



AutoFireX® HS Mechanical Series Kitchen Fire Suppression System

KM 786033
Certified kitchen fire
Suppression system





AutoFireX® HS Kitchen Fire Suppression System

Background Information



- Whether you own a restaurant or a hospital kitchen, you need to ensure that your kitchen is equipped to handle accidental kitchen fires. As a matter of fact, fire accidents are more likely to happen in a restaurant than nearly any other kind of commercial place since there is continuous exposure to high heat in a commercial kitchen. Kitchen fire accidents have the potential to quickly engulf the kitchen in flames if not handled on time. This is where a kitchen fire suppression system comes in handy. Kitchen fire suppression systems provide a unique way of controlling and suppressing fire hazards.
- Kitchen fires can escalate fast and can get out of control in the blink of an eye. The fire caused by the cooking oils and grease build up is not easy to dispel using any ordinary fire extinguisher. Therefore, a specialized fire suppression system and Class 'K' fire extinguishers are needed to prevent the fire from escalating.
- A kitchen fire suppression system is also crucial to ensure personnel safety. The commercial kitchen fire suppression system is usually installed directly above each individual cooking station. It makes it easier to contain the fire in a specified area.
- Moreover, a commercial kitchen is equipped with tools and equipment, which are very expensive, and any damages can cause huge losses for the restaurant business. Having a commercial fire suppression system in place can help reduce the risk of property and equipment damages. Fire suppression systems are specially designed to put out fires in commercial kitchens without ruining the food and produce.
- Worldwide, there has been an increase in fires caused by grease in kitchen equipment in direct proportion to the increasing number of restaurants after the 1960s.
- According to the fire statistics published by the NFPA every year, 58% of fires in hotels and motels occur in kitchens. Although the loss of life is small, very serious financial losses occur. 80% of the companies damaged by the fire in the kitchen have to terminate their activities immediately or within 18 months.

AutoFireX® HS Kitchen Fire Suppression System

Background Information

PROBLEM AREAS

- ❖ KITCHEN APPLIANCES
- ❖ RANGE COOKERS
- ❖ GAS/ ELECTRICAL HOBS
- ❖ DEEP FRYERS
- ❖ BROILERS
- ❖ TILTING PANS
- ❖ BBQ/ GRILLS
- ❖ HOODS
- ❖ EXHAUST DUCTS
- ❖ GAS LINE (ISOLATION)





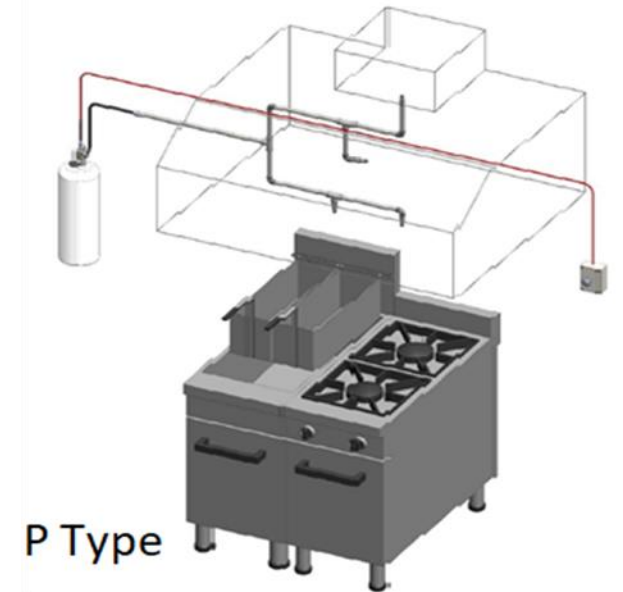
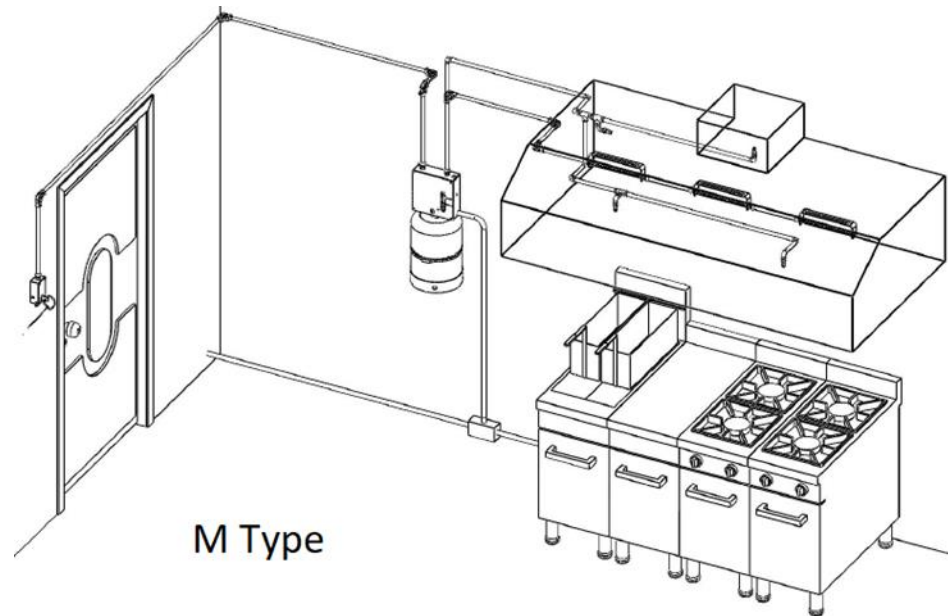
AutoFireX® HS Kitchen Fire Suppression System

SOLUTION

Fires in a working kitchen can arise in numerous ways including defective or damaged heating controls, unattended devices, burners overheating and grease/dirt residue build-up. With this specific, very problematic risk in mind, AutoFireX® HS Kitchen Fire Suppression systems utilizing Wet Chemical offer a certified suppression system to suit this particular risk requirement.

AutoFireX® offers two customized Pre-Engineered systems types to effectively detect and extinguish a Kitchen fire that may occur in the mentioned hazard areas when deployed / installed as per the Design Installation manual.

- AutoFireX® HS Mechanical Series
- AutoFireX® HS Pneumatic Series





AutoFireX® HS Kitchen Fire Suppression System

How does Kitchen Suppression actually work?

- Wet chemical fire suppression systems are normally used in commercial kitchens, and the UL 300 standard requires them for compliance. These suppression systems extinguish fires with the combination of oxygen depletion and water-based cooling. In the event of a fire, the system discharges a wet chemical mix which is pre pressurized, propelled by a pressurization agent - nitrogen onto the fire itself. Extinguishant agent is distributed to the heat source via stainless steel pipework fitted to the canopy/ hood. This immediately extinguishes the fire, and the workplace needs minimal cleaning with no special training or equipment.
- The chemical agent includes an alkali substance, which forms a soap like substance after reacting with fats - the process is called saponification. A foam layer forms above the burning oil or fat, interrupting the oxygen supply. Some common agents are potassium acetate, potassium carbonate and potassium citrate.
- There is also a water content in the fire suppression agent, which cools oils and fats below their ignition temperature.
- Kitchen fire suppression systems are connected to both equipment hoods and gas supply lines. Once the system activates, it interrupts the gas supply in addition to releasing the chemical agent; burning fats and oils are much more dangerous if gas is being released nearby.





AutoFireX® HS Kitchen Fire Suppression System

GLOBAL STANDARDS FOR KITCHEN FIRE SUPPRESSION SYSTEMS

Globally the main standards for fire suppression systems in commercial kitchens are the following:

- UL 300: Standard for Fire Testing of Fire Extinguishing Systems for Protection of Commercial Cooking Equipment
- EN:17446 European Standard for Fire Extinguishing Systems in Commercial Kitchens
- NFPA 17A: Standard for Wet Chemical Extinguishing Systems
- NFPA 96: Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations

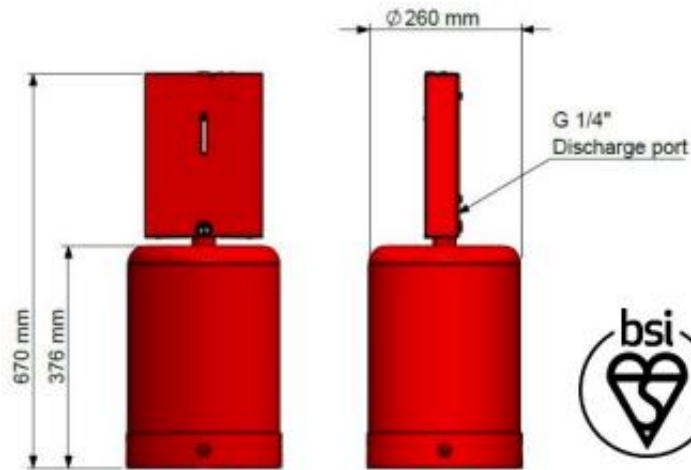
AutoFireX® HS Mechanical Series Kitchen Fire Suppression systems offer a unique Mechanical-Hydraulic activation Wet Chemical Kitchen Fire suppression systems that has been tested to UL 300 standards and carry EN-17446 Approval



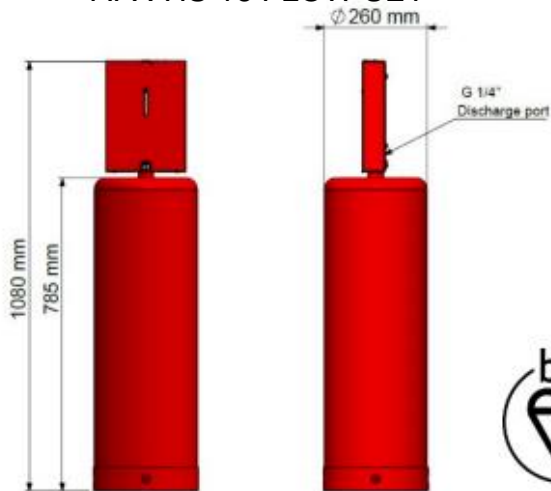


AutoFireX® HS Kitchen Fire Suppression System

AutoFireX® HS Mechanical Series Kitchen Fire Suppression systems Unique Features:



AFX-HS 8 FLOW SET
AFX-HS 16 FLOW SET



- World's first EN:17446-2021 certified mechanical system.
- No pressurized components needed for activation.
- Fast and precise mechanical fire detection.
- Microswitch included as standard to annunciate Fire event to Fire alarm panel or Audio-Visual Alarm unit
- Gas shut-off valve (mechanical or electrical) can be integrated with the system to shut off gas supply.
- Multi cylinder application up to 5 cylinders.
- Patented technique.
- Easy to install
- Easy to maintain and service.
- Simple hydraulic calculation for volume/agent calculation.
- System design, piping and flow calculation is easy.
- Systems available: 8 flow point and 16 flow point options.
- Laser marked 2 types of nozzles.
- Low system working pressure-15 bar
- System cylinders can be recharged and pressurized at site.

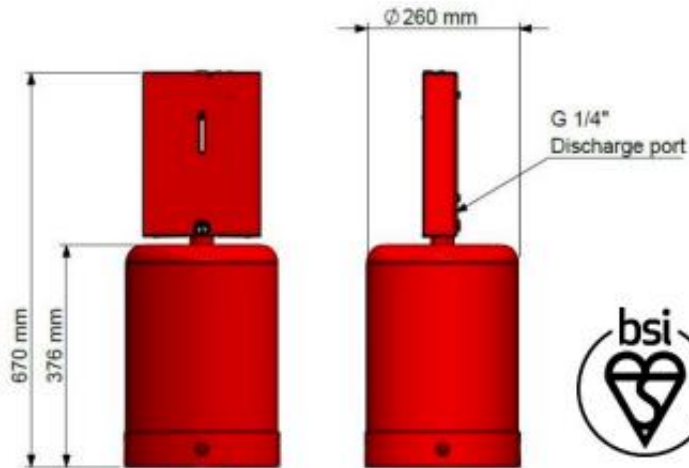
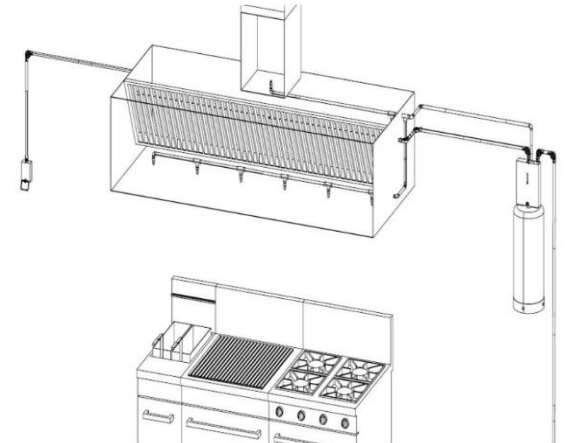


AutoFireX® HS Kitchen Fire Suppression System

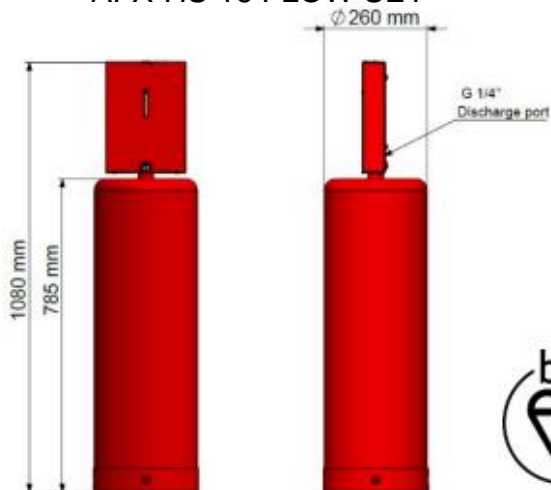
SYSTEM COMPONENTS

AFX- HS8- AutoFireX® HS Mechanical Series 8 Flow point Kitchen Fire Suppression System

- 10 Ltr. Wet chemical
- 8 Nos. Nozzles (H1 & H2)
- 3 Nos. Heat Link/ Thermo bulb
- 3 Nos. Corner Pulleys
- 1 Nos. Manual pull station
- 1 Nos. Cylinder & Wall mounting Bracket kit

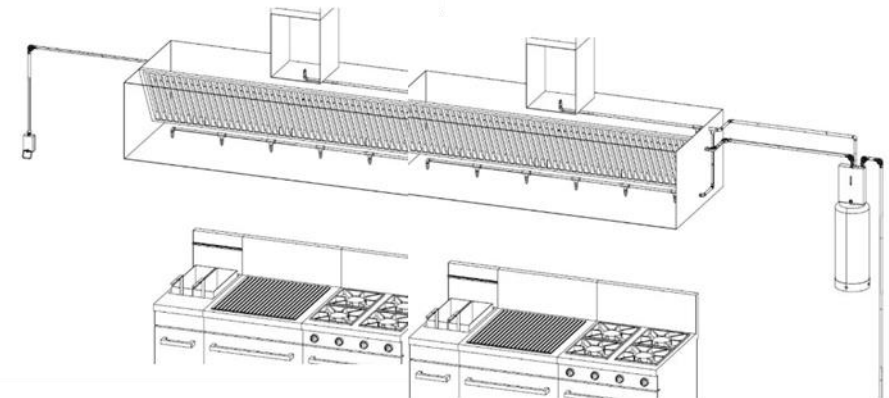


AFX-HS 8 FLOW SET
AFX-HS 16 FLOW SET



AFX- HS16- AutoFireX® HS Mechanical Series 16 Flow point Kitchen Fire Suppression System

- 20 Ltr. Wet chemical
- 16 Nos. Nozzles (H1 & H2)
- 3 Nos. Heat Link/ Thermo-bulb
- 5 Nos. Corner Pulleys
- 1 Nos. Manual pull station
- 1 Nos. Cylinder & Wall mounting Bracket kit





AutoFireX® HS Kitchen Fire Suppression System

FLOW CAPACITY ACCORDING TO SYSTEM TYPE

SYSTEM TYPE	Flow
HS8	8
HS16	16
HS8+HS8	16
HS8+HS16	24
HS16+HS16	32
HS8+HS16+HS16	40
Multi cylinder application available up to 5 cylinders.	





AutoFireX® HS Kitchen Fire Suppression System

FLOW POINT CALCULATION

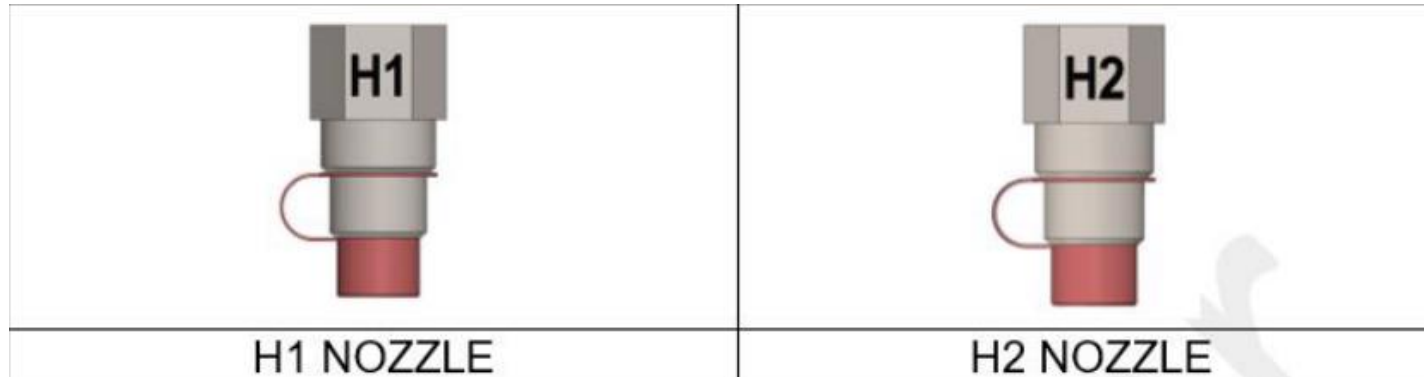
There are two types of nozzles used in the system.

H1 Type Nozzle (100224)

1 flow nozzle for all appliances and hood and plenum.

H2 Type Nozzle (100225)

2 flow nozzles for deep fat fryers.





AutoFireX® HS Kitchen Fire Suppression System

FLOW POINT CALCULATION

Single Nozzle Protection

Catering equipment	Max. COOKING SURFACE dimensions for protection with 1 nozzle (width x length) (cm)	Nozzle type	Nozzle height limitations from catering equipment surface to nozzle tip	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





AutoFireX® HS Kitchen Fire Suppression System

FLOW POINT CALCULATION

Multiple Nozzle Protection

Catering equipment	Max. COOKING SURFACE dimensions for protection with multiple nozzles (width x length) (cm)	Nozzle Quantity / type	Nozzle height limitations from catering equipment surface to nozzle tip	Flow calculation
Range top	1 nozzle for each 40x60 cm. section	1 / H1	90 – 100	1
Griddle	76x120	2 / H1	90 – 110	2
Split vat or Multi vat deep fat fryer (for each vat)	34x50	1 / H2	90 – 100	2





AutoFireX® HS Kitchen Fire Suppression System

FLOW POINT EXHUAUST PROTECTION

Important Notification!

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

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



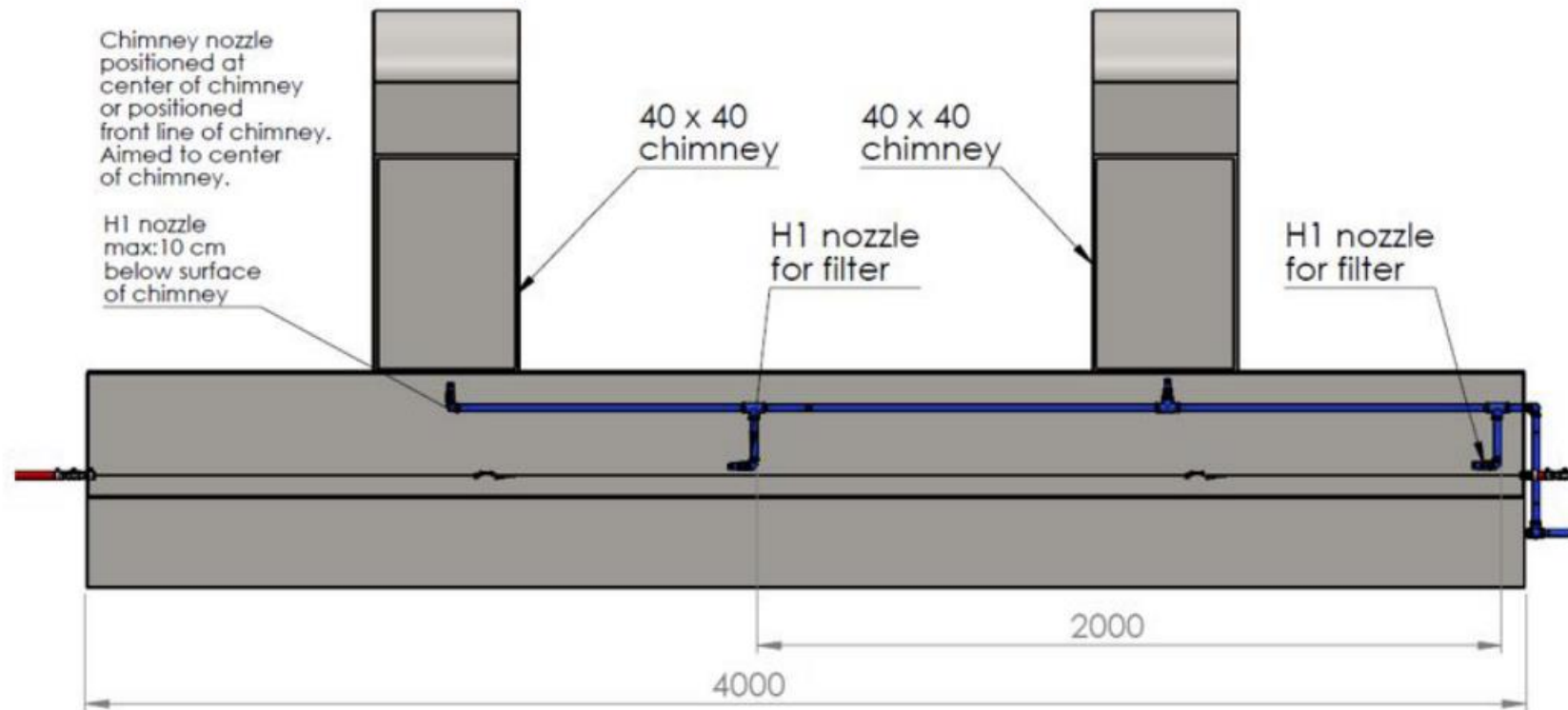
- **Protection for round chimneys:**
 - 1 pc. Of H1 type nozzle for each chimney with a diameter up to 40 cm.
 - 2 pc. Of H1 type nozzles for each chimney with a diameter up to 60 cm.
- **Protection for square chimneys:**
 - 1 pc. Of H1 type nozzle for each chimney with up to 40x40 cm dimensions.
 - 2 pcs. Of H1 type nozzles for each chimney with up to 40x60 cm dimensions.
 - Add 1 more nozzle for every 20 cm more lengths of chimneys.
- **Protection for filters:**
 - H1 type nozzles can spray upto 3m forward.**
 - Install 1 pc of H1 type nozzle for up to 3m hoods.



AutoFireX® HS Kitchen Fire Suppression System

FLOW POINT CALCULATION

Important Notice: If the hood is a divided hood, install 1 pc. of H type nozzle for each division up to 3 m.

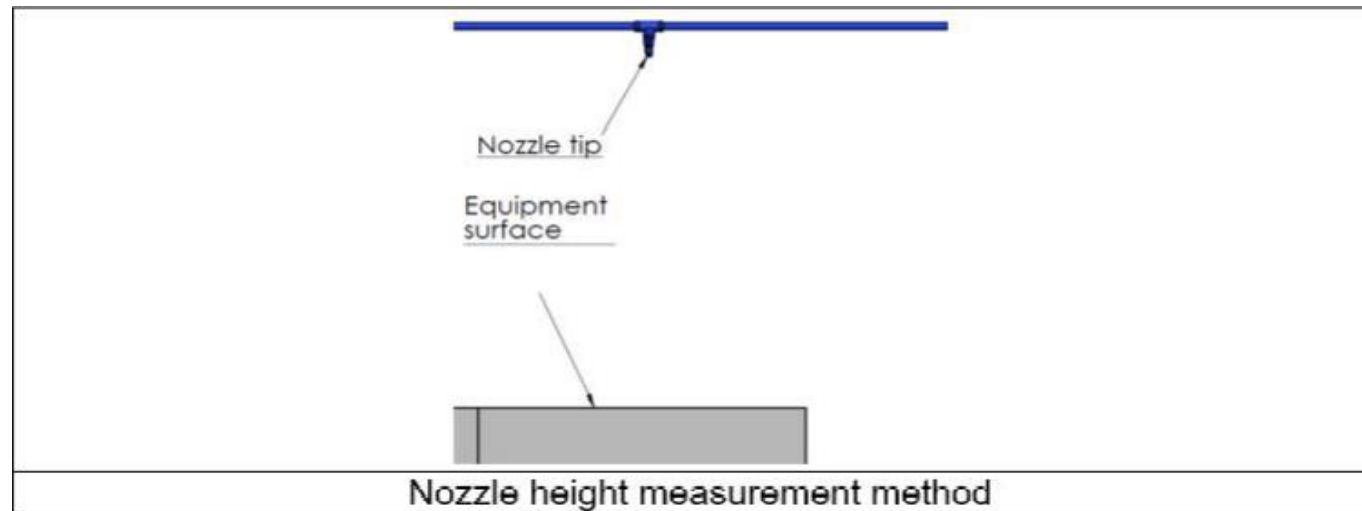




AutoFireX® HS Kitchen Fire Suppression System

NOZZLE PLACEMENT/ LOCATION IN EXHAUST PROTECTION

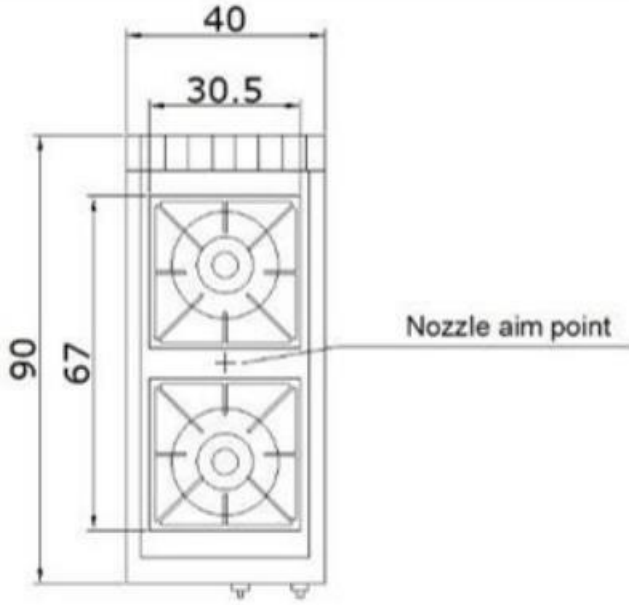
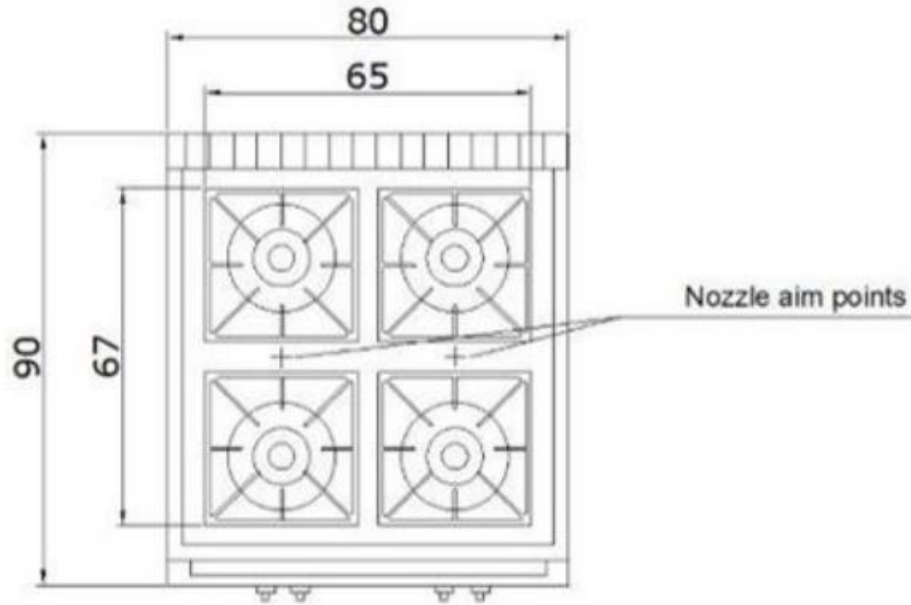
- H1 type nozzle (1 flow) is used to protect any kind of equipment under the hood EXCEPT DEEP FAT FRYER.
- Deep fat fryers that are larger than 34x50 cm are protected by 1 pc. H2 type nozzle for split vat or multi vat deep fat fryers.
- Range top up to 40x60 cm is protected by 1 pc. H1 type nozzle.





AutoFireX® HS Kitchen Fire Suppression System

NOZZLE PLACEMENT FOR RANGE PROTECTION

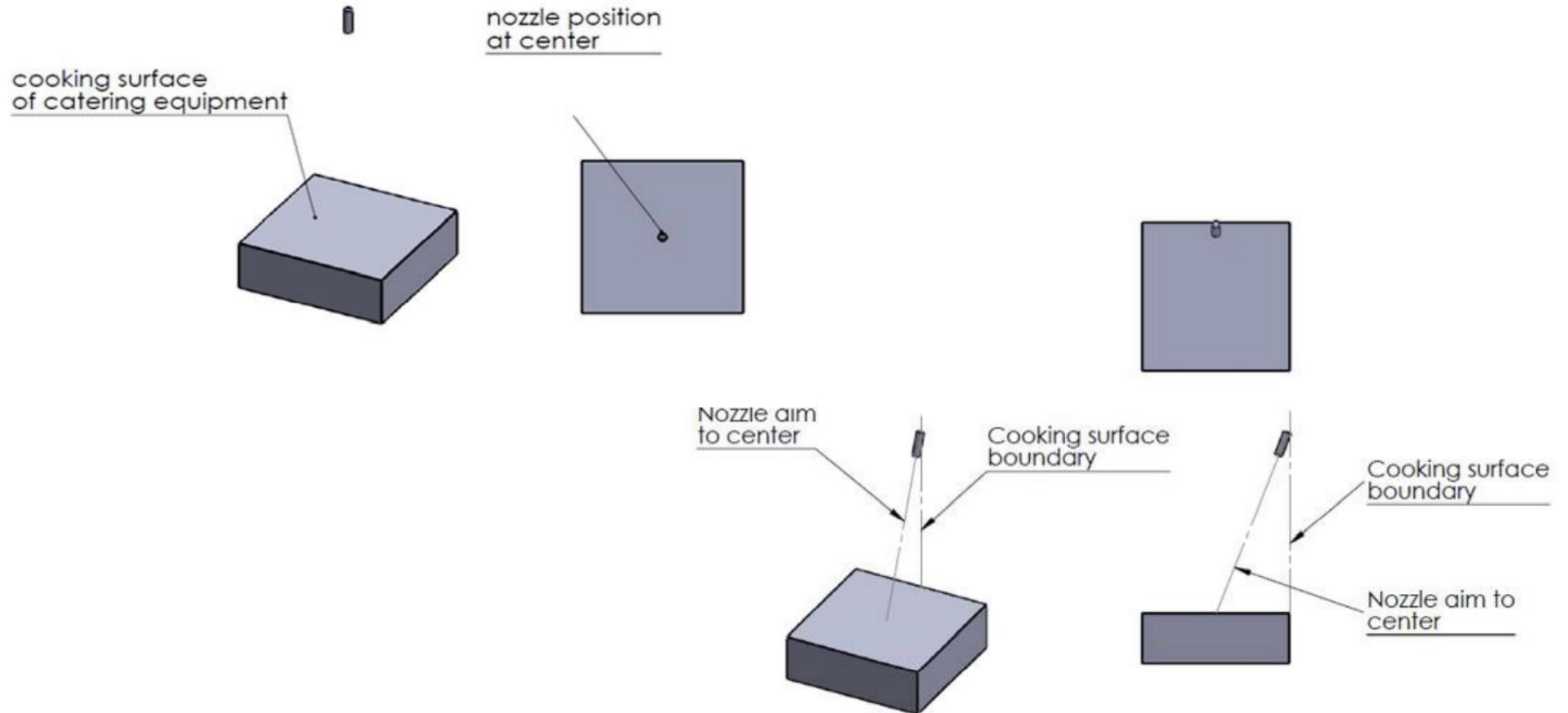
	
Single module range top protection for single nozzle application (maximum dimensions)	Double module range top protection for multiple nozzle protection





AutoFireX® HS Kitchen Fire Suppression System

NOZZLE PLACEMENT FOR COOKING APPLIANCES





AutoFireX® HS Kitchen Fire Suppression System

HEAT LINK/ DETECTORS

JOB standard response thermobulb links and Global Fusible Links are used for fire detection. JOB thermobulb links and Global Fusible Links are UL listed.

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

Mid temp detection: 182°C thermobulb (100226)



Thermobulb Link

Temperature	Color Code	Part Code	Definition	Cooking equipment
182 °C	Purple	P400	Mid. Temp	Fryers, range tops, skillets, woks.



AutoFireX® HS Kitchen Fire Suppression System

MANUAL PULL STATION



According to NFPA 17-A ;

- Manual pull station shall installed minimum 2 meters away from hood or on the way of exit of the placei
- Manual pull station shall installed at minimum 1.2 m height from ground.



AutoFireX® HS Kitchen Fire Suppression System

CORNER PULLEYS

These should be used in all returns in detection line installation. Maximum 25 corner pulleys can be used in a detection line.



System Type	Corner Pulleys
HS8	3 Pcs
HS16	5 Pcs

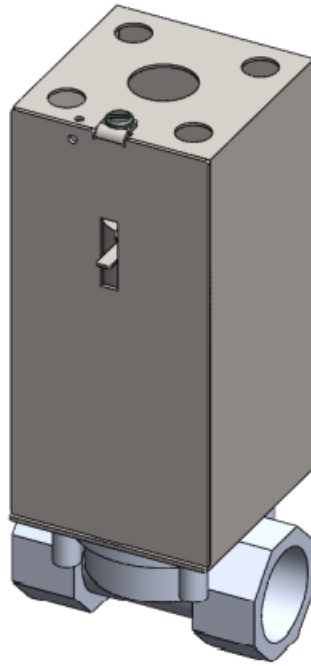




AutoFireX[®] HS Kitchen Fire Suppression System

MECHANICAL GAS SHUT OFF VALVE

1 Inch mechanical gas shut-off valve





AutoFireX® HS Kitchen Fire Suppression System

PIPING LIMITATIONS

3.1. Discharge Line Piping Rules and Hydraulic Calculation

All pipe and fitting materials to be used in the system shall be made of AISI 304 or AISI 304L quality stainless steel (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 cm.





AutoFireX® HS Kitchen Fire Suppression System

PIPING LIMITATIONS

Maximum Piping Limits for discharge Line

Limitation for discharge line length is needed because the AutoFireX systems are closed-circuit systems. That means, systems have natural-physical limits because there is limited pressurised gas inside of cylinders. Piping limit is defined as system discharge line installed with a straight pipe (no bends).

Calculated piping limits are given on table below.

Discharge line shall be thought as a straight pipe for limitation.

All elbows and TEE's installed on system should be extracted from maximum piping length with their value of "equivalent pipe length".

Hydraulic calculation can be performed with using our excel table for "Hydraulic calculation for HS and HSP series".



Diameter	Fitting	Equivalent pipe length	The values shall be extracted for each fitting from maximum pipe length.
3/8"	Elbow	0,4 m.	
	TE	0,4 m.	



AutoFireX® HS Kitchen Fire Suppression System

SYSTEM COMPONENTS

Part Code	Part Name	Explanation / Details	Image / Picture
P900	Corner Pulley	Corner Pulley Package quantity : 10 pcs.	
P850 (8 flow) P860 (16 flow)	Cylinder Hang Kit	Complete Assembly 1 pcs. Cylinder Hang 1 pcs. Fixing belt 6 pcs. Screw 6 pcs. dowels Package quantity : 1 pcs.	
P300	Manual Pull Station	Complete Assembly Package quantity : 1 pcs.	
P400	Thermobulb Kit	1 pcs. 182 C Thermobulb 2 pcs. Aluminum Collet 2 pcs. S hooks Package quantity : 1 pcs.	
P700	Thermobulb Kit	1 pcs. 260 C Thermobulb 2 pcs. Aluminum Collet 2 pcs. S hooks Package quantity : 1 pcs.	

Part Code	Part Name	Explanation / Details	Image / Picture
P600 (H1) P650 (H2)	Spray Nozzle	1 pcs. Spray Nozzle 1 pcs. Nozzle Cap Package quantity : 15 pcs.	
P350	Pull Pin Kit	1 pcs. Pull Pin with handle 1 pcs. Housing Screw 2 pcs. Aluminum Collet 2 pcs. Thermoplastic Seal 4 pcs. Screw 4 pcs. Anchor Package quantity : 1 pcs.	
P200	Microswitch Kit	1 pcs. Microswitch Kit Package quantity : 1 pcs.	
P602	Nozzle Cap	Thermoset Nozzle Cap Package quantity : 10 pcs.	
P116	Pressure Gauge	15 bar bourdon tube pressure gauge Package quantity : 10 pcs.	





AutoFireX® HS Kitchen Fire Suppression System



THANK YOU FOR YOUR TIME

SUDHIR TANDON

AutoFireX LLP

Village Pandeygaon, Bilaspur

Bhimtal , NainiTal : 263136 Uttrakhand

www.autofirex.co.uk

Email: info@autofirex.co.uk

KM 786033
Certified kitchen fire
Suppression system

