

# A60 Marine Fire Damper

With ATEX rated Electrical (Schischek) Actuator Installation Manual



## TYPE OF PROTECTION 'C'

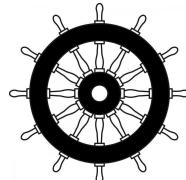
II 2G Exh II C T6 Gb

II 2D Exh III C T85 Db

Sira 11ATEX6259

EN ISO 80079-36:2016

EN ISO 80079-37:2016



2923/YYYY

YYYY Denotes the year the Wheel mark is affixed to damper

## 1. Description

The actionair Marine Fire Damper is tested and approved for fitting to class A-0 A-15 A-30 A-60 divisions (bulkheads and decks), when suitably insulated.

A-0 must have insulation over case.

## 2. Tests, approvals and certification

- Lloyds Register Approved.
- DNV-GL Approved.
- ABS Approved
- USCG Approved.
- Transport Canada Approved.
- MED Marine Equipment Directive Compliant.
- Fire tested to the latest IMO FTP code & in compliance with the international convention for the safety of life at sea (SOLAS)
- Sira certification (Ex) category 2 equipment

- Corrosion Tested - EN60068-2-52 severity 2 conditions
- Vibration Tested – EN60068-2-6 (5Hz to 350Hz @2g)

## 3. Health and Safety

- Care must be taken when installing and inspecting dampers, as they are likely to close without warning due to loss of electrical power, or a temperature rise in the ductwork. This is their prime function.

Do not introduce any items, fingers or limbs between the blades.

- Larger dampers are heavy and must be handled in accordance with current local regulations and good practice.
- All wiring should be carried out in accordance with the wiring details provided, to the IEC regulations.

## 4. General Information

- The actionair Marine Fire Damper is suitable for both vertical and horizontal applications, with airflow in either direction.
- The dampers tested to IMO fire test procedure, Annex 1 Pt 3, are normally open, and fail-safe to the closed position. The Actionair Marine Fire Dampers are supplied with the blades in the fully interlocked closed position to avoid damage during transit and installation. It is recommended that the dampers remain closed until actual date of commissioning. All fire dampers are life safety products and must be treated with care during handling, storage and installation.
- Actionair Marine Fire Dampers are designed for applications in normal dry filtered air systems and should be subjected to a planned inspection programme.

## 5. Installation - see below.

## 6. Maintenance & Cleaning

- Dampers are supplied in two casing and blade material options: -  
1/ Galvanised Steel casing and 430 Stainless steel blades, only suitable for installation in dry filtered systems.

2/ 316 Stainless steel casing, blades and drive - more suited for corrosive conditions, but even this will rapidly corrode and fail if not properly maintained, when used in air intake systems at sea. The addition of a mist eliminator is highly recommended, and access must be provided for maintenance.

## 7. Testing

Two levels of testing exist.

- Routine testing - Monthly, or in accordance with maintenance programme, release and reset damper (via control system or ETR test switch). Check remote indication or visual check of mechanical pointer as appropriate.
- Visual check at damper - At commissioning and at least once a year, check damper operation by removing and re-applying power to actuator. (via ETR test switch).
- Visually check blades for damper closed and open positions.

Prove remote indication if applicable.

## 8. Routine Maintenance

- Depending upon environmental conditions, each damper will merit its own cleaning regime. Particularly hostile areas.
- 'Frequency of maintenance' should be determined by collecting historical data from previous visits, and for this reason, commence maintenance programmes.
- Dampers in 'Dry Filtered Air' require very limited maintenance. When exposed to fresh air intakes and/or inclement conditions this may require monthly cleaning and lubrication maintenance to be performed.

## 9. Cleaning

- Using light lubricant, clean all exposed surfaces, using a cloth.
- Remove all traces of surface staining, as this will deteriorate further causing deeper material corrosion.
- For 316 stainless steel blades and case, pay specific attention to the blade rivets where crevice corrosion will cause rapid failure of blades if not kept in check.
- If damper is stiff to operate lubricate blade ends, open and close damper successively until the damper moves with ease. (This may necessitate removal of the actuator and operating the blades manually by the drive shaft).
- Refit actuator and re-test.
- Clean off excessive lubricant.

## 10. Damper installation

All installations shall be carried out in accordance with the relevant Marine/Offshore Authority requirements.

The damper should be installed in accordance with Insulation details that represent a typical installation.

Please refer to the relevant notified body certificates for insulation lengths located on Actionair website:

### A60 Marine Fire Damper

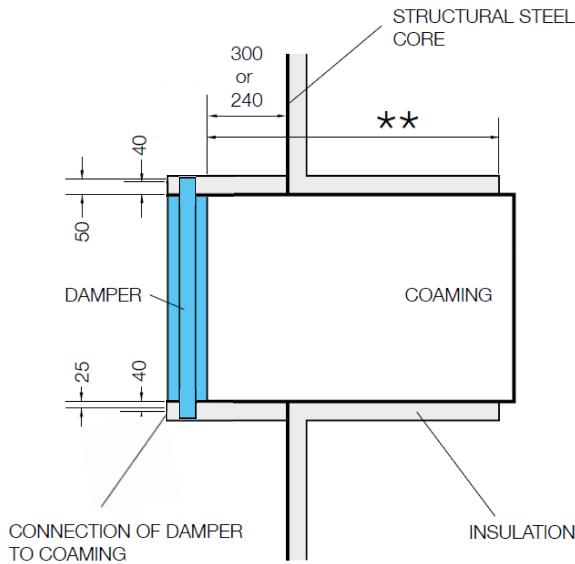
Bolt holes provided as standard on the damper flanges (unless otherwise stated) at 150mm maximum centres. Matching hole positions are necessary on mating coaming/duct flanges.

Apply approved fire-resistant sealant/gasket to mating flanges and position damper.

Bolt A60 square/rectangular dampers using suitable steel bolts minimum M10 diameter and minimum M6 diameter on A60 circulars.

For insulation lengths \*\* please refer to the relevant notified body certificates located on our website: [A60 Marine Fire Damper](#)

**Bulkhead (Vertical)** Figure 1



**Deck (Horizontal)** Figure 2

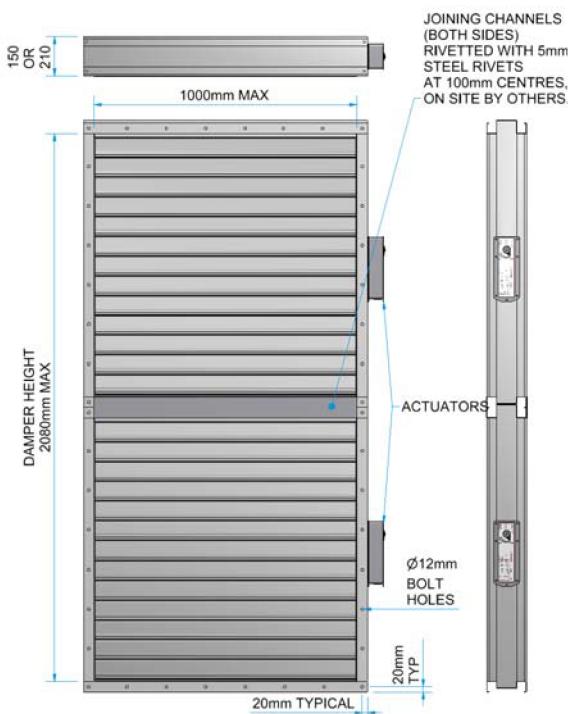
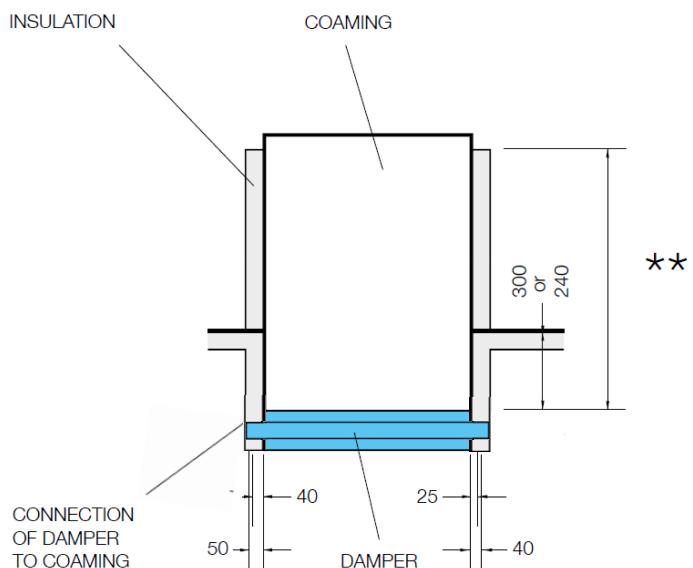


Figure 3

**Multiple Damper Assemblies**  
Tested and approved to a size of either;  
(2x1) 2080mm x 1000mm  
or (1x2) 1000mm x 2080mm

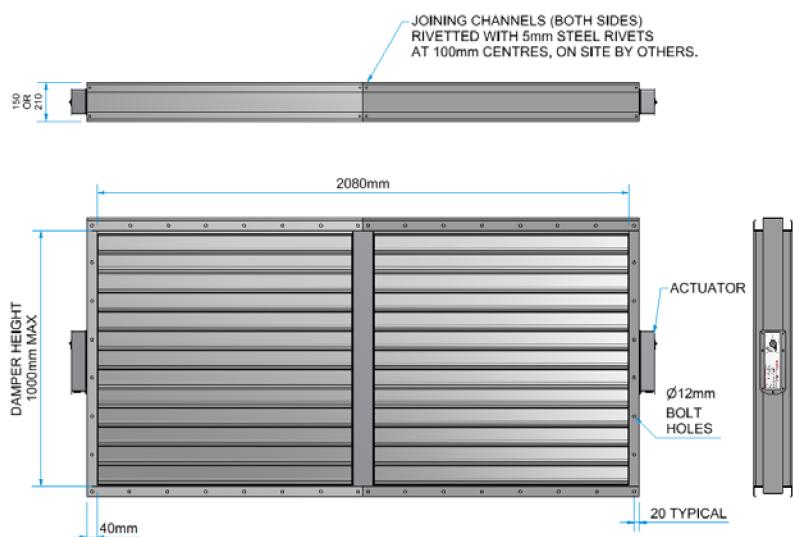


Figure 4

## 11. Control Modes (3 positions) (Refer to figure 8)

Two sizes of Control Modes are utilised - 5.10Nm & 15Nm. Correctly sized Control Modes are designed to fit only to the relevant sized damper. (See 'Control Mode Standard Parameters' figure) (Refer to figure 5)

Remove transit plate from damper mounting plate and recycle.

Mount actuator to damper mounting brackets & secure with screw & washer provided - 5Nm Max. (Refer to figure 6)

It's important to fit the 2 spacers provided. (Refer to figure 6) Never operate the manual override (shaft) when actuator is connected to power supply.

Actuators will only work if Safety temperature sensor (ExPro TT) is properly connected. (Refer to figure 7)

\*IMPORTANT\* - please ensure damper blades are in the fully closed position prior to mounting actuators. Failure to do so may damage drive shafts and render the damper inoperable.

## 12. Mechanical Operation check

As an interim check, the damper should be manually reset and released using the manual reset key provided, (refer to Control Mode label) to ensure that correct mechanical operation is achieved. This feature may be used for system commissioning when electrical power is unavailable. Note however, the ExPro TT is not operable without electrical power, and the damper will not close automatically should a temperature rise or fire occur.

## 13. Safety Temperature Sensor (ExPro TT)

Installation (When not affixed to damper casing, 210mm wide casing option only)

Select a suitable position for the ExPro TT on the duct as follows: Deck Installations – Must be anywhere below the damper. Bulkhead installations – Ideally this should be anywhere in the top half of the duct.

Position the self-adhesive ExPro TT drilling template label provided in the appropriate position on the duct.

Using a 2.5mm dia bit, drill the two ExPro TT fixing holes.

Using a 10mm dia drill, drill the central hole.

Remove sharp edges.

Push the ExPro TT through the duct and ensure that both screws are used to hold it securely in position.

The ExPro TT cable must not be shortened, and care must be taken not to damage it.

## 14. Electrical Connection and Final Operational Test

The unit must be wired as described in the Application and Wiring section 17. When power is available, the unit must be checked for electrical operation. Power on to motor open, power off to spring close.

The unit must also be checked by moving and holding the test switch on the ExPro TT to confirm that the damper closes. When pressure is removed from the switch the damper will re-open. This may be done after the initial installation test, to provide periodic operation of the damper to simulate actual fail-safe closure under fire conditions. Schischek actuators are equipped with a universal supply unit working at a voltage range from 24 to 230 VAC/DC. The supply unit is self-adjustable to the connected voltage. The safety operation of the spring return function works if the supply voltage is cut. For electrical connection inside hazardous areas, an EEx-e terminal box, certified in accordance with ATEX is required (E.G ExBox XNNN00578)

Electrical ATEX (Ex) rated as below

Fail-safe is by means of an ExPro-TT which operates at 72 °C, or if power supply is interrupted.

A manual test button (Refer to figure 7) allows periodic operation of the damper for testing purposes, simulating actual fail-safe release under fire conditions.

The associated electrical Control Modes are available in one Universal version with 24 – 230V AC/DC supply.

## Control Mode Standard Parameters

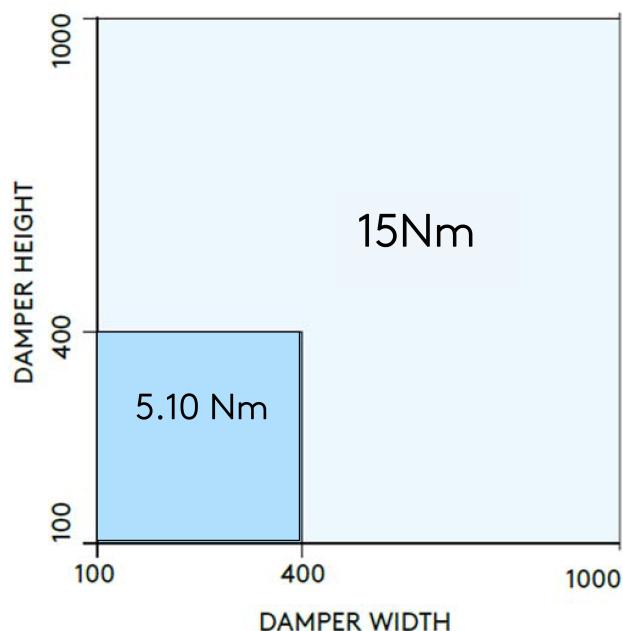
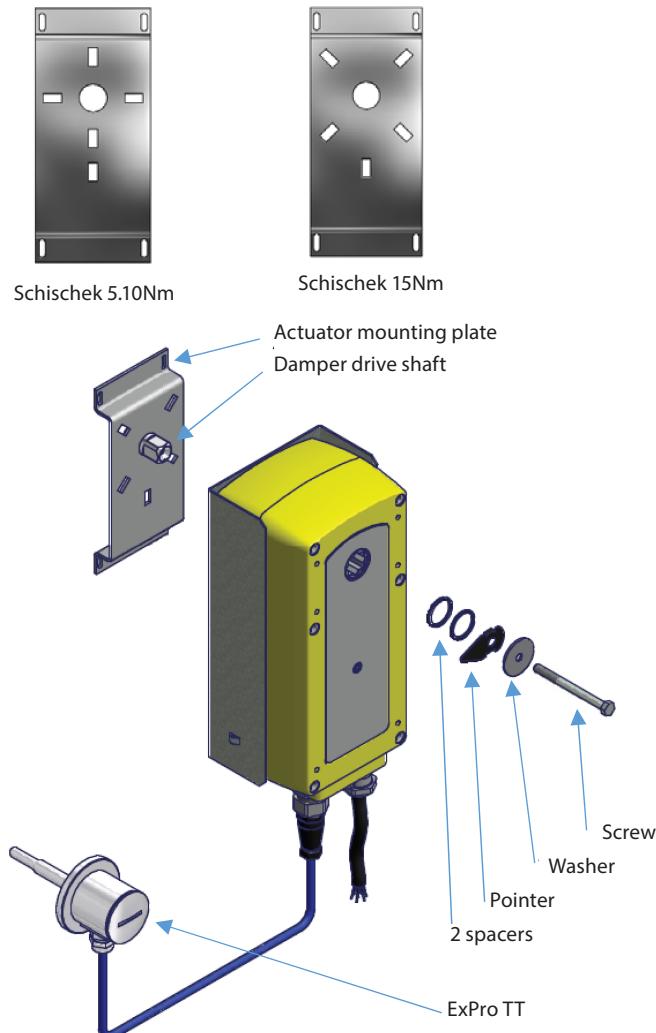


Figure 5

# A60 Marine Fire Damper With ATEX rated Electrical (Schischek) Actuator

## 15. Actuator Installation

Actuator mounting brackets  
riveted to damper casing



## 16. Three position Actuator mounting & dimensional data

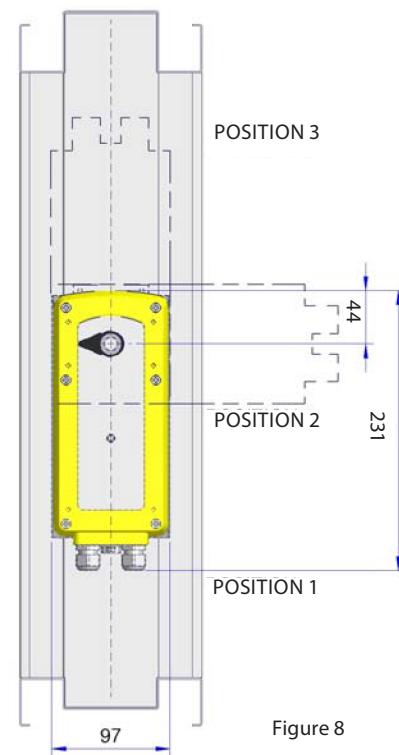
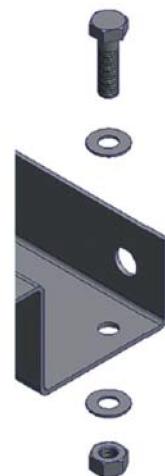
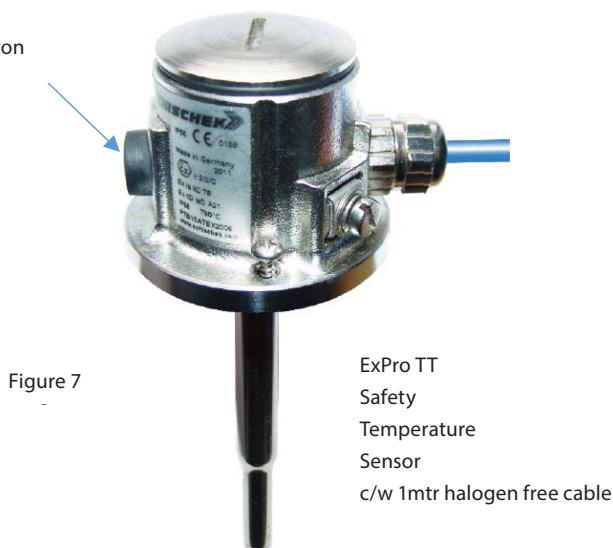


Figure 8

Detail A Earthing  
Boss for Atex Rating



Test button



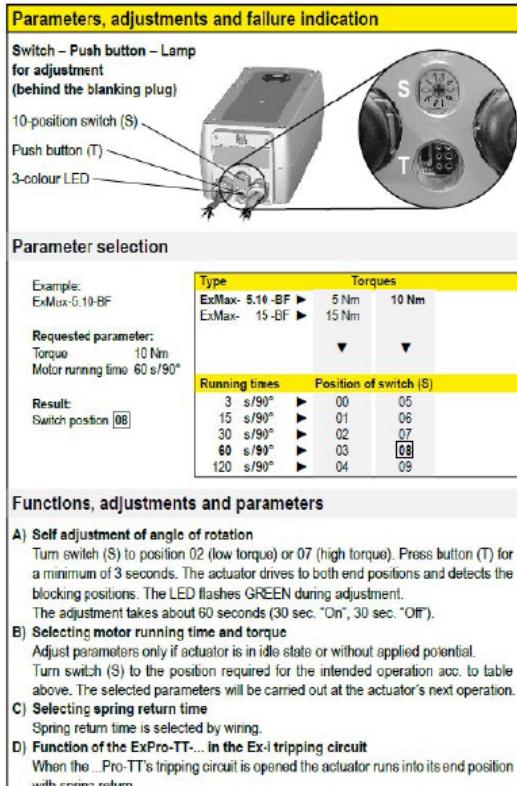
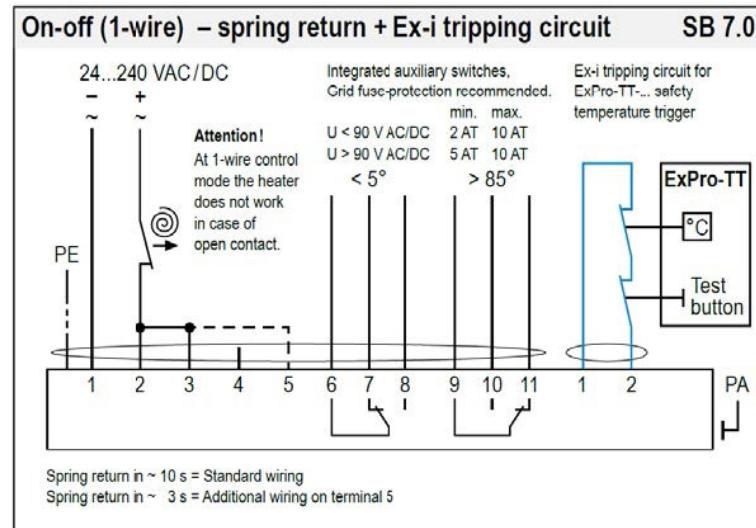
## 17. Standard Application & Wiring

**IMPORTANT:** Please fully read the Schischek data sheets provided with every actuator

For 5.10 actuators 10Nm & 3 sec/90° must be selected.

For 15Nm actuators 3 sec/90° must be selected.

Make sure that 1 cycle per minute is not exceeded.

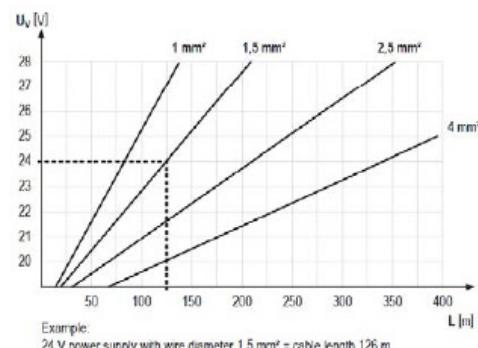
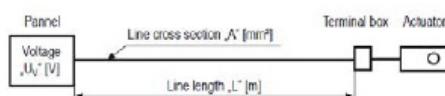


### Cross sections of the inlet line

On long distances between voltage supply and drive, voltage drops occur due to line resistances. As a consequence with 24 VAC/DC the actuator receives a too low tension and does not start. In order to prevent this the cross section of the inlet line is to be dimensioned accordingly.

The accompanying formulas allow the calculation of the necessary line cross section respectively maximal permitted conduit length respectively utilizing the existing line cross section.

Alternatively the secondary voltage can be increased by selecting a transformer.



Required cable cross section A at existing cable length L

$$A = 0,0714 \times L : (U_v - 18 V)$$

Example: L = 250 m, U<sub>v</sub> = 30 V  
Cross section A = 1.5 mm<sup>2</sup>

Maximum cable length L at existing cross section A

$$L = A \times (U_v - 18 V) : 0,0714$$

Example: A = 1.5 mm<sup>2</sup>, U<sub>v</sub> = 24 V  
Length of cable L = 126 m

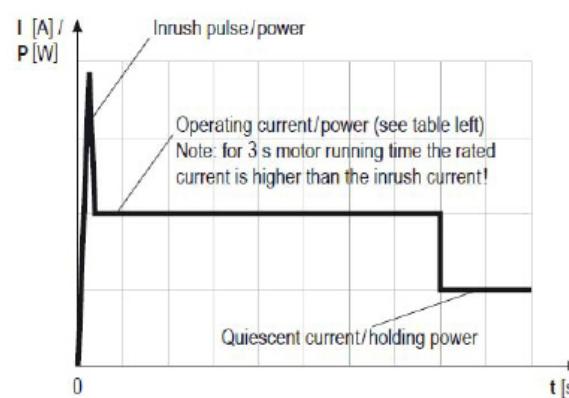
For calculation following characteristics are essential:  
 $U_v$  = supply voltage [V]  
 $A$  = line cross section [mm<sup>2</sup>]  
 $L$  = conduit length [m]  
Factor 0,0714 = drive specific factor [Vmin<sup>2</sup>/m]  
(based on the electrical conductivity of electrolytic copper with a coefficient of 56 m<sup>2</sup>/Ω mm<sup>2</sup>)

### Power input depending on supply voltage

The design of the on-site supply depends on the selected motor running time and selected supply voltage. Accompanying values are "about values" since there can be construction unit dispersions within electronics. The holding power is run time independently typical at ~ 5 W. The power consumption for the heater is ~ 16 W. In the heating phase the motor is not active!

The initial starting supply voltage required by the actuators power supply unit is ~ 2.0 A. The starting pulse takes about 1 sec. (please consider this while conceiving the cross section of the supply line). The power factor is between 0.8 and 0.5 in dependence of motor running time. A line protection should be min. 2 AT.

		Rated current in acc. with motor running time				
Voltage	Current	3 / 7,5 s	15 s	30 s	60 s	120 s
24 V DC	I <sub>Nominal</sub>	4,70 A	1,30 A	0,70 A	0,60 A	0,50 A
120 V AC	I <sub>Nominal</sub>	0,75 A	0,30 A	0,25 A	0,20 A	0,17 A
240 V AC	I <sub>Nominal</sub>	0,37 A	0,15 A	0,12 A	0,10 A	0,08 A



Ex-i intrinsic safe data				Ex-i intrinsic safe data – for temperature trigger ExPro-TT T 1.0																										
U <sub>o</sub> = 10,6 V				U <sub>o</sub> = 10,6 V																										
I <sub>o</sub> = 11 mA				I <sub>o</sub> = 11 mA																										
P <sub>o</sub> = 30 mW				P <sub>o</sub> = 30 mW																										
C <sub>i</sub> = 0				C <sub>i</sub> = 0																										
L <sub>i</sub> = 0				L <sub>i</sub> = 0																										
<table border="1"> <tr> <td>C<sub>o</sub></td><td>IIC</td><td>IIB</td><td>IIA</td></tr> <tr> <td>830 nF</td><td>3,7 µF</td><td>4,5 µF</td><td></td></tr> <tr> <td>L<sub>o</sub></td><td>2 mH</td><td>5 mH</td><td>10 mH</td></tr> </table>				C <sub>o</sub>	IIC	IIB	IIA	830 nF	3,7 µF	4,5 µF		L <sub>o</sub>	2 mH	5 mH	10 mH	<table border="1"> <tr> <td>L<sub>o</sub></td><td>IIC</td><td>IIB</td><td>IIA</td></tr> <tr> <td>2 mH</td><td>5 mH</td><td>10 mH</td><td></td></tr> <tr> <td>C<sub>o</sub></td><td>830 nF</td><td>3,7 µF</td><td>4,5 µF</td></tr> </table>			L <sub>o</sub>	IIC	IIB	IIA	2 mH	5 mH	10 mH		C <sub>o</sub>	830 nF	3,7 µF	4,5 µF
C <sub>o</sub>	IIC	IIB	IIA																											
830 nF	3,7 µF	4,5 µF																												
L <sub>o</sub>	2 mH	5 mH	10 mH																											
L <sub>o</sub>	IIC	IIB	IIA																											
2 mH	5 mH	10 mH																												
C <sub>o</sub>	830 nF	3,7 µF	4,5 µF																											

Trouble shooting:

Fault	Possible problem	Recommended action
Control Mode does not fit to damper drive shaft when Control Mode is correctly positioned	Damper shaft not in 'danger closed' position	Damper shaft has an 'indication groove' which is parallel to damper blades. Damper must be in closed position before fitting Control mode
Control Mode does not operate electrically	ExPro not correctly fitted	Refer to Page 3
	Mode wired incorrectly / No power	Refer to above wiring diagram
	STS activated	Replace STS
Control Mode operated, but limited or no movement of damper blades evident	Damper/Control Mode positions not synchronised	Remove Control Mode. Check damper closed (see indication Groove on damper shaft), and Control Mode released. Refit Control Mode
	Obstruction impeding damper blade	Check visually, remove obstruction. If necessary, remove Control Mode and operate damper drive shaft with 14mm A/F spanner
	Over tightening of M5 x 80mm screw. (3 position only)	Loosen screw to 5Nm torque

**18. Ignition Hazard Assessment**

IGNITION HAZARD ASSESSMENT EN ISO 80079-36																
No.	1		2					3			4					
	Ignition hazard		Assessment of frequency of occurrence without application of additional measures					Measures applied to prevent the ignition source becoming effective			Frequency of occurrence incl. measures applied					
	A	B	A	B	C	D	E	A	B	C	A	B	C	D	E	F
	Potential ignition source	Description/basic cause	During normal operation	During foreseeable malfunction	During rare malfunction	Not relevant	Reasons for assessment	Description of the measure applied	Basis	Technical documentation	During normal operation	During foreseeable malfunction	During rare malfunction	Not relevant	Resulting EPL in respect of this ignition hazard	Necessary restrictions
1	Hot surface	Heat transfer through the damper case	X				Metallic damper case will conduct heat from gas travelling through	Damper to have maximum temperature rating. Actuator thermal fuse will operate at approximately 74°C or when there is no power supplied to the damper. The case and blades are still thermally conductive once closed. However, the flow of gas travelling through the damper will be stopped.	EN ISO 80079-36, clause 6.2				X		Gb Db	T6
2	Hot surfaces	Exposed hot surfaces of the electrical components			X		Excess temperature rise due to poor ventilation or build up of dirt. Excess temperature rise due to overloading	Reliance is placed up on suitably ATEX certified Components. Operation, use and maintenance will be in accordance with the components' manufacturer instructions.	EN ISO 80079-36				X		Gb Db	