

Rotork actuators are designed and built to last, a quality that is valued by many Rotork customers who have products dating back to the 1960s and 70s still in operation. However, like all industrial equipment, valve actuators are often exposed to hostile environments or at times can be overstressed or damaged by unpredictable events. To assist our customers to manage their actuator assets more effectively we offer site surveys and preventative maintenance services.

Customers who are currently making use of these services find that:

- The reliability of their actuators improves.
- Problems are identified before they affect operation.
- Overall maintenance costs decline because minor problems are identified before they become more major and Rotork technicians require less time to carry out the work than less experienced third-party personnel.
- Small repairs are done on the spot avoiding the need for more intrusive intervention in the future.
- Large repairs can be scheduled at a convenient time limiting the impact on operations.
- Costs can be controlled and confidently predicted to allow for realistic budgeting.

Site Surveys

A site survey is the first step in a preventative maintenance contract and involves an assessment of the condition of the actuators on site. At the same time we gather all the key product information from each actuator and its associated valve in order to update or create the customer's asset register for automated valves. To this we then add information from our own manufacturing databases (e.g. build specification and date of manufacture) and the current condition of the equipment from the site survey. When any maintenance or repair work is carried out in the future the details can be recorded in the asset register so that a clear picture of the maintenance needs for each actuator develops.

A customer may elect to just receive a site survey report to assist them with decisions about whether to invest further in maintenance and repair or to consider possible replacement actuators.

Preventative Maintenance

When we are engaged to carry out preventative maintenance we will undertake both intrusive and non-intrusive procedures as shown below. The condition of each actuator and details of the work performed are recorded in the asset database so that a complete history develops. In this way any degradation of the equipment over time can be identified so that repairs or a complete overhaul can be planned in advance. The interval between preventative maintenance visits should be planned according to the environment in which the actuators have to operate, how critical the application is in terms of plant integrity and safety, and the frequency of operation of the actuator.



A Tailored Offering

Rotork is engaged in hundreds of preventative maintenance contracts for customers around the world. Our philosophy is to support our customers to help maximize the performance of their equipment therefore each contract can be tailored to the specific needs of the customer.

For larger sites (such as oil refineries) we have Rotork service technicians resident on site to work alongside the customers own staff on a day-to-day basis. This delivers the customer additional economies of scale whilst also ensuring that they have expert valve actuation support always on hand.

For most sites our technicians visit on an "as planned" or annual basis to complete the preventative maintenance and follow up work. This ensures the maximum operational time for the plant. Planned work is scheduled to coincide with plant outages wherever possible.

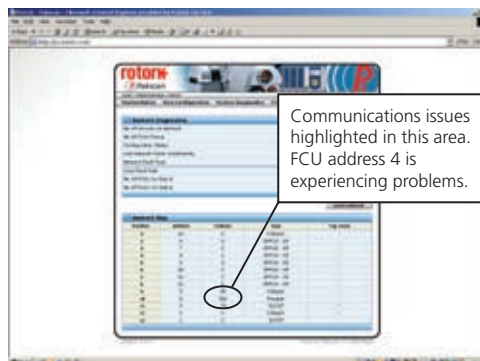
With all our preventative maintenance contracts a one year warranty is provided on all the work undertaken by a Rotork technician.

Typical Preventative Maintenance Actions on Actuators

The actions performed on other types of actuators such as pneumatic, hydraulic and electro-hydraulic types will vary from those shown below:

- Visual inspection of all external surfaces including paint finishes, local controls, position indicators and exposed valve stems where applicable. Any sign of oil leaks will be noted.
- The oil level is checked and replenished if necessary taking into account the specification of the lubricant in use (low temperature, food grade etc.).
- Mounting bolts, nuts, washers and screws are checked for damage and tightness.
- Check manual hand wheel operation and that there is physical movement of the valve.
- Confirmation that the actuator operates in local control in both directions whilst checking for any signs of deterioration such as excessive motor or gear noise.
- If the valve has an exposed threaded stem, check for deposits of actuator drive bush material on the surface of the valve stem (often occurs if the valve stem has not been kept lubricated). If there are signs that may indicate a worn drive bush further checks will be carried out to verify if this is the case.
- The terminal cover is removed and the connections are checked for tightness. Additionally, the compartment is checked for water ingress and corrective action taken as necessary. On explosion-proof actuators the condition of the flame path is inspected. Before replacing the cover a new o-ring seal is installed.
- Depending on the model of actuator, the motor cover is removed and the motor is checked. The housing is checked for any ingress of moisture and the o-ring seal is replaced. On explosion-proof actuators the condition of the flame path is inspected.
- The electrical cover is removed and the compartment checked for any ingress of moisture. The condition of switches, contactors and other electrical apparatus is checked. On explosion-proof actuators the condition of the flame path is inspected.
- Where needed cover retaining screws are replaced.

- In the case of IQ and IQT actuators the battery is replaced.
- For IQ and IQT actuators that have data loggers the historical performance data is downloaded from the actuators and the information compared with data from previous downloads in order to identify any changes in performance. This includes the torque profile for each valve. (See below).
- On completion both local and remote operation is checked.



For actuators that are equipped with data loggers we will collect and analyze the historical operational data and the valve torque profile from the motor operated valve (MOV). Where a baseline "footprint" torque profile was collected at the time of commissioning the MOV a comparison of the current and baseline profiles could reveal changes in the condition of the valve that indicate the need for maintenance. The data logger information is an invaluable tool for helping to predict the need for maintenance of both the valve and the actuator.

When used as a part of a planning process for plant shutdowns or maintenance programs the result is savings of both time and money because only the MOV that have identifiable problems need to be worked on. Where baseline torque profiles were not taken at the time of commissioning we will reset the data logger and take a torque profile as part of the preventative maintenance process so that this feature can be used to advantage in the future.



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A full listing of our worldwide sales and service network is available on our website at www.rotork.com

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