

Engineered Specification

Emergency Chlorine Shutoff System for (2) 150 lb Cylinders

Terminator Actuators with Gemini Controller



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QUALITY ASSURANCE

The manufacturer of the emergency chlorine shutoff system shall have a minimum of 20 years of experience in the manufacture of equipment of similar type and size as that specified herein.

SYSTEM DESCRIPTION

A. General

1. The emergency chlorine shutoff system is intended to automatically and rapidly stop the flow of chlorine from a cylinder in the case of a feed system leak or emergency. The shutoff system consists of two (2) electric valve actuators that are powered and controlled by a 12VDC battery powered controller.
2. After process connections have been installed and leak tested, the chlorine cylinder valve is opened, and the actuator is set in place on the valve stem. Separate test keys on the controller allows each actuator to be independently tested after installation on cylinder valve to ensure proper operation.
3. In the event of an emergency, the controller receives an input signal from leak detector, panic switch or other device and then initiates the closing of the cylinder valves. The actuator runs for 3 seconds, allowing it to deliver 35 to 40 ft-lbs of closing torque to the cylinder valve stem. A relay output and controller LED status lights indicate an emergency shutoff has been performed.
4. The actuators can be installed on cylinders using direct mount vacuum regulators or pressure feed.



PRODUCTS

EMERGENCY CHLORINE SHUTOFF SYSTEM

- A. The electric actuator shall mount upon the chlorine cylinder valve stem by means of a bronze drive bushing and two parallel rods that straddle the gas valve body. No clamping mechanisms or mounting tools of any kind shall be required for ease of installation and for rapid access to valve in the event of an emergency. The installed actuator shall not restrict access to the valve packing nut and yoke or clamp in the event they require tightening.

- B. The actuator shall have a 12-volt DC electric motor acting through a direct drive ratchet assembly that applies proper closing torque. Actuator power shall be provided by the controller. The actuator shall be powered only in the closing direction to eliminate unintended or accidental opening of the cylinder valve. The valve stem for each cylinder shall be opened manually by means of a wrench prior to mounting the actuator.
- C. The actuator shall allow installation on a valve using a yoke style process connection. The actuator shall be compatible with all direct mount vacuum regulators commonly used in the industry without the need for adapters, installation brackets, or modification.
- D. All external metal components shall be epoxy powder coated for corrosion resistance. Shaft entrances to the actuator mechanism shall be sealed with O-ring seals of Viton and Teflon. The motor canister and main enclosure shall be sealed with static Viton O-rings.
- E. The controller for the actuators shall be contained within a single, NEMA 4X rated electrical enclosure. All cables, connectors, switches and fittings shall be of a similar rating to resist the chemical environment. The controller shall have an internal 12 VDC gel cell lead acid type battery rated at 8 ampere-hours to provide power to the controller and actuators. An internal battery charging circuit shall provide a variable controlled charge current that is temperature compensated to optimize battery performance and service life. In the event of a loss of AC charging power, the battery shall provide 24 hours of backup time. During a sustained loss of AC charging power, the microprocessor shall detect a declining battery charge and initiate an emergency close sequence while sufficient power remains to apply the specified closing torque to the valve stem.
- F. The controller shall use flexible cable suitable for direct placement in the chlorine room environment to deliver DC electric power to each actuator.
- G. The controller shall contain a microprocessor programmed to precisely control the valve closing cycle time and apply the required torque to the valve stem. The microprocessor shall also monitor and display the status of the battery, charging power and system readiness as well as provide a diagnostic system check during the test cycle. Electro-mechanical relays or contacts, which are susceptible to corrosion failure, shall not be used in the control circuitry. The entire control system shall be comprised of encapsulated solid state devices.
- H. The controller shall have a membrane control panel with system status LED lights. Light conditions shall indicate ARMED/READY status, BATTERY status and BATTERY CHARGER status. The membrane control panel shall have actuator test keys to allow a full cycle test of each actuator. The test cycle shall include a microprocessor self-test, cable/motor continuity test, and battery load test. Test procedures as outlined on the control panel label shall provide the operator with go/no go criteria. Test results shall be confirmed by operator observation and by the tactile force required to reopen the valve.
- I. The controller shall accept multiple incoming signals from sources such as gas detectors, remote station alarms, seismic or fire sensors and manual panic switches to activate an emergency chlorine shutoff. External signals shall be of the normally open dry contact closure type. Input shall be configurable by moving a jumper on the controller mainboard to allow for a normally closed circuit.

- J. A standard low voltage relay output rated at a maximum of 1 amp @ 24V shall be provided. After the completion of an emergency shutoff, the relay shall momentarily activate. The relay shall have the ability to be wired as normally open or normally closed.
- K. Power for the controller battery charging circuit shall be 115 / 230 volts AC, 60 Hz, single phase. Maximum current consumption shall be 0.9 amp at 115 VAC (110 watts).
- L. *RECOMMENDED OPTION: The controller shall have a Relay Interface Module with three (3) dry contact relay outputs, rated 5A @ 250V. A separate output shall indicate each of the following: emergency activation, low battery power, and system NOT armed and ready. Outputs shall provide normally open and normally closed states and shall be configurable as momentary or latching.*
- M. Standard accessories for each system shall include two (2) wall mounted stowage bracket for temporary placement of the actuator during cylinder changes and one (1) remote mount emergency shutoff switch.
- N. The emergency chlorine shutoff system shall be Terminator actuators with Gemini controller, Model 8002.14, as manufactured by Halogen Valve Systems, Tustin, CA USA www.halogenvalve.com

TOOLS AND SPARE PARTS

- A. No tools or spare parts are required

WARRANTY

- A. Actuator and controller shall have a 3-year factory warranty.