

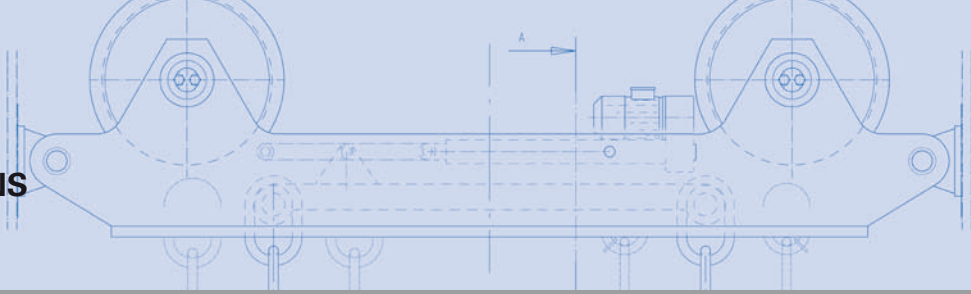


**RACO ACTUATION SOLUTIONS
FOR CRANE SYSTEMS**



RACO Schwelm

RACO ACTUATION SOLUTIONS FOR CRANE SYSTEMS



ADDED VALUE “MADE BY RACO”

RACO is a manufacturer of electrical actuators and, as a system supplier for crane systems, RACO provides automation concepts for electromechanical power train system from a single source.

RACO has more than 55 years of experience in the development and manufacture of electrical cylinders. Manufacturing, assembly and quality assurance are located at the main factory in Germany. This is also the place where the services are coordinated.

The modular RACO component system is the basis for our long-term oriented product policy and provides the flexibility to customize the electrical cylinders in production.

The name RACO stands for absolute quality, highest reliability and safety. A good indicator for the product care are the requirements of well known crane manufacturers aimed at realizing the different motions of the crane in an economic and efficient manner.

RACO actuator solutions provide a high degree of positioning and control accuracy as well as an easy realization of the actuation for the smooth start.

RACO ELECTRICAL CYLINDERS ARE USED IN THE FOLLOWING CRANE TYPES:

Crane types for “Container handling”

- STS (Ship-To-Shore)
- RTG (Rubber-Tyre-Gantry)
- RMG (Rail-Mounted-Gantry)
- ACS (Automatic-Container-Stacker)



Crane types for “General cargo handling”

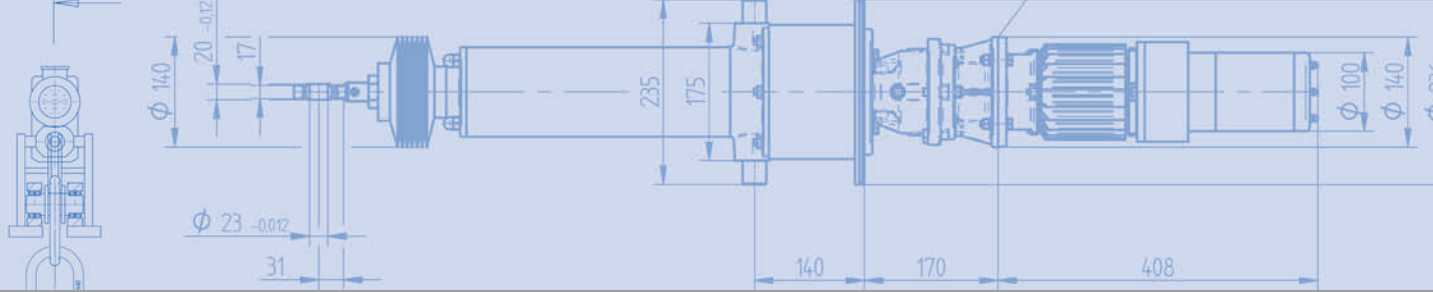
- Process Cranes
- Shipyard Cranes
- Grab Cranes

TYPICAL APPLICATIONS INCLUDE:

- Spreader adjustment for the crane gear positioning above the container “side shift actuator”
- Alignment of the rope system at the spreader “trim list actuator”
- Actuation of the flipper arms of the crane gear above the container.
- Locking of the extension arm / crab as wind and storm guard.
- Actuation of the transmission at the hoist system for shipyard crane systems
- Actuation of the locking at the load handling device / grabber for container.
- Width adjustment at the grabbers for the transport of paper rollers or band steel coils
- Tilt adjustment of crane cabins
- Pedal adjustment in the seat module of the crane cabins of RTGs



- [1] Type: T1A2 Locking the crab as storm guard
- [2]-[4] Type: K1M8 / T1M7 Spreader adjustment for the crane gear positioning
- [3] Type: T1B2 Actuation of the flipper arms of the crane gear above the container.



RACO ELECTRICAL CYLINDERS – CONCEPTS FOR YOUR CRANE SYSTEMS

The objective of crane systems is to hoist loads safely, to position them precisely and to set them down smoothly. The challenge is to complete these tasks in a short time to guarantee that the output is maximized and therefore profitable.

The design of actuation systems for crane applications requires therefore comprehensive know-how and experience. RACO focuses on two aspects

- Availability under the most adverse environmental impacts and
- Precise central/distributed controlled actuation

to guarantee the highest reliability and safety in extreme situations.

Snow, ice, water, wind and sun – crane systems are intensely and directly affected by the elements. RACO electrical cylinders have proven themselves in many harbor and process crane systems.

THE CONFIGURATION

RACO electrical cylinders series “**Heavy Duty**” are designed for the listed application conditions and withstand even under extreme loads and continuous operation.

The configuration packages for “**on-shore**” and “**off-shore**” include - in addition to the material selection - a large variety of measures for corrosion protection (EN ISO 12944-2, **C5-M**) as well as design related details to increase the functional and operational safety.

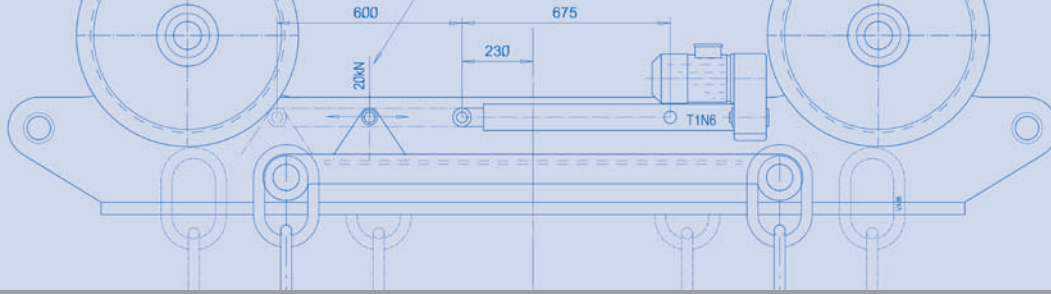
The basic design qualifies all RACO electrical cylinders for an ambient temperature range of **-20°C to + 70°C**.

Depending on the design, the requirements of EN 60529 **IP65** are fulfilled with respect to a high protection type for these enclosed systems, which are lubricated with “**Long-Life**” grease.

Container loading station
Munich



[1]+[2] Type; T1A2 Locking the crab
as storm guard



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THE CONTROLLED ACTUATION

The controlled moving of several electrical cylinders with an even adjustment speed, also for overlapping motions of lifting beams and crab, are typical requirements for the continuous and safe transport sequence.

The configuration of the RACO electrical cylinders includes optional brake and frequency converter technologies, which enables the smooth start and/or the braking in generator mode through a ramp function.

Electrical cylinders equipped with RACO Matic® can be controlled locally and / or they can be integrated into the crane control system through a BUS interface.

A control concept individually tailored to the customer requirements, for example, for the synchronous motions of the several actuators, delivers the signal exchange to the higher ranking PLC.

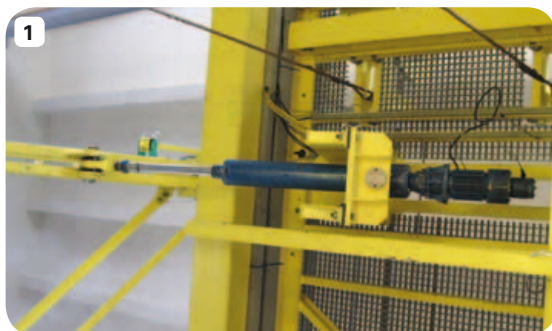
A central or local installation of the control components and the remote inquiry of the operating status are possible.

RACO ELECTRICAL CYLINDERS CAN BE INTEGRATED INTO EXISTING SYSTEMS WITHOUT PROBLEMS:

The actuation of the RACO electrical cylinders provides many advantages if compared to fluid based systems. The adjustment speed and the motion profile can be adjusted continuously to drive to any position across the entire stroke length.

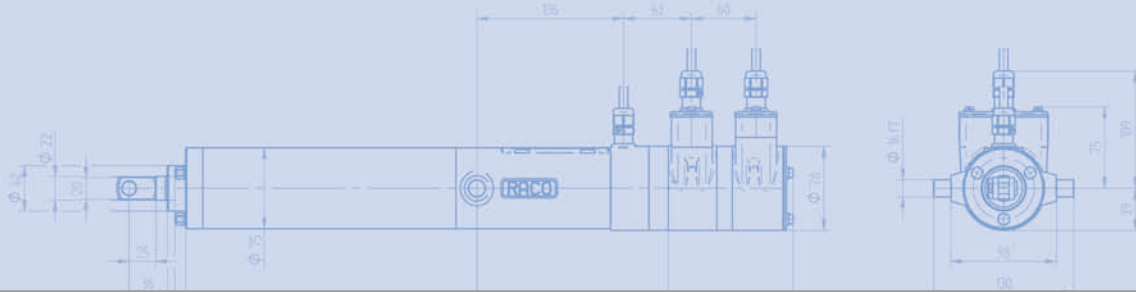
The status signal of the integrated distance sensors can be integrated without problems into the control loop of a higher ranking control system.

Type: T1A5 with RACO Matic®



[1]-[3] Type: T1M5 / T1M6 Actuation of the grabber locking in an electroplating system

Process crane systems are also equipped with RACO electrical cylinders, because the requirements for the resistance against aggressive materials are comprehensively fulfilled by RACO by using special materials and / or by implementing special actions for surface protection.



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POSITIVE IMPACT FOR THE LIFE CYCLE COST ACCOUNTS!

In the past, mainly hydraulic systems were used. Hydraulic units were viewed as especially powerful and robust, however, they require complex care and maintenance of the components such as cylinders, compressed oil supplies and pipe systems.

The easy handling of the electrical cylinders during commissioning and a minimal maintenance effort in operation are today the important cost related factors for more cost effectiveness and environmental sustainability.

RACO ELECTRICAL CYLINDERS OFFER MANAGEABLE AND CALCULABLE COSTS:

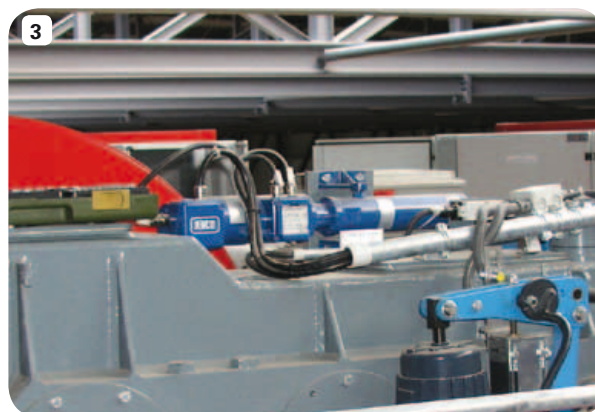
The frequent check for leakages and the exchange of the many wear parts including their bleeding needed for hydraulic systems are not required.

Service work can be scheduled because a damage of the stripper between torque tube and guide cap (when compared to the piston rod seal) of the RACO electrical cylinders does not result in a functional failure.

RACO ELECTRICAL CYLINDERS ARE READY FOR CONNECTION ACTUATION SYSTEMS FOR YOUR CRANE APPLICATIONS:

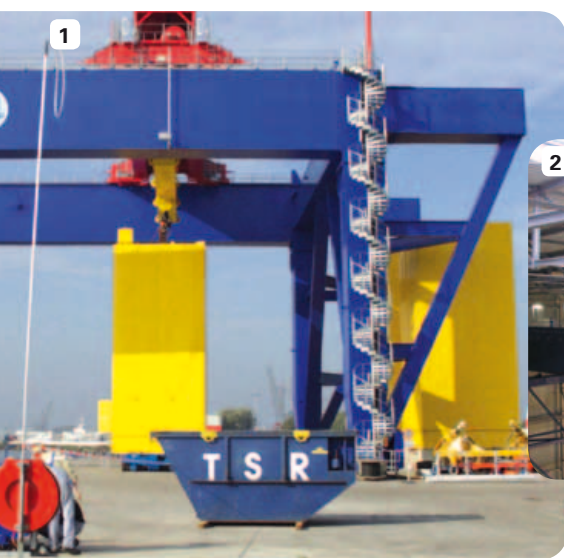
In contrast to hydraulic systems, which require the installation of hoses, valves, filters and many more items for the pressure medium, the connection of the RACO electrical cylinders only require electrical wiring.

Adjustment work at the electrical cylinder for the initialization after an exchange is not required. The actuator can be used immediately.



[1]-[4] Type: T1B2 Actuation of the switch transmission at the hoist system for shipyard crane systems.

RACO electrical cylinders are used for the switching of the transmission at the hoisting gear from slow to fast and vice versa. The switch function is executed by an actuation that protects the transmission gears and the electrical cylinder against damages because the transmission is not synchronized.



COMPETENT CONSULTATIONS

Please request a competent consultation from us and profit from our extensive experience. Make an appointment for an individual meeting.

Here are some basic points for the right decision:

- ✓ With its modular component system, RACO offers many approaches for a customer specific design.
- ✓ Our consultation and the provision of CAD data lead quickly to results.
- ✓ Only the installation space and the cable feed for the electrical cylinders must be considered during the planning phase. Devices for the safe connection of hydraulic lines and oil collection devices are not required.
- ✓ The closed design of an electrical cylinder protects all function elements against ambient impacts. The crane manufacturer and the operating company must not cover the costs for additional protective measures.
- ✓ Not sensitive to strongly changing ambient temperatures, i.e. without additional costs for heating as required for systems with auxiliary media.
- ✓ The easy realization of the control system with only a few components and the low cabling expenditures represent a lower failure risk for the user and fewer spare parts that must be stocked by the user of the crane system.
- ✓ Due to its high degree of efficiency, RACO electrical cylinders are characterized by a low energy consumption during operation. The motor is also switched off during standstill.
- ✓ Environmentally friendly and high operating safety because there are no leakage losses or freezing problems as for systems with auxiliary media.

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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- [1] Ship loading crane
- [2] RTG
- [3] Container bridge crane

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