


## Applications

- Explosive atmospheres.
- All sectors of Water, Energy and Industry markets.

## General information

- AMTROBOX EEx ia and AMTRONIC EEx ia (R 1172) remote indication and control boxes are of intrinsically safe protection design for use in explosive atmospheres.
- **AMTROBOX EEx ia R 1172**  
Specially designed for use with double acting ACTAIR and spring return DYNACTAIR pneumatic actuators and MR manual actuators, this box integrates, in a modular form, the following electric functions:
  - Position detection (opening and closing) by microswitches or inductive proximity detectors
  - Feed-back position by angle sensor and 4-20 mA transmitter (option).
- **AMTRONIC EEx ia R 1172**  
Specially designed for use with double acting ACTAIR and spring return DYNACTAIR pneumatic actuators, this box ensures the following functions:
  - Position detection (opening and closing) by microswitches or inductive proximity detectors,
  - Feed-back position by angle sensor and 4-20 mA transmitter (option)
  - On/off pneumatic distribution.
- They are approved Ex ia IIC T6 in accordance with EN 60079-0 and EN 60079-11 standards.  
EC type examination certificate: LCIE 03 ATEX 6435X/01.  
The representative gas of explosion risk is hydrogen, the maximum temperature of the box is 80 °C.
- They are in accordance with ATEX 94/9/CE directive and marking:

CE 0081  II 1 G

- Explosive area: Ex ia IIC T6

This leaflet is also to be used as a start-up guide ref. 42 057 237

- It can be fitted directly onto actuators by the intermediate of it VDI/VDE 3845 interface.
- It is equipped with a bicolor visual pointer large size allowing the visualisation of the quarter-turn valve position.

## Protection

- Protection level: IP 67
- Its cataphoresis coating ensures a good resistance in corrosive environments.

## Temperature range

- From -10 °C to +50 °C

## Material

- Housing: Aluminium.
- Base plate: Aluminium.

## Standard variante

- Feed-back position.



AMTROBOX EEx ia

Transparent sight glass

Pointer

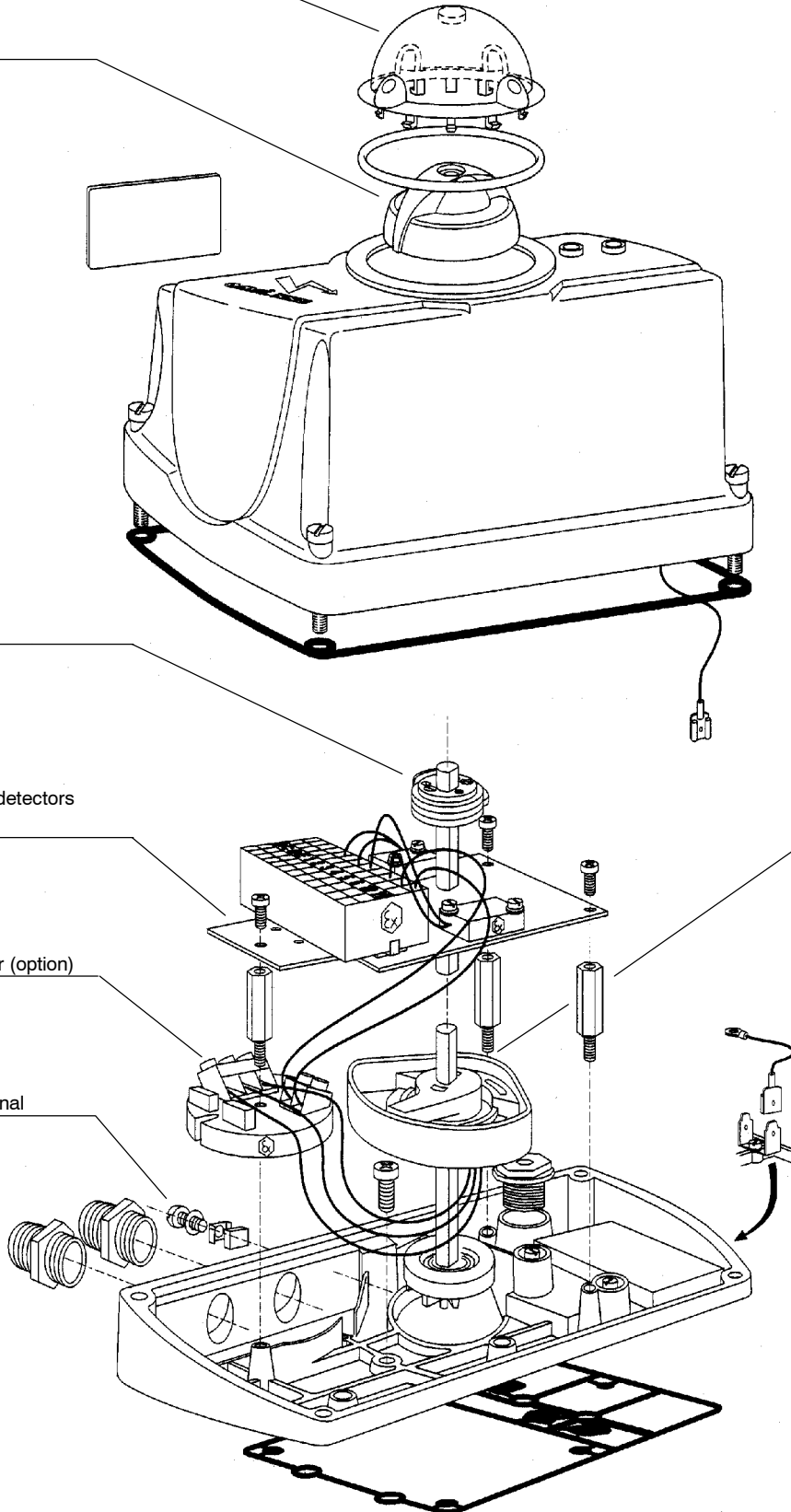
Adjustable cams

Microswitches or  
inductive proximity detectors  
on supporting plate

4-20 mA transmitter (option)

External earth terminal

Angle sensor (option)



AMTRONIC EEx ia



Transparent sight glass

Pointer

Push-buttons  
for emergency control  
of the electric pilots

Adjustable cams

Microswitches or  
inductive proximity detectors  
on supporting plate

Electric pilots

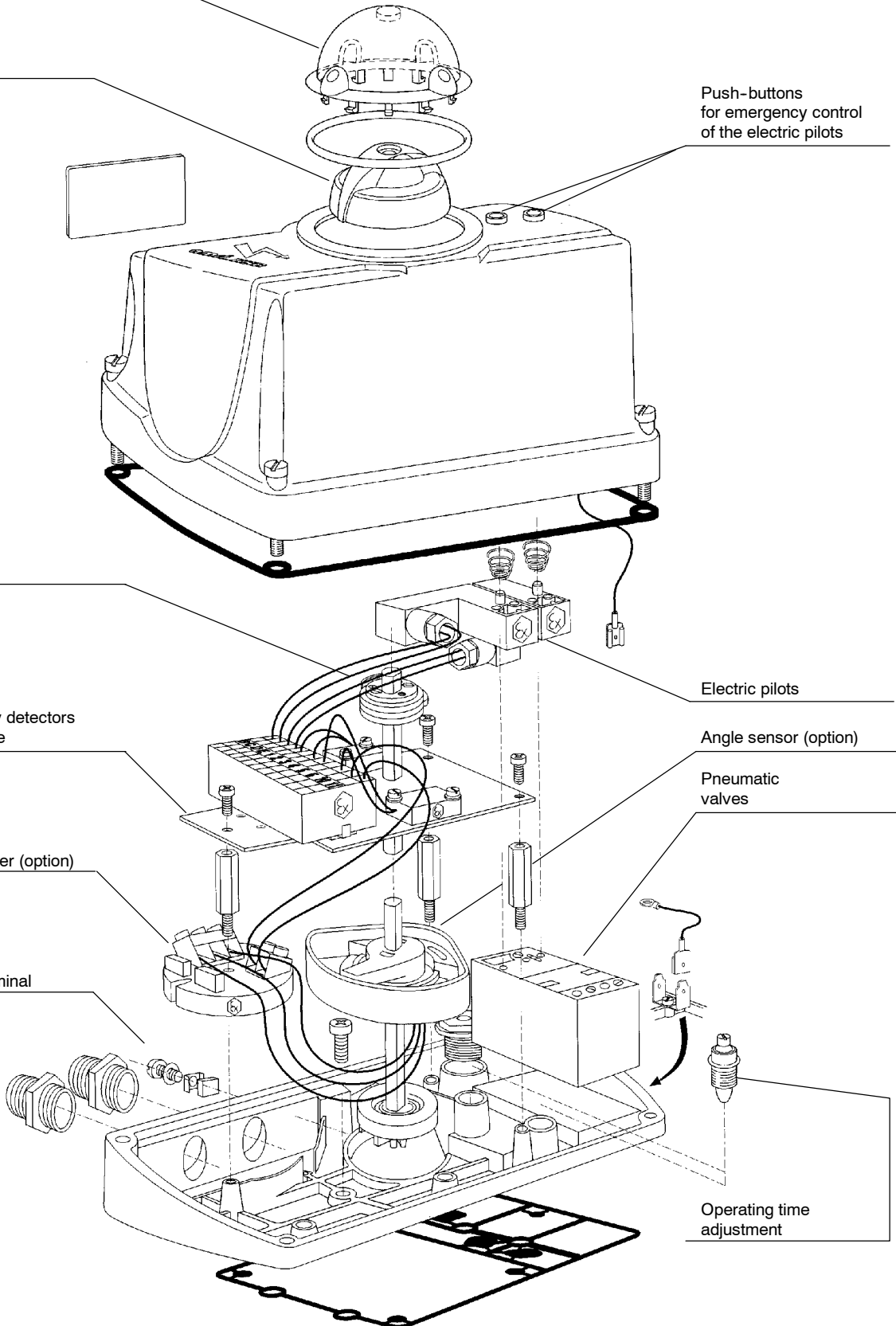
Angle sensor (option)

4-20 mA transmitter (option)

Pneumatic  
valves

External earth terminal

Operating time  
adjustment





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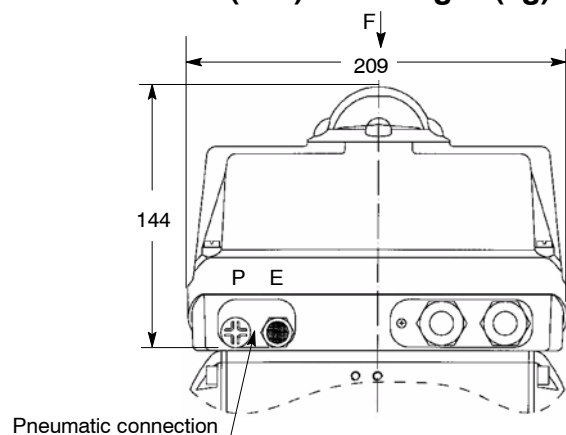
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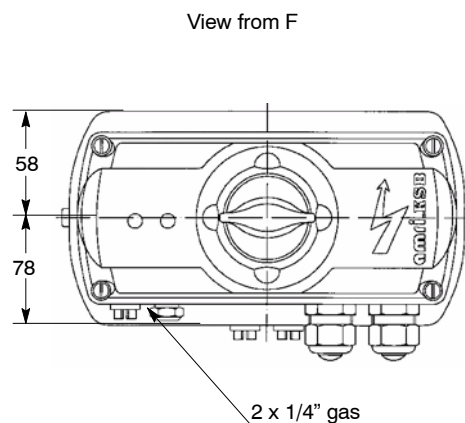
## General technical data

Environment	
- Protection level:	IP 67
- Resistance to impacts:	5 g according to CEI 68-2-27
- Resistance to vibrations:	2 g, 6 mm from 5 to 500 Hz as per STANAG 4370 3 axis
- Working temperature:	from - 10 °C up to + 50 °C
- Control air temperature:	from - 10 °C up to + 30 °C (AMTRONIC EEx ia)
- Electromagnetic compatibility: Standards	EN 61000-6-2; EN 61000-6-4
- Protection against explosive environment since intrinsically safe	EN 60079-0; EN 60079-11
Housing	
- Material:	Aluminium
- Coating:	Black cataphoresis
- Position indication:	By visual pointer under transparent sight glass
- Bolting:	A2-70 stainless steel
Air distribution:	
- Pressure connection	Port marked "P" equipped with an internal filter on the base (1/4 gas)
- Central discharge connection	Port marked "E" fitted with a silencer or connectable to exhausted network (1/4" gas)
- Working pressure	3,5 to 7 bar (50 to 102 psi), dry or lubricated
- Filtration level	< 50 µm
- Dew point	-5 °C
- Maximum flow rate	300 NI/mn at 6 bar (4/3) / 400 NI/mn at 6 bar (4/2)
- Pneumatic consumption when idle	None

## Overall dimensions (mm) and weight (kg)

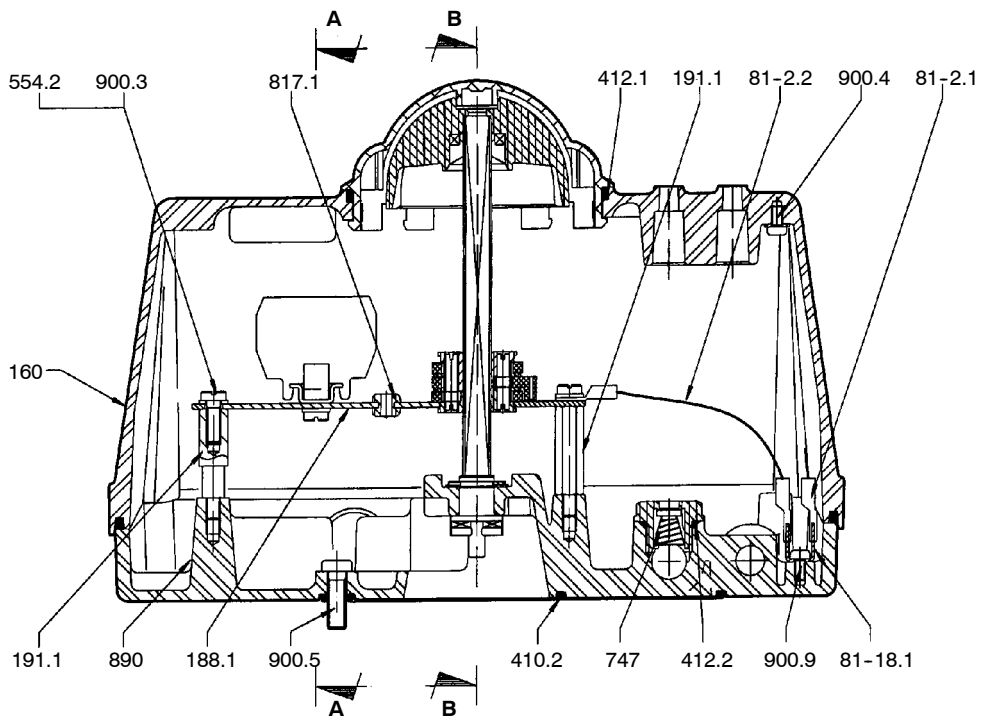


Weight: 1,5 kg



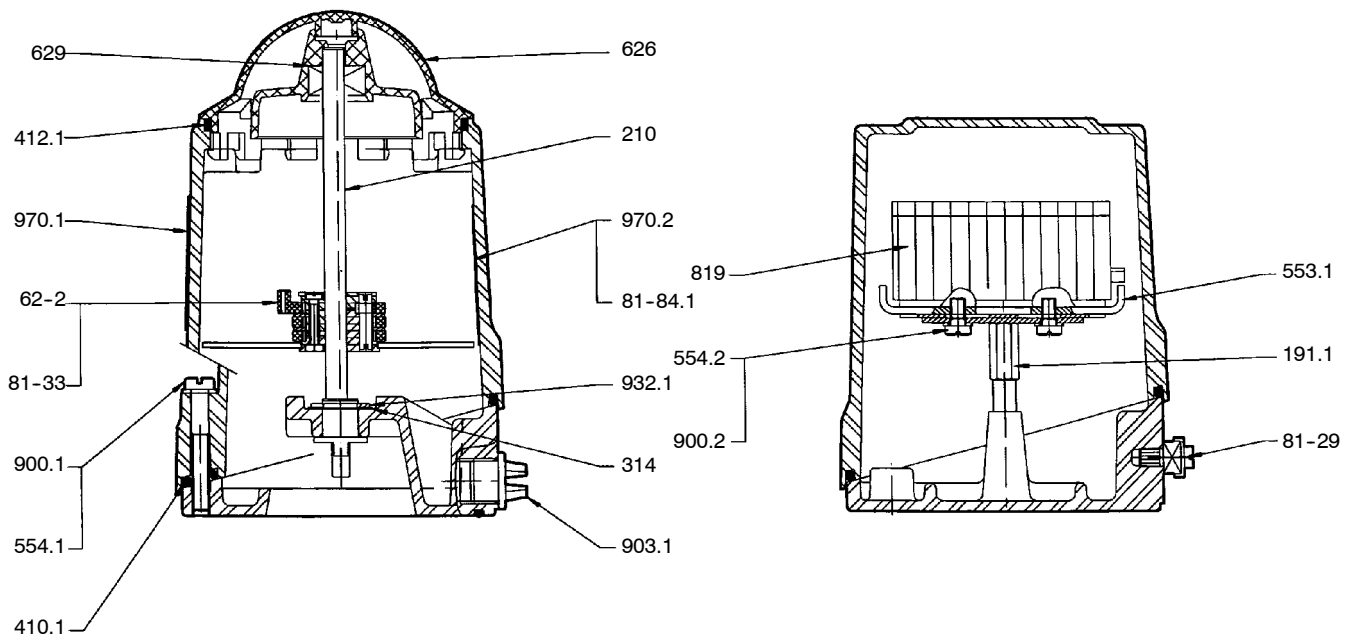


Parts common to all versions



Section B-B

Section A-A




**Common parts to all versions**

Item	Designation	Materials
160	Cover	Aluminium with black cataphoresis coating
188.1	Sheet	Steel
191.1	Sheet support	Polyamide 6
210	Operating shaft	Acetal
314	Thrust washer	304 stainless steel
410.1	Cover gasket	Nitrile
410.2	Base gasket	Nitrile
412.1	Sigh glass O-Ring	Nitrile
412.2	O-Ring	Nitrile
553.1	Thrust	Steel
554.1	Plain washer	A2-70 stainless steel
554.2	Plain washer	A2-70 stainless steel
62-2	3-cam sub-assembly	Acetal + 30% fibreglass
626	Sight glass	Transparent polycarbonate
629	Pointer	Polyamide 6-6 with anti U.V. treatment
747	Check valve sub-assembly	---
81-18.1	Snap	---
81-2.1	500 SV type ground wire 1,5 mm <sup>2</sup>	Copper
81-2.2	Ground wire + cable terminal	Copper
81-29	Ex 05-0012-0002 earth terminal	Bartec
81-33	Detection sheet for inductive proximity detector	Steel
81-84.1	Wiring diagram	Aluminium sticker
817.1	Cable way	Skiffy
819	Terminal block	Entrelec
890	Base	Aluminium with black cataphoresis coating
900.1	Cheese-head screw	A2-70 stainless steel
900.2	Cheese-head screw	A2-70 stainless steel
900.3	Cheese-head screw	A2-70 stainless steel
900.4	Self-cutting screw	Zinc coated steel cl. 8-8
900.5	Cheese-head screw	A2-70 stainless steel
900.9	Pozidriv screw	Zinc coated steel cl. 8-8
903.1	Plug 1/4" Gas	Polyamide 6-6
932.1	Spring retaining ring	Steel
970.1	Identity plate	Adhesive polyester
970.2	Instruction notice	Paper



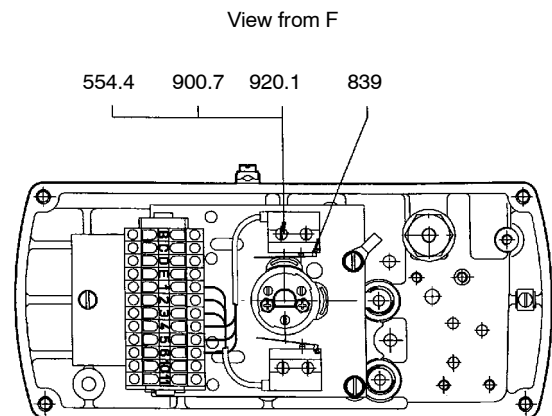
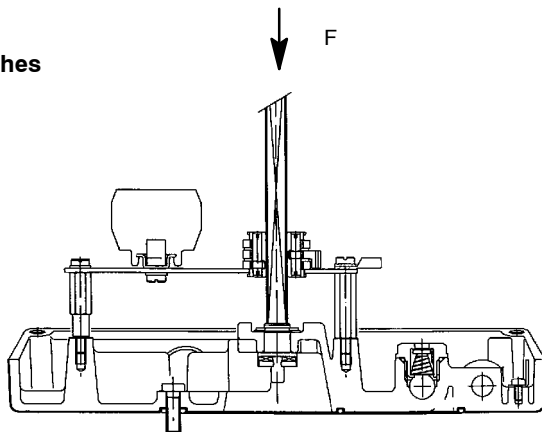
## Position detection: AMTROBOX EEx ia and AMTRONIC EEx ia

### General

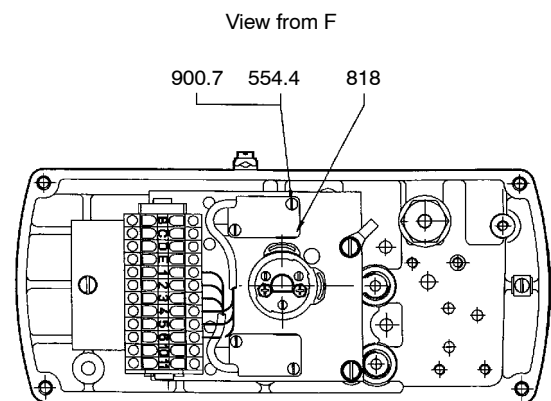
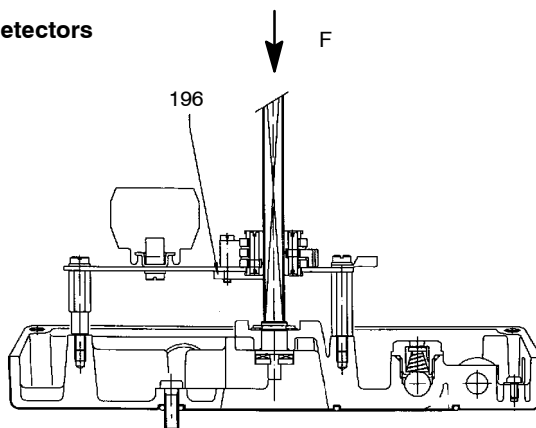
The intrinsically safe microswitches and inductive proximity detectors fitted in AMTROBOX EEx ia and AMTRONIC EEx ia are in accordance with EN 60079-0 and EN 60079-11 standards relating to components installed in explosive environment. They must be connected individually to an approved safety barrier. Situated in a safe area, these barriers allow the power supply of the microswitches installed in hazardous area.

### Construction

#### Microswitches



#### Proximity detectors



Item	Designation	Materials
196	Securing plate	Steel
554.4	Plain washer	Steel
818	Detector Ex ia ref. NS 5002 or Detector V3 DIN 41635 NJ2-V3-N	IFM Effector (box ref. R 1172-J7....) or Pepper & Fuchs (box ref. R 1172-K3....)
839	Microswitch V4 DIN 4635B ref. 83 136 069	Crouzet (box ref. R 1172-A2....)
900.7	Cheese-head screw	Steel cl. 8.8
920.1	Hexagonal nut	Steel cl. 8.8

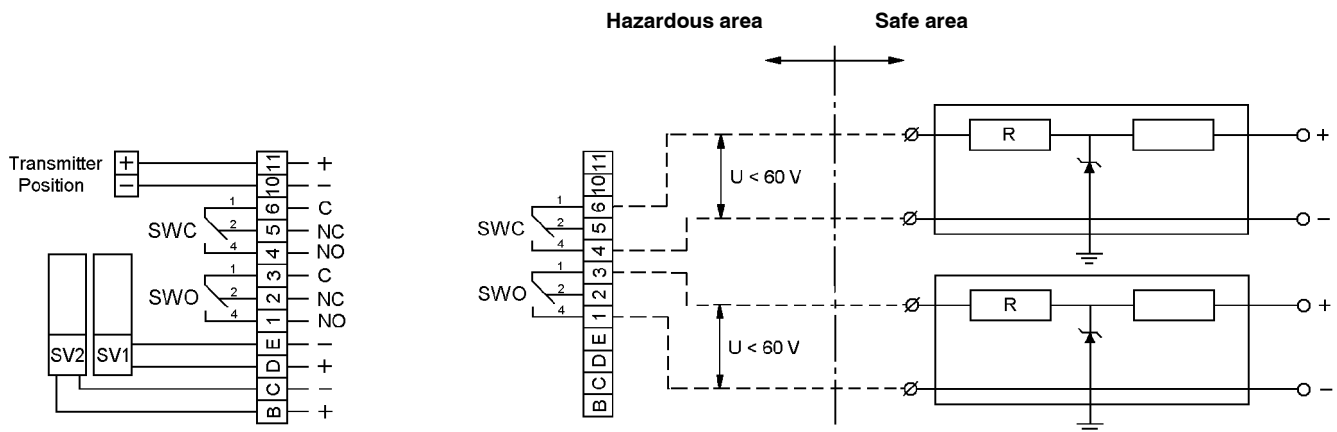



**Position detection by microswitches - Box ref. R 1172-A2....**
**Technical characteristics of microswitches**

• Manufacture:	Crouzet
• Type:	83 186 069 lever 170A R=24 - V4
• Conformity certificate:	Material according to EN 50020 §5 standard - Common material
• Electrical output:	By 3-wire cable, section 0.5 mm <sup>2</sup>
• Protection level:	IP 67
• Wiring:	The two microswitches are workshop-connected to the main terminal block by means of spring connectors, capacity 2.5 mm <sup>2</sup> . Refer to wiring diagram below.
• Max. voltage:	60 VDC
• Mechanical and electrical life:	2 . 10 <sup>6</sup> cycles
• Working temperature:	From - 25 °C up to + 70 °C
• Resistance to impacts:	5 g according to CEI 68-2-27
• Resistance to vibrations:	2,5 g from 5 to 500 Hz as per STANAG 4370 3 axis
• Function:	Change-over

**Special conditions for safe use**

• Working ambient temperature :	From - 10 °C to + 50 °C
• Max. voltage U <sub>0</sub> :	≤ 26,5 VDC
• Max. current I <sub>0</sub> :	≤ 127 mA

**Wiring diagram**

**Barriers and Interfaces**

The barriers and interfaces recommended by KSB-AMRI can be ordered to one of the manufacturers in the following table. When ordering, specify that these components are intended for the electric supply of Crouzet type 83 186 069 microswitches.

Manufacturer	Barrier reference	Interface reference	Laboratory certificate	Gas group	Permitted areas
GEORGIN		RDN 11 RDN 211	LCIE 02 ATEX 6104 X LCIE 02 ATEX 6104 X	II C II C	Any area
AP 3	NAEV-DI 2 N-A230		LCIE 00 ATEX 6034 X	II C	
	NAEV-DI 2 N-A115		LCIE 00 ATEX 6034 X	II C	

Any other barrier or interface of different construction may be used provided it complies with regulations requirements and that calculation and installation rules are respected.

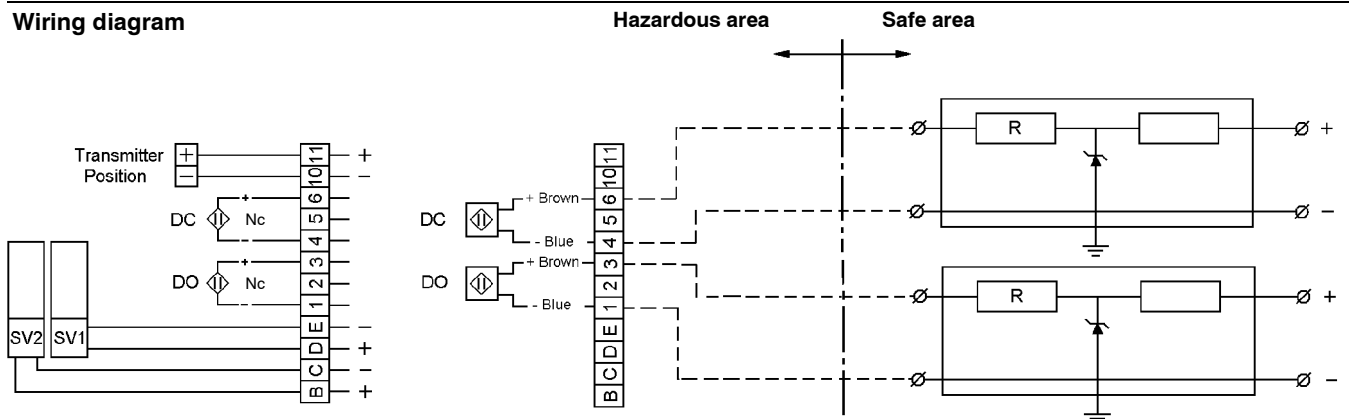
For each reference defined in the above table, KSB-AMRI can supply to the user the corresponding loop calculations.


**Position detection by inductive proximity detectors - Boxes ref. R 1172-K3.... or R 1172-J7....**
**Technical characteristics of detectors**

	Box ref. R 1172-J7....	Box ref. R 1172-K3...
• Manufacturer:	IFM Effector	Pepperl & Fuchs
• Type:	NS 5002	NJ2-V3-N
• Conformity certificate:	PTB 01 ATEX 2191	PTB 00 ATEX 2032 X
• Nominal voltage:	8.2 VDC	8 VDC
• Voltage:	5 to 25 VDC	-----
• Off state ondulation:	< 5%	-----
• Cable max. resistance:	50 Ω	-----
• Output activation:	< 1 mA	< 1 mA
• Output non activation:	< 2.2 mA	< 3 mA
• Self capacity:	< 70 nF	< 35 nF
• Self inductance:	< 190 μH	< 50 μH
• Switching frequency:	800 hz	1000 hz
• Resistance to impacts:	< 30g on 10 ms	-----
• Resistance to vibrations:	< 10g to 55 hz. a = 1 mm	-----
• Protection level:	IP 67	IP 67
• Rated operating distance:	2 mm	1,62 mm
• Output type:	NF	NF
• Connection:	Cable PVC : 2 x 0.14 mm <sup>2</sup>	Cable PVC : 2 x 0.14 mm <sup>2</sup>
• Working temperature	From - 25° C up to + 70° C	From - 25° C up to + 70° C

**Special conditions for safe use**

	IFM Effector NS-5002	Pepperl & Fuchs NJ2-V3-N
• Working ambient temperature :	From - 10° C to + 50° C	From - 10° C to + 50° C
• Max. voltage U <sub>0</sub> :	≤ 16 VDC	≤ 15,5 VDC
• Max. current I <sub>0</sub> :	≤ 50 mA	≤ 52 mA
• Max. Consumption P <sub>0</sub> :	≤ 150 mW	≤ 169 mW

**Wiring diagram**

**Barriers and Interfaces**

The barriers and interfaces recommended by KSB-AMRI can be ordered to any of the manufacturers in the following table. When ordering, specify that these components are intended for the supply of proximity detectors IFM Effector NS 5002 or Pepperl & Fuchs NJ2-V3-N.

Manufacturer	Barrier reference	Interface reference	Laboratory certificate	Gas group	Permitted areas
GEORGIN		RDN 11 RDN 211	LCIE 02 ATEX 6104 X LCIE 02 ATEX 6104 X	II C II C	Any area
AP 3	NAEV-DI 2 N-A230		LCIE 00 ATEX 6034 X	II C	
	NAEV-DI 2 N-A115		LCIE 00 ATEX 6034 X	II C	

Any other barrier or interface of different construction may be used provided it complies with regulations requirements and that the calculation and installation rules are respected.

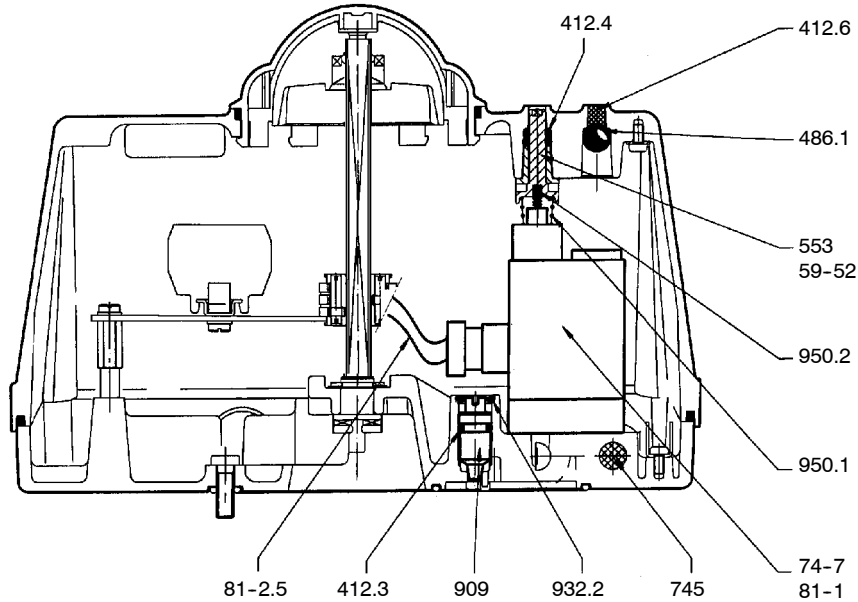
For each reference defined in the above table, KSB-AMRI can supply to the user the corresponding loop calculations.

**On/off pneumatic distribution: AMTRONIC EEx ia**



In AMTRONIC EEx ia, the on/off pneumatic distribution is added to the position detection function. This distribution function is ensured by means of a pneumatic valve with intrinsically safe solenoid valve in accordance with EN 60079-0 and EN 60079-11 standards.

**Construction**



Item	Designation	Materials
412.3	O-Ring	Nitrile
412.4	O-Ring	Nitrile
412.6	Toric rope	Nitrile
486.1	Ball	Stainless steel
553	Thrust	Acetal
59-52	Push-button for emergency control	Acetal
74-7	Electro-pneumatic valve	---
745	Filter	Bronze
81.1	Connector Ex ia ref. 81516082	Crouzet
81-2.5	Wire	Copper
909	Operating time adjustment screw	Steel
932.2	Threaded rod	Steel
950.1	Spring	Stainless steel
950.2	Spring	Steel

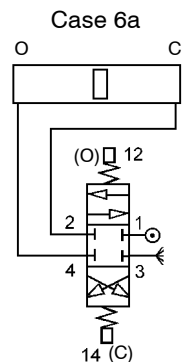
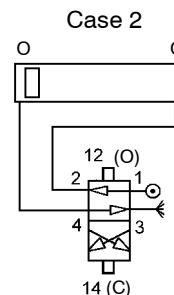
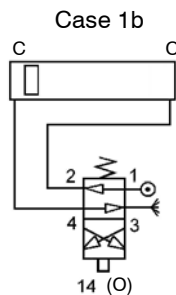
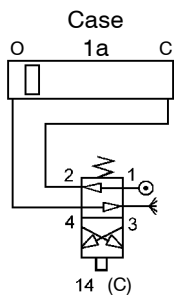
Note: in case of 4/2 monostable electro-pneumatic valve, the cover is equipped with only one push-button for emergency control and one ball. In other cases, the cover is equipped with two push-buttons.

All AMTRONIC are equipped with a bronze silencer ref. 88-5.

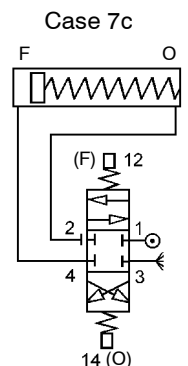
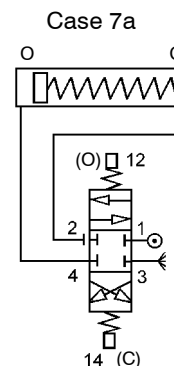
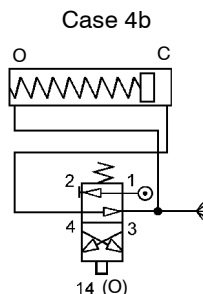
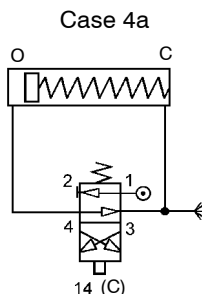

**Available configurations**
**• For ACTAIR double acting actuators**

Configuration	Case 1a	Case 1b	Case 2	Case 6a
Safety by lack of current	In open position	In closed position	In open or closed position(*)	Stand in position
Pneumatic valve	4/2 monostable	4/2 monostable	4/2 bistable	4/3 centre closed to pressure
Solenoid valve	One 3/2 NC solenoid valve	One 3/2 NC solenoid valve	Two 3/2 NC solenoid valves	Two 3/2 NC solenoid valves
Operating pressure	3.5 to 7 bar	3.5 to 7 bar	3.5 to 7 bar	3.5 to 7 bar

(\*) In bistable version, the actuator stays in the position defined by the last signal received (memory).


**• For DYNACTAIR spring return actuators**

Configuration	Case 4a	Case 4b	Case 7a	Case 7c
Safety by lack of current	In open position	In closed position	Stand in position	Stand in position
Pneumatic valve	4/2 monostable	4/2 monostable	4/3 centre closed to pressure	4/3 centre closed to pressure
Solenoid valve	One 3/2 NC solenoid valve	One 3/2 NC solenoid valve	Two 3/2 NC solenoid valves	Two 3/2 NC solenoid valves
Operating pressure	3.5 to 7 bar	3.5 to 7 bar	3.5 to 7 bar	3.5 to 7 bar

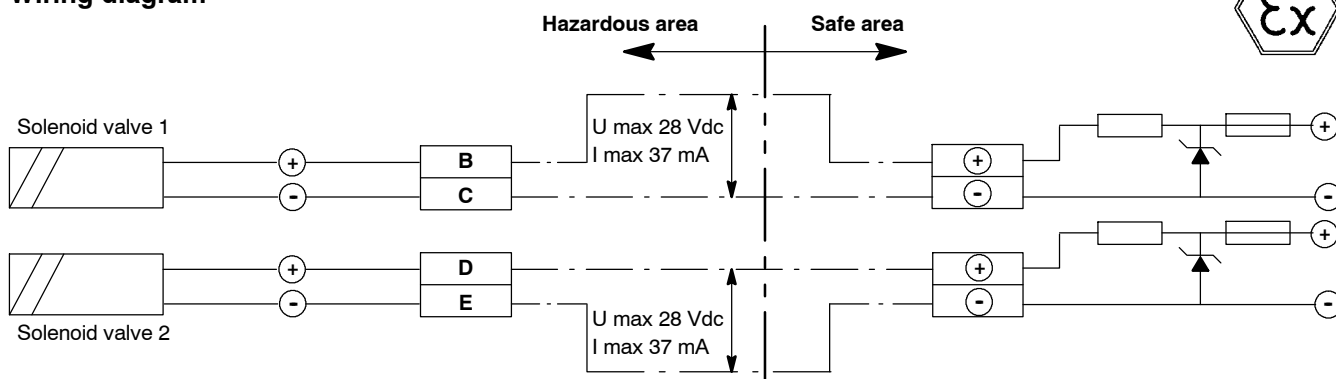



**Technical characteristics of electro-pneumatic solenoid valve**

• Manufacturer:	Crouzet
• Type:	81 519 335
• Conformity certificate:	LCIE 02 ATEX 6122 X
• Nominal voltage:	24 VDC
• Max. allowable voltage:	28 VDC
• Consumption:	≤ 0.7 W
• Manual emergency control:	By impulse
• Control fluid:	Air or neutral gas
• Operating pressure:	3 to 7 bar
• Working temperature:	From -10 °C up to +50 °C
• Fluid temperature:	From -10 °C up to +30 °C
• Changeover time:	8 to 15 ms
• Mechanical life:	< 1.5 x 10 <sup>7</sup> operations
• Working ratio:	100 %
• Isolation class:	F
• Ignition intensity:	55.5 mA
• Max. allowable intensity with k = 1.5:	37 mA
• Capacity:	0 ηF
• Resistance at + 20 °C:	580 Ω
• Resistance at - 10 °C:	> 476 Ω
• Resistance at + 50 °C:	< 690 Ω

**Special conditions for safe use**

• Working ambient temperature :	From -10 °C to +50 °C
• Max. voltage U <sub>0</sub> :	≤ 28 VDC
• Current going through the solenoid valves:	≤ 37 mA

**Wiring diagram**

**Barriers and Interfaces**

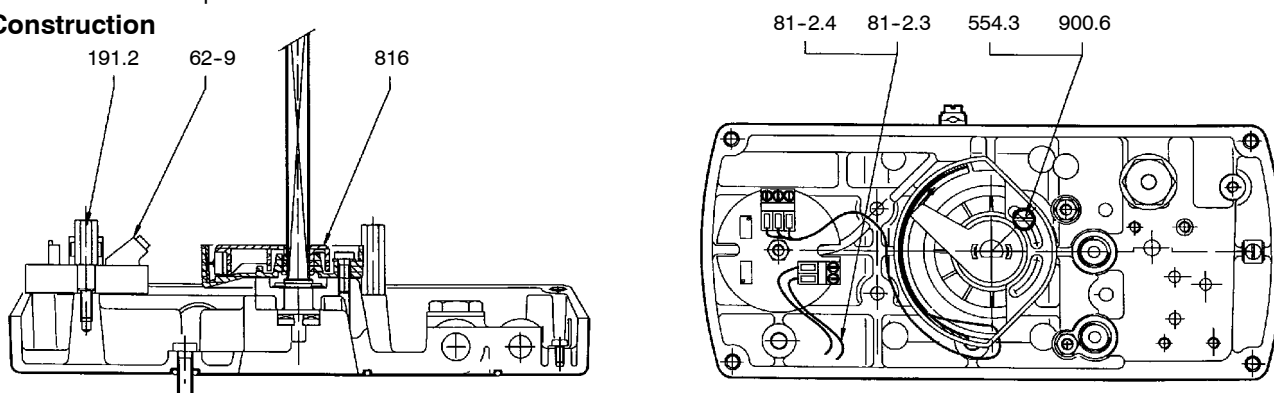
The barriers and interfaces recommended by KSB-AMRI can be ordered to any of the manufacturers in the following table. When ordering, specify that these components are intended for the supply of electro-pneumatic solenoid valve Crouzet type 81 519 335.

Manufacturer	Barrier reference	Laboratory certificate	Gas group	Permitted areas
GEORGIN	BZC 24/50/1/A1	LCIE 01 ATEX 6070 X	II C	Any area
AP 3	NAEV-...-DO2H	LCIE 00 ATEX 6034 X	II C	

**Optional feed-back position 0° to 90° by 4-20 mA signal**

This option is common to AMTROBOX EEx ia and AMTRONIC EEx ia (boxes ref. RTC 1172).

The feed-back position consists in a 4.7 kΩ on 100° potentiometric angle sensor associated with a transmitter self-supplied by the 4-20 mA current loop.

**Construction**


Item	Designation	Materials
191.2	Support	Steel
554.3	Plain washer	Stainless steel
62-9	Transmitter XT42-SI-NIV 4-20 mA	Puissance 3
81-2.3	Black wire	Copper
81-2.4	Red wire	Copper
816	Angle sensor sub-assembly	---
900.6	Cheese-head screw	Zinc coated steel

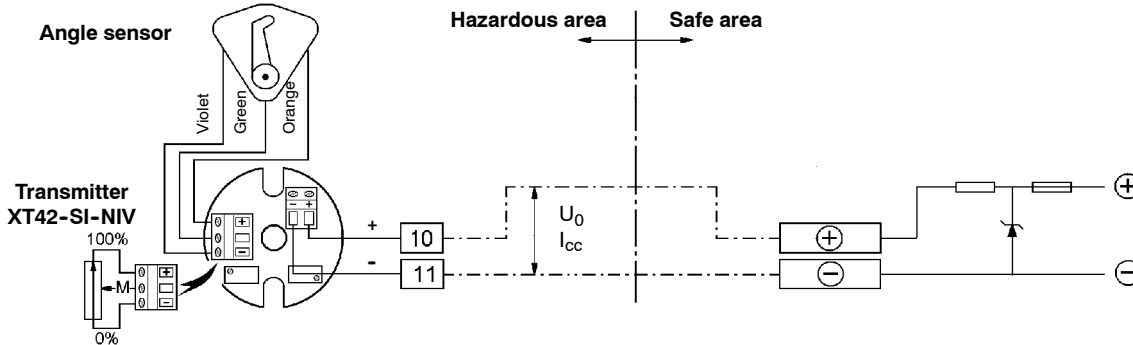


**Wiring diagram**

The wiring of the angle sensor and transmitter assembly is carried out in workshop, the connection to the current loop is through the terminal no. 10 for ⊕ and on the terminal no. 11 for ⊖.

Two adjustments are available for the zero adjustment (4 mA) and the gain (20 mA).

When the AMTRONIC EEx ia box is delivered with its actuator, the assembly is preadjusted in workshop.



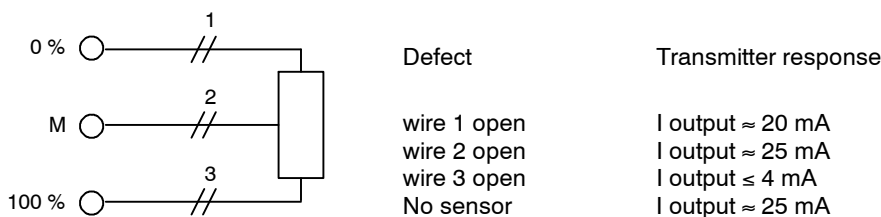
**CAUTION !**

The intrinsically safe parameters concerning the elements could be connected on the terminals 10 and 11, must not exceed the values below:

$U_0$	$P_0$	$C_0$	$L_0$	$I_{cc}$
30 V	820 mW	60 nF	50 mH	27,5 mA
27 V	980 mW	90 nF	40 mH	30,0 mA
24 V	990 mW	120 nF	51 mH	26,5 mA
21 V	870 mW	190 nF	62 mH	23,5 mA
18 V	750 mW	290 nF	90 mH	20,0 mA

Manufacturer	Barrier reference	Interface reference	Laboratory certificate	Gas group	Permitted areas
GEORGIN	BZC 24/50/1/A1 BZC 24/50/22/A1		LCIE 01 ATEX 6070X	II C	Any area
	Converter BXNT1		LCIE 02 ATEX 6104 X	II C	
AP 3		PROF SI 38-...-PAS	LCIE 03 ATEX 6078 X	II C	

**Detection of faulty box or angle sensor connections.**



**Pneumatic supply - Pneumatic connection for AMTRONIC**

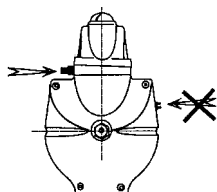
The pneumatic valve works with 50 μ filtered air.

Before pneumatic connection, check the pipe is without impurities, mainly when starting-up.

As a measure of safety, the box is equipped with a filter in the input port in order to prevent the clogging of the pneumatic distributor with the impurities.

This filter can be replaced if it is clogged (the distributor don't work): extract it by means of a screw and put in the port a new clean filter.

Working pressure from 3.5 to 7 bar (50 to 102 psi).



- Pressure connection: port marked "P".
- Exhaust connection: port marked "E" fitted with a silencer or connectable to exhaust network.



## Commissioning



**CAUTION !**

**WARNING**

The installation and start-up of the electro-pneumatic actuators must be according to the best safety practices and mainly:

**Piping:**

Starting-up of a new installation requires cleaning the piping by air before connection to the actuator. This will remove any impurities impossible to eliminate during construction (fillings, flux, paste, PTFE, etc.).

As a safety measure, the box is equipped with a filter in the input port to prevent clogging of the air valve by impurities. This filter can be replaced (if clogged, the air valve does not work) by extracting it by means of a screw and inserting a new clean filter.

**Electric wiring:**

- The electric components are "CE" marked in accordance with 94/9/EC and 2004/108/EC european directive.
- The electric supply voltage and the electric values of the signals must be checked before connecting the components.
- The components of the intrinsically safe electric loops should be checked to ensure the inputs and outputs as well as wiring, do meet the regulations in force.  
KSB-AMRI shall keep at the disposition of users the loop calculations for the recommended associated equipment.
- An external earth terminal allows grounding of the metal parts of the control box.

**Never exceed the values stipulated in this leaflet!**

This box is a pressurized electric device. As such, it may be a source of danger for property or even personnel. Any excess of these values may cause damage.

**Never uncouple or disassemble the AMTRONIC EEx ia box or its accessories when pressurized or energized.**

Always make sure that the actuator chambers are free from air pressure by pushing on the buttons for emergency control of the pilots before disassembling the pneumatic valve, solenoid valves or the box itself.

Also, always check that the fieldbus wires are disconnected before carrying out any disassembly.

During the mounting and dismantling of the boxes, take care the correct installation of all sealing gaskets. Quality and integrity depends of this correct installation.

**During workshop or on-site checking, the valve associated with the actuator and its AMTRONIC EEx ia box can be operated from full open to full closed position.**

**This operation may be of a high significant risk of personal injury if the safety steps required are not taken to prevent access between the disc and the seat.**

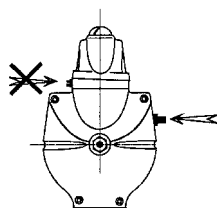
### Electric connections

The electric connection is obtained via 2 packing-gland PG 13,5 (plastic or stainless steel).  
Gland capacity: cable external dia. 8 to 13 mm, wiring to be connected to spring terminal max. are 2.5 mm<sup>2</sup>.  
The good tightness of the box depends on cable selection and the tightening level of the packing-gland.

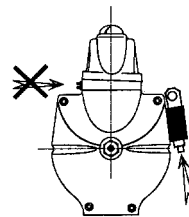
### Pneumatic connection

#### AMTROBOX EEx ia

The pneumatic connection is done directly on the actuator or on the solenoid valve fitted on the actuator



Direct connection



Connection on solenoid valve

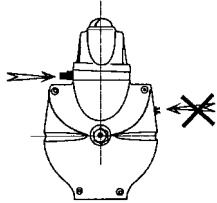



**AMTRONIC EEx ia**

The pneumatic valve works with 50 µm filtered air. Working pressure from 3.5 to 7 bar (50 to 102 psi).

Before connecting pneumatic supply, check the piping is clean, without any impurities, mainly when starting-up of a new installation.

As a measure of safety, the box is equipped with a filter in the input port in order to prevent the clogging of the distributor with impurities. This filter can be cleaned if clogged (in this case, the air valve does not work): extract it by means of a wood screw and clean it with solvent or compressed air.



- Direct connection on AMTRONIC.
- Working pressure: 3.5 to 7 bar (50 to 102 psi).
- Pressure connection: port marked "P".
- Exhaust connection: port marked "E" fitted with a silencer or connectable to exhaust network.

**Operating time adjustment (AMTRONIC EEx ia)**

The operating time can be adjusted by means of two independent flow adjusters: one for opening and one for closure time. Depending on the actuator type, the operating times can be adjusted as stated in the following table.

Double acting actuators		
Type	Operating time	
	minimum	maximum
ACTAIR 3	1 second	5 seconds
ACTAIR 6	1 second	7 seconds
ACTAIR 12	2 seconds	15 seconds
ACTAIR 25	3 seconds	20 seconds
ACTAIR 50	4 seconds	30 seconds
ACTAIR 100	6 seconds	40 seconds
ACTAIR 200	9 seconds	60 seconds
ACTAIR 400	15 seconds	120 seconds
ACTAIR 800	30 seconds	150 seconds
ACTAIR 1600	60 seconds	180 seconds

Spring return actuators		
Type	Operating time	
	minimum	maximum
DYNACTAIR 1.5	2 seconds	5 seconds
DYNACTAIR 3	2 seconds	7 seconds
DYNACTAIR 6	2 seconds	15 seconds
DYNACTAIR 12	4 seconds	20 seconds
DYNACTAIR 25	6 seconds	30 seconds
DYNACTAIR 50	10 seconds	40 seconds
DYNACTAIR 100	15 seconds	60 seconds
DYNACTAIR 200	40 seconds	120 seconds
DYNACTAIR 400	75 seconds	150 seconds
DYNACTAIR 800	150 seconds	180 seconds

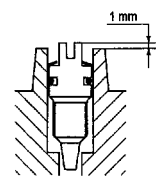
For a shorter operating time than the min. one or for a longer operating time than the max. one, please consult us.

**CAUTION!**

The set screws of the exhaust flow rate adjusters are under line air pressure.

THEREFORE they must not be excessively unscrewed otherwise the screws may be expelled by the pressure.

The top of the screw must not protrude from its hole by more than one millimetre.

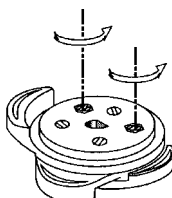

**Open/close position detection adjustment**

The limit switches or detectors are factory adjusted.

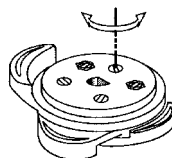
It is not necessary to re-adjust before valve mounting on site.

Nevertheless, if you wish to re-adjust after a maintenance operation, proceed as follows:

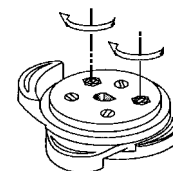
- Remove the cover of the box.
- Put the disc in extreme position (opening or closing).
- Unscrew the two metal screws one turn.
- Adjust triggering of the required detector by turning the coloured screw corresponding to the colour of the cam to adjust.
- Proceed in the same manner with the opposite switch.
- Each cam is adjusted independently and the adjustment does not affect in any way the adjustment of the other cam.
- When adjustments are completed, slightly tighten the two metal screws to prevent adjustments being changed.
- Replace the cover of the box.



1 - Loosen the metal screws



2 - Adjust the cams



3 - Tighten the metallic screws



### Angle sensor adjustment

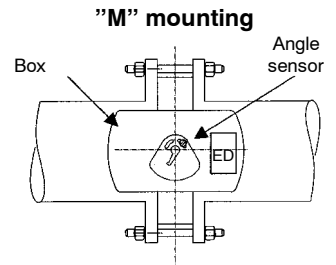
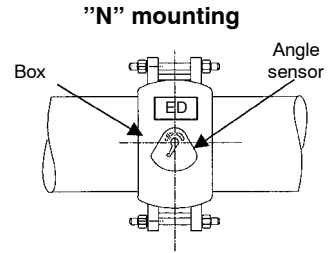
The Box / Actuator assemblies are delivered for **“N” mounting** on the valve. Any other mounting must be specified when ordering and requires a modification to the position of the angle sensor.

If the actuator is designed for an **“M” mounting**, it is necessary to change the position of the angle sensor in compliance with the opposite diagram.

To perform this operation, it is necessary to previously remove the cover and to disassemble the following in the given order:

- the control solenoid valves (AMTRONIC EEx ia),
- the pointer,
- the securing plate with the position detectors,
- the angle sensor attachment screw.

Now turn the angle sensor casing 90° and repeat the previous operations in reverse order.



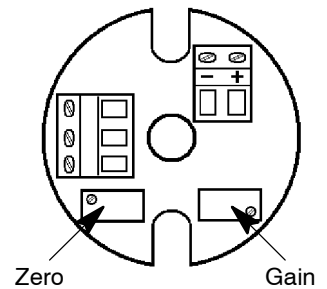
### 4-20 mA feed-back position adjustment

When the box is delivered with its actuator, the transmitter is preadjusted in workshop. It is not necessary to re-adjust it before valve mounting on site.

Nevertheless, if you wish to re-adjust it after a maintenance operation, proceed as follows:

- rRmove the cover of the box.
- Remove the electric pilots (AMTRONIC EEx ia).
- Remove the supporting plate of the position detectors to access to the transmitter.
- Two adjustments are available for the zero adjustment (4 mA) and the gain (20 mA).
- Repeat the previous operations in reverse order.

- |                           |                     |
|---------------------------|---------------------|
| Zero adjustment (4 mA) :  | ± 5 %               |
| Gain adjustment (20 mA) : | ± 10 %              |
| Accuracy :                | ± 1 % of full scale |





## EC declaration of Conformity

Hereby we,

**KSB S.A.S.**  
**Zone industrielle Gagnaire Fonsèche**  
**24490 LA ROCHE CHALAIS**  
**Registered Office: 92635 - Gennevilliers**  
**France**

declare that the automation boxes used in potentially explosive gaseous or dusty atmosphere and listed below comply with the requirements of the Directives 94/9/EC and 2004/108/EC (EMC).

Description of automation boxes:

- AMTRONIC R1172
- AMTRONIC RTC1172
- AMTROBOX R1172

As per harmonized european standards:

**Electrical equipment for potentially explosive atmosphere;**  
 - EN 60079-0 (2004); EN 60079-11 (2007)

**Electromagnetic compatibility;**  
 - EN 61000-6-2 ; EN 61000-6-4

Electrical equipment suitable for:

**Group II category 1 (zone 0)**

Marking:

 **II 1 G - Ex ia IIC T6**  
**LCIE 03 ATEX 6435X/01**

Manufacturing Quality Assurance notification:

**L.C.I.E. 03 ATEX Q 8078**

Name and address of the authorizing and monitoring notified body:

**L.C.I.E.**  
**33, avenue Division Leclerc**  
**92260 FONTENAY-AUX-ROSES**  
**FRANCE**

Number of notified body:

**0081**

Michel Delobel

Quality Assurance

06/12 - rev.4

This document was prepared electronically and is valid without signature.

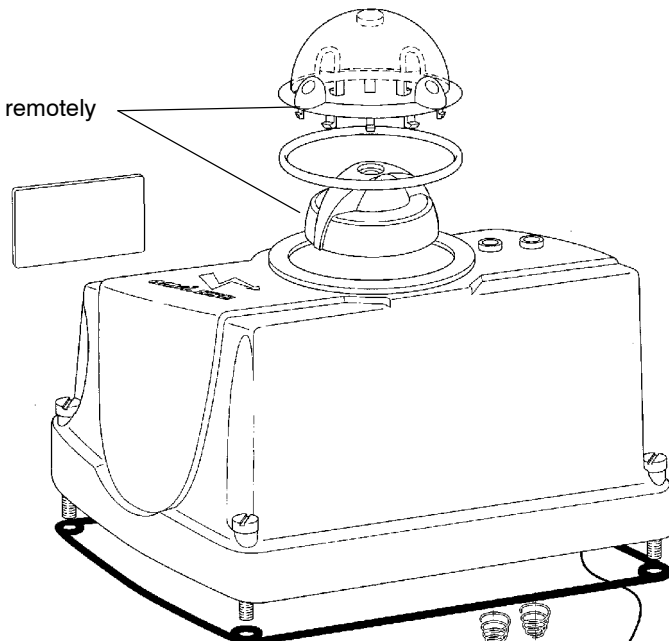
Its implementation in the public domain validates his condition.



Product features - to our Customers' Benefit

**Pointer under transparent sight glass**

The valve position is visible remotely



**Adjustable cams**

The detection position is adjustable on the full stroke of the valve

**Position detection**

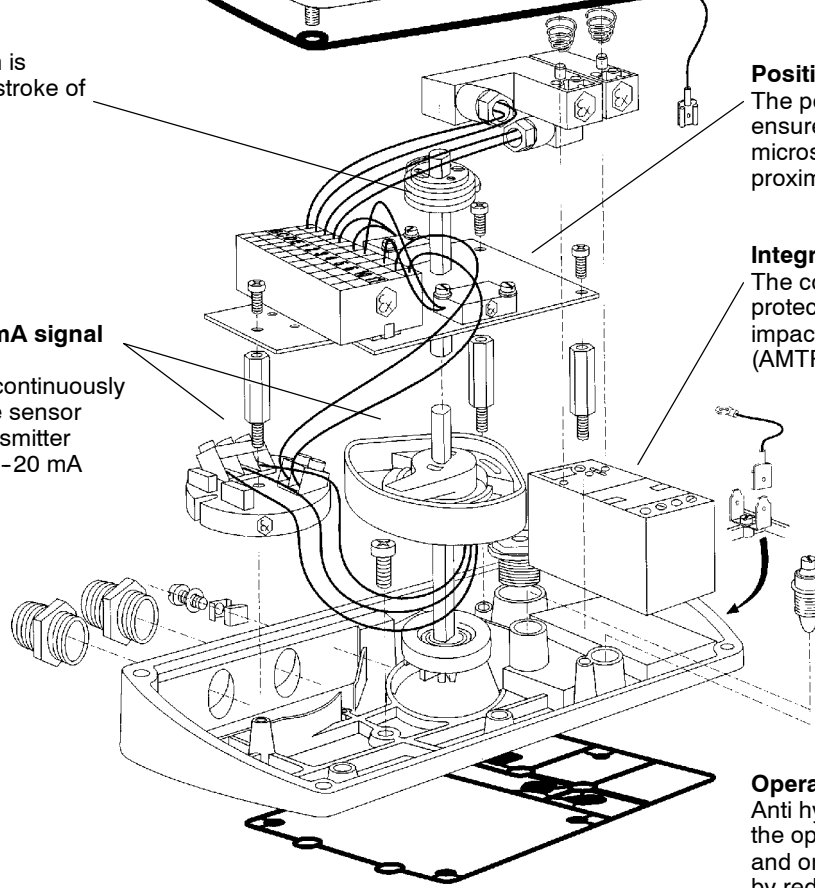
The position detection is ensured by intrinsically safe microswitches or inductive proximity detectors

**Feed-back position 0° to 90° by a 4-20 mA signal (option)**

The valve position is continuously conveyed by an angle sensor associated with a transmitter self-supplied by the 4-20 mA current loop

**Integrated pneumatic valve**

The control equipments are protected by the housing against impacts, corrosion and dust (AMTRONIC EEx ia)



**Operating time adjustment**

Anti hydraulic shocks system: the operating time, on opening and on closing, can be adjusted by reducing the air flow on the exhaust (AMTRONIC EEx ia)

This leaflet is not contractual and may be amended without notice.

26.06.12

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