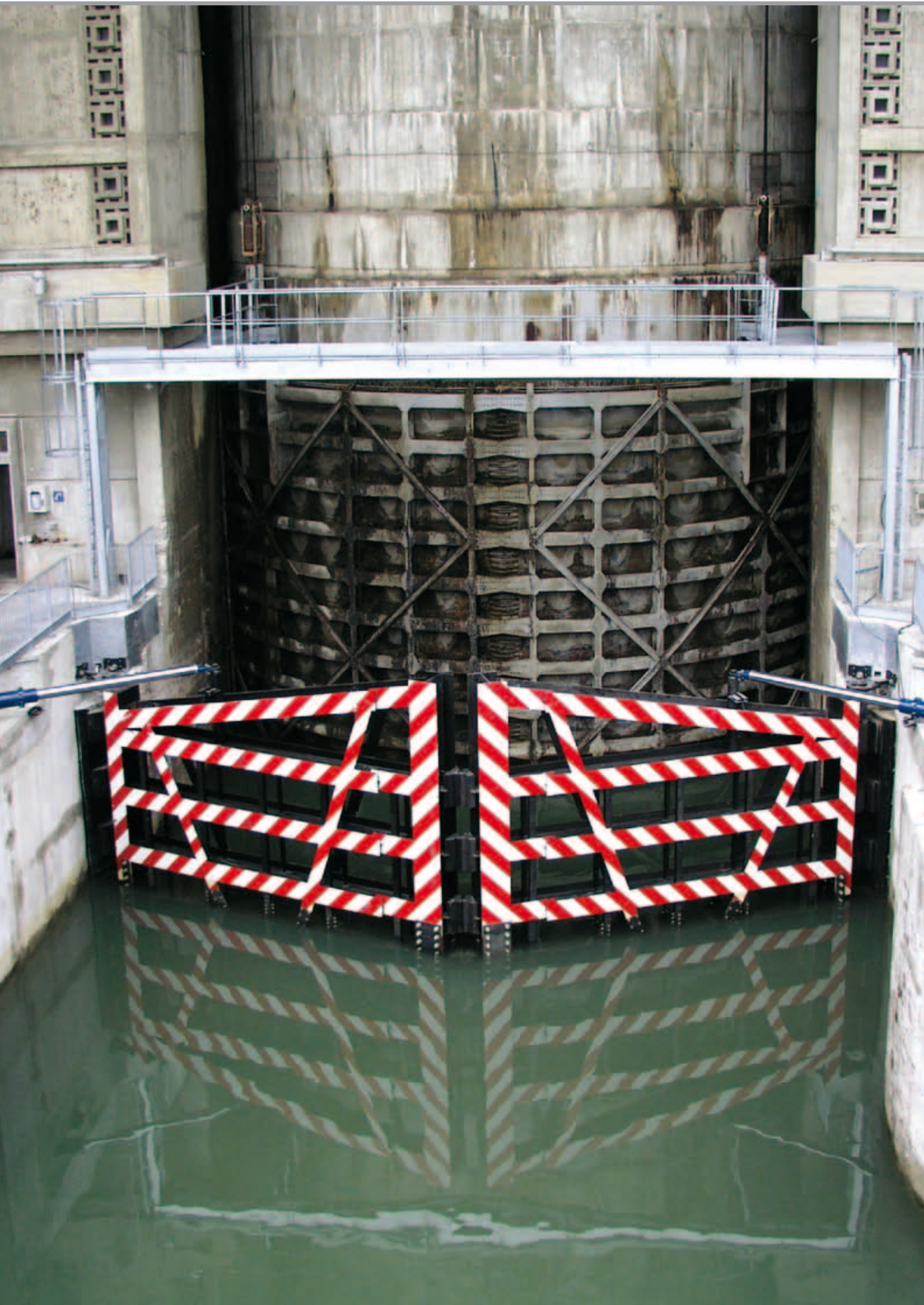


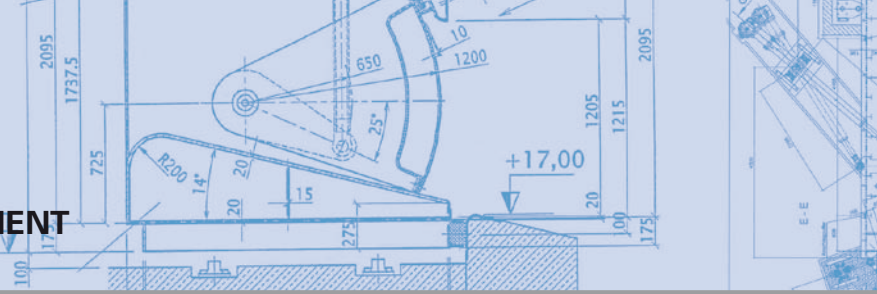


RACO HYDROMECHANICAL EQUIPMENT



RACO Schwelm

RACO HYDROMECHANICAL EQUIPMENT



RACO ELECTRIC ACTUATORS FOR YOUR HYDRO TECHNICAL APPLICATIONS

For the operation of lock and dams RACO has developed a specific system. Dependant on the application (thrust, speed, dynamic forces, live expectancy, etc...) the geometry of the screw and nut design will be determined and manufactured by RACO.

Particular attention was paid to the hydro technical application conditions for the electrical actuator under the following aspects:

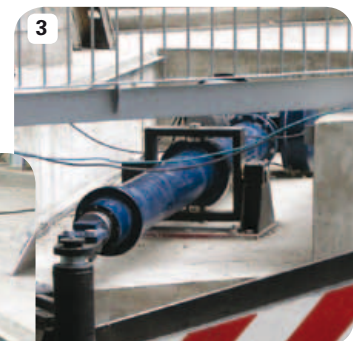
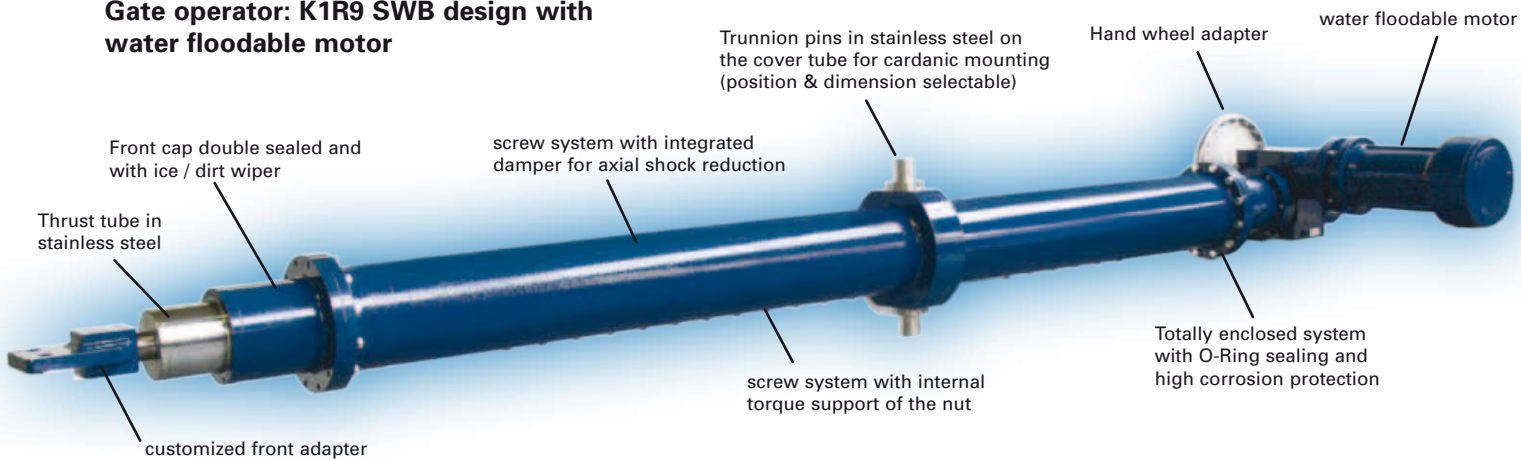
- Live expectancy of the actuator but in particular to the spindle and nut system
- Operational integrity under extreme temperature conditions and temperature changes
- Corrosion resistance of the components and the appropriate classification

During the engineering face of the project all by code required calculations, test documents and certificates will be generated by RACO.

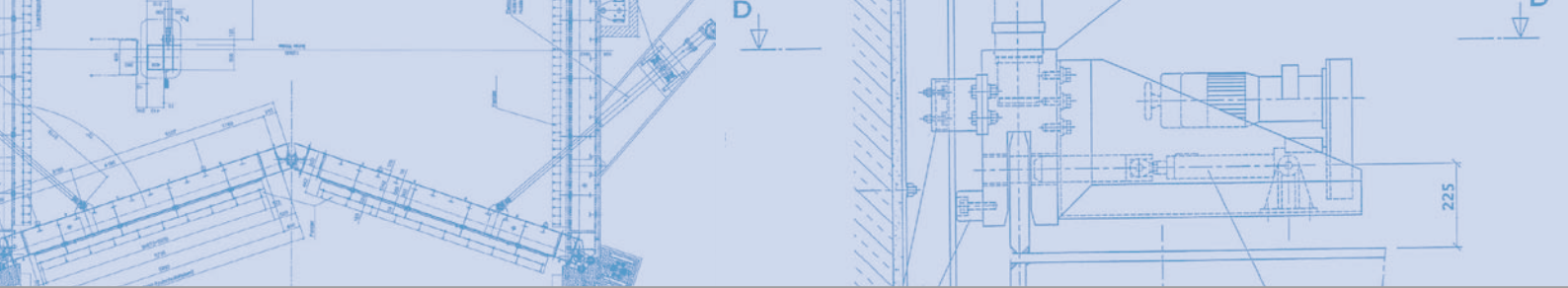
The electromechanical actuators from RACO distinguish themselves by:

- Compact design combined with a high power density
- Robust construction due to the selection of high quality material
- Integrated anti rotation protection between the thrust tube and the spindle system
- Shock absorbing spindle nut design system
- Actuator design and mounting interface will be customized to meet customer boundary conditions
- High degree on variability on already designed options

Gate operator: K1R9 SWB design with water floodable motor



[1]-[3] Gate operator, type: K1R9 SWB with cardanic mounting option



THE RACO AUTOMATION CONCEPT FOR HYDRO TECHNICAL INSTALLATIONS

The decision making criteria for the implementation of an automated lock and dam system is driven by the economical efficiency, which is significantly influenced by the number of lock operations.

The innovative and at the same time variable technical solutions of our electrical actuators is setting new guidelines:

- High availability
- High reliability
- Maintenance free through live long lubrication in accordance to the german WGK water protection class regulation
- Extremely environmentally friendly and economical due to the start stop function of the motor

RACO as a system integrator is offering multiple communication interface solutions to connect to the customer integrated central operations system.

The essential benefits compared to the previously used hydraulic actuation solutions utilized in lock and dams are:

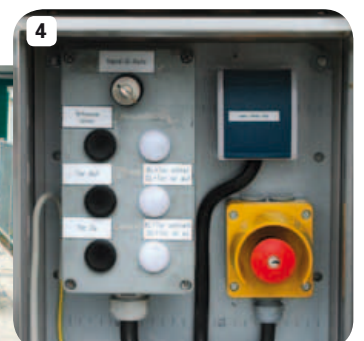
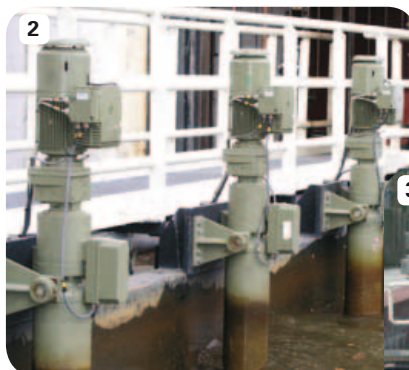
- Contamination of water ways through oil and lubricants is eliminated by the virtue of the electro mechanical design and the encapsulation of all moving parts.

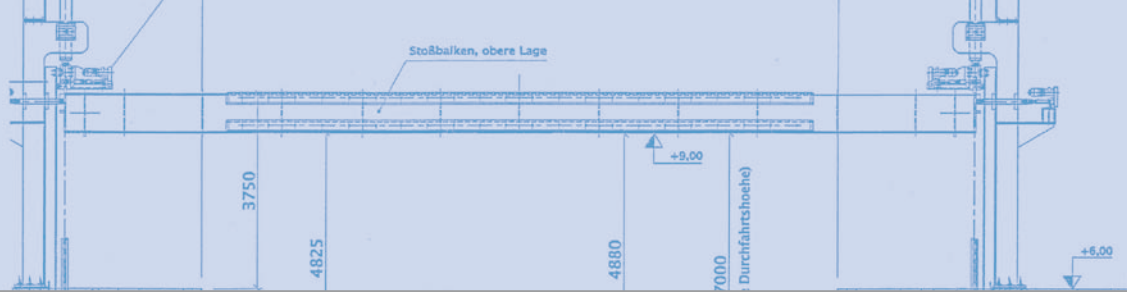


Segment gate operator, type: K1R9 SWB, Hub = 5.500 mm

- The power transmission is realized via a screw / nut system verses a high pressure hydraulic oil piston system
- Due to the modular design of the RACO actuator system the required spare parts inventory is drastically reduced compared to hydraulic solutions and as well as the serviceability

- [1]-[2] Slide gate operator, type: K1K8 SWB, stroke = 1.000 mm
- [3] Gate operator, type: T1M5 SWB, stroke = 1.000 mm
- [4] local control cabinet





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RACO OFFERS FUNCTIONAL RELIABILITY

The interlocking of bridge segments is a neuralgic point in the overall operating sequence. Regardless of the environmental conditions the locking or unlocking operation has to be performed even after extended periods of idle time. Only after the exact retracted or extended position is reached and confirmed the enabling signal can initiate the next step.

Dependant on the overall system design and the main bridge control system specific emergency functions can be implemented:

- Emergency Stop: In the event of a power loss the actuator will maintain its position
- Emergency End Position: In the event of a power loss the actuator can be driven by a gravity force into a predefined position.

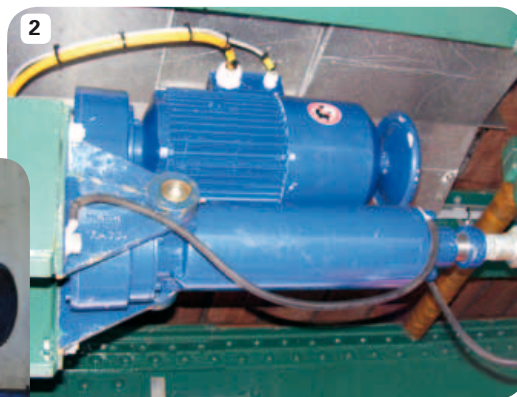
For applications, which need to be installed with a manual hand wheel release mechanism and depend on a high degree of operating reliability the relevance of a hand wheel release mechanism is an integral function. RACO has combined the break release mechanism and the hand wheel disengage mechanism with a motor interlock function in an IP 65 classified housing.

RACO can generate custom design solutions for your applications out of our modular actuator system under affordable conditions.

- Actuators for bridges with: bridge lifting operation, lock bar operation
- Actuators for safety gates on lock and dams: lifting safety gates, sliding safety gates
- Actuators for lock and dams for flood control
- Actuators for sport boat locks and gates



Bascule bridge centre locking device



- [1] Movable bridge pin lock operator, type: T1N7, stroke = 200 mm
- [2] Movable bridge pin lock operator, type: T1G6, stroke = 200 mm
- [3] Movable bridge pin lock operator, type: T1T5, stroke = 200 mm

New demand features lead to new design criteria's for our products. As a manufacturer of high quality actuation systems for linear motion applications RACO has selectively complemented its product range. The electrical actuators of the heavy duty series, historically distinguish themselves through robust design and longevity even under extreme operating conditions.



Option: Shock protection

- Spring loaded nut housing with floating nut arrangement
- High performance elastomer impact shock absorbing ring for accidental over stroke protection
- Cushioning system configurable in compression or tensile loading
- Electronic thrust overload protection devices



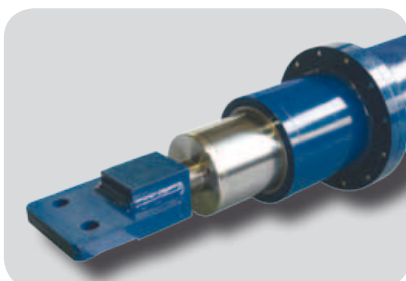
Option: Equipment selection per customer specification

- Independently energized holding break (IP 67/68) with hand release mechanism
- Pluggable connection for power and control and / or pick tale cable with quick connectors
- Cardanic trunnion pin mounting
- Actuator air pressure equalizing system with floating valve breather system



Option: RACO break motor with mechanical hand wheel release system

- Emergency operation via disagreeable hand wheel mounted on the extended motor shaft with electrical starter interlock and manual brake release
- Break and motor heating system for corrosion protection and freezing ambient conditions



Option: Special seal

- Encapsulated system housed in an steal enclosure (all flanges and connections are sealed with O-rings, IP65)
- Hard chromed thrust tube with dirt and ice wiper seal on the front flange and internal high performance seal kit (ceramic coating or stainless steel thrust tube available)
- Flange seals and wipers are replaceable
- Stainless steel fasteners or galvanized fasteners are used for corrosion protection
- Thick film coating with additional corrosion protection



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OUR KNOW HOW IS YOUR CUSTOMERS VALUE

As a full line provider, RACO has the ability to offer from the component level up to attractive integrated systems solutions, which may unlock saving potentials. Regardless of the form of cost reduction, if it is in conjunction with a prolonged live span, shorter cycle time, ease of installation, maintenance free, reduction in weight, our program includes a multitude of alternative solutions. Based on our experience with various applications and over 250,000 actuators in operation we praise ourselves to supply custom design solutions for specific application areas.



**Would you like to receive a quotation without obligation and free of charge?
Please call us directly or use our contact form on www.raco.de!
We will contact you immediately.**

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