THINKTANK®

TANK SYSTEMS

SECURING SYSTEMS, ENSURING SAFETY

储罐系统相关产品

呼吸阀
先导阀
带阻火器呼吸阀
氮封系统阀

BREATHER VALVE
PILOT OPERATED VALVE
FLAME ARRESTER
BREATHER VALVE WITH FLAME ARRESTER
N2 BLANKETING VALVE

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THINKTANK 是一家知名控制阀品牌，在制造高品质控制阀方面拥有超过 11 年的经验。我们注重客户满意度，为各个行业提供可定制的产品，已成为可靠、高效的控制阀解决方案值得信赖的供应商。

另外 THINKTANK 还供全面的储罐系列产品，包括呼吸阀、先导阀、阻火器、带阻火器的呼吸阀和氮封保护阀。这些阀门制造精度高，质量好，有助于各个工业领域储罐系统的安全、高效和可靠运行。

THINKTANK offers a comprehensive range of tank products, including breathing valves, pilot valves, flame arresters, breathing valves with flame arresters and nitrogen protection valves. Manufactured with high precision and quality, these valves contribute to the safe, efficient and reliable operation of tank systems in various industrial sectors.

About Us

THINKTANK, a well-known company famous for its professional production of control valves and self-operated pressure regulator. also specializes in manufacturing various types of valves necessary for tank systems. Includes breather valve, pilot self-operated valve, flame arrester, breather valve with flame arrester, and N2 blanketing valve.

Breather Valve

Breather valves are designed to control the pressure and vacuum levels within the tank to ensure safe and efficient operation of the tank. These valves allow the tank to breathe, preventing excessive pressure from building up or creating a vacuum that could damage the tank or endanger its contents.

Pilot Operated Valve

Pilot operated valves utilize a pilot system to control the flow or pressure of fluid or gas within a tank system. They are typically used in applications that require precise control of process variables such as flow, pressure, or temperature.

Flame Arrester

Flame arresters are important safety devices that prevent the spread of flames and minimize the risk of explosion or fire in tank systems. These devices use internal mechanisms to extinguish flames and dissipate heat, maintaining a safe environment inside the tank.

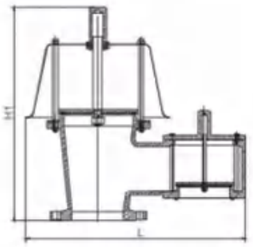
Breather Valve c/w Flame Arrester

Breather valves with flame arresters, which combine the functions of a breather valve and a flame arrester. These integrated devices provide simultaneous pressure and vacuum relief and flame suppression to increase the safety and efficiency of tank operations.

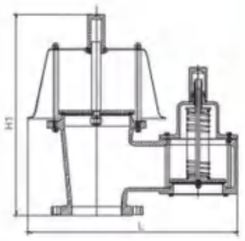
N2 Blanketing Valve

Nitrogen protection valves are used in nitrogen blanketing applications to introduce a layer of inert gas, such as nitrogen, into the tank to prevent exposure of stored materials to oxygen. Nitrogen blanketing helps minimize the risk of oxidation, degradation or explosion due to contact with oxygen or reactive materials.

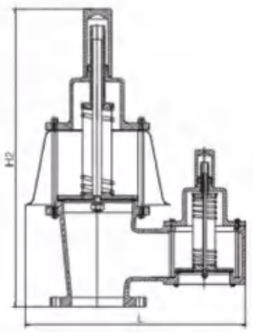
Mode TT7110/8110 Pressure/Vacuum Relief Valve is designed for use on atmospheric and low-pressure storage tanks, vents to atmosphere. The primary function is to protect tanks from damage, deformation, and minimize emissions to the environment as well as loss of product due to evaporation.



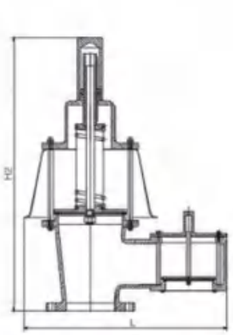
a. TT7110, TT8110 Weight Loaded



b. TT7112, TT8112 Vacuum Spring Loaded



c. TT7113, TT8113 Pressure/Vacuum Spring Loaded



d. TT7115, TT8115 Pressure Spring Loaded

- Sizes available 2"~12"(DN50~DN300).
- The Model TT7110 series outlet ports is same to inlet.
- The Model TT8110 series outlet ports is one pipe size larger than inlet flange to optimize flow capacity.
- Vent to atmosphere.
- The weather hood and cover are easily removed for inspection and maintenance.
- Protective screens are provided at pressure and vacuum ports to prevent entrance of foreign matter.
- The Flame Arrester, Inlet Pipe, Steam Jacket, Blowing Hole, Lining or Humidity Absorber are options to client.
- Designed and tested according to API 2000.
- The flanges are accordance with ANSI B16.5, or EN1092, JIS.
- Available Materials: Aluminum, Carbon Steel, Stainless Steel, Special Materials on Application.

Setting Pressure

Model	TT7110, TT8110	TT7112, TT8112	TT7113, TT8113	TT7115, TT8115
Set Pressure (KPa)	0.2 to 6.9	0.2 to 6.9	6.9 to 103.4	6.9 to 103.4
Set Vacuum (KPa)	-0.2 to -4.3	-4.3 to -82	-4.3 to -82	-0.2 to -4.3

TT7110, 7112, 7113, 7115 Dimensions (mm)

Nominal Size (inch)	2"	3"	4"	6"	8"	10"	12"
(mm)	DN50	DN80	DN100	DN150	DN200	DN250	DN300
L	301	368	416	525	675	824	967
Width	160	200	248	290	390	488	584
H1	290	352	393	490	622	746	876
H2	394	422	505	636	870	1030	1230

TT8110, 8112, 8113, 8115 Dimensions (mm)

Nominal Size (inch)	2"	3"	4"	6"	8"	10"	12"
(mm)	DN50	DN80	DN100	DN150	DN200	DN250	DN300
L	322	405	473	620	770	912	1075
Width	200	248	290	390	488	584	680
H1	335	378	466	613	701	830	956
H2	403	490	615	860	985	1182	1225

How to Order

THINKTANK TT | Model | Size | Material | Others

Model
7110
7120
7130
7140
8110
8120
8130
8140
...

Size
02"
03"
04"
05"
06"
|
12"

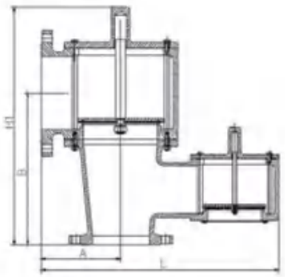
Material
Body Material
Seat Material
Disc Material
1 - Cabon Steel
2 - Aluminum
3 - SS304
4 - SS316
5 - SS316L
6 - Special

Others
Diaphragm Material
F - FEP
V - Viton
B - Buna-N
M - Metal to Metal
S - Special

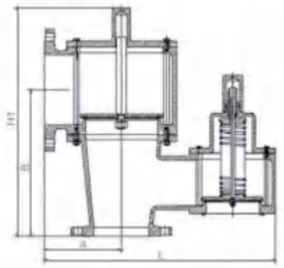
Options
N - No Option
Z - With Flame Arrester
J - Steam Jacket
C - Blowing Hole
G - With Inlet Pipe
L - Lining

Flanged Ends
A - ANSI 150LB RF
D - PN10 RF
E - PN16 RF
J - JIS 10K RF

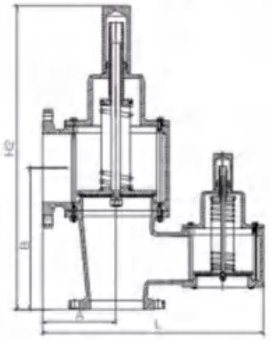
Mode 7120/8120 Pressure Vacuum Relief Valve is designed for use on atmospheric and low-pressure storage tanks, pipe away. The primary function is to protect tanks from damage or deformation and minimize emissions to the environment, as well as loss of product due to evaporation.



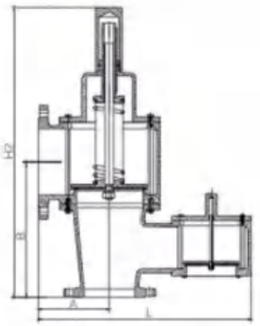
a. TT7120, TT8120 Weight Loaded



b. TT7122, TT8122 Vacuum Spring Loaded



c. TT7123, TT8123 Pressure/Vacuum Spring Loaded



d. TT7125, TT8125 Pressure Spring Loaded

- Sizes available 2"~12"(DN50~DN300).
- The Model TT7120 series outlet ports is same to inlet.
- The Model TT8120 series outlet ports is one pipe size larger than inlet flange to optimize flow capacity.
- Vent to pipline.
- The protective screens prevents external debris from entering the equipment through the inlet or outlet.
- The Flame Arrester, Inlet Pipe, Steam Jacket, Blowing Hole, Lining or Humidity Absorber are options to client.
- Designed and tested according to API 2000.
- The flanges are accordance with ANSI B16.5, or EN1092, JIS.
- Available Materials: Aluminum, Carbon Steel, Stainless Steel, Special Materials on Application.

Setting Pressure

Model	TT7120, TT8120	TT7122, TT8122	TT7123, TT8123	TT7125, TT8125
Set Pressure (KPa)	0.2 to 6.9	0.2 to 6.9	6.9 to 103.4	6.9 to 103.4
Set Vacuum (KPa)	-0.2 to -4.3	-4.3 to -82	-4.3 to -82	-0.2 to -4.3

TT7120, 7122, 7123, 7125 Dimensions (mm)

Nominal Size (inch)	2"x2"	3"x3"	4"x4"	6"x6"	8"x8"	10"x10"	12"x12"
(mm)	DN50xDN50	DN80xDN80	DN100xDN100	DN150xDN150	DN200xDN200	DN250xDN250	DN300xDN300
L	345	406	445	546	696	853	995
Width	200	200	230	280	345	406	485
H1	300	359	417	523	648	789	923
H2	412	441	525	660	893	1055	1257
A	123	138	153	166	216	273	320
B	200	245	280	350	420	515	590

TT8120, 8122, 8123, 8125 Dimensions (mm)

Nominal Size (inch)	2"x3"	3"x4"	4"x6"	6"x8"	8"x10"	10"x12"	12"x14"
(mm)	DN50xDN80	DN80xDN100	DN100xDN150	DN150xDN200	DN200xDN250	DN250xDN300	DN300xDN350
L	360	435	494	641	798	940	1116
Width	200	230	280	345	406	485	533
H1	340	402	498	640	744	875	984
H2	422	510	636	884	1010	1209	1253
A	138	153	166	216	273	320	381
B	226	265	327	411	470	542	616

How to Order

THINKTANK | Model: TT | | | | | Size: | | Material: | | |

Others: | | |

Model	Size
7110	02"
7120	03"
7130	04"
7140	05"
8110	06"
8120	|
8130	12"
8140	
...	

Material: Body Material / Seat Material / Disc Material

1	Cabon Steel
2	Aluminum
3	SS304
4	SS316
5	SS316L
6	Special

Others: Diaphragm Material

F	FEP
V	Viton
B	Buna-N
M	Metal to Metal
S	Special

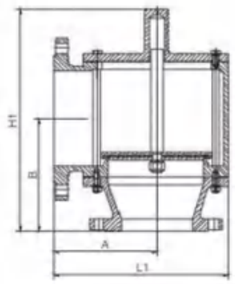
Others: Options

N	No Option
Z	With Flame Arrester
J	Steam Jacket
C	Blowing Hole
G	With Inlet Pipe
L	Lining

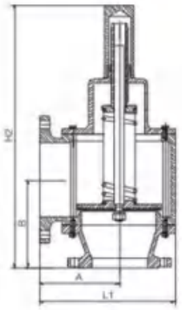
Others: Flanged Ends

A	ANSI 150LB RF
D	PN10 RF
E	PN16 RF
J	JIS 10K RF

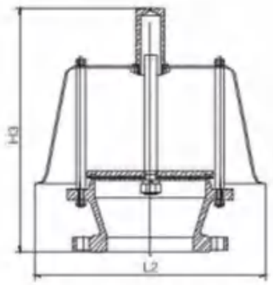
Mode 7130/8130 Pressure Relief Valve is designed for use on atmospheric and low-pressure storage tanks, vents to atmosphere, or pipe away. The primary function is to protect tanks from damage or deformation and minimize emissions to the environment, as well as loss of product due to evaporation.



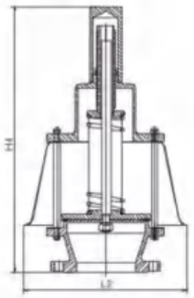
a. TT7130, TT8130 Pipe Away/Weight Loaded



b. TT7135, TT8135 Pipe Away/Spring Loaded



c. TT7136, TT8136 Vent to ATM Weight Loaded



d. TT7138, TT8138 Vent to ATM/Spring Loaded

- Sizes available 2"~12"(DN50~DN300).
- The Model TT7130 series outlet ports is same to inlet.
- The Model TT8130 series outlet ports is one pipe size larger than inlet flange to optimize flow capacity.
- Vent to atmosphere/pipe.
- The weather hood and cover are easily removed for inspection and maintenance.
- Protective screens are provided at pressure and vacuum ports to prevent entrance of foreign matter.
- The Flame Arrester, Inlet Pipe, Steam Jacket, Blowing Hole, Lining or Humidity Absorber are options to client.
- Designed and tested according to API 2000.
- The flanges are accordance with ANSI B16.5, or EN1092, JIS.
- Available Materials: Aluminum, Carbon Steel, Stainless Steel, Special Materials on Application.

Setting Pressure

Model	TT7130, TT8130	TT7136, TT8136	TT7135, TT8135	TT7138, TT8138
Set Pressure (KPa)	0.2 to 6.9	0.2 to 6.9	6.9 to 103.4	6.9 to 103.4

TT7130, 7135, 7136, 7138 Dimensions (mm)

Nominal Size	L1	L2	H1	H2	H3	H4	A	B	W7130	W7136
2"x2"	200	160	209	322	200	303	123	110	160	155
3"x3"	215	200	303	322	230	303	138	126	200	200
4"x4"	268	248	380	400	267	380	153	154	230	248
6"x6"	306	290	483	504	332	483	166	195	285	290
8"x8"	388	390	687	710	438	687	216	237	345	390
10"x10"	476	488	795	820	511	795	273	280	406	488
12"x12"	562	584	946	973	594	946	320	306	485	584

TT8130, 8135, 8136, 8138 Dimensions (mm)

c	L1	L2	H1	H2	H3	H4	A	B	W8130	W8136
2"x3"	215	200	240	322	230	303	138	126	200	200
3"x4"	240	248	291	400	267	380	153	154	230	248
4"x6"	281	290	368	503	332	483	166	195	285	290
6"x8"	366	390	464	710	438	687	216	237	345	390
8"x10"	453	488	554	820	511	795	273	280	406	488
10"x12"	525	584	639	973	594	946	320	306	485	584
12"x14"	616	680	702	991	674	951	381	334	533	680

How to Order

THINKTANK TT | Model | Size | Material | Others

Model

7110
7120
7130
7140
8110
8120
8130
8140
...

Size

02"
03"
04"
05"
06"
|
12"

Material

Body Material
Seat Material
Disc Material

1 - Cabon Steel
2 - Aluminum
3 - SS304
4 - SS316
5 - SS316L
6 - Special

Others

Diaphragm Material

F - FEP
V - Viton
B - Buna-N
M - Metal to Metal
S - Special

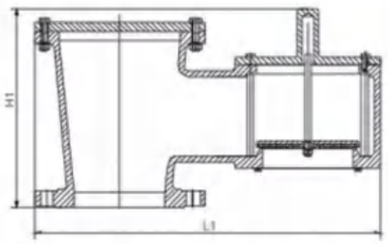
Options

N - No Option
Z - With Flame Arrester
J - Steam Jacket
C - Blowing Hole
G - With Inlet Pipe
L - Lining

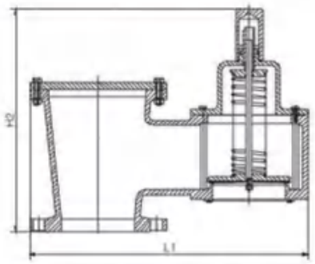
Flanged Ends

A - ANSI 150LB RF
D - PN10 RF
E - PN16 RF
J - JIS 10K RF

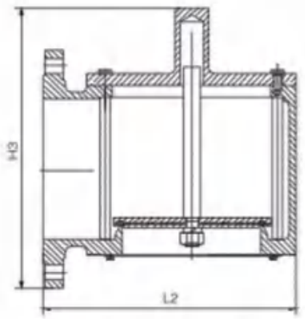
Mode TT7140/8140 Vacuum Relief Valve is designed for use on atmospheric and low-pressure storage tanks, vents to atmosphere or pipe away. The primary function is to protect tanks from damage, deformation, and minimize emissions to the environment as well as loss of product due to evaporation.



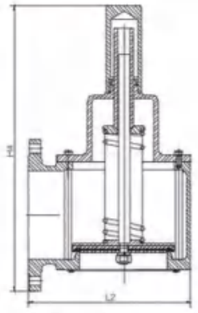
a. TT7140, TT8140 Vertical Installation/Weight Loaded



b. TT7143, TT8143 Vertical Installation /Spring Loaded



c. TT8145 Side Instalation/Weight Loaded



d. TT8147 Side Installation/Spring Loaded

- Sizes available 2"~14"(DN50~DN350).
- Vertical/Side Installation.
- The protective screens prevents external debris from entering the equipment through the inlet or outlet.
- The Flame Arrester, Inlet Pipe, Steam Jacket, Blowing Hole, Lining or Humidity Absorber are options to client.
- Designed and tested according to API 2000.
- The flanges are accordance with ANSI B16.5, or EN1092, JIS.
- Available Materials: Aluminum, Carbon Steel, Stainless Steel, Special Materials on Application.

Setting Pressure

Model	TT7140, TT8140	TT7143, TT8143	TT8145	TT8147
Set Pressure (KPa)	-0.2 to -4.3	-4.3 to 82	-0.2 to 4.3	-4.3 to -82

TT8140, 8143, 8145, 8147 Dimensions (mm)

Nominal Size	L1	L2	H1	H2	H3	H4	W8140	W8146
2"(DN50)	300	186	180	292	175	288	155	155
3"(DN80)	378	215	217	300	214	296	200	200
4"(DN100)	443	241	253	361	252	361	235	230
6"(DN150)	575	281	311	448	289	448	300	280
8"(DN200	705	366	370	615	350	645	360	345
10"(DN250)	825	453	439	705	440	742	410	406
12"(DN300)	970	525	519	853	520	909	470	483
14"(DN350)	—	616	—	—	535	910	—	533

How to Order

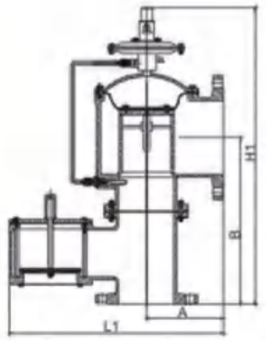
THINKTANK | Model | Size | Material | Others

TT

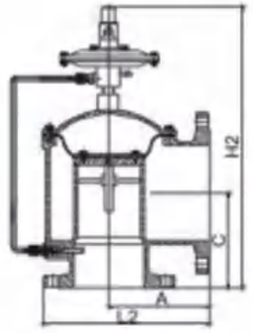
Model	Size	Material	Others
7110	02"	Body Material	Diaphragm Material
7120	03"	Seat Material	Options
7130	04"	Disc Material	Flanged Ends
7140	05"		
8110	06"	1 - Cabon Steel	F - FEP
8120	|	2 - Aluminum	V - Viton
8130	12"	3 - SS304	B - Buna-N
8140		4 - SS316	M - Metal to Metal
...		5 - SS316L	S - Special
		6 - Special	

Options	Flanged Ends
N - No Option	A - ANSI 150LB RF
Z - With Flame Arrester	D - PN10 RF
J - Steam Jacket	E - PN16 RF
C - Blowing Hole	J - JIS 10K RF
G - With Inlet Pipe	
L - Lining	

Compared with general gravity-loaded and spring-type breathing valves, Model TT9800 Pilot-operated breathing valves have higher sealing performance and can reach full displacement when the overpressure is less than 10%. Therefore, the operating pressure of the pilot breathing valve can be very close to the maximum design pressure of the storage tank, thereby reducing evaporation losses and improving economic performance.



a. TT9800 Pilot-Operated Relief Valve



b. TT9805 Pilot-Operated Relief Valve

Mode TT9800 Pilot-operated relief valve has two principal advantages over other types of relief valves:

1. It is bubble-tight to set pressure.
2. It is fully open at less than 10% above set pressure.

These characteristics permit an operating pressure nearer to the maximum allowable working pressure of the tank. High operating pressures reduce evaporation and total venting volume, thereby reducing product loss and the cost of processing emissions.

Model

Model TT9800 Pilot Operated Pressure Vacuum Relief Valve
Model TT9805 Pilot Operated Pressure Relief Valve

Design Feature

- Sizes available 2" ~12"(DN50~DN300).
- Fully open at less than 10%above set pressure .
- Pipe away.
- Designed and tested according to API 2000.
- The flanges are accordance with ANSI B16.5, or EN1092, JIS.
- Available Materials: Aluminum,Carbon Steel, Stainless Steel, Special Materials on Application.

Setting Pressure

Model	TT9800	TT9805
Set Pressure (KPa)	0.5 to 103.4	0.5 to 103.4
Set Vacuum (KPa)	-0.2 to -4.3	/

TT9800 Dimensions (mm)

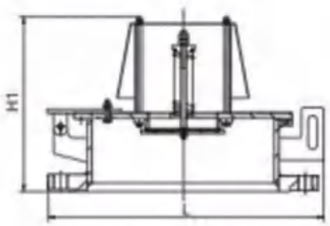
Nominal Size	L1	L2	Width	H1	H2	A	B	C
2"x3"	338	191	280	340	525	115	282	112
3"x4"	406	233	280	765	580	138	301	112
4"x6"	472	294	280	870	655	179	360	148
6"x8"	594	354	345	1025	755	214	460	202
8"x10"	720	412	405	1005	700	240	514	214
10"x12"	860	486	485	1080	745	283	614	246
12"x14"	998	562	535	1140	795	321	696	280

How to Order

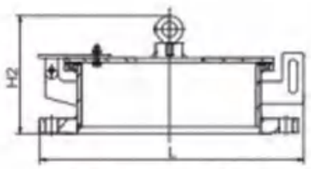
THINKTANK | Model | Size | Material | Others

TT | 7110 / 7120 / 7130 / 7140 / 8110 / 8120 / 8130 / 8140 / ... | 02" / 03" / 04" / 05" / 06" / | / 12" | Body Material / Seat Material / Disc Material: 1 - Cabon Steel, 2 - Aluminum, 3 - SS304, 4 - SS316, 5 - SS316L, 6 - Special | Diaphragm Material: F - FEP, V - Viton, B - Buna-N, M - Metal to Metal, S - Special | Options: N - No Option, Z - With Flame Arrester, J - Steam Jacket, C - Blowing Hole, G - With Inlet Pipe, L - Lining | Flanged Ends: A - ANSI 150LB RF, D - PN10 RF, E - PN16 RF, J - JIS 10K RF

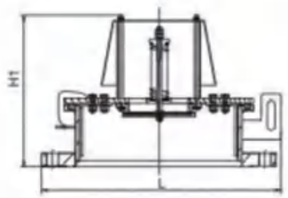
Model TT8160 Emergency Pressure Relief Valves are designed to provide emergency relief capacity beyond that furnished by the normal operating pressure relief valve on the tank.
The valve protects the tank against rupture or explosion that could result from excessive internal pressure caused by fire.



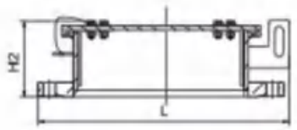
a. TT8160 Emergency Pressure Vacuum Relief Valve



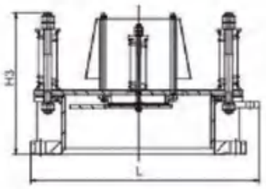
b. TT8168 Emergency Pressure Relief Valve



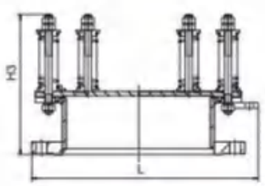
c. TT8170 Emergency Pressure Vacuum Relief Valve



d. TT8178 Emergency Pressure Relief Valve



e. TT8180 Emergency Pressure Vacuum Relief Valve



f. TT8188 Emergency Pressure Relief Valve

Design Features

- Sizes available 16", 20", 24".
- Designed and tested according to API 2000.
- The flanges are accordance with ANSI B16.5, or EN1092, JIS.
- The opening stop block of TT8160 and TT8168 emergency pressure vacuum relief valves can effectively help the valve disc to reset.
- The guide rod of Model TT8170 and TT8178 emergency pressure vacuum relief valve can prevent the valve cap from shifting and provide guidance.
- Model TT8180 and tt8188 emergency pressure vacuum relief valves are spring-loaded and suitable for storage tanks with relatively high set pressure.
- Available Materials: Aluminum, Carbon Steel, Stainless Steel, Special Materials on Application.

Setting Pressure

Model	TT8160	TT8168	TT8170	TT8178	TT8180	TT8188
Set Pressure (KPa)	0.6 to 3.4	0.6 to 3.4	0.6 to 6.9	0.6 to 6.9	6.9 to 103.4	6.9 to 103.4
Set Vacuum (KPa)	-0.2 to -1.7	/	-0.2 to -1.7	/	-0.2 to -1.7	/

TT8160 Dimensions (mm)

Nominal Size	L1	H1	H2	H3
16" (DN400)	597	350	270	476
20" (DN500)	765	350	270	584
24" (DN600)	845	350	270	686

How to Order

THINKTANK | Model: TT | 7110, 7120, 7130, 7140, 8110, 8120, 8130, 8140, ... | Size: 02", 03", 04", 05", 06", |, 12" | Material: Body Material, Seat Material, Disc Material — 1 - Cabon Steel; 2 - Aluminum; 3 - SS304; 4 - SS316; 5 - SS316L; 6 - Special | Others: Diaphragm Material — F - FEP; V - Viton; B - Buna-N; M - Metal to Metal; S - Special | Options — N - No Option; Z - With Flame Arrester; J - Steam Jacket; C - Blowing Hole; G - With Inlet Pipe; L - Lining | Flanged Ends — A - ANSI 150LB RF; D - PN10 RF; E - PN16 RF; J - JIS 10K RF

Mode FA Flame arrester is designed to prevent deflagration and detonation. It can be installed either at the end of a pipe-line or beside it, as well as on top of storage tanks. Its purpose is to stop the spread and diffusion of deflagration.

Type

a. Model FA-I Vertical End-of-Line Flame Arrester
b. Model FA-II In-Line Flame Arrester
c. Model FA-III Horizontal Line Flame Arrester
d. Model FA-IV Detonation Flame Arrester

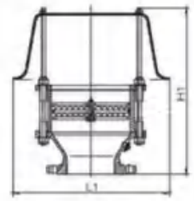
Design Features

- Sizes available: 2 " to 12" (DN50 ~ DN300) .
- Proven spiral-wound, crimped ribbon, flame element.
- Low pressure drop with multiple element sizes available for each flange size.
- Easy cleaning, bi-directional flame arresting.
- Suitable for storing tanks containing first-category oil with a flashpoint lower than 28℃ or second-category oil with a flashpoint lower than 60℃, such as petroleum, toluene, kerosene, coal oil, and base oil.
- Can be used with a pressure/vacuum relief valve, for vertical or horizontal installation.
- Steam jacket, blowing hole, test hole absorber are options for clients.
- Designed and tested according to GB/T 13347, GB/T 5908.
- The flanges are in accordance with ANSI B16.5, or EN1092, GB/T9113, JIS.
- Available materials: aluminum, carbon steel, stainless steel, special materials upon application.

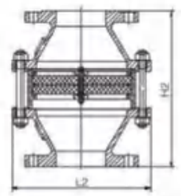
Deflagration Resistance, Detonation Resistance Mixed Gas & Concentration for Test

Grade	MESG	Test Gas Requirements			
		Gas	Gas Concentration%	Gas Content%	Safety Clearance/mm
ⅡA	≥0.9	Propane	≥ 95	4.2±0.2	0.94±0.02
ⅡB1	≥0.85	Ethylene	≥ 98	5.0±0.1	0.83±0.02
ⅡB2	≥0.75			5.5±0.1	0.73±0.02
ⅡB3	≥0.65			6.5±0.5	0.67±0.02
ⅡB	≥0.5	Hydrogen	≥ 99	45±0.5	0.48±0.02
ⅡC	<0.5			28.5±0.5	0.31±0.02

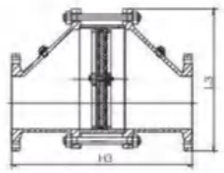
FA Flame Arrester Dimensions (mm)



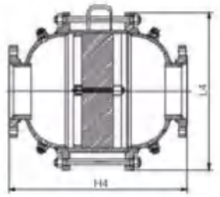
a. FA-I Vertical End-of-Line Flame Arrester



b. FA-II In-Line Flame Arrester



c. FA-III Horizontal Line Flame Arrester



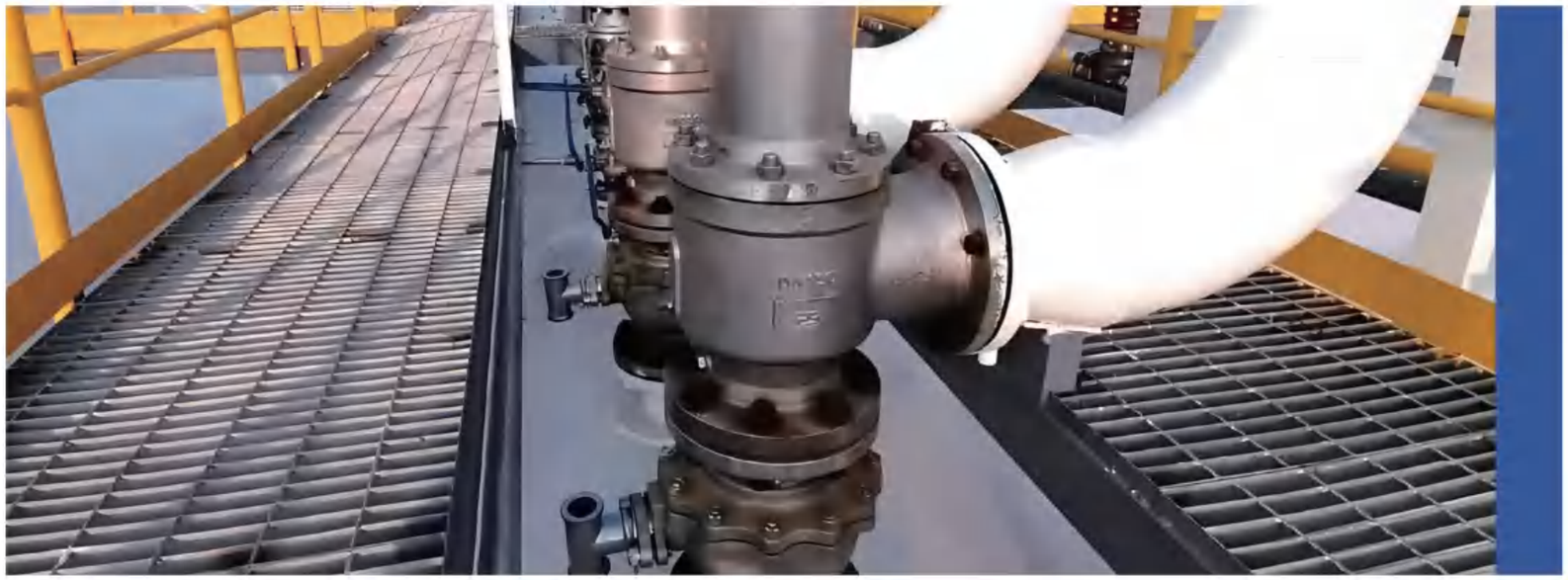
d. FA-IV Detonation Flame Arrester

Nominal Size	L1	H1	L2	H2	L3	H3	L4	H4
2" (DN50)	263	300	205	210	221	349	230	437
3" (DN80)	330	330	260	260	278	400	280	516
4" (DN100)	390	410	280	310	317	457	345	570
6" (DN150)	488	525	345	400	407	533	450	654
3" (DN200)	584	598	440	445	534	635	570	753
8" (DN250)	770	695	563	530	637	762	700	824
12" (DN300)	880	805	650	635	737	826	800	970

From 14" to 36 "(DN350~DN900) Large size flame arresters need to be specially customized. Please feel free to contact THINKTANK's sales representative.

Ordering Information

Project Name	
Tag Number	
Installation Position	
Mode	FA-I, FA-II, FA-III, FA-IV
Size	2", 3", 4", 6", 8", 10", 12"
Qty	
Type of Flame Arrester	End-line, In-line
Material	Carbon Steel, Stainless Steel
Flanged Ends	ANSI150#RF, PN10 RF, PN16 RF
Gas Crade	ⅡA, ⅡB1, ⅡB2, ⅡB3, ⅡB, ⅡC
Flow Rates	
Maximum Allowable Pressure Drop	



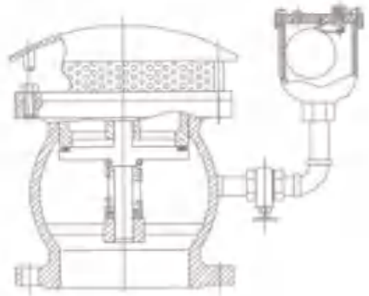
The vacuum breaker is designed to prevent vacuum conditions from occurring in pipes or tanks.
After a power failure or rapid draining of the system, a vacuum condition often occurs in a pipe or tank. The pressure difference between the inside vacuum and outside air will cause a downward force on the disc.
At vacuum pressures greater than -0.25 psig, the disc will compress the spring and move downward, allowing free flow of outside air into the pipe or tank to eliminate the vacuum. When positive pressure is restored in the pipe or tank, the valve will automatically close and seal tightly. Optional valves can be piped to the vacuum breaker to vent trapped air in the pipeline if needed.

Type

a. Model VB41 Vacuum Breaker Valve
b. Model VB42 Vacuum Breaker with Air Release Valve

Design Features

- Size available: 2" to 42" (DN50~DN1050).
- The flanges are in accordance with ANSI B16.5, HG/T20592, GB/T9113, JIS.
- Available materials: Cast Iron, Carbon Steel, Stainless Steel. Special Materials upon Application.



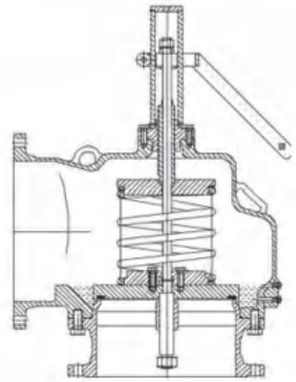
This is a large and high-capacity atmospheric safety valve with a soft seat that provides tightness. It is designed for use in steam condensers and turbines.

Type

a. Model A48XSH Straight-through Atmospheric Safety Relief Valve (Water seal)
b. Model A48XSV Aangle-through Atmospheric Safety Relief Valve (Water seal)

Design Features

- Size available: 6" to 36" (DN150 to DN900).
- This limit is 0.5 barg according to the requirements of Pressure Equipment Directive 97/23/EC for the European Community or 10 psig (0.69 barg) according to the Heat Exchanger Institute (HEI).
- Available vertical or horizontal installation.
- The A48X Series steam safety valve is used for the overpressure protection of condensers that normally operate under vacuum.
- The valve has been specially designed to limit the pressure that may inadvertently occur in the condenser to a level below the value at which the condenser is considered, by local code or regulation, a steam pressure vessel.
- Although the A48X Series soft-sealed atmospheric safety valve was intended for steam condenser and turbine applications, it can also be used for various applications involving gas and vapors, where its soft seat tightness performance and large flow capacity meet the service requirements.



The N2 blanketing valve is designed to maintain constant gas pressure in the vapor space of storage tanks. It is capable of regulating the desired pressure within specific limits when liquid runs out or when a vacuum occurs due to temperature decrease. Additionally, it serves to prevent air and humidity from entering the storage vessel, thereby preserving products and safeguarding against fire. The controller also plays a critical role in protecting the tank from explosions by restricting sparks and preventing fluid outflow through evaporation.

Design Features

- Size: DN20 ~ DN100
- Pressure Rating: PN1.6 ~ PN6.4MPa, 150 ~ 300LB
- Flange Standard: JB/T79.1-94. 79.2-94, ANSI B16.
- Body Material: Cast iron, cast steel, stainless steel
- Plug type: Single seated, double-seat, Cage guided
- Stem material: Stainless steel
- Pressure balancing: Stainless steel bellows
- Flow characteristic: Quick open
- Working temperature: ≤ 80°C

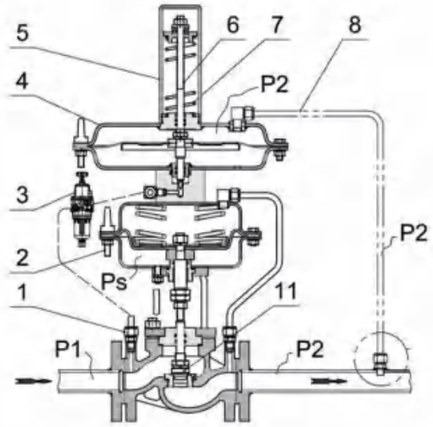
Rated Kv Value · Rated Travel · Adjusting Pressure Range (Sheet 1)

Nominal Diameter DN(mm)		20	25	32	40	50	65	80	100	125	150	200	250	300
Rated Flow Characteristic Kv	Single- Seated	7	11	20	30	48	75	120	190	300	480	760	–	–
	Cage Type	7	11	20	30	48	75	120	190	300	480	760	–	–
	Double- Seated	–	–	22	33	53	83	132	209	330	528	836	1210	1925
Rated Travel (mm)		8		10		14	20		25	40		50	60	70
Adjusting Pressure Range (kPa)		15~50, 40~80, 60~100, 80~140, 120~180, 160~220, 200~260, 240~300, 280~350, 330~400, 380~450,												
		430~500, 480~560, 540~620, 600~700, 680~800, 780~900, 880~1000, 950~1100, 1080~1250,												
		1230~1400, 1380~1550, 1530~1800, 1780~2000, 1980~2300, 2280~2500												

Main Parameters For Micro-Flow, Single-Seated (Sheet 2)

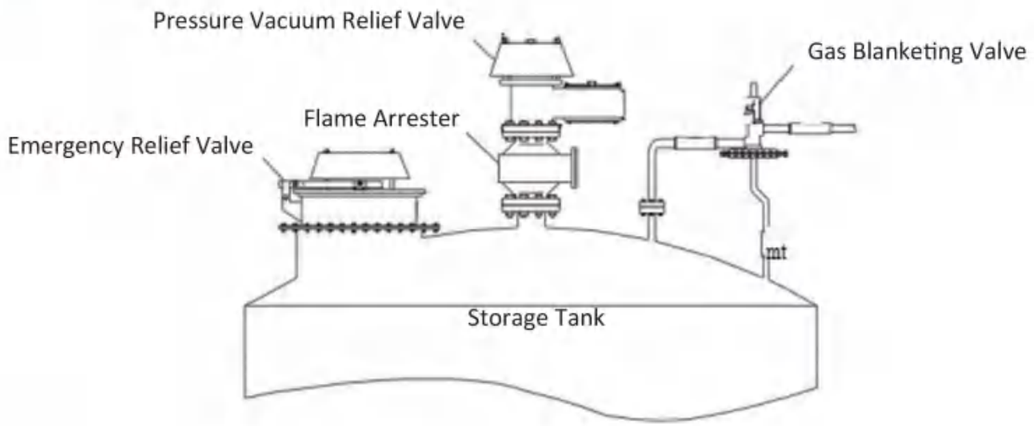
Nominal Diameter DN(mm)	20, 25												
Seat Diameter(mm)	6								7	8	10	12	15
Rated Flow Characteristic Kv	0.01	0.02	0.048	0.06	0.08	0.12	0.2	0.32	0.5	0.8	1.8	2.8	4.4
Rated Travel (mm)	5												

The nitrogen sealing device for natural gas comprises three main parts: the model NGP pilot self-operated pressure regulating valve (referred to as the nitrogen supply valve), the model GBV self-operated regulating valve (the nitrogen release valve), and the breather valve. If the tank's pressure exceeds the set value, the nitrogen supply valve closes, and the nitrogen release valve opens (if there is no breather valve on the tank top, or if the breather valve fails to open) to release excess pressure. As the tank pressure drops, the nitrogen release valve closes, and the nitrogen supply valve opens to inject nitrogen into the tank. It's best to keep the pressure in front of the nitrogen supply valve below 1.0 MPa.



1. Main valve 2. Actuator 3. Filter
4. Pilot Actuator 5. Spring Cover
6. Valve Stem 7. Setting Pressure Spring
8. Tubing

Typical Installation



The tank safety setup includes pressure relief valve, emergency relief valve, and gas blanket regulator. The pressure relief valve manages pressure changes, preventing tank damage.
The emergency relief valve handles excess pressure during fires or pump overflow.
The gas blanket regulator maintains low gas pressure. A flame arrester prevents flame spread and protects against heat and ignition. Usually, a "vent to atmosphere" valve is installed above the flame arrester.

Pressure/Vacuum Relief Valve Ordering Information

Model	TT7110/8110, TT7120/8120, TT7130/8130, TT7140/8140 ...		
Size	2", 3", 4", 6", 8", 10", 12"		
Tank Data	Max. Operating Pressure		
	Operating Temperature		
Pressure Operating Conditions	Fluid/State/Mol.		
	Density /Ratio of Specific Heats		
	Relieving Temperature		
	Max. Flow Capacity		
	Set Pressure		
	Allowable Overpressure		
Vacuum Operating Conditions	Fluid/State/Mol.		
	Density /Ratio of Specific Heats		
	Relieving Temperature		
	Max. Flow Capacity		
	Set Pressure		
	Allowable Overpressure		
Material	Body Material	Carbon Steel, Stainless Steel	
	Seal Material	SS304, SS316, SS316L	
	Flanged Ends	ANSI 150LB RF, PN10 RF, PN16 RF	
Options	Flame Arrester	Yes ☐	No ☐
	Jacket	Yes ☐	No ☐
	Blowing Hole	Yes ☐	No ☐
	Special	Yes ☐	No ☐

How to Order

THINKTANK Model: TT

Model	Size	Body Material	Seat Material	Disc Material
7110	02"	1 - Cabon Steel	1 - Cabon Steel	1 - Cabon Steel
7120	03"	2 - Aluminum	2 - Aluminum	2 - Aluminum
7130	04"	3 - SS304	3 - SS304	3 - SS304
7140	05"	4 - SS316	4 - SS316	4 - SS316
8110	06"	5 - SS316L	5 - SS316L	5 - SS316L
8120	—	6 - Special	6 - Special	6 - Special
8130	12"			
8140	...			

Material: Body Material / Seat Material / Disc Material

Diaphragm Material: F - FEP; V - Viton; B - Buna-N; M - Metal to Metal; S - Special

Others

Size

Material

Body Material

Seal Material

Disc Material

1 - Cabon Steel

2 - Aluminum

3 - SS304

4 - SS316

5 - SS316L

6 - Special

Diaphragm Material

F - FEP

V - Viton

B - Buna-N

M - Metal to Metal

S - Special

Others

Flanged Ends

A - ANSI 150LB RF

D - PN10 RF

E - PN16 RF

J - JIS 10K RF

Options

N - No Option

Z - With Flame Arrester

J - Steam Jacket

C - Blowing Hole

G - With Inlet Pipe

L - Lining

Flanged Ends

A - ANSI 150LB RF

D - PN10 RF

E - PN16 RF

J - JIS 10K RF

Options

N - No Option

Z - With Flame Arrester

J - Steam Jacket

C - Blowing Hole

G - With Inlet Pipe

L - Lining

API 2000 – 5th Edition
- Tank volume
- Liquid flow (pump-in/-out)
- Temperature change
- Directed at pressure control for hydrocarbons in low pressure tanks
- Industrial tanks as well

API 2000 – 6th Edition (Appendix A = API 5th edition)
- Tank volume
- Liquid flow (pump-in/-out)
- Pump out
- Temperature change
- Average storage temperature
- Vapour pressure
- Latitude
- Additional focus on alcohols
- Higher vapour pressures
- Can double the inflow (big change in thermal vacuum)

API 2000 – 7th Edition (Appendix A = API 5th edition)
- Minor calculation changes
- For volatile liquids, the outbreathing calculation is simply doubled
- No need to perform an evaporation rate calculation