

Product bulletin for:

S70M Electric rotary actuator for butterfly valves



S70M electric actuator in conjunction with the BV10000

Developed for HVAC applications

Energy, the right amount to the right place at the right time



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2 Features

2.1 Your benefits for greater energy efficiency

- Exact positioning ensures precise flow control
- Complete opening and closing from 100% to 0
 - Ensures 100% utilization of the actuator capacity
 - Ensures that the stated leak rate is achieved.
- Range from 68 Nm to 2034 Nm
 - For the actuator that fits to your application requirements
- Self-regulating heater (Optional, also available as retrofit set)
 - Prevents condensation in the housing caused by severe temperature changes.
- Construction optimized for operation with butterfly valves.
 - This means minimum use of space with good accessibility.
- Two isolated auxiliary switches as standard
 - i.e. switch on/off pumps.

2.2 Applications

The actuator is specially developed for use with butterfly valves in the HVAC industry.

As well as this, Bray Controls many years of experience in the area of industrial applications was brought to bear.

This means that beside the European actuator models described here there are also types available for world-wide usage (UL, CSA, CCC...).

- Butterfly valves
- Further applications for 90° rotary actuators

2.3 Technical specifications

- 230 V AC and 24 V AC
- 2-point, 3-point and proportional control
- Nominal torque in Nm: 68, 226, 565, 735, 1470 and 2034
- Environmental temperatures -29°C .. +65°C
- Run-time = 100% with 2-point and proportional control and 25% with 3-point class S2 control
- Protection class IP 65, dust-proof and shower proof from all angles.

- Hand operation is standard. When hand operation is active a yellow ring is displayed and the actuator motor is not operative.
- Adjustable mechanical end stops and electrical end position switches.
- Decoupling relays for parallel operation between 2-point and 3-point controlled actuators.
- Direct coupling to Bray BV 10000 butterfly valves.
- Two cable entries to separate power cables from control cables.
- Die cast housing made of powder-coated aluminum
- All-around and clearly recognizable position indicator.
- Adjustable limit switches to reduced turning angle.
- Independently adjustable opening and closing speeds by proportional application.
- Adjustable responsivity.

3 Overview of models and order numbers

3.1 Models

Table 1 230V 50/60 Hz

Torque (Nm)	Control	Heating	Order number
68	2 / 3 - Point	-	S70M2300061
		Yes	S70M2300061H
	0(2) .. 10 V DC 0 .. 5 V DC 4 mA .. 20 mA	Yes	S70M2300061SVH
226	2 / 3 - Point	-	S70M2300201
		Yes	S70M2300201H
	0(2) .. 10 V DC 0 .. 5 V DC 4 mA .. 20 mA	Yes	S70M2300201SVH
735	2 / 3 - Point	-	S70M2300651
		Yes	S70M2300651H
	0(2) .. 10 V DC 0 .. 5 V DC 4 mA .. 20 mA	Yes	S70M2300651SVH
1470	2 / 3 - Point	-	S70M2301306
		Yes	S70M2301306H
	0(2) .. 10 V DC 0 .. 5 V DC 4 mA .. 20 mA	Yes	S70M2301306SVH
2034	2 / 3 - Point	-	S70M2301806
		Yes	S70M2301806H
	0(2) .. 10 V DC 0 .. 5 V DC 4 mA .. 20 mA	Yes	S70M2301806SVH

Table 2 24 V 50/60 Hz

Torque (Nm)	Control	Heating	Order number
68	2 / 3 - Point	-	S70M240060
		Yes	S70M240060H
	0(2) .. 10 V DC 0 .. 5 V DC 4 mA .. 20 mA	Yes	S70M240060SVH
226	2 / 3 - Point	-	S70M240200
		Yes	S70M240200H
	0(2) .. 10 V DC 0 .. 5 V DC 4 mA .. 20 mA	Yes	S70M240200SVH
565	2 / 3 - Point	-	S70M240500
		Yes	S70M240500H
	0(2) .. 10 V DC 0 .. 5 V DC 4 mA .. 20 mA	Yes	S70M240500SVH

3.2 S70M in Combination with the BV10000 butterfly valve

The S70M actuator series is used in combination with the BV10000 (BV20000) butterfly valve from the nominal sizes DN 50 to DN 500.

The corresponding allocation can be taken from the following tables



Table 3 S70M 230V Models

			S70M2300061SVH	S70M2300061 S70M2300061H	S70M2300201SVH	S70M2300201 S70M2300201H	S70M2300651SVH	S70M2300651 S70M2300651H	S70M2301306SVH	S70M2301306 S70M2301306H	S70M2301806SVH	S70M2301806 S70M2301806H		
Order number			68		226		735		1470		2034			
Torque Nm			68		226		735		1470		2034			
Voltage AC			230 V AC 50/60Hz											
Proportional			√		√		√		√		√			
Input 0-10V; 0-5V; 2-10V; 4-20mA			√		√		√		√		√			
Output. 0-10V; 0-5V; 4-20mA			√		√		√		√		√			
2 / 3 Point				√		√		√		√		√		
2 Aux. switches			√											
Running time in s at 50 Hz			36						132					
Adjustable running time			√		√		√		√		√			
Order No.	DN	K _{vs}	Max. Δp (kPa)											
BV10050	050	124	1200	√	√									
BV10065	065	243	1200	√	√									
BV10080	080	397	1200	√	√									
BV10100	100	723	1200	√	√									
BV11100	100	723	350	√	√									
BV10125	125	1.083	1200	√	√									
BV11125	125	1.083	350	√	√									
BV10150	150	1.591	1200	√	√									
BV11150	150	1.591	350	√	√									
BV10200	200	2.852	1200			√	√							
BV11200	200	2.852	350			√	√							
BV10250	250	4.670	1200					√	√					
BV11250	250	4.670	350			√	√							
BV10300	300	6.946	1200					√	√					
BV11300	300	6.946	350					√	√					
BV10350	350	9.063	1000					√	√					
BV11350	350	9.063	350					√	√					
BV10400	400	12.044	1000							√	√			
BV11400	400	12.004	350					√	√					
BV10450	450	14.804	1000							√	√			
BV11450	450	14.804	350					√	√					
BV10500	500	19.212	1000								√	√		
BV11500	500	19.212	350					√	√					

Table 4 S70M 24V Model

			S70M240060SVH	S70M240060 S70M240060H	S70M240200SVH	S70M240200 S70M240200H	S70M240500SVH	S70M240500 S70M240500H
Order number								
Torque Nm			68		226		565	
Voltage AC			24V AC 50/60Hz					
Proportional			√		√		√	
Input 0-10V; 0-5V; 2-10V; 4-20mA			√		√		√	
Output 0-10V; 0- 5V; 4-20mA			√		√		√	
2 / 3 Point				√		√		√
2 Aux. switches			√					
Running time in s at 50 Hz			60					
Adjustable running time			√		√		√	
Order No..	DN	K _{vs}	Max. Δp (kPa)					
BV10050	050	124	1200	√	√			
BV10065	065	243	1200	√	√			
BV10080	080	397	1200	√	√			
BV10100	100	723	1200	√	√			
BV11100	100	723	350	√	√			
BV10125	125	1.083	1200	√	√			
BV11125	125	1.083	350	√	√			
BV10150	150	1.591	1200	√	√			
BV11150	150	1.591	350	√	√			
BV10200	200	2.852	1200			√	√	
BV11200	200	2.852	350			√	√	
BV10250	250	4.670	1200					√
BV11250	250	4.670	350			√	√	
BV10300	300	6.946	1200					√
BV11300	300	6.946	350					√
BV10350	350	9.063	1000					√
BV11350	350	9.063	350					√
BV10400	400	12.044	1000					√
BV11400	400	12.004	350					√
BV10450	450	14.804	1000					√
BV11450	450	14.804	350					√
BV10500	500	19.212	1000					√
BV11500	500	19.212	350					√

To order an already fitted combination simply add the module, for example BV11150/S70M24006

You can also order with a built-in self-regulating heater that prevents condensation within the actuator .Just add an “H” to the actuator order No. for example: BV11150/S70M240061H.

The necessary bolts spring washers and the axle carrier are included in the actuator scope of delivery for when you want to carry out an in-situ fitting. Please observe the installation instructions.

4 Technical drawings and connection diagram

4.1 S70M Actuator 006, 020, 050, 065

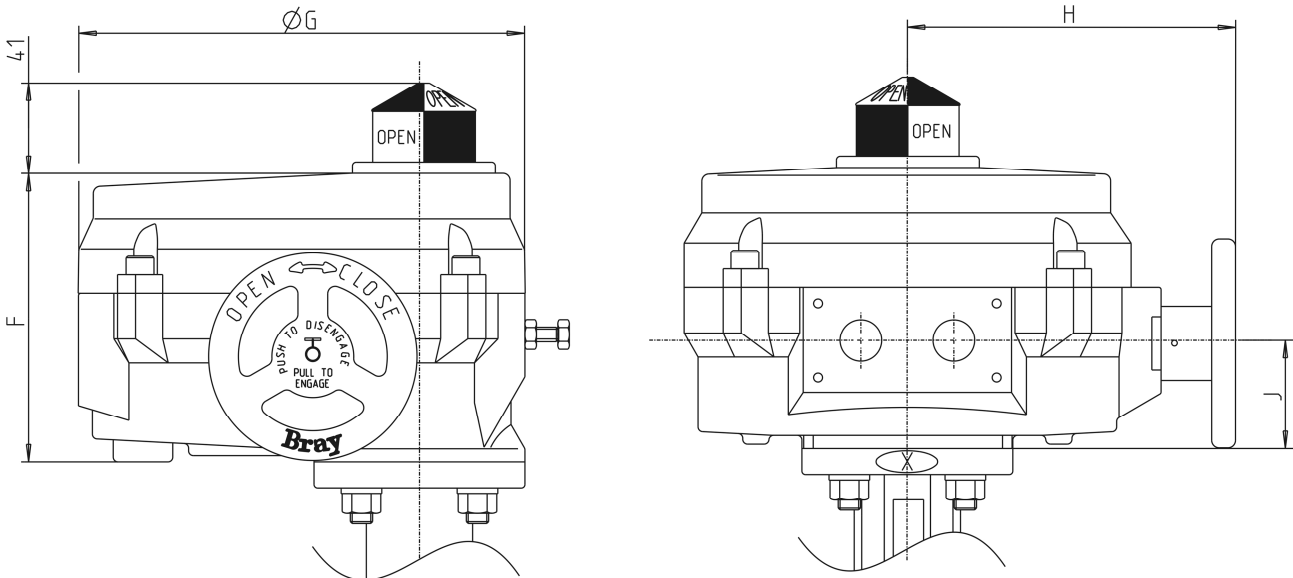


Fig. 1 S70M Actuator 006, 020, 050, 065

4.2 S70M Actuator 130, 180

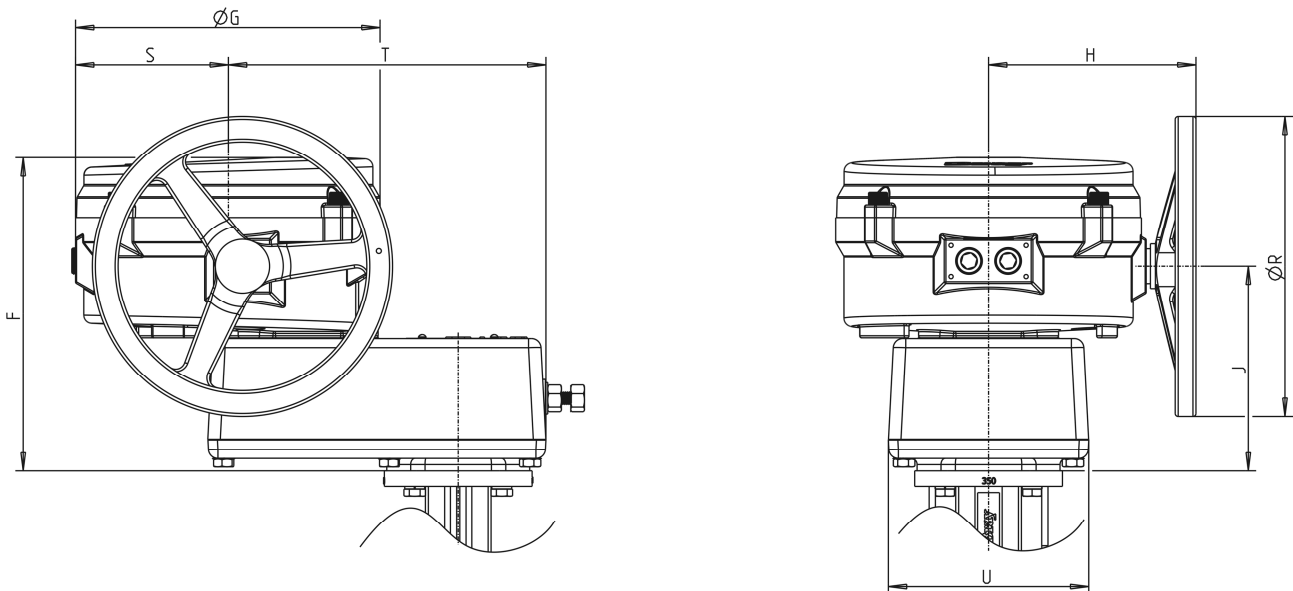


Fig. 2 S70M Actuator 130, 180

Table 5 BV10000 plus S70M Dimensions

Actuator	F	G	H	J	S	T	R	U	Flange
Order No.	mm								
S70M_006_	130	191	142	48	-	-	89	-	F07
S70M_020_	165	257	198	64	-	-	203	-	F07/F12
S70M_050_ S70M_065_	183	307	241	74	-	-	305	-	F12/F16
S70M_130_ S70M_180_	317	307	241	206	155	323	305	203	F12/F16

Table 6 Stem Hole

Actuator	∅	Across flats	depth	Keyway
S70M_0060_	19.05	12.95	44.45	-
S70M_020_	29.97	22.10	55.88	-
S70M_050_ / S70M_065_	50.04		66.04	50.8 x 11.94
S70M_130_ / S70M_180_	50.04		137.16	101.6 x 11.94

! Note:

Ensure that there is adequate room for fitting the actuator and making the electrical connections as well as possible additional work.

4.3 Electrical connection diagram

4.3.1 24 V AC, 2 / 3 Point

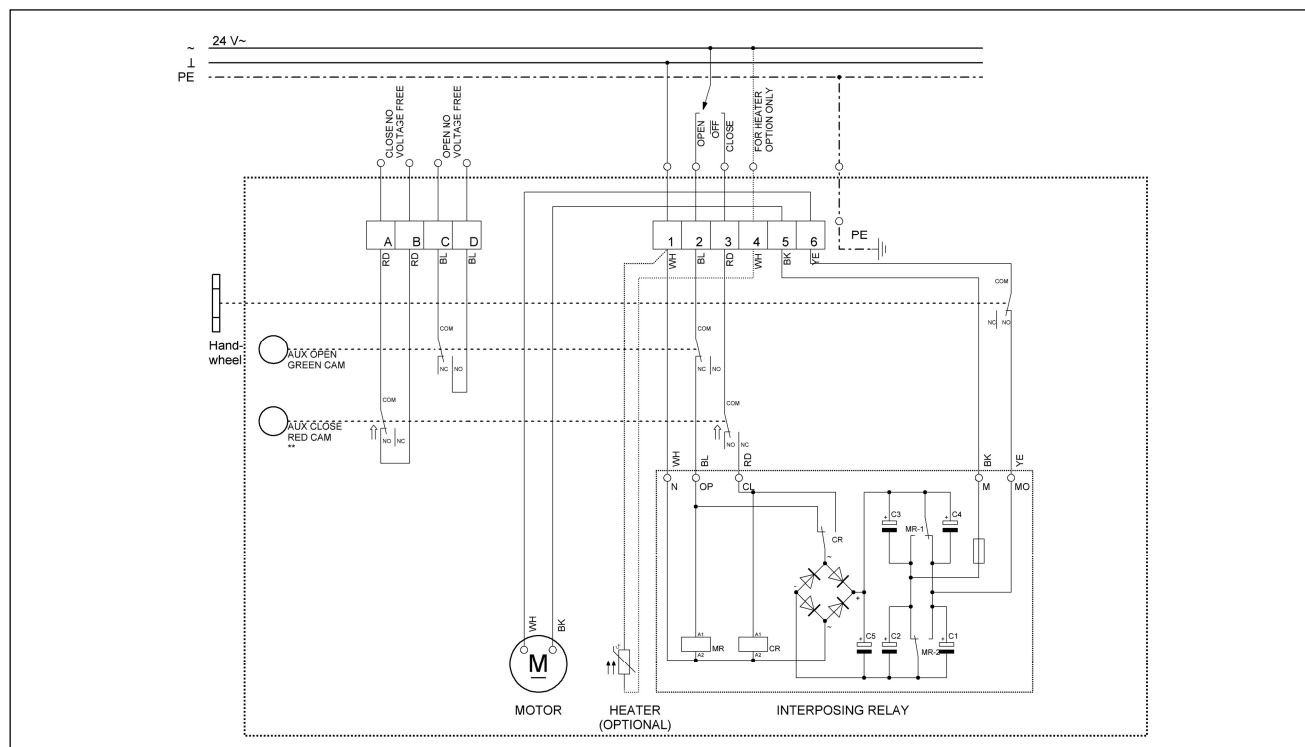


Fig. 3 24 V AC 2/3 Point

4.3.2 230 V AC, 2 / 3 Point

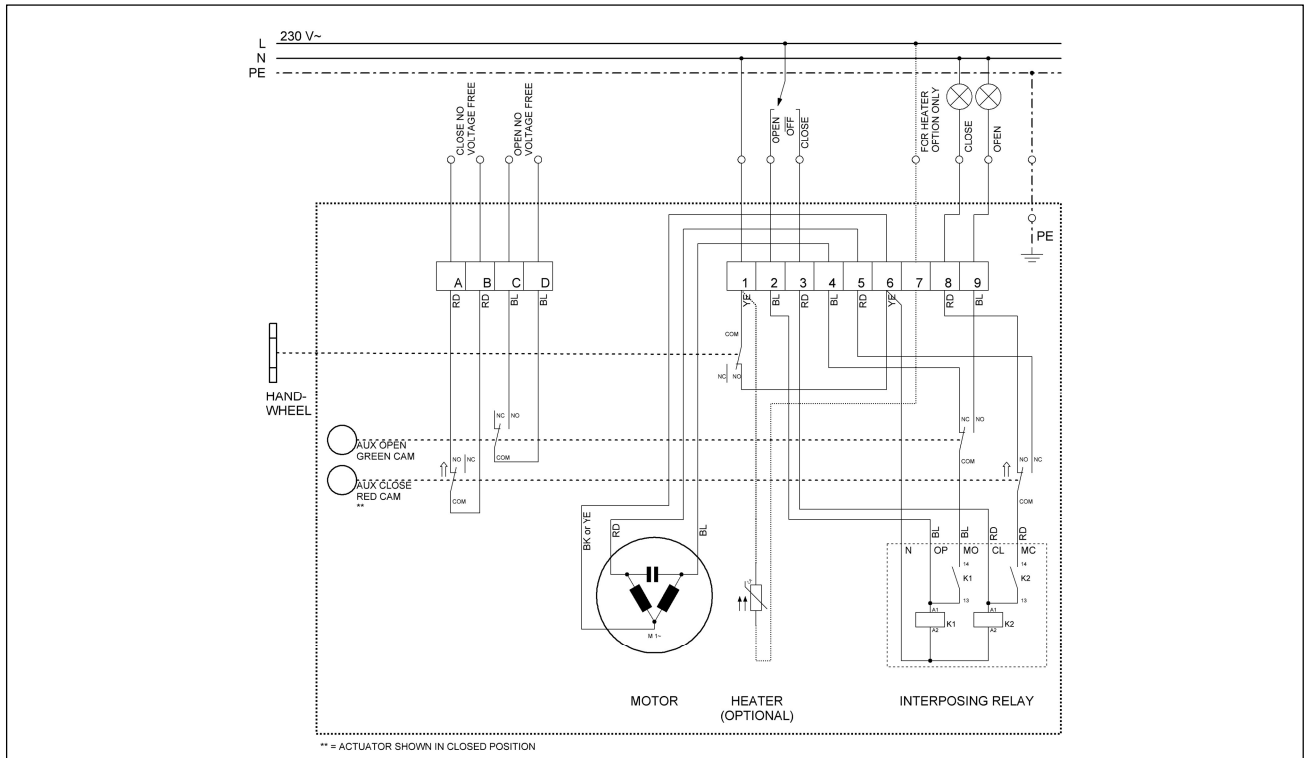


Fig. 4 230 V AC 2/3 Point

4.3.3 24 V AC, Proportional

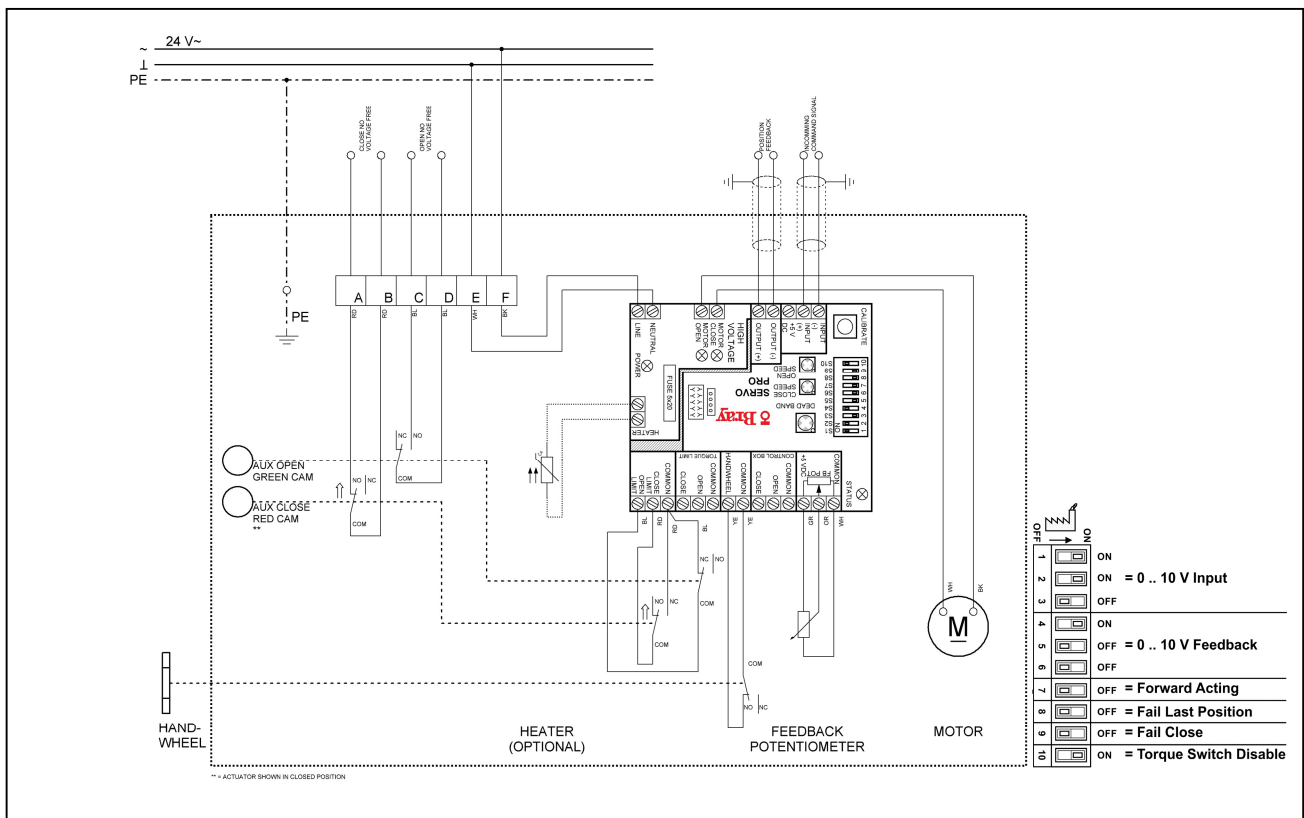


Fig. 5 24 V AC, Proportional

4.3.4 230 V Proportional

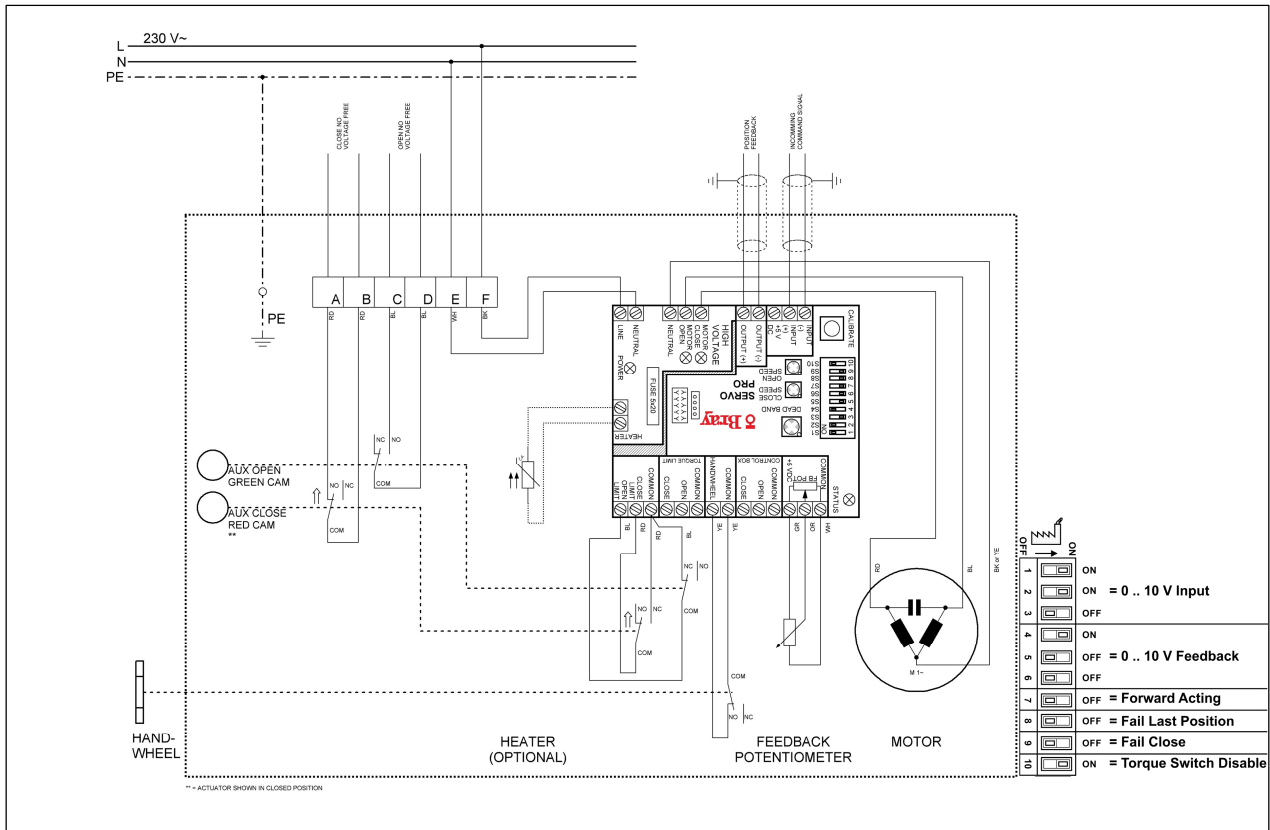


Fig. 6 230V AC, Proportional

4.3.5 DIP-Settings

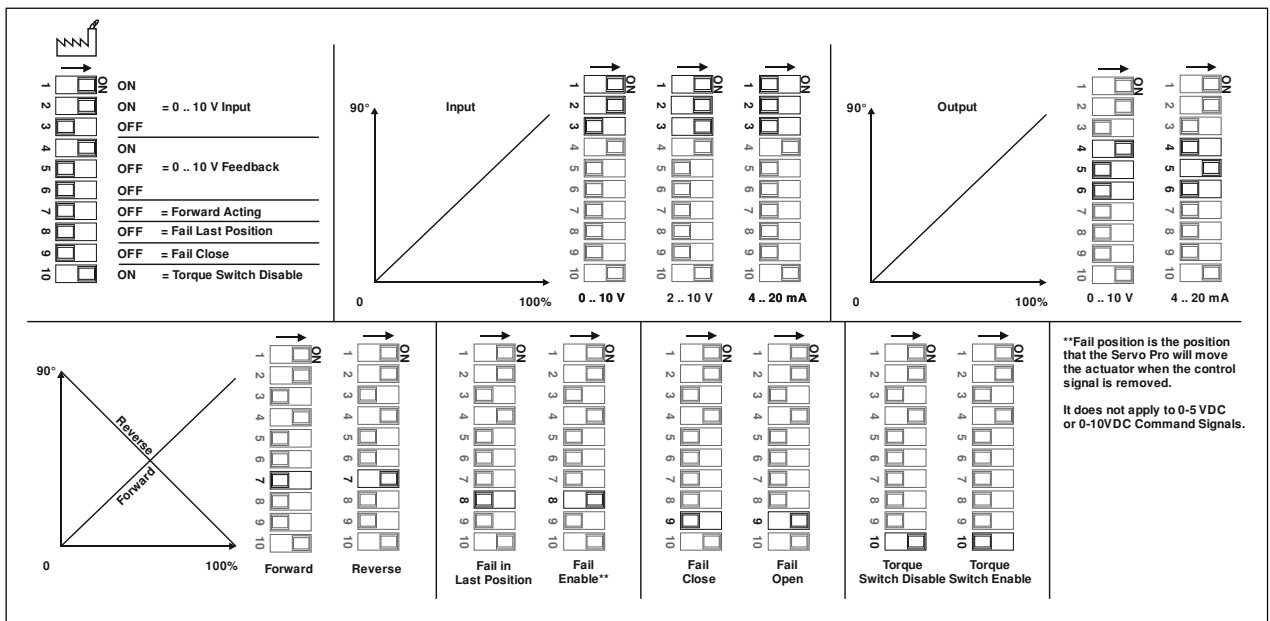


Fig. 7 DIP-Settings

5 Technical data

Table 7 Technical data 1 of 3

Control	2 Point, 3 Point	Proportional
Nominal voltage	230 V +/- 10 % or 24V +/- 20 %	
Frequency	50/60 Hz	
Protection class	IP65	
Ambient operating temperature	-29°C.. 65°C	
Ambient storage temperature	-40°C.. 65°C	
Humidity	95%, No condensation	
Noise level	max.70dB(A)	
Input	Nominal voltage	0(2)-10V DC 0-5V DC 4-20mA
Output	-	0(2)-10V DC 0-5V DC 4-20mA
Minium Response time	200 ms	-
Positioning	-	Up to 200 possible positions 0(2)-10V DC 0-5V DC
Impedance	-	>10MOhm 4-20mA 200 Ohm
Running time	S2 25%	100%
Guarantee	3 Years	
Manual operation	Standard	
Conformity and approvals	Machine directive 2006/42/EC und 98/37/EC EMC directive 2004/108/EC Low voltage directive 2006/95/EC EN 60204-1:2006 EN 61010-1:2011-7 EN 6100-6-1...4 EN 60730-1 EN 60730-2-14	
Heating	optional add H to the actuator order number	yes
Power (Heating)	5W	
Auxiliary switches	2 SPDT standard; 10A at 250VAC; 0,5A at 24VDC	
Electrical connections	Screw terminals 0.35 .. 4 mm ²	Screw terminals 0.35 .. 4 mm ² for Nominal voltage supply 0.25 .. 2.5 mm ² for control
Servicing	No servicing required	

Table 8 *Technical data 2 of 3*

Order No.	Torque	Flange	Stem-adaption	Cable-entry	Weight	Axle carrier
S70M2300061 S70M2300061H	68 Nm	F07	∅ 19 mm 13 mm	2 x M20 * 1.5	6 kg	DN50-80 = S70MA1 DN100 = S70MB1 DN125+150= Direct
S70M2300061SVH	68 Nm	F07	∅ 19 mm 13 mm	2 x M20 * 1.5	6 kg	DN50-80 = S70MA1 DN100 = S70MB1 DN125+150= Direct
S70M2300201 S70M2300201H	226 Nm	F07, F12	∅ 30 mm 22 mm	2 x M25 * 1.5	13 kg	DN200 = S70MD1 DN250= Direct
S70M2300201SVH	226 Nm	F07, F12	∅ 30 mm 22 mm	2 x M25 * 1.5	13 kg	DN200 = S70MD1 DN250= Direct
S70M2300651 S70M2300651H	735 Nm	F12, F16	∅ 50 mm 12x10	2 x M25 * 1.5	22 kg	DN250+300 = S70ME2 DN350-500= S70MF1
S70M2300651SVH	735 Nm	F12, F16	∅ 50 mm 12x10	2 x M25 * 1.5	22 kg	DN250+300 = S70ME2 DN350-500= S70MF1
S70M2301306 S70M2301306H	1470 Nm	F12, F16	∅ 50 mm 12x10	2 x M25 * 1.5	54 kg	DN400 = S70MF1 DN450= Direct
S70M2301306SVH	1470 Nm	F12, F16	∅ 50 mm 12x10	2 x M25 * 1.5	54 kg	DN400 = S70MF1 DN450= Direct
S70M2301806 S70M2301806H	2034 Nm	F12, F16	∅ 50 mm 12x10	2 x M25 * 1.5	54 kg	DN500= Direct
S70M2301806SVH	2034 Nm	F12, F16	∅ 50 mm 12x10	2 x M25 * 1.5	54 kg	DN500= direct
S70M240060 S70M240060H	68 Nm	F07	∅ 19 mm 13 mm	2 x M20 * 1.5	6 kg	DN50-80 = S70MA1 DN100 = S70MB1 DN125+150= Direct
S70M240060SVH	68 Nm	F07	∅ 19 mm 13 mm	2 x M20 * 1.5	6 kg	DN50-80 = S70MA1 DN100 = S70MB1 DN125+150= Direct
S70M240200 S70M240200H	226 Nm	F07, F12	∅ 30 mm 22 mm	2 x M25 * 1.5	13 kg	DN200 = S70MD1 DN250= Direct
S70M240200SVH	226 Nm	F07, F12	∅ 30 mm 22 mm	2 x M25 * 1.5	13 kg	DN200 = S70MD1 DN250= Direct
S70M240500 S70M240500H	565 Nm	F12, F16	∅ 50 mm 12x10	2 x M25 * 1.5	22 kg	DN250+300 = S70ME2 DN350-450= S70MF1
S70M240500SVH	565 Nm	F12, F16	∅ 50 mm 12x10	2 x M25 * 1.5	22 kg	DN250+300 = S70ME2 DN350-450= S70MF1

Table 9 *Technical data 3 of 3*

Order No.	Torque	Current-consumption	Apparent Power	Idling wattage	Weight	Runtime	max.
						90° ± 50 Hz	adjustable
S70M2300061 S70M2300061H	68 Nm	0,65 A	150 VA 155 VA	- 5 W	6 kg	36 s	-
S70M2300061SVH	68 Nm	0,65 A	157 VA	7 W	6 kg	36 s	36 .. 480 s
S70M2300201 S70M2300201H	226 Nm	0,5 A	115 VA 120 VA	- 5 W	13 kg	36 s	-
S70M2300201SVH	226 Nm	0,5 A	122 VA	7 W	13 kg	36 s	36 .. 480 s
S70M2300651 S70M2300651H	735 Nm	1,1 A	253 VA 258 VA	- 5 W	22 kg	36 s	-
S70M2300651SVH	735 Nm	1,1 A	260 VA	7 W	22 kg	36 s	36 .. 480 s
S70M2301306 S70M2301306H	1470 Nm	1,3 A	300 VA 305 VA	- 5 W	54 kg	132 s	-
S70M2301306SVH	1470 Nm	1,3 A	307 VA	7 W	54 kg	132 s	132 .. 1760 s
S70M2301806 S70M2301806H	2034 Nm	1,5 A	345 VA 350 VA	- 5 W	54 kg	132 s	-
S70M2301806SVH	2034 Nm	1,5 A	352 VA	7 W	54 kg	132 s	132 .. 1760 s
S70M240060 S70M240060H	68 Nm	1,8 A	43 VA 48 VA	- 5 W	6 kg	60 s	-
S70M240060SVH	68 Nm	1,8 A	50 VA	7 W	6 kg	60 s	60 .. 800 s
S70M240200 S70M240200H	226 Nm	2,0 A	48 VA 53 VA	- 5 W	13 kg	60 s	-
S70M240200SVH	226 Nm	2,0 A	55 VA	7 W	13 kg	60 s	60 .. 800 s
S70M240500 S70M240500H	565 Nm	3,0 A	72 VA 77 VA	- 5 W	22 kg	60 s	-
S70M240500SVH	565 Nm	3,0 A	79 VA	7 W	22 kg	60 s	60 .. 800 s

5.1 Declaration of conformity



ARMATUREN & ANTRIEBE EUROPA
A Subsidiary of BRAY INTERNATIONAL, Inc.



CE DECLARATION OF CONFORMITY

In conformity with directives

EMC directive (2004/108/EC)
Low voltage directive (2006/95/EC)
Machinery directive (2006/42/EC)

We declare under our sole responsibility that the products to which this declaration relates, are in conformity with the following standards.

Products:	Bray Actuator	S70M230.... S70M230....H S70M230....SV S70M230....SVH S70M24.... S70M24....H S70M24....SV S70M24....SVH
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For assessment of these products following standards have been consulted:

EN 61010-1:2011-7 EN 50178:1998-04	for low voltage directive 2006/95/EG
EN 61000-6-1:2007 EN 61000-6-2:2005 EN 61000-6-3:2007+A1:2011/AC:2012 EN 61000-6-4:2007+A1:2011	for EMC directive 2004/108/EG
EN 60259 EN ISO 5211	for machinery directive 2006/42/EG

Krefeld, den 30.01.2012

Kurt Baier, Geschäftsführer

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Geschäftsführung: Frank J. Raymond, Craig C. Brown, George Crooks, Kurt Baier

Fig. 8 Declaration of conformity

6 General information

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Bray commercial reserves the right to change the contents of this bulletin as well as the specifications and features of related products and software without notice at any time.

For the purpose of this documentation an 'operator' is someone who is familiar with the installation, startup, operation and maintenance of the system. The operator must have the following qualifications:

- Trained or authorized to energize/de-energize the system in accordance with established safety procedures.
- Trained and authorized in the proper care and use of protective equipment in accordance with established safety procedures.

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