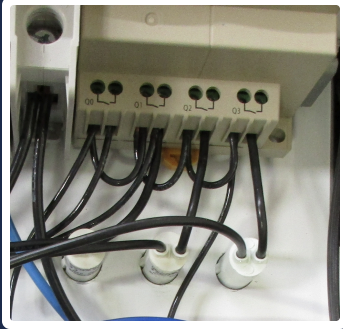


TECHNICAL DATA
DOCUMENT

Fan & Pump Delay Sequence

PLC Timers T1 / T2 · Outputs Q0 / Q1 · Fan Override Toggle



KEY SPECIFICATIONS

FAN LEAD TIME

Fans ON 10 s before the pump

FAN RUN-ON

Fans OFF 10 s after the pump

T1 (ON-DELAY)

10 s · delays pump start (Q1)

T2 (OFF-DELAY)

10 s · delays fan stop (Q0)

TB (PRESSURE TIMER)

25 s to prove 550 psi

Q0 OUTPUT

Fans: 24 VAC to FAN CONTROL

Q1 OUTPUT

Pump: inlet solenoid · EDV · contactor · RUN light

FAN OVERRIDE TOGGLE

Runs fans only · bypasses Q0

CONTROLLER

Omron PLC

Fan Delay: Function & Purpose

Current FanMist Pump Stations sequence the fans and pump separately. When the humidistat calls for humidity, the fans start right away and the pump starts **10 seconds later**. When the set point is reached, the pump stops first and the fans run **10 more seconds** to clear the remaining mist.

Some earlier Pump Stations were wired **without the fan delay**, so the fans and pump started and stopped together. This document explains the delay sequence and gives the field procedure to **convert a station from no fan delay to fan delay**. It also covers the related rewiring that makes the fan override toggle switch run the fans only.

Why the Fan Delay Matters

- **Air before water:** the fans reach full speed before the nozzles open, so the first mist enters a moving 10,000 CFM air stream instead of falling below the fan.
- **Mist clearing at shutdown:** the fans keep running for 10 seconds after the pump stops, carrying off the last mist as the EDV depressurizes the line.
- **Drip-free operation:** no mist is released into still air at start or stop, which prevents wet spots under the fans.

Without vs. With Fan Delay

	No Fan Delay	With Fan Delay
Start	Fans and pump start together	Fans start, then the pump starts 10 s later
Stop	Fans and pump stop together	The pump stops, then the fans stop 10 s later
Outputs	Fans and pump loads share one output	Q0 = fans · Q1 = pump
Fan toggle	May not run the fans alone	Runs the fans only

Delay Settings

Factory PLC Timer Settings	
T1: on-delay	10 s. Delays the pump start (Q1) after the fans start. The fans (Q0) have no delay at start.
T2: off-delay	10 s. Delays the fan stop (Q0) after the pump stops. The pump (Q1) has no delay at stop.
Tb: pressure timer	25 s. The pump must reach 550 psi at the HPS, or the system faults OFF.
Typical cycle	10 minutes ON / 10 minutes OFF during the coldest months



TECHNICAL DATA
DOCUMENT

Fan & Pump Delay Sequence

PLC Timers T1 / T2 · Outputs Q0 /
Q1 · Fan Override Toggle

KEY SPECIFICATIONS

FAN LEAD TIME

Fans ON 10 s before the pump

FAN RUN-ON

Fans OFF 10 s after the pump

T1 (ON-DELAY)

10 s · delays pump start (Q1)

T2 (OFF-DELAY)

10 s · delays fan stop (Q0)

TB (PRESSURE TIMER)

25 s to prove 550 psi

Q0 OUTPUT

Fans: 24 VAC to FAN CONTROL

Q1 OUTPUT

Pump: inlet solenoid · EDV ·
contactor · RUN light

FAN OVERRIDE TOGGLE

Runs fans only · bypasses Q0

CONTROLLER

Omron PLC

Delay Sequence & Timing

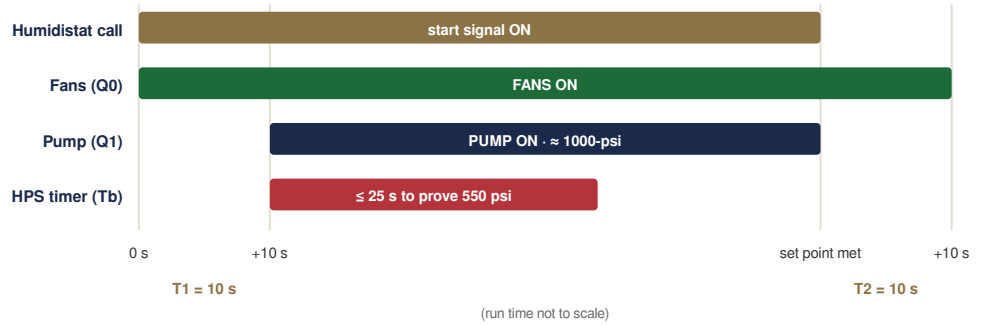


Figure 1 — Timing of the fan and pump outputs with the fan delay in place.

- 1 Idle / Ready**
No humidity demand. Q0 and Q1 are open.
Fans OFF Pump OFF
- 2 Call for Humidity · 0 s**
The humidistat closes the cube relay and the PLC receives the start signal. **Q0 closes immediately** and sends 24 VAC to the fan relay box. T1 starts timing. The orange light turns on.
Fans ON Pump OFF
- 3 Pump Start · +10 s**
T1 times out and **Q1 closes**. This energizes the inlet solenoid valve, the EDV (closes) and the motor contactor coil, and lights the green RUN light. The 25 s pressure timer (Tb) starts.
Fans ON Pump ON
- 4 Set Point Satisfied**
The start signal ends. **Q1 opens immediately**, so the pump stops and the EDV opens to depressurize the line. T2 starts timing.
Fans ON Pump OFF
- 5 Fans Off · +10 s**
T2 times out and **Q0 opens**. The fans stop and the system returns to Idle / Ready.
Fans OFF Pump OFF

Note: each time the pump is turned on, it takes about 10 seconds to reach full pressure because of the fan delay. Do not interrupt this delay, for example during the flushing procedure.

TECHNICAL DATA
DOCUMENT

Fan & Pump Delay Sequence

PLC Timers T1 / T2 · Outputs Q0 /
Q1 · Fan Override Toggle

KEY SPECIFICATIONS

FAN LEAD TIME

Fans ON 10 s before the pump

FAN RUN-ON

Fans OFF 10 s after the pump

T1 (ON-DELAY)

10 s · delays pump start (Q1)

T2 (OFF-DELAY)

10 s · delays fan stop (Q0)

TB (PRESSURE TIMER)

25 s to prove 550 psi

Q0 OUTPUT

Fans: 24 VAC to FAN CONTROL

Q1 OUTPUT

Pump: inlet solenoid · EDV ·
contactor · RUN light

FAN OVERRIDE TOGGLE

Runs fans only · bypasses Q0

CONTROLLER

Omron PLC

PLC Outputs & Timer Settings

The fan delay depends on the fans and the pump being wired to **separate PLC output relays**. The PLC's output terminal strip has four relay outputs, Q0 – Q3, each with a pair of terminals (left and right).



Figure 2 — PLC output relays Q0 – Q3, shown before conversion.

Output	Wired To (with fan delay)	Delay
Q0	24 VAC hot to the FAN CONTROL terminals, which feed the fan relay box coil	None at start · T2 at stop
Q1	Inlet solenoid valve · EDV · motor start contactor coil · green RUN light	T1 at start · none at stop
Q2	Red FAULT light (HPS timer)	Tb = 25 s
Q3	Amber MAINT light	500 hours

Changing or Verifying T1 & T2

After the conversion, confirm that T1 and T2 are both set to 10 seconds.

1. Press the OK button. The screen changes.
2. Use the down arrow to highlight Parameter, then press OK.
3. "1" has a blinking square around it. To change a different timer, skip to step 7.
4. Press the left arrow. The blinking square drops to the number in the lower right corner. Press OK.
5. The last digit of the timer value blinks. Use the left arrow to move to the digit to change, and the up/down arrows to change it. Press OK.
6. If that is the only timer to change, press ESC twice to return to the primary screen.
7. Press OK. The number next to the T blinks. Use the up/down arrows to select the timer number, then press OK.
8. Press the left arrow, then OK. Change the value as in step 5 and press OK.
9. Press ESC twice to return to the primary screen.

Full PLC screen and timer detail: IHC–TDD–PLC–0926–RevA (Omron PLC).



TECHNICAL DATA DOCUMENT

Fan & Pump Delay Sequence

PLC Timers T1 / T2 · Outputs Q0 /
Q1 · Fan Override Toggle

KEY SPECIFICATIONS

FAN LEAD TIME

Fans ON 10 s before the pump

FAN RUN-ON

Fans OFF 10 s after the pump

T1 (ON-DELAY)

10 s · delays pump start (Q1)

T2 (OFF-DELAY)

10 s · delays fan stop (Q0)

TB (PRESSURE TIMER)

25 s to prove 550 psi

Q0 OUTPUT

Fans: 24 VAC to FAN CONTROL

Q1 OUTPUT

Pump: inlet solenoid · EDV ·
contactor · RUN light

FAN OVERRIDE TOGGLE

Runs fans only · bypasses Q0

CONTROLLER

Omron PLC

Conversion: Fan & Pump Delay Rewiring



Before You Start

Turn the pump switch OFF and lock out/tag out power at the plant breaker. Depressurize the system and confirm zero pressure on the gauge. Remove the electrical panel hardware to reach the PLC output terminals. Only qualified personnel should perform this procedure.

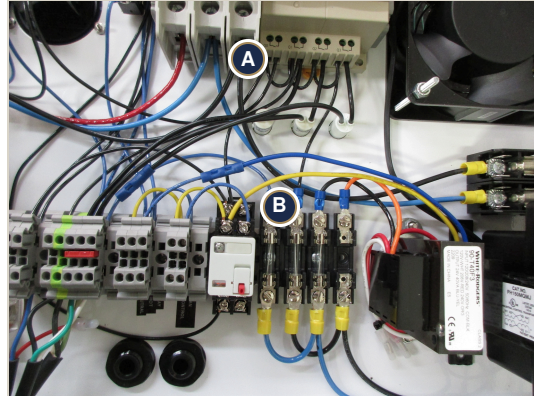


Figure 3 — Electrical panel, showing the two areas rewired in the conversion.

- A** **PLC output terminals (Q0 / Q1):** rewired for the 10-second pump and fan delay (this page)
- B** **Terminal blocks:** rewired so the fan override toggle switch runs the fans only (next page)

Delay Rewiring: 3 Steps

This separates the fan circuit (Q0) from the pump circuit (Q1), so the PLC timers can delay each one.



- 1** **Remove this wire.** Remove the jumper wire that loops between the Q0 and Q1 terminals.



- 2** **Move the left-side wire.** Move the wire from the **left side of Q0** to the **left side of Q1**.



- 3** **Move the black wire.** Move the black wire from the **right side of Q0** to the **right side of Q1**. The Q1 right-side port will then hold 3 wires.

Check: make sure every conductor is fully seated and tight in its terminal, especially the Q1 right-side port with 3 wires. Do not restore power until the toggle switch rewiring on the next page is also complete.

TECHNICAL DATA
DOCUMENT

Fan & Pump Delay Sequence

PLC Timers T1 / T2 · Outputs Q0 /
Q1 · Fan Override Toggle

KEY SPECIFICATIONS

FAN LEAD TIME

Fans ON 10 s before the pump

FAN RUN-ON

Fans OFF 10 s after the pump

T1 (ON-DELAY)

10 s · delays pump start (Q1)

T2 (OFF-DELAY)

10 s · delays fan stop (Q0)

TB (PRESSURE TIMER)

25 s to prove 550 psi

Q0 OUTPUT

Fans: 24 VAC to FAN CONTROL

Q1 OUTPUT

Pump: inlet solenoid · EDV ·
contactor · RUN light

FAN OVERRIDE TOGGLE

Runs fans only · bypasses Q0

CONTROLLER

Omron PLC

Conversion: Fan Toggle Switch & Testing

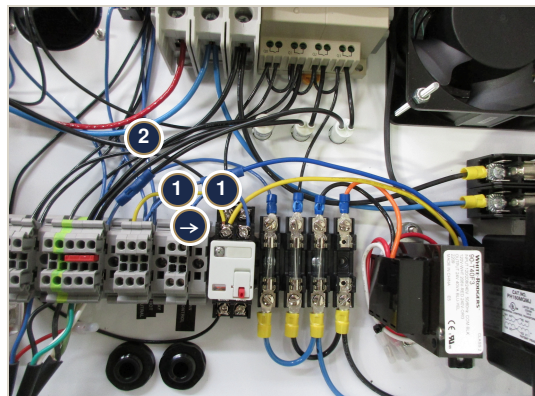


Figure 4 — Terminal block area, showing the fan toggle switch conversion.

Toggle Switch: 2 Steps

- 1** Remove the two blue wires marked 1 in Figure 4.
- 2** Move the wire marked 2 to the **second terminal block** (arrow).

After this change, the toggle switch on the outside of the enclosure sends 24 VAC only to the FAN CONTROL circuit. It runs the fans alone for testing and checking rotation, without starting the pump.

Post-Conversion Test

1. Restore power and water. Turn the pump switch ON.
2. **Toggle test:** switch the fan override ON. The fans run and the pump stays OFF. Switch it OFF.
3. Set the humidistat above the current RH to call for humidity.
4. **Start:** the fans start immediately and the pump starts about 10 s later. The gauge reaches 1000-psi and the red light goes out within 25 s.
5. Set the humidistat below the current RH.
6. **Stop:** the pump stops immediately and the EDV relieves pressure. The fans stop about 10 s later.
7. Return the humidistat to the desired RH set point.

Troubleshooting the Conversion

Symptom	Possible Cause	Corrective Action
Fans and pump still start together	Jumper between Q0 and Q1 not removed, or wires on the wrong terminals	Repeat steps 1–3. Confirm the fan circuit is on Q0 and the pump circuit is on Q1.
Pump starts, but the fans never start	Fan circuit not landed on Q0, or no 24 VAC at FAN CONTROL	Check the Q0 wiring and the 2-wire FAN CONTROL run to the relay box coil.
Fans start, but the pump never starts	Pump loads not landed on Q1, or a loose conductor in the 3-wire port	Re-seat the Q1 right-side wires. Check T1 and confirm the cube relay green light is on.
Delay is not 10 seconds	T1 or T2 changed from the factory setting	Reset T1 and T2 to 10 s (page 3).
Toggle switch runs the pump, or does nothing	Toggle wiring not converted	Repeat the toggle switch steps. The toggle must feed only the FAN CONTROL circuit.

Related: IHC–TDD–WIR–1026–RevA (Wiring & Schematics) · IHC–TDD–PLC–0926–RevA (Omron PLC) · IHC–TDD–TSG–1026–RevA (Troubleshooting by Part). Support: 765-702-4083.