

## Type MV-R Reverse Action and Type MV-T Tank Top Medium Velocity Open Nozzles

### General Description

The Tyco Type MV-R Reverse Action and Type MV-T Tank Top Nozzles are open (non-automatic) spray nozzles designed for use in water spray fixed systems for fire protection of vessels or structures containing highly flammable liquids, gases and solids having flash-points of 66 °C (150 °F) and below. They are external deflector-type nozzles that discharge against the direction of the orifice in a uniformly filled spray pattern of medium velocity water droplets over a pre-determined area.

MV-R and MV-T nozzles are effective in covering exposed vertical, horizontal, curved, and irregular shaped surfaces in a cooling spray to prevent excessive absorption of heat from an external fire and possible structural damage or spread of fire to the protected equipment. They also promote vapor dilution and dispersion.

The Type MV-R Reverse Action Nozzle, designed specifically to protect spherical vessels and bulk storage tanks, can be installed at any angle and discharges a 118° reverse angle conical spray pattern (refer to Graph A).

The Type MV-T Tank Top Nozzle, designed specifically to protect tank tops, is installed in only an upright orientation and discharges a wide-angle hemispherical spray pattern (refer to Graph B).

#### IMPORTANT

Refer to Technical Data Sheet TFP2300 for warnings pertaining to regulatory and health information.

Always refer to Technical Data Sheet TFP700 for the "INSTALLER WARNING" that provides cautions with respect to handling and installation of sprinkler systems and components. Improper handling and installation can permanently damage a sprinkler system or its components and cause the sprinkler to fail to operate in a fire situation or cause it to operate prematurely.

Type MV-R and MV-T nozzles having orifice diameters smaller than 9,5 mm (0.37 in.) are factory assembled with an orifice insert and strainer. Strainers have 3,2 mm (0.13 in.) diameter holes. Nozzles equipped with strainers range in size from MV10 to MV30 (Ref. Tables A and B).

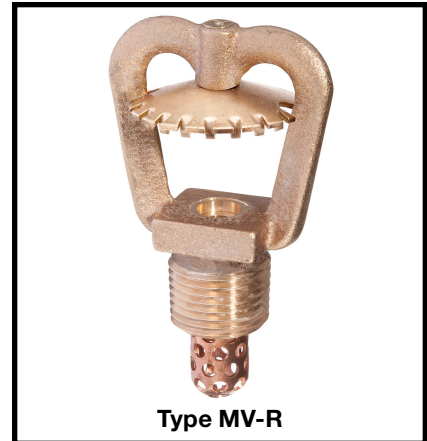
It is recommended that the end user be consulted with respect to the suitability of the materials of construction and finish for any given corrosive environment. The effects of ambient temperature, concentration of chemicals, and gas/chemical velocity, should be considered, at a minimum, along with the corrosive nature to which the Type MV Nozzles may be exposed.

#### NOTICE

*The Tyco Type MV-R and MV-T Nozzles described herein must be installed and maintained in compliance with this document and with the applicable standards of the NATIONAL FIRE PROTECTION ASSOCIATION (NFPA), in addition to the standards of any authorities having jurisdiction. Failure to do so may impair the performance of these devices.*

*The design of individual water spray fixed systems can vary considerably, depending on the characteristics and nature of the hazard, the basic purpose of the spraying system, the configuration of the hazard, and wind/draft conditions. Because of these variations, as well as the wide range of available nozzle spray characteristics, the design of water spray fixed systems for fire protection must only be performed by experienced designers who thoroughly understand the limitations as well as capabilities of such systems.*

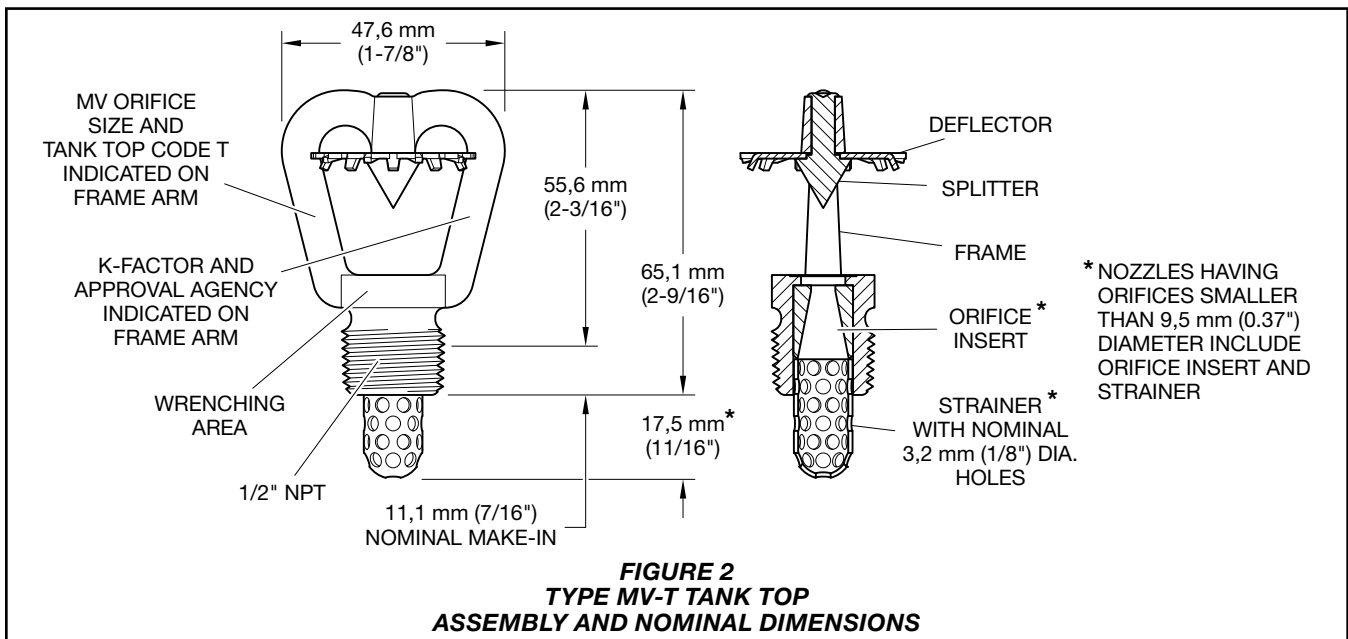
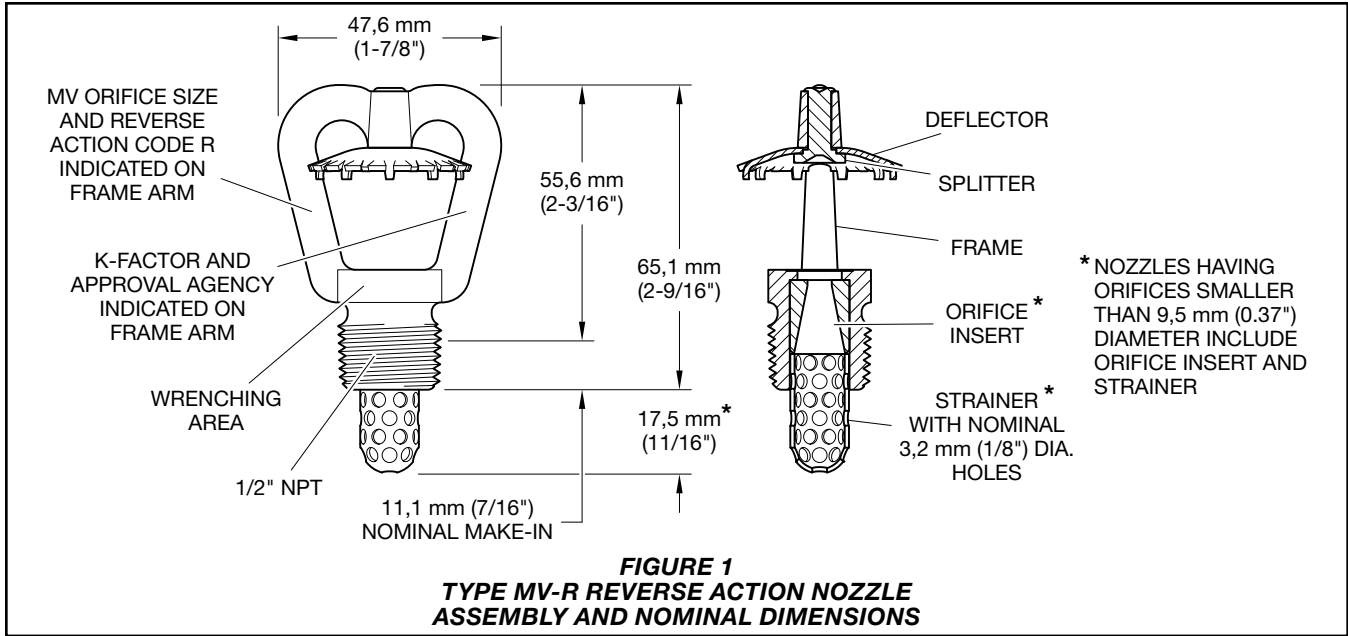
*The owner is responsible for maintaining their fire protection system and devices in proper operating condition. Contact the installing contractor or product manufacturer with any questions.*



Type MV-R



Type MV-T



## Technical Data

**Approvals**  
 MV-R: UL Listed and FM Approved (refer to Table A)  
 MV-T: UL Listed (refer to Table B)

**Maximum Working Pressure**  
 12,1 bar (175 psi)

**Discharge Coefficient**  
 MV-R, refer to Table A  
 MV-T, refer to Table B

**Thread Connection**  
 1/2 in. NPT

**Physical Characteristics**  
 Type MV-R and MV-T Nozzles are comprised of components constructed from: Stainless Steel, Brass & Leaded Gunmetal LG2, Titanium, Aluminium Bronze, SMO254, or Zeron 100.

| Orifice Size | Minimum Diameter mm (Inches) | K-factor               |                        | Listings/Approvals per Material |       |          |                  |        |           |
|--------------|------------------------------|------------------------|------------------------|---------------------------------|-------|----------|------------------|--------|-----------|
|              |                              | LPM/bar <sup>1/2</sup> | GPM/psi <sup>1/2</sup> | Stainless Steel                 | Brass | Titanium | Aluminium Bronze | SMO254 | Zeron 100 |
| MV10R        | 5,15 (0.20)                  | 17,3                   | 1.2                    | 1, 2                            | 1, 2  | 1, 2     | 1, 2             | 1, 2   | 1, 2      |
| MV12R        | 5,40 (0.21)                  | 18,7                   | 1.3                    |                                 |       |          |                  |        |           |
| MV15R        | 6,35 (0.25)                  | 25,9                   | 1.8                    |                                 |       |          |                  |        |           |
| MV18R        | 6,80 (0.27)                  | 28,8                   | 2.0                    |                                 |       |          |                  |        |           |
| MV19R        | 7,15 (0.28)                  | 31,7                   | 2.2                    |                                 |       |          |                  |        |           |
| MV21R        | 7,70 (0.30)                  | 36,0                   | 2.5                    |                                 |       |          |                  |        |           |
| MV25R        | 8,35 (0.33)                  | 41,8                   | 2.9                    |                                 |       |          |                  |        |           |
| MV26R        | 8,80 (0.34)                  | 44,6                   | 3.1                    |                                 |       |          |                  |        |           |
| MV30R        | 9,00 (0.35)                  | 49,0                   | 3.4                    |                                 |       |          |                  |        |           |
| MV34R        | 9,60 (0.38)                  | 59,0                   | 4.1                    |                                 |       |          |                  |        |           |
| MV47R        | 11,20 (0.44)                 | 79,2                   | 5.5                    |                                 |       |          |                  |        |           |
| MV57R        | 12,60 (0.50)                 | 100,8                  | 7.0                    |                                 |       |          |                  |        |           |

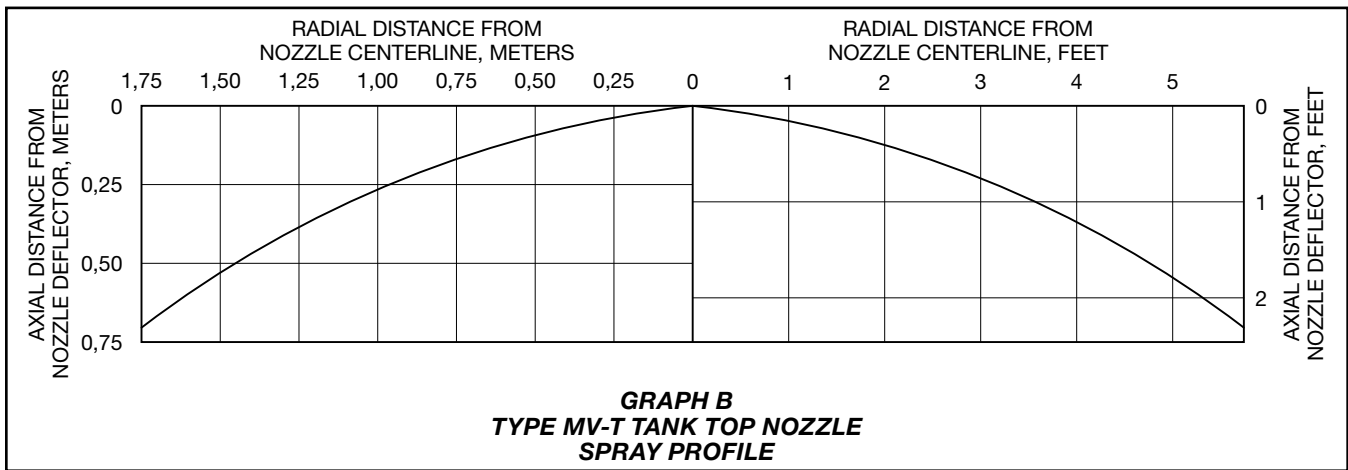
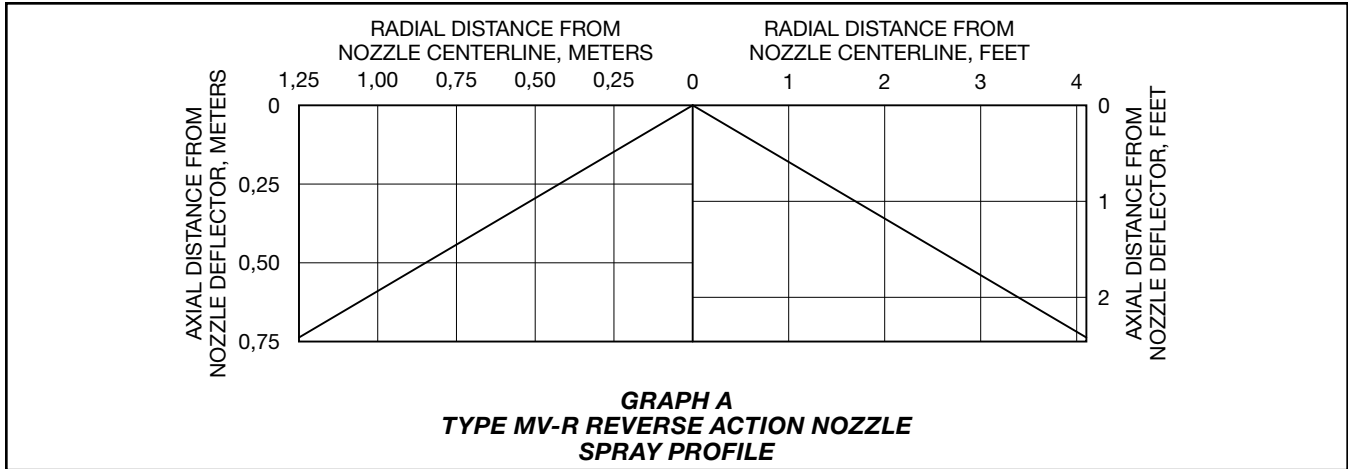
**NOTES:**  
1. UL Listed  
2. FM Approved

**TABLE A**  
**TYPE MV-R REVERSE ACTION NOZZLE**  
**ORIFICE SIZES, DISCHARGE COEFFICIENTS, MATERIALS OF CONSTRUCTION, AND**  
**LABORATORY LISTINGS AND APPROVALS**

| Orifice Size | Minimum Diameter mm (Inches) | K-factor               |                        | Listings/Approvals per Material |       |          |                  |        |           |
|--------------|------------------------------|------------------------|------------------------|---------------------------------|-------|----------|------------------|--------|-----------|
|              |                              | LPM/bar <sup>1/2</sup> | GPM/psi <sup>1/2</sup> | Stainless Steel                 | Brass | Titanium | Aluminium Bronze | SMO254 | Zeron 100 |
| MV10T        | 5,15 (0.20)                  | 17,3                   | 1.2                    | 1                               | 1     | 1        | 1                | 1      | 1         |
| MV12T        | 5,40 (0.21)                  | 18,7                   | 1.3                    |                                 |       |          |                  |        |           |
| MV15T        | 6,35 (0.25)                  | 25,9                   | 1.8                    |                                 |       |          |                  |        |           |
| MV18T        | 6,80 (0.27)                  | 28,8                   | 2.0                    |                                 |       |          |                  |        |           |
| MV19T        | 7,15 (0.28)                  | 31,7                   | 2.2                    |                                 |       |          |                  |        |           |
| MV21T        | 7,70 (0.30)                  | 36,0                   | 2.5                    |                                 |       |          |                  |        |           |
| MV25T        | 8,35 (0.33)                  | 41,8                   | 2.9                    |                                 |       |          |                  |        |           |
| MV26T        | 8,80 (0.34)                  | 44,6                   | 3.1                    |                                 |       |          |                  |        |           |
| MV30T        | 9,00 (0.35)                  | 49,0                   | 3.4                    |                                 |       |          |                  |        |           |
| MV34T        | 9,60 (0.38)                  | 59,0                   | 4.1                    |                                 |       |          |                  |        |           |
| MV47T        | 11,20 (0.44)                 | 79,2                   | 5.5                    |                                 |       |          |                  |        |           |
| MV57T        | 12,60 (0.50)                 | 100,8                  | 7.0                    |                                 |       |          |                  |        |           |

**NOTES:**  
1. UL Listed

**TABLE B**  
**TYPE MV-T TANK TOP NOZZLE**  
**ORIFICE SIZES, DISCHARGE COEFFICIENTS, MATERIALS OF CONSTRUCTION, AND**  
**LABORATORY LISTINGS AND APPROVALS**



## Design Criteria

### Nozzle Placement

Where direct impingement of water spray onto all of the protected surface is required by the authority having jurisdiction, Type MV-R and MV-R Nozzles are to be spaced and directed so that their spray patterns will completely cover the protected surface with the minimum required average density.

Both MV-R and MV-T nozzles must be installed at a maximum effective distance of 0,75 m (2.5 ft) from the protected surface.

Type MV-R nozzles can be oriented at any angle on pipe sprigs (Ref. Figure 3).

Type MV-T nozzles must be oriented in the upright position on pipe sprigs (Ref. Figure 4).

### Spray Patterns

Spray patterns for MV-R and MV-T nozzles are shown in Graphs A and B and apply to discharge pressures of 1,4 (20 psi). Though the Maximum Working Pressure is 12,1 bar (175 psi), discharge pressures in excess of 4,1 bar (60 psi) will result in a decrease in coverage area since the spray patterns tend to draw inwards at higher pressures.

### Main Pipeline Strainers

Main pipeline strainers per NFPA 15 are required for systems utilizing nozzles with a flow path less than 9,5 mm (0.37 in.) diameter (i.e., MV10 thru MV30, refer to Table A), and for any system where the water is likely to contain obstructive material.

## Installation

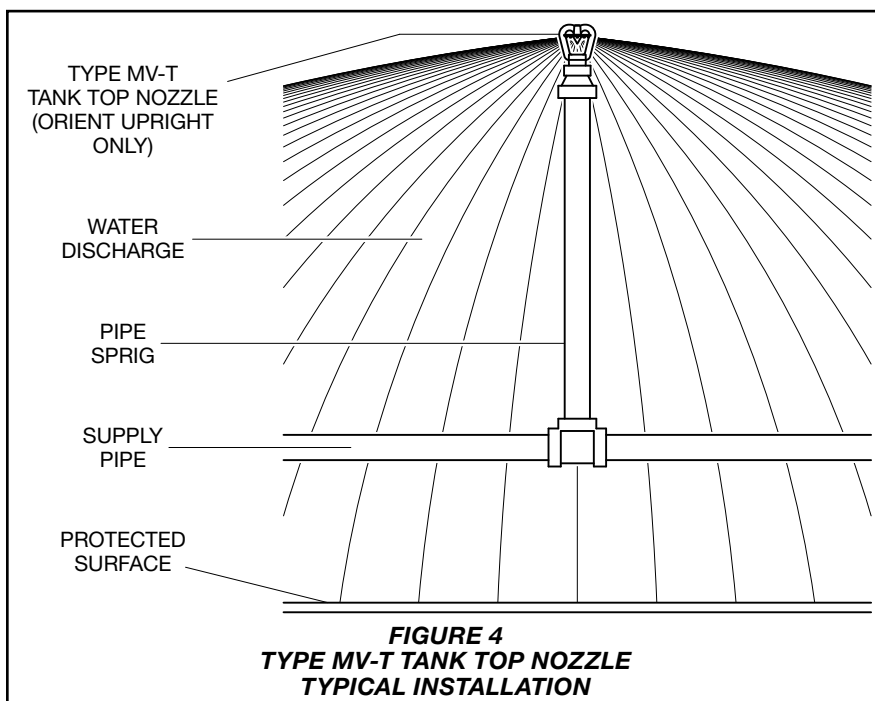
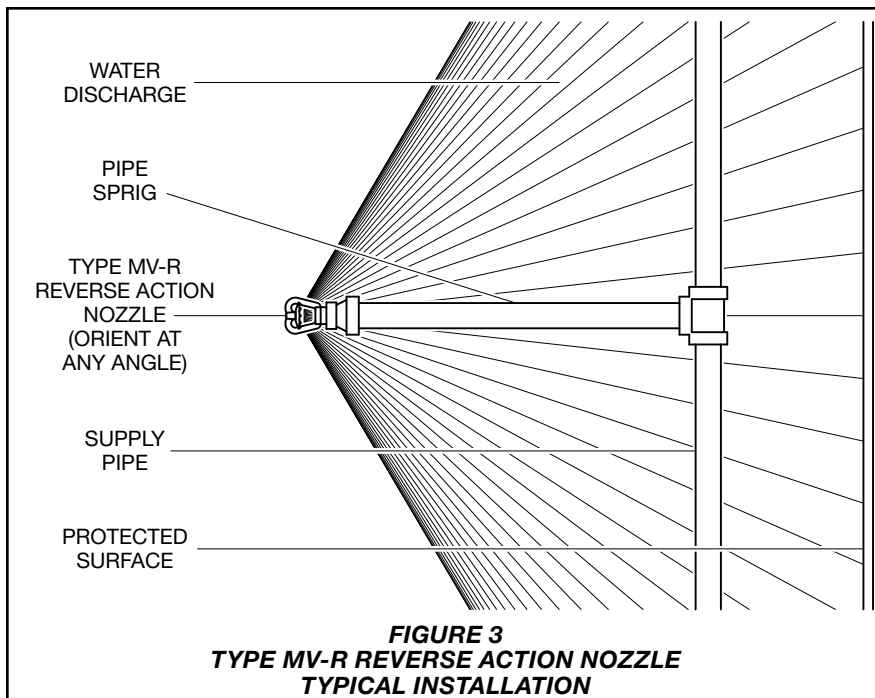
The Tyco Type MV-R and MV-T Nozzles must be installed in accordance with this section.

### General Instructions

A leak-tight 1/2 in. NPT sprinkler joint should be obtained by applying a minimum-to-maximum torque of 9,5 to 19,0 N·m (7 to 14 ft·lb). Higher levels of torque can distort the nozzle Inlet with consequent impairment of the nozzle.

**Step 1.** With pipe-thread sealant applied to the pipe threads, hand-tighten the nozzle into the nozzle fitting.

**Step 2.** With reference to Figures 1 and 2, apply an appropriate size adjustable Crescent wrench to the wrenching area and tighten the nozzle into the nozzle fitting.



## Care and Maintenance

The Tyco Type MV-R and MV-T Nozzles must be maintained and serviced in accordance with this section.

Before closing a fire protection system main control valve for maintenance work on the fire protection system that it controls, obtain permission to shut down the affected fire protection system from the proper authorities

and notify all personnel who may be affected by this action.

Type MV-R and MV-T Nozzles must never be painted, plated, coated or altered in any way after leaving the factory; otherwise, the spray performance may be impaired.

Exercise care to avoid damage to the nozzles, before, during, and after installation. Replace nozzles damaged by dropping, striking, wrench twist/slip-page, or the like.

Frequent visual inspections are recommended to be initially performed for nozzles installed in potentially corrosive atmospheres to verify the integrity of the materials of construction and finish as they may be affected by the corrosive conditions present for a given installation. Thereafter, annual inspections per NFPA 25 are required.

Water spray fixed systems to fire protection service require regularly scheduled care and maintenance by trained personnel.

In addition to inspecting nozzles for proper spray performance during water flow trip tests of the system, it is recommended that nozzles be periodically inspected for broken or missing parts, loading/obstructions, or other evidence of impaired protection. The inspections should be scheduled weekly or as frequently as may be necessary, and corrective action must be taken to ensure that the nozzles will perform as intended in the event of a fire.

The owner is responsible for the inspection, testing, and maintenance of their fire protection system and devices in compliance with this document, as well as with the applicable standards of the NATIONAL FIRE PROTECTION ASSOCIATION (e.g., NFPA 25), in addition to the standards of any authorities having jurisdiction. Contact the installing contractor or product manufacturer with any questions.

Water spray fixed systems are recommended to be inspected, tested, and maintained by a qualified Inspection Service in accordance with local requirements and/or national codes.

| Orifice Size | Material        |                             |          |                  |          |           |
|--------------|-----------------|-----------------------------|----------|------------------|----------|-----------|
|              | Stainless Steel | Brass & Leaded Gunmetal LG2 | Titanium | Aluminium Bronze | SMO254   | Zeron 100 |
| MV10R        | 28480           | 28383                       | 28480T   | 28383AB          | 28480SMO | 28480Z    |
| MV12R        | 28481           | 28384                       | 28481T   | 28384AB          | 28481SMO | 28481Z    |
| MV15R        | 28482           | 28385                       | 28482T   | 28385AB          | 28482SMO | 28482Z    |
| MV18R        | 28483           | 28386                       | 28483T   | 28386AB          | 28483SMO | 28483Z    |
| MV19R        | 28484           | 28387                       | 28484T   | 28387AB          | 28484SMO | 28484Z    |
| MV21R        | 28485           | 28388                       | 28485T   | 28388AB          | 28485SMO | 28485Z    |
| MV25R        | 28486           | 28389                       | 28486T   | 28389AB          | 28486SMO | 28486Z    |
| MV26R        | 28487           | 28390                       | 28487T   | 28390AB          | 28487SMO | 28487Z    |
| MV30R        | 28488           | 28391                       | 28488T   | 28391AB          | 28488SMO | 28488Z    |
| MV34R        | 28489           | 28392                       | 28489T   | 28392AB          | 28489SMO | 28489Z    |
| MV47R        | 28490           | 28393                       | 28490T   | 28393AB          | 28490SMO | 28490Z    |
| MV57R        | 28491           | 28394                       | 28491T   | 28394AB          | 28491SMO | 28491Z    |

**TABLE C**  
**TYPE MV-R REVERSE ACTION NOZZLE**  
**PART NUMBERS**

| Orifice Size | Material        |                             |          |                  |          |           |
|--------------|-----------------|-----------------------------|----------|------------------|----------|-----------|
|              | Stainless Steel | Brass & Leaded Gunmetal LG2 | Titanium | Aluminium Bronze | SMO254   | Zeron 100 |
| MV10T        | 28492           | 28285                       | 28492T   | 28285AB          | 28492SMO | 28492Z    |
| MV12T        | 28493           | 28281                       | 28493T   | 28281AB          | 28493SMO | 28493Z    |
| MV15T        | 28494           | 28282                       | 28494T   | 28282AB          | 28494SMO | 28494Z    |
| MV18T        | 28495           | 28283                       | 28495T   | 28283AB          | 28495SMO | 28495Z    |
| MV19T        | 28496           | 28286                       | 28496T   | 28286AB          | 28496SMO | 28496Z    |
| MV21T        | 28497           | 28287                       | 28497T   | 28287AB          | 28497SMO | 28497Z    |
| MV25T        | 28498           | 28288                       | 28498T   | 28288AB          | 28498SMO | 28498Z    |
| MV26T        | 28499           | 28289                       | 28499T   | 28289AB          | 28499SMO | 28499Z    |
| MV30T        | 28500           | 28290                       | 28500T   | 28290AB          | 28500SMO | 28500Z    |
| MV34T        | 28501           | 28291                       | 28501T   | 28291AB          | 28501SMO | 28501Z    |
| MV47T        | 28502           | 28292                       | 28502T   | 28292AB          | 28502SMO | 28502Z    |
| MV57T        | 28503           | 28293                       | 28503T   | 28293AB          | 28503SMO | 28503Z    |

**TABLE D**  
**TYPE MV-T TANK TOP NOZZLE**  
**PART NUMBERS**

## Limited Warranty

For warranty terms and conditions, visit [www.tyco-fire.com](http://www.tyco-fire.com).

## Ordering Procedure

Contact your local distributor for availability. When placing an order, indicate the full product name and part number (P/N).

**Type MV-R Reverse Action Nozzles**  
Specify: Type MV-R Reverse Action Nozzle, Open, Medium Velocity, orifice size (specify), material (specify), P/N (specify from Table C).

**Type MV-T Tank Top Nozzles**  
Specify: Type MV-T Tank Top Nozzle, Open, Medium Velocity, orifice size (specify), material (specify), P/N (specify from Table D).