

PremiTork



LONWORKS®



Bluetooth®



Compact
Electric Actuators

Introducing the revolutionary compact electric actuator that's BIG on integrated technology



Tyco Valves & Controls introduce PremiTork - the biggest new development in compact intelligent electric actuators.

It's that perfect quarter-turn solution: a **compact** single-phase actuator which contains all the advanced variables you need to provide effective control - in even the biggest and most complex plants.

Weighing in at just 7 kilos, PremiTork is pound for pound the most innovative modular actuator around today. Not only does it include a whole range of essential design features but there's also the opportunity to incorporate **Bluetooth®** wireless connectivity. Need we add more?



PremiTork - design features

Mechanical connection to the valve

PremiTork actuators feature an interchangeable base plate and drive insert to allow direct mounting to most valve types including standard EN ISO 5211 dimensions.

Electric motor

A universal electric motor with innovative power supply module is used in all PremiTork actuators. Uniquely designed to automatically accept any single phase input voltages [from 24 to 240V DC or AC]. PremiTork can simply be connected to the local power and it will adapt to the available power rating. Three phase voltages from 208-575 VAC are also available.

Electric motor thermostat

A thermostat to control the motor temperature in hot and cold applications is included as standard in the electric motor frame.

Actuator service

The same standard actuator is suitable for ON-OFF and modulating valves, as the motor is S3-100% duty rated.

Compact and light design

PremiTork actuators are very compact and balanced for easy installation to small valves minimizing pipe work stress or loads to the valve shaft.

Actuator control, setting & diagnostics

Each function and parameter of the actuator's control, setting and diagnostics is available both remotely and locally. Position, torque, open/close speed and output contacts only require configuring.

Local manual override

A constantly engaged manual override (not rotating during motor operation) is fitted to all PremiTork actuators.

Torque and sizing

The PremiTork range comprises six models, for operating torques of up to 2.000 Nm with a configurable operation time from 8 to 400 seconds. The nominal output torque value is constant along the entire stroke.

Actuator body and construction

The PremiTork body is die cast aluminium with epicyclical internal gearing manufactured from sintered alloy steel lubricated with grease. Output drives are manufactured from cast iron.

Heater

A heater is standard within the unit powered from the motor power supply, it is automatically activated when the temperature drops below 30°C.

Local control unit

An optional compact local operator interface is available, which includes a local/remote selector switch, open/close pushbuttons and 2 LED's for local position indication.

Non-intrusive configuration

With **Bluetooth®** wireless technology enabled on your PDA all configuration requirements can be undertaken non-intrusively. Direct access to the PremiTork is then available for configuration and predictive/preventative maintenance information, including valve position, actuator speed, output torque, faults and status.

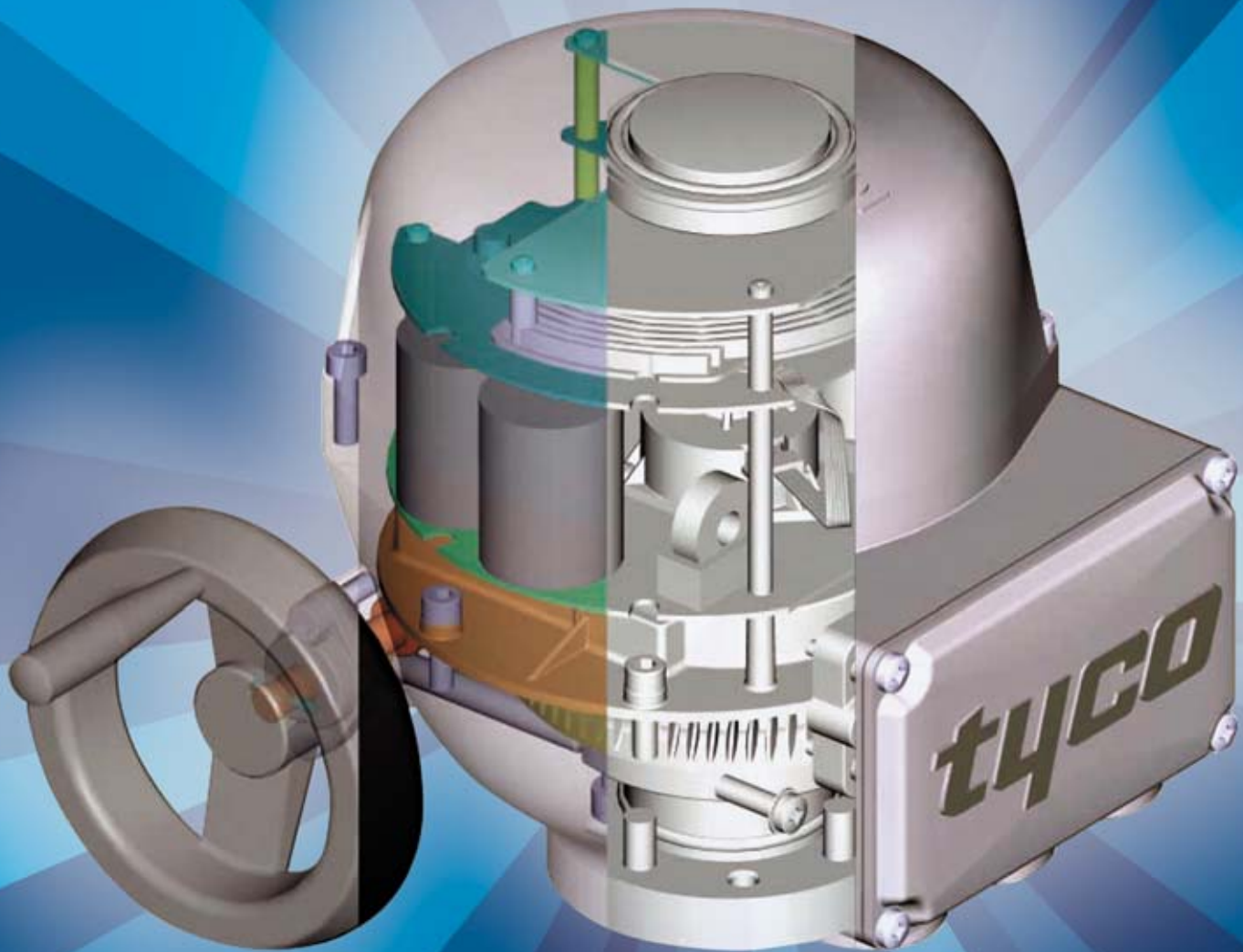


LONWORKS®



PremiTork

The new standard in intelligent quarter-turn actuators



✓ **STANDARD**

An innovative motor that operates with the whole range of voltages and duty rated at 100%.

✓ **STANDARD**

Accurate and adjustable torque control from 40% to 100% of nominal value.

✓ **STANDARD**

Contact-less Position Detection™ adjustment by means of two-position sensors.

✓ **STANDARD**

Variable speed control independently adjustable in either open or closed position.

✓ **STANDARD**

Separate terminal block for easy and safe installation.

✓ **STANDARD**

Valve position detection with end of travel setting using rotary switches.

✓ **STANDARD**

Interchangeable base plate ensures simple connection to all valve types.

PLUS

The option of Bluetooth® technology.



PREMITORK's valve position detection has end of travel settings using rotary switches

PREMITORK's new sintered epicyclical internal gearing ensures a smooth, reliable operation



PREMITORK has a separate terminal block for easy and safe installation

PREMITORK's interchangeable base plate means a simple connection to all types of valves



PREMITORK ALSO FEATURES:

Innovative power supply

module™ allows motor to operate with the whole range of voltages from 24 to 240V - both in AC or DC.

Output speed adjustment

with a 10 step rotary switch - from 8 seconds to 400 seconds.

Valve operating speed selectable

independently for the opening and closing stroke.

Accurate and adjustable torque

control from 40% to 100% of nominal value.

Contact-less Position Detection™

position adjustment by means of a two-position selector sensor.

A compact local operator

interface (optional).

PremiTork

It's everything you've been looking for in an electric actuator ... and more!

Bluetooth technology

allows your PDA to have direct access to the PremiTork for non-intrusive configuration and diagnostics. (optional)

The wireless Bluetooth technology enables devices to connect point-to-point or multipoint (up to seven simultaneous connections by a single device). Bluetooth operates at the unlicensed 2.4 GHz range, and it's usable within a range of about 10 meters. This means that a Bluetooth enabled actuator can be configured with a PDA without the requirement of cables or direct optical link (i.e. IrDA). If the actuator is within range of the PDA, you can select it from the TAG list and immediately view the configuration and diagnostic information.

The HMI information on the PDA allows you to verify, change and save the configuration of the actuator. If multiple actuators have to be configured, it's possible to configure a single unit and use the same configuration for all the others. This saves a lot of time during the installation and start-up procedures and prevents that actuators are configured incorrectly. As soon as the PDA is connected to your PC, data will be exchanged to store the new information into the configuration database.

During operation, the PDA allows you to retrieve enhanced diagnostic information required to realize preventive/predictive maintenance. The alarm reports and event data logger in combination with the valve torque footprints will detect potential failures before they even occur. This will save you valuable production time and prevent any downtime.

Due to the low power consumption of a Bluetooth transmitter (100 mW for class 1 module), this technology may also be used in Ex environments. Ex PDA's are available and accept the required HMI software.





Tyco valve packages the one-stop solution to total reliability

PremiTork actuators can be supplied with high quality Tyco valves to provide a pre-assembled and tested product ready for on-site installation. Available with a full range of quarter turn valves Tyco PremiTork valve packages put you in control.

All valves and actuators are manufactured in plants certified to ISO 9001 – 2000 and comply with the most stringent requirements of the European Directives and harmonized

standards including Pressure Equipment Directive (97/23/EC PED) and ATEX 94/9/EC for potentially explosive atmospheres.

However the real benefits of sourcing valve packages from Tyco are the savings achieved through dealing with one company able to provide a complete unit specifically designed to operate as an assembly, factory tested and ready for immediate installation and commissioning on site.

General Applications

A full range of ball valves and butterfly valves are available for a wide range of general industrial and service applications including water, food, chemical, pharmaceutical, oil & gas, petrochemical, automotive and shipbuilding.

Benefits

- Single source of supply
- Designed to operate as an assembly
- Manufactured in ISO 9001 – 2000 certified plants
- All actuated valve packages are individually tested before shipping
- Packages are suitable for incorporation in assemblies requested under the Machinery Directive 98/37/EEC. Special ESD valves compliant with this Directive are also available.

Features

- Actuator attachment flanges are EN ISO 5211 compliant
- Valves have ISO 5211 top plates
- Brackets and couplings are manufactured to EN standards
- Valves, actuators and accessories comply with the following standards:

Pressure Equipment Directive (97/23/EC PED)

- Valves certified following module H of PED, allowing applications up to and including category III (highest category for industrial valves, table 6 of the PED annex II)
- Actuators falling under article 3, paragraph 3 of the PED are produced in an environment certified to both ISO 9001 and PED module H

ATEX 94/9/EC Potentially Explosive Atmospheres

- Valves and actuators have been assessed to ATEX 94/9 and certified as II 2 GD equipment suitable for installation in all zones 1 & 21 and zones 2 & 22 (according to the ATEX Directive 1999/92/EC annex II)
- Large range of valve diameters, PN or Class designated
- Carbon steel and stainless steel valves as standard, special materials on request
- Valves suitable for on/off and control service.
- Choice of metal or soft valve seats and a variety of end connections.



Total peace of mind is all part of a Tyco valve package

PremiTork - technical data

Specification

Electric motor: standard with Innovative Power Supply Module suitable for any single phase input voltages. The motor duty cycle at 40°C is S3-100% for all models.

Voltage ratings: 24 to 240V DC or AC single phase input voltages at 50 and 60 Hz.

Three phase supply version: extended voltage range from 208 to 575 V AC.

Tolerance of fluctuations: voltage: +/- 10% continuous; frequency: +/- 2%.

Working temperature: -25°C to +70°C;
A special version is available for -40°C to +70°C;

Environmental protections:

Standard version:

- IP68 according to EN 60529;
- NEMA 4/4X/6 according to NEMA ICS6 / NEMA 250.
Explosion proof version
- ATEX (94/9/EC) II 2GD, EEx de IIB T4;
- NEC 500 (FM / CSA Approvals) for Class 1 div. 1 Groups C & D;
- NEMA 7 and NEMA 9;

Safety compliance: machinery directive 98/37/EEC;
Electromagnetic compatibility directive (EMC) 98/336/EEC and further amendments;
Low voltage directive (LV) 73/23/EEC and further amendments by the application of EN 60204-1.

Painting: ESPC suitable for 1000 hours resistance to salt spray. Standard color: white.

Travel stops: mechanical stops fixed on the base of the actuator to provide the following setting range: +/- 10° over travel in each direction of rotation. (70° minimum/110° maximum angular stroke).

Heater: standard 10 Watts powered from the internal PCB. An internal thermostat activates the heater when the temperature on the control enclosure drops below +30°C.

Local indicator: a standard 'window' type local position indicator is located on top of the actuator cover; a 'beacon' type indicator is offered as an option.

Electronic controls:

- internal drive to reverse the actuator direction of rotation via 24V DC remote control signals with Internal or External 24V DC power.
- push-to-run remote control signals (3 wires type open / close / common).

- torque sensor with adjustment from 40% to 100% of nominal torque in both directions: torque adjustment by means of rotary graduated switches (10 steps).
- contact-less Position Detection: position adjustment by means of two-position sensors.
- output speed adjustment with ratio 1 to12 (or 1 to 6 for Model 1000 Nm): speed adjustment by means of rotary switch (10 steps).
- valve operating speed selectable independently for the opening and closing stroke.
- standard 4 SPST (NO/NC) latched type contacts for fully open / fully closed remote indication.
- contact ratings: 120V AC - 5 Amp ; 30V DC- 5 Amp.

Electrical connection: the terminal board has 4 x M25 cable entries for power and controls cables. 1" NPT is also available, other options require adaptors. The terminal board is in a separate compartment for easy and safe cable installation.

Fieldbus Communication / Network Interfaces:

PremiTork actuators can easily be connected to a standard fieldbus system via an (optional) interface card in the actuator enclosure. The open network protocols available are: Foundation Fieldbus, Profibus DPV0 and DPV1, Device Net 2.1, AS interface v2.1 and LonWorks.

Optional modules

Modulating control and monitoring:

- analog position INPUT 4-20 mA or 0-10 V DC.
- analog position OUTPUT 4-20 mA or 0-10 V DC.
- monitor relay: loss of power, torque alarm, high temperature alarm, travel alarm.
- motor running.
- 4 additional SPST output contacts can be set independently at any point of the stroke.
- 3 wire control: suitable for existing Keystone EPI actuators in the field to ensure compatibility of wiring.
- three phase voltages module for 3 phase voltages.

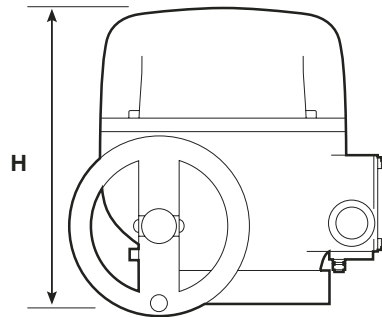
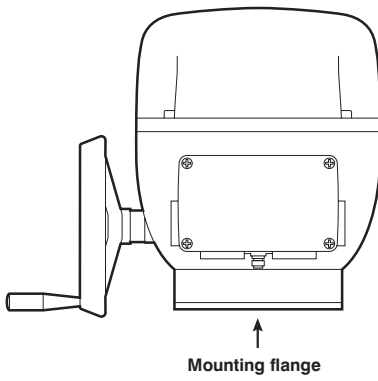
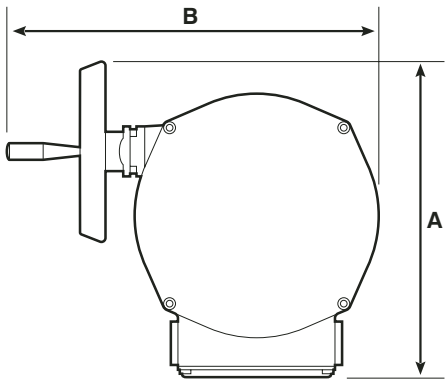
Power failure back up: a 9V battery or external 24V DC supply allows remote indication of the actuator/valve status in the event of a power failure. The standard Alkaline battery has a working temperature of -20°C to +60°C and storage temperature of -40°C to +75°C

Local interface: provides local / remote selector, open / close pushbuttons and 2 LEDs for local indication.

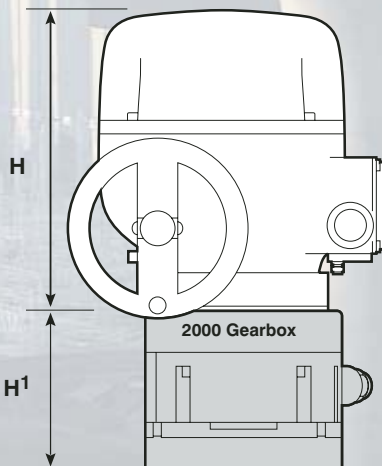
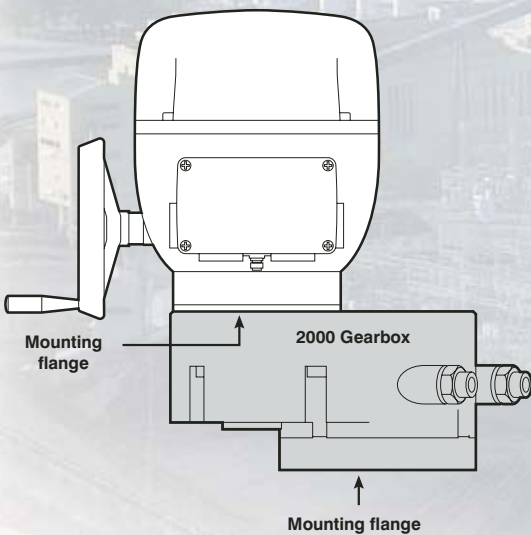
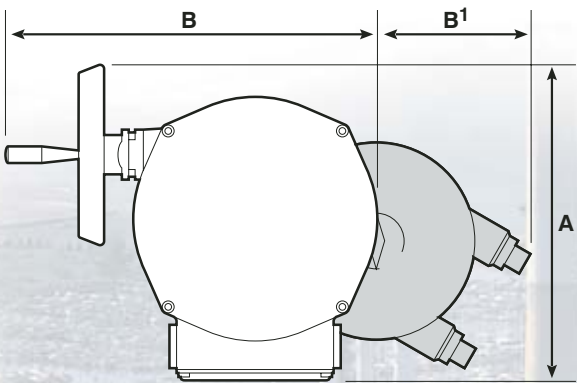
Non-Intrusive configuration tool: based on Bluetooth® technology. To control and configure PremiTork you can download the diagnostic information for predictive maintenance.

PremiTork - Dimensions

PremiTork 062-1000



PremiTork 2000



Overall dimensions							
Actuator size	A	B	B¹	H	H¹	Mounting flange	Weight (Kg)
063	238	282		211	-	F07	7.5
125	238	282		223	-	F07	7.8
250	283	332		282	-	F10	13.0
500	283	332		282	-	F10	14.0
1000	318	332		355	-	F12	22.0
2000	318	332	138	355	92	F14	40.0

Standard flange is EN ISO 5211 (others available)
Gearbox supplied from size 2000

PremiTork - performance and technical data

Test summary

PremiTork actuators have been comprehensively tested to ensure reliable and efficient performance in the field.

Life Tests

Based on AWWA C540-02 a minimum 10.000 cycles (open - close - open) are guaranteed. Tested with 80% of nominal torque along the stroke and stop with seating torque at 100% of nominal torque against travel stop at each end of the stroke.

Vibration test

Tested to IEC 60068-2-6- Appendix B (plant induced): frequencies from 1 to 500 Hz (in 3 axes) with 2.0g peak acceleration. Sweep cycles in each axis: 1.

Seismic test

Tested in accordance with IEC 60068-2-57.

Frequencies from 1 to 35 Hz (in 3 axis) with max 2.0g peak acceleration.

Verification of structural integrity at 5g. Endurance of oscillogram: 30 seconds.

Environmental test

Tested according to the following standards: IEC 68-2-1 (cold) to -55°C IEC 68-2-2 (dry heat) to +85°C;

IEC 68-2-3 (damp heat) to +40°C at 93% relative humidity.

Salt spray test

The external coating is tested for resistance to salt spray for 1,500 hours according to ASTM B117/IEC 68-2-11.

Noise test

PremiTork actuators are tested according to EN 21680.

Noise level is less than 65 dB (grade A) at 1m distance.

Actuator performance

PremiTork operating times											
Actuator size	Nominal torque (Nm)	Operating time (secs/90°) at selected step ¹									
		9	8	7	6	5	4	3	2	1	0
063	63	8	12	15	22	30	40	50	60	75	90
125	125	8	12	15	22	30	40	50	60	75	90
250	250	8	12	15	22	30	40	50	60	75	90
500	500	8	12	15	22	30	40	50	60	75	90
1000	1000	15	24	30	45	60	80	100	120	150	180
2000	2000	33	53	66	100	132	180	220	264	330	400

(1) Different operating time can be selected independently in opening and closing manoeuvre.

Actuator details								
Housing	Size	Nominal torque (Nm) at 100%	EN ISO 5211 flanges	Keystone ISO flanges	Keystone non-ISO flanges	Ratio	Time range (secs/90°)	Max. absorbed power (Watt) at 100%
1	063	63	F05-F07	F05-F07	44.45-82.6	300:1	8" - 90"	75
1	125	125	F07-F10	F07-F10	82.6	300:1	8" - 90"	150
2	250	250	F07-F10-F12	F07-F10-F12	82.6	300:1	8" - 90"	300
2	500	500	F07-F10-F12	F07-F10-F12	82.6-127	300:1	8" - 90"	700
3	1000	1000	F10-F14	F12-F16	127-165	600:1	15" - 180"	700
4	2000	2000	F12-F16	F12-F16	127-165	1300:1	33" - 400"	700

Frame size 1						
Size	063			125		
	WP	HAZ	Imperial	WP	HAZ	Imperial
Type (WP or HAZ)	WP	HAZ		1" NPT	WP	
Conduit entries	Metric	M25	Metric		M25	
Mounting	F05-F07		44.45-82.6	F07-F10		44.45-82.6
Drive - Insert	17 Star	20x14 DD	3/4x1/2 DD	22 Star	30x22 DD	1 1/8x1/4k
Additions	Module number	Module number	Module number	Module number	Module number	Module number

Frame size 2						
Size	250			500		
	WP	HAZ	Imperial	WP	HAZ	Imperial
Type (WP or HAZ)	WP	HAZ		1" NPT	WP	
Conduit entries	Metric	M25	Metric		M25	
Mounting	F07-F10-F12		82.6-127	F07-F10-F12		82.6-127
Drive - Insert	27 Star	35x10k	1 5/8x3/8k	27 Star	35x10k	1 5/8x3/8k
Additions	Module number	Module number	Module number	Module number	Module number	Module number

Insert details						
Size	EN ISO 5211		Keystone ISO flange		Keystone Non-ISO flange	
	Insert drive (mm)	Length min' (mm)	Insert drive (mm)	Length min' (mm)	Insert drive (mm)	Length min' (mm)
063	17 Star	19.0	20D x 14 flat	32.0	19D x 12.7 flat	32.0
125	22 Star	24.0	30D x 22 flat	51.0	28.58D x (6.35x6.35) key	51.0
250	27 Star	29.0	35D x (10x8) key	51.0	41.28D x (9.53x9.53) key	51.0
500	27 Star	29.0	35D x (10x8) key	51.0	41.28D x (9.53x9.53) key	51.0
1000	36 Star	38.0	50D x (14x9) key	77.0	47.63D x (12.7x9.53) key	108.0
2000	36 Star	38.0	50D x (14x9) key	77.0	47.63D x (12.7x9.53) key	108.0

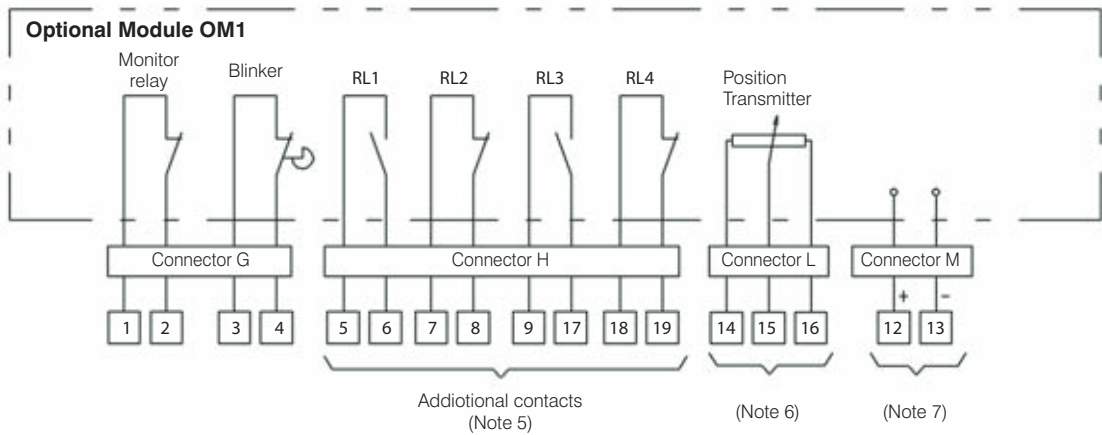
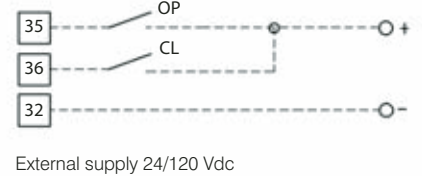
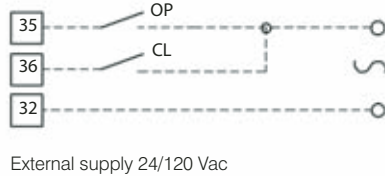
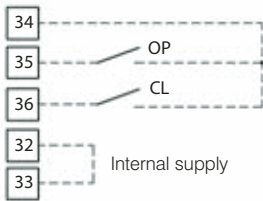
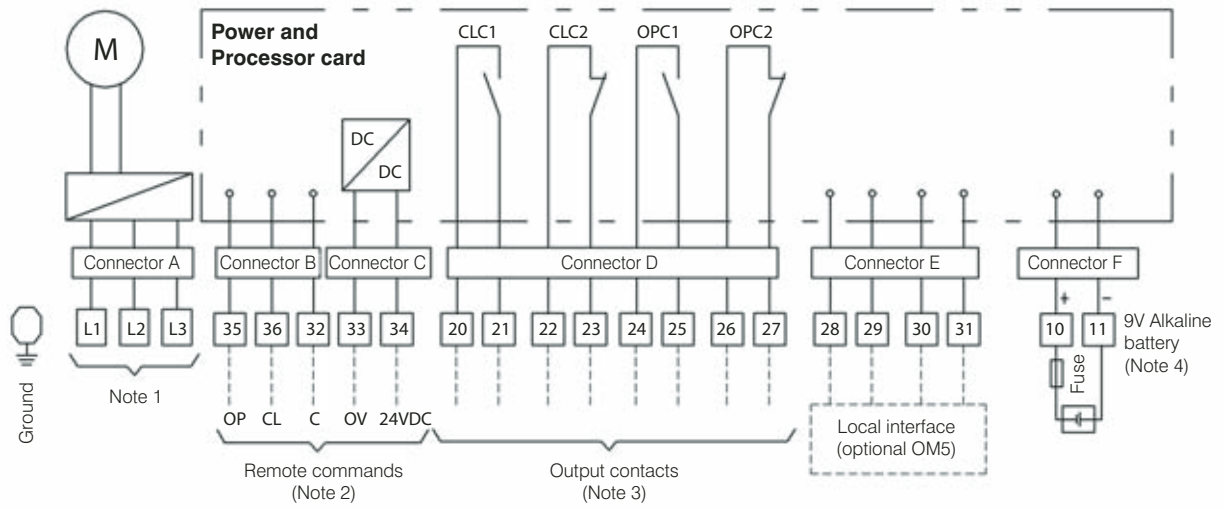
(1) Is the minimum valves stem protrusion. Standard flange is EN ISO 5211

Frame size 3						
Size	1000			2000		
	WP	HAZ	Imperial	WP	HAZ	Imperial
Type (WP or HAZ)	WP	HAZ		1" NPT	WP	
Conduit entries	Metric	M25	Metric		M25	
Mounting	F10-F14	F12-F16	127-165	F10-F14	F12-F16	127-165
Drive - Insert	36 Star	50x14k	1 7/8x1/2k	36 Star	50x14k	1 7/8x1/2k
Additions	Module number	Module number	Module number	Module number	Module number	Module number

Configuration of actuator										
	Travel position		Motor stop				Speed		Torque	
	Close	Open	Close		Open		Close	Open	Close	Open
			Position	Torque	Position	Torque				
SW 4	0	1	2	2	3	3	4	5	6	7
SW 6	0	0	1	2	1	2	0-9	0-9	0-9	0-9
SW 1	Must be 'ON' when setting									
SW 5	Must be 'Pushed' to confirm changes									

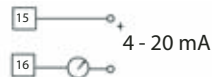
Default settings for all models	
Open torque	0.8
Close torque	0.8
Open setting	Position
Close setting	Position
Open speed	Fastest
Close speed	Fastest

PremiTork - Wiring Diagram



Notes

1. Connection L1 - L2 for VDC or VAC single phase motor supply from 24 to 240 volt.
With OM6 (three phase supply version) connection L1 - L2 - L3 for 3 phase motor supply
2. Remote command options
3. End of travel signalling
4. Auxiliary external supply 24VDC or internal battery 9V
5. Independance adjustable along all the stroke (10 steps)
6. Internal supply



7. 4 - 20 mA / 0 - 10V position request

Tyco Electric Actuators - the complete range of intelligent electric actuators

With the new actuator range we introduce a new philosophy in the electric actuators, electronic cards with all main optional functions integrated in the basic card and with easy plug in of the most advanced options. The new range of actuators have been engineered to suit most critical ambient conditions

An important goal in the valve/actuator process diagnostics and advanced maintenance program has been optimised with the new electric actuators from Tyco.

With enhanced hardware and software performances, the new product range offers advanced maintenance data including reports on the last opening and closing position/torque curves with relative parameters, detailed and updated information on actuator internal parameters, precise and clear alarm reports and general data logger on event and recorder.

In the communication era, we have engineered new advanced solutions to easily communicate with users and control rooms and to download all process information and diagnostic data.

In addition to the remote communication systems through traditional hardwired connections and network solutions, the new actuator range offers a wide range of communication possibilities with the local operator by means of the local control panel with a new large graphic display or via the innovative Bluetooth® (radiofrequency wireless connector based on a qualified Bluetooth® class 1 module).

Watertight and explosion-proof PDAs are available for actuator operation, the download of diagnostic info and for maintenance purposes through Bluetooth®.





www.tycovalves-eu.com

Tyco reserves the right to change product designs and specifications without notice

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