

1160-1164 BUTTERFLY VALVES + SA ELECTRIC ACTUATOR

FEATURES

The butterfly valves 1160 to 1164 are dedicated to the automatic opening/shut-off of various fluid pipes. It has a ductile iron body. Thanks to various material possibilities for both the butterfly and the sleeve, it can be used in different applications. The lug type body enables the mounting on PN10/16 flanges. This type of attachment enables the dismantling of pipes or other devices without draining the whole system. The ISO 5211 pad enables the direct mounting of the SA electric actuator. It is perfectly adapted for an indoor or outdoor industrial use.



SA



SA-X 05



with SA-X 05



EAC

AVAILABLES MODELS

DN 32 to DN 125.

Flanged connections PN16.

Supply voltages : 12 Vdc, 24 Vac-dc and 230 Vac.

LIMITS OF USE

Fluid pressure : WP	16 bar
End-of-pipe mounting	6 bar
Fluid temperature: WT°	According to the table below
Ambient temperature	-20°C / +70°C
Service factor	S2-15mn - S4 : 50 % (SA 05)
	S2-15mn - S4 : 30 % (SA 09)



Ref.	Butterfly	Liner	Example of applications	WT° min	WT° max
1160	GS cast iron	EPDM	Cold water – warm water (110°C at peak) - ACS	-20°C	+110°C
1161	316 SS	NBR	Hydrocarbon, natural gas, compressed air	-10°C	+90°C
1162	GS cast iron	NBR	Hydrocarbon, natural gas, compressed air	-10°C	+90°C
1163	316 SS	EPDM	Demineralised water – alkalis (110°C at peak) - ACS	-20°C	+110°C
1164	316 SS	FPM	Compatible aggressive fluids, petrol	-5°C	+180°C
1168	316 SS	White NBR		-10°C	+80°C
1181	GS cast iron	NBR	Natural gas – NF-ROB GAZ authorisation 5 bar	-20°C	+60°C

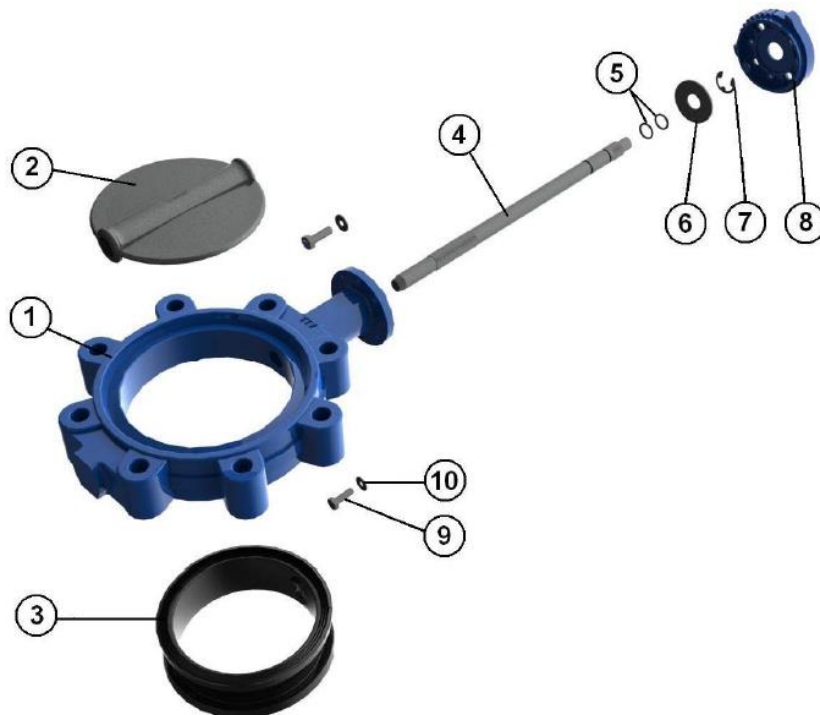
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DIRECTIVES AND MANUFACTURING STANDARDS

OBJET	Standard	ON	OBJET	Standard
2014/68/EC Pressure Equipment Directive	DN40 to DN50 : Cat I	0409	Final test	ISO 5208
	DN65 to DN200 : Cat II			
	DN250 to DN300 : CAT III			
ATEX DIRECTIVE	II 2G/D Tx zones 1,2,21 and 22	0038	Face-to-face dimension	ISO 5752 series 20
Flanges dimension	EN 1092-1		Racc. Motorisation	ISO 5211
Sanitary compliance	ACS			



CONSTRUCTION

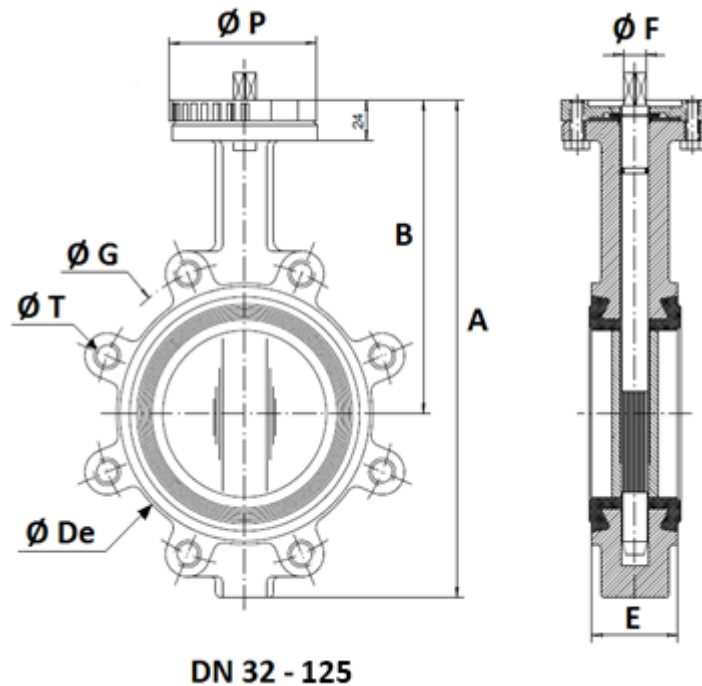
No.	Name	1160	1161	1162	1163	1164	1168	1181
1	Body	GS EN GJS-500-7 cast iron						
2	Butterfly DN32-100	1.4408 SS						
2	Butterfly DN125-400	GS EN GJS-500-7 cast iron			1.4408 SS			GS cast iron
3	Liner	EPDM	NBR	NBR	EPDM	FPM	White NBR	NBR
4	Stem	420 SS	304 SS	420 SS	304 SS	304 SS	304 SS	420 SS
5	O-ring	NBR	NBR	NBR	NBR	FPM	NBR	NBR
6	Ring	steel						
7	Circlips	steel						
8	ISO mounting pad	aluminium						
9	Screw	5.6 steel						
10	Washer	steel						

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DIMENSIONS (mm)



DN	32-40	50	65	80	100	125
A	205	226	246	259	295	325
B	140	156	161	169	187	206
Ø De	83	102	115	136	157	192
E	33	43	46	46	52	56
Ø F	9.5	9.5	12	14	14	17
Ø G (PN10)	100/110	125	145	160	180	210
Ø G (PN16)						
Ø P	88	88	88	88	88	105
Ø T (PN10)	4xM16	4xM16	4xM16	8xM16	8xM16	8xM16
Ø T (PN10)						
Weight (kg)	2,7	4,1	4,7	6,1	7,9	10,9

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FLOW-RATE COEFFICIENT Kv (m³/h)

DN	Opening angle								
	10°	20°	30°	40°	50°	60°	70°	80°	90°
40	3	4	8	17	25	35	45	56	70
50	3	6	14	22	37	60	95	147	164
65	4	7	10	22	48	78	140	160	201
80	5	12	29	52	88	156	216	281	359
100	9	21	48	87	147	234	346	519	627
125	19	35	78	148	232	372	562	761	995

Head loss calculations :

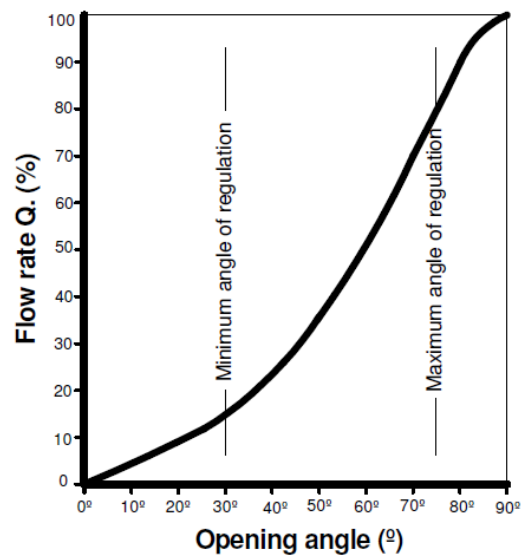
$$\Delta p = (Q / K_v)^2 \times SG$$

Q : flow in m³/h

Δp : Head loss in bar

SG : Specific gravity (= 1 for water)

Kv : Volume of water in m³/h, that will flow through a given restriction or valve opening with a pressure drop of 1 bar at 20°C.



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SA ELECTRICAL MOTORIZATION

The SA motorization proposed as a standard extends to:

- IP67 epoxy coated aluminium housing for actuator and steel gear box,
 - safety coefficient of 1.3 minimum compared to the nominal torque of the valve,
 - upstream / downstream pressure difference $\Delta P=10$ bar max,
- The actuator assembly is of the direct type, with aluminium motorization mounting pad.

DN	Actuator	Power (W)	Intensity 230V AC	Intensity 24V AC-DC	Time (s)*	Standard equipment of the actuator
32	SA 05	6 W	0,23 A	1,8 A	17 s	2 adjustable limit switches 2 dry auxiliary contacts Anti-condensation heater 5W Thermal protection of the motor Stand-by manual control with key Backlit position indicator (apart from SA-X) Electrical connection: 2 P.E. M20x1.5
40	SA 05	6 W	0,23 A	1,8 A	17 s	
50	SA 05	6 W	0,23 A	1,8 A	17 s	
65	SA 05	6 W	0,23 A	1,8 A	17 s	
80	SA 05	6 W	0,23 A	1,8 A	17 s	
100	SA 05	6 W	0,23 A	1,8 A	17 s	
125	SA 09	6 W	0,23 A	1,8 A	17 s	
150	Voir 1160 + actuator NA					
200*						
250*						
300*						

For any other operating conditions, please contact us.

* indicative time for actuator running empty

MOTORIZATION OPTIONS

There are many options for which you are invited to contact our sales service :

There are many options for which you are invited to contact our sales service :				
1	2	3	4	5
SA 05 S : Slow actuator 100 s	SA 05 PCU : 4-20mA or 0-10V proportional control unit actuator	SA 05 SCP : super capacitor safety actuator	SA 05 X : zone ATEX 1 and 2 actuator	SR 05 : spring return fail safe actuator
				
6	SA PUI actuator with feedback potentiometer			
7	actuator dimensioned for an upstream / downstream pressure difference ΔP greater than 10 bar			
8	NA actuator with override by handwheel			
OPTIONS ON THE VALVE				
1	Carbon steel body, 304 and 316 SS, bronze and aluminium			
2	Carbon steel butterfly, 304 and 316 SS, copper-alu, Uranus, Hastelloy			
3	Hypalon liner, silicone steam, white EPDM, natural rubber, neoprene, vulcanized			
4	Stems of 420, 304, 316 SS, Hastelloy			

INSTALLATION IN AN ATEX AREA

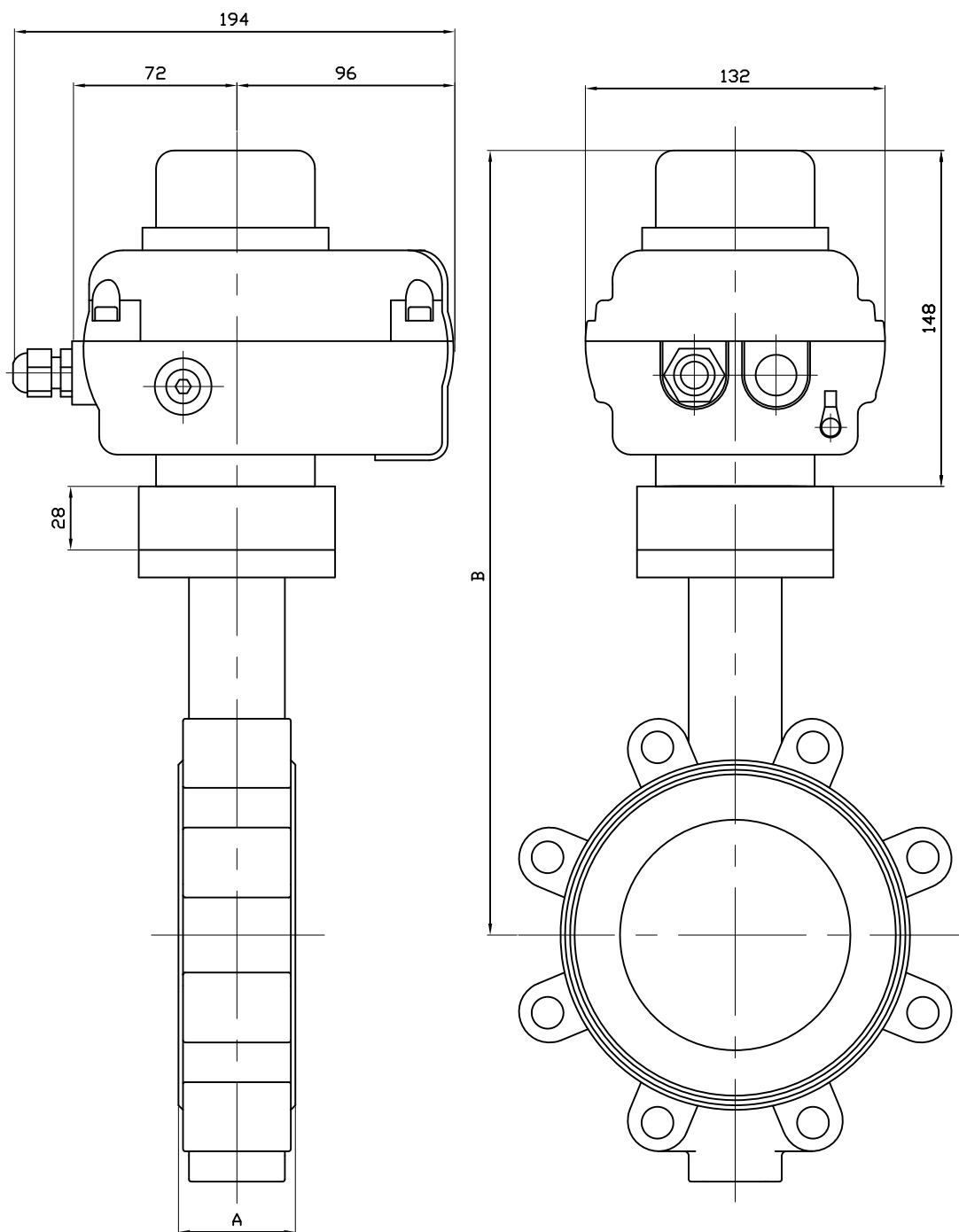
For automatic valves 1160+SA-X to be installed in the ATEX 1 or 2 areas, this has to be specified when ordering. Our services will check of the assembly, the installation of an earthing braid, and will issue an assembly certificate. Our authorized technicians carry out these operations in the workshop. Please contact us.

The special assembly and maintenance instructions for motorized valves in the ATEX areas must be followed. The ATEX glands and plug are not included in the supply. Use the following codes:

Presse-étoupe aluminium M20x1,5 ATEX	Code 980179	Bouchon aluminium M20x1,5 ATEX	Code 980180
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DN	32/40	50	65	80	100
A	33	43	46	46	52
B	301	315	321	333	346
KG	5.7	7.1	7.7	9.1	10.9

Informations données à titre indicatif et sous réserve de modifications éventuelles
data subject to alteration

				Ajout poids	06/06/2012	A
Ech: /	Date :05/10/2006	Dessiné par : L.L	Tolérances générales : +/- 0.2	Modifications	Date	REV.
ROBINET A PAPILLON 1160-1168/BUTTERFLY VALVE 1160-1168 + SERVOMOTEUR SA05/ELECTRIC ACTUATOR SA05				Matériau :		
				Poids (Kg) :		
				Traitement : SANS		
 45, Rue du Ruisseau 38297 SAINT QUENTIN FALLAVIER				Plan n° Ens 1009A		

SA 05 - SA 09 ELECTRIC ACTUATOR

FEATURES

The SA 05 / SA 09 electric actuator are intended for motorising industrial 1/4 turn valves. The torques are 50 Nm and 90 Nm. With a compact, robust construction and IP67 epoxy-coated aluminium housing, the SA actuator is especially well suited for motorising ball valves and butterfly valves installed in workshops or outdoors. The SA has a manual key control and a 3D visual position indicator. Compliant with the EN 15714-2 standard.

AVAILABLE MODELS

Supply voltages: 230 Vac (50-60Hz), 24 Vac/dc and 12 Vdc.

Options: 110 Vac, feedback potentiometer, local command.



LIMITS OF USE

IP rating	IP 67
Ambient temperature	- 20°C / +70°C
Service factor	S2: 15mn - S4: 50% (SA 05)
	S2: 15mn - S4: 30% (SA 09)



MECHANICAL FEATURES

Gear box	treated steel pinions
Torque	50 Nm / 90 Nm
Angle of rotation	90° +/- 5°
Declutching	Without
Override control	by key (except for SA 05 S)

Actuator	SA 05 / SA 09			SA 05 S	
Voltage	230V AC	24V AC/DC	12V DC	230V AC	24V AC/DC
Torque (Nm)	50 / 90			50	
Manoeuvring time (s)	17 / 32	10 / 22	11 / 25	100	100
ISO 5211	F03/F05/F07 star 14				

ELECTRICAL FEATURES

Motor protection	Thermal switch	Anti-condensation	5W heater
Limit switches	2 adjustable switches	Electrical connection	2 x P.E. M20x1.5
Auxiliary switches	2 adjustable dry switches		

Actuator	SA 05 / SA 09			SA 05 S	
Voltage	230V AC	24V AC/DC	12V DC	230V AC	24V AC/DC
Power (W)	6 W	15 W	6 W	6 W	6 W
Current (A)	0,23 / 0,25	1,8 / 2,1	3,2 / 3,4	0,23	1,8

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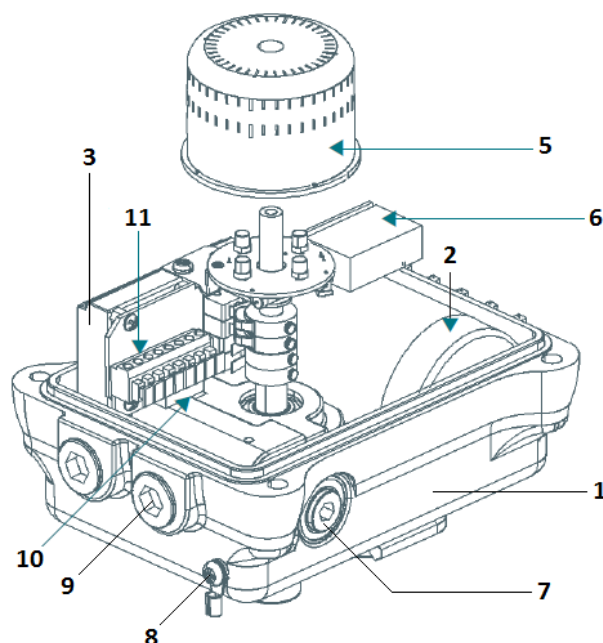
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Telephone: +33 4 74 94 90 70 - Fax: +33 4 74 94 13 95
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SA 05 - SA 09 ELECTRIC ACTUATOR

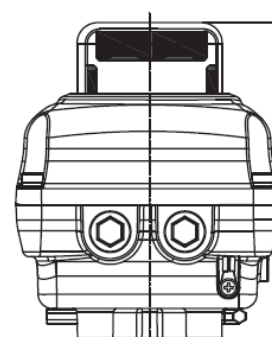
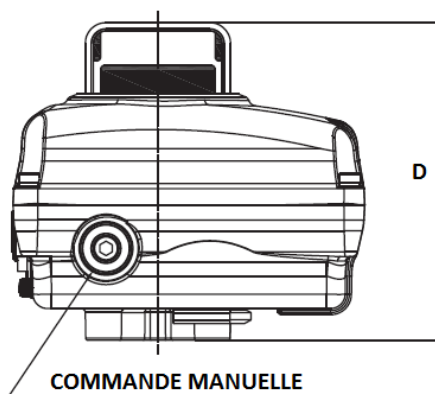
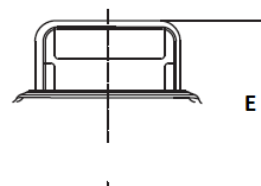
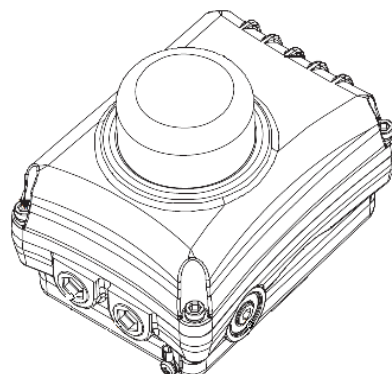
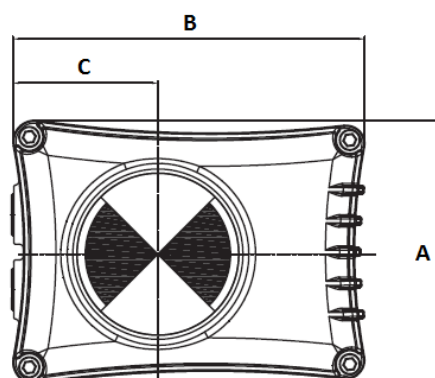
CONSTRUCTION

1	Housing	Polyester-coated aluminium
2	Electrical motor	
3	Gear box	Treated steel pinions
4	Cover	Polyester-coated aluminium
5	Position indicator	Polycarbonate plastic
6	Condenser	
7	Handle override	
8	Earthing	
9	Cable inlet	
10	Anti-condensation heater	
11	Terminal box	



DIMENSIONS (mm) AND WEIGHT (kg)

Dimensions (mm)	A	B	C	D	E	Weight (kg)
SA 05 / SA 09	127	170	70	153	80	3.2



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SA 05 - SA 09 ELECTRIC ACTUATOR

WIRING DIAGRAM 230V AC 50Hz/60Hz

1	common	CLS : Close Limit Switch (250VAC 3A) OLS : Open Limit Switch (250VAC 3A) ACLS : Aux Close Limit Switch (250VAC 3A) AOLS : Aux Open Limit Switch (250VAC 3A) TP : Thermal Protector (250VAC 3A) RM : Motor Regulation
2	anti-condensation heater	
3	closing command	
4	opening command	
5	closing auxiliary	
6	closing auxiliary	
7	opening auxiliary	
8	opening auxiliary	

WIRING DIAGRAM 24V AC/DC-12V DC

1	common or +	CLS : Close Limit Switch (250VAC 3A) OLS : Open Limit Switch (250VAC 3A) ACLS : Aux Close Limit Switch (250VAC 3A) AOLS : Aux Open Limit Switch (250VAC 3A) TP : Thermal Protector (250VAC 3A) RM : Motor Regulation
2	closing command	
3	opening command	
4	closing auxiliary	
5	opening auxiliary	
6	auxiliaries common	
7	anti-condensation heater power supply	
8	anti-condensation heater power supply	

OPTIONS

1	SA 05 / SA 09 X: version for ATEX zone
2	SA 05 / SA 09 PIU: version with feedback potentiometer
3	SA 05 / SA 09 CPT: version with position transmitter 4-20 mA
4	SA 05 / SA 09 PCU: version with adjustment card 0-10, 2-10V, 2-20 mA, 4-20 mA
5	SA 05 / SA 09 LCU: version with local control
6	SA 05 / SA 09 SCP: version with super capacitor safety

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SA 05 - SA 09 ELECTRIC ACTUATOR

SPARE PARTS

SA05 Electric actuator	
Gear box	
Printed circuit board	
Electrical motor	
Pinion	
https://www.sectoriel.com/fr/sa05-servomoteur-electrique-aluminium-1-4-tour-50-nm-on-off-ip67.html	

SA09 Electrical actuator	
Gear box	
Printed circuit board	
Electrical motor	
https://www.sectoriel.com/fr/sa09-servomoteur-electrique-aluminium-1-4-tour-90-nm-on-off-ip67.html	

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SA 05 - SA 09 ELECTRIC ACTUATOR

ASSEMBLING AND MAINTENANCE INSTRUCTIONS



SA05 - SA05S - SA09



SA05X - SA09X

1. DESCRIPTION

- 1.1 Electric actuator for motorising 90° turn valves.
- 1.2 The full features of this device are given in sheet FT23010 / FT23310.
- 1.3 Before operating this device, read the present instructions carefully.

2. GUARANTEE

- 2.1 Before any contact with our services, identify the type of actuator.
- 2.2 SECTORIEL actuators have a 12-month guarantee from the delivery date. Parts recognized as defective by an assessment at our facility, will be replaced at our expense. Complaints generated by incorrect use or a modification of the actuator cannot be taken into account.

3. VERIFICATIONS AND ACCEPTANCE

- 3.1 At acceptance, check that:
 - the packaging is in good condition;
 - the actuator is as ordered;
 - the equipment is not damaged.
- 3.2 It is recommended to install the actuator as soon as accepted and not to leave it unused. If the equipment has to be stored, it has to be in a dry place protected from weather.

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SA 05 - SA 09 ELECTRIC ACTUATOR

4. PRECAUTIONS FOR OPERATION

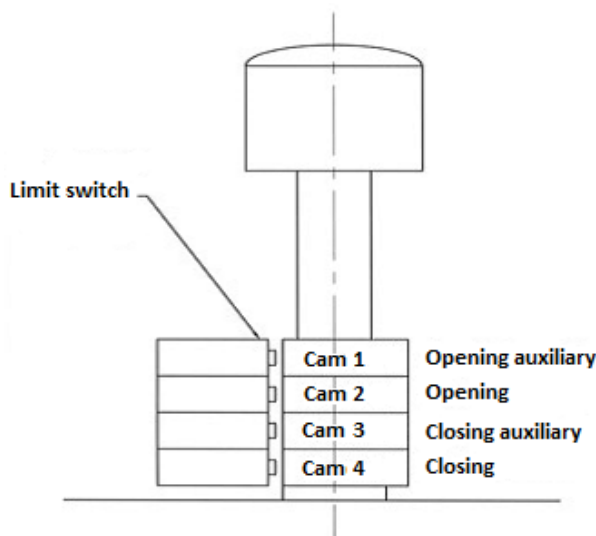
- 4.1 Before installing, make sure that the installation is completely depressurized and brought to ambient temperature.
- 4.2 In a zone classified as explosive, install only model SA05X / SA09X.
- 4.3 The protection class of the actuator is IP67 for indoors or outdoors installation. Do not install this actuator in a marine environment and do not immerse it.
- 4.4 The actuator must not be electrically powered during the installation and maintenance of the valve on the pipework, and of the actuator on the valve
- 4.5 Before proceeding to the electrical connection, check the supply voltage of the actuator.
- 4.6 Do not mount the actuator in series or in parallel with other electrical motors. If need be, use relays.
- 4.7 Do not mount the actuator on valves with higher torque than the nominal torque of the actuator.
- 4.8 The anti-condensation heater must be wired, indoors and outdoors, on special applications.

5. INSTALLATION AND OPERATION

- 5.1 Install the actuator on the valve (already done for units assembled in our workshops)
- 5.2 Perform the electrical wiring as shown in the diagram below.
- 5.3 Adjust the switch stops (already done for units assembled in our workshops).
- 5.4 View the valve's movement using the indicator light on the cover.
- 5.5 SA05 / SA09 and SA05X / SA09X actuator: to actuate the handle override, first disconnect the electrical power supply, then turn the hollow hex-head screw with an Allen key.
No handle override for SA05S.
- 5.6 SA05X actuator: the electrical connection must be carried out using an ATEX approved cable gland (CG) CG M20x1.5 which corresponds to the same operation zones as SA05X / SA09X.
SA05X has 2 connections M20x1.5. If using only one CG ATEX cable gland, the 2nd connection must be provided with an ATEX-approved plug which corresponds to the same operation zones as SA05X / SA09X.
CG and ATEX plug are not provided as standard. Option when ordering.

6. SWITCH SETTING

- 6.1 The cams are attached to the drive stem.
- 6.2 Clockwise rotation = valve closing. The micro-switch stops the actuator.
- 6.3 Anti-clockwise rotation = valve opening. The micro-switch stops the actuator.



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SA 05-X - SA 09-X ELECTRIC ACTUATOR

FEATURES

SA05-X - SA09-X electric actuators are intended for motorising 1/4 turn valves in hazardous areas. The torque are 50 Nm (SA05-X) and 90 Nm (SA09-X). The protection mode is a "d" explosion-proof. With a compact, robust construction and IP67 epoxy-coated aluminium housing, the SA05-X and SA09-X actuator are especially well suited for motorising ball valves and butterfly valves installed in hazardous areas. The SA05-X and SA09-X are equipped with a key-operated hand control and a 3D visual position indicator. It is compliant with the EN 15714-2 standard.

AVAILABLE MODELS

Supply voltages: 230V AC (50-60Hz), 24V AC/DC.

LIMITS OF USE

IP Code	IP 67
Ambient temperature	- 20°C / +55°C
Service factor	S2 : 15mn - S4 : 50%



ATEX APPROVAL

Protection mode	"d" according to the EN 60079-1 standard
Category of material	2
Operation zones	1G and 2G
Marking	II 2 G Ex d IIB T4 (ON KEMA no. 0344)



MECHANICAL FEATURES

Gear box	treated steel pinions
Torque	50 Nm (SA05-X) / 90 Nm (SA09-X)
Angle of rotation	90° +/- 5°
Declutching	Without
Override control	By key

Actuator	SA05-X (50Hz)		SA05-X (60Hz)	SA09-X (50Hz)	SA09-X (50Hz)	SA09-X (60Hz)
Voltage	230V AC	24V AC/DC	230V AC	230V AC	24V AC/DC	230V AC
Torque (Nm)	50		50	90		90
Manoeuvring time (s)	17	10	14	36	17	30
ISO 5211	F03/F05/F07 star 14					

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SA 05-X - SA 09-X ELECTRIC ACTUATOR

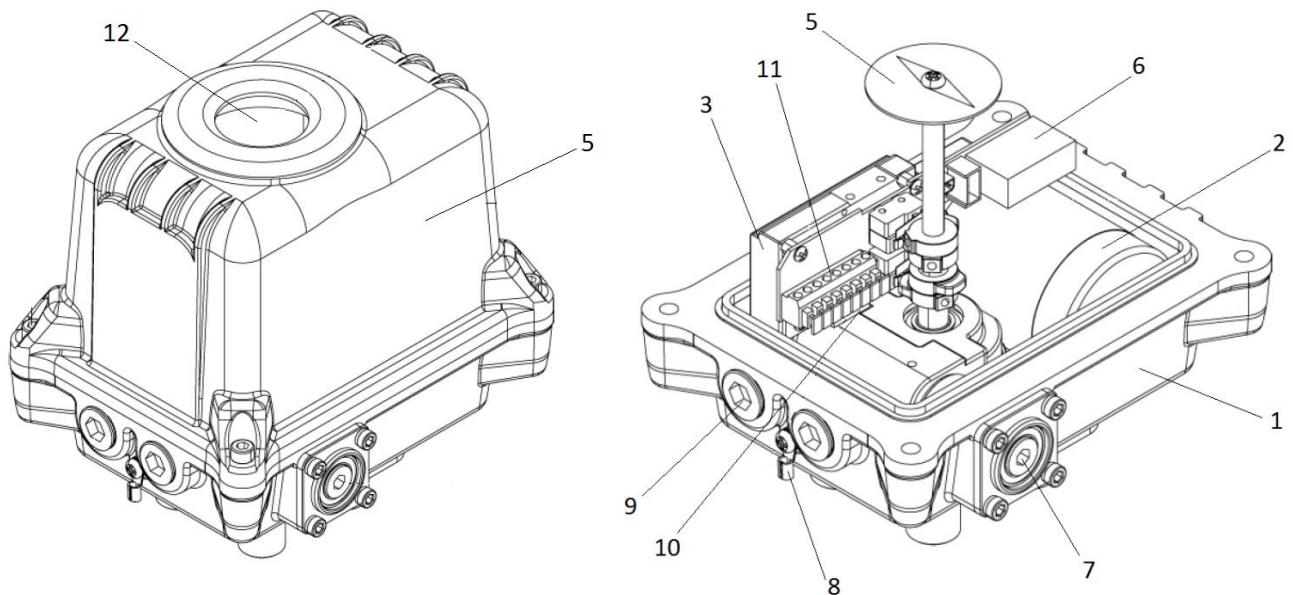
ELECTRICAL FEATURES

Motor protection	Thermal switch	Anti-condensation	5W heater
Limit switches	2 adjustable switches	Electrical connection	2 x C.G. M20x1.5 ATEX (NOT SUPPLIED on option)
Auxiliary switches	2 adjustable dry switches		

Actuator	SA05 X		SA09 X	
Voltage	230V AC	24V AC/DC	230V AC	24V AC/DC
Power (W)	6 W	15 W	6 W	15 W
Current (A)	0.23	1.8	0.19	1.8

CONSTRUCTION

1	Housing	Polyester-coated aluminium
2	Electrical motor	
3	Gear box	Treated steel pinions
4	Cover	Polyester-coated aluminium
5	Position indicator	Polycarbonate plastic
6	Condenser	
7	Handle override	
8	Earthing	
9	Cable inlet	
10	Anti-condensation heater	
11	Terminal box	
12	Indicator light	Toughened glass



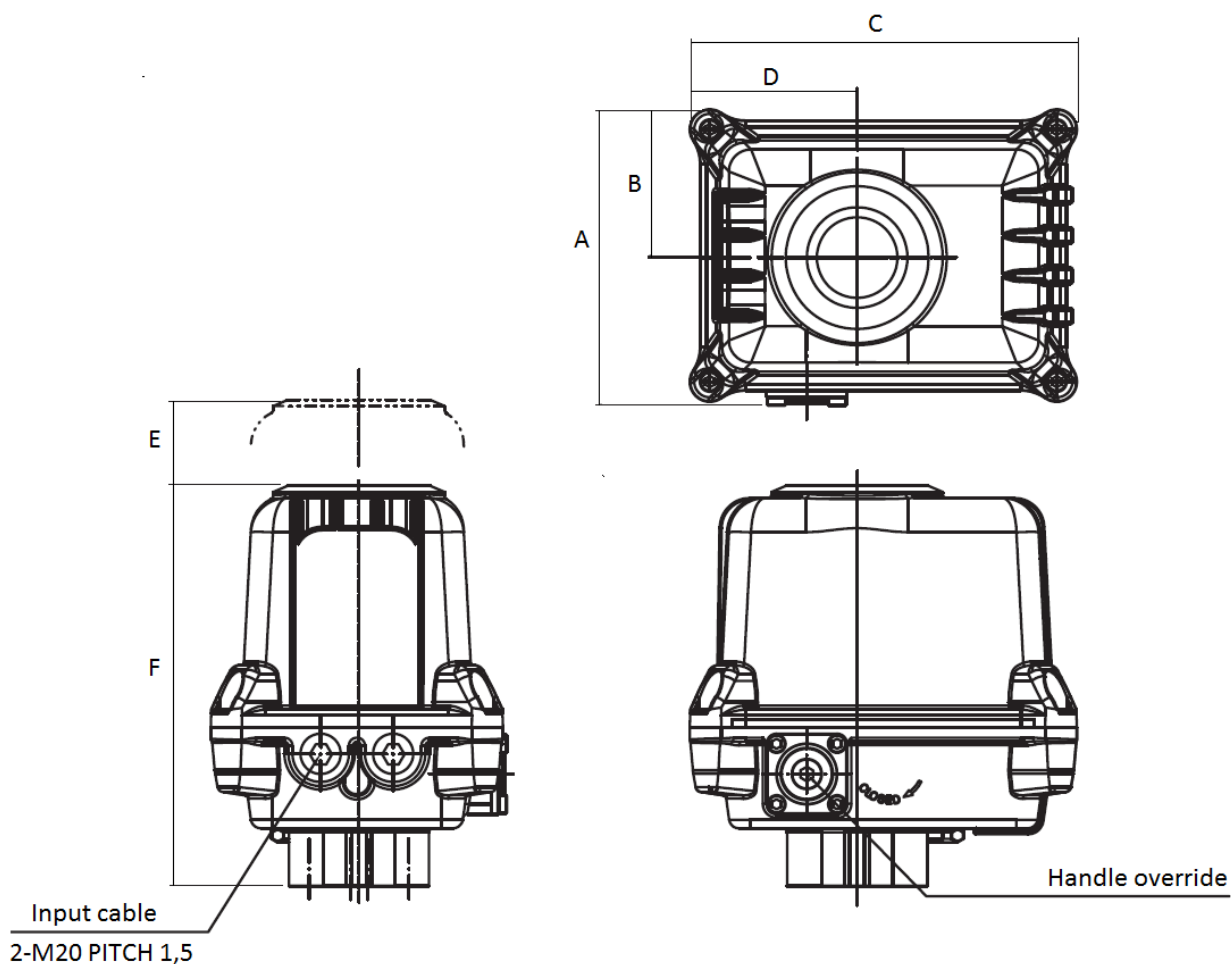
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SA 05-X - SA 09-X ELECTRIC ACTUATOR

DIMENSIONS (mm) AND WEIGHT (kg)

Dimensions (mm)	A	B	C	D	E	F	Weight (kg)
SA05-X / SA09-X	147	73	193	83	100	199	5

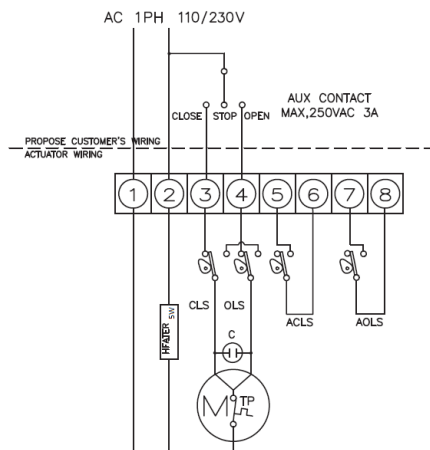


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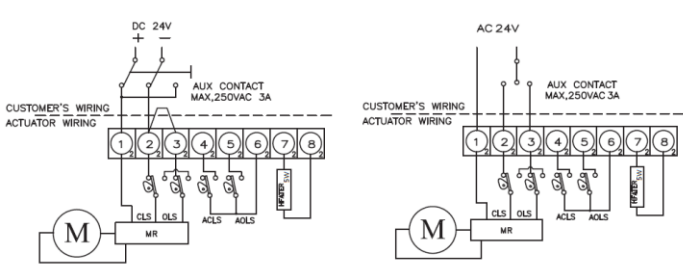
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SA 05-X - SA 09-X ELECTRIC ACTUATOR

WIRING DIAGRAM 230V AC 50Hz/60Hz

1	common	CLS : Close Limit Switch (250VAC 3A) OLS : Open Limit Switch (250VAC 3A) ACLS : Aux Close Limit Switch (250VAC 3A) AOLS : Aux Open Limit Switch (250VAC 3A) TP : Thermal Protector (250VAC 3A) RM : Motor Regulation 
2	anti-condensation heater	
3	closing command	
4	opening command	
5	closing auxiliary	
6	closing auxiliary	
7	opening auxiliary	
8	opening auxiliary	

WIRING DIAGRAM 24V AC/DC

1	common or +	CLS : Close Limit Switch (250VAC 3A) OLS : Open Limit Switch (250VAC 3A) ACLS : Aux Close Limit Switch (250VAC 3A) AOLS : Aux Open Limit Switch (250VAC 3A) TP : Thermal Protector (250VAC 3A) RM : Motor Regulation 
2	closing command	
3	opening command	
4	closing auxiliary	
5	opening auxiliary	
6	auxiliaries common	
7	anti-condensation heater power supply	
8	anti-condensation heater power supply	

OPTIONS

1	SA 05 X / SA 09 PIU : version with feedback potentiometer
2	SA 05 X / SA 09 X CPT : version with position transmitter 4-20 mA
3	SA 05 X / SA 09 PCU : version with adjustment card 0-10, 2-10V, 2-20 mA, 4-20 mA

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SA 05-X - SA 09-X ELECTRIC ACTUATOR

SPARE PARTS

SA05-X / SA09-X Electric actuator	
Gear box	
Printed circuit board	
Pinion (SA05-X)	
Electrical motor	
https://www.sectoriel.com/fr/sa05x-servomoteur-electrique-atex-1-4-tour-50-nm-on-off-ip67.html	

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SA 05-X - SA 09-X ELECTRIC ACTUATOR

ASSEMBLING AND MAINTENANCE INSTRUCTIONS



SA05 - SA05S - SA09



SA05X - SA09X

1. DESCRIPTION

- 1.1 Electric actuator for motorising 90° turn valves.
- 1.2 The full features of this device are given in sheet FT23010 / FT23310.
- 1.3 Before operating this device, read the present instructions carefully.

2. GUARANTEE

- 2.1 Before any contact with our services, identify the type of actuator.
- 2.2 SECTORIEL actuators have a 12-month guarantee from the delivery date. Parts recognized as defective by an assessment at our facility, will be replaced at our expense. Complaints generated by incorrect use or a modification of the actuator cannot be taken into account.

3. VERIFICATIONS AND ACCEPTANCE

- 3.1 At acceptance, check that:
 - the packaging is in good condition;
 - the actuator is as ordered;
 - the equipment is not damaged.
- 3.2 It is recommended to install the actuator as soon as accepted and not to leave it unused. If the equipment has to be stored, it has to be in a dry place protected from weather.

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SA 05-X - SA 09-X ELECTRIC ACTUATOR

4. PRECAUTIONS FOR OPERATION

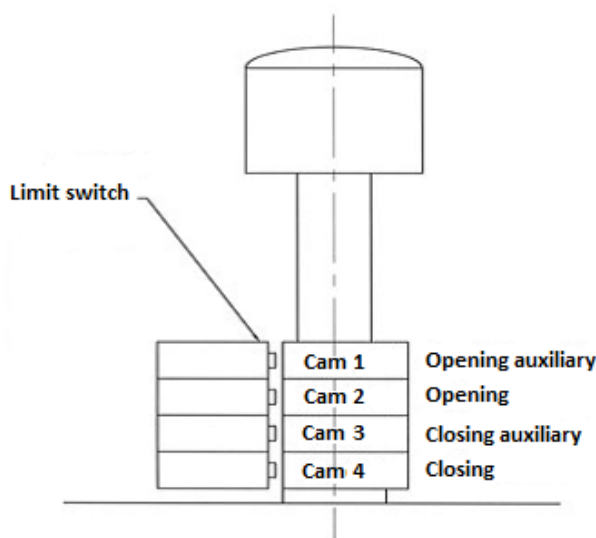
- 4.1 Before installing, make sure that the installation is completely depressurized and brought to ambient temperature.
- 4.2 In a zone classified as explosive, install only model SA05X / SA09X.
- 4.3 The protection class of the actuator is IP67 for indoors or outdoors installation. Do not install this actuator in a marine environment and do not immerse it.
- 4.4 The actuator must not be electrically powered during the installation and maintenance of the valve on the pipework, and of the actuator on the valve
- 4.5 Before proceeding to the electrical connection, check the supply voltage of the actuator.
- 4.6 Do not mount the actuator in series or in parallel with other electrical motors. If need be, use relays.
- 4.7 Do not mount the actuator on valves with higher torque than the nominal torque of the actuator.
- 4.8 The anti-condensation heater must be wired, indoors and outdoors, on special applications.

5. INSTALLATION AND OPERATION

- 5.1 Install the actuator on the valve (already done for units assembled in our workshops)
- 5.2 Perform the electrical wiring as shown in the diagram below.
- 5.3 Adjust the switch stops (already done for units assembled in our workshops).
- 5.4 View the valve's movement using the indicator light on the cover.
- 5.5 SA05 / SA09 and SA05X / SA09X actuator: to actuate the handle override, first disconnect the electrical power supply, then turn the hollow hex-head screw with an Allen key.
No handle override for SA05S.
- 5.6 SA05X actuator: the electrical connection must be carried out using an ATEX approved cable gland (CG) CG M20x1.5 which corresponds to the same operation zones as SA05X / SA09X.
SA05X has 2 connections M20x1.5. If using only one CG ATEX cable gland, the 2nd connection must be provided with an ATEX-approved plug which corresponds to the same operation zones as SA05X / SA09X.
CG and ATEX plug are not provided as standard. Option when ordering.

6. SWITCH SETTING

- 6.1 The cams are attached to the drive stem.
- 6.2 Clockwise rotation = valve closing. The micro-switch stops the actuator.
- 6.3 Anti-clockwise rotation = valve opening. The micro-switch stops the actuator.



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