

ADVANCE Ammonia Gas Pressure Feeder Series FX4600A



CAPITAL CONTROLS



- ◆ **Microprocessor-based automatic control**
- ◆ **Precise flow rate control**
- ◆ **Variable capacities to 1000 PPD (20 kg/h)**
- ◆ **Modularized components - convenient and safe**
- ◆ **Safe direct cylinder mounting**
- ◆ **New improved, textured design**
- ◆ **Front access to internal components**

Capital Controls Series FX4600A is floor cabinet mounted, pressure operated, and designed to conveniently house the components of the ammonia pressure gas feed equipment. The cabinets enclose the gas flow controls and are constructed of ABS and structural foam plastic with a textured easily maintained finish.

Easy to install, and designed for indoor installation, each Series FX4600A feeder is factory tested and needs no field adjustment prior to start-up. Six different flowmeter capacities provide versatility in meeting gas flow requirements. For capacities up to 250 PPD (5 kg/h) and below, the pressure regulator can be direct cylinder mounted for optimum safety, wall mounted on the gas valve of a single or multiple cylinder manifold, or on the gas discharge valve of a bulk storage tank. For capacities of 1000 PPD (20 kg/h), Capital Controls' Series PRV861 pressure reducing valves are used and mounted in the ammonia line. A self-cleaning, sleeved diffuser has been designed for use to help reduce calcium and magnesium salt formation due to high pH production at the diffuser.

A Series FX4600A gas feeder system consists of a pressure regulator or pressure reducing valve, gas filter assembly, excess pressure relief valve, manual exhaust valve, CAPTROL® controller (automatic only), self-cleaning diffuser-check valve assembly, pressure and vent tubing (250 PPD/5 kg/h only) and floor cabinet with automatic valve (automatic only), metering and rate controls, gas flowmeter and gas pressure gauge.

Design Features

- ◆ **Modern design:** Superior materials of construction, stainless steel rate valve, corrosion-resistant yoke assembly, stainless steel springs
- ◆ **Reliable:** Over 35 years of experience with gas feeders, integral pressure relief valve and gas flow indication (up to 250 PPD/5 kg/h), self-cleaning sleeved diffuser
- ◆ **Versatility:** Gas feeder can be cylinder or manifold mounted (up to 250 PPD/5 kg/h)
- ◆ **Ease of maintenance:** Simplicity of design and modularized components

Operation

For 250 PPD/5 kg/h maximum capacity units, ammonia gas at source pressure, enters through the inlet valve and filter assembly. Gas pressure is reduced and controlled to approximately 20 psig (1.4 bar). Low pressure gas is conveyed from the pressure reducer to the floor cabinet mounted rate controls. In the floor cabinet, the ammonia gas flow is metered and its flow rate automatically controlled by a linear modulating valve. (Figure 1)

Over 250 PPD/5 kg/h to 1000 PPD/20 kg/h maximum capacity units, ammonia gas at source pressure, enters the valve body and flows through the capsule assembly containing the valve plug and seat. Its pressure is regulated inside the valve by a spring-opposed or pilot-operated diaphragm located above the capsule. As the inlet gas pressure varies, the diaphragm position will move

to vary the orifice size and balance the supply pressure. This action maintains constant gas discharge pressure. The gas then exists through the valve outlet (See Figure 2)

The cabinet instrument panel houses the ammonia gas pressure gauge and gas flow indicator. The position of the automatic gas flow control valve is controlled at the cabinet with a manual rate adjuster, or automatically from the controller which is remotely mounted where most convenient for operator observation and system safety. The microprocessor controller receives the flow signal and adjusts valve position. From the cabinet, the low pressure gas is conveyed to the check valve and gas diffuser assembly located at the application point. The gas is diffused into the water or wastewater through an expandable rubber sleeve which

automatically removes precipitate that may form on the diffuser in water containing hardness. A spring loaded diaphragm check valve prevents backflow of water.

Measurement of ammonia post-treatment may be important. This can be achieved on-line using the AZTEC® A100 Ammonia Monitor, either to monitor or control the feed of ammonia. (Reference Bulletin 230.0001).

Applications

For process water, waste treatment, water treatment in the municipal or industrial marketplace.

- ◆ **Drinking water: THM prevention, chloramination**
- ◆ **Wastewater: Nutrient feed**

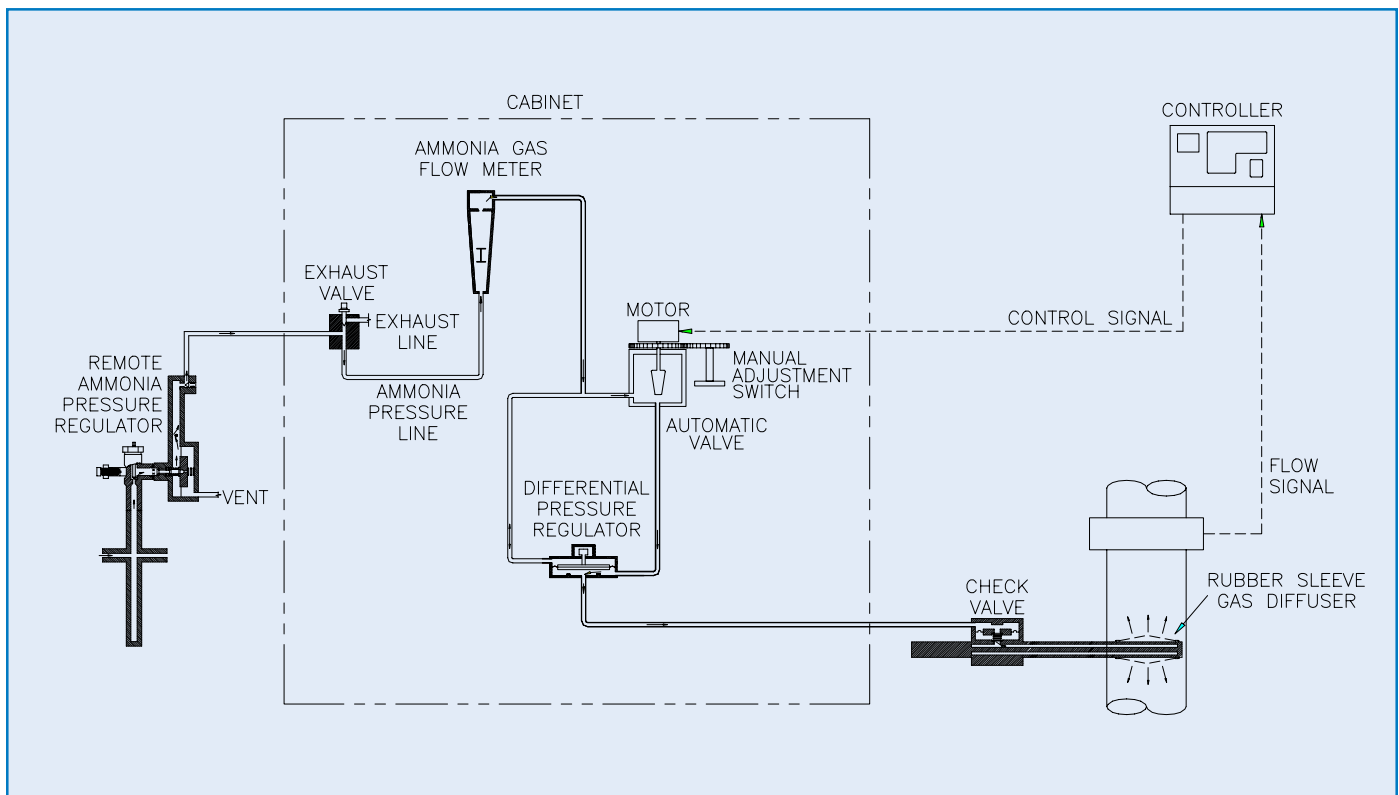


Figure 1 - 250 PPD (5 kg/h) Maximum Flow Diagram

Technical Data

Series FX4600A

GENERAL

Capacities: Standard indicating flowmeters are available with the following capacities: 20, 50, 100, 250, 500, 1000 PPD (0.4, 1, 2, 5, 10, 20 kg/h)

Flowmeter: The minimum feed capacity for every gas flowmeter is 1/20th of maximum capacity for automatic units

Accuracy: Within $\pm 4\%$ of maximum flowmeter capacity

Electrical requirements: 120/240 Vac, 50/60 Hz, single phase

Overall dimensions: 64" (1627mm) H x 31" (784mm) W x 20" (502mm) D

Model Information Code

Model	FX	4	6	A	3
Floor Cabinet Gas Feeder Control Mode		0 - Manual	4 - Automatic (Flow Proportioning)		
Capacity		3 - 250 PPD (5 kg/h)	4 - 1000 PPD (20 kg/h)		
				Pressure Regulator Mounting	
				3 - Remote	
				Gas	
				A - Anhydrous Ammonia	

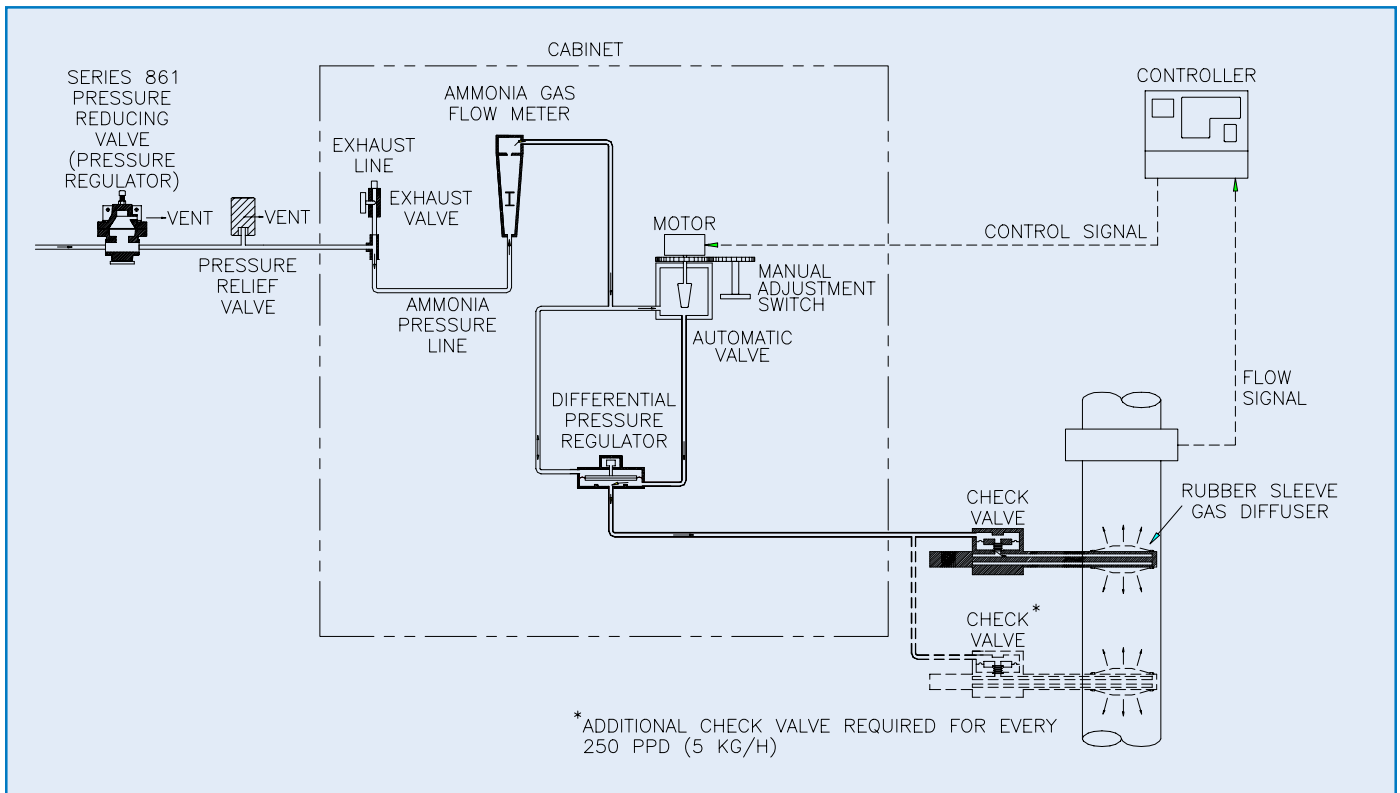


Figure 2 - 1000 PPD (20 kg/h) Maximum Flow Diagram

Warranty and Capability

Capital Controls offers a one (1) year limited warranty on the Series FX4600A ammoniator.

Capital Controls is ISO 9001 certified to provide quality and precision materials. Disinfection technologies, water quality monitors and instrumentation for water and wastewater are areas of specialization. Over 35 years of industrial and municipal application experience in the water and wastewater industries is incorporated into the equipment design to provide high quality comprehensive solutions for the global market.

Brief Specification

The ammoniator design shall be of the gas pressure operated, direct feed type. The cabinet shall be constructed of pressure formed ABS and structural foam plastic. The unit shall be rigid with removable front bezel, slightly textured finish to resist dirt and with front and rear access. Gas feeder components shall be housed in a cabinet 64" (1627 mm) high, 31" (784 mm) wide and 20" (502 mm) deep. The gas flow indicator and pressure indicator shall be mounted on the face of the cabinet. Manual units shall have a manual rate adjustment on the face of the cabinet.

The ammoniator shall be constructed of materials suitable for wet or dry ammonia gas service. All springs used in the ammoniator shall be stainless steel. The rate valve plug shall be stainless steel for capacities to 250 PPD (5 kg/h). The valve sleeve shall be stainless steel for capacities 1000 PPD (20 kg/h). All cabinet utilities shall use bulkhead connections. The regulator shall be remote mounted. Manual rate adjustment is provided by manual knob on the automatic valve.

On 250 PPD (5 kg/h) units, a diaphragm shall be provided to reduce ammonia container pressure to a constant pressure of approximately 20 psig (1 bar). This spring-opposed regulator shall be factory set and not require any field adjustment. The pressure regulator shall mount directly on an ammonia valve, cylinder or manifold. Excess pressure shall be relieved by a spring-loaded, diaphragm-actuated pressure relief valve, located at the pressure regulator.

For 250 PPD (5 kg/h) to 1000 PPD (20 kg/h) units, a pressure reducing valve is provided to regulate the pressure, sometimes more than one is necessary to reduce pressure to 20 psig (1 bar) (See Model PRV861, Bulletin 115.0005).

Cabinet mounted components shall include automatic rate control valve or manual control valve for manual units with manual bypass, indicating gas flowmeter, differential pressure regulator and pressure gauge. For venting gas pressure during source replacement, a manual exhaust valve shall be provided. Loose components consist of pressure regulator, gas exhaust valve, diffuser-check valve assembly and a controller.

On automatic units, a controller shall be microprocessor-based and available for flow proportioning. The diffuser-check valve assembly shall consist of a spring-loaded check valve to prevent flooding of pressure regulator. The diffuser contains a rubber sleeve which is self-cleaning. Maximum back pressure at point of application shall be 8 psig (0.6 bar).

Design improvements may be made without notice.

Represented by:



CAPITAL CONTROLS

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