

Kitchen Fire Suppression

Testing Inspection and Maintenance

Agenda

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- **Kitchen Hood type**
 - Impact of grease
- **Fire suppression systems that protect the hoods**
 - Design –systems function
 - Discharge – what happens and the components involved
 - Testing Inspection and Maintenance
 - New technology
 - Food trucks

NFPA®



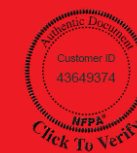
NFPA 90
NFPA 17

NFPA®

17A

Standard for
Wet Chemical
Extinguishing Systems

2017



Type One
Type Two
Hoods



Hood Cleaning Schedule

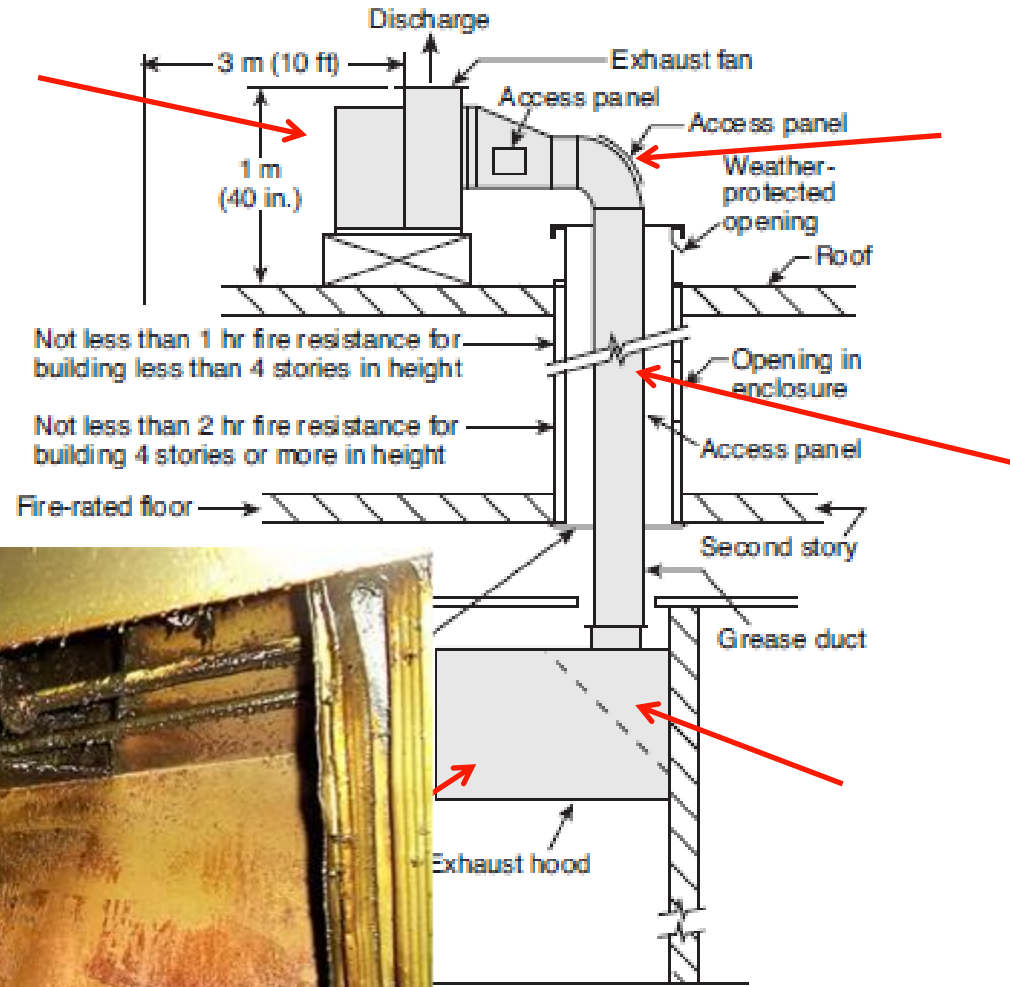
Table 11.4 Schedule of Inspection for Grease Buildup

Type or Volume of Cooking	Inspection Frequency
Systems serving <u>solid fuel</u> cooking operations	Monthly
*Systems serving <u>high-volume</u> cooking operations	Quarterly
Systems serving moderate-volume cooking operations	Semiannually
†Systems serving <u>low-volume</u> cooking operations	Annually

*High-volume cooking operations include 24-hour cooking, charbroiling, and wok cooking.

†Low-volume cooking operations include churches, day camps, seasonal businesses, and senior centers.

What is cooking Volume?



Section View for Building with Fire-Rated Ceiling and Fire-Rated Floor in Figure A.4.2(a) apply also to

03 14 2022

Why does a greasy hood make you cringe?

- The Fire Suppression system is not designed to handle the extra fuel load.
- When a system discharges, the fuel is cut off (electric and gas)
 - Grease is an added fuel that cannot turn off.
- Grease is outside of the coverage area.
- Grease clogs pipe
 - Link line
 - Discharge nozzles



Here are some examples!





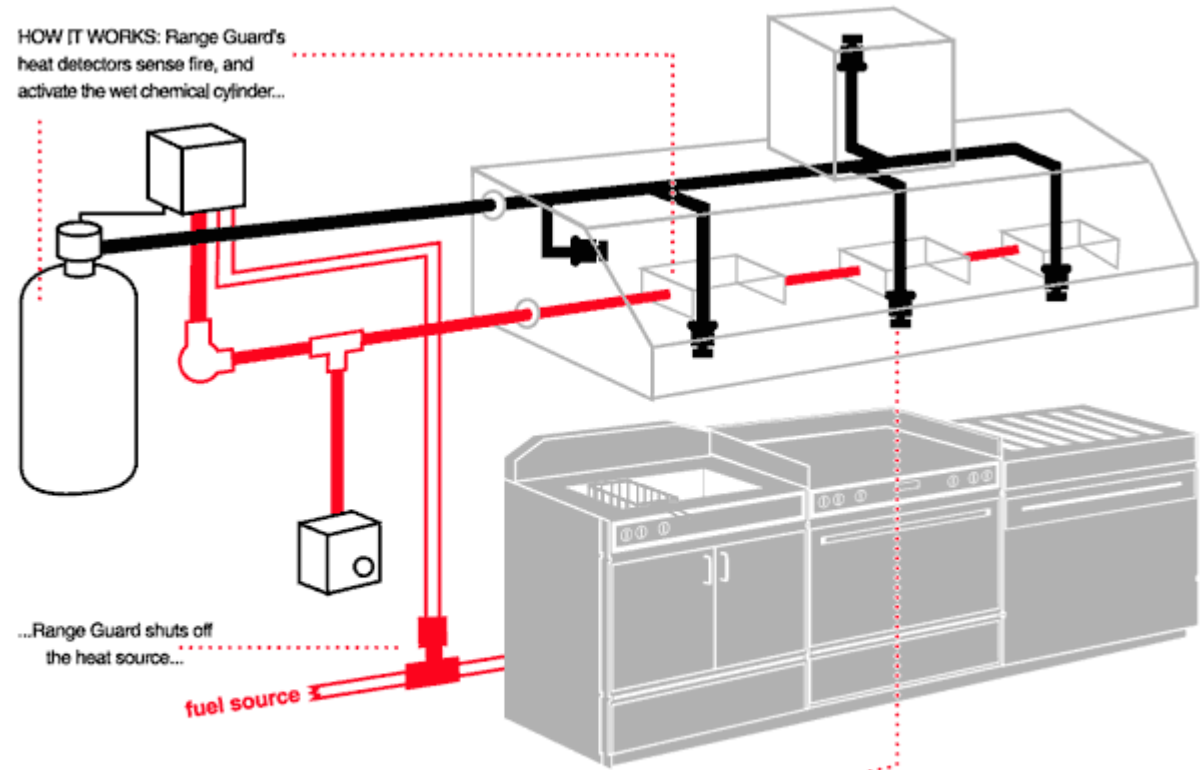


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Kitchen Hood Fire Protection

HOW IT WORKS: Range Guard's heat detectors sense fire, and activate the wet chemical cylinder...



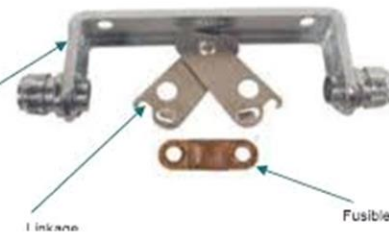
...Range Guard shuts off the heat source...

fuel source

... wet chemical agent is discharged from nozzles, and fire is OUT.



usable link holder (bracket).



Pre-Engineered System

What is a Pre-Engineered system?

- **Pre-Engineered = Pre-Determined**
 - Flow Rates
 - Nozzle Pressure
 - Agent Quantity
- **Specific**
 - pipe size
 - max and min lengths
 - specific fittings & nozzles
 - a limited number of everything.



- Fryer – 1 nozzle with 3 flows **3**
- 40” char broiler – 2 nozzles – 2 flows each **4**
- 36” Range with a shelf – 1F nozzle on the front edge
 - 1 nozzle every 12 inches **3**
- Range with out a shelf – 1 nozzle in the center

1

Pre-Engineered System

What is Pre-Engineered?
What is a flow
point?

Ansul

- 3 gal = 12 flow points
- 1.5 gallon = 6 points

Fryer

3N = Nozzle has 3 flow points

Amerex

- Model 2.75 gal = 8 flow points
- Model 3.75 gal = 11 points
- Model 4.75 gal = 14 points

Fryer

13729 = Nozzle has 2 flow points

What happens
when the system
discharges?

- **Manual - Automatic - Extinguisher**
- **Agent is released**
- **Power is cut**
 - **Electric**
 - **Gas**
- **Fans change state**
- **Notifies the Fire Alarm System**

What happens
when the system
discharges?

- **UL300 system is a Wet Chemical System**
- **Saponification**
- **Bubble Blanket**
- **Slower discharge**

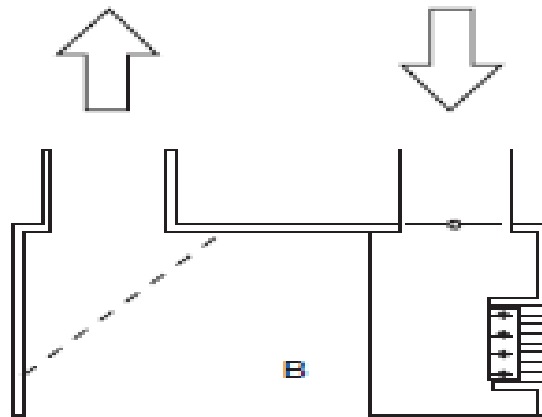
What happens
when the system
discharges?

- **Electrical Power - shunt trip breaker**
- **Gas valve closes – Mechanical / Electric**



What happens
when the system
discharges?

- Exhaust fan = ON
- Makeup air = OFF
- Night Mode Activation
- Interlocked Controls
- Exhaust Fan heat monitor



What happens
when the system
discharges?



Testing Inspection Maintenance

NFPA 96

11.2 Inspection, Testing, and Maintenance of Fire-Extinguishing Systems.

11.2.1* Maintenance of the fire-extinguishing systems and listed exhaust hoods containing a constant or fire-activated water system that is listed to extinguish a fire in the grease removal devices, hood exhaust plenums, and exhaust ducts shall be made by properly trained, qualified, and certified person(s) acceptable to the authority having jurisdiction at least every 6 months.

TIM

A red speech bubble graphic with a white outline, containing the text 'Authorized Service Companies'. The bubble has a tail pointing downwards and to the left.

Authorized Service Companies

- **Go to the website to see Authorized Manufacture Distributor for your zip code**
 - **Ansul Fire Systems**
 - **Kidde Fire Systems**
 - **Amerex Distributors**
 - **Range Guard**

Inspection and Maintenance

- Who is responsible for the inspection?
- Actuation and control components shall be tested for proper operation.
- Change the links – note the link dates
- Check the agent
- Check the gauges
- Check the conduit and pipe
- Active signal to the fire alarm panel



Why are links
changed each
inspection?

- **Links loose their integrity.**
- **They heat up, they cool down.**
- **Links are dated.**
- **Hang the link on the pull station or automan?**

Where does the
pull station go?

- Mounted 10' – 20' from the hood.
- Egress path to the exit
- Toward a lighted exit
- Not behind a stack of boxes

Why do we
need a nozzle
caps?

- Grease creeps up and into the pipe.
- Impedes the discharge pattern



What happens if
you move a
discharge nozzle?



Hood integrity

We don't like
holes in hoods?



- Heat rises unless there is a better path!
- What does a gap do for us?
- Missing filters
- Screw hole in the plenum

Who needs to
be present at
the final test



YOU



What appliances
do not need
coverage?

- Non grease laden appliances
 - Steamer
 - Kettle
 - Convection oven
- Rotisserie Oven

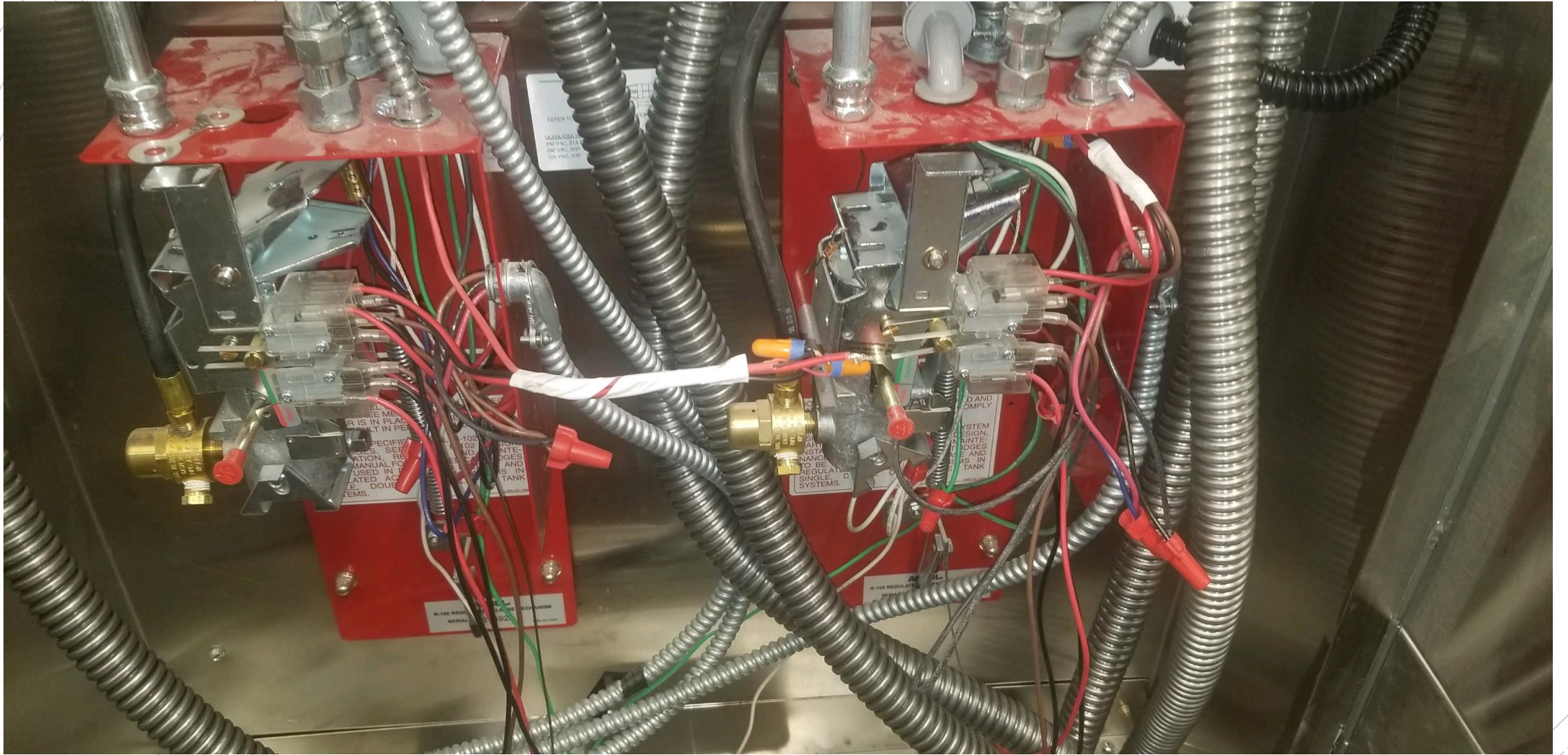


Do all appliances
need to be under
the hood?

- All cooking appliance must be under the hood
- Grease lading appliances must be under the hood
- 6'' in from the edge









WHICH WOULD DAMAGE
THE UNIT IF USED IN
THE FOLLOWING MANNER:
DO NOT USE THE UNIT
IF THE OXYGEN CONCENTRATION
IS BELOW 21% O₂.
DO NOT USE THE UNIT
IF THE OXYGEN CONCENTRATION
IS ABOVE 23% O₂.
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DO NOT INSTALL OR
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ANSUL
R-102 REGULATED RELEASE MECHANISM
SERIAL 310006

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■ Restaurant Electronic Detection

Why do Kitchen
system put up
with the greasy
clogged link lines?



Key ANSUL® RED Technology components

1. Linear Detection Wire

With multiple temperature ratings in a single hazard area, the linear detection wire accommodates a variety of cooking equipment. It helps minimize the potential for grease buildup and simplifies maintenance.

Available temperature ratings

- 155°F / 68°C
- 280°F / 137°C
- 356°F / 180°C
- 500°F / 260°C

Are Food Trucks
safe?



Food Truck Fire System Fell Off Wall

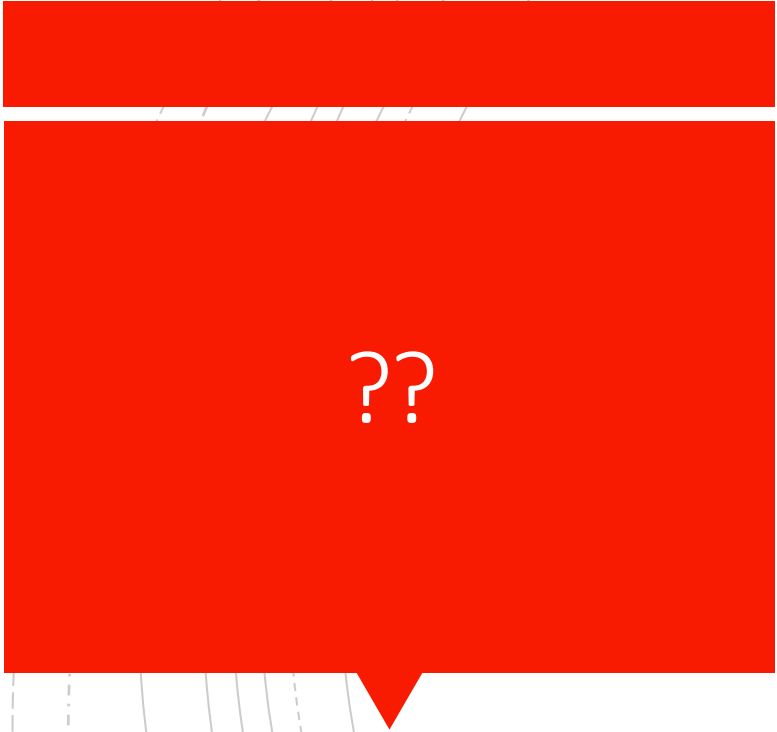


NFPA and Food Trucks

- <https://youtu.be/KuAlxaMkr-E>
- <https://youtu.be/BzzOE4IwFtU>
- <https://youtu.be/7cfTJrrJh1o>
- <https://youtu.be/f9BJ8CUkWxE>

- **NFPA.ORG/DOCINFO**
- **NFPA.ORG/FOODTRUCKSAFETY**





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Thank You!!



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