

# PIRANHA® RESTAURANT FIRE SUPPRESSION SYSTEMS

Data/Specifications



## FEATURES

- UL and ULC Listed – Meets Requirements of UL 300
- Overlapping Appliance Protection
- Two Nozzle Styles Cover All Hazards
- Dual Agent
- Rapid Flame Knockdown
- New Proprietary Agent With Increased Performance
- Fifteen Times Faster Than Existing Agents in Reducing the Temperature of the Grease Below the Reflash Point
- Reliable Cartridge Operated
- Aesthetically Appealing
- Self-Contained Water Tank Option Available
- ▶ ■ CE Marked

## APPLICATION

The PIRANHA® Restaurant Fire Suppression System is an automatic, pre-engineered, fixed, fire suppression system designed to protect the following areas associated with cooking equipment; ventilating equipment including hoods, ducts, plenums, and filters; fryers; griddles and range tops; upright, natural charcoal, or chain-type broilers; Electric, lava rock, mesquite or gas-radiant char-broilers and woks.

The system is ideally suitable for use in restaurants, hospitals, nursing homes, hotels, schools, airports, and other similar facilities.

Use of the PIRANHA Restaurant system is limited to interior applications only. The regulated release and tank assemblies must be mounted in an area where the air temperature will not fall below 32 °F (0 °C) or exceed 130 °F (54 °C). The system must be designed and installed within the guidelines of the UL Listed Design, Installation, Recharge, and Maintenance Manual.

## SYSTEM DESCRIPTION

The PIRANHA Restaurant Wet Agent Fire Suppression system is a dual-agent, pre-engineered, fixed, automatic fire extinguishing system developed specifically for improved fire protection of commercial restaurant cooking appliances, exhaust hoods and ducts.

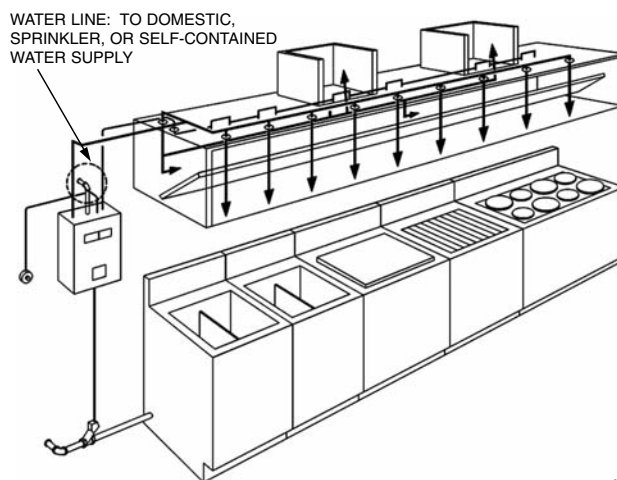
The PIRANHA system is available in three (3) sizes:

- PIRANHA-7 (1.5 gallon, 7 nozzle capacity)
- PIRANHA-10 (2.25 gallon, 10 nozzle capacity)
- PIRANHA-13 (3.0 gallon, 13 nozzle capacity)

When actuated, the system discharges a fixed amount of proprietary wet chemical agent followed by water through the same nozzles. Water is provided by a connection to the potable water supply. Advantages of the dual system over single wet agent systems include: (1) more robust suppression of hostile fires in protected restaurant hazards; (2) greater hazard area protection with less wet agent; (3) faster flame extinguishment and securement of hot fuels such as cooking shortening; (4) overlapping protection of cooking appliances from fixed nozzle spacings, allowing appliances to be interchanged freely without changing nozzles; (5) more rapid cooling of hot fuels and appliances to prevent reignition; (6) simplicity of design and installation.

The addition of the water discharge significantly aids in increasing and prolonging the foam blanket generated by the wet chemical agent. The longer retention of the foam blanket allows the hot grease to cool well below the auto-ignition temperature.

Patents are pending for both the new proprietary wet chemical agent and the dual agent system itself.



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The water spray portion of the system is provided by a connection to the potable water supply or by means of a PIRANHA self-contained water tank.

The system design for appliance protection under the hood allows the nozzles to be positioned uniformly from one end of the appliance line to the other. Most appliances under the hood can be protected in this overlapping manner, therefore, it is not necessary to protect each appliance individually. Appliances are free to be shifted around under the hood. The only exception to this overlapping type coverage are upright broilers, salamanders, and chain broilers.

These type appliances requires dedicated nozzle protection.

The system is capable of automatic detection and actuation and/or remote manual actuation. Additional equipment is available for mechanical or electrical gas line shut-off applications.

The detection portion of the fire suppression system allows for automatic detection by means of specific alloy rated fusible link detectors, which, when the temperature exceeds the rating of the link, the link separates, allowing the regulated release to actuate.

A system owner's guide is available containing basic information pertaining to system operation and maintenance. A detailed technical manual is also available including system description, design, installation, recharge, and maintenance procedures, plus additional equipment installation and resetting instructions.

The system is installed and serviced by authorized distributors that are trained by the manufacturer.

The basic system consists of an ANSUL AUTOMAN® regulated release assembly which includes a regulated release mechanism and a wet chemical storage tank housed within a single enclosure. The tank valve is designed to allow the wet chemical agent to discharge onto the hazard area first.

Then, immediately following the agent discharge, the valve will automatically allow the water to flow through the piping and out the system nozzles. Nozzle blow-off caps, detectors, cartridges, agent, fusible links, and pulley elbows are supplied in separate packages in the quantities needed for the fire suppression system arrangement.

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 warning lights, etc., to installation where required.

The water supply piping includes a lockable valve (for domestic and sprinkler water supply only).

Each tank is limited to a listed maximum number of nozzles.

## COMPONENT DESCRIPTION

### Wet Chemical Agent

The PRX™ extinguishing agent is a specially-formulated, aqueous solution of inorganic salts designed for rapid flame knockdown and foam securement of grease related fires. It is available in 5.0 gallon (18.9 L) plastic containers with instructions for wet chemical handling and usage.

### Agent Tank

The agent tank is installed in a stainless steel enclosure. The tank is deep drawn carbon steel finished in red enamel.

Tanks are available in three (3) sizes:

PIRANHA-7:	1.5 gallon (5.7 L) capacity
PIRANHA-10:	2.25 gallon (8.5 L) capacity
PIRANHA-13:	3.0 gallon (11.4 L) capacity

The tanks have a working pressure of 150 psi (10.3 bar), a test pressure of 450 psi (31.0 bar), and a minimum burst pressure of 900 psi (62.1 bar).

The tank includes an adaptor/tube assembly. The adaptor is chrome-plated steel with 1/4 in. NPT female low pressure gas inlet port and a 3/8 in. NPT female agent outlet port. The adaptor also contains a bursting disc seal which prevents the siphoning of agent up the pipe during extreme temperature variations.

Connected to the adaptor/tube assembly is the water flow valve. Note: Self-contained design option does not require a water flow valve. This valve is designed to allow the wet chemical agent to flow first and then the valve will automatically switch internally to allow the water to start flowing, thus increasing the foam blanket and providing additional cooling.

### Regulated Release Mechanism

The regulated release mechanism is a spring-loaded, mechanical/pneumatic type capable of providing the expellant gas supply to the agent tank. It contains a factory installed regulator deadset at 150 psi (10.3 bar) with an internal relief of approximately 190 psi (13.1 bar). It has automatic actuation capabilities by a fusible link detection system and remote manual actuation by a mechanical pull station.

The regulated release mechanism contains a release assembly, regulator, and expellant gas hose in a stainless steel enclosure with cover. The enclosure contains knock-outs for 1/2 in. conduit. The cover contains an opening for a visual status indicator.

The regulated release assembly also contains an anti-siphon valve (not required with self-contained option) which is designed to prevent back-siphonage of possible contaminated water into a potable water supply.

It is compatible with mechanical gas shut-off devices; or, when equipped with a field or factory installed switch, it is compatible with electric gas line or appliance shut-off devices.

### Water Supply Tank – (Self Contained Option)

A 40 gallon (151 L) water supply tank is available for the PIRANHA 7, 10, and 13 systems. The water tank is constructed of mild steel with a rust-inhibitive coating, both internal and external. The Self-Contained Water Supply Tank is equipped with a brass outlet adaptor and an internal pick-up tube.

### Water Tank Expellant Gas Assembly – (Self Contained Option)

The Water Tank Expellant Gas Assembly consists of two (2) pneumatic actuators, one (1) 75 psi (5.2 bar) regulator, and a stainless steel hose and fittings for actuator connection. These components are housed in a stainless steel enclosure. This assembly is utilized to expel the water from the water supply tank.

The Water Tank Expellant Gas Assembly requires two (2) LT-A-101-30 nitrogen cartridges.

### Discharge Nozzles

Two types of discharge nozzles are tested and listed with the PIRANHA system for all applications. One type is used for all high proximity appliance and plenum protection and is stamped "AP," and the other type is used for all duct protection and low proximity appliance protection and is stamped "DL." Each nozzle must have a metal or rubber blow-off cap to keep the nozzle tip orifice free of cooking grease build-up.

### Water Shutdown Device (Domestic and Sprinkler Water Supply Option Only)

The water shutdown device is an optional component which can be field installed in the ANSUL AUTOMAN release. With the device installed, the water flow to the discharge nozzles will automatically shutdown approximately 10 minutes after system actuation.

## CODES AND STANDARDS

The PIRANHA hybrid wet agent system and its components meet the following codes, standards and recommended practices:

1. Underwriters Laboratories, Inc. (UL): Standard 300 – Fire Testing of Fire Extinguishing Systems for Protection of Restaurant Cooking Areas.
  2. Underwriters Laboratories, Inc. (UL): Standard 2092 – Pre-Engineered Wet Chemical Extinguishing Units.
  3. Underwriters Laboratory of Canada (ULC): Standard ORD-C1254.6 – Pre-Engineered Wet Chemical Extinguishing System Units.
  4. National Fire Protection Association (NFPA): Standard 17A – Wet Chemical Extinguishing Systems.
  5. National Fire Protection Association (NFPA): Standard 96 – Ventilation Control and Fire Protection of Commercial Cooking Operations.
  6. American Society of Sanitary Engineers (ASSE): Standard 1001 – Cross Connection Protection Devices: Guidelines for Selection of the Proper Type of Backflow Preventor – Piped Applied Atmospheric Vacuum Breakers.
  7. International Association of Plumbing and Mechanical Officials (IAPMO): Installation, Material and Property Standard PS 108-98 – Grease Fire Suppression Systems.
- ▶ 8. CE Marked

## ORDERING INFORMATION

Order all system components through your local authorized ANSUL Distributor.

## SPECIFICATIONS

An ANSUL PIRANHA Fire Suppression System shall be furnished. The system shall be capable of protecting all hazard areas associated with cooking equipment.

### 1.0 GENERAL

#### 1.1 References

- 1.1.1 Underwriters Laboratories, Inc. (UL)
  - 1.1.1.1 UL Standard 300
  - 1.1.1.2 UL Standard 2092
- 1.1.2 Underwriters Laboratories of Canada (ULC)
- 1.1.3 National Fire Protection Association (NFPA)
  - 1.1.3.1 NFPA 96
  - 1.1.3.2 NFPA 17A
- 1.1.4 International Association of Plumbing and Mechanical Officials (IAPMO)
  - 1.1.4.1 PS 108-98

#### 1.2 Submittals

- 1.2.1 Submit two sets of manufacturer's data sheets
- 1.2.2 Submit two sets of piping design drawings

#### 1.3 System Description

- 1.3.1 The system shall be an automatic fire suppression system using a dual agent concept; wet chemical agent and water for grease related fires.
- 1.3.2 The system shall be approved for uniform, overlapping appliance protection.
- 1.3.3 The system shall be capable of suppressing fires in the following areas associated with cooking equipment: Ventilating equipment including hoods, ducts, plenums, and filters; Fryers; Griddles and range tops; Upright, natural charcoal, or chain-type broiler; Electric, lava rock, mesquite or gas-radiant char-broilers; Woks.
- 1.3.4 The system shall be the pre-engineered type having minimum and maximum guidelines established by the manufacturer and listed by Underwriters Laboratories, Inc. (UL) and Underwriters Laboratories of Canada (ULC).
- 1.3.5 The system shall be installed and serviced by personnel trained by the manufacturer.

#### 1.4 Quality Control

- 1.4.1 Manufacturer: The PIRANHA Restaurant Fire Suppression System shall be manufactured by a company with at least forty years experience in the design and manufacture of pre-engineered fire suppression systems. The manufacturer shall be ISO 9001 registered.
- 1.4.2 Certificates: The wet agent shall be a specially formulated, aqueous solution of inorganic salts with a pH range between 9.5 – 10.5, designed for rapid flame knockdown and foam securement of grease-related fires, and specifically constituted to provide continuous evolution of foam when sprayed with water.

#### 1.5 Warranty, Disclaimer, and Limitations

- 1.5.1 The pre-engineered restaurant fire suppression system components, manufactured by ANSUL, shall be warranted for five years from date of delivery against defects in workmanship and materials. Any purchased components, such as electric gas valves, reset relays, solenoids, pressure relief valves, regulators, electric switches, fusible links, etc. shall be warranted for one year from date of purchase.

#### 1.6 Delivery

- 1.6.1 Packaging: All system components shall be securely packaged to provide protection during shipment.

#### 1.7 Environmental Conditions

- 1.7.1 The PIRANHA system shall be capable of operating in a temperature range of 32 °F to 130 °F (0 °C to 54 °C).

## 2.0 PRODUCT

### 2.1 Manufacturer

- 2.1.1 Ansul Incorporated, One Stanton Street, Marinette, Wisconsin 54143-2542, Telephone (715) 735-7411

### 2.2 Components

- 2.2.1 The basic system shall consist of an ANSUL AUTOMAN regulated release assembly which includes a regulated release mechanism, stainless steel enclosure, anti-siphonage valve (domestic and sprinkler water supply option only), and water flow valve (domestic and sprinkler water supply option only). The agent storage tank is purchased separately and shall be mounted within the enclosure. Agent storage tanks shall be available in three sizes: PIRANHA-7 (1.5 gallon capacity), PIRANHA-10 (2.25 gallon capacity), and PIRANHA-13 (3.0 gallon capacity).

Nozzles, blow-off caps, detectors, cartridges, agent, fusible links, and pulley elbows shall be supplied in separate packages in quantities needed for fire suppression system arrangements. Additional equipment shall include remote manual pull station, mechanical and electrical gas valves, pressure switches, and electrical switches for automatic equipment and gas line shut-off.
- 2.2.2 Wet Chemical Agent: The extinguishing agent shall be a specially formulated, aqueous solution of inorganic salts with a pH range between 9.5 – 10.5, designed for rapid flame knockdown and foam securement of grease-related fires.
- 2.2.3 Agent Tank: The agent tank shall be installed in a stainless steel enclosure. The tank shall be deep drawn carbon steel finished in red enamel. Tanks shall be available in three (3) sizes; 1.5 gallon (5.7 L), 2.25 gallon (8.5 L), and 3.0 gallon (11.4 L). The tanks shall have a working pressure of 150 psi (10.3 bar), a test pressure of 450 psi (31.0 bar), and a minimum burst pressure of 900 psi (62.1 bar). The tank shall include an adaptor/tube assembly containing a burst disc union.
- 2.2.4 Tank Valve (domestic and sprinkler water supply option only): The tank valve shall be designed to discharge dual agent onto the hazards being protected. The valve shall automatically shuttle to switch from wet chemical agent discharge to water discharge.
- 2.2.5 Regulated Release Mechanism: The regulated release mechanism shall be a spring-loaded, mechanical/pneumatic type capable of providing the expellant gas supply via a pressurized cartridge to a single agent tank. It shall contain a factory installed regulator deadset at 150 psi (10.3 bar) with an internal relief of approximately 190 psi (13.1 bar).

It shall have automatic actuation by a fusible link detection system and remote manual actuation by a mechanical pull station.

The regulated release mechanism shall contain a release assembly, regulator, expellant gas hose, anti-siphonage valve (domestic and sprinkler water supply option only), and agent storage tank housed in a stainless steel enclosure with cover. The enclosure shall contain knock-outs for 1/2 in. conduit. The cover shall contain an opening for a visual status indicator.

It shall be compatible with mechanical gas shut-off devices; or when equipped with a field or factory-installed switch, it shall be compatible with electric gas line or appliance shut-off devices.
- 2.2.6 Discharge Nozzles: Two types of discharge nozzles shall be tested and listed with the PIRANHA system for all applications. One type shall be used for all high proximity appliance and plenum protection and shall be stamped "AP." The other type shall be used for all duct and low proximity appliance protection and shall be stamped "DL." Each nozzle shall have a metal or rubber blow-off cap to keep the nozzle tip orifice free of cooking grease build-up.
- 2.2.7 Distribution Piping: Distribution piping shall be Schedule 40 black iron, chrome-plated, or stainless steel pipe conforming to ASTM A120, A53, or A106.

**2.0 PRODUCT (Continued)**

**2.2 Components (Continued)**

- 2.2.8 Detectors: The detectors shall be the fusible link type designed to separate at a specific temperature.
- 2.2.9 Cartridges: The cartridge shall be a sealed steel pressure vessel containing nitrogen gas. The cartridge seal shall be designed to be punctured by the releasing device supplying the required pressure to expel the wet chemical agent from the storage tank.
- 2.2.10 Water supply piping (domestic and sprinkler water supply option only): The water supply piping portion of the dual agent system shall contain a lockable ball valve. The lockable ball valve shall be installed in the water supply piping to allow authorized personnel to close the valve after a system actuation and stop the flow of water into the hazard area.
- 2.2.11 Water shutdown device (domestic and sprinkler water supply option only): With the approval of the AHJ, a water shutdown device shall be installed in the water supply piping. This device shall automatically shutdown the flow of water to the discharge nozzles approximately 10 minutes after system actuation.
- 2.2.12 Self-Contained Water Tank: The self-contained water tank shall be sized to hold 40 gallons of water. The tank shall be constructed of mild steel with a rust-inhibitive coating, both internal and external. The tank shall be equipped with a brass outlet adaptor and an internal pick-up tube.
- 2.2.13 Self-Contained Water Tank Expellant Gas Assembly: The water tank expellant gas assembly shall be a mechanical/pneumatic device capable of supplying the required gas supply, via a pressurized cartridge(s), to the self-contained water tank, to properly discharge the water onto the hazard surface. It shall contain a factory installed regulator deadset at 75 psi (5.2 bar).

**3.0 IMPLEMENTATION**

**3.1 Installation**

- 3.1.1 The PIRANHA fire suppression system shall be designed, installed, inspected, maintained, and recharged in accordance with the manufacturer's listed instruction manual.

**3.2 Training**

- 3.2.1 Employees shall be instructed in personal safety and the operation of the system by authorized distributors who are trained by the manufacturer.



002730

**Standard PIRANHA AUTOMAN Release**

**Size:** 20 1/2 in. x 23 1/2 in. x 7 1/2 in.  
(52 cm x 60 cm x 19 cm)

**Weight:** Approx. 70 lb. (32 kg) including charged tank



006862

**Self-Contained PIRANHA AUTOMAN Release**

**Size:** 20 1/2 in. x 23 1/2 in. x 7 1/2 in.  
(52 cm x 60 cm x 19 cm)

**Weight:** Approx. 65 lb. (30 kg) including charged tank



006863

**Water Tank Expellant Gas Assembly**

**Size:** 16 1/2 in. x 23 1/2 in. x 7 1/2 in.  
(42 cm x 60 cm x 19 cm)

**Weight:** Approx. 31 lb. (14 kg) including cartridges



007037

**Self-Contained Water Tank**

**Size:** 18 in. dia. x 44 1/2 in.  
(46 cm x 113 cm)

**Weight:** Empty – 112 lb. (51 kg)  
Full – 440 lb. (200 kg)

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