

Kidde ECS Fire Suppression System Marine Series Component Description



Effective: June 2014

K-90-9130M

Nitrogen Time Delay

FEATURES

- For Use with Nitrogen Actuation Arrangements
- Units Matched to 108 cu. in. or 1040 cu. in. Pilot Cylinders
- Two Delay Options for Each Pilot Cylinder Configuration
- Connection for Control Head to Bypass Delay
- UL Listed for Marine Applications
- USCG Approved
- RoHS Compliant

DESCRIPTION

The Kidde ECS System offers four models of the Nitrogen Time Delay that are matched to the 108 cu. in. and 1040 cu. in. nitrogen pilot cylinders. Each unit is individually rated to meet the code* requirement of -0%/+20% from 32°F to 130°F (0°C to 54°C). The delay period is longest at the lowest operating temperature and shortest at the highest operating temperature. Therefore, the rated value of the nitrogen time delay relates to high temperature performance, i.e., the delay period at 70°F (21°C) is longer than the rated delay for each unit.

Note: NFPA 12: 2000 Edition and UL-2166.

Refer to Table 1 below for detailed information for each unit. The Nitrogen Time Delay charts indicate the relationship between the temperature and the delay period and can be used to verify the performance of a time delay unit at different ambient temperatures.

Each unit consists of a control valve, a pressure accumulator and a metering tube. Labeling is unique to each of the four models.



OPERATION

The unit is activated automatically following operation of the connected pilot cylinder(s). When high-pressure nitrogen is fed into the inlet port of the time delay unit, the media begins to fill the accumulator via the metering tube. The delay period is complete when the pressure has built up in the accumulator to the preset level, which, in turn, opens the control valve. Pilot nitrogen is then free to pass from the pilot cylinder to the actuation circuit downstream of the time delay.

The unit can be bypassed through the use of a lever operated control head that is installed on the 1.25-18 NF threaded connection at the top of the control valve (see Figure 1 and Figure 2).



Ensure that the correct time delay is matched to the driving pilot cylinder. Failure to do so could result in a delay period shorter or longer than the desired period.

Table 1: Nitrogen Time Delay Rating

Part Number	Pilot Nitrogen Driver Cylinder	Nominal Rating (seconds)	Nominal Delay 270F (seconds)
81-871072-001	108 cu in	34	37
81-871072-002	108 cu in	61	68
81-871072-003	1040 cu in	35	40
81-871072-004	1040 cu in	68	74

INSTALLATION



During and immediately following system operation, the time delay unit is pressurized. Before removing the time delay following an activation, ensure the pipe work upstream and downstream of the time delay unit is vented. Failure to do so could result in rapid release of nitrogen which could cause death, serious bodily injury and/or property damage.

The time delay unit should be mounted using pipe clamps secured as close as possible to the inlet and outlet of the unit. The most efficient way to achieve this is by installing 3/4-in. NPT nipples into the inlet and outlet. This mounting method may be supplemented by the use of the mounting bracket (P/N WK-877845-000). The unit should normally be installed vertically with the valve at the top. A lever operated control head (P/N WK-870652-000) should be installed with adequate clearance around it to allow for unrestricted access. (See Figure 1.)

Note: When the nitrogen time delay is going to be installed in a fixed piping network, unions should be installed on either side of the valve to allow removal for maintenance or testing.

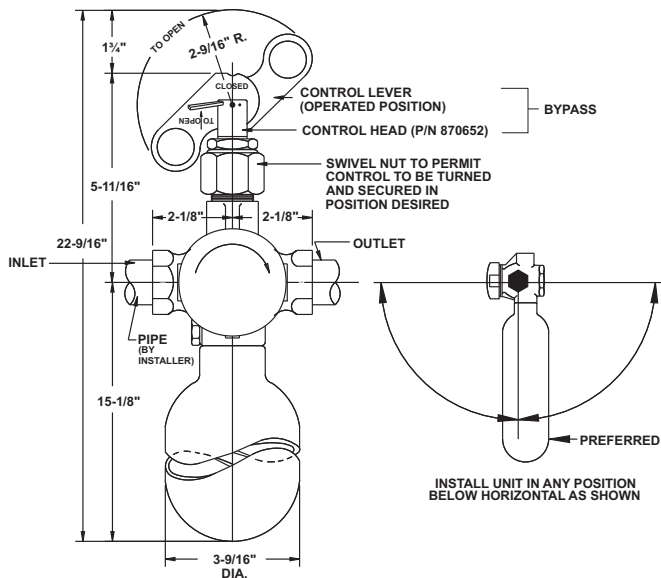


Figure 1. Time Delay with Lever Operated Control Head

PERIODIC TESTING AND MAINTENANCE

At least annually, or according to the requirements of the Authority Having Jurisdiction (AHJ), the nitrogen time delay unit should be tested to verify that the correct delay period is observed.



Before testing any components in the actuation circuit, ensure that the agent cylinder control heads are removed to prevent accidental system release.

A time delay test should be representative of the actual installation configuration, however, it is not necessary to test the complete actuation system or the installed pilot cylinder to verify the accuracy of the time delay unit. Typically, a test cylinder of the same type as that installed in the system is used to drive the unit; it is possible to use an alternative driver cylinder if required. Where it is convenient, a 108 cu. in. pilot cylinder may be used to test a system configured for a 1040 cu. in. pilot cylinder, however, the time delay achieved will be shorter. To verify correct performance, use the rated values and/or charts for P/N 81-871072-001 or P/N 81-871072-002 when testing P/N 81-871072-003; use the rated values and/or charts for P/N 81-871072-004 when a 108 cu. in. test cylinder is used.

The nitrogen pilot test cylinder should be connected to the inlet of the time delay to drive the unit. Ensure that the cylinder is charged to the correct pressure (corrected for temperature). The pipe and/or hose used to connect the pilot cylinder must be less than or equal to 4 ft. (1.2 m) in length and have a nominal diameter between 1/4 inch and 3/4 inches (6 mm and 20 mm). The outlet of the time delay should be connected to a closed section of pipe and must include a device that is capable of indicating when the time delay period is complete, i.e., that there is pressure in the section. A pressure gauge, discharge indicator or pressure operated control head is acceptable for this purpose. All components must be securely mounted prior to conducting the test. A stopwatch or other suitable timing device should be used to measure the "delay". Delay is defined as the period of time between activating the pilot cylinder and the opening of the time delay valve (evidenced by pressure downstream of the time delay unit). The delay period should fall within the specified tolerance of the nominal rated value. Do not use the nominal delay at 70°F (21°C) for this calculation.

TIME DELAY SPECIFICATIONS

Operating

Temperature Range: 32°F to 130°F (0°C to 54°C)

Delay Tolerance: -0% to +20% of rated value

Height: 17.9 in. (455 mm)
without control head

Mass: 13 lb. (5.9 kg)
without control head

Accumulator: Spun cylinder, DOT3AA-1800

Materials:

Valve- Forged brass

Metering Tube- Stainless Steel

Cylinder- Chrome-Moly Steel

DIMENSIONS

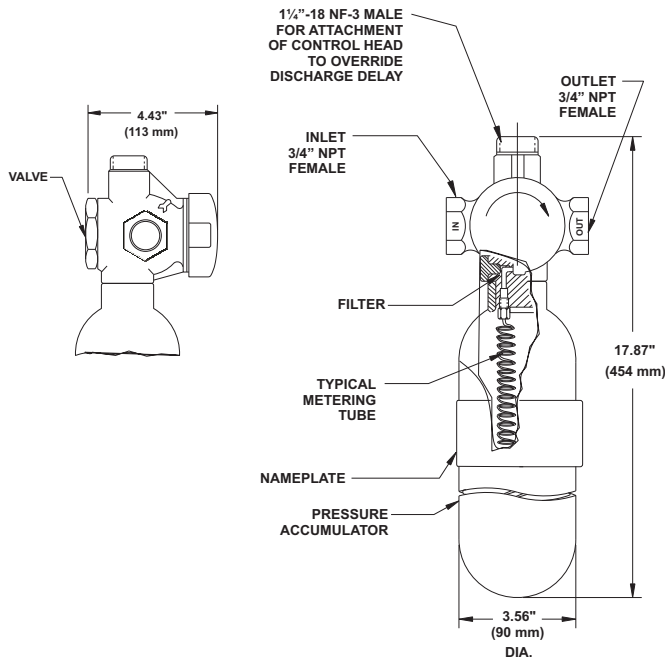


Figure 2. Nitrogen Time Delay Dimensions

ORDERING INFORMATION



Ensure the pilot cylinder is connected to the 'inlet' on the time delay valve marked "IN". Incorrect connection into the system will prevent the correct delay from being observed.

81-8710172-00X

- 001:** 108 cu. in. cylinder, 34 second nominal rating
- 002:** 108 cu. in. cylinder; 61 second nominal rating
- 003:** 1040 cu. in. cylinder; 35 second nominal rating
- 004:** 1040 cu. in. cylinder; 68 second nominal rating

COMPATIBILITY

Series	For Use With
Kidde ECS HFC-227ea	X
Kidde ECS Advanced Delivery FM-200®	X

NITROGEN TIME DELAY CHARTS

Note: The charts, provided on the next page, are provided for guidance only. The nitrogen time delay units are designed to provide a delay period that falls within the specified tolerance throughout the operating temperature range.



Time delays do not need to be hydrostatically tested since the components are not pressure containers. Do not attempt to service a time delay. Return to factory for repair.

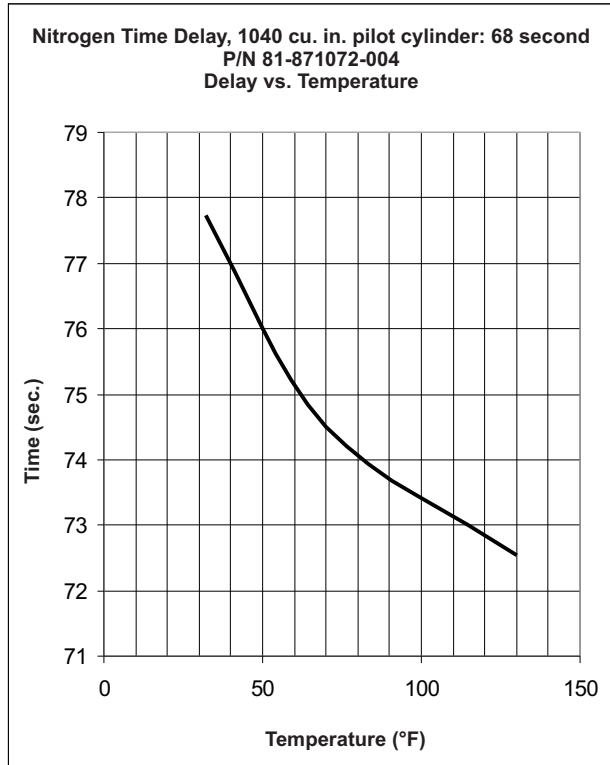
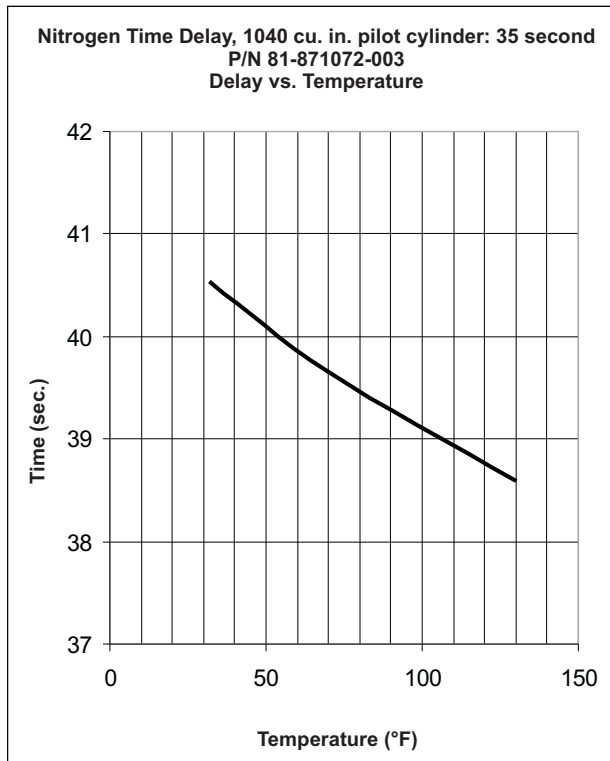
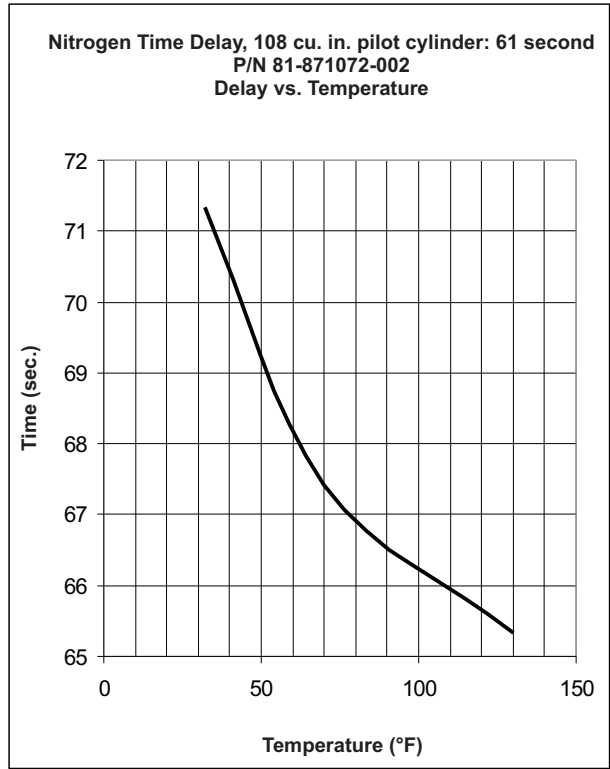
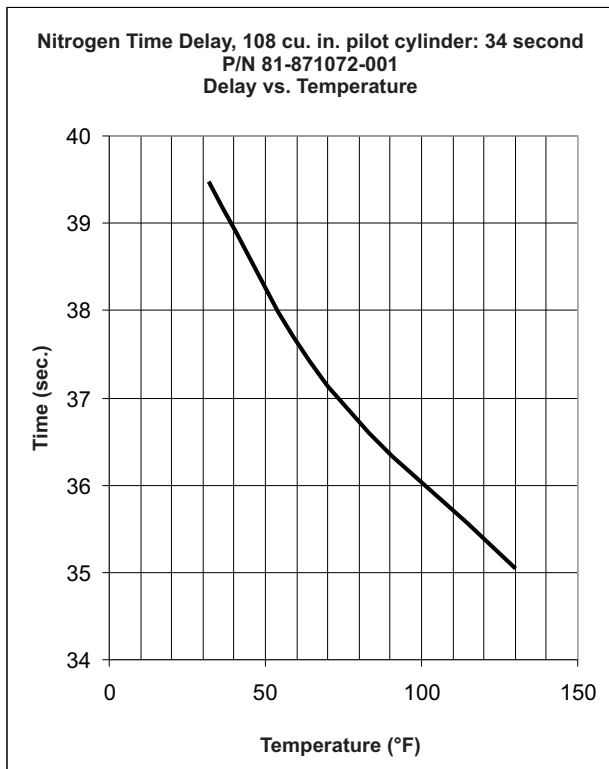


Figure 3. Nitrogen Time Delay Charts

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