rotork®

Keeping the World Flowing for Future Generations

IQH Range

High Speed, Self-Locking Multi-Turn Electric Valve Actuators

- Graphical interface, remote indication and data logger accessible without power
- Explosionproof to international standards
- Oil bath lubrication provides extended life and the ability to mount in any orientation
- Increased protection by using independent torque and position sensing
- Double-sealed to IP66/68 7 m for 72 hours
- Safe, motor-independent, handwheel operation
- Detailed trend analysis and diagnostic data available for asset management
- *Bluetooth*® setting tool allows secure control and indication configuration in the field
- Easy installation and maintenance using detachable thrust bases
- Continuous position sensing at all times, even without power
- Compatible with a wide variety of fieldbus, hardwired and analogue site systems

IQH provides a range of high output speed IQ range actuators with integral epicyclic gearing. Gearing is optimised to be irreversible and provide a self-locking function for the valve.

IQH actuators have been developed for diverter valves in meter prover applications that require fast operation with positive seating and zero backdriving.

A 1:3 step up epicyclic gearbox enables high speed operation

HART COMMUNICATION PROTOCOL · Pakscan™ · Modbus® · PROFIBUS · RIRO · FOUNDATION · DeviceNet

Simple, Secure Commissioning and Configuration

Ensuring correct configuration and keeping it secure is the bedrock of reliable operation.

All IQ range actuators are set up non-intrusively using a Rotork setting tool. Torque levels, position limits, control and indication functions can all be accessed using the intrinsically safe, wireless handheld setting tool. The IQ range of actuators are compatible with all Rotork setting tools but optimised for the Rotork Bluetooth® Setting Tool *Pro*. Bluetooth wireless connectivity allows easier use without direct line-of-sight and over greater distances. This is achieved by the initial 'pairing' of tool and actuator being carried out by a single infrared transaction after which a Bluetooth wireless connection automatically takes over. Configuration changes are password protected and the actuator is immune to connection by non-Rotork devices or programmes.

3rd generation IQ range actuators benefit from further advances in user interface design. In addition to a configurable and information-rich display, they offer a highly intuitive menu system for configuration, status and diagnostics.

With the latest version of the Rotork Insight 2 software, you can further streamline actuator setup, by pre-defining complete sets of instructions and settings. Each collection of settings can be saved as a 'mission' and quickly applied to individual actuators via the handheld Rotork Bluetooth® Setting Tool *Pro*.

IQ range actuators can be interrogated and set up even when mains power is not available; the actuator can be configured and interrogated by using power from its display back-up battery.

Further remote operation is possible with Rotork's Remote Hand Station (RHS). Full functionality of the actuator display and controls is replicated, allowing operation and commissioning up to 100m away. The RHS is ideal for operating hard to reach and remote actuators.

Technological Advances

Position

Reliable valve position sensing is critical to any valve automation application. Using the latest technology and after years of testing, the patented Rotork IQ absolute encoder can measure up to 8,000 output turns with built-in redundancy and self checking. Longevity of the encoder is ensured using contactless position measurement and only four active parts. Unlike existing absolute encoder designs, these technological breakthroughs increase position sensing reliability while providing zero-power position measurement.

Display

The advanced display allows large segment character position displays down to -50 °C while the matrix display provides detailed setting, status and diagnostic multilingual information. The display backlight provides excellent contrast even in the brightest ambient light conditions and is protected by a toughened glass window. An optional protective clip-in cover is available where high UV levels or abrasive environments are present.

Torque

IQ utilises a torque sensor developed and used successfully by Rotork for over 15 years. Torque generated in moving the valve produces a proportional thrust reaction on the motor worm shaft. This thrust creates pressure in the piezo torque transducer which converts it to a voltage, directly proportional to the output torque being produced by the actuator. This voltage is used by the control circuit for torque limiting, real-time torque indication and for recording valve operating force profiles by the data logger. Now enhanced to provide increased integrity and performance, torque sensing is simple, accurate with high resolution and extremely reliable over the life of the actuator. Unlike other systems employed, the IQ system of torque measurement has the advantage of being independent of power supply voltage and temperature variations.

Control

Control elements such as main control and network interface cards are connected using an internal bus system based on CAN, reducing wiring and connections increasing reliability.

Unrivalled Industry-leading Reliability

Valve operation must be reliable. Rotork IQ range actuators are designed to meet the toughest applications and engineered for a lifetime of uninterrupted service. Built on the Rotork drive train, proven for over 60 years, 3rd generation IQ range actuators retain industry leading reliability.

Asset Management

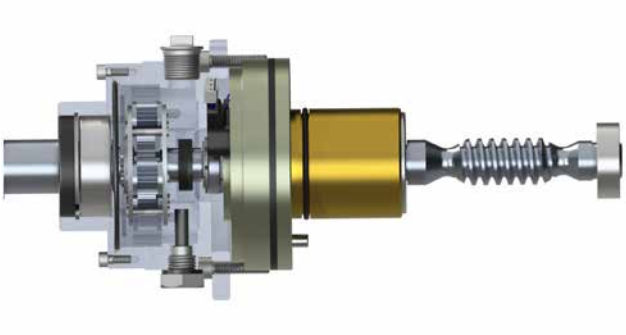
The advanced display ensures position, torque, status and configuration data is clear and immediately accessible.

In addition, asset information for the valve, actuator and process can be extracted with accompanying operational data and stored as the basis for planned maintenance, process performance characteristics and asset comparison purposes.

Data can be extracted using the Rotork Bluetooth® Setting Tool *Pro* (v1.1) for further analysis within Rotork Insight 2 software.

The IQH Epicyclic Gearbox

Fast operation is achieved by using a 1:3 step up epicyclic gearbox between the 2-pole motor and worm gearbox. This is a mature design and was first implemented in the IQ design of the 1990s.



Optimised for Preventative Maintenance

All IQ actuators incorporate a sophisticated data logger, providing comprehensive data capture and analysis for planned maintenance and troubleshooting issues with valves and processes. Captured information includes:

- Valve torque profiles
- Operational starts profiles
- Operational, vibration and temperature trend logs
- Event log

In addition, asset management data regarding the actuator, gearbox and valve is stored within the actuator and available for download. Specific asset management information includes:

- Running time
- Average torque
- Starts
- Life statistics

IQ actuators include configurable service / maintenance alarms. The alarm parameters include:

- Open torque levels
- Close torque levels
- Starts/hr
- Total starts
- Total turns
- Service intervals

Performance Data

		Actuator output speeds		
RPM	50 Hz	108	144	216
	60 Hz	130	173	259
Final Gear Ratio		80:1	60:1	40:1

	Torque**					
Model	**Nm**	**lbf.ft**	**Nm**	**lbf.ft**	**Nm**	**lbf.ft**
IQH20	75	55	75	55	68	50
IQH25	108	80	98	72	83	61
IQH35	202	149	182	134	153	113
IQH40	397	293	347	256	240	177

** Torque rating is maximum torque setting in both directions.
Stall torque will be 1.4 to 2 times this value depending on speed and voltage.

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IQH Specification

The IQH matches the same specification as IQ (refer to PUB002-038) unless stated differently in this publication.

General

Enclosure and Temperature	IP66/68 7 m for 72 hours Type 4, 4X & 6 -40 to +70 °C (-40 to +158 °F) ATEX & IECEx Ex db h IIB T4 Gb IP66/IP68 Ex db h IIC T4 Gb IP66/IP68 Ex h tb IIIC T120°C Db -20 to +70 °C (-4 to +158 °F) FM & cCSAus XP Class I, Div 1, Group B, C, D DIP Class II, Div 1, Group E, F, G -40 to +70 °C (-40 to +158 °F)
Power Supply	3-phase supplies only
Mounting Interface	ISO 5210, MSS SP-102
Lubrication	Oil bath with sealed lubricated epicyclic gearing
Handwheel	Top direct drive handwheel Side geared handwheel
Conduit Entries	3 x M25 x 1.5p, 1 x M40 x 1.5p Via adaptors: 3 x 1" NPT, 1 x 1½" NPT Via adaptors: 3 x PG16, 1 x PG29
Orientation	Any
Finish	Polyester powder coat (P1) Polyester powder coat + offshore triple coat – ferrous parts (P2) Offshore triple coat – all parts (PX)

Indication

Remote Indication	4 x volt free relay contacts
Remote Indication Options	8 x extra volt free relay contacts 4-20 mA position / torque output *Pakscan*™, Profibus®, Modbus®, Foundation Fieldbus®, DeviceNet®, HART®

Operation

Type	Isolating
Duty Cycle	Class A & B (ISO 22153) S2-15 min (IEC60034)

Control

Wiring Diagram	Basic – 100B0000
Local Control	Non-intrusive design LOCAL / STOP / REMOTE selector OPEN / CLOSE selector Restricted access with padlock
Remote Control	Hardwired digital inputs OPEN, CLOSE, STOP, ESD, OPEN INTERLOCK, CLOSE INTERLOCK
Remote Control Options	4-20 mA position control - Folomatic
Network Control Options	*Pakscan*™, Profibus®, Modbus®, Foundation Fieldbus®, DeviceNet®, HART®

System

Configuration	Non-intrusive infrared / Bluetooth
Local Display	LCD and dot matrix dual layer display Multi-lingual setting support Wide viewing angle Backlit for full visibility in daylight Toughened glass protection
Limit Switching	2.5 to 8,000 turns, resolution 7.5° Contactless absolute encoder Built-in redundancy
Torque Switching	Independently configurable switches Piezo electric torque sensor device Switch bypass function available
Data Logger	Standard detailed data logger Torque profiles, trend graphs, event log, fault log, service log

Support Tools

Analysis Software	Insight 2 PC software Configuration and data log review

A full listing of the Rotork sales and service network is available on our website.

www.rotork.com

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Electric Actuators and Control Systems
Fluid Power Actuators and Control Systems
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PUB002-142-00
Issue 02/23