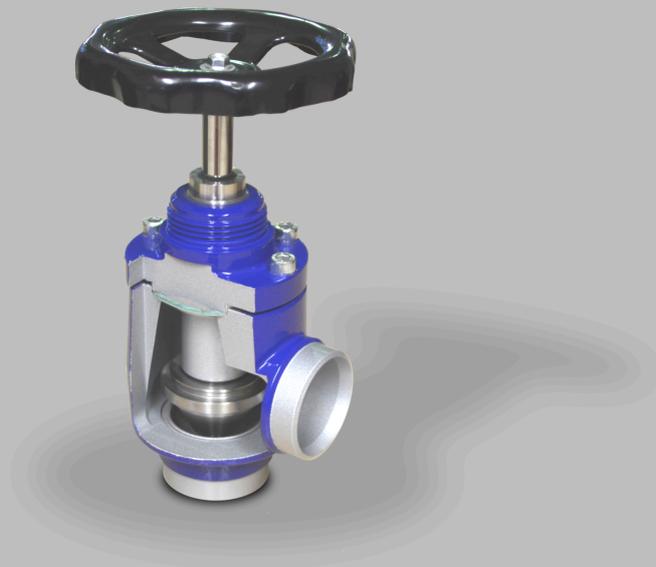


# REGULATING VALVES FOR REFRIGERATION

HRAR, HRAB, HRAR MAV

05.02.2026





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# 1 HRAR / HRAB

HRAR: Control valve - shut-off capable - stem seal with spring-energised PTFE ring

HRAR	Connection	Form	Material	Valve type
HRAR	Materials			
HRAR PS25 / PS40 / PS63	Welding ends	Straight-way	St	HRAR D AE / DV
			NIRO	HRAR D AE NIRO / DV
		Angle	St	HRAR E AE / DV
			NIRO	HRAR E AE NIRO / DV
	Flanged ends	Straight-way	St	HRAR D FL / DV
			NIRO	HRAR D FL NIRO / DV
		Angle	St	HRAR E FL / DV
			NIRO	HRAR E FL NIRO / DV
	Soldering ends	Straight-way	St	HRAR D LE / DV
			NIRO	HRAR D LE NIRO / DV
		Angle	St	HRAR E LE / DV
			NIRO	HRAR E LE NIRO / DV
	Screwed ends	Straight-way	St	HRAR D SE / DV
			NIRO	HRAR D SE NIRO / DV
		Angle	St	HRAR E SE / DV
			NIRO	HRAR E SE NIRO / DV
HRAR PS160	Welding ends	Straight-way	St	HRAR D AE
			NIRO	HRAR D AE NIRO
		Angle	St	HRAR E AE
			NIRO	HRAR E AE NIRO
	Soldering ends	Straight-way	St	HRAR D LE
			NIRO	HRAR D LE NIRO
		Angle	St	HRAR E LE
			NIRO	HRAR E LE NIRO
HRAR MAV J+J PS25 / PS40 / PS63	Welding ends	Straight-way	St	HRAR MAV D AE DV
			NIRO	HRAR MAV D AE DV NIRO
			St	HRAR MAV G AE DV
			NIRO	HRAR MAV G AE DV NIRO
		Angle	St	HRAR MAV E AE DV
			NIRO	HRAR MAV E AE DV NIRO
HRAR MAV PS25 / PS40 / PS63	Welding ends	Straight-way	St	HRAR MAV D AE DV
			NIRO	HRAR MAV D AE DV NIRO
		Angle	St	HRAR MAV E AE DV
			NIRO	HRAR MAV E AE DV NIRO

DV = optional bonnet extension, St = steel NIRO = stainless steel

## 2 HRAR / HRAB

HRAB: Control valve - shut-off capable - stem seal with metal bellows

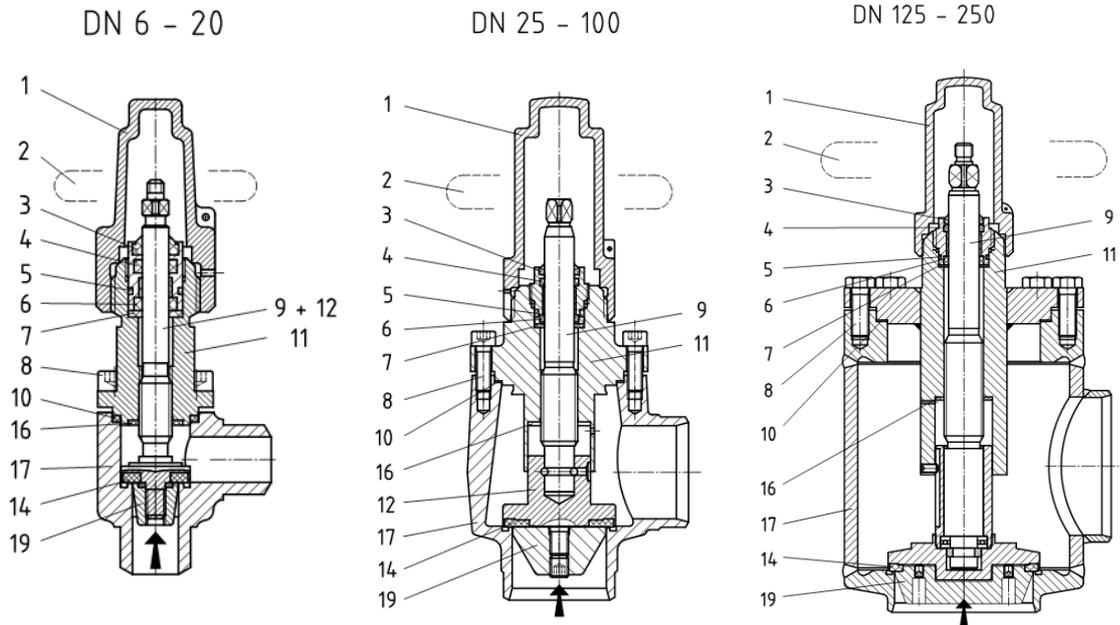
HRAB	Connection	Form	Material	Valve type
HRAB	Materials			
HRAB PS25-PS40	Welding ends	Straight-way	St	HRAB D AE / DV
			NIRO	HRAB D AE NIRO / DV
		Angle	St	HRAB E AE / DV
			NIRO	HRAB E AE NIRO / DV
	Flanged ends	Straight-way	St	HRAB D FL / DV
			NIRO	HRAB D FL NIRO / DV
		Angle	St	HRAB E FL / DV
			NIRO	HRAB E FL NIRO / DV
	Soldering ends Solder ends	Straight-way	St	HRAB D LE / DV
			NIRO	HRAB D LE NIRO / DV
		Angle	St	HRAB E LE / DV
			NIRO	HRAB E LE NIRO / DV
Information	Valve stem sealing system			
	Insulation thicknesses			
	HR / K Handwheel / Cap			
	Comparison of European/American materials			
	Coding of connections for small and service valves			
	Accessories/fittings for AVR, HRAR, RV, RVA, RVAK, SS, UVA			
	DIN-FL welding neck flanges			
	EN-FL welding neck flanges			
	ANSI-FL welding neck flanges - smooth			
	AWP-FL welding neck flanges - AWP			
	Legal notices			

DV = optional bonnet extension, St = steel NIRO = stainless steel

### 3 HRAR materials

Designation and materials

HRAR - control valve



Part		Material for steel valves	Material for stainless steel valves
1	Cap	Aluminium AlSi10Mg	Aluminium AlSi10Mg
2	Handwheel	Steel	Steel
3	Wiper ring	NBR	NBR
4	O-ring A	CR, NBR, HNBR, EPDM, FPM*	CR, NBR, HNBR, EPDM, FPM*
5	O-ring B	CR, NBR, HNBR, EPDM, FPM*	CR, NBR, HNBR, EPDM, FPM*
6	Spring-loaded U-ring	PTFE	PTFE
7	Flat sealing ring for threaded bush	AFM30	AFM30
8	Bonnet screw	8.8	A2-70
9	Stem	X8CrNiS18-9 1.4305	X8CrNiS18-9 1.4305
10	Flat sealing ring for bonnet	AFM30	AFM30
11	Bonnet	S355J2 1.0577	X8CrNiS18-9 1.4305 X5CrNiS18-10 1.4301 X2CrNiS19-11 1.4306
12	Valve disc	S355J2 1.0577	X8CrNiS18-9 1.4305
14	Flat sealing ring for valve disc	PTFE	PTFE
16	Back seal	PTFE	PTFE

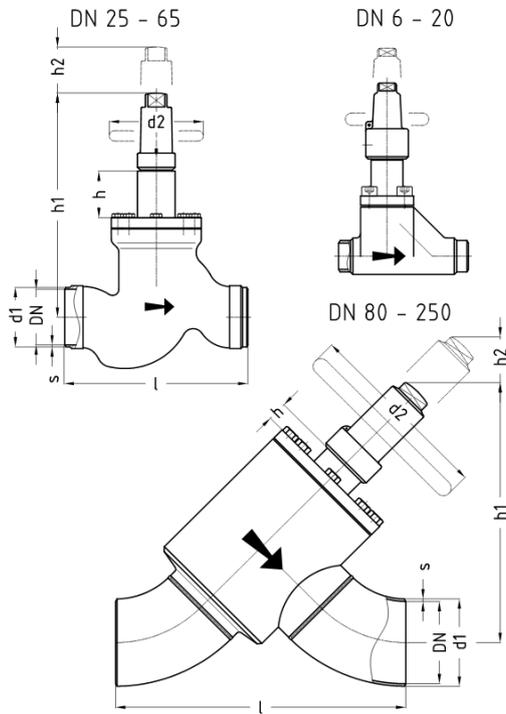
Part		Material for steel valves	Material for stainless steel valves
17	Body	P235GH 1.0345 S355J2 1.0577 P355N 1.0562 G20Mn5 +QT	X5CrNi18-10 1.4301 GX5CrNiMoNb19-11-2
19	Regulating cone	S355J2 1.0577	X8CrNiS18-9 1.4305

\* depending on the refrigerant used

## 4 HRAR D AE / HRAR D AE DV

**D:** Straight-way, **AE:** Welding ends, **DV:** Bonnet extension

HRAR steel control valve - shut-off capable - stem seal with spring-energised PTFE ring for natural refrigerants (NH<sub>3</sub>, CO<sub>2</sub>) and non-corrosive gases and liquids according to EN 378-1 as well as brines



Pressure / temperature operating limits:

**PS:** Max. permissible operating pressure in bar

**TS:** Permissible operating temperature in °C associated with the permissible operating pressures (PS)

**PN:** Nominal pressure rating

DN / INCH	PN	-60	-40	-25	-10	+50	+150	TS [°C]
DN 6...20 1/8" ...3/4"	PN25	6.25	12.5	18.7	25	25	25	PS [bar]
	PN40	10	20	30	40	40	40	PS [bar]
	PN63	15.75	31.5	47.2	63	63	63	PS [bar]
DN 25...200 1" ...8"	PN25	6.25	12.5	18.7	25	25	25	PS [bar]
	PN40	10	20	30	40	40	40	PS [bar]
	PN63	15.75	31.5	47.2	63	63	43/63*	PS [bar]
DN 250 10"	PN25	6.25	12.5	18.7	25	25	25	PS [bar]
	PN40	10	20	30	40	40	40	PS [bar]

\*only from DN80

Nominal size:		Welding ends acc. to: s						PN63, DN6-15:										
DN	INCH	ISO Series 1			ISO Series 2		ANSI Sched 40		ANSI Sched 80		Dimensions l to d2 same as for DN20							
		d1	s1)	s2)	d1	s	d1	s	d1	s	l	h	h*)	h1	h1*)	h2	d2	
6	1/8"	10.2	1.6	1.6			10.3	1.7	10.3	2.4	84	22	54	128	160	35	60	
8	1/4"	13.5	1.8	1.8			13.7	2.2	13.7	3.0	84	22	54	128	160	35	60	
10	3/8"	17.2	1.8	1.8	15.0	2.5	17.1	2.3	17.1	3.2	84	22	54	128	160	35	60	

Nominal size:		Welding ends acc. to: s									PN63, DN6-15:						
15	1/2"	21.3	2.0	2.0	20.0	2.5	21.3	2.8	21.3	3.7	84	22	54	128	160	35	60
20	3/4"	26.9	2.3	2.6	25.0	2.5	26.7	2.9	26.7	3.9	110	31	68	148	185	45	60
25	1"	33.7	2.6	2.6	32.0	3.0	33.4	3.4	33.4	4.5	160	18	78	201	261	90	120
32	1 1/4"	42.4	2.6	2.9	38.0	3.0	42.2	3.6	42.2	4.8	180	18	78	202	262	90	120
40	1 1/2"	48.3	2.6	2.9	45.0	3.0	48.3	3.7	48.3	5.1	200	13	73	234	294	110	140
50	2"	60.3	2.9	2.9	57.0	3.2	60.3	3.9			230	13	73	234	294	110	140
65	2 1/2"	76.1	2.9	3.2	76.1	3.6	73.0	5.2			290	8	78	262	332	130	140
80	3"	88.9	3.2	3.6	88.9	4.0	88.9	5.5			304	21	78	326	367	110	180
100	4"	114.3	3.6	4.0	108.0	4.0	114.3	6.0			386	7	88	348	405	110	180
125	5"	139.7	4.0	4.5	133.0	4.0	141.3	6.6			461	29	129	420	491	140	300
150	6"	168.3	4.5	5.6	159.0	4.5	168.3	7.1			537	5	105	437	508	150	400
200	8"	219.1	6.3	7.1			219.1	8.2			708	11	102	610	675	170	630
250	10"	273.0	7.1				273.0	9.3			875	100		739		220	630

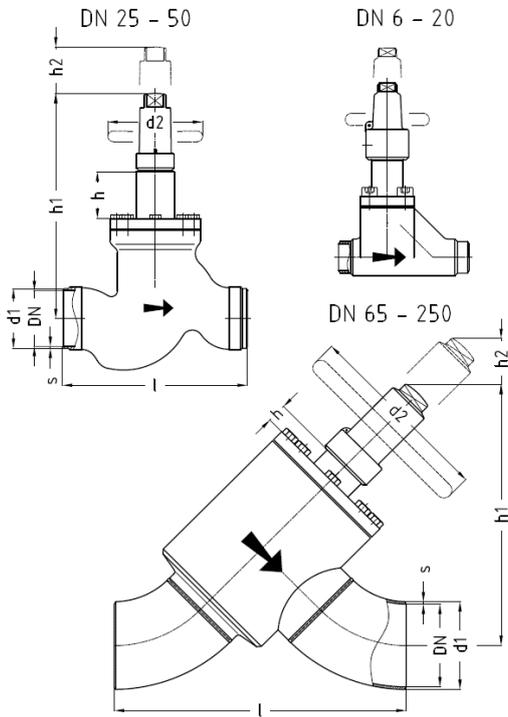
Table 1: Dimensions

1) PN25 / PN40 2) PN63 \*) for valves with bonnet extension, h2 = dismantling dimension

## 5 HRAR D AE NIRO / HRAR D AE DV NIRO

**D:** Straight-way, **AE:** Welding ends, **DV:** Bonnet extension

HRAR stainless steel control valve - shut-off capable - stem seal with spring-energised PTFE ring for natural refrigerants (NH<sub>3</sub>, CO<sub>2</sub>) and non-corrosive gases and liquids according to EN 378-1 as well as brines



Pressure / temperature operating limits:

**PS:** Max. permissible operating pressure in bar

**TS:** Permissible operating temperature in °C associated with the permissible operating pressures (PS)

**PN:** Nominal pressure rating

DN / INCH	PN	-60	-10	+50	+150	TS [°C]
DN 6...20 1/8" ...3/4"	PN25	25	25	25	25	PS [bar]
	PN40	40	40	40	40	PS [bar]
	PN63	63	63	63	63	PS [bar]
DN 25...200 1" ...8"	PN25	25	25	25	25	PS [bar]
	PN40	40	40	40	40	PS [bar]
	PN63	63	63	63	50.2/63*	PS [bar]
DN 250 10"	PN25	25	25	25	25	PS [bar]
	PN40	40	40	40	40	PS [bar]

\*only from DN65

Nominal size:		Welding ends acc. to:										PN40/PN63, DN6-15:					
DN	INCH	ISO Series 1			ISO Series 2		ANSI Sched 40		ANSI Sched 80		Dimensions l to d2 same as for DN20						
		d1	s1)	s2)	d1	s	d1	s	d1	s	l	h	h*)	h1	h1*)	h2	d2
6	1/8"	10.2	1.6	1.6			10.3	1.7	10.3	2.4	84	22	54	128	160	35	60
8	1/4"	13.5	1.8	1.8			13.7	2.2	13.7	3.0	84	22	54	128	160	35	60
10	3/8"	17.2	1.8	1.8	15.0	2.5	17.1	2.3	17.1	3.2	84	22	54	128	160	35	60

Nominal size:		Welding ends acc. to:									PN40/PN63, DN6-15:						
15	1/2"	21.3	2.0	2.0	20.0	2.5	21.3	2.8	21.3	3.7	84	22	54	128	160	35	60
20	3/4"	26.9	2.3	2.6	25.0	2.5	26.7	2.9	26.7	3.9	110	31	68	148	185	45	60
25	1"	33.7	2.6	2.6	32.0	3.0	33.4	3.4	33.4	4.5	160	18	78	201	261	90	120
32	1 1/4"	42.4	2.6	2.9	38.0	3.0	42.2	3.6	42.2	4.8	180	18	78	202	262	90	120
40	1 1/2"	48.3	2.6	2.9	45.0	3.0	48.3	3.7	48.3	5.1	200	13	73	234	294	110	140
50	2"	60.3	2.9	2.9	57.0	3.2	60.3	3.9			230	13	73	234	294	110	140
65	2 1/2"	76.1	2.9	3.2	76.1	3.6	73.0	5.2			256	8	78	248	298	100	140
80	3"	88.9	3.2	3.6	88.9	4.0	88.9	5.5			304	21	78	326	367	110	180
100	4"	114.3	3.6	4.0	108.0	4.0	114.3	6.0			386	7	88	348	405	110	180
125	5"	139.7	4.0	4.5	133.0	4.0	141.3	6.6			461	29	129	420	491	140	300
150	6"	168.3	4.5	5.6	159.0	4.5	168.3	7.1			537	5	105	437	508	150	400
200	8"	219.1	6.3	7.1			219.1	8.2			708	11	102	610	675	170	630
250	10"	273.0	7.1				273.0	9.3			875	100		739		220	630

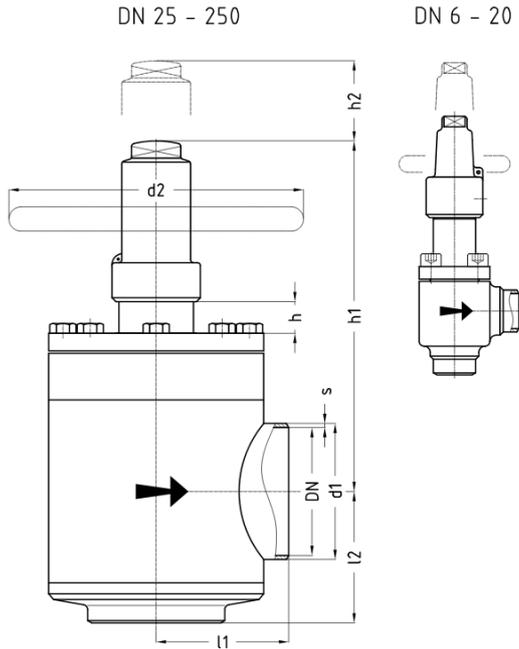
Table 2: Dimensions

1) PN25 / PN40 2) PN63 \*) for valves with bonnet extension, h2 = dismantling dimension

## 6 HRAR E AE / HRAR E AE DV

**E:** Angle, **AE:** Welding ends, **DV:** Bonnet extension

HRAR steel control valve - shut-off capable - stem seal with spring-energised PTFE ring for natural refrigerants (NH<sub>3</sub>, CO<sub>2</sub>) and non-corrosive gases and liquids according to EN 378-1 as well as brines



Pressure / temperature operating limits:

**PS:** Max. permissible operating pressure in bar

**TS:** Permissible operating temperature in °C associated with the permissible operating pressures (PS)

**PN:** Nominal pressure rating

DN / INCH	PN	-60	-40	-25	-10	+50	+150	TS [°C]
DN 6...20 1/8" ...3/4"	PN25	6.25	12.5	18.7	25	25	25	PS [bar]
	PN40	10	20	30	40	40	40	PS [bar]
	PN63	15.75	31.5	47.2	63	63	63	PS [bar]
DN 25...200 1" ...8"	PN25	6.25	12.5	18.7	25	25	25	PS [bar]
	PN40	10	20	30	40	40	40	PS [bar]
	PN63	15.75	31.5	47.2	63	63	43/63*	PS [bar]
DN 250 10"	PN25	6.25	12.5	18.7	25	25	25	PS [bar]
	PN40	10	20	30	40	40	40	PS [bar]

Nominal size:		Welding ends acc. to:										PN63, DN6-15:						
		ISO Series 1			ISO Series 2		ANSI Sched 40		ANSI Sched 80		Dimensions l1 to d2 same as for DN20							
DN	INCH	d1	s1)	s2)	d1	s	d1	s	d1	s	l1	l2	h	h*)	h1	h1*)	h2	d2
6	1/8"	10.2	1.6	1.6			10.3	1.7	10.3	2.4	35	35	22	54	110	143	35	60
8	1/4"	13.5	1.8	1.8			13.7	2.2	13.7	3.0	35	35	22	54	110	143	35	60
10	3/8"	17.2	1.8	1.8	15.0	2.5	17.1	2.3	17.1	3.2	35	35	22	54	110	143	35	60
15	1/2"	21.3	2.0	2.0	20.0	2.5	21.3	2.8	21.3	3.7	35	35	22	54	110	143	35	60

Nominal size:		Welding ends acc. to: PN63, DN6-15:																
20	3/4"	26.9	2.3	2.6	25.0	2.5	26.7	2.9	26.7	3.9	41	41	31	68	125	162	45	60
25	1"	33.7	2.6	2.6	32.0	3.0	33.4	3.4	33.4	4.5	60	60	18	78	180	240	90	120
32	1 1/4"	42.4	2.6	2.9	38.0	3.0	42.2	3.6	42.2	4.8	60	60	18	78	180	240	90	120
40	1 1/2"	48.3	2.6	2.9	45.0	3.0	48.3	3.7	48.3	5.1	70	70	13	73	205	265	110	140
50	2"	60.3	2.9	2.9	57.0	3.2	60.3	3.9			70	70	13	73	205	265	110	140
65	2 1/2"	76.1	2.9	3.2	76.1	3.6	73.0	5.2			85	85	8	78	212	282	130	140
80	3"	88.9	3.2	3.6	88.9	4.0	88.9	5.5			100	100	21	78	291	350	150	180
100	4"	114.3	3.6	4.0	108.0	4.0	114.3	6.0			120	120	7	88	287	368	150	180
125	5"	139.7	4.0	4.5	133.0	4.0	141.3	6.6			135	135	29	129	360	456	190	300
150	6"	168.3	4.5	5.6	159.0	4.5	168.3	7.1			150	150	5	105	352	452	210	400
200	8"	219.1	6.3	7.1			219.1	8.2			195	195	11	102	513	608	240	630
250	10"	273.0	7.1				273.0	9.3			236	236	100		626		300	630

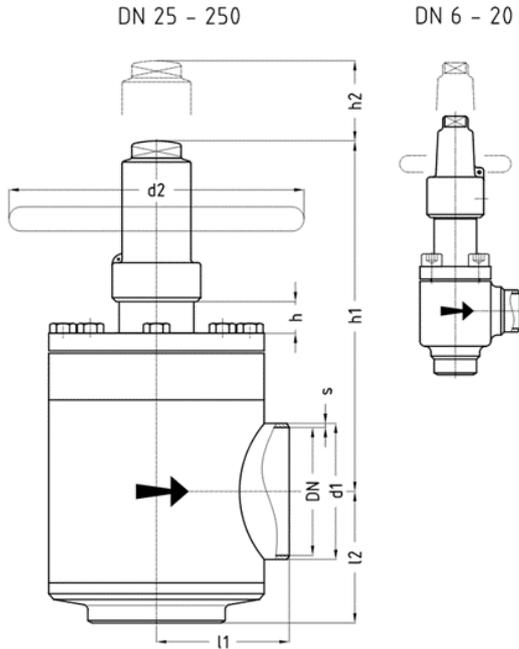
Table 3: Dimensions

1) PN25 / PN40 2) PN63 \*) for valves with bonnet extension, h2 = dismantling dimension

## 7 HRAR E AE NIRO / HRAR E AE DV NIRO

**E:** Angle, **AE:** Welding ends, **DV:** Bonnet extension

HRAR stainless steel control valve - shut-off capable - stem seal with spring-energised PTFE ring for natural refrigerants (NH<sub>3</sub>, CO<sub>2</sub>) and non-corrosive gases and liquids according to EN 378-1 as well as brines



Pressure / temperature operating limits:

**PS:** Max. permissible operating pressure in bar

**TS:** Permissible operating temperature in °C associated with the permissible operating pressures (PS)

**PN:** Nominal pressure rating

DN / INCH	PN	-60	-10	+50	+150	TS [°C]
DN6...20 1/8" ...3/4"	PN25	25	25	25	25	PS [bar]
	PN40	40	40	40	40	PS [bar]
	PN63	63	63	63	63	PS [bar]
DN 25...200 1" ...8"	PN25	25	25	25	25	PS [bar]
	PN40	40	40	40	40	PS [bar]
	PN63	63	63	63	63	PS [bar]
DN 250 10"	PN25	25	25	25	25	PS [bar]
	PN40	40	40	40	40	PS [bar]

Nominal size:		Welding ends acc. to:										PN40/PN63, DN6-15:						
		ISO Series 1			ISO Series 2		ANSI Sched 40		ANSI Sched 80		Dimensions l1 to d2 same as for DN20							
DN	INCH	d1	s1)	s2)	d1	s	d1	s	d1	s	l1	l2	h	h*)	h1	h1*)	h2	d2
6	1/8"	10.2	1.6	1.6			10.3	1.7	10.3	2.4	35	35	22	54	110	143	35	60
8	1/4"	13.5	1.8	1.8			13.7	2.2	13.7	3.0	35	35	22	54	110	143	35	60
10	3/8"	17.2	1.8	1.8	15.0	2.5	17.1	2.3	17.1	3.2	35	35	22	54	110	143	35	60
15	1/2"	21.3	2.0	2.0	20.0	2.5	21.3	2.8	21.3	3.7	35	35	22	54	110	143	35	60

Nominal size:		Welding ends acc. to: PN40/PN63, DN6-15:																
20	3/4"	26.9	2.3	2.6	25.0	2.5	26.7	2.9	26.7	3.9	41	41	31	68	125	162	45	60
25	1"	33.7	2.6	2.6	32.0	3.0	33.4	3.4	33.4	4.5	60	60	18	78	180	240	90	120
32	1 1/4"	42.4	2.6	2.9	38.0	3.0	42.2	3.6	42.2	4.8	60	60	18	78	180	240	90	120
40	1 1/2"	48.3	2.6	2.9	45.0	3.0	48.3	3.7	48.3	5.1	70	70	13	73	205	265	110	140
50	2"	60.3	2.9	2.9	57.0	3.2	60.3	3.9			70	70	13	73	205	265	110	140
65	2 1/2"	76.1	2.9	3.2	76.1	3.6	73.0	5.2			85	85	8	78	212	282	130	140
80	3"	88.9	3.2	3.6	88.9	4.0	88.9	5.5			100	100	21	78	291	350	150	180
100	4"	114.3	3.6	4.0	108.0	4.0	114.3	6.0			120	120	7	88	287	368	150	180
125	5"	139.7	4.0	4.5	133.0	4.0	141.3	6.6			135	135	29	129	360	456	190	300
150	6"	168.3	4.5	5.6	159.0	4.5	168.3	7.1			150	150	5	105	352	452	210	400
200	8"	219.1	6.3	7.1			219.1	8.2			195	195	11	102	513	608	240	630
250	10"	273.0	7.1				273.0	9.3			236	236	100		626		300	630

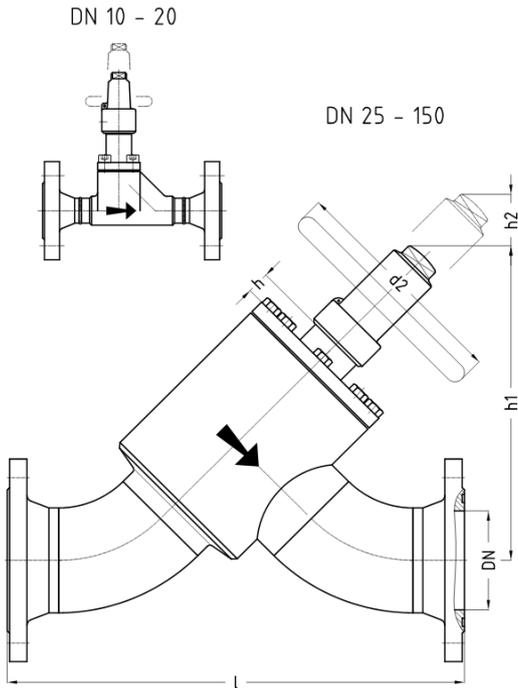
Table 4: Dimensions

1) PN25 / PN40 2) PN63 \*) for valves with bonnet extension, h2 = dismantling dimension

## 8 HRAR D FL / HRAR D FL DV

**D:** Straight-way, **FL:** Flanged ends

HRAR steel control valve - shut-off capable - stem seal with spring-energised PTFE ring for natural refrigerants (NH<sub>3</sub>, CO<sub>2</sub>) and non-corrosive gases and liquids according to EN 378-1 as well as brines



Pressure / temperature operating limits:

**PS:** Max. permissible operating pressure in bar

**TS:** Permissible operating temperature in °C associated with the permissible operating pressures (PS)

**PN:** Nominal pressure rating

DN / INCH	PN	-60	-40	-25	-10	+50	+150	TS [°C]
DN 10...20 3/8" ...3/4"	PN25	6.25	12.5	18.7	25	25	25	PS [bar]
	PN40	10	20	30	40	40	40	PS [bar]
	PN63	15.75	31.5	47.2	63	63	63	PS [bar]
DN 25...200 1" ...8"	PN25	6.25	12.5	18.7	25	25	25	PS [bar]
	PN40	10	20	30	40	40	40	PS [bar]
	PN63	15.75	31.5	47.2	63	63	63	PS [bar]
DN 250 10"	PN25	6.25	12.5	18.7	25	25	25	PS [bar]
	PN40	10	20	30	40	40	40	PS [bar]

Nominal size:		Flanged ends acc. to:					PN63, DN10-15:					
		AWP DN10-20 PN25 DN25-80 PN40	PN25 DIN 2534 EN1092-1	PN40 DIN 2535 EN1092-1	PN63 DIN 2536 EN1092-1	ANSI 300 RF	Dimensions h to d2 same as for DN20					
DN	INCH	l	l	l	l	l / l1)	h	h*)	h1	h1*)	h2	d2
10	3/8"	149	156	156	202		22	54	128	160	35	60
15	1/2"	149	162	162	202	192/218	22	54	128	160	35	60
20	3/4"	175	192	192	208	228	31	68	148	185	45	60

Nominal size:		Flanged ends acc. to:					PN63, DN10-15:					
25	1"	230	222	222	258	266	18	78	188	231	70	120
32	1 1/4"	244	240	240	276	286	18	78	191	233	70	120
40	1 1/2"	235	248	248	282	295	13	73	208	251	80	140
50	2"	270	280	280	308	324	13	73	214	259	80	140
65	2 1/2"	365	362	362	394	410	8	78	248	298	100	140
80	3"	413	422	422	450	464	21	78	326	367	110	180
100	4"		518	518	544	560	7	88	348	405	110	180
125	5"		599	599	639	660	29	129	420	491	140	300
150	6"		689	689	729	736	5	105	437	508	150	400
200	8"		870	886	930	932	11	102	610	675	170	630
250	10"		1053	1087		1112	100		739		220	630

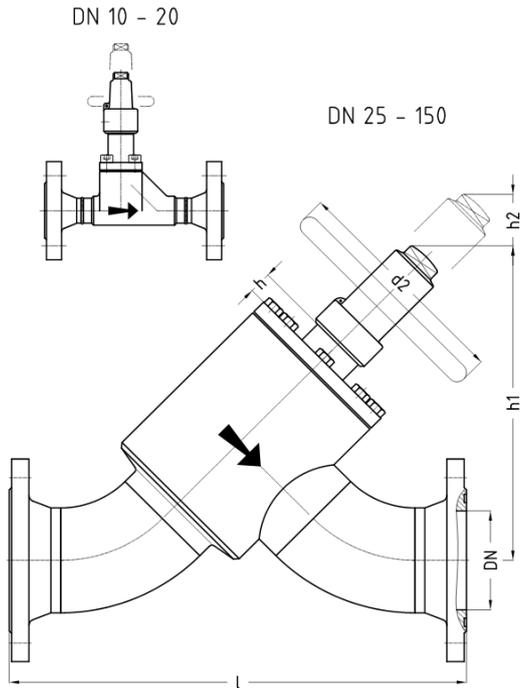
Table 5: Dimensions

l<sup>(1)</sup> PN63 \*) for valves with bonnet extension, h<sub>2</sub> = dismantling dimension, DIN/EN flange facings with DIN 2512 groove as standard

## 9 HRAR D FL NIRO / HRAR D FL DV NIRO

**D:** Straight-way, **FL:** Flanged ends

HRAR stainless steel control valve - shut-off capable - stem seal with spring-energised PTFE ring for natural refrigerants (NH<sub>3</sub>, CO<sub>2</sub>) and non-corrosive gases and liquids according to EN 378-1 as well as brines



Pressure / temperature operating limits:

**PS:** Max. permissible operating pressure in bar

**TS:** Permissible operating temperature in °C associated with the permissible operating pressures (PS)

**PN:** Nominal pressure rating

DN / INCH	PN	-60	-10	+50	+150	TS [°C]
DN 10...20 3/8" ...3/4"	PN25	25	25	25	25	PS [bar]
	PN40	40	40	40	40	PS [bar]
	PN63	63	63	63	63	PS [bar]
DN 25...200 1" ...8"	PN25	25	25	25	25	PS [bar]
	PN40	40	40	40	40	PS [bar]
	PN63	63	63	63	63	PS [bar]
DN 250 10"	PN25	25	25	25	25	PS [bar]
	PN40	40	40	40	40	PS [bar]

Nominal size:		Flanged ends acc. to:					PN40/PN63, DN10-15:					
		AWP DN10-20 PN25 DN25-80 PN40	PN25 DIN 2534 EN1092-1	PN40 DIN 2535 EN1092-1	PN63 DIN 2536 EN1092-1	ANSI 300 RF	Dimensions h to d2 same as for DN20					
DN	INCH	l	l	l	l	l / l1)	h	h*)	h1	h1*)	h2	d2
10	3/8"	149	156	182	202		22	54	128	160	35	60
15	1/2"	149	162	188	202	192/218	22	54	128	160	35	60
20	3/4"	175	192	192	208	228	31	68	148	185	45	60

Nominal size:		Flanged ends acc. to:				PN40/PN63, DN10-15:						
25	1"	230	222	222	258	266	18	78	188	231	70	120
32	1 1/4"	244	240	240	276	286	18	78	191	233	70	120
40	1 1/2"	235	248	248	282	295	13	73	208	251	80	140
50	2"	270	280	280	308	324	13	73	214	259	80	140
65	2 1/2"	365	362	362	394	410	8	78	248	298	100	140
80	3"	413	422	422	450	464	21	78	326	367	110	180
100	4"		518	518	544	560	7	88	348	405	110	180
125	5"		599	599	639	660	29	129	420	491	140	300
150	6"		689	689	729	736	5	105	437	508	150	400
200	8"		870	886	930	932	11	102	610	675	170	630
250	10"		1053	1087		1112	100		739		220	630

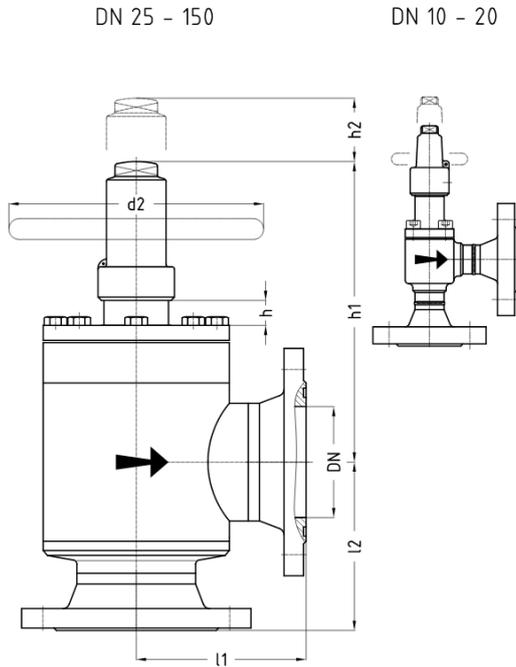
Table 6: Dimensions

l<sup>(1)</sup> PN40/PN63 \*) for valves with bonnet extension, h2 = dismantling dimension, DIN/EN flange facings with DIN 2512 groove as standard

## 10 HRAR E FL / HRAR E FL DV

**E:** Angle, **FL:** Flanged ends, **DV:** Bonnet extension

HRAR steel control valve - shut-off capable - stem seal with spring-energised PTFE ring for natural refrigerants (NH<sub>3</sub>, CO<sub>2</sub>) and non-corrosive gases and liquids according to EN 378-1 as well as brines



Pressure / temperature operating limits:

**PS:** Max. permissible operating pressure in bar

**TS:** Permissible operating temperature in °C associated with the permissible operating pressures (PS)

**PN:** Nominal pressure rating

DN / INCH	PN	-60	-40	-25	-10	+50	+150	TS [°C]
DN10...20 3/8" ...3/4"	PN25	6.25	12.5	18.7	25	25	25	PS [bar]
	PN40	10	20	30	40	40	40	PS [bar]
	PN63	15.75	31.5	47.2	63	63	63	PS [bar]
DN 25...200 1" ...8"	PN25	6.25	12.5	18.7	25	25	25	PS [bar]
	PN40	10	20	30	40	40	40	PS [bar]
	PN63	15.75	31.5	47.2	63	63	63	PS [bar]
DN 250 10"	PN25	6.25	12.5	18.7	25	25	25	PS [bar]
	PN40	10	20	30	40	40	40	PS [bar]

Nominal size:		Flanged ends acc. to:										PN63, DN10-15:					
		AWP DN10-20 PN25 DN25-80 PN40		PN25 DIN2634 EN1092-1		PN40 DIN 2635 EN1092-1		PN63 DIN 2636 EN1092-1		ANSI 300 RF		Dimensions h to d2 same as for DN20					
DN	INCH	l1	l2	l1	l2	l1	l2	l1	l2	l1/ l11)	l2/ l21)	h	h*)	h1	h1*)	h2	d2
10	3/8"	67.5	67.5	71	71	71	71	87	87			22	54	110	143	35	60

Nominal size:	Flanged ends acc. to:										PN63, DN10-15:						
15	1/2"	67.5	67.5	74	74	74	74	87	87	89/95	89/95	22	54	110	143	35	60
20	3/4"	73.5	73.5	82	82	82	82	90	90	100	100	31	68	125	162	45	60
25	1"	105	105	101	101	101	101	119	119	123	123	18	78	180	240	90	120
32	1 1/4"	105	105	103	103	103	103	121	121	126	126	18	78	180	240	90	120
40	1 1/2"	110	110	116	116	116	116	133	133	139	139	13	73	205	265	110	140
50	2"	114	114	119	119	119	119	133	133	141	141	13	73	205	265	110	140
65	2 1/2"	140	140	138	138	138	138	154	154	162	162	8	78	212	282	130	140
80	3"	155	155	159	159	159	159	173	173	180	180	21	78	291	350	150	180
100	4"			186	186	186	186	199	199	207	207	7	88	287	368	150	180
125	5"			204	204	204	204	224	224	235	235	29	129	360	456	190	300
150	6"			226	226	226	226	246	246	250	250	5	105	352	452	210	400
200	8"			276	276	284	284	306	306	308	308	11	102	513	608	240	630
250	10"			325	325	342	342	362	362	355	355	100		626		300	630

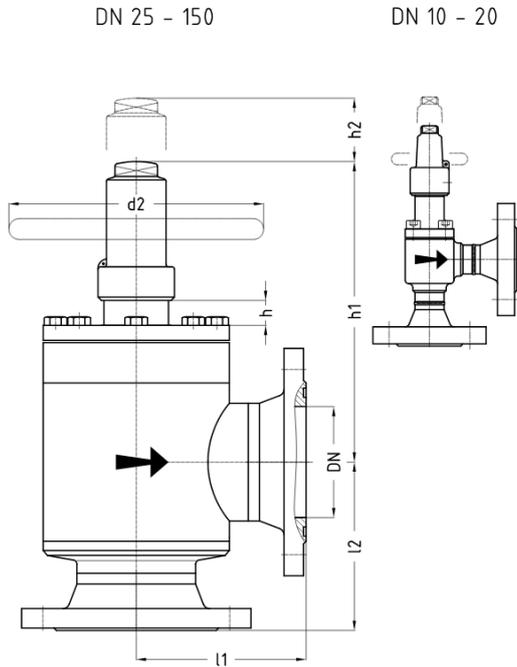
Table 7: Dimensions

l1<sup>1)</sup>, l2<sup>1)</sup> PN63 \*) for valves with bonnet extension, h2 = dismantling dimension DIN/EN flange facings with DIN 2512 groove as standard

## 11 HRAR E FL NIRO / HRAR E FL DV NIRO

**E:** Angle, **FL:** Flanged ends, **DV:** Bonnet extension

HRAR stainless steel control valve - shut-off capable - stem seal with spring-energised PTFE ring for natural refrigerants (NH<sub>3</sub>, CO<sub>2</sub>) and non-corrosive gases and liquids according to EN 378-1 as well as brines



Pressure / temperature operating limits:

**PS:** Max. permissible operating pressure in bar

**TS:** Permissible operating temperature in °C associated with the permissible operating pressures (PS)

**PN:** Nominal pressure rating

DN / INCH	PN	-60	-10	+50	+150	TS [°C]
DN10...20 3/8" ...3/4"	PN25	25	25	25	25	PS [bar]
	PN40	40	40	40	40	PS [bar]
	PN63	63	63	63	63	PS [bar]
DN 25...200 1" ...8"	PN25	25	25	25	25	PS [bar]
	PN40	40	40	40	40	PS [bar]
	PN63	63	63	63	63	PS [bar]
DN 250 10"	PN25	25	25	25	25	PS [bar]
	PN40	40	40	40	40	PS [bar]

Nominal size:		Flanged ends acc. to:										PN40/PN63, DN10-15:					
		AWP DN10-20 PN25 DN25-80 PN40		PN25 DIN2634 EN1092-1		PN40 DIN 2635 EN1092-1		PN63 DIN 2636 EN1092-1		ANSI 300 RF		Dimensions h to d2 same as for DN20					
DN	INCH	l1	l2	l1	l2	l1	l2	l1	l2	l1/ l11)	l2/ l21)	h	h*)	h1	h1*)	h2	d2
10	3/8"	67.5	67.5	71	71	77	77	87	87			31	68	125	162	45	60

Nominal size:		Flanged ends acc. to: PN40/PN63, DN10-15:															
15	1/2"	67.5	67.5	74	74	80	80	87	87	89/95	89/95	31	68	125	162	45	60
20	3/4"	73.5	73.5	82	82	82	82	90	90	100	100	31	68	125	162	45	60
25	1"	105	105	101	101	101	101	119	119	123	123	18	78	180	240	90	120
32	1 1/4"	105	105	103	103	103	103	121	121	126	126	18	78	180	240	90	120
40	1 1/2"	110	110	116	116	116	116	133	133	139	139	13	73	205	265	110	140
50	2"	114	114	119	119	119	119	133	133	141	141	13	73	205	265	110	140
65	2 1/2"	140	140	138	138	138	138	154	154	162	162	8	78	212	282	130	140
80	3"	155	155	159	159	159	159	173	173	180	180	21	78	291	350	150	180
100	4"			186	186	186	186	199	199	207	207	7	88	287	368	150	180
125	5"			204	204	204	204	224	224	235	235	29	129	360	456	190	300
150	6"			226	226	226	226	246	246	250	250	5	105	352	452	210	400
200	8"			276	276	284	284	306	306	308	308	11	102	513	608	240	630
250	10"			325	325	342	342	362	362	355	355	100		626		300	630

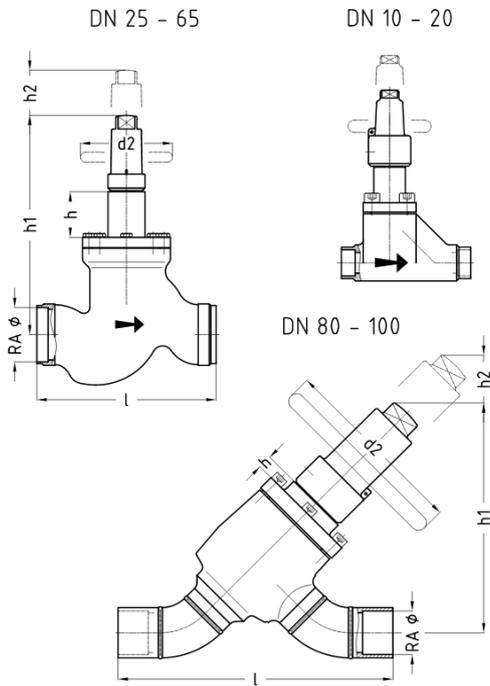
Table 8: Dimensions

l1<sup>1)</sup>, l2<sup>1)</sup> PN40/PN63 \*) for valves with bonnet extension, h2 = dismantling dimension DIN/EN flange facings with DIN 2512 groove as standard

## 12 HRAR D LE / HRAR D LE DV

**D:** Straight-way, **LE:** Soldering ends, **DV:** Bonnet extension

HRAR steel control valve - shut-off capable - stem seal with spring-energised PTFE ring for natural refrigerants (NH<sub>3</sub>, CO<sub>2</sub>) and non-corrosive gases and liquids according to EN 378-1 as well as brines



Pressure / temperature operating limits:

**PS:** Max. permissible operating pressure in bar

**TS:** Permissible operating temperature in °C associated with the permissible operating pressures (PS)

**PN:** Nominal pressure rating

DN	PN	-60	-40	-25	-10	+50	+150	TS [°C]
DN 10...20	PN25	6.25	12.5	18.7	25	25	25	PS [bar]
	PN40	10	20	30	40	40	40	PS [bar]
	PN63	15.75	31.5	47.2	63	63	63	PS [bar]
DN 25...100	PN25	6.25	12.5	18.7	25	25	25	PS [bar]
	PN40	10	20	30	40	40	40	PS [bar]
	PN63	15.75	31.5	47.2	63	63	43/63*	PS [bar]

\* only from DN80

Nominal size: Soldering ends acc. to:		PN63, DN10-15:							
		Dimensions l to d2 same as for DN20							
DN	RAØ	l	h	h*)	h1	h1*)	h2	d2	
10	12	84	22	54	128	160	35	60	
15	15	84	22	54	128	160	35	60	
15	18	84	22	54	128	160	35	60	
20	22	110	31	68	148	185	45	60	
25	28	160	18	78	201	261	90	120	
32	35	180	18	78	202	262	90	120	
40	42	200	13	73	234	294	110	140	

Nominal size:	Soldering ends acc. to:	PN63, DN10-15:						
50	54	230	13	73	234	294	110	140
65	64	290	8	78	262	332	130	140
65	76	290	8	78	262	332	130	140
80	89	406	21	78	326	367	110	180
100	108	518	7	88	348	405	110	180

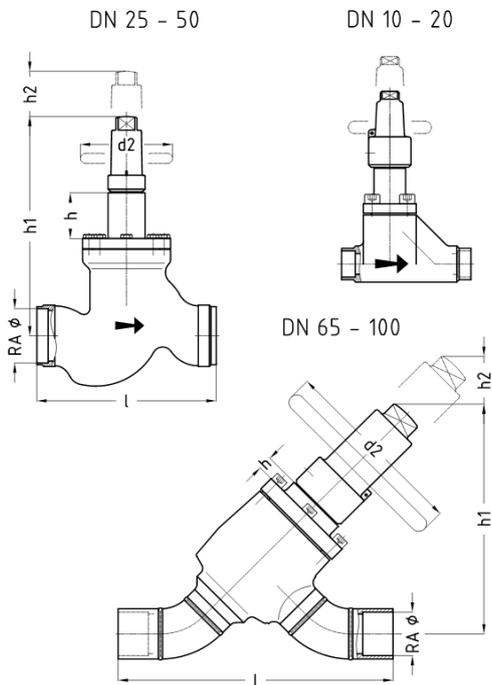
Table 9: Dimensions

\*) for valves with bonnet extension, h2 = dismantling dimension

### 13 HRAR D LE NIRO / HRAR D LE DV NIRO

**D:** Straight-way, **LE:** Soldering ends, **DV:** Bonnet extension

HRAR stainless steel control valve - shut-off capable - stem seal with spring-energised PTFE ring for natural refrigerants (NH<sub>3</sub>, CO<sub>2</sub>) and non-corrosive gases and liquids according to EN 378-1 as well as brines



Pressure / temperature operating limits:

**PS:** Max. permissible operating pressure in bar

**TS:** Permissible operating temperature in °C associated with the permissible operating pressures (PS)

**PN:** Nominal pressure rating

DN	PN	-60	-10	+50	+150	TS [°C]
DN 10...20	PN25	25	25	25	25	PS [bar]
	PN40	40	40	40	40	PS [bar]
	PN63	63	63	63	43	PS [bar]
DN 25...100	PN25	25	25	25	25	PS [bar]
	PN40	40	40	40	40	PS [bar]
	PN63	63	63	63	50.2/63*	PS [bar]

\* from DN65

Nominal size: Soldering ends acc. to:		PN40/63, DN10-15:								
		Dimensions l to d2 same as for DN20								
DN	RAØ	l	h	h*)	h1	h1*)	h2	d2		
10	12	84	22	54	128	160	35	60		
15	15	84	22	54	128	160	35	60		
15	18	84	22	54	128	160	35	60		
20	22	110	31	68	148	185	45	60		
25	28	160	18	78	201	261	90	120		
32	35	180	18	78	202	262	90	120		
40	42	200	13	73	234	294	110	140		

Nominal size:	Soldering ends acc. to:	PN40/63, DN10-15:						
50	54	230	13	73	234	294	110	140
65	64	366	8	78	248	298	100	140
65	76	366	8	78	248	298	100	140
80	89	406	21	78	326	367	110	180
100	108	518	7	88	348	405	110	180

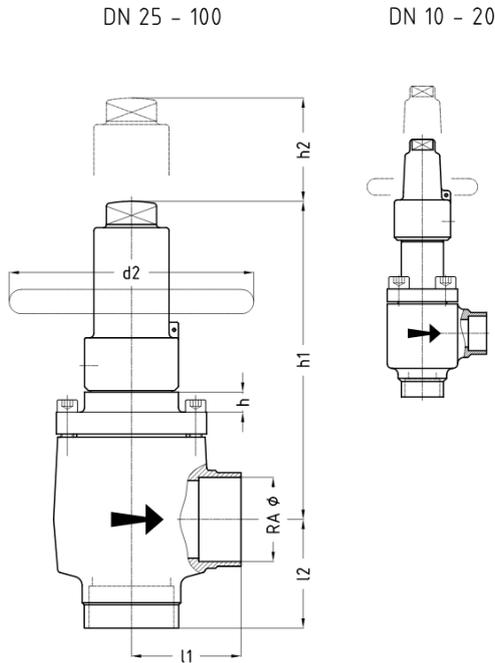
Table 10: Dimensions

\*) for valves with bonnet extension, h2 = dismantling dimension

## 14 HRAR E LE / HRAR E LE DV

**E:** Angle, **LE:** Soldering ends, **DV:** Bonnet extension

HRAR steel control valve - shut-off capable - stem seal with spring-energised PTFE ring for natural refrigerants (NH<sub>3</sub>, CO<sub>2</sub>) and non-corrosive gases and liquids according to EN 378-1 as well as brines



Pressure / temperature operating limits:

**PS:** Max. permissible operating pressure in bar

**TS:** Permissible operating temperature in °C associated with the permissible operating pressures (PS)

**PN:** Nominal pressure rating

DN	PN	-60	-40	-25	-10	+50	+150	TS [°C]
DN 10...20	PN25	6.25	12.5	18.7	25	25	25	PS [bar]
	PN40	10	20	30	40	40	40	PS [bar]
	PN63	15.75	31.5	47.2	63	63	63	PS [bar]
DN 25...100	PN25	6.25	12.5	18.7	25	25	25	PS [bar]
	PN40	10	20	30	40	40	40	PS [bar]
	PN63	15.75	31.5	47.2	63	63	63	PS [bar]

Nominal size: Soldering ends acc. to:		PN63, DN10-15:							
DN	RAØ	Dimensions l1 to d2 same as for DN20							
		l1	l2	h	h*)	h1	h1*)	h2	d2
10	12	35	35	22	54	110	143	35	60
15	15	35	35	22	54	110	143	35	60
15	18	35	35	22	54	110	143	35	60
20	22	41	41	31	68	125	162	45	60
25	28	60	60	18	78	180	240	90	120
32	35	60	60	18	78	180	240	90	120
40	42	70	70	13	73	205	265	110	140
50	54	70	70	13	73	205	265	110	140

Nominal size:	Soldering ends acc. to:	PN63, DN10-15:							
65	64	140	140	8	78	212	282	130	140
65	76	140	140	8	78	212	282	130	140
80	89	151	151	21	78	291	350	150	180
100	108	186	186	7	88	287	368	150	180

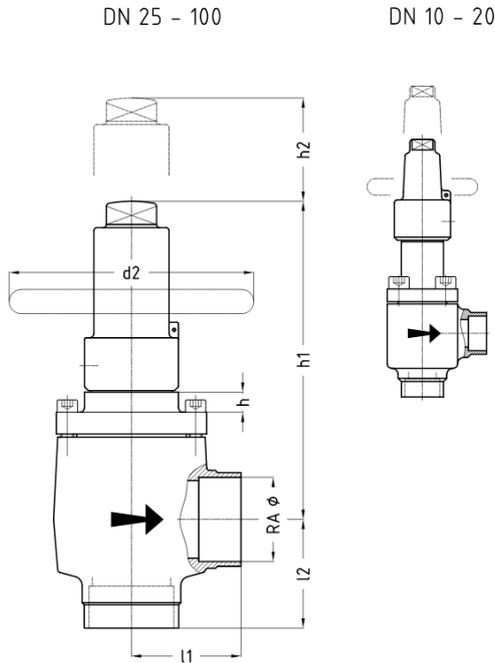
Table 11: Dimensions

\*) for valves with bonnet extension, h2 = dismantling dimension

## 15 HRAR E LE NIRO / HRAR E LE DV NIRO

**E:** Angle, **LE:** Soldering ends, **DV:** Bonnet extension

HRAR stainless steel control valve - shut-off capable - stem seal with spring-energised PTFE ring for natural refrigerants (NH<sub>3</sub>, CO<sub>2</sub>) and non-corrosive gases and liquids according to EN 378-1 as well as brines



Pressure / temperature operating limits:

**PS:** Max. permissible operating pressure in bar

**TS:** Permissible operating temperature in °C associated with the permissible operating pressures (PS)

**PN:** Nominal pressure rating

DN	PN	-60	-10	+50	+150	TS [°C]
DN 10...100	PN25	25	25	25	25	PS [bar]
	PN40	40	40	40	40	PS [bar]
	PN63	63	63	63	63	PS [bar]

Nominal size: Soldering ends acc. to:		PN40/63, DN10-15:							
DN	RAØ	Dimensions l1 to d2 same as for DN20							
		l1	l2	h	h*)	h1	h1*)	h2	d2
10	12	35	35	22	54	110	143	35	60
15	15	35	35	22	54	110	143	35	60
15	18	35	35	22	54	110	143	35	60
20	22	41	41	31	68	125	162	45	60
25	28	60	60	18	78	180	240	90	120
32	35	60	60	18	78	180	240	90	120
40	42	70	70	13	73	205	265	110	140
50	54	70	70	13	73	205	265	110	140
65	64	140	140	8	78	212	282	130	140
65	76	140	140	8	78	212	282	130	140
80	89	151	151	21	78	291	350	150	180

Nominal size:	Soldering ends acc. to:	PN40/63, DN10-15:								
100	108	186	186	7	88	287	368	150	180	

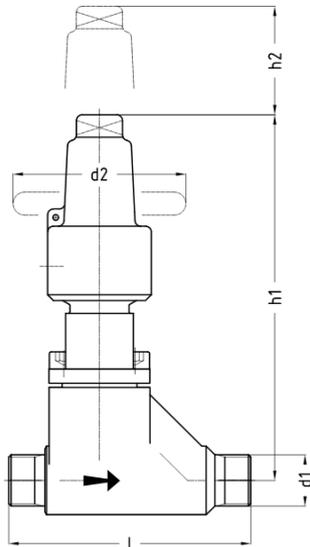
Table 12: Dimensions

\*) for valves with bonnet extension, h2 = dismantling dimension

## 16 HRAR D SE / HRAR D SE DV

**D:** Straight-way, **SE:** Screwed ends, **DV:** Bonnet extension

HRAR steel control valve - shut-off capable - stem seal with spring-energised PTFE ring for natural refrigerants (NH<sub>3</sub>, CO<sub>2</sub>) and non-corrosive gases and liquids according to EN 378-1 as well as brines



**NOTICE! Installation lengths (l) may vary due to the different threads.**

Pressure / temperature operating limits:

**PS:** Max. permissible operating pressure in bar

**TS:** Permissible operating temperature in °C associated with the permissible operating pressures (PS)

**PN:** Nominal pressure rating

DN	PN	-60	-40	-25	-10	+50	+150	TS [°C]
DN 8...20	PN25	6.25	12.5	18.7	25	25	25	PS [bar]
	PN40	10	20	30	40	40	40	PS [bar]
	PN63	15.75	31.5	47.2	63	63	63	PS [bar]

Nominal size:	Screwed ends acc. to:	PN63, DN8:						
		Dimensions l to d2 same as for DN20						
DN	d1	l	h	h*)	h1	h1*)	h2	d2
8	See coding, connections	84	22	54	128	160	35	60
20		110	31	68	148	185	45	60

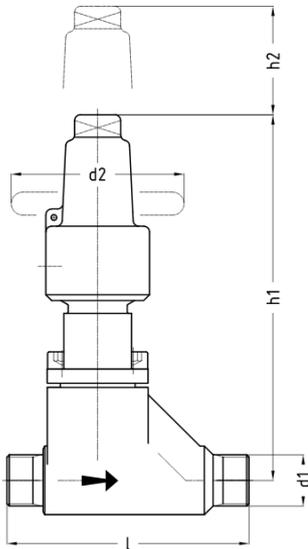
Table 13: Dimensions

\*) for valves with bonnet extension, h2 = dismantling dimension

## 17 HRAR D SE NIRO / HRAR D SE DV NIRO

**D:** Straight-way, **SE:** Screwed ends, **DV:** Bonnet extension

HRAR stainless steel control valve - shut-off capable - stem seal with spring-energised PTFE ring for natural refrigerants (NH<sub>3</sub>, CO<sub>2</sub>) and non-corrosive gases and liquids according to EN 378-1 as well as brines



**NOTICE! Installation lengths (l) may vary due to the different threads.**

Pressure / temperature operating limits:

**PS:** Max. permissible operating pressure in bar

**TS:** Permissible operating temperature in °C associated with the permissible operating pressures (PS)

**PN:** Nominal pressure rating

DN	PN	-60	-10	+50	+150	TS [°C]
DN 8...20	PN25	25	25	25	25	PS [bar]
	PN40	40	40	40	40	PS [bar]
	PN63	63	63	63	63	PS [bar]

Nominal size:	Screwed ends acc. to:	PN40/63, DN8:						
		Dimensions l to d2 same as for DN20						
DN	d1	l	h	h*)	h1	h1*)	h2	d2
8	See coding, connections	84	22	54	128	160	35	60
20		110	31	68	148	185	45	60

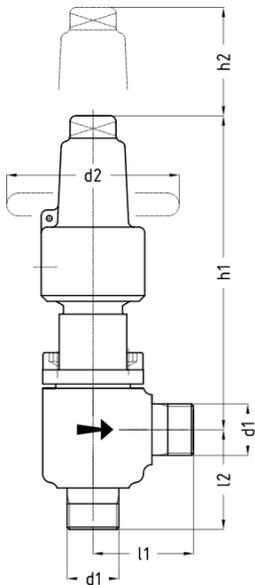
Table 14: Dimensions

\*) for valves with bonnet extension, h2 = dismantling dimension

## 18 HRAR E SE / HRAR E SE DV

**I:** Angle, **SE:** Screwed ends, **DV:** Bonnet extension

HRAR steel control valve - shut-off capable - stem seal with spring-energised PTFE ring for natural refrigerants (NH<sub>3</sub>, CO<sub>2</sub>) and non-corrosive gases and liquids according to EN 378-1 as well as brines



**NOTICE! Installation lengths (l) may vary due to the different threads.**

Pressure / temperature operating limits:

**PS:** Max. permissible operating pressure in bar

**TS:** Permissible operating temperature in °C associated with the permissible operating pressures (PS)

**PN:** Nominal pressure rating

DN	PN	-60	-40	-25	-10	+50	+150	TS [°C]
DN 8...20	PN25	6.25	12.5	18.7	25	25	25	PS [bar]
	PN40	10	20	30	40	40	40	PS [bar]
	PN63	15.75	31.5	47.2	63	63	63	PS [bar]

Nominal size: Screwed ends acc. to:		PN63, DN8:							
		Dimensions l1 to d2 same as for DN20							
DN	d1	l1	l2	h	h*)	h1	h1*)	h2	d2
8	See coding, connections	35	35	22	54	110	143	35	60
20		41	41	31	68	125	162	45	60

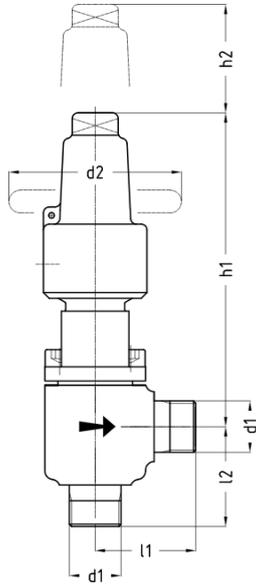
Table 15: Dimensions

\*) for valves with bonnet extension, h2 = dismantling dimension

## 19 HRAR E SE NIRO / HRAR E SE DV NIRO

I: Angle, SE: Screwed ends, DV: Bonnet extension

HRAR stainless steel control valve - shut-off capable - stem seal with spring-energised PTFE ring for natural refrigerants (NH<sub>3</sub>, CO<sub>2</sub>) and non-corrosive gases and liquids according to EN 378-1 as well as brines



**NOTICE! Installation lengths (l) may vary due to the different threads.**

Pressure / temperature operating limits:

**PS:** Max. permissible operating pressure in bar

**TS:** Permissible operating temperature in °C associated with the permissible operating pressures (PS)

**PN:** Nominal pressure rating

DN	PN	-60	-10	+50	+150	TS [°C]
DN 8...20	PN25	25	25	25	25	PS [bar]
	PN40	40	40	40	40	PS [bar]
	PN63	63	63	63	63	PS [bar]

Nominal size: Screwed ends acc. to:		PN40/63, DN8:							
DN	d1	Dimensions l1 to d2 same as for DN20							
		l1	l2	h	h*)	h1	h1*)	h2	d2
8	See coding, connections	35	35	22	54	110	143	35	60
20		41	41	31	68	125	162	45	60

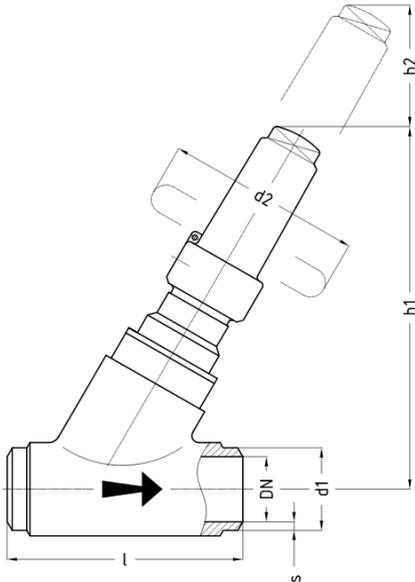
Table 16: Dimensions

\*) for valves with bonnet extension, h2 = dismantling dimension

## 20 HRAR D AE

**D:** Straight-way, **AE:** Welding ends

HRAR steel control valve - shut-off capable - stem seal with spring-energised PTFE ring for natural refrigerants (NH<sub>3</sub>, CO<sub>2</sub>) and non-corrosive gases and liquids according to EN 378-1 as well as brines



Pressure / temperature operating limits:

**PS:** Max. permissible operating pressure in bar

**TS:** Permissible operating temperature in °C associated with the permissible operating pressures (PS)

**PN:** Nominal pressure rating

DN / INCH	PN	-60	-10	+50	+150	TS [°C]
DN 10...32 3/8" ...1 1/4"	PN160	120	160	160	99	PS [bar]

Nominal size:		Welding ends acc. to:							
		ISO Series 1							
DN	INCH	d1	s	l	h	h1	h2	d2	
10	3/8"	17.2	2.3	120	30	186	70	120	
15	1/2"	21.3	2.6	120	30	186	70	120	
20	3/4"	26.9	3.2	120	30	186	70	120	
25	1"	33.7	3.6	120	30	186	70	120	
32	1 1/4"	42.4	4.5	120	30	186	70	120	

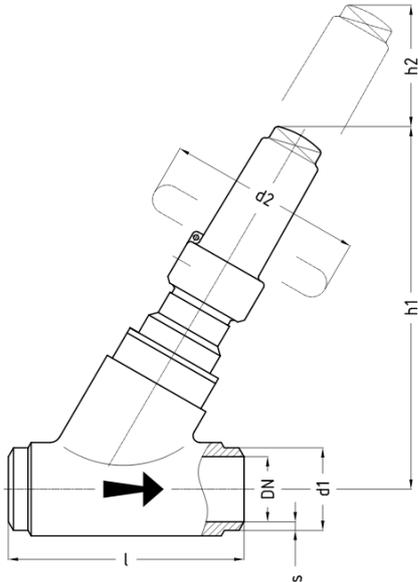
Table 17: Dimensions

h2 = dismantling dimension

## 21 HRAR D AE NIRO

**D:** Straight-way, **AE:** Welding ends

HRAR stainless steel control valve - shut-off capable - stem seal with spring-energised PTFE ring for natural refrigerants (NH<sub>3</sub>, CO<sub>2</sub>) and non-corrosive gases and liquids according to EN 378-1 as well as brines



Pressure / temperature operating limits:

**PS:** Max. permissible operating pressure in bar

**TS:** Permissible operating temperature in °C associated with the permissible operating pressures (PS)

**PN:** Nominal pressure rating

DN / INCH	PN	-60	-10	+50	+150	TS [°C]
DN 10...32 3/8"...1 1/4"	PN160	160	160	160	106	PS [bar]

Nominal size:		Welding ends acc. to:						
		ISO Series 1						
DN	INCH	d1	s	l	h	h1	h2	d2
10	3/8"	17.2	2.3	120	30	186	70	120
15	1/2"	21.3	2.6	120	30	186	70	120
20	3/4"	26.9	3.2	120	30	186	70	120
25	1"	33.7	3.6	120	30	186	70	120
32	1 1/4"	42.4	4.5	120	30	186	70	120

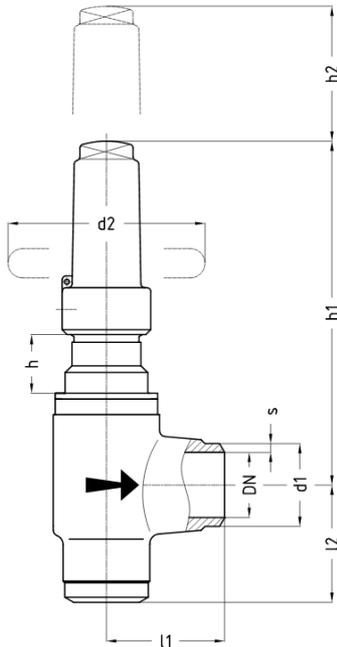
Table 18: Dimensions

h2 = dismantling dimension

## 22 HRAR E AE

**E:** Angle, **AE:** Welding ends

HRAR steel control valve - shut-off capable - stem seal with spring-energised PTFE ring for natural refrigerants (NH<sub>3</sub>, CO<sub>2</sub>) and non-corrosive gases and liquids according to EN 378-1 as well as brines



Pressure / temperature operating limits:

**PS:** Max. permissible operating pressure in bar

**TS:** Permissible operating temperature in °C associated with the permissible operating pressures (PS)

**PN:** Nominal pressure rating

DN / INCH	PN	-60	-10	+50	+150	TS [°C]
DN 10...32 3/8" ...1 1/4"	PN160	120	160	160	99	PS [bar]

Nominal size:		Welding ends acc. to:							
		ISO Series 1							
DN	INCH	d1	s	l1	l2	h	h1	h2	d2
10	3/8"	17.2	2.3	60	60	30	176	80	120
15	1/2"	21.3	2.6	60	60	30	176	80	120
20	3/4"	26.9	3.2	60	60	30	176	80	120
25	1"	33.7	3.6	60	60	30	176	80	120
32	1 1/4"	42.4	4.5	60	60	30	176	80	120

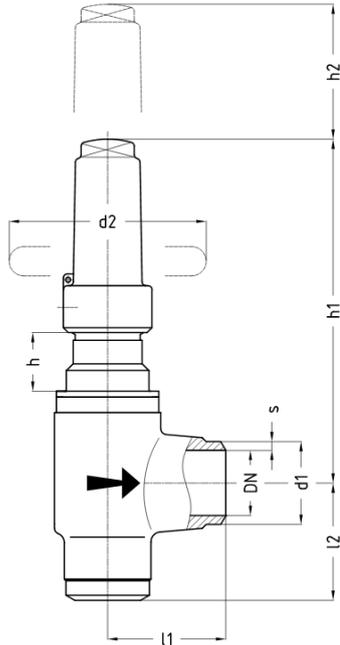
Table 19: Dimensions

h2 = dismantling dimension

## 23 HRAR E AE NIRO

**E:** Angle, **AE:** Welding ends

HRAR stainless steel control valve - shut-off capable - stem seal with spring-energised PTFE ring for natural refrigerants (NH<sub>3</sub>, CO<sub>2</sub>) and non-corrosive gases and liquids according to EN 378-1 as well as brines



Pressure / temperature operating limits:

**PS:** Max. permissible operating pressure in bar

**TS:** Permissible operating temperature in °C associated with the permissible operating pressures (PS)

**PN:** Nominal pressure rating

DN / INCH	PN	-60	-10	+50	+150	TS [°C]
DN 10...32 3/8"...1 1/4"	PN160	160	160	160	106	PS [bar]

Nominal size:		Welding ends acc. to:							
		ISO Series 1							
DN	INCH	d1	s	l1	l2	h	h1	h2	d2
10	3/8"	17.2	2.3	60	60	30	176	80	120
15	1/2"	21.3	2.6	60	60	30	176	80	120
20	3/4"	26.9	3.2	60	60	30	176	80	120
25	1"	33.7	3.6	60	60	30	176	80	120
32	1 1/4"	42.4	4.5	60	60	30	176	80	120

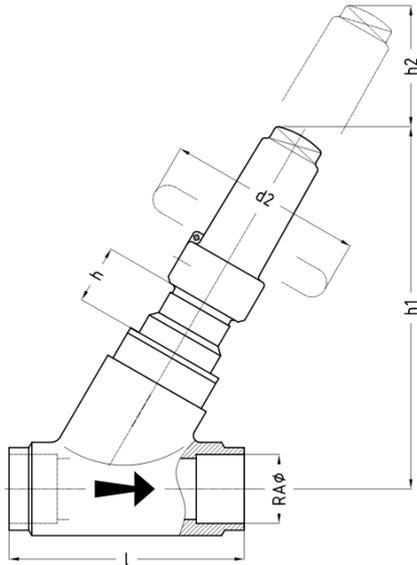
Table 20: Dimensions

h2 = dismantling dimension

## 24 HRAR D LE

**D:** Straight-way, **LE:** Soldering ends

HRAR steel control valve - shut-off capable - stem seal with spring-energised PTFE ring for natural refrigerants (NH<sub>3</sub>, CO<sub>2</sub>) and non-corrosive gases and liquids according to EN 378-1 as well as brines



Pressure / temperature operating limits:

**PS:** Max. permissible operating pressure in bar

**TS:** Permissible operating temperature in °C associated with the permissible operating pressures (PS)

**PN:** Nominal pressure rating

DN	PN	-60	-10	+50	+150	TS [°C]
DN 10...32	PN160	120	160	160	99	PS [bar]

Nominal size:		Soldering ends acc. to:				
DN	RAØ	l	h	h1	h2	d2
10	12	120	30	186	70	120
15	15	120	30	186	70	120
15	18	120	30	186	70	120
15	LE 3/4"	120	30	186	70	120
20	22	120	30	186	70	120
20	LE 7/8"	120	30	186	70	120
25	28	120	30	186	70	120
32	35	120	30	186	70	120

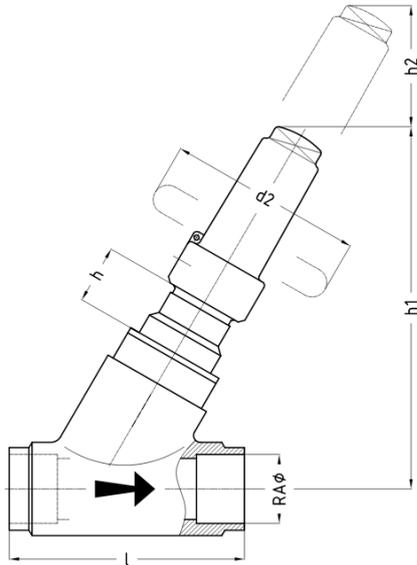
Table 21: Dimensions

h2 = dismantling dimension

## 25 HRAR D LE NIRO

**D:** Straight-way, **LE:** Soldering ends

HRAR stainless steel control valve - shut-off capable - stem seal with spring-energised PTFE ring for natural refrigerants (NH<sub>3</sub>, CO<sub>2</sub>) and non-corrosive gases and liquids according to EN 378-1 as well as brines



Pressure / temperature operating limits:

**PS:** Max. permissible operating pressure in bar

**TS:** Permissible operating temperature in °C associated with the permissible operating pressures (PS)

**PN:** Nominal pressure rating

DN	PN	-60	-10	+50	+150	TS [°C]
DN 10...32	PN160	160	160	160	106	PS [bar]

Nominal size:	Soldering ends acc. to:					
DN	RAØ	l	h	h1	h2	d2
10	12	120	30	186	70	120
15	15	120	30	186	70	120
15	18	120	30	186	70	120
15	LE 3/4"	120	30	186	70	120
20	22	120	30	186	70	120
20	LE 7/8"	120	30	186	70	120
25	28	120	30	186	70	120
32	35	120	30	186	70	120

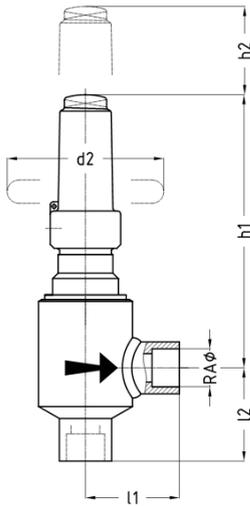
Table 22: Dimensions

h2 = dismantling dimension

## 26 HRAR E LE

**E:** Angle, **LE:** Soldering ends

HRAR steel control valve - shut-off capable - stem seal with spring-energised PTFE ring for natural refrigerants (NH<sub>3</sub>, CO<sub>2</sub>) and non-corrosive gases and liquids according to EN 378-1 as well as brines



Pressure / temperature operating limits:

**PS:** Max. permissible operating pressure in bar

**TS:** Permissible operating temperature in °C associated with the permissible operating pressures (PS)

**PN:** Nominal pressure rating

DN	PN	-60	-10	+50	+150	TS [°C]
DN 10...32	PN160	120	160	160	99	PS [bar]

Nominal size:		Soldering ends acc. to:					
DN	RAØ	l1	l2	h	h1	h2	d2
10	12	60	60	30	176	80	120
15	15	60	60	30	176	80	120
15	18	60	60	30	176	80	120
15	LE 3/4"	60	60	30	176	80	120
20	22	60	60	30	176	80	120
20	LE 7/8"	60	60	30	176	80	120
25	28	60	60	30	176	80	120
32	35	60	60	30	176	80	120

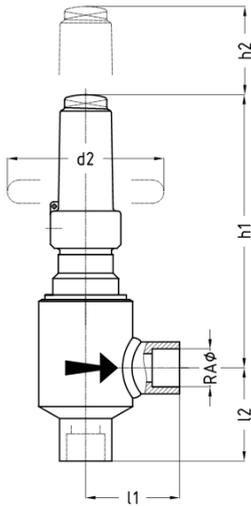
Table 23: Dimensions

h2 = dismantling dimension

## 27 HRAR E LE NIRO

**E:** Angle, **LE:** Soldering ends

HRAR stainless steel control valve - shut-off capable - stem seal with spring-energised PTFE ring for natural refrigerants (NH<sub>3</sub>, CO<sub>2</sub>) and non-corrosive gases and liquids according to EN 378-1 as well as brines



Pressure / temperature operating limits:

**PS:** Max. permissible operating pressure in bar

**TS:** Permissible operating temperature in °C associated with the permissible operating pressures (PS)

**PN:** Nominal pressure rating

DN	PN	-60	-10	+50	+150	TS [°C]
DN 10...32	PN160	160	160	160	106	PS [bar]

Nominal size:		Soldering ends acc. to:					
DN	RAØ	l1	l2	h	h1	h2	d2
10	12	60	60	30	176	80	120
15	15	60	60	30	176	80	120
15	18	60	60	30	176	80	120
15	LE 3/4"	60	60	30	176	80	120
20	22	60	60	30	176	80	120
20	LE 7/8"	60	60	30	176	80	120
25	28	60	60	30	176	80	120
32	35	60	60	30	176	80	120

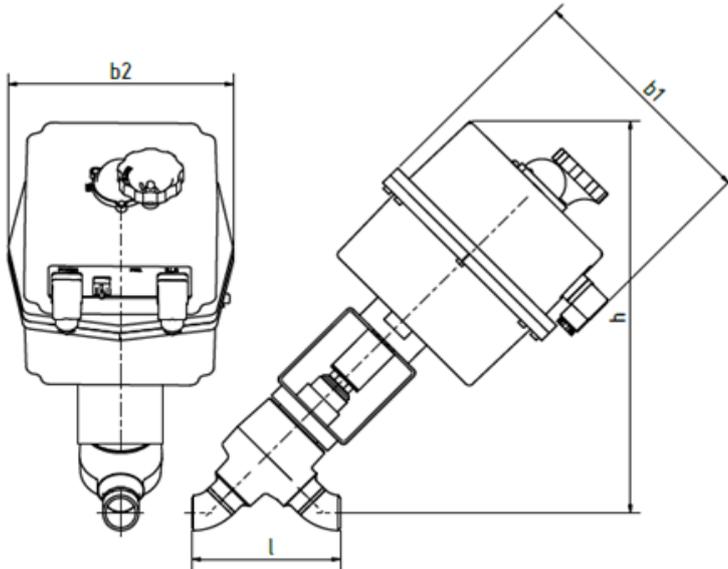
Table 24: Dimensions

h2 = dismantling dimension

## 28 HRAR MAV D AE DV

**D:** Straight-way, **AE:** Welding ends, **DV:** Bonnet extension

HRAR MAV steel control valve, shut-off capable, with J+J electric actuator - stem seal with spring-energised PTFE ring for natural refrigerants (NH<sub>3</sub>, CO<sub>2</sub>) and non-corrosive gases and liquids according to EN 378-1 as well as brines



Pressure / temperature operating limits:

**PS:** Max. permissible operating pressure in bar

**TS:** Permissible operating temperature in °C associated with the permissible operating pressures (PS)

**PN:** Nominal pressure rating

DN / INCH	PN	-60	-40	-25	-10	+50	+150	TS [°C]
DN 6...65 1/8" ...2 1/2"	PN25	6.25	12.5	18.7	25	25	25	PS [bar]
	PN40	10	20	30	40	40	40	PS [bar]
	PN63	15.75	31.5	47.2	63	63	63	PS [bar]

Nominal size:					PN63, DN6-15: Dimensions same as for DN20									
		ISO Series 1			ANSI Sched 40		ANSI Sched 80		Overall dimension					
DN	INCH	d1	s1)	s2)	d1	s	d1	s	l	h	h*)	b1	b2	
6	1/8"	10.2	1.6	1.6	10.3	1.7	10.3	2.4	84	TBD	TBD	TBD	TBD	
8	1/4"	13.5	1.8	1.8	13.7	2.2	13.7	3.0	84	TBD	TBD	TBD	TBD	
10	3/8"	17.2	1.8	1.8	17.1	2.3	17.1	3.2	84	TBD	TBD	TBD	TBD	
15	1/2"	21.3	2.0	2.0	21.3	2.8	21.3	3.7	84	TBD	TBD	TBD	TBD	
20	3/4"	26.9	2.3	2.6	26.7	2.9	26.7	3.9	110	TBD	TBD	TBD	TBD	
25	1"	33.7	2.6	2.6	33.4	3.4	33.4	4.5	140	374	385	231	213	
32	1 1/4"	42.4	2.6	2.9	42.2	3.6	42.2	4.8	154	374	385	231	213	
40	1 1/2"	48.3	2.6	2.9	48.3	3.7	48.3	5.1	156	TBD	TBD	TBD	TBD	
50	2"	60.3	2.9	2.9	60.3	3.9			182	TBD	TBD	TBD	TBD	
65	2 1/2"	76.1	2.9	3.2	73.0	5.2			256	TBD	TBD	TBD	TBD	

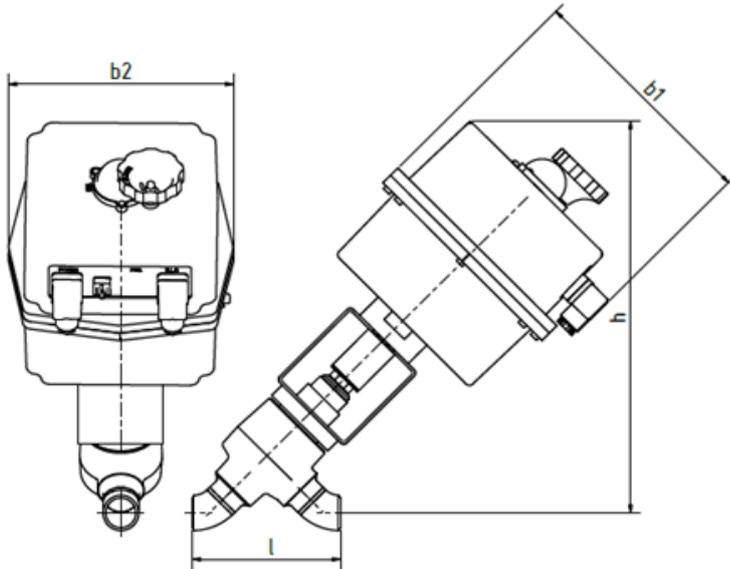
Table 25: Dimensions

1) PN25 / PN40, 2) PN63 PN63 \*) for valve with bonnet extension

## 29 HRAR MAV D AE DV NIRO

**D:** Straight-way, **AE:** Welding ends, **DV:** Bonnet extension

HRAR MAV stainless steel control valve, shut-off capable, with J+J electric actuator - stem seal with spring-energised PTFE ring for natural refrigerants (NH<sub>3</sub>, CO<sub>2</sub>) and non-corrosive gases and liquids according to EN 378-1 as well as brines



Pressure / temperature operating limits:

**PS:** Max. permissible operating pressure in bar

**TS:** Permissible operating temperature in °C associated with the permissible operating pressures (PS)

**PN:** Nominal pressure rating

DN / INCH	PN	-60	-10	+50	+150	TS [°C]
DN 25...65 1" ...2 1/2"	PN25	25	25	25	25	PS [bar]
	PN40	40	40	40	40	PS [bar]
	PN63	63	63	63	63	PS [bar]

Nominal size:										PN40/PN63, DN6-15: Dimensions same as for DN20 /			
		ISO Series 1			ANSI Sched 40		ANSI Sched 80		Overall dimension				
DN	INCH	d1	s1)	s2)	d1	s	d1	s	l	h	h*)	b1	b2
6	1/8"	10.2	1.6	1.6	10.3	1.7	10.3	2.4	84	TBD	TBD	TBD	TBD
8	1/4"	13.5	1.8	1.8	13.7	2.2	13.7	3.0	84	TBD	TBD	TBD	TBD
10	3/8"	17.2	1.8	1.8	17.1	2.3	17.1	3.2	84	TBD	TBD	TBD	TBD
15	1/2"	21.3	2.0	2.0	21.3	2.8	21.3	3.7	84	TBD	TBD	TBD	TBD
20	3/4"	26.9	2.3	2.6	26.7	2.9	26.7	3.9	110	TBD	TBD	TBD	TBD
25	1"	33.7	2.6	2.6	33.4	3.4	33.4	4.5	140	374	385	231	213
32	1 1/4"	42.4	2.6	2.9	42.2	3.6	42.2	4.8	154	374	385	231	213
40	1 1/2"	48.3	2.6	2.9	48.3	3.7	48.3	5.1	156	TBD	TBD	TBD	TBD
50	2"	60.3	2.9	2.9	60.3	3.9			182	TBD	TBD	TBD	TBD
65	2 1/2"	76.1	2.9	3.2	73.0	5.2			256	TBD	TBD	TBD	TBD

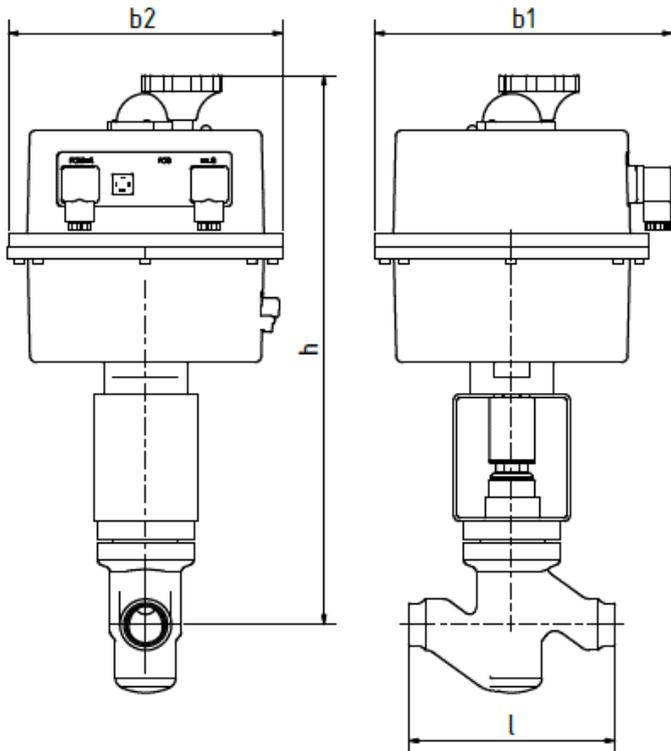
Table 26: Dimensions

1) PN25 / PN40, 2) PN63 PN63 \*) for valve with bonnet extension

### 30 HRAR MAV D AE DV

**D:** Straight-way, **AE:** Welding ends, **DV:** Bonnet extension

HRAR MAV steel control valve, shut-off capable, with J+J electric actuator - stem seal with spring-energised PTFE ring for natural refrigerants (NH<sub>3</sub>, CO<sub>2</sub>) and non-corrosive gases and liquids according to EN 378-1 as well as brines



Pressure / temperature operating limits:

**PS:** Max. permissible operating pressure in bar

**TS:** Permissible operating temperature in °C associated with the permissible operating pressures (PS)

**PN:** Nominal pressure rating

DN / INCH	PN	-60	-40	-25	-10	+50	+150	TS [°C]
DN 25...65 1" ... 2 1/2"	PN25	6.25	12.5	18.7	25	25	25	PS [bar]
	PN40	10	20	30	40	40	40	PS [bar]
	PN63	15.75	31.5	47.2	63	63	63	PS [bar]

Nominal size:													
		ISO Series 1			ANSI Sched 40		ANSI Sched 80		Overall dimension				
DN	INCH	d1	s1)	s2)	d1	s	d1	s	l	h	h*)	b1	b2
25	1"	33.7	2.6	2.6	33.4	3.4	33.4	4.5	160	428	444	231	213
32	1 1/4"	42.4	2.6	2.9	42.2	3.6	42.2	4.8	180	428	444	231	213
40	1 1/2"	48.3	2.6	2.9	48.3	3.7	48.3	5.1	200	TBD	TBD	TBD	TBD
50	2"	60.3	2.9	2.9	60.3	3.9			230	TBD	TBD	TBD	TBD
65	2 1/2"	76.1	2.9	3.2	73.0	5.2			290	TBD	TBD	TBD	TBD

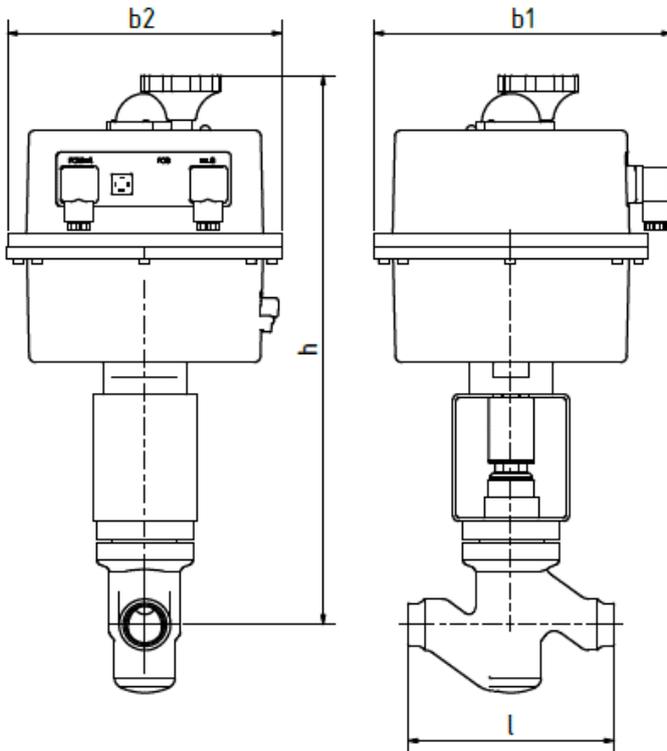
Table 27: Dimensions

1) PN25 / PN40, 2) PN63 PN63 \*) for valve with bonnet extension

### 31 HRAR MAV D AE DV NIRO

**D:** Straight-way, **AE:** Welding ends, **DV:** Bonnet extension

HRAR MAV stainless steel control valve, shut-off capable, with J+J electric actuator - stem seal with spring-energised PTFE ring for natural refrigerants (NH<sub>3</sub>, CO<sub>2</sub>) and non-corrosive gases and liquids according to EN 378-1 as well as brines



Pressure / temperature operating limits:

**PS:** Max. permissible operating pressure in bar

**TS:** Permissible operating temperature in °C associated with the permissible operating pressures (PS)

**PN:** Nominal pressure rating

DN / INCH	PN	-60	-10	+50	+150	TS [°C]
DN 6...50 1/8"..."	PN25	25	25	25	25	PS [bar]
	PN40	40	40	40	40	PS [bar]
	PN63	63	63	63	63	PS [bar]

Nominal size:													
		ISO Series 1			ANSI Sched 40		ANSI Sched 80		Overall dimension				
DN	INCH	d1	s1)	s2)	d1	s	d1	s	l	h	h*)	b1	b2
25	1"	33.7	2.6	2.6	33.4	3.4	33.4	4.5	160	428	444	231	213
32	1 1/4"	42.4	2.6	2.9	42.2	3.6	42.2	4.8	180	428	444	231	213
40	1 1/2"	48.3	2.6	2.9	48.3	3.7	48.3	5.1	200	TBD	TBD	TBD	TBD
50	2"	60.3	2.9	2.9	60.3	3.9			230	TBD	TBD	TBD	TBD

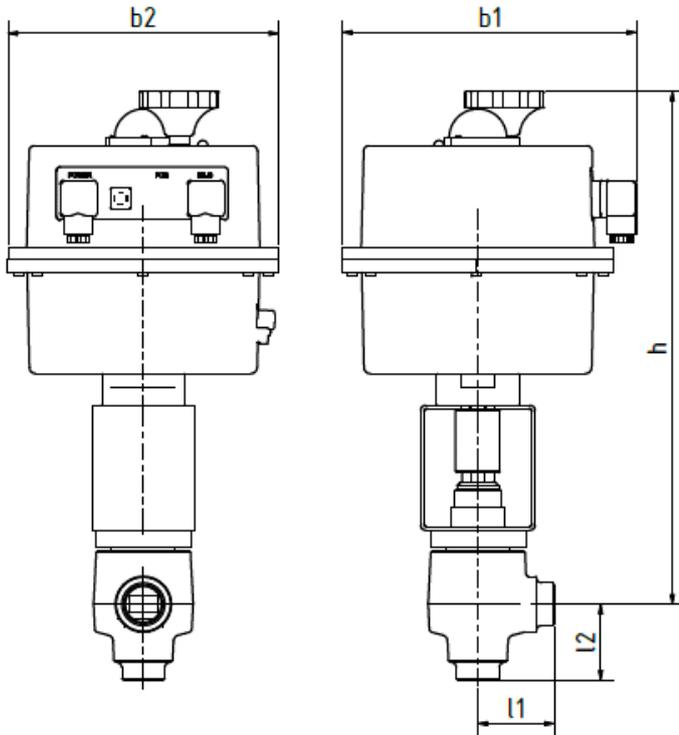
Table 28: Dimensions

1) PN25 / PN40, 2) PN63 PN63 \*) for valve with bonnet extension

## 32 HRAR MAV E AE DV

**E:** Angle, **AE:** Welding ends, **DV:** Bonnet extension

HRAR MAV steel control valve, shut-off capable, with J+J electric actuator - stem seal with spring-energised PTFE ring for natural refrigerants (NH<sub>3</sub>, CO<sub>2</sub>) and non-corrosive gases and liquids according to EN 378-1 as well as brines



Pressure / temperature operating limits:

**PS:** Max. permissible operating pressure in bar

**TS:** Permissible operating temperature in °C associated with the permissible operating pressures (PS)

**PN:** Nominal pressure rating

DN / INCH	PN	-60	-40	-25	-10	+50	+150	TS [°C]
DN 6...65 1/8" ...2 1/2"	PN25	6.25	12.5	18.7	25	25	25	PS [bar]
	PN40	10	20	30	40	40	40	PS [bar]
	PN63	15.75	31.5	47.2	63	63	63	PS [bar]

Nominal size:		PN63, DN6-15: Dimensions same as for DN20												
DN	INCH	ISO Series 1			ANSI Sched 40		ANSI Sched 80		Overall dimension					
		d1	s1)	s2)	d1	s	d1	s	l1	l2	h	h*)	b1	b2
6	1/8"	10.2	1.6	1.6	10.3	1.7	10.3	2.4	35	35	TBD	TBD	TBD	TBD
8	1/4"	13.5	1.8	1.8	13.7	2.2	13.7	3.0	35	35	TBD	TBD	TBD	TBD
10	3/8"	17.2	1.8	1.8	17.1	2.3	17.1	3.2	35	35	TBD	TBD	TBD	TBD
15	1/2"	21.3	2.0	2.0	21.3	2.8	21.3	3.7	35	35	TBD	TBD	TBD	TBD
20	3/4"	26.9	2.3	2.6	26.7	2.9	26.7	3.9	41	41	TBD	TBD	TBD	TBD
25	1"	33.7	2.6	2.6	33.4	3.4	33.4	4.5	60	60	406	422	231	213
32	1 1/4"	42.4	2.6	2.9	42.2	3.6	42.2	4.8	60	60	406	422	231	213
40	1 1/2"	48.3	2.6	2.9	48.3	3.7	48.3	5.1	70	70	TBD	TBD	TBD	TBD

Nominal size:								PN63, DN6-15: Dimensions same as for DN20						
50	2"	60.3	2.9	2.9	60.3	3.9		70	70	TBD	TBD	TBD	TBD	
65	2 1/2"	76.1	2.9	3.2	73.0	5.2		85	85	TBD	TBD	TBD	TBD	

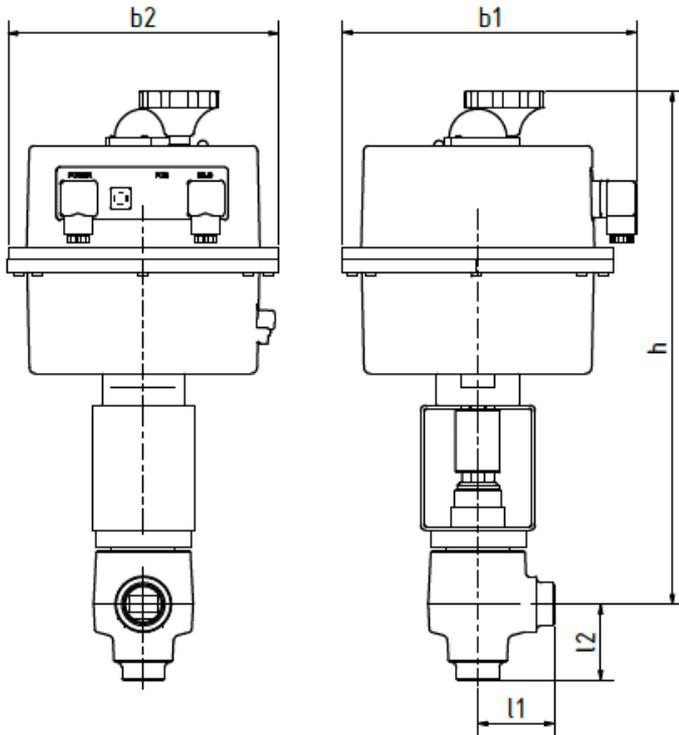
Table 29: Dimensions

1) PN25 / PN40, 2) PN63 PN63 \*) for valve with bonnet extension

### 33 HRAR MAV E AE DV NIRO

**E:** Angle, **AE:** Welding ends, **DV:** Bonnet extension

HRAR MAV stainless steel control valve, shut-off capable, with J+J electric actuator - stem seal with spring-energised PTFE ring for natural refrigerants (NH3, CO2) and non-corrosive gases and liquids according to EN 378-1 as well as brines



Pressure / temperature operating limits:

**PS:** Max. permissible operating pressure in bar

**TS:** Permissible operating temperature in °C associated with the permissible operating pressures (PS)

**PN:** Nominal pressure rating

DN / INCH	PN	-60	-10	+50	+150	TS [°C]
DN 6...65 1/8" ...2 1/2"	PN25	25	25	25	25	PS [bar]
	PN40	40	40	40	40	PS [bar]
	PN63	63	63	63	63	PS [bar]

Nominal size:		PN40/PN63, DN6-15: Dimensions same as for DN20												
DN	INCH	ISO Series 1			ANSI Sched 40		ANSI Sched 80		Overall dimension					
		d1	s1)	s2)	d1	s	d1	s	l1	l2	h	h*)	b1	b2
6	1/8"	10.2	1.6	1.6	10.3	1.7	10.3	2.4	35	35	TBD	TBD	TBD	TBD
8	1/4"	13.5	1.8	1.8	13.7	2.2	13.7	3.0	35	35	TBD	TBD	TBD	TBD
10	3/8"	17.2	1.8	1.8	17.1	2.3	17.1	3.2	35	35	TBD	TBD	TBD	TBD
15	1/2"	21.3	2.0	2.0	21.3	2.8	21.3	3.7	35	35	TBD	TBD	TBD	TBD
20	3/4"	26.9	2.3	2.6	26.7	2.9	26.7	3.9	41	41	TBD	TBD	TBD	TBD
25	1"	33.7	2.6	2.6	33.4	3.4	33.4	4.5	60	60	406	422	231	213
32	1 1/4"	42.4	2.6	2.9	42.2	3.6	42.2	4.8	60	60	406	422	231	213
40	1 1/2"	48.3	2.6	2.9	48.3	3.7	48.3	5.1	70	70	TBD	TBD	TBD	TBD

Nominal size:								PN40/PN63, DN6-15: Dimensions same as for DN20						
50	2"	60.3	2.9	2.9	60.3	3.9		70	70	TBD	TBD	TBD	TBD	
65	2 1/2"	76.1	2.9	3.2	73.0	5.2		85	85	TBD	TBD	TBD	TBD	

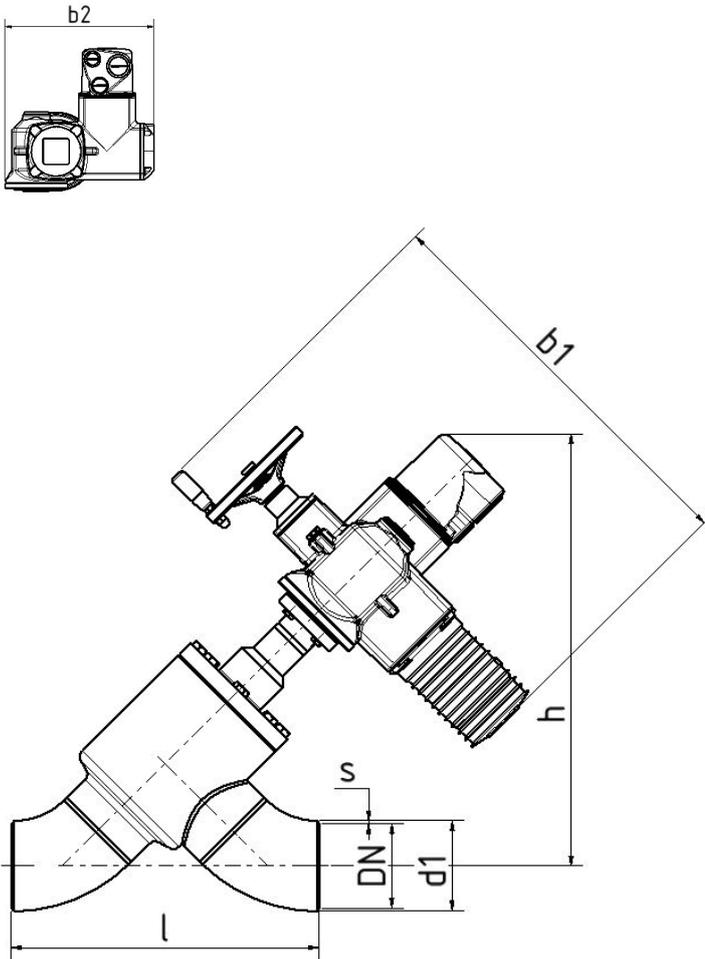
Table 30: Dimensions

1) PN25 / PN40, 2) PN63 PN63 \*) for valve with bonnet extension

### 34 HRAR MAV D AE DV

**D:** Straight-way, **AE:** Welding ends, **DV:** Bonnet extension

HRAR MAV steel control valve, shut-off capable, with electric actuator - stem seal with spring-energised PTFE ring for natural refrigerants (NH<sub>3</sub>, CO<sub>2</sub>) and non-corrosive gases and liquids according to EN 378-1 as well as brines



Pressure / temperature operating limits:

**PS:** Max. permissible operating pressure in bar

**TS:** Permissible operating temperature in °C associated with the permissible operating pressures (PS)

**PN:** Nominal pressure rating

DN / INCH	PN	-60	-40	-25	-10	+50	+150	TS [°C]
DN 80...200 3"...8"	PN25	6.25	12.5	18.7	25	25	25	PS [bar]
	PN40	10	20	30	40	40	40	PS [bar]
	PN63	15.75	31.5	47.2	63	63	63	PS [bar]
DN 250 10"	PN25	6.25	12.5	18.7	25	25	25	PS [bar]
	PN40	10	20	30	40	40	40	PS [bar]

Nominal size:																		
		ISO Series 1			ANSI Sched 40		ANSI Sched 80		Overall di- mension	PS25			PS40			PS63		
DN	INCH	d1	s1)	s2)	d1	s	d1	s	l	h	b1	b2	h	b1	b2	h	b1	b2
80	3"	88.9	3.2	3.6	88.9	5.5			304	510	514	300	510	514	300	510	537	313

Nominal size:																		
100	4"	114.3	3.6	4.0	114.3	6.0			386	547	514	300	549	537	313	567	725	376
125	5"	139.7	4.0	4.5	141.3	6.6			461	632	537	313	651	725	376	651	728	376
150	6"	168.3	4.5	5.6	168.3	7.1			537	701	725	376	701	728	376			
200	8"	219.1	6.3	7.1	219.1	8.2			707	764	728	376	909	795	500			
250	10"	273.0	7.1		273.0	9.3			874	1000	795	500	1000	795	500			

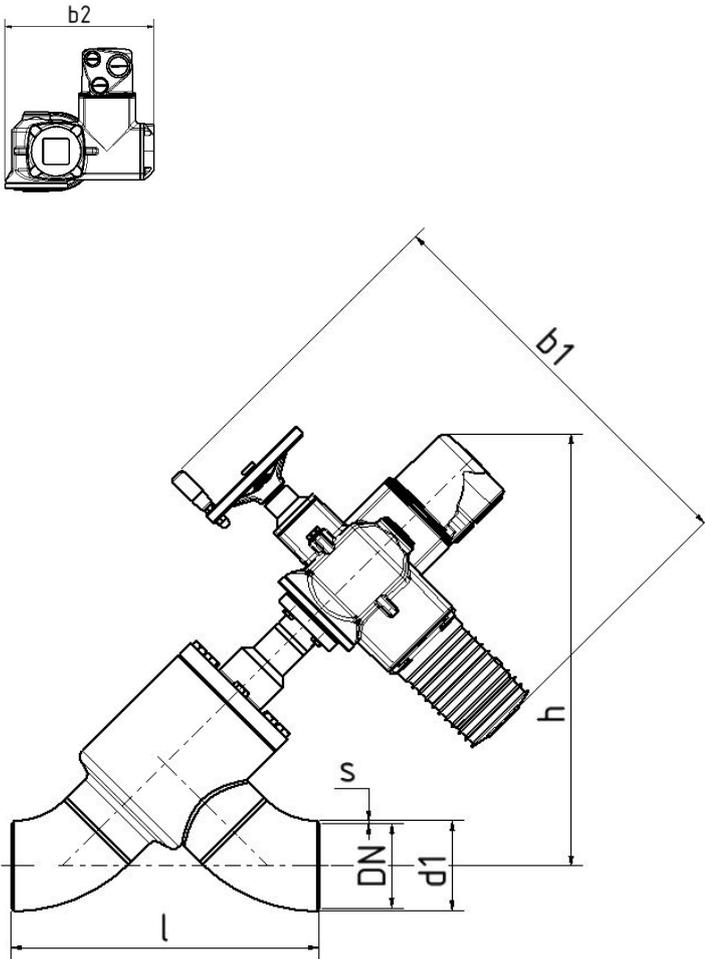
Table 31: Dimensions

1) PN25 / PN40 2) PN63, Larger nominal sizes on request, subject to technical feasibility.

### 35 HRAR MAV D AE DV NIRO

**D:** Straight-way, **AE:** Welding ends, **DV:** Bonnet extension

HRAR MAV stainless steel control valve, shut-off capable, with electric actuator - stem seal with spring-energised PTFE ring for natural refrigerants (NH<sub>3</sub>, CO<sub>2</sub>) and non-corrosive gases and liquids according to EN 378-1 as well as brines



Pressure / temperature operating limits:

**PS:** Max. permissible operating pressure in bar

**TS:** Permissible operating temperature in °C associated with the permissible operating pressures (PS)

**PN:** Nominal pressure rating

DN / INCH	PN	-60	-10	+50	+150	TS [°C]
DN 80...200 3"..."8"	PN25	25	25	25	25	PS [bar]
	PN40	40	40	40	40	PS [bar]
	PN63	63	63	63	63	PS [bar]
DN 250 10"	PN25	25	25	25	25	PS [bar]
	PN40	40	40	40	40	PS [bar]

Nominal size:																		
		ISO Series 1			ANSI Sched 40		ANSI Sched 80		Overall di- mension	PS25			PS40			PS63		
DN	INCH	d1	s1)	s2)	d1	s	d1	s	l	h	b1	b2	h	b1	b2	h	b1	b2
80	3"	88.9	3.2	3.6	88.9	5.5			304	510	514	300	510	514	300	510	537	313

Nominal size:																		
100	4"	114.3	3.6	4.0	114.3	6.0			386	547	514	300	549	537	313	567	725	376
125	5"	139.7	4.0	4.5	141.3	6.6			461	632	537	313	651	725	376	651	728	376
150	6"	168.3	4.5	5.6	168.3	7.1			537	701	725	376	701	728	376			
200	8"	219.1	6.3	7.1	219.1	8.2			707	764	728	376	909	795	500			
250	10"	273.0	7.1		273.0	9.3			874	1000	795	500	1000	795	500			

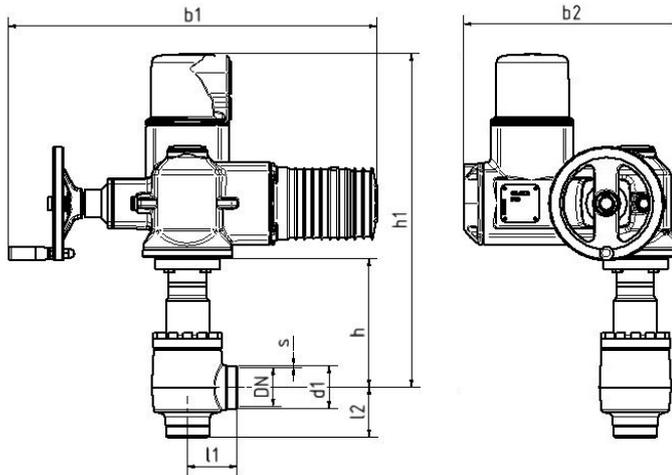
Table 32: Dimensions

1) PN25 / PN40 2) PN63, Larger nominal sizes on request, subject to technical feasibility.

### 36 HRAR MAV E AE DV

**E:** Angle, **AE:** Welding ends, **DV:** Bonnet extension

HRAR MAV steel control valve - shut-off capable - stem seal with spring-energised PTFE ring and electric actuator for natural refrigerants (NH<sub>3</sub>, CO<sub>2</sub>) and non-corrosive gases and liquids according to EN 378-1 as well as brines



Pressure / temperature operating limits:

**PS:** Max. permissible operating pressure in bar

**TS:** Permissible operating temperature in °C associated with the permissible operating pressures (PS)

**PN:** Nominal pressure rating

DN / INCH	PN	-60	-40	-25	-10	+50	+150	TS [°C]
DN 80...200 3" ... 8"	PN25	6.25	12.5	18.7	25	25	25	PS [bar]
	PN40	10	20	30	40	40	40	PS [bar]
	PN63	15.75	31.5	47.2	63	63	63	PS [bar]
DN 250 10"	PN25	6.25	12.5	18.7	25	25	25	PS [bar]
	PN40	10	20	30	40	40	40	PS [bar]

Nominal size:																				
		ISO Series 1			ANSI Sched 40		ANSI Sched 80		Overall dimension			PS25			PS40			PS63		
DN	INC H	d1	s1)	s2)	d1	s	d1	s	l1	l2	h	h1	b1	b2	h1	b1	b2	h1	h2	b2
80	3"	88.9	3.2	3.6	88.9	5.5			100	100	243	531	514	303	531	514	303	533	537	313
100	4"	114.3	3.6	4.0	114.3	6.0			120	120	260	548	514	303	550	537	313	576	725	376
125	5"	139.7	4.0	4.5	141.3	6.6			135	135	349	639	537	313	665	725	376	665	728	376
150	6"	168.3	4.5	5.6	168.3	7.1			150	150	338	704	725	376	704	728	376			
200	8"	219.1	6.3	7.1	219.1	8.2			195	195	402	718	728	376	762	795	500			

Nominal size:																			
250	10"	273.0	7.1		273.0	9.3			236	236	421	781	795	500	781	795	500		

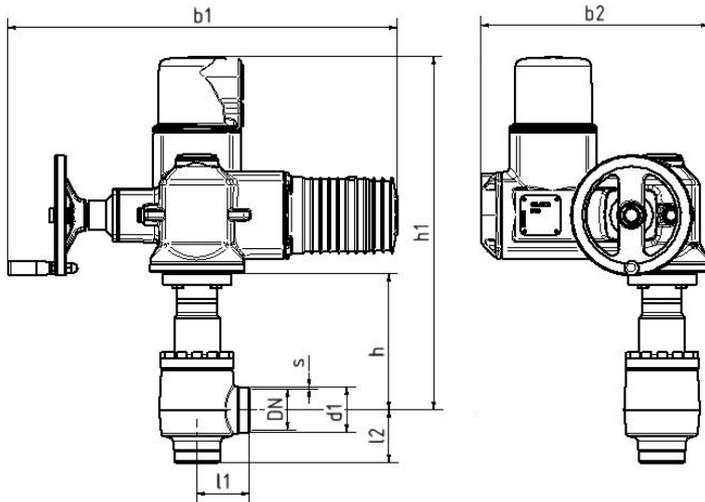
Table 33: Dimensions

1) PN25 / PN40, 2) PN63, Larger nominal sizes on request, subject to technical feasibility.

### 37 HRAR MAV E AE DV NIRO

**E:** Angle, **AE:** Welding ends, **DV:** Bonnet extension

HRAR MAV stainless steel control valve - shut-off capable - stem seal with spring-energised PTFE ring and electric actuator for natural refrigerants (NH<sub>3</sub>, CO<sub>2</sub>) and non-corrosive gases and liquids according to EN 378-1 as well as brines



Pressure / temperature operating limits:

**PS:** Max. permissible operating pressure in bar

**TS:** Permissible operating temperature in °C associated with the permissible operating pressures (PS)

**PN:** Nominal pressure rating

DN / INCH	PN	-60	-10	+50	+150	TS [°C]
DN 80...200 3" ...8"	PN25	25	25	25	25	PS [bar]
	PN40	40	40	40	40	PS [bar]
	PN63	63	63	63	63	PS [bar]
DN 250 10"	PN25	25	25	25	25	PS [bar]
	PN40	40	40	40	40	PS [bar]

Nominal size:																				
		ISO Series 1			ANSI Sched 40		ANSI Sched 80		Overall di- mension			PS25			PS40			PS63		
DN	INC H	d1	s1)	s2)	d1	s	d1	s	l1	l2	h	h1	b1	b2	h1	b1	b2	h1	h2	b2
80	3"	88.9	3.2	3.6	88.9	5.5			100	100	243	531	514	303	531	514	303	533	537	313
100	4"	114. 3	3.6	4.0	114. 3	6.0			120	120	260	548	514	303	550	537	313	576	725	376
125	5"	139. 7	4.0	4.5	141. 3	6.6			135	135	349	639	537	313	665	725	376	665	728	376
150	6"	168. 3	4.5	5.6	168. 3	7.1			150	150	338	704	725	376	704	728	376			
200	8"	219. 1	6.3	7.1	219. 1	8.2			195	195	402	718	728	376	762	795	500			

Nominal size:																			
250	10"	273.0	7.1		273.0	9.3			236	236	421	781	795	500	781	795	500		

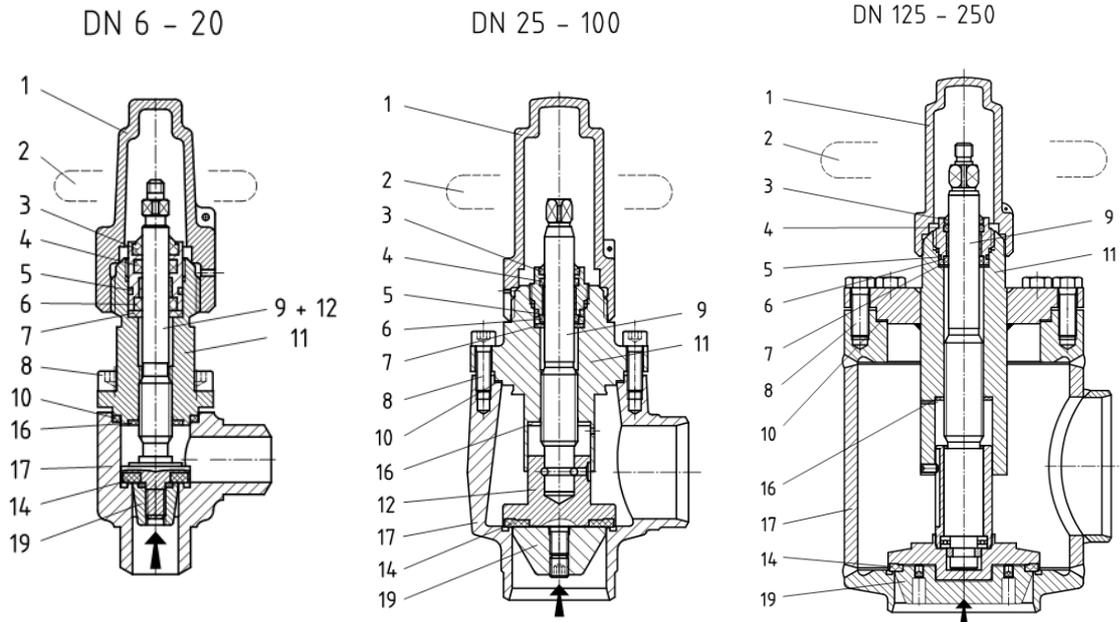
Table 34: Dimensions

1) PN25 / PN40, 2) PN63, Larger nominal sizes on request, subject to technical feasibility.

## 38 HRAB materials

Designation and materials

HRAB - control valve with metal bellows



Part	Material for steel valves	Material for stainless steel valves
1 Cap	Aluminium AlSi10Mg	Aluminium AlSi10Mg
2 Handwheel	Steel	Steel
3 Wiper ring	NBR	NBR
4 O-ring A	CR, NBR, HNBR, EPDM, FPM*	CR, NBR, HNBR, EPDM, FPM*
5 O-ring B	CR, NBR, HNBR, EPDM, FPM*	CR, NBR, HNBR, EPDM, FPM*
6 Spring-loaded U-ring	PTFE	PTFE
7 Flat sealing ring for threaded bush	AFM30	AFM30
8 Bonnet screw	8.8	A2-70
9 Stem	X8CrNiS18-9 1.4305	X8CrNiS18-9 1.4305
10 Flat sealing ring for bonnet	AFM30	AFM30
11 Bonnet	S355J2 1.0577	X8CrNiS18-9 1.4305 X5CrNi18-10 1.4301 X2CrNi19-11 1.4306
12 Valve disc	S355J2 1.0577	X8CrNiS18-9 1.4305 X5CrNi18-10 1.4301
14 Flat sealing ring for valve disc	PTFE	PTFE
16 Back seal	PTFE	PTFE

Part		Material for steel valves	Material for stainless steel valves
17	Body	P235GH 1.0345 S355J2 1.0577 P355N 1.0562 G20Mn5 +QT	X5CrNi18-10 1.4301 GX5CrNiMoNb19-11-2
18	Metal bellows	X6CrNiMoTi17-12-2 1.4571	X6CrNiMoTi17-12-2 1.4571
19	Regulating cone	S355J2 1.0577	X8CrNiS18-9 1.4305

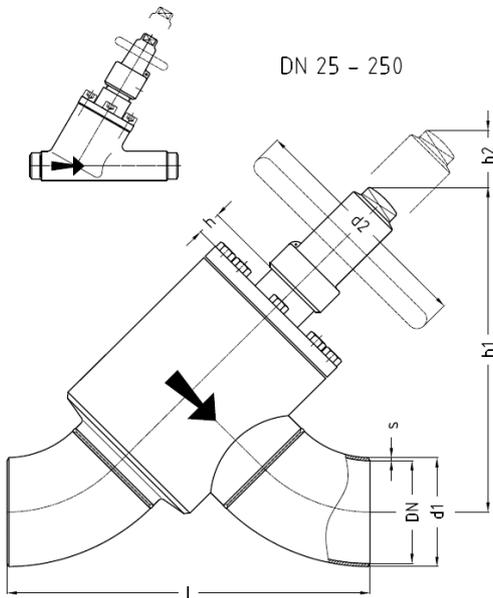
\* depending on the refrigerant used

### 39 HRAB D AE / HRAB D AE DV

**D:** Straight-way, **AE:** Welding ends, **DV:** Bonnet extension

HRAB steel control valve - shut-off capable - stem seal with metal bellows for natural refrigerants (NH<sub>3</sub>, CO<sub>2</sub>) and non-corrosive gases and liquids according to EN 378-1 as well as brines

DN 10 – 20



Pressure / temperature operating limits:

**PS:** Max. permissible operating pressure in bar

**TS:** Permissible operating temperature in °C associated with the permissible operating pressures (PS)

**PN:** Nominal pressure rating

DN / INCH	PN	-60	-40	-25	-10	+50	+150	TS [°C]
DN 10...20 3/8" ...3/4"	PN25	6.25	12.5	18.7	25	25	25	PS [bar]
	PN40	10	20	30	40	40	40	PS [bar]
DN 25...250 1" ...10"	PN25	6.25	12.5	18.7	25	25	25	PS [bar]
	PN40	10	20	30	40	40	40	PS [bar]

**Nominal size: Welding ends acc. to:**

		ISO Series 1		ISO Series 2		ANSI Sched 40		ANSI Sched 80								
DN	INCH	d1	s	d1	s	d1	s	d1	s	l	h	h*)	h1	h1*)	h2	d2
10	3/8"	17.2	1.8	15.0	2.5	17.1	2.3	17.1	3.2	130	19		136		55	60
15	1/2"	21.3	2.0	20.0	2.5	21.3	2.8	21.3	3.7	130	19		136		55	60
20	3/4"	26.9	2.3	25.0	2.5	26.7	2.9	26.7	3.9	150	19		136		55	60
25	1"	33.7	2.6	32.0	3.0	33.4	3.4	33.4	4.5	160	18	78	201	261	90	120
32	1 1/4"	42.4	2.6	38.0	3.0	42.2	3.6	42.2	4.8	180	18	78	202	262	90	120
40	1 1/2"	48.3	2.6	45.0	3.0	48.3	3.7	48.3	5.1	200	13	73	234	294	110	140
50	2"	60.3	2.9	57.0	3.2	60.3	3.9			230	13	73	234	294	110	140
65	2 1/2"	76.1	2.9	76.1	3.6	73.0	5.2			290	8	78	262	332	130	140
80	3"	88.9	3.2	88.9	4.0	88.9	5.5			304	21	78	326	367	110	180

Nominal size: Welding ends acc. to:																
100	4"	114.3	3.6	108.0	4.0	114.3	6.0			386	7	88	348	405	110	180
125	5"	139.7	4.0	133.0	4.0	141.3	6.6			461	29	129	420	491	140	300
150	6"	168.3	4.5	159.0	4.5	168.3	7.1			537	5	105	437	508	150	400
200	8"	219.1	6.3			219.1	8.2			708	11	102	610	675	170	630
250	10"	273.0	7.1			273.0	9.3			875	100		739		220	630

Table 35: Dimensions

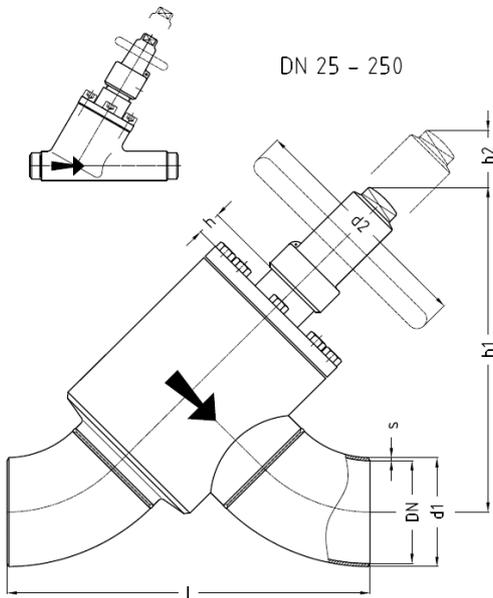
\*) for valves with bonnet extension, h2 = dismantling dimension

## 40 HRAB D AE NIRO / HRAB D AE DV NIRO

**D:** Straight-way, **AE:** Welding ends, **DV:** Bonnet extension

HRAB stainless steel control valve - shut-off capable - stem seal with metal bellows for natural refrigerants (NH3, CO2) and non-corrosive gases and liquids according to EN 378-1 as well as brines

DN 10 – 20



Pressure / temperature operating limits:

**PS:** Max. permissible operating pressure in bar

**TS:** Permissible operating temperature in °C associated with the permissible operating pressures (PS)

**PN:** Nominal pressure rating

DN / INCH	PN	-60	-10	+50	+150	TS [°C]
DN 10...20 3/8" ...3/4"	PN25	25	25	25	25	PS [bar]
	PN40	40	40	40	40	PS [bar]
DN 25...250 1" ...10"	PN25	25	25	25	25	PS [bar]
	PN40	40	40	40	40	PS [bar]

Nominal size: Welding ends acc. to:																
		ISO Series 1		ISO Series 2		ANSI Sched 40		ANSI Sched 80								
DN	INCH	d1	s	d1	s	d1	s	d1	s	l	h	h*)	h1	h1*)	h2	d2
10	3/8"	17.2	1.8	15.0	2.5	17.1	2.3	17.1	3.2	130	19		136		55	60
15	1/2"	21.3	2.0	20.0	2.5	21.3	2.8	21.3	3.7	130	19		136		55	60
20	3/4"	26.9	2.3	25.0	2.5	26.7	2.9	26.7	3.9	150	19		136		55	60
25	1"	33.7	2.6	32.0	3.0	33.4	3.4	33.4	4.5	160	18	78	201	261	90	120
32	1 1/4"	42.4	2.6	38.0	3.0	42.2	3.6	42.2	4.8	180	18	78	202	262	90	120
40	1 1/2"	48.3	2.6	45.0	3.0	48.3	3.7	48.3	5.1	200	13	73	234	294	110	140
50	2"	60.3	2.9	57.0	3.2	60.3	3.9			230	13	73	234	294	110	140
65	2 1/2"	76.1	2.9	76.1	3.6	73.0	5.2			290	8	78	262	332	130	140
80	3"	88.9	3.2	88.9	4.0	88.9	5.5			304	21	78	326	367	110	180

Nominal size: Welding ends acc. to:																
100	4"	114.3	3.6	108.0	4.0	114.3	6.0			386	7	88	348	405	110	180
125	5"	139.7	4.0	133.0	4.0	141.3	6.6			461	29	129	420	491	140	300
150	6"	168.3	4.5	159.0	4.5	168.3	7.1			537	5	105	437	508	150	400
200	8"	219.1	6.3			219.1	8.2			708	11	102	610	675	170	630
250	10"	273.0	7.1			273.0	9.3			875	100		739		220	630

Table 36: Dimensions

\*) for valves with bonnet extension, h2 = dismantling dimension

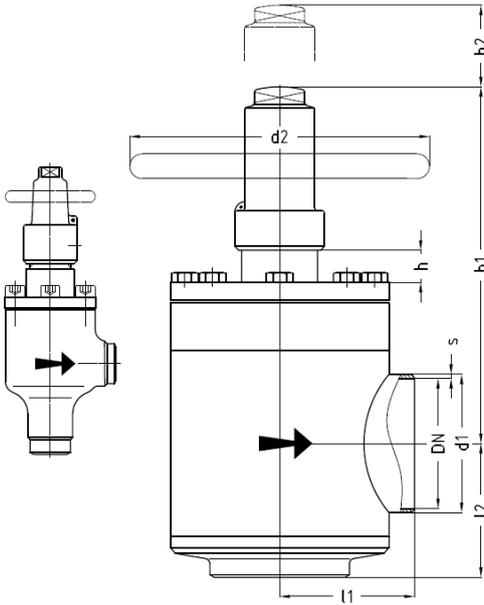
## 41 HRAB E AE / HRAB E AE DV

**E:** Angle, **AE:** Welding ends, **DV:** Bonnet extension

HRAB steel control valve - shut-off capable - stem seal with metal bellows for natural refrigerants (NH<sub>3</sub>, CO<sub>2</sub>) and non-corrosive gases and liquids according to EN 378-1 as well as brines

DN 10 - 65

DN 80 - 250



Pressure / temperature operating limits:

**PS:** Max. permissible operating pressure in bar

**TS:** Permissible operating temperature in °C associated with the permissible operating pressures (PS)

**PN:** Nominal pressure rating

DN / INCH	PN	-60	-40	-25	-10	+50	+150	TS [°C]
DN 10...65 3/8" ...2 1/2"	PN25	6.25	12.5	18.7	25	25	25	PS [bar]
	PN40	10	20	30	40	40	40	PS [bar]
DN 80...250 3" ...10"	PN25	6.25	12.5	18.7	25	25	25	PS [bar]
	PN40	10	20	30	40	40	40	PS [bar]

Nominal size:		Welding ends acc. to:															
DN	INCH	ISO Series 1		ISO Series 2		ANSI Sched 40		ANSI Sched 80		l1	l2	h	h*)	h1	h1*)	h2	d2
		d1	s	d1	s	d1	s	d1	s								
10	3/8"	17.2	1.8	15.0	2.5	17.1	2.3	17.1	3.2	44	61	19		133		60	60
15	1/2"	21.3	2.0	20.0	2.5	21.3	2.8	21.3	3.7	44	61	19		133		60	60
20	3/4"	26.9	2.3	25.0	2.5	26.7	2.9	26.7	3.9	44	61	19		133		60	60
25	1"	33.7	2.6	32.0	3.0	33.4	3.4	33.4	4.5	60	60	18	78	180	240	90	120
32	1 1/4"	42.4	2.6	38.0	3.0	42.2	3.6	42.2	4.8	60	60	18	78	180	240	90	120
40	1 1/2"	48.3	2.6	45.0	3.0	48.3	3.7	48.3	5.1	70	70	13	73	205	265	110	140
50	2"	60.3	2.9	57.0	3.2	60.3	3.9			70	70	13	73	205	265	110	140
65	2 1/2"	76.1	2.9	76.1	3.6	73.0	5.2			85	85	8	78	212	282	130	140
80	3"	88.9	3.2	88.9	4.0	88.9	5.5			100	100	21	78	291	350	150	180

Nominal size: Welding ends acc. to:																	
100	4"	114.3	3.6	108.0	4.0	114.3	6.0			120	120	7	88	287	368	150	180
125	5"	139.7	4.0	133.0	4.0	141.3	6.6			135	135	29	129	360	456	190	300
150	6"	168.3	4.5	159.0	4.5	168.3	7.1			150	150	5	105	352	452	210	400
200	8"	219.1	6.3							195	195	11	102	513	608	240	630
250	10"	273.0	7.1							236	236	100	100		626	300	630

Table 37: Dimensions

\*) for valves with bonnet extension, h2 = dismantling dimension

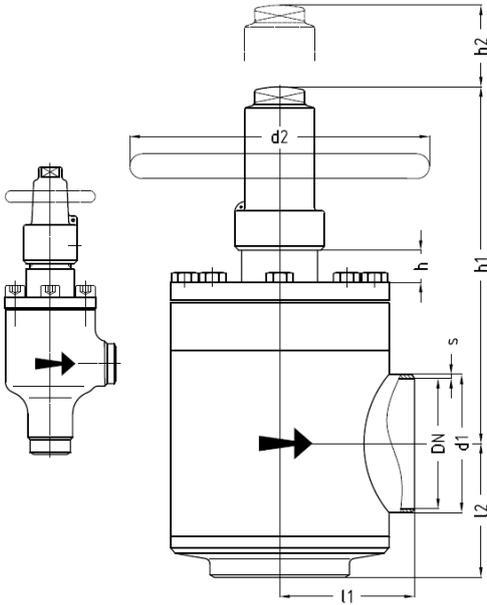
## 42 HRAB E AE NIRO / HRAB E AE DV NIRO

**E:** Angle, **AE:** Welding ends, **DV:** Bonnet extension

HRAB stainless steel control valve - shut-off capable - stem seal with metal bellows for natural refrigerants (NH3, CO2) and non-corrosive gases and liquids according to EN 378-1 as well as brines

DN 10 - 65

DN 80 - 250



Pressure / temperature operating limits:

**PS:** Max. permissible operating pressure in bar

**TS:** Permissible operating temperature in °C associated with the permissible operating pressures (PS)

**PN:** Nominal pressure rating

DN / INCH	PN	-60	-10	+50	+150	TS [°C]
DN 10...65 3/8" ...2 1/2"	PN25	25	25	25	25	PS [bar]
	PN40	40	40	40	40	PS [bar]
DN 80...250 3" ...10"	PN25	25	25	25	25	PS [bar]
	PN40	40	40	40	40	PS [bar]

Nominal size:		Welding ends acc. to:															
DN	INCH	ISO Series 1		ISO Series 2		ANSI Sched 40		ANSI Sched 80		l1	l2	h	h*)	h1	h1*)	h2	d2
		d1	s	d1	s	d1	s	d1	s								
10	3/8"	17.2	1.8	15.0	2.5	17.1	2.3	17.1	3.2	44	61	19		133		60	60
15	1/2"	21.3	2.0	20.0	2.5	21.3	2.8	21.3	3.7	44	61	19		133		60	60
20	3/4"	26.9	2.3	25.0	2.5	26.7	2.9	26.7	3.9	44	61	19		133		60	60
25	1"	33.7	2.6	32.0	3.0	33.4	3.4	33.4	4.5	60	60	18	78	180	240	90	120
32	1 1/4"	42.4	2.6	38.0	3.0	42.2	3.6	42.2	4.8	60	60	18	78	180	240	90	120
40	1 1/2"	48.3	2.6	45.0	3.0	48.3	3.7	48.3	5.1	70	70	13	73	205	265	110	140
50	2"	60.3	2.9	57.0	3.2	60.3	3.9			70	70	13	73	205	265	110	140
65	2 1/2"	76.1	2.9	76.1	3.6	73.0	5.2			85	85	8	78	212	282	130	140
80	3"	88.9	3.2	88.9	4.0	88.9	5.5			100	100	21	78	291	350	150	180

Nominal size: Welding ends acc. to:																	
100	4"	114.3	3.6	108.0	4.0	114.3	6.0			120	120	7	88	287	368	150	180
125	5"	139.7	4.0	133.0	4.0	141.3	6.6			135	135	29	129	360	456	190	300
150	6"	168.3	4.5	159.0	4.5	168.3	7.1			150	150	5	105	352	452	210	400
200	8"	219.1	6.3							195	195	11	102	513	608	240	630
250	10"	273.0	7.1							236	236	100	100		626	300	630

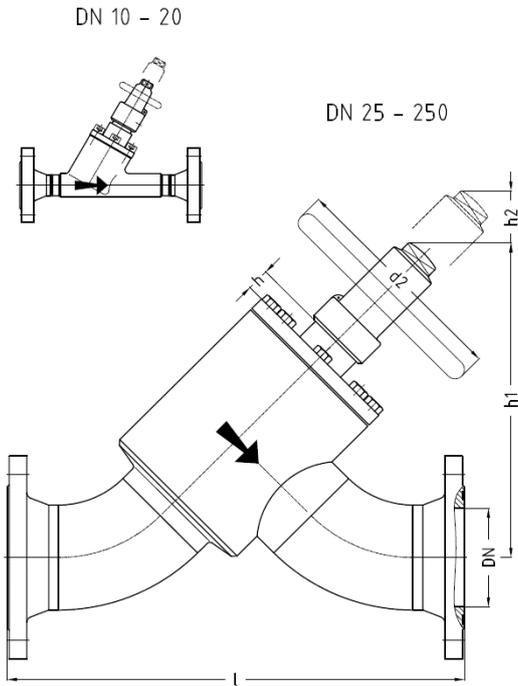
Table 38: Dimensions

\*) for valves with bonnet extension, h2 = dismantling dimension

### 43 HRAB D FL / HRAB D FL DV

**D:** Straight-way, **FL:** Flanged ends, **DV:** Bonnet extension

HRAB steel control valve - shut-off capable - stem seal with metal bellows for natural refrigerants (NH<sub>3</sub>, CO<sub>2</sub>) and non-corrosive gases and liquids according to EN 378-1 as well as brines



Pressure / temperature operating limits:

**PS:** Max. permissible operating pressure in bar

**TS:** Permissible operating temperature in °C associated with the permissible operating pressures (PS)

**PN:** Nominal pressure rating

DN / INCH	PN	-60	-40	-25	-10	+50	+150	TS [°C]
DN 10...20 3/8" ...3/4"	PN25	6.25	12.5	18.7	25	25	25	PS [bar]
	PN40	10	20	30	40	40	40	PS [bar]
DN 25...250 1" ...10"	PN25	6.25	12.5	18.7	25	25	25	PS [bar]
	PN40	10	20	30	40	40	40	PS [bar]

Nominal size:		Flanged ends acc. to:										
DN	INCH	AWP DN10-20 DN25-80	PN25 DIN 2634 EN1092-1	PN40 DIN 2635 EN1092-1	ANSI 300 RF	l	h	h*)	h1	h1*)	h2	d2
10	3/8"	196	202	202		196	19		136		55	60
15	1/2"	196	208	208	237	196	19		136		55	60
20	3/4"	216	232	232	266	216	19		136		55	60
25	1"	230	222	222	266	230	18	78	188	231	70	120
32	1 1/4"	244	240	240	286	244	18	78	191	233	70	120
40	1 1/2"	235	248	248	295	235	13	73	208	251	80	140
50	2"	270	280	280	324	270	13	73	214	259	80	140
65	2 1/2"	365	362	362	410	365	8	78	248	298	100	140

Nominal size:		Flanged ends acc. to:									
80	3"	413	422	422	464	21	78	326	367	110	180
100	4"		518	518	560	7	88	348	405	110	180
125	5"		599	599	660	29	129	420	491	140	300
150	6"		689	689	736	5	105	437	508	150	400
200	8"		870	886	932	11	102	610	675	170	630
250	10"		1053	1087	1112	100	100		739	220	630

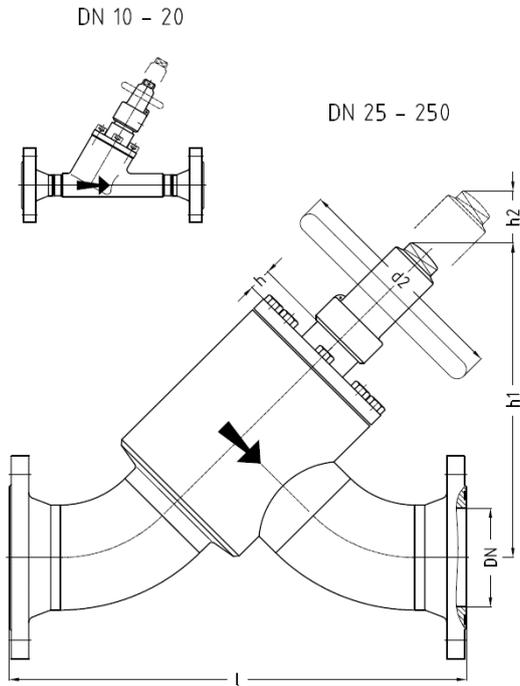
Table 39: Dimensions

\*) for valves with bonnet extension, h2 = dismantling dimension, DIN/EN flange facings with DIN 2512 groove as standard

## 44 HRAB D FL NIRO / HRAB D FL DV NIRO

**D:** Straight-way, **FL:** Flanged ends, **DV:** Bonnet extension

HRAB stainless steel control valve - shut-off capable - stem seal with metal bellows for natural refrigerants (NH3, CO2) and non-corrosive gases and liquids according to EN 378-1 as well as brines



Pressure / temperature operating limits:

**PS:** Max. permissible operating pressure in bar

**TS:** Permissible operating temperature in °C associated with the permissible operating pressures (PS)

**PN:** Nominal pressure rating

DN / INCH	PN	-60	-10	+50	+150	TS [°C]
DN 10...20 3/8" ...3/4"	PN25	25	25	25	25	PS [bar]
	PN40	40	40	40	40	PS [bar]
DN 25...250 1" ...10"	PN25	25	25	25	25	PS [bar]
	PN40	40	40	40	40	PS [bar]

Nominal size:		Flanged ends acc. to:									
DN	INCH	AWP DN10-20 PN25 DN25-80 PN40	PN25 DIN 2634 EN1092-1	PN40 DIN 2635 EN1092-1	ANSI 300 RF	h	h*)	h1	h1*)	h2	d2
10	3/8"	196	202	202		19		136		55	60
15	1/2"	196	208	208	237	19		136		55	60
20	3/4"	216	232	232	266	19		136		55	60
25	1"	230	222	222	266	18	78	188	231	70	120
32	1 1/4"	244	240	240	286	18	78	191	233	70	120
40	1 1/2"	235	248	248	295	13	73	208	251	80	140
50	2"	270	280	280	324	13	73	214	259	80	140
65	2 1/2"	365	362	362	410	8	78	248	298	100	140

Nominal size:		Flanged ends acc. to:									
80	3"	413	422	422	464	21	78	326	367	110	180
100	4"		518	518	560	7	88	348	405	110	180
125	5"		599	599	660	29	129	420	491	140	300
150	6"		689	689	736	5	105	437	508	150	400
200	8"		870	886	932	11	102	610	675	170	630
250	10"		1053	1087	1112	100	100		739	220	630

Table 40: Dimensions

\*) for valves with bonnet extension, h2 = dismantling dimension, DIN/EN flange facings with DIN 2512 groove as standard

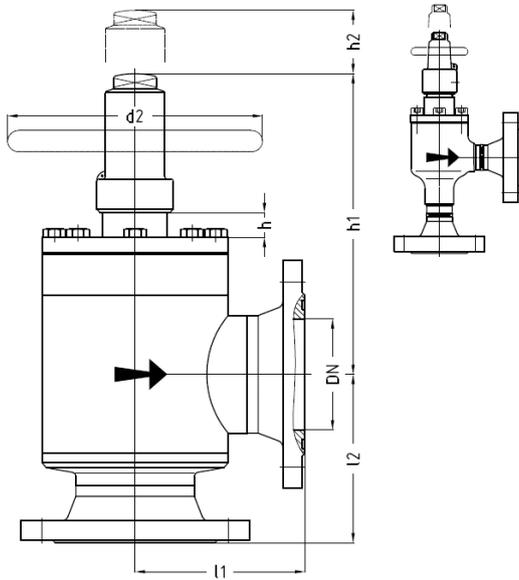
## 45 HRAB E FL / HRAB E FL DV

**E:** Angle, **FL:** Flanged ends, **DV:** Bonnet extension

HRAB steel control valve - shut-off capable - stem seal with metal bellows for natural refrigerants (NH<sub>3</sub>, CO<sub>2</sub>) and non-corrosive gases and liquids according to EN 378-1 as well as brines

DN 80 – 250

DN 10 – 65



Pressure / temperature operating limits:

**PS:** Max. permissible operating pressure in bar

**TS:** Permissible operating temperature in °C associated with the permissible operating pressures (PS)

**PN:** Nominal pressure rating

DN / INCH	PN	-60	-40	-25	-10	+50	+150	TS [°C]
DN 10...65 3/8" ...2 1/2"	PN25	6.25	12.5	18.7	25	25	25	PS [bar]
	PN40	10	20	30	40	40	40	PS [bar]
DN 80...250 3" ...10"	PN25	6.25	12.5	18.7	25	25	25	PS [bar]
	PN40	10	20	30	40	40	40	PS [bar]

### Nominal size: Flanged ends acc. to:

		AWP DN10-20 PN25 DN25-80 PN40		PN25 DIN 2634 EN1092-1		PN40 DIN 2635 EN1092-1		ANSI 300 RF							
DN	INCH	l1	l2	l1	l2	l1	l2	l1	l2	h	h*)	h1	h1*)	h2	d2
10	3/8"	77	94	80	97	80	97			19	42	133	152	60	60
15	1/2"	77	94	83	100	83	100	97	114	19	42	133	152	60	60
20	3/4"	77	94	85	102	85	102	102	119	19	42	133	152	60	60
25	1"	105	105	101	101	101	101	123	123	18	78	180	240	90	120
32	1 1/4"	105	105	103	103	103	103	126	126	18	78	180	240	90	120
40	1 1/2"	110	110	116	116	116	116	139	139	13	73	205	265	110	140
50	2"	114	114	119	119	119	119	141	141	13	73	205	265	110	140
65	2 1/2"	140	140	138	138	138	138	162	162	8	78	212	282	130	140

Nominal size: Flanged ends acc. to:															
80	3"	155	155	159	159	159	159	180	180	21	78	291	350	150	180
100	4"			186	186	186	186	207	207	7	88	287	368	150	180
125	5"			204	204	204	204	235	235	29	129	360	456	190	300
150	6"			226	226	226	226	250	250	5	105	352	452	210	400
200	8"			276	276	284	284	307	307	11	102	513	608	240	630
250	10"			325	325	342	342	354	354	100	100		626	300	630

Table 41: Dimensions

\*) for valves with bonnet extension, h2 = dismantling dimension, DIN/EN flange facings with DIN 2512 groove as standard

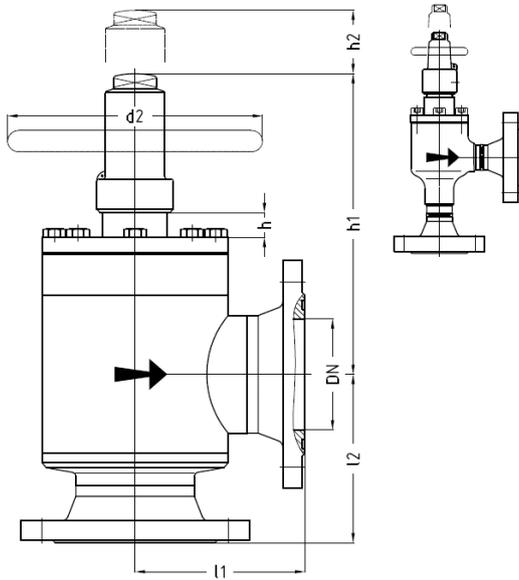
## 46 HRAB E FL NIRO / HRAB E FL DV NIRO

**E:** Angle, **FL:** Flanged ends, **DV:** Bonnet extension

HRAB stainless steel control valve - shut-off capable - stem seal with metal bellows for natural refrigerants (NH<sub>3</sub>, CO<sub>2</sub>) and non-corrosive gases and liquids according to EN 378-1 as well as brines

DN 80 – 250

DN 10 – 65



Pressure / temperature operating limits:

**PS:** Max. permissible operating pressure in bar

**TS:** Permissible operating temperature in °C associated with the permissible operating pressures (PS)

**PN:** Nominal pressure rating

DN / INCH	PN	-60	-10	+50	+150	TS [°C]
DN 10...65 3/8" ...2 1/2"	PN25	25	25	25	25	PS [bar]
	PN40	40	40	40	40	PS [bar]
DN 80...250 3" ...10"	PN25	25	25	25	25	PS [bar]
	PN40	40	40	40	40	PS [bar]

### Nominal size: Flanged ends acc. to:

		AWP		PN25		PN40		ANSI							
		DN10-20 PN25		DIN 2634		DIN 2635		300 RF							
		DN25-80 PN40		EN1092-1		EN1092-1									
DN	INCH	l1	l2	l1	l2	l1	l2	l1	l2	h	h*)	h1	h1*)	h2	d2
10	3/8"	77	94	80	97	80	97			19	42	133	152	60	60
15	1/2"	77	94	83	100	83	100	97	114	19	42	133	152	60	60
20	3/4"	77	94	85	102	85	102	102	119	19	42	133	152	60	60
25	1"	105	105	101	101	101	101	123	123	18	78	180	240	90	120
32	1 1/4"	105	105	103	103	103	103	126	126	18	78	180	240	90	120
40	1 1/2"	110	110	116	116	116	116	139	139	13	73	205	265	110	140
50	2"	114	114	119	119	119	119	141	141	13	73	205	265	110	140
65	2 1/2"	140	140	138	138	138	138	162	162	8	78	212	282	130	140

Nominal size: Flanged ends acc. to:															
80	3"	155	155	159	159	159	159	180	180	21	78	291	350	150	180
100	4"			186	186	186	186	207	207	7	88	287	368	150	180
125	5"			204	204	204	204	235	235	29	129	360	456	190	300
150	6"			226	226	226	226	250	250	5	105	352	452	210	400
200	8"			276	276	284	284	307	307	11	102	513	608	240	630
250	10"			325	325	342	342	354	354	100	100		626	300	630

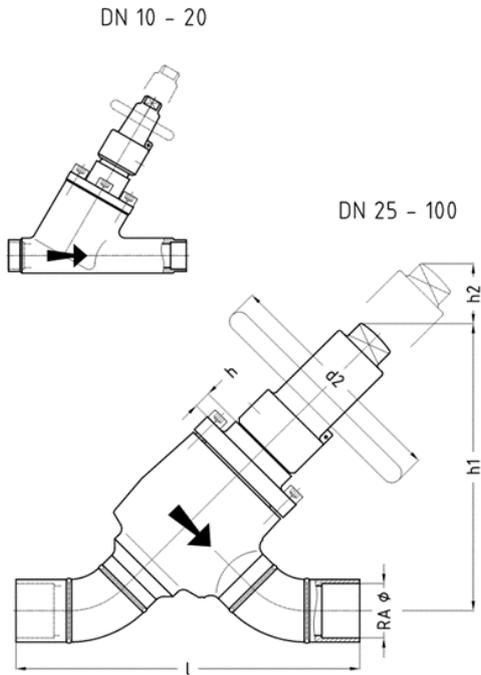
Table 42: Dimensions

\*) for valves with bonnet extension, h2 = dismantling dimension, DIN/EN flange facings with DIN 2512 groove as standard

## 47 HRAB D LE / HRAB D LE DV

**D:** Straight-way, **LE:** Soldering ends, **DV:** Bonnet extension

HRAB steel control valve - shut-off capable - stem seal with metal bellows for natural refrigerants (NH<sub>3</sub>, CO<sub>2</sub>) and non-corrosive gases and liquids according to EN 378-1 as well as brines



Pressure / temperature operating limits:

**PS:** Max. permissible operating pressure in bar

**TS:** Permissible operating temperature in °C associated with the permissible operating pressures (PS)

**PN:** Nominal pressure rating

DN	PN	-60	-40	-25	-10	+50	+150	TS [°C]
DN 10...20	PN25	6.25	12.5	18.7	25	25	25	PS [bar]
	PN40	10	20	30	40	40	40	PS [bar]
DN 25...100	PN25	6.25	12.5	18.7	25	25	25	PS [bar]
	PN40	10	20	30	40	40	40	PS [bar]

Nominal size:		Soldering ends acc. to:							
DN	RAØ	l	h	h*)	h1	h1*)	h2	d2	
10	12	130	19		136		55	60	
15	15	130	19		136		55	60	
15	18	130	19		136		55	60	
20	22	150	19		136		55	60	
25	28	160	18	78	201	261	90	120	
32	35	180	18	78	202	262	90	120	
40	42	200	13	73	234	294	110	140	
50	54	230	13	73	234	294	110	140	
65	64	290	8	78	262	332	130	140	
65	76	290	8	78	262	332	130	140	
80	89	406	21	78	326	367	110	180	

Nominal size:	Soldering ends acc. to:							
100	108	518	7	88	348	405	110	180

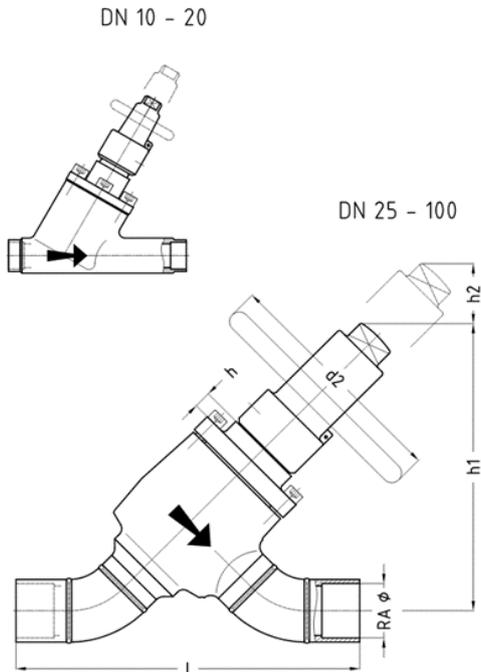
Table 43: Dimensions

\*) for valves with bonnet extension, h2 = dismantling dimension

## 48 HRAB D LE NIRO / HRAB D LE DV NIRO

**D:** Straight-way, **LE:** Soldering ends, **DV:** Bonnet extension

HRAB stainless steel control valve - shut-off capable - stem seal with metal bellows for natural refrigerants (NH<sub>3</sub>, CO<sub>2</sub>) and non-corrosive gases and liquids according to EN 378-1 as well as brines



Pressure / temperature operating limits:

**PS:** Max. permissible operating pressure in bar

**TS:** Permissible operating temperature in °C associated with the permissible operating pressures (PS)

**PN:** Nominal pressure rating

DN	PN	-60	-10	+50	+150	TS [°C]
DN 10...20	PN25	25	25	25	25	PS [bar]
	PN40	40	40	40	40	PS [bar]
DN 25...100	PN25	25	25	25	25	PS [bar]
	PN40	40	40	40	40	PS [bar]

Nominal size:		Soldering ends acc. to:							
DN	RAØ	l	h	h*)	h1	h1*)	h2	d2	
10	12	130	19		136		55	60	
15	15	130	19		136		55	60	
15	18	130	19		136		55	60	
20	22	150	19		136		55	60	
25	28	160	18	78	201	261	90	120	
32	35	180	18	78	202	262	90	120	
40	42	200	13	73	234	294	110	140	
50	54	230	13	73	234	294	110	140	
65	64	366	8	78	248	298	100	140	
65	76	366	8	78	248	298	100	140	
80	89	406	21	78	326	367	110	180	

Nominal size:	Soldering ends acc. to:							
100	108	518	7	88	348	405	110	180

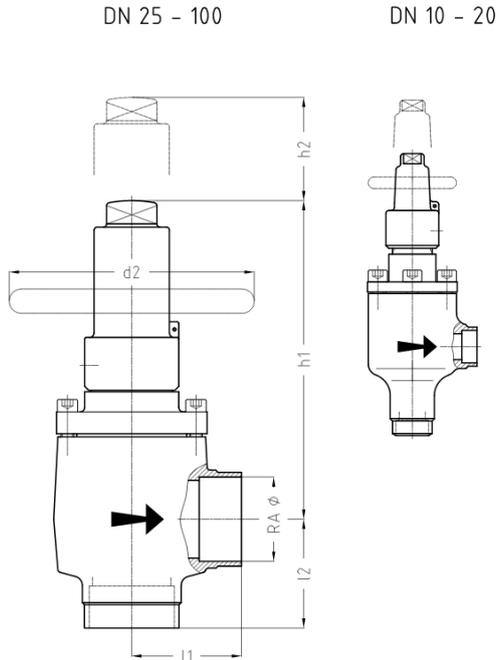
Table 44: Dimensions

\*) for valves with bonnet extension, h2 = dismantling dimension

## 49 HRAB E LE / HRAB E LE DV

**E:** Angle, **LE:** Soldering ends, **DV:** Bonnet extension

HRAB steel control valve - shut-off capable - stem seal with metal bellows for natural refrigerants (NH<sub>3</sub>, CO<sub>2</sub>) and non-corrosive gases and liquids according to EN 378-1 as well as brines



Pressure / temperature operating limits:

**PS:** Max. permissible operating pressure in bar

**TS:** Permissible operating temperature in °C associated with the permissible operating pressures (PS)

**PN:** Nominal pressure rating

DN	PN	-60	-40	-25	-10	+50	+150	TS [°C]
DN 10...20	PN25	6.25	12.5	18.7	25	25	25	PS [bar]
	PN40	10	20	30	40	40	40	PS [bar]
DN 25...100	PN25	6.25	12.5	18.7	25	25	25	PS [bar]
	PN40	10	20	30	40	40	40	PS [bar]

Nominal size: Soldering ends acc. to:										
DN	RAØ	l1	l2	h	h*)	h1	h1*)	h2	d2	
10	12	44	61	19		133		60	60	
15	15	44	61	19		133		60	60	
15	18	44	61	19		133		60	60	
20	22	44	61	19		133		60	60	
25	28	60	60	18	78	180	240	90	120	
32	35	60	60	18	78	180	240	90	120	
40	42	70	70	13	73	205	265	110	140	
50	54	70	70	13	73	205	265	110	140	
65	64	140	140	8	78	212	282	130	140	
65	76	140	140	8	78	212	282	130	140	
80	89	151	151	21	78	291	350	150	180	

Nominal size:		Soldering ends acc. to:								
100	108	186	186	7	88	287	368	150	180	

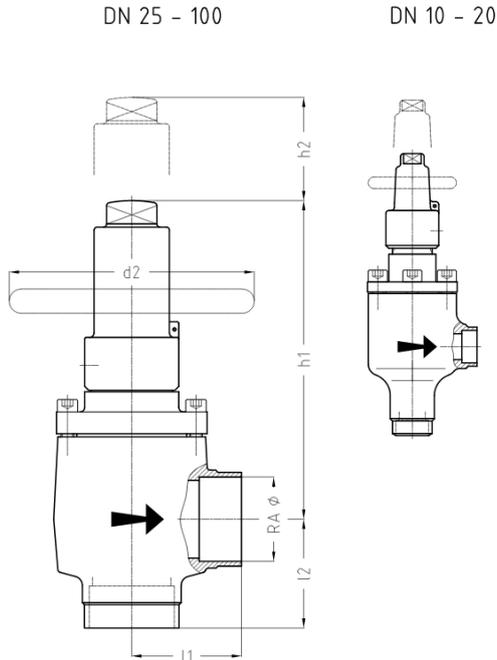
Table 45: Dimensions

\*) for valves with bonnet extension, h2 = dismantling dimension

## 50 HRAB E LE NIRO / HRAB E LE DV NIRO

**E:** Angle, **LE:** Soldering ends, **DV:** Bonnet extension

HRAB stainless steel control valve - shut-off capable - stem seal with metal bellows for natural refrigerants (NH<sub>3</sub>, CO<sub>2</sub>) and non-corrosive gases and liquids according to EN 378-1 as well as brines



Pressure / temperature operating limits:

**PS:** Max. permissible operating pressure in bar

**TS:** Permissible operating temperature in °C associated with the permissible operating pressures (PS)

**PN:** Nominal pressure rating

DN	PN	-60	-10	+50	+150	TS [°C]
DN 10...20	PN25	25	25	25	25	PS [bar]
	PN40	40	40	40	40	PS [bar]
DN 25...100	PN25	25	25	25	25	PS [bar]
	PN40	40	40	40	40	PS [bar]

### Nominal size: Soldering ends acc. to:

DN	RAØ	l1	l2	h	h*)	h1	h1*)	h2	d2
10	12	44	61	19		133		60	60
15	15	44	61	19		133		60	60
15	18	44	61	19		133		60	60
20	22	44	61	19		133		60	60
25	28	60	60	18	78	180	240	90	120
32	35	60	60	18	78	180	240	90	120
40	42	70	70	13	73	205	265	110	140
50	54	70	70	13	73	205	265	110	140
65	64	140	140	8	78	212	282	130	140
65	76	140	140	8	78	212	282	130	140
80	89	151	151	21	78	291	350	150	180

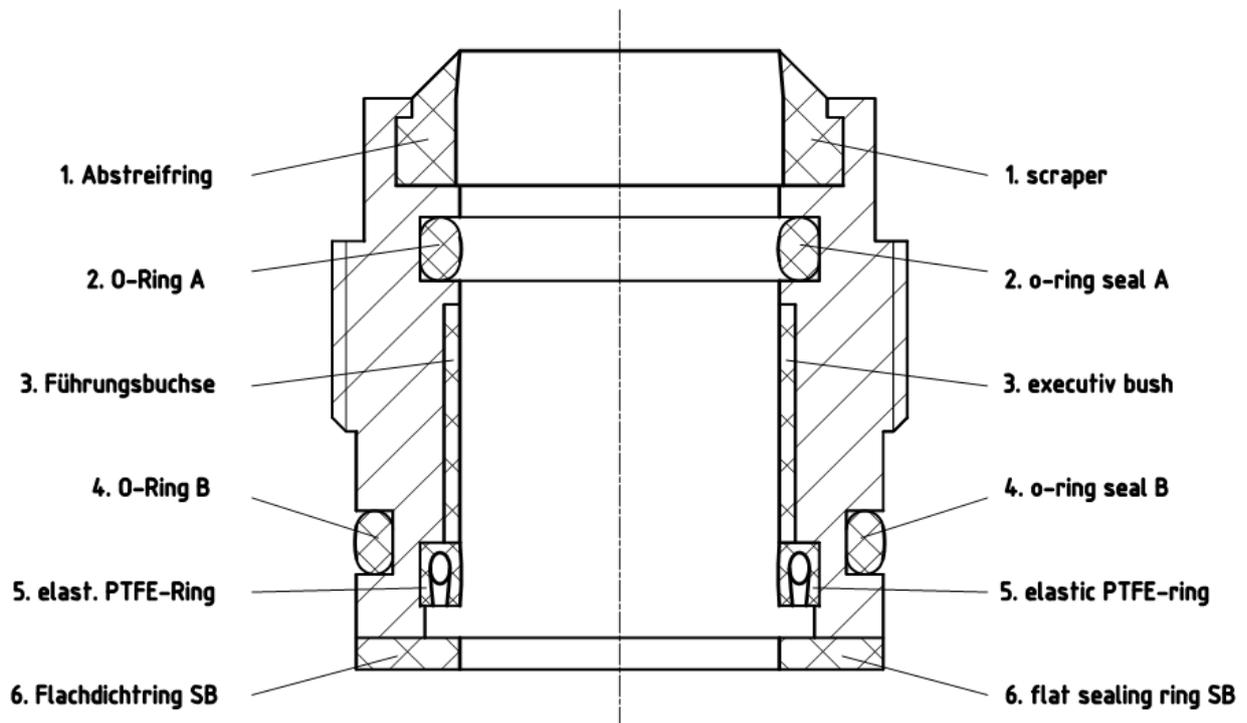
Nominal size:		Soldering ends acc. to:								
100	108	186	186	7	88	287	368	150	180	

Table 46: Dimensions

\*) for valves with bonnet extension, h2 = dismantling dimension

## 51 Appendix

## 52 Valve stem sealing system



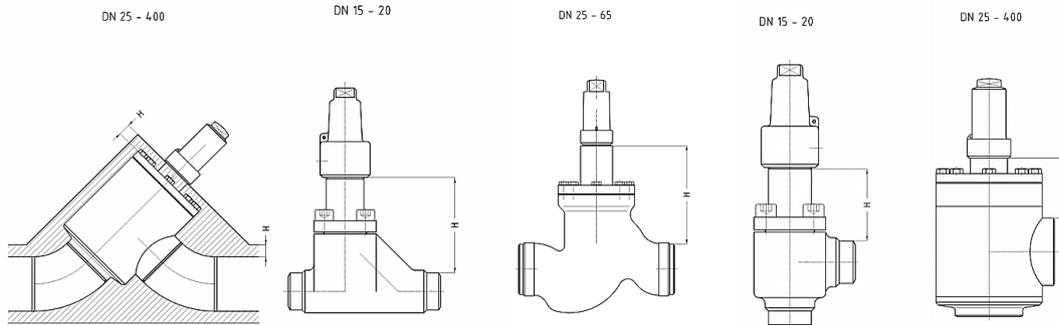
The valve stem sealing system is maintenance-free. The sealing system consists of the following components:  
 Note: GEA AWP valves have a back seal. Therefore, the removal and replacement of the sealing system is possible during operation of the plant. Please observe the instructions in our operating regulations regarding this.

1. Wiper ring  
 The wiper ring prevents the ingress of dirt and water from the outside.
2. O-ring A  
 O-ring A makes the valve vacuum-tight. (Valve operation in the vacuum range at low temperatures)
3. Guide bush  
 The guide bush prevents damage to the stem.
4. O-ring B  
 O-ring B seals the outer part of the sealing system in addition to the flat sealing ring SB.
5. Resilient PTFE ring  
 The resilient PTFE ring is the primary seal of the sealing system. It consists of a high-performance PTFE compound with a wound stainless steel spring. This seal seals the valve to the atmosphere.
6. Flat sealing ring SB  
 The flat sealing ring SB seals the outer part of the sealing system.

## 53 Insulation thicknesses

AVR - shut-off valves

HRAR - control valves

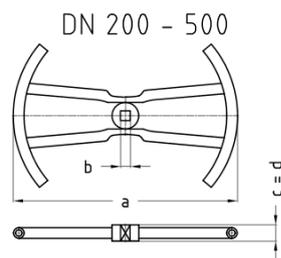
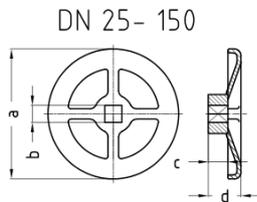
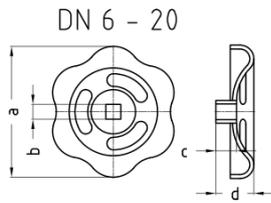


Nominal size Straight-way valves						Nominal Angle valves size			
		Angle-seat		Straight-seat				Angle type	
		AVR D	AVR D DV	AVR D	AVR D DV			AVR E	AVR E DV
		HRAR D	HRAR D DV	HRAR D	HRAR D DV			HRAR E	HRAR E DV
DN	INCH	H	H	H	H	DN	INCH	H	H
15	1/2"			52	84	15	1/2"	34	67
20	3/4"			69	106	20	3/4"	43	81
25	1"	21	81	84	144	25	1"	62	122
32	1 1/4"	21	81	81	141	32	1 1/4"	58	118
40	1 1/2"	14	74	88	148	40	1 1/2"	59	117
50	2"	14	74	82	142	50	2"	53	111
65	2 1/2"	9	79	102	170	65	2 1/2"	52	120
80	3"	21	80	144	203	80	3"	99	158
100	4"	9	90	144	225	100	4"	82	163
125	5"	29	129			125	5"	123	222
150	6"	5	105			150	6"	103	203
200	8"	11	102			200	8"	146	237
250	10"	100	100			250	10"	230	230
300	12"	107	107			300	12"	251	251

Nominal size Straight-way valves						Nominal Angle valves size			
350	14"	107	107			350	14"	270	270
400	16"	112	112			400	16"	309	309

AVR / HRAR D = standard valves, AVR / HRAR D DV = valves with bonnet extension

## 54 Handwheel / Cap

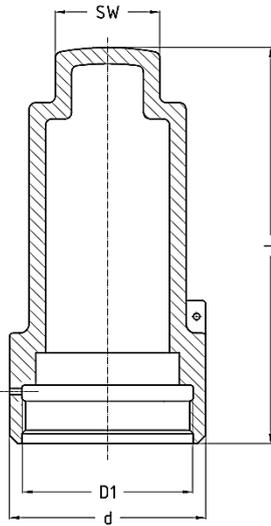


for type: HRS AVR AVB HRAR HRAB RVA RVAK

	Diameter	Hub square	Hub height	Height
DN	a	b	c	d
6-20	60	6	9	15
25-32	120	11	14	31.0
40-65	140	12	16	32.5
80-100	180	14	22	42.0
125	300	22	28	55
150	400	22	28	60
200-500	630	28	46	46

Table 47: Dimensions handwheel DN 6 - 500

DN 6 - 500


**for type: AVR AVB HRAR HRAB RVA RVAK**

	Height	Diameter	Thread	Wrench size
DN	l	d	D1	SW
6-20	65	36	M27x2	19
25-32	99	45	M36x2	24
40-65	122	60	M52x3	32
80-100	148	72	M60x3	41
125-150	165	90	M76x3	50
200-350	260	100	M80x3	60
400	319	100	M80x3	90
500	325	100	M80x3	90

Table 48: Dimensions cap DN 6 - 500

## 55 Comparison of European / American materials

GEA AWP valves contain individual parts in different materials. The following table contains all materials that GEA AWP uses for pressure-retaining parts and lists the equivalent American materials.

European material		American equivalent material		
Material number	Short name	Standard	Material standard	Grade
Valves made of carbon steel				
1.0345	P235GH, TC1 +N	DIN EN 10216-2	ASTM A106	A + B
1.0038	S235JR +N	DIN EN 10025-2	ASTM A570	36
1.0425	P265GH	DIN EN 10028-2	ASTM A516	60
1.0577	S355J2 +N	DIN EN 10025-2	ASTM A516	65
1.0562	P355N	DIN EN 10028-3		
1.6220	G20Mn5 +QT	DIN EN 10213	ASTM A352	LCC
1.0460	C22.8	VdTÜV 350/3	ASTM A105	-
Valves made of low-temperature steel				
1.0451	P215NL +N	DIN EN 10216-4	ASTM A333	6
1.0452	P255QL +QT	DIN EN 10216-4		
1.0566	P355NL1 +N	DIN EN 10028-3 DIN 17103 VdTÜV 354/3	ASTM A662 ASTM A420 ASTM A350	B WPL6 LF2
1.0488	TStE 285	DIN 17103 VdTÜV 352/3	ASTM A662 ASTM A350	A LF2
1.6220	G20Mn5 +QT	DIN EN 10213	ASTM A352	LCC
Valves made of stainless steel				
1.4301	X5CrNi18-10	DIN EN 10216-5 DIN EN 10028-7 DIN EN 10222-5 DIN EN 1092-1	ASTM A312 ASTM A240 ASTM A182	TP304 304 F304
1.4581	GX5CrNiMoNb19-11-2	DIN EN 10213	ASTM A351	CF10M

Straight-way valves in non-standard design (e.g. deviating materials, third-party inspection) are only available in angle-seat form.

## 56 Coding of connections for small and service valves

GEA AWP valves can be manufactured with a variety of connection variants:

DN	Thread	Code	Welding ends		Dimensions	Code
DN8	M12x1.5 RA6	AL	DN6	R1	Ø10.2x1.6	C0
DN8	M12x1.5-taper	AY		ANSI 40	Ø1/8"x1.7	C1
DN8	M14x1.5 RA8	A4		ANSI 80	Ø1/8"x2.4	C2
DN8	M16x1.5 RA8	A5				
DN8	M16x1.5 RA10	A6	DN8	R1	Ø13.5x1.8	D0
DN8	M16x1.5-i	AZ		ANSI 40	Ø1/4"x2.2	D1
DN8	M16x1.5-taper	AC		ANSI 80	Ø1/4"x3.0	D2
DN8	M18x1.5 RA10	A7		12x2	Ø12x2.0	D3
DN8	M18x1.5 RA12	A8		12x3	Ø12x3.0	D4
DN8	M20x1.5 RA12	A9		R1 ext. L2=130 Niro	Ø13.5x1.8	D5
DN8	M22x1.5 RA14	AA		R1 ext. L2=130 C-St.	Ø13.5x1.8	D6
DN8	M22x1.5 RA15	AB				
DN8	M22x1.5	A0	DN10	R1	Ø17.2x1.8	E0
DN8	M22x1.5-taper	AD		ANSI 40	Ø3/8"x2.3	E1
DN20	M26x1.5 RA18	AS		ANSI 80	Ø3/8"x3.2	E2
DN20	M30x2 RA22	AT		R2	Ø15x2.5	E3
DN8	G1/4"	AF		18x3	Ø18x3.0	E4
DN8	G1/4"-taper	AG		R1 ext. L2=130 Niro	Ø17.2x1.8	E5
DN8	G1/4"-i	AH		R1 ext. L2=130 C-St.	Ø17.2x1.8	E6
DN8	G3/8"	AK		16x4 ext.L2=130 NIRO	Ø16x4.0	E7
DN8	G3/8"-i	AM		17,2x2	Ø17.2x2.0	E8
DN8	G3/8" RA10	AJ		R1 ext. L2=120 C-St.	Ø17.2x1.8	E9
DN8	G1/2"	A1		R1 ext. L2=140 Niro	Ø17.2x1.8	EA
DN8	G1/2"-LH	A2		R1 ext. L2=140 C-St.	Ø17.2x1.8	EB
DN8	G1/2" RA12	AN		R1 ext. L2=60 Niro	Ø17.2x1.8	EC
DN8	G1/2"-i	AU		R1 ext. L2=60 C-St.	Ø17.2x1.8	ED
DN8	G1/2" UM *)	AV		18x4 ext.L2=140 Niro	Ø18x4.0	EE
DN8	G1/2" **)	AW		18x4 ext.L2=140C-St	Ø18x4.0	EF
DN8	G1/2"-taper	AX		18x4 ext.L2=60 Niro	Ø18x4.0	EG
DN20	G3/4"	AE		18x4 ext.L2=60 C-St.	Ø18x4.0	EH
DN20	G3/4" RA18	AP				
DN8	1/4"NPT-male	A3	DN15	R1	Ø21.3x2.0	F0

DN	Thread	Code	Welding ends		Dimensions	Code
DN8	1/4"NPT-female	AR		ANSI 40	Ø1/2"x2.8	F1
DN8	3/8"NPT-male	AI		ANSI 80	Ø1/2"x3.7	F2
DN8	3/8"NPT-female	B2		R2	Ø20x2.5	F3
DN8	1/2"NPT-male	B0		R1 ext. L2=130 Niro	Ø21.3x2.0	F5
DN8	1/2"NPT-female	B1		R1 ext. L2=130 C-St.	Ø21.3x2.0	F6
DN20	3/4"NPT-male	B3		R1 ext. L2=180 NIRO	Ø21.3x2.0	F7
DN8	M10-a	B4		ANSI 80 L2=130 C-St	Ø21.3x3.7	F8
DN20	G1"	B6	*) rotatable, welded to body			
DN8	G3/8" BSPT-male	B7				
DN8	G3/8" BSPT-female	B8	**) for one-piece blind nut			
DN8	3/8-18 NPTF-male	B9				
DN8	R3/8"-taper	BA				

i = female thread, a = male thread

These connections can be equipped with accessories.

Accessories		Short designation	Code
UM+ST	Union nut with welding nipple	UM+ST	1
BM	Blind nut	BM	2
DM	Double nut left/right	DM	3
UM+SKB	Union nut with weld ball nipple	UM+SKB	4
UM+SR	Union nut with cutting ring	UM+SR	5
UM+SLT	Union nut with hose nipple	UM+SLT	6
DM+ad- apter	Double nut with adapter G1/2"-a/ G1/4"-i	DM+adapter	7
UM+KKR	Union nut with clamping ring	UM+KKR	9

## 57 Accessories for AVR, HRAR, RV, RVA, RVAK, SS, UVA

- UM+ST Union nut with welding nipple and gasket
- BM Blind nut with gasket
- DM Double nut right-hand/left-hand with gasket
- UM+SLT Union nut with hose nipple and gasket
- UM+SKB Union nut with weld ball nipple
- UM+SR Union nut with cutting ring

TYPE	AWP code	Description
UM+ST G3/8"	00060F07A5A0AK01	Union nut G3/8", welding nipple 10.2x1.6, gasket 10x13.5x1.5-Al
UM+ST G1/2"	00060F07A5A0A101	Union nut G1/2", welding nipple 13.5x1.8, gasket 13x18x1.5-Al
UM+ST G3/4"	00060F07A5A0AE01	Union nut G3/4", welding nipple 17.2x2.0, gasket 17x22x1.5-Al
UM+ST G1"	00060F07A5A0B601	Union nut G1" + welding nipple 21.3x2.0 + gasket 22x27x1.5-Al
BM 8 (G1/2")	00060F07A5A0A102	Blind nut G1/2", gasket 13x18x1.5-Al G1/2"
BM 10 (G3/4")	00060F07A5A0AE02	Blind nut G3/4", gasket 17x22x1.5-Al G3/4"
DM G1/2"-G1/2"L	00060F07A5A0A203	Left-right nut G1/2", gasket 13x18x1.5-Al
UM+SLT	00060F07A5A0A106	One-piece hose nipple G1/2" + gasket 13x18x1.5-Al
UM+SKB 6 RA6	00060F07A5A0AL04	Union nut M12x1.5 RA6, weld ball nipple SKA 6x1.5
UM+SKB 8 RA10	00060F07A5A0A604	Union nut M16x1.5 RA10, weld ball nipple SKA 10x1.5
UM+BM 8 RA10	00060F07A5A0A602	Union nut with blind plug M16x1.5 RA10
UM+SKB 8 RA12	00060F07A5A0A804	Union nut M18x1.5 RA12, weld ball nipple SKA 12x2.0
UM+BM 8 RA12	00060F07A5A0A802	Union nut with blind plug M18x1.5 RA12
UM+SKB G1/2" RA12	00060F07A5A0AN04	Union nut G1/2" RA12, weld ball nipple SKA 12x2 RA12
UM+BM G1/2" RA12	00060F07A5A0AN02	Union nut with blind plug G1/2" RA12
UM+SR 6 L6	00060F07A5A0AL05	Union nut M12x1.5 RA6, cutting ring L6
UM+SR 8 L10	00060F07A5A0A605	Union nut M16x1.5 RA10, cutting ring L10
UM+SR 8 L12	00060F07A5A0A805	Union nut M18x1.5 RA12, cutting ring L12
UM+SR G1/2" RA12	00060F07A5A0AN05	Union nut G1/2" RA12, cutting ring L12

## 58 Welding neck flanges - DIN 2634/2635

- DIN-FL
- DIN-FL N
- DIN-FL F
- DIN-FL C
- DIN-FL D
- FL - flange
- Form N - groove / DIN 2512
- Form F - tongue / DIN 2512
- Form C - smooth flange facing / (Rz 160) DIN 2526
- Form D - smooth flange facing / (Rz 40) DIN 2526

DIN2634 PN25 DN10-150 / DIN 2635 PN40 DN10-400																				
Welding ends					Flange facing design											Screws DIN 931			Sealing ring DIN 2691	
Series 1		Series 2			Groove						Tongue					Quant- ity	Thread	Lengt h	di	da
DN	d1	s	d1	s	b	k	h	d	D	di	da	f	di	da	f					
10	17.2	1.8	15.0	2.5	16	60	35	14	90	23	35	2.5	24	34	4.0	4	M 12	45	24	34
15	21.3	2.0	20.0	2.5	16	65	38	14	95	28	40	2.5	29	39	4.0	4	M 12	45	29	39
20	26.9	2.3	25.0	2.5	18	75	40	14	105	35	51	2.5	36	50	4.0	4	M 12	50	36	50
25	33.7	2.6	32.0	3.0	18	85	40	14	115	42	58	2.5	43	57	4.0	4	M 12	50	43	57
32	42.4	2.6	38.0	3.0	18	100	42	18	140	50	66	2.5	51	65	4.0	4	M 16	55	51	65
40	48.3	2.6	45.0	3.0	18	110	45	18	160	60	76	2.5	61	75	4.0	4	M 16	55	61	75
50	60.3	2.9	57.0	3.2	20	125	48	18	185	72	88	2.5	73	87	4.0	4	M 16	60	73	87
65	76.1	2.9	76.1	3.6	22	145	52	18	215	94	110	2.5	95	109	4.0	8	M 16	60	95	109
80	88.9	3.2	88.9	4.0	24	160	58	18	240	105	120	2.5	106	120	4.0	8	M 16	65	106	120
100	114.3	3.6	108.0	4.0	24	190	65	22	258	125	150	3.0	129	149	4.0	8	M 20	70	129	149
125	139.7	4.0	133.0	4.0	26	220	68	22	276	150	170	3.0	155	175	4.0	8	M 24	80	155	175
150	168.3	4.5	159.0	4.5	28	250	75	26	302	180	200	3.0	183	203	4.0	8	M 24	80	183	203
200	219.1	6.3			34	320	88	30	375	230	260	3.0	239	259	4.0	12	M 27	100	239	259
250	273.0	7.1			38	385	105	33	450	290	310	3.0	292	312	4.0	12	M 30	110	292	312

DIN2634 PN25 DN10-150 / DIN 2635 PN40 DN10-400																				
300	323.9	8.0			42	450	115	33	515	342	364	3.0	343	363	4.5	16	M 30	120	343	363
350	355.6	8.8			46	510	125	36	580	394	422	3.5	395	421	5.0	16	M 33	130	395	421
400	406.4	11.0			50	585	135	39	660	446	474	3.5	447	473	5.0	16	M 36	140	447	473

Table 49: Installation lengths

## 59 Welding neck flanges - DIN 2634/2636/2637

- DIN-FL N
- DIN-FL F
- DIN-FL C
- DIN-FL D
- FL - flange
- Form N - groove, DIN 2512
- Form F - tongue, DIN 2512
- Form C - smooth flange facing, (Rz 160) DIN 2526
- Form D - smooth flange facing, (Rz 40) DIN 2526

DIN 2634 PN25 DN200-500																		
DN	Welding ends						Flange facing design						Screws DIN 931			Sealing ring DIN 2691		
	Series 1						Groove			Tongue			Quant- ity	Thread	Lengt h	di	da	
d1	s	b	k	h	d	D	di	da	f	di	da	f						Quant- ity
200	219.1	6.3	30	310	80	26	360	238	260	3.0	239	254	4.5	12	M 24	90	239	259
250	273.0	7.1	32	370	88	30	425	291	313	3.0	292	312	4.5	12	M 27	90	292	312
300	323.9	8.0	34	430	92	30	485	342	364	3.0	343	363	4.5	16	M 27	100	343	363
350	355.6	8.0	38	490	100	33	553	394	422	3.0	395	421	5.0	16	M 30	110	395	421
400	406.4	8.8	40	550	110	36	626	446	474	3.0	447	473	5.0	16	M 33	120	447	473
500	508.0	10.0	44	660	120	36	736	548	576	3.0	549	575	5.0	20	M 33	130	549	575
DIN2636 PN63 DN10-40 / DIN 2637 PN100 DN10-40																		
DN	d1	s	b	k	h	d	D	di	da	f	di	da	f	Quant- ity	Thread	Lengt h	di	Da
10	17.2	2.0	20	70	45	14	100	23	35	2.5	24	34	4.0	4	M 12	55	24	34
15	21.3	2.0	20	75	45	14	105	28	40	2.5	29	39	4.0	4	M 12	55	29	39
20	26.9	2.6	22	90	48	18	130	35	51	2.5	36	50	4.0	4	M 16	60	36	50
25	33.7	2.6	24	100	58	18	140	42	58	2.5	43	57	4.0	4	M 16	65	43	57
32	42.4	2.9	24	110	60	22	155	50	66	2.5	51	65	4.0	4	M 20	70	51	65
40	48.3	2.9	26	120	62	22	170	60	76	2.5	61	75	4.0	4	M 20	70	61	75

DIN 2634 PN25 DN200-500																		
DIN 2636 PN63 DN50-125																		
DN	d1	S	b	k	h	d	D	di	da	f	di	da	f	Quant- ity	Thread	Length	di	da
50	60.3	2.9	2 6	13 5	62	2 2	18 0	72	88	2. 5	73	87	4. 0	4	M 20	75	73	87
65	76.1	3.2	2 6	16 0	68	2 2	20 5	94	11 0	2. 5	95	10 9	4. 0	8	M 20	75	95	109
80	88.9	3.6	2 8	17 0	72	2 2	21 5	10 5	12 1	2. 5	10 6	12 0	4. 0	8	M 20	75	106	120
100	114.3	4.0	3 0	20 0	78	2 6	25 0	12 8	15 0	3. 0	12 9	14 9	4. 5	8	M 24	90	129	149
125	139.7	4.5	3 4	24 0	88	3 0	29 5	15 4	17 6	3. 0	15 5	17 5	4. 5	8	M 27	100	155	175

Table 50: Installation lengths

## 60 Welding neck flanges - DIN EN 1092-1

- DIN EN-FL
- DIN EN-FL D
- DIN EN-FL C
- DIN EN-FL B1
- DIN EN-FL B2
- FL - flange
- Form D - groove, DIN EN 1092-1
- Form C - tongue, DIN EN 1092-1
- Form B1 - raised face (Rz 50) DIN EN 1092-1
- Form B2 - raised face (Rz 12.5) DIN EN 1092-1

DIN EN 1092-1 PN25 DN10-150 / PN40 DN10-400																					
DN	Welding ends				Flange facing design												Screws DIN 931			Sealing ring DIN 2691	
	Series 1		Series 2		Groove						Tongue						Quant- ity	Thread	Lengt h	di	da
d1	s	d1	s	b	k	h	d	D	di	da	f	di	da	f	Quant- ity	Thread					
10	17.2	1.8	15.0	2.5	16	60	35	14	90	23	35	4.0	24	34	4.5	4	M 12	45	24	34	
15	21.3	2.0	20.0	2.5	16	65	38	14	95	28	40	4.0	29	39	4.5	4	M 12	45	29	39	
20	26.9	2.3	25.0	2.5	18	75	40	14	105	35	51	4.0	36	50	4.5	4	M 12	50	36	50	
25	33.7	2.6	32.0	3.0	18	85	40	14	115	42	58	4.0	43	57	4.5	4	M 12	50	43	57	
32	42.4	2.6	38.0	3.0	18	100	42	18	140	50	66	4.0	51	65	4.5	4	M 16	55	51	65	
40	48.3	2.6	45.0	3.0	18	110	45	18	150	60	76	4.0	61	75	4.5	4	M 16	55	61	75	
50	60.3	2.9	57.0	3.2	20	120	48	18	165	72	88	4.0	73	87	4.5	4	M 16	60	73	87	
65	76.1	2.9	76.1	3.6	22	140	52	18	185	94	110	4.0	95	109	4.5	8	M 16	60	95	109	
80	88.9	3.2	88.9	4.0	24	160	58	18	200	105	120	4.0	106	120	4.5	8	M 16	65	106	120	
100	114.3	3.6	108.0	4.0	24	190	65	22	235	125	150	4.0	129	149	4.5	8	M 20	70	129	149	
125	139.7	4.0	133.0	4.0	26	220	68	26	270	150	175	4.0	155	175	4.5	8	M 24	80	155	175	
150	168.3	4.5	159.0	4.5	28	250	75	26	300	180	205	4.0	183	203	4.5	8	M 24	80	183	203	
200	219.1	6.3			34	320	88	30	370	230	260	4.0	239	259	4.5	12	M 27	100	239	259	
250	273.0	7.1			38	380	105	30	450	290	315	4.0	292	312	4.5	12	M 30	110	292	312	

DIN EN 1092-1 PN25 DN10-150 / PN40 DN10-400																				
300	323.9	8.0			42	450	115	33	515	342	364	4.5	343	363	5.0	16	M 30	120	343	363
350	355.6	8.8			46	510	125	36	580	394	422	5.0	395	421	5.5	16	M 33	130	395	421
400	406.4	11.0			50	585	135	39	660	446	474	5.0	447	473	5.5	16	M 36	140	447	473

Table 51: Installation lengths

## 61 Welding neck flanges - DIN EN 1092-1

- DIN EN-FL
- DIN EN-FL D
- DIN EN-FL C
- DIN EN-FL B1
- DIN EN-FL B2
- FL - flange
- Form D - groove, DIN EN 1092-1
- Form C - tongue, DIN EN 1092-1
- Form B1 - raised face, (Rz 50) DIN EN 1092-1
- Form B2 - raised face, (Rz 12.5) DIN EN 1092-1

DIN EN 1092-1 PN25 DN200-500																			
Welding ends			Flange facing design											Screws			Sealing ring		
Series 1			Groove											DIN 931			DIN 2691		
DN	d1	s	b	k	h	d	D	di	da	f	di	da	f	Quantity	Thread	Length	di	da	
200	219.1	6.3	30	310	80	26	360	238	260	4.5	239	259	5.0	12	M 24	90	239	259	
250	273.0	7.1	32	370	88	30	425	291	313	4.5	292	312	5.0	12	M 27	90	292	312	
300	323.9	8.0	34	430	92	30	485	342	364	4.5	343	363	5.0	16	M 27	100	343	363	
350	355.6	8.0	38	490	100	33	555	394	422	5.0	395	421	5.5	16	M 30	110	395	421	
400	406.4	8.8	40	550	110	36	620	446	474	5.0	447	473	5.5	16	M 33	120	447	473	
500	508.0	10.0	44	660	125	36	730	548	576	5.0	549	575	5.5	20	M 33	130	549	575	
DIN EN 1092-1 PN63 DN10-40 / PN100 DN10-40																			
DN	d1	s	b	k	h	d	D	di	da	F	di	da	f	Quantity	Thread	Length	di	Da	
10	17.2	2.0	20	70	45	14	100	23	35	4.0	24	34	4.5	4	M 12	55	24	34	
15	21.3	2.0	20	75	45	14	105	28	40	4.0	29	39	4.5	4	M 12	55	29	39	
20	26.9	2.6	22	90	48	18	130	35	51	4.0	36	50	4.5	4	M 16	60	36	50	
25	33.7	2.6	24	100	58	18	140	42	58	4.0	43	57	4.5	4	M 16	65	43	57	
32	42.4	2.9	24	110	60	22	155	50	66	4.0	51	65	4.5	4	M 20	70	51	65	
40	48.3	2.9	26	125	62	22	170	60	76	4.0	61	75	4.5	4	M 20	70	61	75	
DIN EN 1092-1 PN63 DN50-125																			

DIN EN 1092-1 PN25 DN200-500																			
DN	d1	S	b	k	h	d	D	di	da	f	di	da	F	Quantity	Thread	Length	di	da	
50	60.3	2.9	26	135	62	22	180	72	88	4.0	73	87	4.5	4	M 20	75	73	87	
65	76.1	3.2	26	160	68	22	205	94	110	4.0	95	109	4.5	8	M 20	75	95	109	
80	88.9	3.6	28	170	72	22	215	105	121	4.0	106	120	4.5	8	M 20	75	106	120	
100	114.3	4.0	30	200	78	26	250	128	150	4.5	129	149	5.0	8	M 24	90	129	149	
125	139.7	4.5	34	240	88	30	295	154	176	4.5	155	175	5.0	8	M 27	100	155	175	

Table 52: Installation lengths

## 62 Welding neck flanges - ANSI B16.5 raised face

- ANSI-FL
- ANSI-FL 150lbs RF
- ANSI-FL 300lbs RF
- FL - flange
- Facing with large and small male / female
- Facing with large and small tongue / groove according to ANSI B16.5

Nominal size		Welding ends acc. to:													
DN	INCH	ANSI		ANSI-FL 150lbs RF / sq. in					Screws DIN 931	ANSI-FL 300lbs RF / sq. in					Screws DIN 931
		d1	s	b	k	h	d	D	Quantity	b	k	h	d	D	Quantity
15	1/2"	21.3	2.8	11.2	60.5	47.8	15.7	88.9	4	14.2	66.5	52.3	15.7	95.2	4
20	3/4"	26.7	2.9	12.7	69.9	52.3	15.7	98.6	4	15.7	82.5	57.1	19.0	117.3	4
25	1"	33.4	3.4	14.2	79.2	55.6	15.7	108.0	4	17.5	88.9	62.0	19.0	123.9	4
32	1 1/4"	42.2	3.6	15.7	88.9	57.2	15.7	117.3	4	19.0	98.5	65.0	19.0	133.3	4
40	1 1/2"	48.3	3.7	17.5	98.6	62.0	15.7	127.0	4	20.6	114.3	68.3	22.3	155.4	4
50	2"	60.3	3.9	19.1	120.7	63.5	19.1	152.4	4	22.3	127.0	69.8	19.0	165.1	6
65	2 1/2"	73.0	5.2	22.4	139.7	69.9	19.1	177.8	4	25.4	149.3	76.2	22.3	190.5	8
80	3"	88.9	5.5	23.9	152.4	69.9	19.1	190.5	4	28.4	168.1	79.2	22.3	209.5	8
100	4"	114.3	6.0	23.9	190.5	76.2	19.1	228.6	8	31.7	200.1	85.8	22.3	254.0	8
125	5"	141.3	6.6	23.9	215.9	88.9	22.4	254.0	8	35.0	234.9	98.5	22.3	279.4	8
150	6"	168.3	7.1	25.4	241.3	88.9	22.4	279.4	8	36.5	269.7	98.5	22.3	317.5	12
200	8"	219.1	8.2	28.4	298.5	101.6	22.4	342.9	8	41.1	330.2	111.2	25.4	381.0	12
250	10"	273.0	9.3	30.2	362.0	101.6	25.4	406.4	12	47.7	387.3	117.3	28.4	444.5	16
300	12"	323.8	10.3	31.8	431.8	114.3	25.4	482.6	12	50.8	450.8	130.0	31.7	520.7	16
350	14"	355.6	11.1	35.1	476.3	127.0	28.4	533.4	12	53.8	514.3	142.7	31.7	584.2	20
400	16"	406.4	12.7	36.6	539.8	127.0	28.4	596.9	16	57.1	571.5	146.0	35.0	647.7	20

Table 53: Installation lengths

## 63 Welding neck flanges - AWP

- AWP-FL
- AWP-FL N
- AWP-FL F
- FL - flange
- N - groove
- F - tongue

AWP-FL PN25 DN10-20 / PN40 DN25-80																									
Welding ends										Flange facing design										Screws DIN 931			Sealing ring DIN 2691		
Series 1		Series 2		ANSI										Groove		Tongue				Quant- ity	Thread	Len <sup>g</sup> th			
D	N	d1	s	d1	s	d1	s	b	k	r	h1	ds	di	da	f1	h2	di	da	f2	h3				di	da
10		17.2	1.8	15.0	2.5	17.1	2.3	88	60	13	16	14	28	40	3	31.5	29	39	4	32.0	2	M 12	45	29	39
15		21.3	2.0	20.0	2.5	21.3	2.8	88	60	13	16	14	28	40	3	31.5	29	39	4	32.0	2	M 12	45	29	39
20		26.9	2.3	25.0	2.5	26.7	2.9	88	60	13	16	14	28	40	3	31.5	29	39	4	32.0	2	M 12	45	29	39
25		33.7	2.6	32.0	3.0	33.4	3.4	92	85	15	18	14	42	58	3	44.0	43	57	4	44.0	4	M 12	50	43	57
32		42.4	2.6	38.0	3.0	42.2	3.6	92	85	15	18	14	42	58	3	44.0	43	57	4	44.0	4	M 12	50	43	57
40		48.3	2.6	45.0	3.0	48.3	3.7	92	85	15	18	14	42	58	3	38.5	43	57	4	38.5	4	M 12	50	43	57
50		60.3	2.9	57.0	3.2	60.3	3.9	132	135	20	28	18	84	96	3	43.0	85	95	4	43.0	4	M 16	75	A85x95*	
65		76.1	2.9	76.1	3.6	73.0	5.2	132	135	20	28	18	84	96	3	53.5	85	95	4	53.5	4	M 16	75	A85x95*	
80		88.9	3.2	88.9	4.0	88.9	5.5	132	135	20	28	18	84	96	3	53.5	85	95	4	53.5	4	M 16	75	A85x95*	

Table 54: Installation lengths

\* = acc. to DIN 7603

## 64 Legal notices

- GEA AWP valves must be handled in accordance with the GEA AWP operating regulations.
- The safety instructions mentioned in the operating regulations must be observed.
- A hazard analysis is available for GEA AWP valves.
- GEA AWP valves must only be handled by authorised persons.
- The instructions for the use of personal protective equipment (PPE) must be observed.
- GEA AWP valves must be used for their intended purpose.
- This catalogue has been carefully created and checked; however, it may still contain errors. The technical specifications given in the catalogue are not contractually guaranteed properties. Technical specifications are only binding if they have been confirmed by us in writing.
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