

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

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.

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docs.jci.com/tycofire/tfp809

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, see Graph A.

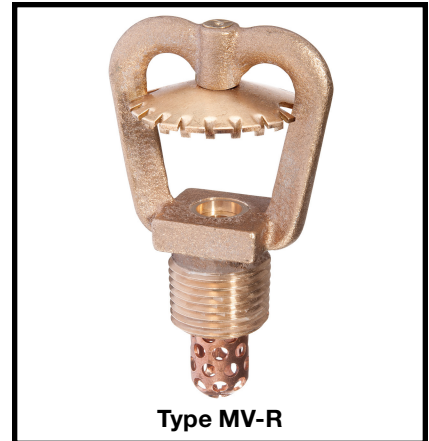
The Type MV-T Tank Top Nozzle, designed specifically to protect tank tops, is installed in only an upright orientation and discharges a wide-angle hemispherical spray pattern, see Graph B.

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, see Tables A and B.

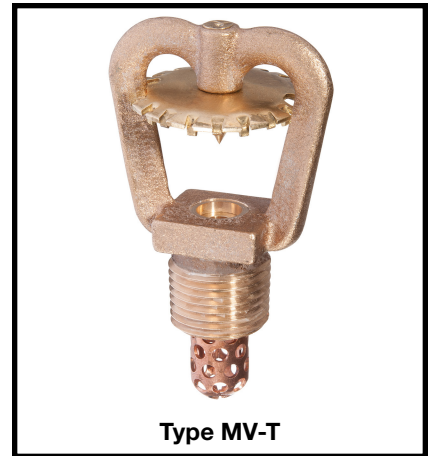
It is recommended that the end user be consulted with respect to the suitability of the materials of construction and finish for any given corrosive environment. The effects of ambient temperature, concentration of chemicals, and gas/chemical velocity, should be considered, at a minimum, along with the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



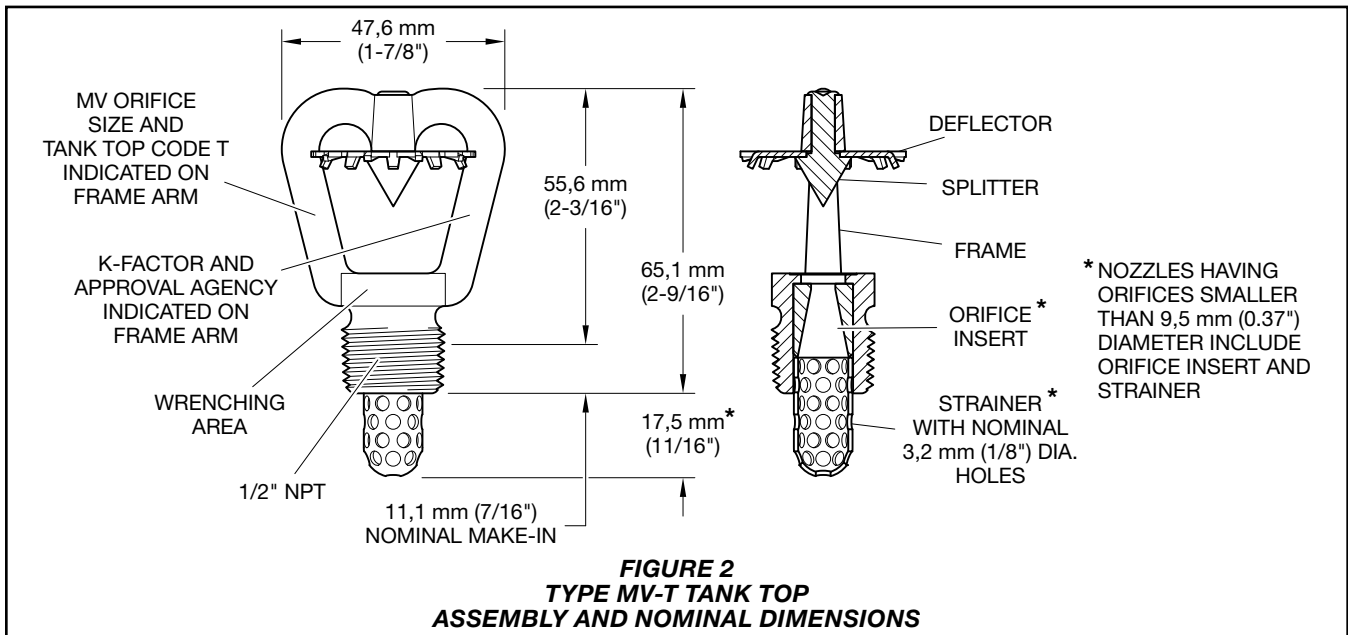
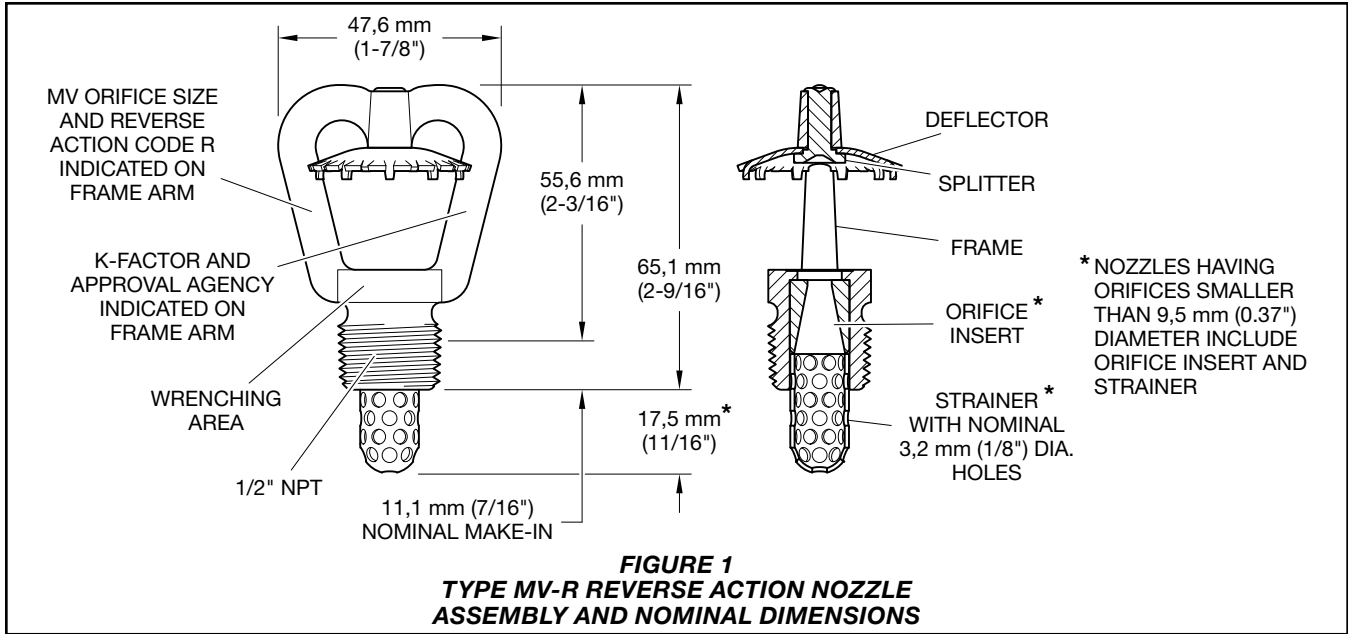
Type MV-R



Type MV-T

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.



Technical Data

Approvals

MV-R: UL Listed and FM Approved, see Table A
 MV-T: UL Listed, see Table B

Maximum Working Pressure
 12,1 bar (175 psi)

Discharge Coefficient
 MV-R, see Table A
 MV-T, see 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 ^{1/2}	GPM/psi ^{1/2}	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						

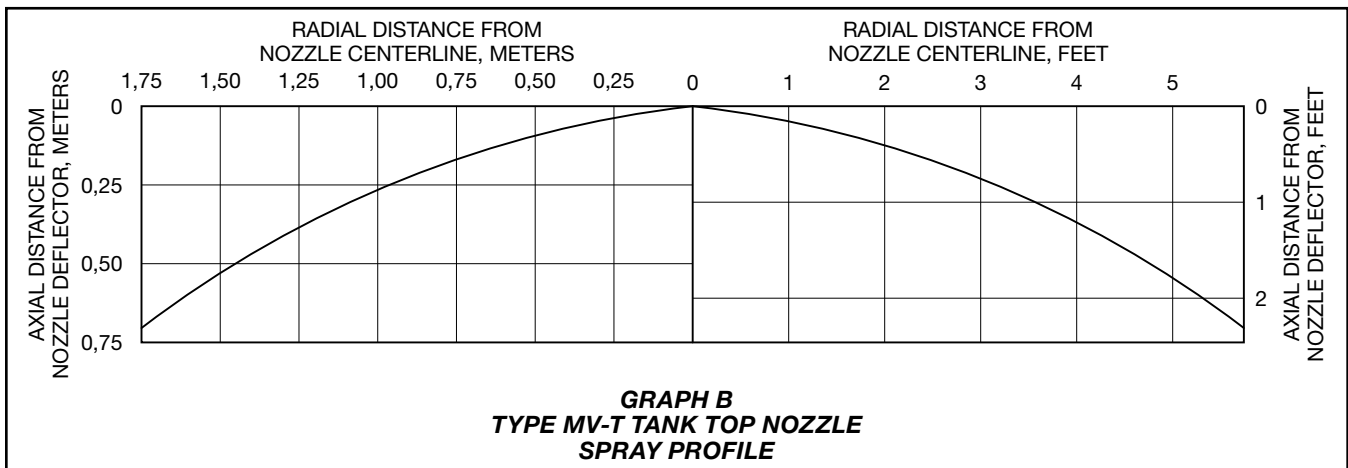
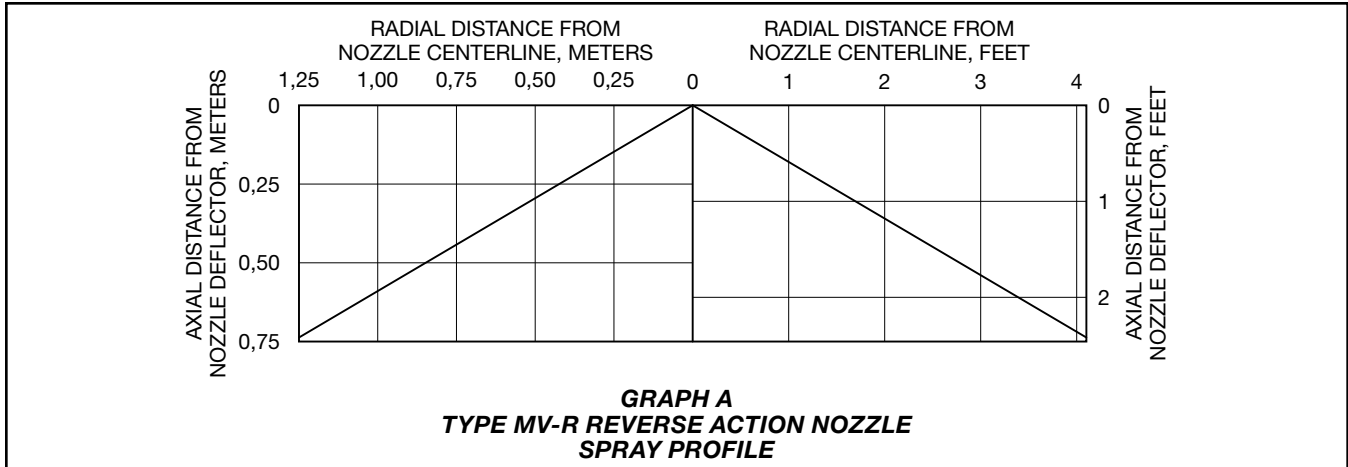
NOTES:
1. UL Listed
2. FM Approved

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 ^{1/2}	GPM/psi ^{1/2}	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, see Figure 3.

Type MV-T nozzles must be oriented in the upright position on pipe sprigs, see 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, for example, MV10 thru MV30, see 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.

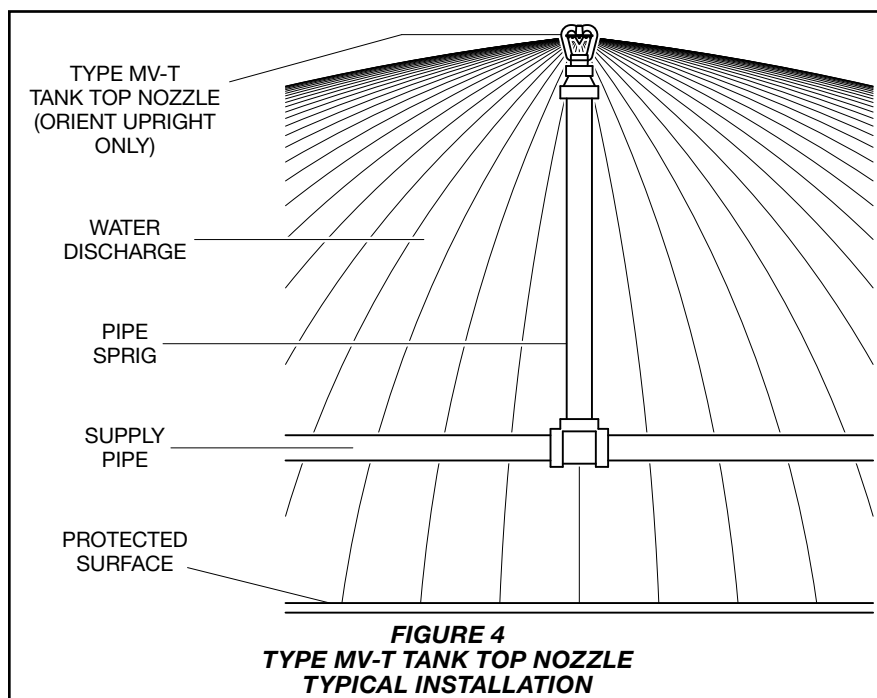
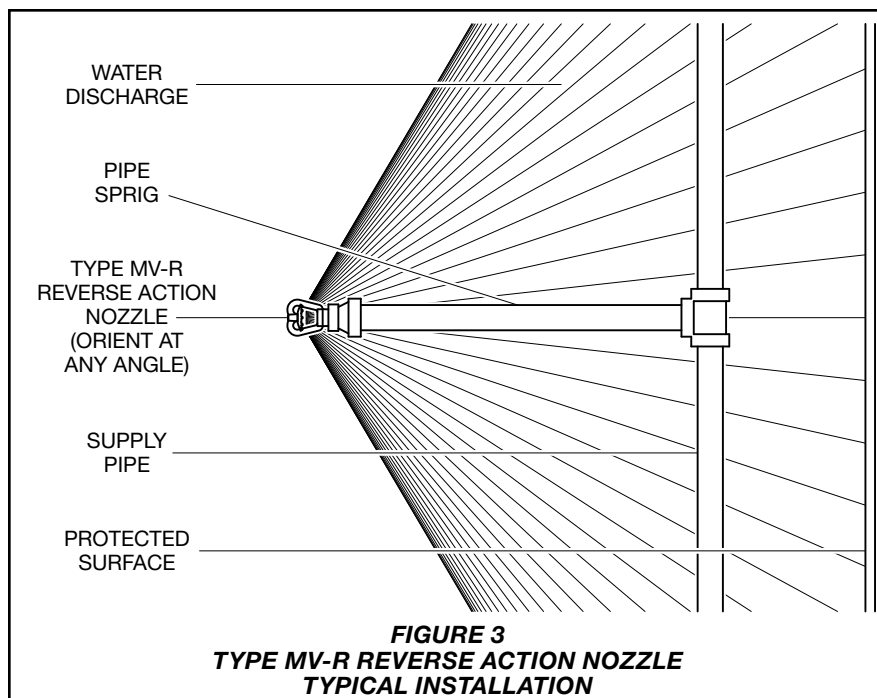
Frequent visual inspections are recommended to be initially performed for nozzles installed in potentially corrosive atmospheres to verify the integrity of the materials of construction and finish as they may be affected by the corrosive conditions present for a given installation. Thereafter, annual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

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).



Worldwide
Contacts | www.tyco-fire.com

TFP809 Change History Appendix

ISSUE DATE	NOTES
08-22	Page 1, added QR code and URL to allow convenient access to electronic version from printed document; Page 6, changed corporate address and telephone number to 1467 Elmwood Avenue, Cranston, RI 02910 Telephone +1-401-781-8220, formerly 1400 Pennbrook Parkway, Lansdale, PA 19446 Telephone +1-215-362-0700.
08-18	Updated Tyco® branding and document format; Added Johnson Controls copyright; Added disclaimer stating specifications and information subject to change without notice; Added reference to Regulatory and Health Warning Technical Data Sheet TFP2300.
02-16	Removed FM Approved from the MV-T in Approvals sub-section.
02-15	New Technical Data Sheet TFP809 describes Type MV-R Reverse Action and Type MV-T Tank Top Open Medium Velocity Nozzles.