

## Connecting shaft KSK

**FESTO**



### Characteristics

#### At a glance

In many applications, electric axes are combined to form multi-axis systems. When designing gantry systems with a medium centre distance between the axes and heavy loads, it is particularly important that the two basic axes are actuated synchronously. For these systems, two axes with toothed belt drive are generally coupled with a shared motor and synchronised using a connecting shaft.

- For synchronising toothed belt axes and cantilever axes
- For torsion-resistant transmission of the necessary torque
- For slip-free transmission of an identical feed speed
- To compensate for tolerances and misalignments between the two axes

## Type code

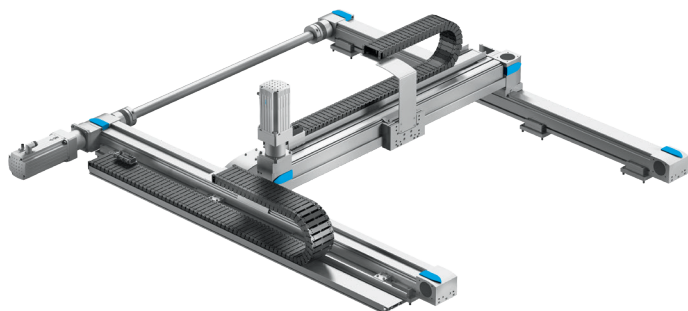
| 001        | Series           |  |
|------------|------------------|--|
| <b>KSK</b> | Connecting shaft |  |
| 002        | Product version  |  |
|            | Standard         |  |
| <b>A</b>   | Deviating design |  |

| 003        | Size [mm] |  |
|------------|-----------|--|
| <b>50</b>  | 50        |  |
| <b>70</b>  | 70        |  |
| <b>80</b>  | 80        |  |
| <b>120</b> | 120       |  |
| <b>185</b> | 185       |  |

| 004 | Nominal length [mm] |  |
|-----|---------------------|--|
| ... | 200 ... 2000 mm     |  |

## Datasheet

## Allocation axis -&gt; connecting shaft



## Allocation

Axis -&gt; Connecting shaft

EGC-50-TB -&gt; KSK-50

EGC-70-TB -&gt; KSK-70

EGC-80-TB -&gt; KSK-80

EGC-120-TB -&gt; KSK-120

EGC-185-TB -&gt; KSK-185

ELGD-TB-KF-60 -&gt; KSK-80

ELGD-TB-KF-80 -&gt; KSK-80

ELGD-TB-KF-120 -&gt; KSK-120

ELGD-TB-KF-WD-100 -&gt; KSK-70

ELGD-TB-KF-WD-120 -&gt; KSK-80

ELGA-TB-70 -&gt; KSK-A-70

ELGA-TB-80 -&gt; KSK-80

ELGA-TB-120 -&gt; KSK-120

ELGA-TB-150 -&gt; KSK-185

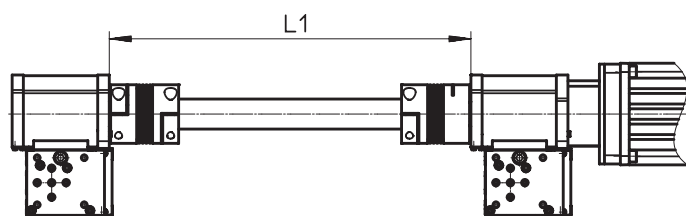
ELCC-TB-KF-60 -&gt; KSK-80

ELCC-TB-KF-70 -&gt; KSK-80

ELCC-TB-KF-90 -&gt; KSK-120

ELCC-TB-KF-110 -&gt; KSK-185

## General information



Nominal length L1 = Clear width between the drive covers

The total mass is calculated as follows:  $m = m_0 + m_L \cdot L_1$ The moment of inertia is calculated as follows:  $J = J_0 + J_L \cdot L_1$ 

## General technical data

| Size                                                           | 50                     | 70                     | 80                     | 120                    | 185                    |
|----------------------------------------------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| Product version                                                | Standard [ ]           |                        | Deviating design [A]   | Standard [ ]           |                        |
| Nominal length                                                 | 200 ... 2,000 mm       |                        |                        | 250 ... 2,000 mm       | 350 ... 2,000 mm       |
| Max. axial offset                                              | 2 mm                   |                        |                        |                        | 5 mm                   |
| Mass moment of inertia J <sub>0</sub>                          | 0.34 kgcm <sup>2</sup> | 0.35 kgcm <sup>2</sup> | 1.61 kgcm <sup>2</sup> | 1.59 kgcm <sup>2</sup> | 13.9 kgcm <sup>2</sup> |
| Mass moment of inertia J <sub>L</sub> per metre nominal length | 0.34 kgcm <sup>2</sup> |                        | 0.8 kgcm <sup>2</sup>  |                        | 3.33 kgcm <sup>2</sup> |
| Basic weight with 0 mm stroke                                  | 280 g                  | 290 g                  | 540 g                  | 530 g                  | 2,280 g                |
| Additional weight per metre nominal length                     | 320 g                  |                        | 480 g                  |                        | 800 g                  |
| Mounting position <sup>1)</sup>                                | Horizontal             |                        |                        |                        |                        |
| Mounting diameter 1                                            | 8 mm                   |                        | 15 mm                  |                        | 25 mm                  |
| Mounting diameter 2                                            | 8 mm                   |                        | 15 mm                  |                        | 25 mm                  |

1) Vertical on request

## Datasheet

### Operating and environmental conditions

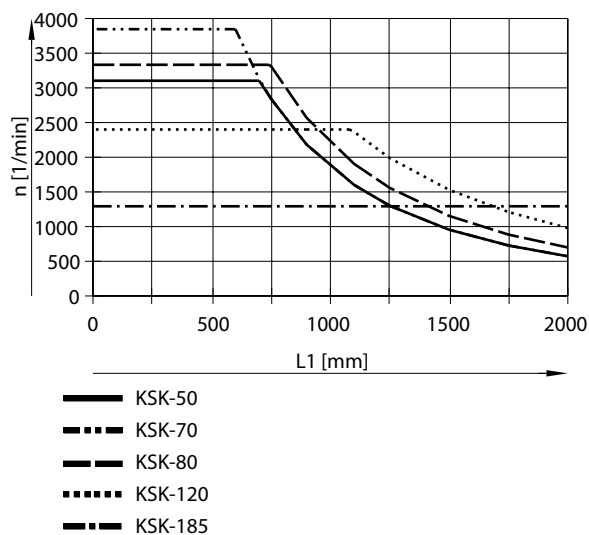
|                                                 |                               |
|-------------------------------------------------|-------------------------------|
| Ambient temperature                             | -10 ... 60°C                  |
| Relative air humidity                           | 0 - 95%                       |
| Corrosion resistance class<br>CRC <sup>1)</sup> | 2 - Moderate corrosion stress |

1) More information [www.festo.com/x/topic/crc](http://www.festo.com/x/topic/crc).

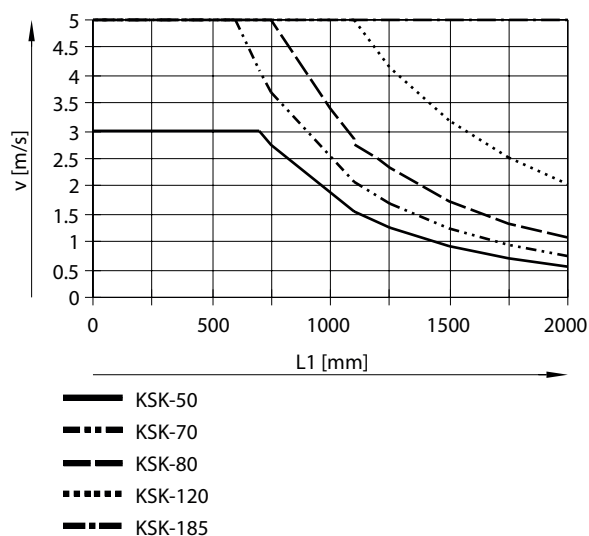
### Materials

|                              |                                                    |
|------------------------------|----------------------------------------------------|
| Material coupling            | High-alloy steel, Anodised wrought aluminium alloy |
| Pipe material                | High-alloy stainless steel                         |
| Drive shaft adapter material | Quenched and tempered steel                        |
| Note on materials            | RoHS-compliant                                     |
| LABS (PWIS) conformity       | VDMA24364 zone III                                 |

### Max. speed n as a function of nominal length L1 for EGC-TB-KF

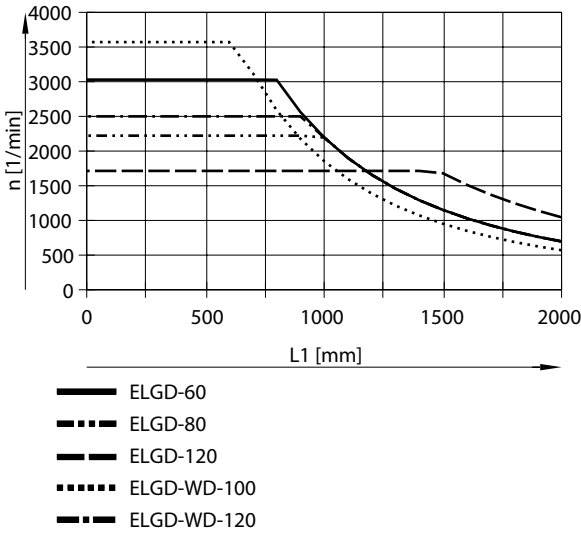


### Max. speed v as a function of nominal length L1 for EGC-TB-KF

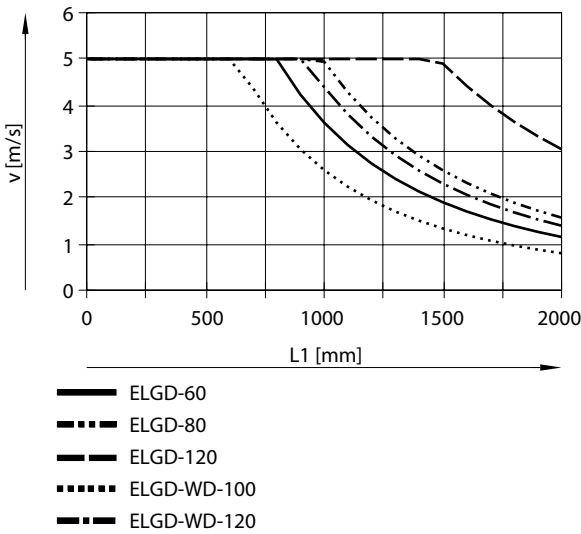


Datasheet

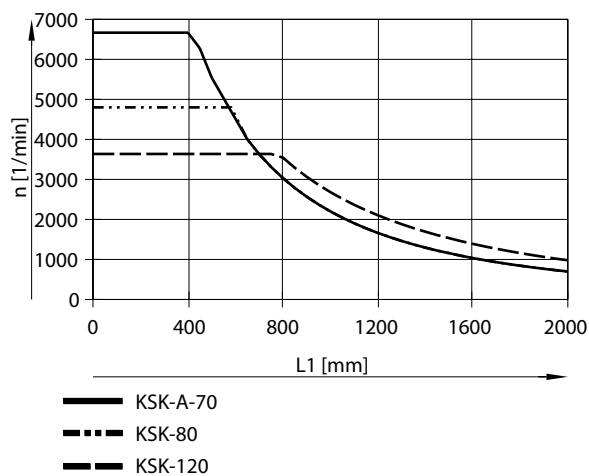
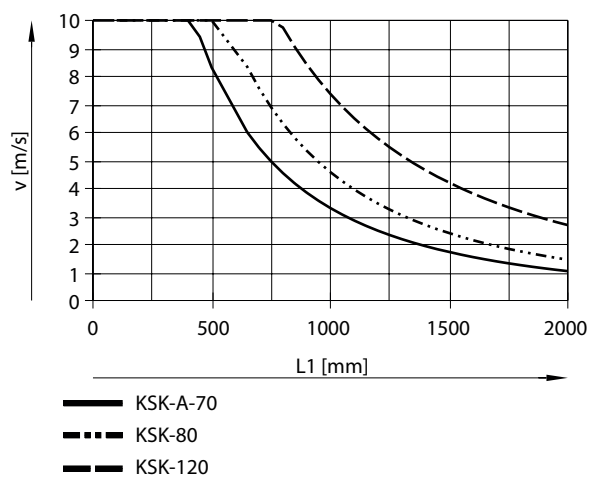
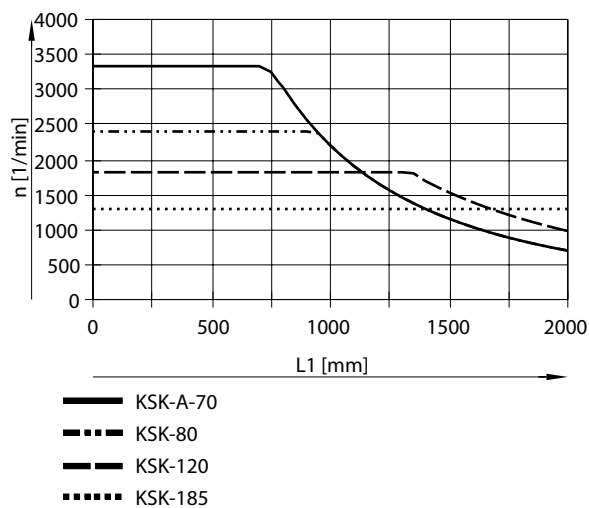
Max. speed n as a function of nominal length L1 for ELGD-TB-KF



Max. speed v as a function of nominal length L1 for ELGD-TB-KF

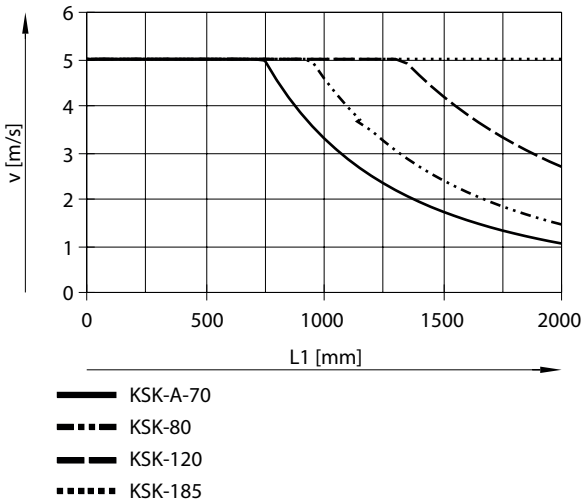


## Datasheet

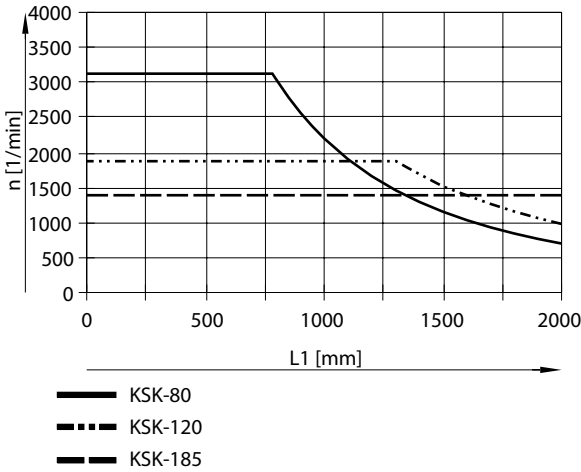
Max. speed  $n$  as a function of nominal length  $L_1$  for ELGA-TB-RFMax. speed  $v$  as a function of nominal length  $L_1$  for ELGA-TB-RFMax. speed  $n$  as a function of nominal length  $L_1$  for ELGA-TB-KF

Datasheet

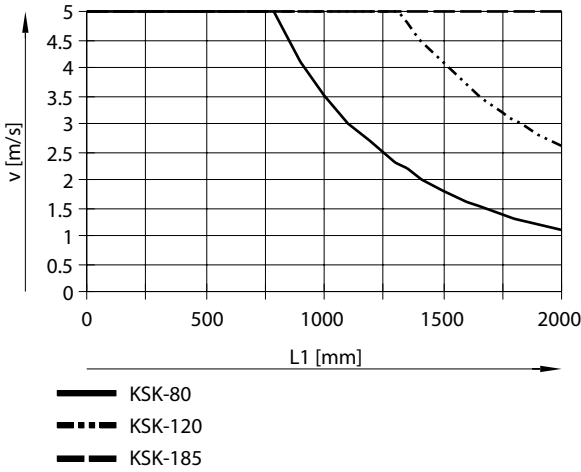
Max. speed v as a function of nominal length L1 for ELGA-TB-KF



Max. rotational speed n as a function of nominal length L1 for ELCC-TB-KF

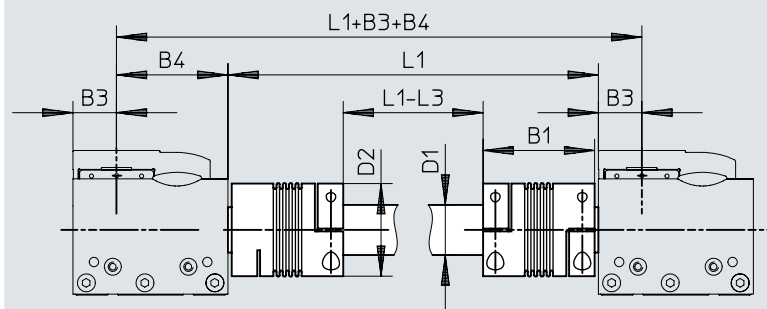


Max. speed v as a function of nominal length L1 for ELCC-TB-KF



## Dimensions

### Dimensions – Internal/external guide for EGC-TB-KF

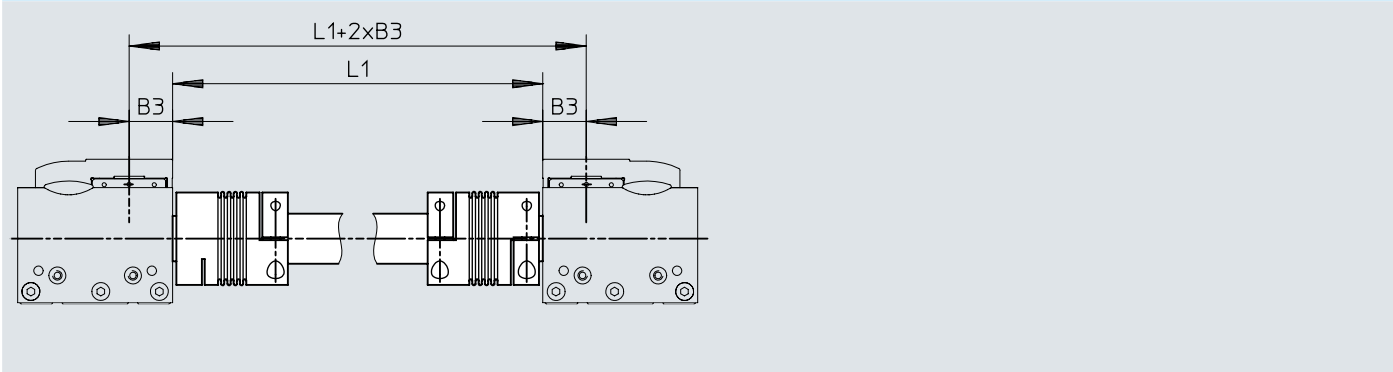
[Download CAD data](#) [www.festo.com](http://www.festo.com)


|         |                | B1  | B3   | B4   | D1<br>Ø | D2<br>Ø | L1 | L3    |
|---------|----------------|-----|------|------|---------|---------|----|-------|
| KSK-50  | EGC-50-TB-...  | 50  | 12,5 | 35,5 | 21,27   | 40      | 1) | 102,2 |
| KSK-70  | EGC-70-TB-...  | 50  | 17,5 | 51,5 | 21,27   | 40      |    | 103,7 |
| KSK-80  | EGC-80-TB-...  | 59  | 23   | 59   | 26,52   | 49      |    | 122   |
| KSK-120 | EGC-120-TB-... | 94  | 35   | 85   | 41,6    | 81      |    | 192   |
| KSK-185 | EGC-185-TB-... | 111 | 55   | 131  | 65,4    | 110     |    | 228   |

1) Clear width between the drive covers

Dimensions

Dimensions – Internal guide for EGC-TB-KF Download CAD data [www.festo.com](http://www.festo.com)

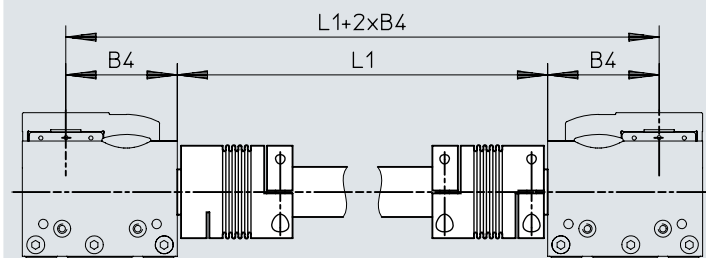


|         |                | B3   | L1 |
|---------|----------------|------|----|
| KSK-50  | EGC-50-TB-...  | 12,5 | 1) |
| KSK-70  | EGC-70-TB-...  | 17,5 |    |
| KSK-80  | EGC-80-TB-...  | 23   |    |
| KSK-120 | EGC-120-TB-... | 35   |    |
| KSK-185 | EGC-185-TB-... | 55   |    |

1) Clear width between the drive covers

## Dimensions

### Dimensions – External guide for EGC-TB-KF

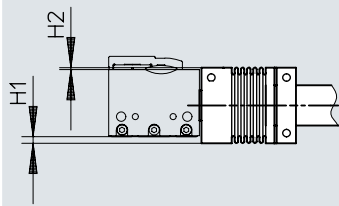
[Download CAD data](http://www.festo.com)


|         |                | B4   | L1 |
|---------|----------------|------|----|
| KSK-50  | EGC-50-TB-...  | 35,5 | 1) |
| KSK-70  | EGC-70-TB-...  | 51,5 |    |
| KSK-80  | EGC-80-TB-...  | 59   |    |
| KSK-120 | EGC-120-TB-... | 85   |    |
| KSK-185 | EGC-185-TB-... | 131  |    |

1) Clear width between the drive covers

Dimensions

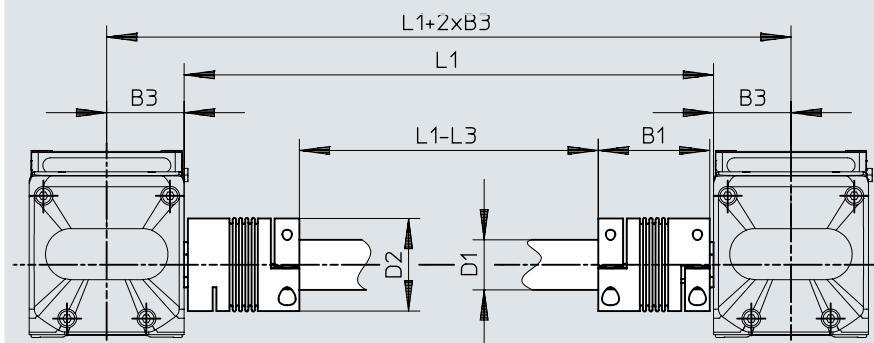
Dimensions – Projection of the coupling with the EGC-TB-KF Download CAD data [www.festo.com](http://www.festo.com)



|         |                | H1 | H2 |
|---------|----------------|----|----|
| KSK-50  | EGC-50-TB-...  | 4  | 1  |
| KSK-70  | EGC-70-TB-...  | –  | –  |
| KSK-80  | EGC-80-TB-...  | –  | –  |
| KSK-120 | EGC-120-TB-... | –  | 1  |
| KSK-185 | EGC-185-TB-... | –  | –  |

## Dimensions

### Dimensions – Internal/external guide for ELGD-TB-KF

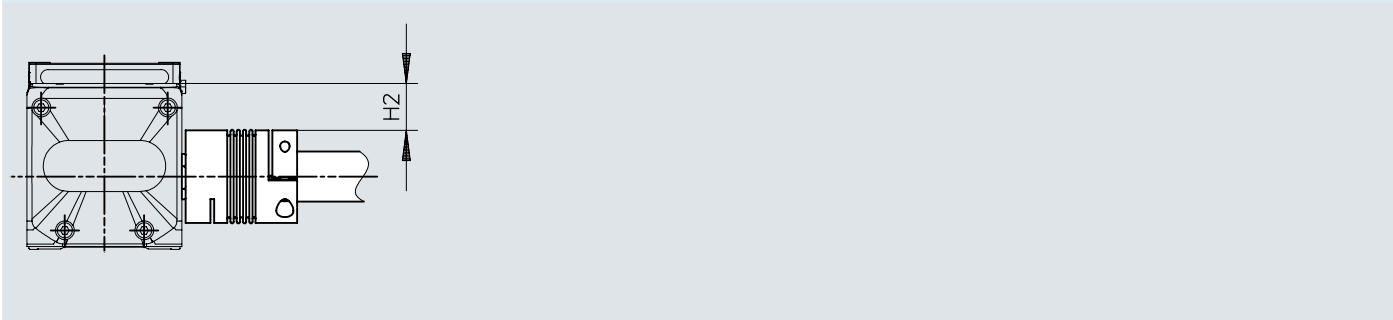
[Download CAD data](#) [www.festo.com](http://www.festo.com)


|         |                       | B1 | B3   | D1<br>Ø<br>H7 | D2<br>Ø | L1 | L3    |
|---------|-----------------------|----|------|---------------|---------|----|-------|
| KSK-80  | ELGD-TB-KF-60-...     | 59 | 31   | 26,5          | 49      | 1) | 121,7 |
| KSK-80  | ELGD-TB-KF-80-...     | 59 | 41   | 26,5          | 49      |    | 122   |
| KSK-120 | ELGD-TB-KF-120-...    | 94 | 61,5 | 41,6          | 81      |    | 192   |
| KSK-70  | ELGD-TB-KF-WD-100-... | 50 | 51   | 21,27         | 40      |    | 103,4 |
| KSK-80  | ELGD-TB-KF-WD-120-... | 59 | 61,5 | 26,5          | 49      |    | 122   |

1) Clear width between the drive covers

Dimensions

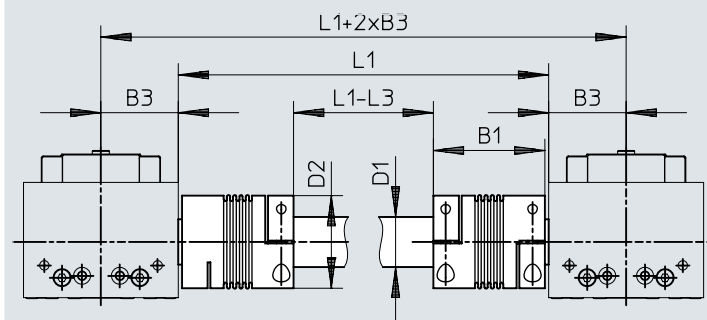
Dimensions – Distance to coupling ELGD-TB-KF [Download CAD data](#) [www.festo.com](http://www.festo.com)



|         |                       | H2   |
|---------|-----------------------|------|
| KSK-80  | ELGD-TB-KF-60-...     | 12,9 |
| KSK-80  | ELGD-TB-KF-80-...     | 24,8 |
| KSK-120 | ELGD-TB-KF-120-...    | 21,8 |
| KSK-70  | ELGD-TB-KF-WD-100-... | 14,5 |
| KSK-80  | ELGD-TB-KF-WD-120-... | 14,4 |

## Dimensions

### Dimensions – Internal/external guide for ELGA-TB-RF

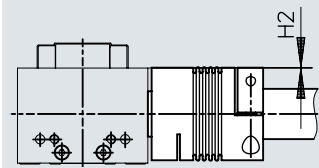
[Download CAD data](#) [www.festo.com](http://www.festo.com)


|          |                    | B1 | B3   | D1<br>ø<br>H7 | D2<br>ø | L1 | L3  |
|----------|--------------------|----|------|---------------|---------|----|-----|
| KSK-A-70 | ELGA-TB-RF-70-...  | 59 | 34,5 | 26,52         | 49      | 1) | 122 |
| KSK-80   | ELGA-TB-RF-80-...  | 59 | 41   | 26,52         | 49      |    | 122 |
| KSK-120  | ELGA-TB-RF-120-... | 94 | 60   | 41,6          | 81      |    | 192 |

1) Clear width between the drive covers

Dimensions

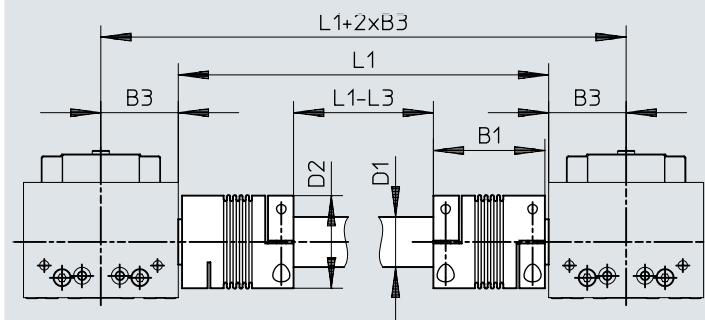
Dimensions – Projection of the coupling with the ELGA-TB-RF [Download CAD data](#) [www.festo.com](http://www.festo.com)



|          |                    | H2  |
|----------|--------------------|-----|
| KSK-A-70 | ELGA-TB-RF-70-...  | 0,2 |
| KSK-80   | ELGA-TB-RF-80-...  | –   |
| KSK-120  | ELGA-TB-RF-120-... | –   |

## Dimensions

### Dimensions – Internal/external guide for ELGA-TB-KF

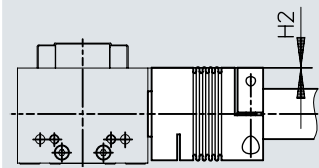
[Download CAD data](#) [www.festo.com](http://www.festo.com)


|          |                    | B1  | B3   | D1<br>Ø<br>H7 | D2<br>Ø | L1 | L3  |
|----------|--------------------|-----|------|---------------|---------|----|-----|
| KSK-A-70 | ELGA-TB-KF-70-...  | 59  | 34,5 | 26,52         | 49      | 1) | 122 |
| KSK-80   | ELGA-TB-KF-80-...  | 59  | 41   | 26,52         | 49      |    | 122 |
| KSK-120  | ELGA-TB-KF-120-... | 94  | 60   | 41,6          | 81      |    | 192 |
| KSK-185  | ELGA-TB-KF-150-... | 111 | 77   | 65,4          | 110     |    | 228 |

1) Clear width between the drive covers

Dimensions

Dimensions – Projection of the coupling with the ELGA-TB-KF [Download CAD data](#) [www.festo.com](http://www.festo.com)



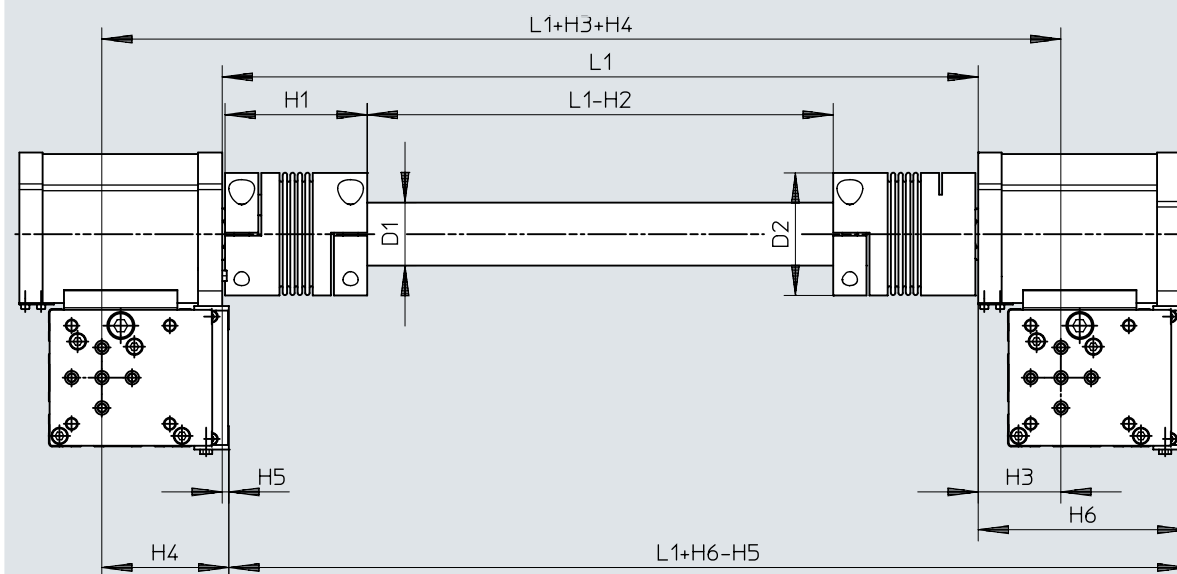
|                       |                    | H2  |
|-----------------------|--------------------|-----|
| KSK-A-70              | ELGA-TB-KF-70-...  | 0,2 |
| KSK-80                | ELGA-TB-KF-80-...  | –   |
| KSK-120               | ELGA-TB-KF-120-... | –   |
| KSK-185 <sup>2)</sup> | ELGA-TB-KF-150-... | –   |

1) Clear width between the drive covers  
2) For ELGA-TB-KF-150

## Dimensions

Dimensions – Similar axis mounting surfaces with the ELCC-TB-KF

Download CAD data [www.festo.com](http://www.festo.com)

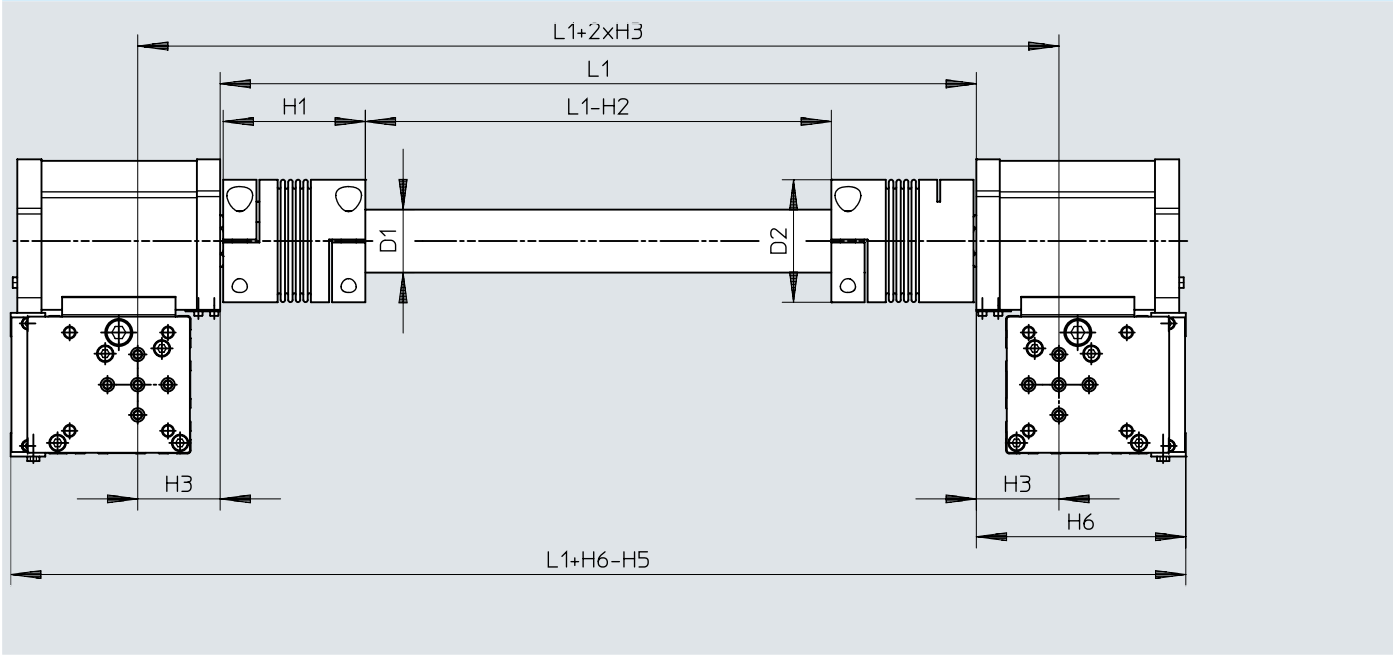


|         |                    | D1<br>Ø<br>H7 | D2<br>Ø | H1  | H2  | H3   | H4   | H5   | H6    | L1 |
|---------|--------------------|---------------|---------|-----|-----|------|------|------|-------|----|
| KSK-80  | ELCC-TB-KF-60-...  | 26,6          | 49      | 59  | 122 | 43,1 | 27,1 | 8,5  | 78,6  | 1) |
|         | ELCC-TB-KF-70-...  | 26,6          | 49      | 59  | 122 | 48   | 53,5 | 10,5 | 112   |    |
| KSK-120 | ELCC-TB-KF-90-...  | 41,7          | 81      | 94  | 192 | 54,6 | 79,6 | 4,4  | 138,6 |    |
| KSK-185 | ELCC-TB-KF-110-... | 65,5          | 110     | 111 | 228 | 73,6 | 85,6 | 11,4 | 170,6 |    |

1) Clear width between the contact surfaces

Dimensions

Dimensions – Axis mounting surfaces facing outwards with the ELCC-TB-KF Download CAD data [www.festo.com](http://www.festo.com)



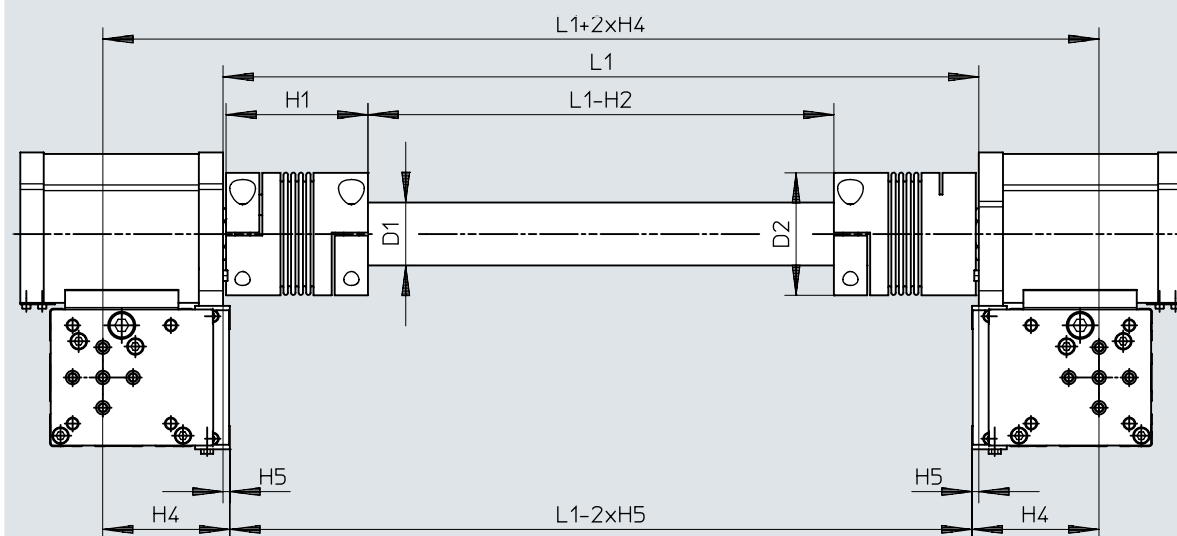
|         |                    | D1<br>Ø<br>H7 | D2<br>Ø | H1  | H2  | H3   | H5   | H6    | L1 |
|---------|--------------------|---------------|---------|-----|-----|------|------|-------|----|
| KSK-80  | ELCC-TB-KF-60-...  | 26,6          | 49      | 59  | 122 | 43,1 | 8,5  | 78,6  | 1) |
|         | ELCC-TB-KF-70-...  | 26,6          | 49      | 59  | 122 | 48   | 10,5 | 112   |    |
| KSK-120 | ELCC-TB-KF-90-...  | 41,7          | 81      | 94  | 192 | 54,6 | 4,4  | 138,6 |    |
| KSK-185 | ELCC-TB-KF-110-... | 65,5          | 110     | 111 | 228 | 73,6 | 11,4 | 170,6 |    |

1) Clear width between the contact surfaces

## Dimensions

Dimensions – Axis mounting surfaces facing each other with the ELCC-TB-KF

Download CAD data [www.festo.com](http://www.festo.com)



|         |                    | D1<br>Ø<br>H7 | D2<br>Ø | H1  | H2  | H4   | H5   | L1 |
|---------|--------------------|---------------|---------|-----|-----|------|------|----|
| KSK-80  | ELCC-TB-KF-60-...  | 26,6          | 49      | 59  | 122 | 27,1 | 8,5  | 1) |
|         | ELCC-TB-KF-70-...  | 26,6          | 49      | 59  | 122 | 53,5 | 10,5 |    |
| KSK-120 | ELCC-TB-KF-90-...  | 41,7          | 81      | 94  | 192 | 79,6 | 4,4  |    |
| KSK-185 | ELCC-TB-KF-110-... | 65,5          | 110     | 111 | 228 | 85,6 | 11,4 |    |

1) Clear width between the contact surfaces

## Ordering data

## Order information

The nominal length L1 must be specified in the type code when ordering. The nominal length L1 here refers to the clear width between the drive covers.

Order example:

Two toothed belt axes ELGD-TB-KF-80-... are to be connected with a connecting shaft, nominal length L1 = 1000 mm.

The following connecting shaft is required:

Type: KSK-80-1000

Part number 562521

| KSK-...                                                                          |      |                 |          |           |
|----------------------------------------------------------------------------------|------|-----------------|----------|-----------|
|                                                                                  | Size | Nominal length  | Part no. | Type      |
|  | 50   | 200 ... 2000 mm | 563710   | KSK-50-   |
|                                                                                  | 70   |                 | 562520   | KSK-70-   |
|                                                                                  | 80   |                 | 2261462  | KSK-A-70- |
|                                                                                  | 120  | 250 ... 2000 mm | 562521   | KSK-80-   |
|                                                                                  | 185  | 350 ... 2000 mm | 562522   | KSK-120-  |
|                                                                                  |      |                 | 562523   | KSK-185-  |