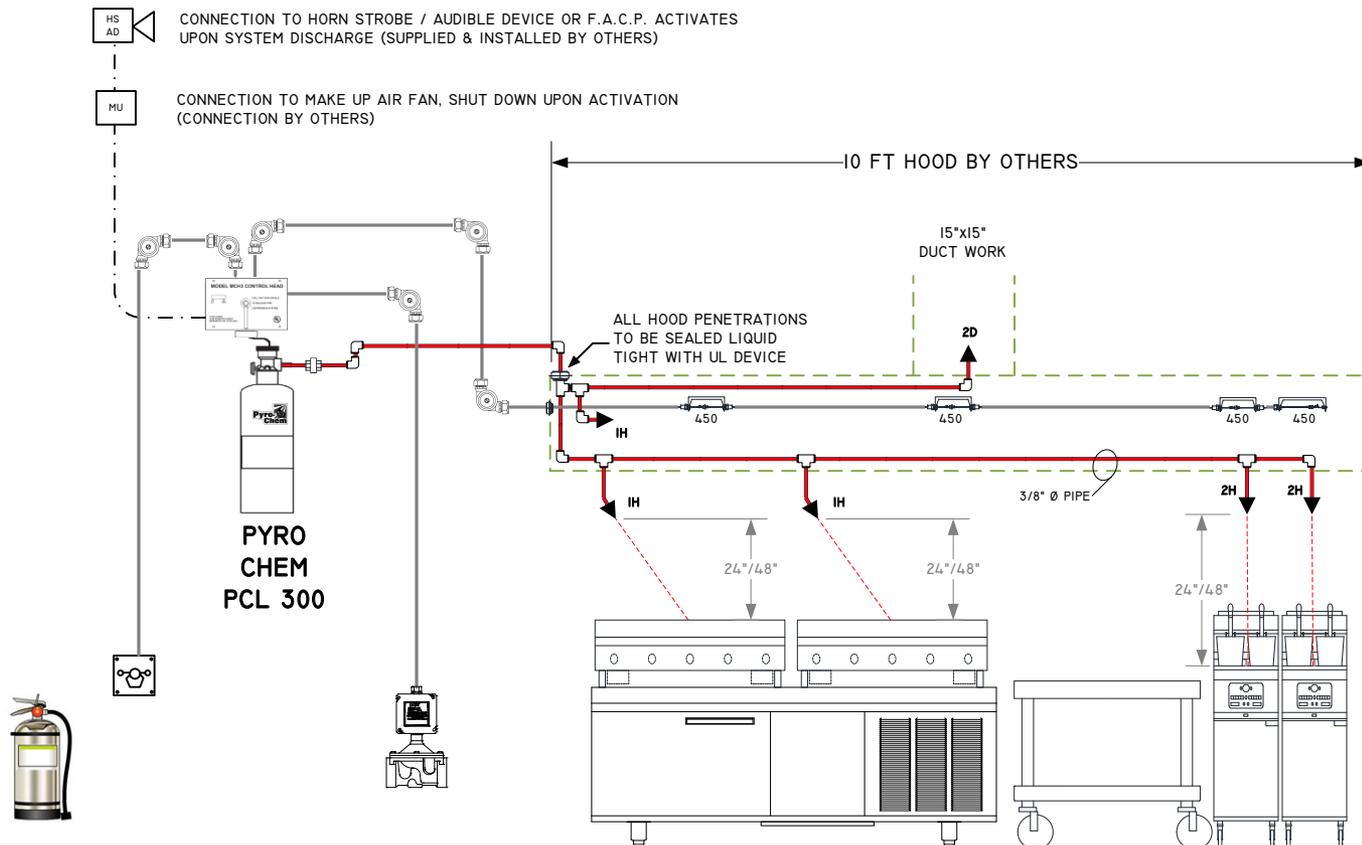




UL Listing

The PYRO-CHEM KITCHEN KNIGHT II Restaurant Fire Suppression System has been tested to the UL Standard for Fire Extinguishing Systems For Protection of Restaurant Cooking Areas, UL300 and Listed by Underwriters Laboratories, Inc.

FUSIBLE LINK TEMPERATURE SELECTION SHALL BE PER THE PYROCHEM INSTALLATION MANUAL RECOMMENDATIONS – SEE PAGE 3 FOR DETAILS ON LINK TEMPERATURE GUIDLINES



CLASS K WET CHEMICAL EXTINGUISHER

SHALL BE INSTALLED 42" - 48" ABOVE THE FINISHED FLOOR – WITHIN 30 FT TRAVEL DISTANCE OF THE COOKING EQUIPMENT

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

MECHANICAL GAS VALVE
REQUIRES MANUAL RESET
INSTALLED BY OTHERS

24" FLAT GRIDDLE

24" FLAT GRIDDLE

BREADING STATION

TWO - 14"x14" FRYERS

MAXIMUM PIPE VOLUME NOT TO EXCEED – 1910 ML
SEE PIPING REQUIREMENTS AND LIMITATIONS ON PAGE 2

PYRO CHEM PCL WET CHEM SYSTEM PCL 300
THIS SYSTEM UTILIZES 9 OF 10 POINTS

NOZZLE TABLE						
HAZARD	QTY	NOZZLE	PTS	TOTAL	MIN Nozzle	MAX Nozzle
					Height	Height
24" FLAT GRIDDLE	2	1H	1	2	24	48
14"x14" FRYERS	2	2H	2	4	24	48
DUCT	1	2D	2	2	100" PERIMETER MAX	
PLENUM	1	1H	1	1	10 FT LENGTH MAX	
TOTAL				9		

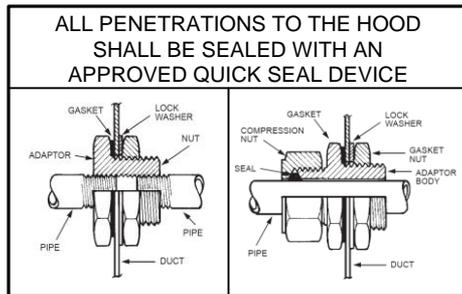
PRE-ENGINEERED SYSTEM SHOP DRAWING ONLY – NOT TO SCALE

	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 5	

GENERAL NOTES:

1. SYSTEM SHALL BE PRE-ENGINEERED
2. SYSTEM SHALL BE MANUFACTURED BY PYROCHEM INC.
3. PYROCHEM SYSTEMS HAVE THE FOLLOWING LISTINGS AND APPROVALS:

UNDERWRITERS LABORATORIES INC, UL 300 / UL 1254, UL EX 3830
4. SYSTEM TEMPERATURE LIMITATIONS – 32F MIN / 120F MAX
5. INSTALLATION REQUIREMENTS, NOZZLE LIMITATIONS AND DESIGN CRITERIA SHALL COMPLY WITH THE PYROCHEM INC. TECHNICAL MANUAL AND ALL ADDENDUMS AS PUBLISHED BY PYROCHEM INC.
6. PIPE AND FITTINGS SHALL BE SCHEDULE 40 BLACK, CHROME PLATED OR STAINLESS. GALVANIZED PIPE SHALL NOT BE USED.
7. ALL REQUIRED ELECTRICAL WORK SHALL BE PERFORMED BY OTHERS AND IS NOT INCLUDED ON THIS SHOP DRAWING.
8. ALL REQUIRED PLUMBING WORK SHALL BE PERFORMED BY OTHERS AND IS NOT INCLUDED ON THIS SHOP DRAWING



General Piping Requirements

1. Split piping and straight piping are both allowed on a PCL-160, PCL-300 and PCL-460 system.
2. PCL-600 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.
3. Maximum volume for 1/4 in. pipe between a nozzle and the preceding tee is 410 mls.
4. Maximum flow numbers for 1/4 in. pipe is 6.
5. Maximum number of elbows between a nozzle and the preceding tee is 5.
6. Maximum of 25 elbows are allowed in the total piping system.
7. Maximum difference in elevation between the tank outlet and any nozzle, or the tank outlet and the highest or lowest horizontal pipe run, is 10 ft. (3.1 m).
8. No traps are allowed in the piping network.
9. Pipe lengths are measured from center to center of fittings.
10. The internal equivalent length volume of fittings does not have to be considered as part of the total pipe volume.
11. 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.
12. Elbow(s) or swivel adaptors located at the nozzles do not have to be counted in the 25 elbow maximum requirement.
13. Reducing bushings are allowed when reducing to a smaller pipe size.
14. Additional piping requirements when protecting a range, wok, or a fryer:
 - PCL-160 – Minimum of 239 ml and one (1) flow number required in total system. Of that minimum, 180 ml must be utilized at or before the range, wok, or fryer.
 - PCL-300 - 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.
 - PCL-460 – 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.
 - PCL-600 – Minimum of 960 ml and fourteen (14) flow numbers required in total system. Of that minimum, 120 ml and 2 flow numbers must be

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.

Tank Chart

Tank Size	Maximum Flow Numbers	Maximum Pipe Volume (milliliters)	Maximum Volume Allowed Between First Nozzle and Last Nozzle (milliliters)
1.6 Gallon PCL-160	5	1500	600
3.0 Gallon PCL-300	10	1910	1125
4.6 Gallon PCL-460	14	3400	3000
4.6 Gallon PCL-460	15	2600	2000
6.0 Gallon PCL-600	19	4215	1688 per side
6.0 Gallon PCL-600	20	3465	1313 per side



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360-473-5290

SOME RESTAURANT
123 MAIN STREET
BREMERTON, WA 98337

SIZE	FSCM NO	DWG	REV
		KITCHEN FIRE SYSTEM	
SCALE	N/A	SHEET	2 OF 5

MODEL MCH3 - MECHANICAL CONTROL HEAD (P/N 551200)

The Model MCH3 mechanical control head is a fully mechanical control head which can be connected to the PCL-

- ▶ 160/300/460/600 cylinder valve. This control head will support a fusible link detection system, a remote mechanical pull station (Model RPS-M), and a mechanical or electric gas shut-off valve. A micro electric switch (Model MS-SPDT, MS-DPDT, MS-3PDT, or MS-4PDT) can be ordered separately and field installed. It is equipped with a local manual control handle that allows for mechanical system actuation. Operation of the local manual control requires removing the pull pin and rotating the handle clockwise. The Model MCH3 control head can actuate a maximum of five (5) cylinders with the 16 gram CO₂ cartridge. See Figure 2-4.

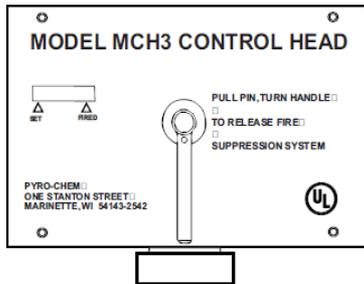
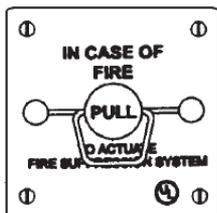


Figure 2-4. Mechanical Control Head.
004790PC

MODEL RPS-M - REMOTE MECHANICAL PULL STATION (P/N 551074)

- Remote manual control for the Model MCH3, NMCH3, or ECH3 control head is provided by the Model RPS-M remote mechanical pull station. It is connected to the system control head by stainless steel cable. This cable is enclosed in 1/2 in. EMT conduit with corner pulleys or flexible conduit with bends and/or corner pulleys at each change in direction. The remote mechanical pull station shall be located at the point of egress. See Figure 2-12.



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

Fusible Links

The fusible link is designed to separate at a specific temperature, releasing tension from the fusible link line, causing system actuation. See Figure 2-10.

- ▶ **Note:** When possible, temperature readings should be taken at each detector location to determine optimum fusible link temperature ratings. Temperature can be recorded using either a maximum registering thermometer, Part No. 15240, temperature tape (by others), or any other accurate thermometer that will record the maximum temperature experienced at the detector location.

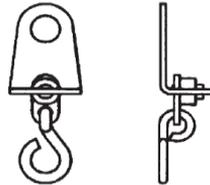


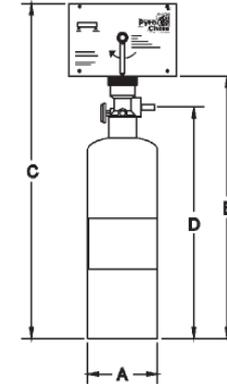
Figure 2-10. ML Style Fusible Link.
002851PC

After determining the maximum ambient temperature at the fusible link location, select the correct fusible link according to the temperature condition chart below:

Fusible Link Model No.	To Be Used Where Temperature Does Not Exceed	Part Number
FL-165	100° F. (38° C.)	550368
FL-212	150° F. (66° C.)	550365
FL-280	225° F. (107° C.)	550366
FL-360	290° F. (143° C.)	550009
FL-450	360° F. (182° C.)	550367
FL-500	400° F. (204° C.)	56816

CYLINDERS & VALVE

The PYRO-CHEM KITCHEN KNIGHT II System has available four different size cylinders: Models PCL-160 (P/N 553163), PCL-300 (P/N 551194), PCL-460 (P/N 551193), and PCL-600 (P/N 551196). Cylinder sizes are expressed in terms of extinguishing agent capacity (i.e., the PCL-300 uses 3.0 gallons (11.4 L) of extinguishing agent). The cylinder is manufactured, tested, and meets DOT requirements. Cylinders come pre-filled with extinguishing agent and are charged with dry nitrogen to a pressure of 225 psig @ 70° F (15.5 bar @ 21 °C). Cylinder and valve assembly dimensions are shown in Figure 2-1a.



Model No.	A in. (cm)	B in. (cm)	C in. (cm)	D in. (cm)	Max. Flow Point Capacity	Weight lb (kg)	Mounting Bracket Used
▶ PCL-160	8.00 (20.3)	17.75 (45.1)	23.50 (59.7)	15.44 (39.2)	5	34 (15)	MB-15
▶ PCL-300	8.00 (20.3)	25.06 (63.7)	30.81 (78.3)	22.75 (57.8)	10	53 (24)	MB-15
PCL-460	10.00 (25.4)	25.06 (63.7)	30.81 (78.3)	22.75 (57.8)	15	83 (37.7)	MB-15
PCL-600	10.00 (25.4)	35.81 (91)	41.56 (105.4)	33.50 (85.1)	20	108 (48.9)	MB-1

Figure 2-1a. Cylinder and Valve Assemblies.
002841PC



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SOME RESTAURANT
123 MAIN STREET
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SIZE	FSCM NO	DWG	REV
		KITCHEN FIRE SYSTEM	
SCALE	N/A	SHEET	3 OF 5

Duct Protection

It is not required that the fan be shut down or the exhaust duct be dampered for the system to operate properly.

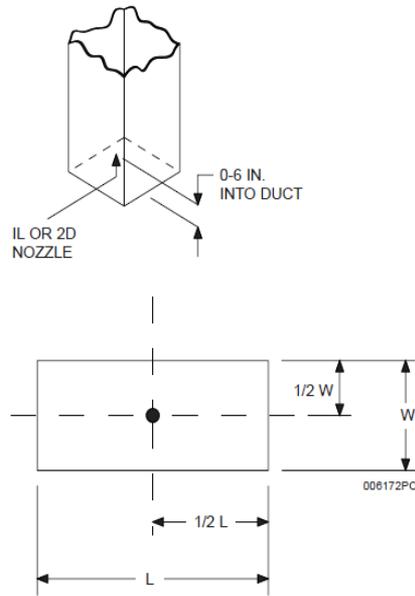
All duct protection is UL listed without limitation of maximum duct length (unlimited length). This includes all varieties of ductworks both horizontal and vertical including ducts that run at angles to the horizontal and ducts with directional bends.

Duct protection requires that a nozzle be positioned to discharge into the duct. Two nozzles are available for duct protection.

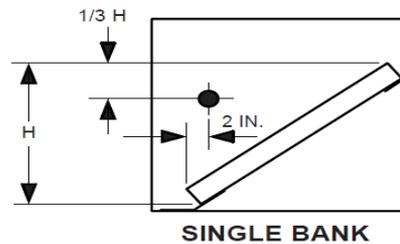
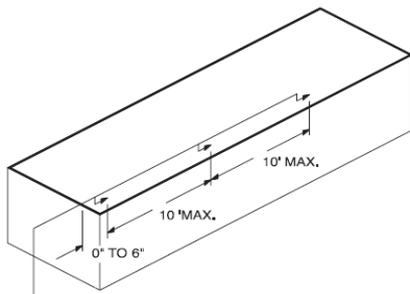
The Model 1L Nozzle, Part No. 551026, is a one (1) flow nozzle. A single 1L nozzle is capable of protecting square or rectangular ducts with a maximum perimeter of 50 in. (127 cm), with the diagonal being a maximum of 18 3/4 in. (47.6 cm). It can also protect a round duct with a maximum diameter of 16 in. (40.6 cm).

The Model 2D duct nozzle, Part No. 551038, is a two (2) flow nozzle. A single 2D nozzle is capable of protecting square or rectangular ducts with a maximum perimeter of 100 in. (254 cm), with the diagonal being a maximum of 37 3/8 in. (94.9 cm). It can also protect a round duct with a maximum diameter of 31 7/8 in. (81 cm).

When two (2) 2D duct nozzles are used to protect a single duct, the cross sectional area of the duct must be divided into two equal symmetrical areas. The nozzle must then be installed on the centerline of the area it protects and aimed directly into the duct opening.



PLENUM – 1H NOZZLE



The Model 1H nozzle, Part No. 551029, is a one (1) flow nozzle used for plenum protection. A single 1H nozzle can protect a plenum (with single or V-bank filters) 10 ft. (3.1 m) long by 4 ft. (1.2 m) wide. Dividing the length into sections equal to or less than 10 ft. (3.1 m) in length and positioning a nozzle at the start of each section can be done to protect longer plenums.

Small Griddle (1080 sq in. (6968 sq cm) x 36 in. (91 cm) longest side maximum)

Two nozzles are available for small griddle protection: High proximity and low proximity.

The 1H nozzle, Part No. 551029, is used for high proximity griddle protection. This nozzle is a one (1) flow nozzle. The nozzle must be located **above any corner** of the hazard surface, 24 in. to 48 in. (61 to 122 cm) above the cooking surface of the appliance and aimed at a point 12 in. (31 cm) over and 12 in. (31 cm) in from the corner below the nozzle. See **Figure 3-8**.

The 1L nozzle, Part No. 551026, is used for low proximity griddle protection. This nozzle is a one (1) flow nozzle. The nozzle must be located **above any corner** of the hazard surface, 10 in. to 24 in. (25 to 61 cm) above the cooking surface of the appliance and aimed at a point 12 in. (31 cm) over and 12 in. (31 cm) in from the corner below the nozzle. See **Figure 3-8**.

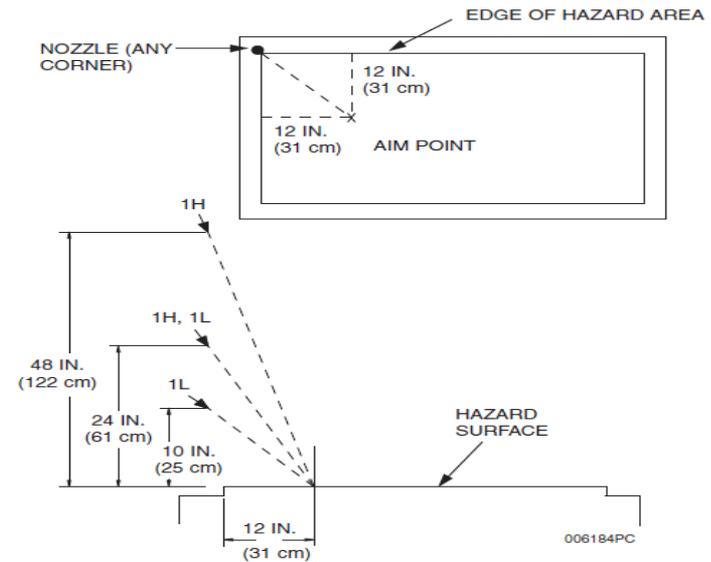


Figure 3-8.



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BREMERTON, WA 98337

SIZE	FSCM NO	DWG	REV
		KITCHEN FIRE SYSTEM	
SCALE	N/A	SHEET	4 OF 5

Fryers with Drip Board

The maximum single nozzle protection dimensions depend on the dimensions of the fry pot only.

For fry pots with maximum dimensions of 18 in. (45.7 cm) on the longest side and 324 sq. in. (2090 sq. cm) max. area, use **overall** dimensions of 27 3/4 in. (70.5 cm) on the longest side and 500 sq. in. (3226 sq. cm) max. area.

For fry pots with maximum dimensions exceeding 18 in. x 324 sq. in. (2090 sq. cm), but no greater than 19 1/2 in. (49.5 cm) on the longest side and 371 sq. in. (2394 sq. cm) max area, use **overall** dimensions of 25 3/8 in. (64.5 cm) on the longest side and 495 sq. in. (3194 sq. cm) area.

Two nozzles are available for fryer protection: High proximity and low proximity.

The Model 2H nozzle, Part No. 551028, is used for high proximity fryer protection. This nozzle is a two (2) flow nozzle. The nozzle must be located **anywhere within the perimeter** of the hazard area, 24 in. to 48 in. (61 to 122 cm) above the cooking surface of the appliance and aimed at the center of the cooking area. See **Figure 3-3b**.

The Model 2L nozzle is used for low proximity fryer protection. This nozzle is a two (2) flow nozzle. The

nozzle must be located **anywhere on the perimeter** of the hazard area, 13 in. to 24 in. (33 to 61 cm) above the cooking surface of the appliance and aimed at the center of the cooking area. See **Figure 3-3b**.

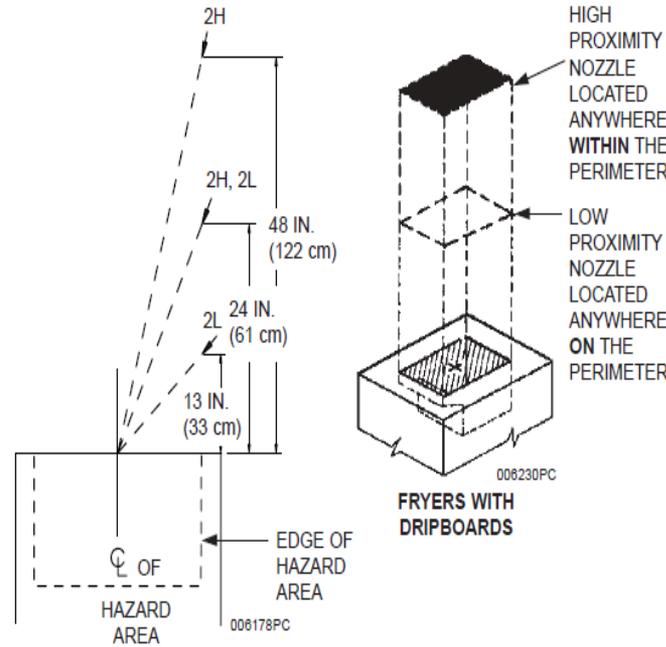


Figure 3-3b



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SOME RESTAURANT
123 MAIN STREET
BREMERTON, WA 98337

SIZE	FSCM NO	DWG	REV
		KITCHEN FIRE SYSTEM	
SCALE	N/A	SHEET	5 OF 5