

VBS200 / VBS201 / VBS202 – VOLUME BOOSTER SERIES

The VBS200 Volume Booster Series is designed to operate pneumatic valve actuators via a valve positioner. It is recommended for large actuators to reduce positioning time. 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
- Booster controlled by valve positioner and / or by a solenoid operated valve
- Heavy duty Aluminum housing
- Adjustable Bypass Valve

Three versions to fulfill any requirements:

- **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
- Easy and quick installation with important saving (material and labor) due to elimination of piping and fittings (version 201 and 202)
- Tapped exhaust threaded 1/2" for connection of an Exhaust Noise Silencer or to a venting gas collection system



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1 WARNINGS

These products are intended for use in industrial compressed-air systems only. Do not use these products where pressures and temperatures can exceed those listed under Specification in PSS.

Only qualified personnel should install or service a volume booster. Volume Boosters should be installed, operated, and maintained in accordance with international and applicable codes and regulations, and our instructions. If the booster vents fluid or a leak develops in the system, it indicates that service is required. Failure to take the booster out of service immediately may create a hazardous condition. Personal injury, equipment damage, or leakage due to escaping fluid or bursting of pressure-containing parts may result if this booster is over pressured or is installed where service conditions could exceed the limits given in the specifications, or where conditions exceed any rating of the adjacent piping or piping connections.

To avoid such injury or damage, provide pressure-relieving or pressure-limiting devices (as required by the appropriate code, regulation, or standard) to prevent service conditions from exceeding limits. Additionally, physical damage to the booster could result in personal injury and property damage due to escaping fluid. To avoid such injury and damage, install the booster in a safe location.

2 INSTALLATION

2.1 Pre-Installation Requirements

2.1.1 The VBS requires a source of clean, oil-free dry instrument grade air filtered to 40 microns.

2.1.2 Supply Air should be free of all contaminants and hazardous gases, flammable or toxic.

2.1.3 Clean all pipelines of dirt and scale prior to installation.

NOTE: Failures attributable to instrument air supply contamination are not covered by the warranty.

CAUTION: This instrument vents to atmosphere (Exception: device is connected to a venting gas collection system). The use of supply gas other than air can create a hazardous environment.

2.1.4 Apply a minimum amount of pipe compound to the male threads of the fitting only. Do not use thread sealant tape on pipe fittings as it tends to contaminate the valve causing the booster to malfunction.

2.2 Installation

2.2.1 Install the booster so that direction of flow is from Inlet to Outlet as labeled "SUP-VBS" (Supply) to "OUT" (Output). Connect the signal port "Sign" with output Y of positioner. The Connections "SUP-VBS" and "OUT" are G 1/2, "Sign" is G 1/4 thread. Tighten all connections securely.

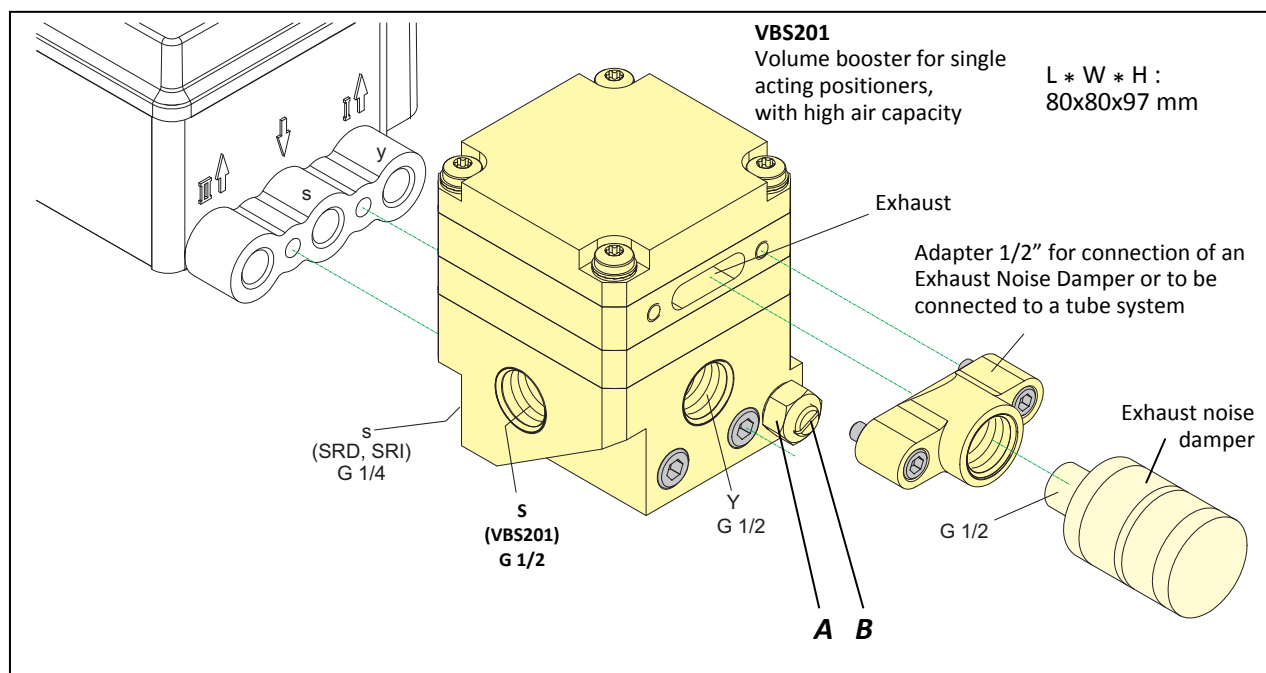
2.2.2 Booster can be mounted in any position. See illustrations for a typical installation.

2.2.3 Ensure that piping to and from the booster is of proper size to meet the capacity demands of the booster and that the downstream actuator has properly sized input connections so as not to limit flow.

CAUTION: Keep exhaust port free of any obstructions. Excessive exhaust restriction can damage the booster. High flow capacity exhaust silencers and full size exhaust piping must be used to limit back pressure during the exhaust cycle in operation.

2.2.4 Tapped Exhaust : To reduce exhaust noise, we recommend to mount a silencer on the tapped exhaust. Such silencer should be compliant with the exhaust air flow, to prevent reducing the performance of the booster.

DIMENSIONS AND CONNECTIONS



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 and is forwarded to the positioner.

3 OPERATION

3.1 During commissioning and operation be extremely careful as the valve may move very quickly!

3.2 Do not stay close to the booster during commissioning and operation! Noise created by exhausting air can be superior as the allowed regulation and fast exhausting air could also injury personal.

3.3 Prior to applying supply pressure to the booster, loose nut **A** and open the bypass valve **B** approximately one turn by turning counter clockwise.

After applying supply pressure, note response of actuator to open and close commands from the positioner. If excessive overshoot or hunting is seen, open bypass valve until stable operation is obtained.

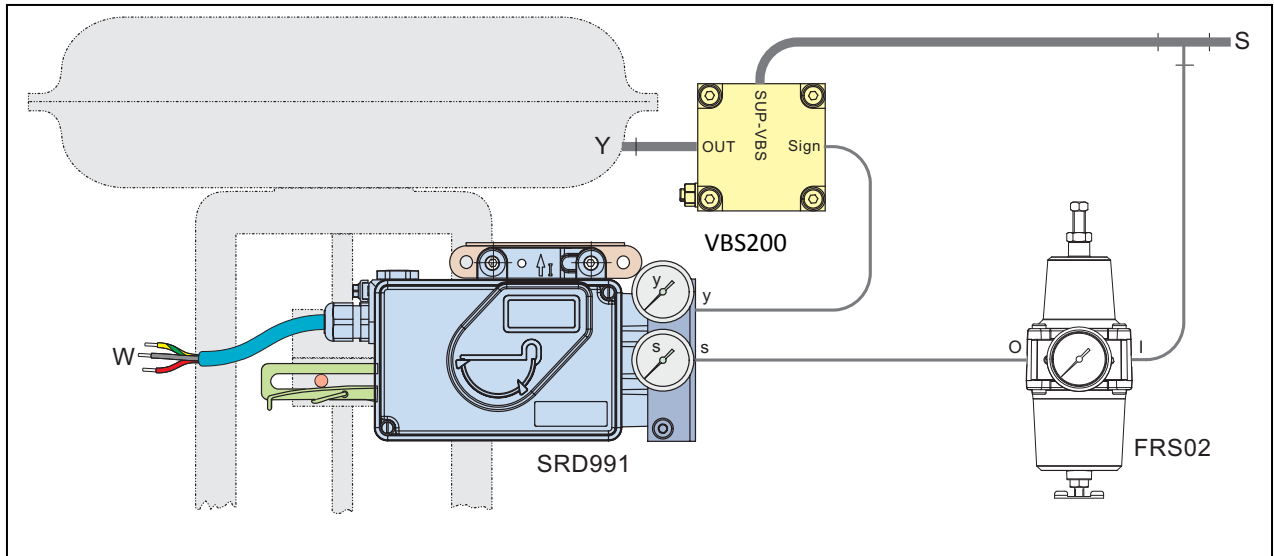
If valve becomes too slow to react to signal change from the positioner, close needle valve until more responsive.

- Turning the bypass valve clockwise (closing) speeds response but can lead to instability.
- Turning the bypass valve counter clockwise (opening) aids stability but will slow down the actuator's response.

Proper setting provides stable operation and acceptable response time.

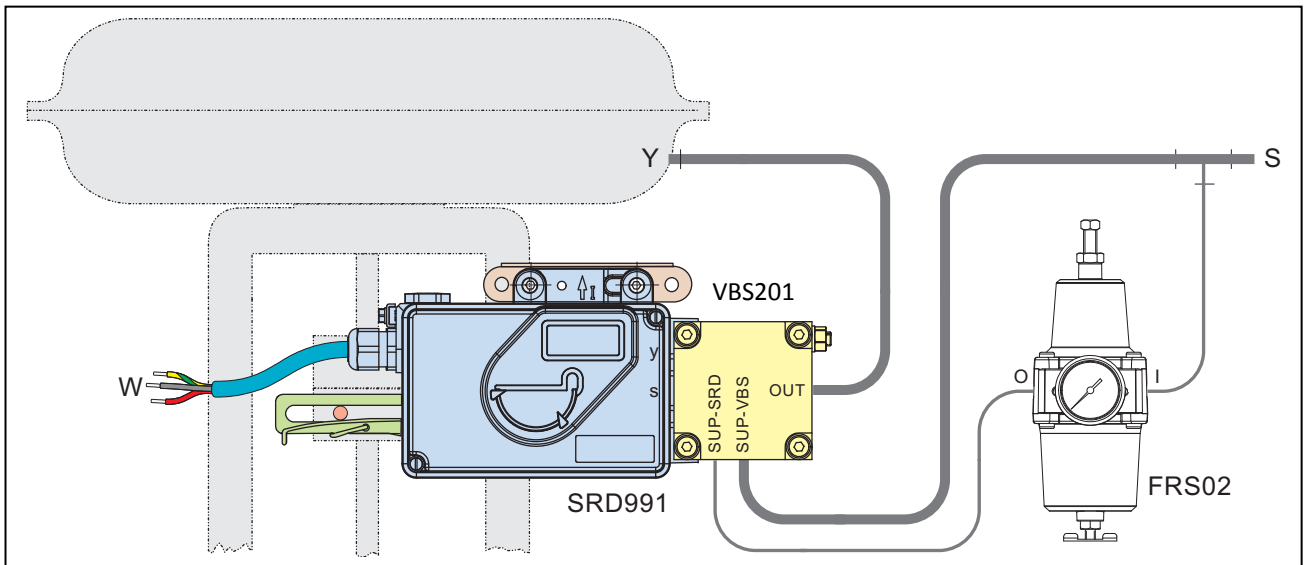
After adjustment screw on nut **A**.

TYPICAL APPLICATION VBS200: "Remote from Positioner"



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

TYPICAL APPLICATION VBS201: "Direct side mounted"



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 plate of the actuator and the VBS202 is mounted on the adapter plate. The adapter plate contains the bores for the air duct between the drive 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.

On the VBS202 the **Turning plate** is mounted. This contains air ducts which open or close different ducts depending on the mounting direction.

The turning 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 VBS202 is marked with a notch **2** on the side:

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

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

When turning the turning plate, note that the coding pin **1** is screwed on the side which is located on the notch **2**. See illustration below.

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

The following operating modes are possible with the above 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)

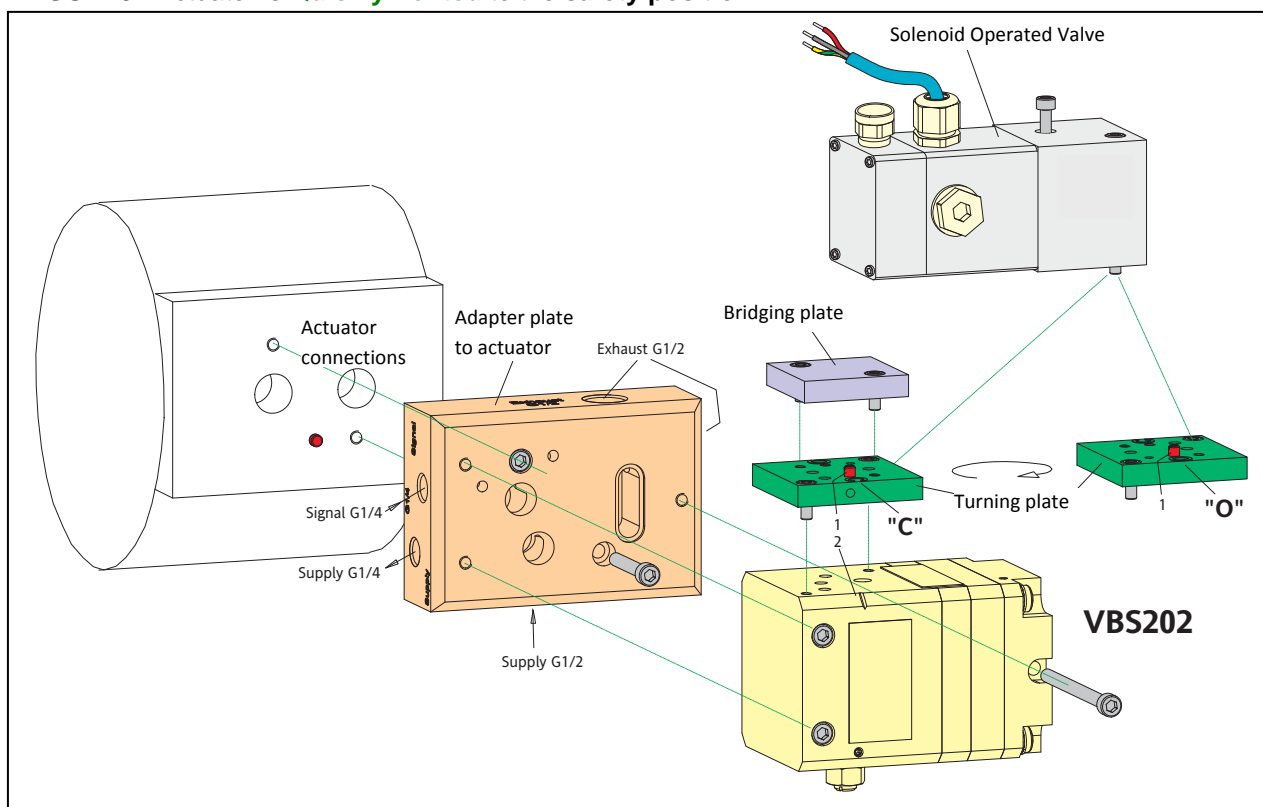
SOV=1: Positioner + Booster → **Control Mode**

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

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

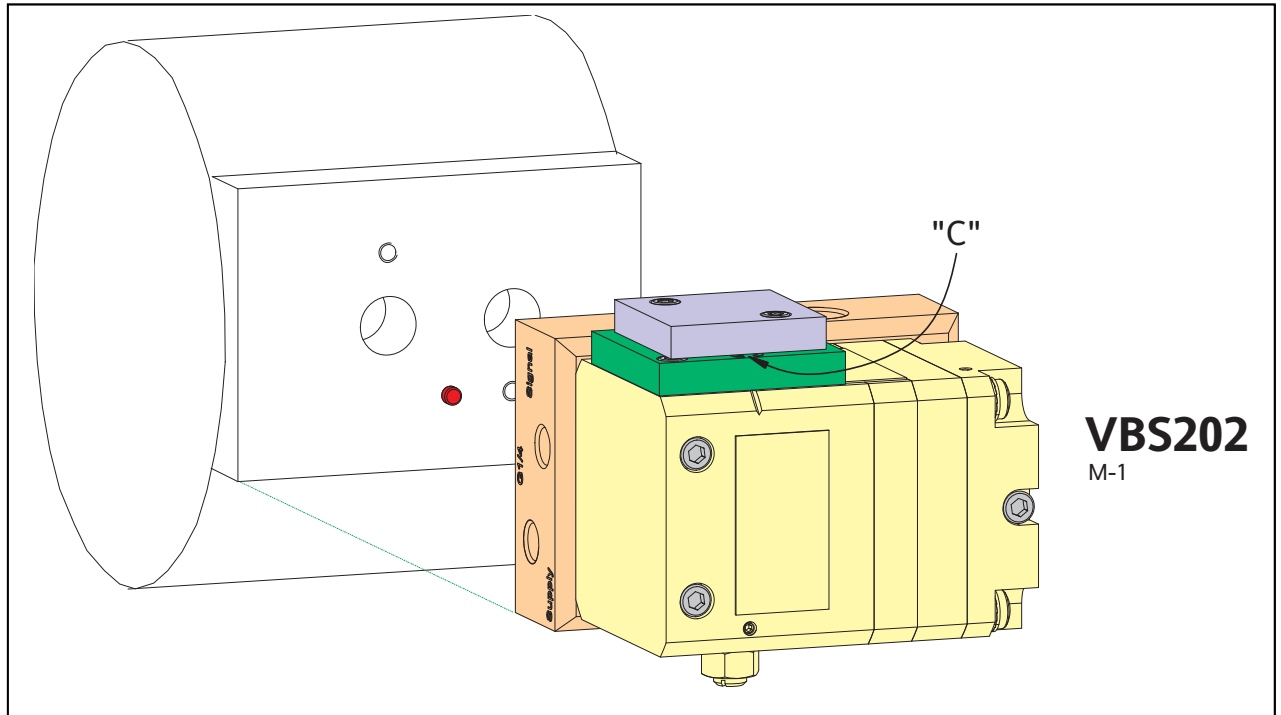
SOV=1: Actuator is **Quickly Moving** to the **working position**

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

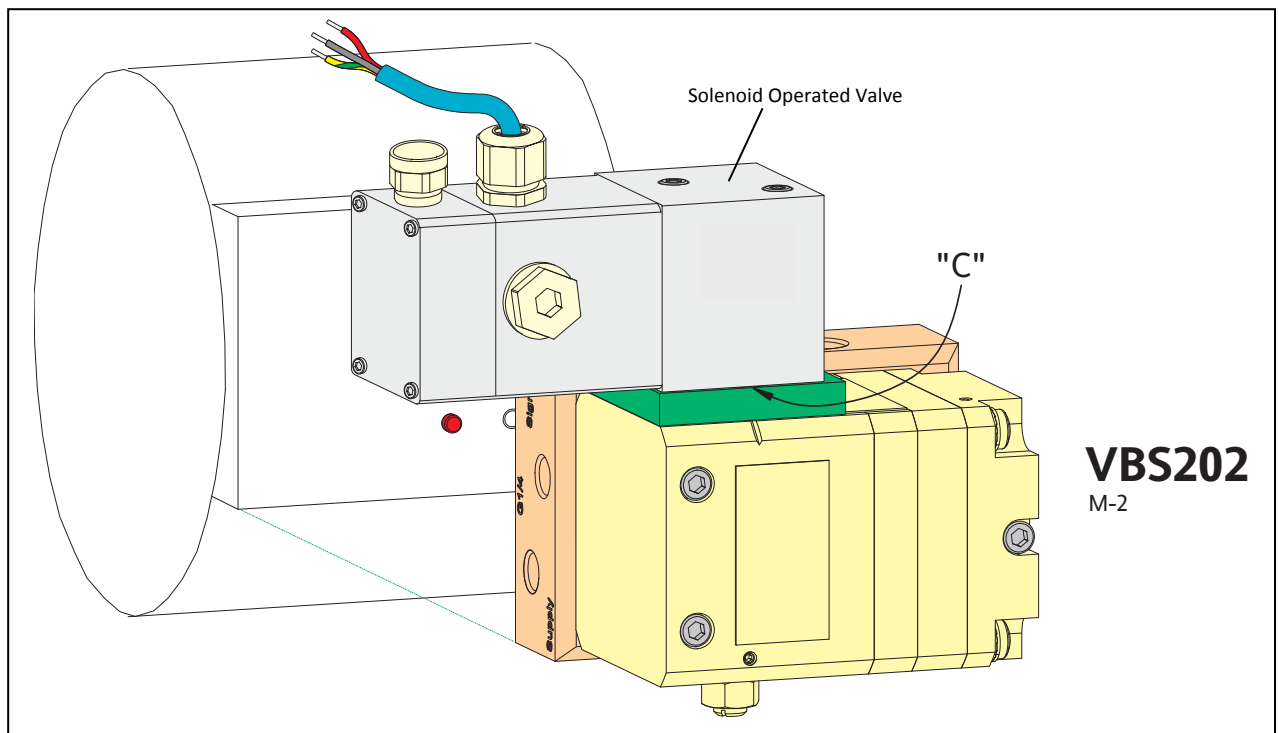


Note: The "supply air G 1/2" and "supply air G 1/4" connections are directly connected to each other on the adapter plate. The connection "supply air G 1/4" is usually looped through to supply the upstream position control. If the supply air pressure for the actuator is higher than for the positioner, an air supply station must reduce the pressure for the positioner to a permissible value.

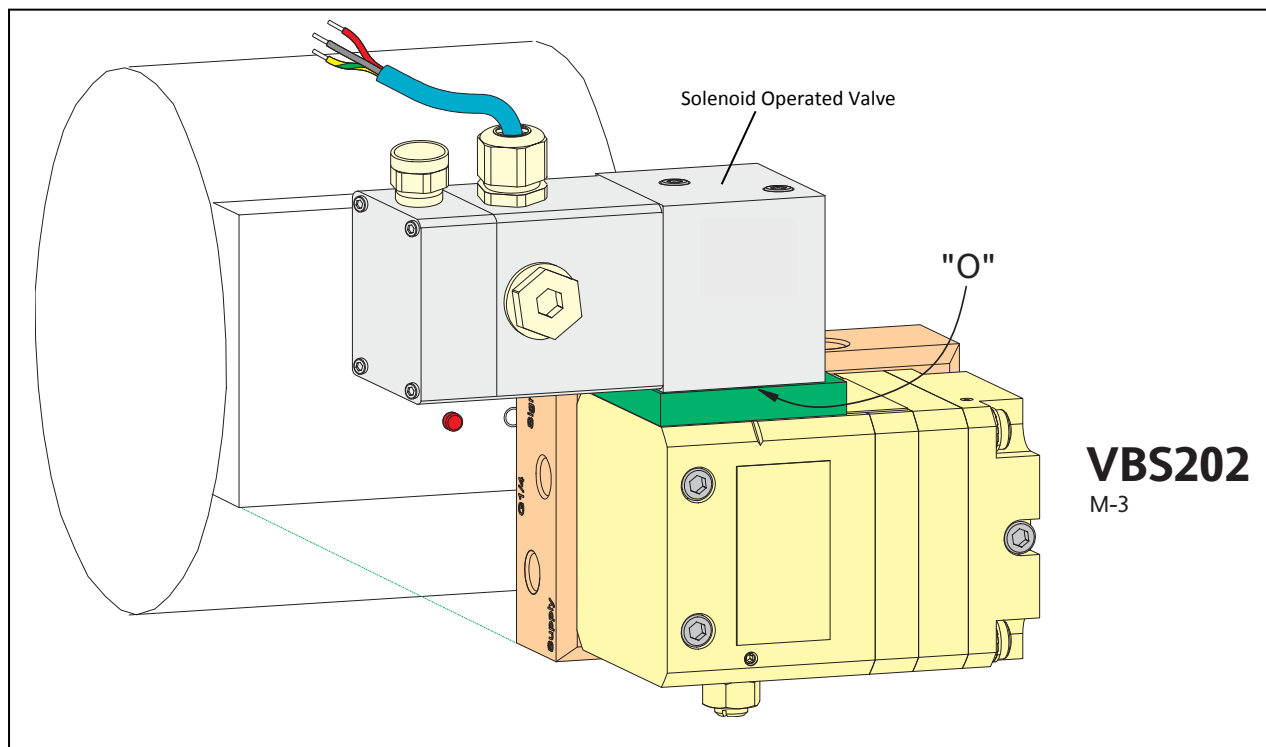
APPLICATION VBS202, Mode 1, Control



APPLICATION VBS202, Mode 2, Control // Quick release



APPLICATION VBS202, Mode 3, ON/OFF
Quick opening // Quick release



4 MAINTENANCE AND REPAIRS

Under normal circumstances, no maintenance should be required.

4.1 Repairs

4.1.1 In the event of unit failure, the VBS can be returned to the factory through point of purchase for warranty repair if the warranty period has not expired.

4.1.2 All units returned for repair must be authorized prior to receipt at the factory. Contact your local representative at the point of purchase.

4.1.3 Repair kits for the VBS are available.

Repair kit : No. on request