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LEAFLET No. INS 7 – ATEX Ex4000

Issue 11 - 10/07/2023

**This leaflet applies to Controls approved by SGS UK Limited and
SGS Fimko Oy for Equipment or Protective Systems or Components
Intended for use in Potentially Explosive Atmospheres.**

Directive 2014/34/EU

UKSI 2016:1107 (as amended) Schedule 3A, Part 1

EN IEC 60079-0:2018

EN 60079-1:2014

EN IEC 60079-7:2015+A1:2018

HALF YEARLY OR SHUT-DOWN MAINTENANCE.

1. Isolate the electrical supply.
2. Isolate process.
3. Remove all cover and gaskets from switch.
4. Check for ingress of dust or moisture, clean the inside of the switch making sure that the actuator is free and has no excessive wear.
5. Check the microswitch or pneumatic valve for correct functioning.
6. Clean out process chamber cavity, and flush out if necessary check threads and ensure all pressure retaining bolts are tight.
7. In the case of hazardous area switches, check that the glands or fittings are in good condition and ensure that the gasket and housing cover are free from damage.

Should it become necessary to replace the diaphragms, refer to the diagram on the centre page and proceed as follows:-

1. Slacken off the Range Screw (5) to ensure that the Range Spring (6) is not compressed.
2. Undo the 6 Chamber Screws (26), remove the Pressure Chamber (24), Spacing Gasket (23), Diaphragms (22) and Zero Ring (21).
3. Replace the Diaphragms and Spacing Gasket taking care to refit the Zero Ring.
4. Refit the Pressure Chamber and 6 Chamber Screws.
5. Adjust the Range Screw to the required pressure setting (see installation section).

The Switch Plate Screws (4) should not normally be tampered with, but should it become necessary to re-zero the microswitch, the following procedure should be adopted:-

Disconnect supply pressure, release range screw (5), clamp one side of the switch plate (3) and on this pivot move the switch plate until the microswitch plunger is just compressed by the actuator rod (7), but not enough to operate the switch (test with a suitable meter or continuity tester). When the setting is correct, tighten the two switch plate screws.

SGS UK Limited and SGS Fimko Oy

APPROVED SWITCHES

SERIES ATEX Ex4000

Sirco Switches are manufactured under a very strict quality control and are machined, assembled and tested under strict supervision before a certificate is issued.

INSTALLATION

The Sirco Switch is a precision instrument, therefore transportation and installation of the switch should be carried out as carefully as possible.

Avoid mounting the Switch in a position where exposure to vibration or mechanical shock is a possibility.

The purchaser should make the manufacturer aware of any external effects or aggressive substances that the equipment may be exposed to.

Before mounting the Switch, ensure the pipe is clean and the process orifice is free from dirt. Switches should not be installed on dead end pipes, but ideally fitted to a lead-off or pigtail pipe.

ELECTRICAL CONNECTIONS ON APPROVED CONTROLS

When wiring the Switch ensure that the correct type and size of cable for the required current rating is used.

The fitted microswitch is of the Single Pole Double throw (S.P.D.T.) type and can be connected to switch either 'on' or 'off' on pressure rise (see diagram in the centre of this manual).

The cover of the approved switch must first be removed (with a slotted screwdriver). Fit a suitable cable gland to the Switch, ensuring that a seal is fitted between the gland and housing to maintain the integrity of the Switches IP54 rating. Make sure that the thread type on the gland matches that of the switch. The thread type is stamped on the housing adjacent to the cable entry, M20 x 1.5 being standard. Pass the cable through the gland and connect to the microswitch via the three way terminal block.

The Switch must be earthed by the connection of a suitable earthed wire to the earth terminal on the end of the Switch. It is not sufficient to use only the process connection as an earth.

NOTE: Due care must be taken not to overtighten the terminals or disturb the position of the microswitch in the housing.

RANGE SETTING

Remove the cover and gasket from the Switch housing.

Connect a pressure source to the to the process connection of the switch, along with a suitable gauge to indicate the input pressure.

Connect a suitable meter or continuity tester to the microswitch via the terminal block.

Turn the range screw (5) clockwise to increase or anticlockwise to reduce the pressure at which the microswitch will operate.

Once installed and set-up correctly, apply a coat of suitable corrosion inhibitor to the Switch.

PRESSURE, VACUUM & DIFFERENTIAL PRESSURE SWITCHES

PLEASE READ CAREFULLY

**RECOMMENDED PRACTICES IN SELECTING, SPECIFYING AND INSTALLING
SIRCO CONTROLS.**

For all controls purchased, SIRCO recommend the following procedures:-

Install a back-up control for all critical applications where a control failure could endanger life, limb or property. A back-up control to serve as a high or low limit control is especially recommended for applications where a temperature or pressure runaway condition could result.

Provide preventative maintenance or periodic testing – particularly in critical applications. Factory set units should be tested on all applications prior to start up.

Electrical ratings stated in literature and on name-plates should not be exceeded. Overload on a switch or control can cause failure on the first cycle. Always wire devices to national and local electrical codes using the correct wire size.

Avoid mechanical cycling (5 c.p.m. average).

Note warning signs of possible failure – such as drift in set-point, check controls immediately.

For explosion-proof controls, always be sure that all electrical circuits are shut off before removing cover.

Use only factory authorized replacement parts and procedures.

With temperature controls – long capillary lengths beyond three metres can increase chance for error and may require re-calibration of set-point with a change in ambient.

Avoid mounting all controls in extremes of ambient.

PREVENTATIVE MAINTENANCE

MONTHLY CHECK.

1. Visual checks should be carried out to ensure that no covers are out of place and that the inhibitor and paint is keeping out corrosion.
At the slightest sign of rust or corrosion clean and re-apply inhibitor.
2. Report any unusual appearance or signs of interference or tampering.

QUARTERLY MAINTENANCE.

1. Isolate electrical supply.
2. Isolate process.
3. Open front cover.
4. Check all internal components visually for corrosion or ingress of moisture.
5. Check that microswitch and terminal block is intact.
6. Using an Avo, or other signal device to test the operation of the switch, manually operate the microswitch pip both at the normally open and normally closed terminals.
7. Check all screws and fastenings for tightness.
8. Connect independent pressure or vacuum source and check set-point (five times), raising the pressure or dropping it from the normal working pressure of the process line (depending on whether the function is on a rising or falling Pressure) - remembering that the first operation from zero will always be slightly in advance of the set point.
9. Replace all covers and gaskets and apply inhibitor (Rocol Rust Shield).

CARE AND MAINTENANCE

Whilst every care is taken to test the accuracy, repeatability, and correct functioning of all Sirco Switches before they leave the factory, it must be constantly borne in mind that the tests are carried out in ideal conditions and no amount of testing can accurately simulate the actual environment or the conditions, using the process fluids at the site of their ultimate installation.

It is for this reason that regular care and maintenance must be carried out to ensure that they are restored to their original state of operation if necessary.

Like all electro-mechanical devices, whose correct function depends on accurate wear-free movements and positively repeated signals within the given parameters of a detailed specification, it is necessary in the interests of HEALTH AND SAFETY, to ensure that regular checks and preventative maintenance is carried out by QUALIFIED Instrument Engineers. Qualified that is – in respect of the particular switches they are checking or maintaining – without a tendency towards experimentation. There is no substitute for experience – and no excuse for dismissing these instructions, by equating experience with long and faithful service and a working knowledge of similar instruments; especially where life and limb and/or production loss results from a malfunction, through lack of maintenance.

PERIODIC FUNCTION CHECKS.

1. In most cases, when pressure, pressure difference or vacuum switches are fitted to process lines, where the actuation is frequent, - it is possible to observe and record the accuracy and repeatability by reference to the process cycles and gauges.
2. When switches are fitted to detect an abnormal or alarm condition and may never work, because of primary interlocking or back-up systems, - it is recommended that a two-way shut-off valve be installed immediately below the process connection, thus enabling the process fluid to be isolated and at the same time opening a test point to enable a pressure to be introduced to check the switch.

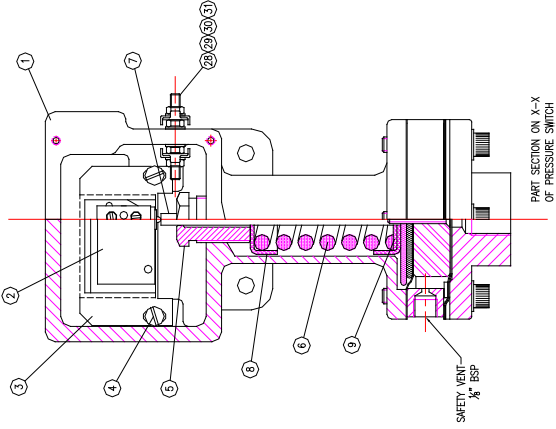
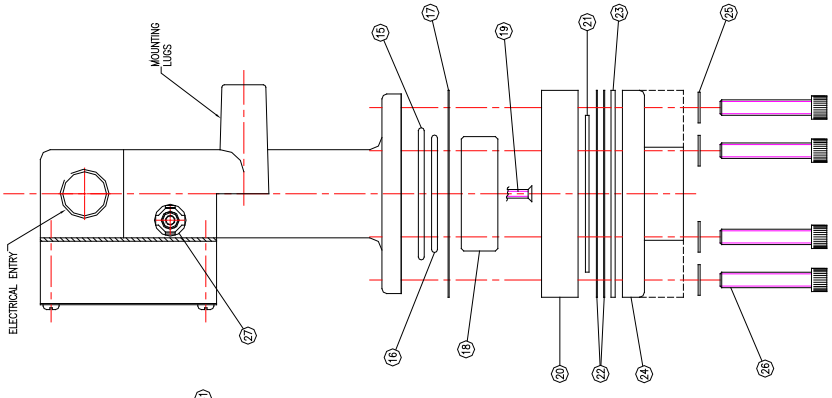
SWITCH IDENTIFICATION LABEL

SIRCO		CONTROLS LTD. ROCHFORD, ESSEX, SS4 1RQ	
CE 0598	UK CA 1180	Ex db eb IIC T6 Gb (T _{amb} -20°C to +60°C)	
Baseefa03ATEX0128	BAS22UKEX0247	Ex II 2 G	
TYPE: ATEX Ex4000			
RATING: 250Vac 5A Res. or Ind. / 125Vac 5A Res. or Ind. 250Vdc 0.25A Res. or 0.03A Ind. / 125Vdc 0.5A Res. or 0.03A Ind. 75Vdc 0.75A Res. or Ind. / 50Vdc 1A Res. or Ind. / 30Vdc 5A Res. or 3A Ind.			
MODEL	████████████████████	P.P.	████████████████████
RANGE	████████████████████	M.W.T.	████████████████████
DIFF.	████████████████████	TAG NO.	████████████████████
SERIAL NO.	████████████████████	Y.O.M.	████████████████████
WARNING - DO NOT OPEN WHEN ENERGIZED			

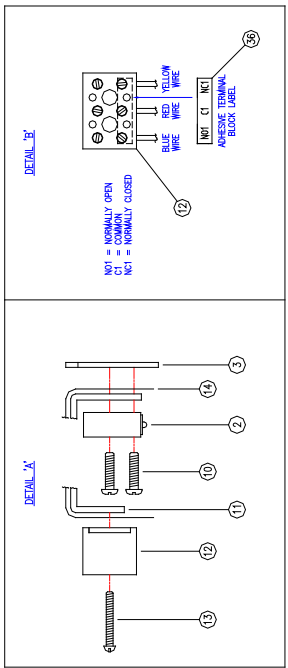
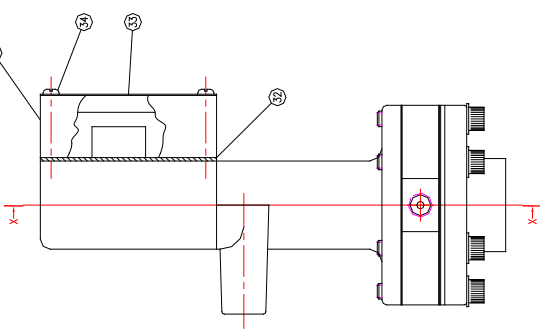
BASIC CONSTRUCTION

See diagram in the centre of this manual.

1. The ATEX Ex4000 Model is built around an aluminium housing and its basic pattern is the same throughout.
2. The housing consists of an approved microswitch and a range adjustment screw and range spring.
3. The lower part of the housing (power unit) consists of a safety vent feature, operating diaphragm and pressure chamber assembly.
The range spring opposes the diaphragm and any tightening of the range screw raises the point at which the microswitch will operate.
4. The drawing (see centre page) shows the basic construction of the ATEX Ex-4000 Switch.



PART SECTION ON X-X
OF PRESSURE SWITCH



COMMON PARTS FOR ONE UNIT

No.	Part No.	Description	Qty.	Material	Remarks/Drawing No.
1	R126	Housing	1	Aluminium	A3-3270
2	A98	Microswitch	1		E1V3CS - ATEX
3	A125	Switch plate	1	St. Steel	A4-2466
4	A231	Screw Pan Head	2	St. Steel	
5	A116	Range Screw	1	Mild Steel Zinc Plated	SP122
6	A191, A186	Range Spring	1	Spring Steel Zinc Plated	RA/RB HT-MB9, RC/RD HT-MB6
7	A113	Actuator Rod	1	St. Steel	G144
8	A108	Spring Cup	2	St. Steel	SP683
9	A895	Mudguard Washer	1	St. Steel	
10	A254	Screw Pan Head	2	St. Steel	
11		Microswitch/Terminal Block bracket	1	Aluminium	A4-3267
12	A84	Terminal Block	1		BK3 - ATEX
13	A258	Round Head Screw	2	St. Steel	
14		Insulating Cloth	1	Wellstead Cloth	
15	A110	Backing Plate	1	Aluminium	G146
16	A114	Backing Plate Pad	1	Aluminium	G160
17	A117	Safety Vent Sealing Diaphragm	1	Buna	
18		Safety Vent Boss	1	Aluminium	A4-3269
19	A320	Screw Countersunk Head	1	St. Steel	
20		Safety Vent Chamber	1	Aluminium	A4-3268
21	A115	Zero Ring	1	St. Steel	G149
22		Diaphragm	2	As Required See Table 1	
23	A122	Spacing Gasket	1	Rubber	G155
24		Pressure Chamber	1	As Per Customer Requirement	
25	A864	Shakeproof Washer M6	6	St. Steel	
26		Socket Cap Head Screw	6	St. Steel	
27	A476	Earth Terminal Label	1	Plastic Self Adhesive	PSD1643
28	S16	Nut M4	2	St. Steel	
29	S18	Washer M4	2	St. Steel	
30		Studding M4	1	St. Steel	
31	A875	Earth Washer	4	Copper	
32		Cover Gasket	1	Rubber Gasket	A4-3461
33		Label	1	St. Steel	A4-3246/F
34	A237	Cover Screw Pan Head	4	St. Steel	
35	R129	Deep Cover	1	Aluminium	A4-3266
36	A499	Terminal Block Label	1		

Table 1

Diaphragm	Material	RA	RB	RC	RD
G 152/1	Buna-N	2	2	2	3
G 152/3	P.T.F.E.	2*	2*	2*	2*
SP 585	St. Steel	1	1	1	1

* Plus 1 x Buna-N backing diaphragm positioned between 21 and 22