

ELECTRIC ACTUATORS

SA3 - SA100

SAR3 - SAR100

Electric actuators for weather-proof applications

Epac-C Version



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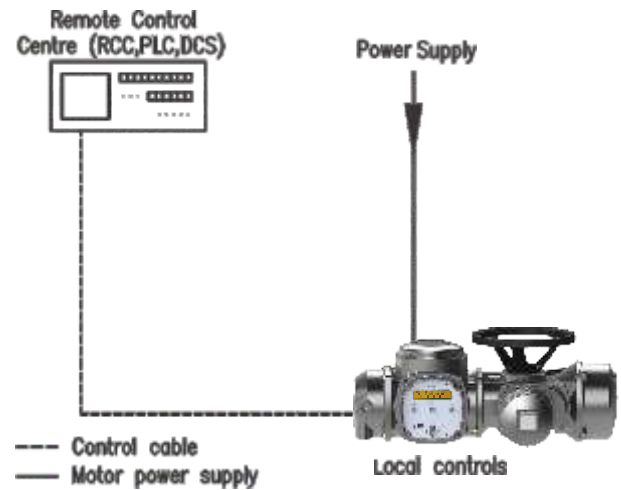
AUMA ACTUATORS - INTRODUCTION

AUMA India SA and SAR weather-proof actuators are suitable for all valves in non-hazardous locations. AUMA India weather-proof actuators with or without integral starter are designed to suit harsh environments. AUMA India actuators are manufactured to comply with IS/ISO 22153:2020 / EN 15714- 2.

The modern controls in the integral starter actuators integrate all electrical components such as limit, torque, thermoswitches, all monitoring elements and position transmitters.

This results in following simplification:

- No extensive wiring in the external control cabinet.
- Several actuators can be connected to common supply cable using isolation switch for each actuator.
- Actuator signals are processed in the controls, only feedback to process control system is necessary.
- Integral starter housing can be easily replaced due to multi-pin plug & socket connector between actuator & integral starter unit.
- Actuator can be operated from Local or Remote position using selector switch of the integral starter unit.



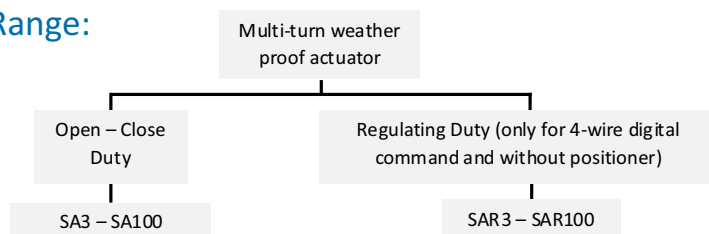
Integral starter - AUMA Epac

Technical data:

The actuator is suitable for:

- 415V, 50Hz, 3 ph AC supply, it can also be offered for other supply voltages and frequency based on customer requirement for Indian projects.
- Permissible variation of mains power supply voltage: $\pm 10\%$
- Permissible variation of mains frequency: $\pm 5\%$
- Ambient Temperature: -20 deg C to +70 deg C
- Relative humidity: Up to 100%
- Enclosure protection: IP 68
- Altitude: AUMA India actuators are capable of operation at an altitude at least 1000m above sea level accordance with IS/ISO 22153:2020.
- Corrosion Protection: AUMA India offers C3 & C4 corrosion protection coating solutions as per EN ISO 12944-2. Special corrosion protection coating requirements will be catered based on request.

Product Range:



AUMA ACTUATORS - APPLICATIONS

Power

AUMA India actuators are relied upon for controlling water and steam flows in pipeline throughout the power plants. Offering a uniform interface for all automated valves, AUMA India actuators are specially designed to adapt to the power plant control solution

- Conventional power plants (coal, gas, oil)
- Co-generation power plants
- Hydroelectric power plants
- Biogas power plants
- Solar thermal power plants
- Nuclear power plants



Water

From potable water treatment and distribution, sewage treatment to civil engineering constructions for water applications, AUMA actuators automate valves of any size and design

- Sewage treatment plants
- Water treatment plants
- Drinking water distribution
- Seawater desalination

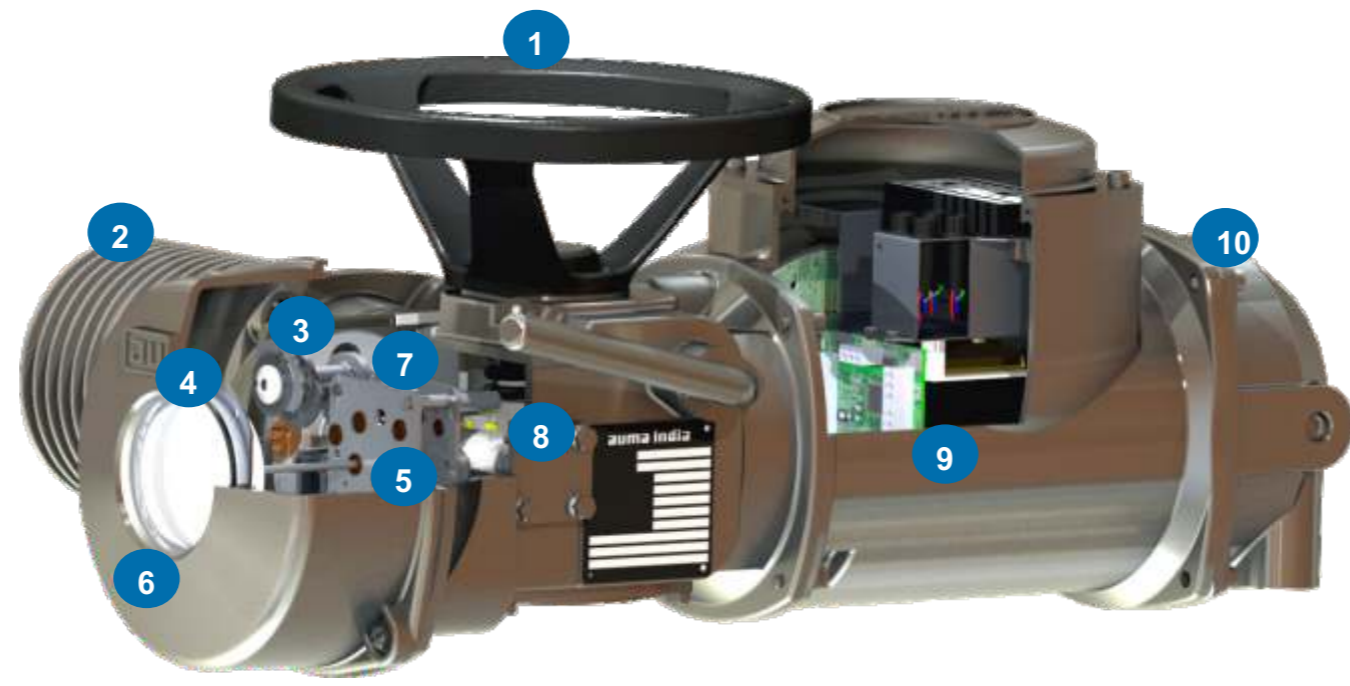
Industry

Any process technology requires pipes & valves and consequently AUMA India actuators. AUMA India provide tailor-made solutions to plant-specific requirements

- Cement works, Steel mills
- Air conditioning
- Chemical industry
- Paper & pulp, Food industry
- Pharmaceutical industry
- Shipbuilding industry



Typical Actuator Constructional View



1 Provided with a handwheel to enable operation of the actuator during commissioning or in case of power failure.

2 AUMA India motors are specifically designed with high starting torque with low inertial to unseat the valves from end positions.
The RDOL starter is used for operation of the actuator motor.

3 AUMA India actuators are available with a wide range of output speed achieved by special combination of gears located outside the grease filled housing. Output speed can be easily altered by changing the gear pair and/or motor at site.

4 Switch compartment comprise of mechanism for limit and torque sensing & settings.

5 A reduction gear unit (RGU) in the actuator is used for mechanical position indication.

6 A mechanical position indicator is provided to indicate valve position even without power supply during manual actuator operation.

7 Valve position can be signaled to the local control unit / DCS via the potentiometer or a 4 – 20 mA signal (via EWG/RWG position transmitters).

The space heater minimizes condensation within the switch compartment.

10 All electrical connections are terminated inside the terminal compartment through 50 pin and 64 pin non modular double sealing connector for ease of connection and maintenance. In case of MPCB and additional accessories requirement, screw type (DIN rail arrangement) connector is used.

As a standard, AUMA India actuators are supplied with adequate cable entries closed with metallic plugs and o-rings to prevent ingress of dust and water during transportation and storage. Additionally, cable glands can be provided based on customer requirement.

9 The integral control e-pac consists of control module and power module for performing the standard control functions. It also comprise of a local push button station for local operation & programming of the actuator and includes selector switch, push buttons and LED indications.

8 A well proved principle of worm gearing is used to reduce the motor speed to required output speed of actuator. Self-locking feature is achieved by worm gearing up to 90 rpm at output. The sliding worm is positioned between two sets of springs on worm shaft. The worm moves axially in relation to torque applied on actuator. Via lever & gears, the torque measure is transmitted to control unit.

The valve mounting flange is according to ISO 5210/ ISO 5211. Various output drives are available for adaption to various types of valves.

Standard

Emergency Shut Down:

The closing of Emergency Shut Down contact at the Remote Command Centre (RCC) will enable the actuator to move in OPEN/ CLOSE direction and STAYPUT (can be selected through DIP switch available on Epac-C control card) overriding any existing REMOTE or LOCAL signals.

Remote Annunciation Relays:

There is 1 assignable relay provided, which can be programmed for Actuator running open, Actuator running close, Open torque switch tripped, Close torque switch tripped, Thermo- switch/ Thermal overload relay trip etc.



Fault/healthy annunciation:

In case of any fault like power fail, torque fault, single phase etc., annunciation to indicate the same is provided.

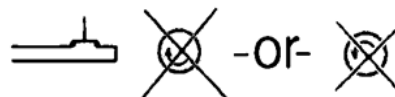
4-wire remote operation (for Digital Signal only):

Command through 4-wire system using (internal / external) 24V DC can be used.

Optional

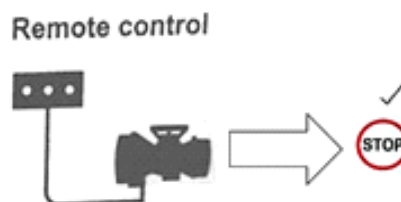
Inhibit Open/ Close:

With this function, it is possible to prevent the actuator from Opening/ Closing. Selection of either Open/ Close is programmable.



Local Stop:

The actuator with this feature, enables the user to stop the actuator by operating the local STOP push button provided on the front panel, even when the actuator selector switch is locked in REMOTE position.

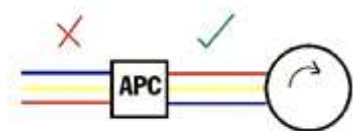


Electronic Position Transmitters (EPT):

For 4-20mA remote position feedback to customer is either through Contact type or Non-contact type EPT.

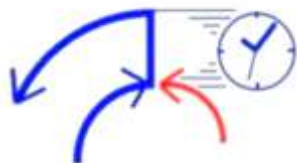
Automatic Phase correction:

The actuator with automatic phase correction in-built, will check the phase sequence of the input power supply and correct it in case wrong phase sequence connected to ensure correct direction of operation of the actuator.



Instantaneous reversal protection:

This feature assures that the motor does not get an instantaneous reversal signal. Even if an instantaneous reversal signal is given to the actuator, a time delay of 500 msec is built-in to prevent instantaneous reversal of the motor direction and ensures the safety of the motor and the driven equipment.



Smart torque function:

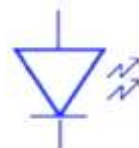
The torque switches plays an important role in protecting the actuator, motor and the valve. In addition to its role of tripping the actuator under overload conditions, Torque switches perform the smart function during the valve unseating process and prevents nuisance tripping.

Anti- Hammer protection:

If the actuator is tripped by the torque switches in a particular direction, it will not allow actuator to run again in the same direction i.e., Anti- Hammer protection is provided in the actuator.

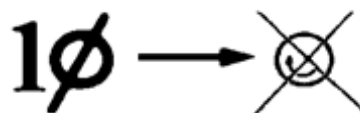
Opto-isolation of input signals:

All the remote-control inputs (OPEN- STOP- CLOSE) to the actuator are isolated optically from the actuator internal electronics to ensure perfect isolation between customer controls and actuator controls.



Single Phasing protection:

This feature protects 3 phase actuator motor during the absence of any of the incoming phase.



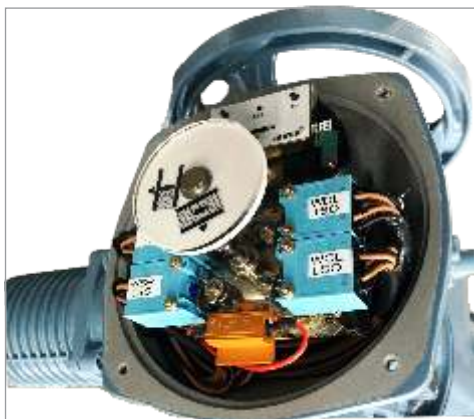
Self-Diagnostic:

The integral starter in electronic control version is self-diagnostic with local LEDs for status and fault annunciation.



1 Switch Compartment Cover

Switch compartment, houses the sensor system for automatic actuator switch off once the end positions or preset positions or set torque is reached. This sensor system consists of limit and torque switches for end position and torque measurement, mechanical position indicator, reduction gearing unit, position transmitters & potentiometer and space heater.



Limit switching enables actuators to switch off when reaching defined position, usually end positions. The valve travel is measured by mechanical counter gear mechanism, which when reaching the set points, limit switches trips the actuator.

In limit switching, Two Train counter gear and Four Train counter gear versions are available.

Two Train Counter Gear has two limit switches, one for each direction of travel having 1 NO + 1 NC or 2 NO + 2 NO contacts are provided. The number of spindle turns can be set between 1 and 480 or 1 and 4800.

Four Train Counter Gear has two additional intermediate switching positions. This limit switching has four limit switches. Two limit switches are used to switch off at end position

while the other two are available for setting any desired intermediate positions between end positions.

- Four limit switches of 1 NO + 1 NC or 2 NO + 2 NC contacts are provided.

Torque Switching enables to switch off the actuator when pre-set torque is reached. The torque switching works on principle of sliding worm. Micro switches of torque switching are provided with 1 NO + 1 NC or 2 NO + 2 NC contacts for both open and close directions.

Running Indication is displayed by blinker switch provided in the actuator.

Micro switches help mechanical parameters such as travel & torque to be converted into electrical signals for actuator control. There are four switches in the basic version:

- One limit switch each for the end positions OPEN and CLOSE
- One torque switch each for the directions OPEN and CLOSE

The micro switches are individually sealed for enclosure protection.

Limit and torque switches are available in single or tandem versions. Limit or torque switches in tandem version have additional switching contacts. These contacts can be wired for :

- Switching another circuit also with different voltage and current.
- Safety function, to operate with single switch.
- Multiplying the available contacts, like for signalization.

Intermediate limit switching allows setting of additional switching points for each direction of rotation. The switching can be set between 25%

and 75% of valve travel in each direction. Each micro switch has 1NO + 1NC contact. Intermediate positions can be set for indication or interlocking purpose.

Contact type (RWG) Electronic position transmitter is a signal converter for the transformation of resistance value into proportionate current signal. It can also be placed in the actuator where the position determined by the potentiometer is converted into 4 -20 mA current signal.

Non-Contact type (EWG) Electronic position transmitter allows contact-less and wear-free sensing of the valve position by means of Hall sensors for signaling the valve position. 2/3/4 wire system with plug / socket connector for customer connection.

Potentiometer is used as sensor for actuator. single turn wire wound potentiometer with 4.7 kOhm / 5kOhm with linearity $\pm 0.5\%$ is available for this purpose. It is available in single or tandem version.

2 Epac controls

Intelligent epac controls consists of microcontroller based electronic cards, motor starter, control transformer, local push button station.

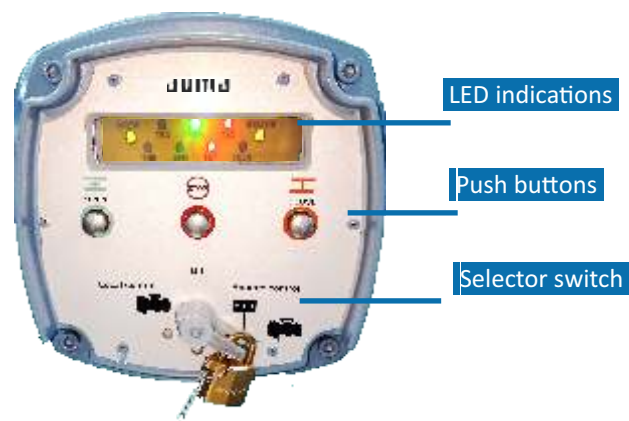
Microcontroller based electronic cards for signal conditioning, digital inputs & outputs, relays, isolators for performing control functions in the actuator.

Motor starter (RDOL starter) is used for operation of actuator motor.

Control transformer is used in the integral starter to derive the required voltages to use it internally from the main power supply, to avoid the need of an additional external control voltage.

Local push button station is used for local operation of the actuators and consists of:

- Selector switch
- Push buttons
- LED indications



Selector switch is provided to select the actuator in any of the three positions, namely LOCAL, OFF, REMOTE.

A switch knob with a padlock is provided to lock the selector switch in any of the three positions.

Push buttons OPEN-STOP-CLOSE are provided for operating the actuator in local mode.

LED indications are provided to have Information regarding the running indication of the actuator (status) and faults status, if any.



PWR
Green LED ON - Power ON
Green LED Blinks - ESD feature is enabled

MODE
Green LED ON - Local
Red LED ON - Off
Orange LED ON - Remote

STATUS
Green LED Blinks - Running OPEN
Green LED ON - OPEN End position reached
Orange LED Blinks - Running CLOSE
Orange LED ON - CLOSE End position reached
Red LED Blinks - FAULT condition
Red LED ON - Actuator stopped in Mid Travel

TSO
Red LED ON - OPEN torque switch trip

TSC
Red LED ON - CLOSE torque switch trip

THS
Red LED ON - Thermo switch trip

SPH
Red LED ON - Single Phase Fault
Red LED Blinks - Single Phase detection (4 pin) connector is disconnected.

TOLR
Red LED ON - TOLR trip

FLT
Red LED ON - FAULT condition

Compact in Size

Actuators is compact in size when compared to other versions of epac actuators to meet the simple actuator solution need of various sectors. Single housing solution makes these actuators compact actuators similar to Norm actuators but with built-in sophisticated controls.



Easy adaptability with various interfaces

Set-up, commissioning, local operation and diagnostics/ trouble shooting are via Local Push Button station with LED display. All of these operations can be done in hazardous environments or adverse weather conditions without removing a single bolt or nut, which drastically reduces set-up time. The local push buttons provide full access to all of the functions.

- Hardwired interface (Controls on 4-wire)
- Regulating duty: 4-wire digital remote command and without positioners

Simple construction

Easy maintenance at site due to simple construction of the actuator and few electronic cards. No separate cards for LED indications but most of the LED are provided in the push button cover which provides easy operation and status viewing of the Actuator



For more details on operation and maintenance, refer Epac-CO&M manual.

LED display screen for user-interface:

Actuator has Integral starter controls comprising of pushbuttons for local open, close and stop operations and a Lockable Local/Remote/off selector switch for selection of required mode of operation. Local controls are also provided with electronic control logic having in built LED's display visible from outside to show the various status and fault annunciations/indications of actuators for easy diagnosis and repair of the actuator



AUMA ACTUATOR - TECHNICAL DATA

Model	Output Speed at 50Hz rpm	Torque Range ¹⁾ S2-15 min		Running Torque ²⁾ S2-15 min Nm	Valve Attachement		Stem Dia. Output Drive Type A Max. mm	Permissible Thrust for Type A Max. kN	Hand wheel Dia Std. mm	Hand wheel ratio		Weight	
		Min. Nm	Max. Nm		Standard DIN:3210	Option ISO:5210				Std.	with TBG*	Std.	with TBG*
SA3	11	20	30	11	G0	F10	26	25	250	1:1	2:1	63	69
	16												
	22												
	32												
	45												
	63												
	90												
	125 ³⁾												
180 ³⁾													
SA3.5	16	20	35	11.5	G0	F10	26	25	250	1:1	2:1	33	39
SA6	4	20	60	21	G0	F10	26	40	250	1:1	2:1	33	39
	5.6												
	8												
	11												
	16												
	22												
	32												
	45												
	63												
	90												
125 ³⁾													
180 ³⁾													
SA12	4	40	120	42	G0	F10	38	60	250	1:1	2:1	33	39
	5.6												
	8												
	11												
	16												
	22												
	32												
	45												
	63												
	90												
125 ³⁾													
180 ³⁾													
SA15	4	50	150	53	G0	F10	38	60	250	1:1	2:1	33	39
	5.6												
	8												
	11												
	16												
	22												
	32												
	45												
	63												
	90												
125 ³⁾													
180 ³⁾													
SA25	4	100	250	88	G1/2	F14	52	120	360	1:1	3:1	71	87
	5.6												
	8												
	11												
	16												
	22												
	32												
	45												
	63												
	90												
125 ³⁾													
180 ³⁾													
			220										

- 1) Tripping torque adjustable for both direction .
- 2) Permissible average torque for the whole travel .
- 3) Non Self-locking .
- 4) The approximate weight of an epac unit is 16kg
- * Top Bevel Gear Set

We reserve the right to alter data according to improvements made. Previous data sheets become invalid with the issue of this data sheet.



AUMA ACTUATORS - TECHNICAL DATA

Model	Output Speed at 50Hz rpm	Torque Range ¹⁾ S2-15 min		Running Torque ²⁾ S2 15 min Nm	Valve Attacehment		Stem Dia. Output Drive Type A Max. mm	Permissible Thrust for Type A Max. kN	Hand wheel Dia Std. mm	Hand wheel ratio		Weight	
		Min. Nm	Max. Nm		Standard DIN:3210	Option ISO:5210				Std.	with TBG*	Std.	with TBG*
SA30	4	100	300	105	G1/2	F14	52	120	360	1:1	3:1	71	87
	5.6												
	8												
	11												
	16												
	22												
	32												
	45												
	63												
	90												
	125 ³⁾												
180 ³⁾													
SA50	4	200	500	175	G1/2	F14	52	160	640	1:1	3:1	99	116
	5.6												
	8												
	11												
	16												
	22												
	32												
	45												
	63												
	90												
	125 ³⁾												
180 ³⁾													
SA60	4	200	600	210	G1/2	F14	52	160	640	1:1	3:1	99	116
	5.6												
	8												
	11												
	16												
	22												
	32												
	45												
	63												
	90												
	125 ³⁾												
180 ³⁾													
SA100	4	400	1000	350	G3	F16	65	190	800	1:1	4:1	131	152
	5.6												
	8												
	11												
	16												
	22												
	32												
	45												
	63												
	90												
	125 ³⁾												
180 ³⁾													

Enclosure IP68-15:13947 (Part I):1993, Appendix C/IEC60947-I:2004.

Actuators are rated for short time duty S2-15 min, based on 40°C ambient temperature. Nominal Current is based on running torque approximately 35% of max. torque. The max torque can be utilised for a short time (eg: to seat or unseat the valve) and the current can rise to max. value, refer corresponding column for current at max. torque in electrical data.

Note: Revolution for Full Stroke (Min/Max)-1 -480 or 1-4800

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AUMA ACTUATORS - ELECTRICAL DATA

auma®	ELECTRICAL DATA							SA3-SA100					
	OPEN-CLOSE DUTY												
Model	Output Speed at 50Hz rpm	Torque Max. Nm	Three phase squirrel cage AC motor 415V, 50Hz										
			Size	Speed RPM	Nominal Output kW	Nominal Current/Full Load Current* A	Starting Current A	Power Factor CosØ	Full Load Efficiency (%)	Current at Max. Torque ¹⁾ A			
SA3	11	30	63	1400	0.06	0.29	1.2	0.6	48	0.31			
	16				0.12	0.65	2.3	0.53		50	0.38		
	22				0.18	0.58	3.3	0.66		65	0.50		
	32				0.37	1.32	5.7	0.61		64	0.87		
	45			2800	63	2800	0.18	0.58	3.3	0.66	65	0.90	
	63						0.37	1.32	5.7	0.61		64	1.3
	90						0.55	1.5	9.0	0.71		75	1.9
	125						0.71	1.5	9.0	0.71		75	1.6
180	0.90	1.32	5.7	0.61	64	2.2	2.2						
SA3.5	16	35	63	1400	0.06	0.29	1.2	0.6	48	0.42			
SA6	4	60	63	1400	0.06	0.29	1.2	0.6	48	0.29			
	5.6				0.12	0.65	2.3	0.53		50	0.31		
	8				0.18	0.58	3.3	0.66		65	0.38		
	11				0.37	1.32	5.7	0.61		64	0.7		
	16			2800	63	2800	0.12	0.65	2.3	0.53	50	0.87	
	22						0.18	0.58	3.3	0.66		65	1.2
	32						0.37	1.32	5.7	0.61		64	1.3
	45						0.55	1.5	9.0	0.71		75	1.9
	63	55	71	2800	0.37	1.32	5.5	0.61	64	2.4			
	90				0.55	1.5	9.0	0.71		75	2.45		
	125				0.71	1.5	9.0	0.71		75	3.08		
	180				0.90	1.32	5.7	0.61		64	3.52		
SA12	4	120	63	1400	0.06	0.29	1.2	0.6	48	0.38			
	5.6				0.12	0.65	2.3	0.53		50	0.7		
	8				0.18	0.58	3.3	0.66		65	0.87		
	11				0.37	1.32	5.7	0.61		64	1.2		
	16		71	63	1400	0.25	1.2	4.6	0.5	60	1.45		
	22					0.37	1.32	5.5	0.61		64	1.8	
	32					0.55	1.5	9.0	0.71		75	2.5	
	45					0.71	1.5	9.0	0.71		75	3.08	
	63	110	71	2800	1.1	2.9	16	0.72	75	4.58			
	90				1.3	2.9	17	0.72		75	6.5		
	125				1.3	2.9	17	0.72		75	5.1		
	180				1.3	2.9	17	0.72		75	7.5		
SA15	4	150	63	1400	0.06	0.29	1.2	0.6	48	0.45			
	5.6				0.12	0.45	2.3	0.53		50	0.8		
	8				0.25	1.2	4.6	0.5		60	1.2		
	11		71	63	1400	0.25	1.2	4.6	0.5	60	1.36		
	16					0.37	0.93	5.7	0.61		64	1.66	
	22					0.55	1.5	9.0	0.71		75	2.2	
	32	71	63	2800	0.55	1.5	9.0	0.71	75	2.75			
	45				1.1	2.9	16	0.72		75	4.26		
	63				1.3	2.9	17	0.72		75	5.67		
90	1.3	2.9	17	0.72	75	7.6							
SA25	4	250	63	1400	0.12	0.65	2.3	0.53	50	0.95			
	5.6				0.25	1.2	4.6	0.5		60	1.29		
	8				0.55	1.75	7.6	0.66		67	1.64		
	11		71	63	1400	0.55	1.75	7.6	0.66	67	1.92		
	16					1.1	2.9	16	0.72		75	2.6	
	22					1.1	2.9	16	0.72		75	3.58	
	32	90	63	2800	1.1	2.9	16	0.72	75	4.75			
	45				2.2	4.1	35	0.88		85	6.58		
	63				2.2	4.1	35	0.88		85	8.44		
	90	220	90	2800	2.2	4.1	35	0.88	85	12.5			
	125				2.2	4.1	35	0.88		85	8.95		
	180				2.2	4.1	35	0.88		85	13.6		

1) Current at max. torque. We recommended to select switch gear and cables suitable for those values.

*Whenever actuators are supplied with integral starter with TOLR, the tripping current set on the TOLR is same as nominal current/Full load current.

Permissible voltage variation : ±10%, Permissible frequency variation: ±5%, Permissible combined variation: 10% if voltage drops below there will be reduction of nominal output.

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AUMA ACTUATORS - ELECTRICAL DATA

auma®	ELECTRICAL DATA							SA3-SA100																																		
	OPEN-CLOSE DUTY																																									
Model	Output Speed at 50Hz rpm	Torque Max. Nm	Three phase squirrel cage AC motor 415V, 50Hz																																							
			Size	Speed RPM	Nominal Output kW	Nominal Current/Full Load Current* A	Starting Current A	Power Factor CosØ	Full Load Efficiency (%)	Current at Max. Torque ¹⁾ A																																
SA30	4	300	63	1400	0.12	0.65	2.3	0.53	50	1.2																																
	5.6		71		1400	0.25	1.2	4.6	0.5	60	1.39																															
	8					71	1400	0.55	1.75	7.6	0.66	67	1.77																													
	11							71	1400	1.1	2.9	25	0.72	75	2.2																											
	16									90	2800	1.25	2.7	22	0.81	79	3.08																									
	22											90	2800	2.2	4.1	35	0.88	85	3.95																							
	32	90		2800										2.5	4.7				16	5.72																						
	45		90		2800									4	9.0	60	0.82	82	8.65																							
	63					90	2800							2.2	4.1	35	0.88	85	10																							
	90							90	2800					2.5	4.7				35	0.88	84	15.5																				
	125									264	90			2800	4	9.0	60	0.82				82	11.5																			
	180											264	90						2800	4	9.0		60	0.82	82	16.5																
4	500	71		1400																						0.25	1.2	4.6	0.5	60	1.48											
5.6			71		1400																					0.55	1.75	7.6	0.66	67	1.95											
8						71	1400																			1.1	2.9	25	0.72	75	2.6											
11								90	2800																	2.2	4.1	35	0.88	85	3.58											
16										90	2800			4.0	9.0	60	0.82	82				4.8																				
22												90	2800	4.0	9.0	60	0.82	82	6.65																							
32		450		90															2800	4.0	9.0	60	0.82	82	8.52																	
45			450		90																				2800	4.0	9.0	60	0.82	82	12.5											
63						450	90																								2800	4.0	9.0	60	0.82	82	17.1					
90								450	90																												2800	4.0	9.0	60	0.82	82
125										450	90																															
180												450	90	2800	4.0	9.0	60	0.82																								
4	600	71		1400															0.25	1.2	4.6	0.5	60	1.67																		
5.6			71		1400														0.55	1.75	7.6	0.66	67	2.2																		
8						71	1400												1.1	2.9	19	0.72	75	3.08																		
11								90	2800										2.2	5.7	35	0.7	77	5.15																		
16										90	2800								2.2	4.1	35	0.88	85	5.75																		
22												90	2800	4	9	60	0.82	82	7.92																							
32		90		2800										4	9	60	0.82	82	10.04																							
45			540		112									2800	4	9	60	0.82	82	15.05																						
63						540	112								2800	5	10.8	90	0.84	88	21.08																					
90								540	112							2800	5	10.8	90	0.84	88	31.08																				
125										540	112						2800	5	10.8	90	0.84	88	22.5																			
180												540	112					2800	5	10.8	90	0.84	88	35.5																		
4	1000	71		1400															0.55	1.75	7.6	0.66	67	2.55																		
5.6			71		1400									0.75					1.85	12	0.75	75	3.85																			
8						90	1400							1.1	2.9				25	0.72	4.65																					
11								90	1400					2.2	5.7	35			0.7	6.65																						
16										90	1400			4	9	60	0.82		9.06																							
22												90	1400	4	9	60		0.82	12.5																							
32		90		1400										4	9	60	0.82		17.5																							
45			90		1400									4	9	60		0.82	26																							
63						900	112							2800	7.5	15	116		0.82	40																						
90								900	112						2800	7.5	15	116		0.82	60																					
125										900	112					2800	7.5	15	116		0.82	44.6																				
180												900	112				2800	7.5	15	116		0.82	68																			

Auma motors are provided with 3 thermostats one in each winding connected in series to protect windings. Our warranty is void if these thermostats are not connected in control circuit.

Motor data are approximate. Due to manufacturing tolerances, given values may deviate.

1) Current at max. torque. We recommended to select switch gear and cables suitable for those values.

Output speed (RPM) of the actuator at 60Hz shall be 1.2 times of the output speed (RPM) at 50Hz as indicated above.

We reserve the right to alter data according to improvements made. Previous data sheets become invalid with the issue of this data sheet.

AUMA ACTUATORS - TECHNICAL DATA

auma®	TECHNICAL DATA									SAR3-SAR100					
	Model	Output Speed at 50Hz rpm	Torque Range ¹⁾ S4-25%		Modulating Torque ²⁾ S4-25% Nm	Valve Attacehment		Number of starts max. c/h	Stem Dia. Output Drive Type A Max. mm	Permissible Thrust for Type A Max. kN	Hand wheel Dia Std. mm	Hand wheel ratio		Weight	
			Min. Nm	Max. Nm		Standard DIN:3210	Option ISO:5210					Std.	with TBG*	Std.	with TBG*
SAR3	11	20	30	20	G0	F10	1200	26	25	250	1:1	2:1	33	39	
	16														
	22														
	32														
	45														
SAR6	4	30	60	30	G0	F10	1200	26	40	250	1:1	2:1	33	39	
	5.6														
	8														
	11														
	16														
	22														
	32														
45															
SAR12	4	60	120	60	G0	F10	1200	38	60	250	1:1	2:1	33	39	
	5.6														
	8														
	11														
	16														
	22														
	32														
45															
SAR15	4	60	150	75	G0	F10	1200	38	60	250	1:1	2:1	33	39	
	5.6														
	8														
	11														
	16														
	22														
	32														
SAR25	4	120	250	125	G1/2	F14	1200	52	120	360	1:1	3:1	71	87	
	5.6														
	8														
	11														
	16														
	22														
	32														
45															
SAR30	4	150	300	150	G1/2	F14	1200	52	120	360	1:1	3:1	71	87	
	5.6														
	8														
	11														
	16														
	22														
	32														
45															
SAR50	4	250	500	250	G1/2	F14	1200	52	160	640	1:1	3:1	99	116	
	5.6														
	8														
	11														
	16														
	22														
	32														
45															
SAR60	4	300	600	300	G1/2	F14	1200	52	160	640	1:1	3:1	99	116	
	5.6														
	8														
	16														
	22														
32															
SAR100	4	500	1000	500	G3	F16	1200	65	190	800	1:1	4:1	131	152	
	5.6														
	8														
	11														
	16														
	22														
	32														
22															

1) Tripping torque adjustable for both direction .

2) Permissible average torque for the whole travel .

3) The approximate weight of an epac unit is 16kg. Enclosure IP68-15:13947 (Part I):1993, Appendix C/IEC60947-I:2004.

Actuators are rated for intermittent duty S4-25% ED, based on 40°C ambient temperature. The nominal current is based on modulating torque of approximately 35% of max. torque.

The max torque can be utilised for a short time (eg: to seat or unseat the valve) and the current can rise to max. value, refer corresponding column for current at max. torque in electrical data.

Note: Revolution for Full Stroke (Min/Max)-1 -480 or 1-4800

* Top Bevel Gear Set

We reserve the right to alter data according to improvements made. Previous data sheets become invalid with the issue of this data sheet.

auma®

AUMA ACTUATORS - ELECTRICAL DATA

auma®	ELECTRICAL DATA								SAR3-SAR100		
	REGULATING DUTY										
Model	Output Speed at 50Hz rpm	Modulating Torque Nm	Three phase squirrel cage AC motor 415V, 50Hz								
			Size	Speed RPM	Nominal Output kW	Nominal Current/Full Load Current* A	Starting Current A	Power Factor CosØ	Full Load Efficiency (%)	Current at Max. Torque ¹⁾ A	
SAR3	11	20	63	1400	0.06	0.29	1.2	0.60	48	0.31	
	16									0.38	
	22									0.50	
	32									0.87	
	45									1.00	
SAR6	4	30	63	1400	0.06	0.29	1.2	0.60	48	0.29	
	5.6									0.31	
	8									0.38	
	11									0.70	
	16				71	0.12	0.65	2.3	0.53	50	0.87
	22										1.20
	32										1.45
	45										1.86
SAR12	4	60	63	1400	0.06	0.29	1.2	0.60	48	0.38	
	5.6				0.12	0.65	2.3	0.53	50	0.70	
	8									0.87	
	11		71		0.25	1.20	4.6	0.50	60	1.20	
	16									1.45	
	22									1.80	
	32									2.52	
45	3.52										
SAR15	4	75	63	1400	0.06	0.29	1.2	0.60	48	0.45	
	5.6				0.12	0.65	2.3	0.53	50	0.80	
	8									1.20	
	11		71		0.25	1.20	4.6	0.50	60	1.36	
	16									1.66	
	22									2.20	
32	3.08										
SAR25	4	125	63	1400	0.12	0.65	2.3	0.53	50	0.95	
	5.6		71		0.25	1.20	4.6	0.50	60	1.29	
	8									1.64	
	11		90		0.55	1.75	7.6	0.66	67	1.92	
	16									2.60	
	22									3.58	
	32		4.80								
45	6.67										
SAR30	4	150	63	1400	0.12	0.65	2.3	0.53	50	1.2	
	5.6				71	0.25	1.20	4.6	0.50	60	1.39
	8		1.77								
	11		90		0.55	1.75	7.6	0.66	67	2.2	
	16									3.08	
	22									3.95	
	32		5.75								
	45		8								
SAR50	4	250	71	1400	0.25	1.2	4.6	0.5	60	1.48	
	5.6				90	0.55	1.75	7.6	0.66	67	1.95
	8										2.6
	11		90		1.1	2.9	25	0.72	75	3.58	
	16									4.8	
	22									6.65	
	32									9.06	
45	13.4										
SAR60	4	300	71	1400	0.25	1.2	4.6	0.5	60	1.67	
	5.6				90	0.55	1.75	7.6	0.66	67	2.2
	8										3.08
	16		112		1.1	2.9	25	0.72	75	5.75	
	22									7.92	
32	11.1										
SAR100	4	500	71	1400	0.55	1.75	7.6	0.66	67	2.55	
	5.6				90	0.75	1.85	12	0.75	75	3.85
	8										4.65
	11		112		1.1	2.9	25	0.72	77	6.65	
	16									9.06	
	22									12.5	
	32									18.5	
45	27										

Permissible voltage variation : ±10%, Permissible frequency variation: ±5%, Permissible combined variation: 10% if voltage drops below there will be reduction of nominal output.

Auma motors are provided with 3 thermostiches one in each winding connected in series to protect windings. Our warranty is void if these thermostiches are not connected in control circuit.

Motor data are approximate. Due to manufacturing tolerances, given values may deviate.

* Whenever actuators are supplied with integral starter (epac) with TOLR, the tripping current set on the TOLR is same as nominal current / Full load current.

Output speed (RPM) of the actuator at 60 HZ shall be 1.2 times of the output speed (RPM) at 50 Hz as indicated above.

1) Current at max. torque. We recommended to select switch gear and cables suitable for those values.

We reserve the right to alter data according to improvements made. Previous data sheets become invalid with the issue of this data sheet.

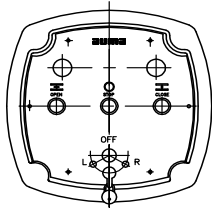


Semipact Actuator / Epac-C

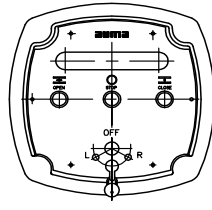
(With Plug in Type Customer Terminals)

SA3 – SA100

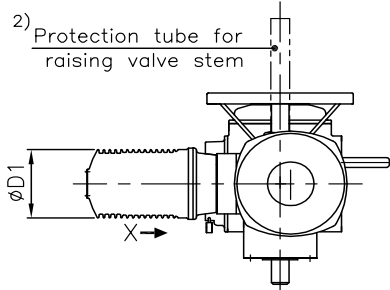
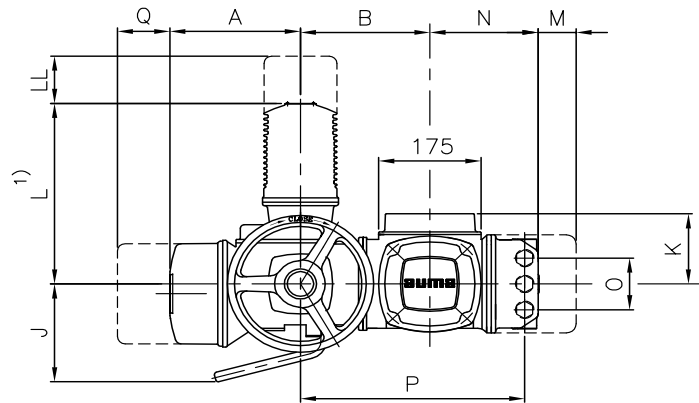
SAR3 – SAR100



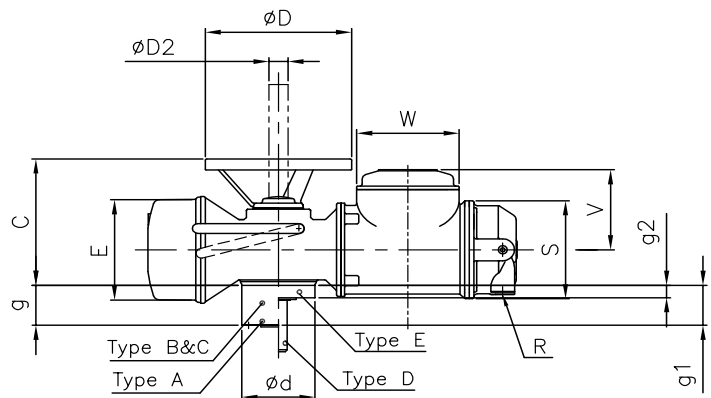
VIEW-X
(For Semipact)



VIEW-X
(For Epac-C)



2) Protection tube for raising valve stem



1) Exact dimension according to motor used.

2) When ordering please mention required length.

Dimensions	SA3 & SA6 / SAR3 & SAR6	SA12 & SA15 / SAR12 & SAR15	SA25 & SA30 / SAR25 & SAR30	SA50 & SA60 / SAR50 & SAR60	SA100 / SAR100
A	223	223	245	245	275
B	221	221	246	246	272
C	233	235	275	325	380
ϕD	250	250	360	640	800
$\phi D1$	110 – 125	110 – 125	110 – 160	125 – 160	125 – 200
$\phi D2$	42 x 3.3	60 x 3.7	76 x 3.7	76 x 3.7	89 x 4.1
ϕE	195	195	255	255	255
J	180	180	210	210	230
K	128	128	128	128	128
L max.	330	330	450	450	515
LL min.	35	35	45	45	60
M min.	80	80	80	80	80
N	185	185	185	185	185
O	100	100	100	100	100
P	383	383	408	408	434
ϕQ min	65	65	65	65	65
R (Cable gland thread)	2Nos M32x1.5 1 No M25x1.5	2Nos M32x1.5 1 No M25x1.5	2Nos M32x1.5 1 No M25x1.5	2Nos M32x1.5 1 No M25x1.5	2Nos M32x1.5 1 No M25x1.5
S	180	180	180	180	180
V	148	148	148	148	148
W	175	175	175	175	175
ϕd	125	125	175	175	210
g (TYPE- A)	35 / 73	37 / 67	51 / 95	51 / 95	69 / 119
g1 (TYPE- B & C)	50	50	65	65	80
g2 (TYPE- D & E)	15	15	22	22	30
DIN 3210 Designation	G0	G0	G½	G½	G3

We reserve the right to alter data, dimensions and weights according to improvement made.
Figures and diagrams are not binding.

(all dimensions are in mm)

Dimension Sheet, Output Drives

Output drives according to DIN 3210

SA3 - SA100
SAR6 - SAR100

Dimension (in mm)	SA3/SA6	SAR3/SAR6	SA12/SA15	SAR12/SAR15	SA25/SA30	SAR25/SAR30	SA50/SA60	SAR50/SAR60	SA100/SAR100	
DIN 3210	G0		G0		G 1/2		G 1/2		G 3	
F max. kN	25/40	40	60		120		160		190	
TYPE-A Stem nut	125		125		175		175		210	
ød1	60		60		100		100		130	
ød2 f8	M 10		M 10		M 16		M 16		M 20	
ød3	28		40		55		55		70	
ød4	26		38		52		52		65	
ød5 max.	35	73	37	67	51	95	51	95	69	119
g	3		3		4		4		5	
h1	15		15		22		22		30	
h2	102		102		140		140		165	
øk	1		1		2		2		3	
L1	30	67	37	67	51	95	51	95	70	120
L2	4		4		4		4		4	
Z	1.7	3.9	2	4.2	6	12	6	12	12	28
Weight	12		12		18		18		22	
b1 JS9	28		40		55		55		70	
ød4	26		38		52		52		65	
ød5	42		42		60		60		80	
ød6 H8	50		50		65		65		80	
g1	3		3		4		4		4	
h1	45		45		65		65		80	
IL3	45.3		45.3		64.4		64.4		85.4	
t1	1.7		2		6		6		12	
Weight kg	14		14		20		20		24	
b2 H11	28		40		55		55		70	
ød4	28		28		38		38		47	
ød5 DIN:3210	26		38		52		52		65	
ød5 max.	50		50		75		75		100	
ød7	50		50		65		65		80	
g1	3		3		4		4		4	
h1	10		10		12		12		15	
h3	1.7		2		6		6		12	
Weight kg	6		6		8		8		12	
b3 h9	20		20		30		30		40	
ød8 g6	15		15		22		22		30	
øg2	50		50		70		70		90	
L4	55		55		76		76		96	
L5	22.5		22.5		33		33		43	
t2	1		1.5		3.5		3.5		6	
Weight kg	6		6		8		8		12	
b4 JS9	20		20		30		30		40	
ød9 H8 Din3210	20		32		45		45		60	
ød9 max.	15		15		22		22		30	
g2	3		3		4		4		4	
h1	55		56		77		77		100	
L6	22.8		22.8		33.3		33.3		43.3	
t3	1		1.5		3.5		3.5		6	
Weight kg	1		1.5		3.5		3.5		6	
TYPE-B Plug sleeve	6		6		8		8		12	
TYPE-C Dog coupling	20		20		30		30		40	
TYPE-D Stub shaft	15		15		22		22		30	
TYPE-E Bore with keyway	50		50		70		70		90	
	55		55		76		76		96	
	22.5		22.5		33		33		43	
	1		1.5		3.5		3.5		6	
	6		6		8		8		12	
	20		20		30		30		40	
	20		32		45		45		60	
	15		15		22		22		30	
	3		3		4		4		4	
	55		56		77		77		100	
	22.8		22.8		33.3		33.3		43.3	
	1		1.5		3.5		3.5		6	

Functional Test:

After assembly, all actuators are thoroughly tested and torque switches are calibrated. Final inspection record is provided to the customer.

Type Test Certificates:

Auma actuators and critical components of actuators have been tested and guaranteed for performance. Some of the type test certificates available are listed:

- Endurance test as per IS/EN/AWWA/GDCD standards.
- Damp heat cycle test as per IS 9000.
- Vibration test as per IS 12075.
- Noise test as per IS 12065.
- Degree of protection as per IS/IEC 60529.
- Tests on micro switches.
- Motor performance tests.

CE Marking:

Auma India has certified its weather-proof actuators and valve gearboxes as CE marked to indicate conformity with essential health and safety requirements at the place of use.

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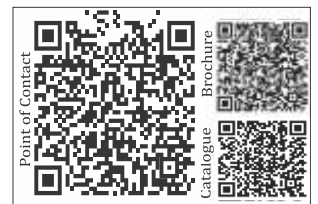
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