



The elevated tank, standpipe or storage reservoir is a common and important element found in many water distribution systems- municipal, fire protection, commercial, military and industrial.

The function of the OCV Series 3330 Altitude Control Valve is accurate, automatic level control, without the use of floats or sensors. Pilot controls for the series can accommodate storage facilities up to 230 feet high, maintaining the liquid level to within inches of a predetermined set point.

The series is offered in two basic types. The Model 3331, one-way flow is used for tank fill only. The Model 3333 allows flow both into and out of the tank.

#### **SERIES FEATURES**

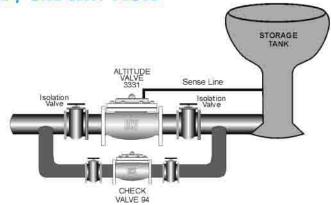
- Consistently maintains water level to within inches of set point in tank/reservoirs from 5 to 230 Ft high.
- Installs at the base of tank
- Operates hydraulically without need for a tank-mounted float or electrical controls or sensors.

## **VALVE FEATURES**

- Operates automatically off line pressure.
- Heavy-duty, nylonreinforced diaphragm.
- Rectangular-shaped, soft seat seal provides driptight Class VI closure.
- Diaphragm assembly Guided top and bottom.
- Throttling seat retainer for flow and pressure stability.
- Easily maintained without removal from the line.
- Replaceable seat ring.
- Alignment pins assure proper reassembly after maintenance.
- Valves are factory tested.
- Valves are serial numbered and registered to facilitate replacement parts and factory support.

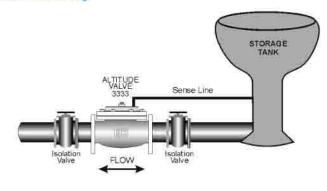
# ALTITUDE VALVE / ONE WAY FLOW (TANK FILL)

Provides automatic filling of elevated tanks or reservoirs. When the altitude control senses a drop in level below the predetermined set point, the valve opens to fill tank. When the level again reaches the set point, the valve will close. Discharge of the tank is by a separate line.



## ALTITUDE VALVE / TWO WAY FLOW (TANK FILL & DISCHARGE)

Controls both the fill and discharge cycles of a tank or reservoir. When valve inlet (system) pressure falls below tank head pressure, the altitude valve opens to feed the system. When system pressure recovers above tank head, the tank begins to refill. When the high level set point is reached, the valve will close.



TOLL FREE 1.888.628.8258 • phone: (918)627.1942 • fax: (918)622.8916 • 7400 East 42nd Place, Tulsa, Ok 74145 email: sales@controlvalves.com • website: www.controlvalves.com

## **Altitude Control Valve Series 3330**



## **VALVE OPERATION**

Model 3331 One-way Flow

The 3331 is designed to only fill the tank. Tank head (pressure) is sensed under the diaphragm of the 3300 altitude pilot (2). When the tank head falls below the set point, the pilot shifts to vent water from diaphragm chamber of the main valve (1) to drain. This allows the valve to open and fill the tank. When the tank level again reaches the set point, the altitude pilot shifts to apply full inlet pressure to the diaphragm of the main valve, forcing the valve fully closed.

The 3331 consists of the following components, arranged as shown on the schematic diagram:

- Model 65 Basic Valve Assembly
- Model 3300 Altitude Pilot
- 3. Model 141-2 Needle Valve
- Model 159 Y-Strainer
   Two Model 141-4 Ball Valves
- Model 155 Visual Indicator

3333 (10-24" diagram)

3331 (2-8" diagram)

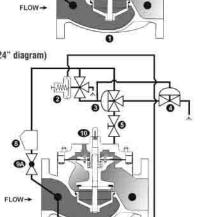
Two-Way Altitude Valve
The 3333 is designed to drain and fill the tank. When the inlet (system) pressure falls below the set point of the altitude pilot (2), the pilot shifts to vent water from diaphragm chamber of the main valve (1) to drain. This allows the valve to open and let the tank feed the system. When system pressure recovers to a point higher than tank head, the tank will begin refilling. When the tank level again reaches the set point, the altitude pilot shifts to apply full inlet pressure to the diaphragm of the main valve, forcing the valve fully closed.

The 3333 consists of the following components, arranged as shown on the schematic diagram:

- Model 65 Basic Valve Assembly
- Model 3300 Altitude Pilot

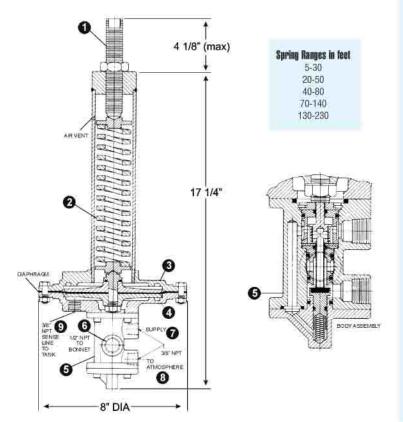
- Model 3600 Three-Way Auxiliary Pilot (10-24" only) Model 6401 Two-Way Auxiliary Pilot (10-24" only)
- Model 141-2 Needle Valve

- Model 126 Ejector
   Model 141-1 Check Valve
- Model 159 Y-Strainer Three Model 141-4 Ball Valves
- 10. Model 155 Visual Indicator





≥3300 Altitude Pilot



#### **Installation Requirements**

The altitude valve is furnished fully factory assembled except for the tank sense line. In areas where freezing temperatures are possible, the valve should be located in a vault below the frost line.

After the main valve is installed, the tank sense line must be connected at the altitude pilot. The proper installation of this sense line is critical to the efficient operation of the altitude valve. The following guidelines apply.

1. It is essential that the sense line be connected as close to the tank as possible in order to accurately sense the tank head, within 40 diameters of the tank wall or riser.

2. Minimum recommended size for the sense line is ½" OD tables or 2.0" possible or 2.0" on the sense line is ½" OD

tubing or 3/8" pipe.

3. In order to prevent air accumulation, the sense line should slope slightly upwards from the valve to the tank.

The altitude valve vents its diaphragm chamber to atmosphere, the volume varying according to valve size, as shown below. Provision should be made to drain off or otherwise dispose of this water.

1 1/4"	0.02 gal.	8"	1.0 gal.
1 1/4"	0.02 gal	8" 10"	2.5 gal.
2"	0.05 gal.	12"	4.0 gal.
2 1/2"	0.06 gal.	14"	6.5 gal.
3"	0.1 găl. 0.2 gal.	16" 24"	9.6 gal. 28.0 gal.
6"	0.2 gal.	24	20.0 yai.

MODEL 3330 Altitude Control Valve Series

- Adjusting Screw
- Spring
- 3. Upper Diaphragm Chamber
- Lower Diaphragm Chamber
- Pilot Valve Body
- To Bonnet
- 7. To Supply
- To Atmosphere
- Tank Pressure Sense Line

TOLL FREE 1.888.628.8258 phone: (918)627.1942 fax: (918)622.8916 7400 East 42nd Place, Tulsa, Oklahoma 74145 email: sales@controlvalves.com • website: www.controlvalves.com



### SIZING CONSIDERATIONS

For the most comprehensive procedure in sizing Series 3330 control valves, it is best to use our ValveMaster software or the guidelines shown here in conjunction with the Performance Charts in the Engineering Section of the OCV catalog.

With rare exceptions, altitude valves are line sized. This being said, the following criteria may be applied.

The valve flow rate may be verified from the equation:

 $Q = C_v \sqrt{dp}$ 

where: Q = Cv =

flow rate, gallons per minute valve flow coefficient from chart, below

available pressure drop

Tank Fill - (system pressure minus tank head in psi )

Flow Out of Tank - (tank head in psi minus system pressure )

In no case should the flow velocity exceed 25 ft/sec (see chart). If a greater flow is required, use a larger valve.

In some cases, in may be necessary to limit the flow, particularly for flow into the tank. In such cases, consider using either a smaller valve or a line size valve with a pressure sustaining feature (Model 3331-3 or 3333-3).

	BASIC VALVE	FLOW CHARACTER	RISTICS
Valve Size	Globe Valves Cv	Angle Valves Cv	Flow for 25ft/sec GPM
1-1/4	23	30	115
1-1/2	27	35	115
2"	47	65	260
2-1/2"	68	87	370
3"	120	160	570
4"	200	270	1,000
6"	450	550	2,250
8"	760	1,000	3,900
10"	1,250	1,600	6,150
12"	1,940	2,400	8,700
14"	2,200		10,500
16"	2,850	4,000	13,800
24"	6,900	**************************************	31,300



## Altitude Control Valve Series 3330

## VALVE SELECTION GUIDE

By combining various control pilots, multiple valve functions can be performed on a single Series 3330 Altitude Control Valve. To find the combination function valve, select the desired features and then the model number.

This chart shows only a sample of those most often specified valves. Consult the factory for specific data on the model you selected,

	433	1/33	1/33	2/33	13/33 /	1/3	13/33	1. A 355	1 43°	1.24 SSS	34 /33	10/20		3 / 53	32/35	3 /33	5 / 5 / 5 S	1 /3° /3°	15/53		135 /3	Definition
One-Way Flow	x	х	х	x	х	X	х	х	X	x	х											Fills elevated tank or resevoir
Two-Way Flow												х	х	х	x	х	х	X	x	х	х	Fills elevated tank and opens for return flow
Pressure Sustaining				х		Х		х		х					х		х		x		Х	Maintains minimum valve inlet pressure
Lift Check											х											internal assembly closes valve on pressure reversal
Solenoid- Energized to Enable		х				х	x						х				х	x				Solenoid energized to allow valve to open
Solenoid- Energized to Close	3		х					х	х					х					х	х		Solenoid energized to close valve
Delayed Drawdown			y		х		х		х	х												Valve opening delayed until tank level reaches set point
Delayed Opening For Retum Flow																х		х		х	х	Valve opening for return flow is delayed

#### **ABOUT YOUR VALVE**

OCV Control Valves was founded more than 50 years ago with a vision and commitment to quality and reliability. From modest beginnings, the company has grown to be a global leader just a half century later. In fact, OCV Valves can be found in some capacity in nearly every country around the

world from fire protection systems in Malaysia to aircraft fueling systems in Africa and from oil refineries in Russia to water supply systems in the USA and Canada. You will also find our valves in irrigation systems in Europe, South America and the Middle East.

The original foundation on which the company was built allows our team of professionals to not only provide the service required to be a worldwide supplier, but more importantly the opportunity to afford the personal touch necessary to be each of our customers' best partner. Simply stated, we take pride in all that we do.

Committed to the work they do, our employees average over 15 years of service. This wealth of knowledge allows us to provide quality engineering, expert support, exacting control and the know-how to create valves known for their long life.

Being ISO 9001 certified means we are committed to a quality assurance program. Our policy is to supply each customer with consistent quality

products and ensure that the process is right every time. Our valves meet and exceed industry standards around the world. Including approvals by:

All valves are not created equal. OCV Control Valves proves that day in and day out. We stand behind our valves and are ready to serve your needs.







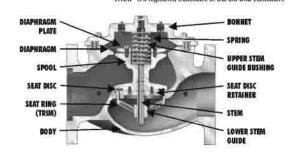






VALVE BODY & BOI	NNET DUCTILI	E IRON	CAST	STEEL	BRC	ST	STAII ST	MLESS				
Material Specifications	ASTM (epoxy)	A536 coated)	ASTM AZ (epoxy	216/WCB coated)	-	M B61	-916.983	743/CF8M				
END CONNECTIONS	1 1		na na retta en	•	4							
Flange Standard (also available in m	etric) ANSI	B16.42	ANSI	B16.5	ANSI	B16.24	ANSI	B16.5				
Flange Class	150#	300#	150#	300#	150#	300#	150#	300#				
Flange Face	Flat	Raised	Raised	Raised	Flat	Flat	Raised	Raised				
Maximum Working Pressure	250 psi	640 psi	285 psi	740 psi	225 psi	500 psi	285 psi	740 ps				
Screwed Working Pressure:	ANSI B1.20.1 (B2.1) 640 psi	Gr	ooved End \	Norking Pro	essure:	300 psi	-79	30"				
INTERNALS												
Stem		STAINLES	S STEEL AISI 30	03	C	PTIONAL MOI	NEL					
Spring		STAINLES	S STEEL AISI 30	12								
Spool	DUCTILE IRO	DUCTILE IRON ASTM A536 (epoxy coated)  B-61  STN. STL. ASTM A 743/CF8										
Seat Disc Retainer	DUCTILE IRO 4" & SMALLE	DUCTILE IRON ASTM A536 (epoxy coated) 4" & SMALLER VALVES - STAINLESS STEEL B-61 STAINL										
Diaphragm Plate	DUCTILE IRO	STAINL	ESS STEEL									
Seat Ring (Trim)	BRONZE B61 OPTIONAL STAINLESS STEEL ASTM A743/CF8M											
Upper Stem Bushing	STANDARD BRONZE ASTM B	1438	VALVE W/ STA	INLESS STEEL S	EAT RING-TEF	LON	TE	TEFLON				
Lower Stem Bushing	SE	AT MATERIAL	VALVES W/ STA	INLESS STEEL S	EAT RING-TEF	LON	TEI	FLON				
<b>ELASTOMER PARTS (Rubb</b>	er)											
Diaphragm/Seat Disc/O-Rings	7 FF 2014 C - FF	RD - BUNA-N	NYLON REINFO	RCED	OPTIONA	L - VITON®	OPTION	AL - EPDM				
Operating Temperature		-40°F to	180°F		32°F to	400°F	0°F to	300 F*				
COATINGS	WIDE RANGE OF COATING PER YOU	R FLUID APPLICATION	ON. COATINGS HANI	DLE MUNICIPAL POT	ABLE WATER, SEAW	ATER, PETROLEUM	AND REFINED PR	ODUCTS.				
ELECTRICAL SOLENOIDS												
Bodies	STANDA	RD BRASS		STAINI	ESS STEEL		OPT	IONAL				
Elastomers	STANDA	RD - BUNA-N I	NYLON REINFO	RCED	OPTIONA	L - VITON®						
Enclosures	WATER TIGHT	r, NEMA 1, 3, 4,	& 4X - EXPLOS	ION PROOF - O	PTIONAL (NEW	A7&9)						
Power	AC, 60HZ - 24	, 120, 240, 480	VOLTS AC,	50HZ - In 110	VOLT MULTIPL	ES DC, 6 1:	2, 24, 240 VO	LTS				
Operation	ENERGIZE TO	OPEN (NORMA	ALLY CLOSED)	DE-ENERGIZE	TO OPEN (NO	RMALLY OPEN	)					

CONTROL PIL	DTS	
Bodies	BRONZE B62/B61	STAINLESS STEEL ASTM A743/CFBN
Internal		AISI 303
CONTROL CIRC	CUITS	
Tubing		COPPER OR STAINLESS STEEL
Fittings		BRASS OR STAINLESS STEEL



#### SALTWATER SERVICE VALVE MATERIALS

Cast Steel Special Coatings --Ni Aluminum Bronze ASTM B148 --Super Duplex Stainless Steel



#### **Globe Flanged Sizes**

32mm 40mm 50mm 65mm 80mm 100mm 150mm 200mm 250mm 300mm 350mm 400mm 450mm 500mm	1	0	6"	6	4"		3"	2.5"	2"	1.5"	1.25"
	25	mm 20	150mn	nm 150	100mm	n l	80mm	65mm	50mm	40mm	32mm



#### **Angle Flanged Sizes**

1.25"	1.5"	2"	2.5"	3"	4"	6"	8"	10"	12"	16"
32mm	40mm	50mm	65mm	80mm	100mm	150mm	200mm	250mm	300mm	400mm



#### Globe/Angle Screwed Sizes

1.25"	1.5"	2"	2.5"	3"
32mm	40mm	50mm	65mm	80mm



#### Globe/Angle Grooved Sizes

1.5"	2"	2.5"	3"	4"
32mm	50mm	65mm	80mm	100mm

TOLL FREE 1.888.628.8258 • phone: (918)627.1942 • fax: (918)622.8916 • 7400 East 42nd Place, Tulsa, Ok 74145 email: sales@controlvalves.com • website: www.controlvalves.com



### **SPECIFICATIONS**

U.S. DIMENSIONS - INC.	

DIM	END CONN.	1 1/4-1 1/2	2	2 1/2	3	4	6	8	10	12	14	16	24
	SCREWED	8 3/4	9 7/8	10 1/2	13		25	22:		- 22	nα	742	142
A	GROOVED	8 3/4	9 7/8	10 1/2	13	15 1/4	-				-		
	150# FLGD	8 1/2	9 3/8	10 1/2	12	15	17 3/4	25 3/8	29 3/4	34	39	40 3/8	62
	300# FLGD	8 3/4	9 7/8	11 1/8	12 3/4	15 5/8	18 5/8	26 3/8	31 1/8	35 1/2	40 1/2	42	63 3/4
	SCREWED	1 7/16	1 11/16	1 7/8	2 1/4	-				-	-ë	94	44
В	GROOVED	1*	1 3/16	1 7/16	1.3/4	2 1/4	-	-	577	77.1	Utr.		
	150# FLGD	2 5/16-2 1/2	3	3 1/2	3 3/4	4 1/2	5 1/2	6 3/4	8	9 1/2	10 5/8	11 3/4	16
	300# FLGD	2 5/8-3 1/16	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	18
	SCREWED	4 3/8	4 3/4	6	6 1/2	-77		.72		7.1	l e	57.	277
C	GROOVED	4 3/8*	4 3/4	6	6 1/2	7.5/8			HH 1				
ANGLE	150# FLGD	4 1/4	4 3/4	6	6	7 1/2	10	12 11/16	14 7/8	17	1/2	20 13/16	
	300# FLGD	4 3/8	5	6 3/8	6 3/8	7 13/16	10 1/2	13 3/16	15 9/16	17 3/4	-	21 5/8	
	SCREWED	3 1/8	3 7/8	4	4 1/2				<del>(</del> 0)	+4.0	100	( 000	
D	GROOVED	3 1/8*	3 7/8	4	4 1/2	5 5/8			247	441	1,025	142	144
ANGLE	150# FLGD	3	3 7/8	4	4	5 1/2	6	8	11 3/8	11	- 18	15 11/16	- 32
	300# FLGD	3 1/8	4 1/8	4 3/8	4 3/8	5 13/16	6 1/2	8 1/2	12 1/16	11 3/4	U	16 1/2	-75
Ē	ALL	6	6	7	6 1/2	8	10	11 7/8	15 3/8	17	18	19	27
F	ALL	3 7/8	3 7/8	3 7/8	3 7/8	3 7/8	3 7/8	6 3/8	6 3/8	6 3/8	6 3/8	6 3/8	8
G	ALL	6	6 3/4	7 11/16	8 3/4	11 3/4	14	21	24 1/2	28	31 1/4	34 1/2	52
H	ALL	10	11	11	11	12	13	14	17	18	20	20	28 1/2

<sup>\*</sup>GROOVED END NOT AVAILABLE IN 1 1/4"

#### METRIC DIMENSIONS - M.M.

DIM	END CONN.	DN32-DN40	DN50	DN65	DN80	DN100	DN150	DN200	DN250	DN300	DN350	DN400	DN600
	SCREWED	222	251	267	330	-		27.1	- THE	W.1	THE ST	28	925
A	GROOVED	222	251	267	330	387	5	Ψ.		eat:	De l	346	744
	150# FLGD	216	238	267	305	381	451	645	756	864	991	1026	1575
	300# FLGD	222	251	283	324	397	473	670	791	902	1029	1067	1619
	SCREWED	37	43	48	57				**	49.1	184	744	144
В	GROOVED	25*	30	37	44	57	521		227	121	122	140	22
	150# FLGD	59-64	76	89	95	114	140	171	203	241	270	298	406
	300# FLGD	67-78	83	95	105	127	159	191	222	260	292	324	457
	SCREWED	111	121	152	165	241		22;			nα	74	142
C	GROOVED	111*	121	152	165	194	=			-	16		
ANGLE	150# FLGD	108	121	152	152	191	254	322	378	432	199	529	***
	300# FLGD	111	127	162	162	198	267	335	395	451	100	549	
	SCREWED	79	98	102	114	-		-		-			
D.	GROOVED	79*	98	102	114	143		-	**	***	197	100	255
ANGLE	150# FLGD	76	98	102	102	140	152	203	289	279	100	398	544
	300# FLGD	79	105	111	111	148	165	216	306	298	T E	419	32
E,	ALL	152	152	178	165	203	254	302	391	432	457	483	686
F	ALL	98	98	98	98	98	98	162	162	162	162	162	203
G	ALL	152	171	195	222	298	356	533	622	711	794	876	1321
Н	ALL	254	279	279	279	305	330	356	432	457	508	508	724

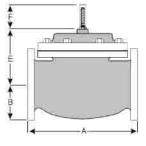
<sup>\*</sup>GROOVED END NOT AVAILABLE IN DN32

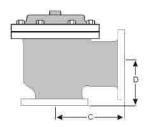
For maximum efficiency, the OCV control valve should be mounted in a piping system so that the valve bonnet (cover) is in the top position. Other positions are acceptable but may not allow the valve to function to its fullest and safest potential. In particular, please consult the factory before installing 8" and larger valves, or any valves with a limit switch, in positions other than described. Space should be taken into consideration when mounting valves and their pilot systems.

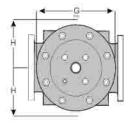
A routine inspection & maintenance program should be established and conducted yearly by a qualified technician. Consult our factory @ 1-888-628-8258 for parts and service.

#### How to order your valve

When Ordering please provide:
Series Number - Valve size - Globe or Angle Pressure Class - Screwed, Flanged, Grooved Trim Material - Adjustment Range - Pilot
Options - Special needs / or installation
requirements.







Represented by:

TOLL FREE 1.888.628.8258 phone: (918)627.1942 fax: (918)622.8916 7400 East 42nd Place, Tulsa, Oklahoma 74145 email: sales@controlvalves.com website: www.controlvalves.com