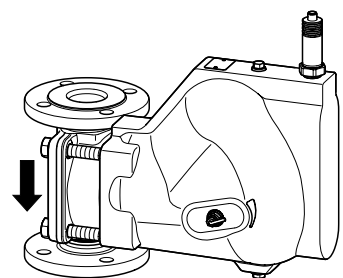
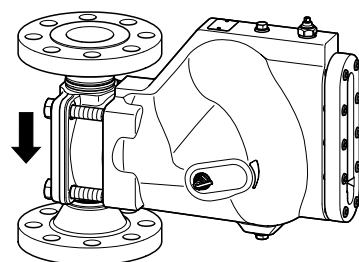


UNA 45hi MAX, UNA 46hi MAX, UNA 46Ah MAX



UNA 45v MAX with cover for mounting electrode



UNA 45v MAX with sightglass cover

Ball Float Steam Trap

UNA 45 MAX, UNA 46 MAX, UNA 46A MAX

PN 40/Class 300

DN 40, 50, 65

Description

Type UNA 45 MAX, UNA 46 MAX and UNA 46A MAX models are used for removing condensate from the steam in installations with steam-heated consumers.

A ball float opens the orifice based on the fill level. This regulates the drainage rate. With the orifice opened to maximum, the drainage rate depends on the diameter of the orifice (AO). As the float rises with the fluid level it pulls the nozzle stem off the pilot valve, allowing a small amount of fluid to flow through the pilot valve.

The fluid compresses the bellows of the control unit, which causes the discharge orifice to open fully.

Models with SIMPLEX control unit are particularly suitable for cold condensates and superheated steam.

Models with DUPLEX control unit may also be used for venting air from the installation. The DUPLEX control unit consists of the float and an additional temperature-dependent vent valve. Venting is controlled by the membrane regulator. Models with this type of control unit are particularly suitable for saturated steam systems. For models with DUPLEX control unit, the membrane regulator capsule must not be exposed to superheated steam above 5 K.

The optional float lifting lever allows you to lift the ball float manually.

The optional manual vent valve allows you to vent the pipe manually.

The equipment may only be used within the admissible pressure and temperature ratings, and under consideration of chemical and corrosive influences.

Fluids

The equipment is designed for the following fluids (in accordance with the EU Pressure Equipment Directive or Pressure Equipment (Safety) Regulations in the UK):

UNA 45 MAX

- Group 2 fluids

UNA 46 MAX and UNA 46A MAX

- Group 1 fluids
- Group 2 fluids

Chemical and corrosive influences must be taken into consideration.

Use in potentially explosive atmospheres

The equipment does not have its own potential source of ignition (as per ATEX Directive). Please note the following:

Once installed, static electricity may arise between the equipment and the connected system. If the equipment is used in potentially explosive atmospheres, the plant manufacturer or owner is responsible for discharging or preventing possible static charge.

If it is possible for fluid to escape, e.g. through actuating mechanisms or leaks in threaded joints, the plant manufacturer or owner must take this into consideration when dividing the area into zones.

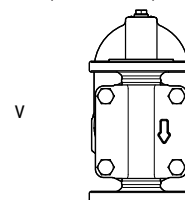
Function

The control unit opens the orifice in line with the liquid level. This regulates the drainage rate. The max. drainage rate depends on the diameter of the installed orifice when it is fully open.

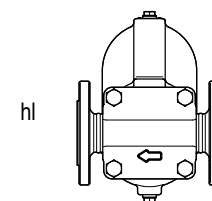
Optional extras

- Standard cover plus two lateral sealing plugs for subsequent attachment of measuring electrode/float lifting lever
- Float lifting lever for lifting the float manually
- Manual vent valve for manually venting the pipe
- Direction of flow horizontal from left to right (hr)
- Sightglass cover PN 16/CL 150
- Special cover for mounting NRG 16-19 or NRG 16-27 measuring electrodes

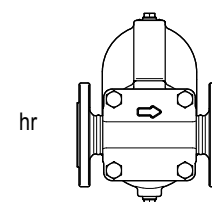
The different equipment versions allow you to adjust the direction of flow of the equipment to suit your system. The following installation positions are possible:



Position "v" for installation in vertical pipes with downward flow



Position "hl" for horizontal left flow



Position "hr" for horizontal right flow

Connections

- Flange EN 1092-1 B1, PN 40
- Flange EN 1092-1 B1, PN 16
- Flange ASME B16.5, Class 150 RF, Class 300 RF
- Screwed socket ISO 228/1, G
- Screwed socket ASME B16.11, NPT
- Socket-weld end DIN EN 12760
- Socket-weld end ASME B16.11, Class 3000
- Butt-weld end via transition pieces EN 12627, welded joint geometry ISO 9692-1, code no. 1.3 (30° chamfer)
- Butt-weld end via transition pieces ASME B6.25, ASME B36.10

Materials

Component	Type	EN	ASTM/ASME
Body	UNA 45 MAX, UNA 46 MAX	1.0460	SA105
	UNA 46A MAX	1.4404	SA182-F316L
Cover	UNA 45 MAX, sightglass cover, cover for mounting electrodes	5.3103	A395 ¹⁾
	UNA 46 MAX	1.0619	SA216-WCB
	UNA 46A MAX	1.4408	SA351-CF8M
Body gasket, regulator gasket, adapter gasket, gasket for reflection water level gauge	all	Graphite CrNi	
Membrane regulator capsule	all	Hastelloy/stainless steel	
Other components	all	Stainless steel	

1) ASTM material is comparable to the EN material. Pay attention to differences in chemical and physical properties.

Operating data

Models with sightglass cover:

PN16: max. service temperature 240 °C at 12.3 bar service pressure

Class 150: max. service temperature 240 °C at 12.4 bar service pressure.

If the pH value is above 9.0 and the fluid temperature exceeds 200 °C, the glass will wear down faster.

Models with NRG 16-19 or NRG 16-27 measuring electrode, PN40/Class300: max. service temperature 238 °C at 32 bar service pressure

The maximum differential pressure ΔPMX of the equipment depends on the type of orifice used.

Orifice ... MAX	ΔPMX bar	Hole diameter mm
4	4	27.5
8	8	19.4
13	13	15.3
22	22	11.7
32	32	9.7

Models with DUPLEX control unit: max. service temperature corresponds to the saturation temperature +5 K.

Pressure and temperature ratings

The values below apply to standard equipment.

The pressure and temperature ratings of the equipment may be lower than those quoted here because of the type of connection used.

You can find the relevant values for your equipment on the name plate.

UNA 45 MAX and UNA 46 MAX: Flange PN 40, screwed socket G

Pressure ¹⁾ p	barg	40	37.1	33.3	27.6	25.7	17.1 ²⁾
Temperature ¹⁾ T	°C	−10 — 20	100	200	300	350	420 ²⁾
Max. admissible differential pressure ΔPMX	bar	4, 8, 13, 22, 32					

1) Ratings for strength of body/cover to EN 1092-1

2) Not for UNA 45 MAX

UNA 45 MAX and UNA 46 MAX: Flange Class 150

Pressure ¹⁾ p	barg	19.6	17.7	13.8	10.2	8.6	5.5 ²⁾
Temperature ¹⁾ T	°C	−29 — 20	100	200	300	345	425 ²⁾
Pressure ¹⁾ p	psig	285	260	200	140	125	80 ²⁾
Temperature ¹⁾ T	°F	−20 — 100	200	400	600	650	800 ²⁾
Max. admissible differential pressure ΔPMX	bar	4, 8, 13 (19.6 bar with orifice 22, 32)					
	psi	58, 116, 188 (284 psi with orifice 22, 32)					

1) Ratings for strength of body/cover to ASME B16.5

2) Not for UNA 45 MAX

UNA 45 MAX and UNA 46 MAX: Flange Class 300, screwed socket NPT, socket-weld end, butt-weld end

Pressure ¹⁾ p	barg	51.1	46.6	43.8	39.8	37.8	28.8 ²⁾
Temperature ¹⁾ T	°C	−29 — 20	100	200	300	345	425 ²⁾
Pressure ¹⁾ p	psig	740	680	635	570	550	410 ²⁾
Temperature ¹⁾ T	°F	−20 — 100	200	400	600	650	800 ²⁾
Max. admissible differential pressure ΔPMX	bar	4, 8, 13, 22, 32					
	psi	58, 116, 188, 320, 465					

1) Ratings for strength of body/cover to ASME B16.5

2) Not for UNA 45 MAX

UNA 45 MAX with sightglass cover: Flange PN 16, screwed socket G

Pressure ¹⁾ p	barg	16.0	14.8	14.0	13.3	12.3
Temperature ¹⁾ T	°C	−10 — 20	100	150	200	240
Max. admissible differential pressure ΔPMX	bar	4, 8, 13 (16 bar with orifice 22, 32)				

1) Ratings for strength of body/cover to EN 1092-1

Operating data

Models with sightglass cover:

PN16: max. service temperature 240 °C at 12.3 bar service pressure

Class 150: max. service temperature 240 °C at 12.4 bar service pressure.

If the pH value is above 9.0 and the fluid temperature exceeds 200 °C, the glass will wear down faster.

Models with NRG 16-19 or NRG 16-27 measuring electrode, PN40/Class300: max. service temperature 238 °C at 32 bar service pressure

The maximum differential pressure Δ PMX of the equipment depends on the type of orifice used.

Orifice ... MAX	Δ PMX bar	Hole diameter mm
4	4	27.5
8	8	19.4
13	13	15.3
22	22	11.7
32	32	9.7

Models with DUPLEX control unit: max. service temperature corresponds to the saturation temperature +5 K.

Pressure and temperature ratings continued

UNA 45 MAX with sightglass cover: Flange Class 150, screwed socket NPT, socket-weld end, butt-weld end

Pressure ¹⁾ p	barg	19.6	17.7	15.8	13.8	12.4
Temperature ¹⁾ T	°C	−29 — 20	100	150	200	240
Pressure ¹⁾ p	psig	285	260	230	200	180
Temperature ¹⁾ T	°F	−20 — 100	200	300	400	465
Max. admissible differential pressure Δ PMX	bar	4, 8, 13 (19.6 bar with orifice 22, 32)				
	psi	58, 116, 188 (284 psi with orifice 22, 32)				

¹⁾ Ratings for strength of body/cover to ASME B16.5

UNA 46A MAX: Flange PN 40, screwed socket G

Pressure ¹⁾ p	barg	40.0	37.9	31.8	27.6	25.7	25
Temperature ¹⁾ T	°C	−10 — 20	100	200	300	400 ²⁾	450 ²⁾
Max. admissible differential pressure Δ PMX	bar	4, 8, 13, 22, 32					

¹⁾ Ratings for strength of body/cover to EN 1092-1

²⁾ If the service temperature exceeds 300 °C, intercrystalline corrosion may occur. Do not subject the equipment to service temperatures above 300 °C unless intercrystalline corrosion can be ruled out.

UNA 46A MAX: Flange Class 150

Pressure ¹⁾ p	barg	15.9	13.3	11.2	10.0	6.5	5.5
Temperature ¹⁾ T	°C	−29 — 20	100	200	300	400 ²⁾	425 ²⁾
Pressure ¹⁾ p	psig	230	195	160	140	95	80
Temperature ¹⁾ T	°F	−20 — 100	200	400	600	750	800
Max. admissible differential pressure Δ PMX	bar	4, 8, 13 (15.9 bar with orifice 22, 32)					
	psi	58, 116, 188 (230 psi with orifice 22, 32)					

¹⁾ Ratings for strength of body/cover to ASME B16.5

²⁾ If the service temperature exceeds 300 °C, intercrystalline corrosion may occur. Do not subject the equipment to service temperatures above 300 °C unless intercrystalline corrosion can be ruled out.

UNA 46A MAX: Flange Class 300, screwed socket NPT, socket-weld end, butt-weld end

Pressure ¹⁾ p	barg	41.4	34.8	29.2	26.1	24.3	23.9
Temperature ¹⁾ T	°C	−29 — 20	100	200	300	400 ²⁾	425 ²⁾
Pressure ¹⁾ p	psig	600	510	420	370	355	345
Temperature ¹⁾ T	°F	−20 — 100	200	400	600	750	800
Max. admissible differential pressure Δ PMX	bar	4, 8, 13, 22, 32					
	psi	58, 116, 188, 320, 465					

¹⁾ Ratings for strength body/cover to ASME B16.5

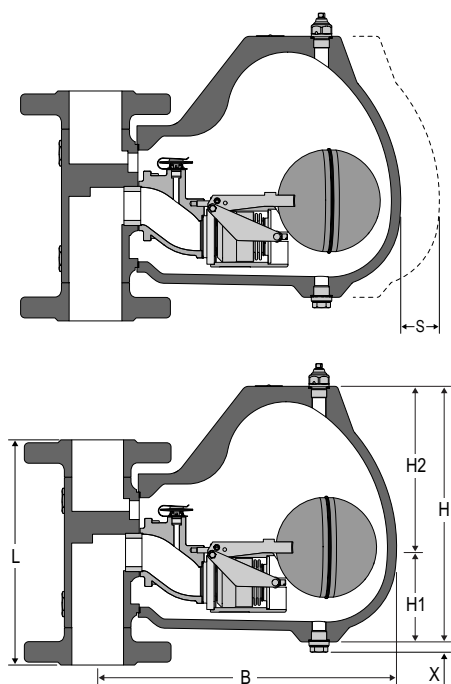
²⁾ If the service temperature exceeds 300 °C, intercrystalline corrosion may occur. Do not subject the equipment to service temperatures above 300 °C unless intercrystalline corrosion can be ruled out.

No.	Designation
2	Body
3	Body gasket
22	Adapter gasket
6	Control unit (DUPLEX version shown here)
8	Cover (standard cover shown here)
12	Manual vent valve
15	Float lifting lever
30	Socket wrench
37	Adapter for SIMPLEX version
5	Adapter for DUPLEX version

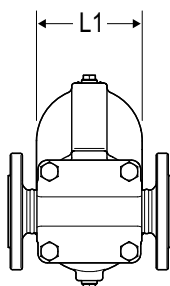
Service dimensions

A service dimension S of 270 mm is required for removing the cover.

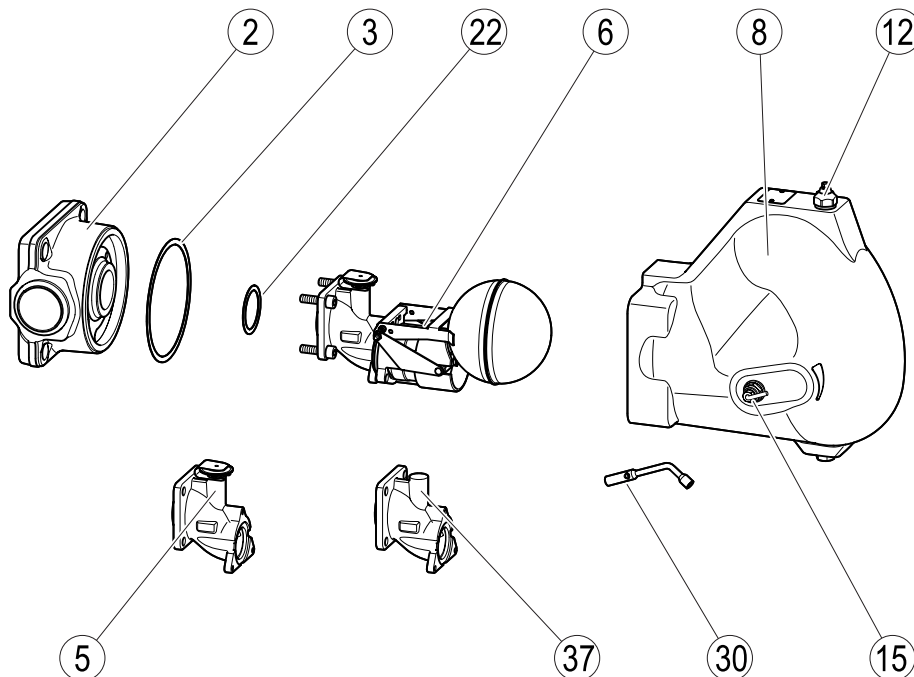
Equipment with attached socket wrench requires additional clearance of 100 mm.



UNA 45 MAX, UNA 46 MAX, UNA 46A MAX
DUPLEX control unit, flanged ends



Overview of UNA 45 MAX, UNA 46 MAX, UNA 46A MAX equipment



Dimensions and weights

Equipment with flange PN 16–40

Nominal size		Type of cover	DN 40 (1½")	DN 50 (2")	DN 65 (2½")
L	mm (in)	all	230 (9.1)		290 (11.4)
W	mm (in)	Standard cover	326 (12.9)		
		Sightglass cover	370 (14.6)		
		Cover for mounting electrodes	343 (13.5)		
H1	mm (in)	all	98 (3.9)		
H2	mm (in)	all	182 (7.2) ¹⁾		
H	mm (in)	all	280 (11.0) ¹⁾		
L1	mm (in)	all	160 (6.3) ²⁾		
X	mm (in)	all	13 (0.5)		
Weight	kg	Standard cover	33.6	35.1	37.4
		Sightglass cover	37.5	39.0	41.3
		Cover for mounting electrodes	35.5	36.9	39.3
Weight	lb	Standard cover	74.1	77.4	82.5
		Sightglass cover	82.7	86.0	91.0
		Cover for mounting electrodes	78.3	81.3	86.6

¹⁾ Plus 25 mm (1 in) if fitted with manual vent valve.

²⁾ Plus 35 mm (1.4 in) if fitted with float lifting lever.

Equipment with flange CL150 and CL300

Nominal size		Type of cover	Class 150			Class 300		
			DN 40 (1½")	DN 50 (2")	DN 65 (2½")	DN 40 (1½")	DN 50 (2")	DN 65 (2½")
L	mm (in)	all	241 (9.5)	267 (10.5)	292 (11.5)	241 (9.5)	267 (10.5)	292 (11.5)
W	mm (in)	Standard cover	326 (12.9)					
		Sightglass cover	370 (14.6)			–		
		Cover for mounting electrodes	326 (13.5)					
H1	mm (in)	all	98 (3.9)					
H2	mm (in)	all	182 (7.2) ¹⁾					
H	mm (in)	all	280 (11.0) ¹⁾					
L1	mm (in)	all	160 (6.3) ²⁾					
X	mm (in)	all	13 (0.5)					
Weight	kg	Standard cover	32.6	34.6	38.2	34.8	36.2	39.9
		Sightglass cover	36.5	38.5	42.1	–		
		Cover for mounting electrodes	34.5	36.5	40.1	36.7	38.1	41.7
Weight	lb	Standard cover	71.9	76.3	84.2	76.7	79.8	88.0
		Sightglass cover	80.5	84.9	92.8	–		
		Cover for mounting electrodes	76.1	80.5	88.4	80.9	84.0	91.9

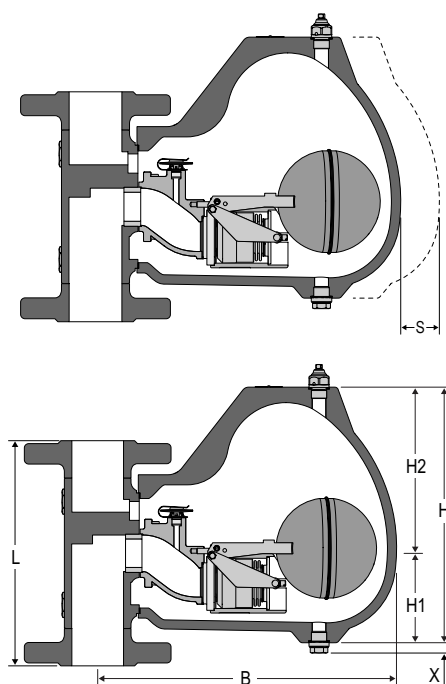
¹⁾ Plus 25 mm (1 in) if fitted with manual vent valve.

²⁾ Plus 35 mm (1.4 in) if fitted with float lifting lever.

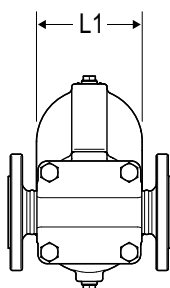
Service dimensions

A service dimension S of 270 mm is required for removing the cover.

Equipment with attached socket wrench requires additional clearance of 100 mm.



UNA 45 MAX, UNA 46 MAX, UNA 46A MAX
DUPLEX control unit, flanged ends



Dimensions and weights continued

Equipment with socket-weld end

Nominal size	Type of cover	DN 40 (1½")	DN 50 (2")	DN 65 (2½")
L mm (in)	all	165 (6.5)	267 (10.5)	292 (11.5)
W mm (in)	Standard cover	326 (12.9)		
	Sightglass cover	370 (14.6)		
	Cover for mounting electrodes	343 (13.5)		
H1 mm (in)	all	98 (3.9)		
H2 mm (in)	all	182 (7.2) ¹⁾		
H mm (in)	all	280 (11.0) ¹⁾		
L1 mm (in)	all	160 (6.3) ²⁾		
X mm (in)	all	13 (0.5)		
Weight kg	Standard cover	29.9	30.9	32.2
	Sightglass cover	33.8	34.8	36.1
	Cover for mounting electrodes	31.7	32.8	34.1
Weight lb	Standard cover	65.9	68.1	71.0
	Sightglass cover	74.5	76.7	79.6
	Cover for mounting electrodes	69.9	72.3	75.2

¹⁾ Plus 25 mm (1 in) if fitted with manual vent valve.

²⁾ Plus 35 mm (1.4 in) if fitted with float lifting lever.

Equipment with screwed socket

Nominal size	Type of cover	DN 40 (1½")	DN 50 (2")
L mm (in)	all	165 (6.5)	
W mm (in)	Standard cover	326 (12.9)	
	Sightglass cover	370 (14.6)	
	Cover for mounting electrodes	343 (13.5)	
H1 mm (in)	all	98 (3.9)	
H2 mm (in)	all	182 (7.2) ¹⁾	
H mm (in)	all	280 (11.0) ¹⁾	
L1 mm (in)	all	160 (6.3) ²⁾	
X mm (in)	all	13 (0.5)	
Weight kg	Standard cover	30.1	29.6
	Sightglass cover	34.0	33.5
	Cover for mounting electrodes	32.0	31.4
Weight lb	Standard cover	66.4	65.3
	Sightglass cover	75.0	73.9
	Cover for mounting electrodes	70.5	69.2

¹⁾ Plus 25 mm (1 in) if fitted with manual vent valve.

²⁾ Plus 35 mm (1.4 in) if fitted with float lifting lever.

Equipment with butt-weld end via transition pieces

Nominal size	Type of cover	DN 40 (1½")	DN 50 (2")	DN 65 (2½")
L mm (in)	all	241 (9.5)	267 (10.5)	292 (11.5)
W mm (in)	Standard cover	326 (12.9)		
	Sightglass cover	370 (14.6)		
	Cover for mounting electrodes	343 (13.5)		
H1 mm (in)	all	98 (3.9)		
H2 mm (in)	all	182 (7.2) ¹⁾		
H mm (in)	all	280 (11.0) ¹⁾		
L1 mm (in)	all	160 (6.3) ²⁾		
X mm (in)	all	13 (0.5)		
Weight kg	Standard cover	30.1	30.4	31.3
	Sightglass cover	34.0	34.3	35.2
	Cover for mounting electrodes	32.0	32.3	33.2
Weight lb	Standard cover	66.4	67.0	69.0
	Sightglass cover	75.0	75.6	77.6
	Cover for mounting electrodes	70.5	71.2	73.2

¹⁾ Plus 25 mm (1 in) if fitted with manual vent valve.

²⁾ Plus 35 mm (1.4 in) if fitted with float lifting lever.

Ball Float Steam Trap
**UNA 45 MAX, UNA 46 MAX,
 UNA 46A MAX**
 PN 40/Class 300
 DN 40, 50, 65

Flow chart

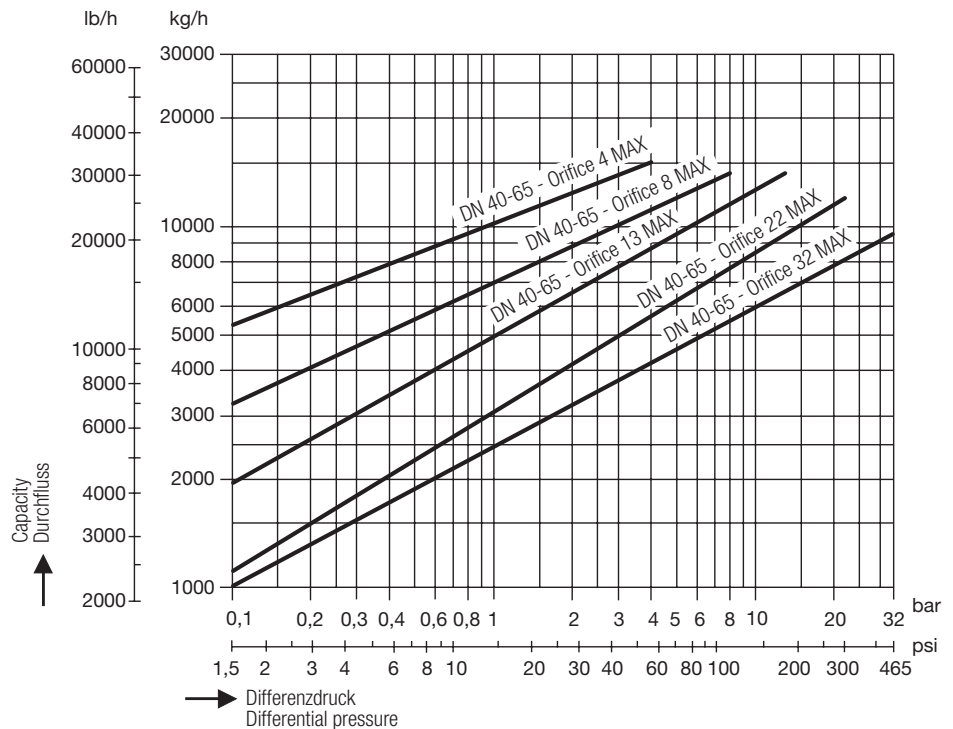
The chart shows the maximum capacities for hot condensate for the orifices.

The capacities are dependent on the differential pressure (service pressure). The differential pressure is the difference between the inlet and outlet pressure and depends, among other things, on the run of the condensate line. If the condensate downstream of the trap is lifted, the differential pressure is reduced by 1 bar for 7 m lift.

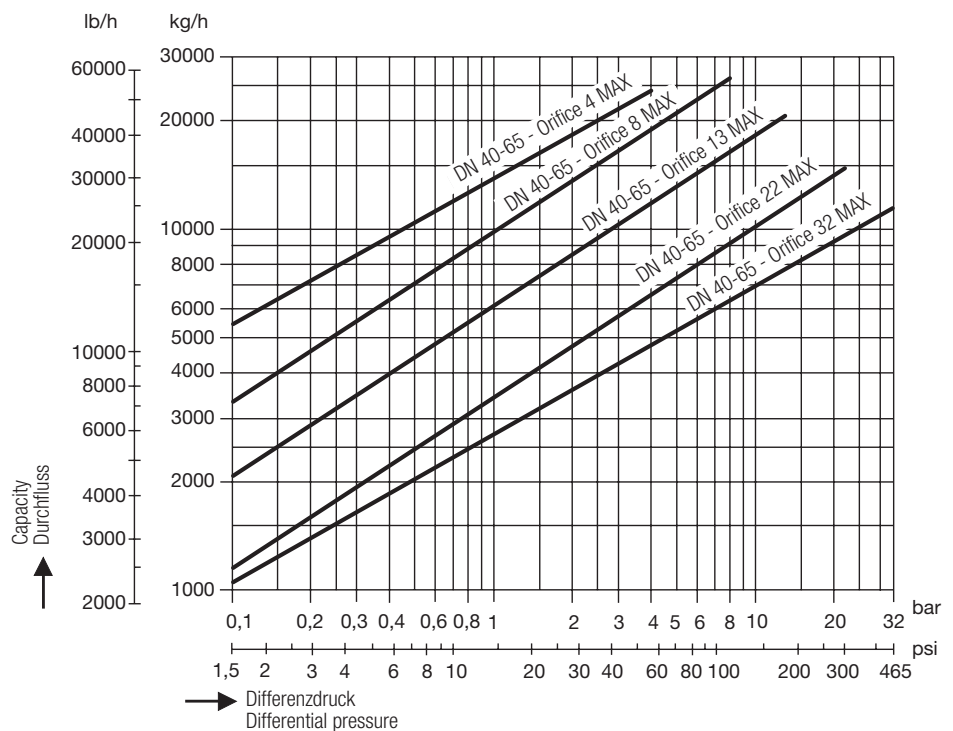
The maximum admissible differential pressure is dependent on the cross-sectional area of the orifice and the density of the fluid to be discharged.

The charts show the maximum capacities for hot condensate (top) and cold water (bottom).

Capacity chart for hot condensate



Capacity chart for cold water



Acceptance inspections

An inspection certificate to EN 10204 can be provided as verification of material and construction tests. All inspection requirements must be included in the request for a quote or in the order. Once a product has been delivered, inspection certificates can no longer be issued. The standard test scope and costs of the above-mentioned test certificates can be found in our price list "Test and Inspection Charges for Standard Equipment". If you require a different inspection scope, please request a separate quote.

Directives and standards

You can find details on the conformity of the equipment and the applicable standards and directives in the Declaration of Conformity and associated certificates or approvals.

Please note our general terms of business.

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