

# POSITIONERS

## Product Specifications

PSS EVE0602

### VBS200 / VBS201 / VBS202 / VBS203 / VBS204 – VOLUME BOOSTER SERIES



The VBS200 Volume Booster Series is designed to operate pneumatic valve actuators via a valve positioner. For large actuators, we recommend reducing the positioning time by using such a booster. The bypass valve is used to adjust dynamic response to provide stable operation over a wide range of actuator sizes.

#### FEATURES

- ▶ Booster for control and ON/OFF actuators/valves
- ▶ Particularly adapted for PST applications
- ▶ Booster controlled by valve positioner and/or by a solenoid operated valve
- ▶ Heavy duty Aluminum housing
- ▶ Adjustable Bypass Valve
- ▶ ATEX Constructive Safety
- ▶ VBS200 remote version for any positioner
- ▶ VBS201 integral volume booster for positioners SRD991, SRD960, SRD998, and SRI990 (directly flanged to the positioner)
- ▶ VBS202 directly mounted to actuators acc. to VDI/VDE 3845 and with flange interface for direct mounting of solenoid valve
- ▶ VBS204 as VBS202 but for double acting actuators
- ▶ Easy and quick installation with important saving (material and labor) due to elimination of piping and fittings (version 201, 202, 203 and 204)
- ▶ Tapped exhaust threaded 1/2" for connection of an Exhaust Noise Silencer or to a venting gas collection system
- ▶ VBS203 mounted to actuators acc. to Namur NE04 and with flange interface for positioners acc. to VDI/VDE 3847

Equipment should be installed, operated, serviced, and maintained only by qualified personnel.  
No responsibility is assumed by Schneider Electric for any consequences arising from the use of this material.

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SPECIFICATIONS

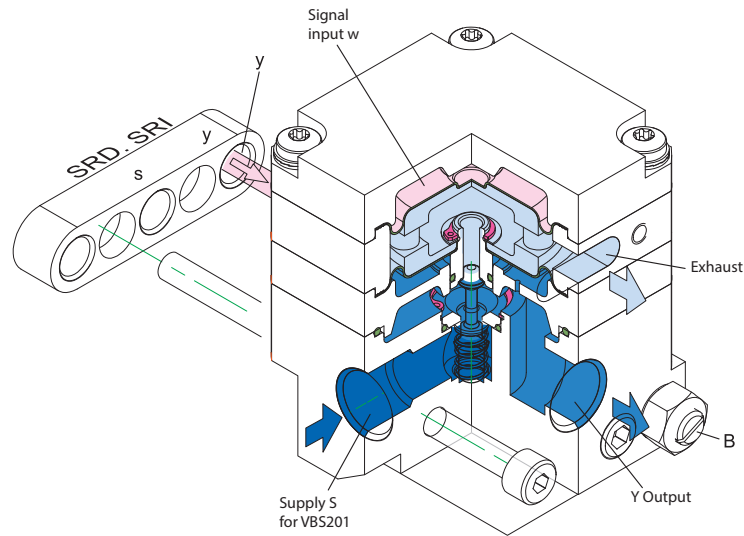
	VBS200	VBS201	VBS202	VBS203	VBS204
<b>Max. Supply Pressure</b>	10 bar / 150 psig				
<b>Max. Signal/Output Pressure</b>	10 bar / 150 psig (controlled by positioner)				
<b>Flow Capacity (Cv) Input</b>	Cv 1.4				
<b>Flow Capacity (Cv) Exhaust</b>	Cv 1.4				
<b>Signal/Output Pressure Ratio</b>	1:1				
<b>Housing material</b>	Aluminum				
<b>Diaphragm material</b>	ECO (Epichlorhydrin rubber)				
<b>Supply/Output Connection</b>	G 1/2 or 1/2 NPT		G1/2		
<b>Signal Connection</b>	G 1/4 or 1/4 NPT		G1/2	G 1/4	
<b>Ambient Temperature</b>	-40°C to 85°C / -40°F to 185°F				
<b>Weight</b>	1 kg	1.64 kg	2,87 kg	4,45 kg	5,85 kg
<b>Mounting type</b>	remote; independent from positioner	direct side mounted to positioner	direct mounted to actuator according to VDI/VDE 3845	mounted to actuator according to Namur NE04 with interface for positioners according to VDI/VDE 3847	direct mounted to double acting actuator according to VDI/VDE 3845

MODEL CODES VBS20X

<u>Volume Booster</u>	<u>VBS</u>
<u>Flow Capacity</u> Cv 1.4	2
<u>Body Material</u> Aluminum Stainless steel	0 1
<u>Mounting Type</u> Remote from Positioner Direct side mounting to Positioners SRI990, SRD991, SRD960, SRD998 Remote mounting acc. to VDI/VDE 3845 Mounting to actuators according to Namur NE04 and flange interface for positioners acc. to VDI/VDE 3847 Remote mounting according to VDI/VDE 3845 double acting	0 1 2 3 4
<u>Connections</u> G threads NPT threads	G N
<u>Options</u> With tapped exhaust With Silencer (exhaust noise damper)	T S

FUNCTIONAL DRAWING (VBS201)

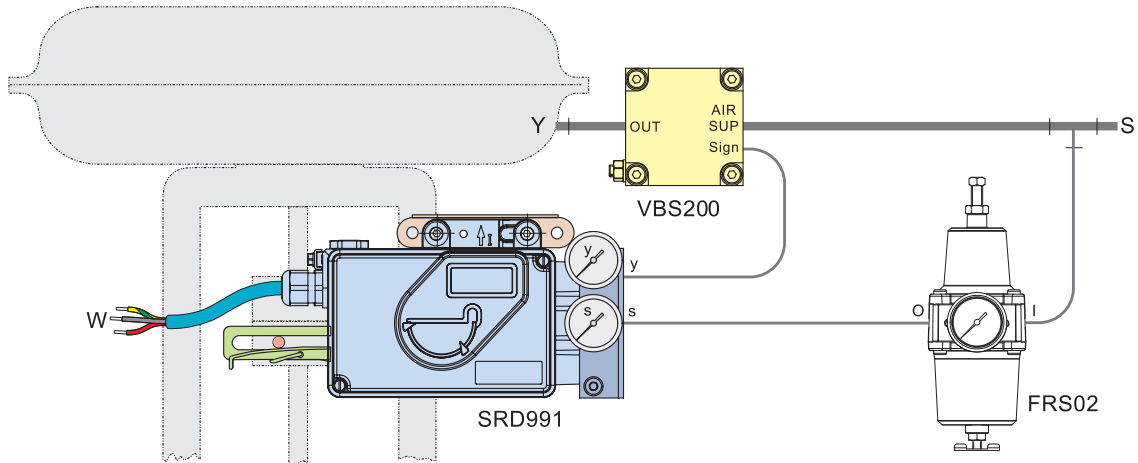
Figure 1. FUNCTIONAL DRAWING (VBS201)



Output y of Positioner is connected to chamber w of Booster. Bypass-screw B controls the flow between input w and output Y of Booster. SRD / SRI supply is connected at the rear side of the VBS201 housing and is forwarded to the positioner.

TYPICAL APPLICATION VBS200

Figure 2. TYPICAL APPLICATION VBS200: Remote from Positioner



For best control performance, we recommend making the tube length between Booster output and actuator as short as possible.

**DIMENSIONS AND CONNECTIONS (VBS201)**

Figure 3. DIMENSIONS AND CONNECTIONS (VBS201)

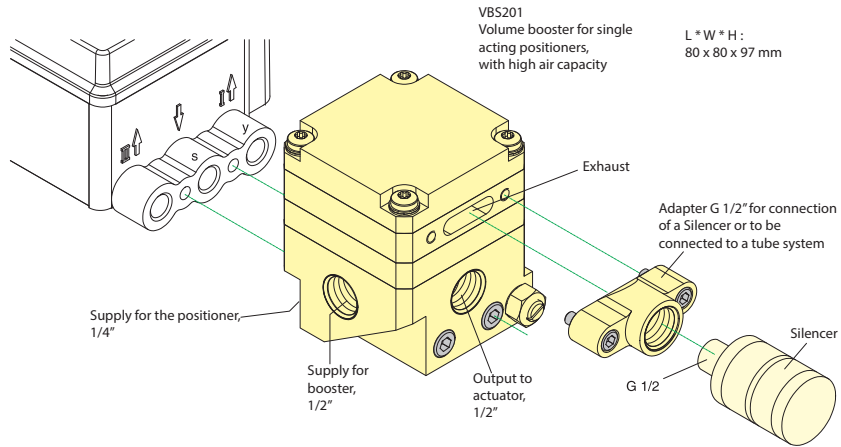
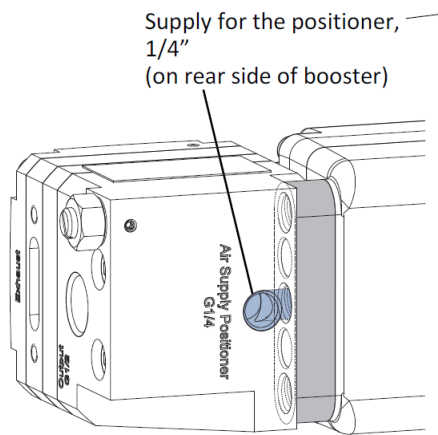


Figure 4. DIMENSIONS AND CONNECTIONS (VBS201)\_Part2



Supply air pressure for the booster is up to 10 bar and

Supply air pressure for the positioner is limited to 6 bar.

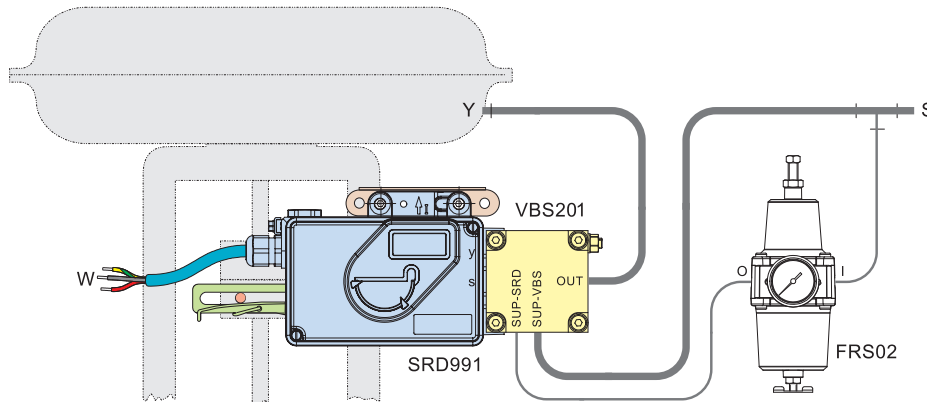
If operating pressure of booster is more than 6 bar, supply of positioner is to be reduced to 6 bar by a Filter regulator (FRS02).

Therefore, booster and positioner have their own supply connection.

Air connection of positioner takes place at the rear side of housing of booster and is directly passed to the positioner.

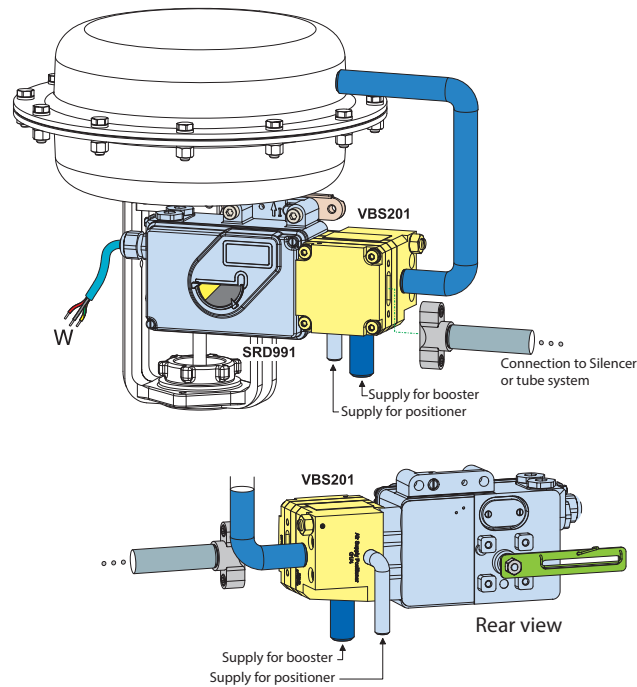
### TYPICAL APPLICATION VBS201

Figure 5. TYPICAL APPLICATION VBS201: Direct side mounted



### EXAMPLE FOR MOUNTING VBS201

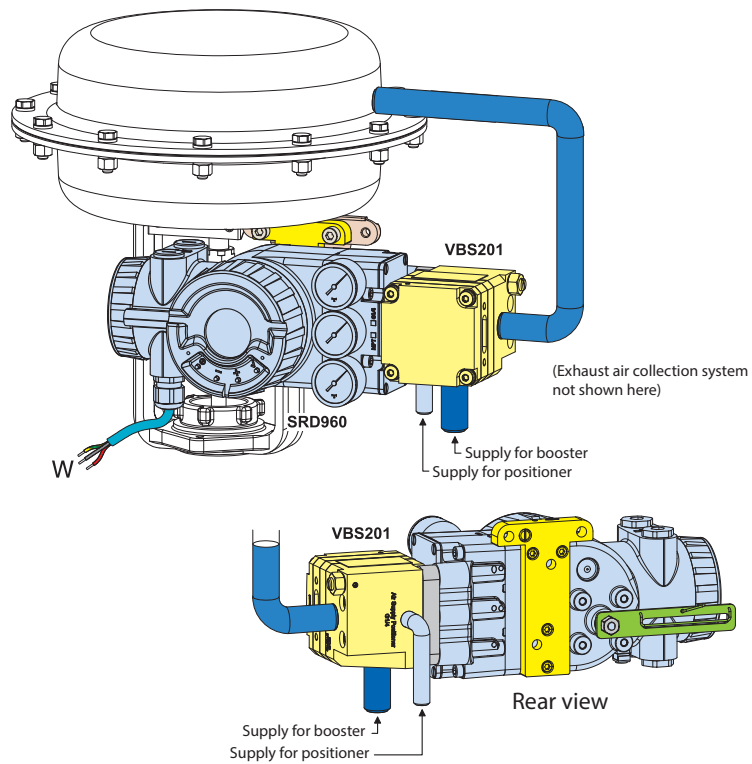
Figure 6. EXAMPLE FOR MOUNTING VBS201 at SRD991 / SRI990, directly side mounted



The LEX 426 602 037 manifold supplied with the VBS201 is not used when connecting to the SRD991 or SRI990. The enclosed 3 sealing rings are mounted between the booster and the positioner.

EXAMPLE FOR MOUNTING VBS201

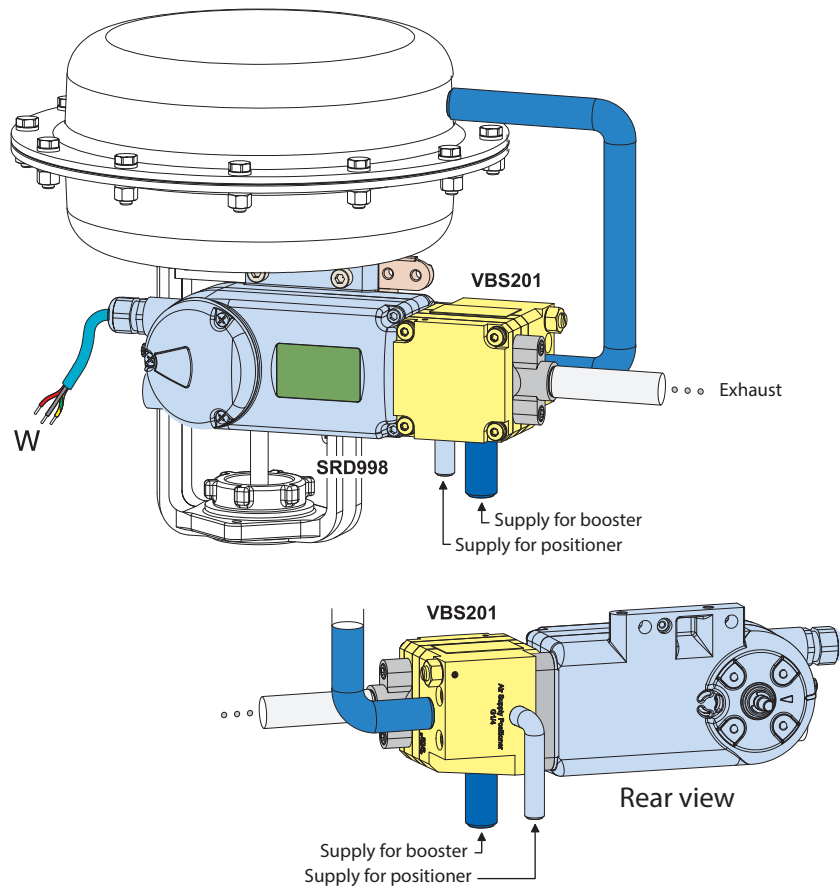
Figure 7. EXAMPLE FOR MOUNTING VBS201 at SRD960, Directly Side Mounted



The LEX 426 602 037 manifold supplied with the VBS201 and the enclosed 3 sealing rings are mounted between the booster and the positioner when connected to the SRD960.

EXAMPLE FOR MOUNTING VBS201 AT SRD998

Figure 8. EXAMPLE FOR MOUNTING VBS201 at SRD998, with Exhaust Collector



The manifold supplied or already mounted on the SRD998 is removed; for this, the manifold LEX 426 602 037, supplied with the VBS201, is mounted between SRD998 and VBS201. The enclosed sealing rings are mounted between the booster and the positioner; the sealing ring with inserted filter in the middle connection (for the supply air).



TYPICAL APPLICATIONS VBS202: VDI/ VDE 3845

The VDI / VDE 3845 regulation defines, among other things, the connection pattern of the air ducts of actuators.

The Adapter plate is mounted on the connection interface of the actuator and the Booster is mounted on the adapter plate. The adapter plate contains the bores for the air duct between the actuator and the booster, as well as the connections for the supply air, the positioner and the exhaust air collection system. The piping is thus substantially simplified with the adapter plate.

Figure 9. Dimensions and Assembly - VBS202

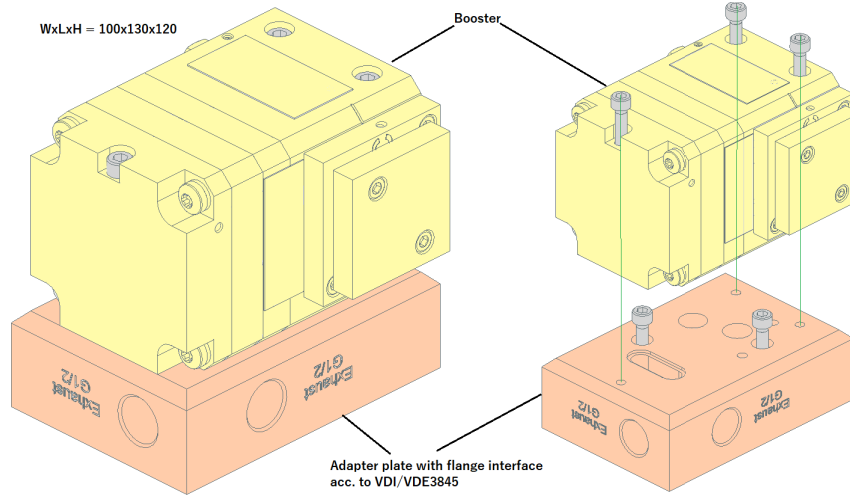
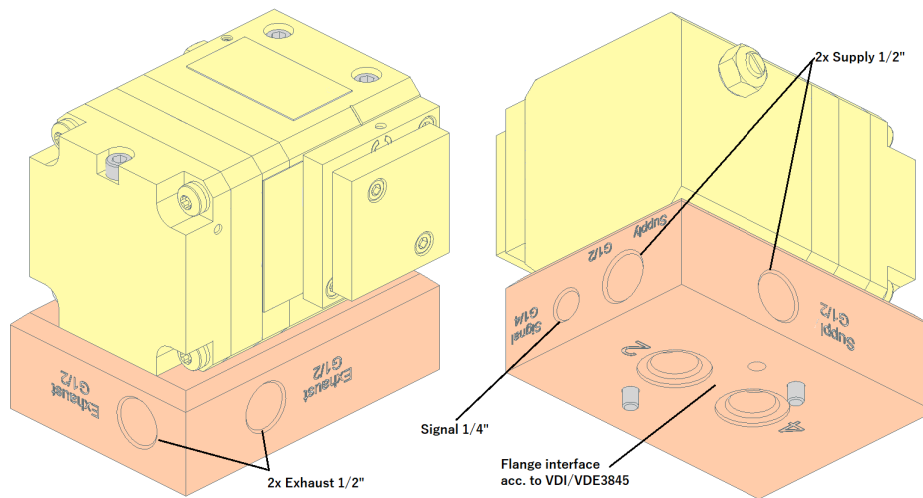


Figure 10. Connections - VBS202



**NOTICE**

**POTENTIAL EQUIPMENT DAMAGE**

The both Supply air 1/2" connections are directly connected to each other on the Adapter plate. The connection left hand Supply air 1/2" is usually looped through to supply the upstream position control. If the supply air pressure for the actuator is higher than for the positioner, an air supply station must reduce the pressure for the positioner to a permissible value.

**Failure to follow these instructions can result in equipment damage.**

**TYPICAL APPLICATIONS VBS203: VDI/ VDE 3847 AND NAMUR NE04**

The adapter plate of the VBS203 is mounted on the rod of the actuator or on the actuator rib according to NAMUR Recommendation NE 04. The assembly unit is attached to the adapter plate. The booster and the lock-in unit are located on the mounting unit. In addition, on the mounting unit, there is a flange interface according to the standard VDI/VDE 3847 to connect the positioner.

*Figure 11. Dimensions and Assembly - VBS203*

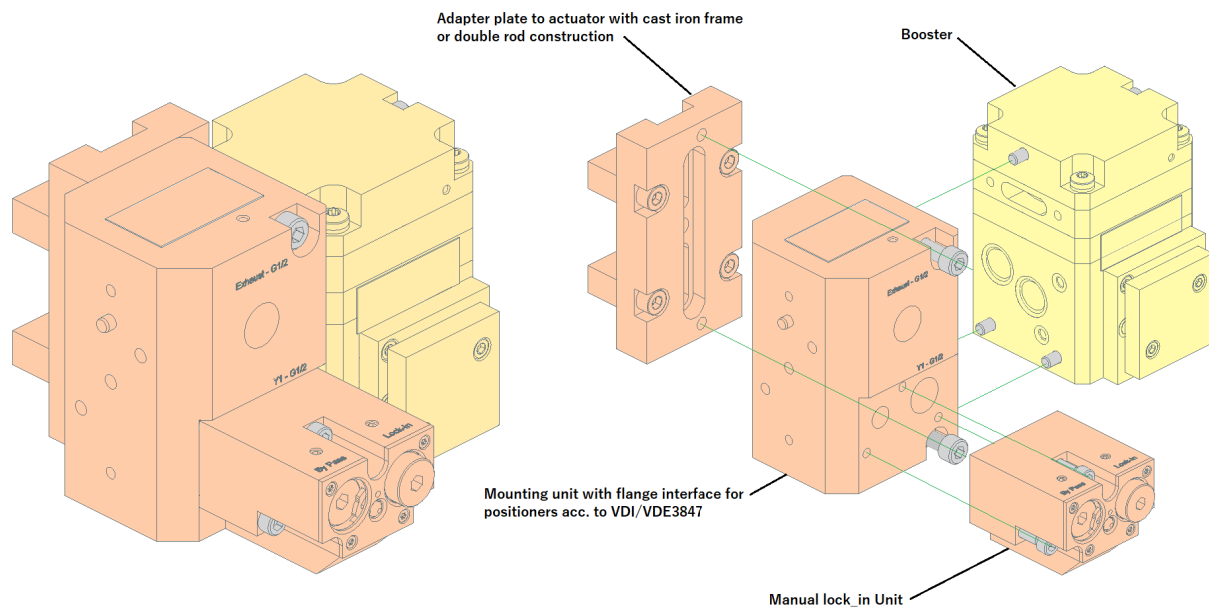
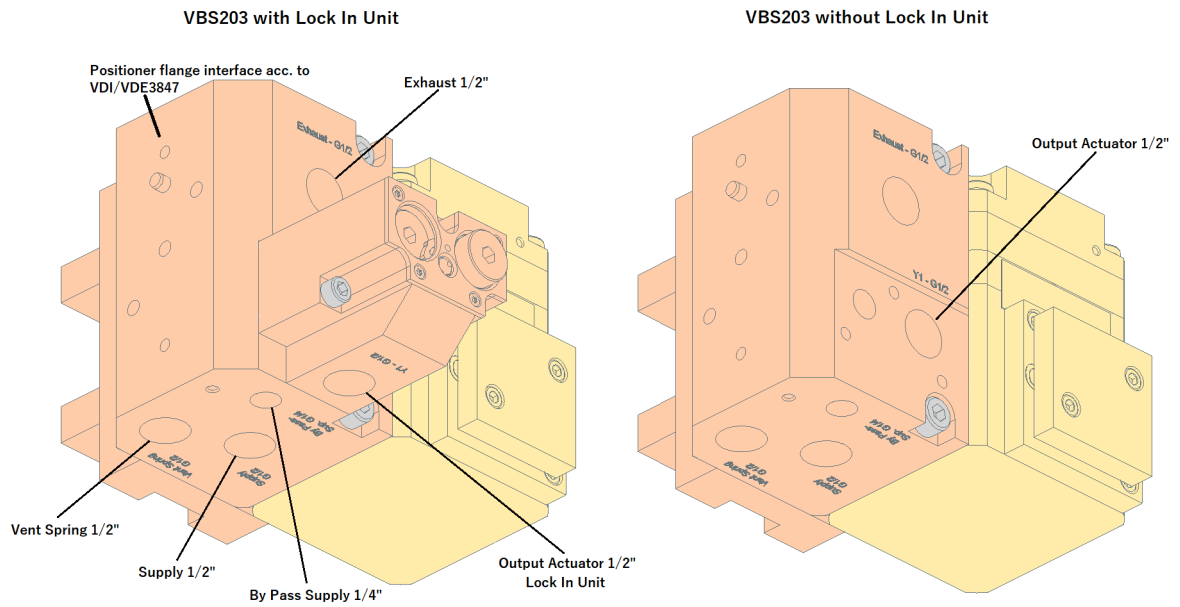


Figure 12. Connections - VBS203



### FUNCTIONAL PRINCIPLE OF THE LOCK IN UNIT - VBS203

The VBS203 is provided with a lock-in unit that enables the manual locking of the actuator.

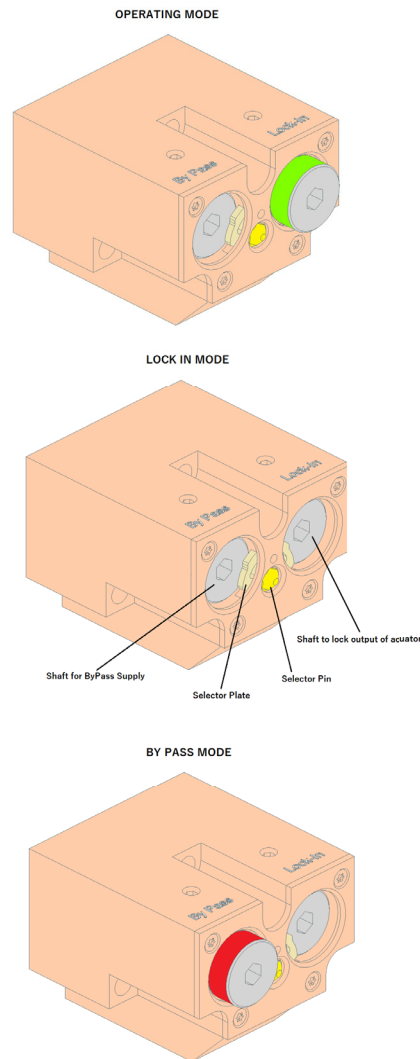
The lock-in unit can work in 3 modes:

- ▶ Operating mode
- ▶ Lock-in mode
- ▶ By-pass mode

In operating mode, the lock-in unit is in operation and the actuator can be controlled via the booster.

In lock-in mode, the connection between booster and the actuator is locked. By-pass mode can be activated if the actuator leaks. For this purpose, a preset pressure at the inlet of the by-pass supply can be passed direct to the actuator.

Figure 13. Work Modes of Lock in Unit - VBS203



The different modes can be set by using the mechanism.

The selector pin is pressed in with a hexagon wrench with the size of 6 mm. While the selector pin is pressed, the selector plate can be rotated clockwise and counterclockwise by 60°. In order to activate the shaft for the bypass supply, the plate must be turned clockwise. In order to activate the shaft for the lock in, counterclockwise.

Then the respective shaft can be locked or opened with the same hexagonal key by a full turn. In order to secure the set mode, the selector plate must be brought back to the middle position. The mechanism is designed in the way that both shafts cannot be opened at the same time.

TYPICAL APPLICATIONS VBS204: VDI/ VDE 3845

The VBS204 is mounted to the actuator with the flange interface according the standard VDI/VDE 3845.

It is designed for double-acting valves and has two boosters.

The first adapter plate is mounted to the flange interface of the actuator. The other adapter plate with the two boosters and the connection plate for positioners is mounted to the adapter plate with the flange interface according to VDI/VDE 3845.

The adapter plates contain the bores for the air duct between the actuator and the booster, as well as the connections for the supply air, the positioner and the exhaust air collection system. The piping is substantially simplified with these adapter plates.

Figure 14. Dimensions and Assembly - VBS204

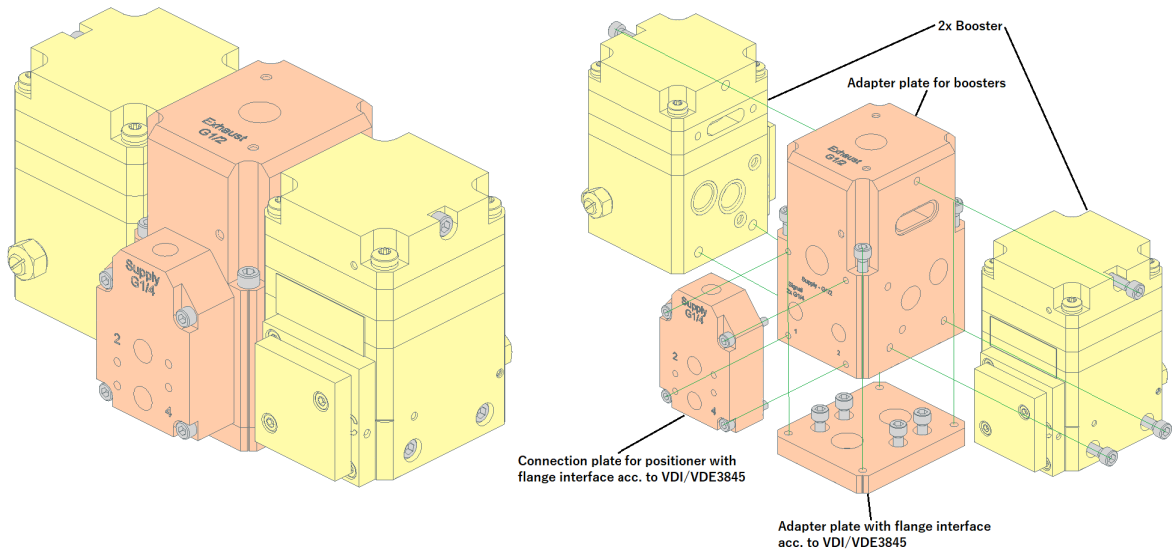
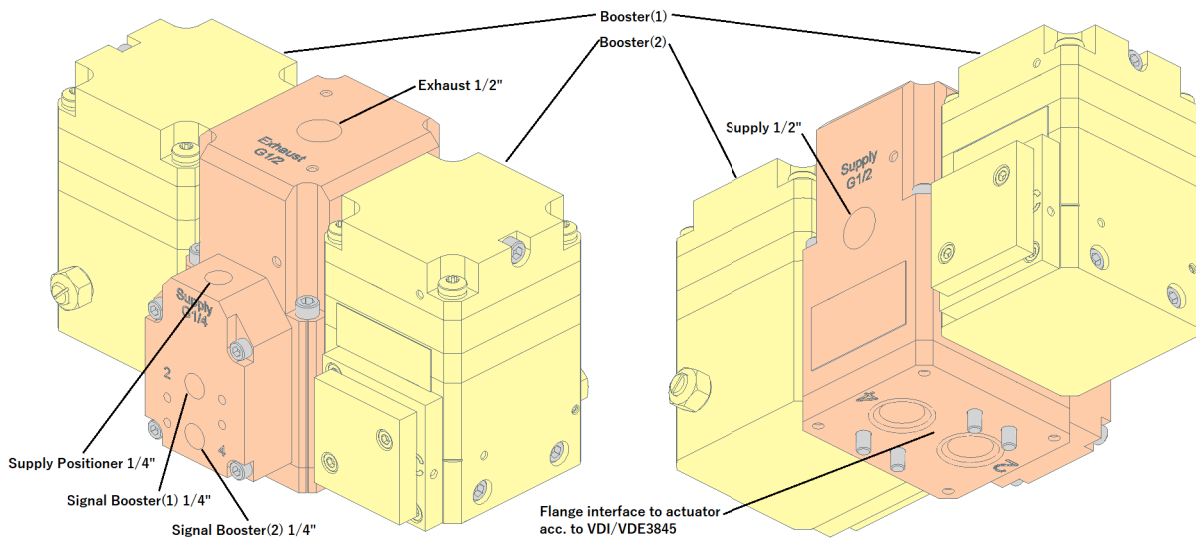


Figure 15. Connections - VBS204



### CONTROL MODES OF BOOSTER FOR VBS202, VBS203 AND VBS204

On the Booster the selector plate is mounted. This contains air ducts which open or close different ducts depending on the mounting direction. The Selector plate is labeled on one side with a "C", rotated by 180 degrees with an "O" ("C" for "CONTROL", "O" for "ON / OFF" operation).

The booster is marked with a notch 2 on the side:

When the Selector plate is mounted so that the "C" points to the notch, the control mode is set.

When the Selector plate is mounted so that the "O" points to the notch, ON/OFF mode is selected.

#### **NOTICE**

##### **RISK OF IMPROPER INSTALLATION**

When turning the Selector plate, note that the coding pin 1 is screwed on the side which is located on the notch 2 as shown in Figure 16.

**Failure to follow this instruction can result in equipment damage.**

With a Solenoid Operated Valve (SOV) mounted on the Selector plate, extended operating modes are possible. Without the Solenoid Operated Valve, the Selector plate is mounted so that the "C" points to the notch; then the Bypass plate is mounted thereon which bridges the air ducts to the SOV.

The following operating modes are possible with the described components:

##### **Operating Mode 1 (M-1):**

Positioner + Booster → **Control Mode**

Other operating modes with additional Solenoid Operated Valve:

**Operating Mode 2 (M-2):** Positioner control with upstream Solenoid Operated Valve (SOV)

SOV=1: Positioner + Booster → **Control Mode**

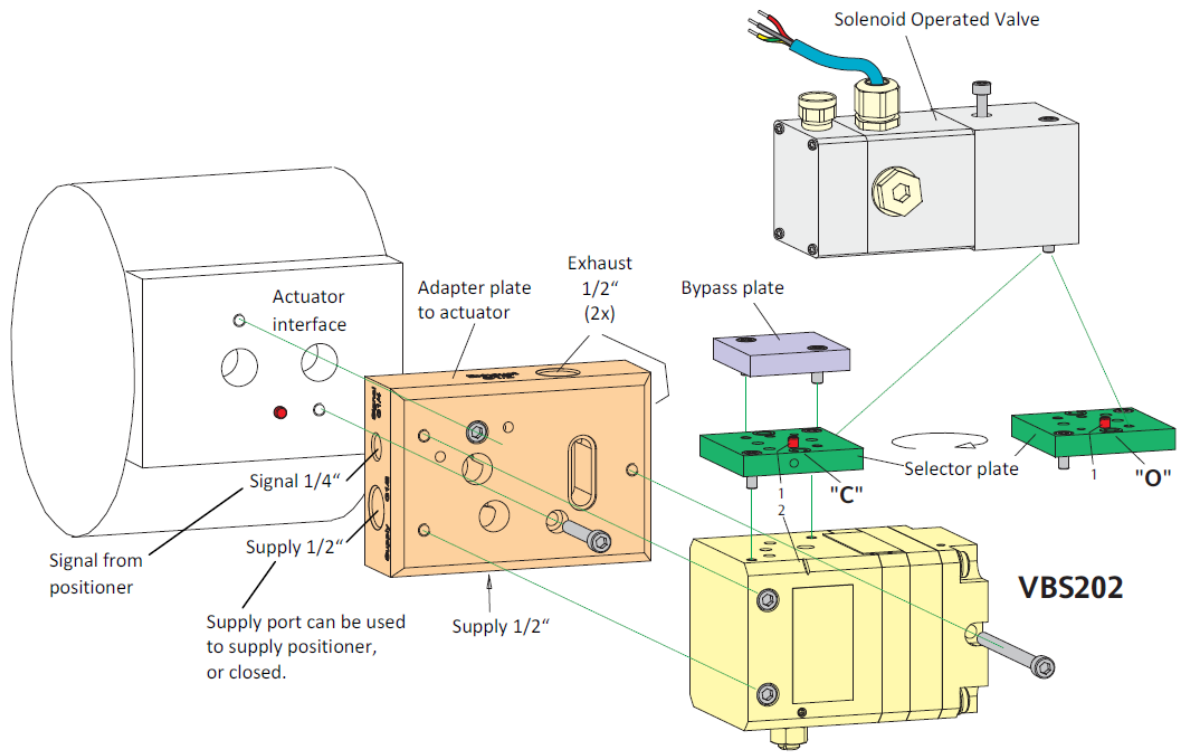
SOV=0: Actuator is **Quickly Vented** to the safety position

**Operating Mode 3 (M-3):** ON/OFF operation with SOV and Booster; **without Positioner**

SOV=1: Actuator is **Quickly Moving** to the working position

SOV=0: Actuator is **Quickly Vented** to the safety position

Figure 16. Solenoid Operated Valve on VBS202



APPLICATION VBS202

Figure 17. APPLICATION VBS202, Mode 1, Control

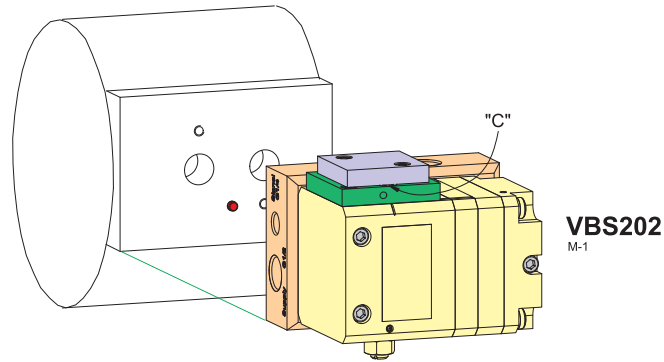


Figure 18. APPLICATION VBS202, Mode 2, Control//Quick Release

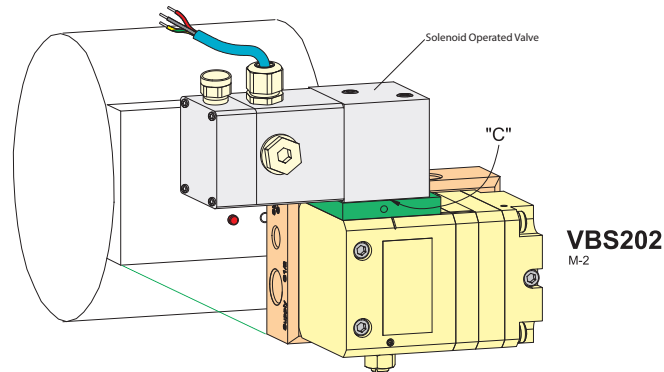
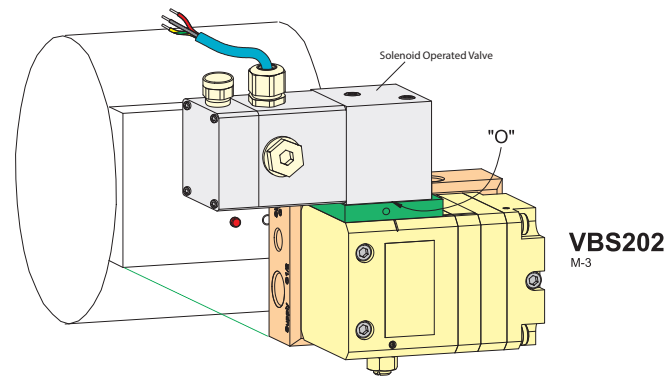


Figure 19. APPLICATION VBS202, Mode 3, ON/OFF Quick Opening//Quick Release





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NOTES





### ADDITIONAL PRODUCTS

These product lines offer a broad range of measurement and instrument products, including solutions for pressure, flow, analytical, temperature, positioning, and controlling.  
For a list of these offerings, visit our web site at:

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