Operating Manual

for the

Tapping Points

of the EM55-1/EM55-2/EM55-3/EM55-4 series

and the EE55-1/EE55-2/EE55-3/EE55-4 series

EM55-1

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1. Introduction

1.1 General

Validity

This operating manual is valid for the EM55-1 to EM55-4 and EE55-1 to EE55-4 tapping points.

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Retention and completeness

- This operating manual is a component of the EM55-1 to EM55-4 and EE55-1 to EE55-4 tapping points and must be accessible to those with the relevant authorisation at all times.
- Under no circumstances should chapters be removed from this operating manual. If the operating manual is lost or if any chapters are missing –in particular the "For your safety" chapter – it or they must be replaced without delay.

Copyright

Updates

No update service is provided for this operating manual by Spectron Gas Control Systems GmbH. Changes can be made to this operating manual without the need to notify anyone about them.

1.2 Description of the tapping points

The EM55-1 to EM55-4 and EE55-1 to EE55-4 tapping points are equipped with a process gas valve, a pressure regulator and a pressure gauge for measuring the outlet pressure. The function of the tapping point is to reduce the inlet pressure to the outlet pressure required for the purpose. The gas flow to the pressure regulator can be interrupted or released by the process gas valve of the tapping point.

1.3 Intended use

Intended use

The EM55-1 to EM55-4 tapping points are intended for use with non-corrosive gases up to a purity grade of 6.0. The EE55-1 to EE55-4 tapping points are suitable, in addition, for use with corrosive gases up to a purity grade of 6.0. The permissible gases and pressure ranges for the tapping point are specified on the type plate. In the vast majority of cases, tapping points are used as the second pressure relief stage and shut-off unit after the pressure control panel. They further reduce the relatively constant outlet pressure of the pressure control panel to an extremely constant outlet pressure to the consumer.

Tapping points without electrical components (such as a contact pressure gauge or pressure transducer) may be used in potentially explosive atmospheres, since they do not have a potential ignition source of their own (ignition hazard evaluated in accordance with DIN EN 13463-1).

The danger of ignition has to be taken into account with tapping points with electrical components. It is imperative that this is evaluated on the basis of the documentation of the electrical components, taking into consideration how they are incorporated into the system as a whole, in compliance with directive 2014/34/EU (ATEX 95) and 1999/92/EC (ATEX 137).

Foreseeable misuse

The following operating conditions are deemed to constitute misuse:

- Operation with gases that are not specified on the type plate
- Use with gases in their liquid state
- Operation outside of the permissible technical limit values
- Failure to heed and comply with any applicable legal regulations and other provisions
- Failure to follow the instructions in this operating manual
- Failure to carry out inspection and maintenance work
- Failure to heed the information on the type plate and in the product data sheet
- Pressurisation in reverse (against normal flow direction)

1.4 Personnel requirements

Definition of an authorised person

An authorised person is a person with a technical training who has received technical instruction about the system as a whole and the associated hazards – gas cylinder – gas type – gas cylinder valve – pressure regulator – and has successfully completed training in the supply of pressurised gases.

Tasks of the operating personnel

The operating personnel must identify problems or irregularities and – if possible and permissible – resolve them.

Requirements to be met by the operating personnel

To be able to do their work, 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 indicates **danger of death** or physical injury.

2.2 Essential safety information

Note

The safety information given below is to be regarded as supplementary information to the relevant national accident prevention regulations and legislation. All relevant accident prevention regulations and legislation must be observed under all circumstances.

Various laws, regulations, rules and directives have to be observed when handling pressurised gases, depending on the type of gas involved.
In Germany the following legislation and publications are applicable (although this is not necessarily a complete list):

- EU Directive 2009/104/EC (Work Equipment Directive)
- EU Directive 1999/92/EC (ATEX 137)
- EU Directive 98/24/EC (Dangerous Substances Directive)
- Industrial health and safety ordinance (implementation of Directives 2009/104/EC and 1999/92/EC in German law
- Ordinance on hazardous substances (implementation of Directive 98/24/EC in German law)
- TRBS (technical regulations on industrial safety and health) publications
- German technical rules for hazardous substances (TRGS)
- TRAS (technical regulations on plant safety) publications
- BGV A1 German trade association basic accident prevention regulations
- BGR 104 German trade association rules on explosive prevention regulations
- BGR 132 German trade association rules for the avoidance of ignition hazards resulting from electro-static charges
- BGR 500 2.26 German trade association rules on welding, cutting and related work procedures
- BGR 500 2.31 German trade association rules for working on gas lines
- BGR 500 2.32 German trade association rules for the operation of oxygen systems
- BGR 500 2.33 German trade association rules for the operation of systems that handle gas
- BG RCI leaflet M034
- EIGA documents
- Safety data sheets for the gases used

2.3 Safety features

Important
The tapping points generally do not have a relief valve. In the event of the failure of the tapping point's pressure regulator, a safety mechanism that meets the requirements of the applicable regulations must be incorporated to protect downstream fittings, pressure vessels and pipes from excess pressure.

Possible hazard	Hazard-prevention measures
Risk of fatal injury! 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 of oil and grease.
Risk of fatal injury! 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.
Risk of fatal injury! 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 made without the written approval of the manufacturer's authorised technical personnel.
Risk of fatal injury! 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.
Risk of fatal injury! Gas that escapes in an uncontrolled manner indoors can reduce the oxygen content of the air and be life-threatening.	Make sure that the outlet end of the blow-off pipe of systems operated indoors is outdoors. In the case of toxic or corrosive gases or gases that are harmful to the environment in some other way, dispose of the blown-off gas in accordance with the applicable regulations.
Risk of fatal injury! Oxygen that escapes in an uncontrolled manner indoors can result in a dangerous rise in the oxygen content of the air and an increase in the tendency of clothing and other objects to ignite.	Make sure that the outlet end of the blow-off pipe of oxygen systems operated indoors is outdoors, and do not start a fire or ignite a flame. Read the EIGA document SAG 79/04/E for more information.

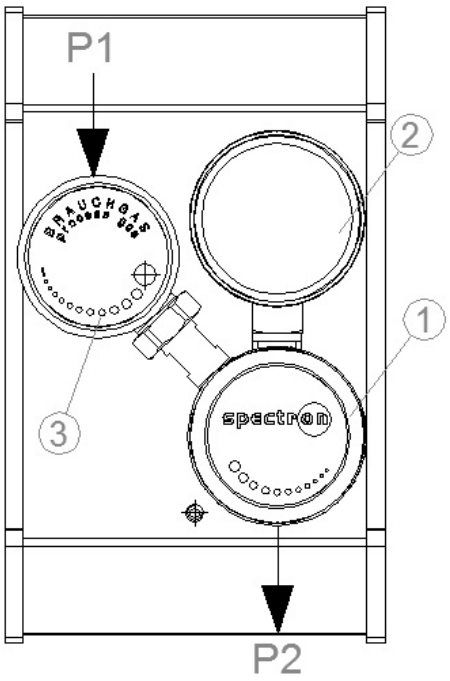
2. For your safety

Possible hazard	Hazard-prevention measures
Risk of fatal injury! The use of the pressure control panel with components or accessories that are not rated for the same pressure as the control panel itself can lead to serious damage or bursting.	Components or accessories (fittings, pipes etc.) connected to the pressure control panel must be rated for the pressure given on the type plate of the pressure control panel.
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 or over +60 °C.
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. That is why a filter is incorporated into the process gas inlet of the pressure control panel.
If the device is not handled properly and used as intended, this may be dangerous for the user and others and may damage it.	Use and handle the tapping point only as described in this operating manual.
If the connecting surfaces or gaskets of the fittings are damaged or missing, there is a danger of gas escaping in an uncontrolled manner.	Check the connection surfaces for damage before installing the tapping point. Do not install the tapping point if the connection surfaces are damaged or if gaskets are missing.

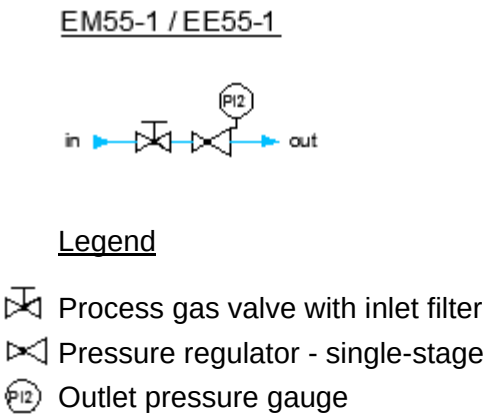
3. Description

3.1 Overview of the EM55-1 to EM55-4 and EE55-1 to EE55-4 tapping points

Drawing of the EM55-1 tapping point



Flow chart



Elements of the tapping point

Item	Designation	Correct functioning
1	Pressure regulator	Reduces the inlet pressure (P1) to a set outlet pressure (P2).
2	Pressure gauge	Indicates the current outlet pressure.
3	Process gas valve	Shuts off the inlet pressure.

3.2 Functional description

The EM55-1 to EM55-4 and EE55-1 to EE55-4 tapping points are equipped with a process gas valve, a pressure regulator and a pressure gauge for measuring the outlet pressure. The function of the tapping point is to reduce the inlet pressure to the outlet pressure required for the purpose. The gas flow to the pressure regulator can be interrupted or released by the process gas valve of the tapping point.

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 type plate.

3.4 Connection options

- Inlet pressure connector: 1/4" NPT female thread, generally equipped with a stainless steel compression fitting for 6 mm pipes
- Outlet pressure connector: 1/4" NPT female thread

4. Operation

4.1 Labelling

Labelling example

Hydrogen (H_2)
EM55-1-40-10-U
P1: 40 bar
P2: 10 bar

Note

The gas type must be specified on the tapping point. If the gas type is not specified on the type plate, it must be done using the attached gas-type adhesive labels before the device is put into operation for the first time.

Warning

Only the gas type for which the tapping point was ordered may be specified on it.

4.2 Installing the tapping point

Note

You can find instructions on how to install the tapping point in the installation manual MA_BM+BE.
You can view and download this at www.spectron.de.

4.3 Putting the tapping point into operation

Important

Before putting the equipment into operation for the first time, the pipe system and tapping point must be purged via the process gas valve right up to the consumer. It is imperative to adhere to the direction of the gas flow when doing this. You must not purge counter to the usual direction of flow (from the tapping point to the pressure control panel), since this can flush debris resulting from the installation work, for example, back into the pressure regulator.

The connecting thread and connecting surfaces as well as the sealing rings of the manual connectors must be checked to ensure they are in perfect condition.

In general – but especially for filling the downstream installation the process gas valves must be opened gradually ensuring that any (audible) vibration of the pressure regulator is avoided.

Always turn shut-off valves as far as the stop when opening or closing them.

Step	Activity
1	Ensure that: • The gas type is specified on the tapping point. • All protective caps have been removed. • The installation has been carried out properly in accordance with the installation manual MA_BM+BE. • All connectors have been correctly installed and checked for leaks. • The pressure regulator is released.
2	Slowly open the process gas valve.
3	Set the pressure regulator to the desired outlet pressure by turning the handwheel clockwise. It is essential that no vibrations of the pressure regulator should be audible when filling the downstream pipe, since otherwise the pressure regulator could be damaged.
4	Check the entire tapping point and all detachable connections again for leakage.
5	Gas can now be drawn.

4.4 Taking the equipment out of operation

Taking out of operation or interrupting operation for a short period

When interrupting operation for a short period, all you need to do is close the process gas valve.

The red marking in the handwheel window indicates immediately that the valve is closed.

Taking out of operation or interrupting operation for a longer period

Step	Activity
1	Close all valves. To do this, turn the grip until you can see the red marking in the handwheel window.
2	Entirely relieve the pressure on the pressure regulator by removing the gas.
3	Carry out a visual check of the pressure gauge to ascertain whether the pressure has been reduced.

5. Problems

Danger

Whenever there appears to be a problem, immediately close the process gas valves 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 • Correct functioning • 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 find defects during the visual inspection, do not put the tapping point into operation. Have the tapping point checked immediately by the manufacturer or an authorised specialist company.

6.2 Regular cleaning

Warning

Detergents or disinfectants can corrode and ruin gaskets inside the fittings. Do not use detergents or disinfectants.

If the device gets very dirty, this can interfere with operation. If it becomes necessary to clean the tapping point, use only a damp, lint-free cloth.

6.3 Repair information

Important

Repairs may only be carried out by specialist personnel in authorised repair workshops.
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.

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