



# Modular electrical linear drives OSP-E

Operating Instructions

*ORIGA SYSTEM PLUS*

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## Operator's responsibilities

The operator/organisation in charge is responsible for:

- Compliance with EN 89/655 replaced by 2001/45EWG and its national implementation,
- Compliance with 89/392/EEC in the version 91/368/EEC and 93/44/EEC
- Compliance with the national regulations for working safety applicable.
- Using the OSP-E for the intended purpose only.
- Compliance with all rules and regulations of these Operating Instructions.

It is not permitted to start the OSP-E until it has been ascertained that the machine into which the unit has been assembled fully complies with the provisions of the EC Machines Directive .

## 1 Foreword to the Operating Instructions

The purpose of these Operating Instructions is to assist you in familiarising yourself with the OSP-E and to make use of the functions it has been designed for.

The Operating Instructions contain important advice so that you can use the OSP-E safely, reliably and economically. Observance of these Operating Instructions will help you to avoid danger, reduce repair costs and downtime as well as to increase reliability and the service life of the OSP-E.

These Operating Instructions need to be read and applied by all persons working with the OSP-E, including:

- operating the unit, including setup work, trouble shooting during the work sequence, removal of production waste, servicing, handling as well as removing waste of hazardous materials (operating and auxiliary materials);
- maintenance (preventive maintenance, inspection, repairs)

In addition to the Operating Instructions and the mandatory regulations for accident prevention and environmental protection applicable in the user country and at the location of deployment , the standard technical rules and regulations for safe and professional work shall also be observed.

### Explanation of symbols and instruction notes

Instruction notes marked with these symbols help to prevent physical injury and harm for persons. All users shall be informed of all such instruction notes.

| Symbol                                                                              | Explanation                                                                                                | Symbol                                                                               | Explanation                        |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|------------------------------------|
|  | Attention: Safety-relevant passages of the Operating Instructions will indicate this symbol                |  | Attention: Danger of lacerations   |
|  | Information: Symbol for tips and instructions to facilitate working with the machine and to prevent damage |  | Important: Wear protective goggles |
|  | Attention: Falling loads                                                                                   |  | Important: Wear protective gloves  |
|  | Attention: Danger resulting from crushing                                                                  |  | Note: Accessories available        |

### Copyright

Parker-Origa GmbH has the copyright to these Operating. Instructions Copyright 2008®.

No part of these Operating Instructions may be copied or distributed or used in any way or divulged to third parties for competitive purposes. Any infringement may result in legal action.

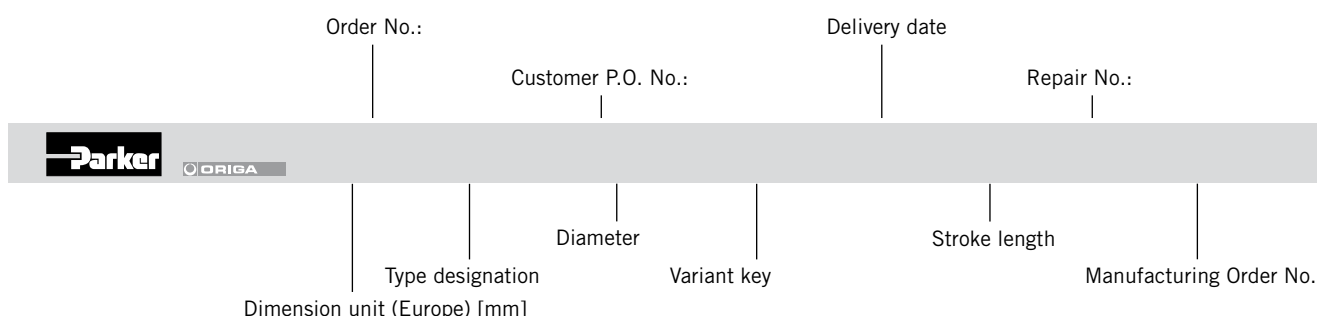
### The identification plate

This identification plate is located at the OSP-E in the groove of the cylinder barrel.

### Product observation

It is our aim to have safe and reliable products that represent state-of-the-art technology. For this reason, we constantly monitor our products even after delivery. Please inform us immediately of any repeating faults or problems with the OSP-E.

## 2 Safety



### Use in accordance with the design purpose

**We will only warrant the operating safety of the OSP-E if it is used in accordance with the design purpose.**

The following usage is in accordance with the design purpose:

- moving loads,
- applying force.

The OSP-E is powered by electric motors.

Also to be taken into account:

- The conditions as stated and stipulated in the order confirmation,
- the operating instructions

If the OSP-E is used for any other purposes, this constitutes a use not in accordance with the design purpose.

This may result in material damage and personal injury for which we cannot be held responsible or liable in any way. The user is entirely responsible for any risk arising from such a use.

### The Operating Personnel

The operator of the overall plant needs to ensure that only authorised and qualified specialised personnel are allowed to work with and at the OSP-E. Authorised personnel are trained specialised personnel of the user, the manufacturer and the service partner.

### Working with an awareness of safety

The contents of these Operating Instructions, particularly the chapter on "Safety Instructions" must be duly observed under all circumstances.

Before commencing work, all personnel assigned to work with the OSP-E must have read and thoroughly understood the Operating Instructions - and the chapter on Safety in particular. Doing so while at work is too late !! This also applies in particular to personnel working occasionally on the OSP-E, e.g., during set-up and maintenance.

At appropriate intervals, check the safety-awareness of the personnel at work with due observance of the Operating Instructions.

### The following is not permitted:

- carrying out independent modifications of the OSP-E,
- using working methods that impair the safety of the OSP-E.

### Observe at the OSP-E:

- All attached safety instructions

Maintain these instructions in a fully legible condition.

Observe also the manufacturer's instructions on lubricants, solvents and cleaning agents.

### Conversions and alterations

The linear drives shall not be modified in its construction and safety aspects, without the prior written approval of **Parker-Origa GmbH**. Any such modifications carried out without approval will rule out all liability on the part of **Parker-Origa GmbH**.

In principle, no safety and protection devices/equipment shall be dismantled or put out of operation.

When installing special attachments, the assembly regulations of the manufacturer shall be observed as required.

The following regulatory instruments must be observed as a matter of course:

- relevant rules and regulations for accident prevention,
- generally recognised safety regulations,
- EU-Directives and
- country-specific provisions.

## Spare parts

The use of original spare parts and accessories authorised by the manufacturer is an important aspect for your safety. The use of other parts may change the characteristics of the OSP-E.

We accept no liability for any consequences resulting from the use of such parts.

## 3 Warranty

We reserve the right to make alterations to these Operating Instructions as well as to technical details with reference to data and illustrations as contained in these Operating Instructions.

**Parker-Origa GmbH** issues no quality and durability guarantees or any guarantees for the suitability for certain purposes unless these are expressly agreed in writing.

Public statements, statements of quality or advertising are not statements of characteristics.

If the user wants to make a claim under the warranty, he needs to notify the fault immediately and describe it precisely in his statement of complaint. Under no circumstances is **Parker-Origa GmbH** responsible for damage to the product itself or for consequential damage caused by the product, as caused by incorrect and faulty handling of the product. Insofar as **Parker-Origa GmbH** is responsible for a fault,

**Parker-Origa GmbH** may, at its discretion, either repair/modify the product or replace the item with a new one.

All OSP-E are provided with an identification plate within the framework of ISO 9000, that is attached to an OSP-E. This identification plate shall not be removed or destroyed in any way.

A liability of Messrs **Parker-Origa GmbH** – irrespective of the legal reason – exists only in the event of intentional or gross negligence, culpable injury to life, body, health, in the event of deficiencies with malicious intent of deception or faults the absence of which has been expressly guaranteed.

Furthermore, the company is liable to the extent stipulated by the product liability law regarding personal injury or material damage on objects used privately. In the event of culpable violation of essential contractual obligations, **Parker-Origa GmbH** is liable also in the case of minor negligence, however, limited to the damage that could be foreseen under the contract.

Any other claims are ruled out.

No warranty shall apply in the event of non-observance of these Operating Instructions, the relevant legal provisions as well as further instructions of the supplier.

In particular, we are not responsible for stoppages caused by modifications by the customer or other persons. In such cases, we charge the normal repair costs. These are also charged for an inspection of the equipment where no fault can be found on the equipment.

This regulation also applies during the warranty period.

Users have no rights regarding the supply of previous equipment versions or regarding the upgrading of equipment to the current version.

## 4 Transport and Assembly

### 4.1 Transport

The linear drives OSP-E are high-precision equipment. Strong and abrupt jolts/bumps can damage the mechanical system or affect the functioning. In order to avoid damage during transport, the equipment is fixed in appropriate protective packaging.



#### Danger caused by falling load

Incorrect transport and assembly of the OSP-E can:

- endanger human life,
- result in material damage.

#### Transport of the packaged OSP-E with a crane or a forked-lift truck.

- Apply slinging as shown, and position the fork-lift truck as shown.

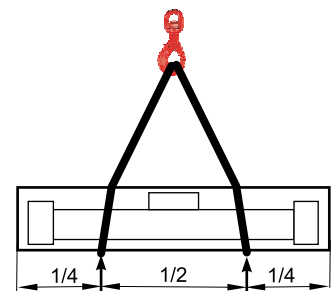
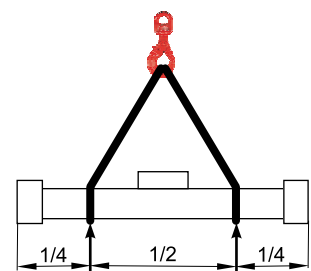
#### Transport of the OSP-E with a crane

- Apply slinging as shown.

#### Information



Transport damage and missing parts are to be reported immediately and in writing to the transport company or to Parker-Origa GmbH or to the delivery company.



## 4.2 Interim storage

Where interim storage is involved, you must observe the following:

- dry, dust- and vibration-free storage,
- on a flat surface,
- outdoors under a suitable covering.



**You must avoid deflection (bending) of the OSP-E !**

## 4.3 Assembly

Before assembly, all transport devices must be removed and disposed of as required.

The assembly itself must be carried out in such a way that

- the applicable rules and regulations are observed as required,
- the OSP-E is installed without distortion or warping,
- all connections and operating parts are accessible,
- the company name is legible on the red cover strip.



**Any potential hazards that may exist between ORIGA products and customer's items of equipment must be eliminated by the user as required.**

### Notes for using the OSP-E

#### Mechanical



- Secure the payload only at the threaded holes on the driver and/or at the piston rod thread.
- Place the payload in such a way that the bending moments at the driver are below the values that are stated in the catalogue OSP-E.
- Use central supports for long drives.

#### Electrical

- Exact positioning of the load is effected by the control unit.
- Do not locate the sensor close to ferritic parts or to moving loads .
- Use the most favourable mounting slot on the circumference of the cylinder profile.

## 5 Commissioning

The linear drive can produce quick linear movements with high force. Failure to observe the safety regulations can cause bodily injury as a result of trapping, or damage as a result of collision with other plant parts.



### Danger of crushing

#### Inspect before start-up:

- The correct connection conditions, and
- that there nothing in the way of the moving load.

During the first start-up, check the function of proximity and/or limit switches. First, the linear drive should be allowed to run through the entire moving zone at low speed in order to detect any possible collision areas. These must be removed immediately.

## 6 After sales service



### Spare parts and after sales service addresses

Refer to the last page of these Operating Instructions

### Spare parts list

For the purposes of preventive maintenance for the linear drives, we offer seal kit sets, service packages and spare parts (refer to **Chapter 11**).

## 7 Belt drives OSP-E..BHD / OSP-E..BV / OSP-E..B

### 7.1 Technical data

#### 7.1.1 General



Detailed information on

- dimensions,
- space requirement,
- and weights

are shown in the **OSP-E catalogue**.

The following applies for all linear drives of the product series OSP-E with belt drive:

- Temperature range: -30°C to +80°C.
- Installation location: BHD, B = any  
BV = vertical

**We reserve the right to make technical alterations !**

#### 7.1.2 OSP-E..BHD

**BHDII: Linear drive with toothed belt and integrated recirculating linear ball bearing guide.**

| Performance overview                                                    |            |                      |             |            |            |            |
|-------------------------------------------------------------------------|------------|----------------------|-------------|------------|------------|------------|
| Characteristic                                                          |            | Unit                 | Description |            |            |            |
| Series                                                                  |            |                      | OSP-E20BHD  | OSP-E25BHD | OSP-E32BHD | OSP-E50BHD |
| Max. speed                                                              |            | [m/s]                | 3.0         | 5.0        | 5.0        | 5.0        |
| Linear motion per revolution of the drive shaft with integrated gear    |            | [mm]                 | 125         | 180        | 240        | 350        |
|                                                                         |            | [mm]                 | -           | 220        | 280        | 360        |
| Max. speed of the drive shaft                                           |            | [min <sup>-1</sup> ] | 2 000       | 1 700      | 1 250      | 860        |
| Maximum effective action force $F_A$ with reference to the drive torque | < 1 m/s    | [N]                  | 550         | 1 070      | 1 870      | 3 120      |
|                                                                         | 1 - 3 m/s  | [N]                  | 450         | 890        | 1 560      | 2 660      |
|                                                                         | > 3-10 m/s | [N]                  | -           | 550        | 1 030      | 1 940      |
| No-load torque                                                          |            | [Nm]                 | 0.6         | 1.2        | 2.2        | 3.2        |
| Max. acceleration /deceleration                                         |            | [m/s <sup>2</sup> ]  | 50          | 50         | 50         | 50         |
| Repeatability                                                           |            | [mm/m]               | ± 0.05      | ± 0.05     | ± 0.05     | ± 0.05     |
| Max. standard stroke length                                             |            | [mm]                 | 5760        | 5700       | 5600       | 5500       |
| Tightening torque clamping hub                                          |            | [Nm]                 | 4,8         | 9,5        | 17         | 40         |

| Max. permissible torque on the drive shaft |             |            |             |             |             |            |             |             |             |            |             |             |             |            |             |
|--------------------------------------------|-------------|------------|-------------|-------------|-------------|------------|-------------|-------------|-------------|------------|-------------|-------------|-------------|------------|-------------|
| Speed / stroke                             |             |            |             |             |             |            |             |             |             |            |             |             |             |            |             |
| OSP-E20BHD                                 |             |            |             | OSP-E25BHD  |             |            |             | OSP-E32BHD  |             |            |             | OSP-E50BHD  |             |            |             |
| Speed [m/s]                                | Torque [Nm] | Stroke [m] | Torque [Nm] | Speed [m/s] | Torque [Nm] | Stroke [m] | Torque [Nm] | Speed [m/s] | Torque [Nm] | Stroke [m] | Torque [Nm] | Speed [m/s] | Torque [Nm] | Stroke [m] | Torque [Nm] |
| 1                                          | 11          | 1          | 11          | 1           | 31          | 1          | 31          | 1           | 71          | 1          | 71          | 1           | 174         | 1          | 174         |
| 2                                          | 10          | 2          | 11          | 2           | 28          | 2          | 31          | 2           | 65          | 2          | 71          | 2           | 159         | 2          | 174         |
| 3                                          | 9           | 3          | 8           | 3           | 25          | 3          | 31          | 3           | 59          | 3          | 60          | 3           | 153         | 3          | 138         |
| 4                                          |             | 4          | 7           | 4           | 23          | 4          | 25          | 4           | 56          | 4          | 47          | 4           | 143         | 4          | 108         |
| 5                                          |             | 5          | 5           | 5           | 22          | 5          | 21          | 5           | 52          | 5          | 38          | 5           | 135         | 5          | 89          |



#### Important:

The maximum allowable torque at the drive shaft is the lowest value of the speed- or stroke-dependent torque value (refer to example page 11).



### 7.1.3 OSP-E..BHD

#### BHD: Linear drive with toothedbelt and integrated roller guide

| Performance overview                                              |            |                      |             |            |            |
|-------------------------------------------------------------------|------------|----------------------|-------------|------------|------------|
| Characteristic                                                    |            | Unit                 | Description |            |            |
| Series                                                            |            |                      | OSP-E25BHD  | OSP-E32BHD | OSP-E50BHD |
| Max. speed                                                        |            | [m/s]                | 10          | 10         | 10         |
| Linear motion per revolution of the drive shaft                   |            | [mm]                 | 180         | 240        | 350        |
| Max. speed of the drive shaft                                     |            | [min <sup>-1</sup> ] | 3 000       | 2 500      | 1 700      |
| Maximum effective action force with reference to the drive torque | < 1 m/s:   | [N]                  | 1 070       | 1 870      | 3 120      |
|                                                                   | 1 - 3 m/s  | [N]                  | 890         | 1 560      | 2 660      |
|                                                                   | > 3-10 m/s | [N]                  | 550         | 1 030      | 1 940      |
| No-load torque                                                    |            | [Nm]                 | 1.2         | 2.2        | 3.2        |
| Max. acceleration /deceleration                                   |            | [m/s <sup>2</sup> ]  | 40          | 40         | 40         |
| Repeatability                                                     |            | [mm/m]               | ± 0.05      | ± 0.05     | ± 0.05     |
| Max. standard stroke length                                       |            | [m]                  | 7           | 7          | 7          |
| Tightening torque clamping hub                                    |            | [Nm]                 | 9,5         | 17         | 40         |

#### Max. allowable torque at the drive shaft Speed / stroke

| OSP-E25BHD  |             |            |             | OSP-E32BHD  |             |            |             | OSP-E50BHD  |             |            |             |
|-------------|-------------|------------|-------------|-------------|-------------|------------|-------------|-------------|-------------|------------|-------------|
| Speed [m/s] | Torque [Nm] | Stroke [m] | Torque [Nm] | Speed [m/s] | Torque [Nm] | Stroke [m] | Torque [Nm] | Speed [m/s] | Torque [Nm] | Stroke [m] | Torque [Nm] |
| 1           | 31          | 1          | 31          | 1           | 71          | 1          | 71          | 1           | 174         | 1          | 10,0        |
| 2           | 28          | 2          | 31          | 2           | 65          | 2          | 71          | 2           | 159         | 2          | 10,0        |
| 3           | 25          | 3          | 31          | 3           | 59          | 3          | 60          | 3           | 153         | 3          | 138         |
| 4           | 23          | 3          | 25          | 4           | 56          | 4          | 47          | 4           | 143         | 4          | 108         |
| 5           | 22          | 5          | 21          | 5           | 52          | 5          | 38          | 5           | 135         | 5          | 89          |
| 6           | 21          | 6          | 17          | 6           | 50          | 6          | 32          | 6           | 132         | 6          | 76          |
| 7           | 19          | 7          | 15          | 7           | 47          | 7          | 28          | 7           | 126         | 7          | 66          |
| 8           | 18          |            |             | 8           | 46          |            |             | 8           | 120         |            |             |
| 9           | 17          |            |             | 9           | 44          |            |             | 9           | 116         |            |             |
| 10          | 16          |            |             | 10          | 39          |            |             | 10          | 108         |            |             |



#### Important:

The maximum allowable torque at the drive shaft is the lowest value of the speed- or stroke-dependent torque value (refer to example page 11).

# Modular electrical linear drives OSP-E

## 7.1.4 OSP-E..BV

### Vertical linear drive with with toothed belt and inegrated recirculating linear ball bearing guide

| Performance overview                                                    |            |                      |             |            |
|-------------------------------------------------------------------------|------------|----------------------|-------------|------------|
| Characteristic                                                          |            | Unit                 | Description |            |
| Series                                                                  |            |                      | OSP-E20BHD  | OSP-E25BHD |
| Max. speed                                                              |            | [m/s]                | 3.0         | 5.0        |
| Linear motion per revolution of the drive shaft                         |            | [mm]                 | 108         | 160        |
| Max. speed of the drive shaft                                           |            | [min <sup>-1</sup> ] | 1 700       | 1 875      |
| Maximum effective action force $F_A$ with reference to the drive torque | < 1 m/s:   | [N]                  | 650         | 1 430      |
|                                                                         | 1 - 3 m/s: | [N]                  | 890         | 1 560      |
|                                                                         | > 3-5 m/s: | [N]                  | -           | 1 050      |
| No-load torque                                                          |            | [Nm]                 | 0.6         | 1.2        |
| Max. acceleration /deceleration                                         |            | [m/s <sup>2</sup> ]  | 20          | 20         |
| Repeatability                                                           |            | [mm/m]               | ± 0.05      | ± 0.05     |
| Max. standard stroke length                                             |            | [mm]                 | 1 000       | 1 000      |
| Tightening torque clamping hub                                          |            | [Nm]                 | 4.8         | 9.5        |
| Recomended permissible mass                                             |            | [kg]                 | 10          | 20         |

| Max. allowable torque at the drive shaft<br>Speed / stroke |             |            |             |             |             |            |             |
|------------------------------------------------------------|-------------|------------|-------------|-------------|-------------|------------|-------------|
| OSP-E20BHD                                                 |             |            |             | OSP-E25BHD  |             |            |             |
| Speed .<br>[m/s]                                           | Torque [Nm] | Stroke [m] | Torque [Nm] | Speed [m/s] | Torque [Nm] | Stroke [m] | Torque [Nm] |
| 1                                                          | 19          | 1          | 17          | 1           | 36          | 1          | 36          |
| 2                                                          | 17          | 2          | 10.5        | 2           | 30          |            | 36          |
| 3                                                          | 15.5        |            |             | 3           | 30          |            |             |
|                                                            |             |            |             | 4           | 28          |            |             |
|                                                            |             |            |             | 5           | 27          |            |             |



#### Important:

The maximum allowable torque at the drive shaft is the lowest value of the speed- or stroke-dependent torque value (refer to example page11).

### 7.1.5 OSP-E..B

#### Linear drive with toothed belt and internal plain bearing guide

| Performance overview                                                    |                      |             |          |          |
|-------------------------------------------------------------------------|----------------------|-------------|----------|----------|
| Characteristic                                                          | Unit                 | Description |          |          |
| Series                                                                  |                      | OSP-E25B    | OSP-E32B | OSP-E50B |
| Max. speed                                                              | [m/s]                | 2           | 3        | 5        |
| Linear motion per revolution of the drive shaft                         | [mm]                 | 60          | 60       | 100      |
| Max. speed of the drive shaft                                           | [min <sup>-1</sup> ] | 2 000       | 3 000    | 3 000    |
| Maximum effective action force $F_A$ with reference to the drive torque | < 1 m/s:             | [N]         | 50       | 150      |
|                                                                         | 1 - 2 m/s:           | [N]         | 50       | 120      |
|                                                                         | > 2 m/s:             | [N]         | -        | 100      |
| Max. acceleration / deceleration                                        | [m/s <sup>2</sup> ]  | 10          | 10       | 10       |
| Repeatability                                                           | [mm/m]               | ± 0.05      | ± 0.05   | ± 0.05   |
| Max. standard stroke length                                             | [m]                  | 3.0         | 5.0      | 5.0      |
| Bi-Parting version                                                      |                      | 2 x 1.5     | 2 x 2.5  | 2 x 2.5  |
| No-load torque                                                          | [Nm]                 | 0.4         | 0.5      | 0.6      |

| Max. allowable torque at the drive shaft<br>Speed / stroke |             |            |             |             |             |            |             |             |             |            |             |
|------------------------------------------------------------|-------------|------------|-------------|-------------|-------------|------------|-------------|-------------|-------------|------------|-------------|
| OSP-E25B                                                   |             |            |             | OSP-E32B    |             |            |             | OSP-E50B    |             |            |             |
| Speed [m/s]                                                | Torque [Nm] | Stroke [m] | Torque [Nm] | Speed [m/s] | Torque [Nm] | Stroke [m] | Torque [Nm] | Speed [m/s] | Torque [Nm] | Stroke [m] | Torque [Nm] |
| 1                                                          | 0.9         | 1          | 0.9         | 1           | 2.3         | 1          | 2.3         | 1           | 10.0        | 1          | 10.0        |
| 2                                                          | 0.9         | 2          | 0.9         | 2           | 2.0         | 2          | 2.3         | 2           | 9.5         | 2          | 10.0        |
|                                                            |             | 3          | 0.9         | 3           | 1.8         | 3          | 2.3         | 3           | 9.0         | 3          | 9.0         |
|                                                            |             |            |             |             |             | 4          | 2.3         | 4           | 8.0         | 4          | 7.0         |
|                                                            |             |            |             |             |             | 5          | 1.8         | 5           | 7.5         | 5          | 6.0         |



#### Important:

The maximum allowable torque at the drive shaft is the lowest value of the speed- or stroke-dependent torque value.

#### Example:

OSP-E32B stroke 2 m, requires speed 3 m/s;

From table OSP-E..B: Speed 3 m/s means 1.8 Nm and stroke 2 m means 2.3 Nm.

The maximum torque in this application is 1.8 Nm.

## 7.2 Structural arrangement and operating mode

### 7.2.0 General arrangement

The linear drives are used in all those places where loads are to be transported and/or have to be precision-positioned.

With a combination of several linear drives, a wide-surface covering or room-orientated arrangement can be realised.

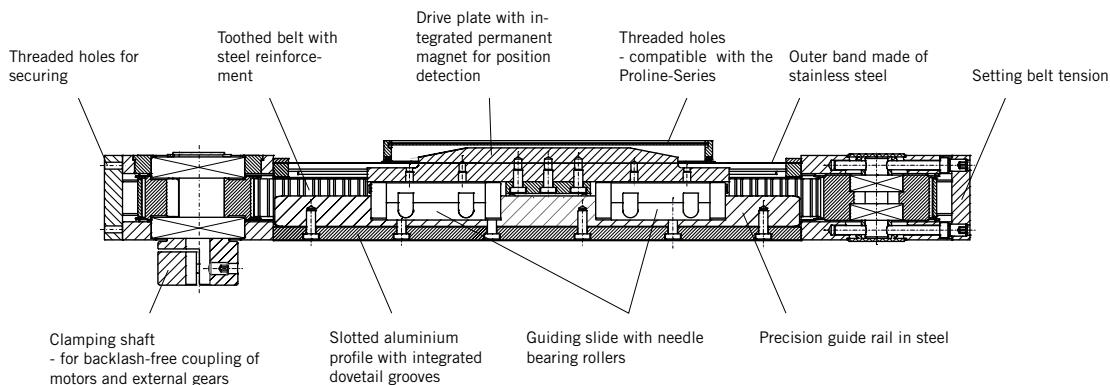
- On a slotted aluminium profile with dovetail grooves, on the ends, the end cap required for the driving elements are mounted.
- In this barrel profile, a driver is moved where supporting rings are attached to both ends. These provide the lowest possible sliding friction.
- The attachment of the load material is connected by way of threaded holes on the driver.
- Dirt is prevented from getting into the aluminium profile by a outer band made of high quality stainless steel.
- An integrated permanent magnet at OSP-E..BHD and B is used for the purpose of position detection.  
A magnetic switch set is recommended for OSP-E..BV. The magnet must be fixed in the dovetail groove.
- The linear unit is attached by means of threaded holes on the end caps.

### 7.2.1 OSP-E..BHD

**BHDII: Linear drive with toothed belt and integrated recirculating linear ball bearing guide.**

#### Design Features

- Precision guide rail in steel.
- Drive plate on guiding slide with integrated linear guidance system for ball bearings.
- Toothed belt drive with integrated planetary gear (optional).
- Motor can be mounted from below or above (optional).

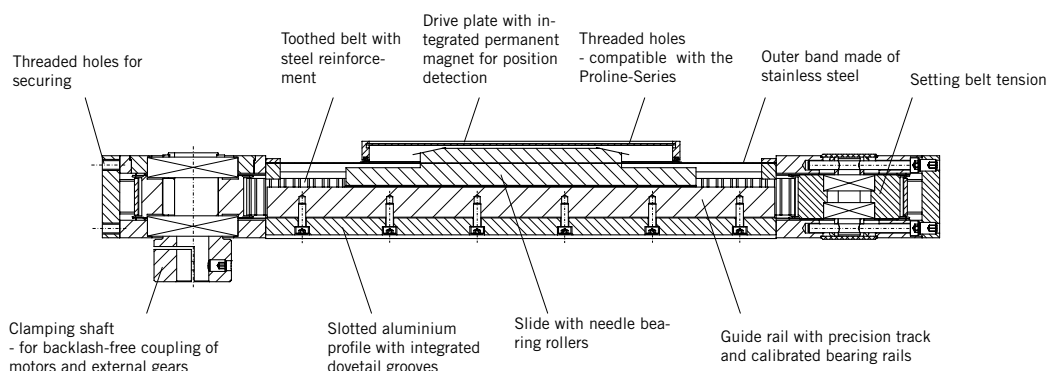


### 7.2.2 OSP-E..BHD

**BHD: Linear drive with toothed belt and integrated roller guide**

#### Design Features

- Guide rail in the aluminium profile and driver on needle-bearings
- Belt drive with integrated planetary gear (option).
- Motor attachment from above or below (option) possible

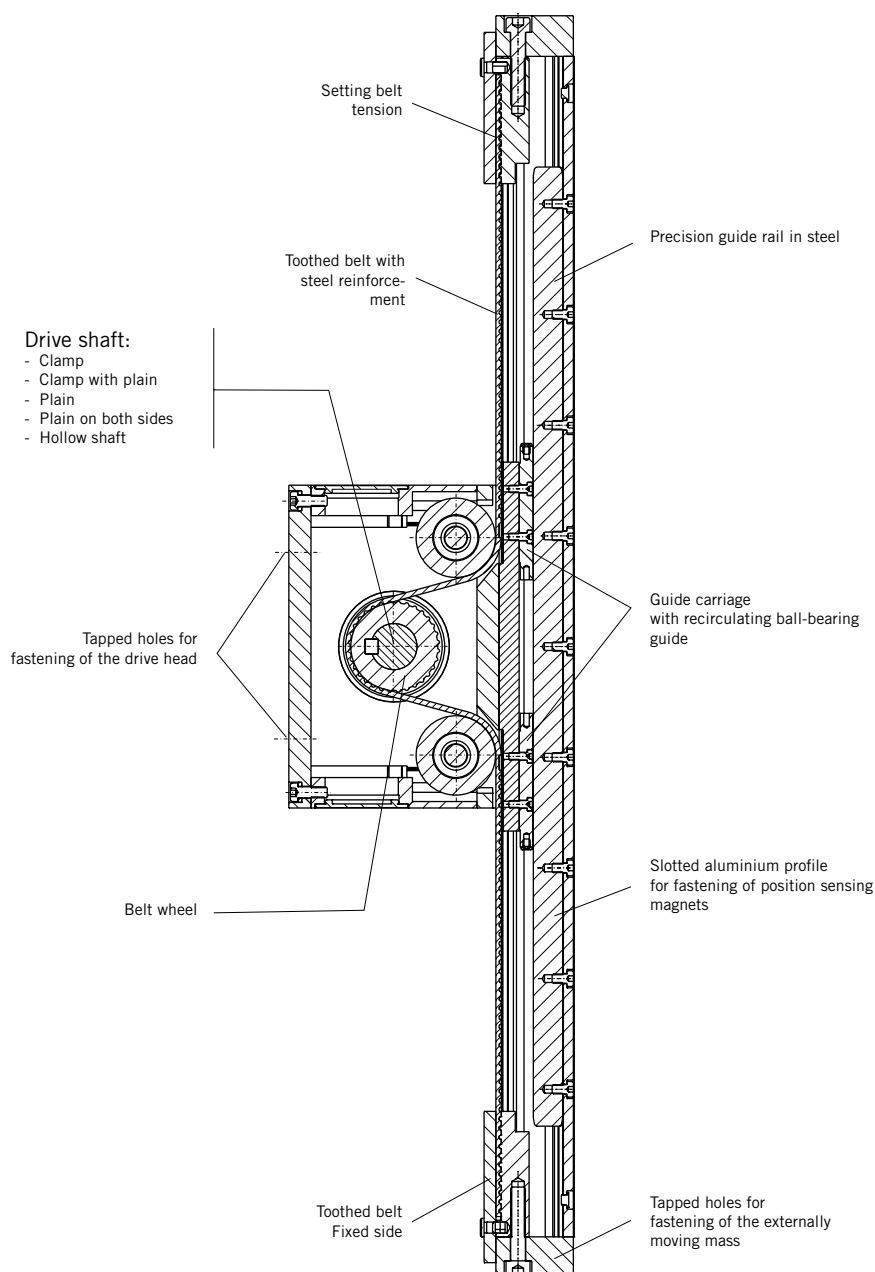


### 7.2.3 OSP-E..BV

#### Vertical Linear drive with toothed belt and integrated recirculating ball bearing guide

##### Design Features

- Linear drive for vertical movements in Z direction.
- Drive head fixed and movement through aluminium profile.
- Precision guide rail of steel.
- Fastening of the externally moving mass by means of anchor points at the end of the profile. (observe details given in the catalogue!)

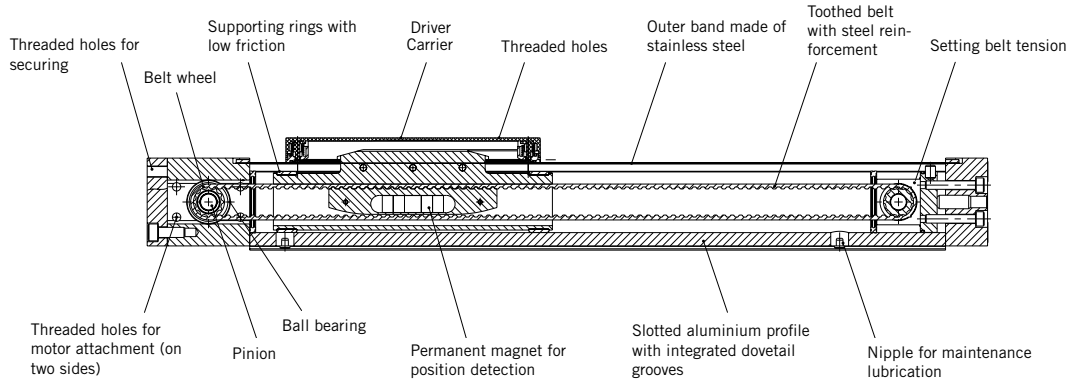


## 7.2.4 OSP-E..B

### Linear drive with toothed belt and internal plain bearing guide

#### Design Features

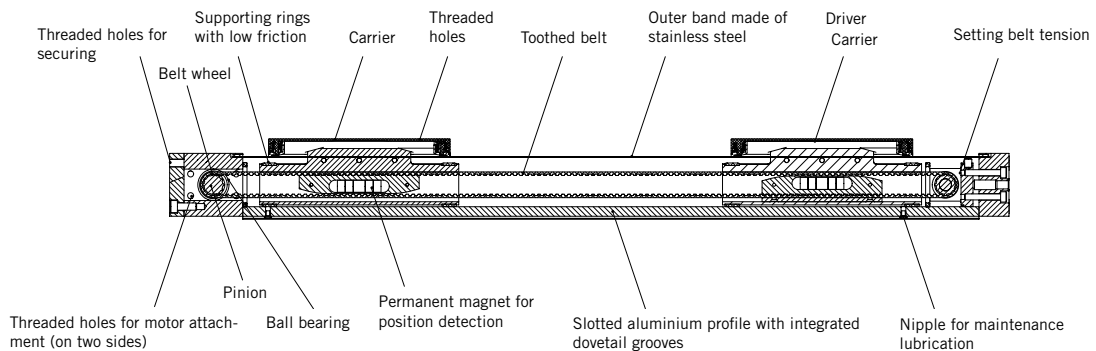
- Toothed belt drive for linear movements
- Toothed belt drive with threaded holes for lateral motor attachment



### OSP-E..B Bi-Parting version

#### Design Features

- Drive for synchronous counter movements
- Belt drive with threaded holes for lateral motor attachment



### 7.3 Maintenance / repair



#### Attention

Maintenance and repair work shall only be carried out by specially trained and instructed persons !

#### Attention

The machine or the working zone must be cordoned off for safety purposes as required !

#### 7.3.1 Cleaning

The linear drive must be kept free from dirt particles at all times, particularly the surface between the outer band and the aluminium profile and/or the wipers at the carrier.

For cleaning, use only non aggressive cleansers and lint-free cloths.



#### Attention

After every cleaning operation, the corresponding parts must be lubricated as required.

#### 7.3.2 Lubrication

The roller guides and shaft bearings are lubricated for life.

We recommend an inspection of the linear drive after max. 3000 km or an operating period of 12 months, depending on the application.

The following aspects must be taken into account:

- Load
- Speed
- Temperature
- Surrounding condition of the linear drives.

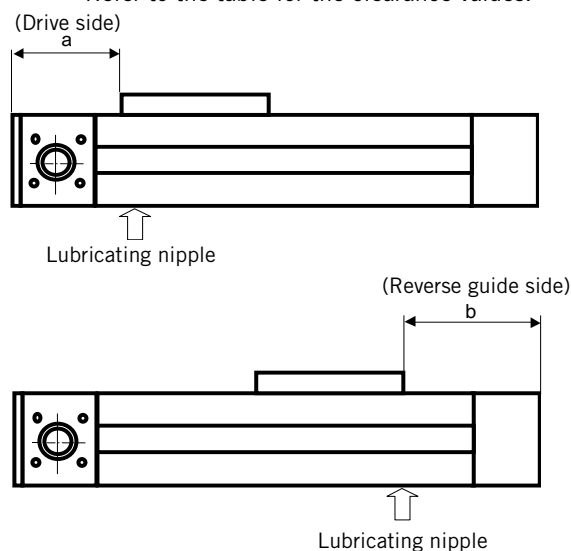
#### Visual inspection for lubricating grease:

- Make sure that the outer band has a thin lubricating film on both sides.
- Make sure that the guide rail (OSP-E..BHD) is covered with a thin lubricating film as required. For this purpose, the clamping pieces for the outer band must be loosened so that this can be lifted up easily.

#### Lubrication of the running surfaces in the tube (OSP-E..B):

On the downward facing side of the linear drive, there are two grease nipples for lubricating the running surfaces. In order to perform lubrication with a grease gun, the driver must be moved into its corresponding greasing position (if necessary, inching movement in the direction of the mechanical limit position of the drive).

Refer to the table for the clearance values.



| Type     | Dimension a [mm] | Dimension b [mm] |
|----------|------------------|------------------|
| OSP-E25B | 64               | 71               |
| OSP-E32B | 73               | 79               |
| OSP-E50B | 98               | 103              |

#### Lubricant

- Parker-Origrease 2  
(HO-Grease 2 Ident N°.: #15071 Tube 45 gr)

## 7.3.3 Inspection of the belt tension

### OSP-E..BHD

#### Linear drive with toothed belt and integrated guide

- Move the slide far enough to the drive side until the clearance between profile of the driver edge and the centre of the pinion of the running side (opposite drive side) is 500 mm (or 250 mm for short stroke lengths).
- Take off the lateral cover strips (in the aluminium barrel profile).
- Through the side bore in the aluminium profile it is possible to measure the belt tension
- For a correct belt tension, you should be able to deflect the belt by 6 to 7 mm for an exposed belt length of 500 mm, and 3 to 3.5 mm for an exposed belt length of 250 mm.

Use a force-measuring gauge (**dynamometer FDN200 with testpin ident-no. 16187**) to read the following force:

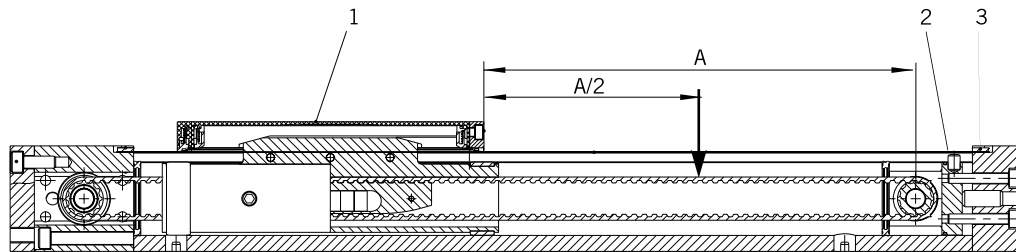
| Linear drive | Size 20      | Size 25        | Size 32      | Size 50      |
|--------------|--------------|----------------|--------------|--------------|
| Force        | 27N $\pm$ 1N | 35N $\pm$ 0,5N | 60N $\pm$ 1N | 94N $\pm$ 2N |

If the measured value is below the value in the table shown above, then the belt must be replaced.

- Replace the lateral cover strips (in the aluminium profile).

### OSP-E..B

#### Linear drive with toothed belt and internal plain bearing guide



- Push the driver (1) onto the drive side.
- Release the clamping piece (3) for the outer band (2) so that the outer band can be lifted up and the slot between driver and running side is exposed.
- Move the driver far enough so that 500 mm (or 250 mm for short stroke lengths) of the belt is exposed between the profile of the driver edge and the centre of the pinion of the running side (opposite drive side) (Dimension A).
- In order to measure the belt tension, press down the belt in the centre of the exposed length in the direction of the slot (e.g. 250 mm or 125, measured from the edge of the carrier).
- For a correct belt tension, you should be able to deflect the belt by 6 to 7 mm for an exposed belt length of 500 mm, and 3 to 3.5 mm for an exposed belt length of 250 mm.

With a force-measuring gauge (**dynamometer FDN200 with testpin ident-no. 16187**) it should be possible to read the following force:

| Linear drive | Size 25         | Size 32      | Size 50      |
|--------------|-----------------|--------------|--------------|
| Force        | 7.5N $\pm$ 0,5N | 13N $\pm$ 1N | 23N $\pm$ 2N |

If no force-measuring gauge is available, you can carry out the test with a weight of 0.7 kg (size 25), 1.3 kg (size 32) or 2.5 kg (size 50) which is placed through the slot onto the belt.

The belt should normally deflect by max. 7 mm and min. 6 mm for an exposed belt length of 500 and max. 3.5 mm and min 3 mm for a 250 mm exposed belt length.

If the measured value is below the value in the table shown above, then the belt must be replaced.

- Reposition the outer band into place and fix with the clamping piece

### OSP-E..BV

#### Vertical linear drive with tooth belt and integrated recirculating ball bearing guide



#### Attention

The toothed belt tension adjusted by the manufacturer must not be modified.

It is not required to adjust the tension.



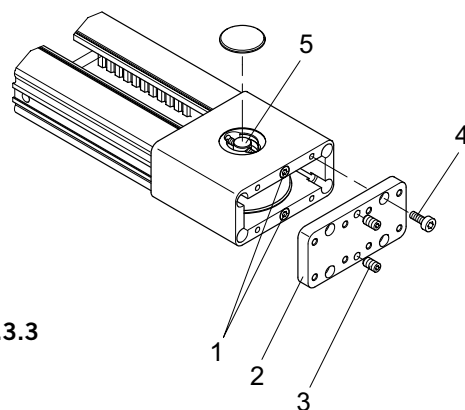
### 7.3.4 Tensioning the belt

#### OSP-E..BHD

##### Linear drive with toothed belt and integrated guide

- Release the set screws (3).
- Release the socket head screws (4) and remove cover (2).
- Tighten uniformly the socket head screws (1) in order to tighten the belt by moving the axle (5).
- After achieving the required belt tension, mount the cover (2) again and screw tight as required.
- Fix the position of the socket head screws (1) by tightly turning the set screws (3).

During tensioning, check the belt tension according to Chapter 7.3.3

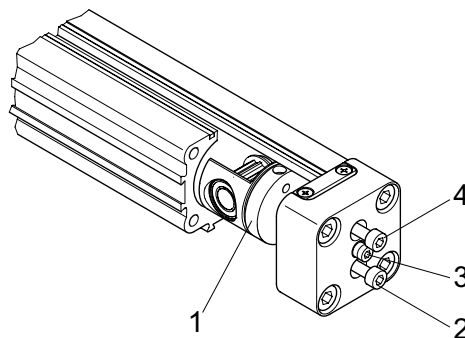


#### OSP-E..B

##### Linear drive with toothed belt and plain bearing guide

- Release the set screw (3)
- Tighten the socket head screws (2) and (4) uniformly in order to tension the belt by moving the bearing housing (1).
- After obtaining the required belt tension, fix the position of the bearing housing by tightly turning the set screw (3).

| Thread size | Tightening torques socket head screws / threaded pins |
|-------------|-------------------------------------------------------|
| M 5         | 6 ± 1Nm                                               |
| M 6         | 10 ± 1,5Nm                                            |



During tensioning, check the belt tension according to Chapter 7.3.3.

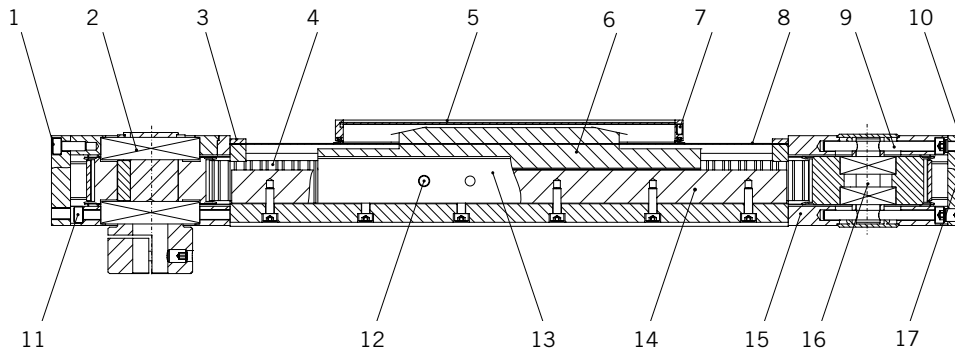
#### Attention

Avoid a slanted position of the axle (5) by uniformly tightening the socket head screws (1).

## 7.3.5 Replacing the belt

### OSP-E..BHD

#### Linear drive with toothed belt and integrated guide



- Release and remove motor/drive unit as well as all other components attached.
- Release and remove the components mounted on the carrier (6).
- Release and remove the two bracing screws (7) so that the bearing housing lies loosely in the aluminium profile (5).
- Remove the clamping pieces (3) so that the outer band (7) can be removed.
- Release/remove the four fastening screws (10) and take off the cover plate (17).
- Slightly loosen the two belt bracing screws (9) in order to relieve the belt wheel (16).
- Release and remove the four fastening screws of the end cap (15).
- Remove the end cap (15) to the rear to such an extent until the belt (4) can be pressed together by hand in order to be able to lead it through the slot of the aluminium profile (if necessary, loosen further the belt bracing screws).
- Remove the fastening screws (1) and take off the cover plate.
- Remove the fastening screws (11) and remove the drive end cap.
- **OSP-E..BHD with recirculating linear ball bearings:** Pull the slide with linear guidance system (6) to the end of the guide rail (14) at the drive housing (2). Carefully insert transportation lock for balls from the service kit into the sliding carriages. After that, completely remove carriage (6), toothed belt (4) and housing (15).
- **OSP-E..BHD with roller guide:** remove drive housing (2) including carrier with rollerguide (6), toothed belt (4) and housing (15).
- Remove socket head screws (12) in order to be able to remove the belt clamping plate (13).
- The belt can now be removed



#### Attention

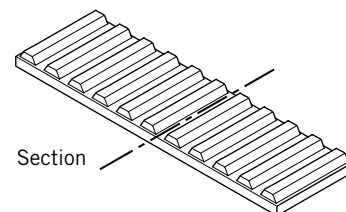
Check the dismantled parts for wear and replace if necessary.

Observe direction of movement with belt and carrier assembly ! (Clamping in the carrier)

Do not twist the belt. Observe position of the drive end cap.

The new belt to be installed must be checked for correct length and, if necessary, shortened according to the following table.

| Size | Belt length OSP-E..BHD      |
|------|-----------------------------|
| 25   | 2 x Stroke length + 830 mm  |
| 32   | 2 x Stroke length + 960 mm  |
| 50   | 2 x Stroke length + 1310 mm |



#### Information

The cut for the shortening of the belt must be made in the valley between two peaks.

The belt for the linear drive OSP-E..BP is to be divided according to the following table.

**Important:**

applies only for OSP-E..BHD..BP

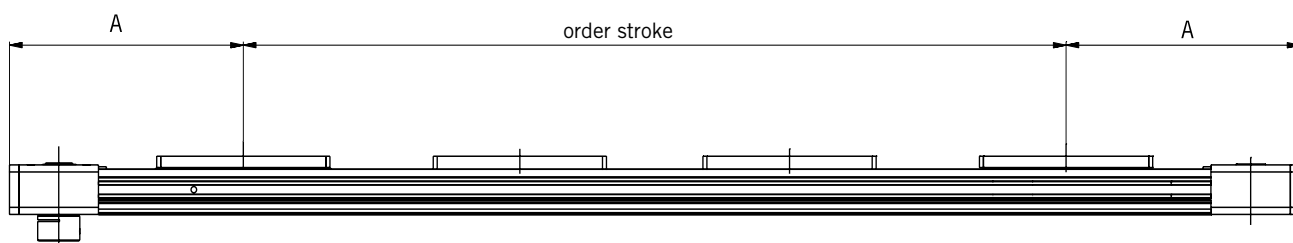
(Option carrier: bi-directional: synchronous counter movement)

- Divide belt in the middle
- Shorten the belt according to the following table

| Sorting of tooth belt, bi-parting |            |                    |
|-----------------------------------|------------|--------------------|
| Size                              | Teeth      |                    |
|                                   | Drive side | Reverse guide side |
| 25                                | 2          | 1                  |
| 32                                | 4          | 3                  |
| 50                                | 6          | 5                  |

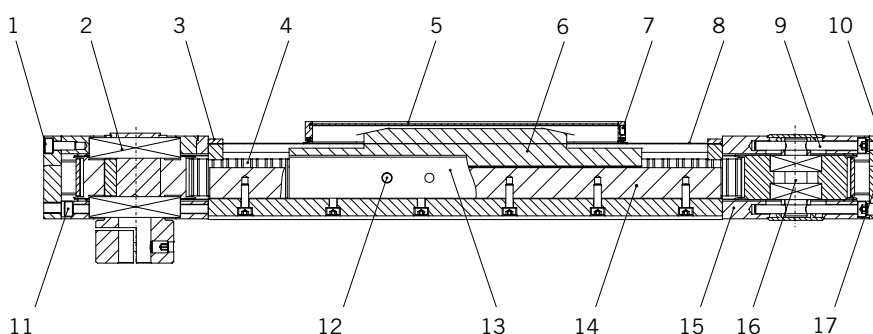
**Information**

After assembly, the clearance dimension (A) on both sides must be checked and corrected if necessary by offsetting the belt.



| Size | clearance dimension A |
|------|-----------------------|
| 25   | 218 mm                |
| 32   | 262 mm                |
| 50   | 347 mm                |

The belt is mounted in the dismantled condition of the linear drive.



- Place the belt (4) around the belt wheels.
- Locate the belt (4) into the clamping strip (13) on both sides in such a way that, in each case, at least six teeth (size 25 and 32) and ten teeth (size 50) engage.
- Secure the clamping strip with screws at the roller shoe couple (secure with thread lock).
- Press together the belt between end cap (15) and carrier (6) and place in the slot of the aluminium profile
- **OSP-E..BHD with recirculating ball bearing system:** Carefully slide carriage with linear guidance system (6) onto the guide rail (14) and remove transportation lock for balls. Install carriage (6), drive housing (2) and linear guidance housing (15)
- **OSP-E..BHD with roller guides:** Push carriage with roller guides (6) onto the guide rail (14) and install drive housing (2) and housing for linear guidance (15).

# Modular electrical linear drives OSP-E

- Secure the drive end cap (2) with the four hex screws (11) at the aluminium profile (15).
- Mount the end cap (15) with hex screws at the aluminium profile.
- Tension the belt (8) in accordance with Chapter 7.3.4.
- Push the outer band (8) through the carrier(6) and screw tight on both sides with the clamping pieces (3) at the aluminium profile.
- Carefully mount and screw tight cover sheet (5) und cover with wiper (7).
- Secure both covers with hex screws to the individual casings.
- Mount again motor/drive unit as well as all other components attached to it (tightening torques clamping hub, refer to table for load values chapter 7.1 ff).
- The components attached to the carrier are to be mounted again.

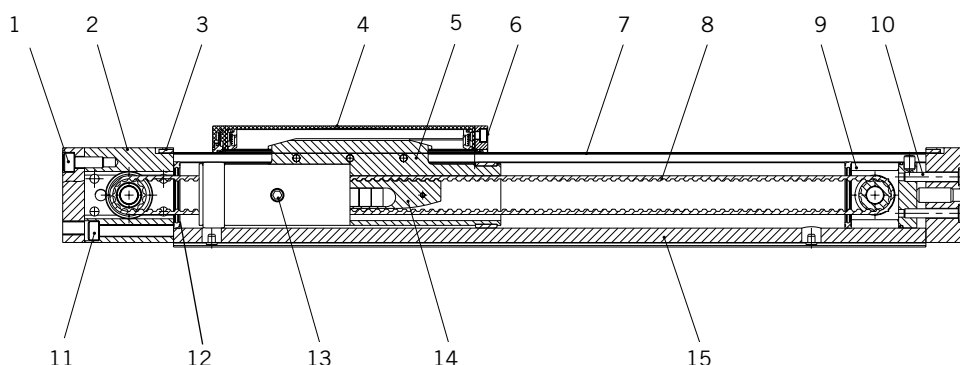
| Thread size | Tightening torques<br>socket head screws |
|-------------|------------------------------------------|
| M 3         | 1.2 ± 0.2 Nm                             |
| M 4         | 3 ± 0.5 Nm                               |
| M 5         | 5,5 ± 0.8 Nm                             |
| M 6         | 10 ± 1.5 Nm                              |

| Thread size | Tightening torques<br>countersunk screws |
|-------------|------------------------------------------|
| M 3         | 0,5 ± 0.1 Nm                             |
| M 4         | 2,2 ± 0.1 Nm                             |

## OSP-E..BV

### Vertical linear drive with toothed belt and integrated recirculating ball bearing guide

If the toothed belt must be replaced, ask the manufacturer of the drive for possible repair.

**OSP-E..B****Linear drive with toothed belt and internal plain bearing guide**

- Release and remove motor/drive unit as well as all other components attached.
- Release and remove the components mounted on the carrier (5).
- Release and remove the two bracing screws (10) so that the bearing housing (9) lies loosely in the aluminium profile (15).
- Remove the fastening screws (6) on both sides and take off carefully the covering (4) with the wipers (snap-in type). Make sure that the wipers and springs maintain their positions.
- Remove the clamping pieces (3) so that the outer band (7) can be removed.
- Remove the fastening screws (1) and take off the cover plate.
- Remove the fastening screws (11).
- Remove the drive end cap (2) including carrier (5) and bearing housing (9).
- Remove socket head screws (13) in order to be able to remove the belt clamping plate (14).
- The belt (8) can now be removed.

**Attention**

Check the dismantled parts for wear and replace if necessary.

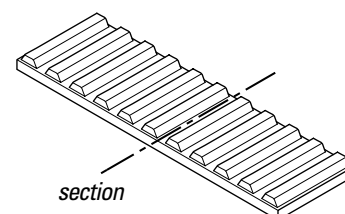
The belt shall not be buckled as this can lead to damage.

When assembling belt and carrier, observe correct direction of movement ! (clamping in carrier)

Do not twist the belt. Observe the position of the drive casing.

The new belt to be installed must be checked for correct length and, if necessary, shortened according to the following table.

| Size | OSP-E..B                   |
|------|----------------------------|
| 25   | 2 x stroke length + 390 mm |
| 32   | 2 x stroke length + 485 mm |
| 50   | 2 x stroke length + 670 mm |

**Information**

The cut for the shortening of the belt must be made in the valley between two peaks.

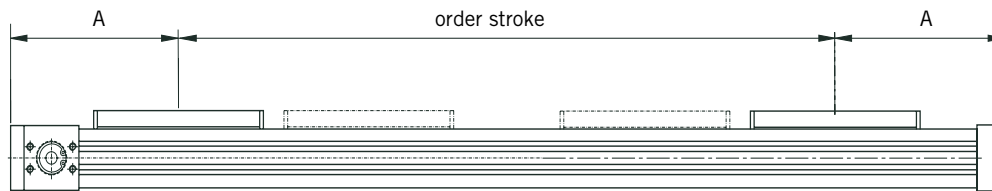
The belt for the linear drive OSP-E..B in Bi-Parting version is to be divided according to the following table.

| Size | Belt length            |                        |
|------|------------------------|------------------------|
|      | Drive side             | Reverse guide side     |
| 25   | stroke length + 200 mm | stroke length + 180 mm |
| 32   | stroke length + 252 mm | stroke length + 222 mm |
| 50   | stroke length + 345 mm | stroke length + 315 mm |



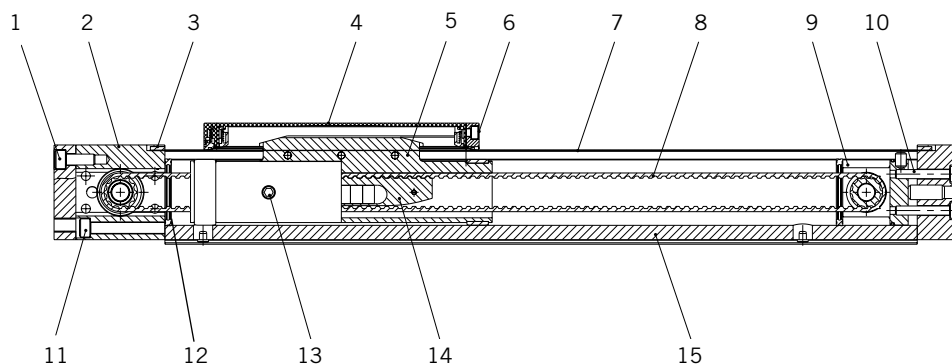
## Information

After assembly, the clearance dimension (A) on both sides must be checked and, if required, corrected by shifting the belt.



| OSP-E..B |                       |
|----------|-----------------------|
| Size     | clearance dimension A |
| 25       | 125 mm                |
| 32       | 150 mm                |
| 50       | 200 mm                |

## Mounting of the belt



- Place belt (8) around the drive belt wheel.
- Move the X-rings over the belt (8) as these cannot be mounted after.
- Move the belt end, which is not to be clamped, correctly positioned through the carrier (5) and around the second belt wheel (do not forget the X-rings).
- Put in the belt clamping plate (14) into the carrier (5).

## OSP-E..B

- Place in the belt (8) into the belt clamping plate (14) on both sides in such a way that no tooth remains free (belt ends meet in the middle).

## OSP-E..B Bi-Parting version

- Place in the belt (8) into the belt clamping plate (14) on both sides in such a way that the middle tooth of the clamping plate remains free.
- With the screws (13) secure the belt clamping plate to the carrier (5) (and secure with thread lock).
- Move the bearing housing (9) and the carrier (5) into the aluminium profile (15)..



## Attention

**Do not twist the belt. Observe the position of the drive casing (2).**

**When assembling belt and carrier, observe correct direction of movement ! (clamping in carrier**

- With the help of the supporting rings and the slide rails, bring the carrier (5) into its correct position.
- Secure the drive end cap (2) with the four hex screws (11) at the aluminium profile (15).
- Secure the cover plate with the two hex screws (1) at the drive end cap (2).

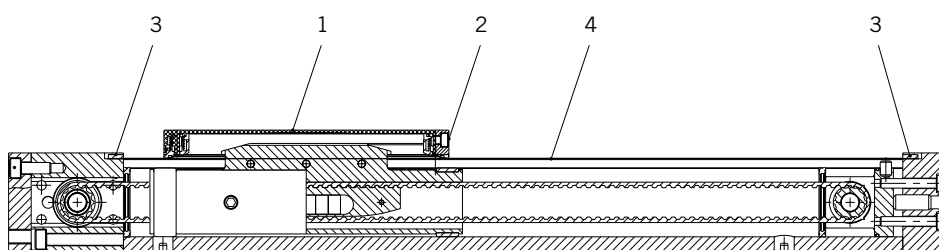
- Tension the belt (8) in accordance with Chapter 7.3.4.
- Push the outer band (7) through the carrier and screw tight on both sides with the clamping pieces at the aluminium profile.
- With great care, mount the covering (4) with the wipers (snap-in type) and screw tight as required. Make sure that the wipers and springs maintain their positions.
- Motor/drive unit and all attached components are to be mounted again.
- The components attached to the carrier are to be mounted again.

| Thread size | Tightening torques socket head screws |
|-------------|---------------------------------------|
| M 3         | 1.2 ± 0.2 Nm                          |
| M 4         | 3 ± 0.5 Nm                            |
| M 5         | 5.5 ± 0.8 Nm                          |
| M 6         | 10 ± 1.5 Nm                           |

| Thread size | Tightening torques countersunk screws |
|-------------|---------------------------------------|
| M 3         | 0.5 ± 0.1 Nm                          |
| M 4         | 2.2 ± 0.1 Nm                          |

### 7.3.6 Replace wiper / outer band

If the wipers are worn, these must be replaced accordingly.



- Loosen and remove the components mounted on the carrier.
- Remove the fastening screws (2) on both sides and take off carefully the covering (1) with the wipers (snap-in type). Make sure that the wipers and springs maintain their positions.
- The new wipers can now be mounted again.

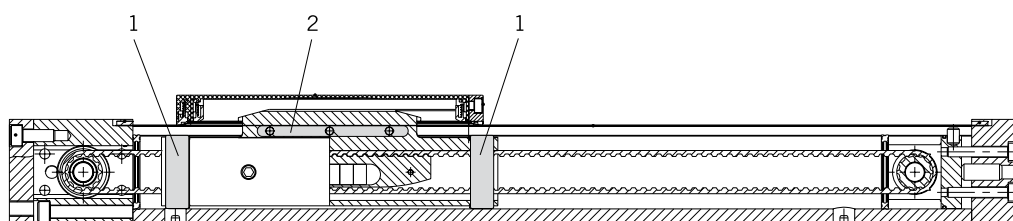
**If the outer band has visible damage so that dirt can get into the aluminium profile, it must be replaced immediately.**

- Dismantle wipers.
- Remove clamping pieces (3) so that the outer band (4) can be removed and replaced

| Thread size | Tightening torques countersunk screws |
|-------------|---------------------------------------|
| M 3         | 0,5 ± 0.1 Nm                          |
| M 4         | 2,2 ± 0.1 Nm                          |

### 7.3.7 Replace bearing strips / bearing rings

The clearance between the bearing strips (2) and the aluminium profile should be maximum 0.2 mm. Any excess of this value means that the bearing strips must be replaced.



- Dismantle the drive in accordance with Chapter 7.3.4 (do not dismantle the belt !)
- Remove both bearing strips (2) and replace with new bearing strips of the same colour.
- Inspect the supporting rings (1) for wear and, if necessary, replace with new supporting rings of the same thickness.

## 7.3.8 Check the bearings

If there is increased noise development with the movement of the linear drives, the bearings must be inspected for wear.

Such an inspection should be carried out every 3000 km running performance or every 12 months.

- Loosen and remove motor/drive unit as well as all other components attached.
- Inspect belt and guides for possible dirt (loosen outer band and lift up for visual inspection).
- Turn drive shaft by hand in both directions. This should be possible without jolts and with easy movement. In order to check the running behaviour in a better way, if necessary, mount coupling on drive axle. Observe torque for no-load run ! (see page 8/10)
- If this is not possible, the linear drive must be dismantled and the damaged bearing replaced.

## 8 Spindle drives OSP-E..SB / OSP-E..ST / OSP-E..SBR / OSP-E..STR

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### 8.1 Technical data

#### 8.1.1 General



Detailed information on

- dimensions,
- space requirement,
- weights

are shown in the OSP-E catalogue.

For all linear drives of the product series OSP-E, the following applies:

#### **Temperature ranges:**

- OSP-E..SB -20°C to +80°C.
- OSP-E..ST -20°C to +70°C.
- OSP-E..SBR -20°C to +80°C.
- OSP-E..STR -20°C to +70°C.

Installation location: no specific requirements

**We reserve the right to make technical alterations !**



### 8.1.2 OSP-E..SB

#### Linear drive with ball screw drive and internal plain bearing guide

| Performance overview                                                       |                      |                  |                  |     |                  |     |      |      |
|----------------------------------------------------------------------------|----------------------|------------------|------------------|-----|------------------|-----|------|------|
| Characteristic                                                             | Unit                 | Description      |                  |     |                  |     |      |      |
| Series                                                                     |                      | <b>OSP-E25SB</b> | <b>OSP-E32SB</b> |     | <b>OSP-E50SB</b> |     |      |      |
| Pitch                                                                      | [mm]                 | 5                | 5                | 10  | 5                | 10  | 25   | 50   |
| Max. speed                                                                 | [m/s]                | 0.25             | 0.25             | 0.5 | 0.25             | 0.5 | 1.25 | 2.5  |
| Linear motion per revolution of the drive shaft                            | [mm]                 | 5                | 5                | 10  | 5                | 10  | 25   | 50   |
| Max. speed of the drive shaft                                              | [min <sup>-1</sup> ] | 3 000            | 3 000            |     | 3 000            |     |      |      |
| Maximum effective action force $F_A$<br>with reference to the drive torque | [N]                  | 250              | 600              |     | 1 500            |     |      |      |
|                                                                            | [Nm]                 | 0.35             | 0.75             | 1.3 | 1.7              | 3.1 | 7.3  | 14.6 |
| No-load torque                                                             | [Nm]                 | 0.2              | 0.2              | 0.3 | 0.3              | 0.4 | 0.5  | 0.6  |
| Max. allowable drive torque at the drive shaft                             | [Nm]                 | 0.6              | 1.5              | 2.8 | 4.2              | 7.5 | 20   | 20   |
| Repeatability                                                              | [mm/m]               | ± 0.05           | ± 0.05           |     | ± 0.05           |     |      |      |
| Max. standard stroke length                                                | [m]                  | 1.1              | 2.0              |     | 3.2              |     |      |      |

### 8.1.3 OSP-E..ST

#### Linear drive with trapezoidal screw drive and internal plain bearing guide

| Performance overview                                                       |                      |                  |                  |                  |
|----------------------------------------------------------------------------|----------------------|------------------|------------------|------------------|
| Characteristic                                                             | Unit                 | Description      |                  |                  |
| Series                                                                     |                      | <b>OSP-E25ST</b> | <b>OSP-E32ST</b> | <b>OSP-E50ST</b> |
| Pitch                                                                      | [mm]                 | 4                | 4                | 6                |
| Max. speed                                                                 | [m/s]                | 0.1              | 0.1              | 0.15             |
| Linear motion per revolution of the drive shaft                            | [mm]                 | 4                | 4                | 6                |
| Max. speed of the drive shaft                                              | [min <sup>-1</sup> ] | 1 500            | 1 500            | 1 500            |
| Maximum effective action force $F_A$<br>with reference to the drive torque | [N]                  | 600              | 1 300            | 2 500            |
|                                                                            | [Nm]                 | 1.35             | 3.2              | 8.8              |
| No-load torque                                                             | [Nm]                 | 0.3              | 0.4              | 0.5              |
| Max. allowable drive torque at the drive shaft                             | [Nm]                 | 1.55             | 4.0              | 9.4              |
| Self-locking $F_L$                                                         | [N]                  | 600              | 1300             | 2500             |
| Repeatability                                                              | [mm/m]               | ± 0.5            | ± 0.5            | ± 0.5            |
| Max. standard stroke length                                                | [m]                  | 1.1              | 2.0              | 2.5              |

## 8.1.4 OSP-E..SBR

Linear drive with ball screw drive, internal plain bearing guide and piston rod

| Performance overview                                                       |                      |                   |                   |      |                   |     |      |
|----------------------------------------------------------------------------|----------------------|-------------------|-------------------|------|-------------------|-----|------|
| Characteristic                                                             | Unit                 |                   |                   |      |                   |     |      |
| Series                                                                     |                      | <b>OSP-E25SBR</b> | <b>OSP-E32SBR</b> |      | <b>OSP-E50SBR</b> |     |      |
| Pitch                                                                      | [mm]                 | 5                 | 5                 | 10   | 5                 | 10  | 25   |
| Max. speed                                                                 | [m/s]                | 0.25              | 0.25              | 0.5  | 0.25              | 0.5 | 1.25 |
| Linear motion per revolution of the drive shaft                            | [mm]                 | 5                 | 5                 | 10   | 5                 | 10  | 25   |
| Max. speed of the drive shaft                                              | [min <sup>-1</sup> ] | 3 000             | 3 000             |      | 3 000             |     |      |
| Maximum effective action force $F_A$<br>with reference to the drive torque | [N]                  | 250               | 550               | 1090 | 750               | 990 | 1680 |
|                                                                            | [Nm]                 | 0.3               | 0.65              | 2.6  | 0.9               | 2.4 | 10   |
| No-load torque                                                             | [Nm]                 | 0.2               | 0.2               | 0.3  | 0.3               | 0.4 | 0.5  |
| Max. allowable drive torque at the drive shaft                             | [Nm]                 | 0.6               | 1.5               | 2.8  | 4.2               | 7.5 | 20   |
| Repeatability                                                              | [mm/m]               | ± 0.05            | ± 0.05            |      | ± 0.05            |     |      |
| Max. standard stroke length                                                | [mm]                 | 500               | 500               |      | 500               |     |      |

## 8.1.5 OSP-E..STR

Linear drive with trapezoidal screw drive, internal plain bearing guide and piston rod

| Performance overview                                                       |                      |                   |                   |                   |
|----------------------------------------------------------------------------|----------------------|-------------------|-------------------|-------------------|
| Characteristic                                                             | Unit                 |                   |                   |                   |
| Series                                                                     |                      | <b>OSP-E25STR</b> | <b>OSP-E32STR</b> | <b>OSP-E50STR</b> |
| Pitch                                                                      | [mm]                 | 3                 | 4                 | 5                 |
| Max. speed                                                                 | [m/s]                | 0.075             | 0.1               | 0.125             |
| Linear motion per revolution of the drive shaft                            | [mm]                 | 3                 | 4                 | 5                 |
| Max. speed of the drive shaft                                              | [min <sup>-1</sup> ] | 1 500             | 1 500             | 1 500             |
| Maximum effective action force $F_A$<br>with reference to the drive torque | [N]                  | 800               | 1 600             | 3 300             |
|                                                                            | [Nm]                 | 1.35              | 3.4               | 9.25              |
| No-load torque                                                             | [Nm]                 | 0.3               | 0.4               | 0.5               |
| Max. allowable drive torque at the drive shaft                             | [Nm]                 | 1.7               | 4.4               | 12                |
| Self-locking FI                                                            | [N]                  | 800               | 1600              | 3300              |
| Repeatability                                                              | [mm/m]               | ± 0.5             | ± 0.5             | ± 0.5             |
| Max. standard stroke length                                                | [m]                  | 0.5               | 0.5               | 0.5               |

## 8.2 Structural arrangement and operating mode

### 8.2.1 General arrangement

The linear drives are used in all those places where loads are to be transported and/or have to be precision-positioned.

With a combination of several linear drives, a wide-surface covering or room-orientated arrangement can be realised.

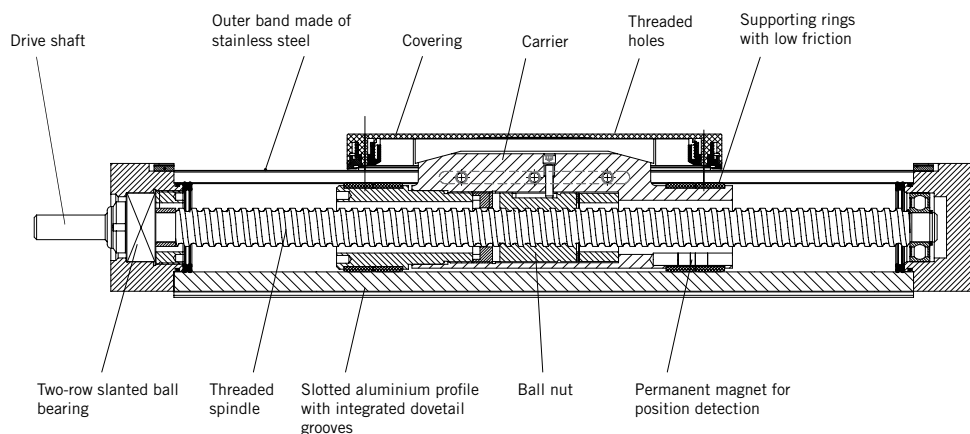
- On a slotted aluminium profile with dovetail grooves, on the ends, the end cap required for the driving elements are mounted.
- In this barrel profile, a carrier is moved where supporting rings are attached to both ends. These provide the lowest possible sliding friction.
- The attachment of the load material is connected by way of threaded holes at the carrier.
- Dirt is prevented from getting into the aluminium profile by an outer band made of high quality stainless steel.
- An integrated permanent magnet is used for the purpose of position detection.
- On the side of the drive shaft there are end cap screws with internal threads for securing the coupling housing and the flange plate.

### 8.2.2 OSP-E..SB

#### Linear drive with ball screw drive, internal plain bearing guide and piston rod

##### Design Features

- Ball screw drive
- internal plain bearing guide

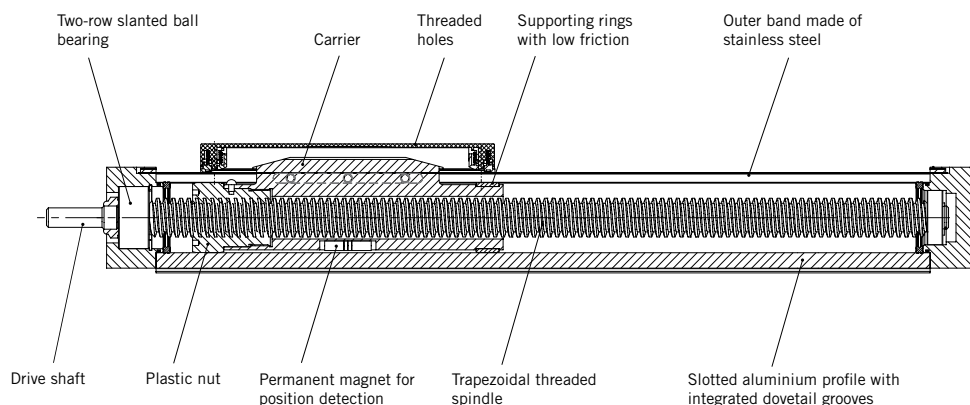


### 8.2.3 OSP-E..ST

#### Linear drive with trapezoidal screw drive, internal plain bearing guide and piston rod

##### Design Features

- Trapezoidal thread drive
- self locking

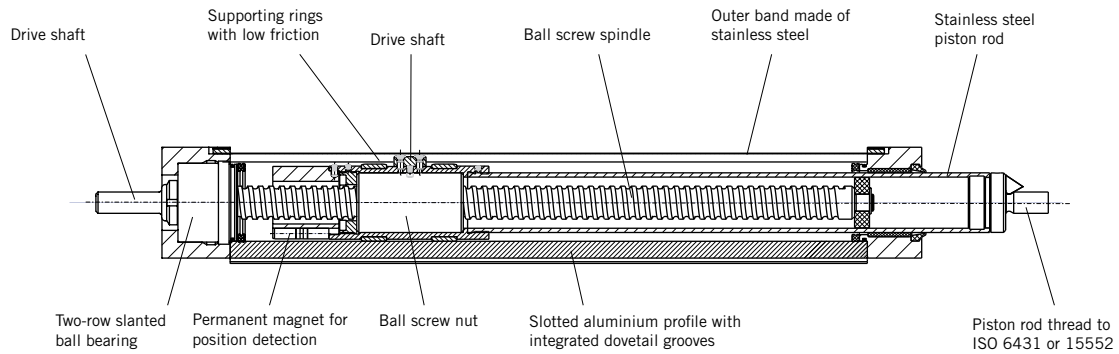


## 8.2.4 OSP-E..SBR

Linear drive with ball screw drive, internal plain bearing guide and piston rod

### Design Features

- Ball screw spindle
- Piston rod made of stainless steel

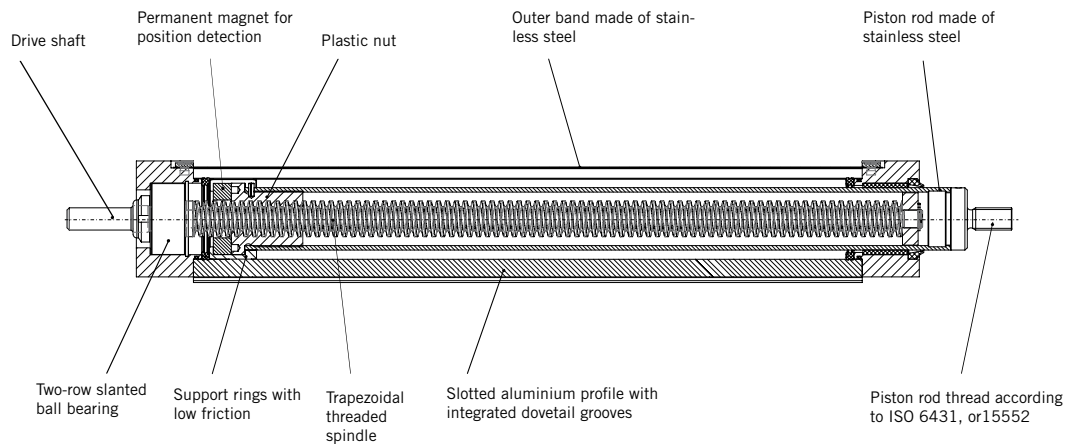


## 8.2.5 OSP-E..STR

Linear drive with trapezoidal screw drive, internal plain bearing guide and piston rod

### Design Features

- Trapezoidal thread drive
- Piston rod made of stainless steel



### 8.3 Maintenance / repair



#### Attention

Maintenance and repair work shall only be carried out by specially trained and instructed persons !  
The machine or the working zone must be cordoned off for safety purposes as required !

#### 8.3.1 Cleaning

The linear drive must be kept free from dirt particles at all times, particularly the surface between the outer band and the aluminium profile and/or the wipers at the carrier.

For cleaning, use only non aggressive cleansers and lint-free cloths.



#### Attention

After every cleaning operation, the corresponding parts must be lubricated as required.

#### 8.3.2 Lubrication

The shaft bearings have life-long lubrication.

The following aspects of the linear drives must be taken into account:

- Load
- Speed
- Temperature
- Surrounding condition

#### Lubricant for trapezoidal and ball screw spindle as well as cylinder tube

- Parker-Origa-grease 2 (HO-Grease 2 Ident N°.: #15071 Tube 45 gr)

#### Inspection interval for linear drive OSP-E..SB and OSP-E..SBR

Carry out a visual inspection after an operating period of max. 3000 km or 12 months.

#### Inspection interval for linear drive OSP-E..ST and OSP-E..STR

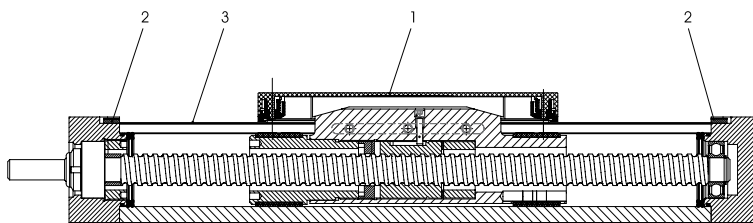
Carry out a visual inspection after an operating period of max. 300 km or 24 months.

#### Visual inspection for lubricating grease

- Make sure that the outer band/piston rod has always a thin lubricating film on both sides.
- Make sure that the spindles are covered with a thin lubricating film. For this purpose, the clamping pieces for the outer band must be loosened so that this can be lifted up easily.

#### Lubricating the drive OSP-E..SB and OSP-E..ST

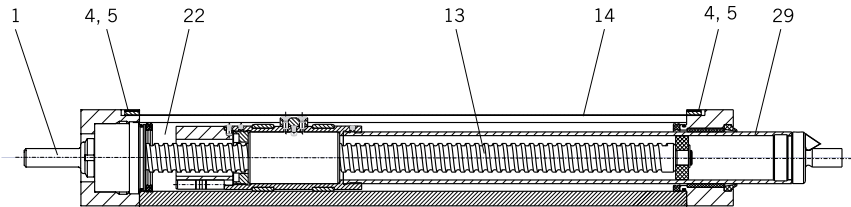
- Push the carrier (1) into the central position.
- Loosen clamping pieces (2) and lift up the outer band (3).
- Place a line of grease on the threaded spindle and the inside of the tube.
- Push the driver backward and forward a few times by hand to over the entire guide length.
- Tightly clamp the outer band again.



| Thread size | Tightening torques<br>countersunk screws |
|-------------|------------------------------------------|
| M 3         | 0,5 ± 0,1 Nm                             |
| M 4         | 2,2 ± 0,1 Nm                             |

## Lubricating the spindle of linear drive OSP-E..SBR and OSP-E..STR

- Remove the motor / drive unit from the drive shaft (1).
- Move the piston rod (29) by hand into the extended position.
- Release the countersunk screws (4) and clamping piece (5). Lift the cover band (14).
- Dispense a continuous string of grease on to the threaded spindle (13) and the inside of the tube (22)).
- Move the piston rod (29) by hand several times through the complete stroke.
- Reposition the cover band (14). Put the clamping piece (5) back into place and insert the counter-sunk screws (4), tightening them to the appropriate torque.
- After the lubrication the motor / drive unit is ready to be mounted again.



| Thread size | Tightening torques<br>countersunk screws |
|-------------|------------------------------------------|
| M 3         | 0,5 ± 0,1 Nm                             |
| M 4         | 2,2 ± 0,1 Nm                             |

## 8.3.3 Check axle backlash of drive spindles

### Inspection of the axle backlash of the drive spindles

- The axle backlash of the drive spindles is determined by axially moving the carrier (1) (OSP-E..SB / OSP-E..ST) and/or the piston rod (2) (OSP-E..SBR / OSP-E..STR) at machine standstill.

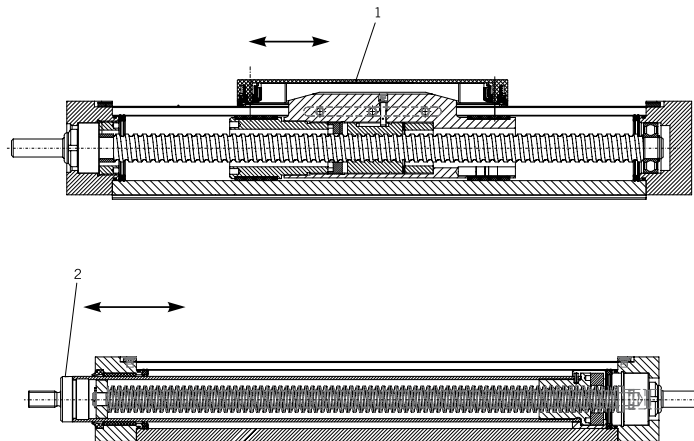
The determined clearance should not exceed:

- **OSP-E..S** 0.2 mm
- **OSP-E..ST** 0.5 mm
- **OSP-E..SBR** 0.2 mm
- **OSP-E..STR** 0.5 mm



### Attention

If the allowable backlash clearance is exceeded, the spindle nuts and/or the spindles must be replaced.



## 8.3.4 Replacing the spindle nut / spindle

### OSP-E..SB

Linear drive with ball screw drive and internal plain bearing guide



### Information

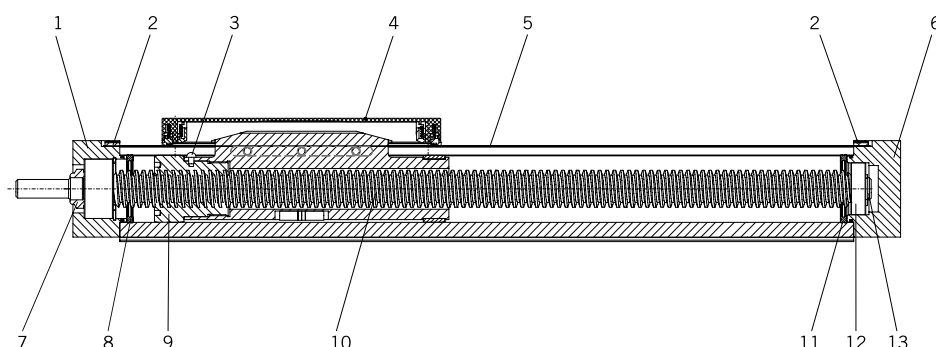
The exchange of the ball screw spindle requires perfect coordination. The ball screw nut must be adjusted precisely in order to avoid premature wear due to faulty installation.

The spindle must only be repaired by Parker-Origa GmbH or separately instructed personnel.

## OSP-E..ST

## Linear drive with trapezoidal screw drive and internal plain bearing guide

## Dismantling spindle / spindle nut



- Release and remove motor/drive unit as well as all other components attached.
- Release and remove the components mounted on the carrier (4).
- Release clamping pieces (2) and remove clamp.
- Remove outer band (5).
- By releasing the fastening screws, separate the end cap (6) from the aluminium profile and remove from the spindle.
- Separating the end cap (1) from the aluminium profile by loosening the fastening screws.
- Take out the carrier (4) with the trapezoidal threaded spindle from the aluminium profile.
- Remove circlip (13), ball bearing (12) and X-ring (11).
- Turn out carrier with spindle nut (9).
- Remove locking screw (3).
- Replace spindle nut (9).
- In order to change the trapezoidal threaded spindle (10), loosen the locking nut (7), remove end cap (1) with ball bearing (drive side) and X-ring (8)

## Installing the spindle nut

- Screw in the new spindle nut up to the stop in the carrier.
- Drill hole for locking screw (3) in spindle nut (anti-rotation) in accordance with the following table.

| Size | Diameter | Depth |
|------|----------|-------|
| 25   | 2,2 mm   | 5 mm  |
| 32   | 2,5 mm   | 5 mm  |
| 50   | 3,1 mm   | 5 mm  |

**Attention**

**Do not drill into the thread itself !**

- Screw in the locking screw (3)

## Installing the trapezoidal threaded spindle

- Turn the trapezoidal threaded spindle (10) into the spindle nut (9).
- The assembly of the spindle and ball screw nut is carried out in the reverse sequence of the disassembly.

| Thread size | Tightening torques countersunk screws |
|-------------|---------------------------------------|
| M 3         | 0.5 ± 0.1 Nm                          |
| M 4         | 2.2 ± 0.1 Nm                          |

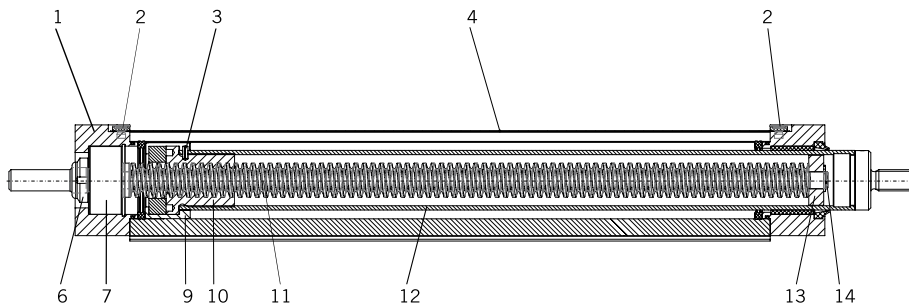
| Thread size | Tightening torques locking nut |
|-------------|--------------------------------|
| M 8         | 10 ± 1.5 Nm                    |
| M 12        | 24 ± 2 Nm                      |
| M 17        | 30 ± 2 Nm                      |

| Thread size | Tightening torques socket head screws |
|-------------|---------------------------------------|
| M 3         | 1,2 ± 0.2 Nm                          |
| M 4         | 3 ± 0.5 Nm                            |
| M 5         | 5,5 ± 0.8 Nm                          |
| M 6         | 10 ± 1.5 Nm                           |

## OSP-E..STR

### Linear drive with trapezoidal screw drive, internal plain bearing guide and piston rod

#### Dismantling the spindle / spindle nut



- Release and remove motor/drive unit as well as all other components attached.
- Release clamping pieces (2) and remove clamp.
- Remove outer band (4).
- By loosening the fastening screws, separate the drive end cap (1) from the aluminium profile and take out completely the spindle (11) with the piston rod (12).
- Remove the supporting ring (9).
- Remove the locking pin (3).
- Turn out the spindle nut (10) from the piston rod and take out the spindle.
- Remove retaining ring (14) and supporting bearing (13).
- Turn out the spindle nut.
- In order to change the trapezoidal spindle (11), loosen the locking nut (6) and remove the drive end cap (1) with ball bearing (7)

#### Installing the spindle nut / trapezoidal threaded spindle

- Screw a new spindle nut onto the trapezoidal threaded spindle.
- Screw in the spindle nut up to the stop into the piston rod profile.
- Drill a hole for locking pin (3) in spindle nut (anti-rotation) in accordance with the following table.

| Size | Diameter | Depth |
|------|----------|-------|
| 25   | 2.5 mm   | 4 mm  |
| 32   | 2.5 mm   | 4 mm  |
| 50   | 3 mm     | 6 mm  |

## Attention

### Do not drill into the thread itself !

- Screw in the locking screw (3).
- Assemble the dismantled parts again in reverse order (torques, refer to OSP-E..ST, above).

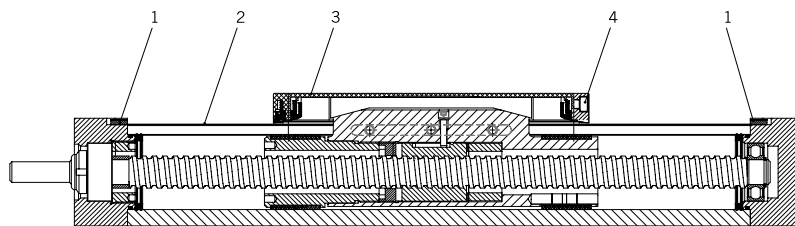




### 8.3.5 Replacing the wiper / outer band

If the wipers are worn down (OSP-E..S and OSP-E..ST), these must be replaced accordingly.

- Loosen and remove the components mounted on the carrier.



- Remove the fastening screws (4) on both sides and take off carefully the covering (3) with the wipers (snap-in type). Make sure that the wipers and springs maintain their positions.
- The new wipers can now be mounted again.

**If the outer band has visible damage so that dirt can get into the aluminium profile, it must be replaced immediately.**

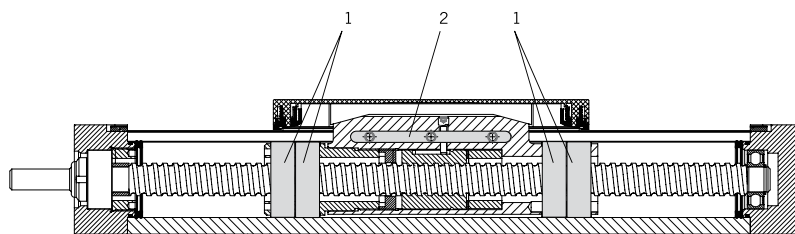
- Dismantle wipers (OSP-E..S and OSP-E..ST).
- Remove clamping pieces (1) so that the outer band (2) can be removed and replaced.

| Thread size | Tightening torques countersunk screws |
|-------------|---------------------------------------|
| M 3         | 0.5 ± 0.1 Nm                          |
| M 4         | 2.2 ± 0.1 Nm                          |

### 8.3.6 Replacing bearing strips (OSP-E..S and OSP-E..ST) / supporting rings

The clearance between the bearing strips (1) and the aluminium profile should be maximum 0.2 mm. Any excess of this value means that the slide rails must be replaced.

- Dismantle drive according to Chapter 8.3.4 (do not dismantle spindle and nut !)



- Remove both bearing strips (2) and replace with new bearing strips of the same colour.
- Check both supporting rings (1) for wear and replace, if necessary, by new supporting rings with the same thickness.

### 8.3.7 Checking the bearings

If there is increased noise development with the movement of the linear drives, the bearings must be inspected for wear.

We recommend an inspection of the linear drives (**OSP-E..ST** and **OSP-E..STR**) after an operating duration of max. 300 km or 24 months.

An inspection of the linear drive **OSP-E..SB** and **OSP-E..SBR** should be carried out after an operating duration of max. 3000 km or 12 months.

- Release and remove motor/drive unit as well as all other components attached.
- Check the spindles and guides for possible dirt (loosen outer band and lift up for visual inspection).
- Turn drive shaft by hand in both directions. This should be possible without jolts and with easy movement. In order to check the running behaviour in a better way, if necessary, mount coupling on drive axle. Observe torque for no-load run ! (see cap. 7.1...)
- If this is not possible, the linear drive must be dismantled and the damaged bearing replaced.

## 9 Accessories

### 9.1 Multi-axe system

With the use of **Parker-Origa** adapter plates, profile attachments and/or intermediate drive shafts, the connection of linear drives in a multi-axe arrangement is possible.

Further information on this subject can be found in the OSP-E catalogue.

### 9.2 Linear guides

The **Origa System Plus-OSP** offers the possibility of adapting various types of guides to the linear drive.

Further information on this subject is available in the OSP-E catalogue or in the separate operating instructions for guides and brakes.

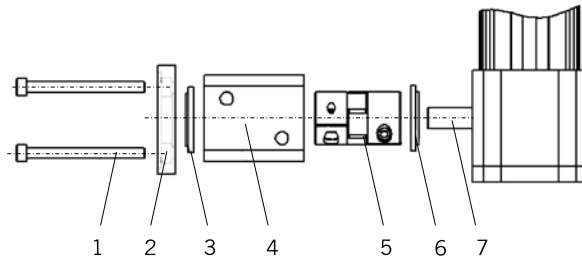
### 9.3 Mountings and sensors

With the help of the comprehensive range of **Parker-Origa** accessories for mounting components, the linear drives can be secured depending on the surrounding conditions.

With the **Parker-Origa** sensors, a non-contact scanning of the linear drives is achieved at end and/or intermediate positions.

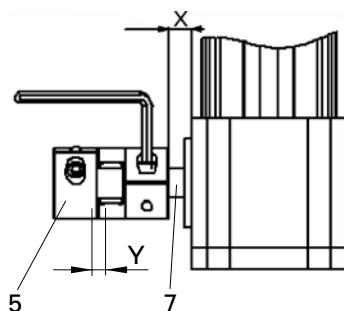
Further information on this subject can be found in the OSP-E catalogue.

### 9.4 Couplingbox and coupling



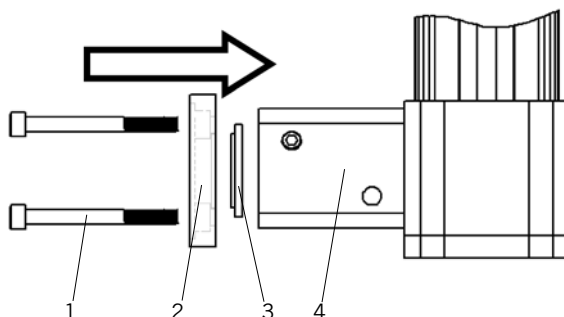
#### 9.4.1 OSP-E belt drive

- Push the location ring (6) over the drive shaft (7) until this is positioned in the cover of the drive. Observe and ensure correct location of the location ring !
- Connect the coupling (5) with the drive shaft (7) in such a way that there is a defined clearance "X", as stated in the table
- or make sure that the hex screw at the motor end of the coupling is accessible through the window in the coupling housing (4).
- Secure coupling (5) to the drive shaft (7).
- Push the coupling housing (4) onto the location ring (6).

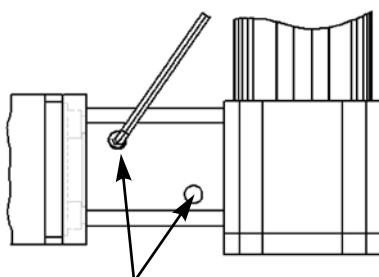


| Size       | Dimension „X“ | Dimension „Y“ | Tightening torque |
|------------|---------------|---------------|-------------------|
| OSP-E20BHD | 6,4 mm        | 2 mm          | 10,5 Nm           |
| OSP-E20BV  | 6,4 mm        | 2 mm          | 10,5 Nm           |
| OSP-E25BV  | 13 mm         | 2 mm          | 10,5 Nm           |
| OSP-E25B   | 14 mm         | 1 mm          | 0,76 Nm           |
| OSP-E32B   | 10 mm         | 1,5 mm        | 1,34 Nm           |
| OSP-E50B   | 5 mm          | 2 mm          | 10,5 Nm           |

- Place location ring (3) into the coupling housing. Observe and ensure correct location of the location ring !



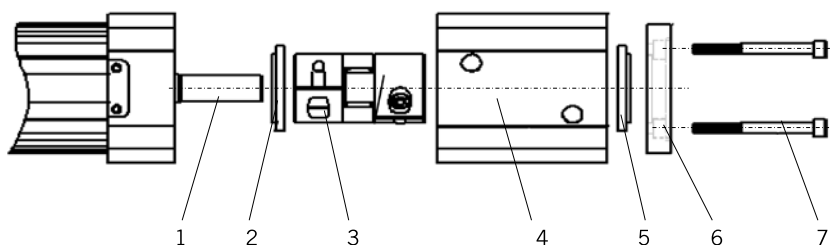
- Fix-position the motor flange (2) at the coupling housing (4).
- Secure the coupling unit at the linear drive with the screws (1).
- Tightly screw the motor to the motor flange (2).
- Tighten the screws of the coupling through the window of the coupling case (4). Use a screw driver to assist in the alignment of the screws. This can be inserted into the notch at the coupling and the coupling can then be turned into the desired position.
- Insert the plugs into the coupling housing to prevent the penetration of dirt.



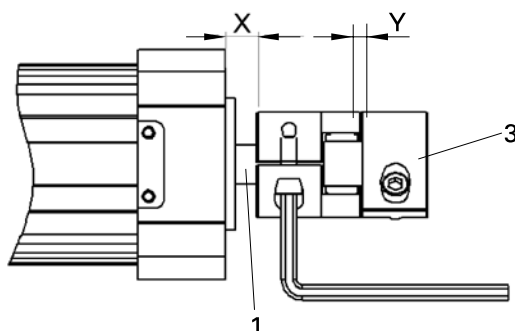
#### Attention

Some motor systems (e.g., Servo) are to be adjusted in advance before they are connected up to the drive.

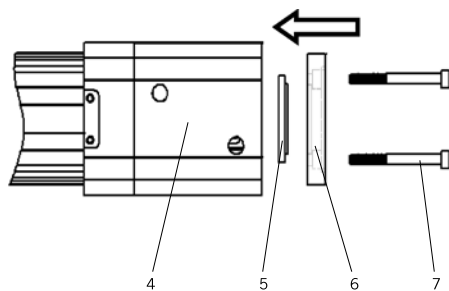
#### 9.4.2 OSP-E spindle drive



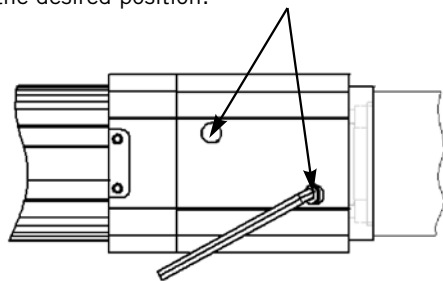
- Push the location ring (2) over the drive shaft (1) until this is positioned in the cover of the drive. Observe and ensure correct location of the location ring !
- Connect the coupling (3) with the drive shaft (1) in such a way that there is a defined clearance "X", as stated in the table
- or make sure that the hex screw at the motor end of the coupling is accessible through the window in the coupling housing (4).



| Size | Dimension „X“ | Dimension „Y“ | Tightening torque |
|------|---------------|---------------|-------------------|
| 25   | 5 mm          | 1 mm          | 0,76 Nm           |
| 32   | 15 mm         | 1,5 mm        | 1,34 Nm           |
| 50   | 13 mm         | 2 mm          | 10,5 Nm           |



- Secure coupling (3) on the drive shaft.
- Push the coupling housing (4) onto the location ring of the drive (6).
- Place fitting ring (5) into the coupling housing. Observe and ensure correct location of the location ring !
- Fix-position the motor flange (6) at the coupling housing (4).
- Secure the coupling unit at the linear drive with the screws (7).
- Tightly screw the motor to the motor flange (6).
- Tighten the screws through the window of the coupling housing. Use a screw driver to assist in the alignment of the screws. This can be inserted into the notch at the coupling and the coupling can then be turned into the desired position.



- Insert the plugs into the coupling housing to prevent the penetration of dirt.

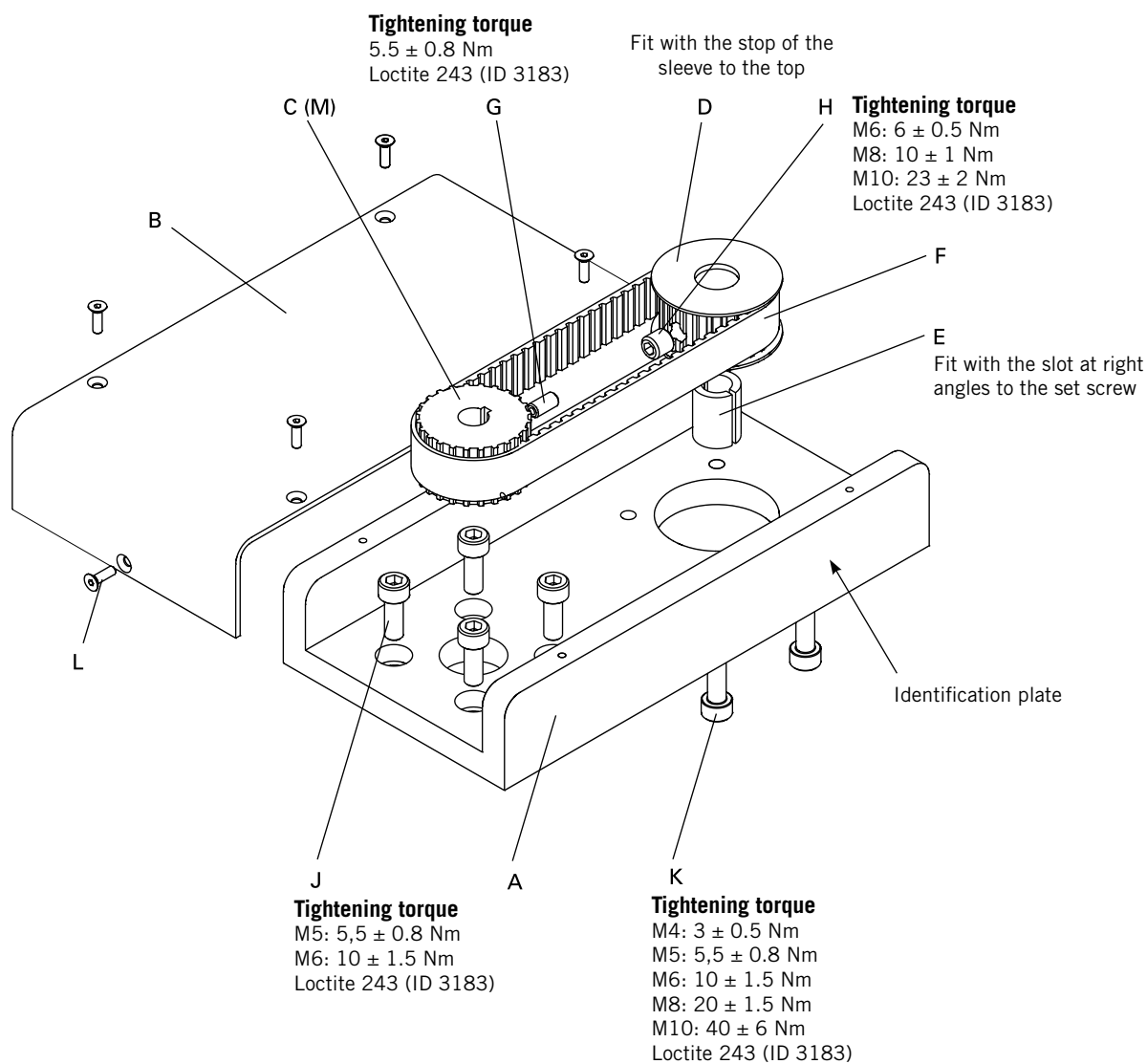


## Attention

Some motor systems (e.g., Servo) are to be adjusted in advance before they are connected up to the drive.

## 9.5 Synchronous belt drive with configuration capability

### 9.5.1 Design Features



| POS | DESIGNATION                        |
|-----|------------------------------------|
| A   | FLANGE PLATE                       |
| B   | COVER                              |
| C   | COG BELT WHEEL A T5 DRIVE SIDE     |
| D   | COG BELT WHEEL A T5 MOTOR SIDE     |
| E   | CLAMPING SLEEVE                    |
| F   | COG BELT                           |
| G   | SOCKET SET SCREW DRIVE SIDE        |
| H   | SOCKET SET SCREW MOTOR SIDE        |
| J   | SOCKET HEAD CAP SCREW DRIVE SIDE   |
| K   | SOCKET HEAD CAP SCREW MOTOR SIDE   |
| L   | COUNTERSUNK SCREW M3 X 10 DIN 7991 |
|     | IDENTIFICATION PLATE               |

#### Parts for the option „smooth drive shaft“

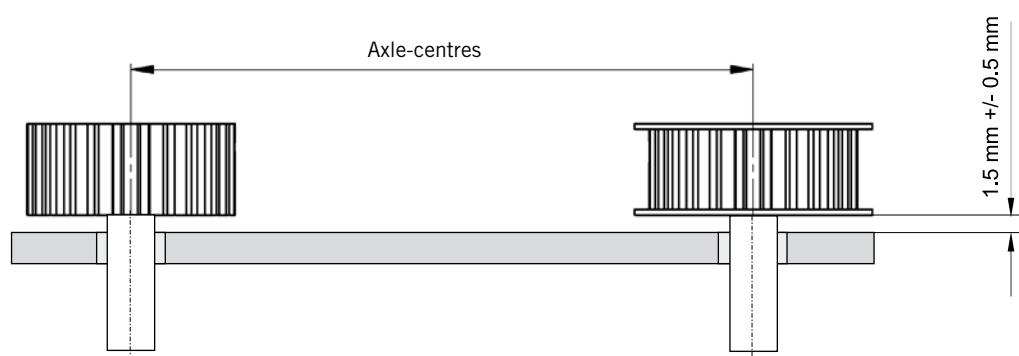
| POS | DESIGNATION                             |
|-----|-----------------------------------------|
| C   | COG BELT WHEEL ACTUATOR A T5 DRIVE SIDE |
| M   | CLAMPING SLEEVE                         |

## 9.5.2 Sequence of assembly:

### Pay attention to tightening torque.

- Fit the motor to the flange plate.
- Fit the linear drive to the flange plate ensuring that the axles centres are set at the correct distance apart. (See table)
- Push on belt wheels and feed on timing belt. (See drawing)
- Set the clearance between the belt wheel and flange face to 1.5+/- 0.5mm and tighten the locking screws.
- Install toothed belts and correct centre distance if necessary.
- Fit the cover plate.

| Size               | OSP-E25 |       | OPS-E32 |       | OSP-E50 |       |
|--------------------|---------|-------|---------|-------|---------|-------|
| Transmission ratio | 1:1     | 2:1   | 1:1     | 2:1   | 1:1     | 2:1   |
| Axle-centres [mm]  | 110     | 109.3 | 110     | 111.4 | 135     | 133.7 |



## 10 Manufacturer's statement



### Manufacturer's Declaration

in accordance with EU-Directives Machinery (89/392/ EC, replaced by 98/37/EU appendix II B)

The design of the OSP-E:

Types: **OSP-E..BHD / OSP-E..BV / OSP-E..B**  
**OSP-E..SB / OSP-E..ST / OSP-E..SBR / OSP-E..STR**

is developed, designed and manufactured in compliance with Guidelines 98/37/EU and is the sole responsibility of

Company:

**Parker-Origa GmbH**  
**Industriestraße 8**  
**DE-70794 Filderstadt**

To the OSP-E following related standards apply:

- DIN EN ISO 12100, Safety of Machines Plant and Machinery
- DIN EN 60204.1, Equipment for Industrial Machines

Full technical documentation is available.

**Commissioning of the OSP-E is forbidden until it has been established that the machine/plant in which it is to be installed complies with the requirements of the EU Machines Directives.**

Filderstadt, august 2006

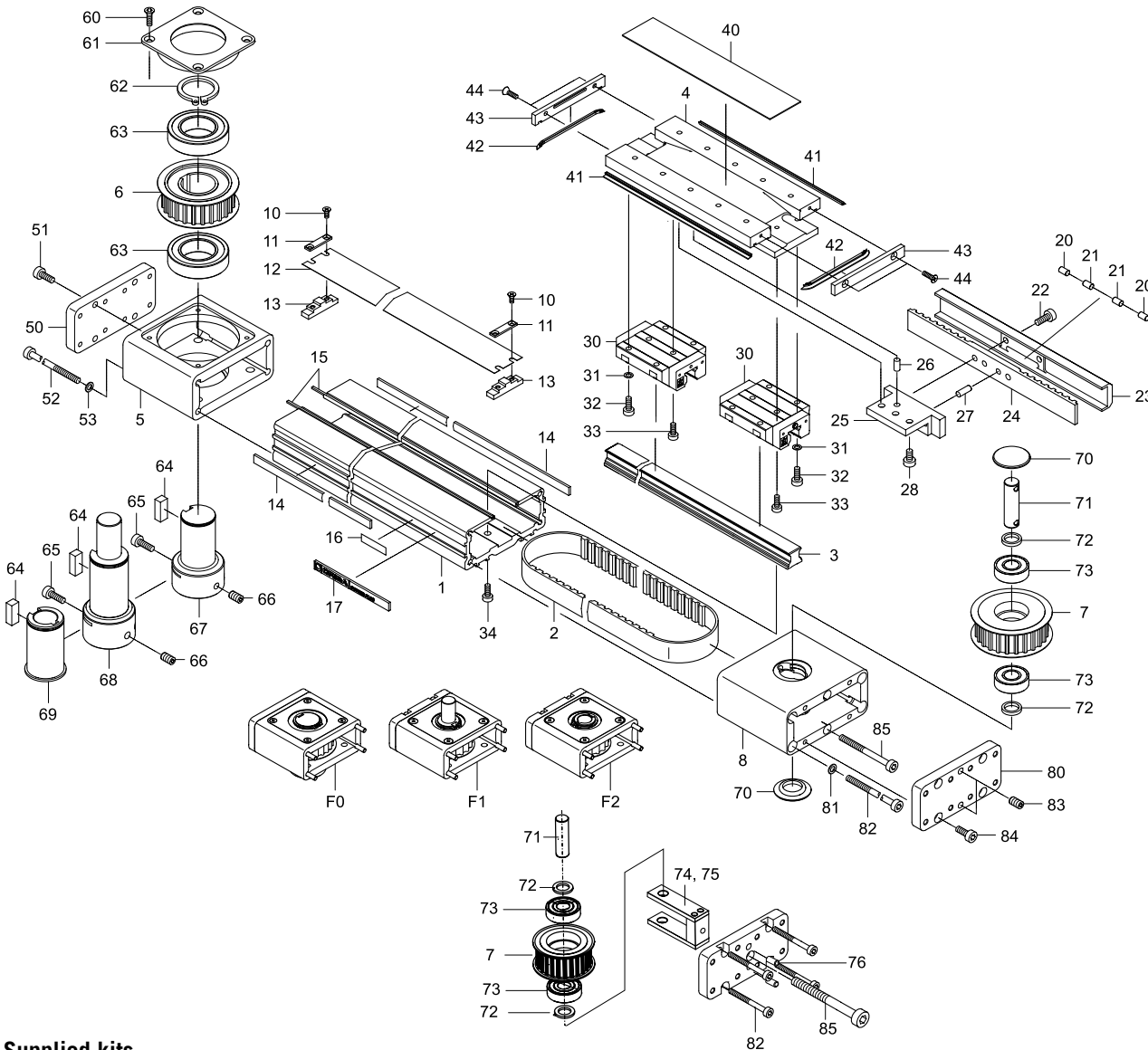
  
 Johann Asperger  
 Managing Director

  
 Dr. Robert Eschmann  
 Dep. for Research and Development

## 11 Spare part lists

### 11.1 OSP-E..BHD

**BHDII: Linear drive with toothed belt and integrated recirculating ball bearing guide**



### Supplied kits

| Description                                     | Order No.  |            |            |            | Contents                                             |
|-------------------------------------------------|------------|------------|------------|------------|------------------------------------------------------|
|                                                 | OSP-E20BHD | OSP-E25BHD | OSP-E32BHD | OSP-E50BHD |                                                      |
| Service kit                                     | 16317      | 15266      | 15267      | 15268      | 2, 10, 11, 12, 13, 70                                |
| Outer-band-kit                                  | 16316      | 15271      | 15272      | 15273      | 10, 11, 12, 13                                       |
| End cap kit - run end                           | 16145      | 12930      | 12931      | 12932      | 7, 70, 71, 72, 73, 8, 80, 81, 82, 83, 84, 85         |
| End cap kit - drive clamp shaft                 | 16144      | 12927      | 12928      | 12929      | 5, 50, 51, 52, 53, 6, 60, 61, 62, 63, 64, 65, 66, 67 |
| End cap kit - drive clamp shaft and plain shaft | 16148      | 15093      | 15095      | 15097      | 5, 50, 51, 52, 53, 6, 60, 61, 62, 63, 64, 65, 66, 68 |
| End cap kit - plain shaft                       | 16185      | 16318      | 16319      | 16320      | 5,50,51,52,53,6,60,61,62,63,64,90                    |
| End cap kit - drive hollow shaft                | 16147      | 15094      | 15096      | 15098      | 5, 50, 51, 52, 53, 6, 60, 61, 62, 63, 64, 65, 66, 69 |



**POS. DESCRIPTION**

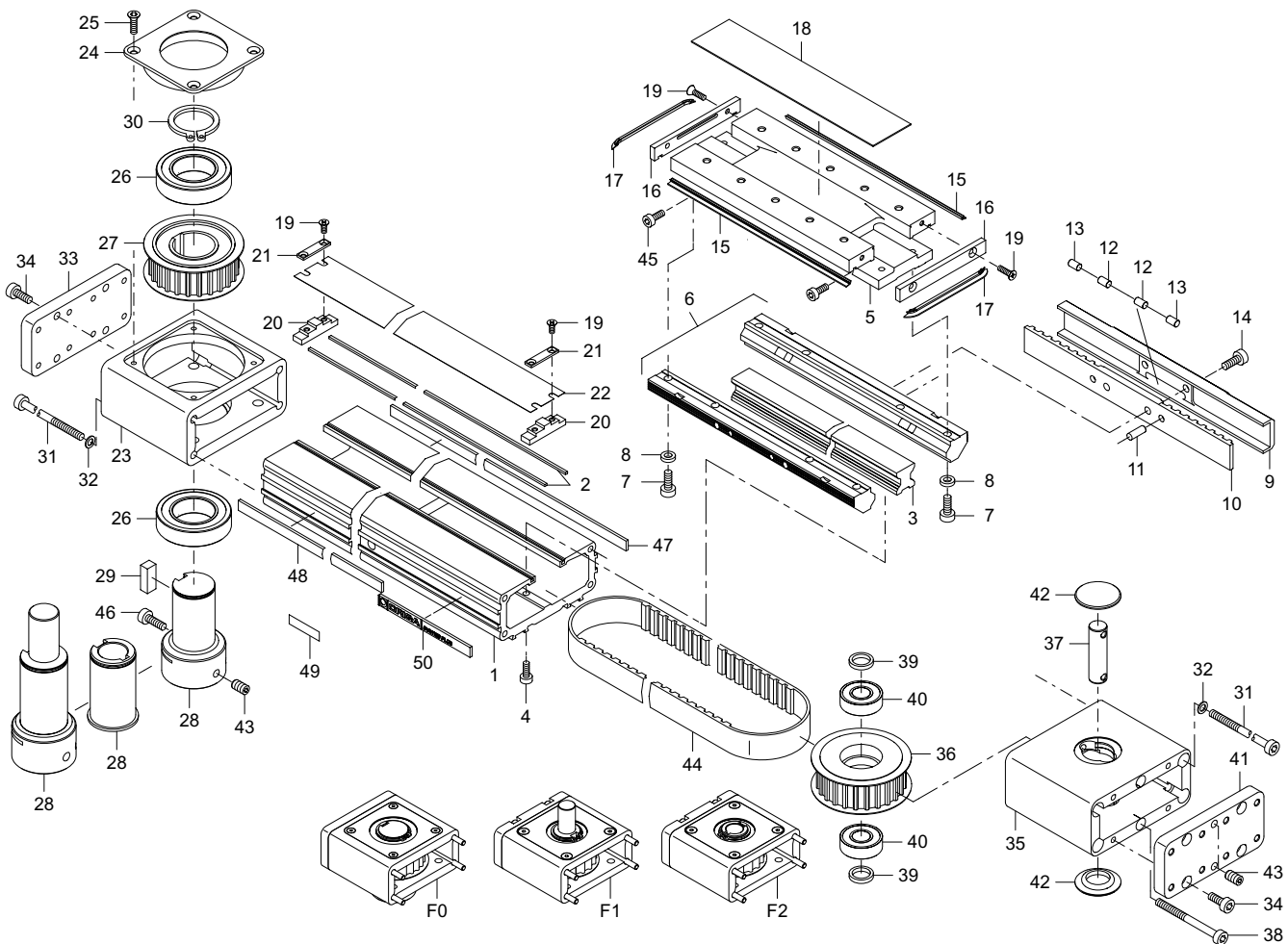
|    |                                                                       |
|----|-----------------------------------------------------------------------|
| 1  | CYLINDER BARREL OSP-E..BHD                                            |
| 2  | TOOTH BELT OSP-E..BHD                                                 |
| 3  | GUIDE RAIL OSP-E..BHD                                                 |
| 4  | CARRIER OSP-E..BHD                                                    |
| 5  | CAP ACTUATOR OSP-E..BHD                                               |
| 6  | TOOTH BELT WHEEL ACTUATOR OSP-E..BHD                                  |
| 7  | TOOTH BELT WHEEL CIRCULATION OSP-E..BHD                               |
| 8  | END CAP RUN END OSP-E..BHD                                            |
| 10 | COUNTERSUNK SCREW DIN 7991                                            |
| 11 | CLAMPING PIECE FOR OUTER BAND OSP-E..BHD                              |
| 12 | OUTER BAND OSP-E..BHD                                                 |
| 13 | CLAMPING PIECE FOR INNER BAND OSP-E..BHD-II                           |
| 14 | COVER RAIL                                                            |
| 15 | MAGNETIC STRIP                                                        |
| 16 | IDENTIFICATION PLATE                                                  |
| 17 | COVER RAIL- LABEL                                                     |
| 20 | STEEL BOLT<br>(2*OSP-E20BHD, 25BHD, 32BHD / 3*OSP-E50BHD)             |
| 21 | MAGNET<br>(1*OSP-E20BHD / 6*OSP-E25BHD / 2*OSP-E32BHD / 3*OSP-E50BHD) |
| 22 | SOCKET HEAD CAP SCREW DIN 6912                                        |
| 23 | CLAMPING PLATE OSP-E..BHD                                             |
| 24 | TOOTH BELT KEYLOCK OSP-E..BHD                                         |
| 25 | TOOTH BELT SHACKLE PLATE OSP-E..BHD-II                                |
| 26 | ROLL PIN DIN 6325<br>ONLY OSP-E32BHD AND OSP-E50BHD                   |
| 27 | ROLL PIN DIN 7                                                        |
| 28 | SOCKET HEAD CAP SCREW DIN 7984                                        |
| 30 | GUIDED CARRIAGE OSP-E..BHD                                            |
| 31 | WASHER                                                                |
| 32 | SOCKET HEAD CAP SCREW DIN 912                                         |
| 33 | SOCKET HEAD CAP SCREW DIN 7984                                        |
| 34 | SOCKET HEAD CAP SCREW DIN 7984                                        |
| 40 | COVER OSP-E..BHD                                                      |
| 41 | SIDE WIPER                                                            |
| 42 | WIPER GABLE END                                                       |
| 43 | WIPER COVER                                                           |

**POS. DESCRIPTION**

|    |                                     |
|----|-------------------------------------|
| 44 | COUNTERSUNK SCREW DIN 7991          |
| 50 | COVER PLATE ACTUATOR FOR OSP-E..BHD |
| 51 | SOCKET HEAD CAP SCREW DIN 912       |
| 52 | SOCKET HEAD CAP SCREW DIN 912       |
| 53 | WASHER                              |
| 60 | COUNTERSUNK SCREW DIN 7991          |
| 61 | COVER CAP ACTUATOR OSP-E..BHD       |
| 62 | WASHER DIN 471                      |
| 63 | BALL BEARING                        |
| 64 | KEY DIN 6885                        |
| 65 | SOCKET HEAD CAP SCREW DIN 912       |
| 66 | SOCKET SET SCREW DIN 913            |
| 67 | CLAMP SHAFT                         |
| 68 | CLAMP SHAFT WITH PLAIN SHAFT        |
| 69 | HOLLOW SHAFT WITH KEYWAY            |
| 70 | COVER CAP (NOT OSP-E20BHD)          |
| 71 | AXLE CIRCULATION OSP-E..BHD         |
| 72 | DISTANCE RING OSP-E..BHD            |
| 73 | BALL BEARING                        |
| 80 | COVER PLATE CIRCULATION OSP-E..BHD  |
| 81 | WASHER                              |
| 82 | SOCKET HEAD CAP SCREW DIN 912       |
| 83 | SOCKET SET SCREW DIN 913            |
| 84 | SOCKET HEAD CAP SCREW DIN 912       |
| 85 | SOCKET HEAD CAP SCREW DIN 912       |

## 11.2 OSP-E..BHD

**BHD: Linear drive with toothed belt and integrated roller guide**



### Supplied kits

| Description                                | Order No.  |            |            | Contents                                               |
|--------------------------------------------|------------|------------|------------|--------------------------------------------------------|
|                                            | OSP-E25BHD | OSP-E32BHD | OSP-E50BHD |                                                        |
| Service kit                                | 15266      | 15267      | 15268      | 19, 20, 21, 22, 42, 44                                 |
| Outer-band-kit                             | 15271      | 15272      | 15273      | 19, 20, 21, 22                                         |
| End cap kit - run end                      | 12930      | 12931      | 12932      | 31, 32, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43         |
| End cap kit - drive clamp shaft            | 12927      | 12928      | 12929      | 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 43, 46 |
| End cap kit - clamp shaft with plain shaft | 15093      | 15095      | 15097      | 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 43, 46 |
| End cap kit - drive plain                  | 16318      | 16319      | 16320      | 5, 50, 51, 52, 53, 6, 60, 61, 62, 63, 64, 90           |
| End cap kit - drive hollow shaft           | 15094      | 15096      | 15098      | 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34         |

**POS. DESCRIPTION**

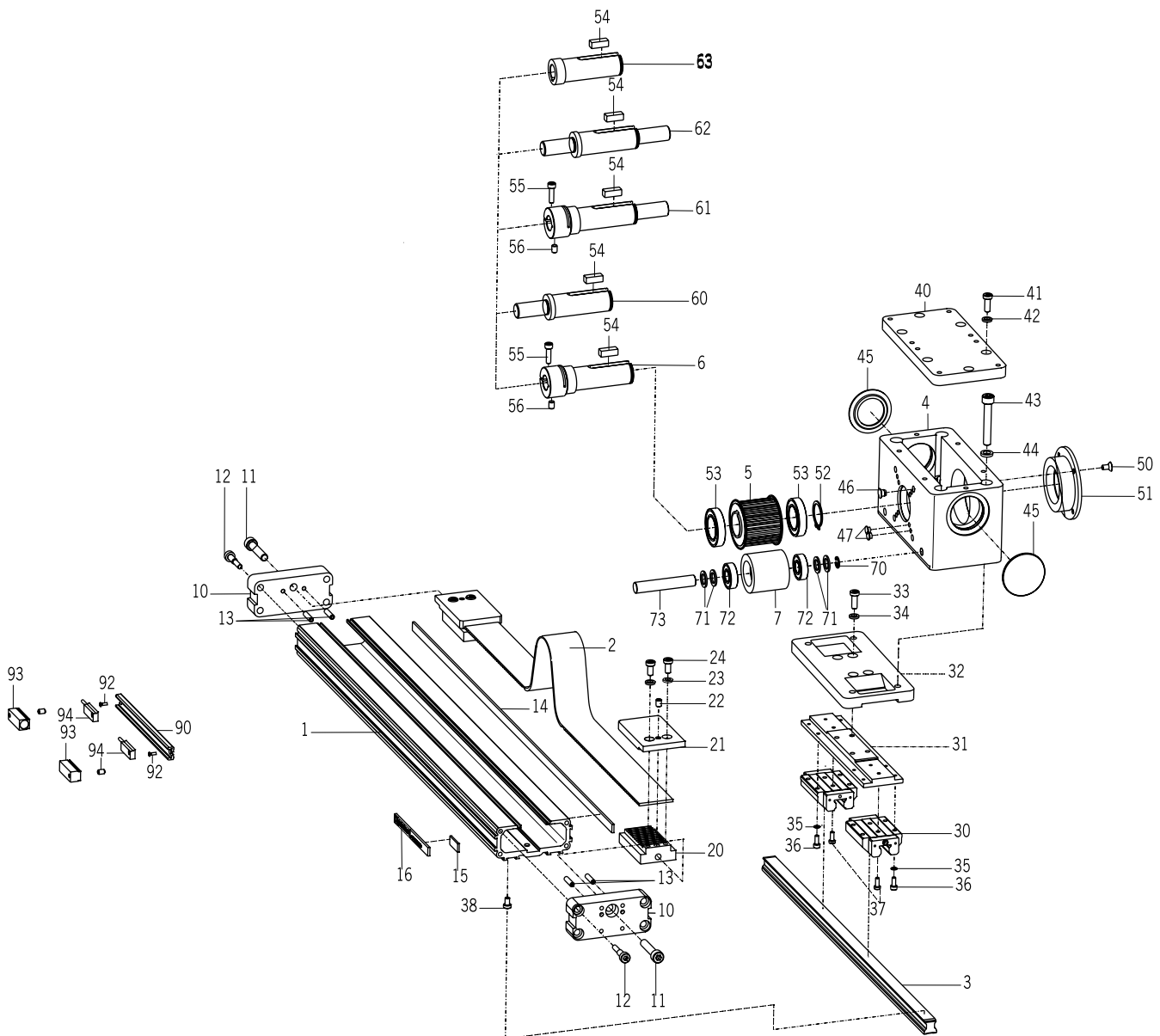
|    |                                            |
|----|--------------------------------------------|
| 1  | CYLINDER BARREL OSP-E..BHD CUT TO LENGTH   |
| 2  | MAGNET BAND                                |
| 3  | DOUBLE RAIL FD15K OSP-E..BHD CUT TO LENGTH |
| 4  | CYLINDER SCREW DIN 912                     |
| 5  | CARRIER OSP-E..BHD                         |
| 6  | ROLLER SHOE PAIR OSP-E..BHD                |
| 7  | CYLINDER SCREW DIN 912                     |
| 8  | LOCKING DISK                               |
| 9  | CLAMPING PLATE OSP-E..BHD                  |
| 10 | BELT LOCK OSP-E..BHD                       |
| 11 | CYLINDRICAL PIN DIN 7                      |
| 12 | MAGNET                                     |
| 13 | STEEL BOLT OSP-E32BHD / OSP-E50BHD         |
| 14 | CYLINDER SCREW DIN 6912                    |
| 15 | WIPER SIDE OSP-E..BHD CUT TO LENGTH        |
| 16 | WIPER COVER OSP-E..BHD                     |
| 17 | WIPER END OSP-E..BHD CUT TO LENGTH         |
| 18 | COVERING OSP-E..BHD                        |
| 19 | COUNTERSUNK SCREW DIN 7991                 |
| 20 | CLAMPING PIECE INTERN OSP-E..BHD           |
| 21 | CLAMPING PIECE OUTER BAND OSP-E..BHD       |
| 22 | OUTER BAND CUT TO LENGTH OSP-E..BHD        |
| 23 | COVER DRIVE FOR OSP-E..BHD CLAMP SHAFT     |
| 24 | COVERING COVER DRIVE OSP-E..BHD            |
| 25 | COUNTERSUNK SCREW DIN 7991                 |
| 26 | BALL BEARING                               |
| 27 | BELT WHEEL DRIVE FOR OSP-E..BHD            |
| 28 | CLAMP SHAFT OSP-E..BHD / HOLLOW SHAFT      |
| 29 | ADJUSTING SPRING DIN 6885                  |
| 30 | LOCKING DISK DIN 471                       |

**POS. DESCRIPTION**

|    |                                          |
|----|------------------------------------------|
| 31 | CYLINDER SCREW DIN 912                   |
| 32 | LOCKING DISK                             |
| 33 | COVER PLATE DRIVE FOR OSP-E..BHD KL.     |
| 34 | CYLINDER SCREW DIN 912                   |
| 35 | COVER REVERSE GUIDE OSP-E..BHD           |
| 36 | BELT WHEEL REVERSE GUIDE FOR OSP-E..BHD  |
| 37 | AXLE REVERSE GUIDE FOR OSP-E..BHD        |
| 38 | CYL. SCREW DIN 912                       |
| 39 | DISTANCE RING FOR OSP-E..BHD             |
| 40 | BALL BEARING                             |
| 41 | COVER PLATE REVERSE GUIDE FOR OSP-E..BHD |
| 42 | COVER CAP                                |
| 43 | THREADED PIN DIN 916                     |
| 44 | BELT OSP-E..BHD CUT TO LENGTH            |
| 45 | CYLINDER SCREW DIN 7984                  |
| 46 | CYLINDER SCREW DIN 912                   |
| 47 | COVER RAIL METER GOODS                   |
| 48 | COVER RAIL METER GOODS                   |
| 49 | IDENTIFICATION PLATE                     |
| 50 | COVER RAIL FOR NAMEPLATE                 |

## 11.3 OSP-E..BV

Vertical linear drive with tooth belt and integrated recirculating ball bearing guide

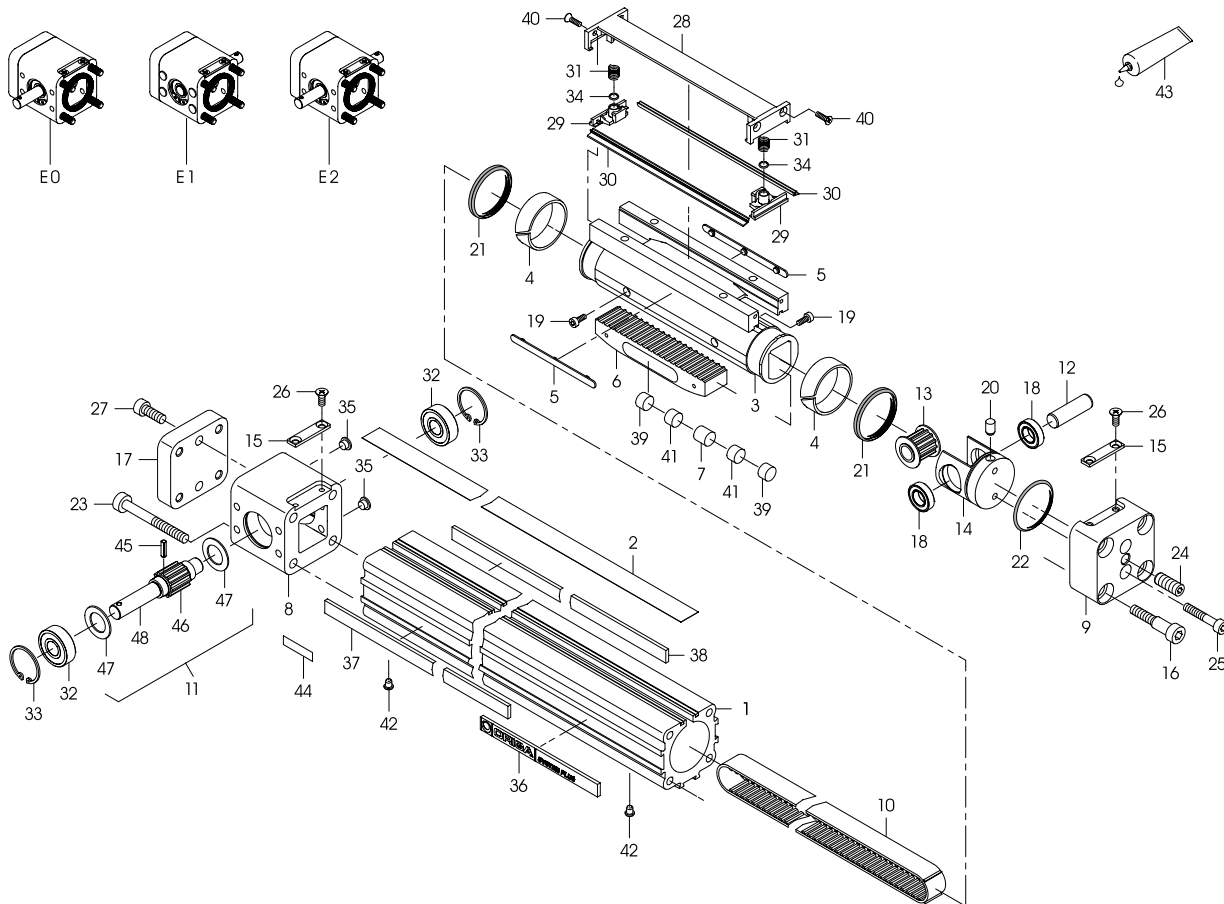


| POS. | DESCRIPTION                            |
|------|----------------------------------------|
| 1    | CYLINDER BARREL OSP-E..BV              |
| 2    | TOOTHED BELT OSP-E..BV                 |
| 3    | GUIDE RAIL OSP-E..BV                   |
| 4    | CAP ACTUATOR OSP-E..BV                 |
| 5    | TOOTHED BELT DRIVE OSP-E..BV           |
| 6    | CLAMP SHAFT                            |
| 7    | TOOTH BELT WHEEL CIRCULATION OSP-E..BV |
| 10   | COVER PLATE OSP-E..BV                  |
| 11   | SOCKET HEAD CAP SCREW DIN 912          |
| 12   | SCREW FOR COVER                        |
| 13   | SOCKET SET SCREW DIN 916               |
| 14   | COVER RAIL                             |
| 15   | IDENTIFICATION PLATE                   |
| 16   | COVER RAIL IDENTIFICATION PLATE        |
| 20   | BELT LOCK OSP-E..BV                    |
| 21   | CLAMPING PLATE OSP-E..BV               |
| 22   | CYLINDRICAL PIN DIN 6325               |
| 24   | SOCKET HEAD CAP SCREW DIN 7984         |
| 30   | GUIDED CARRIAGE OSP-E..BV              |
| 31   | CARRIER PLATE OSP-E..BV                |
| 32   | COVER PLATE OSP-E..BV                  |
| 33   | SOCKET HEAD CAP SCREW DIN 7984         |
| 34   | LOCK WASHER                            |
| 35   | LOCK WASHER                            |
| 36   | SOCKET HEAD CAP SCREW DIN 912          |
| 37   | SOCKET HEAD CAP SCREW DIN 6912         |
| 38   | SOCKET HEAD CAP SCREW DIN 7984         |
| 40   | COVER PLATE DRIVE OSP-E..BV            |
| 41   | SOCKET HEAD CAP SCREW DIN 7984         |

| POS | DESCRIPTION                               |
|-----|-------------------------------------------|
| 42  | LOCK WASHER                               |
| 43  | SOCKET HEAD CAP SCREW DIN 912             |
| 44  | LOCK WASHER                               |
| 45  | COVER CAP GPN 910/4010                    |
| 46  | PLUG 7 D                                  |
| 47  | PLUG M6                                   |
| 50  | COUNTERSUNK SCREW DIN 7991                |
| 51  | COVER CAP ACTUATOR OSP-E..BV              |
| 52  | LOCK WASHER DIN 471                       |
| 53  | BALL BEARING                              |
| 54  | KEYWAY                                    |
| 55  | SOCKET HEAD CAP SCREW DIN 912             |
| 56  | SOCKET SET SCREW DIN 913                  |
| 60  | SHAFT WITH PLAIN                          |
| 61  | CLAMP SHAFT WITH PLAIN SHAFT              |
| 62  | CLAMP SHAFT WITH PLAIN SHAFT DOUBLE SIDED |
| 63  | HOLLOW SHAFT WITH KEYWAY                  |
| 70  | LOCK WASHER DIN 472                       |
| 71  | DISTANCE RING                             |
| 72  | BALL BEARING                              |
| 73  | KEEPER                                    |
| 90  | LOCK RAIL                                 |
| 92  | SOCKET HEAD CAP SCREW                     |
| 93  | MAGNET                                    |
| 94  | KL3087 (RS-S NC)                          |

## 11.4 OSP-E..B

### Linear Drive with toothed belt and internal plain bearing guide



### Supplied kits

| Description              | Order No.      |                |                | Contents                                              |
|--------------------------|----------------|----------------|----------------|-------------------------------------------------------|
|                          | OSP-E25B       | OSP-E32B       | OSP-E50B       |                                                       |
| Seal kit                 | 12110          | 12111          | 12112          | 4, 5, 19, 21, 22, 28, 29, 30, 31, 34, 40, 43          |
| Service kit              | 15247          | 15248          | 15249          | Seal kit + 2, 10                                      |
| Carrier kit              | 12172          | 12173          | 12174          | 3, 4, 5, 6, 7, 19, 28, 29, 30, 31, 34, 39, 40, 41     |
| End cap kit running unit | 12113          | 12117          | 12121          | 9, 12, 13, 14, 15, 16, 18, 20, 21, 22, 24, 25, 26     |
| End cap kit shaft 0      | 12114 / 15277* | 12118 / 15280* | 12122 / 15283* | 8, 15, 17, 21, 23, 26, 27, 32, 33, 35, 45, 46, 47, 48 |
| End cap kit shaft 1      | 12115 / 15278* | 12119 / 15281* | 12123 / 15284* | 8, 15, 17, 21, 23, 26, 27, 32, 33, 35, 45, 46, 47, 48 |
| End cap kit shaft 2      | 12116 / 15279* | 12120 / 15282* | 12124 / 15285* | 8, 15, 17, 21, 23, 26, 27, 32, 33, 35, 45, 46, 47, 48 |

\*) Stainless steel version

**POS. DESCRIPTION**

|    |                                        |
|----|----------------------------------------|
| 1  | CYLINDER BARREL OSP-E..B CUT TO LENGTH |
| 2  | OUTER BAND CUT TO LENGTH OSP-E..B      |
| 3  | CARRIER OSP-E..B                       |
| 4  | SUPPORT RING OSP-E..B                  |
| 5  | BEARING STRIP OSP-E..B                 |
| 6  | MAGNET HOUSING FOR OSP-E..B            |
| 7  | MAGNET 10D X 3L FOR OSP-E..B           |
| 8  | DRIVE END CAP FOR OSP-E..B             |
| 9  | RUN END CAP FOR OSP-E..B               |
| 10 | BELT OSP-E..B CUT TO LENGTH            |
| 11 | SHAFT ONE-SIDE OSP-E32B / OSP-E50B     |
| 12 | AXLE REVERSE GUIDE FOR OSP-E..B        |
| 13 | BELT WHEEL REVERSE GUIDE FOR OSP-E..B  |
| 14 | BEARING HOUSING FOR OSP-E..B           |
| 15 | CLAMPING PIECE EXTERN                  |
| 16 | SCREW FOR COVER                        |
| 17 | COVER PLATE FOR OSP-E..B               |
| 18 | BALL BEARING                           |
| 19 | CYLINDER SCREW                         |
| 20 | CYLINDRICAL PIN DIN 6325               |
| 21 | X-RING                                 |
| 22 | O-RING                                 |
| 23 | CYLINDER SCREW DIN 912                 |
| 24 | THREADED PIN DIN 916                   |
| 25 | CYLINDER SCREW DIN 912                 |
| 26 | COUNTERSUNK SCREW DIN 963              |
| 27 | CYLINDER SCREW DIN 912                 |
| 28 | COVER                                  |
| 29 | WIPER                                  |

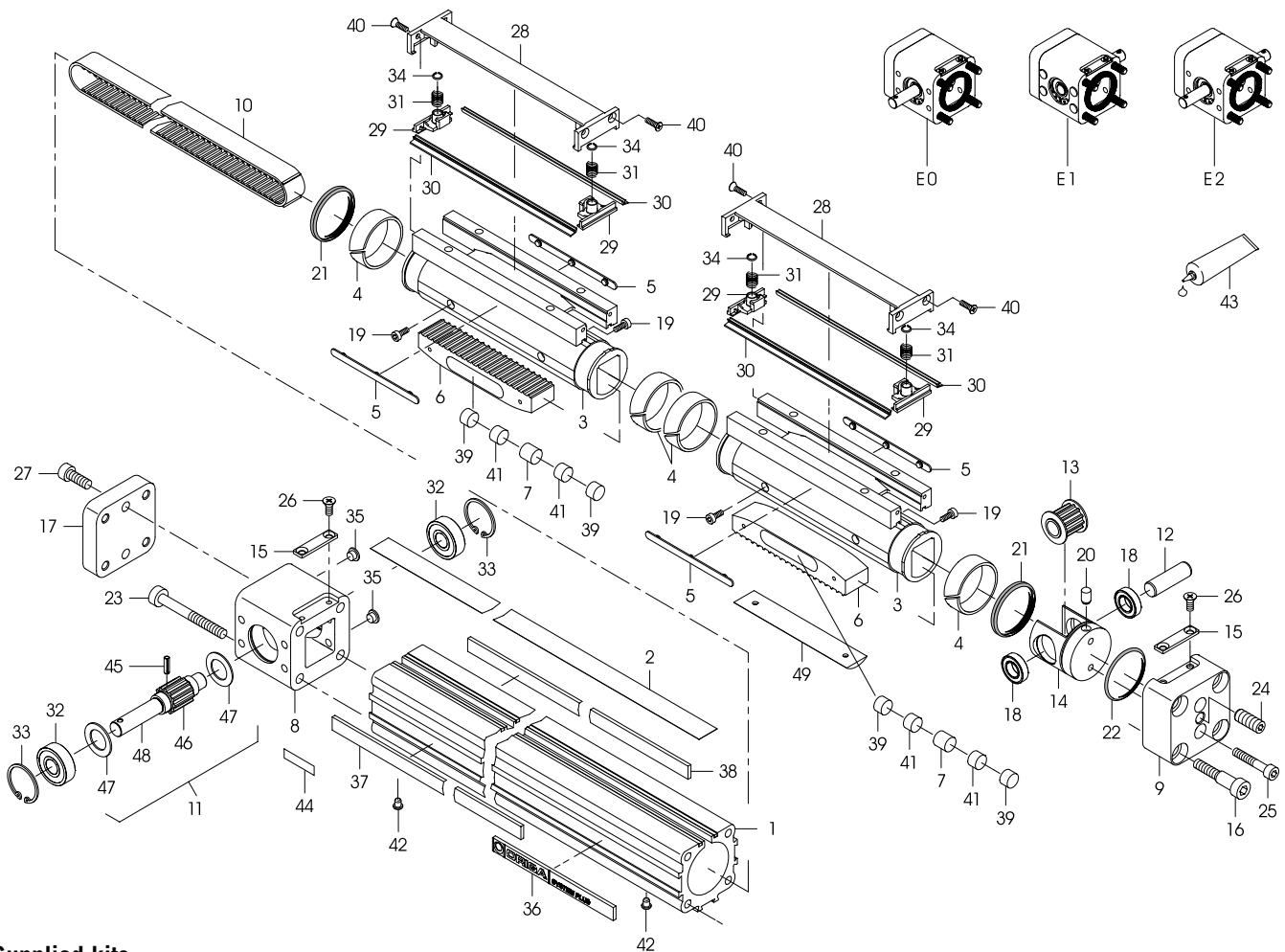
**POS. DESCRIPTION**

|    |                                     |
|----|-------------------------------------|
| 30 | SIDE WIPER CUT TO LENGTH ON SIDE    |
| 31 | THRUST SPRING FOR WIPER             |
| 32 | BALL BEARING                        |
| 33 | CIRCLIP DIN 472                     |
| 34 | O-RING                              |
| 35 | PLUG PLASTIC FOR SECURING BOREHOLES |
| 36 | COVER RAIL FOR NAMEPLATE            |
| 37 | COVER RAIL METER GOODS              |
| 38 | COVER RAIL METER GOODS              |
| 39 | BOLT FOR MAGNET                     |
| 40 | COUNTERSUNK SCREW DIN 7991          |
| 41 | MAGNET OSP-E32B                     |
| 42 | GREASE NIPPLE A1                    |
| 43 | GREASE FOR GUIDE                    |
| 44 | IDENTIFICATION PLATE OSP            |
| 45 | BRACING PIN DIN 7343 OSP-E25B       |
| 46 | BELT WHEEL DRIVE FOR OSP-E25B       |
| 47 | DISTANCE RING FOR OSP-E25B          |
| 48 | SHAFT ONE SIDE OSP-E25B             |

## 11.5 OSP-E..B

Linear Drive with toothed belt and internal plain bearing guide

Bi-Parting version



### Supplied kits

| Description              | Order No.      |                |                | Contents                                              |
|--------------------------|----------------|----------------|----------------|-------------------------------------------------------|
|                          | OSP-E25BP      | OSP-E32BP      | OSP-E50BP      |                                                       |
| Seal kit                 | 2 x 12110      | 2 x 12111      | 2 x 12112      | 4, 5, 19, 21, 22, 28, 29, 30, 31, 34, 40, 43          |
| Service kit              | 15289          | 15290          | 15291          | Seal kit + 2, 10                                      |
| Carrier kit              | 15253          | 15254          | 15255          | 3, 4, 5, 6, 7, 19, 28, 29, 30, 31, 34, 36, 40, 41, 49 |
| End cap kit running unit | 12113          | 12117          | 12121          | 9, 12, 13, 14, 15, 16, 18, 20, 21, 22, 24, 25, 26     |
| End cap kit shaft 0      | 12114 / 15277* | 12118 / 15280* | 12122 / 15283* | 8, 15, 17, 21, 23, 26, 27, 32, 33, 35, 45, 46, 47, 48 |
| End cap kit shaft 1      | 12115 / 15278* | 12119 / 15281* | 12123 / 15284* | 8, 15, 17, 21, 23, 26, 27, 32, 33, 35, 45, 46, 47, 48 |
| End cap kit shaft 2      | 12116 / 15279* | 12120 / 15282* | 12124 / 15285* | 8, 15, 17, 21, 23, 26, 27, 32, 33, 35, 45, 46, 47, 48 |

\* ) Stainless steel version



**POS. DESCRIPTION**

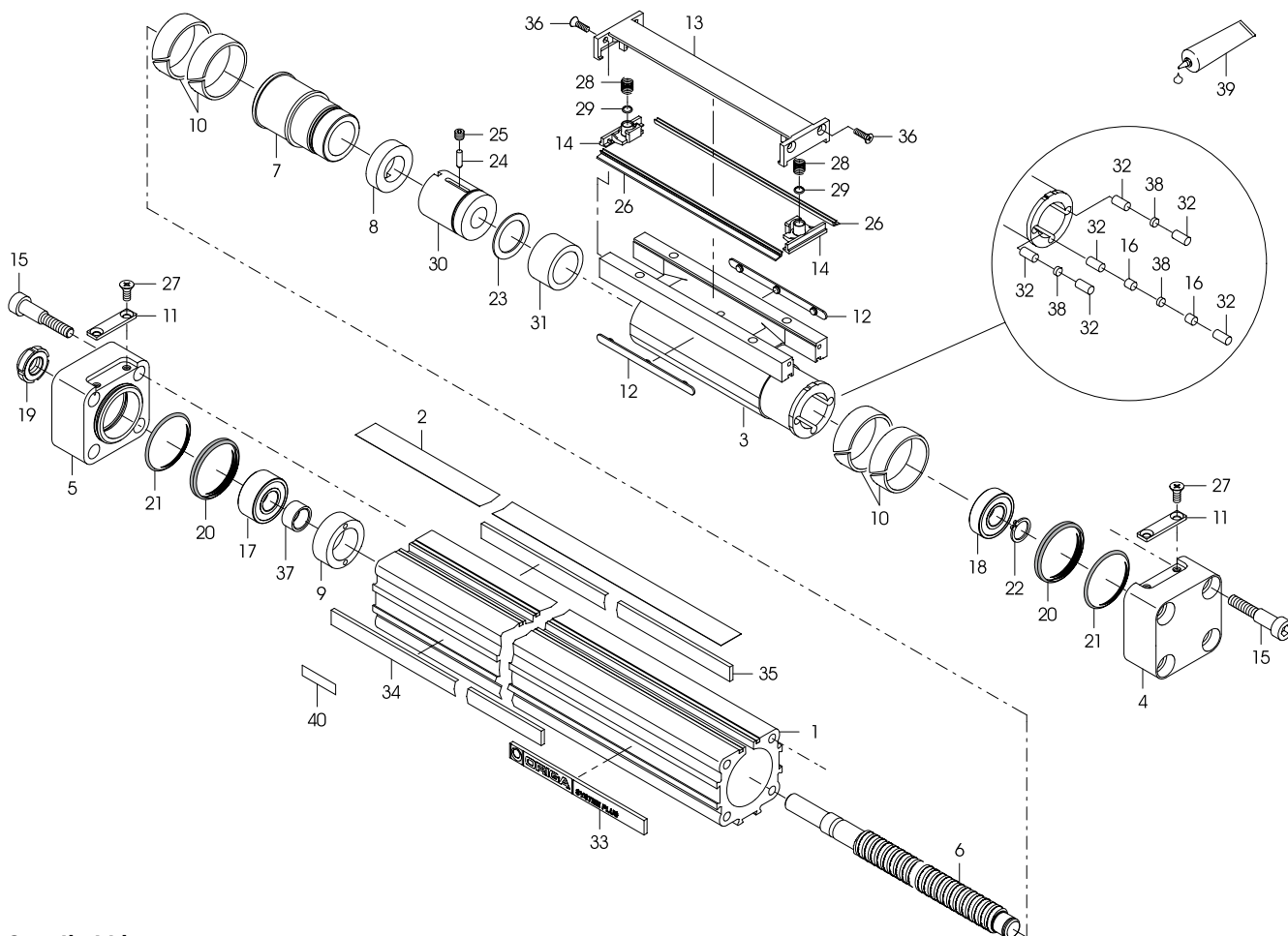
|    |                                         |
|----|-----------------------------------------|
| 1  | CYLINDER BARREL OSP-E..BP CUT TO LENGTH |
| 2  | OUTER BAND CUT TO LENGTH OSP-E..BP      |
| 3  | CARRIER OSP-E..BP                       |
| 4  | SUPPORT RING OSP-E..BP                  |
| 5  | BEARING STRIP OSP-E..BP                 |
| 6  | MAGNET HOUSING FOR OSP-E..BP            |
| 7  | MAGNET 10D X 3L FOR OSP-E..BP           |
| 8  | DRIVE END CAP FOR OSP-E..BP             |
| 9  | RUN END CAP FOR OSP-E..BP               |
| 10 | BELT OSP-E..B CUT TO LENGTH             |
| 11 | SHAFT ONE SIDE OSP-E32B / OSP-E50BP     |
| 12 | AXLE REVERSE GUIDE FOR OSP-E..B         |
| 13 | BELT WHEEL REVERSE GUIDE FOR OSP-E..BP  |
| 14 | BEARING HOUSING FOR OSP-E..BP           |
| 15 | CLAMPING PIECE EXTERN                   |
| 16 | SCREW FOR COVER                         |
| 17 | COVER PLATE FOR OSP-E..BP               |
| 18 | BALL BEARING                            |
| 19 | CYLINDER SCREW DIN 912                  |
| 20 | CYLINDRICAL PIN DIN 6325                |
| 21 | X-RING                                  |
| 22 | O-RING                                  |
| 23 | CYLINDER SCREW DIN 912                  |
| 24 | THREADED PIN DIN 916                    |
| 25 | CYLINDER SCREW DIN 912                  |
| 26 | COUNTERSUNK SCREW DIN 963               |
| 27 | CYLINDER SCREW DIN 912                  |
| 28 | COVER                                   |
| 29 | WIPER                                   |

**POS. DESCRIPTION**

|    |                                     |
|----|-------------------------------------|
| 30 | WIPER CUT TO LENGTH ON SIDE         |
| 31 | SPRING                              |
| 32 | BALL BEARING                        |
| 33 | CIRCLIP DIN 472                     |
| 34 | O-RING                              |
| 35 | PLUG PLASTIC FOR SECURING BOREHOLES |
| 36 | COVER RAIL FOR NAMEPLATE            |
| 37 | COVER RAIL METER GOODS              |
| 38 | COVER RAIL METER GOODS              |
| 39 | BOLT FOR MAGNET OSP-E..BP           |
| 40 | COUNTERSUNK SCREW DIN 7991          |
| 41 | MAGNET OSP-E32BPP                   |
| 42 | GREASE NIPPLE A1                    |
| 43 | GREASE FOR GUIDE                    |
| 44 | IDENTIFICATION PLATE OSP            |
| 45 | LOCK PIN DIN 7343 FOR OSP-E25BP     |
| 46 | WHEEL BELT DRIVE FOR OSP-E25BP      |
| 47 | DISTANCE RING FOR OSP-E25BP         |
| 48 | SHAFT ONE SIDE OSP-E25BP            |
| 49 | FILLING OUT PLATE FOR OSP-E..BP     |

## 11.6 OSP-E..SB

## Linear drive with ball screw drive and internal plain bearing guide



## Supplied kits

| Description                  | Order No. |          |          | Contents                                                           |
|------------------------------|-----------|----------|----------|--------------------------------------------------------------------|
|                              | OSP-E25S  | OSP-E32S | OSP-E50S |                                                                    |
| Seal kit                     | 12125     | 12126    | 12127    | 10, 12, 13, 14, 20, 21, 26, 28, 29, 36, 39                         |
| Service pack                 | 15250     | 15251    | 15252    | Seal kit + 2                                                       |
| Carrier kit spindle<br>5 mm  | 12166     | 12168    | 12916    | 3, 7, 8, 10, 12, 13, 14, 16, 23, 24, 25, 26,<br>28, 29, 32, 36, 38 |
| Carrier kit spindle<br>10 mm | -         | 12168    | 12916    | 3, 7, 8, 10, 12, 13, 14, 16, 23, 24, 25, 26,<br>28, 29, 32, 36, 38 |
| Carrier kit spindle<br>25 mm | -         | -        | 12916    | 3, 7, 8, 10, 12, 13, 14, 16, 23, 24, 25, 26,<br>28, 29, 32, 36, 38 |
| Carrier kit spindle<br>50 mm | -         | -        | 12916    | 3, 7, 8, 10, 12, 13, 14, 16, 23, 24, 25, 26,<br>28, 29, 32, 36, 38 |
| Ball Screw Dirve 5 mm        | 15256     | 15257    | 15259    | 6, 30                                                              |
| Ball Screw Dirve 10 mm       | -         | 15258    | 15260    | 6, 30                                                              |
| Ball Screw Dirve 25 mm       | -         | -        | 15261    | 6, 30                                                              |
| Ball Screw Dirve 50 mm       | -         | -        | 15262    | 6, 30                                                              |
| End cap kit run unit spindle | 12129     | 12131    | 12133    | 4, 11, 15, 18, 20, 21, 22, 27                                      |
| End cap kit actuator spindle | 12128     | 12130    | 12132    | 5, 9, 11, 15, 17, 20, 21, 27                                       |

**POS. DESCRIPTION**

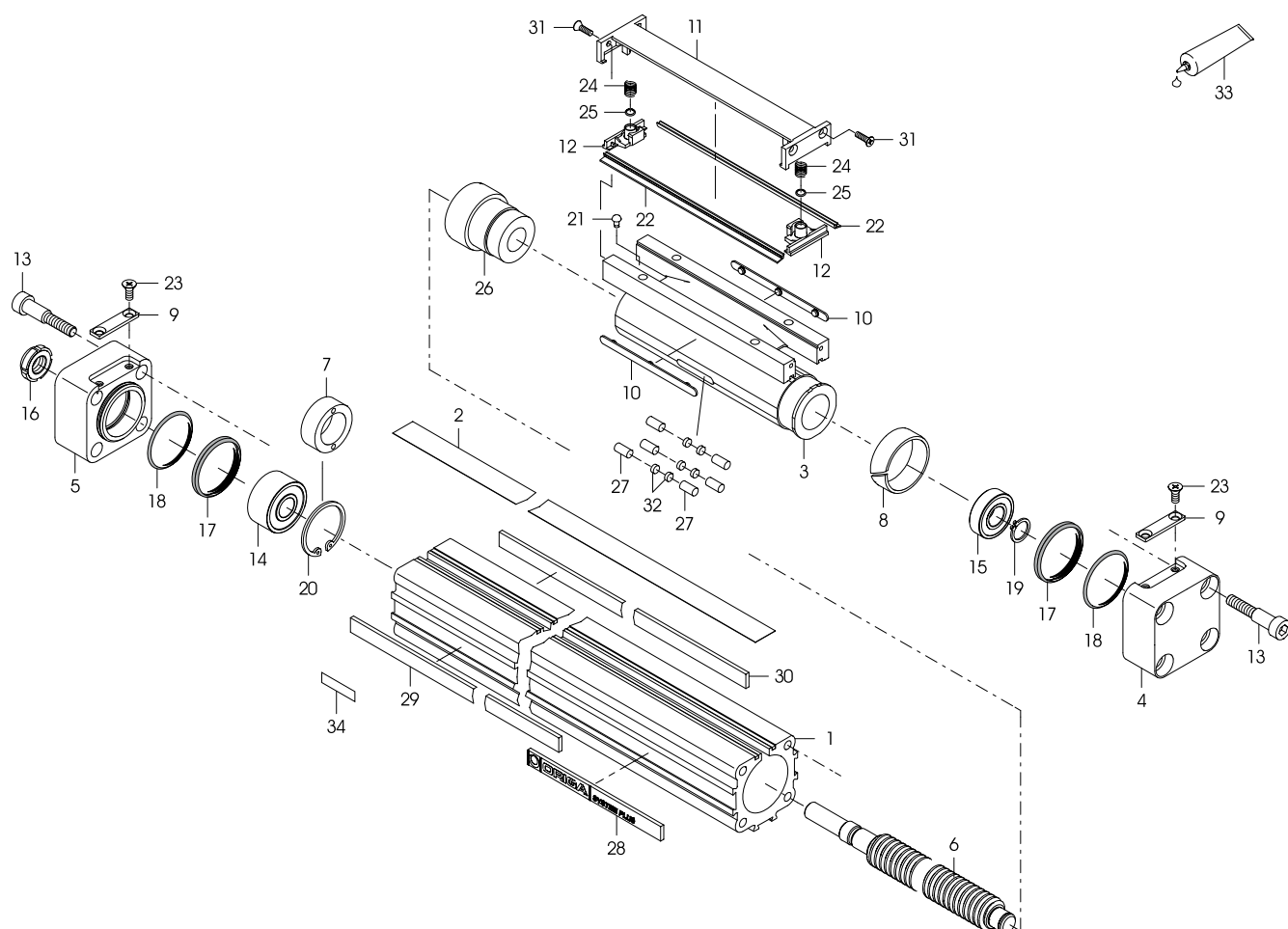
|    |                                        |
|----|----------------------------------------|
| 1  | CYLINDER BARREL CUT TO LENGTH OSP-E..S |
| 2  | OUTER BAND CUT TO LENGTH OSP-E..S      |
| 3  | CARRIER OSP-E..S                       |
| 4  | END CAP FOR OSP-E..S                   |
| 5  | END CAP DRIVE FOR OSP-E..S             |
| 6  | BALL THREADED SPINDLE                  |
| 7  | LOCKING NUT OSP-E..S                   |
| 8  | ADJUSTING NUT OSP-E..S                 |
| 9  | CLAMPING RING OSP-E..S                 |
| 10 | SUPPORT RING OSP-E..S                  |
| 11 | CLAMPING PIECE EXTERN                  |
| 12 | BEARING STRIPS OSP-E..S                |
| 13 | COVER                                  |
| 14 | WIPER                                  |
| 15 | SCREW FOR COVER                        |
| 16 | MAGNET OSP-E..S                        |
| 17 | BALL BEARING                           |
| 18 | BALL BEARING                           |
| 19 | NUT                                    |
| 20 | X-RING                                 |
| 21 | O-RING                                 |
| 22 | CIRCLIP DIN 471                        |
| 23 | FITTING DISK DIN 988                   |

**POS. DESCRIPTION**

|    |                                  |
|----|----------------------------------|
| 24 | NEEDLE ROLL NRB                  |
| 25 | THREADED PIN DIN 913             |
| 26 | SIDE WIPER CUT TO LENGTH ON SIDE |
| 27 | COUNTERSUNK SCREW DIN 963        |
| 28 | THRUST SPRING FOR WIPER          |
| 29 | O-RING                           |
| 30 | BALL THREADED NUT FOR OSP-E..S   |
| 31 | DISTANCE RING                    |
| 32 | STEEL BOLT                       |
| 33 | COVER RAIL FOR NAMEPLATE         |
| 34 | COVER RAIL METER GOODS           |
| 35 | COVER RAIL METER GOODS           |
| 36 | COUNTERSUNK SCREW DIN 7991       |
| 37 | SLEEVE                           |
| 38 | MAGNET                           |
| 39 | GREASE FOR GUIDE                 |
| 40 | IDENTIFICATION PLATE             |

## 11.7 OSP-E..ST

Linear drive with trapezoidal screw drive and internal plain bearing guide



### Supplied kits

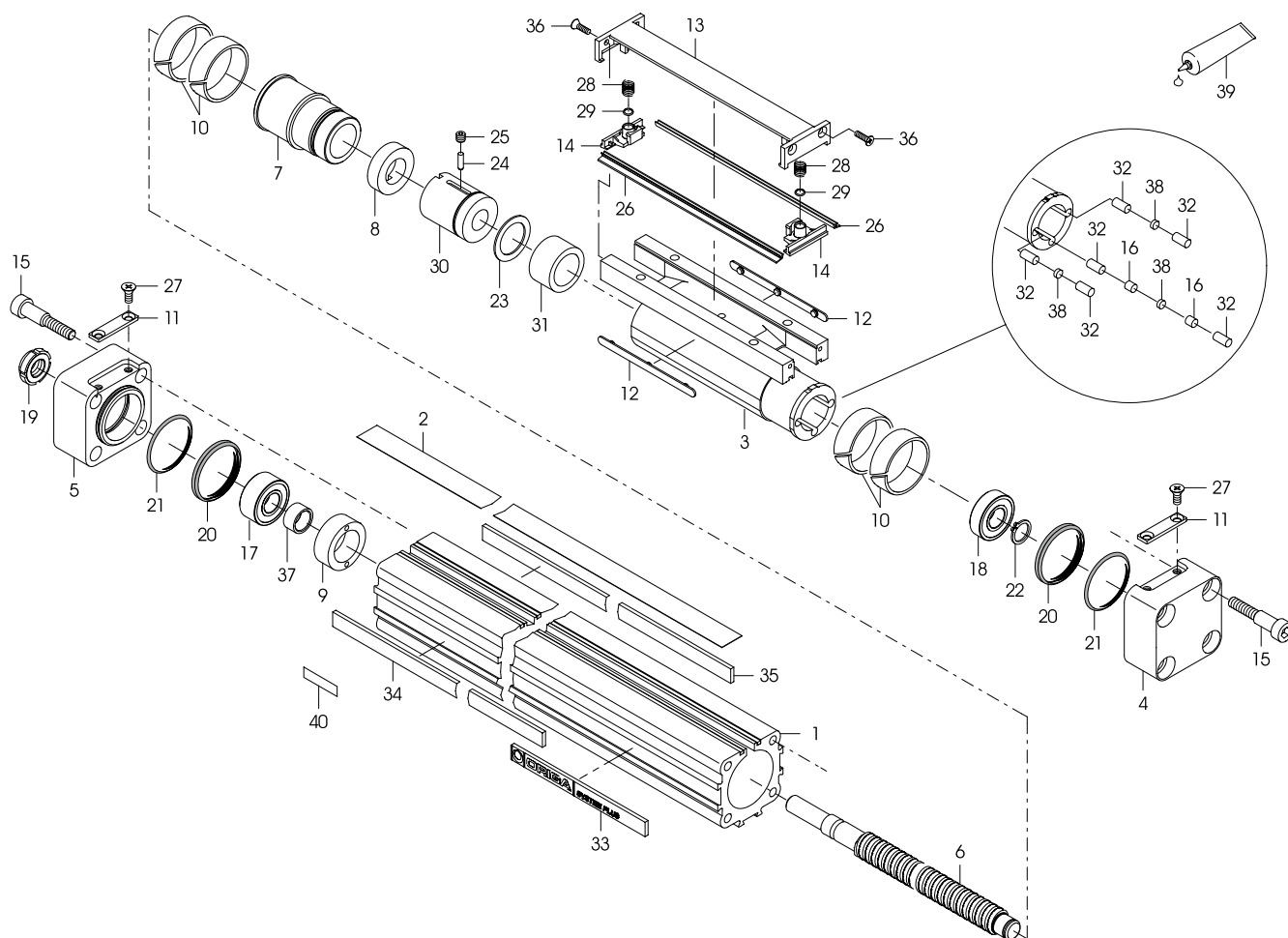
| Description                  | Order No. |           |           | Contents                                         |
|------------------------------|-----------|-----------|-----------|--------------------------------------------------|
|                              | OSP-E25ST | OSP-E32ST | OSP-E50ST |                                                  |
| Seal kit                     | 12125     | 12126     | 12127     | 8, 10, 11, 12, 17, 18, 22, 24, 25, 31, 33        |
| Service pack                 | 15250     | 15251     | 15252     | seal kit + 2                                     |
| Carrier kit                  | 12816     | 12825     | 12834     | 3, 8, 10, 11, 12, 21, 22, 24, 25, 26, 27, 31, 32 |
| End cap kit run unit spindle | 12129     | 12131     | 12133     | 4, 9, 13, 15, 17, 18, 19, 23                     |
| End cap kit actuator spindle | 12128     | 15617     | 15618     | 5, 9, 13, 14, 17, 18, 20, 23                     |

| POS. | DESCRIPTION                                          |
|------|------------------------------------------------------|
| 1    | CYLINDER BARREL CUT TO LENGTH OSP-E..ST              |
| 2    | OUTER BAND CUT TO LENGTH OSP-E..ST                   |
| 3    | CARRIER OSP-E..ST                                    |
| 4    | END CAP FOR OSP-E..ST                                |
| 5    | END CAP DRIVE FOR OSP-E..ST                          |
| 6    | TRAPEZOIDAL THREADED SPINDLE OSP-E..ST CUT TO LENGTH |
| 7    | CLAMPING RING OSP-E25ST                              |
| 8    | SUPPORT RING OSP-E..ST                               |
| 9    | CLAMPING PIECE EXTERN                                |
| 10   | SLIDE RAIL OSP-E..ST                                 |
| 11   | COVER                                                |
| 12   | WIPER                                                |
| 13   | SCREW FOR COVER                                      |
| 14   | BALL BEARING                                         |
| 15   | BALL BEARING                                         |
| 16   | NUT                                                  |
| 17   | X-RING                                               |
| 18   | O-RING                                               |
| 19   | CIRCLIP DIN 471                                      |
| 20   | CIRCLIP OSP-E32ST / OSP-E50ST                        |

| POS. | DESCRIPTION                            |
|------|----------------------------------------|
| 21   | SCREW                                  |
| 22   | SIDE WIPER CUT TO LENGTH ON SIDE       |
| 23   | COUNTERSUNK SCREW DIN 963              |
| 24   | THRUST SPRING FOR WIPER                |
| 25   | O-RING                                 |
| 26   | TRAPEZOIDAL THREADED NUT FOR OSP-E..ST |
| 27   | STEEL BOLT                             |
| 28   | COVER RAIL FOR NAMEPLATE               |
| 29   | COVER RAIL METER GOODS                 |
| 30   | COVER RAIL METER GOODS                 |
| 31   | COUNTERSUNK SCREW DIN 7991             |
| 32   | MAGNET FOR OSP-E..ST                   |
| 33   | GREASE                                 |
| 34   | IDENTIFICATION PLATE                   |

## 11.8 OSP-E..SB

### Linear drive with ball screw drive and internal plain bearing guide

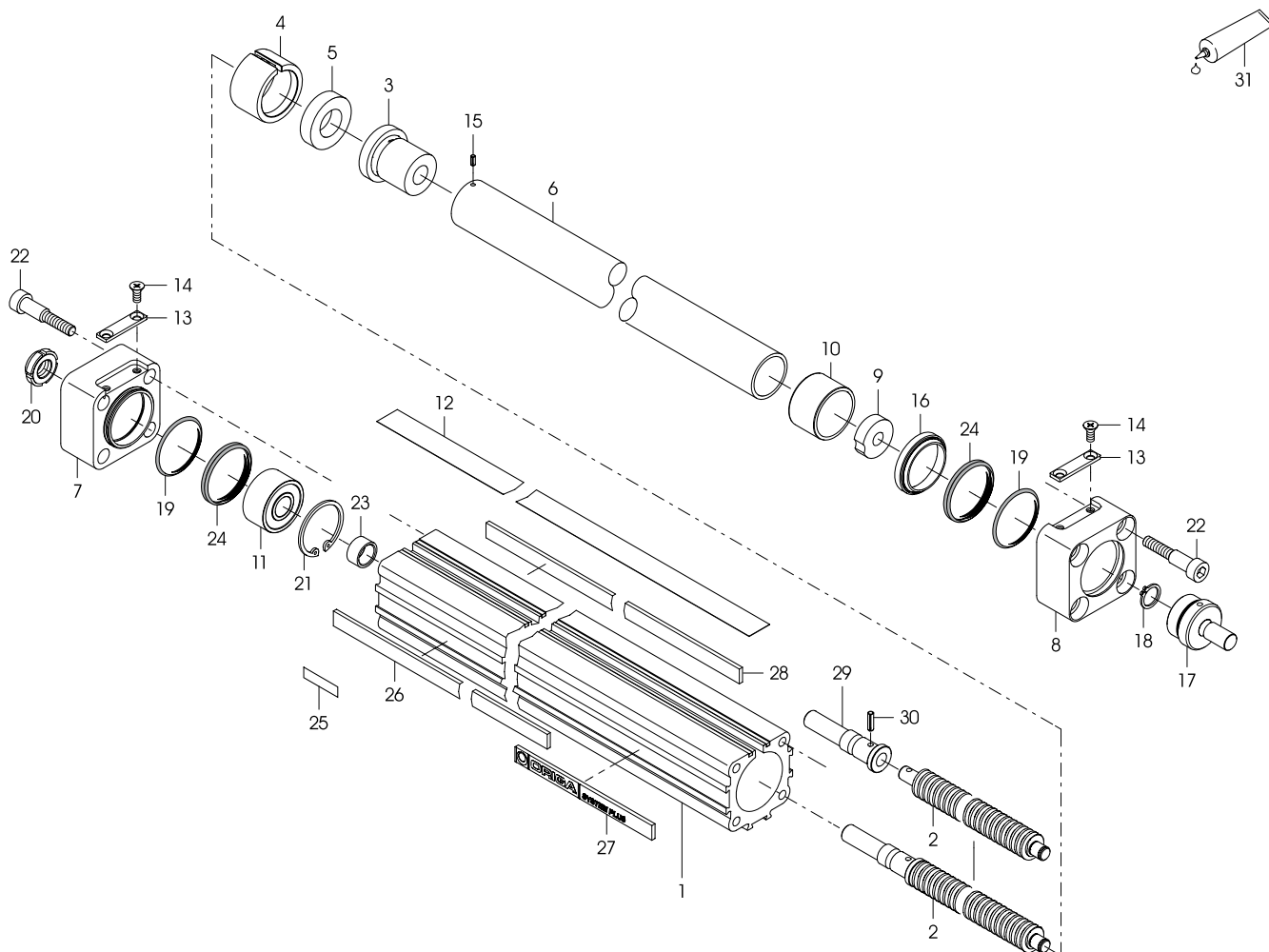


| POS. | DESCRIPTION                              |
|------|------------------------------------------|
| 1    | CYLINDER BARREL OSP-E..SBR CUT TO LENGTH |
| 2    | BALL SCREW                               |
| 3    | PISTON ROD                               |
| 4    | SUPPORT RING OSP-E..SBR                  |
| 5    | BALL SCREW NUT                           |
| 6    | ADJUSTING NUT                            |
| 7    | END CAP DRIVE FOR OSP-E..SBR             |
| 8    | END CAP PISTON SIDE OSP-E..SBR           |
| 9    | COUNTERSUNK SCREW DIN 965                |
| 10   | CLAMPING PIECE EXTERN                    |
| 11   | SCREW FOR COVER                          |
| 12   | LOCKING NUT                              |
| 13   | BALL BEARING                             |
| 14   | SLEEVE OSP-E32SBR                        |
| 15   | CLAMPING RING                            |
| 16   | O-RING                                   |
| 17   | X-RING                                   |
| 18   | WIPER                                    |
| 19   | SEALING RING DIN 471                     |
| 20   | SUPPORT BEARING                          |
| 21   | SLIDE BEARING                            |
| 22   | PISTON ROD SECUREMENT                    |
| 23   | COVER RAIL FOR NAMEPLATE                 |

| POS. | DESCRIPTION                     |
|------|---------------------------------|
| 24   | IDENTIFICATION PLATE            |
| 25   | COVER RAIL METER GOODS          |
| 26   | OUTER BAND CUT TO LENGTH        |
| 30   | NUT SLEEVE                      |
| 31   | BEARING STRIPL                  |
| 32   | COUNTERSUNK SCREW DIN 965       |
| 33   | TURNING LOCK                    |
| 34   | SOCKET SET SCREW DIN 914        |
| 35   | SOCKET SET SCREW DIN 916        |
| 40   | MAGNET HOLDER OSP-E32/50SBR     |
| 41   | STEEL BOLT OSP-E32/50SBR        |
| 42   | MAGNET OSP-E32/50SBR            |
| 43   | MAGNET OSP-E32SBR               |
| 50   | MAGNET OSP-E25SBR               |
| 51   | ADJUSTING WASHER OSP-E25SBR     |
| 52   | SEALING RING DIN 471 OSP-E25SBR |
| 99   | PARKER-ORIGA GREASE 2           |

## 11.9 OSP-E..STR

Linear drive with trapezoidal screw drive, internal plain bearing guide and piston rod



### POS. DESCRIPTION

|    |                                                      |
|----|------------------------------------------------------|
| 1  | CYLINDER BARREL OSP-E..SR CUT TO LENGTH              |
| 2  | TRAPEZOIDAL THREADED SPINDLE OSP-E..ST CUT TO LENGTH |
| 3  | NUT TR16X4 OSP-E..SR                                 |
| 4  | SUPPORT RING OSP-E..SR                               |
| 5  | MAGNET FOR OSP-E..SR                                 |
| 6  | PISTON ROD OSP-E..SR CUT TO LENGTH                   |
| 7  | END CAP DRIVE FOR OSP-E..SR                          |
| 8  | END CAP PISTON SIDE OSP-E..SR                        |
| 9  | SUPPORT BEARING OSP-E..SR                            |
| 10 | SLIDE BEARING                                        |
| 11 | BALL BEARING                                         |
| 12 | OUTER BAND CUT TO LENGTH OSP-E..SR                   |
| 13 | CLAMPING PIECE EXTERN OSP-E..SR                      |
| 14 | COUNTERSUNK SCREW DIN 965                            |
| 15 | BRACING PIN DIN 8752                                 |
| 16 | WIPER                                                |
| 17 | PISTON ROD SECUREMENT OSP-OSP-E..SR                  |
| 18 | CIRCLIP DIN 471                                      |

### POS. DESCRIPTION

|    |                                |
|----|--------------------------------|
| 19 | O-RING                         |
| 20 | LOCKING NUT                    |
| 21 | CIRCLIP DIN 472                |
| 22 | SCREW FOR COVER                |
| 23 | SLEEVE FOR OSP-E32SR           |
| 24 | X-RING                         |
| 25 | IDENTIFICATION PLATE           |
| 26 | COVER RAIL METER GOODS         |
| 27 | COVER RAIL FOR NAMEPLATE       |
| 28 | COVER RAIL METER GOODS         |
| 29 | SHAFT OSP-E32SR                |
| 30 | BRACING PIN DIN 8752 OSP-E32SR |
| 31 | GREASE                         |

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info-hosg-sales@parker-origa.com

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parker.nl@parker.com

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Tel: +31 168 356 600  
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parker.norway@parker.com

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**RO – Romania**, Bucarest  
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**RU – Russia**, Moscow  
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**SE – Sweden**, Spånga  
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parker.sweden@parker.com

**SE – Sweden**, Kungsör  
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Tel: +46 227 411 00  
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**SG – Singapor**  
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**ZA – South Africa**,  
Kempton Park  
Tel: +27 (0)11 961 0700  
parker.southafrica@parker.com



**Parker-Origa GmbH**

Industriestr. 8

70794 Filderstadt, Deutschland

Tel. +49 7185 17030

Fax +49 7158 64870

www.parker-origa.com