



ELECTRIC ACTUATORS

for continuous underwater use



The SA multi-turn actuator for continuous underwater use by AUMA opens up new applications for electric actuators – for water supply, in hydropower plants and underwater valves in general.

Easy installation, low operating costs and maintenance requirements as well as the comprehensive functions of the integral actuator controls – to name only some advantages of electric actuators as feasible alternative to hydraulic actuation technology.

TIGHTLY SEALED

A sophisticated sealing system combined with excellent corrosion protection properties qualify AUMA actuators for underwater use. Double sealed cable glands at the electrical connection safely prevent any ingress of water. Inner seals at all housing covers, sometimes coming in pairs, as well as a solid shaft made of stainless steel complete the universal concept.

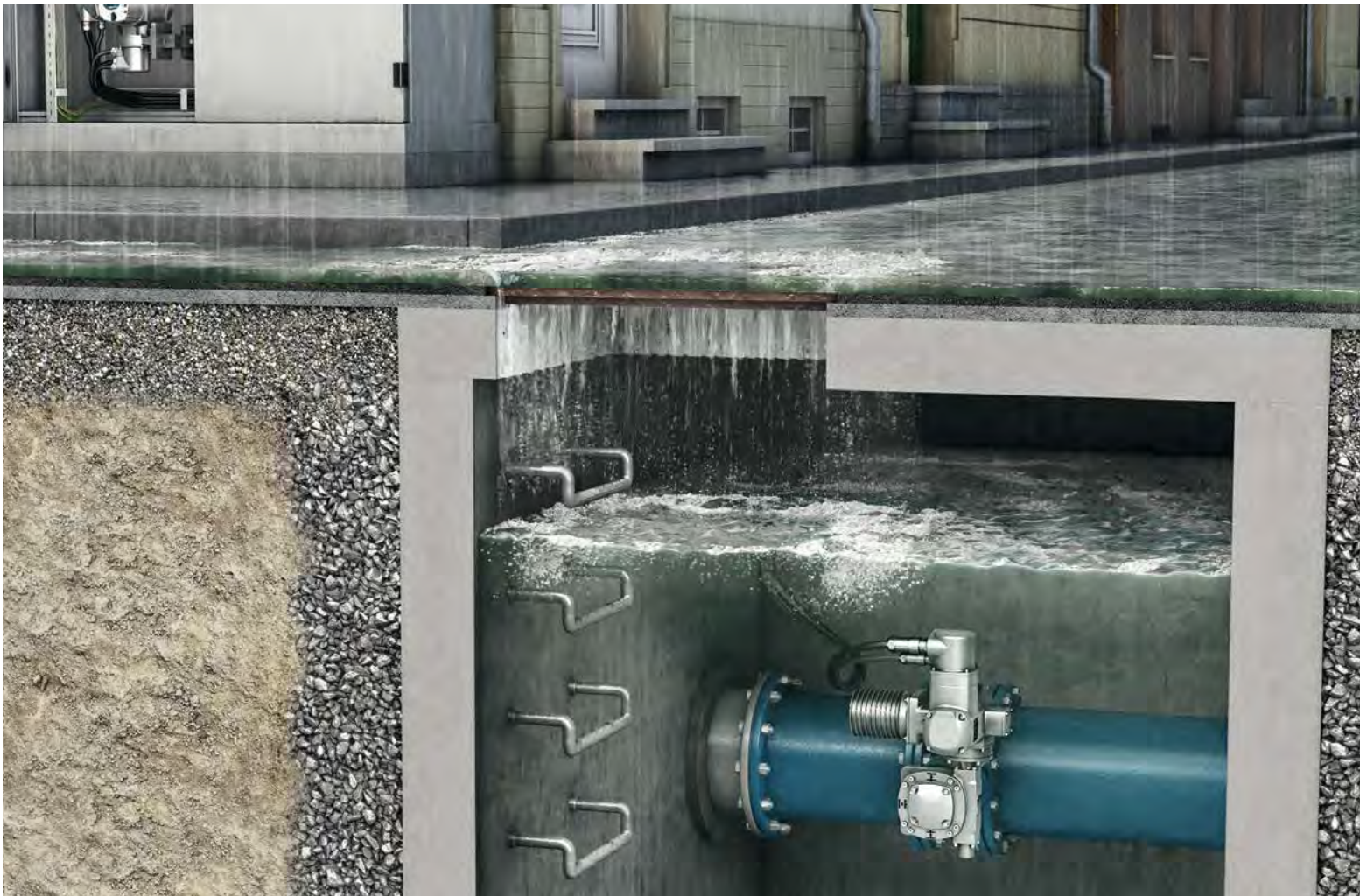
EASY TO INSTALL

They just require power supply and a signal cable: Electric actuators are easy to install and cost-efficient in operation. Due to the modular AUMA product portfolio, the actuator controls can be installed separately outside the flooded area.

MAINTENANCE-FREE AND ENVIRONMENTALLY FRIENDLY

Another asset: AUMA actuators are virtually maintenance-free. Only after few years of installation do AUMA recommend an inspection of the actuator for underwater use. Furthermore, the actuators are environmentally friendly as there is no risk of contamination by leaking oil.

SA MULTI-TURN ACTUATORS FOR CONTINUOUS UNDERWATER USE



Hydropower applications

Electric actuators for underwater use are the perfect choice for hydropower applications. They operate gate valves, butterfly valves and globe valves, for example, deployed for turbine control, spear head adjustment or guide vane adjustment.

In modern pit power plants, used to exploit the enormous unused energetic potential of water courses with low gradient levels, variable speed electrical actuators control flow during start-up, synchronisation and cut-out of the turbine installed completely under water.

In screen cleaning systems, retaining and deflecting twigs and other solid foreign objects from the turbine inlet, electric actuators for underwater use are installed for ecological and economic reasons. The variable speed version enables soft and gentle approaching of end positions.

Applications in water management

Where both supply and sewer pipes are underground, actuator and valve are often installed in pits below ground level. If high waters are a permanent risk, actuators for underwater use will operate reliably even if flooding persists. Therefore, they are ideally suited for installation in monsoon areas.

Civil engineering constructions for water applications and special applications

Applications with special requirements on the operation of underwater valves can be found in various sectors such as offshore installations, flood control at coastlines and rivers and in civil engineering constructions for water applications.



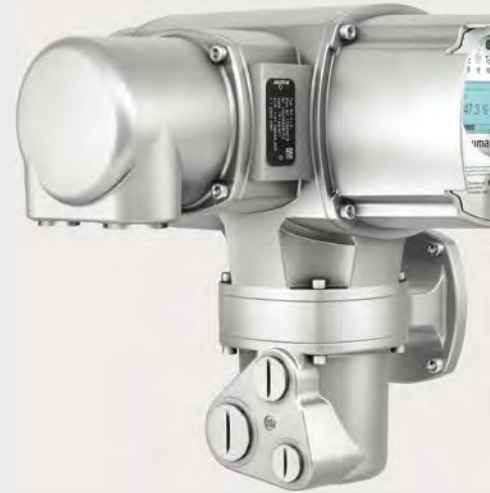
DESIGN

Electric SA multi-turn actuator

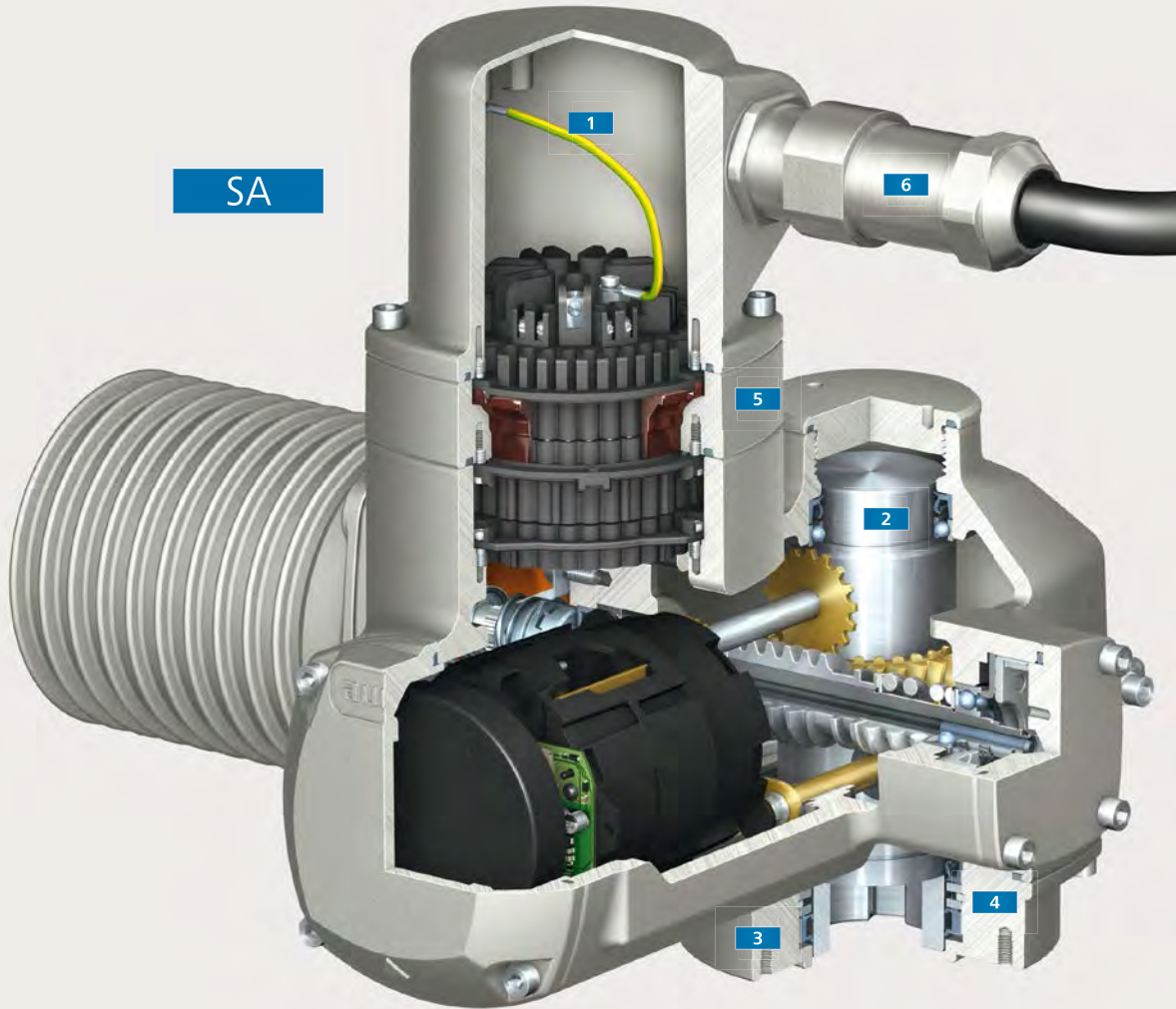
AUMA SA multi-turn actuators are available in many sizes and versions and can be tailored to the individual requirements of the application. They excel by easy operation, robust design, reliability and a long service life, which is also essential for continuous underwater use.

In addition, actuators for continuous underwater use are subject to a comprehensive sealing system, preventing the ingress of water efficiently for several years. A handwheel is not provided.

AC



SA



1 MWG electronic control unit for non-intrusive setting
Underwater applications require the exclusive use of the electronic control unit (MWG). All actuator settings, including end position setting for travel and torque are made non-intrusive, i.e. without opening the housing.

2 Solid shaft
As integral part of the sealing system, a solid shaft made of stainless steel instead of a hollow shaft is used to transmit the torque to the valve.

3 Valve attachment
Output drive types B, D, B3D and DD can be used for valve attachment. B1 and B2 are directly integrated as bore with keyway into the solid shaft; B3, B4 and D require an additional output drive sleeve. B3D and DD are designed as special shafts.

4 Double sealed bearing flange
Additional inner seals avoid ingress of water into the actuator.

5 Double sealed frame
The proven AUMA double sealed frame tightly seals the electrical connection towards the actuator.

6 Special cable glands
Double sealed cable glands provide additional safety at the electrical connection.

SERVICE CONDITIONS

AC integral actuators controls

AC integral actuator controls are mounted separately outside the water while cables connect them to the actuator. The state-of-the-art actuator controls assume communication control between DCS and actuator. Controls are available with various interfaces to the DCS – allowing both parallel signal transmission and fieldbus communication. Supported are, for example, Profibus DP and PROFINET, Modbus RTU and TCP/IP, DeviceNet, Foundation Fieldbus as well as HART and WirelessHART.

Integral local controls also allow for direct actuator operation. Advanced diagnostic functions enable preventive maintenance and integration of actuators into asset management systems.

Variable speed actuator (option)

SAV and SARV variable speed actuators with ACV integral actuator controls are also available as version for underwater use. Operating speed can be adapted across the travel for these actuators. Soft start and gentle approaching of end positions as well as modulating duty with utmost positioning accuracy and fast emergency operation is therefore also possible.



Combination with AUMA gearboxes (option)

AUMA gearboxes are also approved for underwater use. Should a part-turn actuator be required for operation of a ball valve or butterfly valve, the SA multi-turn actuator can be combined with a GS part-turn gearbox.



ENCLOSURE PROTECTION

As standard, AUMA actuators for continuous underwater use are supplied in improved enclosure protection IP68-C15. The maximum head of water is 15 m. Higher heads of water are available on request.

CORROSION PROTECTION

The AUMA corrosion protection system as such, certified by TÜV and characterised by its two-layer powder coating, provides utmost corrosion resistance. AUMA actuators for continuous underwater use are additionally protected by wet painting and screws, name plates and outside shafts exclusively made of stainless steel. The devices are suitable for the following ambient conditions in accordance with EN ISO 12944-2:

- > C5-M (very high, marine, coastal and offshore areas with high salinity, almost permanent condensation and with high pollution)
- > Im1 (fresh water)
- > Im2 (sea or brackish water)
- > Im3 (soil)

TECHNICAL DATA

The following technical data is for reference purpose only. For detailed data, please refer to the separate technical data sheets.

Multi-turn actuator size	SA 07.2 – SA 16.2 SAR 07.2 – SAR 16.2 SAV 07.2 – SAV 16.2 SARV 07.2 – SARV 16.2
Torque	10 Nm – 1,000 Nm at 50 Hz
Output speed	4 rpm – 180 rpm
Valve attachment	F07 – F16
Mains voltage for 3-phase AC	50 Hz: 220 V, 230 V, 240 V, 380 V, 400 V, 415 V, 500 V 60 Hz: 440 V, 460 V, 480 V Permissible variation of mains voltage: $\pm 10\%$ Permissible variation of mains frequency: $\pm 5\%$ Further mains voltages on request
Cable length	Max. 100 m between actuator and AC 01.2 actuator controls
Ambient temperature	-30 °C to $+70\text{ °C}$

AUMA Riester GmbH & Co. KG

Aumastr. 1
79379 Muellheim
Germany
Tel +49 7631 809-0
Fax +49 7631 809-1250
info@auma.com

AUMA subsidiaries or representatives
are implanted in more than 70 countries.
For detailed contact information, please
refer to our website.
www.auma.com