



**NITROGEN-PAC™ M SERIES**  
**GENERAL INFORMATION**

**FEATURES**

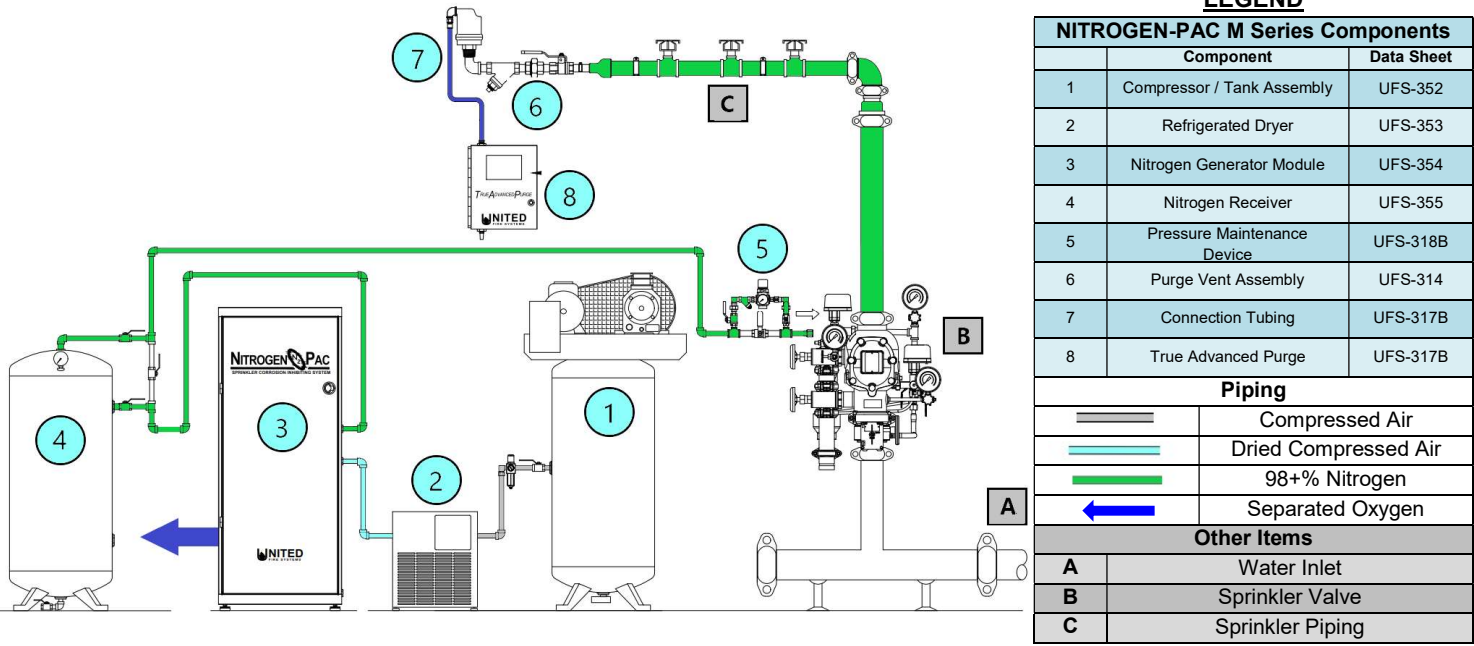
- Inhibits corrosion of the interior of dry sprinkler piping
- For dry-pipe or preaction sprinkler systems
- Inerts interior of pipe with nitrogen
- Uses atmospheric air to supply 98+% purity nitrogen
- Replaces ordinary supervisory air compressor
- Can be used for initial-fill in 30 minutes or less per NFPA 13
- Low dew point (-40°F) nitrogen supplied
- System scalable to sprinkler system requirements
- Can fill up to 31,100 gallons of pipe volume with nitrogen

**BENEFITS**

- Cost-effective continuous supply of nitrogen
- Eliminates the need for chemical corrosion inhibitors
- No inconvenient and dangerous handling of high-pressure cylinders
- Prevents oxidation corrosion (rust) and scale
- Prevents microbiologically influenced corrosion (MIC)
- Fitting gaskets will not be deteriorated by chemical additives
- Compatible with all UNITED Fire Systems PREACTION-PAC™ and SPRINKLER-PAC™ systems
- Compatible with all other brands / types of sprinkler valves and assemblies
- Reliable, dependable protection that functions as designed
- Expert in-house and field technical support

**DESCRIPTION**

The UNITED Fire Systems NITROGEN-PAC™ M Series is a fully integrated modular nitrogen generation system to introduce high-purity nitrogen into preaction and dry-pipe sprinkler piping. NITROGEN-PAC™ M Series replaces the conventional air compressor, providing the necessary supervisory pressure in the form of 98+% nitrogen instead of air. The system is modular, providing the most flexibility for component placement and space saving.



For downloadable architect's specifications and drawing details, go to:  
[unitedfiresystems.com/product/nitrogen-pac-m-series](http://unitedfiresystems.com/product/nitrogen-pac-m-series)

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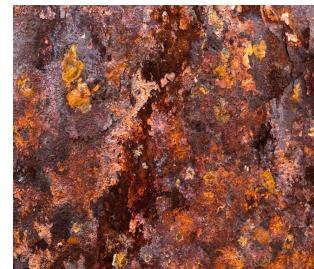
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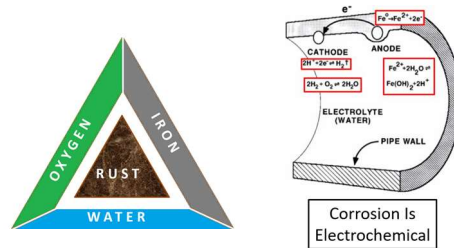
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**WHY USE NITROGEN AGAINST RUST?**

The interior of preaction and dry sprinkler piping is subject to oxidation corrosion (rust), which can lead to leaks, pipe failure, and clogged sprinkler heads. Oxidation corrosion takes place in the presence of oxygen, and is accelerated by the presence of water. Reducing the damaging effects of this corrosion is best accomplished by greatly reducing or eliminating the amount of water and oxygen left in the pipe. Ordinary air compressors used to provide supervisory pressure keep the oxygen concentration inside the pipe the same as normal air - ideal for oxidation corrosion to take place. Ordinary compressors also do not dry the air – residual water from system testing remains in low points, and moist air can actually increase standing water within pipes from condensation. The introduction of high-purity dry nitrogen with a low dew point reduces or eliminates this problem. The interior of the pipe remains dry, with very little oxygen remaining to attack the metal.



Examples – Oxidation Corrosion



Oxidation Corrosion Process

**WHY USE NITROGEN AGAINST MIC?**

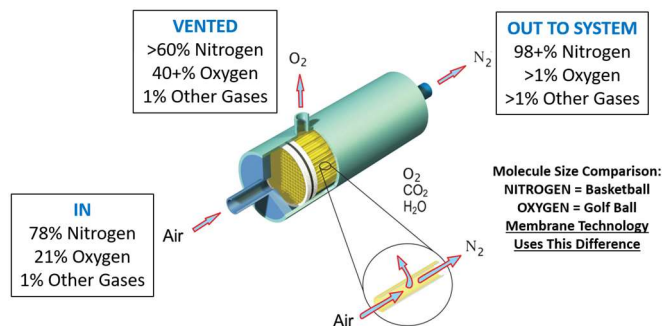
Microbiologically influenced corrosion (MIC) takes place in the presence of certain microbes that attack metal, again in the presence of water and in many cases oxygen. High-purity dry nitrogen is an inhospitable environment for most of these microbes. Greatly inhibiting their growth minimizes the pinhole leaks and pipe wall damage that can occur. Plus, MIC reduces the pipe diameter and roughens the internal surface, critically changing the hydraulic characteristics of the sprinkler system and likely impeding the effectiveness in case of fire.



Examples – Microbiologically Influenced Corrosion (MIC)

**WHY USE NITROGEN-PAC™?**

Nitrogen has been used in sprinkler systems in the past, but the source was high-pressure cylinders. Cylinders represent an ongoing cost, they are hazardous to handle, and they can run out, leaving the system unsupervised. Fortunately, a way exists to use the nitrogen present in the air all around us. Ambient air is already about 78% nitrogen, with about 21% oxygen and other gases. **NITROGEN-PAC™** systems use specialized membrane technology to produce 98+% nitrogen from compressed air. The system is totally automatic, uses only atmospheric air as a source, and supplies high-purity nitrogen continuously, with no possibility of running out and no cylinders to change or handle.



**NITROGEN-PAC™ Nitrogen Production**  
**Membrane Technology**

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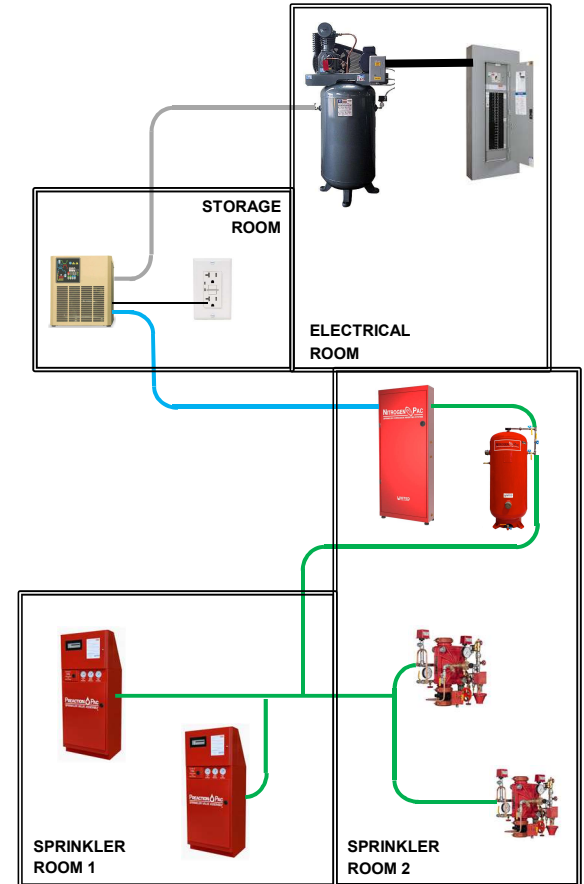
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**WHY USE NITROGEN-PAC™ M Series?**

The **NITROGEN-PAC™ M Series** from **UNITED Fire Systems** offers significant features, advantages, and benefits to designers, installer, and users of fire sprinkler systems, and to engineers tasked with specifying such systems. These include:

- Produces nitrogen with a measurable purity of 98+%
- System capable of supplying both initial-fill air and nitrogen to multiple sprinkler risers
- System can supply nitrogen to multiple sprinkler risers up to 31,100 total gallons of pipe volume
- System can supply initial-fill air to fill a single sprinkler riser up to 5434 gallons of pipe volume in 30 minutes per NFPA 13
- Modular design permits location of system components in optimum locations – for example:
  - Locate **Model CTA Compressor / Tank Assembly** near power supply source (panelboard) – minimize installation distance of high-current-carrying conductors
  - Locate **Model IRD-42 Refrigerated Dryer** near 120 VAC receptacle – minimize electrical work to add receptacle
  - Locate **Model NGM Nitrogen Generator Module** wherever wall or wall / floor space (depending on model) can be found – no power required; no noise to interfere with operations
  - Locate **Model NR-60 Nitrogen Receiver** wherever sprinkler valves are placed



**IMPORTANT NOTES**

- Refer to **UNITED Fire Systems** manual P/N 30-NPMICM-001 for detailed information on choosing **NITROGEN-PAC™ M Series** components.
- **UNITED Fire Systems** recommends performing a leakage test on each fire sprinkler system, and correcting excess leakage, before designing, installing, and commissioning a **NITROGEN-PAC™ M Series** system.
- **UNITED Fire Systems** recommends that all fire sprinkler systems protected by a **NITROGEN-PAC™ M Series** system conform to the NFPA 13-2022 paragraph 29.2.2.2 requirement to be tested with air pressure to 40 PSIG with no more than 1-1/2 PSI pressure loss in 24 hours. Correct leaks until system is capable of conformance with this paragraph.
- Refer to Data Sheet UFS-352 for important notes regarding the choice of **NITROGEN-PAC™ M Series** Compressor / Tank Assembly motors.

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