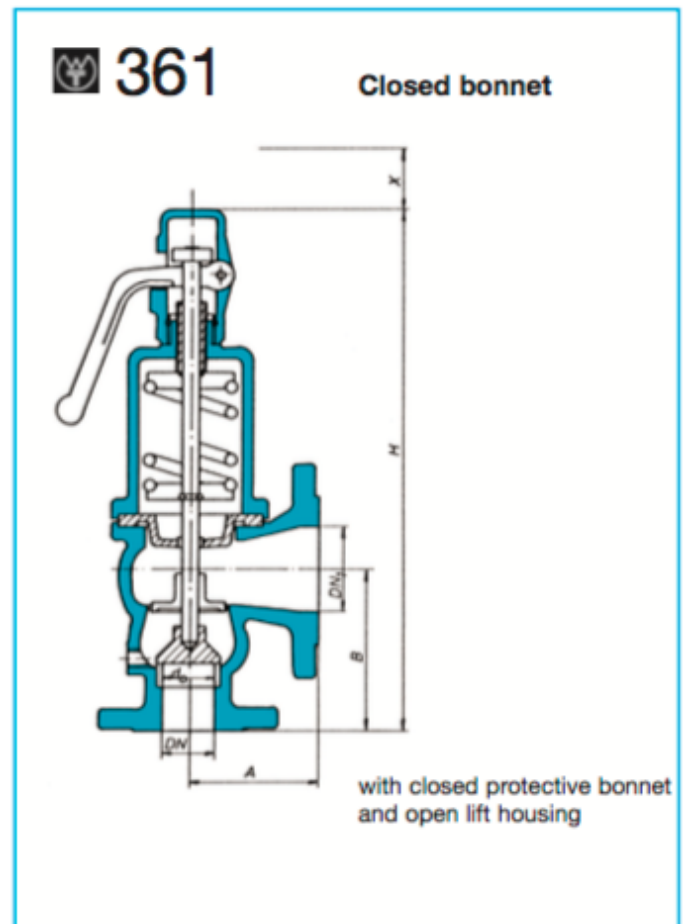
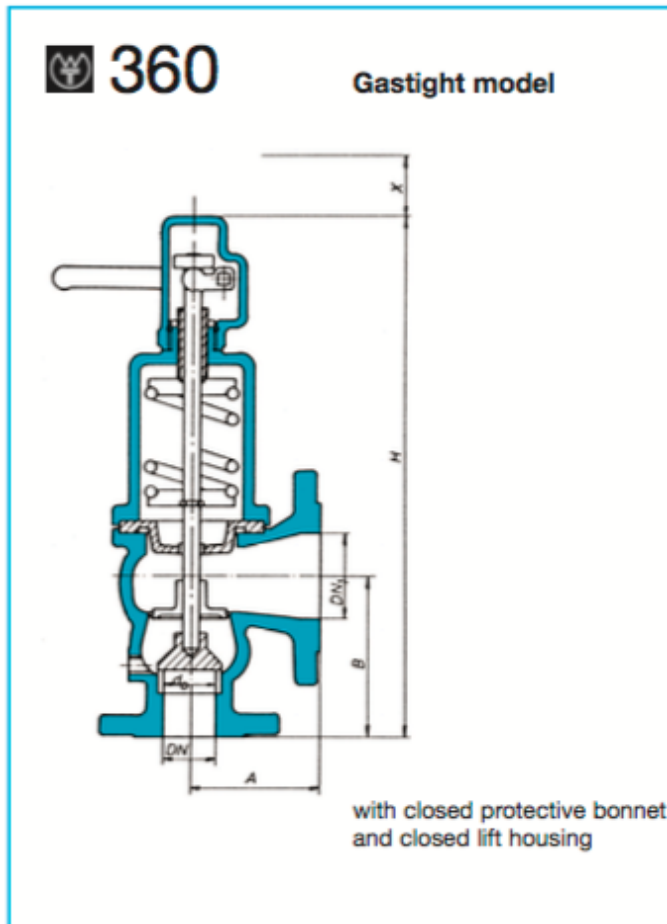


Säkerhetsventiler (Type 360 / 361 Spring Loaded Gas Tight / Closed Bonnet Safety Valve)



Product Overview

Maximum blow-off rate due to low flow losses. Special research led to the development of a simple construction of the flow passages leading to optimum efficiency and performance.

Series 360. Spring Loaded High-Efficiency – Safety valves for blowing-off liquid from fixed pressure vessels, subject to the condition that no evaporation occurs. Also suited to district heating systems. Series 360, Gas-tight with closed protective bonnet and closed lift housing.

Series 361. Spring Loaded High-Efficiency – Safety valves for blowing-off liquid from fixed pressure vessels, subject to the condition that no evaporation occurs. Also suited to district heating systems. Series 361 with closed protective bonnet and open lift housing. Valve head is liftable. Force is transmitted centrally at the valve head.

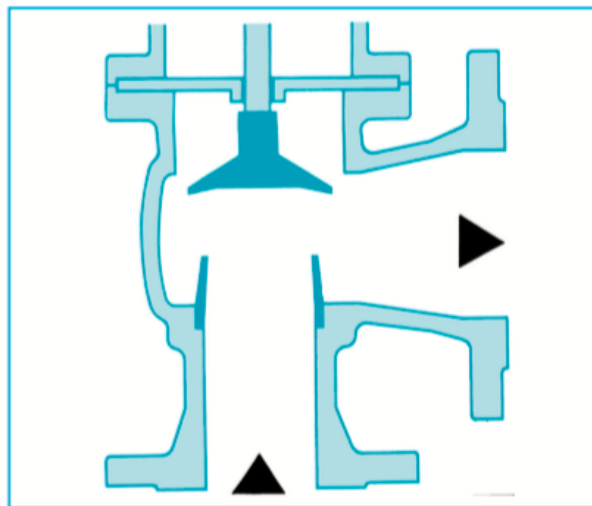
General Operation

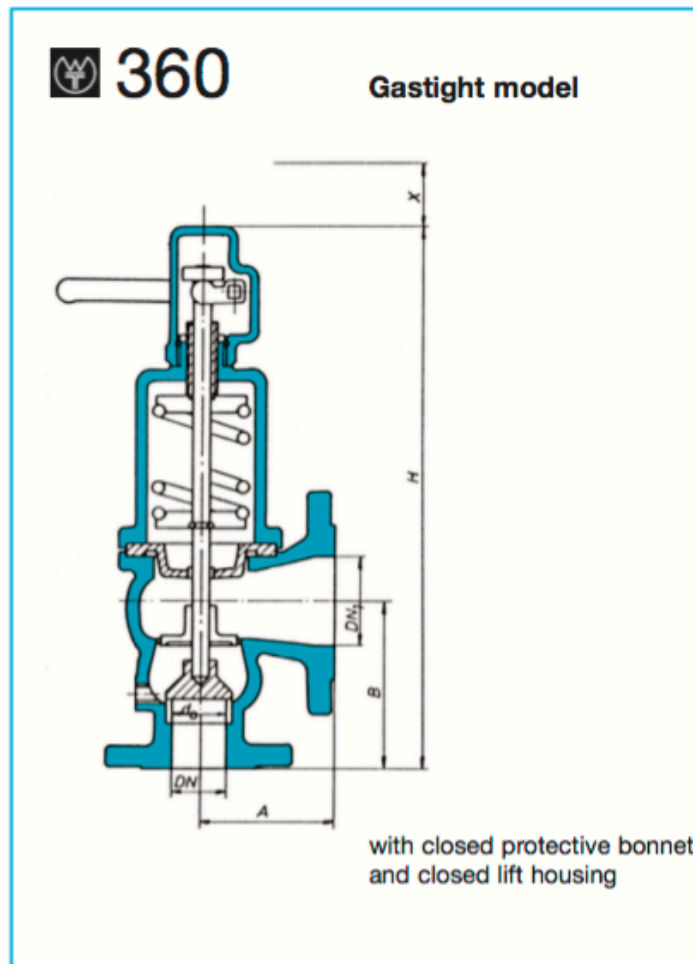
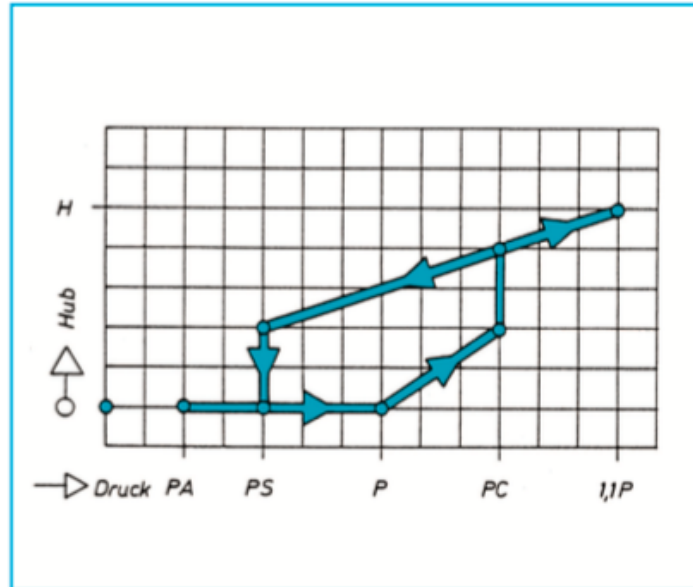
Valve design

The schematic on the left shows the simple and efficient construction of the THIES High-efficiency Safety Valve. At the inlet the incoming fluid is compressed slightly to compensate for any vortices and then discharges to the side through the gap between valve head and valve seat. The special design of the valve seat and valve head result in the high-efficiency operation as described below.

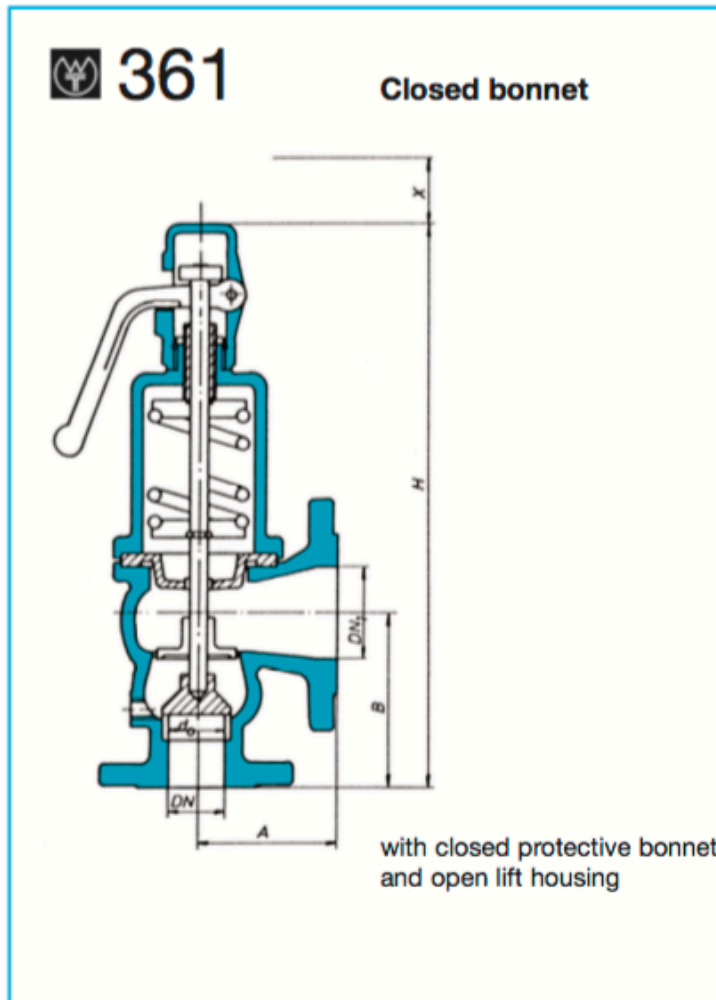
Operation

THIES High-efficiency Safety Valves start to open at response pressure P . Additional increases in pressure produce proportionate valve opening, until pressure P_C is reached. This produces instantaneous opening of the port's full cross section. At a pressure 10% in excess of the response pressure lift H is measured, on which the design value of the outflow is based. The valve closes again as the pressure drops. At closing pressure P_S the valve is fully shut. In order to ensure proper and reliable valve functioning the plant operating pressure should be P_A . The values of the rate of flow certified by the type approval mark issued by the German Technical Inspection Authority (Vd TÜV Essen) are determined by taking the lowest measured value for a particular series and subtracting a 10% safety margin.





- x = Pressure change in range of fitted spring
- x₁ = Pressure change requiring spring replacement



Spring loaded High-efficiency Safety Valves

Application:

Safety valves for blowing-off liquid from fixed pressure vessels, subject to the condition that no evaporation occurs.

Also suited to district heating systems. If the liquid to be blown off does not have similar properties to the liquid (water) used in the valve testing procedure, then the properties of the liquid, in respect to chemical aggressiveness or sticking tendency, must be taken into account in the acceptance testing of the pressure vessel.

Proof marks for these valves, as follows, were issued by the official German Technical Inspection Authority (Vd TÜV Essen), for response overpressure of 1.0 to 10 bar:

For nom. diam. 25 mm

TÜV · SV · ** - 575 · do · F · 0,5 · p

For nom. diam. 32 mm

TÜV · SV · ** - 575 · do · F · 0,42 · p

For nom. diam. 40 mm

TÜV · SV · ** - 575 · do · F · 0,45 · p

For nom. diam. 50 mm

TÜV · SV · ** - 575 · do · F · 0,45 · p

THIES high-efficiency safety valves meet the requirements of the German Pressure Vessel Safety Regulations and AD Specification A 2 „Safety Valves“.

Construction:

Spring loaded high-efficiency valves, angled, with O-ring seal in the valve head.

Series 360

with closed protective bonnet and closed lift housing.

Series 361

with closed protective bonnet and open lift housing.

Valve head is liftable. Force is transmitted centrally at the valve head. Corrosion-resistant spindle guides ensure reliable and precise response of the valve.

Flange connections:

Spheroidal graphite iron version:

inlet as per DIN 2533 PN 16 = DIN 2545 PN 40

outlet as per DIN 2543 PN 16

Materials:

Valve body	GGG 40
Protective bonnet	GGG 40
Valve seat	GCu Sn 7 Zn Pb/Niro 1.4122
Valve head	Cu Zn 39 Pb 2, Niro 1.4305
O-ring in the valve head	Viton
Spindle, polished	Niro 1.4021
Spring	Niro 1.4310
Bolts	5.6

Models and dimensions

Models and dimensions	Order Code No.
Series 360 of spheroidal graphite iron	PN 40 = PN 16 360 GGG
Series 361 of spheroidal graphite iron	PN 40 = PN 16 361 GGG

Example of order:

1 x 360 GGG 32 — 4 bar:

i. e. 1 THIES high-efficiency safety valve, series 360 made of spheroidal graphite iron GGG 40, nom. diam. 32/50, PN 40 = PN 16, response overpressure 4 bar.

Dimensions and weights in mm and kg					
Norm. diam. DN		25	32	40	50
Norm. diam. DN ₁		40	50	65	80
Length	A	100	110	115	120
Length	B	105	115	140	150
Overall height	H	380	390	465	500
Narrowest flow passage cross section	d ₀	25	32	40	50
Weight	kg	12	15	18	20
Clearance	x	50	50	50	50
Clearance	x ₁	90	90	90	90

As the cross sectional area of the inlet is designed to be approximately equal to that of the narrowest flow passage, a pressure drop in the feed line may affect the function of the safety valve.

The feed line must be adapted to the maximum permissible pressure drop of 3% and, if necessary, enlarged appropriately.

The safety valves are provided with a drain plug; size R 1/4".

The dimensions and weights quoted are non-binding. Subject to design modifications.

Performance table

Water at 20°C ($\gamma = 998 \text{ kg/m}^3$)
in kg/h at response overpressure p

The values quoted apply to the response overpressure.

This gives an additional safety margin of 10% compared with the actual outflow. According to the German Safety Valve Code and AD specification A 2, it is not permissible to calculate the outflow at response pressure + 10% extra pressure.

DN	25	32	40	50	DN
bar	Q kg/h	Q kg/h	Q kg/h	Q kg/h	bar
1	12406	17072	28581	44659	1
1,5	15194	20909	35005	54697	1,5
2	17547	24146	40424	63165	2
2,5	19616	26994	45192	70615	2,5
3	21490	29572	49508	77359	3
3,5	23210	31939	53471	83551	3,5
4	24812	34144	57162	89319	4
4,5	26316	36214	60627	94733	4,5
5	27742	38175	63912	99865	5
5,5	29097	40040	67033	104743	5,5
6	30389	41818	70010	109394	6
6,5	31630	43525	72869	113861	6,5
7	32824	45168	75619	118159	7
7,5	33978	46757	78279	122315	7,5
8	35090	48287	80839	126316	8
8,5	36170	49773	83327	130204	8,5
9	37218	51216	85743	133978	9
9,5	38239	52621	88096	137654	9,5
10	39233	53988	90385	141231	10