

## **2SL78 linear thrust unit**

Supplement to  
operation instructions  
SEVEN HiMod



## Contents

<b>1</b>	<b>General.....</b>	<b>3</b>
1.1	References to operation instructions ....	3
1.2	Safety instructions: Used symbols and their meaning .....	3
<b>2</b>	<b>Mounting linear thrust unit.....</b>	<b>4</b>
2.1	Mounting linear thrust unit to valve .....	4
2.2	Mounting actuator to linear thrust unit ..	5
2.3	Stroke limitation .....	5
2.4	End position setting and test run .....	6
<b>3</b>	<b>Maintenance .....</b>	<b>6</b>
3.1	General notes .....	6
3.2	Seals .....	6
3.3	Oil change .....	6

# 1 General

## 1.1 References to operation instructions

This supplement to operation instructions describes assembly of linear thrust unit and is only complete in combination with the respective main operation instructions of SEVEN actuators PROFITRON or HiMod.

For this reason, please heed all safety information contained in the main operation instructions of actuator!

For reason of clarity, these operation instructions cannot comprise all detailed information to every possible operation of installation, operation or maintenance. Consequently, the operation instructions are essentially provided for qualified staff in appropriate use of devices in industrial applications.

For any question in particular in case of missing product specific details, please contact SIPOS Aktorik sales department. Please also indicate type designation and serial number of the respective actuator and the linear thrust unit (refer to name plates).

## 1.2 Safety instructions: Used symbols and their meaning

The operation instructions use the following symbols with their respective meaning. **Failure to observe** may lead to serious injuries or damage.



**Warning** marks activities which can affect the safety of persons or material if not performed correctly.



**Note** marks activities which have major influence on the correct operation. Failure to observe these notes could result in consequential damage.

## 2 Mounting linear thrust unit



- Subsequent tasks may only be performed by qualified and trained personnel!
- Mounting of linear thrust unit is possible in any position.
- If there is a risk of crushing by moving parts, protective devices must be fitted.
- Touch up damage to paint finish after work on the device to avoid corrosion.

### 2.1 Mounting linear thrust unit to valve



- On delivery, the thrust rod of linear thrust unit is not completely retracted. When commissioning, make sure that the valve is not under tension. The end position of the valve must not match the mechanical end position of the thrust rod.
- The type of connection between the thrust rod of the linear thrust unit and the valve stem is determined by the valve manufacturer via a coupling, depending on the valve.

#### How to proceed

1. Thoroughly clean and **degrease** contact surfaces at linear thrust unit and valve (fig., pos. 1).
2. Place linear thrust unit ensuring that bores of output mounting flange align perfectly with the threaded bores of the valve flange. Ensure that the spigot mates uniformly and that the mounting faces are in complete contact.
3. Fasten linear thrust unit with screws (strength class min. 8.8):
  - We recommend applying liquid thread sealing material to the screws to avoid contact corrosion.
  - Fasten screws crosswise applying the required tightening torque according to the table below:

Tightening torques for screws of tightening class 8.8	
Threads	Tightening torque
M8	25 Nm
M10	51 Nm
M16	214 Nm
M20	341 Nm

4. Connect thrust rod using a coupling to the valve stem.  
The type of connection depends on the valve and is determined by the valve manufacturer

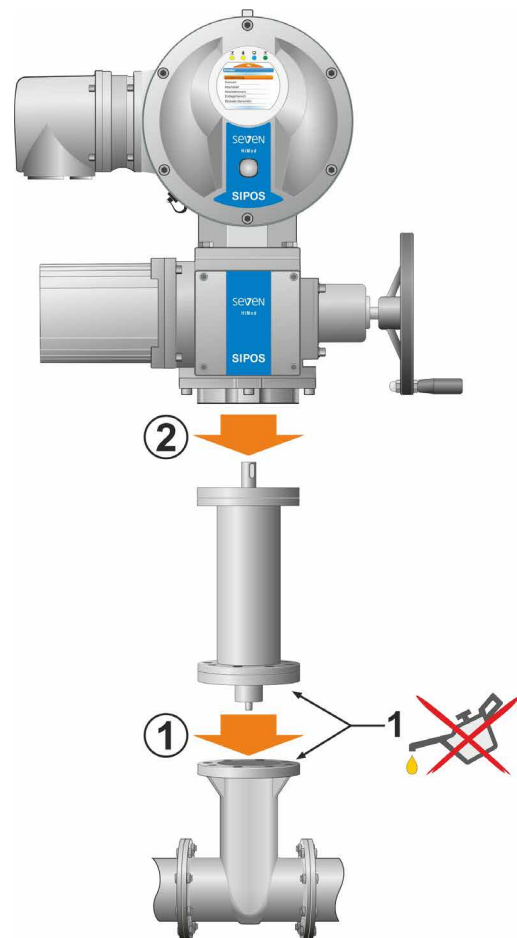


Fig.: Mounting linear thrust unit

## 2.2 Mounting actuator to linear thrust unit

### How to proceed

1. Clean contact surfaces of actuator and linear thrust unit.
2. Assembly may differ depending on the actuator:

#### For 2SL781/2 actuator:

- a) Place actuator on linear thrust unit and slightly tighten using the provided screw with washers (fig. 1, pos. 1).
- b) Fasten screws evenly crosswise while respecting the torque, refer to table below:

#### For 2SL783/4/5 actuator:

- a) Unscrew flange (fig. 2, pos. 1) from linear thrust unit (pos. 2).
- b) Fasten flange to actuator.
- c) Fasten flange to actuator (fig. 3).
- d) Place actuator on linear thrust unit (fig. 4) and slightly tighten using the screws with washers.
- e) Fasten screws evenly crosswise while respecting the torque, refer to table below:

Tightening torques when combining actuator and linear thrust unit				
Linear thrust unit	Flange	Screws 8.8	Dented washers	Torque
2SL781	F10	DIN 912-M10x30	S 10	40 Nm
2SL782	F10	DIN 912-M10x30	S 10	40 Nm
2SL783	F14	DIN 7984-M16x30	S 16	170 Nm
2SL784	F14	DIN 7984-M16x35	S 16	170 Nm
2SL785	F16	DIN 7984-M20x40	S 30	340 Nm

## 2.3 Stroke limitation



- With linear thrust units, stroke is limited by end stops. These end stops may not be approached in motor operation. Not even as stroke limitation for torque tripping. This could lead to linear thrust unit damage.
- The mechanical end stops of linear thrust units are not required when operating the device in standard operation mode. They serve the purpose as "second protection" against manual operation beyond the desired setting range.
- In the factory, the mechanical end stops are adapted to the defined maximum stroke of linear thrust units. Changing this maximum stroke is not possible (refer to subsequent chapter, item 2.).



Fig. 1: Mounting actuator to linear thrust unit

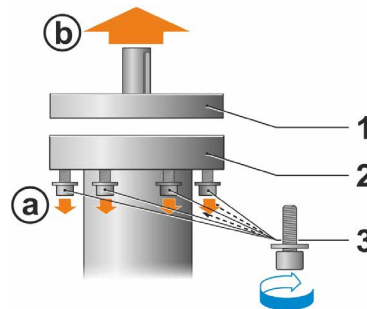


Fig. 2: Unscrew flange from linear thrust unit

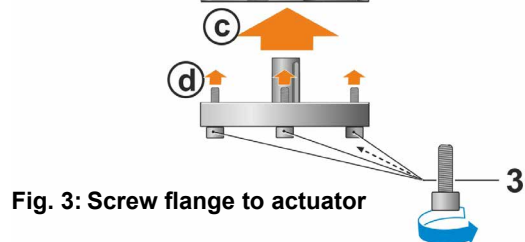


Fig. 3: Screw flange to actuator

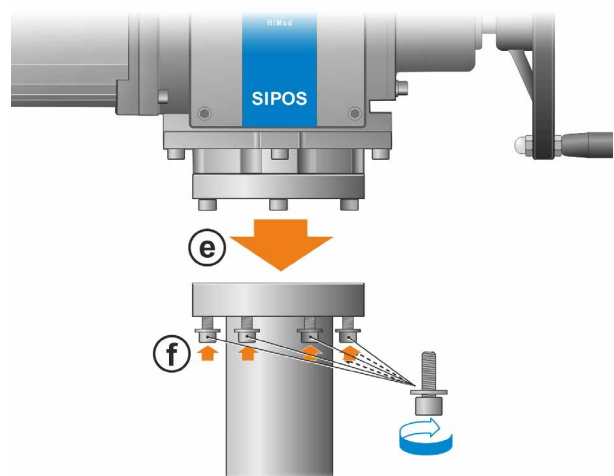


Fig. 4: Screw flange to linear thrust unit

## 2.4 End position setting and test run

End position setting at actuator must be performed, refer to operation instructions SEVEN, chapter "Commissioning".

1. Check direction of operation:
  - a) Operate the linear thrust unit in middle position in manual operation mode.
  - b) Briefly operate the actuator in direction OPEN. If the direction of operation is incorrect, immediately stop and change the direction of operation. For this, refer to the actuator operation instructions, chapter "Commissioning".
2. Operate in direction CLOSE in motor operation. Prior to reaching the end position, continue operation in manual mode until torque rises. Then check, if
  - either the position of the valve
  - or
  - the mechanical end stop of linear thrust unit is reached.

If the mechanical end stop of the linear thrust unit is reached prior to the valve reaching the end position, replace the linear thrust unit selecting a device offering a larger stroke ranges.

# 3 Maintenance

## 3.1 General notes

After commissioning, check the linear thrust unit for damage to paint finish. To avoid damage by corrosion, thoroughly touch up damage to paint finish.

Basically, the linear thrust unit does not require maintenance. However, to ensure continuous availability, we recommend the following actions:

- Approximately six months after commissioning and every year after, check bolts of linear thrust unit to multi-turn actuator and to valve for tightness. If required, fasten screws applying the appropriate torques corresponding to the tightening class of the screws applied (refer to table in chapter 2.1).
- Perform a visual inspection once a year for oil and grease leakage. In case of leakage, replace linear thrust unit.
- Perform a detailed functional test of the linear thrust unit every 2 years.
- Linear thrust unit permanently subjected to temperatures over 40 °C must be serviced in shorter intervals.

## 3.2 Seals

Seals made of elastomer are subject to ageing. We recommend to replace the seals of linear thrust units after 8 years during actuator revision.

## 3.3 Oil change

We recommend an oil change for linear thrust units after 8 years. In case of frequent operation or modulating duty, the recommended period is every 4 to 8 years. In case of infrequent operation, the period is recommended at 10 to 12 years.



- Exclusively use original oil or an approved equivalent. Indications to oil quantities are indicated in the table below.
- We recommend a lubricating oil CLP 220 (DIN 51517 Part 3), e.g. BECHEM Staroil G220 by CARL BECHEM GmbH.
- Removed lubricants and used cleaning agents must be disposed of complying with the valid regulations.

Oil quantities for linear thrust unit		
Linear thrust unit	Stroke 100 mm	Stroke 300 mm
2SL781, 2SL782	0.3 l	0.6 l
2SL783	0.75 l	1.35 l
2SL784, 2SL785	1.1 Liter	2.0 l