

WARNING !

The A120ACT 12 Volt Electrical Fail Safe Release Actuator must be used for **ANHYDROUS AMMONIA APPLICATIONS ONLY**. Do not use with any indoor or an enclosed NH3 application, or at any other hazardous location. **DO NOT USE IN LPG/PROPANE SERVICE**. Failure to follow these instructions or to properly install and maintain this equipment could result in personal injury or death. Equipment must be installed, operated and maintained in accordance with federal, state and local codes. The installation must also comply with NFPA No. 70 and ANSI K61.1, (CGA G-2.1) standards or local authority having jurisdiction. Only personnel trained in the proper procedures, codes, standards and regulations of the Anhydrous Ammonia industry shall install and service this equipment.

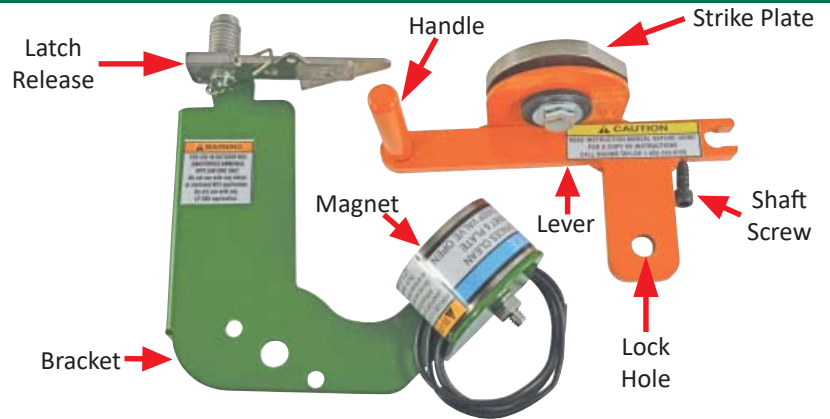
NOTE: REFER TO THE INSTRUCTION MANUAL SUPPLIED WITH THE INTERNAL VALVE OR Squibb Taylor's WEBSITE FOR ALL WARNINGS, CUSTOMER NOTIFICATIONS, SPECIFICATIONS, OPERATION, CAUTIONS, MAINTENANCE, & PARTS. CALL SQUIBB TAYLOR @ 800.345.8105 WITH ANY QUESTIONS BEFORE PROCEEDING.

Scope of the Manual

This instruction manual covers installation, operation, & maintenance for the A120ACT electrical release for 1 1/4" & 1 1/2" internal valves (A120, A125, & A150) manufactured by Marshall Excelsior Co. in outdoor Anhydrous Ammonia (NH3) applications.

Parts List

1. Green Bracket with Latch Release & Magnet (1 piece).
2. Orange Lever with Handle & Strike Plate (1 piece).
3. Hex Screw for Lever (1 piece).



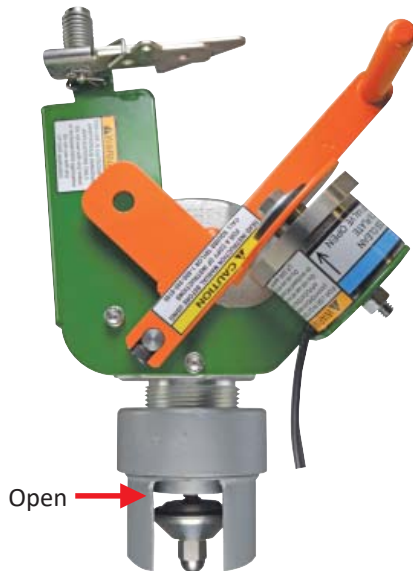
Operation

To Open Closed Valve

Close a shutoff valve downstream of the internal valve. Turn the electrical power on. Release the A120ACT latch & pull the handle clockwise. There is a rapid bleed opening as tank pressure helps hold the main valve disk closed against the seat until pressure equalizes on both sides of the main valve disk. The internal valve can be opened without further pressure by continuing to rotate the handle to the open position. When the handle is fully open, the electromagnetic force of the magnet latches against the strike plate and holds the valve open.

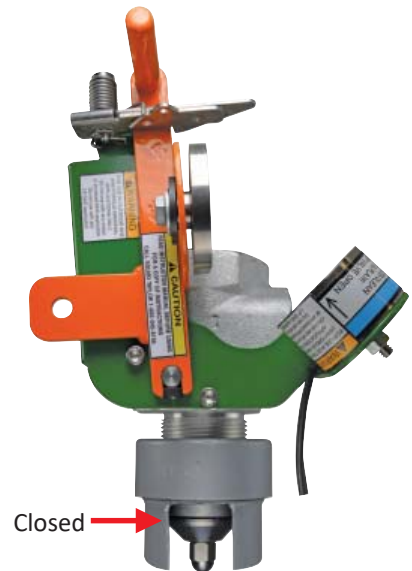
To Close Opened Valve

From a remote location, turn the electrical power off. The electromagnet de-energizes causing the magnet to lose its magnetic field. Due to loss of magnetic field, the magnet unlatches from the strike plate. The closing spring causes the valve to close. For any other reason, if 12 Volts is lost the valve closes automatically. This is why the A120ACT Actuator is known as **FAIL SAFE**. Manually forcing the handle counter-clockwise can also close the valve.



Power On & Valve Open.

CAUTION !
DO NOT Force open handle against NH3 Nurse Tank flow before pressure is equalized on each side of the main valve disk. Keep Hands & fingers away from the handle as it closes when electrical power is turned off.



Power Off & Valve Closed.

Installation

WARNING !

When installing or removing Internal Valve from tank, make sure all Product & Pressure has been removed from Nurse Tank and any Downstream Piping.

1. Remove Plate, Hex Screws, & Washers (#29) from Gland Assembly. Leave White Spacer in place. This Spacer can stick to the plate.

1 1/4" or 1 1/2"
Internal Valve



NOTE: Keep
White Spacer
for reassembly.



NOTE: Keep
Hex Screws &
Washers for
reassembly.



Tool Used: 5/16" Allen Wrench

2. Install Hex Screws & Washers as shown. Put the Hex Screws thru from the magnet side. Then put the washers on from the back side. Hold the bracket with Magnet facing you and slide it over the Shaft to start the screws.



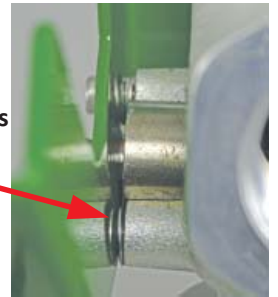
Magnet Side



Back Side

Washers

NOTE: The Washers
go between the
body of the valve
and the bracket.



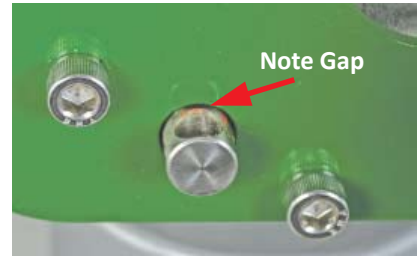
3. Secure the Bracket onto the valve by tightening the Hex Screws(2) with an Allen Wrench.

Hex
Screws

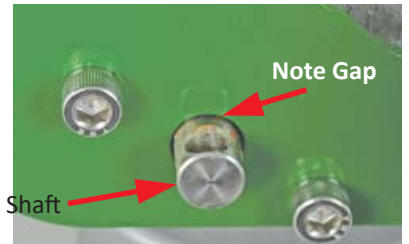


4. Make sure that the Gland Assembly Shaft is pulled all the way out. This needs to be done before installing the lever. Just put the short end of the Allen Wrench in the hole & pull away from the valve.

NOTE: This Step helps with installing the Lever. The Shaft does not move much. Just enough to be out of alignment with the Lever.



Note Gap

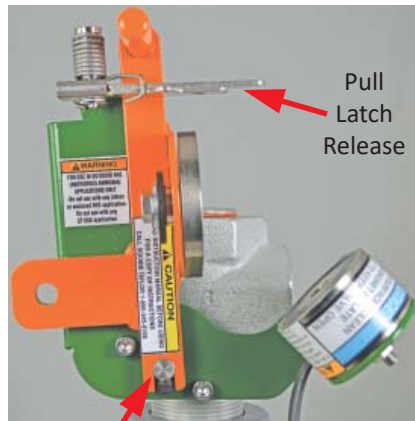


Note Gap

Gland Assembly Shaft

Tool Used: 5/16" Allen Wrench

5. Install the Lever as shown. Hold the Lever by the Handle and slide the open end over the Shaft. Then pull on the Latch Release to line up the Lever. This will align hole in Shaft to Lever. Make sure Shaft in Valve DOES NOT GET PUSHED IN.



Pull
Latch
Release

Gland Assembly Shaft

6. Secure the Lever to the Gland Assembly Shaft. Insert the supplied Hex Screw as shown. Use the Allen Wrench to tighten the Hex Screw.

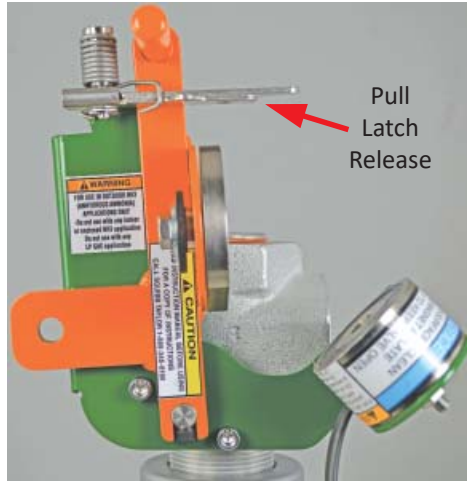


Gland Assembly Shaft

Tool Used: 5/16" Allen Wrench

Installation Continued

7. Test the Lever for full operation. Pull on the Latch Release with One Hand. Grab the Lever by the Handle with your Other Hand & move it Clockwise to open the Valve. When you release the handle make sure you let go of the Latch. Check the Lever to see that it is Latched.

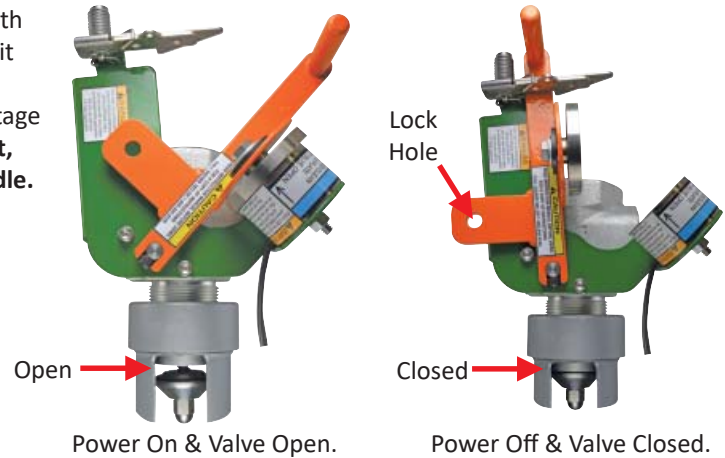


8. Connect electromagnet to the 12 V DC system and turn on voltage to the electromagnet.

9. After Installation is complete test the Lever. Pull on the Latch Release with One Hand. Grab the Lever by the Handle with your Other Hand & move it Clockwise to open the Valve. Strike Plate should latch against Surface of Electromagnet and stay attached to the Surface of Strike Plate while voltage is applied. Valve must stay open. **Upon de-energizing the Electromagnet, the Handle and Valve must “snap” closed and the Latch Locks the Handle.** The Handle and Valve must quickly rotate and close either when (a) the power source is turned off or (b) the handle is forced closed from the latched open position.

WARNING !
NEVER BYPASS MAGNET TO HOLD VALVE OPEN.

CAUTION !
DO NOT PAINT THE STRIKE PLATE OR THE MAGNET.
The Paint Will Impede Operation.



**Assembled Valve & Actuator is now an
Emergency Shutoff Valve for
Anhydrous Ammonia (NH3) Nurse Tank.**

- Test For Proper Operation @ A Minimum Of Once A Month & Daily During Field Application Periods.
- Always Test Operation Before Sending To Field For Use.

Locking Option

Valve Can Be Locked
As Shown In Photo.

Padlock Not Included.

Lock



Maintenance

WARNING !

ONLY PERSONNEL TRAINED IN THE PROPER PROCEDURES, CODES, STANDARDS & REGULATIONS OF THE ANHYDROUS AMMONIA INDUSTRY SHALL PERFORM MAINTENANCE ON THIS EQUIPMENT. Before starting any type of maintenance, close off the A120ACT valve(s) & remove all Anhydrous Ammonia (NH3) pressure from the Outlet of the Internal Shutoff Valve. If maintenance or repairs are to be made on the internal valve(s), refer to the Instruction Manual for the particular valve model. An A120ACT electrical release that has been disassembled must be tested for proper operation before being returned to service.

CHECK ACTUATOR PERIODICALLY FOR THE FOLLOWING:

1. See that the electrical release is properly connected, works freely and is not worn. Make sure that the handle and strike plate are working smoothly.
2. Make sure there are no obstructions or debris to block the valve and handle from closing when the electromagnet is de-energized.
3. When opening the valve make sure there are no impurities or debris on the contact surface between the electromagnet and strike plate.
4. Turn on the voltage to the A120ACT electrical release, rotate the handle counterclockwise to open the valve. Verify that the strike plate remains latched against the surface of the electromagnet and stays attached to the surface of the electromagnet while voltage is applied. Then interrupt the power to the electromagnet. Turn off the voltage supplied to the electromagnet and verify that the handle and valve snaps closed and the Latch Locks the Handle.

Electrical Specifications

The Electrical Specifications section lists specification for the A120ACT Electrical Release Actuator that is designed for Anhydrous Ammonia (NH₃) service at ambient temperatures. For a copy of instructions or additional inquiries, please call Squibb-Taylor @ 1.800.345.8105.

Electrical Specifications

Rated Voltage: 12 VDC
Operating Voltage Range: 11 to 13.2 VDC
Resistance: 20.5 ohms ± 10% at 68°F / 20°C
Ampere at Rated Volts: 0.58 A at 68°F / 20°C
Watts at Rated Volts: 7.0 W at 68°F / 20°C
Holding Force: 140 lbf at 68°F / 20°C
Duty Cycle: Continuous

Electromagnet Wire Lead Specifications

Complies with: UL 1015
Cable Type: Stranded Conductor
Cable Specifications: AWG 18
Maximum Amperage: 3.7 A
Maximum Resistance at 71°F: 6.64 Ω/1000 ft

Customer Wiring Requirements⁽¹⁾

See Recommended Wire Size (AWG) gauge in Table 1 or per local electrical codes and authority having jurisdiction.

Connection of Electromagnet Wire Lead to Customer Wiring Requirement⁽¹⁾

Connections shall be per ANSI/NFPA 70, National Electrical Code or local electrical codes and authority having jurisdiction.

Operating Temperature⁽²⁾

-40 to 140°F / -40 to 60°C

1. Electrical equipment and wiring for use in ammonia installations shall be general purpose or weather resistant as appropriate.
2. The temperature limits in this Instruction Manual and any applicable standard limitation should not be exceeded.

Table 1. Recommended Wire Size (AWG) Per Number of Units Installed at Distance

		RECOMMENDED MINIMUM WIRE SIZE ⁽²⁾⁽³⁾ [AWG]															CURRENT DRAW (A)
		One-Way Length of Wire ⁽¹⁾ (ft.)															
		10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	
NUMBER OF UNITS	1	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	0.58
	2	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	1.16
	3	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	1.74
	4	12	12	12	12	12	12	12	12	12	12	12	12	12	10	10	2.32
	5	12	12	12	12	12	12	12	12	12	12	10	10	10	10	10	2.90
	6	12	12	12	12	12	12	12	12	12	10	10	10	10	10	8	3.48
	7	12	12	12	12	12	12	12	10	10	10	10	10	8	8	8	4.06
	8	12	12	12	12	12	12	10	10	10	10	8	8	8	8	8	4.64
	9	12	12	12	12	12	12	10	10	10	8	8	8	8	8	8	5.22
	10	12	12	12	12	12	10	10	10	8	8	8	8	8	6	6	5.80
	11	12	12	12	12	10	10	10	8	8	8	8	8	6	6	6	6.38
	12	12	12	12	12	10	10	10	8	8	8	8	6	6	6	6	6.96
	13	12	12	12	12	10	10	8	8	8	8	6	6	6	6	6	7.54
	14	12	12	12	10	10	10	8	8	8	6	6	6	6	6	6	8.12
	15	12	12	12	10	10	8	8	8	8	6	6	6	6	6	4	8.70

Gray areas indicate that the AWG values are limited by NFPA 70 recommended minimum wire size, check local code for requirements.

1. Wire length is measured from the electromagnet(s) to the power source, in-and-out nature of circuits is accounted for.

2. Wire resistivity based on solid copper wire at 68°F / 20°C.

3. Wire size based on 1 VDC allowable voltage drop with 12 VDC nominal supply.

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