

TORO®

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COMMERCIAL



220 Series Brass Valves

With Spike-Guard™ Solenoid Technology

Built for commercial applications such as sports fields, these heavy-duty brass and stainless steel valves feature pressure regulation and are designed to withstand high-pressure applications



RELIABILITY

With a lightning rating exceeding 20,000 volts, the new 220 Series brass valves offer nearly three times the lightning protection of competitive products.

INNOVATION

The Spike-Guard™ solenoid features very low power consumption, which reduces wire size requirements, allows twice as many valves to run simultaneously on a transformer and lowers power costs.

CONSERVATION

Available in sizes from 1 to 3 inches, these optional pressure regulating valves have an operating pressure of 10 to 220 psi and feature the EZReg® dial design technology for precise downstream pressure control.

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Features and Benefits

- 220 psi maximum pressure rating
- Ingot brass and stainless steel construction
- Precise pressure control option with compact EZReg® dial design technology (factory or field installed—no need to remove solenoid)
- Pressure regulator can be installed as a service kit without draining the main line
- Pressure regulates in electric and manual modes, serviceable under pressure
- Forward-flow design for more precise regulation
- Standard, built-in Schrader type valve for downstream pressure verification
- Anti-vandal dust cap on pressure regulating models
- Easily removable, self-flushing, 120-mesh, stainless steel filter screen
- No external tubing for either-electric or pressure regulating models
- Internal downstream manual bleed keeps valve box dry
- External manual bleed for system flushing
- Manual flow control: adjustable to zero flow
- Tough, double beaded, fabric reinforced rubber diaphragm
- Stainless steel diaphragm support ring for minimum-wear
- Diaphragm stem guide
- Stainless steel solenoid seat for longer life and positive shutoff
- Low-power requirement for longer wire runs
- Five year warranty

Specifications

- Flow range:
 - 1"—5–40 GPM (25mm—18,9–151,4 LPM)
 - 1¼"—20–100 GPM (32mm—75,7–378,5 LPM)
 - 1½"—20–130 GPM (40mm—75,7–492,1 LPM)
 - 2"—30–180 GPM (50mm—113,6–681,4 LPM)
 - 2½"—60–250 GPM (65mm—227,1–946,4 LPM)
 - 3"—80–350 GPM (75mm—302,8–1324,9 LPM)
- Operating pressure:
 - Electric—10–220 psi (0,7–15,2 Bar)
- Pressure regulating:
 - Outlet: 5–100 psi \pm 3 psi (EZR-100) (0,3–7,0 Bar \pm 0,2 Bar)
 - Inlet: 15–220 psi (0,1–15,2 Bar)
 - Minimum pressure differential (between inlet and outlet): 10 psi (0,7 Bar)
- Burst pressure safety rating: 750 psi (51,7)
- Body styles:
 - Globe valve—1", 1¼", 1½", 2" (25mm, 32mm, 40mm, 50mm) female threads
 - Angle valve—2½", 3" (65mm, 75mm) female threads
- Solenoid: 24 V ac (50/60 Hz) (standard)
 - Inrush: 50 Hz: 0.17 amps, 60 Hz: 0.12 amps
 - Holding: 50 Hz: 0.15 amps, 60 Hz: 0.1 amps
- Dimensions:
 - 1"—5¾" H x 5" W (25mm—145mm x 125mm)
 - 1¼"—6½" H x 6" W (32mm—163mm x 150mm)
 - 1½"—6½" H x 6" W (40mm—165mm x 150mm)
 - 2"—7½" H x 7" W (50mm—191mm x 178mm)
 - 2½"—8¾" H x 8½" W (65mm—223mm x 216mm)
 - 3"—8¾" H x 8½" W (75mm—223mm x 216mm)

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Optional Accessories:

- DC Latching solenoid assembly (DCLS-P)
- Recycled water lavender solenoid assembly and tag (RW60-Kit)
- EZR-30 (5–30 psi pressure-regulation module)
- EZR-100 (5–100 psi pressure-regulation module)



Precise Pressure Regulation

An accurate and visibly adjustable dial, coupled with a forward flow valve design allows the 220 Series with the EZReg® module to regulate with precision. It can regulate with flows of only 5-GPM (1" valve) and it only requires 10 psi differential to operate. The pressure regulator is perfect for retrofit projects and can be easily and quickly installed—even under pressure, with no danger of water geysers from the removed solenoid area or opening of the valve. The EZReg regulates in the manual mode, should-power be unavailable. A standard, Schrader type valve permits quick verification of downstream operating pressure.

220 Series Friction Loss Data—U.S.

Model	Type	GPM Flow																	
		5	10	15	20	30	40	50	60	70	80	100	120	150	170	180	200	250	300
1" (25mm)	Electric	2.0	2.5	1.5	2.5	5.5	8.9												
1¼" (32mm)	Electric				4.4	4.7	5.1	5.5	5.8	7.2									
1½" (40mm)	Electric				3.9	4.2	4.6	4.9	5.2	5.5	7.2								
2" (50mm)	Electric					1.0	2.0	2.0	2.5	3.0	3.5	6.0	7.5	10.0	12.0	14.0			
2½" (65mm)	Electric								2.0	2.2	2.3	2.4	2.5	3.0	4.0	4.5	5.5	7.0	
3" (75mm)	Electric										2.2	2.4	2.5	3.0	4.0	4.5	5.5	6.5	7.5
1" (25mm)	Hydraulic	<1	<1	1.5	2.5	5.5	7.0												
1¼" (32mm)	Hydraulic				2.0	2.7	3.7	4.8	6.0	8.0									
1½" (40mm)	Hydraulic				<1	1.5	2.5	3.0	4.5	6.0	8.0								
2" (50mm)	Hydraulic					<1	1.0	1.1	1.5	2.5	3.0	5.5	7.0	10.0	11.5	14.5			

Notes: For optimum performance when designing a system, calculate total friction loss to ensure sufficient downstream pressure.

For optimum regulation performance, size regulating valves toward the higher flow ranges.

Flow rates are recommended not to exceed 5 psi loss.

Values shown in psi.

220 Series Friction Loss Data—Metric

Model	Type	LPM Flow																	
		25	50	75	100	125	150	200	250	300	350	400	450	500	600	700	800	900	1000
25mm (1")	Electric	0,15	0,13	0,17	0,31	0,41	0,48												
32mm (1¼")	Electric			0,38	0,42	0,47	0,51	0,56	0,61	0,88	1,03								
40mm (1½")	Electric			0,32	0,33	0,36	0,37	0,42	0,47	0,55	0,64	0,79	1,02						
50mm (2")	Electric					0,09	0,14	0,15	0,19	0,24	0,35	0,44	0,51	0,59	0,75	1,00			
65mm (2½")	Electric								0,15	0,16	0,16	0,17	0,17	0,19	0,24	0,33	0,40	0,46	
75mm (3")	Electric									0,16	0,16	0,17	0,17	0,19	0,24	0,33	0,40	0,43	0,46

Notes: For optimum performance when designing a system, calculate total friction loss to ensure sufficient downstream pressure.

For optimum regulation performance, size regulating valves toward the higher flow ranges.

Flow rates are recommended not to exceed 0,3 bar loss.

Values shown in bar.



Dirty Water Resistance

The 220 Series 120-mesh, stainless steel filter screen is positioned on the supply side of the water stream. It is constantly flushed by the flow, enabling the use of very dirty water without clogging and valve closure failure. Stainless steel construction of both the filter screen and the valve solenoid seat ensure long component life in all types of water and pressures. In addition, the filter screen is easily removed for cleaning and there are no bulky tubes that can break or deteriorate.

Specifying Information

220 2X X X

Configuration	Solenoid	Size
3—BSP, Electric 4—BSP, Pressure-regulated (5-100) 6—NPT, Electric 7—NPT, Pressure-regulated (5-100)	0—50/60 Hz Solenoid	4—1" (25mm) 5—1¼" (32mm) 6—1½" (40mm) 8—2" (50mm) 9—2½" (65mm) 0—3" (75mm)

Example: A 1" (25mm) NPT pressure-regulated, 220 Series Brass Valve with 60 Hz solenoid, would be specified as: 220-27-04

Note: Less solenoid available in 1", 1½", 2"-and 3" (25, 40, 50 and 75mm) electric NPT and BSP versions only.
1", 1½" and 2"-(25, 40 and 50mm)—globe configuration.
2½" and 3"-(65 and 75mm)—angle configuration.

Specifying Information

Model Number	Description
RW60-Kit	Recycled Water Indicator Recycled Water (Lavendar) Solenoid Assembly (24 V ac, 60 Hz) and Warning Tag



Manual flow control

Combined internal and external (flush) manual bleed screw

Spike-Guard™ solenoid with captured hex plunger and spring

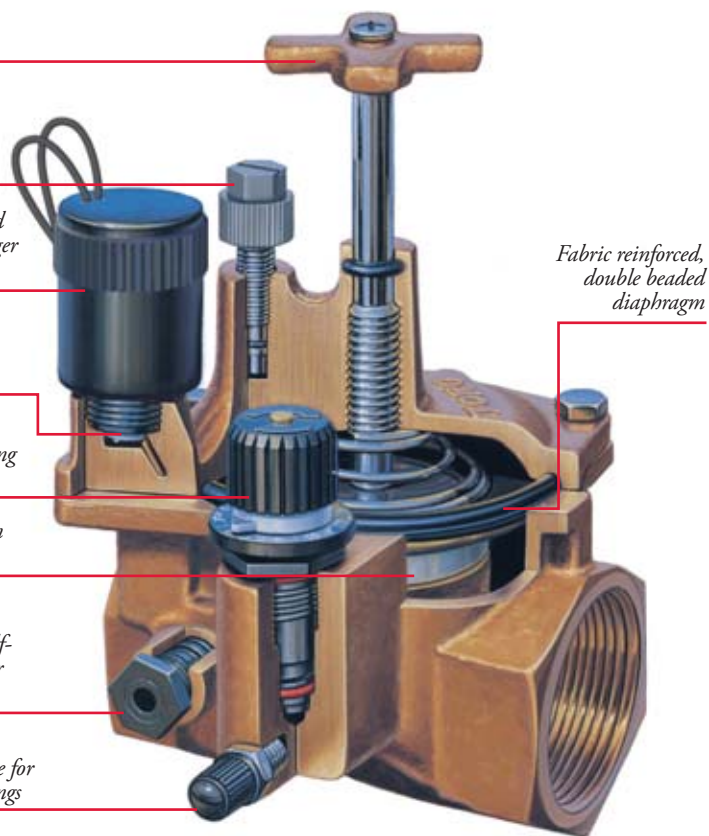
Stainless steel solenoid seat

EZReg® pressure-regulating module or port plug

Stainless steel diaphragm support ring

Externally removable self-flushing, 120-mesh filter screen

Standard Schrader valve for operating pressure readings



Valve Wire Sizing

Maximum One-way Distance (ft.) Between Controller and Valve
Using **Spike-Guard™** Solenoid*

Ground Wire	Control Wire						
	18	16	14	12	10	8	6
18	2040	2520	2940	3280	3540	3720	3860
16	2520	3260	4000	4660	5220	5620	5920
14	2940	4000	5180	6360	7420	8300	8960
12	3280	4660	6360	8240	10100	11800	13180
10	3540	5220	7420	10100	13180	16060	18770
8	3720	5620	8300	11800	16060	20800	25540
6	3860	5960	8960	13180	18700	25540	33080

* Solenoid Model: 24 V ac Pressure: 150 psi Voltage Drop: 4 V
Min. Op. Voltage: 20 V Amperage (peak): 0.12 A

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