CITY OF SACRAMENTO

1231 I Street, Sacramento, CA 95814

Permit No: 0015049

Insp Area: 1

Site Address: 1930 H ST SAC
Parcel No: 007-0013-007

Sub-Type: COM
Housing (Y/N): N

CONTRACTOR
SENTINEL FIRE EQUIPMENT
5702 BROADWAY
SAC CA 95820

OWNER
NEWMAN RUTH M
1095
PEBBLE BEACH CA 95814

ARCHITECT

Nature of Work: TYPE I EXHAUST HOOD AND DUCT FIRE SUPPRESSION SYSTEM.

CONSTRUCTION LENDING AGENCY : I hereby affirm under penalty of perjury that there is a construction lending agency for the performance of the work for which this permit is issued (Sec. 3097, Civ. C).

Lender's Name _____ Lender'sAddress _____

LICENSED CONTRACTORS DECLARATION: I hereby affirm under penalty of perjury that I am licensed under provisions of Chapter 9 (commencing with section 7000) of Division 3 of the Business and Professions Code and my license is in full force and effect.

X License Class C-16 License Number 361637 Date 1-2-2001 Contractor Signature SENTINEL FIRE EQUIP

OWNER-BUILDER DECLARATION: I hereby affirm under penalty of perjury that I am exempt from the contractors License Law for the following reason (Sec. 7031.5, Business and Professions Code: any city or county which requires a permit to construct, alter, improve, demolish, or repair any structure, prior to its issuance, also requires the applicant for such permit to file a signed statement that he or she is licensed pursuant to the provisions of the Contractors License Law (Chapter 9 (commencing with Section 7000) of Division 8 of the Business and Professions Code) or that he or she is exempt therefrom and the basis for the alleged exemption. Any violation of Section 7031.5 by any applicant for a permit subjects the applicant to a civil penalty of not more than five hundred dollars ($500.00):

___ I, as a owner of the property, or my employees with wages as their sole compensation, will do the work, and the structure is not intended or offered for sale (Sec. 7044, Business and Professional Code: The Contractors License Law does not apply to an owner of property who builds or improves thereon, and who does such work himself or herself or through his/her own employees, provided that such improvements are not intended or offered for sale. If, however, the building or improvement is sold within one year of completion, the owner-builder will have the burden of proving that he/she did not build or improve for the purpose of sale.)

___ I, as owner of the property, am exclusively contracting with licensed contractors to construct the project (Sec. 7044, Business and Professions Code: The Contractors License Law does not apply to an owner of property who builds or improves thereon, and who contracts for such projects with a contractor(s) licensed pursuant to the Contractors License Law.)

___ I am exempt under Sec. _____ B & PC for this reason: _____

Date _____ Owner Signature _____

IN ISSUING THIS BUILDING PERMIT, the applicant represents, and the city relies on the representation of the applicant, that the applicant verified all measurements and locations shown on the application or accompanying drawings and that the improvement to be constructed does not violate any law or private agreement relating to permissible or prohibited locations for such improvements. This building permit does not authorize any illegal location of any improvement or the violation of any private agreement relating to location of improvements.

I certify that I have read this application and state that all information is correct. I agree to comply with all city and county ordinances and state laws relating to building construction and herby authorize representative(s) of this city to enter upon the abovementioned property for inspection purposes.

X Date 1-2-2001 X Applicant/Agent Signature Wayne T Brunston

WORKER'S COMPENSATION DECLARATION: I hereby affirm under penalty of perjury one of the following declarations:

___ I have and will maintain a certificate of consent to self-insure for workers' compensation as provided for by Section 3700 of the Labor Code, forthe performance of work for which the permit is issued.

X ___ I have and will maintain workers' compensation insurance, as required by Section 3700 of the Labor Code, for the performance of the work for which this permit is issued. My workers' compensation insurance carrier and policy number are:

Carrier STATE FUND Policy Number 565-00-009600 Exp Date 10/01/2001

___ (This section need not be completed if the permit is for $100 or less) I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the workers' compensation laws of California and agree that if I should become subject to the workers' compensation provisions of Section 3700 of the Labor Code, I shall forthwith comply with those provisions.

X Date 1-2-2001 X Applicant Signature Wayne T Brunston

WARNING: FAILURE TO SECURE WORKER'S COMPENSATION COVERAGE IS UNLAWFUL AND SHALL SUBJECT AN EMPLOYER TO CRIMINAL PENALTIES AND CIVIL FINES UP TO ONE HUNDRED THOUSAND DOLLARS ($100,000) IN ADDITION TO THE COST OF COMPENSATION, DAMAGES AS PROVIDED FOR IN SECTION 3706 OF THE LABOR CODE, INTEREST AND ATTORNEY'S FEE.

THIS PERMIT SHALL EXPIRE BY LIMITATION IF WORK IS NOT COMMENCED WITHIN 180 DAYS.

APPLICATION FOR COMMERCIAL BUILDING PERMIT

CITY OF SACRAMENTO
DEVELOPMENT SERVICES DIVISION
PERMIT SERVICES SECTION
231 I Street, Rm. 200
Sacramento, CA 95814 (916) 264-7619 FAX 264-7046

ACTIVITY # 0015049 Insp. Area 1C

Applicant MUST complete ALL Unshaded areas

ADDRESS 1930 H STREET SACRAMENTO Suite _____

PARCEL # _____

CONTACT	LICENSED CONTRACTOR Lic No. # 369137-C16
Name NATION WIDE MEATS	Name SENTINEL FIRE EQUIP. CO.
Street Address 1930 H. STREET	Address 5702 BROADWAY
City/State/Zip SACRAMENTO CA 95814	City/State/Zip SACRAMENTO, CA. 95820
Phone _____ FAX _____	Phone 916 452 1800 FAX 455-4104
E-mail:	E-mail: 2 H DEPT
ARCHITECT/ENGINEER	**OWNER**
Name _____	Name _____
Address _____	Address _____
City/State/Zip _____	City/State/Zip _____
Phone _____ FAX _____	Phone _____ FAX _____
E-mail:	E-mail:

→ Will permittee have any employees on the jobsite? ☐ No ☑ Yes → INSURANCE CO: STATE FUND

→ WORKER'S COMPENSATION POLICY # 565-00-009600 EXPIRATION DATE: 10-01-2001

NATURE OF WORK IN DETAIL:
1 ea.
EXHAUST HOOD FIRE SUPPRESSION SYSTEM.

OCCUPANT/TENANT:

VALUATION: $ 2495.00

FLOOD STATUS: S.C.A.T.

JOB DESCRIPTION: BLDG SHELL APT TI( ) REM( ) SW FIRE ADD OTH

INSPECTION DISCIPLINES	BLDG	MECH	PLUMB	ELEC	SITE	2 FIRE

# Stories	1st flrArea.	Total Area	Use Zone	Occp Group	Const type	Fire Req. Y / N	ALARM	Fed Code	Vio. File [H] [Quad]
				A-3				18	

B	L	P	M	E	F		D	PW	UTIL
							2R		

COMMENTS: _____

REGIONAL SANITATION FEES? ☐ Yes ☐ No HEALTH DEPARTMENT? ☐ Yes ☐ No

WATER FLOW TEST FOR NEW BUILDINGS OR ADDITIONS? ☐ Provided ☐ Faxed

CITY OF SACRAMENTO
DEVELOPMENT SERVICES DIVISION

EXPRESS PLAN REVIEW

SUBMITTAL DATES					
First Review		2nd Review		3rd Review	
IN	OUT	IN	OUT	IN	OUT
/ /	/ /	/ /	/ /	/ /	/ /

PLAN CHECK # 0015049
ADDRESS: 1938 H St
☑ Commercial ☐ Residential

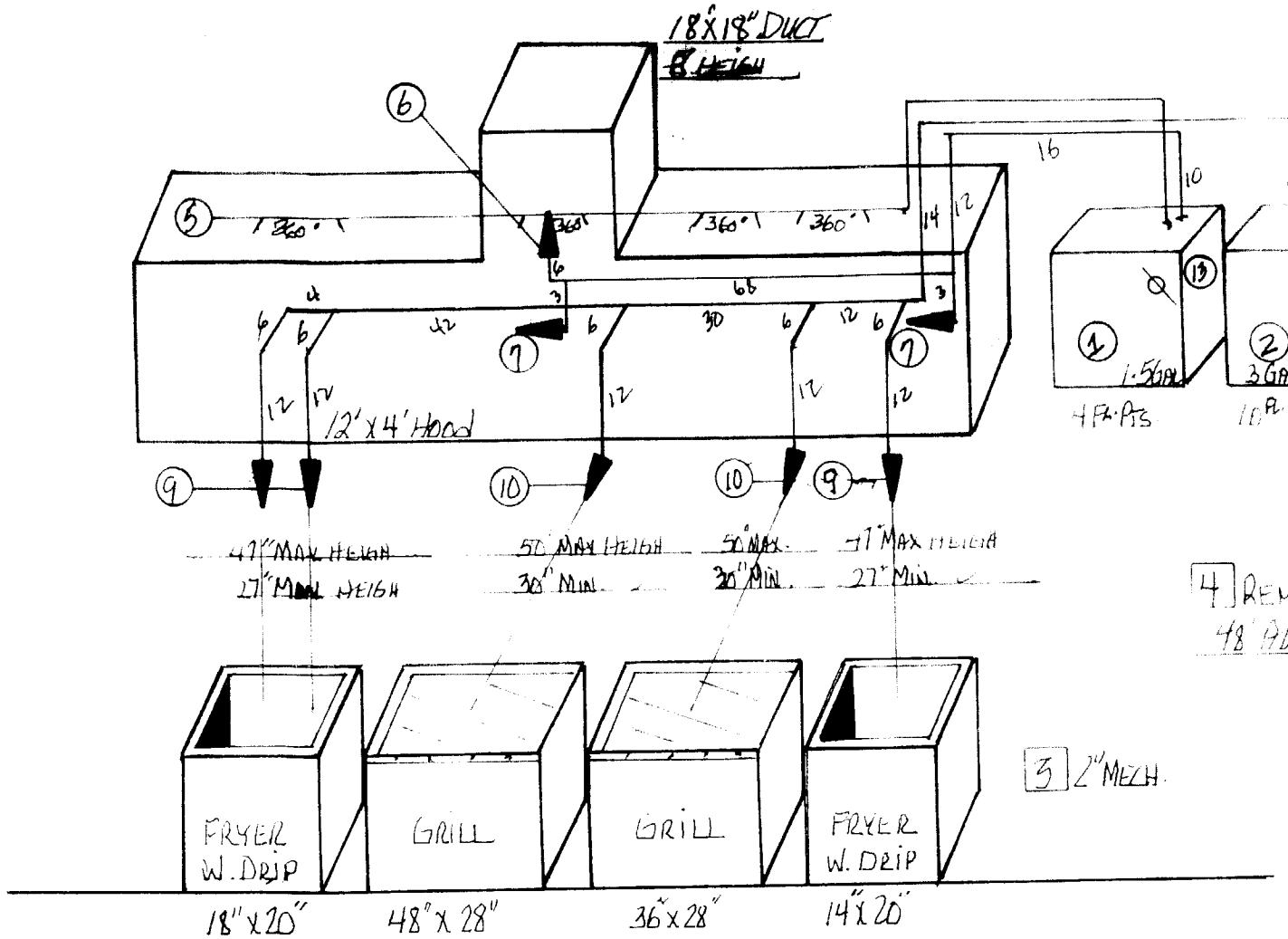
ACCEPTED by (Staff):

DISCIPLINE	1ST REVIEW			2ND REVIEW			3RD REVIEW		
	Status	Staff	Date	Status	Staff	Date	Status	Staff	Date
LIFE SAFETY									
STRUCTURAL									
MECHANICAL/PLUMBING									
ELECTRICAL									
FIRE	13	BJF	12/27/00						
PLANNING									

STAFF COMMENTS:

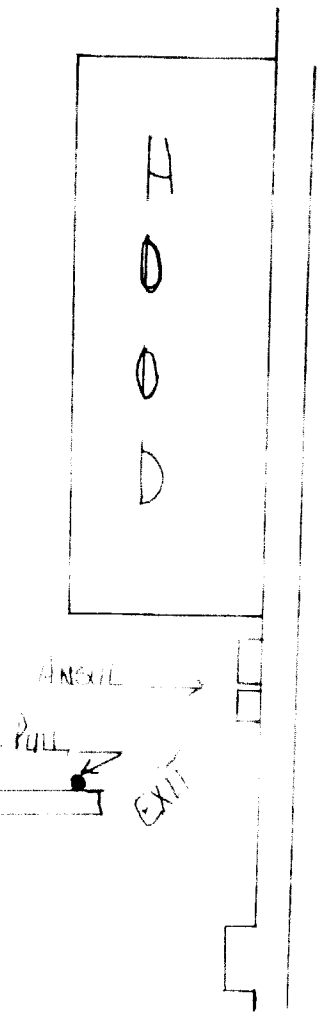
rev. 5/16/98

0015049



4 REMOTE PULL & EXIT
48" ABOVE FLOOR

3 2" MECH.



This set of plans and specifications must be kept on the job at all times and it is unlawful to make any changes or alterations from the same without written permission from the Building Inspection Division.

The approval of this plan and specification SHALL NOT be held to permit or approve the violation of any City Ordinance or State Law.

DEPT. OF PLANNING & DEVELOPMENT APPROVED UNDER TITLE 15 CITY CODE City of SACRAMENTO, CALIF. BUILDING INSPECTION DIVISION

CITY OF SACRAMENTO
PERMIT ASSISTANCE

DEC 26 2000

RECEIVED

ISSUED

JAN 02 2001

Sacramento Building Division

SERVICE COUNTER

APPROVED

BJ Foster 12-27-00
SACRAMENTO
FIRE DEPARTMENT

*ALL PIPING IS 3/8" BLK.–SCHD. 40
*AS BUILT PIPING DIMENSIONS TO BE FURNISHED AT FINAL TEST
*TO BE INSTALLED AS–PER ANSUL MANUAL, NFPA 17A, AND LOCAL FIRE AUTH.
*MAX. FLOW POINTS IS (16), BEING USED IS (14) FLOW POINTS
SINGLE FILTER BANK

Established 1929
SENTINEL FIRE EQUIPMENT COMPANY
C–16 LICENSE NO. 369137
5702 BROADWAY, SACRAMENTO, CA 95820
(916) 455–5630

SALES AND SERVICE
ANSUL AUTHORIZED DISTRIBUTOR
• RESTAURANT HOOD SYSTEMS
• VEHICLE FIRE PROTECTION

BRAND	ANSUL	JOB NAME	NATION WIDE MEATS
MODEL	R102 UL300 4.5GAL	ADDRESS	1930 H. STREET
DATE	12-21-2000	CITY	SACRAMENTO CA. 95814

DRAWN BY: WH

SCALE: 1/16

PARCEL E

NO.	DESCRIPTION	PART NO	NO.	DESCRIPTION	PART NO	NO.	DESCRIPTION	PART NO
1	ANSUL (R102) SYSTEM	79291	6	DUCT NOZZLE 2W	419337	11	RADIANT BROILER	
2	OTHER 36GAL TANK ENCLOSURE	78929	7	PLENUM NOZZLE–8' 1N	419335	12	SALAMANDER NOZZLE	
3	GAS VALVE 2" MECH	55610	8	PLENUM NOZZLE–4'		13	SWITCH FOR ELECT. & ALARM INTERFACE BY OTHERS	32222
4	REMOTE PULL BOX	4835	9	FRYER NOZZLE 2 PA PTS	230	14		
5	DETECTOR BRACKET 360°	56837	10	/GRILL NOZZLE 2 PA PTS	260	15		

MEMORANDUM

SACRAMENTO FIRE DEPARTMENT

TO: BUILDING DEPARTMENT **DATE:** 6-26-01

FROM: Troy Malaspino
Fire Marshal

SUBJECT: **FIRE SYSTEM INSPECTION**

A final inspection of the newly installed fire system at:

1530 H ST

Has been conducted by Inspector

C. Paek

On

6 22 01

00-15049		K. Tcha Hood
Permit Number	Square Footage	Type of Inspection

They system is acceptable by this department.

By: Ross L. Woodman,
Fire Prevention Officer II

00-494
F.D. Reference Number

0015049

ANSUL

This set of plans and specifications must be kept on the job at all times and it is unlawful to make any changes or alterations in the same without written permission from the Building Inspection Division. The approval of this plan and specifications SHALL NOT be held to permit or be an approval of a violation of any City Ordinance or State law.

DESIGN
INSTALLATION
RECHARGE AND
MAINTENANCE
MANUAL

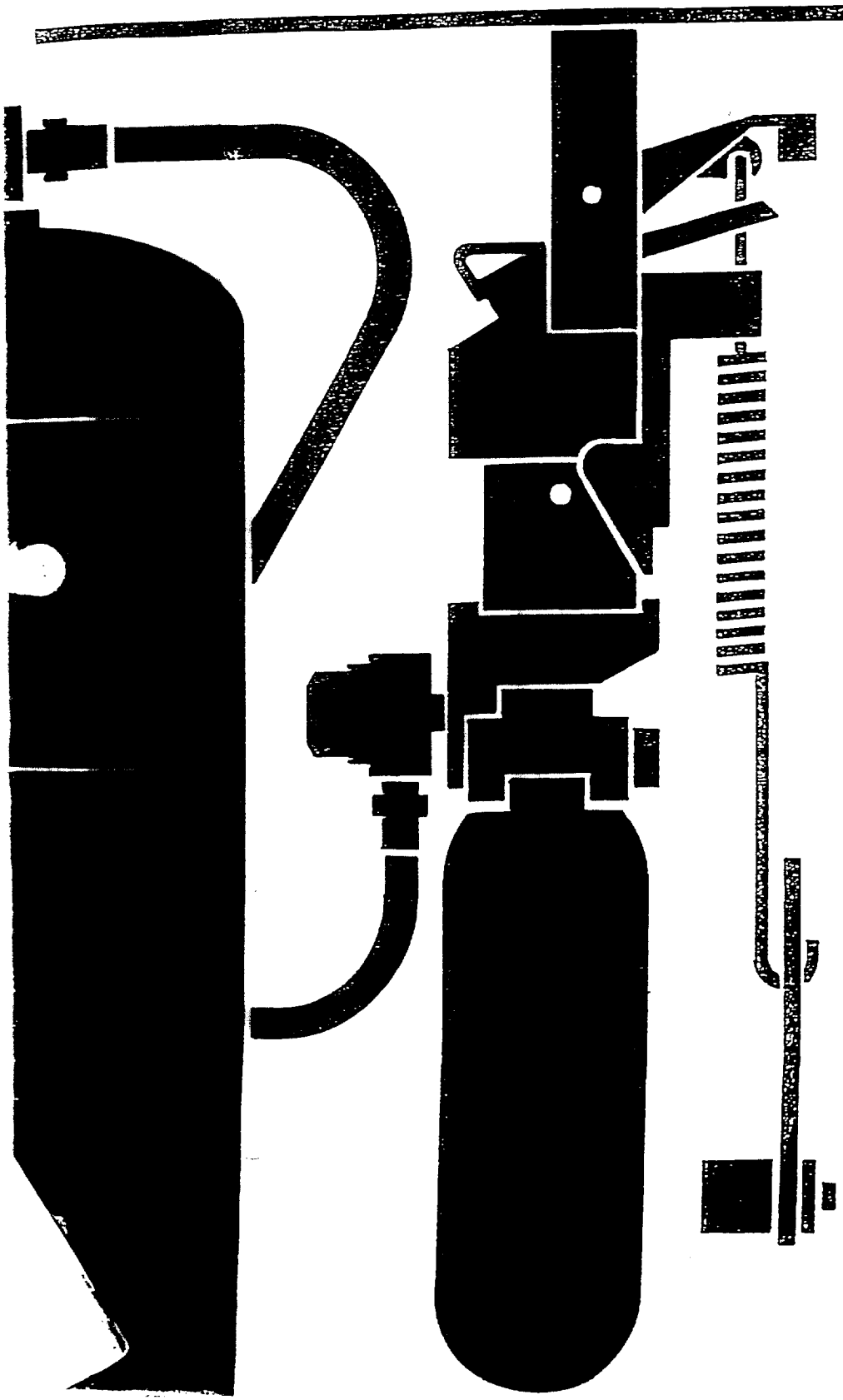
R-102 RESTAURANT FIRE SUPPRESSION SYSTEM

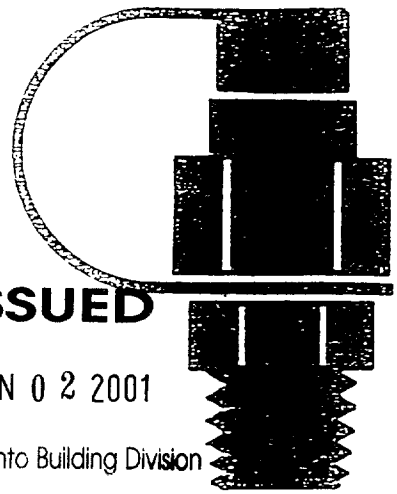
(Standard UL 300 Listed)

CITY OF SACRAMENTO
PERMIT ASSISTANCE

DEC 26 2000

RECEIVED





ISSUED

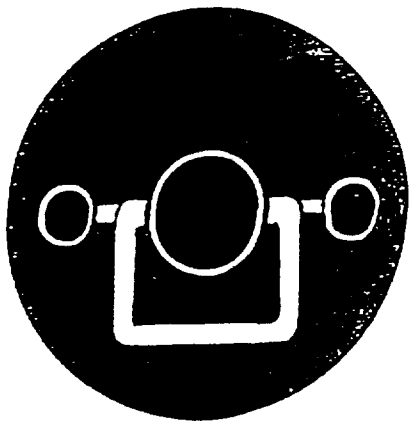
JAN 02 2001

Sacramento Building Division

Office Copy

APPROVED

BJ Foster 12-27-00
SACRAMENTO
FIRE DEPARTMENT



DESIGN AND APPLICATION

The Ansul R-102 Restaurant Fire Suppression System is designed to provide fire protection for restaurant cooking appliances, hoods, and ducts. It is a pre-engineered group of mechanical and electrical components for installation by an authorized Ansul distributor. The basic system consists of an ANSUL AUTOMAN regulated release assembly which includes a regulated release mechanism and a liquid agent storage tank housed within a single enclosure. Nozzles, detectors, cartridges, liquid agent, fusible links, pulley tees, and pulley elbows are supplied in separate packages in the quantities needed for each fire suppression system arrangement.

The system provides automatic actuation, or it can be actuated manually through a remote manual pull station. The gas or electrical supply to all protected appliances will be immediately shut off upon actuation of the system, using appropriate gas shut-off or electrical shut-down devices.

Additional equipment includes remote manual pull station, mechanical and electrical gas valves, pressure switches, and electrical switches for automatic equipment and gas line shut-off. Accessories can be added, such as alarms, warning lights, etc., to installations where required.

The R-102 system suppresses fire by spraying the plenum area, the filters, cooking surfaces, and the exhaust duct system with a predetermined flow rate of ANSULEX Low pH Liquid Fire Suppressant. When the liquid agent is discharged onto a cooking appliance fire, it cools the grease surface, and reacts with the hot grease (saponification) forming a layer of soap-like foam on the surface of the fat. This layer acts as insulation between the hot grease and the atmosphere, thus helping to prevent the escape of combustible vapors.

Exhaust fans in the ventilating system should be left on. The forced draft of these fans assists the movement of the liquid agent through the ventilating system, thus aiding in the fire suppression process. These fans also provide a cooling effect in the plenum and duct after the fire suppression system has been discharged. The system is UL listed with or without fan operation.

It is also recommended that make up or supply air fans be shut down upon system actuation. Shutdown of fuel and power to all appliances located under protected ventilating equipment is required upon system actuation.

UL LISTING

The R-102 Restaurant Fire Suppression System has been tested and is listed by Underwriters Laboratories, Inc. as a pre-engineered system. These tests require extinguishment of fires which are initiated in deep fat fryers, griddles, char-broilers, upright broilers, chain-broilers, filters, plenum chambers, hoods, and ducts after pre-loading each appliance with a prescribed amount of cooking grease. Each fire is allowed to progress to maximum intensity before the fire suppression system is actuated.

DEFINITION OF TERMS

Actuation Gas Line: Piping from the ANSUL AUTOMAN Regulated Release Assembly which supplies nitrogen or carbon dioxide to the Regulated Actuator Assembly for multiple-tank system actuation.

Agent Tank: A pressure vessel containing the liquid agent.

ANSUL AUTOMAN Regulated Release Assembly (Electrical): An assembly which contains the regulated release mechanism, agent tank, expellant gas hose, solenoid, and electric switch within a metal enclosure. The enclosure contains knockouts to facilitate component hookups.

ANSUL AUTOMAN Regulated Release Assembly (Mechanical): An assembly which contains the regulated release mechanism, agent tank, and expellant gas hose within a metal enclosure. The enclosure contains knockouts to facilitate component hookups.

Authority Having Jurisdiction: The "authority having jurisdiction" is the organization, office, or individual responsible for "approving" equipment, an installation, or a procedure. The phrase "Authority Having Jurisdiction" is used in a broad manner since jurisdictions and "approval" agencies vary as do their responsibilities. Where public safety is primary, the "authority having jurisdiction" may be a federal, state, local, or other regional department or individual such as a fire chief, fire marshal, chief of a fire prevention bureau, labor department, health department, building official, electrical inspector, or others having statutory authority. For insurance purposes, an insurance company representative may be the "authority having jurisdiction." In many circumstances the property owner or his designated agent assumes the role of the "authority having jurisdiction;" at government installations, the commanding officer or departmental official may be the "authority having jurisdiction."

Blow-Off Cap: A cap which covers the end of the nozzle tip and prevents grease from plugging the nozzle orifice.

Branch Line: The agent distribution piping which extends from the supply line to the nozzle(s).

Bursting Disc: A disc installed in the tank adaptor which eliminates the siphoning of the agent up the pipe during extreme temperature variations.

Cartridge: A sealed, steel pressure vessel containing nitrogen or carbon dioxide gas used to pressurize the agent tank.

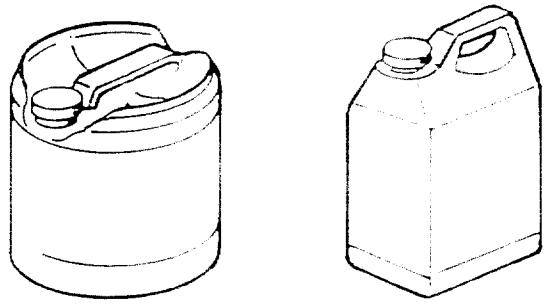
Cooking Appliance: Includes fryers, griddles, ranges, upright broilers, chain broilers, natural charcoal broilers, or char-broilers (electric, lava rock, gas-radiant, or mesquite).

Conduit Offset Assembly: A pre-formed piece of conduit which can be installed between the Ansul regulated release and the conduit to allow the wire rope for the detection, gas valve and remote manual pull station to be installed in a more convenient manner.

EXTINGUISHING AGENT

ANSULEX Low pH Liquid Fire Suppressant (1.5 gallon – Part No. 79694 or 3.0 gallon – Part No. 79372) is a potassium-based solution designed for fast knock-down and suppression of grease-related fires. The agent is shipped in plastic containers which provide one complete tank charge. Agent storage life expectancy is twelve years. The distributor must record the batch numbers and date of shipment receipt to be filed with each installation record.

ANSULEX® LOW pH LIQUID FIRE SUPPRESSANT



3.0 GALLON 1.5 GALLON

FIGURE 1

REGULATED RELEASE ASSEMBLY (MECHANICAL)

The ANSUL AUTOMAN Regulated Mechanical Release Assembly (3.0 gallon – Part No. 79290 or 1.5 gallon – Part No. 79291) contains the regulated release mechanism, agent tank, expellant gas hose for agent tank hookup, and enclosure knockouts to facilitate installing actuation piping; expellant piping; detection system; and additional equipment. This regulated release assembly is used in single, double, and multiple-tank systems and must be mounted to a rigid surface. The release mechanism can be used to interconnect both the actuation and expellant gas lines as required per system design. The regulator is designed to allow a constant flow of gas into the tank at 100 psi (690 kPa) when the system is actuated.

In single, double, and multiple-tank systems, the provided expellant gas hose connects the agent tank to the bottom outlet of the regulator. In double and multiple-tank system configurations, the back outlet of the regulator is used as an expellant gas feed for one additional tank-enclosure or tank-bracket hookup. The enclosure contains the required knockouts to facilitate this connection. If a pressure switch is to be attached to the regulator, additional fittings are required.

The tank is mounted within the enclosure. The tank contains an adaptor/tube assembly with a burst disc union. The burst disc helps prevent siphoning of the agent up the pipe due to significant temperature fluctuations in the area where the tank is located. The tank is mild steel and, under normal conditions, requires hydrostatic testing every twelve years.

The agent tank is shipped uncharged and must be filled with 1.53 gallons (5.8 L) or 3.06 gallons (11.6 L) of only ANSULEX Low pH Liquid Fire Suppressant during installation.

The detection and additional equipment required per system design are connected to the release mechanism. The enclosure contains knockouts to facilitate detection and additional hookups.

The system can be actuated automatically or manually. Automatic actuation occurs when a fusible link within the detection system separates in a fire condition. Manual actuation of the system occurs when personnel pull on the remote manual pull station pull ring.

"ANSUL AUTOMAN" REGULATED RELEASE ASSEMBLY (MECHANICAL)

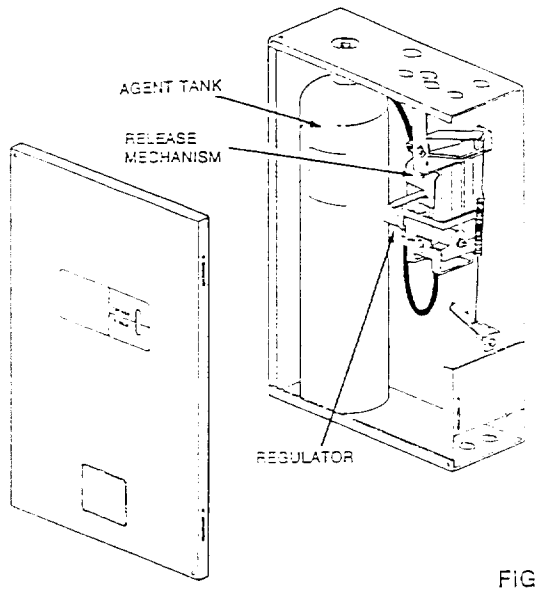


FIGURE 2

REGULATED RELEASE ASSEMBLY (ELECTRICAL)

The ANSUL AUTOMAN Regulated Electrical Release Assembly (3.0 gallon Part No. 79292) is identical to the mechanical version except it contains a factory installed 120 VAC solenoid and electrical switch.

The solenoid is used to provide electrical actuation of the release mechanism. The electric switch is used to protect the solenoid by opening the circuit to the solenoid once the system is fired. Additional electrical switches can be added as required for automatic equipment and gas shut-off accessories, as well as initiating audible and visual alarms.

"ANSUL AUTOMAN" REGULATED RELEASE ASSEMBLY (ELECTRICAL)

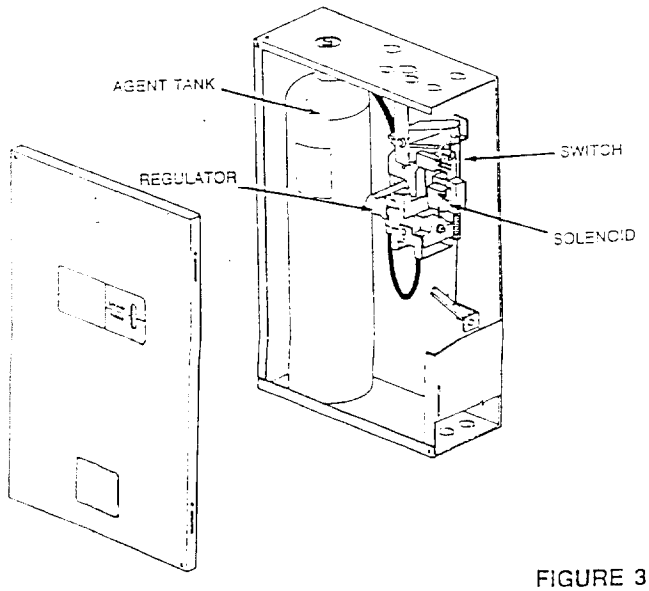


FIGURE 3

TANK-ENCLOSURE ASSEMBLY

The Tank-Enclosure Assembly (1.5 gallon – Part No. 78921 or 3.0 gallon – Part No. 78929) consists of an agent storage tank and mounting enclosure. This assembly is used in double and multiple-tank systems and must be mounted to a rigid surface near the regulated release or regulated actuator assembly its expellent gas line will be connected to.

The tank contains an adaptor/tube assembly with a bursting disc. The bursting disc helps prevent agent leakage due to significant temperature fluctuations in the area where the tank is located. The date of manufacture is stamped on the bottom of the tank.

▸ The tank is shipped uncharged and must be filled with only ANSULEX Low pH Liquid Fire Suppressant during installation.

The tank-enclosure is designed for mounting the tank in a minimum amount of space.

TANK ENCLOSURE ASSEMBLY

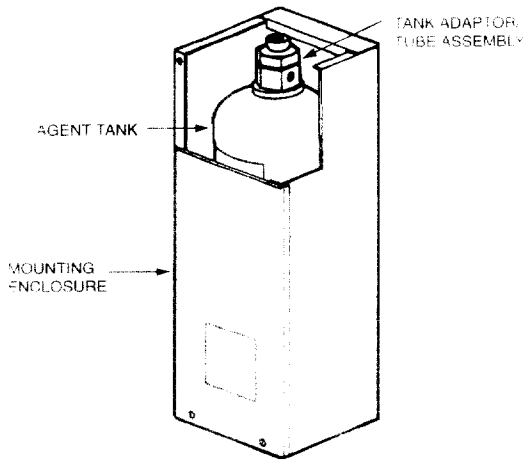


FIGURE 4
000142

TANK-BRACKET ASSEMBLY

The Tank-Bracket Assembly (1.5 gallon – Part No. 78232 or 3.0 gallon – Part No. 78937) consists of an agent storage tank and mounting bracket. This assembly is used in double and multiple-tank systems and must be mounted to a rigid surface near the regulated release assembly or regulated actuator assembly that its expellant gas line will be connected to.

The tank contains an adaptor/tube assembly with a bursting disc. The bursting disc helps prevent agent leakage due to significant temperature fluctuations in the area where the tank is located. The tank is mild steel and, under normal conditions, requires hydrostatic testing every twelve years. The date of manufacture is stamped on the bottom of the tank.

▸ The tank is shipped uncharged and must be filled with only ANSULEX Low pH Liquid Fire Suppressant during installation. The tank bracket is designed for mounting the tank in a minimum amount of space.

TANK-BRACKET ASSEMBLY

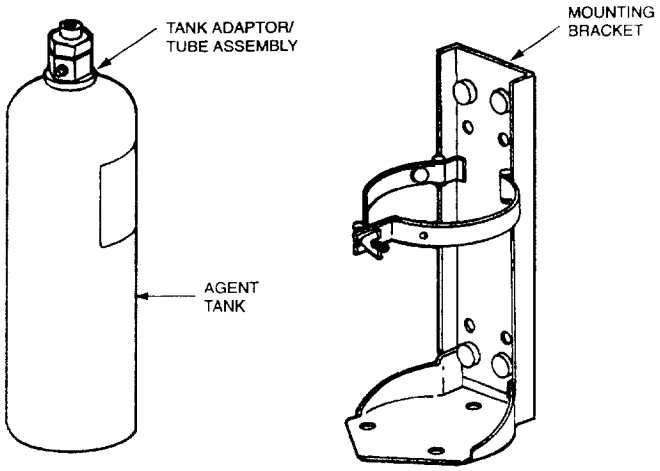


FIGURE 5
000140 / 000141

REGULATED ACTUATOR ASSEMBLY

The Regulated Actuator Assembly (1.5 gallon – Part No. 79137 or 3.0 gallon – Part No. 79327) contains the regulator, pneumatic actuator, agent tank, expellant gas hose for agent tank hookup, and enclosure knockouts to facilitate installing expellant piping. This assembly is used in multiple-tank systems and must be mounted to a rigid surface.

The regulator contains two outlets 135° apart. One outlet is used to interconnect the expellant gas hose to the enclosed agent tank. The other outlet connects an expellant gas line to an additional tank-enclosure or tank-bracket assembly. The regulator is designed to allow a constant flow of nitrogen into each agent tank
▸ connected (two tanks maximum) at 110 psi (759 kPa).

The pneumatic actuator is designed to puncture the expellant gas cartridge seal upon receiving pressure from the regulated release assembly actuation piping. The agent tank is shipped uncharged
▸ and must be filled with only ANSULEX Low pH Liquid Fire Suppressant during installation. The tank is mounted and secured within the enclosure. The enclosure contains a knockout to facilitate distribution piping hookup.

REGULATED ACTUATOR ASSEMBLY

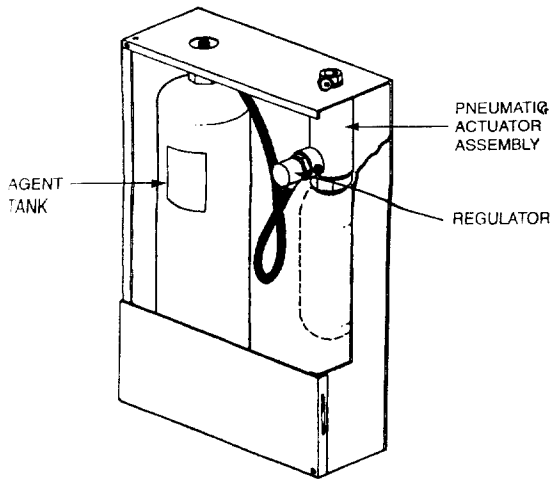


FIGURE 6
000143

ANSUL

AGENT DATA SHEET

ANSULEX Low pH LIQUID FIRE SUPPRESSANT

FEATURES

- Fast Flame Knock-Down and Securement of Grease-Related Fires
- Provides a Cooling Effect Which Further Enhances Its Ability to Prevent Reflash
- Designed for a Wide Variety of Restaurant Hazards
- Listed by Underwriters Laboratories, Inc. (UL) as Part of the R-102 Restaurant System
- Ease of Recharge and Post-Fire Cleanup
- Non-Corrosive

APPLICATION

ANSULEX Low pH Liquid Fire Suppressant is designed for use only in Ansul R-102 restaurant fire suppression systems. This "liquid" agent will combat grease-related fires as found in restaurant appliances and ventilating equipment. It should not be used for fires involving energized electrical hazards.

DESCRIPTION

ANSULEX Low pH Liquid Fire Suppressant is a specially-formulated, aqueous solution of organic salts. The agent is pre-mixed, eliminating the need for dilution before system charging. When used as an extinguishing agent, it will produce no toxic by-products.

AGENT PROPERTIES

Appearance	Color-Coded Fluorescent Yellow-Green
Storage Life	12 Years
Refractive Index	1.4040
Freeze Point	– 40 °F (– 40 °C)
Boiling Point	230 °F (110 °C)
Specific Gravity	1.32
Kinematic Viscosity	5.26 centistokes
pH	7.8 – 8.2

WARNING: *Care should be taken when* handling the agent. If contact is made with the eyes or skin, flush with water. If the agent is swallowed, dilute with water or milk and contact a physician.

PERFORMANCE

When used in the Ansul R-102 restaurant system, ANSULEX Low pH Liquid Fire Suppressant is extremely effective on fires in restaurant ventilating equipment – hoods and ductwork, as well as in a variety of cooking appliances – deep-fat fryers, griddles, range tops, and several types of broilers and char-broilers.

As the agent is sprayed in fine droplets (atomized) onto an appliance grease fire, it provides excellent flame knock-down, surface-cooling, and fire-securing capabilities. When the agent reacts with the hot grease, it forms a layer of foam on the surface of the fat. This soap-like blanket of foam acts as an insulator between the hot grease and the atmosphere, helping to prevent flammable vapors from escaping and reducing the chance for flame reignition.

Post-fire cleanup can be readily accomplished by flushing the area with water or steam.

Because of the composition of ANSULEX Low pH Liquid Fire Suppressant, it is compatible with metals commonly found in restaurant kitchen environments (i.e., stainless steel, aluminum, galvanized metal, mild steel, copper and brass).

APPROVALS AND LISTINGS

ANSULEX Low pH Liquid Fire Suppressant has been tested, and is listed with Underwriters Laboratories, Inc. (EX-3470) as part of the Ansul R-102 Restaurant Fire Suppression System.

ORDERING INFORMATION

ANSULEX Low pH Liquid Fire Suppressant is available in sealed containers.

Part No. 79694	1.5 gallon (5.7 L)
Part No. 79372	3.0 gallon (11.4 L)

Recharge services are available from Ansul-authorized distributors.

ANSUL FIRE PROTECTION
MARINETTE, WI 54143-2542
715-735-7411

Form No. F 9140

SYSTEM DESIGN

The R-102 and the PIRANHA systems use compatible agents and components, therefore they may be used together for cooking appliance, hood, and duct protection. The primary ANSUL AUTOMAN Release can be either an R-102 or a PIRANHA ANSUL AUTOMAN Release and can actuate up to two additional R-102 or PIRANHA Regulated Actuators. In systems utilizing a 1/4 remote release, any combination of the maximum number of regulated actuators can be used.

- Both systems must actuate simultaneously.
- Each system must be designed and installed per its appropriate manual.
- Adjacent appliances requiring protection must be protected with the same type of system, either R-102 or PIRANHA, unless the center-to-center spacing between the adjacent R-102 and PIRANHA nozzles is no less than 36 inches.
- When appliances are protected with R-102 nozzles, the hood and connecting duct above those appliances cannot be protected with PIRANHA nozzles.
- Mixing systems in a common plenum is not allowed.

The Ansul R-102 Restaurant Fire Suppression System may be used on a number of different types of restaurant cooking appliances and hood and duct configurations. The design information listed in this section deals with the limitations and parameters of this pre-engineered system. Those individuals responsible for the design of the R-102 system must be trained and hold a current Ansul certificate in an R-102 training program.

One of the key elements for restaurant fire protection is a correct system design. This section is divided into ten sub-sections: Nozzle Placement Requirements, Tank Quantity Requirements, Actuation and Expellant Gas Line Requirements, Distribution Piping Requirements, Detection System Requirements, Manual Pull Station Requirements, Mechanical Gas Valve Requirements, Electrical Gas Valve Requirements, Electrical Switch Requirements, and Pressure Switch Requirements. Each of these sections must be completed before attempting any installation. System design sketches should be made of all aspects of design for reference during installation.

NOZZLE PLACEMENT REQUIREMENTS

This section gives guidelines for nozzle type, positioning, and quantity for plenum, duct, and individual appliance protection. This section must be completed before determining tank quantity and piping requirements.

Duct Protection

All duct protection is UL approved 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.

The R-102 system uses several different duct nozzles depending on the size of duct being protected.

- 1W Nozzle (Part No. 419336) – 1.5 Gallon and 3.0 Gallon Systems:
  The R-102 systems, both 1.5 gallon and 3.0 gallon, use the 1W nozzle (Part No. 419336) for duct protection of 27 in. (68.6 cm) perimeter or less or 8.5 in. (21.6 cm) diameter or less. The nozzle tip is stamped with 1W, indicating that this is a one-flow nozzle and is to be counted as one flow number.

- Single Nozzle (One Flow Number) Duct Protection:
  One 1W nozzle (Part No. 419336) will protect ducts with a maximum perimeter of 27 in. (68.6 cm) or a maximum diameter of 8.5 in. (21.6 cm). The nozzle must be installed 2-8 in. (5-20 cm) into the center of the duct opening and positioned as shown in Figure 1.

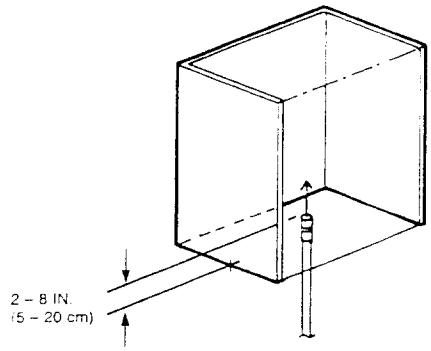


FIGURE 1
000173

- Single Nozzle (One Flow Number) Transition Protection:
  One 1W nozzle (Part No. 419336) will protect transitions where the perimeter of 27 in. (68.6 cm) or the diameter of 8.5 in. (21.6 cm) or less begins within that transition. The nozzle must be placed in the center of the transition opening where the maximum perimeter or diameter begins as shown in Figures 2 and 3.

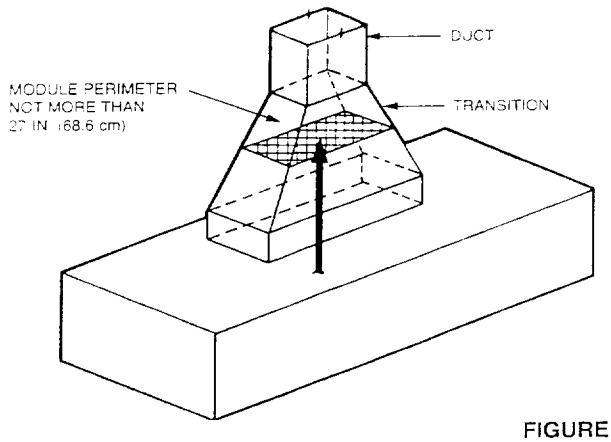


FIGURE 2
000174

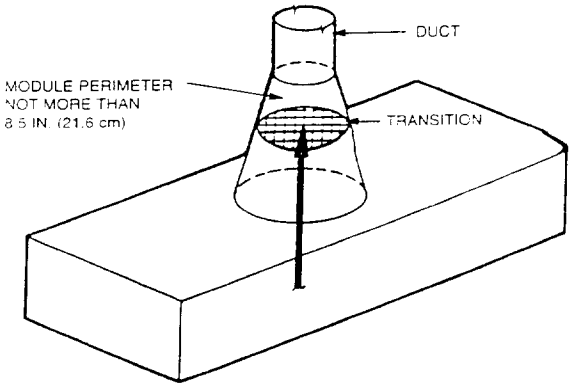


FIGURE 3
000175

NOZZLE PLACEMENT REQUIREMENTS (Continued)

Duct Protection (Continued)

NOTICE

A 2WH nozzle must be substituted for a 2W nozzle for any installation using Option 2 of the 1.5 gallon system coverage (6 flow duct and plenum protection only).

2. 2W Nozzle (Part No. 419337):

The R-102 System, uses the 2W nozzle (Part No. 419337) for duct protection of 75 in. (190.5 cm) perimeter or less, or 24 in. (61 cm) diameter or less. The nozzle tip is stamped with 2W, indicating that this is a two-flow nozzle and must be counted as two flow numbers.

The 1W and 2W nozzles will protect the following:

3. Single Nozzle (2W) Duct Protection:

One 2W nozzle will protect ducts with a maximum perimeter of 75 in. (190.5 cm) or a maximum diameter of 24 in. (61 cm). The nozzle must be installed 2-8 in. (5-20 cm) into the center of the duct opening and positioned as shown in Figure 4.

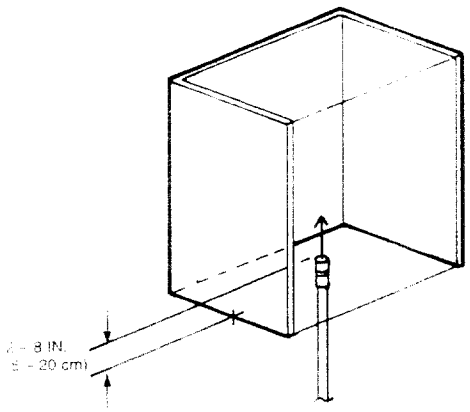


FIGURE 4
000173

4. Single Nozzle (2W) Transition Protection:

One 2W nozzle will protect transitions at the point where the perimeter of 75 in. (190.5 cm) or the diameter of 24 in. (61 cm) or less begins within that transition. The nozzle must be placed in the center of the transition opening where the maximum perimeter or diameter begins as shown in Figures 5 and 6.

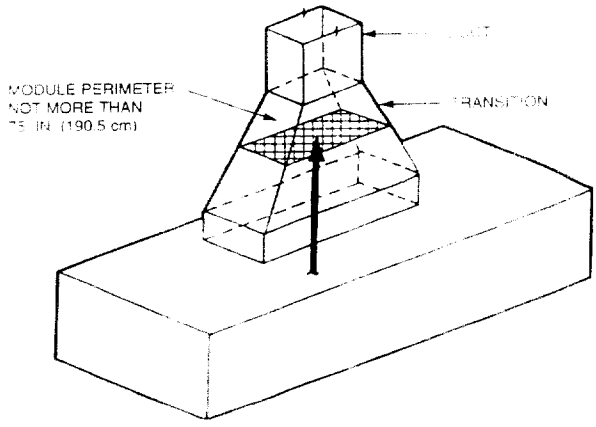


FIGURE 5
000174

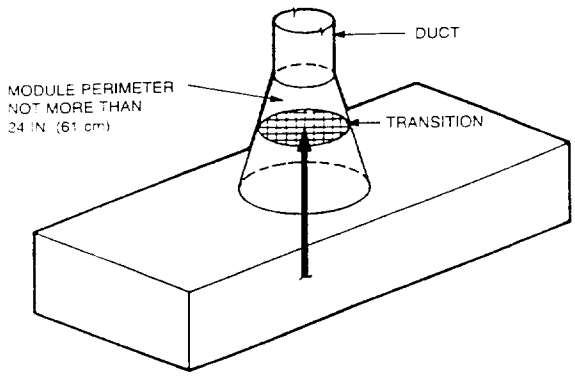


FIGURE 6
000175

5. Dual-Nozzle Duct Protection:

Two 2W nozzles will protect ducts with a maximum perimeter of 150 in. (381 cm) or a maximum diameter of 48 in. (122 cm). The nozzles must be installed 2-8 in. (5-20 cm) into the duct opening and positioned as in Figure 7.

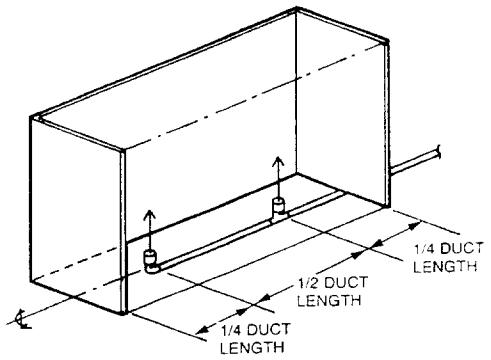


FIGURE 7
000176

NOTICE

In installations where a UL listed damper assembly is employed, the duct nozzle can be installed beyond the 8 in. (20 cm) maximum, to a point just beyond the damper assembly that will not interfere with the damper. Exceeding the maximum of 8 in. (20 cm) in this way will not void the UL listing of the system.

NOZZLE PLACEMENT REQUIREMENTS (Continued)

Duct Protection (Continued)

5. Dual-Nozzle Transition Protection:

Two 2W nozzles will protect transitions with a maximum perimeter of 150 in. (381 cm). The transition area must be divided where two equally sized modules begin within that transition. The nozzle must be placed in the center of the transition opening where the maximum module perimeter begins as shown in Figure 8.

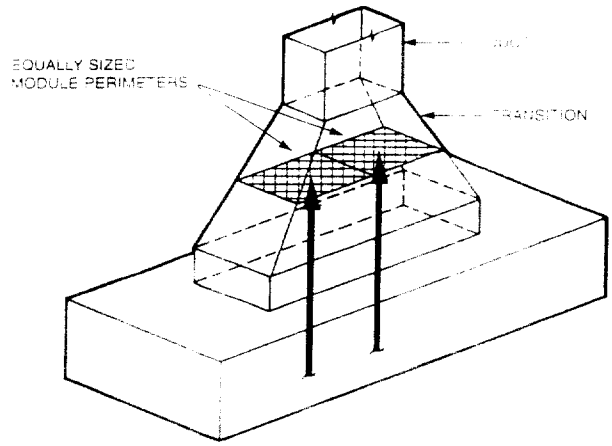


FIGURE 8

6. Dual-Nozzle Duct Protection (3 Flow Numbers):

Rectangular ducts larger than 75 in. (191 cm) perimeter, up to a maximum of 102 in. (260 cm) perimeter, (diameters larger than 24 in. (61 cm), up to 32 in. (81 cm) diameter) can be protected with a combination of one 1W nozzle (Part No. 419336) and one 2W nozzle (Part No. 419337). Each nozzle must be installed on its own duct branch line and positioned 2-8 in. (5-20 cm) into the center of the duct. See Figure 9.

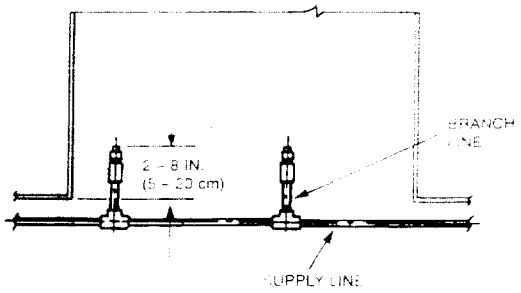


FIGURE 9

To correctly locate the nozzles in the duct, the longest side of the duct must be divided into four equal modules. See Figure 10.

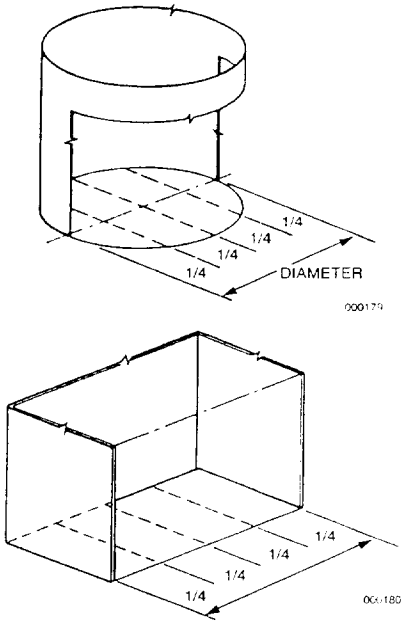


FIGURE 10

The 1W nozzle (Part No. 419336) is then centered in one of the outside modules. See Figure 11.

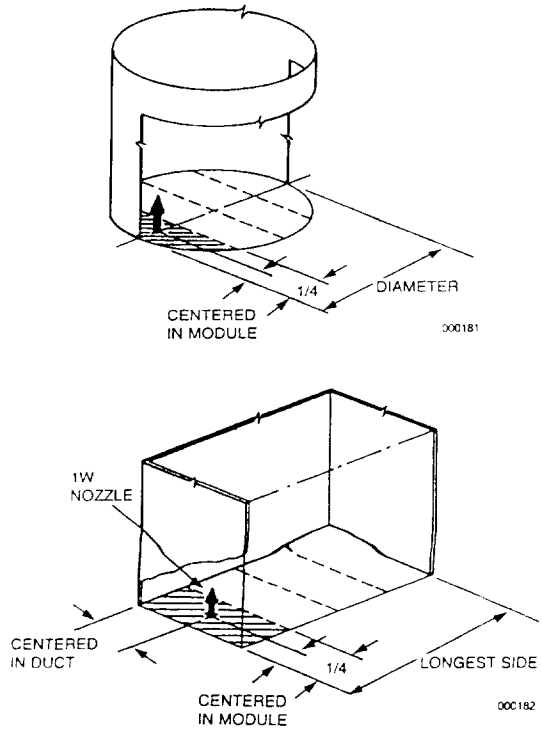


FIGURE 11

NOZZLE PLACEMENT REQUIREMENTS (Continued)

Duct Protection (Continued)

(Continued)

The 2W nozzle (Part No. 419337) is then centered in the remaining three modules. See Figure 12.

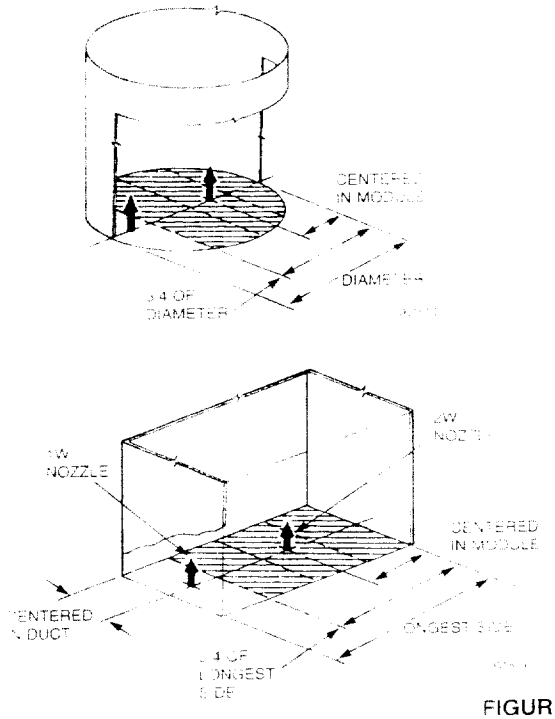


FIGURE 12

The nozzles must be positioned on the same centerline, parallel to the longest side. See Figure 13.

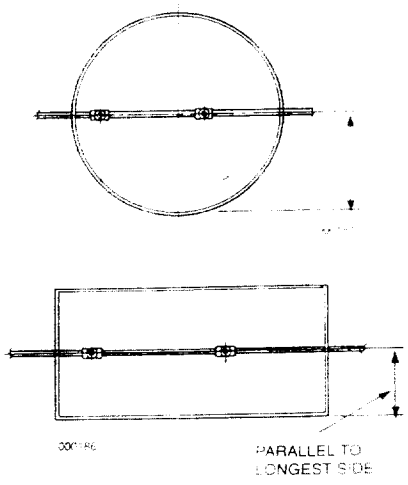


FIGURE 13

8. Triple-Nozzle Duct Protection (5 Flow Numbers):

NOTICE

When protecting the duct with a 1.5 gallon system using this type of protection, no appliance branch lines are allowed on the 1.5 gallon system.

Rectangular/square ducts larger than 150 in. (381 cm) perimeter, up to a maximum of 177 in. (450 cm) perimeter, may be protected with a combination of one 1W nozzle (Part No. 419336) and two 2W nozzles (Part No. 419337). Each nozzle must be installed on its own duct branch line and positioned 2-8 in. (5-20 cm) into the center of the duct. See Figure 14.

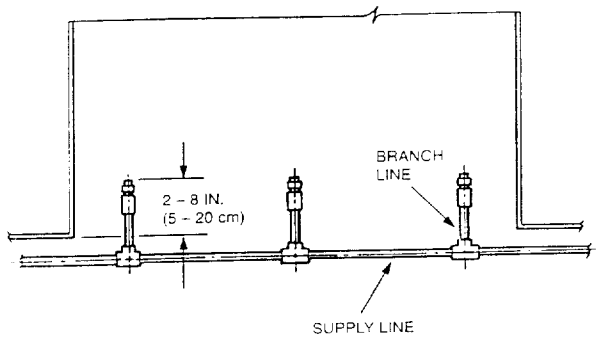


FIGURE 14

To determine if this type of protection can be used, first divide the longest side of the duct in half. See Figure 15.

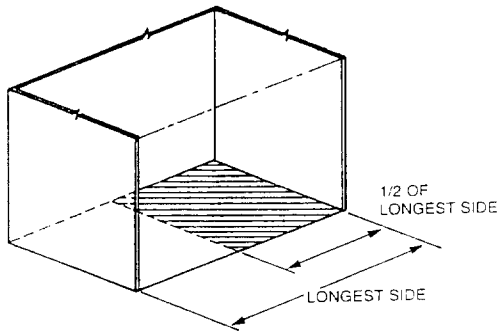


FIGURE 15

NOZZLE PLACEMENT REQUIREMENTS (Continued)

Plenum Protection (Continued)

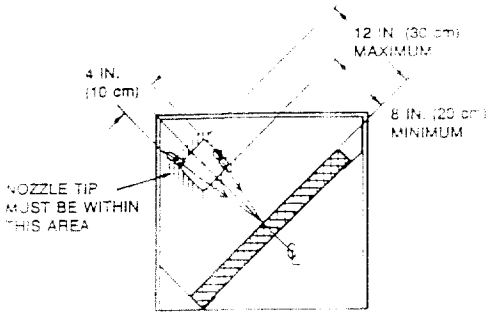


FIGURE 26

1N NOZZLE - PART NO. 419335

One 1N nozzle will protect 8 linear feet (2.4 m) of single filter bank plenum or two 1N nozzles will protect 8 linear feet (2.4 m) of "V" bank plenum. In either application, 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 filter height must not exceed 20 in. (51 cm). See Figure 27.

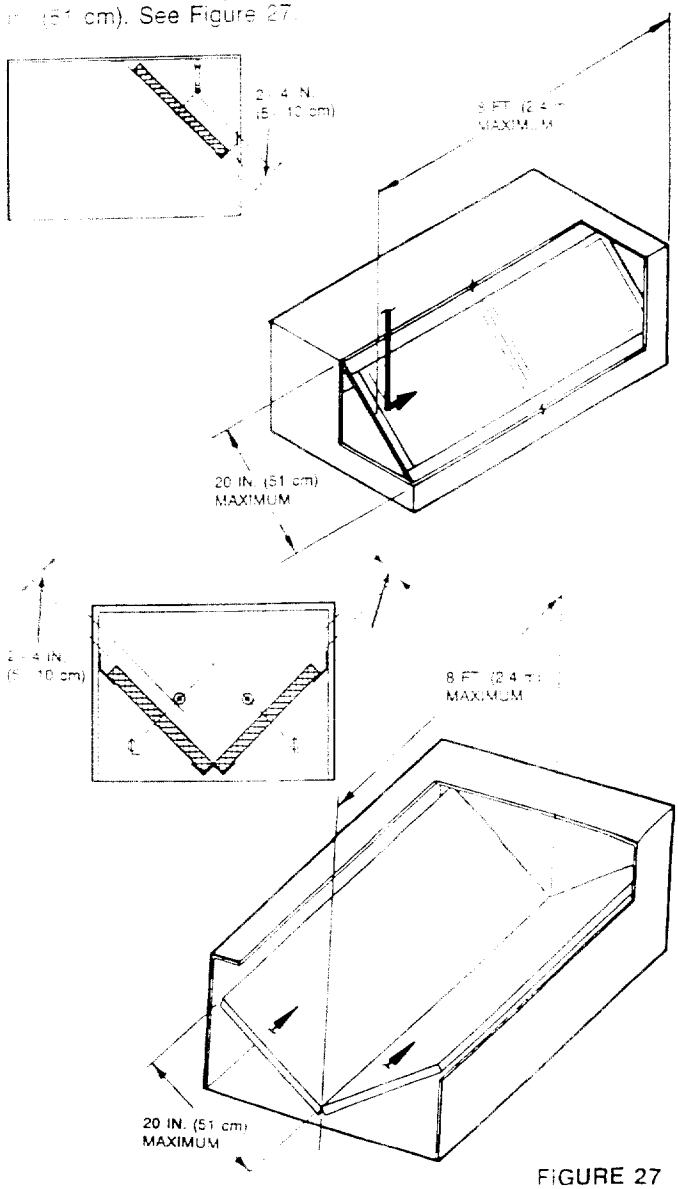


FIGURE 27

Exception: When the plenum chamber contains filters that do not exceed 10 in. (25.4 cm) in height and the 1N nozzle can be installed at the intersecting center lines of both filter banks and not exceed the 2-4 in. (5 to 10 cm) distance from either filters, a single 1N nozzle can be used. See Figure 27a.

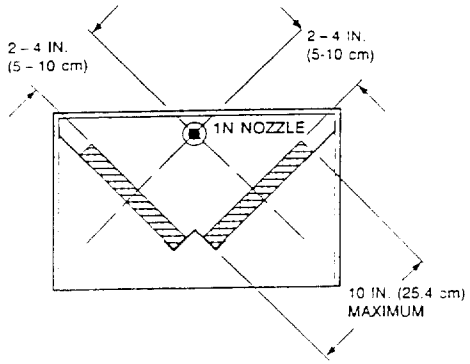


FIGURE 27a

NOTICE

If 1N nozzle coverage does not exceed 7 linear ft. (2.1 m), the nozzle can be mounted 2 to 6 in. (5-15 cm) from the face of the filter.

For a plenum, either single or "V" bank, with a linear extension longer than 8 feet (2.4 m), each bank may be protected using one 1N nozzle every 8 ft. (2.4 m) or less depending on the overall length of the plenum. See Figure 28. The nozzles may point in the opposite directions as long as the entire plenum area is protected, and the 8 ft. (2.4 m) limitation is not exceeded. See Figure 29. The nozzle positioning shown in Figure 30 is not an acceptable method of protection because the plenum area directly under the tee is not within the discharge pattern of either nozzle.

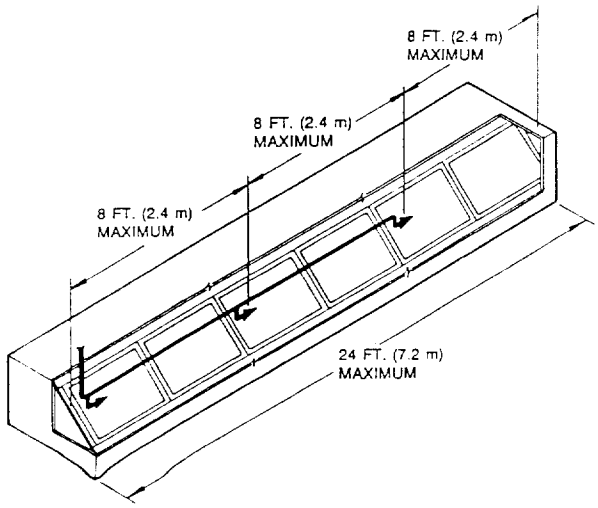


FIGURE 28

NOZZLE PLACEMENT REQUIREMENTS (Continued)

Plenum Protection (Continued)

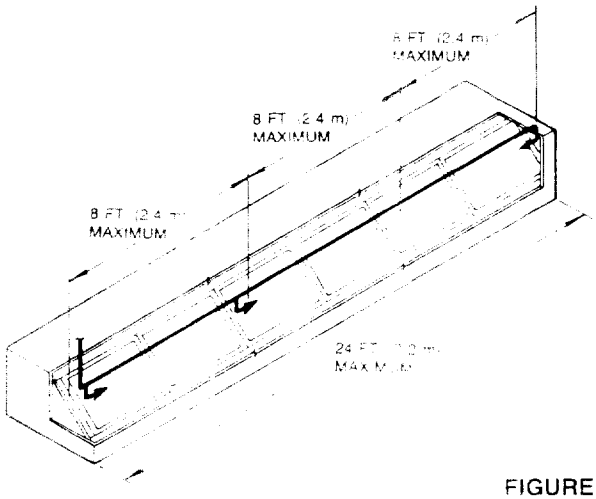


FIGURE 29

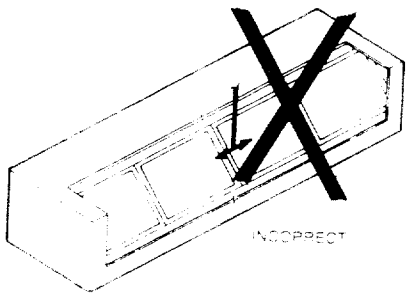


FIGURE 30

The following pages detail types of appliance protection. Each design requires several factors: correct nozzle choice, correct nozzle height above hazard, correct nozzle location and correct aiming point.

When protecting appliances which are larger than single nozzle coverage, multiple nozzles can be used.

Larger appliances can be divided into several modules, each equal to or smaller than single nozzle coverage. Exception: Fryers must not exceed a maximum of 864 sq. in. (5574 sq. cm).

Single Nozzle Fryer Protection – 2-Flow High Proximity/ 2-Flow Medium Proximity

If the fryer **does not** have a drip board, the maximum hazard (fry pot) size is 15 in. (38 cm) x 14 in. (36 cm) (maximum area of 210 sq. in. (1355 sq. cm)). If the fryer **has** a drip board, the maximum hazard (cooking surface) size is 21 in. (53 cm) x 14 in. (36 cm) (maximum area of 294 sq. in. (1897 sq. cm)). The maximum fryer pot size must still not exceed 15 in. (38 cm) x 14 in. (36 cm) (210 sq. in. (1355 sq. cm) of maximum area.) The nozzle must be aimed at the center of the hazard area.

The R-102 system uses two different style nozzles for the protection of fryers.

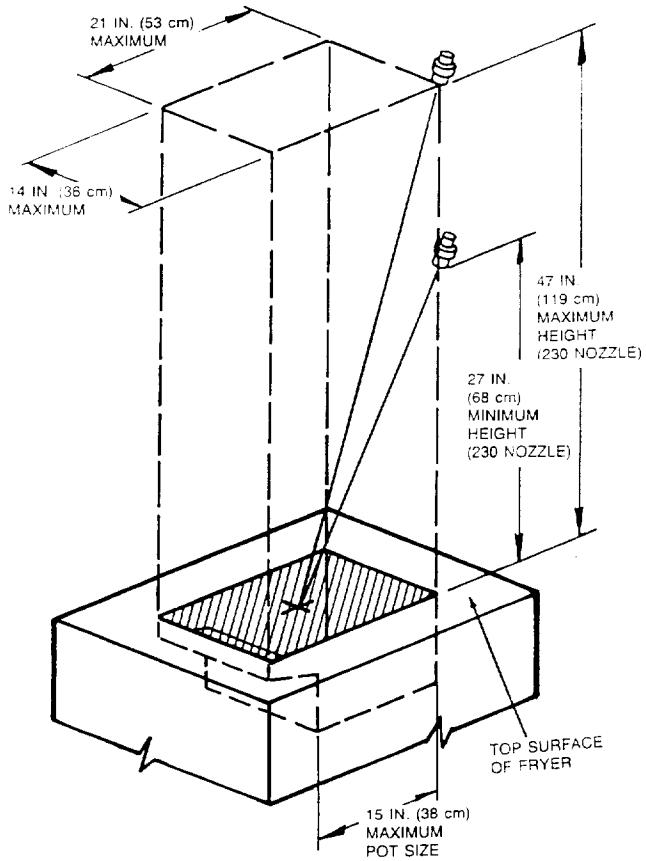
1. **High Proximity Applications:** 27 to 47 in. (68 to 119 cm) above the top surface of fryer. See Figure 31a and Figure 31b.

   The 230 Nozzle (Part No. 419339) is used for high proximity applications. The nozzle tip is stamped with 230, indicating that this is a two-flow nozzle and must be counted as two flow numbers.

   When using this nozzle for fryer protection, the nozzle tip must be positioned anywhere along or within the perimeter of the maximum hazard area and angled to the center.

FRYER WITH DRIP BOARD:
MAXIMUM DIMENSIONS 21 IN. (53 cm) x 14 IN. (36 cm)
MAXIMUM AREA 294 SQ. IN. (1897 sq. cm)

FRY POT:
MAXIMUM DIMENSIONS 15 IN. (38 cm) x 14 IN. (36 cm)
MAXIMUM AREA IS 210 SQ. IN. (1354 sq. cm)



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

FIGURE 31a

NOZZLE PLACEMENT REQUIREMENTS (Continued)

2-Flow Griddle Protection (Continued)

Option 2 – Nozzle Perimeter Located

High Proximity Application: 30 in. to 50 in. (76 cm to 127 cm) above the cooking surface.

This high proximity application uses the 260 nozzle, Part No. 419341.

The nozzle tip is stamped with 260 indicating this is a two-flow nozzle and must be counted as two flow numbers.

One 260 nozzle will protect a maximum cooking area of 1440 sq. in. (9290 sq. cm) with a maximum dimension of 48 in. (122 cm).

When using this nozzle for griddle protection, the nozzle must be positioned along the cooking surface perimeter to 2 in. (5 cm) inside perimeter, and aimed at the center of the cooking surface. See Figure 52 and 53.

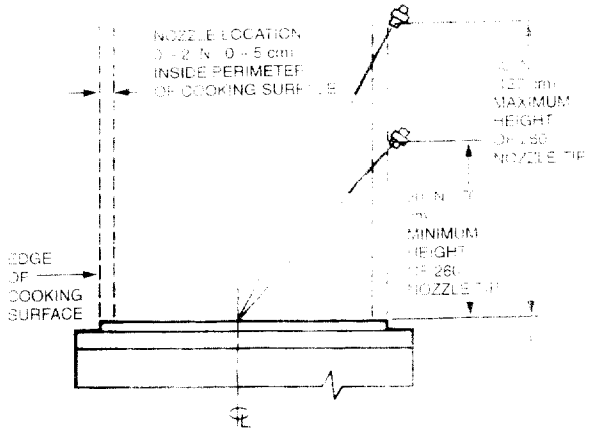


FIGURE 52

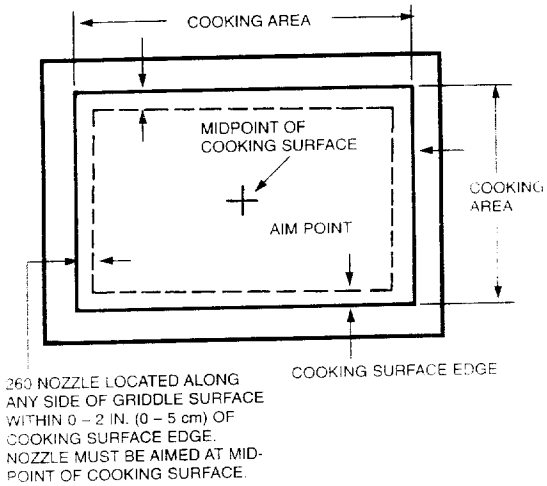


FIGURE 53

DISTRIBUTION PIPING REQUIREMENTS (Continued)

Distribution Piping Requirements – 1.5 Gallon System

OPTION 1 – DUCT, PLENUM, AND APPLIANCE PROTECTION

1. This option allows for duct protection, plenum protection, appliance protection, or any combination.
2. When using a combination of plenum and duct protection only with this option, only one duct nozzle, either a 1W or a 2W, may be used.
3. All distribution piping, supply and branch, must be 3/8 in. Schedule 40 black iron, chrome-plated, or stainless steel.
4. Each 1.5 gallon tank allows a maximum of five flow numbers.*
5. The pipe length between the start of the first branch line and the start of the last branch line must not exceed 8 ft (2.4 m). When the supply line is split, the **combined length** of both legs of the supply line (start of first branch line to start of last branch line) must not exceed 8 ft. (2.4 m). See Figure 84.
6. The combined length of all branch lines must not exceed 22 ft. (6.7 m). See Figure 85.
7. The requirements of the following table must not be exceeded:

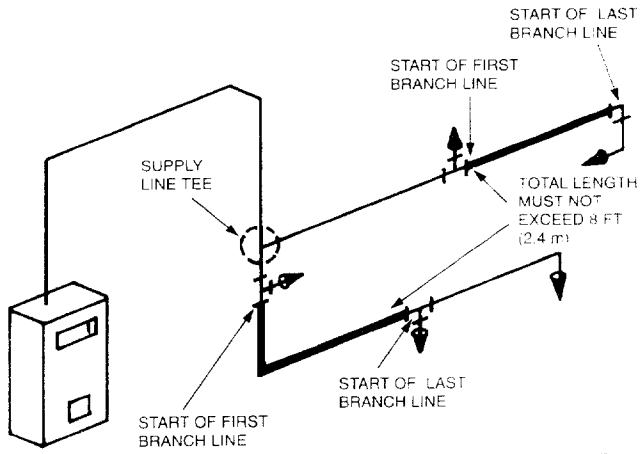


FIGURE 84

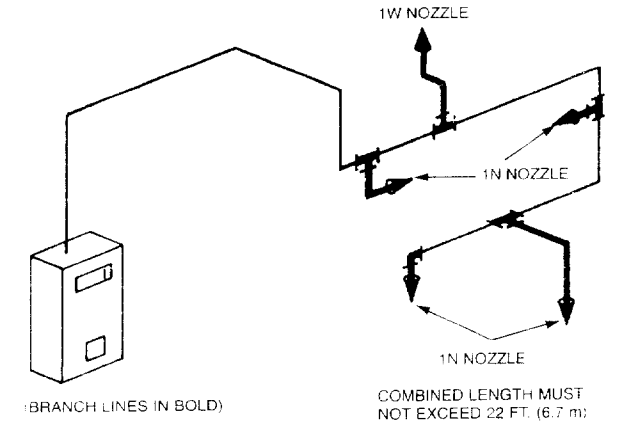


FIGURE 85

Requirements	Supply	Duct Branch Line	Plenum Branch Line	Appliance Branch Line
Pipe Size	3/8 in.	3/8 in.	3/8 in.	3/8 in.
Maximum Length	40 ft. (12.2 m)	6 ft. (1.8 m)	4 ft. (1.2 m)	10 ft. (3 m)
Maximum Rise	6 ft. (1.8 m)	4 ft. (1.2 m)	2 ft. (.6 m)	2 ft. (.6 m)
Maximum 90° Elbow	9	4	4	6
Maximum Tees	1	1	2	3
Maximum Flow Numbers	5*	2	2	3

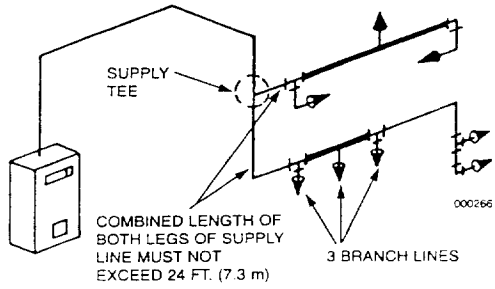
* **Exceptions:**

1. Six (6) flow numbers are allowed when a duct branch line is the last branch line on the piping network and no 1N nozzles, Part No. 56930, are used to protect woks or griddles.
2. Six (6) flow numbers are allowed when six (6) 1N nozzles, Part No. 56930, are used and none of the nozzles are used to protect woks and griddles. NOTE: Only five (5) flow numbers are allowed if a 1N nozzle is used for wok or griddle protection.
3. Six (6) flow numbers are allowed when only two (2) 1N nozzles, Part No. 76782, are used.

DISTRIBUTION PIPING REQUIREMENTS (Continued)

Distribution Piping Requirements – 3.0 Gallon System

1. The maximum length between the start of the first branch line and the start of the last branch line must not exceed 24 ft. (7.3 m). When the supply line is split, the **combined total** of both legs of the supply line (from the start of the first branch line to the start of the last branch line) must not exceed 24 ft. (7.3 m). See Figure 88.
2. The total length of all branch lines must not exceed 36 ft. (10.9 m). See Figure 88.
3. Use a 3/8 in. union to connect the tank adaptor to the 3/8 in. supply line.
4. A maximum of two nozzles are allowed per duct branch line.
5. The requirements of the following table must not be exceeded:



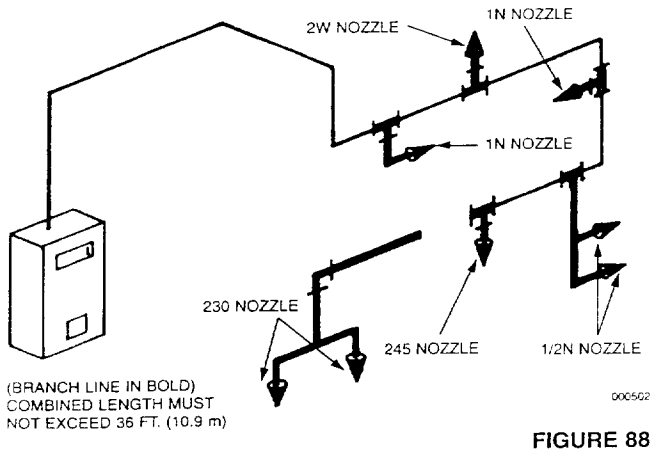


FIGURE 88

Requirements	Supply Line	Duct Branch Line	Plenum Branch Line	Appliance Branch Line
Pipe Size	3/8 in.	3/8 in.	3/8 in.	3/8 in.
Maximum Length	40 ft. (12.2 m)	8 ft. (2.4 m)	4 ft. (1.2 m)	12 ft. (3.7 m)
Maximum Rise	6 ft. (1.8 m)	4 ft. (1.2 m)	2 ft. (.6 m)	2 ft. (.6 m)
Maximum 90° Elbows	9	4	4	6
Maximum Tees	1	2	2	4
Maximum Flow Numbers	11*	4	2	4

*Exceptions:

1. Twelve (12) flow numbers are allowed in any one tank not containing two-flow appliance nozzles, and/or, a 1N nozzle for wok or griddle protection, and/or, a 1F nozzle for range protection, and/or a 3N nozzle for fryer protection.
2. Twelve (12) flow numbers are allowed with any one tank using only two-flow appliance nozzles.
3. Twelve (12) flow numbers are allowed with any one tank using only three-flow appliance nozzles.

Special Instructions:

1. Twelve (12) flow numbers are allowed when four (4) Dean Industries GTI Gas Fryers are protected at low proximity as shown in Figure 101 on Page 4-52. The discharge piping must be as shown in Figure 102 on Page 4-52.
2. For certain McDonald's applications 11.5 flow numbers are allowed when using a combination of one (1) 2W duct nozzle, one (1) 1/2N electrostatic precipitator nozzle, one (1) 1N plenum nozzle, and four (4) two-flow appliance nozzles. Contact Ansul Applications Engineering Department for additional information.

NOZZLE PLACEMENT REQUIREMENTS (Continued)

Nozzle Application Chart (Continued)

Hazard	Maximum Hazard Dimensions	Nozzle Quantity	Nozzle Heights	Nozzle Part No.	Nozzle Tip Stamping – Flow No.
Fryer**	Maximum Size (without drip board) 19 1/2 in. (49.5 cm) x 19 in. (48.2 cm) Area – 370 1/2 sq. in. (2390 sq. cm) Maximum				
	High Proximity	1	21 – 34 in.	419338	3N
	Low Proximity	1	13 – 16 in.	419342	290
	Maximum Size (with drip board) 25 3/8 in. (64.4 cm) Area – 495 sq. in. (3194 sq. cm) Maximum (Fry pot side must not exceed 19 1/2 in. (49.5 cm) x 19 in (48.2 cm)				
	High Proximity	1	21 – 34 in.	419338	3N
	Low Proximity	1	13 – 16 in.	419342	290
Range	Longest Side 28 in. (71 cm) Area – 336 sq. in. (2168 sq. cm)	1	30 – 50 in. (76 – 127 cm) 40 – 48 in. (102 – 122 cm) (With Backshelf)	419333	1F
	Longest Side (High Proximity) 28 in. (71 cm) Area – 672 sq. in. (4335 sq. cm)	1	40 – 50 in. (102 – 127 cm)	419340	245
	Longest Side (Medium Proximity) 28 in. (71 cm) Area – 672 sq. in. (4335 sq. cm)	1	30 – 40 in. (76 – 102 cm)	419341	260
	Longest Side (Low Proximity) 36 in. (91 cm) Area – 1008 sq. in. (6503 sq. cm)	2	15 – 20 in. (38 – 51 cm)	419342	290
Griddle	Longest Side (High Proximity) 48 in. (122 cm) Area – 1440 sq. in. (9290 sq. cm)	1	30 – 50 in. (76 – 127 cm) (perimeter located)	419341	260
	Longest Side (High Proximity) 30 in. (76 cm) Area – 720 sq. in. (1829 sq. cm)	1	30 – 50 in. (76 – 127 cm) (center located)	419342	290
	Longest Side (High Proximity) 36 in. (91 cm) Area – 1080 sq. in. (2743 sq. cm)	1	35 — 40 in. (89 – 102 cm) (perimeter located)	419335/417332	1N/1NSS
	Longest Side (Medium Proximity) 49 in. (122 cm) Area – 1440 sq. in. (9190 sq. cm)	1	20 – 30 in. (51 – 76 cm) (perimeter located)	419342	290

**For multiple nozzle protection of single fryers, see detailed information on Pages 4-10.1 through 4-10.8

NOZZLE PLACEMENT REQUIREMENTS (Continued)

Nozzle Application Chart (Continued)

Hazard	Maximum Hazard Dimensions	Nozzle Quantity	Nozzle Heights	Nozzle Part No.	Nozzle Tip Stamping – Flow No.
Griddle (Continued)	Longest Side (Low Proximity) 48 in. (122 cm) Area – 1440 sq. in. (9290 sq. cm)	1	10 – 20 in. (25 – 51 cm) (perimeter located)	419343	2120
Chain Broiler* (Underhead Protection)	Longest Side – 34 in. (86 cm) Area – 1088 sq. in. (7019 sq. cm)	2	10 – 26 in. (25 – 66 cm)	419336/417333	1W/1WSS
Chain Broiler (Horizontal Protection)	Length – 43 in. (109 cm) Width – 31 in. (79 cm)	2	1 – 3 in. (3 – 8 cm)	419335/417332	1N/1NSS
Gas-Radiant Char-Broiler	Longest Side – 24 in. (61 cm) Area – 528 sq. in. (3406 sq. cm)	1	18 – 40 in. (46 – 102 cm)	419340	245
	Longest Side – 24 in. (61 cm) Area – 528 sq. in. (3406 sq. m)	1	26 – 40 in. (66 – 102 cm)	419335/417332	1N/1NSS
Electric Char-Broiler	Longest Side – 34 in. (86 cm) Area – 680 sq. in. (4388 sq. cm)	1	20 – 50 in. (51 – 127 cm)	419335/417332	1N/1NSS
Lava-Rock Broiler	Longest Side – 24 in. (61 cm) Area – 312 sq. in. (2013 sq. cm)	1	18 – 35 in. (46 – 89 cm)	419335/417332	1N/1NSS
Natural Charcoal Broiler	Longest Side – 24 in. (61 cm) Area – 288 sq. in. (1858 sq. cm)	1	18 – 40 in. (46 – 102 cm)	419335/417332	1N/1NSS
Lava-Rock or Natural Charcoal Char-Broiler	Longest Side – 30 in. (76 cm) Area – 720 sq. in. (4645 sq. cm)	1	14 – 40 in. (36 – 102 cm)	419338	3N
Mesquite Char-Broiler	Longest Side – 30 in. (76 cm) Area – 720 sq. in. (4645 sq. cm)	1	14 – 40 in. (36 – 102 cm)	419338	3N
Upright Broiler	Length – 32.5 in. (82.5 cm) Width – 30 in. (76 cm)	2	–	419334	1/2N
Salamander Broiler	Length – 32.5 in. (82.5 cm) Width – 30 in. (76 cm)	2	–	419334	1/2N
Wok	14 in. – 30 in. (36 – 76 cm) Diameter 3.75 – 8.0 in. (9.5 – 20 cm) Deep	1	35 – 45 in. (89 – 114 cm)	419341	260
	11 in. – 18 in. (28 – 46 cm) Diameter 3.0 – 5.0 in. (7.6 – 13 cm) Deep	1	35 – 40 in. (89 – 102 cm)	419335/417332	1N/1NSS
	11 in. – 24 in. (28 – 61 cm) Diameter 3.0 – 6.0 in. (8 – 15.2 cm) Deep		35 in. (89 cm)	419335/417332	1N/1NSS

*Minimum chain broiler exhaust opening 12 in. x 12 in. (31 cm x 31 cm) and no less than 60% of internal broiler size

NOZZLE PLACEMENT REQUIREMENTS (Continued)

Nozzle Application Chart

The following chart has been developed to assist in calculating the quantity and type of nozzle required to protect each duct, plenum, or appliance.

NOTICE

This chart is for general reference only. See complete details for each type of hazard.

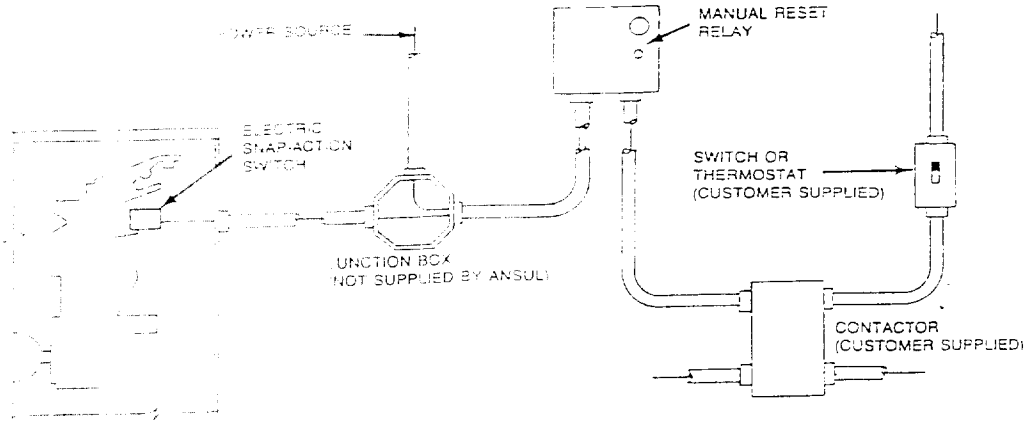
Hazard	Maximum Hazard Dimensions	Nozzle Quantity	Nozzle Heights	Nozzle Part No.	Nozzle Tip Stamping – Flow No.
▸ Duct or Transition (Single Nozzle)	Length – Unlimited Perimeter – 27 in. (67 cm) Diameter – 8.5 in. (22 cm)	1	–	419336	1W
▸ Duct or Transition (Single Nozzle)	Length – Unlimited Perimeter – 75 in. (190.5 cm) Diameter – 24 in. (61 cm)	1	–	419337/78078*	2W/2WH*
▸ Duct or Transition (Dual Nozzle)	Length – Unlimited Perimeter – 150 in. (381 cm) Diameter – 48 in. (122 cm)	2	–	419337/78078*	2W/2WH*
▸ Electrostatic Precipitator (At Base of Duct)	Individual Cell	1	–	419334	1/2N
▸ Plenum (Horizontal Protection)	Length – 8 ft. (2.4 m) Filter Height – 20 in. (51 cm)	1	–	419335/417332	1N/1NSS
▸ Plenum (Vertical Protection)	Length – 4 ft. (1.2 m) Width – 4 ft. (1.2 m)	1	–	419336/417333	1W/1WSS
Fryer/Split Vat Fryer**	Maximum Size (without drip board) 15 in. (38 cm) x 14 in. (36 cm) Area – 210 sq. in. (1355 sq. cm) Maximum				
▸	High Proximity	1	27 – 47 in.	419339	230
▸	Medium Proximity	1	20 – 27 in.	419340	245
	Maximum Size (with drip board) 21 in. (53 cm) x 14 in. (36 cm) Area – 294 sq. in. (1897 sq. cm) Maximum (Fry Pot must not exceed 15 in. x 14 in (38 cm x 36 cm))				
▸	High Proximity	1	27 – 47 in.	419339	230
▸	Medium Proximity	1	20 – 27 in.	419340	245

*Use 2WH nozzle on 1.5 gallon, 6 flow, duct and plenum protection only.
**For multiple nozzle protection of single fryers, see detailed information on Pages 4-10.1 through 4-10.8.

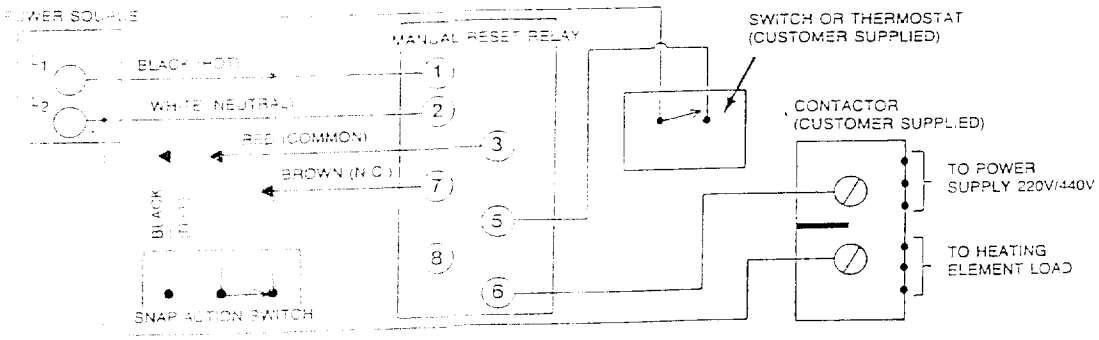
ELECTRICAL SWITCH REQUIREMENTS (Continued)

Electric (110 VAC/60 Hz) Application with Customer Supplied Contactor and Heating Element Load, and Power Supply Switch

INSTALLATION OVERVIEW



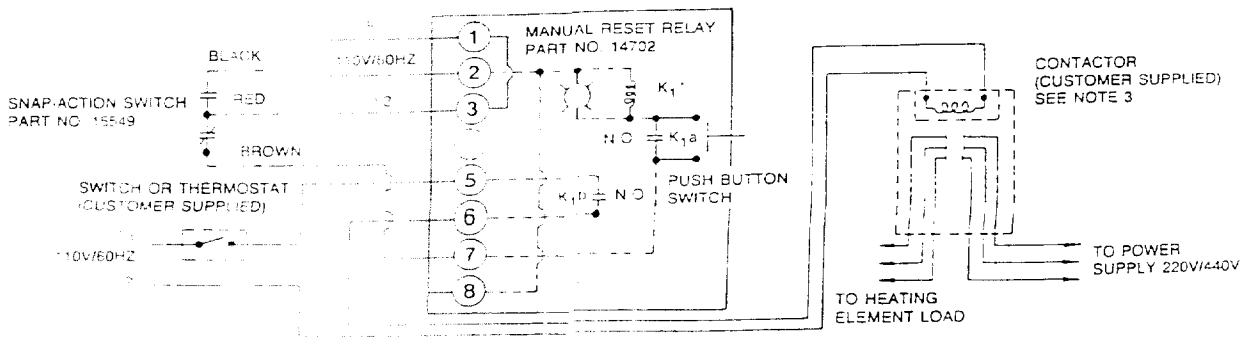
BASIC WIRING DIAGRAM



NOTE: DO NOT USE BLACK WIRE ON SNAP-ACTION SWITCH IN NORMAL INSTALLATION. BLACK WIRE TO BE USED ONLY FOR EXTRANEOUS ALARM, LIGHT CIRCUITS, ETC.

WIRING SCHEMATIC

* K_1a and K_1b are N.O. when K_1 is de-energized.



NOTE:

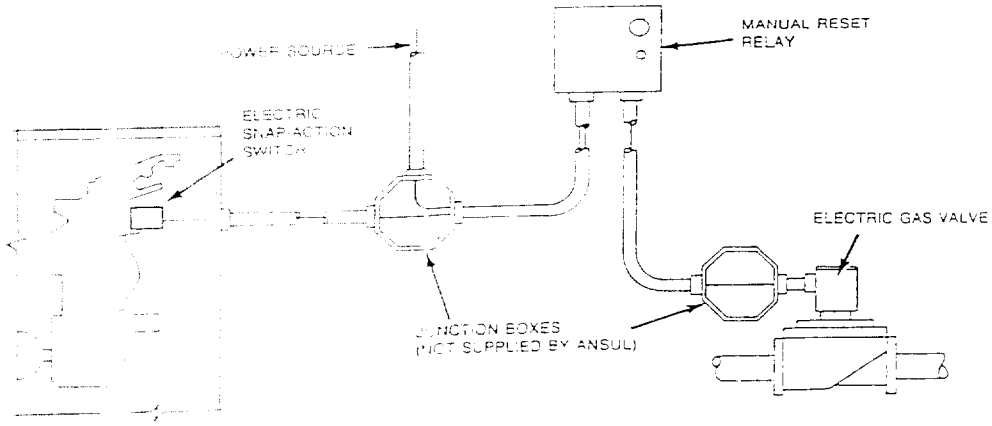
1. ———— DENOTES FIELD INSTALLATION
2. — — — — DENOTES FACTORY INSTALLATION
3. CONTRACTORS, UL LISTED ENCLOSED INDUSTRIAL CONTROL EQUIPMENT OR MAGNETIC SWITCH HAVING A RATING MATCHING THAT OF THE COOKING APPLIANCE COIL 110V/60HZ

FIGURE 82

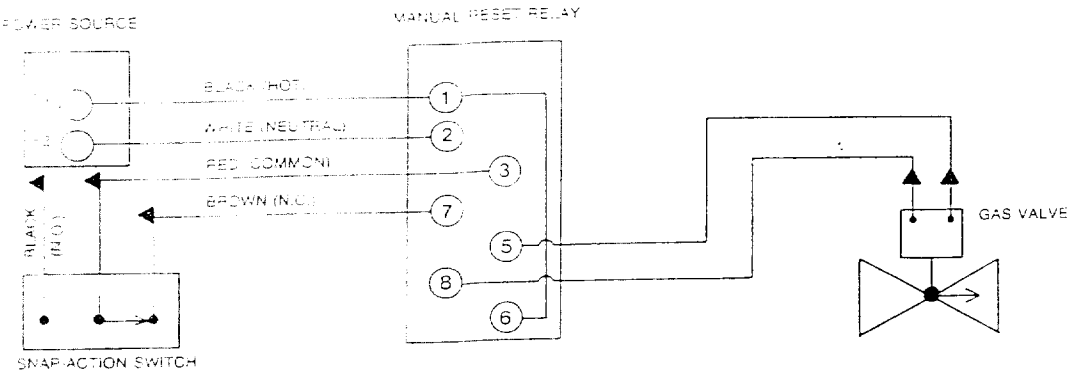
ELECTRICAL SWITCH REQUIREMENTS (Continued)

Electric (110 VAC/60 Hz) Gas Shut-off Valve

INSTALLATION OVERVIEW

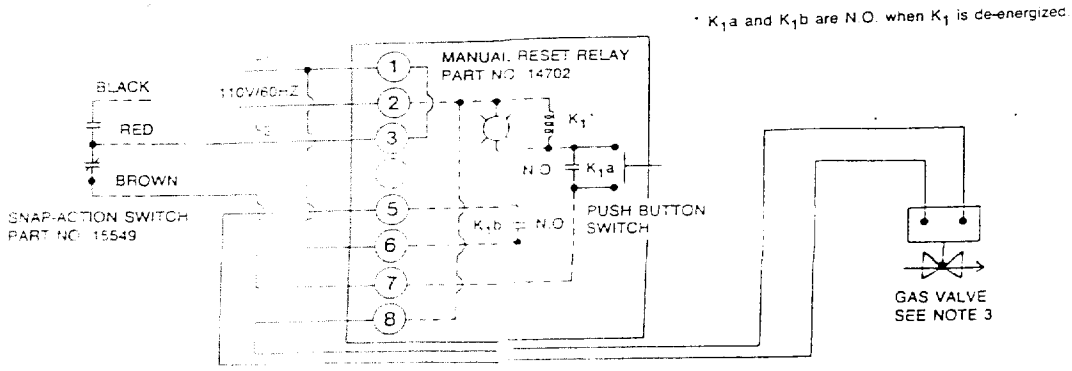


BASIC WIRING DIAGRAM



NOTE DO NOT USE BLACK WIRE ON SNAP-ACTION SWITCH IN NORMAL INSTALLATION. BLACK WIRE TO BE USED ONLY FOR EXTRANEOUS ALARM, LIGHT CIRCUITS, ETC.

WIRING SCHEMATIC



NOTE

_____ DENOTES FIELD INSTALLATION

_ _ _ _ _ DENOTES FACTORY INSTALLATION

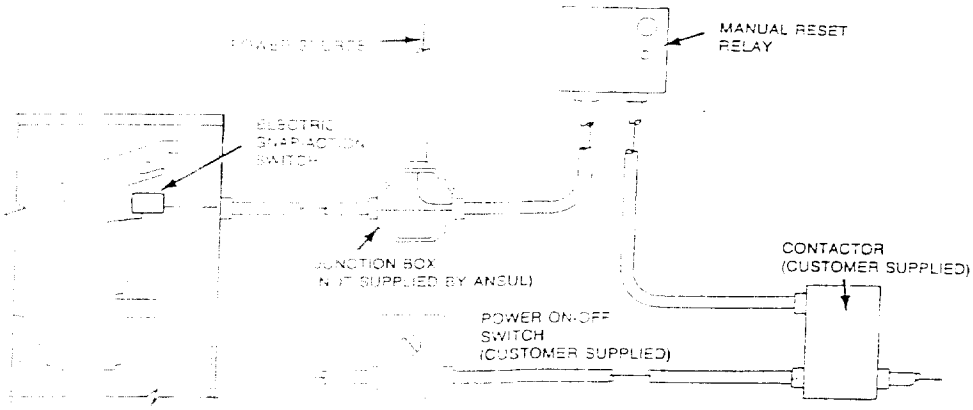
GAS VALVES: "UL LISTED ELECTRICALLY-OPERATED SAFETY VALVE FOR NATURAL OR LP GAS AS NEEDED OF APPROPRIATE PRESSURE AND TEMPERATURE RATING, 110V/60 HZ" OR ANSUL GAS VALVES, PART NUMBERS 13707, 13708, 13709, 13710, AND 17643.

FIGURE 80

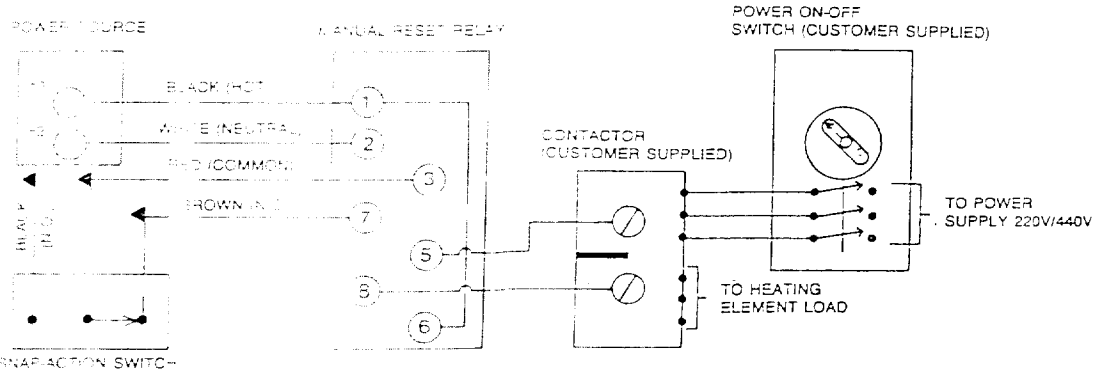
ELECTRICAL SWITCH REQUIREMENTS (Continued)

Electric (110 VAC/60 Hz) Application with Customer Supplied Contactor and Heating Element Load

INSTALLATION OVERVIEW

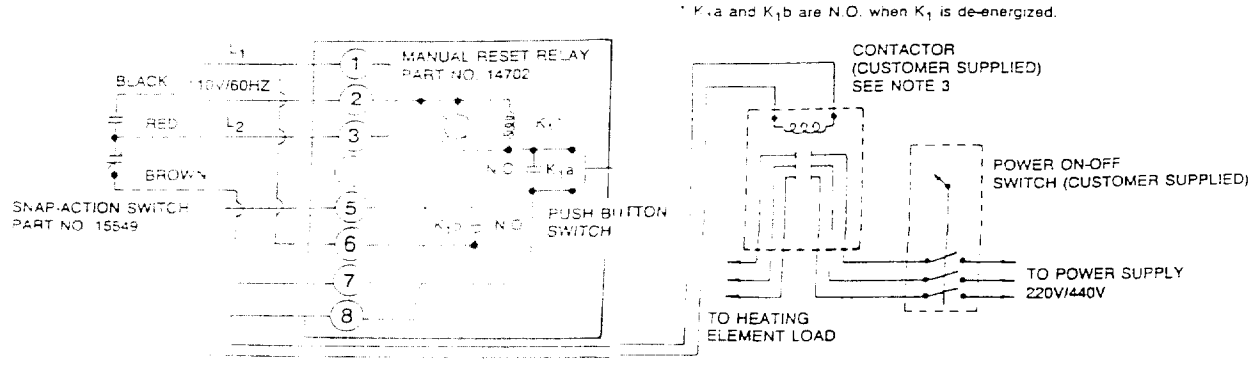


BASIC WIRING DIAGRAM



NOTE 1: DO NOT USE BLACK WIRE ON SNAP-ACTION SWITCH IN NORMAL INSTALLATION. BLACK WIRE TO BE USED ONLY FOR EXTRANEOUS ALARM LIGHT CIRCUITS, ETC.

WIRING SCHEMATIC



NOTE:

1. ——— DENOTES FIELD INSTALLATION
2. - - - - - DENOTES FACTORY INSTALLATION
3. CONTACTORS, UL LISTED ENCLOSED INDUSTRIAL CONTROL EQUIPMENT OR MAGNETIC SWITCH HAVING A RATING MATCHING THAT OF THE COOKING APPLIANCE ONLY, 110V/60HZ

FIGURE 81

FUSIBLE LINK

In order to determine the normal operating temperature at the fusible link location, utilize a maximum registering thermometer (Part No. 15240), temperature tape or other accurate thermometer.

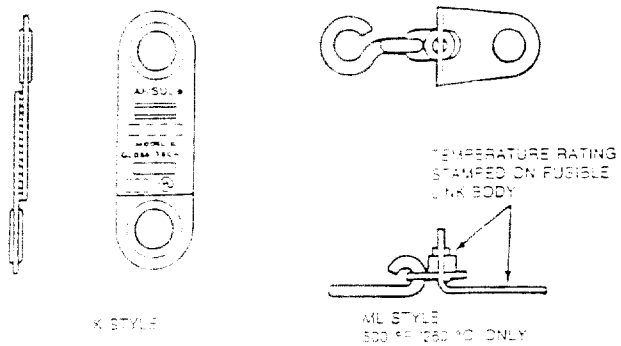


FIGURE 37

Select correct U.L. Listed fusible link(s) for installation in detector(s) according to the temperature condition chart below:

Fusible Link Part No.	Temperature Rating	To Be Used Where Temperature Does Not Exceed
415739	165 °F (74 °C)	100 °F (38 °C)
415740	212 °F (100 °C)	150 °F (66 °C)
415741	280 °F (138 °C)	225 °F (107 °C)
415742	360 °F (182 °C)	290 °F (143 °C)
415743	450 °F (232 °C)	360 °F (182 °C)
66816	500 °F (260 °C)	400 °F (204 °C)

BURSTING DISC

The R-102 Bursting Disc is installed in the tank adaptor assembly. The bursting disc eliminates the siphoning of the agent up the pipe during extreme temperature variations. The bursting discs are available in packs of 10, Part No. 417911.

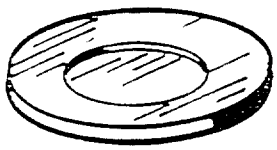


FIGURE 38

DETECTORS

The detector consists of three basic components: the bracket, linkage, and fusible link. (Fusible links are not included and must be ordered separately.) The bracket holds the entire assembly to the mounting surface. The linkage is used to support the fusible link. The fusible link is designed to separate at a specific temperature and release the wire rope, thereby actuating the regulated release mechanism.

There are three styles of detectors available: the clip-on style, the hinged style, and the scissor style.

The clip-on style allows the wire rope to be strung completely through the detection system conduit and brackets first and the detector linkage assemblies are then clipped on later.

The hinged style detector requires the wire rope to be strung to the detector bracket, and then "threaded" through the linkage assembly before continuing to the next detector bracket.

The scissor style allows the wire rope to be strung completely through the detection system conduit and brackets first and the detector linkage assemblies are then clipped on later.

Each style of detector consists of two types of assemblies:

The Terminal Detector (Part No. 56838, 15375, or 417368) includes a test link and is placed last in a series of detectors. This detector is sometimes referred to as the end-of-line detector and is thus named because it is at the point at which the wire rope "terminates," or is anchored at the detector bracket. Only one terminal detector is required per detection system.

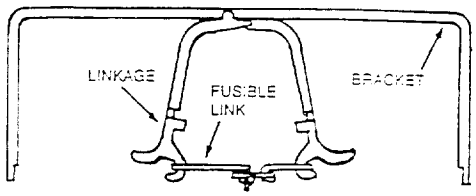
The Series Detector (Part No. 56837, 15373, or 417369) is any detector located in-line between the regulated release assembly and the terminal detector.

When using Part No. 56837 and 56838 style detectors, a total of 12 detectors can be in one detection system: 11 series detectors, Part No. 56837 and 1 terminal detector, Part No. 56838.

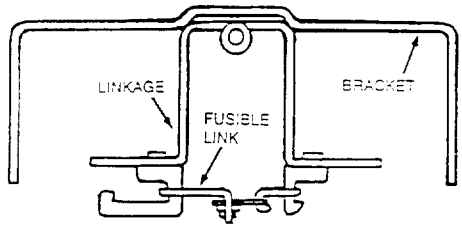
When using Part No. 15373 and 15375 style detectors, a total of 15 detectors can be in one detection system: 14 series detectors, Part No. 15373 and 1 terminal detector, Part No. 15375.

When using Part No. 417368 and 417369 style detectors, a total of 15 detectors can be in one detection system: 14 series detectors, Part No. 417369 and 1 terminal detector, Part No. 417368.

CLIP-ON STYLE – PART NO. 56837 AND 56838



HINGED STYLE – PART NO. 15373 AND 15375



SCISSOR STYLE – PART NO. 417368 AND 417369

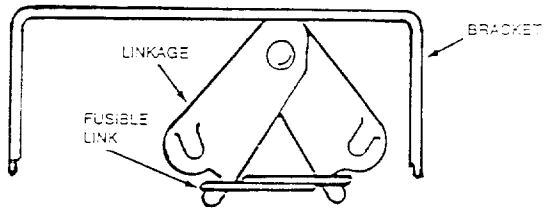
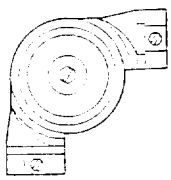


FIGURE 27

PULLEY ELBOWS

There are two types of pulley elbows used to change the direction of the wire rope by 90°. Ansul recommends for temperatures not in excess of 700 °F (371 °C). Part No. 415670 has socket ends with set screws for 1/2 in. conduit, and Part No. 45771 has compression ring ends also for 1/2 in. conduit.

PART NO. 415670



PART NO. 45771

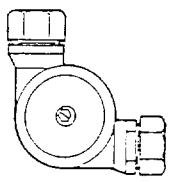


FIGURE 28

PULLEY TEE

The Pulley Tee (Part No. 15342) is used to change the direction of two wire ropes by 90°. It must be used in areas where the temperatures are within the range of 32 °F to 130 °F (0 °C to 54 °C). Pulley tees can be used in mechanical gas valve actuation lines and remote manual pull station lines. Pulley tees cannot be used within a detection line. Pulley tees can only be used to operate one gas valve from two ANSUL AUTOMAN Releases.

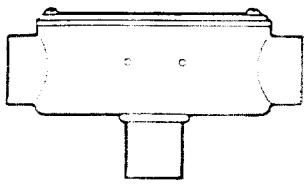


FIGURE 29

STAINLESS STEEL CABLE

The 1/16 in. stainless steel cable is run from the terminal detector, through conduit, all series detectors and pulley elbows, and into the regulated release mechanism trip lever. When any fusible link separates, the tension on the cable is relaxed, and the trip lever actuates the regulated release mechanism. The cable can also be used for mechanical gas valves and remote manual pull stations. The cable is available in 50 ft. (15 m) (Part No. 15821) and 500 ft. (152.4 m) (Part No. 79663) lengths.

REMOTE MANUAL PULL STATION

The remote manual pull station (Part No. 4835, Part No. 54011, or Part No. 415255) is required for manual actuation of the regulated release assembly. The remote manual pull station should be mounted at a point of egress and positioned at a height determined by the authority having jurisdiction.

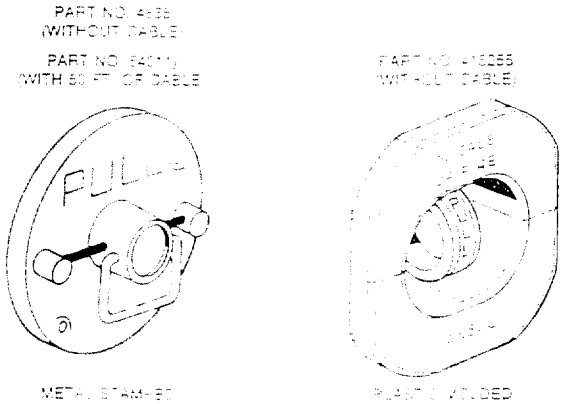


FIGURE 30

MECHANICAL GAS VALVES

The mechanical gas valves are designed to shut off the flow of gas to the appliances upon actuation of the regulated release assembly. The valves are available in sizes of 3/4 in., 1 in., 1 1/4 in., 1 1/2 in., and 2 in. Ansul style; and 2 1/2 in. and 3 in. Asco style. The valves are rated for natural and LP gas. Both styles are UL Listed.

Part No.	Description	Maximum Operating Pressure
55598	3/4 in. Gas Valve (ANSUL)	10 psi (69 kPa)
55601	1 in. Gas Valve (ANSUL)	10 psi (69 kPa)
55604	1 1/4 in. Gas Valve (ANSUL)	10 psi (69 kPa)
55607	1 1/2 in. Gas Valve (ANSUL)	10 psi (69 kPa)
55610	2 in. Gas Valve (ANSUL)	10 psi (69 kPa)
25937	2 1/2 in. Gas Valve (ASCO)	5 psi (34.5 kPa)
25938	3 in. Gas Valve (ASCO)	5 psi (34.5 kPa)

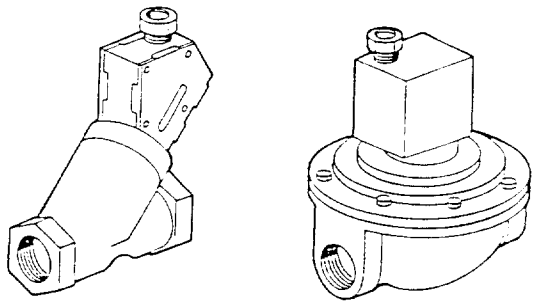


FIGURE 31

ELECTRICAL GAS VALVES

The electrical gas valves are designed to shut off the flow of either natural or LP gas to the appliances upon actuation of the regulated release assembly. The valves are available in sizes of 3/4 in., 1 in., 1 1/2 in., 2 in., and 3 in.. The valve is held open by an energized solenoid and upon system actuation, the switch contacts in the regulated release assembly open, thus de-energizing the circuit to the gas valve solenoid, causing the valve to close. Valves are available in 120 VAC and are UL Listed.

Part No.	Description	Maximum Operating Pressure
13707	3/4 in. Solenoid Gas Valve (ASCO)	2 psi (13.8 kPa)
13708	1 in. Solenoid Gas Valve (ASCO)	1 psi (6.9 kPa)
13709	1 1/2 in. Solenoid Gas Valve (ASCO)	25 psi (172 kPa)
13710	2 in. Solenoid Gas Valve (ASCO)	25 psi (172 kPa)
17643	3 in. Solenoid Gas Valve (ASCO)	5 psi (34.5 kPa)

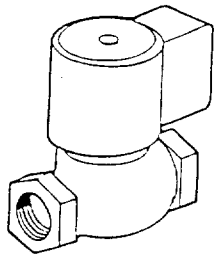


FIGURE 32

METAL BLOW-OFF CAP

Two types of metal blow-off caps are available as options to the standard rubber caps. The metal cap can be used in unusually high heat conditions generally over 400° F (204° C). The metal blow-off cap is attached to the nozzle by means of a stainless steel wire which prevents it from falling into the appliance during discharge. Shipping Assembly Part No. 79745 contains 10 metal blow-off caps for use on standard, non-swivel nozzles and Shipping Assembly Part No. 415568 contains 10 metal blow-off caps for use on swivel nozzles.

NOTICE

If metal blow-off caps are required for upright broiler protection, use (2) two 1N nozzles (Part No. 56930) instead of 1/2N nozzles.

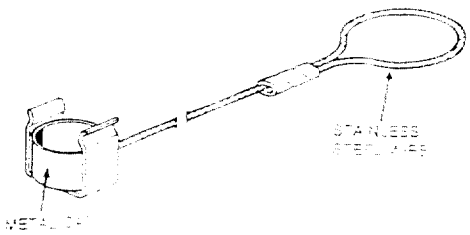


FIGURE 22

CONDUIT OFFSET ASSEMBLY

The conduit offset assembly, Part No. 79825, is used to change direction of the wire rope on detection, mechanical gas valve, and remote pull station lines. The conduit offset assembly can only be used in the area where the conduit attaches to the regulated release assembly. When using the conduit offset assembly, the maximum number of pulley elbows is still allowed.

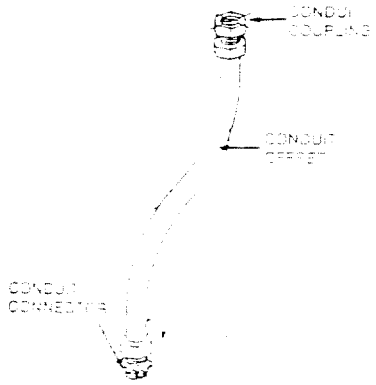


FIGURE 23

"QUIK-SEAL" ADAPTOR

The "Quik-Seal" adaptor is a listed mechanical bulkhead fitting that produces a liquid-tight seal around both distribution piping and detection conduit which runs through restaurant hoods and ducts. The "Quik-Seal" adaptor accepts threaded pipe or conduit. The adaptor is available for 1/4 in. (Part No. 78195), 3/8 in. (Part No. 77284), 1/2 in. (Part No. 77286), or 3/4 in. (Part No. 77288) pipe or conduit sizes. When using with EMT conduit, a conduit connector must be installed in each end of the adaptor.

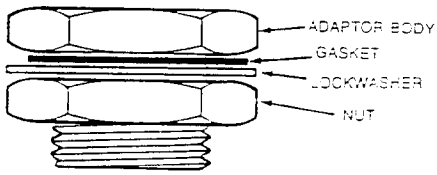


FIGURE 24

"COMPRESSION-SEAL" ADAPTOR

This adaptor is a mechanical bulkhead fitting that produces a liquid-tight seal around pipe and conduit when installing distribution piping and detection conduit through restaurant hoods and ducts. The "Compression-Seal" adaptor is a straight-through design requiring no cutting or threading of conduit or pipe. The adaptor is available for pipe sizes of 1/4 in. (Part No. 79148), 3/8 in. (Part No. 79150), 1/2 in. (Part No. 79146), and EMT conduit size of 1/2 in. (Part No. 79152).

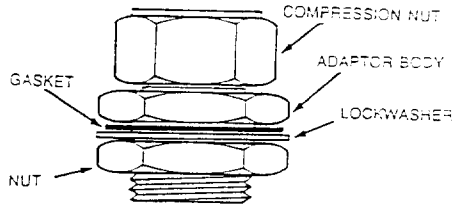


FIGURE 25

"HOOD SEAL" ADAPTOR ASSEMBLY

This adaptor, shipping assembly Part No. 79768, is a mechanical bulkhead fitting that produces a liquid-tight seal around 1/2 in. EMT conduit when installing the detection line through restaurant hoods and ducts. The adaptor accepts a high temperature pulley elbow and, when used, correctly positions the elbow or conduit in line with the conduit adaptor hole in the detector bracket. The "Hood Seal" eliminates the need for multiple elbows when penetrating the top of a hood when installing the detection line.

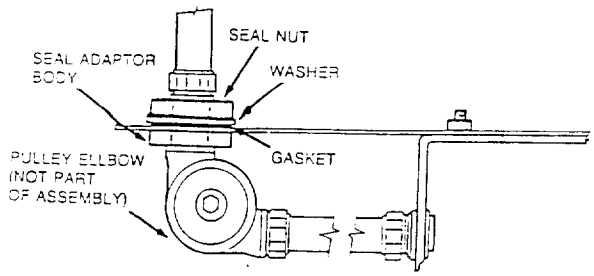


FIGURE 26

WARRANTY AND LIMITS OF WARRANTY

A. **Ansul Products**

Except as indicated in B below, your R-102 System, supplied by Ansul Incorporated ("Ansul") is warranted to you as the original purchaser for five years from the date of delivery against defects in workmanship and material as purchaser's sole and exclusive remedy. Ansul will replace or repair any component part which, in its opinion, is defective and has not been tampered with or subjected to misuse, abuse or exposed to highly corrosive conditions.

B. **Purchased Products**

The following items, which are not manufactured but purchased by Ansul, are warranted against defects resulting from the manufacturer's fabrication process or parts for one year from the date of purchase: fusible links, electric gas shut-off valves, manual reset relay, snap-action switch and solenoid, detectors, electric manual pull station, pressure relief valves, and regulators.

Evaluation of each reportedly defective relay, valve, etc. returned to Ansul will be made by the original manufacturer or an agent thereof and its judgment shall be final.

C. EXCEPT AS PROVIDED IN (A) AND (B), THERE ARE NO OTHER WARRANTIES, EXPRESSED OR IMPLIED INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE MADE BY ANSUL CONCERNING THIS SYSTEM. ANSUL SHALL HAVE NO LIABILITY FOR ANY CONSEQUENTIAL, SPECIAL OR SIMILAR DAMAGES.

For repairs, parts and service of the Ansul System, contact your local Ansul representative, or Ansul Incorporated, Marinette, Wisconsin 54143-2542; 800-TO-ANSUL (800-862-6675).