



Type IFP AQUAMIST Zone Control Valve Cabinet Industrial Fryer Protection

General Description

The TYCO AQUAMIST Industrial Fryer Protection (IFP) Zone Control Valve Cabinet is utilized in the IFP Intermediate Pressure Water Mist system designed to provide protection from industrial fryer hazards.

The Zone Control Valve Cabinet assembly is comprised of two zone control valves: the primary zone 1-1/2 inch DV-5 deluge valve with releasing solenoid valve and the fines box zone 3/4 inch solenoid valve.

Actuation is initiated by an electrical signal from a system fire alarm and control panel to either the primary zone control valve releasing solenoid or the fines box zone control solenoid valve, allowing water flow to effected areas of protection: either fryer and fines box areas or fines box area only.

In a fryer alarm condition the DV-5 valve actuates when the primary zone control valve releasing solenoid is energized, allowing water to flow through the 1-1/2 system discharge and 3/4 inch fines box discharge connections, flooding the fryer and fines box areas of protection with watermist.

In a fines box alarm condition the fines box zone control solenoid valve is energized, allowing water to flow through the 3/4 inch fines box discharge connection, flooding only the fines box area of protection with watermist.



NOTICE

The Type IFP AQUAMIST Industrial Fryer Protection (IFP) Zone Control Valve Cabinet 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 watermist systems can vary considerably, depending on the characteristics and nature of the hazard and the basic purpose of the watermist system. Because of these variations, the design of watermist 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 device manufacturer with any questions.

Technical Data

Approvals

The TYCO IFP Zone Control Valve Cabinet is FM Approved as part of the FM Approved Industrial Fryer Protection System (Ref. Technical Data Sheet TFP2240). This component does not hold any individual approval and cannot be utilized in any other protection system.

Friction Loss

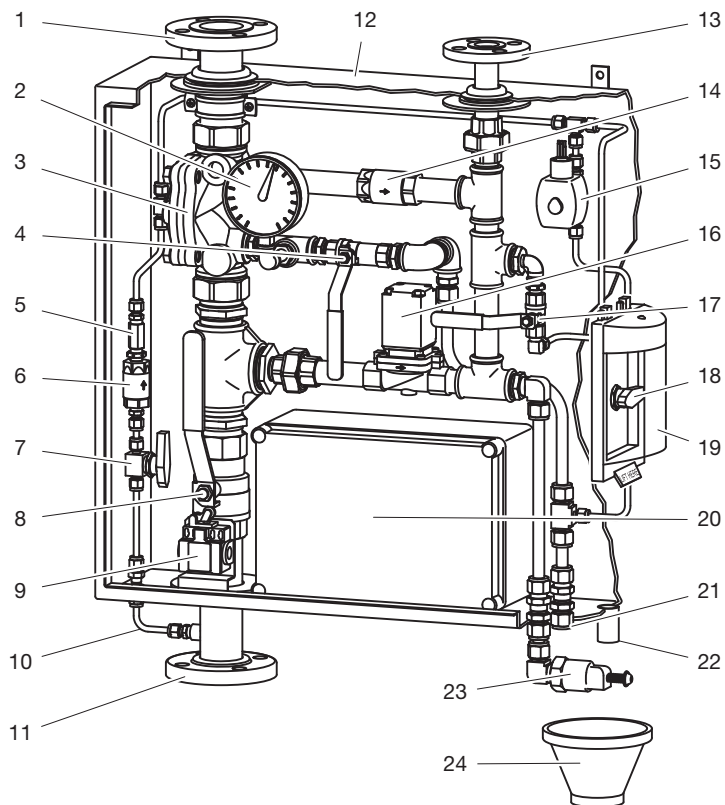
Refer to Graph A

Materials of Construction

Cabinet, valves, tubing and fittings are stainless steel.

IMPORTANT

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



NO.	DESCRIPTION	P/N
1	System Discharge Connection	n/a
2	Water Supply Pressure Gauge	92-343-1-005
3	DV-5 Primary Zone Control Valve (Normally Closed)	52-479-1-069
4	Main Drain Valve (Normally Closed)	2806273
5	Diaphragm Chamber Supply Restriction	700492
6	Diaphragm Chamber Supply Check Valve	140420011
7	Diaphragm Chamber Supply Control Valve (Normally Open)	BVCB4-B
8	Primary Control Valve (Normally Open)	2806277
9	Primary Control Valve Supervisory Switch	997907
10	Diaphragm Chamber Supply	n/a
11	Water Supply Connection	n/a
12	Valve Enclosure (Door not Shown) . .	n/a
14	Fines Box Discharge Isolation Check Valve	140420014
15	Primary Zone Control Valve Releasing Solenoid (Normally Closed)	86430871
16	Fines Box Zone Control Solenoid Valve (Normally Closed)	39800108
17	Secondary Drain Valve (Normally Closed)	2806271
18	Manual Release Valve (Normally Closed)	BVCB4-BRED
19	Manual Release Valve Cover	n/a
20	Electrical Enclosure (Connections on Bottom of Valve Enclosure)	n/a
21	Main Drain Discharge Port	n/a
22	Valve Enclosure Drain Port	n/a
23	Model AD-1 Automatic Drain Valve (Normally Open)	52-793-4-004
24	Drip Funnel	92-343-1-007

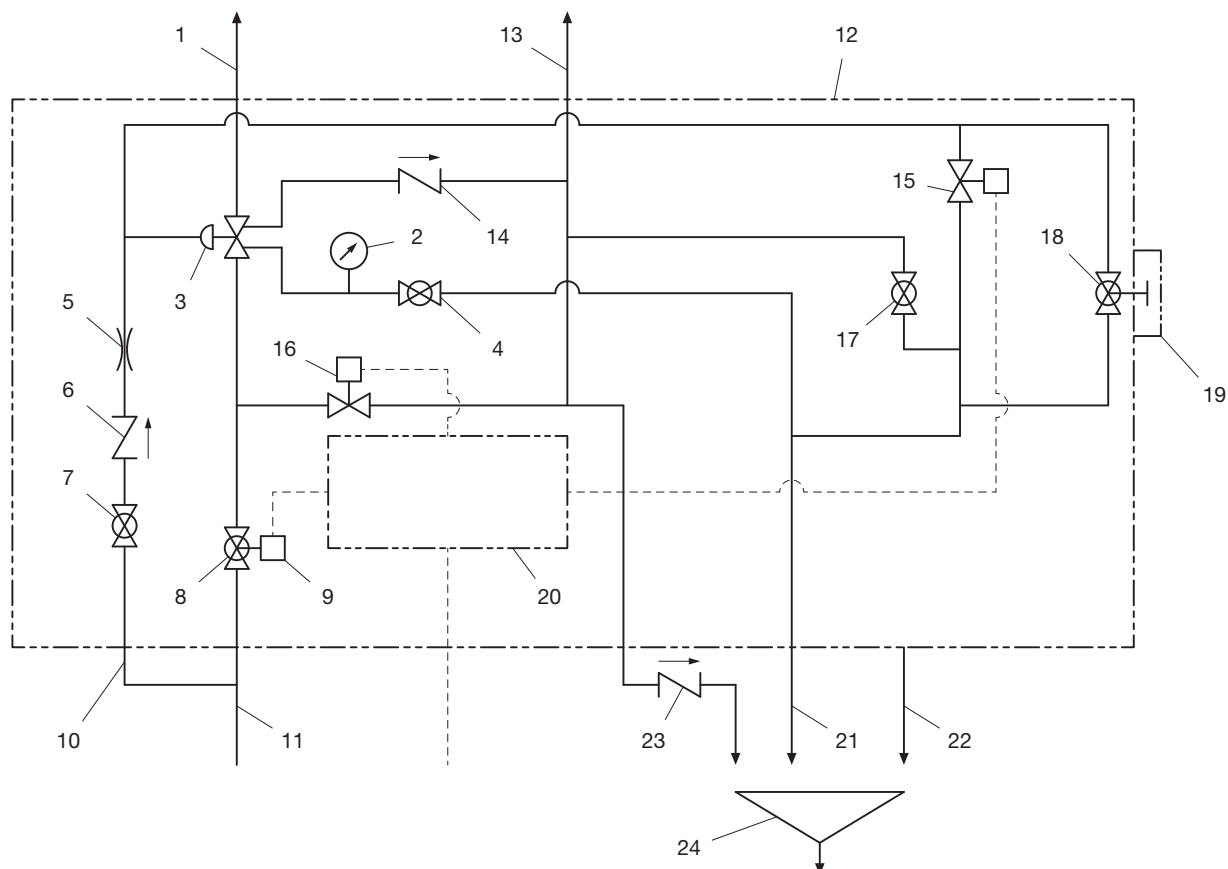


FIGURE 1
IFP ZONE CONTROL VALVE CABINET
ASSEMBLY AND FUNCTIONAL SCHEMATIC

Operation

Refer to Figure 1 for cabinet assembly and functional schematic.

The Primary Zone Control Valve is a diaphragm-type DV-5 Deluge Valve (refer to Technical Data Sheet TFP1305) actuated by a releasing solenoid valve.

The DV-5 valve is set for service when the diaphragm chamber is pressurized by the water supply through trim connections from the inlet side of the valve. The valve discharges when pressure in the diaphragm chamber is relieved.

Fryer Alarm Condition

With fire detected in the fryer, an electrical signal from the system fire alarm and control panel energizes the primary zone control releasing solenoid valve, resulting in a rapid pressure drop in the DV-5 valve diaphragm chamber. The water supply pressure forces the diaphragm open permitting water to flow from the 1-1/2 inch system and 3/4 inch fines box discharge connections, flooding the fryer and fines box areas of protection with watermist.

The restriction in the diaphragm supply trim prevents inadvertent premature re-pressurization of the diaphragm chamber.

Under normal operation, water flows from the main drain discharge port at a rate not exceeding 5 gpm (19 lpm). This flow must be factored when determining the capacity requirements of the system pump.

Fines Box Alarm Condition

With fire detected only in the fines box, an electrical signal from the system fire alarm and control panel energizes the fines box zone control solenoid valve allowing water to flow from the 3/4 inch fines box discharge connection, flooding only to the fines box area of protection with watermist.

The isolation check valve in the fines box bypass trim prevents water from flowing through the system discharge connection to the fryer area of protection.

Manual Actuation

Manual actuation is initiated by rotating the manual release valve handle to the open position. As a result, similar to actuation in a fryer alarm condition, both fryer and fines box areas of protection are flooded by watermist.

Note: Actuating the manual release valve allows water to discharge in all protection areas.

Valve Setting Procedure

Set the TYCO AQUAMIST Industrial Fryer Protection Zone Control Valve Cabinet for service in accordance with this section.

Refer to Figure 1 to identify components and to Technical Data Sheet TFP2240 for equipment in the IFP System application.

NOTICE

This procedure must be performed when initially setting the IFP Zone Control Valve Cabinet, after an operational test of the fire protection system, or after system operation due to a fire.

Step 1. Close primary control valve (8).

Step 2. Close diaphragm chamber supply control valve (7).

Step 3. Open main (4) and secondary (17) drain valves, and all auxiliary drains in system (if any). Close secondary drain valve and any auxiliary drains after water ceases to discharge. Leave main drain valve open.

Step 4. Reset actuation system:

Electric Actuation — In accordance with manufacturer instructions, reset electric fire detection system alarm and control panel to de-energize primary (15) and fines box (16) zone control solenoid valves as applicable.

Manual Actuation — Rotate manual release valve (18) handle to closed position.

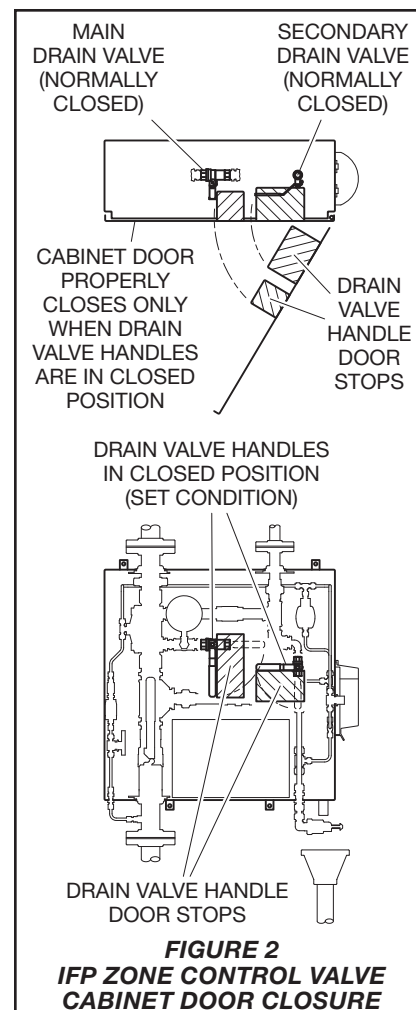
Step 5. Open diaphragm chamber supply control valve (7) and wait several seconds until DV-5 valve (3) diaphragm chamber is fully pressurized.

Step 6. Rotate manual release valve handle (18) to open position to vent trapped air from DV-5 valve diaphragm chamber. Slowly rotate manual release valve handle to closed position after aerated water ceases to discharge from main drain discharge port (20).

Step 7. Inspect drain connections from the manual release (18) and Model AD-1 automatic drain (23) valves. Repair leaks before proceeding to next step.

Step 8. Verify DV-5 valve diaphragm is able to hold water supply pressure as follows:

- With diaphragm chamber pressurized per Step 5, temporarily close diaphragm chamber supply control valve and monitor AD-1 valve outlet and main drain discharge port (21) for several minutes.
- Ensure steady flow or constant dripping do not discharge from

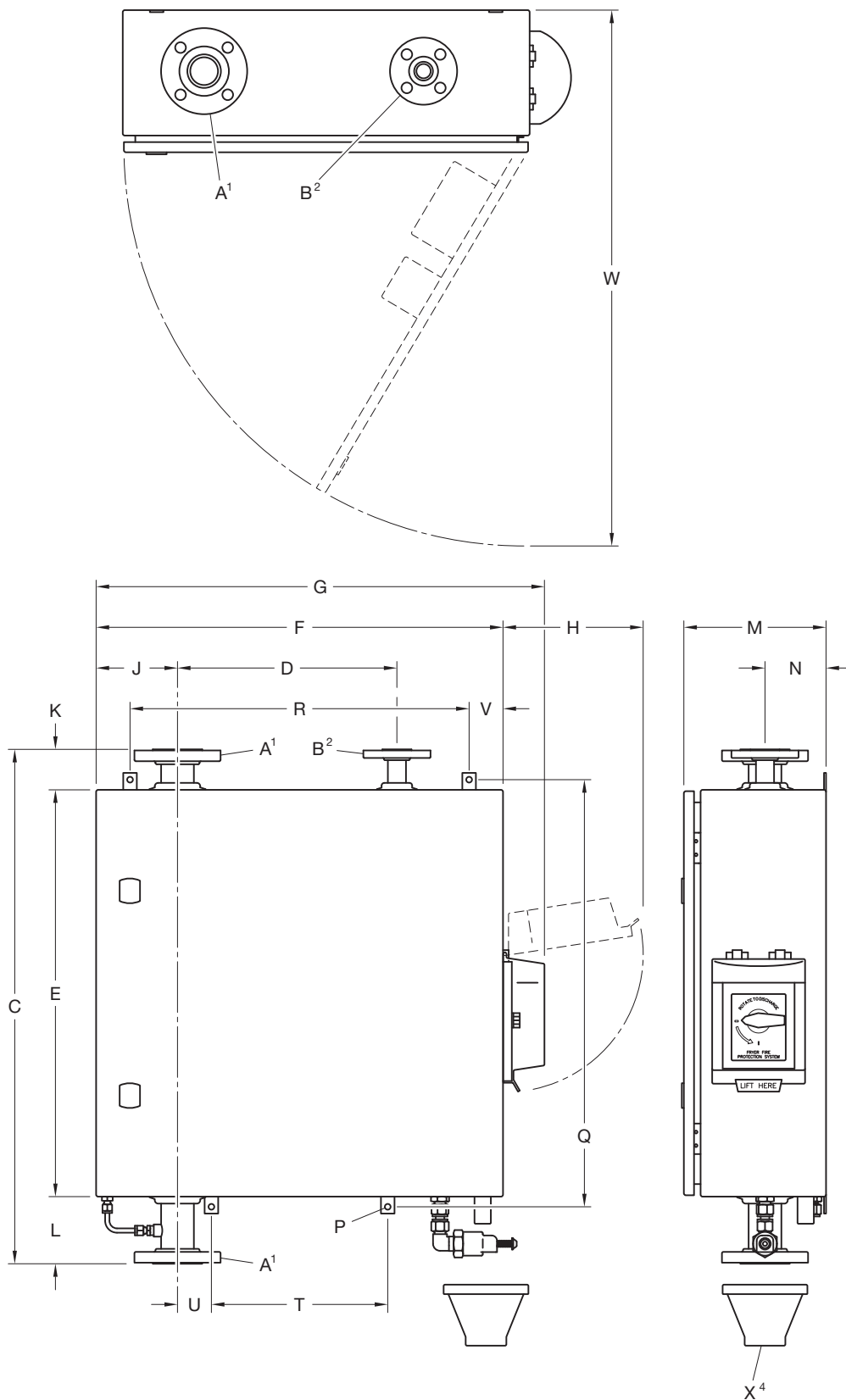


AD-1 valve or main drain port. If discharges are observed, replace DV-5 valve diaphragm and/or repair any leaks before proceeding to next step.

- If no steady flow or dripping from the AD-1 valve or main drain port are observed, open diaphragm chamber supply control valve and proceed to the step.

Step 9. Slowly open primary control valve. Slowly close main drain valve when water discharges from main drain port. Observe conditions at AD-1 valve outlet: If water discharges determine cause and correct as necessary; If no water discharges DV-5 primary zone control valve (3) is ready to be placed in service.

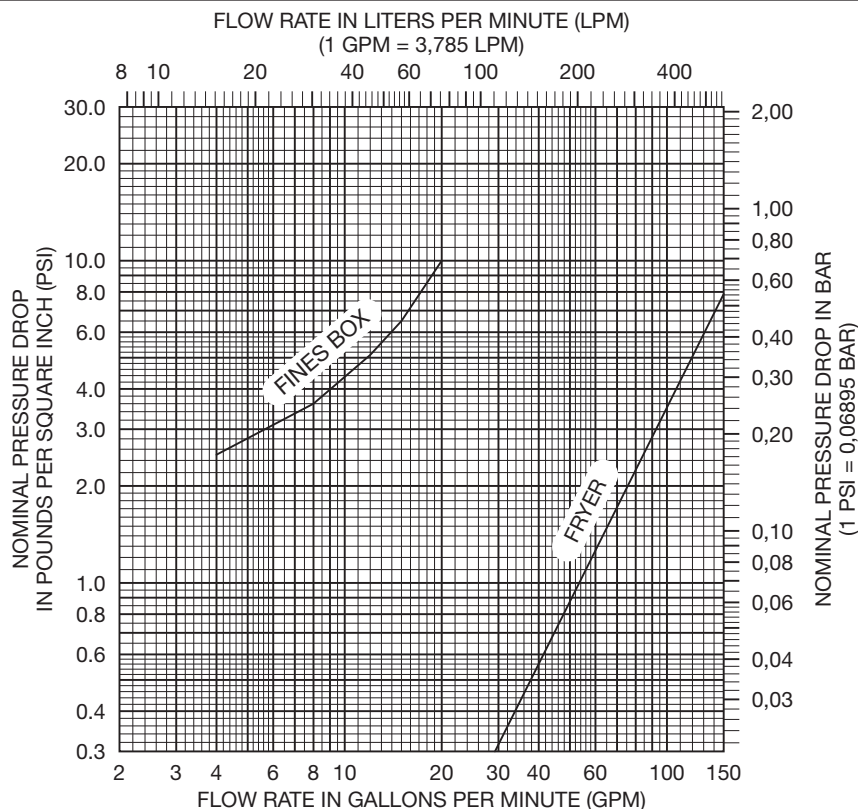
Step 10. Close cabinet door. Ensure door fully closes and no supervisory conditions exist at fire detection alarm and control panel. If door does not close, main or secondary drain valves may not be fully closed (Ref. Figure 2). Rotate drain valve handles to fully closed positions and close cabinet door. IFP system is placed in service once cabinet door is closed.



Dim.	Nominal Dimensions Inches (mm)
A	1-1/2 (DN40) ¹
B	3/4 (DN20) ²
C	29-7/8 (758,7)
D	12-3/4 (323,5)
E	23-5/8 (600,0)
F	23-5/8 (600,0)
G	26 (660,0)
H	8-1/8 (206,0)
J	4-3/4 (120,0)
K	2-3/8 (59,7)
L	3-7/8 (99,0)
M	8-1/4 (209,7)
N	3-1/2 (90,0)
P	3/8 (8,5) ³
Q	24-7/8 (630,0)
R	19-5/8 (500,0)
T	10-1/4 (260,0)
U	2 (50,0)
V	2 (50,0)
W	31-1/8 (790,4)
X ⁴	1-1/4 NPT

- Notes**
1. Supply Connection and System Discharge Connection Flanges per ANSI B 16.5
 2. Fines Box Discharge Connection Flange per ANSI B 16.5
 3. Diameter, 4 cabinet mounting holes
 4. Locate Drip Funnel relative to valve and cabinet drains

FIGURE 2
IFP ZONE CONTROL VALVE CABINET
INSTALLATION DIMENSIONS



GRAPH A
IFP ZONE CONTROL VALVE CABINET
NOMINAL PRESSURE LOSS VS. FLOW

Installation

The TYCO AQUAMIST Industrial Fryer Protection Zone Control Valve Cabinet must be installed in accordance with this section.

General Instructions

Refer to Figure 3 when planning for installation. Allow adequate clearance to fully open the cabinet door and the manual release valve cover.

Care and Maintenance

The TYCO AQUAMIST Industrial Fryer Protection Zone Control Valve Cabinet 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, permission to shut down the affected fire protection systems must first be obtained from the proper authorities, and all personnel who may be affected by this decision must be notified.

Inspection, testing, and maintenance must be performed as in accordance with the requirements of the NATIONAL

FIRE PROTECTION ASSOCIATION (NFPA), and any impairment must be immediately corrected.

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 regarding any questions.

The recommended maintenance for the valve assembly is as follows:

- Weekly — The cabinet should be visually inspected to ensure that the cabinet door is closed and in the locked position and there is no discharge from any drain.
- Annually — Exercise all the zone control valves. No discharge into the system piping is required for this test.
- Annually — A Main Drain Test is required to ensure no debris or partial blockage of the system piping has built up over the last year to diminish the residual flow of the system.

1. The standby static pressure (with the Pressure Maintenance Pump running) should be noted and compared to previous tests.
2. Rotate the Main Drain Valve handle to the fully open position.
 - a. Verify that the Main Pump in the Mist Control Center (MCC) unit operates as intended and that the pressure increases above the standby static pressure.
3. Note and compare the residual pressure to the last inspection.
4. Close the main drain valve slowly. Note and compare the post static pressure to the last inspection.

- Every 5 years — A full discharge test is required to ensure the proper nozzle placement and orientation.

Note: The Fines Box Releasing Solenoid must be exercised during the full discharge test.