

Installation and Maintenance Instruction Manual



Pressure switch model B7, differential pressure switch model D7 and temperature switch model T7

for explosion risk areas pursuant to Directive 2014/34/EU (ATEX) / IEC

In the following configuration:

- B7###CN### pressure switch
- D7###CN### differential pressure switch
- T7###CN### temperature switch



B7
Pressure switch



D7
Differential pressure
switch



T7
Temperature switch

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1 General remarks

1.1 Purpose of this Manual

This Operating Manual contains fundamental and essential advice to be followed for the installation, operation and servicing of the device. It must be read without fail before assembly and start-up of the device by the fitter, the operator and the specialist personnel responsible for the device. This Operating Manual must be available at the point of use at all times.

The following sections about general safety information (2) and also the following specific advice regarding the intended purposes (2.2) and through to disposal (11.3) contain important safety information which, if not followed, may result in risks for people and animals, or to property and buildings.

1.2 Symbols



Warning!

This indicates a possibly hazardous situation where failing to follow advice may result in risks to people, animals, the environment and buildings.



Information!

This emphasizes key information for efficient, fault-free operation.

1.3 Limits of liability

Failure to respect this safety information, the envisaged uses or the limit values relating to use indicated in the technical data for the device may result in risk or to injury to people, the environment or the plant.

Claims for compensation for damage against the device supplier are excluded in such an eventuality.

1.4 Copyright

This Operating Manual may only be copied and passed on as a complete document without the special permission of the publisher.

1.5 Warranty

For the product described here, we offer a warranty pursuant to Section 6 Guarantee in Respect of Defects in our General Terms and Conditions of Delivery and Payment.

1.6 Manufacturer's address, customer services

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Fax.: +49 (0) 2401/808-999
E-mail: customer.service@ashcroft.com
Web: www.ashcroft.eu

2 Safety

2.1 General sources of hazards

Pressure and temperature switches are generally a constituent part of a control and measurement system. Pressure switches are pressurized parts where failure can result in hazardous situations. The selection of switches should be made in accordance with the applicable standards, regulations and engineering practice.

The devices are only to be used for the intended purpose as described by the manufacturer.

The devices are precision built agency approved control device which features a mechanical snap action switch. Controllers are available for operation on pressure or vacuum (B7), differential pressure (D7) or temperature (T7) with fixed differential.

The integrated switching elements are SPDT micro switches, in case if intrinsically safe operation supplied by isolating switch amplifiers with certified intrinsically safe power circuits. If the set limit values are exceeded, the output circuits are opened or closed.

For each use scenario, the corresponding set-up regulations must be respected. If used in explosion risk areas, the following conditions are to be respected for the individual finishes.

2.2 Operator's responsibility

Safety instructions for proper operation of the device must be respected. They are to be provided by the operator for use by the respective personnel for installation, servicing, inspection and operation. Risks from electrical energy and from the released energy of the medium, from escaping media and from improper connection of the device must be eliminated. The details for this are to be found in the corresponding applicable set of regulations, such as DIN EN, UVV (accident prevention regulations) and in sector-specific instances of use (DVWG, Ex- GL, etc.) the VDE guidelines and the regulations supplied by local utilities companies.

The device must be taken out of service and secured against inadvertently being restarted, if the presumption is that risk-free operation is no longer possible (see Chapter 10: Faults).

Conversion works or other technical alterations to the device by the customer are not permitted. This also applies to installation of spare parts. Possible conversions or alterations may only be carried out by the manufacturer.

The operational safety of the device is only guaranteed where it is used for its intended purpose. The specification of the device must be adapted to the medium used in the plant. The limit values indicated in the technical data must not be exceeded.

The safety information detailed in this Operating Manual, existing national regulations for accident prevention, and the operator's internal regulations regarding working, operations and safety must be respected.

The operator is responsible for all specified servicing, inspection and installation works being carried out by authorized and qualified specialists.

2.3 Staff qualifications (target group assessment)

The device may only be installed and started up by specialist staff who are familiar with installation, start-up and operation of the product.

Specialist staff are people who are able to assess the work assigned to them on the basis of their specialist training, their knowledge and experience and their knowledge of the relevant standards, and can identify possible risks.

For devices in explosion-protected configuration, these staff must have been trained or instructed in, or be authorized for, working on explosion-protected devices in potentially explosive plants.

2.4 Signs/Safety markings

The switch and its surrounding packaging carry markings. These markings show the article number, measurement range and manufacturer. The switches can be provided with additional signs and safety markings advising on special conditions:

- Advice on calibration
- Ex (for ATEX configuration)

2.5 Safety equipment

This device is fitted with safety locking devices and electrical earthing. The detecting element, when filled, secures the operating rod preventing removal and contains two venting holes that ensure that the interior of the enclosure is not subject to pressure greater than 2 lb/ft².

2.6 Environmental protection

This device contains electrical components. The provisions set out in the WEEE regulation EU directive 2002/96/EC on electrical and electronically equipment are to be respected, and the products are registered at the EAR under the number DE 26646349.

3 Use in explosion risk areas pursuant to Directive 2014/34/EU (ATEX)

3.1 B7/D7/T7 flameproof enclosure and dust ignition protection by enclosure

Area of use:

Explosion risk areas Zone 1 and 2, and 21 and 22, risk from gases and dry dust

Permitted temperatures:

Permitted ambient temperature -20°C to +60 °C.

Permitted medium temperature in the pressure switch < 85 °C.



Warning! With gaseous media, the device temperature may increase due to compression heat. In such cases, the rate of the pressure change must be regulated or the permitted temperature of the measuring medium reduced.

To avoid additional temperature increase, the devices should not be exposed to direct exposure to sunlight when in operation!

EU design type test certification:

The Ashcroft® 7XX Series Pressure & Temperature Switches comprise a cylindrical two-part enclosure, consisting of a base and cover, manufactured from die-cast aluminum 380 or stainless steel 316L. The cover treads into the base and is secured against loosening by a 10-32 UNF-2B socket head cap screw. The base houses a range of various switch elements and an operating rod. The base has three bosses at 90° apart on its side walls. The two opposing bosses each contain a 3/4" NPT cable entry port while the other boss provides a facility allowing connection to different detecting elements retained by a mounting plate secured by six M5 x 12 hexagon head screws. The detecting element, when filled, secures the operating rod preventing removal and contains two venting holes that ensure that the interior of the enclosure is not subject to pressure greater than 2 lb/ft².

Switch element ratings up to:

- 15 A 125/250/480 VAC
- 6 A 34 VDC
- 500 mA 125 VDC
- 250 mA 250 VDC

Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the schedule to EC-type examination certificate, has been assured by compliance with the following documents:

This product complies with the following standards:	
IECEX	ATEX
EN 60079-0: 2011 Ed 6	EN 60079-0: 2012 + A11 2013
EN 60079-1: 2007	EN 60079-1: 2014
EN 60079-31: 2013	EN 60079-31: 2014

The documentation has been filed with SIRA (see declaration of conformity).

Labeling:

 0518  II 2GD
 Ex db IIC T6 Gb
 Ex tb IIIC T85°C Db IP 6X
 (Ta = -20°C to +60°C)

4 Technical data

The detailed technical information can be found in the documents in the Appendix, Chapter 12.

5 Labeling on the device

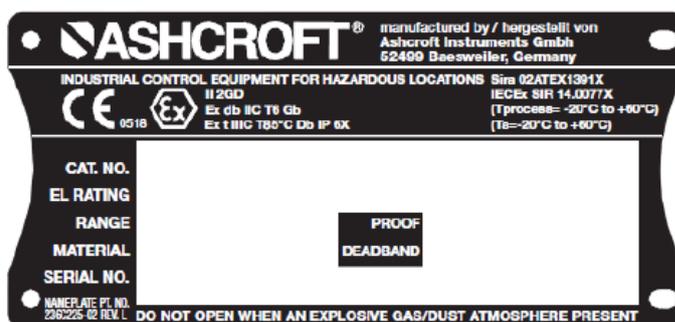
The label with the serial number and type designation is located on the outside of the housing. The materials identifier is encoded in the type designation.

5.1 Labeling on the device for explosion risk areas (ATEX)

The label with the marking for explosion risk areas is located on the outside of the housing.

Switch certified flameproof enclosure or dust ignition protection by enclosure:

#7###CN###



6 Construction and function

6.1 Overview

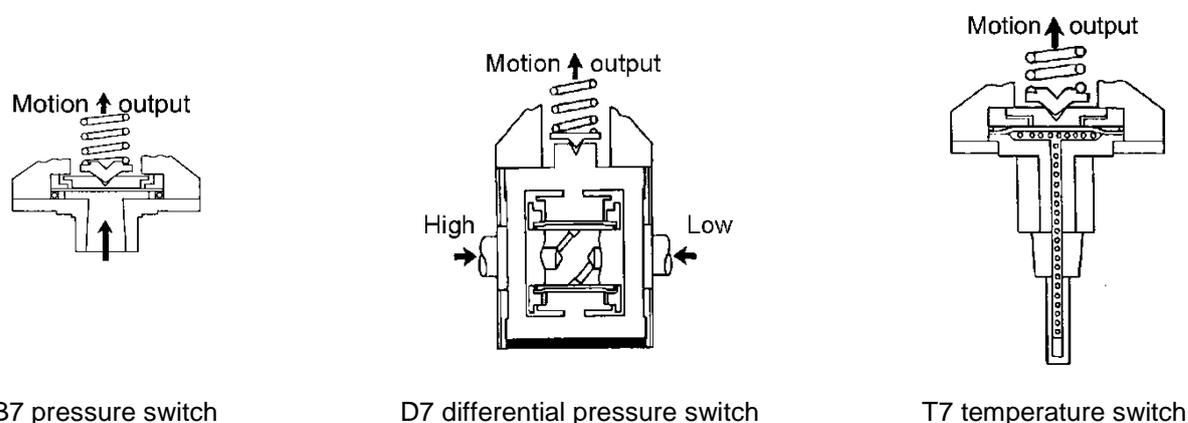


Figure 1

6.2 Description of function

The Ashcroft pressure switch is a precision built agency approved control device which features a mechanical snap action switch. Controllers are available for operation on pressure or vacuum, differential pressure or temperature with fixed or variable differential. Also manual reset types for operation on increasing or decreasing pressure. The manual reset types remain tripped until reset by pressing a button on top of the enclosure. Various wetted material constructions for compatibility with a range of pressure media may be obtained.

6.3 Description of components

6.3.1 Process adapter of pressure switch B7

B-Series pressure and vacuum switches use two different actuators depending on setpoint requirements. For setpoints between 2 and 3000 psi, the simple, rugged diaphragm-sealed piston actuator is used. This design features high reliability and choice of actuator seal materials for virtually every application. An optional welded design is also available for setpoints up to 1000 psi for maximum reliability. This design is available in 316 SS or Monel.

For setpoints between 4.5 and 150 inches of H₂O, a large diaphragm is used for increased sensitivity with good choice of materials of construction.

6.3.2 Process adapter of pressure switch D7

Differential pressure models use a unique, dual diaphragm-sealed piston design that features very high static operating pressures and small size.

For setpoints between 1.5 and 150 inches of H₂O, a large diaphragm is used for increased sensitivity with good choice of materials of construction.

6.3.3 Process adapter of temperature switch T7

B-Series temperature switches feature a SAMA Class II vapor pressure thermal system. This system provides quick, accurate response to process temperature changes with negligible ambient temperature effects. This is inherent in the design due to the precise relationship that exists between temperature and pressure according to the vapor pressure laws. A wide selection of sensing bulb and armored capillary lengths is available. The vapor pressure system design features small bulb sizes, making installation easy and cost-effective.

6.3.4 Set point adjustment

A single setpoint adjustment nut (7/8") is located centrally at the bottom on the inside of the enclosure.

6.3.5 Micro switch

Standard electrical switch is SPDT, available with various electrical characteristics. Two SPDT switch elements mounted together are available except on variable Deadband and manual reset types.

Microswitch Code		Electrical rating	
Single	Dual	VAC	VDC
20	61	15 A, 250 V	0,4 A, 120 V
21	65	5 A, 250 V	
22	67	5 A, 250 V	2,5 A, 28 V
23		22 A, 250 V	
24	64	15 A, 480 V	0,25 A, 250 V
25		10 A, 250 V	10 A, 250 V
26	62	15 A, 250 V	0,4 A, 120 V
27	63	15 A, 250 V	
28		15 A, 250 V	
29		15 A, 250 V	
31	70	1 A, 250 V	50 mA, 60 V
32	68	11 A, 250V	5 A, 30 V
42	71	1 A, 125 V	
50		15 A, 250 V	
35		10 A, 250 V	0,3 A, 250 V

Table 1: Micro switch electrical ratings

6.3.6 Enclosure

The Ashcroft snap action pressure switch is furnished in the flameproof NEMA 7 & 9 and ATEX Ex db and dust ignition protected ATEX Ex tb enclosure styles. Enclosure is epoxy coated aluminum casting or optional stainless steel 316L.

6.4 Accessories

Please contact the manufacturer regarding special tools and accessories.

7 Transport

7.1 Safety

The switch should be protected against the effects of knocks and impacts. The device should only be transported in the packaging provided. The device should only be transported in a clean condition (free of residues of measuring media).

7.2 Transport inspection

The delivery must be checked for completeness and damage during transport. In the event of damage during transport, the delivery must not be accepted, or only accepted subject to reservation of the scope of the damage being recorded and, if necessary, a complaint initiated.

7.3 Storage

The switch must be stored in dry, clean conditions, within a temperature range of -40 to +60 °C, protected against direct exposure to sunlight and protected against impact damage.

8 Assembly/Installation

8.1 Safety

To ensure safe working during installation and servicing, suitable shut-off valves must be installed in the plant (see 6.4 Accessories), enabling the device:

- To be depressurized or taken out of operation;
- To be disconnected from the mains supply for repair or checks within the relevant plant;
- Or to enable function tests of the device to be performed “on site”.

During the works to mount/install the switch, the plant must be protected against being switched back on.

8.2 Preparations (requirements for the installation location)

- A check on suitability of the device for the medium to be measured, the scope of the measurement range and of the protection against special conditions such as vibrations, pulsations and pressure spikes.
- A bracket must be installed to support the switch if the metering pipe is not able to provide adequate support.
- Ambient Temperature: -20 to 60°C
- Process Temperature: -20 to 60°C, other temperature limits are possible with different diaphragm materials
- Refer to appropriate datasheet for materials of construction and technical information.
- These controls are precision instruments and should never be left with internal components exposed. During installation insure that covers are in place and conduit openings are closed except when actually working on the control.
- To minimize the risk of injury, the control must be installed according to the required safety and electrical codes.
- To attain the degree of protection listed on the switch it may be necessary to add required conduit fittings.
- The switch must be protected from moisture, shock and/or extreme vibration.
- Mounting position: Switch can be mounted in any position. It is recommended that unit be set in intended operating position.



Cautions:

- Always install the cover after wiring the switch and before power is supplied.
- Before removing the cover in hazardous areas be sure there is no explosive atmosphere present and the power supply is turned off.
- For ATEX approved switches all safety locking devices and electrical earthing must be installed or connected before operating.
- Never carry a temperature switch by holding only the stem, bulb or capillary.
- Do not push any foreign objects (ex. Screwdrivers) against the diaphragm.

- Do not exceed ranges, current and/or voltage limits.

8.3 Mounting/Installation

8.3.1 Process connection

As standard, the device is equipped for pipework mounting with a pressure connection shank pursuant to DIN EN 837-3. The device is calibrated ex works for vertical installation.

- Connection to be undertaken by authorized and qualified specialist staff only.
- Three holes external to the enclosure for surface mounting. Location of these holes is shown in the general dimension drawing.
- Units may also be mounted directly on the pressure line using the pressure connection.
- Use only with the mechanical process connection provided – regarding the configuration, see order code on the device type label, with a matching threaded seal.
- When connecting the device, the pipes must be depressurized.
- The pressure metering pipe must be laid inclined in such a way that, for example, for measurements of fluids no air pockets can form, and for measurements of gases no water pockets. If the necessary incline is not achieved, then at suitable points water separators or air separators must be installed.
- The pressure metering pipe must be kept as short as possible and laid without sharp bends, to avoid the occurrence of irritating delays.
- With liquid measurement media, the pressurized connection pipe must be degassed, since any gas bubble inclusions result in measurement error.
- If water is used as the measurement medium, the device must be frost-protected.



Safety notice: When tightening control to pressure line, always use the wrench flats or hex on the lower housing, and do not twist the device itself.

8.3.2 Electrical connection



Take note of the electrical data in the EU design type test certification and the locally-applicable regulations and guidelines for installing and operating electrical plant in explosion risk areas (e.g. EN 60079-14, etc.).

- Connection to be undertaken by authorized and qualified specialist staff only.
- The electrical connection of the device is to be undertaken in accordance with the relevant regulations of the VDE and the regulations supplied by the local utilities company.
- Disconnect the plant from the mains supply before wiring electrical connections.
- Before operating the switch all conduit entries and/or junction boxes need to be closed according to the required safety and electrical codes.
 - a) Standard product has two 3/4 NPT conduit holes with one permanent plug. 3/4 NPT conduit holes can be modified or reduced with ATEX approved adapters.
 - b) Available ATEX approved cable glands can be used.
- It is recommended that Teflon tape or other sealant be used on conduit, bushing, gland or plug threads to ensure integrity of the enclosure.
- Cable couplers, glands and conduit connectors must have the correct electrical approvals.
- Always follow safety and electrical regulations when connecting these devices.
- The system ground of the device is marked with a green colored screw and/or by the ground symbol.
- ATEX approved switches have an external ground screw that must be connected..

NO (Normally Open) Blue
 NC (Normally Closed) Red
 C (Common) White

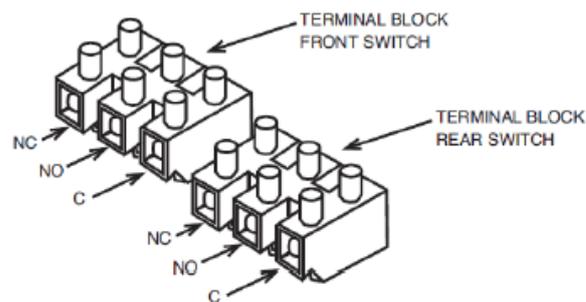


Figure 2: Micro switch terminals and wire color codes

- SPDT – Wire directly to the switch according to circuit requirements.
- 2 SPDT – Wire to front switch terminal block (left) and rear switch terminal block (right) as marked. Strip insulation 5/16", insert in proper terminal connector and tighten clamping screw to secure.

8.4 Starting up and setpoint adjustment

The precondition for start-up is proper installation of all electrical feed lines and metering pipes. All connecting lines must be laid such that no mechanical forces can act on the device.

Before start-up, the seal on the pressurized connection line must be checked.



Note – As indicated below, adjustment of setpoint is made by use of 7/8" nut. Precision switch element mounting screws and bracket adjusting screw are factory sealed and should not be tampered with.

8.4.1 Pressure switch model B7

A single setpoint adjustment nut (7/8") is located centrally at the bottom on the inside of the enclosure.

For accurate setpoint calibration, mount the switch on a calibration stand, a pump or catalog No. 1305 deadweight gauge tester. A suitable reference standard such as an ASHCROFT Duragauge or Test Gauge is necessary to observe convenient changes in pressure.

As received, the pressure switch will normally be set to approximately 90% of the indicated range. Pressurize the system to required setpoint and turn the adjustment nut until switch changes mode. Direction of turning is indicated on a label affixed to the inside of the control enclosure. When setpoint has been achieved raise and lower pressure to insure that setpoint is correct.

After installation of the control replace cover to insure electrical safety and to protect internal parts from the environment.



Note – Since vacuum models are already above setpoint at atmosphere, the Normally Open (NO) circuit will be closed as received.

8.4.2 Differential pressure switch model D7 (high range)

A single setpoint adjustment nut (7/8") is located centrally at the bottom on the inside of the enclosure.

The direction of turning is indicated on a label affixed to the inside of the control enclosure.

A typical calibration procedure would be as follows:

Static Working Pressure	- 600 psig
Adjustable Differential Range	- 5/200 psid
Differential Setpoint	- 150 psi above static working pressure.

Simultaneously raise the high and low side pressure to 600 psig. Maintain the low side pressure at 600 psig. Raise the high side pressure to 750 psig to obtain 150 psi differential.

Turn the adjustment nut until the switch changes mode at 150 psi differential. When the setpoint has been achieved, raise and lower the high side pressure to ensure that the differential setpoint is correct.

After installation of the control replace cover to insure electrical safety and to protect internal parts from the environment.

8.4.3 Differential pressure switch model D7 (low range)

A single setpoint adjustment nut (7/8") is located centrally at the bottom on the inside of the enclosure.

The direction of turning is indicated on a label affixed to the inside of the control enclosure. XG5 controls have a setpoint indication scale adjacent to the adjustment nut. To adjust the control, align the top of the adjustment nut hex with the indicator line on the scale. Do not force adjustment or attempt to exceed the maximum setting shown on the scale or nameplate.

For accurate setpoint calibration or for controls without a scale mount the control on a calibration stand so that the HIGH and LOW pressures expected under operating conditions may be obtained. Suitable reference standards are necessary for each pressure.



Note – Due to the sensitivity of these controls it is imperative that the LOW pressure side volume be large to prevent a setpoint shift between calibration and field installation. If this is not possible, an approximate setpoint under operating conditions can be obtained by setting the operating point with the low side open to atmosphere. A final setpoint adjustment can be made after installation.

Apply LOW pressure. Then apply HIGH pressure to the required setpoint and turn the adjustment nut until the switch operates. When the setpoint has been achieved, raise and lower HIGH pressure to ensure that the differential pressure between the HIGH and LOW pressures is correct.

After installation of the control, replace the cover to ensure electrical safety and to protect the internal parts from the environment.

8.4.4 Temperature switch model T7

A single setpoint adjustment nut (7/8") is located centrally at the bottom on the inside of the enclosure.

The bulb of the control should be immersed in a bath at the desired setpoint temperature. Optimum performance will be obtained if the bulb is fully immersed. Allow five minutes for initial stabilization.

As received, the temperature switch will normally be set to approximately 90% of the indicated range. After stabilization, turn the adjustment nut until switch changes mode. Direction of turning is indicated on a label affixed to the inside of the control enclosure. When setpoint has been achieved raise and lower temperature to insure that the setpoint is correct.

After installation of the control replace cover to insure electrical safety and to protect internal parts from the environment.

8.4.5 B750, D750 and T750 Variable Deadband Switches

Deadband is varied by rotating the wheel on the precision switch. When viewed from the front of the enclosure, rotation to the left increases deadband – rotation to the right decreases deadband. Letters on the wheel may be used as a reference. Deadbands obtainable will vary from 0.5% to 9% of pressure or temperature range depending on range segment and type of diaphragm.

Adjustment of Setpoint – As received, the switch will normally be set to approximately 90% of range. Rotate the wheel on the MICRO SWITCH all the way to the right; this will provide smallest deadband. Pressurize, or increase bath temperature, to the required setpoint and turn the adjustment nut until the switch changes mode. Lower the pressure to reset the switch. Rotate the wheel on the MICRO SWITCH until the desired deadband is obtained. The upper setpoint will be changing upward with this adjustment. Lower the pressure to reset the switch. Then increase the pressure to the desired setpoint and turn the adjusting nut until the switch changes mode. Lower the pressure and check resetpoint and deadband.

8.5 Subsequent relocation of the switch (by the customer)



Recommendation: Do not remove the switch from one metering point and fit it in a different place, as there is a risk of the measuring media being mixed, with unforeseeable chemical reactions.

9 Servicing

All ASHCROFT switches require little or no maintenance.

- Be sure that the case is closed at all times.

- When the switch is exposed to process media that may harden and/or build up in the pressure port, the switch should be removed and cleaned as needed.

However, to ensure reliable operation and a long lifetime for the device, we recommend that it is checked regularly.

9.1 Safety

When undertaking servicing work on the device, the pressure lines must be depressurized, the electrical connections isolated from the mains supply, and the plant secured against being switched on again.

9.2 Check on function, and recalibration

The check on function and recalibration is carried out at regular intervals, depending on the application. The precise testing cycles should be adjusted in line with the operating conditions and ambient conditions. In the event of various device components interacting, the operating instructions for all other devices should also be taken into account.

- Check on function, in conjunction with downstream components.
- Check of pressurized connection pipes for seal condition.
- Check of electrical connections.

9.3 Cleaning and maintenance

- Never use aggressive solvents.
- Do not use high-pressure water to clean the switch.

10 Faults

10.1 Safety

Defective or faulty switches put the operational safety and process safety of the plant at risk, and can lead to a risk or injury to persons, the environment or the plant.

10.2 Conduct in the event of faults

All defective or faulty devices must be taken out of service. If a repair is required, the device must be sent directly to our Repairs Department. We request that all returns of devices are agreed with our Service Department.

10.3 Fault table

Possible situations indicating a fault:

- Setpoint shift or deadband out of range
- Random switch function
- Corrosion at process connection and diaphragm
- Leakage of process media
- Bended stem or bulb
- Sharp edged bended capillary line
- Damage to housing or wiring

In these instances, replacement of the switch is always required.

10.4 Conduct following fault rectification

See Chapter 8.3 Mounting/Installation

11 Removal, disposal

11.1 Safety



Residues of measuring media in and on removed switches can constitute a risk to people, the environment and equipment. Adequate precautionary measures must be adopted. If necessary, the devices must be cleaned thoroughly (see advice in safety data sheets).

11.2 Removal

- When undertaking servicing work on the device, the pressure lines must be depressurized, the electrical connections isolated from the mains supply, and the plant secured against being switched on again.
- Demount the switch using a suitable tool

11.3 Disposal



Please help to protect the environment and dispose of or recycle the devices and components used in accordance with the applicable regulations.

12 Appendix

12.1 Data sheet for switches B7, D7 and T7

More detailed datasheets are available direct from the manufacturer (see 1.6 Manufacturer's address, customer services).

The table below contains an overview of the individual documents.

Model	Description	Document
B7	Pressure switch series B4 and B7	G4.SW20-P
D7	Differential pressure switch series D4 and D7	G4.SW20-P
T7	Temperature switch series T4 and T7	G4.SW20-T

12.2 EG Declaration of Conformity

 EU-Konformitätsbescheinigung EU-Declaration of Conformity DIN EN ISO IEC 17050-1:2010	
Ashcroft Instruments GmbH Max-Planck-Straße 1 52499 Baesweiler	
erklärt in alleiniger Verantwortung, dass die mit CE gekennzeichneten Produkte <i>declares in sole responsibility that the products marked with CE</i>	
Gerät: Equipment:	Druck- / Temperaturschalter vom Typ B7/D7/T7 die mittels Wegänderung einen Mikroschalter betätigten. <i>Pressure- / Temperature switch, using a micro switch actuated by movement of a piston cylinder unit.</i>
Kennzeichnung: Marking:	SIRA 02 ATEX 1391X / IECEx SIR 14.0077X
 0518  II 2GD Ex db IIC T6 Gb Ex tb IIIC T85° C Db IP 6X (Ta = -20°C to +60°C)	
Herstellungsdatum: Date of manufacture:	ab 20.04.2016 from 20.04.2016
die grundlegenden Sicherheits- und Schutzanforderungen erfüllen, in Übereinstimmung mit den unten genannten Richtlinien und harmonisierten Normen. Die Konformitätsaussage bezieht sich auf die Konzeption und Fertigung der oben genannten Produkte. <i>the fundamental safety and protection requirements passed in accordance with the guidelines and harmonized standards listed below. This declaration of conformity refers to the design and manufacture of the above products.</i>	
Richtlinie Directive	2014/34/EU „Geräte und Schutzsysteme zur bestimmungs-gemäßen Verwendung in explosionsgefährdeten Bereichen“ <i>“equipment and protective systems intended for use in potentially explosive atmospheres”</i>
Angewendete harmonisierte Normen Used harmonized Standards	EN 60079-0:2012 + A11:2013, EN 60079-1:2014, EN 60079-31:2014
Benannte Stelle Notification Body	Code number of notified Body: 0518 Sira Certification Service Rake Lane, Eccleston, Chester CH49JN, England
Nachweis Proof	Assessment Report Sira R70007385A and B
Richtlinie Directive	2014/35/EU „Niederspannungsrichtlinie“ <i>“Electrical equipment designed for use within certain voltage limits”</i>
Angewendete harmonisierte Normen Used harmonized Standards	EN 61010-1:2010, EN 60947-7-1 bis 3:2009
Richtlinie Directive	⁽¹⁾ 2014/68/EU „Druckgeräterichtlinie“ <i>„Pressure Equipment Directive“</i>
	⁽¹⁾ PS >200 bar und V <0,1l, Artikel 4 Drucktragende Ausrüstungsteile, Modul A <i>PS >200 bar and V <0,1l, Article 4 Pressure Accessories, Module A</i>
Richtlinie Directive	⁽¹⁾ 2011/65/EU „Richtlinie zur Beschränkung der Verwendung bestimmter gefährlicher Stoffe in Elektro- und Elektronikgeräten“ (RoHS) <i>„Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment“</i>
	⁽¹⁾ Überwachungs- und Kontrollinstrumente einschließlich Überwachungs- und Kontrollinstrumenten in der Industrie (Anhang 1, Kategorie 9) gemäß Artikel 4 Absatz 3 sowie Artikel 2 Absatz 4. <i>Monitoring and control instruments including industrial monitoring and control instruments (category 9 per Annex 1) according to Article 4 paragraph 3 as well as Article 2 paragraph 4.</i>
Baesweiler, den 22.07.2017 Ort und Datum Place and date	 Werksleiter Operation Manager
Ashcroft Instruments GmbH	Fon: +49 (0)2401-808-888 Fax: +49 (0)2401-7027 www.ashcroft.eu
 	

12.3 IECEX Declaration of conformity

		<h2 style="text-align: center;">IECEX Certificate of Conformity</h2>	
INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification Scheme for Explosive Atmospheres <small>for rules and details of the IECEX Scheme visit www.iecex.com</small>			
Certificate No.:	IECEX SIR 14.0077X	Issue No.:	0
Status:	Current		
Date of Issue:	2015-04-24	Page 1 of 3	
Applicant:	Ashcroft Inc. 250 East Main Street Stratford Connecticut 06614 United States of America		
Electrical Apparatus: <i>Optional accessory:</i>	Ashcroft® B7, T7 and D7 Series Pressure & Temperature Switches		
Type of Protection:	Flameproof and Dust Protection by Enclosure		
Marking:	Ex db IIC T6 Gb Ex tb IIIC T85°C Db Ta -20°C to +60°C		
Approved for issue on behalf of the IECEX Certification Body:	A C Smith		
Position:	Certification Manager		
Signature: <i>(for printed version)</i>			
Date:	2015-04-24		
<p>1. This certificate and schedule may only be reproduced in full. 2. This certificate is not transferable and remains the property of the issuing body. 3. The Status and authenticity of this certificate may be verified by visiting the Official IECEX Website.</p>			
Certificate issued by:			
SIRA Certification Service CSA Group Unit 6, Hawarden Industrial Park Hawarden Deeside CH5 3US United Kingdom			



IECEx Certificate of Conformity

Certificate No.: IECEx SIR 14.0077X

Date of Issue: 2015-04-24

Issue No.: 0

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Manufacturer: **Ashcroft Instruments GmbH**
Max-Planck Straße 1
Postfach 1120
D-52499 Baesweiler
Germany

Additional Manufacturing location
(s):

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended.

STANDARDS:

The electrical apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

IEC 60079-0 : 2011 Edition: 6.0	Explosive atmospheres - Part 0: General requirements
IEC 60079-1 : 2014-06 Edition: 7.0	Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
IEC 60079-31 : 2013 Edition: 2	Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"

*This Certificate **does not** indicate compliance with electrical safety and performance requirements other than those expressly included in the Standards listed above.*

TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in

Test Report:

[GB/SIR/ExTR15.0109/00](#)

[GB/SIR/ExTR15.0118/00](#)

Quality Assessment Report:

[GB/SIR/QAR10.0013/03](#)

[GB/SIR/QAR11.0010/03](#)



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Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

Ashcroft® B7, T7 and D7 Series Pressure & Temperature switches comprise a cylindrical two-part enclosure, consisting of a base and cover, manufactured from die-cast aluminium, aluminium alloy or stainless steel. The cover threads into the base and is secured against loosening by a 10-32 UNF-2B socket head cap screw. The base houses a range of various switch elements and an operating rod. The base has three bosses at 90° apart on its side walls. The two opposing bosses each contain a 3/4" NPT cable entry port while the other boss provides a facility allowing connection to different detecting elements (actuators) retained by a mounting plate secured by six 10-32 UNC screws. Either the detecting element, when filled or the main body (dependent upon type) provide a means of venting that ensure the interior of the enclosure is not subject to a pressure greater than 2 lb/ft². Refer to the Annexe for Product Nomenclature and ratings

CONDITIONS OF CERTIFICATION: YES as shown below:

1. In accordance with clause 5.1 of IEC 60079-1, the critical dimensions of the flamepaths are:

Flamepath	Maximum Gap (mm)	Minimum L (mm)
The cylindrical joint between the push rod & spring guide	0.09	25
2. Prior to use, the equipment shall be subjected to a pressure test, which shall be based on the process pressure of the associated system. If available, the test shall be conducted in accordance with the requirements of an applicable industry standard. The pressure shall be applied from the system side of the diaphragm. It must be proven that there is no leakage of the test medium into the flameproof enclosure and that the flameproof enclosure does not become pressurised above ambient atmospheric pressure.
3. Epoxy coated enclosures are non-conducting and may generate an ignition-capable level of electrostatic charges under certain extreme conditions. The user should ensure that the equipment is not installed in a location where it may be subjected to external conditions (such as high-pressure steam) which might cause a build-up of electrostatic charges on non-conducting surfaces. Additionally, cleaning of the equipment should be done only with a damp cloth.*

Annex: IECEx SIR 14.0077X Iss 0 Annexe.pdf

Annexe to: IECEx SIR 14.0077X Issue 0
Applicant: Ashcroft Inc
Apparatus: Ashcroft® B7, T7 and D7 Series Pressure & Temperature Switches



Switch element ratings up to:

15 A	125/250/480 V ac	500 mA	125 V dc
6 A	34 V dc	250 mA	250 V dc

PRODUCT NOMENCLATURE

- Ashcroft® T7 Series Temperature Switches product nomenclature: 1 2 3 4 5 6 7 8 9
 Typical example: T767TS060

Where	Description	Code designation(s)
1	Product type designation	T
2	Standard designation	7
3	2 digit code depicting the internally fitted switches	20 thru 27,31,32,42,50,61 thru 71
4	Standard designation	T
5	Switch mount type	S= DIRECT MOUNT Omitted = REMOTE MOUNT
6	2 digit code depicting the length of line in feet on the remote mount switch	e.g. 05 = 5 feet Omitted = DIRECT MOUNT
7	3 digit code depicting the bulb length in inches on the remote mount switch, or STEM length for a direct mount system.	e.g. 060 = 6 inches
8	Additional (up to 8 digit code) suffix coding may be present indicating additional overall product assembly features that are not covered by this certification and do not affect the explosion protection concepts covered by this certification.	e.g. ***** XC4YFSNH
9	Temperature range of switch	e.g. 260/400C Noting ; Though part of the product code is listed on the nameplate in its own field 'RANGE'

- Ashcroft® B7 and D7 Series Pressure & Temperature Switches product nomenclature: 1 2 3 4 5 6 7
 Typical example: B724B

Where	Description	Code designation(s)
1	Product type designation	B or D
2	Standard designation	7
3	2 digit code depicting the internally fitted switches	20 thru 27,31,32,42,50,61 thru 71
4	Associated actuator material	S,P,B,V or T
5	Additional (up to 8 digit code) suffix coding may be present indicating additional overall product assembly features that are not covered by this certification and do not affect the explosion protection concepts covered by this certification.	e.g. ***** XC4YFSNH
6	Pressure range of switch	e.g. 60PSI Noting ; Though part of the product code is listed on the nameplate in its own field 'RANGE'

Date: 09 April 2015

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Sira Certification Service

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