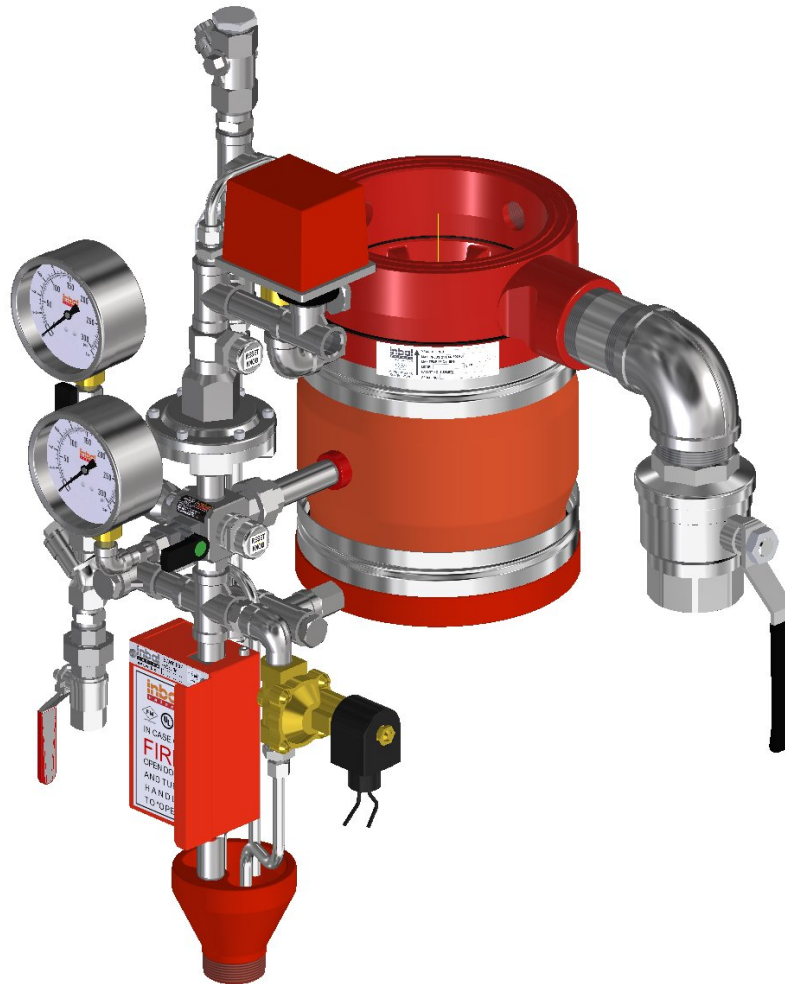


Inbal Preaction Valve, Non-Interlock

Series 700D/DG/DX - 04/14G01

Electric Actuation



Model 799DX-04G01

General Description

The **Inbal** Electrically Actuated, Non-Interlocked, Preaction Valve utilizes an **Inbal** Dry Pipe Valve with an electric detection and release system. The **Inbal** Valve may be opened either by the fusing of a sprinkler in the dry sprinkler piping or by the operation of the electric release system. The **Inbal** Automatic Water Control Valve used in this preaction system is a pressure operated, sleeve actuated, axial valve designed for use in fire protection systems.

The **Inbal** Preaction Valve is used for automatic or manual operation. Electric activation requires a solenoid valve controlled by a control (fire alarm & releasing) panel with heat, smoke, or flame detectors. When the detection system operates, the control panel energizes the Solenoid Valve to open. The **Inbal** Valve is opened to allow water to flow into the sprinkler piping in readiness for possible subsequent opening of one or more sprinklers. Upon fusing of a sprinkler, water will start to spray instantaneously, thus the delay caused by a pipe filling is eliminated. However, in the

event of a sprinkler head operating first, or damage to the sprinkler piping, the **Inbal** Non-Interlocked, Preaction Valve will respond as a dry pipe valve; the **Inbal** Valve will trip open and water will flow from any open release on the sprinkler piping regardless of operation or non-operation of the electric release system. As soon as the releasing system and the sprinkler piping are reset, the **Inbal** Preaction Valve resetting is merely done by activating the reset knob.

The standard material **Inbal** Preaction Valve is rated to 300 psi (21 bar) but due to the Solenoid Valve's lower pressure rating, it is limited to 175 psi (12 bar). It is available in sizes 1½" (40 mm) to 12" (300 mm) with threaded, flanged, grooved, or wafer inlet and outlet ends and can be used in vertical or horizontal installation.

Technical Data

Approvals

The **Inbal** Electrically Controlled Non-Interlocked Preaction System consists of a Dry Pipe Valve which is FM Approved to 300 psi (21 bar) in sizes 2", 3", 4", 6", 8", 10 and 12" (50, 80, 100, 150, 200, 250 and 300 mm) and a Solenoid Valve which is also FM Approved. **Inbal** Valves have Lloyd's, DNV ▪ GL, BV, RMRS, and ABS Type Approvals for all sizes.

Model Numbers

Inlet End	Outlet End	Model No.
Threaded	Threaded	711DG-04G01
Threaded	Grooved	716DG-04G01
Flanged	Flanged	733DG-04G01
Flanged	Grooved	736DG-04G01
Grooved	Grooved	766DG-04G01
Wafer	Wafer	799DG-04G01

"DG" can be replaced with "D" or "DX" depends on the **Inbal** Automatic Water Control Valve series in use. See bulletins F02-01, F02-02 and F02-03.

The above model numbers refer to fully trimmed valves. For basic trim replace "04" with "14". For example: 716D-14G01 is an inlet threaded end and outlet grooved end valve with basic electrically actuated, non-interlocked preaction trim.

Sizes

Threaded Ends:

1½", 2", 2½", & 3" (40, 50, 65 & 80 mm).

Flanged and Grooved Ends:

1½", 2", 2½", 3", 4", 6", 8", 10" & 12" (40, 50, 65, 80, 100, 150, 200, 250 & 300 mm).

Wafer Ends:

3", 4", 6", 8", 10", & 12" (80, 100, 150, 200, 250 & 300 mm).

End Standards

Threaded End:

NPT or BSPT.

Flanged End:

ANSI B16.5 class 150 & 300 ;

ISO 7005 - PN10, 16 & 25 ;

BS 10 Table D & E ;

AS 2129 Table D & E ;

Jis B 2212, 2213, 2214.

Wafer End:

Fits most of the above standards.

Grooved End:

ANSI/AWWA C606-87.

Pressure Rating

Maximum working pressure: 300 psi (21 bar) but depends on the solenoid valve pressure rating.

Temperature Range

Water: Max. +150°F (+65°C).

Solenoid Valve

Standard

2-way, normally closed, 24 V DC, model 157-01 or 157-02.

See bulletin F30-10.

Optional

Energized to open, energized to close, and magnetic latch (impulse) types in various voltages, frequencies, enclosures, and pressure ratings.

See bulletins F30-10 and F30-12.

Installation Position

Vertical or horizontal.

Materials

Standard

Valve Housing:

Forged steel (SAE 1021).

Valve Ends and Wafer Flow Test & Drain Ends:

Ductile Iron (ASTM A536 65-45-12).

Threaded, Flanged, and Grooved Flow Test & Drain Ends:

Carbon Steel (SAE 1020).

Sleeve:

SMR5 Elastomer reinforced with Polyester and Kevlar.

Control Trim:

Brass Nickel Chrome plated, Stainless Steel, and Galvanized Steel.

Optional

Cast Steel ;

Bronze ;

Nickel Aluminium Bronze ;

Stainless Steel AISI 316 ;

Super Austenitic Stainless Steel ;

Super Duplex Stainless Steel ;

Titanium.

Coating

Standard

Powder epoxy coated. Thickness: 0.004" (0.1 mm) external and internal surfaces.

Optional

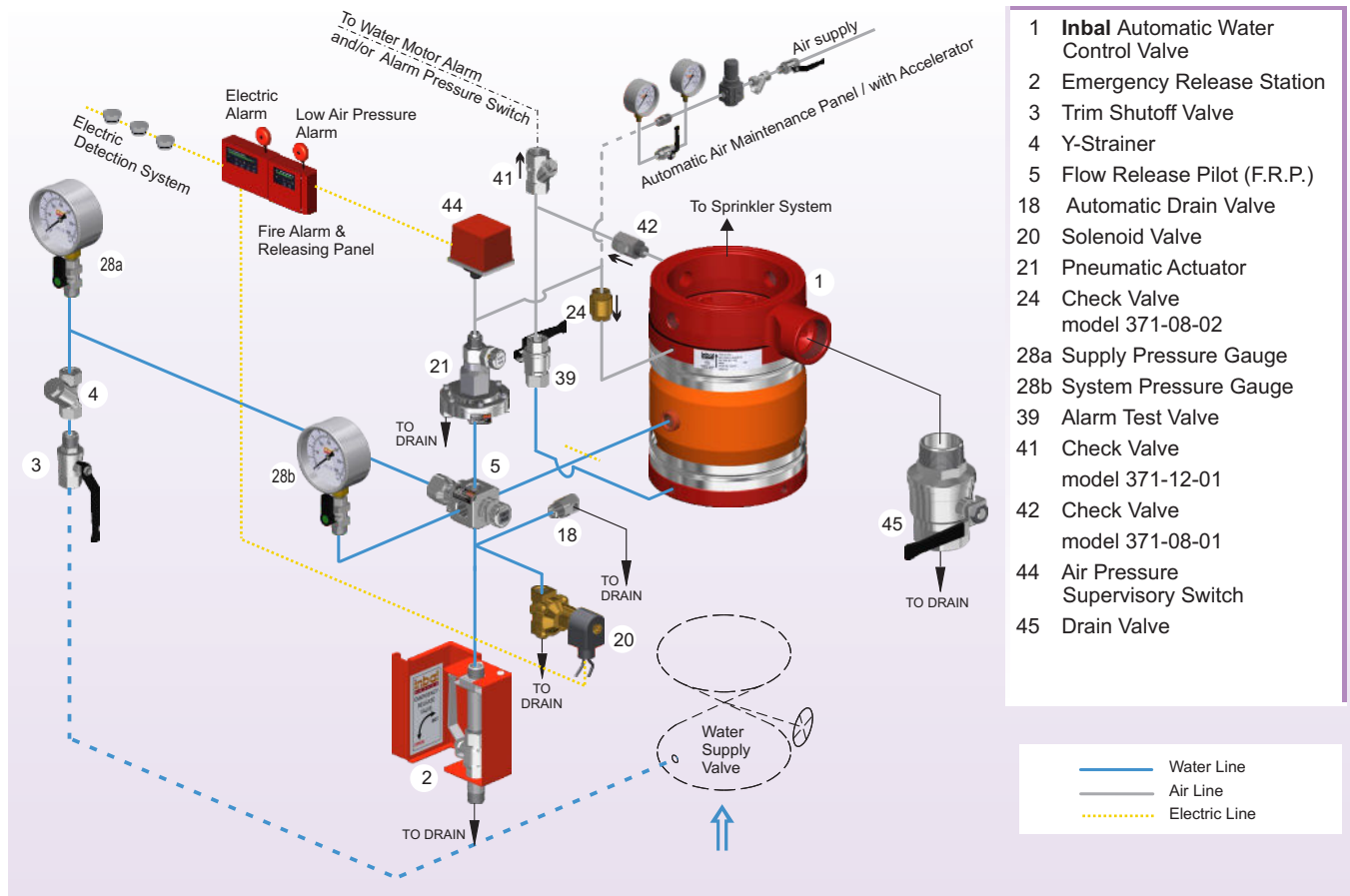
High built epoxy coated and polyurethane finish.

Thickness: 0.01" (0.3 mm).

Halar® coated. Thickness: 0.02" (0.5 mm) .

Halar® is a registered trade mark of Ausimont USA Inc.

Schematic Control Diagram – 700DX-04G01



Control Trim

On standard, the control trim is supplied fully preassembled. When the control trim is ordered in loose components form, the **Inbal** Preaction Valve must be trimmed as shown. Any deviation may affect proper operation.

The complete control trim includes the following components:

- Solenoid Valve, 2 way.
- Pneumatic Actuator, 2 way, with a built-in lock device.
- Y-Strainer with a stainless steel screen.
- Alarm Test Valve - 2 way, quarter turn ball valve.
- Trim Shutoff Valve, Drain Valve - 2 way quarter turn ball valve.
- Check Valve - spring loaded ball type, model 371-08-01
- Check Valve - spring loaded ball type, model 371-08-02
- Check Valve model 371-12-01 - Spring loaded, min opening pressure 40 [psi (2.7 bar)].
- Flow Release Pilot (F.R.P.).
- Supply and System Pressure Gauges, with dual scale (psi and bar).

- Pressure Gauge Valves - 3 way, quarter turn ball valves.
- Drain Cup and drain tubes.
- Automatic Drain Valve.
- Emergency Release Station.
- Pressure Supervisory Switch

Features

- The unique design eliminates the need for a check valve.
- No Moving Mechanical Parts (N.M.M.P) construction ensures a long life of dependable operation, reducing the cost of maintenance.
- Quick, yet soft opening performance - eliminates water hammer and consequent damages.
- Optional opening and/or closing speed control is available.
- Fast and easy reset by thumb activated knobs.
- Control trim is supplied fully preassembled.
- Can be installed vertically or horizontally.
- Compact design - minimum space for valve and trim.

- Unique principle of operation prevents false operation due to water surges.
- Pressure rating to 300 psi (21 bar), provided a compatible solenoid valve is used.
- Wide selection of solenoid valves to meet various requirements for type of operation, voltage, frequency, protection and enclosure.
- Wide range of sizes for an ideal system design.
- Control trim made of high grade materials as standard.
- Epoxy coating supplied as standard - ensures excellent corrosion resistance.

Operation

The Control Chamber of the **Inbal** Automatic Water Control Valve is the annular space between the valve Housing and the Sleeve. The valve is held in a closed position as long as inlet pressure is maintained in the Control Chamber.

The electric actuation trim consists of a Solenoid Valve connected to the wet pilot line and is controlled by the detection system and the control (Fire Alarm & Releasing) panel.

In the set position, water pressure is applied to the **Inbal** Valve Control Chamber, to the Solenoid Valve, and to the Pneumatic Actuator from the upstream of the Water Supply Valve. The de-energized Solenoid Valve is closed. The sprinkler piping air pressure holds the Pneumatic Actuator closed. Consequently the **Inbal** Valve stays closed, keeping the piping system dry.

When the detection system operates, the Fire Alarm & Releasing Panel activates an alarm and energizes the Solenoid Valve to open, the pressure in the Control Chamber is released. The **Inbal** Valve opens to allow water to flow into the piping system and to the Alarm Pressure Switch and/or Water Motor Alarm. When a sprinkler head opens, water will flow from the system.

The **Inbal** Valve opens also if the sprinkler piping air pressure is reduced due to opening of one or more sprinkler heads or damage to the pipe. The Pneumatic Actuator opens due to loss of supervisory pressure in the sprinkler piping allowing the pressure in the **Inbal** Valve Control Chamber to vent, thus causing the **Inbal** Valve to open. Water will flow into the system piping and to the water flow alarms and will be released from the open sprinkler or any other release in the sprinkler piping system.

Either one of these operations, which releases water from the **Inbal** Valve Control Chamber, latches the F.R.P. in an open position, isolating the Control Chamber from the inlet water supply. The F.R.P. operation prevents the **Inbal** Preaction Valve from closing even if the open releasing

devices close. The **Inbal** Valve will close only when the Resetting procedure is followed.

The Emergency Release Valve is used for emergency actuation of the **Inbal** Preaction Valve and for routine testing.

Installation

Refer to the Trim Chart applicable to the specific **Inbal** Non-Interlocked, Preaction Valve model in use.

1. When the **Inbal** Non Interlocked Preaction Valve is delivered, care-fully unpack and visually check that there has been no damage to the operating components, piping, and fittings.
2. Always flush the pipelines before installing the **Inbal** Valve.
3. Place the **Inbal** Valve in the piping at the outlet of the Water Supply Valve. Verify that the arrow on the valve Housing matches the actual flow direction. Determine which side the system will be accessed from and locate the **Inbal** Valve accordingly.
4. Install the **Inbal** Valve, connected to a fully assembled control trim, in the pipeline. Use gaskets, bolts, stud bolts, bolt sleeves, and nuts as required by the valve ends.
5. The water pressure supply to the control trim must always be source from the inlet side of the Water Supply Valve through a ½" pipe.
6. Assemble the Solenoid Valve according to the drawing, the applicable bulletin of the Solenoid Valve, and direction of flow. The Solenoid Valve must be wired in accordance with the requirements of the authorities having jurisdiction and/or NEC, IEC, or CNELEC standards and codes. Wiring should be done by a licensed electrician.
7. Connect the air supply through the **Inbal** Automatic Air Maintenance Panel to the valve trim. The air supply must be regulated and maintained automatically. It is recommended to preset the Automatic Air Maintenance Panel to maintain a constant air supply equal to the "minimum recommended sprinkler piping pressure" as shown in Graph (1) in bulletin F32-02. The Air Pressure Supervisory Switch should be set to activate at a pressure drop of 5 psi (0.35 bar).
8. The air supply must be restricted to ensure that the automatic air supply can not replace air as fast as it escapes when a sprinkler operates.
9. It is recommended to install an inspector's test valve on the sprinkler piping system. The inspector's test valve is a locked closed ball valve with an outlet end orifice equivalent to the smallest orifice of releasing device

provided on the system. The inspector's test valve may be used to verify adequate loss of air pressure when the sprinkler piping system operates.

10. Set the **Inbal** Non Interlocked Preaction Valve by following the Resetting procedure.
11. Test the **Inbal** Valve, the trim, and the alarms according to the Testing procedure.

Resetting

The **Inbal** Non Interlocked Preaction Valve must be reset and restored to service as soon as possible after automatic, emergency, or manual actuation.

The procedure is as follows:

1. Close the Water Supply Valve. The water flow alarms are reset.
2. Close the Trim Shutoff Valve.
3. Close the air supply valve.
4. De-energize the Solenoid Valve by resetting the detection system and the Fire Alarm & Releasing Panel. Verify that the Solenoid Valve is in a closed position and the Electric Alarm is reset.
5. Open the Drain Valve, allowing all the water to drain.
6. Inspect and replace any sprinklers that have operated, been damaged, or been exposed to fire conditions.
7. Inspect the trim and alarm Y-Strainers. Clean if necessary.
8. Verify that the Emergency Release Valve is in a closed position.
9. Close the Drain Valve downstream of the **Inbal** Valve.
10. Close the inspector's test valve if it was in operation.
11. Open the air supply to fill the sprinkler piping system with air/gas. Use the air by-pass valve in the **Inbal** Automatic Air Maintenance Panel to accelerate the filling rate. Push and hold the reset knob on the Pneumatic Actuator until the air pressure exceeds the "minimum recommended sprinkler piping pressure" as shown in Graph (1) in bulletin F32-02. Verify that the Pressure Supervisory Switch and Low Air Pressure Alarm are reset.
12. Release the reset knob on the Pneumatic Actuator.
13. Open the Trim Shutoff Valve. Push and hold the reset knob on the Flow Release Pilot (F.R.P) and allow water pressure to build up in the trim and in the **Inbal** Valve Control Chamber. Verify that the pressure readings on both pressure gauges are equal.
14. Release the reset knob on the Flow Release Pilot.
15. Fully Open the Water Supply Valve.

Maintenance, Inspection, & Testing

It is recommended that periodic inspection and tests be conducted by qualified personnel to ensure that the **Inbal** Non- Interlocked Preaction Valve and related equipment are in good operating condition. The inspection and testing activities should be done according to NFPA Standards, the guidelines and regulations of the authorities having jurisdiction, and the following instructions. It is recommended that the **Inbal** Valve be tested, operated, cleaned, and inspected at least on a routine basis.

Inspection

A *weekly* Inspection is recommended:

1. Verify that the Water Supply Valve and the air supply valve are sealed in fully open position.
2. Verify that the required water and air pressures are being applied to the **Inbal** Valve inlet and trim.
3. Verify that the Trim Shutoff Valve, Alarm Test Valve, Emergency Release Valve, Pressure Gauge Valves, Condensate Valve (if in use), Drain Valve are in set position.
4. The Supply, System, and Air Pressure Gauges should be checked for accuracy.
5. Visually inspect for disconnected wires, broken or missing parts, or other evidence of impaired protection.

Strainer Cleaning

A *quarterly* Strainer Cleaning is recommended:

1. Close the Trim Shutoff Valve.
2. Remove the covers of the trim and alarm Y-Strainers. Clean if necessary.
3. Open the Trim Shutoff Valve.

Alarm Testing

A *quarterly* Alarm Testing is recommended:

Water Flow Alarm

1. Test the Water Motor Alarm or Alarm Pressure Switch by opening the Alarm Test Valve.
2. Water Motor Alarm should be audible. Alarm Pressure Switch should activate.
3. Close the Alarm Test Valve. All local alarms should stop sounding and pressure switch is reset.
4. Verify that the supply piping to the alarm drains properly.

Low Air Pressure Alarm

1. Close the Water Supply Valve.
2. Partially open the inspector's test valve in the sprinkler piping system to reduce the pressure to the pre-determined alarm level (but not below that level, as this may inadvertently activate Non-Interlocked Preaction Trim Testing).

3. Verify that the Low Air Pressure Alarm operates properly.
4. Close the inspector's test valve. Verify that normal pneumatic pressure is restored and that the Low Air Pressure Alarm and Air Pressure Supervisory Switch are reset.
5. Open the Water Supply Valve.

Preaction Trim Testing

A *semi-annual* Preaction Trim Testing is recommended. Testing of the control trim is conducted with no flow of water to the system.

1. Close the Water Supply Valve.
2. Test the trim function by either:
 - a) Actuation of the Solenoid Valve. The Electric Alarm should operate and a trickle of water should be drained from the trim.
 - b) Opening of an inspector's test valve. Let the air/gas pressure in the operated system decrease. The Low Air Pressure Alarm should operate. Water should be drained from the trim.
3. Wait until the pressure reading on the System Pressure Gauge drops to zero which simulates an open position of the **Inbal** Valve.
4. Reset the valve by performing the instructions in Resetting.

Trip Testing

By performing the Trip Testing, the sprinkler piping system will be flooded with water, and water will flow from any open release in the system. The **Inbal** Preaction Valve should be trip tested *annually* with the Water Supply Valve partially open, and *every 3 years* with the Water Supply Valve fully open. The Trip Testing should be done during warm weather.

1. Record the water supply pressure and pneumatic system pressure.

2. Trip the **Inbal** Valve to open by either:
 - a) Operating a detector according to the manufacturer's instructions.
 - b) Opening an inspector's test valve.
 - c) Activating the Emergency Release Valve.
3. The **Inbal** Valve should open, filling the sprinkler system with water. Record the elapsed time for the development of a full flow of water from the inspector's test valve.
4. Verify that all the alarms operate properly.
5. Reset the valve by performing the instructions in Resetting.
6. Verify that the Water Supply Pressure and pneumatic system pressures have been restored to the level as recorded in (3) above.

Removal

To remove the **Inbal** Preaction Valve:

1. Close all the pressure supply valves:
 - a) Water Supply Valve.
 - b) Trim Shutoff Valve.
 - c) Air supply valve.
2. Disconnect the electric wires from the Solenoid Valve. The electric work should be done by a licensed electrician.
3. Open the Emergency Release Valve to release the water pressure from the **Inbal** Valve Control Chamber.
4. Open Drain Valve to allow all the water and air to drain.
5. Disconnect the union and remove the trim from the valve.
6. Remove the **Inbal** Valve from the line for inspection.
7. To reinstall, follow the Installation procedure (use new gaskets for flanged or wafer valve).

Inquiries/Orders

The Data Sheet for Inquiries/Orders (bulletin F01-05) should be submitted. ●

