SAFE5112

Fire Suppression System

for utulizing FK-5-1-12

42 bar systems

50 bar systems

ABOUT VdS

VdS stands for Inspected. Approved. Safe. and is Europe's largest expert organzation for fire Protection. It is independent institution which has been ensuring safety and trust in the fields of fire protection and security for many devades.

VdS develops advanced safety concepts for significant industrial and commercial enterpires, leading manufacturers and system businesses as well as specialist firms and independent specialists. Its expert assess more than 21.000 fire protection systems worldwide every year.

TABLE OF COMPONENTS

SAFE5112 System components are approved and certified compliant
With recognized international norms. Certification relate to invidual
Produsts anda re clearly indicated on each respective product page.

SAFE5112 Systems certified with system approval by VdS.

Inadditional, all SAFE manufacturing sites comply with ISO 9001 quality standards.

1 Compliant with the Construction Product Regulation (CPR) V3 Oct.2014
2 According to the Pressure Equipment Directice (2014/68/EU)
3 According to the Transportable Pressure Equipment Directive (2010/35/EU)
4 VdS – approved components
5 Components part of VdS approved system
6 Low Voltage Directive (LVD) (2014/35/EU)

COMPONENTS FOR A COMPLETE SAFE5112 SYSTEM

SAFE5112 System by SAFE Technology Ltd. is a complete VdS Certified clean agent fire protection systems that helps you save time and improves productivity.

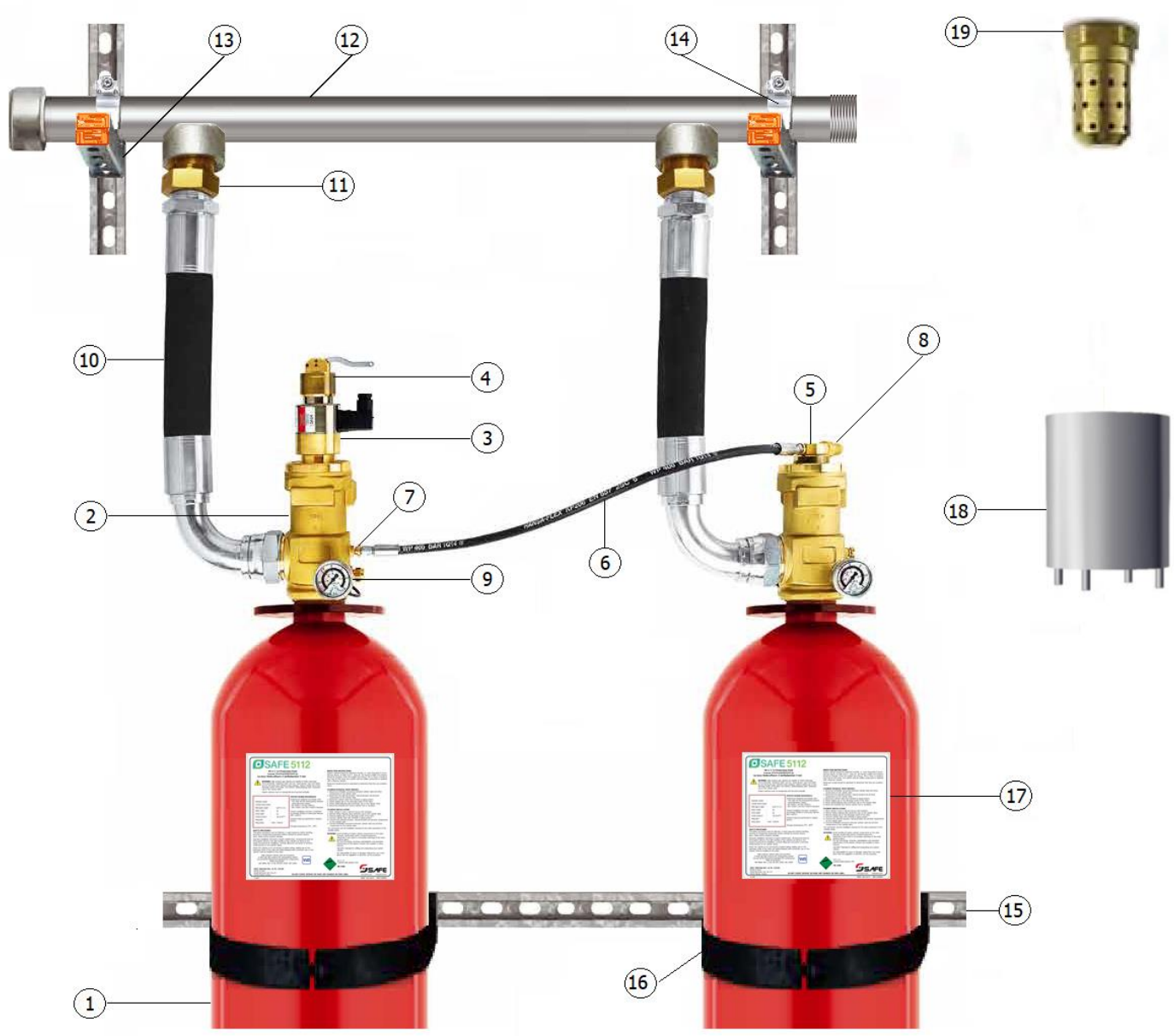
SAFE, has done the compatibility, performance testing and certification work for you.
The system is ready to configure and requires less space to protect high-value assests in areas difficult to Access.
Safe, effective and VdS-Certified.

Fire Protection Systems designs and manufactures components need to confifigure SAFE5112 system.

a complete SYSTEM VdS-Approved

- Components entirely compatible and interchangable
- Easier and faster installarion – No "bad surprises"
- Everything to the same high-specification
- Greater confidence in performance at the critical time
- Full warranty protection
- Simplicity of a single supplier

SAFE makes it easy for system engineers and installers to select a complete VdS-Approved fixed suppression system.
Using FK-5-1-12 with seamless steel high pressure cylinders.



Legent			
1	Agent container (pressure cylinder)	11	Check valve
2	System valve	12	Manifold
3	Electromagnetic actuator	13	Manifold mounting rail
4	Manual/pneumatic actuator	14	Clamp for manifold
5	Pneumatic actuator	15	Agent container wall mounthing rails
6	Pilot hose	16	Clamp for wall mounthing rails
7	Adapter for pilot hose	17	Agent container name plate
8	Bleed valve	18	Safety/shipping valve protection cap
9	Pressure gauge	19	Nozzle
10	Discharge hose		

The **SAFE5112** System helps you to reduce the footprint, installation and service cost by offering you a choice from 14L to 180L cylinders in 42 bar or 50 bar confgratons.

- Less cylinders are needed for your installation due to high filling raito that can be up to 1,2 kg/L
- The 50 bar pressure option allows the cylinders to be palced further away from the protection zone.
- Extremely fast discharge of agent withn 10 seconds. The fire is out before it has a change spread. Damages and downtime are at an absolute minimum.

The **SAFE5112** System is designed and manufactured by SAFE Technology Ltd.
A World leader in reliable control system for pressurized gas applications.
The proven technology used in the SAFE5112 VdS-Approved Clean Agent Fre Suppression System has been isntalled in thousands of instalations worldwide.

For maximum ease and certain of performance, specify SAFE Technology Ltd. for your entire system.

SAFE5112 SYSTEM 42 BAR VARIANTS

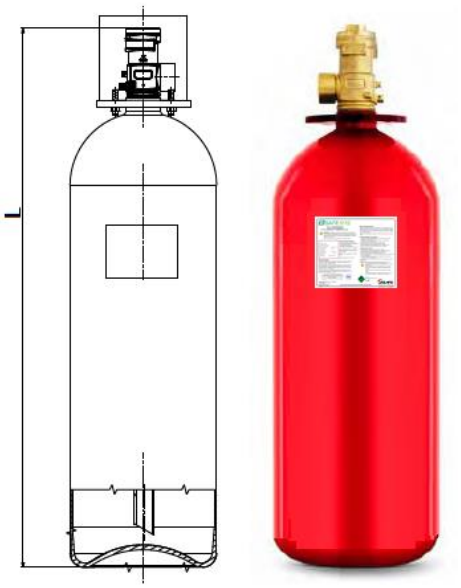
SAFE5112 System article	Agent container article	SAFE5112 System pressure [Bar]	Agent container size [liter]	Agent container height [mm]	Agent container diameter [mm]	Valve with integrated electromagnetic actuator	Outlet connection (A)
SFK 3101442	SFK 0101416	42	14	950	165	---	W21.8 x 1/14"
SFK 3102742	SFK 0102722	42	27	945	229	---	W21.8 x 1/14"
SFK 2202742	SFK 0102723	42	27	1010	229	•	1 7/8" – 12 UN
SFK 2203042	SFK 0103027	42	30	910	267	•	1 7/8" – 12 UN
SFK 2205042	SFK 0105023	42	50	1635	229	•	1 7/8" – 12 UN
SFK 2205142	SFK 0105027	42	50	1250	267	•	1 7/8" – 12 UN
SFK 2207542	SFK 0107527	42	75	1725	267	•	1 7/8" – 12 UN
SFK 2208042	SFK 0108027	42	80	1885	267	•	1 7/8" – 12 UN
SFK 2212042	SFK 0112035	42	120	1650	356	•	1 7/8" – 12 UN
SFK 2212142	SFK 0112033	42	120	1680	348	•	1 7/8" – 12 UN
SFK 2302742	SFK 0102723	42	27	1010	229	---	1 7/8" – 12 UN
SFK 2303042	SFK 0103027	42	30	910	267	---	1 7/8" – 12 UN
SFK 2305042	SFK 0105023	42	50	1635	229	---	1 7/8" – 12 UN
SFK 2305142	SFK 0105027	42	50	1250	267	---	1 7/8" – 12 UN
SFK 2307542	SFK 0107527	42	75	1725	267	---	1 7/8" – 12 UN
SFK 2308042	SFK 0108027	42	80	1885	267	---	1 7/8" – 12 UN
SFK 2312042	SFK 0112035	42	120	1650	356	---	1 7/8" – 12 UN
SFK 2312142	SFK 0112033	42	120	1680	348	---	1 7/8" – 12 UN
SFK 2412042	SFK 0112036	42	120	1705	356	•	2 1/2" – 12 UNJ
SFK 2412142	SFK 0112034	42	120	1730	348	•	2 1/2" – 12 UNJ
SFK 2414042	SFK 0114036	42	140	1915	356	•	2 1/2" – 12 UNJ
SFK 2414142	SFK 0114034	42	140	1945	348	•	2 1/2" – 12 UNJ
SFK 2418042	SFK 0118040	42	180	1860	406	•	2 1/2" – 12 UNJ
SFK 2418142	SFK 0118039	42	180	1975	390	•	2 1/2" – 12 UNJ
SFK 2512042	SFK 0112036	42	120	1705	356	---	2 1/2" – 12 UNJ
SFK 2512142	SFK 0112034	42	120	1730	348	---	2 1/2" – 12 UNJ
SFK 2514042	SFK 0114036	42	140	1915	356	---	2 1/2" – 12 UNJ
SFK 2514142	SFK 0114034	42	140	1945	348	---	2 1/2" – 12 UNJ
SFK 2518042	SFK 0118040	42	180	1860	406	---	2 1/2" – 12 UNJ
SFK 2518142	SFK 0118039	42	180	1975	390	---	2 1/2" – 12 UNJ

A COMPLETE CYLINDER/VALVE ASSEMBLY
- 27L to 180L cylinder for 42 bar working pressure
- 4000210 or 4000220 valves
- steel valve protection cap included acc. ISO 11117

KEY FEATURES

- Improves producttiviy: Cylinder/valves assemblies arrive pre-assembled
- VdS approved
- System are available either empty or filled with FK-5-1-12 agent. Contact us for filled product code

Label included for filled cylinder only



SAFE5112 SYSTEM 50 BAR VARIANTS

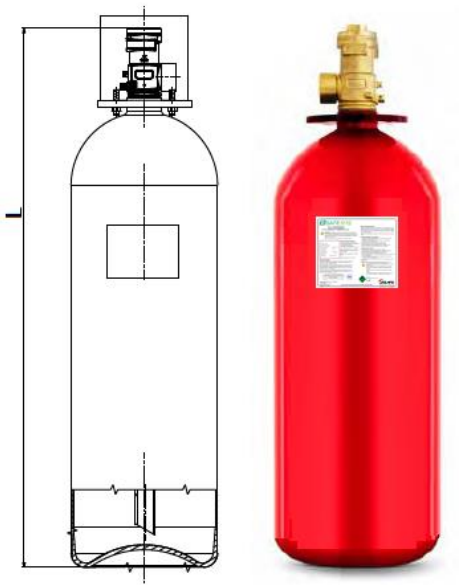
SAFE5112 System article	Agent container article	SAFE5112 System pressure [Bar]	Agent container size [liter]	Agent container height [mm]	Agent container diameter [mm]	Valve with integrated electromagnetic actuator	Outlet connection (A)
SFK 3201450	SFK 0101416	50	14	950	165	---	W21.8 x 1/14"
SFK 3202750	SFK 0102722	50	27	945	229	---	W21.8 x 1/14"
SFK 2602750	SFK 0102723	50	27	1010	229	•	1 7/8" – 12 UN
SFK 2603050	SFK 0103027	50	30	910	267	•	1 7/8" – 12 UN
SFK 2605050	SFK 0105023	50	50	1635	229	•	1 7/8" – 12 UN
SFK 2605150	SFK 0105027	50	50	1250	267	•	1 7/8" – 12 UN
SFK 2607550	SFK 0107527	50	75	1725	267	•	1 7/8" – 12 UN
SFK 2608050	SFK 0108027	50	80	1885	267	•	1 7/8" – 12 UN
SFK 2612050	SFK 0112035	50	120	1650	356	•	1 7/8" – 12 UN
SFK 2612150	SFK 0112033	50	120	1680	348	•	1 7/8" – 12 UN
SFK 2702750	SFK 0102723	50	27	1010	229	---	1 7/8" – 12 UN
SFK 2703050	SFK 0103027	50	30	910	267	---	1 7/8" – 12 UN
SFK 2705050	SFK 0105023	50	50	1635	229	---	1 7/8" – 12 UN
SFK 2705150	SFK 0105027	50	50	1250	267	---	1 7/8" – 12 UN
SFK 2707550	SFK 0107527	50	75	1725	267		1 7/8" – 12 UN
SFK 2708050	SFK 0108027	50	80	1885	267	---	1 7/8" – 12 UN
SFK 2712050	SFK 0112035	50	120	1650	356	---	1 7/8" – 12 UN
SFK 2712150	SFK 0112033	50	120	1680	348	---	1 7/8" – 12 UN
SFK 2812050	SFK 0112036	50	120	1705	356	•	2 1/2" – 12 UNJ
SFK 2812150	SFK 0112034	50	120	1730	348	•	2 1/2" – 12 UNJ
SFK 2814050	SFK 0114036	50	140	1915	356	•	2 1/2" – 12 UNJ
SFK 2814150	SFK 0114034	50	140	1945	348	•	2 1/2" – 12 UNJ
SFK 2818050	SFK 0118040	50	180	1860	406	•	2 1/2" – 12 UNJ
SFK 2818150	SFK 0118039	50	180	1975	390	•	2 1/2" – 12 UNJ
SFK 2912050	SFK 0112036	50	120	1705	356	---	2 1/2" – 12 UNJ
SFK 2912150	SFK 0112034	50	120	1730	348	---	2 1/2" – 12 UNJ
SFK 2914050	SFK 0114036	50	140	1915	356	---	2 1/2" – 12 UNJ
SFK 2914150	SFK 0114034	50	140	1945	348	---	2 1/2" – 12 UNJ
SFK 2918050	SFK 0118040	50	180	1860	406	---	2 1/2" – 12 UNJ
SFK 2918150	SFK 0118039	50	180	1975	390	---	2 1/2" – 12 UNJ

A COMPLETE CYLINDER/VALVE ASSEMBLY
- 27L to 180L cylinder for 50 bar working pressure
- 4000210 or 40002220 valves
- steel valve protection cap included acc. ISO 11117

KEY FEATURES

- Improves producttiviy: Cylinder/valves assemblies arrive pre-assembled
- VdS approved
- System are available either empty or filled with FK-5-1-12 agent. Contact us for filled product code

Label included for filled cylinder only



EXTINGUISHING AGENT FK-5-1-12

Article	SFK 0005112

FK-5-1-12 is a next-generation halon replacement, designed to alleviate concerns for human safety, performance, and the environment. FK-5-1-12 has key features which define sustainable clean extinguishing agent protection:

- Zero ozone depletion potential
- A global warming potential of one
- Five-day atmospheric lifetime
- A large margin of safety for occupied spaces

FK-5-1-12 is applied as a gas, but is liquid at room temperature. It is electrically non-conducting in both the liquid and gaseous state.

FK-5-1-12 has been tested and verified to be safe for use in occupied spaces. Tests have proven that exposure to FK-5-1-12 is safe and effective in suppressing fires at low concentrations; all of which are well below the EPA's maximum exposure levels. FK-5-1-12 is approved for use in occupied areas up to 10,5 % concentration by volume with a mandated egress time of 5 minutes or less.

Physical properties of FK-5-1-12

All properties tested at a room temperature of +25 °C unless otherwise noted.

Chemical name	: Pentafluoroethyl Ketone ($C_6F_{12}0$)
Molecular weight (g/mol)	: 316,04 g/mol
Boiling point at 1 atm	: +49,2 °C (+120,0 °F)
Freezing point	: -108,0 °C (-162,4 °F)
Critical temperature	:+168,7 °C (+335,6 °F)
Critical pressure	: 18,65 bar (270,44 psi)
Critical volume	: 494,5 cc/mol (0,0251 ft^3lbm)
Critical density	: 639,1 kg/m^3 (39,91 lbm/ft^3)
Specific heat, liquid	: 1,103 kJ/kg °C (0,2634 BTU/lb °F)
Specific heat, vapor at 1 atm	: 0,891 kJ/kg °C (0,2127 BTU/lb °F)
Heat of vaporization (kJ/kg °C) at boiling point	: 37,8
Thermal conductivity /W/m °C) of liquid point	: 0,034
Viscosity, liquid	: 0,39 centistokes
Global warming potential	: 1
NOAEL (VOL %)	: 10
LOAEL (VOL %)	: >10,0
Ozone depletion potential	: 0
US EPA SNAP approval	: Acceptes
Estimated atmospheric lifetime	: 0,014 years
4 hours acute inhalation	: LC50 > 100,000 ppm

Extinguishing mechanism

In order to understand how FK-5-1-12 suppresses a fire, it is important to review the principal aspects of fire chemistry. Four components (fuel, oxygen, heat, and the combustion chain reaction) are often referred to as the "fire tetrahedron".

All four of these factors are required in the correct combination for a fire to ignite and sustain burning. The fire tetrahedron shows that a fire can be extinguished by breaking one or more links between these components or by changing the balance between them.

1. By interrupting the combustion chain reaction.
2. By containing or eliminating the source of fuel.
3. By cutting off or diluting the source of oxygen.
4. By removing sufficient heat from the fire.

FK-5-1-12, like other halocarbon halon alternatives, extinguishes a fire simply by removing heat from the fire. Upon discharge, FK-5-1-12 creates a gaseous mixture with air. This extinguishing agent/air mixture has a heat capacity much larger than that of air alone. A higher heat capacity means that this gas mixture will absorb more energy (heat) for each degree of temperature change it experiences.

Exposure to FK-5-1-12

FK-5-1-12 is both low in acute toxicity and is a highly-efficient clean extinguishing agent, so that it puts out fires long before the extinguishing agent reaches concentrations that could harm humans. In fact, because its design concentration is much lower than its No Observable Adverse Effects Level (NOAEL).

FK-5-1-12 offers the largest margin of safety among all other chemical extinguishing agents, CO2, and inert gas mixtures.

Extinguishing agent	FK-5-1-12	HFC-125	HFC-227ea	Inert Gas	CO_2
Design concentration	6,1 %	8,7 – 12,1 %	6,25 – 8,7 %	34,2 – 40,6 %	30 – 75 %
NOAEL	10 %	7,5 %	9 %	43 %	< 5 %
Safety margin	64 %	nil	3 – 44 %	6 – 26 %	Lethal at desing concentration

FK-5-1-12 has been extensively tested and is approved for use in fire suppression systems around the world.
The LC50 toxicity rating for FK-5-1-12 is greater than 100,000 ppm. When one considers that most SAFE5112 System are designed for concentrations providing less than 59,000 ppm it is evident that FK-5-1-12 is safe to use.

Chilling and visibility
FK-5-1-12 discharging from the nozzles will have a chilling effect on objects and can cause frostbite burns to the skin. The liquid phase vaporizes rapidly when mixed with air. Discharging the extinguishing agent into an area with a humid atmosphere may cause a reduction in visibility due to condensation of water vapor normally present in the hazard area.

Pressure

The normal working pressure of a SAFE5112 System - depending on the system - 42 bar or 50 bar at +20 °C. This is accomplished by super pressurizing the SAFE5112 System with a charge of nitrogen added to the FK-5-1-12. All agent containers are pressurized vessels. Care must be observed when handling, filling and transporting storage agent containers. The sealing cap must be in place whenever the charged agent container is removed from the pipework.

To increase the available pressure above the vapor pressure of FK-5-1-12 nitrogen is added to the agent container after the transfer of the FK-5-1-12 is complete. This process is referred to as super pressurization. Super pressurization is applied to the agent container cylinder for any of the following reasons:

- To increase the total pressure available for flow from the agent container cylinder through the downstream pipework.
- To provide a "pressure pad" for the liquid in order to keep the liquid compressed in the liquid phase during flow through the pipework.

Agent cylinder selection, filling capacity and empty weights

Agent container article	Size [liter]	System valve series	Agent filling quantity min.fill qty. [kg]	Agent filling quantity max.fill qty. [kg]	Cylinder/valve empty weight [kg]
SFK 0101416	14	SFK 4000201	6	16	21.3
SFK 0102722	27	SFK 4000201	11	32	35.5
SFK 0102723	27	SFK 4000210	11	32	44.3
SFK 0103027	30	SFK 4000210	12	36	43.3
SFK 0105023	50	SFK 4000210	20	60	68.4
SFK 0105027	50	SFK 4000210	20	60	63.9
SFK 0107527	75	SFK 4000210	30	90	75.5
SFK 0108027	80	SFK 4000210	32	96	105.4
SFK 0112035	120	SFK 4000210	48	144	138.2
SFK 0112033	120	SFK 4000210	48	144	116.7
SFK 0112036	120	SFK 4000220	48	144	144.8
SFK 0112034	120	SFK 4000220	48	144	123.0
SFK 0114036	140	SFK 4000220	56	168	161.1
SFK 0114034	140	SFK 4000220	56	168	127.8
SFK 0118040	180	SFK 4000220	72	216	147.0
SFK 0118039	180	SFK 4000220	72	216	164.6

SAFE5112 SYSTEM AGENT CONTAINERS (pressure cylinders)

The agent container for vertical installation only is a red-coated steel construction. The agent containers are constructed, tested and marked in accordance with TPED regulations. Each agent container is delivered with a safety/ shipping valve protection cap.

A dip tube is used for liquefied FK-5-1-12 withdrawal from a agent container. A dip tube is screwed into the dip tube thread of the valve and extends down almost to the bottom of the agent container.

Agent containers for SFK 4000201 valve

Article number	SFK 0101416	SFK 0102722
Water volume (L)	14	27
Height (mm)	865	860
Valve series	SFK 4000201	SFK 4000201
External diameter (mm)	165	229
Hydraulic test pressure	250 bar	300 bar
Valve conection thread	25E (W28,8x1"/14)	25E (W28,8x1"/14)
Conformity	2010/35/EU TPED	2010/35/EU TPED

Agent containers for SFK 4000210 series valve

Article number	SFK 0102723	SFK 0105023	SFK 0108027	SFK 0112035
Water volume (L)	27	50	80	120
Height (mm)	860	1485	1735	1500
Valve series	SFK 4000210	SFK 4000210	SFK 4000210	SFK 4000210
External diameter (mm)	229	229	267	356
Hydraulic test pressure	300 bar	300 bar	250 bar	300 bar
Valve conection thread	2 ½"-12UN-2B	2 ½"-12UN-2B	2 ½"-12UN-2B	2 ½"-12UN-2B
Conformity	2010/35/EU TPED	2010/35/EU TPED	2010/35/EU TPED	2010/35/EU TPED

Article number	SFK 0103027	SFK 0105027	SFK 0107527	SFK 0112033
Water volume (L)	30	50	75	120
Height (mm)	760	1100	1575	1530
Valve series	SFK 4000210	SFK 4000210	SFK 4000210	SFK 4000210
External diameter (mm)	267	267	267	348
Hydraulic test pressure	250 bar	250 bar	250 bar	250 bar
Valve conection thread	2 ½"-12UN-2B	2 ½"-12UN-2B	2 ½"-12UN-2B	2 ½"-12UN-2B
Conformity	2010/35/EU TPED	2010/35/EU TPED	2010/35/EU TPED	2010/35/EU TPED

Agent containers for SFK 4000220 series valve

Article number	SFK 0112036	SFK 0114036	SFK 0118040
Water volume (L)	120	140	180
Height (mm)	1505	1715	1660
Valve series	SFK 4000220	SFK 4000220	SFK 4000220
External diameter (mm)	356	356	406
Hydraulic test pressure	300 bar	300 bar	150 bar
Valve conection thread	3"-12UN-2B	3"-12UN-2B	3"-12UN-2B
Conformity	2010/35/EU TPED	2010/35/EU TPED	2010/35/EU TPED

Article number	SFK 0112034	SFK 0114034	SFK 0118039
Water volume (L)	120	140	180
Height (mm)	1530	1745	1775
Valve series	SFK4000220	SFK 4000220	SFK 4000220
External diameter (mm)	348	348	390
Hydraulic test pressure	250 bar	250 bar	250 bar
Valve conection thread	3"-12UN-2B	3"-12UN-2B	3"-12UN-2B
Conformity	2010/35/EU TPED	2010/35/EU TPED	2010/35/EU TPED

SAFE5112 SYSTEM VALVES

SAFE5112 System valves are high-performance cylinder valves for fixed extinguishing systems as well as Ultra High Prutiy. System vlalves control the release of the FK-5-1-12 agent from the agent container.

System valve SFK 4000201 valve

SFK 4000201 valve used for only SAFE5112 14L and 27L agent containers.

Article number	SFK 4000201
Inlet connection	W28.8 x 1/14" - 25E
Outlet connection	W21.8 x 1/14"
Burst disck	78 bar
Pressure gauge port	M10 x 1 mm
Deep Tube connection	M16 x 1 mm
Material	Brass
Conformity	PED & TPED

System Valves SFK 4000210 and SFK 4000220 series

There are 2 sizes available for the SAFE5112 System: 1,5" (33 mm) for the SFK 4000210 valve series and 2" (49 mm) for the SFK 4000220 valve series.

Valves are available without integrated electromagnetic actuator and with an integrated electromagnetic actuator. If a valve is equipped with an integrated electromagnetic actuator an additional electromagnetic release device is not required.

Valve Series SFK 4000210

Valve Series SFK 4000210
with integrated electromagnetic actuator

Valve Series SFK 4000220

Valve Series SFK 4000220
with integrated electromagnetic actuator

Articel number	Working pressure at +21°C (pw)	Inlet connection (C)	Outlet connection (A)	Dip tube thread (G)	Integrated electromagnetic actuator	Burst disc
SFK 4000211	42 bar	2 1/2" – 12 UN	1 7/8" – 12 UN	1 1/2" – 16 UN	•	78 bar
SFK 4000212	42 bar	2 1/2" – 12 UN	1 7/8" – 12 UN	1 1/2" – 16 UN	---	78 bar
SFK 4000216	50 bar	2 1/2" – 12 UN	1 7/8" – 12 UN	1 1/2" – 16 UN	•	89 bar
SFK 4000217	50 bar	2 1/2" – 12 UN	1 7/8" – 12 UN	1 1/2" – 16 UN	---	89 bar
SFK 4000221	42 bar	3" – 12 UN	2 1/2" 12 UNJ	2 1/8" – 16 UN	•	78 bar
SFK 4000222	42 bar	3" – 12 UN	2 1/2" 12 UNJ	2 1/8" – 16 UN	---	78 bar
SFK 4000226	50 bar	3" – 12 UN	2 1/2" 12 UNJ	2 1/8" – 16 UN	•	89 bar
SFK 4000227	50 bar	3" – 12 UN	2 1/2" 12 UNJ	2 1/8" – 16 UN	---	89 bar
Conformity	VdS-G312003					

Valve series	SFK 4000210	SFK 4000220
Valve type according yo EN 12094-4	TYPE 2	TYPE 2
Pressure gauge connector	M10 x 1	M10 x 1
Pilot port	G1/8"	G1/8"
Orifice diameter	Ø 33 mm	Ø 49 mm
Maximumoperating temperature range	-20 °C + 50 °C	-20 °C + 50 °C

Integrated electromagnetic actuator

Voltage (volt)	24 V DC ± 10 %
Current (Ampere)	0,25 A
Wattage (Watt)	6 W ± 10 %
Protection class	IP 65
Effective duty cycle (ED)	100 % ED
Minimum actuation time	>= 5 Seconds
Maximum operating temperature range	-20 °C to + 50 °C

RELEASE DEVICES

Electromagnetic

Manual/Pneumatic

Pneumatic

can be used with a range of different actuators

SFK 4000201 VALVE

SFK 4000210 SERIES VALVE
with or without electromagnetic actuator

SFK 4000220 SERIES VALVE
with or without electromagnetic actuator

Large-orifice celan agent valves with flexibiliy of actuation methods.
For all clean agent installations.
Intergrated solenoid option available

ELECTROMAGNETIC RELEASE DEVICE

Device to electrically actuate the release of extinguishing agent.

for use with
SFK 4000201
SFK 4000210 series and
SFK 4000220 series valves.

KEY FEATURES

- Most commonly used as a master valve to actuate the system electonically, such as with connection to a smoke or heat detetction device
- Electronically actuates the release of extinguishing agent

1 Complant with the Construction Productss Regulation (CPR) V3 Oct. 2014
2 VdS –approved components
4 Components part of VdS – approved system

The electromagnetic release device is used to actuate the SAFE5112 System electrically. It is mounted on top of the master valve (only if the master valve is without integrated electromagnetic actuator) and is operated by an electrical signal from a fire detection system. In order to actuate the electromagnetic release device a constant DC voltage of 24 V is required.

The electromagnetic release device can be combined with the manual/pneumatic release device or the pneumatic release device.

with **BLOCKING DEVICE**
to temporarity unarm the system during maintenance

Article number	SFK 4001001 (with diode) SFK 4001002 (without diode) SFK 4001011 (with diode and with blocking device) SFK 4001012 (without diode but with blocking device)
Valve connection	M42 x 1,5
Nominal voltage	24 V DC ± 10 %
Nominal current (I)	0,5 A ± 10 %
Electrical connection	DIN 175301-803 A electrical connector
Protection class	IP65
Height	131 mm / 135 mm with blocking device
Conformity	VdS-G312003

RESET TOOL FOR ELECTROMAGNETIC ACTUATOR

The reset tool is used to reset the electromagnetic release device pin after a discharge.
The reset tool is screwed into the inlet connection of the electromagnetic release device.

Used to reset the electromagnetic actuator piston when putting the system back in active service after system discharge

Article number	SFK 4001091
Outlet connection	M42 x 1,5
Material	Brass

MANUAL/PNEUMATIC RELEASE DEVICE

The manual/pneumatic release device allows manual or pneumatic actuation of several SAFE5112 System components. This release device is used for pneumatic actuation of multiple agent containers in series, which are connected to the master agent container by a pilot hose.

Manual actuation is accomplished by pulling the hand lever on the manual/pneumatic release device. In the closed position the manual/pneumatic release device is secured with a safety pin. By removing the safety pin, the hand lever can be manually pressed down to actuate the discharge of the extinguishing agent.

Article number	SFK 4001111
Maximum working pressure	300 bar
Inlet connection (C)	M42 x 1,5
Pilot port	G1/8”
Actuation force / pressure	< 150N / 20 Bar
Torque moment	50 + 0/-15 Nm
Body material	Brass
Height	136.5 mm
Conformity	VdS-G312003

PNEUMATIC RELEASE DEVICE

This release device is used for pneumatic actuation of multiple agent containers in series, which are connected to the master valve on the master agent container by a pilot hose.
Agent container equipped with the pneumatic release device serve as slave agent containers.

Article number	SFK 4001114
Maximum working pressure	300 bar
Inlet connection (C)	M42 x 1,5
Pilot port	G1/8”
Actuation pressure	20 bar
Body material	Brass
Height	50 mm
Conformity	VdS-G312003

PILOT HOSES

Pilot hoses are used to connect several agent container, that are equipped with a valve and the corresponding release device.

The pilot hose is used to set up the pilot line, e.g. to connect several release devices and/or the valve and release device. The pilot hose must only be used in accordance with component approval in SAFE5112 Systems.

Article number	SFK 4002105	SFK 4002107	SFK 4002110
Lenght	500 mm	700 mm	1000 mm
Connection (A / C)	2 x M12 x 1,5	2 x M12 x 1,5	2 x M12 x 1,5
Bending radius	75 mm	75 mm	75 mm
Nominal diameter	DN6	DN6	DN6
Working pressure	400 bar	400 bar	400 bar
Burst pressure	1600 bar	1600 bar	1600 bar
Maximum operating temperature range	-40 °C to +100 °C	-40 °C to +100 °C	-40 °C to +100 °C
Standard	EN 857 2 SC		
Conformity	VdS-G314018		

ADAPTER FOR PILOT HOSE

The adapter is used for the connection of pilot hoses to the manual/pneumatic release device or to the pneumatic release device.

Article number	SFK 4002121
connections	G1/8" / M12 x 1,5
Material	Brass

Each hose requires 2 adapters.
Must be ordered separately.

BLEED VALVE

The bleed valve is a part of the pilot line. The bleed valve must be mounted at the end of each pilot line on the last pneumatic release device. The bleed valve is a safety device, which protects the SAFE5112 System against unwanted discharge if a agent container has a leak and the pressure thereby increases in the pilot line. The bleed valve vents the pressure in the pilot line under 0,7 bar and thus prevents an accidental discharge.

Article number	SFK 4002131
Closing pressure	0,7 – 1,5 bar
Inlet connection	G1/8"
Flow @ p=0.6 bar	6 liters/min
Material	Brass

1 Compliant with the Construction Products Regulation (CPR) V3 Oct.2014
2 VdS – approved components
4 Components part of VdS – approved system

Mounts on all pneumatic release devices

PRESSURE GAUGES

The pressure gauge measures and displays the pressure in the agent container. Each valve must be equipped with a pressure gauge. The pressure gauge is connected to the port for optional parts of the valve.

The pressure gauges SFK 4001221 and SFK 4001231 are equipped with an integrated pressure switch to supervise the loss of pressure in the agent container. Therefore, the agent container leakage monitoring can take place on a weekly basis instead of a daily basis.

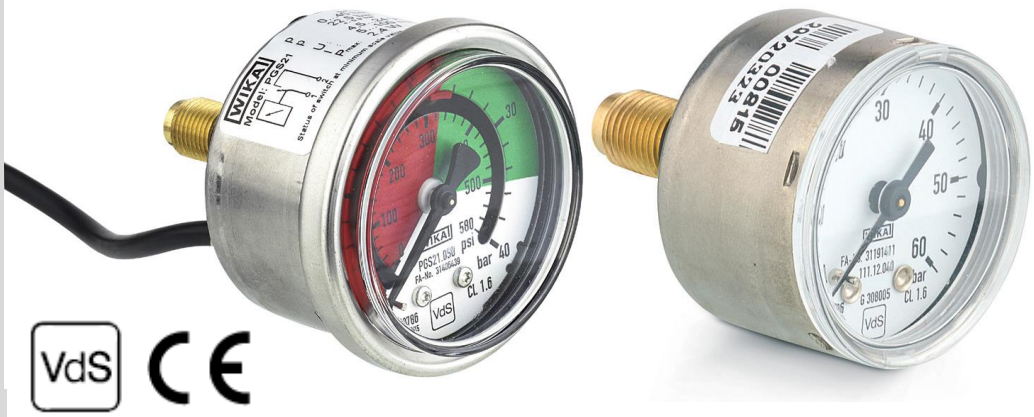
The left picture below shows the pressure gauge with integrated pressure switch and the right picture the standard version of a pressure gauge.

Measures and dispays the cylinder pressure to verify that cylinders apre properly filled and charged.

for FK-5-1-12

Rear mounthing for use with
SFK 4000201
SFK 4000210 seires
SFK 4000220 series valves

- **Integrated pressure switch.**
- **Choice of 0-60 bar or 0-100 bar.**



Article number	SFK 4001221	SFK 4001231	SFK 4001211	SFK 4001212
Most suitable for pressure scale	42 bar	50 bar	42 bar	50 bar
Scale	0 - 60 bar	0 – 60 bar	0 – 60 bar	0 – 100 bar
Inlet connection (C)	M10 x 1	M10 x 1	M10 x 1	M10 x 1
Pressure switch	Yes	Yes	No	No
Switch contact	38 bar	45 bar	---	---
Switching mode	NC	NC	---	---
Switching voltage	4.5 to 24 VDC / AC	4.5 to 24 VDC / AC	---	---
Switching current	5 mA – 100 mA	5 mA – 100 mA	---	---
Contact load	max. 2.4 W	max. 2.4 W	---	---
Protection class	IP65	IP65	IP65	IP65
Conformity	VdS-G309005	VdS-G309005	VdS-G308005	VdS-G308005

DISCHARGE HOSES

The discharge hose is used to set up the pipework, e.g. to connect a valve to a check valve. The connections of the discharge hose are protected with plastic caps.

Hose to connect the cylinder valve to the manifold or pipe network in fixed fire suppression systems.

for SFK 4000201 valve for 14L to 27L cylinders

for SFK 4000210 valves for 27L to 120L cylinders

for SFK 4000220 valves for 120L to 180L cylinders

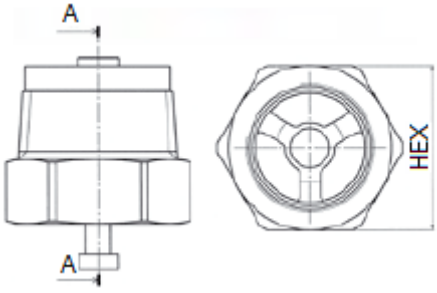
Article number	SFK 4002266	SFK 4002240	SFK 4002250
Valve series	for SFK 4000201 valves	for SFK 4000210 valves	for SFK 4000220 valves
Lenght	250 mm	500 mm	550 mm
Bending Radius	90 mm min	min. 500 mm	min. 630 mm
Valve connection	W21.8 x 1/14" - 90°	1 7/8" – 12UN	2 ½" – 12UN
Outlet connection	G3/4"	R 1 1/2"	R 2"
Nominal diameter	DN12	DN40	DN50
Working pressure	360 bar	53 bar	53 bar
Maximum operating temperature range	-40 °C to +100 °C	-40 °C to +100 °C	-40 °C to +100 °C
Standard	EN 853 2 SN		
Materials	Syenthetic rubber oil resistant		
Conformity	VdS-G314019	VdS-G316003	VdS-G316003

CHECK VALVES

The check valve prevents a back-flow of the extinguishing agent into the agent container. The check valve is provided with an outlet connection (A) for the connection to the manifold and an inlet connection (C) for the connection to the discharge hose.

Prevents backflow into the cylinder.

Required for each hose attachment to the discharge manifold.



DN33 Check valve
for SFK 4000210 valves
for 27L to 120L cylinders

DN50 Check valve
for SFK 4000220 valves
for 120L to 180L cylinders

Article number	SFK 4002333	SFK 4002350
Valve series	for SFK 4000210 valves	for SFK 4000220 valves
Nominal diameter	DN33	DN50
Inlet connection (C)	Rc 1 1/2”	Rc 2”
Outlet connection (A)	R 2”	R 2 1/2”
Working pressure	60 bar	60 bar
Material	Brass HEX 65 mm	Brass HEX 80 mm
Conformity	VdS-G318001	

NOZZELS FOR SAFE5112 SYSTEM

Double rows of fixed holes discharge nozzles, used with calculated drill size of orifice. The nozzles are delivered with their orifices drilled and assembled according to the results of the VdS calculation software.

The nozzle determines the flow and distributes the extinguishing agent evenly in the hazard area in the calculated flooding time. The nozzles are made of brass and available with the inlet connections R1/2”, R3/4”, R1”, R1 1/4”, R1 1/2” and R2”.

Nozzles are available in three different series with different dispersal patterns. SFK 7614XXX and SFK 7616XXX with spray angle 360° with 16 discharge holes and 180° with 17 discharge holes. SFK 7615XXX with spray angle 180° with 8 discharge holes.

The nozzle selection depends on the hazard and location to be protected

360° – 16 Discharge holes, 2 rows

180° – 17 discharge holes, 3 rows

180° – 8 discharge holes, 2 rows

Pre-boed and preassembled discharge nozzles for FK-5-1-12 extinguishing agent

KEY FEATURES

- Available in 360° or 180° versions
- Solid brass
- Max working pressure 100 bar

3 VdS – approved components
4 Components part of VdS – approved system

Inlet connection (C) Rc 1/2”

Article number range	Orifice diameter range (DN)± 0,02 [mm]	Increasig stpes	Spray angel	Number of discharge holes	Lenght nozzle (L1) [mm]	Wrench size (HEX) [mm]
SFK 7616100 to SFK 7616103	1,60 – 1,90*	0,1 mm	360°	16	52	32
SFK 7616104 to SFK 7616107	1,60 – 1,90*	0,1 mm	180°	17	58	32
SFK 7614100 to SFK 7614130	2,00 – 3,50*	0.05 mm	360°	16	52	32
SFK 7614131 to SFK 7614159	2,00 – 3,40*	0.05 mm	180°	17	58	32
SFK 7615101 to SFK 7615142	2,90 – 4,95*	0.05 mm	180°	8	58	32

*) for variants with an orifice diameter smaller than, 3,00 mm a metal filter and safety clip are used.

Inlet connection (C) Rc 3/4”

Article number range	Orifice diameter range (DN)± 0,02 [mm]	Increasig stpes	Spray angel	Number of discharge holes	Lenght nozzle (L1) [mm]	Wrench size (HEX) [mm]
SFK 7616200 to SFK 7616213	2,00 – 3,30*	0,1 mm	360°	16	59	36
SFK 7616214 to SFK 7616228	1,90 – 3,30*	0,1 mm	180°	17	67	36
SFK 7614200 to SFK 7614225	3,40 – 4,65	0.05 mm	360°	16	50	36
SFK 7614226 to SFK 7614248	3,40 – 4,50	0.05 mm	180°	17	57	36
SFK 7615201 to SFK 7615233	4,95 – 6,55	0.05 mm	180°	8	57	36

*) for variants with an orifice diameter smaller than, 3,00 mm a metal filter and safety clip are used.

Inlet connection (C) Rc 1”

Article number range	Orifice diameter range (DN)± 0,02 [mm]	Increasig stpes	Spray angel	Number of discharge holes	Lenght nozzle (L1) [mm]	Wrench size (HEX) [mm]
SFK 7616300 to SFK 7616314	3,10 – 4,50	0,1 mm	360°	16	60	46
SFK 7616315 to SFK 7616329	3,10 – 4,50	0,1 mm	180°	17	68	46
SFK 7614300 to SFK 7614327	4,60 – 5,95	0.05 mm	360°	16	60	46
SFK 7614328 to SFK 7614351	4,60 – 5,75	0.05 mm	180°	17	68	46
SFK 7615301 to SFK 7615335	6,70 – 8,40	0.05 mm	180°	8	68	46

Inlet connection (C) Rc 1 1/4”

Article number range	Orifice diameter range (DN)± 0,02 [mm]	Increasig stpes	Spray angel	Number of discharge holes	Lenght nozzle (L1) [mm]	Wrench size (HEX) [mm]
SFK 7616400 to SFK 7616423	3,50 – 5,80	0,1 mm	360°	16	65	55
SFK 7616424 to SFK 7616449	3,30 – 5,80	0,1 mm	180°	17	73	55
SFK 7614400 to SFK 7614438	5,90 – 7,80	0.05 mm	360°	16	65	55
SFK 7614439 to SFK 7614473	5,90 – 7,60	0.05 mm	180°	17	73	55
SFK 7615401 to SFK 7615451	8,60 – 11,10	0.05 mm	180°	8	73	55

Inlet connection (C) Rc 1 1/2”

Article number range	Orifice diameter range (DN)± 0,02 [mm]	Increasig stpes	Spray angel	Number of discharge holes	Lenght nozzle (L1) [mm]	Wrench size (HEX) [mm]
SFK 7616500 to SFK 7616531	4,60 – 7,70	0,1 mm	360°	16	75	60
SFK 7616532 to SFK 7616565	4,40 – 7,70	0,1 mm	180°	17	80	60
SFK 7614500 to SFK 7614527	7,75 – 9,10	0.05 mm	360°	16	75	60
SFK 7614528 to SFK 7614550	7,75 – 8,85	0.05 mm	180°	17	80	60
SFK 7615501 to SFK 7615533	11,30 – 12,90	0.05 mm	180°	8	80	60

Inlet connection (C) Rc 2”

Article number range	Orifice diameter range (DN)± 0,02 [mm]	Increasig stpes	Spray angel	Number of discharge holes	Lenght nozzle (L1) [mm]	Wrench size (HEX) [mm]
SFK 7616600 to SFK 7616631	5,90 – 9,00	0,1 mm	360°	16	80	75
SFK 7616632 to SFK 7616665	5,70 – 9,00	0,1 mm	180°	17	87	75
SFK 7614600 to SFK 7614645	9,05 – 11,30	0.05 mm	360°	16	80	75
SFK 7614646 to SFK 7614491	9,05 – 11,30	0.05 mm	180°	17	87	75
SFK 7615601 to SFK 7615666	13,20 – 16,45	0.05 mm	180°	8	87	75

Conformity	VdS-G319009

MANIFOLDS

Manifolds are used to connect several agent cylinders and form a cylinder battery with SFK 4000220 series valves.

It should be manufacture from galvanised seamless steel pipes of diameter and quality found as a result of VdS hydraulic calculation. There should be welded connection ports on the main line for the check valves to be connected to the manifold inlets.

Connection ports must be the same diameter as the check valve outlet connection. The end of the manifold must be closed by welding by end plug. The manifold outlet is connect to the discharge piping network.

Article number	nominal diameter	inlet connection	connection quantity	lenght [mm]	working pressure	used for agent containers
SFK 6023562	2″	2 1/2″	2 port	790	60 bar	120 lt. or 140 lt. cylinders
SFK 6023563	2″	2 1/2″	3 port	1200	60 bar	120 lt. or 140 lt. cylinders
SFK 6024062	2″	2 1/2"	2 port	840	60 bar	180 lt. cylinders
SFK 6033562	3″	2 1/2″	2 port	790	60 bar	140 lt. cylinders
SFK 6033563	3″	2 1/2″	3 port	1200	60 bar	140 lt. cylinders
SFK 6033564	3″	2 1/2″	4 port	1610	60 bar	140 lt. cylinders
SFK 6034062	3″	2 1/2″	2 port	840	60 bar	180 lt. cylinders
SFK 6034063	3″	2 1/2″	3 port	1300	60 bar	180 lt. cylinders
SFK 6034064	3″	2 1/2″	4 port	1760	60 bar	180 lt. cylinders

MANIFOLD MOUNTING RAIL

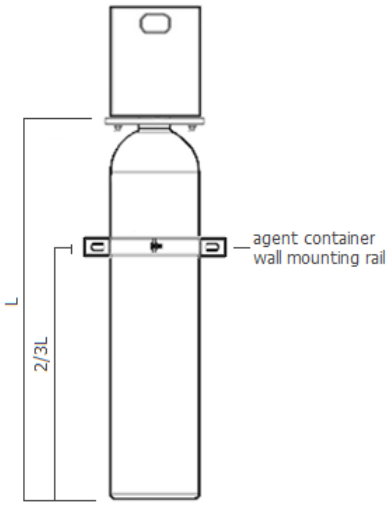
Galvanized steel wall mounting rails and clamps are used to mount the manifold.

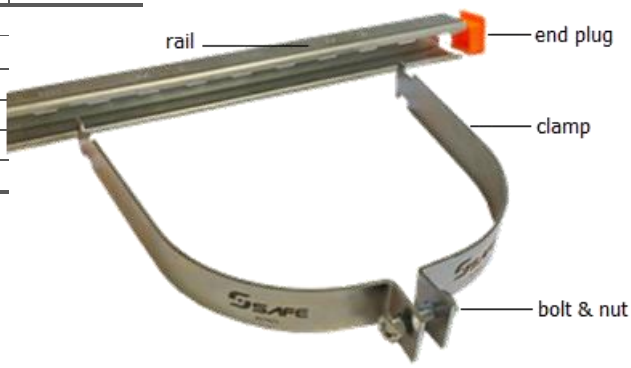
Part	Article number	Lenght	used for agent containers
Manifold mounthing rail	SFK 6093561	300 mm	1 row 120 lt. or 140 lt. cylinders
Manifold mounthing rail	SFK 6094061	350 mm	1 row 180 lt. cylinders
Manifold mounthing rail	SFK 6093562	700 mm	2 rows 120 lt. or 140 lt. cylinders
Manifold mounthing rail	SFK 6094062	750 mm	2 rows 180 lt. cylinders
Manifold mounthing rail	SFK 6093563	1100 mm	3 rows 120 lt. or 140 lt. cylinders
Manifold mounthing rail	SFK 6094063	1250 mm	3 rows 180 lt. cylinders
Clamp for manifold	SFK 6099002	2″	
Clamp for manifold	SFK 6099003	3″	
End plug	SFK 1290001		

AGENT CONTAINER MOUNTING RAILS

Galvanized steel wall mounting rails and clamps are used to mount the agent containers in a vertical position to the wall. The agent container wall mounting rail is available for 1 to 4 agent containers.

Part	Article number	Agent containers		
		Diameter [mm]	Quantity	Lenght [mm]
Agent container wall mounthing rails	SFK 1216501	165	1	320
	SFK 1222901	229	1	380
	SFK 1226701	267	1	420
	SFK 1235001	348	1	500
	SFK 1236001	356	1	510
	SFK 1236002	356	2	920
	SFK 1236003	356	3	1330
	SFK 1236004	356	4	1740
	SFK 1240001	406	1	560
	SFK 1240002	406	2	1020
	SFK 1240003	406	3	1480
	SFK 1240004	406	4	1940
2 X Clamp for wall mounthing rails	SFK 1416501	165	1	
	SFK 1422901	229	1	
	SFK 1426701	267	1	
	SFK 1435001	348	1	
	SFK 1436001	356	1	
	SFK 1440001	406	1	
End plug	SFK 1290001			
Bolt M10 x 30	SFK 1290021			
Nut M10 x 30	SFK 1290045			





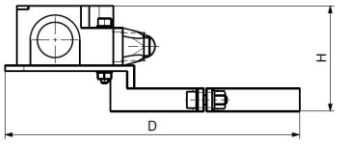
MONITORING SWITCH

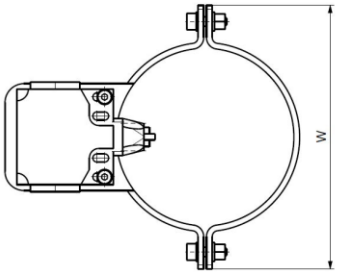
The monitoring switch (for electromagnetic release device) monitors if the electromagnetic release device is properly in place to actuate the system. It is connected to the control box.

Mandatory according to NFPA 2001 Standard on Clean Agent Extinguishing Systems – 2015 Edition

KEY FEATURES
- Compact design: remains in the cylinder diameter
- Easy installation: simply clamps around the valve base
- Retrpfit of existing installation possible

Articel number	SFK 4001031	SFK 4001032
Description	Mounted on SFK 4000210 series valves	Mounted on SFK 4000220 series valves





PRESSURE & FLOW DETECTOR SWITCH

The pressure and flow detector switch is connected to the manifold and to a power supply. It is used to send a signal that the SAFE5112 System is discharging. It reacts in the earliest stage of a discharge at 2 bar pressure and energizes or de-energizes electrically operated equipment e.g. an alarm box or control panel.

After a discharge the pressure and flow detector switch must be reset manually.

Used to send a signal that the system is discharging.

Pressure Activated.

KEY FEATURES
- Sends a signal to control panel or alarm box at the earliest phase of discharge
- Acuated at 2 bar pressure
- Flexible Voltage/Amp power source

CE

Article number	SFK 4002521
Opening pressure	2 bar
Operating pressure	200 bar
Test pressure	300 bar
Inlet connection (C)	G1/2”
Operating temperature	-10 °C to 85 °C
Dimensions	191 x 105 x 47 mm
Voltage (Volt)	400 V AC / 3 A or 24 V DC / 10 A
Protection class	IP65

AGENT CONTAINER LABEL

VdS-approved cylinder labels
For 27L to 180L cylinders

A mandatory part of a complete VdS-approved system.

Not included with empty cylinder / valve assemblies.

Labels only valid for cylinders VdS approved systems.

Article number	SFK 1100621
Dimensions	235 x 175 mm

DANGER AND WARNING SIGNS

Article number	SFK 1100626	SFK 1100629	SFK 1100627	SFK 1100628

NOTES :

NOTES :

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