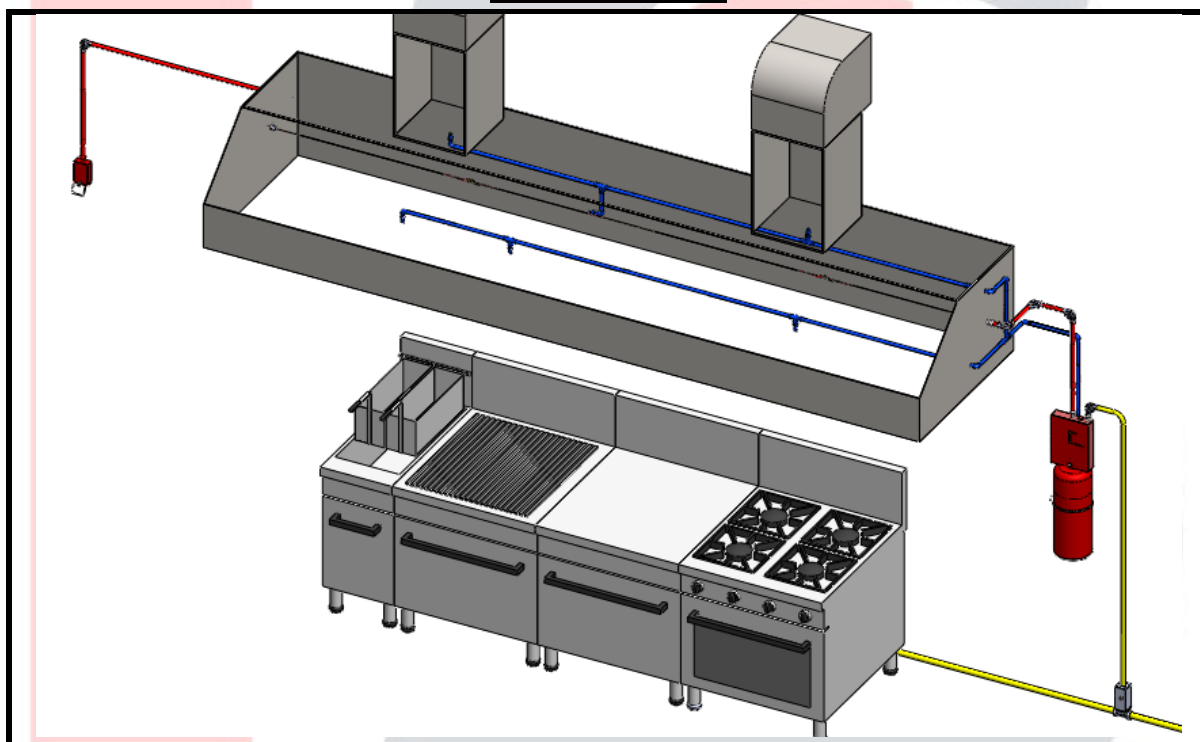




EN 17446:2021 CERTIFIED
PRE-ENGINEERED FIXED FIRE SUPPRESSION SYSTEM
for KITCHEN HOOD & CATERING EQUIPMENT

USER MANUAL



MODELS;
HS8 (8 FLOW)
HS16 (16 FLOW)

HoodSafer
Kitchen Protection Experts

	HS SERIES KITCHEN HOOD FIRE SUPPRESSION SYSTEM USER MANUAL		Document Code	UM-HS
			Establishment Date	10-03-2025
			Rev. No. / Date	

SUMMARY

This technical manual is prepared for HOODSAFER **HS8 & HS16** models. The manual explain how to design, calculate, install, maintain and service the HOODSAFER pre-engineered fixed fire suppression system for hood & catering equipment.

READ, UNDERSTAND and COMPLY all the rules, explanations, and precautions in this manual. All kind of operations shall be performed according to the manual.

HOODSAFER is a “pre-engineered” fixed fire suppression system to protect commercial kitchen hoods and catering equipment against fire.

The definition “pre-engineered system” means;

- The system is tailored specially and individually for a kitchen hood.
- The system shall be designed for hood’s and catering equipment’s features.
- System suppression capacity, detection line, discharge piping line, nozzle placement and amount etc. shall be calculated according to hood and catering equipment features.
-

Only authorized HOODSAFER staff or authorized HOODSAFER dealer staff shall perform the tasks in this manual.
HOODSAFER will not have any responsibility in case of unauthorized interventions.

SAFETY PRECUATIONS

- Protective glasses are to be put on during use of pressurized cylinders. It may cause losses of lives and properties significantly.
- In re-filling of cylinders, filled-cylinders shall never be filled without filling apparatus or splash protection plate.
- Where such equipment is equipped, filled cylinders should be tightened in a manner to withStand pressure which may occurred in accidental opening of the valve.
- Do not use oxygen welding to remove piping installation. Using oxygen welding is too dangerous. Availability of small amount of oil may cause explosion so that this may cause loss of life and property and physical injuries.
- The system uses high pressure. Safety goggles are to be placed. Loose the mechanism slowly and carefully.
- Do not dispose pressurized cylinders. The cylinders are to be discharged fully before disposal. The filled gas cylinders may cause danger when they will not be carried as needed.
- Do not heat the cylinders over 60°C. It may cause loss of live and/ or property and physical injuries.
- Overheated pressurized cylinders may explode so that such situation may cause loss of live and/ or property and physical injuries.

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PRESSURIZED CYLINDERS

- Pressurized cylinders used in the system; therefore, the personnel in charge of the fire extinguishing systems is to be notified of the dangers for failure in handling, installation, or maintenance of the equipment duly.
- Fire Extinguishing system service personnel shall have been trained fully on handling, installation, and maintenance of the equipment duly, and comply with the operating instructions in this manual strictly.

Please Note That!!!

Pressurized (filled) cylinders are extremely dangerous and may be discharged violently when not handles properly. Such circumstance may cause loss of life and property and physical injuries.

Please Note That!!!

READ, UNDERSTAND and ALWAYS COMPLY with operating and maintenance manuals, user manuals, service manuals and similar documentation delivered with the systems.

Moving – delivery of Cylinders:

Cylinders are to be shipped in upright position and required measures in compact manner. The cylinders should not be rolled, dragged, and skipped. It is not permitted to skip the cylinders from the luggage covers of the vehicles. Proper trolley, stacking equipment and rolling platform or other similar equipment are to be used.

Careless Handling:

Cylinders are not to be fallen or they are not allowed to hit each other or other surfaces hardly.

Storing:

Cylinders are to be stored in upright position at a place in which there will be stand safe without tripping

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CHAPTER 1: Definitions, system information and descriptions

1. System Description

Where kitchen hoods used in commercial kitchens would be used without cleaning for a long time, it is very difficult to extinguish the fires caused by ignition of the oils accumulated inside the kitchen hood. Also, it is very likely occurrence of fire in the cooking equipment in the kitchen. Kitchen hood and cooking equipment extinguishing system is the easiest and most effective solution in extinguishing of these fires.

1.1. Fire Class Definition

Vegetable and animal origin liquid oil containing fires are defined as “K” Class fire in the United States of America and F Class Fire (EN Form) in the European Countries. Such product is designed and tested for K and F class fires. In European norms, the applicable standard details are given under EN3-7/A2.

1.2. Operating Temperature Limits

System operating temperature is between +5 – +60°C. In higher ambient temperatures, ventilation or ambient cooling are required.

1.3. Standards and Approvals

- System cylinders are CE marked.
- HOODSAFER has UKAS accredited ISO-9001:2015 quality management certificate.
- System design meets the requirements of UL1254, NFPA 17A and NFPA 96.

1.4. Manufacturer Warranty Conditions

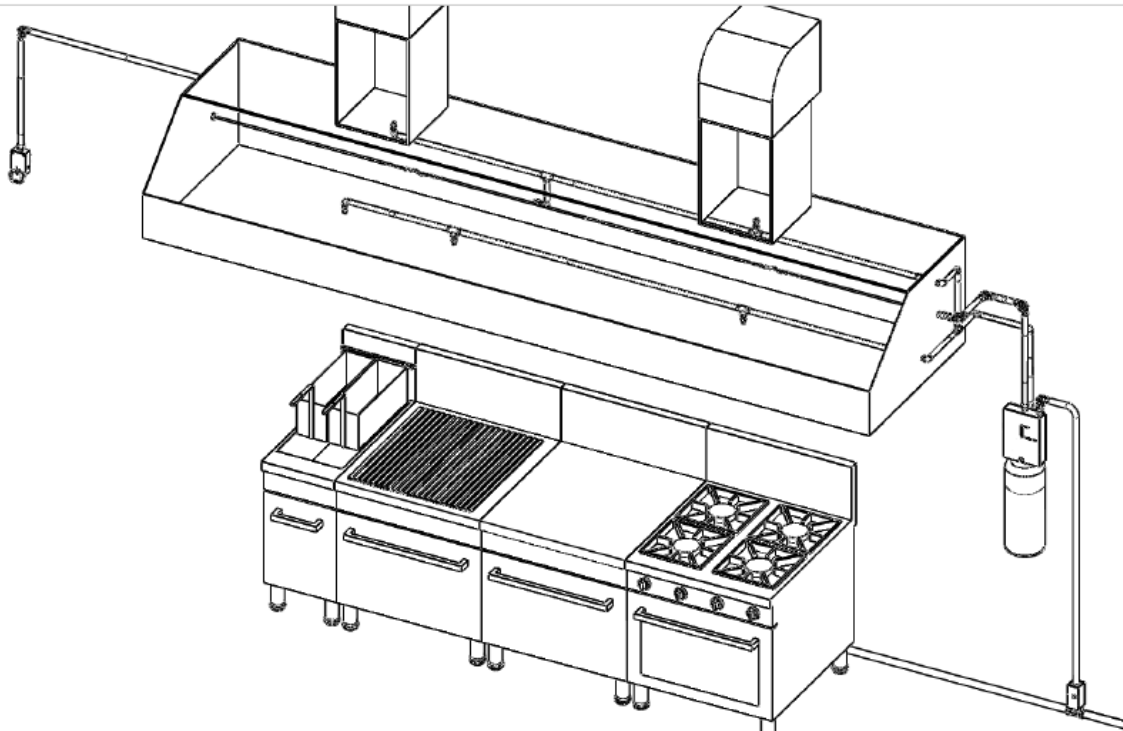
The product is under 2-year warranty against production faults unconditionally for components. Warranty period shall start as of the date of sales invoice, and end two years thereafter. The defective part/ product shall be replaced with a new one in the event of production defects within 30 days.

1.5. Operation Principle

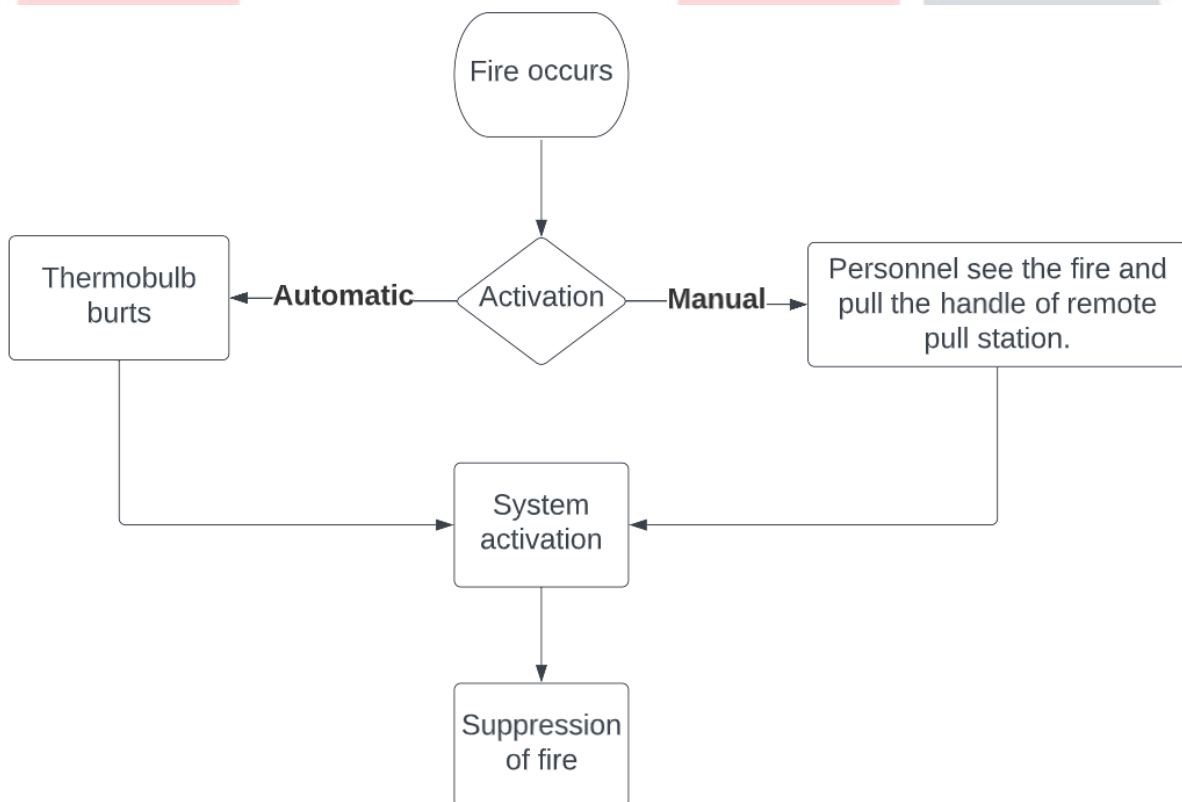
The System works in two ways as automatic, or user activated. In automatic activation, the temperature sensitive glass detectors (thermobulbs) placed specifically in the kitchen hood system are burst and the system is activated. When manual activation needed, the activation is performed by pulling the pull pin on the remote pull station. After activation of the system, wet chemical extinguishing liquid is sprayed via nozzles over the cooking equipment, through the filter of the kitchen hood, and the chimneys.

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1.6. Fundamental Configuration

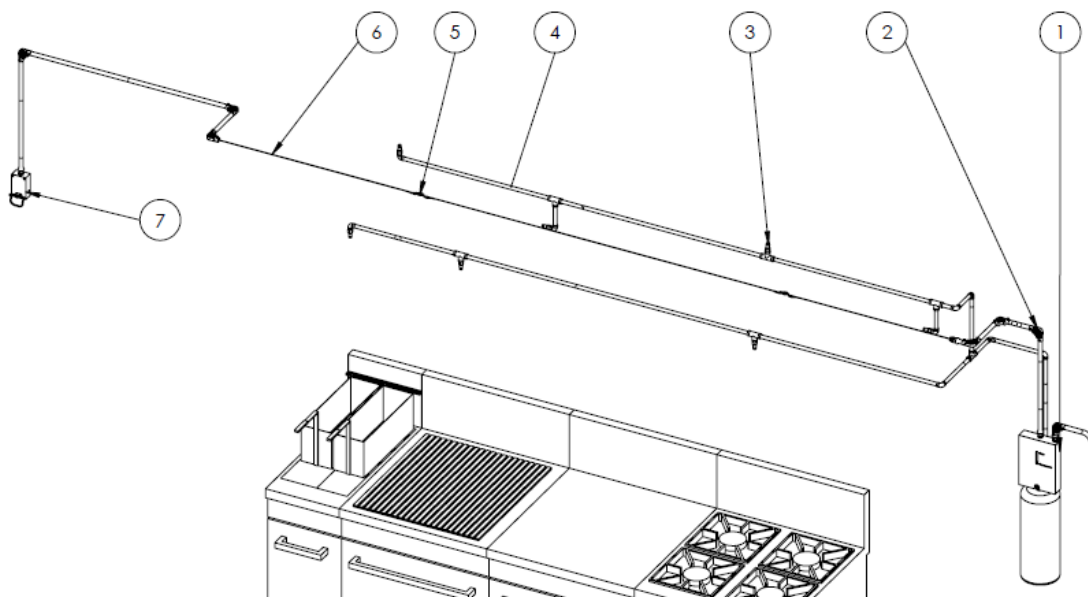


1.7. Activation Diagram



1.8. System Models by Suppression Capacities

HS8	8 Flow capacity suppression system
HS16	16 Flow capacity suppression system



HS series suppression system introduction

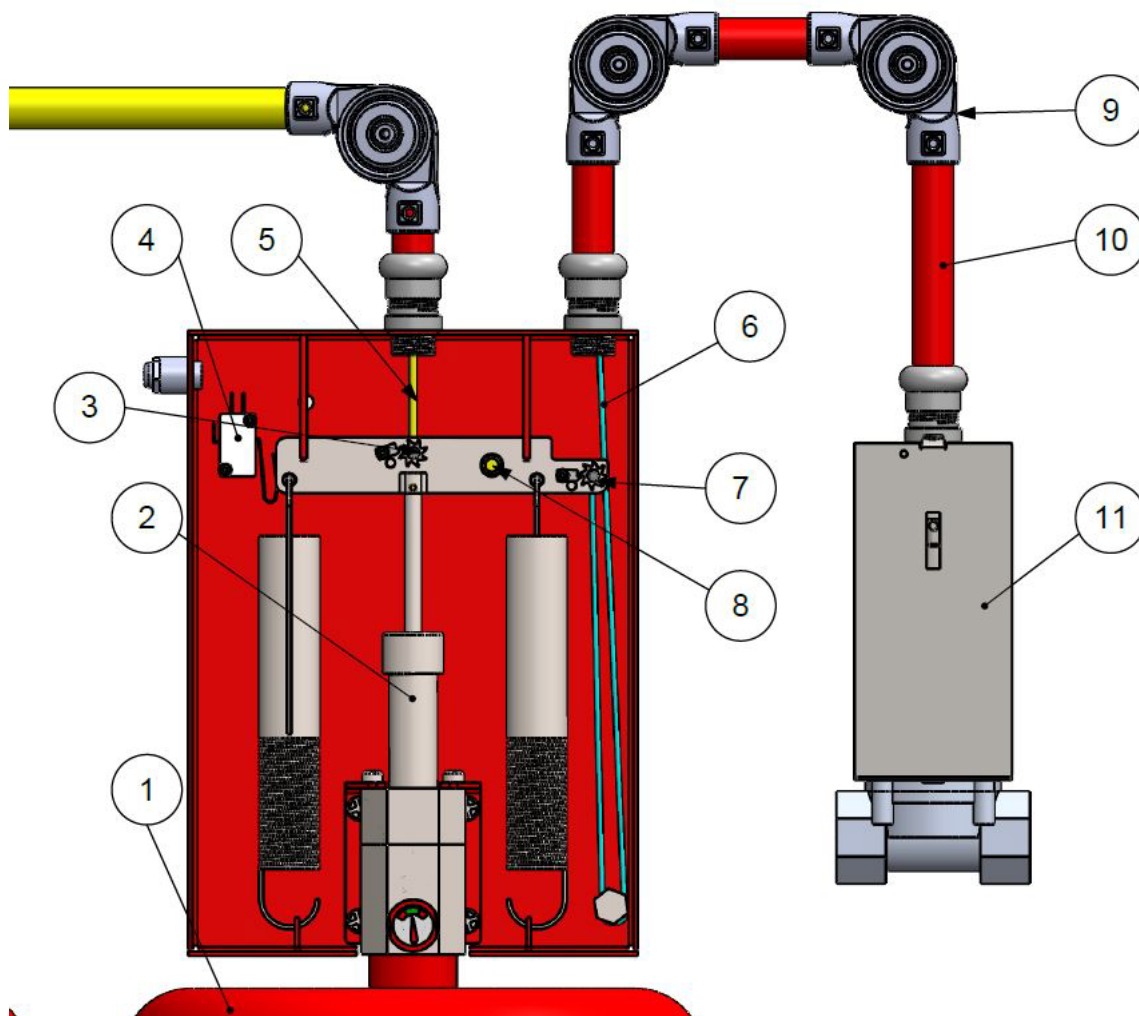
Item No	Component
1	System cylinder and activation mechanism
2	Corner pulley
3	Nozzle
4	Discharge line
5	Thermobulb
6	Detection line
7	Remote pull station

1.9. System Main Components

- Activation mechanism
- Pressurized cylinder
- Remote pull station
- Nozzle
- Heat detectors (thermobulbs)
- Corner pulley
- Discharge line
- Activation line

1.10. Activation Mechanism

The activation mechanism is a valve mechanism equipped with a hydraulic cylinder and lever assembly.



HOODSAFER system activation mechanism

Item No	Description	Item No	Description
1	System cylinder	11	Gas shut-off valve
2	Actuation valve		
3	Tensioning gear		
4	Microswitch		
5	Detection line wire		
6	Gas shut-off valve wire (also the same installation for multi cylinder application)		
7	Gas shut-off valve tensioning gear (also the same installation for multi cylinder application)		
8	Indicator pin		
9	Corner pulley		
10	Gas shut-off valve piping		

1.11. Pressurized Cylinders

Cylinders have 2 different volume capacities

- HS8 - 8 Flow 10 Liter
- HS16 - 16 Flow 20 Liter

Cylinder packages include 1 bracket, 1 meter tie clamp.

Cylinders are pressurized with nitrogen 15 bar in standard room temperature (21°C). Cylinder pressure will increase or decrease according to ambient temperature.

Pressure change acc. To temp;

-20 C° 11 bar

- 21 C° 15 Bar
- 60 C° 18,5 bar

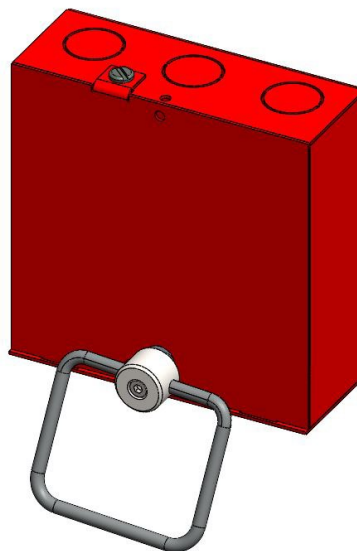
Operational pressure is shown as "green area" in manometer. The green area beginning shows 11 bar, end shows 18,5 bar. System is fully functional if manometer indicator is on "green area".



Pressure gauge

1.12. Remote Pull Station (P300)

Remote pull station is used for activation the system manually. Easily pull the pin and system will be activated.



Remote pull station

1.13. Nozzles

There are 2 types of nozzles used in the system.

H1 Nozzle (P600)

1 flow nozzles for all appliances and hood and plenum.

H2 Nozzle (P650)

2 flow nozzles for deep fat fryers.

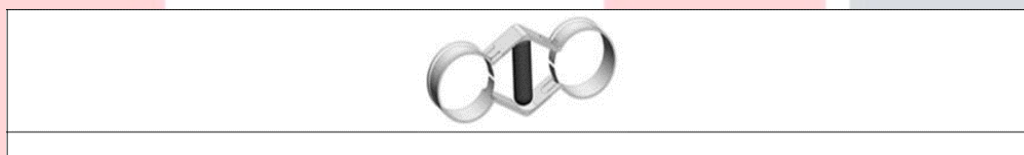


1.14. Heat Detectors (P400)

JOB standard response thermobulb links are used for fire detection. JOB thermobulb links are UL listed.

2 types of thermobulb links are used for fire detection. The thermobulb links may be used individually according to needs for different cooking equipment in a hood.

Mid temp detection : 182 °C thermobulb (P400)

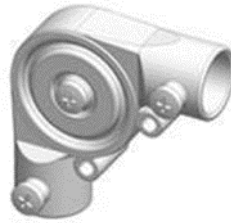


Thermobulb Link

Temperature	Color Code	Part Code	Definition	Cooking equipment
182 °C	Purple	P400	Mid. Temp	Fryers, range tops, skillets, woks.
260 °C	Black	P700	High temp	Barbecues and grills with open flame

1.15. Corner Pulleys (P900)

Corner pulleys are used to bend the detection line safely. **Maximum 25 pieces corner pulleys can be used in an installation.**



Corner pulley

CHAPTER 2: SYSTEM DESIGN & RULES

2.1. Calculation of Flow Capacity and Installation Rules

All sections of the hood should be protected by nozzles.

All catering equipment should be protected by nozzles.

The system should be designed according to hood type, hood dimensions, divisions of the hood, hood height, chimney quantity, chimney dimensions, catering equipment type and catering equipment dimensions.

2.2. Nozzle Installation for Hood

EXHAUST & FILTER PROTECTION:

H1 type (1 flow) nozzle is used for exhaust & filter protection.

Important Notification !

Please note that chimney protection nozzles SHALL ALWAYS **AIM TO CENTER** OF CHIMNEYS. (positioning tolerance is ± 3 HS. for each direction)

Please note that filter protection nozzles SHALL ALWAYS BE POSITIONED TO CENTER of PLENUM (the volume behind the filters) (positioning tolerance is ± 5 HS for each direction)

- **Protection for round exhaust;**

1 pc. of H1 type nozzle for each chimney with a diameter up to 40 cm.

2 pcs. of H1 type nozzles for each chimney with a diameter up to 60 cm.

- **Protection for square exhaust :**

1 pc. of H1 type nozzle for each chimney with up to 40x40 cm. dimensions.

2 pcs. of H1 type nozzles for each chimney with up to 40x60 cm. dimensions.

Add 1 more nozzle for every 20 cm. more length of chimneys.

- **Protection for filters :**

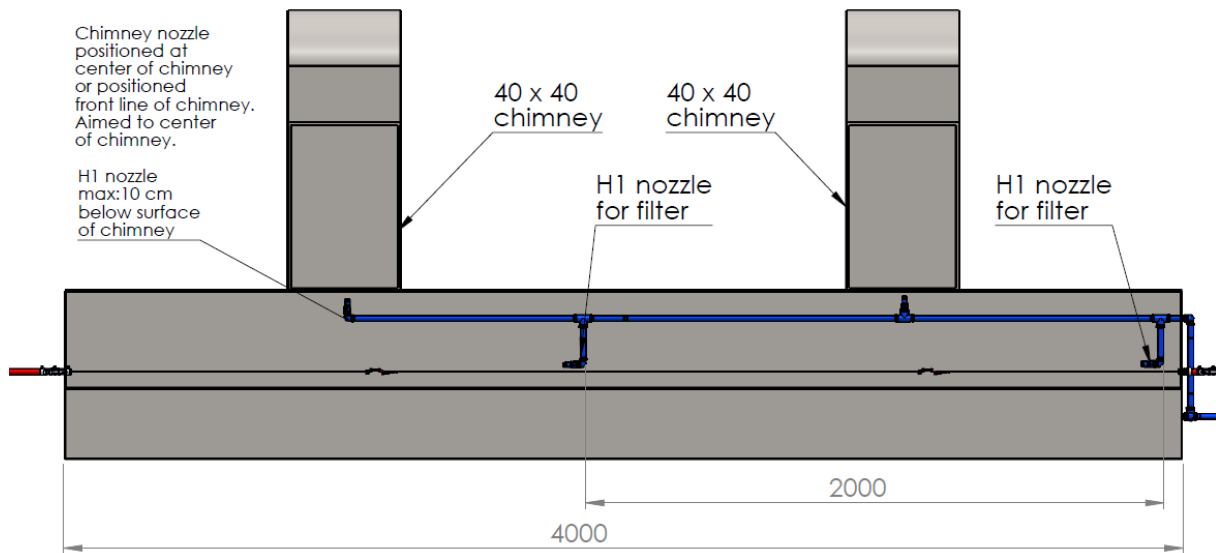
H1 type nozzles can spray up to 3 m. forward.

Install 1 pc. of H1 type nozzle for up to 3 m. hoods.

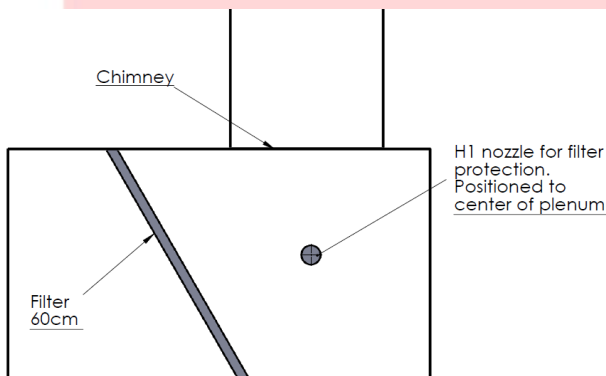
Install 1 pc. of H1 type nozzle for every 2 m. length for longer than 3 m. hoods.

Important Notice: If the hood is a divided hood, install 1 pc. of H type nozzle for

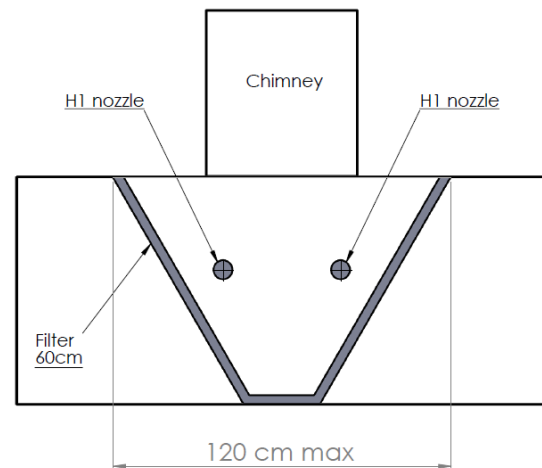
each division up to 3 m.



Chimney & filter protection nozzle placement for a 4 m. hood with 2 chimneys
This installation has 4 flow. (4x1 flow nozzles)



Filter protection nozzle placement
1 flow (1x1 flow)



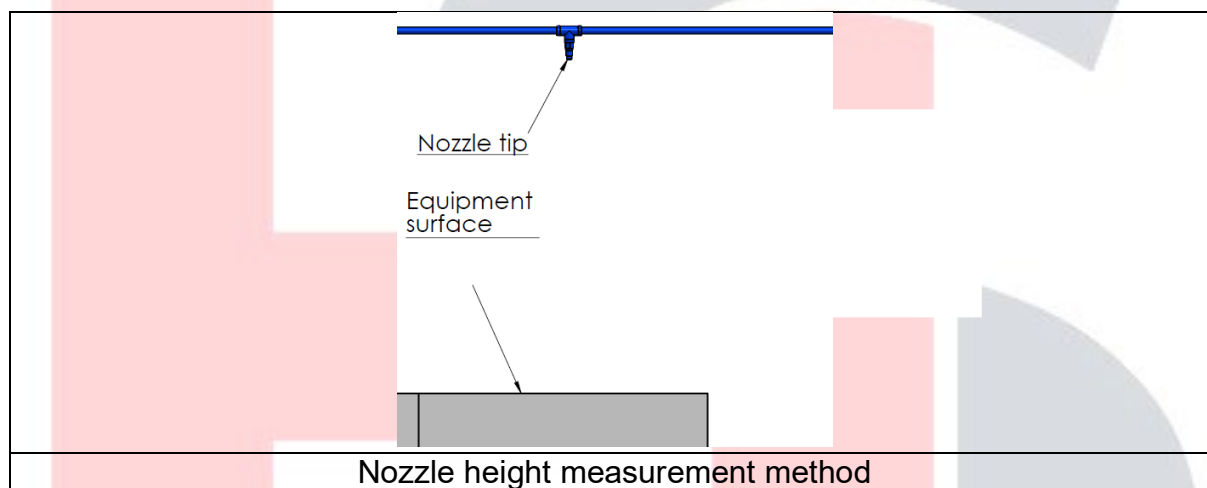
“V” type filter protection nozzle placement
2 flow (2x1 flow)

Install 1 pc. of H1 nozzle for “\” type filters with up to 60 cm. height.
 Install 2 pcs. of H1 nozzles for “V” type filters with up to 60 cm. height and 120 cm. space. Allowed nozzle distance from filter surface is max. 45 cm. for each filter. If the filter distance is smaller than 120 cm., install 1 pc. of H1 nozzle for filter protection.

2.3. Catering Equipment Protection

- H1 type nozzle (1 flow) is used to protect any kind of equipment under the hood EXCEPT DEEP FAT FRYER.
- Deep fat fryers that larger than 34x50 cm. are protected by 2 pcs. H2 type nozzles.
- For each vat greater than 34x50 cm. is protected by 1 pcs. H2 type nozzle for split vat or multi vat deep fat fryers.
- Range top up to 40x60 cm. is protected by 1 pcs. H1 type nozzle.

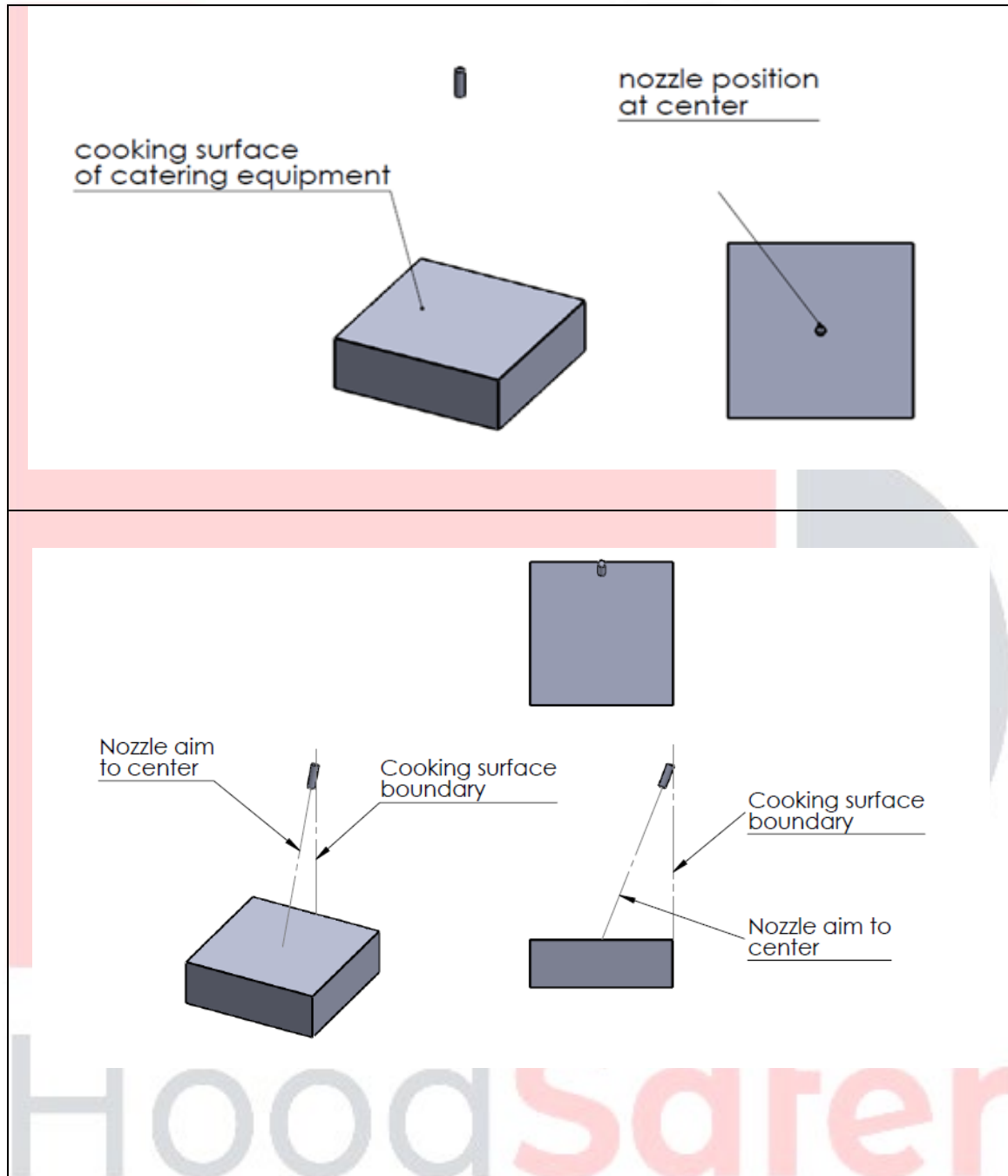
Notice: Protection area limits for each type of nozzle according to equipment dimensions will be introduced at the **"TABLE: 1" on page 17.**



Single Nozzle Protection

Catering equipment	Max. COOKING SURFACE dimensions for protection with 1 nozzle (width x length) (cm)	Nozzle type	Nozzle height limitations catering equipment surface to nozzle tip (cm)	Flow calculation
Range top	40x60	H1	90 – 100	1
Ground stove	60x60	H1	140 – 200	1
Griddle	70x70	H1	90 – 110	1
Wok	Max. diameter: 36 Max. depth: 20	H1	90 – 110	1
Single vat deep fat fryer	34x50	H2	90 - 100	2

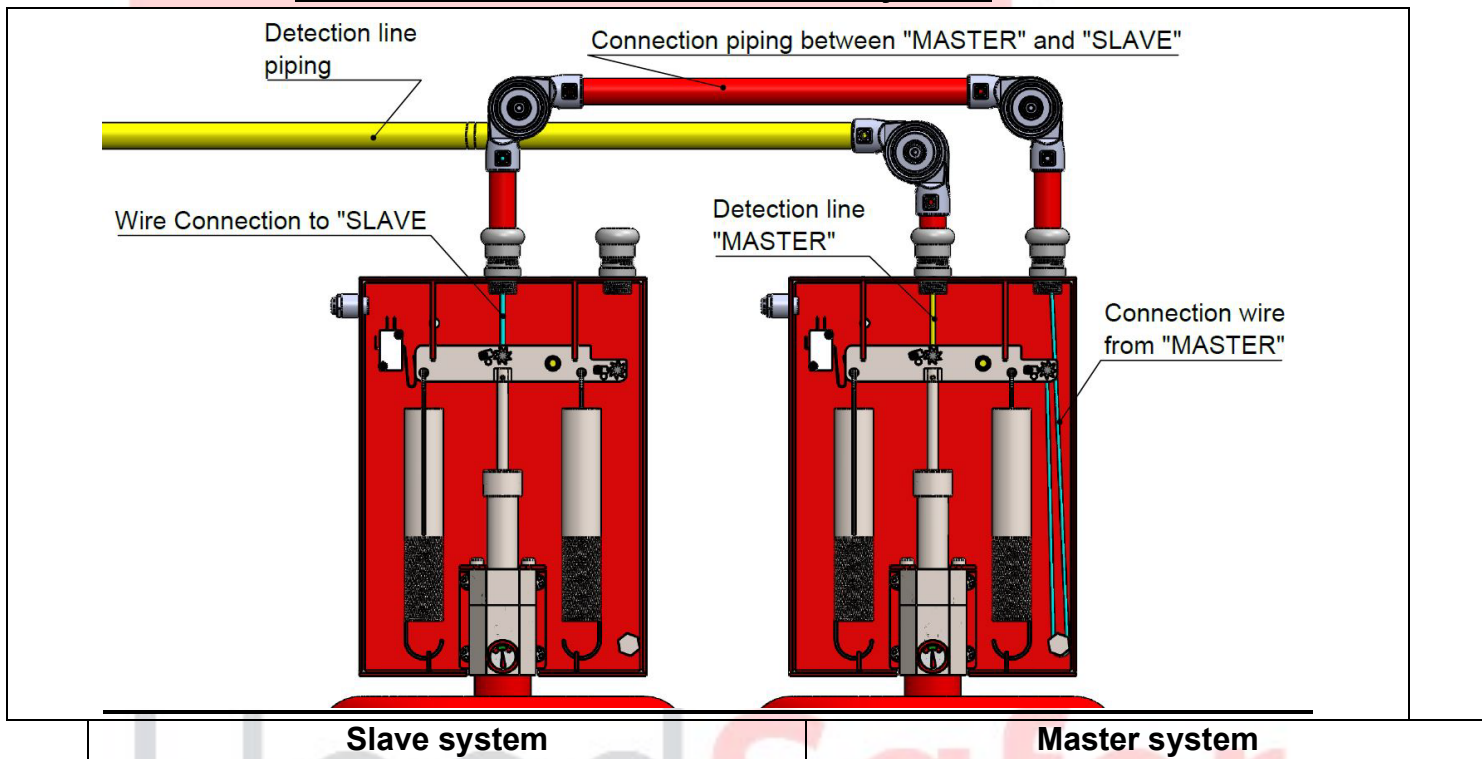
- The best nozzle positioning is to install the nozzle to the center of catering equipment's cooking surface.
- If installation to center is not possible, the nozzle may be installed on any position INSIDE OF THE COOKING SURFACE BOUNDARIES AND **SHALL AIM TO CENTER OF EQUIPMENT.** (please see the figures below)



2.4. Multi Cylinder Application

Multi cylinder application is needed in case of the biggest (HS16) system is not enough to protect a kitchen hood.

- Always the smaller system protects the hood.
- Always the bigger system protects the catering equipment.
- Detection line is installed for the system that protect the catering equipment. Detection line is NOT INSTALLED for the system that protect the hood.
- Activation is performed by the bigger system. The bigger system triggers the activation mechanism of smaller system.
- The bigger system is named as the “MASTER”.
(Detection line shall be connected to MASTER system)
- The smaller system is named as the “SLAVE”
- Gas shut-off valve (if applicable) shall be installed on SLAVE system
- Microswitch can be installed on both systems



✓ Please see “Chapter 3 : Installation “ for detailed information

- ✓ If a single 16 flow system is not enough to meet the flow requirements of a hood, 5 pieces of HOODSAFER systems can be installed by binding together.

CHAPTER 3: INSTALLATION

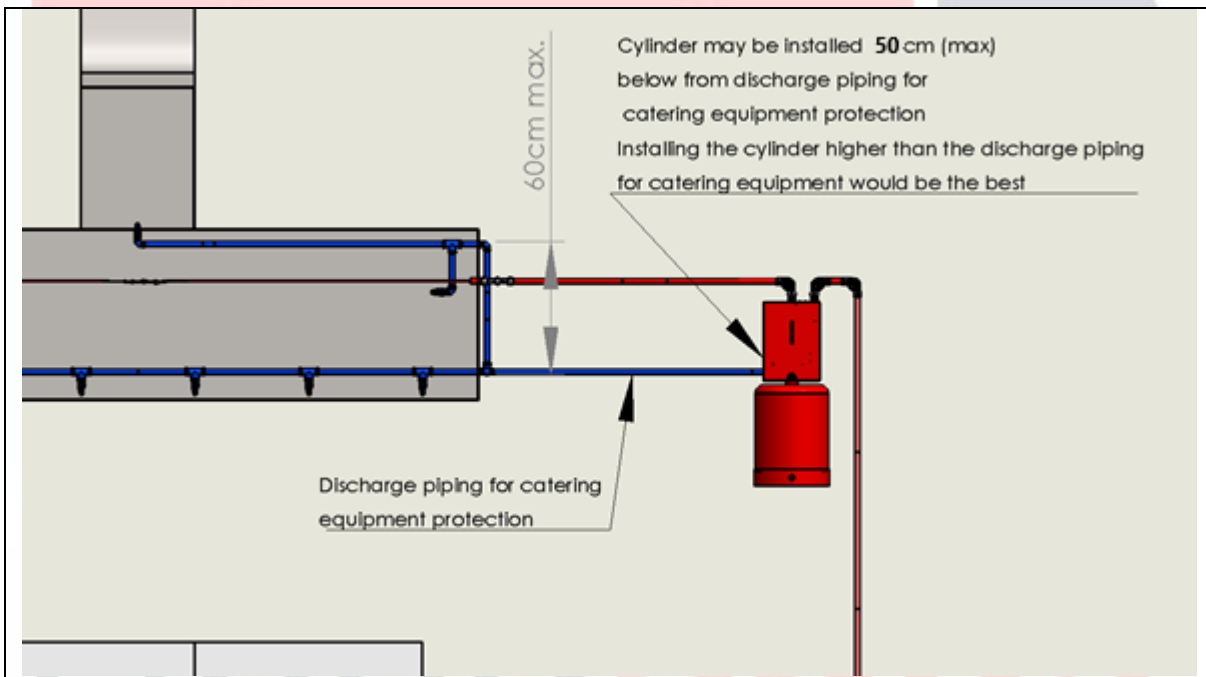
3.1. Discharge Line Piping Rules

All pipe and fitting materials to be used in the system shall be made of AISI 304 or AISI 304L quality stainless steel seamless pipe(SCH40). Pipe diameter is 3/8".The thickness of the pipe should not be less than 2.0 mm (Normal is 2.3 mm). This thickness is required for threads at the end of the pipe.

PLEASE ATTENTION

In the Kitchen hood, the followings are to be considered in discharge pipeline installation.

- 1- Galvanized pipe and fittings shall not be used in the system
- 2- Pipes may not be bent, and outer surface should not be damaged
- 3- Chemical pipe sealer should be used in the pipe inserts, and it should be avoided to use Teflon band etc.
- 4- The pipes should be fixed with metal clamps on hood
- 5- Discharge line pipes should not be painted.
- 6- The pipes should be fixed with metal studs with maximum spacing of 150 HS.



Cylinder installation height limits

Vertical distance from mechanism to hood protection discharge line may be **50 cm maximum**

Vertical distance from equipment protection discharge line to hood discharge line may be **60 cm maximum**

These distances should be the minimum if possible.

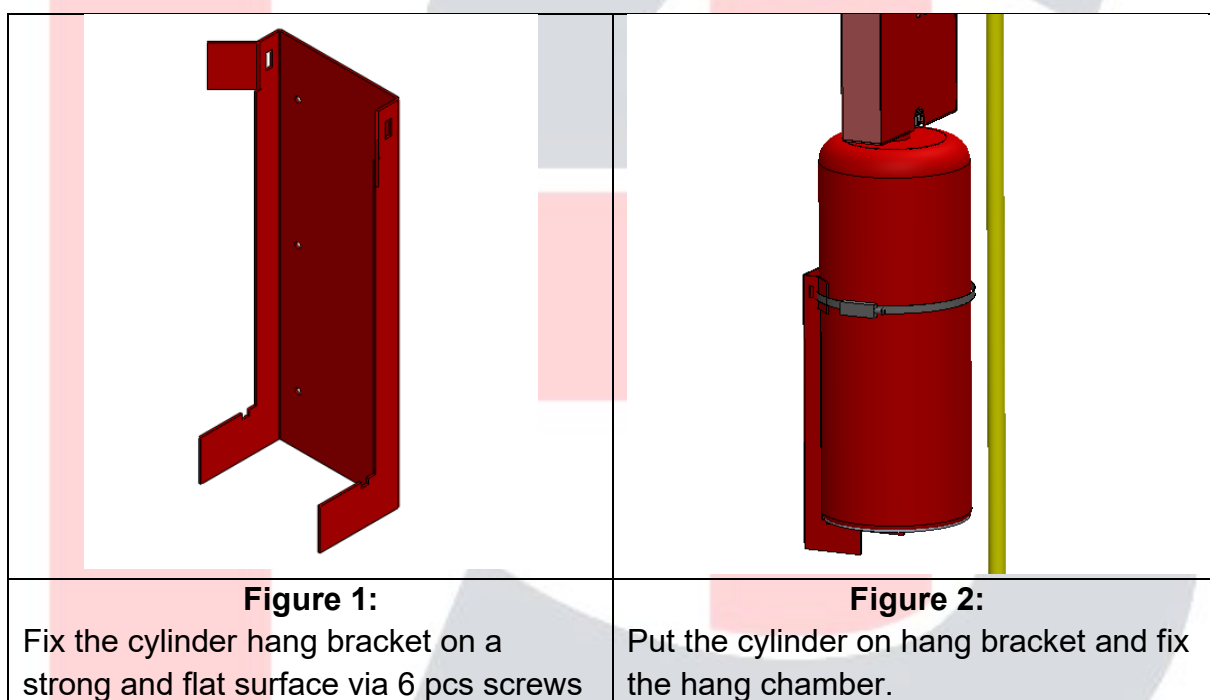
3.2. Hanging up the Cylinders for an Installation

Please Note!!!

Pressurized (filled) cylinders are extremely dangerous and may be discharged violently when not handle properly. Such circumstance may cause loss of life and property and physical injuries.

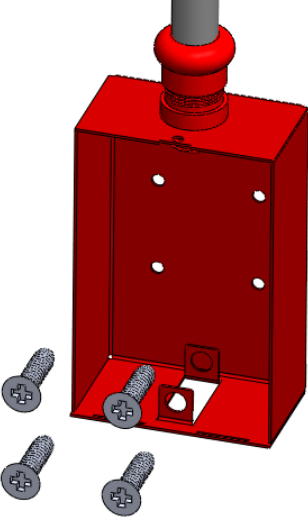

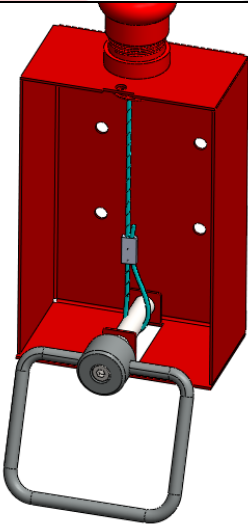
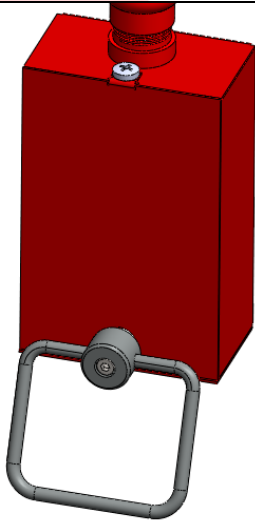
RULES:

- Cylinder hang brackets shall be fixed on a strong surface.
- Cylinder hang brackets shall be fixed via **minimum 4 pcs.** of fixing screws on surface.
- Cylinders should be fixed **minimum 1 m. far away** from hood.
- Cylinder hang chambers shall be fixed carefully.



3.3. Fixing the Remote Pull Station

- Remote pull station shall be fixed on a strong and flat surface.
- Remote pull station shall be fixed via 4 pcs of fixing screws on the surface.
- Remote pull station shall be fixed **between 140 and 170 cm.** height from floor.
- Remote pull station shall be fixed at minimum 2 m. far away from hood.
- Remote pull station shall be fixed in an easily seem and easily reachable location.
- Remote pull station is always located at the end of the detection line.

	
<p>Fix the box via 4 pcs. of screws (includes in package)</p>	<p>Bend the detection line wire as seen on figure. Fix the bended wire with the aluminum collet.</p>
	
<p>Put the pull pin inside of the wire and holes on the box as seen on figure.</p>	<p>Slide the shutter vertically down and fix the screw</p>

3.4. Fixing Discharge Line

- Discharge line shall be fixed via 3/8" metal clamps in every 1,5 m. outside of the hood
- Discharge line shall be fixed via metal clamps in every 1 m. inside of the hood
- Suitable studs shall be used to fix the metal clamps.
- Chemical thread sealant shall be applied for every connection for discharge line and fittings



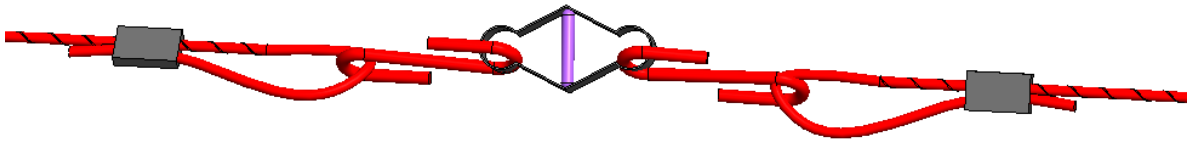
3.5. Fixing Detection Line

- 18 mm. diameter aluminum pipes shall be used to protect the detection line outside (including the line for remote pull station) of the hood.
- No piping needed inside of the hood.
- Corner pulleys shall be used for detection line inlet and outlet of the hood
- Metal clamps shall be used to fix the piping for detection line.
- Metal clamps shall be located at every 1 m. on detection line protection piping.

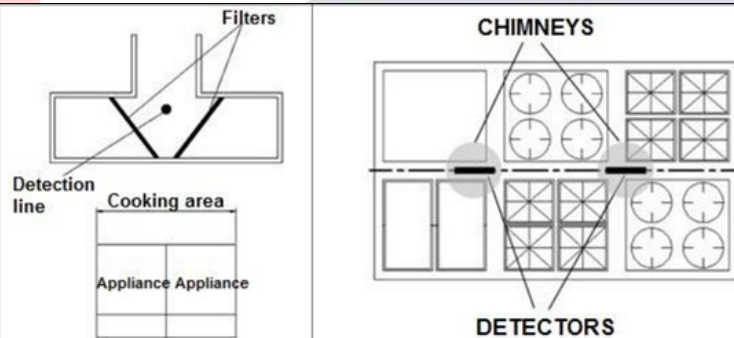


3.6. Installing the Fusible Links or Thermobulbs

- Detectors should be at the location nearest onto airflow way of hood for the best results. Positioning tolerance is 10 cm. for each direction.
- Please see the figures below.
- Detection wire shall be bended as seen on figures and fixed with aluminum collet.
- "S hooks" shall be used to hold the detectors.
- Detection line total Length is maximum 20 m.
- Total maximum bends in the detection line is 25 units.
- Maximum detector installation height is 160 cm. from max height of appliance surface. Minimum detector installation height is 125 cm. from max height of appliance surface.
- Fire detection distance of each detector is 120 cm. Location tolerance is 10 cm. for each direction.
- For fast fire detection, detectors are to be located up of the cooking device and at the direction of the smoke discharge of the cooking device.
- In order to prevent accidental activation of the system, it should be towards the channel outlet and at the required height.



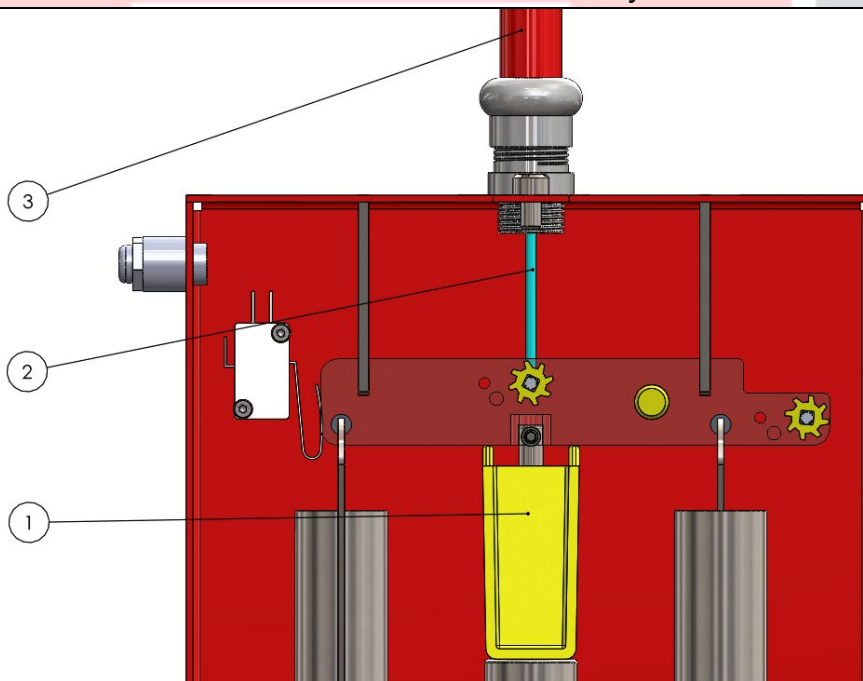
Installation of thermobulb



Detector installation example

3.7. Installing the Activation Mechanism

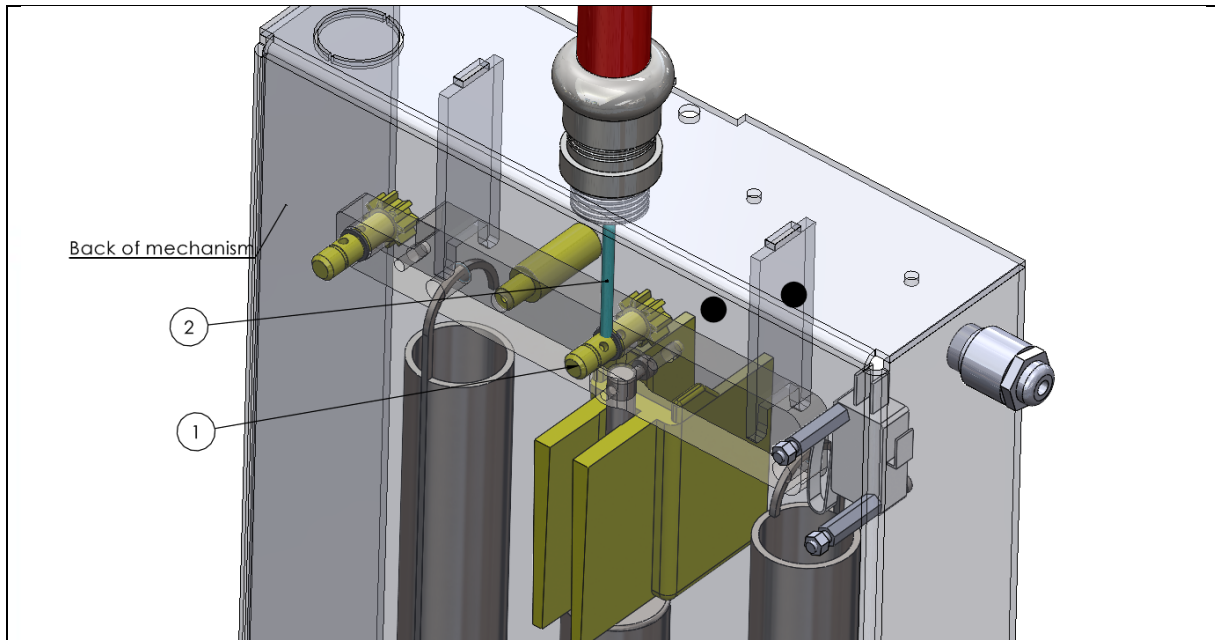
- The activation mechanism is delivered in ready-to use condition



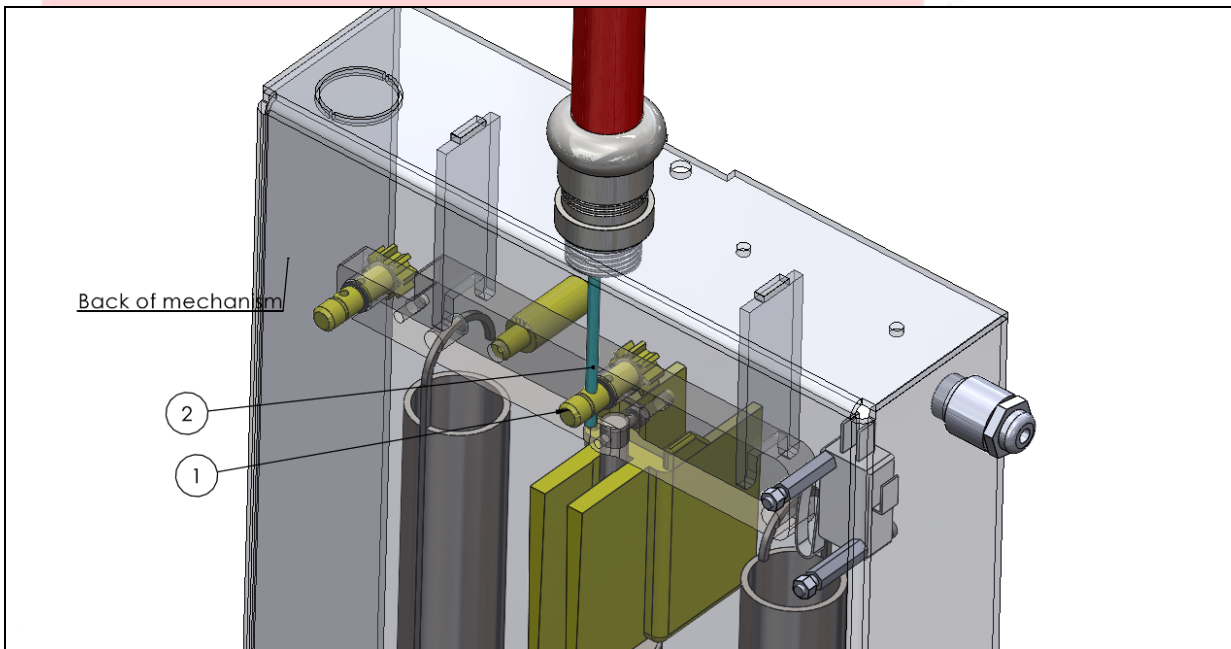
1- Secure installation apparatus

2- Detection line wire

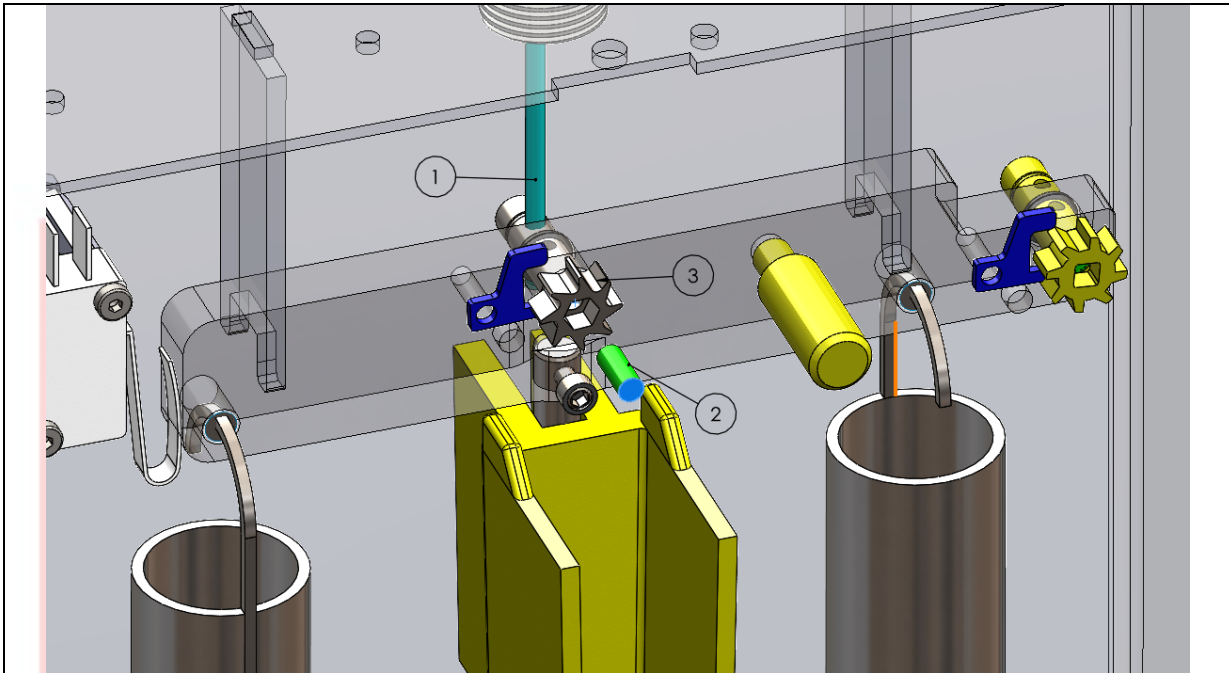
3- Detection line piping



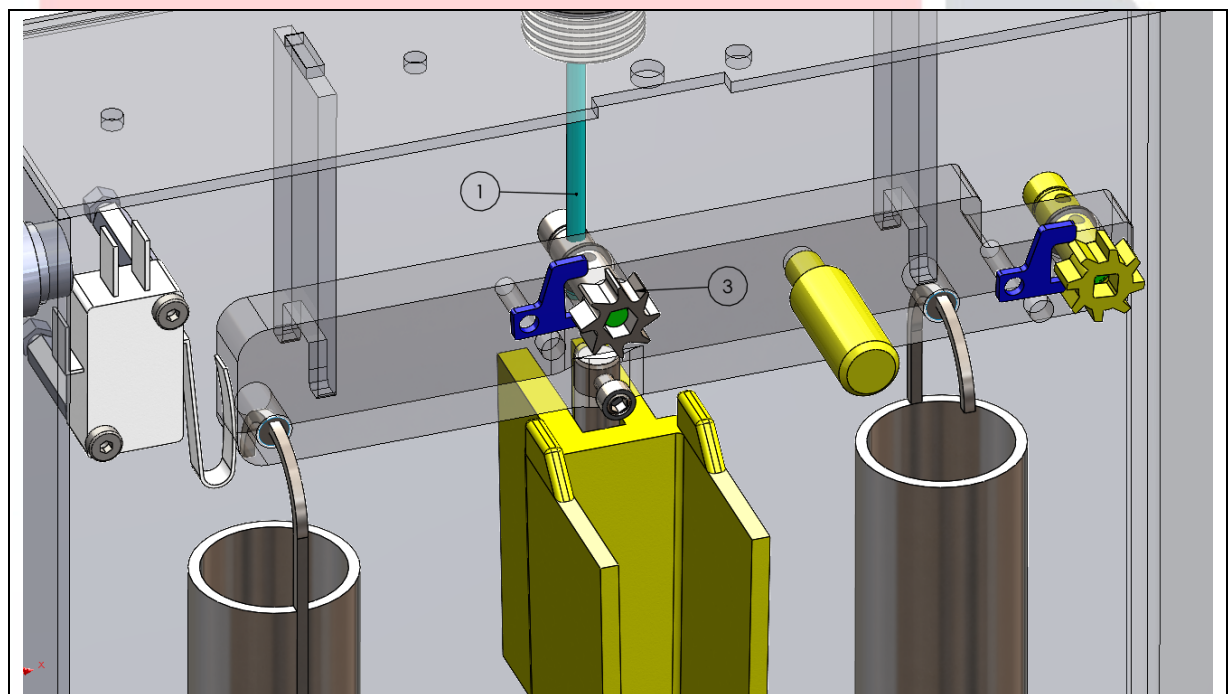
Push the wire of detection line (2) into tension gear hole (1)



Push the wire of detection line (2) into tension gear hole (1)



Tighten the detection line wire (1) via the setscrew (2) inside of the tension gear (3).
No:2 allen wrench is used to tighten the setscrew.



Turn the tension gear (3) clockwise to finish detection line installation.

No. 5 allen wrench is used to turn the tension gear .(3)

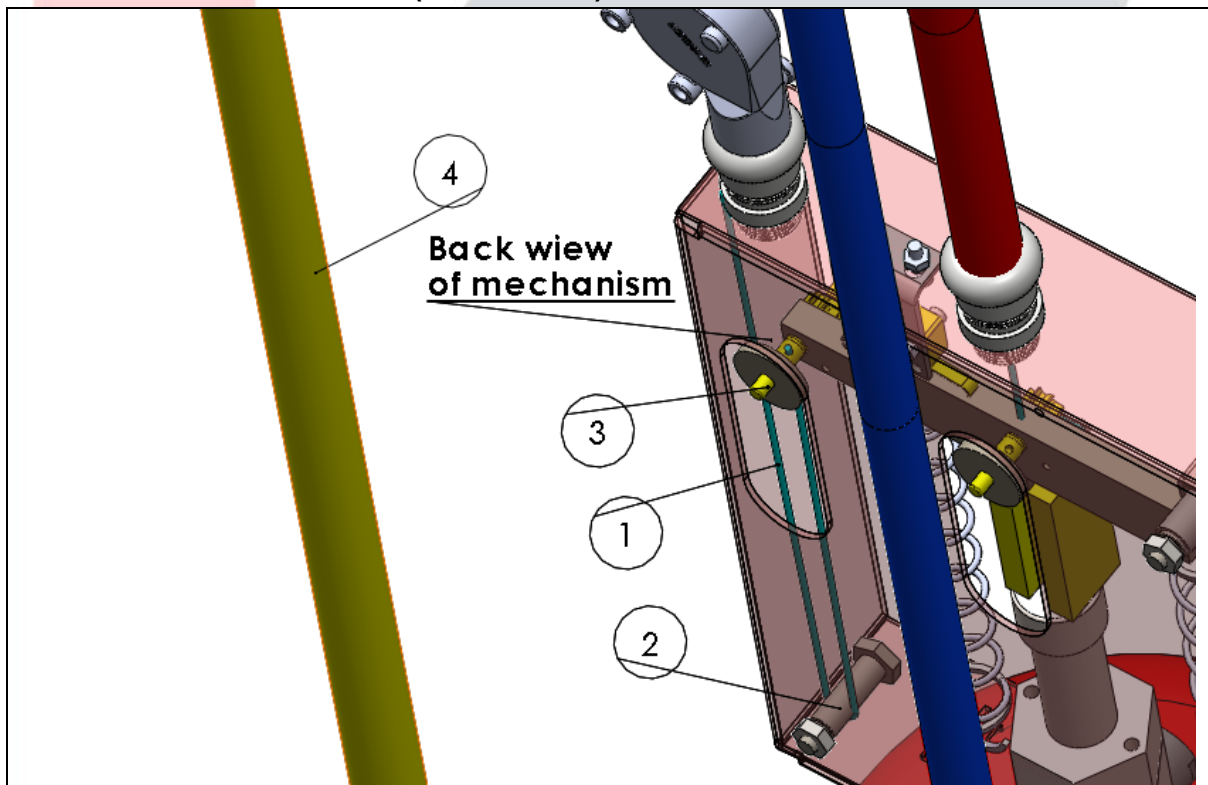
Tensioning shall be performed after installation all detectors and the remote pull station.

Tension of detection wire is suitable when you'll be able to remove the secure installation apparatus (4).

WARNING !

- Secure installation apparatus shall be removed after tensioning the detection line !
- The system won't work if the secure installation apparatus is not removed !
- The system will be operational when the secure installation apparatus is removed !

3.8. Gas Shut-Off Valve (Mechanical) Installation

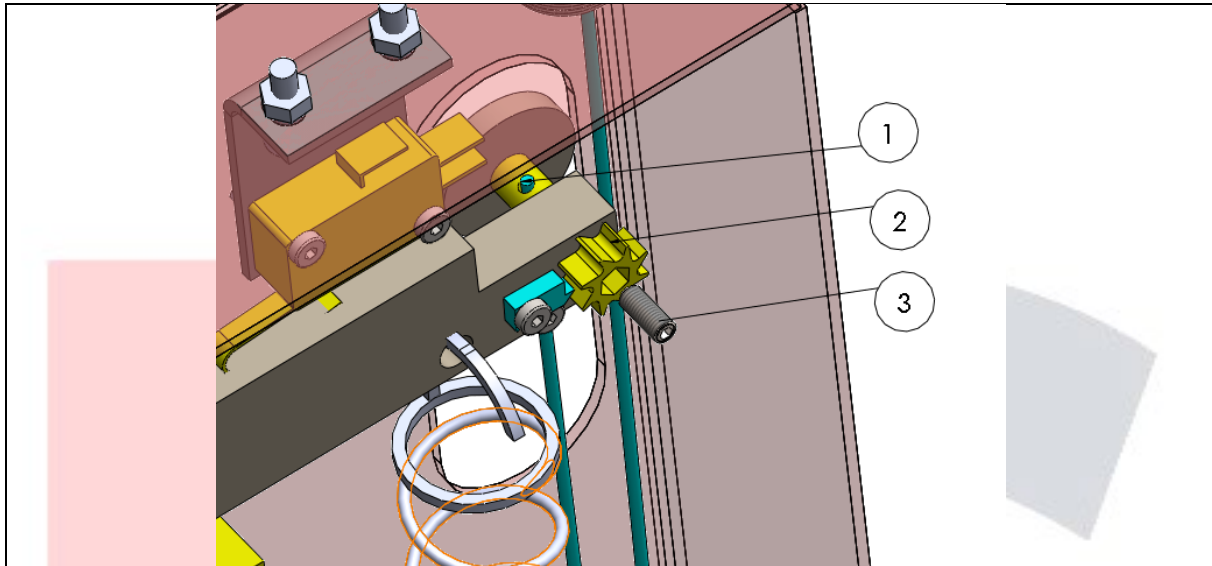


- 1- The wire of gas shut-off valve
- 2- Holding fixture for gas shut-off wire
- 3- Tension gear for gas shut-off valve
- 4- Protection piping (D:18 aluminum) for gas shut-off valve wire

Use corner pulleys for gas shut-off valve wire (1) installation from the valve to the mechanism.

Pull the wire and bend over by holding fixture for gas shut-off valve (2).

Push the wire inside of the hole of tension gear for gas shut-off valve (3).

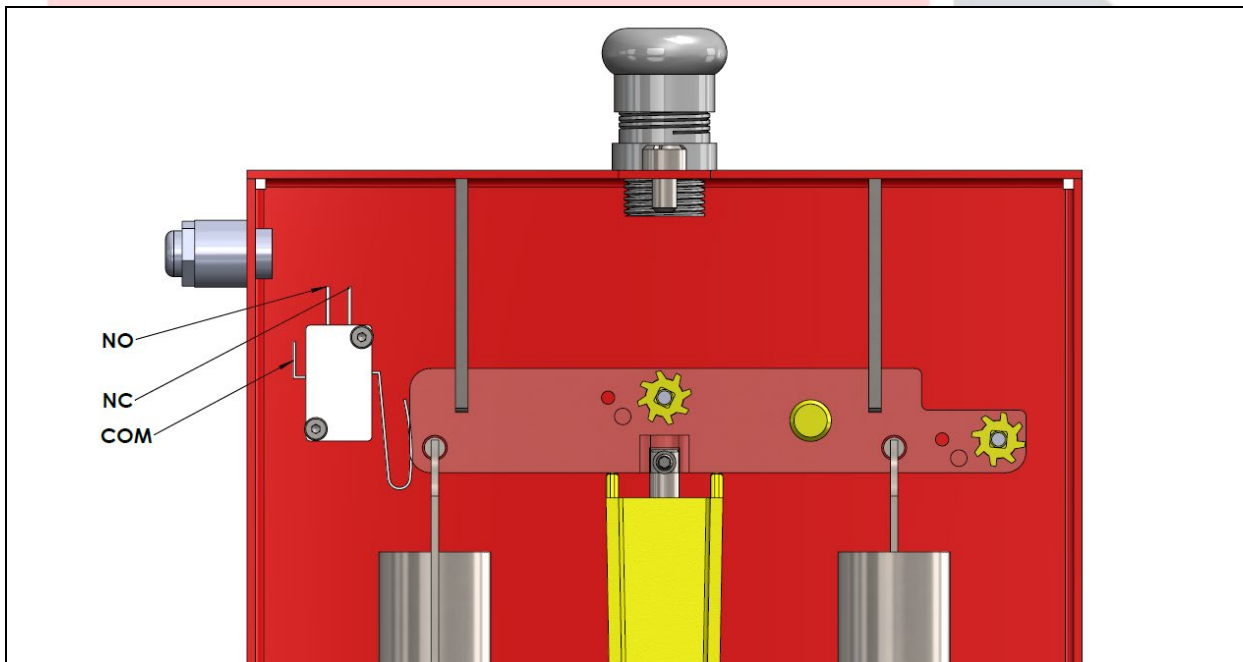


Tighten the wire (1) via the setscrew (3) inside of the tension gear for gas shut-off valve (2).

Turn the tension gear (2) to open the gas shut-off valve.

When turning the gear (2) is not available, that means the valve is opened.

3.9. Microswitch Connections



Microswitch connection diagram

HOODSAFER recommends installing microswitch to shut off ventilation or to send signal to fire panel (activate alarm and shut off the power to appliances) in case of fire.

3.10. HOODSAFER Wet Chemical

Only FLAME KILLER wet chemical shall be used in HS series fixed fire suppression systems.

Freezing point of wet chemical is 0 °C.

Filling quantity (±100 gr);

10 liters for HS8 system

20 liters for HS16 system

FLAME KILLER wet chemical sold in 10 lt & 20 lt containers.

CHAPTER 4: MAINTENANCE & SERVICE

4.1. Periodical Maintenance

The system is to be subject to periodical maintenance **per minimum 6 months** as per the international standards. System should be checked against if appliance risk has modified. Appliance positions should be checked if the right nozzles-detectors are located at the right places. All assets and passive components in the system are to be checked by the qualified service personnel and maintenances are to be conducted. **Failure of maintain the system may result false activation or failure to activate in a fire.**

Periodical controls and maintenance are provided below.

4.2. Detectors and Detector Line Periodical Maintenance

- The covers of all corner pulleys in the system are removed and the rollers inside the bends are controlled. The bends of all tight or dirty rollers are to be removed, and washed with oil remover and hot water, and convenient movement is ensured.
- Failed roller bends are to be replaced with the new ones.
- All detectors in the detection line should be removed, and washed with warm water, and placed in their original places. The detector should be controlled by eye after physical control, and damaged ones should be replaced.
- **The detectors should be replaced every year.** The former detectors shall be given to the authorized service dealer for disposal.
- The rust or damage are to be controlled in the stainless steel tension wire used in the detector line. **No attachment is allowed!**
- Aluminum pipes and connection couplings should be checked in detection line. The connection elements (clamps) should be checked. Damaged ones should be changed.

4.3. Activation Mechanism Periodical Maintenance

- Visual check against rust or damage on mechanism box and lid
- Visual check pressure gauge
- Visual check on inside mechanism

4.4. Nozzle Periodical Maintenance

- The nozzles should be removed, and their positions should be noted.
- **Nozzle caps should be replaced.**
- Nozzle inner part should not be removed.
- All of nozzles should be poured in hot water mixed with oil remover.
- Visual check and risky nozzles should be replaced
- Nozzles should be installed as per cooking equipment
- Angle and aims should be checked and verified.
- HOODSAFER recommend that the nozzle caps should be replaced in every 6 months for better and safer operation.

4.5. System Cylinder Periodical Maintenance

- Cylinder should be checked against corrosion and deformation.
- Cylinder pressure should be (15 Bar) and should be re-pressurized if lower.
- Label compliance should be checked. Damaged one should be replaced.
- System cylinder shall either be tested hydrostatically every 5 years or replaced. Wet chemical agent shall also be replaced in every 5 years.
- Disposal of wet chemical should be performed in accordance with all applicable local and national regulations

4.6. Cleaning Instructions for System

- System components may be cleaned by wet nappy of standard kitchen appliance cleaning chemicals.
- Don't apply force on activation mechanism and nozzles while cleaning.
- **Do not clean detection line and detectors. Applying force on detectors and the line may occur unwanted activation.**

5. What to Do After an Activation

We hope that our customers will never have a fire in their kitchen and our system won't need to work.

Here there is what to do after an activation of a HOODSAFER HS series system.

(These steps will be performed after the kitchen staff cleaning and preparation of the kitchen)

- Detach all nozzles and clean as explained in chapter 4.7. If there are defected or very old nozzles, replace them.
- Clean inside of all piping as explained in chapter 4.10.
- Replace detection line rope.
- Replace all thermobulbs.
- Replace nozzle caps
- Disassemble the activation mechanism form cylinder.
- Check cylinder for any defects or problems. If defected, replace the cylinder.
- Replace both lever springs
- Disassemble the valve cap group form valve body. Reset the cap by pushing the hammer back.
- Clean all components of valve body and valve cap with water and oil remover chemicals.
- Remove the cap that stops the activation piston at top of the valve cap. Check if the oil amount is OK or not. Refill hydraulic oil if needed.
- Replace the pressure gauge on valve.(if needed)
- Replace the activation piston on valve.(if needed)
- Wash the cylinder completely.
- Fill new wet chemical via suitable Refill containers (10 lt for HS8 , 20 lt for HS16).
- Replace the valve o-ring.
- Fix the mechanism to cylinder.
- Pressurize the cylinder from discharge outlet.
- Re-install the system.

END OF MANUAL

HoodSafer
Kitchen Protection Experts