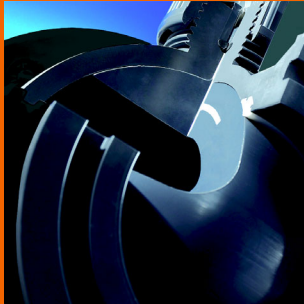


# Ball Valve C 16

valve ball completely moulded in place, near-zero dead volume with modified, lockable hand lever



## Advantages

### Maximum safety due to

- valve ball completely moulded in place
  - ball and ball seal cannot be flushed out -
- high operating safety
  - no shearing of the stainless steel ball shaft as an insert of the ball even at a high torque -
- near-zero dead volume
  - the housing encloses the ball due to the special injection moulding process -
- lockable - manipulations are excluded due to the optionally available locking plate -

### Optimised $k_v$ value

- for all dimensions, the internal ball diameter is adapted to the internal pipe diameter

## Application

- chemical plants and industrial plants

## Utilisation

- to shut off pipeline systems

## Type of fluids

- Neutral and aggressive fluids or gaseous media free of solids provided that the components getting in contact with the medium are resistant at operating temperature according to the ASV resistance guide.

## Examinations

- requirements and examinations acc. to DIN 3441, 3442, 8063 and 16962. DIN EN 12266, leakrate A examined

## Nominal pressure (H<sub>2</sub>O, 20°C)

- DN 50                      PN 16
- DN 65 - DN 100        PN 10
- DN 125 - DN 150      PN 6

## Media temperature

- see pressure/temperature diagram

## Operating pressure

- see pressure/temperature diagram

## Size

- PVC-U                    DN 50 - DN 150

## Body

- PVC-U

## Ball

- PE

## Ball seat

- DN 50 - DN 125    CSM
- DN 50 - DN 150    PTFE

## Sealings

- EPDM
- FPM

## Actuation

- with hand lever, also as position indicator
- with electric actuator acc. to DIN EN ISO 5211
- with pneumatic actuator acc. to DIN EN ISO 5211

## Connection

- GFR- or PP/steel-flanges acc. DIN 2501 PN 10/16

## Mounting

- variable, hand lever or actuator preferably in upright position

## Option

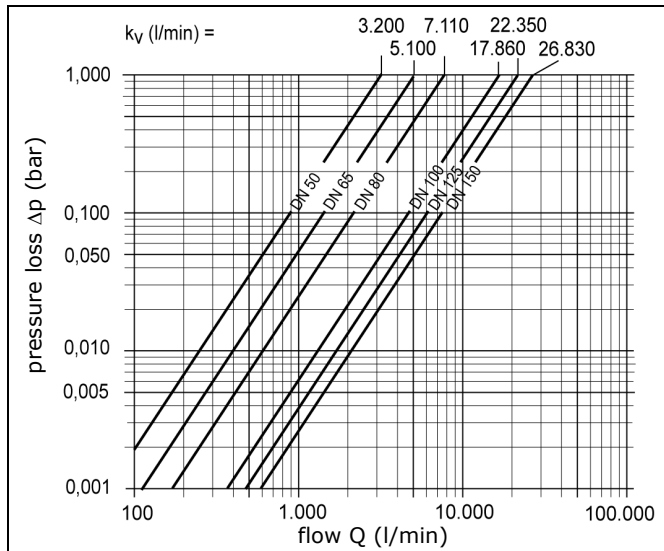
- limit switch

## Colour

- body:                    PVC-U    grey, RAL 7011
- hand lever: PVC-U    orange, RAL 2004

## Ball Valve C 16

### Pressure loss curve (appr. values for H<sub>2</sub>O, 20°C)



### For calculation:

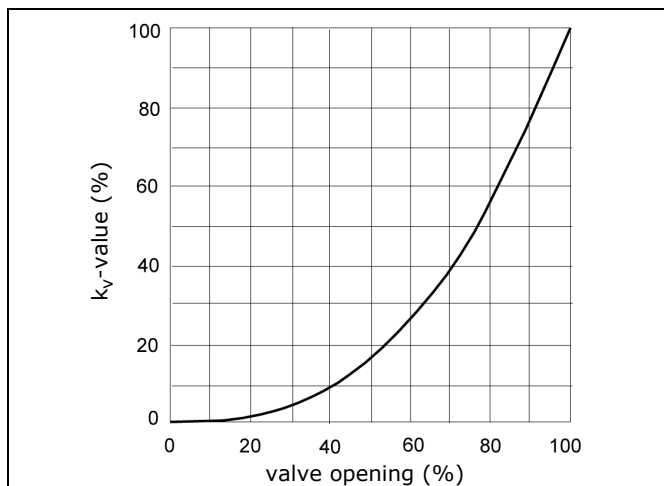
$$c_v = k_v \times 0,07$$

$$f_v = k_v \times 0,0585$$

### Units:

$k_v$  [l/min]  
 $c_v$  [gal/min] US  
 $f_v$  [gal/min] GB

### Flow characteristic



### Torque Nm (standard value)

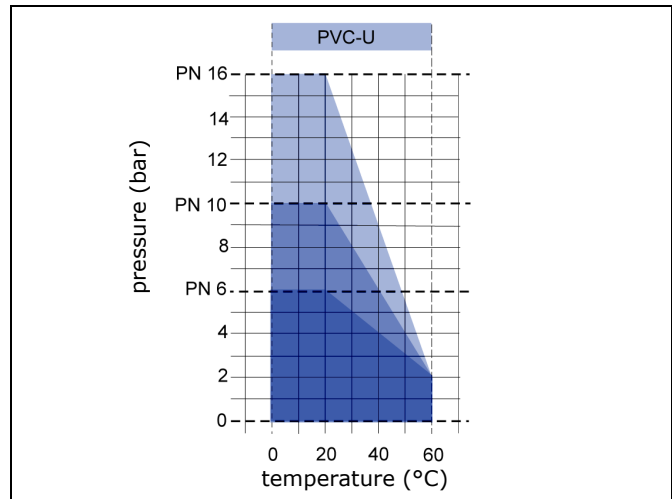
d (mm)	63	75	90	110	140	160
MD (Nm)	17	30	40	50	100	80

The stated torques are approximate values. They have been determined as follows.

Operating pressure  $p = 6$  bar (DN 125 - DN 150),  
 $p = 10$  bar (DN 65 - DN 100) and  $p = 16$  bar (DN 50)  
 with H<sub>2</sub>O, 20°C.

Depending on the fluid the respective value can be higher or lower.

### Pressure/temperature diagram



The pressure/temperature limits are applicable for a computed operating life factor of 25 years.

The values are a guide for harmless fluids (DIN 2403), to which the material of the valve is resistant.

For other media see the ASV resistance guide.

The durability of wear and tear parts depends on the operating conditions of the application.

For temperatures below 0°C please specify the precise operating conditions of the application.

### Operating instructions

#### ATTENTION

Safe operation of the valve can only be ensured if it is properly installed, operated, serviced or repaired by qualified personnel according to its intended use while observing the accident prevention regulations, safety regulations, relevant standards and technical regulations or data sheets such as e.g. DIN, DIN EN, DIN ISO and DVS\* for example.

The intended use includes adhering to the specified limit values for pressure and temperature as well as checking the chemical resistance with regard to the operating conditions.

For this purpose, ensure that all components getting in contact with the media are "resistant" in accordance with the ASV resistance guide.

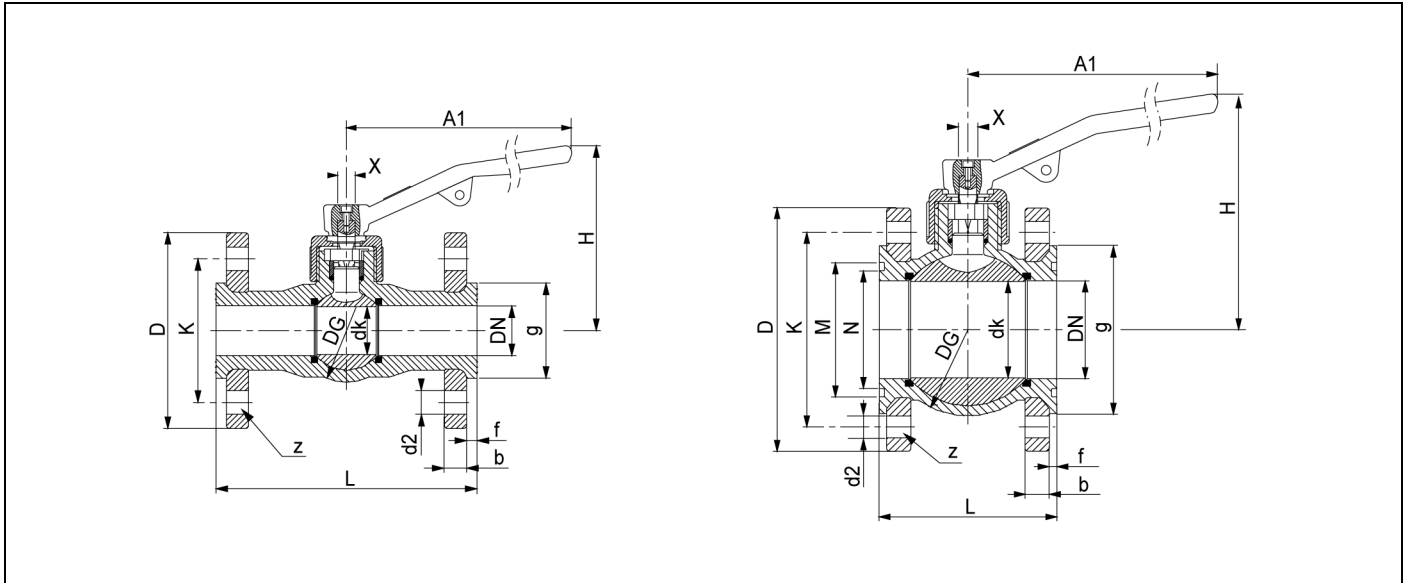
Non-observance of the specified instructions and safety regulations may cause damage to health and/or damage to assets.

\*DVS = German Welding Society ✓

#### ATTENTION

For operation in potentially explosive areas adhere to the data sheet 330550 «Ball valves for Explosion Endangered Areas.» ✓

## Ball Valve C 16 »manual«



### Dimension

<b>d (mm)</b>	<b>63</b>	<b>75</b>	<b>90</b>	<b>110</b>	<b>140</b>	<b>160</b>
DN (mm)	50	65	80	100	125	150
DN (inch)	2	2 1/2	3	4	5	6
PN (bar) PVC-U	16	10	10	10	6	6
dk	48,6	64,5	79,3	93,3	125,0	150,0
A1	320,0	320,0	320,0	320,0	320,0	480,0
GFR flange b	18,0	18,0	20,0	20,0	26,0	28,0
PP/steel flange b	19,0	19,0	21,0	22,0	26,0	27,0
D	165,0	185,0	200,0	220,0	250,0	285,0
DG	95,0	122,0	142,0	168,0	224,0	260,0
d2	18,0	18,0	18,0	18,0	18,0	23,0
PVC-U f	9,0	6,0	7,0	7,0	16,0	9,0
g	90,0	122,0	138,0	158,0	188,0	200,0
H	186,0	190,0	190,0	220,0	250,0	285,0
h	110,0	-	-	-	-	-
K	125,0	145,0	160,0	180,0	210,0	240,0
PVC-U L	230,0	138,0	146,0	167,0	267,0	267,0
M	-	92,0	111,0	133,0	164,0	190,0
N	-	78,0	97,0	115,0	146,0	172,0
X	12 x 14	12 x 14	14 x 16	16 x 18	16 x 18	22 x 22
z	4,0	4,0	8,0	8,0	8,0	8,0

### Weight (kg)

<b>d (mm)</b>	<b>63</b>	<b>75</b>	<b>90</b>	<b>110</b>	<b>140</b>	<b>160</b>
GFR flange	3,20	3,60	4,20	5,50	8,10	11,60
PP/steel flange	3,90	4,86	5,80	7,16	9,94	14,26

### Ident number

**Body: PVC-U**

<b>d (mm)</b>	<b>63</b>	<b>75</b>	<b>90</b>	<b>110</b>	<b>140</b>	<b>160</b>
<b>connection</b>						
<b>sealings</b>						
GFR flange CSM-EPDM	51623	51624	51625	51626	51627	-
GFR flange PTFE-FPM	51457	51458	51459	51460	51461	51854
PP/steel flange CSM-EPDM	51643	51644	51645	51646	51647	-
PP/steel flange PTFE-FPM	64044	62299	61349	61157	67964	57675

## Ball Valve C 16 »electric«

### Voltage

- see technical data

### Running time

- see technical data

### Mounting set

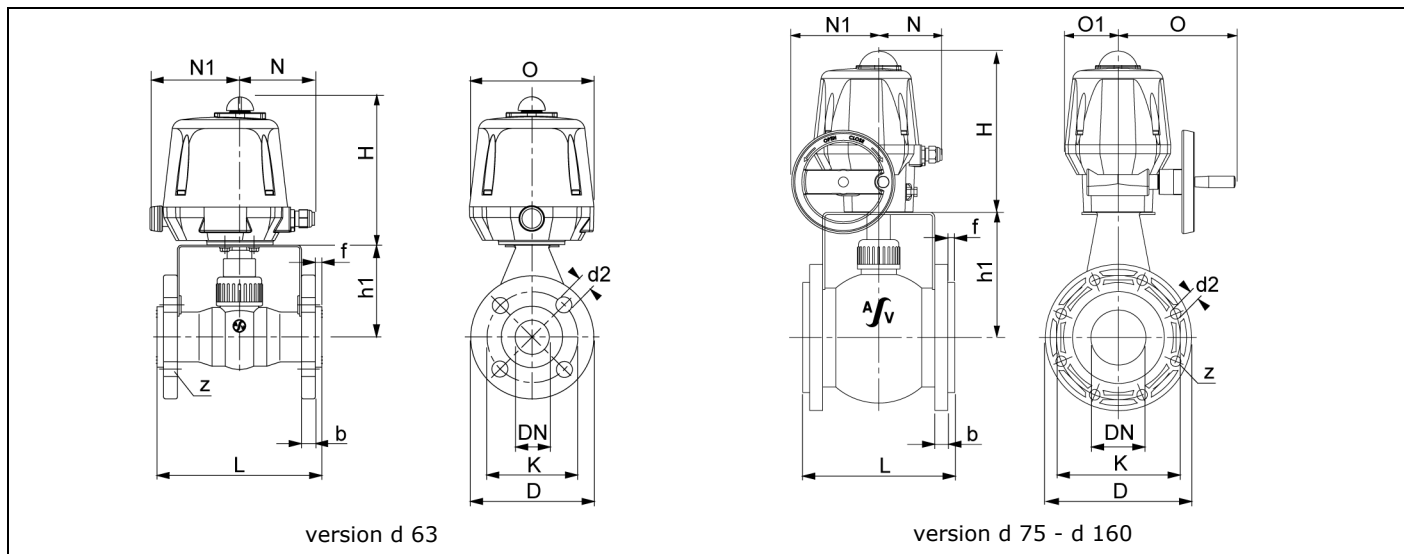
- stainless steel, V4A (1.4375)

### Coupling

- square steel, zinc coated
- adaptor, aluminium

### Screws

- stainless steel, V2A (1.4301)



### Dimensions

d (mm)	63	75	90	110	140	160
DN (mm)	50	65	80	100	125	150
DN (inch)	2	2 1/2	3	4	5	6
PN	16	10	10	10	6	6
<b>actuator type</b>	<b>VR45</b>	<b>VR75</b>	<b>VS100</b>	<b>VS300</b>	<b>VS300</b>	<b>VS300</b>
dk	48,6	64,5	79,3	93,3	125,0	150,0
b	18,0	18,0	20,0	20,0	26,0	28,0
D	165,0	185,0	200,0	220,0	250,0	285,0
d2	18,0	18,0	18,0	18,0	18,0	23,0
f	9,0	6,0	7,0	7,0	16,0	9,0
H	198,0	198,0	259,0	259,0	259,0	259,0
h1	127,0	146,0	159,0	186,0	211,0	230,0
K	125,0	145,0	160,0	180,0	210,0	240,0
L	230,0	138,0	146,0	167,0	267,0	267,0
N	120,0	120,0	102,0	102,0	102,0	102,0
N1	103,0	103,0	140,0	140,0	140,0	140,0
O	170,0	170,0	190,0	190,0	190,0	190,0
O1	-	-	85,0	85,0	85,0	85,0
z	4	4	8	8	8	8

### Weights (kg)

d (mm)	63	75	90	110	140	160
GFR flange	5,8	6,2	9,3	10,6	13,2	15,7
PP/steel flange	6,5	7,5	10,9	12,3	15,0	18,4

# Ball Valve C 16 »electric«

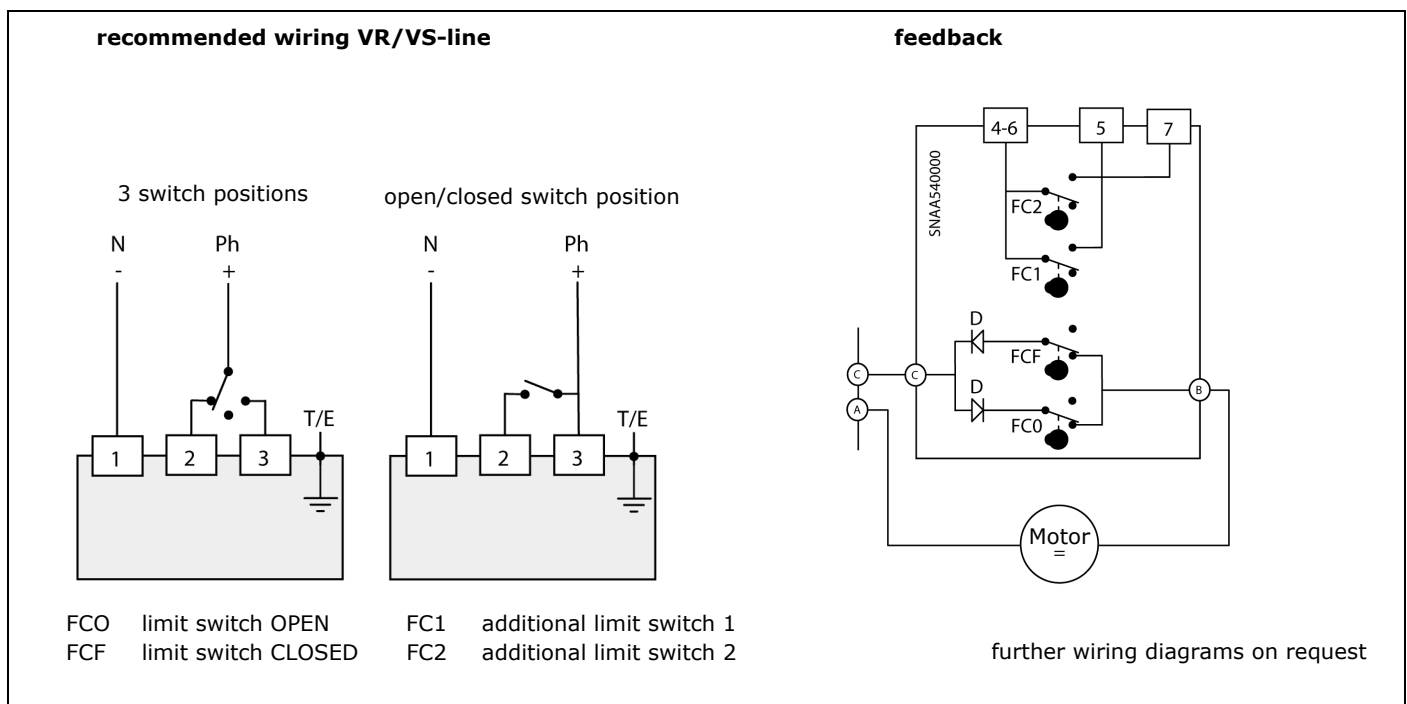
## Technical data

<b>actuator type V-line:</b>	<b>options:</b>
manual emergency control	2 additional limit switches
visual position indicator	long hand lever
protection type: IP 67	fail-safe rechargeable battery pack (internal/external)
PG union	positioner
2 additional limit switches	feedback: potentiometer
torque limiter	feedback: 4...20mA
duty cycle: 50%	positioner: 4...20mA/0...10V
heating resistance 3 W	ASI BUS connection
voltage: 400V AC 50/60Hz or	ATEX version
voltage: 100 - 240V AC 50/60Hz	duty cycle: 80%
or 120 - 350V DC or	
voltage: 24V AC/DC	
Running time: 7 - 20s	

## Technical data V-line

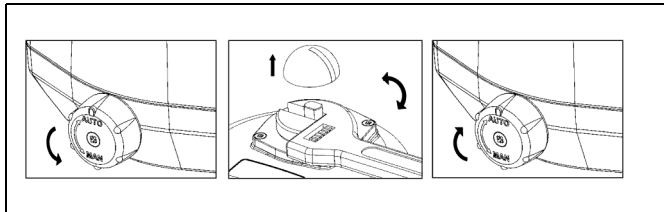
type VS actuator	VR45			VR75			VS100			VS300		
torque (Nm)	45			75			100			300		
voltage (V)	24	100-240	400	24	100-240	400	24	100-240	400	24	100-240	400
running time 90° (sec)	15	15	10	20	20	15	15	15	10	50	50	35
rating (W)	45	45	52	45	45	52	45	45	135	85	85	135
weight (kg)	3,1			3,1			5,6			5,6		
duty cycle (%)	50			50			50			50		
type of protection	IP67			IP67			IP67			IP67		
temperature (°C)	-20 to +70			-20 to +70			-20 to +70			-20 to +70		

## Electrical connection type VR/VS-line

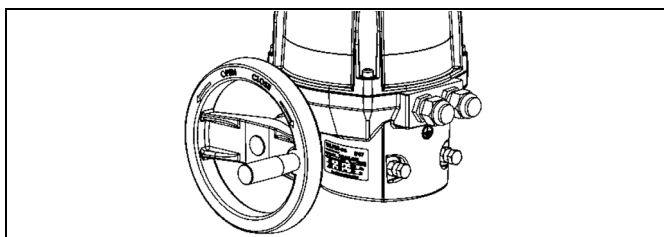


## Ball Valve C 16 »electric«

### Emergency manual control VR series



### Emergency manual control VS series



### Manual emergency control VR series

The valve can be manually operated in the event of an interruption of the power supply.

To allow manual emergency control, turn the coupling switch from »AUTO« to »MANU« and hold in the »MANU« position.

Turn the actuator shaft with the aid of an adjustable spanner.

Release the coupling switch to re-engage the gearing.

### Manual emergency control VS series

Before manual operation ensure the interruption of the power supply. Disengagement is not necessary, turning the handwheel is sufficient.

## Ball Valve C 16 »pneumatic«

### Control pressure

- 6 bar

### Standard

- visual position indicator

### Control functions

- NC (normally closed)
- NO (normally open)
- DA (double acting)

### Mounting set

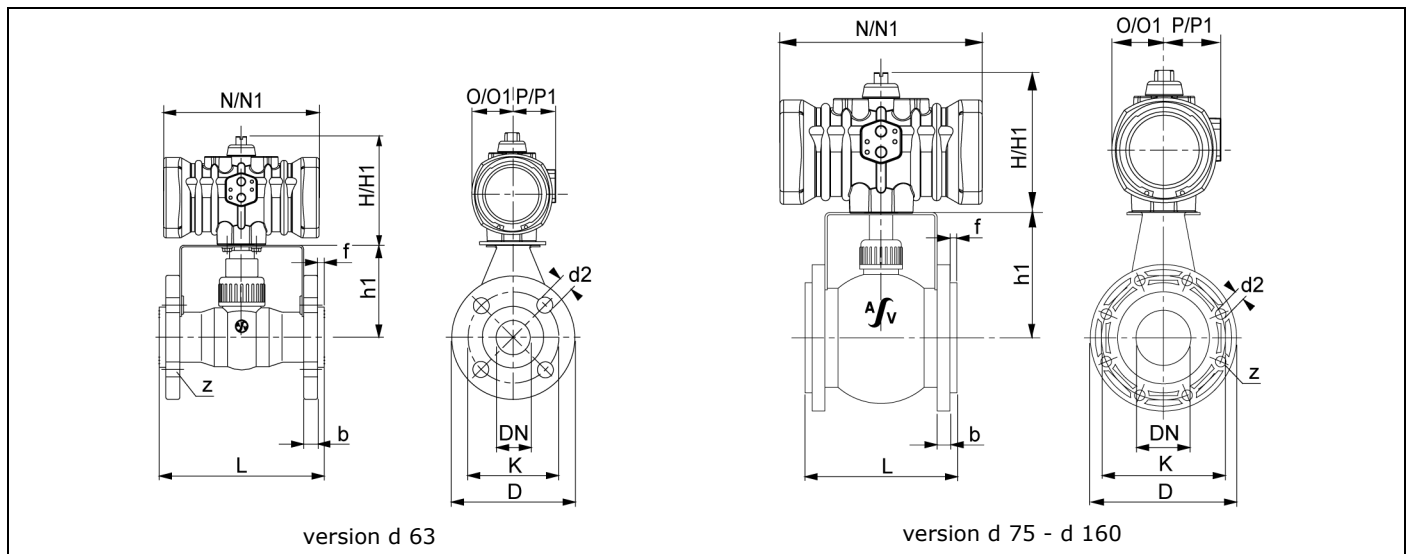
- stainless steel, V4A (1.4375)

### Coupling

- square steel, zinc coated
- adaptor, aluminium

### Screws

- stainless steel, V2A (1.4301)



### Dimension

d (mm)		63	75	90	110	140	160
DN (mm)		50	65	80	100	125	150
DN (inch)		2	2 1/2	3	4	5	6
<b>actuator type</b>	<b>NC-NO</b>	<b>PP20S</b>	<b>PP20S</b>	<b>P25S</b>	<b>P30S</b>	<b>P40S</b>	<b>P40S</b>
<b>actuator type</b>	<b>DA</b>	<b>PP10</b>	<b>PP10</b>	<b>PP20</b>	<b>PP20</b>	<b>P25</b>	<b>P25</b>
	dk	48,6	64,5	79,3	93,3	125,0	150,0
	b	18,0	18,0	20,0	20,0	26,0	28,0
	D	165,0	185,0	200,0	220,0	250,0	285,0
	d2	18,0	18,0	18,0	18,0	18,0	23,0
	f	9,0	6,0	7,0	7,0	16,0	9,0
NC / NO	H	162,0	162,0	191,0	211,0	272,0	272,0
DA	H1	128,0	128,0	162,0	162,0	191,0	191,0
	h1	127,0	146,0	159,0	186,0	211,0	230,0
	K	125,0	145,0	160,0	180,0	210,0	240,0
	L	230,0	138,0	146,0	167,0	267,0	267,0
NC / NO	N	304,0	304,0	362,0	479,0	598,0	598,0
DA	N1	182,0	182,0	233,0	233,0	276,0	276,0
NC / NO	O	60,0	60,0	74,0	83,0	106,0	106,0
DA	O1	49,0	49,0	60,0	60,0	74,0	74,0
NC / NO	P	65,0	65,0	78,0	94,0	120,0	120,0
DA	P1	53,0	53,0	65,0	65,0	78,0	78,0
	z	4,0	4,0	8,0	8,0	8,0	8,0
air connection	A	1/4	1/4	1/4	1/4	1/4	1/4
air connection	B	1/4	1/4	1/4	1/4	1/4	1/4

## Ball Valve C 16 »pneumatic«

### Weight (kg)

d (mm)		63	75	90	110	140	160
GFR flange	NC-NO	7,7	8,1	12,9	20,9	44,0	46,5
PP/steel flange	NC-NO	8,3	9,3	14,5	22,6	45,8	49,2
GFR flange	DA	4,1	4,5	6,6	7,9	13,5	16,0
PP/steel flange	DA	4,8	5,8	8,2	9,6	15,3	18,7

### Technical data

#### Actuator: single acting NC/NO

type	torque		air volume (L)		running time (sec.)		air connection	weight kg
	Nm at 6 bar		opening	closing	opening	closing		
	start	end						
PP20S	103,30	64,20	0,800	-	0,5	0,5	1/4	4,95
P25S	177,60	118,4	1,500	-	0,8	0,8	1/4	9,20
P30S	273,70	179,9	2,050	-	1,2	1,2	1/4	15,9
P40S	766,90	491,6	5,300	-	2,0	2,0	1/4	36,4

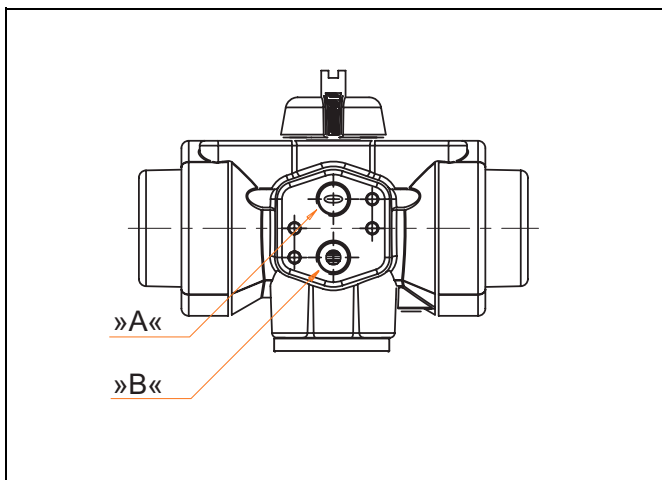
#### Actuator: double acting DA

type	torque		air volume (L)		running time (sec.)		air connection	weight kg
	Nm at 6 bar		opening	closing	opening	closing		
	start	end						
PP10	71,00	-	0,35	0,32	0,25	0,25	1/4	1,410
PP20	165,50	-	0,80	0,70	0,40	0,40	1/4	2,940
P25	290,00	-	1,50	1,20	0,50	0,50	1/4	5,900

### Application conditions

control medium	temperature range	max. pressure	body
filtered, dry compressed air, non-corrosive medium	-32°C to +90°C	8 bar	type PP: PA, glass fibre reinforced type P: aluminium

### Compressed air connection



#### Single acting actuators

- compressed air to connection »B«

#### Double acting actuators

- compressed air to connection »A« (closes)
- compressed air to connection »B« (opens)

#### Control

- 3/2-way solenoid valves for NC/NO actuators
- 5/2-way solenoid valves for DA actuators

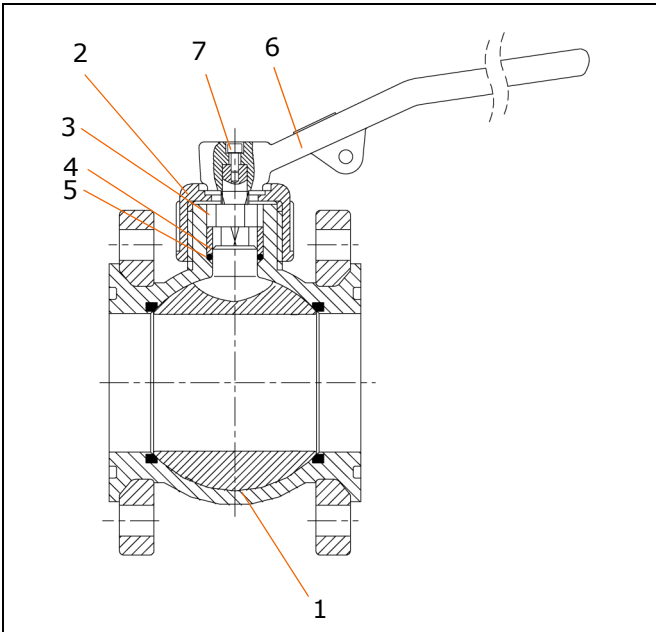
#### Options

- micro switches or proximity switches as directly mounted variant or as variant in limit switch box
- positioner
- handwheel
- ASI Bus
- pilot solenoid valve



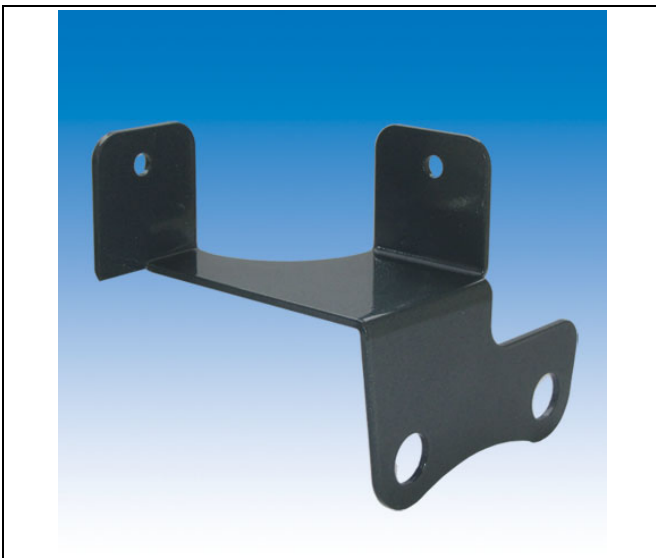
## Ball Valve C 16 »manual«

### Part list and designation



item	qty.	designation
1	1	body with ball
2	1	cap
3	1	end of travel limiter
4	1	back-up ring
5	1	o-ring
6	1	hand lever
7	1	hexagonal head screw

### Locking plate



d (mm)	63	75	90	110	140	160
DN (mm)	50	65	80	100	125	150
DN (inch)	2	2 1/2	3	4	5	6
ident number	137944	137945	137946	137947	137948	137949

## Ident number for automated valves

9

### ident number manual valve

#### actuated valve

#### line

- 0
- ER-line (electric) 1
- V-line (electric) 2
- 3
- 4
- PA (pneumatic) 5
- alu (pneumatic) 6
- steel (pneumatic) 7
- 8
- 9

#### version

- 12V DC 0
- 24V AC/DC 1
- 115V AC 2
- 230V AC 3
- 400V AC 4
- 100-240V AC/120-350V DC 5
- NC 6
- NO 7
- DA 8

#### option (electric)

- standard version 0
- DIN connector 1
- additional limit switch 2
- rechargeable battery pack 3
- heating resistor 4
- positioner 5
- feedback: Potentiometer 6
- feedback: 4...20 mA 7
- ASI BUS 8
- 9

#### option (pneumatic)

- standard version 0
- handwheel (for DA) 1
- micro switch 2
- proximity switches 3
- limit switch box with micro switches 4
- limit switch box with proximity switches 5
- safety spring 6
- pilot valve 7
- ASI BUS 8
- positioner 9

### Example:

type: C 16, DN 100  
 body/housing: PVC-U  
 seal: CSM-EPDM  
 connection: GFR flange

5  1  6  2  6  9  2  3  0

**actuator: V-line, 230V AC**

Subject to technical modifications



