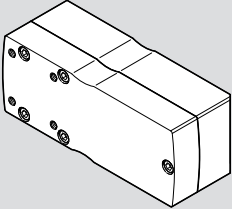


EAMM-U-...-D...-...A/P/R-1  
Parallel kit



**FESTO**

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Assembly instructions


8164817  
2022-02g  
[8164819]



Translation of the original instructions

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1 Applicable documents

 All available documents for the product → [www.festo.com/sp](http://www.festo.com/sp).

| Document               | Product |
|------------------------|---------|
| Operating instructions | Motor   |
| Operating instructions | Axis    |

Tab. 1: Applicable documents

2 Safety

2.1 Safety instructions

- Only mount the product on components that are in a condition to be safely operated.
  - Clean the shafts. The clamping sleeves only grip without slipping on dry and grease-free shaft journals.
  - If the motor is loosened or turned, homing must be carried out on the axis.
  - Select required mounting components. The kit contains all the mounting components that may be required.
  - Select the correct screw length for the screws [7] depending on the axis. The screws [7] are labelled correspondingly.
  - Observe the tightening torques. Unless otherwise specified, the tolerance is ± 20%.
- If the tightening torques are exceeded, the cover screws of the axis will loosen during disassembly.

2.2 Intended use

2.2.1 Use

The parallel kit connects an axis to a motor in a parallel configuration.

2.2.2 Permissible axes and motors

**NOTICE**

**Overloading can cause malfunction and material damage.**  
The motor's output variables must not exceed the permissible values of the components used.  
Permissible values → [www.festo.com/catalogue](http://www.festo.com/catalogue).

- Limit the motor's output variables accordingly.

- Take the axis and the motor from the interface codes.

Example: EAMM-U-60-D40-55A

D40: axis interface


55A: motor interface

| Axis interface | Axis             |
|----------------|------------------|
| D19            | EGSL-35          |
| D32            | EGSL-45, ESBF-32 |
| D40            | EGSL-55, ESBF-40 |
| D50            | ESBF-50          |
| D60            | EGSL-75, ESBF-63 |
| D80            | ESBF-80          |
| D100           | ESBF-100         |

Tab. 2: Permissible axes

| Motor interface | Motor                                      |
|-----------------|--|
| 40A             | EMMS-AS-40                                 |
| 40P             | EMMB-/EMME-AS-40                           |
| 40R             | Third-party motor                          |
| 42A             | EMCS-/EMMS-ST-42, third-party motor        |
| 55A             | EMMS-AS-55, third-party motor              |
| 57A             | EMCS-/EMMS-ST-57, third-party motor        |
| 60P             | EMMB-/EMME-/EMMT-AS-60, third-party motor  |
| 60R             | Third-party motor                          |
| 67A             | EMCA-EC-67                                 |
| 70A             | EMMS-AS-70, third-party motor              |
| 80P             | EMMB-/EMME-/EMMT-AS-80, third-party motor  |
| 87A             | EMMS-ST-87                                 |
| 88A             | Third-party motor                          |
| 90R             | Third-party motor                          |
| 100A            | EMME-/EMMS-/EMMT-AS-100, third-party motor |
| 140A            | EMMS-AS-140                                |
| 150A            | EMMS-AS-140, EMMT-AS-150                   |

Tab. 3: Permissible motors



It is the responsibility of users to qualify third-party motors with the matching mechanical interface for the combination.  
To find out which third-party motors are suitable, consult your regional Festo contact or → [www.festo.com/sp](http://www.festo.com/sp).

2.3 Training of qualified personnel

Work on the product may only be carried out by qualified personnel who can evaluate the work and detect dangers. Personnel must have the relevant mechanical training.

3 Additional information

- Contact the regional Festo contact if you have technical problems
- Accessories → [www.festo.com/catalogue](http://www.festo.com/catalogue).
- Spare parts and accessories → [www.festo.com/spareparts](http://www.festo.com/spareparts).

4 Product Range Overview

4.1 Scope of delivery

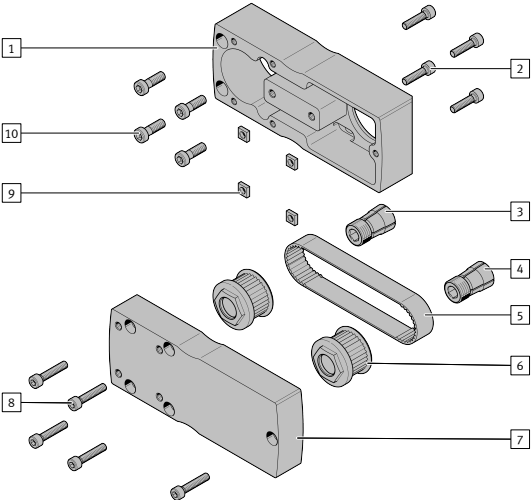



Fig. 1: Basic scope of delivery

|   |                            |    |                          |
|---|----------------------------|----|--------------------------|
| 1 | Housing (1x)               | 6  | Toothed belt pulley (2x) |
| 2 | Screw (4x)                 | 7  | Cover (1x)               |
| 3 | Axis clamping sleeve (1x)  | 8  | Screw (5x)               |
| 4 | Motor clamping sleeve (1x) | 9  | Square nut (4x)          |
| 5 | Toothed belt (1x)          | 10 | Screw (4x)               |



With EAMM-U-...-42A: the square nut [9] is not required.

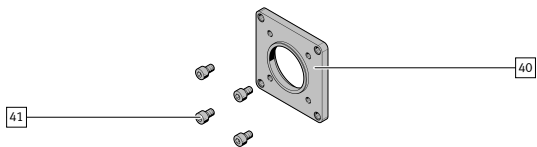


Fig. 2: Addendum with EAMM-U-...-67A

- 40 Adapter plate (1x)      41 Screw (4x)



Fig. 3: Addendum with EAMM-U-110/-145

- 50 Sealing plug (1x/2x)

#### 4.2 Not in scope of delivery

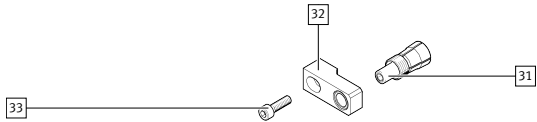


Fig. 4: Counter bearing EAMG-U1

- 31 Axis clamping sleeve (1x)      33 Screw (1x/2x)  
32 Counter bearing (1x)

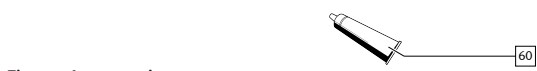


Fig. 5: Accessories

- 60 Lubricating grease (1x)  
LUB-KC1 (silicone-free)



Fig. 6: Tools

- 61 Clamping element EADT-E-  
U1-110 (1x)



The clamping element [61] is recommended from size 110.

## 5 Assembly

### 5.1 Assembly

#### 5.1.1 Mounting the housing

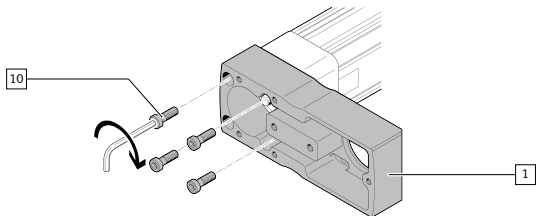


Fig. 7: Mount axis

- Use the screws [10] to mount the axis on the housing [1].

#### Without adapter plate [40]

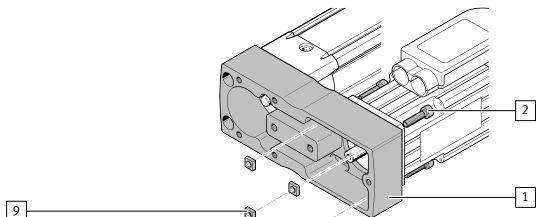


Fig. 8: Attach motor - without adapter plate

- Use the screws [2] and the square nuts [9] to attach the motor to the housing [1].  
The motor is movable and can be easily tilted.



For EAMM-U-...-42A the mounting direction is different.

- Attach the housing [1] to the motor with the screws [2].  
With EAMM-U-...-67A an adapter plate [40] is required.
- Please note the following section.

#### With adapter plate [40]

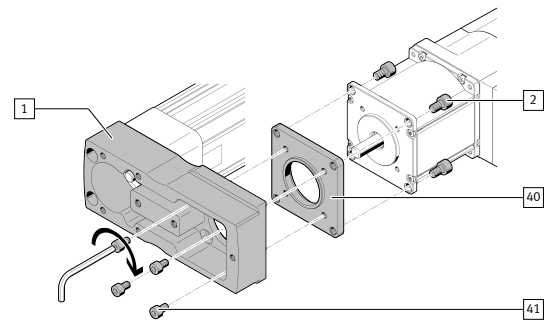


Fig. 9: Attach motor - with adapter plate

- Fasten the adapter plate [40] to the motor with the screws [2].
- Attach housing [1] to the adapter plate [40] with the screws [41].  
The motor is movable and can be easily tilted.

#### 5.1.2 Mounting the toothed belt

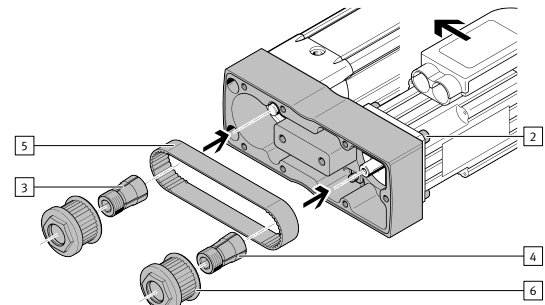


Fig. 10: Insert toothed belt

- Grease clamping sleeves [3]/[4] with the lubricating grease [60] on the thread and the outside of the cone only.  
Greased clamping sleeves [3]/[4] can be tightened evenly.
- Screw the clamping sleeves [3]/[4] into the thread of the toothed belt pulleys [6]. Do not tighten.
- Insert the toothed belt pulleys [6] into the toothed belt [5].
- Move the motor in the direction of the axis up to the stop and tilt it slightly.
- Place the clamping sleeves [3]/[4] on the drive shaft.
- Fasten motor with the screws [2].  
The motor is movable, but it can no longer be tilted.

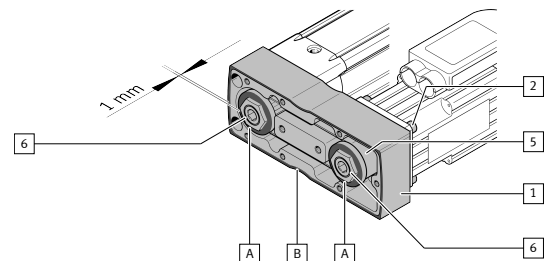


Fig. 11: Align toothed belt pulley

- Position surfaces [A] approx. 1 mm above the reference surface [B].  
Background: the toothed belt pulley [6] moves inwards when tightening.  
The position of the surface [A] depends on the size.

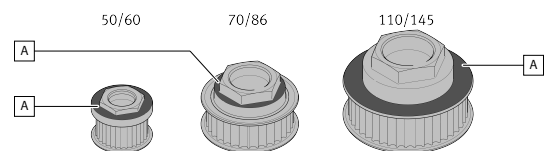


Fig. 12: Area A on the toothed belt pulley

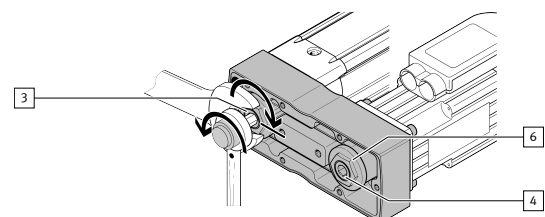


Fig. 13: Tighten the toothed belt pulley

- Select the required tightening torque for the toothed belt pulleys [6] → 8.2  
Tightening torques for the toothed belt pulleys.
- Tighten toothed belt pulleys [6]. Apply counter pressure to the clamping sleeves [3]/[4].

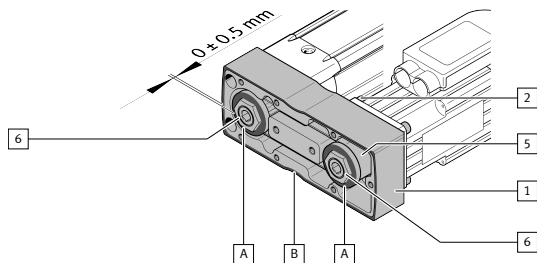


Fig. 14: Observe tolerances

1. Observe tolerances. The areas [A] must be flush with the reference area [B].  
Tolerance:  $\pm 0.5$  mm
2. If the toothed belt [5] or one of the toothed belt pulleys [6] is grinding against the housing:
  - Unscrew clamping sleeves [3]/[4] slightly.
  - Readjust the toothed belt pulleys [6].

### 5.1.3 Mounting the counter bearings

#### NOTICE

**When counter bearings are installed, they extend the service life of the axes and motors.**

- Always mount the counter bearing [32] included in the scope of delivery.
- With heavy loads: mount optional counter bearing EAMG-U1  
→ [www.festo.com/catalogue](http://www.festo.com/catalogue).

#### NOTICE

**Malfunctions and material damage may occur if the trunnion [F] is bent.**

- When tightening the toothed belt pulley [6], avoid a transverse load of the trunnion [F] on the clamping sleeve [31].

Prerequisite: the toothed belt is mounted with clamping sleeves [31] and [4] but not yet tensioned → 5.1.2 Mounting the toothed belt.

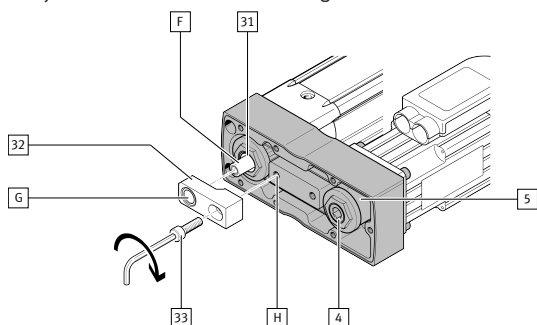


Fig. 15: Fasten counter bearing

1. Push the needle bush [G] onto the trunnion [F] of the clamping sleeve [31] avoiding tension.
2. Fasten the counter bearing [32] with the screw [33] on the thread [H].
3. Tension toothed belt [5].

### 5.1.4 Tensioning the toothed belt

#### NOTICE

**Toothed belt pretensioning too high.**

Impermissible radial loads or shaft break.

Increased wear of the toothed belt and the bearings of axis and motor.

- Avoid excessive toothed belt pretension.

A low toothed belt pretension is recommended.

The toothed belt [5] is tensioned when the strands [D] run approximately parallel:

- Untensioned:  $y > x$
- Tensioned:  $y \approx 1 \dots 1.05 x$

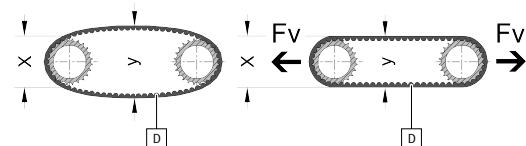


Fig. 16: Strands of the toothed belt

### With EAMM-U-50/-60/-70/-86

1. Move the motor until the clamping force  $F_v$  is exerted on the toothed belt [5].
2. Tighten [2] screws.

| EAMM-U- | Clamping force $F_v$ [N] |
|---------|--------------------------|
| 50      | 15 ... 35                |
| 60      | 40 ... 70                |
| 70      | 60 ... 110               |
| 86      | 70 ... 130               |

Tab. 4: Permissible Clamping Force of the Toothed Belt

### With EAMM-U-110/-145

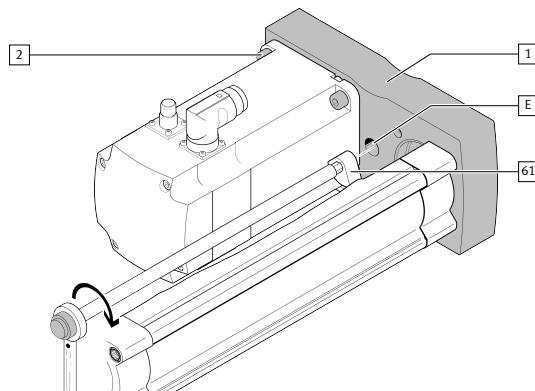


Fig. 17: Tension toothed belt with clamping element

1. Position clamping element [61] in the drilled hole [E].
2. Turn clamping element [61]. Hex wrench:  $\approx 8$   
Observe the recommended torque.
  - ↳ The motor, which can be moved along the slots, is pressed away from the axis mechanism by the eccentric cam of the clamping element.
3. Tighten screws [2].

| EAMM-U- | Recommended torque [Nm] |             |             |
|---------|-------------------------|-------------|-------------|
|         |                         |             |             |
| 110     | 0.2 ... 0.6             | 0.4 ... 0.8 | 0.6 ... 1.0 |
| 145     | 1.0 ... 1.5             | 1.5 ... 2.0 | 2.0 ... 2.5 |

Tab. 5: Recommended torque of the clamping element

| EAMM-U- | Clamping force $F_v$ [N] |
|---------|--------------------------|
| 110     | 120 ... 300              |
| 145     | 200 ... 450              |

Tab. 6: Permissible clamping force of the toothed belt

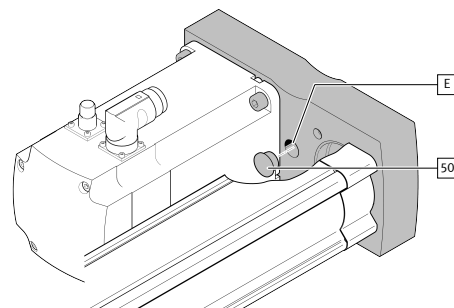


Fig. 18: Close drilled hole

- Press the sealing plug [50] into the drilled hole [E].

### 5.1.5 Mounting the cover

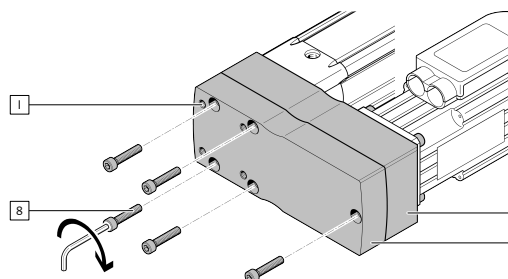


Fig. 19: Attach the cover

- Mount cover [7] on the housing [1] with the screws [8].



The threads [1] are used to fasten mounting accessories

→ [www.festo.com/catalogue](http://www.festo.com/catalogue).

CAUTION

Risk of injury from touching hot surfaces.

The motor connecting kit becomes hot due to the heat dissipation of the motor.

- Do not touch the motor connecting kit during operation or immediately after-ward.

WARNING

Risk of injury due to unexpected movement of components if toothed belt fails.

- Take supplemental safeguarding measures.

7 Maintenance

7.1 Checking the toothed belt

The toothed belt [5] is a wearing part → [www.festo.com/spareparts](http://www.festo.com/spareparts).

- Check toothed belt [5] regularly:
  - during maintenance of the machine
  - when replacing an axis
- Replace the toothed belt [5] at the following indicators of wear:
  - excessive accumulation of wear particles in the housing
  - cracks on the back of the toothed belt
  - visible glass fibre cords in the tooth base

7.2 Demounting the toothed belt

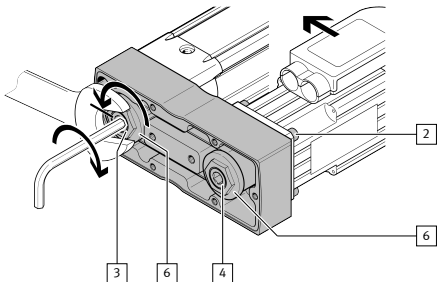


Fig. 20: Loosen toothed belt pulleys

- Unscrew the screws [2] slightly.
  - The motor is movable and can be easily tilted.
- Move the motor in the direction of the axis up to the stop and tilt it slightly.
- Dismount the counter bearing.
- Unscrew the toothed belt pulleys [6]. Apply counter pressure to the clamping sleeves [3]/[4].
- Rotate toothed belt pulleys [6] anti-clockwise.
  - The toothed belt pulleys [6] can be pulled from the cone of the clamping sleeves [3]/[4].

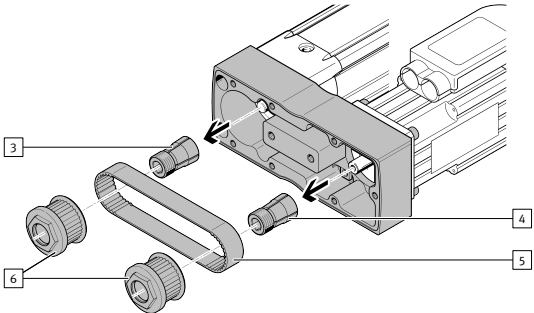


Fig. 21: Remove toothed belt

- Pull the clamping sleeves [3]/[4] off the shaft journals.
- Remove the toothed belt [5] from the toothed belt pulleys [6].

8 Technical data

8.1 Screw sizes and tightening torques

| EAMM-U-    | [2]   | [Nm] | [8]   | [Nm] | [10]  | [Nm]              | [33]  | [Nm] |
|------------|-------|------|-------|------|-------|-------------------|-------|------|
| 50-D19-40R | M4x12 | 3    | M4x25 | 3    | M4x12 | 3                 | M5x20 | 6    |
| 50-D32-40A | M3x12 | 1.2  | M4x25 | 3    | M6x18 | 5/6 <sup>1)</sup> | M5x20 | 6    |
| 50-D32-40P | M3x12 | 1.2  | M4x25 | 3    | M6x18 | 5/6 <sup>1)</sup> | M5x20 | 6    |
| 50-D32-40R | M4x12 | 3    | M4x25 | 3    | M6x18 | 5/6 <sup>1)</sup> | M5x20 | 6    |
| 50-D32-42A | M3x8  | 1.2  | M4x25 | 3    | M6x18 | 5/6 <sup>1)</sup> | M5x20 | 6    |
| 60-D32-55A | M5x20 | 6    | M5x25 | 6    | M6x18 | 5/6 <sup>1)</sup> | M6x20 | 10   |
| 60-D32-57A | M5x35 | 6    | M5x25 | 6    | M6x18 | 5/6 <sup>1)</sup> | M6x20 | 10   |
| 60-D32-60P | M4x35 | 3    | M5x25 | 6    | M6x18 | 5/6 <sup>1)</sup> | M6x20 | 10   |
| 60-D32-60R | M5x35 | 6    | M5x25 | 6    | M6x18 | 5/6 <sup>1)</sup> | M6x20 | 10   |
| 60-D32-67A | M6x10 | 10   | M5x25 | 6    | M6x18 | 5/6 <sup>1)</sup> | M6x20 | 10   |
| 60-D40-40R | M4x12 | 3    | M5x25 | 6    | M6x18 | 5/6 <sup>1)</sup> | M6x20 | 10   |
| 60-D40-55A | M5x20 | 6    | M5x25 | 6    | M6x18 | 5/6 <sup>1)</sup> | M6x20 | 10   |
| 60-D40-57A | M5x35 | 6    | M5x25 | 6    | M6x18 | 5/6 <sup>1)</sup> | M6x20 | 10   |
| 60-D40-60P | M4x35 | 3    | M5x25 | 6    | M6x18 | 5/6 <sup>1)</sup> | M6x20 | 10   |
| 60-D40-60R | M5x35 | 6    | M5x25 | 6    | M6x18 | 5/6 <sup>1)</sup> | M6x20 | 10   |

| EAMM-U-       | [2]    | [Nm] | [8]   | [Nm] | [10]   | [Nm]               | [33]  | [Nm] |
|---------------|--------|------|-------|------|--------|--------------------|-------|------|
| 60-D40-67A    | M6x10  | 10   | M5x25 | 6    | M6x18  | 5/6 <sup>1)</sup>  | M6x20 | 10   |
| 70-D32-60P    | M4x16  | 3    | M5x35 | 6    | M6x18  | 5/6 <sup>1)</sup>  | M8x30 | 18   |
| 70-D32-70A    | M5x18  | 6    | M5x35 | 6    | M6x18  | 5/6 <sup>1)</sup>  | M8x30 | 18   |
| 70-D40-60P    | M4x16  | 3    | M5x35 | 6    | M6x18  | 5/6 <sup>1)</sup>  | M8x30 | 18   |
| 70-D40-70A    | M5x18  | 6    | M5x35 | 6    | M6x18  | 5/6 <sup>1)</sup>  | M8x30 | 18   |
| 70-D50-70A    | M5x20  | 6    | M5x35 | 6    | M8x20  | 12                 | M8x30 | 18   |
| 70-D50-60P    | M4x16  | 3    | M5x35 | 6    | M8x20  | 12                 | M8x30 | 18   |
| 86-D40-70A    | M5x18  | 6    | M6x40 | 10   | M6x18  | 5/6 <sup>1)</sup>  | M8x30 | 18   |
| 86-D40-80P    | M5x20  | 6    | M6x40 | 10   | M6x18  | 5/6 <sup>1)</sup>  | M8x30 | 18   |
| 86-D40-87A    | M6x40  | 10   | M6x40 | 10   | M6x18  | 5/6 <sup>1)</sup>  | M8x30 | 18   |
| 86-D40-88A    | M6x45  | 10   | M6x40 | 10   | M6x18  | 5/6 <sup>1)</sup>  | M8x30 | 18   |
| 86-D50-80P    | M5x20  | 6    | M6x40 | 10   | M8x20  | 12                 | M8x30 | 18   |
| 86-D50-87A    | M6x45  | 10   | M6x40 | 10   | M8x20  | 12                 | M8x30 | 18   |
| 86-D60-55A    | M5x20  | 6    | M6x40 | 10   | M8x20  | 9/12 <sup>2)</sup> | M8x30 | 18   |
| 86-D60-60P    | M4x20  | 3    | M6x40 | 10   | M8x20  | 9/12 <sup>2)</sup> | M8x30 | 18   |
| 86-D60-70A    | M5x20  | 6    | M6x40 | 10   | M8x20  | 9/12 <sup>2)</sup> | M8x30 | 18   |
| 86-D60-80P    | M5x20  | 6    | M6x40 | 10   | M8x20  | 9/12 <sup>2)</sup> | M8x30 | 18   |
| 86-D60-87A    | M6x45  | 10   | M6x40 | 10   | M8x20  | 9/12 <sup>2)</sup> | M8x30 | 18   |
| 86-D60-88A    | M6x45  | 10   | M6x40 | 10   | M8x20  | 9/12 <sup>2)</sup> | M8x30 | 18   |
| 110-D50-100A  | M8x25  | 18   | M8x50 | 18   | M8x20  | 12                 | M8x40 | 18   |
| 110-D60-88A   | M6x20  | 10   | M8x50 | 18   | M8x20  | 9/12 <sup>2)</sup> | M8x40 | 18   |
| 110-D60-90R   | M6x20  | 10   | M8x50 | 18   | M8x20  | 9/12 <sup>2)</sup> | M8x40 | 18   |
| 110-D60-100A  | M8x25  | 18   | M8x50 | 18   | M8x20  | 9/12 <sup>2)</sup> | M8x40 | 18   |
| 110-D80-100A  | M8x25  | 18   | M8x50 | 18   | M10x20 | 25                 | M8x40 | 18   |
| 145-D80-140A  | M10x55 | 30   | M8x50 | 18   | M10x20 | 25                 | M8x40 | 18   |
| 145-D80-150A  | M10x60 | 30   | M8x50 | 18   | M10x20 | 25                 | M8x40 | 18   |
| 145-D100-140A | M10x55 | 30   | M8x50 | 18   | M10x20 | 25                 | M8x40 | 18   |
| 145-D100-150A | M10x60 | 30   | M8x50 | 18   | M10x20 | 25                 | M8x40 | 18   |

1) With axis EGSL: 5 Nm; ESBF: 6 Nm

2) With axis EGSL: 9 Nm; ESBF: 12 Nm

Tab. 7: Screws [2] ... [33]

| EAMM-U-    | [41] | [Nm] |
|------------|------|------|
| 60-D32-67A | M5x8 | 6    |
| 60-D40-67A | M5x8 | 6    |

Tab. 8: Screw [41]

8.2 Tightening torques for the toothed belt pulleys

The transferable torque depends on the tightening torque of the toothed belt pulleys [6].

- Select the tightening torque of the toothed belt pulley [6] from the permissible range.
  - Check: the transferable torque is greater than the driving torque of the motor → Technical data of the motor.

| EAMM-U- | Toothed belt pulley [6] | Parallel kit             |
|---------|-------------------------|--------------------------|
|         | Tightening torque [Nm]  | Transferable torque [Nm] |
| 50      | 3 ... 5                 | 0.5 ... 1                |
| 60      | 10 ... 15               | 1.5 ... 3                |
| 70      | 22 ... 35               | 3.5 ... 7                |
| 86      | 25 ... 40               | 4.8 ... 9.5              |
| 110     | 65 ... 80               | 12.5 ... 25              |
| 145     | 120 ... 180             | 25 ... 50                |

Tab. 9: Tightening torques of the toothed belt pulley [6]

| EAMM-U- | Toothed belt pulley [6] | Clamping sleeve [3]/[4] | Clamping sleeve [31] |
|---------|-------------------------|-------------------------|----------------------|
| 50      | ≈ 17                    | ≈ 5                     | ≈ 3                  |
| 60      | ≈ 22                    | ≈ 8                     | ≈ 5                  |
| 70/86   | ≈ 30                    | ≈ 8                     | ≈ 6                  |
| 110/145 | ≈ 36                    | ≈ 10                    | ≈ 8                  |

Tab. 10: Width across flats of the toothed belt pulley [6] and the clamping sleeves [3] ... [31]