



Technical details

Explosion-proof pressure switches

according to ATEX directive 2014/34/EU and IECEx scheme





Introduction

Explosion-proof pressure switches are ATEX-certified (Atmosphère Explosible) and approved for use in the Ex-protected zones.




The design of the pressure switch is intended to prevent the pressure switch from becoming a source of ignition and thus from igniting an explosive gas or dust mixture in the vicinity of the pressure switch.

SUCO offers pressure switches with four different types of ignition protection to meet various requirements in the field of explosion protection.

ATEX substance group

ATEX-protection covers various environmental hazards, which are differentiated between gases and vapors, dusts, or methane/coal dust.

Suco offers pressure switches suitable for every type of substance.

Methane/Coal dust, Mining	Gases and Vapors	Hydrogen	Dusts
		H_2	
			0340/0341
0342/0343	0342/0343		0342/0343
0344/0345	0344/0345	0H44/0H45	0344/0345
	0165		
0390/0391/0393	0390/0391/0393		0390/0391/0393
0396/0397	0396/0397		0396/0397
	0386-N / 0387-N		

Types of ignition protection



Pressure-resistant encapsulation

Pressure switches with pressure-resistant encapsulation can withstand the pressure of an explosion of an explosive mixture inside and thus prevent the explosion from spreading to the outside. This type of protection offers a high level of ATEX-protection that is easy to implement in the application. The pressure switches with pressure-resistant encapsulation can also be operated without an intrinsically safe circuit. SUCO pressure switches with pressure-resistant encapsulation are suitable for Zones 1 and 2 for gases and vapors.



Protection through housing

For use in explosive dust atmospheres, SUCO offers pressure switches with dust-tight housings and explosion protection for Zones 21 and 22.



Protection through intrinsic safety

If the pressure switch is operated in intrinsically safe circuits, SUCO offers pressure switches with Ex i ignition protection for use in all Zones 0, 1 and 2 as well as 20, 21, and 22.

The current and voltage in the circuit must be limited to values that prevent the ignition of explosive mixtures. SUCO Ex i pressure switches are equipped with gold contacts for safe operation in intrinsically safe circuits. SUCO pressure switches with Ex i are cost-effective pressure switches with high coverage of all zones.

However, the operator must ensure the intrinsic safety of their circuit themselves.



Ignition protection type

If an ignitable mixture is only present extremely rarely and for a short time in the event of technical faults, ignition protection type n can be a good value for money alternative to higher protection types.



Explosion-proof pressure switches

Type	0342 / 0343	0344 / 0345	0340 / 0341	0165
Protection class	Ex d, Ex t	Ex d, Ex t	Ex t	Ex d
Gas Zone	1, 2	1, 2	–	1, 2
Dust Zone	21, 22	21, 22	22	–
Mining	M2	M2	–	–
Housing material	Galvanized steel	1.4404 stainless steel	Galvanized steel	Aluminum
Temperature resistance	NBR -20 °C ... +70 °C (only 0342/0343/0344/0345: +80 °C / temperature class T5)			
	EPDM -20 °C ... +70 °C			
	EPDM TW (Diaphragm switch) -20 °C ... +70 °C			
	FKM (Diaphragm pressure switch) -5 °C ... +70 °C			
	FKM (Piston pressure switch) -15 °C ... +70 °C			
	HNBR -20 °C ... +70 °C			
Switching frequency	200 / min			
Mechanical life expectancy	1.000.000 cycles			
Pressure rise rate	≤ 1.000 bar/s			
Hysteresis	10 ... 30 % (depending on type, non-adjustable)			
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 60068-2-27			
Weight	approx. 230 g			approx. 380 g
Electric connection	Cable approx. 2m with vein wired end ferrule (other lengths av. on request), 3x 0,5 m ²			Cable approx. 2m with vein wired end ferrule (other lengths av. on request), 3x 0,5 m ²
Protection class	IP65			
Max. Voltage	250 VAC			
Microswitch	Changeover			
Grounding	☐			Grounding on housing

Electrical ratings

Rated working voltage U_n

250 VAC 50 / 60 Hz (AC12)	2 A
250 VAC 50 / 60 Hz (AC14)	1 A
24 VDC (DC12 / DC13)	2 / 1 A
50 VDC (DC12 / DC13)	1 / 0,5 A
75 VDC (DC12 / DC13)	0,5 / 0,25 A
125 VDC (DC12 / DC13)	0,2 / 0,1 A
250 VDC (DC12 / DC13)	0,15 / 0,1 A

Rated working current I_n

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	up to 3,5 A
Conditional short-circuit current	< 350 A





Explosion-proof pressure switches

Type	0390/0391/0393	0396/0397
Protection class	Ex i	Ex i
Gas Zone	0, 1, 2	0, 1, 2
Dust Zone	20, 21, 22	20, 21, 22
Mining	-	-
Housing material	Galvanized steel	1.4305 stainless steel
Temperature resistance	NBR -20 °C ... +70 °C	
	EPDM -20 °C ... +70 °C	
	EPDM TW (Diaphragm switch) -20 °C ... +70 °C	
	FKM (Diaphragm pressure switch) -5 °C ... +70 °C	
	FKM (Piston pressure switch) -15 °C ... +70 °C	
	HNBR -20°C ... +70 °C	
Switching frequency	200 / min	
Mechanical life expectancy	1.000.000 cycles	
Pressure rise rate	≤ 1.000 bar/s	
Hysteresis	10 ... 30 % (depending on type, non-adjustable)	
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 60068-2-27	
Weight	ca. 230 g	ca. 230 g
Electric connection	Device socket	Device socket
Protection class	IP65 (when assembled)	
Electrical values	The microswitch is designed for a max. of 24V, 50 mA, 0,5 VA	
Microswitch	Only permitted in intrinsically safe circuits	

0342 / 0343

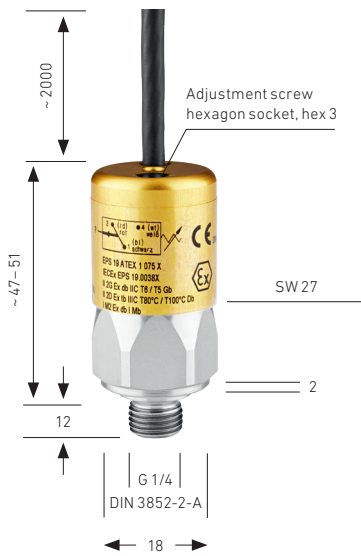


Ex d, Ext

Pressure switch for a wide range of applications

- ATEX CE II 2G Ex db IIC T6 / T5 Gb (Gases and vapors, Zones 1 + 2)**
- ATEX CE II 2D Ex tb IIIC T80°C / T100°C Db (Dusts, Zones 21 + 22)**
- ATEX CE I M2 Ex db I Mb (Mining)**
- EPS 19 Atex 1 075 X**
- IECEX EPS 19.0038X**

- Pressure-resistant enclosure for explosion protection gases
- Protection through housing for explosion protection dusts
- Max. voltage 250 V protective insulation □
- Galvanized steel housing
- Switching point adjustable during operation



P _{max} in bar	Adjustment range in bar	Tolerance at room temperature in bar	Thread	Article number
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0342 Diaphragm pressure switch

300 ⁽¹⁾	0,3 – 1,5	±0,2	G1/4 (DIN 3852-2-A2)	0342 - 457 60 - X - 020
	1 – 10	±0,5 – 1,0		0342 - 458 60 - X - 020
	10 – 20	±1,0		0342 - 459 60 - X - 020
	20 – 50	±2,0		0342 - 461 60 - X - 020

300 ⁽¹⁾	0,3 – 1,5	±0,2	NPT 1/4 ⁽²⁾	0342 - 457 09 - X - 020
	1 – 10	±0,5 – 1,0		0342 - 458 09 - X - 020
	10 – 20	±1,0		0342 - 459 09 - X - 020
	20 – 50	±2,0		0342 - 461 09 - X - 020

0343 Piston pressure switch

600 ⁽¹⁾	50 – 150	±5,0	G1/4 (DIN 3852-2-A2)	0343 - 460 60 - X - 020
600 ⁽¹⁾	50 – 150	±5,0	NPT 1/4 ⁽²⁾	0343 - 460 09 - X - 020

Seal material – Application areas

NBR	Hydraulic/machine oil, air, nitrogen, etc.	1
EPDM	Brake fluid, water, hydrogen, oxygen, acetylene, etc.	2
FKM	Hydraulic fluids (HFA, HFB, HFD), petrol/gasoline, etc.	3
HNBR	Hydraulic/machine oil, ester-based bio-oils	9

Article number:	034X - XXXXX - X - 020 ⁽³⁾
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(1) Static value. Dynamic value is 30-50% lower. Values pertain to the hydraulic/pneumatic part of the pressure switch.

(2) For small quantities only available with thread adapter (G1/4 auf NPT1/4). Please consult SUCO for further information.

(3) End number -020 corresponds to the standard cable length of 2 m. For a cable length of 5 m, please specify end number -050.

Piston pressure switches only have limited suitability for use with gases.



0344 / 0345



Ex d, Ext

Pressure switch for a wide range of applications
Housing made of stainless steel 1.4404

ATEX CE II 2G Ex db IIC T6 / T5 Gb (Gases und vapors, Zones 1 + 2)

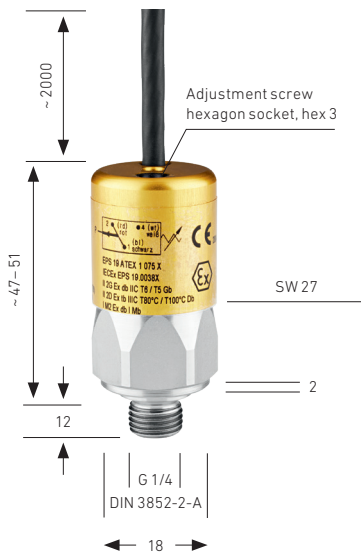
ATEX CE II 2D Ex tb IIIC T80°C/ T100°C Db (Dusts, Zones 21 + 22)

ATEX CE I M2 Ex db I Mb (Mining)

EPS 19 Atex 1 075 X

IECEX EPS 19.0038X

- Pressure-resistant enclosure for explosion protection gases
- Protection through housing for explosion protection dusts
- Max. voltage 250 V protective insulation
- Switching point adjustable during operation



P _{max} in bar	Adjustment range in bar	Tolerance at room temperature in bar	Thread	Article number
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0344 Diaphragm pressure switch

300 ⁽¹⁾	0,3 – 1,5	±0,2	G1/4 (DIN 3852-2-A2)	0344 - 457 60 - X - 020
	1 – 10	±0,5 – 1,0		0344 - 458 60 - X - 020
	10 – 20	±1,0		0344 - 459 60 - X - 020
	20 – 50	±2,0		0344 - 461 60 - X - 020

300 ⁽¹⁾	0,3 – 1,5	±0,2	NPT 1/4 ⁽²⁾	0344 - 457 09 - X - 020
	1 – 10	±0,5 – 1,0		0344 - 458 09 - X - 020
	10 – 20	±1,0		0344 - 459 09 - X - 020
	20 – 50	±2,0		0344 - 461 09 - X - 020

0345 Piston pressure switch

600 ⁽¹⁾	50 – 150	±5,0	G1/4 (DIN 3852-2-A2)	0345 - 460 60 - X - 020
600 ⁽¹⁾	50 – 150	±5,0	NPT 1/4 ⁽²⁾	0345 - 460 09 - X - 020

Seal material – Application areas

NBR	Hydraulic/machine oil, air, nitrogen, etc.	1
EPDM	Brake fluid, water, hydrogen, oxygen, acetylene, etc.	2
FKM	Hydraulic fluids (HFA, HFB, HFD), petrol/gasoline, etc.	3
HNBR	Hydraulic/machine oil, ester-based bio-oils	9

Article number:	034X - XXXXX - X - 020 ⁽³⁾
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(1) Static value. Dynamic value is 30-50% lower. Values pertain to the hydraulic/pneumatic part of the pressure switch.

(2) For small quantities only available with thread adapter (G1/4 auf NPT1/4). Please consult SUCO for further information.

(3) End number -020 corresponds to the standard cable length of 2 m. For a cable length of 5 m, please specify end number -050.

Piston pressure switch only have limited suitability for use with gases.



0340 / 0341

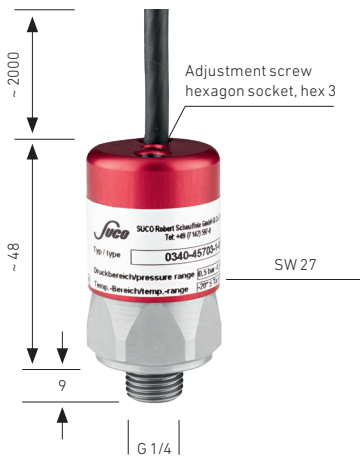


Ex t

Pressure switch for explosion protection dusts

ATEX CE [®] II 3D Ex tc IIIC T90°C Dc (Dusts, Zone 22)

- Protection through housing for explosion protection dusts
- Max. voltage 250 V protective insulation
- Galvanized steel housing
- Switching point adjustable during operation



P _{max} in bar	Adjustment range in bar	Tolerance at room temperature in bar	Thread	Article number
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0340 Diaphragm pressure switch

300 ⁽¹⁾	0,3 – 1,5	±0,2	G 1/4	0340 - 457 03 - X - 003
	1 – 10	±0,5 – 1,0		0340 - 458 03 - X - 006
	10 – 20	±1,0		0340 - 459 03 - X - 009
	20 – 50	±2,0		0340 - 461 03 - X - 012

0341 Piston pressure switch

600 ⁽¹⁾	50 – 150	±5,0	G1/4	0341 - 460 03 - X - 003
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Seal material – Application areas

NBR	Hydraulic/machine oil, air, nitrogen, etc.	1
EPDM	Brake fluid, water, hydrogen, oxygen, acetylene, etc.	2
FKM	Hydraulic fluids (HFA, HFB, HFD), petrol/gasoline, etc.	3
HNBR	Hydraulic/machine oil, ester-based bio-oils	9



Article number:	034X - XXX 03 - X - XXX
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(1) Static value. Dynamic value is 30-50% lower. Values pertain to the hydraulic/pneumatic part of the pressure switch.

0165

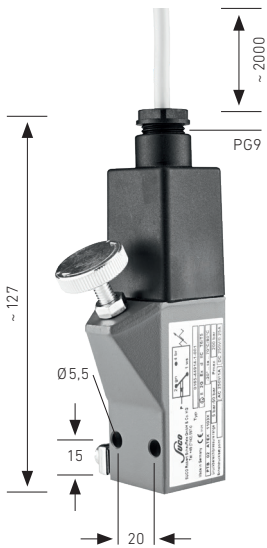


Ex d

Pressure switch – switching point easily adjustable

ATEX CE **II 2G Ex d IIC T6 / T5 X (Gases + vapors, Zone 1 + 2)**

- Flameproof enclosure for explosion protection gases
- Switching point up to 400 bar
- Max. voltage 250 V
- Aluminium housing



P _{max} in bar	Adjustment range in bar	Tolerance at room temperature in bar	Thread	Article number
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0165 Diaphragm pressure switch

200*	1 – 6	±0,5	G 1/4 female	0165 - 448 14 - X - 001
	5 – 50	±3,0		0165 - 449 14 - X - 001

0165 Piston pressure switch

600*	20 – 100	±3,0 – 5,0	G 1/4 female	0165 - 450 14 - X - 001
	25 – 250	±5,0 – 7,0		0165 - 452 14 - X - 001
	100 – 400	±5,0 – 9,0		0165 - 451 14 - X - 001

Seal material – Application areas

NBR	Hydraulic/machine oil, air, nitrogen, etc.	1
EPDM	Brake fluid, water, hydrogen, oxygen, acetylene, etc.	2
FKM	Hydraulic fluids (HFA, HFB, HFD), petrol/gasoline, etc.	3

Article number:	0165 - XXX 14 - X - 001
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* Static value. Dynamic value is 30-50% lower. Values pertain to the hydraulic/pneumatic part of the pressure switch.



0390 / 0391 / 0393



Ex i

Pressure switch for intrinsically safe circuits

ATEX CE II 1G Ex ia IIC T6 Ga (Gases und vapors, Zones 0, 1 + 2)

ATEX CE II 1D Ex ia IIIC T135°C (Dusts, Zones 20, 21 + 22)

ATEX CE IM1 Ex ia I Ma (Mining)

- Intrinsic safety
- Hysteresis adjustable at the factory
- Max. voltage 24 V, changeover, gold contacts
- Galvanized steel housing

P _{max} in bar	Adjustment range in bar	Tolerance at room temperature in bar	Thread	Article number
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0390 Diaphragm pressure switch with plug connection

100 ⁽¹⁾	0,3 – 1,5	± 0,2	G 1/4	0390 - 457 03 - X - 003
			NPT 1/4	0390 - 457 09 - X - 314
400 ⁽¹⁾	1 – 10	± 0,5	G 1/4	0390 - 458 03 - X - 042
			NPT 1/4	0390 - 458 09 - X - 340
	10 – 50	± 3,0	G 1/4	0390 - 459 03 - X - 009
			NPT 1/4	0390 - 459 09 - X - 316
	10 – 100	± 3,0 - 5,0	G 1/4	0390 - 461 03 - X - 012
			NPT 1/4	0390 - 461 04 - X - 321

0391 Piston pressure switch with plug connection

700 ⁽¹⁾	50 – 200	± 5,0	G 1/4	0391 - 460 03 - X - 003
			NPT 1/4	0391 - 460 09 - X - 303

0393 Piston pressure switch with plug connection

600 ⁽¹⁾	100 – 300	± 10,0	M 14x1,5 DIN 6149-3	0393 - 462 45 - X - 051
	200 – 400			0393 - 463 45 - X - 061



Seal material – Application areas

NBR	Hydraulic/machine oil, air, nitrogen, etc.	1
EPDM	Brake fluid, water, hydrogen, oxygen, acetylene, etc.	2
FKM	Hydraulic fluids (HFA, HFB, HFD), petrol/gasoline, etc.	3

Article number:	039X - 4XX XX - X - XXX
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

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

0396 / 0397



Ex i

Pressure switch for intrinsically safe circuits

ATEX CE  II 1G Ex ia IIC T6 Ga
 ATEX CE  II 1D Ex ia IIIC T135 °C Da
 ATEX CE  II I M1 Ex ia I Ma

- Intrinsic safety
- Hysteresis adjustable at the factory
- Max. voltage 24 V, changeover, gold contacts
- Housing made of stainless steel 1.4305

P _{max} in bar	Adjustment range in bar	Tolerance at room temperature in bar	Thread	Article number
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0396 Diaphragm pressure switch

100 ⁽³⁾	0,3 – 1,5	±0,2	G 1/4 (DIN 3852-2-A)	0396 - 446 60 - X - 001
400 ⁽¹⁾	0,5 – 5	±0,3	G 1/4	0396 - 457 03 - X - 003
	1 – 10	±0,5		0396 - 458 03 - X - 006
	10 – 50	±3,0		0396 - 459 03 - X - 009
	10 – 100	±3,0 – 5,0		0396 - 461 03 - X - 012

0397 Piston pressure switch

700 ⁽¹⁾	50 – 200	±5,0	G 1/4	0397 - 460 03 - X - 003
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Seal material – Application areas

NBR	Hydraulic/machine oil, air, nitrogen, etc.	1
EPDM	Brake fluid, water, hydrogen, oxygen, acetylene, etc.	2
EPDM-TW ⁽²⁾	Drinking water (p _{max} ≤ 35 bar)	5
FKM	Hydraulic fluids (HFA, HFB, HFD), petrol/gasoline, etc.	3
Silikon ⁽²⁾	Water, foods, air, etc. (p _{max} ≤ 35 bar)	8
HNBR	Hydraulic/machine oil, ester-based bio-oils	9

Artikelnummer:	039X - XXX XX - X - XXX
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(1) Static value. Dynamic value is 30-50% lower. Values pertain to the hydraulic/pneumatic part of the pressure switch.

(2) Operational safety with EPDM-TW and silicone sealing compounds only guaranteed up to max. 35 bar.

(3) Pressure range only available for NBR, EPDM, and FKM.



0386-N / 0387-N



Exec nC

Pressure switch – affordable solution
for increased safety

ATEX CE II 3G Ex ec nC IIC T6...T5 Gc (Gases, Zone 2)

- Ignition protection type encapsulated, sealed / device socket with increased safety
- Hysteresis adjustable at the factory
- Max. voltage 250 V, changeover, silver contacts
- Housing made of stainless steel 1.4305

P _{max} in bar	Adjustment range in bar	Tolerance at room temperature in bar	Thread	Article number
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0386-N Diaphragm pressure switch

100 ⁽¹⁾	0,3 – 1,5	±0,2	G 1/4	0386-N 4660 - X - 001
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400 ⁽¹⁾	0,5 – 5	±0,3	G1/4	0386-N 5760 - X - 001
	1 – 10	±0,5		0386-N 5860 - X - 001
	10 – 50	±3,0		0386-N 5960 - X - 001
	10 – 100	± 3,0 – 5,0		0386-N 6160 - X - 001

0387-N Piston pressure switch

700 ⁽¹⁾	50 – 200	±5,0	G1/4	0387-N 6060 - X - 001
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Seal material – Application areas

NBR	Hydraulic/machine oil, air, nitrogen, etc.	1
EPDM	Brake fluid, water, hydrogen, oxygen, acetylene, etc.	2
FKM	Hydraulic fluids (HFA, HFB, HFD), petrol/gasoline, etc.	3

Article number:	038X-N XX 60 - X - 001
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(1) Static value. Dynamic value is 30-50% lower. Values pertain to the hydraulic/pneumatic part of the pressure switch.