

ACTUATION

OVERVIEW

In an automatic system, the closing of any one of the normally-open heat detection devices will cause the control panels to discharge the electric actuator. The pressure generated from the discharge of the electric actuator forces the piston through the seal of the actuating nitrogen gas cartridge. The gas then moves through the actuation lines to the slave actuator where a piston punctures the seal of the pressurizing cartridge. The released gas flows to the agent tank and distributes the fire suppression agent into the protected areas of the machine.

If the automatic detection feature of the system has been disabled, or was not installed, the system will discharge when manually actuated. Manual actuation is accomplished by pulling a safety pin and striking down forcefully on the push knob on a mechanical actuator assembly. This action forces the piercing rod through the seal of the compressed nitrogen gas cartridge.

KEY FEATURES

- Purpose built for heavy equipment
- Automatic and manual actuation uses
- Third-party tested and approved by FM HDME, ActivFire AS 5062, and CE



SYSTEM COMPONENTS

A116000 FIRING MECHANISM

The firing mechanism is used with systems featuring automatic detection and actuation. It houses the electric actuator and a nitrogen cartridge. The electric actuator is mounted in the upper port and a nitrogen discharge port is located in the lower portion of the firing mechanism. Discharge of the electric actuator, or depressing the knob on the top of the firing mechanism, forces the piercing rod through the seal in the nitrogen cartridge, allowing the release of the compressed gas.



A709500 ELECTRIC ACTUATOR

The electric actuator is used with systems featuring automatic detection and actuation. It produces gas pressure upon discharge. This gas pressure drives the piercing rod in the firing mechanism down through the seal in the nitrogen cartridge, releasing the compressed nitrogen gas. One end of the electric actuator is threaded into the upper part of the firing mechanism and a wiring harness is integrated into the other end. A spacer is required for all model numbers ending in C03 and must not be removed.



Note: Legacy electric actuators shipped prior to 2019 included a separate harness.

A905000 CHECK VALVE

The check valve is a spring loaded ball valve that controls the direction of the flow of the nitrogen gas from the actuating nitrogen cartridges. If more than one manual actuator is installed, one check valve is required per actuator. An arrow is inscribed on the check valve to indicate the direction of flow. The check valve is finished with 1/4" male NPT threads.



MANUAL ACTUATORS - A981350 REMOTE W/20Z BRACKET, A981450 REMOTE W/U-BRACKET, A981550 REMOTE W/S-BRACKET

A manual actuator serves as a point of manual actuation for both manual and automatic systems. When the knob on the top of the actuator is driven down forcefully, the piercing rod is forced through the seal in the actuating nitrogen cartridge, releasing the compressed gas, which is then directed to the top of the slave actuator.

Manual actuators satisfy:

- **NFPA 17 9.9.8** - An additional manual actuator or operating device shall be located so that it is in the path of egress and operable from ground level.
- **NFPA 122 7.4** - (3) Depending on the size of the equipment, additional ground-level manual actuators could be needed to provide quick access for manual activation of the system.



A981350



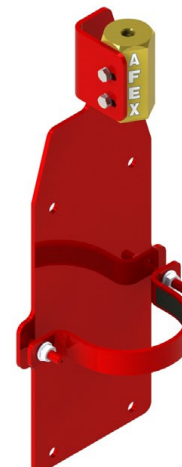
A981450



A981550

AUTOMATIC ACTUATOR - A981750 SLAVE ACTUATOR

The slave actuator is primarily used to actuate the pressurizing cartridges for the agent tanks. The gas released from the actuation cartridge enters the top of the slave actuator and drives the piston downwards, puncturing the seal of the nitrogen cartridge, and releasing the gas into the agent tank.



ACTUATION HOSE FITTINGS

Approved flexible hydraulic hose with 1/4" (6.35mm) nominal inside diameter must be used for system actuation and agent tank pressurization lines. Female hose fittings must be used with corresponding appropriate adapters.



NITROGEN CARTRIDGES

The nitrogen cartridge assemblies consist of a DOT approved cylinder, threaded adapter, seal and shipping cap. They are used to either pressurize or actuate the fire suppression system, depending on their application. The nitrogen used in the AFEX fire suppression system is 99.99% nitrogen with a dew point of -100°F (-73°C).



MAINTENANCE INTERVALS

NOT TO EXCEED 5 YEARS

Hose Assemblies (A601000P, A604400P, A604600P & A604800P)

- Hydrotesting or replacement per AFEX recommendations due to harsh environmental exposure

Electric Actuators (A709500)

- Replace installed component if equipped
- Note: Shelf life is 10 years under ideal storage conditions

Liquid Agent (A200515)

- Replace if equipped

Nitrogen Cartridges - Aluminum (A310015, A330025 & A350015)

- Hydrostatic testing of all aluminum nitrogen cartridges shall be performed to the test pressure as defined by DOT specification. For DOT 3A cartridges this equals 5/3 times the service pressure.

NOT TO EXCEED 10 YEARS

Nitrogen Cartridges - Steel (A310000, A320000, A330000, A350000, A360000 & A380000)

- Replace all 1 oz. (A320000), 2 oz. (A360000), and non-refillable (A310005 & A350005) nitrogen cartridges.
- Hydrostatic testing of all steel nitrogen cartridges greater than 2" (5cm) outside diameter (all cartridges larger than 2 oz) shall be performed to the test pressure as defined by DOT specification. For DOT 3A cartridges this equals 5/3 times the service pressure.

SPECIFICATION CHARTS

MANUAL ACTUATORS

COMPONENTS & PART NO.	DIMENSIONS	DESCRIPTION	SHIPPING WEIGHT
A981350 Remote w/2oz. Bracket	3.25" x 3.75" x 12.25" (8 x 10 x 31 cm)	Remote actuator with 2 oz. nitrogen cartridge bracket	1.2247 kg (2.7 lb)
A981450 Remote w/U-Bracket	2.5" x 3" x 6" (6 x 8 x 15 cm)	Remote actuator with u-bracket	0.5579 kg (1.23 lb)
A981550 Remote w/S-Bracket	3" x 3.5" x 14.25" (8 x 9 x 36 cm)	Remote actuator with s-bracket	1.4628 kg (3.22 lb)

AUTOMATIC ACTUATORS

COMPONENTS & PART NO.	DIMENSIONS	DESCRIPTION	SHIPPING WEIGHT
A981750 Slave Actuator	7.5" x 5" x 18.75" (19 x 13 x 47 cm)	Automatic slave actuator	3.4111 kg (7.5202 lb)
A116000 Firing Mechanism	2.5" x 2.5" x 7.5" (6 x 6 x 19 cm)	Firing mechanism for automatic actuators	0.787 kg (1.735 lb)
A709500 Electric Actuator	1" x 1" x 1.25" (25 x 25 x 32 mm)	Electric actuator	0.1429 kg (0.315 lb)

ACTUATION HOSE AND FITTINGS

COMPONENTS & PART NO.	DIMENSIONS	DESCRIPTION	SHIPPING WEIGHT
A601000P Hose-1/4in	1/4" (6.35mm)	1/4' actuation hose	0.0726 kg (0.16006 lb)
A604400P FTG-1/4 Hose x 1/4 FJIC	1/4" (6.35mm)	1/4' hose x 1/4" female JIC fitting	0.0975 kg (0.21495 lb)
A604600P Adapter-1/4 MPT x 1/4 MJIC Straight	1/4" (6.35mm)	1/4' male NPT x 1/4" male JIC straight adapter	0.0295 kg (0.0650 lb)
A604800P Elbow-1/4 MPT x 1/4 MJIC x 90	1/4" (6.35mm)	1/4' male NPT x 1/4" male JIC x 90 adapter	0.0408 kg (0.0899 lb)
A604850P FTG-Bulkhead 1/4 MJIC	1/4" (6.35mm)	1/4' male JIC bulkhead fitting	0.0431 kg (0.0950 lb)
A905000 Check Valve	1.75" x 0.75" x 1" (44 x 19 x 25mm)	Check valve 1/4" male NPT threads	0.0816 kg (0.1799 lb)

SPECIFICATION CHARTS

NITROGEN CARTRIDGES

COMPONENTS & PART NO.	DIMENSIONS	NOMINAL CAPACITY	FILLED TO	SHIPPING WEIGHT
A310000 10oz Refill Nitrogen Gas	3.56" x 15.8" (9 x 40 cm)	10 oz (383.5 g)	1800 psi	2.3474 kg (5.3 lb)
A310015 10oz Refill - Aluminum	4.4" x 11.85" (11 x 30 cm)	10 oz (383.5 g)	1800 psi	2.268 kg (5 lb)
A315000 10oz Refill Nitrogen Gas	4.2" x 15.7" (10.7 x 40 cm)	10 oz (383.5 g)	1800 psi	3.7 kg (8.1571 lb)
A320000 1oz Assm Nitrogen Gas	2" x 7.5" (5 x 19 cm)	1 oz (28.4 g)	1800 psi	0.6532 kg (1.44 lb)
A330000 25oz Assm Nitrogen Gas	4.2" x 27" (10.7 x 68.5 cm)	25 oz (708.7 g)	2015 psi	6.8198 kg (15.035 lb)
A330025 25oz Assm Nitrogen Gas - Aluminum	4.4" x 26.25" (11 x 66.7 cm)	25 oz (708.7 g)	2015 psi	4.9895 kg (11 lb)
A350000 A355000 15oz Refill Nitrogen Gas	4.2" x 18" (10.7 x 45.7 cm)	15 oz (425.2 g)	2015 psi	4.6 kg (10.1413 lb) 4.6258 kg (10.1981 lb)
A350015 15oz Assm Nitrogen Gas - Aluminum	4.4" x 17.6" (11 x 44.7 cm)	15 oz (56.6 g)	2015 psi	3.402 kg (7.5 lb)
A360000 2oz Assm Nitrogen Gas	2" x 10.5" (5 x 26.7 cm)	2 oz (56.7 g)	1800 psi	0.9095 kg (2.0051 lb)
A380000 55oz Assm Nitrogen Gas	7" x 24.9" (17.8 x 63.2 cm)	55 oz (1559.2 g)	2015 psi	19.0511 kg (42.001 lb)

SYSTEM TYPES

MANUAL SYSTEMS

These systems do not have heat detection circuits and require human action to identify a fire condition and take appropriate actions to initiate the system's discharge sequence.

Manual systems are primarily used in steel and slag industries due to the high ambient temperature of the environment in which they operate.

AUTOMATIC SYSTEMS

These systems feature a detection circuit that senses heat in the protected areas of the machine and then automatically initiate the discharge sequence. All automatic systems are required to have a manual override method of initiating the discharge sequence.

Automatic systems are primary used in mining; forestry; oil, gas and energy; coal; waste handling; and agriculture industries.

APPROVALS & CERTIFICATIONS

AFEX fire suppression systems have been tested by:

- Factory Mutual - FM HDME (Heavy-Duty Mobile Equipment)
- Australian Standards - AS 5062 (Fire protection for mobile and transportable equipment)
- European CE standard

ADVANTAGES OF CHOOSING AFEX

- Commitment to top-notch, personable customer service - when you call, you speak to a real person who cares!
- Forward-thinking, innovative company that keeps current with heavy equipment trends
- Timely and professional shipment of orders
- Employment of American workers in an American manufacturing plant
- ISO 9001 certifies standardization and quality assurance

ORDERING INFORMATION



We appreciate our customers and are committed to providing the industry's best service and support. That's part of what makes us the number one manufacturer of vehicle fire suppression systems.

Order all system components through your local distributors.

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