



## THREE-WAY GLOBE CONTROL VALVES V253

### DESCRIPTION

The ADCATrol V253 is a series of three-way globe control valves designed to ensure accurate control in mixing or diverting general service applications.

These valves can be assembled with pneumatic, hydraulic or electric actuators and used with the most common process fluids such as water, superheated water, thermal oil, steam, air, gas and other non corrosive fluids.

### MAIN FEATURES

Compact and cost-effective design.  
Mixing and diverting versions.

### OPTIONS AND ACCESSORIES:

Various stem sealing options including bellows sealed versions.

### USE:

Hot and superheated water.  
Thermal oil.  
Saturated and superheated steam.  
Air, gases and others.

### AVAILABLE MODELS:

V253G – SG iron.

### SIZES:

DN 15 to DN 150.

### CONNECTIONS:

Flanged EN 1092-2 PN 16 or PN 25.  
Standard PN 16 DN 65 flanges are supplied with 4 holes. 8 holes, according to EN 1092-2, on request.

### STEM SEALING:

PTFE/GR V-Rings – up to 220 °C.  
Graphite packing – up to 350 °C.  
Stainless steel bellows – up to 350 °C.



BODY LIMITING CONDITIONS *			
FLANGED PN 16		FLANGED PN 25	
ALLOWABLE PRESSURE	RELATED TEMPERATURE	ALLOWABLE PRESSURE	RELATED TEMPERATURE
16 bar	-10 °C / 120 °C	25 bar	-10 °C / 120 °C
15,5 bar	150 °C	24,3 bar	150 °C
14,7 bar	200 °C	23 bar	200 °C
14,3 bar	220 °C	22,5 bar	220 °C
13,9 bar	250 °C	21,8 bar	250 °C
12,8 bar	300 °C	20 bar	300 °C
11,2 bar	350 °C	17,5 bar	350 °C

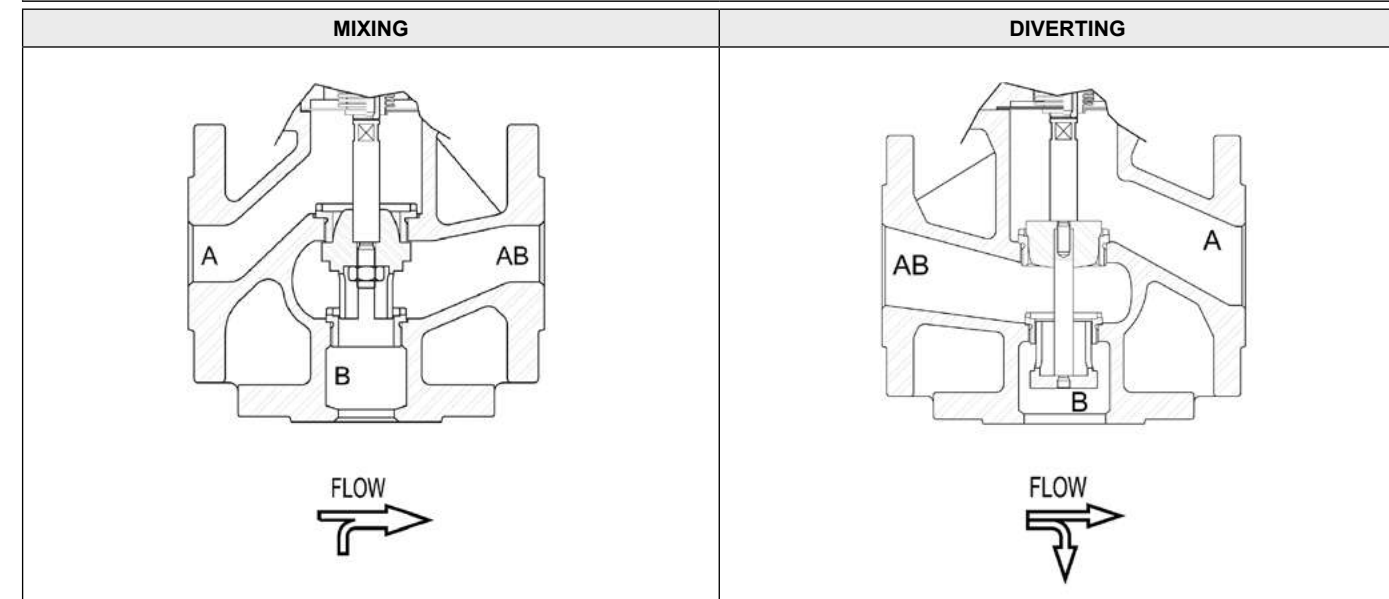
\* Rating according to EN 1092-2:2007.

### CE MARKING – GROUP 2 (PED – European Directive)

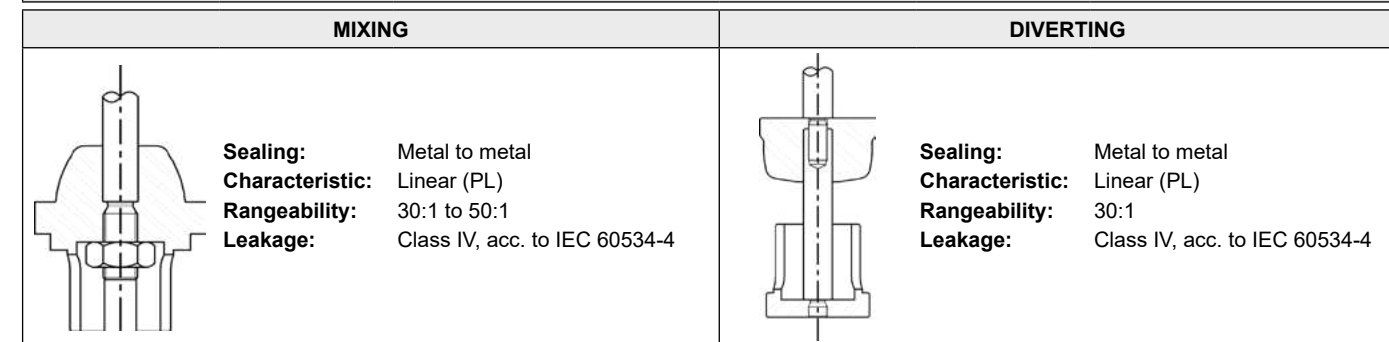
PN 16	PN 25	Category
DN 15 to 50	DN 15 to 40	SEP
DN 65 to 150	DN 50 to 125	1 (CE marked)
–	DN 150	2 (CE marked)



### TRIM DESIGN



### PLUG DESIGN



### FLOW RATE COEFFICIENTS – MIXING PLUGS

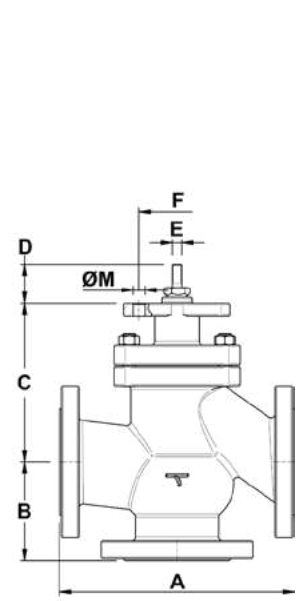
SIZE	DN 15	DN 20	DN 25	DN 32	DN 40	DN 50	DN 65	DN 80	DN 100	DN 125	DN 150
<b>Kvs (m³/h)</b>	4	6,3	10	16	25	40	63	100	160	230	330
<b>SEAT Ø *</b>	20 / 15	20 / 15	25 / 20	32 / 25	40 / 32	50 / 40	65 / 50	80 / 65	100 / 80	125 / 120	150 / 140
<b>STROKE (mm)</b>	20						30			35	40

\* Upper and lower seat diameters respectively.  
For conversion, Kvs = Cv (US) x 0,865.

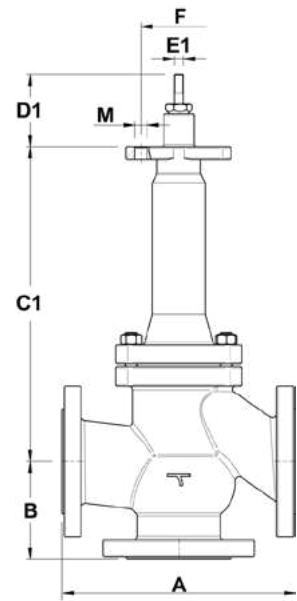
### FLOW RATE COEFFICIENTS – DIVERTING PLUGS

SIZE	DN 32	DN 40	DN 50	DN 65	DN 80	DN 100	DN 125	DN 150
<b>Kvs (m³/h)</b>	12	20	27	50	83	123	190	250
<b>SEAT Ø *</b>	32 / 25	40 / 32	50 / 40	65 / 50	80 / 65	100 / 80	100 / 100	120 / 120
<b>STROKE (mm)</b>	20			30			35	40

\* Upper and lower seat diameters respectively.  
For conversion, Kvs = Cv (US) x 0,865.



Valve with standard bonnet



Bellows sealed valve

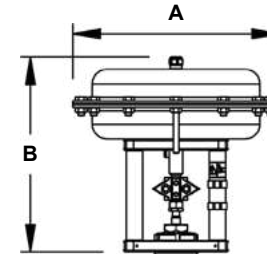
DIMENSIONS (mm)											
DIMENSION	SIZE										
	DN 15	DN 20	DN 25	DN 32	DN 40	DN 50	DN 65	DN 80	DN 100	DN 125	DN 150
A	130	150	160	180	200	230	290	310	350	400	480
B	65	70	75	80	90	100	120	130	150	200	210
C	143	157	151	158	163	166	209	209	217	319	334
C1	265	279	273	280	285	288	418	418	426	529	544
D	56										
D1	96										
E	M10										
E1	M12										
F	100										
M	17										

Remark: Standard PN 16 DN 65 flanges are supplied with 4 holes. 8 holes, according to EN 1092-2, on request.

WEIGHTS (kg)											
	DN 15	DN 20	DN 25	DN 32	DN 40	DN 50	DN 65	DN 80	DN 100	DN 125	DN 150
STANDARD	8	9	10	12,5	14	16	32	36	51	107	130
BELLOWS	10	11	11,5	14,5	16	19	36	40	54	95	125

MAX. PERMISSIBLE ACTUATING FORCES (kN)											
	SIZE										
	DN 15	DN 20	DN 25	DN 32	DN 40	DN 50	DN 65	DN 80	DN 100	DN 125	DN 150
STANDARD	12										
BELLOWS	16										

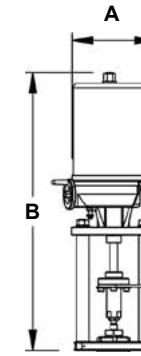
**PA SERIES PNEUMATIC ACTUATORS**



DIMENSIONS (mm)					
DIMENSION	PA206	PA281	PA341	PA436	PA80
A	209	275	336	430	405
B	236	243	323	291 / 311 *	505
WEIGHT (kg)	6,2	9,6	14,3	24,4 / 28 *	50,4

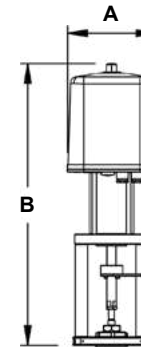
\* For actuators with spring ranges 1 - 2 bar, 1,5 - 3 bar and 2 - 4 bar.

**EL SERIES ELECTRIC ACTUATORS**



DIMENSIONS (mm)				
DIMENSION	EL12	EL20 - EL45	EL80 - EL120	EL250
A	129	148	188	216
B	333	485	587	683
WEIGHT (kg)	2,1	8	13	19

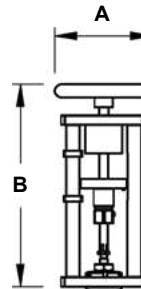
**ELR SERIES ELECTRIC ACTUATORS**



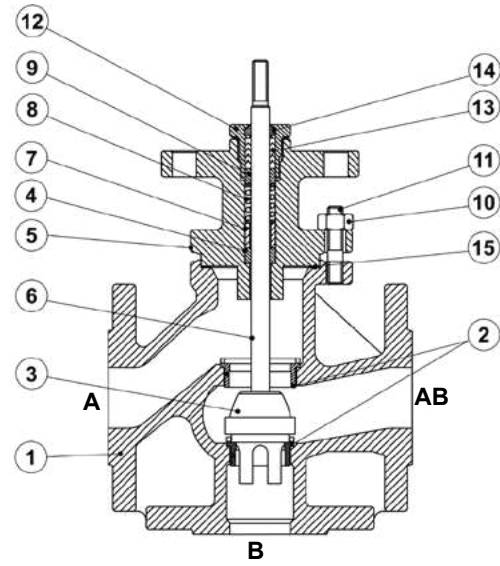
DIMENSIONS (mm)			
DIMENSION	ELR2.1	ELR2.2	ELR2.3
A	162	162	162
B	518 / 555 *	536 / 573 *	557 / 593 *
WEIGHT (kg)	8,7	9,3	10

\* With PEL electronic positioner.

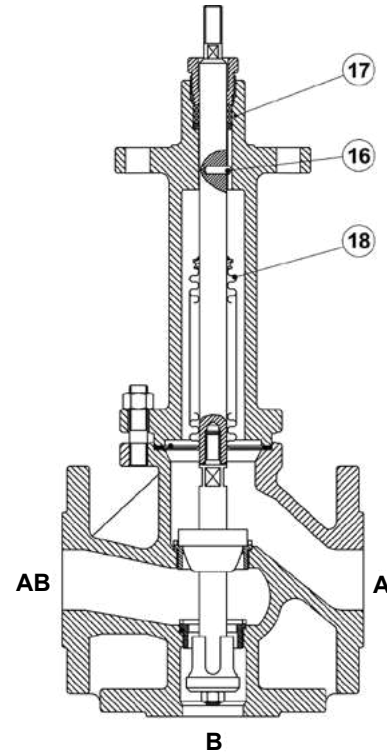
**MANUAL OPERATION HANDWHEEL**



DIMENSIONS (mm)	
DIMENSION	MAH
A	160
B	331
WEIGHT (kg)	5,6



Mixing valve with standard bonnet



Diverting bellows sealed valve

MATERIALS		
POS. N°	DESIGNATION	MATERIAL
1	Body	GJS-400-18-LT / 5.3103
2	* Seats	AISI 420 / 1.4021
3	* Valve plug	AISI 420 / 1.4021
4	Lower stem guide	Graphite filled PTFE
5	Bonnet	GJS-400-18-LT / 5.3103
6	* Stem	AISI 420 / 1.4021
7	Packing spacer	AISI 303 / 1.4305
8	Spring	AISI 301 / 1.4310
9	Upper stem guide	Graphite filled PTFE
10	Nuts	C35E / 1.1181
11	Studs	C35E / 1.1181
12	Packing nut	AISI 303 / 1.4305
13	* Chevron packing set	Graphite filled PTFE
14	Scraper ring	FPM
15	* Gasket	Stainless steel / Graphite
16	Locking pin	Stainless steel A2-70
17	* Safety packing set	Stainless steel / Graphite
18	* Metal bellows	AISI 316Ti / 1.4571

\* Available spare parts.

ORDERING CODES V253 a)								
Valve model	V.23	G	M	1	7	L	15	
Globe valve, three-way, straight body	V.23							
<b>Body material</b>								
GJS-400-18-LT / 0.7043 SG iron		G						
<b>Trim design</b>								
Mixing			M					
Diverting (only available for size DN 32 and above)			D					
<b>Stem sealing</b>								
PTFE/GR V-Rings / Standard bonnet				1				
Graphite / Standard bonnet				3				
Stainless steel bellows with graphite safety packing				8				
<b>Valve plug</b>								
Linear (PL) – metal to metal (class IV)					7			
<b>Pipe connection</b>								
Flanged EN 1092-2 PN 16						L		
Flanged EN 1092-2 PN 25						M		
<b>Size</b>								
DN 15							15	
DN 20							20	
...								
<b>Special valves / Extras</b>								
Full description or additional codes have to be added in case of a non-standard combination								E

a) Codification for valve only. For actuator codes, refer to the respective datasheet.

**PNEUMATIC CONTROL VALVES  
PV403 DN 15 – DN 50**

**(V403 globe valves series with linear actuators PA or EL series)**

**DESCRIPTION**

The PV403 control valves are three-way valve body for mixing service. The PA pneumatic actuator is rubber diaphragm and multi-springs. Its action can be DA – direct action (air to close) or RA – reverse action (air to open). The V403 valves have been designed to assure an accurate control in any process condition. Their wide application ranges allow the use of this valve with the most common process fluids such as water, superheated water, diathermic oil, steam, air, gas and other non corrosive fluids.

**MAIN FEATURES**

Mixing or diverting control valve.  
Standard packing or bellows sealed stem sealing.

**OPTIONS:** Soft sealing.  
Position transmitter.  
Pneumatic pilot positioner.  
Air filter regulator.  
Top-work manual handwheel.

**USE:** Hot and superheated water.  
Diathermic oil.  
Saturated and superheated steam.  
Air, gases and other non-corrosive fluids.

**AVAILABLE MODELS:** PV403S and EV403S – steel.  
PV403I and EV403I – stainless steel.

**SIZES:** DN 15 to DN 50.

**CONNECTION:** Flanged EN 1092-1 PN 40.  
Flanged ASME B16.5 Class 150 or Class 300.  
Threaded connections on request.

**PNEUMATIC ACTUATORS:** PA205, PA280, PA340, PA435.

**ACTUATORS CONNECTION:** 1/4" NPT-F.

**CONTROL SIGNAL:** 0,2 – 1bar; 0,4 – 1,2 bar; 0,4 – 2 bar.

**ELECTRIC ACT.:** Consult IS EL 20.00 E – Linear electric actuators.



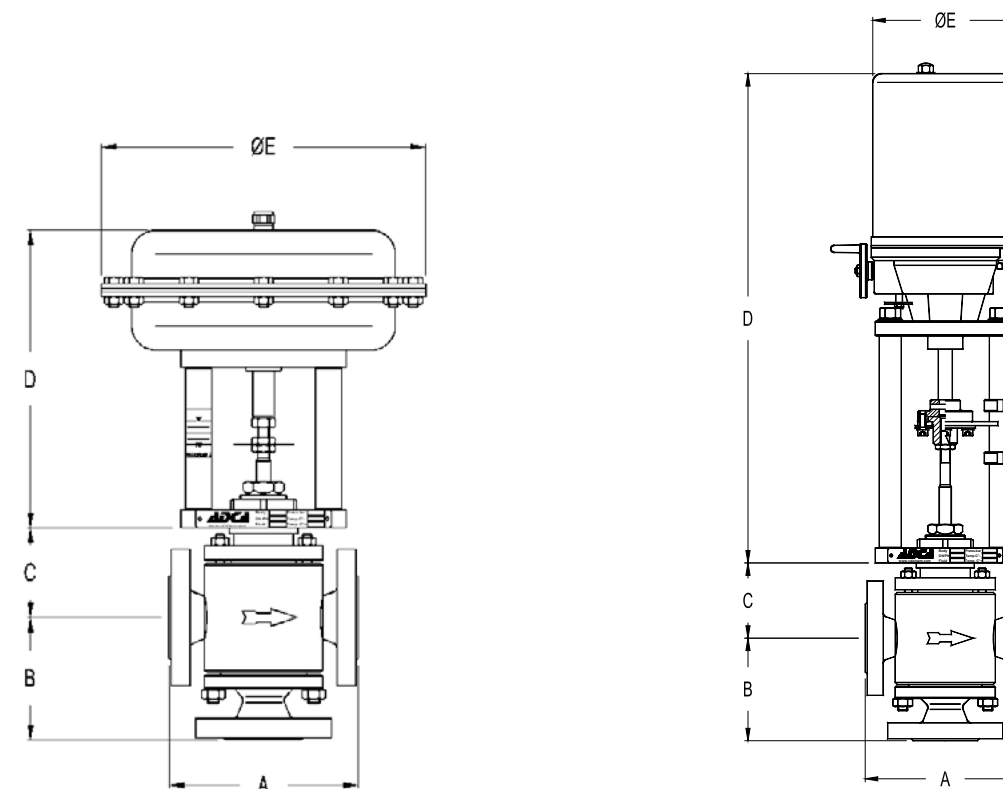
**MAX. AIR SUPPLY:** 3,5 bar.  
**AMBIENT TEMP.:** -20 °C to 70 °C.  
**BONNET:** Standard – up to 220 °C;  
Extended finned – above 220 °C.  
**STEM SEALING:** PTFE/GR V-Rings – up to 220 °C.  
Graphite – up to 400 °C.  
Bellows sealed.  
**PLUG TYPE:** Linear (PL).  
**PORT:** Full port.  
**HOW TO SELECT:** Never size the valve according to the pipe diameter in which it has to be fitted, but according to the required actual flow of steam or water. Refer to the valve calculation data sheet or consult the factory.

BODY LIMITING CONDITIONS *			
V403S		V403I	
ALLOW. PRESSURE	RELATED TEMP.	ALLOW. PRESSURE	RELATED TEMP.
25 bar	-10 / 50 °C	23,6 bar	-10 / 100 °C
20,8 bar	200 °C	19,8 bar	200 °C
19 bar	250 °C	18,6 bar	250 °C
17,2 bar	300 °C	17,2 bar	300 °C

\* Rating according to EN 1092-1:2018;  
Maximum temperature limited to the valve packing selected.  
Valves with soft seal: max. allowable temperature: 200 °C.

**CE MARKING – GROUP 2 (PED – European Directive)**

PN 25	Category
DN 15 to DN 40	SEP
DN 50	1 (CE Marked)

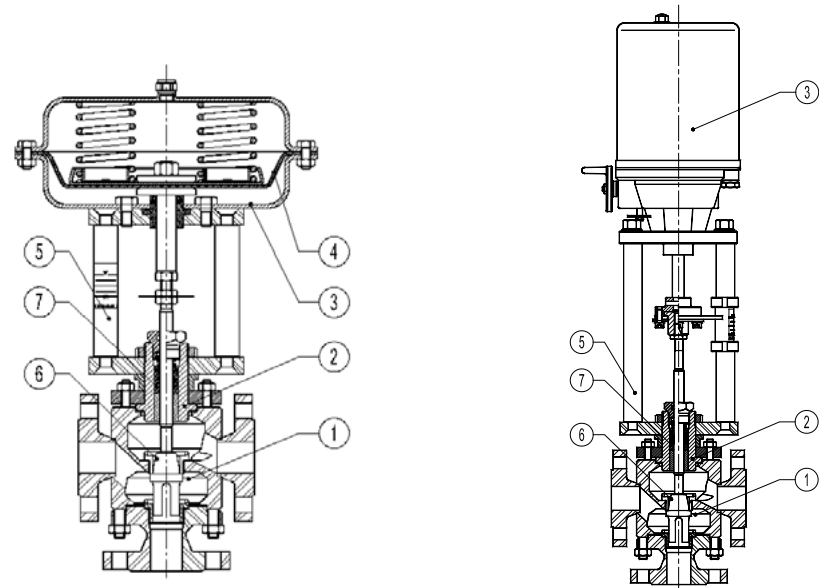


DIMENSIONS (mm)						
SIZE	A PN 40	A CLASS 150	A CLASS 300	B	C - BONNET	
					STANDARD PACKING	BELLOWS SEALED
1/2" – DN 15	150	184	190	100	75	267
3/4" – DN 20	150	184	194	103	75	267
1" – DN 25	160	184	197	103	75	267
1 1/4" – DN 32	180	–	–	110	83	285
1 1/2" – DN 40	200	222	235	110	96	285
2" – DN 50	230	254	267	130	100	298

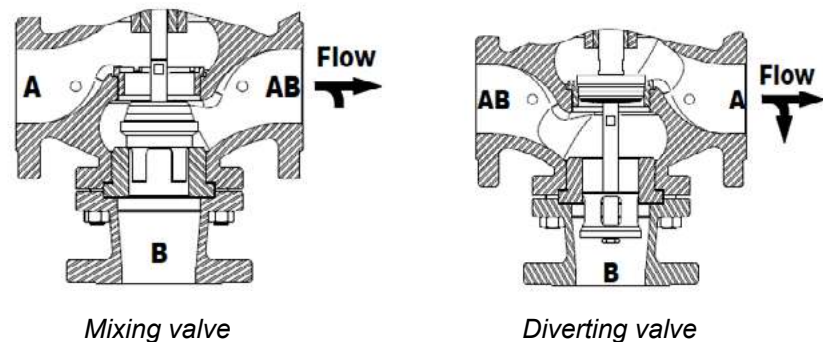
DIMENSIONS – PNEUMATIC ACTUATOR			
TYPE	E (mm)	D (mm)	WEIGHT (kg)
PA205	210	235	6
PA280	275	245	10
PA340	335	265	15
PA435	430	295	25

DIMENSIONS – ELECTRIC ACTUATOR		
TYPE	E (mm)	D (mm)
EL12	130	340
EL20	145	458
EL45	145	458
EL80	188	517
EL120	188	517





MATERIALS			
POS. N°	DESIGNATION	V403S	V403I
1	Valve body	S355JR / 1.0045	AISI 316 / 1.4401
2	Bonnet	A351 CF8 / 1.4308	A351 CF8 / 1.4308
3	Pneum. actuator (steel)	S235JR / 1.0038	S235JR / 1.0038
	Pneum. actuator (st. steel)	AISI 304 / 1.4301	AISI 304 / 1.4301
	Electrical actuator casing	Aluminium	Aluminium
4	Diaphragm	NBR70	NBR70
5	Yoke (steel)	C45E / 1.1191	C45E / 1.1191
	Yoke (st. steel)	AISI 304/ 1.4301	AISI 304/ 1.4301
6	Valve plug	Stainless steel; PTFE/GR	Stainless steel; PTFE/GR
7	Standard packing	PTFE/GR	PTFE/GR



FAILURE POSITION DEPENDING ON VALVE DUTY			
Mixing valve		Diverting valve	
Direct action actuator (a)	Reverse action actuator (b)	Direct action actuator (a)	Reverse action actuator (b)
Port A to AB closes	Port B to AB closes	Port AB to B closes	Port AB to A closes

a) Retracted stem on air failure.  
b) Extended stem on air failure.

VALVE STROKE (mm)						
STROKE	SIZES					
	DN 15	DN 20	DN 25	DN 32	DN 40	DN 50
	20					

FLOW RATE COEFFICIENTS						
Kvs	SIZES					
	DN 15	DN 20	DN 25	DN 32	DN 40	DN 50
	4	6,3	10	16	25	40

Kvs in m³/h, see IS PV10.00 E – Technical information.  
For conversion Kvs = Cv (US) x 0,855.

MAX. PERM. PRESSURE DROP (bar) – N.C. (fluid to open) – Reverse action actuator (air signal to open)							
ACTUATOR	CONTROL SIGNAL	SIZES					
		DN 15	DN 20	DN 25	DN 32	DN 40	DN 50
PA205	0,2 ÷ 1 bar	6	6	5	–	–	–
	0,4 ÷ 1,2 bar	10	10	7	–	–	–
	0,4 ÷ 2 bar	12	12	9	–	–	–
PA280	0,2 ÷ 1 bar	28	26	16	8	6	3,5
	0,4 ÷ 1,2 bar	40	38	20	12	10	5
	0,4 ÷ 2 bar	50	45	25	16	12	6,5
PA340A	0,2 ÷ 1 bar	60	60	50	20	12	10
	0,4 ÷ 1,2 bar	80	80	60	30	16	13
	0,4 ÷ 2 bar	100	100	80	40	20	18
PA340B	0,2 ÷ 1 bar	–	–	–	–	–	–
	0,4 ÷ 1,2 bar	–	–	–	–	–	–
	0,4 ÷ 2 bar	–	–	–	–	–	–
PA435A	0,2 ÷ 1 bar	–	–	–	–	40	25
	0,4 ÷ 1,2 bar	–	–	–	–	48	30
	0,4 ÷ 2 bar	–	–	–	–	55	45

The pressure drop values refer to closed valves. They have been verified by a control signal coming from an electro-pneumatic converter with an enduring minimum signal of 0,2 bar.  
The actuator pressure drops given with closed valve for the actuator signal 0,4 - 2 bar are also valid for on/off service with air supply at 2,4 bar.  
Special spring 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.



ORDERING CODES V403										
VALVE CODES	P	V	.43S	M	1	6	N	15	.X.	
<b>Actuator type</b>										
Pneumatic actuator	P									
Electric actuator	E									
<b>Group designation</b>										
Globe valve, three way		V								
<b>Valve model</b>										
Steel body			.43S							
Stainless steel body			.43I							
<b>Flow</b>										
Mixing				M						
Diverting (only available for DN 40 and above)				D						
<b>Stem sealing</b>										
PTFE/GR V-Rings / Standard bonnet					1					
Virgin PTFE V-Rings / Standard bonnet					2					
Graphite / Standard bonnet					3					
Graphite / Extended bonnet					4					
Stainless steel bellows					8					
<b>Valve plug</b>										
PL (linear) – Soft (PTFE/GR)						6				
PL (linear) – Metal AISI 316 / 1.4401						7				
<b>Pipe connection</b>										
Flanged EN 1092-1 PN 16/40							N			
Flanged ASME B16.5 Class 300							V			
<b>Size</b>										
DN 15								15		
DN 20								20		
...										
<b>Actuator</b>										(1)
<b>Extras</b>										
Full description or additional codes have to be added in case of non-standard combination.										E

ACTUATOR CODES (PNEUMATIC) *				
VALVE CODES	P.	1	D	15
<b>Group designation</b>				
Multi-spring, pneumatic linear actuator	P.			
<b>Actuator size</b>				
205		1		
280		3		
340A – From DN 15 to DN 50		5		
435A – From DN 15 to DN 50		7		
<b>Actuator type</b>				
Direct action (air to close)			D	
Reverse action (air to open)			R	
<b>Actuator Construction</b>				
Steel construction (painted) – standard				(2)
Stainless steel construction				I
<b>Control signal</b>				
0,2 – 1 bar (3/15 psi)				15
0,4 – 1,2 bar (6/18 psi)				18
0,4 – 2 bar (6/30 psi)				30
0,4 – 2,4 (6/35 psi)				35

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

Example:

V403S mixing valve model, PL soft plug, PTFE/GR stem sealing, DN 50, complete with reverse action actuator signal 0,4 – 1,2 bar, size 340A steel:

Code: PV.43S.M16L50.5R18

REMARKS:

- (1) – Indicate actuator.
- (2) – Omitted if the standard actuator is selected.

ADCATrol control valves are identified by a serial number on a nameplate, located on the actuator yoke.

When ordering spares, always use that serial number. If the valve has non-standard extras the serial number has also an E (extras).

\* For electric actuator ordering codes, consult our technical department.