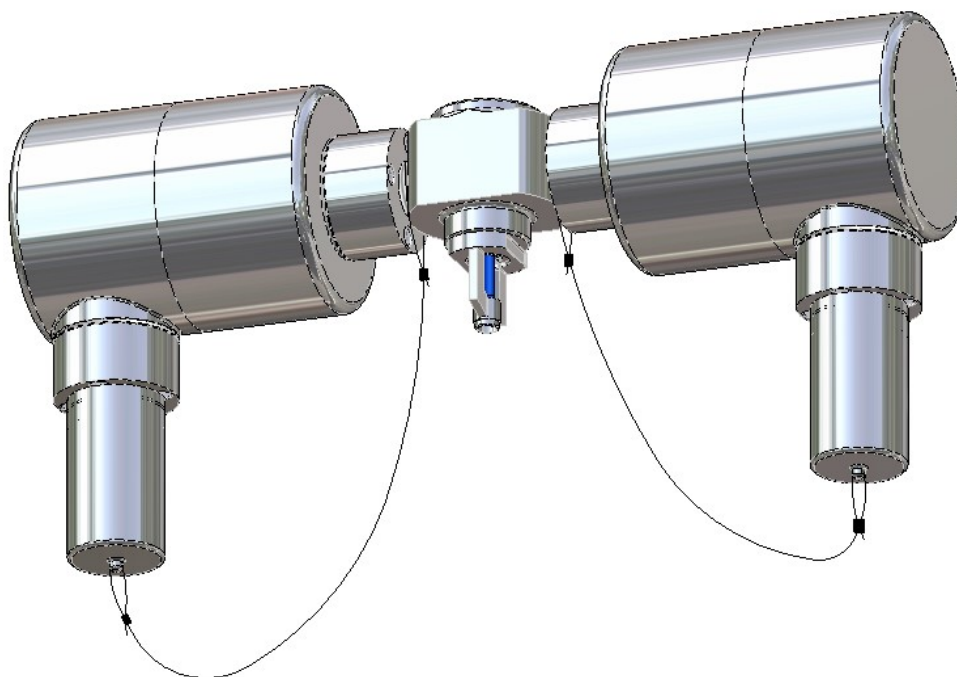


GW MisteryHood – Twin Nozzle System
GW DualTech – Twin Nozzle System (USA)

Installation Guidelines
& Applications



**GW Commercial Fat Fryer Sprinkler
Protection System
Manual No 815**

GW SPRINKLER A/S

Kastanievej 15, DK-5620 Glamsbjerg, Denmark
Tel: +45 64 72 20 55 Fax: +45 64 72 22 55
Email: sales.dep@gwsprinkler.com

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GW SPRINKLER A/S

Kastanievej 15, DK-5620 Glamsbjerg, Denmark
Tel: +45 64 72 20 55 Fax: +45 64 72 22 55
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1 Introduction

The **GW MisteryHood-Twin Nozzle System** is a water based twin fluid system for the automatic fire protection of Commercial Deep Fat Fryer Units. The system, which is available in three different release temperatures, operates automatically from the heat of a fire. The system does not require any electrical power to operate. The system shall be connected to a 3/4" pipe that is branched off from a wet pipe sprinkler system in accordance with NFPA 13, "Installation of Sprinkler Systems".

GW MisteryHood-Twin Nozzle Units are delivered fully assembled and ready for installation.

The **GW MisteryHood-Twin Nozzle Units** contain agent which has a limited service life. The 1/2" nozzle connection port is marked with the **year of expiry** at which time the agent filled canister must be replaced with a new one. Your supplier shall be contacted for replacements.

The **GW MisteryHood-Twin Nozzle Units** are made up of units tested within limitations contained in the detailed Installation Manual. It is essential that these limitations are not exceeded. The system designer must be consulted whenever changes are planned for the system or for the area of protection. An authorized installer or system designer must also be consulted after the system has discharged.

GW MisteryHood-Twin Nozzle Units shall **not** be interconnected to one another: for example to provide fire protection of fryer pools larger than the size for which the system is approved. For individual pools of the correct size a separate connection must be provided for each individual MisteryHood Unit (See **Diagram 5**)

The **GW MisteryHood-Twin Nozzle Units** shall be inspected at regular intervals for:

- the collection of grease;
- damage to the unit or the nozzles / missing parts;
- the expiry date of the agent-canisters.

The unit shall be cleaned or replaced as appropriate

The intervals for system inspection and cleaning depends on the application. GW strongly recommends that the system is checked, and recorded for blockages and damage, at least every week. Cleaning shall take place at least every three (3) months, or when grease build-up can be seen on the components of the system. Cleaning shall be conducted by qualified and trained personnel, and signed records kept. The cleaning and the inspections shall be conducted in accordance with the guidelines of this service manual and with local requirements to the control of hygiene and health and safety in cooking areas.

GW SPRINKLER A/S

Kastanievej 15, DK-5620 Glamsbjerg, Denmark
Tel: +45 64 72 20 55 Fax: +45 64 72 22 55
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The **GW MisteryHood-Twin Nozzle Units** shall be maintained in accordance with the procedures in this manual. After system activation, all power supply to the protected cooking area must be turned off and isolated to avoid risk of electric shock from wetted electric equipment. The frying grease shall be cooled to below its re-ignition temperature 600°F (320 °C) before the water supply to the GW MisteryHood System is turned off.

The affected area shall then be cleaned and the frying pool(s) drained of **all water*** and grease. All contaminated liquids shall be removed and disposed of in line with local environmental requirements. A complete new MisteryHood Unit, including new nozzles, shall then be installed by a trained installer, in accordance with the installation procedures of this manual.

In case of any doubts to design, installation or maintenance of GW MisteryHood Systems the system supplier shall be contacted.

*** WARNING !**

Water is heavier than oil and will gather invisibly under the frying oil. The water will, if present in the frying pool, cause the oil to EXPLODE when heated up!! It is therefore mandatory that **ALL** liquid (water & oil) is drained out and the fryer pool carefully cleaned and dried before adding fresh frying oil.

2 Application & Water Supply Details

The MisteryHood System is suitable for the protection of fat fryers with a maximum pool surface area (including drip board area) not exceeding (see also **diagram 1B**):

Single Vat: **26,75" x 21,5" (679,5mm x 546mm)**

Split Vat: **2 x 13⅜" x 21½" (340mm x 546mm)**

The MisteryHood System may be installed in Kitchen Hoods.

- *The MisteryHood Systems shall **not** be installed in hoods where the protected fat fryer unit is installed next to a chain-boiler with catalyst exceeding 210 °F (100 °C)*
- *MisteryHood Systems shall **not** be installed in kitchen hoods with high surface temperatures. The hood surface temperature should not exceed 158 °F (70°C).*

The highest peak temperature in the kitchen hood area, where the MisteryHood Unit is installed, shall always be 68°F (20°C) **below** the nominal release temperature of the MisteryHood Unit. If in doubt do not install the MisteryHood System, and contact your fryer supplier /manufacturer for the correct information and guidance on the operation of the fryer unit.

GW SPRINKLER A/S

Kastanievej 15, DK-5620 Glamsbjerg, Denmark
Tel: +45 64 72 20 55 Fax: +45 64 72 22 55
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GW MisteryHood / GW DualTech

Deep Fat Fryer Fire Protection

Installation, Operation & Maintenance (IO&M)

The heat release element of the MisteryHood Unit shall be installed above the centre of the cooking pool, which the unit protects. The installation tolerances shall be kept within $\pm 2"$ (50mm) front to back, and within $\pm 3"$ (75mm) right to left, of the pool centre.

The MisteryHood System nozzles shall be installed at a height between 47,5" - 49,5" (1,20m – 1,25m) above the max. static level of the heated oil surface. (See **Diagram 1A**).

The GW MisteryHood System shall be installed with the two system canisters in parallel, with the length of the fryer pool (see **Diagram 1**). The Unit nozzles shall always be installed in the pendent position (tip of the nozzles / Blow Off Caps pointing downwards).

This is very important when replacing old canisters with new, to ensure correct spray pattern and coverage. (See **Diagram 2**).

The MisteryHood System shall be connected to a $\frac{3}{4}"$ branched off pipe from a wet pipe fire sprinkler system. The branch pipe shall have a minimum water supply capable of supplying the MisteryHood System with 17.7 US gal/min. (67 l/min) of extinguishing water at 50 PSI (3,5 bar).

The water pressure shall not exceed 175 psi (12 bar).

The installation shall be in accordance with NFPA 13 "Installation of Sprinkler Systems"

3 GW MisteryHood -Twin Nozzle System components

Data

System K-factor: 2.48 gal/min. $\sqrt{\text{psi}}$. (2 x K18 = 36 l/min $\sqrt{\text{bar}}$)

Nominal release temperature: 286°F (141°C)

Heat response class: Standard Response A - (RTI >100)

Components

The *GW MisteryHood-Twin Nozzle System* consists of:

GW Automatic Valve (1 x)

This is supplied with a $\frac{3}{4}"$ female BSP parallel (USA: $\frac{3}{4}"$ female NPT) pipe connection. It is supplied with a standard response glass bulb:

Colour	Nominal heat release temperature	
Blue	286°F	141°C

GW SPRINKLER A/S

Kastanievej 15, DK-5620 Glamsbjerg, Denmark
Tel: +45 64 72 20 55 Fax: +45 64 72 22 55
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Installation, Operation & Maintenance (IO&M)



The name of the manufacturer, the year of manufacture, the brand name are all permanently marked on the side of the Automatic Valve body. The nominal heat release temperature is marked on the detector fitted in the valve. The valve is made of nickel / chrome plated brass.

If a fire starts in the fryer pool below the GW Automatic Valve, the glass bulb will shatter when the nominal release temperature around the bulb is reached. Note that the “free burn time” which is the time passing from ignition of the oil until the shattering of the glass bulb is approx. 90 seconds (286°F/141°C bulb). The valve will then be opened by the water pressure in the sprinkler pipes and the water pressure from the sprinkler system will then build up on the two outlet ports which are connected to the canisters. (See **Diagram 3**).

The GW Automatic Valve cannot be re-used after activation. The GW Automatic Valve has been supplied with the glass bulb accurately loaded and the whole system primed. The GW Automatic Valve shall not be disassembled or adjusted in any way, as doing so will invalidate the warranty and will impair the performance of the system.

Canister (2 x)

Two identical Canisters are screwed into the two outlet ports of the GW Automatic Valve. The Canisters are made of stainless steel ANSI 316 and contain a fire suppression agent (details of the agent can be found at the end of this manual).

The inlet and the outlet of the canisters are sealed with Bursting Discs.

When the GW Automatic Valve is activated from the heat of fire, the water pressure from the sprinkler system breaks the Bursting Discs at the inlet of the canisters. The build-up in pressure inside the Canister will then break the Bursting Discs at the outlet of the Canisters. This in turn will, after blowing off the protection cap from the nozzle, allow the AFFF fire extinguishing agent to be distributed over the place of fire.

The concentrated fire suppression agent (AFFF) will be expelled from the nozzles, followed by a continuous supply of water mist. The agent will immediately extinguish the fire – and water mist cools the grease pool, preventing re-ignition. (See **Diagram 3**).

The Canisters are marked with a year of expiry on the nozzle port. At the first service during the year of expiry (= 5 years after manufacture) a trained service engineer must replace the expired Canister with a new one (failure to replace the canister could cause failure of the system).

The Canisters can be changed, by a qualified service professional, without having to dismount the GW Automatic Valve or disconnect the water supply to the MisteryHood Unit. When replacing the canisters the installation guideline in **diagram 2** must be followed.

WARNING !

No work shall be conducted over a heated cooking fryer pool. Work done over a cooking area must be in accordance with local operating, safety and hygiene requirements. All power must be isolated and all equipment removed and covered whilst the work is being undertaken.

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Nozzle (2 x)

A GW-S nozzle (K18) is fitted in the pendent position (pointing downwards) in the outlet port of each canister. The nozzles are made from nickel / chrome plated brass. The nozzles are protected/covered by Blow-Off-Caps. Nozzles shall be installed with the yokes perpendicular to the canisters. (see **Diagram 4**).

By removing the Blow-Off-Cap (pull it gently downwards) the nozzles can be inspected for damages to the deflector hooks, and for collection of grease. The position of the "hook deflector" relative to the small centre positioned orifice shall be checked in accordance with this manual. If damaged, the nozzle must be replaced with a new one.

On no account shall any attempt be made to repair the nozzle!

Blow-Off-Cap (2 x)

A cap is fitted over each nozzle. The caps are made from nickel / chrome plated brass. Each cap is fitted with a wire, made of stainless steel, which prevents the caps from accidentally dropping into the oil - or when the system is activated.

The two wires have different lengths (406 mm and 470 mm) to prevent the Blow Off Caps from hitting each other when being released. Attention should be paid to this when ordering spare parts. The caps are supplied fitted, covering/protecting the nozzles.

Sealing Adapter (2 x)

To protect the spray Nozzles from becoming damaged or dirty the Nozzles are fully covered by Blow-Off-Caps. These are fixed and held in place by a Sealing Adapter mounted on the Nozzle thread. When the MisteryHood Unit is activated, the Blow-Off-Cap is automatically ejected by means of the system water pressure.

Other Components

All packaging can be re-cycled, and shall be disposed of as recommended by local guidelines or laws.

Maintenance sheet - this shall be supplied to the end user of the system with suitable training. (signed off training records shall be created to show that the individuals can adequately maintain the system).

Warning !

The main components are supplied by GW Sprinkler as complete assemblies. Unless stated within this manual, no component shall be dismantled or adjusted.

No attempt shall be made to use other components from other sources with this system. This could make the system inoperative and could have serious safety consequences.

GW SPRINKLER A/S

Kastanievej 15, DK-5620 Glamsbjerg, Denmark
Tel: +45 64 72 20 55 Fax: +45 64 72 22 55
Email: sales.dep@gwsprinkler.com

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4 System component performance:

Important ! *This product is intended to restrain the spread of fire in the event of one occurring in a fryer unit. It is essential that the responsible business user of the fat fryer shall always have adequate fire drill and escape procedures in place to ensure that personnel can be evacuated safely.*

The sequence below details a possible fire scenario (also see **Diagram 3**):

- 1 The temperature control of the fryer unit fails to switch off/regulate the heat source.
- 2 The oil pool heats to above its ignition temperature, and it ignites. Flames appear, and grow.
- 3 The heat from the flames operates the glass bulb on the GW Automatic Valve, and the GW Automatic Valve is activated.
- 4 Water flows from the sprinkler system, through the valve, to the Bursting Disc on the inlets of the Canisters, where water pressure builds up.
- 5 The sprinkler water pressure bursts the Bursting Disc at the canister inlets, and shortly after also at the canister outlet port.
- 6 Pressure from the canister outlet port causes the Blow-Off-Cap to eject from the Sealing Adapter, exposing the Nozzle. (The caps are fitted with a wire rope which will support the caps and prevent them from dropping into the hot oil)
- 7 Extinguishing agent is distributed over the place of fire, followed by water mist, which extinguishes* the fire and cools the oil bath, preventing re-ignition.
- 8 At a time during this sequence the alarm sounds from the sprinkler system alarm, and from the alarm/water flow control panel.
- 9 The system continues to spray water mist, and cools the fryer, until the water supply is manually turned off.

* In tests of this product the time from activation of the MisteryHood Unit to the flames being extinguished has been in the range of 5-10 seconds.

Warning !

The timescales quoted are only a guideline based on a possible scenario. There may be many causes of a fire and various factors which affect the rate at which a fire spreads, the user must not be reliant on these timescales being accurate.

On **no** account shall any attempt be made to try and extinguish the oil fire manually with water!!!

GW SPRINKLER A/S

Kastanievej 15, DK-5620 Glamsbjerg, Denmark
Tel: +45 64 72 20 55 Fax: +45 64 72 22 55
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5 Design Guidelines for MisteryHood System

- The MisteryHood System shall be connected to a branched off pipe with a male 3/4" BSP connection from a Water Sprinkler System (USA: 3/4" NPT).
- The installed MisteryHood System shall be designed in accordance with NFPA 13, and the system shall be hydraulically calculated to be able to provide a **minimum of 17,7 US gallons of water per minute (67 l/min.) at 50 psi (3.5 bar)**. The system water pressure shall not exceed 175 psi (12 bar).
- One MisteryHood System shall be installed to protect **one (1)** fat fryer unit. The maximum cooking pool area, including drip-board of the fryer, shall **not exceed** the size limitations specified in **Diagram 1B**.
- The MisteryHood System shall not be interconnected with another MisteryHood System in order to provide fire protection of larger fryers.
- The nominal release temperature of the units (see section 3 for options) shall be a minimum of 68°F (20 °C) higher than the maximum peak temperature in the hood where the MisteryHood unit is installed.
- MisteryHood Systems shall not be installed next to a fryer-chain-boiler with catalyst where the temperature exceeds 212°F (100°C).
- The surface temperature inside the hood area shall not exceed 158°F (70 °C).
- The MisteryHood System shall not be installed in hoods where there is a risk for the system nozzles being damaged during use of the protected deep fat fryers.
- The MisteryHood System must be installed inside kitchen hoods with the heat sensitive element of the MisteryHood Unit **located 47,5" – 49,5" (1.20m – 1.25m) above the centre of the hot frying pool surface**. The heat sensitive element shall be positioned right above the centre of the fat fryer pool. For installation details see Diagram 1.
- The canisters shall be positioned in parallel with the longitudinal centre line of the fryer pool. The two nozzles must be fitted in the canister outlets, with the yokes perpendicular to the canister centre axis. (See **Diagram 1 and 2**).
- The MisteryHood System is typically installed as part of a wet pipe, sprinkler system together with a UL listed alarm flow switch, flow panel or control panel. The panel shall be able to sound an alarm at a flow rate of 6.5 US gal per minute (25 l/min), when the GW MisteryHood System operates. The panel shall also be able to disconnect the power, gas or other fuel supply to the fryer unit, when the MisteryHood System operates.
- The MisteryHood System shall be installed and secured in the kitchen hoods to be able to withstand vibrations inside the hoods.
- Maintenance and service manuals etc. shall be present in the working area. The operator of a protected deep fat fryer unit shall be made aware of the extinguishing system and its precautions.
- The MisteryHood System is supplied complete with Canisters, Nozzles and Blow-Off-Caps ready for installation in the kitchen hood.
- Many authorities (AHJ) require that local application systems, such as the MisteryHood System, are isolated from the rest of the sprinkler system with an isolation valve. Such a valve must be:

GW SPRINKLER A/S

Kastanievej 15, DK-5620 Glamsbjerg, Denmark
Tel: +45 64 72 20 55 Fax: +45 64 72 22 55
Email: sales.dep@gwsprinkler.com

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- a) lockable in the fully open position or
- b) electrically monitored/supervised to sound an alarm if it is not in the fully open position. Such a valve makes it possible to change/maintain/disconnect the MisteryHood System without having to close down the main sprinkler system.
- If multiple units are to be installed to protect an equal number of fat fryer units under one kitchen hood, all heat sensitive elements must have the **same** nominal release temperature. All of the MisteryHood Units in such an arrangement shall be installed at the same distance to the maximum level of the hot frying pool surface (See **Diagram 1**).

Precautions

The following precautions shall be taken:

- Do not touch the Bursting Disc at the canister outlet. This may damage the Bursting Disc and cause the MisteryHood Unit to leak AFFF agent into the frying pool.
- Leaking Units shall immediately be replaced with new, and the fryer pool shall be completely emptied*, cleaned and dried before new frying oil is applied. All liquids/solids shall be handled in accordance with the supplier's recommendations and disposed of in accordance with suppliers / manufacturers and local environmental requirements).
- Ensure that Nozzles are changed with new if damaged or blocked with grease.
- Ensure that MisteryHood Units and Nozzles are checked and cleaned at regular intervals.
- Ensure that deep fat fryer units are always correctly positioned below the MisteryHood Units.
- Do not exceed the max. temperature limit within kitchen hoods where MisteryHood Systems are installed.
- Ensure that maintenance and replacement work is not carried out above **hot** frying pools. Remove the frying unit prior to installation, maintenance or replacement of the MisteryHood System.
- Ensure that the persons responsible for installation/servicing do so in line with hygiene requirements.
- Never attempt to disassemble any of the units supplied unless stated in this manual.
- Always use the spanner provided to tighten the Nozzles. Do not use any other tool or method.

*** WARNING !**

Water is heavier than oil and will gather invisibly under the frying oil. The water will, if present in the frying pool, cause the oil to EXPLODE when heated up !!

GW SPRINKLER A/S

Kastanievej 15, DK-5620 Glamsbjerg, Denmark
Tel: +45 64 72 20 55 Fax: +45 64 72 22 55
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It is therefore mandatory that **ALL** liquid (water & oil) is drained out and the fryer pool carefully cleaned and dried before adding fresh frying oil.

6 Installation of the MisteryHood System

Pre-installation checks

The MisteryHood System must be visually checked when received on site. The following shall be checked before the system is installed:

- There must have been no leaks from the canisters.
- The glass bulb must be intact and filled with fluid.
- The MisteryHood system is fitted with the correct nominal release temperature for the application.
- The colour of the bulb shall match the nominal release temperature specified for the system.

Colour	Nominal heat release temperature	
Blue	286°F	141°C

- Make sure that both Blow-Off-Caps are in place when unpacking the MisteryHood Unit. If the Blow-Off-Caps have been removed during transportation the Nozzles must be inspected to make sure that the deflector plate and the deflector hook have not been damaged. The position of the Deflector Hook shall be according to instruction on **diagram 4**.

Make sure that the deflector plate orifice holes are all open and free from dirt. (see section 7 for correct method of replacing the caps).

- The **year of expiry** labeled on the nozzle ports must not be exceeded.
- The type of the ¾" female connection port thread of the MisteryHood Unit (i.e. size, NPT/BSP) must be identical to the ¾" male thread on the branched off supply pipe.

Preparing the water supply to the MisteryHood System

- Ensure that the water supply to the system is clean. Whilst the system contains some filtration it will not function with water containing debris.
- Using the existing or new sprinkler system, create a ¾" branch pipe into the fryer hood area. If in doubt contact the hood manufacturer for details on how and where to connect a branch pipe.
- The location of the branch pipe must be such that the MisteryHood Unit will be installed with the heat sensitive element right above the centre of the fryer pool.
For installation details see **Diagram 1**.

GW SPRINKLER A/S

Kastanievej 15, DK-5620 Glamsbjerg, Denmark
Tel: +45 64 72 20 55 Fax: +45 64 72 22 55
Email: sales.dep@gwsprinkler.com

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- Ensure the branch pipe is securely located and suitably sealed with the appropriate high temperature sealant (contact the hood manufacturer to confirm suitable sealant and anchoring positions). The weight of the full MisteryHood system, and hydraulic reaction forces, when activated, shall be taken into consideration when providing a suitable anchoring method/position.

As with all sprinkler systems, it is essential that correct procedures are used when preparing pipe work. No debris i.e. from threading, welding, sealant etc. shall remain in the pipe work after installation, which could block the internal orifices of the system.

- Apart from the direct connection, none of the pipe components or the fixing devices shall come into contact with the MisteryHood System.
- None of the pipe components, or the fixing devices, may hang lower than the canisters when installed. Doing so will disrupt the spray pattern of the system. The location of pipe work and fixing devices shall be designed so as to reduce the risk of fat, grease, oil and condensates to drip onto the MisteryHood system.
- Many authorities require that local application systems, such as the *MisteryHood System*, are isolated from the rest of the sprinkler system with an isolation valve. Such a valve must be:
 - a) lockable in the fully open position or
 - b) electrically monitored to sound an alarm if not in the fully open position.

Such a valve makes it possible to change or service the MisteryHood System without having to close down the main sprinkler system. If applicable such valve shall be installed at this stage.

- A method of activating the alarm and/or disconnecting the fryer energy supply may be required in case the system is activated. Please consult the relevant authority for local requirements in force. A suitable and approved method for detection shall be installed at this stage.

Installing the MisteryHood System

- The MisteryHood System shall be fitted and secured to the branch pipe at the $\frac{3}{4}$ " inlet port on the GW Automatic Valve with the assistance of suitable pipe sealant i.e. PTFE tape. The MisteryHood System shall be fitted with the canisters in parallel with the length of the fryer (See **Diagrams 1 and 2**).
- Check that the MisteryHood System is safely installed and that its position is secure. There shall be no damage to any part of the system. The Blow-Off-Caps must be fitted tightly (no gaps) to the flange.
- After finishing the installation, check that all isolation valves (if any) installed between the sprinkler system and the MisteryHood System are fully open, and locked in the open position.
- After installation of the system, turn the water supply on. Check that there are no leaks from the system, and that all electric circuits and alarm / control circuits are functioning as intended. Ensure that all air in the system is vented.

GW SPRINKLER A/S

Kastanievej 15, DK-5620 Glamsbjerg, Denmark
Tel: +45 64 72 20 55 Fax: +45 64 72 22 55
Email: sales.dep@gwsprinkler.com

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- It is recommended that the system is left for at least 24 hours to ensure that no leaks from the branch pipe occur. It is recommended that the area is heated (normal working temperature) to ensure that there are no leaks from any connections.
- If no leaks occur, the fryer can be moved into correct position under the MisteryHood Unit.
- The installer must inform the user in writing that the fryer pool must remain in place below the MisteryHood System within the dimensions specified in this manual. (See **Diagram 1A**). If possible, fixtures or marks for the fryer unit shall be fitted / identified on the floor to ensure that the fat fryer unit is always re-positioned in the correct place after removal.
- A system operation manual shall be present in the cooking area.
- The owner of the installation must be made aware of how and when to inspect the system and when to have the installation serviced. GW recommends that the installer provides the customer with a manual containing this document.

Warnings !

- MisteryHood System units containing components, which have been dropped or damaged must **never** be installed. Glass bulbs are fragile components. Damage to these glass bulbs may not always be visible to the eye. MisteryHood Unit shall not be installed if tools or other hard elements have been in contact with the glass bulb during the installation, handling or transportation – as this could cause spurious release of the system.
- Under no circumstances must the glass bulb in the MisteryHood system be touched.
- No installation or maintenance work on the MisteryHood System shall be conducted above heated oil pools. The installer / service individual shall ensure that the fryer is cold and isolated, so that it can be safely removed from its position. If necessary cover the fryer to ensure no debris enters the oil pool.
- The installation must be checked for leaks before the fryer is moved back into position. The fryer unit must then be re-positioned in the right place after the work has been finished. (see **Diagram 1A**).

GW SPRINKLER A/S

Kastanievej 15, DK-5620 Glamsbjerg, Denmark
Tel: +45 64 72 20 55 Fax: +45 64 72 22 55
Email: sales.dep@gwsprinkler.com

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7 Service and maintenance of MisteryHood System:

Control of Canister content

- Each canister is filled with 0,4l foam liquid. The content can be controlled by weighing the canister or the complete MisteryHood Unit:

Weight of one Canister excl. Nozzle and Blow Off Cap = 1.470 g +/- 30g

Weight of complete HistryHood Unit incl. Blow Off Caps = 3.800 g +/- 80g

If the MisteryHood system has been activated

- After the system has activated ensure that all power and heat sources to the area are isolated and turned off before the cooking equipment, or any other equipment in the area, is touched.
- The fryer pool must be cooled down for **at least for 2 minutes** to get below its re-ignition temperature. At this point the water from the sprinkler system may be turned off.
- The fryer pool must be cooled off before the pool is moved or emptied for oil. Check oil suppliers MSDS and fryer manufacturer's instructions of what temperature the fryer pool must be before removal of oil. The grease shall be removed and disposed of in accordance with the supplier's and environmental requirements.
- The used MisteryHood System shall be replaced with a complete new system installed in accordance with this installation manual (See section 5)
This work shall only be completed by a qualified and trained individual.
- The fire may have damaged various components in the system. The installer shall on no account try to install single parts of the system i.e. canisters. **The whole system MUST be replaced!**
GW recommends that the sprinkler system, branch pipe, sealant, fixing method are checked for fire damage, and where necessary replaced in accordance with NFPA13 requirements or recommendations.
- All equipment that has been in contact with the fire extinguishing agent (AFFF) shall have its contents removed and thoroughly cleaned with detergent and dried.

WARNING !

Water is heavier than oil and will gather invisibly under the frying oil. The water will, if present in the frying pool, cause the oil to EXPLODE when heated up !! It is therefore mandatory that **ALL** liquid (water & oil) is drained out and the fryer pool carefully cleaned and dried before adding fresh frying oil.

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Kastanievej 15, DK-5620 Glamsbjerg, Denmark
Tel: +45 64 72 20 55 Fax: +45 64 72 22 55
Email: sales.dep@gwsprinkler.com

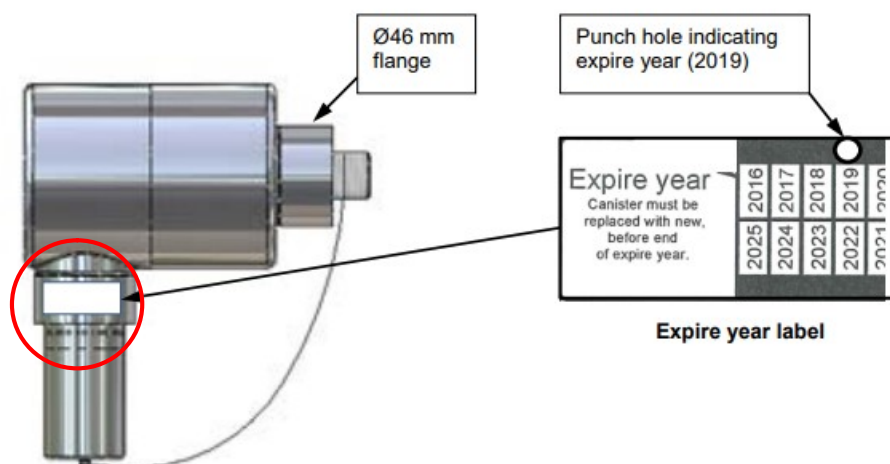
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Expiry of agent canisters



This shall only be completed by a qualified and trained individual

- The expiry year is marked on the canisters (nozzle ports). Both Canisters shall be changed at the first service within the year of expiry. Only new canisters shall be used.
- Prior to changing canisters the cooking pool shall be isolated, cooled off, and removed from the working place. If necessary, cover the fryer to ensure no debris enters the oil pool. Isolate the MisteryHood system by means of the isolation valve prior to starting work.
- Canisters can be changed without disconnecting or draining the sprinkler system pipes providing the GW Automatic Valve has not been damaged. Precautions shall be taken not to damage the heat sensitive element (glass bulb) on the GW Automatic Valve during the change-out process as this might activate the system.
- The expired canisters shall be unscrewed from the Automatic Valve, The caps, wires, sealing adapter, and the nozzles shall be removed (the latter using the spanner provided = Part No. BE25061). *The expired canisters can be returned to the supplier for safe disposal, or be disposed of locally. Please confirm and abide by local environmental laws and regulations whilst disposing of the canisters or extinguishing agent.*
- The outlet threads of the GW Automatic Valve shall be carefully cleaned to remove loose sealant / PTFE tape.
- PTFE tape (3-4 windings) shall be applied to the male connection thread of the new canisters. The wires from the Blow off Caps should then be fitted over the threads.
- The yellow protection plugs shall be removed from the new replacement Canisters. Precautions shall be taken at this stage not to apply any instruments into the Nozzle ports on the canisters, as this could break the Burst Discs.
The installer shall check that there have been no leaks from the canisters. If leaks are found, the

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MisteryHood System needs to be replaced with a new before the system or the fryer is taken into use.

- The new canisters shall then be fitted to the outlet ports of the Automatic Valves and a torque applied (3Nm-4Nm). The canisters shall be positioned with the nozzle connection ports in the pendent position. (See **Diagrams 2 and 4**).
- The existing nozzles shall be checked in accordance with the procedures of this manual (see next section).
- PTFE tape shall be applied to the thread of the Nozzles. Place the Sealing Adapter correctly orientated over the thread. (See **diagram 4**). The Nozzles shall then be fitted to the outlet threads of the Canisters. To avoid risks of damage to Nozzles during assembly the GW-S spanner shall be used when fitting the nozzles to the Canisters. Nozzles shall be secured with 3Nm – 4Nm of torque. Nozzles shall be installed with the yokes perpendicular to the length of the canisters (See **Diagram 2**).
- The Blow-Off Caps should be placed over the nozzles.
- Check that the MisteryHood System is safely installed and that its position is secure. There shall be no damage to any part of the system.
- After finishing the installation, check that all separation / isolation valves (if any) installed between the sprinkler system and the sprinkler system are fully open and locked in the open positions.
- After installation of the system, turn the water supply on. Check that there are no leaks from the system and that all electric circuits and alarm / control circuits are functioning as intended.
- Re-position the fryer unit. (See **Diagram 1A**).
- A record of the change-out of Canisters shall be made in the system operation manual and maintenance data which shall be present in the cooking area.

Replacing nozzles

The nozzles are protected by the Blow Off Cap and it is unlikely that damage will occur. If the nozzles are damaged then they should only be replaced by suitably trained personnel.

If the nozzle is damaged i.e.:

- the free hook end has been hit and is not positioned in centre 0.05 of an inch (1.8mm ± 0.2mm) from the small orifice hole (See **Diagram 4**),
- the orifice hole has been blocked during cleaning of the system
- damage to any part of the nozzle is visible or known

the nozzle shall be replaced with new.

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Deep Fat Fryer Fire Protection

Installation, Operation & Maintenance (IO&M)

- Isolate the system by means of the valve, and remove all equipment below the MisteryHood system.
- Remove the blow off cap.
- Using the spanner provided, unscrew the nozzle from the canister. Care shall be taken not to touch the bursting disc inside the nozzle port. (See **Diagram 3**). Carefully remove the sealing adapter from the nozzle.
- Remove all old sealant from the MistryHood orifice.
- The new nozzles shall be checked for physical damage (See **Diagram 4**).
- Fit the sealing adapter over the nozzle (see **Diagram 4** for correct orientation).
- Thread the new nozzle with 3 to 4 layers of PTFE tape
- Fit the nozzle to the canister port using the GW-S nozzle spanner (always ensure that the system is suitably anchored before applying a torque). The nozzle shall be secured applying a torque of 3-4 Nm.
- The caps should then be placed over the nozzles.
- All equipment can then be replaced, ensure that the fryer is in its correct position (see **Diagrams 1 and 2**). Check that the whole setting complies with the description of the service and installation manual.

Warnings !

Care must be taken not to touch the bursting disc.

On no account shall any attempts be made to repair a nozzle or to reinstall an old nozzle.

On no account must any other spanner be used other than the one provided. If in doubt please contact your MistryHood supplier.

The two wires fitted to blow off caps should be different lengths. Do not mix wires / caps from different systems.

Maintenance and Cleaning

This section of the manual can be copied and left as notes for training staff in cleaning the product. Please read this section, including the warnings, prior to cleaning the system.

Persons who are expected to clean the system must:

- Read this manual and understand it.
- Be shown how to clean the MistryHood system in line with the maintenance instructions – GW recommends that the training be provided by a qualified installer.

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- Shown how to look for damage to the MisteryHood system - particularly the bulb and nozzles.
- Shown to be aware and look for leaks from the MisteryHood and sprinkler system
- Know the limitations of the MisteryHood system.

Persons who work in the vicinity of the MisteryHood system must:

- Know that the system exists – and how it works.
- Know how to isolate the system after activation.
- Know what to do in the event of a fire.
- Know that the system can only be turned off after the oil has reached a suitable temperature (less than the re-ignition temperature).
- Know that the area must not be approached after activation unless all electrical power to the area, and heating sources to the fryer, has been turned off.

Checking and cleaning of the MisteryHood System

- The MisteryHood Units are installed in the hoods above the fat fryer units. It is necessary to keep the units clean from grease and coatings to ensure the optimal extinguishing performance of the units in the case of fire. Cleaning is also essential to keep good hygiene in the cooking area and reduce the risk of fire spread.
 - When cleaning the MisteryHood Units, the system shall be inspected for physical damage, the build-up of grease coatings on the Unit - and the expiry of the canisters.
If any part of the system is damaged, a certified installer must be called to fix the system.
If there is a build-up of grease the units shall be cleaned.
The canisters shall be replaced with new ones if the year of expiry has been exceeded. This work shall only be performed by a qualified sprinkler installer.
- MisteryHood Units shall be cleaned and inspected as a part of the cleaning routine of the kitchen hood **every 3-month** as a minimum.
- MisteryHood units shall be degreased and inspected by trained personnel, or other responsible persons, who have been trained by the supplier of the MisteryHood Units. The person trained shall have a signed record of training, and a copy held in their personnel file.
- Important information prior to the degreasing process:
 - The MisteryHood Units shall be cleaned only using a soft brush and household washing-up detergent, the units shall be cleaned so as not to cause physical damages to any parts – particularly care shall be exercised when cleaning the area of heat sensitive glass bulb activation element of the units. Do NOT touch the glass bulb!

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Tel: +45 64 72 20 55 Fax: +45 64 72 22 55
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- **The detergent shall not contain ammonia or any other chemicals reactive to brass or stainless steel**, it shall not contain any abrasive particles which could cause damage to the surfaces of the MisteryHood Unit. The MisteryHood unit shall always be rinsed with fresh clean water after the degreasing process.
- MisteryHood Units shall not be steam cleaned, or cleaned with any cleaner of temperatures higher than 104°F (40 °C), (this is to prevent inadvertent operation of the glass bulb – the heat sensitive element).
- Particular caution shall be taken not to get cleaning agent into the open nozzle inlets, this could cause the cleaning agent to get in contact with the busting disc.

The cleaning process to be followed

- The fryer unit must be cool and the power turned off.
- The fryer unit must be removed and covered in line with health, safety and hygienic regulations. As water is used during the cleaning process it is essential that other fryers and equipment in the area are turned off and removed in case water from this process inadvertently drops on other equipment.
- The MisteryHood Units shall be degreased using a soft brush and detergent (see above comments on detergents) whilst in the installed position inside the hoods. All outer surfaces shall be cleaned and rinsed with fresh clean water. There is no need to dismantle the system. In case dismantling is required for access then this shall be undertaken by a qualified installation individual.
- After rinsing, all components must be dry prior to replacing any equipment.
- All equipment can then be replaced, ensure that the fryer is in its correct position (see **Diagram 1**). Check that the whole setting complies with the description of the service and installation manual.

Warnings!

Do not move or adjust the MisteryHood system, never attempt to mend the system or attempt to disassemble any of the units supplied.

Do not touch the coloured glass bulb in the middle automatic valve – not even with the soft brush.

No work shall be conducted over a heated cooking fryer pool. Work done over a cooking area must be in accordance with local operating, safety and hygiene requirements. The oil must be cool and all power must be isolated and all equipment removed and covered whilst the work is being undertaken.

All liquids and solids shall be handled in accordance with the supplier's recommendations, they shall be disposed of in accordance with supplier, manufacturer and local environmental requirements.

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Ensure that the fat fryer is always correctly positioned below the MisteryHood system (See **Diagram 1A**).

This product is intended to restrain the spread of fire in the event of one occurring in a fryer unit. It is essential that the responsible business user of the fat fryer shall always have adequate fire drill and escape procedures in place to ensure that personnel can be evacuated safely.

No attempt shall be made to use other components from other sources with this system, this could make the system inoperative and could have serious safety consequences.

GW recommends the use of a maintenance sheet to record the cleaning and servicing that has been completed on the system. The following are examples of maintenance and training records to keep:

Maintenance Record Sheet

Date	Description of what maintenance took place i.e. cleaning, replacement etc.	Confirmation that the maintenance was carried out correctly	
		Name	Signature

Personnel trained on cleaning this system

Name of trainee	Training date	Type of training received	Trained by	Signature

The trainer shall be suitably qualified and should use a training sheet detailing the training course and what was covered. Individuals who do not clean the MisteryHood system regularly should be retrained at least every 12 months.

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GW MisteryHood / GW DualTech

Deep Fat Fryer Fire Protection

Installation, Operation & Maintenance (IO&M)

8 Spare Parts

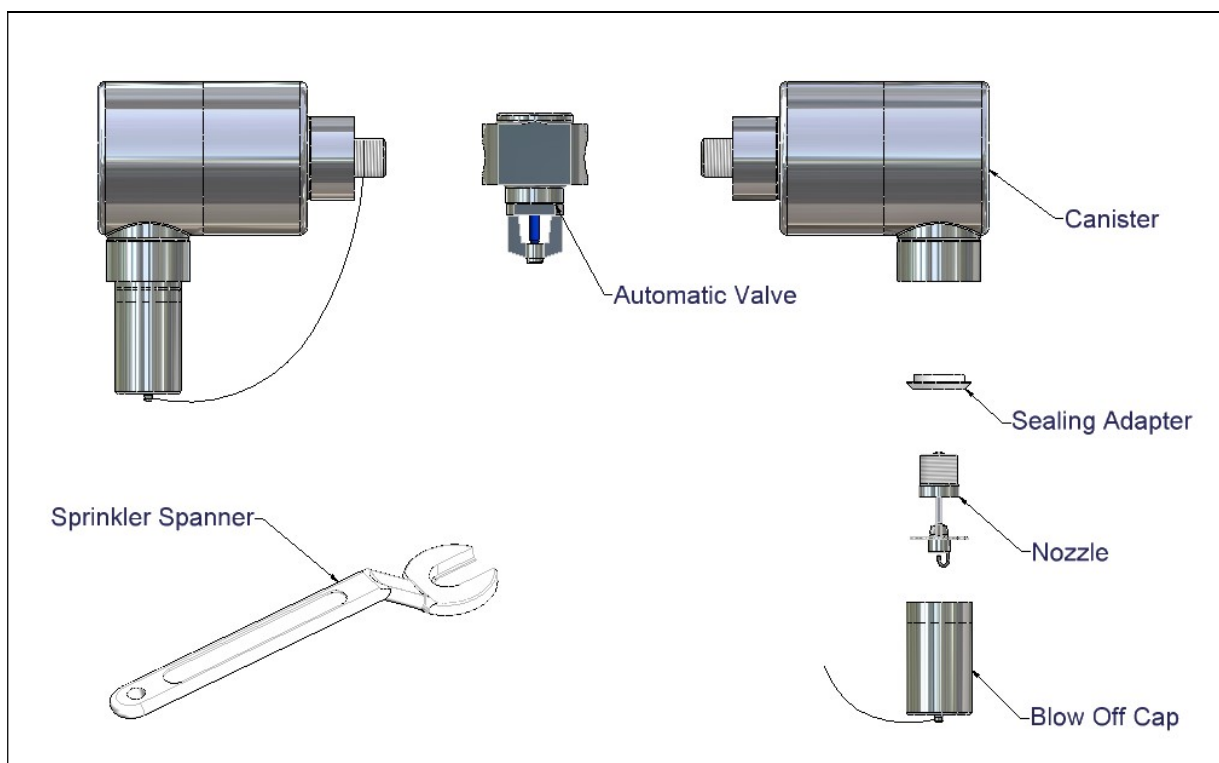
Due to the nature of the system only the complete units are sold as spare parts. This product is only made by GW Sprinkler A/S and components have been specifically chosen.

All spares must be genuine GW units.

Installers / users shall never attempt to use other components not supplied by GW Sprinkler, however small or seemingly insignificant, as this may impair on the performance of the system.

Spare Part	Spare Part No.
Canister	BE 26798
Nozzle	BE 26800
Sealing Adapter	BE 26993
Blow Off Cap (406 mm wire)	BE 27013
Blow Off Cap (470 mm wire)	BE 27014
Sprinkler Spanner	BE 25061

The diagram below shows the parts of the MisteryHood system.



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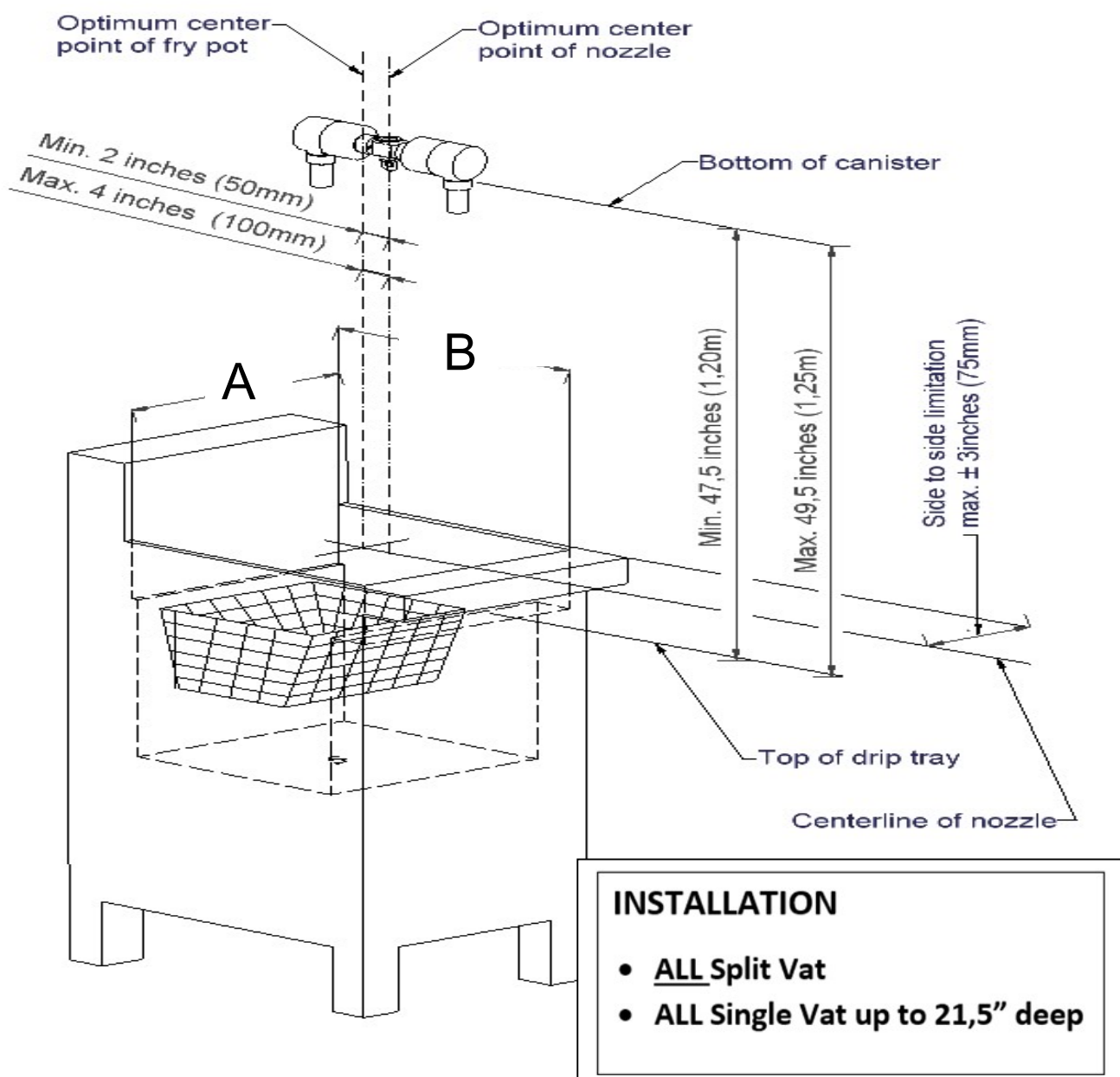
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9 Diagrams (to be referenced with this manual)

Diagram 1A

Position of fryer unit with MisteryHood System



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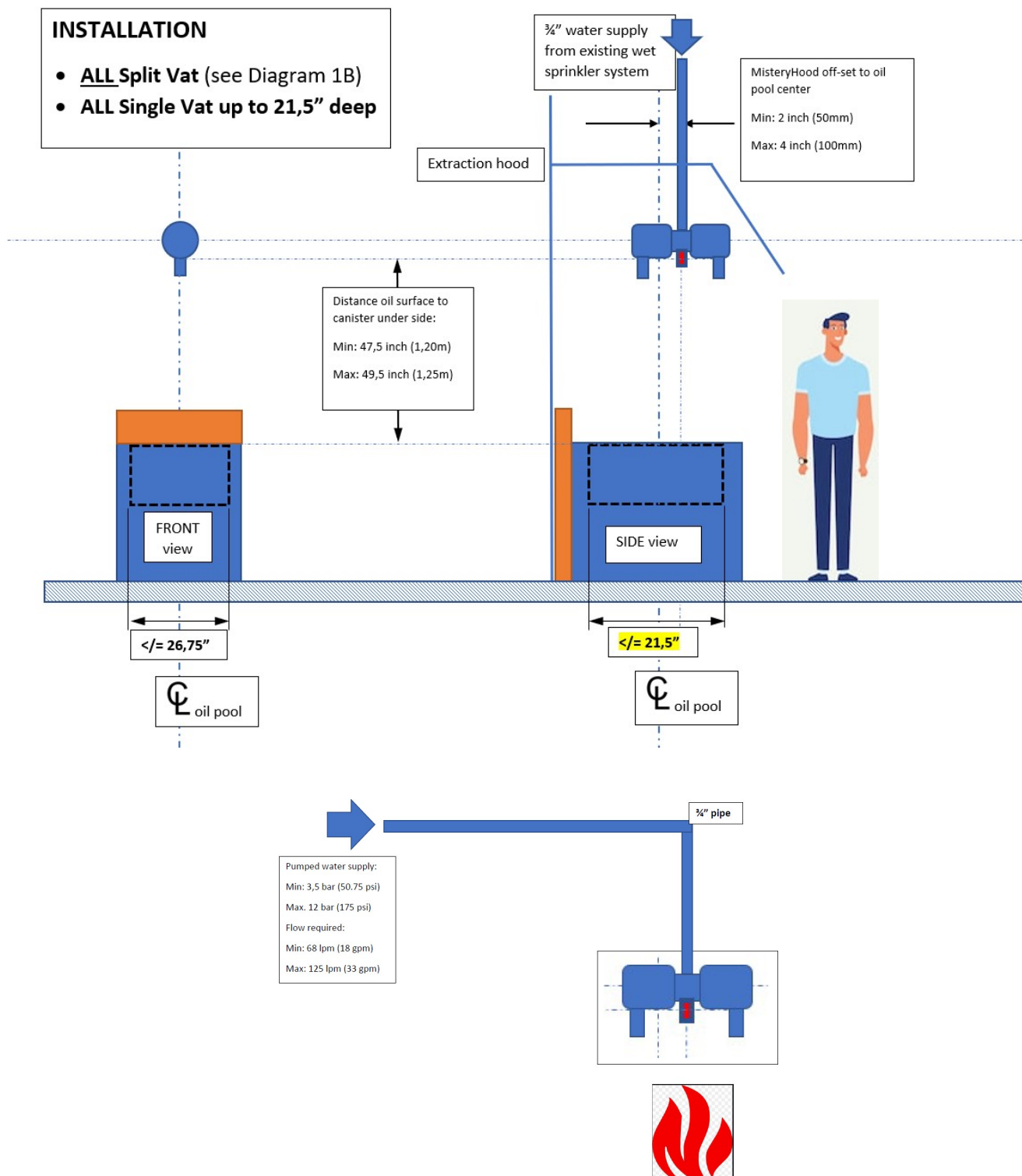
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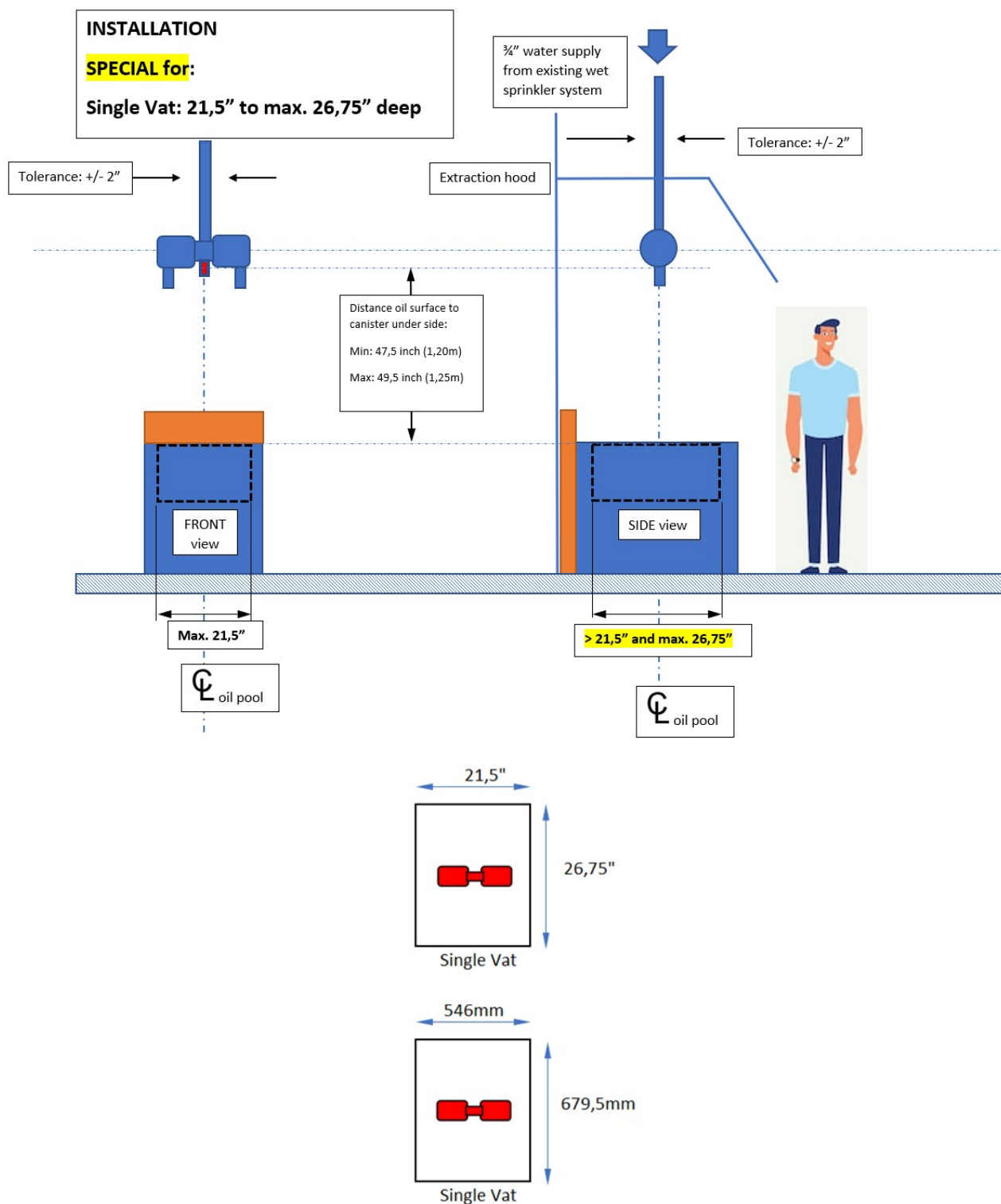
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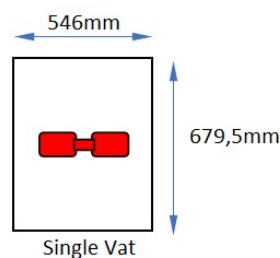
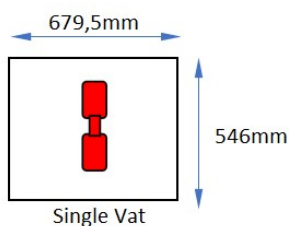
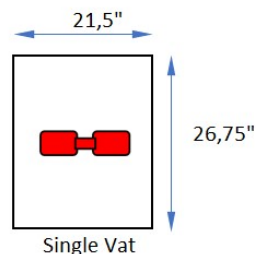
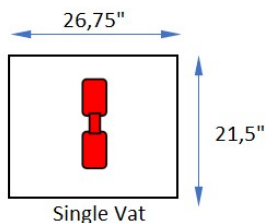
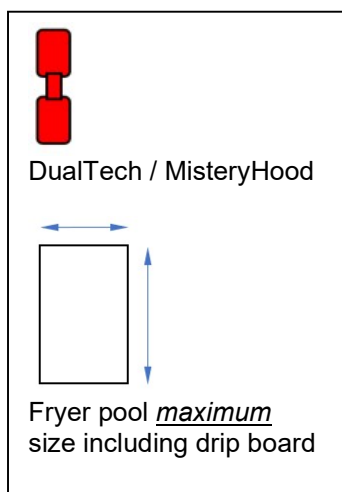
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Installation, Operation & Maintenance (IO&M)

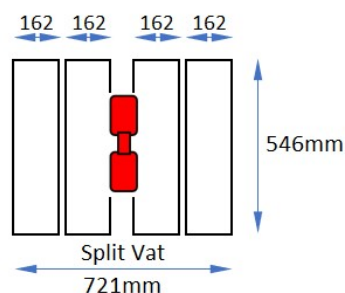
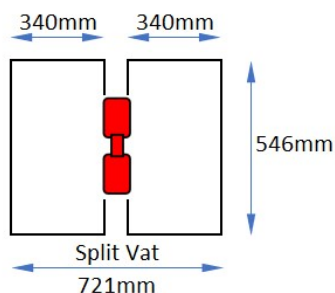
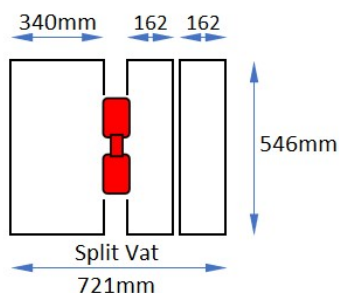
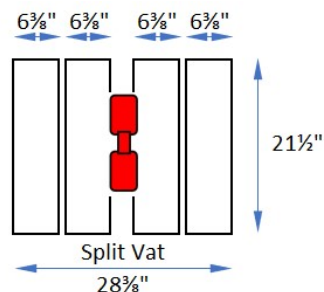
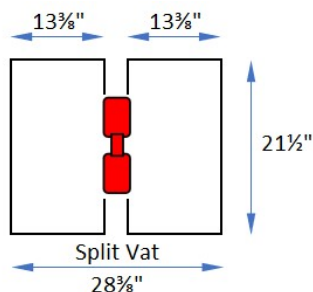
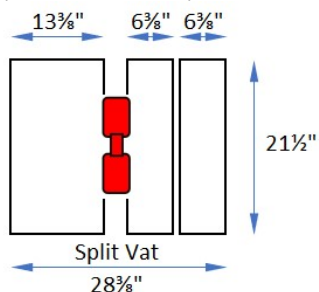
Diagram 1B

Max. fryer pool sizes covered by UL-approval:

Single Vat (seen from above):



Spilt Vat (seen from above):



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Deep Fat Fryer Fire Protection

Installation, Operation & Maintenance (IO&M)

Diagram 2
Orientation of MisteryHood System

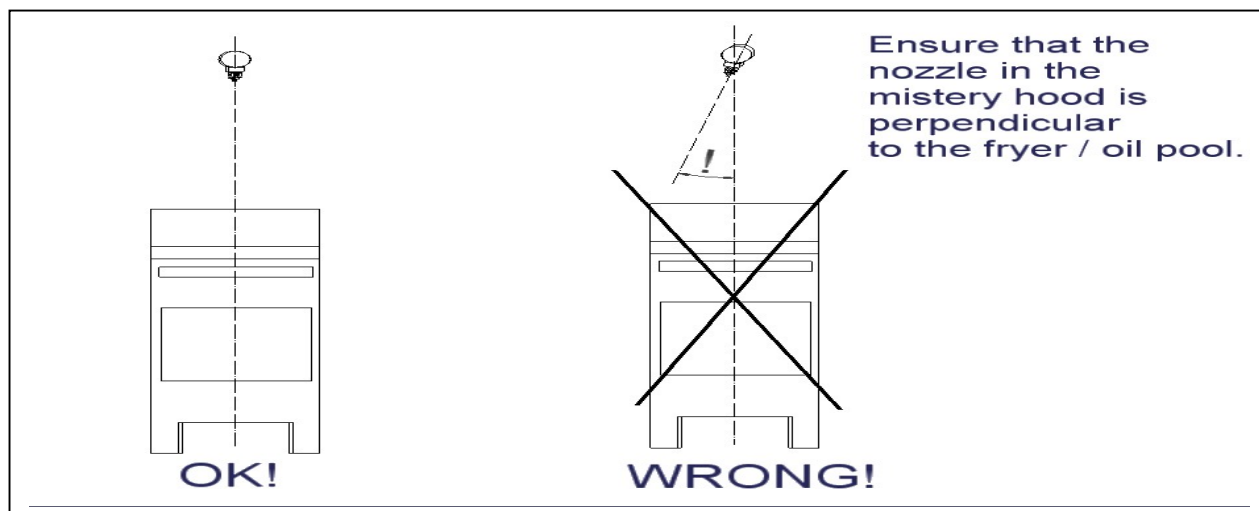
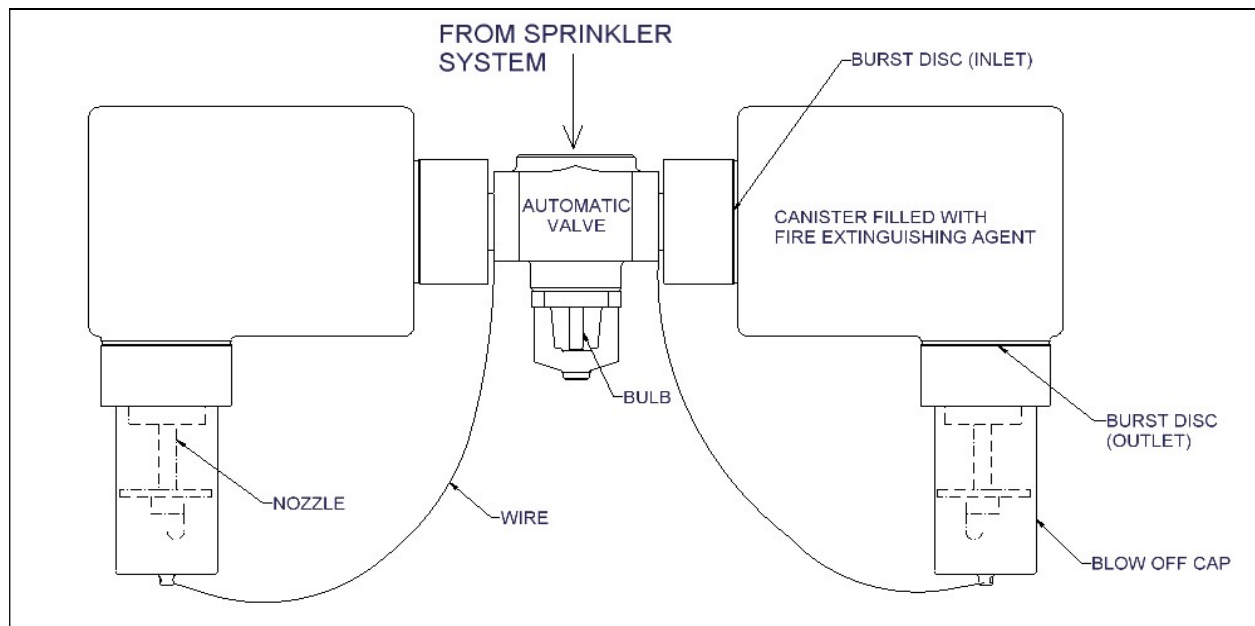


Diagram 3
Components and basic function



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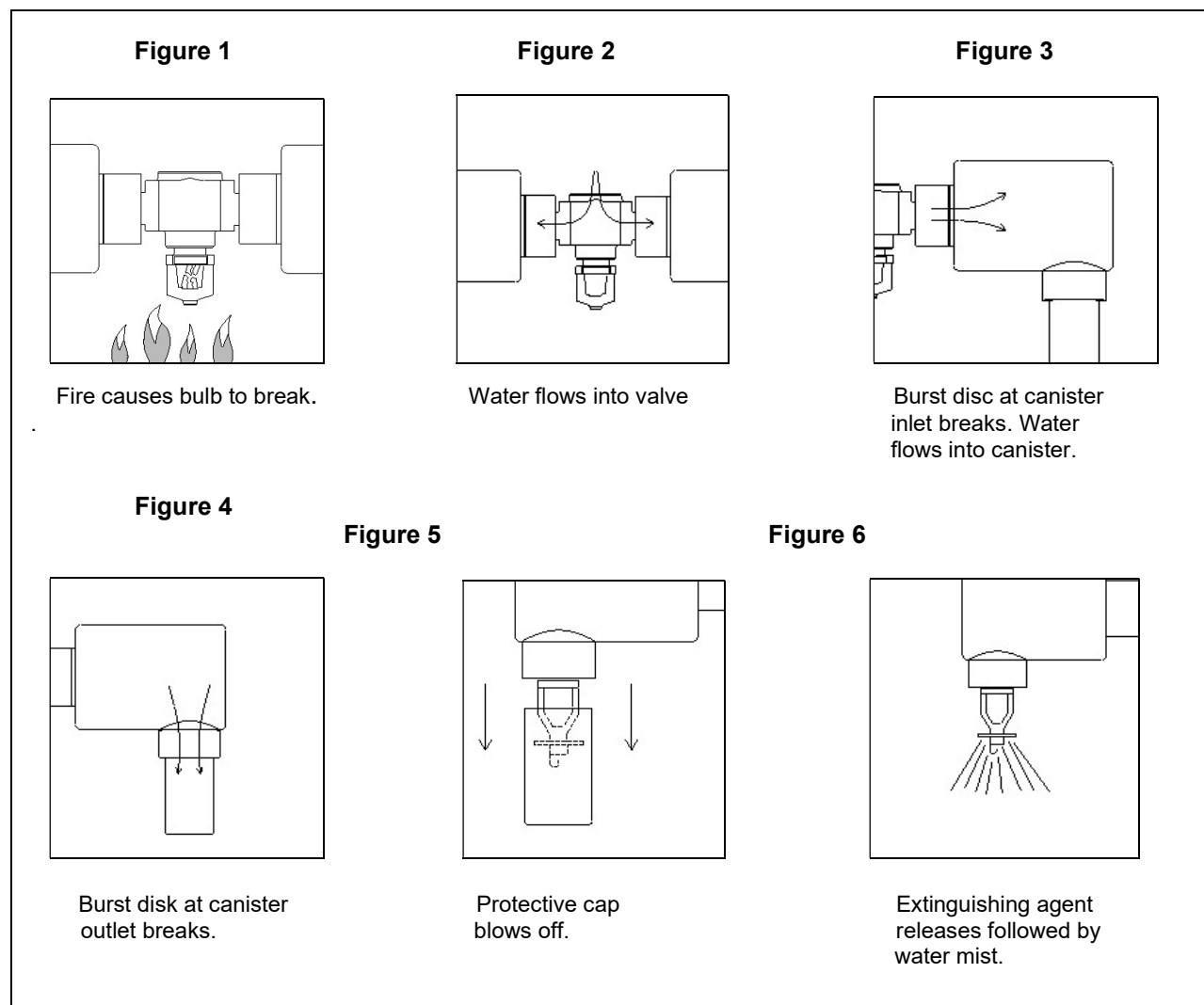
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Sequence of operation:



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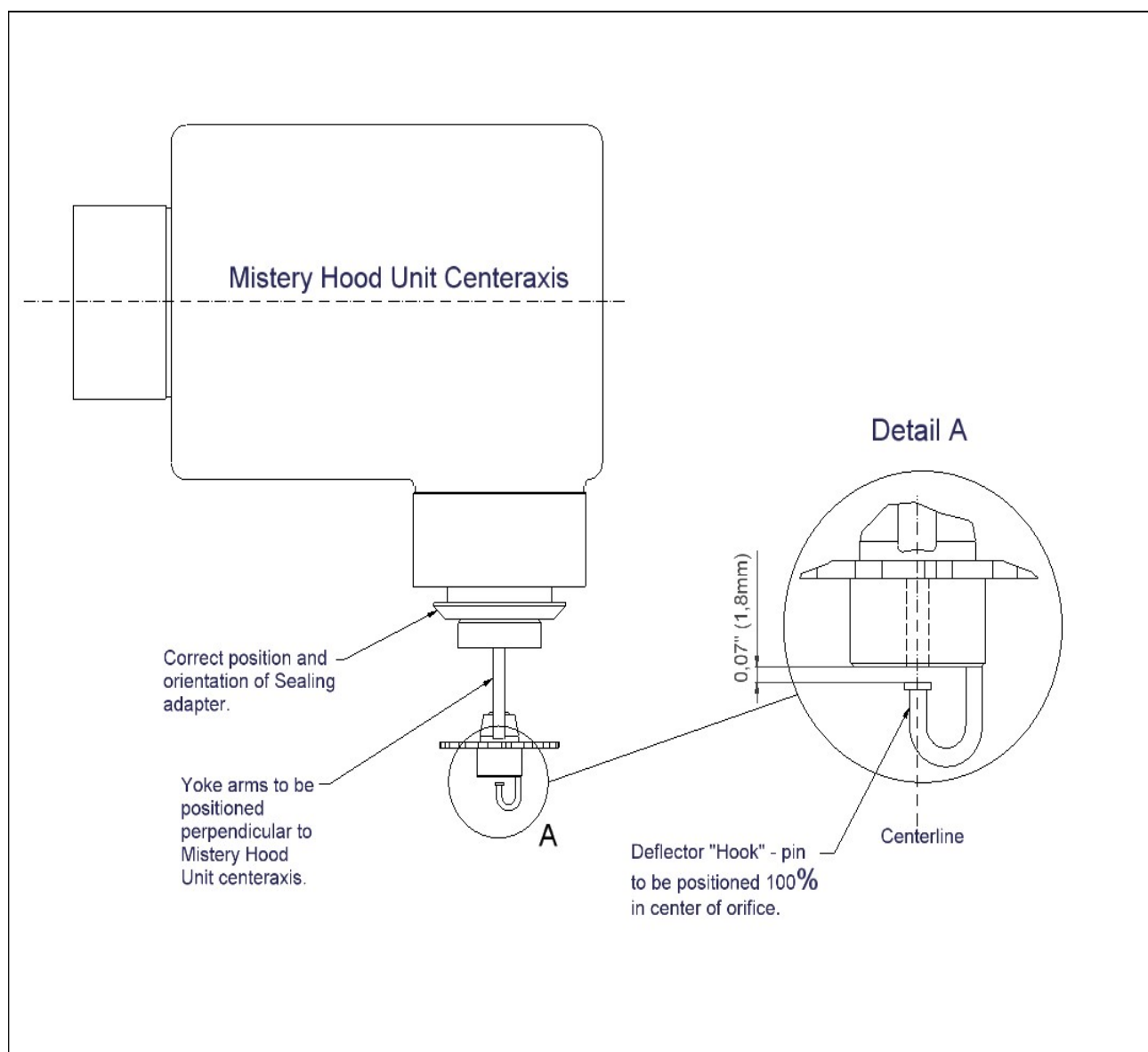
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Diagram 4
Description of nozzle



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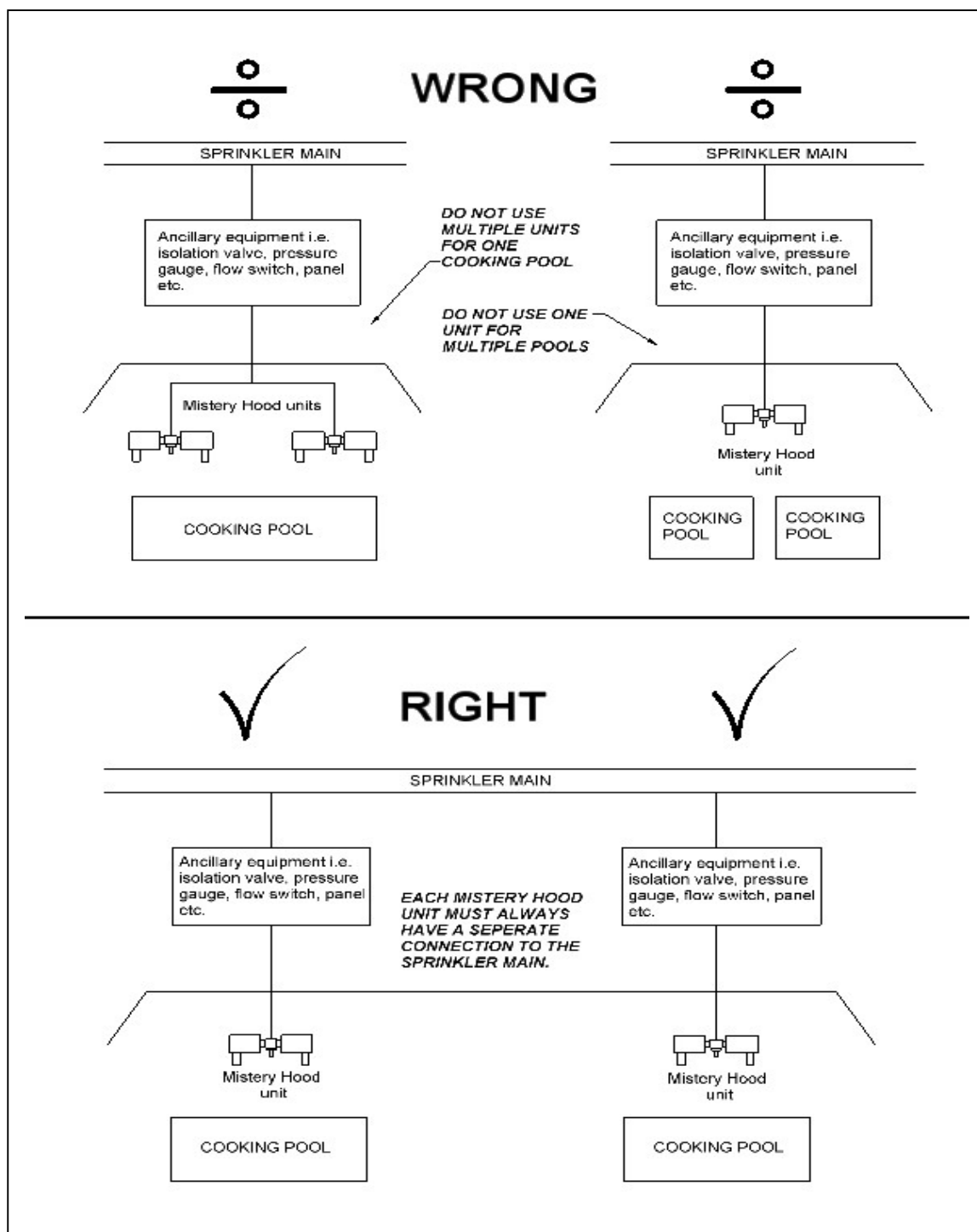
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Diagram 5
Connection of MisteryHood Unit



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AFFF MSDS

Data Sheet for the Extinguishing Agent - TRIDOL C6 S1 AFFF

To view the full MSDS (material safety data sheet) for the foam agent used in the MisteryHood unit, please consult separate data sheet: SN045 1002.1 A_MSDS Tridol C6 1S (MisteryHood foam agent) – or visit/download document from the AFFF-manufacturer's website:

[Tridol C6 S – Angus Fire](#)

	ANGUS FIRE	SAFETY DATA SHEET
Section 1: Identification of the substance/mixture and of the company/undertaking		
Product identifier		
Trade name or designation of the mixture	Tridol S1	
Identification Number	Not applicable.	
Registration number	-	
Synonyms	Aqueous Film Forming Foam (AFFF)	
Product code	130-05	
Date of first issue	07-October-2010	
Version number	02	
Revision date	03-December-2014	
Supersedes date	07-October-2010	
Relevant identified uses of the substance or mixture and uses advised against		
Identified uses	Fire fighting foam concentrate.	
Uses advised against	None known.	
Details of the supplier of the safety data sheet		
Supplier		
Company name	Angus Fire Ltd	
Address	Station Road Bentham, Lancashire, LA2 7NA	
e-mail	Email: general.enquiries@angusuk.co.uk	
SDS number	-	
Reference number	Not available.	
Manufacturer/Supplier	Angus Fire Ltd Station Road Bentham, Lancashire, LA2 7NA general.enquiries@angusuk.co.uk 0044 (0)15 2428 4000 Contact person: EH&S Manager	
Emergency	0044 (0)15 2428 4000 (Standard office hours: Monday to Friday 8:30am - 4:30pm GMT)	
Section 2: Hazards identification		
Classification of the substance or mixture		
Classification according to Directive 67/548/EEC or 1999/45/EC as amended		
Classification	Xi;R38	
Classification according to Regulation (EC) No 1272/2008 as amended		
Health hazards	Serious eye damage/eye irritation	Category 2 Causes serious eye irritation.
Hazard summary		
Physical hazards	Not classified for physical hazards.	
Health hazards	Irritating to eyes. Occupational exposure to the substance or mixture may cause adverse health effects.	
Environmental hazards	Not classified for hazards to the environment.	
Specific hazards	May cause skin irritation. May cause respiratory tract irritation. May cause damage to the kidneys. May cause central nervous system effects.	
Main symptoms	Symptoms can include irritation, redness, scratching of the cornea, and tearing. Symptoms may include redness, oedema, drying, defatting and cracking of the skin. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.	
Label elements		
Label according to Regulation (EC) No. 1272/2008 as amended		
Contains:	2-(2-butoxyethoxy)-ethanol, Cocoamidopropyl betaine	
Tridol S1		
3822 Version No.: 02 Revision date: 03-December-2014		
SDS EU		
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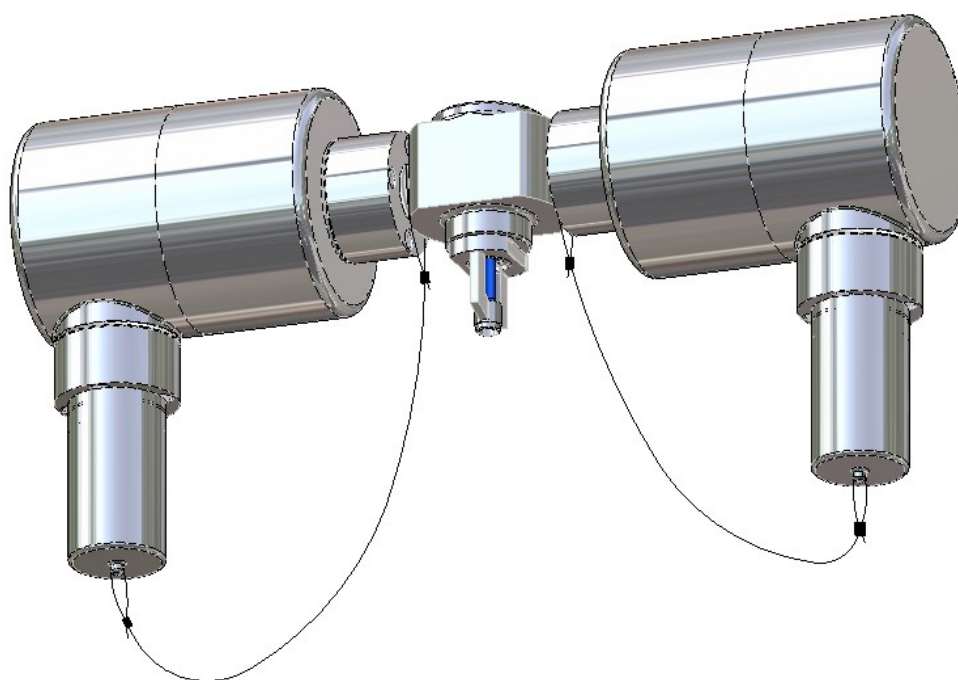
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User's Manual

MisteryHood / DualTech (USA)

No.817



MisteryHood Commercial Fat Fryer Sprinkler Protection System

User Manual

Caution ! This manual is a basic user's manual and not an installation or a maintenance manual

GW SPRINKLER A/S

Kastanievej 15, DK-5620 Glamsbjerg, Denmark
Tel: +45 64 72 20 55 Fax: +45 64 72 22 55
Email: sales.dep@gwsprinkler.com

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GW MisteryHood / GW DualTech

Deep Fat Fryer Fire Protection

Installation, Operation & Maintenance (IO&M)

Introduction

The MisteryHood-Twin Nozzle System is a water based twin fluid system for the automatic fire protection of Commercial Deep Fat Fryer Units. The system operates automatically from the heat of a fire.

The MisteryHood-Twin Nozzle Units contain agent which has a limited service life. The ½" nozzle connection port is marked with the year of expiry at which time the agent filled canister must be replaced with a new one.

The MisteryHood-Twin Nozzle Units are made up of units tested within limitations contained in the detailed Installation Manual. A qualified system designer shall be consulted whenever changes are planned for the system or for the area of protection. The qualified system designer should always refer to the installation manual.

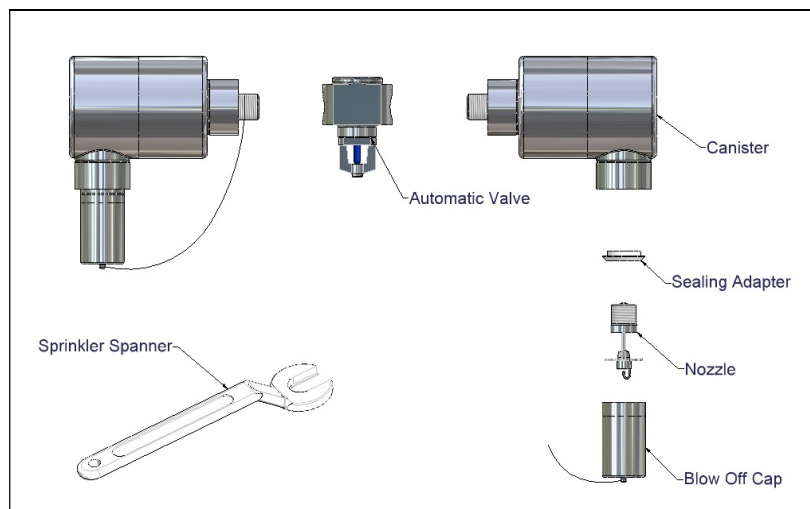
The MisteryHood-Twin Nozzle Units shall be inspected at regular intervals for the collection of grease, damage to the unit or the nozzles, missing parts, and the expiry date of the agent-canisters.

This system shall be inspected at least every 6 months by a suitable maintenance contractor who is qualified and trained to maintain the system.

The intervals of system inspection and cleaning depends on the application. GW strongly recommends that the system is checked and recorded for blockages and damage at least every week. Cleaning shall take place at least every three (3) months, or when grease build-up can be seen on the components of the system. Cleaning shall be conducted by qualified and trained personnel, and signed records kept. The cleaning and the inspections shall be conducted in accordance with the guidelines of the installation / maintenance manual and with local requirements to the control of hygiene and health and safety in cooking areas.

Components/Spare Parts.

This product is only made by GW sprinkler and components have been specifically chosen. All spares must be genuine GW units. Installers / users shall never attempt to use other components not supplied by GW Sprinkler, however small or seemingly insignificant, or this will damage the performance of the system.



Foam Agent (AFFF)

This system contains AFFF foam solution which is distributed over the fire during the first seconds of the extinguishing process. The installation/maintenance manual has a full data sheet on this substance which should be checked by the user to confirm it does not pose a problem to the surroundings or employees.

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Contact your supplier if the system has been discharged, you have any doubts, require maintenance, or if replacements are required!

Maintenance and Cleaning

Please read this section, including the warnings, prior to cleaning the system.

General

Persons who are expected to clean the system must:

- Read this manual and understand it.
- Be shown how to clean the MisteryHood system in line with the maintenance instructions – GW recommends that the training be provided by a qualified installer.
- Shown how to look for damage to the MisteryHood system particularly the bulb and nozzles.
- Shown to be aware and look for leaks to the MisteryHood and sprinkler system
- Know the limitations of the MisteryHood system.

Persons who work in the vicinity of the MisteryHood system must:

- Know that the system exists.
- Know how to isolate the system after activation.
- Know what to do in the event of a fire.
- Know that the system can only be turned off after the oil has reached a suitable temperature (less than the re-ignition temperature).
- Know that the area must not be approached after activation unless all electrical power to the area has been turned off.

Checking and cleaning of the MisteryHood System

The MisteryHood Units are installed in the hoods above the fat fryer units. It is necessary to keep the units clean from grease to ensure the optimal extinguishing performance of the units in the case of fires. Cleaning is also essential to keep good hygiene in the cooking area.

When cleaning the MisteryHood Units, the system shall be inspected for physical damage, the build-up of grease and the expiry of the canisters.

- If any part of the system is damaged an approved installer must be called to fix the system.
- If there is a build-up of grease the units shall be cleaned.
- The canisters shall be replaced with new ones if the year of expiry has been exceeded. This is to be done only by a qualified installer.

MisteryHood Units shall be cleaned and inspected as a part of the cleaning routine of the hood **every 3-month** as a minimum.

MisteryHood units shall be degreased and inspected by trained personnel, or other responsible persons, who have been trained by the supplier of the MisteryHood Units. The person trained shall have a signed record of training and a copy held in their personnel file.

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Important information prior to the degreasing process

The MisteryHood Units shall be cleaned only using a soft brush and household washing-up detergent, the units shall be cleaned so as not to cause physical damages to any parts - particularly the heat sensitive glass bulb activation element of the units.

The detergent shall not contain ammonia or any other chemicals reactive to brass or stainless steel. It shall not contain any abrasive particles which could cause damage to the surfaces of the MisteryHood Unit. The MisteryHood unit shall always be rinsed with fresh clean water after the degreasing process.

MisteryHood Units shall not be steam cleaned, or cleaned with any cleaner of temperatures higher than 104°F (40 °C), (this is to prevent inadvertent operation of the glass bulb – the heat sensitive element).

The cleaning process to be followed

The fryer unit must be cool and the power turned off.

The fryer unit must be removed and covered in line with health, safety and hygienic regulations. As water is used during the cleaning process it is essential that other fryers and equipment in the area are turned off and removed in case water from this process inadvertently drops on other equipment.

The MisteryHood Units shall be degreased using a soft brush and detergent (see above comments on detergents) whilst in the installed position inside the hoods. All outer surfaces shall be cleaned and rinsed with fresh clean water. There is no need to dismantle the system, if dismantling is required for access then this shall be undertaken by a qualified installation individual.

After rinsing, all components must be dry prior to replacing any equipment.

All equipment can then be replaced, ensure that the fryer is in its correct position (see **Diagram 1**). To ensure easy and correct repositioning of the fryer unit after every clean it is recommended to put fixing marks on the floor. Check that the whole setting complies with the description of the service and installation manual.

Warnings !

Water is heavier than oil and will gather invisibly under the frying oil. The water will, if present in the frying pool, cause the oil to **EXPLODE** when heated up !! It is therefore mandatory that **ALL** liquid (water & oil) is drained out and the fryer pool carefully cleaned and dried before adding fresh frying oil.

Do not move or adjust the MisteryHood system, never attempt to mend the system or attempt to disassemble any of the units supplied.

Do not touch the coloured glass bulb in the middle automatic valve – not even with the soft brush.

No work shall be conducted over a heated cooking fryer pool. Work done over a cooking area must be in accordance with local operating, safety and hygiene requirements. The oil must be cool, all power must be isolated and all equipment removed and covered whilst the work is being undertaken. All liquids and solids shall be handled in accordance with the supplier's recommendation, and shall be disposed of in accordance with supplier, manufacturer and local environmental requirements.

Ensure that the fat fryer is always correctly positioned below the MisteryHood system (See **Diagram 1**).

This product is intended to restrain the spread of fire in the event of one occurring in a fryer unit. It is essential that the responsible business user of the fat fryer shall always have adequate fire drill and escape procedures in place to ensure that personnel can be evacuated safely.

No attempt shall be made to use other components from other sources with this system, this could make the system inoperative and could have serious safety consequences.

GW recommends the use of a maintenance sheet to record the cleaning and servicing that has been completed on the system. An example can be obtained from the installation / maintenance manual.

In the event of a fire **NEVER** apply water on to the hot / burning oil. This will immediately cause the oil pool to explode !!

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Deep Fat Fryer Fire Protection

Installation, Operation & Maintenance (IO&M)

What happens when the system activates ?

Important!

This product is intended to restrain the spread of fire in the event of one occurring in a fryer unit. It is essential that the responsible business user of the fat fryer shall always have adequate fire drill and escape procedures in place to ensure that personnel can be evacuated safely.

The sequence below details a possible fire scenario (also see **Diagram 3**):

- The temperature control of the fryer unit fails to switch off the heat source.
- The oil pool heats to above its ignition temperature and it ignites. Flames appear.
- The heat from the flames operates the glass bulb on the GW Automatic Valve, and the GW Automatic Valve opens.
- Water flows from the sprinkler system to the Bursting Disc on the inlets of the Canisters, where water pressure builds up.
- The sprinkler water pressure bursts the Bursting Disc at the canister inlets, and shortly after also at the canister outlet port.
- Pressure from the canister outlet port causes the Blow-Off-Cap to drop away from the Sealing Adapter exposing the Nozzle. (The caps are fitted with a wire rope which will support the caps and prevent them from dropping into the hot oil)
- Extinguishing agent flows to the place of fire where, together with the following water mist, extinguishes the fire, cools the oil bath and prevents re-ignition.
- At a time during this sequence the alarm sounds from the sprinkler system alarm, and from the alarm/water flow control panel.
- The system continues to spray water until the water supply is manually turned off.

In tests of this product the time from activation of the MisteryHood Unit to the flames being extinguished has been in the range of 5 to 10 seconds. This time can vary significantly depending upon the circumstances and nature of the fire and should not be taken as a precise measurement.

If the system has been activated

After the system has activated ensure that all power and heat sources are isolated and turned off to the area before the cooking or any other equipment in the area is touched. The cooking grease pool must be cooled down for at least for 2 minutes to get below its re-ignition temperature. At this point the water from the sprinkler system may be turned off. See warnings section. The grease pool must be cooled off before the pool is moved or emptied for grease. (Check grease suppliers and fryer manufacturer's instructions of what temperature the grease pool must be before removal of solution). The grease shall be removed and disposed in accordance with the supplier and environmental requirements. See warnings section. An authorized installer or system designer must be consulted after the system has discharged.

Contact your supplier for the installation of a complete new unit

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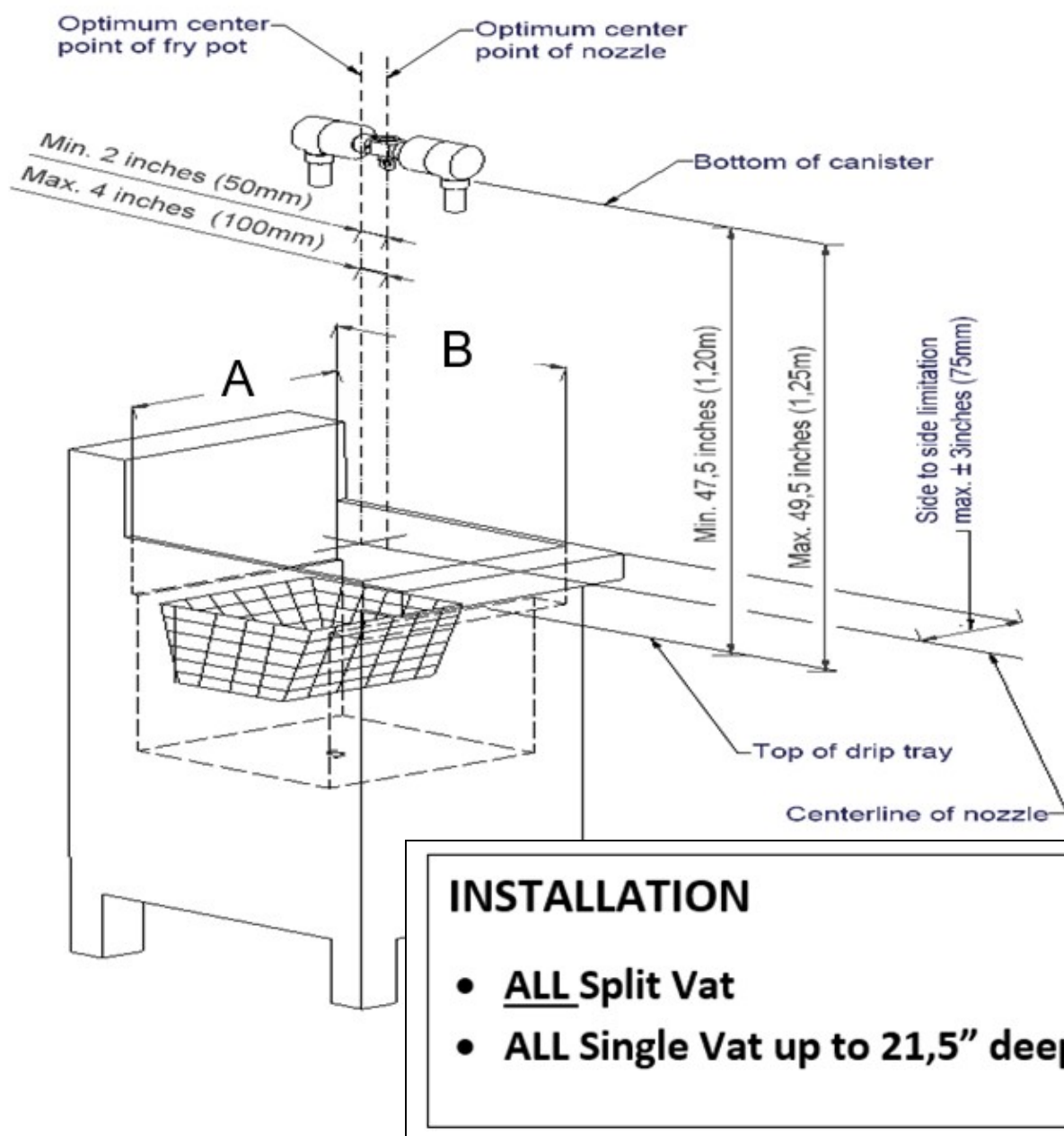
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Diagram 1: **Position of fryer unit with MisteryHood System**

Position of fryer unit with MisteryHood System



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Installation, Operation & Maintenance (IO&M)

Diagram 2: Orientation of MisteryHood System

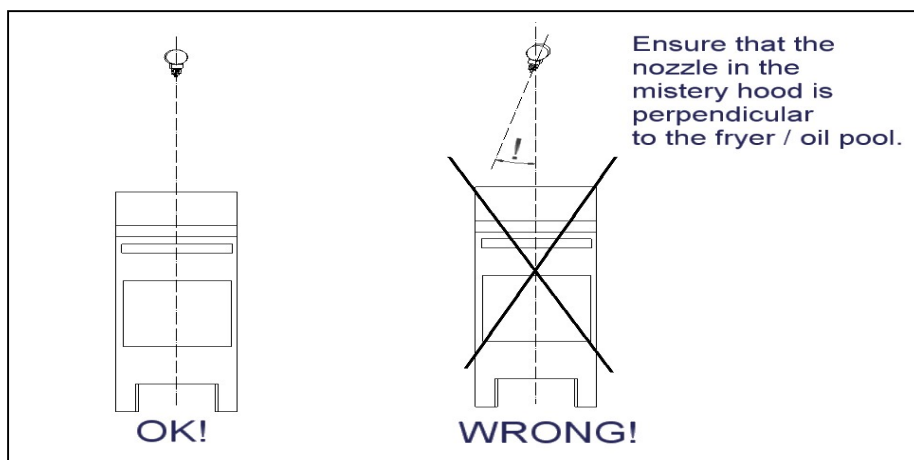
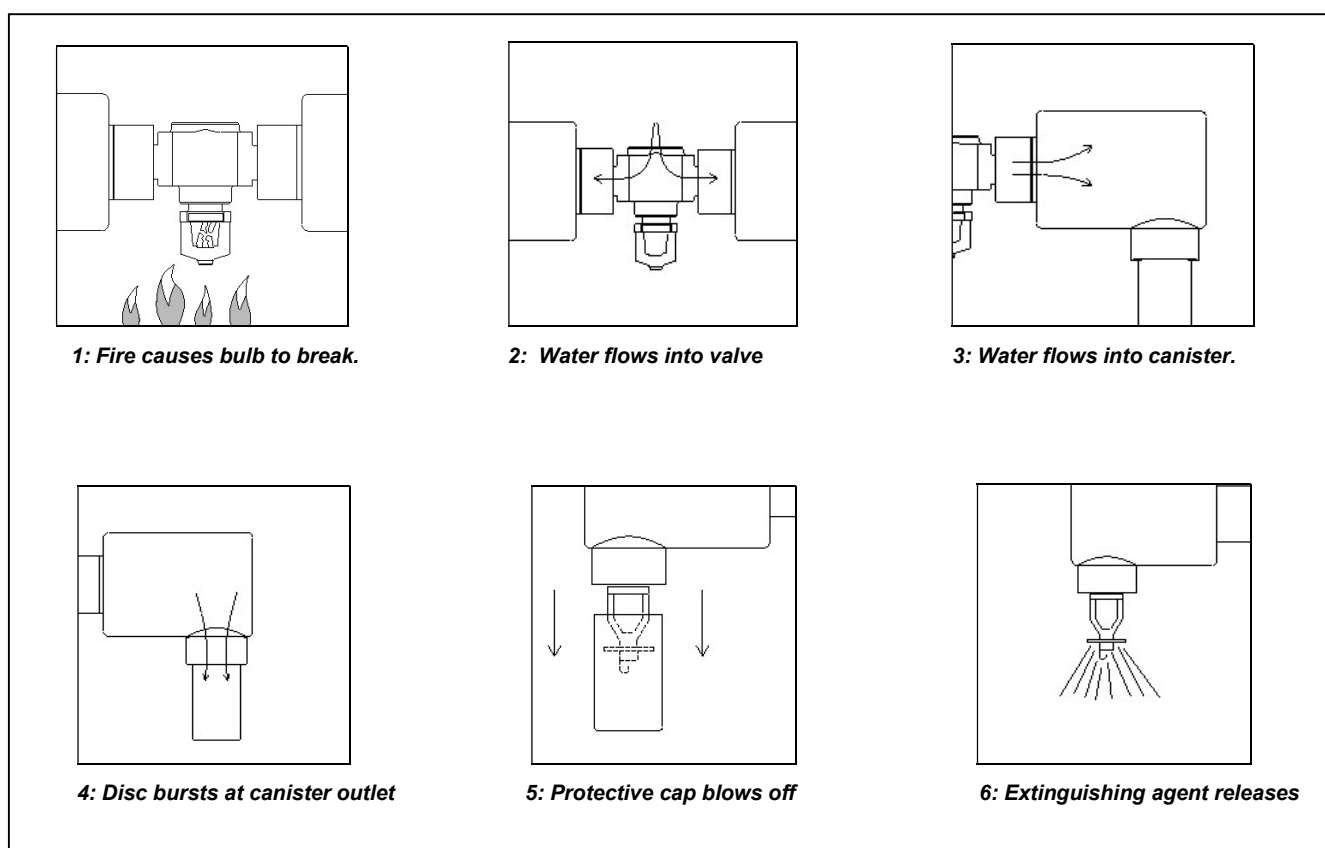


Diagram 3: Basic Function



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