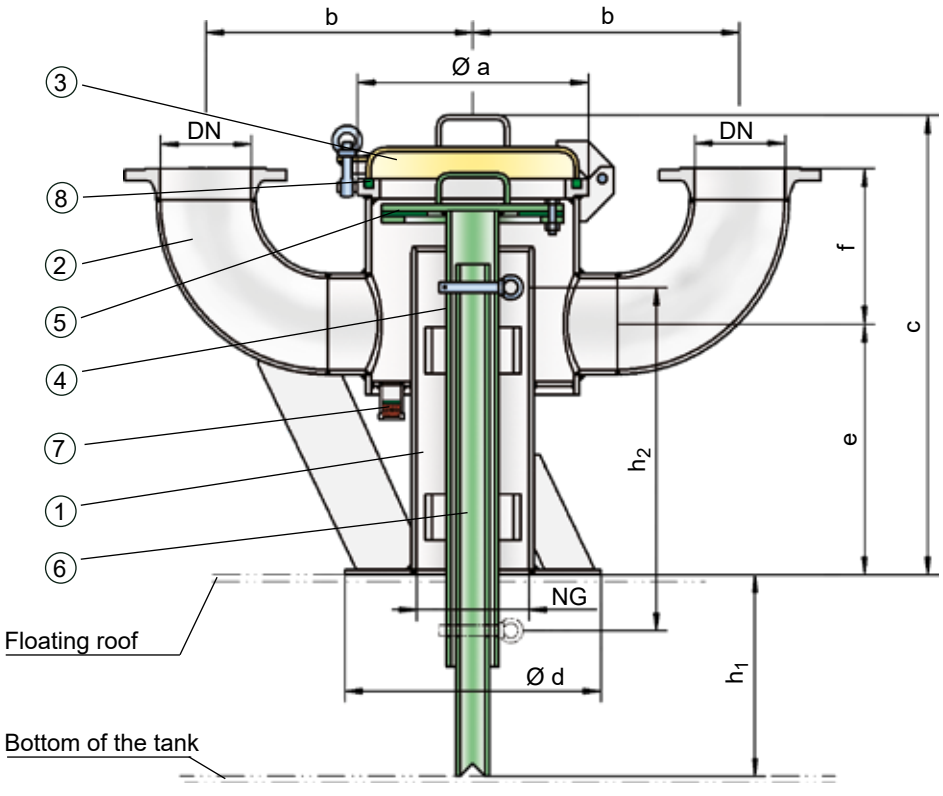


Vent Valve, Lift-actuated

PROTEGO® AL/DK



Function and Description

PROTEGO® lift-actuated vent valves type AL/DK provide automatic venting of floating roof tanks when the floating roof is lowered onto its supports and the tank is either drained or refilled. When the floating roof is in its lowest position, the valve is forced to open through lift actuation, which prevents inadmissible vacuum during final draining or inadmissible pressure during refilling.

The PROTEGO® AL/DK valve consists of a housing (1) with a sheet metal panel to be welded onto the floating roof, two or four connection nozzles (2) for installation of vent caps, cover (3), lift (4) including valve disc (5), lift pipe (6), and the condensate drain valve (7) which can be designed to be flame transmission proof. The condensate drain is sealed by a flat gasket attached to the valve disk (5). The cover (3) is sealed by a sealing cord (8).

As the lowest position of the floating roof varies for operation and assembly, specify the dimensions h_1 and h_2:

h_1: Distance between the lower edge of sheet-metal panel (or mounting flange) and the tank bottom in lowest position of floating roof (operating position with an empty tank).

h_2: Distance between the floating roof in lifted maintenance position and the height of the floating roof in fully lowered operating position (operating position with an empty tank).

If the floating roof supports are changed from operating position to maintenance position, the lift has to be extended as well. This is done with an adjustable locking pin that is secured with a split pin.

The valve is not flame transmission proof.

Based on a hazard analysis with regard to material selection and function, the valves have no potential ignition sources. As a result, they are not subject to the European Explosion Protection Directive (ATEX) when used in explosive atmospheres.

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Designs and Specifications

Table 1: Dimensions for connection PROTEGO® BE/HR

NG	200 / 8“	200 / 8"	200 / 8"	200 / 8"
DN	80 / 3“	100 / 4"	150 / 6"	200 / 8"
a	350 / 13.78	350 / 13.78	350 / 13.78	350 / 13.78
b	465 /18.31	465 /18.31	465 / 18.31	515 / 20.28
c	870 / 34.25	870 / 34.25	870 / 34.25	870 / 34.25
d	450 / 17.72	450 / 17.72	450 / 17.72	450 / 17.72
e	345 / 13.58	360 / 14.17	385 / 15.16	415 / 16.34
f	460 / 18.11	445 / 17.52	285 / 11.22	370 / 14.57

Dimensions in mm / inches

Table 2: Material

Housing	Steel	Special materials upon request.
Valve guide	Stainless Steel	
Gasket	FPM	

Table 3: Flange connection type DN

EN 1092-1, Form B1	Other types upon request.
ASME B16.5 CL 150 R.F.	

Selection and Design

The required amount and nominal size DN is determined based on the calculated flow rate from the thermal venting and pump rate in lowest floating roof position (Nm³/h or CFH) and on the maximum acceptable tank pressure p_T (mbar / inch W.C.) according to the flow capacity charts. Special designs are available upon request.
Flow rates and pressure losses of vent caps PROTEGO® EB or PROTEGO® LH/AD have to also considered according to the appropriate charts in the relevant data sheets.

Necessary Data for Specification

Stored product

Tank diameter (m or ft)

Tank height (m or ft)

Support height h_1 (operating position with empty tank)

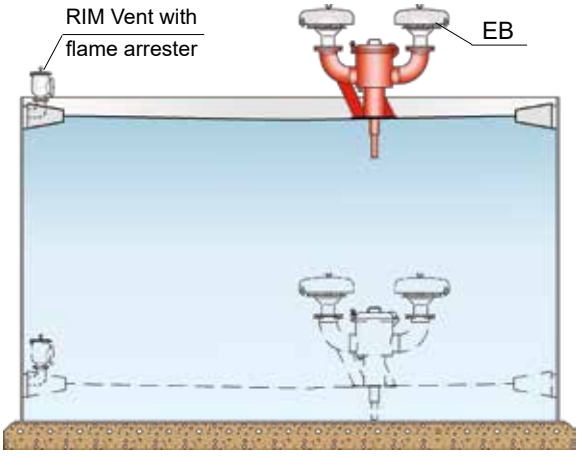
Support height h_2 (lifted assembly position)

Maximum allowable tank pressure p_T (mbar or inch W.C.)

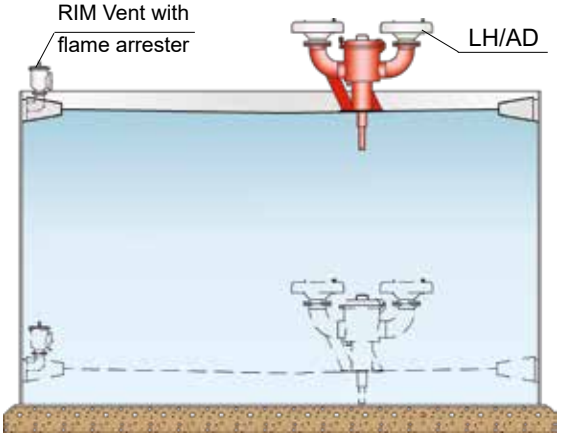
Pump rate (m³/h or CFH)

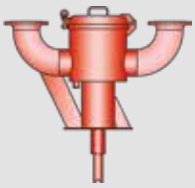
Application Examples

Lift-actuated vent valves PROTEGO® AL/DK can be combined with vent caps PROTEGO® EB which are deflagration-proof and endurance burning-proof. This ensures flame transmission- proof ventilation.



If endurance burning-proof is not required, the valves can be combined with deflagration-proof PROTEGO® LH/AD devices. The applicable data sheets are available in Sec. 2 “Deflagration Flame Arresters, End-of-Line and Vent Caps”.

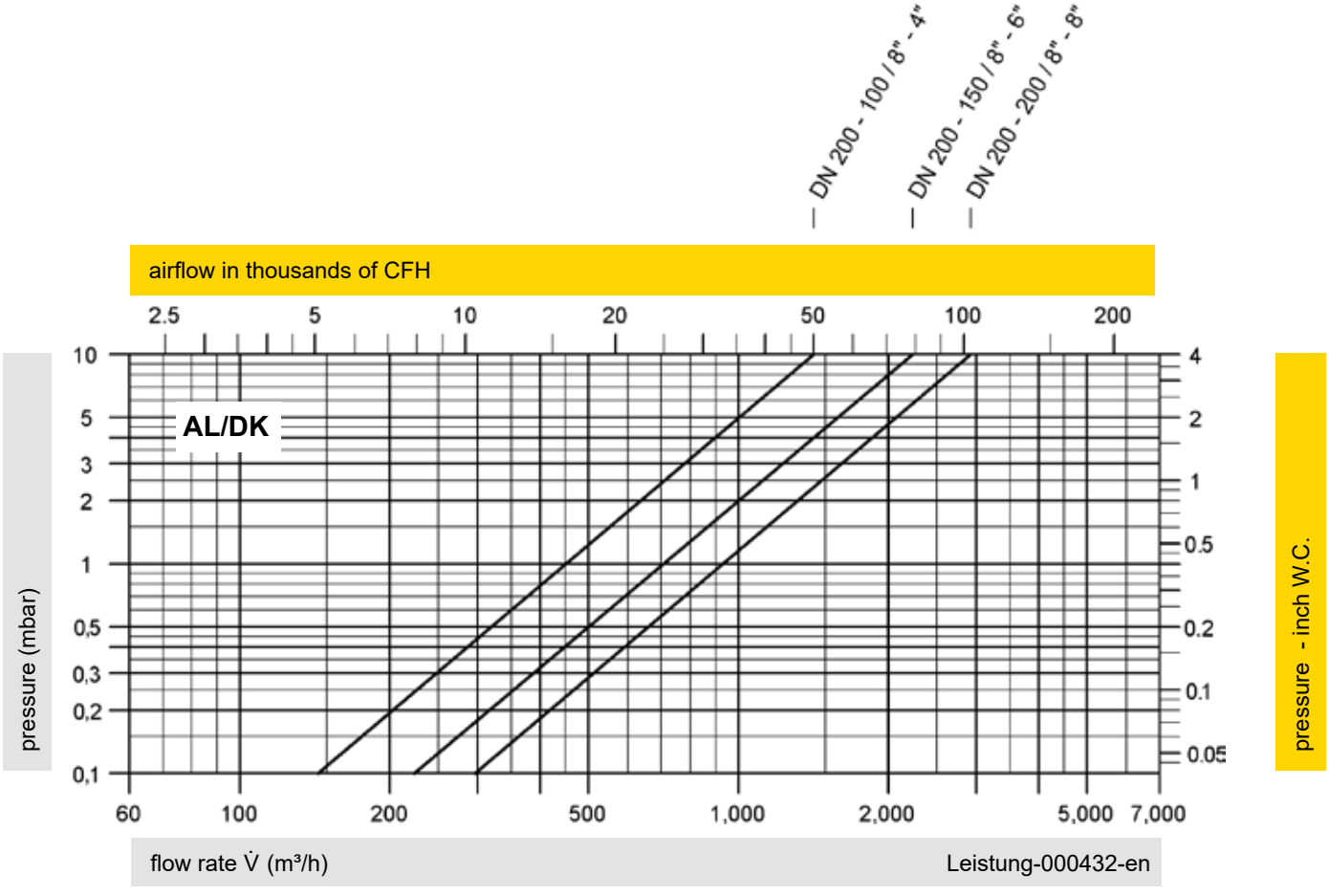




Vent Valve, Lift-actuated

Flow Capacity Chart

PROTEGO® AL/DK



The flow capacity charts have been determined with a calibrated and TÜV certified flow capacity test rig.

Volume flow V̇ in (m³/h) and CFH refer to the standard reference conditions of air in ISO 6358 (20°C, 1bar).
For conversion to other densities and temperatures, refer to Sec. 1: “Technical Fundamentals.”

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