VIKING®

TECHNICAL DATA

MULTI JET CONTROL (MJC)

HEAT OR ELECTRICALLY ACTIVATED WITH 3 MM OR 5 MM BULB

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

1. DESCRIPTION

Viking Multiple Jet Controls (MJCs) are unidirectional inline valves for use in sprinkler or water-spray systems where it is required to operate small groups of sprinklers or waterspray nozzles simultaneously. The MJCs contain either a 3 mm or 5 mm thermosensitive glass bulb and are available in various temperature ratings. Available thread sizes are 1" NPT or 25 mm BSPT with a double outlet. They can be installed in any orientation. Electrically actuated MJCs are fitted with a Metron actuator, which operates when an electrical current is applied, causing the Metron body to break the frangible glass bulb.

2. LISTINGS AND APPROVALS

LPCB Approved: Ref. Nos. 096v/01, 096v/02, 096v/03, and 096v/04

Refer to the Approval Chart and Design Criteria for LPCB Approval requirements that must be followed.

3. TECHNICAL DATA

Specifications:

Available since 2011.
Minimum Operating Pressure: 7 psi (0.5 bar)
Rated to 175 psi (12 bar) water working pressure.
Factory tested hydrostatically to 500 psi (34.5 bar).
Maximum long-term operating temperature for the optional Metron Actuator is 200 °F (93 °C).
The MJCs are marked with the temperature rating and the direction of water flow on the body.
Thread Sizes: 1" NPT or 25 mm BSPT
Nominal K-Factor (metric*): 370 bar (25.7 U.S.)

Viking Technical Data may be found on The Viking Corporation's Web site at http://www.vikinggroupinc.com. The Web site may include a more recent edition of this Technical Data Page.

* Metric K-factor measurement shown is in bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.

Glass-bulb fluid tempeature rated to -65 °F (-55 °C).
C_v Factor: 34 for the 1" or 25 mm MJC with one outlet open, or 50 for the 1" or 25 mm MJC with two outlets open
Friction Loss (Given in feet of Schedule 40 pipe based on Hazen & Williams formula C=120):

1" or 25 mm MJC with one outlet - > 3.16' (0.96 m)
1" or 25 mm MJC with two outlets open - > 1.45' (0.44 m)

Weight: 2.56 lb (1.2 kg) for the 1" or 25 mm MJC

$$Q = C_v \sqrt{\frac{\Delta P}{S}}$$

Q= Flow
C_v= Flow Factor (GPM/1 PSI ΔP)
ΔP= Pressure Loss through Valve
S= Specific Gravity of Fluid

Material Standards:

Body: Brass UNS-C84400
Bulb: Glass, nominal 3 mm or 5 mm diameter
Belleville Spring Sealing Assembly: Nickel Alloy (Inconel 718) coated on both sides with Teflon Tape

Metron Actuator (optional):

Small Brass Cylinders with Two Lead Wires Approx. 3-11/16" (93 mm)

Ordering Information: (Also refer to the current Viking price list.)

Order the Multi Jet Control (MJC) valve by selecting the appropriate part number from the Approval Chart. Add the appropriate suffix for the finish first and then the suffix for the temperature rating to the MJC base part number.
Finish Suffix: Brass = A
Temperature Suffix: 155 °F (68 °C) = B, 175 °F (79 °C) = D, 200 °F (93 °C) = E, 286 °F (141 °C) = G, 360 °F (182 °C) = H*, or 500 °F (260 °C) = L**
For example, MJC with a 3 mm bulb, 25 mm BSPT, Brass finish, and a 155 °F (68 °C) temperature rating = Part No. 16992AB
NOTE: MJCs can be ordered with a Metron actuator in temperature ratings of 155 °F (68 °C), 175 °F (79 °C), and 200 °F (93 °C).
**The 360 °F (182 °C) and 500 °F (260 °C) temperature ratings are available for the 5 mm bulb version only.

Available Finish and Temperature Ratings: Refer to Table 1.

(Removed Single Outlet Data)

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4. INSTALLATION

WARNING: Viking MJCs are manufactured and tested to meet the rigid requirements of the approving agency. The MJCs are designed to be installed in accordance with recognized installation standards. Deviation from the standards or any alteration to the MJC after it leaves the factory including, but not limited to: painting, plating, coating, or modification, may render the unit inoperative and will automatically nullify the approval and any guarantee made by The Viking Corporation.

The Approval Chart shows approvals of MJCs for use on water spray systems. The chart shows listings and approvals available at the time of printing. Other approvals may be in process. Check with the manufacturer for any additional approvals.

A. MJCs are to be installed in accordance with the latest edition of Viking technical data, the latest published standards of NFPA, FM Global, LPCB, APSAD, VdS or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards whenever applicable. The use of MJCs may be limited due to occupancy and hazard. Refer to the Authority Having Jurisdiction prior to installation.

B. MJCs are installed on fixed fire protection systems.

C. Handle MJCs with care. They must be stored in a cool, dry place in their original shipping container. Never install an MJC that has been dropped, damaged, or exposed to temperatures exceeding the maximum ambient temperature allowed (refer to Table 1).

D. Never install any MJC if the bulb is cracked or if there is a loss of liquid from the bulb. A small air bubble should be present in the glass bulb. Any MJC with a loss of liquid from the glass bulb or damage to the Metron acuator should be destroyed immediately.

E. MJCs are not approved for use in areas subject to corrosive atmospheres.

F. MJCs must be installed after the piping is in place to prevent mechanical damage.

G. MJCs must be protected from mechanical damage.

H. Before installing, be sure to have the appropriate MJC model and style, with the correct temperature rating and response characteristics. MJCs are identified with the temperature rating. Keep the protective bulb shields on the MJCs during installation and testing, and any time the MJC is shipped or handled.

1. Install the MJC on the fixed piping using a crescent or pipe wrench applied to the wrench flats only. Take care not to overtighten or damage the MJC operating parts. **Never tighten MJCs onto the piping by inserting a wrench handle or pipe into the outlet(s).** This may damage the sealing mechanism.
2. Discharge pipe must be supported at a maximum of 23 in. (600 mm) from each MJC outlet.

TABLE 1: AVAILABLE MJC TEMPERATURE RATINGS AND FINISHES

Temperature Classification	Nominal Temperature Rating[1]	Maximum Ambient Ceiling Temperature[2,3]	Bulb Color
Ordinary	155 °F (68 °C)	100 °F (38 °C)	Red
Intermediate	175 °F (79 °C)	150 °F (65 °C)	Yellow
Intermediate	200 °F (93 °C)	150 °F (65 °C)	Green
High	286 °F (141 °C)	225 °F (107 °C)	Blue
Extra High[4]	360 °F (182 °C)	300 °F (149 °C)	Mauve
Ultra High[4,5]	500 °F (260 °C)	465 °F (240 °C)	Black

MJC Finish: Brass

Footnotes

[1] The temperature rating is stamped on the MJC body.

[2] Based on NFPA-13. Other limits may apply, depending on fire loading, MJC location, and other requirements of the Authority Having Jurisdiction. Refer to specific installation standards.

[3] The maximum long-term operating temperature for the Metron Actuator is 200 °F (93 °C).

[4] The 360 °F (182 °C) and 500 °F (260 °C) temperature ratings are available for the 5 mm bulb version only.

[5] The Ultra-High temperature rating is intended for use inside ovens, dryers, or similar enclosures with normal operating temperatures above 300 °F (149 °C). Where the ambient temperature around the Ultra-High temperature rated MJC is significantly reduced below 300 °F (149 °C), response time may be severely retarded.

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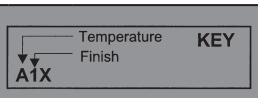
Approval Chart

Multi Jet Controls
Maximum 175 PSI (12 bar) WWP



Base Part Number[1]	Outlet	Thread Size		Metric K-Factor[2]	Overall Length (Refer to Figures 1 and 2.)		Listings and Approvals[3] (Refer also to Design Criteria.)
		NPT	BSPT		Inches	mm	LPCB[4]
with a 3 mm Glass Bulb[5]							
16754	Double	1”	--	370 double	5-5/8	143	B1
16992	Double	--	25 mm	370 double	5-5/8	143	B1
with a 3 mm Glass Bulb and Metron Actuator[5]							
16758	Double	1”	--	370 double	5-5/8	143	C1
16994	Double	--	25 mm	370 double	5-5/8	143	C1
with a 5 mm Glass Bulb							
16752	Double	1”	--	370 double	5-5/8	143	A1
16991	Double	--	25 mm	370 double	5-5/8	143	A1
with a 5 mm Glass Bulb and Metron Actuator[5]							
16756	Double	1”	--	370 double	5-5/8	143	D1
16993	Double	--	25 mm	370 double	5-5/8	143	D1

Approved Temperature Ratings[6,7]

A - 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), 286 °F (141 °C), 360 °F (182 °C)[8], and 500 °F (260 °C)[8]
B - 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), and 286 °F (141 °C)
C - 155 °F (68 °C), 175 °F (79 °C), and 200 °F (93 °C)
D - 155 °F (68 °C), 175 °F (79 °C), and 200 °F (93 °C)

Approved Finish
1 - Brass

Footnotes

[1] Base part number is shown. When ordering, specify either open or automatic. For complete part number, see current Viking price schedule.

[2] Metric K-factor shown is for use when pressure is measured in bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.

[3] This chart shows the listings and approvals available at the time of printing. Other approvals may be in process. Check with the manufacturer for any additional approvals.

[4] LPCB Approved: Ref. Nos. 096v/01, 096v/02, 096v/03, and 096v/04.

[5] MJCs with a metron device are available in temperature ratings of 155 °F (68 °C), 175 °F (79 °C), and 200 °F (93 °C).

[6] The MJC body is identified with the temperature rating.

[7] The maximum long-term operating temperature for the Metron Actuator is 200 °F (93 °C).

[8] The 360 °F (182 °C) and 500 °F (260 °C) temperature ratings are available for the 5 mm bulb version only.

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DESIGN CRITERIA

(Also refer to the Approval Chart.)

LPCB Approval Requirements:

MJCs are unidirectional inline valves for use in sprinkler or waterspray systems where it is required to operate small groups of sprinklers or waterspray nozzles simultaneously. Refer to the installation standards for minimum water supply requirements, pressure, and installation guidelines.

- MJCs may be installed in any orientation, including upright, pendent, or horizontal sidewall.
- Discharge pipe must be supported at a maximum of 23 in. (600 mm) from each MJC outlet.

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Viking MJCs are to be installed in accordance with the latest edition of Viking technical data, the appropriate standards of NFPA, FM Global, LPCB, APSAD, VdS or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable.

I. **For Metron Actuated MJCs:** Ensure that the Metron element and its wiring are not damaged during storage or installation. Care must be taken to ensure that the actuator cable/leadwires are not twisted. Before making electrical connections, precautions must be made to prevent accidental firing; ensure the wiring is NOT live and preferably shorted out. Refer to Table 2 on this page for required electrical current. Although Metron actuators cannot be tested, their electrical continuity can be checked using a very low current (refer to Table 2). NOTE: Where Metron MJCs are installed near electrical machinery, shielded wiring is recommended.
   1. Multiple firing: Metron actuators can be wired in series or in parallel, although series wiring is preferred. With parallel wiring, the resistance of each cable run must be balanced to ensure that all the devices receive sufficient current to fire. Metrons wired in series must have the minimum series firing current stated in Table 2 for a minimum of 10 ms.

Table 2 - Metron Actuators

Nominal Energy	6 millijoules
Resistance Range	0.9-1.6 Ohms
Max. No Fire Current 30 sec. Pulse 0.050 sec. Pulse	 0.15A 0.3A
Min. Single Firing Current DC 10 ms Pulse	0.6A 0.9A
Recommended Single Firing Current	1.0A
Recommended Series Firing Current	3.0A
Max. Monitoring Current†	0.01A

†DO NOT exceed 0.01A short circuit current to prevent inadvertent operation of the actuator.

J. After installation, the entire fixed pipe system must be tested. The test must be conducted to comply with the installation standards. Make sure the MJC has been properly tightened. If a thread leak occurs, normally the unit must be removed, new pipe-joint compound or tape appled, and then reinstalled. This is due to the fact that when the joint seal is damaged, the sealing compound or tape is washed out of the joint. In areas where leakage during testing must be prevented, system piping may be air tested prior to testing with water. Refer to the appropriate installation standard and the Authority Having Jurisdiction.

K. **Remove plastic protective bulb shields AFTER installation and testing is completed and there no longer is a potential for mechanical damage to the MJC operating elements.** To remove the shields, simply pull the ends of the shields apart where they are snapped together. **BULB SHIELDS MUST BE REMOVED FROM MJCs BEFORE PLACING THE SYSTEM IN SERVICE!**

5. OPERATION

The bulb is pre-loaded at the factory to hold a sealing spring assembly against the inlet seat, which provides a water and air tight seal. During fire conditions, the heat-sensitive liquid in the glass bulb expands, causing the bulb to shatter, releasing the sealing spring assembly. This allows water to flow through the outlet(s). Electrically actuated MJCs are fitted with a Metron actuator. When an electrical current is applied to the actuator, a piston is propelled from the Metron body, breaking the the frangible glass bulb. If the Metron is not activated for any reason, the glass bulb will shatter with the application of heat in fire conditions.

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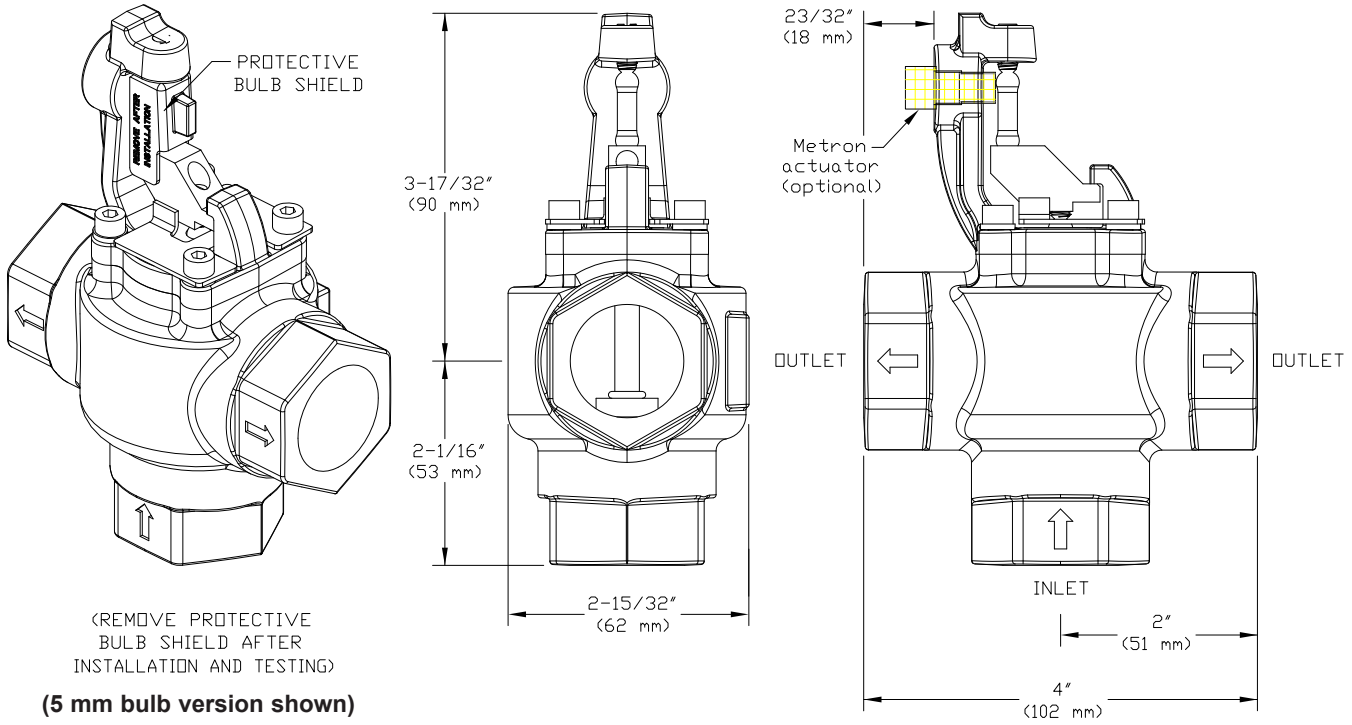

Figure 2: **1” NPT or 25 mm BSPT MJC Dimensions**

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6. INSPECTIONS, TESTS AND MAINTENANCE

NOTICE: Refer to NFPA 25 for Inspection, Testing and Maintenance requirements. **NOTICE:** The owner is responsible for having the fire-protection system and devices inspected, tested, and maintained in proper operating condition in accordance with this guide, and applicable NFPA standards. In addition, the Authority Having Jurisdiction may have additional maintenance, testing, and inspection requirements that must be followed.

A. MJCs must be inspected on a regular basis for corrosion, build up of dirt, mechanical damage, obstructions, paint, etc. Frequency of inspections may vary due to corrosive atmospheres, water supplies, and activity around the device. Viking recommends inspecting MJC valves monthly for damage, corrosion, or the build up of dirt. Where MJCs become coated in dust this can be removed with a light brush. DO NOT use compressed air. Where corrosion or dirt is a problem, Viking recommends removing a sample of the installed MJCs and returning them to Viking for inspection on a yearly basis. MJCs coated in dirt or corrosion should NOT be cleaned on site because removing the coating may damage the mechanism.

B. MJCs that have been filed painted, caulked, or mechanically damaged must be replaced immediately. MJCs showing signs of corrosion shall be tested and/or replaced immediately as required. The Installation standards require MJCs to be tested and, if necessary, replaced after a specified term of service. NOTE: Metron actuators must be replaced at least every 10 years from the date of manufacture. Depending on service conditions, more frequent replacement may be necessary. Refer to NFPA 25 and the Authority Having Jurisdiction for the specified period of time after which testing and/or replacement is required. Never attempt to repair or reassemble an MJC. MJCs that have operated cannot be reassembled or re-used, but must be replaced. When replacement is necessary, use only new MJCs with identical performance characteristics.

C. When replacing existing MJCs, the system must be removed from service. Refer to the appropriate system description and/or valve instructions. Prior to removing the system from service, notify all Authorities Having Jurisdiction. Consideration should be given to employment of a fire patrol in the affected area.
   1. Remove the system from service, drain all water, and relieve all pressure on the piping.
   2. Install the new MJC unit by following the instructions in section 4. INSTALLATION. Care must be taken to ensure that the replacement MJC is the proper model and style, with the correct temperature rating and response characteristics.

D. Place the system back in service and secure all valves. Check for and repair all leaks. Sprinkler systems that have been subjected to a fire must be returned to service as soon as possible. The entire system must be inspected for damage, and repaired or replaced as necessary. MJCs that have been exposed to corrosive products of combustion or high ambient temperatures, but have not operated, should be replaced. Refer to the Authority Having Jurisdiction for minimum replacement requirements.

7. AVAILABILITY

The Viking MJCs are available through a network of domestic and international distributors. See The Viking Corporation web site for the closest distributor or contact The Viking Corporation.

8. GUARANTEE

For details of warranty, refer to Viking's current list price schedule or contact Viking directly.