

## Application

Control of single and double-acting pneumatic actuators and boosting of pneumatic binary signals

## General

The Type 3756 Booster Valve is used to control single and double-acting pneumatic actuators. Different styles, types of actuation, and switching functions result in versatile use.

## Special features

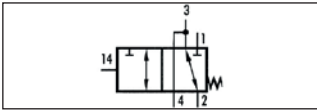
- 3/2, 5/2, 5/3 or 6/2-way function
- Spring-return mechanism or detent mechanism
- Pneumatic or pilot actuated
- $K_{VS}$  1.4 to 8.7
- Max. operating pressure 10 bar
- Corrosion-resistant body made of aluminum or stainless steel for rough ambient conditions
- Ambient temperature  $-45$  to  $+80$  °C
- Threaded connections for installation into pipelines or NAMUR interface according to VDI/VDE 3845 for mounting to pneumatic actuators



Fig. 1: Type 3756 Booster Valve

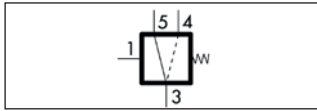
## Booster valves with threaded connections

K<sub>VS</sub> 1.4



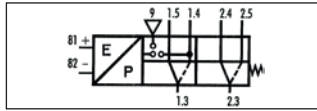
- 3/2-way function with spring-return mechanism
- Exhaust air feedback
- G 1/4/1/4 NPT connection

K<sub>VS</sub> 4.3



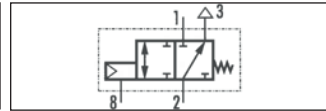
- 3/2-way function with spring-return mechanism (closed in neutral position)
- G 1/2/1/2 NPT connection

K<sub>VS</sub> 4.3

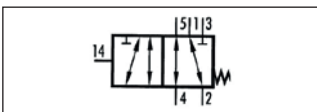


- 5/2-way function with spring-return mechanism
- G 1/2/1/2 NPT connection

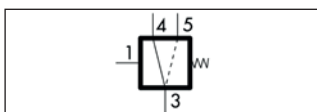
K<sub>VS</sub> 8.7



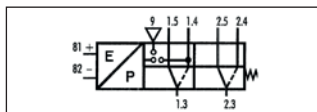
- 3/2-way function with spring-return mechanism
- G 1 / 1 NPT connection



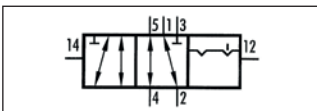
- 5/2-way function with spring-return mechanism
- G 1/4/1/4 NPT connection



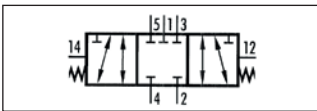
- 3/2-way function with spring-return mechanism (open in neutral position)
- G 1/2/1/2 NPT connection



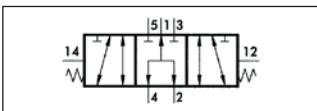
- 6/2-way function with spring-return mechanism
- G 1/2/1/2 NPT connection



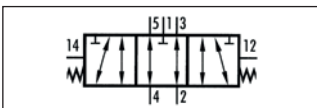
- 5/2-way function with two de-tent positions
- G 1/4/1/4 NPT connection



- 5/3-way function with spring-centered mid-position (ports 2 and 4 closed)
- G 1/4/1/4 NPT connection



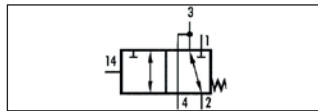
- 5/3-way function with spring-centered mid-position (ports 2 and 4 supplied with air)
- G 1/4/1/4 NPT connection



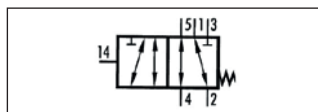
- 5/3-way function with spring-centered mid-position (ports 2 and 4 vented)
- G 1/4/1/4 NPT connection

## Booster valves with NAMUR interface

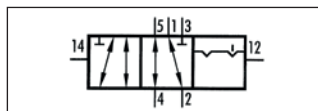
K<sub>VS</sub> 1.4



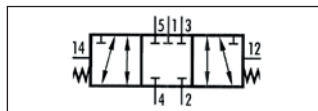
- 3/2-way function with spring-return mechanism
- NAMUR interface 1/4"



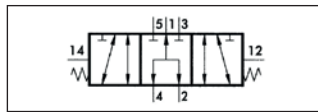
- 5/2-way function with spring-return mechanism
- NAMUR interface 1/4"



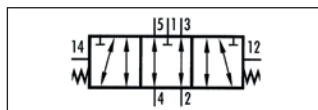
- 5/2-way function detent mechanism
- NAMUR interface 1/4"



- 5/3-way function with spring-centered mid-position (ports 2 and 4 closed)
- NAMUR interface 1/4"

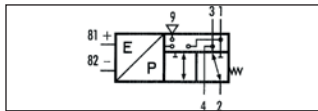


- 5/3-way function with spring-centered mid-position (ports 2 and 4 supplied with air)
- NAMUR interface 1/4"

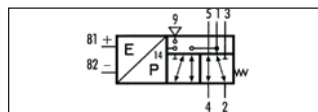


- 5/3-way function with spring-centered mid-position (ports 2 and 4 vented)
- NAMUR interface 1/4"

K<sub>VS</sub> 2.9

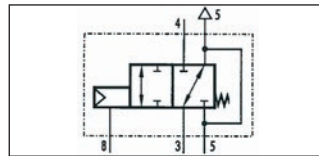


- 3/2-way function with spring-return mechanism
- NAMUR interface 1/2"

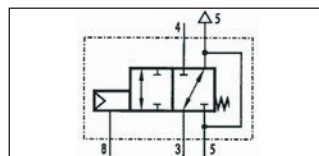


- 5/2-way function with spring-return mechanism
- NAMUR interface 1/2"

K<sub>VS</sub> 2.0 or 4.3

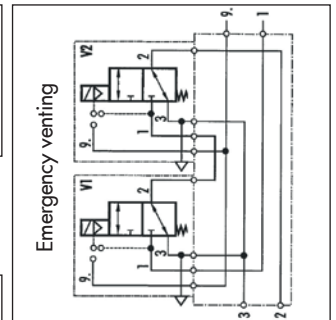


- 3/2-way function with spring-return mechanism
- NAMUR interface 1/4"

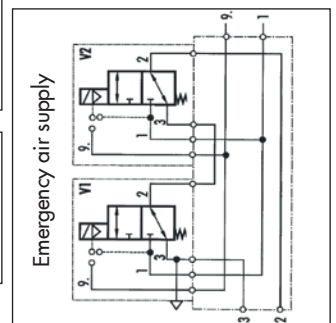


- 3/2-way function with spring-return mechanism
- NAMUR interface 1/2"

K<sub>VS</sub> 1.9 (1-out-of-2 redundancy)



- 3/2-way function with spring-return mechanism
- NAMUR interface 1/2"
- Emergency venting

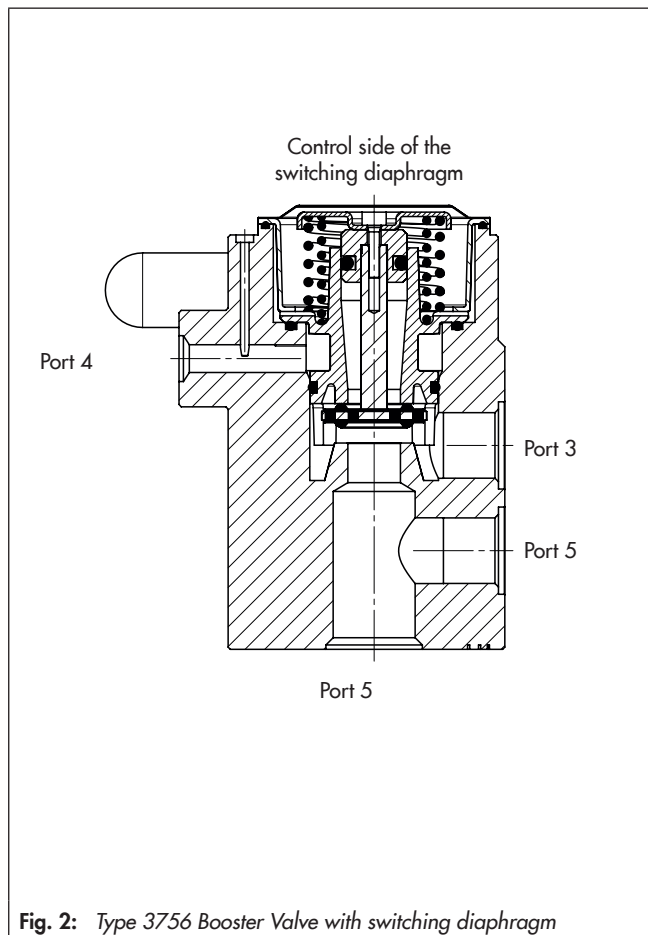


- 3/2-way function with spring-return mechanism
- NAMUR interface 1/2"
- Emergency air supply

### Function of the switching diaphragm

The booster valve consists of a body with a diaphragm element actuated on one side with return spring.

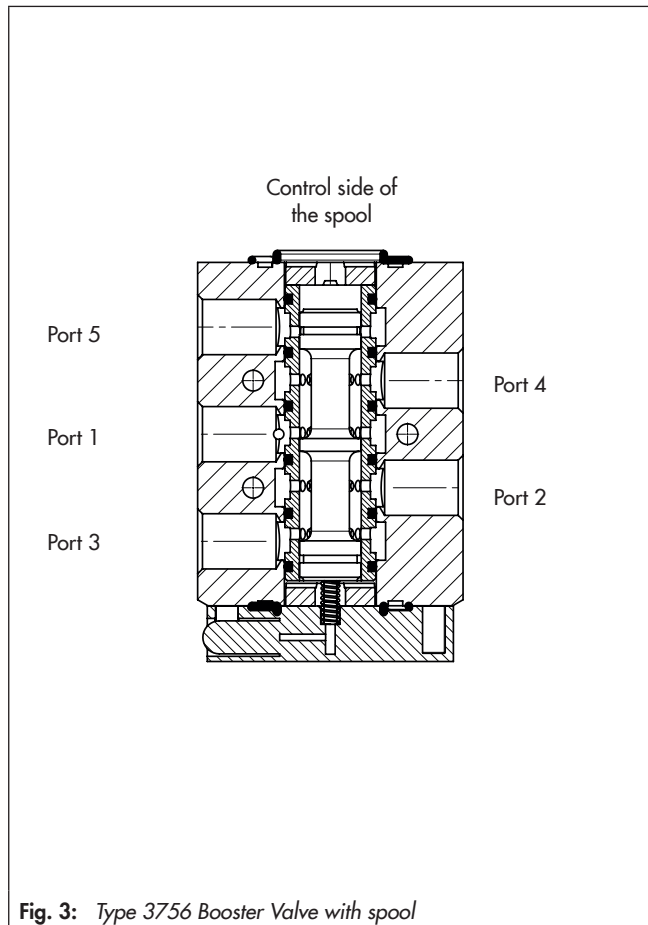
In the neutral position, the connection from port 4 to port 3 is closed by the spring force acting on the switching element. After applying the necessary control pressure on the switching diaphragm, the booster valve switches to the operating position and opens the connection from port 4 to port 3. This causes port 5 to close. The return spring causes the switching element to switch back to the neutral position after the control pressure is removed.



### Function of the spool

The booster valve consists of a body with a spool actuated on one side with return spring.

In the neutral position, the connection from port 1 to port 2 and the connection from port 4 to port 5 is open. After applying the necessary control pressure on the control side of the spool, the spool moves to the operating position, opening the connection from port 1 to port 4 and the connection from port 2 to port 3. The return spring causes the spool to be pushed back to the neutral position after the control pressure is removed.



## Technical data

Booster valve with threaded connections or NAMUR interface, $K_{VS}$ 1.4, actuated on one side				
Switching function	3/2-way function with exhaust air feedback		5/2-way function	
$K_{VS}$ <sup>1)</sup>	1.4			
Safety approval	TÜV <sup>2)</sup>		–	
Design	Spool, metal-to-metal seat, zero overlap, with return spring			
Material	Body	Aluminum, powder coated, gray beige RAL 1019, or stainless steel 1.4404		
	Seals	Silicone rubber		
	Filter	Polyethylene		
	Screws	Stainless steel 1.4571		
	Springs	Stainless steel 1.4310		
Operating medium	Instrument air (free from corrosive substances) or nitrogen, air containing oil or non-corrosive gases			
Compressed air quality according to ISO 8573-1	Max. particle size and density: Class 4 · Oil content: Class 3 · Pressure dew point: Class 3 or at least 10 K below the lowest ambient temperature to be expected			
Actuation, control pressure, switching points	Pneumatic connection	1.4 to 10 bar	≤ 0.2 bar (switchover to neutral position), ≥ 1.4 bar (switchover to operating position)	
	G 1/8 or 1/8 NPT			
	CNOMO interface	1.4 to 10 bar <sup>3)</sup>		
	Type 3963 Solenoid Valve (as spare part)	1.4 to 6 bar		
	Type 3967 Solenoid Valve	1.4 to 10 bar		
Max. operating pressure	10.0 bar			
Ambient temperature <sup>4)</sup>	–45 to +80 °C			
Connection	G 1/4 or 1/4 NPT and NAMUR interface 1/4" <sup>5)</sup>			
Approx. weight	0.48 kg			

Booster valve with threaded connections or NAMUR interface, $K_{VS}$ 1.4, actuated on both sides				
Switching function	5/2-way function with two detent positions	5/3-way function with spring-centered mid-position (ports 2 and 4 closed)	5/3-way function with spring-centered mid-position (ports 2 and 4 vented)	5/3-way function with spring-centered mid-position (ports 2 and 4 supplied with air)
$K_{VS}$ <sup>1)</sup>	1.4			
Safety approval	TÜV <sup>2)</sup>	–	TÜV <sup>2)</sup>	–
Design	Spool, metal-to-metal seat, zero overlap			
Material	Body	Aluminum, powder coated, gray beige RAL 1019, or stainless steel 1.4404		
	Seals	Silicone rubber		
	Filter	Polyethylene		
	Screws	Stainless steel 1.4571		
	Springs	Stainless steel 1.4310		
Operating medium	Instrument air (free from corrosive substances) or nitrogen, air containing oil or non-corrosive gases			
Compressed air quality according to ISO 8573-1	Max. particle size and density: Class 4 · Oil content: Class 3 · Pressure dew point: Class 3 or at least 10 K below the lowest ambient temperature to be expected			
Actuation, control pressure, switching points	Pneumatic connection	1.4 to 10 bar	≤ 0.2 bar (switchover to neutral position), ≥ 1.4 bar (switchover to operating position)	
	G 1/8 or 1/8 NPT			
	CNOMO interface	1.4 to 10 bar <sup>3)</sup>		
	Type 3963 Solenoid Valve (as spare part)	1.4 to 6 bar		
	Type 3967 Solenoid Valve	1.4 to 10 bar		
Max. operating pressure	10.0 bar			
Ambient temperature <sup>4)</sup>	–45 to +80 °C			
Connection	G 1/4 or 1/4 NPT and NAMUR interface 1/4" <sup>5)</sup>			
Approx. weight	0.48 kg			

<sup>1)</sup> The air flow rate when  $p_1 = 2.4$  bar and  $p_2 = 1.0$  bar is calculated using the following formula:

$$Q = K_{VS} \times 36.22 \text{ in m}^3/\text{h.}$$

<sup>2)</sup> Emergency release or locking of compressed air supply

<sup>3)</sup> The permissible control pressure with the CNOMO interface depends on the pilot valve used.

<sup>4)</sup> The maximum permissible ambient temperature depends on the permissible ambient temperature of the components, type of protection, and temperature class.

<sup>5)</sup> NAMUR interface according to VDI/VDE 3845

(continued on page 6)

## Technical data

(continued from page 5)

<b>Booster valve with threaded connections, <math>K_{VS}</math> 4.3, actuated on one side</b>		
Switching function	3/2-way function (closed in neutral position)	
$K_{VS}$ <sup>1)</sup> (direction of flow)	1.9 (4×3), 1.5 (3×4), 4.3 (3×5), 4.7 (5×3)	
Safety approval	SIL <sup>2)</sup> , TÜV <sup>3)</sup>	
Design	Poppet valve with diaphragm actuator, soft seated, with return spring	
Material	Body Aluminum, powder coated, gray beige RAL 1019, or stainless steel 1.4404	
	Diaphragms Chloroprene rubber (-20 to +80 °C) or silicone rubber (-45 to +80 °C)	
	Seals Chloroprene rubber (-20 to +80 °C) or silicone rubber (-45 to +80 °C)	
	Screws Stainless steel 1.4571	
	Springs Stainless steel 1.4310	
Operating medium	Instrument air (free from corrosive substances) or nitrogen, air containing oil or non-corrosive gases	
Compressed air quality according to ISO 8573-1	Max. particle size and density: Class 4 · Oil content: Class 3 · Pressure dew point: Class 3 or at least 10 K below the lowest ambient temperature to be expected	
Actuation, control pressure, switching points	Pneumatic connection 1.4 to 3 bar G ¼ or ½ NPT	≤ 0.2 bar (switchover to neutral position), ≥ 1.4 bar (switchover to operating position)
	CNOMO interface 1.4 to 10 bar <sup>4)</sup>	
	Type 3963 Solenoid Valve (as spare part) 1.4 to 6 bar	
Max. operating pressure	10.0 bar	
Ambient temperature <sup>5)</sup>	-20 to +80 °C -45 to +80 °C	
Connection	G ½ or ½ NPT	
Approx. weight	0.58 kg	

<b>Booster valve with threaded connections, <math>K_{VS}</math> 4.3, actuated on one side</b>		
Switching function	3/2-way function (open in neutral position)	
$K_{VS}$ <sup>1)</sup> (direction of flow)	1.9 (4×3), 1.5 (3×4), 4.3 (3×5), 4.7 (5×3)	
Safety approval	–	
Design	Poppet valve with diaphragm actuator, soft seated, with return spring	
Material	Body Aluminum, powder coated, gray beige RAL 1019	
	Diaphragms Chloroprene rubber (-20 to +80 °C) or silicone rubber (-45 to +80 °C)	
	Seals Chloroprene rubber (-20 to +80 °C) or silicone rubber (-45 to +80 °C)	
	Screws Stainless steel 1.4571	
	Springs Stainless steel 1.4310	
Operating medium	Instrument air (free from corrosive substances) or nitrogen, air containing oil or non-corrosive gases	
Compressed air quality according to ISO 8573-1	Max. particle size and density: Class 4 · Oil content: Class 3 · Pressure dew point: Class 3 or at least 10 K below the lowest ambient temperature to be expected	
Actuation, control pressure, switching points	Pneumatic connection 1.4 to 3 bar G ¼ or ½ NPT	≤ 0.2 bar (switchover to neutral position), ≥ 1.4 bar (switchover to operating position)
Max. operating pressure	10.0 bar	
Ambient temperature <sup>5)</sup>	-20 to +80 °C -45 to +80 °C	
Connection	G ½ or ½ NPT	
Approx. weight	0.58 kg	

<sup>1)</sup> The air flow rate when  $p_1 = 2.4$  bar and  $p_2 = 1.0$  bar is calculated using the following formula:

$$Q = K_{VS} \times 36.22 \text{ in m}^3/\text{h.}$$

<sup>2)</sup> SIL according to IEC 61508

<sup>3)</sup> Emergency release or locking of compressed air supply

<sup>4)</sup> The permissible control pressure with the CNOMO interface depends on the pilot valve used.

<sup>5)</sup> The maximum permissible ambient temperature depends on the permissible ambient temperature of the components, type of protection, and temperature class.

(continued on page 7)

## Technical data

(continued from page 6)

Booster valve with threaded connections, $K_{VS}$ 4.3, actuated on one side		
Switching function	5/2-way function	6/2-way function
$K_{VS}$ <sup>1)</sup> (direction of flow)	1.9 (1.4»1.3 and 2.4»2.3), 1.5 (1.3»1.4 and 2.3»2.4), 4.3 (1.3»1.5 and 2.3»2.5), 4.7 (1.5»1.3 and 2.5»2.3)	
Safety approval	–	
Design	Poppet valve with diaphragm actuator, soft seated, with return spring	
Material	Body	Aluminum, powder coated, gray beige RAL 1019
	Diaphragms	Chloroprene rubber (–20 to +80 °C) or silicone rubber (–45 to +80 °C)
	Seals	Chloroprene rubber (–20 to +80 °C) or silicone rubber (–45 to +80 °C)
	Screws	Stainless steel 1.4571
	Springs	Stainless steel 1.4310
Operating medium	Instrument air (free from corrosive substances) or nitrogen, air containing oil or non-corrosive gases	
Compressed air quality according to ISO 8573-1	Max. particle size and density: Class 4 · Oil content: Class 3 · Pressure dew point: Class 3 or at least 10 K below the lowest ambient temperature to be expected	
Actuation, control pressure, switching points	Pneumatic connection G 1/4 or 1/4 NPT	1.4 to 3 bar ≤ 0.2 bar (switchover to neutral position), ≥ 1.4 bar (switchover to operating position)
	CNOMO interface	1.4 to 10 bar <sup>2)</sup>
	Type 3963 Solenoid Valve (as spare part)	1.4 to 6 bar
Max. operating pressure	10.0 bar	
Ambient temperature <sup>3)</sup>	–20 to +80 °C	
	–45 to +80 °C	
Connection	G 1/2 or 1/2 NPT	
Approx. weight	1.1 kg	

Booster valve with threaded connection, $K_{VS}$ 8.7, actuated on one side		
Switching function	3/2-way function	
$K_{VS}$ <sup>1)</sup>	8.7	
Safety approval	–	
Design	Poppet valve, soft seated, with return spring	
Material	Body	Aluminum alloy, hard-coat anodizing
	Seals	Nitrile butadiene rubber
	Screws	Stainless steel 1.4571
	Springs	Stainless steel 1.4310
Operating medium	Instrument air (free from corrosive substances) or nitrogen, air containing oil or non-corrosive gases	
Compressed air quality according to ISO 8573-1	Max. particle size and density: Class 4 · Oil content: Class 3 · Pressure dew point: Class 3 or at least 10 K below the lowest ambient temperature to be expected	
Actuation, control pressure, switching points	NAMUR interface 1/4" <sup>4)</sup>	3 to 10 bar
	Type 3967 Solenoid Valve	3 to 10 bar
Max. operating pressure	10.0 bar	
Ambient temperature <sup>3)</sup>	–40 to +80 °C	
Connection	G 1	
Approx. weight	4.7 kg	

<sup>1)</sup> The air flow rate when  $p_1 = 2.4$  bar and  $p_2 = 1.0$  bar is calculated using the following formula:  
 $Q = K_{VS} \times 36.22$  in m<sup>3</sup>/h.

<sup>2)</sup> The permissible control pressure with the CNOMO interface depends on the pilot valve used.

<sup>3)</sup> The maximum permissible ambient temperature depends on the permissible ambient temperature of the components, type of protection, and temperature class.

<sup>4)</sup> NAMUR interface according to VDI/VDE 3845

(continued on page 8)

## Technical data

(continued from page 7)

<b>Booster valve with NAMUR interface, <math>K_{VS}</math> 2.9<sup>1)</sup>, actuated on one side</b>	
Switching function	3/2-way function 5/2-way function
$K_{VS}$ <sup>2)</sup>	2.9
Safety approval	–
Design	Spool, metal-to-metal seat, zero overlap, with return spring
Material	Body Aluminum, powder coated, gray beige RAL 1019 Seals Silicone rubber Filter Polyethylene Screws Stainless steel 1.4571 Springs Stainless steel 1.4310
Operating medium	Instrument air (free from corrosive substances) or nitrogen, air containing oil or non-corrosive gases
Compressed air quality according to ISO 8573-1	Max. particle size and density: Class 4 · Oil content: Class 3 · Pressure dew point: Class 3 or at least 10 K below the lowest ambient temperature to be expected
Actuation, control pressure, switching points	CNOMO interface 1.4 to 3 bar <sup>3)</sup> Type 3963 Solenoid Valve 1.4 to 6 bar (as spare part) Type 3967 Solenoid Valve 1.4 to 10 bar
Max. operating pressure	10.0 bar
Ambient temperature <sup>4)</sup>	–45 to +80 °C
Connection	G ½ or ½ NPT and NAMUR interface ½" <sup>5)</sup>
Approx. weight	1.76 kg

<b>Booster valve with NAMUR interface, <math>K_{VS}</math> 2.9<sup>1)</sup>, actuated on both sides</b>	
Switching function	5/2-way function with two detent positions
$K_{VS}$ <sup>2)</sup>	2.9
Safety approval	–
Design	Spool, metal-to-metal seat, zero overlap, with return spring
Material	Body Aluminum, powder coated, gray beige RAL 1019 Seals Silicone rubber Screws Stainless steel 1.4571 Springs Stainless steel 1.4310
Operating medium	Instrument air (free from corrosive substances) or nitrogen, air containing oil or non-corrosive gases
Compressed air quality according to ISO 8573-1	Max. particle size and density: Class 4 · Oil content: Class 3 · Pressure dew point: Class 3 or at least 10 K below the lowest ambient temperature to be expected
Actuation, control pressure, switching points	CNOMO interface 1.4 to 10 bar <sup>3)</sup> Type 3963 Solenoid Valve 1.4 to 6 bar (as spare part) Type 3967 Solenoid Valve 1.4 to 10 bar
Max. operating pressure	10.0 bar
Ambient temperature <sup>4)</sup>	–45 to +80 °C
Connection	G ½ or ½ NPT and NAMUR interface ½" <sup>5)</sup>
Approx. weight	1.76 kg

1) On request

2) The air flow rate when  $p_1 = 2.4$  bar and  $p_2 = 1.0$  bar is calculated using the following formula:  
 $Q = K_{VS} \times 36.22$  in m<sup>3</sup>/h.

3) The permissible control pressure with the CNOMO interface depends on the pilot valve used.

4) The maximum permissible ambient temperature depends on the permissible ambient temperature of the components, type of protection, and temperature class.

5) NAMUR interface according to VDI/VDE 3845

(continued on page 9)



## Technical data

(continued from page 8)

Booster valve with NAMUR interface, $K_{VS}$ 2.0 or 4.3, actuated on one side		
Switching function	3/2-way function	
$K_{VS}$ <sup>1)</sup> (direction of flow)	1.1 (4»3) 2.0 (3»5)	1.9 (4»3) 4.3 (3»5)
Safety approval	SIL <sup>2)</sup> , TÜV <sup>3)</sup>	
Design	Poppet valve with diaphragm actuator, soft seated, with return spring	
Material	Body	Aluminum, powder coated, gray beige RAL 1019, or stainless steel 1.4404
	Diaphragms	Chloroprene rubber (-20 to +80 °C) or silicone rubber (-45 to +80 °C)
	Seals	Chloroprene rubber (-20 to +80 °C) or silicone rubber (-45 to +80 °C)
	Screws	Stainless steel 1.4571
	Springs	Stainless steel 1.4310
Operating medium	Instrument air (free from corrosive substances) or nitrogen, air containing oil or non-corrosive gases	
Compressed air quality according to ISO 8573-1	Max. particle size and density: Class 4 · Oil content: Class 3 · Pressure dew point: Class 3 or at least 10 K below the lowest ambient temperature to be expected	
Actuation, control pressure, switching points	Pneumatic connection G 1/4 or 1/4 NPT	1.4 to 10 bar ≤ 0.2 bar (switchover to neutral position), ≥ 1.4 bar (switchover to operating position)
	CNOMO interface	1.4 to 10 bar <sup>4)</sup>
	Type 3963 Solenoid Valve (as spare part)	1.4 to 6 bar
	Type 3967 Solenoid Valve	1.4 to 10 bar
Max. operating pressure	10.0 bar	
Ambient temperature <sup>5)</sup>	-20 to +80 °C	
	-45 to +80 °C	
Conne- ction	Supply air	G 1/4 or 1/4 NPT and NAMUR interface 1/4" <sup>6)</sup> with G 3/8/3/8 NPT
	Exhaust air	G 1/2 or 1/2 NPT and NAMUR interface 1/4" <sup>6)</sup> with G 3/8/3/8 NPT
Approx. weight	1.38 kg	
	1.5 kg	

Booster valve with NAMUR interface, $K_{VS}$ 2.9, actuated on both sides (1-out-of-2 redundancy)		
Switching function	3/2-way function (emergency venting)	3/2-way function (emergency air supply)
$K_{VS}$ <sup>1)</sup>	1.9	
Safety approval	SIL <sup>2)</sup>	
Design	Poppet valve with diaphragm actuator, soft seated, with return spring	
Material	Body	Aluminum, powder coated, gray beige RAL 1019, or stainless steel 1.4404
	Diaphragms	Chloroprene rubber (-20 to +80 °C) or silicone rubber (-45 to +80 °C)
	Seals	Chloroprene rubber (-20 to +80 °C) or silicone rubber (-45 to +80 °C)
	Screws	Stainless steel 1.4571
	Springs	Stainless steel 1.4310
Operating medium	Instrument air (free from corrosive substances) or nitrogen, air containing oil or non-corrosive gases	
Compressed air quality according to ISO 8573-1	Max. particle size and density: Class 4 · Oil content: Class 3 · Pressure dew point: Class 3 or at least 10 K below the lowest ambient temperature to be expected	
Actuation, control pressure, switching points	Type 3963 Solenoid Valve (as spare part)	1.4 to 6 bar
	Type 3967 Solenoid Valve	1.4 to 10 bar
Max. operating pressure	10.0 bar	
Ambient temperature <sup>5)</sup>	-20 to +80 °C	
	-45 to +80 °C	
Connection	G 1/2 or 1/2 NPT and NAMUR interface 1/2" <sup>6)</sup>	
Approx. weight	2.2 kg	

<sup>1)</sup> The air flow rate when  $p_1 = 2.4$  bar and  $p_2 = 1.0$  bar is calculated using the following formula:

$$Q = K_{VS} \times 36.22 \text{ in m}^3/\text{h.}$$

<sup>2)</sup> SIL according to IEC 61508

<sup>3)</sup> Emergency release or locking of compressed air supply

<sup>4)</sup> The permissible control pressure with the CNOMO interface depends on the pilot valve used.

<sup>5)</sup> The maximum permissible ambient temperature depends on the permissible ambient temperature of the components, type of protection, and temperature class.

<sup>6)</sup> NAMUR interface according to VDI/VDE 3845

## Ordering data

Booster valve		Type 3756-	x	x	x	x	x	x	x	x	x	x	x	x	x
<b>Control</b>	Pneumatic	0													
	Over CNOMO interface	1													
	With Type 3963 Solenoid Valve (as spare part)	2													
	With Type 3967 Solenoid Valve	3													
	Over NAMUR interface ¼" according to VDI/VDE 3845	4													
<b>Switching function</b>	3/2-way function with spring-return mechanism <b>SIL/TÜV</b>	0													
	5/2-way function with spring-return mechanism	1													
	5/2-way function with two detent positions <b>TÜV</b>	2													
	5/3-way function with spring-centered mid-position (ports 2 and 4 closed)	3													
	5/3-way function with spring-centered mid-position (ports 2 and 4 supplied with air)	4													
	5/3-way function with spring-centered mid-position (ports 2 and 4 vented) <b>TÜV</b>	5													
	6/2-way function with spring-return mechanism	6													
	3/2-way function with spring-return mechanism (open in neutral position)	7													
<b>Attachment</b>	NAMUR interface according to VDI/VDE 3845	0													
	Threaded connection	1													
<b>K<sub>vs</sub></b> <sup>1)</sup>	1.4 <b>TÜV</b>									0					
	4.3 <b>SIL/TÜV</b>									1					
	2.9										2				
	2.0 <b>SIL/TÜV</b>											3			
	1.9 <b>SIL</b>												5		
	8.7													6	
<b>Connection</b>	G ¼														0
	¼ NPT														1
	G ½														2
	½ NPT														3
	G 1														6
<b>Ambient temperature</b> <sup>2)</sup>	-20 to +80 °C														0
	-45 to +80 °C														1
	-40 to +80 °C														2
<b>Material</b>	Aluminum														0
	Stainless steel														1
<b>Safety approval</b>	Without														0
	SIL <sup>3)</sup>														1
	TÜV <sup>4)</sup>														2
<b>Special version</b>	Without														0 0 0
	Emergency venting (1-out-of-2 redundancy)														0 1 0
	Emergency air supply (1-out-of-2 redundancy)														0 1 1

1) The air flow rate when  $p_1 = 2.4$  bar and  $p_2 = 1.0$  bar is calculated using the following formula:

$$Q = K_{vs} \times 36.22 \text{ in m}^3/\text{h.}$$

2) The maximum permissible ambient temperature depends on the permissible ambient temperature of the components, type of protection, and temperature class.

3) SIL according to IEC 61508

4) Emergency release or locking of compressed air supply

## Summary of explosion protection approvals

Type	Certification			Type of protection/comments
3756	SIL	No.	V 60.09/14 rev. 01	Certification for safety-instrumented systems according to IEC 61508
		Date	2015-02-10	
	TÜV	No.	S 284 2013 E2 rev. 01	Mounted on control valves according to DIN 3394-1, DIN EN 161, DIN 32725, DIN EN 264, and DIN 32730
		Date	2014-01-16	

## Accessories and spare parts

Spare parts	
Order no.	Designation
8502-1091	Formed seal (for supply air in booster valves with $K_{VS}$ 1.4)
8421-9002	O-ring 13 × 5, -45 to +80 °C (for booster valves with NAMUR interface 1/4", $K_{VS}$ 1.4)
8421-0364	O-ring 16 × 2, -20 to +80 °C (for booster valves with NAMUR interface 1/4", $K_{VS}$ 2.0)
8421-0368	O-ring 16 × 2, -45 to +80 °C (for booster valves with NAMUR interface 1/4", $K_{VS}$ 2.0)
8421-1077	O-ring 24 × 2, -20 to +80 °C (for booster valves with NAMUR interface 1/2", $K_{VS}$ 4.3)
8421-0425	O-ring 24 × 2, -45 to +80 °C (for booster valves with NAMUR interface 1/2", $K_{VS}$ 4.3)
8421-0419	O-ring 28 × 2, -45 to +80 °C (for booster valves with NAMUR interface 1/2", $K_{VS}$ 2.9)
8333-1303	Screw M5 × 60 A4 (for booster valves with NAMUR interface, $K_{VS}$ 2.0)
8392-0651	Spring washer A5-A4 (for booster valves with NAMUR interface, $K_{VS}$ 2.0 and 2.9)
8333-0538	Screw M5 × 60 A4 (for booster valves with NAMUR interface, $K_{VS}$ 4.3)
8392-0658	Spring washer A5-A4 (for booster valves with NAMUR interface, $K_{VS}$ 4.3)
8333-1272	Screw M5 × 60 A4 (for booster valves with NAMUR interface, $K_{VS}$ 2.9)

Accessories	
Order no.	Designation
8504-0066	Filter made of polyethylene, G 1/4 connection, degree of protection IP 54
8504-0068	Filter made of polyethylene, G 1/2 connection, degree of protection IP 54
1136-0208	Silencer G 1, male thread
1400-9598	Adapter plate, painted aluminum, for NAMUR interface 1/4" on NAMUR rib/threaded connection (G 1/4)
1400-9599	Adapter plate, painted aluminum, for NAMUR interface 1/4" on NAMUR rib/threaded connection (1/4 NPT)
1400-9600	Adapter plate, stainless steel 1.4404, for NAMUR interface 1/4" on NAMUR rib/threaded connection (G 1/4)
1400-9601	Adapter plate, stainless steel 1.4404, for NAMUR interface 1/4" on NAMUR rib/threaded connection (1/4 NPT)
1402-0827	Adapter plate, painted aluminum, for NAMUR interface 1/2" on NAMUR rib/threaded connection (G 1/2)
1402-0829	Adapter plate, painted aluminum, for NAMUR interface 1/2" on NAMUR rib/threaded connection (1/2 NPT)
1402-0828	Adapter plate, stainless steel 1.4404, for NAMUR interface 1/2" on NAMUR rib/threaded connection (G 1/2)
1402-0830	Adapter plate, stainless steel 1.4404, for NAMUR interface 1/2" on NAMUR rib/threaded connection (1/2 NPT)
1380-1652	Adapter plate, painted aluminum, for NAMUR interface 1/4" on rotary actuator 1/2"
1380-1797	Adapter plate, stainless steel 1.4404, for NAMUR interface 1/4" on rotary actuator 1/2"
1380-1795	Adapter plate, painted aluminum, for NAMUR interface 1/2" on rotary actuator 1/4"
1380-1796	Adapter plate, stainless steel 1.4404, for NAMUR interface 1/2" on rotary actuator 1/4"

Specifications subject to change without notice.



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