

Model RM-2 Base Riser Manifold Commercial and Residential

IMPORTANT

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

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General Description

TYCO Model RM-2 Base Riser Manifolds are single assembly risers providing equipment meeting requirements of NFPA 13, NFPA 13D and NFPA 13R for commercial and residential fire sprinkler system applications.

All riser manifolds feature:

- waterflow alarm switch
- pressure gauge
- drain valve

For increased capability, riser manifolds equipped with the TYCO Model TD-2 Test and Drain Valve also feature:

- system flow test orifice
- sight glass
- adjustable pressure relief valve

See Table A for configurations.

Refer to Technical Data Sheet TFP965 for complete details about the Model TD-2 Test and Drain Valve.

Residential manifolds featuring male threaded end connections (MNPT) are supplied with a coupling and union unassembled in the packaging, providing flexibility in riser connection options. See Figures 2 and 4.

An optional pressure relief kit is available for installation on residential manifolds equipped with a ball valve drain. When installed above the normally-closed drain valve, the pressure relief valve automatically bleeds system pressure exceeding 175 psi (12,1 bar) through by-pass trim connected to the manifold drain outlet, see Figure 6.

An optional flexible drain hose is available for installation on commercial and residential riser manifolds equipped with TD-2 Test and Drain Valve, see Figure 9.

The variety of options allow cost effective and easy transition to check valves, control valves, and system piping. See Table A for configurations.

The Model RM-2 Base Riser Manifolds may be installed in either horizontal (flow switch on top) or vertical (flow upward) orientation, for both single sprinkler risers and floor control in high-rise structures.

NOTICE

The Model RM-2 Base 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

cULus Listed
FM Approved
Listed by California State Fire Marshall

Note: See Table A for details.

Maximum Working Pressure

300 psi (20,7 bar)

Model TD-2 Test Orifice

- 1-1/4 in. – 3 in. (DN32 – DN80)
Size Manifolds:
K = 2.8 gpm/psi^{1/2} (40,3 lpm/bar^{1/2})
- 4 in. – 8 in. (DN100 – DN200)
Size Manifolds:
K = 4.2 gpm/psi^{1/2} (60,5 lpm/bar^{1/2})

Finish

Red Painted

Appearance	Application	Drain	NFPA Compliance	TD-2 Valve Test Orifice K-factor	End Connections	Size in. (DN)	Part Number	Approvals	See Figure
	Commercial	TD-2 Valve	NFPA 13 or NFPA 13D	2.8 gpm/psi ^{1/2} (40,3 lpm/bar ^{1/2})	Grooved	2 (DN50)	6940601	1, 2, 3	1
						2 1/2 (DN65)	6940611		
						3 (DN80)	6940621		
				4 (DN100)		6940651			
				6 (DN150)		6940661			
				8 (DN200)		6940681			
	Residential (With TD)	TD-2 Valve	NFPA 13 or NFPA 13D	2.8 gpm/psi ^{1/2} (40,3 lpm/bar ^{1/2})	MNPT	1 1/4 (DN32)	6940472	1, 3	2
					Grooved	1 1/4 (DN32)	6940482		3
						1 1/2 (DN40)	6940582		
	Residential	Ball Valve	NFPA 13R	N/A	MNPT	1 (DN25)	6940671	1, 3	4
						1 1/4 (DN32)	6940471		
						1 1/2 (DN40)	6940571		
					Grooved	1 1/4 (DN32)	6940481		5
						1 1/2 (DN40)	6940581		
						2 (DN50)	6940591		

Notes:
1. cULus Listed
2. FM Approved
3. Listed by California State Fire Marshall

TABLE A
TYCO MODEL RM-2 BASE RISER MANIFOLD OPTIONS AND LABORATORY LISTINGS AND APPROVALS

Manifold Installation

The TYCO Model RM-2 Base Riser Manifold must be installed in accordance with this section.

The Model RM-2 Base Riser Manifold may be installed either horizontally (flow switch on top) or vertically (flow upward). The inlet of the Riser Manifold may be connected directly to a shut-off control valve.

Note: Where applicable, apply pipe thread sealant 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.

Installation Procedure

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

Step 2. Connect the drain line and on commercial manifolds close the Model TD-2 Test and Drain Valve main drain hand wheel, and turn the test port lever to the OFF position. On residential manifolds close the drain valve.

Step 3. Refer to Figure 7 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 6 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.

No	Qty	Description	Part Number					
			2 (DN50)	2 1/2 (DN65)	3 (DN80)	4 (DN100)	6 (DN150)	8 (DN200)
1	1	Body	NR ¹					
2	1	Waterflow Alarm Switch	24110	24111	24112	24114	24116	24117
3	1	Water Pressure Gauge, 300 psi/2000 kPa	923431005					
4	1	Model TD-2 Test and Drain Valve	1 1/4 in. x 2.8K Orifice	598321		—		
			2 in. x 4.2K Orifice	—		598322		
5	1	1/4 in. Ball Valve	5941000					
6	1	1/4 in. x 90° Street Elbow	CH ²					
7	1	Nameplate	NR ¹					

NOTES

1. NR = Not Replaceable
2. CH = Common Hardware

Nominal Valve Size, in. (DN)	Pipe O.D., in. (mm)	Nominal Dimensions, in. (mm)						
		A	B	C	D	E	F	G
2 (DN50)	2.375 (60,3)	2.375 (60,3)	1 1/4 in. NPT	11.00 (279,4)	13.65 (346,6)	9.23 (234,4)	5.71 (145,0)	4.92 (125,0)
2 1/2 (DN65)	2.875 (73,0)	2.875 (73,0)		11.00 (279,4)	13.65 (346,6)	9.49 (241,0)	6.02 (152,9)	5.18 (131,6)
3 (DN80)	3.500 (88,9)	3.500 (88,9)		11.00 (279,4)	13.65 (346,6)	9.80 (248,9)	6.27 (159,3)	5.49 (139,6)
4 (DN100)	4.500 (114,3)	4.500 (114,3)	2 in. NPT	11.50 (292,1)	13.65 (346,6)	11.07 (281,2)	6.83 (173,6)	6.59 (167,4)
6 (DN150)	6.625 (168,3)	6.625 (168,3)		16.00 (406,4)	N/A	11.74 (298,2)	7.83 (199,0)	7.27 (184,5)
8 (DN200)	8.625 (219,1)	8.625 (219,1)		16.00 (406,4)	N/A	12.94 (328,7)	8.77 (222,8)	8.47 (215,0)

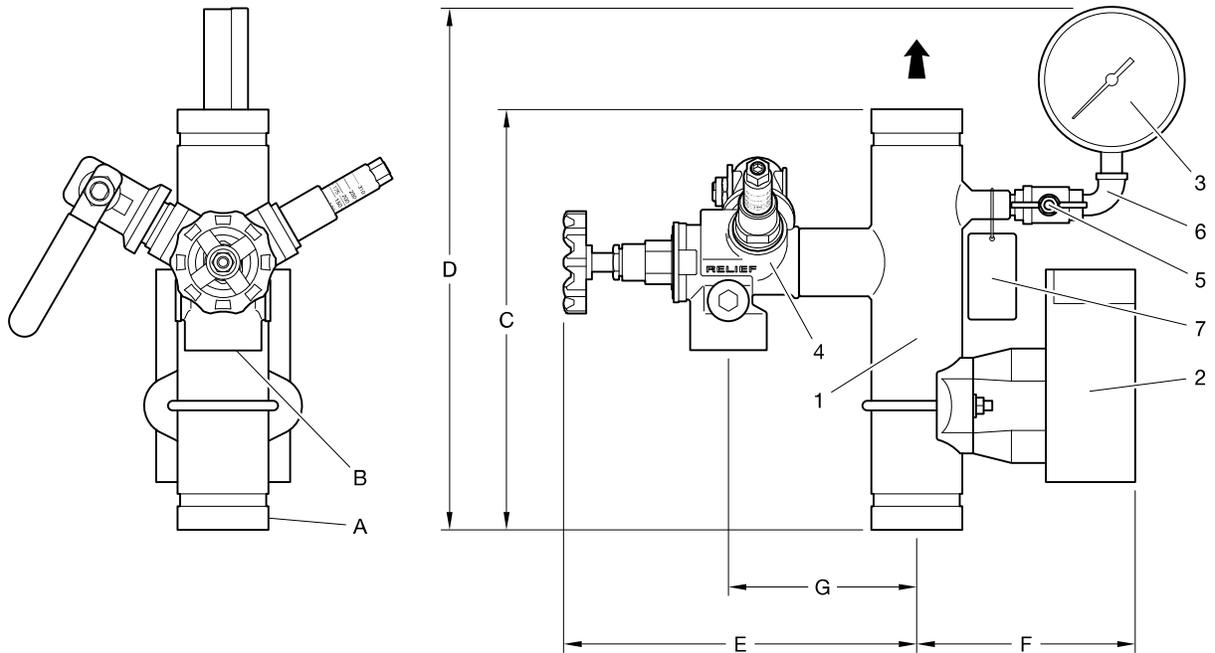


FIGURE 1
MODEL RM-2 BASE COMMERCIAL RISER MANIFOLD
WITH MODEL TD-2 TEST AND DRAIN VALVE
GROOVE X GROOVE ASSEMBLY
2 INCH TO 8 INCH (DN25 TO DN200)

No	Qty	Description	Part Number
1	1	Body	NR ¹
2	1	Waterflow Alarm Switch	24148
3	1	Water Pressure Gauge, 300 psi/2000 kPa	923431005
4	1	Model TD-2 Test and Drain Valve, 1 1/4 in. x 2.8K Orifice	598321
5	1	1/4 in. Ball Valve	5941000
6	1	1/4 in. x 90° Street Elbow	CH ²
7	1	Nameplate	NR ¹
8	1	1 1/4 in. Pipe Coupling ³	CH ²
9	1	1 1/4 in. Pipe Union ³	CH ²

NOTES

1. NR = Not Replaceable
2. CH = Common Hardware
3. Ships unassembled in package; assemble as necessary to connect to system piping

Nominal Valve Size, in. (DN)	Pipe O.D., in. (mm)	Nominal Dimensions, in. (mm)						
		A	B	C	D	E	F	G
1 1/4 (DN32)	1.660 (42,4)	1 1/4 in. NPT	1 1/4 in. NPT	12.00 (304,8)	15.10 (383,6)	8.02 (203,8)	6.06 (153,8)	3.61 (91,8)

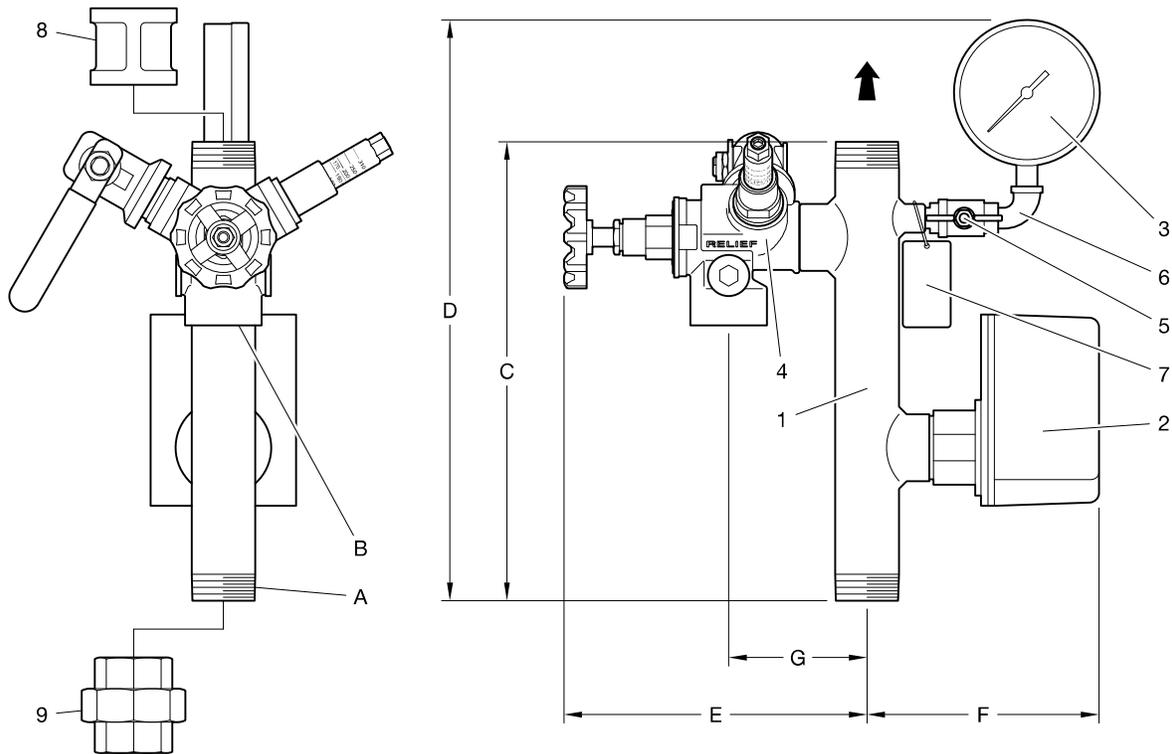


FIGURE 2
MODEL RM-2 BASE RESIDENTIAL (WITH TD) RISER MANIFOLD
WITH MODEL TD-2 TEST AND DRAIN VALVE
THREAD X THREAD ASSEMBLY
1 1/4 INCH (DN32)

No	Qty	Description	Part Number	
			1 1/4 (DN32)	1 1/2 (DN40)
1	1	Body	NR ¹	
2	1	Waterflow Alarm Switch	24148	24148
3	1	Water Pressure Gauge, 300 psi/2000 kPa	923431005	
4	1	Model TD-2 Test and Drain Valve, 1 1/4 in. x 2.8K Orifice	598321	
5	1	1/4 in. Ball Valve	5941000	
6	1	1/4 in. x 90° Street Elbow	CH ²	
7	1	Nameplate	NR ¹	

- NOTES**
 1. NR = Not Replaceable
 2. CH = Common Hardware

Nominal Valve Size, in. (DN)	Pipe O.D., in. (mm)	Nominal Dimensions, in. (mm)						
		A	B	C	D	E	F	G
1 1/4 (DN32)	1.660 (42,4)	1.660 (42,4)	1 1/4 in. NPT	12.00 (304,8)	14.35 (364,6)	8.02 (203,8)	6.06 (153,8)	3.61 (91,8)
1 1/2 (DN40)	1.900 (48,3)	1.900 (48,3)		11.00 (279,4)	13.35 (339,2)	8.13 (206,4)	6.18 (156,9)	3.83 (97,2)

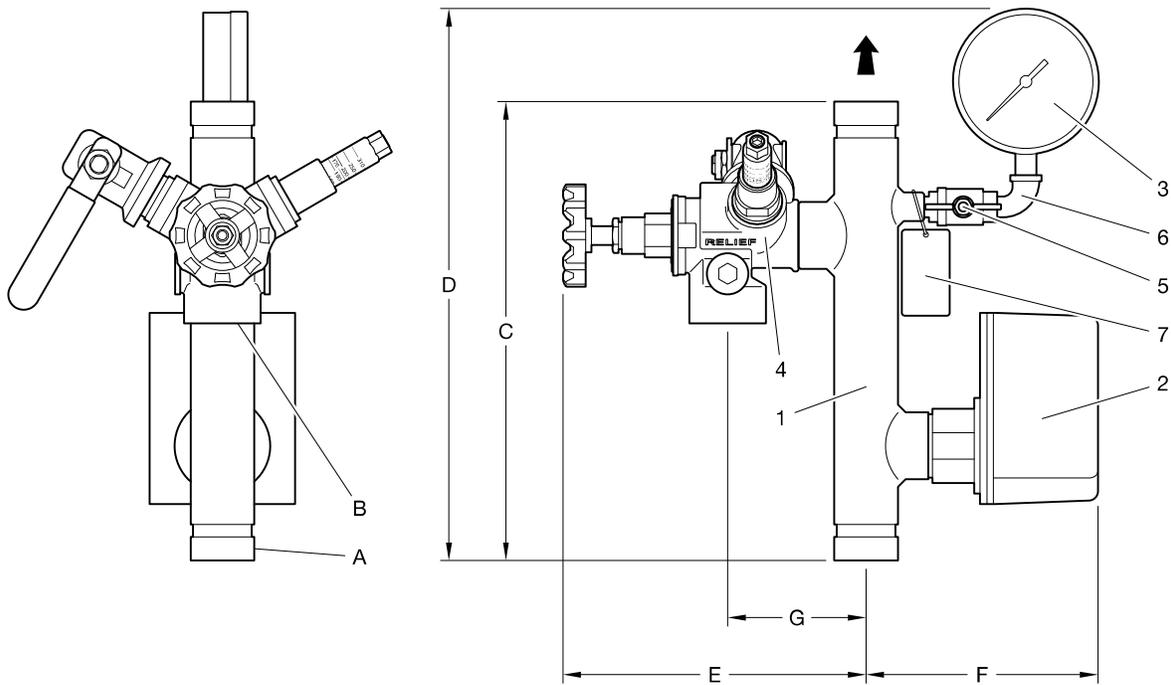


FIGURE 3
MODEL RM-2 BASE RESIDENTIAL (WITH TD) RISER MANIFOLD
WITH MODEL TD-2 TEST AND DRAIN VALVE
GROOVE X GROOVE ASSEMBLY
1 1/4 INCH TO 1 1/2 INCH (DN32 TO DN40)

No	Qty	Description	Part Number		
			1 (DN25)	1 1/4 (DN32)	1 1/2 (DN40)
1	1	Body	NR ¹		
2	1	Waterflow Alarm Switch	24148	24148	24148
3	1	Water Pressure Gauge, 300 psi/2000 kPa	923431005		
4	1	1/4 in. Ball Valve	5941000		
5	1	1 in. Ball Valve	97111604		
6	1	1/4 in. x 90° Street Elbow	CH ²		
7	1	1 in. x 1/2 in. x 1 in. Reducing Street Tee	CH ²		
8	1	1/2 in. Pipe Plug	CH ²		
9	1	1 in. x Close Nipple	CH ²		
10	1	Nameplate	NR ¹		
11	1	Pipe Coupling ³	CH ²		
12	1	Pipe Union ³	CH ²		

NOTES

1. NR = Not Replaceable
2. CH = Common Hardware
3. Fitting size compatible with riser size; ships unassembled in package; assemble as necessary to connect to system piping

Nominal Valve Size, in. (DN)	Pipe O.D., in. (mm)	Nominal Dimensions, in. (mm)						
		A	B	C	D	E	F	G ¹
1 (DN25)	1.315 (33,7)	1 in. NPT	1 in. NPT	14.00 (355,6)	16.20 (411,4)	6.02 (153,0)	4.38 (111,2)	1/2 in. NPT
1 1/4 (DN32)	1.660 (42,4)	1 1/4 in. NPT		12.00 (304,8)	15.10 (383,6)	6.13 (155,6)	4.27 (108,5)	
1 1/2 (DN40)	1.900 (48,3)	1 1/2 in. NPT		11.00 (279,4)	14.10 (358,2)	6.23 (158,3)	4.41 (111,9)	

NOTES

1. Optional pressure relief trim connection

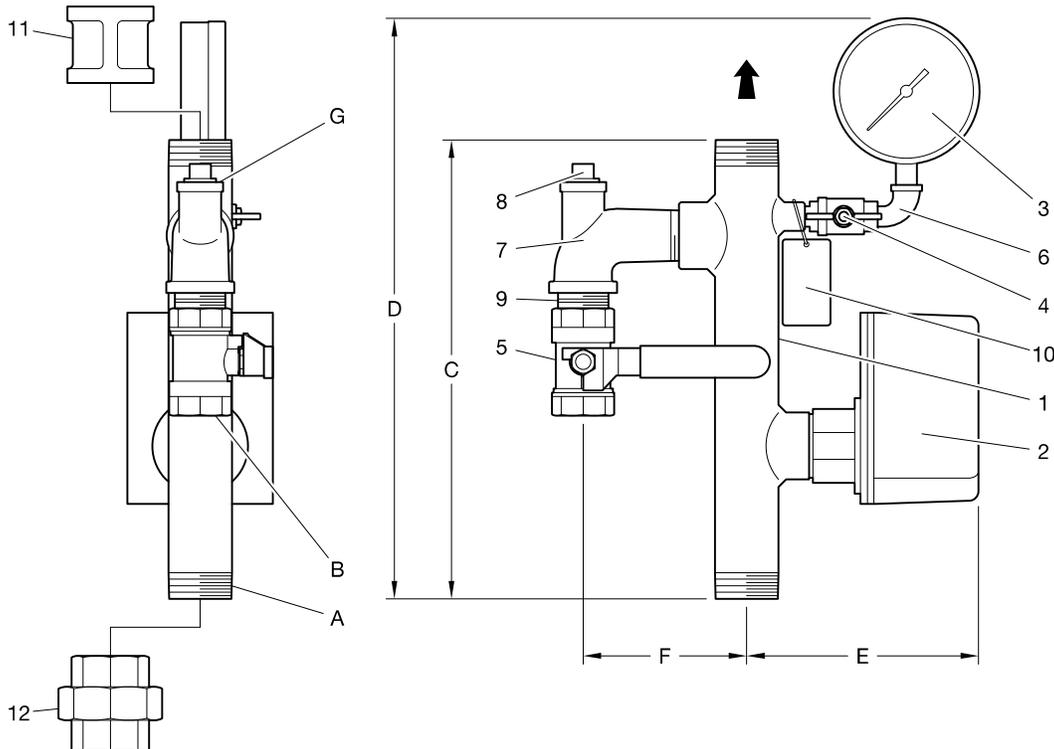


FIGURE 4
MODEL RM-2 BASE RESIDENTIAL RISER MANIFOLD
WITH DRAIN BALL VALVE
THREAD X THREAD ASSEMBLY
1 INCH TO 1 1/2 INCH (DN25 TO DN40)

No	Qty	Description	Part Number		
			1 1/4 (DN32)	1 1/2 (DN40)	2 (DN50)
1	1	Body	NR ¹		
2	1	Waterflow Alarm Switch ³	24148	24148	24110
3	1	Water Pressure Gauge, 300 psi/2000 kPa	923431005		
4	1	1/4 in. Ball Valve	5941000		
5	1	1 in. Ball Valve	97111604		
6	1	1/4 in. x 90° Street Elbow	CH ²		
7	1	1 in. x 1/2 in. x 1 in. Reducing Street Tee	CH ²		
8	1	1/2 in. Pipe Plug	CH ²		
9	1	1 in. x Close Nipple	CH ²		
10	1	Nameplate	NR ¹		

NOTES

1. NR = Not Replaceable
2. CH = Common Hardware
3. 1-1/4 in. (DN32) and 1-1/2 in. (DN40) switches are threaded mount, 2 in. (DN50) switch is saddle mount.

Nominal Valve Size, in. (DN)	Pipe O.D., in. (mm)	Nominal Dimensions, in. (mm)						
		A	B	C	D	E	F	G ¹
1 1/4 (DN32)	1.660 (42,4)	1.660 (42,4)	1 in. NPT	12.00 (304,8)	14.35 (364,6)	6.13 (155,6)	4.27 (108,5)	1/2 in. NPT
1 1/2 (DN40)	1.900 (48,3)	1.900 (48,3)		11.00 (279,4)	13.35 (339,2)	6.18 (156,9)	4.41 (111,9)	
2 (DN50)	2.375 (60,3)	2.375 (60,3)		11.00 (279,4)	13.60 (345,5)	5.72 (145,2)	4.88 (123,9)	

NOTES

1. Optional pressure relief trim connection

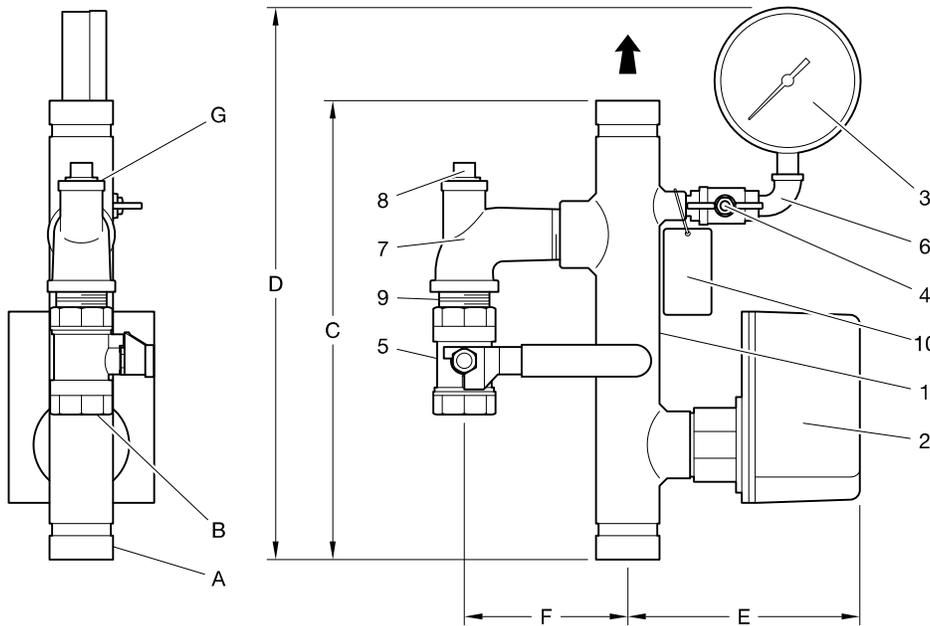


FIGURE 5
MODEL RM-2 BASE RESIDENTIAL RISER MANIFOLD
WITH DRAIN BALL VALVE
GROOVE X GROOVE ASSEMBLY
1 1/4 INCH TO 2 INCH (DN32 TO DN50)

Letter	Qty	Description	Part Number
A	1	175 psi (12 bar) Pressure Relief Valve	5941070
B	2	1/2 in. Thread x Barbed 90° Elbow	CH ¹
C	1	1 in. x 1 in. x 1/2 in. Reducing Tee	CH ¹
D	1	1 in. Close Nipple	CH ¹
E	2	Tension Spring Band Clamp	CH ¹
F	1	1/2 in. Flexible PVC Tube	CH ¹

NOTES

1. CH = Common Hardware

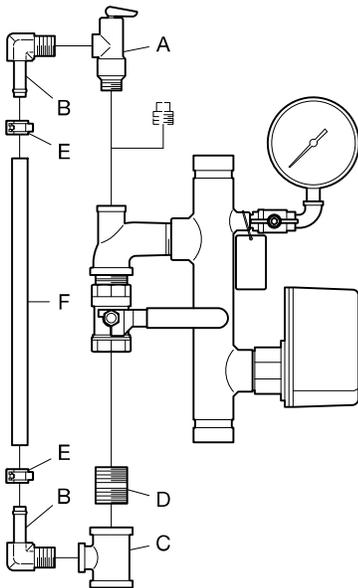


FIGURE 6
MODEL RM-2 BASE
RESIDENTIAL RISER MANIFOLD
OPTIONAL PRESSURE RELIEF
TRIM KIT

Optional Pressure Relief Trim Installation

Model RM-2 Base residential riser manifolds equipped with ball valve drain are designed to accommodate Optional Pressure Relief Trim as shown in Figure 6.

Pressure relief trim must be installed in accordance with this section.

Note: *Not compatible with riser manifolds equipped with TD-2 Test and Drain Valve.*

For riser manifold assemblies installed and in service, verify the fire protection system is de-pressurized and drained. Close the system supply control valve, open the drain valve to relieve residual pressure and drain the system. Make certain that drainage water will not cause any damage or injury.

See the 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 male threaded connections, with the exception of internally sealed flexible hose connections.

Installation Procedure

Refer to Figures 4 and 5 for residential riser manifold component Item Numbers, and to Figure 6 for pressure relief trim component Item Letters described in this procedure.

Step 1. Remove the 1/2 in. Pipe Plug (8) from the manifold Reducing Tee (7). Inspect the exposed female tee threads, and remove any thread sealant remnants or debris as necessary.

Step 2. Install the Pressure Relief Valve (A) in the manifold Reducing Tee, and orientate the valve outlet port perpendicular to and facing away from the manifold body.

Step 3. If connected, disconnect drain piping from the threaded outlet of the manifold drain Ball Valve (5). Install the 1 in. x Close Nipple (D) in the valve outlet.

Step 4. Install the Reducing Tee (C) on the 1 in. x Close Nipple (D), and align the tee branch outlet parallel with the pressure relief valve outlet port. Reconnect the drain piping to the drain outlet of the Reducing Tee (C) as necessary.

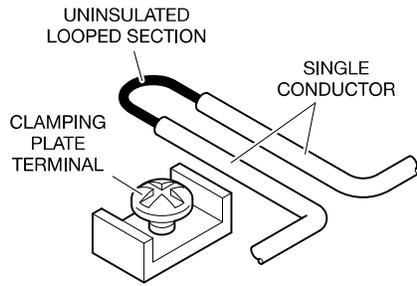
Step 5. Install the 1/2 in. Thread x Barbed 90° Elbows (B) in the Pressure Relief Valve (A) outlet port and in the Reducing Tee (C) branch outlet.

Step 6. Pre-assemble the Tension Spring Band Clamps (E) onto the Flexible PVC Tube (F), approximately 2 in. (50 mm) beyond ends.

Step 7. Install the Flexible PVC Tube (F) onto the barbed ends of the 1/2 in. Thread x Barbed 90° Elbows and secure with Tension Spring Band Clamps (E).

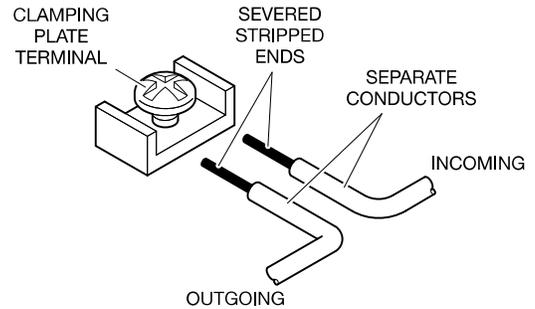
Note: *Ensure the Flexible Hose is not susceptible to being caught or snagged by other moving equipment.*

SWITCH TERMINAL CONNECTIONS

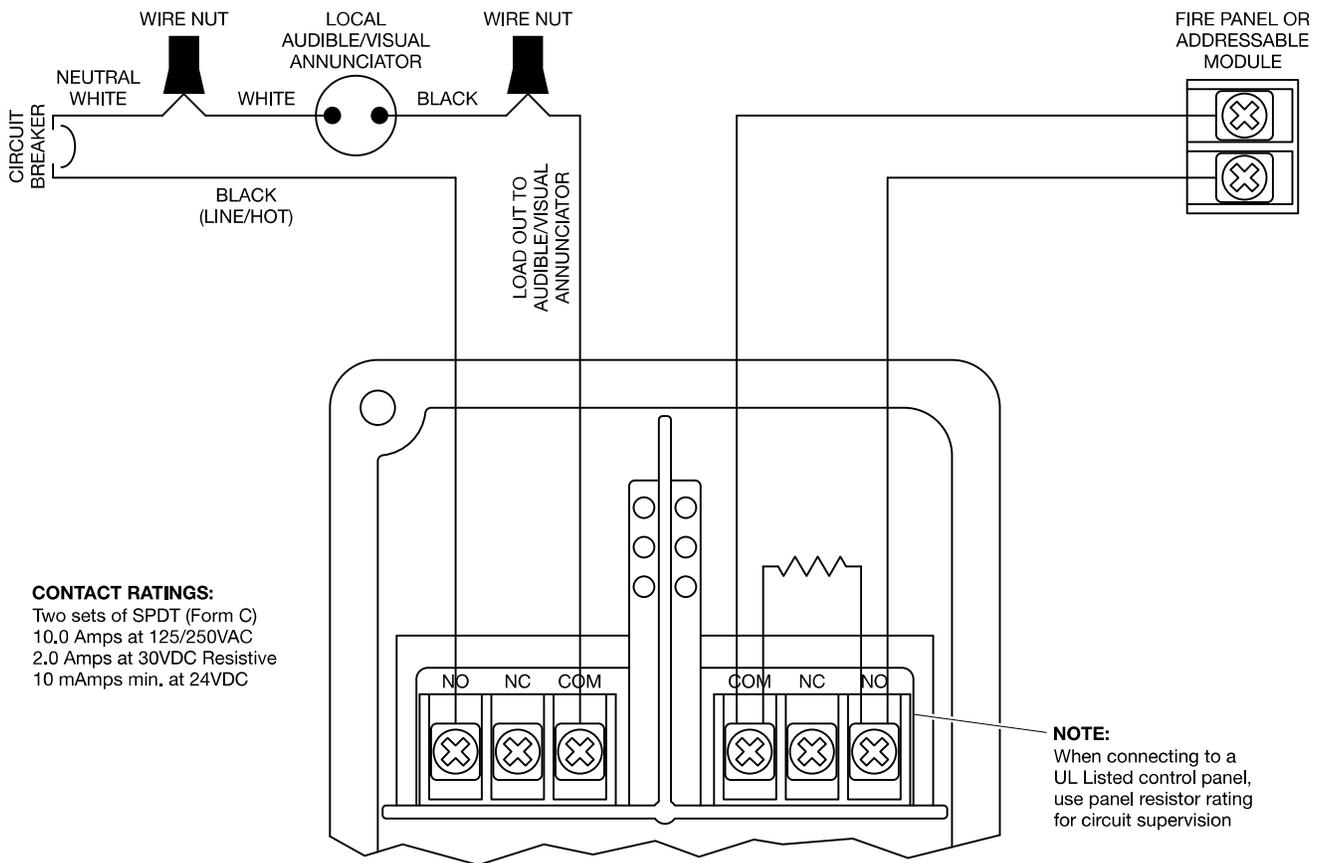


IMPROPER CONNECTION METHOD

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

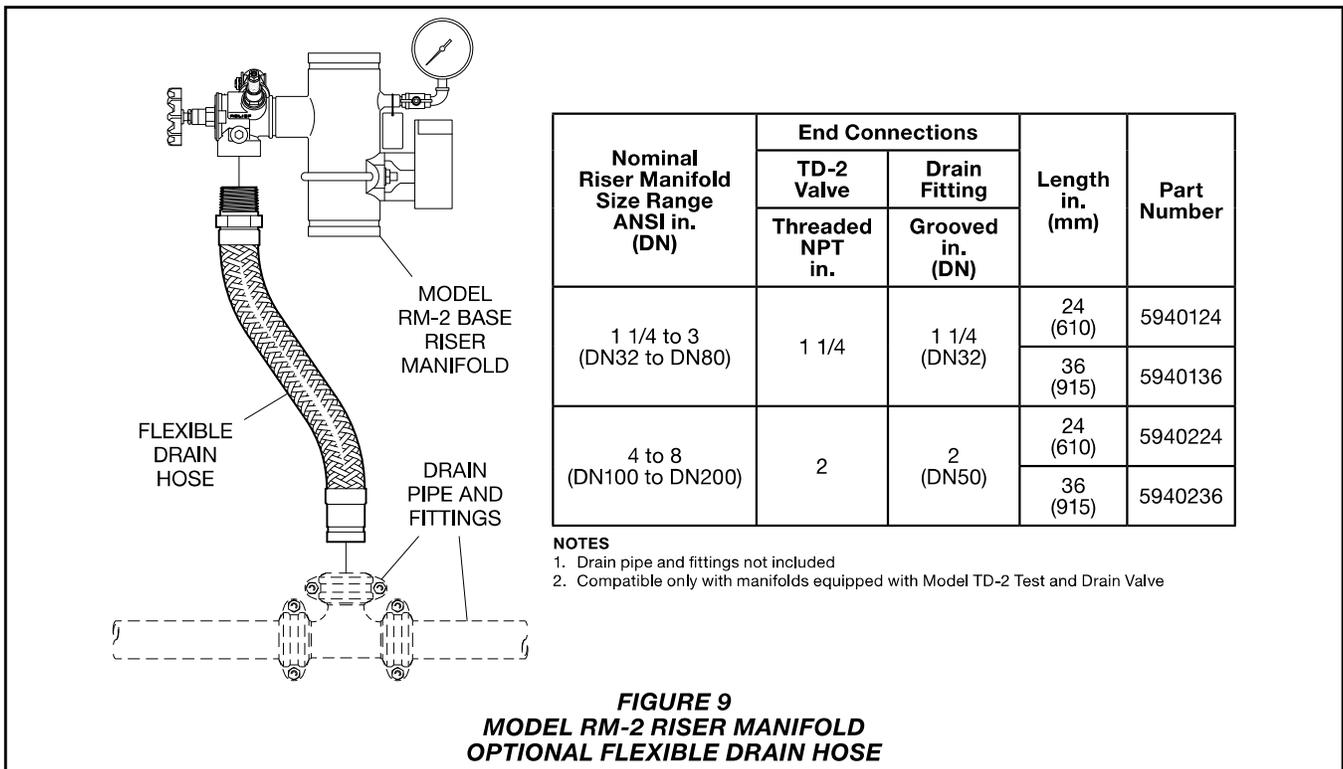
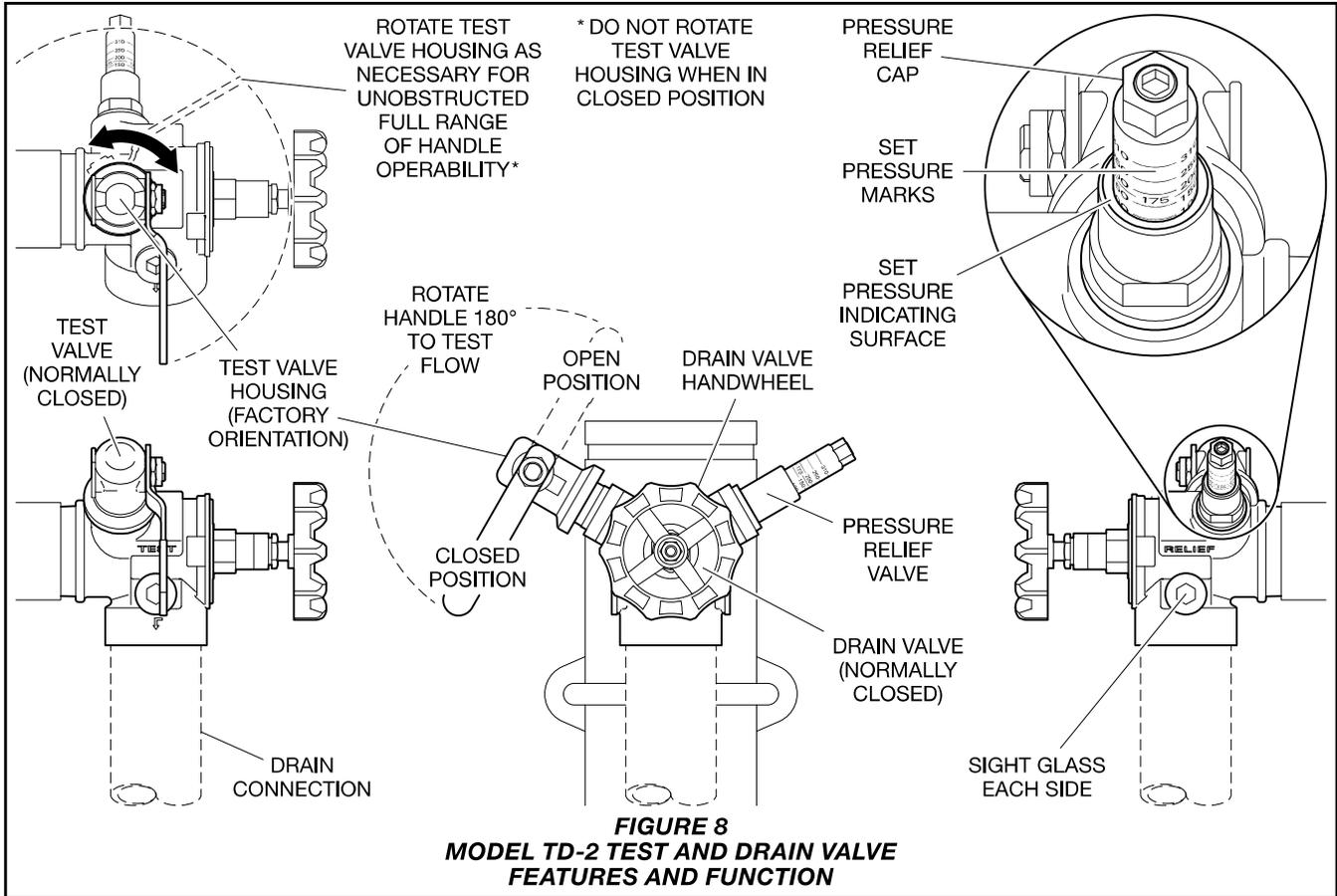


CONTACT RATINGS:
Two sets of SPDT (Form C)
10.0 Amps at 125/250VAC
2.0 Amps at 30VDC Resistive
10 mAmps min. at 24VDC

NOTE:
When connecting to a UL Listed control panel, use panel resistor rating for circuit supervision

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 7
MODEL RM-2 BASE COMMERCIAL AND RESIDENTIAL RISER MANIFOLD WIRING GUIDANCE



Care and Maintenance

The TYCO RM-2 Base Riser Manifold 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 such as 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, ball valves, pressure relief valve, Model TD-2 Test and Drain Valve, or the drain valve handwheel on the Model TD-2 Test and Drain 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. Rotate the Model TD-2 test valve handle 180 degrees to the OPEN position as shown in Figure 8. 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 (for example, 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 (for example, not flowing) pressure indicated by the pressure gauge is no less than originally recorded for the system when it was first installed.

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).

Riser Manifolds

Specify: Model RM-2 Base Riser Manifold, (specify Commercial or Residential) Application, Size (specify), (specify inlet x outlet) End Connections, P/N (specify per Table A)

Riser Manifold Accessories

Optional Flexible Drain Hose

For part descriptions and part numbers, see Figure 9.

Specify: Flexible Drain Hose, P/N (specify)

Optional Residential Manifold 175 psi Pressure Relief Kit

Specify: Pressure Relief Kit, Model RM-2 Base Riser Manifold, Residential Application, P/N 5940711

Replacement Parts

Manifold Replacement Parts

For replacement part descriptions and part numbers, see Figures 1, 2, 3, 4 or 5.

Specify: Model RM-2 Base Riser Manifold, (specify part description), P/N (specify)

Note: Refer to TFP965 for Model TD-2 Test and Drain Valve replacement parts.

Residential Riser Manifold Pressure Relief Kit Replacement Parts

For replacement part descriptions and part numbers, see Figure 6.

Specify: Model RM-2 Base Residential Pressure Relief Kit, (specify part description), P/N (specify)

