

## Model RM-1 Riser Manifold Commercial and Residential

### General Description

The TYCO commercial and residential Model RM-1 Riser Manifold provide the necessary waterflow alarm, pressure gauge, alarm test orifice, drain, and sight glass equipment in a single assembly for use in NFPA 13 commercial sprinkler systems and in NFPA 13D/13R residential sprinkler systems as follows:

#### NFPA 13\*

- 1-1/2 in. (DN40)  
Male Thread x Female Thread
- 2 in.–6 in. (DN50–DN150)  
Groove x Groove

#### NFPA 13D

- 1 in. (DN25)  
Female Thread x Female Thread

#### NFPA 13R

- 1-1/2 in. (DN40)  
Male Thread x Female Thread
- 2 in. (DN50)  
Groove x Groove

\* Although the Riser Manifold described in this technical data sheet is intended for NFPA 13 sprinkler systems, it may be used for NFPA 13D or 13R residential sprinkler systems, where a test orifice of 2.8K or 4.2K is acceptable.

The variety of sizes and grooved end connections allow cost effective and easy transition to check valves, control valves, and system piping. The Model RM-1 Riser Manifolds may be installed either horizontally (flow switch on top) or vertically (flow going up) orientation, for both single sprinkler rises and floor control in high-rises.

Optional Pressure Relief Kits feature a 175 psi pressure relief valve and trim components for convenient integration into commercial and residential riser manifold assemblies.

The pressure relief valve, installed in manifold assemblies above the normally closed test and drain or drain valve, automatically bleeds system pressure exceeding 175 psi through a flexible hose connected to the manifold drain outlet (Ref. Figure 5), reducing system pressure to 175 psi.

#### NOTICE

*The Model RM-1 Riser Manifolds described herein must be installed and maintained in compliance with this document, as well as with the applicable standards of the NATIONAL FIRE PROTECTION ASSOCIATION (NFPA), in addition to the standards of any other authorities having jurisdiction. Failure to do so may impair the performance of these devices.*

*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

UL and ULC Listed  
FM Approved  
Listed by California State Fire Marshall

#### Maximum Working Pressure

300 psi (20,7 bar)

#### Friction Loss

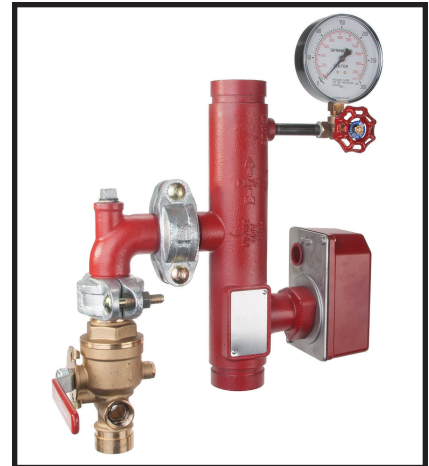
See Table A

#### Test Orifice

1 in.–3 in. (DN25–DN80) Manifolds: 2.8K  
4 in.–6 in. (DN100–DN150) Manifolds: 4.2K

#### Finish

Red Painted

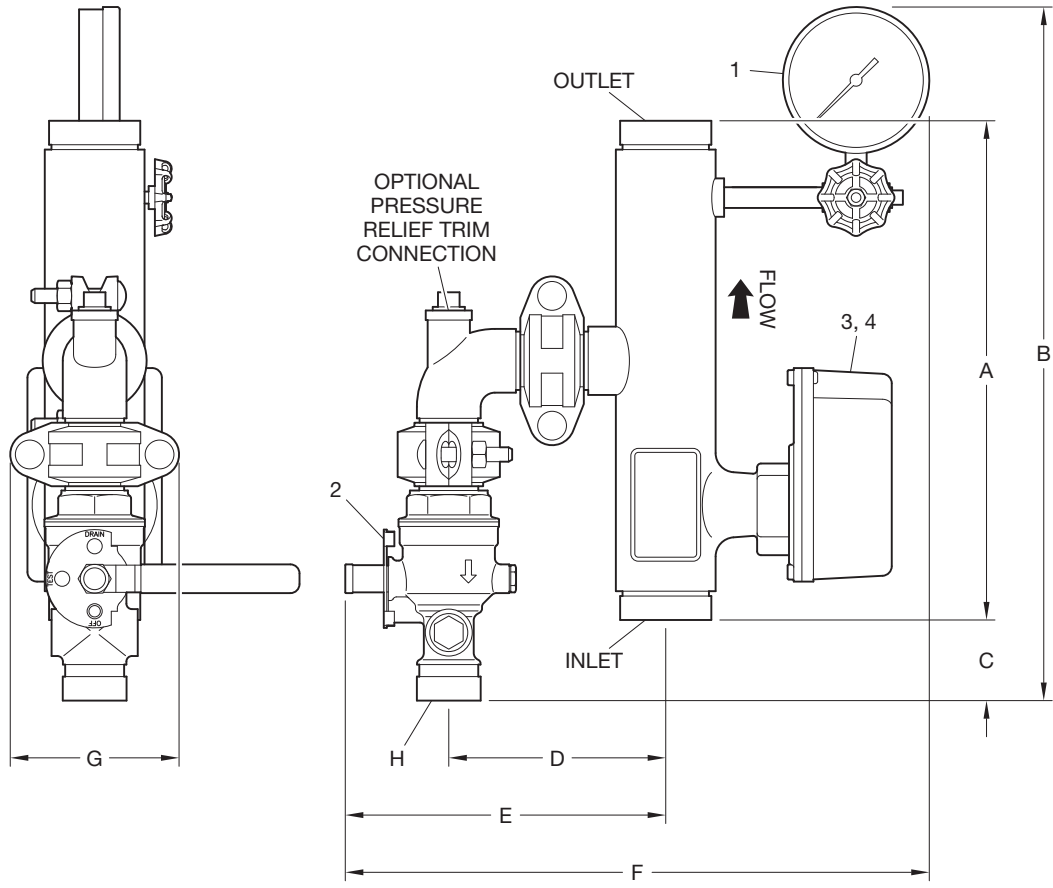


#### IMPORTANT

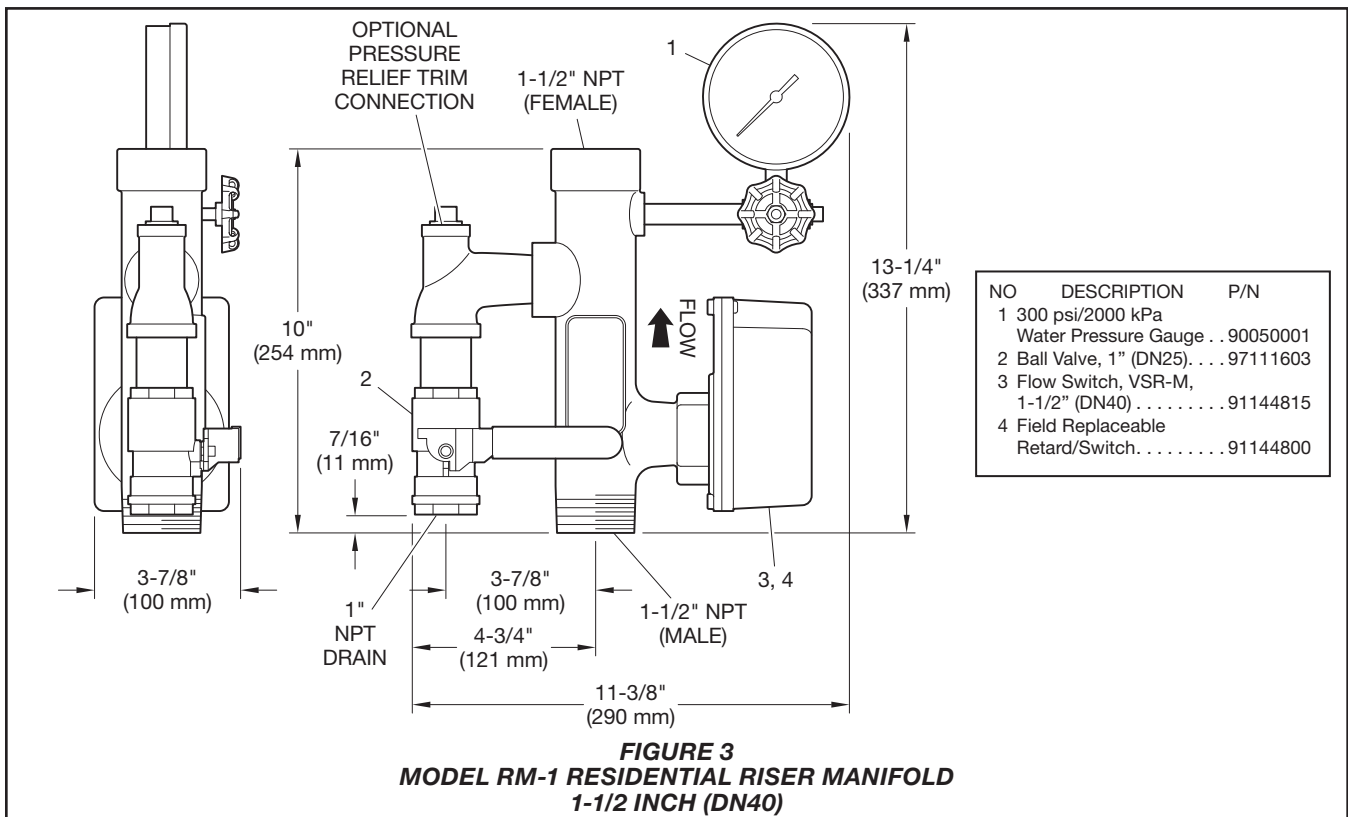
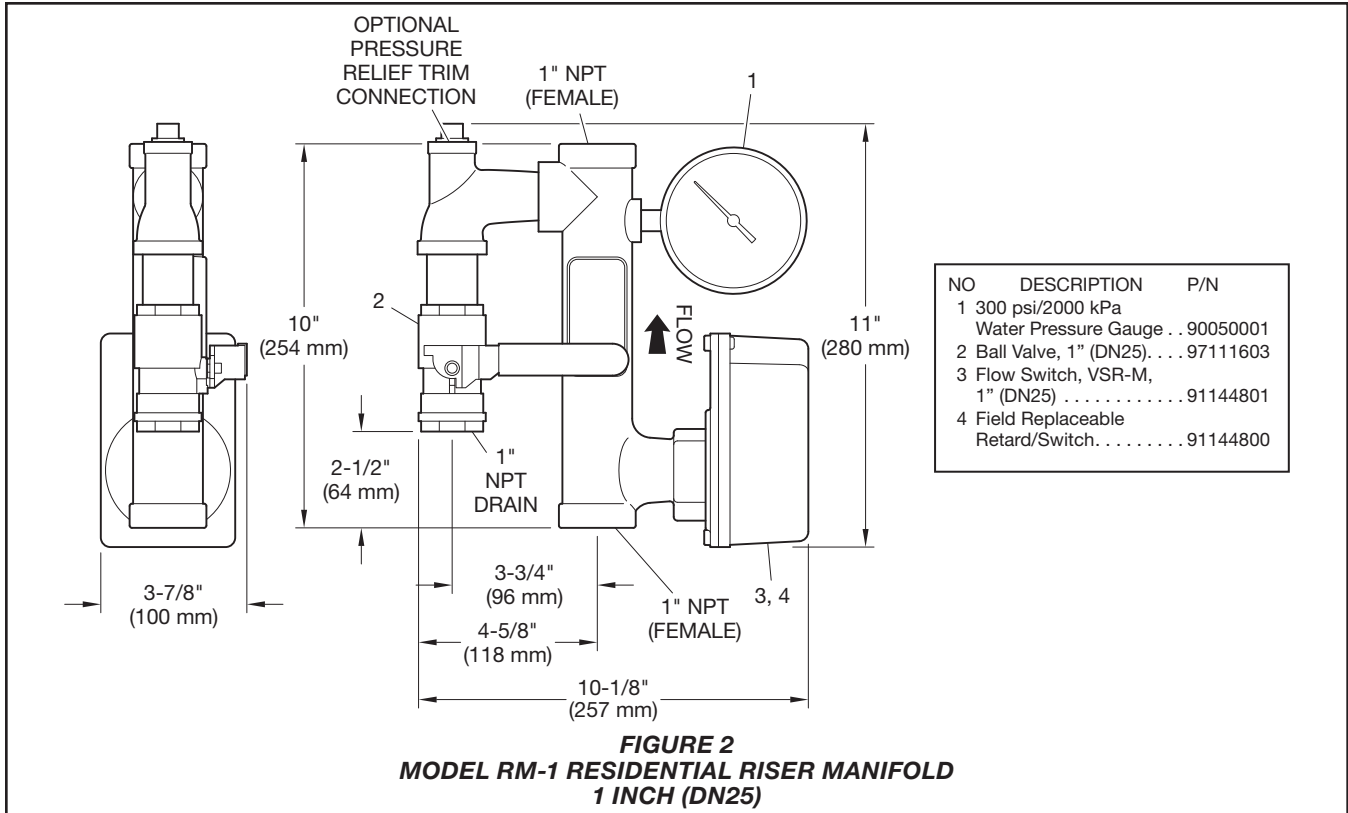
Refer to Technical Data Sheet TFP2300 for warnings pertaining to regulatory and health information.

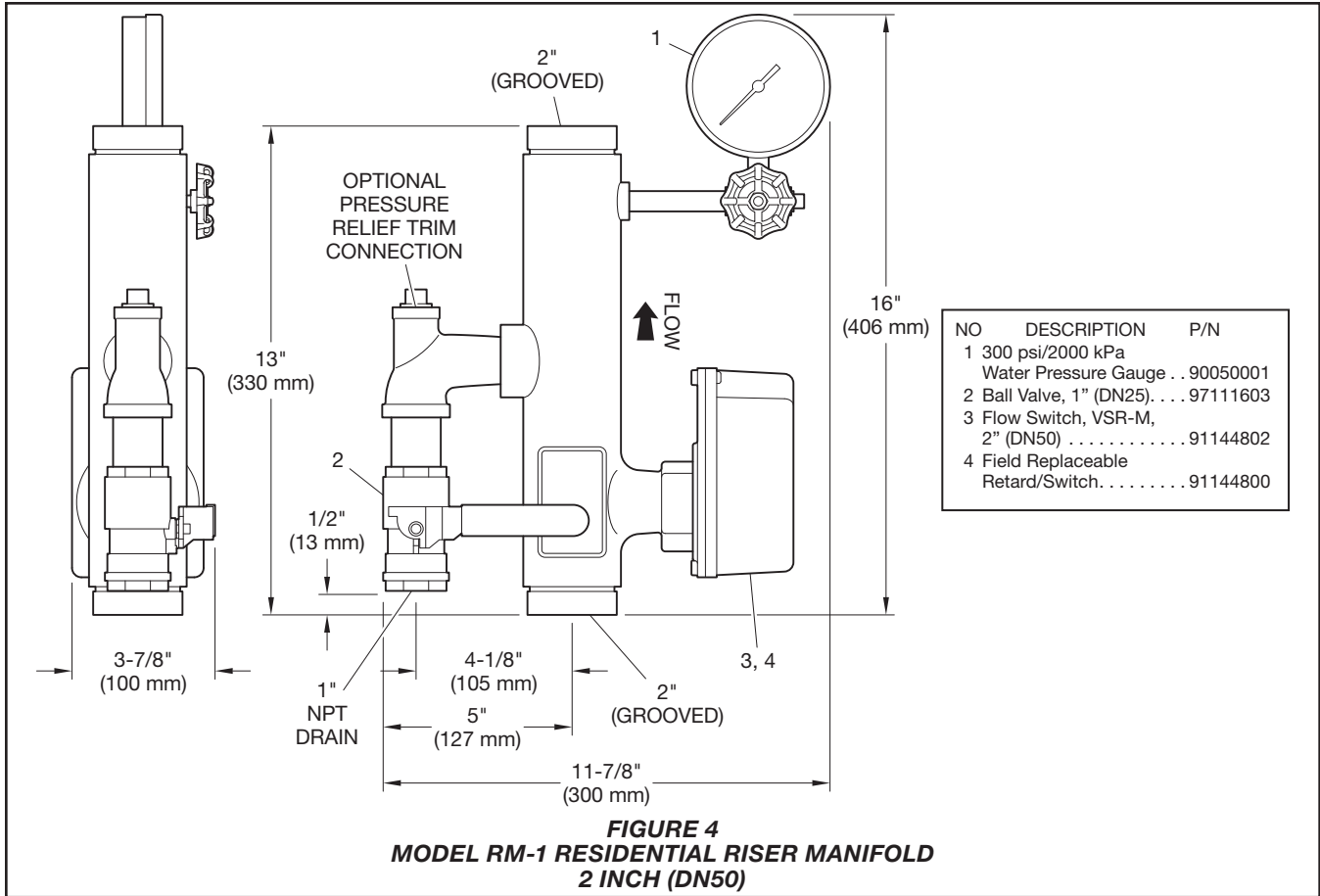
Nominal Riser Size Inches (DN)	End Connections		Nominal Dimensions Inches (mm)							Nominal Drain Size Inches (DN)
	Inlet	Outlet	A	B	C	D	E	F	G	
1-1/2 (40)	Thread MNPT	Thread FNPT	10 (254)	15-1/2 (394)	2-1/4 (57)	5-5/8 (143)	8-3/8 (213)	15 (381)	4-3/8 (111)	1-1/4 (32)
2 (50)	Groove	Groove	13 (330)	18 (457)	2-1/16 (53)	5-5/8 (143)	8-3/8 (213)	15-1/4 (388)	4-3/8 (111)	1-1/4 (32)
2-1/2 (65)	Groove	Groove	13 (330)	18-1/16 (460)	2-1/16 (53)	5-5/8 (143)	8-3/8 (213)	15-1/4 (388)	4-3/8 (111)	1-1/4 (32)
3 (80)	Groove	Groove	13 (330)	18-1/16 (460)	2-1/16 (53)	5-7/8 (150)	8-5/8 (219)	15-3/4 (400)	4-3/8 (111)	1-1/4 (32)
4 (100)	Groove	Groove	13 (330)	20-1/4 (514)	4-1/4 (108)	6-3/4 (172)	10-3/4 (273)	18-3/8 (467)	5-3/16 (132)	2 (50)
6 (150)	Groove	Groove	13 (330)	20-1/4 (514)	4-1/4 (108)	7-3/4 (197)	11-3/4 (300)	21 (533)	6-3/4 (172)	2 (50)

- |    |   |          |
|----|---|----------|
| NO | DESCRIPTION   | P/N      |
| 1  | 300 psi/2000 kPa Water Pressure Gauge . . .   | 90050001 |
| 2  | Test and Drain Valve, Model TD-1: 1-1/2-3 Inch (DN40-DN80) Size Manifolds, 1-1/4", 2.8K Orifice . . . . . | A61G0420 |
|    | 4-6 Inch (DN100-DN150) Size Manifolds, 2", 4.2K Orifice . . . . .   | A61G0601 |
| 3  | Flow Switch, VSR-M: 1-1/2" (DN40) . . . . .   | 91144815 |
|    | 2" (DN50) . . . . .   | 91144802 |
|    | 2-1/2" (DN65) . . . . .   | 91144825 |
|    | 3" (DN80) . . . . .   | 91144803 |
|    | 4" (DN100) . . . . .  | 91144804 |
|    | 6" (DN150) . . . . .  | 91144806 |
| 4  | Field Replaceable Retard/Switch . . . . .   | 91144800 |



**FIGURE 1**  
**MODEL RM-1 COMMERCIAL RISER MANIFOLDS**  
**1-1/2-6 INCH (DN40-DN150)**





## Manifold Installation

TYCO Model RM-1 Riser Manifold must be installed in accordance with this section.

The Model RM-1 Riser Manifold may be installed either horizontally (flow switch on top) or vertically (flow going up). The inlet of the Riser Manifold may be connected directly to a shut-off control valve.

### Notes:

Where applicable pipe thread sealant is to be applied sparingly. Use of a non-hardening pipe thread sealant is recommended.

Never remove any piping component nor correct or modify any piping deficiencies without first depressurizing and draining the system.

Provisions for an alarm test flow on Residential Models must be made. The alarm test flow is to be through an orifice having a flow capacity equal to or smaller than the smallest orifice sprinkler in the system. One of two options can be considered. The first option is to temporarily install a test orifice in the outlet of the drain line prior to performing the alarm test. The second option is to install an Inspector's Test Connection downstream of the Waterflow Alarm Switch.

**Step 1.** Install the manifold body with the flow arrow pointing in the downstream position using threaded connections and/or listed mechanical grooved connections, as applicable.

**Step 2.** Connect the drain line and on commercial manifolds set the Model TD-1 Test and Drain Valve to the OFF position or on residential manifolds close the drain valve.

**Step 3.** Refer to Figure 6 for wiring guidance. All wiring must be performed in accordance with the authority having jurisdiction and/or the National Electrical Code.

**Step 4.** Refer to Figure 5 for Optional Pressure Relief Trim installation.

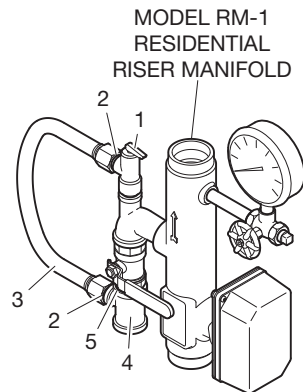
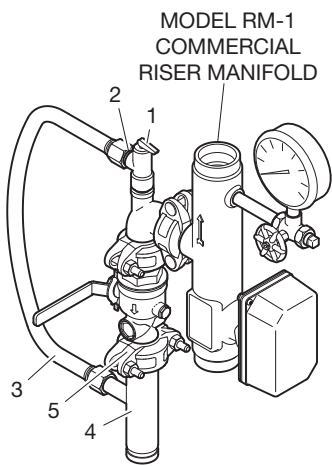
**Step 5.** Place the system in service by filling the system with water. When filling the system, partially open the control valve to slowly fill the system. Filling the system slowly will help avoid damaging the waterflow alarm switch.

After the system is fully pressurized, completely open the control valve.

**Step 6.** Secure all supply valves open.

Commercial Riser Manifolds		
NO	DESCRIPTION	P/N
1	Pressure Relief Valve, 175 psi, 1/2" NPT . . . . .	1001184-01
2	1/2" x Close Nipple . . . . .	1001023-01
3	Flexible Hose: 1-1/2-3 Inch (DN40-DN80) Size Manifolds, 1/2" x 24" . . . . .	1001266-02
	4-6 Inch (DN100-DN150) Size Manifolds, 1/2" x 30" . . . . .	1001266-01
4	Figure 323 Reducing Tee, Grooved x NPT Threaded: 1-1/2-3 Inch (DN40-DN80) Size Manifolds, 1-1/4" x 1-1/4" x 1/2" . . . . .	3231305GS
	4-6 Inch (DN100-DN150) Size Manifolds, 2" x 2" x 1/2" . . . . .	3232005GS
5	Figure 577 Rigid Grooved Coupling: 1-1/2-3 Inch (DN40-DN80) Size Manifolds, 1-1/4" . . . . .	57713AGCP
	4-6 Inch (DN100-DN150) Size Manifolds, 2" . . . . .	57720AGCP

Residential Riser Manifolds		
NO	DESCRIPTION	P/N
1	Pressure Relief Valve, 175 psi, 1/2" NPT . . . . .	1001184-01
2	1/2" x Close Nipple, Qty 2 . . . . .	1001023-01
3	Flexible Hose, 1/2" x 16" . . . . .	1001266-03
4	Figure 815 Threaded Reducing Tee, 1" x 1" x 1/2" NPT . . . . .	1001259-07
5	1" x Close Nipple . . . . .	1001025-01



**FIGURE 5**  
**MODEL RM-1 COMMERCIAL AND RESIDENTIAL RISER MANIFOLDS**  
**OPTIONAL PRESSURE RELIEF TRIM INSTALLATION**

## Optional Pressure Relief Trim Installation

Model RM-1 commercial and residential riser manifold assemblies are designed to accommodate an optional pressure relief valve and trim components (Ref. Figure 5).

Optional pressure relief trim must be installed in accordance with the following procedures.

### Notes:

*For assembly in Riser Manifolds installed and in service, verify the fire protection system is de-pressurized and drained. Close the system supply control valve, set commercial manifold test and drain valve to DRAIN or open residential drain valve to relieve residual pressure and drain system. Make certain that drainage water will not cause any damage or injury.*

*Refer to Care and Maintenance section for other requirements when closing a fire protection system control valve and placing system in service.*

*Apply thread sealant or TEFLON tape on all threaded connections, with the exception of internally sealed flexible hose connections.*

### Commercial Manifolds

Refer to Figure 1 for commercial riser manifold features and Figure 5 for pressure relief trim components described in this procedure.

**Step 1.** Remove 1/2 in. pipe plug from manifold tee. Inspect exposed female tee threads, remove thread sealant remnants or debris as necessary.

**Step 2.** Install Pressure Relief Valve (1) in manifold tee, orienting valve outlet port perpendicular to and facing away from manifold body.

**Step 3.** Install 1/2 in. x Close Nipple (2) in pressure relief valve outlet port.

**Step 4.** Disconnect drain piping from grooved outlet of manifold TD-1 test and drain valve as applicable and install Figure 323 Grooved Reducing Tee (4) on valve outlet by securing with Figure 577 Grooved Coupling (5), aligning tee threaded branch outlet parallel with pressure relief valve outlet port. Reconnect drain piping to Figure 323 tee drain outlet as necessary.

**Note:** Refer to Technical Data Sheet G901 for Figure 577 Grooved Coupling installation and assembly instructions.

**Step 5.** Install Flexible Hose (3) by threading female ends onto 1/2 in. x close nipple installed on relief valve outlet port and onto Figure 323 reducing tee branch outlet.

**Note:** Assure Flexible Hose is not susceptible to being caught or snagged by other moving equipment.

### Residential Manifolds

Refer to Figures 2, 3 or 4 for residential riser manifold features and Figure 5 for pressure relief trim components described in this procedure.

**Step 1.** Remove 1/2 in. pipe plug from manifold tee. Inspect exposed female tee threads, remove thread sealant remnants or debris as necessary.

**Step 2.** Install Pressure Relief Valve (1) in manifold tee, orienting valve outlet port perpendicular to and facing away from manifold body.

**Step 3.** Disconnect drain piping from threaded outlet of manifold drain valve as applicable and install 1 in. x Close Nipple (5) in valve outlet.

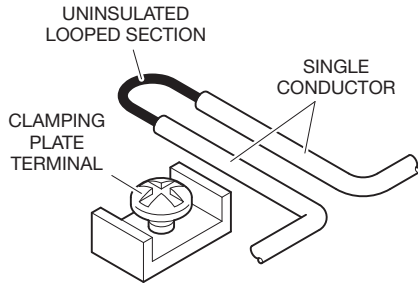
**Step 4.** Install Figure 815 Reducing Tee (4) onto 1 inch x close nipple, aligning tee branch outlet parallel with pressure relief valve outlet port. Reconnect drain piping to Figure 815 tee drain outlet as necessary.

**Step 5.** Install 1/2 in. x Close Nipples (2) in pressure relief valve outlet port and in Figure 815 reducing tee branch outlet.

**Step 6.** Install Flexible Hose (3) by threading female ends onto 1/2 in. x close nipples installed on relief valve outlet port and Figure 815 reducing tee branch outlet.

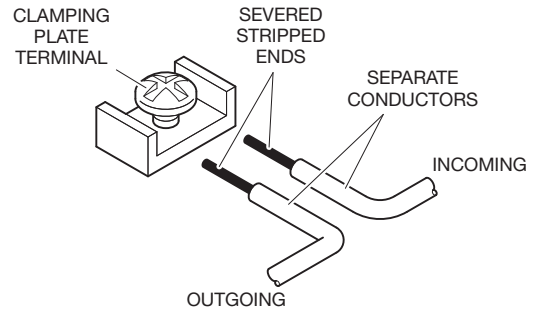
**Note:** Assure Flexible Hose is not susceptible to being caught or snagged by other moving equipment.

**SWITCH TERMINAL CONNECTIONS**

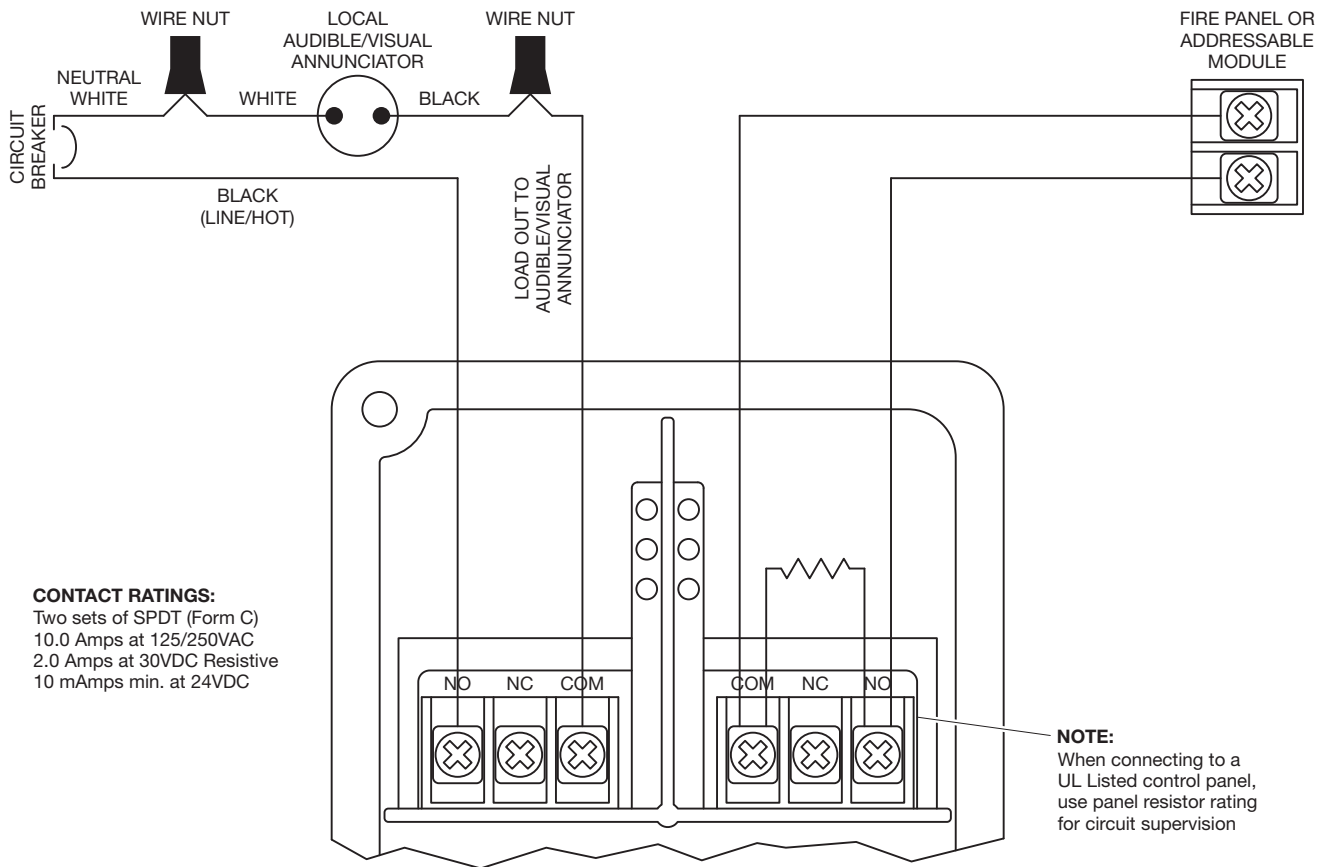


**IMPROPER CONNECTION METHOD**

**CAUTION:**  
 An uninsulated section of a single conductor is not permitted to be looped around the terminal and serve as two separate connections. The wire must be severed to serve as two separate connections, thereby providing supervision of the connection in the event that the wire becomes dislodged from the terminal.

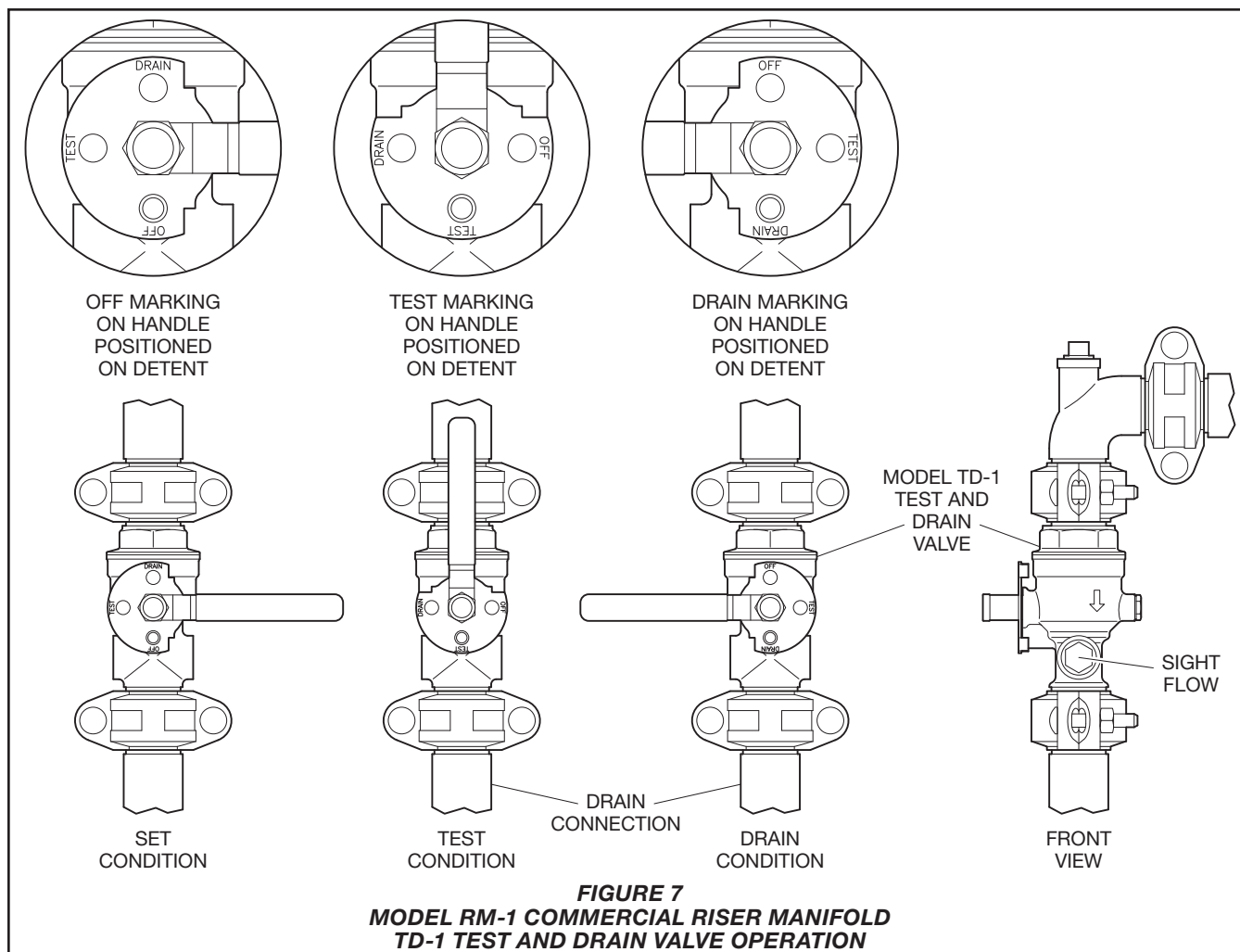


**PROPER CONNECTION METHOD**



**NOTE:**  
 For supervised circuits, see "Switch Terminal Connections" above. The Waterflow Alarm Switch has two switches, one can be used to operate a central station, proprietary or remote signaling unit, while the other contact is used to operate a local audible or visual annunciator.

**FIGURE 6**  
**MODEL RM-1 COMMERCIAL AND RESIDENTIAL RISER MANIFOLD WIRING GUIDANCE**



**FIGURE 7**  
**MODEL RM-1 COMMERCIAL RISER MANIFOLD**  
**TD-1 TEST AND DRAIN VALVE OPERATION**

## Care and Maintenance

TYCO Riser Manifolds RM-1 must be serviced and maintained in accordance with this section.

Before closing a fire protection system control valve for inspection or maintenance work on the fire protection system that it controls, permission to shut down the effected fire protection system must first be obtained from the proper authorities and all personnel who may be affected by this action must be notified.

After placing a fire protection system in service, notify the proper authorities and advise those responsible for monitoring proprietary and/or central station alarms.

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 authority having jurisdiction. Contact the installing contractor or product manufacturer with any questions.

It is recommended that automatic sprinkler systems be inspected, tested, and maintained by a qualified Inspection Service in accordance with local requirements and/or national codes.

**Note:** No attempt is to be made to repair any Riser Manifold component in the field. Only the pressure gauge, waterflow alarm switch, or relief valve can be replaced. If any other problems are encountered the entire riser manifold must be replaced.

The alarm/flow test procedure will result in operation of the associated alarms. Consequently, notification must be given to the owner and the fire department, central station, or other signal station to which the alarms are connected, and notification must be given to the building occupants.

The following inspection procedure must be performed as indicated, in addition to any specific requirements

of the NFPA, and any impairment must be immediately corrected:

### Alarm/Flow Test Procedure

**Step 1.** Place the Model TD-1 Test and Drain Valve in the TEST position (Ref. Figure 7). On residential assemblies without a test orifice, temporarily install a test orifice in the drain outlet and fully open the Drain Valve. Make certain that drainage water will not cause any damage or injury.

**Step 2.** Verify operation of associated alarms.

**Step 3.** Verify that the residual (i.e., flowing) pressure indicated by the pressure gauge is no less than originally recorded for the system when it was first installed.

**Step 4.** Close the Drain Valve on the Residential models and the Test and Drain valve on commercial models.

**Step 5.** Verify that the static (i.e., not flowing) pressure indicated by the pressure gauge is no less than originally recorded for the system when it was first installed.

Nominal Valve Size ANSI in. (DN)	Equivalent Length of Schedule 40 Pipe ft (m)
2 (DN50)	4.5 (1,3)
2-1/2 (DN65)	3.6 (1,1)
3 (DN80)	3 (5,1)
4 (DN100)	4 (6,6)
6 (DN150)	9.6 (2,9)

**TABLE A**  
**FRICITION LOSS EXPRESSED**  
**AS FLOW THROUGH**  
**EQUIVALENT LENGTH OF**  
**SCHEDULE 40 PIPE**

## 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, including description and part number (P/N).

### Riser Manifolds

Specify: Size (specify) Connection Type (specify inlet x outlet) Model RM-1 Riser Manifold, P/N (specify):

#### Commercial

1-1/2 in. (DN40) MT x FT ..... 40551  
 2 in. (DN50) G x G ..... 40601  
 2-1/2 in. (DN65) G x G ..... 40611  
 3 in. (DN80) G x G ..... 40621  
 4 in. (DN100) G x G ..... 40651  
 6 in. (DN150) G x G ..... 40661

#### Residential

1 in. (DN25) FT x FT ..... 40671  
 1-1/2 in. (DN40) MT x FT ..... 40571  
 2 in. (DN50) G x G ..... 40591

### Optional 175 psi Pressure Relief Kit

Specify: Pressure Relief Kit, Model RM-1 Riser Manifold, (specify Commercial or Residential application), (specify size range), P/N (specify):

#### Commercial

1-1/2 in. – 3 in. (DN40–DN80) ..... 40721  
 4 in. – 6 in. (DN100–DN150) ..... 40731

#### Residential

1 in.–2 in. (DN25–DN50) ..... 40711

### Replacement Parts

Specify: Model RM-1 Riser Manifold (specify part description), P/N (specify from Figures 1, 2, 3, 4 or 5)