

# CML Electronic Actuator for Baumann™ 24000 Series

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Figure 1. Baumann 24000CVF Valve with  
CML-250 Electric Actuator



X1450

## Introduction

CML electric actuators (figure 1) provide high accuracy for industrial temperature, HVAC, and sanitary applications with Baumann sliding-stem control valves.

## Scope of Manual

This instruction manual includes installation information for CML electric actuators.

Do not install, operate, or maintain CML electric actuators without being fully trained and qualified in valve, actuator, and accessory installation, operation, and maintenance. To avoid personal injury or property damage, it is important to carefully read, understand, and follow all the contents of this manual, including all safety cautions and warnings. If you have any questions about these instructions, contact your [Emerson sales office](#) before proceeding.

## Actuator Specifications

Table 1. CML Actuator Specifications

ACTUATOR	CML-250	CML-750
ACTUATOR HOUSING	Cast Aluminum	
ENVIRONMENTAL RATINGS	FM, CSA, ATEX, IEC	
OPTIONAL RATINGS	FM, CSA, ATEX, IEC	
STANDARD ENCLOSURE	FM NEMA 4 and 6 / IP67 Class 1 Div 1 Gr C, D Class II Div I E, F, G	
STANDARD TEMPERATURE RATING	-30°C to +70°C (-22°F to +158°F)	
HAZAROUS AREA TEMPERATURE RANGE	-20°C to +65°C (-4°F to +150°F)	
CONDUIT CONNECTION	3/4" - 14 NPT (M25 x 1.50p optional)	
MOTOR TYPE	Brushless DC	
OPTIONAL VOLTAGES	120VAC, 240VAC, 24VDC <sup>(1)</sup>	
STANDARD POWER	120VAC/240VAC	
THRUST RATING	250 lbs Mod/Run (1112.1 N) 375 lbs Seating (1668.1 N)	750 lbs Mod/Run (3336.2 N) 1125 lbs Seating (5004.2 N)
THRUST ADJUSTABILITY	60% - 150% Rated Thrust	
MAX SPEED	0.13 in/sec <sup>(2)</sup>	
STANDARD CONTROL	Full range 4-20mA / Split Range 4/12 or 12-20mA **optional: 0-5Vdc and 0-10Vdc	
STANDARD FEEDBACK	4-20mA loop powered feedback <sup>(3)</sup>	
STANDARD CONTROL OPTIONS (SPECIAL)	Discrete On/Off RIRO [24VDC or 120VAC control], HART, Foundation Fieldbus, DeviceNet, Profibus, Modbus, Pakscan	
HMI/GUI SETUP	LCD - text	
MODULATING DUTY CYCLE	Unrestricted and Continuous	
RESOLUTION	0.2% (adjustable deadband 0 - 10% of analogue signal)	
SENSITIVITY	0.2%	
RESPONSE TIME	20 milliseconds	
STANDARD FAILURE ACTION	Close valve / Open valve / Hold-in-Place / Fail to Position on loss of input signal (selectable). Holds in place on power failure (standard)	
CUSTOMER SETTINGS SAVED	Yes, Standard	
WEIGHT (ACTUATOR ONLY)	8.3 kg (18.4 lbs)	11.5 kg (25.4 lbs)
POWER BACK-UP OPTION	Available: Super Capacitors. Fail to Position on Loss of Power. Adjustable to Fail Closed, Fail Open, Fail to Position, Fail in Place	
LOWER CONTROL OPTION	Available: Separate option. Local controls come standard with Super Capacitor Power Back-up	

1. 24VAC not available.  
2. Adjustable from 50 to 100%.  
3. Includes 2 adjustable relay outputs.

### WARNING

Always wear protective gloves, clothing and eyewear when performing any installation operations to avoid personal injury.

Personal injury or property damage caused by sudden release of pressure or bursting of pressure retaining parts may result if service conditions exceed those for which the product was intended. To avoid injury or damage, provide a relief valve for over pressure protection as required by government or accepted industry codes and good engineering practices.

Check with your process or safety engineer for any additional measures that must be taken to protect against process media.

If installing into an existing application, also refer to the WARNING at the beginning of the Maintenance section in this instruction manual.

**CAUTION**

This actuator is intended for a specific range of pressures, temperatures and other application specifications. Applying different pressures and temperatures to the actuator could result in parts damage, malfunction of the actuator or loss of control of the process. Do not expose this product to service conditions or variables other than those for which the product was intended. If you are not sure what these conditions are you should contact your [Emerson sales office](#) for more complete specifications. Provide the product serial numbers (shown on the nameplate) and all other pertinent information.

**⚠ WARNING**

If you move or work on an actuator installed on a valve with loading pressure applied, keep your hands and tools away from the stem travel path to avoid personal injury. Be especially careful when removing the stem connector to release all loading on the actuator stem.

Likewise take similar care when adjusting or removing any optional travel stop. Refer to the relevant actuator Maintenance Instructions.

If hoisting the valve, take care to prevent people from being injured in case the hoist or rigging slips. Be sure to use adequate sized hoists and chains or slings to handle the valve.

**⚠ WARNING**

Personal injury could result from packing leakage. Valve packing is tightened before shipment; however, the packing might require some readjustment to meet specific service conditions.

## Educational Services

For information on available courses for CML electric actuators, as well as a variety of other products, contact:

Emerson Automation Solutions  
Educational Services - Registration  
Phone: 1-641-754-3771 or 1-800-338-8158  
E-mail: [education@emerson.com](mailto:education@emerson.com)  
[emerson.com/fishervalvetraining](http://emerson.com/fishervalvetraining)

## Maintenance

### **⚠ WARNING**

Avoid personal injury and property damage from sudden release of process pressure or bursting of parts. Before performing any maintenance operations:

- Do not remove the actuator from the valve while the valve is still pressurized.
- Always wear protective gloves, clothing, and eyewear when performing any maintenance operations.
- Disconnect any operating lines providing air pressure, electric power, or a control signal to the actuator. Be sure the actuator cannot suddenly open or close the valve.
- Use bypass valves or completely shut off the process to isolate the valve from process pressure. Relieve process pressure on both sides of the valve. Drain the process media from both sides of the valve.
- Use lock-out procedures to be sure the above measures stay in effect while you work on the equipment.
- The valve packing box may contain process fluids that are pressurized, *even when the valve has been removed from the pipeline*. Process fluids may spray out when removing the packing hardware or packing rings, or when loosening the packing box pipe plug.
- Check with your process or safety engineer for any additional measures that must be taken to protect against process media.

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#### Note

It is recommended that you review figure 2 before performing maintenance or installation of the CML electric actuator.

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## Recommended Installation Location

It is permissible to install the CML actuator upright or horizontally. Allow 12 inches of clearance for removal of the actuator. Do not install with the actuator below the pipe.

### **CAUTION**

To avoid equipment damage, do not install the valve with the stem in a downward position. Equipment damage may occur from liquids leaking into the actuator cover.

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Figure 2. CML Actuator Components

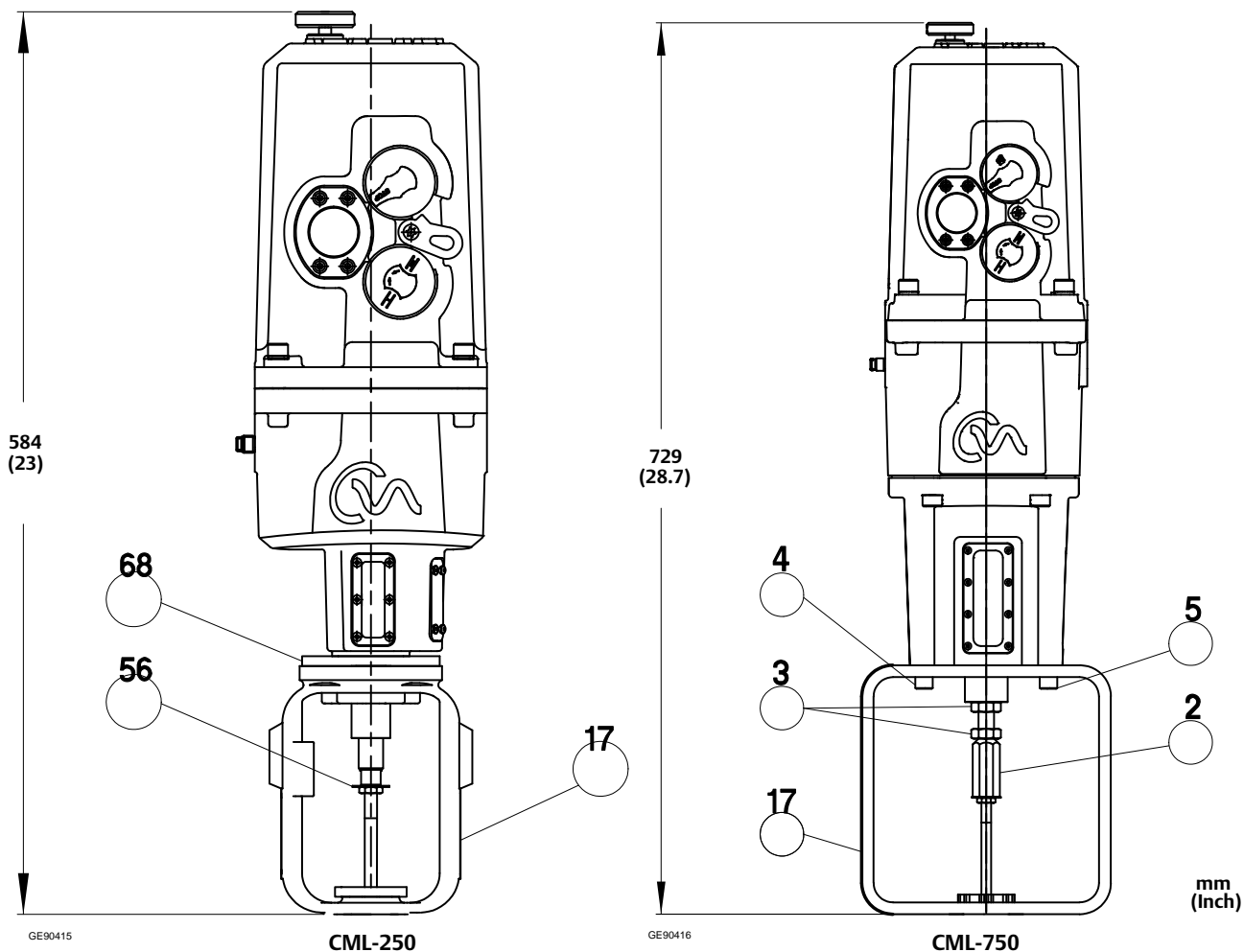
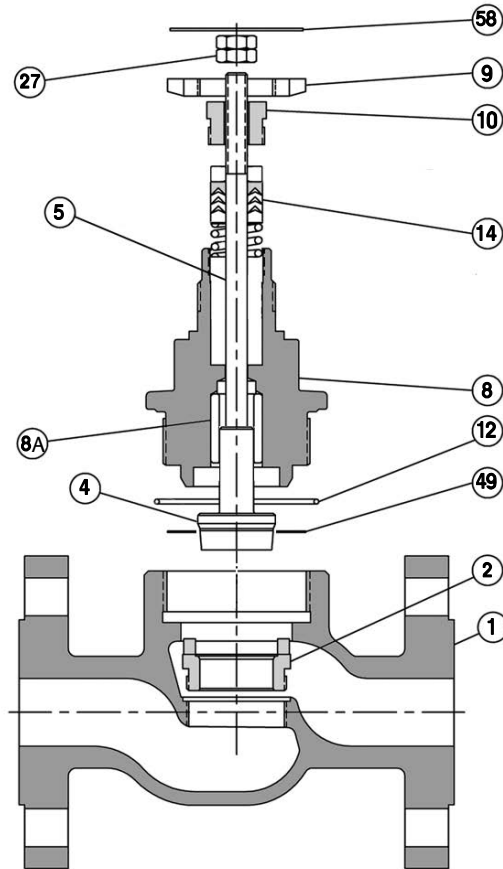


Table 2. CML Mounting Parts List

Key No.	Description	Qty	CML 250	CML 750
			Part Number	Part Number
--	Actuator	1	Consult your <a href="#">Emerson sales office</a>	
2	Stem Adaptor	1	NA	GE87952X022
3	Nut	2	NA	24334-1
4	Lock Washer	4	NA	20075
5	Cap Screw	4	NA	82813
17	Actuator Yoke	1	24184-3B	GE87978X022
56	Travel Scale	1	983674-001-250	NA
68	Spacer	1	24186	GE79905X012

Figure 3. Typical Baumann Valve Components



E1239

Table 3. Common Valve Parts

Key Number	Description
1	Valve Body
2	Seat Ring
4	Plug
5	Stem
8	Bonnet
8A	Bonnet Bushing
9	Drive Nut
10	Packing Follower
12	O-Ring
14	Packing
27	Lock Nuts
49	Body Gasket
58	Travel Indicator

## Installation

See table 2 for actuator parts/key numbers referenced in this Installation section. See table 3 and also refer to the appropriate Baumann valve instruction manual for valve parts referenced.

1. Before starting, ensure you have the correct actuator part number and locate the parts listed in table 2. Refer to the assembly instructions for the appropriate Baumann control valve for parts identification.
2. Place the valve body (key 1) in a vise. Clamp the flat end faces of the valve. DO NOT CLAMP THE SIDES OF THE VALVE. This may distort the shape of the casting and ruin the valve.
3. Push the valve stem (key 5) to the closed position. Install the two lock nuts (key 27) onto the stem (key 25).
4. Slowly lower the actuator down on the valve body (key 1). As the yoke (key 17) passes over the end of the valve stem (key 5), place the yoke drive nut (key 9) over the valve stem (key 5).
5. Screw the yoke drive nut (key 9) on to the bonnet (key 8) and tighten.
6. Place travel indicator disc (key 58) onto the valve stem (key 5).
7. For CML 750: Skip to step 10.
8. For CML 250: Remove the drive nut (supplied with actuator) from the base of the actuator and set the upper drive nut over the valve stem (key 5).
9. Place the spacer (key 68) on top of the actuator yoke (key 17) over the opening.
10. Set the actuator on top of the actuator yoke (key 17) and prepare for mounting
11. Lift the valve stem (key 5) with the travel indicator (key 58) and hold it. Spin the actuator onto top of the yoke (key 17) to screw the actuator stem onto the valve stem (key 5) by 9 full turns. The actuator should be facing forward when engagement is complete.

For the CML750 align the four bolt holes in the yoke (key 17) with the bolt holes in the actuator with the actuator facing forward.

12. For the CML 250 tighten the upper lock nut (supplied with actuator) on the actuator thread.

For the CML750 install the 4 cap screws (key 5) and tighten to 20 ft•lbs.

13. Raise the top lock nut (key 27) and lock travel indicator (key 58) on top. Then raise the lower lock nut (key 27) and lock in place to secure travel indicator (key 58) tight against the actuator stem.

## Additional Calibration and Setup

Additional calibration and setup information is available:

- CMA Installation and Maintenance Manual ([PUB094-009](#))
- CMA Range Quick Start Guide ([PUB094-007](#))

## Parts Ordering

Contact your [Emerson sales office](#) about this equipment.

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