

b.safe

Installation Manual b.safe Splitter Cat. no.: R 680-01



A product brand of Bohlender

Content

Scope of Delivery	2
Compatibility	2
Safety Information	2
Installation	3
Functionality	4
Filling Process	5
More b.safe Products	6

Scope of Delivery

- 3-Way stopcock made of stainless steel (housing 1.4408, ball 1.4401, ball seal PTFE reinforced with 15% glass fibre, stem seal PTFE-FKM) with integrated control module
- Mounted power supply
- Mounted control lines (2m)
- screw-in fittings of PTFE-EX, O-ring seal, GL25 thread
- Wall-mounting bracket made of aluminium for wall mounting

Compatibility

The b.safe Splitter is compatible with all b.safe sensors for fill level control as well as with the b.safe Isolating Amplifier. If the b.safe Splitter shall be used with a b.safe Mini-Display, please choose the b.safe Mini-Display with splitter mode (cat. no. R 658-04 or R 659-04). Of course, the b.safe Splitter is compatible with all b.safe components so that it can be adapted to your special needs.

Safety Information

Sensors used in explosion-hazardous areas (EX zone) have to be secured with an isolating amplifier. All components that are connected ahead of the sensors, e.g. b.safe Mini-Display, b.safe Splitter and b.safe Isolating Amplifier itself, have to be installed outside of these explosion-hazardous areas. Make sure to use only sensors in these areas that are explicitly approved for this purpose! Generally, electronic components have to be installed by qualified personnel only, especially in explosion-hazardous areas.

When using the b.safe Splitter, all components that bear solvents have to be resistant to the chemicals in use. Connected with the b.safe Mini-Display, the b.safe Isolating Amplifier automatically recognizes when sensors are not connected or damaged or when lines are broken.

Please note that the power supplies of b.safe Splitter (cat. no. R 680-01), b.safe Mini-Display (cat. no. R 659-04 or R 658-04) and b.safe Isolating Amplifier (cat. no. R 660-04) are not interchangeable due to their different power data.

Installation

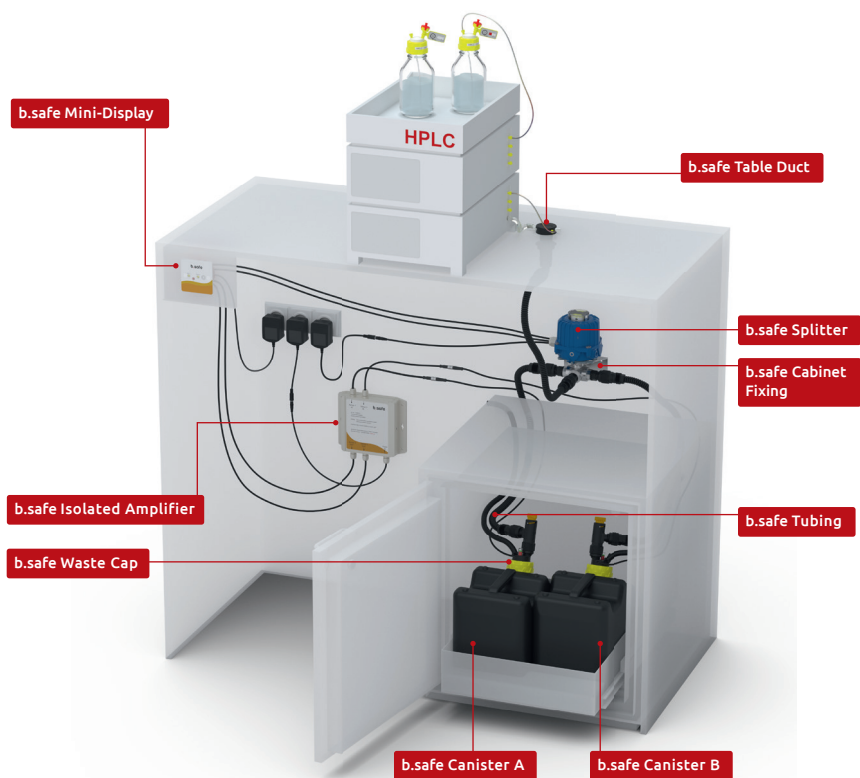
All electronic components like sensor cables, b.safe Isolating Amplifier and b.safe Mini-Display have to be installed by trained personnel according to below mentioned circuit diagram.

Install the b.safe Splitter at a dry and clean place where it is safe from being damaged.

In special cases, however, it can even be installed in difficult ambient conditions thanks to an integrated condensate monitor.

If you want to install the b.safe Splitter in a safety cabinet, we recommend mounting it at the rear side.

The following picture shows the installation of the b.safe Splitter independent of your individual installation situation:



Attention: For an application in explosion-hazardous areas, we recommend to use a b.safe Isolating Amplifier 2-channel (Cat.No.: R 660-01).

Functionality

Via the b.safe splitter, two collection-vessels can be filled automatically in a row at one solvent collection point.

The b.safe Splitter switches automatically from the full to the empty canister, this means from canister A to B and vice versa depending on which of them is full. The b.safe Splitter is controlled by the b.safe Mini-Display.

By using two collection vessels, the collection volume doubles. In this way, plants producing liquid waste can operate without supervision for a longer period. This allows an operation during the night or over the weekend without having to exchange the collection vessels.

Moreover, the b.safe Splitter offers the chance to lead the large waste volumes that occur in preparative HPLC in canisters that are still easy to handle.

One of the remarkable safety features of the b.safe Splitter is that the volumes in the collection canisters can be used even when they are threatened to overflow due to a malfunction.

Also after a power failure, the b.safe splitter ensures maximum safety by an up-to-date query of the filling levels and adapting the switching accordingly.

Filling process

1. Canister A "full"

Sensor at canister A (b.safe Waste Cap with electronic level indicator or an external sensor) sends a signal to the b.safe Mini-Display that the canister is full.

2. b.safe Mini-Display

The Mini-Display indicates that canister A is "full" (red flashing light) and sends a signal to the b.safe Splitter to switch to canister B.

3. b.safe Splitter - switching process

The splitter, a 3-way stopcock with integrated control module, rotates by 90°. This stops the liquid from flowing into canister A and leads it into canister B.

4. Emptying canister A

While canister B is filled, canister A can be emptied or exchanged. Close the stopcock, unscrew the waste cap, remove the full canister and replace it by an empty canister.

5. Canister B "full"

Sensor at canister B (b.safe Waste Cap with electronic level indicator or an external sensor) sends a signal to the b.safe Mini-Display that the canister is full.

6. b.safe Splitter - switching process

The splitter rotates again by 90°. This stops the liquid from flowing into canister B and leads it again into canister A.

7. Emergency operation

If, in case of an emergency, both canisters are "full" at the same time, the splitter switches to a "split" mode and "splits" the liquid flow. It occurs into both canisters continuously from canister A and vice versa. In this way, the liquid volume in the canisters is reduced completely in order to prevent overflowing as long as possible.

Attention: before you start emptying overfilled canisters you must add some liquid again to enable the switching of the remaining liquid.

8. Power failure and recovery

In case of a power failure, the b.safe Splitter remains in its last position. This means either canister A or B is being filled. A signal that the canister is "full" or switching to another canister is not possible without power. When the voltage returns, the b.safe Splitter returns to the current canister and the operation continues. If the power fails exactly during switching from A to B, the control automatically switches to canister A when the power returns.

When canister A is full, the splitter switches directly to canister B.

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CE Declaration of Conformity

The manufacturer / distributor**Bohlender GmbH • Waltersberg 8 • 97947 Gruensfeld • Germany**

declares that the product:

device: **Ball Valve with Electric Actuator**
type designation: **b.safe Splitter**
Cat. No.: **R 680-01**

fulfils the provisions of the following directive:

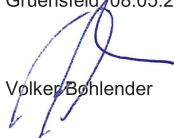
**Machinery Directive 2006/42/EG • Low Voltage Directive 2014/35/EU • EMC Directive 2014/30/EU
Pressure Equipment Directive 2014/68/EU**

Applied harmonized standards are in particular:

DIN EN ISO 12100 Safety of machinery - General principles for design: 2011-3
DIN EN 60204-1 Safety of machinery –Electrical equipment of machines: 2014-10
DIN EN 61000-6-4 EMC – Emission for industrial environment. : 2007+A1:2011
DIN EN 61000-6-2 EMC – Immunity for industrial environments: 2005
DIN EN 61000-3-2 EMC – Limits for harmonic current emissions: 2006+A2:2009
DIN EN 61000-3-3 EMC – Limitation of voltage changes, voltage fluctuations and...:2008
DIN EN 15714-2 Industrial valves - Actuators - Part 2: Electric actuators for industrial valves : 2010-2

DIN EN 125-1:2018-11 Industrial valves - Shell design strength
DIN EN 12516-1:2018-11 Industrial valves - Shell design strength

Gruensfeld, 08.05.2024


Volker Bohlender