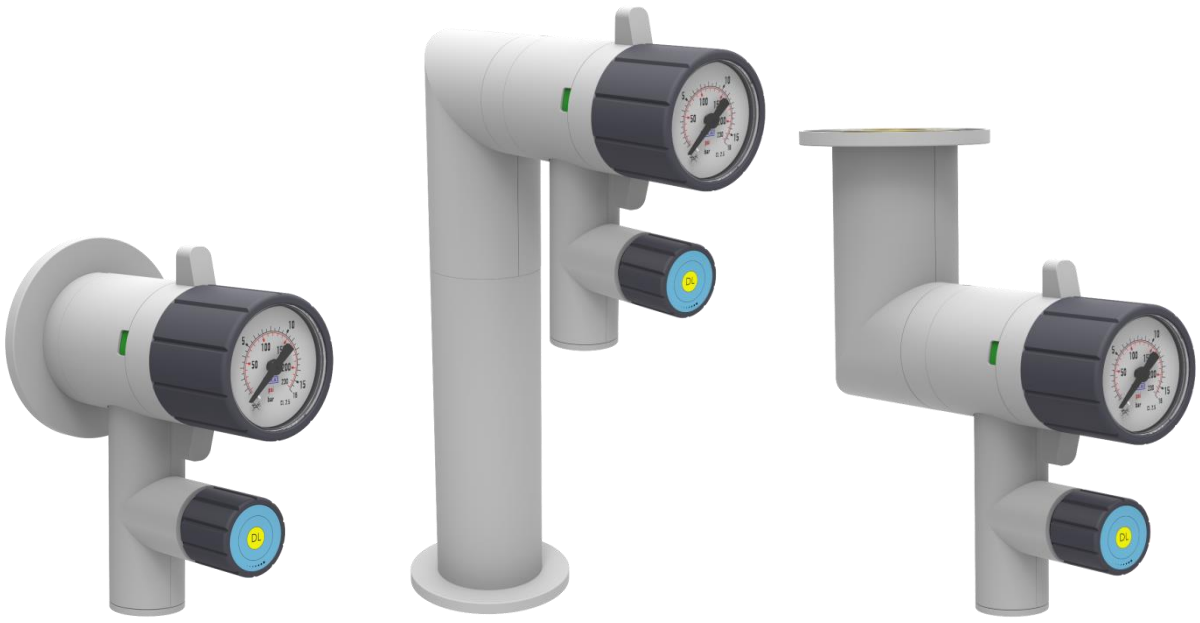
Operating manual

for

tapping points of the EM15/EE15 series



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1. Introduction

1.1 General

Validity

This user manual applies to EM15 and EE15 tapping points.

Manufacturer

Spectron Gas Control Systems GmbH
Fritz-Klatte-Straße 8
D-65933 Frankfurt
Germany
Telephone: +49 69 38016-0
Fax: +49 69 38016-200
E-mail: info@spectron.de
Internet: www.spectron.de

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Retention and completeness

- This user manual is a component of the EM15 and EE15 tapping points and must be kept in a location visible for the authorised group of persons at all times.
- At no time may chapters be removed from this user manual. A missing user manual or missing pages – particularly the "For your safety" chapter – must be replaced immediately.

Copyright

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Updates

This user manual is not subject to updates by Spectron Gas Control Systems GmbH. Changes to this user manual may take place without prior notification
notification.

1.2 Description of the EM15 and EE15 tapping points series

The tapping points of the EM15 and EE15 series are specifically designed for integration in laboratory furniture. They provide high purity and special gasses for the optimal supply of laboratory devices. The main task of the tapping points is to reduce the respective inlet pressure to the required outlet pressure in the specific laboratory applications. The gas supply can be interrupted or released to the laboratory appliances using the shut-off valve on the pressure regulator or the optionally configurable service valve.

1.3 Intended use

Intended use

The EM15 tapping points are intended for use with non-corrosive gases up to quality 6.0. The EE15 tapping points are additionally intended for use with corrosive gases up to quality 6.0. The permitted gases and pressure areas for the tapping points are specified on the product label and the gas type label. Tapping points are used in most cases as a second pressure control and shut off unit following a pressure control panel at the end points of a piping system. They are used to additionally reduce the already relatively constant pipeline pressure downstream of the pressure control panel to a highly constant outlet pressure towards the application.

Tapping points may be used in an ATEX area because they do not have a potential ignition source of their own (ignition hazard assessment in accordance with DIN EN 13463-1).

Foreseeable misuse

The following operating conditions are deemed to constitute misuse:
Operation with gases that are not specified on the product label
Use with gases in their liquid condition
Operation in an environment that has a higher than normal amount of dust particles or humidity as well as operation in an environment with salty, oily or acidic atmospheres
Operation in environments outside a temperature range of -20 °C to +60 °C
Operation in environments that can cause vibrations on or impacts to the fitting
Failure to comply with the locally applicable legal regulations and provisions
The use of oil and grease when handling the fitting
Failure to follow this manual
Failure to carry out inspection and maintenance work
Failure to heed the information on the product label and in the product data sheet
Pressurisation counter to the normal direction of flow

1.4 Personnel requirements

Definition of an authorised person

A person qualifies as an authorised person if they have received technical training and have received technical instructions on the entire system and the associated dangers – gas cylinder – type of gas – gas cylinder valve – pressure regulator and have also successfully completed training in the field of "Supply of pressurised gases".

Tasks of the operating personnel

The operating personnel must identify faults or irregularities and remove where possible and permissible.

Requirements placed on operating personnel

To be able to fulfil the tasks, the operating personnel must meet the following requirements:

The operating personnel must have received instruction in the operation of the tapping point from an authorised person and must have read and understood this operating manual in its entirety.

2. For your safety

2.1 Symbols used

Note! Important! Warning! Danger!

DANGER!

This symbol warns that there is a **"risk of fatal injury"** or a health hazard for the personnel.

2.2 Essential safety information

Note!

The following safety notes are intended to be used as an addition to the already applicable national accident prevention regulations and laws. Existing accident prevention regulations and laws must be complied with at all times.

Various laws, regulations, rules and directives are authoritative when handling compressed gasses. These must be observed depending on each type of gas.
The following list lays no claim to be exhaustive; it merely represents a selection of the most important sections:

EU Directive 2009/104/EC (Work Equipment Directive)

EU Directive 1999/92/EC (ATEX 137)

EU Directive 98/24/EC (risks related to chemical agents at work)

TRBS (technical regulations on industrial safety and health) publications

TRGS (German technical rules for hazardous substances)

TRAS (technical regulations on plant safety) publications

DGUV 100-001 Principles of prevention

DGUV 113-001 Explosion protection rules

GUV-R 132 Avoiding ignition hazards caused by electrostatic charges

BG RCI leaflet M034

EIGA documents

Safety data sheets for the gases used

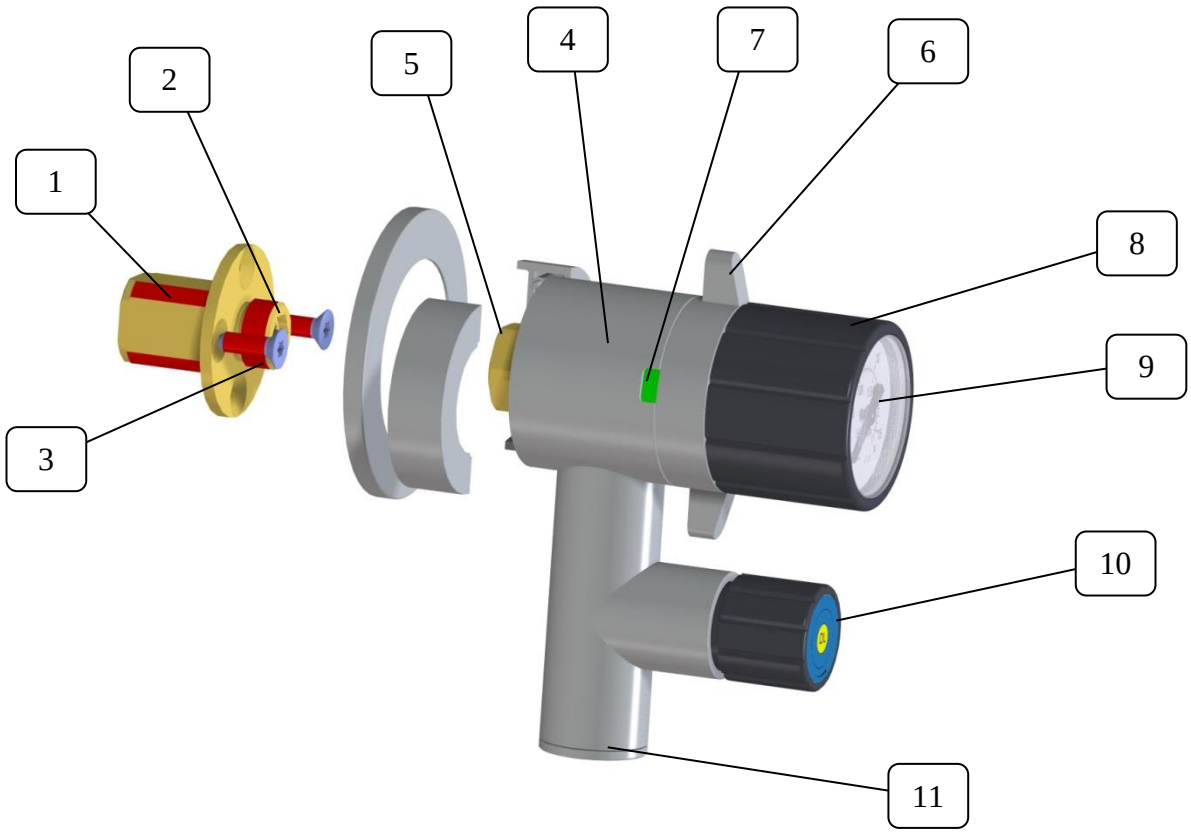
2.3 Safety features

Caution!
The EM15 and EE15 tapping points do not have a relief valve. To protect the downstream fittings, pressure vessels and pipes against overpressure due to a possible failure of the tapping point pressure regulator, a separate safety device that complies with any relevant regulations must be installed.

Possible hazard	Prevention measures
Danger! If oxygen comes into contact with oil or grease, there is a risk of fire due to a chemical reaction.	Keep all parts that come into contact with oxygen free from oil and grease.
Danger! Gas escaping into the ambient air can ignite; there is a risk of fire and explosion.	Smoking and naked flames are strictly prohibited near gas supply equipment.
Danger! The tapping point may be damaged by unauthorised changes or alterations and may no longer work as intended. There is a risk of the system malfunctioning, catching fire or getting damaged.	No changes or alterations may be carried out without written permission from technically authorised manufacturer personnel.
Danger! If tapping points are used that are not suitable for the relevant gas and pressure range, there is a risk of a fire or explosion occurring as a result of a chemical reaction.	The tapping point must be suitable for the relevant gas and the pressure ranges involved. Only use for the gases indicated on the device. If there are no gas types specified on the tapping point, you have to ask the manufacturer which gases it can be used with. On no account must the tapping point be put into operation without this information.
Danger! If the tapping point is used outside the specified ambient temperature range, there is a risk of the system malfunctioning, catching fire or getting damaged.	Do not use in ambient temperatures below −30 °C and above +60 °C.
Danger! Improper handling and impermissible use can lead to danger for the user, other persons as well as damage to the device.	Use and handle the tapping point only as described in this operating manual.
If dirt particles get into the pressure regulator of the tapping point, this can damage it or cause it to malfunction.	It must be ensured that no dirt particles of any kind can get into the pressure regulator.

3. Description

3.1 Design of the EM15 and EE15 series tapping points



Elements of the tapping point

Item	Designation	Function
1	Rear wall connection (RWA)	Used as the connection point for the gas supply system
2	Integrated shut-off valve	Seals the piping system as long as no tapping point is installed and is used as the primary pressure shut-off valve for installed tapping points
3	Fastening screws	Self-tapping screws for fastening the RWA to the furniture wall
4	Pressure regulator	Diminishes the inlet pressure P1 to the adjusted outlet pressure P2
5	Union nut	Fastens the tapping points to the RWA
6	Rotary lever	Used to actuate the shut-off valve
7	Open/closed display	Shows the position of the shut-off valve
8	Hand wheel	Used for setting the outlet pressure
9	Pressure gauge	Indicates the current outlet pressure
10	Gas type label	Shows the type of gas the tapping points may be used for
11	Gas outlet	The following consumer unit can be connected to this component. As depicted in the image, a service gas valve can optionally be installed here. It is used to shut off the outlet pressure regulator. →In all cases, the connection thread is a female ¼”-NPT.

3.2 Structural and functional description

The EM15 and EE15 tapping points are specifically designed for use with laboratory furniture. The design of the fittings consists of a connecting part, called the rear wall connection, which supports various methods of installation: panel-mounted, surface-mounted, wall-mounted, ceiling- or column-mounted. After the installation of the rear wall connection with an integrated shut-off valve, the main component, the pressure regulator, is screwed on. Only a metallic sealing is utilised, without additional sealing elements.

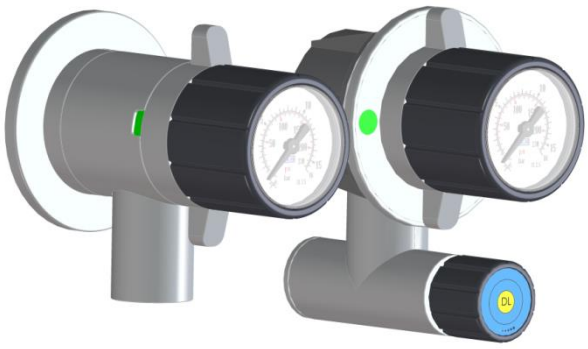
The pressure regulator has different outlet and connection variations downstream. As an option, a control / shut-off valve can be installed in the outlet of the pressure regulator.

There is also the option of screwing a control / shut-off valve or a wall outlet (without pressure regulator) directly onto the rear wall connection.

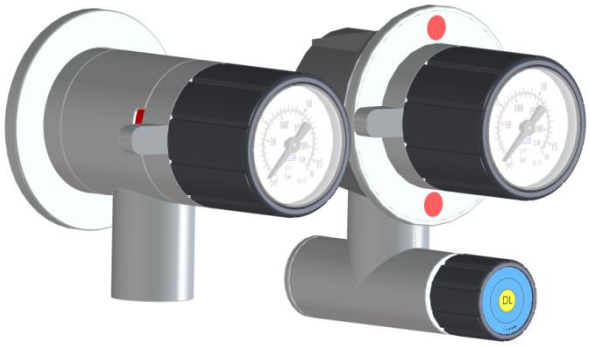
The rear wall connection contains a non-return valve that makes it possible to uninstall a tapping point from a rear wall connection at any time without having to vent the pipe arranged upstream beforehand. This also makes it possible to include points in the structure at which a tapping point can be connected later. The entire gas supply system can continue to operate uninterrupted while the tapping point is connected at a later time.

The outlet pressure can be adapted to new requirements by replacing the tapping point.

The pressure regulator's shut-off valve is actuated using what is called the rotary lever. Depending on the position, a colour mark on the pressure regulator is either red to indicate the closed position or green to indicate the open position of the shut-off valve.



Open position



Closed position

The pressure regulator's pressure setting is controlled using the hand wheel, which encloses the pressure gauge. Turning the hand wheel clockwise increases the pressure. Turning the hand wheel counter-clockwise decreases the pressure.

3.3 Technical data

Note!

The technical data can be taken from the Spectron data sheet for the relevant product. If this is not available, you can view and download it at www.spectron.de.
The maximum inlet and outlet pressures and the gas type are indicated on the product label.

3.4 Connection options

- Inlet pressure connections on the RWA:

AW / AE model	1/4"-NPT female thread
EP / EF model	1/4"-NPT female thread
DC / ES model	1/4"-NPT female thread
SC model	6 mm pipe end for clamping ring screw connections

- Outlet pressure connection: 1/4"-NPT female thread or 6 mm pipe end for clamping screw connections or as soldering/welding end

3.5 Labelling

Labelling example

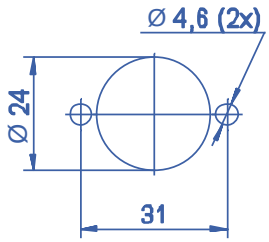
Gas type identification with labels in accordance with EN 13792
EM15-AW-10-0-V-DL
P1: 40 bar
P2: 10 bar
2015.09 (manufacturing date)

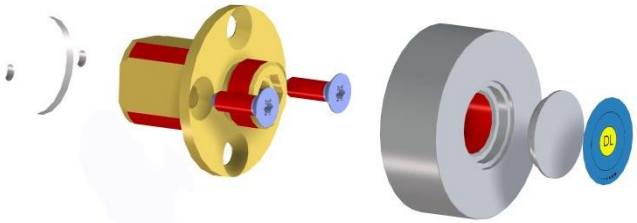
4. Assembly and operation

4.1 Installation

4.1.1 Rear wall connection assembly

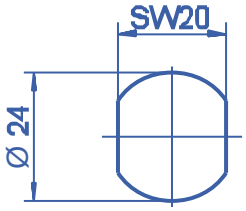
➔ **Rear wall connection ¼-NPT female and M24x1 male assembly from the front / fixing from the front with screws**

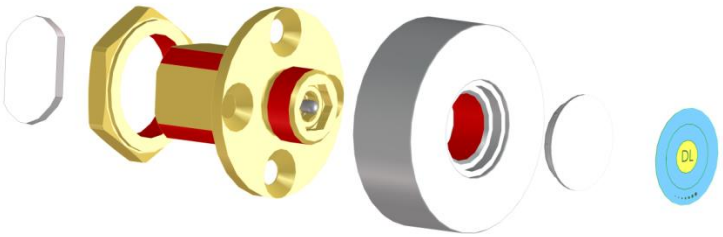




- Arrange the furniture wall as depicted in the drilling pattern drawing
- Screw in self-tapping screws and fasten the rear wall connection to the furniture wall
- Snap on covering caps and attach the gas type label

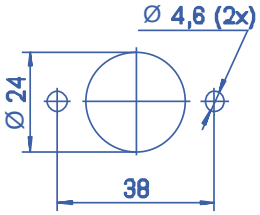
➔ **Rear wall connection ¼-NPT female and M24x1 male assembly from the front / fixing from behind with nut**

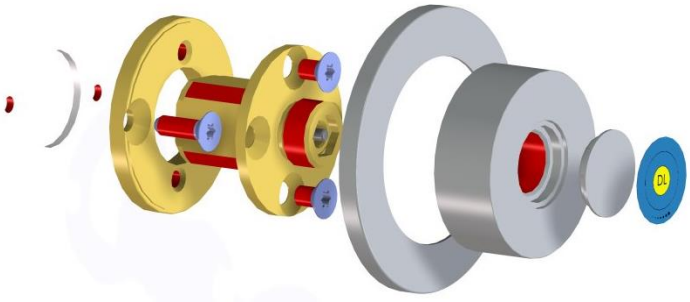




- Arrange the furniture wall as depicted in the drilling pattern drawing
- Screw on M24x1 nuts and fasten the rear wall connection to the furniture wall
- Snap on covering caps and attach the gas type label

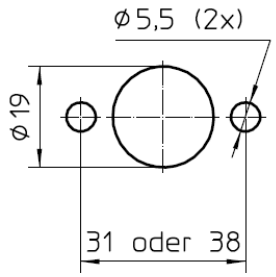
➔ **Rear wall connection with adapter plate using the drilling pattern of the previous series**

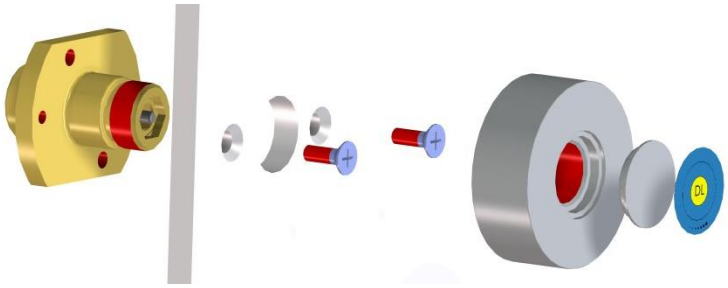




- Arrange the furniture wall as depicted in the drilling pattern drawing
- Fasten the adapter plate to the furniture wall using the supplied self-tapping screws
- Fasten the rear wall connection to the adapter plate using the supplied M5x8 countersunk screws
- Snap on covering caps and attach the gas type label

➔ **Rear wall connection ¼-NPT female**
assembly from behind / fixing from the front with screws





- Arrange the furniture wall as depicted in the drilling pattern drawing
- Mount the rear wall connection from the backside of the furniture and fix from the front side with the screws M4 for pitch circle dia 38 and M5 for for pitch circle dia 31.
- Snap on covering caps and attach the gas type label

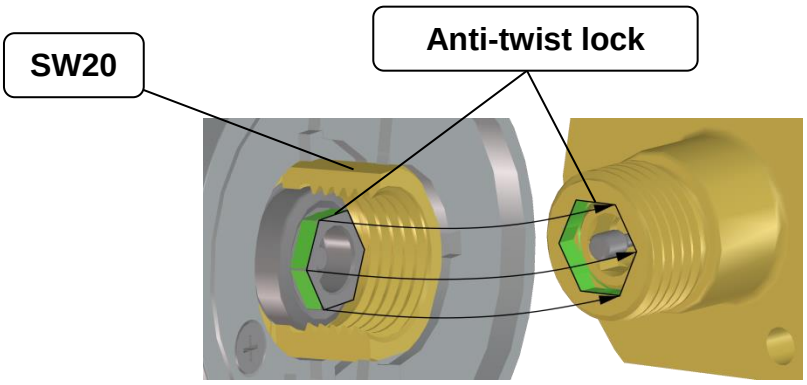
4.1.2 Assembling and screwing together the rear wall connection and tapping point

Special attention is needed when assembling the rear wall connection and the actual tapping point (this equally applies to the column-mounted and the ceiling connection).

Both connecting parts have a hexagonal geometry that serves to aid positioning and acts as an anti-twist lock. It is very important that both hexagonal geometries are threaded in the correct position when manually screwing on the SW20 union nut. While doing this, no force may be applied, for example, by using a tool.

A tool may only be used for the final tightening of the union nut when both parts of the anti-twist lock are interlocked.

Otherwise, the tapping point will be incorrectly positioned and the rear wall connection will be damaged. As a result of this, gas-tightness will not be achieved in the connection between the rear wall connection and tapping points.



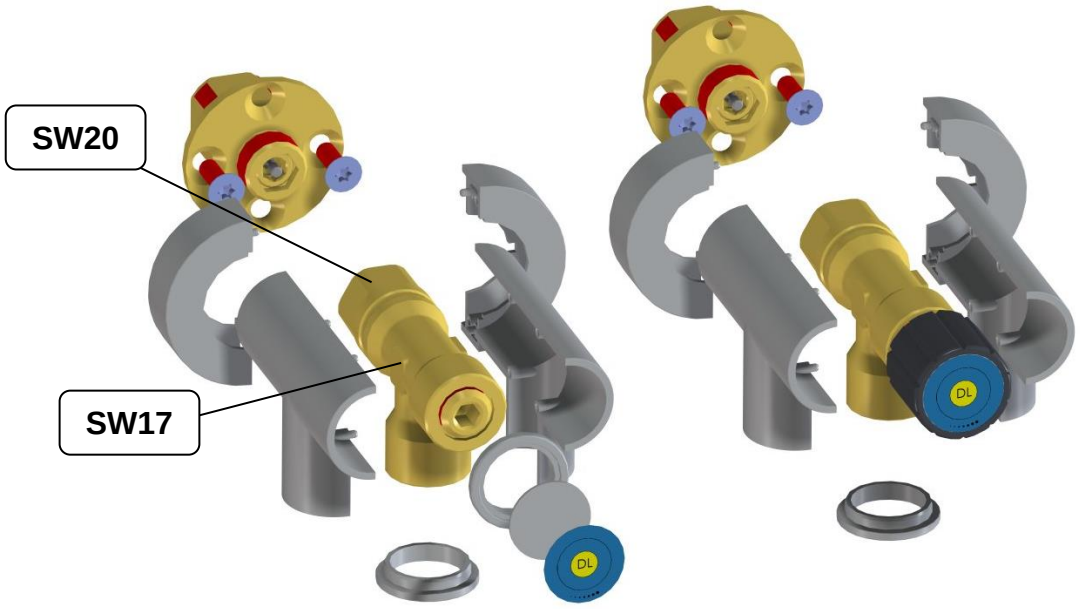
Note!

The hexagonal anti-twist lock can only be repositioned in 60° increments in accordance with its geometric proportions.

If the tapping point is to be rotated by 90° relative to its current position, the rear wall connection must first be rotated by 90°.

4. Assembly and operation

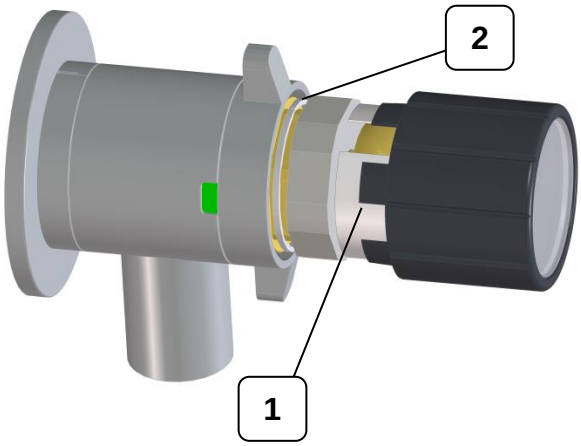
4.1.3 Assembly of the shut-off valve or VM/VE gas-discharge valve



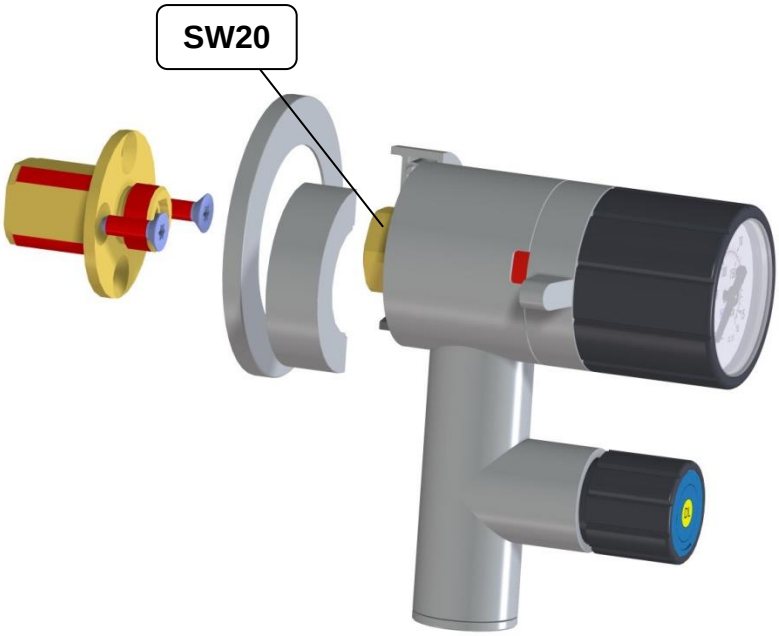
- Insert the shut-off valve or wall outlet into the hexagonal holes of the installed rear wall connection in accordance with section 4.1.1. When doing so, please observe the notes from section 4.1.2.
- Manually tighten the SW 20 union nut until resistance can be felt.
- Hold the shut-off valve or wall outlet with the SW 17 open-ended spanner and tighten the SW 20 union nut with a torque of 45-50 Nm.
- Check to see if the tightness of the rear wall connection is correct.
- Place the T-shaped plastic half-shells around the valve and connect them.
- Place the round plastic half-shells around the rear wall connection and connect them.
- Insert the plastic rings into the joined valve shells.
- Affix the gas type label.

4.1.4 Assembly/disassembly of the hand wheel

The hand wheel is disassembled by simply removing it. During the subsequent assembly of the hand wheel , which occurs by simply attaching it, it must be ensured for all tapping points described below that the brackets (1) of the hand wheel always slide **over** the white plastic stop ring (2).
Note: The white plastic ring is not present for each tapping point. Two plastic rings can occasionally be present.

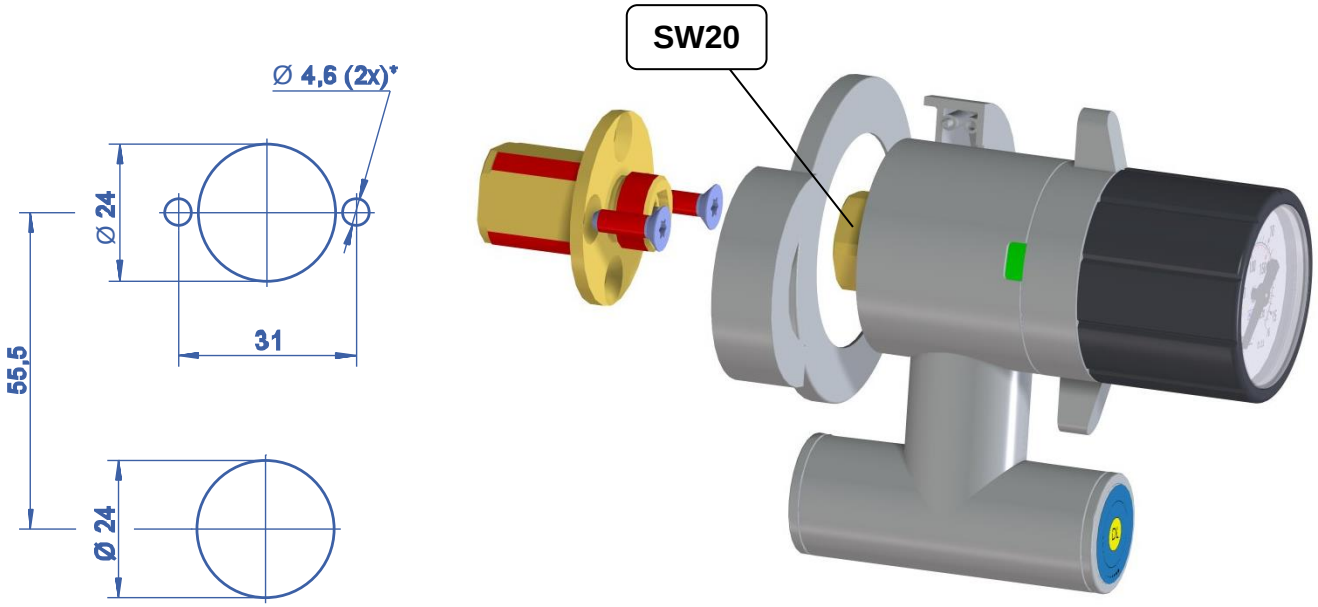


4.1.5 Assembly of the AW type tapping point



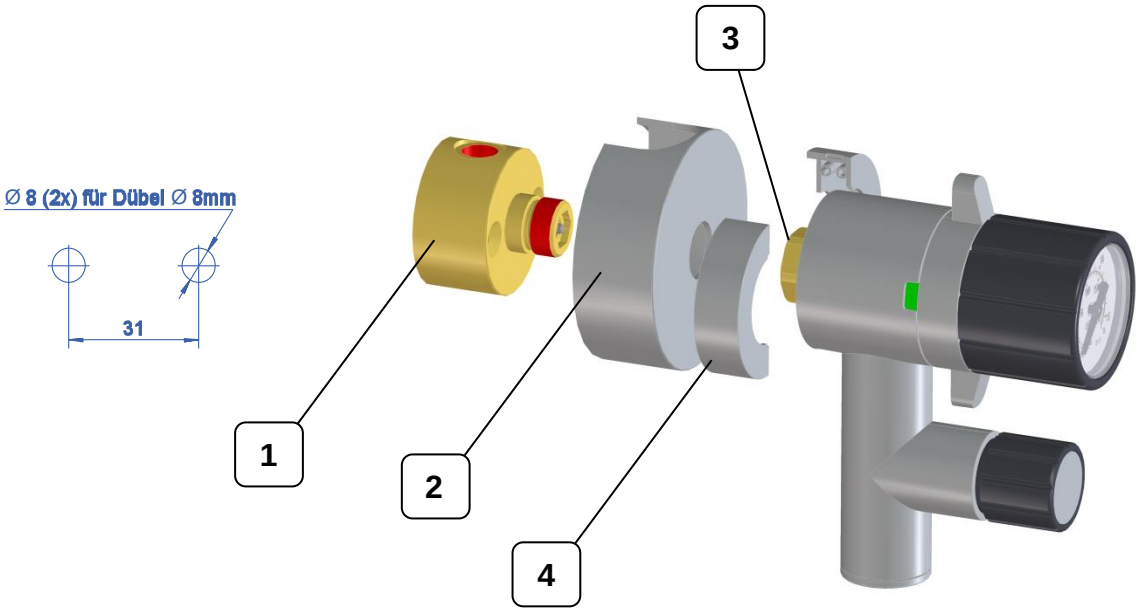
- Close the tapping point shut-off valve by turning the rotary lever clockwise to the closed position. A red mark must be identifiable in both lateral recesses.
- Carefully insert the AW tapping point into the hexagonal holes of the rear wall connection while rotating the SW 20 union nut. When doing so, please observe the notes from section 4.1.2.
- Tighten the union nut with a torque of 45-50 Nm. Manually hold the fitting.
- Check the tightness of the rear wall connection. To do so, open the shut-off valve by turning both handle cams counter-clockwise and properly test the connection points for leaks.
- Place the plastic half-shells around the rear wall connection and connect them.

4.1.6 Assembly of the AE type tapping point



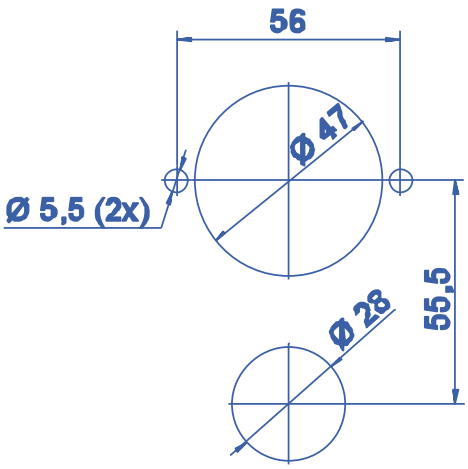
- Arrange the furniture wall as depicted in the drilling pattern drawing.
- Install the rear wall connection according to section 4.1.1.
- Close the tapping point shut-off valve by turning the rotary lever clockwise to the closed position. A red mark must be identifiable in both lateral recesses.
- Carefully insert the AE tapping points into the hexagonal holes of the rear wall connection while rotating the SW 20 union nut. When doing so, please observe the notes from section 4.1.2.
- Tighten the union nut with a torque of 45-50 Nm. While doing so, manually hold the fitting.
- Check the tightness of the rear wall connection. To do so, open the shut-off valve by turning both handle cams anti-clockwise and properly test the connection points for leaks.
- Place the plastic half-shells around the rear wall connection and connect them.

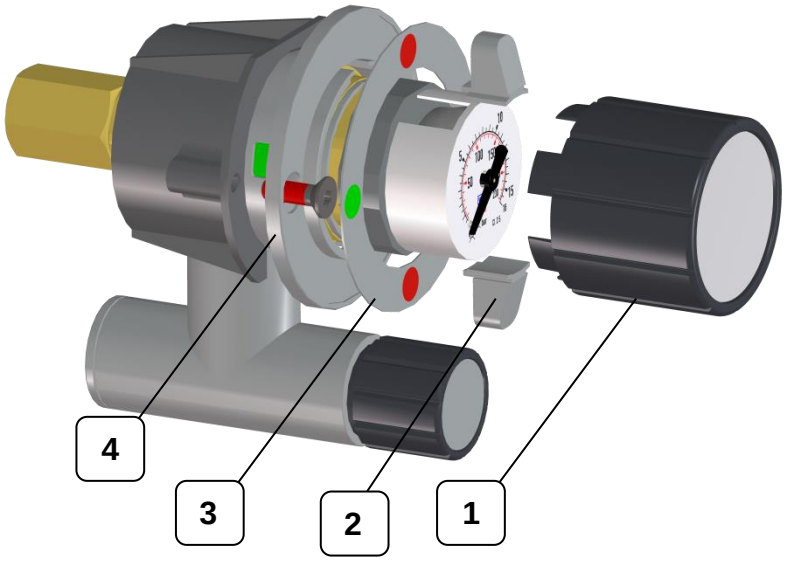
4.1.7 Assembly of the ES type tapping point



- Arrange the furniture wall as depicted in the drilling pattern drawing.
- Properly wrap the 1/4“-NPT screw-in connection using Teflon tape and screw into the rear wall connection (1) (the screw-in connection is not included in the scope of delivery)
- For wall installation, insert 2 Ø 8 mm screw anchors into the wall holes and screw the rear wall connection into place using two wooden countersunk screws.
  → Screw anchors and wooden countersunk screws are not included in the scope of delivery.
- Attach the rear wall connection cover (2) to the rear panel.
- Close the tapping point shut-off valve by turning the rotary lever clockwise to the closed position. A red mark must be identifiable in both lateral recesses.
- Carefully insert the ES tapping point into the hexagonal holes of the rear wall connection while rotating the SW 20 union nut (3). When doing so, please observe the notes from section 4.1.2.
- Tighten the union nut with a torque of 45-50 Nm. While doing so, manually hold the fitting.
- Check the tightness of the rear wall connection. To do so, open the shut-off valve by turning the handle cams counter-clockwise and test the connection points for leaks.
- Place the plastic half-shells (4) around the union nut and connect them.

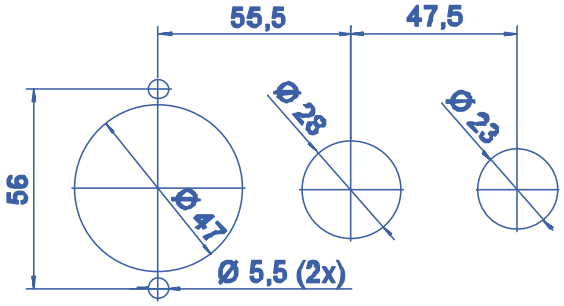
4.1.8 Assembly of the EP type tapping point

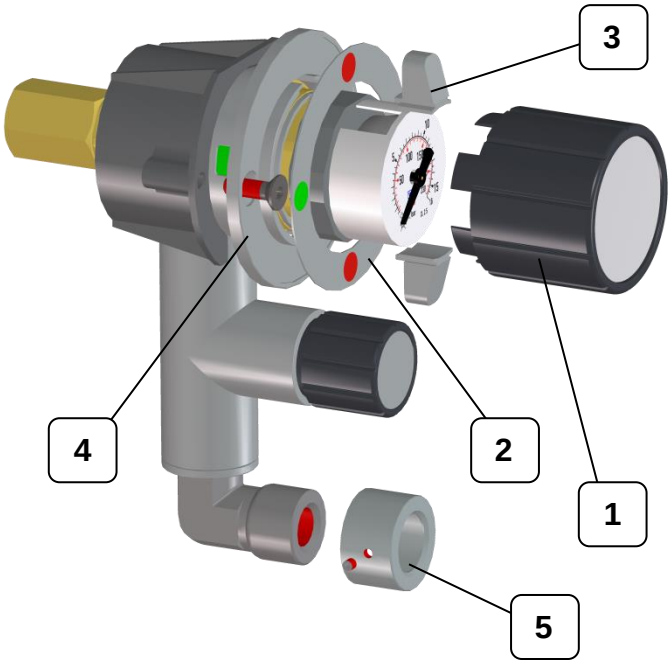




- Arrange the furniture wall as depicted in the drilling pattern drawing.
- Remove the hand wheel (1), lever inserts (2), label (3) and cover (4) from the tapping point. This must be done with great care and caution because the pressure gauge can be damaged very easily when removing the hand wheel .
- Insert the now partially disassembled EP tapping point through the drilled holes on the back of the furniture wall.
- **For up to 5mm furniture wall thickness:**
  Use the supplied countersunk screws, screw the cover (4) to the plastic housing of the tapping point through the furniture wall.
  → While doing so, the torque setting of the Bosch industry cordless screwdriver must not be set higher than 10-11 because the cover can deform when using a higher tightening torque.
  For more than 5mm up to 8mm furniture wall thickness:
  Do not use the cover (4). Instead of that countersink the furniture bores and screw the supplied countersunk screws to the plastic housing of the tapping point directly through the furniture wall.
- Affix the label in the direction displayed above (red points in perpendicular direction).
- Slide the lever inserts into the corresponding slots.
- Carefully attach the hand wheel.
- Connect the tapping point to the back of the piping system and properly and professionally check the tightness of the installation.

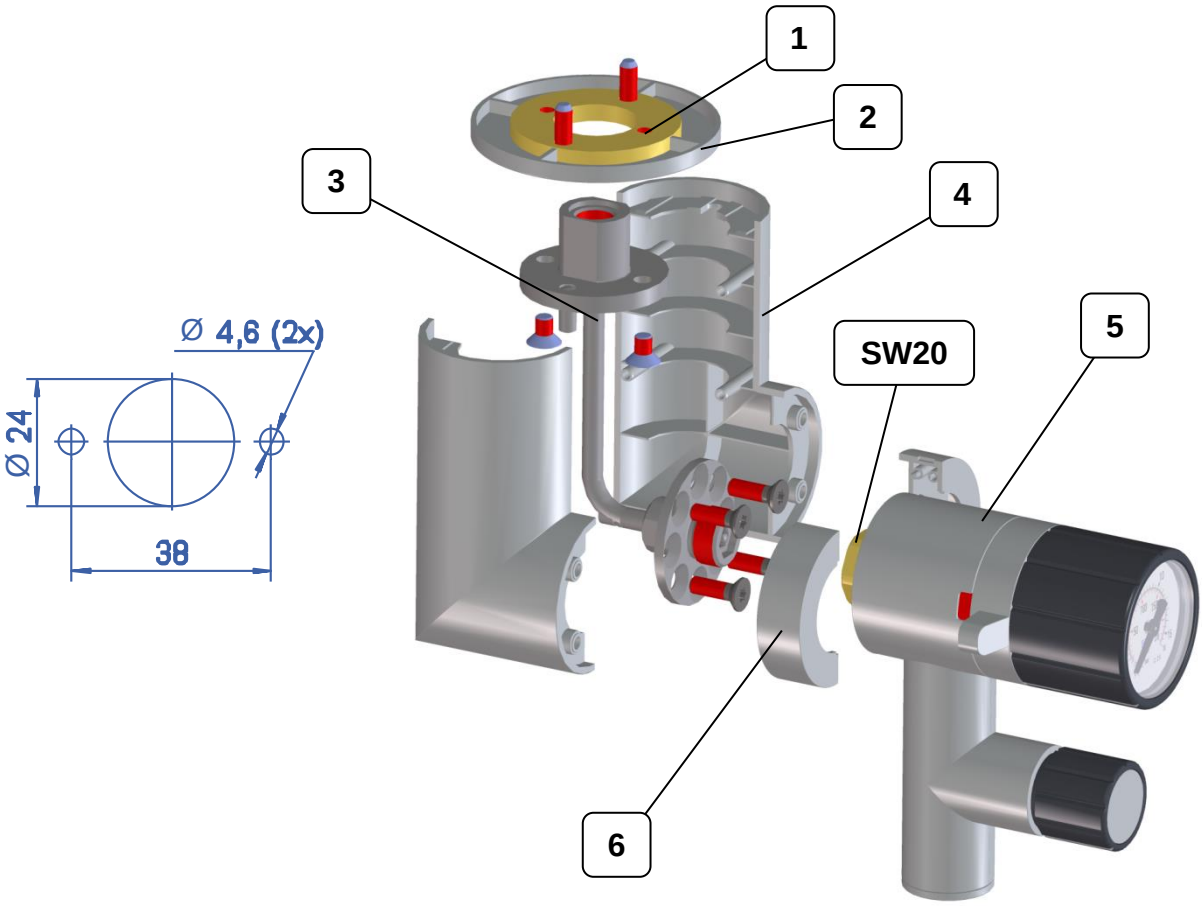
4.1.9 Assembly of the EF type tapping point





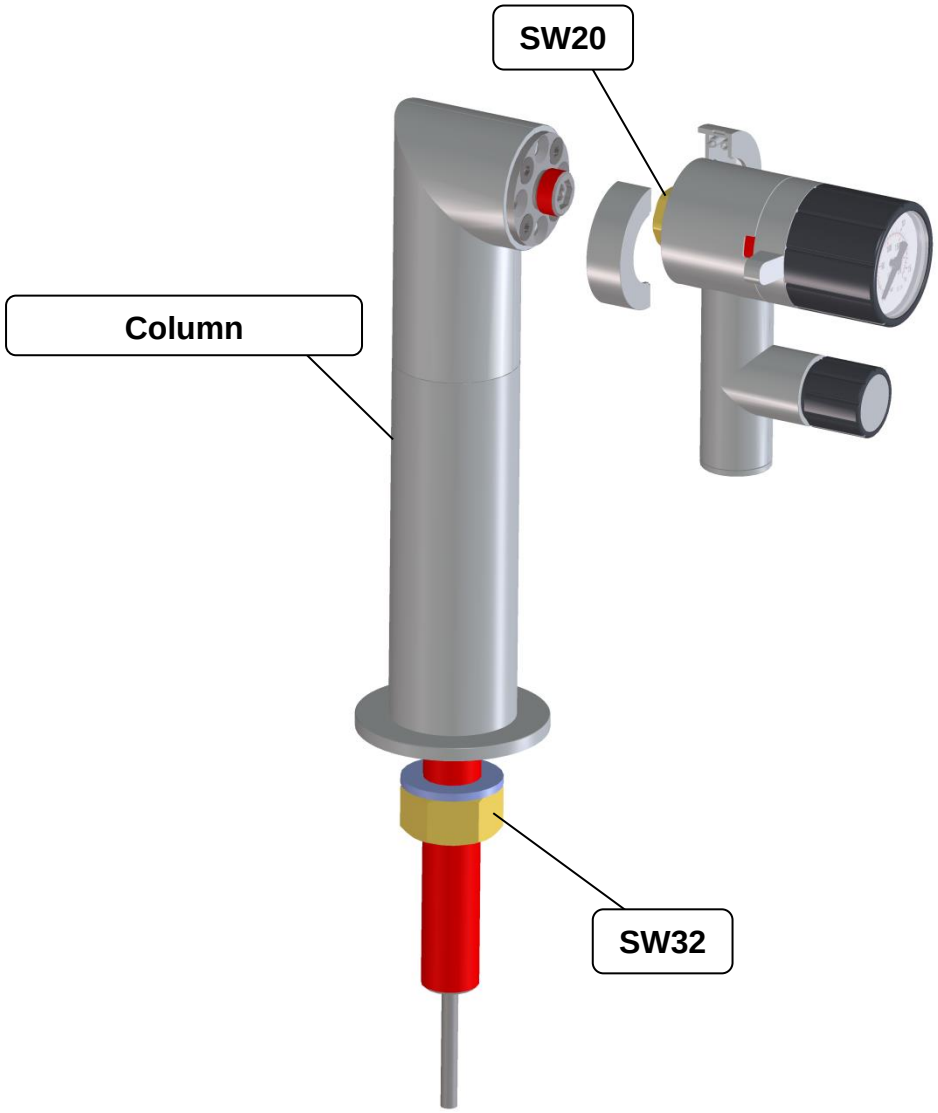
- Arrange the furniture wall as depicted in the drilling pattern drawing.
- Remove the hand wheel, handle cams, cover plate and wall liner from the tapping point. This must be done with great care and caution because the pressure gauge can be damaged very easily when removing the hand wheel.
- Insert the now partially disassembled EF tapping point through the drilled holes on the back of the furniture wall.
- **For up to 5mm furniture wall thickness:**
  Use the supplied countersunk screws, screw the cover (4) to the plastic housing of the tapping point through the furniture wall.
  → While doing so, the torque setting of the Bosch industry cordless screwdriver must not be set higher than 10-11 because the cover can deform when using a higher tightening torque.
  For more than 5mm up to 8mm furniture wall thickness:
  Do not use the cover (4). Instead of that countersink the furniture bores and screw the supplied countersunk screws to the plastic housing of the tapping point directly through the furniture wall.
- Affix the label in the direction displayed above (red points in perpendicular direction).
- Slide the handle cams into the corresponding slots.
- Carefully attach the hand wheel.
- Slide the aluminium ring (5) onto the angled outlet screw connection and attach it using the screwed-in thread pin.
- Connect the tapping point to the back of the piping system and properly and professionally check the tightness of the installation.

4.1.10 Assembly of the DC type tapping point



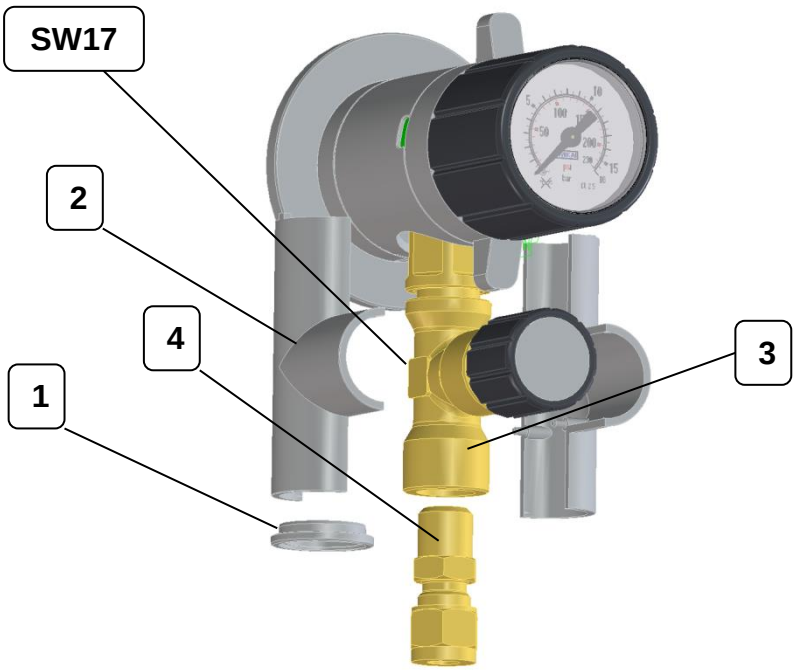
- Arrange the furniture cover as depicted in the drilling pattern drawing.
- Fasten the adapter plate (1) to the furniture cover using the self-tapping screws
- Attach the cover (2) to the adapter plate.
- Insert the pipe angle (3) into the adapter plate using the flange side with four holes and fasten it with both M5x8 countersunk screws.
- Place the L-shaped plastic half-shells (4) on both sides around the pipe angle and connect them.
- Screw four self-tapping screws into the flange with eight holes to attach the L-shaped plastic half-shells.
- Close the tapping point shut-off valve by turning the rotary lever clockwise to the closed position. A red mark must be identifiable in both lateral recesses.
- Carefully insert the DC tapping points (5) into the hexagonal holes of the flange of the pipe angle while rotating the SW 20 union nut. When doing so, please observe the notes from section 4.1.2.
- Tighten the union nut with a torque of 45-50 Nm. While doing so, manually hold the fitting.
- Check the tightness of the rear wall connection. To do so, open the shut-off valve by turning the handle cams counter-clockwise and properly test the connection points for leaks.
- Place the plastic half-shells (6) around the rear wall connection and connect them.

4.1.11 Assembly of the SC type tapping point



- Drill through the furniture plate at the specified location. Diameter range of 25 mm – 30 mm!
- Remove the washer and SW32 hexagon nut of the column.
- Insert the column into the hole of the furniture plate and fasten it from the bottom of the furniture using the washer and SW32 hexagonal nuts.
- Close the tapping point shut-off valve by turning the rotary lever clockwise to the closed position. A red mark must be identifiable in both lateral recesses.
- Carefully insert the SC tapping point into the hexagonal holes of the column flange while rotating the SW 20 union nut. When doing so, please observe the notes from section 4.1.2.
- Tighten the union nut with a torque of 45-50 Nm. While doing so, manually hold the fitting.
- Check the tightness of the rear wall connection. To do so, open the shut-off valve by turning the handle cams counter-clockwise and properly test the connection points for leaks.
- Place the plastic half-shells around the rear wall connection and connect them.

4.1.12 Mounting of fittings



The explanation regarding mounting of fittings into EM/EE 15 armatures is shown on type AW as an example. This may be transferred to any other type.

- Remove the cover of gas outlet or the control valve: Remove the ring (1) and the covers (2) carefully.
- The ¼”-NPT thread of the fitting (e.g. compression ring fitting or hose connector), which has to be mounted into the outlet must professionally be wrapped with PTFE tape.
- The first thread turn must not be covered with PTFE tape.
- Screw the prepared fitting (4) into the outlet (3) manually.
- Hold the outlet with a spanner (SW17) on the flat parts. This prevents the outlet (3) from loosening / turning out of the regulator, which may cause a leakage. Use an appropriate tool to get the connection gas tight.
- Put the covers back together onto the outlet and add the ring on the bottom.
- Before start-up with process gas leak test the connections in the outlet appropriately.

4.2 Putting the tapping point into operation

Caution!

Before start-up, check the label to see whether the tapping point is suitable for the intended purpose.
Make sure that the tapping point has previously been flushed out with inert gas if corrosive gases are to be used. Flushing must not take place against the normal flow direction, otherwise dirt particles could get into sensitive areas of the fitting.
Always turn the shut-off valve and the control / shut-off valve as far as they will go when opening or closing them!

Note!

The numbering used in the following table corresponds to that of section 3.2 in this user manual.

Step	Activity
1	Ensure that • the tapping point is labelled (10) for the present gas type • all protective caps have been removed • the assembly has been properly completed according to the previous section • all connectors have been correctly installed and checked for leaks • the pressure regulator is depressurized
2	Connect the consumer unit to the gas outlet (11)
3	Slowly open the shut-off valve (6a) by turning the rotary lever (6b) clockwise from a horizontal position to a perpendicular position.
4	Adjust the pressure regulator (3) to the desired outlet pressure by turning the hand wheel (7) clockwise. Make sure that an audible vibration of the pressure regulator is prevented, otherwise the pressure regulator could become damaged. Vibrations can, for example, occur when large volumes are filled (long, downstream lines or large-volume containers).
4	Check the entire tapping point and all detachable connections again for gas-tightness.
5	Open the control / shut-off valve (11), if applicable.
6	The withdrawal of gas to supply the connected consumers can take place.

4.3 Taking the unit out of service

Taking out of operation or interrupting operation for a short period

For brief interruptions of work, closing off the downstream control / shut-off valve from the tapping point pressure regulator (if applicable) is sufficient.

To do so, the control / shut-off valve hand wheel must be turned clockwise to the end.

Taking out of operation or interrupting operation for a longer period

Step	Activity
1	Close the shut-off valve of the pressure regulator. To do so, continue to turn the control knob with the two cams behind the hand wheel to the pressure setting until the cams are in a horizontal position and the red mark on the side of the pressure regulator is visible.
2	Completely release the pressure of the pressure regulator by withdrawing gas.
3	Carry out a visual check of the pressure gauge to ascertain whether the pressure has been reduced.
4	If applicable: Also close the process gas valve.

5. Faults

DANGER!

In the event of any possible interference, immediately close the shut-off valve of the pressure regulator and take the tapping point out of operation.

6. Maintenance, cleaning and repairs

6.1 Regular maintenance work and visual inspections

Regular maintenance work

To ensure the tapping point remains in perfect working order and a constantly high level of operational safety and reliability is maintained, it should be checked by a specialist once a year.

Regular visual inspections

Visual inspection of all parts for	Interval
• Damage • Function • Leaks • Integrity/stability • Corrosion	Regular inspections at intervals of 12 months and each time the device is put into operation make an important contribution to the cost-effectiveness and preservation of the value of the fittings.

Note!

If you determine defects during the visual inspection, do not take the tapping point into operation! Immediately have the tapping point checked by the manufacturer or by an authorised specialist company.

6.2 Regular cleaning

Warning!

Detergents or disinfectants can corrode and ruin gaskets inside the fittings. Do not use cleaning or disinfectants for cleaning!

Severe contamination can lead to operational malfunctions. If it becomes necessary to clean the tapping point, use only a damp, lint-free cloth.

6.3 Repair information

Caution!

Repairs may only be carried out by expert personnel in repair shops authorised by the manufacturer. After repairs, the entire tapping point must be checked in accordance with the original Spectron inspection instructions.

Safe and reliable operation can only be guaranteed if original spare parts are used.

Note!

The manufacturer accepts no liability for damage resulting from unauthorised repairs or modifications carried out by the user or third parties without the express written approval of the manufacturer.

6.4 Returns

If the tapping point is returned to the manufacturer for testing, maintenance or repair, and it has been in contact with corrosive and toxic gases, it is imperative that it is purged with inert gas.

Spectron Gas Control Systems GmbH
Fritz-Klatte-Straße 8
65933 Frankfurt
Germany
Telephone: +49 69 38016-0
Fax: +49 69 38016-200
E-mail: info@spectron.de
Internet: www.spectron.de