Model TAV-WN
Air Vent, Wet - Nitrogen

General Description

The TYCO Model TAV-WN Air Vent, Wet - Nitrogen provides automatic controlled venting of trapped gases in wet pipe fire sprinkler systems during the Wet Pipe Nitrogen Inerting (WPNI) process. As a fire sprinkler system is filled with water, trapped gas migrates to the high point of the system near the vent installation location which allows for trapped gas to be vented.

Trapped gas contains oxygen which is the primary cause of corrosion in fire sprinkler systems. Corrosion in wet pipe fire sprinkler systems is directly proportional to the amount of oxygen trapped within the system piping, so a reduction in trapped gas will reduce the internal corrosion activity of the fire sprinkler system. Venting the trapped gas in a wet pipe sprinkler system can also decrease water delivery time and reduce water flow alarms.

The controlled venting is achieved by integrating a pressure relief valve on the gas discharge piping assembly of the TAV-WN Air Vent as shown in Figure 1 Assembly Drawing. During the wet pipe nitrogen inerting process, the vent remains closed to facilitate purging of corrosion causing oxygen from the piping network. Once the piping has been appropriately inerted with nitrogen gas, using the TYCO WPNI protocol, and is filled with water, the vent allows trapped gases to vent from the piping as the system returns to normal pressure. When the TAV-WN Air Vent is used in conjunction with the nitrogen inerting process to provide internal corrosion control for wet pipe fire sprinkler systems by injecting nitrogen gas into the piping network to achieve a nitrogen gas concentration of at least 98%, this controlled venting achieves the following:

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

1. Prevents premature venting of nitrogen gas during Wet Pipe Nitrogen Inerting process.
2. Allows for gas sampling remote areas of the FPS piping network to measure the nitrogen concentration levels within the system.
3. Allows for venting the trapped gas within the system when the FPS is filled with water and put into service.

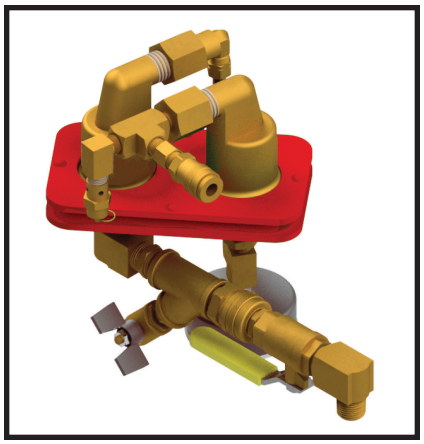
The TYCO Model TAV-WN Air Vent, Wet - Nitrogen, must be installed as shown on the engineering design documents. If a location is not provided install the vent at an accessible high point on the fire sprinkler system remote from the system riser where gas can be vented and at a location that the pressure gauge on the bottom of the vent assembly can be viewed from directly below. The TAV-WN Air Vent is also equipped with brass components that allows the device to be installed in areas subject to external corrosion.

The float mechanism on the device will automatically close when water reaches the vent and the redundant design eliminates the need to plumb the TAV-WN Air Vent to drain.

If the primary gas vent valve allows any significant amount of water to leak, the second gas vent valve will close preventing water from discharging and provide a pressure reading on the pressure gauge above 50 psig. This condition will be an indication that the primary automatic gas vent valve has failed and requires replacement. The pressure gauge on the bottom of the vent assembly is designed to be visible from the floor below the TAV-WN Air Vent from a distance of approximately 30 ft (9 m).

Optional Equipment - Model TRIS Remote Inerting Station

The TYCO Model TRIS Remote Inerting Station, as shown in Figure 5, allows for the nitrogen inerting functions of the TAV-WN Air Vent to be located to an easily accessible location near the ground thereby eliminating the need to access the TAV-WN to perform the following:



- Wet Pipe Nitrogen Inerting (WPNI) protocol
- Nitrogen gas purity sampling
- Monitor system pressure
- Remove trapped water from vent assembly
- Relocate vent assembly exhaust gas when venting into the atmosphere is impractical or undesirable

NOTICE

The TYCO Model TAV-WN Air Vent, Wet - Nitrogen, described herein must be installed and maintained in compliance with this document, in addition to the standards of any other authorities having jurisdiction. Failure to do so may impair the performance of the related 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.

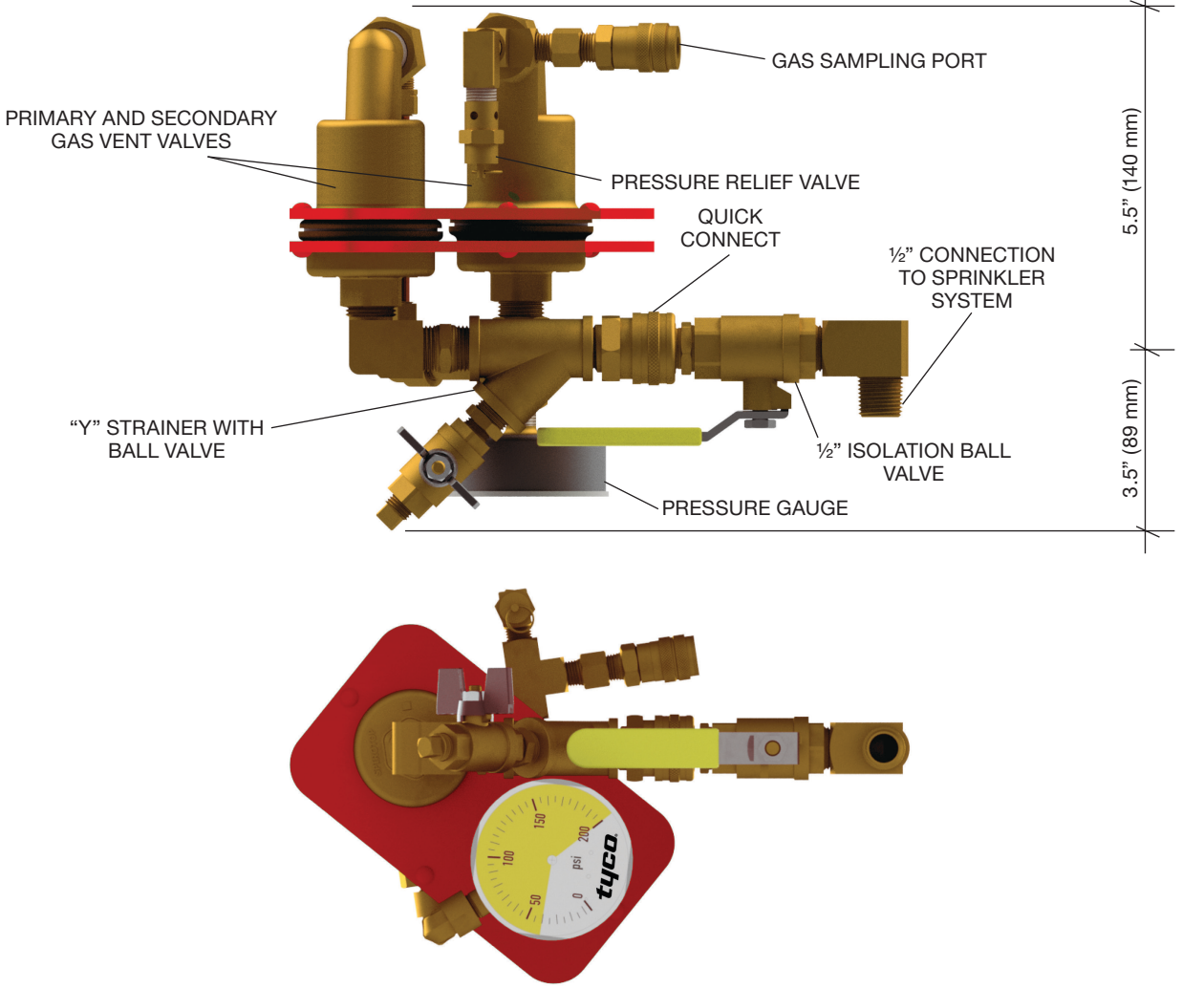


FIGURE 1
MODEL TAV-WN AIR VENT, WET-NITROGEN, ASSEMBLY

Technical Data

Service Pressure
Up to 175 psig (12 Bar)

Regulator Setting
40 psig (2.8 bar)

System Connection
½ in. NPT Male (vent)
1 in. NPT Male (port)

Temperature Range
40°F to 120°F (4.5°C to 49°C)

Dimensions:
14.5 in. (W) x 7.5 in. (D) x 9 in. (H)
(368 mm (W) x 191 mm (D) X 229 mm (H))

Weight:
10 lb (4.5 kg)

Clear Height:
5.5 in. (140 mm)

Optional Equipment:
Remote Inerting Station (TRIS)

Note:

- *Includes TYCO Nitrogen Injection Port (TNIP)*
- *Redundant Float Design Eliminates Piping to a Drain*
- *Support Hanger Not Required*

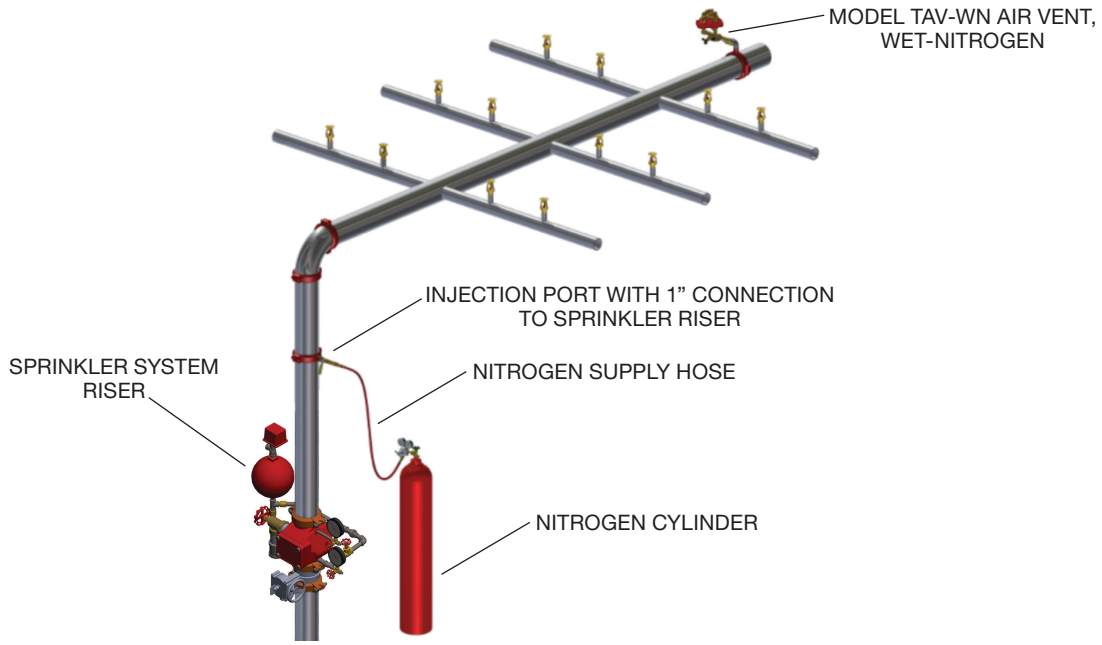


FIGURE 2
MODEL TNIP NITROGEN INJECTION PORT
RISER INSTALLATION

NOTES:
- Patented redundant float design eliminates piping vent to the drain.
- Piping to the vent assembly cannot be installed in a configuration that would trap water and prevent drainage to the sprinkler system; a water trap impedes the ability of the vent to remove gas from the fire sprinkler system.

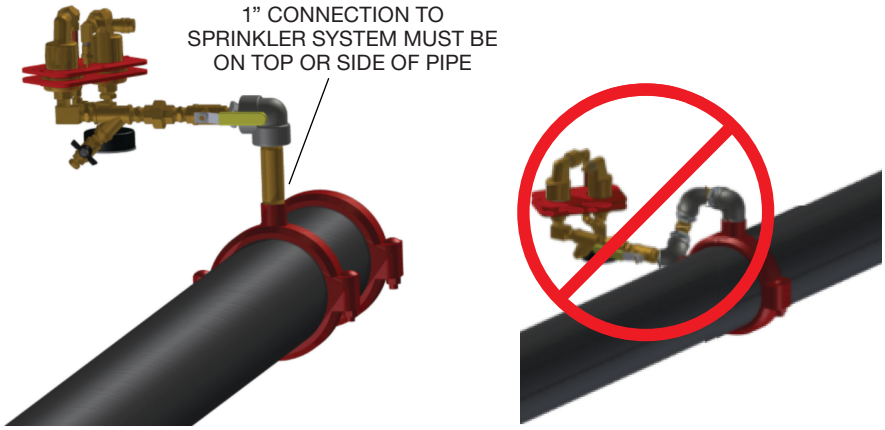


FIGURE 3
MODEL TAV-WN AIR VENT, WET-NITROGEN
SPRINKLER SYSTEM INSTALLATION

Operation

To operate the TAV-WN Air Vent, perform the following steps:

Step 1. Once the fire sprinkler system is hydrostatically tested, open the isolation ball valve on the TAV-WN Air Vent. Trapped gas should be expected to vent from the device if the system is re-filled with water.

Step 2. Follow the Wet Pipe Nitrogen Inerting protocol provided by Johnson Controls to eliminate oxygen from the fire sprinkler system.

Step 3. The Nitrogen Injection Port , as shown in Figure 6, provides access to fill the system with nitrogen gas, while the "Y" strainer ball valve on the vent assembly provides a purging location during the WPNI process.

Step 4. After each fill cycle the system nitrogen concentration can be verified at the gas sampling port on the vent assembly using a Model THGA Handheld Gas Analyzer (not included).

Step 5. The isolation ball valve must remain in the open position to allow for venting of any additional trapped gas remaining in the system that may migrate to the vent location.

Step 6. The "Y" strainer ball valve on the vent assembly can be used to clear water traps that would restrict operation of the TYCO TAV-WN Air Vent.

TRIS Remote Inerting Station Operating Instructions

Step 1. The pressure gauge indicates current system pressure.

- Indicates system pressure during WPNI process.

Step 2. To verify nitrogen purity in system piping while performing WPNI protocol, open gas sampling port "Tee" ball valve momentarily and measure purity level from gas sampling with handheld gas analyzer.

Step 3. To "purge" system piping during WPNI process, open the "purge" connection "Tee" ball valve.

Installation

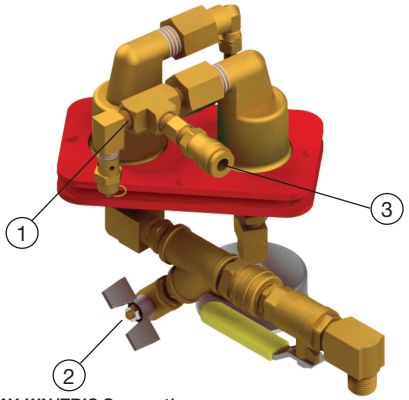
Step 1. The TYCO Model TAV-WN Air Vent is equipped with an isolation ball valve to be connected to the fire sprinkler system. Once the TAV-WN has been assembled at the provided quick connect, as shown in Figure 1, a ½ in. outlet (welded or mechanical) must be installed to connect the vent assembly to the sprinkler system.

Step 2. Install the TAV-WN vent assembly at the location provided by the engineering design documents in a level position at an accessible high point on the sprinkler system where trapped gas can be vented.

Note: *Piping to the vent assembly cannot be installed in a configuration that would trap water and prevent drainage to the sprinkler system; a water trap impedes the ability of the vent assembly to vent oxygen from the fire sprinkler system.*

Step 3. Install the Model TAV-WN Air Vent Injection Port at the fire sprinkler system riser on the system side of the main control valve, see Figure 2 and Figure 3. Install a 1 in. outlet (welded or mechanical) to connect the nitrogen injection port to the fire sprinkler system riser.

Step 4. Inspection of the vent assembly should be performed after installation and hydrostatic testing of the fire sprinkler system and periodically thereafter in accordance with the applicable NATIONAL FIRE PROTECTION AGENCY (NFPA) codes and standards and/or the authority having jurisdiction.



TAV-WN/TRIS Connections
1. Exhaust Gas Connection
2. Y-Strainer "Purge" Connection
3. Gas Sampling Port Connection
4. Nitrogen Gas/Water Exhaust Connection

NOTE: Y-Strainer "Purge" Connection will be exposed to system operating pressure TAV-WN/TRIS Connections

FIGURE 4
MODEL TAV-WN AIR VENT,
WET-NITROGEN, CONNECTIONS TO
MODEL TRIS REMOTE INERTING STATION

Installation Instructions for the Model TRIS Remote Inerting Station

Step 1. Install the TYCO Model TRIS Remote Inerting Station on a wall or vertical surface near the vent assembly in an accessible location.

Step 2. Close the TAV-WN Air Vent assembly ball valve prior to extending piping between TAV-WN and TRIS.

Step 3. Remove the gas sampling port and orifice from the vent assembly and extend the gas sampling port connection to the ¼ in. NPT gas sampling port inlet connection on the TRIS. See Figure 4.

Note: *Gas sampling port "Tee" ball valve in TRIS to remain closed until needed.*

Step 4. Remove the plug in the "Y" strainer "Tee" ball valve and extend the "Y" strainer connection to the ¼ in. NPT WPNI "purge" inlet connection with pressure gauge on the TRIS.

Note: *Once the WPNI "purge" connection is extended to the TRIS:*

- *the "Y" strainer "Tee" ball valve on the vent is to remain in the open position*
- *the WPNI "purge" connection "Tee" ball valve in the TRIS is to remain closed, unless performing a "purge" process*

Step 5. If exhausting gas into the atmosphere is impractical, extend the exhaust gas from the pressure relief valve tank bushing to ¼ in. NPT exhaust gas inlet connection on TRIS.

Step 6. The TRIS exhaust connection can exhaust nitrogen gas and/or water. Verify the exhaust connection is piped to a desirable location that accepts nitrogen gas and water.

Step 7. Open TAV-WN vent assembly ball valve once all connection piping between TAV-WN and TRIS is completed.

Care and Maintenance

The TYCO Model TAV-WN Air Vent, must be inspected annually at minimum by performing the following steps.

Step 1. Check the pressure gauge on the bottom of the vent assembly for a system pressure reading above 50 psig.

Step 2. If a pressure reading is above 50 psig (in the yellow area) the primary vent valve may require a service or replacement by performing the following steps:

- **a.** While isolation ball valve is in the open position check for air/water leaks.
- **b.** Close isolation ball valve to perform maintenance on the TAV-WN Air Vent.
- **c.** While isolation ball valve is in the closed position, inspection the "Y" strainer blockage, clean as necessary.
- **d.** If replacement is required, contact Johnson Controls Technical Services for replacement parts and instructions.

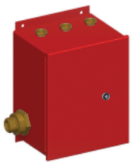


FIGURE 5
MODEL TRIS
REMOTE INERTING STATION

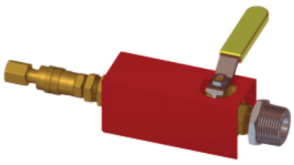


FIGURE 6
MODEL TNIP
NITROGEN INJECTION PORT

Ordering Procedure

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

Air Vent, Wet - Nitrogen
Specify: Model TAV-WN Air Vent, Wet - Nitrogen, P/N TAVWN01

Remote Inerting Station
Specify: Model TRIP Remote Inerting Station, P/N TRIP01

Nitrogen Injection Port*
Specify: Model TNIP Nitrogen Injection Port, P/N TNIP01

* = Included with Model TAV-WN Air Vent

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