

# ELECTRIC ACTUATOR HQ - SERIES

EXPLOSION PROOF  
WEATHER PROOF



Various Colors & Design for OEM



## Factory

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HQ-LIT 01321E 08/01

VALVE AUTOMATION



## TABLE OF CONTENTS

- Description .....	3
- Features .....	3
- Construction .....	4.5
- Configuration .....	6
- Standard configuration .....	7.8
- Optional configuration .....	9
- Performance .....	10
Standard specification .....	10
Optional specification .....	10
- Dimension .....	11

## 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

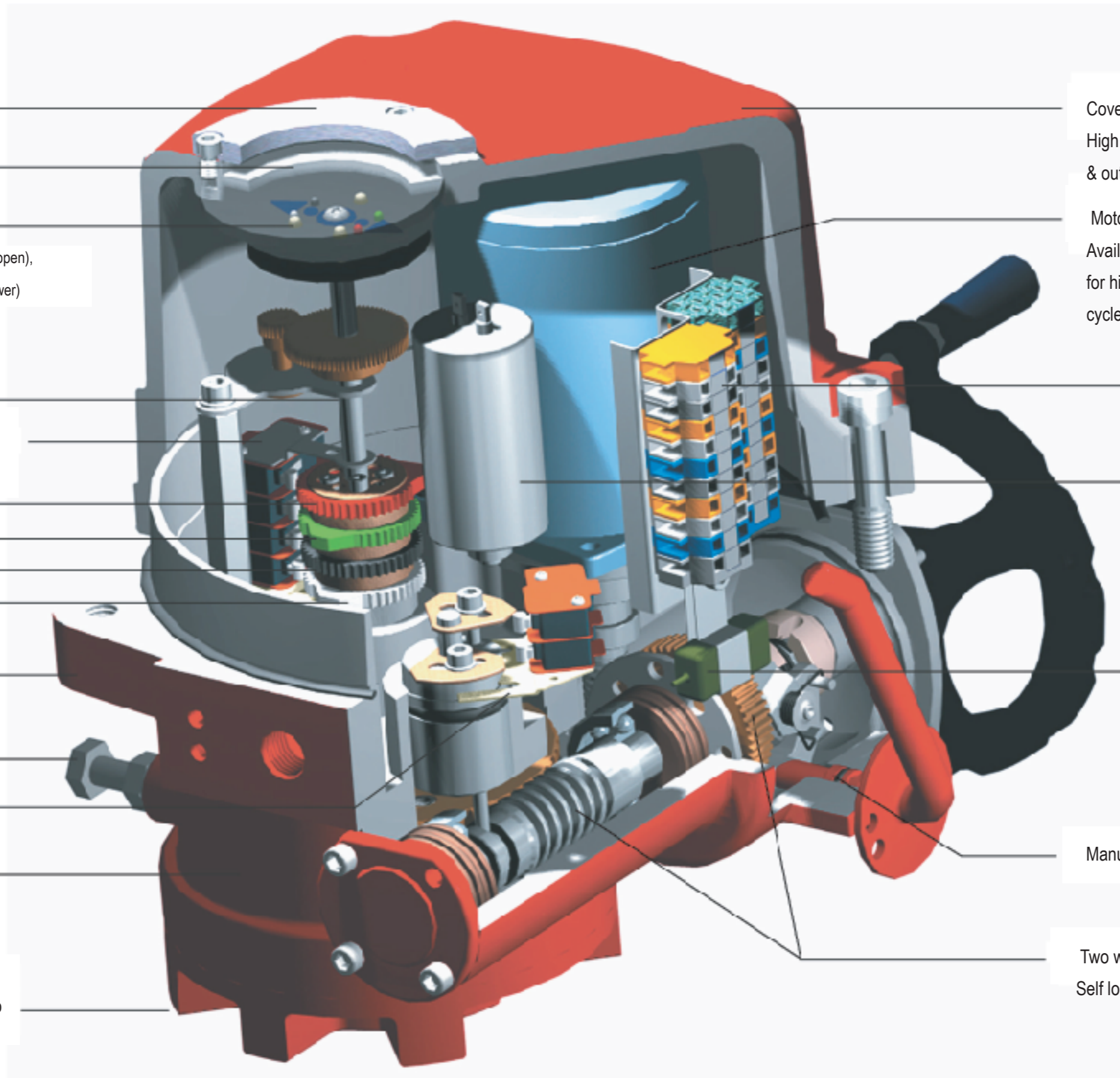
Capacitor

Heater and thermostat

Manual override (Declutching system)

Two worm gear assembly

Self locking with minimum backlash in the transmission

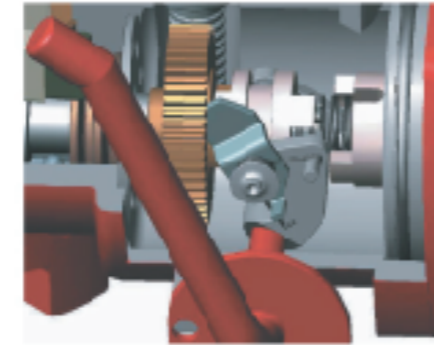


# HQ ELECTRIC ACTUATOR

## CONFIGURATION



HQ electric actuator mechanical system

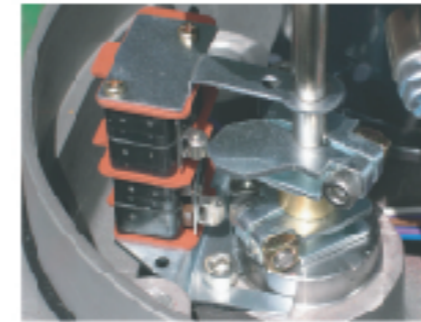


### Manual override (Declutching system)

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

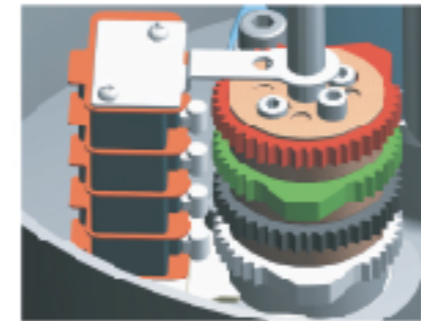
### Internal component arranged compact and simple

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



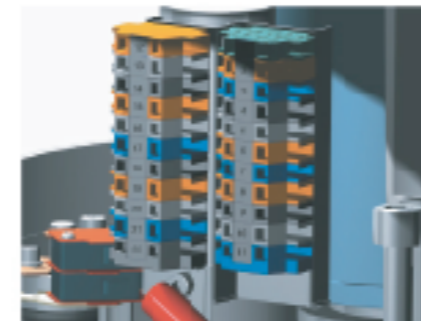
### Standard cam and limit switches

- 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.



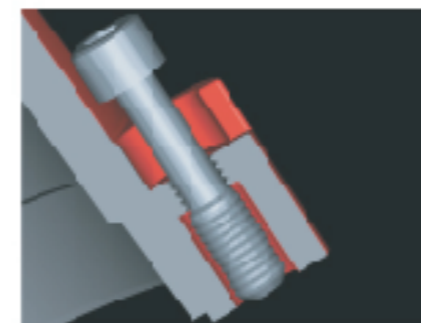
### Terminal block

- 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.



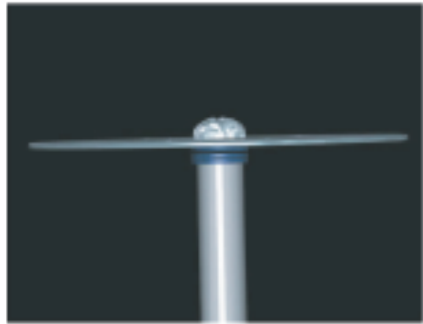
### Captive cover bolt

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



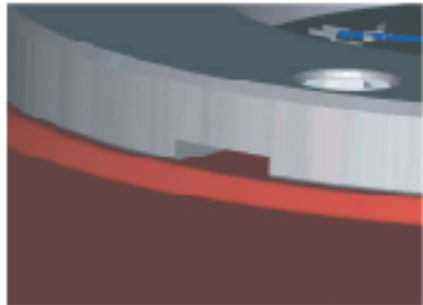
# HQ ELECTRIC ACTUATOR

## STANDARD CONFIGURATION



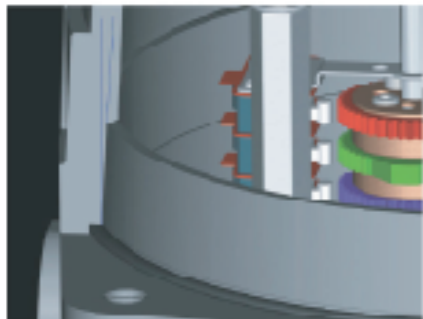
### Indicator sustained by spring

- 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 !



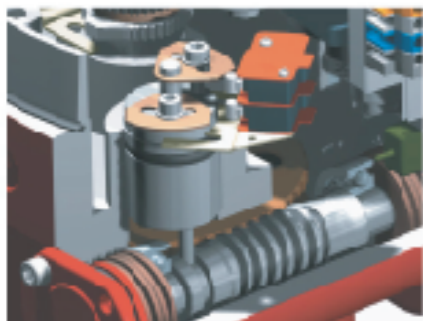
### Slut on window cover for draining rainwater

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



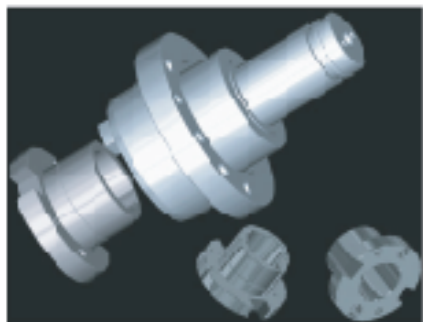
### Tapered interface between cover and housing

- 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



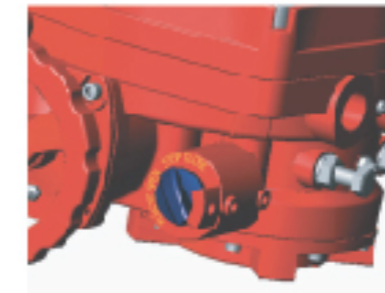
### Local control unit (LCU)

#### 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.

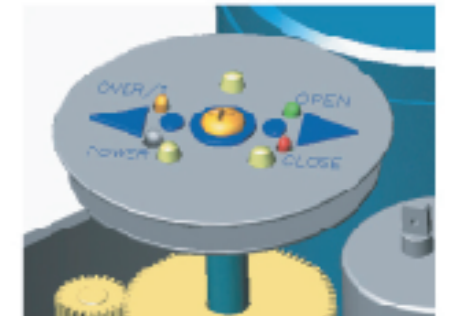
#### Type1

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



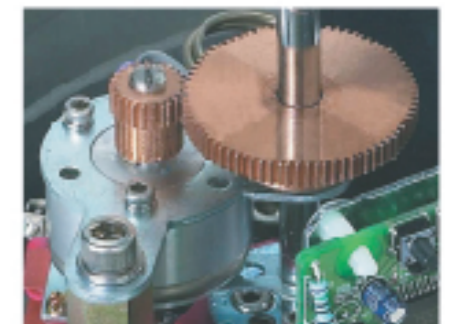
### Visual indicator with signal LED unit (SLU)

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)





# HQ ELECTRIC ACTUATOR

## PERFORMANCE

TYPE (MODEL)	Maximum output torque	Operating time(sec.) 60/50Hz	Maximum bore size	Motor class F frame size	Rated current(A) 60Hz				Duty cycle IEC 34-1	Number of handle turn	Weight
					1 Phase		3 Phase				
					10V	220V	380V	440V			
HQ-008	8	13/16	φ20	15 × 70	1.10/0.96	3.55/0.54	N/A	N/A	30	10	7.4
HQ-010	10	17/20	φ20	15 × 70	1.10/0.96	3.55/0.54	N/A	N/A	30	10	7.4
HQ-015	15	21/25	φ22	40 × 80	1.65/1.67	3.89/0.84	0.31/0.31	0.30/0.3	30	11	16.6
HQ-020	20	21/25	φ22	40 × 80	1.67/1.67	3.89/0.85	0.31/0.31	0.30/0.3	30	11	16.6
HQ-030	30	26/31	φ35	40 × 90	1.85/1.86	3.92/0.92	0.35/0.35	0.34/0.34	30	13.5	22
HQ-050	50	26/31	φ35	90 × 90	3.60/3.62	1.55/1.58	0.59/0.59	0.58/0.58	30	13.5	23
HQ-060	60	26/31	φ35	90 × 90	3.65/3.62	1.60/1.62	0.60/0.59	0.59/0.58	30	13.5	23
HQ-080	80	29/35	φ45	180 × 90	4.10/4.10	2.15/2.20	0.85/0.85	0.79/0.79	30	16.5	29
HQ-120	120	29/35	φ45	180 × 90	4.20/4.10	2.35/2.30	0.87/0.87	0.81/0.8	30	16.5	29
HQ-200	200	63/112	φ65	180 × 90	4.10/4.10	2.15/2.30	0.85/0.85	0.79/0.79	30	49.5	75
HQ-300	300	63/112	φ65	180 × 90	4.20/4.10	2.35/2.30	0.87/0.87	0.81/0.8	30	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, 20~50% Max 10Min~30Min
Duty cycle(modulating)	S4, 30~50% Max 300~1200 start/hour
Motor	Squirrel caged induction motor
Limit switches	2 × open / close, SPDT, 250V AC 10A rating
Additional limit switches	2 × open / close, SPDT, 250V AC 10A rating
Torque switches	open / close, SPDT, 250V AC 10A rating (except HQ-000)
Stall protection/operating temp	Built-in thermal protection, open 150°C ± 5°C / close 97°C ± 15°C
Travel angle	90° ± 5° (0° ~ 110°)
Indicator	Continuous position indicator
Manual override	Decoupling mechanism
Self locking	Provided by couble worm gearing
Mechanical stopper	2 × external adjustable screws
Space heater	20W(110/220V AC) Anti-condensation
Cable entries	Two PF3/4" Tap
Lubrication	Grease moly (EP type)
Terminal block	Spring loaded lever push type
Materials	Steel, Aluminum 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, Munsell no. 5R 3.5/12

## OPTION SPECIFICATION

EXA	Explosionproof enclosure actuator (Excc II 3 T4, Eexd II CT4)	HQ-series
WTA	Watertight enclosure actuator (IP68 10M 72HR)	HQ-series
PIU	Potentiometer unit (1K~10K)	HQ-series
PCU	Proportional control unit (Input, output 4~20mA DC)	HQ-series
ATS	Additional torque switches (8PDT × 2EA 250V AC 10A Rating)	except HQ-008/010
SICU	Semi-integral control unit (1 CU + IMS + phase protect indicator)	except HQ-008/010
ICU	Intelligent Digital control unit (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
DCM	DC motor (24V DC)	HQ-008, 015, 020, 030
LPA	Lever plate actuator	except HQ-008/010
SLU	Signal lamp unit (white-power on, green-open, red-close, yellow-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

## DIMENSION

unit(mm)

Model	Base ISO 5211		D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	X	Y	Z
	φC	Λ																			
HQ008	F07	M8	20	88	3	32	50	157	51	100	70	167	53	40	60	120	-	-	258	170	235
	φ70	12																			
HQ010	F07	M8	20	88	3	32	50	157	51	100	70	167	53	40	60	120	-	-	258	170	235
	φ70	12																			
HQ015	F07/F10	M8/M10	22	125	3	42	73	200	85	142	87	192	68	54	78	130	-	-	338	229	266
	φ70 φ102	12/15																			
HQ020	F07/F10	M8/M10	22	125	3	42	73	200	85	142	87	192	68	54	78	130	-	-	338	229	266
	φ70 φ102	12/15																			
HQ030	F10/F12	M10/M12	35	143	3	49	82	221	85	160	99	221	69	65	78	130	-	-	368	259	297
	φ102 φ129	15/18																			
HQ050	F10/F12	M10/M12	35	143	3	49	82	221	85	160	99	221	69	65	78	130	-	-	368	259	304
	φ102 φ129	15/18																			
HQ060	F10/F12	M10/M12	35	143	3	49	82	221	85	160	99	221	69	65	78	130	-	-	368	259	304
	φ102 φ129	15/18																			
HQ080	F12/F14	M12/M16	45	173	3	57	103	242	85	186	111	241	74	78	110	210	-	-	410	297	330
	φ125 φ143	12/14																			
HQ120	F12/F14	M12/M16	45	173	3	57	103	242	85	186	111	241	74	78	110	210	-	-	410	297	330
	φ125 φ140	13/14																			
HQ200	F14*/F16	M16*/M20	65	245	5	90	103	242	85	186	133	241	74	78	110	210	233	133	410	319	563
	φ140*/φ165	24*/30																			
HQ300	F14*/F16	M16*/M20	65	245	5	90	103	242	85	186	133	241	74	78	110	210	233	133	410	319	563
	φ140*/φ165	24*/30																			

