TORO Count on it.

220G Series Brass Valve
Installation and Operating Instructions

Introduction

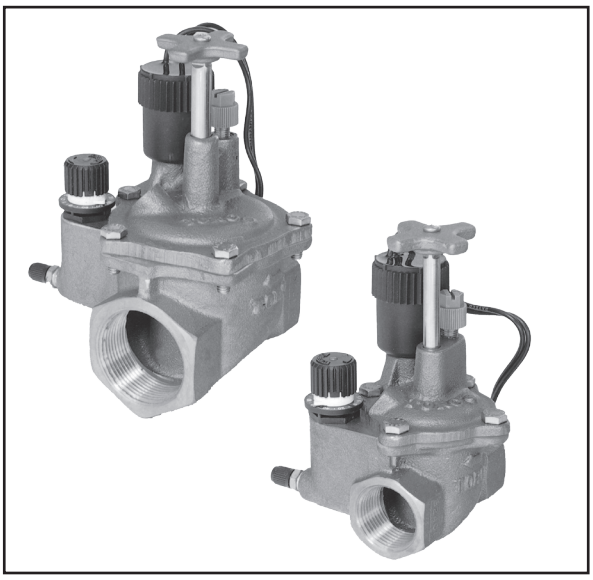
The 220G Series valve offers two electrical activation types: AC powered and DC powered.

For satellite systems, the 24 VAC Spike Guard solenoid provides 20,000 volt lightning protection to minimize down time and service costs. Moreover, it draws less than half the wattage of traditional solenoids for a lower long-term cost of ownership.

For GDC 2-wire systems, a DC-latching solenoid reduces the system wire load to lower initial system cost. It is activated by a momentary pulse "on" and "off", meaning there is no continuous power draw, providing a lower long-term cost of ownership.

The 220G brass valve adjusts easily with the micro-adjust dial and indicator to provided constant downstream pressure between 5-100 psi (,34-6,9 bar).

Note: The 220G valve should be installed below grade in a valve box or vault (see opposite page) to provide service access and vandal resistance. The valve installation site should be readily accessible by grounds maintenance personnel and well clear of hardscape features, cart paths, and foot traffic areas.



Specifications

Configuration
- globe, forward flow
- ingot brass and stainless steel construction
- 1" (25 mm), 1¼" (32 mm), 1 ½" (40 mm), 2" (50 mm) NPT and BSP models
- electric actuation
- pressure regulating

Dimensions

1"	5¾" H x 5" W 146 mm H x 127 mm W
1¼"	6½" H x 6" W 165 mm H x 152 mm W
1½"	6½" H x 6" W 165 mm H x 152 mm W
2"	7½" H x 7" W 191 mm H x 178 mm W

Flow Range

1" (25 mm)	5-40 gpm 19-151 lpm
1¼" (32 mm)	20-100 gpm 76-379 lpm
1½" (40 mm)	20-130 gpm 76-492 lpm
2" (50 mm)	30-180 gpm 114-681 lpm

Operating Pressure Range
- Inlet: 10-220 psi (,69-15,2 bar)
- Outlet: 5-100 +/- 3 psi (,34-6,9 bar +/- ,2 bar)
- minimum inlet / outlet differential: 10 psi (,69 bar)
- burst pressure safety rating: 750 psi (51,7 bar)

Diaphragm
double-beaded, fabric-reinforced

Filter screen
- 120-mesh stainless steel
- self-flushing, contamination resistance

Manual Flow Control
adjustable to zero flow

Friction Loss in PSI

GPM	5	10	15	20	30	40	50	60	70	80	100	120	150	170	180
1"	1.75	2.00	2.20	3.10	5.05	7.80									
1 1/4"				1.85	2.50	2.70	3.50	4.10	5.60						
1 1/2"				2.15	2.45	2.80	3.05	3.80	5.00	6.55					
2"					3.05	3.20	2.90	2.95	3.25	3.40	4.50	6.50	10.10	13.45	14.85

Friction Loss in BAR

LPM	,35	,69	1,0	1,4	2,1	2,8	3,4	4,1	4,8	5,5	6,9	8,3	10,3	11,7	12,4
25 mm	1.21	1.38	1.52	2.14	3.48	5.37									
32 mm				1.27	1.72	1.86	2.41	2.82	3.86						
40 mm				1.48	1.69	1.93	2.10	2.62	3.45	4.51					
50 mm					2.10	2.20	2.00	2.03	2.24	2.34	3.10	4.48	6.96	9.27	10.23

SpikeGuard solenoid
(for satellite control systems)
24 VAC, 50/60 Hz
Inrush - 0.12 amps
Holding - 0.10 amps

DC-latching solenoid
(for GDC 2-Wire control systems)
momentary low-voltage pulse

Manual Bleed Screw
enables manual valve operation
bleeds off water internally downstream

EZReg Pressure Regulator
- compact, precision-dial design
- regulates during atomatic and manual operation
- serviceable while valve is pressurized
- poppet valve (Schrader-type) for downstream pressure verification

Installation

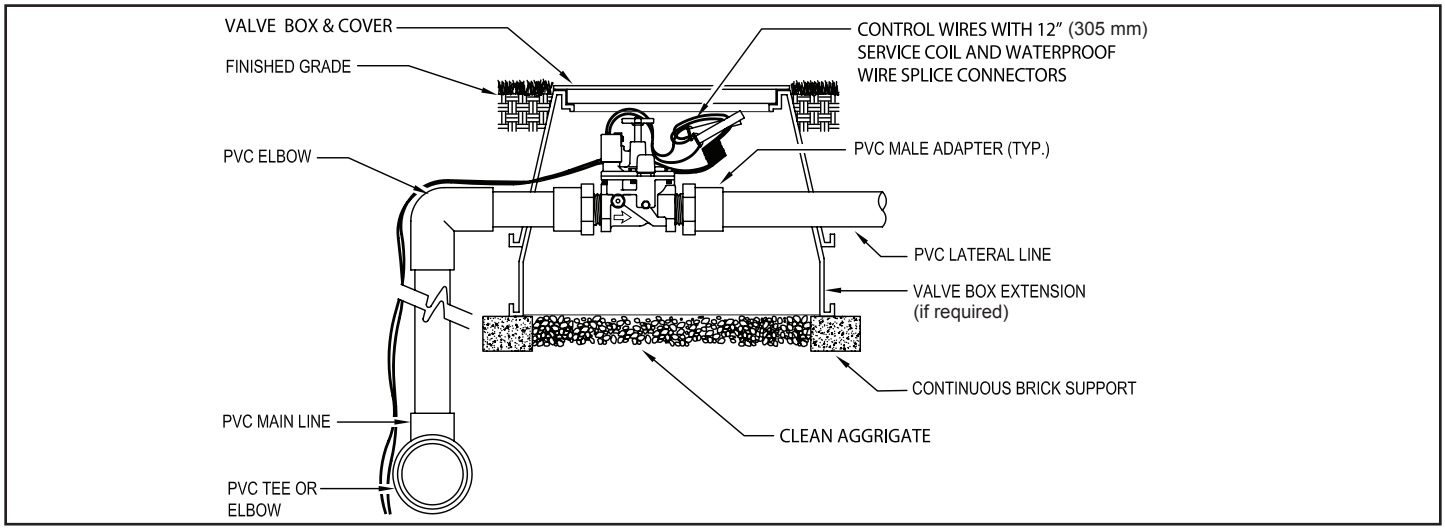
- Note the flow direction arrow in the side of the valve body and install accordingly.
- The valve can be installed at any angle without affecting operation.
- Use direct-burial irrigation control wire for connection from the controller to valves.
- Leave a 12” (305 mm) wire expansion loop at each valve location on long-run wire lengths.
- Waterproof wire splice connectors are absolutely essential for proper electric control system operation. Follow the installation instructions provided by the connector manufacturer for optimum performance.

* Distances specified under the following conditions: minimum voltage: 20 VAC, amperage: 0.12A, operating pressure: 150 psi (10,3 bar).

Chart showing the maximum one-way wire distance between controller and valve solenoid *

feet
meters

Common Wire Gauge Size	Control Wire Gauge Size						
	18	16	14	12	10	8	6
18	2040	2520	2940	3280	3540	3720	3860
	622	768	896	1000	1079	1134	1177
16	2520	3260	4000	4660	5220	5620	5920
	768	994	1219	1420	1591	1713	1804
14	2940	4000	5180	6360	7420	8300	8960
	896	1219	1579	1939	2262	2530	2731
12	3280	4660	6360	8240	10100	11800	13180
	1000	1420	1939	2512	3078	3597	4017
10	3540	5220	7420	10100	13180	16060	18770
	1079	1591	2262	3078	4017	4895	5721
8	3720	5260	8300	11800	16060	20800	25540
	1131	1603	2530	3597	4895	6340	7785
6	3860	5960	8960	13180	18700	25540	33080
	1177	1817	2731	4017	5700	7785	10083



Valve Adjustment

- Close the valve by turning the Flow Control Handle fully clockwise, just until resistance is felt - do not overtighten!
- Remove the EZReg dial protective cover (if installed). Turn the control dial until the pointer indicates the desired downstream pressure (5 to 100 psi) (,34 - 6,9 bar).

  Note: One revolution of the control dial adjusts the pressure setting approximately 10 psi (,69 bar). A minimum of 10 psi (,69 bar) pressure differential between the valve inlet and outlet is required for proper EZReg operation.
- Pressurize the main supply line to the valve. Confirm that all pipe connections are properly sealed.
- Actuate the valve either electrically at the controller, or manually by turning the Manual Bleed knob counterclockwise solely until the valve opens.
- Turn the Flow Control Handle slowly counterclockwise to adjust sprinkler operation.
- To confirm outlet pressure, remove the poppet valve cap, located directly below the EZReg. Attach a water-pressure test gauge to the poppet valve for a direct reading. Adjust pressure as preferred.

  Important: The EZReg assembly can be removed for service while the valve is pressurized. However, the valve must not be operated with the EZReg assembly removed.
- Close Manual Bleed knob (if necessary) to close valve.