

“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.
Bottom cover with drain connection.

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

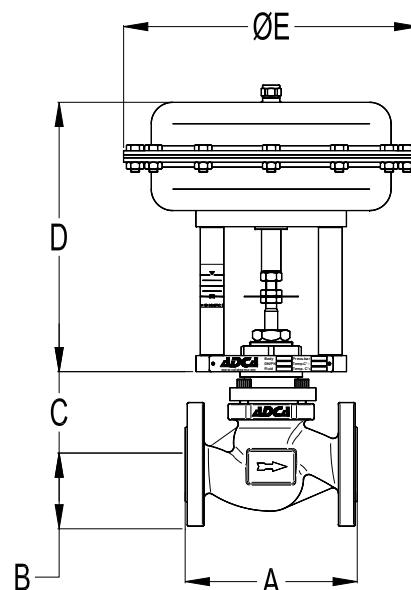
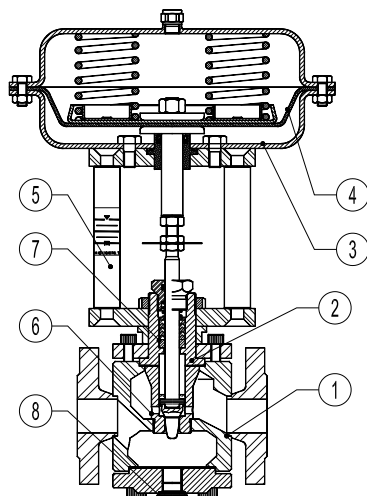
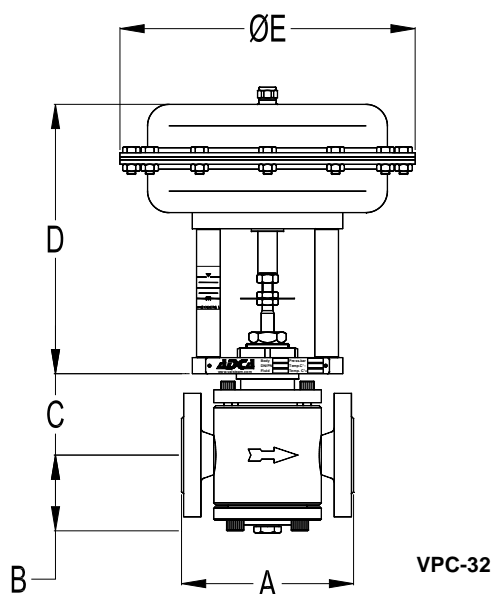
MAX.AIR SUPPLY: 3,5 bar
AMBIENT TEMPERATURE: -20°C+70°C.
STEM SEALING: PTFE/GR V-Rings-220°C (Standard bonnet).
Graphite – up to 300°C (Extended bonnet).
PLUG CHARACT.: PL – Linear.
PLUG DESIGN: Contoured.
Microflow.
PORT: Full port or reduced on request.

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 BODY LIMITING CONDITIONS VPC 32 | | VALVE BODY LIMITING 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) | |
|---|---------------|
| PN 40 | Category |
| DN15 to DN25 | SEP |
| DN40 | 1 (CE Marked) |

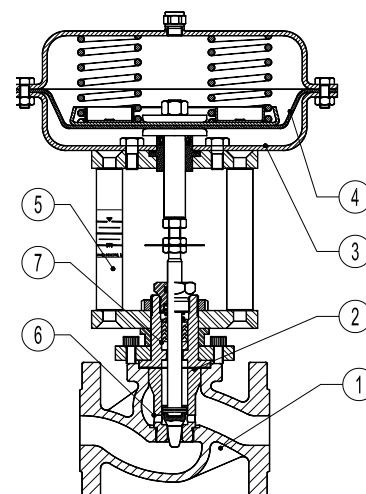


VPC-25

| DIMENSIONS - VALVE BODY VPC-32 | | | | | | |
|--------------------------------|---------------------|---------------------------|---------------------------|-----------|------------------|--------|
| DN | EN FL. A (mm) | ANSI 150 FL. A (mm) | ANSI 300 FL. A (mm) | B (mm) | C (mm) BONNET | |
| | | | | | STANDARD | FINNED |
| 15 - 1/2" | 150 | 184 | 190 | 71 | 75 | 140 |
| 20 - 3/4" | 150 | 184 | 194 | 71 | 75 | 140 |
| 25 - 1" | 160 | 184 | 197 | 71 | 75 | 140 |
| 40 - 1 1/2" | 200 | 222 | 235 | 82 | 96 | 163 |

Sample take off (nr.8) DN 1/4" as standard, others on request.

| DIMENSIONS - VALVE BODY VPC-25 | | | | |
|--------------------------------|-----------|-----------|------------------|--------|
| DN | A (mm) | B (mm) | C (mm) BONNET | |
| | | | STANDARD | FINNED |
| 15 | 130 | 48 | 85 | 150 |
| 20 | 150 | 53 | 85 | 150 |
| 25 | 160 | 58 | 90 | 170 |
| 40 | 200 | 75 | 115 | 190 |



| 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

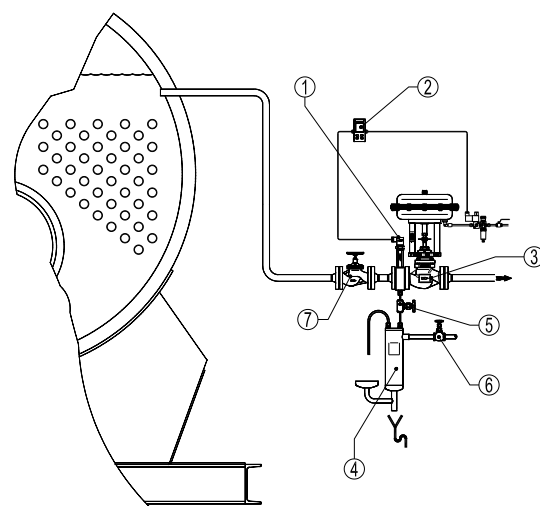
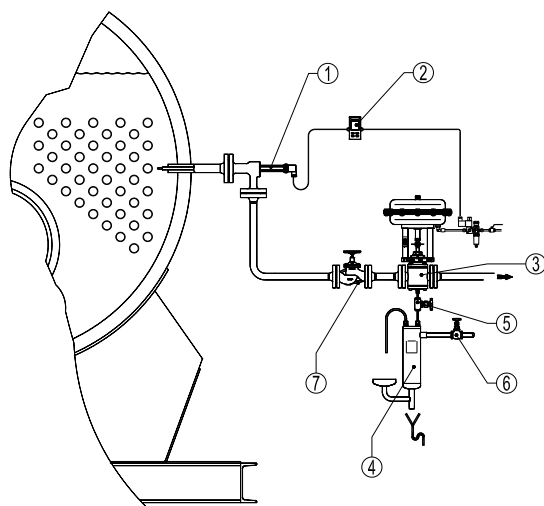
Fs - Conductivity of feed water: 100 $\mu S/cm$

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

[illegible]

ACTUATOR CODES (pneumatic)

| | | | | | |
|--|--|----|---|---|-----|
| ACTUATOR CODES (pneumatic) | | P. | | | |
| Group Designation | | | | | |
| Multi-spring , pneumatic linear actuator | | P. | | | |
| Actuator Size | | | | | |
| 205 | | | 1 | | |
| 280 | | | 3 | | |
| 340 A - From DN15 to DN50 | | | 5 | | |
| 435 A - From DN15 to DN50 | | | 7 | | |
| Actuator | | | | | |
| Reverse Action | | | | R | |
| Actuator Constrution | | | | | |
| Steel construction (painted) - standard | | | | | (2) |
| Stainless steel construction | | | | | I |
| Control Signal | | | | | |
| 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).