

MOUNTING AND OPERATING INSTRUCTIONS



EB 8359-2 EN

Translation of original instructions



Type 4763 Electropneumatic Positioner

Edition January 2022

CE **EAC** **Ex**
certified

Note on these mounting and operating instructions

These mounting and operating instructions assist you in mounting and operating the device safely. The instructions are binding for handling SAMSON devices. The images shown in these instructions are for illustration purposes only. The actual product may vary.

- For the safe and proper use of these instructions, read them carefully and keep them for later reference.
- If you have any questions about these instructions, contact SAMSON's After-sales Service (aftersaleservice@samsongroup.com).



Documents relating to the device, such as the mounting and operating instructions, are available on our website at www.samsongroup.com > **Service & Support > Downloads > Documentation.**

Definition of signal words

DANGER

Hazardous situations which, if not avoided, will result in death or serious injury

WARNING

Hazardous situations which, if not avoided, could result in death or serious injury

NOTICE

Property damage message or malfunction

Note

Additional information

Tip

Recommended action

1	Safety instructions and measures	1-1
1.1	Notes on possible severe personal injury	1-3
1.2	Notes on possible personal injury	1-3
1.3	Notes on possible property damage	1-4
1.4	Special instructions concerning explosion protection	1-5
2	Markings on the device	2-1
2.1	Nameplate	2-1
2.2	Article code	2-2
3	Design and principle of operation	3-1
3.1	Technical data	3-3
3.2	Summary of explosion protection approvals	3-4
3.3	Dimensions in mm	3-5
4	Shipment and on-site transport	4-1
4.1	Accepting the delivered goods	4-1
4.2	Removing the packaging from the positioner	4-1
4.3	Transporting the positioner	4-1
4.4	Storing the positioner	4-1
5	Installation	5-1
5.1	Installation conditions	5-1
5.2	Preparation for installation	5-2
5.2.1	Determining the operating direction of the positioner control loop	5-2
5.2.2	Determining on which side of the valve the positioner is to be mounted	5-2
5.3	Positioner attachment	5-4
5.3.1	Attachment to valve with cast yoke	5-4
5.3.2	Attachment to valve with rod-type yoke	5-4
5.4	Pneumatic connection	5-4
5.4.1	Pressure gauges	5-6
5.4.2	Supply pressure	5-6
5.5	Selecting the range spring	5-6
5.6	Adjusting the positioner	5-9
5.6.1	Air output capacity and proportional band X_p	5-9
5.6.2	Zero and span	5-10
5.7	Electrical connection	5-11
5.8	Accessories and mounting parts	5-13
6	Start-up	6-1
7	Operation	7-1

Contents

8	Malfunction	9-1
8.1	Troubleshooting	9-1
8.2	Emergency action	9-1
9	Servicing	9-1
9.1	Changing the operating direction of the positioner control loop	9-2
9.2	Converting the electropneumatic into a pneumatic positioner	9-2
9.3	Periodic inspection and testing of the positioner.....	9-2
10	Decommissioning	10-1
11	Removal	11-1
12	Repairs	12-1
12.1	Servicing explosion-protected devices.....	12-1
12.2	Returning devices to SAMSON	12-1
13	Disposal	13-1
14	Certificates	14-1
15	Annex	15-1
15.1	Accessories	15-1
15.2	After-sales service	15-2

1 Safety instructions and measures

Intended use

The SAMSON Type 4763 Positioner is mounted on pneumatic control valves and used to assign the valve position to the control signal. The device is designed to operate under exactly defined conditions (e.g. operating pressure, temperature). Therefore, operators must ensure that the positioner is only used in applications where the operating conditions correspond to the technical data. In case operators intend to use the positioner in applications or conditions other than those specified, contact SAMSON.

SAMSON does not assume any liability for damage resulting from the failure to use the device for its intended purpose or for damage caused by external forces or any other external factors.

➔ Refer to the technical data for limits and fields of application as well as possible uses.

Reasonably foreseeable misuse

The Type 4763 Positioner is **not** suitable for the following applications:

- Use outside the limits defined during sizing and by the technical data

Furthermore, the following activities do not comply with the intended use:

- Use of non-original spare parts
- Performing maintenance activities not described in these instructions

Qualifications of operating personnel

The positioner must be mounted, started up and serviced by fully trained and qualified personnel only; the accepted industry codes and practices must be observed. According to these mounting and operating instructions, trained personnel refers to individuals who are able to judge the work they are assigned to and recognize possible hazards due to their specialized training, their knowledge and experience as well as their knowledge of the applicable standards.

Explosion-protected versions of this device must be operated only by personnel who has undergone special training or instructions or who is authorized to work on explosion-protected devices in hazardous areas.

Safety instructions and measures

Personal protective equipment

No personal protective equipment is required for the direct handling of the positioner. Work on the control valve may be necessary when mounting or removing the device.

- ➔ Observe the requirements for personal protective equipment specified in the valve documentation.
- ➔ Check with the plant operator for details on further protective equipment.

Revisions and other modifications

Revisions, conversions or other modifications of the product are not authorized by SAMSON. They are performed at the user's own risk and may lead to safety hazards, for example. Furthermore, the product may no longer meet the requirements for its intended use.

Warning against residual hazards

The positioner has direct influence on the control valve. To avoid personal injury or property damage, plant operators and operating personnel must prevent hazards that could be caused in the control valve by the process medium, the operating pressure, the signal pressure or by moving parts by taking appropriate precautions. Plant operators and operating personnel must observe all hazard statements, warning and caution notes in these mounting and operating instructions, especially for installation, start-up and service work.

If inadmissible motions or forces are produced in the pneumatic actuator as a result of the supply pressure, it must be restricted using a suitable supply pressure reducing station.

Responsibilities of the operator

Operators are responsible for proper use and compliance with the safety regulations. Operators are obliged to provide these mounting and operating instructions to the operating personnel and to instruct them in proper operation. Furthermore, operators must ensure that operating personnel or third parties are not exposed to any danger.

Responsibilities of operating personnel

Operating personnel must read and understand these mounting and operating instructions as well as the specified hazard statements, warning and caution notes. Furthermore, the operating personnel must be familiar with the applicable health, safety and accident prevention regulations and comply with them.

Referenced standards, directives and regulations

Devices with a CE marking fulfill the following requirements of the Directives:

- Type 4763-0: 2014/30/EU, 2011/65/EU
- Type 4763-1/-8: 2014/30/EU, 2014/34/EU, 2011/65/EU

Devices with an EAC marking fulfill the requirements of the Regulation TR CU 020/2011. See the 'Certificates' section for the declarations of conformity and EAC certificates.

Referenced documentation

The following documents apply in addition to these mounting and operating instructions:

- The mounting and operating instructions of the components on which the positioner is mounted (valve, actuator, valve accessories etc.).

1.1 Notes on possible severe personal injury

DANGER

Risk of fatal injury due to the ignition of an explosive atmosphere.

Incorrect installation, operation or maintenance of the positioner in potentially explosive atmospheres may lead to ignition of the atmosphere and ultimately to death.

- The following regulations apply to installation in hazardous areas: EN 60079-14 (VDE 0165, Part 1).
- Installation, operation or maintenance of the positioner must only be performed by personnel who has undergone special training or instructions or who is authorized to work on explosion-protected devices in hazardous areas.
- Read the special instructions concerning explosion protection (see section 1.4).

1.2 Notes on possible personal injury

WARNING

Risk of injury by possible movement of the actuator stem after connecting the signal pressure.

- Do not touch or block the actuator stem.

Incorrect electrical connection will render the explosion protection unsafe.

- Adhere to the terminal assignment.
- Do not undo the enameled screws in or on the housing.

Intrinsic safety rendered ineffective in intrinsically safe devices.

Every time the positioner is operated, even not within the plant (e.g. during maintenance, calibration and work on equipment), it must be ensured that the conditions for intrinsically safe circuits are observed.

- Only connect intrinsically safe devices intended for use in intrinsically safe circuits to certified intrinsically safe input-connected units.
- Do not place intrinsically safe devices back into operation that were connected to intrinsically safe input-connected units without certification.
- Do not exceed the maximum permissible electric values specified in the EC type examination certificates when interconnecting intrinsically safe electrical equipment (U_i or U_0 , I_i or I_0 , P_i or P_0 , C_i or C_0 and L_i or L_0).

1.3 Notes on possible property damage

NOTICE

An incorrect electric signal will damage the positioner.

A current source must be used to power the positioner.

- Only use a current source and never a voltage source.

Incorrect assignment of the terminals will damage the positioner and will lead to malfunction.

For the positioner to function properly, the prescribed terminal assignment must be observed.

- Connect the electrical wiring to the positioner according to the prescribed terminal assignment.

Risk of malfunction due to failure to comply with air quality requirements.

- Only use supply air that is dry and free of oil and dust.
- Read the maintenance instructions for upstream pressure reducing stations.
- Blow through all air pipes and hoses thoroughly before connecting them.

1.4 Special instructions concerning explosion protection

Equipment for use in zone 2/zone 22

- In equipment operated according to type of protection Ex nA II (non-sparking equipment) according to EN 60079-15: 2003, circuits may be connected, interrupted or switched while energized only during installation, maintenance or repair.
- Guide wires for the set point through the cable gland to the terminals 11 (+) and 12 (-) located on the housing.
- Connect the ground connection inside or outside of the housing.

Servicing explosion-protected devices

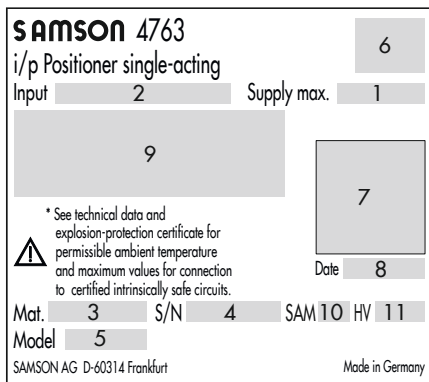
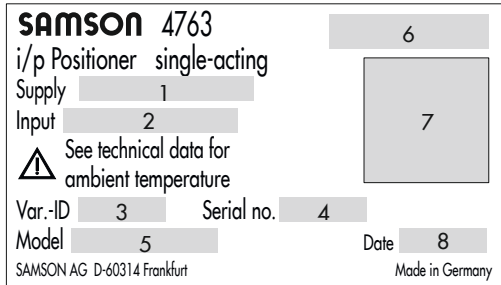
- Observe the following for servicing equipment in a section relevant for explosion protection:
 - The equipment must not be put back into operation until a qualified inspector has assessed the equipment according to explosion protection requirements, has issued an inspection certificate or given the device a mark of conformity. Inspection by a qualified inspector is not required if the manufacturer performed a routine test on the device before putting it back into operation. Document the passing of the routine test by attaching a mark of conformity to the device.
 - Replace explosion-protected components only with original, routine-tested components by the manufacturer.
 - Devices that have already been operated outside hazardous areas and are intended for future use inside hazardous areas must comply with the safety requirements placed on serviced devices. Before being operated inside hazardous areas, test the devices according to the specifications for servicing explosion-protected devices.

Maintenance, calibration and work on equipment

- Only use intrinsically safe current/voltage calibrators and measuring instruments for interconnection with intrinsically safe circuits to check or calibrate the equipment inside or outside hazardous areas.
- Observe the maximum permissible values specified in the certificates for intrinsically safe circuits.

2 Markings on the device

2.1 Nameplate



- | | | | |
|---|----------------------------------|----|--|
| 1 | Supply pressure | 7 | Data Matrix code (electronic nameplate) |
| 2 | Signal range | 8 | Date of manufacture |
| 3 | Configuration ID/material number | 9 | Explosion protection marking |
| 4 | Serial number | 10 | Code for NAMUR Recommendation NE 53 (internal specification) |
| 5 | Model number | 11 | Hardware version |
| 6 | Approvals (CE, EAC, UKCA etc.) | | |

Markings on the device

2.2 Article code

Electropneumatic Positioner	Type 4763-	x	1	x	0	0	x	x	x	x	0	x	0	x	x	0
Explosion protection																
Without	0							2/7								
ATEX: II 2G Ex ia IIC T6 Gb	1															
CCC Ex: Ex ia IIC T4 ~ T6 Gb																
EAC: 1Ex ia IIC T6/T5/T4 Gb X																
CSA: Ex ia IIC T6; Class I, Zone 0 Class I, II, Div. 1, Groups A, B, C, D, E, F, G Class I, II, Div. 2, Groups A, B, C, D, E, F, G	3															
FM: Class I, Zone 0 AEx ia IIC Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G Class I, Div. 2, Groups A, B, C, D; Class II, Div. 2 Groups F, G; Class III																
ATEX: II 3G Ex nA ic IIC T6 Gc	8							2/7								
Spring																
Spring 1, travel = 15 mm			1													
Spring 2, travel = 30 mm, split range 15 mm			2													
Spring 3, travel = 60 mm, split range 30 mm			3													
Pneumatic connections																
ISO 228/1 G ¼						1										
¼-18 NPT						3										
Electrical connection (cable gland)																
M20x1.5 blue (plastic)							1									
M20x1.5 black (plastic)							2									
M20x1.5 (nickel-plated brass)							7			2						
i/p converters																
Type 6109								1								
Type 6112								2								
Set point																
4 to 20 mA									0							
0 to 20 mA								2	2							
1 to 5 mA								2	3							

Electropneumatic Positioner	Type 4763- x 1 x 0 0 x x x x 0 x 0 x x 0									
Temperature range										
Standard								0		
Low temperature down to -45 °C					2			2		
Special version										
Without									0 0 0	
EAC explosion protection certification	1								0 1 0	

i Note

The following devices are marked with the article code as listed on page 2-3:

- Type 4763, device index up to **.03**
- Type 4763, device index **.04** (some already with the currently used article code)

Type 4763 up to device index .04	x 0 x x x x x x x x 0									
Explosion protection										
Without	0									
II 2 G Ex ia IIC T6 according to ATEX	1									
Ex ia according to FM/CSA	3									
Ex according to JIS	7									
II 3 G Ex nA II T6 according to ATEX	8									
Lever										
Lever 1 (40 to 127 mm long)		1								
Spring										
Spring 1, travel = 15 mm			1							
Spring 2, travel = 30 mm, split range 15 mm				2						
Spring 3, travel = 60 mm, split range 30 mm					3					
Special version										
Without					0 0					
Japan	0				2 0 4 0					
Japan	7				2 0 4 0					

Markings on the device

Type 4763 up to device index .04	x	0	x	x	x	x	x	x	x	x	0
Pneumatic connections											
ISO 228/1 G ¼									1		
¼-18 NPT									3		
ISO-7/1-Rc ¼									4		
Electrical connection (cable gland)											
ISO 228/1 G ½									0		
M20x1.5 blue (plastic)									1		
M20x1.5 black (plastic)									2		
Harting connector HAN 7D									5		
M20x1.5 blue (metal)									6		
M20x1.5 (metal)									7		
i/p converter											
Type 6109										1	
Type 6112										2	
Set point											
4 to 20 mA										1	1
4 to 20 mA										2	1
0 to 20 mA										2	2
1 to 5 mA										2	3

3 Design and principle of operation

The electropneumatic positioner is used to assign the valve position (controlled variable) to the input signal (set point). The positioner compares the control signal of a control system to the travel of the control valve and issues a signal pressure (output variable) for the pneumatic actuator.

The positioner consists of an electropneumatic converter unit (21) and a pneumatic unit equipped with a lever (1), shaft (1,1) and range spring as well as the pneumatic control system with nozzle, flapper plate and booster. The DC control signal, e.g. 4 to 20 mA, issued by the controller, is transmitted to the electropneumatic converter unit (i/p converter) where it is converted into a proportional pressure signal p_e .

Any change of the input current signal causes a proportional change of the air pressure p_e fed to the pneumatic control system.

The air pressure p_e produces a force which acts on the surface of the measuring diaphragm (8) and is compared to the force of the range spring (6).

The motion of the measuring diaphragm (8) is transferred to the flapper plate (10.2) over the feeler pin (9.1) and the nozzle (10.1) releases pressure. Any change of either the air pressure p_e or the valve stem position causes the pressure to change in the booster (12) connected downstream of the nozzle. The signal pressure p_{st} , which is released causes the plug stem to assume a position based on the set point.

The adjustable volume restriction Q (14) and X_p (gain) restriction (13) are used to optimize the control loop of the positioner.

The range spring (6), which can be exchanged, is assigned to both the rated valve travel and the span of the set point.

Legend for Fig. 3-1 and Fig. 3-2

1	Lever for valve travel
1.1	Shaft
2	Pin
2.1	Nut
3	Sleeve
4	Zero point adjustment
5	Fastening screw
6	Range spring
6.1	Bracket
7	Fastening screw
8	Measuring diaphragm
9	Diaphragm plate
9.1	Feeler pin
10	Nozzle block
10.1	Nozzle
10.2	Flapper plate
11	Cover plate
12	Booster
13	X_p restriction
14	Volume restriction Q
15	Hole for fastening screw
20	Plate
21	i/p converter

Design and principle of operation

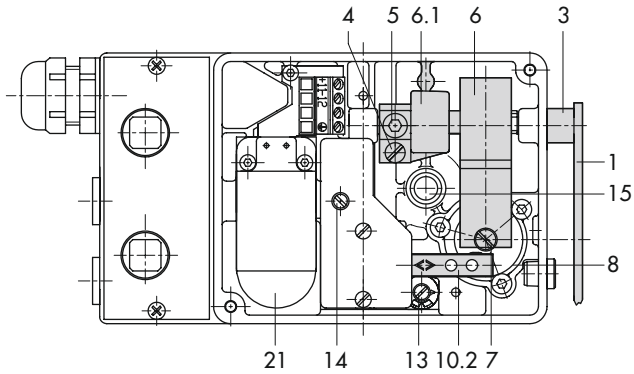


Fig. 3-1: Positioner with cover removed

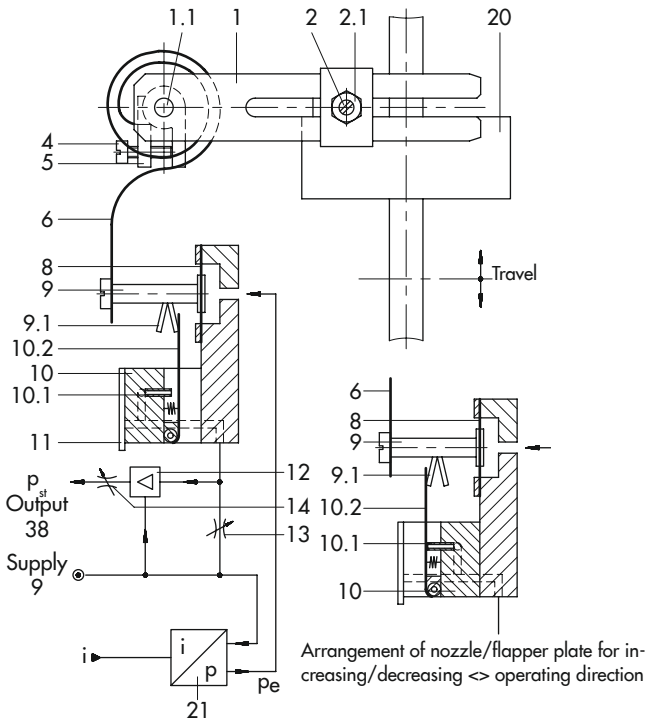


Fig. 3-2: Functional diagram

3.1 Technical data

Controlled variable (travel range)	7.5 to 60 mm, with lever extension: 7.5 to 90 mm
Set point ¹⁾ Split-range 0 to 50 % or 50 to 100 % set point span (up to 50 mm travel)	4 to 20 mA (Ex), $R_i = 250 \Omega^{2)}$ 4 to 20 mA (without explosion protection), $R_i = 200 \Omega^{2)}$ 0 to 20 mA, $R_i = 200 \Omega^{2)}$ 1 to 5 mA, $R_i = 880 \Omega^{2)}$
Range spring	See the 'Installation' section for selection.
Supply	Supply air: 1.4 to 6 bar (20 to 90 psi) Air quality acc. to ISO 8573-1: max. particle size and density: Class 4 Oil content: Class 3 · Pressure dew point: Class 3
Signal pressure p_{st} (output)	Max. 0 to 6.0 bar (0 to 90 psi)
Characteristic	Linear characteristic Deviation from terminal-based conformity $\leq 1.5 \%$
Hysteresis	$< 0.5 \%$
Sensitivity	$< 0.1 \%$
Direction of action	Reversible
Proportional band X_p (at 1.4 bar supply air)	1 to 3.0 % with spring 1 1 to 2.0 % with spring 2 1 to 1.5 % with spring 3
Air consumption in steady state ($X_p = 1 \%$)	With 1.4 bar supply air: $0.19 \text{ m}_n^3/\text{h}$ With 6 bar supply air: $0.5 \text{ m}_n^3/\text{h}$
Air output	At Δp 1.4 bar: $3.0 \text{ m}_n^3/\text{h}$ · At Δp 6 bar: $8.5 \text{ m}_n^3/\text{h}$
Transit time with Type 3271 Actuator, "stem extends"	175 cm ² : $\leq 1.8 \text{ s}$ 350 cm ² : $\leq 2.5 \text{ s}$ 750 cm ² : $\leq 10.0 \text{ s}$
Permissible ambient temperature ³⁾	With Type 6109 i/p Converter: -20 to +70 °C -35 to +70 °C (metal cable gland) With Type 6112 i/p Converter: -20 to +80 °C -40 to +80 °C (metal cable gland) -45 to +80 °C (special version)
Influences	Temperature: $< 0.03 \%/1 \text{ K}$ Supply air: $< 0.3 \%/0.1 \text{ bar}$ Vibrations: $< 2 \%$ between 10 up to 150 Hz and 4 g Variable position when turned by 180°: $< 3.5 \%$

Design and principle of operation

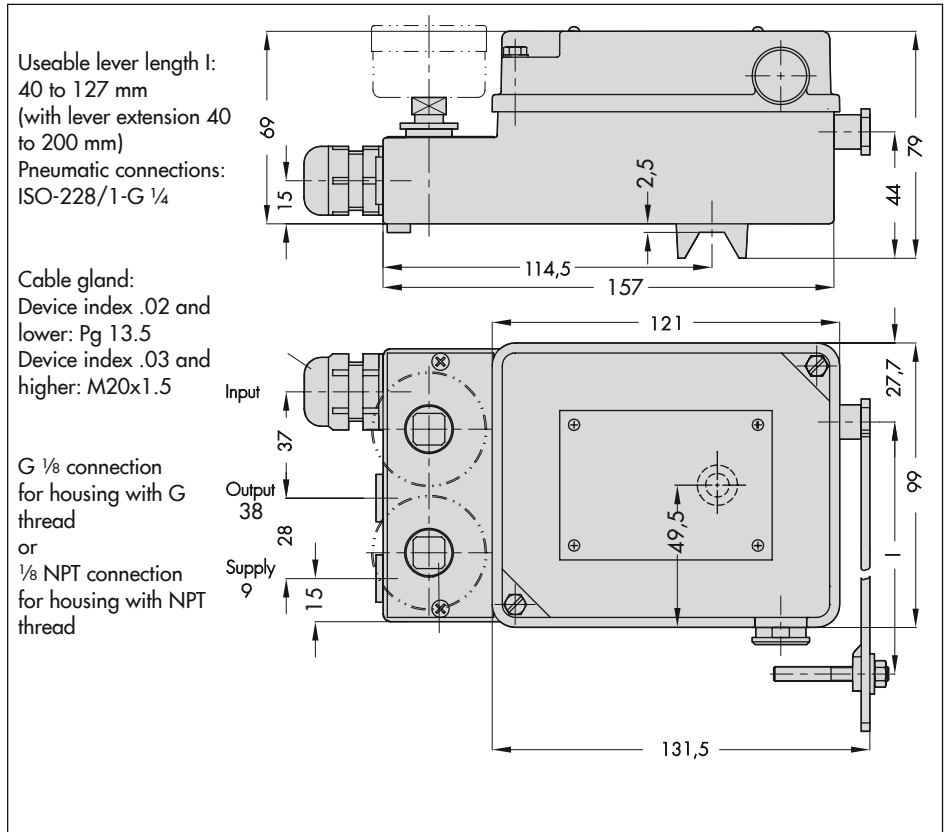
Degree of protection	IP 54 · Venting over check valve (1790-7408): IP 65	
Conformity	CE EAC	
Electromagnetic compatibility	Complying with EN 61000-6-2, EN 61000-6-3 and EN 61326-1	
Weight	Approx. 1.2 kg	
Materials	Enclosure	Die-cast aluminum, chromated and plastic coated
	External parts	Stainless steel

- 1) The data listed in the certificate of conformity applies to the version with type of protection Ex ia IIC.
- 2) R_c = Coil resistance (at approx. 20 °C) \pm 7 % tolerance
- 3) Observe the limits in the certificate of conformity for explosion-protected versions.

3.2 Summary of explosion protection approvals

Type	Certification		Type of protection/comments	
4763-1	ATEX	Number	PTB 02 ATEX 2078	II 2G Ex ia IIC T6 Gb
		Date	2002-07-19	
	CCC Ex	Number	2021322307003870	Ex ia IIC T4 ~ T6 Gb
Date		2021-04-05		
Valid until		2026-04-04		
EAC	Number	RU C-DE.HA65.B.00510/20	1 Ex ia IIC T6/T5/T4 Gb X	
	Date	2020-03-18		
	Valid until	2025-03-18		
4763-3	CSA	Number	1607873	Ex ia IIC T6; Class I, Zone 0 Class I, II, Div. 1, Groups A, B, C, D, E, F, G Class I, II, Div. 2, Groups A, B, C, D, E, F, G
		Date	2005-09-16	
4763-8	ATEX	Number	3020228	Class I, Zone 0 AEx ia IIC Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G Class I, Div. 2, Groups A, B, C, D; Class II, Div. 2 Groups F, G; Class III
		Date	2015-10-12	
4763-8	ATEX	Number	PTB 03 ATEX 2183 X	II 3G Ex nA ic IIC T6 Gc
		Date	2003-09-30	

3.3 Dimensions in mm



4 Shipment and on-site transport

The work described in this section is only to be performed by personnel appropriately qualified to carry out such tasks.

4.1 Accepting the delivered goods

After receiving the shipment, proceed as follows:

1. Check the scope of delivery. Check that the specifications on the nameplate of the positioner match the specifications in the delivery note. See the 'Markings on the device' section for nameplate details.
2. Check the shipment for transportation damage. Report any damage to SAMSON and the forwarding agent (refer to delivery note).

4.2 Removing the packaging from the positioner

Observe the following sequence:

- Do not remove the packaging and the protective caps on the pneumatic ports until immediately before installation.
- Dispose and recycle the packaging in accordance with the local regulations.

4.3 Transporting the positioner

- Pack the positioner properly to comply with terms of transportation.

Transport instructions

- Protect the positioner against external influences (e.g. impact).
- Protect the positioner against moisture and dirt.
- Observe transport temperature depending on the permissible ambient temperature (see the 'Design and principle of operation' section).

4.4 Storing the positioner

! NOTICE

Risk of device damage due to improper storage.

- *Observe the storage instructions.*
 - *Avoid long storage times.*
 - *Contact SAMSON in case of different storage conditions.*
-

i Note

We recommend regularly checking the positioner and the prevailing storage conditions during long storage periods.

Storage instructions

- Protect the positioner against external influences (e.g. impact, shocks, vibration).

Shipment and on-site transport

- Do not damage the corrosion protection (coating).
- Protect the positioner against moisture and dirt. In damp spaces, prevent condensation. If necessary, use a drying agent or heating.
- Make sure that the ambient air is free of acids or other corrosive media.
- Observe storage temperature depending on the permissible ambient temperature (see the 'Design and principle of operation' section).
- Store the positioner with the cover closed.
- Seal the pneumatic and electrical connections.
- Do not place any objects on the positioner.

5 Installation

The work described in this section is only to be performed by personnel appropriately qualified to carry out such tasks.

⚠ DANGER

Risk of fatal injury due to the ignition of an explosive atmosphere.

- Observe EN 60079-14 (VDE 0165, Part 1) for work on the positioner in potentially explosive atmospheres.
- Work in potentially explosive atmospheres must only be performed by personnel who has undergone special training or instructions or who is authorized to work on explosion-protected devices in hazardous areas.

⚠ WARNING

Crush hazard arising from moving parts on the valve.

- Do not touch any moving valve parts while the control valve is in operation.
- Before performing any mounting or installation work on the positioner, put the control valve out of operation by disconnecting and locking the supply air and control signal.
- Do not impede the movement of the actuator and plug stem by inserting objects into the yoke.

ⓘ NOTICE

Risk of malfunction due to incorrect mounting parts/accessories.

- Only use the mounting parts and accessories listed in these mounting and operating instructions to mount and install the positioner. Pay special attention to the type of attachment.

5.1 Installation conditions

Work position

The work position for the positioner is the front view onto the operating controls on the positioner seen from the position of operating personnel.

Operators must ensure that, after installation of the positioner, the operating personnel can perform all necessary work safely and easily access the device from the work position.

Mounting orientation

The vent plugs on the housing cover must face downward when the valve is installed.

5.2 Preparation for installation

Before mounting, make sure the following conditions are met:

- The positioner is not damaged.
- The air supply is not yet connected to the positioner.
- The current is not yet connected to the positioner.

Proceed as follows:

- Lay out the necessary material and tools to have them ready during mounting.
- Determine the operating direction of the positioner control loop (see section 5.2.1).
- Determine on which side of the valve the positioner is to be mounted (see section 5.2.2).
- Remove the protective caps from the pneumatic connections.

5.2.1 Determining the operating direction of the positioner control loop

Operating direction increasing/increasing <<

- The signal pressure p_{st} rises as the input signal p_e (set point) rises
- The signal pressure p_{st} decreases as the input signal p_e (set point) decreases

Operating direction increasing/decreasing <>

- The signal pressure p_{st} decreases as the input signal p_e (set point) rises
- The signal pressure p_{st} rises as the input signal p_e (set point) decreases

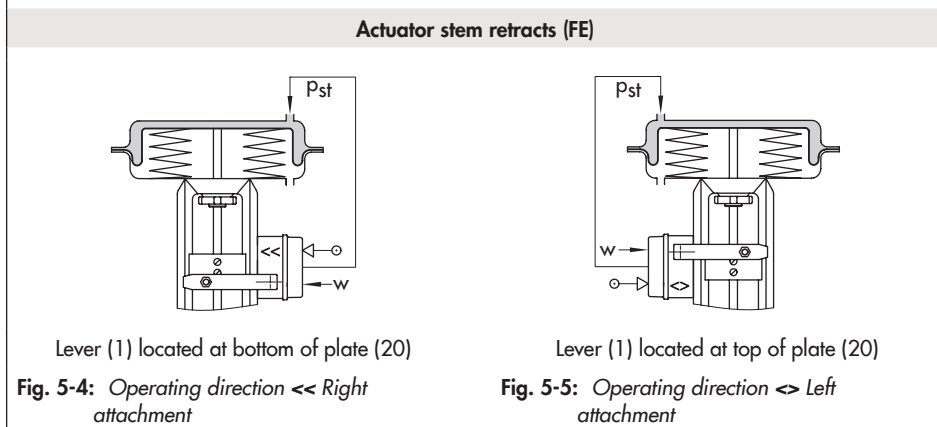
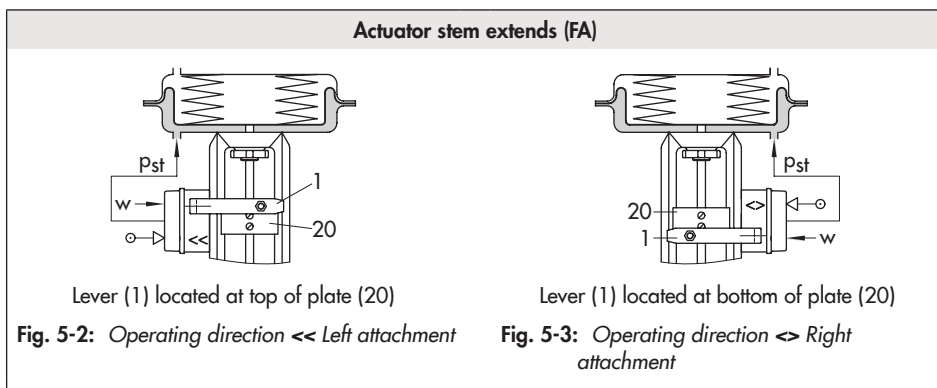
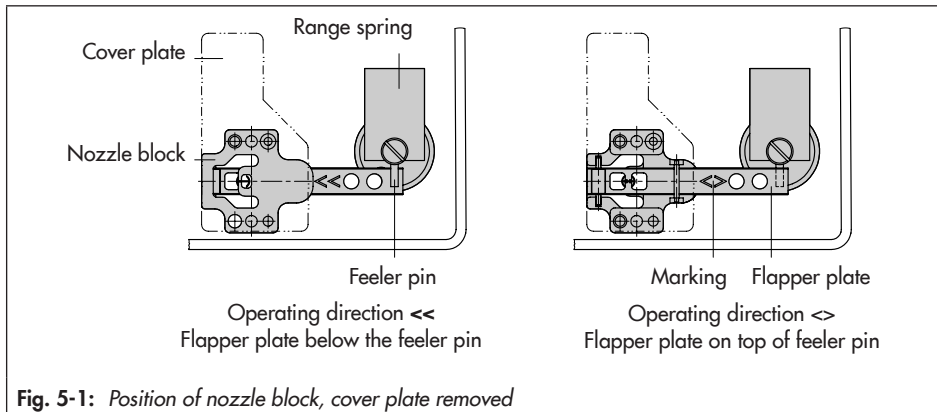
On the flapper plate, the operating direction is indicated by symbols (direct <<, reverse <>). Depending on the position of the flapper plate, the adjusted operating direction and the associated symbol is visible. If the required operating direction does not correspond to the visible symbol or if the operating direction is to be changed, proceed as follows:

- Unscrew both screws on the cover plate and lift off the nozzle block along with the cover plate.
- Turn the nozzle block by 180° and place it back on together with the cover plate. Make sure that the nozzle block and flapper plate are correctly located above or below the feeler pin as shown in Fig. 5-1.
- Fasten the nozzle block.

5.2.2 Determining on which side of the valve the positioner is to be mounted

The positioner is mounted on the left or right side of the valve depending on the actuator's direction of action and the operating direction of the positioner control loop.

- See Fig. 5-2 to Fig. 5-5.



5.3 Positioner attachment

5.3.1 Attachment to valve with cast yoke

Required accessories:

mounting kit 1400-5745

Fig. 5-6

- Fasten the plate (20) to the stem connector (22) of the valve using the screws (21).
- Unscrew the positioner cover and secure the positioner to the valve yoke using the fastening screw (15).

The O-ring included in the mounting kit is not required.

Make sure that the pin (2) is inserted through the wire strap and, as a result, clamped against the plate (20).

Make sure the location of the lever (1) and the plate (20), "lever at top of plate" or "lever at bottom of plate" is correct (see Fig. 5-2 to Fig. 5-5).

5.3.2 Attachment to valve with rod-type yoke

Required accessories:

mounting kits: 1400-5745 and 1400-5342

Fig. 5-7

- Fasten the plate (20), off-centered, to the travel indicator (24) of the plug stem (23) using the screws (21).

- Place both the support (28) and the clamping plate (26) on the rod (27) and lightly fasten. Move the support until both the center of the plate (20) and the support (28) are aligned when the valve is at half of the valve travel.

- Fasten tight the support and the clamping plate.

3. Mount the positioner to the support using the fastening screw (15).

Make sure that the pin (2) is inserted through the wire strap and, as a result, clamped against the plate (20).

Make sure the location of the lever (1) and the plate (20), "lever at top of plate" or "lever at bottom of plate" is correct (see Fig. 5-2 to Fig. 5-5).

5.4 Pneumatic connection

⚠ WARNING

Risk of injury by possible movement of the actuator stem after connecting the signal pressure.

- *Do not touch or block the actuator stem.*

The pneumatic connections are optionally designed as a bore with ¼ NPT or ISO 288/1-G ¼ thread. Customary fittings for metal or copper tubing or plastic hoses can be used.

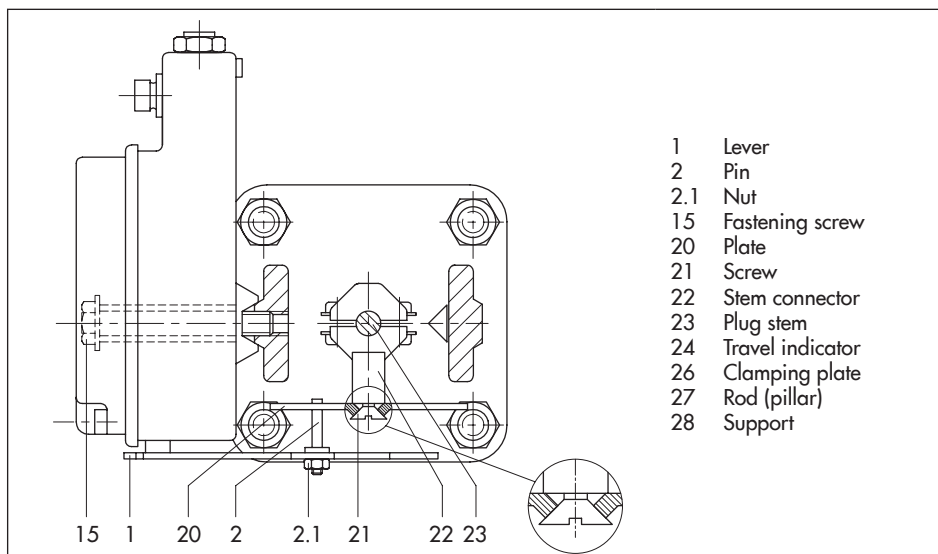


Fig. 5-6: Attachment to valves with cast yokes (NAMUR rib)

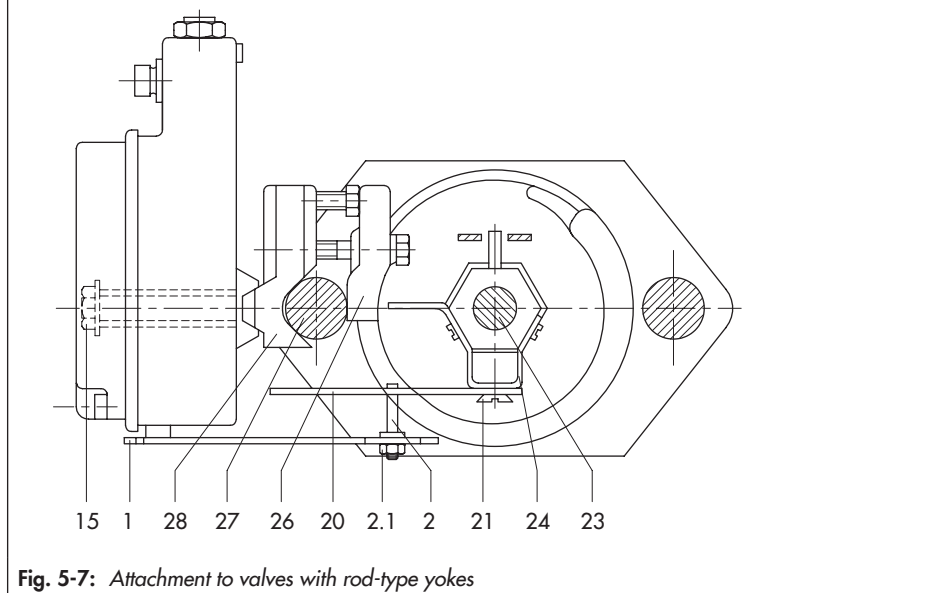


Fig. 5-7: Attachment to valves with rod-type yokes

NOTICE

Risk of malfunction due to failure to comply with air quality requirements.

- ➔ Only use supply air that is dry and free of oil and dust.
- ➔ Read the maintenance instructions for upstream pressure reducing stations.
- ➔ Blow through all air pipes and hoses thoroughly before connecting them.

5.4.1 Pressure gauges

To monitor the positioner, we recommend installing pressure gauges for the supply air and signal pressure (see accessories in section 5.8).

5.4.2 Supply pressure

The required supply air pressure depends on the bench range and the actuator's direction of action (fail-safe action).

The bench range is written on the nameplate either as the bench range or signal pressure range. The operating direction is marked **FA** or **FE** or by a symbol.

Actuator stem extends (FA)

Fail-close

(for globe and angle valves)

Required supply pressure =
Upper bench range value + 0.2 bar,
minimum 1.4 bar

Actuator stem retracts (FE)

Fail-open

(for globe and angle valves)

For tight-closing valves, the maximum signal pressure $p_{st,max}$ is roughly estimated as follows:

$$p_{st,max} = F + \frac{d^2 \cdot \pi \cdot \Delta p}{4 \cdot A} \text{ [bar]}$$

d = Seat diameter [cm]

Δp = Differential pressure across the valve [bar]

A = Actuator area [cm²]

F = Upper bench range value [bar]

If there are no specifications, calculate as follows:

Required supply pressure =
Upper bench range value + 1 bar

The positioner output pressure is routed to the top or bottom diaphragm case of the actuator as shown in Fig. 5-2 to Fig. 5-5.

5.5 Selecting the range spring

The attached lever and the installed range spring of the positioner are assigned to the values of rated valve travel and the set point as in Table 5-1.

In normal operation, the set point span is 100 % = 16 mA. A smaller span of, for example 50 % = 8 mA is only required for split-range operation (Fig. 5-8, right).

The span can be changed by exchanging the range spring. On making adjustments to the positioner, the travel must be adapted to the set point and vice versa.

Table 5-1: Range springs

Rated travel [mm]	Min./max. travel [mm]	Set point (input signal)	Range spring
Standard travels for SAMSON valves with lever l (40 to 127 mm in length)			
15	7.5 to 15	100 %	1
		50 %	2
30	14 to 32	100 %	2
		50 %	3
60	30 to 70	100 %	3
Further travel ranges with lever l and lever extension (40 to 200 mm in length)			
20	7.5 to 26	100 %	1
		50 %	2
40	14 to 50	100 %	2
		50 %	3
> 60	30 to 90	100 %	3

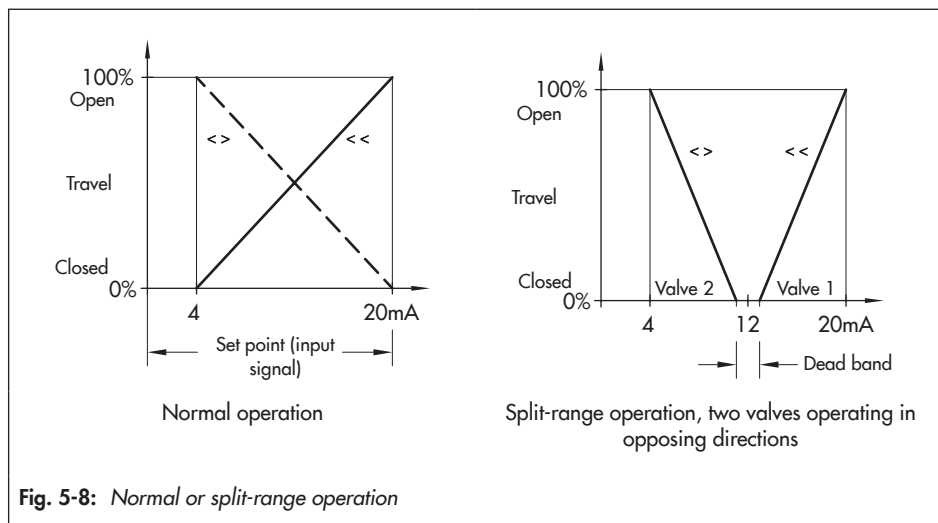


Fig. 5-8: Normal or split-range operation

Installation

With a set point, for example 4 to 20 mA, the valve must move through its entire travel range from 0 to 100 %. The starting point then is 4 mA and the upper range value 20 mA.

In split-range operation, the controller output signal is used to control two control valves, dividing it such that the valves move through their entire travel range at half the input signal range each (e.g. first valve set to 4 to 12 mA, second valve set to 12 to 20 mA). To avoid overlapping, allow for a dead band of ± 0.5 mA as shown in Fig. 5-8.

The starting point (zero) is adjusted at the screw (4); the set point span, i.e. the upper range value, is adjusted at the pin (2).

Exchanging the range spring (Fig. 5-9)

- Unscrew screw (7) on the range spring.
Undo hex socket screw (5) and pull out the lever together with shaft.

- Exchange range spring. Slide lever with shaft through sleeve (3), positioner housing and bracket (6.1).
- Secure range spring with the screw (7).
- Move bracket and shaft until the screw (5) sits on the flattened part of the shaft.
- Tighten screw (5). Allow for a play of 0.05 to 0.15 mm between the lever (1) and the sleeve (3) as well as between the range spring (6) and the positioner housing.

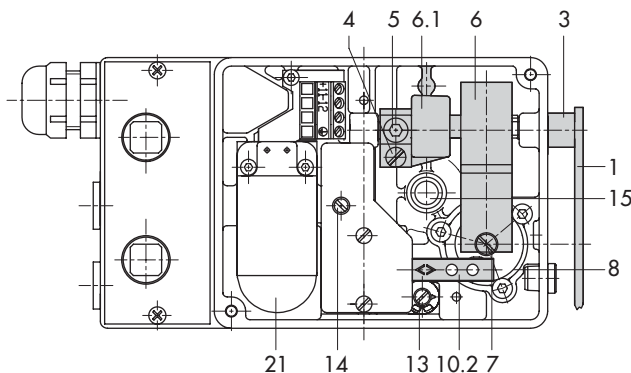


Fig. 5-9: Positioner with cover removed

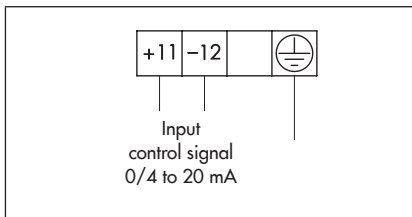
5.6 Adjusting the positioner

⚠ WARNING

Intrinsic safety rendered ineffective in intrinsically safe devices.

- Only connect intrinsically safe devices intended for use in intrinsically safe circuits to certified intrinsically safe input-connected units.
- Do not place intrinsically safe devices back into operation that were connected to intrinsically safe input-connected units without certification.
- Do not exceed the maximum permissible electric values specified in the EC type examination certificates when interconnecting intrinsically safe electrical equipment (U_i or U_o , I_i or I_o , P_i or P_o , C_i or C_o and L_i or L_o).

- Connect an ammeter to the control signal input at the terminals 11 (+) and 12 (-).



- Connect the supply air to the supply input (supply 9).

5.6.1 Air output capacity and proportional band X_p

Fig. 5-9

1. Close the volume restriction (14) as far as the required positioning speed permits. Check the positioning speed by pushing the range spring (6) as far it will go.
2. Adjust the set point at the input to approx. 50 % of its range. Then turn the zero adjuster (4) until the valve is at approximately 50 % valve travel.

On setting the X_p restriction, observe the relationship with the supply pressure as indicated in Fig. 5-10. The preset value of X_p should be approximately 3 %.

3. Check the plug stem's tendency to oscillate by pressing the range spring (6) briefly as far as it will go. The X_p value is to be adjusted to be as small as possible, without considerable overshooting occurring.

Additional points that apply concerning adjustment:

- Always adjust the X_p restriction before setting the starting point.
- In case of a zero shift (e.g. due to a subsequent change in the restriction setting or supply pressure), check the zero setting and readjust it.
- The adjustment range of the X_p restriction is restricted by the pointer and stop to one turn (Fig. 5-10). Do not remove the pointer.

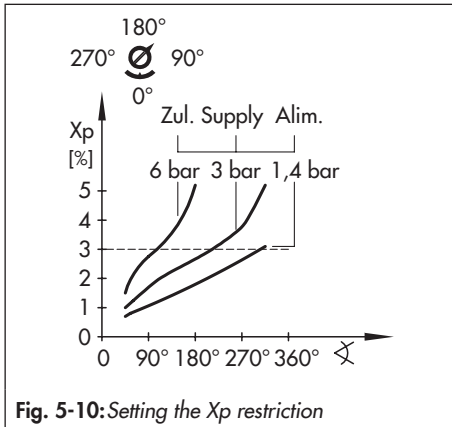


Fig. 5-10: Setting the Xp restriction

If the pointer has been removed by mistake, a basic calibration can be performed as follows:

1. Close the restriction until slight resistance can be felt.
2. From this position, open the restriction one 1/4 turn.
3. Push on the plastic ring with pointer pointing to the 0° position.
4. Set the restriction in the range between 90° and 180°.
5. Set Xp as described above.

5.6.2 Zero and span

a) Actuator with "stem extends" fail-safe action

To ensure that the total closing force of the actuator acts on the valve, proceed as follows while adjusting the set point:

- With operating direction increasing/increasing <<: adjust starting point to 4.5 mA (slightly raised).
- With operating direction increasing/decreasing <>: adjust starting point to 19.5 mA (slightly lowered).

Starting point (zero) e.g. 4.5 mA

1. Turn the zero adjustment screw (4) until the plug stem just starts to move out of its resting position (observe travel indicator).
2. Reduce the input signal to 0 mA and slowly increase it again. Check whether the plug stem starts to move at exactly 4.5 mA and correct, if necessary.

Upper range value (span) e.g. 20 mA

3. Once the starting point has been set, increase the input signal. At exactly 20 mA, the plug stem must stand still, having moved through 100 % travel (watch the travel indicator at the valve). If the upper range value is incorrect, move the pin (2 in Fig. 5-6 or 2 in Fig. 5-7) as follows to correct it:
 4. Move towards
 - Lever end → To increase the travel
 - Fulcrum → To reduce the travel
- After correcting the input signal, re-adjust zero. Then check the upper range value again.

Repeat the correction procedure until both values are correct.

b) Actuator with "actuator stem retracts" (FE) fail-safe action

When using an actuator with fail-safe action "actuator stem retracts", the diaphragm chamber must be pressurized with a signal pressure that is high enough to tightly close the valve against the upstream pressure in the plant.

- Operating direction <<: Upper range value of set point 20 mA
- Operating direction <>: Lower range value of set point 4 mA

The required signal pressure is either indicated on the positioner label or it can be roughly calculated as described in section 5.4.2.

Starting point, e.g. 20 mA

1. Set the input signal at the ammeter to 20 mA.
Turn the zero adjustment screw (4) until the plug stem just starts to move out of its initial position.
2. Increase the input signal and slowly reduce it again to 20 mA. Check whether the plug stem starts to move at exactly 20 mA.
Correct any deviation at the zero adjustment screw (4). Turning it counterclockwise causes the plug stem to move from its end position earlier; turning it clockwise causes it to move from its end position later.

Upper range value (span), e.g. 4 mA

3. Once the starting point has been set, increase the input signal to 4 mA at the ammeter.
At exactly 4 mA, the plug stem must stand still, having moved through 100 % travel (watch the travel indicator at the valve).
4. If the upper range value is incorrect, move the pin (2) to correct it. Readjust 20 mA and turn the zero adjustment screw (4) until the pressure gauge indicates the **required signal pressure**.
If no pressure gauge has been installed, set the starting point to 19.5 mA instead.

5.7 Electrical connection

For electrical installation, observe the relevant electrotechnical regulations and the accident prevention regulations that apply in the country of use. In Germany, these are the VDE regulations and the accident prevention regulations of the employers' liability insurance.

WARNING

Incorrect electrical connection will render the explosion protection unsafe.

- Adhere to the terminal assignment.
- Do not undo the enameled screws in or on the enclosure.

⚠ WARNING

Intrinsic safety rendered ineffective in intrinsically safe devices.

- ➔ *Only connect intrinsically safe devices intended for use in intrinsically safe circuits to certified intrinsically safe input-connected units.*
- ➔ *Do not place intrinsically safe devices back into operation that were connected to intrinsically safe input-connected units without certification.*
- ➔ *Do not exceed the maximum permissible electric values specified in the EC type examination certificates when interconnecting intrinsically safe electrical equipment (U_i or U_0 , I_i or I_0 , P_i or P_0 , C_i or C_0 and L_i or L_0).*

Selecting cables and wires:

Observe clause 12 of EN 60079-14: 2008 (VDE 0165, Part 1) for installation of the intrinsically safe circuits. Clause 12.2.2.7 applies when running multi-core cables and wires with more than one intrinsically safe circuit.

The radial thickness of the insulation of a conductor for common insulating materials (e.g. polyethylene) must not be smaller than 0.2 mm. The diameter of an individual wire in a fine-stranded conductor must not be smaller than 0.1 mm.

Protect the conductor ends against splicing, e.g. by using wire-end ferrules.

When two separate cables or wires are used for connection, an additional cable gland can be installed. Seal cable entries left un-

used with plugs. Fit equipment used in ambient temperatures below -20 °C with metal cable glands.

Equipment for use in zone 2/zone 22:

In equipment operated according to type of protection Ex nA II (non-sparking equipment) according to EN 60079-15:2003, circuits may be connected, interrupted or switched while energized only during installation, maintenance or repair.

Guide the wires for the set point over the cable gland to the terminals 11 (+) and 12 (-) located in the housing.

The ground connection can be connected inside or outside of the positioner housing.

Accessories for electrical connections

- ➔ See section 5.8.

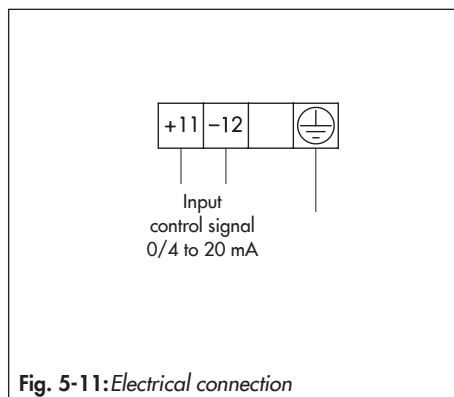
Connecting the electrical supply

Before performing the electrical connection, make sure the following conditions are met:

- The positioner is properly mounted onto the control valve.
- The air supply is properly connected.

If this is the case:

- ➔ Connect the electrical power (mA signal) as shown in Fig. 5-11.



5.8 Accessories and mounting parts

Accessories – Mounting parts	Ordering number
Range spring 1	1190-0736
Range spring 2	1190-0737
Range spring 3	1190-0738
Lever I	1690-6469
Lever extension	1400-6716
Pressure gauge attachment	1402-1637
Pressure gauge attachment (copper-free)	1402-1638
Mounting kit for valves with cast yoke according to NAMUR Valves with rod-type yoke according to NAMUR for 18 to 35 mm rod diameter	1400-5745 1400-5745 and 1400-5342
Assortment of spare parts including gaskets and diaphragms	1400-6792
Assortment of spare parts including gasket, diaphragms and pneumatic parts (for positioners with device index .02 and higher)	1402-0040
Upgrade to degree of protection IP 65: Venting over check valve	1790-7408
Accessories for electrical connections	Ordering number
Black cable gland M20x1.5	1400-6985
Blue cable gland M20x1.5	1400-6986
Adapter M20x1.5 to ½ NPT, powder-coated aluminum:	0310-2149

6 Start-up

The work described in this section is only to be performed by personnel appropriately qualified to carry out such tasks.

DANGER

Risk of fatal injury due to the ignition of an explosive atmosphere.

- Observe EN 60079-14 (VDE 0165, Part 1) for work on the positioner in potentially explosive atmospheres.
- Installation, operation or maintenance of the positioner must only be performed by personnel who has undergone special training or instructions or who is authorized to work on explosion-protected devices in hazardous areas.

WARNING

Crush hazard arising from moving parts on the valve.

- Do not touch any moving valve parts while the control valve is in operation.
- Before performing any mounting or installation work on the positioner, put the control valve out of operation by disconnecting and locking the supply air and control signal.
- Do not impede the movement of the actuator and plug stem by inserting objects into the yoke.

Before start-up, make sure the following conditions are met:

- The positioner is properly mounted according to the instructions.
- The pneumatic and electrical connections have been performed according to the instructions.

Start-up

- Open the supply air line to the positioner.
- Switch on the electrical power supply.

7 Operation

The positioner is ready for use after it has been mounted and the pneumatic and electric connections have been established (see the 'Installation' section).

WARNING

Crush hazard arising from moving parts on the valve.

- *Do not touch any moving valve parts while the control valve is in operation.*
 - *Before performing any mounting or installation work on the positioner, put the control valve out of operation by disconnecting and locking the supply air and control signal.*
 - *Do not impede the movement of the actuator and plug stem by inserting objects into the yoke.*
-

8 Malfunction

DANGER

Risk of fatal injury due to the ignition of an explosive atmosphere.

- Installation, operation or maintenance of the positioner must only be performed by personnel who has undergone special training or instructions or who is authorized to work on explosion-protected devices in hazardous areas.

WARNING

Crush hazard arising from moving parts on the valve.

- Do not touch any moving valve parts while the control valve is in operation.
- Before performing any mounting or installation work on the positioner, put the control valve out of operation by disconnecting and locking the supply air and control signal.
- Do not impede the movement of the actuator and plug stem by inserting objects into the yoke.

8.1 Troubleshooting

- See Table 8-1

Note

Contact SAMSON's After-sales Service for malfunctions not listed in the table.

8.2 Emergency action

Upon failure of the air supply or electric signal, the positioner vents the actuator, causing the valve to move to the fail-safe position determined by the actuator.

Tip

Emergency action in the event of valve or actuator failure is described in the associated valve and actuator documentation.

- Plant operators are responsible for emergency action to be taken in the plant.

Malfunction

Table 8-1: *Troubleshooting*

Description of fault	Measures
Actuator moves too slowly.	→ Check the supply pressure. → Check the cross-section of the piping and screw fittings. → Check the configuration of the mounting parts.
Actuator moves in the wrong direction.	→ Check piping. → Check the configuration of the mounting parts.
Air leaks from the positioner.	→ Check the seals in the connecting plate.
The set point span is not reached at a 100 % signal.	→ Check whether the correct range spring has been selected. → Check the adjusted air output and proportional band. → Check the adjusted span.
Zero is not reached at a 0 % signal.	→ Check the adjusted zero.

9 Servicing

The work described in this section is only to be performed by personnel appropriately qualified to carry out such tasks.

⚠ DANGER

Risk of fatal injury due to the ignition of an explosive atmosphere.

- Installation, operation or maintenance of the positioner must only be performed by personnel who has undergone special training or instructions or who is authorized to work on explosion-protected devices in hazardous areas.

⚠ WARNING

Intrinsic safety rendered ineffective in intrinsically safe devices.

- Only connect intrinsically safe devices intended for use in intrinsically safe circuits to certified intrinsically safe input-connected units.
- Do not place intrinsically safe devices back into operation that were connected to intrinsically safe input-connected units without certification.
- Do not exceed the maximum permissible electric values specified in the EC type examination certificates when interconnecting intrinsically safe electrical equipment (U_i or U_o , I_i or I_o , P_i or P_o , C_i or C_o and L_i or L_o).

⚠ WARNING

Crush hazard arising from actuator and plug stem moving.

- Do not touch any moving valve parts while the control valve is in operation.
- Before performing any mounting or installation work on the positioner, put the control valve out of operation by disconnecting and locking the supply air and control signal.
- Do not impede the movement of the actuator and plug stem by inserting objects into the yoke.

The positioner was checked by SAMSON before it left the factory.

- The product warranty becomes void if service or repair work not described in these instructions is performed without prior agreement by SAMSON's After-sales Service.
- Only use original spare parts by SAMSON, which comply with the original specifications.

The positioner does not require any maintenance.

- Observe the maintenance instructions of any upstream supply air pressure reducing stations.

9.1 Changing the operating direction of the positioner control loop

To change the operating direction of the positioner control loop (increasing/increasing, increasing/decreasing):

- ➔ Change the operating direction of the positioner control loop (see the 'Installation' section).
- ➔ Determine on which side of the valve the positioner is to be mounted (see the 'Installation' section).

9.2 Converting the electro-pneumatic into a pneumatic positioner

Fig. 9-1

The electropneumatic positioner can be converted into a Type 4765 Pneumatic Positioner with a conversion kit.

- ➔ Required conversion kits: see Table 9-1
1. Unscrew fastening screws and lift the i/p converter together with the printed circuit board out of the positioner housing.
 2. Unthread cable gland (1). Plug on hose (5) and screw the connecting nipple (4) of the conversion kit tightly on the housing.
 3. Insert sealing element (7) into connecting plate (6) and fasten it tight into the housing.
 4. Push the free end of the hose onto the connecting plate (6).

i Note

For details on the converted Type 4765 Positioner refer to *Mounting and Operating Instructions* ▶ EB 8359-1.

Table 9-1: Conversion kits

Device index	Threaded connection	Order no.
0.2	G	1400-6724
	NPT	1400-6725
0.3	G	1400-6795
	NPT	1400-6796

9.3 Periodic inspection and testing of the positioner

We recommend inspection and testing according to Table 9-2 at the minimum.

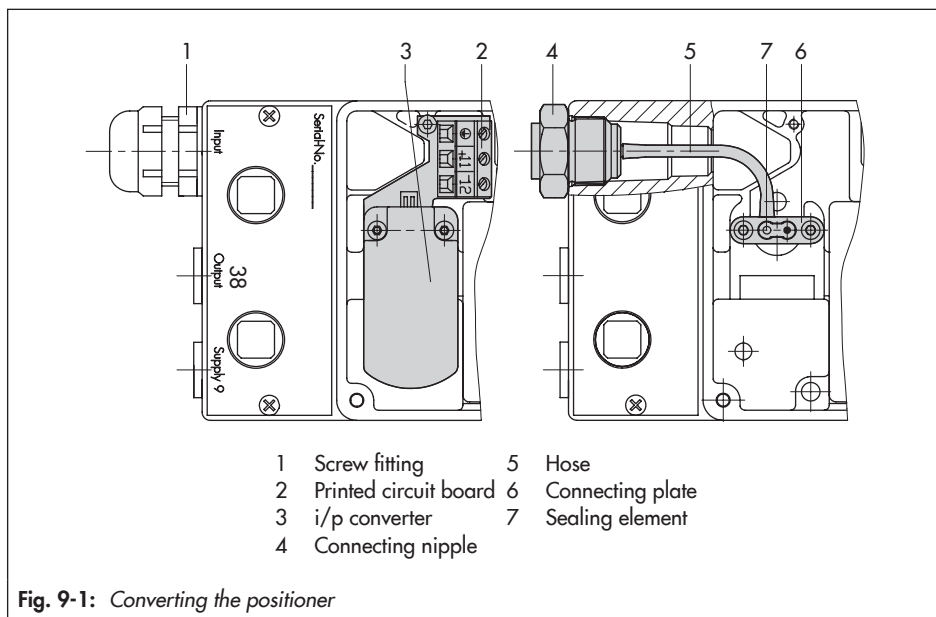


Fig. 9-1: Converting the positioner

Table 9-2: Recommended inspection and testing

Inspection and testing	Action to be taken in the event of a negative result
Check the markings, labels and nameplates on the positioner for their readability and completeness.	Immediately renew damaged, missing or incorrect nameplates or labels.
	Clean any inscriptions that are covered with dirt and are illegible.
Check the positioner to ensure that it is mounted firmly.	Tighten the any loose mounting screws.
Check the pneumatic connections.	Tighten any loose male connectors of the screw fittings.
	Renew any air pipes or hoses that leak.
Check the power supply wires.	Tighten any loose cable glands.
	Make sure that the stranded wires are pushed into the terminals and tighten any loose screws on the the terminals.
	Renew damaged lines.

10 Decommissioning

The work described in this section is only to be performed by personnel appropriately qualified to carry out such tasks.

DANGER

Risk of fatal injury due to ineffective explosion protection.

The explosion protection becomes ineffective when the positioner cover is opened.

→ *The following regulations apply to installation in hazardous areas: EN 60079-14 (VDE 0165, Part 1).*

NOTICE

The process is disturbed by interrupting closed-loop control.

→ *Do not mount or service the positioner while the process is running and only after isolating the plant by closing the shut-off valves.*

To decommission the positioner before removing it, proceed as follows:

- Put the control valve out of operation. See associated valve documentation.
- Shut off and lock the supply air line to the positioner.
- Disconnect and lock the electrical power supply.

11 Removal

The work described in this section is only to be performed by personnel appropriately qualified to carry out such tasks.

DANGER

Risk of fatal injury due to the ignition of an explosive atmosphere.

- *The following regulations apply to installation in hazardous areas: EN 60079-14 (VDE 0165, Part 1).*
 - *Installation, operation or maintenance of the positioner must only be performed by personnel who has undergone special training or instructions or who is authorized to work on explosion-protected devices in hazardous areas.*
-
- Put the positioner out of operation (see the 'Decommissioning' section).
 - Disconnect the wires for electrical input and remove them from the positioner.
 - Unscrew screw fittings for supply pressure/output at the positioner.
 - To remove the positioner, loosen the fastening screws on the positioner.

12 Repairs

A defective positioner must be repaired or replaced.

! NOTICE

Risk of positioner damage due to incorrect service or repair work.

- Do not perform any repair work on your own.
- Contact SAMSON's After-sales Service for service and repair work.

12.1 Servicing explosion-protected devices

If a part of the device on which the explosion protection is based needs to be serviced, the device must not be put back into operation until a qualified inspector has assessed it according to explosion protection requirements, has issued an inspection certificate, or given the device a mark of conformity. Inspection by a qualified inspector is not required if the manufacturer performed a routine test on the device before putting it back into operation. Document the passing of the routine test by attaching a mark of conformity to the device.

Replace explosion-protected components only with original, routine-tested components by the manufacturer.

Devices that have already been used outside hazardous areas and are intended for future use inside hazardous areas must comply

with the safety requirements placed on serviced devices. Before being operated inside hazardous areas, test the devices according to the specifications for servicing explosion-protected devices.

EN 60079-19 applies to servicing explosion-protected devices.

12.2 Returning devices to SAMSON

Defective devices can be returned to SAMSON for repair.

Proceed as follows to return devices to SAMSON:

1. Put the positioner out of operation (see the 'Decommissioning' section).
2. Remove the positioner (see the 'Removal' section).
3. Proceed as described on the Returning goods page of our website
 ► www.samsongroup.com > Service & Support > After-sales Service > Returning goods

13 Disposal



We are registered with the German national register for waste electric equipment (stiftung ear) as a producer of electrical and electronic equipment, WEEE reg. no.: DE 62194439

- Observe local, national and international refuse regulations.
- Do not dispose of components, lubricants and hazardous substances together with your other household waste.



On request, we can appoint a service provider to dismantle and recycle the product.

14 Certificates

The following certificate is shown on the next page:

- EU declaration of conformity for Type 4763
- EU declaration of conformity for Type 4763-1
- EU declaration of conformity for Type 4763-8
- EAC certificate for Type 4763
- ATEX: EC type examination certificate
- CSA certificate

The certificates shown were up to date at the time of publishing. The latest certificates can be found on our website:

▶ www.samsongroup.com > Products & Applications > Product selector > Valve accessories > 4763



**EU Konformitätserklärung / EU Declaration of Conformity /
Déclaration UE de conformité**

Die alleinige Verantwortung für die Ausstellung dieser Konformitätserklärung trägt der Hersteller/
This declaration of conformity is issued under the sole responsibility of the manufacturer/
La présente déclaration de conformité est établie sous la seule responsabilité du fabricant.
Für das folgende Produkt / For the following product / Nous certifions que le produit

**Elektropneumatischer Stellungsregler / Electropneumatic Positioner /
Positionneur électropneumatique
Typ/Type/Type 4763**

wird die Konformität mit den einschlägigen Harmonisierungsrechtsvorschriften der Union bestätigt /
the conformity with the relevant Union harmonisation legislation is declared with/
est conforme à la législation d'harmonisation de l'Union applicable selon les normes:

EMC 2014/30/EU

EN 61000-6-2:2005, EN 61000-6-3:2007
+A1:2011, EN 61326-1:2013

RoHS 2011/65/EU

EN 50581:2012

Hersteller / Manufacturer / Fabricant:

SAMSON AKTIENGESELLSCHAFT
Weismüllerstraße 3
D-60314 Frankfurt am Main
Deutschland/Germany/Allemagne

Frankfurt / Francfort, 2017-07-29

Im Namen des Herstellers/ On behalf of the Manufacturer/ Au nom du fabricant.

Hanno Zager
Leiter Qualitätssicherung/Head of Quality Management/
Responsable de l'assurance de la qualité

Dirk Hoffmann
Zentralabteilungsleiter/Head of Department/Chef du département
Entwicklungsorganisation/Development Organization



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Die alleinige Verantwortung für die Ausstellung dieser Konformitätserklärung trägt der Hersteller/
This declaration of conformity is issued under the sole responsibility of the manufacturer/
La présente déclaration de conformité est établie sous la seule responsabilité du fabricant.
Für das folgende Produkt / For the following product / Nous certifions que le produit

Elektropneumatischer Stellungsregler / Electropneumatic Positioner / Positionneur électropneumatique Typ/Type/Type 4763-1...

- entsprechend der EU-Baumusterprüfbescheinigung PTB 02 ATEX 2078 ausgestellt von der/
according to the EU Type Examination PTB 02 ATEX 2078 issued by/
établi selon le certificat CE d'essais sur échantillons PTB 02 ATEX 2078 émis par:

Physikalisch Technische Bundesanstalt
Bundesallee 100
D-38116 Braunschweig
Benannte Stelle/Notified Body/Organisme notifié 0102

- wird die Konformität mit den einschlägigen Harmonisierungsrechtsvorschriften der Union bestätigt /
the conformity with the relevant Union harmonisation legislation is declared with/
est conforme à la législation d'harmonisation de l'Union applicable selon les normes:

EMC 2014/30/EU	EN 61000-6-2:2005, EN 61000-6-3:2007 +A1:2011, EN 61326-1:2013
Explosion Protection 94/9/EC (bis/to 2016-04-19) Explosion Protection 2014/34/EU (ab/from 2016-04-20)	EN 60079-0:2009, EN 60079-11:2012
RoHS 2011/65/EU	EN 50581:2012

Hersteller / Manufacturer / Fabricant:

SAMSON AKTIENGESELLSCHAFT
Weismüllerstraße 3
D-60314 Frankfurt am Main
Deutschland/Germany/Allemagne

Frankfurt / Francfort, 2017-07-29

Im Namen des Herstellers/ On behalf of the Manufacturer/ Au nom du fabricant.

H. Zager

Hanno Zager
Leiter Qualitätssicherung/Head of Quality Management/
Responsable de l'assurance de la qualité

D. Hoffmann

Dirk Hoffmann
Zentralabteilungsleiter/Head of Department/Chef du département
Entwicklungsorganisation/Development Organization



EU Konformitätserklärung / EU Declaration of Conformity / Déclaration UE de conformité

Die alleinige Verantwortung für die Ausstellung dieser Konformitätserklärung trägt der Hersteller/
This declaration of conformity is issued under the sole responsibility of the manufacturer/
La présente déclaration de conformité est établie sous la seule responsabilité du fabricant.
Für das folgende Produkt / For the following product / Nous certifions que le produit

Elektropneumatischer Stellungsregler / Electropneumatic Positioner / Positionneur électropneumatique Typ/Type/Type 4763-8...

entsprechend der EU-Baumusterprüfbescheinigung PTB 03 ATEX 2183 X ausgestellt von der/
according to the EU Type Examination PTB 03 ATEX 2183 X issued by/
établi selon le certificat CE d'essais sur échantillons PTB 03 ATEX 2183 X émis par:

Physikalisch Technische Bundesanstalt
Bundesallee 100
D-38116 Braunschweig
Benannte Stelle/Notified Body/Organisme notifié 0102

wird die Konformität mit den einschlägigen Harmonisierungsrechtsvorschriften der Union bestätigt /
the conformity with the relevant Union harmonisation legislation is declared with/
est conforme à la législation d'harmonisation de l'Union applicable selon les normes:

EMC 2014/30/EU	EN 61000-6-2:2005, EN 61000-6-3:2007 +A1:2011, EN 61326-1:2013
Explosion Protection 94/9/EC (bis/to 2016-04-19) Explosion Protection 2014/34/EU (ab/from 2016-04-20)	EN 60079-0:2009, EN 60079-15:2010
RoHS 2011/65/EU	EN 50581:2012

Hersteller / Manufacturer / Fabricant:

SAMSON AKTIENGESELLSCHAFT
Weismüllerstraße 3
D-60314 Frankfurt am Main
Deutschland/Germany/Allemagne

Frankfurt / Francfort, 2017-07-29

Im Namen des Herstellers/ On behalf of the Manufacturer/ Au nom du fabricant.

Hanno Zager
Leiter Qualitätssicherung/Head of Quality Management/
Responsable de l'assurance de la qualité

Dirk Hoffmann
Zentralabteilungsleiter/Head of Department/Chef du département
Entwicklungsorganisation/Development Organization



СЕРТИФИКАТ СООТВЕТСТВИЯ

№ ЕАЭС RU C-DE.ЭА11.В.00045/19

Серия **RU** № **0197354**

ОРГАН ПО СЕРТИФИКАЦИИ Общества с ограниченной ответственностью «ТМС РУС». Место нахождения (адрес юридического лица): Российская Федерация, 127083, город Москва, улица Верхняя Масловка, дом 20, строение 2; адрес места осуществления деятельности: Российская Федерация, 127083, город Москва, улица Верхняя Масловка, дом 20, строение 2, помещения № 18, 28. Аттестат аккредитации № РОСС RU.0001.11ЭА11 от 02.07.2015. Номер телефона: +7 (495) 221-18-04; адрес электронной почты: info@tms-cs.ru.

ЗАЯВИТЕЛЬ Общество с ограниченной ответственностью «Самсон Контролс». Место нахождения (адрес юридического лица) и адрес места осуществления деятельности: Российская Федерация, 109544, город Москва, бульвар Энтузиастов, дом 2, этаж 5, комната 11. ОГРН 1037700041026. Номер телефона: +7 (495) 777-45-45; адрес электронной почты: samson@samson.ru.

ИЗГОТОВИТЕЛЬ «SAMSON AG Mess- und Regeltechnik». Место нахождения (адрес юридического лица) и адрес места осуществления деятельности по изготовлению продукции: Weismullerstrasse 3, D-60314 Frankfurt am Main, Германия.

ПРОДУКЦИЯ Позиционеры, типы 3724, 3725, 3730-0, 3730-1, 3730-2, 3730-3, 3730-4, 3730-5, 3730-6, 3731-3, 3731-5, 4763, 4765. Изготовление в соответствии со стандартами, указанными в приложении к сертификату соответствия на бланке № 0676628. Серийный выпуск.

КОД ТН ВЭД ЕАЭС 9032 81 000 0

СООТВЕТСТВУЕТ ТРЕБОВАНИЯМ технического регламента Таможенного союза «Электромагнитная совместимость технических средств» (ТР ТС 020/2011)

СЕРТИФИКАТ СООТВЕТСТВИЯ ВЫДАН НА ОСНОВАНИИ протокола сертификационных испытаний № 190919-013-016-02/ИР от 22.10.2019, выданного испытательной лабораторией Общества с ограниченной ответственностью «Инновационные решения», аттестат аккредитации РОСС RU.0001.21AB90; акта о результатах анализа состояния производства № 00062-А от 04.07.2019 органа по сертификации Общества с ограниченной ответственностью «ТМС РУС»; руководства по эксплуатации 4218-3725-3724-2018.РЭ, 4218-3730-4763-2018.РЭ, 4218-3731-2018.РЭ. Схема сертификации – 1с.

ДОПОЛНИТЕЛЬНАЯ ИНФОРМАЦИЯ Стандарт, в результате применения которого на добровольной основе обеспечивается соблюдение требований технического регламента: подразделы 6.2 и 7.2 ГОСТ Р 51522.1-2011 (МЭК 61326-1:2005) «Электрическое оборудование для измерения, управления и лабораторного применения. Часть 1. Общие требования и методы испытаний». Назначенный срок службы – 15 лет. Назначенный срок хранения – 2 года. Условия хранения указаны в руководствах по эксплуатации 4218-3725-3724-2018.РЭ, 4218-3730-4763-2018.РЭ, 4218-3731-2018.РЭ.

СРОК ДЕЙСТВИЯ С 05.11.2019 **ПО** 04.11.2024
ВКЛЮЧИТЕЛЬНО

Руководитель (уполномоченное лицо) органа по сертификации

Эксперт (эксперт-аудитор) (эксперты (эксперты-аудиторы))

Назарова
(подпись)



Назарова Лилия Юрьевна (Ф.И.О.)

Ходоров Владимир Игоревич (Ф.И.О.)

ПРИЛОЖЕНИЕ

К СЕРТИФИКАТУ СООТВЕТСТВИЯ № ЕАЭС RU C-DE.ЭА11.В.00045/19

Серия **RU** № **0676628** Лист 1 из 1

Стандарты, в соответствии с которыми изготавливается продукция

Обозначение стандарта	Наименование стандарта
IEC 61000-6-2:2016	Electromagnetic compatibility (EMC). Part 6-2: Generic standards. Immunity for industrial environments
EN 61000-6-3:2007	Electromagnetic compatibility (EMC). Part 6-3: Generic standards. Emission standard for residential, commercial and light-industrial environments
EN 61326-1:2013	Electrical equipment for measurement, control and laboratory use. EMC requirements. Part 1: General requirements

Руководитель (уполномоченное
лицо) органа по сертификации

(подпись)

Эксперт (эксперт-аудитор)
(эксперты (эксперты-аудиторы))

(подпись)



Назарова Лилия Юрьевна

(Ф.И.О.)

Ходоров Владимир Игоревич

(Ф.И.О.)



TRANSLATION

(1) **EC TYPE EXAMINATION CERTIFICATE**

- (2) Equipment and Protective Systems Intended for Use
in Potentially Explosive Atmospheres – Directive 94/9/EC



- (3) EC Type Examination Certificate Number

PTB 02 ATEX 2078

- (4) Equipment: Model 4763-1.. I/P Positioner
(5) Manufacturer: SAMSON AG, Mess- und Regeltechnik
(6) Address: Weismüllerstr. 3, D-60314 Frankfurt, Germany

- (7) This equipment and any acceptable variations thereof are specified in the schedule to this certificate.

- (8) The Physikalisch-Technische Bundesanstalt, notified body number 0102 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres as specified in Annex II to the Directive.

The examination and test results are recorded in confidential report PTB-Ex 02-22054.

- (9) The Essential Health and Safety Requirements are satisfied by compliance with

EN 50014: 1997+A1+A2 / EN 50020: 1994

- (10) If the sign “X” is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.
(11) According to the Directive 94/9/EC, this EC TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified equipment. If applicable, further requirements of this Directive apply to the manufacture and supply of the equipment.

The results laid down in this test report refer exclusively to the test object and the technical documentation submitted. Test reports without signature and seal are invalid. This test report may be reproduced unaltered only. Extracts or amendments shall require the prior approval of the Physikalisch-Technische Bundesanstalt.

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Ptb29-4763.doc

- (12) The marking of the equipment shall include the following:

 II 2 G EEx ia IIC T6

Zertifizierungsstelle Explosionsschutz
By order

Braunschweig, 19. July 2002

(Signature) (Seal)

Dr. Ing. U. Johannsmeyer
Regierungsdirektor

The results laid down in this test report refer exclusively to the test object and the technical documentation submitted. Test reports without signature and seal are invalid. This test report may be reproduced unaltered only. Extracts or amendments shall require the prior approval of the Physikalisch-Technische Bundesanstalt.

(13)

Schedule

(14)

EC Type Examination Certificate Number PTB 02 ATEX 2078

(15) **Description of Equipment**

The Model 4763-1.. I/P Positioner is intended for attachment to pneumatic control valves. It serves for converting control signals of (0) 4...20 mA or 1...5 mA from a controlling system into a pneumatic actuating pressure of 6 bar max. For auxiliary power non-combustible media are used.

The i/p converter circuit is a passive two-terminal network which may be connected to any certified intrinsically safe circuit, provided the permissible maximum values of U_i , I_i and P_i are not exceeded.

The device is intended for use inside and outside of hazardous locations.

The correlation between version, temperature classification, permissible ambient temperature ranges and maximum short-circuit currents is shown in the table below:

Version 4763-1...1. with Model 6109 I/P Module

Temperature class	Permissible ambient temperature range	Maximum short-circuit current
T6	-45 °C ... 60 °C	85 mA
T5	-45 °C ... 70 °C	
T4	-45 °C ... 80 °C	
T5	-45 °C ... 70 °C	100 mA
T4	-45 °C ... 80 °C	

Version 4763-1...2. with Model 6112 I/P Module

Temperature class	Permissible ambient temperature range	Maximum short-circuit current
T6	-45 °C ... 60 °C	85 mA or
T5	-45 °C ... 70 °C	100 mA
T4	-45 °C ... 80 °C	120 mA

The results laid down in this test report refer exclusively to the test object and the technical documentation submitted. Test reports without signature and seal are invalid. This test report may be reproduced unaltered only. Extracts or amendments shall require the prior approval of the Physikalisch-Technische Bundesanstalt.

Electrical data

Signal circuit
(terminals 11/12)

Type of protection: Intrinsic safety EEx ia IIC
only for connection to a certified intrinsically safe circuit

Maximum values:

U_i = 28 V
 I_i = 110 mA or 85 mA
 P_i = 0.7 W
or

U_i = 25 V
 I_i = 120 mA
 P_i = 0.7 W
 C_i = negligible
 L_i = negligible

(16) **Test Report PTB Ex 02-22054**

(17) **Special conditions for safe use**

None

(18) **Essential Health and Safety Requirements**

In compliance with the standards specified above.

Zertifizierungsstelle Explosionsschutz
By order

Braunschweig, 19. July 2002

(Signature) (seal)

Dr. Ing. U. Johannsmeyer
Regierungsdirektor

The results laid down in this test report refer exclusively to the test object and the technical documentation submitted. Test reports without signature and seal are invalid. This test report may be reproduced unaltered only. Extracts or amendments shall require the prior approval of the Physikalisch-Technische Bundesanstalt.


1. SUPPLEMENT

according to Directive 94/9/EC Annex III.6

to EC-TYPE-EXAMINATION CERTIFICATE PTB 02 ATEX 2078

(Translation)

Equipment: *i/p*-positioner, type 4763-1..

Marking:  II 2 G EEx ia IIC T6

Manufacturer: SAMSON AG Mess- und Regeltechnik

Address: Weismüllerstr. 3, 60314 Frankfurt, Germany

Description of supplements and modifications

The *i/p*-positioner, type 4763-1.. is mounted onto pneumatic control valves. It is used for the conversion of (0) 4 ... 20 mA- or 1 ... 5 mA-control-signals from a controlling system into a pneumatic control pressure up to max. 6 bar. Non-flammable media are used as pneumatic auxiliary power.

The *i/p* converter circuit is a passive two-terminal network that may be connected into all certified intrinsically safe circuits provided that the permissible maximum values for U_i , I_i , and P_i are not exceeded. The equipment is intended for the application inside or outside the hazardous area.

In the future the *i/p*-positioner, type 4763-1.. may also be manufactured according to the test documents listed in the test report.

The state of the standards has been adapted. Further modifications have not been made.

For relationship between variant, temperature class, permissible ranges of the ambient temperature and maximum short-circuit currents, reference is made to the following tables:

Variant 4763-1...1. with *i/p*-module, type 6109-1..

Temperature class	Permissible ambient temperature range	Maximum short-circuit current
T6	-45 °C ... 60 °C	85 mA
T5	-45 °C ... 70 °C	
T4	-45 °C ... 80 °C	
T5	-45 °C ... 70 °C	100 mA
T4	-45 °C ... 80 °C	

Sheet 1/3

EC-type-examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt. In case of dispute, the German text shall prevail.

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1. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 02 ATEX 2078

Electrical data

Signal circuit type of protection Intrinsic Safety Ex ia IIC
(terminals 11/12) only for connection to a certified intrinsically safe circuit

Maximum values:

$$U_i = 28 \text{ V}$$
$$I_i = 100 \text{ mA or } 85 \text{ mA}$$
$$P_i = 0.7 \text{ W}$$

C_i negligibly low
 L_i negligibly low

Variant 4763-1...2. with i/p-module, type 6112-2..

Temperature class	Permissible ambient temperature range	Maximum short-circuit current
T6	-45 °C ... 60 °C	85 mA or
T5	-45 °C ... 70 °C	100 mA or
T4	-45 °C ... 80 °C	120 mA

Electrical data

Signal circuit type of protection Intrinsic Safety Ex ia IIC
(terminals 11/12) only for connection to a certified intrinsically safe circuit

Maximum values:

$$U_i = 28 \text{ V}$$
$$I_i = 100 \text{ mA or } 85 \text{ mA}$$
$$P_i = 0.7 \text{ W}$$

or

$$U_i = 25 \text{ V}$$
$$I_i = 120 \text{ mA}$$
$$P_i = 0.7 \text{ W}$$

C_i negligibly low
 L_i negligibly low

The future marking reads:

 II 2 G Ex ia IIC T6 Gb

Sheet 2/3

EC-type-examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt. In case of dispute, the German text shall prevail.

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Applied standards

EN 60079-0:2009

EN 60079-11:2012

Test report: PTB Ex 14-23194

Konformitätsbewertungsstelle, Sektor Explosionsschutz

Braunschweig, August 28, 2014

On behalf of PTB:



Dr.-Ing. T. Horn
Regierungsrat



Addendum Page 1

Installation Manual for apparatus certified by CSA for use in hazardous locations.

Electrical rating of intrinsically safe apparatus and apparatus for installation in hazardous locations.

Table 1: Maximum values

	U_i or V_{max}	I_i or I_{max}	P_i or P_{max}	C_i	L_i
Signal circuit	28V	115mA	0,7W	0nF	0μH

$$U_0 \text{ or } V_{oc} \leq U_i \text{ or } V_{max} / I_0 \text{ or } I_{oc} \leq I_i \text{ or } I_{max} / P_0 \leq P_i \text{ or } P_{max}; C_a \geq C_i \text{ and } L_a \geq L_i$$

Table 2: CSA - certified barrier parameters of solenoid valve circuit

Barrier	Supply barrier		Evaluation barrier	
	V_{max}	R_{min}	V_{max}	
Signal circuit	≤ 28V	≥ 280Ω	28V	Diode Return

Table 3: The correlation between temperature classification and permissible ambient temperature ranges is shown in the table below:

Temperature class	Permissible ambient temperature range
T6	60°C
T5	- 45°C ... 70°C
T4	80°C

Intrinsically safe if installed as specified in manufacturer's installation manual.

CSA- certified for hazardous locations

Ex ia IIC T6; Class I, Zone 0

Type 3 Enclosure

Class I; Groups A, B, C, D

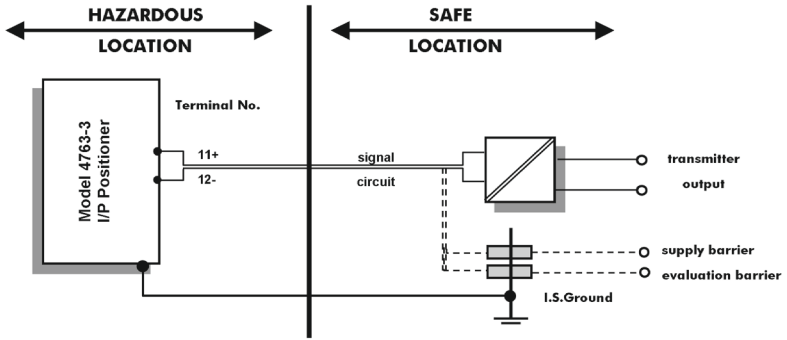
Class II; Groups E, F + G; Class III

Notes:

- 1.) The apparatus may be installed in intrinsically safe circuit only when used in conjunction with the CSA certified apparatus. For maximum values of **U_i or V_{max}** ; **I_i or I_{max}**; **P_i or P_{max}** ; **C_i** and **L_i** of the various apparatus see Table 1.
- 2.) The apparatus may be installed in intrinsically safe circuit only when used in conjunction with the CSA certified intrinsically safe barrier. For barrier selection see Table 2.
- 3.) Installation shall be in accordance with the Canadian Electrical Code Part. 1.
- 4.) Use only supply wires suitable for 5°C above surrounding temperature.

Revisions Control Number: 1 May 05

Addendum to EB 8359-2 EN



Version: Model 4763-3 I/P Positioner.

Supply and evaluation barrier CSA certified.

For the permissible maximum values for the intrinsically safe circuit see Table 1

For the permissible barrier parameters for the circuit see Table 2

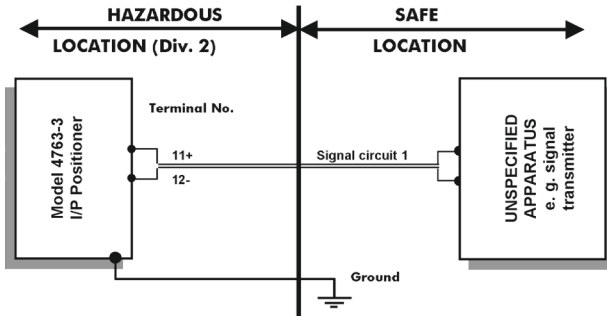
Cable entry M 20 x 1.5 or metal conduit according to drawing No. 1050 – 0539 T or 1050 – 0540 T

CSA- certified for hazardous locations

Class I; Div. 2, Groups A, B, C, D

Class II; Div. 2, Groups E, F + G, Class III

Type 3 Enclosure



Notes:

- 1.) For the maximum values for the circuit see Table 1 and 2.
- 2.) Cable entry only rigid metal conduit according to drawing No. 1050-0539 T and 1050-0540 T

Addendum Page 3

Installation Manual for apparatus approved by FM for use in hazardous locations.

Electrical rating of intrinsically safe apparatus and apparatus for installation in hazardous locations.

Table 1: Maximum values

	U_i or V_{max}	I_i or I_{max}	P_i or P_{max}	C_i	L_i
Signal circuit	28V	115mA	0,7W	0nF	0 μH

Notes: U₀ or V_{0c} or V_t ≤ U_i or V_{max} / I₀ or I_{0c} or I_t ≤ I_i or I_{max}
P₀ or P_{max} ≤ P_i or P_{max}

Table 2: FM - approved barrier parameters of solenoid valve circuit

Barrier	Supply barrier			Evaluation barrier		
	V_{0c}	R_{min}	I_{0c}	V_{0c}	R_{min}	I_{0c}
Signal circuit	≤ 28V	≥ 280Ω	≤ 115mA	28V	#	0mA

Table 3: The correlation between temperature classification and permissible ambient temperature ranges is shown in the table below:

Temperature class	Permissible ambient temperature range
T6	60°C
T5	- 45°C ≤ t _a ≤ 70°C
T4	80°C

Intrinsically safe if installed as specified in manufacturer's installation manual.

FM- approved for hazardous locations

Class I, Zone 0, A Ex ia IIC T6,

NEMA 3R

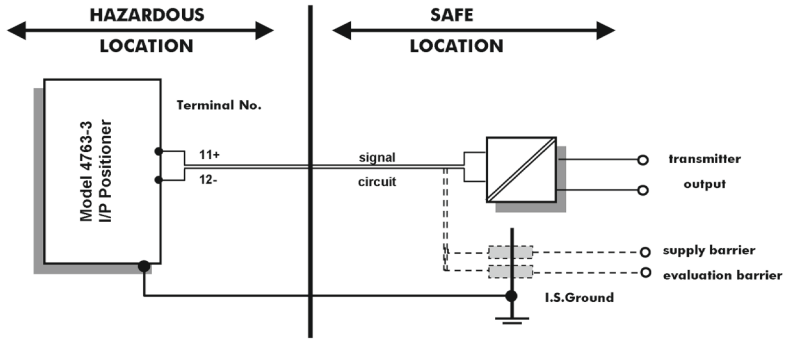
Class I, II, III, Division 1, Groups A, B, C, D, E, F + G

Notes:

- 1.) The apparatus may be installed in intrinsically safe circuit only when used in conjunction with the FM approved apparatus. For maximum values of U_i or V_{max} ; I_i or I_{max}; P_i or P_{max} ; C_i and L_i of the various apparatus see Table 1.
- 2.) The apparatus may be installed in intrinsically safe circuit only when used in conjunction with the FM approved intrinsically safe barrier. For barrier selection see Table 2.
- 3.) Installation shall be in accordance with the National Electrical Code ANSI/NFPA 70 and ANSI/ISA RP 12.06.01
- 4.) Use only supply wires suitable for 5°C above surrounding temperature.

Revisions Control Number: 1 August 04

Addendum to EB 8359-2 EN



Version: Model 4763-3 I/P Positioner.

Supply and evaluation barrier FM/CSA- approved.

For the permissible maximum values for the intrinsically safe circuit see Table 1

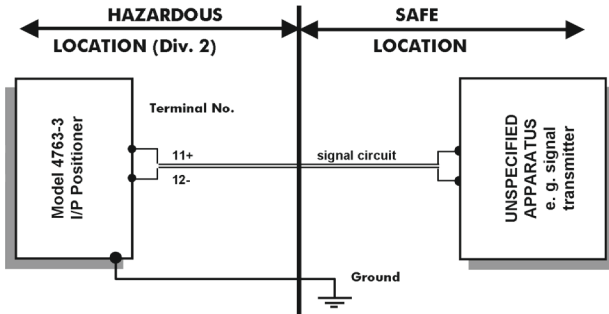
For the permissible barrier parameters for the circuit see Table 2

Cable entry M 20 x 1.5 or metal conduit according to drawing No. 1050 – 0539 T or 1050 – 0540 T

FM- approved for hazardous locations

Class I, Division 2, Groups A, B, C, D
Class II Division 2, Groups F + G, Class III

NEMA 3R



Notes:

- 1.) For the maximum values for the circuit see Table 1 and 2.
- 2.) Cable entry only rigid metal conduit according to drawing No. 1050-0539 T and 1050-0540 T
- 3.) The installation shall be in accordance with the National Electrical Code ANSI/NFPA 70

Revisions Control Number: 1 August 04

Addendum to EB 8359-2 EN

15 Annex

15.1 Accessories

Accessories – Mounting parts	Ordering number
Range spring 1	1190-0736
Range spring 2	1190-0737
Range spring 3	1190-0738
Lever I	1690-6469
Lever extension	1400-6716
Pressure gauge attachment	1402-1637
Pressure gauge attachment (copper-free)	1402-1638
Mounting kit for valves with cast yoke according to NAMUR	1400-5745
Valves with rod-type yoke according to NAMUR for 18 to 35 mm rod diameter	1400-5745 and 1400-5342
Assortment of spare parts including gaskets and diaphragms	1400-6792
Assortment of spare parts including gasket, diaphragms and pneumatic parts (for positioners with device index .02 and higher)	1402-0040
Upgrade to degree of protection IP 65: Venting over check valve	1790-7408
Accessories for electrical connections	Ordering number
Black cable gland M20x1.5	1400-6985
Blue cable gland M20x1.5	1400-6986
Adapter M20x1.5 to ½ NPT, powder-coated aluminum:	0310-2149

15.2 After-sales service

Contact our after-sales service for support concerning service or repair work or when malfunctions or defects arise.

E-mail contact

You can reach our after-sales service at aftersalesservice@samsongroup.com.

Addresses of SAMSON sales sites

The addresses of SAMSON AG and sales sites can be found on our website (www.samsongroup.com).

Required specifications

Please submit the following details:

- Order number and position number in the order
- Type, serial number, device version

EB 8359-2 EN



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