

## “ADCATROL” TDS BLOWDOWN CONTROL VALVES VPC Series

### DESCRIPTION

The Adcatrol VPC series control valves are specially designed for the blowdown of steam boilers in order to control the TDS concentration in combination with a TDS controller (BCS) and probe (SPS series). These valves can also be used for any application where high pressure drop and low flow rates are present.

### MAIN FEATURES

Single seated, two way, direct action valve.  
Valve top flange permanently attached to the body, removal is unnecessary for replacing the actuator.  
Metal to metal hardened sealing as standard.

- OPTIONS:**                   Pneumatic or electric actuators  
                                  Air filter regulator
- USE:**                         Saturated and superheated steam  
                                  Hot and superheated water
- AVAILABLE MODELS:**       VPC-32-Fabricated steel construction  
                                  VPC-25-Cast steel
- VALVE SIZES:**             DN15,20,25 and 40
- CONNECTIONS:**          Flanged EN 1092-1  
                                  ANSI Class 150 and 300 lbs
- PNEUMATIC ACTUATORS:**   PA-205, PA-280.
- ACTUATOR CONN:**       1/4" NPT-F
- CONTROL SIGNAL:**       0,4 – 2 bar
- ELECTRIC ACT.:**         Consult catalogue IS EL20.00 E and IS ELR21.00 E



**VPC-32**



**VPC-25**

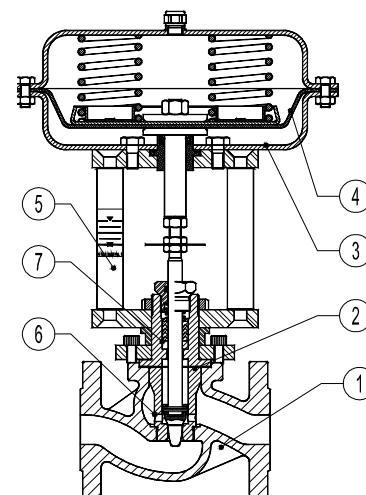
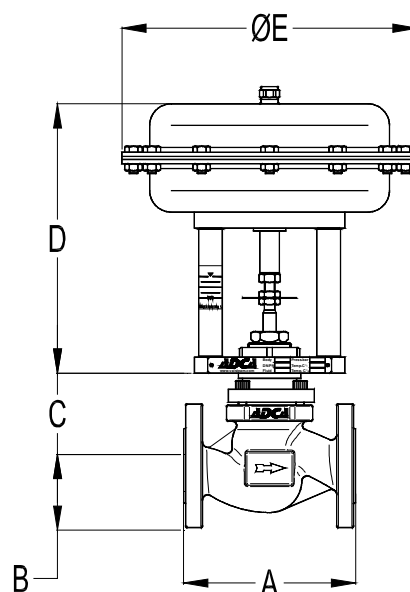
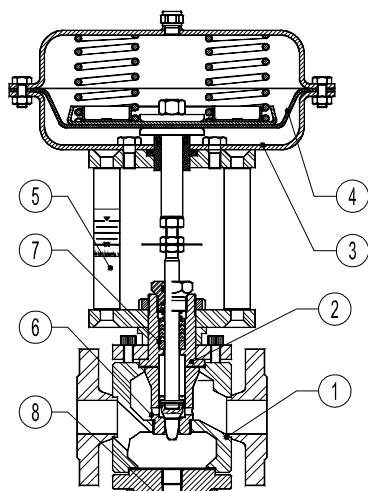
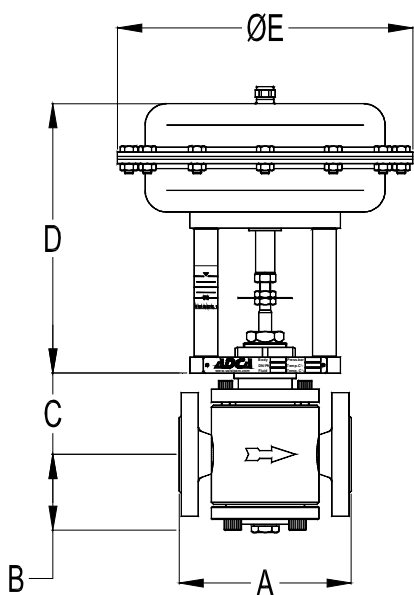
- MAX.AIR SUPPLY:**       3,5 bar
- AMBIENT TEMPERATURE:**   -20°C ....+70°C
- STEM SEALING:**         PTFE/GR V-Rings-220°C  
                                  Graphite – 300°C  
                                  (Extended bonnet)
- PLUG CHARACT.:**       PL - Linear
- PLUG DESIGN:**         Contoured  
                                  Microflow
- PORT:**                     Full port or reduced on request

**HOW TO SELECT:** Never size the valve according to the pipe diameter in which it has to be fitted, but according to the required actual flow. Refer to the valve calculation data sheet or consult the factory.

VALVE LIM. CONDITIONS VPC 32		VALVE LIM. CONDITIONS VPC 25	
PRESSURE/TEMPERATURE		PRESSURE/TEMPERATURE	
40 bar	-10/50°C	40 bar	-10/50°C
33,3 bar	200 °C	30,2 bar	200 °C
30,4 bar	250 °C	25,8 bar	300 °C
27,6 bar	300 °C	24 bar	350 °C

Maximum temperature limited to the valve packing selected

CE MARKING (PED - European Directive 97/23/EC)	
PN 40	Category
DN15 to DN25	SEP - art. 3, paragraph3
DN40	1 (CE Marked)



DIMENSIONS - VALVE BODY VPC-32					
DN	A (mm)	B (mm)	C (mm) BONNET		
			STANDARD	FINNED	EXTENDED
15	150	71	75	140	140
20	150	71	75	140	140
25	160	71	75	140	140
40	200	82	96	163	163

DIMENSIONS - VALVE BODY VPC-25					
DN	A (mm)	B (mm)	C (mm) BONNET		
			STANDARD	FINNED	EXTENDED
15	130	48	85	150	150
20	150	53	85	150	150
25	160	58	90	170	170
40	200	75	115	195	195

DIMENSIONS PNEUMATIC ACTUATOR		
Type	ø E (mm)	D (mm)
		DN15-DN50 DA/RA
PA-205	210	235
PA-280	275	240

MATERIALS			
POS.	DESIGNATION	VPC 32	VPC 25
1	Valve Body	S355 J2 G3 / 1.0570	ASTM A216WCB / 1.0619 GP240GH / 1.0619
2	Bonnet	CF8 / 1.4308	CF8 / 1.4308
3	* Actuator (Steel)	S235JRG2 / 1.0038	S235JrG2 / 1.0038
	* Actuator (St. steel)	AISI304 / 1.4301	AISI304 / 1.4301
4	Diaphragm	NBR70	NBR 70
5	Yoke (steel)	C45E / 1.1191	C45E / 1.1191
	Yoke (st. steel)	AISI304 / 1.4301	AISI304 / 1.4301
6	Valve plug	Hardened St. Steel	Hardened St. Steel
7	Standard packing	Graphite	Graphite
8	Sample take off	AISI304 / 1.4301	-

\* Electric actuator : see IS EL20.00 E

Kvs VALUES FOR ADCATROL CONTROL VALVES VPC					
SEAT D. mm	VALVE STROKE mm	VALVE SIZES			
		DN15	DN20	DN25	DN40
4A	20	0,1	—	—	—
4B		0,25	—	—	—
4C		0,5	—	—	—
8A		1	1	—	—
8B		1,7	1,7	—	—
12A		2,1	2,5	3	—
12B		2,7	3,7	4	—
15A		3,8	4,7	5,8	6,8
20A			5,1	6,3	9,3
25A				9,4	14,6

Letters after the Kvs are for codification purposes only.

MAX. PERM.PRESS.DROP IN bar - N.C.(fluid to open) - Reverse action actuator (air signal to open)					
ACTUATOR	CONTROL SIGNAL	SIZES			
		DN15	DN20	DN25	DN40
PA-205	0,4 ÷ 2 bar	18	15	12	8
PA-280	0,4 ÷ 2 bar	45	40	35	25

Special spring pressure drops available on request.  
The pressure drop values must be used within the body rating limits.  
For electric actuator selection please consult catalogue IS EL.20.00 E  
or our technical department.  
For conversion  $Kvs = Cv(US) \times 0,855$

### CALCULATING THE AMOUNT OF BOILER BLOWDOWN

The boiler blowdown system design depends on the amount of boiler water which has to be blown down. This amount depends on:

(Rs)-Recommended boiler water TDS in ppm (parts per million) or  $\mu s/cm$ . Usually recommended by the boiler manufacturer or water treatment specialist.

(Fs)-Feed water TDS (same units) .Sample for analysis must be taken from fresh water feed tank or feed water line. Do not use a sample of the make-up feed water otherwise wrong figures can be obtained.

(Q)-Steam boiler maximum flow rate in Kgs/h

(Br)- The blow down rate or amount of water to be discharged in Kgs/h can be obtained using the following formula:

$$Br = Q \cdot Fs / Rs - Fs$$

Example:

Boiler pressure: 12 bar

Q - Boiler capacity: 12 000 Kg/h

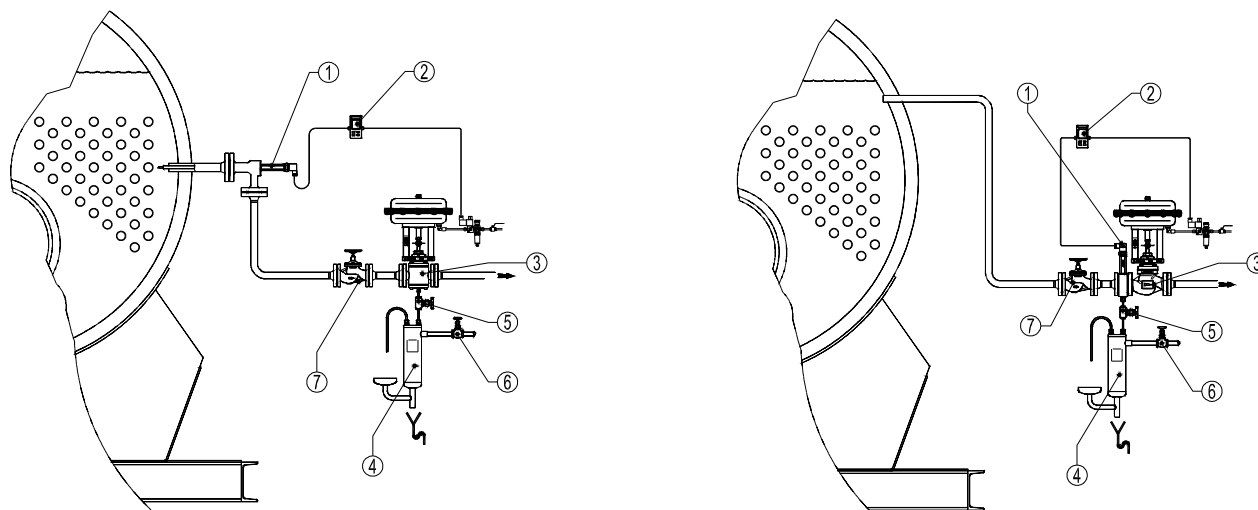
Fs - Conductivity of feed water: 100  $\mu s/cm$

Rs - Recommended boiler water TDS 3000  $\mu s/cm$

$$Br = 12000 \cdot 100 / 3000 - 100; Br = 413,8 \text{ Kgs/h}$$

Using the formula available in IS PV10.00 E, it is now possible to determine the necessary Kv valve value and select the right valve size (IS VPC.50 E).

### TYPICAL INSTALLATION





### ORDERING CODES VPC

VALVE CODES	VPC	25.	32.	1	2	3	4	8	15	20	30	.X.
<b>Group Designation</b>												
Blowdown control valves, two way, straight body	VPC											
<b>Valve Model</b>												
ASTM A216 WCB body, stainless steel trim		25.										
Steel body, stainless steel trim		32.										
<b>Stem Sealing</b>												
PTFE/GR-V-Rings / Standard bonnet				1								
Virgin PTFE V-Rings / Standard bonnet				2								
Graphite / Standard bonnet				3								
Graphite / Finned bonnet				4								
<b>Valve Plug</b>												
PL (linear) - Stellite								8				
<b>Seat Diameter</b>												
4 A									1			
4 B									2			
4 C									3			
8 A									4			
8 B									5			
12 A									7			
12 B									8			
15 A									10			
20 A									13			
25 A									16			
<b>Pipe Connection</b>												
Flanged EN1092-2 PN16											L	
Flanged EN1092-1 PN40											N	
Flanged ANSI B16.5 300#											V	
<b>Size</b>												
DN15												15
DN20												20
...												
<b>Actuator</b>												
												(1)
<b>Extras (3)</b>												
												E

ACTUATOR CODES ( pneumatic )	P.	R	I	30	.X.
<b>Group Designation</b>					
Multi-spring , pneumatic linear actuator	P.				
<b>Actuator Size</b>					
205		1			
280		3			
340 A - From DN15 to DN50		5			
435 A - From DN15 to DN50		7			
<b>Actuator</b>					
Reverse Action		R			
<b>Actuator Construction</b>					
Steel construction (painted) - standard				(2)	
Stainless steel construction				I	
<b>Control Signal</b>					
0,4 - 2 bar (6/30 psi)				30	

→ To be introduced on ".X.", if supplied in combination with the valve.

**REMARKS:**

- (1)- Indicate actuator type.
  - (2)- Omitted if the standard actuator is selected.
  - (3)- To be used only when a non-standard combination valve is supplied.
- ADCATROL control valves are identified by a serial number on a nameplate, located on the actuator yoke.
- Always order spares by using that serial number. If the valve has non-standard extras the serial number has also an E (extras).