

Seibu

電動バルブアクチュエータ
ELECTRIC VALVE ACTUATOR

セムフレックス A シリーズ
Semflex A Series

技術資料
TECHNICAL INFORMATION

取扱説明書
OPERATION MANUAL



西部電機株式会社
SEIBU ELECTRIC & MACHINERY CO., LTD.

— 目次 —

1. Characteristics

2. Specification

- 2.1 Sleeve rotation speed
- 2.2 Power supply
- 2.3 Motor
- 2.4 Sensor
- 2.5 Plug-in connector
- 2.6 Protective structure
- 2.7 Ambient Temperature
- 2.8 Manual operation
- 2.9 Automatic operation
- 2.10 Display
- 2.11 Mass and amount of grease
- 2.12 Painting
- 2.13 Others
- 2.14 Options

3. Model Selection

- 3.1 Model Selection
- 3.2 Actuator performance table
- 3.3 Output shaft speed - Torque diagram
- 3.4 Cable Selection
- 3.5 Handwheel force

4. Thrust Unit

5. Structure & Dimensional drawing

6. Wiring diagram

7. Instructions

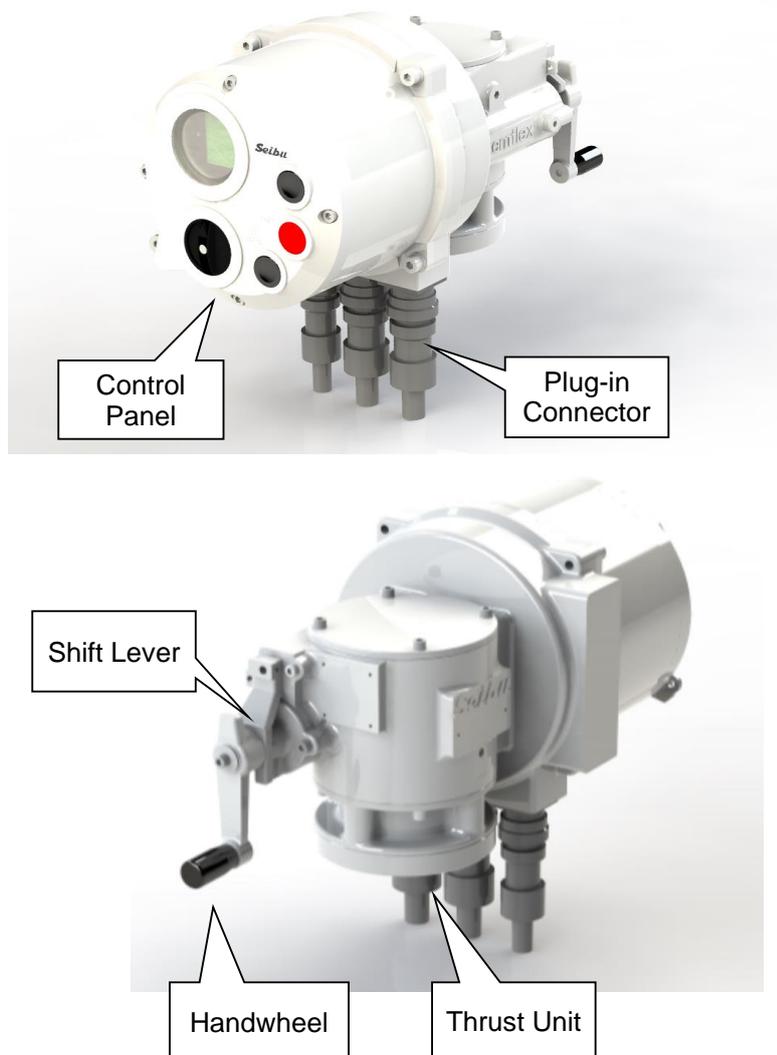
- 7.1 Instillation
- 7.2 Test run
- 7.3 Meintenance

1. Characteristics

1.1 Characteristics

- (1) Semflex-A is compact and lightweight, and help to downsize piping design and overall plant design.
- (2) Reduce operating noise dramatically by removing A/B gears
- (3) Variable speed operation is possible with servomotor control. Also torque and speed can be set arbitrarily within the spec range.

1.2 Figures



1.3 Model number

example) Semflex A-100 Maximum allowable output shaft torque (100 Nm)

2. Specification

2.1 Sleeve rotation speed

	A-50	A-100
Minimum speed	1 min ⁻¹	
Maximum speed	100 min ⁻¹	

Setting unit : 0.2 min⁻¹

2.2 Power supply

Single/Three-phase : AC200V±10% 50/60Hz
 : AC400V±10% 50/60Hz

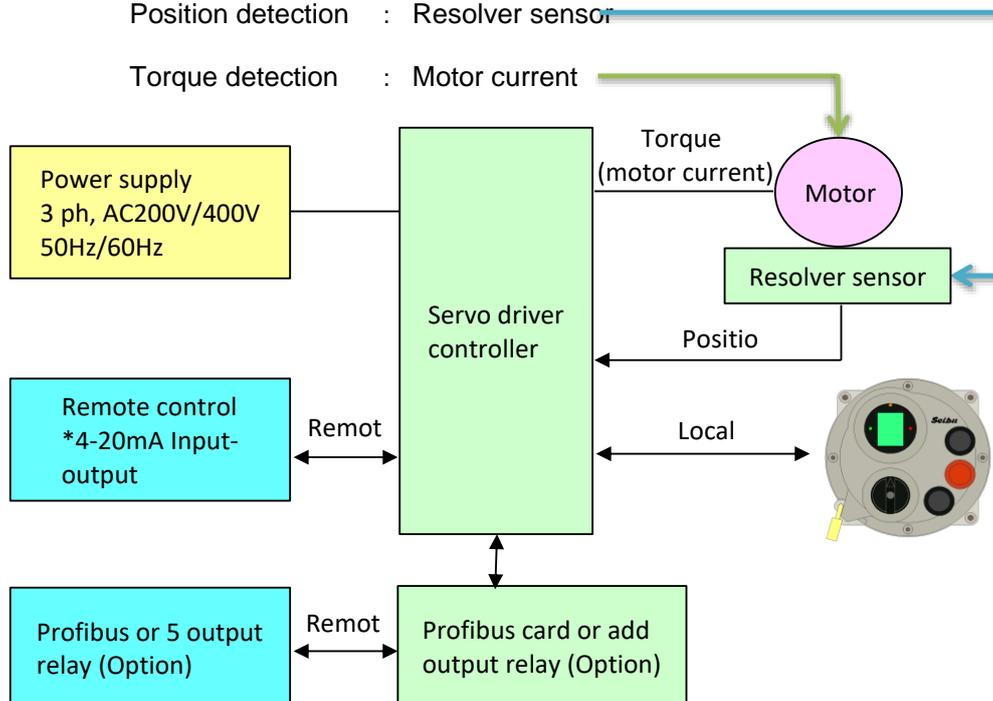
2.3 Motor

項目	A-50	A-100
Servomotor Output	0.4kW	0.75kW
Insulation Class	Class F	Class F
Duty	15 min	15 min
Brake	None	None

2.4 Sensor

Position detection : Resolver sensor

Torque detection : Motor current



Electrical configuration

2.5 Plug-in connector

Number of poles

Power connector : 4P (U, V, W, E)
JL05-2A18-11PC-F0-R (JAE)

Control connector : 30P (1~29, E)
JL05-2A20-30APC-F0-R (JAE)

Communication connector : 30P (1~29, E)
JL05-2A20-30APC-F0-R (JAE)

2.6 Protective structure

IP68 : dustproof, waterproof (8m, 72h, 15 cycle operation)

2.7 Ambient Temperature

-20 ~ +60 °C

2.8 Manual operation

Switching to manual operation

When shift lever is switched to manual position, interlock switch turns on.
Push handle to enable manual operation.

After manual operation, pull back handle and return switching lever to electric pos
Interlock switch turns off and electric operation becomes possible.

2.9 Automatic operation

Integral type with built-in servo system

2.10 Display

Liquid crystal display (LCD)

Opening display (display unit can be arbitrarily selected from "%", "°", "mm", "m"),
various alarm icons are set.

2.11 Mass and amount of grease

Seibu actuator is filled with long life lithium grease.

It is not necessary to renew the grease for several years during normal operation. If you need to replenish the grease, use new grease according to the table below. If it is a lithium grease, you can mix greases of different brands, but avoid mixing greases with different soap bases as they may deteriorate.

Recommended grease brand	Manufacturer or distributor
Nigtit LYW No.0-N	Nippon Grease Co., Ltd.
General purpose grease No.0-S	Kyodo Yushi Co., Ltd.
Cosmo Grease Dynamax EP No.0	Cosmo Oil Co., Ltd.
Daphni-Eponex EP0	Idemitsu Kosan Co., Ltd.
Movilux EP0	Exxon Mobil
Albania EP Grease R0	Showa Shell Sekiyu Co.,
Epinoc AP0	Nippon Oil Co., Ltd.
Resonix Grease EP0	Japan Energy Co., Ltd.

Model	A-50	A-100
Amount (kg)	0.4	0.5

2.12 Painting

Munsell N8 as standard

Undercoat: Metal Epo Primer (N8)

Topcoat: Phthalic acid-based resin paint Futacoat (N8) Semi-gloss

Other specifications are available and selected according to customer request.

2.13 Others

Vibration resistance 5~100Hz 0.7G, 90 mins

Shock resistance : 30G/11ms (X, Y, Z 3 times each)

Durability : 10,000 cycles of Open/Stop/Close in th condition of max allowable torque for full-close and of rated torque for intermediate position.

2.14 Options

4-20mA Output

4-20mA Input (Proportional control)

Proibus-DP network

3. Model Selection

3.1 Model Selection

The following information is necessary to select model.

- a) Valve Shaft type (Rising/Non-rising, diameter, No. of threads, pitch or lead)
- b) Output torque (Nm)
- c) Thrust load (N)
- d) Rotation speed (rpm)
- e) Power Supply (Voltage, frequency)
- f) Cable (who arrange, length)

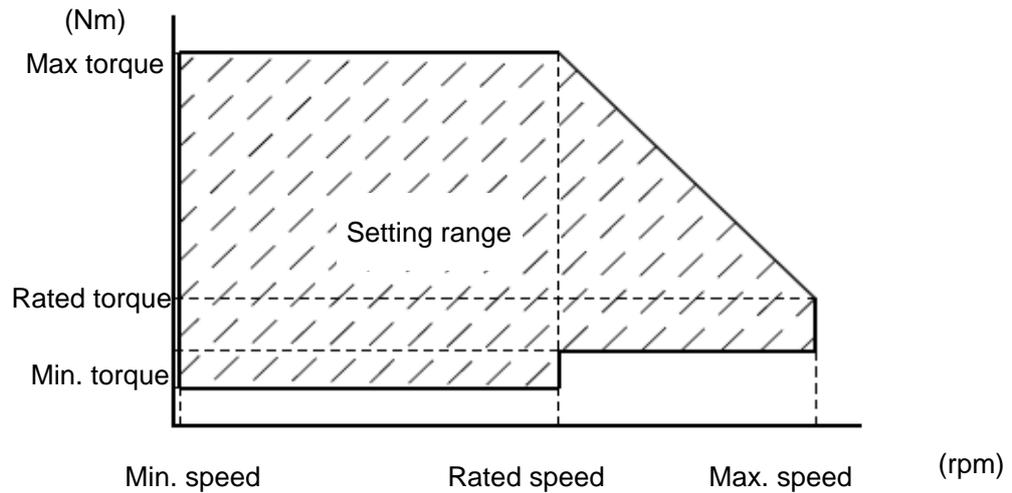
3.2 Actuator performance table

Model	Allowable Stem shaft diameter (mm)		Torque (Nm)	Thrust (kN)	Flange size (mm)	
	Non-rising	Rising			Rated Max	ISO Flange
			A-50			
A-100	38	40	33 100	54	F10	70 102 4-M10, depth 16 125

Model A-50							
Sleeve rotation speed (rpm)	1	15	30	45	60	80	100
	Min. speed				Rated speed		Max. speed
Torque (Nm)	Max.	50				33	17
	Rated	17				17	17
	Min.	5				10	10

Model A-100							
Sleeve rotation speed (rpm)	1	15	30	45	60	80	100
	Min. speed				Rated speed		Max. speed
Torque (Nm)	Max.	100				67	33
	Rated	33				33	33
	Min.	10				20	20

3.3 Output shaft speed - Torque diagram



Output speed and torque is set to the indicated value.

In case only model type is indicated, it is set to the rated speed and torque.
 It is possible to change and reset the setting value by operating control panel,
 even without opening the unit cover.
 Please refer to "Operation manual : BO-1207" for the details.

3.4 Cable Selection

3.3.1 In case Seibu arrange cables

Please indicate cable length.
 Plug in connector is assembled at Seibu and deliver to customer.

3.3.2 In case customer arrange cables

Dedicated crimping tool:
 For power : Please prepare CT150-2C-JL05, and
 Locator JP-JL05-12
 For control : Please prepare M22520/1-01

Pack with the plug parts of the plug-in connector as an accessory.

3.3.3 Cable outer diameter

	Bushing inner size	Calbe diameter (mm)
Power cable outer diameter	11	~
Control/communiatio n calbe outer	10.6	~
	20	~

Remark) Please use indicated cable diameter to keep sealing of connector

3.5 Handwheel force

Manual operating force $F = 1000 \times T / (G \times R \times \eta)$

Item	A-50	A-100
T Torque value (Nm)	Max. 50	Max. 100
G Worm gear ratio	50	50
R Handwheel radius	70	70
η Manual	0.30	0.30
F Manual operating force (N)	[At Max. torque] 47.6	[At Max. torque] 95.2

4. Thrust unit

In case of Non-rising type stem, thrust unit is assembled at Seibu and delivered

In case of Rising type stem, thrust unit is delivered as an accessory with actuator.
Please assemble it by customer.

Please refer to "7.1.2 Stem Bush assembly" for the details.

5. Structure and dimensional drawing

5.1 Structure drawing

A-50 No. 3K01979

A-100 No. 3K01980

5.2 Standard dimensional drawing

A-50 No. 3K01985

A-100 No. 3K01986

6. Wiring diagram

6.1 Standard No. 3M00204

6.1 With Profibus-DP
No. 3M00207

7. Installation procedure

7.1 Installation

7.1.1 Inspection before install

Please check if the spec is correct referring value on name plate.

Please check if the spec is correct referring wiring diagram attached to the actuator.

Please check if the size is correct referring stem bush and stem, and flange of actuator and valve.

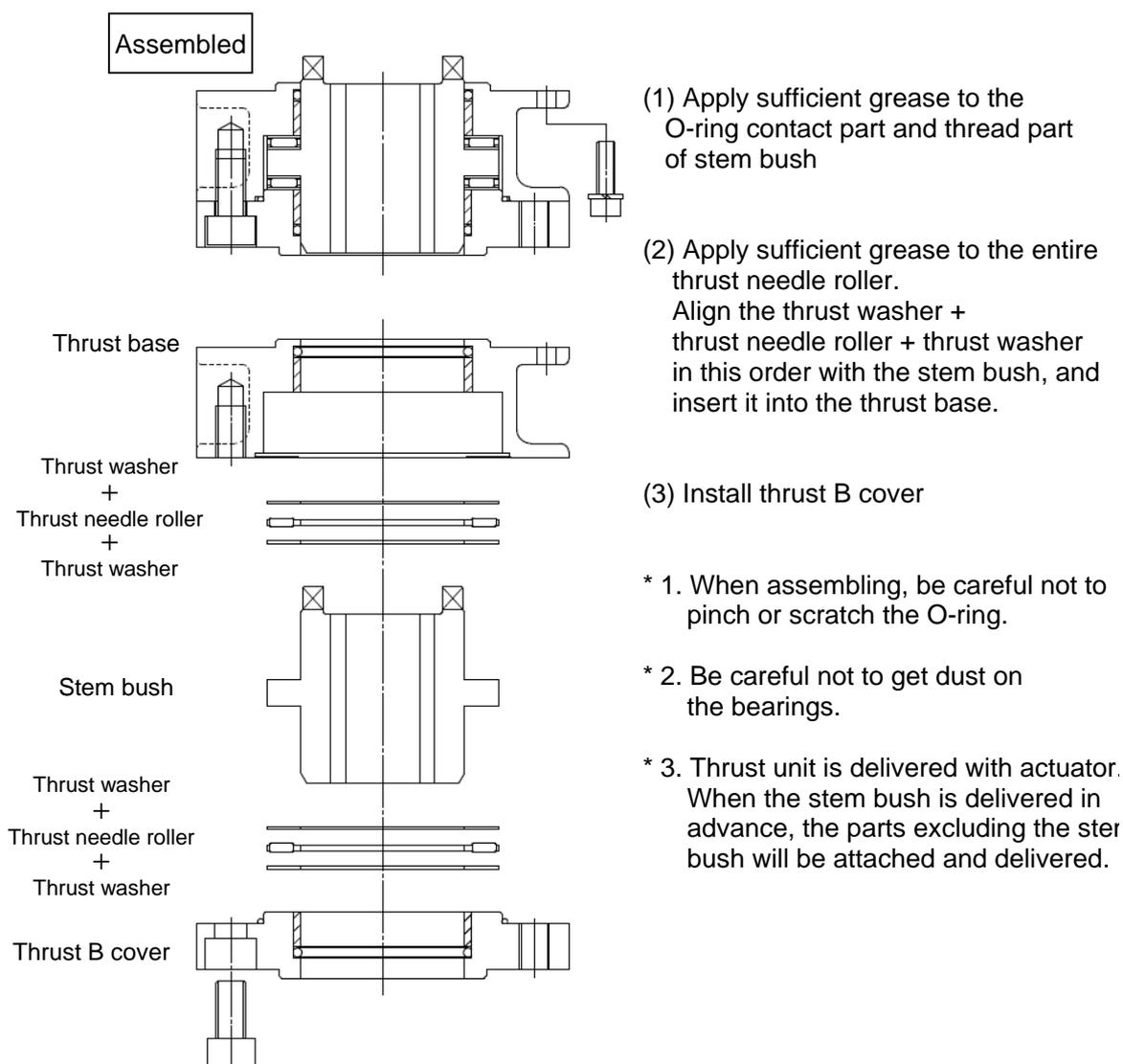
7.1.2 Stem bush assembly

In case of non-rising type and of standard inner diameter size, the stem bush is machined and assembled at Seibu.

It is necessary to machine at customer side when to use non-rising type with not-standard inner diameter or rising type.

In such case, please assemble the part as per the following instruction.

*Please be careful not to damage bearing or O-ring when machining stem bush.



7.1.3 Installation to valve

- (1) Use the eyebolt to lift the actuator.
- (2) In case of rising type stem, screw the valve rod into stem bush while turning the actuator. After the flange of actuator and the flange of valve come into contact, tighten the flange with bolts.

At this time, turn the handle slightly to opening direction in order to avoid overtightening of the valve.



Remarks)

1. When lifting actuator, do not use manual handwheel.
Please use eyebolt on actuator body to lift it.
Handwheel may break if lifted.
2. When lifting the valve and actuator after connecting them, do not lift only actuator.
Actuator may break by the weight of valve.
3. Do not enter under suspended actuator and valve.

7.2 Test run

7.2.1 Manual test run

- (1) Operate switching lever to set it to manual drive.
 - I. If you force to push it in position where clutch overlaps, it may be damaged.
Rotate the handle about 30 ° and push it in again.
 - II. When the lever is switched to manual position, interlock switch turns on and electric operation is deactivated.
After finishing manual operation, return switching lever to electric state to turn off interlock switch and enable electric operation.

7.2.2 Setting

After mounting on valve, it is necessary to set full close / full open position and so Please refer to "Operating Manual BO-1207" for setting details.

7.2.3 Electric operation

- I. Make sure that power supply and power supply specifications of actuator is same.
- II. Turn select switch to Local operation side and press push button for open or close by which electric operation start automatically.
Make sure to complete various settings before performing electric operation.

7.3 Maintenance

7.3.1 Storage

If actuator is to be temporarily stored before mounting on valve, store it according to the following points.

- I. Please keep it in a dry place indoors.
- II. In case to store it outdoors, place it higher than the floor level and cover it securely not to be exposed to rainwater.
- III. Apply grease to stem bush.
- IV. Apply rust preventive to mounting flange surface.
- V. Please charge for 24 hours or more every 12 months.
When battery is depleted, it is not possible to detect open angle.
- VI. After storing for a long time, check for rust and paint peeling.

7.3.2 Maintenance

Lubricant : Please refer to "2.11 Mass and amount of grease"

Valve stem lubricant :

Valve with rising type shaft requires lubrication to prevent screw wear on stem bush. Apply following recommended grease regularly (for example, every six months) according to the frequency of use and environment.

Recommended grease brand	Manufacturer or distributor
Morab Alloy 882EP-H Open Gear	
Almix EP No.1 Grease	Kyodo Yushi Co., Ltd

Note) Use low temperature grease in an environment of -10 ° C or lower.

How to apply lubricant :

Remove spindle cover and apply grease to threaded part of valve stem with a brush or bamboo spatula.

If spindle cover is long and difficult to remove, use lubrication plug and refuel with a grease gun.

Be careful not to let dust or foreign matter get caught in screw part, and apply grease to cover screw entirely, or collect it properly in grease pocket.

In case actuator is not used often, set a schedule and activate it at regular intervals (for example one week) to check that there are no abnormalities.