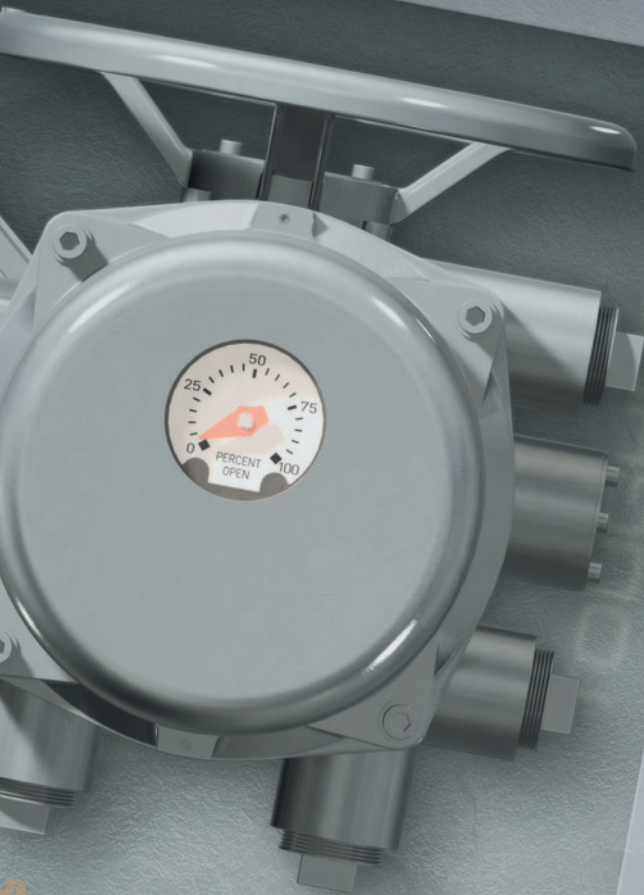


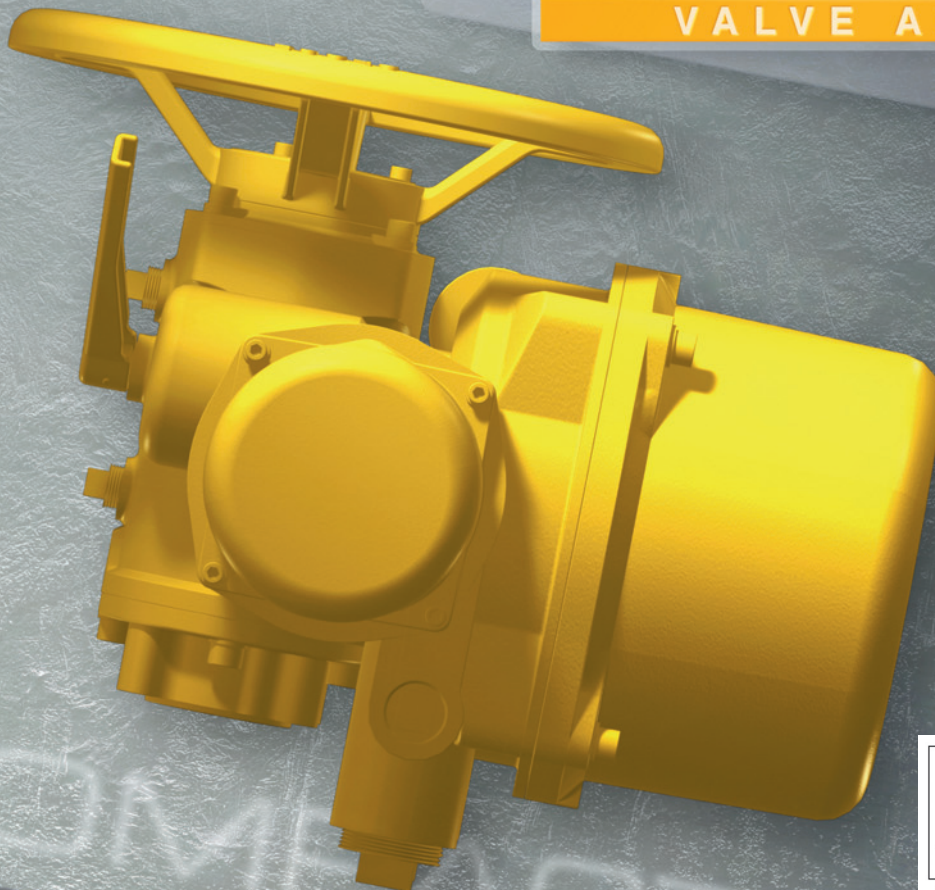
NIPPON GEAR CO., LTD.



# LSB

## SERIES

VALVE ACTUATOR



intertek  
ISO 9001:2015



intertek  
ISO 14001:2015  
Only for Fujisawa Factory





# LSB SERIES

VALVE ACTUATOR



## The world's latest state-of-the-art mechanical actuator.

Nippon Gear, officially release LSB our newest series electric actuator with compact and light body. In addition to its robust, highly accurate structure and full complement of control mechanism, its design for excellent maintainability ensures stable operation over a long period of time. To meet demands from the market across a wide range of fields, we offer a variety of protection features, including a wide range of gear ratios, water-resistant design, explosion-proof design, and integral control specifications. Standard IP68 Specification. \*Designed to withstand submersion in case of accidents (submersion for 72 hours, water head of 10 meters).



## PRODUCT FEATURES

LSB-1/-3/-5 are top-class compact outdoor mechanical actuators that achieve 30% reduction in weight and size compared to our conventional models. They can be directly attached to linear valves (such as gate valves and globe valves) and used in combination with part-turn actuators for part-turn valves (such as butterfly valves and ball valves).

### ■ Small and Light

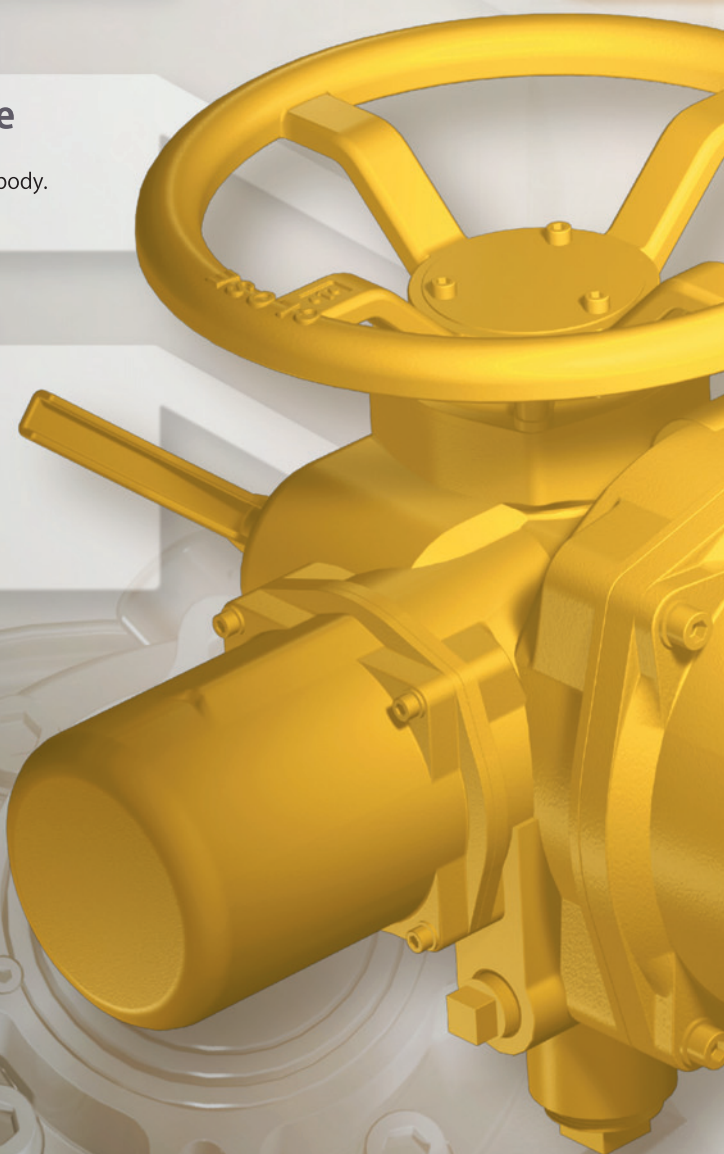
- Top-class compact model of mechanical actuators.
- Can be installed in small spaces.

### ■ Overwhelming Tolerance for Torque

- Achieving world-class tolerance for torque compared to its small body.

### ■ Elevated maintenance accessibility

- Significantly simplified the structure to enhance maintainability.
- Settings made easier by adopting new torque switches and geared limit switches.





### ■ Highly durable gear

- The worm gear and worm are made of aluminum bronze and chrome molybdenum steel.
- Optimal materials for each gear are chosen based on the load, and high-pressure grease is filled inside the sealed gear case.

### ■ Newly designed High-Precision Geared Limit Switch

- Adopts the snap action of a micro switch to prevent contact welding and enhance reliability.
- Allows setting the operating point at any position across the entire stroke.
- The switch rotor operates reliably with a metal intermittent gear, ensuring that the set position remains unchanged.

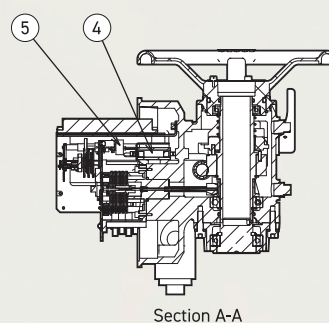
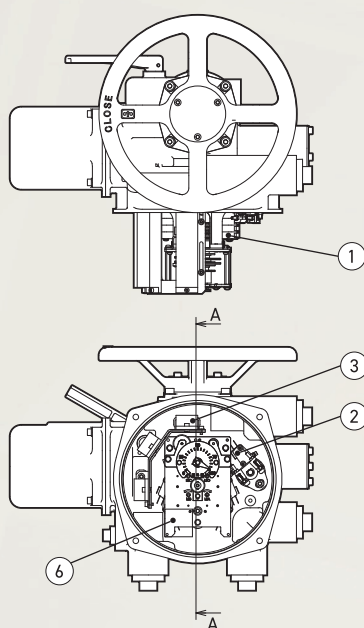
### ■ Newly designed High-Performance Torque Switch

- Capable of setting the operating point across the entire torque range for both opening and closing directions. Ensures reliable protection of the valve from overload.
- Implemented a high-precision reverse switch structure to address concerns of wear and tear.

## SPECIFICATION

Unit Size			LSB-1	LSB-3	LSB-5
Mechanical Spec.	Torque rating (N・m)		170	550	1000
	Thrust rating (k・N)		50	130	160
	Min/Max stem capacity (mm)	Thread connection	40	60	75
		Key connection	30	45	60
	Output speed (min-1)	60Hz	22~229	22~229	22~229
		50Hz	18~193	18~193	18~193
	Attachable actuator (Secondary reduction gearbox)		BGA-type, CWG-type, HB-type		
	Torque switch		1a1b contact (open/close)		
Limit switch		4R-4C type (2a2b)			
Electric/ Modulating control	Body	Heater	Standard		
	Motor	Size(kw)	0.2/0.4/0.75	0.75/1.5/3.0	2.2/5.5
		Standard Power Supply	AC200/400V 50Hz AC200/400V 60Hz AC220/440V 60Hz		
		Insulation type	F		
		Rating	15 minutes		
	Push button lamp station		Option		
	Position transmitter. R/I converter				
	Electromagnetic switch				
	Modulating control				
	Enclosure	IP grade		IP68	
Ambient Temperature		-20℃~+70℃			
Explosion proof		IECEx Exd II CT4(Hydrogen) TIIS(Japan)/KOSHA(Korea)/ITRI(Taiwan)			

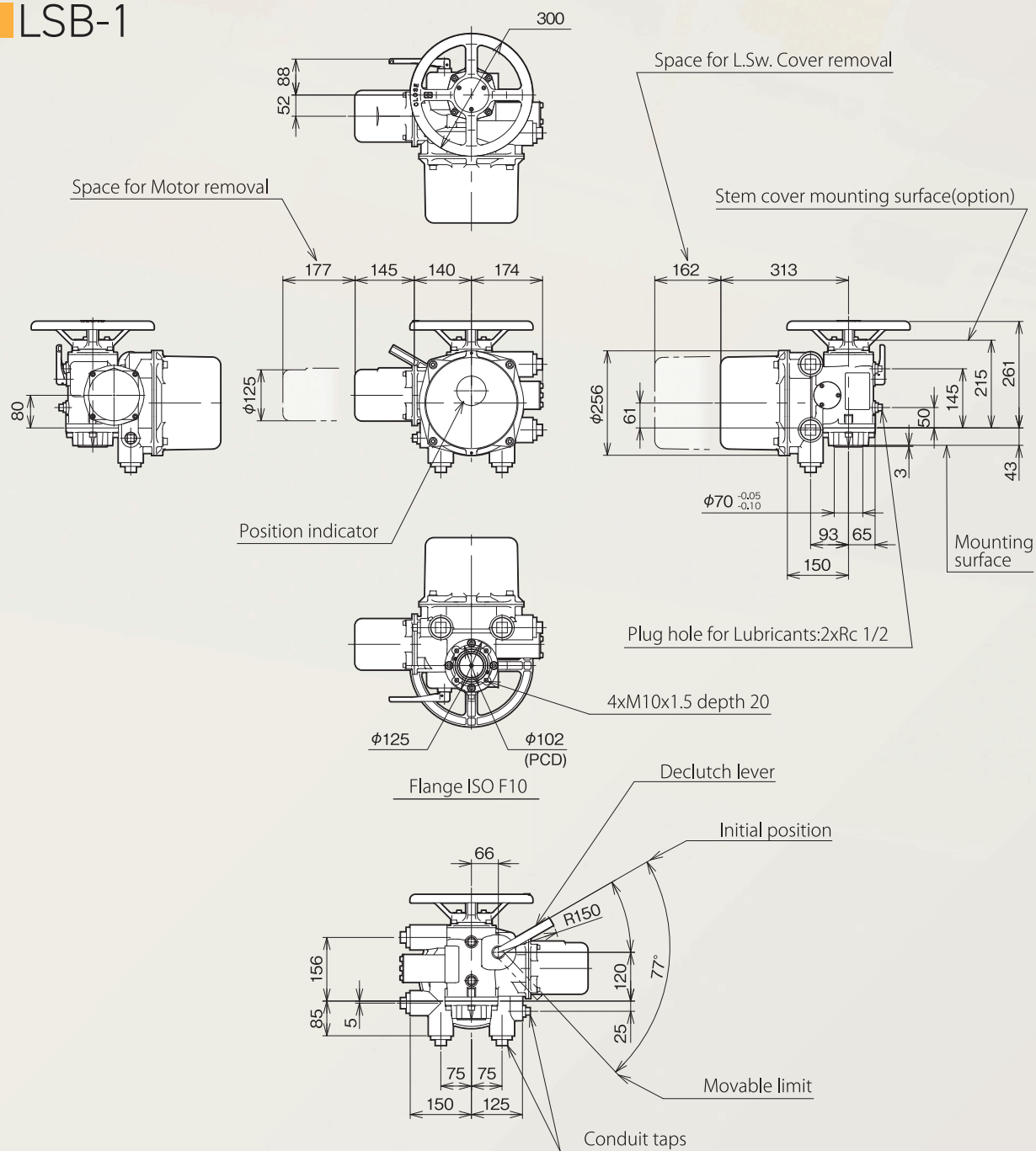
## DIMENTION



No.	Name
1	Limit switch
2	Torque switch
3	Terminal block
4	Resistor
5	Potentiometer <b>Option</b>
6	R/I converter <b>Option</b>

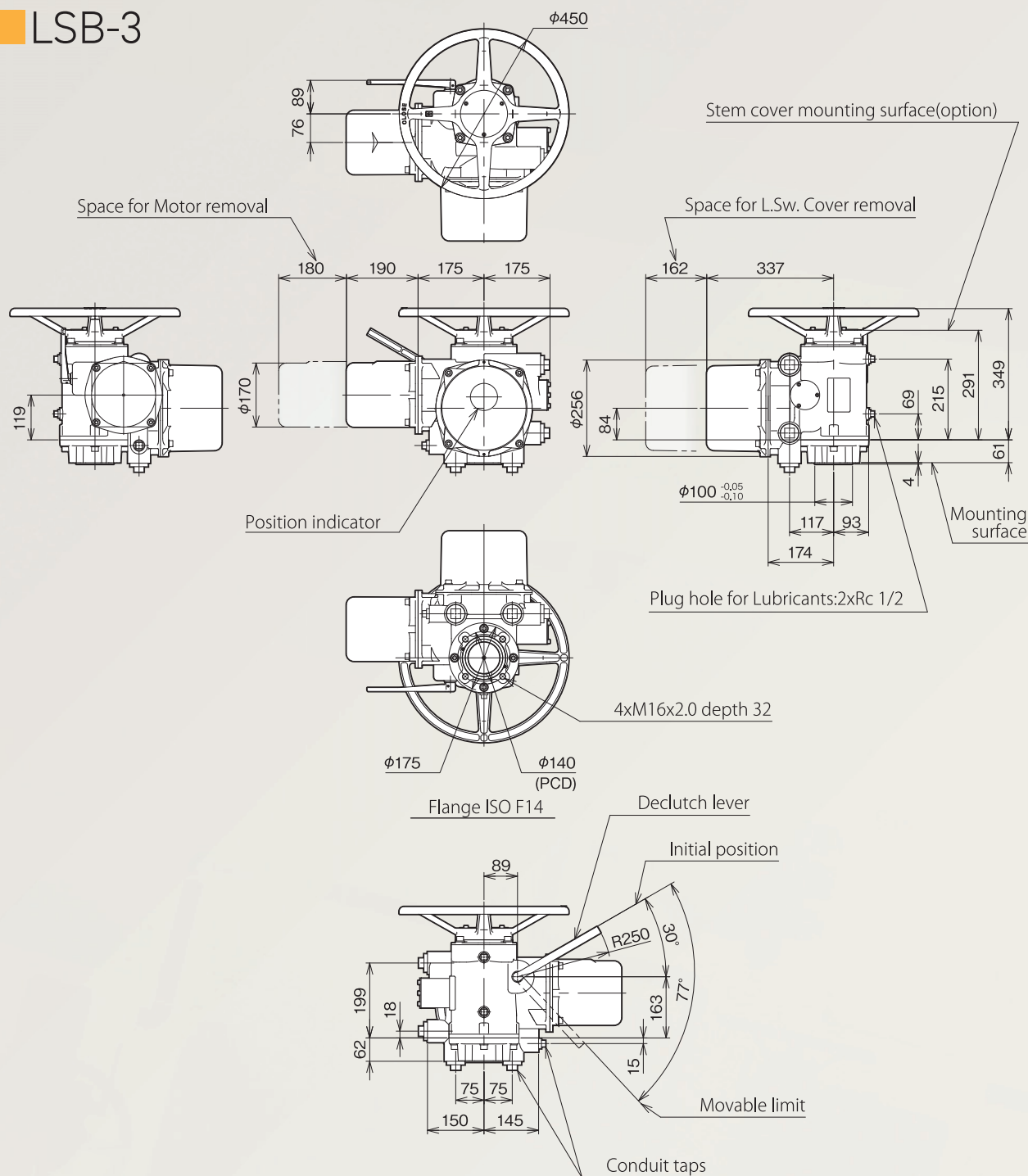


# LSB-1



Mass	Motor spec.	
	Output	Poles number
33 kg	0.2 kW	4P
34 kg	0.4 kW	4P
34 kg	0.4 kW	2P
36 kg	0.75 kW	2P

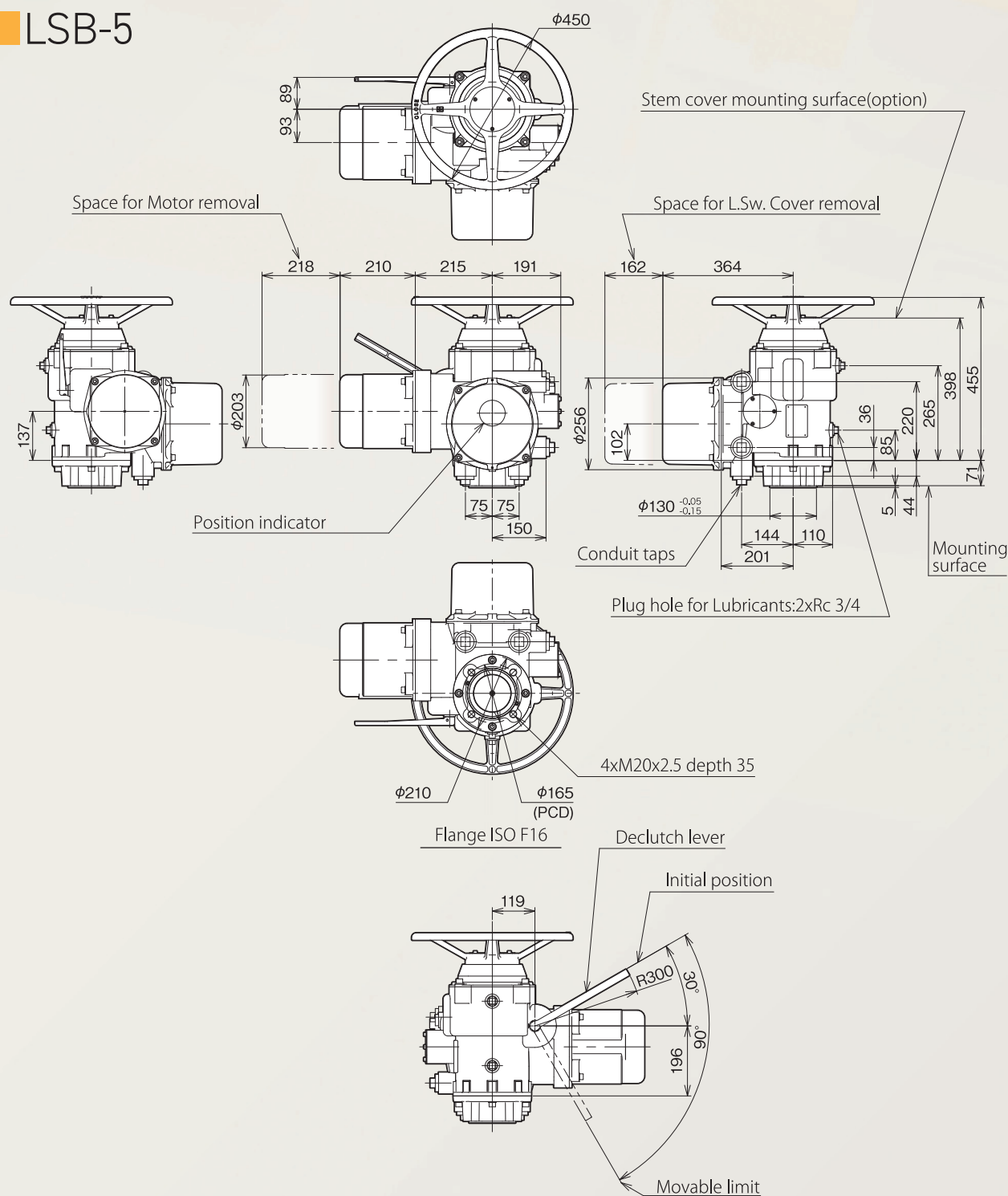
# LSB-3



Mass	Motor spec.	
	Output	Poles number
61 kg	0.75 kW	4P
64 kg	1.5 kW	4P
65 kg	1.5 kW	2P
67 kg	3.0 kW	2P

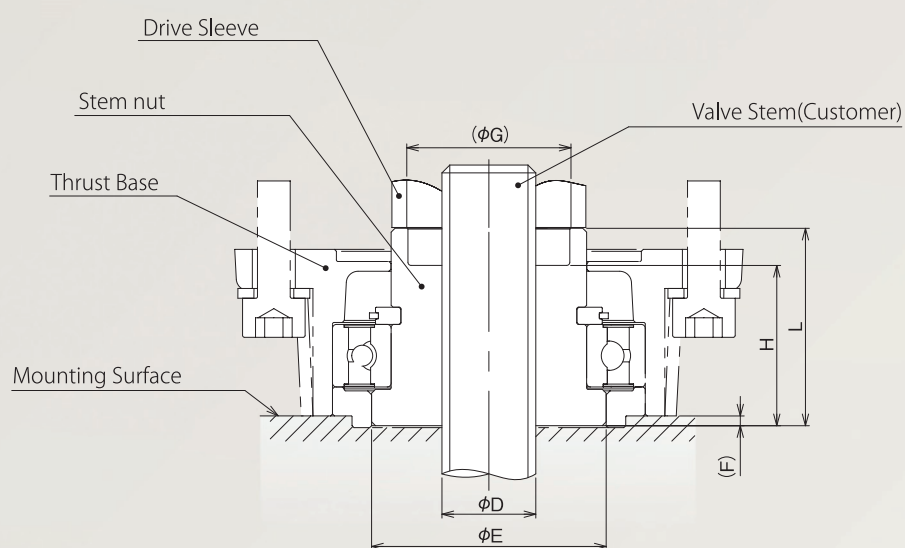


# LSB-5



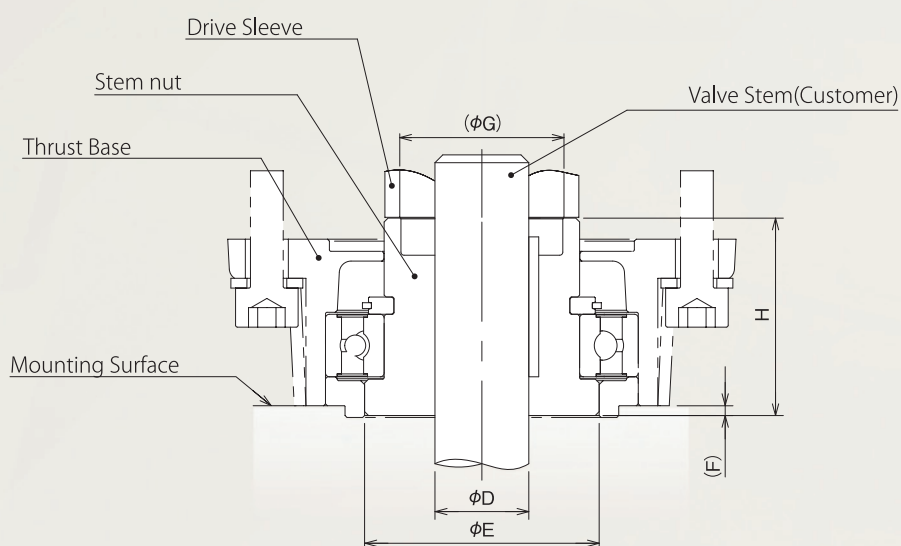
Mass	Motor spec.	
	Output	Poles number
101 kg	2.2kW	4P
113 kg	5.5kW	2P

## A1 [Screw]



Unit Size	φ D max	φ E	F	φ G	H	L
LSB-1	40	60	2.5	42	41	50.5
LSB-3	60	85	3.5	62	60	71.5
LSB-5	75	105	4.5	80	71	89

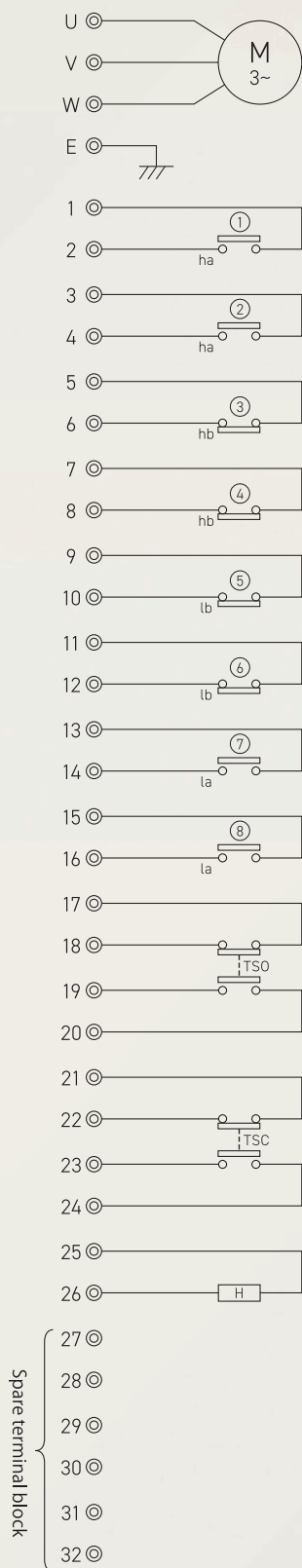
## B4 [Key]



Unit Size	φ D max (Keyway)	φ E	F	φ G	H
LSB-1	30(10x3.3)	60	2.5	42	50.5
LSB-3	45(10x3.8)	85	3.5	62	71.5
LSB-5	60(18x4.4)	105	4.5	80	89



## BASIC WIRING DIAGRAM



### Limit switch contact arrangement diagram

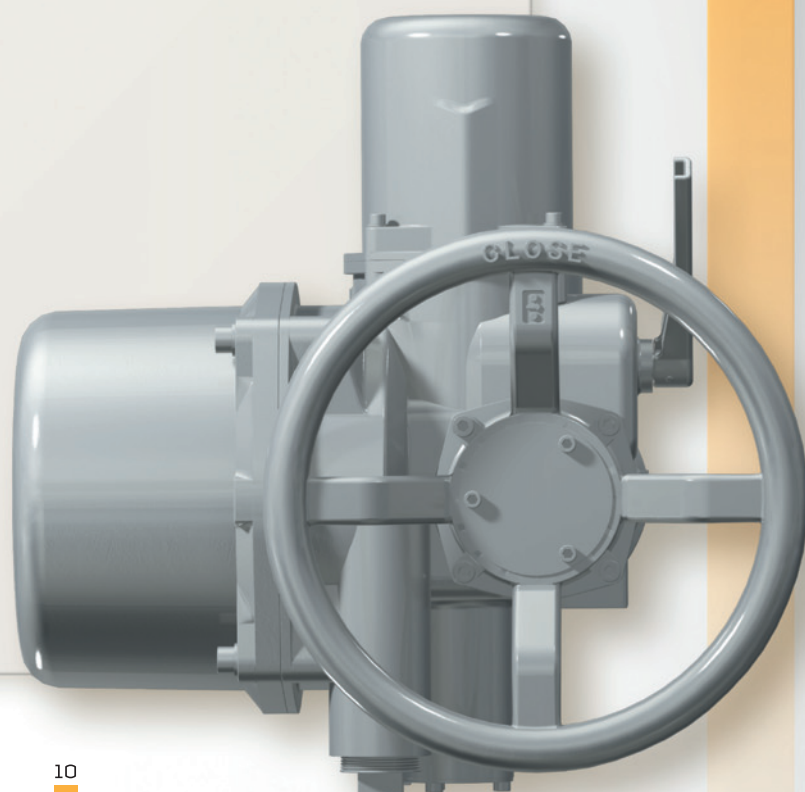
( — : Contact close    - - - - - : Contact interruption )

Rotor	Contact number	Valve degree of opening %		Function
		0	100	
LSO	1		—	ha
	2		—	ha
	3	—		hb
	4	—		hb
LSC	5	—		lb
	6	—		lb
	7	—	—	la
	8	—	—	la

### Mark explanation

- ①~④ : Open limit switch
- ⑤~⑧ : Close limit switch
- TSO : Open limit switch
- TSC : Close limit switch
- H : Space heater
- ⊙ : Terminal block

This drawing shows the valve fully closed.  
Torque switch indicates inactive state.



## ■ Headquarters

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## ■ Factory

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### Product warranty

#### (1) Warranty period

The warranty period shall be two years after shipment from our factory or one year after the start of operation in the field, whichever is shorter.

#### (2) Warranty scope

Product shall be for the period specified at the time of contract signing, provided that the product is used with the agreed-upon ratings and under the agreed-upon operating conditions.

Any defects that occur in the warranty period for any of the reasons stated below shall be outside the warranty scope.

- 1) Use beyond the specifications or selection conditions for the product.
- 2) Reason not attributable to the structure of the product, such as fire, flood, typhoon, earthquake, and other natural disasters.
- 3) Reason attributable to the modification or repair by someone other than us and service contractors designated by us.
- 4) Non-conformance due to changes over time (such as natural fading of coating and plating, rusting, grease deterioration, and oil separation)
- 5) Reason attributable to a failure not to follow the maintenance, inspection, and other procedures specified in the operating instructions and elsewhere.
- 6) Reason attributable to an error in operation or handling.
- 7) Any sensory characteristics (such as sound and vibration) of such a level that they are generally deemed not to affect quality or performance.

#### (3) Warranty expense

If a defect attributable to us is found in the warranty period, we shall deliver a substitute for the product or repair the product at our own expense.

Note that the warranty is valid only in Japan.

The warranty expense shall be construed to include the expense of the delivered product itself and not to include any of the following expenses that may be induced by a failure of the delivered product.

- 1) Man-hours for the removal of the existing product from the system and the mounting of the delivered product; transportation expenses required for re-delivery; and extra costs such as taxes and warehouse expenses.
- 2) Loss due to the suspension of equipment, opportunity loss, and so on resulting from the defect of the product.

<http://www.nippon-gear.jp/english/>

Please acknowledge that the content of this catalog might change by the improvement of the product or other reasons without a previous notice.

