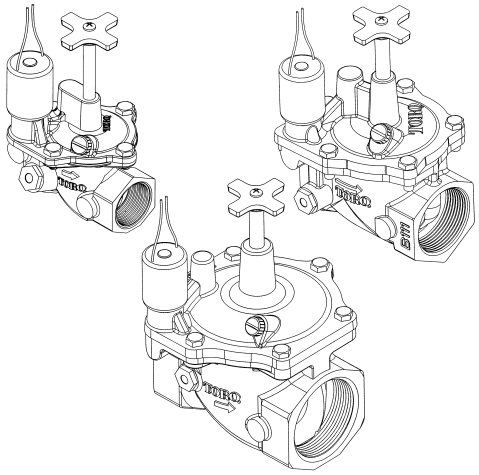
210 Series Brass Valves
Installation Instructions

Introduction

Built on proven technologies and components, the Toro 210 Series brass valves are tough, have excellent performance and are extremely reliable. A self-flushing, clog-resistant, stainless-steel filter for dirty water conditions assures years of trouble-free performance.

In commercial installations, it is advantageous to install the valves in a valve box. This enables the valve to be located, accessed and maintained easily. The use of clean aggregate in the the bottom of the box, and keeping valve box locations away from structures, potential hardscaping features (such as sidewalks) and large planting locations is recommended. Additionally, valve box locations generally should be in shrub beds and at right angles to structure locations. If the valves are installed below grade without a valve box, access to the top of the valve should be provided using a section of 4" PVC pipe and a Toro Valve Cover (Part No. 850-00) installed directly over each valve.



Specifications

- Models:
  - 210 Series electric, 1", 1¼", 1½", 2"
  - 210 Series hydraulic normally open, 1", 1½", 2"
- Flow range:
  - 1" — 5-40 GPM
  - 1¼" — 20-100 GPM
  - 1½" — 20-130 GPM
  - 2" — 30-180 GPM
- Operating pressure:
  - Electric and normally open hydraulic models: 10-220 PSI maximum
- Burst pressure safety rating: 750 PSI
- Body styles:
  - Globe valve — 1", 1¼", 1½", 2" female threads
  - BSP threads available
- Solenoid: 24 V a.c.
  - Inrush: 0.40 amps, 11.50 VA
  - Holding: 0.20 amps, 5.75 VA
- Dimensions:
  - 1" — 5¾" H x 3½" W
  - 1¼" — 6½" H x 4½" W
  - 1½" — 6½" H x 4½" W
  - 2" — 7½" H x 5" W
- 220 PSI maximum pressure rating
- Ingot brass and stainless-steel construction
- Removable, self-flushing, contamination-proof, 120-mesh, stainless-steel filter screen (electric models)
- Manual flow control: adjustable to zero flow
- Tough, double-beaded, fabric-reinforced rubber diaphragm rated at 750 PSI

Friction Loss

	Flow (GPM)																
Model	**5**	**10**	**15**	**20**	**30**	**40**	**50**	**60**	**70**	**80**	**100**	**120**	**150**	**170**	**180**	**200**	
Hydraulic																	
1"	<1	<1	1.5	2.5	5.5	7.0											
1¼"				2.0	2.7	3.7	4.8	6.0	8.0	10.5	13.0						
1½"				<1	1.5	2.5	3.0	4.5	5.0	8.0	11.5	14.0					
2"					<1	1.0	1.1	1.5	2.5	3.0	5.5	7.0	10.0	11.5	14.5		
Electric																	
1"	2.0	2.5	1.5	2.5	5.5	7.0											
1¼"				5.5	6.5	7.5	8.0	8.5	9.0	13.0	16.0						
1½"				4.0	5.2	5.4	6.0	6.5	7.0	8.0	10.0	15.0					
2"					1.0	2.0	2.0	2.5	3.0	3.5	6.0	7.5	10.0	12.0	14.0		

Note: For optimum performance, calculate total friction loss to ensure sufficient downstream pressure.

Voltage Requirement (standard solenoid)

Voltage	Inlet Pressure
22.5 V a.c.	220 PSI
21.1 V a.c.	200 PSI
20.2 V a.c.	175 PSI
19.1 V a.c.	150 PSI
18.2 V a.c.	125 PSI
17.1 V a.c.	100 PSI
16.1 V a.c.	75 PSI
16.0 V a.c.	50 PSI

Normally Open Valve Installation

The normally open hydraulic valve is particularly appropriate for dirty-water applications such as effluent water use. With these valves, the main-flow water supply is not utilized as a source for closing the valve. The pressure within the diaphragm chamber on a normally open valve is supplied separately through a filtered water source from the controller.

Installation Guidelines:

- Note the flow direction arrow in the side of the valve body and install accordingly.
- The valve can be installed at any angle without affecting operation.
- To enable proper valve operation, the filtered water supplied to the controller and valves must be obtained from the highest source of pressure within the irrigation system. In other words, the water pressure in the control tubing from the controller to the valves must be greater than or equal to the main-flow water pressure on the inlet side of the valve
- The recommended maximum control tubing run is 1000'. Exceeding this distance may cause erratic valve operation.
- Hydraulic valve control tubing should be rated for a maximum continuous working pressure of 220 PSI with 1/4" O.D. and 1/8" I.D. Toro polyethylene control tubing and fittings are recommended for this type of installation.

  Note: Toro control tubing is available in 2000' rolls and four color codes to simplify identification during installation. Tubing connections should be made with self-aligning, corrosion resistant couplers and secured with 1/4" I.D. tube retainers. Refer to the Tubing and Fitting chart below for model number information.
- Prior to connecting the control tube to the valve fitting, the tube must be pre-filled and completely free of all debris and trapped air. A flushing adapter (model 995-02) enables the tubing to be easily attached to a standard water hose end for this procedure.
- Leaving an expansion loop at each valve location is recommended.

1/4" Polyethylene Control Tubing and Accessories

Control Tubing (2000' roll):	**Accessories:**
Model 900-11 Blue color code	**Model 900-30** Metal Coupler
Model 900-12 Yellow color code	**Model 850-21** Plastic Coupler
Model 900-13 Pink color code	**Model 900-40** Retainer
Model 900-14 White color code	**Model 900-21** Adapter (1/4" compression to 1/4" poly)
	Model 900-24 Adapter (1/8" Male NPT to 1/4" poly)
	Model 900-50 Metal Tee
	Model 850-22 Plastic Tee
	Model 900-70 Tubing Plug

Electric Valve Installation

Installation Guidelines:

- Note the flow direction arrow in the side of the valve body and install accordingly.
- Use direct-burial wire, utilizing different color codes for each station control wire and one color for the common wire to all valves.
- Waterproof wire splice connectors are absolutely essential for proper electric control system operation. Follow the installation instructions provided with the connectors for optimum waterproof splice protection.
- Leaving a wire expansion loop at each valve location on long-run wire lengths is recommended.

Flow Control Adjustment

The flow control is used to reduce the flow and pressure to valve outlet. By turning the control handle clockwise, the flow will gradually be reduced zero.

- Adjust the flow control as necessary for optimum sprinkler performance.