Electric Actuators and Control Systems

rotork®
Controls

Established Leaders in Valve Actuation

ROM & RBM Range

Quarter-turn Direct Drive
Electric Actuators

Publication E611E Issue 05/09

rotork®

Rotork actuators have been in use all around the world for over 50 years. In this time Rotork has grown to become the leader in the valve automation industry. With manufacturing, service centres, offices and representatives throughout the world, Rotork is able to offer global service solutions to your company.

In the 50 years since the company was founded, Rotork has become a byword for excellence in the field of valve, sluice gate and damper actuation products for the oil, gas, power, water and waste treatment industries - worldwide.

We owe our success to an uncompromising focus on quality at every stage - and at every level - of Rotork's operations.

From initial site survey, specification and design, through to materials, manufacturing and testing, installation, commissioning and after-sales service we accept nothing but the best.

At the heart of the company is an exceptional workforce - the highly trained, forward-thinking engineers, technicians and support staff who each have a crucial role to play in maintaining Rotork's unrivalled reputation for innovation, reliability and first class customer support.

The Rotork family of products also includes pneumatic, hydraulic and electro-hydraulic actuators as well as a comprehensive range of gearboxes and valve accessories. Rotork's bespoke Pakscan digital control system offers market leading features whilst all our actuators offer the ability to interface with other digital control systems.

Rotork. Established leaders in valve actuation technology.

rotork® Controls

rotork® Fluid Systems

rotork® Gears

rotork® Site Services

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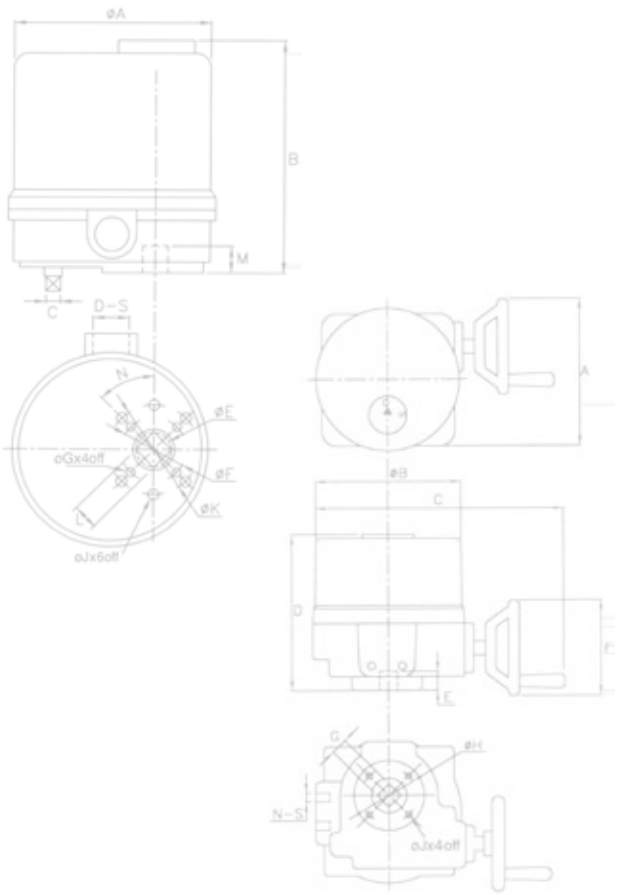


As one of the world's leading manufacturers of actuation products, Rotork has built up an enviable reputation as the supplier of equipment which is both well developed and durable.

With over forty years of experience of long term installation in all environments we have evolved a design of uncompromising reliability. With the addition of the ROM/ RBM range, Rotork is complementing its offering of quarter-turn actuators with simple specification for small valves.

Rotork ROM and RBM Range Actuators:

- Small
- Compact
- Lightweight
- Efficient yet simple gearing
- On-off
- Modulating option
- Single phase, 3-phase and DC versions

The ROM and RBM Range

The ROM and RBM actuators provide quiet and reliable operation for all kinds of small ball valves and butterfly valves, as well as dampers and ventilation louvres. They provide self-locking as standard, local visual indicators and manual override options together with a wide range of voltages.

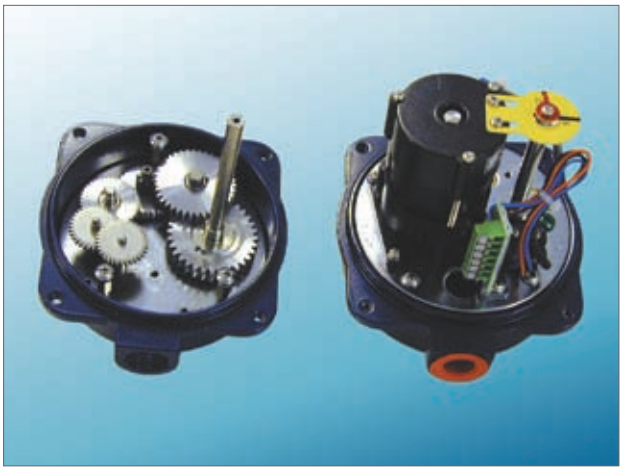
Features:

Enclosure

- IP 67 (NEMA 4, NEMA 4X) waterproof and dust-proof enclosures.
- Material: Aluminium alloy.
- Finish: Dry powder coated.

Motor

- Standard extended duty cycle induction motor. H insulation class for ROM-1 and ROM-A; F class for RBM-2 and ROM-2 to ROM-4.
- Built-in thermal motor protection (135 °C).



Position Indicator

- All models have continuous position indication on the actuator top cover.

Manual Override

- Non-clutch design, the manual operation can be operated without any lever, clutch or brake upon power outage.
- When the electric motor is operating, the manual overide will not rotate.

Gear Train

- High alloy steel gear trains provide self-locking function to avoid valve back drive.
- Gear trains are factory lubricated with a high temperature rated lubricant.

Mechanical Stops

- Externally adjustable mechanical stops are provided on ROM-2, 3 & 4 Actuators.

Working Conditions

- Ambient temperature: -5 to +60 °C.
- Humidity: 30% to 95%.

Various Options

- Anti-condensation heater.
- Additional limit switches.
- Potentiometer unit (1kΩ).
- Local control unit (local/remote, on/off).
- Conduit entries 1/2" NPT or M20.
- Adjustable torque switches.
- Current position transmitter (output 4-20 mA).
- Modulating controller.

Certificates

- ISO 9001, CE, CSA.

Operating Voltages:

	12 VDC	24 VDC	12 VAC	24 VAC	110 V/1	220 V/1	220 V/3	380 V/3	440 V/3
RBM-2	✗	✗	✗	✗	✔	✔	✗	✗	✗
ROM-A	✔	✔	✔	✔	✔	✔	✗	✗	✗
ROM-1	✔	✔	✔	✔	✔	✔	✗	✗	✗
ROM-2	✔	✔	✔	✔	✔	✔	✔	✔	✔
ROM-3	✔	✔	✔	✔	✔	✔	✔	✔	✔
ROM-4	✔	✔	✔	✔	✔	✔	✔	✔	✔

Note: ROMpak actuators are not available with 24 VAC supply. See page 10 for more details.

Mechanical and Electrical Data

Mechanical Data

Model	Power Watts	90°Travel time seconds 50 Hz	60 Hz	12/24 V AC/DC	Weight (kg)	Manual override	Output Drive (mm)	Torque Nm/lbsft	Mounting base designation to ISO5211	imperial
RBM-2	40	10	8	-	4.5	N/A	-	120 / 89	F07 or	FA07
ROM-A	10	24	20	24	3.0	N/A	17 / 14	50 / 37	F07 or	FA07
ROM-1	10	13	12	15	2.0	Lever	14 / 11 / 9	35 / 26	F05 / F03	-
ROM-2	40	17	15	15	9.0	Handwheel	22	90 / 67	F07 or	FA07
ROM-3	40	26	22	22	9.0	Handwheel	22	150 / 110	F07 or	FA07
ROM-4	120	26	22	22	17.5	Handwheel	35	400 / 295	F10 or	FA10

Electrical Performance Data

12V/24V

Model No.	Torque (Nm)	Speed (sec / 90')	Motor Power (W)	Motor Speed (rpm) 12 V	24 V	12 VDC / AC (A) Run	Start	Lock	24 VDC / AC Run	Start	Lock
ROM-A	50	24	3.3W	6000	6000	0.5	3.0	3.0	0.27	1.8	1.8
ROM-1	35	15	3.3W	6000	6000	0.5	3.0	3.0	0.27	1.8	1.8
ROM-2	90	15	70W	1800	1800	3.4	5.0	8.5	2.0	3.0	5.0
ROM-3	150	22	70W	1800	1800	3.4	5.0	8.5	2.0	3.0	5.0
ROM-4	400	22	180W	1800	1800	5.0	8.5	10.0	3.0	5.0	6.0

Single Phase

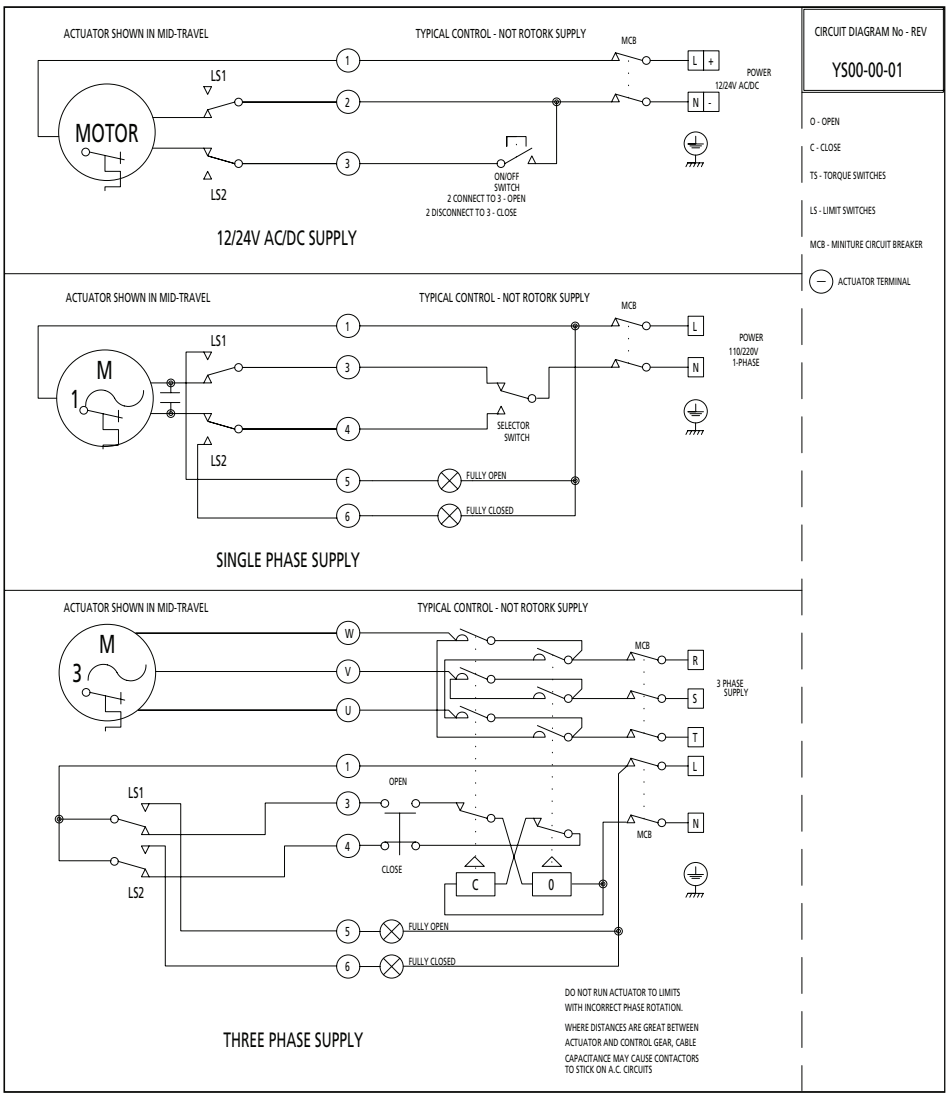
Model No.	Torque (Nm)	Speed (sec) 50Hz	60Hz	Motor Power (W)	Motor Speed (rpm) 50 Hz	60 Hz	110 V Current Run	Start	Lock	220 V Current Run	Start	Lock
ROM-2	120	10	8	40	1450	1720	1.0	3.0	1.8	0.5	1.5	0.9
ROM-A	50	24	20	10	3000	3600	0.5	1.5	0.6	0.3	1.0	0.5
ROM-1	35	13	12	10	3000	3600	0.5	1.5	0.6	0.3	1.0	0.5
ROM-2	90	17	15	40	1450	1720	1.0	3.0	1.8	0.5	1.5	0.9
ROM-3	150	26	22	40	1450	1720	1.0	3.0	1.8	0.5	1.5	0.9
ROM-4	400	26	22	120	1450	1720	1.0	3.0	3.6	0.5	1.5	1.8

Three Phase

Model No.	Torque (Nm)	Speed (sec) 50 Hz	60 Hz	Motor Power (W)	Motor Speed (rpm) 50 Hz	60 Hz	220 V Current Run	Start	Lock	380 V Current Run	Start	Lock	440 V Current Run	Start	Lock
ROM-2	90	17	15	40	1450	1720	0.6	1.8	1.1	0.3	1.0	0.7	0.4	1.3	0.7
ROM-3	150	26	22	40	1450	1720	0.6	1.8	1.1	0.3	1.0	0.7	0.4	1.3	0.7
ROM-4	400	26	22	120	1450	1720	1.0	3.0	3.5	0.7	2.2	2.0	0.8	2.5	2.0

Circuit Diagram and Optional Extras

ROM/RBM Wiring Diagram



Optional Extras:

Torque Switches

Cam activated torque switches to provide torque overload protection (available on ROM-2, 3 & 4).

Potentiometer Unit

Synchronous with output transmission shaft to provide a feedback signal for Position Indicator etc.

Modulating Controller

Input signal: 4-20 mA, 1-5 V, 2-10 V.
Output signal: 4-20 mA, 2-10 V, 0-100%.

External controller: An external unit attached to the actuator is available for ROM-1 and ROM-A actuators.
Internal controller: An internal circuit board inside the actuator is available for ROM-2, 3 & 4 actuators.

Current Position Transmitter

Works in conjunction with the Potentiometer Unit and provides 4-20 mA output signal for poistion indication etc.

Local Control Unit

Local / Remote selection switches Open / Close selection switches (available on ROM-2, 3 & 4 only).

Anti-condensation Heater

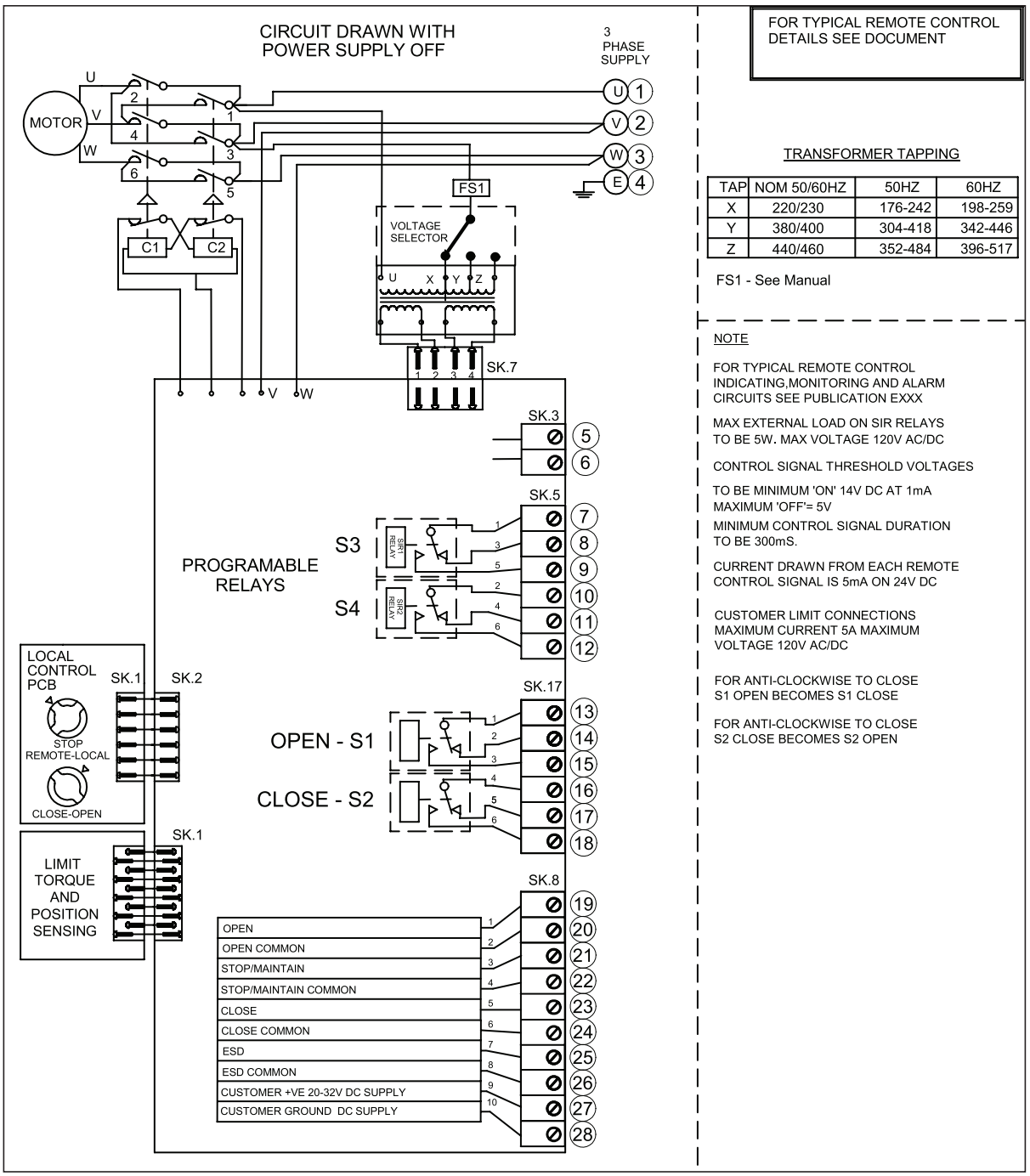
This heater is available for all sizes.

Position Indicator

Position Indicator can be either 0-100% or 4-20 mA.

Circuit Diagram and Optional Extras

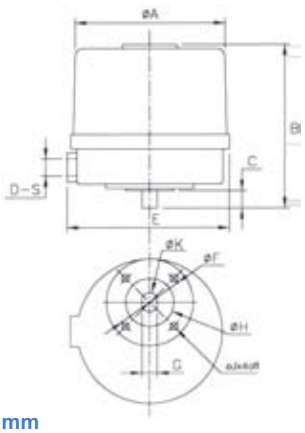
ROMpak 3 Phase Wiring Diagram



TAP	NOM 50/60HZ	50HZ	60HZ
X	220/230	176-242	198-259
Y	380/400	304-418	342-446
Z	440/460	352-484	396-517

Dimensional Data

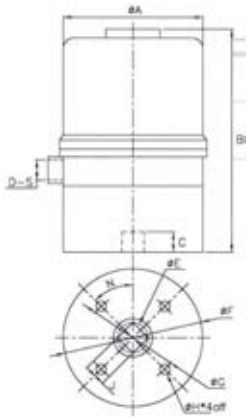
The RBM-2



Dimension table: **Unit: mm**

A	B	C	D	E	F	G	H	J	K	S	Flange type
154	168	18	1	160	70	16	50	m8	20	½ NPT/m20	F07

The ROM-A

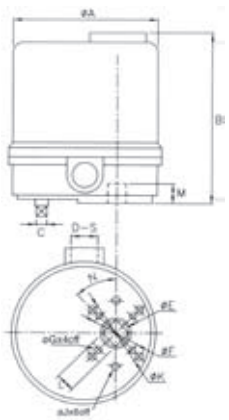


*Drive Insert Option:
J=14, E=19

Dimension table: **Unit: mm**

A	B	C	D	E	F	G	H	J_{max}	N	S	Flange type
108	178	16	1	24	106	70	m8	17	45°	½ NPT/m20	F07

The ROM-1



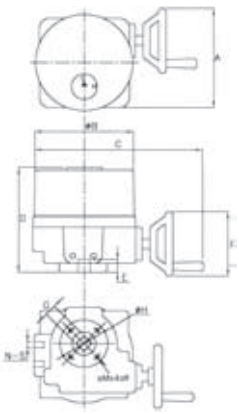
*Drive Insert Options:
(1) L=11, E=15
(2) L=9, E=12

Dimension table: **Unit: mm**

A	B	C	D	E	F	G	J	K	L_{max}	M	N	S	Flange type
108	130	8	1	19	36	m5	m6	50	14	15	45°	½ NPT/m20	F03/F05

Dimensional Data

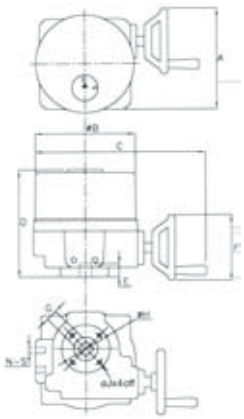
The ROM-2 to 3



Dimension table: **Unit: mm**

A	B	C	D	E	F	Gmax	H	M	N	S	Flange type
200	200	330	206	30	125	22	70	m8	2	½ NPT/m20	F07

The ROM-4



*Drive Insert Option:
J=14, E=19

Dimension table: **Unit: mm**

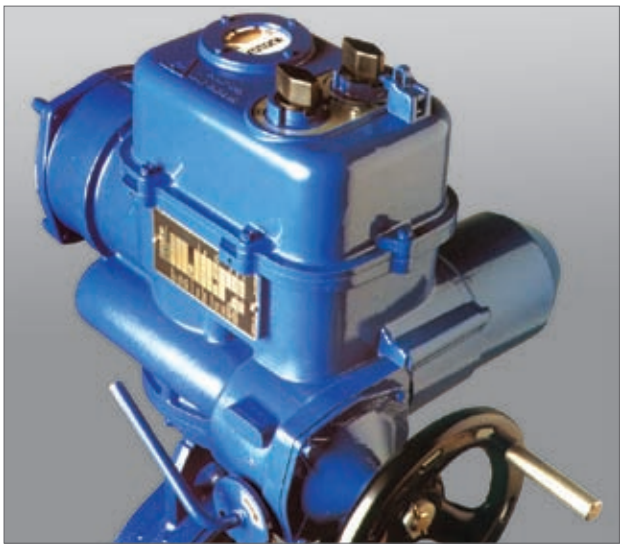
A	B	C	D	E	F	Gmax	H	M	N	S	Flange type
300	234	380	276	40	195	35	102	m10	2	½ NPT/m20	F10

The 'Q' Range

For applications requiring higher torque and sophisticated control capability, Rotork offers the 'Q' Range.

- Single phase.
- IP68 - double sealed.
- Handwheel as standard.
- 'Q' Standard and 'Q' Pak versions.
- Up to 406 Nm.
- Various bus-systems options.

For details of the 'Q' Range, see publication E610E.



Dimensional Data

The ROMpak

The ROM range of actuators is now enhanced with the addition to of the ROMpak actuator. The ROMpak has a self contained control package with local controls, status indication relays, isolated control circuits and support for Rotork control options such as Folomatic, Pakscan and other bus systems.

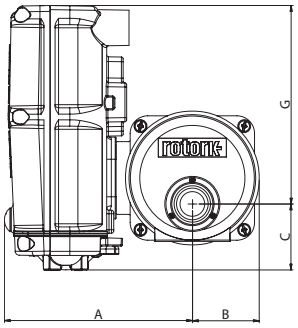
- Small, Compact & Lightweight.
- Manual override.
- Externally adjustable mechanical stops*.
- Local controls.
- Phase rotation correction.
- IP67.
- 12/24 VDC, 110/220 VAC single-phase and 220/380/440 VAC three-phase, 50 Hz and 60 Hz*.
- Position indication via local manual indicator and LED's.
- -5 to +60 °C operation.

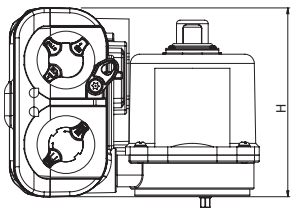
For details of the ROMpak, see publication E612E.

* Excluding ROM 1

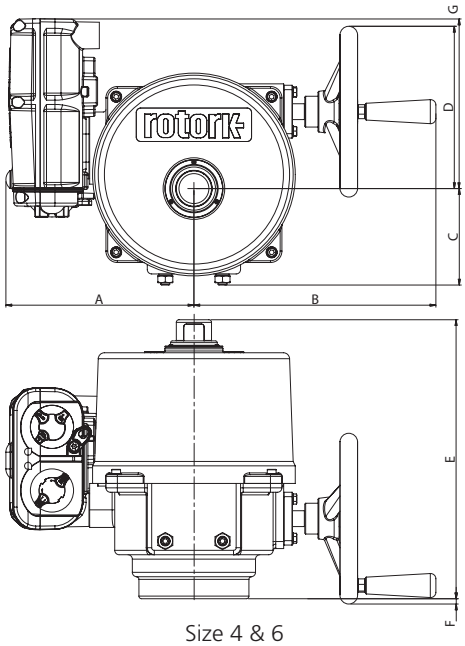
Dimension table: **Unit: mm**

Model	A	B	C	D	E	F	G	H
ROMpak 1	160	57	56	-	-	-	169	161
ROMpak 2	190	231	84	124	255	-	170	-
ROMpak 3	190	231	84	124	255	-	170	-
ROMpak 4	214	275	110	184	317	6	193	-
ROMpak 6	214	275	110	184	317	6	193	-

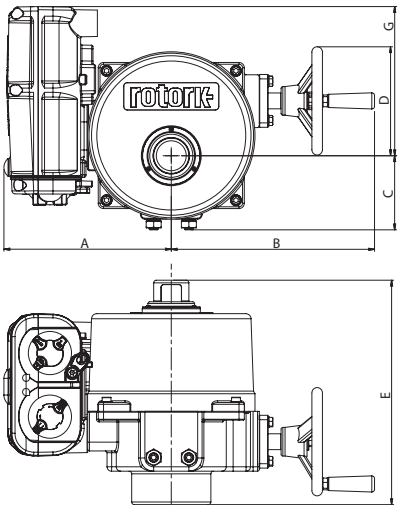




Size 1



Size 4 & 6



Size 2 & 3

rotork Site Services

Rotork Site Services, the projects, service and retrofit division, is active in 47 service centres in over 20 countries around the world, with agents providing support services in another 55 countries, bringing the total number of expert technicians supporting Rotork customers to well over 1,000.

Rotork Site Services aims to further develop Rotork's services in the areas of maintenance, management and upgrading of installed actuation assets to ensure that Rotork can fully support and satisfy the increasing demands from it's customers on a global basis.

Visit www.rotork.com to identify your nearest Rotork Site Services centre.

Emergency and Planned Service

Available for all types of actuator, in all areas (including hazardous environments). Some customers require guaranteed emergency response times, others require planned response for all types of actuator work, including installation, commissioning, upgrading, connection and installation of bus communication systems, troubleshooting and repair of damaged or deteriorating assets.

Actuator Overhauls

After a long service life customers may prefer their actuators to be completely overhauled rather than replacing them with new ones. In our workshops we completely strip and rebuild actuators, returning them to their original state.

Health Checks

Some customers lack detailed information on their assets, making it difficult to prioritise maintenance and replacement investment. We can carry out a detailed and intrusive inspection of the actuators and combine this with build data from our own databases to give customers a holistic view of their assets.

Preventative Maintenance

We provide preventative maintenance to enhance the integrity of actuators and their associated valves. We tailor programmes depending upon the type of actuators, the availability of asset information, and the criticality of the plant to maximise up-time whilst minimising operating costs.

Retrofitting actuators to existing valves

We have extensive experience in fitting actuators to valves, penstocks and dampers that are already installed as part of existing plant. Whether customers are replacing obsolete actuators, changing power sources or motorising manual valves, we offer a tailor made solution to meet customers' specific requirements.

Shutdown Outages

We can support customers in making sure that all their actuators are fully operational and that they meet tight shutdown deadlines. For example some power stations look for us to remove and overhaul in our workshops over 200 actuators when taking a unit out for maintenance. We do this, reinstall and commission the actuators and, where requested, carry out additional actuation projects simultaneously to ensure that customers make the most of their plant shutdown time.

Factory fitting of actuators to new valves

The careful assembly of valve and actuator is critical to ensure that an automated valve performs correctly and reliably. Whilst this service is often carried out by valve manufacturers, if there is a need we can provide this service.

Extended scope projects

This is a growing requirement and some of our service teams have the wide range of skills necessary to offer a "one-stop-shop" to automate part or all of a customer's process. Our capabilities cover all of the installation phases (scoping, design, procurement, manufacturing, installation, commissioning) on the broad scopes that typically surround actuation projects.

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