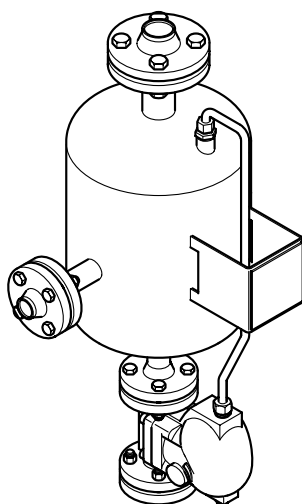


VD 45h, DN 25,
horizontal version



VD 45v, DN 25
vertical version

Compact Flash Tank

VD 45h, VD 45v

PN 40

DN 25, 40

System description

The compact flash tank VD 45 is installed in steam systems.

For example, the equipment can be installed downstream of the boiler's continuous blowdown valve or downstream of consumers.

The equipment is used to separate condensate and flash steam after reducing the pressure from high-pressure steam applications. It makes the flash steam obtained in this process available for the low-pressure steam system.

This makes the overall system more efficient.

Tank made of steel and ball-float steam trap made of steel / spheroidal graphite iron.

Designs

VD 45h: compact flash tank for horizontal pipe

VD 45v: compact flash tank for vertical pipe

The equipment features a ball-float steam trap UNA 45 and an air-balance pipe.

Other versions and custom versions are available upon request.

Control unit

Ball-float steam trap UNA 45 control unit: Simplex, orifice

DN N1, N2	Orifice UNA	ΔPMX Maximum differential pressure bar
25	13	13
25	32	28
40	8	8
40	13	13
40	32	28

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):

■ 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:

During operation, avoid excessive surface temperatures caused by the fluid. The equipment itself does not generate higher surface temperatures.

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

Condensate and flash steam from the high-pressure steam application flow through connection N1 into the tank. The flash steam collects at the top of the tank and is returned to the low-pressure steam system from there. The condensate is discharged into the collection tank via the ball-float steam trap.

The following pressure ratios are required for the equipment to work correctly:

$$p_{HP} > p_{LP} > p_{SD}$$

p_{HP} : Pressure of high-pressure application

p_{LP} : Pressure of low-pressure steam line

p_{SD} : Pressure of collection tank

Connections

Incl. welding neck flange, screws, nuts and seals.

■ Flange EN 1092-1 B1, PN 40

Compact Flash Tank
VD 45h, VD 45v

No.	Designation
1	Condensate inlet N1
2	Flash steam outlet N3
3	Air-balance pipe
4	Tank
5	Condensate outlet N2
6	Ball-float steam trap UNA 45
7	Name plate

Materials

Component	EN
Flange	1.0460
Pipes, jacket	1.0345
Foot, VD 45h	1.0345
Base	1.0425
Body, UNA 45 ¹	1.0460
Cover, UNA 45 ¹	5.3103

¹ See documentation for ball-float steam trap UNA 45

Pressure and temperature ratings

	PN	Max. admissible pressure bar	Min. admissible temperature °C	Max. admissible temperature °C
VD 45h, VD 45v	40	28	-10	250

Operating data

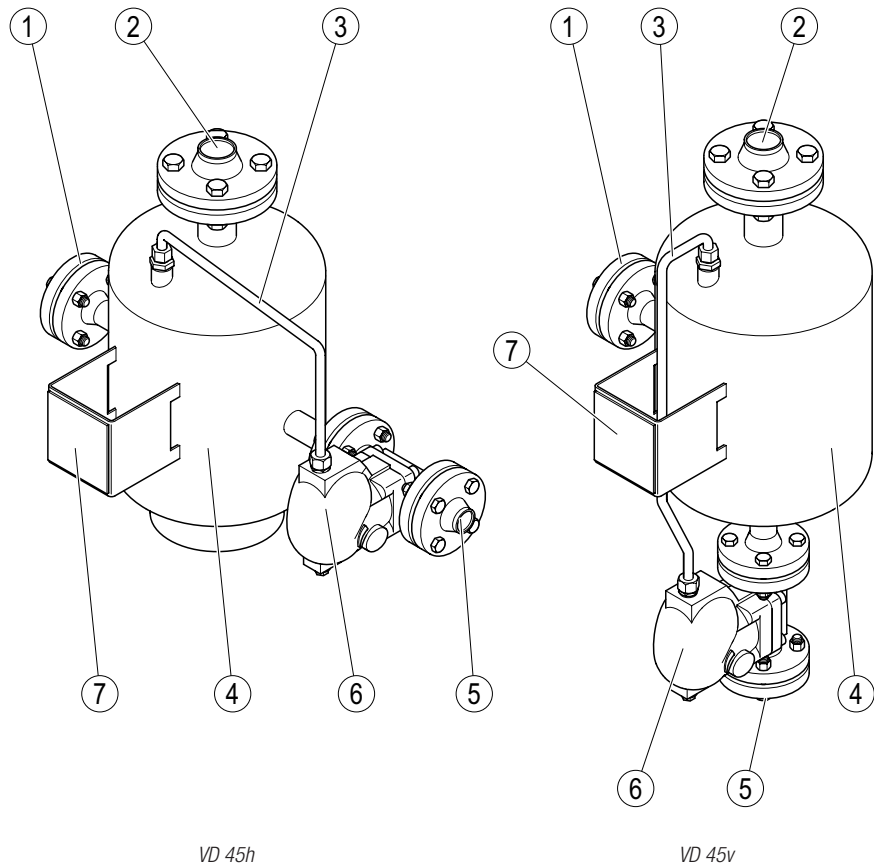
VD 45h, VD 45v, ball-float steam trap UNA 45 control unit: Simplex, orifice

DN N1, N2	Orifice UNA	ΔPMX Maximum differential pressure bar	Hole diameter UNA mm
25	13	13	4.1
25	32	28	3.0
40	8	8	10.0
40	13	13	8.5
40	32	28	6.5

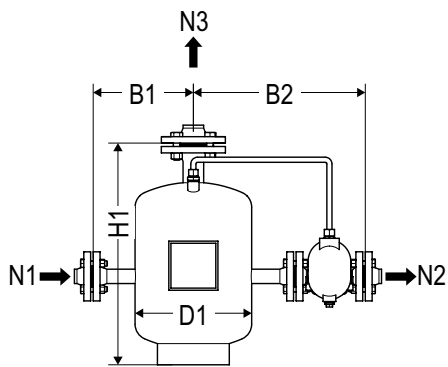
Ambient conditions

Area of application	Indoors and outdoors
Admissible ambient temperature	0–55°C
Relative humidity	5–85% (no moisture condensation)

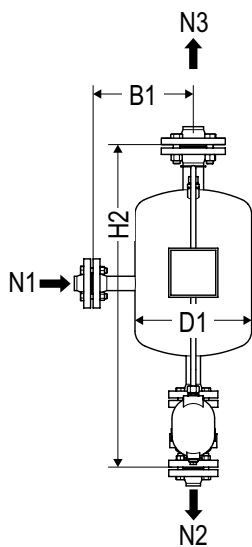
Equipment overview



Compact Flash Tank
VD 45h, VD 45v



VD 45h, DN 25



VD 45v, DN 25

Dimensions and weights

		VD 45h DN 25	VD 45h DN 40	VD 45v DN 25	VD 45v DN 40
Contents	l	17.6			
Flange nominal pressure rating PN		40			
N1 condensate inlet DN		25	40	25	40
N2 condensate outlet DN		25	40	25	40
N3 flash steam outlet DN		40	50	40	50
Air-balance pipe Ø	mm	12			
B1	mm	237			
B2	mm	399	470	—	
H1	mm	514	527	—	
H2	mm	—		754	821
D1	mm	273			
Weight, empty	kg	51	73	50	72
Weight, full	kg	69	91	68	90

Compact Flash Tank
VD 45h, VD 45v

Design

The following pressure ratios are required for the equipment to work correctly:

$p_{HP} > p_{LP} > p_{SD}$

Determining the nominal size and control unit

Example a

Condensate flowrate: 500 kg/h

Pressure of VD 45: 14 bar

Pressure downstream from steam trap: 4 bar

$\Delta p = 14 \text{ bar} - 4 \text{ bar} = 10 \text{ bar}$

Based on the chart "Capacity chart for ball-float steam trap UNA 45", this results in a ball-float steam trap DN 25 with orifice 32.

The version selected is a VD 45h, VD 45v, DN 25, orifice 32 with a condensate rating of 540 kg.

Determining the flash steam flowrate at N3

$\dot{m}_{\text{Flash steam N3}} = F * \dot{m}_{\text{Condensate N1}}$

Example b

Condensate flowrate: 300 kg

Pressure of high-pressure application (e.g. consumer or in continuous blowdown valve): 10 bar

Pressure of VD 45: 0.75 bar

Based on the chart "Chart for determining the steam flowrate at connection N3", this results in a factor value of:

$F = 0.1275$

The factor multiplied by a condensate flowrate of 300 kg/h results in 38 kg/h flash steam.

Example c

Condensate flowrate: 500 kg

Pressure of high-pressure application (e.g. consumer or in continuous blowdown valve): 22 bar

Pressure of VD 45: 14 bar

Based on the chart "Chart for determining the steam flowrate at connection N3", this results in a factor of:

$F = 0.0475$

The factor multiplied by a condensate flowrate of 500 kg/h results in 24 kg/h flash steam.

Capacity chart for ball-float steam trap UNA 45

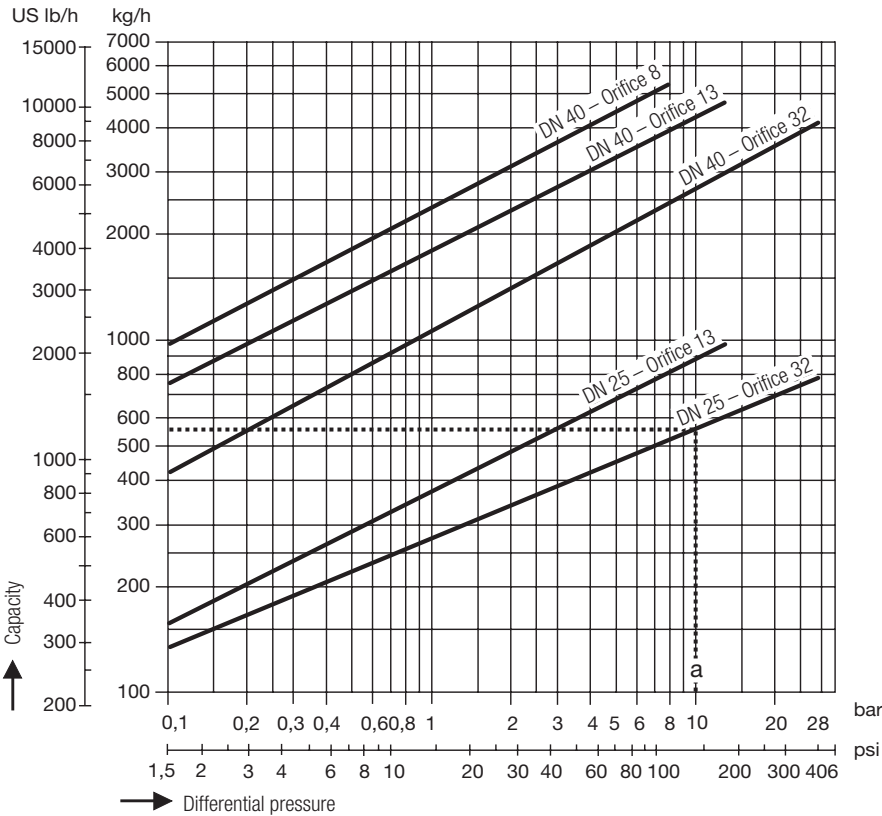
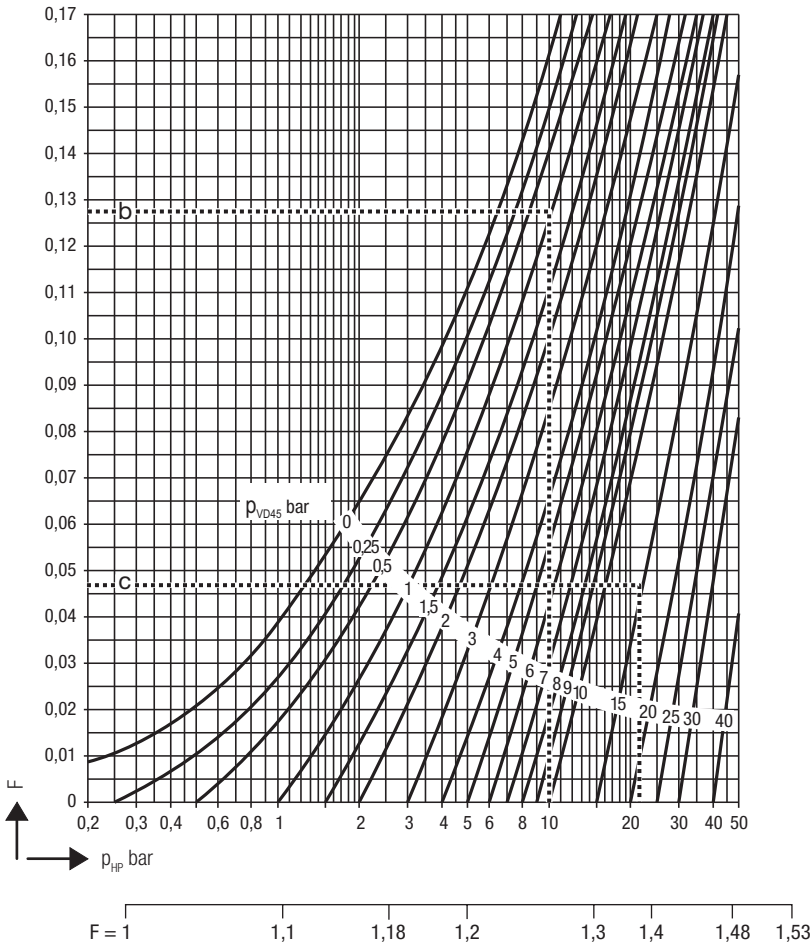


Chart for determining the flash steam flowrate at connection N3



F	Factor $\text{kg}_{\text{Flash steam}} / \text{kg}_{\text{Condensate N1}}$
p_{HP}	Pressure of high-pressure application
p_{VD45}	Pressure of VD 45

Compact Flash Tank
VD 45h, VD 45v

How to order

GESTRA compact flash tank

■ VD 45h

■ VD 45v

Material: steel/spheroidal graphite iron

Condensate flowrate at N1.....kg/h

Pressure of high-pressure application (p_{HP}).....barg

Pressure of low-pressure steam line (p_{LP}).....barg

Pressure of collection tank (p_{SD}).....barg

Please enter values; delete if not applicable.

Inspection and certification

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.

Directives and standards

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

Please note our general terms of business.

Important notes

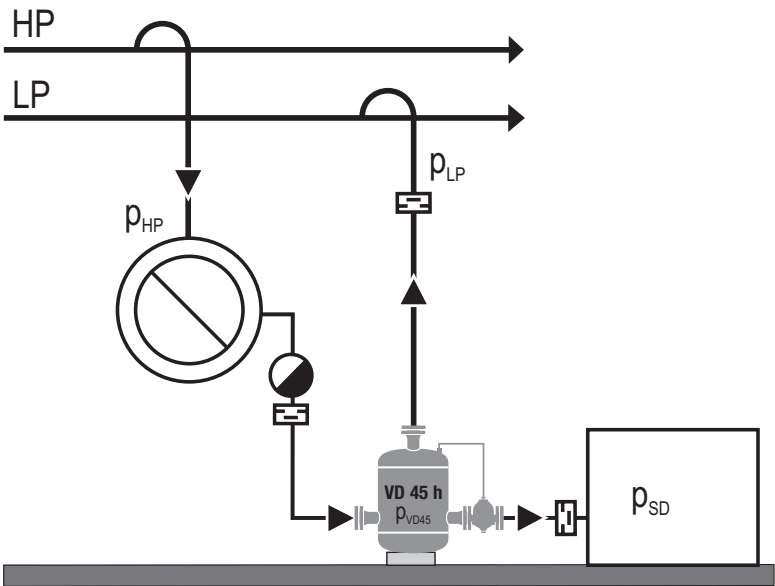
Diagram (does not include all valves and fittings)

Pressure ratios: $p_{HP} > p_{LP} > p_{SD}$

p_{HP} : Pressure of high-pressure application

p_{LP} : Pressure of low-pressure steam line

p_{SD} : Pressure of collection tank



HP	High-pressure steam line
LP	Low-pressure steam line
p_{HP}	Pressure of high-pressure application
p_{VD45}	Pressure of VD 45
p_{LP}	Pressure of low-pressure steam line
p_{SD}	Pressure of collection tank
	Steam trap
	Check valve
	Consumer
	Collection tank

We recommend insulating the equipment at the installation site.

There must be an on-site drainage mechanism and a means of aerating and venting the pipes.

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