

ELECTRIC ACTUATOR HQ - SERIES

EXPLOSION PROOF
WEATHER PROOF



Various Colors & Design for OEM



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DESCRIPTION

- HQ series electric actuator is specially designed for quarter turn operating applications such as Ball, Butterfly, Plug valves/Dampers and similar usages.
- It's variation in wide range of output torque and control options fit your specific requirement.
- HQ provides high reliability and performance for your automation plan.

FEATURES

- Compact and low weight due to high grade aluminum alloy for housing.
- High corrosion resistance due to hard anodizing on inside & outside and polyester coating on external surface.
- Various output torque from 80Nm to 3000Nm
- Wide range of voltage available
- Self locking with minimum backlash in the transmission
- Rugged construction with o-ring system giving water and explosion proof .
(optional : explosionproof/Eexd IIB T6, IP68)
- Handwheel for manual operation engaged by a hand/auto lever arranged for power preference.
- Easy mounting base standard to ISO5211
- Standard 4 limit switches.
2 for operation, 2 for extra(dry contacts)
- Torque switches (except for HQ-008)
- LED lamps on indicator monitoring valve position and operation(option)
- Space heater with thermostat for preventing overheat.
- Removable drive bushing with under hung for easy machining and tight connection.



HQ ELECTRIC ACTUATOR

CONSTRUCTION

Window cover

Window

Position indicator

Option: illuminated red(close), green(open),
yellow(over torque), white(power)

Optional potentiometer set

Limit Switch & Auxiliary switch set

Cam block

Red close cam

Green open cam

Black close cam(extra s/w)

White open cam(extra s/w)

Dual conduit connection

Mechanical stoppers

Torque switch system

Sealed oil gearbox

Easy mounting base standard to
ISO5211

Cover

High corrosion-resistance due to anodizing on the inside
& outside and polyester powder coating on the outside

Motor

Available in 1phase/3phase, all motors are custom built
for high-torque, low current draw and the highest duty
cycle ratings offered.

Terminal block

Capacitor

Heater and thermostat

Manual override (Declutching system)

Two worm gear assembly

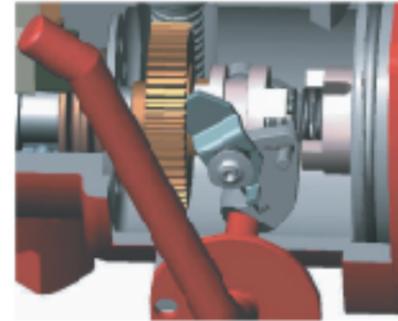
Self locking with minimum backlash in the transmission

HQ ELECTRIC ACTUATOR

CONFIGURATION



HQ electric actuator mechanical system



Manual override (Declutching system)

- Manual/Auto lever and handwheel engagement for emergency manual operation.
- Power drive automatically resorted by motor start unless lever padlock to prevent it.



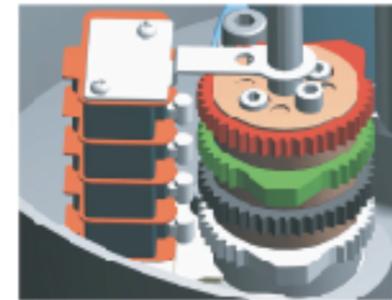
Internal component arranged compact and simple

- All internal components are arranged simple and compact as shown below.
- Most of optional functions are also integrated inside of actuator housing.



Standard cam and limit switches

- Unique Design.
- Double setting effective for extra limit switches.
- Easy setting available at on-site.



Cam block and limit switches

- 4 cams and 4 limit switches arranged as block.
 - 2 travel limit switches for operation
 - 2 auxiliary limit switch as dry contact for customer usage.
- Easy setting from upside by two screws for tight lockup.
- Each cam be set independently.
- Once setting is done, each cam keep up position permanently.



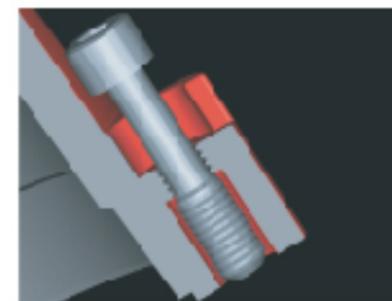
Terminal block

- Enough number of terminal strips for customer's convenience (Max 22 points)
- Proven reliability and tight wiring connection.
- Stripped length: 8-9 mm / 0.33 in
- Terminal dimensions: 10 x 22 x 32mm



Heater

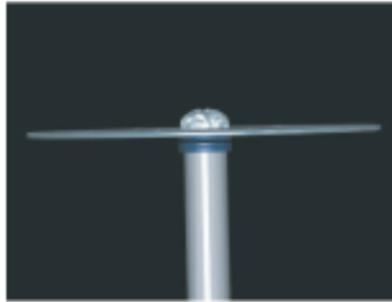
- 7~10W, Ceramic housing with thermostat to prevent over heat comparing with set temperature.
- No risk of electricity leakage.



Captive cover bolt

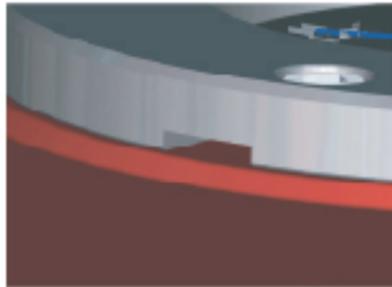
- Cover bolts are specially designed to prevent losing it during maintenance or installation.
- All external bolts are stainless steel for rust prevention.

STANDARD CONFIGURATION



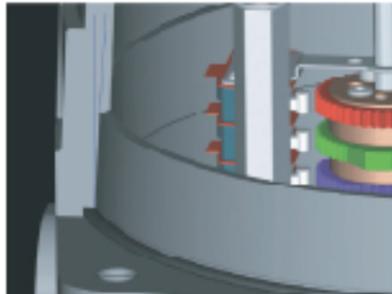
Indicator sustained by spring

- Direction of Visual indicator is set by factory before delivery.
- In case of changing it's direction, just grip the indicator plate and change the position.
- Spring underneath indicator plate sustains the set position unchanged.
- No need to loose screw and tight it again !



Slut on window cover for draining rainwater

- Rainwater inside of window cover may affect the sealing of window.
- To prevent this, drain slut is useful to prevent this effect.



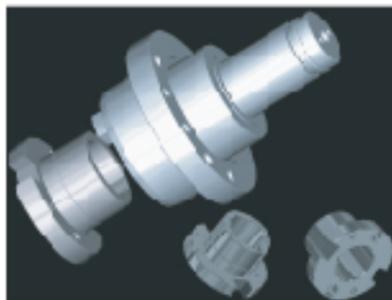
Tapered interface between cover and housing

- To take off cover from housing is not always easy when installation and maintenance as long as actuator is explosionproof grade because of very small tolerance in interface between cover and housing.
- HQ actuator has also very small tolerance in interface but tapered interface provide easy work.



Torque switch

- Torque switch provided for protecting motor & internal electrical component from over heat caused by overload of valve.



Removable drive bushing with under hung

- Drive bushing is removable type for easy machining for stem adaption.
- 4 Under hungs for tight and rugged connection between driving shaft and bushing.
- Easy mounting on valve.

OPTION CONFIGURATION

Fire Proofing Actuator (FPA)

- FR coating (Intumescent)
- Performance : 1050 5°C / 50minutes(FPA1) :
Lloyd's Register (SEO 0351064/3)
- Performance : 250 5°C / 150minutes(FPA2):
Lloyd's Register (SEO 0351064/1)
- Heat Resistance Test by Lloyd's Register



Local control unit (LCU)

Type1

- Consists of two rotary switches.
- One for selection of remote/local, another one for open/stop/close.
- 4 indication lamps remote local, open/close.

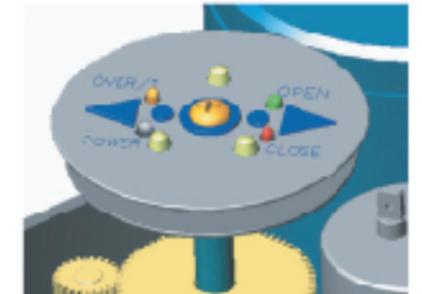
Type1

- Simple 4 step rotary switch-Remote-Local (open/stop/close) mounted on bottom side of housing.



Visual indicator with signal LED unit (SLU)

Big size plate indicator with 4 monitoring lamps (Power, Over torque, Open and Close)



Position indication unit (Potentiometer kit, PIU)

High resolution potentiometer with precisely machined gearing directly engaged with driving shaft provides continuous monitoring of position of valve and actuator



Proportional control unit (PCU -01-A)

- HQ PCU is a combination of electronic positioner and position transmitter using Micro-processor providing extremely high reliability and performance.
- Auto calibration provide the most convenient to user without complicated setting in field installation.
- Field setting can be done by just pushing one button(auto calibration)
- Input signal range : 0~10VDC, 1~5VDC, 4~20mA, 0~20mA
- Output signal range : 4~20mA, 0~10VDC
- Adjustable range : zero 8mA, open 16mA
- Input power 110V/220VAC 10% 50/60Hz Power consumption : 4W
- Input resistance : 250 ohm, Feedback signal : 1k~10k ohm
- Load resistance : Max 750 ohm
- Resolution : Min. 1/1000
- Position conversion accuracy : 0.5~1.5%(depends on installation)





Electric Actuator HQ Series

HQ Series



Performance

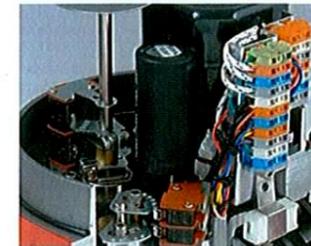
HQ (MODEL)	Maximum output torque Kg-m	Operating time(sec.) 60/50Hz	Maximum bore size mm	Motor class F power(W) 60Hz/50Hz		Rated current(A) 60Hz/50Hz				Duty cycle IEC 34-1 S4(%)	Number of handle turn N	Weight Kg
				1 Phase	3 Phase	1 Phase		3 Phase				
						110V	220V	380V	440V			
HQ-008	8	13/16	φ20	106/103	N/A	1.00/0.97	0.45/0.45	N/A	N/A	70	10	7.4
HQ-010	10	16/20	φ20	106/103	N/A	1.00/0.97	0.47/0.45	N/A	N/A	70	10	7.4
HQ-015	15	21/25	φ22	185/166	112/216	1.70/1.50	0.84/0.73	0.28/0.37	0.36/0.59	70	11	16.6
HQ-020	20	21/25	φ22	185/166	112/216	1.70/1.50	0.84/0.73	0.28/0.37	0.36/0.59	70	11	16.6
HQ-030	30	26/31	φ35	177/148	130/171	1.67/1.37	0.81/0.68	0.27/0.33	0.34/0.55	70	13.5	22
HQ-050	50	26/31	φ35	390/410	184/236	3.56/4.27	1.30/1.40	0.42/0.51	0.47/0.66	70	13.5	23
HQ-060	60	26/31	φ35	390/410	184/236	3.56/4.27	1.30/1.40	0.42/0.51	0.47/0.66	70	13.5	23
HQ-080	80	31/37	φ45	483/389	312/427	4.93/3.59	2.20/1.80	0.61/0.83	0.67/1.10	70	16.5	29
HQ-120	120	31/37	φ45	483/389	312/427	4.93/3.59	2.20/1.80	0.61/0.83	0.67/1.10	70	16.5	29
HQ-200	200	93/112	φ65	483/389	312/427	4.93/3.59	2.20/1.80	0.61/0.83	0.67/1.10	70	49.5	75
HQ-300	300	93/112	φ65	483/389	312/427	4.93/3.59	2.20/1.80	0.61/0.83	0.67/1.10	70	49.5	75

Standard Specification

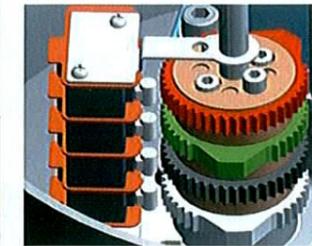
Enclosure	Weatherproof enclosure IP67, NEMA 4 and 6
Power supply	110 / 220V AC 1PH, 380 / 440V AC 3PH 50 / 60Hz, ±10%
Control power supply	110 / 220V AC 1PH, 50 / 60Hz, ±10%
Duty cycle(on-off)	S2, 100% Max 30Min
Duty cycle(modulating)	S4, 70% Max 300~1600 start/hour
Motor	Induction motor (Reversible motor)
Limit switches	Open / close, SPDT, 250V AC 16A rating
Additional limit switches	Open / close, SPDT, 250V AC 16A rating (except HQ-008/010)
Torque switches	Open / close, SPDT, 250V AC 16A rating (except HQ-008/010)
Stall protection/operating temp	Built-in thermal protection, open 150°C±5°C / close 97°C±15°C
Travel angle	90° ± 10° (0~110°)
Indicator	Continuous position indicator
Manual override	Declutching mechanism
Self locking	Provided by double worm gearing
Mechanical stopper	2 × external adjustable screws
Space heater	10W(110/220V AC) Anti-condensation
Cable entries	Three PF3/4" tap (standard type only)
Lubrication	Grease moly (EP type)
Terminal block	Spring loaded lever push type
Materials	Steel, Aluminium alloy, Al bronze, Polycarbonate
Ambient temperature	-20°C~+70°C (except option electronic board)
Ambient humidity	90% RH Max.(non-condensing)
Anti vibration	X Y Z 10g, 0.2~34Hz, 30minute
External coating	Anodizing treatment before dry powder, Polyester

Option Specification

EXA	Explosionproof enclosure actuator (Eexd II BT4)	HQ-series
WTA	Watertight enclosure actuator (IP68 10M 72HR)	HQ-series
PIU	Potentiometer unit (0~1kΩ)	HQ-series
PCU	Proportional control unit (input, output 0~10V DC, 4~20mA DC)	HQ-series
ATS	Additional torque switches (SPDT x 2EA 250V AC 10A Rating)	except HQ-008/010
LCU-B	Integral control (LCU + IMS + phase protect indicator)	except HQ-008/010
LCU-C	Digital display control (LCU + IMS + auto phase discriminator)	except HQ-008/010
CPT	Current position transmitter (output 4~20mA DC)	HQ-series
EXT	Extension 120°, 180°, 270° turn	except HQ-200, 300
RBP	Rechargeable battery backup	HQ-008/010, 015, 020, 030
DCM	DC motor (24V DC)	HQ-008/010, 015, 020, 030
ADCM	Multi AC/DC 24V(integral)	HQ-008/010, 015, 020, 030
LPA	Lever plate actuator	except HQ-008/010
SLU	Signal lamp unit (white-power on, red-open, green-close, yellow-over torque)	except HQ-008/010
FPA1	Fire Proofing Actuator 1050 ± 5°C / 50min	Engineering consult in advance
FPA2	Fire Proofing Actuator 250 ± 5°C / 150min	Engineering consult in advance



(Standard cam)

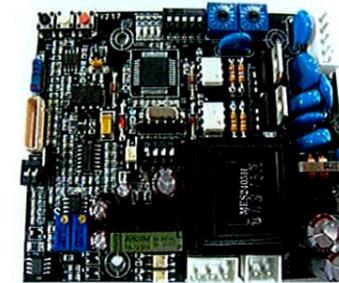


(Cam block)



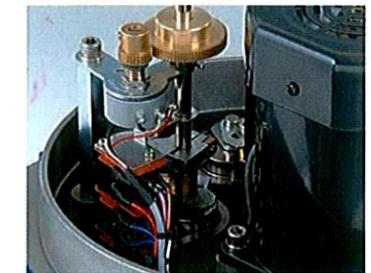
(D-Type cam)

- 2 travel limit switches for operation
- 2 auxiliary limit switches as dry contact for customer usage
- Easy setting from upside by two screws for tight lockup
- Each cam be set independently



Proportional Control Unit (PCU)

- Input signal range : 0~10VDC, 1~5VDC, 4~20mA, 20~4mA
- Output signal range : 4~20mA, 0~10VDC
- Adjustable range : Zero 8mA, Open 16mA
- Position conversion accuracy : ±0.5~1.5%(depends on installation)



Potentiometer Kit (PIU)

- 0~1K ohm(±0.5%), high resolution



Fire Proofing Actuator (FPA)



Rechargeable Battery Backup