\\// albia Walbia

ELECTRIC ACTUATOR MODELS VB030-350 MAINTENANCE AND INSTALLATION INSTRUCTIONS OF VALBIA ELECTRIC ACTUATORS

TABLE OF CONTENTS

- 1.0 WARNING
- 2.0 GENERAL DATA
- 2.1 TECHNICAL CHARACTERISTICS 2.2 ELECTRICAL SUPPLY DATA /CONSUMPTION
- 3.0 FIELD APPLICATION
- 4.0 DEVICE INSTALLATION 4.1 OPENING COVER OF THE ELECTRIC ACTUATOR 4.2 WIRING DIAGRAM
- 4.3 ELECTRICAL CONNECTION FOR MODELS SUPPLIED WITH 12-24 VAC 50/60 HZ AND 12-24 VDC 4.4 ELECTRICAL CONNECTION FOR MODEL SUPPLIED WITH 100-240 VAC 50/60HZ 4.5 CONNECTION OF SIGNALS AUXILIARY WIRES TO THE LIMIT SWITCHES
- 4.6 CONNECTION OF SIGNAL WIRES TO THE FAULTS CONTACT 4.7 CONNECTION OF SIGNAL WIRES TO THE POTENTIOMETER (OPTIONAL)
- 4.8 HEATING RESISTORS
- 4.9 DEVICE WORKING CONDITIONS 4.10 ADJUSTMENT OF THE ACTUATOR STROKE 4.11 CLOSURE OF ELECTRIC ACTUATOR ENCLOSURE
- 5.0 EMERGENCY OPERATION 5.1 WORKING IN EMERGENCY WITH THE BATTERY (OPTIONAL) 6.0 MAINTENANCE
- 7.0 VALVE AUTOMATION 8.0 TRANSPORT AND STOCKING

1.0 Warnings

· Please read the following instructions before making any installation of the actuator. The damages caused from the non-observance of these instructions are not covered in the warranty.

This documentation must be kept in dry place and available for use

 The installation and maintenance of electric actuator must be made only by gualified personnel. · Before proceeding to the electrical connections, please make sure the ground wiring system works correctly

· Please always check that supply voltage is included between the ones indicated on the label on the exterior of the actuator

Before making any maintenance on the actuator, always make sure to shut off the power supply. · Valbia s.r.l. reserves the right to change the data and the characteristics of this manual at any time and with no notice in the scope of a constant updating

of technological improvement 2.0 General data (Tab.1)

TECHNICAL FEAUTURES	UNIT		VALUE						
Object of device		-	Electric actuator						
Construction type		-	Electronic control integrate device						
Protection level of the cover (IP rating)		-	IP65-IP67						
Ambient temperature range	C°	F°	-20 ÷ +55	-4 ÷ +131					
Auxiliary limit switches contacts	A 2 A @ 250Vac - 2 A @ 30 Vdc (resistive load)								
Fault auxiliary contact		A	1 A @ 120Vac - 2 A @ 24 Vdc (resistive load)						
Section of connections clamps' conductors	AV	VG	14 ÷ 22						
Minimum temperature of connection clamps' conductor	0	С	85						
Protection class against electric shock		-	Classe I						
Blocking way of cables		-	Glands PG11 (cable diameter 6 ÷ 9 mm / 0.24" ÷ 0.35")						
Restriction of continue operation time (internal restrictions)	se	ec.	It depends on the actuator model						
Power supply voltage tolerance		-	±10%						
Parallel connection of actuators		-	STD						
REQUESTED FEAUTURES FOR UL508 STANDARD									
UL file number		-	NMTR.E303174						
Cover Type		-	Type 4x Indoor Use Only						
Connection conductor		-	Listed flexible cord (ZJCZ) minimum S or SJ						
Maximum torque of clamps screws' tightening of the 100-240 Vac models	Nm	LbIn	0.5	4.5					
Maximum torque of clamps screws' tightening of the 12-24 Vac/dc models	Nm	LbIn	0.4	3.5					
Maximum torque of enclosure screws' tightening	Nm	LbIn	2.5	22.15					
Pollution degree	-		111						
Category of overvoltage	-		Н						
Tab.1 General features of the electric actuator									

Product in conformity to the Community norm 2006/95/CE (LVD), 2004/108/CE (EMC)

Use copper (CU) conductor

4.5 Connection of signals auxiliary wires to the limit switches (fig.5)

There are two auxiliary contacts of limit switches (free contacts SPDT) available on the terminal block "G", which connect to give signals to the end user. The terminal block "G" is composed by two parts, one of those removable. For an easier procedure it is suggested to pull out the removable part and insert it again after its cabling. Connect to the terminal block "G" between the contacts

"2" and "3" to get the signal of closing.

- "5" and "6" to get the signal of opening The signal of opening or closing is when the cams (the ones in blue color) push the auxiliary electromechanical limit switches on the control board. The cams adjustment procedure is described on paragraph 4.10

NOTE: during the installation please take care of the conditions of the limit switches in the open/closed positions by using a tools of electrical continuity.

4.6 Connection of signal wires to the faults contact (fig.5)

There is an auxiliary contact (free contact NO) available on the terminal block "R", which connect to give signals to the end user when there are an anomalous working conditions. The terminal block "R" is composed by two parts, one of those removable. For an easier procedure it is suggested to pull out the removable part and insert it again after its cabling.





Fig.5 Control/logic board and particular of terminal blocks "G" and "F



Fig.6 Electric actuator particular of the terminal block "POT **RESISTORS "RIS"** 200245

4.7 Connection of signal wires to the potentiometer

The actuator with potentiometer is equipped with an extra terminal block "POT" (Fig.6) which grants the possibility to use the resistive information concerning the actuator position. To obtain it, please have a look at the wiring diagram of Fig.2

8 RHeating resistors (Fig. 7)

devices are equipped with "RIS" heating resistors that are activated when, with actuator supplied, the motor is not working and the temperature inside the actuator goes down to 25°C / 77°F. Take care that the actuator is power supplied even in the open/close position. This prevents the formation of internal condensation due to fluctuations of the ambient emperature. The resistors are handled automatically by and do not require additional wiring

WARNING: to guarantee the working of the heater is commended to keep the actuator powered even when the vice is stopped in the open / close positions.

VALBIA Electric Actuators Models VB030-VB350 - From AVS UK - www.actuatedvalvesupplies.com - E-mail info@actuatedvalvesupplies.com

2.1 Technical characteristics

Here below are some technical characteristics of Valbia electric actuators: • they are standard equipped with heating resistors to avoid condensate into the actuator due to the changes of the external environmental temperature (Par. 4.8):

*∨*albia

· a safety system must be in place to shut off the actuator in case the motor requires a torque over the one for which it has been designed (torque limiter): the device makes automatically three triggering attempts. In case of negative results, it makes a short rotation in the opposite direction in order to relieve the mechanical tension to the gears. Torque limiter intervention is indicated by a red color LED (Par. 4.9) and by the closure of the remote signal an auxiliary contact (Par. 4.6):

· a safety system must be in place to shut off the actuator in case the motor works past over the allowable operation time value (the time value depends on the actuator models). The maximum working time fault is indicated by a red color LED (Par. 4.9) and by the closure of the remote signal an auxiliary contact (Par. 4.6)

• duty rating: the electric actuator was designed for working with a duty rating of 75% referred to the working time and to the nominal load. This parameter defines the rest times after an operation. The use of the actuator with an higher duty rating can cause the not correct intervention torque limiter or the failure of electronic components

2.2 Electrical supply data /consumption (Tab.2)

	-											
MOD.	VB030		VB060		VB110		VB190		VB270		VB350	
Nominal torque [Nm]	30		60		110		190		270		350	
Nominal torque [LbIn]	2	66	530		975		1680		2390		3100	
Nominal voltage (H Version)	100 – 240 Vac											
Absorbed current (H Version) [A]	0.4	- 0.2	0.6 - 0.3		0.4 - 0.2		0.6 - 0.3		0.6 - 0.3		0.75 - 0.4	
Absorbed power (H Versioen) [VA]	40	- 48	60	- 72	40 - 48		60 - 72		60 - 72		75 - 96	
Nominal voltage (L Version)	12Vac/dc	24Vac/dc	12Vac/dc	24Vac/dc	12Vac/dc	24Vac/dc	12Vac/dc	24Vac/dc	12Vac/dc	24Vac/dc	12Vac/dc	24Vac/dc
Absorbed current (L Version) [A]	2.2 - 1.8	1 - 0.7	3.8 - 2.85	1.8 - 1.2	2.2 - 1.8	1 - 0.7	3.8 - 2.85	1.8 - 1.2	3.8 - 2.85	1.8 - 1.2	4.75 - 3.65	1.95 - 1.65
Absorbed power (L Versioen) [VA]	26.5 - 22	24 - 17	46 - 34	43 - 29	26.5 - 22	24 - 17	46 - 34	43 - 29	46 - 34	43 - 29	57 - 44	47 - 40
Frequency [Hz]	50/60											
Potation time 0° 00° [cool		0		0	07		07		50		50	

Tab.2 Electrical rating of the actuators 3.0 Field application

VALBIA electric actuators have been designed and tested to operate ball and butterfly valves for industrial sector. Actuators are available in standard version with rotation 0°-90°. On request we can supply actuators with rotation 0°-180° and/or 0°-270°. For applications other than that above are needed please contact the VALBIA engineering.

4.0 Device installation

The connection has be done directly into the internal part of the actuator, by passing the cable through one of the two external glands PG11 (IP68). It is then necessary to open the upper enclosure in order to locate the terminal block and the correct electronic supply. The terminal block "F" is composed by two parts, one of those removable. For an easier procedure it is suggested to pull out the removable part and insert it again after its cabling.

WARNING: please pay attention to the cabling and setting phases of electromechanical limit switches in order to avoid that fluids or other substance do not get in touch with any electronic part. Before assembling the upper cover please make sure that the o-ring is seated in the proper groove and there are no other instructions which could compromise the perfect tightness of enclosure.

WARNING: Valbia electric actuators can work in any position, anyhow we do not suggest application where glands are positioned up side-down, because this position could not guarantee a perfect tightness on glands. Do not mount the actuator upside down. In case the assembling of electric actuator and the electrical connection of itself are scheduled to be made in two different moments then please take care of the right closure of the glands entrance.

WARNING: if the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

4.1 Opening cover of the electric actuator (fig.1)



screw the fasteners "D" to remove the upper cover "A"; raise up the cover "A" carefully to avoid to damage the internal electric parts; turn in the electric supply cable (diameter 6 ÷ 9 mm / 0.24" ÷ 0.35") by the proper bolds "E" (PG11); proceed to connect the cable in its proper terminal block "F" by looking at the wiring diagram (Fig.2) according to the different voltage (please also review the tag you find inside the cover)

remove position indicator "B" by loosening the screws "C";

Fig.1 External view of the actuator

4.9 Device working conditions

on the internal power supply electronic board, a green light (LED) is displayed if the power supply voltage is provided;

- on the internal electronic board, a yellow light (LED) is displayed the activated working mode:
- slow flashing: the actuator power supply is provided by the voltage on the terminal block "F"

fast flashing: the actuator power supply is provided by the battery backup; on the internal control electronic board, a warning light (LED) and a free contact is displayed the anomalous working conditions. The possible cases are:

unblock operation failed and torque limiter intervention · power supply voltage under the minimum limit;

past over maximum working time of a single operation (time out);

When there is an anomalous working condition, to recover the correct operation of the actuator, it is necessary to shut off the power supply voltage, remove the anomaly cause and power the actuator again. WARNING: to recover the actuator working and to reset the faults, it is necessary to shut off the power supply for more than 10 sec. This ensures the

4.10 Adjustment of the actuator stroke (Fig.8)

The end of the electric actuator stroke (in opening or closing) is when the cams (the ones in black colour) push the electromechanical limit switches on the logic/control board. The signal of opening or closing is when the cams (the ones in blue colour) push the auxiliary electromechanical limit switches on the plate of checking.

The procedures to adjust the actuator stroke are as follows

1. take care there is not electrical supply;

full discharge of the capacitors

- 2. remove the upper cover of the actuator (see instructions point 4.1): 3. to simplify the cams adjustment it is possible to take off the removable part of the "G" and "R" terminal blocks;
- take care that the device to be automatised (example: valve) is on "OPEN" position;
 loose the bolt which fixes the cam 1 (black colour) and turn until it pushes the limit switch POS2 ("click" of the electromechanical micro switch). Then proceed to fix the cam by tightening the bolt;
- 6. loose the bolt which fixes the cam 3 (blue colour) and turn until it pushes the limit switch FCU2 ("click" of the electromechanical micro switch). Then
- proceed to fix the cam by tightening the bolt;
- 7. power supply the actuator and command a close operation 8. wait the actuator stop in closed position, then shut off the power supply
- 9. take care that the device to be automatised (example: valve) is on "CLOSED" position. For an exact adjusting it is possible to turn the actuator with the handwheel "H":
- 10. loose the bolt which fixes the cam 2 (black colour) and turn until it pushes the limit switch POS1 ("click" of the electromechanical micro switch).

Then proceed to fix the cam by tightening the bolt; 11. loose the bolt which fixes the cam 4 (blue colour) and turn until it pushes the limit switch FCU1 ("click" of the electromechanical micro switch). Then proceed to fix the cam by tightening the bolt;



5 1 2 3 OPTIONAL BATTERY 24 V INOT AVAILABLE FOR VERSIONS 12V





2

5.0 Emergency operation

with actuator NOT power supplied; Do not use tools to action the handwheel

5.1 Working in emergency with the battery (optional)

following actions: · Open: an eventual opposite operation is interrupted · Close: an eventual opposite operation is interrupted.

6.0 Maintenance

7.0 Valve automation

maximum torque.



4.2 Wiring diagram (Fig.2)

The wiring diagram to be followed for the proper cabling to the actuators is showed in Fig.2 and also it is, as tag, inside the cover. In addition to the 3-points control mode it is possible the cabling of the actuator for the 2-points control mode.



Fig.3 Board for the low voltage supply and particular of terminal block "F"

Fig.4 Board for the high voltage supply and particular of terminal block

4.11 Closure of electric actuator enclosure (Fig.1)

After making the proper connection, please proceed to the assembling of cover "A", by paying close attention not to hit any electronic parts. re-assemble the position indicator "B" on "OPEN " blocking it by screw "C"

 make sure that the tightening of cables is secure, by screwing the gland "E"; finish the closing of cover "A" by screwing in the fasteners "D".

All the VALBIA electric actuators have an external handwheel "H" (fig.1), which can manually operate the closing and opening positions. The manual operation operates by put in a pressure on the top of handwheel and by making a small rotation in order to engage the stem to the handwheel After engaging the manual operation you can make desired the position you wish by keeping pressure on, and turning the handwheel. The handwheel for the manual override can be used:

- with actuator power supplied after the intervention of the torque limiter

WARNING: do not operate the manual override when the actuator is turning.

For the models which have the battery (option) is possible to set up the actuator so that, in case of failure supply, actuator carry out automatically one of the

- Complete the operation: the motor continue the stroke up to the reach of the limit switch.

Working with battery is enabled immediately in case of supply shut off during the movement of the actuator, instead in the limit switch positions there is a

- Working with battery will be stopped at the end of the action expected and actuator will start functioning again after the recovering of the net voltage The working with battery can be interrupted by an eventual recovering of the net voltage.
- A red light (LED) mounted on the power supply board is displayed the charge level of the battery:
- · fast flashing: the battery is not connected to the power supply board or the battery is charging; · light on: the battery is not charge at a nominal value and it could not guarantee a complete safety operation;
- light off: the battery is charged at the nominal value;

The LED display is correct if the battery is not deteriorated

- These electric actuators do not need of any format maintenance.
- The internal lubrication is sufficient for the whole life of the actuator
- To get a good cleaning of the external parts, we suggest to use a light detergent with low level of chemical aggressiveness. In case of damage or a problem in operation, we recommend that you send the actuators back to Valbia for inspection.
- Valbia s.r.l. declines all responsibility and warrantee on our actuators repaired from any third party
- The mechanical assembling between the electric actuator and the item to be automated (for example: the valve) can be done by direct mounting or by a mounting kit. Both the cases you can verify the right alignment and the correct dimensions of the part to transmit the power in order to avoid axial stress which
- can damage valve and actuator. All Valbia electric actuators are in conformity of norm EN ISO 5211-DIN 3337.
- In order to have a right automation of the valve, is necessary to use a Valbia electric actuators whose range has a torque of at least 25% over the valve
- Verify the actuator duty rating suitability with the application Do not raise up or moved the motorized valve by using the electric actuator as point of grip or hold.

8.0 Transport and stocking

- Valbia electric actuators are supplied in paperboard boxes which are of solid construction for a normal transport. Please handle and keep with care the cover until the moment of the installation of the actuator. The stocking of the material needs a dry and well ventilated place.
- Please take care also that it should be protected from temperature changes

4.4 Electrical connection for model supplied with 100-240 VAC 50/60 Hz (fig.4)

4.3 Electrical connection for models supplied with

The signal cable of "closing" (clockwise rotation) (positive

supply +12Vdc / +24Vdc or phase 12Vac / 24Vac) must be connected to the contact "1" of the terminal-block "F";

the signal cable of "opening" (counter-clockwise rotation)

(positive supply +12Vdc / +24Vdc or phase 12Vac / 24Vac)

must be connected to the contact "3" of the terminal-block "F";

the cable of "earth" must be connected to the "faston" put

the signal cable "common" (0V) or "neutral" must be

connected to the contact "2" of the terminal-block "F"

WARNING: the ground wiring system is obligatory

on metallic body of the actuator.

12-24VAC 50/60Hz and 12-24VDC (Fig.3)

The signal cable of "closing" (clockwise rotation) (signal of phase) must be connected to the input 1 of terminal-block "F"; the signal cable of "opening" (counter-clockwise rotation) (signal of phase) must be connected to the contact "3" of

- terminal-block "F": - the signal cable "neutral" must be connected to the contact "2"
- of terminal block "F" - the cable of "earth" must be connected to the "faston" put on the metallic parts on the actuato

3

WARNING: the ground wiring system is obligatory