

EAU29 SERIES



ACTUATOR OPERATIONAL CONCEPTS

The EAU29 Series actuator is a unidirectional quarter-turn 90° actuator rotating in a CCW direction on each successive move. The actuator is designed to operate Hayward Type HCTB 2 way ball valves in municipal, commercial and industrial environments. These units are NEMA4/4X rated and feature on/off control.


TABLE OF CONTENTS


Actuator Operational Concepts	1	Wire Sizing Chart	4
Table of Contents	1	Commissioning	4
Important Safety Instructions	2	Mechanical Data	5
Actuator Handling And Installation	3	Technical Information	5
Wiring Diagram And Setup	3		


Notice: EAU29 Series actuators are unidirectional and rotate CCW in 90° degree increments without a reversing function. The rotation direction is viewed from ABOVE the actuator. There are NO travel adjustments and there are no mechanical stops in the EAU29 Series.

IMPORTANT SAFETY INSTRUCTIONS

Basic safety precautions should always be followed, including the following: Failure to follow instructions can cause severe injury and/or death.


 This is the safety-alert symbol. When you see this symbol on your equipment or in this manual, look for one of the following signal words and be alert to the potential for personal injury.

 **WARNING** warns about hazards that could cause serious personal injury, death or major property damage and if ignored presents a potential hazard.


 **CAUTION** warns about hazards that will or can cause minor or moderate personal injury and/or property damage and if ignored presents a potential hazard. It can also make consumers aware of actions that are unpredictable and unsafe.


Notice: A notice indicates special instructions that are important but not related to hazards.




 **WARNING** - Read and follow all instructions in this IOM manual and on the equipment. Failure to follow instructions can cause severe injury and/or death.





 **WARNING** – **Risk of Electric Shock.** All electrical wiring **MUST** be in conformance with applicable local codes, regulations, and the National Electric Code (NEC). Hazardous voltage can shock, burn, and cause death or serious property damage. To reduce the risk of electric shock, do NOT use an extension cord to connect unit to electric supply. Provide a properly located electrical receptacle. **Before working on any electrical equipment, turn off power supply to the equipment.**

 **WARNING** – To reduce the risk of electric shock replace damaged wiring immediately.


 **WARNING** – Ground all electrical equipment before connecting to electrical power supply. Failure to ground all electrical equipment can cause serious or fatal electrical shock hazard.

 **WARNING** – Do NOT ground to a gas supply line.

 **WARNING** – To avoid dangerous or fatal electrical shock, turn OFF power to all electrical equipment before working on electrical connections.

 **WARNING** – Failure to bond all electrical equipment to system structure will increase risk for electrocution and could result in injury or death. To reduce the risk of electric shock, see installation instructions and consult a professional electrician on how to bond all electrical equipment. Also, contact a licensed electrician for information on local electrical codes for bonding requirements.



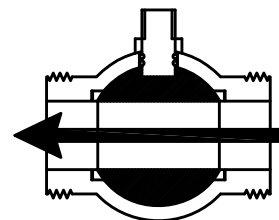
 **CAUTION** – Potential pinch point. Equipment connected to or driven by this device may start unexpectedly and may cause personal injury or entrapment in linkage systems.

ACTUATOR HANDLING AND INSTALLATION

SHIPPING AND HANDLING

- Position on arrival:
 - A Type HCTB 2 way ball valve assembly arrives with the valve fully OPEN.
- Storage: This unit should not be stored outside unless it is powered up and has proper conduit terminations. When not powered up, it should be stored in a clean, dry environment at all times.
- This quarter-turn actuator has been factory tested for operation between 0° and 90°. There are no travel adjustments.
- Notice:** The EAU29 Series actuators have no mechanical stops to limit rotation.
- Notice:** Protect the actuator from moisture by installing it with watertight EMT fittings and proper conduit drainage. There is no internal heater.

EAU29
Default Shipping Position
Valve OPEN



Flow OPEN



WARNING – To avoid dangerous or fatal electrical shock, turn OFF power to all electrical equipment before working on electrical connections.

INSTALLATION NOTES



CAUTION – Please follow the following guidelines for proper installation.

- These actuators are designed to be used between a horizontal and upright position. Do NOT mount the assembly with the actuator top below a horizontal position (i.e. upside down).
- When installing conduit, use proper techniques for entry into the actuator. Use drip loops to prevent conduit condensate from entering the actuator.
- The EMT conduit port MUST use proper fittings to protect the NEMA 4X integrity of the housing.
- Use proper wire size to prevent actuator failure (see Wire Sizing Chart for proper wire sizing).
- All terminals accept 12-18AWG solid/stranded wire.

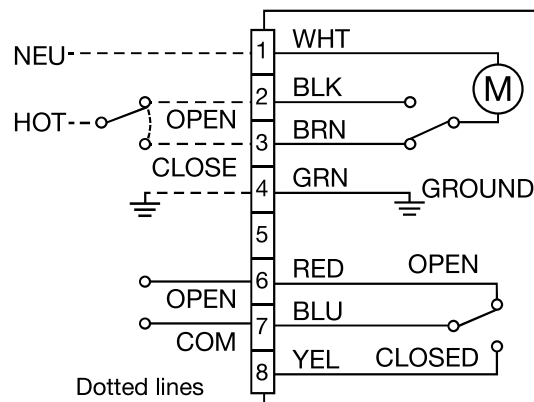
WIRING DIAGRAM AND SETUP

Notice: All EAU29 Series actuators rotate in 90° CCW increments to drive the output shaft out the bottom of the actuator. The actuator is unidirectional and does not have a reversing function.

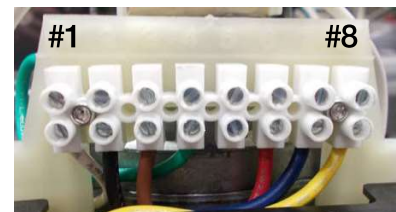
Should the actuator and valve need re-mounting, follow this procedure:

- Place the valve in the OPEN position. Assure the actuator is in the correct rotation position by applying (the actuator's) rated voltage to terminals 1 & 2.
- You can confirm the correct position by measuring continuity between terminals 6 and 7. Center the actuator on the valve drive shaft and tighten all hardware.
- Screw terminals are rated to accept 12AWG down to 18AWG solid or stranded wire. **TERMINAL NUMBERING HAS #1 AT LEFT and #8 AT RIGHT.**
- Make the electrical connections per the Wiring Diagram (common for all voltages in this document).
- Terminals 6~8 on each actuator are for the aux switch. It has dry type (volt free) Form A contacts rated 250VAC @ 10A Max.

Wiring diagram is shown in the full open position.



Dotted lines depict field wiring by others.



Terminal strips facilitate ease of field wiring and testing.

WIRE SIZING CHART

Wire sizing data is provided in the table to assist in the selection of the proper wire size for EAU29 Series actuators using various wire sizes over distance.

Be sure to reference the correct voltage and do not exceed the indicated length of the wire run for each model.

Maximum distance between Actuator and Power Supply (ft)

ACTUATOR	EAU29 12A~12D	EAU29 24A~24D	EAU29	EAU29 220A
Voltage	12VAC/VDC	24VAC/VDC	120VAC	230VAC
AWG \ Amps	4.80	2.40	1.80	0.90
18	17	69	459	1760
16	27	108	722	2766
14	44	175	1166	4468
12	67	267	1783	6833
10	114	455	3030	11616
8	170	678	4523	17338



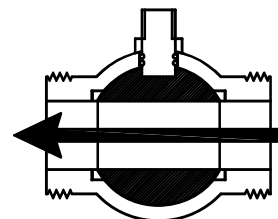
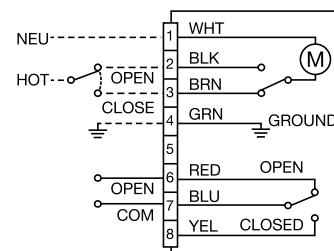
WARNING – To avoid dangerous or fatal electrical shock, turn OFF power to all electrical equipment before working on electrical connections.

Wiring diagram is shown in the full open position.

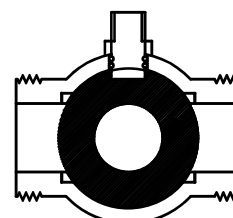
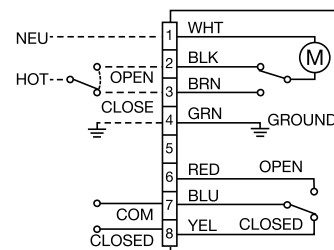
COMMISSIONING

Commissioning Procedure - On/Off Control

1. Apply correct power to the unit.
2. Measure correct power and polarity as shown in the wiring diagrams.
3. Note that the unit is shipped in the OPEN position (valve OPEN).
4. Command the field device to generate a CLOSED signal.
 - The actuator rotates 90° in the CCW direction (as viewed from above) and the valve CLOSES the B port and OPENS the A port.
5. Measure connections between terminals 1 and 3.
 - The actuator will stop after it rotates 90° CCW (as viewed from above).
 - Measure the continuity between wires #8 & #7 to show the Aux switch is closed (valve CLOSED indication).
6. Command the field device to generate an OPEN signal.
 - The actuator rotates 90° in the CCW direction (as viewed from above) and the valve OPENS.
7. Measure connections between terminals 1 and 2.
 - The actuator will stop after it rotates 90° CCW (as viewed from above).
 - Measure the continuity between wires #6 & #7 to show the Aux switch is closed (valve OPEN indication).
8. Actuator is now commissioned and operational.



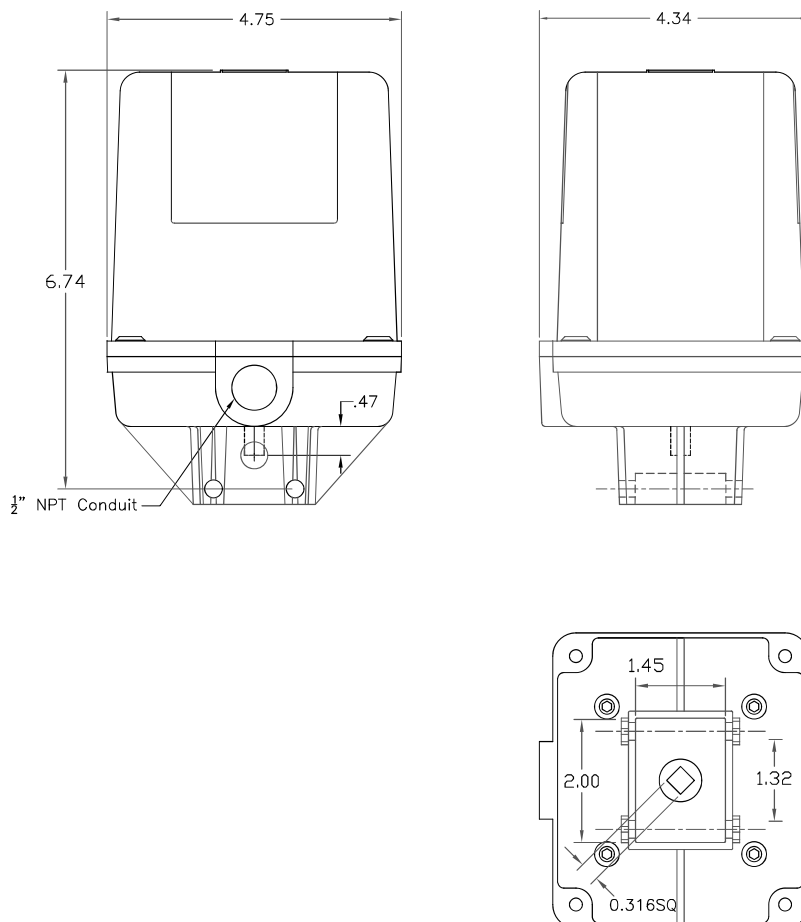
Flow OPEN



Flow CLOSED

MECHANICAL DATA

**ALLOW 6"
ABOVE FOR
COVER REMOVAL
CLEARANCE**



TECHNICAL INFORMATION

ACTUATOR SPECIFICATIONS

MODEL	EAU29	EAU2912A	EAU2912D
Torque Output ("lbs / Nm)	120 / 13.5	120 / 13.5	120 / 13.5
Current Draw	1.8A	4.8A	4.8A
Voltage	120VAC	12VAC	12VDC
Drive Cycle	90°	90°	90°
Speed (90°) seconds, 60 Hz	2.5	2.5	2.5
Motor, Type	120VAC	12VAC	12VDC
Duty Cycle (on/off)	25%	25%	25%
Motor Starts, per hour, Max	1200	1200	1200
Motor Protection, Temp / Class	130°C / Class B	130°C / Class B	130°C / Class B
MODEL	EAU2924A	EAU2924D	EAU29220A
Torque Output ("lbs / Nm)	120 / 13.5	120 / 13.5	120 / 13.5
Current Draw	2.4A	2.4A	0.9A
Voltage	24VAC	24VDC	220VAC
Drive Cycle	90°	90°	90°
Speed (90°) seconds, 60 Hz	7.5	2.5	2.5
Motor, Type	24VAC	24VDC	220VAC
Duty Cycle (on/off)	25%	25%	25%
Motor Starts, per hour, Max	1200	1200	1200
Motor Protection, Temp / Class	130°C / Class B	130°C / Class B	130°C / Class B

COMMON TO ALL

Electrical Entry (1)	1/2" EMT x 1 Port
Control	On/Off Control Only
Humidity Range	0-95% RH
Housing	GFPP enclosure, NEMA 4/4X
Mount	Proprietary Hayward Quick Mount
Operation	Unidirectional - CCW (viewed from above the actuator)
Auxiliary Switch	10A 230VAC (Resistive) SPDT x 1, End of Travel Dry Contact
Thermal Protection	UL Listed Motor Thermal Protection
Position Holding	Mechanical Brake Motor

This page intentionally left blank

