



# Model ZW204H

## Non-Modulating Float and Pressure Sustaining Valve

### Application

The Zurn Wilkins Model ZW204H Non-Modulating Float Operated Fluid Level and Pressure Sustaining Valve is designed to be either fully open or fully closed in response to the position of the float. The valve will accurately control the fluid level of a tank, opening at a preset low point and closing at a preset high point. The sustaining/relief pilot control reacts to changes in upstream pressure. If the upstream pressure drops, the main valve will modulate between the closed and open position, maintaining desired upstream set pressure. However, once the upstream pressure exceeds the set point of the relief pilot, the main valve will open allowing the float pilot to control operation. The Float Pilot Valve will be set up for remote liquid level control as standard. The Float Pilot can be mounted to the control valve at additional cost.

### Standards Compliance:

- ANSI/AWWA C530
- Meets the requirements of NSF/ANSI/CAN 61\*  
\*(0.25% MAX. WEIGHTED AVERAGE LEAD CONTENT)

### Materials

Main Valve Body	Ductile Iron ASTM A536
Main Valve Bonnet	Ductile Iron ASTM A536
Disc Guide	Stainless Steel
Seat	Stainless Steel
Disc	Buna-N Rubber
Diaphragm	Nylon Reinforced Buna-N
Stem	Stainless Steel
Spring	Stainless Steel
Coating	FDA Approved Fusion Epoxy

### Float Pilot System Specifications

Wetted Parts: Stainless Steel, Buna-N Rubber, Monel  
 Float: 6" diameter Stainless Steel  
 Float Rod: Two 12" sections of Stainless Steel rod.  
 Additional 12" SS extensions available, up to 5' max rod length  
 Additional counterweight necessary with additional extensions

### On/Off Set Point Adjustment

- 1" to 40" adjustment range between upper and lower float set points

### Standard Features

- Blue Epoxy Coated, FDA Approved
  - Pilot Assembly
    - SXL "Wye" Type Strainer
    - Accelerator Pilot (sizes 8" - 16")
    - 850XL Isolation Valves
  - ANSI Class 150 Flanges
  - Copper Tubing and Brass Fittings
- Temperature Rating:  Water 33°F to 140°F  
 Pilot Rating:  300 psi max.

BODY CONFIGURATIONS		GLOBE STYLE BODY		ANGLE STYLE BODY
END CONNECTION	PRESSURE RATING	FULL PORT	REDUCED PORT	
Threaded	400 psi max.	1 1/4"-3"	n/a	1 1/4"-3"
Flanged	ANSI Class 150, 250 psi max.	1 1/2"-16"	3"-10"	1 1/2"-10"
	ANSI Class 300, 400 psi max.			
Grooved	300 psi max.	1 1/2"-10"	n/a	1 1/2"-10"

MINIMUM INLET PRESSURE 10 PSI



NSF/ANSI/CAN 61

### Options (Add suffix letters to ZW204)

#### Function

- E - Solenoid override to shut-off valve
- C - 40XL2 Hydraulic Check with Isolation Valve
- L - SC1 Closing Speed Control (Standard on 8" and larger)
- O - SC1 Opening Speed Control

#### Body

- A - Angle Style Body
- R - Reduced Port Body

#### Connections

- G - IPS Grooved
- TH - NPT Threaded
- Y - ANSI Class 300 Flanges

#### Main Valve Options

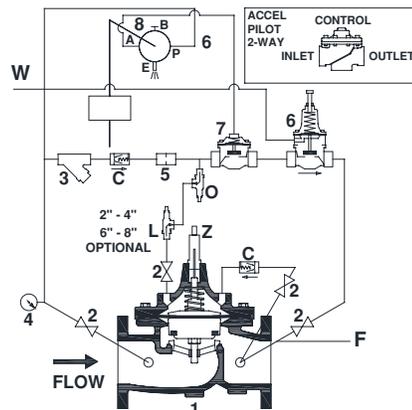
- Z - ZPI Visual Position Indicator

#### Pilot System

- SP - All Stainless Steel Pilotry (replaces all brass fittings, pilot valve and copper tubing. "GL" Option included)
- SH - Stainless Steel Braided Hoses (replaces Copper Tubing, with "VM" Option only)
- VM - Valve Mounted Float Pilot
- R1,R2,R3 - 1', 2', or 3' Float Rod Extension (5' total length max.)
- W - Independent Operating Pressure
- RV - Pilot Installed on reverse side
- SO - Limit Switch Open Trip
- SC - Limit Switch Closed Trip
- SD - Limit Switch Dual Trip

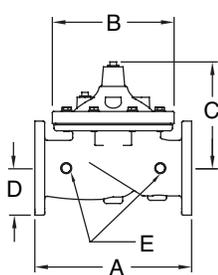
### Schematic Diagram

Item	Description of Standard Features
1	Main Valve
2	850XL Isolation Valve
3	SXL "Wye" Type Strainer
4	Pressure Gauge
5	Restriction Fitting
6	PV-RLF Pressure Relief Valve
7	PV-ACL Accelerator Pilot Valve
8	Non-Modulating Float Operated Pilot Valve

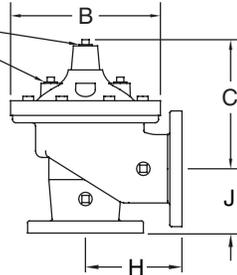
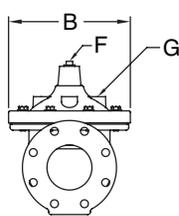


## Globe and Angle Main Valve Dimensions

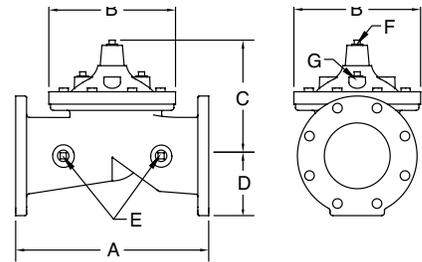
DIM	FULL PORT	VALVE SIZE INCHES (mm)											
		1 1/4 (32)	1 1/2(38)	2 (50)	2 1/2 (65)	3 (80)	4 (100)	6 (150)	8 (200)	10 (250)	12 (300)	14 (350)	16 (400)
A	Threaded	7 1/4	7 1/4	9 7/16	11	12 1/2							
	Class 150 Flange		8 1/2	9 3/8	11	12	15	20	25 3/8	29 3/4	34	39	41 3/8
	Class 300 Flange		9	10	11 5/8	13 1/4	15 5/8	21	26 7/16	31 1/8	35 1/2	40 1/2	43 1/2
	Grooved		8 1/2	9	11	12 1/2	15	20	25 3/8	29 3/4			
B	Diameter	5 5/8	5 5/8	6 3/4	8	9 3/16	11 11/16	15 3/4	20 1/8	23 11/16	27 1/2	31 3/4	34 1/2
C	Max.	5 3/4	5 3/4	6 3/16	7 3/8	8	10 3/16	12 5/16	15 9/16	17 5/8	20 3/16	22 13/16	25 7/8
D	Threaded/Grooved	1 3/8	1 3/8	1 3/4	2 1/8	2 9/16	3 7/16	5	5	5 13/16	6 3/4	8 7/8	8 13/16
	Class 150 Flange		2 1/2	3	3 1/2	3 3/4	4 1/2	5 1/2	6 3/4	8	9 1/2	10 1/2	11 3/4
	Class 300 Flange		3	3 1/4	3 3/4	4 1/8	5	6 1/4	7 1/2	8 3/4	10 1/4	11 1/2	12 3/4
E	NPT Body Tap	3/8	3/8	3/8	1/2	1/2	3/4	3/4	1	1	1	1	1
F	NPT Cvr. Plug Tap	1/2	1/2	1/2	1/2	1/2	3/4	3/4	1	1	1	1	1
G	NPT Cover Tap	3/8	3/8	3/8	1/2	1/2	3/4	3/4	1	1	1	1	1
H	Threaded	3 1/4	3 1/4	4 3/4	5 1/2	6 1/4							
	Class 150 Flange		4	4 3/4	5 1/2	6	7 1/2	10	12 11/16	14 7/8			
	Class 300 Flange		4 1/4	5	6	6 7/16	8	10 1/2	13 1/4	15 9/16			
	Grooved		4 7/16	4 3/4	5 1/2	6	7 1/2	10	12 11/16	14 7/8			
J	Threaded	1 15/16	1 15/16	3 1/4	4	4 1/2							
	Class 150 Flange		4	3 1/4	4	4	5	6	8	8 5/8			
	Class 300 Flange		4 1/4	3 1/2	4 5/16	4 7/16	5 5/16	6 1/2	8 1/2	9 5/16			
	Grooved		3 3/16	3 1/4	4	4 1/4	5	6	8	8 5/8			
Valve Stem Internal Thread		10-32	10-32	10-32	10-32	1/4-20	1/4-20	1/4-20	3/8-16	3/8-16	3/8-16	3/8-16	3/8-16
Stem Travel (in)		7/16	7/16	3/4	7/8	1	1 3/16	1 3/4	2 3/8	2 13/16	3 7/16	3 13/16	4 5/16
Approx. Wt. (lbs)		22	26	36	55	70	130	240	440	720	820	1200	1550



Globe Style Body



Angle Style Body

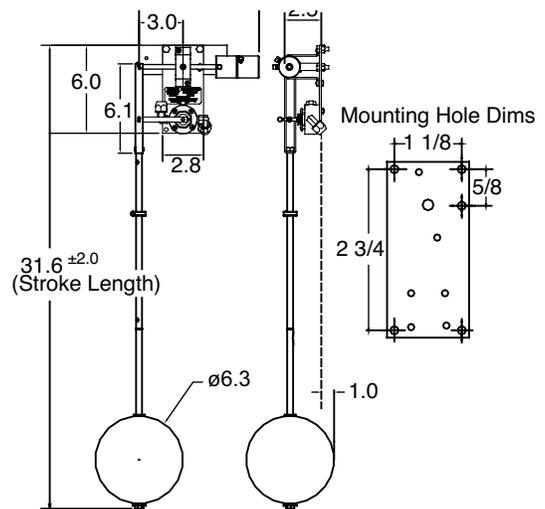


Reduced Port Body

## Reduced Port Main Valve Dimensions

DIM		VALVE SIZE INCHES (mm)				
		3" (80)	4" (100)	6" (150)	8" (200)	10" (250)
A	Class 150 Flange	10 1/4	14	17 3/4	21 7/16	26
	Class 300 Flange	11	14 1/2	18 11/16	22 7/16	27 7/16
B	Dia	6 3/4	9 3/16	11 11/16	15 3/4	20 1/8
C	Max	6 3/8	8 7/16	12 5/16	13 1/4	16 3/4
D	Class 150 Flange	3 3/4	4 1/2	5 1/2	6 3/4	8
	Class 300 Flange	4 1/8	5	6 1/4	7 1/2	8 3/4
E	NPT Body Tap	3/8	1/2	3/4	3/4	1
F	NPT Cvr. Plug Tap	3/8	1/2	3/4	3/4	1
G	NPT Cvr. Tap	3/8	1/2	3/4	3/4	1
Valve Stem Internal Thread		10-32	1/4-20	1/4-20	3/8-16	3/8-16
Stem Travel (in)		3/4	1	1 1/5	1 3/4	2 3/8
Approx. Wt. (Lbs)		35	80	140	275	480

## Pilot System Dimensions

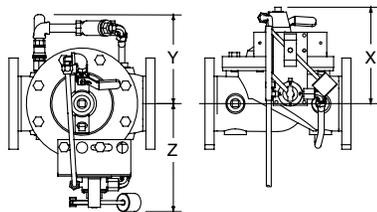


## Pilot System Dimensions

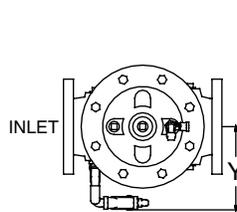
PILOT SYSTEM DIMENSIONS		VALVE SIZE INCHES (mm)											
	DIM	1-1/4 (32)	1-1/2 (40)	2" (50)	2-1/2" (65)	3" (80)	4" (100)	6" (150)	8" (200)	10" (250)	12" (300)	14" (350)	16" (400)
Full Port Body	X	11 5/8	11 5/8	11 5/8	12 5/8	12 5/8	15 5/8	15 5/16	16 5/16	17 5/16	20	23	26
	Y	4	4	4	4	4 1/2	6	8	10	12	14	16	17 1/2
	Z	9 5/8	9 5/8	10	9 3/4	10 1/8	11 1/4	12 1/8	13 5/8	13 5/8	18	20	21 1/2
Reduced Port Body	X					11 5/8	12 5/8	15 5/8	15 5/16	16 5/16			
	Y					4	4 1/2	6	8	10			
	Z					10	10 1/8	11 1/4	12 1/8	13 5/8			
Angle Body	X	12	12	12	13	13	16	16	17	18			
	Y	5	5	5	5	5	6	8	10	12			
	Z	10	10	10 1/2	10 1/2	10 1/2	12	12 1/2	14	14			

### ZW204 Remote Mounted Float

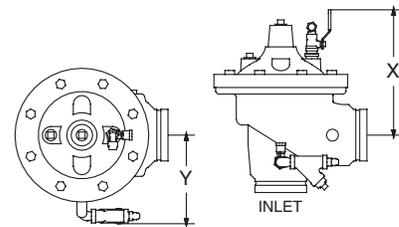
ZW204VM Valve Mounted Float



Globe Pilot System Dimensions

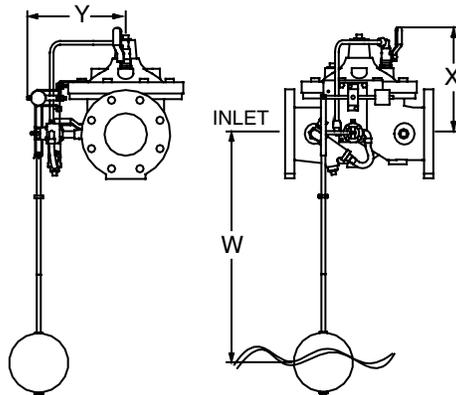


Angle Pilot System Dimensions



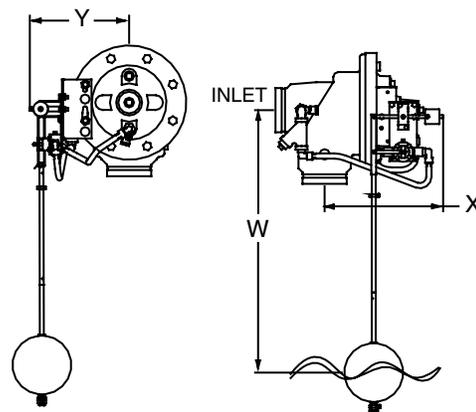
### ZW204 Valve Mounted Float

Globe Pilot System Dimensions



ZW204VM

Angle Pilot System Dimensions



ZW204AVM

**Note:** For a Valve Mounted Float Pilot, "W" is the maximum distance the valve should be mounted above the desired low water level for proper operation. Once the liquid level falls below the low level set point the valve will fill the tank until the high liquid level set point is reached. Add additional rod extensions if the desired low level set point is greater than "W" from the mounting location of the valve.

## Operation

The Model ZW204H utilizes a float pilot and a direct acting, spring loaded, diaphragm actuated pressure relief pilot valve. The float pilot opens the valve fully at a predetermined low set point and closes it tightly at the high set point. This pilot consists of a body, rotary disc and the float. The body of the pilot contains three sets of flow passages: the supply, the common and the exhaust. The rotary disc is correspondingly keyed to these same functions of supply, common and exhaust. The pilot is so constructed that when the float reaches its low level set point, the supply port of the pilot is blocked, and the common port connects to the exhaust. This vents pressure in the upper chamber of the main valve thereby allowing inlet pressure to open the valve and fill the tank. As the float reaches its high level set point, the opposite action takes place with the exhaust port blocked and supply connected to the common port. This pressurizes the upper diaphragm chamber of the main valve and the valve closes. To facilitate smooth, free movement of the rotary pilot's float and mechanical linkage, the weight of the float arm is counterbalanced on a pivot. Properly adjusted, this counterweight allows the float to effortlessly move the float arm (thus the rotary pilot) through the full range between the low and high level set points. Establishing these set points is a simple matter of appropriately positioning the float with upper and lower stop collars on the float rod. The pressure relief pilot is normally closed. A sensing line runs externally from the inlet of the main valve to the pressure relief pilot control chamber under the diaphragm. Thus, inlet pressure exceeding the preset acts to open the pilot while the adjustable spring seeks to keep it closed. The result is a modulating action in the pilot that is transmitted to the bonnet of the main valve. Upstream pressure causes the main valve to open and will maintain the upstream pressure regardless of changing flow rates or varying outlet pressures.

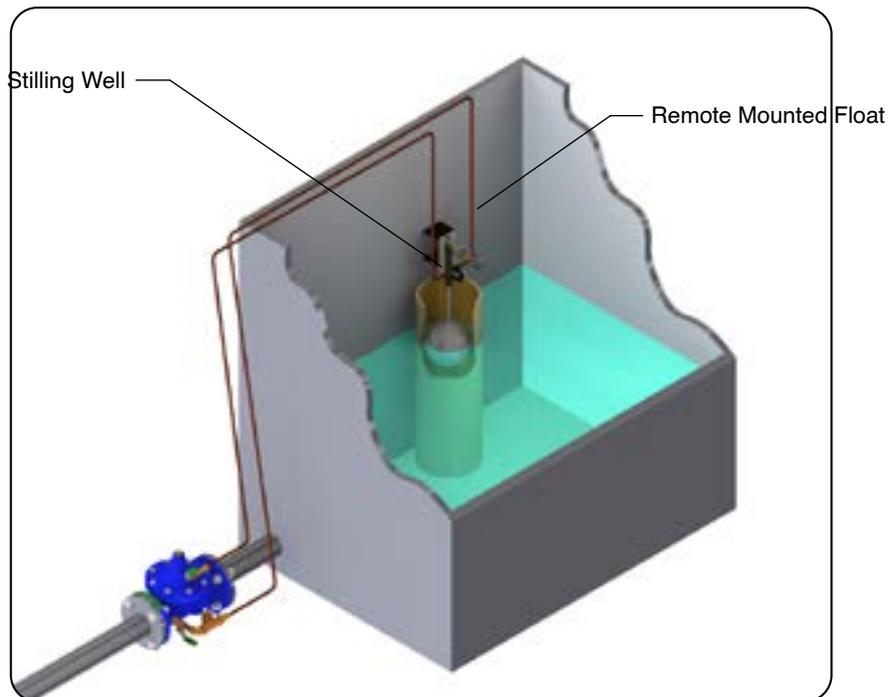
## Flow Characteristics

Full Port Globe and Angle Valve size	inches (mm)	1 1/4 (32)	1 1/2 (40)	2 (50)	2 1/2 (65)	3 (80)	4 (100)	6 (150)	8 (200)	10 (250)	12 (300)	14 (350)	16 (400)
Reduced Port Globe Valve Size	inches (mm)			3 (80)		4 (100)	6 (150)	8 (200)	10 (250)				
Suggested Flow (GPM)	Max. Continuous	93	125	210	300	460	800	1800	3100	4900	7000	8400	11000
	Max Intermittent	120	160	260	375	600	1000	2250	4000	6150	8700	10500	13800
	Min. Continuous	10	10	15	20	30	50	115	200	300	435	530	690
Suggested Flow (Liters/sec)	Max. Continuous	6	8	13	19	29	50	113	195	309	550	665	870
	Max. Intermittent	7.6	10	16.4	23	37	62	142	246	388	440	530	95
	Min. Continuous	.6	.6	0.9	1.3	1.9	3.2	7.2	13	19	28	33	43

**Note:** Supply adequate flow restriction downstream of the ACV to keep the flow rates below maximum recommended values to prevent premature damage to the ACV. Suggested flow calculations are based on flow through Schedule 40 Pipe. Maximum Continuous flow is approx. 20 ft./sec (6.1 meters/sec) & Maximum Intermittent is approx. 25 ft./sec (7.6 meters/sec).

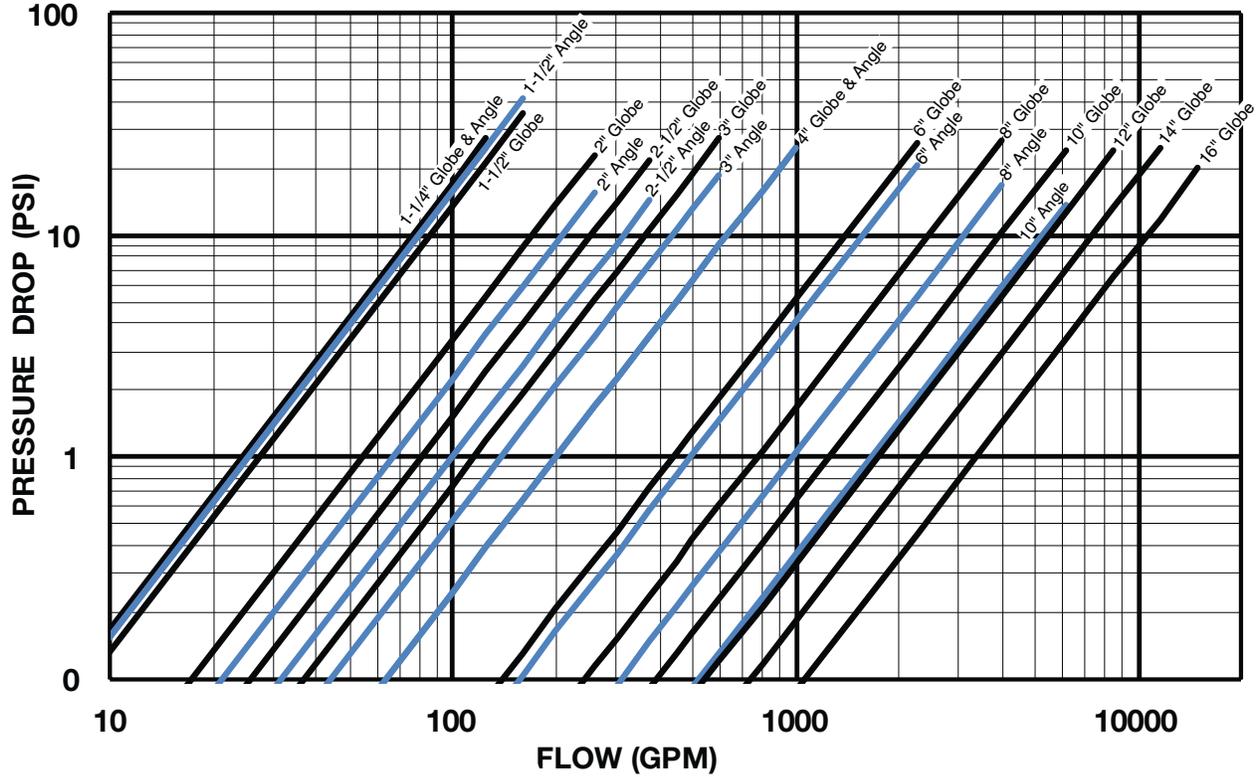
## Typical Installation

A stilling well must be provided where surface waves from water flow or wind will cause erratic float operation. Minimum 8" diameter.



**Caution:** The recommended installation orientation for ACVs is horizontal, with the valve cover up. 6" and larger valves should only be installed horizontally, with the valve cover up, due to the difficulty of properly bleeding air out of the cover and performing maintenance on valves installed in the vertical orientation.

### BODY MINIMUM FRICTION LOSS



If the valve discharges to atmosphere, adequate back pressure is very important to prevent premature damage to the ACV. Contact Zurn Wilkins for assistance.

#### Specifications

The Float Controlled and Pressure Sustaining Valve shall be a single seated, line pressure operated, diaphragm actuated, globe or angle valve. The valve shall seal by means of a corrosion-resistant seat and resilient, rectangular seat disc. These and other parts shall be replaceable in the field; all such service and adjustments will be possible without removing the valve from the line. The main valve body shall be ductile iron ASTM A 536. The stem of the basic valve shall be guided top and bottom. The basic valve and its pilot control system shall contain no packing glands or stuffing boxes. The diaphragm shall not be used as a seating surface nor shall pistons be used as an operating medium. All internal and external ferrous surfaces shall be coated with a high quality, FDA Approved fusion epoxy coating. The pressure relief pilot shall be field adjustable from 50 to 200 psi. The valve shall be certified to NSF/ANSI Standard 61. The Non-Modulating Float Controlled and Pressure Sustaining Valve shall be a ZURN WILKINS Model ZW204H.

Job Name \_\_\_\_\_

Contractor \_\_\_\_\_

Job Location \_\_\_\_\_

Engineer \_\_\_\_\_