www.ikspc.com

TANK SAFETY & PROTECTION DEVICES

Aurora Works Co.,Ltd.

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Korea Steel Power Corp

488-1, Wolhwa-ro, Tong Jin-Eup, Gimpo-Si, Korea
(Zip Code : 415-862)
Web site: www.ikspc.com

Aurora Works Co., Ltd.

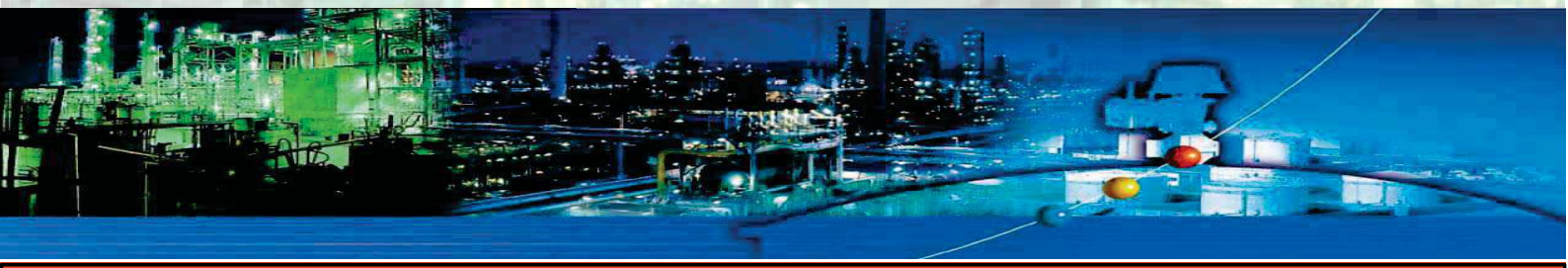
Company Profile:

With more than 15 years' experience for engineering team, Aurora Works Co., Ltd. is a market leader in the following field;
- **Supply Tank Protection Devices, Instrumentation & Valves.**
- **Support a wide range of industries from manufacturing to process control integrators.**

Industrial Applications include:

- **Power plant, Cogeneration Plants**
- **Petrochemical**
- **Chemical Processing**
- **Automotive Manufacturing**
- **Food and Beverage**
- **Cement Industries**
- **Oil & Gas; Crude and Product Tank Farms**
- **Refinery**
- **Pulp & Paper**
- **Water & Water Treatment**
- **Steel and Metal.**
- **Pharmaceutical**
- **A system integrator and Lump Sum Turn Key Project for Plant Automation System, Instrumentation process control system, SCADA /DCS, Fire & gas detection, etc.**
- **Service; Trouble Shooting, Calibration, Commissioning Start Up.**
- **Training Courses for latest technology to customer.**

In addition, we support the expansion of industry in the Eastern Part of Thailand, we, Aurora Works Co., Ltd. have established Rayong Workshop Center to provide customer with fast, effective and efficient services.



OUR CUSTOMERS

LETTER OF AUTHORIZATION “KSPC

AGENCY AGREEMENT

THIS AGREEMENT IS MADE ON THE DAY OF _01TH, JAN. 2017.

BETWEEN

KOREA STEEL POWER CORPORATION.
AS MANUFACTURER.
488-1, WOLHA-RO, TONGJIN-EUP, GIMPO-SI, GYEONGGI-DO, KOREA
TEL : 82-31-998-3825~7 FAX : 82-31-998-3828

AND

AURORA WORKS CO.,LTD
888/24 SOI PRACHAUTHIT 86, PRACHAUTHIT ROAD, THUNG KHRU,
BANGKOK 10140
TEL : 66 2815-5114 FAX : 66 2815-6128

(*HEREIN AFTER REFERRED TO AS 'AGENT"*)

1. APPOINTMENT OF AGENT

1.01 COMPANY HEREBY APPOINTS THE AGENT AS ITS EXCLUSIVE REPRESENTATIVE FOR THE SALE OF COMPANY PRODUCTS/SERVICES AND EQUIPMENT. THE AGENT ACCEPTS THE SAID APPOINTMENT AND AGREES TO PROVIDE THE SERVICES SPECIFIED IN THIS AGREEMENT.

1.02 REPRESENTATION OF COMPANY IN THE ASSIGNED AREA WILL BE CONDUCTED BY THE HEREIN NAMED AGENT, AND ANY DEVIATION MUST BE APPROVED AND AGREED TO BY COMPANY PRIOR TO WRITTEN CONSENT. SUCH CONSENT MUST BE OBTAINED BEFORE ANY SALES ARE MADE OR COMMISSIONS WILL BE DISTRIBUTED TO AGENT BY COMPANY.

1.03 AGENT IS AN INDEPENDENT CONTRACTOR AND COMPANY SHALL IN NO MANNER BE CONSIDERED HIS EMPLOYER AND COMPANY SHALL NOT BE LIABLE FOR ANY ACT AS EMPLOYER, INCLUDING BUT NO LIMITED TO PAYMENT OF ANY TAXES, EXPENSES OR OTHER COSTS OF DOING BUSINESS.

PAGE 1 Aurora Works Co.,Ltd

IN WITNESS WHEREOF, THE PARTIES HERE TO HAVE EXECUTED THIS AGREEMENT

ON ___01TH, JAN, 2017_____

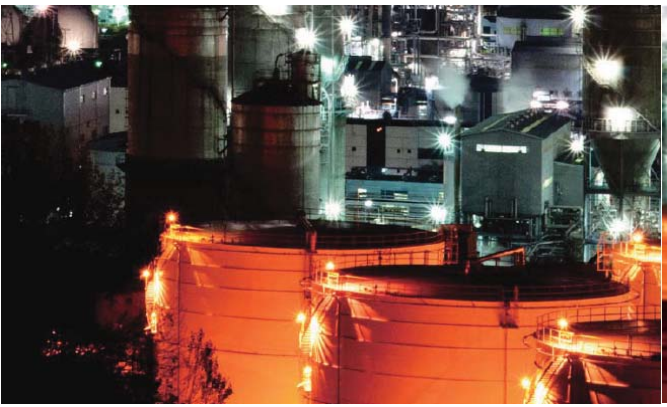
AURORA WORKS CO.,LTD

BY: _____
KOMGRICH DEEJAMALA / MANAGING DIRECTOR

KOREA STEEL POWER CORP AS MANUFACTURER

BY _____
HWA JIK JEONG / MANAGING DIRECTOR

Products Certified



Our Vision

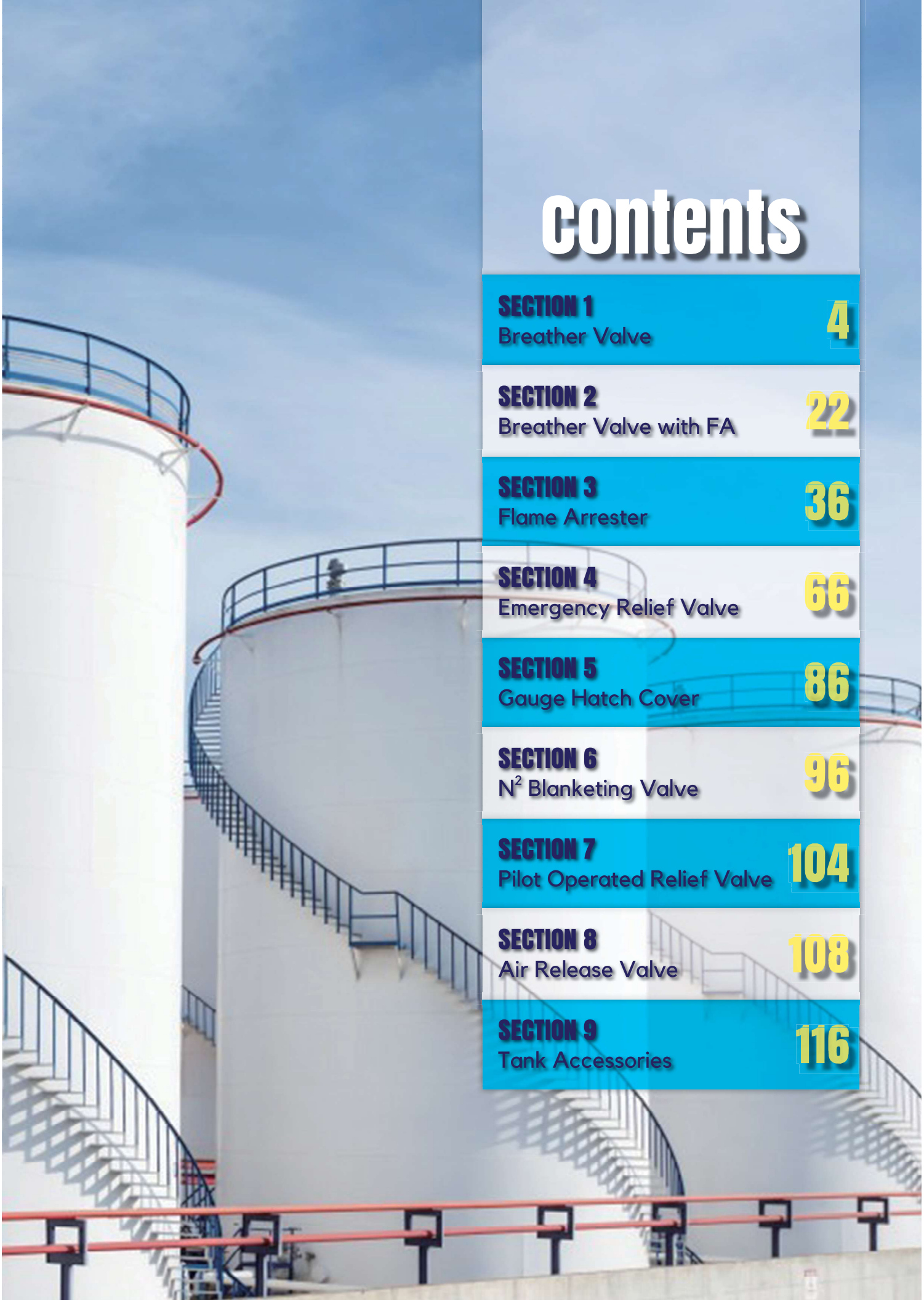
is to be the **PREFERRED GLOBAL SUPPLIER** of tank safety & protection equipment solutions and services for the petrochemical industry.

Our Value

is in deliverying reliable equipment that gurantees system uptime and help our customers **BOOST PRODUCTIVITY AND PROFITABILITY**

Our Strategy

is built around **WORKING IN PARTNERSHIP WITH OUR CUSTOMERS** to devise intelligent, innovative and cost-effective solutions.



Contents

TANK SAFETY & PROTECTION DEVICE

SECTION 1_BREATHER VALVE

PRESSURE VACUUM RELIEF VALVE

PRESSURE RELIEF VALVE

VACUUM RELIEF VALVE

Breather Valve is designed manufactured and tested according to the API 2000 code, these valves utilize the latest technologies to provide protection against positive or vacuum over pressure and prevent air intake, evaporative losses of product and help to contain odorous and potentially explosive vapor.

KSBB/BS

P6

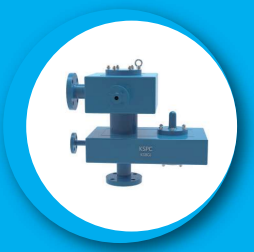
KSBG/GS

P8

KSBBJ/BSJ

P10

KSBGJ/GSJ



P12

KSPR/PS

P14

KSBD/DS

P16

KSVR/VS

P18

KSVB

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SECTION 1.1_KSBB/BS

PRESSURE VACUUM RELIEF VALVE VENT TO ATMOSPHERE

INTRODUCTION

The model KSBB and KSBS pressure vacuum valves are an advanced design for vent to atmosphere applications. Designed, manufactured and tested according to the API 2000 code, these valves utilize the latest technologies to provide protection against positive or vacuum over pressure and prevent air intake, evaporative losses of product and help to contain odorous and potentially explosive vapor.

Setting Pressure

KSBB Weight Loaded model	Min. +/- 20 mmW.C ~ Max. + 700/- 430 mmW.C
KSBS Spring Loaded model	Min. + 700/- 430 mmW.C ~ Max. +/- 9,000 mmW.C

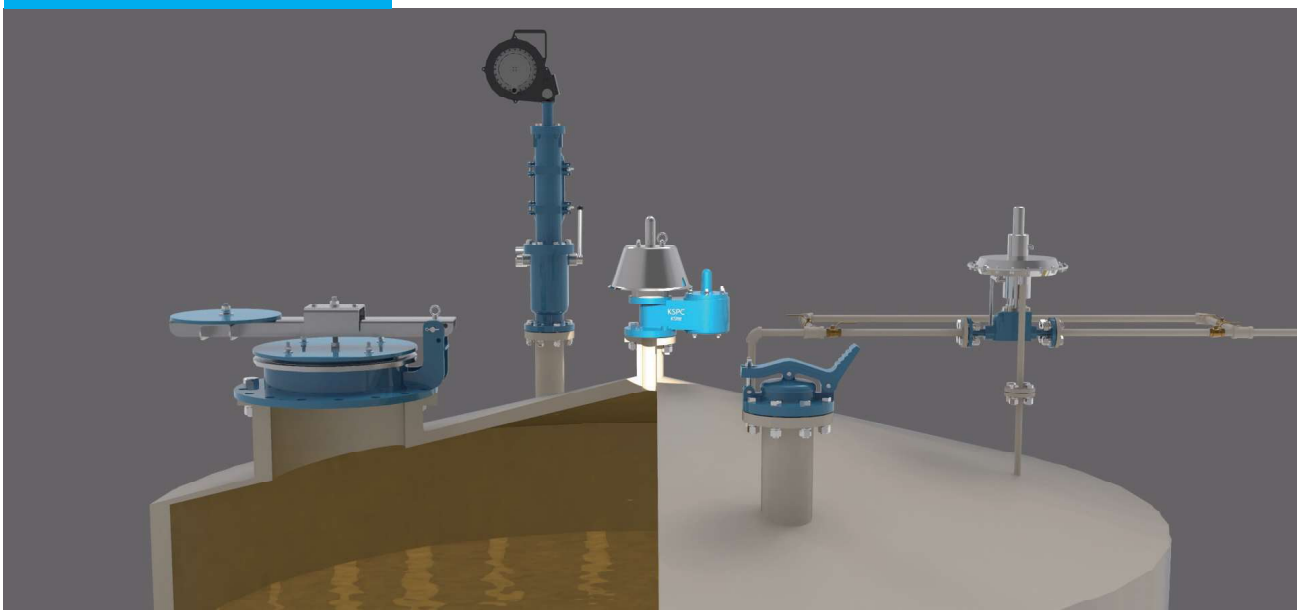
Body Materials Aluminium, Carbon Steel, SS304 and SS316 with various trims (Different materials available on request)

Sizes range DN 50 ~ DN 350 with ASME 150Lb flanges (Different connections available on request)

Rules & Certifications API 2000 & ATEX / KFI

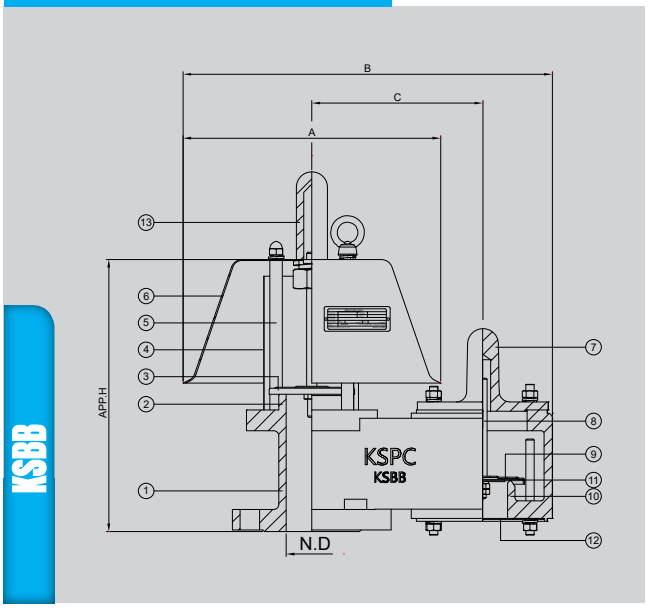
Optimum / Optional Design & Arrangments Stem Jacket type, Steam Tracing type, Proximity type, Teflon Coating/Lining type

APPLICATION

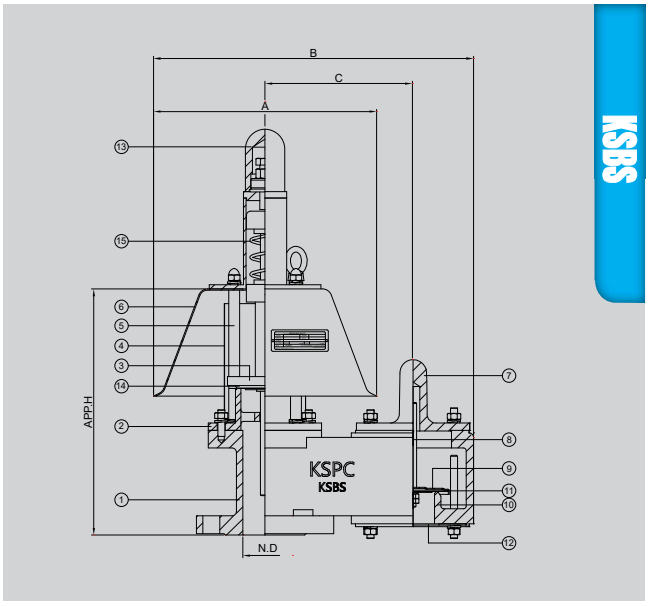


OUTLINE DRAWING

KSBB



KSBS



DIMENSION TABLE

SIZE	2"	3"	4"	6"	8"	10"	12"	14"
N.D	50	80	100	150	200	250	300	350
A	250	294	324	440	476	544	620	685
B	359	446	485	627	742	861	978	1125
C	165	206	230	283	348	406	466	542
Approx. H	271	304	327	398	449	509	558	567

NOTE Standard Connection(ASME 150Lb flange) and JIS or different types are available upon request.

COMPONENT MATERIAL

ITEM NO	COMPONENT	BODY	ALUMINIUM	CARBON STEEL	SS304	SS316
		TRIM	SS304	SS304	SS304	SS316/316L
1	BODY-1		B26-319.F	A216-WCB	A351-CF8	A351-CF8M
2	PRESSURE SEAT		B26-319.F	A351-CF8	A351-CF8	A351-CF8M
3	PRESSURE DISC		SS304	SS304	SS304	SS316L
4	BIRD SCREEN		SS304	SS304	SS304	SS316
5	PRESS. GUIDE POST		SS304	SS304	SS304	SS316
6	WEATHER HOOD		SS304	SS304	SS304	SS316L
7	VACUUM COVER		B26-319.F	CARBON STEEL	SS304	SS316L
8	VACUUM STEM		SS304	SS304	SS304	SS316
9	VACUUM DISC		SS304	SS304	SS304	SS316L
10	VACUUM SEAT		B26-319.F	A351-CF8	A351-CF8	A351-CF8M
11	DIAPHRAGM		TEFLON			
12	VACUUM SCREEN		SS304	SS304	SS304	SS316
13	STEM GUIDE		SS304	SS304	SS304	SS316
14	O-RING		VITON			
15	SPRING		SS304	SS304	SS304	SS316L

SECTION 1.2_KSBG/GS

PRESSURE VACUUM RELIEF VALVE WITH PIPE AWAY

INTRODUCTION

The model KSBG and KSGS pressure vacuum valves are an advanced design for pipe away applications. Designed, manufactured and tested according to the API 2000 code, these valves utilize the latest technologies to provide protection against positive or vacuum over pressure and prevent air intake, evaporative losses of product and help to contain odorous and potentially explosive vapours.

Setting Pressure

KSBG Weight Loaded model	Min. +/- 20 mmW.C ~ Max. + 700/- 430 mmW.C
KSGS Spring Loaded model	Min. + 700/- 430 mmW.C ~ Max. +/- 9,000 mmW.C

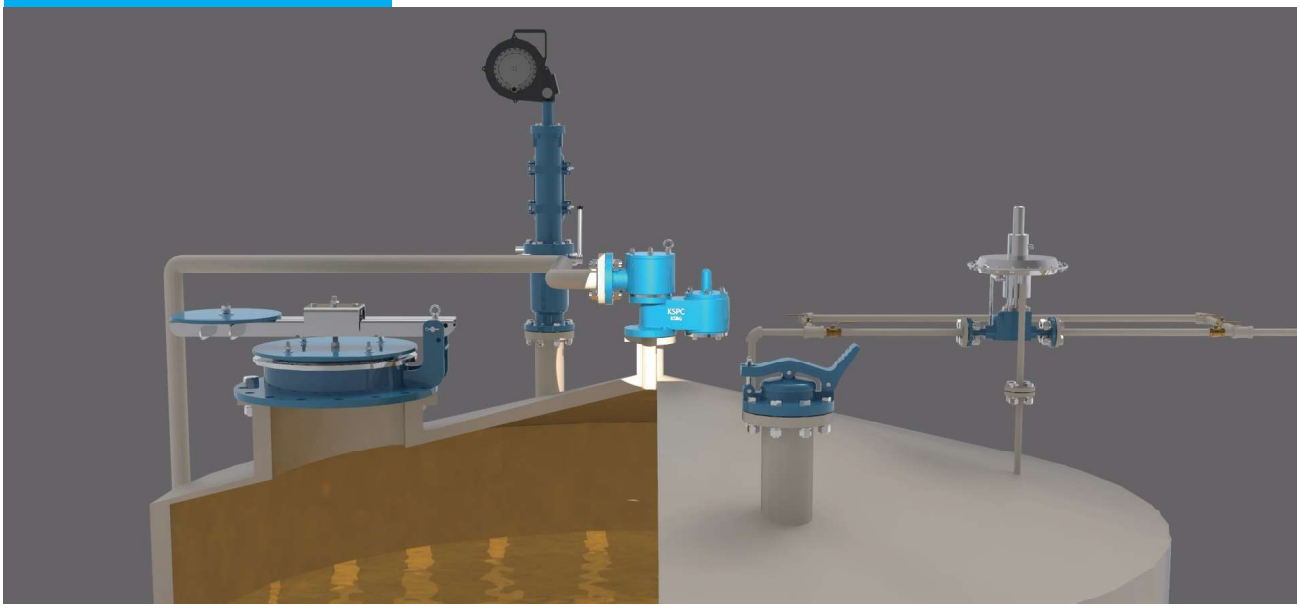
Body Materials Aluminium, Carbon Steel, SS304 and SS316 with various trims (Different materials available on request)

Sizes range DN 50 ~ DN 350 with ASME 150Lb flanges as standard (Different connections available on request)

Rules & Certifications API 2000 & ATEX / KFI

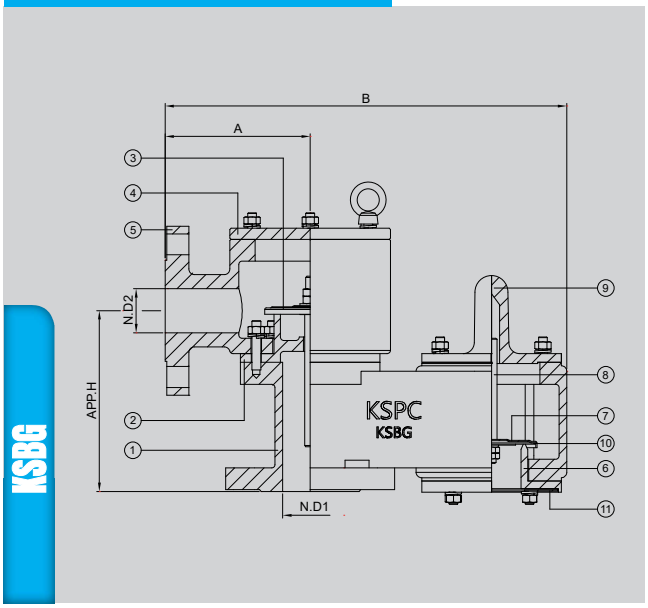
Optimum / Optional Design & Arrangments Stem Jacket type, Steam Tracing type, Proximity type, Teflon Coating/Lining type

APPLICATION

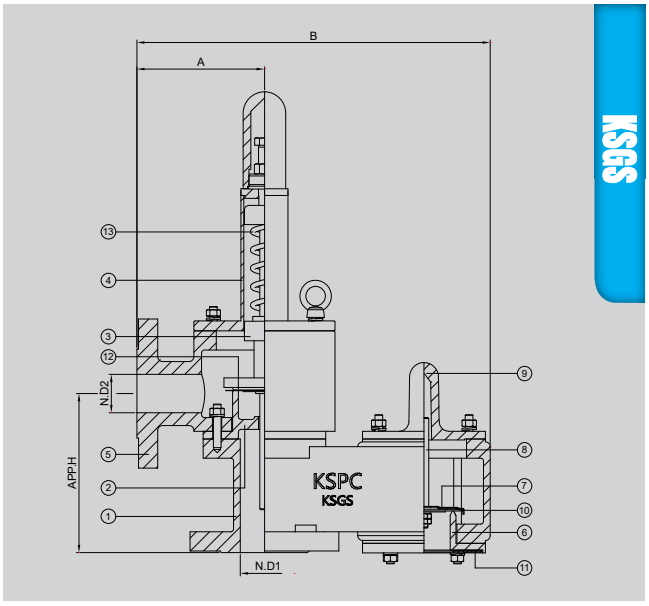


OUTLINE DRAWING

KSBG



KSGS



DIMENSION TABLE

SIZE	2" X 2"	3" X 3"	4" X 4"	6" X 6"	8" X 8"	10" X 10"	12" X 12"	14" X 14"
N.D 1	50	80	100	150	200	250	300	350
N.D 2	50	80	100	150	200	250	300	350
A	132	171	184	223	258	279	329	415
B	366	470	507	630	762	868	997	1197
Approx. H	165	204	227	282	338	387	449	483
SIZE	2" X 3"	3" X 4"	4" X 6"	6" X 8"	8" X 10"	10" X 12"	12" X 14"	14" X 16"
N.D 1	50	80	100	150	200	250	300	350
N.D 2	80	100	150	200	250	300	350	400
A	142	172	189	228	258	290	343	420
B	376	471	512	635	762	879	1011	1211
Approx. H	186	214	252	307	363	412	474	523

NOTE Standard Connection(ASME 150Lb flange) and JIS or different types are available upon request.

COMPONENT MATERIAL

ITEM NO	COMPONENT	BODY	ALUMINIUM	CARBON STEEL	SS304	SS316
		TRIM	SS304	SS304	SS304	SS316/316L
1	BODY-1		B26-319.F	A216-WCB	A351-CF8	A351-CF8M
2	PRESSURE SEAT		B26-319.F	A351-CF8	A351-CF8	A351-CF8M
3	PRESSURE DISC		SS304	SS304	SS304	SS316L
4	PESSURE COVER		ALUMINUM	CARBON STEEL	SS304	SS316L
5	BODY-2		B26-319.F	A216-WCB	A351-CF8	A351-CF8M
6	VACUUM SEAT		B26-319.F	A351-CF8	A351-CF8	A351-CF8M
7	VACUUM DISC		SS304	SS304	SS304	SS316L
8	VACUUM STEM		SS304	SS304	SS304	SS316
9	VACUUM COVER		B26-319.F	SS304	SS304	SS316L
10	DIAPHRAGM		TEFLON			
11	VACUUM SCREEN		SS304	SS304	SS304	SS316
12	O-RING		VITON			
13	SPRING		SS304	SS304	SS304	SS316

SECTION 1.3_KSBBJ/BSJ

PRESSURE VACUUM RELIEF VALVE WITH STEAM JACKET

INTRODUCTION

The model KSBBJ and KSBJS pressure vacuum valves are an advanced design for vent to atmosphere applications. Designed, manufactured and tested according to the API 2000 code, these valves utilize the latest technologies to provide protection against positive or vacuum over pressure and prevent air intake, evaporative losses of product and help to contain odorous and potentially explosive vapours.

Setting Pressure

KSBBJ Weight Loaded model	Min. +/- 20 mmW.C ~ Max. + 700/- 430 mmW.C
KSBJS Spring Loaded model	Min. + 700/- 430 mmW.C ~ Max. +/- 9,000 mmW.C

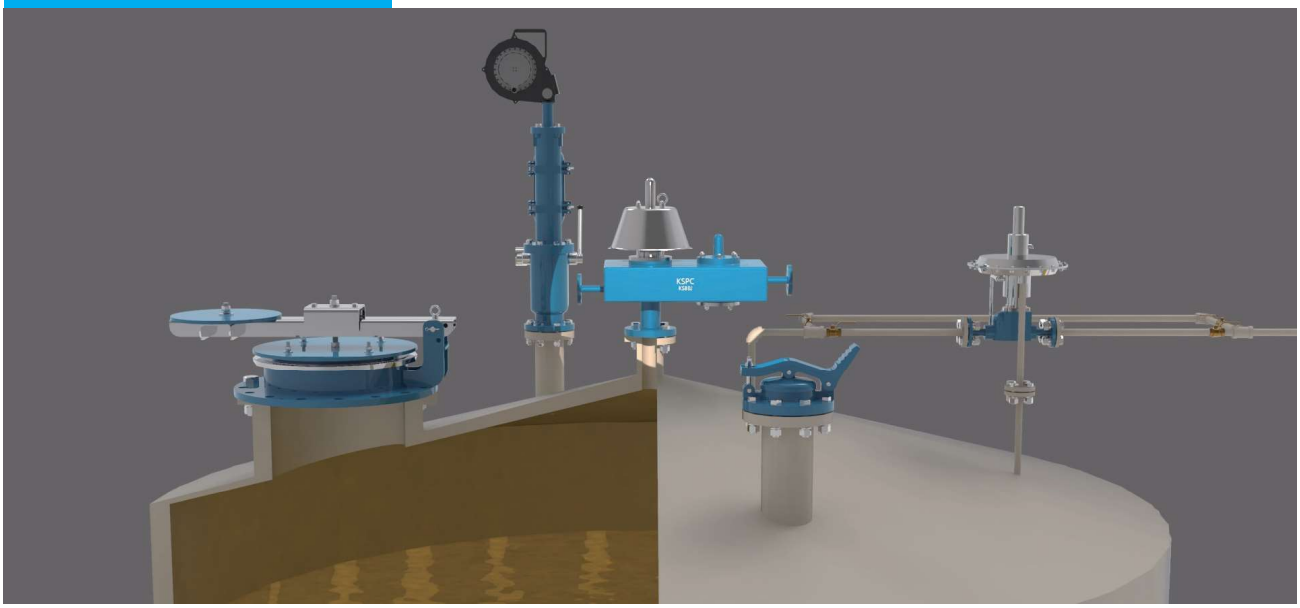
Body Materials Carbon Steel, SS304 and SS316 with various trims
(Different materials available on request)

Sizes range DN 50 ~ DN 350 with ASME 150Lb flanges as standard
(Different connections available on request)

Rules & Certifications API 2000 & KFI

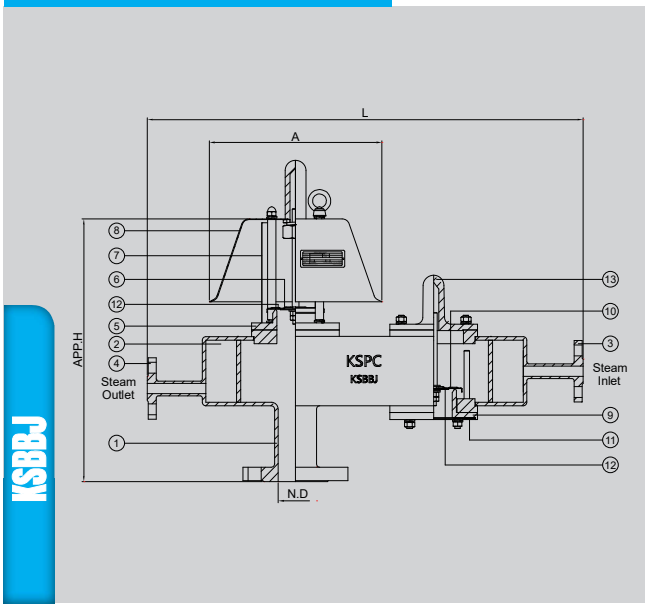
Optimum / Optional Design & Arrangments Stem Jacket type, Steam Tracing type, Proximity type, Teflon Coating/Lining type

APPLICATION

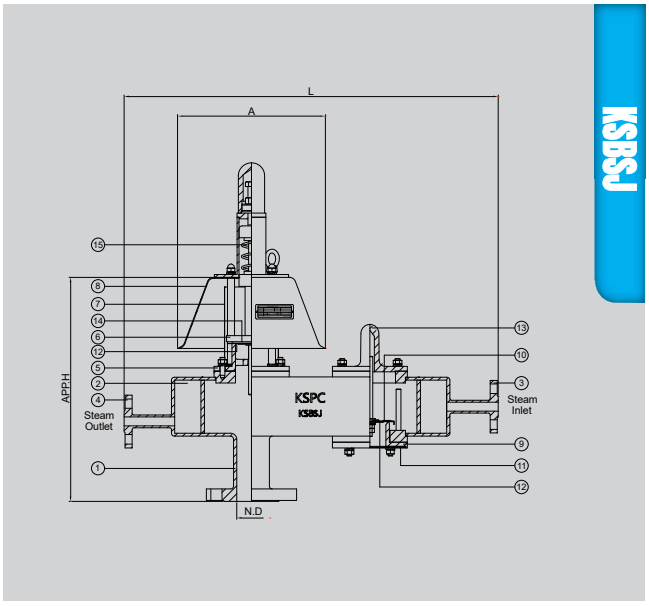


OUTLINE DRAWING

KSBBJ



KSBSJ



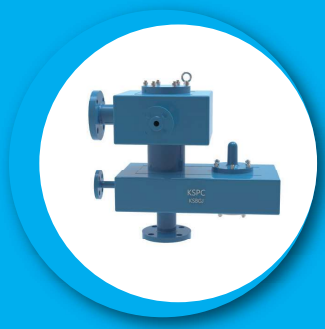
DIMENSION TABLE

SIZE	2"	3"	4"	6"	8"	10"	12"
N.D	50	80	100	150	200	250	300
A	250	294	324	440	476	544	620
L	640	700	730	870	970	1070	1170
Approx. H	370	385	410	470	560	650	750

NOTE Standard Connection(ASME 150Lb flange) and JIS or different types are available upon request.

COMPONENT MATERIAL

ITEM NO	COMPONENT				
		BODY	CARBON STEEL	SS304	SS316
		TRIM	SS304	SS304	SS316/316L
1	BODY		CARBON STEEL	SS304	SS316L
2	STEAM JACKET		CARBON STEEL	SS304	SS316L
3	STEAM INLET FLANGE		A105	A182-F304	A182-F316
4	STEAM OUTLET FLANGE		A105	A182-F304	A182-F316
5	PRESSURE SEAT		A351-CF8	A351-CF8	A351-CF8M
6	PRESSURE DISC		SS304	SS304	SS316L
7	PRESSURE SCREEN		SS304	SS304	SS316
8	WEATHER HOOD		SS304	SS304	SS316L
9	VACUUM SEAT		A351-CF8	A351-CF8	A351-CF8M
10	VACUUM DISC		SS304	SS304	SS316L
11	VACUUM SCREEN		SS304	SS304	SS316
12	DIAPHRAGM		TEFLON		
13	VACUUM COVER		CARBON STEEL	SS304	SS316L
14	O-RING		VITON		
15	SPRING		SS304	SS304	SS316



SECTION 1.4_KSBGJ/GSJ

PRESSURE VACUUM RELIEF VALVE WITH STEAM JACKET

INTRODUCTION

The model KSBGJ and KSGSJ pressure vacuum valves are an advanced design for vent to atmosphere applications. Designed, manufactured and tested according to the API 2000 code, these valves utilize the latest technologies to provide protection against positive or vacuum over pressure and prevent air intake, evaporative losses of product and help to contain odorous and potentially explosive vapours.

Setting Pressure

KSBGJ Weight Loaded model	Min. +/- 20 mmW.C ~ Max. + 700/- 430 mmW.C
KSGSJ Spring Loaded model	Min. + 700/- 430 mmW.C ~ Max. +/- 9,000 mmW.C

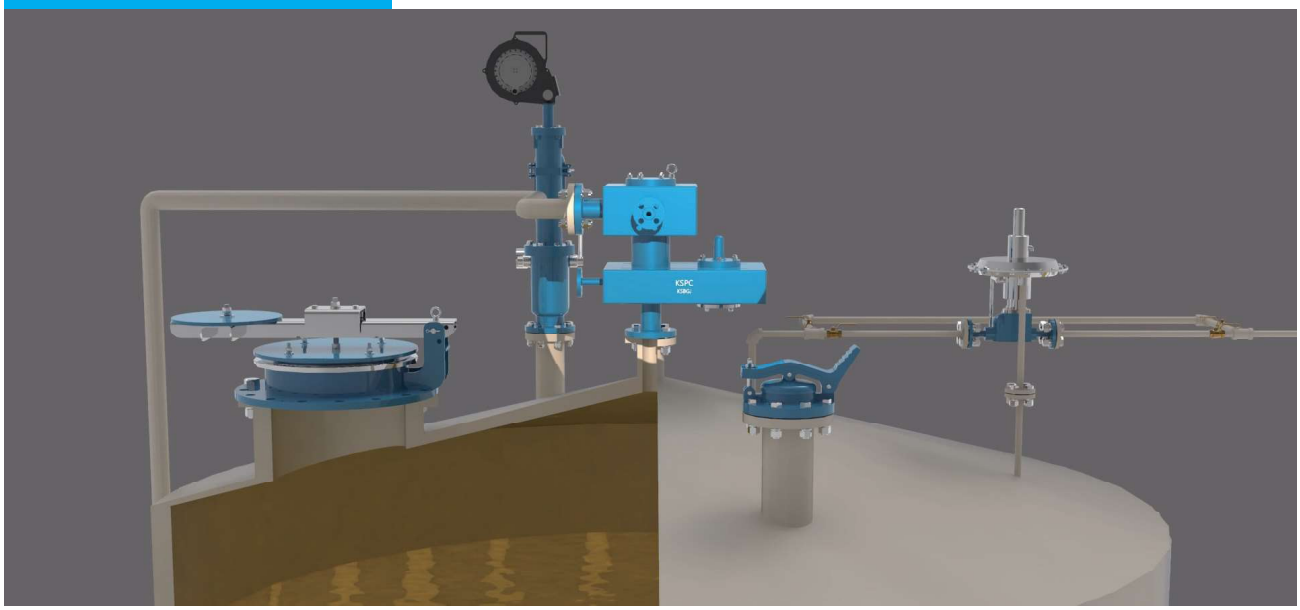
Body Materials Carbon Steel, SS304 and SS316 with various trims
(Different materials available on request)

Sizes range DN 50 ~ DN 350 with ASME 150Lb flanges as standard
(Different connections available on request)

Rules & Certifications API 2000 & KFI

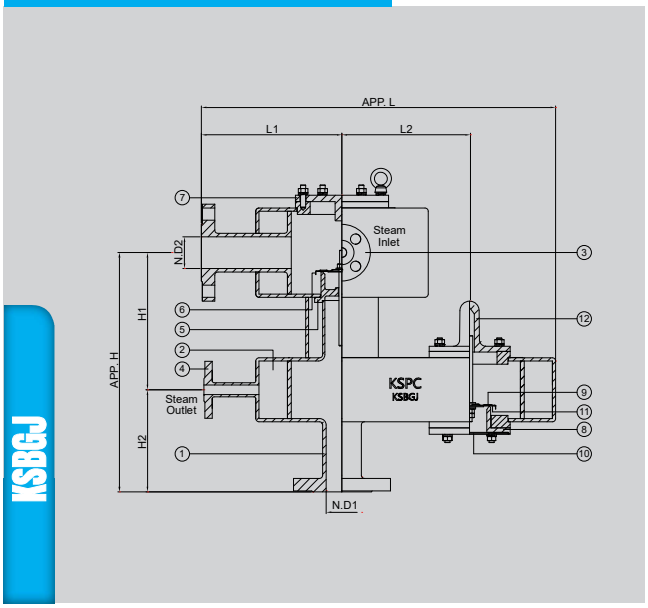
Optimum / Optional Design & Arrangments Stem Jacket type, Steam Tracing type, Proximity type, Teflon Coating/Lining type

APPLICATION

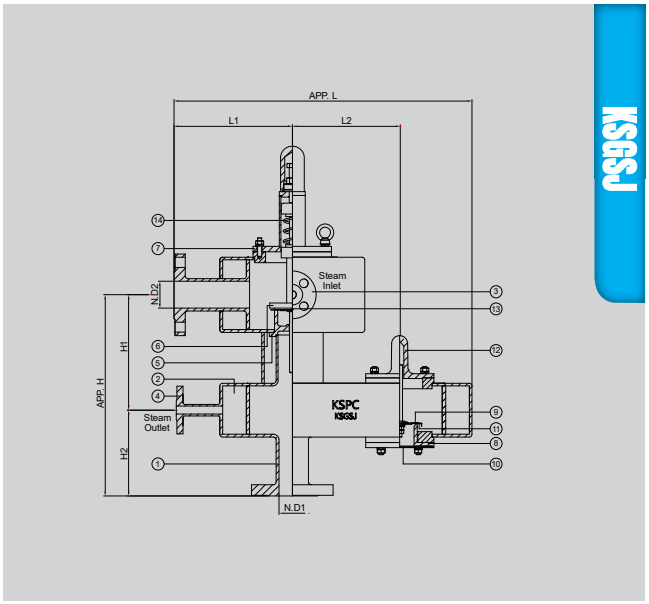


OUTLINE DRAWING

KSBGJ



KSGSJ



DIMENSION TABLE

SIZE	2"	3"	4"	6"	8"	10"
N.D 1	50	80	100	150	200	250
N.D 2	50	80	100	150	200	250
L 1	250	280	310	340	375	410
L2	200	240	280	340	395	455
Approx. L	585	670	750	870	985	1090
H 1	245	265	315	315	345	370
H 2	140	150	175	175	185	190
Approx. H	385	415	490	490	530	565

NOTE Standard Connection(ASME 150Lb flange) and JIS or different types are available upon request.

COMPONENT MATERIAL

ITEM NO	COMPONENT	BODY	CARBON STEEL	SS304	SS316
		TRIM	SS304	SS304	SS316/316L
1	BODY		CARBON STEEL	SS304	SS316L
2	STEAM JACKET		CARBON STEEL	SS304	SS316L
3	STEAM INLET FLANGE		A105	A182-F304	A182-F316
4	STEAM OUTLET FLANGE		A105	A182-F304	A182-F316
5	PRESSURE SEAT		A351-CF8	A351-CF8	A351-CF8M
6	PRESSURE DISC		SS304	SS304	SS316L
7	PRESSURE SCREEN		SS304	SS304	SS316
8	VACUUM SEAT		A351-CF8	A351-CF8	A351-CF8M
9	VACUUM DISC		SS304	SS304	SS316L
10	VACUUM SCREEN		SS304	SS304	SS316
11	DIAPHRAGM		TEFLON		
12	VACUUM COVER		CARBON STEEL	SS304	SS316L
13	O-RING		VITON		
14	SPRING		SS304	SS304	SS316

SECTION 1.5_KSPR/PS

PRESSURE RELIEF VALVE
VENT TO ATMOSPHERE

INTRODUCTION

The model KSPR and KSPS pressure valves are an advanced design for vent to atmosphere applications. Designed, manufactured and tested according to the API 2000 code. Utilize the latest technologies to provide protection against positive or vacuum over pressure and prevent air intake, evaporative losses of product and help to contain odorous and potentially explosive vapours.

Setting Pressure

KSPR Weight Loaded model	Min. 20 mmW.C ~ Max. 700 mmW.C
KSPS Spring Loaded model	Min. 700 mmW.C ~ Max. 9,000 mmW.C

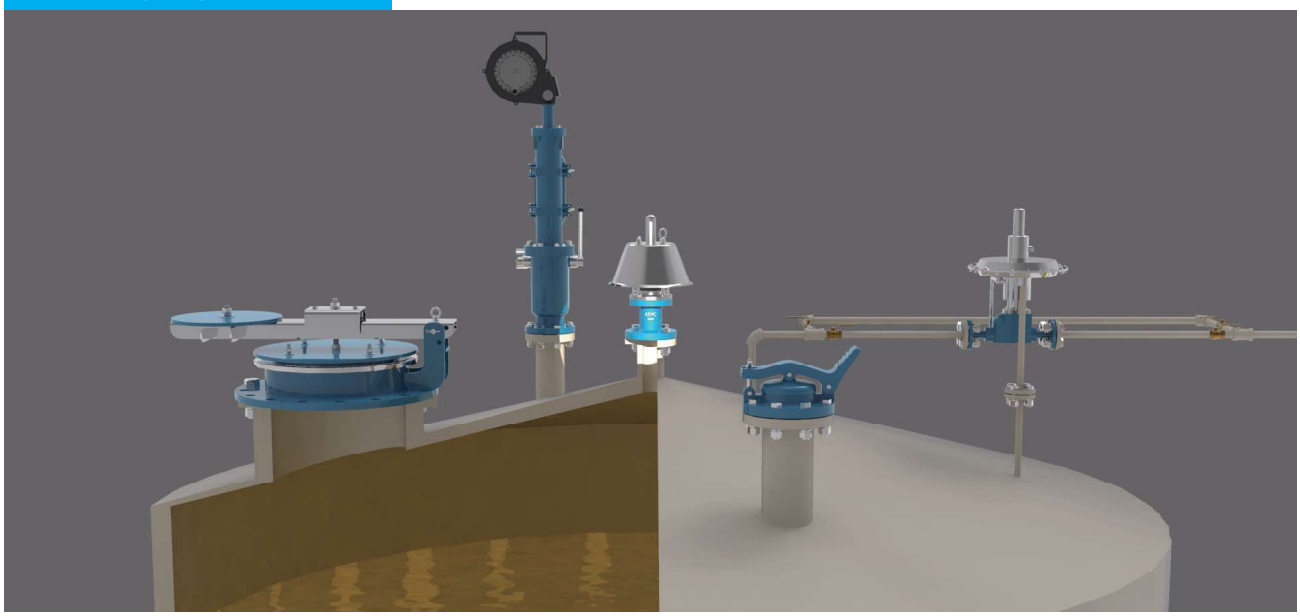
Body Materials Aluminium, Carbon Steel, SS304 and SS316 with various trims
(Different materials available on request)

Sizes range DN 50 ~ DN 350 with ASME 150Lb flanges as standard
(Different connections available on request)

Rules & Certifications API 2000 & ATEX / KFI

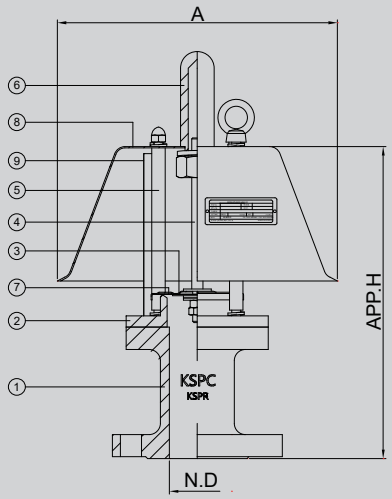
Optimum / Optional Design & Arrangments Stem Jacket type, Steam Tracing type, Proximity type, Teflon Coating/Lining type

APPLICATION

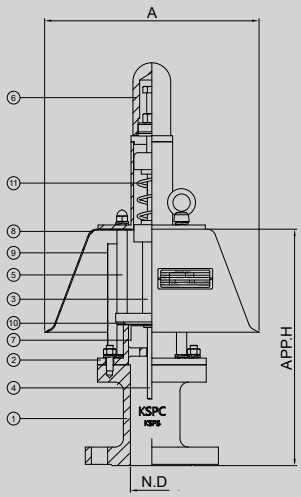


OUTLINE DRAWING

KSPR



KSPS



DIMENSION TABLE

SIZE	2"	3"	4"	6"	8"	10"	12"	14"
N.D	50	80	100	150	200	250	300	350
A	250	294	324	440	476	544	620	685
Approx. H	270	301	344	382	401	436	456	473

NOTE Standard Connection(ASME 150Lb flange) and JIS or different types are available upon request.

COMPONENT MATERIAL

ITEM NO	COMPONENT	BODY	ALUMINIUM	CARBON STEEL	SS304	SS316
		TRIM	SS304	SS304	SS304	SS316L
1	BODY		B26-319.F	A216-WCB	A351-CF8	A351-CF8M
2	SEAT		B26-319.F	A351-CF8	A351-CF8	A351-CF8M
3	DISC		SS304	SS304	SS304	SS316L
4	STEM		SS304	SS304	SS304	SS316
5	GUIDE POST		SS304	SS304	SS304	SS316
6	STEM GUIDE / CAP		SS304	SS304	SS304	SS316
7	DIAPHRAGM		TEFLON			
8	WEATHER HOOD		SS304	SS304	SS304	SS316L
9	BIRD SCREEN		SS304	SS304	SS304	SS316
10	O-RING		VITON			
11	SPRING		SS304	SS304	SS304	SS316

SECTION 1.6_KSBD/DS

PRESSURE RELIEF VALVE WITH PIPE AWAY

INTRODUCTION

The model KSBD and KSDS pressure valves are an advanced design for pipe away applications. Designed, manufactured and tested according to the API 2000 code. Utilize the latest technologies to provide protection against positive or vacuum over pressure and prevent air intake, evaporative losses of product and help to contain odorous and potentially explosive vapours.

Setting Pressure

KSBD Weight Loaded model	Min. 20 mmW.C ~ Max. 700 mmW.C
KSDS Spring Loaded model	Min. 700 mmW.C ~ Max. 9,000 mmW.C

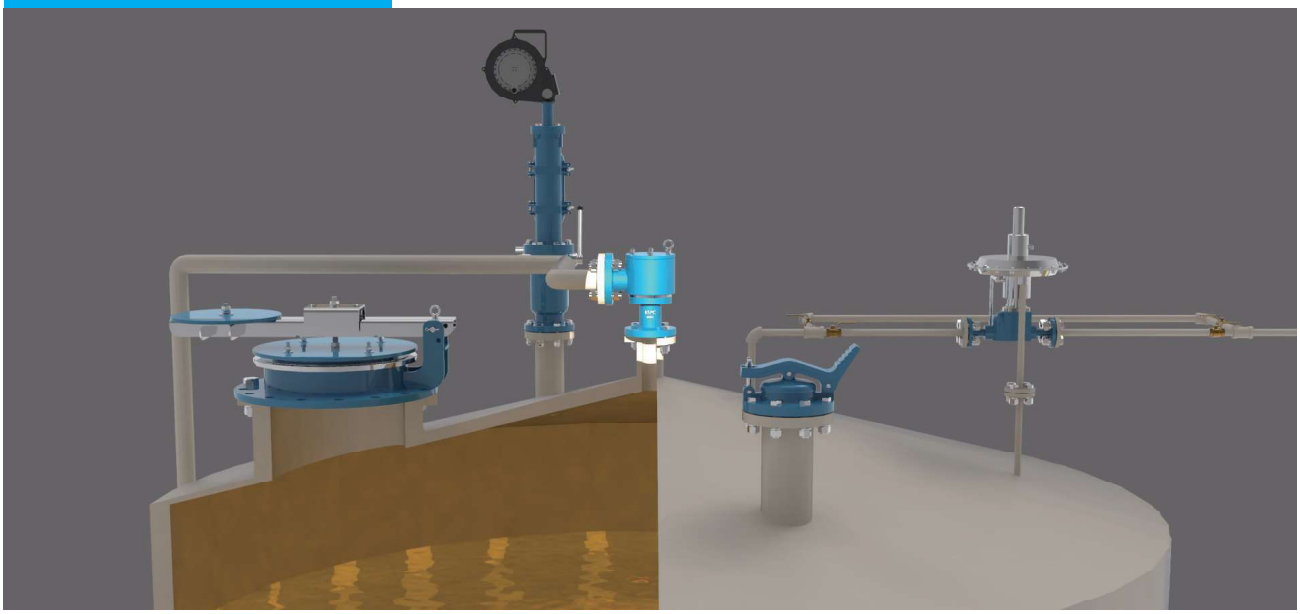
Body Materials Aluminium, Carbon Steel, SS304 and SS316 with various trims
(Different materials available on request)

Sizes range DN 50 ~ DN 350 with ASME 150Lb flanges as standard
(Different connections available on request)

Rules & Certifications API 2000 & ATEX / KFI

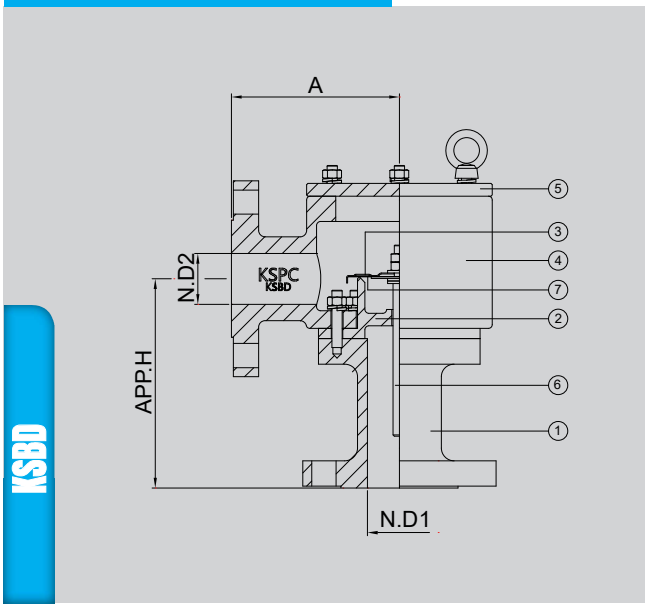
Optimum / Optional Design & Arrangments Stem Jacket type, Steam Tracing type, Proximity type, Teflon Coating/Lining type

APPLICATION

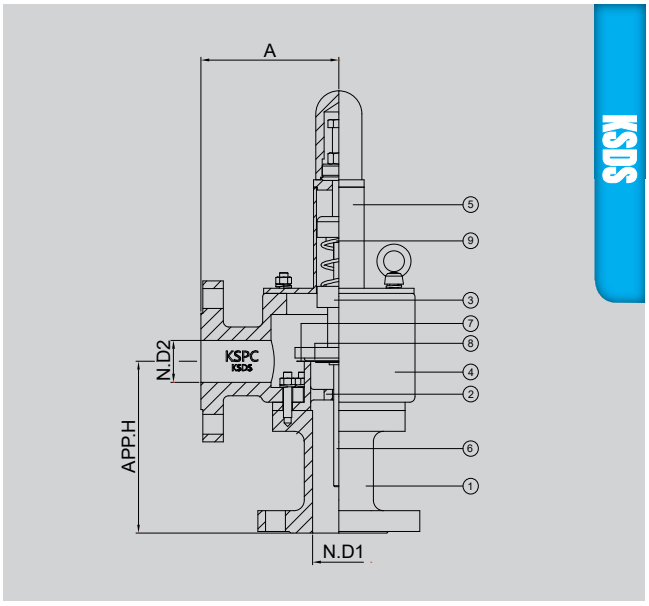


OUTLINE DRAWING

KSBD



KSDS



DIMENSION TABLE

SIZE	2" X 2"	3" X 3"	4" X 4"	6" X 6"	8" X 8"	10" X 10"	12" X 12"	14" X 14"
N.D 1	50	80	100	150	200	250	300	350
N.D 2	50	80	100	150	200	250	300	350
A	132	171	184	223	258	279	329	415
Approx. H	165	201	234	264	289	315	347	389
SIZE	2" X 3"	3" X 4"	4" X 6"	6" X 8"	8" X 10"	10" X 12"	12" X 14"	14" X 16"
N.D 1	50	80	100	150	200	250	300	350
N.D 2	80	100	150	200	250	300	350	400
A	142	172	189	228	258	290	343	420
Approx. H	188	211	261	288	314	342	370	414

NOTE Standard Connection(ASME 150Lb flange) and JIS or different types are available upon request.

COMPONENT MATERIAL

ITEM NO	COMPONENT	BODY	ALUMINIUM	CARBON STEEL	SS304	SS316
		TRIM	SS304	SS304	SS304	SS316L
1	BODY-1		B26-319.F	A216-WCB	A351-CF8	A351-CF8M
2	SEAT		B26-319.F	A351-CF8	A351-CF8	A351-CF8M
3	DISC		SS304	SS304	SS304	SS316L
4	BODY-2		B26-319.F	A216-WCB	A351-CF8	A351-CF8M
5	COVER		ALUMINUM	CARBON STEEL	SS304	SS316L
6	STEM		SS304	SS304	SS304	SS316L
7	DIAPHRAGM		TEFLON			
8	O-RING		VITON			
9	SPRING		SS304	SS304	SS304	SS316

SECTION 1.7_KSVR/VS

VACUUM RELIEF VALVE
VENT TO ATMOSPHERE

INTRODUCTION

The model KSVR and KSVS are designed, manufactured and tested according to the API 2000 code. Utilize the latest technologies to provide protection against positive or vacuum over pressure and prevent air intake, evaporative losses of product and help to contain odorous and potentially explosive vapours.

Setting Pressure

KSVR Weight Loaded model	Min. - 25 mmW.C ~ Max. - 430 mmW.C
KSVS Spring Loaded model	Min. - 430 mmW.C ~ Max. - 9,000 mmW.C

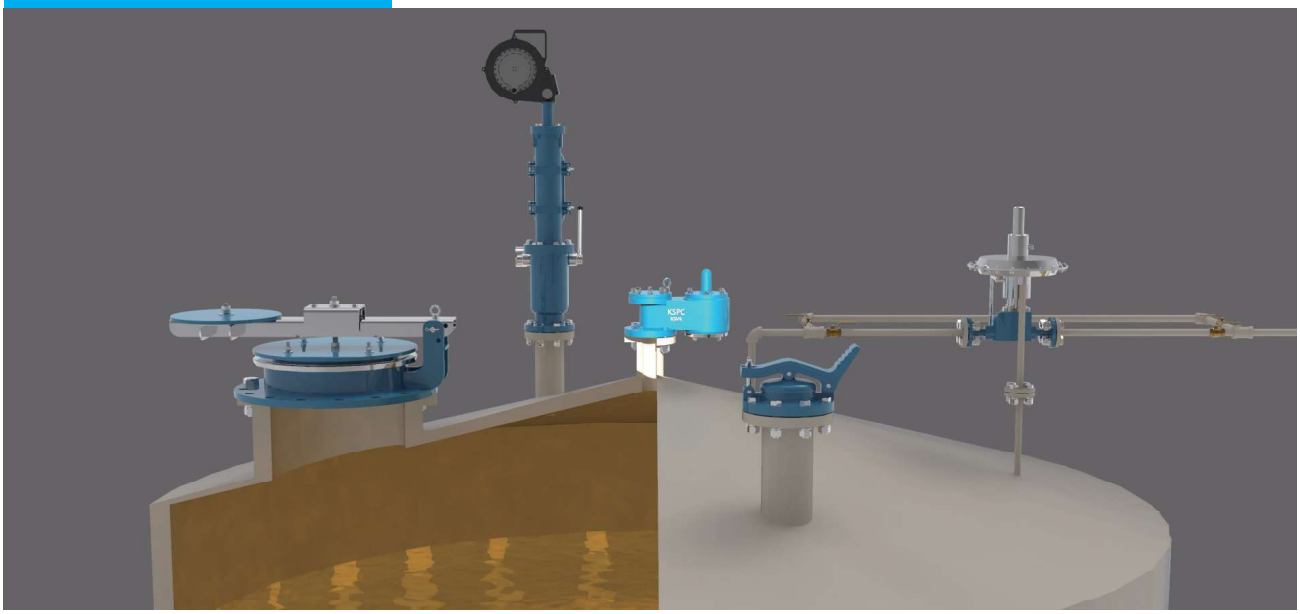
Body Materials Aluminium, Carbon Steel, SS304 and SS316 with various trims
(Different materials available on request)

Sizes range DN 50 ~ DN 350 with ASME 150Lb flanges as standard
(Different connections available on request)

Rules & Certifications API 2000 & ATEX / KFI

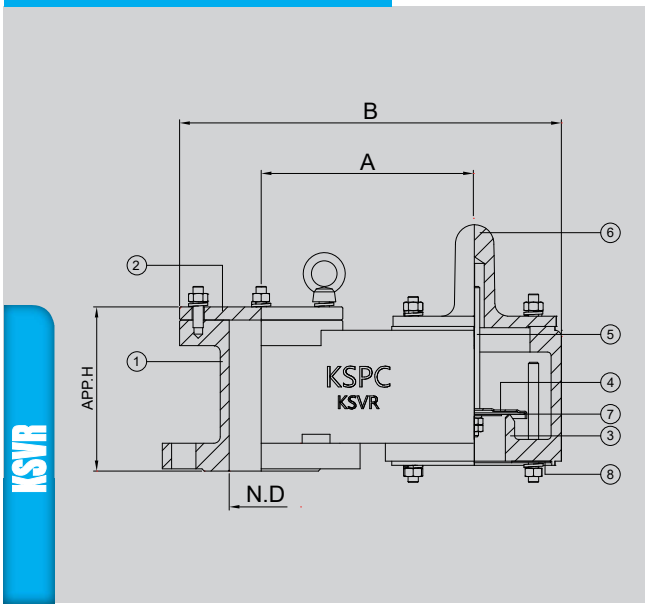
Optimum / Optional Design & Arrangments Stem Jacket type, Steam Tracing type, Proximity type, Teflon Coating/Lining type

APPLICATION

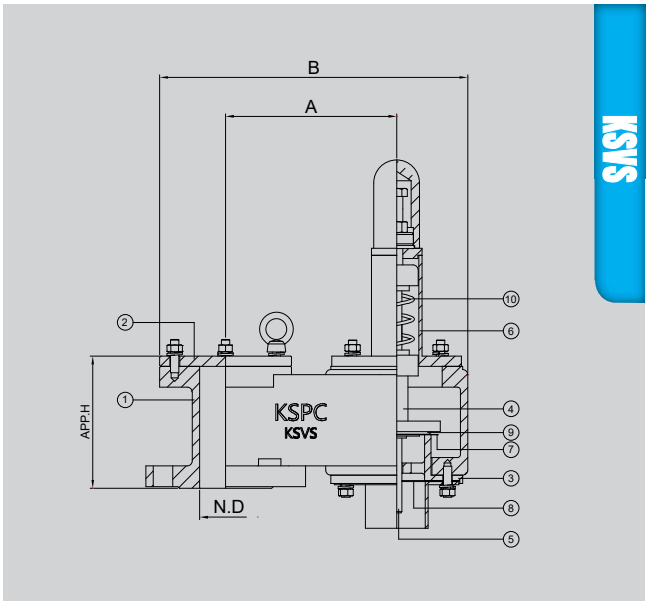


OUTLINE DRAWING

KSVR



KSVS



DIMENSION TABLE

SIZE	2"	3"	4"	6"	8"	10"	12"	14"
N.D	50	80	100	150	200	250	300	350
A	165	206	230	283	348	406	466	542
B	310	395	437	547	676	792	910	1050
Approx. H	128	146	159	184	215	240	274	283

NOTE Standard Connection(ASME 150Lb flange) and JIS or different types are available upon request.

COMPONENT MATERIAL

ITEM NO	COMPONENT	BODY	ALUMINIUM	CARBON STEEL	SS304	SS316
		TRIM	SS304	SS304	SS304	SS316L
1	BODY		B26-319.F	A216-WCB	A351-CF8	A351-CF8M
2	PRESSURE COVER		ALUMINIUM	CARBON STEEL	SS304	SS316L
3	VACUUM SEAT		A351-CF8	A351-CF8	A351-CF8	A351-CF8M
4	VACUUM DISC		SS304	SS304	SS304	SS316L
5	VACUUM STEM		SS304	SS304	SS304	SS316
6	VACUUM COVER		B26-319.F	CARBON STEEL	SS304	SS316L
7	DIAPHRAGM		TEFLON			
8	VACUUM SCREEN		SS304	SS304	SS304	SS316
9	O-RING		VITON			
10	SPRING		SS304	SS304	SS304	SS316

SECTION 1.8_KSVB

VACUUM RELIEF VALVE

INTRODUCTION

The model KSVB is designed, manufactured and tested according to the API 2000 code. Utilize the latest technologies to provide protection against positive or vacuum over pressure and prevent air intake, evaporative losses of product and help to contain odorous and potentially explosive vapours.

Setting Pressure

KSVB Spring Loaded model	Min. - 20 mmW.C ~ Max. - 9,000 mmW.C

Body Materials Carbon Steel, SS304 and SS316 with various trims
(Different materials available on request)

Sizes range DN 50 ~ DN 350 with ASME 150Lb flanges as standard
(Different connections available on request)

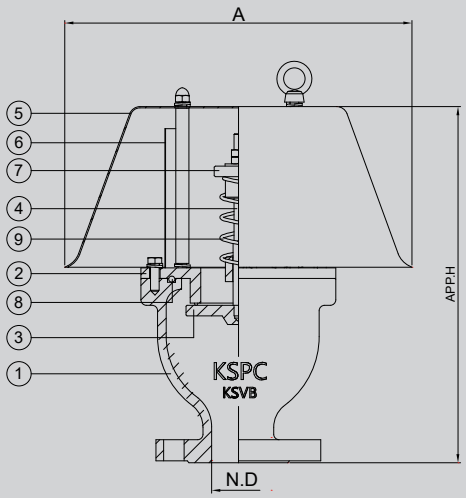
Rules & Certifications API 2000 & ATEX / KFI

Optimum / Optional Design & Arrangments Stem Jacket type, Steam Tracing type, Proximity type, Teflon Coating/Lining type

APPLICATION

OUTLINE DRAWING

KSVB



DIMENSION TABLE

SIZE	2"	3"	4"	6"	8"	10"	12"	14"
N.D	50	80	100	150	200	250	300	350
A	324	440	440	440	476	544	620	685
Approx. H	331	372	388	396	424	475	521	580

NOTE Standard Connection(ASME 150Lb flange) and JIS or different types are available upon request.

COMPONENT MATERIAL

ITEM NO	COMPONENT	BODY	ALUMINIUM	CARBON STEEL	SS304	SS316
		TRIM	SS304	SS304	SS304	SS316L
1	BODY		B26-319.F	A216-WCB	A351-CF8	A351-CF8M
2	VACCUM STEM		A351-CF8	A351-CF8	A351-CF8	A351-CF8M
3	VACUUM DISC		SS304	SS304	SS304	SS316L
4	VACUUM SEAT		SS304	SS304	SS304	SS316
5	WEATHER HOOD		SS304	SS304	SS304	SS316L
6	BRID SCREEN		SS304	SS304	SS304	SS316
7	SPRING PAD		SS304	SS304	SS304	SS316
8	O-RING		VITON			
9	SPRING		SS304	SS304	SS304	SS316

TANK SAFETY & PROTECTION DEVICE

SECTION 2_BREATHER VALVE WITH FLAME ARRESTER

PRESSURE VACUUM RELIEF VALVE WITH FLAME ARRESTER

PRESSURE VACUUM RELIEF VALVE WITH FLAME ARRESTER

PRESSURE VACUUM RELIEF VALVE WITH FLAME ARRESTER

Breather Valve with Flame Arrester is designed manufactured and tested according to API 2000 code,BS7244, and ISO16852, these valves utilize the latest technologies to provide protection against positive or vacuum over pressure and prevent air intake, evaporative losses of product and help to contain odorous and potentially explosive vapor.

KSBBFI/BBFI-A/BSFI/BSFI-A

P24

KSBBFH/BSFH

P26

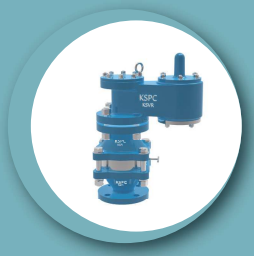
KSBGFI/BGFI-A/GSFI/GSFI-A

P28

KSBGFH/GSFH

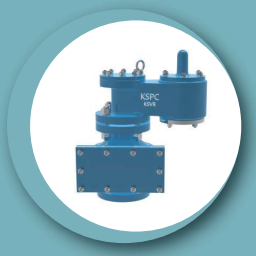
P30

KSVRFI/VRFI-A/VSFI/VSFI-A



P32

KSVRFH/VSFH



P34

SECTION 2.1_KSBBFI/BBFI-A/BSFI/BSFI-A

PRESSURE VACUUM RELIEF VAVLE WITH FLAME ARRESTER

INTRODUCTION

The model KSBBFI and BSFI pressure vacuum valves with flame arrester are an advanced design for vent to atmosphere applications. Designed, manufactured and tested according to the API 2000 code, BS7244 and ISO16852. These valves utilize the latest technologies to provide protection against positive or vacuum over pressure and prevent air intake, evaporative losses of product and help to contain odorous and potentially explosive vapours.

Setting Pressure

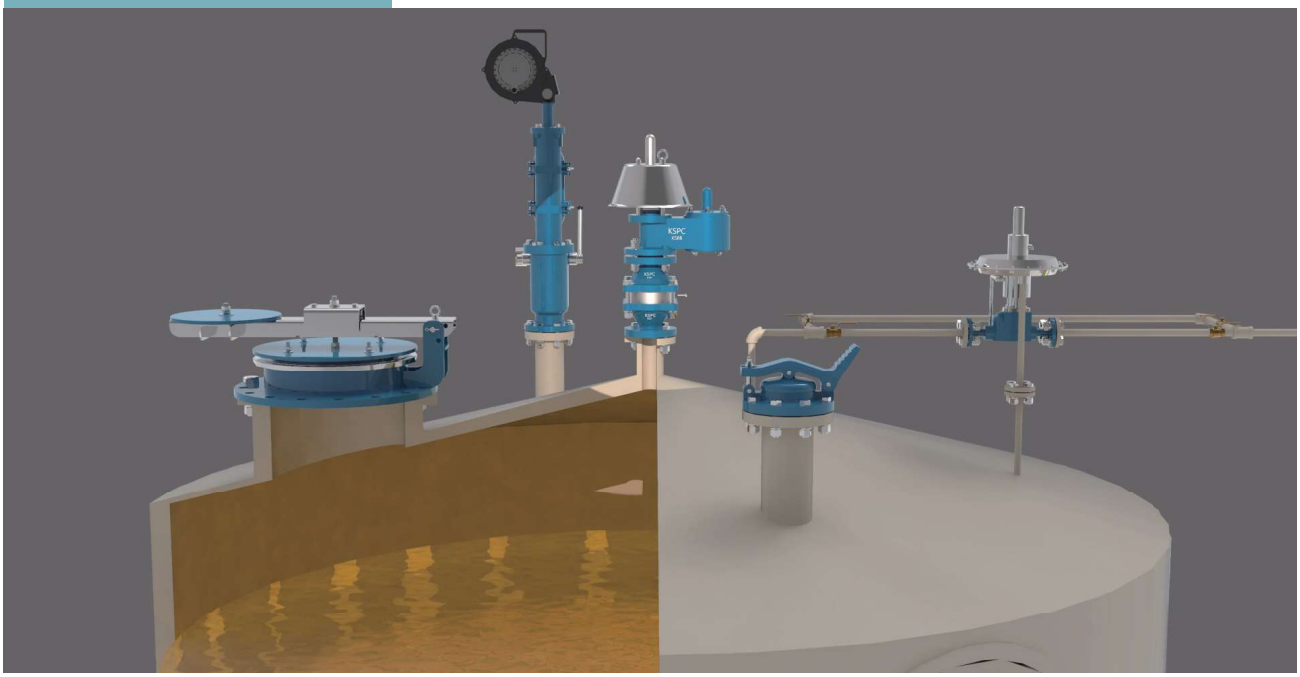
KSBBFI Weight Loaded model	Min. +/- 20 mmW.C ~ Max. + 700/- 430 mmW.C
KSBSFI Spring Loaded model	Min. + 700/- 430 mmW.C ~ Max. +/- 9,000 mmW.C

Body Materials Aluminium, Carbon Steel, SS304 and SS316 with various trims
(Different materials available on request)

Sizes range DN 50 ~ DN 350 with ASME 150Lb flanges as standard
(Different connections available on request)

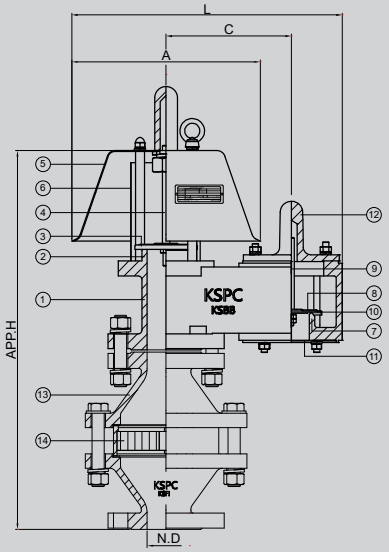
Rules & Certifications API 2000 / ISO 16852 & ATEX / KFI
Flame cell : NEC group D (=IIA), group C(=IIB3) and group B(=IIC), ETC.

APPLICATION

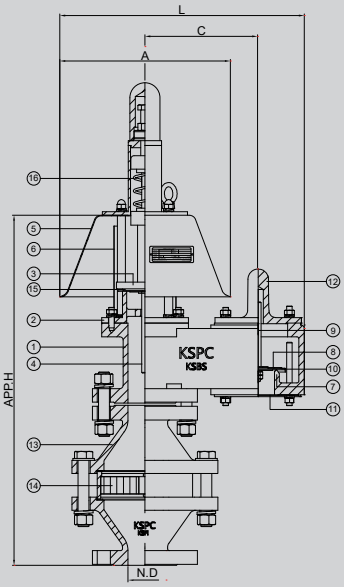


OUTLINE DRAWING

KSBBF1



KSBSF1



DIMENSION TABLE

SIZE	2"	3"	4"	6"	8"	10"	12"	14"
N.D	50	80	100	150	200	250	300	350
A	250	294	324	440	476	544	620	685
B	359	446	485	627	742	861	978	1125
C	165	206	230	283	348	406	466	542
Approx. H	511	564	600	726	794	876	1015	1056

NOTE Standard Connection(ASME 150Lb flange) and JIS or different types are available upon request.

COMPONENT MATERIAL

ITEM NO	COMPONENT	BODY	ALUMINIUM	CARBON STEEL	SS304	SS316
		TRIM	SS304	SS304	SS304	SS316L
1	BODY-1		B26-319.F	A216-WCB	A351-CF8	A351-CF8M
2	PRESSURE SEAT		B26-319.F/A351-CF8	A351-CF8	A351-CF8	A351-CF8M
3	PRESSURE DISC		SS304	SS304	SS304	SS316L
4	PRESSURE STEM		SS304	SS304	SS304	SS316
5	WEATHER HOOD		SS304	SS304	SS304	SS316
6	PRESSURE SCREEN		SS304	SS304	SS304	SS316L
7	VACUUM SEAT		SS304	A351-CF8	SS304	SS316
8	VACUUM DISC		SS304	SS304	SS304	SS316L
9	VACUUM STEM		SS304	SS304	SS304	SS316
10	DIAPHRAGM		TEFLON			
11	VACUUM SCREEN		SS304	SS304	SS304	SS316
12	VACUUM COVER		B26-319.F	CARBON STEEL	SS304	SS316/316L
13	BODY-2		B26-319.F	A216-WCB	A351-CF8	A351-CF8M
14	ELEMENT		SS316L			
15	O-RING		VITON			
16	SPRING		SS304	SS304	SS304	SS316

SECTION 2.2_KSBBFH/BSFH

PRESSURE VACUUM RELIEF VAVLE WITH FLAME ARRESTER

INTRODUCTION

The model KSBBFH and BSFH pressure vacuum valves with flame arrester are an advanced design for vent to atmosphere applications. Designed, manufactured and tested according to the API 2000 code,BS7244, and ISO16852. These valves utilize the latest technologies to provide protection against positive or vacuum over pressure and prevent air intake, evaporative losses of product and help to contain odorous and potentially explosive vapors.

Setting Pressure

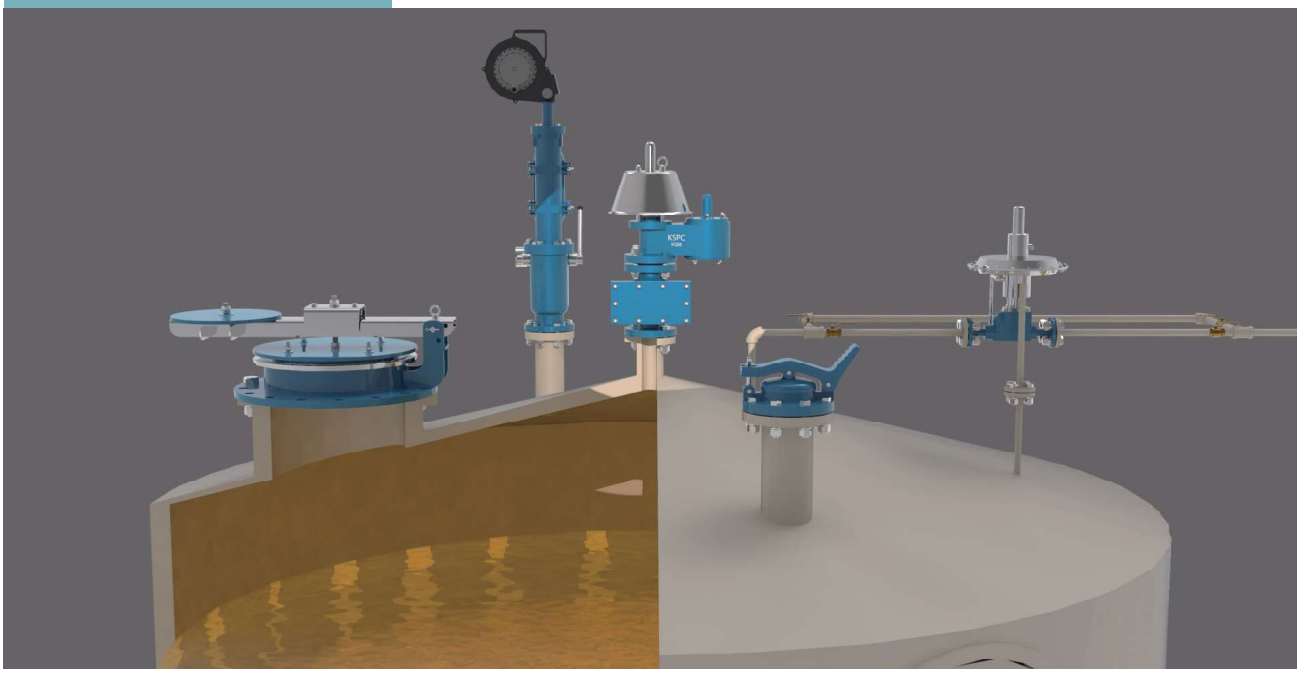
KSBBFH Weight Loaded model	Min. +/- 20 mmW.C ~ Max. + 700/- 430 mmW.C
KSBSFH Spring Loaded model	Min. + 700/- 430 mmW.C ~ Max. +/- 9,000 mmW.C

Body Materials Aluminium, Carbon Steel, SS304 and SS316 with various trims
(Different materials available on request)

Sizes range DN 50 ~ DN 350 with ASME 150Lb flanges as standard
(Different connections available on request)

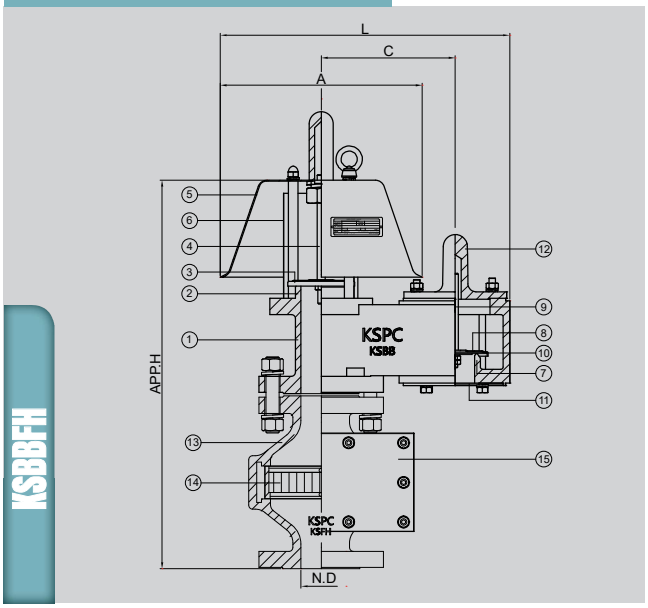
Rules & certifications API 2000, BS7244 / ISO16852 & ATEX / KFI
Flame cell : NEC group D (=IIA), group C(=IIB3) and group B(=IIC), ETC.

APPLICATION

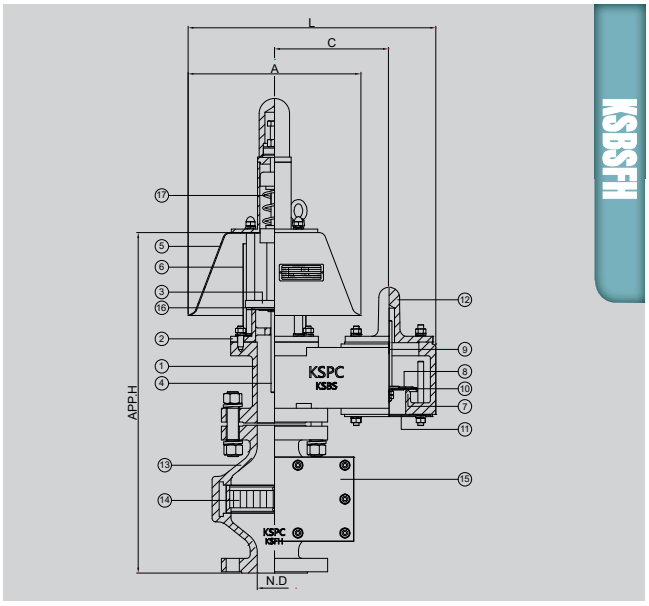


OUTLINE DRAWING

KSBBFH



KSBSFH



DIMENSION TABLE

SIZE	2"	3"	4"	6"	8"	10"	12"	14"
N.D	50	80	100	150	200	250	300	350
A	250	294	324	440	476	544	620	685
L	359	446	485	627	742	861	978	1125
C	165	206	230	283	348	406	466	542
Approx. H	491	550	600	700	757	866	931	1135

NOTE Standard Connection(ASME 150Lb flange) and JIS or different types are available upon request.

COMPONENT MATERIAL

ITEM NO	COMPONENT	BODY	ALUMINIUM	CARBON STEEL	SS304	SS316
		TRIM	SS304	SS304	SS304	SS316L
1	BODY-1		B26-319.F	A216-WCB	A351-CF8	A351-CF8M
2	PRESSIRE SEAT		B26-319.F/A351-CF8	A351-CF8	A351-CF8	A351-CF8M
3	PRESSURE DISC		SS304	SS304	SS304	SS316L
4	PRESSURE STEM		SS304	SS304	SS304	SS316
5	WEATHER HOOD		SS304	SS304	SS304	SS316L
6	PRESSURE SCREEN		SS304	SS304	SS304	SS316
7	VACUUM SEAT		B26-319.F	A216-WCB	A351-CF8	A351-CF8M
8	VACUUM DISC		SS304	SS304	SS304	SS316L
9	VACUUM STEM		SS304	SS304	SS304	SS316
10	DIAPHRAGM		TEFLON			
11	VACUUM SCREEN		SS304	SS304	SS304	SS316
12	VACUUM COVER		B26-319.F	CARBON STEEL	SS304	SS316/316L
13	BODY-2		B26-319.F	A216-WCB	A351-CF8	A351-CF8M
14	ELEMENT		SS316L			
15	ELEMENT COVER		ALUMINIUM	CARBON STEEL	SS304	SS316L
16	O-RING		VITON			
17	SPRING		SS304	SS304	SS304	SS316

SECTION 2.3_KSBGFI/BGFI-A/GSFI/GSFI-A

PRESSURE VACUUM RELIEF VAVLE WITH FLAME ARRESTER

INTRODUCTION

The model KSBGFI and GSFI pressure vacuum valves with flame arrester are an advanced design for vent to Pipe away applications. Designed, manufactured and tested according to the API 2000 code, BS7244 and ISO16852. These valves utilize the latest technologies to provide protection against positive or vacuum over pressure and prevent air intake, evaporative losses of product and help to contain odorous and potentially explosive vapors.

Setting Pressure

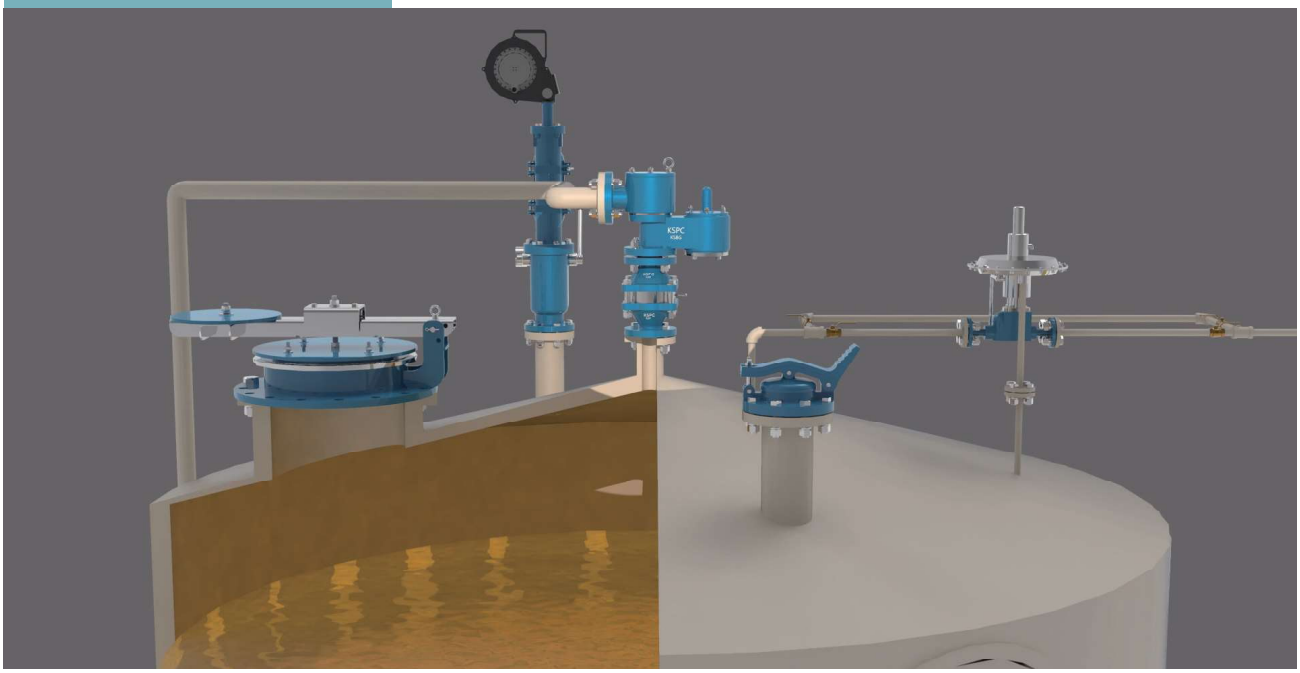
KSBGFI Weight Loaded model	Min. +/- 20 mmW.C ~ Max. + 700/- 430 mmW.C
KSGSFI Spring Loaded model	Min. + 700/- 430 mmW.C ~ Max. +/- 9,000 mmW.C

Body Materials Aluminium, Carbon Steel, SS304 and SS316 with various trims
(Different materials available on request)

Sizes range DN 50 ~ DN 350 with ASME 150Lb flanges as standard
(Different connections available on request)

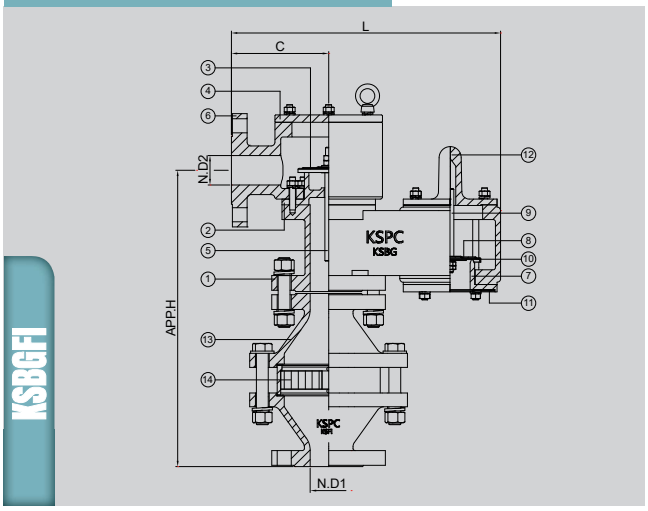
Rules & certifications API 2000, BS7244 / ISO16852 & ATEX / KFI
Flame cell : NEC group D (=IIA), group C(=IIB3) and group B(=IIC), ETC.

APPLICATION

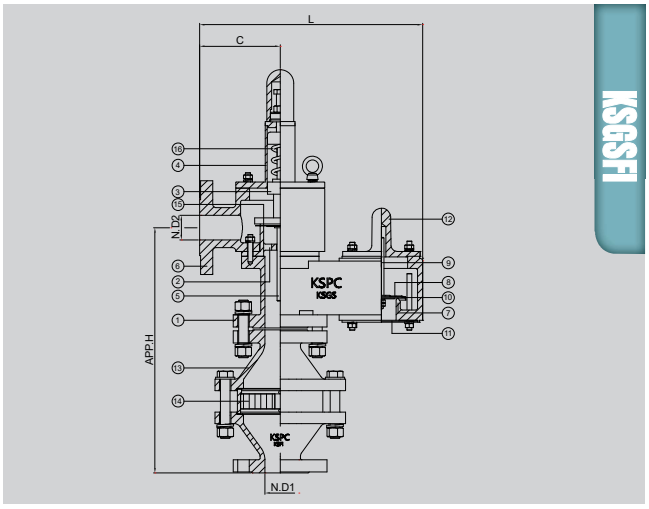


OUTLINE DRAWING

KSBGF1



KSGSF1



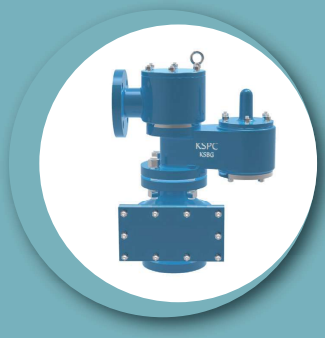
DIMENSION TABLE

SIZE	2" X 2"	3" X 3"	4" X 4"	6" X 6"	8" X 8"	10" X 10"	12" X 12"	14" X 14"
N.D 1	50	80	100	150	200	250	300	350
N.D 2	50	80	100	150	200	250	300	350
L	366	470	507	630	762	868	997	1197
C	132	171	184	223	258	279	329	415
Approx. H	399	461	492	611	683	754	906	972
SIZE	2" X 3"	3" X 4"	4" X 6"	6" X 8"	8" X 10"	10" X 12"	12" X 14"	14" X 16"
N.D 1	50	80	100	150	200	250	300	350
N.D 2	80	100	150	200	250	300	350	400
L	376	471	512	635	762	879	1011	1211
C	142	172	189	228	258	290	343	420
Approx. H	423	471	517	636	708	779	931	1012

NOTE Standard Connection(ASME 150Lb flange) and JIS or different types are available upon request.

COMPONENT MATERIAL

ITEM NO	COMPONENT	BODY	ALUMINIUM	CARBON STEEL	SS304	SS316
		TRIM	SS304	SS304	SS304	SS316/316L
1	BODY-1		B26-319.F	A216-WCB	A351-CF8	A351-CF8M
2	PRESSURE SEAT		A351-CF8	A351-CF8	A351-CF8	A351-CF8M
3	PRESSURE DISC		SS304	SS304	SS304	SS316L
4	PRESSURE COVER		B26-319.F	CARBON STEEL	SS304	SS316L
5	PRESSURE STEM		SS304	SS304	SS304	SS316L
6	BODY-2		B26-319.F	A216-WCB	A351-CF8	A351-CF8M
7	VACUUM SEAT		B26-319.F	A351-CF8	A351-CF8	A351-CF8M
8	VACUUM DISC		SS304	SS304	SS304	SS316L
9	VACUUM STEM		SS304	SS304	SS304	SS316
10	DIAPHRAGM		TEFLON			
11	VACUUM SCREEN		SS304	SS304	SS304	SS316
12	VACUUM COVER		B26-319.F	CARBON STEEL	SS304	SS316/316L
13	BODY-3		B26-319.F	A216-WCB	A351-CF8	A351-CF8M
14	ELEMENT		SS316L			
15	O-RING		VITON			
16	SPRING		SS304	SS304	SS304	SS316



SECTION 2.4_KSBGFH/GSFH

PRESSURE VACUUM RELIEF VAVLE WITH FLAME ARRESTER

INTRODUCTION

The model KSBGFH and GSFH pressure vacuum valves with flame arrester are an advanced design for vent to Pipe away applications. Designed, manufactured and tested according to the API 2000 code, BS7244, and ISO16852. These valves utilize the latest technologies to provide protection against positive or vacuum over pressure and prevent air intake, evaporative losses of product and help to contain odorous and potentially explosive vapors.

Setting Pressure

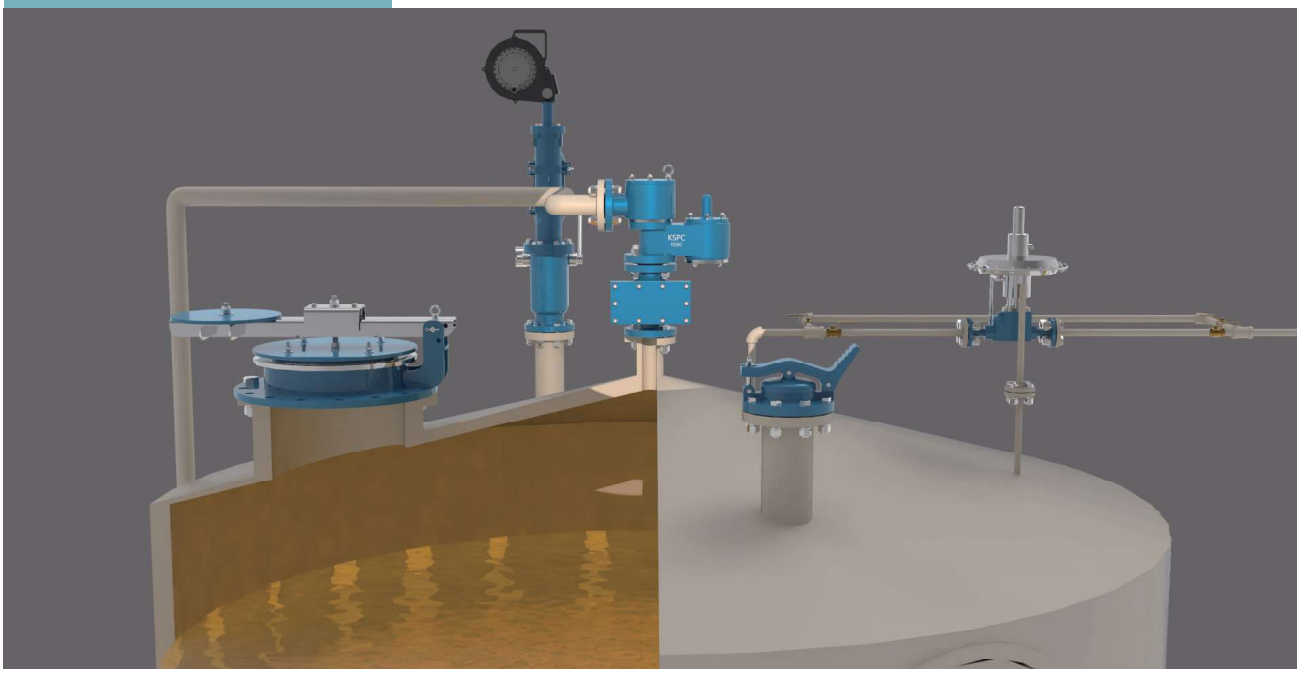
KSBGFH Weight Loaded model	Min. +/- 20 mmW.C ~ Max. + 700/- 430 mmW.C
KSGSFH Spring Loaded model	Min. + 700/- 430 mmW.C ~ Max. +/- 9,000 mmW.C

Body Materials Aluminium, Carbon Steel, SS304 and SS316 with various trims
(Different materials available on request)

Sizes range DN 50 ~ DN 350 with ASME 150Lb flanges as standard
(Different connections available on request)

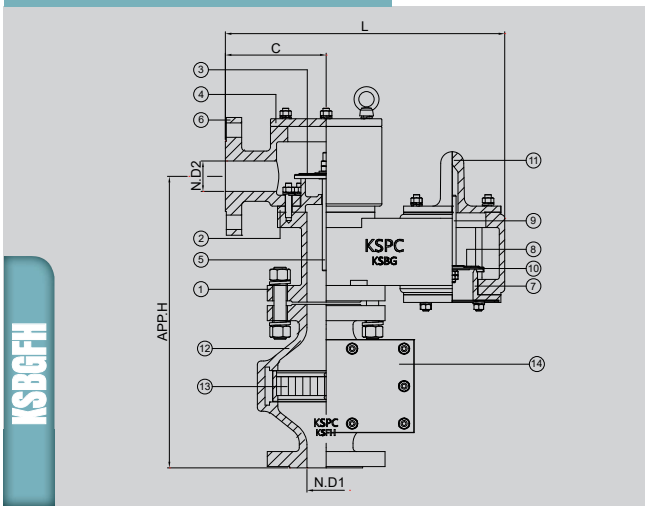
Rules & Certifications API 2000, BS7244 / ISO16852 & ATEX / KFI
Flame cell : NEC group D (=IIA), group C(=IIB3) and group B(=IIC), ETC.

APPLICATION

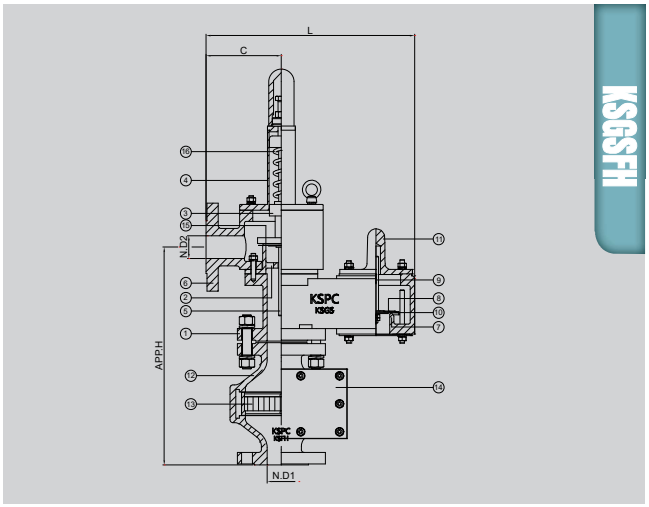


OUTLINE DRAWING

KSBGFH



KSGSFH



DIMENSION TABLE

SIZE	2" X 2"	3" X 3"	4" X 4"	6" X 6"	8" X 8"	10" X 10"	12" X 12"	14" X 14"
N.D 1	50	80	100	150	200	250	300	350
N.D 2	50	80	100	150	200	250	300	350
L	366	470	507	630	762	868	997	1197
C	132	171	184	223	258	279	329	415
Approx. H	382	447	492	585	646	744	822	1051
SIZE	2" X 3"	3" X 4"	4" X 6"	6" X 8"	8" X 10"	10" X 12"	12" X 14"	14" X 16"
N.D 1	50	80	100	150	200	250	300	350
N.D 2	80	100	150	200	250	300	350	400
L	376	471	512	635	762	879	1011	1211
C	142	172	189	228	258	290	343	420
Approx. H	403	457	517	610	671	769	847	1091

NOTE Standard Connection(ASME 150Lb flange) and JIS or different types are available upon request.

COMPONENT MATERIAL

ITEM NO	COMPONENT	BODY	ALUMINIUM	CARBON STEEL	SS304	SS316
		TRIM	SS304	SS304	SS304	SS316L
1	BODY-1		B26-319.F	A216-WCB	A351-CF8	A351-CF8M
2	PRESSURE SEAT		A351-CF8	A351-CF8	A351-CF8	A351-CF8M
3	PRESSURE DISC		SS304	SS304	SS304	SS316L
4	PRESSURE COVER		ALUMINIUM	CARBON STEEL	SS304	SS316L
5	PRESSURE STEM		SS304	SS304	SS304	SS316
6	BODY-2		B26-319.F	A216-WCB	A351-CF8	A351-CF8M
7	VACUUM SEAT		B26-319.F	A351-CF8	A351-CF8	A351-CF8M
8	VACUUM DISC		SS304	SS304	SS304	SS316L
9	VACUUM STEM		SS304	SS304	SS304	SS316
10	DIAPHRAGM		TEFLON			
11	VACUUM COVER		B26-319.F	CARBON STEEL	SS304	SS316/316L
12	BODY-3		B26-319.F	A216-WCB	A351-CF8	A351-CF8M
13	ELEMENT		SS316L			
14	ELEMENT COVER		ALUMINIUM	CARBON STEEL	SS304	SS316L
15	O-RING		VITON			
16	SPRING		SS304	SS304	SS304	SS316

SECTION 2.5_KSVRFI/VRFI-A/VSFI/VSFI-A

VACUUM RELIEF VAVLE WITH FLAME ARRESTER

INTRODUCTION

The model KSVRFI and VSFI vacuum relief valve with flame arrester are an advanced design for vent to atmosphere applications. Designed, manufactured and tested according to the API 2000 code, BS7244 and ISO16852. These valves utilize the latest technologies to provide protection against positive or vacuum over pressure and prevent air intake, evaporative losses of product and help to contain odorous and potentially explosive vapours.

Setting Pressure

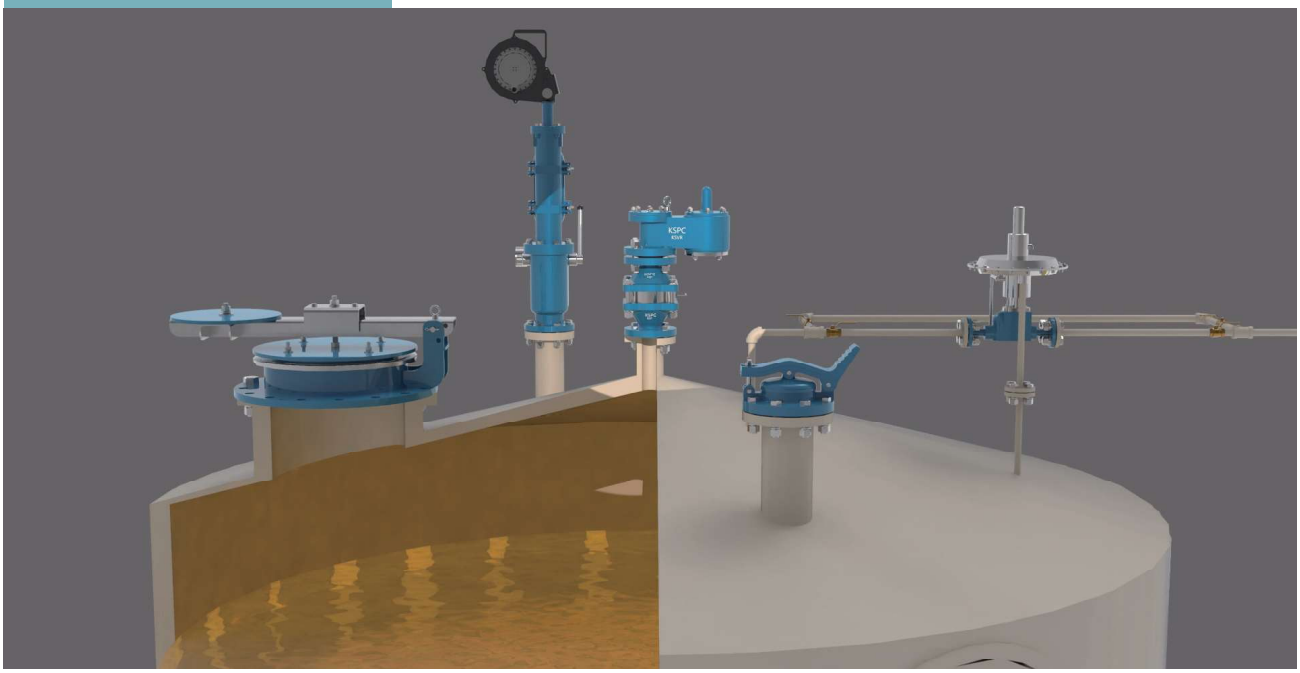
KSVRFI Weight Loaded model	Min. -20 mmW.C ~ Max. - 430 mmW.C
KSVSFI Spring Loaded model	Min. - 430 mmW.C ~ Max. - 9,000 mmW.C

Body Materials Aluminium, Carbon Steel, SS304 and SS316 with various trims
(Different materials available on request)

Sizes range DN 50 ~ DN 350 with ASME 150Lb flanges as standard
(Different connections available on request)

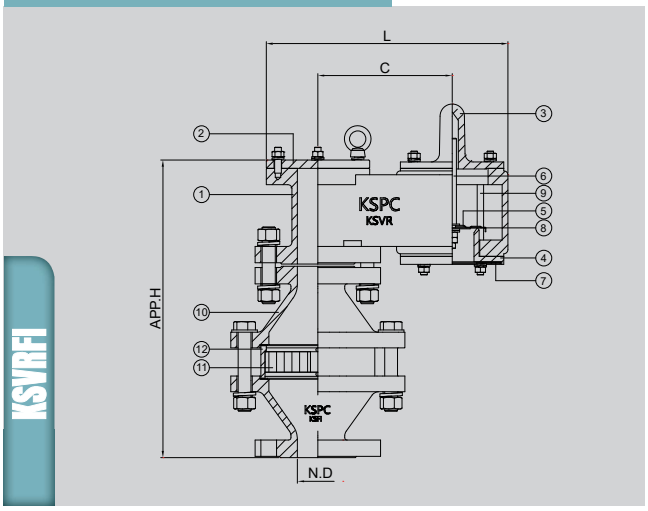
Rules & Certifications API 2000, BS7244 / ISO16852 & ATEX / KFI
Flame cell : NEC group D (=IIA), group C(=IIB3) and group B(=IIC), ETC.

APPLICATION

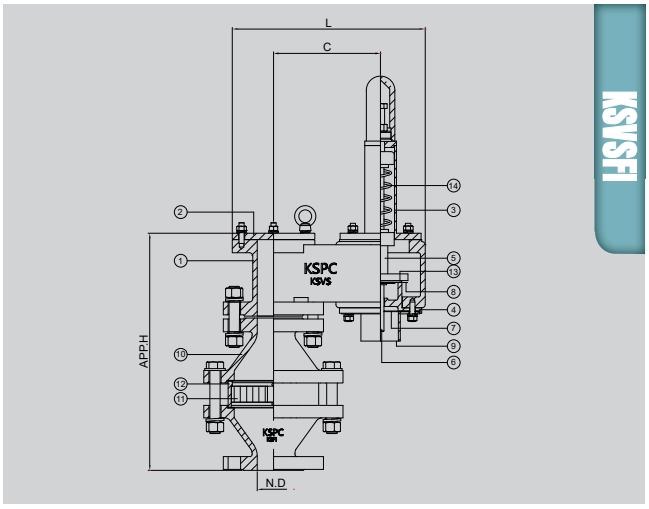


OUTLINE DRAWING

KSVRF1



KSVSF1



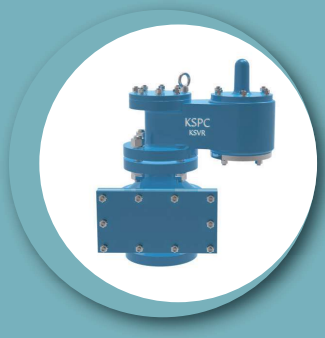
DIMENSION TABLE

SIZE	2"	3"	4"	6"	8"	10"	12"	14"
N.D	50	80	100	150	200	250	300	350
C	165	206	230	283	348	406	466	542
L	347	425	473	600	729	889	1008	1155
Approx. H	365	403	424	513	560	607	731	772

NOTE Standard Connection(ASME 150Lb flange) and JIS or different types are available upon request.

COMPONENT MATERIAL

ITEM NO	COMPONENT	BODY	ALUMINIUM	CARBON STEEL	SS304	SS316
		TRIM	SS304	SS304	SS304	SS316L
1	BODY-1		B26-319.F	A216-WCB	A351-CF8	A351-CF8M
2	BLIND COVER		ALUMINIUM	CARBON STEEL	SS304	SS316L
3	VACUUM COVER		B26-319.F/SS304	C.S/SS304	A351-CF8	SS316/SS316L
4	VACUUM SEAT		B26-319.F/A351-CF8	A351-CF8	A351-CF8	A351-CF8M
5	VACUUM DISC		SS304	SS304	SS304	SS316L
6	VACUUM STEM		SS304	SS304	SS304	SS316
7	VACUUM SCREEN		SS304	SS304	SS304	SS316
8	DIAPHRAGM		TEFLON			
9	STEM GUIDE		SS304	SS304	SS304	SS316/SS316L
10	BODY-2		B26-319.F	A216-WCB	A351-CF8	A351-CF8M
11	ELEMENT		SS316L			
12	ELEMENT HOUSING		SS304	SS304	SS304	SS316
13	O-RING		VITON			
14	SPRING		SS304	SS304	SS304	SS316



SECTION 2.6_KSVRFH/VSFH

VACUUM RELIEF VAVLE WITH FLAME ARRESTER

INTRODUCTION

The model KSVRFH and VSFH vacuum relief valve with flame arrester are an advanced design for vent to atmosphere applications. Designed, manufactured and tested according to the API 2000 code, BS7244 and ISO16852. These valves utilize the latest technologies to provide protection against positive or vacuum over pressure and prevent air intake, evaporative losses of product and help to contain odorous and potentially explosive vapours.

Setting Pressure

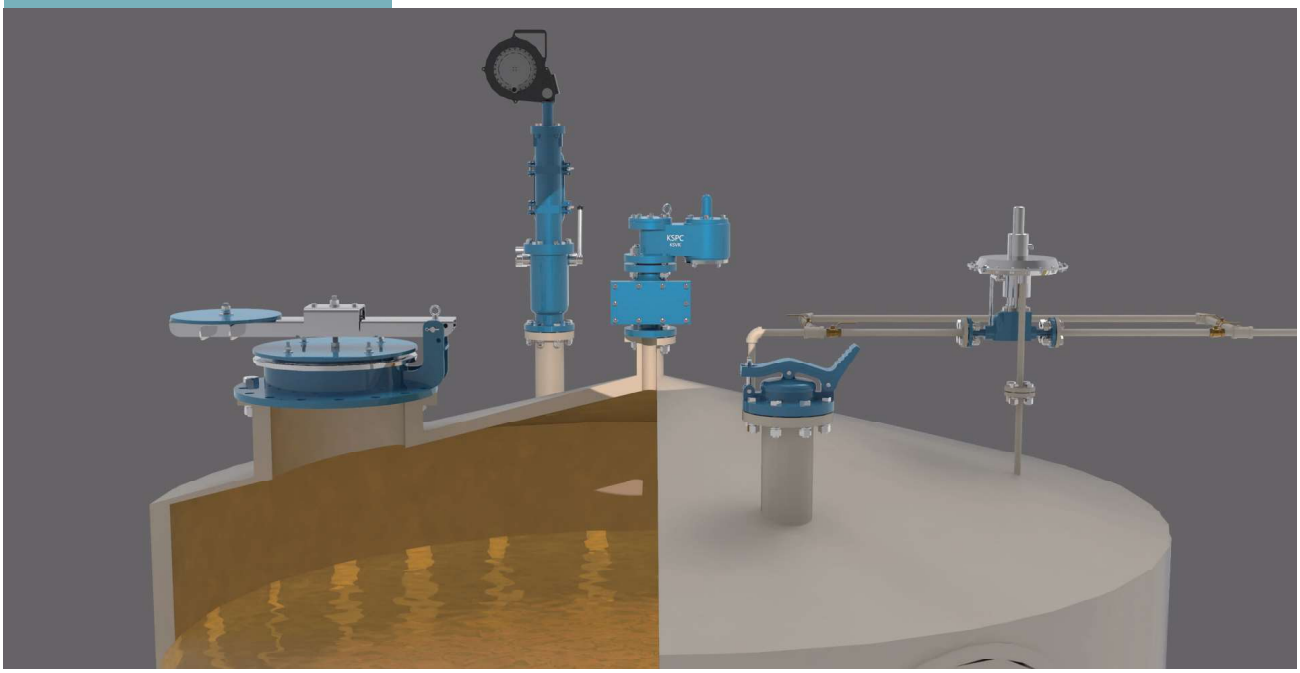
KSVRFH Weight Loaded model	Min. -20 mmW.C ~ Max. - 430 mmW.C
KSVSFH Spring Loaded model	Min. - 430 mmW.C ~ Max. - 9,000 mmW.C

Body Materials Aluminium, Carbon Steel, SS304 and SS316 with various trims
(Different materials available on request)

Sizes range DN 50 ~ DN 350 with ASME 150Lb flanges as standard
(Different connections available on request)

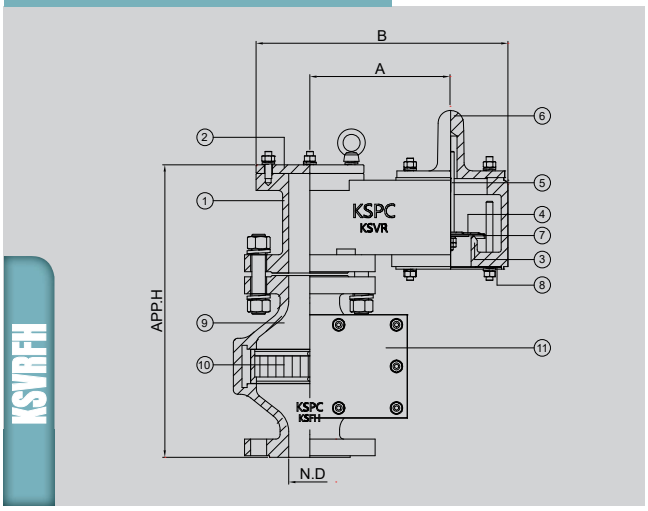
Rules & Certifications API 2000, BS7244 / ISO16852 & ATEX / KFI
Flame cell : NEC group D (=IIA), group C(=IIB3) and group B(=IIC), ETC.

APPLICATION

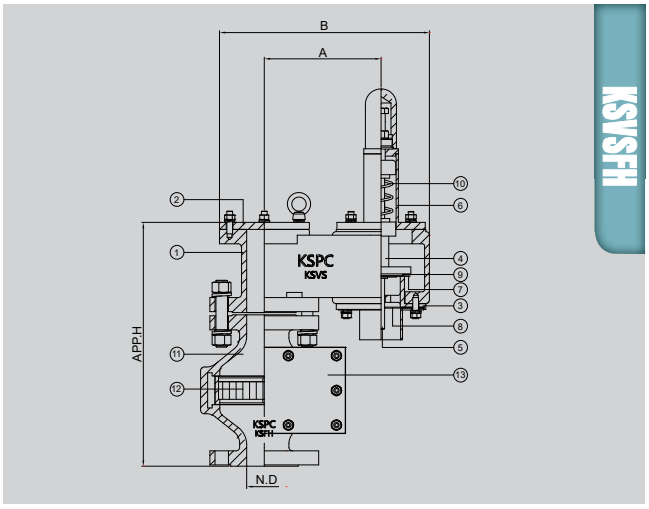


OUTLINE DRAWING

KSVRFH



KSVSFH



DIMENSION TABLE

SIZE	2"	3"	4"	6"	8"	10"	12"	14"
N.D	50	80	100	150	200	250	300	350
A	165	206	230	283	348	406	466	542
B	324	404	450	566	684	853	969	1137
Approx. H	345	389	424	487	523	597	647	851

NOTE Standard Connection(ASME 150Lb flange) and JIS or different types are available upon request.

COMPONENT MATERIAL

ITEM NO	COMPONENT		ALUMINIUM	CARBON STEEL	SS304	SS316
		BODY				
		TRIM	SS304	SS304	SS304	SS316L
1	BODY-1		B26-319.F	A216-WCB	A351-CF8	A351-CF8M
2	BLIND COVER		ALUMINIUM	CARBON STEEL	SS304	SS316L
3	VACUUM SEAT		B26-319.F/A351-CF8	A351-CF8	A351-CF8	A351-CF8M
4	VACUUM DISC		SS304	SS304	SS304	SS316L
5	VACUUM STEM		SS304	SS304	SS304	SS316
6	VACUUM COVER		B26-319.F/SS304	C.S/SS304	A351-CF8	SS316/SS316L
7	DIAPHARAGM		TEFLON			
8	VACUUM SCREEN		SS304	SS304	SS304	SS316
9	BODY-2		B26-319.F	A216-WCB	A351-CF8	A351-CF8M
10	ELEMENT		SS316L			
11	ELEMENT HOUSING		SS304	SS304	SS304	SS316
12	O-RING		VITON			
13	SPRING		SS304	SS304	SS304	SS316

TANK SAFETY & PROTECTION DEVICE

SECTION 3_FLAME ARRESTER

FLAME ARRESTER FOR DEFLAGRATION PROOF IN-LINE KSFI/FI-A

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FLAME ARRESTER FOR DETONATION PROOF IN-LINE

FLAME ARRESTER FOR DEFLAGRATION PROOF END-LINE

Flame Arrester is designed, manufactured, tested according to API 2000, British Standard Specification Code BS7244, and EN 12874 / ISO 16852.
The units are passive devices with no moving parts. They prevent the propagation of flame from the exposed side of the unit to the protected side by the use of a 316L stainless steel crimped metal ribbon type flame cell element.

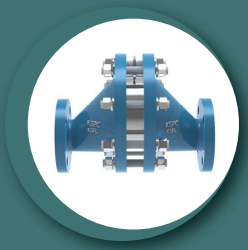
KSFI-J

P40

KSFH

P42

KSFL



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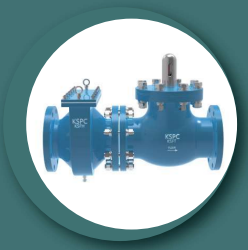
KSFTFH



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KFD

P48

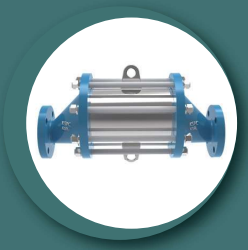
KSFD-A

P50

KSFD

P52

KSFLD



P54

KSFE

P56

KSFE-A

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KSFE-S

P60

KSFF

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SECTION 3.1_KSFI

FLAME ARRESTER
DEFLAGRATION PROOF IN-LINE

INTRODUCTION

The model KSFI inline flame arrester is designed, manufactured, tested according to API 2000, British Standard Specification Code BS7244 and ISO 16852. The units are passive devices with no moving parts. They prevent the propagation of flame from the exposed side of the unit to the protected side by the use of a 316L stainless steel crimped metal ribbon type flame cell element. This construction produces a matrix of uniform opening that are carefully constructed to quench the flame by absorbing the heat.

Operating Temperature @ Pressure

KSFI / DN 15 ~ DN 600	+ 60℃ (=140°F) @ 0.11 Mpa

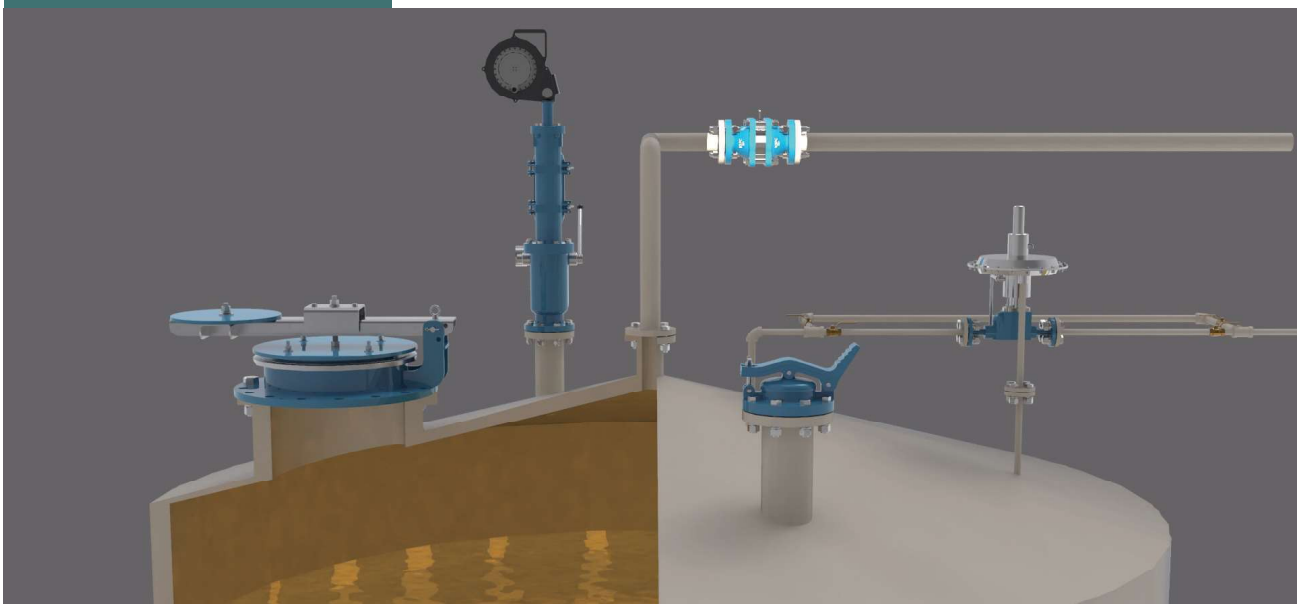
Body Materials Aluminium, Nodular Iron, Cast Steel, SS304, SS316, SS316L with various trims (Different materials available on request)

Sizes range DN 15 ~ DN 600 with ASME 150Lb flanges (Different connections available on request)

Rules & Certifications API 2000, BS7244 / ISO 16852 & KFI
Flame cell : NEC group D (=IIA), group C(=IIB3) and group B(=IIC), ETC.

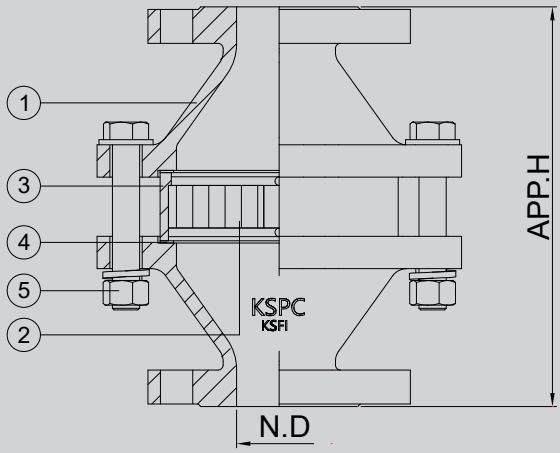
Optimum / Optional Design & Arrangments Stem Jacket type, Steam Tracing type

APPLICATION



OUTLINE DRAWING

KSFI



DIMENSION TABLE

SIZE	½"	1"	1 ½"	2"	3"	4"	6"	8"	10"	12"	14"	16"	20"	24"
N.D	15	25	40	50	80	100	150	200	250	300	350	400	500	600
D	221	229	229	234	254	266	326	342	364	454	486	511	547	720
H	155	155	214	214	251	300	385	450	600	680	745	850	1000	1235

NOTE Standard Connection(ASME 150Lb flange) and JIS or different types are available upon request.

COMPONENT MATERIAL

ITEM NO	COMPONENT	ALUMINIUM	CARBON STEEL	STAINLESS STEEL
1	BODY	CAST ALUMINIUM	CAST or WELDED C.S	CAST or WELDED S.S
2	ELEMENT	SS316L		
3	ELEMENT HOUSING	SS304	SS304	SS304/SS316
4	GASKET	PTFE		
5	STUD BOLT/NUT	A193-B7 / A194-2H or STAINLESS STEEL		
STANDARD PAINTING		IN-OUT SIDE EPOXY 150 MICRON WITHOUT STAINLESS STEEL & ALUMINIUM PART		

MAINTENANCE

- Periodic inspection and maintenance is required. The cell assembly can be removed for cleaning purposes.
- Cleaning ban be accomplished by dipping the entire cell assembly into an appropriate solvent.
- Care should be taken not to damage the cell openings as such deformations hamper the flow through the cell.
- The gaskets should be inspected and replaced if necessary.

SECTION 3.2_KSFI-A

FLAME ARRESTER
DEFLAGRATION PROOF IN-LINE

INTRODUCTION

The model KSFI-A inline flame arrester is designed, manufactured, tested according to API 2000, British Standard Specification Code BS7244 and ISO 16852. The units are passive devices with no moving parts. They prevent the propagation of flame from the exposed side of the unit to the protected side by the use of a 316L stainless steel crimped metal ribbon type flame cell element. This construction produces a matrix of uniform opening that are carefully constructed to quench the flame by absorbing the heat.

Operating Temperature @ Pressure

KSFI-A / DN 25 ~ DN 300	+ 60℃ (=140°F) @ 0.11 Mpa

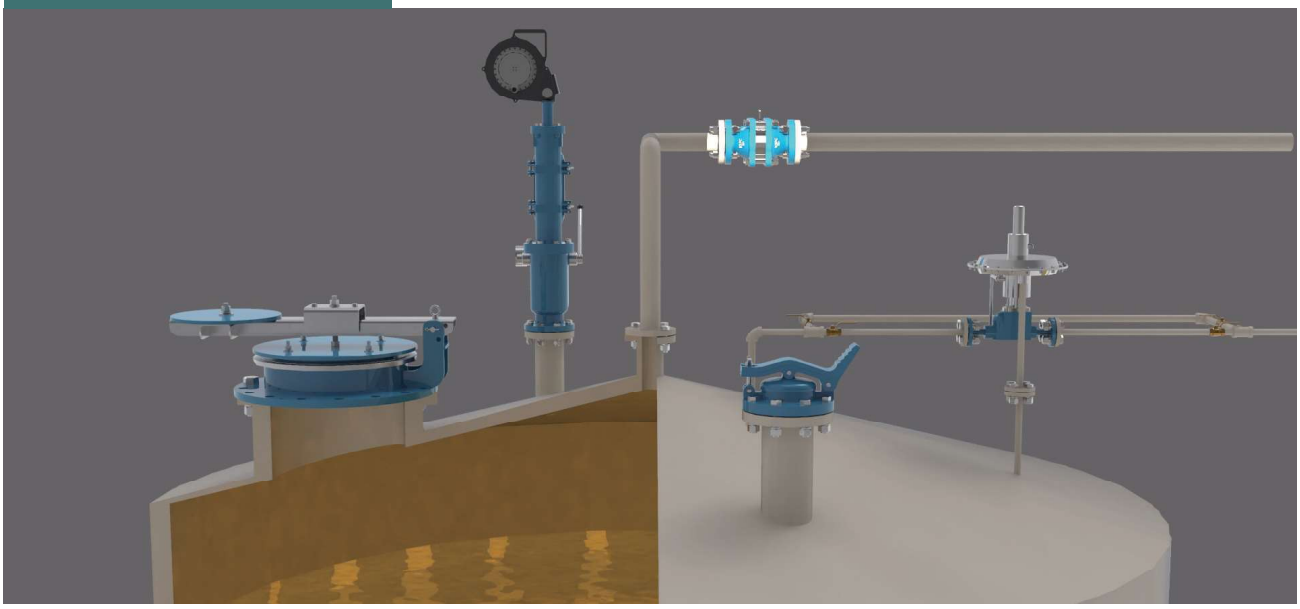
Body Materials Aluminium, Nodular Iron, Cast Steel, SS304, SS316, SS316L with various trims (Different materials available on request)

Sizes range DN 25 ~ DN 300 with ASME 150Lb flanges (Different connections available on request)

Rules & Certifications API 2000, BS7244 / ISO 16852 & ATEX
Flame cell : NEC group D (=IIA), group C(=IIB3) and group B(=IIC), ETC.

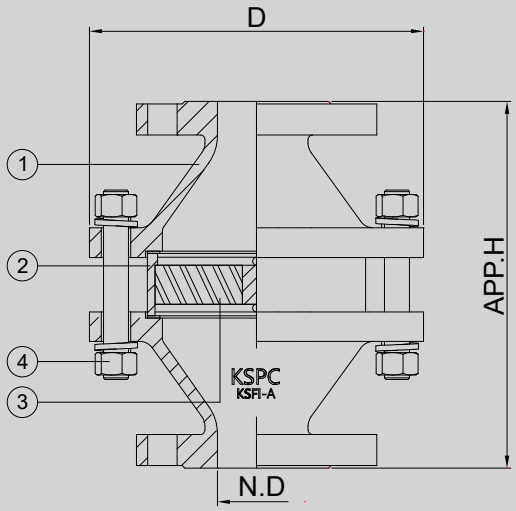
Optimum / Optional Design & Arrangments Stem Jacket type, Steam Tracing type

APPLICATION



OUTLINE DRAWING

KSFI-A



DIMENSION TABLE

SIZE	1"	1 ½"	2"	3"	4"	6"	8"	10"	12"
N.D	25	40	50	80	100	150	200	250	300
D	239	244	250	264	272	326	342	364	454
H	155	214	214	251	300	385	450	600	680

NOTE Standard Connection(ASME 150Lb flange) and JIS or different types are available upon request.

COMPONENT MATERIAL

ITEM NO	COMPONENT	ALUMINIUM	CARBON STEEL	STAINLESS STEEL
1	BODY	CAST ALUMINIUM	CAST or WELDED C.S	CAST or WELDED S.S
2	ELEMENT	SS316L		
3	ELEMENT HOUSING	SS304	SS304	SS304/SS316
4	GASKET	PTFE		
5	STUD BOLT/NUT	A193-B7 / A194-2H or STAINLESS STEEL		
STANDARD PAINTING		IN-OUT SIDE EPOXY 150 MICRON WITHOUT STAINLESS STEEL & ALUMINIUM PART		

MAINTENANCE

- Periodic inspection and maintenance is required. The cell assembly can be removed for cleaning purposes.
- Cleaning ban be accomplished by dipping the entire cell assembly into an appropriate solvent.
- Care should be taken not to damage the cell openings as such deformations hamper the flow through the cell.
- The gaskets should be inspected and replaced if necessary.

SECTION 3.3_KSFI-J

FLAME ARRESTER DEFLAGRATION PROOF IN-LINE

INTRODUCTION

The model KSFI-J inline flame arrester is designed, manufactured, tested according to API 2000, British Standard Specification Code BS7244 and ISO 16852. The units are passive devices with no moving parts. They prevent the propagation of flame from the exposed side of the unit to the protected side by the use of a 316L stainless steel crimped metal ribbon type flame cell element. This construction produces a matrix of uniform opening that are carefully constructed to quench the flame by absorbing the heat.

Operating Temperature @ Pressure

KSFI / DN 15 ~ DN 600	+ 60℃ (=140°F) @ 0.11 Mpa

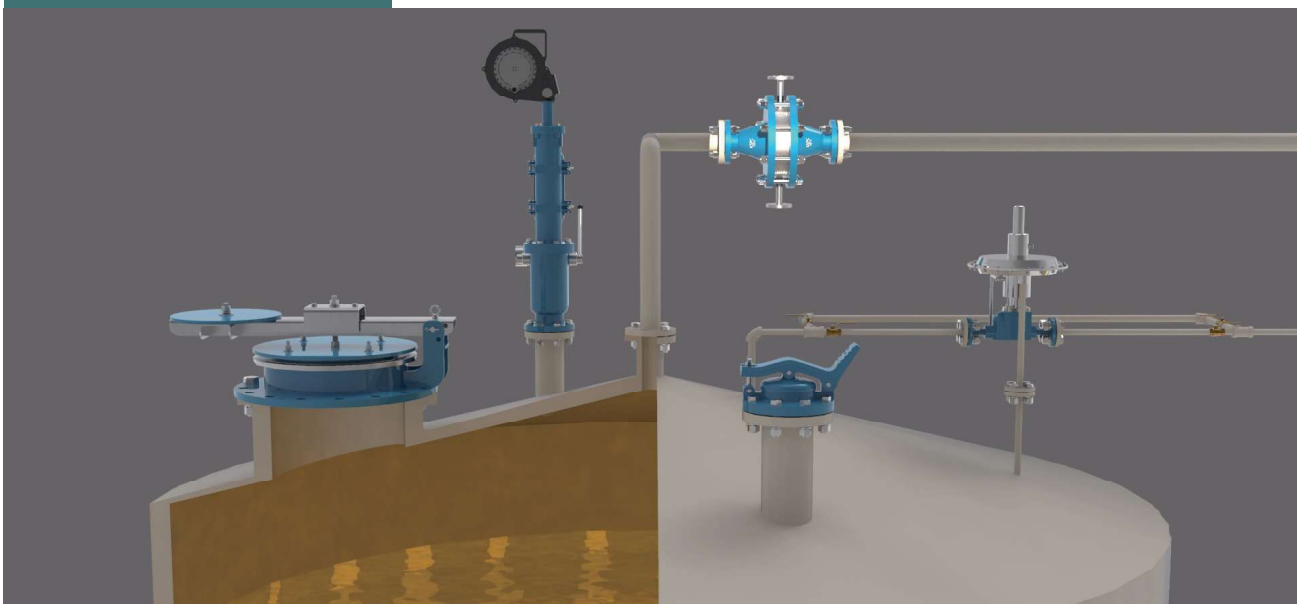
Body Materials Aluminium, Nodular Iron, Cast Steel, SS304, SS316, SS316L with various trims (Different materials available on request)

Sizes range DN 50 ~ DN 300 with ASME 150Lb flanges (Different connections available on request)

Rules & Certifications API 2000, BS7244 / ISO 16852 & KFI
Flame cell : NEC group D (=IIA), group C(=IIB3) and group B(=IIC), ETC.

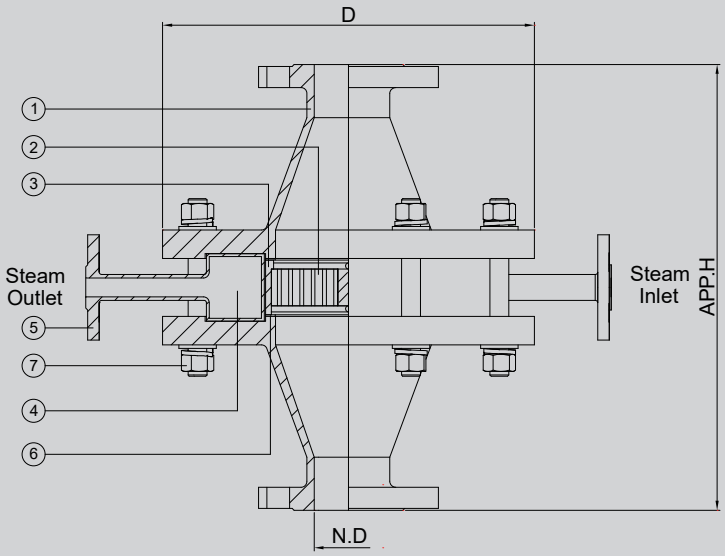
Optimum / Optional Design & Arrangments Stem Jacket type, Steam Tracing type

APPLICATION



OUTLINE DRAWING

KSFI-J



DIMENSION TABLE

SIZE	2"	3"	4"	6"	8"	10"	12"
N.D	50	80	100	150	200	250	300
D	234	254	262	326	342	364	454
Approx. H	214	251	300	385	450	600	680

NOTE Standard Connection(ASME 150Lb flange) and JIS or different types are available upon request.

COMPONENT MATERIAL

ITEM NO	COMPONENT	CARBON STEEL	SS304	SS316/SS316L
1	BODY	CARBON STEEL	SS304	SS316/316L
2	ELEMENT	SS316L		
3	ELEMENT HOUSING	SS304	SS304	SS316
4	STEAM JACKET	SS304	SS304	SS316L
5	STEAM LINE FLANGE	A182 F304	A182 F304	A182 F316L
6	GASKET	PTFE		
7	STUD BOLT/NUT	CARBON STEEL	SS304	SS316
STANDARD PAINTING		IN-OUT SIDE EPOXY 150 MICRON WITHOUT STAINLESS STEEL & ALUMINIUM PART		

MAINTENANCE

- Periodic inspection and maintenance is required. The cell assembly can be removed for cleaning purposes.
- Cleaning ban be accomplished by dipping the entire cell assembly into an appropriate solvent.
- Care should be taken not to damage the cell openings as such deformations hamper the flow through the cell.
- The gaskets should be inspected and replaced if necessary.

SECTION 3.4_KSFH

FLAME ARRESTER
DEFLAGRATION PROOF IN-LINE

INTRODUCTION

The model KSFH inline flame arrester is designed, manufactured, tested according to API 2000, British Standard Specification Code BS7244 and ISO 16852. The units are passive devices with no moving parts. They prevent the propagation of flame from the exposed side of the unit to the protected side by the use of a 316L stainless steel crimped metal ribbon type flame cell element. This construction produces a matrix of uniform opening that are carefully constructed to quench the flame by absorbing the heat.

Operating Temperature @ Pressure

KSFH / DN 50 ~ DN 350	+ 60℃ (=140°F) @ 0.11 Mpa

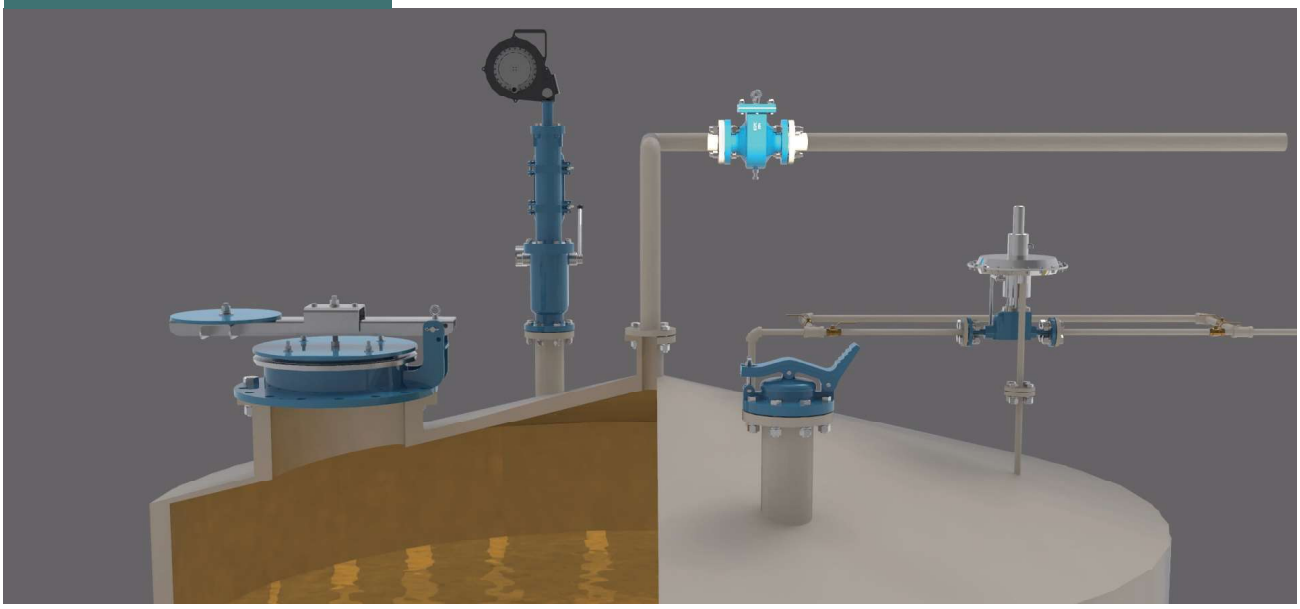
Body Materials Aluminium, Nodular Iron, Cast Steel, SS304, SS316, SS316L with various trims (Different materials available on request)

Sizes range DN 50 ~ DN 350 with ASME 150Lb flanges (Different connections available on request)

Rules & Certifications API 2000, BS7244 / ISO 16852 & KFI
Flame cell : NEC group D (=IIA), group C(=IIB3) and group B(=IIC), ETC.

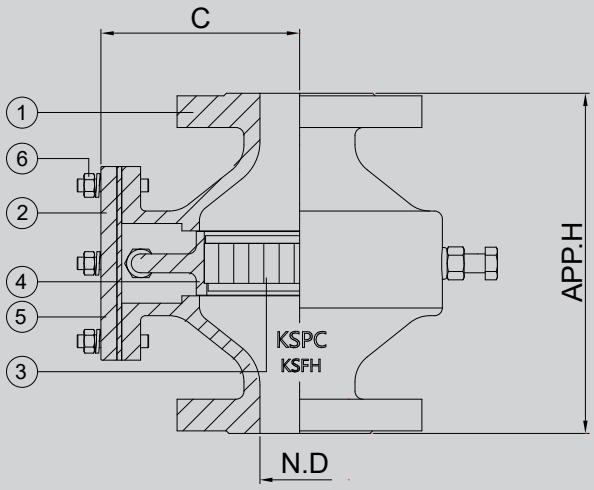
Optimum / Optional Design & Arrangments Stem Jacket type, Steam Tracing type

APPLICATION



OUTLINE DRAWING

KSFH



DIMENSION TABLE

SIZE	2"	3"	4"	6"	8"	10"	12"	14"
N.D	50	80	100	150	200	250	300	350
C	124	144	163	188	220	310	317	395
L	214	249	290	344	404	579	622	753
Approx. H	214	240	262	294	305	354	370	565

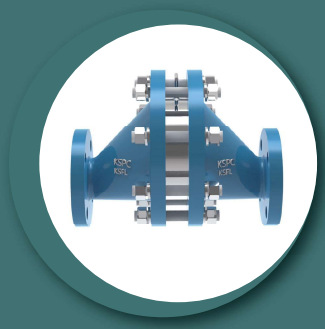
NOTE Standard Connection(ASME 150Lb flange) and JIS or different types are available upon request.

COMPONENT MATERIAL

ITEM NO	COMPONENT	ALUMINIUM	CARBON STEEL	STAINLESS STEEL
1	BODY	CAST ALUMINIUM	CAST or WELDED C.S	AST or WELDED S.S
2	COVER	ALUMINIUM	CARBON STEEL	STAINLESS STEEL
3	ELEMENT	SS316L		
4	ELEMENT HOUSING	SS304	SS304	SS304 or SS316L
5	GASKET	NON ASBESTOS		
6	STUD BOLT/NUT	A193-B7 / A194-2H or STAINLESS STEEL		
STANDARD PAINTING		IN-OUT SIDE EPOXY 150 MICRON WITHOUT STAINLESS STEEL & ALUMINIUM PART		

MAINTENANCE

- Periodic inspection and maintenance is required. The cell assembly can be removed for cleaning purposes.
- Cleaning ban be accomplished by dipping the entire cell assembly into an appropriate solvent.
- Care should be taken not to damage the cell openings as such deformations hamper the flow through the cell.
- The gaskets should be inspected and replaced if necessary.



SECTION 3.5_KSFL

FLAME ARRESTER
DEFLAGRATION PROOF IN-LINE

INTRODUCTION

The model KSFL inline flame arrester is designed, manufactured, tested according to API 2000, British Standard Specification Code BS7244 and ISO 16852. The units are passive devices with no moving parts. They prevent the propagation of flame from the exposed side of the unit to the protected side by the use of a 316L stainless steel crimped metal ribbon type flame cell element. This construction produces a matrix of uniform opening that are carefully constructed to quench the flame by absorbing the heat.

Operating Temperature @ Pressure

KSFL / DN 50 ~ DN 300	+ 60℃ (=140°F) @ 0.11 Mpa

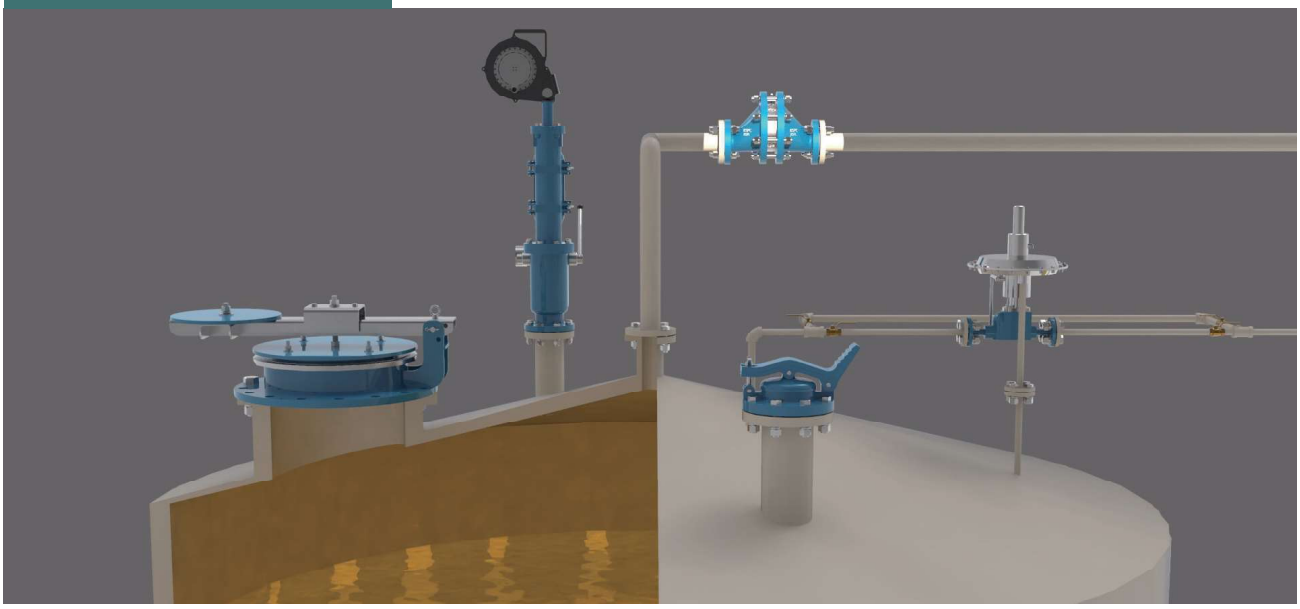
Body Materials Aluminium, Nodular Iron, Cast Steel, SS304, SS316, SS316L with various trims (Different materials available on request)

Sizes range DN 50 ~ DN 300 with ASME 150Lb flanges (Different connections available on request)

Rules & Certifications API 2000, BS7244 / ISO 16852 & ATEX / KFI
Flame cell : NEC group D (=IIA), group C(=IIB3) and group B(=IIC), ETC.

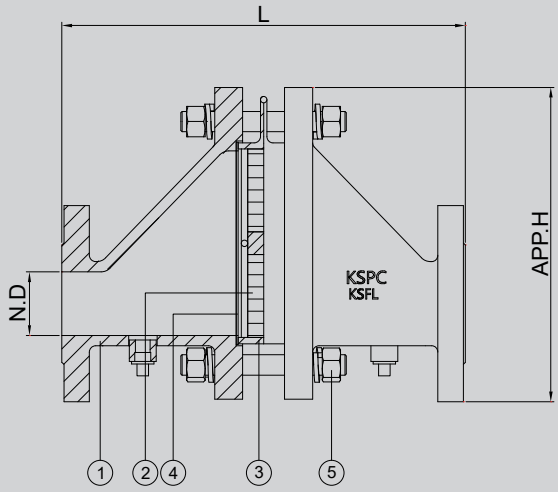
Optimum / Optional Design & Arrangments Stem Jacket type, Steam Tracing type

APPLICATION



OUTLINE DRAWING

KSFL



DIMENSION TABLE

SIZE	2"	3"	4"	6"	8"	10"	12"
N.D	50	80	100	150	200	250	300
L	396	430	502	522	592	770	810
Approx. H	247	276	335	408	488	639	705

NOTE Standard Connection(ASME 150Lb flange) and JIS or different types are available upon request.

COMPONENT MATERIAL

ITEM NO	COMPONENT	CARBON STEEL	STAINLESS STEEL
1	BODY	CAST or WELDED C.S	CAST or WELDED S.S
2	ELEMENT	316L	
3	ELEMENT HOUSING	SS304	SS304
4	GASKET	PTFE	
5	STUD BOLT/NUT	A193-B7 / A194-2H or STAINLESS STEEL	
STANDARD PAINTING		IN-OUT SIDE EPOXY 150 MICRON WITHOUT STAINLESS STEEL & ALUMINIUM PART	

MAINTENANCE

- Periodic inspection and maintenance is required. The cell assembly can be removed for cleaning purposes.
- Cleaning ban be accomplished by dipping the entire cell assembly into an appropriate solvent.
- Care should be taken not to damage the cell openings as such deformations hamper the flow through the cell.
- The gaskets should be inspected and replaced if necessary.

SECTION 3.6_KSFTFH

FLAME TRAP
DEFLAGRATION PROOF IN-LINE

INTRODUCTION

The model KSFTFH flame trap ass'y of KSPC is composed of KSPC Model **KSFH** flame arrester and quick closing valve, automatically, in according to a rise temperature of heat. Generally, it's installed to pipe line in front of gas line from each holder and digester. Also, it's prevent igniter to install in using gas equipment line. Flame Trap is designed to protect as a from explosion of propagation of flame.

Fuse Activating Temperature / time

KSFTFH / DN 25 ~ DN 300	+ 127℃ (=260°F) within 15 seconds

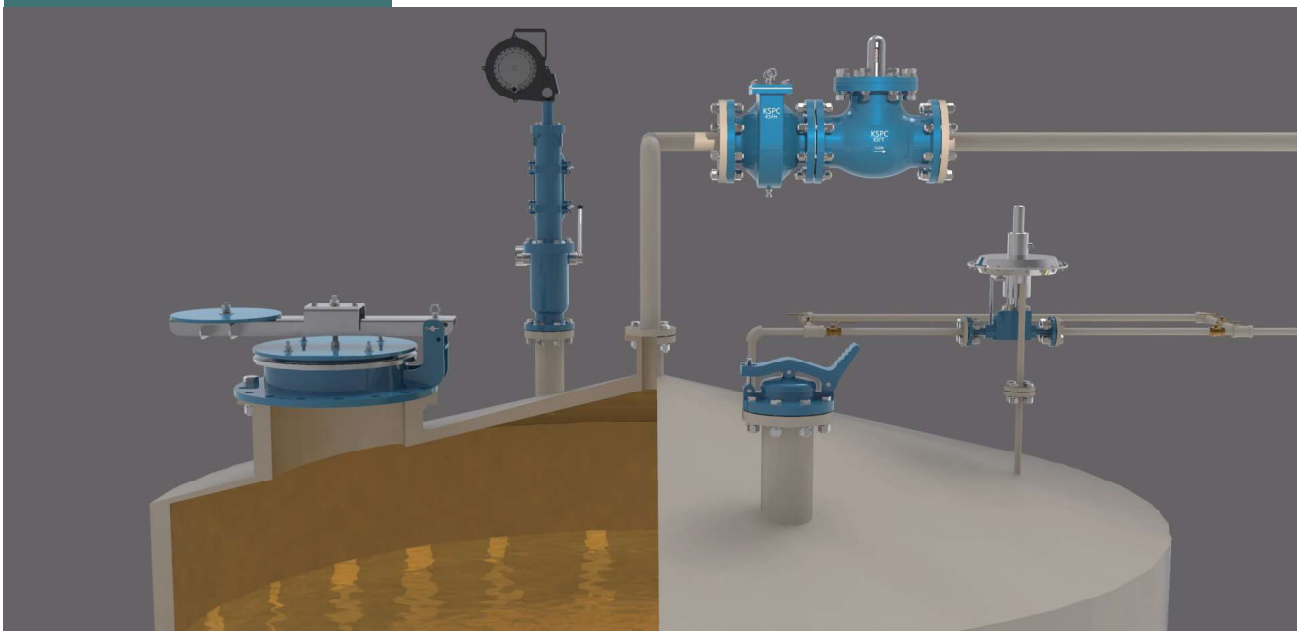
Body Materials Aluminium, Nodular Iron, Cast Steel, SS304, SS316, SS316L with various trims (Different materials available on request)

Sizes range DN 50 ~ DN 300 with ASME 150Lb flanges (Different connections available on request)

Rules & Certifications API 2000, BS7244 / ISO 16852 & KFI
Flame cell : NEC group D (=IIA), group C(=IIB3) and group B(=IIC), ETC.

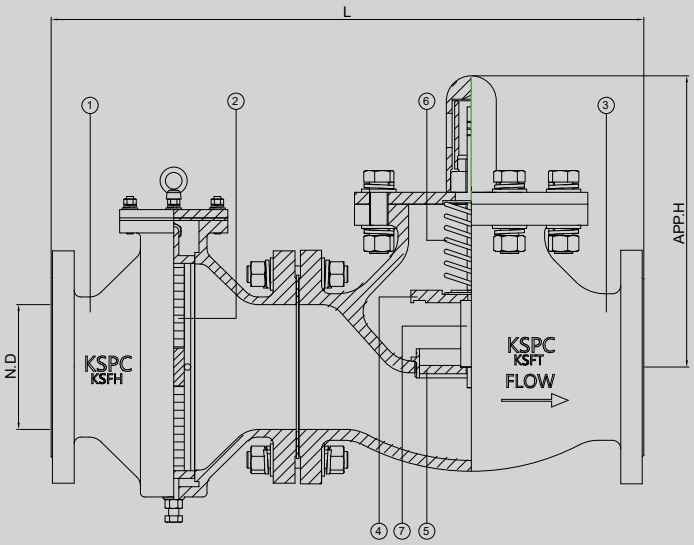
Optimum / Optional Design & Arrangments Stem Jacket type, Steam Tracing type

APPLICATION



OUTLINE DRAWING

KSFTFH



DIMENSION TABLE

SIZE	2"	3"	4"	6"	8"	10"	12"
N.D	50	80	100	150	200	250	300
L	412	468	613	704	795	963	1036
Approx. H	238	263	284	351	395	439	470

NOTE Standard Connection(ASME 150Lb flange) and JIS or different types are available upon request.

COMPONENT MATERIAL

ITEM NO	COMPONENT	ALUMINIUM	CARBON STEEL	STAINLESS STEEL
1	BODY-1	B26-319.F	A216-WCB	A351-CF8
2	ELEMENT	SS316L		
3	BODY-2	B26-319.F	A216-WCB	A351-CF8
4	DISC	SS304	SS304	SS304/SS316L
5	SEAT	SS304	SS304	SS304/SS316
6	SPRING	SS304	SS304	SS304/SS316
7	FUSE	LOW TEMP. METAL		

MAINTENANCE

- Periodic inspection and maintenance is required. The cell assembly can be removed for cleaning purposes.
- Cleaning ban be accomplished by dipping the entire cell assembly into an appropriate solvent.
- Care should be taken not to damage the cell openings as such deformations hamper the flow through the cell.
- The gaskets should be inspected and replaced if necessary.

SECTION 3.7_KFD

FLAME ARRESTER
DETONATION PROOF IN-LINE

INTRODUCTION

The model KFD inline detonation flame arrester is designed, manufactured and tested according to API 2000, British Standard Specification Code BS7244, ISO 16852 & USCG, IMO MSC/Circ.677. **KFD** detonation flame arresters provide protection against flame propagation in piping systems that are manifolded or have long runs. The arresters are designed to stop an ignited flammable vapor mixture traveling at subsonic or supersonic vapor velocities. They are also designed to protect against continuous burning against the SS316L flame cell for a specific period.

Operating Temperature @ Pressure

KFD / DN 15 ~ DN 300	+ 60℃ (=140°F) @ 0.11 Mpa

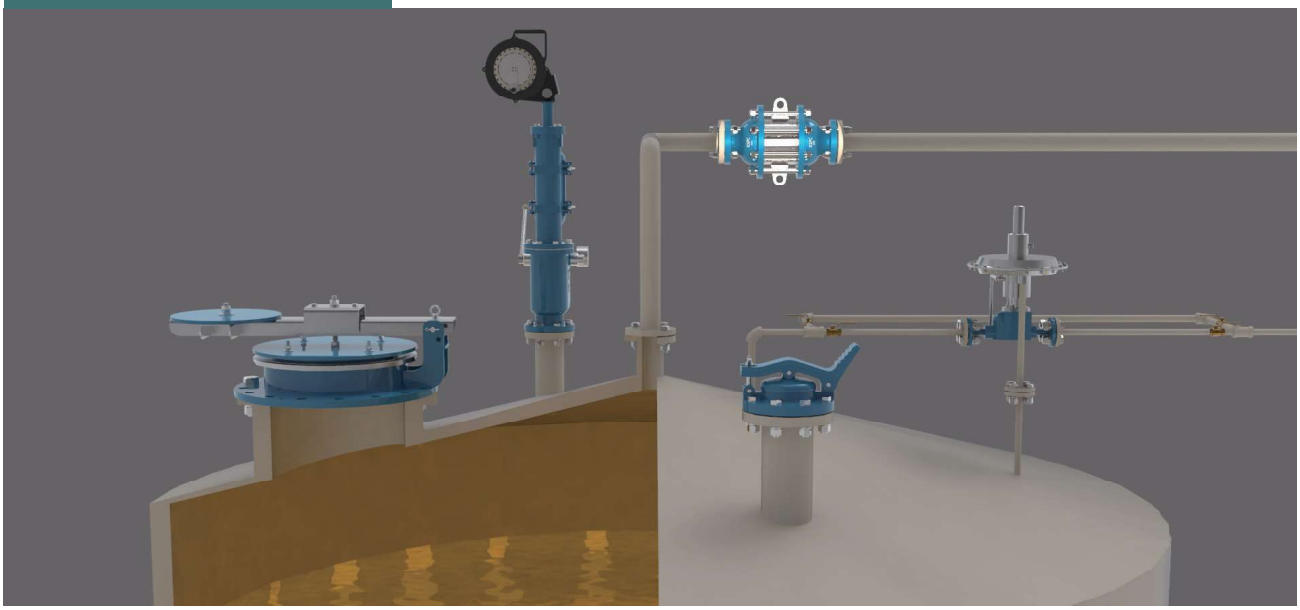
Body Materials Nodular Iron, Cast Steel, SS304, SS316, SS316L with various trims
(Different materials available on request)

Sizes range DN 15 ~ DN 300 with ASME 150Lb flanges
(Different connections available on request)

Rules & Certifications API 2000, BS7244, ISO 16852 / USCG, IMO MSC/Circ.677
Flame cell : NEC group D (=IIA), group C(=IIB3) and group B(=IIC), ETC.

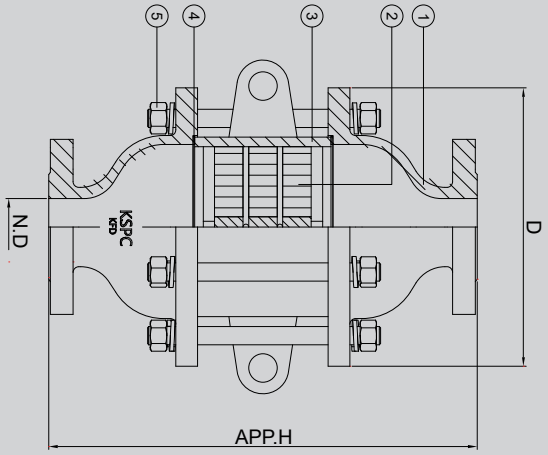
Optimum / Optional Design & Arrangments Stem Jacket type, Steam Tracing type

APPLICATION



OUTLINE DRAWING

KFD



DIMENSION TABLE

SIZE	½"	1"	1 ½"	2"	3"	4"	6"	8"	10"	12"
N.D	15	25	40	50	80	100	150	200	250	300
D	180	200	250	250	280	330	440	570	670	790
Approx. H	360	364	373	373	445	502	577	657	786	840

NOTE Standard Connection(ASME 150Lb flange) and JIS or different types are available upon request.

COMPONENT MATERIAL

ITEM NO	COMPONENT	CARBON STEEL	STAINLESS STEEL
1	BODY	CAST or WELDED CARBON STEEL	STAINLESS STEEL
2	ELEMENT	SS316L	
3	ELEMENT HOUSING	SS304	SS304/SS316
4	GASKET	PTFE	
5	STUD BOLT/NUT	A193-B7 / A194-2H or STAINLESS STEEL	
STANDARD PAINTING		IN-OUT SIDE EPOXY 150 MICRON WITHOUT STAINLESS STEEL & ALUMINIUM PART	

MAINTENANCE

- Periodic inspection and maintenance is required. The cell assembly can be removed for cleaning purposes.
- Cleaning ban be accomplished by dipping the entire cell assembly into an appropriate solvent.
- Care should be taken not to damage the cell openings as such deformations hamper the flow through the cell.
- The gaskets should be inspected and replaced if necessary.

SECTION 3.8_KSFD-A

FLAME ARRESTER
DETONATION PROOF IN-LINE

INTRODUCTION

The model KSFD-A inline detonation flame arrester is designed, manufactured and tested according to API 2000, British Standard Specification Code BS7244, ISO 16852 & USCG, IMO MSC/Circ.677. **KSFD-A** detonation flame arresters provide protection against flame propagation in piping systems that are manifolded or have long runs. The arresters are designed to stop an ignited flammable vapor mixture traveling at subsonic or supersonic vapor velocities. They are also designed to protect against continuous burning against the SS316L flame cell for a specific period.

Operating Temperature @ Pressure

KSFD-A / DN 50 ~ DN 300	+ 60℃ (=140°F) @ 0.11 Mpa

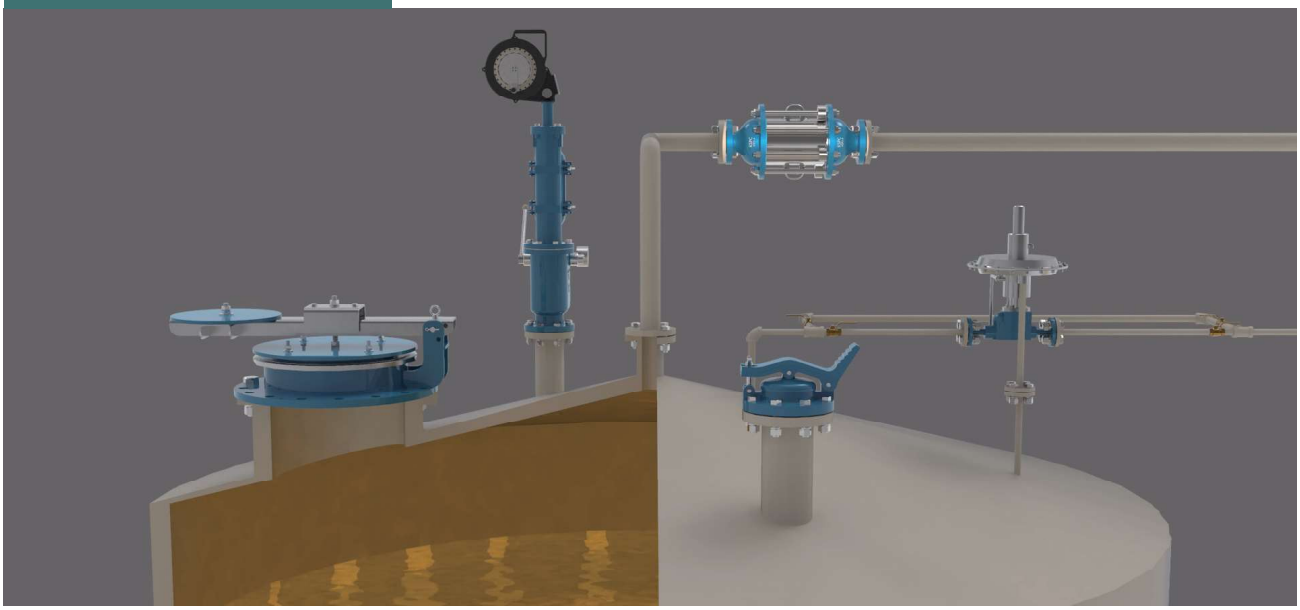
Body Materials Nodular Iron, Cast Steel, SS304, SS316, SS316L with various trims (Different materials available on request)

Sizes range DN 50 ~ DN 300 with ASME 150Lb flanges (Different connections available on request)

Rules & Certifications API 2000, ISO 16852 / USCG, IMO MSC/Circ.677 & ATEX
Flame cell : NEC group D (=IIA), group C(=IIB3) and group B(=IIC), ETC.

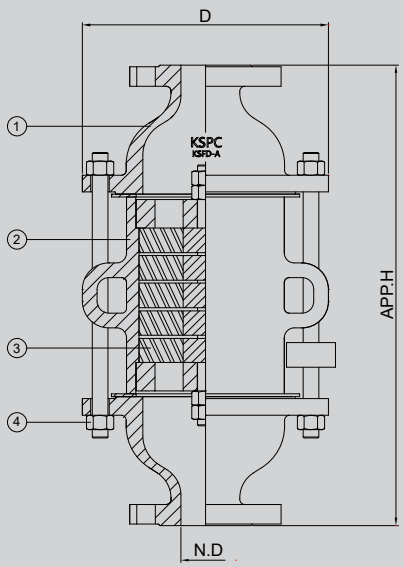
Optimum / Optional Design & Arrangments Stem Jacket type, Steam Tracing type

APPLICATION



OUTLINE DRAWING

KSFD-A



DIMENSION TABLE

SIZE	2"	2½"	3"	4"	6"	8"	10"	12"
N.D	50	65	80	100	150	200	250	300
D	468	524	526	548	620	699	810	854
Approx.H	250	280	280	324	440	570	670	770

NOTE Standard Connection(ASME 150Lb flange) and JIS or different types are available upon request.

COMPONENT MATERIAL

ITEM NO	COMPONENT	CARBON STEEL	STAINLESS STEEL
1	BODY	CAST or WELDED CARBON STEEL	STAINLESS STEEL
2	ELEMENT	SS316L	
3	ELEMENT HOUSING	SS304	SS304/SS316
4	GASKET	PTFE	
5	STUD BOLT/NUT	A193-B7 / A194-2H or STAINLESS STEEL	
STANDARD PAINTING		IN-OUT SIDE EPOXY 150 MICRON WITHOUT STAINLESS STEEL & ALUMINIUM PART	

MAINTENANCE

- Periodic inspection and maintenance is required. The cell assembly can be removed for cleaning purposes.
- Cleaning ban be accomplished by dipping the entire cell assembly into an appropriate solvent.
- Care should be taken not to damage the cell openings as such deformations hamper the flow through the cell.
- The gaskets should be inspected and replaced if necessary.

SECTION 3.9_KSFD

FLAME ARRESTER
DETONATION PROOF IN-LINE

INTRODUCTION

The model KSFD inline detonation flame arrester is designed, manufactured and tested according to API 2000, British Standard Specification Code BS7244 and ISO 16852. **KSFD** detonation flame arresters provide protection against flame propagation in piping systems that are manifolded or have long runs. The arresters are designed to stop an ignited flammable vapor mixture traveling at subsonic or supersonic vapor velocities. They are also designed to protect against continuous burning against the SS316L flame cell for a specific period.

Operating Temperature @ Pressure

KSFD / DN 25 ~ DN 150	+ 60℃ (=140°F) @ 0.11 Mpa
KSFD / DN 200 ~ DN 400	+ 60℃ (=140°F) @ 0.11 Mpa

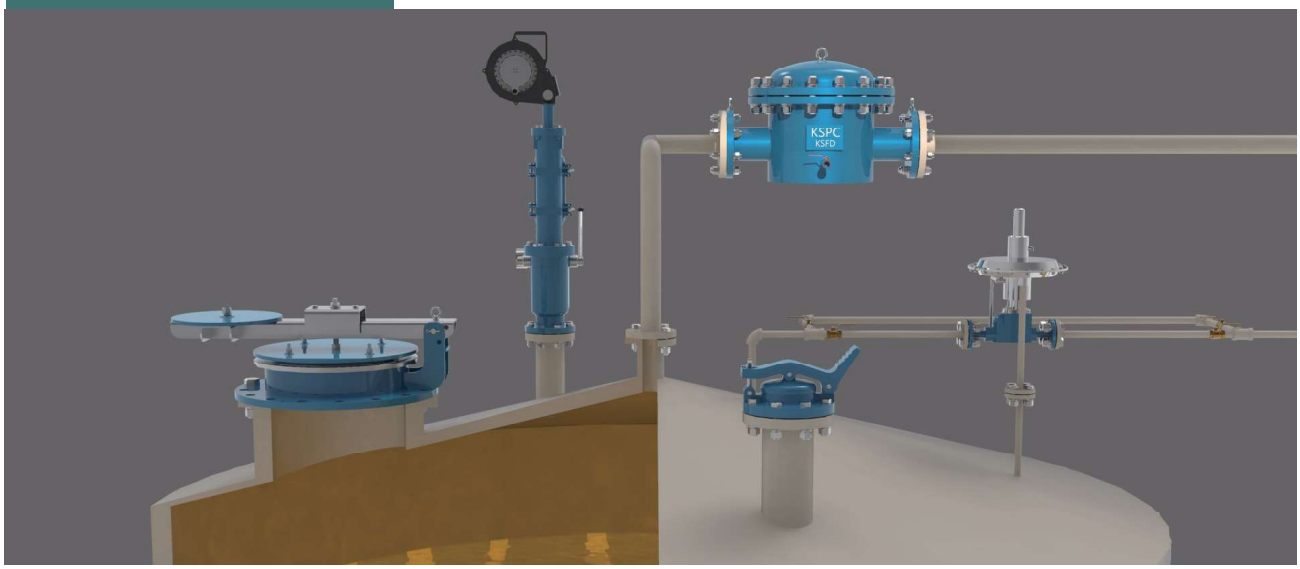
Body Materials Cast Steel, SS304, SS316, SS316L with various trims
(Different materials available on request)

Sizes range DN 25 ~ DN 400 with ASME 150Lb flanges
(Different connections available on request)

Rules & Certifications API 2000, BS7244 / ISO 16852
Flame cell : NEC group D (=IIA), group C(=IIB3) and group B(=IIC), ETC.

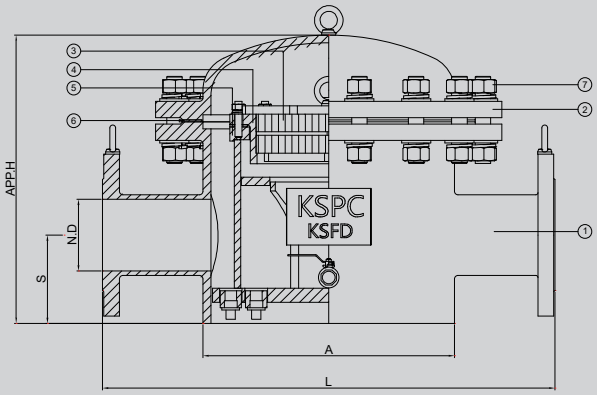
Optimum / Optional Design & Arrangments Stem Jacket type, Steam Tracing type

APPLICATION



OUTLINE DRAWING

KSFD



DIMENSION TABLE

SIZE	1"	1 ½"	2"	3"	4"	6"	8"	10"	12"	14"	16"
N.D	25	40	50	80	100	150	200	250	300	350	400
A	216	216	216	267	356	406	508	610	711	812	914
L	450	450	450	530	640	720	830	960	1080	1200	1320
S	95	95	95	110	125	170	190	220	260	275	305
Approx.H	325	325	325	340	405	495	560	663	760	845	970

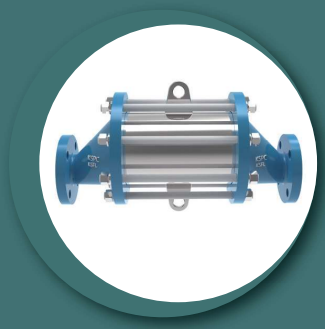
NOTE Standard Connection(ASME 150Lb flange) and JIS or different types are available upon request.

COMPONENT MATERIAL

ITEM NO	COMPONENT	CARBON STEEL	SS304	SS316
1	BODY	WELDED CARBON STEEL	WELDED SS304	WELDED SS316
2	COVER	CARBON STEEL	SS304	SS316
3	ELEMENT	SS316L		
4	ELEMENT HOUSING	A351-CF8/SS304	A351-CF8/SS304	A351-CF8M/SS316
5	MOUNTING FLANGE	A105	A182-F304	A182-F316
6	GASKET	NON ASBESTOS or SPIRAL WOUND		
7	STUD BOLT/NUT	A193-B7 / A194-2H or STAINLESS STEEL		
STANDARD PAINTING		IN-OUT SIDE EPOXY 150 MICRON WITHOUT STAINLESS STEEL & ALUMINIUM PART		

MAINTENANCE

- Periodic inspection and maintenance is required. The cell assembly can be removed for cleaning purposes.
- Cleaning ban be accomplished by dipping the entire cell assembly into an appropriate solvent.
- Care should be taken not to damage the cell openings as such deformations hamper the flow through the cell.
- The gaskets should be inspected and replaced if necessary.



SECTION 3.10_KSFLD

FLAME ARRESTER
DETONATION PROOF IN-LINE

INTRODUCTION

The model KSFLD inline detonation flame arrester is designed, manufactured and tested according to API 2000, British Standard Specification Code BS7244 and ISO 16852. The units are passive devices with no moving parts. The KSFL detonation flame arresters provide protection against flame propagation in piping systems that are manifolded or have long runs. The arresters are designed to stop an ignited flammable vapor mixture traveling at subsonic or supersonic vapor velocities. They are also designed to protect against continuous burning against the SS316L flame cell for a specific period.

Operating Temperature @ Pressure

KSFLD / DN 50 ~ DN 300	+ 60℃ (=140°F) @ 0.11 Mpa

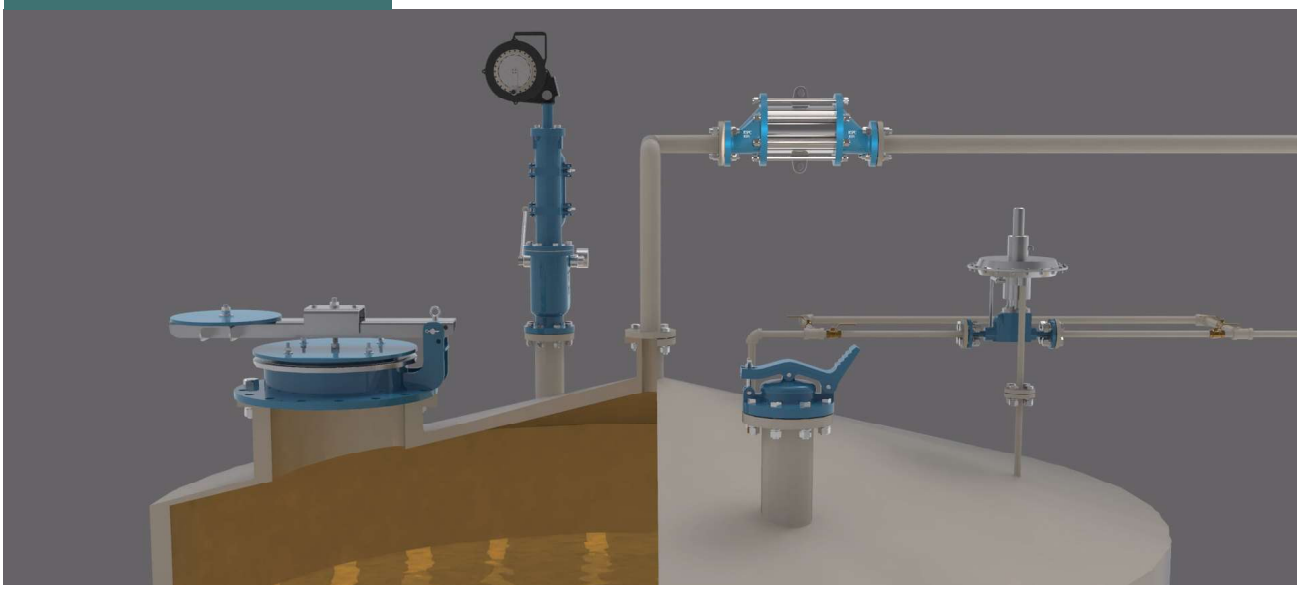
Body Materials Nodular Iron, Cast Steel, SS304, SS316, SS316L with various trims
(Different materials available on request)

Sizes range DN 50 ~ DN 300 with ASME 150Lb flanges
(Different connections available on request)

Rules & Certifications API 2000, BS7244 / ISO 16852
Flame cell : NEC group D (=IIA), group C(=IIB3) and group B(=IIC), ETC.

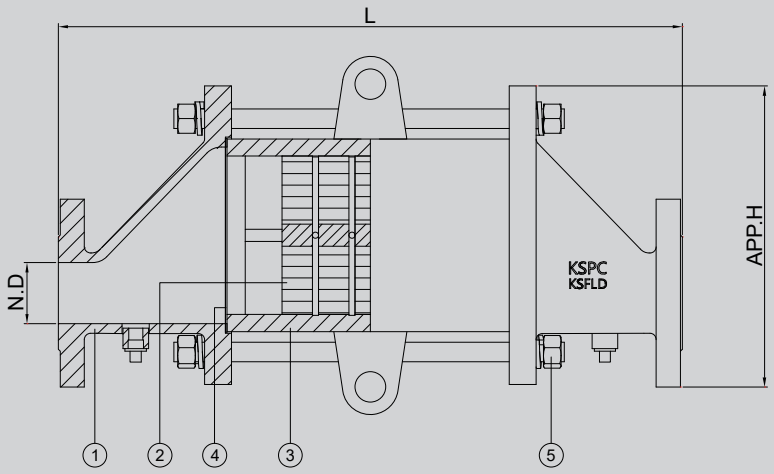
Optimum / Optional Design & Arrangments Stem Jacket type, Steam Tracing type

APPLICATION



OUTLINE DRAWING

KSFLD



DIMENSION TABLE

SIZE	2"	3"	4"	6"	8"	10"	12"
N.D	50	80	100	150	200	250	300
L	396	430	502	522	592	770	810
Approx. H	247	276	335	408	488	639	705

NOTE Standard Connection(ASME 150Lb flange) and JIS or different types are available upon request.

COMPONENT MATERIAL

ITEM NO	COMPONENT	CARBON STEEL	STAINLESS STEEL
1	BODY	CAST or WELDED CARBON STEEL	CAST or WELDED STAINLESS STEEL
2	ELEMENT	SS316L	
3	ELEMENT HOUSING	SS304	SS304/SS316L
4	GASKET	PTFE	
5	STUD BOLT/NUT	A193-B7 / A194-2H or STAINLESS STEEL	
STANDARD PAINTING		IN-OUT SIDE EPOXY 150 MICRON WITHOUT STAINLESS STEEL & ALUMINIUM PART	

MAINTENANCE

- Periodic inspection and maintenance is required. The cell assembly can be removed for cleaning purposes.
- Cleaning ban be accomplished by dipping the entire cell assembly into an appropriate solvent.
- Care should be taken not to damage the cell openings as such deformations hamper the flow through the cell.
- The gaskets should be inspected and replaced if necessary.

SECTION 3.11_KSFE

FLAME ARRESTER
DEFLAGRATION PROOF END-LINE

INTRODUCTION

The model KSFE flame arrester are designed, manufactured and tested according to API2000, BS7244 (British Standard Specification) and ISO 16852. The units allow free venting in combination with flame protection for vertical vent applications. They prevent flame propagation by absorbing and dissipating heat using spiral wound crimped ribbon SS316L flame cells.

Operating Temperature @ Pressure

KSFE / DN 15 ~ DN 300	+ 90℃ (=194℉) @ 0.11 Mpa

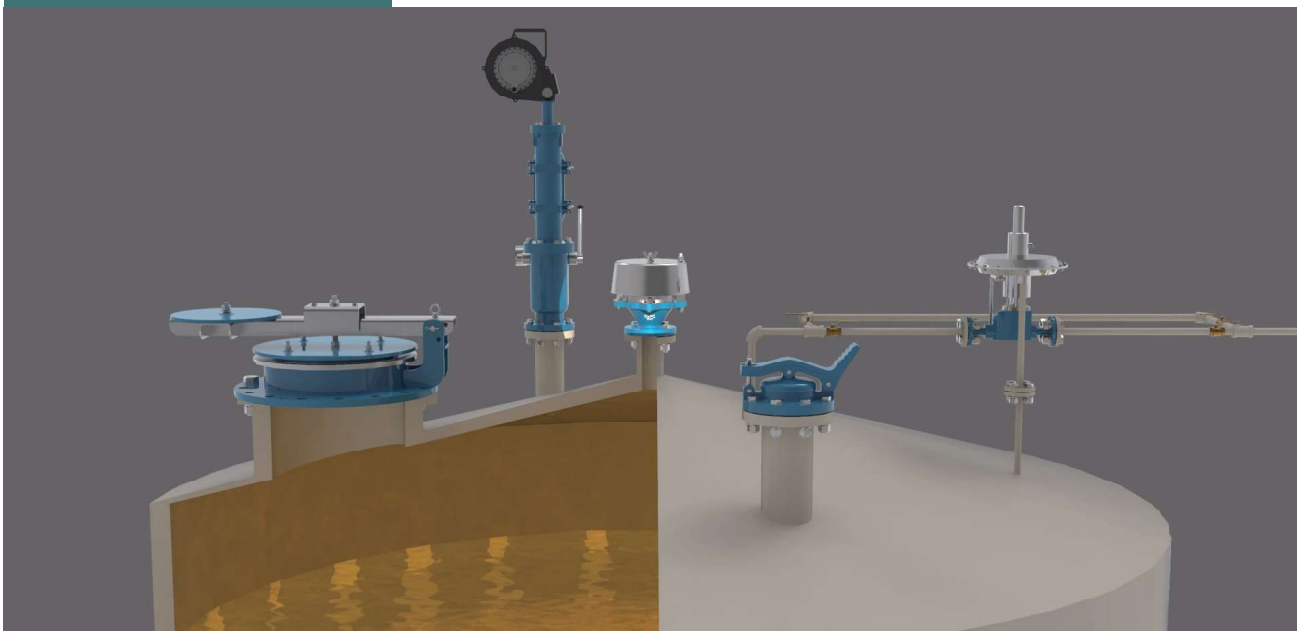
Body Materials Aluminium, Nodular Iron, Cast Steel, SS304, SS316, SS316L with various trims (Different materials available on request)

Sizes range DN 50 ~ DN 300 with ASME 150Lb flanges (Different connections available on request)

Rules & Certifications API 2000, BS7244 / ISO 16852 & KFI
Flame cell : NEC group D (=IIA), group C(=IIB3) and group B(=IIC), ETC.

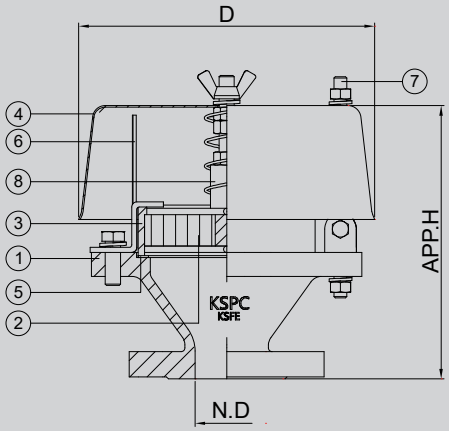
Optimum / Optional Design & Arrangments Stem Jacket type, Steam Tracing type

APPLICATION

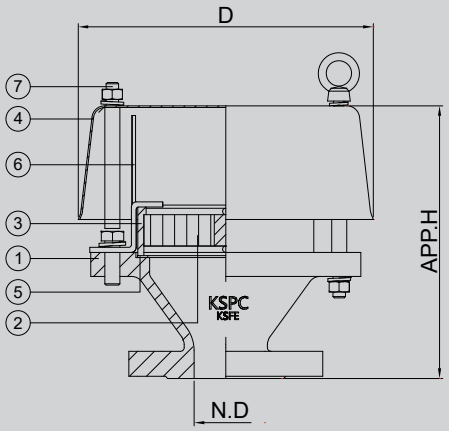


OUTLINE DRAWING

KSFE DN15 ~ 100



KSFE DN150 ~ 300



DIMENSION TABLE

SIZE	2"	3"	4"	6"	8"	10"	12"
N.D	50	80	100	150	200	250	300
D	234	288	342	444	512	658	733
Approx. H	226	237	240	337	345	357	401

NOTE Standard Connection(ASME 150Lb flange) and JIS or different types are available upon request.

COMPONENT MATERIAL

ITEM NO	COMPONENT	ALUMINIUM	CARBON STEEL	STAINLESS STEEL
1	BODY	B26-319.F	A216-WCB	A351-CF8/CF8M
2	ELEMENT	SS316L		
3	ELEMENT HOUSING	SS304	SS304	SS316
4	WEATHER HOOD	SS304	SS304	SS316L
5	GASKET	PTFE		
6	BIRD SCREEN	SS304	SS304	SS316
7	GUID POST	SS304	SS304	SS316
8	FUSE	LOW TEMP. METAL		

MAINTENANCE

- Periodic inspection and maintenance is required. The cell assembly can be removed for cleaning purposes.
- Cleaning ban be accomplished by dipping the entire cell assembly into an appropriate solvent.
- Care should be taken not to damage the cell openings as such deformations hamper the flow through the cell.
- The gaskets should be inspected and replaced if necessary.

SECTION 3.12_KSFE-A

FLAME ARRESTER
DEFLAGRATION PROOF END-LINE

INTRODUCTION

The model KSFE-A flame arrester are designed, manufactured and tested according to API2000, BS7244 (British Standard Specification) and ISO 16852. The units allow free venting in combination with flame protection for vertical vent applications. They prevent flame propagation by absorbing and dissipating heat using spiral wound crimped ribbon SS316L flame cells.

Operating Temperature @ Pressure

KSFE-A / DN 15 ~ DN 100	+ 60℃ (=140°F) @ 0.11 Mpa

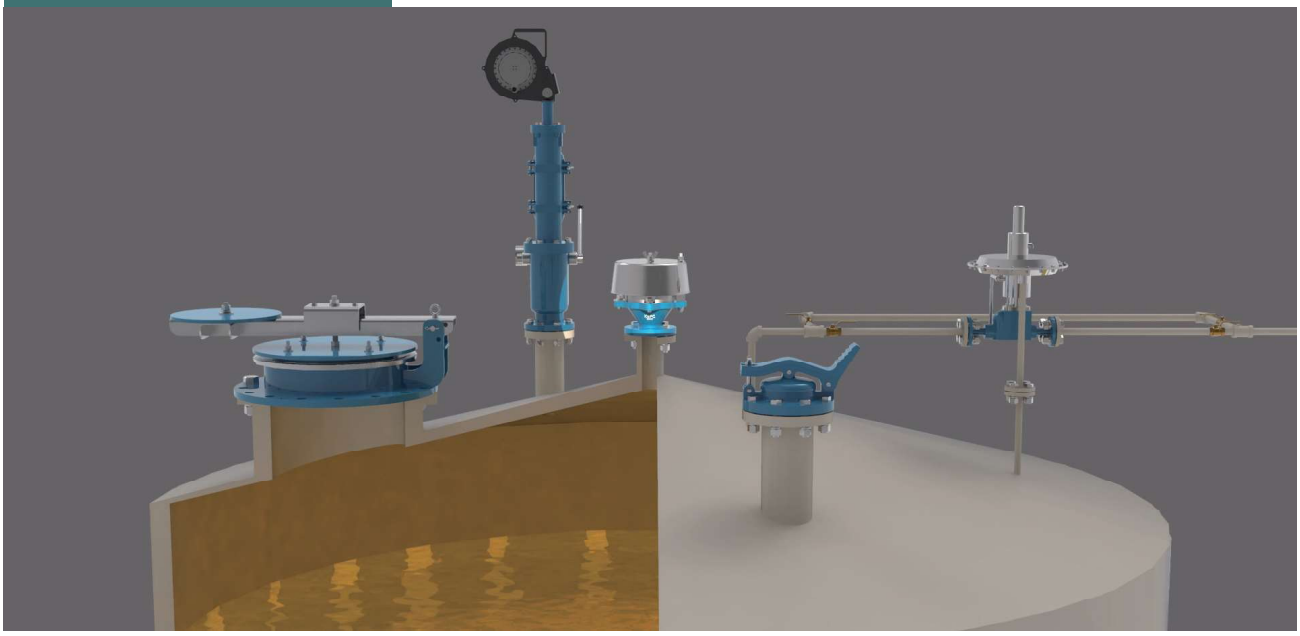
Body Materials Aluminium, Nodular Iron, Cast Steel, SS304, SS316, SS316L with various trims (Different materials available on request)

Sizes range DN 15 ~ DN 100 with ASME 150Lb flanges(Different connections available on request)

Rules & Certifications API 2000, BS7244 / ISO 16852 & ATEX
Flame cell : NEC group D (=IIA), group C(=IIB3) and group B(=IIC), ETC.

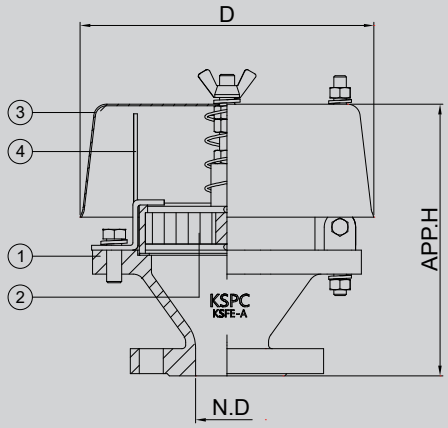
Optimum / Optional Design & Arrangments Stem Jacket type, Steam Tracing type

APPLICATION



OUTLINE DRAWING

KSFE-A DN15 ~ 100



DIMENSION TABLE

SIZE	½"	1"	2"	2½"	3"	4"
N.D	15	25	50	65	80	100
D	234	234	234	234	288	342
Approx. H	220	223	226	229	237	260

NOTE Standard Connection(ASME 150Lb flange) and JIS or different types are available upon request.

COMPONENT MATERIAL

ITEM NO	COMPONENT	ALUMINIUM	CARBON STEEL	STAINLESS STEEL
1	BODY	B216-319.F	A216-WCB	A351-CF8/ CF8M
2	ELEMENT	SS316L		
3	WEATHER HOOD	SS304	SS304	SS316L
4	BIRD SCREEN	SS304	SS304	SS316
STANDARD PAINTING		IN-OUT SIDE EPOXY 150 MICRON WITHOUT STAINLESS STEEL & ALUMINIUM PART		

MAINTENANCE

- Periodic inspection and maintenance is required. The cell assembly can be removed for cleaning purposes.
- Cleaning ban be accomplished by dipping the entire cell assembly into an appropriate solvent.
- Care should be taken not to damage the cell openings as such deformations hamper the flow through the cell.
- The gaskets should be inspected and replaced if necessary.

SECTION 3.13_KSFE-S

FLAME ARRESTER
DEFLAGRATION PROOF END-LINE

INTRODUCTION

The model KSFE-S flame arrester are designed, manufactured and tested according to API2000, BS7244 (British Standard Specification) and ISO 16852. The units allow free venting in combination with flame protection for vertical vent applications. They prevent flame propagation by absorbing and dissipating heat using spiral wound crimped ribbon SS316L flame cells.

Operating Temperature @ Pressure

KSFE-S / DN 15 ~ DN 300	+ 60℃ (=140°F) @ 0.11 Mpa

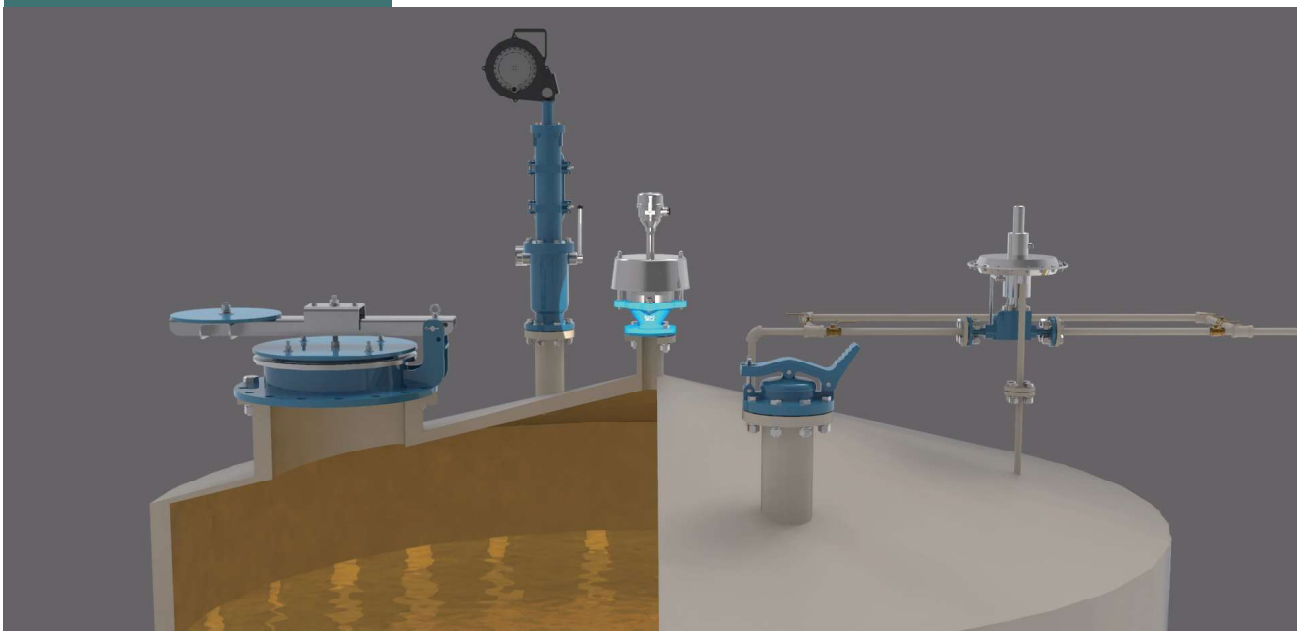
Body Materials Aluminium, Nodular Iron, Cast Steel, SS304, SS316, SS316L with various trims (Different materials available on request)

Sizes range DN 15 ~ DN 300 with ASME 150Lb flanges (Different connections available on request)

Rules & Certifications API 2000, BS7244 / ISO 16852 & ATEX
Flame cell : NEC group D (=IIA), group C(=IIB3) and group B(=IIC), ETC.

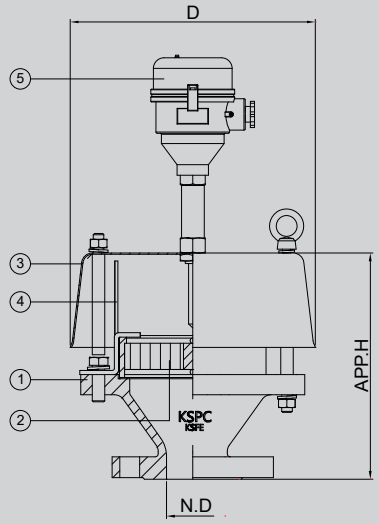
Optimum / Optional Design & Arrangments Stem Jacket type, Steam Tracing type

APPLICATION



OUTLINE DRAWING

KSFE-S DN15 ~ 300



DIMENSION TABLE

SIZE	½"	1"	2"	2½"	3"	4"	6"	8"	10"	12"
N.D	15	25	50	65	80	100	150	200	250	300
D	234	234	234	234	288	342	445	512	658	733
Approx. H	225	225	225	225	237	260	337	345	357	401

NOTE Standard Connection(ASME 150Lb flange) and JIS or different types are available upon request.

COMPONENT MATERIAL

ITEM NO	COMPONENT	ALUMINIUM	CARBON STEEL	STAINLESS STEEL
1	BODY	B216-319.F	A216-WCB	A351-CF8/ CF8M
2	ELEMENT	SS316L		
3	WEATHER HOOD	SS304	SS304	SS316L
4	BIRD SCREEN	SS304	SS304	SS316
5	TEMP. SENSOR	INCONEL		
STANDARD PAINTING		IN-OUT SIDE EPOXY 150 MICRON WITHOUT STAINLESS STEEL & ALUMINIUM PART		

MAINTENANCE

- Periodic inspection and maintenance is required. The cell assembly can be removed for cleaning purposes.
- Cleaning ban be accomplished by dipping the entire cell assembly into an appropriate solvent.
- Care should be taken not to damage the cell openings as such deformations hamper the flow through the cell.
- The gaskets should be inspected and replaced if necessary.

SECTION 3.14_KSFF

FLAME ARRESTER
DEFLAGRATION PROOF END-LINE

INTRODUCTION

The model KSFF is designed, manufactured, tested according to API 2000 & BS 7244 / ISO 16852. Installed in the end of nozzle of the several kinds of the flammable low pressure storage tank (the ignition point below 65℃) with easy coupling, it is the explosion proof and deflagration proof which blocks the influx of flame ignited externally into the tank.

Body Materials Stainless Steel with various trims (Different materials available on request)

Sizes range DN 25 ~ DN 100 with ASME 150Lb flanges
(Different connections available on request)

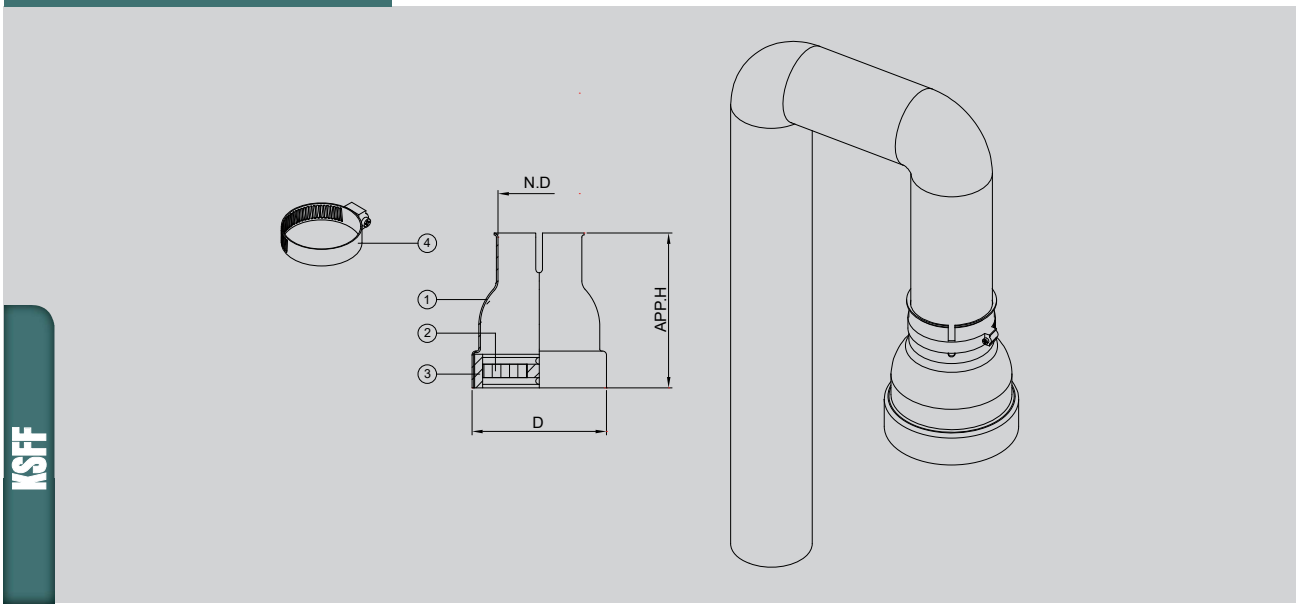
Rules & Certifications API 2000, BS7244 / ISO 16852
Flame cell : NEC group D (=IIA), group C(=IIB3) and group B(=IIC), ETC.

Optimum / Optional Design & Arrangments Stem Jacket type, Steam Tracing type

APPLICATION

OUTLINE DRAWING

KSFF



DIMENSION TABLE

SIZE	½"	¾"	1"	1½"	2"	3"
N.D	22	27	35	49	61	90
D	115	115	115	115	115	169
Approx. H	100	100	100	100	100	170

NOTE Standard Connection(ASME 150Lb flange) and JIS or different types are available upon request.

COMPONENT MATERIAL

ITEM NO	COMPONENT	SS304	SS316L
1	BODY	SS304	SS316L
2	ELEMENT	SS316L	
3	ELEMENT HOUSING	SS304	SS316
4	BEND CLAMP	SS304	
STANDARD PAINTING		IN-OUT SIDE EPOXY 150 MICRON WITHOUT STAINLESS STEEL & ALUMINIUM PART	

MAINTENANCE

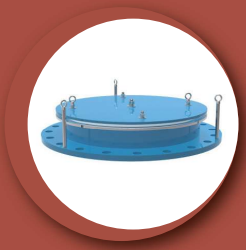
- Periodic inspection and maintenance is required. The cell assembly can be removed for cleaning purposes.
- Cleaning ban be accomplished by dipping the entire cell assembly into an appropriate solvent.
- Care should be taken not to damage the cell openings as such deformations hamper the flow through the cell.
- The gaskets should be inspected and replaced if necessary.

TANK SAFETY & PROTECTION DEVICE

SECTION 4_EMERGENCY RELIEF VALVE

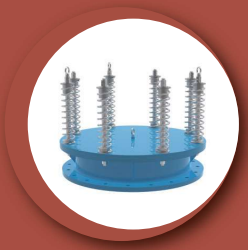
EMERGENCY PRESSURE RELIEF VALVE

KSEP



P68

KSES

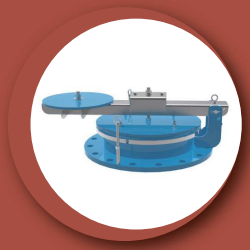


P70

EMERGENCY PRESSURE VACUUM RELIEF VALVE

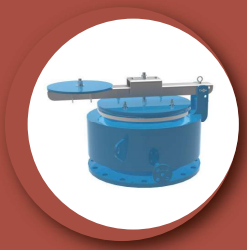
Emergency Relief Valve is designed to provide emergencypressure relief for storage tanks when exposed to overpressures that are not handled by standard tank vents. These vents provide the capacity to meet API standard 2000 for emergency venting due to fire exposure when properly sized. These covers also provide quick easy access for tank inspection and maintenance.

KSEPK



P72

KSEPKJ



P74

KSEPW

P76

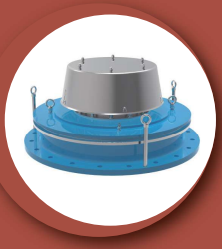
KSEPR/EPS

P78

KSESV

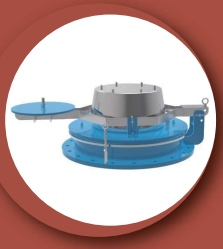
P80

KSEV



P82

KSEVK



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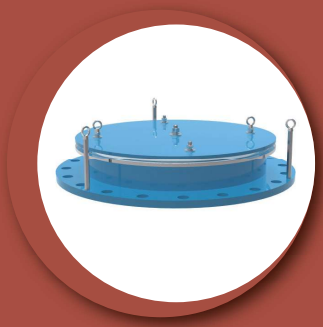


SECTION 4.1_KSEP

EMERGENCY RELIEF VALVE
PRESSURE RELIEF

INTRODUCTION

The model KSEP is designed to provide emergency pressure relief for storage tanks when exposed to overpressures that are not handled by standard tank vents. These vents provide the capacity to meet API standard 2000 for emergency venting due to fire exposure when properly sized. These covers also provide quick easy access for tank inspection and maintenance.

Setting Pressure

KSEP Permernent Setting	Min. 50 mmW.C ~ Max. 700 mmW.C

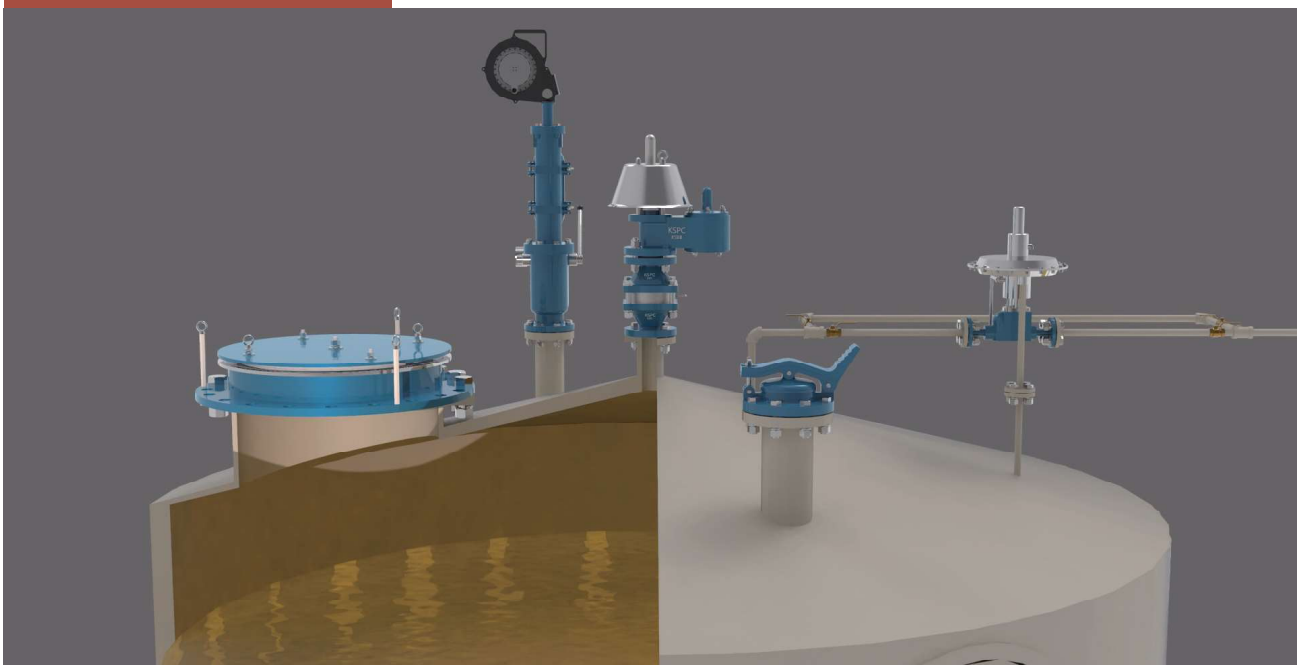
Body Materials Aluminium, Carbon Steel, SS304 and SS316 with various trims (Different materials available on request)

Sizes range DN 400, 450, 500 and DN 750 with ASME 150Lb or API 650 flanges (Different connections available on request)

Rules & certifications API 2000 & ATEX / KFI

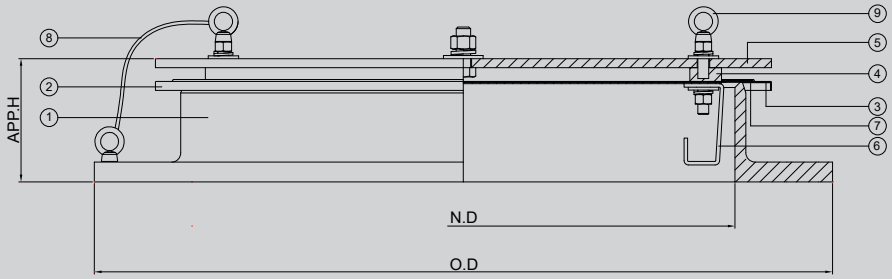
Optimum / Optional Design & Arrangments Stem Jacket type, Steam Tracing type, Proximity type, Teflon Coating/Lining type

APPLICATION



OUTLINE DRAWING

KSEP



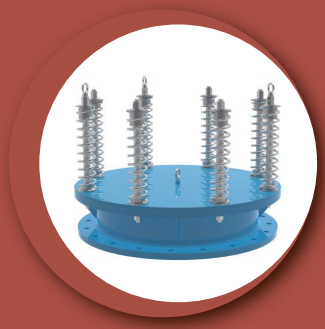
DIMENSION TABLE

SIZE		16"	18"	20"	24"
N.D		400	450	500	600
O.D	API 650	-	-	650/660	750/762
	ASME 150#	597	635	700	815
Approx. H	MIN.	115	115	115	115
	MAX.	150	165	180	200

NOTE CERTIFIED DIMENSIONS AVAILABLE UPON REQUEST (STD : API650).

COMPONENT MATERIAL

ITEM NO	COMPONENT	BODY	ALUMINIUM	CARBON STEEL	SS304	SS316
		TRIM	SS304	SS304	SS304	SS316L
1	BODY		B26-319.F	A216-WCB	A351-CF8	A351-CF8M
2	DISC		SS304	SS304	SS304	SS316L
3	DISC PLATE		SS304	SS304	SS304	SS316L
4	BASE RING		CARBON STEEL	CARBON STEEL	SS304	SS316/SS316L
5	LOADING WEIGHT		CARBON STEEL	CARBON STEEL	C.S or SS304	C.S or SS304
6	GUIDE		SS304	SS304	SS304	SS316
7	DIAPHGRAM		CARBON STEEL OR STAINLESS STEEL			
8	EARTH WIRE		SS304			
9	LIFTING EYE NUT		SS304			



SECTION 4.2_KSES

EMERGENCY RELIEF VALVE
PRESSURE RELIEF

INTRODUCTION

The model KSES is designed to provide emergency pressure relief for storage tanks when exposed to overpressures that are not handled by standard tank vents. These vents provide the capacity to meet API standard 2000 for emergency venting due to fire exposure when properly sized.

Setting Pressure

KSES Permernent Setting	Min. 700 mmW.C ~ Max. 9,050 mmW.C

Body Materials Aluminium, Carbon Steel, SS304 and SS316 with various trims (Different materials available on request)

Sizes range DN 400, 450, 500 and DN 750 with ASME 150Lb or API 650 flanges (Different connections available on request)

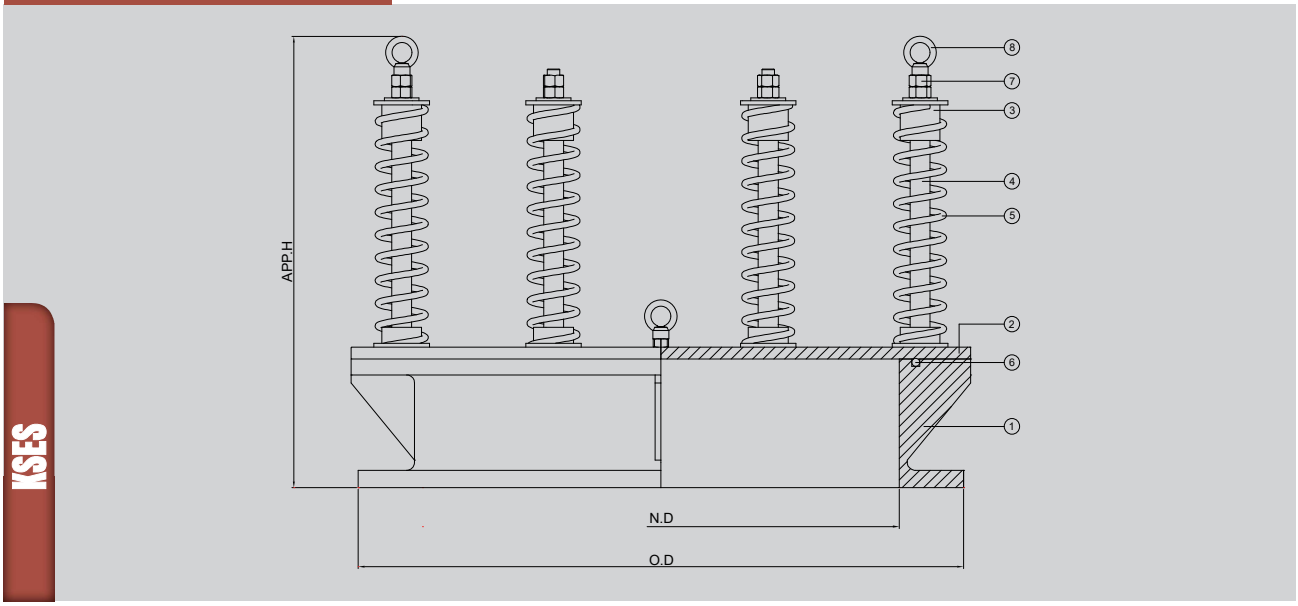
Rules & Certifications API 2000 & KFI

Optimum / Optional Design & Arrangments Stem Jacket type, Steam Tracing type, Proximity type, Teflon Coating/Lining type

APPLICATION

OUTLINE DRAWING

KSES



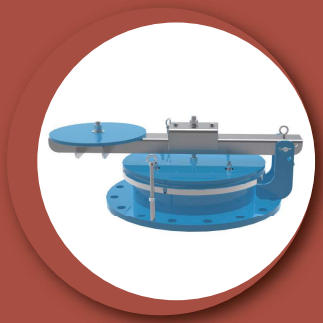
DIMENSION TABLE

SIZE		16"	18"	20"	24"
N.D		400	450	500	600
O.D	API 650	-	-	650/660	750/762
	ASME 150#	595	635	700	815
Approx. H	MIN.	530	530	530	530
	MAX.	590	590	590	590

NOTE CERTIFIED DIMENSIONS AVAILABLE UPON REQUEST (STD : API650).

COMPONENT MATERIAL

ITEM NO	COMPONENT	BODY	ALUMINIUM	CARBON STEEL	SS304	SS316
		TRIM	SS304	SS304	SS304	SS316/SS316L
1	BODY		B26-319.F	A216-WCB	A351-CF8	A351-CF8M
2	COVER(DISC)		CARBON STEEL	CARBON STEEL	SS304	SS316L
3	SPRING PAD		SS304	SS304	SS304	SS316
4	SPRING STEM		SS304	SS304	SS304	SS316
5	SPRING		SS304	SS304	SS304	SS316
6	O-RING		VITON or REQUIRED			
7	HEX. NUT		SS304	SS304	SS304	SS316
8	LIFTING EYE NUT		SS304	SS304	SS304	SS316



SECTION 4.3_KSEPK

HINGED EMERGENCY RELIEF VALVE PRESSURE RELIEF

INTRODUCTION

The model KSEPK is designed to provide emergency pressure relief for storage tanks when exposed to overpressures that are not handled by standard tank vents. These vents provide the capacity to meet API standard 2000 for emergency venting due to fire exposure when properly sized. These covers also provide quick easy access for tank inspection and maintenance.

Setting Pressure

KSEPK Permernent Setting	Min. 50 mmW.C ~ Max. 700 mmW.C

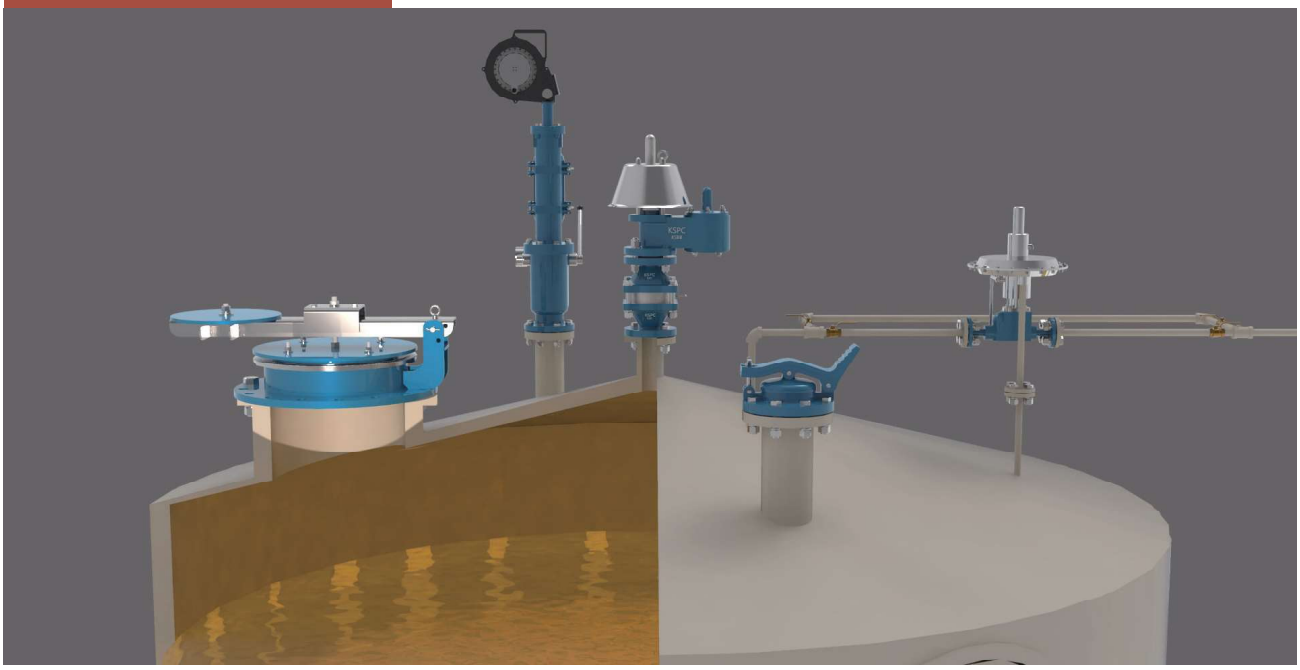
Body Materials Carbon Steel, SS304 and SS316 with various trims
(Different materials available on request)

Sizes range DN 400, 450, 500 and DN 750 with ASME 150Lb or API 650 flanges
(Different connections available on request)

Rules & certifications API 2000 & ATEX / KFI

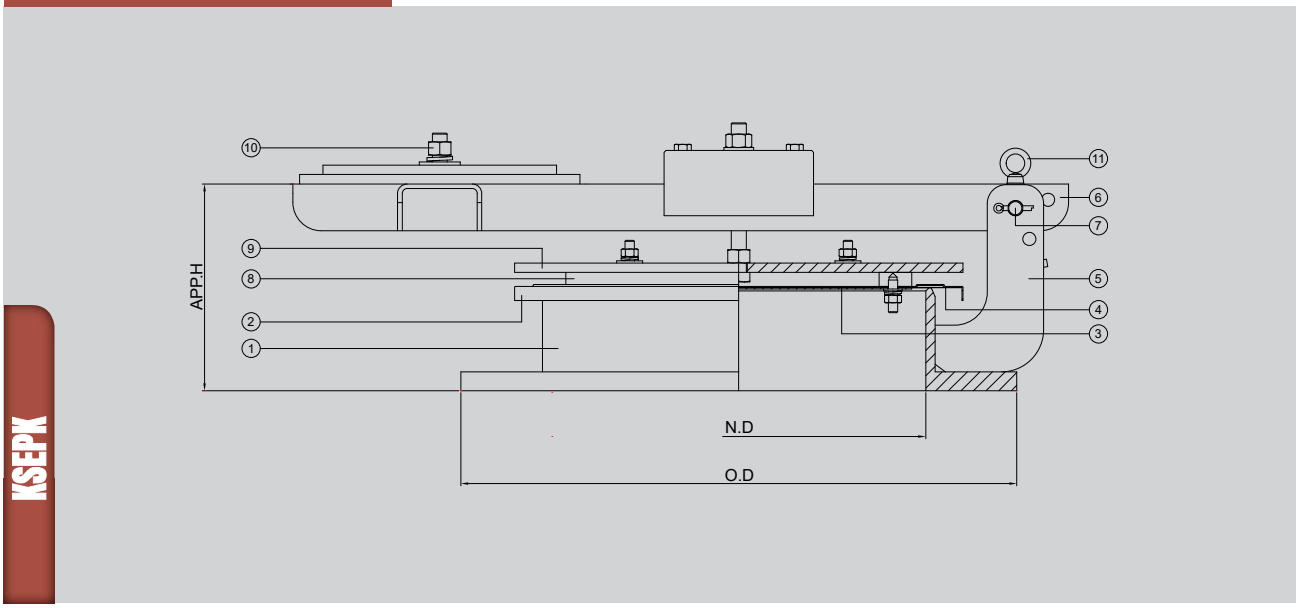
Optimum / Optional Design & Arrangments Stem Jacket type, Steam Tracing type, Proximity type, Teflon Coating/Lining type

APPLICATION



OUTLINE DRAWING

KSEPK



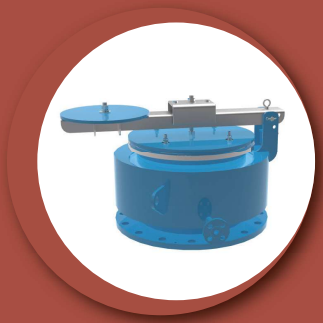
DIMENSION TABLE

SIZE		16"	18"	20"	24"
N.D		400	450	500	600
O.D	API 650	-	-	650/660	750/762
	ASME 150#	595	635	700	815
Approx. H	MIN.	210	210	210	210
	MAX.	250	250	250	250

NOTE CERTIFIED DIMENSIONS AVAILABLE UPON REQUEST (STD : API650).

COMPONENT MATERIAL

ITEM NO	COMPONENT	BODY	CARBON STEEL	SS304	SS316L
		TRIM	SS304	SS304	SS316/SS316L
1	BODY		A216-WCB	A351-CF8	A351-CF8M
2	DISC		SS304	SS304	SS316L
3	DISC PLATE		SS304	SS304	SS316L
4	DIAPHRAGM		TEFLON		
5	HINGE		CARBON STEEL	SS304	SS316L
6	ARM		CARBON STEEL	SS304	SS316L
7	HINGE PIN		SS304	SS304	SS316
8	BASE RING		CARBON STEEL	SS304	SS316L
9	LOADING WEIGHT		CARBON STEEL	CARBON STEEL or SS304	CARBON STEEL or SS316L
10	BOLT/NUT		SS304	SS304	SS316
11	LIFTING EYE NUT		SS304	SS304	SS316



SECTION 4.4_KSEPKJ

HINGED EMERGENCY RELIEF VALVE PRESSURE RELIEF WITH STEAM JACKET

INTRODUCTION

The model KSEPKJ is designed to provide emergency pressure relief for storage tanks when exposed to overpressures that are not handled by standard tank vents. These vents provide the capacity to meet API standard 2000 for emergency venting due to fire exposure when properly sized. These covers also provide quick easy access for tank inspection and maintenance.

Setting Pressure

KSEPKJ Permernent Setting	Min. 50 mmW.C ~ Max. 700 mmW.C

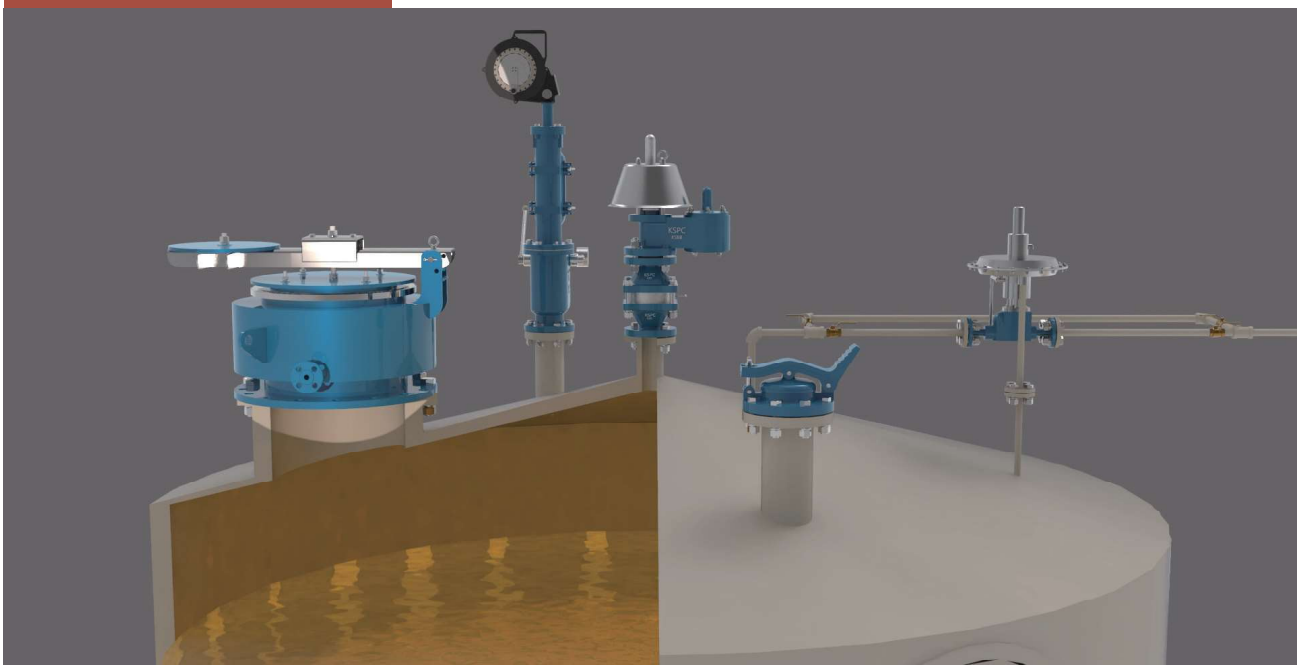
Body Materials Carbon Steel, SS304 and SS316 with various trims
(Different materials available on request)

Sizes range DN 400, 450, 500 and DN 750 with ASME 150Lb or API 650 flanges
(Different connections available on request)

Rules & certifications API 2000

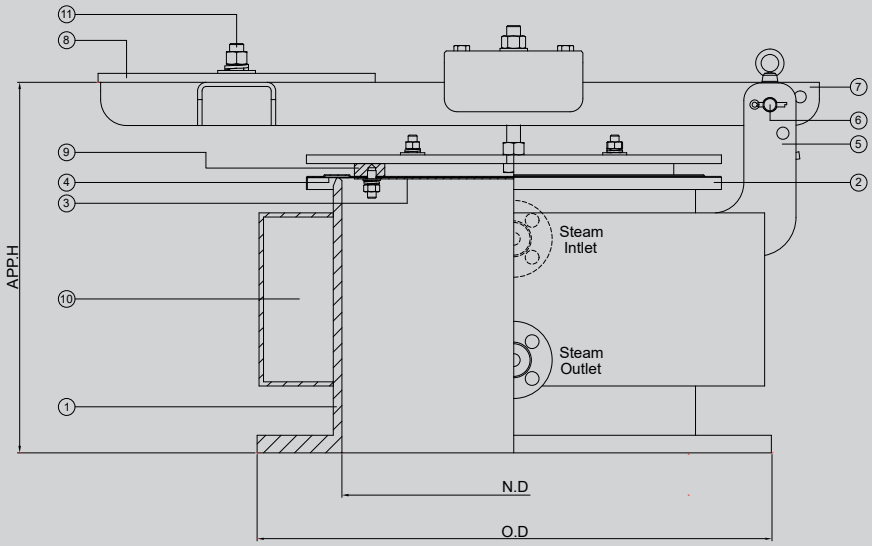
Optimum / Optional Design & Arrangments Steam Tracing type, Proximity type,
Teflon Coating/Lining type

APPLICATION



OUTLINE DRAWING

KSEPKJ



DIMENSION TABLE

SIZE		16"	18"	20"	24"
N.D		400	450	500	600
O.D	API 650	-	-	650/660	750/762
	ASME 150#	595	635	700	815
Approx. H	MIN.	450	450	450	450
	MAX.	500	500	500	500

NOTE CERTIFIED DIMENSIONS AVAILABLE UPON REQUEST (STD : API650).

COMPONENT MATERIAL

ITEM NO	COMPONENT		CARBON STEEL	SS304	SS316L
		BODY	CARBON STEEL	SS304	SS316L
		TRIM	SS304	SS304	SS304/SS316/SS316L
1	BODY		SS275	SS304	SS316L
2	DISC		SS304	SS304	SS316L
3	DISC PLATE		SS304	SS304	SS316L
4	DIAPHRAGM		TEFLON_FEP		
5	HINGE		SS275	SS304	SS316L
6	HINGE PIN		SS304	SS304	SS304
7	ARM		SS304	SS304	SS304
8	LOADING WEIGHT		SS275	SS304	SS316L
9	BASE RING		SS275	SS304	SS316L
10	STEAM JACKET		SS275	SS304	SS316L
11	BOLT/NUT		SS304	SS304	SS316

SECTION 4.5_KSEPW

SEMI LIQUID SEAL EMERGENCY PRESSURE RELIEF VALVE

INTRODUCTION

The model KSEPW is designed to provide emergency pressure relief for storage tanks when exposed to overpressures that are not handled by standard tank vents. These vents provide the capacity to meet API standard 2000 for emergency venting due to fire exposure when properly sized. And it provides quick easy access for tank inspection and maintenance.
And also designed to be Cushioned Air Seating, Teflon(FEP+PTFE) diaphragm are standard.
The excessive pressure over 75% of set point builds up to 90% of set point, the Liquid (Silicon oil) catch up the Leakage and meet bubble tight (no leakage) at 90% of set pressure. It is designed to be self closing under normal operation by inside Guide and the restraining cables to connect the Cover A'ssy and Flange.

Setting Pressure

KSEPW Permernent Setting	Min. 50 mmW.C ~ Max. 700 mmW.C

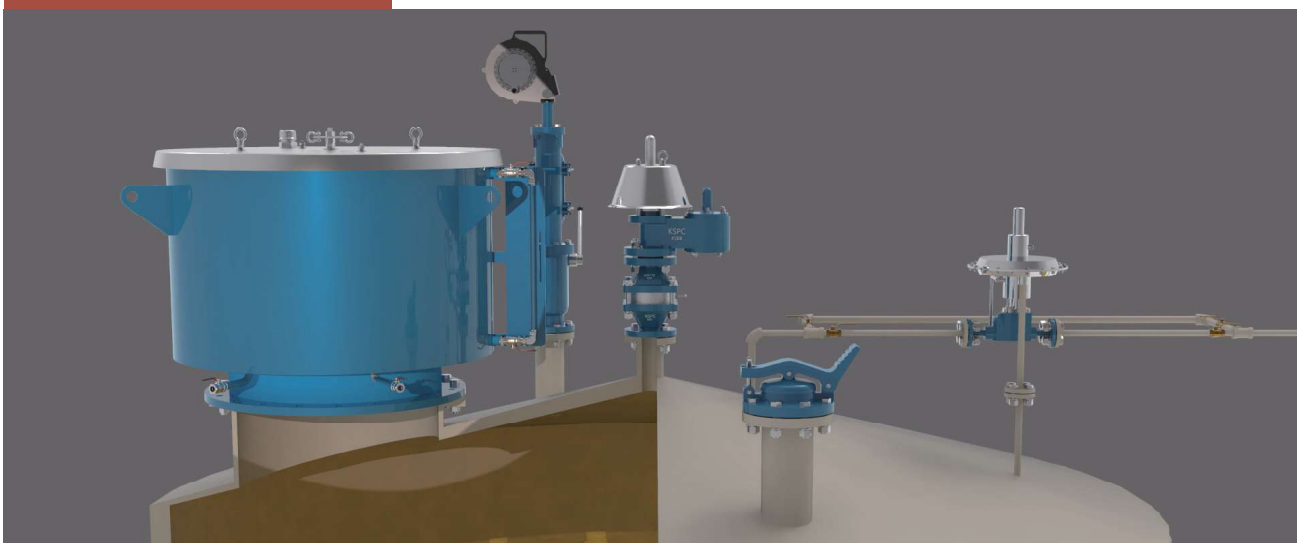
Body Materials Carbon Steel, SS304 and SS316 with various trims
(Different materials available on request)

Sizes range DN 400, 500 and DN 750 with ASME 150Lb or API 650 flanges
(Different connections available on request)

Rules & Certifications API 2000

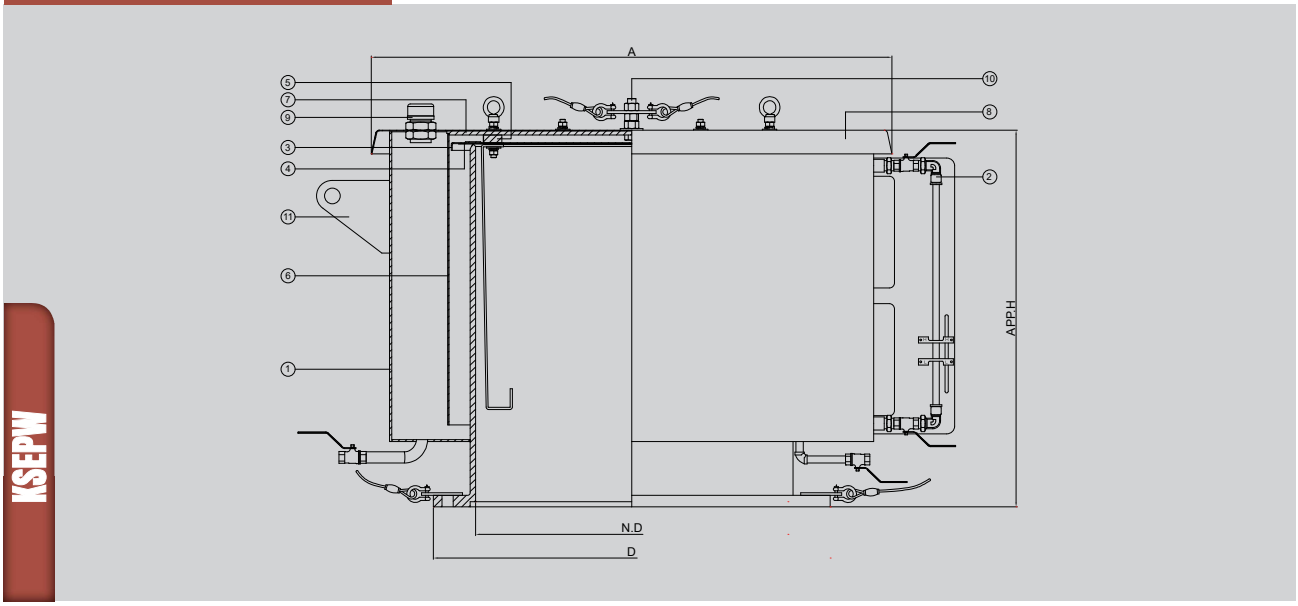
Optimum / Optional Design & Arrangments Stem Jacket type, Steam Tracing type, Proximity type, Teflon Coating/Lining type

APPLICATION



OUTLINE DRAWING

KSEPW



DIMENSION TABLE

SIZE		16"	20"	24"
N.D		400	500	600
A		800	920	1000
D	API 650	-	650/660	750/762
	ASME 150#	595	700	815
Approx. H	MIN.	450	450	500
	MAX.	The higher setting pressure, the higher KSEPW's height to be designed		

NOTE CERTIFIED DIMENSIONS AVAILABLE UPON REQUEST (STD : API650).

COMPONENT MATERIAL

ITEM NO	COMPONENT				
		BODY	CARBON STEEL	SS304	SS316
		TRIM	SS304	SS304	SS316/SS316L
1	BODY		CARBON STEEL	SS304	SS316
2	LEVEL GAUGE		SS304 + PFA	SS304 + PFA	SS304 + PFA
3	DISC		SS304	SS304	SS316L
4	DIAPHRAGM		TEFLON		
5	BASE RING		CARBON STEEL	SS304	SS316L
6	INSIDE COVER		CARBON STEEL	SS304	SS316L
7	LOADING WEIGHT		CARBON STEEL	SS304	SS316L
8	WEATHER HOOD		CARBON STEEL	SS304	SS316L
9	OIL CAP		CARBON STEEL	SS304	SS316
10	BOLT/NUT		SS304	SS304	SS316
11	LIFTING LUG		CARBON STEEL	SS304	SS316

SECTION 4.6_KSEPR/EPS

EMERGENCY RELIEF VALVE
PRESSURE RELIEF

INTRODUCTION

The model KSEPR/EPS is designed to provide emergency pressure relief for storage tanks when exposed to overpressures that are not handled by standard tank vents. These vents provide the capacity to meet API standard 2000 for emergency venting due to fire exposure when properly sized. These covers also provide quick easy access for tank inspection and maintenance.

Setting Pressure

KSEPR Permernent Setting	Min. 20 mmW.C ~ Max. 700 mmW.C
KSEPS Permernent Setting	Min. 70 mmW.C ~ Max. 9,000 mmW.C

Body Materials Aluminium, Carbon Steel, SS304 and SS316 with various trims (Different materials available on request)

Sizes range DN 50 ~ DN 300 with ASME 150Lb or API 650 flanges (Different connections available on request)

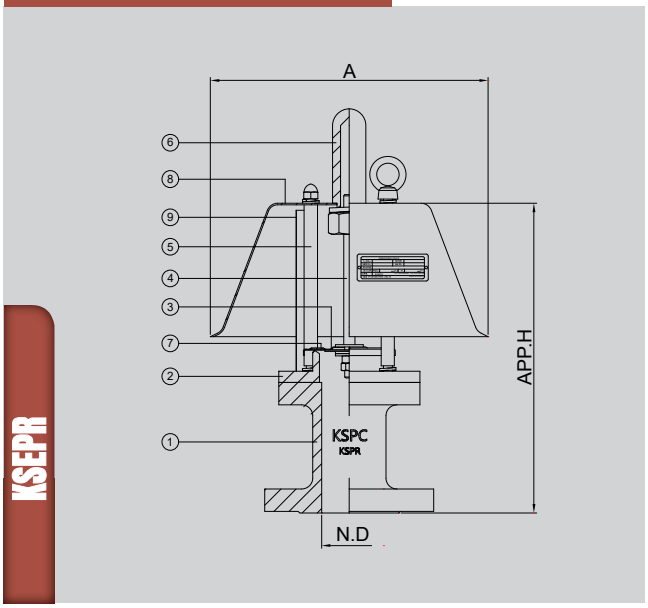
Rules & Certifications API 2000 & ATEX / KFI

Optimum / Optional Design & Arrangments Stem Jacket type, Steam Tracing type, Proximity type, Teflon Coating/Lining type

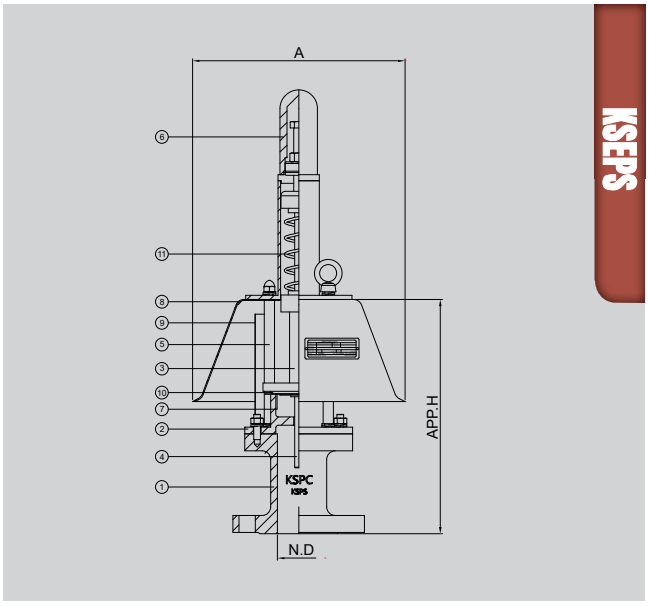
APPLICATION

OUTLINE DRAWING

KSEPR



KSEPS



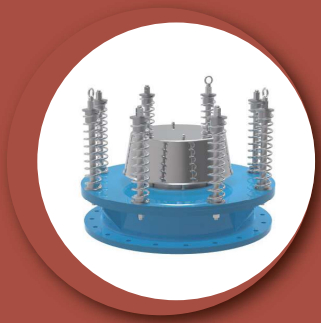
DIMENSION TABLE

SIZE	2"	3"	4"	6"	8"	10"	12"
N.D	50	80	100	150	200	250	300
A	250	294	324	440	476	544	620
Approx. H	270	301	344	382	401	436	473

NOTE Standard Connection(ASME 150Lb flange) and JIS or different types are available upon request.

COMPONENT MATERIAL

ITEM NO	COMPONENT	BODY	ALUMINIUM	CARBON STEEL	SS304	SS316
		TRIM	SS304	SS304	SS304	SS316/SS316L
1	BODY		B26-319.F	A216-WCB	A351-CF8	A351-CF8M
2	SEAT		B26-319.F	A351-CF8	A351-CF8	A351-CF8M
3	DISC		SS304	SS304	SS304	SS316L
4	STEM		SS304	SS304	SS304	SS316
5	GUIDE POST		SS304	SS304	SS304	SS316
6	STEM GUIDE/CAP		SS304	SS304	SS304	SS316
7	DIAPHRAGM		TEFLON			
8	WATHER HOOD		SS304	SS304	SS304	SS316L
9	BIRD SCREEN		SS304	SS304	SS304	SS316
10	O-RING		VITON			
11	SPRING		SS304	SS304	SS304	SS316



SECTION 4.7_KSESV

EMERGENCY RELIEF VALVE
PRESSURE VACUUM RELIEF

INTRODUCTION

The model KSESV is designed to provide emergency pressure vacuum relief for storage tanks when exposed to overpressures and overvacuum that are not handled by standard tank vents. These vents provide the capacity to meet API standard 2000 for emergency venting due to fire exposure when properly sized.

Setting Pressure

KSESV Permernent Setting	Min. + 700/ - 20 mmW.C ~ Max. + 9,500/ - 700 mmW.C

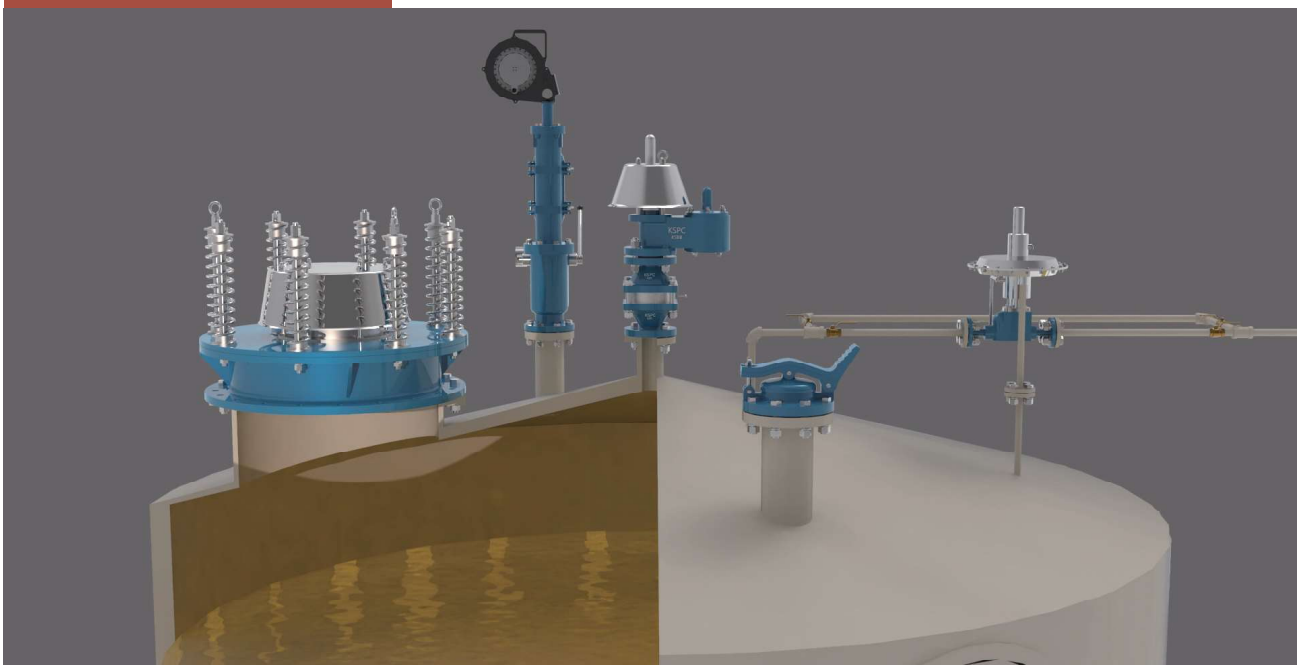
Body Materials Aluminium, Carbon Steel, SS304 and SS316 with various trims (Different materials available on request)

Sizes range DN 400, 450, 500 and DN 750 with ASME 150Lb or API 650 flanges (Different connections available on request)

Rules & certifications API 2000 & KFI

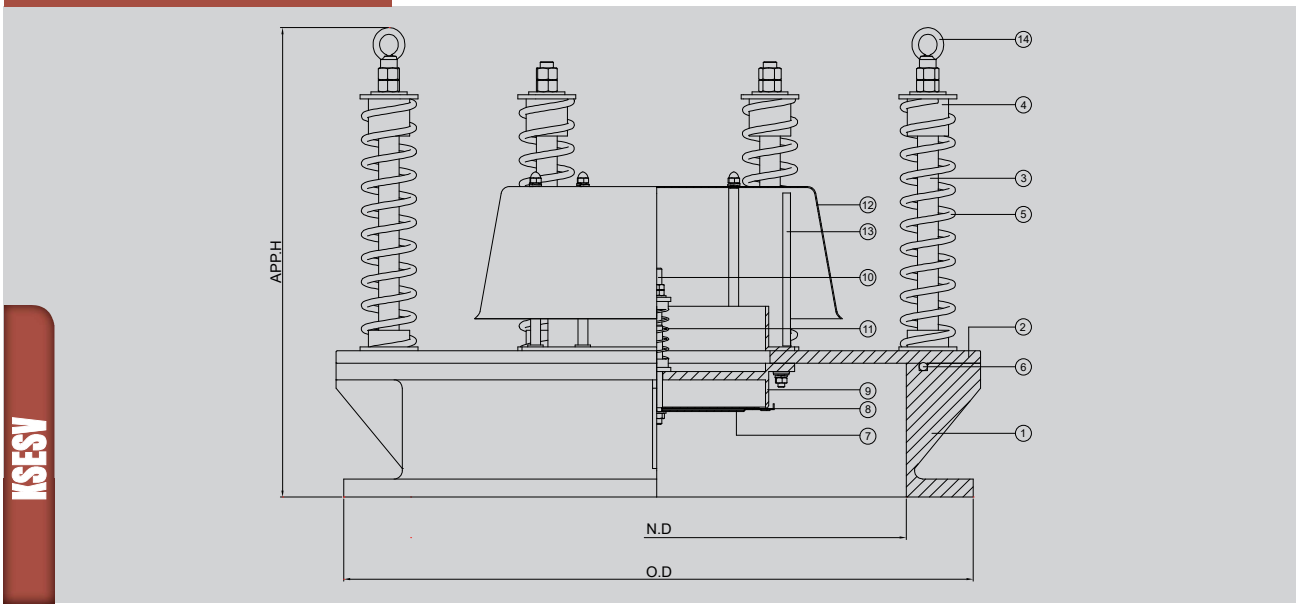
Optimum / Optional Design & Arrangments Stem Jacket type, Steam Tracing type, Proximity type, Teflon Coating/Lining type

APPLICATION



OUTLINE DRAWING

KSESV



DIMENSION TABLE

SIZE		16"	18"	20"	24"
N.D		400	450	500	600
O.D	API 650	-	-	650/660	750/762
	ASME 150#	595	635	700	815
Approx. H	MIN.	530	530	530	530
	MAX.	590	590	590	590

NOTE CERTIFIED DIMENSIONS AVAILABLE UPON REQUEST (STD : API650).

COMPONENT MATERIAL

ITEM NO	COMPONENT	BODY	ALUMINIUM	CARBON STEEL	SS304	SS316
		TRIM	SS304	SS304	SS304	SS316/SS316L
1	BODY		B26-319.F	A216-WCB	A351-CF8	A351-CF8M
2	PRESSURE COVER(DISC)		CARBON STEEL	CARBON STEEL	SS304	SS316L
3	PRESSURE SPRING STEM		SS304	SS304	SS304	SS316
4	PRESSURE SPRING PAD		SS304	SS304	SS304	SS316
5	PRESSURE SPRING		SS304	SS304	SS304	SS316
6	O-RING		VITON			
7	VACUUM DISC		SS304	SS304	SS304	SS316L
8	DIAPHRAGM		TEFLON			
9	VACUUM SEAT		SS304	SS304	SS304	SS316/SS316L
10	VACUUM SPRING STEM		SS304	SS304	SS304	SS316
11	VACUUN SPRING		SS304	SS304	SS304	SS316
12	WEATHER HOOD		SS304	SS304	SS304	SS316L
13	BIRD SCREEN		SS304	SS304	SS304	SS316
14	LIFTING EYE NUT		SS304	SS304	SS304	SS316

SECTION 4.8_KSEV

EMERGENCY RELIEF VALVE
PRESSURE VACUUM RELIEF

INTRODUCTION

The model KSEV is designed to provide emergency pressure vacuum relief for storage tanks when exposed to over pressures and over vacuum that are not handled by standard tank vents. These vents provide the capacity to meet API standard 2000 for emergency venting due to fire exposure when properly sized. These covers also provide quick easy access for tank inspection and maintenance.

Setting Pressure

KSEV Permernent Setting	Min. + 50/ - 25 mmW.C ~ Max. + 700/ - 700 mmW.C

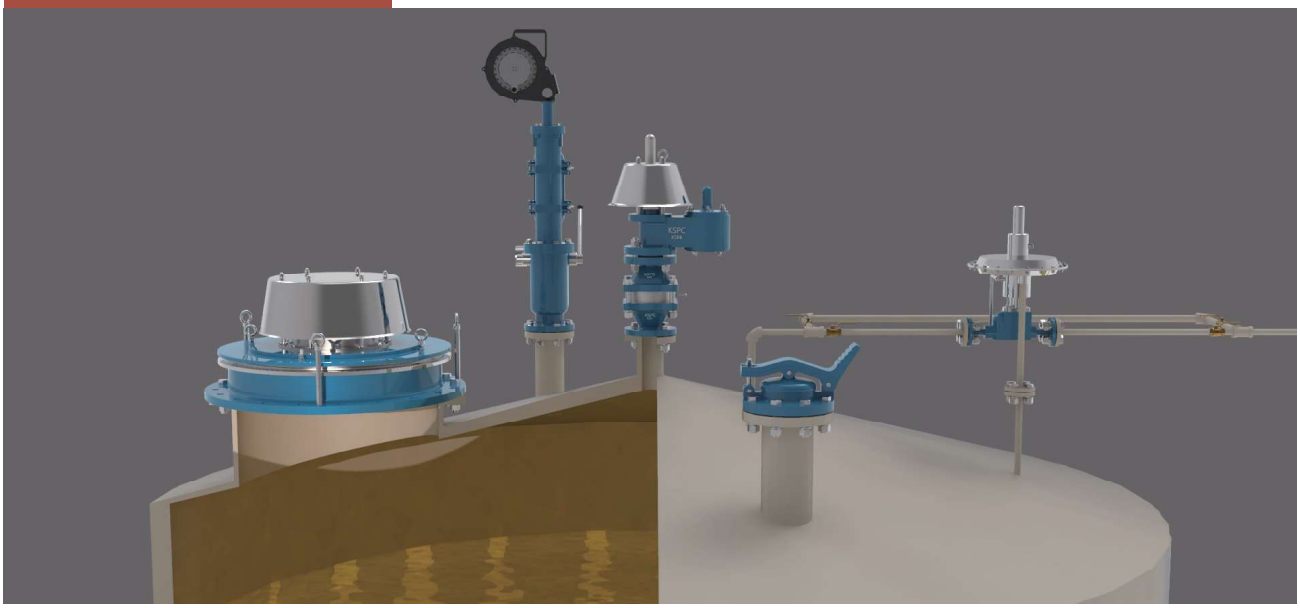
Body Materials Aluminium, Carbon Steel, SS304 and SS316 with various trims (Different materials available on request)

Sizes range DN 400, 450, 500 and DN 750 with ASME 150Lb or API 650 flanges (Different connections available on request)

Rules & Certifications API 2000 & KFI

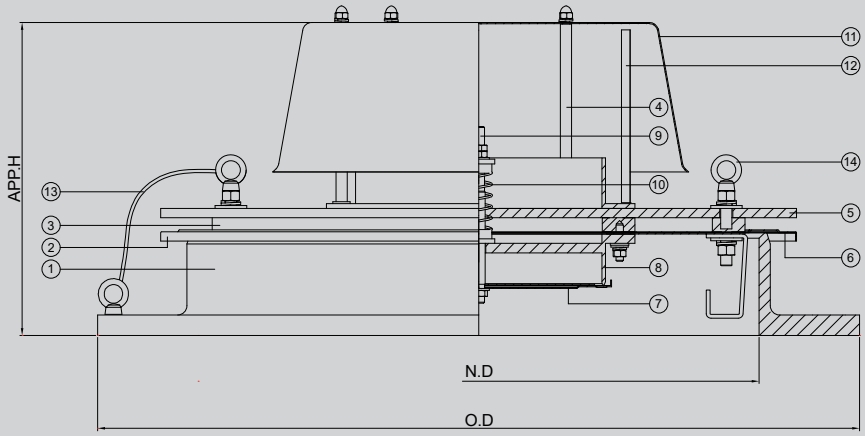
Optimum / Optional Design & Arrangments Stem Jacket type, Steam Tracing type, Proximity type, Teflon Coating/Lining type

APPLICATION



OUTLINE DRAWING

KSEV



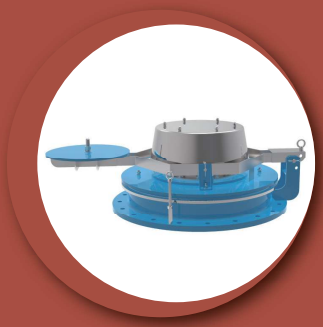
DIMENSION TABLE

SIZE		16"	18"	20"	24"
N.D		400	450	500	600
O.D	API 650	-	-	650/660	750/762
	ASME 150#	595	635	700	815
Approx. H	MIN.	320	320	320	320
	MAX.	380	380	380	380

NOTE CERTIFIED DIMENSIONS AVAILABLE UPON REQUEST (STD : API650).

COMPONENT MATERIAL

ITEM NO	COMPONENT	BODY	ALUMINIUM	CARBON STEEL	SS304	SS316
		TRIM	SS304	SS304	SS304	SS316L
1	BODY		B26-319.F	A216-WCB	A351-CF8	A351-CF8M
2	PRESSURE DISC & PLATE		SS304	SS304	SS304	SS316L
3	BASE RING		CARBON STEEL	CARBON STEEL	SS304	SS316/SS316L
4	GUIDE		SS304	SS304	SS304	SS316L
5	LOADING WEIGHT		CARBON STEEL	CARBON STEEL	C.S or SS304	C.S or SS304
6	DIAPHRAGM		TEFLON			
7	VACUUM DISC		SS304	SS304	SS304	SS316L
8	VACUUM SEAT		SS304	SS304	SS304	SS316/SS316L
9	VACUUM SPRING STEM		SS304	SS304	SS304	SS316
10	VACUUM SPRING		SS304	SS304	SS304	SS316
11	WEATHER HOOD		SS304	SS304	SS304	SS316L
12	BIRD SCREEN		SS304	SS304	SS304	SS316
13	EARTH WIRE		SS304			
14	LIFTING EYE NUT		SS304			



SECTION 4.9_KSEVK

HINGED EMERGENCY RELIEF VALVE
PRESSURE VACUUM RELIEF

INTRODUCTION

The model KSEVK is designed to provide emergency pressure vacuum relief for storage tanks when exposed to over pressures and over vacuum that are not handled by standard tank vents. These vents provide the capacity to meet API standard 2000 for emergency venting due to fire exposure when properly sized. These covers can also be easily lifted open, providing a large, unobstructed passage for rapid entry and quick easy access to the tank for tank inspection and maintenance.

Setting Pressure

KSEVK Permernent Setting	Min. + 50/ - 25 mmW.C ~ Max. + 700/ - 700 mmW.C

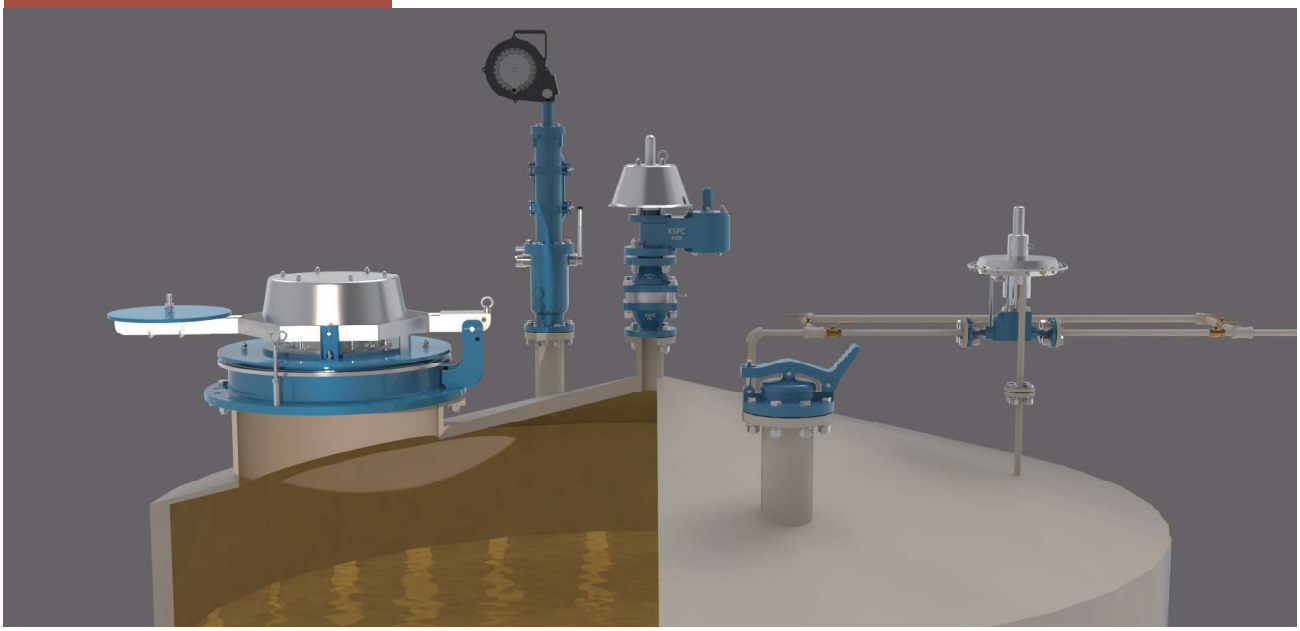
Body Materials Aluminium, Carbon Steel, SS304 and SS316 with various trims
(Different materials available on request)

Sizes range DN 400, 450, 500 and DN 750 with ASME 150Lb or API 650 flanges
(Different connections available on request)

Rules & Certifications API 2000 & KFI

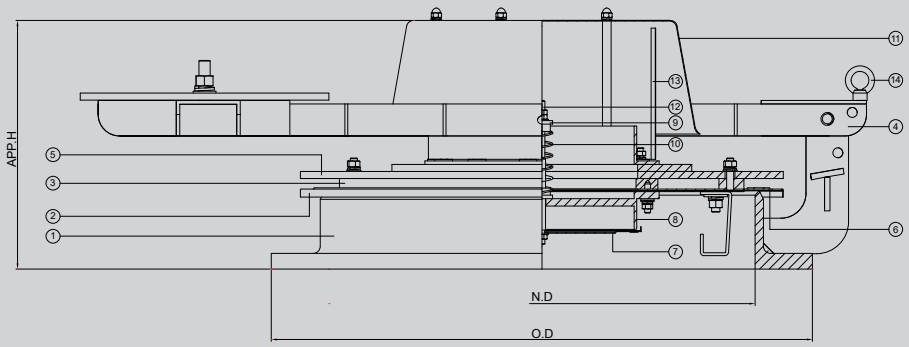
Optimum / Optional Design & Arrangments Stem Jacket type, Steam Tracing type, Proximity type, Teflon Coating/Lining type

APPLICATION



OUTLINE DRAWING

KSEVK



DIMENSION TABLE

SIZE		16"	18"	20"	24"
N.D		400	450	500	600
O.D	API 650	-	-	650/660	750/762
	ASME 150#	595	635	700	815
Approx. H	MIN.	350	375	400	450
	MAX.	420	445	470	520

NOTE CERTIFIED DIMENSIONS AVAILABLE UPON REQUEST (STD : API650).

COMPONENT MATERIAL

ITEM NO	COMPONENT	BODY	CARBON STEEL	SS304	SS316
		TRIM	SS304	SS304	SS316L
1	BODY		A216-WCB	A351-CF8	A351-CF8M
2	PRESSURE DISC & PLATE		SS304	SS304	SS316L
3	BASE RING		SS304	SS304	SS316/SS316L
4	HINGE & ARM		CARBON STEEL	SS304	SS316L
5	LOADING WEIGHT		CARBON STEEL	SS304	SS304/SS316L
6	DIAPHRAGM		TEFLON		
7	VACUUM DISC		SS304	SS304	SS316L
8	VACUUM SEAT		SS304	SS304	SS316/SS316L
9	VACUUM SPRING STEM		SS304	SS304	SS316
10	VACUUM SPRING		SS304	SS304	SS316
11	WEATHER HOOD		SS304	SS304	SS316
12	VACUUM STEM		SS304	SS304	SS316
13	BIRD SCREEN		SS304	SS304	SS316
14	LIFTING EYE NUT		SS304		

TANK SAFETY & PROTECTION DEVICE

SECTION 5_GAUGE HATCH COVER

GAUGE HATCH COVER

GAUGE HATCH COVER WITH PRESSURE RELIEF

SLOT DIPPING DEVICES

Gauge Hatch Cover is designed, manufactured and tested according to the KSPC standard code. This product is to provide quick access for product gauging, temperature measurement or sampling. It is installed on the tank roofs of roof flanges. The hatch covers are self closing and foot pedal have an inclined tread for added safety.

KSGH

P88

KSGE

P90

KSSD

P92

KSSD-A

P94

SECTION 5.1_KSGH

GAUGE HATCH COVER UNDER 0.03 kg/cm^2

INTRODUCTION

The model KSGH, the sampling and gauging hatch Cover, is designed, manufactured and tested according to the KSPC standard code. **KSGH** is made to take the fluid samples from the storage tank, to measure the temperature, and to take test of the stored fluids. **KSGH** is used under 0.03 kg/cm^2 pressure of storage tank.

Operating Pressure

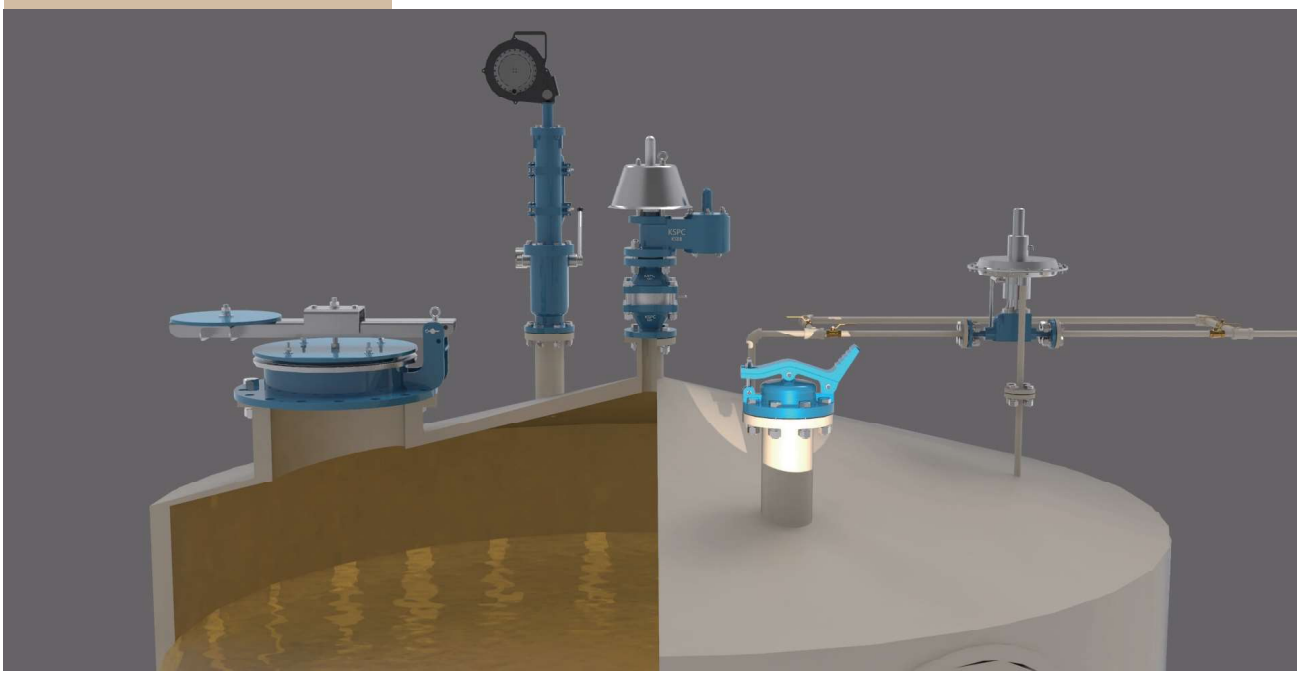
KSGH model	0.03 kg/cm^2 As Standard

Body Materials Aluminium, Carbon Steel, SS304 and SS316 with various trims

Sizes range DN 80 ~ DN 300 with ASME 150Lb flanges (Other connection all available)

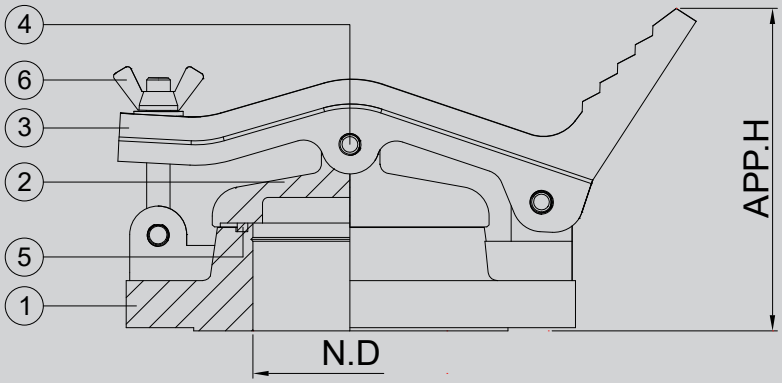
Rules & Certifications designed, manufactured and tested according to the KSPC standard code.

APPLICATION



OUTLINE DRAWING

KSGH



DIMENSION TABLE

SIZE	3"	4"	6"	8"	10"	12"
N.D	80	100	150	200	200	300
O.D	191	229	279	343	406	483
Approx. H	150	160	187	206	229	252

NOTE Standard Connection(ASME 150Lb flange) and JIS or different types are available upon request.

COMPONENT MATERIAL

ITEM NO	COMPONENT	BODY	ALUMINIUM	CARBON STEEL	SS304	SS316
		TRIM	SS304	SS304	SS304	SS316
1	BODY		B26-319.F	A216-WCB	A351-CF8	A351-CF8M
2	COVER		B26-319.F	A216-WCB	A351-CF8	A351-CF8M
3	PADDLE		B26-319.F	A216-WCB	A351-CF8	A351-CF8M
4	PIN		SS304	SS304	SS304	SS316
5	SEAL GASKET		TEFLON			

SECTION 5.2_KSGE

GAUGE HATCH COVER PRESSURE RELIEF

INTRODUCTION

The model KSGE, the sampling and gauging hatch Cover, is designed, manufactured and tested according to the KSPC standard code. **KSGE** is made to take the fluid samples from the storage tank, to measure the temperature, and to take test of the stored fluids.

Operating Pressure

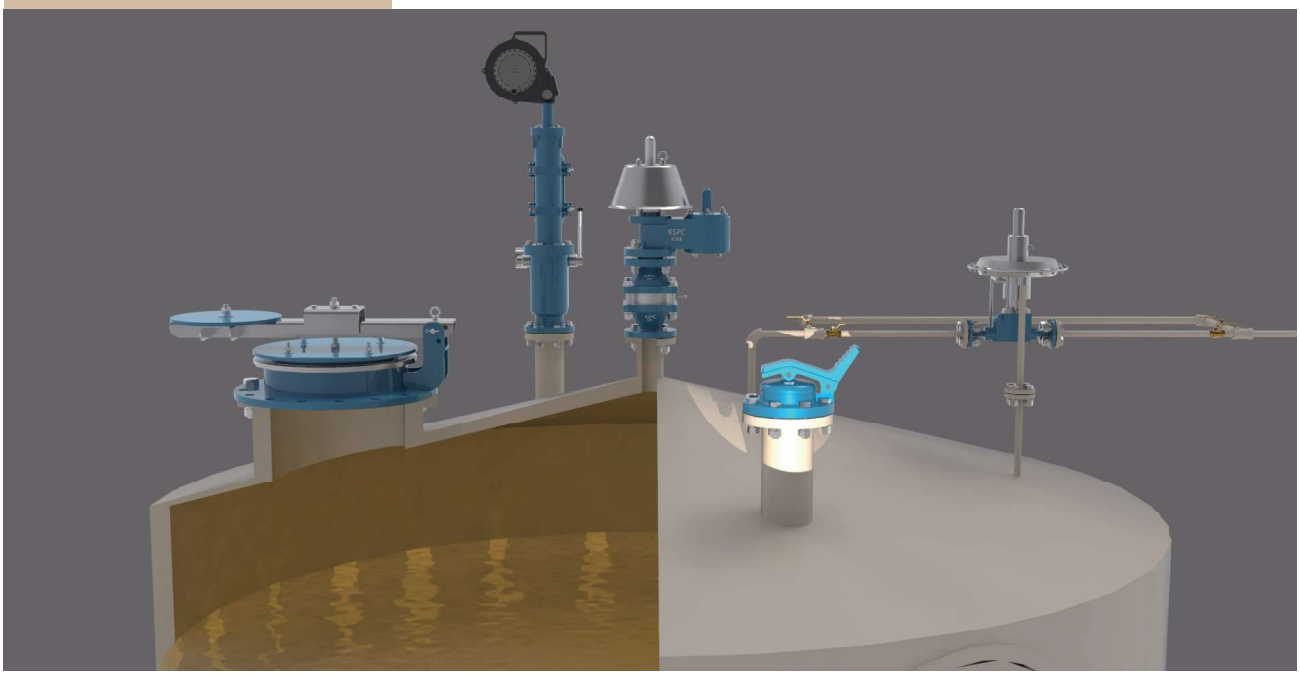
KSGE model	0.01 kg/cm^2 as Standard

Body Materials Aluminium, Carbon Steel, SS304 and SS316 with various trims

Sizes range DN 80 ~ DN 300 with ASME 150Lb flanges (Other connection all available)

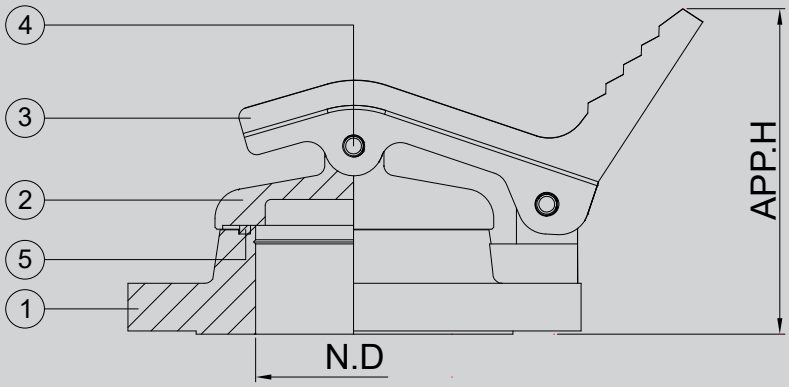
Rules & certifications designed, manufactured and tested according to the KSPC standard code.

APPLICATION



OUTLINE DRAWING

KSGE



DIMENSION TABLE

SIZE	3"	4"	6"	8"	10"	12"
N.D	80	100	150	200	250	300
O.D	191	229	279	343	406	483
Approx. H	150	160	187	206	229	252

NOTE Standard Connection(ASME 150Lb flange) and JIS or different types are available upon request.

COMPONENT MATERIAL

ITEM NO	COMPONENT	BODY	ALUMINIUM	CARBON STEEL	SS304	SS316
		TRIM	SS304	SS304	SS304	SS316
1	BODY		B26-319.F	A216-WCB	A351-CF8	A351-CF8M
2	COVER		B26-319.F	A216-WCB	A351-CF8	A351-CF8M
3	PADDLE		B26-319.F	A216-WCB	A351-CF8	A351-CF8M
4	PIN		SS304	SS304	SS304	SS316
5	SEAL GASKET		TEFLON			

SECTION 5.3_KSSD

SLOT DIPPING DEVICES

INTRODUCTION

The model KSSD is designed for gauging the height of liquid levels, measuring the depth of water bottoms, taking temperature, and taking sample of liquids held in storage tank, without relieving pressure within the tank. It avoids the loss of valuable vapors, and exposing the gauger to excessive fumes. Quick opening valve unit is opened and closed simply by moving a lever through a 90℃ arc.

A by-pass is provided to equalize in the tank and sampling chamber unit, if this should be necessary for easy opening. The window in the top cover of the gauging unit can be provided with an inside wiper, to insure clear vision of the gauge taper, and to permit the taking of accurate reading.

Insallation

1 Mount the KSSD Series Sampling Device on 4" or 12" flange roof nozzle.
2 Attach the gauging bob or sampling bottle to the swivel snap inside the sampling chamber unit.
3 Check the distance from the bottom of the bob to a point above the snap on the tape to make certain a correct reading is obtained.

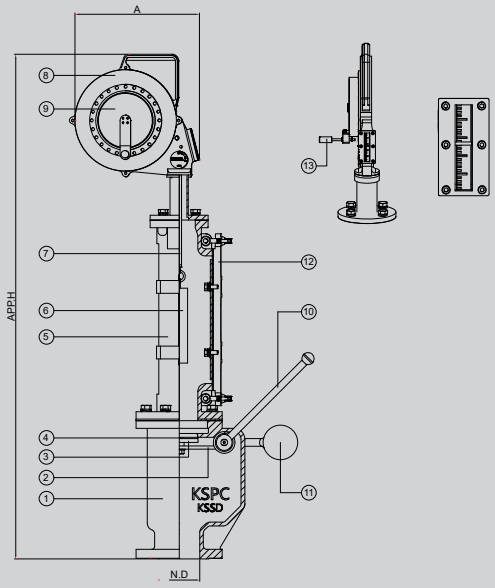
operation

1 Mount the Gauging the depth of the product.
2 Taking a sample at any level.
3 Measuring the product temperature simply with Accessories.

APPLICATION

OUTLINE DRAWING

KSSD



DIMENSION TABLE

SIZE	4"	6"	8"	10"	12"
N.D	100	150	200	250	300
A	346	346	346	346	346
Approx. H	1024	1026	1029	1131	1134

NOTE Standard Connection(ASME 150Lb flange) and JIS or different types are available upon request.

COMPONENT MATERIAL

ITEM NO	COMPONENT	BODY	ALUMINIUM	CARBON STEEL	SS304	SS316
		TRIM	SS304	SS304	SS304	SS316/SS316L
1	BODY-1 (LOWER)		B26-319.F	A216-WCB	A351-CF8	A351-CF8M
2	PALLET ARM		SS304	SS304	SS304	SS316
3	PALLET		A5052	A5052	A5052	A5052
4	O-RING		VITON			
5	BODY-2 (UPPER)		B26-319.F	A216-WCB	A351-CF8	A351-CF8M
6	SAMPLING BOTTLE		SS304	SS304	SS304	SS316
7	SCALE		S45C + PTFE COAT			
8	SCALE ROLLER BODY		B26-356-T6			
9	SCALE ROLLER		B26-356-T6			
10	PALLET OPERATING HANDLE		SS304			
11	COUNTER WEIGHT		A216-WCB	A216-WCB	A351-CF8	A351-CF8M
12	SAMPLING DOOR		B26-319.F	A216-WCB	A351-CF8	A351-CF8M
13	HANDLE ASSEMBLY		SS304	SS304	SS304	SS304

SECTION 5.4_KSSD-A

SLOT DIPPING DEVICES

INTRODUCTION

The model KSDD-A is designed for gauging the height of liquid levels, measuring the depth of water bottoms, taking temperature, and taking sample of liquids held in storage tank, without relieving pressure within the tank. It avoids the loss of valuable vapors, and exposing the gauger to excessive fumes. Quick opening valve unit is opened and closed simply by moving a lever through a 90℃ arc.
A by-pass is provided to equalize in the tank and sampling chamber unit, if this should be necessary for easy opening. The window in the top cover of the gauging unit can be provided with an inside wiper, to insure clear vision of the gauge taper, and to permit the taking of accurate reading.

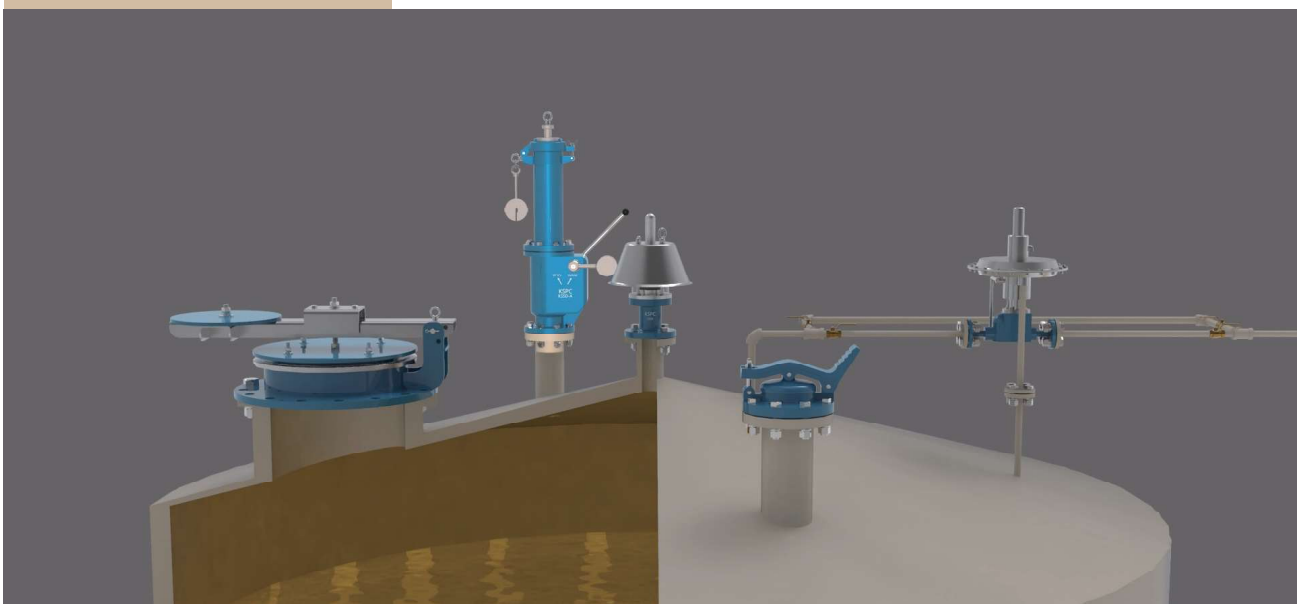
Insallation

1 Mount the KSSD-A Series Sampling Device on 4" or 12" flange roof nozzle.
2 Attach the gauging bob or sampling bottle to the swivel snap inside the sampling chamber unit.
3 Check the distance from the bottom of the bob to a point above the snap on the tape to make certain a correct reading is obtained.

Operation

1 Mount the Gauging the depth of the product.
2 Taking a sample at any level.
3 Measuring the product temperature simply with Accessories.

APPLICATION



OUTLINE DRAWING

KSSD-A

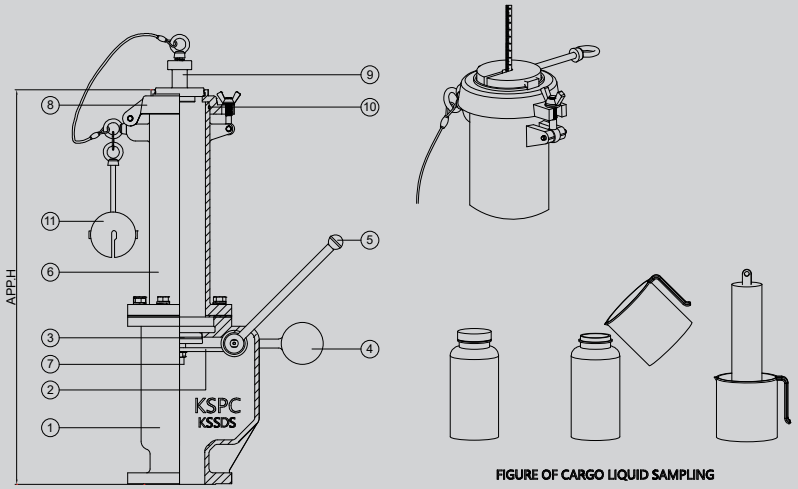


FIGURE OF CARGO LIQUID SAMPLING

DIMENSION TABLE

SIZE	4"	6"	8"	10"	12"
N.D	100	150	200	250	300
Approx. H	865	867	870	872	875

NOTE Standard Connection(ASME 150Lb flange) and JIS or different types are available upon request.

COMPONENT MATERIAL

ITEM NO	COMPONENT	BODY	ALUMINIUM	CARBON STEEL	STAINLESS STEEL
		TRIM	SS304	SS304	SS304
1	UPPER BODY		B26-319.F	A216-WCB	A351-CF8
2	LOWER BODY		B26-319.F	A216-WCB	A351-CF8
3	CAP		B26-319.F	A216-WCB	A351-CF8
4	PALLET		SS304	SS304	SS304
5	PALLET ARM		SS304	SS304	SS304
6	PALLET ARM STOPPER		N.B.R	N.B.R	N.B.R
7	PALLET HANDLE		SS304	SS304	SS304
8	COUNTER WEIGHT		A216-WCB	A216-WCB	A351-CF8
9	GASKET		NON-ASBESTOS	NON-ASBESTOS	NON-ASBESTOS
10	HEX BOLT		SS304	SS304	SS304
11	SEAL PLUG		SS304	SS304	SS304
12	PLUG SEATING		N.B.R	N.B.R	N.B.R

TANK SAFETY & PROTECTION DEVICE

SECTION 6_N^2 BLANKETING VALVE

N^2 BLANKETING VALVE

N^2 Blanketing Valve helps gas pressure to maintain in constant state in the vapor space of storage Tanks.
When liquid run out from storage vessel or vacuum state take place because of temperature dropping, N^2 Blanket gas controller has a ability of control desired pressure within the fixed limits.

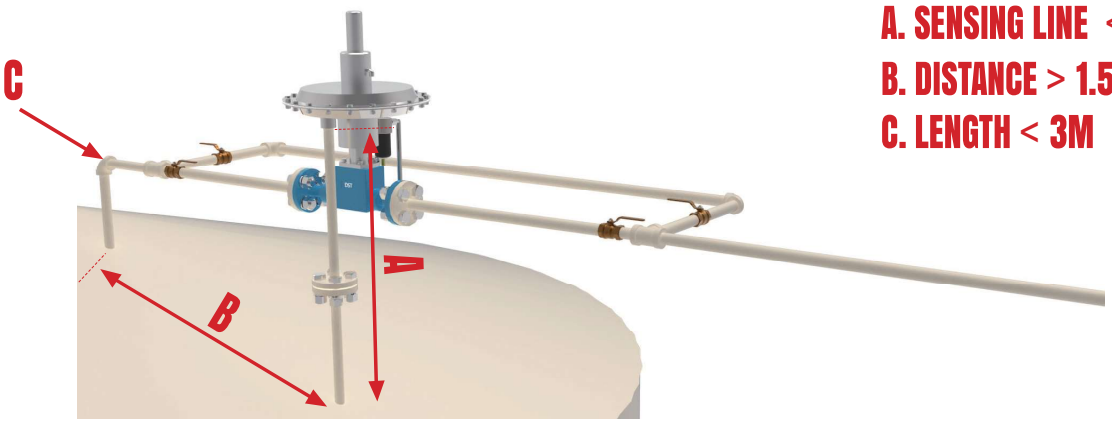
DST-100 / 200

P100

TANK SAFETY & PROTECTION DEVICE

SECTION 6_N^2 BLANKETING VALVE

NORMAL INSTALLATION



A. SENSING LINE < 2M
B. DISTANCE > 1.5M
C. LENGTH < 3M

1 Surly clean the pipeline to completely remove the foreign bodies in it.
2 Check weather the inlet pressure is matched to the recommended pressure.
3 It is recommended to use of appropriate lifting jig for preventing the damage.
4 Flange connects the inlet and outlet of controller, in general Controller is installed in suit of The flow direction and rate indicated on main body.
5 Blanketing is connected to tank or vessel with a distant at least 1.5m from the Sensing Line.
6 Sending line should be always open for securing the monitor of the interior pressure of tank.

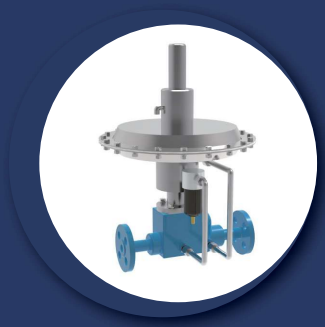
CLOSED POSITION
This occurs when the tank pressure satisfied or exceed the set pressure of the Tank Internal pressure.
The pilot will close and there is no flow out of the pilot.

OPEN POSITION
When the tank pressure below set point by pumping out or thermal effect.
The pilot will open and there is flow out of the pilot.

CALCULATION REQUIREMENT

The calculation requirement of N^2 blanketing Valve have two factors, one is inbreathing due to Liquid (=Product) movement out of the tank and send is inbreathing due to contraction of the vapors/ because of weather changes.
API STD 2000 6th Edition, Calculation for Highest requirements with no flame arrester for Inert-gas-Blanketing (Refer Annex F Guidance for inert-as Blanketing of tanks for flashback protection)

A.INPUT	VALUE	UNIT	
Tank Diameter. D	23.25	m	
Tank Height or Length. H	12.6	m	
Tank Volume. Vtk	5349	m^3	Use maximum capacity
Pump-Out Rate. Vpe	350.0	m^3/h	B
Latitude	23	°	Below 42°
Avg. Storage Temp.	25	℃	>=25 ℃
VP range	Vp >= Hexane		
Ins. Thickness. lin	0	m	
Insulation Type	-		
Selected Thermal Cond. of Insulation. Ain. s	0	W/m-K	
Inside heat transfer coefficient. h	4	W/m2-K	(Typical value for tank: 4 W/m2-K)
Total surface area. Atts	668	m^2	
Insulated surface area. Ainp	0	m^2	(Enter 0 if tank uninsulated)
B.CALCULATIONS	**VALUE**	**UNIT**	
C-Factor	6.5		
Reduction factor. Ri	61.00		
Volume of Reserve Inlet Gas	641.93	m^3	
Required Flow Rate	1,673.42	Nm^3/h	Calculated



SECTION 6_DST-100 / DST-200

N^2 BLANKETING VALVE

INTRODUCTION

The model DST-100 and DST-200, N^2 Blanket gas controller, helps gas pressure to maintain in constant state in the vapor space of storage Tanks. When liquid run out from storage vessel or vacuum state take place because of temperature dropping, N^2 Blanket gas controller has a ability of control desired pressure within the fixed limits.
Besides above subjects, prevents air and humidity from entering into storage vessel, So it can preserve products, and also protect from a fire. It protects the tank from explosion by restricting spark. It prevents the outflow of fluid by evaporation.

Blanketing Capacity

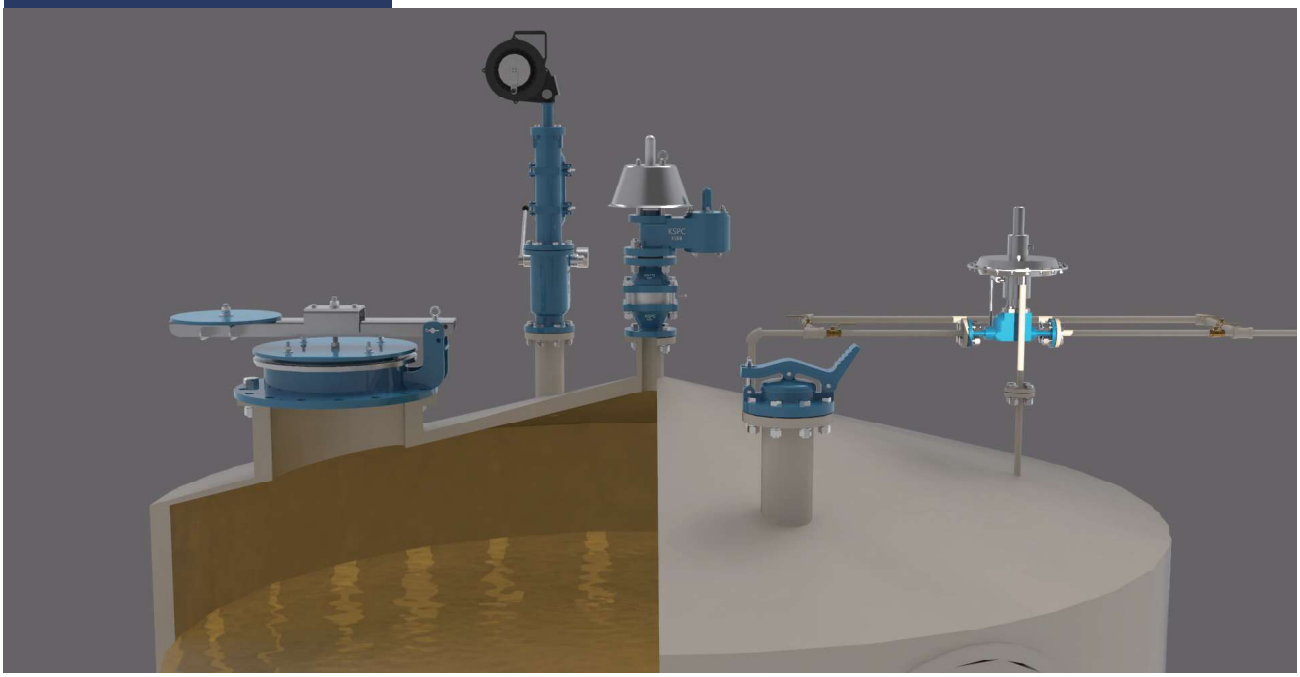
DST-100 (DN 15 ~ DN 25)	Min. 179 ~ Max. 1060 Nm^3/hr for Nitrogen
DST-200 (DN 40 ~ DN 50)	Min. 465 ~ Max. 2760 Nm^3/hr for Nitrogen

Body Materials SS304 and SS316 with various trims

Sizes range DN 15, 20, 25, 40, 50 with ASME 150Lb flanges (Other connection all available)

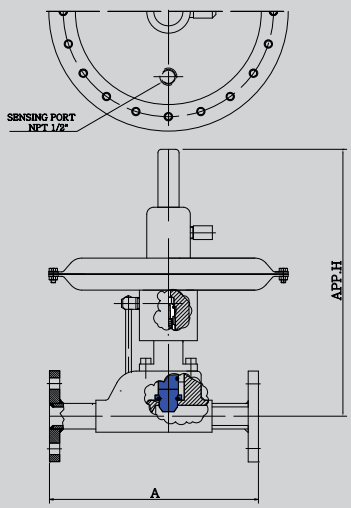
Rules & Certifications API 2000 7th Edition - "Calculation for Highest requirements with no flame arrester for Inert-gas-Blanketing"

APPLICATION

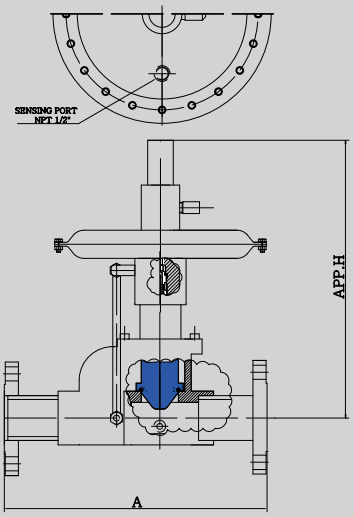


OUTLINE DRAWING

DST-100



DST-200



DIMENSION TABLE

SIZE	DST-100			DST-200	
	½"	¾"	1"	1½"	2"
N.D	15	20	25	40	50
A	290	290	290	340	340
Approx. H	355	355	355	415	415

NOTE Standard Connection(ASME 150Lb flange) and JIS or different types are available upon request.

CAPACITY TABLE

SIZE		1.5	2	2.5	3	3.5	4	4.5	5	6	6.5
Capacity in Nm^3/hr for Nitrogen	DST 100 (½"~ 1")	179	230	260	295	335	387	435	460	545	570
	DST 200 (1 ½"~ 2")	465	595	630	745	875	1005	1140	1280	1411	1460

SIZE		7	7.5	8	8.5	9	9.5	10	11	12	13
Capacity in Nm^3/hr for Nitrogen	DST 100 (½"~ 1")	595	645	690	720	750	800	853	945	1000	1060
	DST 200 (1 ½"~ 2")	1546	1680	1780	1870	1950	2085	2220	2355	2490	2760

GENERAL SPECIFICATION

MODEL	DST-100	DST-200
SIZE	½" ~ 1"	1"~ 2"
SET PRESSURE	30 ~ 5000mmW.C	
CONNECTION	FNPT / ASME 150# & 300#, Etc	
MATERIAL	SS304, SS316, Etc.	
USED GAS	N2 (Nitrogen)	
SENSING PORT	NPT ½"	

TECHNICAL SPECIFICATION

SET PRESSURE		MINIMUM INLET PRESSURE	TEMP.
1.2 ~ 1.4" W.C	1.3 ~ 3.1 psi	22 psi (1.5 kg/cm^2G)	-20 to +149℃
3.5 ~ 10" W.C	2.3 ~ 3.5 psi		
8 ~ 18" W.C	3.0 ~ 6.0 psi		

TANK SAFETY & PROTECTION DEVICE

SECTION 7_PILOT OPERATED RELIEF VALVE

PILOT OPERATED PRESSURE RELIEF VALVE

PILOT OPERATED PRESSURE VACUUM RELIEF VALVE

Pilot Operated Relief Vavle is designed, manufactured and tested according to the KSPC standard code. Pilot Operated Relief Valves discharge the volume flow without requiring pressure increase. Basically, Pilot valves are used for the valve shall be highly tight sealed up to the set pressure figures. The pilot valves provide the capacity to meet API standard 2000.

KSPOE

P--

KSPOP

P--

KSBGPO

P--

KSBBPO

P--

TANK SAFETY & PROTECTION DEVICE

SECTION 7_PILOT OPERATED RELIEF VALVE

PILOT OPERATED PRESSURE RELIEF VALVE

Pilot Operated Relief Vavle is designed, manufactured and tested according to the KSPC standard code. Pilot Operated Relief Valves discharge the volume flow without requiring pressure increase. Basically, Pilot valves are used for the valve shall be highly tight sealed up to the set pressure figures. The pilot valves provide the capacity to meet API standard 2000.

KSPOP

P106

SECTION 7.1_KSPOP

PILOT OPERATED PRESSURE RELIEF VALVE

INTRODUCTION

The model KSPOP is Pilot Operated Relief Valves discharge the volume flow without requiring pressure increase. Basically, Pilot valves are used for the valve shall be highly tight sealed up to the set pressure figures. The pilot valves provide the capacity to meet API standard 2000.

Setting Pressure

KSPOP Permernent Setting	Min. + 50 mmW.C ~ Max. + 9000 mmW.C

Body Materials Aluminium, Carbon Steel, SS304 and SS316 with various trims
(Different materials available on request)

Sizes range DN 100 ~ DN 305 with ASME 150Lb as Standard
(Different connections available on request)

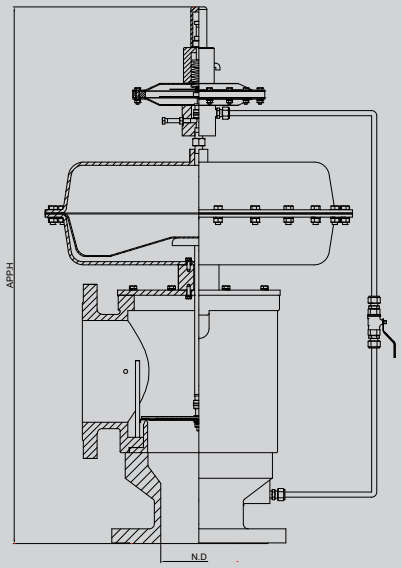
Rules & Certifications API 2000

Optimum / Optional Design & Arrangments Stem Jacket type, Steam Tracing type, Proximity type, Teflon Coating/Lining type

APPLICATION

OUTLINE DRAWING

KSPOP



DIMENSION TABLE

SIZE	4"	6"	8"	10"	12"
N.D	100	150	200	250	300
Approx. H	865	867	870	872	875

NOTE Standard Connection(ASME 150Lb flange) and JIS or different types are available upon request.

COMPONENT MATERIAL

ITEM NO	COMPONENT	BODY	ALUMINIUM	CARBON STEEL	SS304
		TRIM	SS304	SS304	SS304
1	UPPER BODY		B26-319.F	A216-WCB	A351-CF8
2	LOWER BODY		B26-319.F	A216-WCB	A351-CF8
3	CAP		B26-319.F	A216-WCB	A351-CF8
4	PALLET		SS304	SS304	SS304
5	PALLET ARM		SS304	SS304	SS304
6	PALLET ARM STOPPER		N.B.R	N.B.R	N.B.R
7	PALLET HANDLE		SS304	SS304	SS304
8	COUNTER WEIGHT		A216-WCB	A216-WCB	A351-CF8
9	GASKET		NON-ASBESTOS	NON-ASBESTOS	NON-ASBESTOS
10	HEX BOLT		SS304	SS304	SS304
11	SEAL PLUG		SS304	SS304	SS304
12	PLUG SEATING		N.B.R	N.B.R	N.B.R

TANK SAFETY & PROTECTION DEVICE

SECTION 8_AIR RELEASE VALVE

AIR RELEASE VALVE

AIR RELEASE SURGE CHECK VALVE

Air Release Valve is designed to release accumulated air pockets from the system, while pressured pipelines. Air pockets increase energy consumption because pumping operation will be at higher water heads to overcome pressured air. It has function to protect high shock and surge pressure, water hammer and liquid overflow from fresh or sea water pipelines.

KSBJ

P110

KSBJ-D

P112

KSSV

P114

SECTION 8.1_KSBJ

AIR RELEASE VALVE

INTRODUCTION

The model KSBJ is designed to release accumulated air pockets from the system, while pressured pipelines. Air pockets increase energy consumption because pumping operation will be at higher water heads to overcome pressured air. **KSBJ** has function to protect high shock and surge pressure, water hammer and liquid overflow from fresh or sea water pipelines.
KSBJ air release valve can provide low cast insurance to protect expensive maintenance cost of pipelines and pump systems.

Body Materials Carbon Steel, SS304, SS316 with various trims
(Different materials available on request)

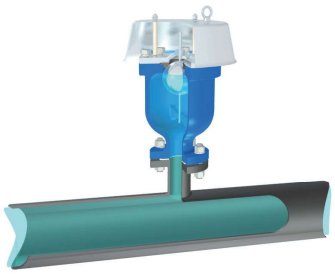
Sizes range DN 15 ~ DN 250 with ASME 150Lb flanges as standard
(Different connections available on request)

Rules & Certifications API 2000

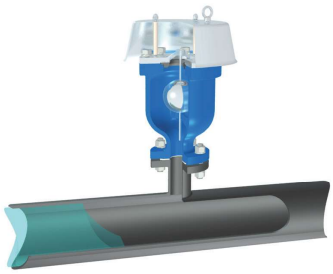
Optimum / Optional Design & Arrangments Stem Jacket type, Steam Tracing type, Proximity type, Teflon Coating/Lining type

APPLICATION

OPERATION PRINCIPLE



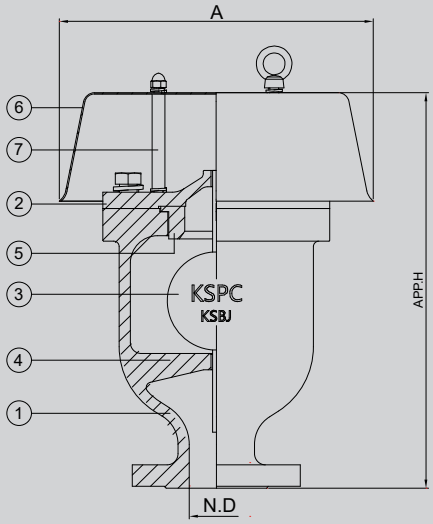
LIQUID OVERFLOW PROTECTION



PRESSURE / VACUUM RELIEF

OUTLINE DRAWING

KSBJ



DIMENSION TABLE

SIZE	½"	1"	2"	3"	4"	6"	8"	10"
N.D	15	25	50	80	100	150	200	250
A	163	163	288	288	342	440	512	512
Approx. H	251	254	363	385	405	611	641	701

NOTE Standard Connection(ASME 150Lb flange) and JIS or different types are available upon request.

COMPONENT MATERIAL

ITEM NO	COMPONENT	BODY	CARBON STEEL	SS304	SS316
		TRIM	SS304	SS304	SS316L
1	BODY		A216-WCB	A351-CF8	A351-CF8M
2	COVER		A216-WCB	A351-CF8	A351-CF8M
3	FLOATER		SS304	SS304	SS316L
4	RIBS		A216-WCB	A351-CF8	A351-CF8M
5	GASKET		NBR		
6	WEATHER HOOD		SS304	SS304	SS316L
7	GUIDE POST		SS304	SS304	SS316

SECTION 8.2_KSBJ-D

AIR RELEASE VALVE

INTRODUCTION

The model KSBJ-D is designed to release accumulated air pockets from the system, while pressured pipelines. Air pockets increase energy consumption because pumping operation will be at higher water heads to overcome pressured air. **KSBJ-D** has function to protect high shock and surge pressure, water hammer and liquid overflow from fresh or sea water pipelines.
KSBJ-D air release valve can provide low cast insurance to protect expensive maintenance cost of pipelines and pump systems.

Body Materials Carbon Steel, SS304, SS316 with various trims
(Different materials available on request)

Sizes range DN 50 ~ DN 250 with ASME 150Lb flanges as standard
(Different connections available on request)

Rules & Certifications API 2000

Optimum / Optional Design & Arrangments Stem Jacket type, Steam Tracing type, Proximity type, Teflon Coating/Lining type

APPLICATION

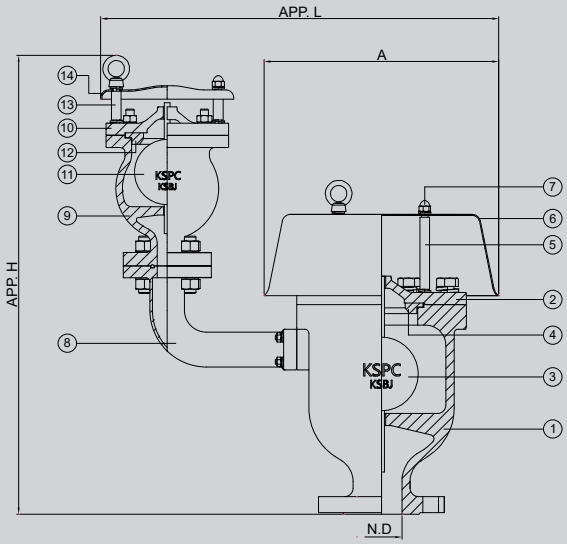
OPERATION PRINCIPLE

LIQUID OVERFLOW PROTECTION

PRESSURE / VACUUM RELIEF

OUTLINE DRAWING

KSBJ-D



DIMENSION TABLE

SIZE	2"	3"	4"	6"	8"	10"
N.D	50	80	100	150	200	250
A	288	288	342	444	512	512
Approx. L	485	485	543	628	690	703
Approx. H	555	577	589	716	758	810

NOTE Standard Connection(ASME 150Lb flange) and JIS or different types are available upon request.

COMPONENT MATERIAL

ITEM NO	COMPONENT	BODY	CARBON STEEL	SS304	SS316
		TRIM	SS304	SS304	SS316L
1	BODY-1		A216-WCB	A351-CF8	A351-CF8M
2	COVER		A216-WCB	A351-CF8	A351-CF8M
3	FLOATER		SS304	SS304	MONEL 400
4	GASKET		NBR		
5	GUIDE POST		SS304	SS304	SS316
7	HOOD		SS304	SS304	SS316L
8	BOLT/NUT		SS304	SS304	SS316
9	CONNECTOR		A216-WCB	A351-CF8	A351-CF8M
10	BODY-2		A216-WCB	A351-CF8	A351-CF8M
11	COVER		A216-WCB	A351-CF8	A351-CF8M
12	FLOATER		SS304	SS304	MONEL 400
13	GASKET		NBR		
14	GUIDE POST		SS304	SS304	SS316
15	HOOD		SS304	SS304	SS316L

SECTION 8.3_KSSV

AIR RELEASE SURGE CHECK VALVE

INTRODUCTION

The model KSSV is designed to release accumulated air pockets from the system, while pressured pipelines. Air pockets increase energy consumption because pumping operation will be at higher water heads to overcome pressured air. **KSSV** has function to protect high shock and surge pressure, water hammer and liquid overflow from fresh or sea water pipelines.
KSSV air release valve can provide low cast insurance to protect expensive maintenance cost of pipelines and pump systems.

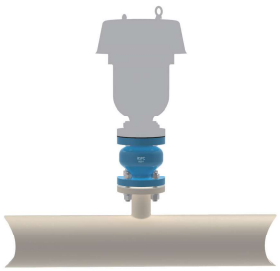
Body Materials Carbon Steel, SS304, SS316 with various trims
(Different materials available on request)

Sizes range DN 15 ~ DN 250 with ASME 150Lb flanges as standard
(Different connections available on request)

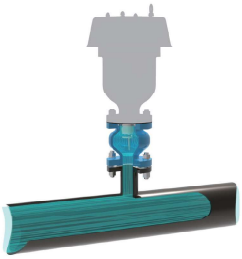
Rules & Certifications API 2000

Optimum / Optional Design & Arrangments Stem Jacket type, Steam Tracing type, Proximity type, Teflon Coating/Lining type

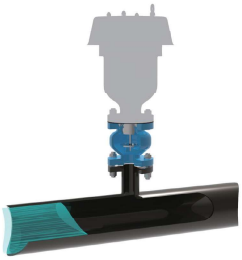
APPLICATION



OPERATION PRINCIPLE



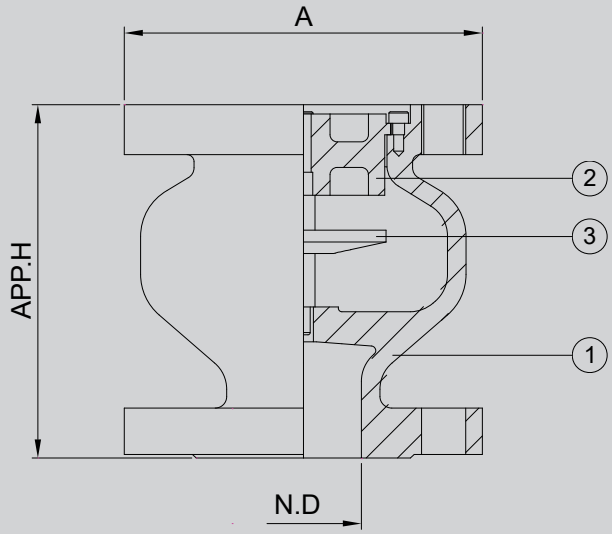
LIQUID OVERFLOW PROTECTION



PRESSURE / VACUUM RELIEF

OUTLINE DRAWING

KSSV



DIMENSION TABLE

SIZE	½"	1"	2"	3"	4"	6"	8"	10"
N.D	15	25	50	80	100	150	200	250
A	108	108	154	191	229	279	343	406
Approx. H	137	140	152	158	185	250	322	395

NOTE Standard Connection(ASME 150Lb flange) and JIS or different types are available upon request.

COMPONENT MATERIAL

ITEM NO	COMPONENT	BODY	CARBON STEEL	SS304	SS316
		TRIM	SS304	SS304	SS316
1	BODY 1		A216-WCB	A351-CF8	A351-CF8M
2	DISC		SS304	SS304	SS316
3	SEAT		SS304	SS304	SS316

TANK SAFETY & PROTECTION DEVICE

SECTION 9_TANK ACCESSORIES

GOOSE NECK FREE VENT

WEATHER HOOD FREE VENT

FLOW CHEK VALVE

Tank Accessories provide open access to the tank's vapor space and venting pressure and vacuum inside tank. Also it protects rain, dust, birds, insects and other from entering the storage tanks.

KSFQ

P118

KSFR

P120

KSFC

P122

SECTION 9.1_KSFQ

GOOSE NECK FREE VENT

INTRODUCTION

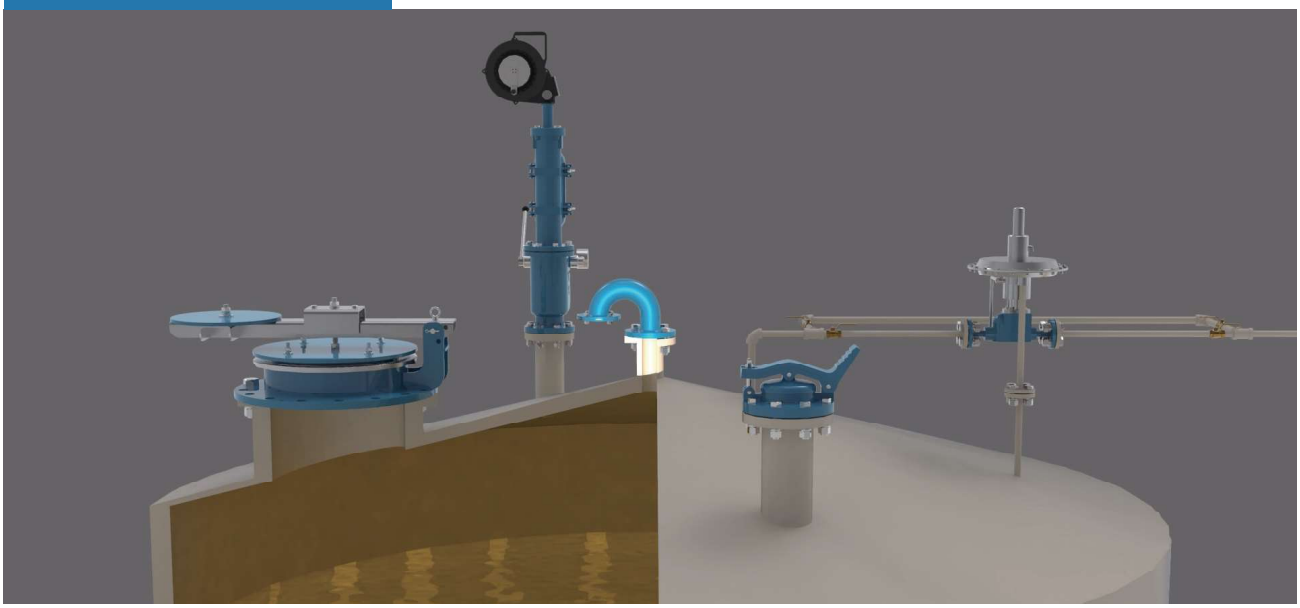
The model KSFQ Gooseneck free vents are an advanced design for vent to atmosphere applications. Designed, manufactured and tested according to the API 2000 code, these free vents utilize the latest technologies to provides provides open access to the tank's vapor space and provides pressure and vacuum venting.

Body Materials Carbon Steel, SS304 and SS316
(Different materials available on request)

Sizes range DN 50 ~ DN 600 with ASME 150Lb flanges
(Different connections available on request)

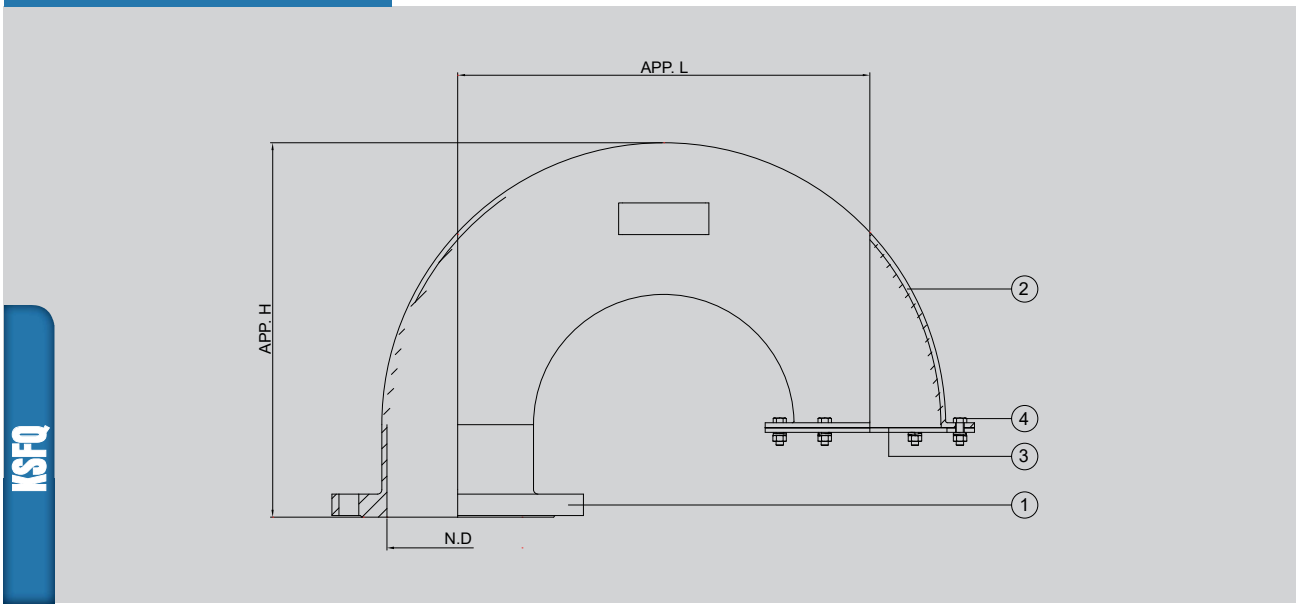
Rules & Certifications API 2000

APPLICATION



OUTLINE DRAWING

KSFQ



DIMENSION TABLE

SIZE	2"	3"	4"	6"	8"	10"	12"	14"
N.D	50	80	100	150	200	250	300	350
Approx. L	152.4	228.6	304.8	457.2	609.6	762	914.4	1066.8
Approx. H	170	229	286	402	516	619	733	838

NOTE Standard Connection(ASME 150Lb flange) and JIS or different types are available upon request.

COMPONENT MATERIAL

ITEM NO	COMPONENT	BODY	CARBON STEEL	SS304	SS316
		TRIM	SS304	SS304	SS316L
1	FLANGE		A105	A182-F304	A182-F316
2	ELBOW		CARBON STEEL	SS304	SS316
3	SCREEN		SS304	SS304	SS316L
4	BOLT/NUT		CARBON STEEL	SS304	SS316

SECTION 9.2_KSFR

WEATHER HOOD FREE VENT

INTRODUCTION

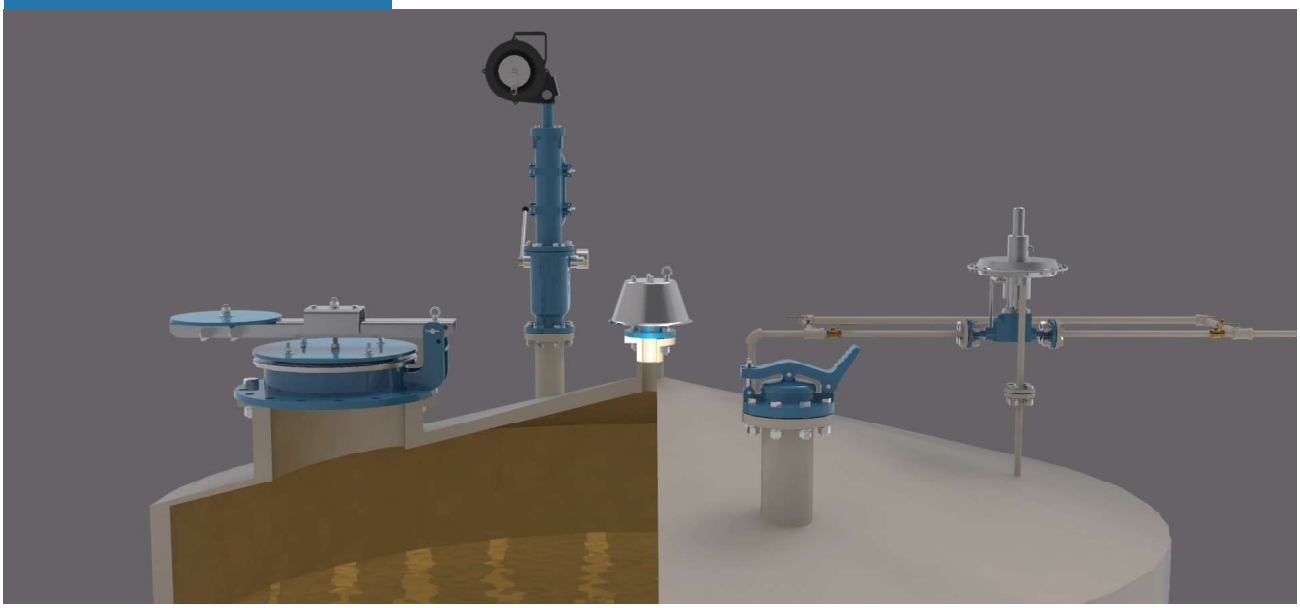
The model KSFR Weather hood free vents are an advanced design for vent to atmosphere applications. Designed, manufactured and tested according to the API 2000 code, these free vents utilize the latest technologies to provides provides open access to the tank's vapor space and provides pressure and vacuum venting.

Body Materials Aluminium, Carbon Steel, SS304 and SS316
(Different materials available on request)

Sizes range DN 50 ~ DN 500 with ASME 150Lb flanges
(Different connections available on request)

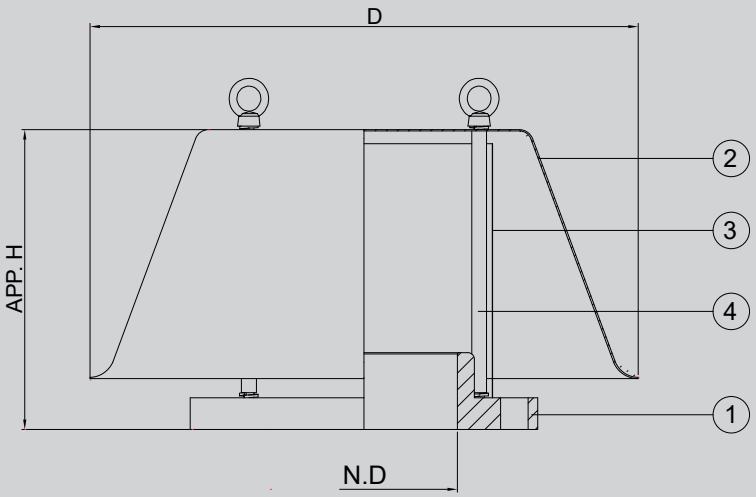
Rules & Certifications API 2000

APPLICATION



OUTLINE DRAWING

KSFR



DIMENSION TABLE

SIZE	2"	3"	4"	6"	8"	10"	12"	14"
N.D	50	80	100	150	200	250	300	350
D	250	294	324	440	476	544	620	685
Approx. H	168	190	205	242	265	302	320	322

NOTE Standard Connection(ASME 150Lb flange) and JIS or different types are available upon request.

COMPONENT MATERIAL

ITEM NO	COMPONENT	BODY	ALUMINIUM	CARBON STEEL	SS304	SS316
		TRIM	SS304	SS304	SS304	SS316L
1	FLANGE		B26-319.F	A105	A182-F304	A182-F316
2	WEAHTER HOOD		SS304	SS304	SS304	SS316L
3	SCREEN		SS304	SS304	SS304	SS316
4	GUIDE POST		SS304	SS304	SS304	SS316

SECTION 9.3_KSFC

FLOAT CHECK VALVE

INTRODUCTION

The model KSFC is operated in line with roof drain systems to prevent a possible overflow product from floating roof tank at the time of drain leakage situation. Whether drain line cause leakage, the valve closes automatically inside of drain sump and prevent oil fl ow from the tank.
KSFC is designed to operate inside of the drain sump in connection with complete drainage systems on the tank.

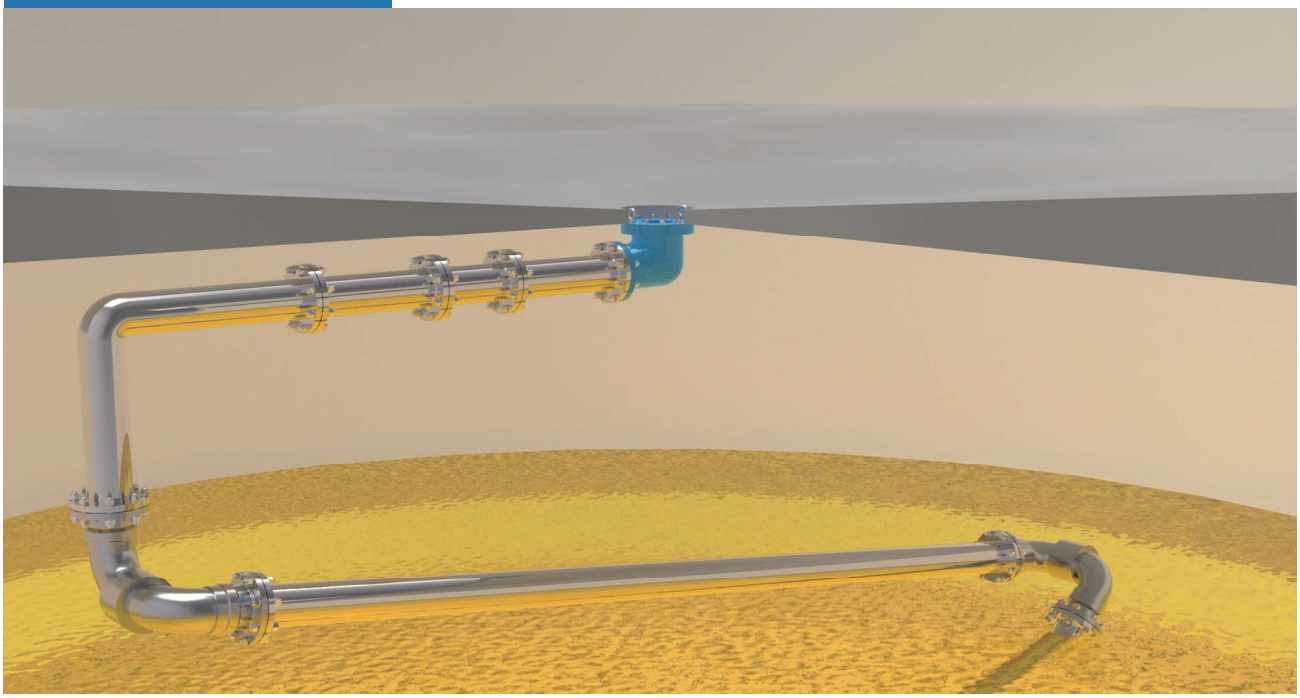
Body Materials Carbon Steel, SS304, SS316 with various trims
(Different materials available on request)

Sizes range DN 80 ~ DN 250 with ASME 150Lb flanges as standard
(Different connections available on request)

Rules & Certifications API 2000

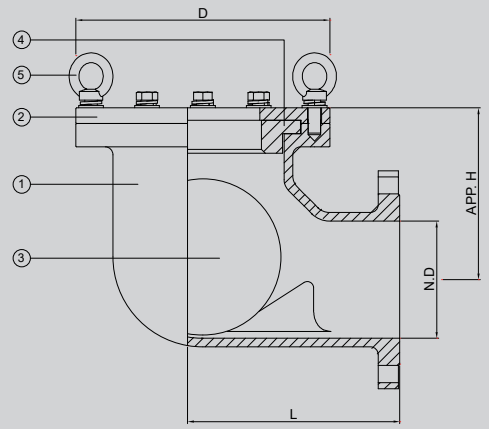
Optimum / Optional Design & Arrangments Proximity type, Teflon Coating/Lining type

APPLICATION



OUTLINE DRAWING

KSFC



DIMENSION TABLE

SIZE	3"	4"	6"	8"	10"
N.D	80	100	150	200	250
D	250	270	325	370	425
L	180	200	250	300	350
Approx. H	160	170	220	270	320

NOTE Standard Connection(ASME 150Lb flange) and JIS or different types are available upon request.

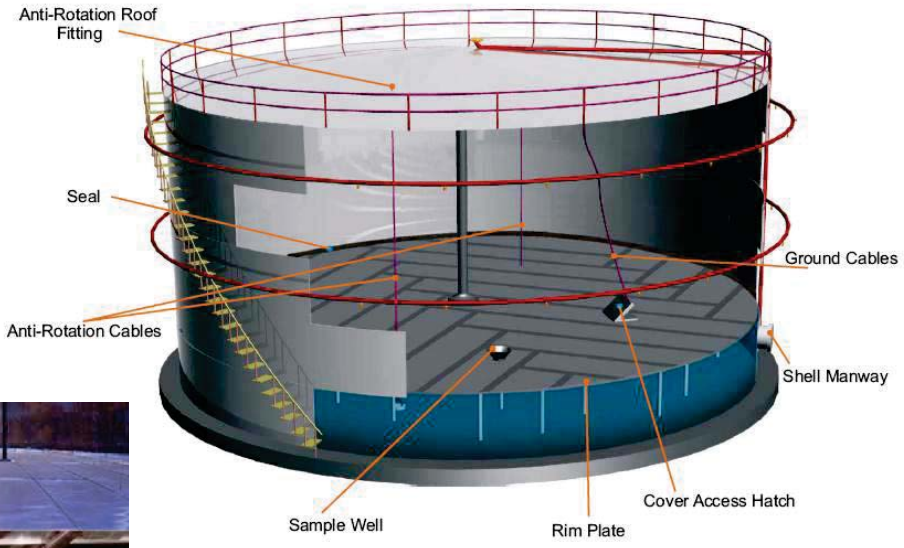
COMPONENT MATERIAL

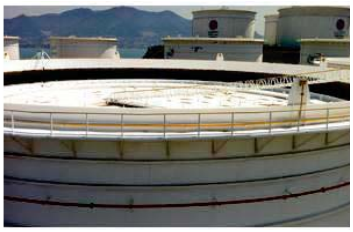
ITEM NO	COMPONENT	BODY	CARBON STEEL	SS304	SS316
		TRIM	SS304	SS304	SS316/SS316L
1	BODY		A216-WCB	A351-CF8	A351-CF8M
2	COVER		CARBON STEEL	SS304	SS316/316L
3	FLOATER		SS304	SS304	SS316/316L
4	GASKET		NBR		
5	BOLT		SS304	SS304	SS316

Above Ground Storage Tank

General of Internal Floating Roof

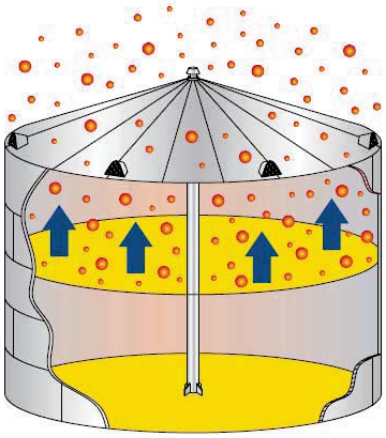
- Emission from organic liquids in storage occur because of evaporative loss of the liquid during
- Its storage and as a result of changes in the liquid level.
- The emission sources very with tank design as does the relative contribution of each type of emission source
- Tank Works products understand vapor loss mechanisms and are one of the best methods to reduce vapor evaporation and organic liquids emission.



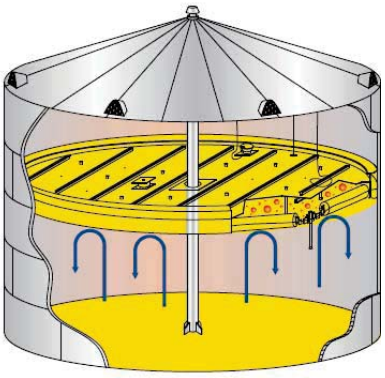


Storage Tank Protection Equipment

- Internal Floating Roofs
- External Floating Roofs Seal
- Aluminums Dome Roof
- Drain System
- Floating Suction & Oil Skimmer
- Tank Fitting



Vapor Loss without Floating Roof

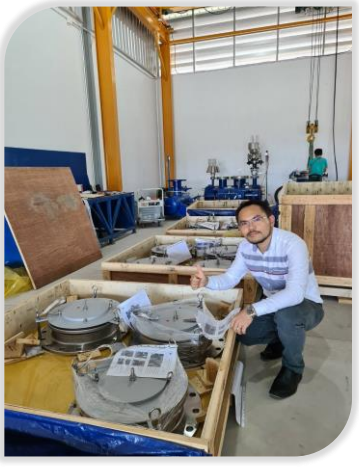


Vapor Prevention with Floating Roof

SAFETY IS THE FIRST & MOST IMPORTANT

SERVICE SOLUTION

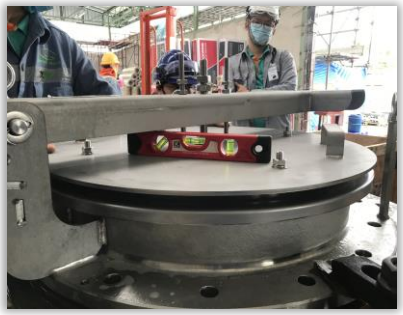
GOODS PRODUCTS



KSPC PROJECT REFERENCE LIST

F.Y.	Client Name	Project Name / EPC
MAR 2020	Thai Rotary Engineering Public Co., Ltd	P11P4358_END LINE PRESSURE VACUUM RELIEF VALVE
FEB 2020	Milott Laboratories Co., Ltd.	Flame Arrester 2" / 5 SETS
FEB 2020	GC Maintenance and Engineering Co., Ltd. (GCME)	SD-20-19269_Refined Glycerine II FEED (OSBL) Vertification Project
JAN 2020	Bangchak Biofuel Company Limited	Bangchak Refined Glycerin Plant Project - Instrument on Top Tank Lot 2
DEC 2019	PTT Global Chemical Public Co., Ltd.	10641641_PTT GC#6_ Pressure Vacuum Relief Valve
DEC 2019	Bangchak Biofuel Company Limited	Bangchak Refined Glycerin Plant Project - Instrument on Top Tank
DEC 2019	Sutee Dished Heads and Metal Form Co., Ltd.	JA-62/0161 Pressure Vacuum Relief Valve 2" / 7 Sets
NOV 2019	Thai Rotary Engineering Public Co., Ltd	P11P3996 MR187675 Pressure Vacuum Relief Valve & Gauge Hatch
SEP 2019	LCB Corporation Company Limited	Emergency Vent Cover 24" and Slot Dipping Device 8"
AUG 2019	Solvay (Bangpoo) Specialty Chemicals Ltd.	PVRV with FA for tank PVRV T-306 and T-364
AUG 2019	Thai Sugar Ethanol Company Limited	100,000 LPD Fuel Grade Ethanol Plant (Phase II) Project
JUL 2019	TTCL Public Company Limited	D189 Olefins Reconfiguration Project (ORP)
JUL 2019	Solvay (Bangpoo) Specialty Chemicals Ltd.	Vacuum Relief Valve Model : KSBG TYPE 3"
JUL 2019	PTT Global Chemical Public Co., Ltd.	D189 Olefins Reconfiguration Project (ORP) By TTCL Public Co.,Ltd.
MAY 2019	PTT Global Chemical Public Co.,Ltd.	Project: 10534425 : 1010253266 / I1
MAY 2019	PM SILALERT Co.,Ltd.	Project CUP4 phase1 GPSC
APR 2019	SCG Chemical (MOC plant.)	Emergency Pressure / Vacuum Relief Valve 24"
MAR 2019	Thai Tank Terminal	PO & POLYOLS_PIIP3351 PROJECT By Thai Rotary Engineering
MAR 2019	PTT Phenol Co.,Ltd.	PVV-12-0301 and Emergency Manhole at TK-1201
FEB 2019	Almendra (Thailand) Ltd.	N2 BLANKETING VALVE 1/2" DST 100 TYPE
FEB 2019	IRPC Public Company Limited.	EMERGENCY VENT VALVE_KSPC PG 220
JAN 2019	SCG Chemicals Co.,Ltd.	I-18-092 TPE_HD3 LP Loading Safety Improvement
DEC 2018	PTT Global Chemical Public Co.,Ltd.	10460961//EMERGENCY RELIEF VALVE 24"KSEPK TYPE
DEC 2018	PTT Global Chemical Public Co.,Ltd.	D189 Olefins Reconfiguration Project (ORP) By TTCL Public Co.,Ltd.
DEC 2018	Gulf SRC Company Limited (GSRC)	GED GSRC New CCPP Project By Best Tech & Engineering
NOV 2018	Global Chemical Co.,Ltd.	KSBSFI TYPE & KSGH TYPE 4" By Phenix Engineering
AUG. 2018	Global Green Chemicals Public Co.,Ltd.	Methyl Ester Plant II Project By K THAI CONTRACTOR
AUG. 2018	UBE Group (Thailand) Co.,Ltd.	PC-18031, SVR
AUG 2018	Thai Rotary Engineering Public Co.,Ltd.	B11P2953 : Request urgent quotation for PVRV
AUG 2018	IRPC Public Company Limited	1100097375: Emergency Vent Valve 20"
AUG 2018	Henkel (Thailand) Ltd.	Henkel Project By Technical system engineering
JUN 2018	SCG Chemicals Co.,Ltd.	Redundant Naphtha Andpygaspipeline Project

MECHANICAL & INSTRUMENT SERVICE SOLUTION
















History:

2019 - 2020

Provide the special list - service training Elmess factory / ULEZEN in Germany.)
Product KSPC / certified ATEX / Ex for Breather Valves and Flow laboratory third party.
- Setting up New Rayong Branch Office

2018

9 September 2018
"Anniversary 10th Years"
AURORA WORKS CO., LTD

2017

New Office
AURORA WORKS CO., LTD.
(Head Office)
888/24 Soi Prachauthit 86
Prachauthit Rd, Thung Khru,
Thung Khru, Bangkok 10140

2016

Add on Representative Agent with:
- SKS Control / Finland

2015

Add on Representative Agent with:
- Delta Control / UK
(Pressure solution)

2014

Add on Representative Agent with:
- Fossil / Canada (Level solution)
- Barton Firtop / UK
(Mechanical solution)
- Simco / UK (Level solution)

2013

Add on Representative Agent with:
- FC Korea / Korea
(Flow meter solution)
- Technical / Italy
(Valves solution

2012

Expansion head office for Training center for instrumentation & tank protection device program.
Add vendor lists customer more than 50 accounts in Thailand
- PTT ME
- PTT GC
- PTT PLC
- PTT EP
- SCG Chemical
- CBES Group
- Bang Chak Petrochemical

Coverage with EPC in Thailand
- Thai Rotary
- Unimit Engineering
- Foster Wheeler
- TRC

Training Tank protection device program
- Toyothai
- Thai Rotary
- IRPC / Lube tank farm
- PTT GC / Tank farm AR1

2011

Setting up "Rayong Branch Office" to coverage of sales market in Petro chemical Oil & Gas industries

Aurora Works Co., ltd agreement with KSPC company (Korea) to start up "Exclusive Distributor agent of KSPC" (Tank protection device) in Thailand

2010

Add vendor lists with Key-account customer:
- Glow Energy
- EGAT
- PTT AR
- TIG
- IRPC
- TPI Polene
- PTT Chemical
- Unilever
- PTT PE

2009

Representative of authorization industrial products:
- Elmess / Germany
- GSI / USA
- NEW FLOW / Taiwan
- Temperature Control / Australia

2008

First Established as Aurora Works co., ltd. In the Business of sale and service to Industrial products and consultants

About Us

Aurora Works Co., Ltd. was established in 2008 with more than 10 years' experience in petrochemical oil & gas, Power plant, cement plant, pulp & paper in Thailand markets.
With representative & distribution, and services of instrumentation, electrical, mechanical c/w valves solution, Such as; Tank protection device, Water level detection products, Flow, Temperature, Pressure, Control Valve and cover engineering service.

Aurora Works is the exclusive distributor for K.S.P.C. (Korea), Fossil (Canada), Klopper (Germany), EPIC-SKS (Finland), Elmess (Germany), Barton Firtop (UK), Delta Mobrey (UK), Simco (UK), Technical (Italy), and MAX MÜLLER (Switzerland).

Mission

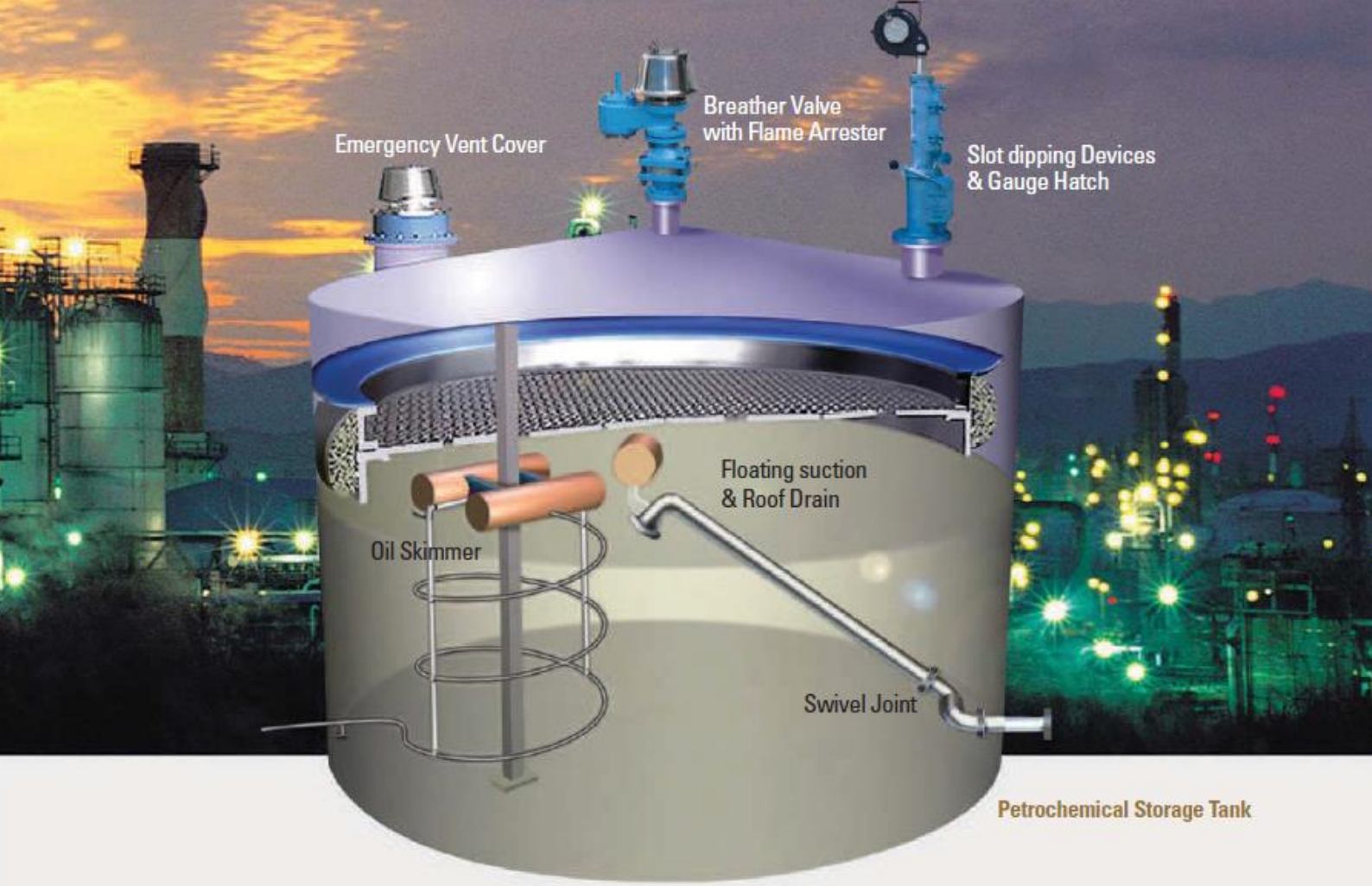
Be recognized as the leading supplier in delivering smarter of Tank protection devices & instrumentation and solutions.

Vision

To deliver superior customer services and solutions to our customers effectively and efficiently.

HEAD OFFICE - BANGKOK

NEW BRANCH OFFICE - RAYONG



PRODUCTS & SERVICES

PRODUCTS AUTHORIZATION

1. KSPC	Tank Protection Devices (API2000)BS7244 and BSEN 12874)	Korea
2. Fossil	High pressure water Column LG.	Canada
3. Delta Mobrey	Pressure Transmitters	UK
4. Barton Firtop	Basket Strainer	UK
5. Technical	Safety Valves (API 526)	Italy
6. Simco	Reflex/Transparent Magnetic Level (Premium grade.)	UK
7. Elmess	Submersible Heater	Germany
8. Klopper	Heater Tracing System	Germany
9. Lapp Automatic	Thermocouple, RTD	Finland
10. Max Müller AG	Process illumination	Switzerland

SERVICE DEPARTMENT

1. Calibrate and inspection test PVRV (Breather valves, ERV, Blanketing regulator) following API2000
2. FAT / SAT and commissioning Electric – heater (Exd.) / Blower heater + control panel unit.
3. Calibrate field instruments such as; Pressure / Temperature Gauge, Transmitter, Controller & switches and safety valves following (API 527).
4. Retrofit YARWAY ports glass, Clark reliance conductivity probes to FOSSIL / New installation & Replacement maintenance.
5. Preventive maintenance UPS and battery under APC brand
6. PLC programmer project
7. Training for API 2000 for low pressure venting

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