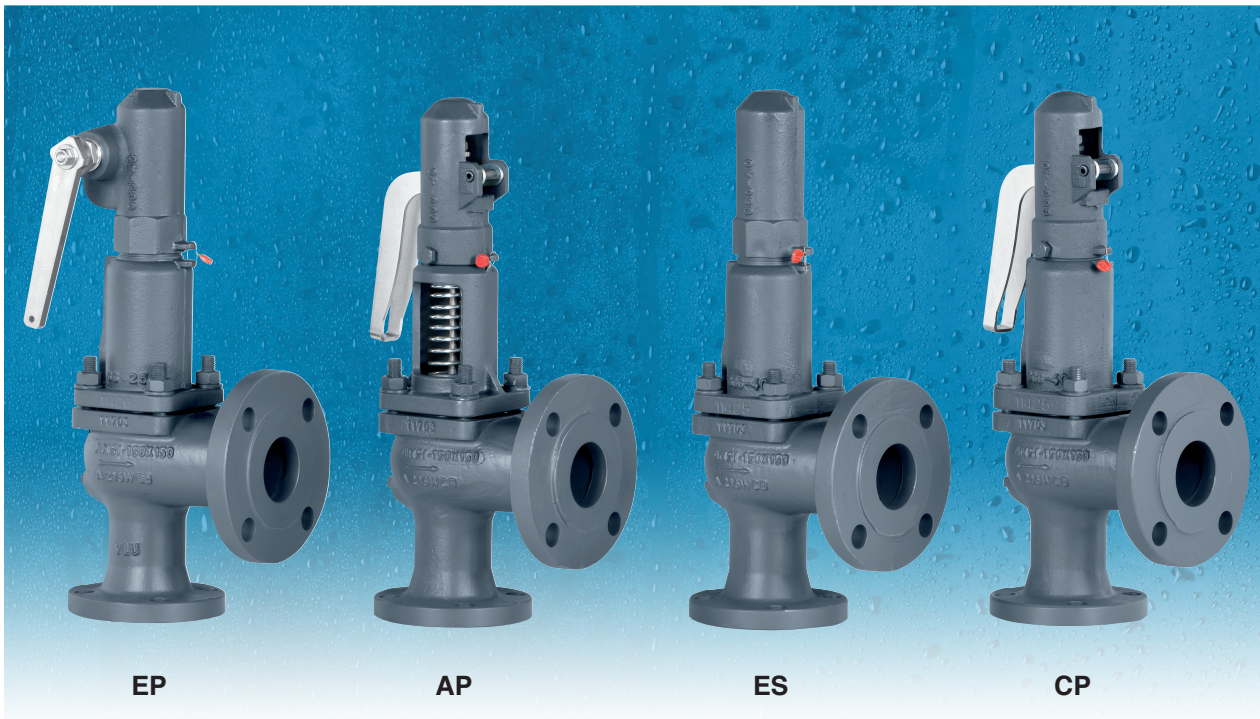


# Full lift safety valve with spring loading.(AIT)

Model 486



**ASME**  
SI Units



The valve works as an automatic pressure releasing regulator activated by the static pressure existing at the entrance to the valve and is characterized by its ability to open instantly and totally.

Design in accordance with "ASME code section VIII".

Materials according ASME code section II and ASTM. Connections according ASME/ANSI B16.5-2009 standard. Center to face dimensions according API-526.

In accordance with the requirements of the pressure equipment directive 2014/68/EU.

EC valve verification certified by: TÜV Rheinland Industrie Service GmbH, Notified Body for Pressure Equipment ID-No. 0035

Type (Module B) EC examination report nº 33530455 certified by: TÜV Rheinland Ibérica ICT, S.A.

In compliance with the ATEX 2014/34/EU directive "Protective equipment and systems for use in potentially explosive atmospheres".

Other authorisations: ISCIR, ITI, NASTHOL,EAC,...etc..

## Specifications

- 90° angular flow.
- Activated by direct action helicoid spring.
- Simplicity of construction ensuring minimum maintenance.
- Materials carefully selected for their resistance to corrosion. With the exception of washers and couplings, the valves are free of non-ferric materials.
- Internal body designed to offer favourable flow profile.
- Sealing surfaces treated and balanced, making them extremely tightness, even exceeding API-527 requirements.
- Great discharge capacity. For liquids typically used with openings similar to proportional safety valves.
- Equipped with draining screws for removing condensation.
- Auto-centering plug.
- Threaded shaft with lever positioner facilitating immediate manual action.
- Elevator, independent of the seal, designed facilitate sudden opening when the steam expands and, with any fluid, guarantees absolute opening and closing precision.
- All the valves are supplied sealed at the set pressure requested, simulating operational conditions, and are vigorously tested.
- All components are numbered, registered and checked. If requested in advance, material, casting, test and efficiency certificates will be enclosed with the valve, and the instruction manual, in accordance with P.E.D. 2014/68/EU.

**IMPORTANT**

Depending on demand:

- Blocking screw which facilitates hydrostatic testing of the container which to be protected.
- Rapid limiter to reduce the coefficient of discharge.
- Fluorelastomer (Vitón) seals, Silicone's rubber, PTFE (Teflón)... etc., achieving leakage levels less than

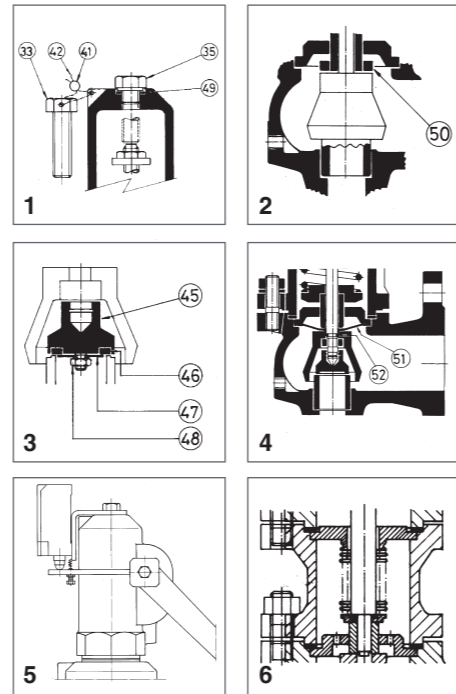
$$0,3 \times 10^{-3} \frac{\text{Pa cm}^3}{\text{seg.}}$$

The ranges of application allow certain flexibility although we recommend limiting them to:

RANGE OF APPLICATION FOR THE SEALS							
FLUID	SET PRESSURE IN bar						
	0,2	1,8	4,0	4,8	7,0	30	40,0
Saturated steam	S	V	T				
Liquids and gases	S			V		T	
SEALS		TEMPERATURE IN °C					
		ACCORDING TO MANUFACTURERS			RECOMMENDED BY VYC		
		MINIMUM	MAXIMUM	MINIMUM	MAXIMUM		
Silicone's rubber	S	-60	+200	-50	+115		
Fluorelastomer (Vitón)	V	-40	+250	-30	+150		
PTFE (Teflón)	T	-265	+260	-80	+230 (1)		

(1) For temperatures exceeding 230°C apply metallic seal only

- Fluorelastomer (Vitón) membrane and O-ring isolating the rotating or sliding parts from the working fluid.
- Electrical contact indicating open/closed.
- Balance bellows to:
  - Protect the spring from atmospheric influences.
  - Ensure outside of valve body is totally tightness.
  - Level out external or self-generated back pressure.
- Possibility of manufacture in other types of material, for special operating conditions (high temperatures, fluids, etc.).
- Totally free of oil and grease, to work with oxygen, avoiding possible fire risks (UV-Oxygen-VBG 62).
- Special springs for critical temperatures.



Nº. PIECE	PIECE	MATERIAL	
		CAST STEEL	STAINLESS STEEL
1	Body	Cast steel (ASTM A216 - WCB)	Stainless steel (ASTM A 351 - CF8M)
2	Closed bell	Nodular iron (ASTM A536 65 - 45 -12)	Stainless steel (ASTM A 351 - CF8M)
3	Open bell	Cast steel (ASTM A 216 - WCB)	Stainless steel (ASTM A 351 - CF8M)
4, 5, 6	Hood	Nodular iron (ASTM A 536 65 - 45 -12)	Stainless steel (ASTM A 351 - CF8M)
7	Elevator	Nodular iron (ASTM A 536 65 - 45 -12) (1)	Stainless steel (ASTM A 351 - CF8M) (7)
8	Cam	Carbon steel (ASTM A 570 - 36) (6)	Stainless steel (AISI 304)
9, 10	Lever	Carbon steel (ASTM A 570 - 36)	Carbon steel (ASTM A 570 - 36)
11	Seating	Stainless steel (AISI 420)	Stainless steel (AISI 630)
12	Plug	Stainless steel (AISI 420)	Stainless steel (AISI 630)
13	Lead	Stainless steel (AISI 420) (4)	Stainless steel (AISI 316) (5)
14	Spring press	Carbon steel (AISI 1045)	Stainless steel (AISI 303)
15	Separator	Stainless steel (AISI 420)	Stainless steel (AISI 316)
16	Rod	Stainless steel (AISI 420)	Stainless steel (AISI 316)
17	Lever shaft	Carbon steel (AISI 1045)	Stainless steel (AISI 303)
18	Gudgeon	Carbon steel (AISI 1070)	Stainless steel (AISI 301)
19	Ring	Stainless steel (AISI 420)	Stainless steel (AISI 316)
20, 21	Safety ring	Stainless steel (AISI 301)	Stainless steel (AISI 301)
22	Spring	Vanadium chrome steel (AISI 6150) (2)	Stainless steel (AISI 301) (3)
23	Gland	Carbon steel (AISI 1045)	Stainless steel (AISI 303)
24	Hollow screw	Stainless steel (AISI 303)	Stainless steel (AISI 303)
25	Hollow screw nut	Stainless steel (AISI 303)	Stainless steel (AISI 303)
26	Buffer nut	Stainless steel (AISI 303)	Stainless steel (AISI 303)
27	Rod check nut	Carbon steel (AISI 1015)	Stainless steel (AISI 316)
28, 29, 48	Nut	Carbon steel (AISI 1015)	Stainless steel (AISI 316)
30, 31	Washer	Carbon steel (AISI 1015)	Stainless steel (AISI 316)
32	Stud	Carbon steel (AISI 1035)	Stainless steel (AISI 316)
33, 34, 35	Screw	Carbon steel (AISI 1045)	Stainless steel (AISI 316)
36	Cap	Carbon steel (AISI 1035)	Stainless steel (AISI 316)
38	Coupling	Graphite	PTFE (Teflon)
39	Coupling	PTFE (Teflon)	PTFE (Teflon)
40	Seal	Graphite	PTFE (Teflon)
41	Seal	Plastic	Plastic
42	Sealing wire	Sealing wire	Sealing wire
43	Characteristic plate	Stainless steel (AISI 304)	Stainless steel (AISI 304)
45	Plug	Stainless steel (AISI 316)	Stainless steel (AISI 316)
46	Sealing disk	PTFE (Teflon)	PTFE (Teflon)
		Silicone's rubber	Silicone's rubber
		Fluorelastomer (Vitón)	Fluorelastomer (Vitón)
47	Washer	Stainless steel (AISI 316)	Stainless steel (AISI 316)
49	Coupling	Copper	PTFE (Teflon)
50	Limiter	Stainless steel (AISI 420)	Stainless steel (AISI 316)
51	Membrane	Fluorelastomer (Vitón)	Fluorelastomer (Vitón)
52	O-ring	Fluorelastomer (Vitón)	Fluorelastomer (Vitón)

- 1"x2" in stainless steel (ASTM A351 CF8M).
- Spring steel (ASTM A228) for wire spring  $\phi < 10$  mm. Maximum temperature EP, ES and CP 250°C / AP 400°C.
- Vanadium chrome steel (AISI 6150) for wire spring  $\phi > 10$  mm.
- 8" x 10" in Stainless steel (ASTM A743 CA40F).
- 8" x 10" in Stainless steel (ASTM A351 CF8M).
- 1"x2" in Stainless steel (AISI 304)
- 1 1/2"x2" to 4"x 6" L in Stainless steel (AISI 316)

**Full lift safety valve with spring loading (AIT) model 486 - AP and CP.**

**1. Disassembly and assembly.**

**1.1 Disassembly.**

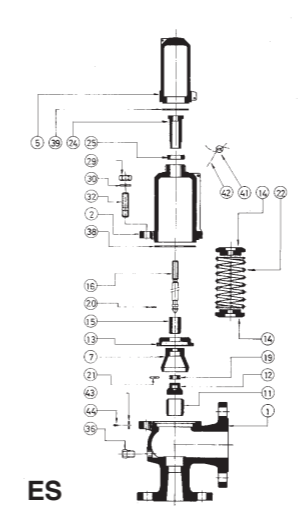
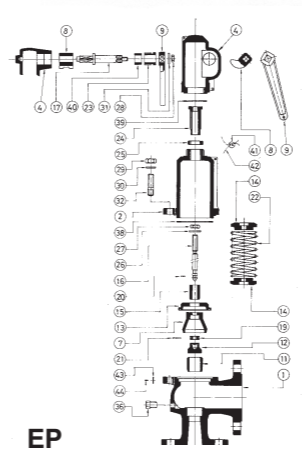
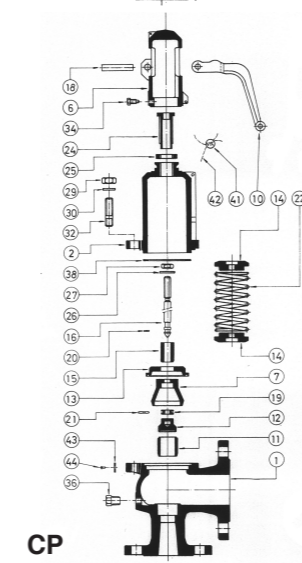
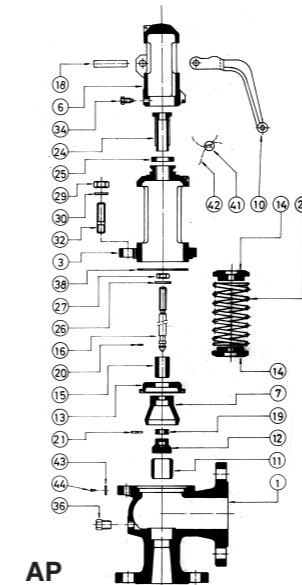
- To replace the spring (22) or clean any of the internal components of the valve, proceed in the following manner:
- Withdraw the clip (18), using a punching tool, until the lever (10) comes free.
  - Loosen the screws (34) and take the cap (6) off.
  - Holding the spindle (16) steady, loosen the hollow screw nut (25) and the hollow screw (24) until you note a releasing of the spring (22).
  - Mark on the spindle (16) the position of the spindle lock-nut (27) and the adjusting nut (26). Loosen them and remove them.
  - Unscrew the nuts (29) and remove them, together with the studs (32) and their washers (30).
  - Lift the cover (3) or (2) and you will have access to all of the components.

**1.2 Assembly.**

- Place the safety-ring (20) on the spindle (16) and press it against the gasket (12).
- In the spindle channel (16) connect the ring (19) and fix it to the security-ring (21). Introduce the elevator (7) into the upper part of the spindle (16) and press this against the previously described pieces.
- Enter the guide (13), the separator (15), the spring-press (14), the spring (22), the spring-press (14) through the upper part of the spindle (16) and press this against the previously described pieces.
- Replace the assembly (38) and the cover (3) or (2).
- Place the washers (30) on the studs (32) and make up the nuts (29) diagonally, checking the correct alignment of the cover (3) or (2).
- Adjust the firing pressure with the hollow screw (24) and fix the adjustment position with the hollow screw nut (25).
- Turn the spindle lock-nut (27) and the adjusting nut (26) to the position marked (see 1.1.D) and make up against each other.
- Introduce the cap (6) and tighten the screws (34).
- Place the lever (10) and fix it with the fastener (18).

**2. Adjusting the firing pressure.**

- Proceed according to points 1.1.A, 1.1.B, 1.1.C.
- Proceed according to points 1.2.F, 1.2.H, 1.2.I.



**Full lift safety valve with spring loading (AIT) model 486 - EP.**

**1. Disassembly and assembly.**

**1.1 Disassembly.**

- To replace the spring (22), or clean any of the internal components of the valve, proceed in the following manner:
- Move the lever (9) in direction C as far as the constructive catcher.
  - Unscrew the cap (4) and remove.
  - Holding the spindle (16) steady, loosen the hollow screw nut (25) and the hollow screw (24) until you note a releasing of the spring (22).
  - Mark on the spindle (16) the position of the spindle lock-nut (27) and the adjusting nut (26). Loosen them and remove them.
  - Unscrew the nuts (29) and remove them, together with the studs (32) and their washers (30).
  - Lift the cover (2) and you will have access to all of the components.

**1.2 Assembly.**

- Place the safety-ring (20) on the spindle (16) and press it against the gasket (12).
- In the spindle channel (16) connect the ring (19) and fix it to the security-ring (21). Introduce the elevator (7) into the upper part of the spindle (16) and press this against the previously described pieces.
- Enter the guide (13), the separator (15), the spring-press (14), the spring (22), the spring-press (14) through the upper part of the spindle (16) in a correlative manner.
- Replace the assembly (38) and the cover (2).
- Place the washers (30) on the studs (32) and make up the nuts (29) diagonally, checking the correct alignment of the cover (2).
- Adjust the firing pressure with the hollow screw (24) and fix the adjustment position with the hollow screw nut (25).
- Turn the spindle lock-nut (27) and the adjusting nut (26) to the position marked (see 1.1.D) and make up against each other.
- Change the coupling (39) and lightly tighten the cap (4). Move the lever (9) towards position A as far as the constructive catcher. Definitively tighten the cap (4).

**2. Adjusting the firing pressure.**

- Proceed according to points 1.1.A, 1.1.B, 1.1.C.
- Proceed according to points 1.2.F, 1.2.H.

**Full lift safety valve with spring loading (AIT) model 486 - ES.**

**1. Disassembly and assembly.**

**1.1 Disassembly.**

- To replace the spring (22), or clean any of the internal components of the valve, proceed in the following manner:
- Unscrew the cap (5) and remove.
  - Holding the spindle (16) steady, loosen the hollow screw nut (25) and the hollow screw (24) until you note a releasing of the spring (22).
  - Unscrew the nuts (29) and remove them, together with the studs (32) and their washers (30).
  - Lift the cover (2) and you will have access to all of the components.

**1.2 Assembly.**

- Place the safety-ring (20) on the spindle (16) and press it against the gasket (12).
  - In the spindle channel (16) connect the ring (19) and fix it to the security-ring (21). Introduce the elevator (7) into the upper part of the spindle (16) and press this against the previously described pieces.
  - Enter the guide (13), the separator (15), the spring-press (14), the spring (22), the spring-press (14) through the upper part of the spindle (16) in a correlative manner.
  - Replace the washers (38) and the cover (2).
  - Place the washers (30) on the studs (32) and make up the nuts (29) diagonally, checking the correct alignment of the cover (2).
  - Adjust the firing pressure with the hollow screw (24) and fix the adjustment position with the hollow screw nut (25).
  - Change the coupling (39) and tighten the cap (5).
- 2. Adjusting the firing pressure.**
- Proceed according to points 1.1.A, 1.1.B.
  - Proceed according to points 1.2.F, 1.2.G.





**FACT LIST FOR SAFETY VALVE CALCULS**  
Calculus according to ASME code section VIII Div.1

Customer:  
Theme:  
Leaf: \_\_\_\_\_ Of: \_\_\_\_\_

1	Consultation / Bid / Order					
2	Position N°.					
3	N°. of units					
4	Regulation					
5	SERVICE CONDITIONS	Fluid				
6		Calculation temperature °C				
7		State at moment of dischar. l = liquid, s = steam, g = gas		l <input type="checkbox"/> s <input type="checkbox"/> g <input type="checkbox"/>	l <input type="checkbox"/> s <input type="checkbox"/> g <input type="checkbox"/>	l <input type="checkbox"/> s <input type="checkbox"/> g <input type="checkbox"/>
8		Molecular mass kg/kmol				
9		Adiabatic exponent æ	Compressibility coe. Z			
10		Density at moment of discharge kg/m³				
11		Coefficients ψ max	χ			
12		Viscosity cSt	cPs			
13		Working pressure abs.		bar		
14		Set pressure abs.		bar		
15		External back pressure abs.		bar		
			constant	variable		
16		Rated pressure abs.		bar		
17		Discharge capacity	Required: kg/h, Nm³/h, l/h			
18		Possible: 1) Kg/h, Nm³/h, l/h				
19	VALVE CONSTRUCTION	Opening: Full lift / Normal / Progressive				
20		Manufacturer type				
21		Materials	Body			
22			Seat			
23			Plug			
24			Spring			
25			Joint			
26		Manual discharge action		yes / no		
27		Cover		Closed / Open		
28		Bellows		yes / no		
29		Body with drainage		yes / no		
30		Diameter of narrowest flow d <sub>o</sub>		mm		
31		Section of narrowest flow A <sub>o</sub>	Necessary A <sub>o</sub>		mm²	
32			Chosen A <sub>o</sub>		mm²	
33	Allowed discharge coefficient		αd			
34	CONNECTIONS	Input / Output	NPS	Flange	mm	
35				Thread	inch	
36				Welding (soldering) ends		
37			Class			
38		Shape of joint surfaces (ASME/ANSI B16.5-2009)				
39	OBSERVATIONS	Unit weight		approx. Kg		
40						
41						
42						
43	ACCEPTANCE	Certificate according to		EN-10204 2.2		
44		Certificate according to		EN-10204 3.2		
45						

Date:  
Department:  
Name: