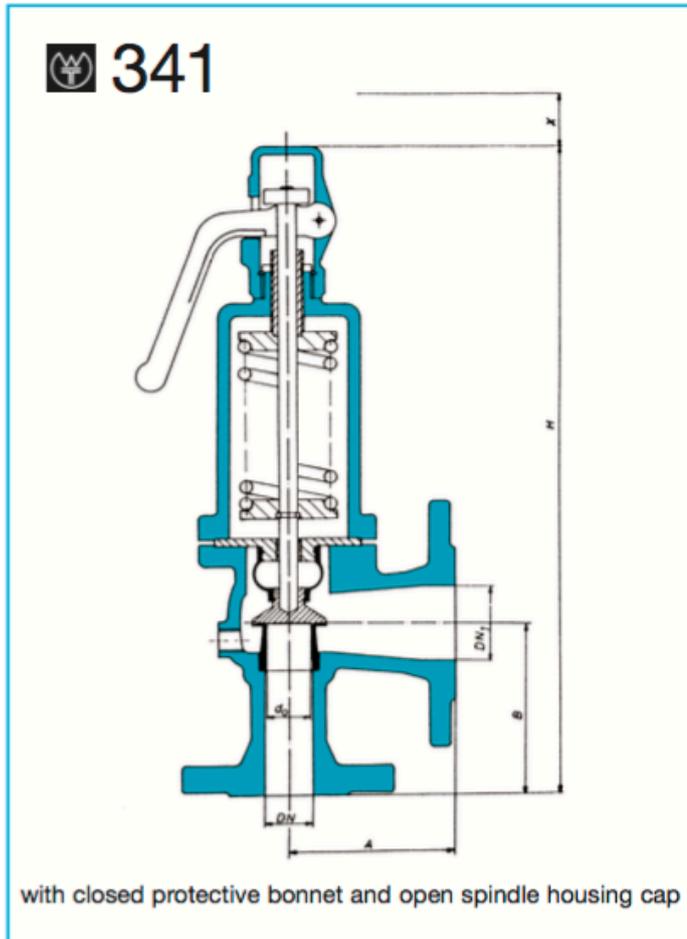


Säkerhetsventiler (Type 341 Spring Loaded Diaphragm Safety Valve)



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 341 with closed bonnet Valve head is liftable. The pressure acts, via a ball, centrally onto the valve head. Corrosion-resistant spindle bushes ensure reliable and precise response of the valve.

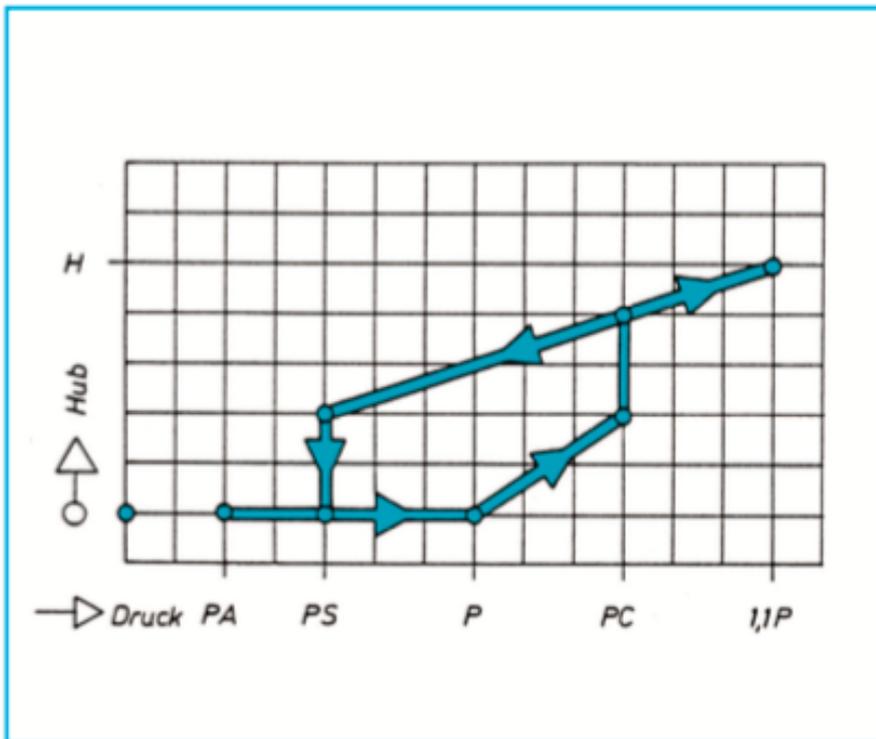
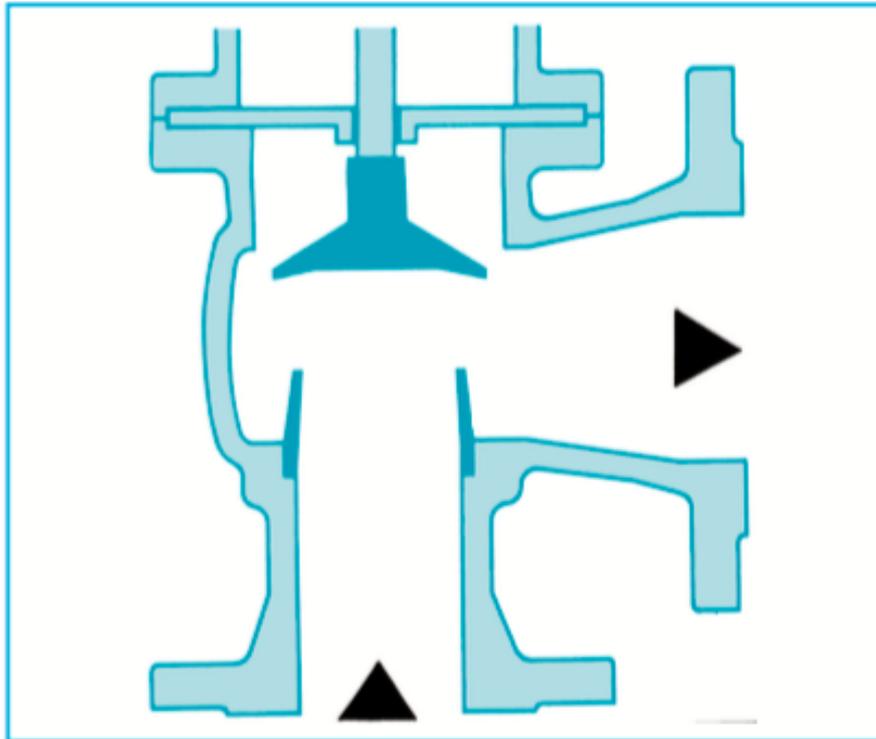
General Operation

Valve design

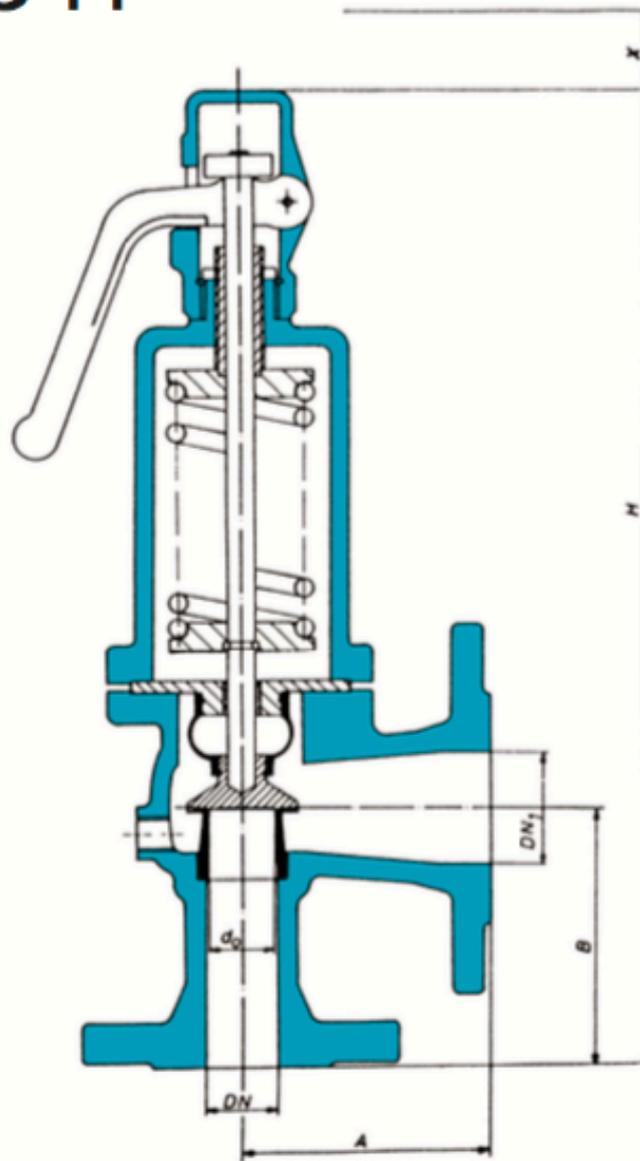
The schematic on the left shows the simple and efficient construction of the THIES High-efficiency Safety Valve. At the inlet the incoming fluid is compressed slightly to compensate for any vortices and then discharges to the side through the gap between valve head and valve seat. The special design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



 **341**

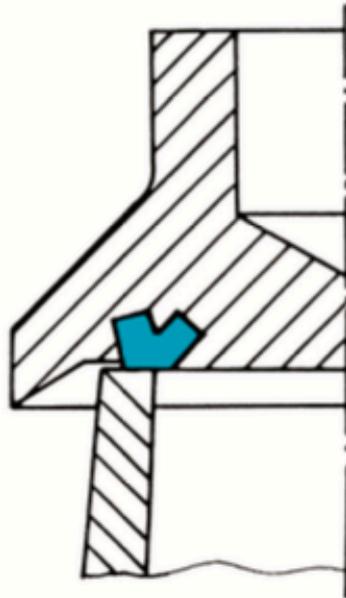


with closed protective bonnet and open spindle housing cap

x = Pressure change in range of fitted spring

x_1 = Pressure change requiring spring replacement

**Valve heat with
highly elastic seal and
metal backing**



leading to

- better tightness
- less sensitivity to fouling
- reliable response due to metal backing
- high strength and high resistance owing to highly elastic seal embedded by vulcanizing

Spring loaded Diaphragm type High-efficiency Safety Valve

Application:

Safety valve to satisfy safety requirements in heating systems with flow temperatures of 120° C according to DIN 4751 Pt. 2.

The following type approval mark has been issued by the German Technical Inspection Authority (Vd TÜV Essen):

TÜV · SV · ** - 662 · do · D/G/H · α_w · p

1	2	3	4	5	6	7	8		
set overpressure (bar)		1 to 3.5		3.5 to 10		2.4 to 3.6			
DN	do (mm)	α_w	h/do>	α_w	h/do>	α_w	h/do>		
20	19.1					0.68	0.29		
25	23.5								
32	30								
40	37.9								
50	46.5	0.61	0.29	0.69	0.28				
65	60								
80	74								
100	92			0.66	0.27				

THIES High-efficiency Safety Valves satisfy the German requirements of the following specifications: UVV-“Pressure Vessels“, AD Specification A 2 „Safety Valves“, the Technical Rules for Steam Boilers (TRD), SR Safety Valves and DIN 4751 Pt. 2.

Construction:

Spring loaded, diaphragm type, high-efficiency safety valve, angled, with highly elastic seal and metal backing in the valve head.

Series 341 with closed bonnet

Valve head is liftable. The pressure acts, via a ball, centrally onto the valve head. Corrosion-resistant spindle bushes ensure reliable and precise response of the valve.

Flange connections:

Grey cast iron version: inlet and outlet according to
 DIN 2533 PN 16

Spheroidal graphite iron version and cast steel version:
 inlet as per DIN 2545 PN 40, outlet as per DIN 2543 PN 16

Materials:

Valve body	GG 25, GGG 40.3 or GS-C 25
Protective bonnet	GG 25, GGG 40.3 or GS-C 25
Valve seat	Niro 1.4122/1.4301
Valve head	Niro 1.4305
Spindle, polished	Niro 1.4021
Guide bushes	Niro 1.4301, Ms 58 or Rg 7
Spring	Niro 1.4310, DIN 17223 C or 50 CrV 4
Bolts	CK 35/5.6
Rubber diaphragm (max. 140°C)	EPDM

Models and dimensions

Models	Order Code No.	
Series 341 of grey cast iron	PN 16 *	341 GN
Series 341 of spheroidal graphite iron	PN 40 *	341 GGG
Series 341 of cast steel	PN 40 **	341 SNC

Example of Order:

1 x 341 SNC 32 — 4 bar
 i. e. 1 THIES-diaphragm high-efficiency safety valve,
 series 341 made of cast steel GS-C 25, nom. diam. 32/50,
 PN 40/16, with elastic seal incorporated in valve head
 and rubber diaphragm. Response overpressure 4 bar.

Dimensions and weights in mm and kg									
Nom. diam. DN		20	25	32	40	50	65	80	100
Nom. diam. DN ₁		32	40	50	65	80	100	125	150
Length	A	100	100	110	115	120	140	160	180
Length	B	100	105	115	140	150	170	195	220
Overall height *	H	380	395	410	565	575	710	735	860
Overall height **	H	420	445	465	580	600	710	735	860
Seat diameter	d ₀	19,1	23,5	30,0	37,9	46,5	60,0	74,0	92,0
Weight	kg	10	12	15	24	26	46	50	72
Clearance	x	50	50	50	55	55	70	70	70
Clearance	x ₁	90	90	90	150	150	150	150	200

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: up to nominal diameter size 50 – R ¼", over 65 – R ⅜".

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

Performance table

Heat capacity in kW at response overpressure p

The values quoted apply to the response overpressure.

This gives an additional 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) – nominal diameter

DN	20	25	32	40	50	65	80	100	DN
p bar	kW	kW	kW	kW	kW	kW	kW	kW	p bar
1		177	289	461	694	1155	1757	2715	1
1,5		217	353	564	849	1414	2150	3323	1,5
2		257	418	667	1004	1672	2544	3931	2
2,5	218	296	483	770	1160	1931	2937	4539	2,5
3	245	333	543	867	1305	2172	3304	5107	3
3,5	275	373	608	970	1460	2431	3697	5715	3,5
4	306	464	756	1206	1815	3022	4597	6797	4
4,5	334	506	824	1315	1979	3295	5013	7411	4,5
5	362	547	892	1424	2143	3568	5428	8025	5
5,5	389	588	958	1529	2301	3832	5829	8639	5,5
6	415	628	1024	1634	2459	4095	6229	9209	6
6,5	442	669	1090	1739	2618	4358	6630	9823	6,5
7	468	709	1155	1844	2776	4621	7030	10393	7
7,5	495	750	1221	1949	2934	4885	7431	11007	7,5
8	522	790	1287	2054	3092	5148	7831	11577	8
8,5	549	830	1353	2159	3250	5411	8231	12191	8,5
9	575	870	1419	2264	3408	5674	8631	12761	9
9,5	600	908	1480	2362	3555	5918	9002	13331	9,5
10	624	945	1540	2459	3701	6162	9373	13857	10