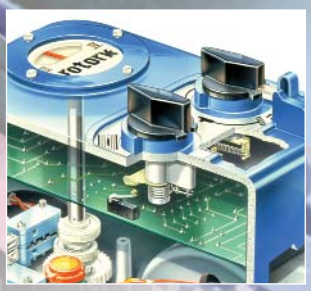
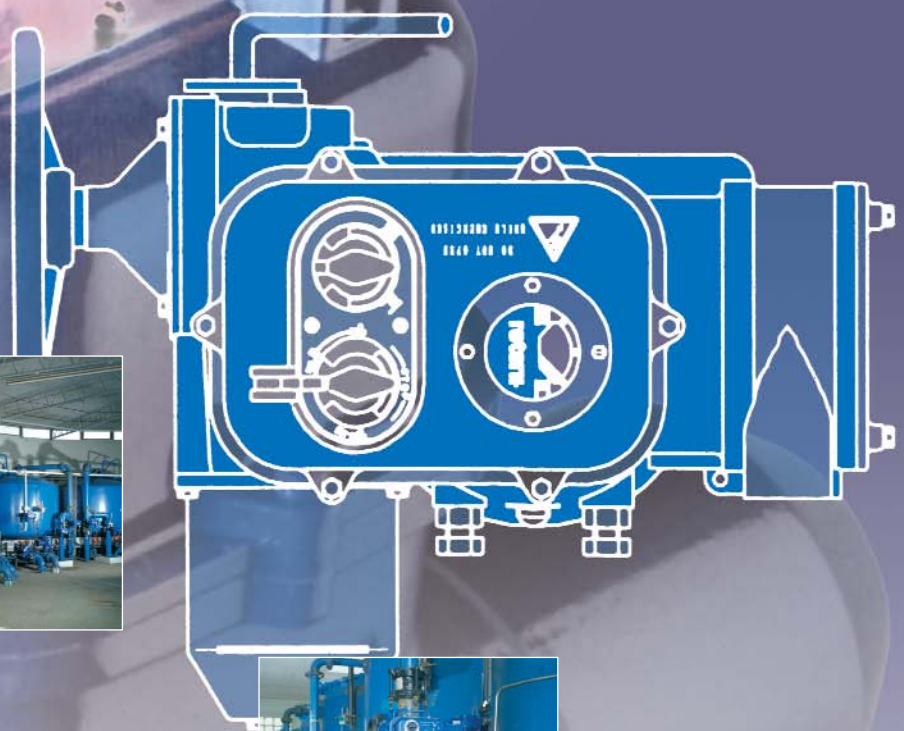
rotork®

Established leaders
in Actuation Technology





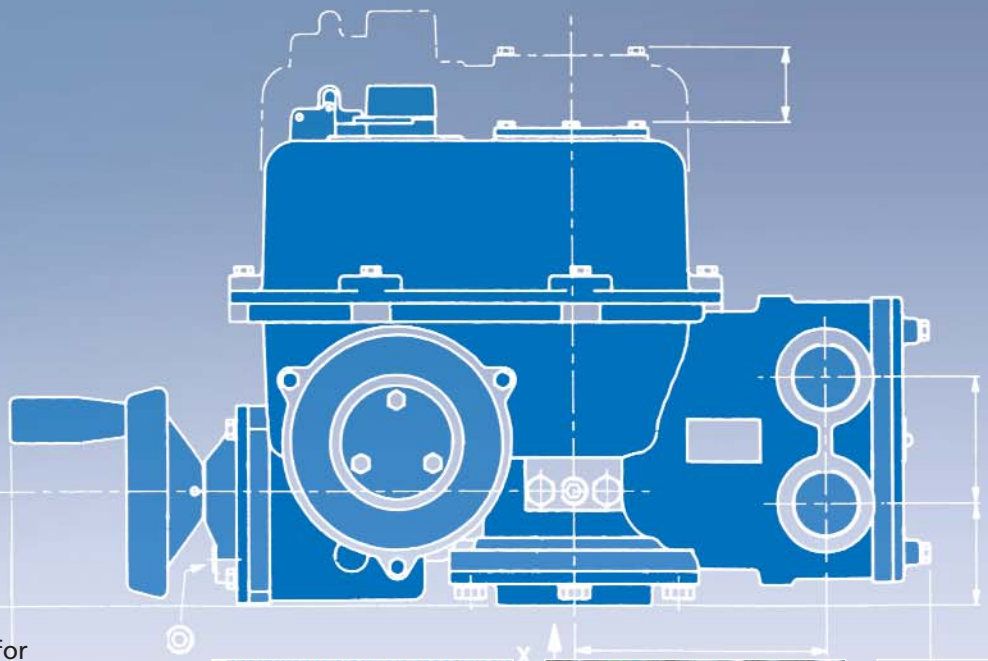
Q Range

watertight single phase
electric quarter turn actuators for
part turn valves and dampers

Publication E610E issue 09/03

rotork

defining your exact requirements



whatever you need wherever you are

In the 45 years since it was founded Rotork has become the name for excellence in the field of valve, sluice gate and damper actuation products for every industry - worldwide.

Rotork has the experience, know-how and product range to deliver virtually any actuation solution - from compact, manually operated gearboxes, to large, highly specified actuators for use in extreme temperature and hazardous environments.

the knowledge to help

Rotork has been at the forefront of actuation technology since the company was formed in 1957 and enjoys an unrivalled reputation for its commitment to the development of leading-edge techniques and processes. Rotork products are designed and manufactured to the highest possible standards of engineering - a principle which drives all areas of our business. So whether you require electric, fluid power, specialist gear or valve adaption products services Rotork has the experience to help you.

everything you need to succeed

Our involvement can go further than just providing the actuator. We can also supply the gearbox, valve adaption kits and control systems to complement it.

Well equipped, Rotork-trained engineers, technicians and representatives work out of 76 offices worldwide and offer both on-site and factory service. Specialist teams offer predictive maintenance and retrofit valve motorisation backed by a quick responsive service. Our aim is to provide our customers with service excellence.

Contents

Q - Set actuator

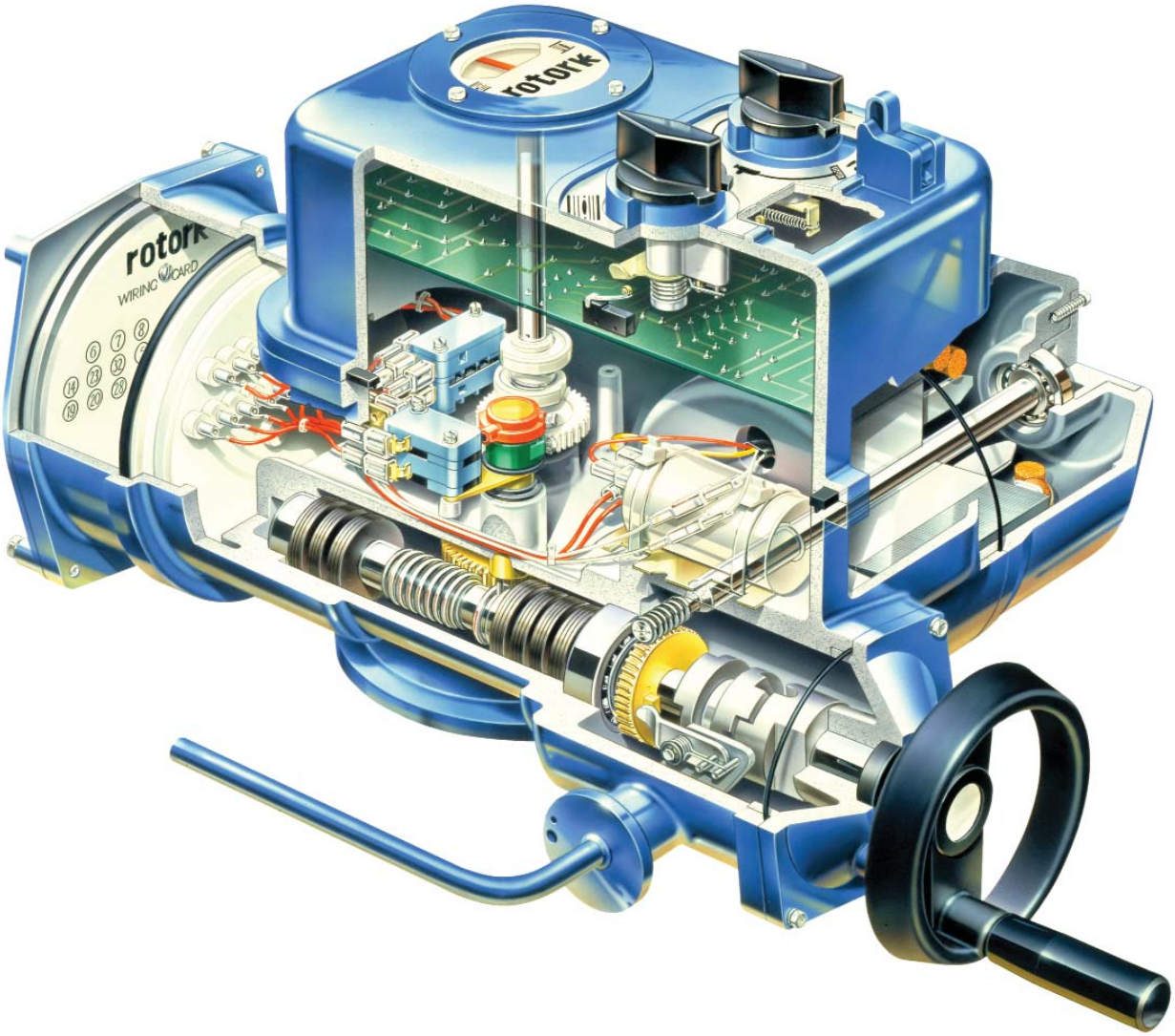
The new watertight 'Q' Range acuators have been designed using Rotork's world proven reliability in combination with the latest technology.

They provide a simple, cost-effective way of controlling small quarter turn valves and dampers. Designed to meet industry's need for a compact and reliable watertight actuator, it is suitable for use in many areas where an IP68 (NEMA 6) enclosure is required The 'Q' Range is a single phase electric actuator which is available in two versions, both with the Rotork 'double sealed' IP68 enclosure.

The Q-standard version is suitable for simple open/close duties where on/off control is required. This is achieved without the need for reversing contactors, giving simplified wiring. The designs of the motor and limit switch mechanism ensure combined ease of setting and reliability in use.

Q - Pak actuator

The Q-pak version benefits from the addition of a specially designed control interface module which enables it to operate from a wide variety of remote control signals and provides status monitoring outputs.



- Reliability of single phase squirrel cage motors.
- Simple remote control for basic applications.
- Rugged compact double sealed watertight enclosure providing environmental protection during plant construction and cabling.
- Positive travel limitation by externally adjustable mechanical stops.
- Simple action auxiliary switch setting.
- Declutchable handwheel with padlockable hand/auto selector arranged for power preference.
- Self locking electrical and manual drive.
- Q-pak version gives compatibility of control and monitoring functions with 'A' and 'AQ' series actuators

MECHANICAL DATA

Model	Electrical supply volts	90° Travel time seconds 50Hz	60Hz	Torque† Nm	lbsft	Mounting base designation to ISO5211 Standard	imperial Optional	Maximum stem acceptance mm bore/keyway	ins A/F square
Q100	220, 240	27, 18, 9	23, 15, 8	135		F05	F07	22*	16*
				100		FA05	FA07	13/16*	5/8*
	110, 115, 120	27, 18, 9	23, 15, 8	135		F05	F07	22*	16*
				100		FA05	FA07	13/16*	5/8*
Q300	220, 240	54, 36, 18	45, 30, 15	406		F10	F07	42**	30**
				300		FA10	FA07	$1^{5}/_{8}$	$1^{1}/_{8}$
Q300	110, 115, 120	54, 36, 18	45, 30, 15	406		F10	F07	42**	30**
				300		FA10	FA07	$1^{5}/_{8}$	$1^{1}/_{8}$**

Q100/Q300 handwheel turns: 15
† Torque rating is maximum torque. Switch setting is in both directions.
Torque output is adjustable from 30% to 100% of rated torque

Drive sleeves are normally supplied blank for machining by valve supplier
* Maximum stem acceptance for both Q100 F05/FA05 and F07/FA07 bases
** These dimensions apply to F10/FA10 base. With Q300 F07/FA07 base, max. acceptance is 28mm bore or 20mm A/F square hole.

ELECTRICAL DATA

Model	Electrical supply volts 50Hz or 60Hz	Travel time seconds 50Hz	60Hz	Starting current Amps	Run current Amps	Nominal kW	Power factor
Q100	110, 115, 120	27	23	2.7	2.6	0.07	0.99
		18	15	3.2	2.3	0.10	0.97
		9	8	7.0	4.9	0.21	0.90
	220, 240	27	23	1.35	1.3	0.07	0.99
		18	15	1.65	1.2	0.10	0.95
		9	8	3.6	2.6	0.21	0.90
Q300	110, 115, 120	54	45	2.5	1.8	0.08	0.98
		36	30	6.0	3.1	0.14	0.95
		18	15	8.6	5.3	0.27	0.90
	220, 240	54	45	1.4	1.0	0.08	0.98
		36	30	2.9	1.6	0.14	0.95
		18	15	4.7	2.6	0.27	0.90

Motor poles 6 4 2

Enclosure
Watertight to IEC529, IP68 (suitable for submersion under 3 metres head of water for 48 hours) NEMA 4 and 6. Even when the terminal cover is removed, the electrical compartment is protected to a level of IP67 from ingress of dirt and moisture.

Temperature
The 'Q' Range has been designed for use in ambient temperatures from -30ºC to +70ºC.

Vibration
The actuator can withstand plant induced vibration of 0.5g over a frequency range of 10 to 200Hz and seismic vibration of 1g in a frequency range of 0.2 to 33Hz. Structural integrity is maintained with a seismic vibration of up to 6g.

Performance
Output torque available from 30lbs.ft (40Nm).

Power Supply
The 'Q' Range of actuators is available as standard for use on the following single phase electrical supplies: 50Hz-110v, 220v, 240v; 60Hz-110v, 115v, 120v, 127v, 220v and 240v. Other voltages can be supplied to special order. A tolerance of ±10% applies to the above voltages. The motor is S2 rated for a 20% duty cycle according to IEC 34.2.

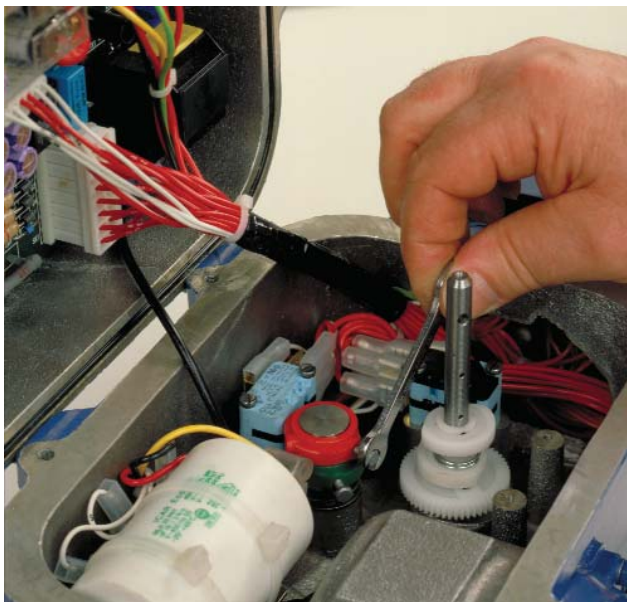
Construction
The gearcase and all housings are diecast aluminium to BS1490. The main gearcase and motor housings are to grade LM4 with the remainder being LM24.

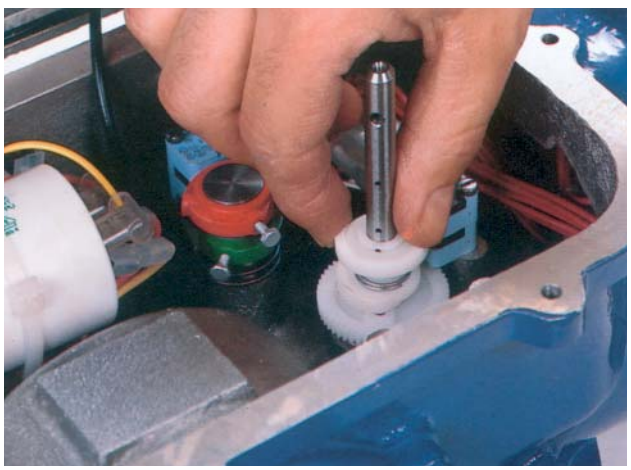
Local control selectors

Output Drive
Easily removable blank, steel drive bush suitable for machining by customer to suit valve stem.

Gearing
Double reduction worm and wheel with steel worm and aluminium bronze worm wheel. The second stage worm and wheel is self locking to ensure that the output cannot be back driven by valve reaction forces.

Switches
Torque-limit and auxiliary limit switches are provided as detailed below and have the following electrical ratings on inductive loads:
110/240V ac 15A
110V dc 0.25A
50V dc 2.5A
24V dc 3A


Torque switch setting


Auxilliary limit switch setting

Torque-Limit Switches
One each for open and close ends of travel with normally closed contacts.

Torque measurement is derived from the self locking output worm and wheel gearing, which avoids torque switch reset on the de-energization of the motor and its associated 'hammering' phenomenon.

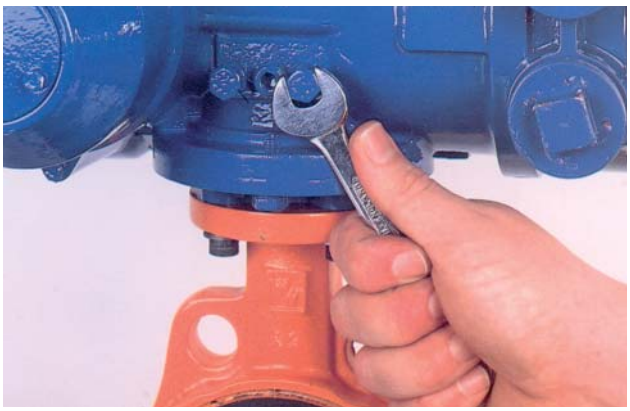
Auxilliary Limit Switches
One auxiliary limit switch with a change over contact is provided for each direction of travel.

Motor
A single phase squirrel cage capacitor run, class F insulated induction motor is fitted. The motor is protected from overload by a thermostat.

Local Indication
A mechanical, continuous position indicator is provided on the electrical compartment cover.

Mounting
All flange mountings are in accordance with ISO5211. As an alternative, they are available with UNC thread holes. See publication E640E.

Manual Operation
A handwheel is provided for manual operation, which is engaged by a padlockable hand/auto selection lever arranged for power preference. When engaged, the handwheel drives the second wormshaft. At no time can the handwheel be driven by the motor.



Mechanical stop adjustment

Mechanical Stops
Externally adjustable mechanical stops are provided with a setting range of 80° to 100° of output movement. The setting of these provides travel limitation for both electrical and manual operation.

Conduit Entries
Two off M32 or two off 1 inch ASA NPT.

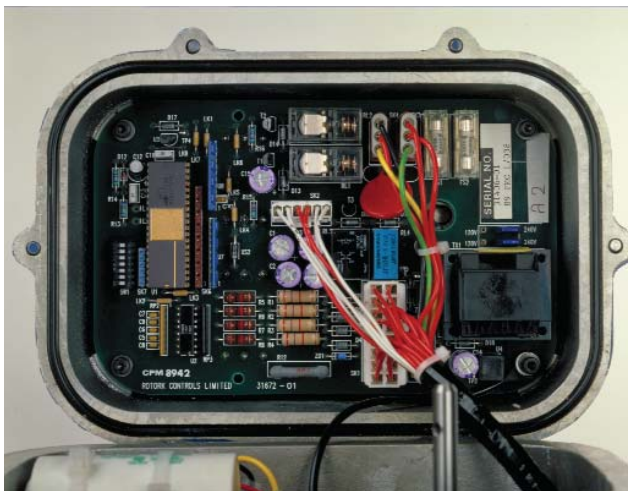
Q-Standard – Optional Extras
Two auxiliary limit switches each independently adjustable to any pointing of valve travel.

12 watt anti-condensation heater to suit motor supply voltage.

Integrally mounted open/close and local/stop/remote selectors.

1 watt potentiometer for remote valve position indication. Externally powered 4-20mA Current Position Transmitter (CPT).

The Q-pak comprises all the features of the Q-standard, as described above, with the addition of the control interface module.



Control interface module

Control Interface Module
This module incorporates a deep cover which houses a printed circuit board with logic circuits, control switches and a transformer. The cover carries open/close and local/stop/remote selectors. The logic circuits allow either internally or externally fed remote controls. Other facilities include: motor running indication, monitor relay and emergency shut down (ESD) facility.

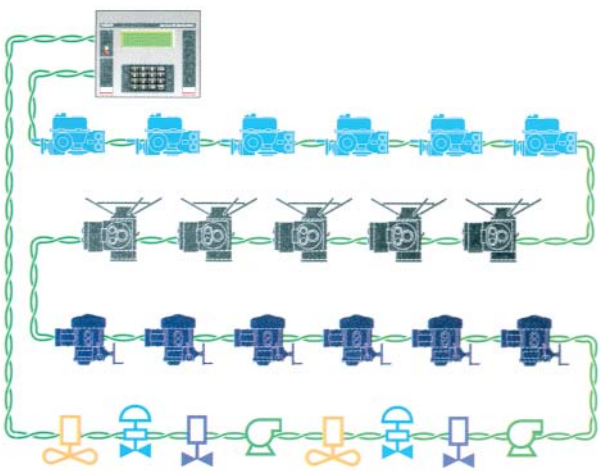
Optional Extras
As Q-standard plus:

Folomatic proportional control.

Pak-scan two wire control.

Internally powered Current Position Transmitter (CPT).

For detail of mechanical and electrical specification see publications E640E and E620E.



Pakscan two wire control for up to 240 actuators and/or other devices

Q Range

watertight single phase electric quarter turn
actuators for part turn valves and dampers

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