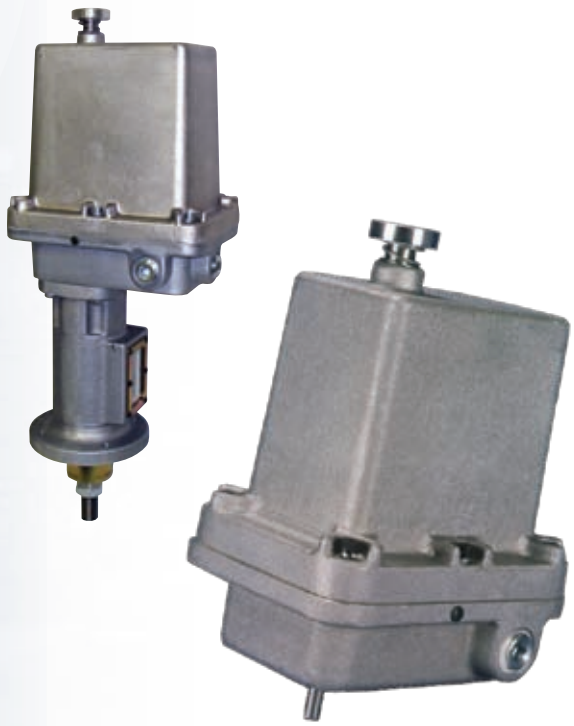
Electric Actuators and Control Systems

rotork®
Process Controls

Established Leaders in Valve Actuation



1000 Series

Linear and Rotary
Control Valve Actuators

Publication P310E Issue 10/08

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.

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 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 with highly trained, forward-thinking engineers, technicians and support staff. Each has 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.

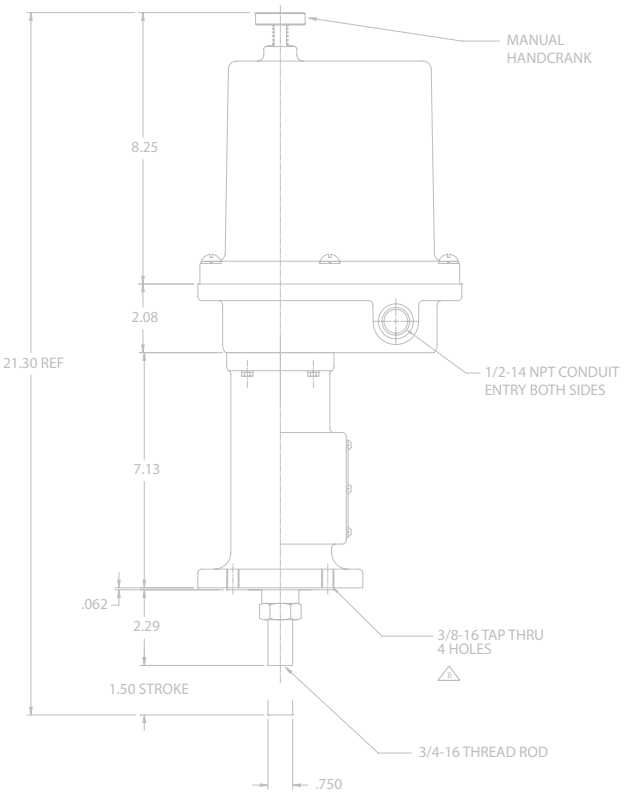
Rotork. Established leaders in valve actuation technology.

rotork® Controls

rotork® Fluid Systems

rotork® Gears

rotork® Site Services



Contents

The Rotork Process Controls 1000 series is a robust and compact range of linear and rotary control valve actuators. Electronically controlled for precise remote operation, these digital actuators are ideal for many applications in the process control industry.

Features

- Simple Compact Mechanics.
- Continuous Modulation.
- 4-20mA Input and Output Signal.
- Easy Set-up.
- Certified Ex Enclosures.
- Manual Override.
- 120V and 240V Single-Phase.
- 24-36V DC.
- High Resolution and Repeatability.
- IP65 Enclosure Standard.

MV & VA-1000 Series

General Description

The 1000 series linear actuators are designed to be used with Low thrust control valves, capable of accepting standard analog current and voltage control signals. The brushless stepper motor design provides smooth, highly accurate positioning, with positive position-lock when not in motion.

The VA-1000 Series is ideally suited for valve, regulator and metering pumps requiring exact position control and unrestricted continuous modulation.

Left: Linear VA-1000 series
Right: Linear MV-1000 series

Features

- Permanently lubricated for any position mounting.
- Amplifier supplies current to hold last position and prevent backdriving, up to thrust rating under power.
- AC or DC input power versions.
- 4 to 20mA position, loop-powered, feedback signal.
- Field selectable adjustments for:
  speed; deadband; zero and span; command signal type; standard or reverse acting; manual-auto operation; output shaft position on loss of signal.
- Wide ambient temperature range.

Base Model Includes

- Motor (stepper).
- Manual override.
- Amplifier.
- Electronic thrust limiting.
- Cast aluminum NEMA 4 (IP65) & dust ignition-proof enclosure.
- Four adjustable position switches (40mA at 40V DC).
- Valve position indicator.
- Internal steel gear train.
- 4-20mA transmitter for customer use.

Popular Options

- Signal Conversion Module: Convert 40mA, 40V DC low level to 5 Amp, 120/240V DC current rated position limit switches.
- Sleeper circuit (24V DC only).
- Switching input powered AC or DC positioning for positioning actuator using AC or DC remote voltage control.
- Process Variable Controller to control one process variable.
- Local Auto/Manual and INC/OFF/DEC toggle switches (Close-coupled, NEMA 4).
- Various enclosure coatings.
- Battery backup to position actuator on loss of AC power.
- Factory mounting to valve.
- ATEX Approval.

Model	Single Phase Voltage	Motor type	DC	Enclosure Certification	Max Torque lbs. (N)	Speed in./sec (mm/sec) at Max. Thrust	Min Thrust lbs. (N)	Speed in./sec (mm/sec) at Min. Thrust	Stroke length in. (mm)	Manual Override	Operating Temp.	Weight lbs. (kg)
MV-1010	120/240	Stepper	Y	IP65; CSA ATEX; FM	100 (445)	0.05 (1.27)	25 (111)	0.25 (6.35)	1.375 (35)	Yes	-40°F to 150°F -40°C to 65°C	12 (5.44)
MV-1020	120/240	Stepper	Y	IP65; CSA ATEX; FM	200 (890)	0.13 (3.3)	100 (445)	0.25 (6.35)	1.375 (35)	Yes	-40°F to 150°F -40°C to 65°C	16 (7.25)
VA-1020	120/240	Stepper	Y	IP65; CSA ATEX; FM	900 (4003)	0.014 (0.35)	220 (978)	0.034 (0.86)	1.5 (38.1)	Yes	-40°F to 150°F -40°C to 65°C	24 (10.8)

SM-1000 Series

General Description

The SM-1000 Series are multi-turn, rotary actuators, designed to meet the exacting requirements for closed-loop modulating positioning control. Designed for low to medium torque rotary applications, these actuators are capable of accepting analog current and voltage command signals. The brushless stepper motor design provides smooth, highly accurate positioning, with positive position-lock when not in motion and powered. The SM-1000 Series is ideally suited for regulators, pilot valves, small quarter-turn valves, choke valves and dampers.

All SM-1000 Series actuators come with a standard digital internal amplifier. These amplifiers are all fullfeatured devices designed to work seamlessly with the actuator for closed loop control.

SM Multi-turn Rotary 1000 series

Features

- Permanently lubricated for any position mounting.
- Amplifier supplies current to hold last position and prevent backdriving, up to thrust rating under power.
- AC or DC input power versions.
- 4 to 20mA position, loop-powered, feedback signal.
- Field selectable adjustments for:
  speed; deadband; zero and span; command signal type; standard or reverse acting; manual-auto operation; output shaft position on loss of signal.
- Wide ambient temperature range.

Base Model Includes

- Motor (stepper).
- Manual override.
- Amplifier.
- Electronic thrust limiting.
- Cast aluminum NEMA 4 (IP65) & dust and hazardous gas ignition-proof enclosure.
- Four adjustable position switches (40mA at 40V DC).
- Internal spur gear train.
- 4-20mA transmitter for customer use.

Popular Options

- Signal Conversion Module: Convert 40mA, 40V DC low level to 5 Amp, 120/240V AC current rated position limit switches.
- Sleeper circuit (24V AC only).
- Switching input powered AC or DC positioning for positioning actuator using AC or DC remote voltage control.
- Process Variable Controller to control one process variable - 120/240V AC only.
- Custom mounting and interface hardware.
- Local Auto/Manual and INC/OFF/DEC toggle switches (Close-coupled, NEMA 4).
- Various enclosure coatings.
- Exd IIB (Hydrogen) enclosure (up to 85 in. lbs.).
- Battery backup to position actuator on loss of AC power.
- ATEX Approval.

Model	Single Phase Voltage	Motor type	DC	Enclosure Certification	Max Torque in lb. (Nm)	Speed at Max. Torque	Min Torque in lb. (Nm)	Speed at Min. Torque	Total turns available	Manual Override	Operating Temp.	Weight lbs. (kg)
SM-1015	120/240	Stepper	Y	IP65; CSA ATEX; FM	45 (5)	1 RPM	15 (1.69)	12.5 RPM	10° to 20 turns	Yes	-40°F to 150°F -40°C to 65°C	12 (5.44)
SM-1020	120/240	Stepper (w/gearbox)	Y	IP65; CSA ATEX; FM	350 (40)	0.7 RPM	20 (2.25)	10 RPM	10° to 20 turns	Yes	-4°F to 150°F -20°C to 65°C	16 (7.25)

CSA - Class I, Division 1, Groups C & D; Class II, Division 1, Groups E, F & G; CSA Enclosure 4.
FM - Class I, Division 1, Groups C & D; Class II/III, Division 1, Groups E, F & G; NEMA Type 4.
ATEX - Testing and certification varies for RPC products, Apply to RPC for specific actuator information.

Applications

Water Treatment Application

MV-1020

- Chemical feed valve control.
- Controls the ALUM that is added to raw, potable water.
- Through the DCS, flow rate is accurately controlled via a needle valve.
- Application environment is outdoors, which requires a NEMA 4 enclosure rating. The application requires unrestricted modulating duty.
- Remote Auto/Manual enclosure required that included power status relay.

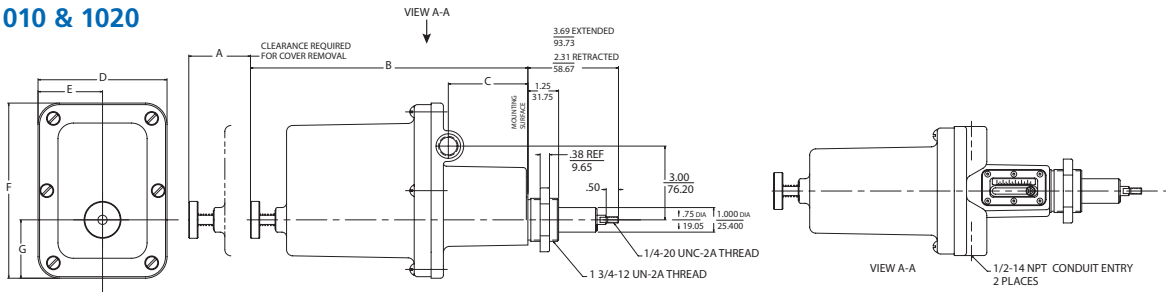
Recycling Plant Chemical Injection

MV-1020

- Emissions control on digester gas combustion in cogenerators.
- Controls levels of hydrogen sulphide in combustion gas.
- Flow is controlled by a 4-20mA signal from the DCS.
- Explosion proof version of MV1020 modulates a 1" Bauman valve to an accuracy of +/- 0.1%.
- Hydrogen sulphide controlled to 50ppm.

Dimensions

MV-1010 & 1020



ACTUATOR

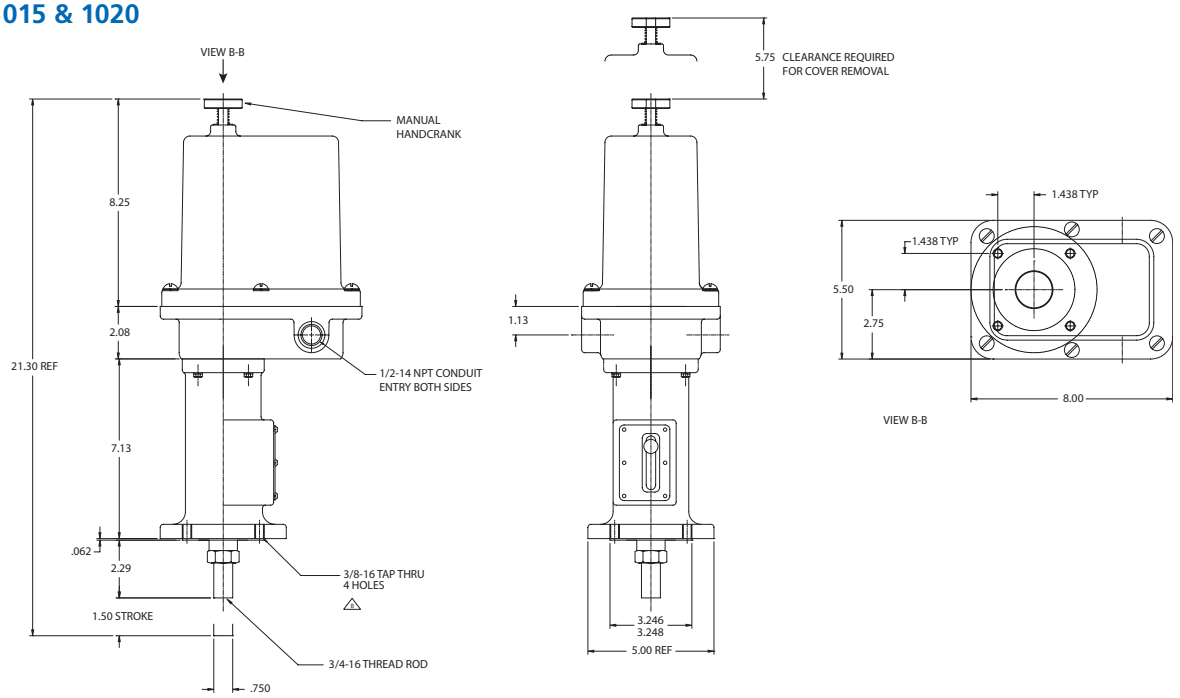
SYM	MV-1010	MV-1020
A	5.25 / 133.35	6.13 / 155.70
B	11.31 / 287.27	12.44 / 315.98
C	3.25 / 82.55	3.50 / 88.90
D	5.25 / 133.35	5.38 / 136.65

ACTUATOR

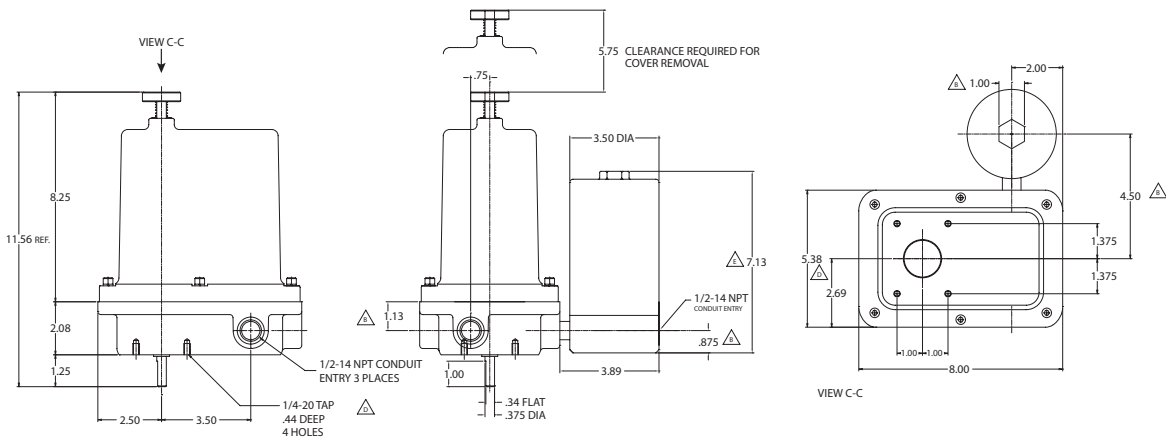
SYM	MV-1010	MV-1020
E	2.63 / 66.80	2.69 / 68.33
F	7.13 / 181.10	8.00 / 203.20
G	2.38 / 60.45	2.50 / 63.50

DIM = INCH / MM

VA-1015 & 1020



SM-1015 & 1020



ISO 9001:2000
Rotork Process Controls, Milwaukee, USA

Rotork Controls Ltd, Bath, UK

rotork®
Process Controls

UK head office
Rotork Controls Limited
tel Bath 01225 733200
fax 01225 333467
email mail@rotork.co.uk

USA head office
Rotork Process Controls
tel Milwaukee (414) 461 9200
fax (414) 461 1024
email rpcinfo@rotork.com

A full listing of our worldwide sales and service network is available on our website at:

www.rotork.com

Controls
Electric Actuators and Control Systems

Fluid Systems
Fluid Power Actuators and Control Systems

Gears
Gearboxes and Gear Operators

Site Services
Projects, Services and Retrofit