

VdS

**SAFE5112**  
**Fire Suppression System**  
**for utilizing FK-5-1-12**  
**42 bar systems**  
**50 bar systems**



## ABOUT VdS

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

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



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SAFE5112 System components are approved and certified compliant With recognized international norms. Certification relate to invidual Products 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.

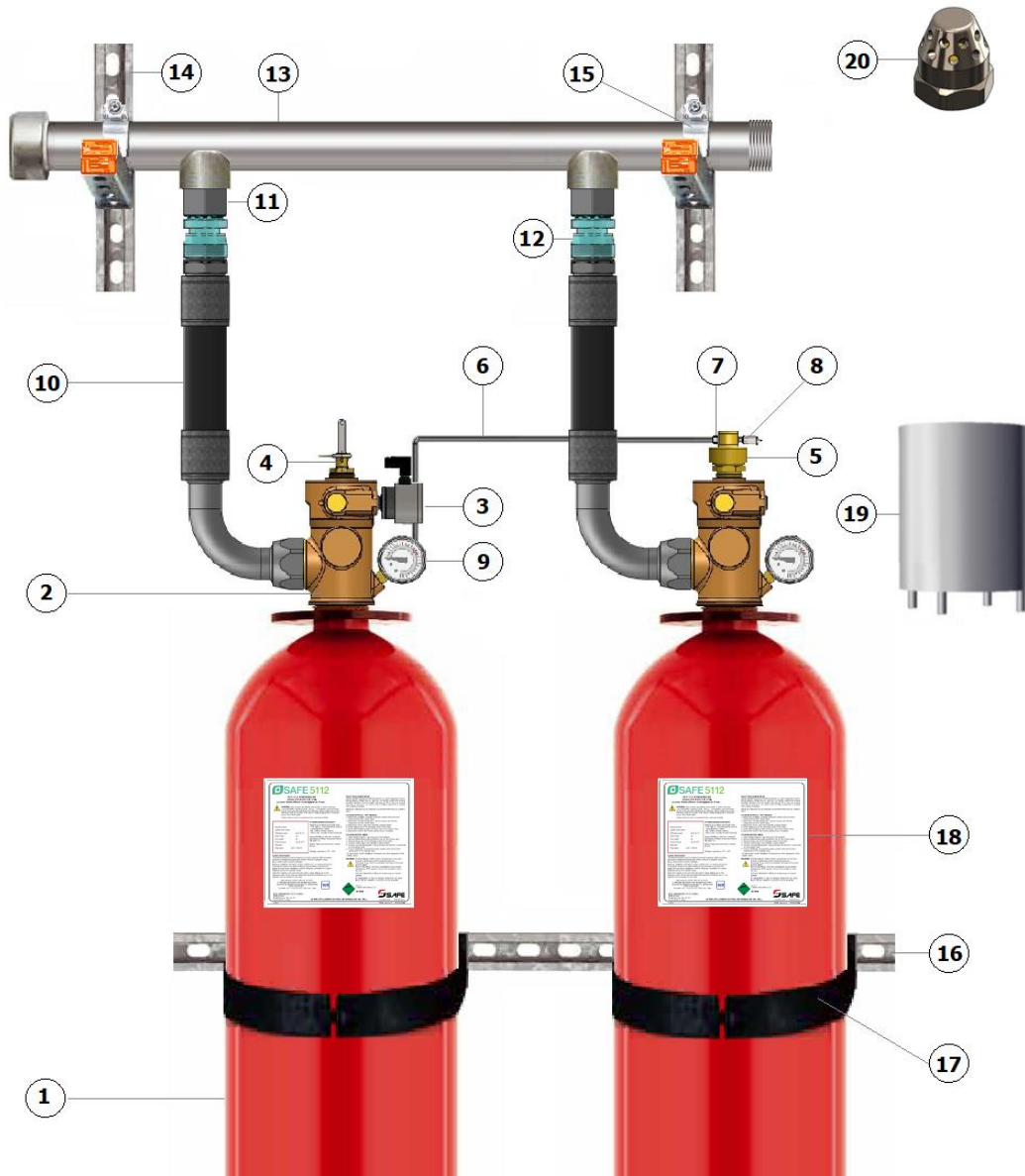
SAFE, has done the compatibility, performance testing and certification work for you. The system is ready to configure and requires less space to protect high-value assets in areas difficult to Access. **Safe, effective and VdS-Certified.**

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



- Components entirely compatible and interchangeable
- Easier and faster installation – 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.

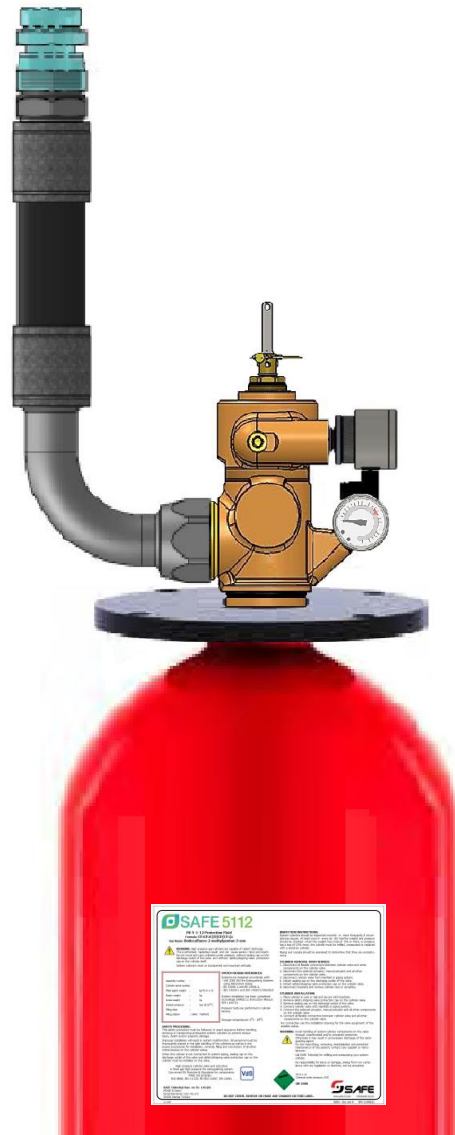


Legent			
1	Agent container (pressure cylinder)	11	Check valve
2	System valve	12	Adapter for discharge hose
3	Electromagnetic actuator	13	Manifold
4	Manual/pneumatic actuator	14	Manifold mounting rail
5	Pneumatic actuator	15	Clamp for manifold
6	Pilot hose	16	Agent container wall mounthing rails
7	Adapter for pilot hose	17	Clamp for wall mounthing rails
8	Bleed valve	18	Agent container name plate
9	Pressure gauge	19	Safety/shipping valve protection cap
10	Discharge hose	20	Nozzle

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			Valve with integrated electromagnetic actuator	Outlet connection (A)
			size [liter]	height [mm]	diameter [mm]		
SFK 3001442	SFK 0101416	42	14	950	165	•	W21.8 x 1/14"
SFK 3002742	SFK 0102722	42	27	945	229	•	W21.8 x 1/14"
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 3302742	SFK 0102723	42	27	1010	229	---	1 7/8" – 12 UN
SFK 3303042	SFK 0103027	42	30	910	267	---	1 7/8" – 12 UN
SFK 3305042	SFK 0105023	42	50	1635	229	---	1 7/8" – 12 UN
SFK 3305142	SFK 0105027	42	50	1250	267	---	1 7/8" – 12 UN
SFK 3307542	SFK 0107527	42	75	1725	267	---	1 7/8" – 12 UN
SFK 3308042	SFK 0108027	42	80	1885	267	---	1 7/8" – 12 UN
SFK 3312042	SFK 0112035	42	120	1650	356	---	1 7/8" – 12 UN
SFK 3312142	SFK 0112033	42	120	1680	348	---	1 7/8" – 12 UN
SFK 3412042	SFK 0112036	42	120	1705	356	---	2 1/2" – 12 UNJ
SFK 3412142	SFK 0112034	42	120	1730	348	---	2 1/2" – 12 UNJ
SFK 3414042	SFK 0114036	42	140	1915	356	---	2 1/2" – 12 UNJ
SFK 3414142	SFK 0114034	42	140	1945	348	---	2 1/2" – 12 UNJ
SFK 3418042	SFK 0118040	42	180	1860	406	---	2 1/2" – 12 UNJ
SFK 3418142	SFK 0118039	42	180	1975	390	---	2 1/2" – 12 UNJ

### A COMPLETE

### CYLINDER/VALVE ASSEMBLY

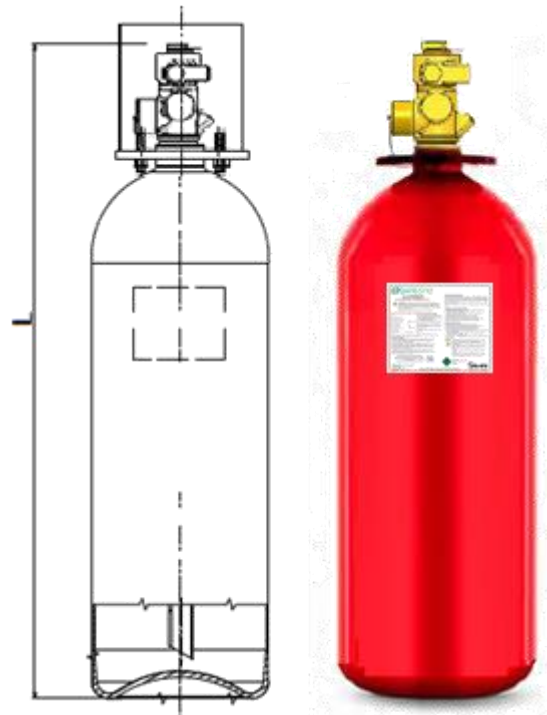
- 14L to 180L cylinder for 42 bar working pressure
- 4000210 or 4000220 valves
- steel valve protection cap included acc. ISO 11117

### KEY FEATURES

- Improves productivity: 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			Valve with integrated electromagnetic actuator	Outlet connection (A)
			size [liter]	height [mm]	diameter [mm]		
SFK 3001450	SFK 0101416	50	14	950	165	•	W21.8 x 1/14"
SFK 3002750	SFK 0102722	50	27	945	229	•	W21.8 x 1/14"
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 3702750	SFK 0102723	50	27	1010	229	---	1 7/8" – 12 UN
SFK 3703050	SFK 0103027	50	30	910	267	---	1 7/8" – 12 UN
SFK 3705050	SFK 0105023	50	50	1635	229	---	1 7/8" – 12 UN
SFK 3705150	SFK 0105027	50	50	1250	267	---	1 7/8" – 12 UN
SFK 3707550	SFK 0107527	50	75	1725	267	---	1 7/8" – 12 UN
SFK 3708050	SFK 0108027	50	80	1885	267	---	1 7/8" – 12 UN
SFK 3712050	SFK 0112035	50	120	1650	356	---	1 7/8" – 12 UN
SFK 3712150	SFK 0112033	50	120	1680	348	---	1 7/8" – 12 UN
SFK 3912050	SFK 0112036	50	120	1705	356	---	2 1/2" – 12 UNJ
SFK 3912150	SFK 0112034	50	120	1730	348	---	2 1/2" – 12 UNJ
SFK 3914050	SFK 0114036	50	140	1915	356	---	2 1/2" – 12 UNJ
SFK 3914150	SFK 0114034	50	140	1945	348	---	2 1/2" – 12 UNJ
SFK 3918050	SFK 0118040	50	180	1860	406	---	2 1/2" – 12 UNJ
SFK 3918150	SFK 0118039	50	180	1975	390	---	2 1/2" – 12 UNJ

### A COMPLETE

### CYLINDER/VALVE ASSEMBLY

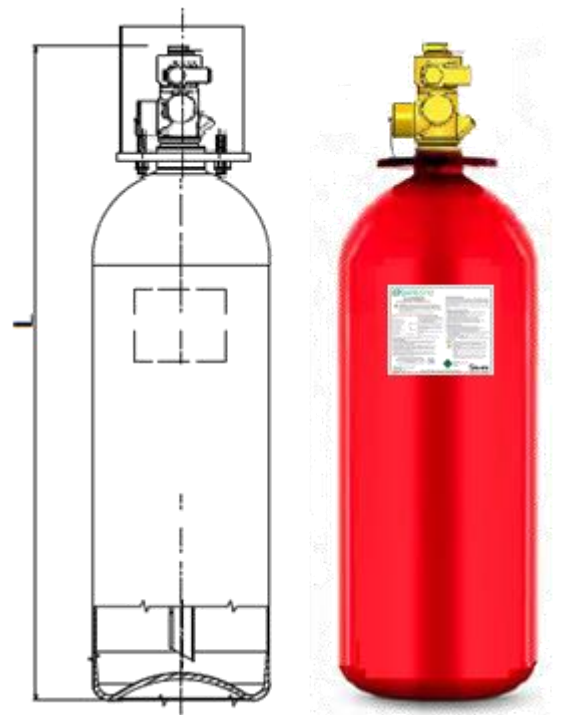
- 14L to 180L cylinder for 50 bar working pressure
- 4000210 or 40002220 valves
- steel valve protection cap included acc. ISO 11117

### KEY FEATURES

- Improves productivity: 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 <sub>6</sub> F <sub>12</sub> O)
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 <sup>3</sup> lbm)
Critical density	: 639,1 kg/m <sup>3</sup> (39,91 lbm/ft <sup>3</sup> )
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, CO<sub>2</sub>, and inert gas mixtures.

Extinguishing agent	FK-5-1-12	HFC-125	HFC-227ea	Inert Gas	CO <sub>2</sub>
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		Cylinder/valve empty weight [kg]
			min.fill qty. [kg]	max.fill qty. [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 4000204 valve

Article number	SFK 0101416	SFK 0102722
Water volume (L)	14	27
Height (mm)	865	860
Valve series	SFK 4000204	SFK 4000204
External diameter (mm)	165	229
Hydraulic test pressure	250 bar	300 bar
Valve connection thread	25E (W28,8x1"/14)	25E (W28,8x1"/14)
Conformity	2010/35/EU TPED	2010/35/EU TPED

### Agent containers for SFK 4000214 & SFK 4000219 valves

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 4000214 / 219	SFK 4000214 / 219	SFK 4000214 / 219	SFK 4000214 / 219
External diameter (mm)	229	229	267	356
Hydraulic test pressure	300 bar	300 bar	250 bar	300 bar
Valve connection 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 4000214 / 219	SFK 4000214 / 219	SFK 4000214 / 219	SFK 4000214 / 219
External diameter (mm)	267	267	267	348
Hydraulic test pressure	250 bar	250 bar	250 bar	250 bar
Valve connection 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 4000224 and SFK 4000229 valves

Article number	SFK 0112036	SFK 0114036	SFK 0118040
Water volume (L)	120	140	180
Height (mm)	1505	1715	1660
Valve series	SFK 4000224 / 229	SFK 4000224 / 229	SFK 4000224 / 229
External diameter (mm)	356	356	406
Hydraulic test pressure	300 bar	300 bar	150 bar
Valve connection 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	SFK 4000224 / 229	SFK 4000224 / 229	SFK 4000224 / 229
External diameter (mm)	348	348	390
Hydraulic test pressure	250 bar	250 bar	250 bar
Valve connection thread	3"-12UN-2B	3"-12UN-2B	3"-12UN-2B
Conformity	2010/35/EU TPED	2010/35/EU TPED	2010/35/EU TPED

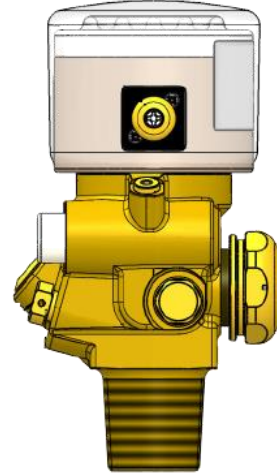
## SAFE5112 SYSTEM VALVES

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

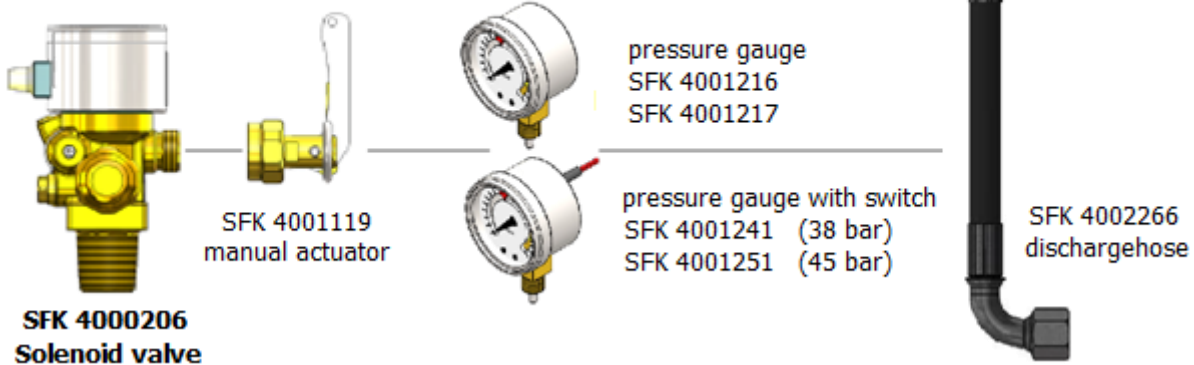
### SFK 4000206 pilot valve with solenoid actuator

SFK 4000206 pilot valve with solenoid actuator used for only SAFE5112 System 14L and 27L agent containers.

Article number	SFK 4000206
Inlet connection	W28.8 x 1/14" - 25E
Outlet connection	W21.8 x 1/14"
Burst disk	90 bar
Pressure gauge port	M12 x 1 mm
Deep Tube connection	M16 x 1 mm
Voltag.	24 VDC
max. current	0.4 A
Power consumption	9.3W
Material	Brass
Conformity	PED & TPED



CE Π



### SFK 4000204 system valve

SFK 4000204 valve used for only SAFE5112 14L and 27L agent containers.

Article number	SFK 4000204
Inlet connection	W28.8 x 1/14" - 25E
Outlet connection	W21.8 x 1/14"
Burst disk	90 bar
Pressure gauge port	M12 x 1 mm
Deep Tube connection	M16 x 1 mm
Material	Brass
Conformity	VdS-G314002

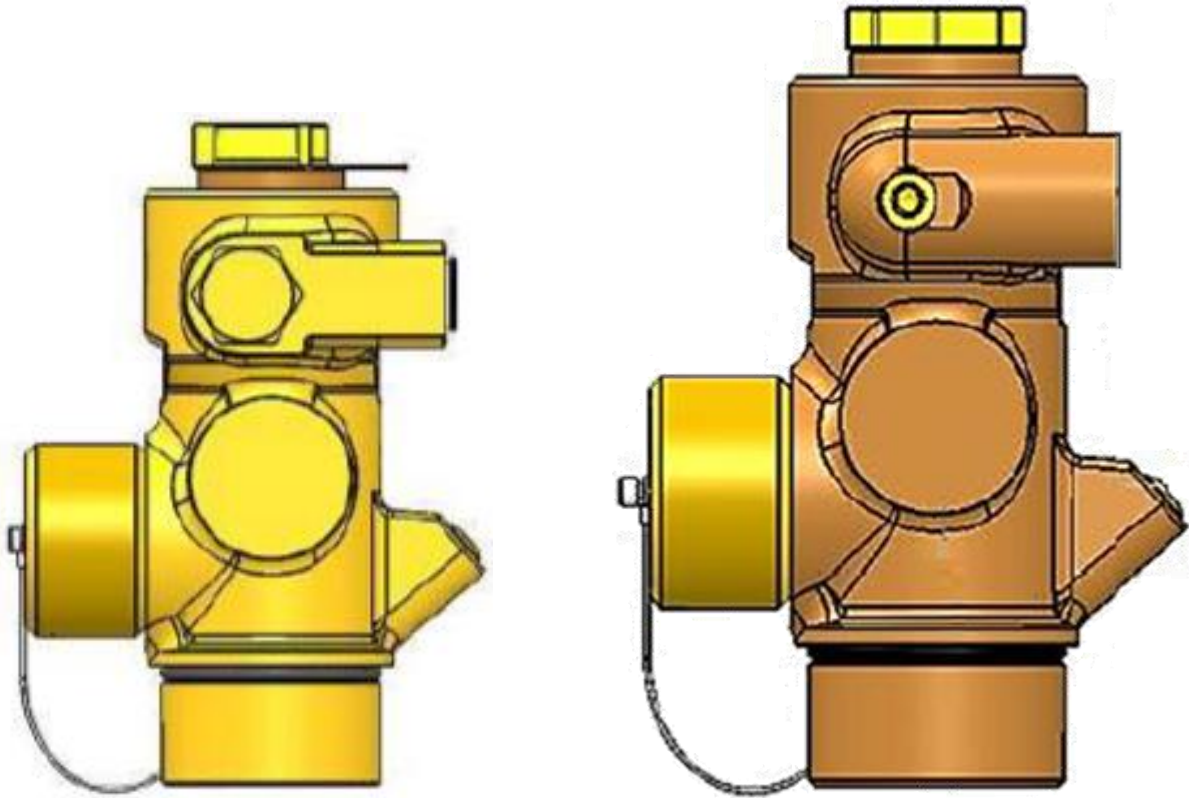


CE Π



## SFK 4000210 and SFK 4000220 series system valves

There are 2 sizes available for the SAFE5112 System:  
 1,5" (33 mm) for the SFK 4000214 and SFK 4000219 valves  
 2" (50 mm) for the SFK 4000224 and SFK 4000229 valves.

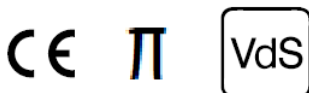


*SFK 4000214 Valve for 42 Bar Systems  
 SFK 4000219 Valve for 50 Bar Systems*

*SFK 4000224 Valve for 42 Bar Systems  
 SFK 4000229 Valve for 50 Bar Systems*

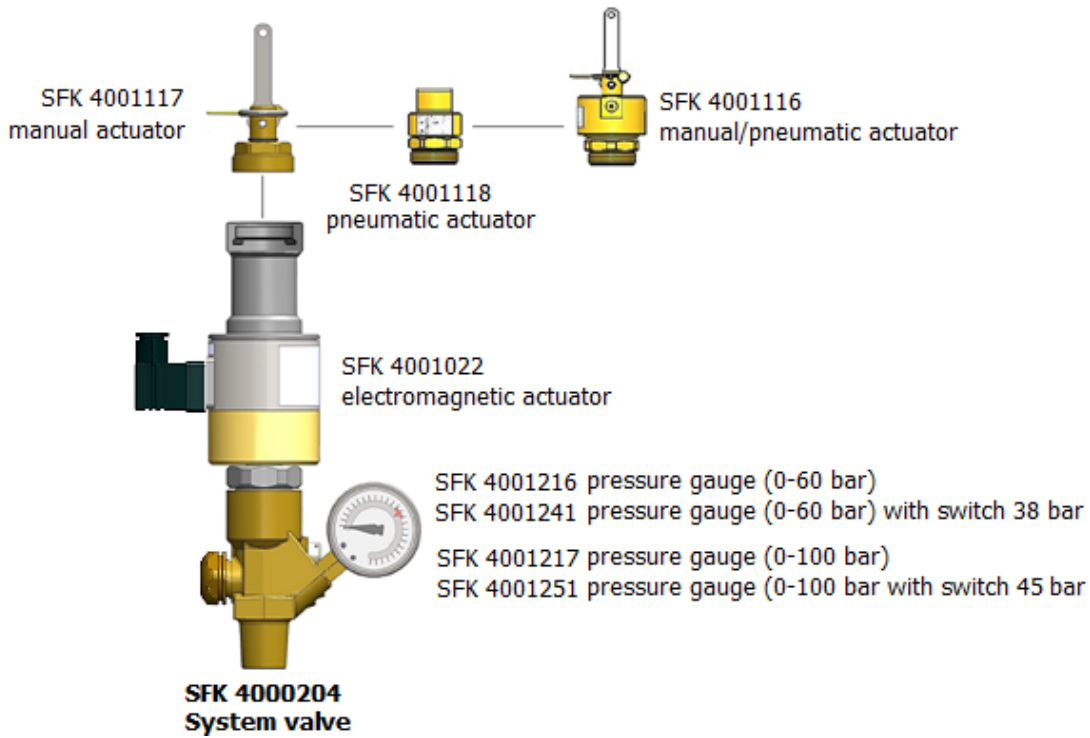
Articel number	Working pressure at +21°C (pw)	Inlet connection (C)	Outlet connection (A)	Dip tube thread (G)	Integrated electromagnetic actuator	Burst disc
SFK 4000214	42 bar	2 1/2" – 12 UN	1 7/8" – 12 UN	1 1/2" – 16 UN	---	60 bar
SFK 4000219	50 bar	2 1/2" – 12 UN	1 7/8" – 12 UN	1 1/2" – 16 UN	---	95 bar
SFK 4000224	42 bar	3" – 12 UN	2 1/2" 12 UNJ	2 1/8" – 16 UN	---	60 bar
SFK 4000229	50 bar	3" – 12 UN	2 1/2" 12 UNJ	2 1/8" – 16 UN	---	95 bar
Conformity	VdS-G317001					

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

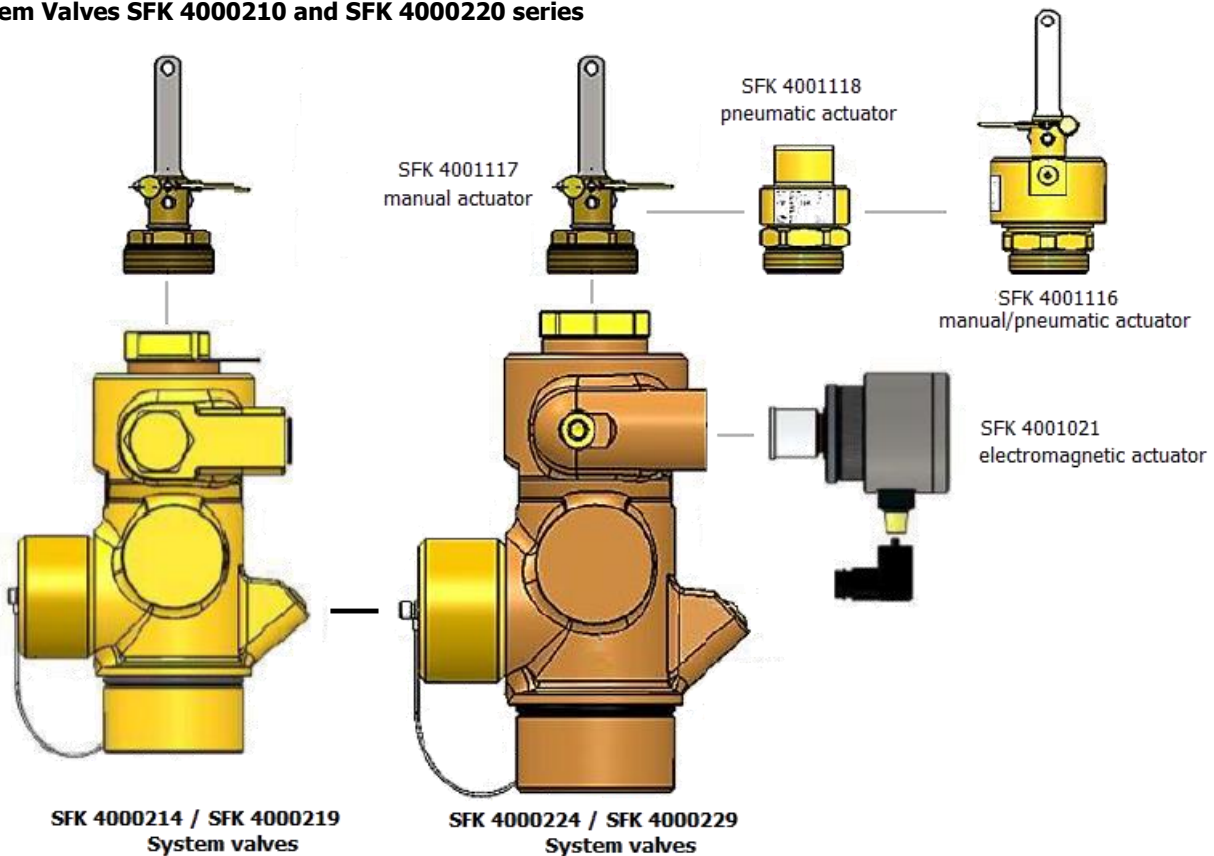


## RELEASE DEVICES

### SFK 4000204 valve



### System Valves SFK 4000210 and SFK 4000220 series



## ELECTROMAGNETIC RELEASE DEVICE

**Device to electrically actuate the release of extinguishing agent.**

**SFK 4001022 for use with SFK 4000204 valve**

**SFK 4001021 for use with SFK 4000210 series and SFK 4000220 series valves.**

### KEY FEATURES

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

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



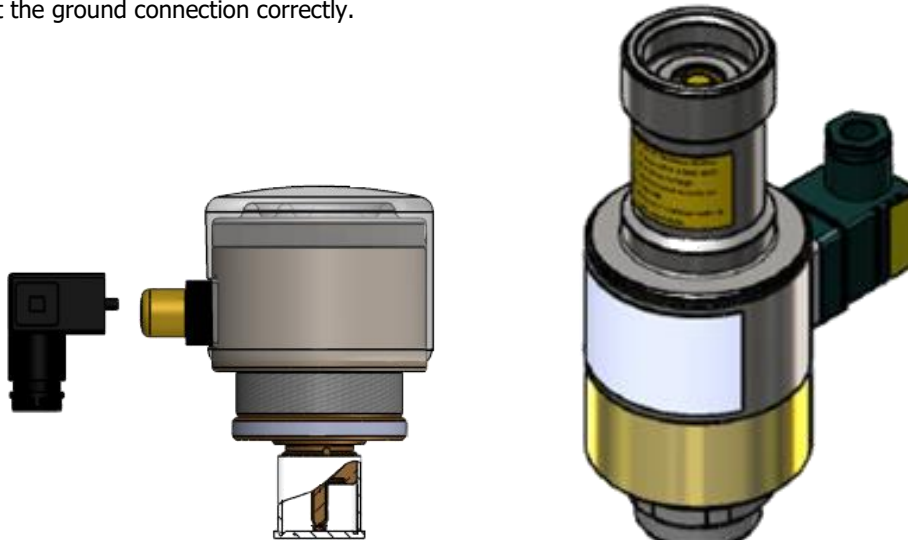
The electromagnetic release device is used to actuate the SAFE5112 System electrically. It is mounted on top of the master valve and is operated by an electrical signal from a fire detection system. In order to actuate the electromagnetic release device a constant DC voltage of 24 V is required.

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

The duration of electrical impulse to actuate must be >5 seconds.

The coil itself has no protective circuit, if necessary this has to be implemented by user with the pilot wiring.

Interchanging polarity of the contacts (+) and (-) does not lead to malfunction of these device or extinguishing system, but ensure to connect the ground connection correctly.



SFK 4001021 use for SFK 4000210 & SFK 4000220 series valves

SFK 4001022 use for only SFK 4000204 valve

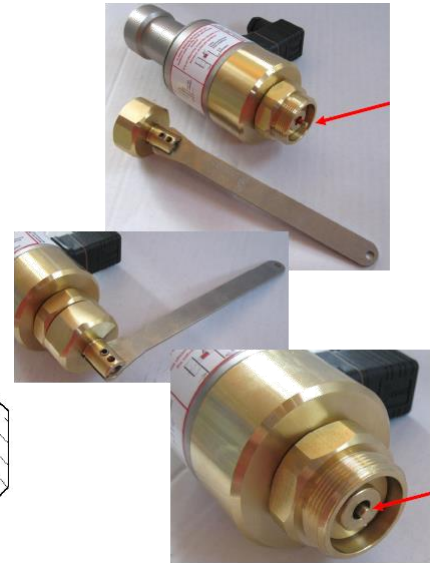
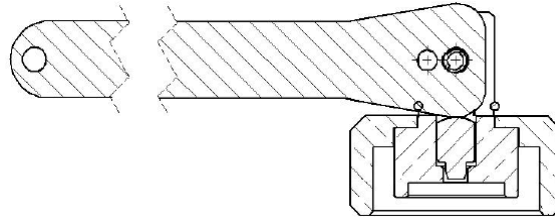
Article number	SFK 4001021	SFK 4001022
Valve series	SFK 4000210 & SFK 4000220	SFK 4000204
Inlet connection	M20 x 1,5	M36 x 1,5
Nominal voltage	24 VDC ± 10 %	24 VDC ± 10 %
Nominal current	0,4 A	0,5 A ± 10 %
Torque moment	25Nm ± 2	25Nm ± 2
Protection class	IP65	IP65
Ambient temperature	-20 +55 °C	-20 +55 °C
Material	Brass and stainless steel	Brass and stainless steel
Conformity	VdS-G317001	VdS-G314002

## 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**

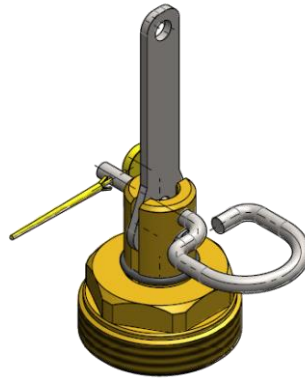
Article number	SFK 4001096
Connection	M36 x 1,5
Material	Brass



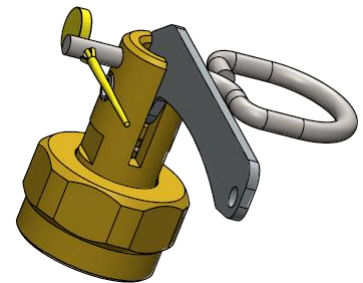
## MANUAL RELEASE DEVICE

The manual release device allows manual actuation of pilot cylinder SAFE5112 System components. This release device is used for manual actuation, which are connected to the pilot agent container.

Manual actuation is accomplished by pulling the hand lever on the manual release device. In the closed position the manual 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.



SFK 4001117 use for  
SFK 4000204  
SFK 4000210 & SFK 4000220  
series valves



SFK 4001119 use for only  
SFK 4000206 valve

Article number	SFK 4001117	SFK 4001119
Inlet connection	M36 x 1,5	M20 x 1,5
Maximum working pressure	300 bar	300 bar
Torque moment	25Nm ± 2	15Nm ± 1
Ambient temperature	-20 +55 °C	-20 +55 °C
Material	Brass	Brass
Conformity	VdS-G317001	

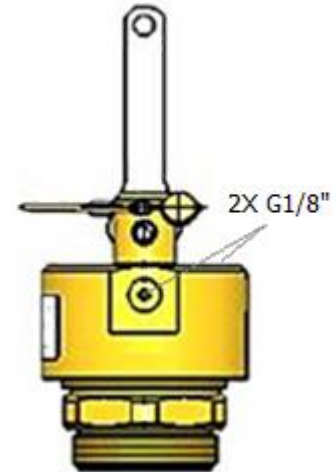


## MANUAL/PNEUMATIC RELEASE DEVICE

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.

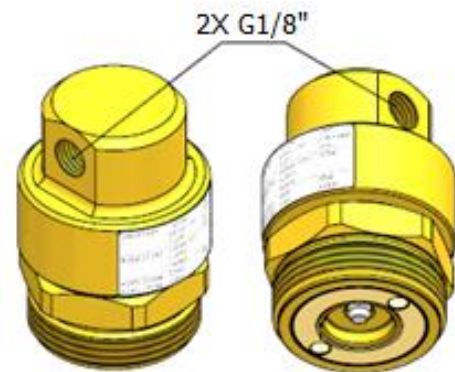
Article number	SFK 4001116
Inlet connection	M36 x 1,5
Maximum working pressure	300 bar
Torque moment	25Nm ± 2
Protection class	IP65
Ambient temperature	-20 +55 °C
Material	Brass
Conformity	VdS-G317001



## 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 4001118
Inlet connection	M36 x 1,5
Maximum working pressure	300 bar
Actuation pressure	6 bar
Torque moment	25Nm ± 2
Protection class	IP65
Ambient temperature	-20 +55 °C
Material	Body: brass
Conformity	VdS-G317001



## 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 4002115	SFK 4002117	SFK 4002119
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	30 mm	30 mm	30 mm
Nominal diameter	DN5	DN5	DN5
Working pressure	360 bar	360 bar	360 bar
Standard	EN 857 2 SC		
Conformity	VdS-G316009		





## 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



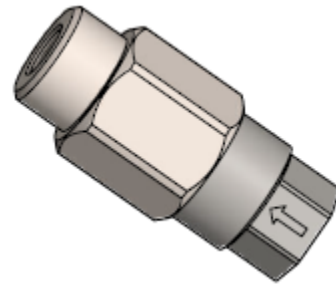
Each hose requires 2 adapters.  
Must be ordered separately.

## NON-RETURN VALVE FOR PILOT HOSE

Non-return valves allow flow in the direction of flow and prevent it in the opposite direction.

For this purpose the component gets assembled, in accordance with the correct flow direction, in the pilot hose line.

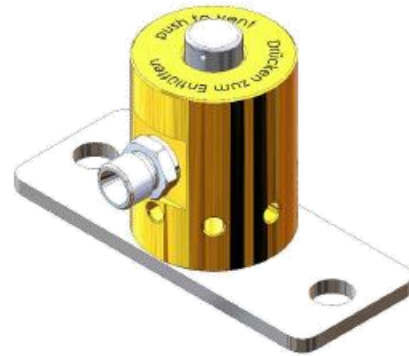
Article number	SFK 4002138
Body	Stainless steel; elastomer
Thread (inlet – outlet)	G1/8"
Operating pressure	360 bar
Temperature range	-20 °C up to +50 °C
Installation position	any
Conformity	VdS-G318002



## VENT VALVE FOR PILOT HOSE

Vent valves are used in fixed installed SAFE5112 System for venting pilot line.

Article number	SFK 4002137
Operating pressure	360 bar
Temperature range	-20 °C up to +65 °C
Connections	1 x straight fitting M12 x 1.5 – G1/8" 24° seal cone
Vent holes	∅5mm 8 x 45°
Type of actuation	Manual actuation
Materials	Brass
Conformity	VdS-Test Report



## 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 4002136
Closing pressure	0,4 bar
Inlet connection	G1/8"
Flow @ p=0.6 bar	6 liters/min
Material	Brass
Conformity	VdS-Test Report



Mounts on all pneumatic release devices

1 Compliant with the Construction Products Regulation (CPR) V3 Oct.2014

2 VdS – approved components

4 Components part of VdS – approved system

## 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 parts of the valve.

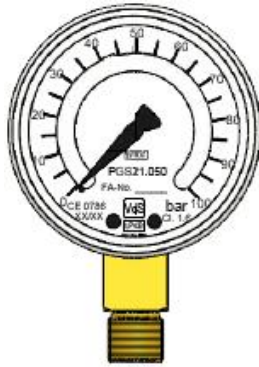
The pressure gauges SFK 4001241 and SFK 4001251 are equipped with an integrated pressure switch to supervise the loss of pressure in the agent container.

**Measures and displays the cylinder pressure to verify that cylinders are properly filled and charged.**

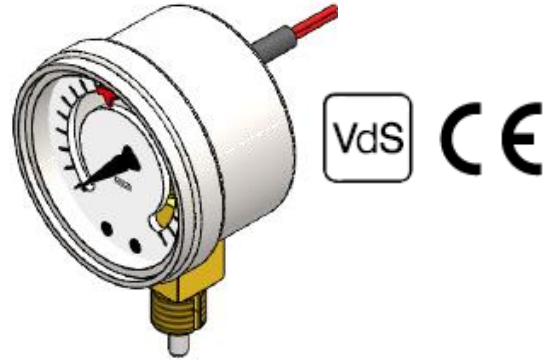
**for FK-5-1-12**

**Rear mounting for use with SFK 4000204 & SFK 4000206 SFK 4000210 series SFK 4000220 series valves**

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



Pressure gauge



Pressure gauge with switch

Article number	SFK 4001216	SFK 4001217	SFK 4001241	SFK 4001251
Pressure scale	42 bar	42 bar / 50 bar	42 bar	50 bar
Scale	0 – 60 bar	0 – 100 bar	0 – 100 bar	0 – 100 bar
Inlet connection	M12 x 1	M12 x 1	M12 x 1	M12 x 1
Pressure switch	No	No	Yes	Yes
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-G309005	VdS-G309005

## 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 4000204 valve  
for 14L to 27L cylinders

for SFK 4000210 valves  
for 27L to 120L cylinders

for SFK 4000220 valves  
for 120L to 180L cylinders



SFK 4002266  
discharge hose



SFK 4002247  
discharge hose



SFK 4002257  
discharge hose

Article number	SFK 4002266	SFK 4002247	SFK 4002257
Valve series	for SFK 4000204 valves	for SFK 4000210 valves	for SFK 4000220 valves
Lenght	250 mm	400 mm	400 mm
Bending Radius	min. 90 mm	min. 500 mm	min. 630 mm
Valve connection	W21.8 x 1/14" - 90°	1 7/8" - 12UN	2 1/2" - 12UN
Outlet connection	G3/4"	R 1 1/2"	R 2"
Nominal diameter	DN12	DN33	DN50
Working pressure	360 bar	70 bar	70 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	Syntetic rubber oil resistant		
Conformity	VdS-G316010	VdS-G316012	VdS-G316012

### Discharge hose adapters (OPTIONAL)

Screw connection with connection nut  
Type: female /connection nut / male

#### Discharge hose adapter G1 1/2"

Article SFK 4002296

#### Discharge hose adapter G2"

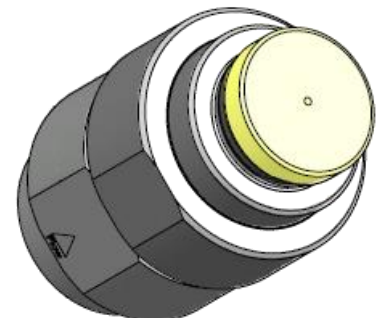
Article SFK 4002297



## 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.

Article number	SFK 4002335	SFK 4002355
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"
Working pressure	70 bar	70 bar
Conformity	VdS-G317009	



## 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	length [mm]	working pressure	used for agent containers
SFK 6023572	2"	2"	2 port	790	60 bar	120 lt. or 140 lt. cylinders
SFK 6023573	2"	2"	3 port	1200	60 bar	120 lt. or 140 lt. cylinders
SFK 6024072	2"	2"	2 port	840	60 bar	180 lt. cylinders
SFK 6033572	3"	2"	2 port	790	60 bar	140 lt. cylinders
SFK 6033573	3"	2"	3 port	1200	60 bar	140 lt. cylinders
SFK 6033574	3"	2"	4 port	1610	60 bar	140 lt. cylinders
SFK 6034072	3"	2"	2 port	840	60 bar	180 lt. cylinders
SFK 6034073	3"	2"	3 port	1300	60 bar	180 lt. cylinders
SFK 6034074	3"	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.

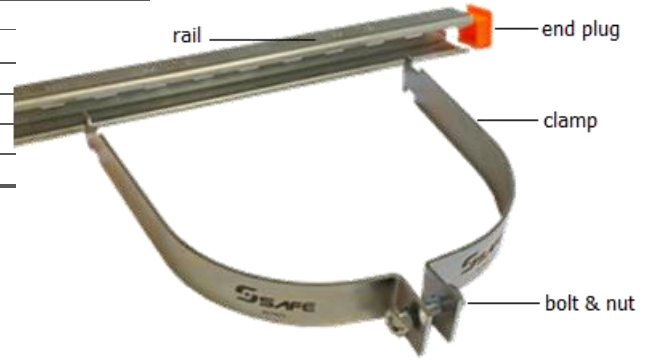
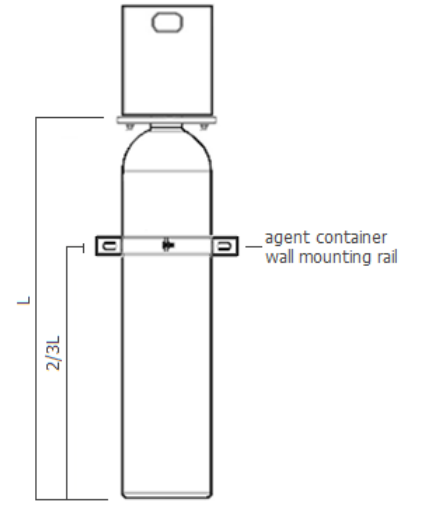
Part	Article number	Length	used for agent containers
Manifold mounting rail	SFK 6093561	300 mm	1 row 120 lt. or 140 lt. cylinders
Manifold mounting rail	SFK 6094061	350 mm	1 row 180 lt. cylinders
Manifold mounting rail	SFK 6093562	700 mm	2 rows 120 lt. or 140 lt. cylinders
Manifold mounting rail	SFK 6094062	750 mm	2 rows 180 lt. cylinders
Manifold mounting rail	SFK 6093563	1100 mm	3 rows 120 lt. or 140 lt. cylinders
Manifold mounting 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		Lenght [mm]
		Diameter [mm]	Quantity	
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			



## NOZZELS FOR SAFE5112 SYSTEM

The 180 and 360 degree range of discharge nozzles are designed to provide the required flow rate and distribution of FK-5-1-12 for total flooding of hazard areas. The 180° nozzle is engineered to provide a 180° discharge pattern for sidewall applications. The 360° nozzle offers a full 360° discharge pattern for installations where nozzles may be located in the centre of the hazard. The nozzle diameters should be dimensioned in accordance with the specifications of the VdS component approvals even when the system is not intended to be a VdS system.

The nozzles are made of brass and available with the inlet connections R3/8", R1/2", R3/4", R1", R1 1/4", R1 1/2" and R2".

Nozzles are available in two different variants with different dispersal patterns. SFK 77360XXX with spray angle 360° with fixed discharge holes. SFK 77180XXX with spray angle 180° with fixed discharge holes.

The range of available orifice diameter (min. – max.) is written in the table of variants. The required orifice diameter has to be determined by VdS calculation software.

**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



180° discharge nozzle



360° discharge nozzle

### 180° Sidewall nozzles

Article number range	Inlet connection (C)	Orifice diameter range [mm]	Spray angle	Number of discharge holes	Lenght nozzle (L1) [mm]	Wrench size (HEX) [mm]
SFK 7718010 – XX,X	G 3/8"	3,0 – 9,5	180°	5	29	24
SFK 7718015 – XX,X	G 1/2"	3,0 – 12,0	180°	5	36	30
SFK 7718020 – XX,X	G 3/4"	4,0 – 16,0	180°	9	46	38
SFK 7718025 – XX,X	G 1"	6,0 – 20,0	180°	9	55	45
SFK 7718032 – XX,X	G 1 1/4"	8,0 – 25,0	180°	9	64	50
SFK 7718040 – XX,X	G 1 1/2"	10,0 – 32,0	180°	14	77	60
SFK 7718050 – XX,X	G 2"	12,0 – 40,0	180°	14	94	80
Conformity	VdS- G317005					

### 360° Nozzles

Article number range	Inlet connection (C)	Orifice diameter range [mm]	Spray angle	Number of discharge holes	Lenght nozzle (L1) [mm]	Wrench size (HEX) [mm]
SFK 7736010 – XX,X	G 3/8"	3,0 – 9,5	360°	8	29	24
SFK 7736015 – XX,X	G 1/2"	3,0 – 12,0	360°	8	36	30
SFK 7736020 – XX,X	G 3/4"	4,0 – 16,0	360°	16	46	38
SFK 7736025 – XX,X	G 1"	6,0 – 20,0	360°	16	55	45
SFK 7736032 – XX,X	G 1 1/4"	8,0 – 25,0	360°	16	64	50
SFK 7736040 – XX,X	G 1 1/2"	10,0 – 32,0	360°	24	77	60
SFK 7736050 – XX,X	G 2"	12,0 – 40,0	360°	24	94	80
Conformity	VdS- G317005					

## MONITORING SWITCH

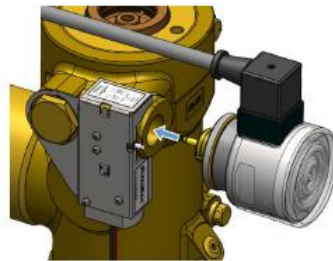
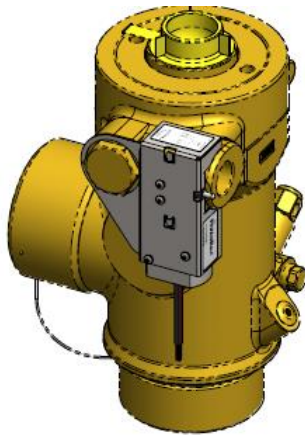
The monitoring switch (for electromagnetic release device) monitors if the electromagnetic release device is properly in place to actuate the system. It is connected to the control box.

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

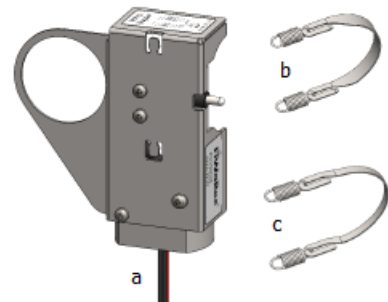
### KEY FEATURES

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

Articel number	SFK 4001041	SFK 4001042
Description	Mounted on SFK 4000210 series valves	Mounted on SFK 4000220 series valves



Switching type - NO  
Rating - max. 30VDC, 3A  
Protection class - IP65  
Wiring diagram:



- a. monitoring device
- b. mounting clamp for use with valve SFK 4000210
- c. mounting clamp for use with valve SFK 4000220

## 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 SAFE5512 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



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 14L to 180L cylinders**

**A mandatory  
part of a complete  
VdS-approved system.**

Article number	SFK 1100621
Dimensions	235 x 175 mm



Not included with  
empty cylinder / valve assemblies.



Labels only valid for cylinders  
VdS approved systems.

**FK-5-1-12 Protection Fluid**  
Formula:  $CF_3CF_2C(O)CF_2CF_3$   
Gas Name: **Dodecafluoro-2-methylpentan-3-one**

**WARNING:** High pressure gas cylinders are capable of violent discharge. This is extremely hazardous result and can cause severe injury and death. Do not move and carry cylinders under pressure, without sealing cap on the discharge outlet of the valve and without safety/shipping valve protection cap on the cylinder body.  
System cylinders must be transported and mounted vertically.

**SAFETY PROCEDURE:**  
The safety procedure must be followed, in exact sequence before handling, servicing or transporting pressurized system cylinders to prevent serious injury, death and/or property damage.  
Improper installation will result in system malfunction. All personnel must be thoroughly trained in the safe handling of the cylinders as well as in the proper procedures for installation, removal, filling and connection of all other critical devices on the cylinder valves.  
When the cylinder is not connected to system piping, sealing cap on the discharge outlet of the valve and safety/shipping valve protection cap on the cylinder must be installed on the valve.  
High pressure cylinder valve and actuators in fixed gas high pressure fire extinguishing system  
Concerned EU Directive & Standards for components  
TRED 2010/35/EU  
ISO 9809, ISO 11120, EN ISO 10297, EN 12094

**SYSTEM DESIGN REFERENCES:**  
Systems are designed accordingly with:  
- VdS 2381 EN Fire Extinguishing Systems using Halocarbon Gases, EN 15094-1 and EN 15094-2,  
- ISO 14520-1 and ISO 14520-5 Standard

**Assembly number :**  
**Cylinder serial number:**  
**Filled agent weight :** kg FK-5-1-12  
**Empty weight :** kg  
**Gross weight :** kg  
**System pressure :** bar @ 20°C  
**Filling date :**  
**Filling station :** SAFE-TURKIE

**SYSTEM DESIGN REFERENCES:**  
System installation has been completed according to SAFES112 Instruction Manual, SFK 1100721.  
Pressure tests are performed in cylinder factory.  
Storage temperature: 0°C - 54°C

**INSPECTION INSTRUCTIONS:**  
System cylinders should be inspected monthly or more frequently if circumstances require. At least once in every six (6) months weight and pressure should be checked, when the weight has a loss of 5% or more, or pressure has a loss of 10% more, the cylinder must be refilled, pressurized or replaced with a stand-by cylinder.  
Piping and nozzles should be examined to determine that they are unobstructed.

**CYLINDER REMOVAL FROM SERVICE:**  
1. Disconnect all flexible connectors between cylinder valve and other components on the cylinder valve.  
2. Disconnect the solenoid actuator, manual actuator and all other components on the cylinder valve.  
3. Disconnect cylinder valve from manifold or piping system.  
4. Attach sealing cap on the discharge outlet of the valve.  
5. Attach safety/shipping valve protection cap on the cylinder valve.  
6. Disconnect brackets and remove cylinder rack or rail safety.

**CYLINDER INSTALLATION:**  
1. Place cylinder in rack or rails and secure with brackets.  
2. Remove safety shipping valve protection cap on the cylinder valve.  
3. Remove sealing cap on the discharge outlet of the valve.  
4. Connect cylinder valve with manifold or piping system.  
5. Connect the solenoid actuator, manual actuator and all other components on the cylinder valve.  
6. Connect all flexible connectors between cylinder valve and all other components on the cylinder valve.  
For connection use the installation drawing for the valve equipment of the suitable valves.

**WARNING:** Avoid handling of system cylinder components on the valve through unauthorized and/or untrained personnel. Otherwise it may result in unnecessary discharge of the extinguishing agent.  
For the mounting, removing, demounting and periodical maintenance of the system, contact your supplier or manufacturer.  
Call SAFE Teknoloji for refilling and pressurizing your system cylinder.  
No responsibility for injury or damage, arising from non compliance with any legislation or directive, can be accepted.

**VdS** **FK-5-1-12**  
**UN 3300** **Chemical under pressure, HOC**

**SAFE Teknoloji San. ve Tic. Ltd. Sti.**  
MOB: 01 426 11 42 61  
İzmir Kahrarman Cad. No:3-5  
45030 Manisa Türkiye

**DO NOT COVER, REMOVE OR MAKE ANY CHANGES ON THIS LABEL.**

**SAFE** [www.safe-tur.com](http://www.safe-tur.com) [info@safe-tur.com](mailto:info@safe-tur.com)

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## DANGER AND WARNING SIGNS

**WARNING**

**SAFES112 Fire Protection System**  
**MANUAL ACTIVATION INSTRUCTIONS**  
IN CASE OF FIRE:  
Break the seal on the safety pin of pilot cylinder valve.  
Activate the valve manually.  
**WARNING**  
Prohibit unauthorized personnel to intervene the equipment on the system valves.  
Otherwise you might cause the system discharge, deactivate the system while maintenance.

MOB: 01 426 11 42 61  
İzmir Kahrarman Cad. No:3-5  
45030 Manisa Türkiye

**SAFE**

**DANGER**

**SAFES112 Fire Protection System**  
**PRESSURE CYLINDERS STORAGE AREA!**  
Only authorized personnel can enter!

MOB: 01 426 11 42 61  
İzmir Kahrarman Cad. No:3-5  
45030 Manisa Türkiye

**SAFE**

**WARNING**

The room is protected by a  
**SAFES112 Fire Protection System!**  
Leave the room immediately when alarm sounds,  
Do not enter before ventilating room  
after system discharge!

MOB: 01 426 11 42 61  
İzmir Kahrarman Cad. No:3-5  
45030 Manisa Türkiye

**SAFE**

**WARNING**

The room is protected by a  
**SAFES112 Fire Protection System!**  
Leave the room immediately when alarm sounds,  
Take emergency exits!  
Do not enter before ventilating room  
after system discharge!

MOB: 01 426 11 42 61  
İzmir Kahrarman Cad. No:3-5  
45030 Manisa Türkiye

**SAFE**

Article number	SFK 1100626	SFK 1100629	SFK 1100627	SFK 1100628
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Article nr. SFK 1100762 - Revision A\_F  
Effective March 10<sup>th</sup> 2023

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