Beck GmbH
Druckkontrolltechnik
Ferdinand-Steinbeis-Straße 4
71144 Steinenbronn

Operating Instructions

Ident: 0607017-BA-901-R5_englisch_Druckversion.doc

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1 General instructions

These operating instructions contain all of the information that is required for an efficient start-up and safe operation of **Model 901….EX** pressure switches.

- Please read these operating instructions before carrying out installations, start-ups, maintenance and repairs.
- Please ensure that these operating instructions are available at all times.
- Please follow the applicable instructions and safety regulations.
- All of the work that is described in these operating instructions must be carried out by qualified and authorised experts.
- In order to avoid problems, the prescribed maintenance must be carried out at regular intervals by appropriately trained personnel.

Symbols used

The meanings of the symbols that are used are as follows:

- Useful, important additional information.

- Dangers and safety instructions. *Important – please read!*
  Failure to comply with these instructions can have a detrimental effect on persons and the operation of the equipment.

- Important instructions for use in potentially explosive areas.
  Danger – *please read!*

1.1 Safety instructions

1.1.1 General safety instructions

- Please follow the applicable
  - Instructions and system-specific regulations (e.g. installation standards governed by VDE regulations etc.)
  - Safety regulations and accident prevention regulations

- All work must be carried out by authorised and qualified personnel. These qualifications and authorisations include:
  - Training, experience and knowledge of the regulations, standards and accident prevention regulations
  - Only personnel with appropriate product knowledge must carry out start-ups and maintenance
  - All repairs must be carried out by personnel who have been authorised to do so by the manufacturer
- Only original parts must be used
- Ignoring these operating instructions and making modifications to the equipment are not permitted and can lead to hazardous situations

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1.1.2 Safety instructions for potentially explosive areas

- The 901..EX pressure switch is *only* suitable for use in areas where there is a *risk of gas explosion* (not dust explosion!)
- Please follow the applicable
  - Instructions and system-specific regulations
- The labelling of the product must point out that important explosion protection characteristics must be adhered to during use.
  - G = Gas
  - Device category 1, 2, 3 in the 3 zonal areas
  - Gas parameters: temperature class (T1…T6), explosion group (A, B, C)
- When work is being performed such as installation, making electrical connections, making repairs or opening the housing, it must be ensured that
  - *no potentially explosive atmosphere i*s present
  - *no electrical voltage* is present
  - *unintentional activation* is ruled out
- Dust deposits must be avoided (installation location, protection, cleaning etc.) in order to prevent dangerous surface temperature increases
- It must be ensured that all technical and organisational protective measures are complied with and that the operation and effectiveness thereof is checked
- No modifications must be made to the equipment, since they may lead to a risk of explosion (ignition)
- The specifications of the EC design certificate are binding and must be complied with
- If the number of the EC design certificate is followed by an “X”, special conditions or deviations from the standard conditions exist
- Installation, start-ups and repeated testing may only be carried out by appropriately qualified personnel (in accordance with TRBS 1203; “qualified persons”)
- The operator must issue a release for work before any activity (installation etc.) is carried out in potentially explosive areas.

1.1.3 Notes on environmental protection

Please help to protect the environment. Please pay attention to the environmental notes in these operating instructions:

- Chapter 3.1 “Storage“: Handling of packaging materials
- Chapter 8.1 “Disposal“: with regard to the product and its components

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2 Correct purpose of use

2.1 Application area

➢ **Purpose of use**

The adjustable differential pressure switches have the following main purpose

- Monitoring air flow in ventilation shafts for adequate
  - ✓ Dilution of gasses that are hazardous to health or potentially explosive
  - ✓ Air supply (fresh air) and/or exhaust air – extraction of “bad” air
- Operational monitoring by monitoring the air flow of
  - ✓ (Air) filters
  - ✓ Air and fire safety flaps
  - ✓ Fans, ventilators
  - ✓ Leaktightness of closed systems
- Liquid level monitoring

The media that are being monitored occur in the following different phases

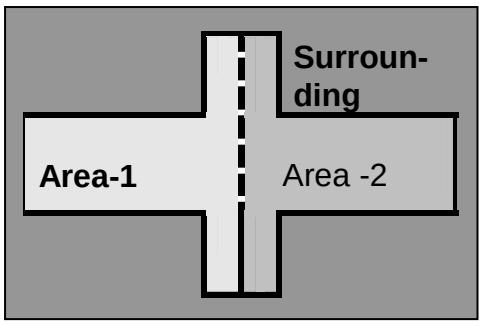
- ➢ *Gaseous* (main application)
  - ✓ Potentially explosive gasses and dust (natural gas, bio-gas, solvents etc.)
- *Liquid*
  - ✓ Flammable liquids (petrol, solvent etc.)

➢ **Use in zones in potentially explosive areas**

Pressure switches are used to monitor the pressure difference in areas of closed systems where there is a risk of gas explosion.

- The device must only be used in areas where there is a risk of gas explosion (G)
- Two separate zonal areas can be connected via pressure connections P1 and P2 (areas 1 and 2)
- Zone 1 or zone 2 may apply to the pressure connections (areas 1 and 2)
- The surroundings (area 3) can be zone 1 or zone 2

Area 1	Surrounding **Area 2**	**Equipment category**		
Zone 0	Zone 1	**1/2 G**	-------	1/2 G
	Zone 2			1/3 G
Zone 1	Zone 1		**2 G**	2 G
	Zone 2			2/3 G
Zone 2	Zone 2			3 G



2.2 CE conformity

The product complies with the following European directives:

- ➢ Explosion protection directive
- ➢ RoHS directive

Other information and verification can be found in the

- ➢ Conformity declaration (see Chapter 9.3)

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3 Storage and transportation

3.1 Packaging

The equipment is protected by packaging. The packaging is environmentally compatible and recyclable. The following main materials are used:

- Cardboard
- PE foam or PE film

Please use appropriate recycling companies to dispose of the packaging

3.2 Storage and transportation conditions

The following points must be observed in order to prevent damage:

- Avoid severe mechanical stress caused by throwing, stacking and dropping.
- Keep out of wet and rainy environments
- Do not subject to direct sunlight for long periods
- The storage temperature must not be lower than -40 ℃ or higher than +85 ℃

4 Installation

The following checks must be performed prior to installing the equipment:

- The equipment must not show signs of damage or obvious modifications
- The IP protection class of the equipment must correspond with the usage and environmental conditions
- An operator zone definition must be available
- Check whether the equipment category corresponds with the specified zones
- With intrinsically safe systems (“i") the “associated operating materials" (barrier) must always be installed outside the potentially explosive area.
- The labelling of the product must point out that important explosion protection characteristics must be complied with during use.
  (see Appendix, Chap. **Fehler! Verweisquelle konnte nicht gefunden werden.**)
  - G = Gas
  - Equipment category/zone area
  - Parameters:
    - ✓ Temperature class (T1...T6)
    - ✓ Explosion group (A, B, C)

Equipment **category**	**Zone** 0	1	2
1 G	*yes*	*yes*	*yes*
2 G	*no*	*yes*	*yes*
3 G	*no*	*no*	*yes*

<u>The following standards and directives are useful:</u>

- EN 1127-1: Explosion protection – basic concepts and methodology
- BGR-104: Explosion protection rules

Standards for areas with risk of gas explosion (“G”):

- EN 60079-10: Classification of potentially explosive areas
- EN 60079-14: Electrical installations in potentially explosive areas
- EN 60079-17: Inspection and maintenance
- EN 60079-25: Intrinsically safe systems

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4.1 Installation

Choose the installation location from the following aspects;

- Ease of access for installation, connection and operation
- Protection from direct effects of the weather, such as rain and sun
- The IP protection class of the equipment must suit the ambient conditions
- In order to prevent dangerous temperature increases on the surface of the equipment, dust deposits must be avoided (installation location, protective cover, cleaning measures etc.)

4.2 Connection

- When work is being performed such as installation, making electrical connection, making repairs or opening the housing, it must be ensured that
  - *No electrical voltage* is present
  - *Unintentional activation* is not possible

- Proceed as follows in potentially explosive areas:
  - Check whether the equipment category corresponds with the specified zones
  - *No potentially explosive atmosphere i*s present
  - A release for work must have been issued by the operator
  - Adherence to the applicable regulations and documentation for the equipment
- Special notes for intrinsically safe ("i") systems:
  - Each intrinsically safe operating material must have an associated operating material inserted before it, outside of the potentially explosive zone.
  - *Separate cable routing* for intrinsically safe and non-intrinsically safe power circuits.
  - For operating voltages of l*ess than 42V AC or 60V AC*: Intrinsically safe and non-intrinsically safe power circuits can be *routed together* in this case. This *only* applies to safety barrier *with galvanic separation*.
  - Separation of *intrinsically safe/non-intrinsically safe* connecting parts: at least 50mm (tight string length)
  - Distance between *different intrinsically safe power circuits*: at least *6mm*
  - Distances between non-insulated *conductive parts* leading to connecting parts: air gap of at least 3mm (housing-terminals-conductor tracks, earth etc.)

- **Power supply**
  - Each intrinsically safe operating material must have an associated operating material inserted before it, outside of the potentially explosive zone:
    - ✓ Pay attention to maximum characteristics (U, I, P, L, C)

- **Select connecting cables**

  The following points must be observed when selecting the cable:
  - Select cable material that complies with the local resistance requirements (mechanical, chemical)
  - Cable cross-section in accordance with electrical power and data sheet

  The following points must be observed when selecting cables for intrinsically safe power circuits:
  - *Diameter* of individual conductors: *greater than 0.1mm*
  - *Insulation strength* of the individual wires: *greater than 0.2 mm*
  - *Test voltage* for intrinsically safe *cables*:
    - between wires, shield and earth: *500V AC*
  - *Shield*: The shield area must be *60%* of the surface coverage or twisting
  - *Labelling* of intrinsically safe power circuits: *colour* preferably *light blue*
  - L and C cable characteristics must be available *(C_i=110nF/km; L_i=1 mH/km)*

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- **Cable routing**
  - If there is a risk of mechanical damage, the cable must be provided with additional protection (protective tube etc.)
  - The cable diameter must be complied with in order to provide a tight connection in the cable lead-in.
  - The screwed cable connection and the screws of the housing cover must be tightened in order to comply with the IP protection class. Over-tightening damages the housing.

- **Connecting the cable**
  - Please ensure that the cables that are being connected are not live. otherwise there is a risk of igniting a potentially explosive atmosphere

- **Attach the shield**
  - Attach shield at one end (in non-potentially explosive area)
  - Attach braiding of shield to earth potential over a wide area.
  - No potential equalisation current must be flowing between potentially explosive areas and non-potentially explosive areas.
    Separation using a capacitor is permitted in this case
    for EMC purposes (total max. 10 nF).

- **Earthing**
  - The external earthing terminal on the housing must be connected to the potential equalisation of the potentially explosive area with low resistance
    (removal of electrostatic charge between 0.2-1 MOhms is considered to be earthing)
  - No potential equalisation current must be flowing between potentially explosive areas and non-potentially explosive areas
  - Minimum cross-section: 2 x 1.5 mm² or 1 x 4 mm²
  - Intrinsically safe power circuits: Housings made from *metal do not need to be earthed*. (If this is necessary anyway – functional earthing, earthing in one location only…)

- **Documentation**
  - Operating instructions, conformity declaration, EC design test certificate
  - System and zonal plan
  - Proof of adherence to explosion protection regulations (see Appendix 9.5)
    - ✓ Equipment selection: category, temperature class, explosion group, …
    - ✓ Proof of adherence to intrinsic safety requirements

5 Start-up

Before voltage is applied to the equipment the following checks must be performed:

- Check that screws are firmly seated in
  - Connecting terminals, protective earth conductor terminals and potential equalisation terminals
  - Housing cover
- Check
  - The torque of the cable lead-in
  - The tightness of the seal provided by the cable lead-in
- Check whether the equipment is ready for operation
  - The parameterisation for this application must have been performed
  - All interfaces such as inputs and outputs for control purposes must be connected and ready for operation

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5.1 Parameterisation

Equipment parameterisation

- Define all application-specific parameters.
- Once the power supply is applied, the equipment is ready for operation immediately.

6 Maintenance / service

The equipment can only be guaranteed to operate safely and reliably in the long term if regular inspections and servicing are carried out. These include the following:

An **inspection** includes

- Visual inspection
  - Mechanical damage
  - Non-permitted dust deposits
  - Other irregularities or error messages from the equipment
- Checking of components (wearing parts) whose functionality or purpose changes and affects the operation of the equipment
- Documentation of what was done by whom, and when

Maintenance includes

- Functionality checking
  - Operating statuses such as alarms etc.
- Checking calibration values (= calibration)
  - Triggering of alarms by known process parameters (test pressure etc.)
- Correction of calibration values (= calibration) must be carried out in the factory
- Documentation of what was done by whom, and when

6.1 Time intervals

Inspection:

The condition of the equipment must be checked at regular intervals. The time interval is extremely dependent on the local situation and the degree of use, and must therefore be adapted to requirements. Extremely short time intervals can be specified such as once per day, every new shift etc.

- Defined by the operator in accordance with local requirements

Maintenance

- The interval from the applicable usage regulations must be taken into consideration
- The interval must not exceed **3 years** in accordance with the operating safety legislation
- As a manufacturer we recommend a maximum interval of 1 year

6.2 Troubleshooting

A list of possible faults (fault indications) can be found in the table below.
The table contains an explanation of how to detect faults.
A list of possible causes and remedial measures also follows.

Fault indication	Possible cause	Measures
Contact won't switch	Defective diaphragm	Replace pressure switch
	Spring defective	
	Pressure connection blocked	
	Pressure outside working range	

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7 Repairs

The following points must be noted before carrying out any work whatsoever on the equipment:

- When work is being performed such as installation, making electrical connections or opening the housing, it must be ensured that
  - *No electrical voltage* is present
  - *Unintentional activation* is not possible

- Repairs must only be carried out by the manufacturer
- The following must be observed in potentially explosive areas:
  - *No potentially explosive atmosphere i*s present
  - A release for work must have been issued by the operator
  - The applicable regulations and all documentation for this equipment must be adhered to
  - Only original spare parts from the manufacturer must be used
  - The spare parts must comply with the required equipment category
  - Interventions that influence explosion protection must only be carried out by *experts* A prerequisite is adequate *qualification* (“capable person”) with regard to *explosion protection* and the use of the *equipment*

8 Dismantling

The following points must be noted before carrying out any work whatsoever on the equipment:

- Ensure that the equipment may be removed and that appropriate replacement measures have been taken.
- All of the instructions in chapter 7 “Repairs” must be followed
- Exposed cable (ends) must be marked, and it must be ensured that
  - *No electrical voltage* is present
  - *Unintentional activation* is not possible

8.1 Disposal

The equipment is made from recyclable materials and is designed to make the housing and the electronics easy to separate. Please ensure that all parts are disposed of in accordance with legal regulations.
Please contact us if you cannot dispose of the equipment properly.

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9 Appendix

9.1 Technical data and dimensioned drawing

Temperature ranges
Ambient temperature:
- from -20 ℃ to +85 ℃

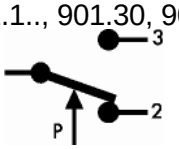
Medium temperature:
- up to +85 ℃

Storage temperature:
- from -40 ℃ to +85 ℃

Diaphragm material
Depending on media NBR, Silicone, FKM (Viton®), EPDM.
For types 901.30 and 901.8x only Silicone diaphragms, others upon request.

Electrical rating
Values indicated for resistive load
- 60 mA/30 VDC oder 100 mA/24VDC

Electrical connection
Arrangement of contacts
- for 901.1.., 901.30, 901.41, 901.51 **EX**



only for 901.2.. **EX**

- for 901.6.., 901.8.., 901.9.. **EX**

only for 901.7.. **EX**

Certifications
CE conformity in according with EC explosion protection directive 94/9EC.
EC design test certification by the specified EXAM body (ID 0158) with the following ATEX labelling:
- 1/2G Ex ia IIB T4 or 2G Ex ia IIC T4

Characteristics:
- $U_i = 30$ V; $I_i = 60$ mA; $L_i = 0$ mH; $C_i = 0$ nF

Life
Minimum 10^6 cycles.

Damping
Restrictors alternatively with 0.3/0.5/0.8 mm diameter.

Accessories
- Protection caps with IP 54 (intended for use in potentially explosive atmospheres)
- Various mounting brackets

Mounting position
Mounting in any position, but needs to be specified for settings below 100 mbar.
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9.1.1 Pressure switch 901

- **Factory-set pressure setting**

Pressure connection

Type	Tube connection			Threaded connection			
	5.0 mm	6.5 mm	10.0 mm	M 10 x1	G 1/8	G 1/4	G 1/2
901.1…EX	PA	PA, PPS	PA, PPS	PA, PVDF, CuZn40, V_2A	PA, PVDF, CuZn40, V_2A	PVDF, CuZn40, V_2A	CuZn40
901.2…EX	PA	PA, PPS	PA, PPS	PA, PVDF, CuZn40, V_2A	PA, PVDF, CuZn40, V_2A	PVDF, CuZn40, V_2A	CuZn40
901.30 EX		PA					
901.41 EX		PA, PPS	PA, PPS	PA, PVDF, CuZn40, V_2A	PA, PVDF, CuZn40, V_2A	CuZn40, V_2A	CuZn40
901.51 EX				CuZn40	CuZn40, V_2A	CuZn40, V_2A	

PA = polyamide, PVDF = polyvinyldifluoride, PPS = polyphenylensulfide, CuZn40 = brass, V_2A = stainless steel

Overpressure range

Type	Factory-set trip pressure		Standard switching differential		Tolerance band in % of trip pressure	Maximum positive working pressure	Maximum negative working pressure
	between	and	lower end of range	upper end of range		standard/ extended	standard/ extended
901.1...EX	5 mbar	200 mbar	2.5 mbar	50 mbar	±10 %	0.5/4 bar	–/–1 bar
	200 mbar	1000 mbar	50 mbar	150 mbar	±10 %	1/4 bar	–/–1 bar
901.41 EX	500 mbar	3000 mbar	200 mbar	600 mbar	±10 %	10 bar	–1 bar
901.51 EX	1.0 bar	12 bar	0.2 bar	1.5 bar	±10 %	25 bar	–1 bar

Vacuum range

Type	Factory-set trip pressure		Standard switching differential		Tolerance band in % of trip pressure	Maximum positive working pressure	Maximum negative working pressure
	between	and	lower end of range	upper end of range		standard/ extended	standard/ extended
901.2…EX	– 5 mbar	– 200 mbar	2.5 mbar	50 mbar	±10 %	0.5/4 bar	–1 bar
	– 200 mbar	– 900 mbar	50 mbar	150 mbar	±10 %	1/4 bar	–1 bar

Differential pressure range

Type	Factory-set trip pressure		Standard switching differential		Tolerance band in % of trip pressure	Maximum positive working pressure	Maximum negative working pressure
	between	and	lower end of range	upper end of range		standard/ extended	standard/ extended
901.30..EX	5 mbar	50 mbar	2.5 mbar	25 mbar	±10 %	100 mbar	–100 mbar

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9.1.2 Pressure switch 901 Prescal®

- **Adjustable setting**

Pressure connection

Type	Tube connection			Threaded connection			
	5.0 mm	6.5 mm	10.0 mm	M 10 x1	G 1/8	G 1/4	G 1/2
901.61-65 EX	PA	PA, PPS	PA, PPS	PA, PVDF, CuZn40, V_2A	PA, PVDF, CuZn40, V_2A	CuZn40, V_2A	CuZn40
901.66-68 EX				CuZn40, V_2A	CuZn40, V_2A	CuZn40, V_2A	CuZn40
901.71-76 EX	PA	PA, PPS	PA, PPS	PA, PVDF, CuZn40, V_2A	PA, PVDF, CuZn40, V_2A	CuZn40, V_2A	
901.77-78 EX				CuZn40, V_2A	CuZn40, V_2A	CuZn40, V_2A	CuZn40
901.8… EX		PA					
901.91-93 EX				CuZn40	CuZn40, V_2A	CuZn40, V_2A	

PA = polyamide, PVDF = polyvinyldifluoride, PPS = polyphenylensulfide, CuZn40 = brass, V_2A = stainless steel

Overpressure range

Type	Adjustment range for trip pressure from	to	Tolerance band in % of	Switching differential	Maximum positive working pressure standard/extended	Maximum negative working pressure standard/extended
901.61 EX	5	20 mbar	±10 %	3 mbar	0,5/4 bar	–/–1 bar
901.62 EX	10	50 mbar	±10 %	5 mbar	0,5/4 bar	–/–1 bar
901.63 EX	25	100 mbar	±10 %	10 mbar	0,5/4 bar	–/–1 bar
901.64 EX	50	250 mbar	±10 %	20 mbar	1/4 bar	–/–1 bar
901.65 EX	100	500 mbar	±10 %	50 mbar	1/4 bar	–/–1 bar
901.66 EX	250	1000 mbar	±10 %	150 mbar	10 bar	–1 bar
901.67 EX	500	1500 mbar	±10 %	250 mbar	10 bar	–1 bar
901.68 EX	1000	3000 mbar	±10 %	500 mbar	10 bar	–1 bar
901.91 EX	1.0	6.0 bar	±10 %	0.5 – 2.0 bar	25 bar	–1 bar
901.92 EX	4.0	9.0 bar	±10 %	0.5 – 2.0 bar	25 bar	–1 bar
901.93 EX	7.0	12.0 bar	±10 %	0.5 – 2.0 bar	25 bar	–1 bar

Vacuum range

901.71 EX	–5	–20 mbar	±10 %	3 mbar	0,5/4 bar	–/–1 bar
901.72 EX	–10	–50 mbar	±10 %	5 mbar	0,5/4 bar	–/–1 bar
901.73 EX	–25	–100 mbar	±10 %	10 mbar	0,5/4 bar	–/–1 bar
901.74 EX	–50	–125 mbar	±10 %	20 mbar	0,5/4 bar	–/–1 bar
901.75 EX	–75	–200 mbar	±10 %	25 mbar	1/4 bar	–/–1 bar
901.76 EX	–100	–300 mbar	±10 %	30 mbar	1/4 bar	–1 bar
901.77 EX	–200	–500 mbar	±10 %	75 mbar	1/4 bar	–1 bar
901.78 EX	–300	–700 mbar	±10 %	75 mbar	1/4 bar	–1 bar

Differential pressure range

901.81 EX	5	20 mbar	±10 %	3 mbar	100 mbar	–100 mbar
901.82 EX	10	50 mbar	±10 %	5 mbar	100 mbar	–100 mbar

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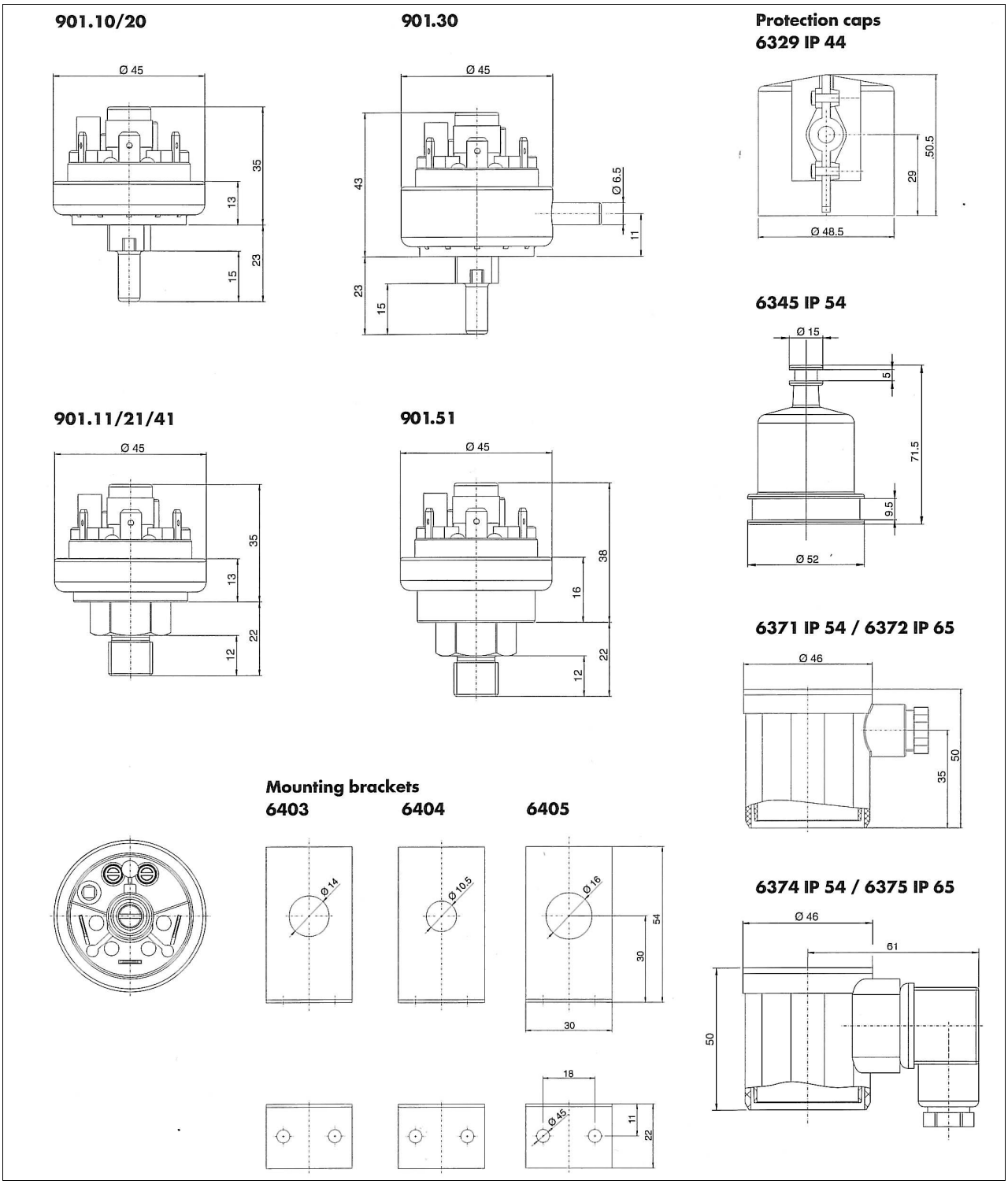
9.2 Dimensioned drawings and accessories

9.2.1 Pressure switch 901



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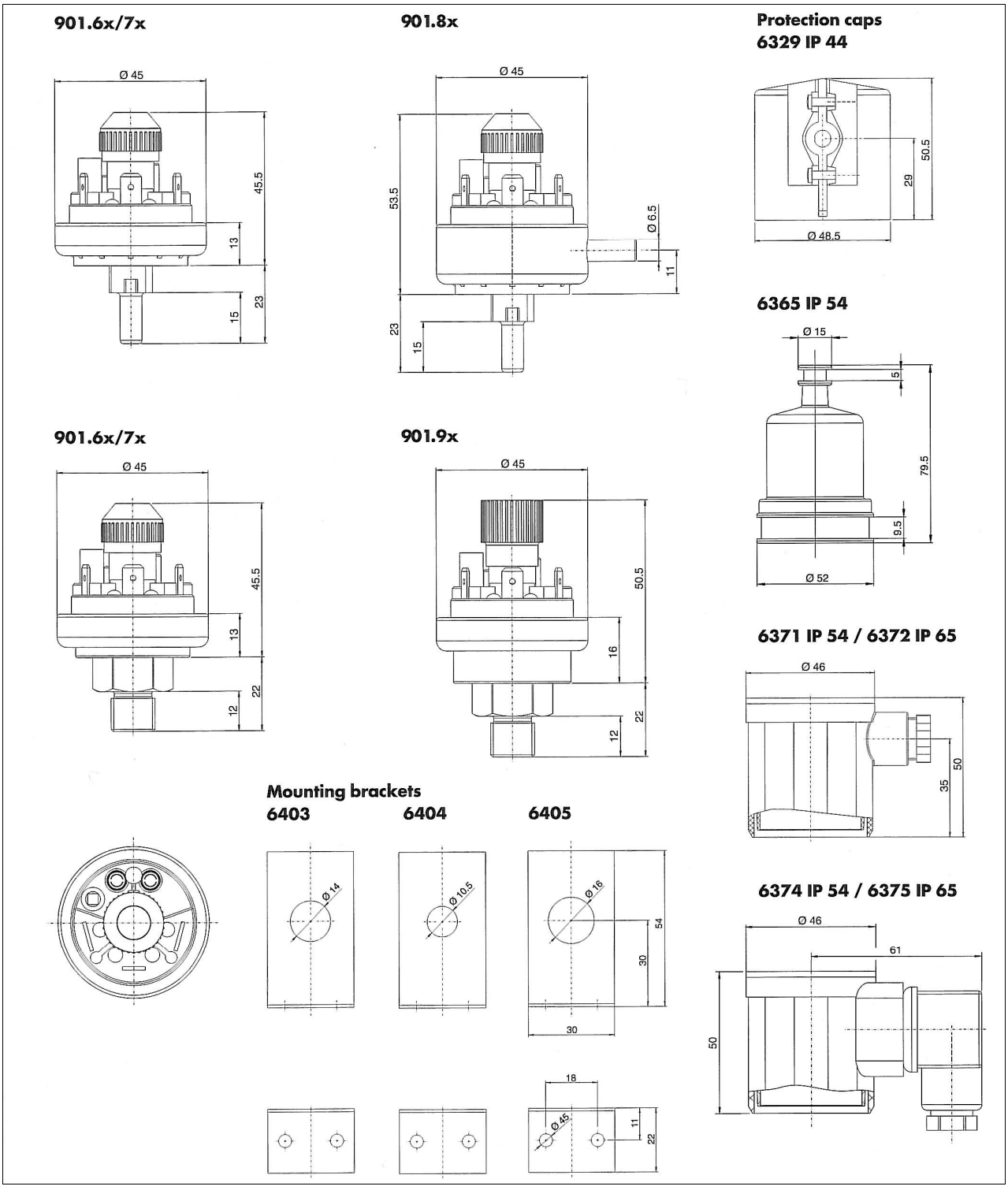
9.2.2 Pressure switch 901 Prescal®



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71144 Steinenbronn

9.3 Declaration of Conformity

EG-Konformitätserklärung
EC-Declaration of Conformity

Beck GmbH
Druckkontrolltechnik
Ferd.-Steinbeis-Str 4
71144 Steinenbronn
Germany

entsprechend der Explosionsschutzrichtlinie 94/9/EG :
Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen
in accordance with ATEX- Directive 94/9/EC:
Equipment and protective systems intended for use in potentially explosive atmospheres

Name des Herstellers: *Name of manufacturer:*	Beck GmbH Druckkontrolltechnik
Anschrift des Herstellers: *Manufacturer's address:*	Ferdinand-Steinbeis-Str 4, 71144 Steinenbronn, Germany
Produktbezeichnung: *Product description:*	Druckwächter für Luft und Abgase *Pressure switch for air and flue gas*
Modell: *Model:*	Baureihe 901…EX *series 901… EX*

Zur Beurteilung der Erzeugnisse hinsichtlich der Richtlinie wurden benannte Stellen miteinbezogen. Für die Verwendung in explosionsgefährdeten Bereichen wurde folgende EG-Baumusterprüfbescheinigung von einer benannten Prüfstelle ausgestellt:
The product has been assessed and testet by a notified body. For the application in explosive atmospheres the notified body certified this in the EC type examination certificate
BVS 06 ATEX E 141 X

Die grundlegenden Sicherheits- und Gesundheitsanforderungen werden erfüllt durch Übereinstimmung mit:
The essential health and safety requirements are met in conformity with:

IEC 60079-0:2004	**Allgemeine Bestimmungen** *General requirements*
IEC 60079-11:2006	**Eigensicherheit „i“** *Intrinsic safety „i“*
IEC 60079-26:2006	**Gerätegruppe II - Kategorie 1G (EPL- Ga)** *Group II- Category 1G (EPL- Ga)*

Das Produkt wird unter einem Qualitätsicherungssystem -Produktion (Anhang IV der Richtlinie) hergestellt. Dies ist durch die benannte Stelle der Kennnummer **-0158** anerkannt worden :
*The product is manufactured under the modul-product quality assurance (Annex IV of the directive). This was certified by the notified body with the identification number **-0158:***

BVS 07 ATEX ZQS /E277

Kennzeichnung des Geräts
Marking of the product
II 1/2G Ex ia IIB T4 oder **II 2G Ex ia IIC T4**
or

Zusätzliche Informationen :
Additional information:
Diese Erklärung bescheinigt die Übereinstimmung mit den genannten Richtlinien, beinhaltet jedoch keine Zusicherung von Eigenschaften. Die Bedienungsanleitung und Sicherheitshinweise der mitgelieferten Produktdokumentation sind zu beachten.
This declaration confirms only the accordance with the above mentioned directive and do not cover any other characteristics. The manual and security advice of the product has to be kept in mind.

Steinenbronn, im Januar 2007

(Hans-Peter Funk)
Geschäftsführer
Marketing & Vertrieb
Managing director

(Ralph Weigl)
Explosionsschutzbeauftragter
Authorised ATEX-representative

Beck GmbH
Druckkontrolltechnik
Ferdinand-Steinbeis-Straße 4
71144 Steinenbronn

9.4 EC design test certification

EXAM
BBG Prüf- und Zertifizier GmbH

(1) **EG-Baumusterprüfbescheinigung**

(2) **- Richtlinie 94/9/EG -**
Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen

(3) **BVS 06 ATEX E 141 X**

(4) **Gerät:** **Druckwächter Typ 901***EX und 930***EX**

(5) **Hersteller:** **Beck GmbH**

(6) **Anschrift:** **71144 Steinenbronn**

(7) Die Bauart dieses Gerätes sowie die verschiedenen zulässigen Ausführungen sind in der Anlage zu dieser Baumusterprüfbescheinigung festgelegt.

(8) Die Zertifizierungsstelle der EXAM BBG Prüf- und Zertifizier GmbH, benannte Stelle Nr. 0158 gemäß Artikel 9 der Richtlinie 94/9/EG des Europäischen Parlaments und des Rates vom 23. März 1994, bescheinigt, dass das Gerät die grundlegenden Sicherheits- und Gesundheitsanforderungen für die Konzeption und den Bau von Geräten und Schutzsystemen zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen gemäß Anhang II der Richtlinie erfüllt.
Die Ergebnisse der Prüfung sind in dem Prüfprotokoll BVS PP 06.2129 EG niedergelegt.

(9) Die grundlegenden Sicherheits- und Gesundheitsanforderungen werden erfüllt durch Übereinstimmung mit

EN 60079-0:2004	Allgemeine Bestimmungen
IEC 60079-11:2006	Eigensicherheit 'i'
IEC 60079-26:2006	Betriebsmittel mit dem Schutzniveau (EPL) Ga

(10) Falls das Zeichen „X" hinter der Bescheinigungsnummer steht, wird in der Anlage zu dieser Bescheinigung auf besondere Bedingungen für die sichere Anwendung des Gerätes hingewiesen.

(11) Diese EG-Baumusterprüfbescheinigung bezieht sich nur auf die Konzeption und die Baumusterprüfung des beschriebenen Gerätes in Übereinstimmung mit der Richtlinie 94/9/EG.
Für Herstellung und in Verkehr bringen des Gerätes sind weitere Anforderungen der Richtlinie zu erfüllen, die nicht durch diese Bescheinigung abgedeckt sind.

(12) Die Kennzeichnung des Gerätes muss die folgenden Angaben enthalten:

II 1/2G Ex ia IIB T4 und II 2G Ex ia IIC T4	für Typ 901 ***EX
II 2G Ex ia IIB T4	für Typ 930 ***EX

EXAM BBG Prüf- und Zertifizier GmbH
Bochum, den 14. November 2006

Zertifizierungsstelle | Fachbereich

Seite 1 von 2 zu BVS 06 ATEX E 141 X
Dieses Zertifikat darf nur vollständig und unverändert weiterverbreitet werden.
Dinnendahlstraße 9 44809 Bochum Telefon 0234/3696-105 Telefax 0234/3696-110 E-mail ZS@bg-exam.de

Beck GmbH
Druckkontrolltechnik
Ferdinand-Steinbeis-Straße 4
71144 Steinenbronn

9.5 Proof of compliance with explosion protection regulations

Project			
Name		**Date**	

Requirement			*Complies with*	*Requirement*			*Complies with*
Application area	**I**	☐		**Temperature class**	**T1**	☐	T1
	II	☐			**T2**	☐	T1-T2
Explosion group	**A**	☐	A		**T3**	☐	T1-T3
	B	☐	A,B		**T4**	☐	T1-T4
	C	☐	A,B,C		**T5**	☐	T1-T5
					T6	☐	T1-T6

Requirement			**Permitted equip. category** (G=Gases)	*Certified for*	*Ignition protection class*
Zone	**2**	☐	**3 G**	**Zone 2**	
	1	☐	**2 G**	**Zone 1,2**	
	0	☐	**1 G**	**Zone 0,1,2**	

CHARACTERISTICS	**Intrinsically safe operating materials**		**Associated operating materials**
Designation		Cable	
Model			
Application area			
Ignition protection class			
Explosion group			
Temperature class			
Certification			
$U_{i,a}$			
$I_{i,a}$			
$P_{i,a}$			
$L_{i,a}$			
$C_{i,a}$			

Cable characteristics: 1 $mH/_{km}$; 110 $nF/_{km}$

	Requirement **complied with**
Application area	☐
Ignition protection class	☐
Explosion group	☐
Temperature class	☐
Equipment category/Zone	☐

Proof of intrinsic safety

	Associated operating materials (barriers)	**Require-ment**	**Intrinsically safe operating materials** (including cable)	**Com-pliant**
U		≤		☐
I		≤		☐
P		≤		☐
L		≥		☐
C		≥		☐