

DIAPHRAGM MONITORING for ML-, KM-pumps

M / RF 409.2 KM
M / RF 409.2 ML
M / RF 410.2 KM
M / RF 410.2 ML
M / RF 509.1 KM

WIKA 233.30



WIKA 213.53



Suco 0186

C / M / RF 409.2 KM ...
C / M / RF 409.2 ML ...
C / M / RF 410.2 ML
M / RF 410.2 KM
M / RF 509.1 KM

M / RF 409.2 KM
M / RF 409.2 ML
M / RF 410.2 KM
M / RF 410.2 ML
M / RF 509.1 KM



Baumer RP2E-L03-46

Manometer WIKA 213.53 NG63		
Manometer type	Pump type	Article-No.
0 - 10 bar	M/RF409.2-11 ML plastic M/RF409.2-17 ML plastic M/RF409.2-45 ML plastic M/RF409.2-110 ML M/RF409.2-220 ML M/RF410.2-135 ML plastic M/RF410.2-500 ML M/RF410.2-1200 ML	90036189
	M/RF409.2-7,5 KM plastic M/RF409.2-10 KM plastic M/RF409.2-18 KM plastic M/RF409.2-45 KM plastic M/RF409.2-95 KM plastic M/RF409.2-190 KM M/RF410.2-850 KM	
0 - 25 bar	M/RF409.2-11 ML 1.4571 M/RF409.2-17 ML 1.4571 M/RF409.2-45 ML 1.4571 M/RF410.2-135 ML 1.4571	90036190
	M/RF409.2-95 KM 1.4571 M/RF410.2-310 KM 1.4571 M/RF410.2-510 KM 1.4571	
0 - 100 bar	M/RF409.2-7,5 KM 1.4571 M/RF409.2-10 KM 1.4571 M/RF409.2-18 KM 1.4571 M/RF409.2-45 KM 1.4571 M/RF410.2-150 KM 1.4571	90015032

Pressure switch Suco 0186	
Pump type	Article-No.
C/M/RF 409.2 KM ... C/M/RF 409.2 ML ... C/M/RF 410.2 ML M/RF 410.2 KM M/RF 509.1 KM	90021225

Pressure switch Baumer RP2E-L03-46	
Pump type	Article-No.
M/RF 409.2 KM M/RF 409.2 ML M/RF 410.2 ML M/RF 410.2 KM M/RF 509.1KM	90013083

Bourdon tube pressure gauge, copper alloy Stainless steel case, liquid filling, NS 50, 63 and 100 Model 213.53

WIKA data sheet PM 02.12



for further approvals see
page 3

Applications

- For measuring points with high dynamic pressure loads and vibrations
- For gaseous and liquid media that are not highly viscous or crystallising and will not attack copper alloy parts
- Hydraulics
- Compressors, shipbuilding

Special features

- Vibration and shock-resistant
- Especially robust design
- Type approval for the shipbuilding industry
- Scale ranges up to 0 ... 1,000 bar



**Bourdon tube pressure gauge, model 213.53.100,
lower mount**

Description

The liquid-filled model 213.53 Bourdon tube pressure gauge is constructed with a case from stainless steel and wetted parts from copper alloy.

The model 213.53 meets the requirements of the international industry standard EN 837-1 for Bourdon tube pressure gauges.

Due to the liquid filling in the case, the pressure element and movement are efficiently damped. Therefore, these instruments are particularly suited to measuring points with high dynamic loads, such as fast load cycles or vibrations.

The cases of the model 213.53 are available in nominal sizes of 50, 63 and 100 mm and fulfil IP65 ingress protection. With an accuracy of up to class 1.0, this pressure gauge is suitable for a wide range of applications in industry.

For mounting in control panels, the pressure gauges with a back mount process connection can be fitted with a mounting flange or with a triangular bezel and mounting bracket.

Specifications

Design

EN 837-1

Nominal size in mm

50, 63, 100

Accuracy class

NS 50, 63: 1.6

NS 100: 1.0

Scale ranges

NS 50: 0 ... 1 to 0 ... 1,000 bar

NS 63, 100: 0 ... 0.6 to 0 ... 1,000 bar

Pressure limitation

NS 50, 63: Steady: Full scale value
Fluctuating: 3/4 x full scale value

Short time: 2/3 x full scale value

NS 100: Steady: Full scale value
Fluctuating: 0.9 x full scale value

Short time: 1.3 x full scale value

Permissible temperature

Ambient: -20 ... +60 °C

Medium: +60 °C maximum

Temperature effect

When the temperature of the measuring system deviates from the reference temperature (+20 °C): max. $\pm 0.4 \text{ } \%/10 \text{ K}$ of the span

Ingress protection per IEC/EN 60529

IP65

Process connection

Copper alloy

Lower mount or back mount

NS 50, 63: G 1/4 B (male), SW 14

NS 100: G 1/2 B (male), SW 22

Pressure element

NS 50:

Copper alloy, C-type or helical type

NS 63:

≤ 400 bar: Copper alloy, C-type or helical type

> 400 bar: ≥ 400 bar: Stainless steel 316L, helical type

NS 100:

< 100 bar: Copper alloy, C-type

≥ 100 bar: Stainless steel 316L, helical type

Movement

Copper alloy

Dial

NS 50, 63: Plastic ABS, white, with pointer stop pin

NS 100: Aluminium, white, black lettering

Pointer

NS 50, 63: Plastic, black

NS 100: Aluminium, black

Case

Stainless steel, natural finish

Sealing towards process connection with O-ring

With all scale ranges, the filling plug can be vented for internal pressure compensation.

Position of blow-out device

NS 50: Case back, at 12 o'clock

NS 63, 100: Case circumference, at 12 o'clock

Window

Plastic, crystal-clear

Ring

Crimped triangular bezel, stainless steel, glossy finish

Filling liquid

Glycerine

Options

- Other process connection
- Sealings (model 910.17, see data sheet AC 09.08)
- Measuring system and movement from stainless steel (model 233.53)
- NS 100: Zero point adjustment (in front)
- Increased medium temperature with special soft solder
 - NS 50, 63: 100 °C
 - NS 100: 150 °C
- Extended ambient temperature range -40 ... +60 °C with silicone oil filling
- Panel mounting flange, stainless steel, for back mount connection
- Surface mounting flange, stainless steel (only NS 63, 100)
- Mounting clamp, for back mount

Approvals

Logo	Description	Country
	EU declaration of conformity Pressure equipment directive PS > 200 bar, module A, pressure accessory	European Union
	GOST (option) Metrology, measurement technology	Russia
	KazInMetr (option) Metrology, measurement technology	Kazakhstan
-	MTSCHS (option) Permission for commissioning	Kazakhstan
	BelGIM (option) Metrology, measurement technology	Belarus
	UkrSEPRO (option) Metrology, measurement technology	Ukraine
	Uzstandard (option) Metrology, measurement technology	Uzbekistan
-	CPA Metrology, measurement technology	China
	GL Ships, shipbuilding (e.g. offshore)	International
-	KBA Automotive	European Union
-	CRN Safety (e.g. electr. safety, overpressure, ...)	Canada

Certificates (option)

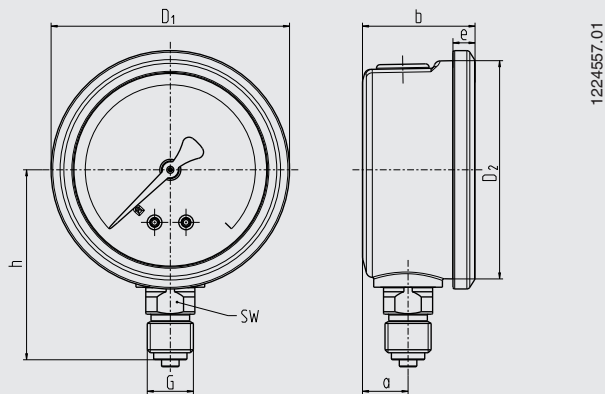
- 2.2 test report per EN 10204 (e.g. state-of-the-art manufacturing, material proof, indication accuracy)
- 3.1 inspection certificate per EN 10204 (e.g. material proof for wetted metallic parts, indication accuracy)

Approvals and certificates, see website

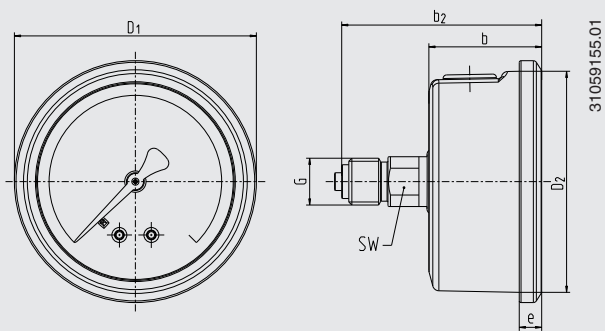
Dimensions in mm

Standard version

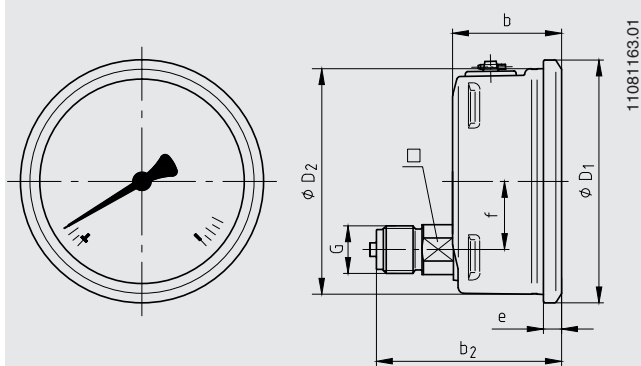
Lower mount (radial)



NS 50, 63, centre back mount



NS 100, lower back mount



NS	Dimensions in mm										Weight in kg
	a	b ±0.5	b ₂ ±0.5	D ₁	D ₂	e	f	G	h ±1	SW	
50	12	30	55	55	50	5.5	-	G ¼ B	48	14	0.15
63	13	32	56	68	62	6.5	-	G ¼ B	54	14	0.21
100	15.5	48	81.5	107	100	8	30	G ½ B	87	22	0.80

Process connection per EN 837-1 / 7.3

Ordering information

Model / Nominal size / Scale range / Process connection / Connection location / Options

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Bourdon tube pressure gauge, stainless steel

For the process industry, safety version, NS 63, 100 and 160

Models 232.30, 233.30

WIKA data sheet PM 02.04



for further approvals
see page 3

Applications

- Increased safety requirements for personal protection
- With liquid-filled case for applications with high dynamic pressure loads or vibrations (model 233.30)
- For gaseous and liquid aggressive media that are not highly viscous or crystallising, also in aggressive environments
- Oil and gas industry, chemical and petrochemical industries, power engineering and also water and wastewater technology

Special features

- Safety version with solid baffle wall designed in compliance with the requirements and test conditions of EN 837-1
- Excellent load-cycle stability and shock resistance
- Completely from stainless steel
- Scale ranges from 0 ... 0.6 to 0 ... 1,600 bar



Bourdon tube pressure gauge, model 232.30

Description

This high-quality Bourdon tube pressure gauge has been designed especially for increased safety requirements within the process industry.

The use of high-quality stainless steel materials and the robust design are geared to applications in the chemical and process engineering industries. Thus the instrument is suitable for liquid and gaseous media, also in aggressive environments.

Scale ranges of 0 ... 0.6 to 0 ... 1,600 bar ensure the measuring ranges required for a wide variety of applications.

WIKA manufactures and qualifies the pressure gauge in accordance with the requirements of the EN 837-1 European standard in the "S3" safety version. The safety version is made up of a non-splintering window, a solid baffle wall between measuring system and dial and a blow-out back. In the event of a failure, the operator is protected at the front side, as media or components can only be ejected via the back of the case.

For harsh operating conditions (e.g. vibrations), all instruments are also available with an optional liquid filling.

Description

Design

EN 837-1

Nominal size in mm

63, 100, 160

Accuracy class

NS 63: 1.6

NS 100, 160: 1.0

Scale ranges

NS 63: 0 ... 1 to 0 ... 1,000 bar

NS 100: 0 ... 0.6 to 0 ... 1,000 bar

NS 160: 0 ... 0.6 to 0 ... 1,600 bar

or all other equivalent vacuum or combined pressure and vacuum ranges

Pressure limitation

NS 63:	Steady:	3/4 x full scale value
	Fluctuating:	2/3 x full scale value
	Short time:	Full scale value
NS 100, 160:	Steady:	Full scale value
	Fluctuating:	0.9 x full scale value
	Short time:	1.3 x full scale value

Permissible temperature

Ambient:	-40 ... +60 °C with unfilled instruments
	-20 ... +60 °C with instruments with glycerine filling ¹⁾
Medium:	+200 °C maximum with unfilled instruments
	+100 °C maximum with filled instruments ¹⁾

Temperature effect

When the temperature of the measuring system deviates from the reference temperature (+20 °C): max. $\pm 0.4 \text{ } \%/10 \text{ K}$ of full scale value

Ingress protection per IEC/EN 60529

IP65 (instruments with back mount connection: IP54)

Process connection

Stainless steel 316L (NS 63: 1.4571)

Lower mount (radial) or lower back mount

NS 63: G 1/4 B (male), SW 14

NS 100, 160: G 1/2 B (male), SW 22

Pressure element

Stainless steel 316L

C-type or helical type

Movement

Stainless steel

Dial

Aluminium, white, black lettering

NS 63 with pointer stop pin

Pointer

Aluminium, black

Case

Stainless steel, with solid baffle wall (Solidfront) and blow-out back, scale ranges $\leq 0 \dots 16$ bar (lower mount) with compensating valve to vent case

Window

Laminated safety glass (NS 63: Polycarbonate)

Ring

Bayonet ring, stainless steel

Filling liquid (for model 233.30)

Glycerine

(glycerine-water mixture for scale ranges $\leq 0 \dots 2.5$ bar)

Options

- Other process connection
- Sealings (model 910.17, see data sheet AC 09.08)
- Assembly on diaphragm seals, see product review diaphragm seals
- Measuring system Monel (model 262.30)
- Panel mounting flange, stainless steel or polished stainless steel
- Surface mounting lugs on the back, stainless steel
- Ambient temperatures -40 °C: Silicone oil filling
- Ingress protection IP66, IP67
- Bourdon tube pressure gauge with switch contacts, see model PGS23.1x0, data sheet PV 22.02 or see model 232.30.063, data sheet PV 22.03
- Bourdon tube pressure gauge with electrical output signal, see model PGT23.1x0, data sheet PV 12.04

¹⁾ Model 233.30

Approvals

Logo	Description	Country
	EU declaration of conformity ■ Pressure equipment directive PS > 200 bar, module A, pressure accessory ■ ATEX directive (option) Ignition protection type "c", constructive safety	European Union
	EAC (option) ■ Pressure equipment directive ■ Hazardous areas	Eurasian Economic Community
	GOST (option) Metrology, measurement technology	Russia
	KazInMetr (option) Metrology, measurement technology	Kazakhstan
-	MTSCHS (option) Permission for commissioning	Kazakhstan
	BelGIM (option) Metrology, measurement technology	Belarus
	UkrSEPRO (option) Metrology, measurement technology	Ukraine
	Uzstandard (option) Metrology, measurement technology	Uzbekistan
-	CPA (option) Metrology, measurement technology	China
	KCs KOSHA (Option) Hazardous areas	South Korea
	GL (option) Ships, shipbuilding (e.g. offshore)	International
-	CRN Safety (e.g. electr. safety, overpressure, ...)	Canada

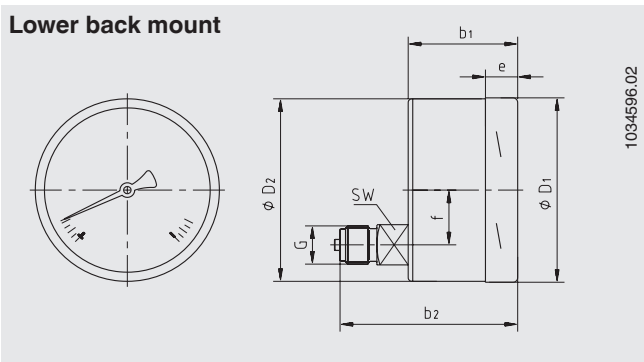
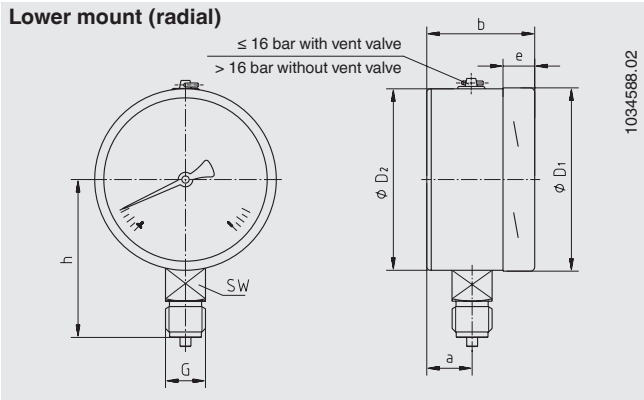
Certificates (option)

- 2.2 test report per EN 10204
- 3.1 inspection certificate per EN 10204

Approvals and certificates, see website

Dimensions in mm

Standard version



NS	Dimensions in mm											Weight in kg	
	a	b	b ₁	b ₂	D ₁	D ₂	e	f	G	h ±1	SW	Model 232.30	Model 233.30
63	17.5	42	42	61	63	63	14.5	18.5	G ¼ B	54	14	0.20	0.26
100	25	59.5	59.5	93	101	100	17	30	G ½ B	87	22	0.65	1.08
160	27 ³⁾	65 ⁴⁾	-	-	161	159	17.5	-	G ½ B	118	22	1.30	2.34

Process connection per EN 837-1 / 7.3

3) With scale ranges ≥ 100 bar: 41.5 mm

4) With scale ranges ≥ 100 bar: 79 mm

Ordering information

Model / Nominal size / Scale range / Process connection / Connection location / Options

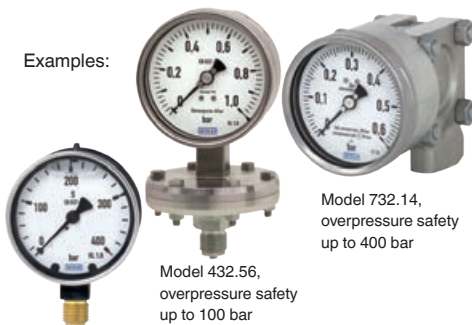
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Pressure gauges

Examples:



Model 213.40

Model 432.56,
overpressure safety
up to 100 bar

Model 732.14,
overpressure safety
up to 400 bar



Part of your business

Notes per current pressure equipment directive

- The pressure gauges are defined as "pressure accessories"
- The volume of the "pressure-bearing housings" of WIKA pressure gauges is $< 0.1 \text{ L}$
- The pressure gauges carry CE marking for fluid group 1 per annex II, diagram 1 when their permissible working pressure is $> 200 \text{ bar}$

Instruments that do not carry the mark are manufactured per article 4, paragraph 3 "sound engineering practice".

Applicable standards (depending on model)

- EN 837-1 Bourdon tube pressure gauges, dimensions, metrology, requirements and testing
- EN 837-2 Selection and installation recommendations for pressure gauges
- EN 837-3 Diaphragm and capsule pressure gauges, dimensions, metrology, requirements and testing

Specifications: See data sheet at www.wika.de

Subject to technical modifications.

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1. Safety



WARNING!

Before installation, commissioning and operation, ensure that the appropriate pressure gauge has been selected in terms of measuring range, design and suitable wetted material (corrosion) for the specific measuring conditions. In order to guarantee the measurement accuracy and long-term stability specified, the corresponding load limits must be observed.

Only qualified persons authorised by the plant manager are permitted to install, maintain and service the pressure gauges.

For hazardous media such as oxygen, acetylene, flammable or toxic gases or liquids, and refrigeration plants, compressors, etc., in addition to all standard regulations, the appropriate existing codes or regulations must also be followed.

From pressure gauges which do not correspond to a safety version per EN 837 highly pressurised media might leak out through the possibly bursting window in case of a component failure. For gaseous media and working pressures $> 25 \text{ bar}$ a pressure gauge with safety version S3 is recommended per EN 837-2.

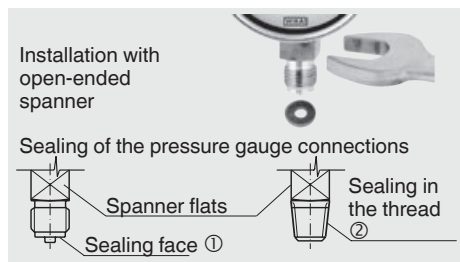
After an external fire, pressure media can leak out, particularly at soft solder joints. All instruments must be checked and, if necessary, replaced before recommissioning the plant.

Non-observance of the respective regulations can cause serious injuries and/or damage to the equipment.

2. Mechanical connection

In accordance with the general technical regulations for pressure gauges (e.g. EN 837-2). When screwing the instruments in, the force required to do this must not be applied through the case, but only through the spanner flats provided for this purpose, and using a suitable tool.

For parallel threads, use flat gaskets, lens-type sealing rings or WIKA profile sealings at the



sealing face ①. With tapered threads (e.g. NPT threads), sealing is made in the threads ② using additional sealing materials, e.g. PTFE tape (EN 837-2).

The torque depends on the sealing used. In order to orientate the measuring instrument so that it can be read as well as possible, a connection with clamp socket or union nut should be used. When a blow-out device is fitted to a pressure

gauge, it must be protected against being blocked by debris and dirt. With safety pressure gauges (see ⑤) there must be a free space of $> 15 \text{ mm}$ behind the blow-out back.

After installation, open the vent valve (if available)



or set from CLOSE to OPEN. With models 4 and 7, do not open the flange mounting screws. The version of the vent valve depends on the

model and can deviate from the above illustration!

Requirements for the installation point

If the line to the measuring instrument is not adequately stable, a measuring instrument holder should be used for fastening (and possibly via a flexible capillary). If vibrations cannot be avoided by means of suitable installation, instruments with liquid filling should be used. The instruments should be protected against coarse dirt and wide fluctuations in ambient temperature.

Note for model 732.14, for front bezel mounting: The front bezel serves as centring and as the aperture in the mounting panel. Securing and thus the weight-bearing must be made via the pressure connection piping.

3. Permissible ambient and operating temperatures

When mounting the pressure gauge it must be ensured that, taking into consideration the influence of convection and heat radiation, no deviation above or below the permissible temperature limits can occur. Observe the influence of temperature on the indication accuracy!

4. Storage

To protect the pressure gauges from mechanical damage keep them in the original packaging until installation.

Protect the measuring instruments from humidity and dust.

Storage temperature range: $-40 \dots +70 \text{ }^{\circ}\text{C}$

Storage temperature range model PG23LT: $-70 \dots +70 \text{ }^{\circ}\text{C}$

5. Maintenance and repairs

The pressure gauges are maintenance-free.

Regular checks should be carried out to ensure the measurement accuracy. Checks or recalibrations must only be carried out by qualified skilled personnel with the appropriate equipment. When dismounting, close the vent valve (if available).



WARNING! Residual media in dismantled pressure gauges can result in a risk to persons, the environment and equipment. Take sufficient precautionary measures.

M. Mechanical Pressure Switches



Pressure switches hex 27

Changeover with silver or gold contacts



- Switching point can be adjusted when fitted on site¹⁾
- Factory adjustable hysteresis (except types 0140 and 0141)
- High overpressure safety and long service life under harsh conditions
- Operating voltage up to 250 V
- Series 0140 / 0141 with protective insulation ☐
- For ready-wired customized versions refer to chapter M.5, starting at page 62
- For pressure switches with integrated connectors refer to chapter M.2, starting at page 32

¹⁾ Pressure switches can also be supplied preset at factory.
Our preset switches are sealed with lacquer paint, set points are embossed on the housing.

Pressure switches hex 27

Technical details

M.4

hex 27



Temperature resistance of sealing materials	NBR (max. overpressure up to 100 bar)	-30 °C ... +100 °C
	NBR (max. overpressure up to 300/600 bar)	-40 °C ... +100 °C
	EPDM	-30 °C ... +120 °C
	EPDM-TW (in diaphragm pressure switch)	-20 °C ... +100 °C
	FKM (in diaphragm pressure switch)	-5 °C ... +120 °C
	FKM (in piston pressure switch)	-15 °C ... +120 °C
	FFKM	-20 °C ... +120 °C
	Silicone (in diaphragm pressure switch)	-40 °C ... +120 °C
	HNBR	-30 °C ... +120 °C
Switching frequency	200 / min	
Mechanical life expectancy	1,000,000 cycles (for diaphragm pressure switches, life expectancy value only applies for switching pressures to max. 50 bar)	
Pressure rise rate	≤ 1 bar/ms	
Hysteresis (only adjustable at factory)	Adjustable average value 10 ... 30 % depending on type Types 0140 and 0141 cannot be adjusted	
Vibration resistance	10 g; 5 ... 200 Hz sine wave; DIN EN 60068-2-6	
Shock resistance	294 m/s ² ; 14 ms half sine wave; DIN EN 60068-2-6, DIN EN 60068-2-29	
Protection class	IP65 with socket device, terminals IP00	
Weight	approx. 100 g	

Switching performance and materials overview

Type	0140	0141	0170	0171	0180	0181	0183	0186	0187	0190	0191	0196	0197
5 ... 24 V DC										●	●	●	●
10 ... 42 V AC/DC			●	●									
10 ... 250 V AC/DC	●	●			●	●	●	●	●				
3 ... 50 mA										●	●	●	●
10 mA ... 2 A	●	●											
10 mA ... 4 A			●	●	●	●	●	●	●				
Gold contacts										●	●	●	●
Silver contacts	●	●	●	●	●	●	●	●	●				
Adjustable hysteresis			●	●	●	●	●	●	●	●	●	●	●
Zinc-plated steel (CrVI-free)	●	●	●	●	●	●	●			●	●		
Stainless steel 1.4305								●	●			●	●

M

Pressure switches hex 27

Electrical values

0140 / 0141

Rated working voltage U_e :	Rated working current I_e	Usage category ¹⁾
250 VAC 50 / 60 Hz	2 A	AC12
24 VDC	2 / 1 A	DC12 / DC13
50 VDC	1 / 0.5 A	DC12 / DC13
75 VDC	0.5 / 0.25 A	DC12 / DC13
125 VDC	0.2 / 0.1 A	DC12 / DC13
250 VDC	0.15 / 0.1 A	DC12 / DC13
Rated insulation voltage U_i :	300 V	
Rated impulse withstand voltage U_{imp} :	4 kV	
Conventional thermal current I_{the} :	5 A	
Switching overvoltage:	< 2.5 kV	
Rated frequency:	DC and 50 / 60 Hz	
Nominal current of short-circuit mechanism:	to 3.5 A	
Rated short-circuit current:	< 350 A	
IP class of protection according to DIN EN 60529:1991+A1:1999:	IP65 with connector	
Tightening torque of terminal screws:	< 0.35 Nm	
Connector cross-section:	0.5 - 1.5 mm ²	

0170 / 0171 / 0180 / 0181 / 0183 / 0186 / 0187 / 0190 / 0191 / 0196 / 0197

Rated working voltage U_e :	Rated working current I_e	Usage category ¹⁾
250 VAC 50 / 60 Hz	4 A	AC12
250 VAC 50 / 60 Hz	1 A	AC14
24 VDC	4 / 2 A	DC12 / DC13
50 VDC	2 / 1 A	DC12 / DC13
75 VDC	1 / 0.5 A	DC12 / DC13
125 VDC	0.3 / 0.2 A	DC12 / DC13
250 VDC	0.25 / 0.2 A	DC12 / DC13
Rated insulation voltage U_i :	300 V	
Rated impulse withstand voltage U_{imp} :	2.5 kV	
Conventional thermal current I_{the} :	5 A	
Switching overvoltage:	< 2.5 kV	
Rated frequency:	DC and 50 / 60 Hz	
Nominal current of short-circuit mechanism:	to 5 A	
Rated short-circuit current:	< 350 A	
IP class of protection according to DIN EN 60529:1991+A1:1999:	IP65 with socket device, terminals IP00	

0186 / 0187

Diaphragm / piston pressure switches up to 250 V
with stainless steel housing

- Stainless steel housing (1.4305 / AISI 303)
- Changeover with silver contacts
- Overpressure safety up to 300 / 600 bar¹⁾
(EPDM-TW and silicone diaphragm up to 35 bar²⁾)
- Hysteresis adjustable at factory

P _{max} in bar	Adjustment range in bar	Tolerance at room temperature in bar	Male thread	Order number
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0186 Diaphragm pressure switches with spade terminal

300 ¹⁾²⁾	0.5 - 5	± 0.3	G1/4	0186 - 457 03 - X - 003
	1 - 10	± 0.5		0186 - 458 03 - X - 006
	10 - 50	± 3.0		0186 - 459 03 - X - 009
	10 - 100	± 3.0 - 5.0		0186 - 461 03 - X - 012

0187 Piston pressure switches with spade terminal

600 ¹⁾	50 - 200	± 5.0	G1/4	0187 - 460 03 - X - 003
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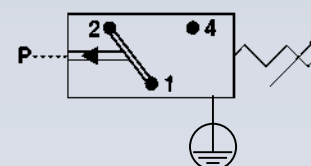
Seal material – Application areas

NBR	Hydraulic/machine oil, heating oil, air, nitrogen, etc.	1
EPDM	Brake fluid, water, hydrogen, oxygen, acetylene, etc.	2
EPDM-TW ³⁾	Drinking water (p _{max} ≤ 35 bar)	5
FKM	Hydraulic fluids (HFA, HFB, HFD), petrol/gasoline, etc.	3
FFKM	Chemical acids, diluted alkalis, ketones, ester's, alcohols	6
Silicone	Water, food products, air, etc. (p _{max} ≤ 35 bar)	8
HNBR	Hydraulic/machine oil, ester-based bio-oils	9

Refer to page 53 for the temperature range and application thresholds of sealing materials.

Your order number: 018X - XXX 03 - X - XXX

M.4
hex 27



M

¹⁾ Static value. Dynamic value is 30-50 % lower. Values pertain to the hydraulic/pneumatic part of the pressure switch.

²⁾ Overpressure safety of diaphragm pressure switch up to 600 bar. Functional reliability only up to 35 bar with diaphragm materials EPDM-TW and silicone.

³⁾ On demand



General technical explanations

User information

Our pressure monitoring products may only be installed and started up by authorised specialists. The safety regulations of country-specific authorities must be observed, especially when working with mains voltages and oxygen, and in potentially explosive areas.

Product information

The technical information in this catalogue is based upon fundamental testing during product development and empirical values. The information cannot be used for all application scenarios.

Testing of the suitability of our products for a specific application (such as the checking of material compatibilities) remains the responsibility of the user. It may be the case that suitability can only be verified by appropriate field testing.

Mounting position

For mechanical and electronic pressure switches as well as transmitters there is no limitation due to the mounting position with regard to the accuracy of the pressure measurement.

However, other boundary conditions of the application may require a certain mounting position, e. g. horizontal installation to avoid waterlogging on the electrical connection or vertical installation to prevent debris from accumulating in the bore of the pressure connection.

IP protection class

The IP protection class is a defined protection level code (sealing) of electrical equipment housings in line with IEC 60529 (formerly DIN 40050 – Part 2). Protection of a housing against the following is tested here:

- The penetration of solid extraneous particles, such as dust
- Access of hazardous parts
- Penetration of water

IP protection tests are performed as type tests.

The IP protection type code, made up of two digits, specifies the protection of a housing against the penetration of solid extraneous particles and water.

The numeric code therefore provides conclusions to be drawn on the level of personal safety as well as the functional protection / mid to longterm functional reliability of electrical equipment.

Protection types IP00, IP65, IP67 and IP6K9K

IP00:

No protection against penetration of solid particles or water, no protection against contact.

IP6X:

Protection against penetration of dust (dust proof). Full contact protection.

IPX5:

A jet of water from a nozzle, aimed at equipment (such as a pressure switch) from all directions, must not have any harmful effect.

IPX7:

Protection from water, when equipment (such as a pressure switch) is immersed in water under defined pressure and time conditions. Water must not penetrate into the equipment in harmful quantities.

IP6K9K:

Devices satisfying these requirements must be dust-proof and be able to withstand loads during the use of high-pressure cleaners and steam jets. The standard stipulates a water pressure from 80 to 100 bar at a temperature of 80 °C for testing.

IP6KX:

Dust must not penetrate. Letter K: Specific to the electrical equipment of road vehicles.

IPX9K:

Protection against penetration of water at high pressure / for steam jet cleaning. Water aimed at the housing from every direction at greatly increased pressure may not have any damaging effects.

We are able to offer IP67 / IP6K9K for many of our mechanical and electronic pressure switches (pre-wired or with integrated connector) and for our transmitters.

IP67 / IP6K9K is the recommended protection for mobile hydraulics and any equipment exposed to the outdoor environment.

Cylindrical threads

Cylindrical threads are either sealed on the front by underlaying an appropriate sealing ring (such as a copper sealing ring) or by already having integrated O-rings or gaskets.

If the corresponding thread types do not provide specifications regarding the roughness of the counter sealing surface, we recommend the following values:

- R_{amax} 1,6
- R_{max} 6,3
- $R_{mr}(-0,10) > 5\% C_{ref}$ 5 %

Conical threads (cone-shaped threads)

Conical threads guarantee tolerance compensation of the two threaded parts. The sealing function is realised with thread flanks which deform permanently and enter into a metallic frictional fit. Conical threads are not screwed in down to the screw-in depth, but fixed with the tightening torque required for the leak tightness.

Remember not to exceed the permitted tightening torque of the pressure switch or transmitter presented in the following table (to prevent damaging the threaded pin beforehand, causing it to become untight during operation or to snap off when tightened).

Tightening torques of steel threads

The specifications below are to be understood upper material thresholds for the housing of pressure switches or transmitters. Remember during installation that the type and material of the seal, the condition of mating surfaces (e.g. dry or oily) and the material of the counter-piece all have a bearing on the tightening torque.

Thread	Tightening torque
NPT 1/8; M 10 x 1 conical	max. 18 Nm
M 10 x 1 cyl.; G 1/8	max. 20 Nm
M 12 x 1.5; 7/16 – 20 UNF	max. 30 Nm
G 1/4; 9/16 – 18 UNF	max. 40 Nm
NPT 1/4; M 14 x 1.5	max. 40 Nm

Values 30% lower than in the table above must be used for brass housings.

Gaseous applications

In particular using additional sealant to attain the required leak tightness may be necessary for gas applications.

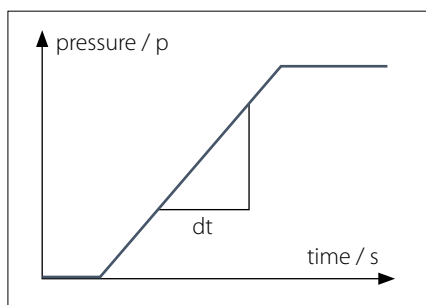
Vacuum

The values given in the technical details for the vacuum range are specified in millibars (mbar) below atmospheric pressure.

Pressure change rate (~rise / ~fall)

The pressure change rate denotes the pressure over time for the rising/falling pressure. The pressure change rate is specified in bar/s or bar/ms.

The maximum pressure change rate for SUCO mechanical pressure switches is 1 bar/ms (1,000 bar/s).



For SUCO electronic pressure monitoring products the maximum pressure change rate can be up to 5 bar/ms (5,000 bar/s).

Overpressure protection

The specified overpressure protection in the catalogue is based on a static pressure. The values refer to the hydraulic or pneumatic part of the switch. It is best practice to use 30 - 50% lower values for dynamic pressure compared to static pressure. These empirical values are based on the knowledge that, in pressure systems, unexpected pressure peaks which are higher than the working pressure are generated as a result of activation of valves, sudden falling or rising load or simply the change of cross-sections in the pipes. With conventional measurement techniques (such as manometers), these pressure peaks are hardly measureable. Faster measurement systems must therefore be used for this data acquisition. Attempts are being made to take this into account by using empirical or corrective factors.

If the pressure conditions are known and the pressure change rates are 0.1 bar/ms, our pressure switches and transmitters can be used up to the permitted overpressure protection as per data sheet / catalogue. Only 50 % of the specified overpressure protection is permitted when operating at the maximum permitted pressure change rate of ≤ 1 bar/ms for mechanical pressure switches, and at ≤ 5 bar/ms for transmitters.

RoHS-Compliance

RoHS

= Restriction of Hazardous Substances (EC Directive 2011/65/EU (RoHS II))



CE-Mark

= Communauté Européenne
European Parliament and Council directives must be observed when products are launched onto the market. If a directive exists for a product, it must be applied. Only products for which a directive exists may bear the CE mark.

Only products which have been tested according to CE directive or corresponding standards may carry the CE mark.

Mechanical pressure switches with a supply voltage above 50 VAC or 75 VDC are covered by the 2014/35/EU Low Voltage Directive. Variants for potentially explosive areas are covered in addition by the 2014/34/EU ATEX Product Directive.

Our electronic products satisfy EMC (Electromagnetic Compatibility) Directive 2014/30/EC.

Mechanical pressure switches do not fall under the EMC Directive.

The Machinery Directive 2006/42/EC is not applicable, because our products are classed as components.

Our product designs are based upon „good engineering practise“ in line with Article 4, Paragraph 3 of the Pressure Equipment Directive (2014/68/EU), meaning neither a declaration of conformity may be issued nor a CE mark affixed.

The current product-specific CE declaration is available in the download area of our homepage:

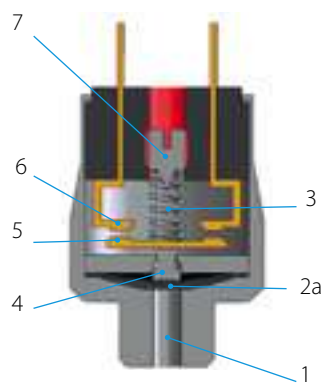
www.suco.de/en/downloads



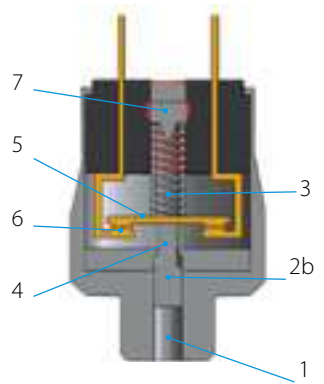
Subject to technical changes

Technical explanations for mechanical pressure switches

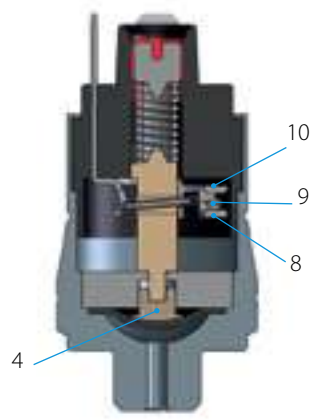
**Diaphragm pressure switch
NO**



**Piston pressure switch
NC**



Change-over



What is a mechanical pressure switch?

Mechanical pressure switches from SUCO monitor the pressure of liquid or gaseous media, and close or open an electrical circuit on reaching a set threshold.

Diaphragm pressure switches

SUCO diaphragm pressure switches are used in pressure ranges from 0.1 bar to 100 bar, meaning overpressure safety of 35, 100, 300 and 600 bar, depending on the used diaphragm type.

Piston pressure switches

Pressure ranges from 10 bar to 400 bar can be monitored with SUCO piston pressure switches (dependent on size); overpressure safety of up to 600 bar can be attained.

Sizes of pressure switches

Mechanical pressure switches from SUCO can be divided into sizes hex 24, hex 27 and 30 A/F. Each particular size has specific hydraulic, pneumatic and electric properties (specified on the relevant catalogue page in the technical details).

How does a pressure switch work?

Function description for **normally open (NO)**: Pressure is applied to the diaphragm (2a) / pistons (2b) through the pressure connector (1).

If the generated pressure force is greater than the force of the pre-tensioned pressure spring (3), the plunger (4) moves towards the counter-contact (6), carrying along the contact disc (5), and closes the circuit.

The switch opens again when the pressure is reduced by the hysteresis value.

Function description for **normally closed (NC)**: Engaging happens in the reverse order.

The adjustment screw (7) enables the switching point to be changed within the adjustment range.

The micro switch of a **change-over contact system** (snap-action) offers both, a NC and a NO contact.

The swivel contact (9) is activated by the plunger (4). The circuit is closed by the NC (8) as long as no pressure is applied. When the applied pressure exceeds the set switching point, the swivel contact changes over and closes the circuit via the NO (10).

Utilisation category

The utilisation category specifies for example voltages and currents, and the type of load, our pressure switches are designed for (according to DIN EN 60947-5-1).

AC voltage

AC12: Control of ohmic loads and semiconductor loads in input circuits of optocouplers (such as PLC inputs).

AC14: Control of electromagnetic loads, 72 VA.

DC voltage

DC12: Control of ohmic loads and semiconductor loads in input circuits of optocouplers (such as PLC inputs).

DC13: Control of electromagnets.

B10d value

According to DIN EN ISO 13849-1, the B10d value specifies the anticipated service life (with a 10% probability of failure). The B10d value is therefore directly dependent on the respective application of the pressure switch. For ohmic loads and currents < 1 A, we specify the B10d value as 1 million cycles of electrical life.

The specification of a MTTF time (mean time to failure) is not possible without knowing the specific conditions in the application. However, the MTTF time can be determined easily from the B10d value:

$$MTTF_d = \frac{B_{10d}}{0,1 n_{op}}$$

n_{op} : number of cycles per year

B_{10d} : number of cycles until 10 % of components have failed.

Classification of electrical switch functions

			Contact form DIN EN- 60947-5-1	Symbol IEC 60617
NO	NO, normally open	SPST single pole, single throw	X	
NC	NC, normally closed	SPST single pole, single throw	Y	
Change-over contacts	CO, change over (snap action)	SPDT single pole, double throw	C	

Minimum current / minimum working voltage

The minimum working current and minimum working voltage depend greatly on operating and ambient conditions. Physically, the build-up of impurity layers on the contact rivets must be countered with mechanical friction and/or electrical erosion.

It has proven useful in many applications to deploy our pressure switches with silver contact rivets ensuring that they are fail safe to 10 mA and 10 V. Variants with gold contacts are available in our catalogue for even lower currents and voltages.

Potential-free – galvanically isolated

Mechanical pressure switches from SUCO are potential-free, i.e. no auxiliary energy is required. Also, there is no electrical contact between the individual, live parts and the housing.

Adjustment range of switching point

The pressure range, within which the switching point of a pressure switch can be set, is called adjustment range. The switching point corresponds to the pressure value at which the electric circuit is opened or closed by the pressure applied.

If no switching point is specified on order, the pressure switches are adjusted by approximately half the adjustment range at factory.

Switching point tolerances

The switching point tolerances specified by us pertain to room temperature (RT) and condition as new. The values can change as a result of temperature, ageing and deployment conditions.

It is not possible to specify generally applicable value for switching point tolerances over temperature as the medium has a significant influence on the sealing materials in the pressure switch.

Double the tolerance stated for RT and condition as new can be assumed as a typical magnitude for the tolerance over the entire temperature range.

Based on their design, piston switches may exhibit an increase in switching points due to storage (dry run, stick-slip effect). Following a short start phase, the switching points return to the value set at the factory.

Pressure change rates of > 1 bar/s may have an effect on the switching point for diaphragm pressure switches.

The switching point (for rising pressure) and hysteresis increase, whilst the switch-back point (for falling pressure) sinks. Also, the effect of the maximum (system) pressure on the switchback point (for falling pressure ramp) must be factored in for tolerance-critical applications. The higher the (system) pressure, the lower the resulting switch-back value.

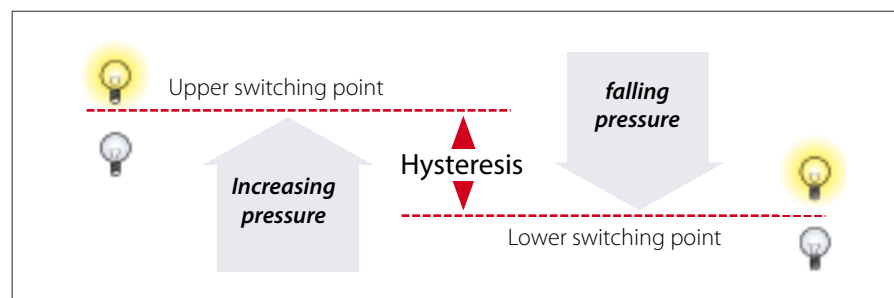
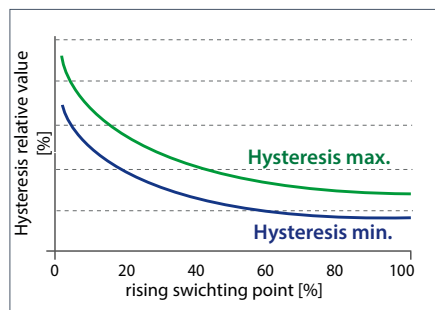
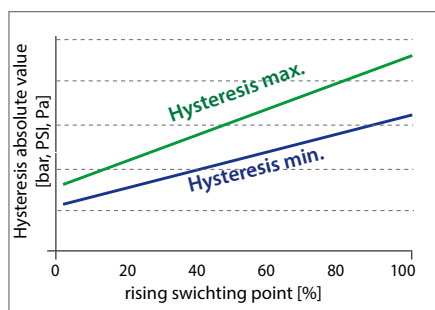
Hysteresis

Rising / falling switching point

The pressure difference between the rising (upper) and falling (lower) switching points (refer to the figure, e.g. NO) is known as hysteresis (switch-back difference).

Hysteresis has no constant value due to the structural layout of a mechanical pressure switch. In absolute values, the hysteresis is also the smallest with the smallest adjustment range. The hysteresis increases with increasing adjustment range.

Hysteresis over rising switching point



Technical explanations for mechanical pressure switches

Hysteresis can be set at SUCO in range from approx. 10 % (at end of adjustment range) to 30 % or higher (at start of adjustment range), related to the respective switching point for hex 27 and 30 A/F pressure switches with adjustable hysteresis.

The specifications in the catalogue only represent typical average values.

Please ask about the possible setting ranges you may require. Our electronic pressure switches are excellently suited to extremely low or high hysteresis.

The lowest possible hysteresis is set if nothing is specified in the order.

Switching frequency

The switching frequency provides information on the possible number of cycles in one minute. The value of 200/minute specified by us is a guideline value. Higher switching frequencies can be attained depending on switch type and conditions of use.

Sealing materials

The priority in sealing material selection is the chemical resistance. The temperature range only becomes a selection criterion when different sealing materials are suitable for the medium.

NBR (Buna-N)

This is the standard material most commonly used. It is a special SUCO material mix with high level of cold flexibility so that the sealing properties of the pressure switch are also retained at low temperatures.

NBR is denoted by number „1“ in our order number.

EPDM

This material is the solution of choice for applications with brake fluids. It is particularly suitable for applications with (process) water. Approval from the BAM (Federal Institute for Material Testing) is in place for oxygen applications. The safety regulations from country-specific authorities must be observed for oxygen applications.

EPDM may not come into contact with oil because this would entail swelling and softening of the material, and so failure of the pressure switch.

EPDM is denoted by number „2“ in our order number.

EPDM-TW with drinking water approval

This EPDM material is intended for drinking water applications according to Elastomer Guideline, WRAS (Water Regulation Advisory Scheme), ACS (Attestation de Conformité Sanitaire) and NSF 61 (National Sanitation Foundation) and for use in medical and pharmaceutical applications.

EPDM-TW may not come into contact with oil because this would entail swelling and softening of the material, and so failure of the pressure switch. Sealing is only available upon request, so please consult us before ordering.

EPDM-TW is denoted by number „5“ in our order number.

FKM / FPM (Viton®)

This is a diaphragm material suitable for high temperature exposure and exhibits special chemical resistance. It has been tested in the hydraulic sector and has been proven to work successfully with critical oils.

FKM / FPM is denoted by number „3“ in our order number.

FFKM

This diaphragm material is suitable for temperature exposure up to 120°C and can withstand very aggressive conditions such as chemical species including organic or inorganic acids, diluted alkalis, ketones, esters, alcohols, fuels and hot water.

FFKM is denoted by number „6“ in our order number.

TPE (Thermoplastic elastomers)

This sealing material is available only for our electrical products of the Performance Series.

TPE offers similar media compatibility like NBR, e.g. suitable for mineral oil and hydraulic fluids.

Additionally the material can be used with diluted acids and bases and cold water, too.

TPE is denoted by number „7“ in our order number.

ECO (epichlorhydrin)

ECO is only used in our vacuum switches. This material has similar properties to NBR in terms of chemical resistance, and can be used in gas applications as well as oil and fuel applications.

ECO is denoted by number „4“ in our order number.

Silicone

Silicone is suitable for use within a wide temperature range. The SUCO silicone diaphragm is FDA-approved (Food & Drug Administration) for the food sector.

Silicone is a soft material reserved for sensitive applications in the low pressure range (below 10 bar) with maximum overpressure safety to 35 bar. Piston switches are therefore not offered with silicone seals. Silicone is also not suitable for oil applications.

Silicone is denoted by number „8“ in our order number.

H-NBR

This is a special SUCO material mixture optimised for ester-based bio-oils. The multitude of bio-oils on the market means suitability of the material for the respective oil must be determined. This diaphragm material can also be used for a number of mineral and synthetic oils.

H-NBR is denoted by number „9“ in our order number.

Medium compatibility

The specifications on medium compatibility in this catalogue cannot be generalised as they pertain to the sealing materials used in our pressure switches.

Saturated and superheated steam applications

The sealing materials mentioned are not suitable for saturated or superheated steam applications.

Conversion table for pressure units

Unit symbol	Unit name	Pa= N/m ²	bar	Torr	lbf/in ² , PSI
1 Pa = N/m ²	Pascal	1	0.00001	0.0075	0.00014
1 bar	Bar	100 000	1	750.062	14.5
1 Torr = 1 mmHg	Millimetres, mercury column	133.322	0.00133	1	0.01934
1 lbf/in ² = 1 PSI	Pound-force per square inch	6 894	0.06894	51.71	1

Conversion table for temperature units

	K	°C	F
K	1	K - 273.15	9/5 K - 459.67
°C	°C + 273.15	1	9/5 °C + 32
F	5/9 (F + 459.67)	5/9 (F - 32)	1

Water applications

Standard piston switches are not suitable for water applications.

Pressure switches in stainless steel with EPDM seal have a special sealing system and can therefore also be used for water with corrosion protection, water mixtures or emulsions. The use of other fluid mixtures should be clarified with SUCO (e.g. swelling of EPDM sealing could happen by water – oil mixture).

Pressure switches with stainless steel housings with EPDM-TW diaphragm, SUCO type „5“ are designed for the use of drinking water.

Gas applications

Our pressure switches are suitable for liquid and gaseous media. Gaseous media place particular demands on leak-tightness however. The leakage rate is dependent on the respective gaseous medium, the working pressure and the permeability of the seal material used in the pressure switch. Their lower leakage rates mean diaphragm pressure switches are better suited for gas pressures than piston pressure switches. The latter can also be used however if certain measures are taken (such as venting of the housing).

For gaseous applications below 10 bar (145 PSI) in combination with pressure switches with high IP class, i.e. IP 67 and IP6K9K, in general we recommend to use ventilation. Please consult us; we are able to offer suitable solutions.

Oxygen applications

Our mechanical pressure switches are suitable for use with oxygen. We recommend the use of our EPDM diaphragm. The resistance to internal burnout of the diaphragm has been tested by the BAM (Federal Institute for Material Testing).

Pressure switches with steel housings with zinc-nickel coating are, in conjunction with oxygen, only approved to a maximum working pressure of 10 bar.

Pressure switches with brass housings are, in conjunction with oxygen, only approved to a maximum working pressure of 35 bar.

Pressure switches with stainless steel housings are, in conjunction with oxygen, only approved to a maximum working pressure of 50 bar.

DGUV accident prevention regulations (such as DGUV 500, Section 2.32 and BGI 617) must be observed for first operation.

Please specify when ordering „oil and grease-free, for use with oxygen“.

Underpressure safety of pressure switches

Our pressure switches are underpressure safe down to 300 mbar (relative).

Overpressure safety of vacuum switches

Our vacuum switches are overpressure safe up to 20 or 35 bar depending on type.

cCSAus approval

Almost all of our mechanical pressure switches (sizes hex 24 and hex 27), and vacuum switch 0151, have cCSAus approval. The CSA mark together with „c“ and „us“ combines the control stamps for introduction onto the Canadian and American markets. The cCSAus certificate also includes the test of the relevant UL standard.

Checked by an official institution and verified with regular company visits by CSA inspectors, this approval guarantees the highest levels of quality and operational reliability for our products.

You can download the current cCSAus certificate on the download area of our homepage: <http://www.suco.de/en/downloads>

Product information

The technical information in this catalogue is based upon fundamental testing during product development, as well as upon empirical values. The information cannot be used for all application scenarios.

Testing of the suitability of our products for a specific application (e.g. also the checking of material compatibilities) rests under the responsibility of the user. It may be the case that suitability can only be guaranteed with appropriate field testing.

Please consult us about gas, water and oxygen applications.

Subject to technical changes.



BOURDON
The Original by Baumer



Main Features

- Excellent repeatability
- Dead band adjustment for regulation
- Fix dead band for control and alarm
- Resistant to accidental overpressure
- Explosion proof Hazardous areas 1, 2, 21, 22

Applications

- Pneumatic appliances
- Power generation safety equipment
- Water treatment
- Valve and compressor control

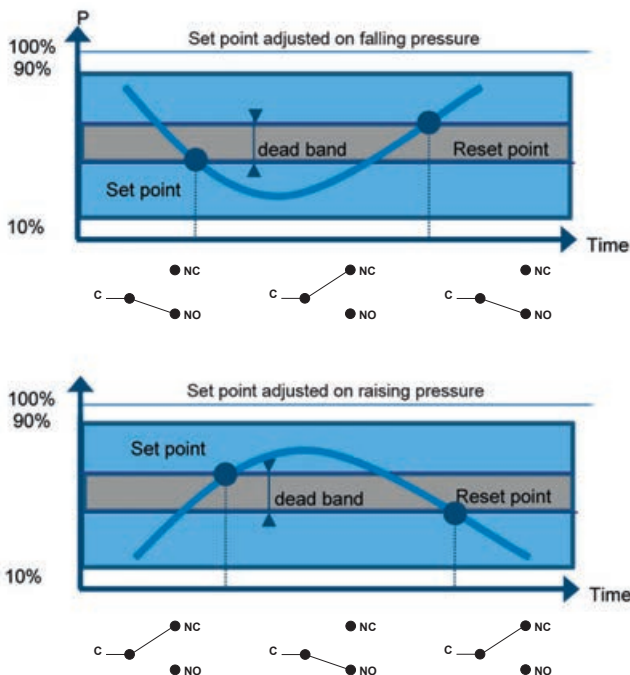
Technical Data

Pressure range	0 ... 1 bar to 0 ... 100 bar	Electrical connection	Via internal terminal block with cable gland 3/4 NPT (ATEX/IECEX certified) for cable Ø 7 to 12
Temperature	Process : -40 ... +150 °C Ambient : -20 ... +70 °C (T5) -20 ... +60 °C (T6) Storage : -40 ... +70 °C	Electrical function	See ordering code details on page 4
Repeatability	± 1% F.S. / constant pressure cycle	Adjustment	Internal adjustment possible for set point and dead band
CE conformity	Low Voltage Directive 2014/35/EU ATEX Directive 2014/34/EU	ATEX/IECEX	<u>Certificate</u> LCIE 02 ATEX 6219X IECEX LCIE 15.0059X <u>Classification</u> CE Ex II 2 G D Ex d IIC T6 or T5 Gb Ex tb IIIC IIC T80 °C or T95 °C Db
Protection rating	IP 66 (EN 60529)		
Process Connection	Stainless steel 1.4404 (316L)		
Diaphragm	Stainless steel 1.4404 (316L)		
Scale	Internal graduated scale		
Weight	1.8 kg		
Housing	Grey painted aluminium housing Explosion proof		
Mounting	2 x M6 x 16 screws		
Ground connection	Via internal or external terminal block		

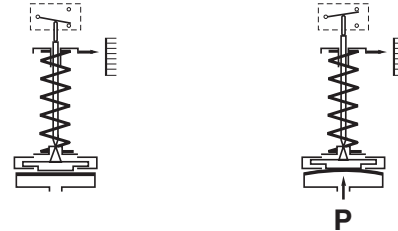
Options

Customer specific set point adjustment	Code SETP
Oxygen application	Code 0765
Mounting on 2" pipe	Code 0407
Stainless steel tag plate and wire	Code 9941

Principle



A flexible sensing element actuates a microswitch by means of a piston. The set point is adjusted by means of a compressible spring installed in opposition.



Set point and reset point must be between 10% and 90% of the selected scale.

Standard factory adjustment

Setpoint at 50% of the scale on falling pressure

Customer specific factory adjustment (option SETP)

The following specifications have to be given with the order:

- Setpoint value
- Adjustment on falling or raising pressure
- Dead band value (as needed) when using an adjustable dead band switch

Adjustable ranges

Scale	P. Max permanent	P. Max accidental	Code	Micro-switch dead band ¹⁾							
				Adjustable dead band		Fixed dead band					
				R		L		M - P		U (2xSPDT)	
				10%	90%	10%	90%	10%	90%	10%	90%
bar	bar	bar		mbar	mbar	mbar	mbar	mbar	mbar	mbar	mbar
0 ... 1	10	50	41	N/A	N/A	30	60	120	330	150	300
0 ... 1.6			42	100 - 200	200 - 550	35	70	150	390	175	350
0 ... 2.5			43	125 - 230	250 - 700	40	80	180	480	200	400
0 ... 4			44	150 - 290	320 - 900	45	90	210	540	225	450
0 ... 6			45	190 - 350	420 - 1200	50	100	240	630	250	500
0 ... 10			46	260 - 500	600 - 1800	55	110	300	750	275	550
0 ... 4	40	100	51	500 - 1000	1250 - 2000	110	200	600	1320	550	1000
0 ... 6			52	550 - 1100	1350 - 2200	110	235	750	1620	550	1175
0 ... 10			53	650 - 1300	1500 - 2600	120	270	840	2010	600	1350
0 ... 16			54	800 - 1600	1700 - 3100	130	305	960	2370	650	1525
0 ... 25			55	1000 - 2000	2000 - 3900	140	340	1050	2730	700	1700
0 ... 40			56	1400 - 2800	2600 - 5200	150	380	1140	3150	750	1900
0 ... 10	100	200	61	1000 - 2000	3000 - 6000	200	500	1500	3600	1000	2500
0 ... 16			62	1150 - 2300	3500 - 7000	280	700	2100	3960	1400	3500
0 ... 25			63	1350 - 2700	4200 - 8400	360	900	2700	5500	1800	4500
0 ... 40			64	1700 - 3400	5350 - 10700	440	1100	3300	7350	2200	5500
0 ... 60			65	2100 - 4200	6900 - 13800	520	1300	3900	9600	2600	6500
0 ... 100			66	3000 - 6000	10000-20000	600	1500	4500	13200	3000	7500

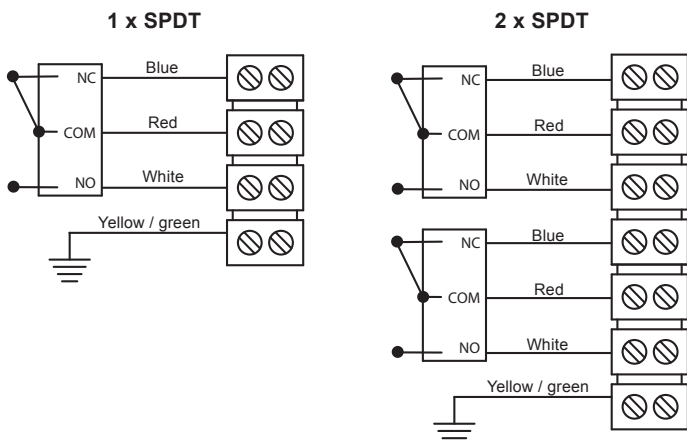
¹⁾ The value of the dead band is depending on the value of the set point.

This table contains the dead band values for set point adjustment at 10% and 90% of the selected scale. For adjustable dead band the lower value corresponds to the dead band spring totally released and the higher corresponds to the dead band spring fully tensed. For other set points the dead band value can be calculated by linear interpolation between the values at 10% and 90%.

Micro switches characteristics

Switch code	R	L	M	P	U
Type	Adjustable Dead band	Fixed dead band			
		Standard	Gold contact	Ultra sensitive	Double
6 Vdc	0.4 ... 10 A	N/A	10 ... 50 mA	0.4 ... 4 A	0.4 ... 10 A
12 Vdc	0.4 ... 10 A	N/A	10 ... 50 mA	0.4 ... 4 A	0.4 ... 10 A
24 Vdc	0.4 ... 5 A	N/A	10 ... 50 mA	0.4 ... 4 A	0.4 ... 6 A
30 Vdc	0.4 ... 5 A	N/A	10 ... 50 mA	0.4 ... 2 A	0.4 ... 6 A
48 Vdc	0.4 ... 5 A	N/A	10 ... 50 mA	N/A	0.4 ... 6 A
110 Vdc	0.2 ... 0.5 A	N/A	10 ... 50 mA	N/A	0.4 ... 0.5 A
220 Vdc	0.1 ... 0.25 A	N/A	10 ... 50 mA	N/A	0.1 ... 0.25 A
115 Vac	0.4 ... 10 A	0.4 ... 10 A	10 ... 50 mA	N/A	0.4 ... 10 A
250 Vac	0.2 ... 10 A	0.2 ... 10 A	N/A	N/A	0.2 ... 10 A
Dielectric rigidity between contacts and ground	2000 V	2000 V	2000 V	1000 V	2000 V

Electrical connections



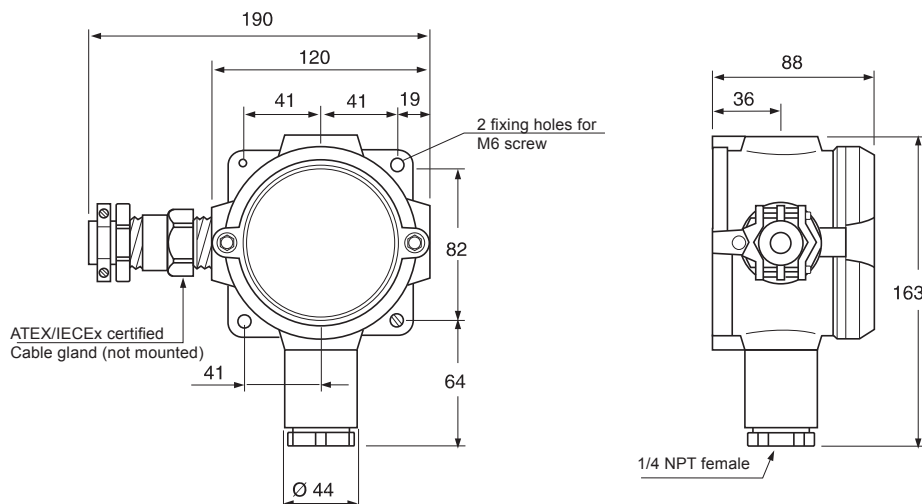
Hazardous areas : zone 1, 2, 21, 22

-20 °C ≤ Ta ≤ +70 °C	Dust IP6x	Gases
	T° surface	Class
Ta = 60 °C	80 °C	T6
Ta = 70 °C	95 °C	T5

Important : Maximum power dissipated inside enclosure does not exceed 5 W

All necessary measures must be taken by the user, to avoid the calorific transfer from the fluid to the apparatus head increasing the head's temperature to such that it reaches the self-ignition temperature of the gas in which it is used.

Dimensions (mm)



Ordering details RP2E

Model	RP2	-		.		xx	/
Compact pressure switch	RP2	-					
Approvals							
ATEX/IECEX Explosion proof					E		
Type of micro switches							
1 SPDT standard change over switch					L		
1 SPDT gold contact change over switch					M		
1 SPDT hermetically ultra sensitive change over switch					P		
1 SPDT change over switch with adjustable dead band					R		
2 SPDT double change over switch					U		
Process connection							
G1/2 male (standard)						3	
1/2 NPT male						6	
1/4 NPT female						8	
1/2 NPT female						N	
Pressure range (bar)							
0 ... 1							41
0 ... 1.6							42
0 ... 2.5							43
0 ... 4							44
0 ... 6							45
0 ... 10							46
0 ... 4							51
0 ... 6							52
0 ... 10							53
0 ... 16							54
0 ... 25							55
0 ... 40							56
0 ... 10							61
0 ... 16							62
0 ... 25							63
0 ... 40							64
0 ... 60							65
0 ... 100							66

Options to be added behind the / (see example below)

Ordering example with options

	RP2	-	E	L	.	3	53	/	0765	-	0407	-	9941
Compact pressure switch													
ATEX/IECEX Explosion proof													
1 SPDT standard change over switch													
Process connection G1/2 male													
Pressure range 0 ... 10 bar over pressure max. 40 bar													
Option: Oxygen application													
Option: Mounting on 2" pipe													
Option: Stainless steel tag plate and wire													

Ces matériels ont été développés, fabriqués et contrôlés en accord avec les directives **94/9/CE** (normes EN60079-0, EN60079-1, EN61241-0, EN61241-1) relatives aux matériels pour atmosphères explosives. Ils sont du type a enveloppe antidéflagrante selon **l'attestation d'examen CE de type LCIE 02 ATEX 6219X**

Marquage

Les informations suivantes figurent sur le matériel :
 -Baumer Bourdon-Haenni Vendôme France
 -type du matériel:
 -étendue de mesure
 -n° de fabrication, date code de traçabilité et année
-CE0081 et les références de l'homologation
 I12 G D Ex d IIC T6 ou T5 Ex tD A21 T 80 °C ou T 95 °C IP6x
AVERTISSEMENT NE PAS OUVRIR SANS TENSION

Montage

Le montage doit être effectuée conformément aux règles de l'art en usage pour des installations classées en zone dangereuse et protection par enveloppe anti-déflagrante. Avant toute mise en service il est indispensable de s'assurer que le process et le fluide à mesurer par le pressostat ou le thermostat sont compatibles avec les exigences de ce mode de protection: Utilisation seulement en zone 1 ou 2 pour G 21 ou 22 pour D

- 1-La pression, la température et la nature du fluide à mesurer doivent être compatibles avec l'étendue de mesure du matériel (risque de destruction) et de ses matériaux .
- 2-La température ambiante doit être comprise entre -20°C et la classe T6 ou T5 . Toutes dispositions seront prises par l'utilisateur pour que le transfert calorifique du fluide vers la tête de l'appareil ne porte pas celle-ci à une température correspondant à la température d'auto inflammation du gaz dans lequel elle se trouve.
- 3-Les opérations de montage et ou démontage doivent se faire hors tension et à pression nulle et ceci pour éviter toute projection de fluide. Pour éviter toute brûlure, s'assurer que la température du process est dans une plage de température acceptable.
- 4-Laisser visible les étiquetages et marquages
- 5-La position de montage influence la mesure : Voir schéma.
- 6-Il est recommandé de protéger le pressostat ou thermostat de toutes influences d'environnements sévères (pulsations, coup de bélier, vibrations, chocs, source de chaleur, de la foudre, de l'humidité et des intempéries).
- 7-L'utilisateur doit s'assurer de l'étanchéité du raccordement en utilisant des joints appropriés et compatibles avec le fluide à mesurer.
- 8-Utiliser une clef de serrage adaptée aux dimensions des raccords. Ne jamais utiliser le boîtier comme moyen de serrage.

Raccordement électrique :

Impérativement se conformer aux prescriptions du schéma. Les entrées de câbles (presse-étoupe ou conduit) doivent posséder leur propre agrément CE de type

Respecter le branchement du câble, à dégainer sur une longueur de 150mm, ainsi que les paramètres électriques, voir schéma.

Réglage à faire hors zone dangereuse à l'aide d'instruments de référence.

1er cas : L'appareil est réglé à une valeur de consigne spécifiée à la commande. Dans ce cas aucun réglage n'est nécessaire, l'appareil est utilisable en l'état.

2ème cas : L'appareil est réglé en milieu d'échelle. Pour un changement de valeur avec une clé plate de 10mm+clé pour 6 pans creux 1.5" :

Soumettre l'appareil à la pression ou à la température; dévisser la vis de blocage **VB**, voir schéma; à l'aide de l'échelle graduée **EG** et du repère **VR**, visser ou dévisser ce dernier jusqu'au basculement du contact; revisser la vis de blocage **VB**: L'appareil est réglé. Vérifier le fonctionnement et le cas échéant retoucher à l'aide de **VR**

Pour les appareils à contacts "**R**" (écart réglable): Le réglage du point de consigne est identique à ci dessus, auquel s'ajoute une possibilité de réglage de l'écart entre l'ouverture et la fermeture du contact par action sur la molette du micro-rupteur, valeurs croissantes de **A** à **F**. Ce réglage ne modifie pas l'enclenchement du contact bas (consigne).

Démontage et maintenance

Ces opérations doivent être effectuées par un personnel qualifié .

Avant tout démontage s'assurer que le régulateur (P ou T) n'est plus alimenté électriquement, que le circuit hydraulique n'est plus sous pression et que la température ambiante permet un démontage sans brûlures. Protéger le plongeur contre les chocs.

Dans le cas d'un remontage, il est indispensable de vérifier si l'équipement à une utilisation sur circuit d'oxygène. Dans ce cas, ces opérations doivent être effectuées par un personnel prévenu, qualifié et disposant de moyens techniques appropriés.

Ne pas remonter le régulateur sur des fluides de nature différente (risque de réaction chimique voire d'explosion).

Remontage :Respecter les mêmes règles que celles préconisées lors du montage initial.

La maintenance, la vérification ou le re-étalonnage doivent être faits par un personnel habilité par Baumer Bourdon-Haenni, utilisant un équipement approprié.

These instruments were developed, manufactured and checked pursuant to directives:
94/9/CE (standards EN60079-0, EN60079-1, EN61241-0, EN61241-1) relating to the equipment for explosive atmospheres.
 They are of flameproof enclosure type according to **EC type examination certificate LCIE 02 ATEX 6219X**

Marking

The following information is reproduced on the transmitter.

- Baumer Bourdon-Haenni Vendôme France
- Type of instrument
- Instrument range
- Serial number, date codes traceability and year
- CE0081 and approval references**

I12 G or D Ex d IIC T6 or T5 Ex td A21 T 80 °C or T 95 °C IP6x

WARNING DO NOT OPEN WHEN ENERGIZED

Assembly

The assembly should be carried out pursuant to state-of-the-art rules applicable to hazardous areas and protection by flameproof enclosure. Prior to putting the equipment into operation, it is essential to make sure the process and the fluid to be measured by the pressure or temperature switch are compatible with the requirements of this protection mode: use only in zone 1 or 2 for G 21 or 22 for D

- 1-The pressure, temperature and nature of the fluid to be measured should be compatible with the instrument range of the transmitter (risk of destruction) and its components.
- 2-The ambient temperature should range between -20°C and class T6 or T5. All necessary measures must be taken by the user, to avoid the calorific transfer from the fluid to the apparatus head increasing the head's temperature to such that it reaches the self-ignition temperature of the gas in which it is used.
- 3-The assembly and/or dismantling operations should be done idle and with no pressure whatsoever to avoid any projection of fluid. To avoid burns, make sure the process temperature is within specified temperature ranges.
- 4-Make sure labels and markings are visible.
- 5-The position of assembly influences the measurement, see diagram.
- 6-It is recommended to protect the switch from all severe environmental conditions (pulsations, water hammer, vibrations, shock, heat source, electric and magnetic fields, lightning, humidity and atmospheric influences).
- 7-The user will ensure the connection is watertight by using appropriate joints compatible with the fluid to be measured.
- 8-Use a spanner or wrench with the correct connection dimensions. **Never use the enclosure as a means for tightening.**

Electrical connection:

Follow diagram instructions to the letter. Conduit entries (packing glands or conduits) should bear their own EC acceptance certificate

Connect the cable, provide for 150mm unsheathing, and comply with the electric parameters – see diagram.

Adjustment to be performed with appropriate tools outside hazardous area.

1st possibility: the device is adjusted to a desired variable specified when placing the order. If so, no adjustment is required. The device can be operated as such.

2nd possibility: the device is adjusted at half of full-scale. To change the variable with a 10mm square wrench and clé pour 6 pans creux 1.5":

Subject the device to pressure or temperature. Unscrew the safety screw **VB**, see diagram; with the instrumental dial **EG** and the reference mark **VR**, screw or unscrew the latter until the contact point tilts; screw back on the safety screw **VB**: the device is now properly adjusted. Check proper functioning and, where necessary, readjust with **VR**.

As regards "R" contact devices (adjustable deviations): adjusting the desired variable is as above but in addition it is possible to adjust the deviation between the contact opening and closure by acting on the microswitch wheel, increasing values from A to F. This adjustment does not affect the triggering of the base contact (desired variable).

Dismantling and maintenance

Qualified staff will perform these operations.

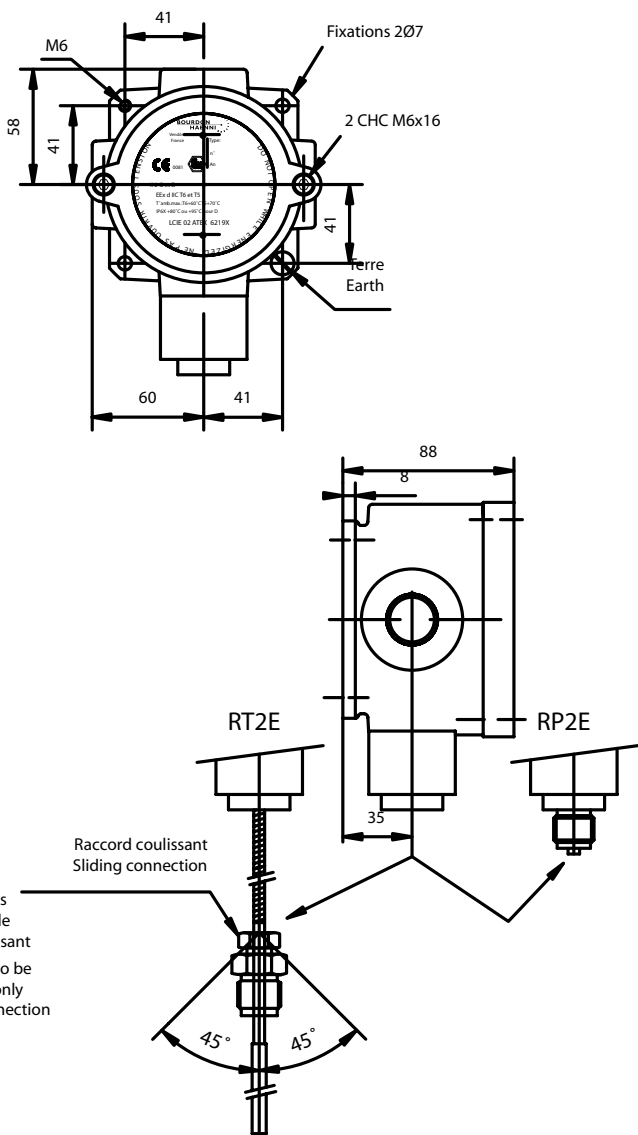
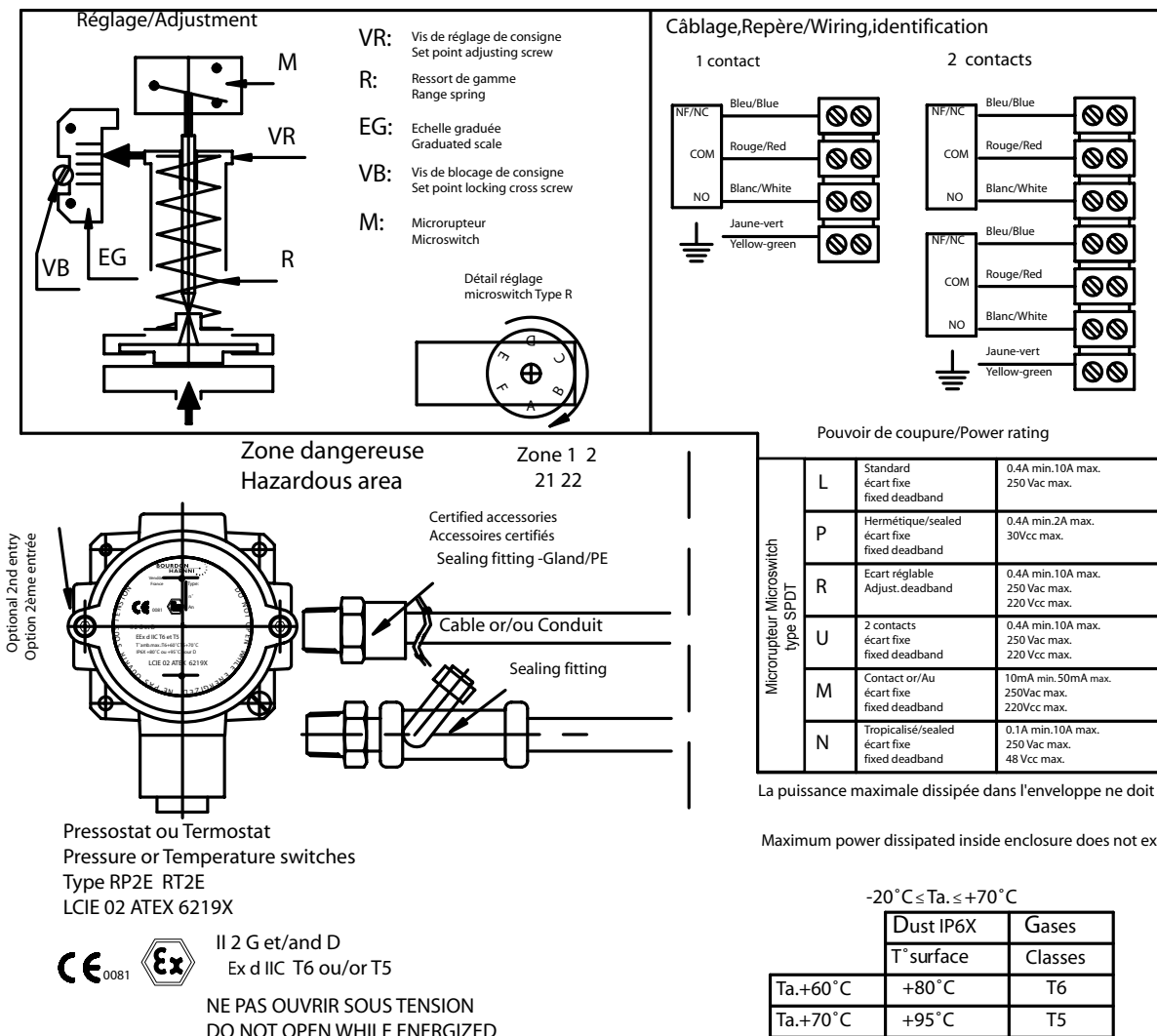
Prior to dismantling make sure the Switch (P or T) is not electrically energized, the hydraulic system no longer under pressure and the ambient temperature allows dismantling without burning the operator. For temperature switches protect the measuring element against shock.

When reassembling, it is essential to check whether the equipment is used with an oxygen circuit. If so, a duly informed and qualified staff with appropriate technical means will perform these operations.

Do not reassemble the switch with fluids of a different nature (risk of chemical reaction or of explosion).

Re-assembly: comply with the same instructions as those recommended for initial assembly.

Maintenance, control or recalibration will be performed using appropriate tools by a staff duly authorised by Baumer Bourdon-Haenni.



EC Declaration of Conformity / Déclaration CE de conformité

We declare under our sole responsibility that the products to which the declaration relates are in conformity with the following standard(s) and directive(s).

Nous déclarons sous notre seule responsabilité que les produits auxquels se réfère cette déclaration sont conformes à la (aux) norme(s) et directive(s) suivantes(s).

Supplier / Fournisseur : Baumer Bourdon Haenni S.A.S.

Product / Produit : Pressure switch or temperature switch in flameproof enclosure / *Pressostat ou Thermostat à enveloppe anti-déflagrante*

Type(s) : RP2E / RT2E

Directive(s) : 94/9/EC about equipment for use in explosive atmospheres - *94/9/CE portant sur les appareils destinés à être utilisés en atmosphères explosibles*

Standard(s) : EN 60079-0(2012) by internal analysis *par analyse interne*
EN 60079-1(2007) / EN 60079-31(2009)

In accordance with clarification sheet ExNB/10/397/CS, minor and editorial changes of standards whose impact on the conformity of products has not been demonstrated might have occurred, without modification of neither EC type examination certificate nor marking / *Conformément au document de référence ExNB /10/397/CS, des modifications mineures ou éditoriales des normes, dont l'impact sur la conformité des produits n'a pas été démontré, peuvent être survenues sans évolution sur la déclaration CE de type ni sur le marquage.*

Notified Body / Organisme Notifié : LCIE – 33, Avenue du Général Leclerc – 92 260 FONTENAY-AUX-ROSES - FRANCE

Notified Body Identification number / Numéro d'accréditation Organisme Notifié : 0081

Notification Quality audit (Appendix IV) / Notification audit Qualité (Annexe IV) : LCIE 02 ATEX Q 8028

EC-type examination certificate / Attestation d'examen CE de type : LCIE 02 ATEX 6219X

Marquage :  0081  II 2 G D Ex d IIC T6 ou T5 Gb / Ex t IIIC T80°C ou T95°C Db IP6x
T° amb : -20°C à + 60°C (T6 ou T80°C) ou -20°C à +70°C (T5 ou T95°C)
LCIE 02 ATEX 6219X

Directive(s) : 73/23/EC modify by 93/68/EC and 2006/95/EC Low voltage equipment - *73/23/CE modifiée par 93/68/CE et 2006/95/CE : basse tension (DBT)*

Standard(s) : EN60947-1/A1 (2011) / EN60947-5-1/A1(2009)

Vendôme, le 09/12/2015

David LECOMTE
R&D Director
Directeur R&D



Charles MOREAU
Ex Authorized person
Personne autorisée Ex





LCIE

1 ATTESTATION D'EXAMEN CE DE TYPE

2 Appareils et systèmes de protection destinés à être utilisés en atmosphères explosibles

Directive 94/9/CE

3 Numéro de l'attestation CE de type

LCIE 02 ATEX 6219 X

4 Appareil ou système de protection :

Boîtier pressostat ou thermostat

Type : RP2E ou RT2E

5 Demandeur : BOURDON-HAENNI

6 Adresse : 125, rue de la Marre
41 103 VENDOME FRANCE

7 Cet appareil ou système de protection et ses variantes éventuelles acceptées est décrit dans l'annexe de la présente attestation et dans les documents descriptifs cités en annexe.

8 Le LCIE, organisme notifié sous la référence 0081 conformément à l'article 9 de la directive 94/9/CE du Parlement européen et du Conseil du 23 mars 1994, certifie que cet appareil ou système de protection est conforme aux exigences essentielles en ce qui concerne la sécurité et la santé pour la conception et la construction d'appareils et de systèmes de protection destinés à être utilisés en atmosphères explosibles, données dans l'annexe II de la directive. Les vérifications et épreuves figurent dans notre rapport confidentiel N° 60003163/01.

9 Le respect des exigences essentielles en ce qui concerne la sécurité et la santé est assuré par la conformité aux documents suivants :

-EN 50014 (1997) + amendements 1 et 2
-EN 50018 (2000) et EN 50281-1-1 (1998).

10 Le signe X lorsqu'il est placé à la suite du numéro de l'attestation, indique que ce matériel ou système de protection est soumis aux conditions spéciales pour une utilisation sûre, mentionnées dans l'annexe de la présente attestation.

11 Cette attestation d'examen CE de type concerne uniquement la conception et la construction de l'appareil ou du système de protection spécifié, conformément à la directive 94/9/CE. Des exigences supplémentaires de cette directive sont applicables pour la fabrication et la fourniture de l'appareil ou du système de protection.

12 Le marquage de l'appareil ou du système de protection devra comporter, entre autres indications utiles, les mentions suivantes :

Ex II 2 G et/ou D
EEx d IIC T6 ou T5
IP6X, T +80°C ou T+95°C

Fontenay-aux-Roses, le 05 février 2003

1 EC TYPE EXAMINATION CERTIFICATE

2 Equipment or protective system intended for use in potentially explosive atmospheres

Directive 94/9/EC

3 EC type Examination Certificate number

LCIE 02 ATEX 6219 X

4 Equipment or protective system :

Pressure sensitive switch or thermostat housing

Type : RP2E or RT2E

5 Applicant : BOURDON-HAENNI

6 Address : 125, rue de la Marre
41 103 VENDOME FRANCE

7 This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 LCIE, notified body number 0081 in accordance with article 9 of the Directive 94/9/EC of the European Parliament and Council of 23 March 1994, certifies that this equipment or protective system has been found to comply with the essential Health and Safety Requirements relating to the design and construction of equipment and protective system intended for use in potentially explosive atmospheres, given in Annex II of the Directive.

The examination and test results are recorded in confidential report No 60003163/01.

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with :

-EN 50014 (1997) + amendments 1 and 2
-EN 50018 (2000) and EN 50281-1-1 (1998).

10 If the sign X is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

11 This EC Type examination certificate relates only to the design and construction of this specified equipment or protective system in accordance with the Directive 94/9/EC. Further requirements of the Directive applies to the manufacture and supply of this equipment or protective system.

12 The marking of the equipment or protective system shall include the following :

Ex II 2 G and/or D
EEx d IIC T6 or T5
IP6X, T +80°C or T+95°C

Le Directeur de l'organisme certificateur
Manager of the certification body

Timbre sec / Dry seal

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Rev A

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et conseil de surveillance
au capital de 15 745 984 €
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(A1) ANNEXE

(A1) SCHEDULE

(A2) ATTESTATION D'EXAMEN CE DE TYPE

(A2) EC TYPE EXAMINATION CERTIFICATE

LCIE 02 ATEX 6219 X

LCIE 02 ATEX 6219 X

(A3) Description de l'équipement ou du système de protection :

Boîtier pressostat ou thermostat
Type : RP2E ou RT2E

Ce matériel, d'un volume interne de 0,35 dm³, est construit en alliage d'aluminium.

Le boîtier est prévu pour recevoir un pressostat ou un thermostat équipé de micro-contacts et fonctionne en position verticale de façon intermittente ou en continu.

En variante, les entrées de conduit pourront être utilisées pour les raccordements électriques de l'appareil.

Le marquage est le suivant :

BOURDON-HAENNI

Adresse

Type : ...

N° de fabrication : ...

Année de construction : ...

II 2 G et/ou D

EEx d IIC T6 ou T5

Tamb : de - 20°C à + 60°C (T6) ou de - 20°C à + 70°C (T5).

IP 6X, T+80°C ou T+95°C pour D

LCIE 02 ATEX 6219 X

NE PAS OUVRIR SOUS TENSION

Le marquage CE est accompagné du numéro d'identification de l'organisme notifié responsable de la surveillance du système approuvé de qualité (0081 pour le LCIE).

Le matériel devra également comporter le marquage normalement prévu par les normes de construction du matériel électrique concerné

Paramètres spécifiques du ou des modes de protection concerné(s) :

Version / Version	Intensité / Current	Tension / Voltage
Standard / Standard	0,4 A min. – 10 A max.	250 VAC max ou 220 Vcc max. / 250 VAC max or 220 VDC max.
Hermétique / Sealed	0,4 A min. – 2 A max.	30 Vcc max. / 30 VDC max.
Réglable / Adjusting	0,4 A min. – 10 A max.	250 VAC max ou 220 Vcc max. / 250 VAC max or 220 VDC max.
Double / Double	0,4 A min. – 10 A max.	250 VAC max ou 220 Vcc max. / 250 VAC max or 220 VDC max.
Contact / Contact	10 mA min. – 50 mA max.	250 VAC max ou 220 Vcc max. / 250 VAC max or 220 VDC max.

La puissance maximale dissipée dans l'enveloppe ne dépasse pas 5 W.

(A3) Description of Equipment or Protective System:

Pressure sensitive switch or thermostat housing
Type : RP2E or RT2E

This electrical apparatus of 0,35 dm³ internal free volume is made of aluminium alloy.

The housing can hold a pressure sensitive switch or a thermostat equipped with micro-contacts and can operate in vertical position, intermittently or continuously.

By variation, the conduit's inlets can be used for the electrical connections of the equipment.

The marking is the following :

BOURDON-HAENNI

Address

Type : ...

Serial number : ...

Year of construction : ...

II 2 G and/or D

EEx d IIC T6 or T5

Tamb : from - 20°C to + 60°C (T6), from - 20°C to + 70°C (T5).

IP 6X, T+80°C or T+95°C for D

LCIE 02 ATEX 6219 X

DO NOT OPEN WHILE ENERGIZED

The CE marking shall be accompanied by the identification number of the notified body responsible for surveillance of the approved quality system (0081 for LCIE).

The equipment must also carry the usual marking required by the manufacturing standards applying to such equipments.

Specific parameters of the mode of protection concerned :

Maximum power dissipated inside the enclosure does not exceed the value of 5 W.



(A1) **ANNEXE**

(A1) **SCHEDULE**

(A2) **ATTESTATION D'EXAMEN CE DE TYPE**

(A2) **EC TYPE EXAMINATION CERTIFICATE**

LCIE 02 ATEX 6219 X (suite)

LCIE 02 ATEX 6219 X (continued)

(A4) Documents descriptifs :

Dossier technique N°163/02 Rév 0 daté du 17 décembre 2002.
Ce document comprend 3 rubriques (5 pages).

(A4) Descriptive documents :

Technical file No 163/02 Rev 0 dated December 17th, 2002.
This file includes 3 items (5 pages).

(A5) Conditions spéciales pour une utilisation sûre :

Toutes dispositions seront prises par l'utilisateur pour que le transfert calorifique du fluide vers la tête de l'appareil ne porte pas celle-ci à une température correspondant à la température d'auto inflammation du gaz dans lequel elle se trouve.

(A5) Special conditions for safe use:

All necessary measures must be taken by the user, to avoid the calorific transfer from the fluid to the apparatus head increasing the head's temperature to such that it reaches the self-ignition temperature of the gas in which it is used.

(A6) Exigences essentielles en ce qui concerne la sécurité et la santé :

Conformité aux normes européennes EN 50014 (1997 + amendements 1 et 2), EN 50018 (2000) et EN 50281-1-1 (1998).

(A6) Essential Health and Safety Requirements:

Conformity to the European standards EN 50014 (1997 + amendments 1 and 2), EN 50018 (2000) and EN 50281-1-1 (1998).

Vérifications et épreuves individuelles

Chaque exemplaire du matériel devra avoir subi avec succès une épreuve de surpression statique d'une valeur égale à 12,5 bars pendant une durée au moins égale à 10 secondes sans toutefois avoir à dépasser 1 minute.

Individual examinations and tests

Each single unit must be successfully submitted to a static overpressure test at 12,5 bars during at least 10 seconds but without exceeding 1 minute.



LCIE

1 AVENANT D'ATTESTATION D'EXAMEN CE DE TYPE

2 Appareil ou système de protection destiné à être utilisé en atmosphères explosibles (Directive 94/9/CE)

3 Numéro de l'avenant :
LCIE 02 ATEX 6219 X / 01

4 Appareil ou système de protection :
Boîtier pressostat ou thermostat
Type : RP2E ou RT2E

5 Demandeur : BAUMER BOURDON HAENNI

15 DESCRIPTION DE L'AVENANT

Changement de raison sociale :
BAUMER BOURDON HAENNI
Mise à jour selon les normes EN 60079-0 (2006),
EN 60079-1 (2004), EN 61241-0 (2005) et EN 61241-1
(2004).

Les résultats des vérifications et essais figurent dans le rapport confidentiel N° 60057202/557976/8.

Paramètres spécifiques du ou des modes de protection concerné(s) :
Inchangés.

Le marquage doit être : Inchangé excepté pour les modifications suivantes :
BAUMER BOURDON HAENNI
Ex d IIC T6 ou T5
Ex tD A21 T80°C ou T95°C IP6X
Avertissement - ne pas ouvrir sous tension

16 DOCUMENTS DESCRIPTIFS

Dossier de certification N° 51/07 rev1 du 29/08/07.
Ce dossier comprend 5 rubriques (8 pages).

17 CONDITIONS SPECIALES POUR UNE UTILISATION SURE
Inchangées.

18 EXIGENCES ESSENTIELLES DE SECURITE ET DE SANTE
Couvertes par les normes EN 60079-0 (2006),
EN 60079-1 (2004), EN 61241-0 (2005) et EN 61241-1
(2004).

19 VERIFICATIONS ET ESSAIS INDIVIDUELS
Néant.
Fontenay-aux-Roses, le 9 février 2008

1 SUPPLEMENTARY EC TYPE EXAMINATION CERTIFICATE

2 Equipment or protective system intended for use in potentially explosive atmospheres (Directive 94/9/EC)

3 Supplementary certificate number :
LCIE 02 ATEX 6219 X / 01

4 Equipment or protective system :
Pressure sensitive switch or thermostat housing
Type : RP2E or RT2E

5 Applicant : BAUMER BOURDON HAENNI

15 DESCRIPTION OF THE SUPPLEMENTARY CERTIFICATE

New company name :
BAUMER BOURDON HAENNI
Normative update according to standards EN 60079-0
(2006), EN 60079-1 (2004), EN 61241-0 (2005) and
EN 61241-1 (2004).

The examination and test results are recorded in confidential report N° 60057202/557976/8.

Specific parameters of the mode(s) of protection concerned:
Unchanged.

The marking shall be : Unchanged excepted for following modifications :
BAUMER BOURDON HAENNI
Ex d IIC T6 or T5
Ex tD A21 T80°C or T95°C IP6X
Warning - do not open when energized

16 DESCRIPTIVE DOCUMENTS

Certification file N° 51/07 rev1 dated 29/08/07.
This file includes 5 items (8 pages).

17 SPECIAL CONDITIONS FOR SAFE USE
Unchanged.

18 ESSENTIAL HEALTH AND SAFETY REQUIREMENTS
Covered by standard EN 60079-0 (2006), EN 60079-1
(2004), EN 61241-0 (2005) and EN 61241-1 (2004).

19 ROUTINE VERIFICATIONS AND TESTS
None.

Le responsable de certification ATEX
ATEX certification manager



Henri CERVELLO

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LCIE

1 AVENANT D'ATTESTATION D'EXAMEN CE DE TYPE

2 Appareil ou système de protection destiné à être utilisé en atmosphères explosibles (Directive 94/9/CE)

3 Numéro de l'avenant :
LCIE 02 ATEX 6219 X / 02

4 Appareil ou système de protection :
Boîtier pressostat ou thermostat
Type : RP2E ou RT2E

5 Demandeur : BAUMER BOURDON HAENNI

15 DESCRIPTION DE L'AVENANT

Mise à jour normative selon les normes EN 60079-0:2009, EN 60079-1:2007 et EN 60079-31:2009.

Les résultats des vérifications et essais figurent dans le rapport confidentiel N°112817-624311-1.

Paramètres spécifiques du ou des modes de protection concerné(s) :

Inchangés.

Le marquage doit être : Modifié comme suit :

BAUMER BOURDON HAENNI Adresse : ...

Type : RP2E ou RT2E

Numéro de série : ...

Année de fabrication : ...

Ex II 2 G D

Ex d IIC T6 ou T5 Gb

Ex t IIIC T80°C ou T95°C Db IP6X

LCIE 02 ATEX 6219 X

T° amb : -20°C à +60°C (T6 ou T80°C) ou -20°C à +70°C (T5 ou T95°C)

AVERTISSEMENT-NE PAS OUVRIR SOUS TENSION

16 DOCUMENTS DESCRIPTIFS

Dossier de certification N°17/12 rev.1 du 09/05/2012. Ce dossier comprend 7 rubriques (11 pages).

17 CONDITIONS SPECIALES POUR UNE UTILISATION SURE

Inchangées.

18 EXIGENCES ESSENTIELLES DE SECURITE ET DE SANTE

Couvertes par les normes EN 60079-0:2009, EN 60079-1:2007 et EN 60079-31:2009.

19 VERIFICATIONS ET ESSAIS INDIVIDUELS
Néant.

Fontenay-aux-Roses, le 10 août 2012

1 SUPPLEMENTARY EC TYPE EXAMINATION CERTIFICATE

2 Equipment or protective system intended for use in potentially explosive atmospheres (Directive 94/9/EC)

3 Supplementary certificate number :
LCIE 02 ATEX 6219 X / 02

4 Equipment or protective system :
Pressure sensitive switch or thermostat housing
Type : RP2E or RT2E

5 Applicant : BAUMER BOURDON HAENNI

15 DESCRIPTION OF THE SUPPLEMENTARY CERTIFICATE

Normative update according to EN 60079-0:2009, EN 60079-1:2007 and EN 60079-31:2009 standards.

The examination and test results are recorded in confidential report N°112817-624311-1.

Specific parameters of the concerned protection mode:

Unchanged.

The marking shall be : Modified as follows :

BAUMER BOURDON HAENNI Address :

Type : RP2E or RT2E

Serial number : ...

Year of construction :

Ex II 2 G D

Ex d IIC T6 or T5 Gb

Ex t IIIC T80°C or T95°C Db IP6X

LCIE 02 ATEX 6219 X

T° amb : -20°C to +60°C (T6 or T80°C) or -20°C to +70°C (T5 or T95°C)

WARNING-DO NOT OPEN WHEN ENERGIZED

16 DESCRIPTIVE DOCUMENTS

Certification file N°17/12 rev.1 dated 2012/05/09. This file includes 7 items (11 pages).

17 SPECIAL CONDITIONS FOR SAFE USE

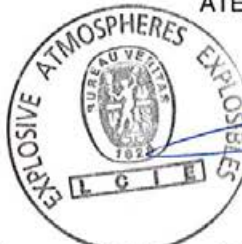
Unchanged.

18 ESSENTIAL HEALTH AND SAFETY REQUIREMENTS

Covered by EN 60079-0:2009, EN 60079-1:2007 and EN 60079-31:2009 standards.

19 ROUTINE VERIFICATIONS AND TESTS
None.

Le Responsable de Certification ATEX
ATEX Certification Officer



Anne LE GUENNEC

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