

# VALVE ACTUATOR

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## PRODUCTS GUIDE



ISO 9001:2015



014



ISO 14001:2015  
Only for Fujisawa Factory



014



A detailed illustration of an industrial valve actuator system. The main component is a large, teal-colored valve actuator with a handwheel and a motor. It is connected to a network of blue pipes and a control panel with a pressure gauge and several buttons. The background is a light blue gradient with faint industrial structures.

## Brand of Technology and Trust

### Advanced Technology

#### **Excellence in advanced technology and facilities**

Our valve actuators are structured in a quite compact and robust way, because of excellent design based on long experience as well as the use of highly-reliable materials. Adopting stable and reliable motors with large starting torque and extremely small inertia, our valve actuators do not always require a brake system due to wide range of self-lock function when operated at normal speed of opening and closing valves. As our valve actuators are designed to have a wide range of applications, they can be combined with the latest instrumentation.

Position limit switches for mechanical actuators adopt gear counter mechanism; so, once setting is done, they can be used for high-speed operation, while maintaining the accuracy. Contact points use the rotary system, and their robust design enables safe operation in humid and dusty environments. Our valve actuators are produced at up-to-date factories, making use of excellent advanced technologies, and demonstrate high performance.

The opening and closing of valves

Nippon Gear's valve actuators accurately control amounts of fluids in pipes, gates and tanks, and are especially useful in a harsh environment – typically mountains and wilderness, which tend to have heat waves, wind and snow, and extreme cold.

Nippon Gear entered into a technical partnership with world-famous Philadelphia Gear (currently, Flowserve) in the United States in 1963, and started manufacturing *Limitorque*® in Japan.

Philadelphia Gear developed Limitorque in 1929, and has a long history as a pioneer.

Recognized as a brand of durability and trust due to the high accuracy, approximately a half million valve actuators of Nippon Gear have been already used in various areas of the society, including power plants, oil refineries, and steel plants.

Not only contributing to industrial development, our valve actuators also continuously support our everyday life in local areas, for example, from the water supply and sewage system.

Our valve actuators are highly valued and trusted not only in Japan, but also worldwide, and have a proven track record. Now valve actuators are entering into the era of advanced systems triggered by digitalization.

In order to deliver even better products, Nippon Gear has been continuously working on technology development.

NIPPON GEAR CO.,LTD.

# VALVE ACTUATOR

## Excellent Performance

### High performance in a harsh environment

Our valve actuators are designed to meet the strictest industrial standards and severest environmental conditions.

Our valve actuators are used worldwide under harsh environmental conditions that require the reliability in the valve control, including robustness, as well as pressure-resistant and explosion-proof, radiation-resistant, cold-resistant, water-resistant, fire-resistant, and corrosion-resistant solutions.

You can select the power source suitable for your intended purpose: electric motor and air.

## Impressive Versatility

### Diverse product portfolio to meet needs of various industries

Our valve actuators are widely used at nuclear/thermal/hydraulic power plants, water supply and sewage systems, as well as oil, gas, chemical, steel, shipbuilding, and paper industries both in Japan and abroad.

While the standard model is the fully closed outdoor model, making use of the wealth of data related to intended purposes, we can deliver various products to satisfy your needs, including the pressure-resistant and explosion-proof actuators, integral type actuators, intelligent electric actuators, and also actuators for high-temperature fluids, and actuators for oxygen valves.

## Network System

### Communication system realizing large-capacity, high-speed, centralized remote control

We can provide a next-generation digital communication system for remote control/monitoring by establishing a network between each valve actuator and/or upstream system such as DCS, using communication cables.

With our safe and reliable large-capacity high-speed communication system, you can easily realize intelligent remote control for your entire plant.

## Global Service Network

### After-sales service network that supports the actuators high performance and high quality

Our valve actuators are produced under strict quality control and verified by the latest testing devices, and therefore promise reliable operations and long life.

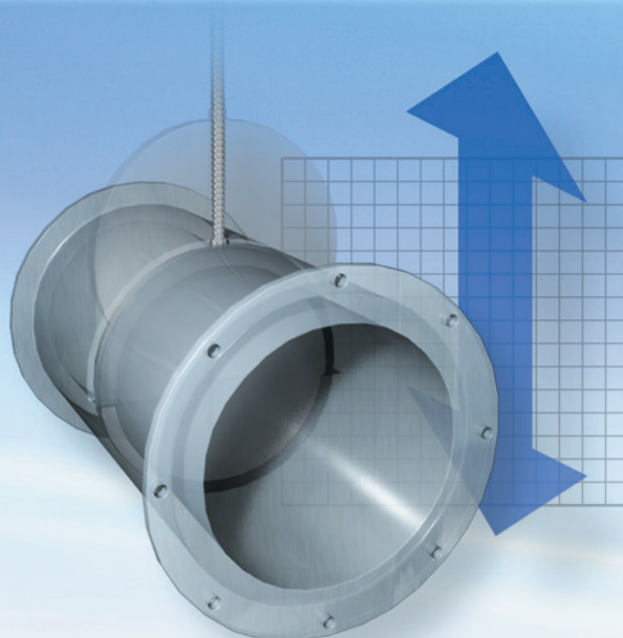
We have established sales/service networks not only in Japan, but also worldwide, and quickly and reliably respond to various requests from customers after product delivery, including periodic checkups.



# MULTI-TURN

## Multi-Turn Type

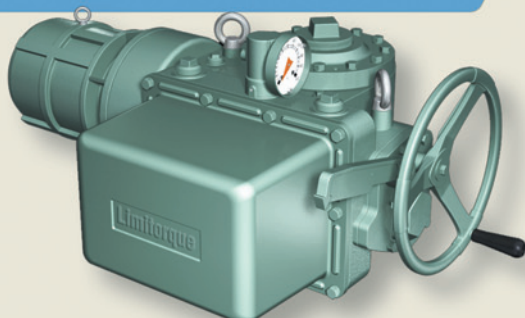
Multi-turn type actuators drive sluice valves, globe valves, water gates, butterfly valves, etc. by linear movement. There are various models for attending to all needs, such as electric actuators as SMB and L120 series as well as manual actuators as BGA and PA series.



### ● Electric Actuator

#### SMB

Automatic return model

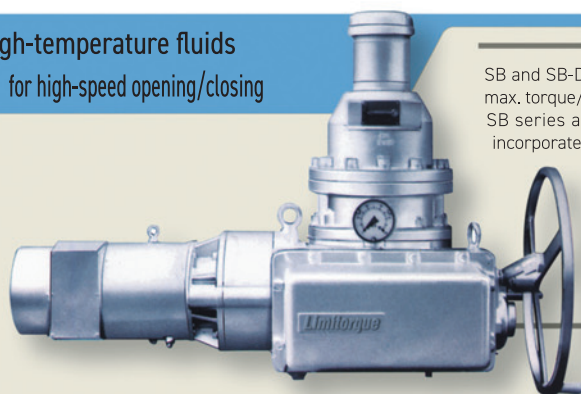


SMB series actuators are robust, and can be used under various environmental conditions since these are applied with pressure-resistant and explosion-proof, fire-resistant, water-resistant, radiation-resistant, etc. Geared limit switch and torque switch mechanisms enable reliable operation and functional positioning check. SMB series adopted torque motors suitable for opening and closing valves. Switching from electric to manual operation can be done with one-touch of the switching lever, and the actuators have the automatic return mechanism from manual to electric operation, which is very convenient. In addition to standard models, we have a variety of models, including integral type and air-motor operated type, for your intended use. The actuators can drive various types of devices that produce linear motion, including gate valves, globe valves, butterfly valves, and water gates so that the actuators apply for wide-range operations.

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Size	SMB-000	SMB-00	SMB-0	SMB-1	SMB-2	SMB-3	SMB-4	SMB-5T
Max thrust rating (kN)	30	62	105	200	320	620	1,100	-
Max torque rating (N-m)	170	360	1,000	1,500	2,700	6,100	11,500	27,500

#### SB for high-temperature fluids SB-D for high-speed opening/closing



SB and SB-D series actuators are designed based on SMB series. Their max. torque/thrust ratings are the same as those of SMB series.

SB series are designed for high-temperature fluids: a disc spring is incorporated into the head of an actuator, and such a structure absorbs expansion force of the valve stem due to changes in the fluid's temperature.

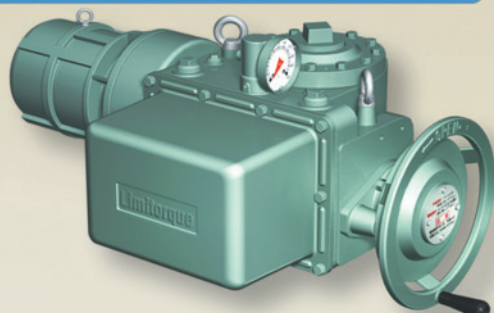
SB-D series are designed for high-speed opening/closing. In order for the actuator to absorb a shock when opening/closing valves at a high speed, the actuator has a special mechanism that incorporates a disc spring into the upper or lower part of Limitorque.

Limitorque®

Size	-	-	SB-0	SB-1	SB-2	SB-3	SB-4
	SB-000D	SB-00D	SB-0D	SB-1D	SB-2D	SB-3D	SB-4D
Max thrust rating (kN)	30	62	105	200	320	620	1,100
Max torque rating (N-m)	170	360	1,000	1,500	2,700	6,100	11,500

## JMB

Manual return model with an electric interlocking switch



Small-sized JMB-04 and 03 have a declutch lever, and medium-sized JMB-00 to large-sized JMB-4 have a push-pull handle. For all models, manual/electric switching can be done with one-touch operation. The actuators are equipped with an interlocking switch which shuts off electric currents during manual operations. They can be used for various purposes, including sluice valves, globe valves and water gates.

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Size	JMB-04	JMB-03	JMB-00	JMB-0	JMB-1	JMB-2	JMB-3	JMB-4
Max thrust rating (kN)	35	49	62	105	200	320	620	1,100
Max torque rating (N-m)	110	250	360	1,000	1,500	2,700	6,100	11,500

## L120

Compact and lightweight



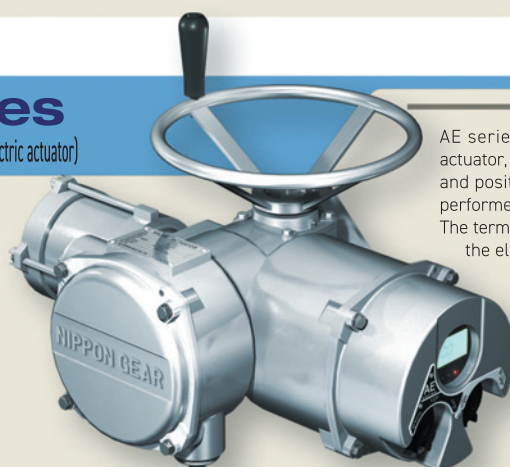
L120 series are compact and lightweight actuators based on SMB series. The adoption of aluminum die-cast achieved reduction of the weight. An O-ring seal is applied to every matching surface, thus maintaining tight sealing. Each piece of electric equipment is connected to the terminal block by a dedicated connector, providing easy maintenance. The standard model is the outdoor rainproof type, and the explosion-proof type is also available at your request. The integrated type which can connect the network system is available as well.

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Size	L120-10	L120-20	L120-40
Max thrust rating (kN)	44	88	130
Max torque rating (N-m)	140	270	540

## AE Series

Electronic control type (Intelligent electric actuator)



AE series are electronic control actuators - intelligent electric actuator, that enable multiple controls by digitalizing torque detection and position detection. All adjustments and function setting can be performed without opening the cover (i.e. Non-intrusive adjustment). The terminal block with a double-seal structure ensures protection of the electric room. The standard model is the outdoor water-proof type, and the explosion-proof type is also available. Remote control function by the Bluetooth application for any adjustments is available.

Size	AE-05	AE-1	AE-3	AE-5	AE-10	AE-20
Max thrust rating (kN)	44	44	88	130	200	320
Max torque rating (N-m)	60	140	270	540	1,500	2,700



## ● Electric Actuator

### JX-05M

For small valves



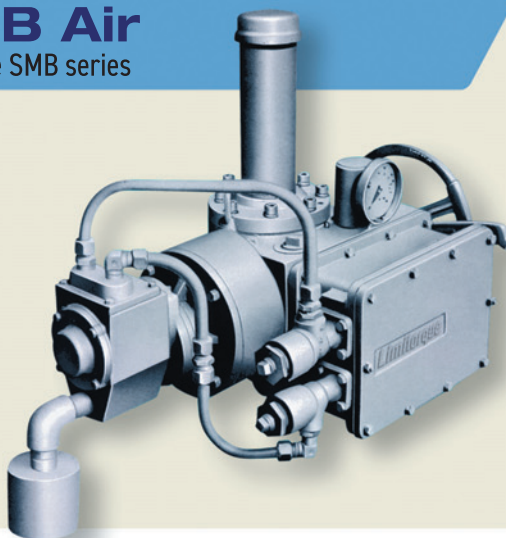
Super small JX-05M series are electric actuators developed for small globe valves and small gate valves. Making use of our wealth of long experience as a pioneer of valve actuators, we designed this series to meet customers' demands. As a result of pursuing usability and safety, a hand wheel is included as a standard feature, and the automatic return mechanism is adopted for manual/electric switching.

Size	JX-05M
Max thrust rating (kN)	30
Max torque rating (N-m)	50

## ● Air Drive Actuator

### SMB Air

Air drive SMB series



SMB Air series can be operated by using compressed air as the power source. SMB Air series are equipped with a rotary vane air motor, and the internal gear transmission mechanism is the same as that of the standard SMB type with an electric motor. The application range of this series is wide, for example, areas where electric power sources cannot be used, areas requiring explosion-proof measures, and for emergency use with tanks. The SMB air type is also available with only the motor being pneumatic, and the controls being electronic.

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### L270

Air drive L120 series



Similarly to the pneumatic type of SMB series, L270 series can be operated by using compressed air as the power source. The internal gear transmission mechanism is the same as that of L120 series. Air micro switches are used for the limit and torque switches, and those operate pilot valves and control the actuator. It is also available to attach electric equipment for L120 to the actuator with only the motor being pneumatic.

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## ● Manual Actuator

### BGA

Bevel Gear type



BGA series are bevel gear actuators that can be attached directly to gate and globe valves that are subjected to thrust, realizing easy manual operations. By using an adaptor, the actuators can be easily attached to existing valves. In addition to the standard type, BGA series includes BGA-P type with a position indicator, BGA-S type with a limit switch, and BGA-W type with two orthogonal shafts.

Size	BGA-04	BGA-00	BGA-0	BGA-1	BGA-2	BGA-3	BA-4
Gear ratio	2:1	2.5:1	3:1	4.11:1	6:1	9:1	10:1
Max thrust rating (kN)	26	62	98	200	340	620	1,200
Max torque rating (N-m)	110	340	740	1,500	2,900	5,900	12,000

### B

Bevel gear type



B series are bevel gear actuators for manual operations. By combining two B series actuators with an SMB series actuator, they can be used for opening/closing a double-spindle gate. Dimensions of the unit's mounting surface and stem are the same as those of SMB series. Accordingly, in case of the need for converting to an electric actuator, B series can be easily replaced with SMB series. Models with a position indicator are also available.

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Size	B-0	B-1	B-2	B-3	B-4	B-5	B-6	B-7
Gear ratio	2	2.5	3	3	5	5	5	5
Max thrust rating (kN)	105	200	320	620	1,100	2,260	3,500	5,000
Max torque rating (N-m)	640	1,150	2,500	5,700	10,000	27,000	50,000	100,000

### PA

Spur gear type



PA series are actuators developed for water gate valves, and equipped with a spur gear. The actuators have a compact design with a built-in thrust bearing. Similarly to BA series, by using an adaptor, they can be easily attached to existing valves. In addition to the standard type, we also offer PA-P type with a position indicator and PA-S type with a limit switch.

Size	PA-0	PA-1	PA-2	PA-3
Gear ratio	3:1	4:1	6:1	9:1
Max thrust rating (kN)	98	200	340	620
Max torque rating (N-m)	740	1,500	2,900	5,900

### W

Worm gear type



W series are worm gear reducers for manual operations. Similarly to B series, dimensions of the unit's mounting surface and stem are exactly the same as those of SMB series. Accordingly, W series can be easily replaced with SMB series electric actuators. Worm and worm gear set of W series are the same as those of SMB series, and various models with different gear ratios are available. Models with a position indicator are also available.

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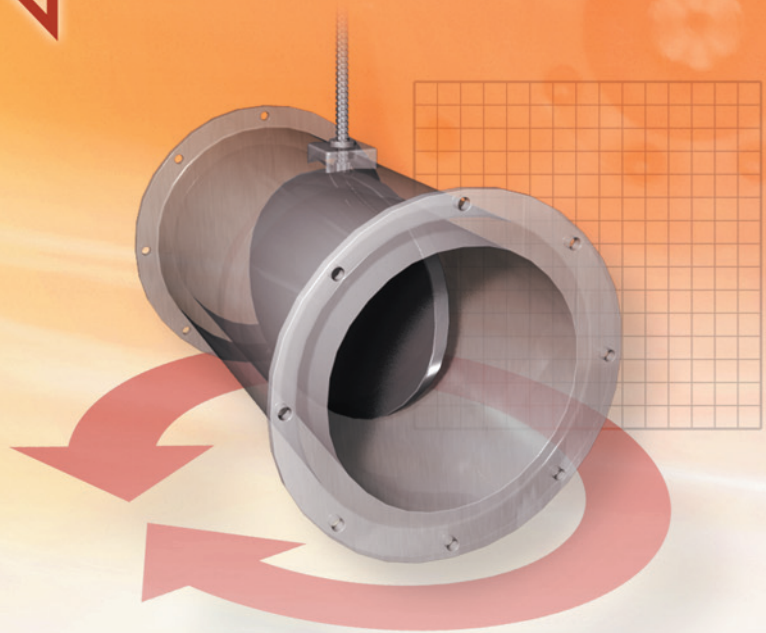
Size	W-0	W-1	W-2	W-3
Max thrust rating (kN)	105	200	320	620
Max torque rating (N-m)	640	1,150	2,500	5,700



# PART-TURN

## Part-Turn Type

Part-turn actuators open/close butterfly valves, ball valves, plug valves, and dampers by rotary movement.



### ● Electric Actuator

## NOM

Quarter turn type



The NOM series electric actuators are actuators which are the most suitable for butterfly valves, ball valves, and small sized valves. Their offer torque ranging from 35 Nm/310 inlb to 4,500 Nm/40,000 inlb. A unique feature of this actuator is that the manual override can be operated without a clutch and a brake. We are able to attach other options such as chain type handles, and integral types.

#### Features

1. ISO 5211 mounting flange
2. Mechanical stop
3. Domed position indicator
4. IP67 enclosure

#### Various options

Push button



Chain handle



Size	NOM-1	NOM-A	NOM-AM	NOM-F	NOM-2	NOM-B	NOM-G	NOM-3	NOM-H	NOM-4
Max torque rating (N-m)	35	50	50	65	90	120	120	150	300	400

Size	NOM-5	NOM-6	NOM-7	NOM-8	NOM-9	NOM-10	NOM-11	NOM-12	NOM-13
Max torque rating (N-m)	500	650	1000	1500	2000	2500	3000	3500	4500



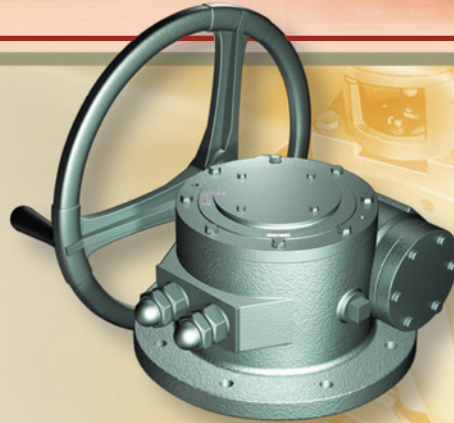
## Manual Actuator

### HB

#### Worm gear type

HB series are actuators for the 90-degree rotation of butterfly valves, ball valves, and plug valves. At your request, we can manufacture actuators for different degrees of movement. HB series can be used for manual operations by attaching a handwheel, and also for electric operations by combining it with such Limitorque electric actuators such as SMB, JMB, and L120 series. HB series can be used by attaching a spur gear attachment (MSG) to the input shaft side.

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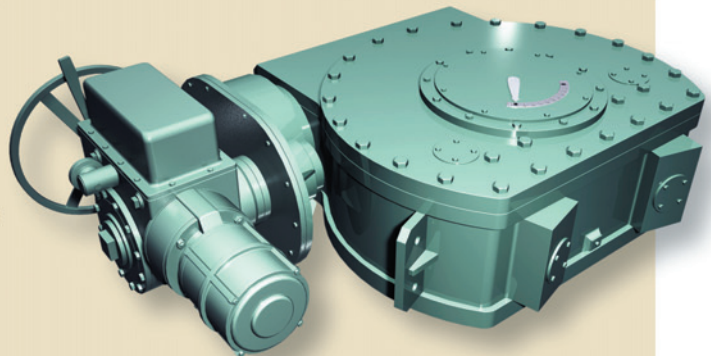
Size		HB-0	HB-1	HB-2	HB-3	HB-4	HB-5	HB-5½	HB6	HB7	HB8	HB10
Gear ratio		60:1	60:1	60:1	60:1	60:1	65:1	67:1	66:1	69:1	64:1	61:1
Max torque rating (N-m)	Electric	640	1,900	3,100	8,000	18,000	26,000	40,000	62,000	86,000	130,000	200,000
	Manual	830	2,500	4,400	11,000	25,000	26,000	40,000	62,000	86,000	130,000	200,000

### H

#### Large-sized worm gear type

H series are actuators for the 90-degree (or less) rotation of large-sized butterfly valves, ball valves, and plug valves. The actuator is constructed by combining a worm gear reducer at the final speed reduction part and a helical gear reducer. As supersized models of the established HB series, we successfully launched the first of its type to be serialized in Japan. The actuators can be used for electric operations by combining them with such electric actuators as SMB and L120 series.

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Size	H-25	H-29	H-35
Gear ratio	59	63	65
Max torque rating (N-m)	390,000	540,000	830,000

### CWG

#### Compact, lightweight, worm gear type

CWG series are worm gear reducers developed for manually operating valves that require 90-degree rotation, including butterfly valves and ball valves, and various kinds of equipment. They have a compact design as reducers for water supply and sewage systems as well as steel and other general industries, and therefore are economical. CWG series can be used for electric operation by combining it with electric actuators, etc.

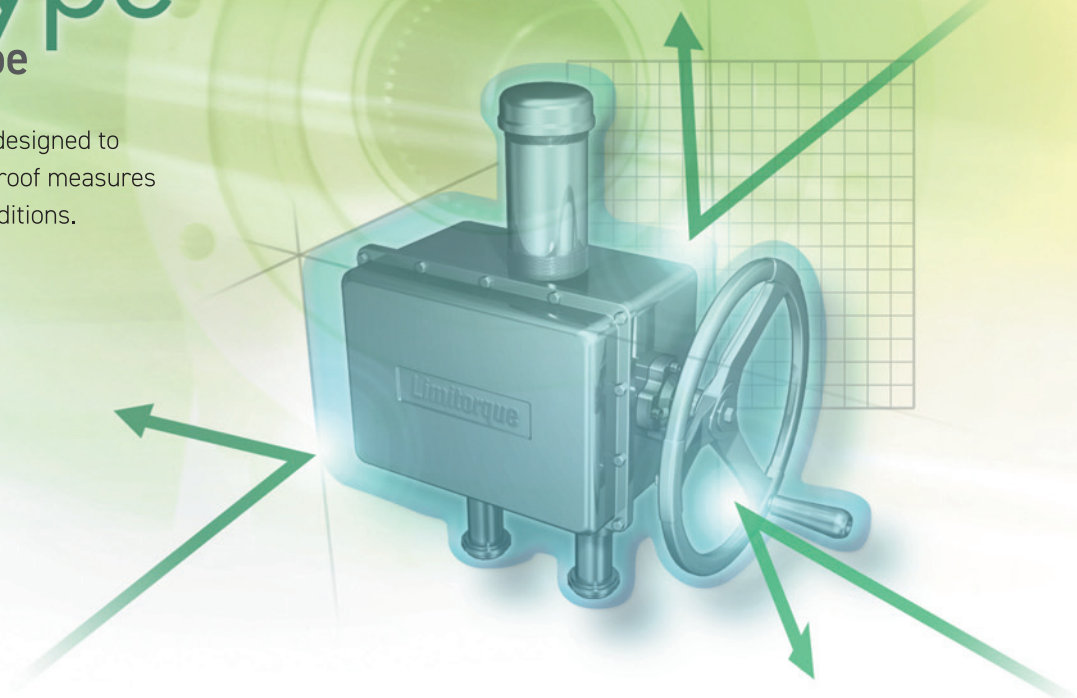


Size	CWG-00	CWG-10	CWG-20	CWG-30	CWG-35	CWG-40	CWG-50	CWG-60	CWG-70	CWG-80
Max torque rating (N-m)	1,200	2,000	2,800	4,300	6,100	10,400	15,900	32,800	51,100	105,000

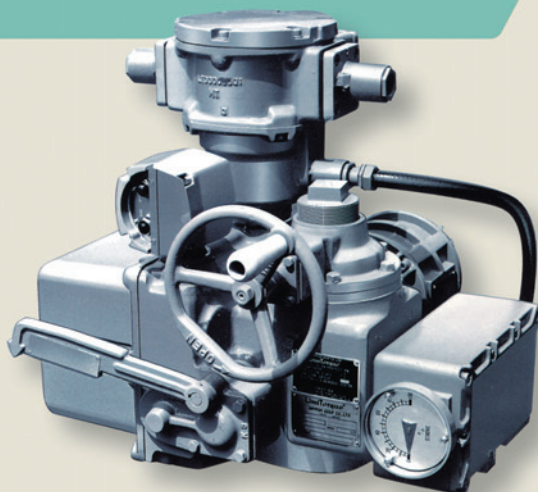
# Proof Type

## Explosion-Proof Type

Explosion-proof type actuators are designed to work in areas requiring explosion-proof measures or under special environmental conditions.



## Explosion-Proof



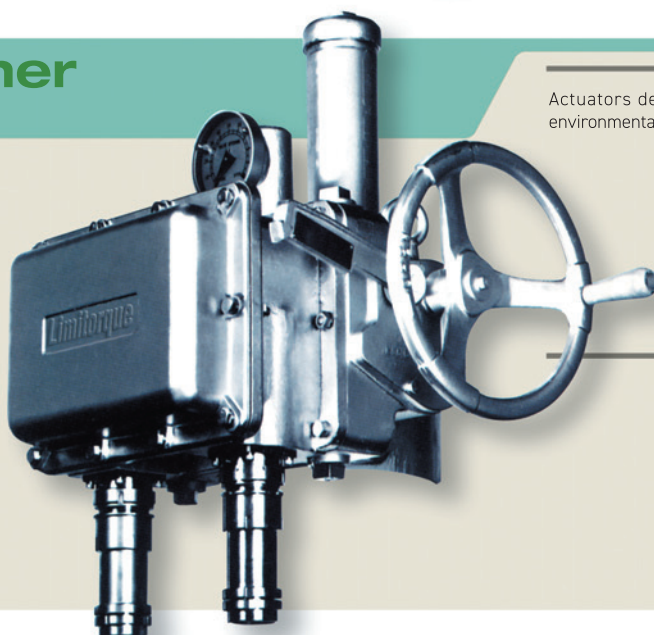
This type of actuators can be used in areas requiring explosion-proof measures. Two models are available: the Pressure-resistant-explosion-proof model, and the increased safety explosion-proof model. They are designed and manufactured in accordance with the standards of explosion-proof construction for electrical machinery and apparatus, and passed the inspection of the Technology Institution of Industrial Safety (TIIS) in Japan.

- JIS Flameproof (pressure-resistant and explosion-proof)
- JIS Increased safety explosion-proof
- JIS Hydrogen explosion-proof
- KOSHA explosion-proof

(JIS= Japanese Industrial Standards)

(KOSHA= Korean Occupational Safety and Health Agency)

## Other



Actuators developed and manufactured for the use under special environmental conditions:

- For outside of a nuclear containment
- For inside of a nuclear containment
- Cold-resistant model, water-resistant model, and fire-resistant model
- Hydrogen sulfide-resistant model
- For oxygen valves
- Shock-resistant model



# Maximum Torque Capacity

## List of Maximum Torque Capacity by Product

In selecting a valve actuator, it is economical to choose optimum unit size and motor capacity.

When you place an order or make an inquiry, please let us have the following data, so that we can select an economical unit size for you.

- Model number, bore, and structure of the valve   ■ Fluid pressure and max. differential pressure   ■ Valve system diameter (pitch lead)
- Time for opening/closing   ■ Stroke from the full-open position to full-close position   ■ Phase of voltage, voltage, cycle or DC electricity
- Ambient temperature of the valve and max. temperature of fluid   ■ Frequency of use   ■ Weather proof or explosion-proof
- Whether a position indicator is necessary   ■ Standard type or integral type   ■ Accessories and preferred method of operation

### ●Electric actuators: type and allowable torque capacity

Max torque (N-m)	SMB	SB	SB-D	JMB	L120	AE
60						AE-05
110				JMB-04		
140					L120-10	AE-1
170	SMB-000		SB-000D			
250				JMB-03		
270					L120-20	AE-3
360	SMB-00		SB-00D	JMB-00		
540					L120-40	AE-5
1,000	SMB-0	SB-0	SB-0D	JMB-0		
1,200						
1,500	SMB-1	SB-1	SB-1D	JMB-1		AE-10
2,500						
2,700	SMB-2	SB-2	SB-2D	JMB-2		AE-20
5,700						
6,100	SMB-3	SB-3	SB-3D	JMB-3		
11,500	SMB-4	SB-4	SB-4D	JMB-4		
27,500	SMB-5T					

### ●Manual actuators: type and allowable torque capacity

Max torque (N-m)	BGA	PA	HB electric	HB manual	B	W	CWG
110	BGA-04						
340	BGA-00						
640			HB-0		B-0	W-0	
740	BGA-0	PA-0					
830				HB-0			
1,100					B-1	W-1	
1,200							CWG-00
1,500	BGA-1	PA-1					
1,900			HB-1				
2,000							CWG-10
2,500				HB-1	B-2	W-2	
2,800							CWG-20
2,900	BGA-2	PA-2					
3,100			HB-2				
4,300							CWG-30
4,400				HB-2			
5,700					B-3	W-3	
5,900	BGA-3	PA-3					
6,100							CWG-35
8,000			HB-3				
9,800					B-4		
10,400							CWG-40
11,000				HB-3			
12,000	BGA-4						
15,900							CWG-50
18,000			HB-4				
25,000				HB-4			
26,000			HB-5		B-5		
32,800							CWG-60
40,000			HB-5.5				
49,000					B-6		
51,100							CWG-70
62,000			HB-6				
86,000			HB-7				
98,000					B-7		
105,000							CWG-80
130,000			HB-8				
200,000			HB-10				

# Electrical Equipment

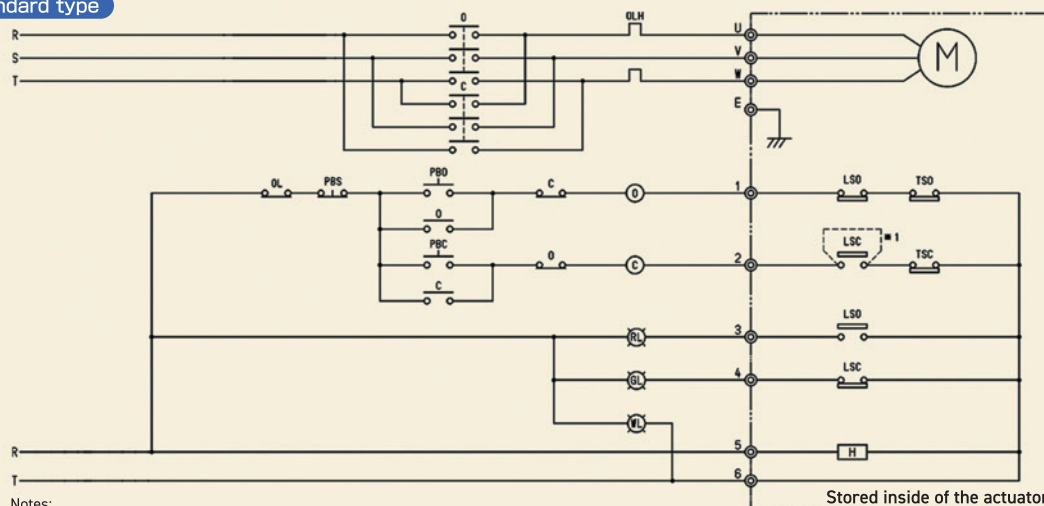
## Electrical Device

We provide various kinds of electrical device to ensure valve actuators effectively deliver good performance. Such devices enable the establishment of more advanced control systems.

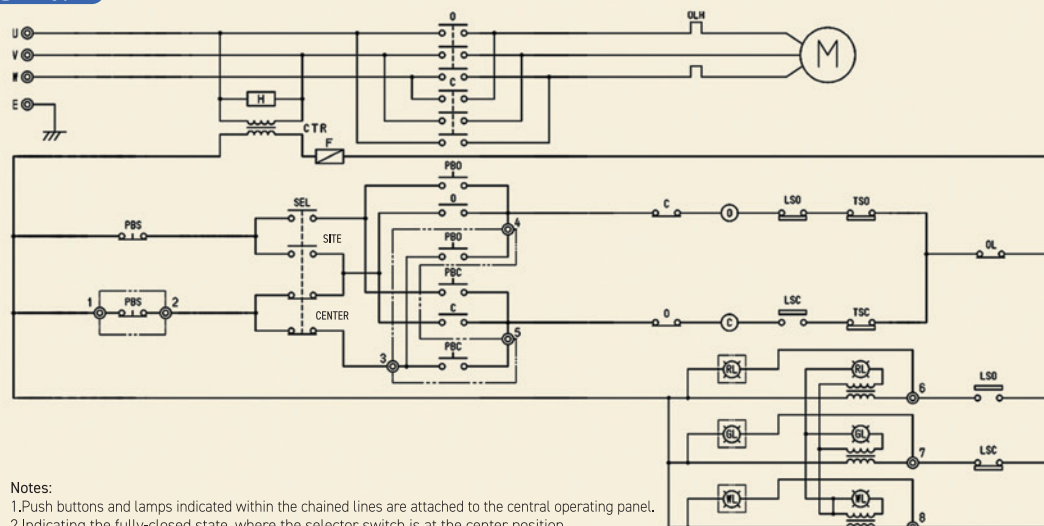
### Standard wiring diagram

Position sheet method (for butterfly valves, ball valves, parallel slide valves, water gates, and wedge gates)

#### Standard type



#### Integral type



Code	Name
0	Magnet switch for opening
C	Magnet switch for closing
OL	Thermal relay
PBC	Pushbutton for closing
PBO	Pushbutton for opening
PBS	Pushbutton for stopping

Code	Name
WL	Power indicator lamp (white)
RL	Full-open indicator lamp (red)
GL	Full-close indicator lamp (green)
CTR	Control transmitter
LSO	Geared limit switch in the opening direction
LSC	Geared limit switch in the closing direction

Code	Name
TSO	Torque switch in the opening direction
TSC	Torque switch in the closing direction
H	Space heater
F	Fuse
SEL	Selector switch
LTR	Transformer for lamp

Please refer to the catalogues to see the wiring diagram for the electronic control type actuator.



## List of Electronic Equipment

Name of equipment	Standard	Integral	Electronic control	Description
Geared limit switch	○	○		Since the switch is equipped with intermittent gear, and filled with grease, the switch can bear operating at high speeds. Operating position is set by adjusting the gear engagement. So once set, it will not get out of order. 2 Train type and the 4 train type are available.
Encoder	△	△	○	The encoder detects the number of revolutions of the output shaft. This is an absolute encoder that outputs a signal corresponding to valve position.
Torque switch	○	○		The switch works when a preset torque (both opening and closing directions) is applied to the output shaft. The standard type is 1NC contact each for opening and closing. 1NO, 1NC contact type is also available.
Torque sensor			○	The sensor works when a preset torque (upon both opening and closing) is applied to the output shaft.
Space heater	○	○		In order to prevent failure due to dew drops, a heater for moisture exclusion is built into the electric room.
Terminal block	○	○	○	This is a screw type terminal block, to which an external cable can be connected. Alternatively, the standard model and integral model can be equipped with a push-in type or stud type terminal block.
Selsyn transmitter	△	△		This is for remote display of valve position, and electrically transmits the valve position to a remote receiver.
Position meter	△	△		This is for remote display of valve position, and transmits a resistance value proportional to valve opening to a remote place.
Reversible electromagnetic switching device		○	○	It drives a motor in both forward and reverse (opening and closing) directions. It is equipped with an electric, mechanic interlock.
Thermal relay		△		This is a relay that breaks the control circuit to interrupt the motor circuit, when the accumulated heat of the electric current flowing in the motor reaches the maximum allowable temperature.
Selector switch	△	△	○	This switch is to be attached if remote/field operation switching is necessary.
Control transformer		○	△	It is to be attached to obtain control power source from motor power source.
Valve position transmitter	△	△	△	It transmits a current signal (DC4-20mA) proportional to the valve position. The standard type and integral type are equipped with a resistance/voltage converter, where a potentiometer is an input. There are 2 types: VPT with built-in power source, and RCC420 for being supplied with the power. Electronic control type implements DA conversion of signals from the encoder.
Torque transmitter			△	It transmits a current signal (DC4-20mA) proportional to torque output.
Modutronic device		△	△	In case proportional control is required, its controller operates to move the valve to a certain position based on electric signals from the regulator and/or setter.
Pushbutton station	△	△		This device consists of 3 pushbuttons (open/close/stop) for field operations.
Pushbutton lamp station	△	△		This device consists of 3 pushbuttons for field operations and a 3-lamp display section.
Control panel			○	Its knob switch enables easy local operations as well as setting and adjustments without opening the cover.
LCD screen			○	The screen displays the actuator's state and setting.
Interposing relay		△		In case an actuator is located in a remote place where operation with AC power source is impossible, this relay is equipped for remote operation (open/close/stop) by using DC power source.
Monitor relay		△	○	During remote operation of an actuator, if there is any obstacle, it informs an operator.
Connector	△	△	△	An external drop cable can be attached with one-touch operation. It prevents wrong wiring after maintenance.
2-line remote control device		△	△	By using two control lines, one motor-operated valve can be operated.
Fieldbus			△	This fieldbus supports PROFIBUS-DP (V1) communications.

○:Standard △:Option

### VPT Valve Position Transmitter

This is a highly accurate, heavy-duty resistance/voltage converter developed for valve actuators. Since it is a transmitter built into the power circuit, if this device is connected to an actuator, it can be used without any equipment other than an indicator. It outputs a constant current which is not affected by the size of a load. It is designed to accommodate a wide range of supply voltage.



### RC Encoder Multi-Rotary Type Position Detector

This is an absolute type encoder that counts rotations and generates outputs in binary signals. The encoder delivers outstanding performance in detecting the positions, and controlling the angles of industrial machinery and large devices, and exhibits high stability against vibration. Therefore, highly reliable systems can be established with RC encoder.



### MJ70 Modutronic Device

This is designed for the valve actuators as an analog type positioner that modulates positions of remote electronic valves according to command signals from the central control room. The device has a simple structure with a potentiometer in the feedback section, and a reversible switch in the motor drive.



### Connector Conduit Connector

The connectors allow for one-touch operation to plug in and remove external drop cables for valve actuators installed in outdoor environments. Connectors in various sizes and with different numbers of pins are available. We also offer special-purpose connectors that can be used in hazardous gas atmospheres and the inside of nuclear containments.



### TWC Two Wire Control System

For remote control, the required number of operating lines is the number of control device(s) plus one. Wiring at the field is easy. The device has a built-in over-voltage protection circuit and error signal detection circuit to ensure excellent safety. Since the device is moisture resistant, it can deliver high performance in a highly humid environment. It is also equipped with a relay circuit that makes it easy to connect with a higher-level computer.



### BLS Pushbutton Lamp Station

This is a device for operating a valve actuator on site. It consists of a switching section with unique 3 pushbuttons and 2 switches, and a 3-lamp display section. Since both sections are housed in the robust case, the device is heavy-duty, and has a highly reliable structure. For L120 actuators, SW type is to be used.



# Intelligent Actuator Systems

Valve control system enables monitoring and centralized control of field actuators from the central master station. The system not only allows control over a large number of valves at the same time, but also has intelligent functions for counting the flow rate and residual quantity in the tank and displaying it digitally. This advanced control system contributes to the automation and labor saving in the entire plant.

## G-Link

Remote Monitoring/Control System for Electric Valves



G-link is a communication system that connects an actuator equipped with a micro-processor (CPU) in a loop using optical fiber or metal cables, to remotely control from the central master station.

It has been more than 20 years since G-Link was launched, and currently more than 2,000 G-Link-based actuators equipped with G-Link are working throughout Japan. Two transmission lines (main and back up lines) are prepared for possible malfunctions and disconnections. The system is strong against induction noise and lightning surge, and also has various functions, including position data, operating state monitoring, and warning transmission.

## Field Bus



The system is compatible with PROFIBUS (PROFIBUS-DP-V1), which is the most common for Process Field Bus. It enables central control of multiple actuators from a remote place. By using the interface module, it can accommodate the redundancy (duplication) of PROFIBUS-DP. Benefits from the adoption of PROFIBUS include the following:

- Excellent functions in terms of speed and amount of communication data
- Easy connection with signal cables
- Confidence in using the system due to the proven track record at many plants
- Ability to constantly deliver the latest technology due to the adoption of new technology



# Maintenance

To ensure that our valve actuators maintain initial performance and continue to work safely, please implement periodic inspection and maintenance.

## ● Inspection and Maintenance

The following overview of inspection and maintenance is for SMB and JMB series. For information on other series, please contact our sales representative.

In principle, please conduct an inspection and maintenance at least once a year, although it may depend on the frequency of use.

- Remove the inspection plug, and confirm the state of grease. If there is nothing abnormal, continue using the grease. As for grease filled in the motor bearing, there is no need for replacement or refilling under normal conditions of use.
- In case of low operation frequency, open and close the valve by electric operation to the extent not to affect operations of the piping system. In doing so, also check the electric/manual switching.
- In case the valve is installed underground, check if there is any corrosion due to flooding or water leakage.
- In case of the actuator with an external screw thread, remove any dust and dirt from the threaded part of the valve stem, and apply a sufficient amount of grease.
- In case water drops are accumulated, release the water from the downward drain plug (1/8") of the switch box, and dry the inside.

Item		Inspection frequency			Service life	Inspection item								Remarks
		A	B	C		Wear	Looseness	Damage/ breakage	Lubrication	Dirty/ness/ corrosion	Deteriorated insulation	Abnormal noise		
Part name		A	B	C	Service life	Wear	Looseness	Damage/ breakage	Lubrication	Dirty/ness/ corrosion	Deteriorated insulation	Abnormal noise	Remarks	
Electronic parts	Geared limit switch	○	○	○	10	○	○	○	○	○	○	○	At the time of B level maintenance, check the grease in the gear box.	
	Torque switch	○	○	○	10	○	○	○		○	○			
	Terminal block	○	○	○	7		○	○		○	○			
	Pushbutton lamp station	○	○	○	10		○	○		○	○			
	Lamp transmitter	○	○	○	10					○				
	Position transmitter	○	○	○	10		○	○		○	○			
	Space heater	○	○	○	10			○		○	○			
	Internal wiring	○	○	○	10		○	○		○	○			
	AC motor	○	○	○	15		○	○		○	○	○	Please contact us for an overhaul.	
Motor brake	○	○	○	10	○	○	○		○	○	○			
Mechanical parts	Manual/electric switching		○	○	15	○	○	○	○	○				
	At site position indicator	○	○	○	10	○	○	○	○	○				
	Worm & worm gear		○	○	15	○		○	○					
	Gear & shaft		○	○	15	○		○	○			○		
	Torque spring			○	15	○	○	○						
	Bearing			○	10	○		○	○			○		
	Stem nut			○	10	○	○	○	○				Including locking nut.	
	Bolt/nut	○	○	○	10		○	○		○			Check the state on a timely basis, and replace them as needed.	
	Seal material		○	○	7	○		○	○				To be replaced at the time of overhaul.	
	Grease	○	○	○	7					○			Grease degrades with age. Check the state on a timely basis, and replace it as needed.	
Other	Inspection (working conditions, function)	○	○	○									This inspection will be done on site with the actuator attached to the valve.	
	Overhaul/test run			○									The overhaul will be done at our factory.	

- A, B, and C in the table represents the levels of inspection/maintenance and frequencies. Generally, Level A, B C inspections should be conducted respectively in every year, 3-5 years and 7-10 years.
- Service life in the table is on the premise that an actuator has been used in accordance with the conditions at the time of selecting the actuator.
- Depending on use conditions and environmental conditions, it may be required to replace parts before the end of the service life.
- As for the inspection of DC motors, please consult us.

## ● Regular Maintenance

Day-to-day maintenance leads to stable availability and improvement of the product. Our maintenance service is constructed as the safety management engineering system to prevent malfunction through periodic inspections, including effective repair. Our service ensures that the safety is maintained, and also contributes to saving costs.

## ● Repair and Restoration

In the event of any malfunction, we will take necessary actions in a timely and appropriate manner, and achieve a quick recovery. We will also investigate the causes, and implement measures to prevent recurrence.

## ● Spare Part

We have regular stock of genuine spare parts necessary for maintenance. We can deliver such parts quickly, as necessary, by making the best use of our transportation network.

## ● Modification, Expansion, and Renewal

To make the biggest return on the smallest investment, please consult us about modification, expansion, and renewal for the purposes of automatization, reduction in weight, and cost savings.



#### ■ Headquarters

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