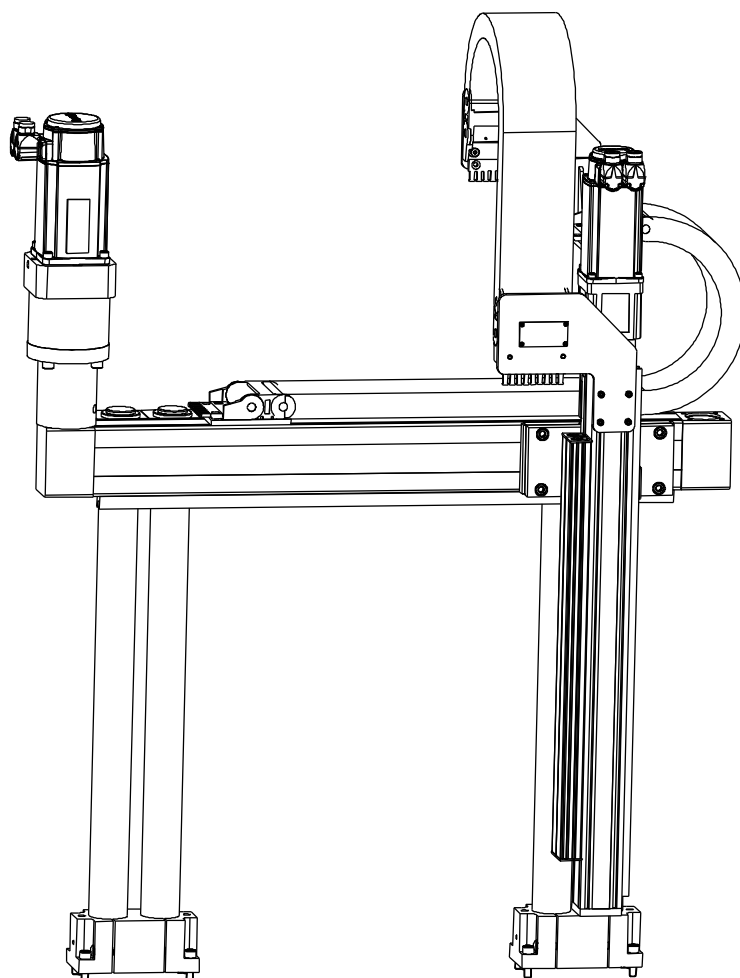


# Linear gantry electric

**LPE 100**

**LPE 200**

**Assembly- and Operating manual**



**Imprint:**

**Copyright:**

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**Technical changes:**

We reserve the right to make alterations for the purpose of technical improvement.

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Dear Customer,

Congratulations on choosing a SCHUNK product. By choosing SCHUNK, you have opted for the highest precision, top quality and best service.

**You are going to increase the process reliability of your production and achieve best machining results – to the customer’s complete satisfaction.**

**SCHUNK products are inspiring.**

Our detailed assembly and operation manual will support you.

Do you have further questions? You may contact us at any time – even after purchase. You can reach us directly at the mentioned addresses in the last chapter of these instructions.

Kindest Regards,

Your SCHUNK GmbH & Co. KG  
Precision Workholding Systems  
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# 1 About this manual

## 1.1 Purpose/validity

This manual is part of the module and describes the safe and proper assembling.

This manual is valid only for the module specified on the front page.

## 1.2 Target groups

Target group	Task
Manufacturer, operator	<ul style="list-style-type: none"> <li>➔ Keep this manual available for the personnel at all times.</li> <li>➔ Require personnel to read and observe this manual and the applicable documents, especially the safety notes and warnings.</li> </ul>
Skilled personnel, fitter	<ul style="list-style-type: none"> <li>➔ Read, observe and follow this manual and the applicable documents, especially the safety notes and warnings.</li> </ul>

Tab. 1

## 1.3 Applicable documents






Detailed device documentation is included in the unit's scope of delivery:

Document	Purpose	See
Component documentation	Technical data or application parameters of individual components and information about maintenance and repair and troubleshooting	Chapter 9, page 20

Tab. 2

## 1.4 Symbols in this manual

To give you quick access to information, the following symbols will be used in this guide:

Symbol	Meaning
 <b>DANGER</b>	Dangers for persons. Nonobservance causes death or serious injuries.
 <b>WARNING</b>	Dangers for persons. Nonobservance causes death or serious injuries.
 <b>CAUTION</b>	Dangers for persons. Nonobservance can cause slight injuries.
 <b>NOTICE</b>	Information on avoiding material damage.
	Handling instruction, also measures in a warning or note.

Tab. 3

## 1.5 Copyright

This manual remains the copyrighted property of SCHUNK GmbH & Co. KG. It is solely supplied to our customers and operators of our products and forms part of the unit.

This documentation may not be duplicated or made accessible to third parties, in particular competitive companies, without our prior permission.

## 1.6 Technical changes

We reserve the right to make alterations for the purpose of technical improvement.

## **2 Basic safety notes**

### **2.1 Intended use**

The unit is to be used only for the application contractually agreed between the manufacturer/supplier and user.

The unit is intended for installation in a machine/system. The requirements of the applicable guidelines must be observed and complied with.

The unit may be used only in the context of its defined application parameters.

To use this unit as intended, it is also essential to observe the technical data and installation and operation notes in this manual and to comply with the maintenance intervals.

Any other use or use exceeding that specified is an infringement of use for intended purpose. The manufacturer bears no liability for damage resulting from such use.

Use which is not specified as an intended use is for instance when

- the unit is used with machines/systems or workpieces that are not designed to be used with the unit.
- the unit is operated without protective equipment in accordance to the EC Machinery Directive.
- the statutory safety and accident-prevention regulations and the standards and guidelines valid at the usage site are not observed.

## 2.2 Controlled production

The unit represents the state of the art and the recognized safety rules at the time of delivery. However, it can present risks if, for example:

- The unit is not used in accordance with its intended purpose.
  - The unit is not installed or maintained properly.
  - The EC Machinery Directive, the VDE directives, the safety, accident-prevention regulations and environmental protection regulations valid at the usage site, or the safety and installation notes are not observed.
- ➔ The unit must only be used when in technically perfect condition and in accordance with its designated use and the instructions set out in the operating manual, and only by safety-conscious persons who are fully aware of the risks involved in operating the unit.
- ➔ Immediately remedy faults that could impair safety.
- ➔ In addition to this manual, statutory and other safety and accident-prevention regulations and the standards and guidelines valid at the usage site must be complied with.

### 2.2.1 Protective equipment

When the unit is in use, when in rotation and when it is stationary, protective equipment must be used to catch flying parts should the unit or part of the unit fail.

The protective equipment must comply with EC Machinery Directive requirements.

The machine/system manufacturer must ensure that the wall thickness in the machine's paneling is adequate and must not use polycarbonate glass for protective windows, because this may cause a threat to the life and limb of the operator if the component should break.

### 2.2.2 Constructional changes, attachments, or modifications

Modifications, additions and conversions which could impair safety may not be made to the unit without SCHUNK's permission.

Non-authorized modifications results in the exclusion from product liability.



### **2.2.3 Spare parts**

Spare parts must meet the requirements of the manufacturer and/or the supplier. This can always be guaranteed with original spare parts.

Improper repair as well as use of non-original spare parts results in the exclusion from product liability.

## **2.3 Obligations of the manufacturer/operator**

### **2.3.1 Choice of personnel and personnel qualifications**

Work on the unit may only be carried out by reliable personnel. The legal minimum age must be observed.

The assembly, commissioning, maintenance, and repair of the unit may be performed only by trained specialist personnel who have been shown how to perform the said work activities.

The manufacturer/operator must ensure that the personnel are adequately and appropriately trained to perform the work on the unit allocated to them.

Every person called upon by the operator to work on the unit must have read and understood the complete Assembly and Operating Manual, especially chapter 2 "Basic safety notes". This applies particularly to occasional personnel such as maintenance personnel.

We recommend that the manufacturer/operator require employees to sign that they have read and understood the Assembly and Operating Manual.

Furthermore we recommend that the manufacturer/operator require employees to sign that they have participated in training courses.

In addition to this manual, the statutory and other safety and accident-prevention regulations and the standards and guidelines valid at the usage site must be complied with.

We recommend that the manufacturer/operator issue in-house operating instructions which take into account the known qualifications of the operating personnel.

- ➔ Only employ trained personnel who have been shown how to perform the work activities. If necessary, make use of the manufacturer's training programmes.
- ➔ Personnel requiring training and instruction or those who are already receiving training and instruction must be supervised on the unit by skilled personnel.
- ➔ Define areas of responsibility of the personnel. Enable personnel to refuse instructions issued by third parties which breach safety regulations.

### **2.3.2 Organizational measures**

- ➔ Ensure that at least one copy of this manual is kept in the direct vicinity of the machine/system where the unit is installed, and that it is accessible for the relevant persons.
- ➔ Ensure that personnel have read and understood this manual, especially chapter 2 "Basic safety notes".
- ➔ Provide instruction about and observe the safety and accident-prevention regulations valid at the usage site.
- ➔ Provide instruction about and observe the environmental protection regulations valid at the usage site.
- ➔ Ensure that the safety and hazard warning signs on the machine/system are observed and that the signs are clearly legible.
- ➔ Provide protective equipment.
- ➔ Check the personnel's conduct regarding awareness of safety and hazards from time to time.

### **2.3.3 Disposal**

- ➔ Send unit components for recycling or properly dispose of them according to local regulations.

## **2.4 Personnel responsibilities**

### **2.4.1 Safety-conscious working**

- ➔ Avoid any manner of working that may interfere with the function and operational safety of the unit.
- ➔ Observe the safety and accident-prevention regulations valid at the usage site.
- ➔ Observe the environmental protection regulations valid at the usage site.
- ➔ Wear protective equipment.

### **2.4.2 Safety measures during transport**

- ➔ Observe safety measures during the transport and handling of very heavy units.

### **2.4.3 Safety measures during operation**

- ➔ Only operate the unit when all protective equipment has been fitted and is in full working order.
- ➔ Check the unit at least once per shift for externally visible damage and faults.
- ➔ Report any changes including changes in operational behaviour to the responsible place/persons immediately. If necessary immediately shut down and lock out the machine/system.

### **2.4.4 Behaviour in the event of faults and/or emergencies**

If faults on the unit occur which could impair safety or the operational behaviour indicates the occurrence of a fault:

- ➔ Shut the machine/system down immediately, lock out and report the fault to the responsible place/persons.
- ➔ Faults may be eliminated by trained and authorized personnel only.
- ➔ Only restart the machine/system when the cause of the fault has been eliminated.

### **2.4.5 Testing/inspections**

- ➔ Observe the stipulated periods for regular tests and inspections.

## 2.5 Notes on particular risks

### **Risk of injury when the machine/system moves unexpectedly!**

- ➔ Remove the energy supplies before installation, modification, maintenance, or adjustment work.
- ➔ Make sure that there is no more residual energy in the system.
- ➔ Perform maintenance, modifications, and additions outside the danger zone.
- ➔ For all work, secure the unit against accidental operation.

### **Risk of injury from falling of the unit during transport and assembly!**

- ➔ Secure unit during transport and assembly with adequately sized straps.
- ➔ Mount the unit, so that it will cause no harm by tilting over or falling down.

### **Risk of injury due to uncontrolled movements of the unit when malfunction of the sensors and electrical distribution panelboard.**

- ➔ Observe the correct connection of the sensors and electrical distributors.

### **Risk of injury due to squeezing and clamping between the slide and the base plate during movement of the modules.**

- ➔ Remove the energy supplies before installation, modification, maintenance, or adjustment work.
- ➔ Make sure that there is no more residual energy in the system.
- ➔ Perform maintenance, modifications, and additions outside the danger zone.
- ➔ For all work, secure the unit against accidental operation.
- ➔ The danger zone must be surrounded by a safety fence during operation.

### 3 Warranty

The warranty is valid for 24 months from the delivery date to the production facility under the following conditions:

- Intended use in 1-shift operation
- Observation of the maintenance and lubrication intervals (see Component documentation)

Parts touching the workpiece and wearing parts are not part of the warranty. Also observe our general terms of business.

The warranty does not cover:

- Damage occurring as a result of incorrect operation.
- Claims under warranty are excluded when repair or intervention is carried out by persons not authorized to do so.
- This also applies if accessories and spare parts are used which are not designed for our unit

### 4 Technical Data

Reference value	Value
noise level [dB(A)]	≤ 70
ambient temperature [C]	0° to +80°
permissible payload [kg]	
Linear gantry electric LPE 100	10
Linear gantry electric LPE 200	20
dynamic values	
horizontal	
Max. acceleration a [m/s <sup>2</sup> ]	5
Max. speed v [m/s]	1
vertical	
max. acceleration a [m/s <sup>2</sup> ]	2
max. speed v [m/s]	0,25

Tab. 4

**Note**

Additional technical data contain the documentations of the components in the Appendix.

## 5 Configuration

The unit consists of following components:

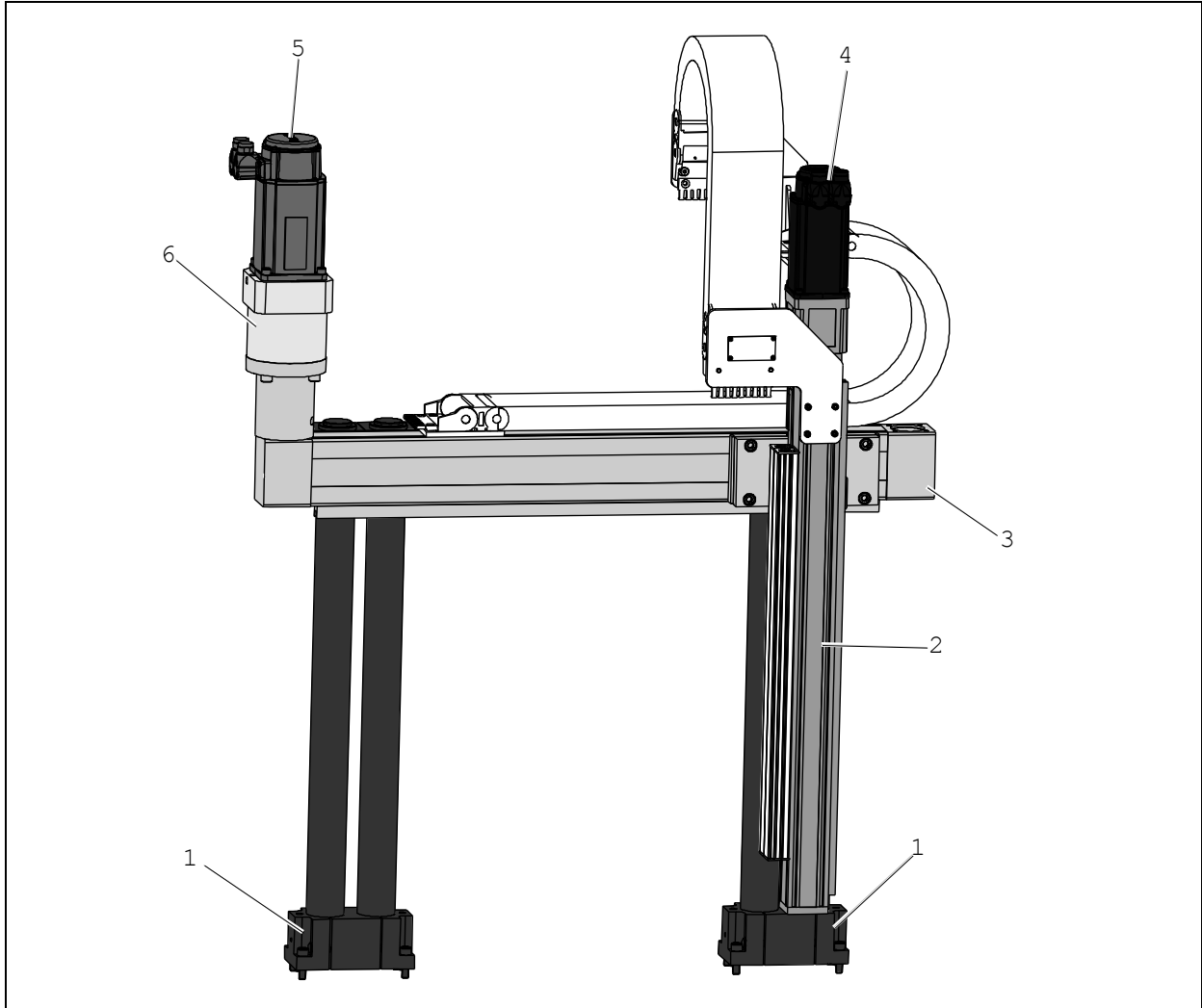


Fig. 1

<b>Item</b>	<b>Designation</b>	<b>See</b>
1	Pillar Assembly system	Documentation „Assembly system“, Appendix 2
2	<p><i>LPE 100:</i> Linear axis Beta 60-SSS with spindel drive - feed / rotation = 5 mm</p> <p><i>LPE 200:</i> Linear axis Beta 80-SSS with spindel drive - feed / rotation= 5 mm</p> <p>with 2x proximity switch IN each</p>	<p>Documentation „Linear axis Beta“, Appendix 1</p> <p>Documentation „Sensors“, Appendix 4</p>
3	<p><i>LPE 100:</i> Linear axis Beta 100D-ZSS with toothed beld drive - feed / rotation = 160 mm</p> <p><i>LPE 200:</i> Linear axis Beta 140-ZSS with toothed beld drive - feed / rotation= 220 mm</p> <p>with 2x proximity switch IN each</p>	<p>Documentation „Linear axis Beta“, Appendix 1</p> <p>Documentation „Sensors“, Appendix 4</p>
4	Drive MSK-040-B-045	Documentation „Drive MSK“, Appendix 3
5	<p><i>LPE 100:</i> Drive MSK-050-B-0300</p> <p><i>LPE 200:</i> Drive MSK-060-C-0300</p>	Documentation „Drive MSK“, Appendix 3
6	<p><i>LPE 100:</i> Planetary gearing GTE 120-NN1-008B-NN20</p> <p><i>LPE 200:</i> Planetary gearing GTE 120-NN1-008B-NN21</p>	

*Tab. 5*

## 6 Assembly and initial operation

### 6.1 Mechanical connection

#### **WARNING**

**Risk of injury when the machine/system moves unexpectedly!**

- Switch off power supply.
- Make sure that there is no more residual energy in the system

#### **WARNING**

**Risk of injury from falling of the unit during assembly!**

- Secure unit during assembly with adequately sized straps.
- Note the tightening torque of fixing screws.

#### **WARNING**

**Risk of injury when the machine/system moves unexpectedly, by moving of the linear axis!**

- Switch off power supply before assembly and maintenance.
- Make sure that there is no more residual energy in the system

The unit can be mounted by a pillar assembly system  $\varnothing$  55 or directly on the horizontal linear axis Beta.

- Information and dimensional drawings for mounting the pillar assembly system contains the documentation of the pillar assembly system in Appendix 2
- Information for mounting the Linear axis Beta contains the Service Manual Beta-100-140-ZRS-ZSS, Appendix 1 – Chapter 6, from page 20.



## 6.2 Connection of the motors

### **GEFAHR**

#### **Danger of electrical potential!**

- ➔ Switch off power supply before assembly, adjustment and maintenance, and secure against restart.
- ➔ The electrical installation may be performed only by a trained electrician.
- ➔ Cover live parts.
- ➔ Detect absence of voltage, ground and short-circuit.

The unit can be selected with the motors provided by SCHUNIK and their mechanical connection, or without motors, flanges and couplings.

Information on connection of the motors contains the Project Planning Manual MSK, Appendix 3, Chapter 8.

## 6.3 Connection of the Sensors

### **WARNING**

#### **Risk of injury when the machine/system moves unexpectedly!**

- ➔ Switch off power supply.
- ➔ Make sure that there is no more residual energy in the system.

### **WARNING**

#### **Risk of injury due to electrical energy!**

- ➔ Switch off power supply.

Information on connection und handling of sensors contains:

- Maintenance manual Beta 60-80-SRS-SSS (Appendix 1)
- Maintenance manual Beta 100-140 ZRS-ZSS (Appendix 1)

## 6.4 Assembly of handling modules

### **WARNING**

**Risk of injury when the machine/system moves unexpectedly!**

- ➔ Switch off power supply.
- ➔ Make sure that there is no more residual energy in the system.

#### **Notes**

- Do not contribute any excessive forces and torques during assembly of loads.
- The evenness of the mounting surface must be less than 0.02 mm.
- Choose a proper connection, with a load that has his own guide mechanism and align them adequately.
- Avoid contact with the linear gantry during operation.
- Select appropriate tightening torques for the assembly of the gantry module or loads at the gantry module in accordance with the general guidelines for screw connections.

## 7 Maintenance and repair

### **WARNING**

**Risk of injury when the machine/system moves unexpectedly!**

**Due to movement of the axis!**

- ➔ Remove the energy supplies before maintenance.
- ➔ Make sure that there is no more residual energy in the system.
- ➔ Perform maintenance outside the danger zone.

### **CAUTION**

**Allergic reactions due to grease in contact with skin!**

- ➔ Wear gloves.

### Maintenance interval

Weekly examination on easily visible damages or wear or contamination of the system.

The maintenance intervals apply to the single components according their servicing manuals.

The component documentation contains maintenance and repair information.

Component	See
Linear axis Beta 60 SSS Linear axis Beta 80 SSS	Maintenance manual Beta 60-80-SRS-SSS Appendix 1- Chapter 10, from page 32
Linear axis Beta 100 D ZSS Linear axis Beta 140 ZSS	Maintenance manual Beta 100-140 ZRS-ZSS Appendix 1- Chapter 10, from page 30
Drive MSK	No maintenance
Sensors	No maintenance
Pillar assembly system	No maintenance

Tab. 6

## 8 Troubleshooting

The component documentation contains troubleshooting information.

## 9 Component documentation

The scope of delivery includes the documentation for the following components (see CD-ROM, Appendix 1-3):

Components	Manufacturer	Appendix
Linear axis Beta	SCHUNK	1
Pillar assembly system	SCHUNK	2
Drive MSK	SCHUNK	3

*Tab. 7*

## 10 Translation of original declaration of incorporation

In terms of the EC Machinery Directive 2006/42/EC, annex II B

Manufacturer/ distributor                      SCHUNK GmbH & Co. KG.  
Spann- und Greiftechnik  
Bahnhofstr. 106 – 134  
D-74348 Lauffen/Neckar

We hereby declare that the following product:

**Product designation:**                      Linear gantry electric  
**ID number:**                                      381240 ... 381589

meets the applicable basic requirements of the Directive Machinery (2006/42/EC).

The incomplete machine may not be put into operation until conformity of the machine into which the incomplete machine is to be installed with the provisions of the Machinery Directive (2006/42/EC) is confirmed.

Applied harmonized standards, especially:

EN ISO 12100-1                      Safety of machines - Basic concepts, general principles for design --  
Part 1: Basic terminology, methodology  
EN ISO 12100-2                      Safety of machines - Basic concepts, general principles for design --  
Part 2: Technical principles

The manufacturer agrees to forward on demand the special technical documents for the incomplete machine to state offices.

The special technical documents according to Annex VII, Part B, belonging to the incomplete machine have been created.

Person responsible for documentation: Mr. Robert Leuthner, Adress: see adress of the manufacturer

Hausen, November 2012



---

Markus Jesser;  
Unit Manager, Engineering Design Gripping Systems





