Badran
Control Process Components.

بادران
قطعات کنترل سیالات

Economycal Electrical
Series 85
(self-extinguish techno polymer enclosure)
Series 86
(Die-cast aluminum enclosure)

General specifications

Badran provides a wide range of quarter-turn single-phase electric actuators, available with different voltages of power supply (12/24V/100-240V) and frequency (50/60 Hz), with CE and UL certifications and different level of protection enclosure (IP-UL Type).

badran electric actuators are suitable for the automation of a great variety of ball and butterfly valves for the industrial and civil sector, with a torque valve that goes from 15 to 350 Nm.

Badran selects, manufactures and uses high quality components to assure high performances:

• The electronic circuit uses last generation components to guarantee high control performances allowing, among other things, the motor speed automatic adjustment according to load variations, maintaining constant the declared working time.

• The electronic system for the control of the maximum torque (torque limiter) and the heater with the thermostat circuit, both included in the standard version and always automatically operating when the actuator is powered, ensure a constant protection of the actuator;

• The gear train is made of two steel and technopolymer gear wheels, inserted in a strong die-cast aluminum structure and sustained by hardened steel pinions mounted on self-lubricating bushes, to guarantee a very high resistance level of the mechanical part;

• The actuators are equipped with a die-cast and painted aluminum plate per ISO 5211-DIN 3337 standard, in order to allow a rapid and direct connection with most of the valves available on the market.

Badran manufactures two series of electric actuators:

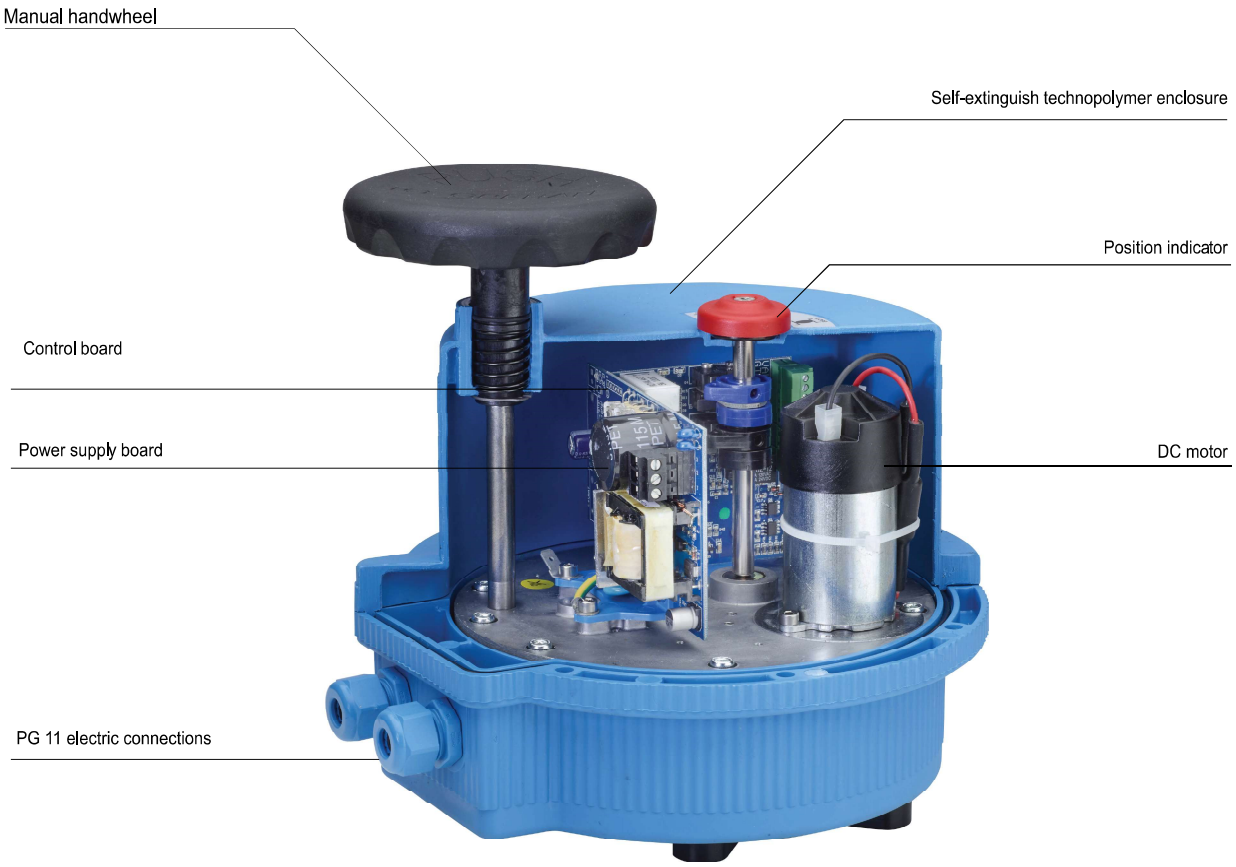
• The series 85, with a self-extinguish technopolymer enclosure;

• The series 86, with a die-cast aluminum enclosure coated with polyester powder.

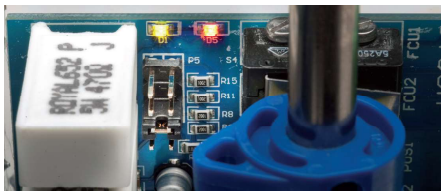
in addition to the standard versions, badran offers a wide range of special versions designed to provide effective solutions for every need.

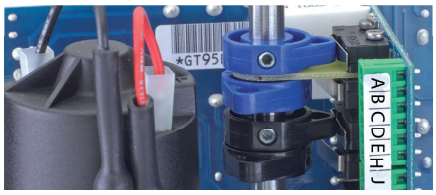
Version	Voltage	VB015		VB030		VB060		VB110		VB190		VB270		VB350	
		85	86	85	86	85	86	85	86	85	86	85	86	85	86
ON/OFF	100-240V	•		•	•	•	•	•	•	•	•	•	•	•	•
	24V	•		•	•	•	•	•	•	•	•	•	•	•	•
	12V	•		•	•	•	•	•	•	•	•	•	•	•	•
Battery Backup	100-240V			•	•	•	•	•	•	•	•	•	•	•	•
	24V			•	•	•	•	•	•	•	•	•	•	•	•
	12V														
Positioner	100-240V			•	•	•	•	•	•	•	•	•	•	•	•
	24V			•	•	•	•	•	•	•	•	•	•	•	•
	12V			•	•	•	•	•	•	•	•	•	•	•	•
Potentiometer	100-240V			•	•	•	•	•	•	•	•	•	•	•	•
	24V			•	•	•	•	•	•	•	•	•	•	•	•
	12V			•	•	•	•	•	•	•	•	•	•	•	•
Battery Backup+ Positioner	100-240V			•	•	•	•	•	•	•	•	•	•	•	•
	24V			•	•	•	•	•	•	•	•	•	•	•	•
	12V														
Middle Position	100-240V			•	•	•	•	•	•	•	•	•	•	•	•
	24V			•	•	•	•	•	•	•	•	•	•	•	•
	12V			•	•	•	•	•	•	•	•	•	•	•	•

Electric Actuators Versions
Standard 0°-90° rotation Upon request also available with adjustable rotation up to 270° (series 85).
Special version with potentiometer 5K Ω 1 W The potentiometer allows to receive a remote feedback 5K Ω 1 W, resistive, about the actuator position even when this is not powered.
Special version with (4-20mA o 0-10 V) or reverse (20-4mA o 10-0V) positioner The modulating version can be controlled by a current (4-20 mA) or voltage (0-10V) command. The proportional control allows a resolution command and of 1.3°, with a positioning tolerance of less than 3% of the potentiometer full scale.
Special version with battery backup for fail-safe operation This special version is available for the ON/OFF standard version and with positioner. Battery operation is immediately enabled, as soon as the voltage supply is interrupted (and it is stopped by the reactivation of the voltage supply); in such case the battery will operate the actuator in one of the following modes: • for the ON/OFF standard version, open, close, ending the commanded operation; • for the version with positioner, open or close. Technical features and general specifications of the actuator as per reference version (ON/OFF or with positioner).
Special version with middle position This version is designed for special applications: it allows to set up 3 different limit switch positions: open, intermediate and close.

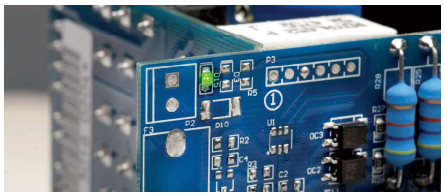


Heating Resistor:
•Managed by control board to guarantee the right internal temperature.





Position cams:
• Black cams: limit switches open and close adjustment.
• Blue cams: free limit switches open and close adjustment.



LED lights to indicate: Power supply on (green), Actuator working conditions (yellow) and fault (red).

Technical Data Series 85

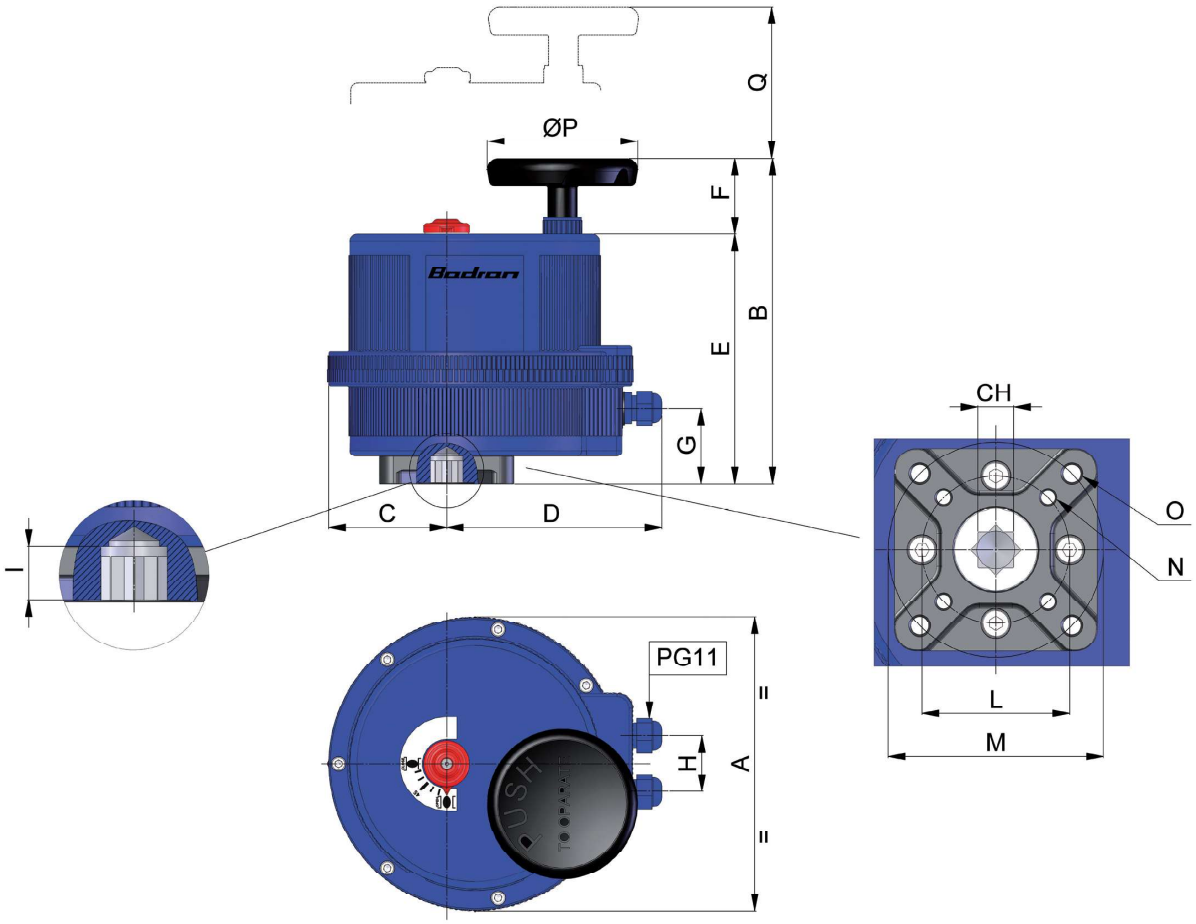
Model		VB015	VB030	VB060	VB110	VB190	VB270	VB350
Max Working Torque (Nm)		15	30	60	110	190	270	350
Nominal Tension (V)	Low Voltage	12V AC/DC	12V AC/DC	12V AC/DC	12V AC/DC	12V AC/DC	12V AC/DC	12V AC/DC
		24V AC/DC	24V AC/DC	24V AC/DC	24V AC/DC	24V AC/DC	24V AC/DC	24V AC/DC
	Multi voltage	100-240V AC	100-240V AC	100-240V AC	100-240V AC	100-240V AC	100-240V AC	100-240V AC
Working Time (Sec)		10	8	9	27	27	50	50
Torque Limiter		STD	STD	STD	STD	STD	STD	STD
Duty Rating		12V AC/24V AC 50% / 12V DC/24V DC 75% / 100-240V AC	12V AC/DC 50% / 24V AC/DC 75% / 100-240V AC	12V AC/DC 50% / 24V AC/DC 75% / 100-240V AC	12V AC/DC 50% / 24V AC/DC 75% / 100-240V AC	12V AC/DC 50% / 24V AC/DC 75% / 100-240V AC	12V AC/DC 50% / 24V AC/DC 75% / 100-240V AC	12V AC/DC 50% / 24V AC/DC 75% / 100-240V AC
Protection		IP65	IP67	IP67	IP67	IP67	IP67	IP67
Enclosure		TECHNOPOLYMER	TECHNOPOLYMER	TECHNOPOLYMER	TECHNOPOLYMER	TECHNOPOLYMER	TECHNOPOLYMER	TECHNOPOLYMER
Rotation		90°	90°	90°	90°	90°	90°	90°
Upon Request Rotation		180°	180° or 270°	180° or 270°	180° or 270°	180° or 270°	180° or 270°	180° or 270°
Manual Override		STD	STD	STD	STD	STD	STD	STD
Position Indicator		STD	STD	STD	STD	STD	STD	STD
Working Temperature		-20°c + 55°c	-20°c + 55°c	-20°c + 55°c	-20°c + 55°c	-20°c + 55°c	-20°c + 55°c	-20°c + 55°c
Heater		STD	STD	STD	STD	STD	STD	STD
Additional Free Limit Switches		n°2 STD (Type SPDT)	n°2 STD (Type SPDT)	n°2 STD (Type SPDT)	n°2 STD (Type SPDT)	n°2 STD (Type SPDT)	n°2 STD (Type SPDT)	n°2 STD (Type SPDT)
Drilling ISO 5211		*F03 - F05	*F03 - F05	F05 - F07	F07 - F10	F07 - F10	F07 - F10	F07 - F10
Square (mm)		11	11	14	17	17	22	22
Square Upon Request (mm)		9	9-14	11-17	14-22	14-22	17	17
Fail-safe Operation (Battery Backup)		Not Available	Upon Request	Upon Request	Upon Request	Upon Request	Upon Request	Upon Request
			Not Available For Mod 12V					
STD (4~20mA Or 0~10 VDC) Reverse (20~4mA Or 10~0 VDC) Mode Positioner		Not Available	Upon Request	Upon Request	Upon Request	Upon Request	Upon Request	Upon Request
Middle Position		Not Available	Upon Request	Upon Request	Upon Request	Upon Request	Upon Request	Upon Request
Rotary Potentiometer (5k Ω 1W)		Not Available	Upon Request	Upon Request	Upon Request	Upon Request	Upon Request	Upon Request
Electrical Connections		PG11	PG11	PG11	PG11	PG11	PG11	PG11
Weight (Kg)		1.40	2.30	3.30	4.90	4.90	6.00	6.00

* F04 Or F07 Upon Request

Electric Actuator Consumption Data

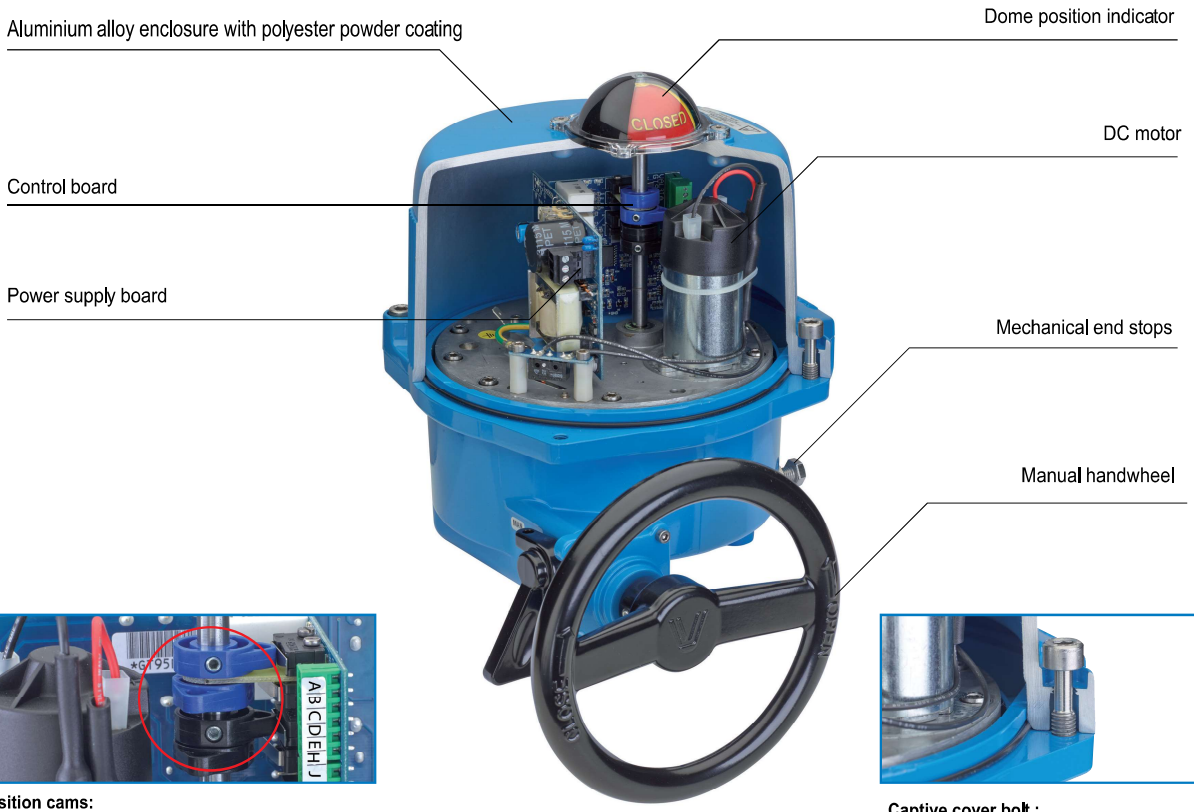
Model		VB015		VB030		VB060		VB110		VB190		VB270		VB350	
Version H	Nominal Voltage	100-240V AC													
	Absorbed Current	0,3-0,19 A		0,4-0,2 A		0,6-0,3 A		0,4-0,2 A		0,6-0,3 A		0,6-0,3 A		0,75-0,4 A	
	Absorbed Power	30-46 VA		40-48 VA		60-72 VA		40-48 VA		60-72 VA		60-72 VA		75-96 VA	
Version L	Nominal Voltage	12V AC/DC	24V AC/DC	12V AC/DC	24V AC/DC	12V AC/DC	24V AC/DC	12V AC/DC	24V AC/DC	12V AC/DC	24V AC/DC	12V AC/DC	24V AC/DC	12V AC/DC	24V AC/DC
	Absorbed Current	1,2 A	0,6 A	2,2-1,8 A	1-0,7 A	3,8-2,85 A	1,8-1,2 A	2,2-1,8 A	1-0,7 A	3,8-2,85 A	1,8-1,2 A	3,8-2,85 A	1,8-1,2 A	4,75-3,65 A	1,95-1,65 A
	Absorbed Power	15 VA		26,5-22 VA	24-17 VA	46-34 VA	43-29 VA	26,5-22 VA	24-17 VA	46-34 VA	43-29 VA	46-34 VA	43-29 VA	57-44 VA	47-40 VA
	Frequency	50/60 Hz													

Mod. VB015 - VB350



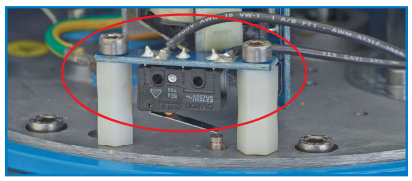
Mod.	ISO 5211	CH	A	B	C	D	E	F	G	H	I	L	M	N	O	ØP	Q
VB015	F03-F05*	11	123	141,5	42,5	120,5	126	15,5	103	32	14	36	50	M5x12	M6x14	68	65
VB030	F03-F05*	11	157	188	60,5	129,5	146	42	33	36	12	36	50	M5x12	M6x14	65	100
VB060	F05-F07	14	185	215	67,5	146,5	173	42	51	36	16	50	70	M6x15	M8x17	65	110
VB110	F07-F10	17	211	232,1	84	153	178	54,1	54	40	19	70	102	M8x20	M10x20	110	115
VB190	F07-F10	17	211	232,1	84	153	178	54,1	54	40	19	70	102	M8x20	M10x20	110	115
VB270	F07-F10	22	222	233,5	77	170	182	51,5	54	40	24	70	102	M8x20	M10x20	110	115
VB350	F07-F10	22	222	233,5	77	170	182	51,5	54	40	24	70	102	M8x20	M10x20	110	115

*upon Request F04 or F07



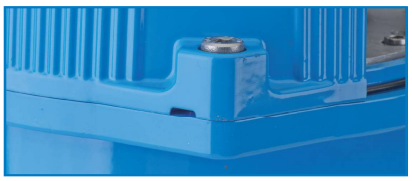
Position cams:
• Black cams: limit switches open and close adjustment.
• Blue cams: free limit switches open and close adjustment.

Captive cover bolt :
• Mover bolts are specially designed to prevent losing them during maintenance or installation.
• All external bolts are stainless steel.



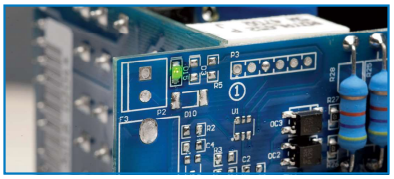
Snap switch (only for mod. VB110m ÷ VB350m):
To avoid the motor automatic rotation when the actuator is in manual mode.

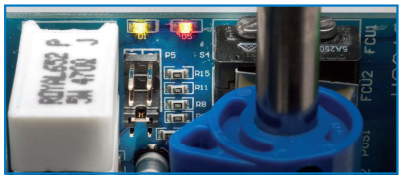
Heating resistor: •
Managed by control board to guarantee the right internal temperature.



Easier upper cover opening

Manual override (only for mod. VB110m ÷ VB350m): •
Allow the manual or automatic operation..





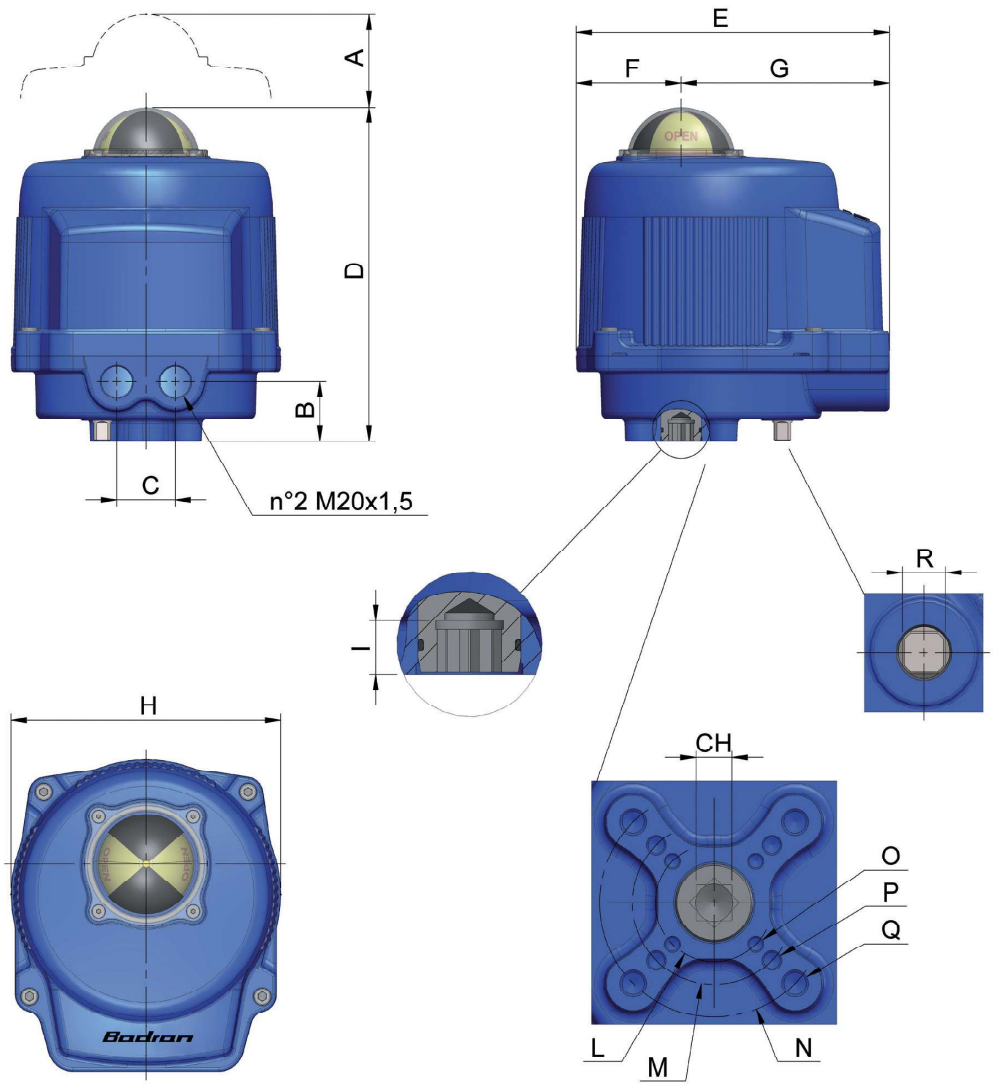
LED lights to indicate: Power supply on (green), Actuator working conditions (yellow) and fault (red).

Model		VB030m	VB060m	VB110m	VB190m	VB270m	VB350m
Max Working Torque (Nm)		30	60	110	190	270	350
Nominal Voltage (V)	Low Voltage	12V AC/DC	12V AC/DC	12V AC/DC	12V AC/DC	12V AC/DC	12V AC/DC
		24V AC/DC	24V AC/DC	24V AC/DC	24V AC/DC	24V AC/DC	24V AC/DC
	Multi voltage	100-240V AC	100-240V AC	100-240V AC	100-240V AC	100-240V AC	100-240V AC
Working Time (Sec)		8	9	27	27	50	50
Torque Limiter		STD	STD	STD	STD	STD	STD
Duty Rating	12V AC/DC	50%	50%	50%	50%	50%	50%
	24V AC/DC	75%	75%	75%	75%	75%	75%
	100-240V AC						
Protection (IP rating/UL)		IP 68/type4	IP68/type4	IP68/type4	IP68/type4	IP68/type4	IP68/type4
Enclosure		Aluminium	Aluminium	Aluminium	Aluminium	Aluminium	Aluminium
Rotation		90°	90°	90°	90°	90°	90°
End Mechanical Stops (Only Reg.0-90°)		No	No	STD	STD	STD	STD
Manual Override		STD 10mm	STD 10mm	STD With Hand Wheel	STD With Hand Wheel	STD With Hand Wheel	STD With Hand Wheel
Dome Position Indicator		☑ STD	☑ STD	STD	STD	STD	STD
Working Temperature		-20°c + 55°c	-20°c + 55°c	-20°c + 55°c	-20°c + 55°c	-20°c + 55°c	-20°c + 55°c
Heater		STD	STD	STD	STD	STD	STD
Additional Free Limit Switches		n°2 STD (Type SPDT)	n°2 STD (Type SPDT)	n°2 STD (Type SPDT)	n°2 STD (Type SPDT)	n°2 STD (Type SPDT)	n°2 STD (Type SPDT)
Drilling ISO 5211		F03-F05-F07	F05 - F07	F07 - F10	F07 - F10	F07 - F10	F07 - F10
Square (mm)		11	14	17	17	22	22
Optional Square (mm)		9-14	11-17	14-22	14-22	17	17
Fail-safe Operation (Battery Backup)		Upon Request	Upon Request	Upon Request	Upon Request	Upon Request	Upon Request
		Not Available For Mod. 12V					
STD (4~20mA or 0~10 VDC) REVERSE (20~4mA or 10~0 VDC) MODE POSITIONER		Upon Request	Upon Request	Upon Request	Upon Request	Upon Request	Upon Request
Rotary Potentiometer (5k Ω 1W)		Upon Request	Upon Request	Upon Request	Upon Request	Upon Request	Upon Request
Middle Position		Upon Request	Upon Request	Upon Request	Upon Request	Upon Request	Upon Request
Electric Cable Entries		N°2 M20x1,5	N°2 M20x1,5	N°2 M20x1,5	N°2 M20x1,5	N°2 M20x1,5	N°2 M20x1,5
Weight (Kg)		3,3	4,5	8,5	8,5	9,5	9,5

Electric Actuator Consumption Data

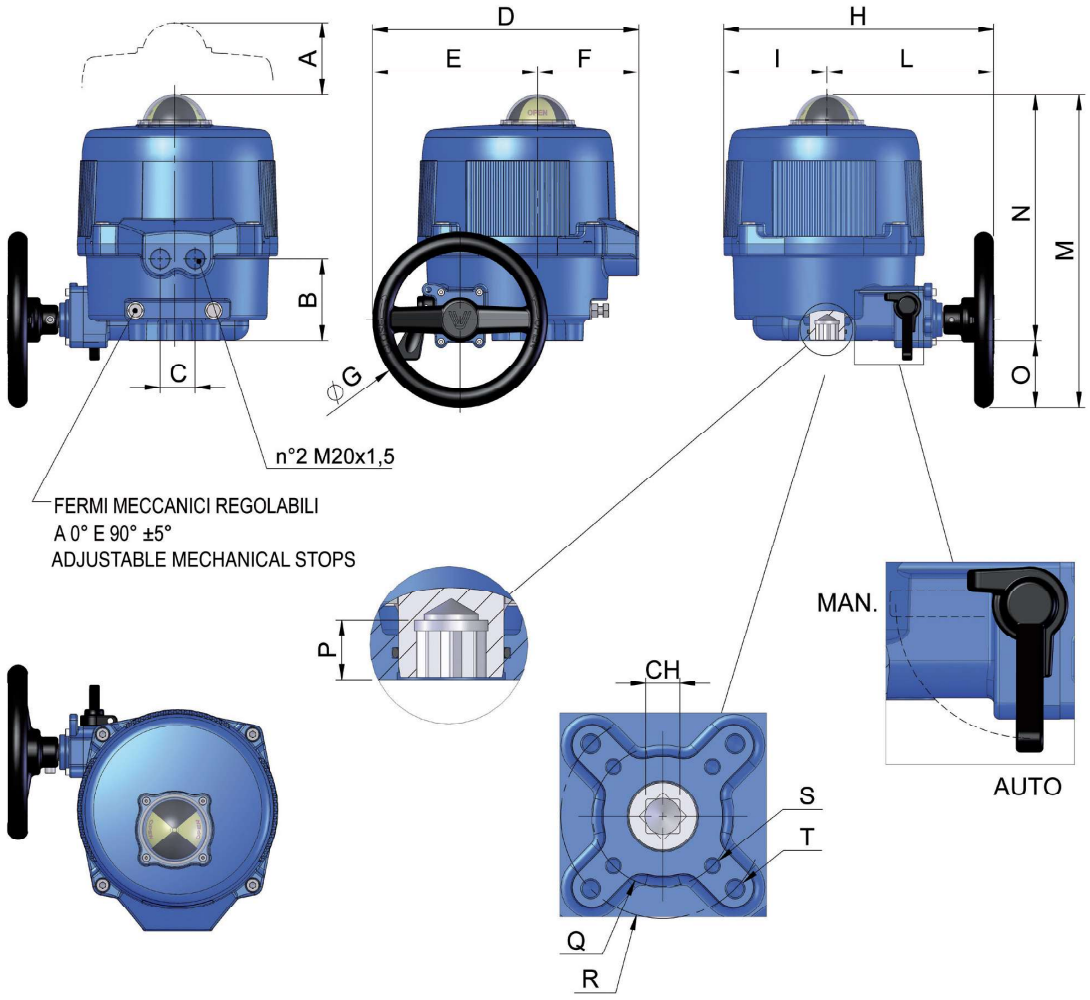
Model		VB030m	VB060m	VB110m	VB190m	VB270m	VB350m
Version H	Nominal Voltage	100-240V AC					
	Absorbed Current	0,4-0,2 A	0,6-0,3 A	0,4-0,2 A	0,6-0,3 A	0,6-0,3 A	0,75-0,4 A
	Absorbed Power	40-48 VA	60-72 VA	40-48 VA	60-72 VA	60-72 VA	75-96 VA
Version L	Nominal Voltage	12V AC/DC 24V AC/DC	12V AC/DC 24V AC/DC	12V AC/DC 24V AC/DC	12V AC/DC 24V AC/DC	12V AC/DC 24V AC/DC	12V AC/DC 24V AC/DC
	Absorbed Current	2,2-1,8 A 1-0,7 A	3,8-2,85 A 1,8-1,2 A	2,2-1,8 A 1-0,7 A	3,8-2,85 A 1,8-1,2 A	3,8-2,85 A 1,8-1,2 A	4,75-3,65 A 1,95-1,65 A
	Absorbed Power	26,5-22 VA 24-17 VA	46-34 VA 43-29 VA	26,5-22 VA 24-17 VA	46-34 VA 43-29 VA	46-34 VA 43-29 VA	57-44 VA 47-40 VA
	Frequency	50/60 Hz					

Mod. VB030M - VB060M



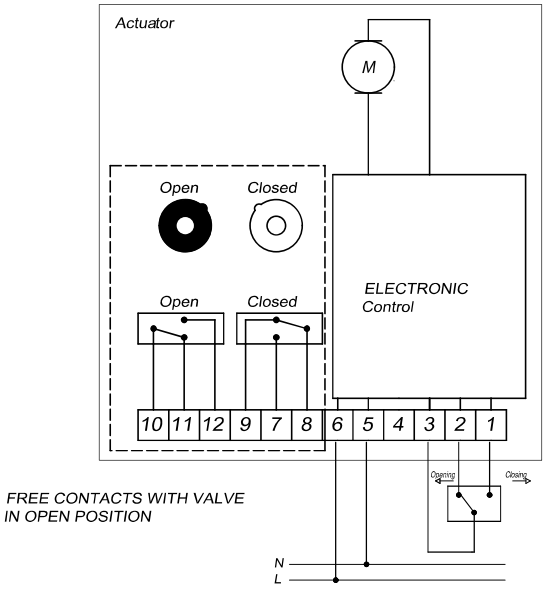
Mod.	ISO 5211 Flange	CH	A	B	C	D	E	F	G	H	I	L	M	N	O	P	Q	R
VB030M	F03-F05-F07	11	139	36	35	199	187	63	124	161	12	36	50	70	M5x8	M6x10	M8x11	10
VB060M	F05-F07	14	139	56	35	220	197	63	134	176	16	-	50	70	-	M6x14	M8x15	10

Mod. VB110M ÷ VB350M

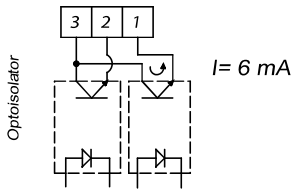


Mod.	ISO 5211 FLANGE	CH	A	B	C	D	E	F	G	H	I	L	M	N	O	P	Q	R	S	T
VB110M	F07-F10	17	139	82	35	266	165	101	175	270	103	167	313	246	67	19	70	102	M8X15	M10X15
VB190M	F07-F10	17	139	82	35	266	165	101	175	270	103	167	313	246	67	19	70	102	M8X15	M10X15
VB270M	F07-F10	22	139	83	35	279	184	95	175	275	109	166	314	247	67	24	70	102	M8X15	M10X15
VB350M	F07-F10	22	139	83	35	279	184	95	175	275	109	166	314	247	67	24	70	102	M8X15	M10X15

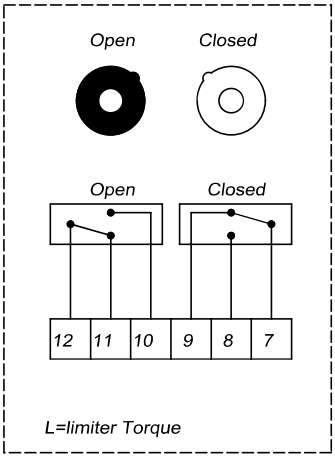
Electric Wiring VB015 100-240V 50/60Hz



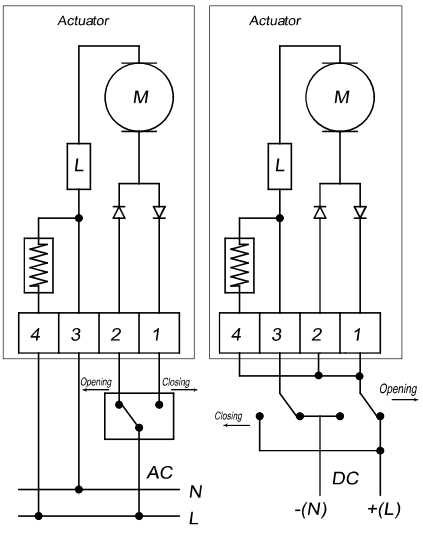
Static Impulse Drive Optoisolated By Plc



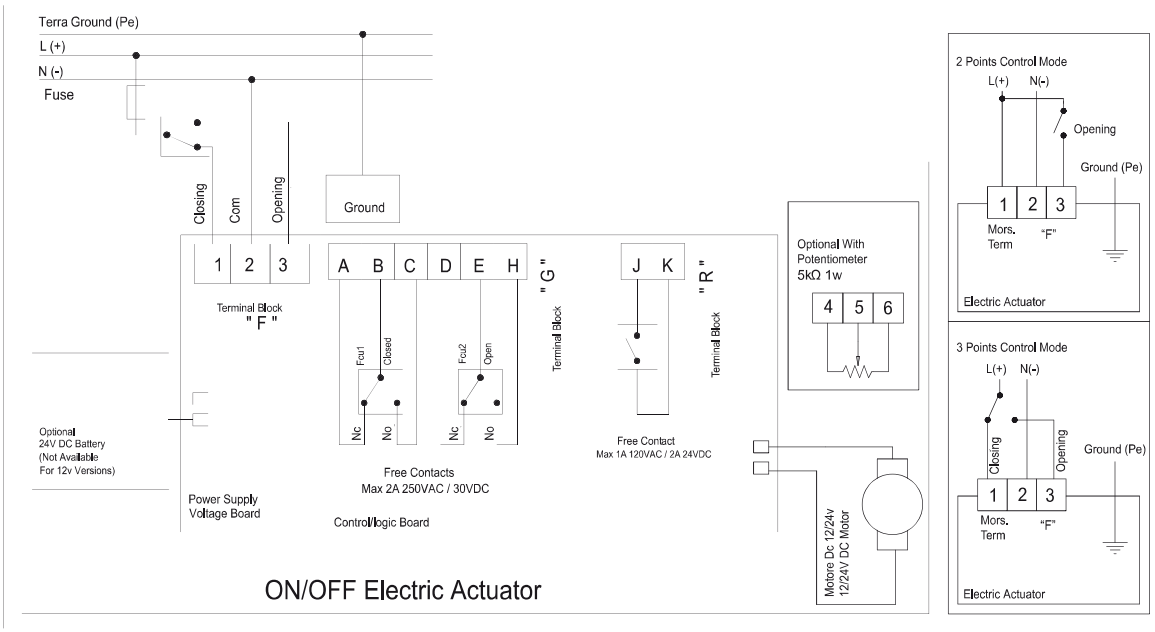
Electric Wiring VB015 12V-24V AC/DC 50/60 Hz



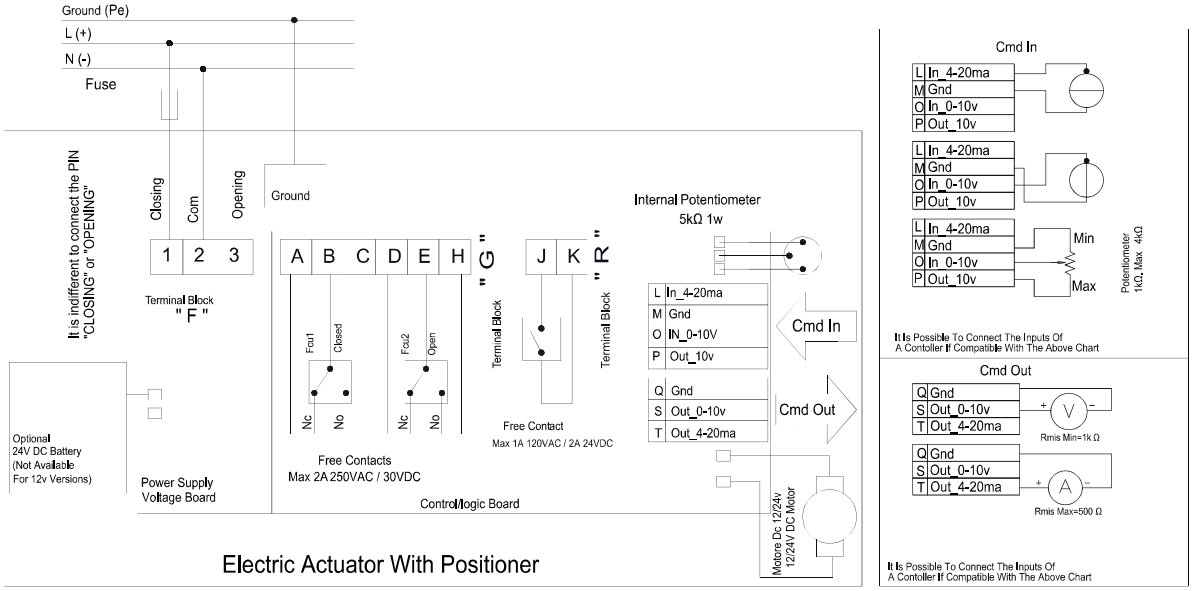
FREE CONTACTS WITH VALVE
IN OPEN POSITION



Electric Wiring From VB030 To VB350 And From VB030m To VB350m 12V AC/DC 50/60 Hz, 24V AC/DC 50/60 Hz, 100-240V AC 50/60 Hz



Electric Wiring With Positioner From VB030 To VB350 And From VB030m To VB350m 12V AC/DC 50/60 Hz, 24V AC/DC 50/60 Hz, 100-240V AC 50/60 Hz



The power supply COM signal (pin "2" terminal block "F") must not share the same electrical command ground signal (pin "GND" terminal block "CDM IN") or feedback ground signal (pin "GND" terminal block "CDM OUT") .

Electric Wiring With Middle Position From VB030 To VB350 And From VB030m To VB350m 12V AC/DC 50/60Hz, 24V AC/DC 50/60Hz, 100-240V AC 50/60Hz