

REMOTE PULL STATION

SHALL BE INSTALLED 42" - 48" ABOVE THE FINISHED FLOOR AND A DISTANCE OF AT LEAST 10FT FROM THE HAZARD BUT NOT MORE THAN 20FT. IT SHALL BE INSTALLED IN THE PATH OF EXIT AND REQUIRE A MAXIMUM FORCE OF 40 LBS AND A MAXIMUM MOVEMENT OF 14" FOR ACTUATION

CLASS K WET CHEMICAL EXTINGUISHER

SHALL BE INSTALLED 42" - 48" ABOVE THE FINISHED FLOOR

THIS SYSTEM USES 18 of 20 FLOW POINTS

PRE-ENGINEERED SYSTEM SHOP DRAWING ONLY – NOT TO SCALE

HAZARD	QTY	NOZZLE	PTS	TOTAL
14" FRYER	1	2H	2	2
6 BURNER RANGE	3	2L	2	6
4 BURNER RANGE	1	2L	2	2
48" RAD CHAR BROILER	2	1H	1	2
DUCT	2	2D	2	4
PLENUM	2	1H	1	2
			TOTAL	18

	FIRE EQUIPMENT CONTRACTOR 345 6TH STREET, SUITE 600 BREMERTON, WA 98337 360-473-5290			
	SOME RESTAURANT 123 MAIN STREET BREMERTON, WA 98337			
SIZE	FSCM NO	DWG	REV	
		KITCHEN FIRE SYSTEM		
SCALE	N/A	SHEET	1 OF 7	

GENERAL PIPING REQUIREMENTS

- Split piping and straight piping are both allowed on L1600, L3000 and L4600 systems.
- L6000 systems must use split piping only, with no nozzle located before the split, and with a maximum of 14 flow points per side. 1/2 in. minimum piping must be used up to the first split.
- Maximum volume for 1/4 in. pipe between a nozzle and the preceding tee is 410 mls.
- Maximum flow numbers for 1/4 in. pipe is 6.
- Maximum number of elbows between a nozzle and the preceding tee is 5.
- Maximum of 25 elbows are allowed in the total piping system.
- Maximum difference in elevation between the tank outlet and any nozzle is 10 ft.
- No traps are allowed in the piping network.
- Pipe lengths are measured from center to center of fittings.
- The internal equivalent length volume of fittings does not have to be considered as part of the total pipe volume.
- When utilizing different size pipe in the system, the largest size must start first and the additional pipe must decrease as it approaches the nozzle.
- Elbow(s) or swivel adaptors located at the nozzles do not have to be counted in the 25 elbow maximum requirement.
- Reducing bushings are allowed when reducing to a smaller pipe size.
- Additional piping requirements when protecting a range, wok, or a fryer:
 - L1600 - Minimum of 239 ml and one (1) flow numbers required in total system. Of that minimum, 180 ml and one (1) flow numbers must be utilized at or before the range, wok, or fryer
 - L3000 - Minimum of 300 ml and four (4) flow numbers required in total system. Of that minimum, 239 ml and two (2) flow numbers must be utilized at or before the range, wok, or fryer.
 - L4600 - Minimum of 660 ml and ten (10) flow numbers required in total system. Of that minimum, 180 ml and two (2) flow numbers must be utilized at or before the range, wok, or fryer.
 - L6000 - Minimum of 960 ml and fourteen (14) flow numbers required in total system. Of that minimum, 120 ml and 2 flow numbers must be utilized at or before the range, wok, or fryer.

PIPING LIMITATIONS

Once the nozzle placement and quantity of tanks has been determined, it is necessary to determine the piping configurations between the tank and the nozzles. This section contains the guidelines and limitations for designing the distribution piping so that the wet chemical agent will discharge from the nozzles at a proper flow rate. These limitations must also be referred to when selecting the mounting location for the tanks.

The maximum pipe lengths are based on internal pipe volume. Each size tank is allowed a minimum and maximum total volume of piping, calculated in milliliters.

There is no need to distinguish between what portion of the piping is supply line and what portion is branch line. Only the total volume of the complete piping network has to be considered.

Volume Chart

1/4 in. pipe = 20.5 mls./ft.

3/8 in. pipe = 37.5 mls./ft.

1/2 in. pipe = 59.8 mls./ft.

3/4 in. pipe = 105.0 mls./ft.

For more Pipe Volume data, see page 52

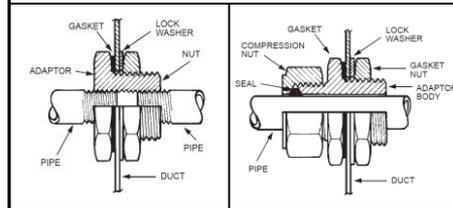
TANK CHART

Tank Size	Maximum Flow Numbers	Maximum Pipe Volume (milliliters)	Maximum Volume Allowed Between First Nozzle & Last Nozzle (milliliters)
1.6 Gallon L1600	5	1500	600
3.0 Gallon L3000	10	1910	1125
4.6 Gallon L4600	14	3400	3000
4.6 Gallon L4600	15	2600	2000
6.0 Gallon L6000	19	4215	1688/side
6.0 Gallon L6000	20	3465	1313/side

MINIMUM PIPE VOLUMES FOR A FRYER, RANGE, AND WOK

Cylinder Size	Entire System	At or before appliance
L1600	239 ml-1 Flow Pt	180 ml-1 Flow Pt
L3000	300 ml-4 Flow Pts	239 ml-2 Flow Pts
L4600	660 ml-10 Flow Pts	180 ml-2 Flow Pts
L6000	960 ml-14 Flow Pts	120 ml-2 Flow Pts

ALL PENETRATIONS TO THE HOOD SHALL BE SEALED WITH AN APPROVED QUICK SEAL DEVICE



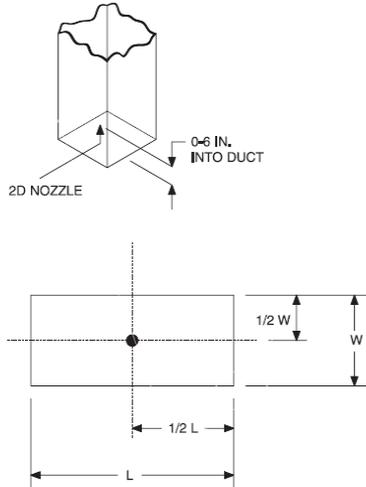
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		KITCHEN FIRE SYSTEM	
SCALE	N/A	SHEET	2 OF 7

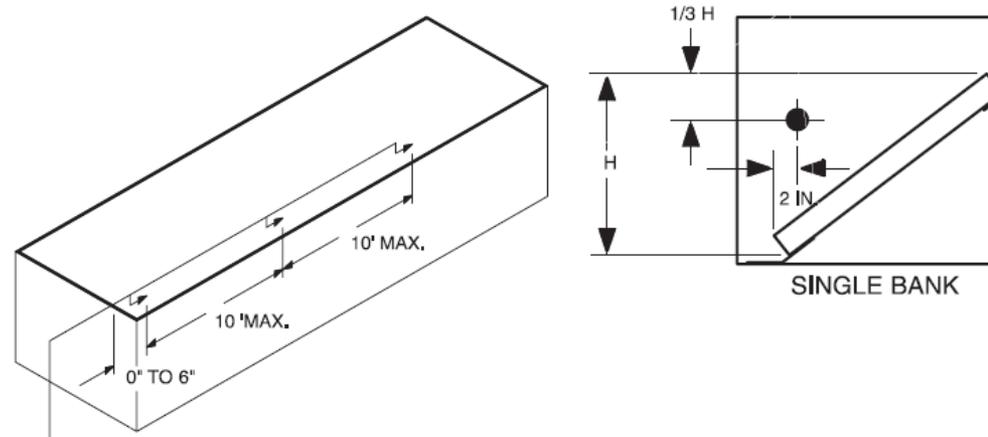
DUCT PROTECTION

Duct protection requires that a nozzle be positioned to discharge up, into the duct. Either a P/N NL1L or a P/N NL2D can be used. The NL2D duct nozzle is a two (2) flow nozzle. A single NL2D nozzle is capable of protecting square or rectangular duct with a maximum of 100 in. perimeter, with the longest side being a maximum of 34 in. It can also protect a round duct with a maximum diameter of 31-7/8 in.



PLENUM PROTECTION

The NL1H nozzle is a one (1) flow nozzle used for plenum protection. A single NL1H nozzle can protect a plenum (with single or V-bank filters) 10 ft. long by 4 ft. wide. Dividing the length into sections equal to or less than 10 ft. in length and positioning a nozzle at the start of each section can be done to protect longer plenums.



EXAMPLE DRAWINGS PROVIDED BY: <http://www.firesystemdrawings.com>



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SOME RESTAURANT
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SIZE	FSCM NO	DWG	REV
		KITCHEN FIRE SYSTEM	
SCALE	N/A	SHEET	3 OF 7

Four Burner Range

Note

The range cannot be under a backshelf when using high mount protection.

Compulsory Nozzle	NL2L
Flow Points Per Nozzle	2 (Two)
Number of Nozzles Required	1 (One)
Maximum Area of Protection	28 inches × 28 inches
Nozzle Location	Center of the cooking surface only.
Nozzle Height	34 inches to 48 inches above the cooking surface.
Nozzle Aiming	Directly down only.
Graphic Representation	See figure 3-9

Example: A four burner range has a hazard size of 20 in. (51 cm) in length and 27 in. (69 cm) in width. Follow down the Range Length column in the Nozzle Positioning Chart until you come to 20 in. (51 cm). Continue down this column until the correct width appears in the width column. When the width of 27 in. (69 cm) is arrived at, read across to the radius column to determine the size of radius allowed, for positioning of the nozzle, from the hazard area centerline. In this example, the correct radius is 3 in. (8 cm). The nozzle can be aimed straight down anywhere within a 3 in. (8 cm) radius of the hazard area centerline.

Nozzle must be located (heightwise) anywhere within the shaded area, and centered above the cooking surface.

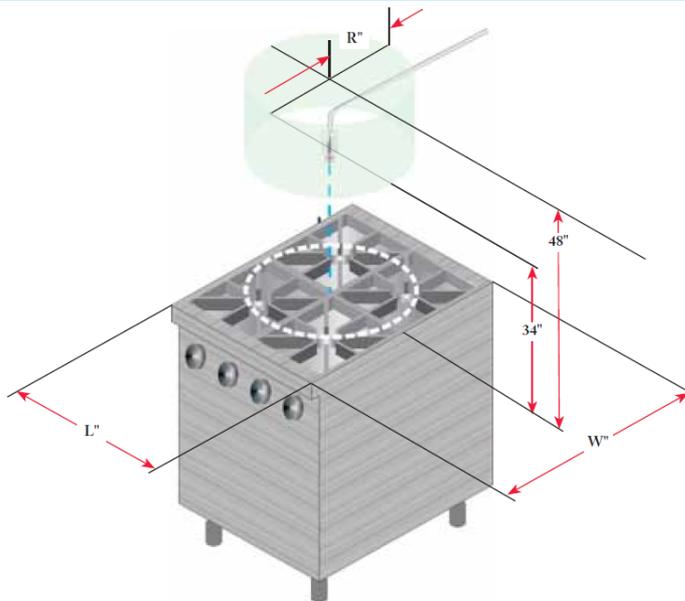


Figure 3-9



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SOME RESTAURANT
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SIZE	FSCM NO	DWG	REV
		KITCHEN FIRE SYSTEM	
SCALE	N/A	SHEET	4 OF 7

Two Burner Range with High Proximity Backshelf Protection (Low Mount Nozzle)

Note

Although most shelves exceed 11 inches in overall depth, make sure the shelf does not exceed 11 inches overhang of the burner.

Compulsory Nozzle	NL2L
Flow Points Per Nozzle	2 (Two)
Number of Nozzles Required	1 (One)
Maximum Area of Protection	12 inches x 28 inches
Nozzle Location	Over the front edge of the front burner; on the front-to-rear center line.
Nozzle Height	24 inches to 35 inches above the cooking surface
Nozzle Aiming	Aimed at a point 10 inches forward from the back burner on the front-to-rear center line
Graphic Representation	See figure 3-11b

Nozzle must be located over the front edge of the front burner, oriented with the nozzle tip aimed on the front-to-back centerline, and aimed 10 inches forward of the back burner on the front-to-back center line.

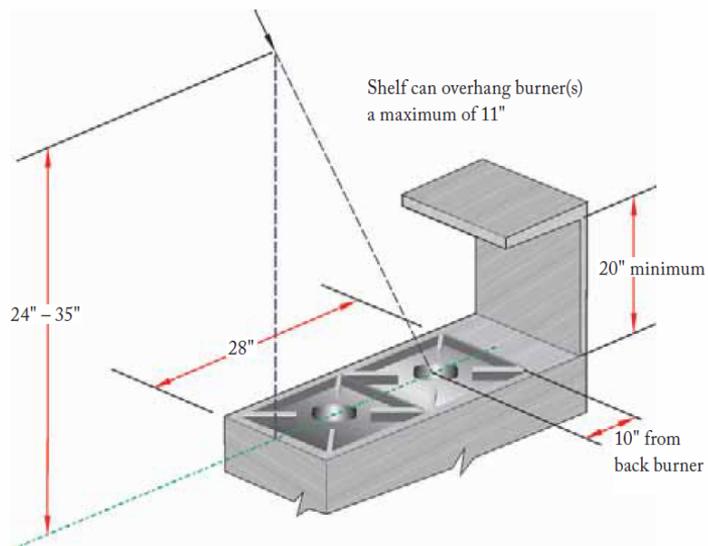


Figure 3-11b

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		KITCHEN FIRE SYSTEM	
SCALE	N/A	SHEET	5 OF 7

Small Gas Radiant Char-Broiler (High Mount Nozzle)

Compulsory Nozzle	NL1H
Flow Points Per Nozzle	1 (One)
Number of Nozzles Required	1 (One)
Maximum Area of Protection	624 square inches with a longest side dimension of 26 inches.
Nozzle Location	Anywhere over the cooking surface.
Nozzle Height	24 inches to 48 inches above the cooking surface.
Nozzle Aiming	Aimed at the center of the broiler.
Graphic Representation	See figure 3-20

Nozzle must be located anywhere within the shaded area and aimed at the center of the cooking surface.

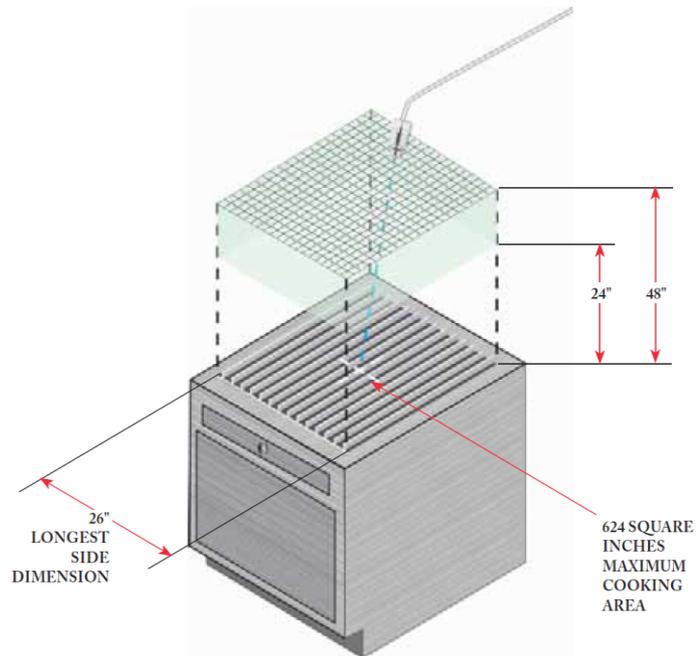


Figure 3-20

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SIZE	FSCM NO	DWG	REV
		KITCHEN FIRE SYSTEM	
SCALE	N/A	SHEET	6 OF 7

Fryers with Drip Board (High Mount Nozzle)

Compulsory Nozzle	NL2H
Flow Points Per Nozzle	2 (Two)
Number of Nozzles Required	1 (One)
Maximum Area of Protection	
	<i>Condition 1</i>
Deep Vat Cooking Area (excludes drip board)	324 square inches with a maximum longest side dimension of 18 inches.
Overall Cooking Area (includes drip board)	500 square inches with a maximum longest side dimension of 27-3/4 inches.
	<i>Condition 2</i>
Deep Vat Cooking Area (excludes drip board)	371 square inches with a maximum longest side dimension of 19-1/2 inches.
Overall Cooking Area (includes drip board)	495 square inches with a maximum longest side dimension of 25-3/8 inches.
Nozzle Location	Anywhere over the cooking surface.
Nozzle Height	24 inches to 48 inches above the cooking surface.
Nozzle Aiming	Aimed at the center of the cooking surface.
Graphic Representation	See Figure 3-5

Nozzle must be located anywhere within the shaded area and aimed at the center of the cooking surface.

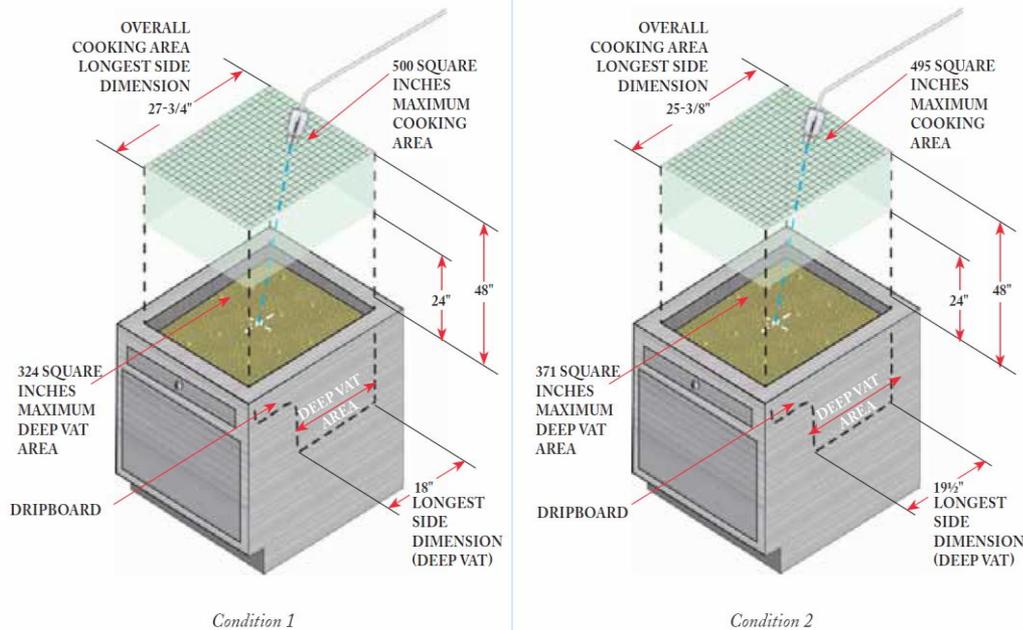


Figure 3-5

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			KITCHEN FIRE SYSTEM	
	SCALE	N/A	SHEET	7 OF 7