Electrical Ratings (all types)

Silver contacts		Gold plated contacts	
30 V DC	5 A	125 V AC	1 A
125 V DC	1 A		
125/250 V AC	11 A		

☞	**IMPORTANT**
We recommend to use a prefuse of the maximum current rating from the table above according to the load switched. We recommend gold plated contacts for all intrinsically safe and other applications with low voltage/power.	

Operating life time

Normal expected service life (expressed in the number of cycles over the full adjustment range) is appr. 0.5...1 million for the pressure switch.

Switch sensor life may also be effected negatively by:

- Media not compatible with the wetted materials.
- Too high switch cycling speed or more than 30 cycles per minute.
- System cycling pressure exceeding the top of the adjustable range.

The proof pressure must never be exceeded, otherwise the switch may be damaged. Careful selection of the pressure range can have a positive effect on the service life of the switch.

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Operating Instructions

Compact Pressure Switches Type 9671X/9681X/9692X

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1 Intended Applications

The pressure switches are specifically applied for monitoring and controlling of operations using maximum and minimum pressures. A micro switch triggers an electrical signal when minimum or maximum pressure are reached.

⚠	**DANGER**
The switch may only be used in the specified fields of application (see type label). The temperature has to be within the specified ranges, the pressure values and the electrical rating must not exceed the values specified. Observe also the applicable national safety instructions for assembly, commissioning and operation of the switch. The switch is not designed to be used as the only safety relevant element in pressurized systems according to DGR 97/23/EC. Without special provisions/actions, pressure switches must not be used for pure gas or hydrogen applications.	

2 Safety Instructions

The safety instructions are intended to protect the user from dangerous situations and/or material damage.

In the operating instructions the seriousness of the potential risk is designated by the following signal words:

⚠	**DANGER**
Refers to imminent danger to men. Nonobservance may result in fatal injuries.	

⚠	**WARNING**
Refers to a recognizable danger. Nonobservance may result in fatal injuries, and destroy the equipment or plant parts.	

⚠	**CAUTION**
Refers to a danger. Nonobservance may result in light injuries and material damage to the equipment and/or to the plant.	

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☞	**IMPORTANT**
Refers to important information essential to the user.	

Disposal

The equipment must be disposed of correctly in accordance with the local regulations for electric/electronic equipment.

The equipment must not be disposed of with the household garbage!

3 Standards

The standards applied during development, manufacture and configuration are listed in the CE conformity and manufacturer's declaration.

4 Warranty/Guaranty

Warranty

Our scope of delivery and services is governed by the legal warranties and warranty periods.

Terms of guaranty

We guaranty for function and material of the compact pressure switch under normal operating and maintenance conditions in accordance with the statutory provisions.

Loss of guaranty

The agreed guaranty period will expire in case of:

changes or modifications to the switch/housing/fitting
incorrect use,
incorrect installation or
incorrect handling or operation contrary to the provisions of these operating instructions.

No liability is assumed for any damage resulting therefrom, or any consequential damage.

5 Transport/Storage

⚠	**CAUTION**
Severe shock and vibrations should be avoided during transport. Storage should be dry and clean.	

6 Installation/Commissioning

⚠	**DANGER**
Only install or uninstall the switch when deenergized (electrically and hydraulically/pneumatically). Pressure connection and electrical connection must be carried out by trained or instructed personnel according to state-of-the-art standards. The switch must only be installed in systems where the maximum pressure P_{max} is not exceeded (see type label).	

⚠	**CAUTION**
Alternating pressure - vacuum applications are not authorized in switch types which are suitable for both vacuum and pressure applications.	

⚠	**WARNING**
Pressure peaks and pressure shocks exceeding the maximum operating pressure are inadmissible. The maximum operating pressure is the upper final value of the adjustable range or, if specified, the pressure indicated as maximum operating pressure. Exceeding the max. operating pressure affects the performance and the life span of the product and may damage it. Pressure switches must be mounted vibrationless.	

⚠	**WARNING**
Check the switch regularly for functioning. If the switch does not work properly, stop operation immediately!	

☞	**IMPORTANT**
All pressure switches are tested for proper functioning before they leave the factory. The factory proof pressures are stated on the type label.	

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Contact Protection

The micro switches used are normally suitable for both direct and alternating current operation. Inductive, capacitive and lamp loads may, however, considerably reduce the life expectancy of a micro switch and, under extreme circumstances, even damage the contacts.

Depending on the application spark suppression and current limiting is recommended (see succeeding figures).

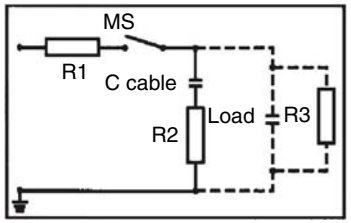

Fig. 1: Protection in case of capacitive loads R1: Protection against starting current rushes R2,R3: Protection against high discharge currents

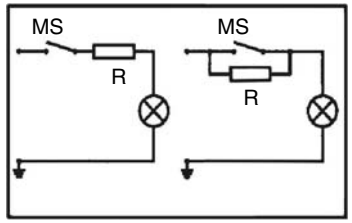

Fig. 2: Lamp load provided with resistance in parallel or series connection to switch of condensators

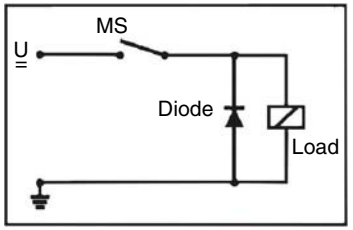

Fig. 3: Protection in case of continuous current and inductive load by recovery diode

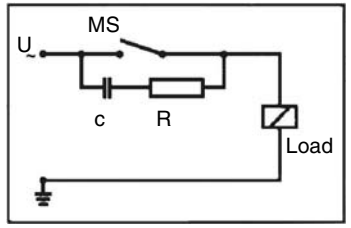

Fig. 4: Protection in case of alternating current and inductive load by RC-link

Set point adjustment

☞	**IMPORTANT**
Factory-Provided: pressure (temperature) switch point setting We confirm for pressure (temperature) switches that have been factory set the setting will be detailed on the label name plate. Warranty is not applicable for any changes that may occur due to transportation or installation. For critical applications we recommend the setting is checked and re-set if cecessary after installation and wirding of the pressure (temperature) switch.	

In pressure switches, a displacement of the pressure sensing element occurs with a change in pressure. Following the displacement of the pressure sensing element operates a microswitch.

Upon delivery of the product, the set points are likely to be found in the middle of the adjustable range. On request, fix set points may be adjusted by our factory. In this event, the point will be indicated on the type plate or any separate plate, i = increasing, d = decreasing.

The set point is adjusted by turning the adjustment screw.

☞	**IMPORTANT**
To reach the adjustment screw for pressure switches with housing, remove the cover (see Fig. 7 or Fig. 8).	

Allow pressure switch to reach the desired switch pressure.

Turn adjustment screw clockwise or counterclockwise to actuate the micro switch.

☞	**IMPORTANT**		
In case of overpressure:	+ Ω –	Counterclockwise rotation:	set point increasing
		Clockwise rotation:	set point decreasing

☞	**IMPORTANT**
Please consult the wiring diagram for the contact status at atmospheric pressure (see Fig. 5).	

Precise adjustment of set point to actuate on increasing pressure

Lower system pressure to 0 bar.

Increase pressure slowly and check if micro switch is actuated at desired switch pressure.

If necessary, readjust by turning the adjustment screw

Repeat the previous steps until the micro switch operates at the desired switch pressure (if necessary check and readjust once again on the following day).

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Precise adjustment of set point to actuate on decreasing pressure

Increase pressure up to a point clearly above the desired switch pressure (at least, switch pressure plus max. hysteresis; not above max. operating pressure).

Lower pressure slowly and check if micro switch is actuated at desired switch pressure.

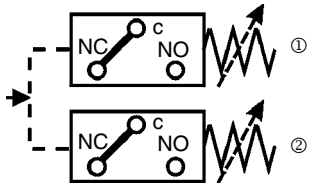
If necessary, readjust by turning the adjustment screw

Repeat preceding steps until microswitch operates at desired switch pressure.

Following the adjustment of all set points, each set point must be checked again and, if necessary, readjusted. (If necessary, check and readjust the set points once again on the following day.)

☞	**IMPORTANT**
The adjustment of several set points occurs for each set point as specified above.	

Wiring Code for all Types (Contact status at atm. pressure)



at vacuum NC/NO vice versa

Power circuit ①	**Power circuit ②**
C = purple	C = brown
NC = blue	NC = orange
NO = red	NO = yellow

Fig. 5: Wiring Code

Wiring code/Option

	Pressure 9681X/9692		**Vacuum 9671X**		**Option**
Function	Circuit 1	Circuit 2	Circuit 1	Circuit 2	
Normally Open/NO	red	yellow	blue	orange	K with mounting holes
Common/C	purple	brown	purple	brown	
Normally Closed/NC	blue	orange	red	yellow	
Earth	green		green		

Use in Hazardous Locations

*Type of protection "**i**" intrinsic safety*

The pressure switches to be used in hazardous locations are principally designed for intrinsically safe circuits **i** following the applicable regulations and are provided with a blue plate bearing the words "For intrinsically safe **Ex i** application".

They must be operated with a switch amplifier as shown in Fig. 6. They are only for use in approved intrinsically safe circuits.

Switches with explosion-proof enclosures must be operated in accordance with their approval. Approval class and identification characteristics according to type plate information must always be observed.

EC-design approved types are marked with a type plate according to ATEX 94/9/EC.

The wiring between switch and **Ex i** isolation amplifier must meet the local safety requirements.

The customer must provide for a highly conductive connection between switch and grounding.

⚠	**WARNING**
With option Ex i: The models having light-alloy (aluminium) enclosures or enclosure parts must be protected against all impact or friction which can ignite the explosive atmosphere.	

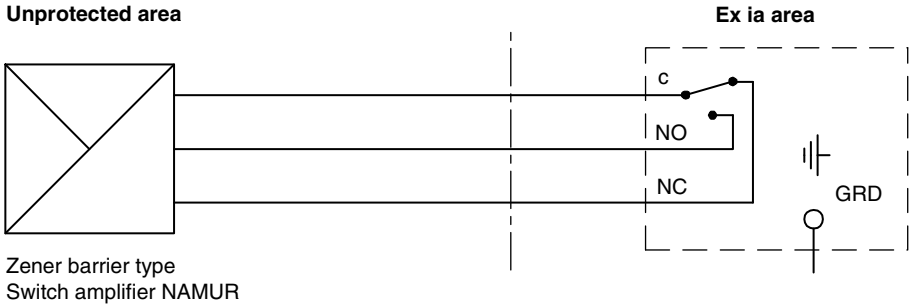


Fig. 6: Operation of pressure switches in intrinsically safe areas

*Type of protection "**d**" explosion-proof enclosure*

The pressure switch with enclosure is suitable for **Ex d** applications.

The "flying leads" are intended for a conduit connector. Free wiring of the leads without protection (e. g. without terminal box - Article no.: 926-0811) is not permissible.

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7 Maintenance/Cleaning

Maintenance

The pressure switch is maintenance free, however, the country specific test intervals for preventive maintenance in plants, the PED guideline are to be carried out at all times. Checking the set points lies within the discretion of the user.

Small setpoint drifts may occur during the initial use of the switch (run-in period). To minimize the setpoint drift we can perform a run-in (ageing) process in our works on request. Larger or continuing setpoints drifts during the normal use of the switch may indicate that the measuring system is not used correctly within the specified limits, exceeding the design criteria or is worn-out. This might lead to metal fatigue of the measuring system and it therefore should be replaced before an ultimate rupture of the metal diaphragm might take place. Please consult your supplier or Barksdale directly for guidelines.

8 Technical Data

See data sheet

Dimensions in mm *(inch)*

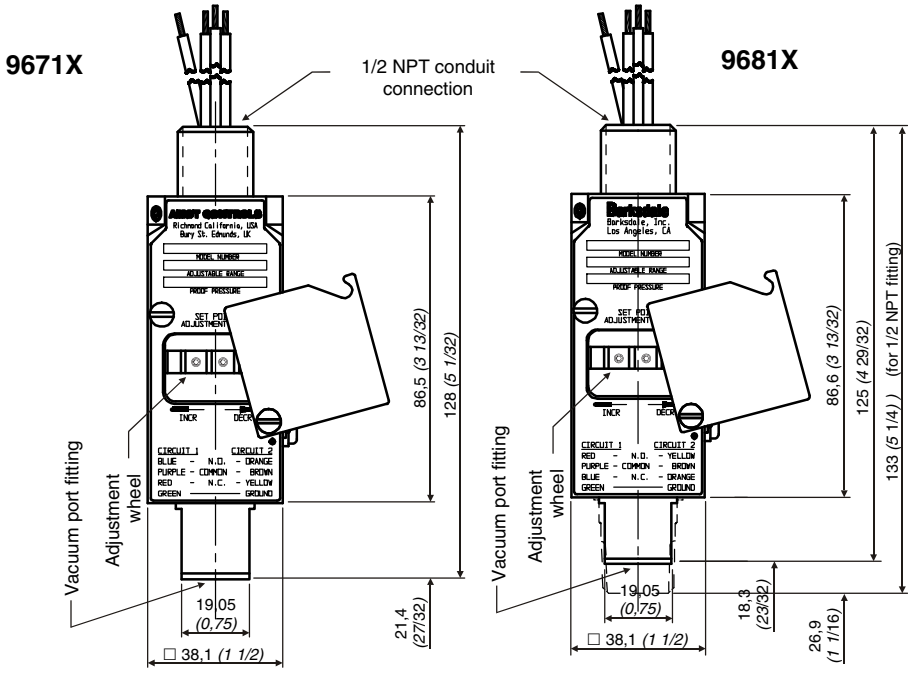

Fig. 7: Dia-seal piston sensor type 9671X/9681X

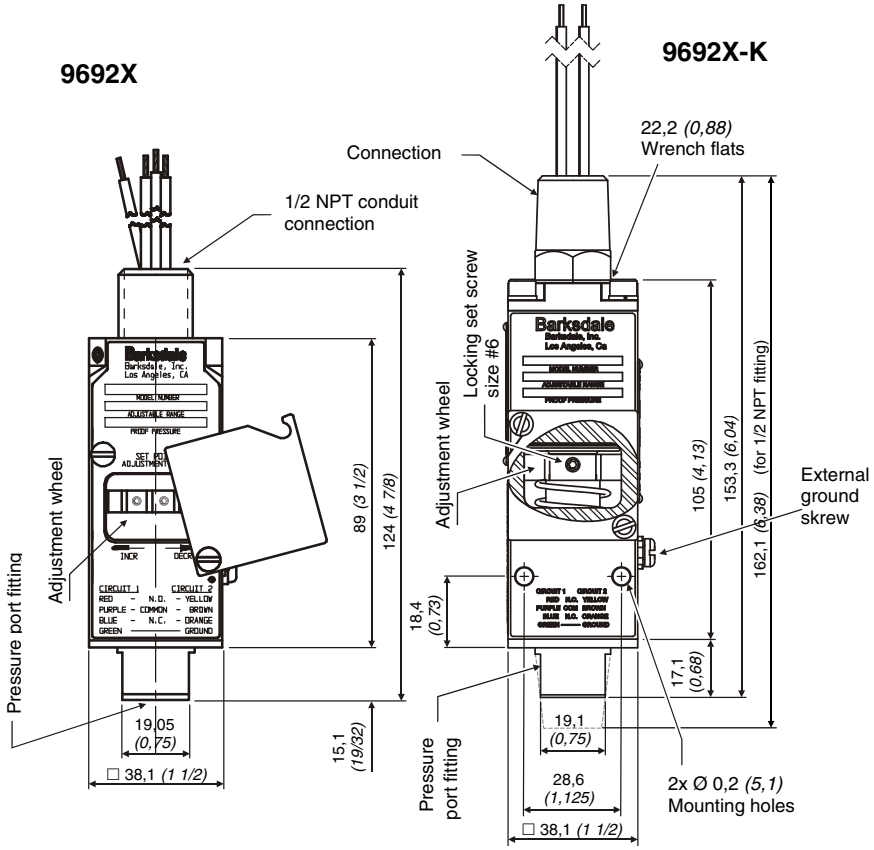

Fig. 8: Piston sensor type 9692X / 9692X-K

Approval data for Ex ia switches

Approval:	⟨Ex⟩ II 1 GD	Ex ia IIC T6 Ga Ex ia IIIC T100°C Da
Certificate no.:	ISSeP08ATEX016X/1	
Permissible ambient temperature:	-40 °C … +75 °C	
Electrical data for intrinsically safe application:	Ui = 28V	Ii = 50 mA
	Ci = 40 pF	Li = 4 µH
Standards applied:	IEC 60079-0 : 2011, IEC 60079-11 : 2011, IEC 60079-26 : 2006	

Approval data for Ex d switches

Approval:	⟨Ex⟩ II 2 G Ex d IIC T6
Certificate no.:	LCIE 08 ATEX 6074 X04
Standards applied:	EN 60079-0 (2004), EN 60079-1 (2004)
Permissible ambient temperature:	-20 °C ... +60 °C

	IMPORTANT
	The ATEX special conditions of use relating to the X01 at the end of the ATEX6074, require that the conduit connection must be sealed with an appropriate Ex d rated junction box.

Adjustable ranges

Order code 1 Switch Contact SPDT	Order code 1 Switch Contact DPDT	Adjustment ranges				Max. hysteresis (end of range)	Max. operating pressure [bar]	Proof Press.
		Pressure		Pressure				
		min.	max.	min.	max.			
9681X-1CC-1	9681X-2CC-1	0.20	1.03	0.130	1.00	0,2	45	68
9681X-1CC-2	9681X-2CC-2	0.50	10.30	0.340	9.00	1.7	45	68
9681X-1CC-3	9681X-2CC-3	2.20	20.60	1.700	18.00	2.8	45	68
9681X-1CC-4	9681X-2CC-4	4.50	34.40	3.400	30.00	4.1	45	68
9692X-1CC-1	9692X-2CC-1	10,3	51,7	6,9	41,4	10,3	600	1034
9692X-1CC-2	9692X-2CC-2	15,2	69,0	10,3	55,2	13,8	600	1034
9692X-1CC-3	9692X-2CC-3	34,5	207,0	27,6	179,0	27,6	600	1034
9692X-1CC-4	9692X-2CC-4	57,9	345,0	48,2	303,0	41,4	600	1034
9692X-1CC-5	9692X-2CC-5	82,8	571,0	69,0	462,9	55,2	600	1034
9692X-1CC-6	9692X-2CC-6	15,2	207,0	10,3	55,2	68,9	600	1034
9692X-1CC-7	9692X-2CC-7	368,6	689,7	344,8	606,9	137,9	690	1034
Vacuum switches								
9671X-1CC	9671X-2CC	0.17	-1.00	-0.034	-0.71	0.3	---	2