



Certificate of Training

It is hereby certified that

Michael Moody

1027921

Has successfully completed the training course for
ANSUL R-102 Restaurant Systems (Instructor led training)

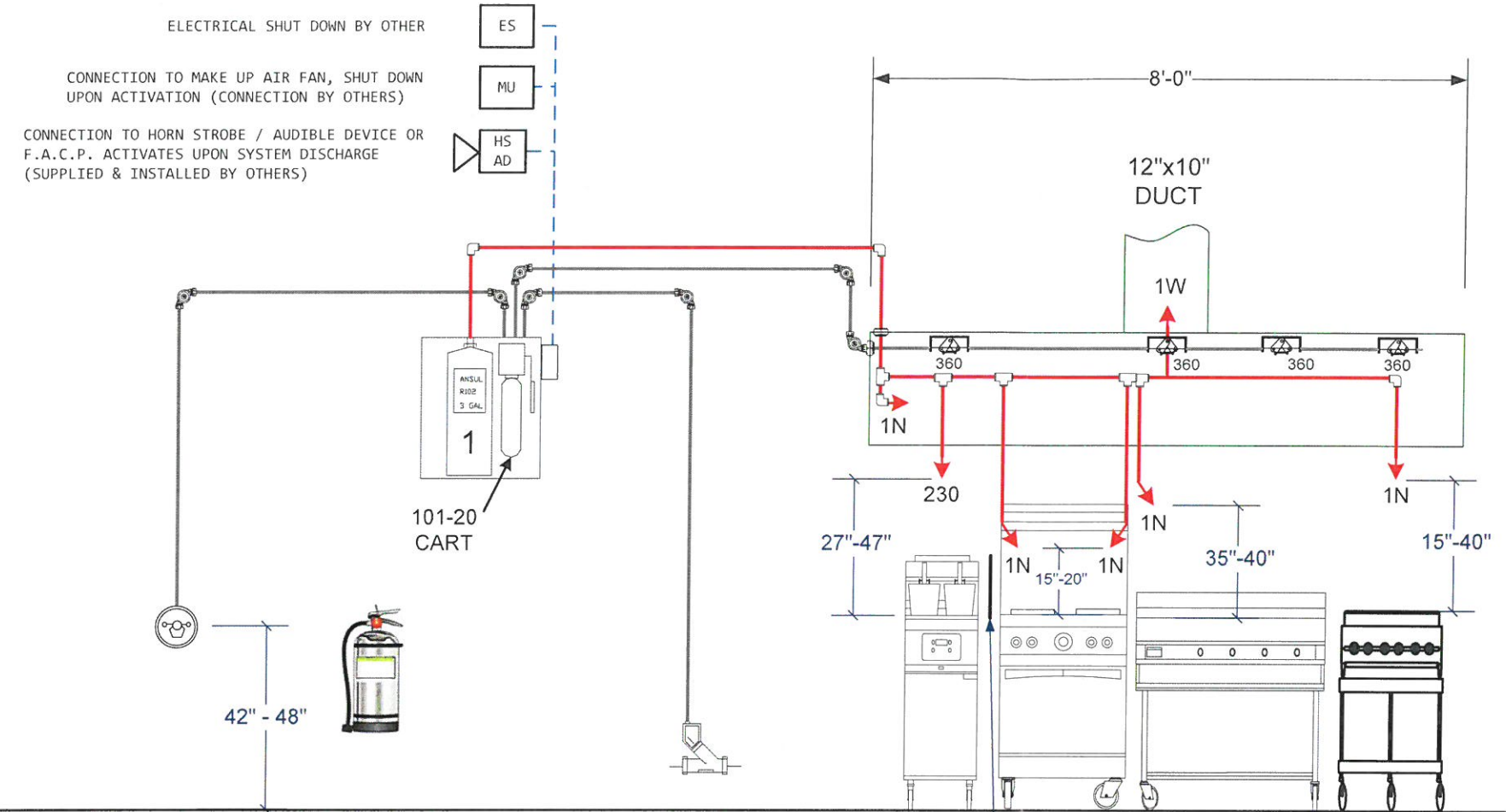
Completed this **4/25/2018**

This certificate is considered valid for a period of three years from completion date and linked to the attendee and the company mentioned above.

Training Hours: **16**

Katherine A. Adrian
Global Director
Technical and Training Services
Johnson Controls





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 - INSTALLATION BEFORE FIRST APPLIANCE

BAFFLE PER NFPA 96(2014) 12.1.2.5 - BY OTHERS

- 14"x20.3" FRYER W/ DRIP BOARD
- 23.5"x27" RANGE
- 35.5"x23" GRIDDLE
- 18"x18" CHARBROILER

CLASS K WET CHEMICAL EXTINGUISHER

SHALL BE INSTALLED 42" - 48" ABOVE THE FINISHED FLOOR - 10' to 30' FROM THE HAZARD

**ANSUL R102 – 3 GALLON SYSTEM
TANK 1 USES 8 of 11 FLOW POINTS**

SYSTEM PIPING LIMITATIONS

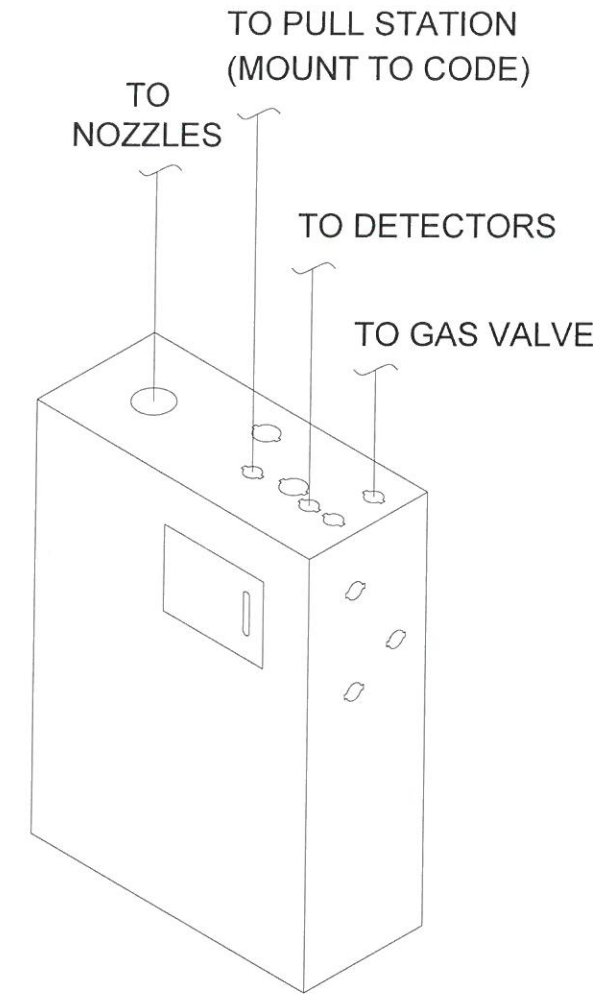
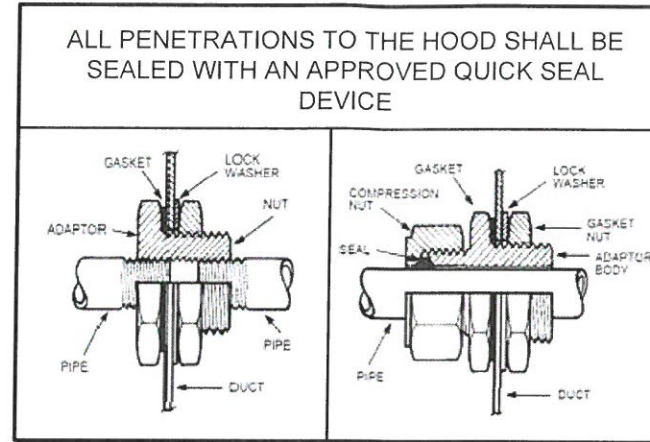
3 GALLON SYSTEM PER TANK				
Requirments	Supply	Duct Branch	Plenum Branch	Appliance Branch
Pipe Size	3/8"	3/8"	3/8"	3/8"
Maximum Length	40 FT	8 FT	4 FT	12 FT
Maximum Rise	6 FT	4 FT	2 FT	2 FT
Max 90 Elbow	9	4	4	6
Max Tees	1	2	2	4
Max Flow Points	11	4	2	4

	Johnson Controls Fire Protection 540 Civic Blvd #105 Raleigh, NC 27610		
	TACOS DON MARCOS 9629 BITTER MELON DR. ANGIER, NC 27501		
SIZE	DWG #	DWG	REV
		KITCHEN FIRE SYSTEM	1
SCALE	N/A	SHEET	1 OF 5

GENERAL NOTES:

1. System shall be Pre-Engineered
2. System shall be manufactured by ANSUL INC.
3. ANSUL R102 systems have the following Listings and Approvals:

Underwriters Laboratories Inc, UL 300 / UL 1254, UL EX 3470
4. System Temperature Limitations – 32F min / 120F Max
5. Installation requirements, nozzle limitations and design criteria shall comply with the ANSUL R102 Manual and all addendums as published by ANSUL
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 be performed by others and is not included on this shop drawing



**3 GAL. SYSTEM DETAIL
N.T.S.**

General Piping Requirements

1. All R-102 system piping is straight line. Therefore, the need for critical lengths and balancing is minimized.
2. Two 45° elbows count as one 90° elbow.
3. Each branch line includes the tee or elbow leading to it, and all fittings within the branch line itself.
4. The minimum piping length of Schedule 40, 3/8 in. pipe from the tank outlet to any nozzle protecting a range, fryer, or wok must be 6 ft. (1.8 m).
5. Pipe lengths are measured from center of fitting to center of fitting. See Figure 85.

FIGURE 85
(ANSUL R102)

6. All distribution piping must be 3/8 in. Schedule 40 black iron, chrome-plated, or stainless steel. **Do not use hot dipped galvanized pipe on the distribution piping.**
7. All threaded connections located in and above the protected area must be sealed with pipe tape. Tape should be applied to male threads only. Make certain tape does not extend over the end of the thread, as this could cause possible blockage of the agent distribution.
8. Before installing blow-off caps on nozzles, apply a small amount of Dow Corning No. 111 silicone grease across the opening in the nozzle tip and also a small amount coating the exterior of the blow-off cap. This will help keep cooking grease from building up on the cap.
9. Tees used in the distribution piping can be used as thru tees, side outlet tees, or bull tees.

TANK AND CARTRIDGE REQUIREMENTS

Once the hazard analysis is completed and the total nozzle flow numbers are established, the quantity and size of agent tanks and cartridges needed to supply the nozzles with the proper volumes of agent at the proper flow rates can be determined. For cartridges used in the regulated release mechanism, flow capacities, tank quantities and sizes, and regulated release cartridge options are given in the table below.

Total Flow Numbers*	Quantity and Size of Tank(s)	Regulated Release Cartridge Options	
		Nitrogen	Carbon Dioxide
1 – 5	(1) 1.5 Gallon	LT-20-R	101-10
6 – 11	(1) 3.0 Gallon	LT-30-R	101-20
11 – 16	(1) 1.5 Gallon (1) 3.0 Gallon	Double	101-30
16 – 22	(2) 3.0 Gallon	Double	101-30**

When one or more regulated actuators are used, the following tank and cartridge combinations apply for each regulated actuator:

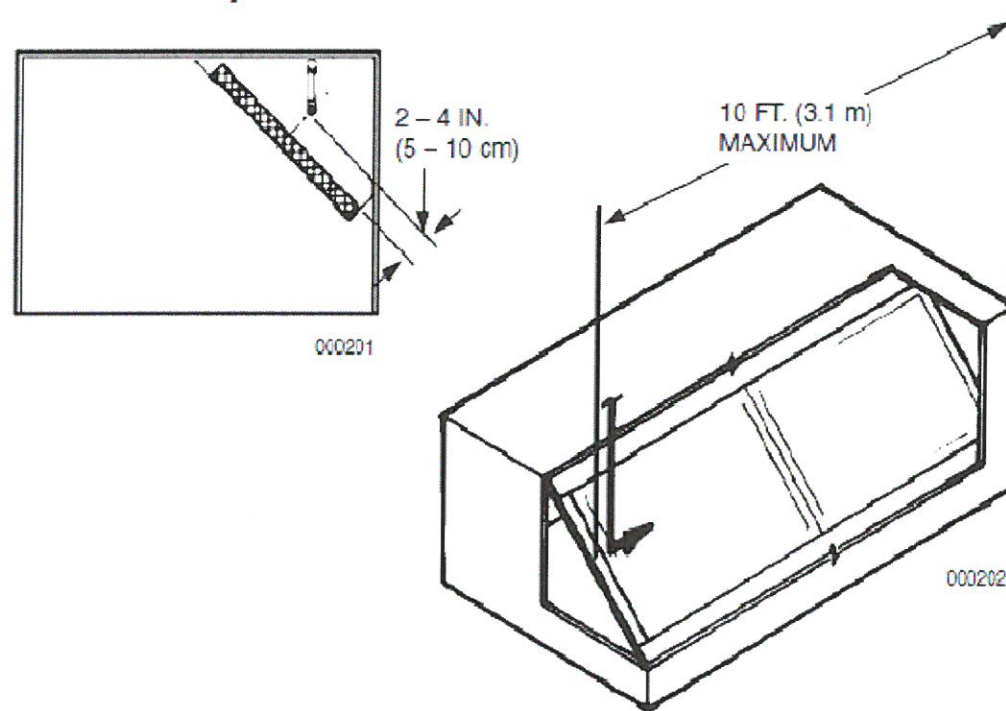
Regulated Actuator Tank(s)	Regulated Actuator Cartridge
(1) 1.5 Gallon	LT-20-R or 101-10
(1) 3.0 Gallon	LT-30-R or 101-20
(1) 1.5 Gallon and (1) 3.0 Gallon	LT-A-101-30 or 101-30** or double tank
(2) 3.0 Gallon	LT-A-101-30 or 101-30** or double tank

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	SIZE	DWG #	REV
			KITCHEN FIRE SYSTEM 1
	SCALE	N/A	SHEET 2 OF 5

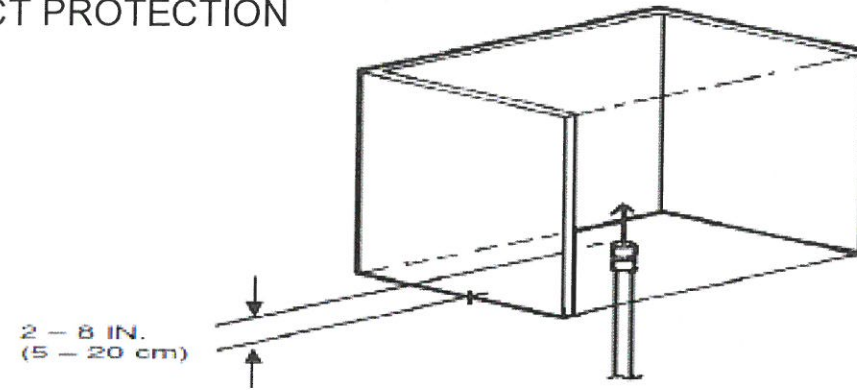
HORIZONTAL PROTECTION – OPTION 1

1N NOZZLE – PART NO. 419335 – SINGLE BANK PROTECTION

One 1N nozzle will protect 10 linear feet (3.1 m) of single filter bank plenum. The nozzle(s) must be mounted in the plenum, 2 to 4 in. (5 to 10 cm) from the face of the filter, centered between the filter height dimension, and aimed down the length. The nozzle must be positioned 0-6 in. (0-15 cm) from the end of the hood to the tip of the nozzle. See Figure 9.



DUCT PROTECTION



DUCT SIZES UP TO 50 IN. (127 cm)
PERIMETER/ 16 IN. (41 cm) DIAMETER

- One 1W nozzle (Part No. 419336) = one flow number
- 50 in. (127 cm) perimeter maximum
- 16 in. (41 cm) diameter maximum

DUCT SIZES UP TO 100 IN. (254 cm)
PERIMETER/ 32 IN. (81.3 cm) DIAMETER

- One 2W Nozzle (Part No. 419337) = two flow numbers
- 100 in. (254 cm) perimeter maximum
- 32 in. (81.3 cm) diameter maximum

The chart below shows the maximum protection available from each duct nozzle.

Description	Part No.	3.0 Gallon System	1.5 Gallon System
2W Nozzle	419337	Maximum 100 in. (254 cm) Perimeter	Maximum 100 in. (254 cm) Perimeter
1W Nozzle	419336	Maximum 50 in. (127 cm) Perimeter	Maximum 50 in. (127 cm) Perimeter

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		KITCHEN FIRE SYSTEM	1
SCALE	N/A	SHEET	3 OF 5

FRYER PROTECTION

Fryer – Single Nozzle Protection

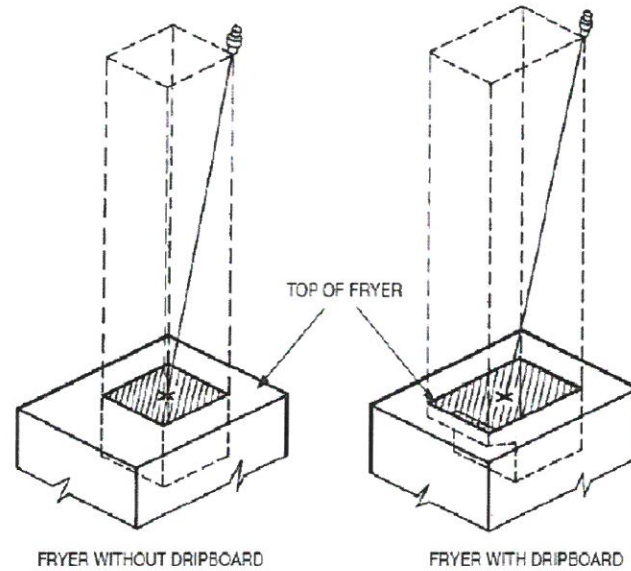
1. Design requirements for fryers are broken down into two types.

A. FRYERS WITHOUT DRIPBOARDS

If the fryer does not include a dripboard, measure the internal depth (horizontal dimension from front to back) and length of the frypot.

B. FRYERS WITH DRIPBOARDS

If the fryer includes any dripboard areas, measure both the internal depth (horizontal dimension from front to back) and length of the frypot portion, and then measure the internal depth and length of the overall hazard area including any dripboard areas.



NOZZLE TIP POSITIONED ANYWHERE ALONG OR WITHIN PERIMETER OF COOKING SURFACE AND AIMED TO THE CENTER OF THE COOKING AREA.

Maximum Area Dimensions – Single Nozzle Fryer Protection

Max. Size Frypot Only	Max. Size Overall With Dripboard	Type of Nozzle	Nozzle Height Above Top of Fryer
Full or Split Vat 14 in. x 15 in. ► (355 mm x 381 mm)	Full or Split Vat 14 in. x 21 in. (355 mm x 533 mm)	230	27 in. to 47 in. (686 mm to 1193 mm)

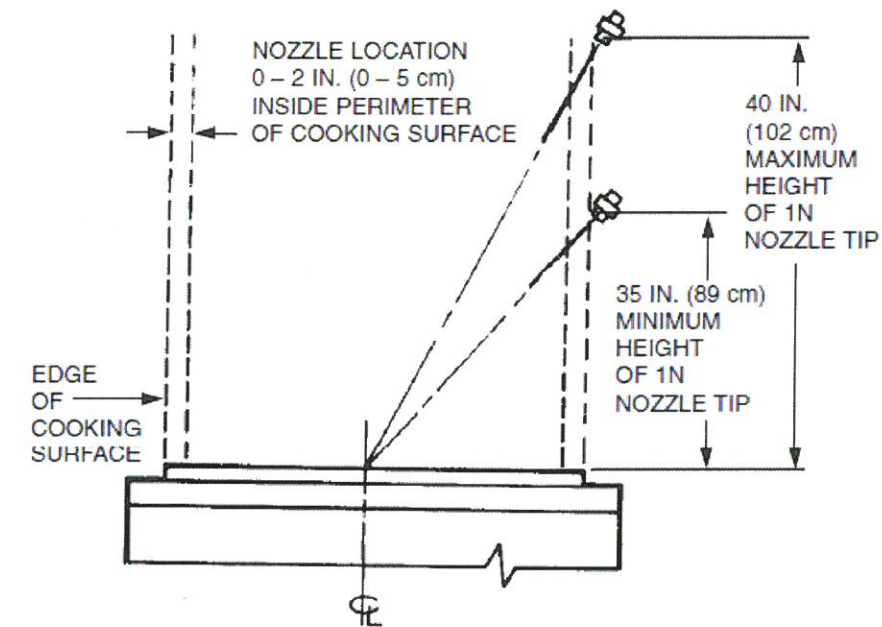
Griddle Protection 1-Flow Nozzle

High Proximity Application: 35 in. to 40 in. (89 to 102 cm) above the cooking surface.

This high proximity application uses the 1N nozzle, Part No. 419335.

The nozzle tip is stamped with 1N indicating this is a one-flow nozzle and must be counted as one flow number.

One 1N nozzle will protect a maximum cooking area of 1080 sq. in. (6968 sq. cm) with the maximum longest side of 36 in. (91 cm).



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SIZE	DWG #	DWG	REV
		KITCHEN FIRE SYSTEM	1
SCALE	N/A	SHEET	4 OF 5

Range Protection 1N (1-Flow) Nozzle – Low Proximity Application

15 in. to 20 in. (381 mm to 508 mm) above the cooking surface.

The low proximity 1-flow nozzle application for the protection of ranges requires the 1N nozzle.

- ▶ The nozzle is stamped with 1N indicating that it is a one-flow nozzle and must be counted as one flow number,

When using the 1N nozzle for low proximity range protection with or without obstruction, the maximum length of the burner grates being protected must not be exceed 24 in. (609 mm) length, aimed along a centerline to a point 20 in. (508 mm) from the end of the length, protecting a maximum width of 18 in. (457 mm).

When protecting a range, the 1N nozzle must be located a maximum of 9 in. (228 mm) from each burner grate centerline and must be positioned above the edge of the hazard area to be protected.

The 1N nozzle tip must be positioned at or below the obstruction, if present. The protected area begins at the point straight down from the nozzle tip. The nozzle can be placed at the side of the range aimed either left or right, or can be placed in the front or back of the range. See Figures 4-33 and 4-34 for nozzle location details.

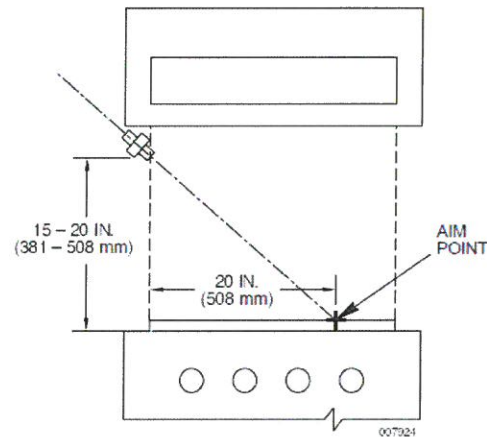


FIGURE 4-33

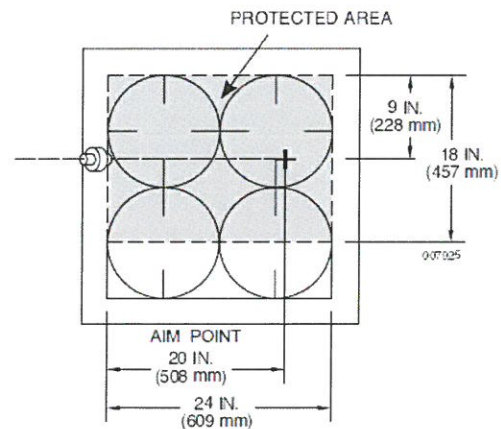


FIGURE 4-34

Gas-Radiant/Electric Char-Broiler Protection

The R-102 system uses the 1N nozzle, (Part No. 419335) for gas-radiant/electric char-broiler protection.

The nozzle tip on the 1N nozzle is stamped with a 1N, indicating that this is a one-flow nozzle and must be counted as one flow number.

- ▶ One 1N nozzle will protect a hazard with a maximum length of 36 in. (91 cm) and a total cooking area which does not exceed 864 in.² (5574 cm²). The nozzle tip must be located 15 to 40 in. (38 to 102 cm) above the hazard surface. When using this nozzle for gas-radiant/electric char-broiler protection, the nozzle must be positioned anywhere along or within the perimeter of the maximum cooking area and shall be aimed at the center of the cooking surface. See Figure 59.

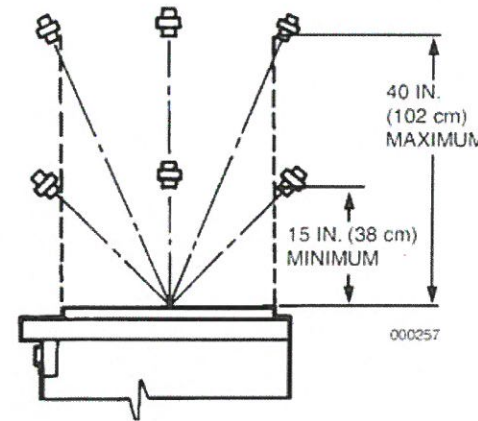
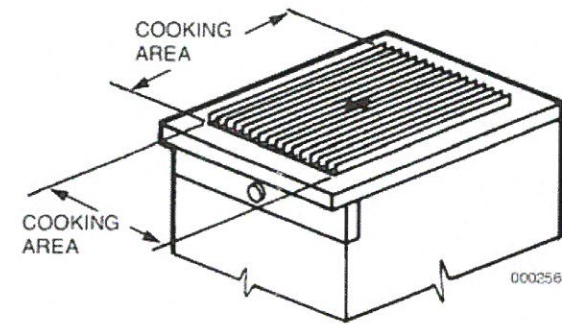



FIGURE 59

	Johnson Controls Fire Protection		
	540 Civic Blvd #105 Raleigh, NC 27610		
TACOS DON MARCOS			
9629 BITTER MELON DR. ANGIER, NC 27501			
SIZE	DWG #	DWG	REV
		KITCHEN FIRE SYSTEM	1
SCALE	N/A	SHEET	5 OF 5