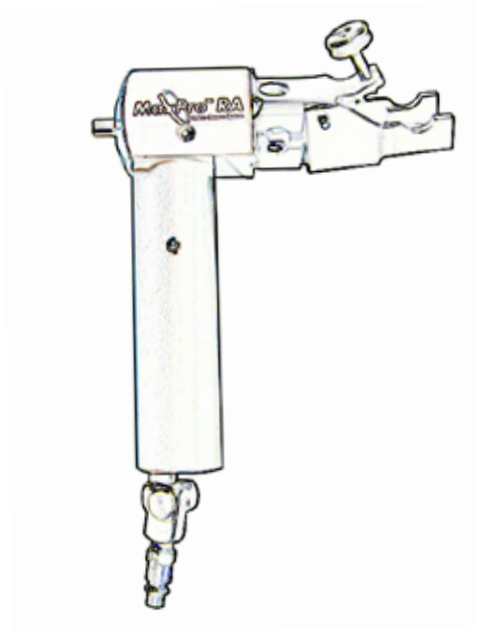
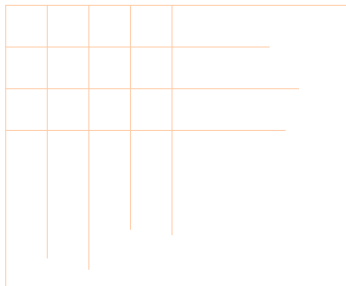
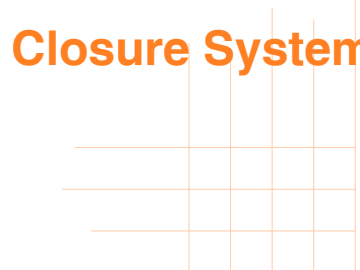


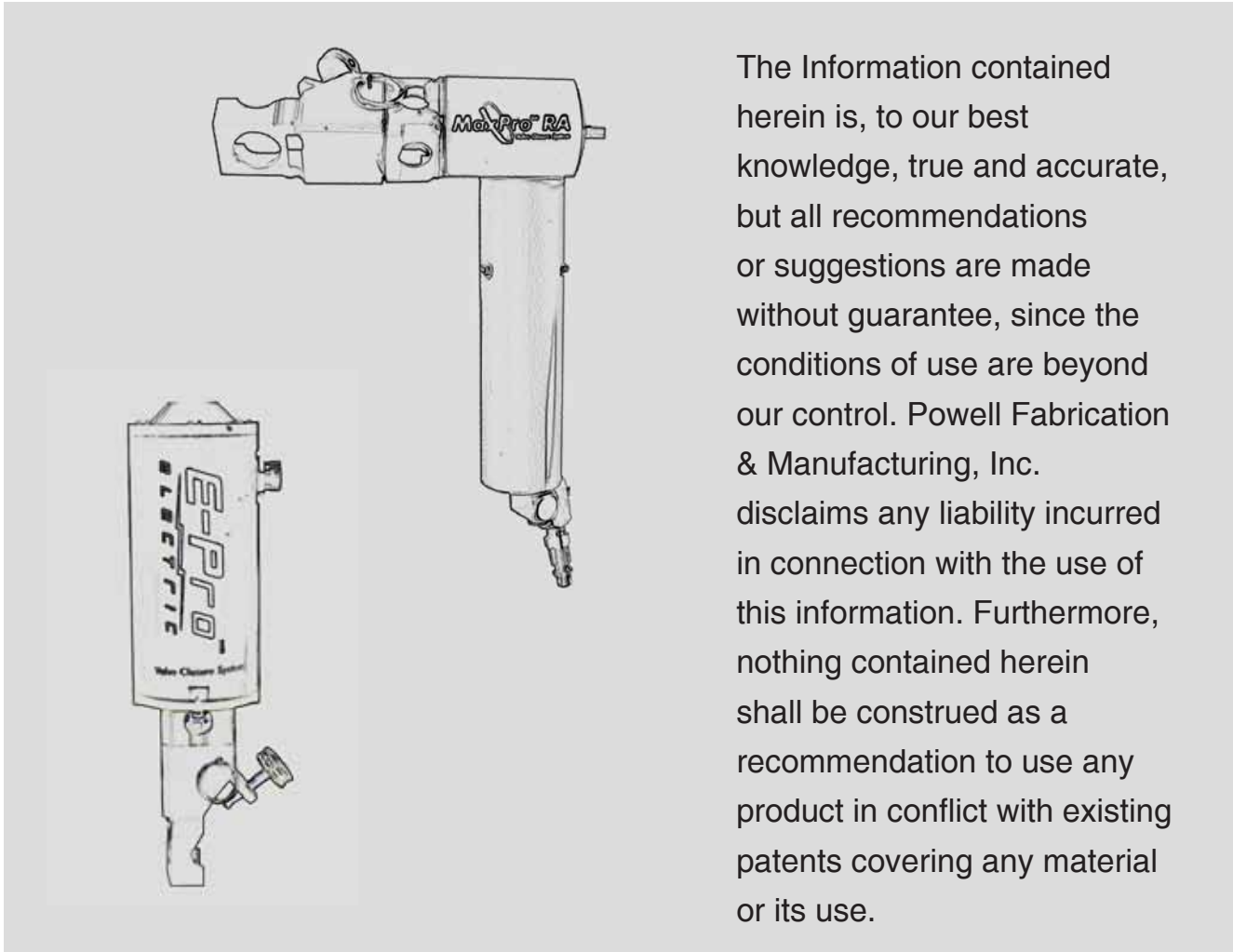
Valve Closure Systems for 1-Ton Containers or 150-Pound Cylinders



**MaxPro™ RA Pneumatic
Valve Closure System**

**E-Pro® Electric
Valve Closure System**





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Powell Valve Closure Systems for 1-Ton Containers and 150-Pound Cylinders

Valve Closure Systems from Powell Fabrication & Manufacturing, Inc. represent today's best available technology to prevent catastrophic releases of hazardous gases from containers. Powell Valve Closure Systems, designed to shut off at the container valve within seconds of detection, are available in pneumatic or electric versions. Either system can be configured to automatically close the valve in the event of a leak, security breach, fire alarm, seismic event or other circumstance. Alternatively, the systems can be activated manually from the main control panel or from remote-mounted emergency stop panels located inside or outside the room.

Powell Valve Closure Systems for 1-ton containers and 150-pound cylinders, available in both pneumatic and electric versions, accommodate the complete range of application requirements. Each system offers unique benefits and numerous advantages to the user.

MaxPro™ RA Pneumatic Valve Closure System

The MaxPro™ RA Pneumatic Valve Closure System requires nitrogen or dry air (-40°F or C dewpoint at 100 psig) to operate. In some facilities, this mode of power is more readily available than electric power. If a pneumatic system best meets your application conditions, you'll want to consider the Powell MaxPro™ RA Pneumatic Valve Closure System.

E-Pro® Electric Valve Closure System

The E-Pro® Electric Valve Closure System is perfect for plants that do not have compressed air or nitrogen available. It operates on standard 120 VAC power. If an electric system best meets your application conditions, you'll want to consider the Powell E-Pro® Electric Valve Closure System.

Figure 1: Six Reasons to Install a Powell Valve Closure System

Fewer Reportable Releases	A Powell Valve Closure System stops a leak long before the RQ (Reportable Quantity) established by the EPA is released.
Protection for Community	A Powell Valve Closure System protects the surrounding community from the dangers of a hazardous chemical leak.
Safer Conditions for Site Workers	A Powell Valve Closure System activates automatically, or manually from a remote location, eliminating the need for workers to enter a hazardous environment to shut off a gas leak.
Alternative to Emergency Scrubber System	A Powell Valve Closure System can be an alternative to a more costly emergency scrubber system.
More Protection at Lower Cost	A Powell Valve Closure System can be used in combination with a Powell Sentry Emergency Scrubber System to provide complete facility protection at a lower cost. Many times, the integration of a valve closure system means the scrubber can be downsized.
Improve RMP Scenarios	Risk Management Planning (RMP), mandated several years ago, requires that facilities with on-site above specified amounts submit scenarios detailing the anticipated impact of a hazardous gas release. A Powell Valve Closure System can significantly reduce the consequences in these scenarios.

Designed and Built by Industry Leader

Powell Valve Closure Systems are designed and built by Powell Fabrication & Manufacturing, Inc., leaders in the chlor-alkali industry since 1964. Powell equipment and technology are used extensively in the US and throughout the world in both municipal and industrial applications.

The MaxPro™ RA Pneumatic Valve Closure System and the E-Pro® Electric Valve Closure System draw on a long-standing and thorough understanding of chlorine, one of the most corrosive elements to metals and electronics. Powell has built chlorine scrubbers since 1975 and is the leading supplier of sodium hypochlorite processing equipment, roughly 80% of the sodium hypochlorite produced in North America is made on Powell equipment.

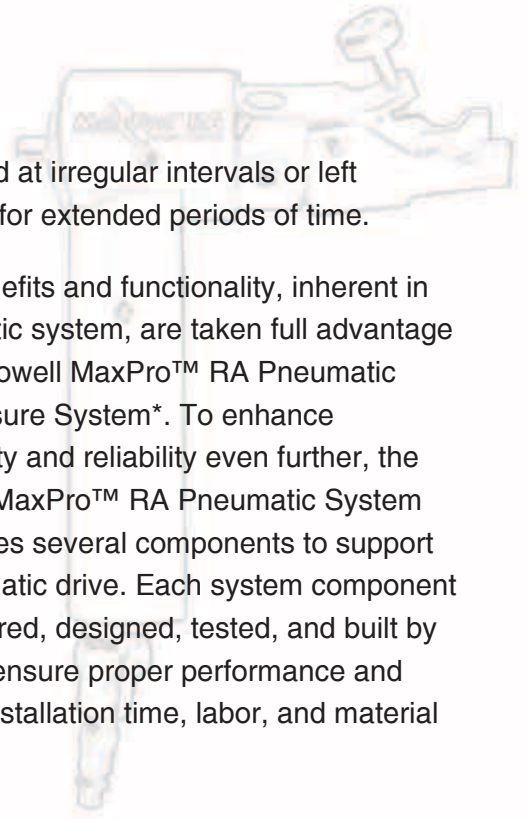
Powell's extensive understanding of chlorine and related chemicals and compounds have enabled it to develop equipment to safely and cost effectively produce, mix, contain, and transport a wide variety of extremely hazardous chemicals.

MaxPro™ RA Pneumatic Valve Closure System for 1-Ton Containers and 150-Pound Cylinders

Pneumatic technology is often preferred for its' uncomplicated concepts, basic components, and low maintenance requirements, adding up to a reliable, trouble-free system. Simply because it is a basic technology, pneumatics offers several advantages in a critical valve closure application. For example, in addition to attractive economics, the pneumatic motor is capable of hundreds of thousands of cycles, and operating pressure (force or torque) can be increased. Pneumatic drives can also easily handle the breakway torque that may be required if the system

is activated at irregular intervals or left stationary for extended periods of time.

These benefits and functionality, inherent in a pneumatic system, are taken full advantage of in the Powell MaxPro™ RA Pneumatic Valve Closure System*. To enhance functionality and reliability even further, the complete MaxPro™ RA Pneumatic System incorporates several components to support the pneumatic drive. Each system component is engineered, designed, tested, and built by Powell to ensure proper performance and reduced installation time, labor, and material cost.



* US Patent #6,840,503

The MaxPro™ RA Pneumatic Valve Closure System is designed in accordance with guidelines established by The Chlorine Institute, Inc. for valve closure systems.



The MaxPro™ RA Pneumatic Actuator has an easy-mount bracket that attaches to the cylinder valve just below the packing nut. The unit can be quickly and easily attached and detached from the cylinder by a single operator. No tools are required for assembly or disassembly.

When the MaxPro™ RA Pneumatic Actuator is installed, the right angle design of the gearbox allows manual operation of the valve with a standard wrench.



The MaxPro™ RA Pneumatic Actuator can accommodate the installation of many common vacuum regulators.

The MaxPro™ RA Pneumatic System is designed to function with 90 psig air or nitrogen pressure.



The MaxPro™ RA Pneumatic Valve Closure System can be used with vacuum or pressurized systems and can use air or nitrogen as the operating gas.

MaxPro™ RA Pneumatic System

Major Components

MaxPro™ RA Pneumatic Actuator

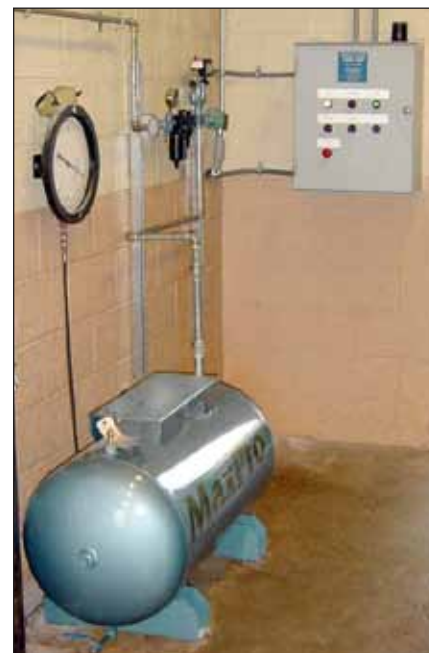
The MaxPro™ RA Pneumatic Actuator is the basis of the system. The unit, which weighs just 5.5 pounds, includes a pneumatic drive with a spring-loaded coupler designed to accommodate cylinder valve stems of varying lengths. The actuator is held in place on the container valve stem with a mounting bracket that attaches directly to the valve stem. The mounting bracket does not rely on the packing nut, yoke assembly, or other external component for support. When the pneumatic actuator is in place, the right angle design of the gearbox allows manual operation of the valve with a standard wrench. The MaxPro™ RA Pneumatic Actuator is easily attached and detached with a hitchpin and can be installed and removed by one person without the use of tools.



The 6-foot air supply hose included with the unit connects the pneumatic actuator to the operating gas supply. The hose connects easily to the pneumatic actuator with an Oetiker swing coupling. The swivel fitting ensures a secure connection between actuator and gas supply and helps to prevent kinks or tangles in the hose.

Control Panel

A basic control panel automatically activates the MaxPro™ RA Pneumatic System in the event of a gas leak, security breach, fire alarm, seismic event or other pre-determined circumstance. A single control panel can activate up to 8 container-mounted MaxPro™ RA Pneumatic Actuators to simultaneously close all 8 valves within 3 seconds. The system can also be activated manually from the control panel. UL listed (Underwriters Laboratory) panels are available and Powell can also supply custom panels.



MaxPro™ RA Pneumatic System Major Components



Remote Emergency Stop Pushbutton Panel

Operators can use the Remote Emergency Stop Pushbutton Panel (E-Stop Panel) to manually activate the system from a safe remote location. The E-Stop Panel can be installed wherever appropriate for operators to reach in an emergency. These allow an operator to activate the MaxPro™ RA Pneumatic Valve Closure System from a safe location.



Air Control Unit

The MaxPro™ RA Air Control Unit is a group of components designed to work together to supply the proper amount of clean pressurized air to the system. This equipment is pre assembled for simple installation.



Air Receiver

The MaxPro™ RA Air Receiver stores compressed air to enable the system to function even if power or air pressure is lost.



Uninterruptible Power Supply

The uninterruptible power supply prevents the MaxPro™ RA Pneumatic Valve Closure System from activating when AC supply voltage is lost or fluctuates. In the event of a sustained power loss, the valve closure system will activate to close container valves after approximately 30 minutes. The system can also be configured to activate the system as soon as plant power is lost.

E-Pro® Electric Valve Closure System for 1-Ton Containers and 150-Pound Cylinders

An electric valve closure system is often the choice in an application where air supply lines and components are simply not available. In addition to air availability and quality, an electric system offers convenience, simplified installation, and ability to integrate effortlessly into existing computer controlled processes. As a result of this practicality and ease of use, an electrical valve closure system is often the emergency shut-off system of choice for smaller plants or those who don't have

compressed air or nitrogen available.

The Powell E-Pro® Electric Valve Closure System* is an ideal selection when an electric system is preferred. It's designed to automatically close the valves on 1-ton containers and 150-pound cylinders in the event of gas leak, seismic activity and process shutoffs, as well as virtually any other condition that may be required or desired.



The E-Pro® Electric Valve Closure System uses standard 120-volt AC power and requires no other tools or fixtures to operate. The electric actuator is designed to deliver 40 lb-ft of torque to a standard valve stem, in both opening and closing directions.



When installed on a ton container, the E-Pro® Electric Actuator protrudes less than 9 inches beyond the valve stem. This helps keep the unit away from passing equipment and personnel.

The E-Pro® Electric Actuator can accommodate the installation of a vacuum regulator.



Any non-leaking valve that has been closed by the E-Pro® Electric Actuator can be reopened using the 'Open' button on the end of the actuator.

The E-Pro® System will respond to any alarm input and close the container valves in less than 5 seconds.



The E-Pro® Electric Valve Closure System is designed in accordance with guidelines established by The Chlorine Institute, Inc. for valve closure systems.

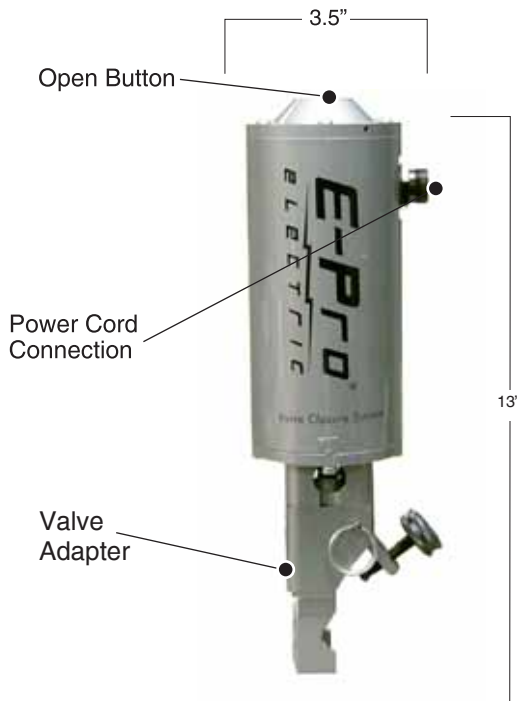
E-Pro® Electric System

Major Components

E-Pro® Electric Actuator

The E-Pro® Electric Actuator is the key component of the electric system. The unit weighs 8.5 pounds and mounts on the container valve as the yoke/vacuum regulator is attached. A single operator can easily attach and detach the unique two-piece mounting bracket onto or off the valve stem in seconds, without the use of tools. The E-Pro® Electric Actuator is reversible and the “Open” button on the end of the electric actuator can be used to re-open any non-leaking valve the unit has closed. The E-Pro® Electric Actuator is solidly made from quality materials of construction and components, some of which were developed specifically for this unit. The actuator housing is sealed to prevent intrusion of wind or water in outdoor applications.

Control Panel



The E-Pro® Control Panel automatically activates the E-Pro® Electric Valve Closure System in the event of a gas leak, seismic activity, process shutoff or other monitored condition. When activated, the control panel automatically shuts off the power to the actuator when the valve has been closed to the appropriate torque. An operator can manually activate the system by depressing the emergency stop pushbutton on the panel. Remote emergency stops are also connected to the control panel, allowing for remote, manual system activation.

E-Pro® Electric System Major Components



Remote Emergency Stop Pushbutton Panel

Operators can use the Remote Emergency Stop Pushbutton Panel (E-Stop Panel) to manually activate the system from a safe remote location. The E-Stop Panel can be installed wherever appropriate for operators to reach in an emergency. These allow an operator to activate the E-Pro® Electric Valve Closure System from a safe location.



Uninterruptible Power Supply

The uninterruptible power supply prevents the E-Pro® Electric Valve Closure System from activating when AC supply voltage is lost or fluctuates. In the event of a sustained power loss, the valve closure system will activate to close container valves after approximately 30 minutes. The system can also be configured to activate the system as soon as plant power is lost.



The E-Pro® Electric Actuator mounts on the body of the valve, not the yoke. In yoke mounted designs, the full torque applied by the actuator to the valve stem is transferred through the yoke, trying to turn the yoke on the body of the valve. This could result in failure of the lead gasket between the yoke and the container valve, leading to a leak. Once installed and leak checked, the E-Pro® Electric Actuator can be used to routinely open and close the valve without concern for the integrity of the lead gasket.

Complimentary Equipment

Chlorine Line Equipment



Chlorine Transfer Hoses

Metallic and non-metallic chlorine transfer hoses designed, manufactured, and tested to The Chlorine Institute, Inc. Pamphlet 6, Appendix A guidelines. Fully traceable back to manufacturer for 5 years.



Handlebar Union

The Powell Handlebar Union is a 3000# ASTM forged steel plated handlebar union with a Viton® O-ring that allows for quick attachment of chlorine transfer hoses to stub pipes from tank truck angle valves. For longer product life, lubricate threads and Viton® O-ring prior to each use.



Chlorine Pressure Gauge Assemblies

The Chlorine Pressure Gauge Assembly consists of a 4½" – 30/0/300 pressure gauge mounted on a welded design diaphragm seal. Carbon steel upper housing with ½" NPT instrument connection tantalum diaphragm, nickel/chrome plated carbon steel lower housing on threaded seal, welded Hastelloy®C lower housing on flanged seal. Gauge face and seal is filled with halocarbon oil.



Chlorine Automatic Ball Valve Assembly

This valve assembly consists of a 1" threaded ball valve with carbon steel body and Monel® trim combined with a fail closed (air to open, spring to close) actuator with position indicator. Note: 80 psi instrument air required. Used in pressurized vapor, and line depressurizing applications.



Chlorine Platform Automatic Plug Valve

This 1" 300# flanged, cast steel body, Hastelloy®C trim, plug valve has vented plug and high cycle low emission stem seal with air to open, spring to close, fail closed actuator. Includes limit switch and visual position indicator. 80-psi air required. Used in pressurized liquid chlorine applications.

Gas Detection Equipment



Complete gas detection systems are available for chlorine, sulfur dioxide and other gases. A typical system consists of an 8 or 16 channel controller, universal transmitters, individual gas sensors and the equipment required to calibrate the system. The controller is wall-mounted in a NEMA 4X enclosure, which can be centrally located.

Recommended Spare Parts and Maintenance Items



3/16" X 2" Hitch Pin

To secure MaxPro™ RA Mounting bracket to cylinder.



Debris Screen

For MaxPro™ RA Pneumatic Actuator; located in inlet of air motor.



Control Panel Pilot Light Bulbs

130V Control Panel



Control Panel Fuse



Relay

115 Vac 4 pole Man 5



Complete Line of Powell Equipment



Sodium Hypochlorite Process Systems

For the Continuous Production of Sodium Hypochlorite.



Chlorine Line Equipment

Chlorine Pressure Switches, Transfer Hoses, Expansion Tanks, Pressure Gauge Assemblies, and More.



Batch Sodium Hypochlorite System

Produce 1,000 Gallon Batches of Sodium Hypochlorite.



Sodium Hypochlorite Filter Systems

Produce the Highest Quality Sodium Hypochlorite Available on the Market.



Dilution System

For the Dilution of Sodium Hypochlorite, Sodium Hydroxide, and Methanol.



Emergency & Equipment Scrubbers

Proven Performance - for use with Chlorine, Sulfur Dioxide, or Phosgene.



Complete Chlor-Alkali Process

Make chlorine, caustic soda, and hydrogen on-site for the production of sodium hypochlorite, ferric chloride, calcium hypochlorite, hydrochloric acid, and other chlorine derivatives, or to produce feed stocks for a variety of other chemicals.



Instrumentation & Controls

Controls and Equipment to Maximize Your Processes.



Oxidation Reduction Potential Electrodes

Automatically determine how much chlorine to add to a caustic solution to make sodium hypochlorite; Neutralize a solution of bleach with hydrogen peroxide or sodium sulfite; Measure the amount of chlorine in a brine solution; Neutralize chlorine with sodium sulfite; Use with Scrubber Systems to measure the reagent strength (caustic strength) of the caustic solution.



Chlorine Unloading Equipment

Railcar Padding Systems, Sophisticated Control Panels, and Eductors, and More.



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