

# Replacement of Jordan MV/VA-1020 Actuators with CML-250/750 Actuators in Baumann™ 24000 Series Valve Assemblies

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CML Series Electric Actuator on a Baumann 24000CVF Valve

## Management of Change

Management of Change (MOC) is a procedure used to proactively manage changes that have the potential to impact safety or the process within a plant. Evaluating new techniques for improving MOC approval procedures can have an impact on plant efficiency. Historically, upgrading obsolete products or replacing existing process control equipment had been delayed or abandoned due to the extensive paperwork involved in completing a complex MOC approval sheet.

Contained in the following sections are design comparisons between the obsolete Jordan MV-1020 and VA-1020 electric actuators and the current CML-250 and CML-750 electric actuators. These comparisons are intended to help end-users understand the similarities and differences between the Jordan and CML electric actuators and help facilitate an efficient and safe transition.

## Background

Baumann 24000 valve assemblies have transitioned away from Jordan MV and VA actuators to CML-250 and CML-750 actuators. Jordan MV-1020 and VA-1020 electronic modulating valve actuators featured state-of-the-art stepper motor technology to provide unrestricted, continuous modulation and exacting position control. The performance of those actuators rivaled the power of our pneumatic diaphragm sliding-stem designs.

The CML electric actuator series leverages all of the features end-users have come to know in the Jordan MV and VA actuators, along with improvements like increased response time, a shorter and narrower profile, optional power backup, and a local control option.

For more information regarding other Baumann products, please contact your Emerson local business partner or sales office.

## Question & Answer Checklist

- 1**    **Q:** Does the proposed modification cause any changes to the piping and instrumentation diagram (P&ID)?  
**A:** No.
- 2**    **Q:** Does the proposed modification change process chemistry, technology, or operating control philosophies?  
**A:** No.
- 3**    **Q:** Does the proposed modification change how the existing plant is operated?  
**A:** No, valve capacity is not affected by actuator revisions.
- 4**    **Q:** Does the proposed modification change process flows?  
**A:** No, valve capacity is not affected by actuator revisions.

- 5** Q: Does the proposed modification change existing pressure relief cases?  
A: No. This change involves actuators only. Pressure relief valve sizing is not considered when sizing and selecting Baumann control valves for end-user applications. If the control valve is determined to affect upstream or downstream safety relief cases, review by the end-user or third party is recommended.
- 6** Q: Does the proposed modification change the process description?  
A: No.
- 7** Q: Have the codes and standards to which the new equipment was designed changed?  
A: Not to our knowledge, but since this is not an original Emerson design, we can't confirm if our supplier's design codes and standards have changed.
- 8** Q: Does the proposed modification change the materials of construction, such as a change in material form (cast, forged, or alloy)?  
A: No. The actuator housings on both the Jordan and CML models are all made from cast aluminum.
- 9** Q: Does the proposed modification introduce new equipment items that require periodic predictive maintenance?  
A: No. These equipment items will require the same periodic predictive maintenance as the previous equipment items.
- 10** Q: Does the proposed modification change existing operator training requirements?  
A: Yes. Operating instructions can be found in the [CML Series instruction manual](#).
- 11** Q: Does the proposed modification introduce new equipment items that require training manuals, maintenance procedures or training to teach the maintenance department how to maintain them?  
A: Yes. Emerson local business partners and sales offices offer local training and support to help ensure operators, maintenance personnel, and instrument technicians are trained on CML electric actuators. Visit [Fisher.com](http://Fisher.com) to find a representative near you.
- 12** Q: Does the proposed modification introduce new equipment items that require spares or obsolete spares for existing equipment?  
A: No.
- 13** Q: Does the proposed modification permanently remove the spares for existing pieces of equipment?  
A: No.

- 14 Q:** Does the proposed modification change the inspection scope or inspection interval?  
**A:** No.
- 15 Q:** Does the proposed modification require welding work to be performed?  
**A:** No.
- 16 Q:** Have the materials of construction been reviewed to ensure that the metallurgy is correct?  
**A:** Yes.

## Comparison of Jordan MV/VA-1020 and CML-250/750 Electric Actuators

### Specifications

Actuator	CML-250 M00-00	CML-750 M00-00	Jordan MV-1020	Jordan VA-1020
Actuator Housing	Cast Aluminum		Cast Aluminum	
Environmental Ratings	FM, CSA, ATEX, IEC		Varies	
Optional Ratings	FM, CSA, ATEX, IEC		CSA	
Standard Enclosure	FM NEMA 4 & 6 / IP67 Class 1 Div 1 Gr C, D Class II Div I E, F, G"		CSA NEMA 4 / IP65 Class I Div 1 Gr C & D Class II Div 1 Gr E, F, G"	
STD Temperature Rating	-30°C to +70°C (-22°F to +158°F)		-40°C to +65°C (-40°F to +150°F)	
Conduit Connection	3/4" - 14 NPT (M25 x 1.50p optional)		1/2" - 14 NPT (M20 optional)	
Motor Type	Brushless DC		Stepper	
Optional Voltages	120VAC, 240VAC, 24VDC **24VAC NOT available		120VAC, 240VAC, 24VDC, 24VAC	
STD Power	120VAC/240VAC		120VAC	120VAC
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)	200 lbs (890 N)	800 lbs (3558.6 N)
Thrust Adjustability	60% - 150% Rated Thrust		Not Available	
Max Speed	0.13 in/sec **adjustable from 50% to 100%		0.13 in/sec	0.14 in/sec

Max Stroke	1.5 inch (38.1 mm)	2.0 inch (50.8 mm)	1.375 inch (35 mm)	1.5 inch (38.1 mm)
Standard Control	Full range 4-20mA / Split Range 4-12 or 12-20mA ** optional: 0-5 Vdc and 0-10Vdc			
Standard Feedback	4-20mA loop powered feedback ** Includes (2) adjustable relay outputs		4-20mA loop powered transmitter ** Includes (4) adjustable mechanical limit switches - 40mA at 40Vdc	
Standard Control Options (Special)	Discrete On/Off RIRO [24Vdc or 120VAC control], HART®, FOUNDATION™ fieldbus, DeviceNet, Profibus, Modbus, Pakscan		Discrete AC/DC positioning ** NETWORK OPTIONS NOT AVAILABLE	
HMI/GUI Setup	LCD - TEXT		LED - LIGHTS	
Modulating Duty Cycle	Unrestricted and Continuous		Unrestricted and Continuous	
Resolution	0.2% (adjustable deadband 0 - 10% of analogue signal)		1.0%	
Sensitivity	0.2%		+/-0.5% of span	
Response Time	20 milliseconds		Less than 240 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)"		Close valve / Open Valve / Hold-in-Place on loss of input signal (selectable). Holds in place on power failure. (standard)	
Customer Settings Saved	YES, Standard		Not Available	
Weight (Actuator Only)	18.4 lbs / 8.3 kg	25.4 lbs / 11.5 kg	16 lbs / 7.3 kg	24 lbs / 10.9 kg
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		Not Available	
Local Control Option	Available: Separate option. Local Controls come standard with Super Capacitor Power Back-up		Not Available	

Table 1. Specification Comparison

## Dimensions

Dimensionally, the CML-250 and CML-750 models are significantly shorter and narrower than the previous Jordan MV-1020 and VA-1020 models, as illustrated below. See Table 2 and Figures 1-4 for illustration of dimensional differences.

Actuator Type	Actuator Height	Actuator Width
Jordan MV-1020	484 mm (19.1 in)	203 mm (8.0 in)
CML-250	584 mm (23.0 in)	180 mm (7.1 in)
Jordan VA-1020	642 mm (25.3 in)	203 mm (8.0 in)
CML-750	729 mm (28.7 in)	201 mm (7.9 in)

Table 2. Dimensional Comparison

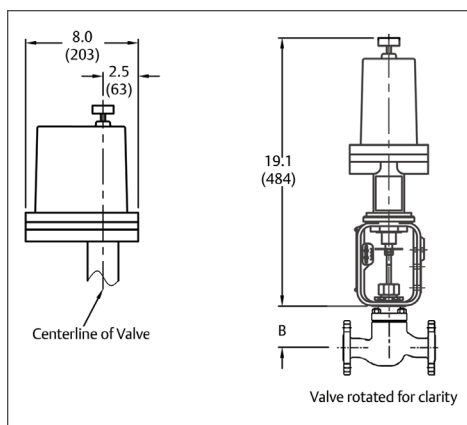


Figure 1: Jordan MV-1020 Dimensions

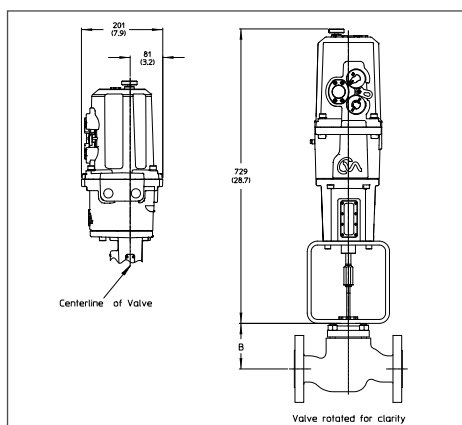


Figure 2: CML-250 Dimensions

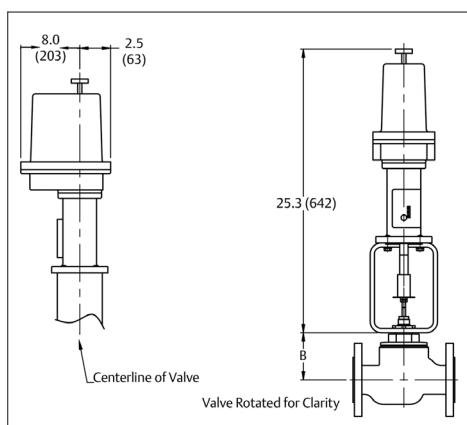


Figure 3: Jordan VA-1020 Dimensions

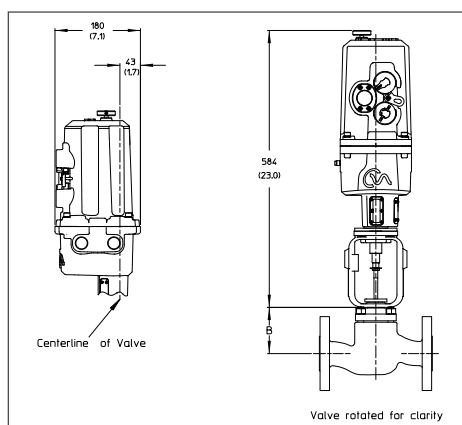


Figure 4: CML-750 Dimensions

## Weight

The CML-250 and CML-750 actuators will be 1-2 pounds heavier than the previous Jordan actuators, depending on the model.

Actuator Type	Weight in Kg. (Lb.)
Jordan MV-1020	7.3 kg (16 lb)
CML-250	8.3 kg (18.4 lb)
Jordan VA-1020	10.9 kg (24 lb)
CML-750	11.5 kg (25.4 lb)

Table 3: Weight Comparison

## Conclusion

Emerson offers the CML electric actuator series as a replacement for the obsolete Jordan actuator series. The CML electric actuator series will leverage all of the features end-users have come to know in Jordan actuators, along with improvements like faster response time, a smaller package profile, optional power back, and a local control option.

For more information regarding Baumann products, contact your [local Emerson sales office](#).



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