MARMIC FIRE & SAFETY

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WHATABURGER #1276

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Lee's Summit, MO 64082

Technical Information Submittal

Fire Suppression System

Tuesday, March 12, 2024

Whataburger –Lee's Summit, MO

Fire Suppression System Submittal

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SECTION A

PRODUCT INFORMATION

TOTAL SYSTEM

There are four types of R-102 Restaurant Fire Suppression Systems:

1. Single-tank System
2. Double-tank System
3. Three-tank System (1 Cartridge)
4. Multiple Tank System (Three Tanks or More – Multiple Cartridges)

The type of system required for the particular installation will be determined through the guidelines covered in “System Design.” Additional equipment which may be required to complete the system design is explained in the “System Components” section. Additional devices covered are: remote manual pull stations, mechanical and electrical gas shut-off valves, electrical switches, and pressure switches.

Single-Tank System

The R-102 single-tank system is available with a stainless steel enclosure and consists of:

1. AUTOMAN Regulated Release Assembly (Electrical or Mechanical)
2. Nitrogen Cartridge and/or Carbon Dioxide Cartridge
3. ANSULEX Low pH Liquid Fire Suppressant
4. Discharge Nozzles
5. Detection Components
6. Additional Devices (As Required)

The regulated release assembly contains the regulated release mechanism, agent tank, expellant gas hose for agent tank hookup, and enclosure knockouts to facilitate installing detection system and additional equipment. Refer to “System Components” section for individual component descriptions.

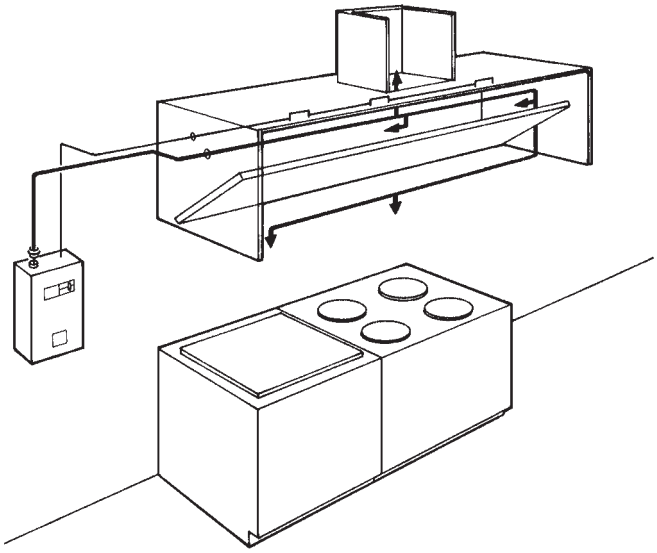


FIGURE 2-1
000133

Double-Tank System

The R-102 double-tank system is available with stainless steel enclosures and consists of:

1. AUTOMAN Regulated Release Assembly (Electrical or Mechanical)
2. Nitrogen Cartridge and/or Carbon Dioxide Cartridge
3. ANSULEX Low pH Liquid Fire Suppressant
4. Enclosure or Bracket Assembly
5. Discharge Nozzles
6. Detection Components
7. Additional Devices (As Required)

The regulated release assembly contains the regulated release mechanism, agent tank, expellant gas hose for agent tank hookup, and enclosure knockouts to facilitate installing expellant piping, detection system, and additional equipment.

The enclosure or bracket assembly is mounted separately but within the guidelines of the regulated release assembly expellant gas piping requirements to ensure simultaneous actuation of the system. Refer to “System Components” section for individual component descriptions.

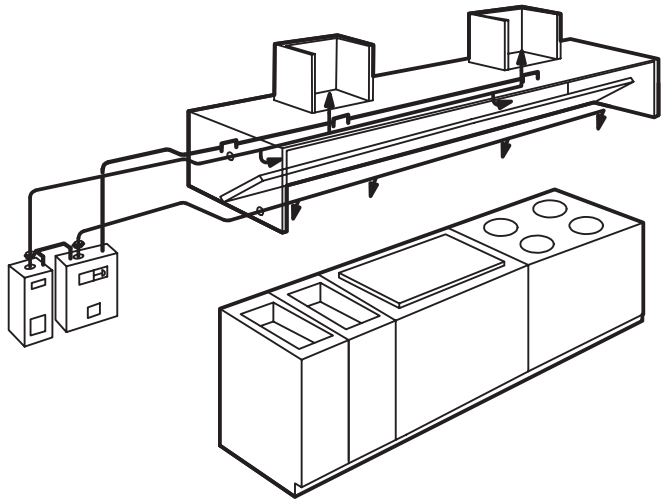
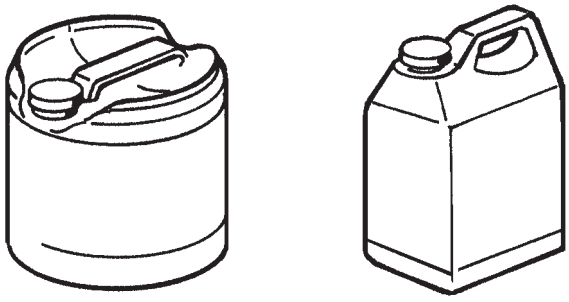


FIGURE 2-2
008321

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. (Refer to Section V, Page 5-2.1, for maximum agent fill capacity.) Agent storage life expectancy is twelve years and can be stored at a temperature of –40 °F to 130 °F (–40 °C to 54 °C). **Note: When installing agent in R-102 system, temperature range is 32 °F (0 °C) to 130 °F (54 °C).** 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
SHIPPING WT. 35 LB (15.9 kg)
000136

1.5 GALLON
SHIPPING WT. 19 LB (8.6 kg)
000137

FIGURE 3-1

REGULATED RELEASE ASSEMBLY (MECHANICAL)

The AUTOMAN Regulated Mechanical Release Assembly (Part No. 429853) contains the regulated release mechanism, 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 110 psi (7.6 bar) when the system is actuated. The agent tank must be ordered separately.

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.

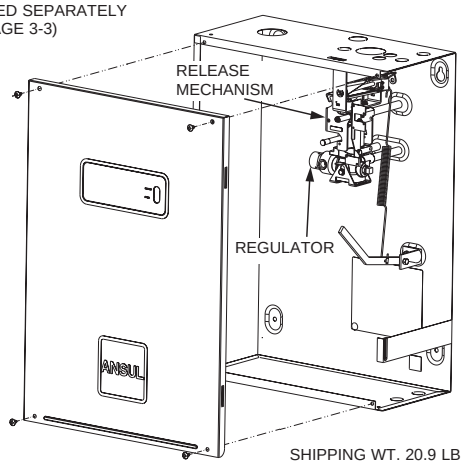
The tank is mounted within the enclosure. The tank contains an adaptor/tube assembly with a burst disc union. The burst disc helps prevent siphoning of the agent up the pipe due to significant temperature fluctuations in the area where the tank is located. The tank is stainless steel and, under normal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

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.

AUTOMAN REGULATED RELEASE ASSEMBLY (MECHANICAL)

NOTE: AGENT TANK MUST BE ORDERED SEPARATELY (SEE PAGE 3-3)



SHIPPING WT. 20.9 LB (9.5 kg)

FIGURE 3-2
009454

REGULATED RELEASE ASSEMBLY (ELECTRICAL)

The AUTOMAN Regulated Electrical Release Assembly (Part No. 429856) is identical to the mechanical version except it also 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.

AUTOMAN REGULATED RELEASE ASSEMBLY (ELECTRICAL)*

NOTE: AGENT TANK MUST BE ORDERED SEPARATELY (SEE PAGE 3-3)

SHIPPING WT. 22.1 LB (10.0 kg)

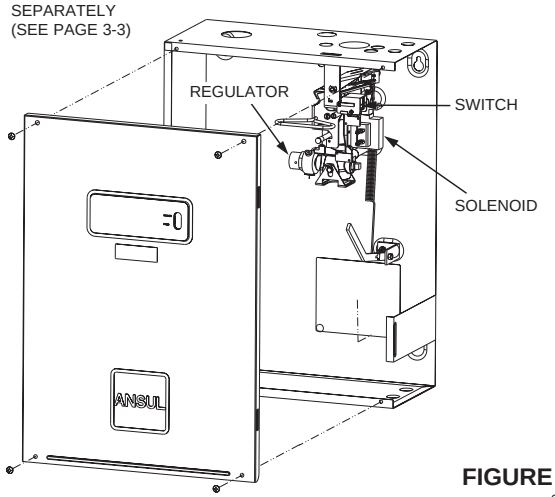


FIGURE 3-3
009455

* **Note:** AUTOMAN Regulated Electrical Release (Part No. 429856) is not intended to be used with electric detection.

REMOTE MECHANICAL RELEASE

The Remote Mechanical Release (Part No. 433485) is used to actuate up to five R-102 regulated actuators. The remote mechanical release utilizes a 101-10 carbon dioxide cartridge as the actuation pressure to operate the regulated actuators. The release is housed in a stainless steel enclosure.

Also available is an OEM Remote Release/Bracket Assembly (Part No. 439946). The OEM Remote Release/Bracket contains the same release mechanism as the standard Remote Release, and must be installed in a suitable equipment enclosure either horizontally or vertically. The remote release contains all the necessary mounting and conduit holes needed to fully install the assembly. **Note:** OEM Release/Bracket Assembly must be installed high enough in cabinet so that there is sufficient room to install and remove cartridge.

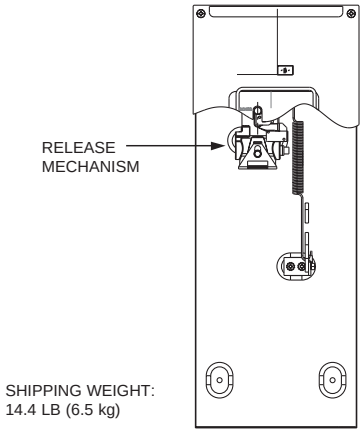


FIGURE 3-4
009456

SINGLE TANK ENCLOSURE ASSEMBLY

The Single Tank Enclosure Assembly (Part No. 429870) 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 enclosure is designed for mounting either a 1.5 gallon (Part No. 429864) or a 3.0 gallon tank (Part No. 429862) in a minimum amount of space.

ENCLOSURE ASSEMBLY

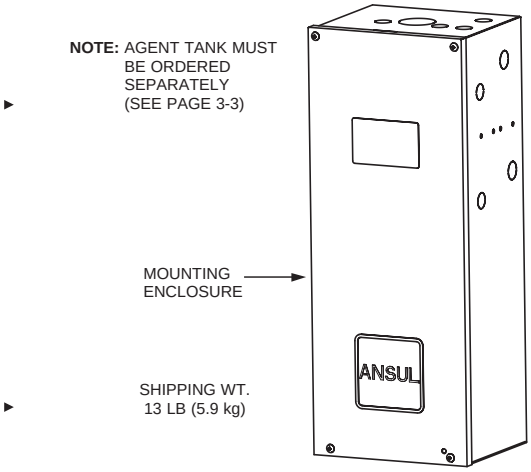


FIGURE 3-5
000142

RED PAINTED BRACKET ASSEMBLY

The Bracket Assembly (Part No. 429878) 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 bracket is constructed of mild steel and painted red. It is designed for mounting the tank in a minimum amount of space. The Bracket Assembly can only be utilized with 3.0 gallon tanks (Part No. 429862).

BRACKET ASSEMBLY

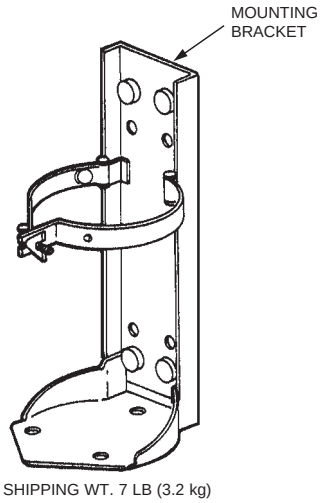


FIGURE 3-6
000141

REGULATED ACTUATOR ASSEMBLY

The Regulated Actuator Assembly (Part No. 429850) contains the regulator, pneumatic actuator, 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 enclosure or bracket assembly. The regulator is designed to allow a constant flow of expellant gas into each agent tank at 110 psi (7.6 bar).

The pneumatic actuator is designed to puncture the expellant gas cartridge seal upon receiving pressure from the regulated release assembly actuation piping. The enclosure contains a knockout to facilitate distribution piping hookup.

REGULATED ACTUATOR ASSEMBLY

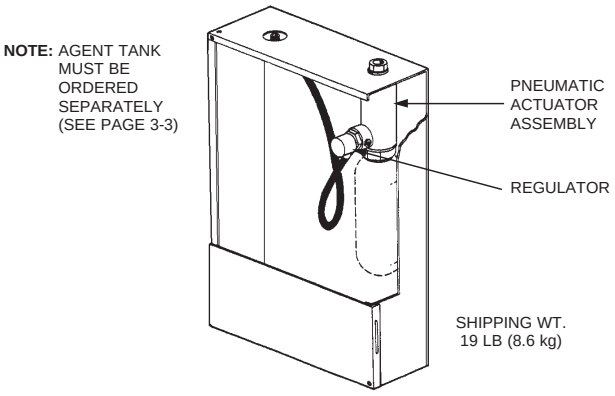


FIGURE 3-7
000143

AGENT TANK ASSEMBLY

The agent tank shipping assembly (3 Gallon (Part No. 429862) and 1.5 Gallon (Part No. 429864)) consists of a stainless steel tank and an adaptor/tube assembly. The adaptor/tube assembly contains a burst disc. The burst disc prevents agent leakage due to significant temperature fluctuations in the area where the tank is located. Under normal conditions, the tank requires hydrostatic testing every twelve years. The date of manufacture is stamped on the tank nameplate.

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

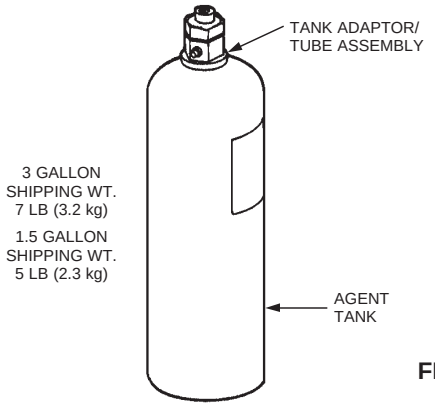


FIGURE 3-8
000140

OEM RELEASE/BRACKET ASSEMBLY (FOR OEM IN-CABINET USE ONLY)

The OEM Regulated Mechanical Release/Bracket Assembly (Part No. 79493) contains the same regulated release mechanism as the standard AUTOMAN Regulated Release Assembly. The OEM Regulated Electrical Release/Bracket Assembly (Part No. 437324*), is identical to the mechanical version except that it contains a factory installed 120 VAC solenoid and electrical switch. These release/bracket assemblies must be installed in a suitable equipment enclosure either horizontally or vertically. They contain all the necessary mounting and conduit holes needed to fully install the assembly. The agent tank is installed separately and need not be bracketed once it is piped and filled. **Note:** OEM Release/Bracket Assembly must be installed high enough in cabinet so that there is sufficient room to install and remove cartridge.

***Note:** OEM Regulated Electrical Release/Bracket Assembly (Part No. 437324) is not intended to be used with electric detection.

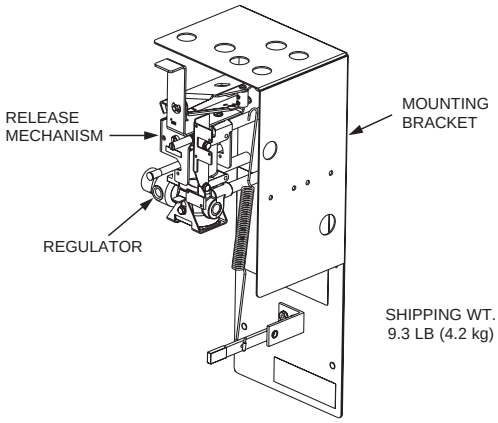
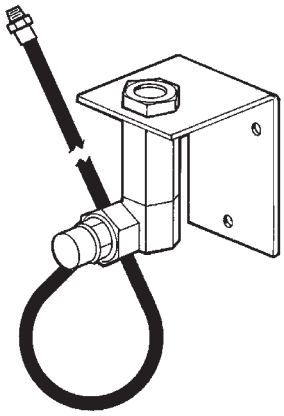


FIGURE 3-9
009457

OEM REGULATED ACTUATOR ASSEMBLY

The OEM Regulated Actuator Assembly (Part No. 418691) includes the regulator, pneumatic actuator, expellant gas hose and OEM bracket. Also available is an OEM Regulated Actuator Assembly with all the above mentioned components except for the bracket. This assembly is Part No. 418522.



SHIPPING WT. 4 LB (1.8 kg)

FIGURE 3-10
002225

GAS CARTRIDGES

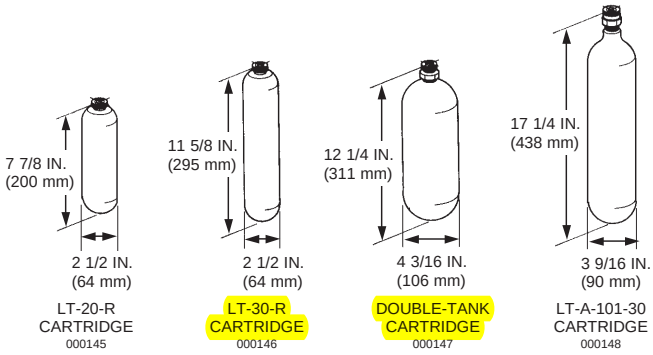
The R-102 system uses gas cartridges to store nitrogen or carbon dioxide expellant gases under pressure until the system is actuated, at which time the cartridge seal is punctured and the released gas expels liquid agent from one or more tanks through the discharge piping and out the discharge nozzles.

Four nitrogen gas cartridges and three carbon dioxide gas cartridges are available as shown in Figure 13.

Cartridges noted as TC/DOT are both Transport Canada (TC) and Department of Transportation (DOT) approved. Cartridges noted as DOT are Department of Transportation approved only.

Cartridge selection options are provided in Section 4 under Tank and Cartridge Requirements.

NITROGEN GAS CARTRIDGES



CARBON DIOXIDE CARTRIDGES

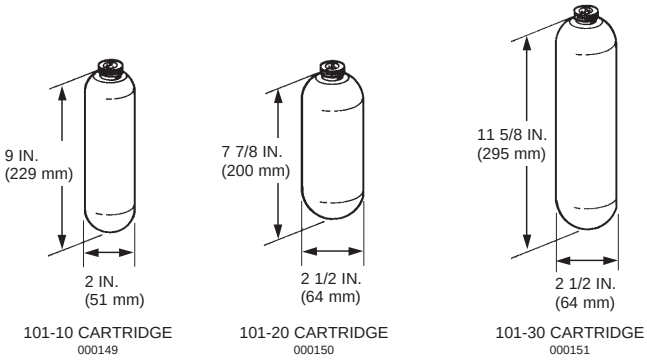


FIGURE 3-13

Additional cartridge shipping assemblies are available for European and Australian requirements.

Cartridge Description	European Part No.	Australian Part No.	TC/DOT Part No.
LT-20-R	428440	428948	423429
LT-30-R	428441	426553	423435
Double Tank	428446	426563	423493
LT-A-101-30	428442	426555	423491
101-10 – CO2	428443	N/A	423439
101-20 – CO2	428445	N/A	423441
101-30 – CO2	428444	N/A	423443

Note: For 101-10 cartridge, Part No. 15850 is DOT only.

NOZZLES

There are 11 types of discharge nozzles each designed to distribute the liquid agent in a uniform pattern throughout the hazard area:

1. 1/2N Nozzle
2. 1F Nozzle
3. 1W Nozzle
4. 1N Nozzle
5. 2W Nozzle
6. 230 Nozzle
7. 245 Nozzle
8. 260 Nozzle
9. 290 Nozzle
10. 2120 Nozzle
11. 3N Nozzle

Although these nozzles are similar in appearance and have certain common parts, the tip of each nozzle is designed for a specific application and must only be used in those areas. See Nozzle Application Chart in Section 4 – System Design, for individual nozzle usage. Nozzles are shipped with metal blow-off caps included.

A 25 pack of Nozzle O-rings (Part No. 439848) is also available.

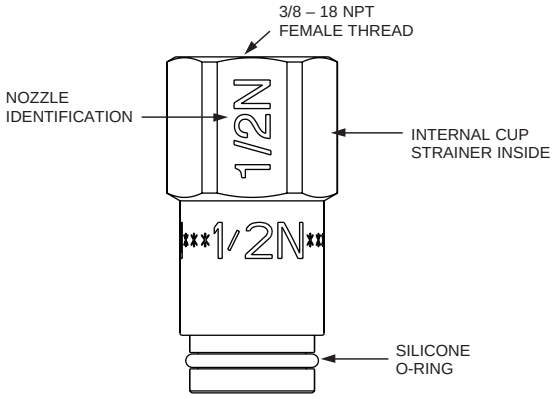


FIGURE 3-14
009474

Nozzle Identification Chart

Nozzle Type	Nozzle Part No.	Package Quantity	Nozzle Flow No.	Nozzle Material
1/2N Nozzle	439837	9	1/2	Chrome-Plated Body
1F Nozzle	439836	9	1	Chrome-Plated Body
1W Nozzle*	439839	25	1	Chrome-Plated Body
1N Nozzle*	439838	25	1	Chrome-Plated Body
2W Nozzle	439840	25	2	Chrome-Plated Body
230 Nozzle	439842	25	2	Chrome-Plated Body
245 Nozzle	439843	25	2	Chrome-Plated Body
260 Nozzle	439844	9	2	Chrome-Plated Body
290 Nozzle	439845	9	2	Chrome-Plated Body
2120 Nozzle	439846	9	2	Chrome-Plated Body
3N Nozzle	439841	9	3	Chrome-Plated Body

*Stainless steel versions are available in the 1W nozzle (Part No. 439864) and the 1N nozzle (Part No. 439865).

SILICONE LUBRICANT

Dow Corning Compound 111 (Part No. 78112) is available in a 5.3-ounce tube. Compound has excellent qualities for sealing and lubricating system components.

SWIVEL ADAPTOR

The Swivel Adaptor Assembly consists of a swivel nut, swivel body and swivel ball. All are chrome-plated. The swivel adaptor allows any nozzle to be rotated approximately 30° in all directions. Swivel Adaptors must be ordered as a Swivel Adaptor Shipping Assembly (Part No. 423572) which contains 25 Swivel Adaptors or Part No. 419385, which contains 9 Swivel Adaptors.

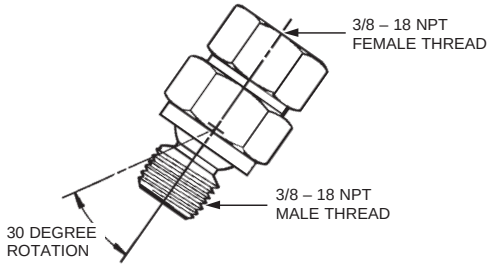


FIGURE 3-15
000003

METAL BLOW-OFF CAP

The Metal Blow-Off Cap helps keep the orifice of the nozzle free of grease or other substances that could interfere with agent distribution.

The Metal Blow-Off Cap Package (Part No. 439861) contains 10 blow-off caps.

Also available is a 10 pack of Stainless Steel Blow-Off Caps (Part No. 439866).

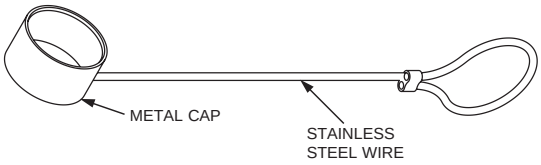


FIGURE 3-16
009475

REDUCING COUPLING

The reducing coupling (Part No. 436228) is made of stainless steel material with 3/8 in. x 1/2 in. NPT inlet threads. If necessary, the reducing coupling can be utilized when installing the Agent Distribution Hose Line Kit (Part No. 435982). Two couplings are required per Agent Distribution Hose.

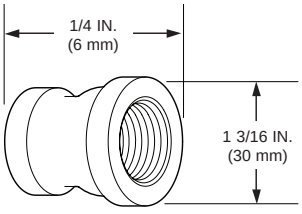


FIGURE 3-17

CONDUIT OFFSET ASSEMBLY

The conduit offset assembly (Part No. 435961) 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 allowed is 16. The Conduit Offset Shipping Assembly (Part No. 436063) consists of 6 conduit offsets.

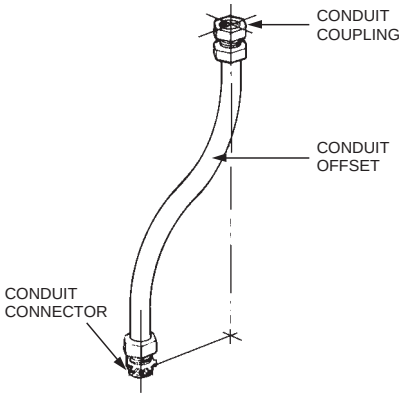


FIGURE 3-18
000153

"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. 78196), 3/8 in. (Part No. 77285), 1/2 in. (Part No. 77287), or 3/4 in. (Part No. 77289) pipe or conduit sizes. When using with EMT conduit, a conduit connector must be installed in each end of the adaptor. The "Quik-Seal" Adaptor Shipping Assembly must be ordered as stated below:

Size	Shipping Assembly Part No.	Qty.	Hole Size Required
1/4 in.	78196	24	3/4 in.
3/8 in.	77285	24	1 1/8 in.
1/2 in.	77287	24	1 1/8 in.
3/4 in.	77289	24	1 3/8 in.

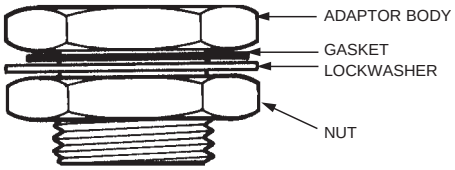


FIGURE 3-19
000154

"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. 79149), 3/8 in. (Part No. 79151), 1/2 in. (Part No. 79147), and EMT conduit size of 1/2 in. (Part No. 79153). Each "Compression-Seal" Adaptor Shipping Assembly must be ordered as stated below:

Size	Shipping Assembly Part No.	Qty.	Hole Size Required
1/4 in. Pipe / 1/2 in. tube	79149	24	3/4 in.
3/8 in. Pipe / 5/8 in. tube	79151	24	1 1/8 in.
1/2 in. Pipe	79147	24	1 1/8 in.
1/2 in. EMT Conduit	79153	24	1 1/8 in.

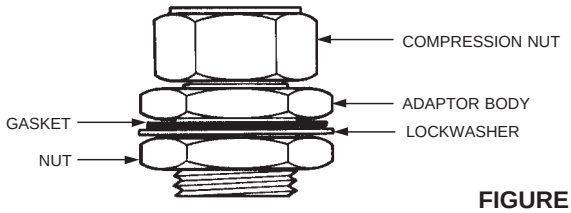
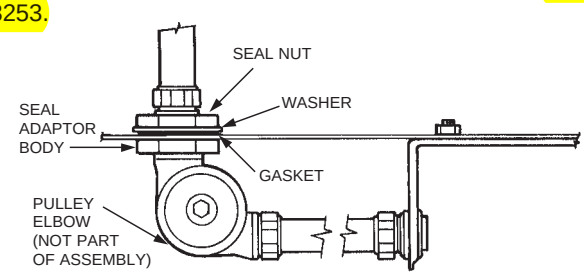


FIGURE 3-20
000155

"HOOD SEAL" ADAPTOR ASSEMBLY

This adaptor 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 duct. 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. "Hood Seal" Adaptors are available in quantities of six as Shipping Assembly Part No. 423253.



USE ONLY PULLEY ELBOW, PART NO. 423250

FIGURE 3-21
000156

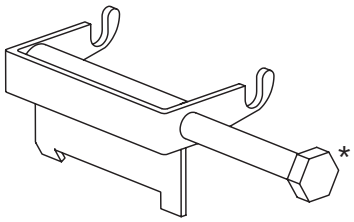
▸COCKING LEVER/LOCK PIN

The cocking lever is a component required to cock (arm) both the mechanical/electrical AUTOMAN release and the mechanical gas valve. After the AUTOMAN is cocked (armed), the lock pin must be inserted to eliminate the accidental firing of the release mechanism. These components are available as either an individual shipping assembly or a shipping assembly containing both. Listed below are the various shipping assembly part numbers.

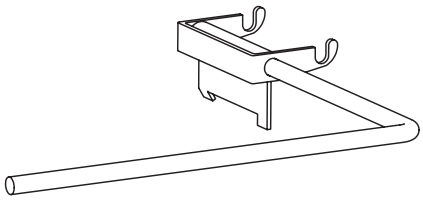
Part No.	Description
441042	Short Handle Cocking Lever with Lock Pin (Mechanical/Electrical AUTOMAN)
441041	Long Handle Cocking Lever with Lock Pin (Mechanical/Electrical AUTOMAN)
26310	Cocking Lever only (AUTOMAN II-C)
416018	Cocking Lever only (Mechanical Gas Valve)
438031	Lock Pin

Short Handle Cocking Lever

*Requires a crescent wrench or open end/box wrench



Long Handle Cocking Lever



Lock Pin

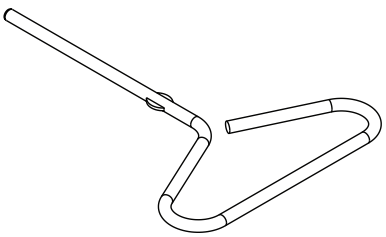


FIGURE 3-22
008325

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.

The scissor style detector 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 detector consists of two types of assemblies:

The Terminal Detector (Part No. 435546) 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. 435547) is any detector located in-line between the regulated release assembly and the terminal detector.

When using Part No. 435546 and 435547 detectors, a total of 15 detectors can be in one detection system: 14 series detectors (Part No. 435547) and 1 terminal detector (Part No. 435546).

Note 1: Series Detector (Part No. 435547) is also available as Part No. 435548, 25/Pkg.

▸ **Note 2**: Scissor-style linkage is also available in a 10-Pack (Part ▸ No. 439515).

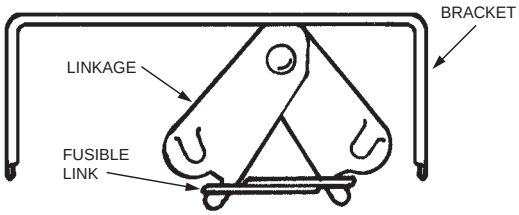
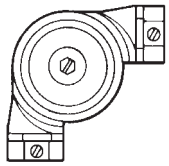


FIGURE 3-23
000159

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. 423250 has compression ring ends also for 1/2 in. conduit. Pulley elbows must be ordered in quantities of 50 as Shipping Assembly Part No. 415671 (socket end type) and Part No. 423251 (compression end type).

PART NO. 415670



PART NO. 423250

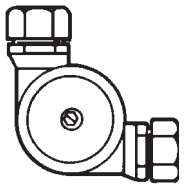


FIGURE 3-24
000160/000161

PULLEY TEE

The Pulley Tee (Part No. 427929) 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.

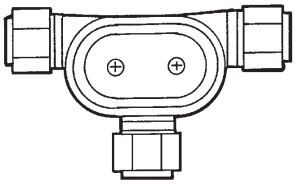


FIGURE 3-25
000447

▸ ANSUL 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 (15.2 m) (Part No. 15821) and 500 ft (152.4 m) (Part No. 79653) lengths. ▸ The ANSUL stainless steel cable contains a blue tracer cable.

REMOTE MANUAL PULL STATION

The remote manual pull station (Part No. 434618 or 435960) is made out of a molded red composite material. The red color makes the pull station more readily identifiable as the manual means for fire suppression system operation. The pull station is compatible with the ANSUL Flexible Conduit. The molded manual pull station should be mounted at a point of egress and positioned at a height determined by the authority having jurisdiction. Trim Rings (Part No. 427074) (pack of 10), are available.

Part No. 434618 (Without Wire Rope)
Part No. 435960 (With 50 ft (15.2 m) of Wire Rope)

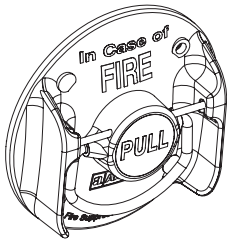


FIGURE 3-26
008326

FLEXIBLE CONDUIT

Flexible conduit allows for quicker installations and the convenience of being able to route the cable over, under and around obstacles. Flexible conduit can be used as a substitute for standard EMT conduit or can be used with EMT conduit. Flexible conduit can be used only with the Molded Manual Pull Station (Part No. 434618) and mechanical gas valve installations. The Flexible Conduit comes in a 500 ft (152.4 m) length (Part No. 434525) or together with 500 ft (152.4 m) of wire rope (Part No. 435959).

- A 50 ft (15.2 m) Flexible Conduit pre-fed with wire rope (Part No. 439104) is available.

Also available is a Flexible Conduit Strain Relief (50-pack) (Part No. 435979).

- A 50-pack of Flexible Conduit Inserts (Part No. 434347) and a 50-pack of P-Clips (Part No. 436150) are also available.

- **Note 1: Flexible conduit is intended for indoor use ONLY.**

- **Note 2: Flexible conduit cannot be used in detection systems.**

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 and includes the air cylinder, tubing, and fittings (Part No. 15733) for connection to the release mechanism.

Part No.	Description	Maximum Operating Pressure
55598	3/4 in. Gas Valve (ANSUL)	10 psi (0.69 bar)
55601	1 in. Gas Valve (ANSUL)	10 psi (0.69 bar)
55604	1 1/4 in. Gas Valve (ANSUL)	10 psi (0.69 bar)
55607	1 1/2 in. Gas Valve (ANSUL)	10 psi (0.69 bar)
55610	2 in. Gas Valve (ANSUL)	10 psi (0.69 bar)
25937	2 1/2 in. Gas Valve (ASCO)	5 psi (0.35 bar)
25938	3 in. Gas Valve (ASCO)	5 psi (0.35 bar)

Pipe Size (inches)	Flow Capacity (CFH) P.D. 1 in. WC 0.64 SP GR	BTU/HR, at 1 in. P.D. 0.64 SP GR 1000 BTU/ft^3 Natural Gas
3/4	751	751,000
1	1288	1,288,000
1 1/4	1718	1,718,000
1 1/2	2630	2,630,000
2	4616	4,616,000
2 1/2	5700	5,800,000
3	7100	7,300,000

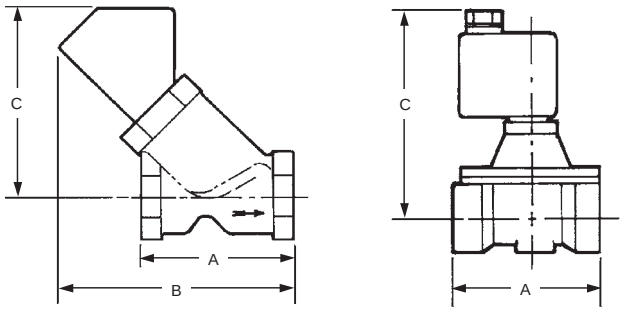
To calculate gas flow for other than 1 inch p.d.:

New cfh = (cfh at 1 inch) x $\sqrt{\text{new p.d.}}$

To calculate gas flow for other than 0.64 SP GR:

New cfh = (cfh at 0.64) x $\sqrt{\dfrac{0.64}{\text{New SP GR}}}$

Valve Size	A in.	A (mm)	B in.	B (mm)	C in.	C (mm)
3/4 in.	3 3/4	(95.3)	6 3/8	(161.9)	5 1/2	(139.7)
1 in.	3 3/4	(95.3)	6 3/8	(161.9)	5 1/2	(139.7)
1 1/4 in.	4 7/8	(123.8)	7 3/8	(187.3)	6 3/8	(161.9)
1 1/2 in.	4 7/8	(123.8)	7 3/8	(187.3)	6 3/8	(161.9)
2 in.	5 7/8	(149.2)	7 7/8	(200.0)	6 11/16	(169.9)
2 1/2 in.	7 13/16	(198.4)	-----		9 1/16	(230.2)
3 in.	7 25/32	(197.6)	-----		9 1/16	(230.2)



3/4 IN. THRU 2 IN. 004208

2 1/2 IN. THRU 3 IN. 004209

FIGURE 3-27

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 1/4 in., 1 1/2 in., 2 in., 2 1/2 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	Max. Operating Pressure
13707	3/4 in. Solenoid Gas Valve (ASCO)	25 psi (1.7 bar)
13708	1 in. Solenoid Gas Valve (ASCO)	25 psi (1.7 bar)
550360	1 1/4 in. Solenoid Gas Valve (ASCO)	25 psi (1.7 bar)
13709	1 1/2 in. Solenoid Gas Valve (ASCO)	25 psi (1.7 bar)
13710	2 in. Solenoid Gas Valve (ASCO)	25 psi (1.7 bar)
▸550363	2 1/2 in. Solenoid Gas Valve (ASCO)	5 psi (0.3 bar)
▸17643	3 in. Solenoid Gas Valve (ASCO)	5 psi (0.3 bar)

Pipe Size (inches)	Flow Capacity (CFH) P.D. 1 in. WC 0.64 SP GR	BTU/HR, at 1 in. P.D. 0.64 SP GR 1000 BTU/ft³ Natural Gas
3/4	264.96	247,500
1	1091.01	1,119,000
1 1/4	1662.49	1,730,000
1 1/2	1818.35	1,900,000
2	3117.18	3,251,000
2 1/2	6078.49	5,821,000
3	7169.51	7,430,000

To calculate gas flow for other than 1 inch p.d.:

New cfh = (cfh at 1 inch) x $\sqrt{\text{new p.d.}}$

To calculate gas flow for other than 0.64 SP GR:

New cfh = (cfh at 0.64) x $\sqrt{\frac{0.64}{\text{New SP GR}}}$

Valve Size	A in.	A (mm)	B in.	B (mm)
▸3/4 in.	3 5/16	(81)	3 5/8	(92)
1 in.	5	(127)	6 27/32	(174)
1 1/4 in.	7 13/16	(198)	7 29/32	(201)
1 1/2 in.	5	(127)	5 19/32	(142)
2 in.	6 3/32	(155)	5 15/16	(151)
2 1/2 in.	7 13/16	(198)	7 29/32	(201)
▸3 in.	7 13/16	(198)	7 29/32	(201)

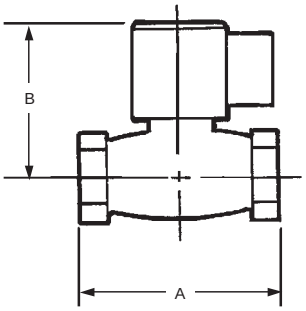


FIGURE 3-28
004210

MANUAL RESET RELAY

The Manual Reset Relay (Part No. 426151) is required when using an electrical gas valve shut-off system. After the electric gas valve has closed, either due to system actuation or power failure, the valve cannot be re-opened, allowing gas to flow, until the reset relay button is manually pressed, re-energizing the circuit. The reset relay is available 120 VAC. The manual reset relay is also recommended for electrical shut down.

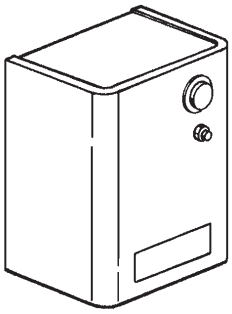


FIGURE 3-29
000087

ELECTRICAL SWITCHES

The electrical switches are intended for use with electric gas valves, alarms, contactors, lights, contractor supplied electric power shut-off devices and other electrical devices that are designed to shut off or turn on when the system is actuated.

Switches are available in kits: One Switch Kit (Part No. 423878), Two Switch Kit (Part No. 423879), Three Switch Kit (Part No. 423880), and Four Switch Kit (Part No. 423881). Mounting hardware and 24 in. (610 mm) long wire leads are provided with each kit. A Two-Switch Assembly without wire leads (Part No. 436770) is also available. Each switch has a set of single-pole, double-throw contacts rated at:

UL/cUL/CSA Rating	ENEC Rating
250 VAC, 21A Resistive	IE4T105µ Approved
250 VAC, 2 HP	250V, 21A Resistive
125 VAC, 1 HP	8A Motor Load

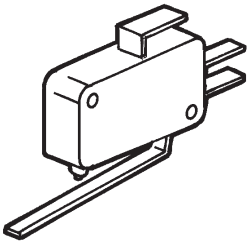


FIGURE 3-30
001612

ALARM INITIATING SWITCH

The Alarm Initiating Switch Kit (Part No. 428311) can be field mounted within the AUTOMAN release. This switch must be used to close a supervised alarm circuit to the building main fire alarm panel when the AUTOMAN release actuates. This action will signal the fire alarm panel that there was a system actuation in the kitchen area. The switch kit contains all necessary mounting components along with a mounting instruction sheet. The switch is rated 50 mA, 28 VDC.

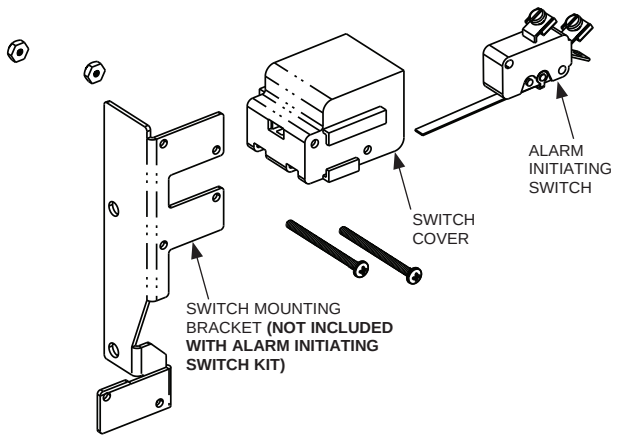


FIGURE 3-31
004890

REGULATOR TEST KIT

The Test Kit Assembly (Shipping Part No. 56972) is required to test the regulator setting and nitrogen flow during 12-year maintenance examinations. This will ensure that the regulator is functioning properly.

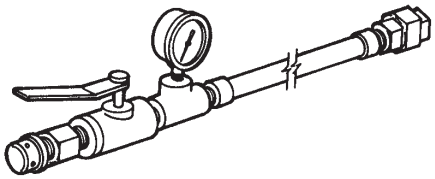


FIGURE 3-32
000169

VENT PLUG ASSEMBLY

The Vent Plug Assembly (Part No. 74274) is installed on the agent tank adaptor to prevent pressure buildup within the agent tank or distribution lines due to temperature fluctuations.

CARTRIDGE RECEIVER GASKET

The Cartridge Receiver Gasket (Part No. 181) is installed in the release and actuator assembly cartridge receiver to create a seal between the cartridge receiver assembly and the cartridge.

FUSIBLE LINK

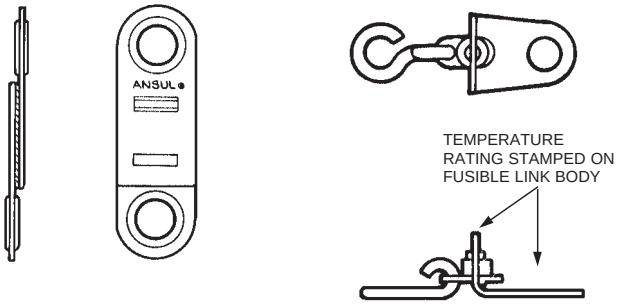
Select correct UL Listed fusible link(s) for installation in detector(s) according to the temperature condition chart below:

SL STYLE

Fusible Link Shipping Assembly Part No.	Temperature Rating	To Be Used Where Temperature Does Not Exceed	Color of Link
439085 (25)	165 °F	100 °F (74 °C)	Black (38 °C)
439086 (25)	212 °F	150 °F (100 °C)	White (66 °C)
439087 (25)	280 °F	225 °F (138 °C)	Blue (107 °C)
439088 (25)	360 °F	290 °F (182 °C)	Red (143 °C)
439089 (25)	450 °F	360 °F (232 °C)	Green (182 °C)

A-PC STYLE

Fusible Link Shipping Assembly Part No.	Temperature Rating	To Be Used Where Temperature Does Not Exceed
439227 (10)	165 °F (74 °C)	100 °F (38 °C)
439228 (10)	212 °F (100 °C)	150 °F (66 °C)
439229 (10)	280 °F (138 °C)	225 °F (107 °C)
439230 (10)	360 °F (182 °C)	290 °F (143 °C)
439231 (10)	450 °F (232 °C)	360 °F (182 °C)
439232 (25)	500 °F (260 °C)	400 °F (204 °C)



SL STYLE
000170

A-PC STYLE
000171

FIGURE 3-33

MAXIMUM REGISTERING THERMOMETER

The Maximum Registering Thermometer (Part No. 15240) may be used to indicate the highest normal temperature for the protected area. Once this is established, the correct rated fusible link can be chosen. Other methods for determining maximum temperatures may be used.

HOSE/GROMMET PACKAGE

The Hose/Grommet Package (Part No. 418511) consists of a 24 in. rubber hose and two grommets. This package is required when expellant gas hose is routed outside the AUTOMAN Regulated Release, Regulated Actuator, and/or tank enclosure assemblies.

IN-LINE BURST DISC ASSEMBLY (MANIFOLDED SYSTEMS ONLY)

The in-line burst disc assembly is required to eliminate the siphoning of the agent up the pipe during extreme temperature variations. In addition to eliminating the siphoning effect, the common in-line burst disc assembly eliminates the possibility of one or more individual discs located in the tank adaptor from failing to burst. The assembly consists of a stainless steel body which houses the burst disc. When utilizing this assembly in a manifolded system, it is necessary to modify (remove) the burst disc located in all of the R-102 tank adaptors in the system. The in-line burst disc assembly is to be mounted as close to the tank outlet as possible. After system discharge, the assembly must be disassembled and a new burst disc installed.

Part No.	Description
416970	In-Line Burst Disc Assembly
417911	Burst Disc (Pack of 10)

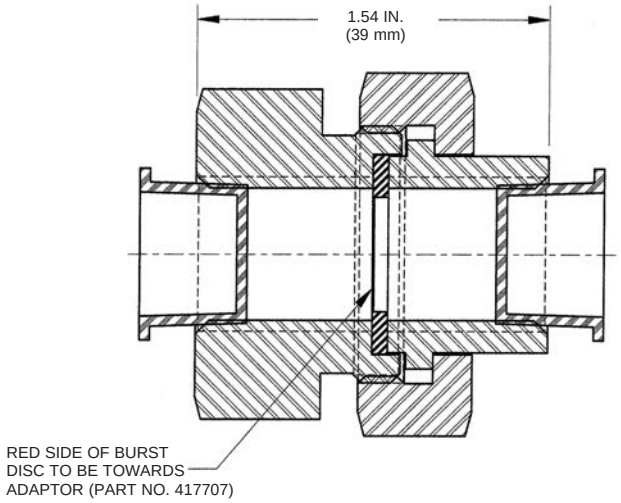


FIGURE 3-34
008383

1/4 IN. CHECK VALVE

The 1/4 in. check valve (Part No. 25627) blocks the flow of actuation gas from the actuator that was actuated to the actuator(s) that was not actuated. This prevents actuation gas from escaping from an open actuator which may have had the cartridge removed.

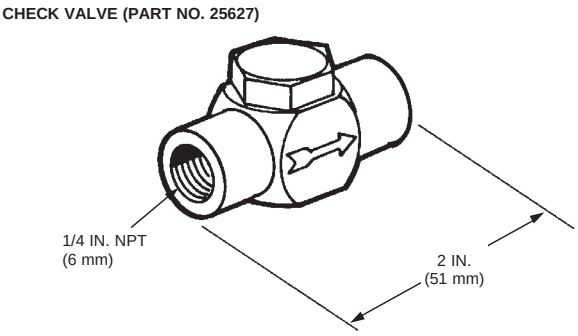


FIGURE 3-35
000899

NOZZLE AIMING DEVICE

The Nozzle Aiming Device (Part No. 439877) is available to properly aim each nozzle to the correct aiming point. The device clamps to the nozzle and emits a small laser light that reflects on the surface that it is aiming at. The nozzle can then be rotated to point at a predetermined aiming point and then tightened to hold that angle. The aiming device adaptor attaches to the nozzle. The shipping assembly consists of the aiming device and the adaptor.

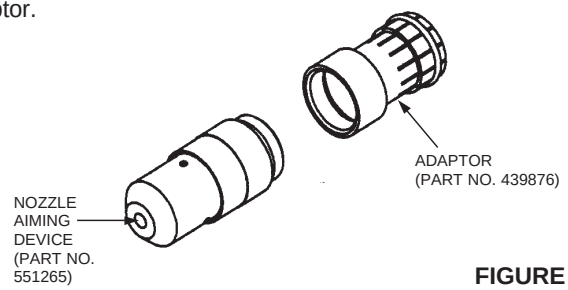


FIGURE 3-36
006520

STAINLESS STEEL BRAIDED ACTUATION HOSE

The Stainless Steel Actuation Hose is used to connect the actuation line compression tees between each pneumatic actuator. The hose has the same thread, 7/16-20, as the fittings. The actuation hose allows flexibility between the AUTOMAN and each regulated actuator.

Hose

Part No.	Length	Couplings
31809	16 in. (406 mm)	7/16-20 x 7/16-20 Females
32335	20 in. (508 mm)	7/16-20 x 7/16-20 Females
32336	24 in. (610 mm)	7/16-20 x 7/16-20 Females
430815	42 in. (1067 mm)	7/16-20 Female x 1/4 in. NPT Male

Fitting

Part No.	Description
31810	Male Elbow (7/16-20 x 1/4 in. NPT)
31811	Male Tee (7/16-20 x 7/16-20 x 1/4 in. NPT)
415371	Tee (7/16-20 x 1/8 in. Male NPT x 1/8 in. Female NPT)
32338	Male Straight Connector (7/16-20 x 1/4 in. NPT)
25627	1/4 in. Check Valve

FIGURE 3-37
000433

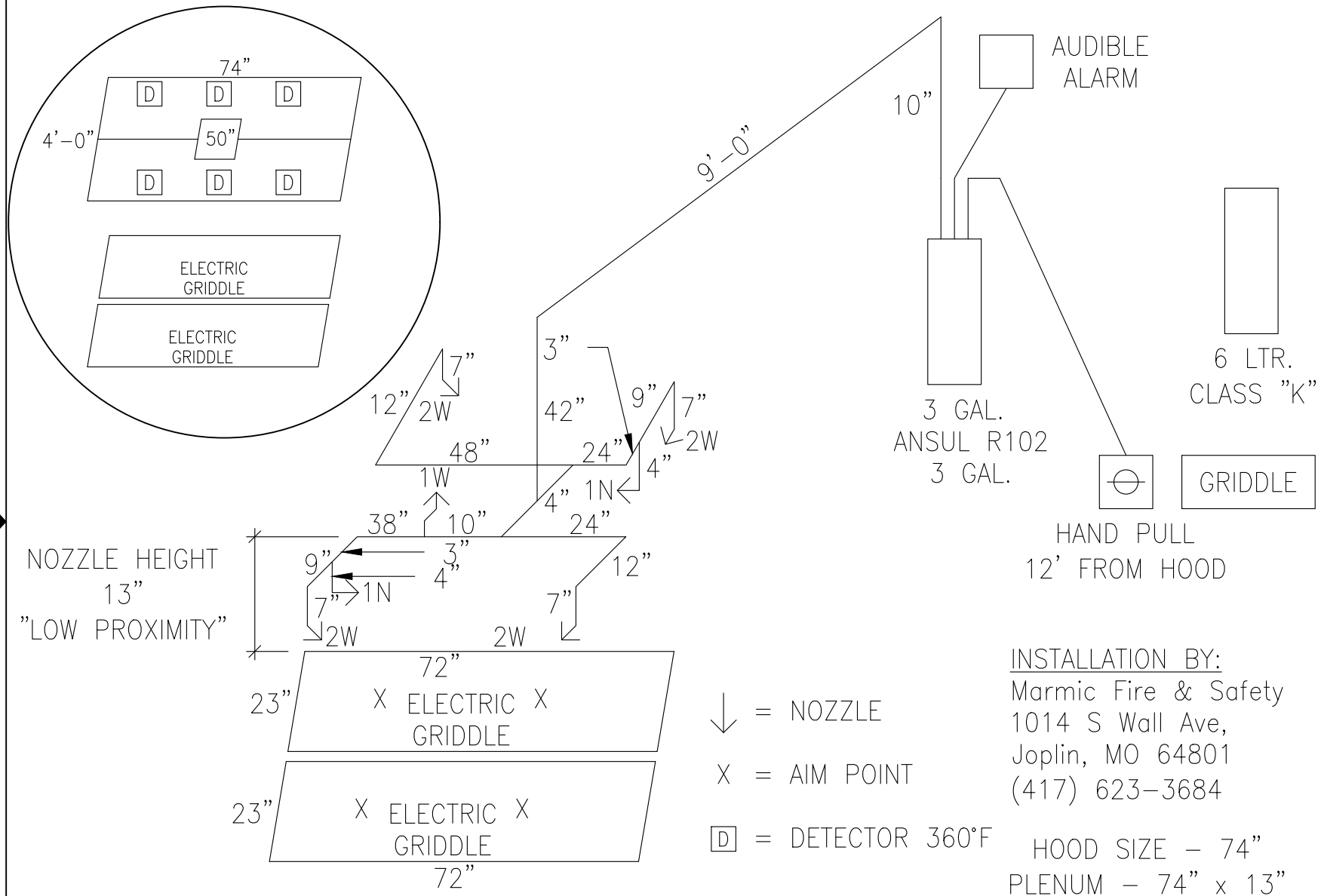
AGENT DISTRIBUTION HOSE AND RESTRAINING CABLE KIT

The Agent Distribution Hose and Restraining Cable Kit (Part No. 435982) consists of a 5 ft (1.5 m) long Agent Distribution Hose, a 3 ft (0.9 m) long Restraining Cable, and a Restraining Cable Hardware Package. The Agent Distribution Hose can be utilized with castered cooking appliances with castered supports found in commercial kitchens. The hose allows for movement of the appliance for cleaning without having to disconnect any fire suppression system discharge piping.

Note: The Agent Distribution Hose is authorized for use with only UL Listed ANSUL Wet Chemical Restaurant Fire Suppression Systems.

SECTION B

DESIGN DATA



INSTALLATION BY:
Marmic Fire & Safety
1014 S Wall Ave,
Joplin, MO 64801
(417) 623-3684

HOOD SIZE – 74"
PLENUM – 74" x 13"
DUCT – 15" x 10"

NFPA 96(2017 EDITION)
NFPA17A (2017 EDITION)

1 ORIGINAL GRIDDLE HOOD

FS1 SCALE: N.T.S.

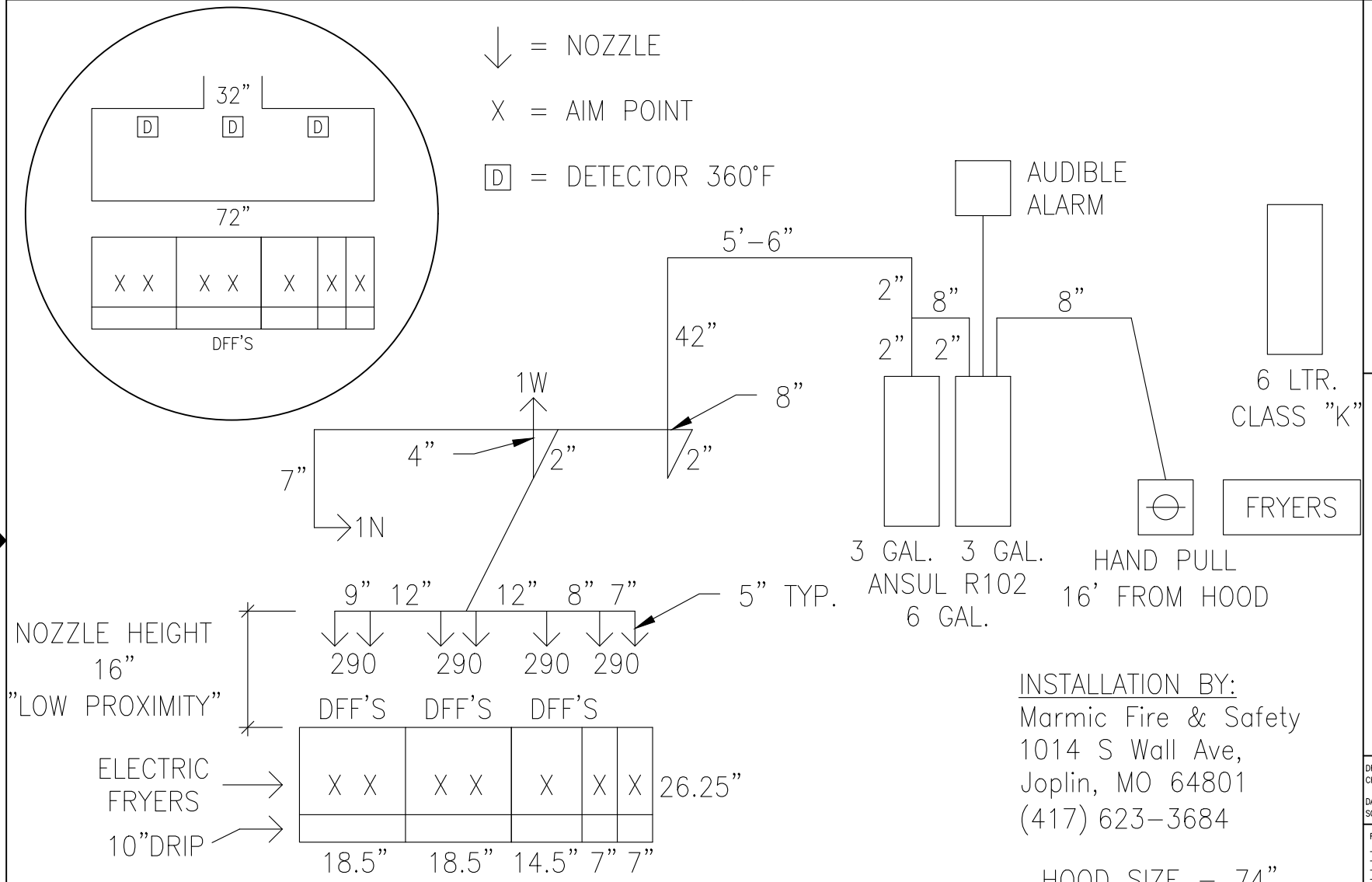
Marmic Fire & Safety
1014 S Wall Ave
Joplin, MO 64801
(417) 623-3684

WHATABURGER
UNIT 1276
204 SW MO-150 HWY
LEES SUMMIT, MO 64082

DRAWN BY: C.L.C.
CHECKED BY: C.A.L.
DATE: 3/12/2024
SCALE: N.T.S.

REVISION NO. & DATE
-
-
-
-
-
-

TITLE: FIRE SUPPRESSION SYSTEM
SHEET NO: FS1
DWG NO.



INSTALLATION BY:
Marmic Fire & Safety
1014 S Wall Ave,
Joplin, MO 64801
(417) 623-3684

HOOD SIZE – 74"
PLENUM – 74" x 13"
DUCT – 15" x 10"

NFPA 96(2017 EDITION)
NFPA17A (2017 EDITION)

1 ORIGINAL FRYER HOOD

FS2 SCALE: N.T.S.

Marmic Fire & Safety
1014 S Wall Ave
Joplin, MO 64801
(417) 623-3684

WHATABURGER
UNIT 1276
204 SW MO-150 HWY
LEES SUMMIT, MO 64082

DRAWN BY: C.L.C.
CHECKED BY: C.A.L.
DATE: 3/12/2024
SCALE: N.T.S.

REVISION NO. & DATE

TITLE: FIRE SUPPRESSION SYSTEM
SHEET NO: FS2
DWG NO.

SECTION C

SUPPORTING DOCUMENTS

DESIGN AND APPLICATION

The ANSUL R-102 Restaurant Fire Suppression System is ▸ developed and tested 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 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 system is also capable of shutting down appliances at system actuation. For appliance shutdown requirements, refer to the current version of NFPA 17A, “Standard For Wet Chemical Extinguishing Systems,” and NFPA 96, “Standard For Ventilation Control and Fire Protection of Commercial Cooking Operations.”

Additional equipment includes: remote manual pull station, mechanical and electrical gas valves, 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.

▸ Make up or supply air fans, internal to the exhaust hood(s) being protected, shall be shut down upon system actuation.

Along with the fire suppression system, the total system design must include hand portable fire extinguisher(s) located within the cooking/restaurant area that can be used to manually suppress a fire that may be burning in an unprotected area. Class K extinguisher(s) must be provided for hazards where there is a potential for fires involving combustible cooking media (vegetable or animal oils and fats). Refer to NFPA 10, “Standard For Portable Fire Extinguisher,” for additional information.

UL LISTING

The R-102 Restaurant Fire Suppression System has been tested and is listed by Underwriters Laboratories, Inc. as a pre-engineered system. The system is in compliance with UL Test Standard 300. These tests require extinguishment of fires which are initiated in deep fat fryers, ranges, griddles, char-broilers, woks, 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.

SYSTEM APPROVALS

- UL EX3470
- ULC EX3470
- ▸ COA #5663 (NYC)

DEFINITION OF TERMS

Actuation Gas Line: Piping and/or stainless steel braided hose assemblies from the AUTOMAN Regulated Release Assembly which supplies high pressure nitrogen or carbon dioxide to the Regulated Actuator Assembly for multiple-tank system actuation.

Agent Tank: A pressure vessel containing the liquid agent.

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

AUTOMAN Regulated Release Assembly (Mechanical): An assembly which contains the regulated release mechanism, agent tank (ordered separately), 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 siliconized rubber or metal cap which covers the end of the nozzle to protect the nozzle tip and minimize cooking grease migration into the nozzle orifice.

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

SYSTEM DESIGN

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.

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 AUTOMAN Release can be either an R-102 or a PIRANHA AUTOMAN Release and can actuate up to two additional R-102 or PIRANHA Regulated Actuators. In systems utilizing a 101 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 in. (914 mm).
- 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.

One of the key elements for restaurant fire protection is a correct system design. This section is divided into 10 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 duct, plenum, and individual appliance protection. This section must be completed before determining tank quantity and piping requirements.

Duct Protection – Single Nozzle

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.

Note: Ducts from multiple hoods connected to a common ductwork must be protected in compliance with NFPA 96 and all local codes.

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

GENERAL INFORMATION

1. Nozzles must be located 2-8 in. (51-203 mm) into the center of the duct opening, discharging up. See Figure 4-1.

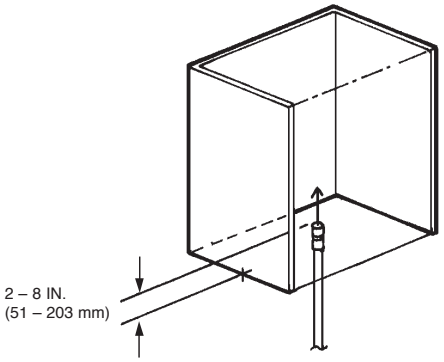


FIGURE 4-1
000173

2. In installations where a UL listed damper assembly is employed, the duct nozzle can be installed beyond the 8 in. (203 mm) maximum, to a point just beyond the damper assembly that will not interfere with the damper. Exceeding the maximum of 8 in. (203 mm) in this way will not void the UL listing of the system.
3. Previously listed three flow number and five flow number duct protection detailed in earlier published manual (Part No. 418087-06) can also still be utilized.

DUCT SIZES UP TO 50 IN. (1270 mm)
PERIMETER/ 16 IN. (406 mm) DIAMETER

- One 1W nozzle = one flow number
- 50 in. (1270 mm) perimeter maximum
- 16 in. (406 mm) diameter maximum

DUCT SIZES UP TO 100 IN. (2540 mm)
PERIMETER/ 32 IN. (812 mm) DIAMETER

- One 2W nozzle = two flow numbers
- 100 in. (2540 mm) perimeter maximum
- 32 in. (812 mm) diameter maximum

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

Description	3.0 Gallon System	1.5 Gallon System
2W Nozzle	Maximum 100 in. (2540 mm) Perimeter	Maximum 100 in. (2540 mm) Perimeter
1W Nozzle	Maximum 50 in. (1270 mm) Perimeter	Maximum 50 in. (1270 mm) Perimeter

Plenum Protection (Continued)

HORIZONTAL PROTECTION – OPTION 2

1W NOZZLE – "V" BANK PROTECTION

One 1W nozzle will protect 6 linear feet (1.8 m) of "V" bank plenum. The nozzle must be mounted horizontally, positioned 1/3 the filter height down from the top of the filter. Nozzles can be located at 6 ft (1.8 m) spacings on longer plenums. The nozzle must be positioned 0-6 in. (0-152 mm) from the end of the hood to the tip of the nozzle. See Figure 4-10.

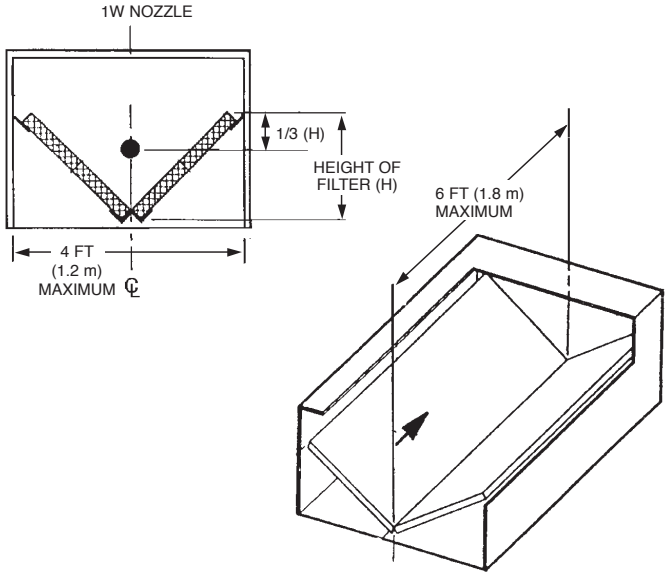


FIGURE 4-10
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TWO 1N NOZZLES – "V" BANK PROTECTION

Two 1N nozzles will protect 10 linear feet (3.0 m) by 4 ft (1.2 m) wide of "V" bank plenum. The nozzles must be mounted in the plenum, 2 to 4 in. (50 to 101 mm) 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. (0-381 mm) from the end of the hood to the tip of the nozzle. See Figure 4-11.

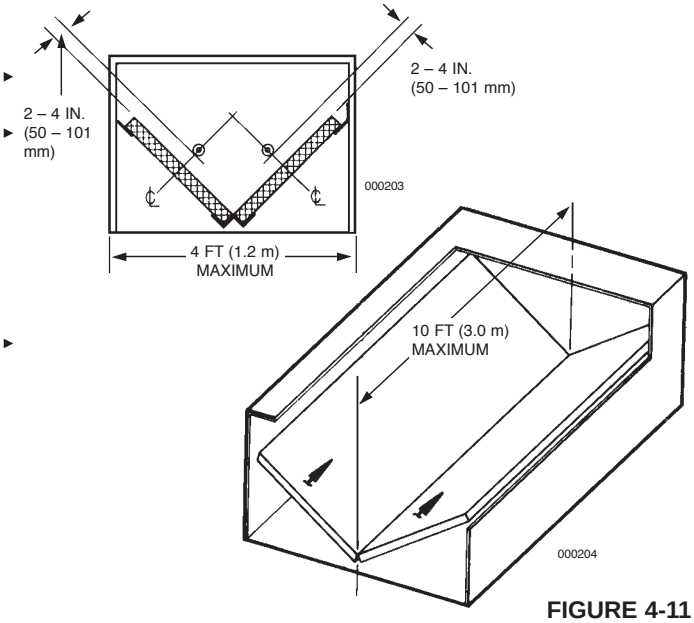


FIGURE 4-11

For a plenum, either single or "V" bank, with a linear extension longer than 10 ft (3.0 m), each bank may be protected using one 1N nozzle every 10 ft (3.0 m) or less depending on the overall length of the plenum. See Figure 4-12. The nozzles may point in the opposite directions as long as the entire plenum area is protected, and the 10 ft (3.0 m) limitation is not exceeded. See Figure 4-13. The nozzle positioning shown in Figure 4-14 is not an acceptable method of protection because the plenum area directly under the tee is not within the discharge pattern of either nozzle.

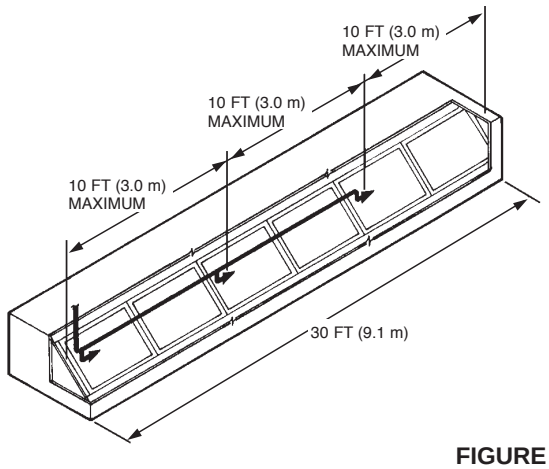


FIGURE 4-12
000206

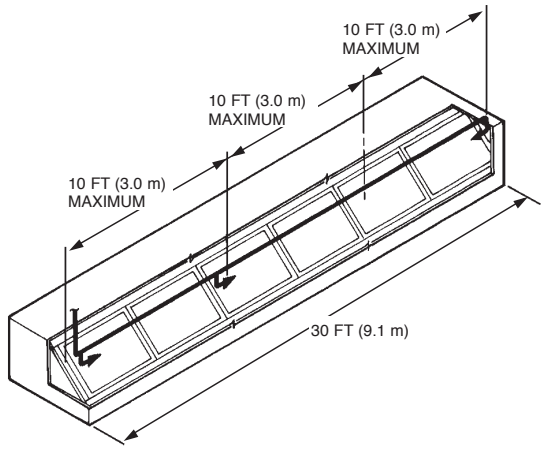


FIGURE 4-13
000207

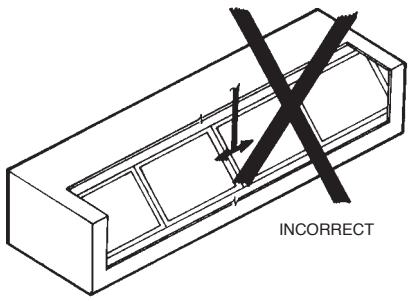
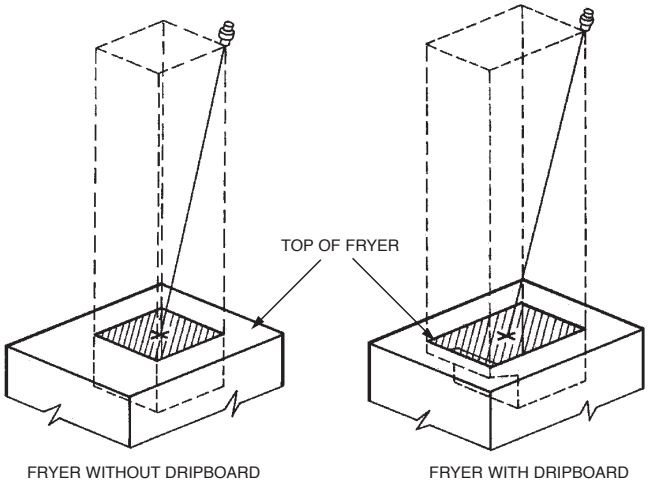


FIGURE 4-14
000208

Fryer – Single Nozzle Protection (Continued)

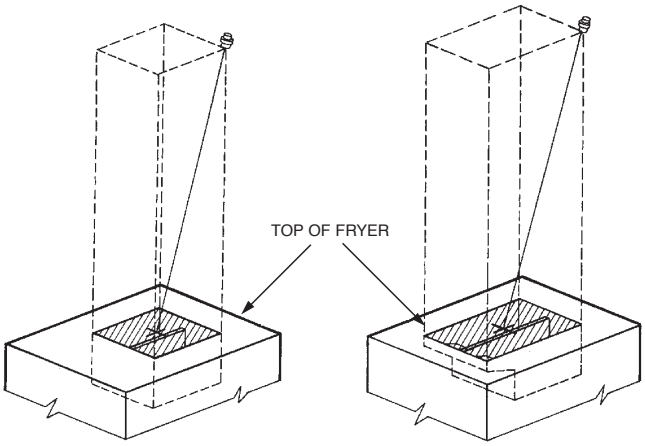
Maximum Area Dimensions – Single Nozzle Fryer Protection

Max. Size Frypot Only	Max. Size Overall With Dripboard	Type of Nozzle	Nozzle Height Above Top of Fryer	Nozzle Location
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)	See Figure 4-15 and 4-16
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)	245	20 in. to 27 in. (508 mm to 685 mm)	See Figure 4-15 and 4-16
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)	290	13 in. to 16 in. (330 mm to 406 mm)	See Figure 4-17
Full or Split Vat 14 1/2 in. x 14 in. ▸ (368 mm x 355 mm)	Full or Split Vat 14 1/2 in. x 26 1/2 in. (368 mm x 673 mm)	290	16 in. to 27 in. (406 mm to 685 mm)	See Figure 4-17



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

FIGURE 4-15
002280



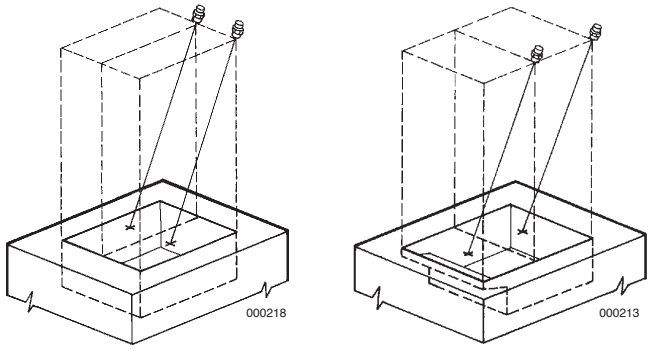
NOZZLE TIP POSITIONED ANYWHERE ALONG OR WITHIN PERIMETER OF COOKING SURFACE AND AIMED TO THE CENTER OF THE COOKING AREA.

FIGURE 4-16
002283

Fryer – Multiple Nozzle Protection (Continued)

Maximum Area Dimension – Multiple Nozzle Fryer Protection

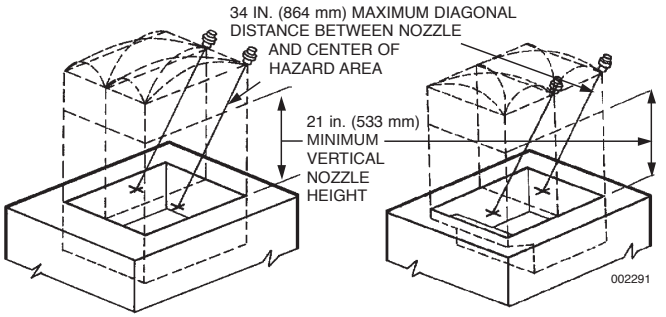
Max. Size Module Frypot Only	Max. Size Module Overall With Dripboard	Type of Nozzle	Nozzle Height Above Top of Fryer	Nozzle Location
Full or Split Vat 21 in. x 210 in.^{2} (533 mm x 0.14 m^2)	Full or Split Vat 21 in. x 294 in.^{2} (533 mm x 0.19 m^2)	230	27 in. to 47 in. (686 mm to 1194 mm)	See Figure 4-21
Full or Split Vat 21 in. x 210 in.^{2} (533 mm x 0.14 m^2)	Full or Split Vat 21 in. x 294 in.^{2} (533 mm x 0.19 m^2)	245	20 in. to 27 in. (508 mm to 686 mm)	See Figure 4-21
Full or Split Vat 21 in. x 210 in.^{2} (533 mm x 0.14 m^2)	Full or Split Vat 21 in. x 294 in.^{2} (533 mm x 0.19 m^2)	290	13 in. to 16 in. (330 mm to 406 mm)	See Figure 4-22
25 3/8 x 370.5 in^2 (644 mm x 0.24 m^2)	25 3/8 x 495 in^2 (644 mm x 0.32 m^2)	290	13 in. to 16 in. (330 mm to 406 mm)	See Figure 4-22
Full or Split Vat 26 1/2 in. x 203 in.^{2} (673 mm x 0.13 m^2)	Full or Split Vat 26 1/2 in. x 384 1/4 in.^{2} (673 mm x 0.25 m^2)	290	16 in. to 27 in. (406 mm to 686 mm)	See Figure 4-22
25 3/8 x 370.5 in^2 (644 mm x 0.24 m^2)	25 3/8 x 495 in^2 (644 mm x 0.32 m^2)	3N	See Figure 4-23	See Figure 4-23
27 3/4 x 324 in.^{2} (704 mm x 0.21 m^2)	27 3/4 x 497 in^2 (704 mm x 0.32 m^2)	3N	25 in. to 35 in. (635 mm to 889 mm)	See Figure 4-24



FRYER WITHOUT DRIPBOARD FRYER WITH DRIPBOARD

POSITION NOZZLE TIP ANYWHERE ALONG OR WITHIN THE PERIMETER OF THE MODULE IT IS PROTECTING AND AIM AT THE MIDPOINT OF THAT MODULAR AREA.

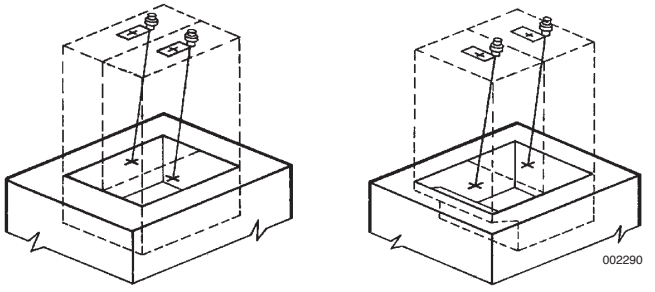
FIGURE 4-21



FRYER WITHOUT DRIPBOARD FRYER WITH DRIPBOARD

3N NOZZLE TIP MUST BE POSITIONED ANYWHERE ALONG OR WITHIN THE PERIMETER OF THE MODULAR IT IS PROTECTING AND AIMED AT THE MIDPOINT OF THAT RESPECTIVE MODULE AREA.

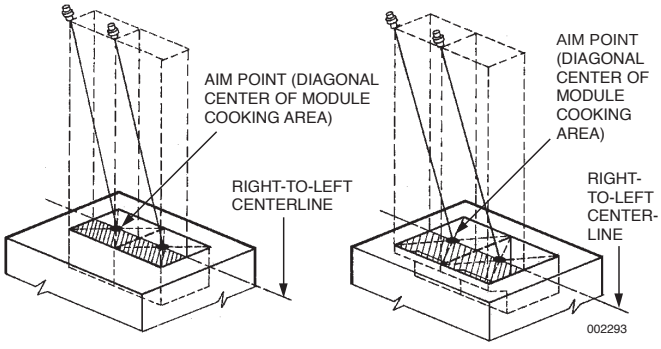
FIGURE 4-23



FRYER WITHOUT DRIPBOARD FRYER WITH DRIPBOARD

290 NOZZLE TIP POSITIONED OVER THE MIDPOINT OF THE RESPECTIVE MODULAR AREA ± 3 IN. (76 mm) FROM THE MIDPOINT ALONG THE LONGEST SIDE OF THE MODULE AND ± 1 IN. (25 mm) FROM THE MIDPOINT ALONG THE SHORTEST SIDE OF THE MODULE AND AIMED AT THE MIDPOINT OF THE MODULE.

FIGURE 4-22



FRYER WITHOUT DRIPBOARD FRYER WITH DRIPBOARD

THE 3N NOZZLE TIP MUST BE POSITIONED ANYWHERE ALONG OR WITHIN THE PERIMETER AND FORWARD OF THE RIGHT-TO-LEFT CENTERLINE OF THE COOKING AREA. THE AIMING POINT OF THE NOZZLE MUST BE AT THE DIAGONAL CENTER OF THE MODULAR COOKING AREA.

FIGURE 4-24

Griddle Protection 2120 (2-Flow) Nozzle – Low Proximity Application

Option 2b – Nozzle Perimeter Located (Continued)

10 in. to 20 in. (254 mm to 508 mm) above the cooking surface.

The low proximity application uses the 2120 nozzle.

▸ The nozzle is stamped with 2120 indicating this is a two-flow nozzle and must be counted as two flow numbers.

One 2120 nozzle will protect a maximum cooking area of 1440 in.^{2} (92903 mm^2) with a maximum dimension of 48 in. (1219 mm).

When using this nozzle for griddle protection, the nozzle must be positioned along the perimeter to 2 in. (50 mm) inside perimeter, and aimed at the center of the cooking surface. See Figure 4-47 and 4-48.

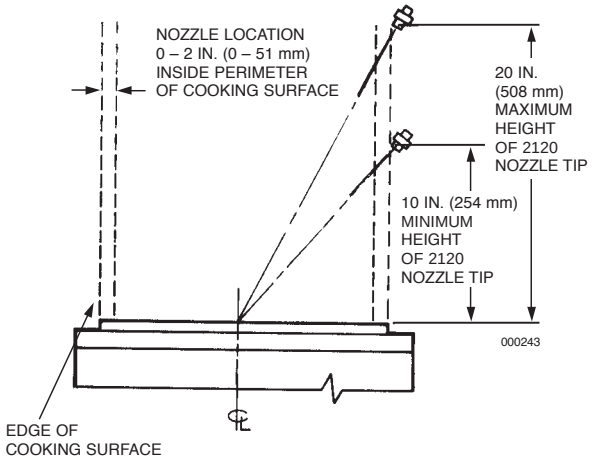


FIGURE 4-47
000243

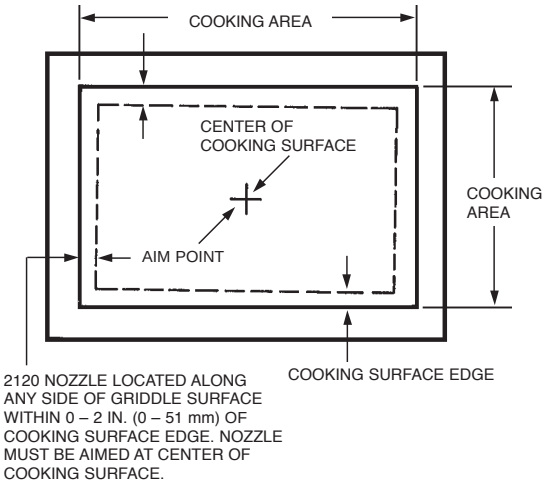


FIGURE 4-48
000241

Griddle Protection 2W (2-Flow) Nozzle – Low Proximity Application

Option 2c – Nozzle Perimeter Located (Continued)

10 in. to 20 in. (254 mm to 508 mm) above the cooking surface.

The low proximity application uses the 2W nozzle.

▸ The nozzle is stamped with 2W indicating this is a two-flow nozzle and must be counted as two flow numbers.

One 2W nozzle will protect a maximum cooking area of 1080 in.^{2} (69677 mm^2) with a maximum dimension of 36 in. (914 mm).

When using this nozzle for griddle protection, the nozzle must be ▸ positioned 0-10 in. (0-254 mm) forward or behind the right to left centerline of the hazard area. See the diagram below for nozzle ▸ location and aiming.

OVERHEAD VIEW

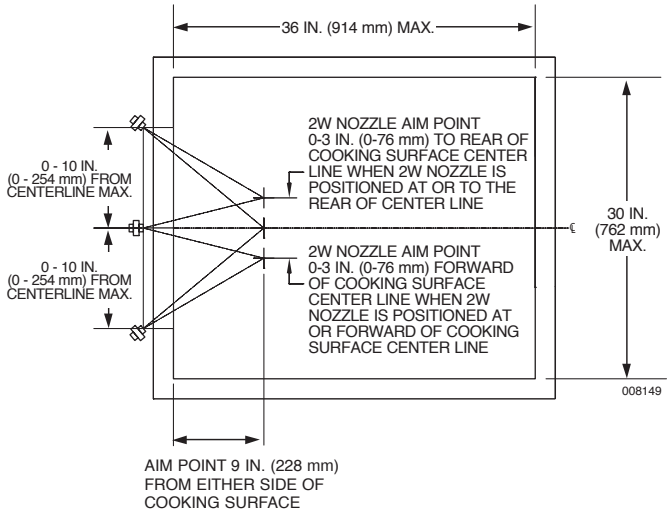


FIGURE 4-49

FRONT VIEW

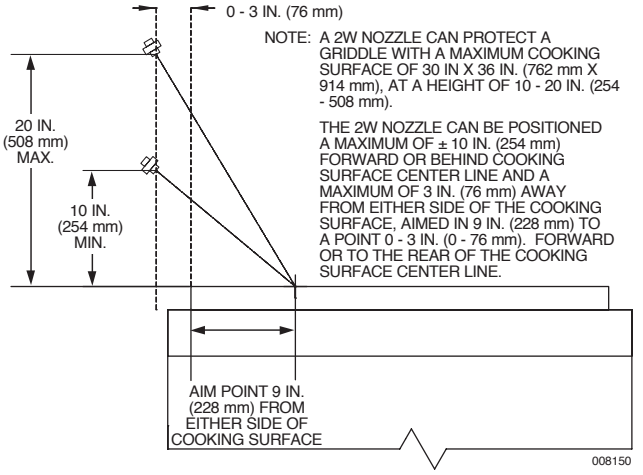


FIGURE 4-50

SECTION D

INSTALLER QUALIFICATION

Section D

Whataburger

Fire Suppression System Submittal