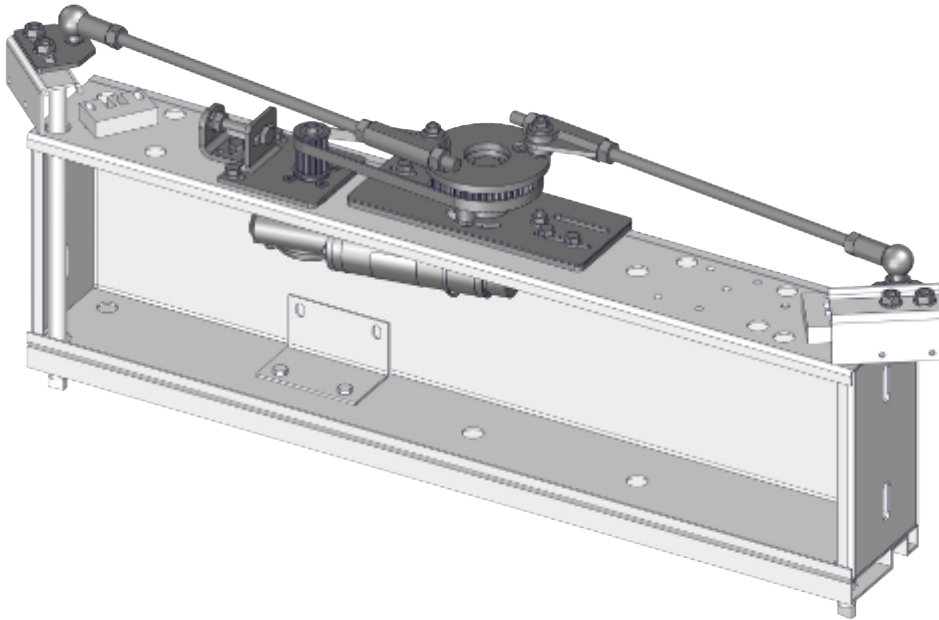
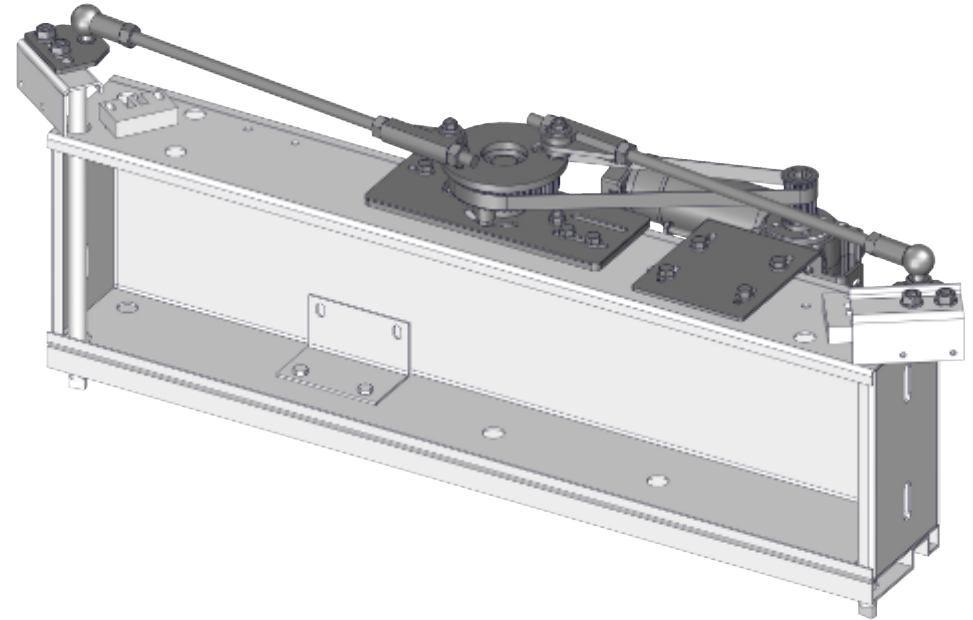




Variant 1



Variant 2

Conversion Instructions
Fermator BDO
to TSG V4

Shows **Z**.

Imprint

Manufacturer	Langer & Laumann Ing.-Büro GmbH
Address	Wilmsberger Weg 8 48565 Steinfurt Germany
Phone	+49 (2552) 92791 0
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Dokument **in Deutsch** durch Scannen des QR-Codes anfordern.



Obtenir le document **en français** en scannant le code QR.



1 About these instructions

1.1 Purpose

These conversion instructions contain important information and general mechanical assembly steps for the conversion of an existing system. These instructions must be observed to avoid hazards, repair costs and downtimes and increase the reliability and service life of the system.

1.2 Scope

These conversion instructions apply to the following conversion kit:

- Fermator BDO to TSG V4

1.3 Version information

The version number of these conversion instructions is shown on the front page and footer of each page.

Always retain and use the latest version of all documents.

Using an outdated version of this and any required and supplementary documentation can lead to incorrect assembly.

1.4 Contact information

See page 2.

1.5 Customers for whom these instructions are intended

These conversion instructions are directed at end customers of Langer & Laumann Ing.-Büro GmbH.

In addition to reading these conversion instructions, the following requirements and previous technical knowledge of the user is required for correct operation of the device:

- comprehensive technical knowledge of the existing facilities
- knowledge of the operating manuals of these facilities
- Classification as skilled personal

1.6 Other applicable documents

The following documents are required for work not described in these conversion instructions:

- Fitting instructions for the door control unit with information on electrical connection, fitting and commissioning
- Information on components not manufactured and supplied by Langer & Laumann

2 Safety

2.1 General safety instructions

Personnel must have carefully read and understood these conversion instructions before starting the conversion work.

The safety instructions and guidelines specified in these conversion instructions must be observed.

The accident prevention regulations applicable at the place of use and general safety regulations must be observed.

2.2 Personnel requirements

2.2.1 Personnel qualification and scope of work

The tasks described in this manual set different requirements for the qualification of the assigned personnel. Inadequately qualified employees are not able to correctly assess the risks and expose themselves and others to the risk of injuries. It is prohibited for inadequately qualified personnel to be in the working/danger zone. Persons whose ability to respond is influenced, for example, by drugs, alcohol or medication may not work on the facility.

Skilled personnel Work on mechanical components may only be carried out by suitably qualified skilled personnel (lift installer for defined tasks in lift construction according to DGUV 303-001).

Electrically skilled personnel Work on electrical components may only be carried out by electrically skilled personnel or lift installers with further training as an electrically skilled person for defined tasks in lift construction according to DGUV 303-001.

2.2.2 Personal protective equipment

Personal protective equipment is used to protect people against health and safety impairments during their work. The specified protective equipment must be worn.

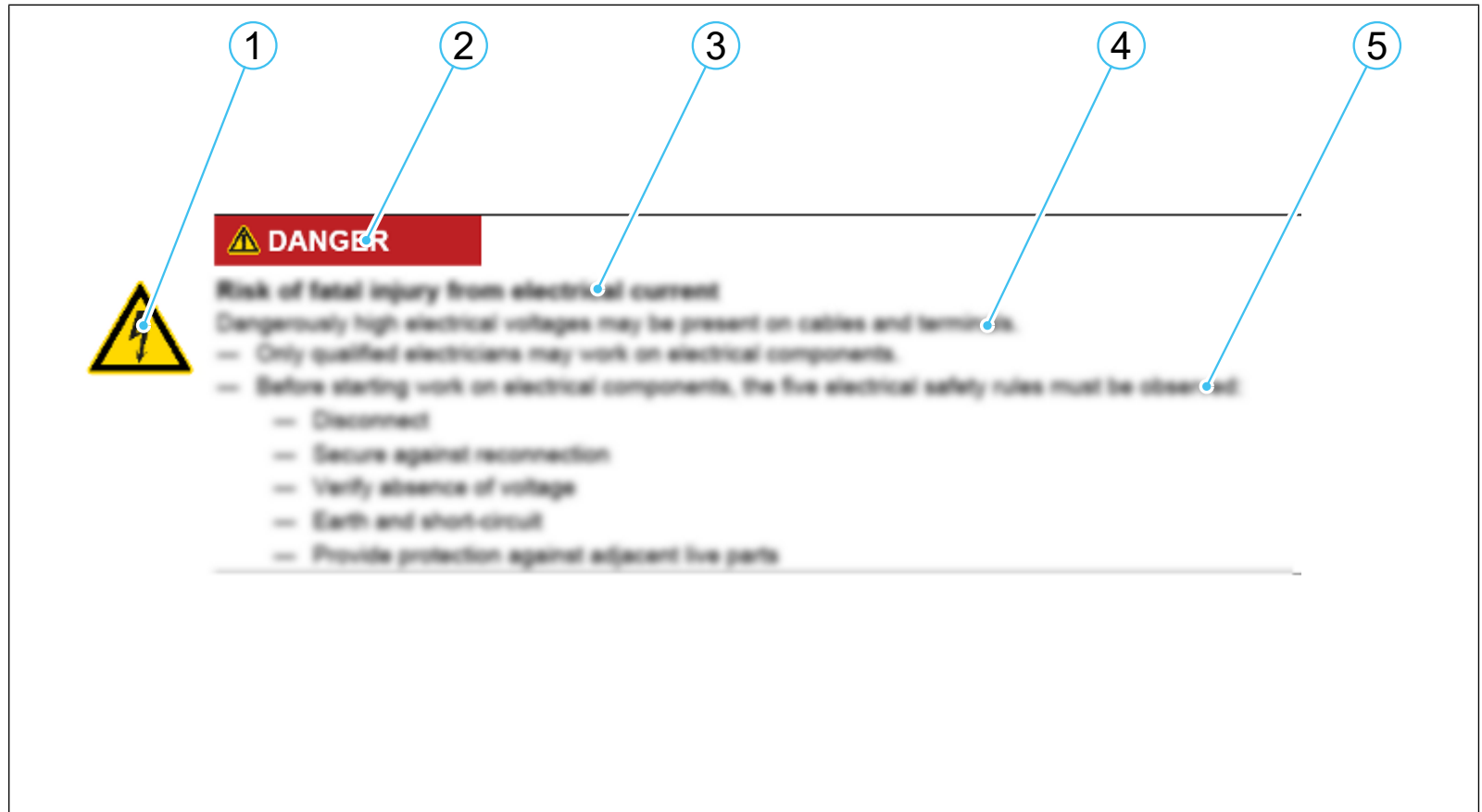
Symbol	Meaning
	Wearing protective work clothing protects against hazards in the workplace.
	Wearing slip-resistant safety footwear protects against injuries to the feet.
	Wearing cut and puncture-resistant protective gloves protects against injuries to the hands.
	Wearing a protective cap protects against head injuries.
	Wearing goggles protects against eye injuries.
	Wearing hearing protection protects against hearing damage.
	Wearing a fall arrest system protects against falls.

Table 1: Personal protective equipment

2.3 Warnings

2.3.1 Structure of warning notices

All warning notices in this document are structured as follows:



1	Hazard symbol	2	Signal word
3	Type and source of hazard	4	Possible consequences of non-observance
5	Procedure for hazard prevention		

2.3.2 Meaning of the signal words and symbols

The following signal words are used in this document:

Signal word	Meaning, consequences if not prevented
DANGER	Warns of an imminent hazardous situation which results in death or serious injury.

Table 2: Meaning of the signal words

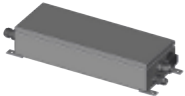
The following hazard-specific symbols are used in this document:

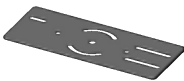
Symbol	Designation
	Automatic start-up
	Electrical hazard

Table 3: Meaning of the hazard-specific symbols

3 In the box

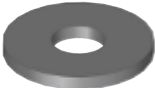
The conversion kit components are shown in the table. The position numbers are used in the following chapters to identify the individual components. For logistical reasons, the packaging can contain further components that are not required for actual use.

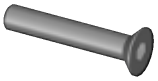
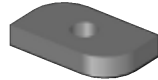
Pos.	Illustration	Item number	Description	Quantity
P001		8.20.xxxxx.04	TSG electronics	1
P002		8.20.2005x.xx	TSG motor	1

Pos.	Illustration	Item number	Description	Quantity
P003		1.20.60526	L-shaped motor bracket	1
P004		1.20.59070	L-shaped bracket	1
P005		1.20.61009	Timing belt, 5m	1
P006		1.20.23303	Round plate	1
P007		1.20.23320	Rectangular bracket	1
P008		1.20.23321	Rectangular bracket	1
P009		1.20.23315	Plate	2
P010		1.20.22020	Turning gear D = 81.62 mm	1

Pos.	Illustration	Item number	Description	Quantity
P011		1.20.23310	Bracket	2
P012		1.20.23106	Threaded rod M10 × 500 mm, right	2
P013		1.20.23105	Hinge M10, L-shaped, right	2
P014		1.20.92210	Sleeve, D = 23 mm	1
P015		1.20.22030	Round shaft	1
P016		1.20.60143	Timing belt pulley, D = 24 mm, 5M	1
P017		1.20.91129	Buffer M6 15 × 15 mm	2
P018		1.20.35060	Plain bearing D = 12 mm, round	2

Pos.	Illustration	Item number	Description	Quantity
P019		1.36.00880	Sleeve, D = 12 mm, round	6
P020		1.20.60056	Motor bracket	1
P021		1.20.30217	Bumper D = 20 mm, round	1
P022		1.20.61018	Timing belt, 5m	1
P023		1.36.00380	Countersunk screw M8 x 20 mm	1
P024		1.36.00137	Locking screw M6 x 20 mm	3
P025		1.36.00502	Nut M6	13
P026		1.36.00710	Locking screw M8 x 16 mm	4

Pos.	Illustration	Item number	Description	Quantity
P027		1.36.00501	Nut M8	5
P028		1.36.00332	Countersunk screw M4 × 10 mm	4
P029		1.36.05040	Set screw M5 × 5 mm	1
P030		1.36.00138	Locking screw M6 × 16 mm	3
P031		1.36.02120	Hexagon head screw M8 × 50 mm	1
P032		1.36.00150	Nut M10	6
P033		1.36.01036	Washer M6	7
P034		1.36.00360	Countersunk screw M6 × 16 mm	4

Pos.	Illustration	Item number	Description	Quantity
P035		1.36.00365	Countersunk screw M6 × 35 mm	2
P036		1.36.01375	Retaining ring for shaft, D = 20 mm	1
P037		1.36.01022	Nut M6, rectangular	2
P038		1.36.00200	Nut M6	2
P039		1.36.00130	Locking screw M5 × 12 mm	4
P040		1.36.00139	Locking screw M6 × 25 mm	4
P041		1.36.00123	Hexagon head screw M8 × 60 mm	1
P042		1.36.00470	Washer M10	3

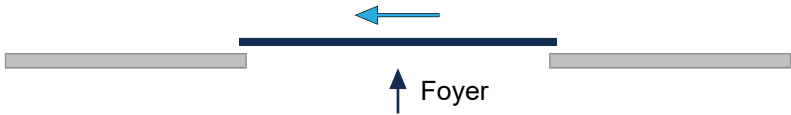
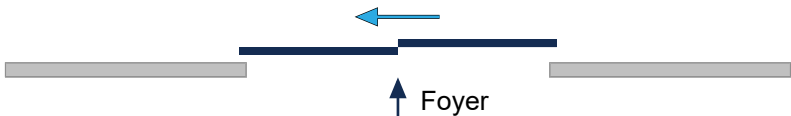
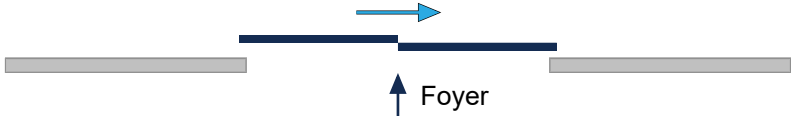
4 Required tools

The tools required for the conversion are shown in the table. The position numbers are used in the following chapters to identify the individual tools.

Pos.	Symbol	Description
T001		Soft face hammer
T002		Hammer
T003		Puller for bearings and pinions
T004		Pipe wrench
T005		Side cutters
T006		Circlip pliers
T007		Angle grinder
T008		Measuring tool (folding rule or measuring tape)
T009		Slotted screwdriver
T010		Phillips screwdriver
T108		Combination spanner, size 8
T110		Combination wrench, size 10
T113		Combination wrench, size 13
T117		Combination spanner, size 17
T202.5		Allen key, size 2.5
T204.0		Allen key, size 4
T205.0		Allen key, size 5
T606.5		Drill bit, Ø 6.5 mm

5 Definition of door opening directions

The possible door opening directions are shown in the following table in schematic form.

L: Left opening	
R: Right opening	
TL: Telescopic left opening	
TR: Telescopic right opening	
Z: Center opening	
ZT: Center telescoping opening	
FD: Folding door	

6 Disassembly of existing components

DANGER



Danger to life from rotating/moving system components

- Before starting work, switch off the system completely.
- Keep away from unsecured rotating/moving system components.

DANGER



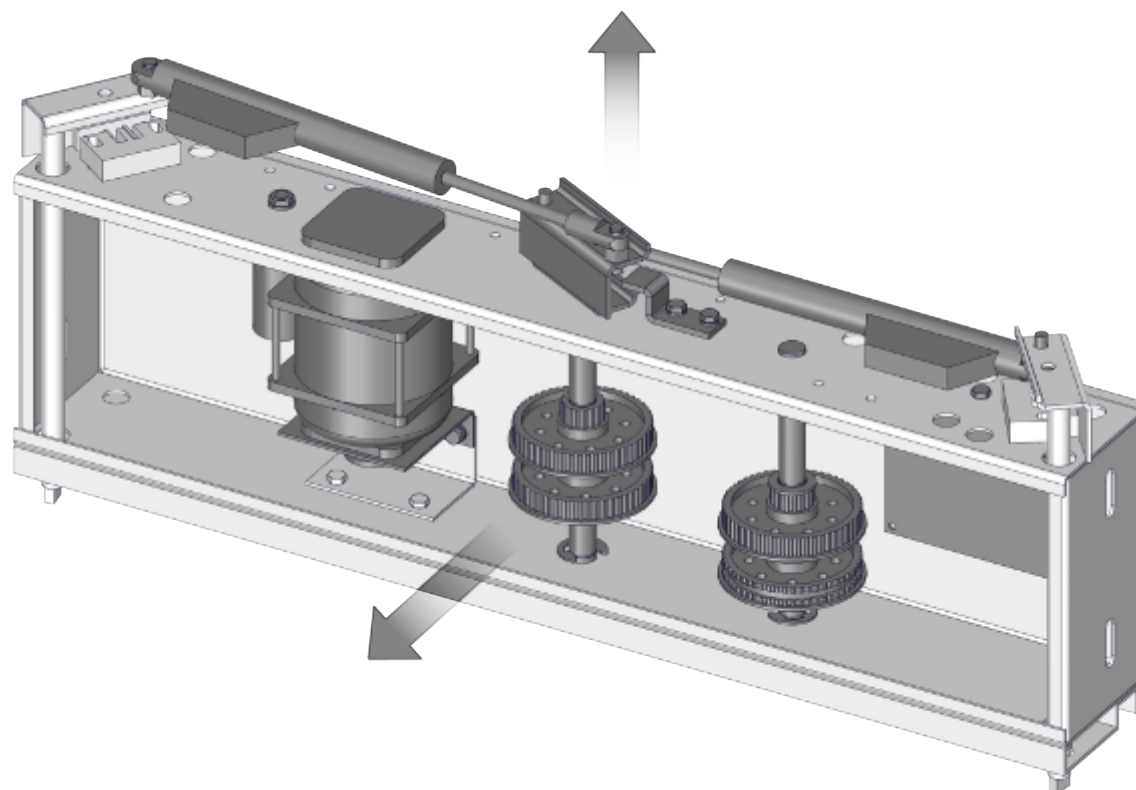
Risk of fatal injury from electrical current

Dangerously high electrical voltages may be present on cables and terminals.

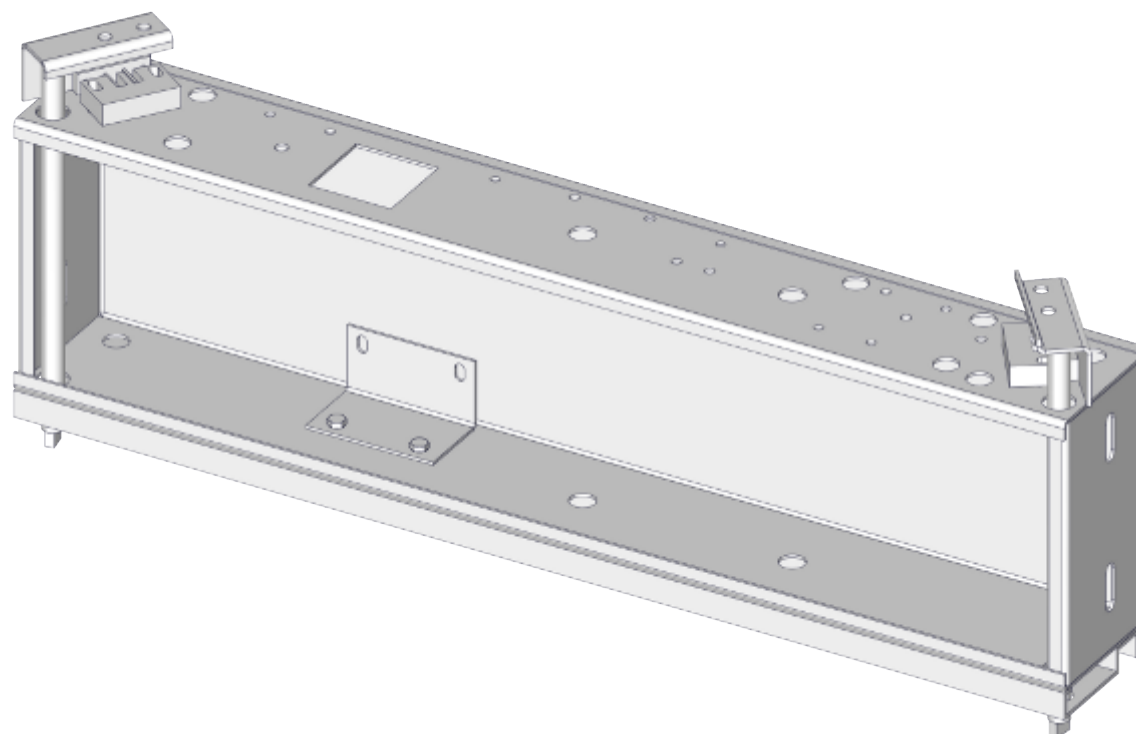
- Only qualified electricians may work on electrical components.
- Before starting work on electrical components, the five electrical safety rules must be observed:
 - Disconnect
 - Secure against reconnection
 - Verify absence of voltage
 - Earth and short-circuit
 - Provide protection against adjacent live parts

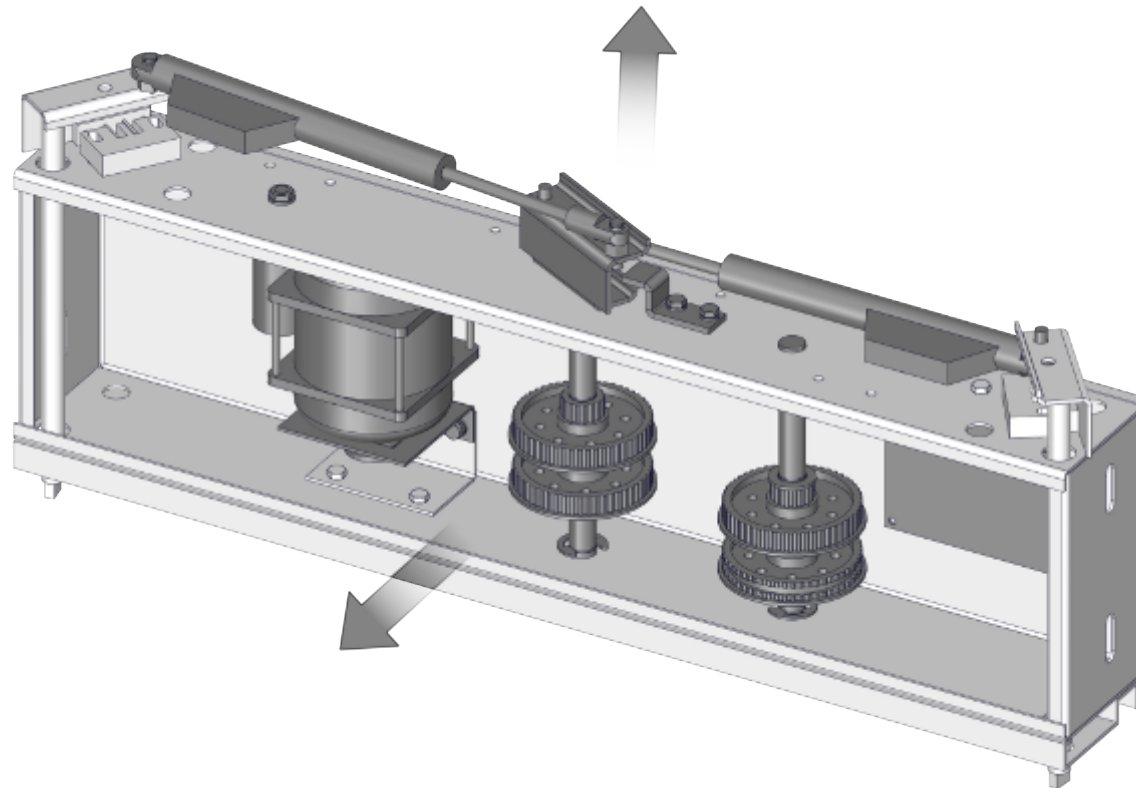
Tools

Pos.	Symbol	Description
T002		Hammer
T003		Puller for bearings and pinions
T004		Pipe wrench
T005		Side cutters
T006		Circlip pliers
T007		Angle grinder
T1xx		Combination spanners, as needed

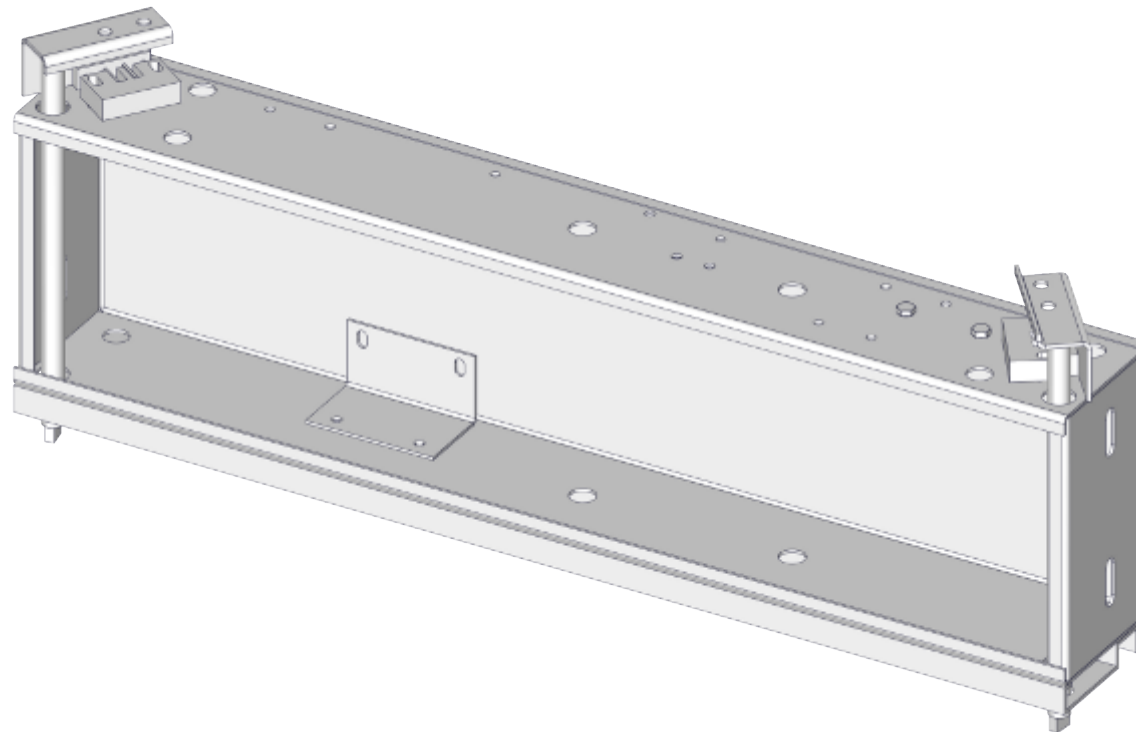


Variant 1: Shows the components to be dismantled.





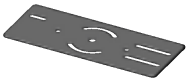
Variant 2: Shows the components to be dismantled.

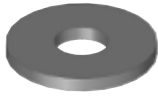


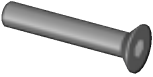
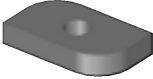
7 Assembly of variant 1

7.1 Mounting the turning gear unit

Components

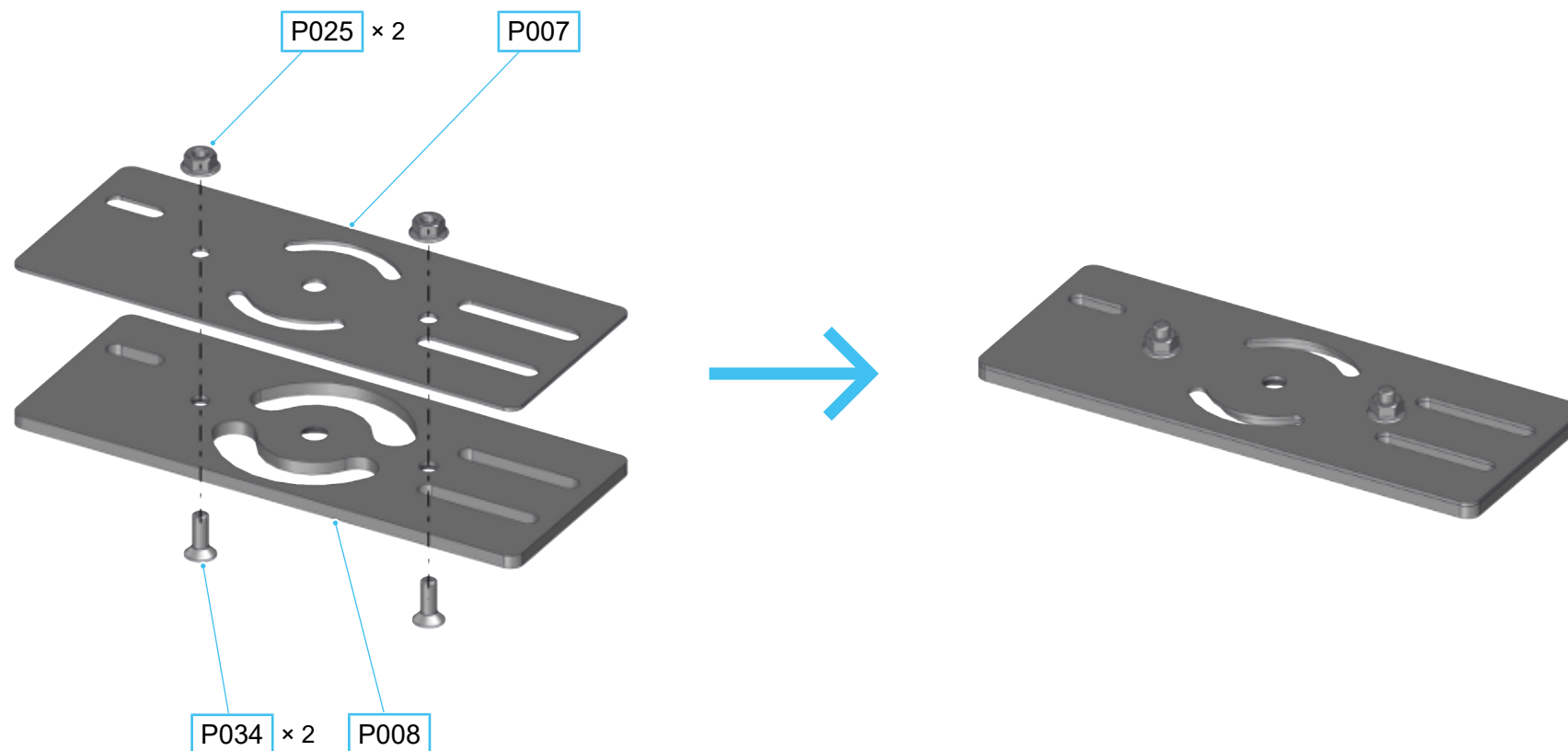
Pos.	Illustration	Item number	Description	Quantity
P006		1.20.23303	Round plate	1
P007		1.20.23320	Rectangular bracket	1
P008		1.20.23321	Rectangular bracket	1
P010		1.20.22020	Turning gear D = 81.62 mm	1
P011		1.20.23310	Bracket	2
P014		1.20.92210	Sleeve, D = 23 mm	1

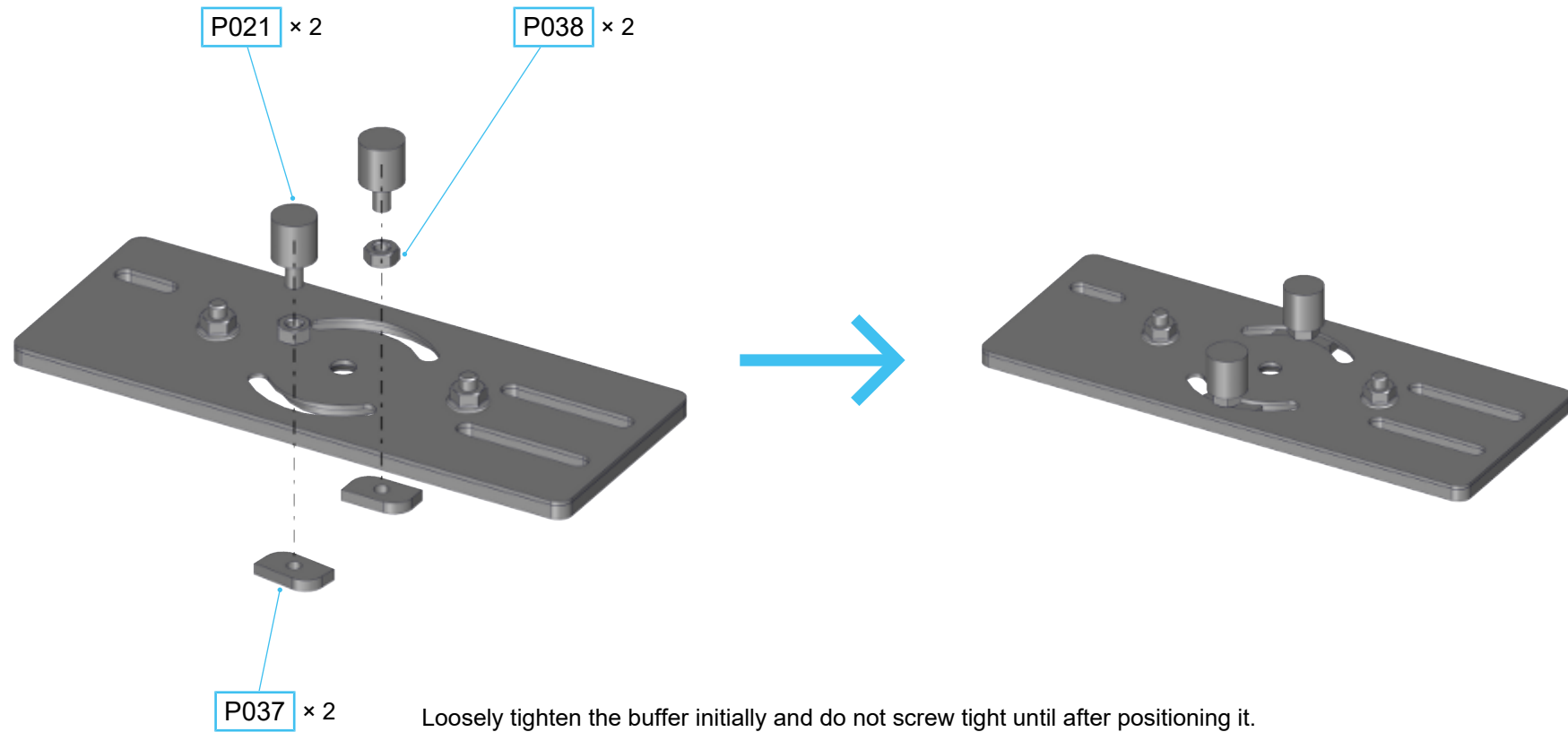
Pos.	Illustration	Item number	Description	Quantity
P015		1.20.22030	Round shaft	1
P017		1.20.91129	Buffer M6 15 × 15 mm	2
P018		1.20.35060	Plain bearing D = 12 mm, round	2
P019		1.36.00880	Sleeve, D = 12 mm, round	2
P023		1.36.00380	Countersunk screw M8 × 20 mm	1
P024		1.36.00137	Locking screw M6 × 20 mm	3
P025		1.36.00502	Nut M6	7
P033		1.36.01036	Washer M6	7

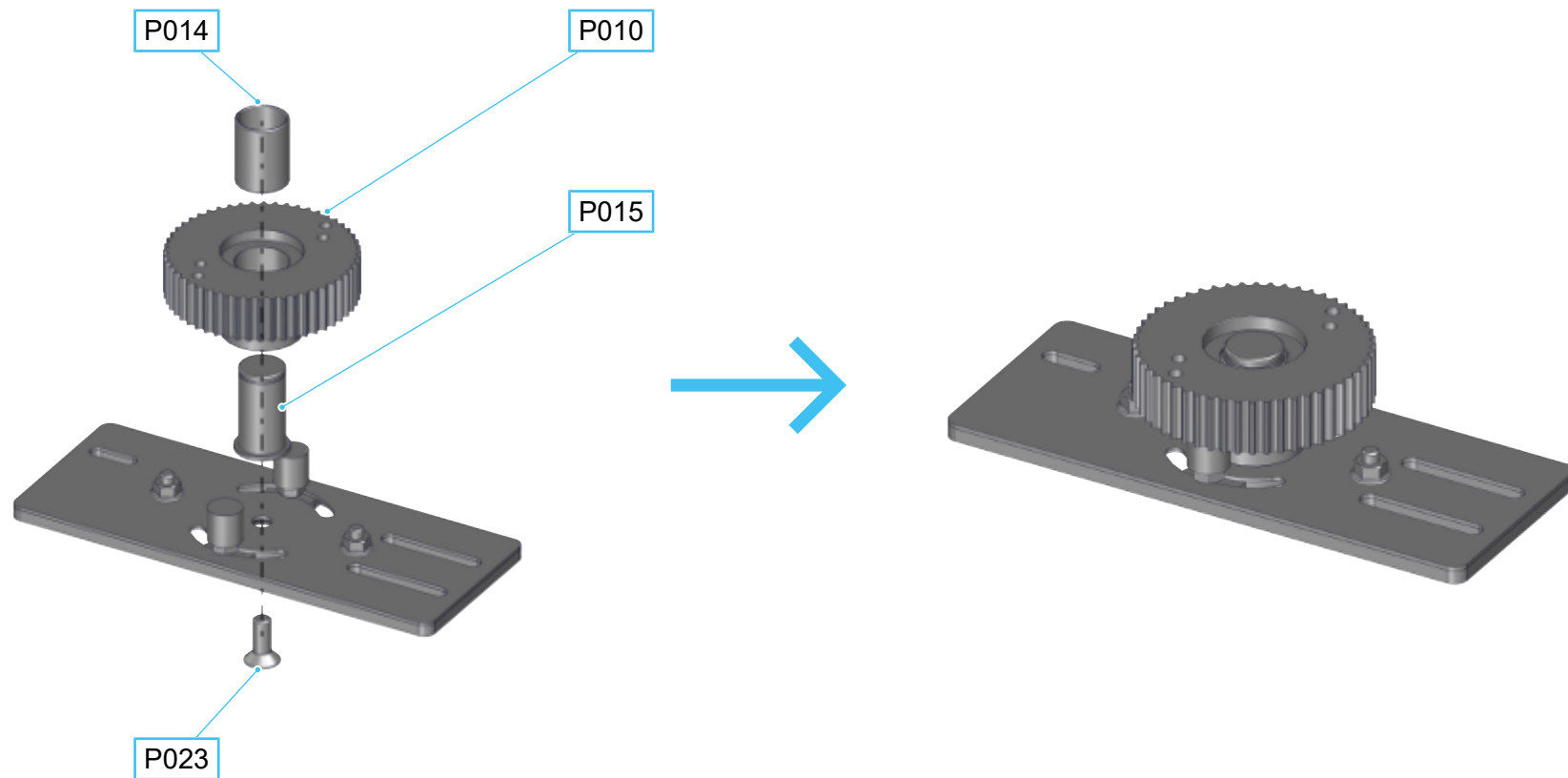
Pos.	Illustration	Item number	Description	Quantity
P034		1.36.00360	Countersunk screw M6 × 16 mm	4
P035		1.36.00365	Countersunk screw M6 × 35 mm	2
P037		1.36.01022	Nut M6, rectangular	2
P038		1.36.00200	Nut M6	2

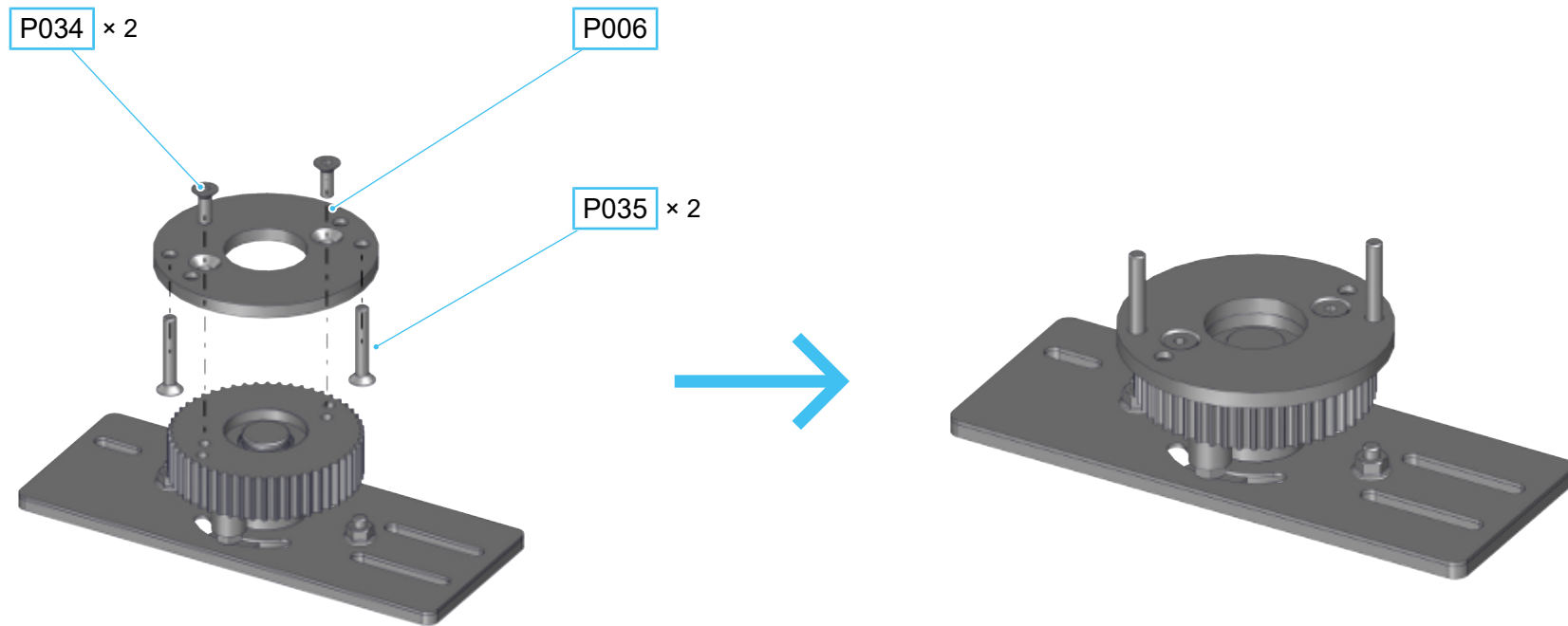
Tools

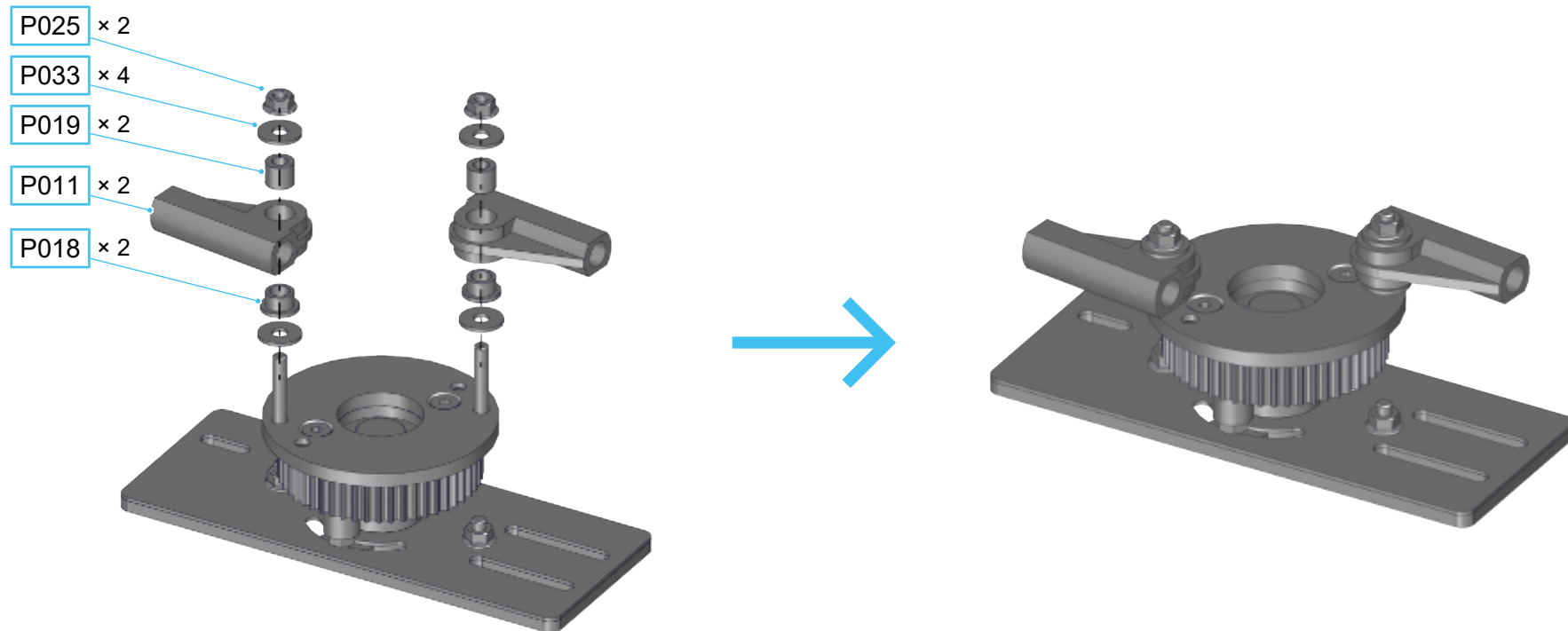
Pos.	Symbol	Description
T110		Combination wrench, size 10
T204.0		Allen key, size 4
T205.0		Allen key, size 5

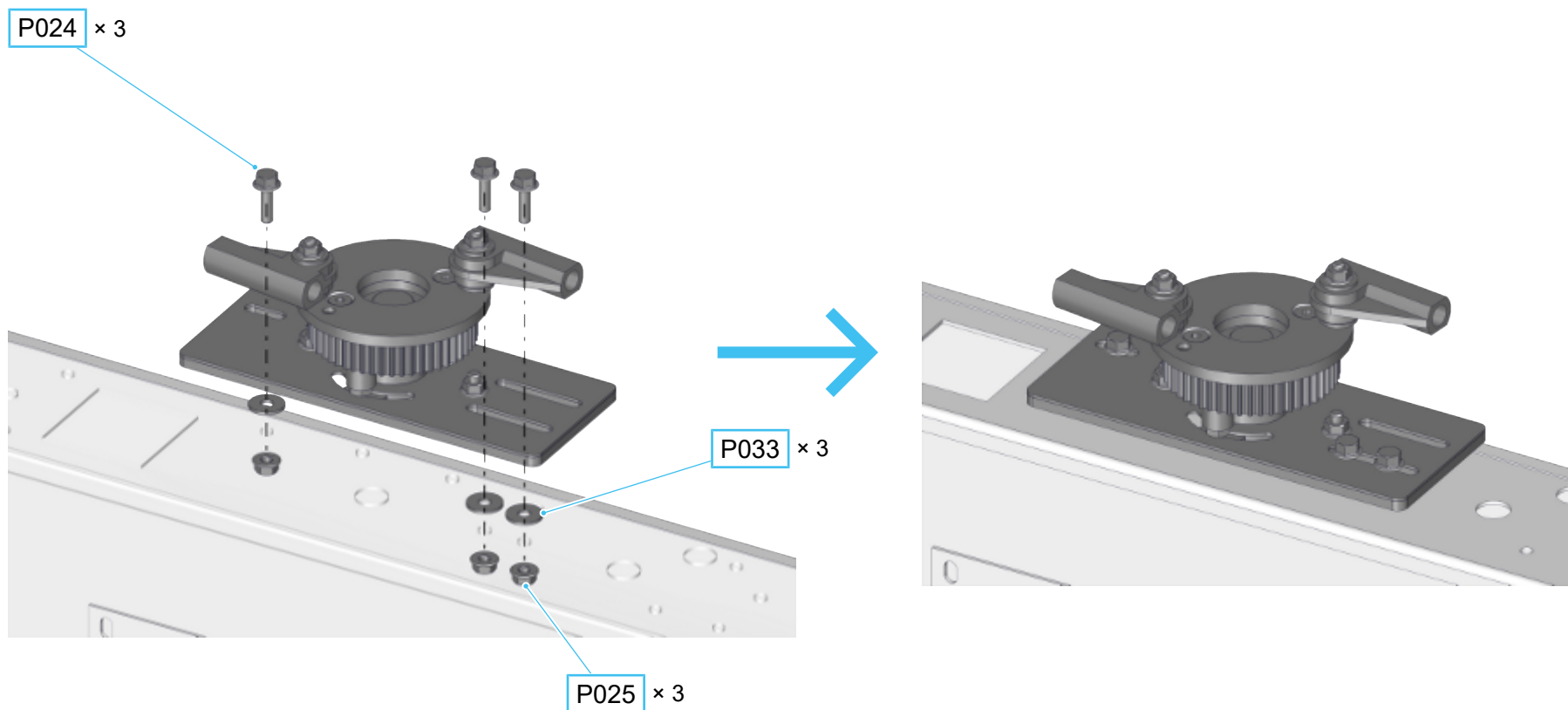


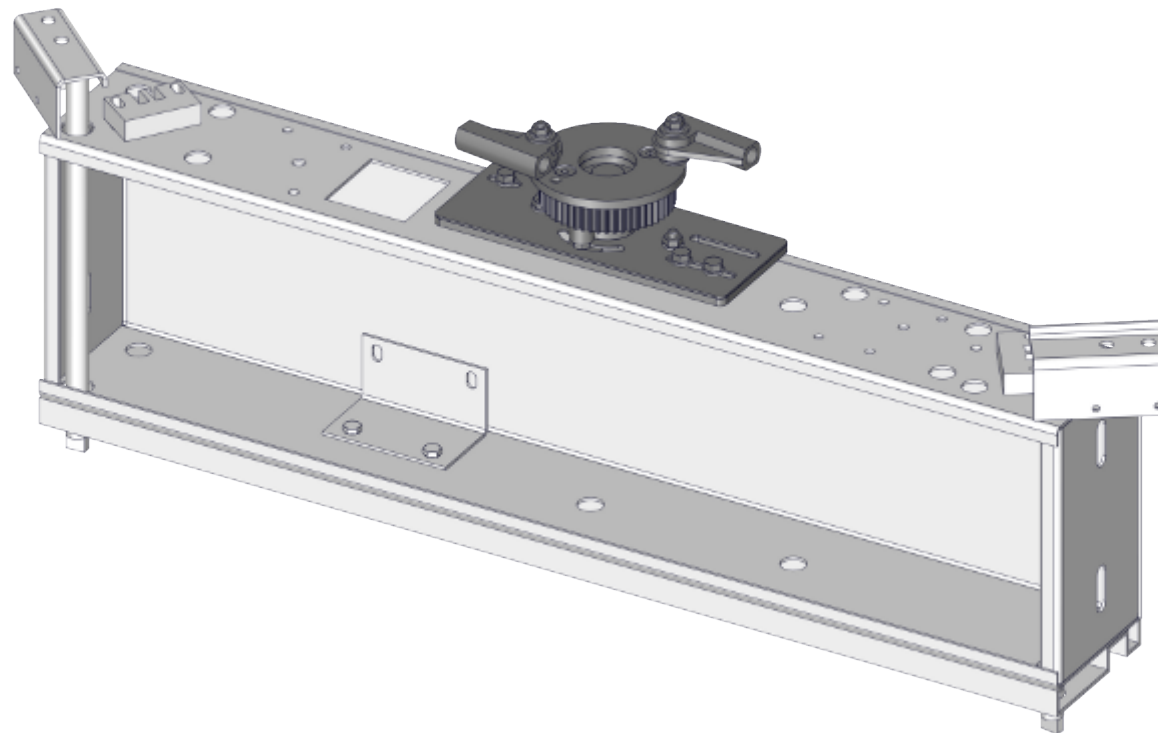








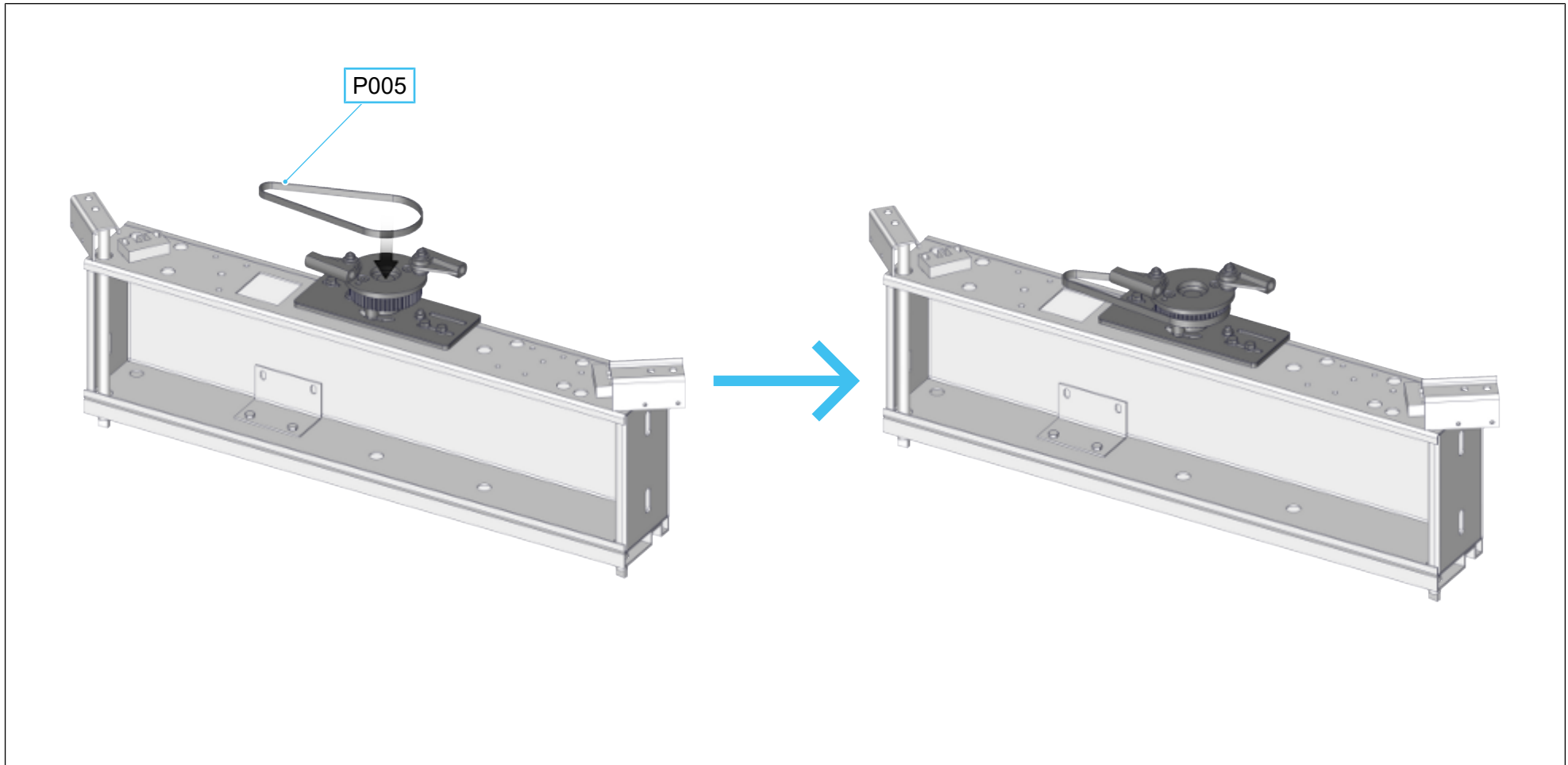




7.2 Preassembling the endless timing belt

Components

Pos.	Illustration	Item number	Description	Quantity
P005		1.20.61009	Timing belt, 5m	1



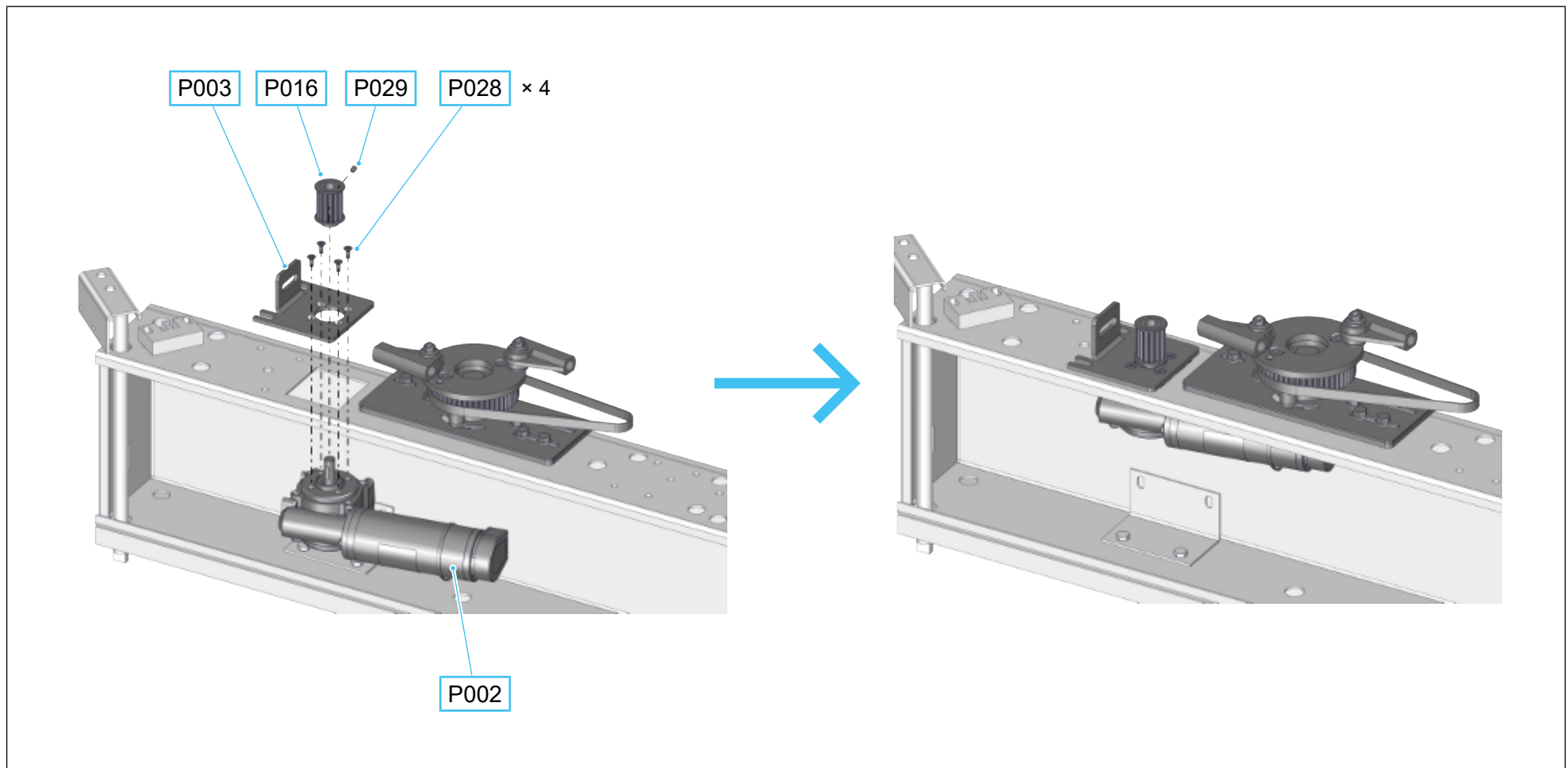
7.3 Mounting the motor on the door frame

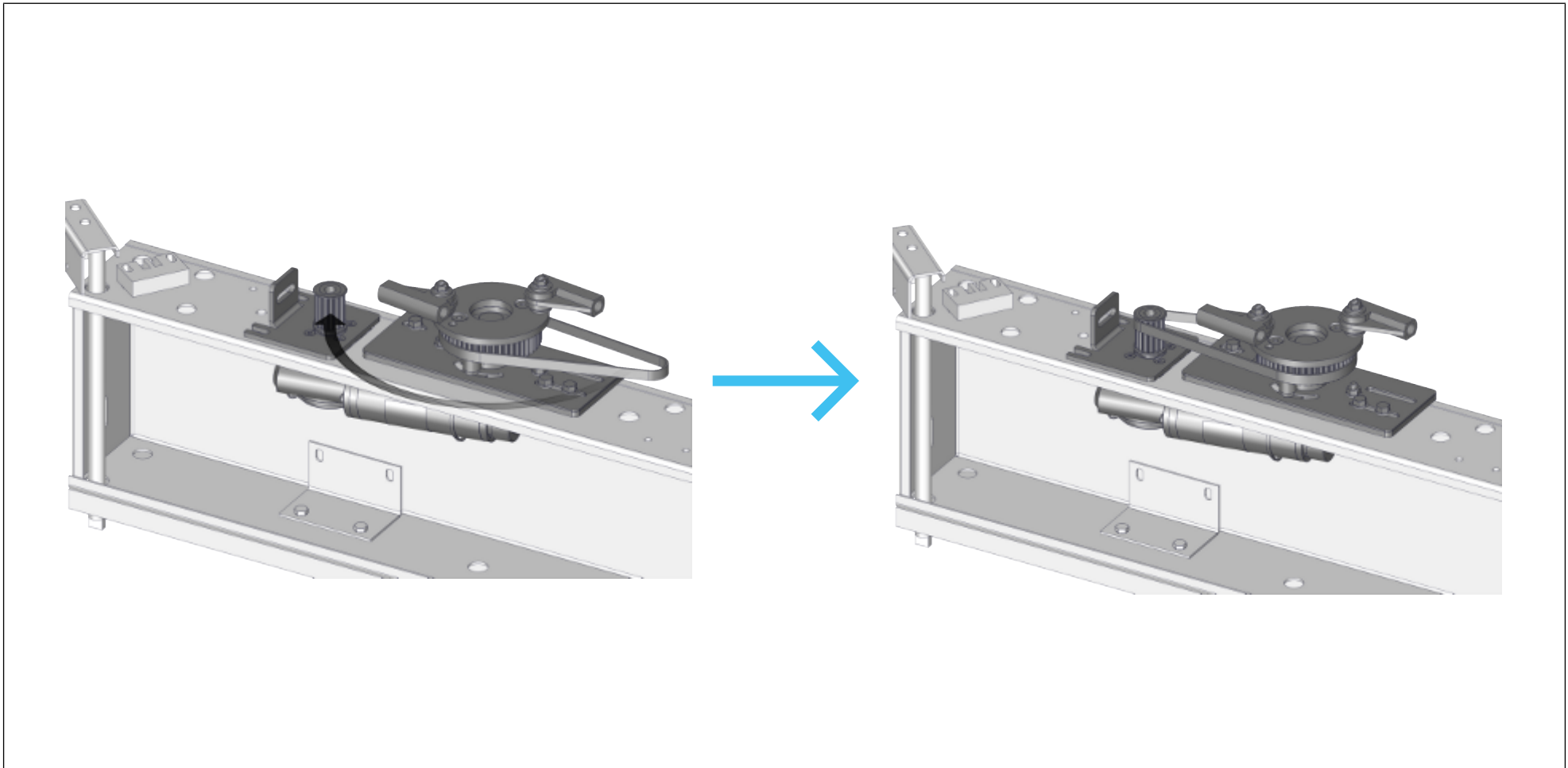
Components

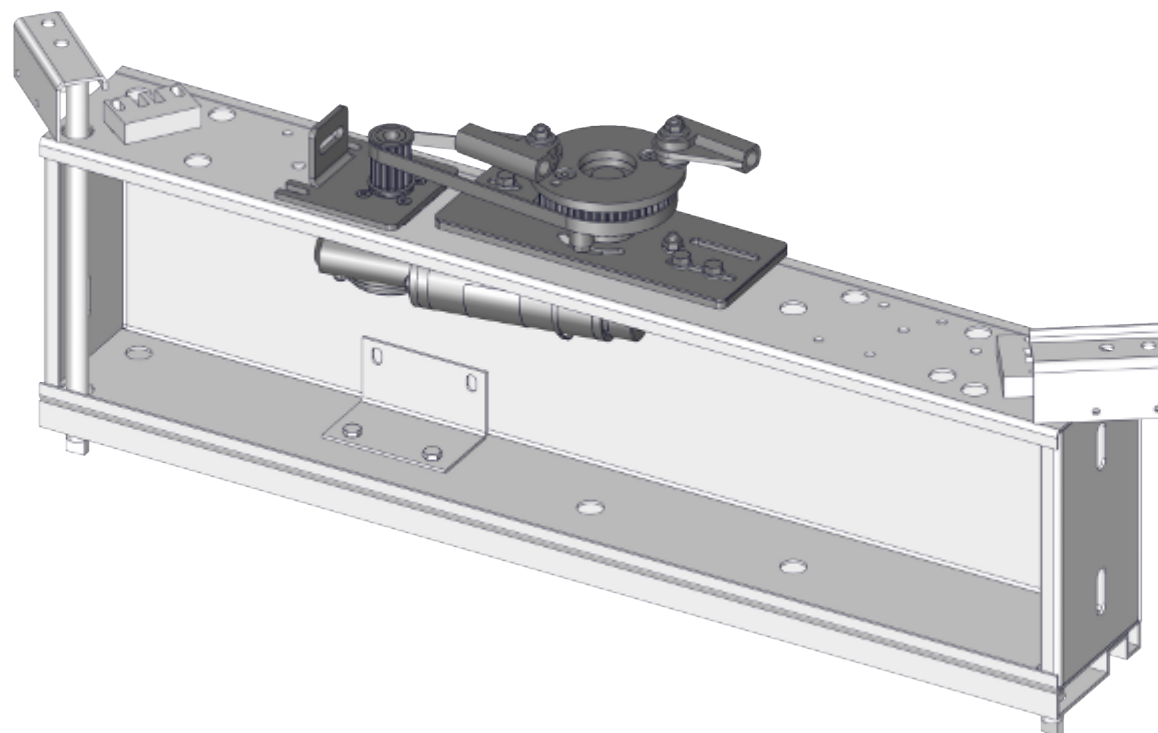
Pos.	Illustration	Item number	Description	Quantity
P002		8.20.2005x.xx	TSG motor	1
P003		1.20.60526	L-shaped motor bracket	1
P016		1.20.60143	Timing belt pulley, D = 24 mm, 5M	1
P028		1.36.00332	Countersunk screw M4 × 10 mm	4
P029		1.36.05040	Set screw M5 × 5 mm	1

Tools

Pos.	Symbol	Description
T010		Phillips screwdriver
T202.5		Allen key, size 2.5







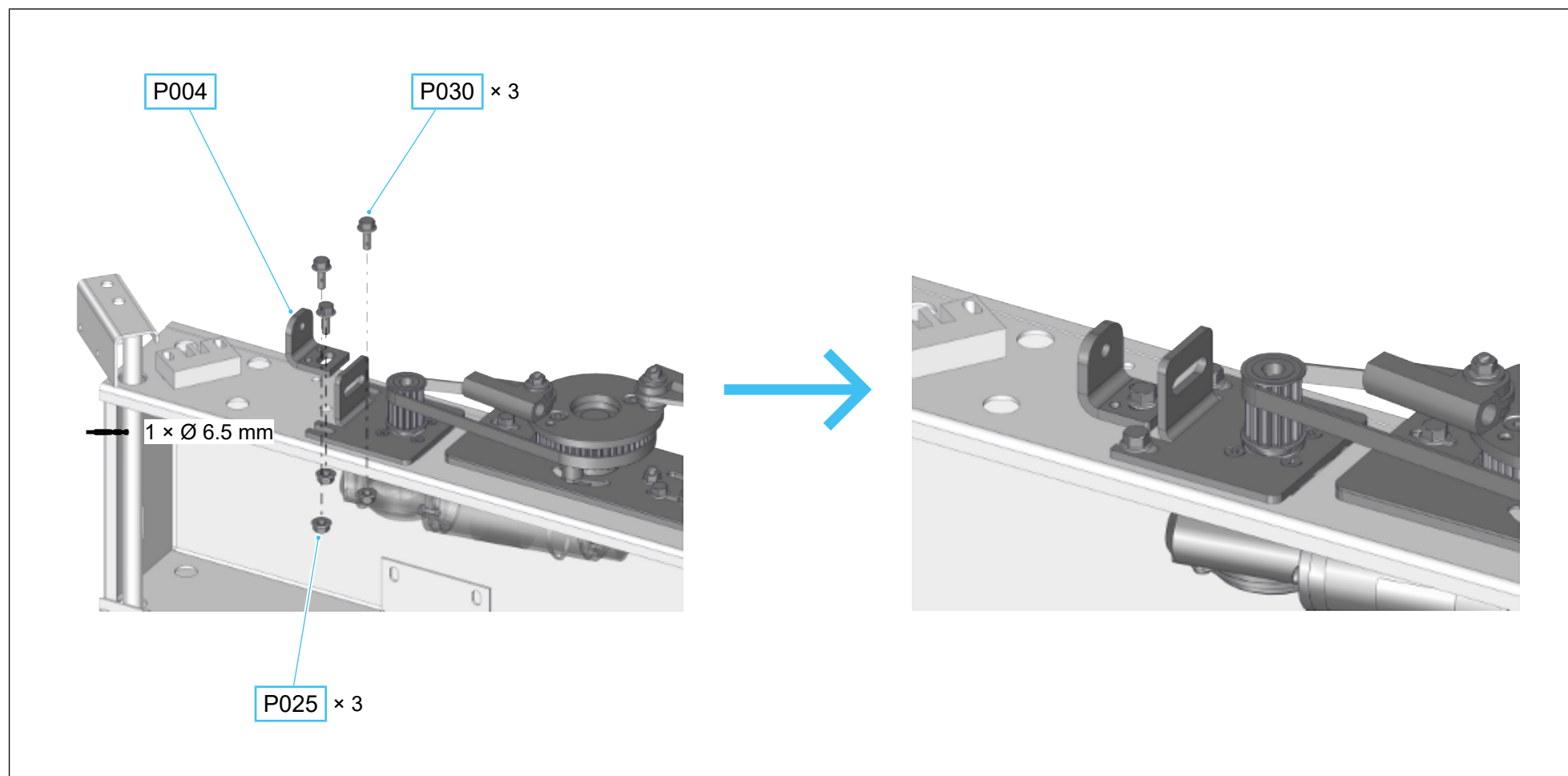
7.4 Mounting the tensioning unit and tensioning the timing belt

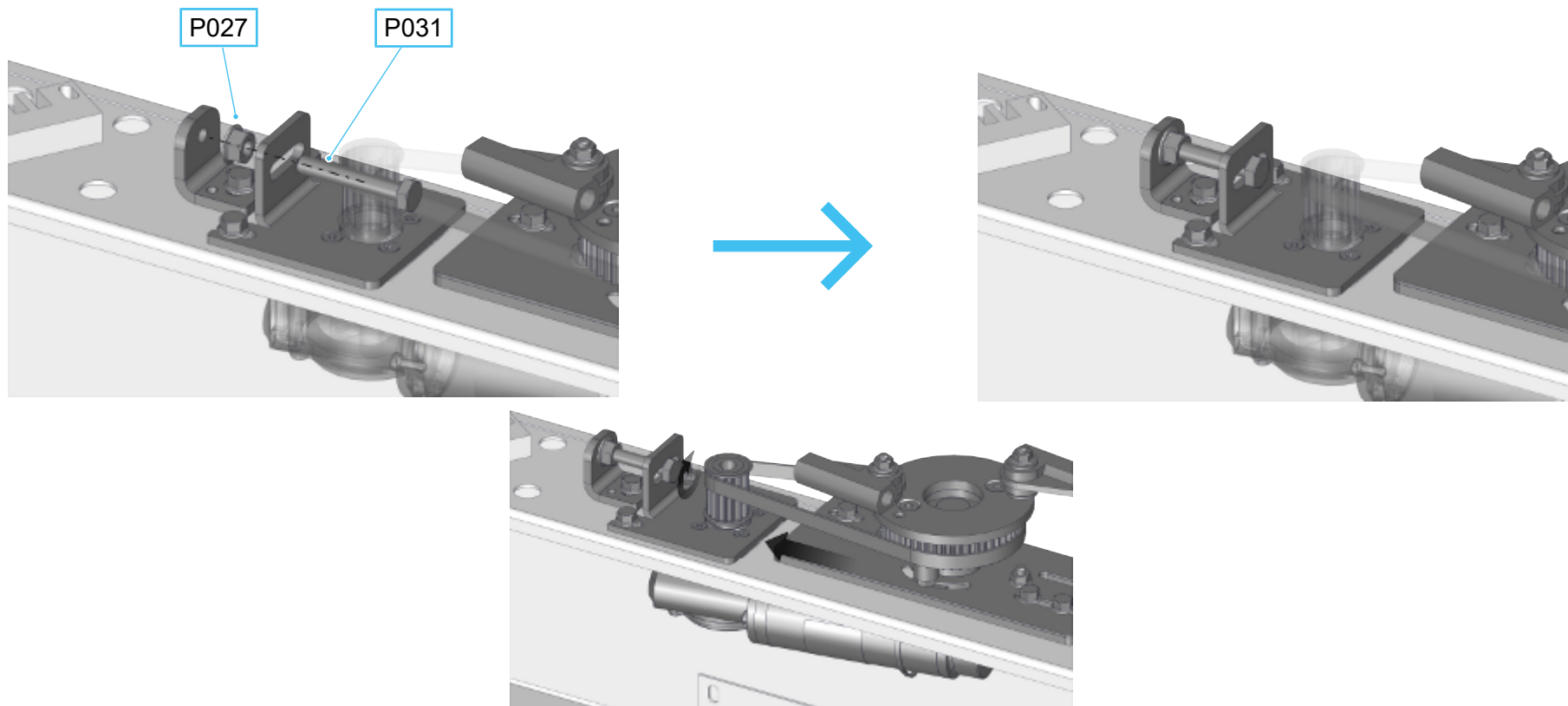
Components

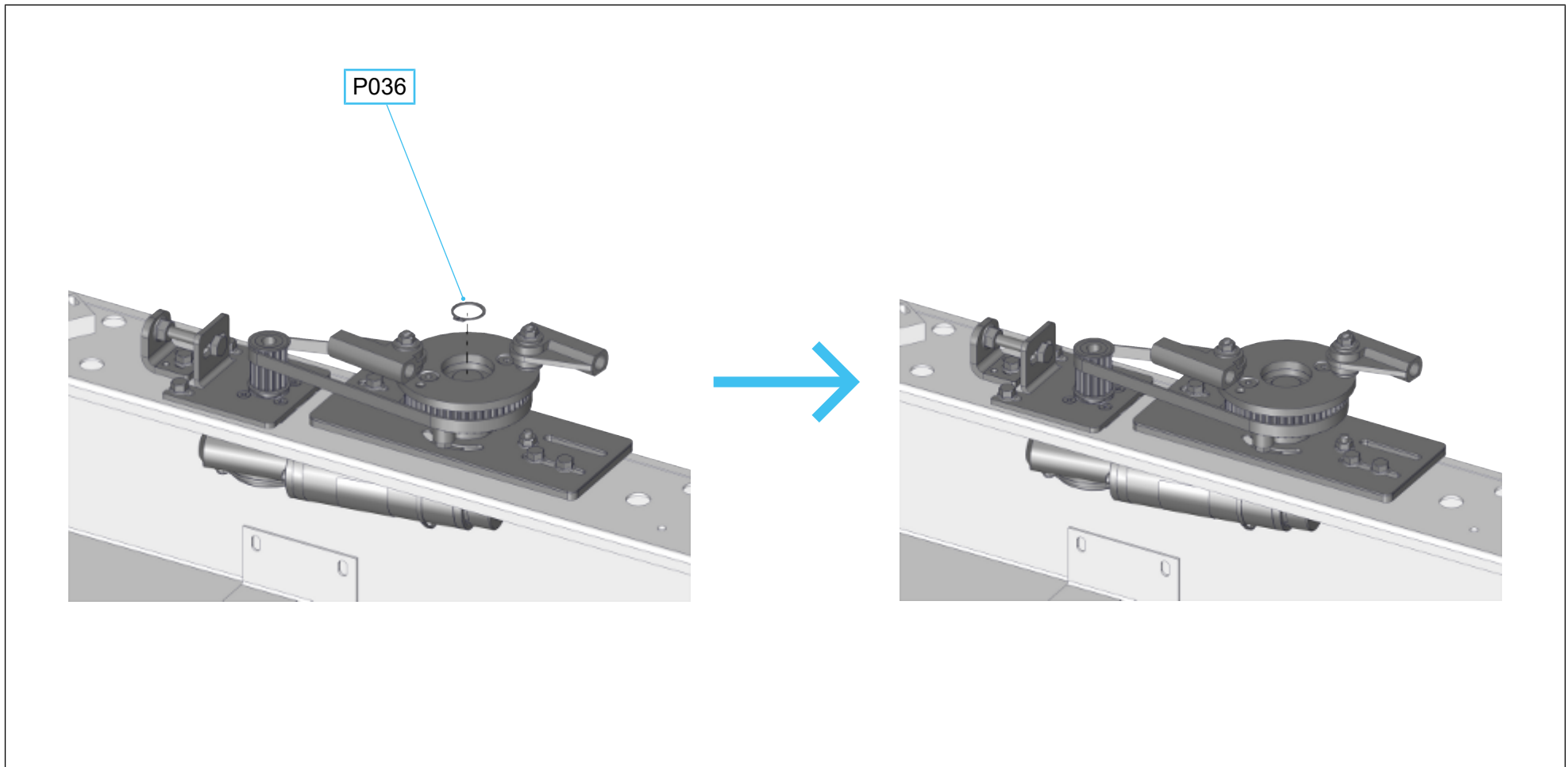
Pos.	Illustration	Item number	Description	Quantity
P004		1.20.59070	L-shaped bracket	1
P025		1.36.00502	Nut M6	3
P027		1.36.00501	Nut M8	1
P030		1.36.00138	Locking screw M6 × 16 mm	3
P031		1.36.02120	Hexagon head screw M8 × 50 mm	1
P036		1.36.01375	Retaining ring for shaft, D = 20 mm	1

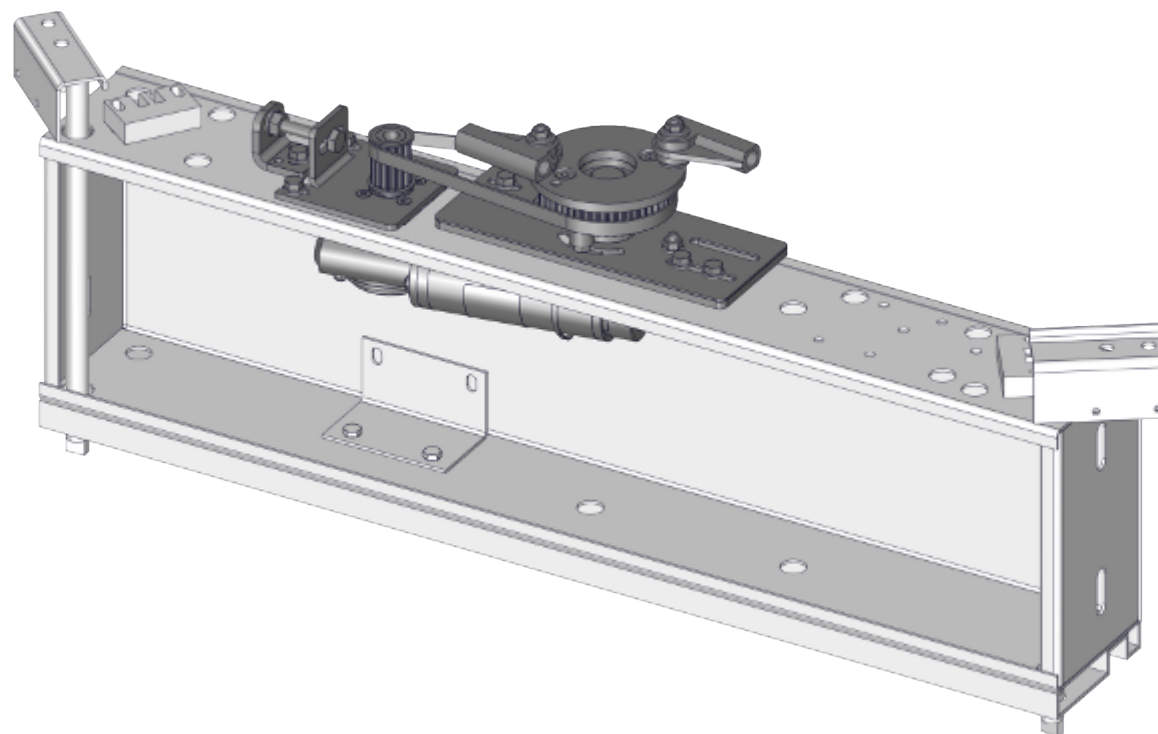
Tools

Pos.	Symbol	Description
T006		Circlip pliers
T110		Combination wrench, size 10
T113		Combination wrench, size 13
T606.5		Drill bit, Ø 6.5 mm



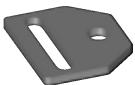






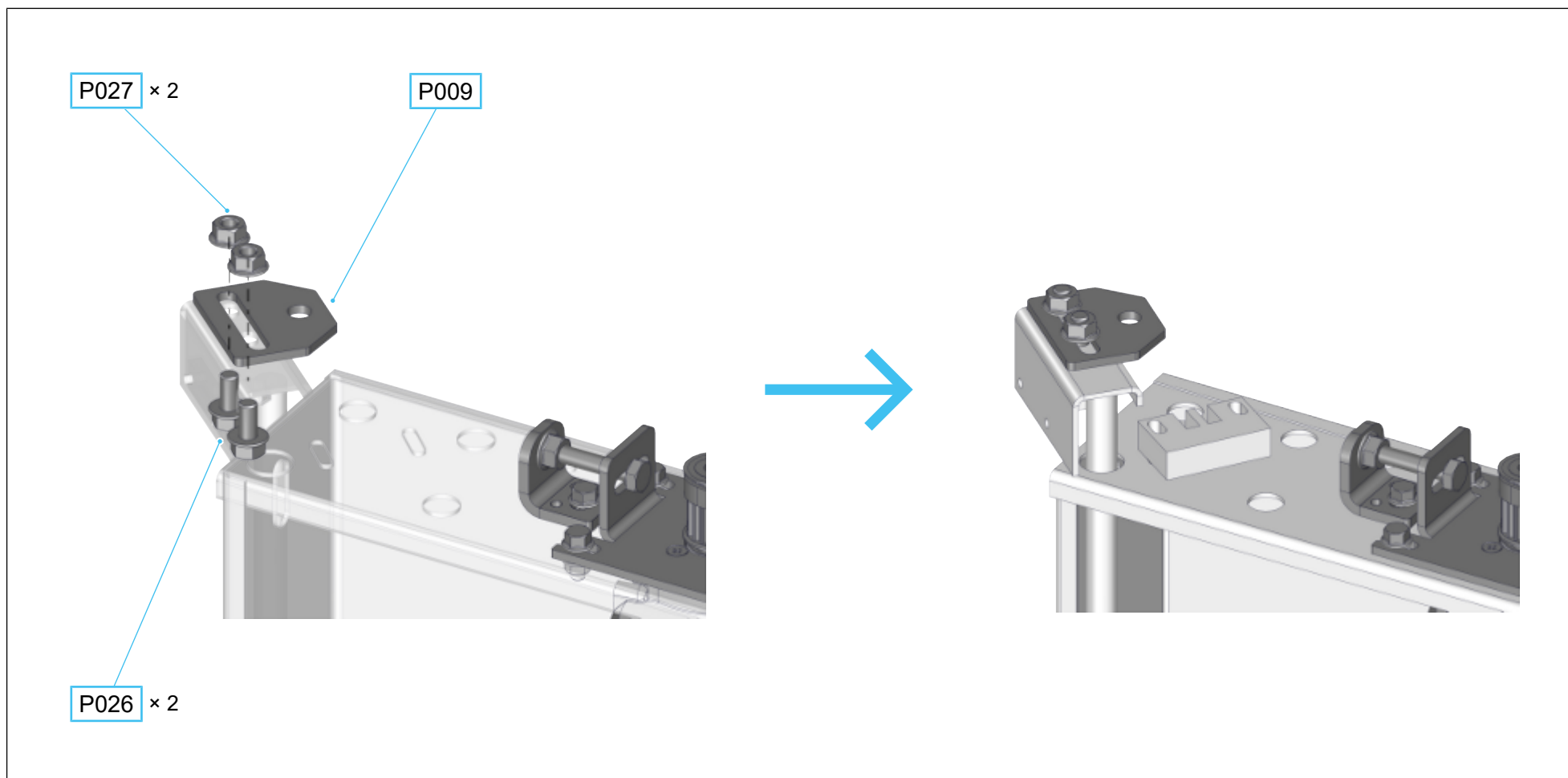
7.5 Mounting the left-hand mechanical arm

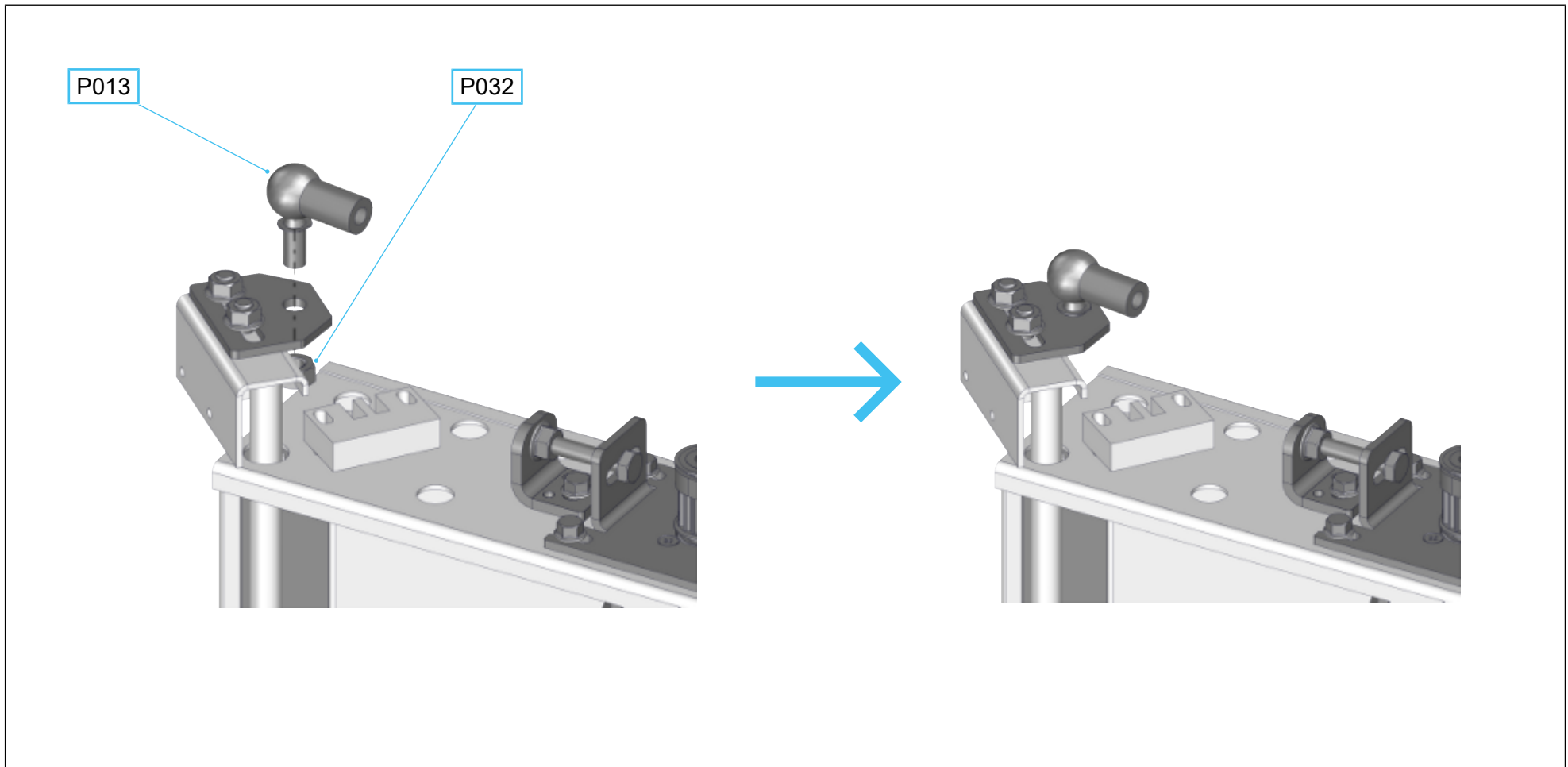
Components

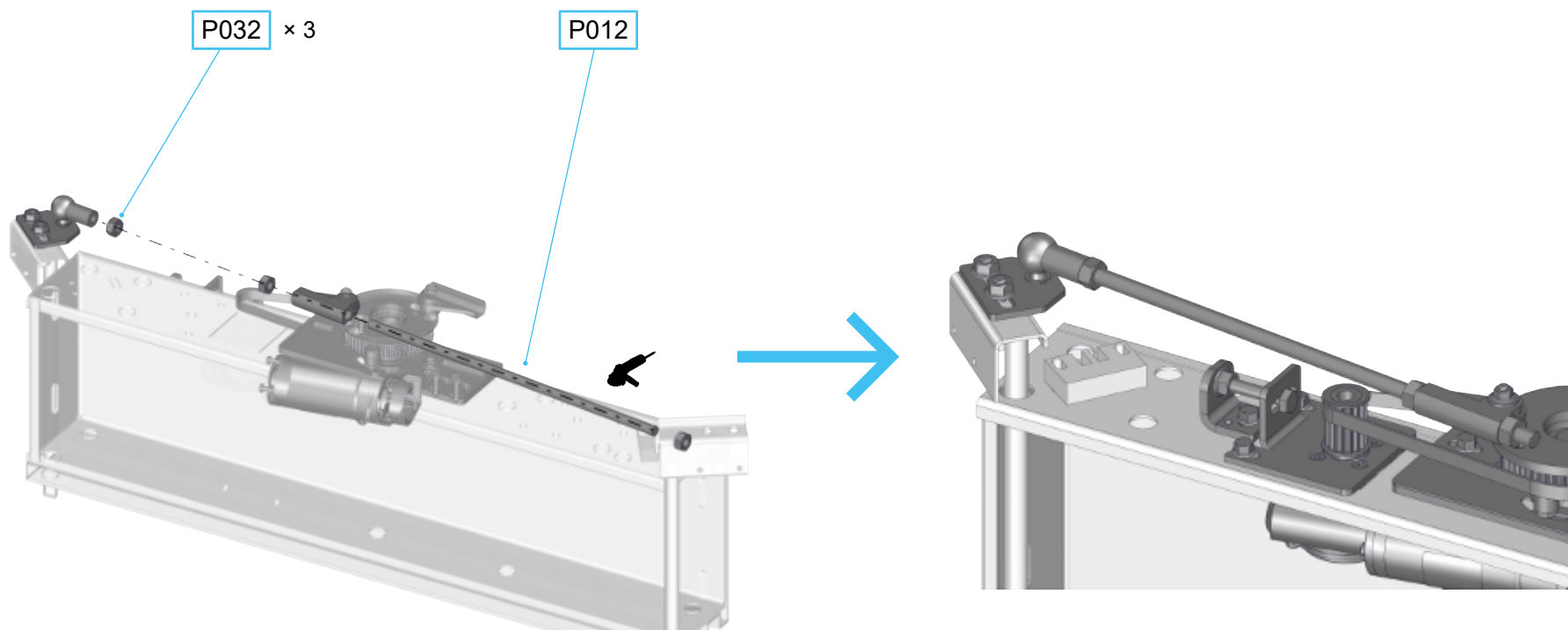
Pos.	Illustration	Item number	Description	Quantity
P009		1.20.23315	Plate	1
P012		1.20.23106	Threaded rod M10 × 500 mm, right	1
P013		1.20.23105	Hinge M10, L-shaped, right	1
P026		1.36.00710	Locking screw M8 × 16 mm	2
P027		1.36.00501	Nut M8	2
P032		1.36.00150	Nut M10	4

Tools

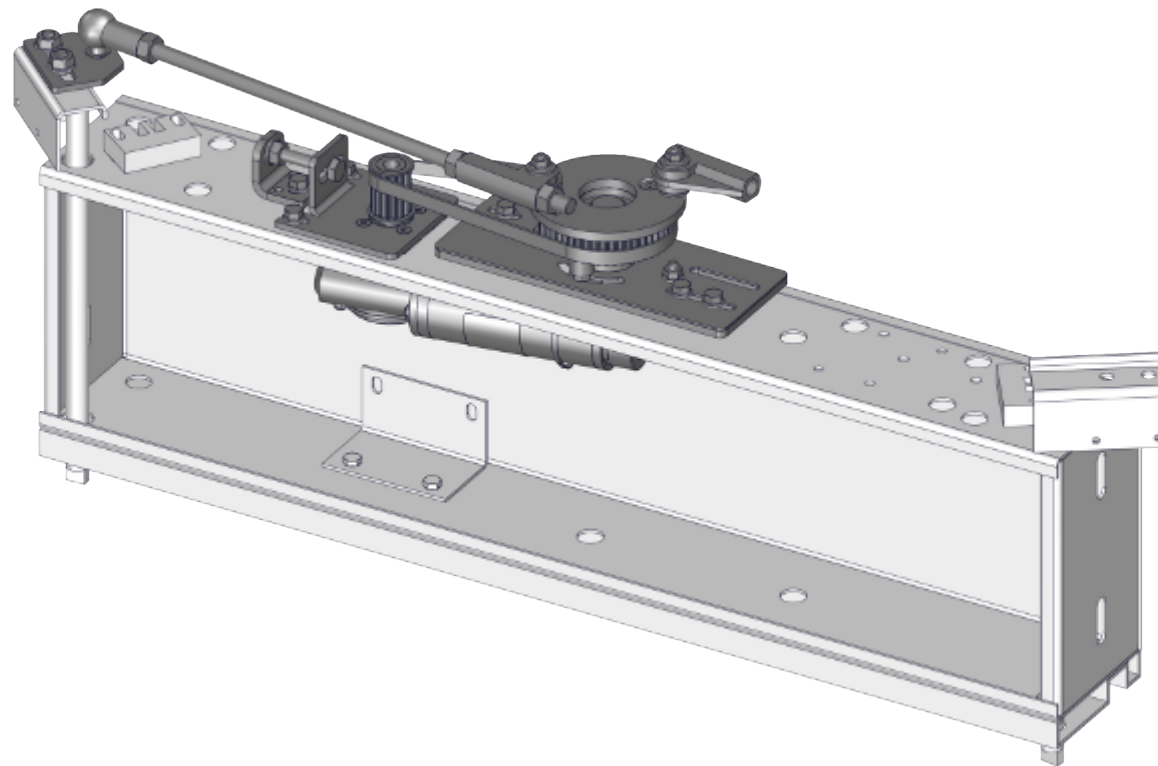
Pos.	Symbol	Description
T007		Angle grinder
T113		Combination wrench, size 13
T117		Combination spanner, size 17





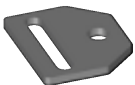


Shorten the threaded rod to the suitable length.



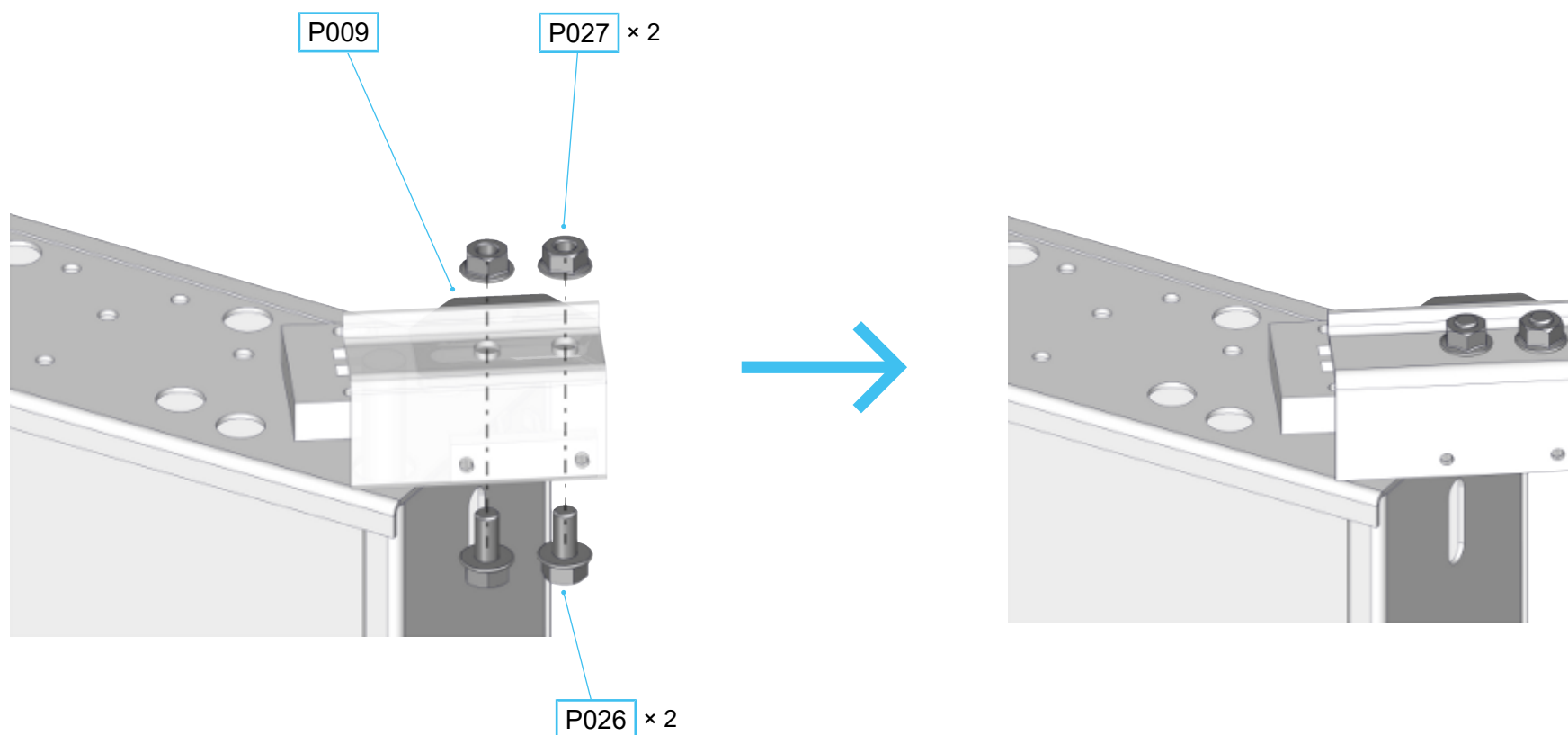
7.6 Mounting the right-hand mechanical arm

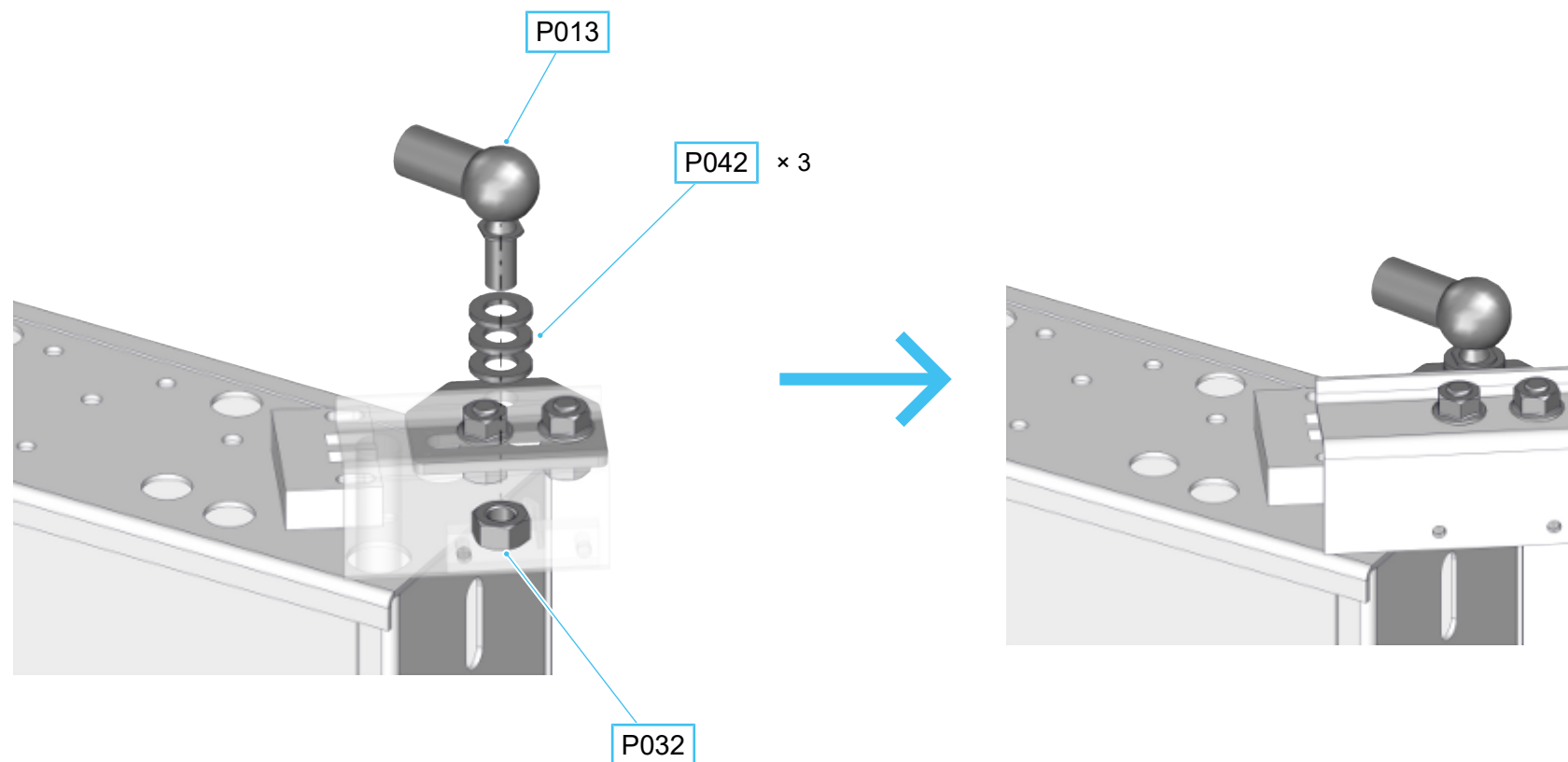
Components

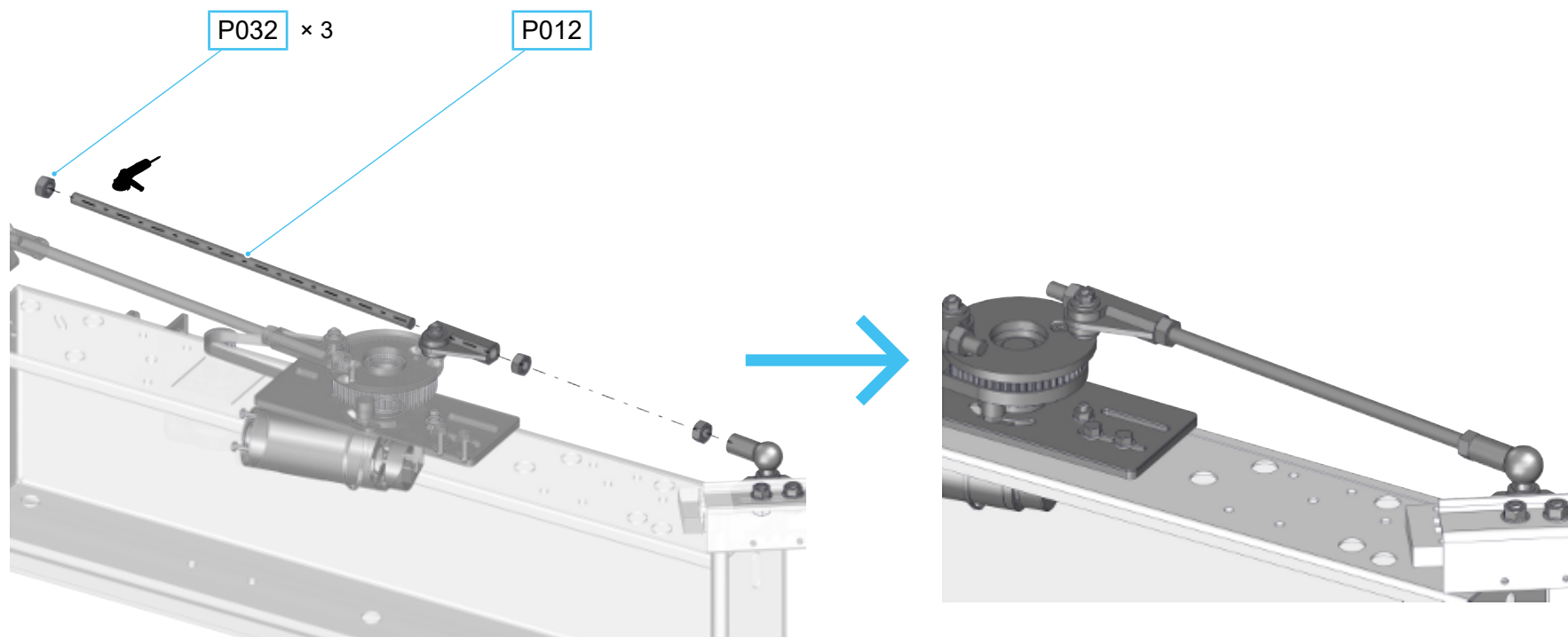
Pos.	Illustration	Item number	Description	Quantity
P009		1.20.23315	Plate	1
P012		1.20.23106	Threaded rod M10 × 500 mm, right	1
P013		1.20.23105	Hinge M10, L-shaped, right	1
P026		1.36.00710	Locking screw M8 × 16 mm	2
P027		1.36.00501	Nut M8	2
P032		1.36.00150	Nut M10	4
P042		1.36.00470	Washer M10	3

Tools

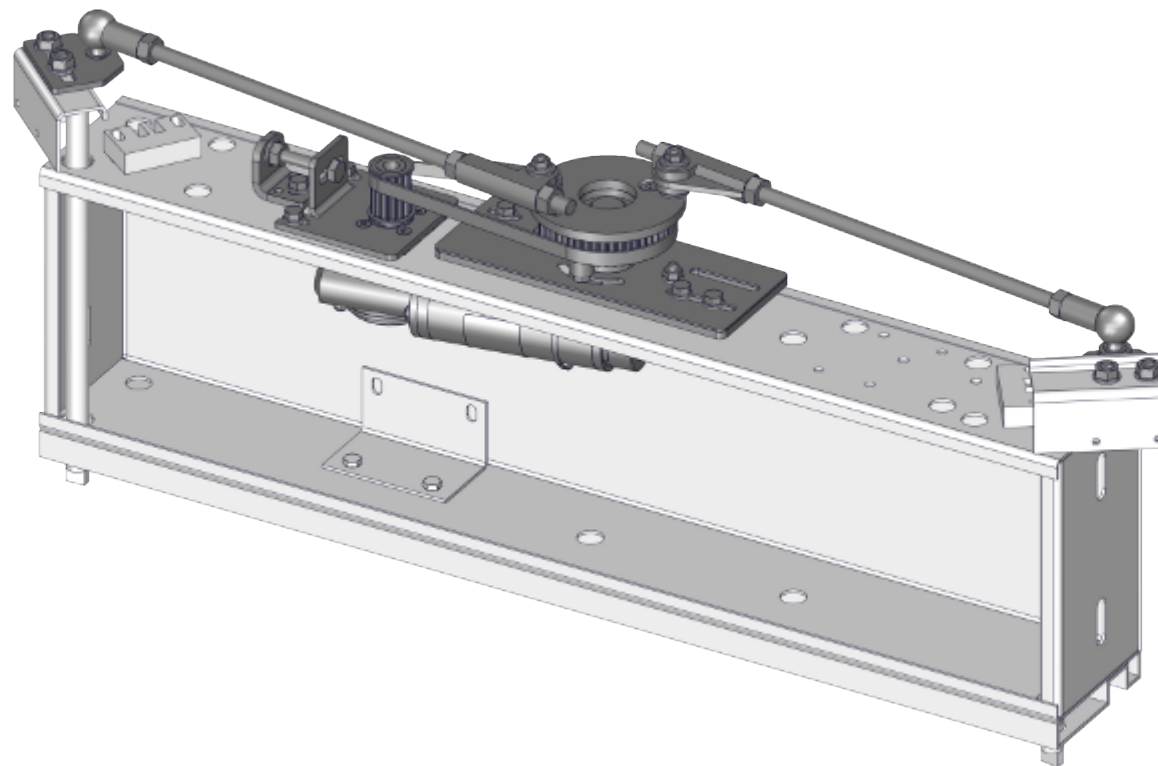
Pos.	Symbol	Description
T007		Angle grinder
T113		Combination wrench, size 13
T117		Combination spanner, size 17







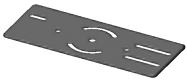
Shorten the threaded rod to the suitable length.

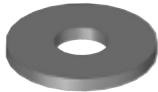


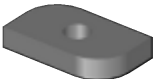
8 Assembly of variant 2

8.1 Mounting the turning gear unit

Components

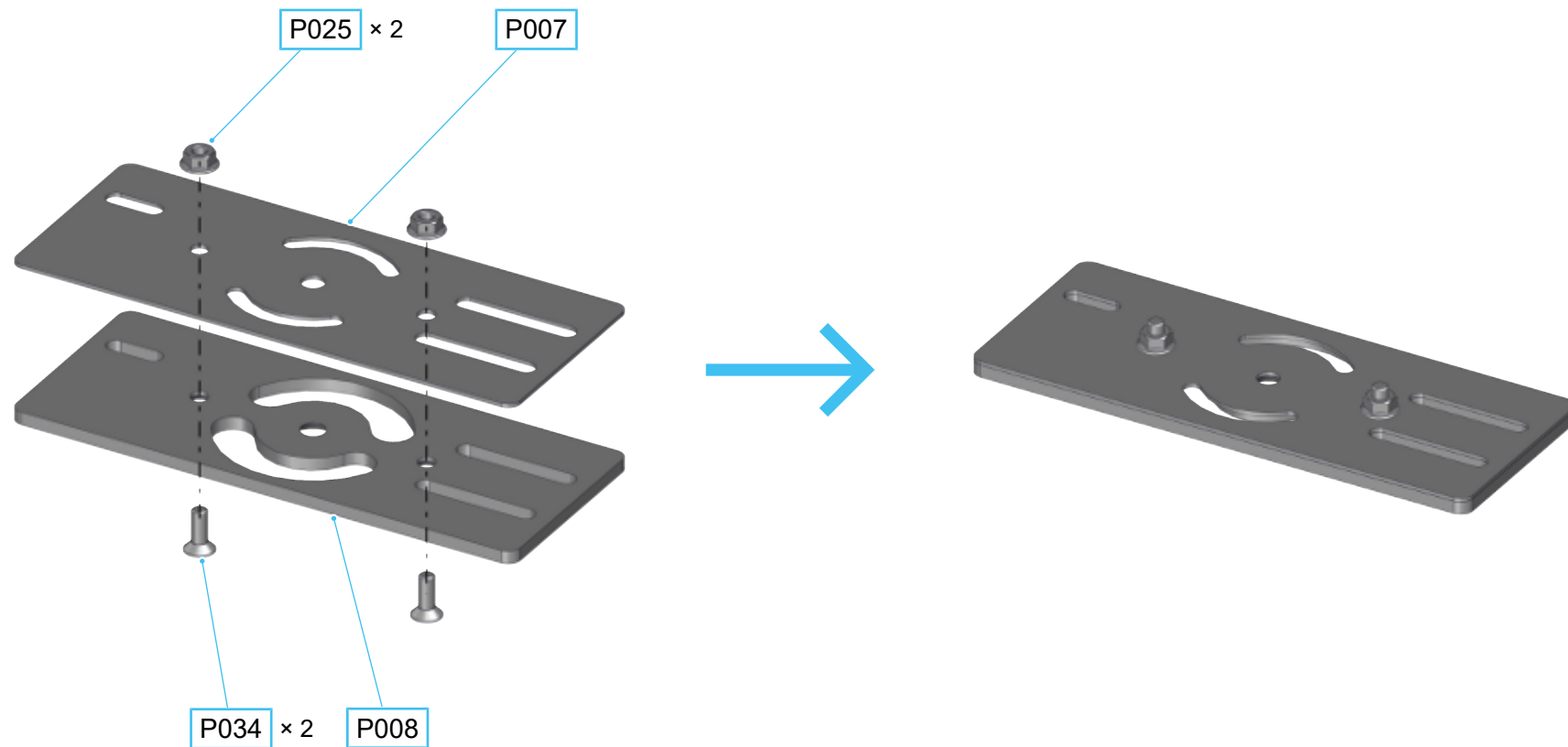
Pos.	Illustration	Item number	Description	Quantity
P006		1.20.23303	Round plate	1
P007		1.20.23320	Rectangular bracket	1
P008		1.20.23321	Rectangular bracket	1
P010		1.20.22020	Turning gear D = 81.62 mm	1
P011		1.20.23310	Bracket	2
P014		1.20.92210	Sleeve, D = 23 mm	1

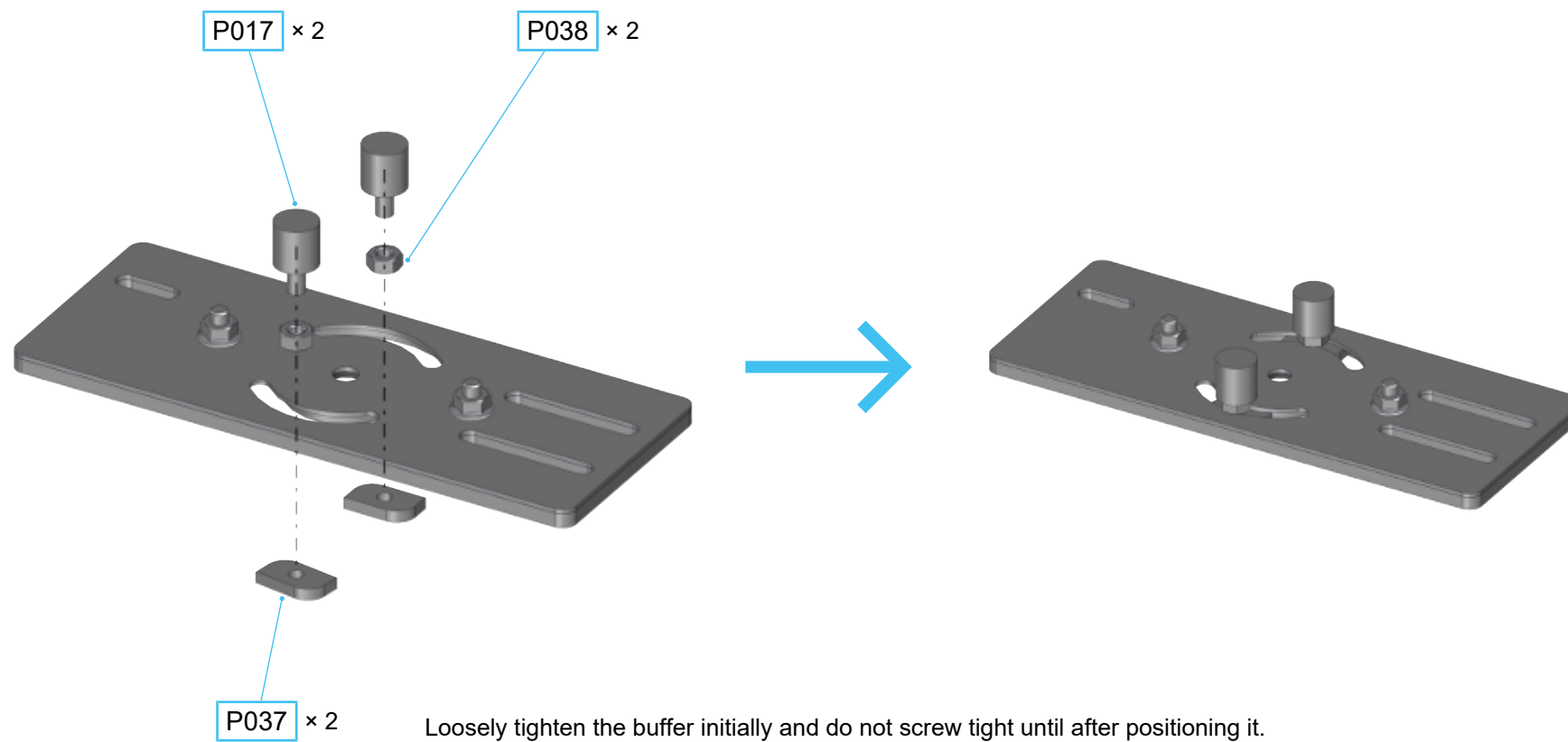
Pos.	Illustration	Item number	Description	Quantity
P015		1.20.22030	Round shaft	1
P017		1.20.91129	Buffer M6 15 × 15 mm	2
P018		1.20.35060	Plain bearing D = 12 mm, round	2
P019		1.36.00880	Sleeve, D = 12 mm, round	2
P023		1.36.00380	Countersunk screw M8 × 20 mm	1
P024		1.36.00137	Locking screw M6 × 20 mm	3
P025		1.36.00502	Nut M6	7
P033		1.36.01036	Washer M6	7

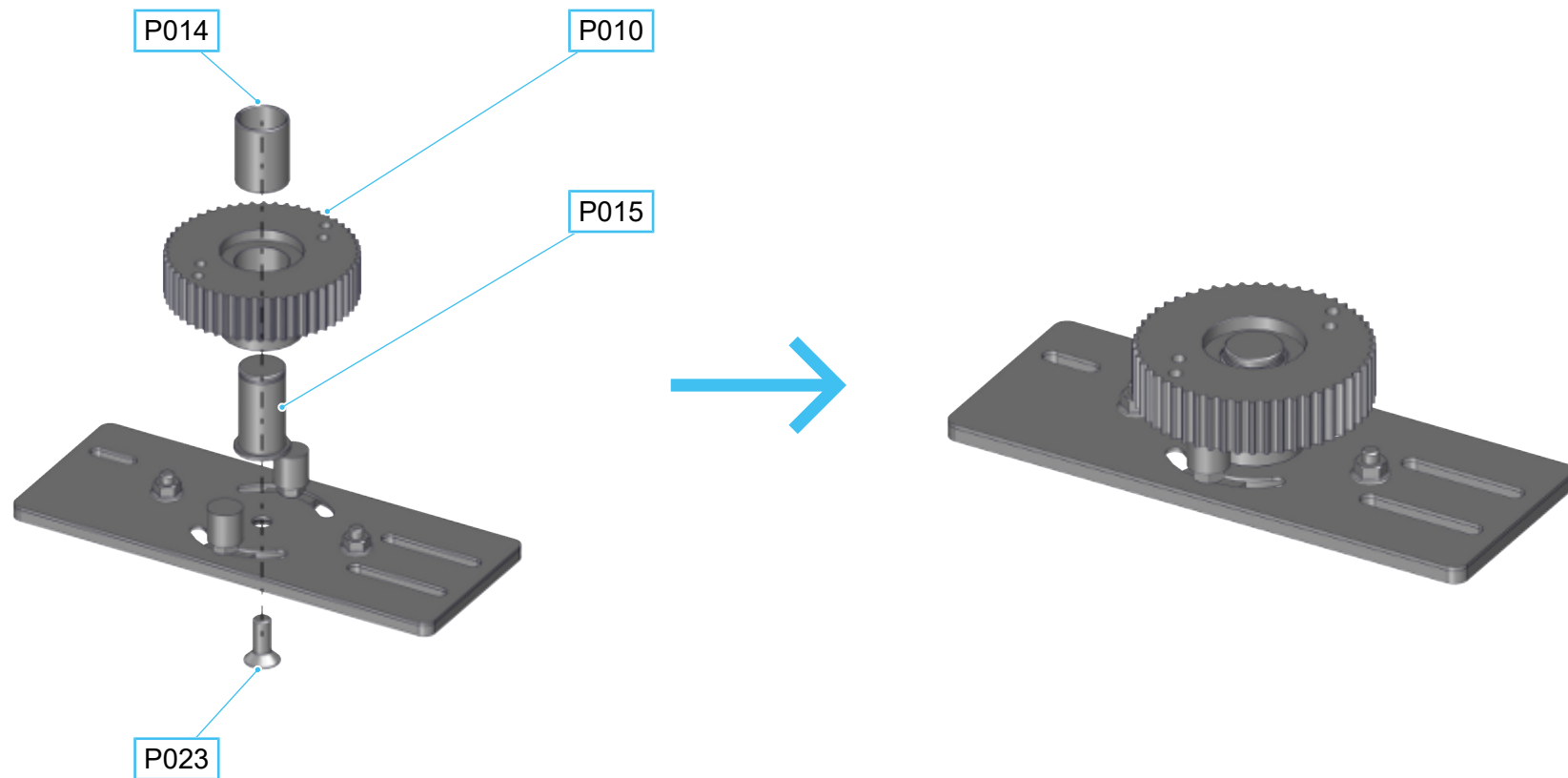
Pos.	Illustration	Item number	Description	Quantity
P034		1.36.00360	Countersunk screw M6 × 16 mm	4
P035		1.36.00365	Countersunk screw M6 × 35 mm	2
P037		1.36.01022	Nut M6, rectangular	2
P038		1.36.00200	Nut M6	2

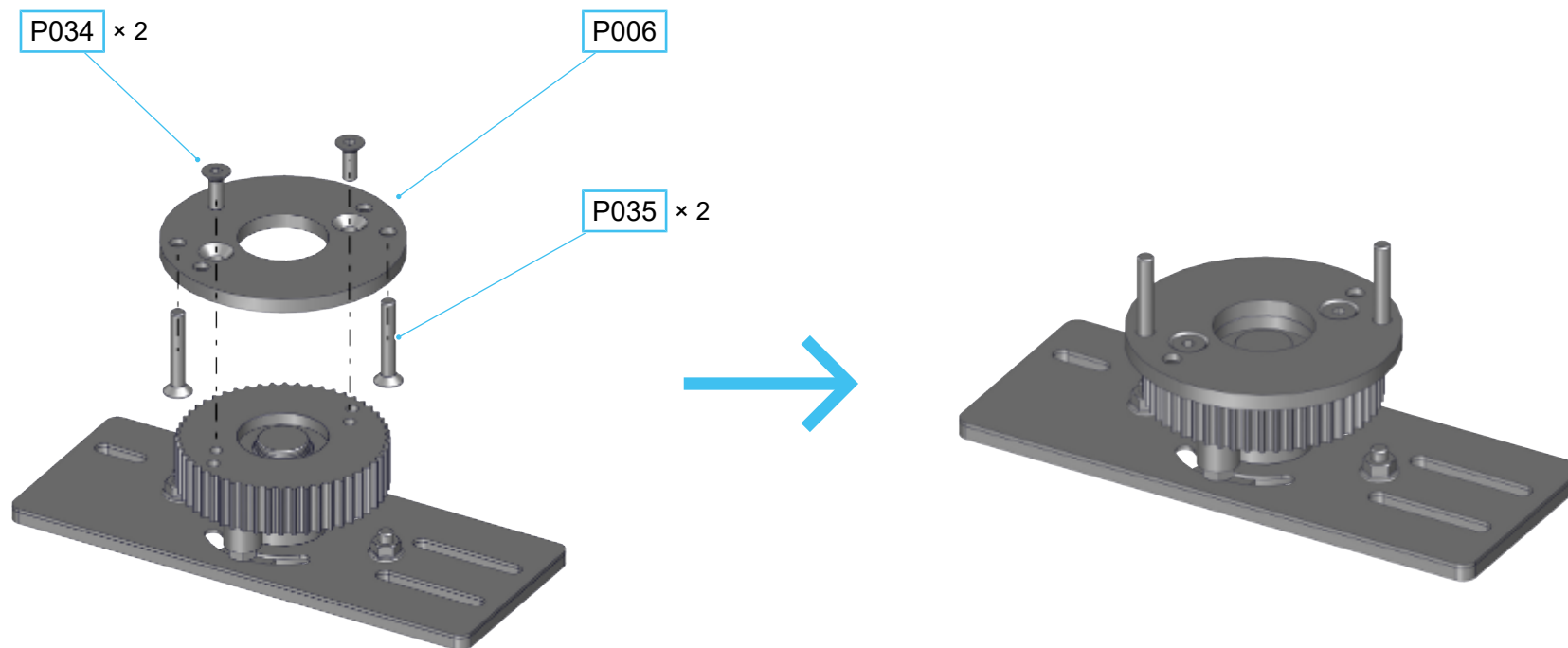
Tools

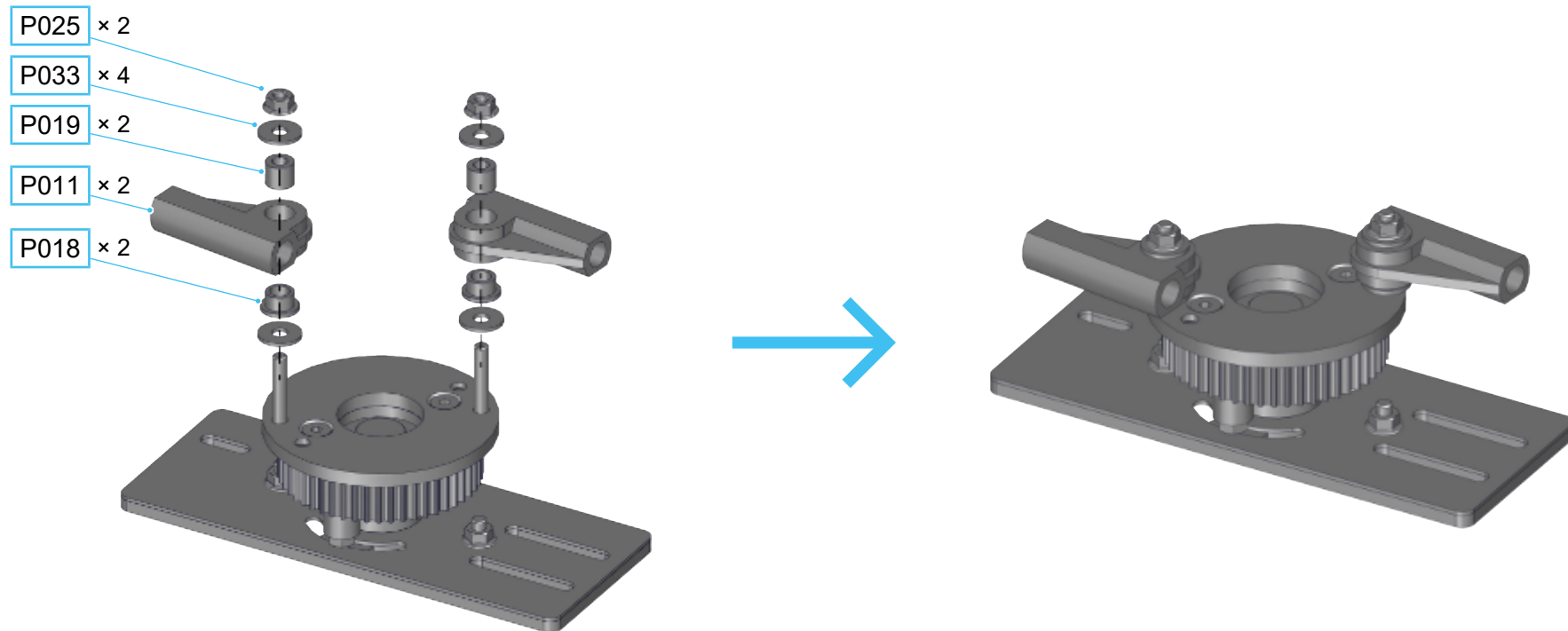
Pos.	Symbol	Description
T110		Combination wrench, size 10
T204.0		Allen key, size 4
T205.0		Allen key, size 5

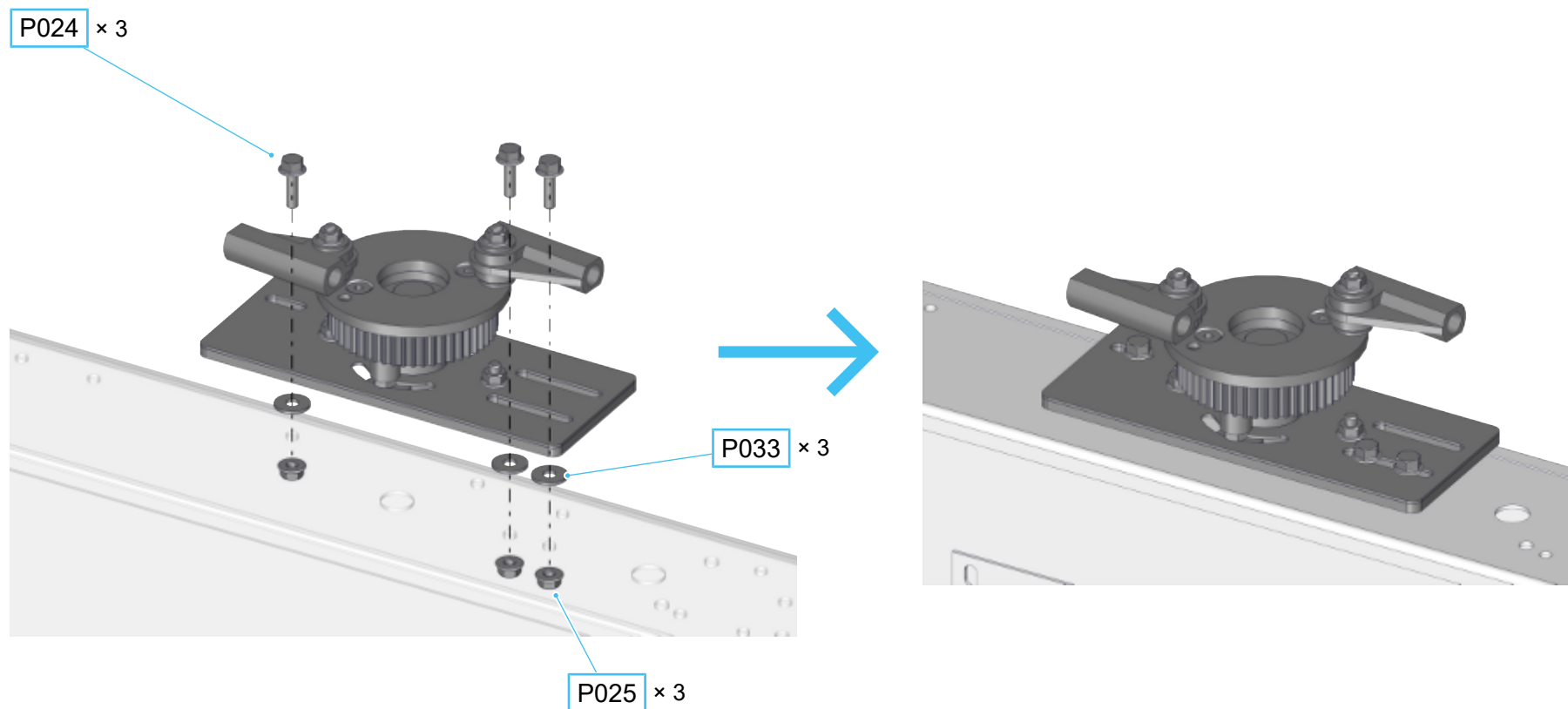


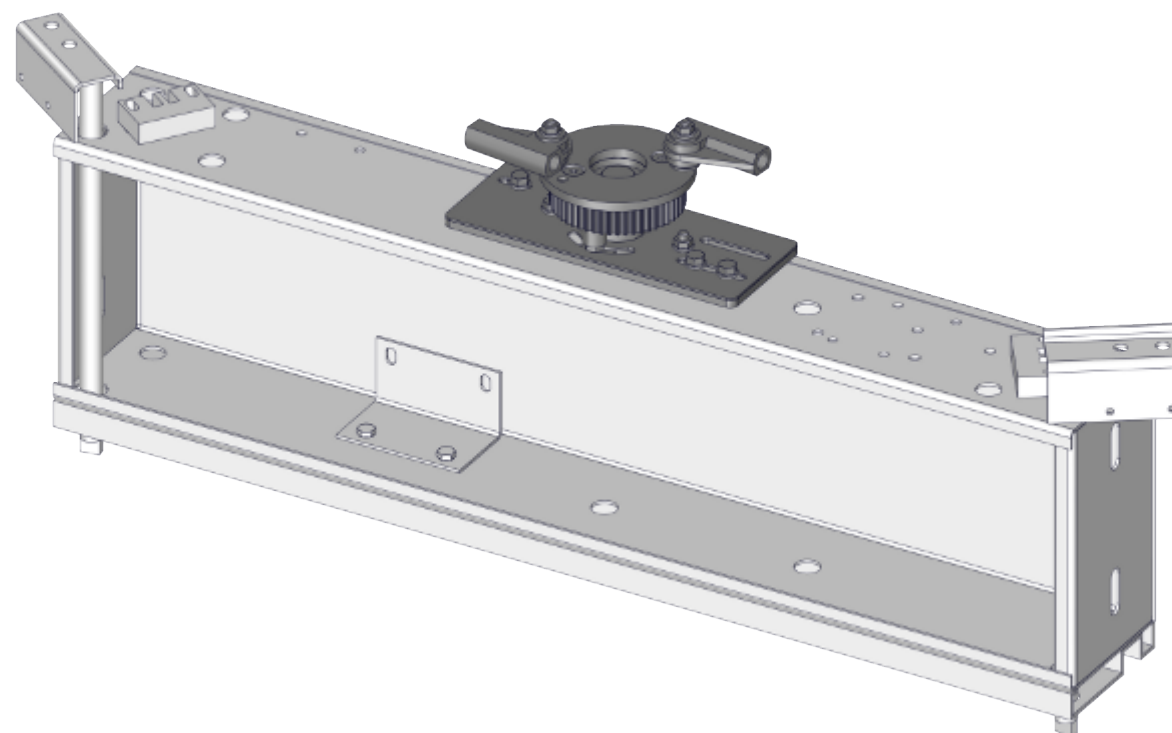








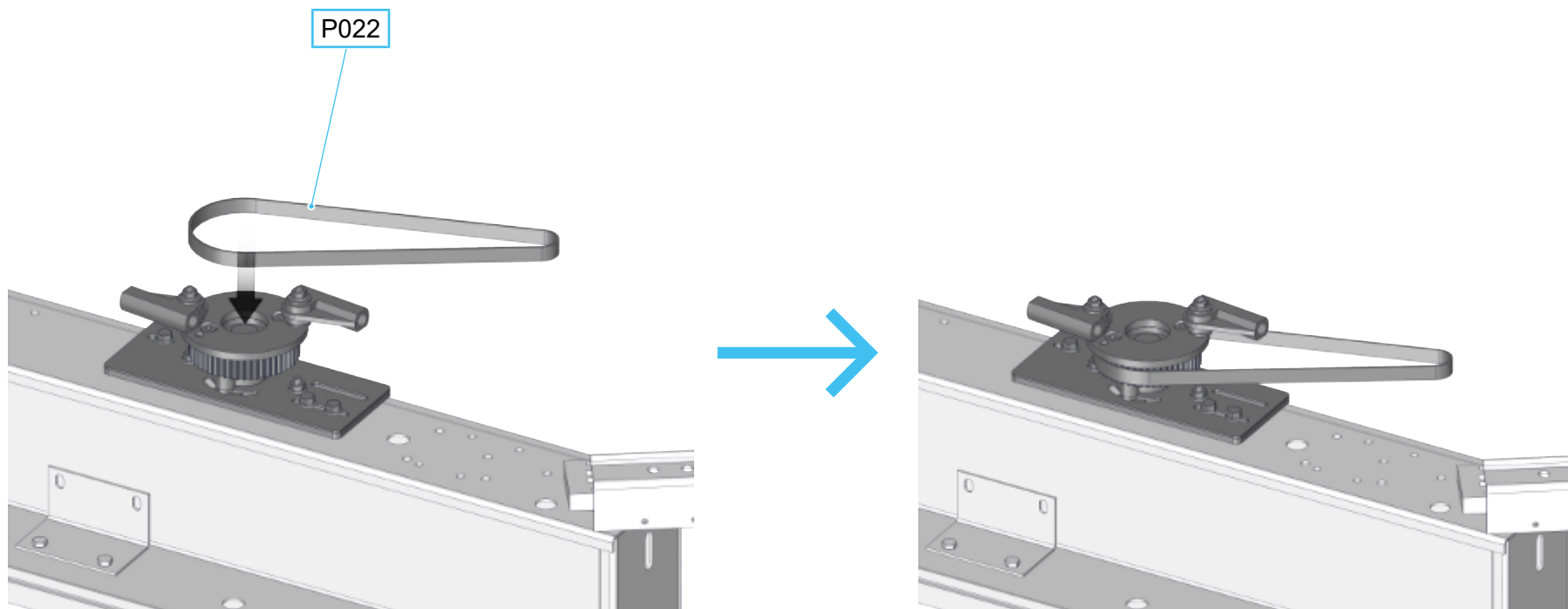


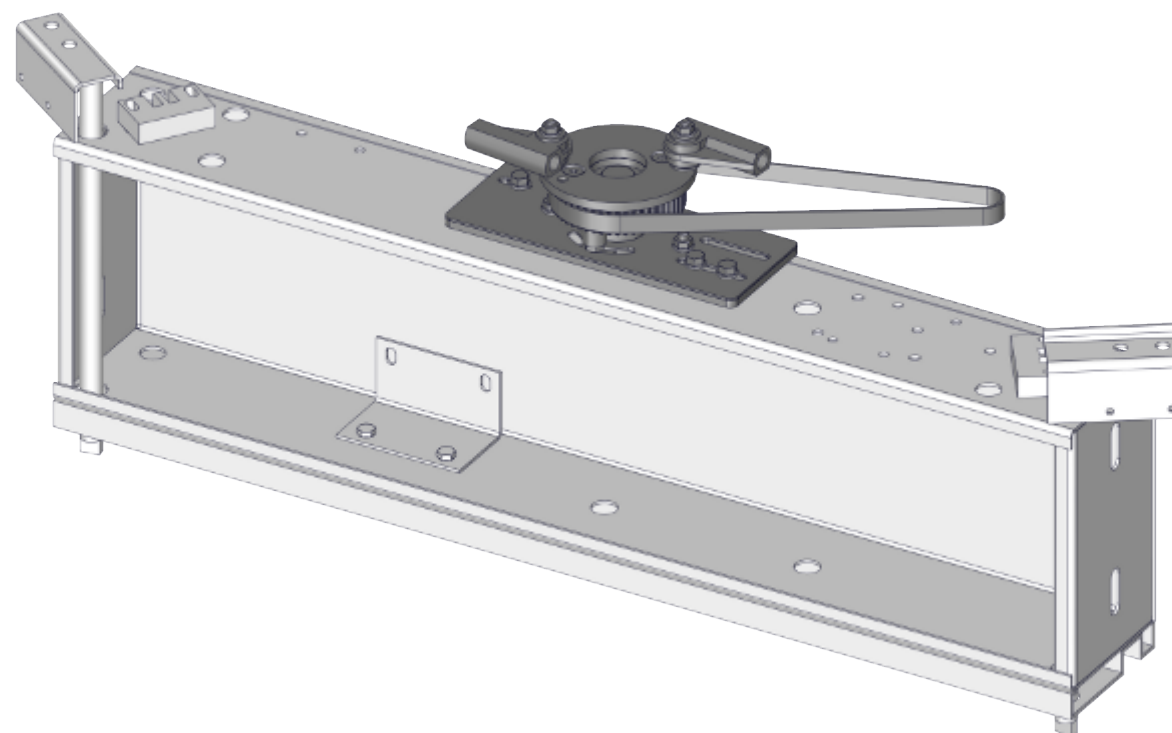


8.2 Preassembling the endless timing belt

Components

Pos.	Illustration	Item number	Description	Quantity
P022		1.20.61018	Timing belt, 5m	1





8.3 Mounting the motor on the door frame

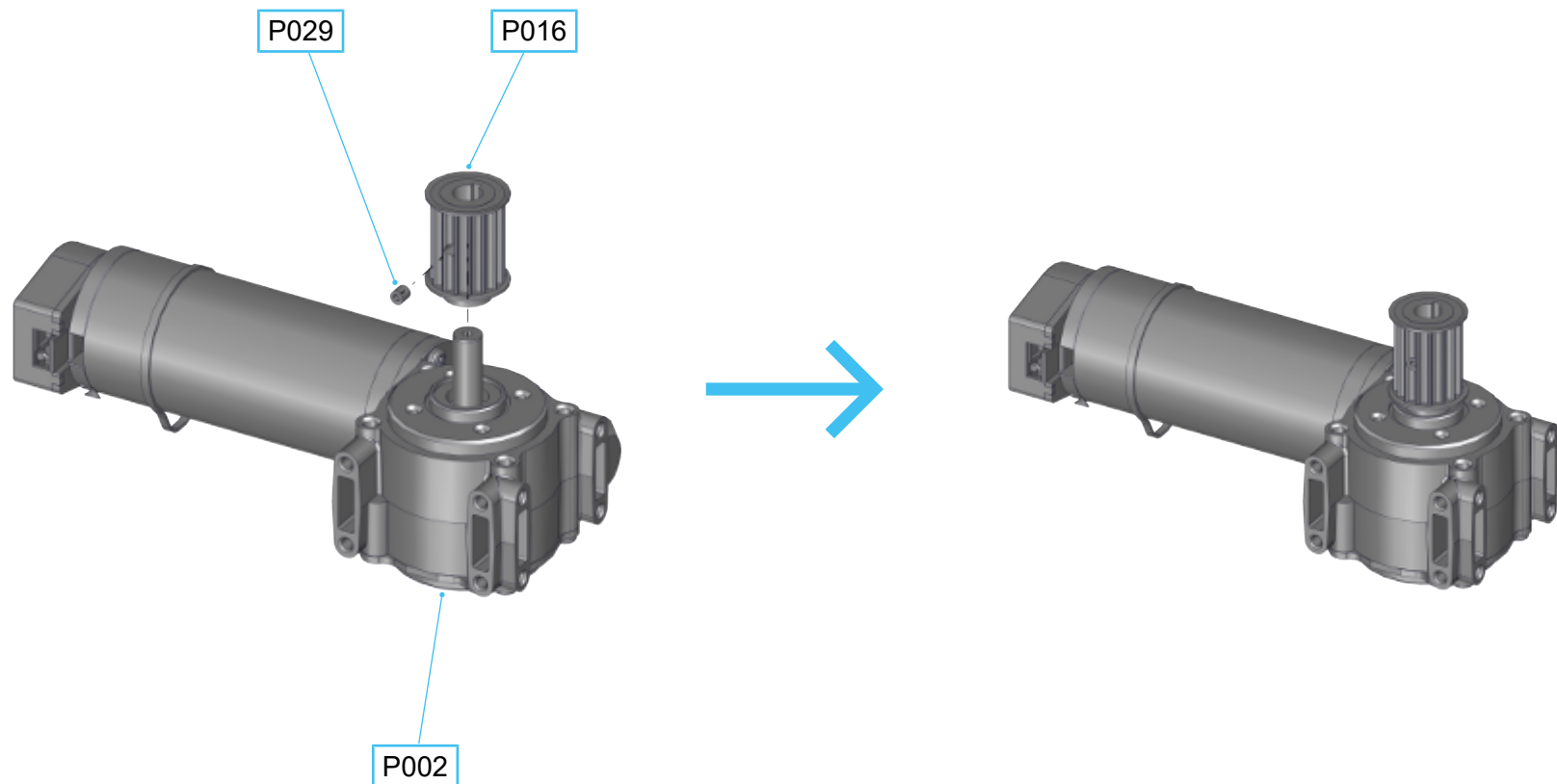
Components

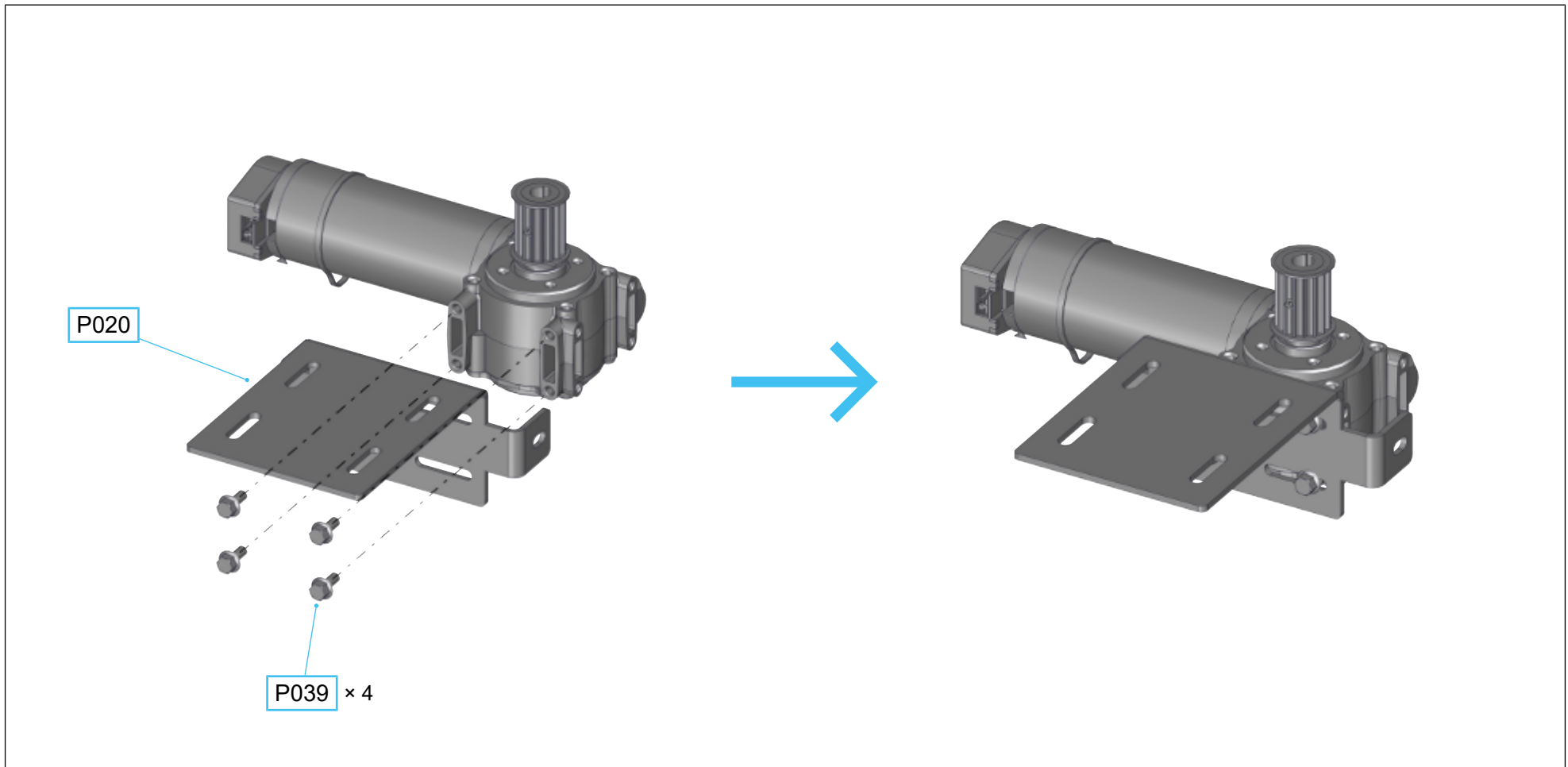
Pos.	Illustration	Item number	Description	Quantity
P002		8.20.2005x.xx	TSG motor	1
P016		1.20.60143	Timing belt pulley, D = 24 mm, 5M	1
P019		1.36.00880	Sleeve, D = 12 mm, round	4
P020		1.20.60056	Motor bracket	1
P025		1.36.00502	Nut M6	4
P029		1.36.05040	Set screw M5 × 5 mm	1
P039		1.36.00130	Locking screw M5 × 12 mm	4

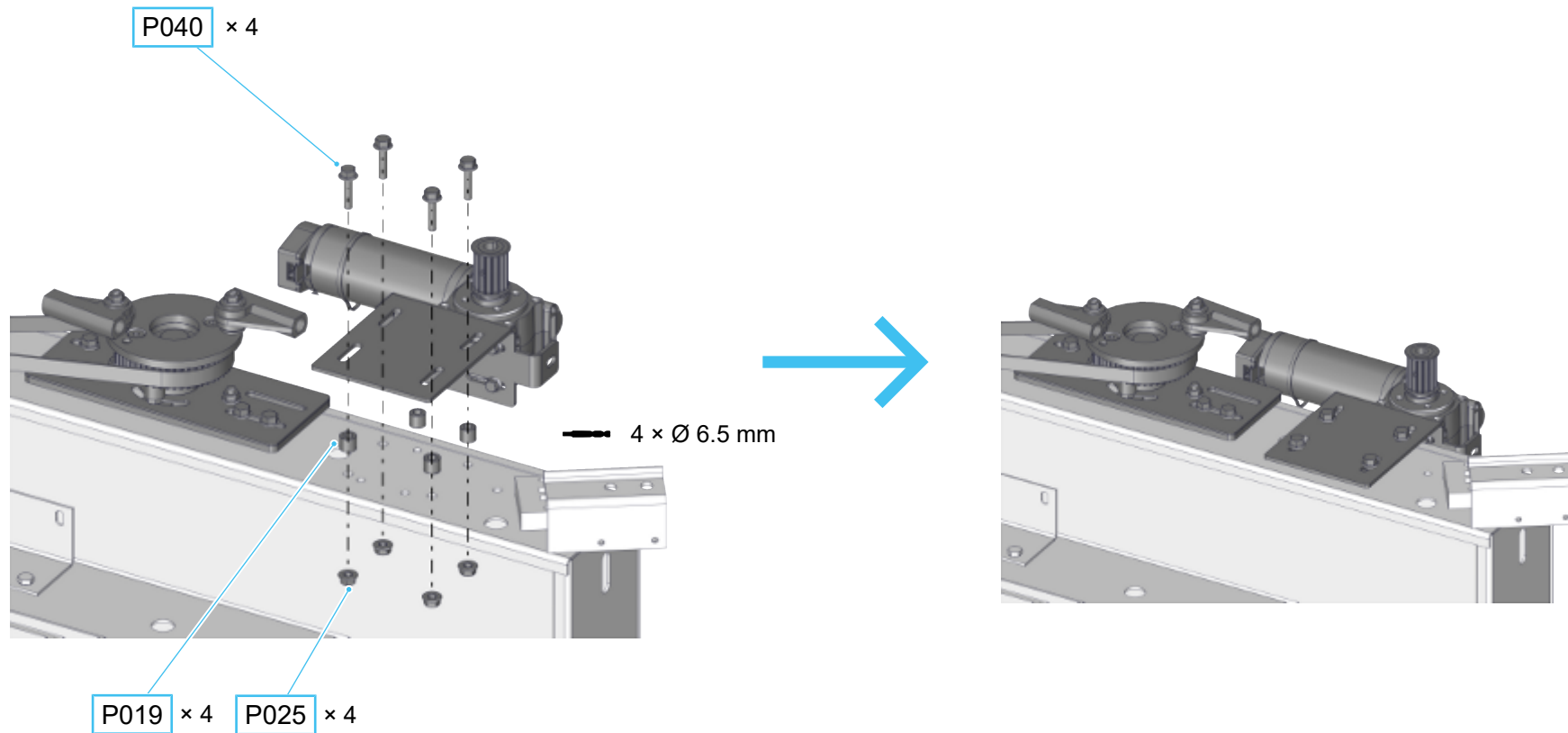
Pos.	Illustration	Item number	Description	Quantity
P040		1.36.00139	Locking screw M6 × 25 mm	4

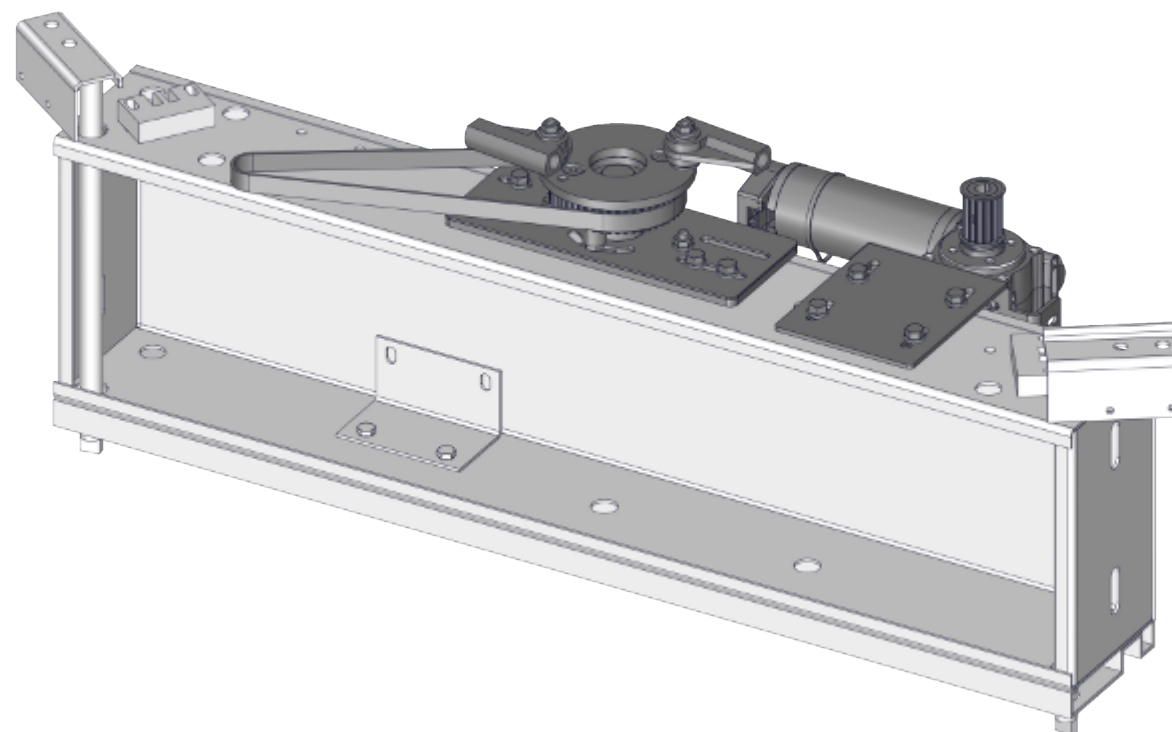
Tools

Pos.	Symbol	Description
T108		Combination spanner, size 8
T202.5		Allen key, size 2.5
T606.5		Drill bit, Ø 6.5 mm









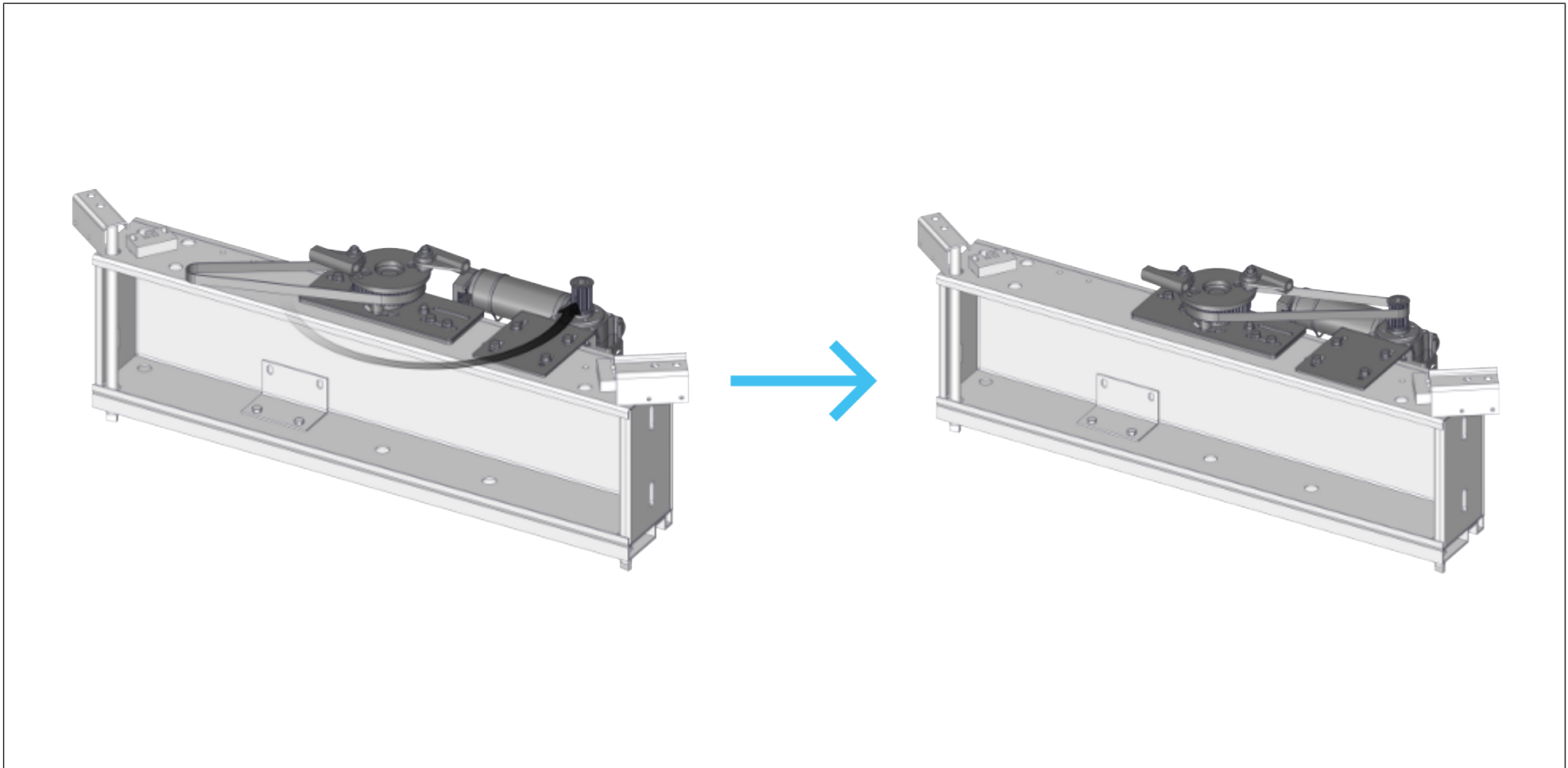
8.4 Mounting and tensioning the timing belt

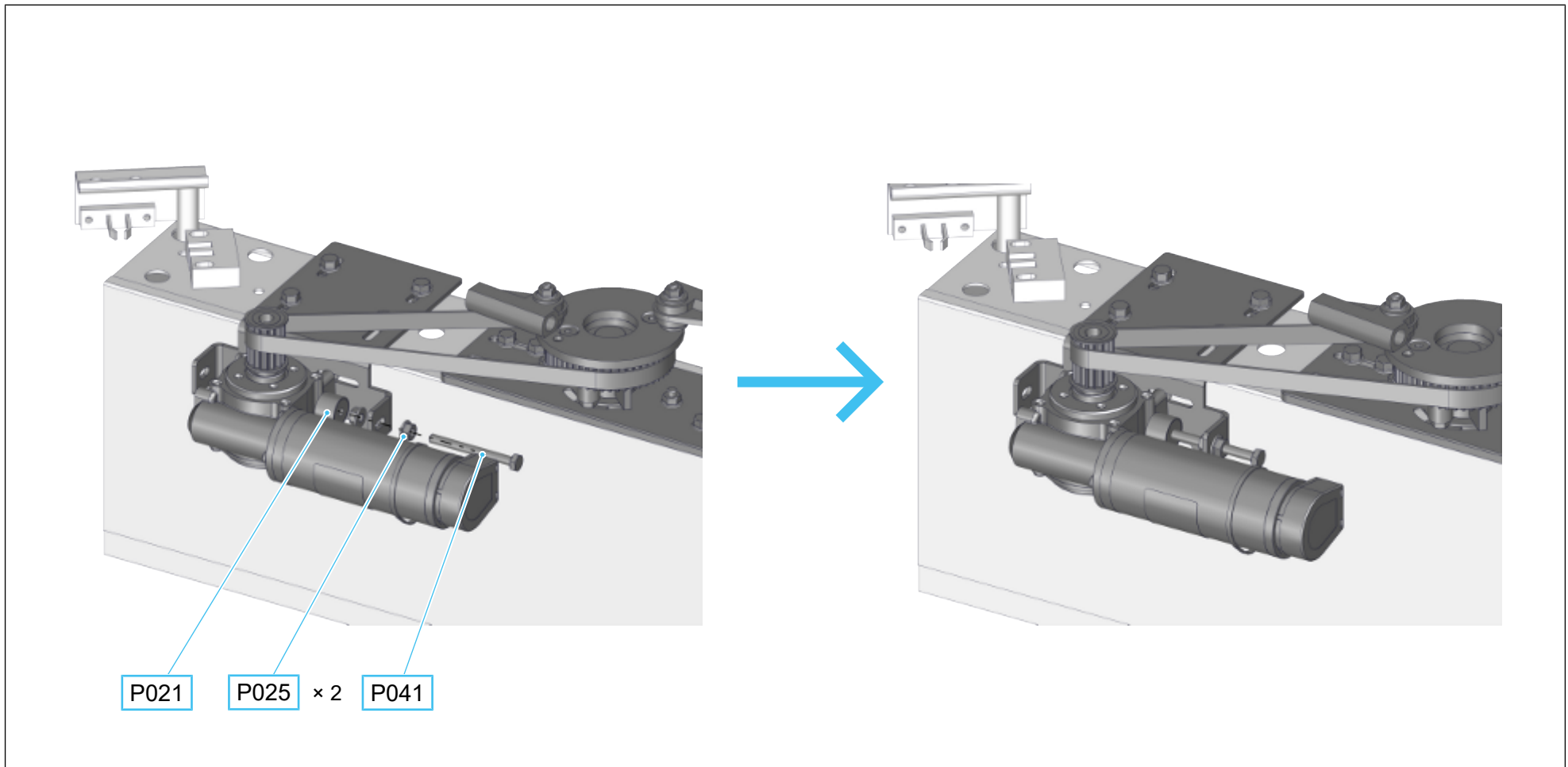
Components

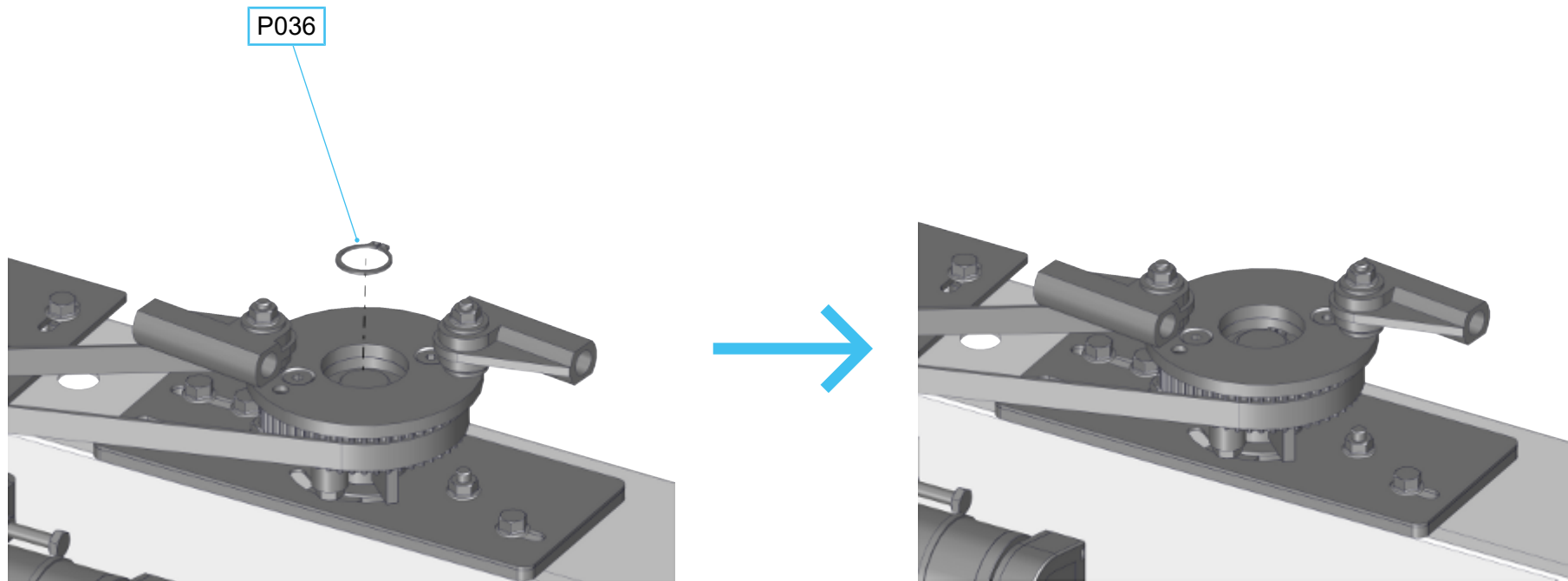
Pos.	Illustration	Item number	Description	Quantity
P021		1.20.30217	Bumper D = 20 mm, round	1
P025		1.36.00502	Nut M6	2
P036		1.36.01375	Retaining ring for shaft, D = 20 mm	1
P041		1.36.00123	Hexagon head screw M8 x 60 mm	1

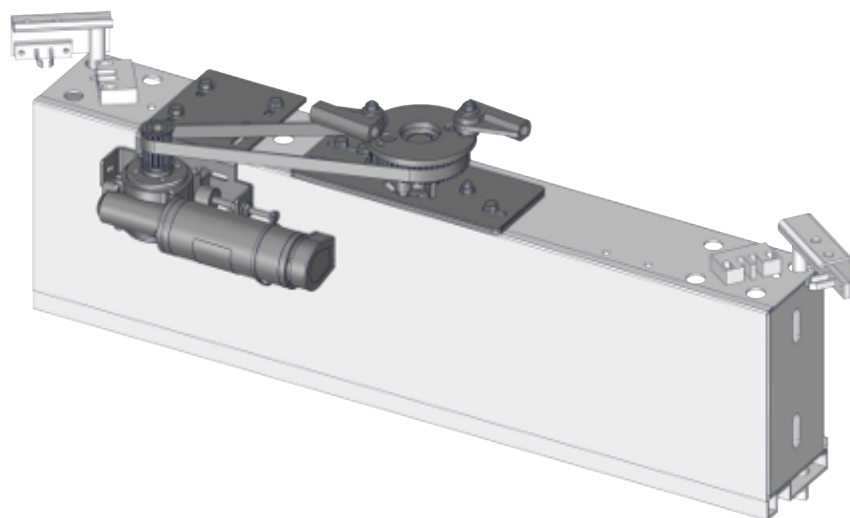
Tools

Pos.	Symbol	Description
T006		Circlip pliers
T110		Combination wrench, size 10

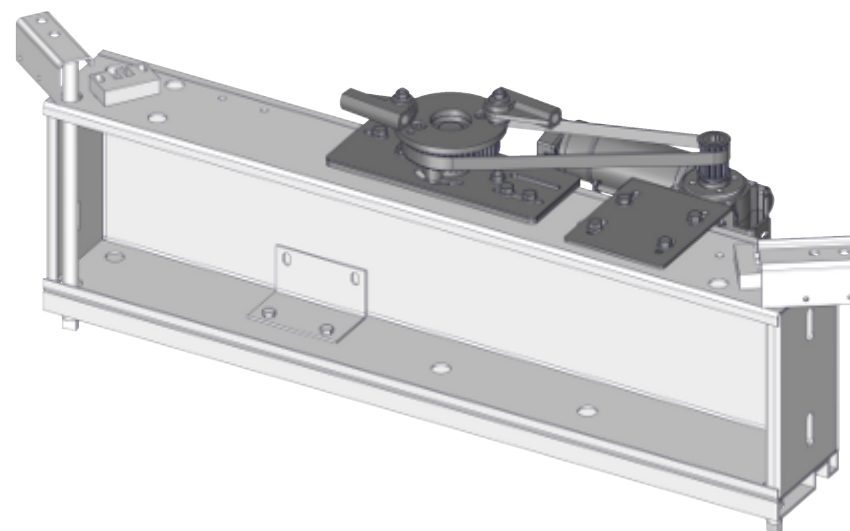








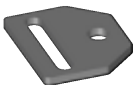
View from the rear



View from the front

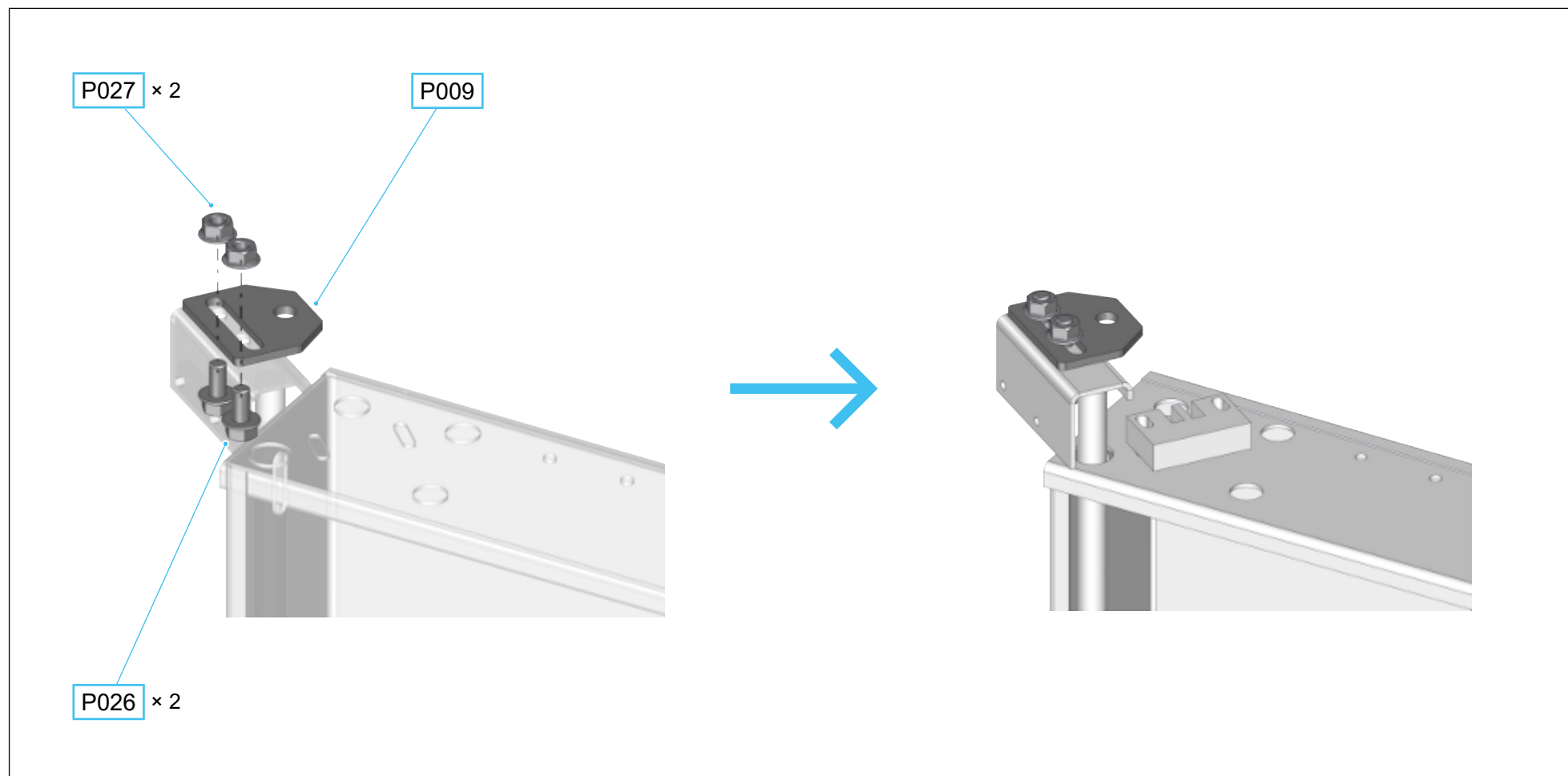
8.5 Mounting the left-hand mechanical arm

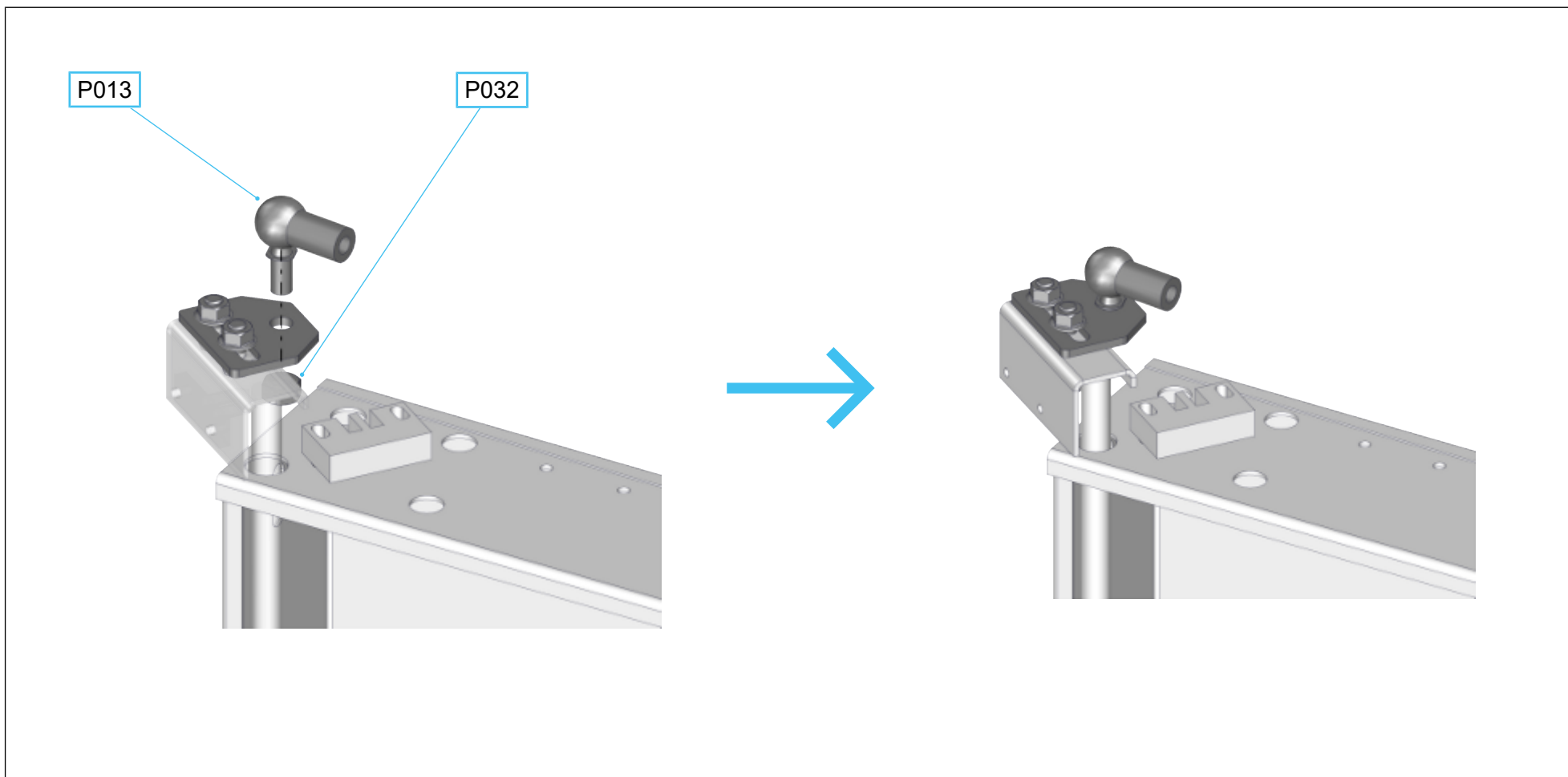
Components

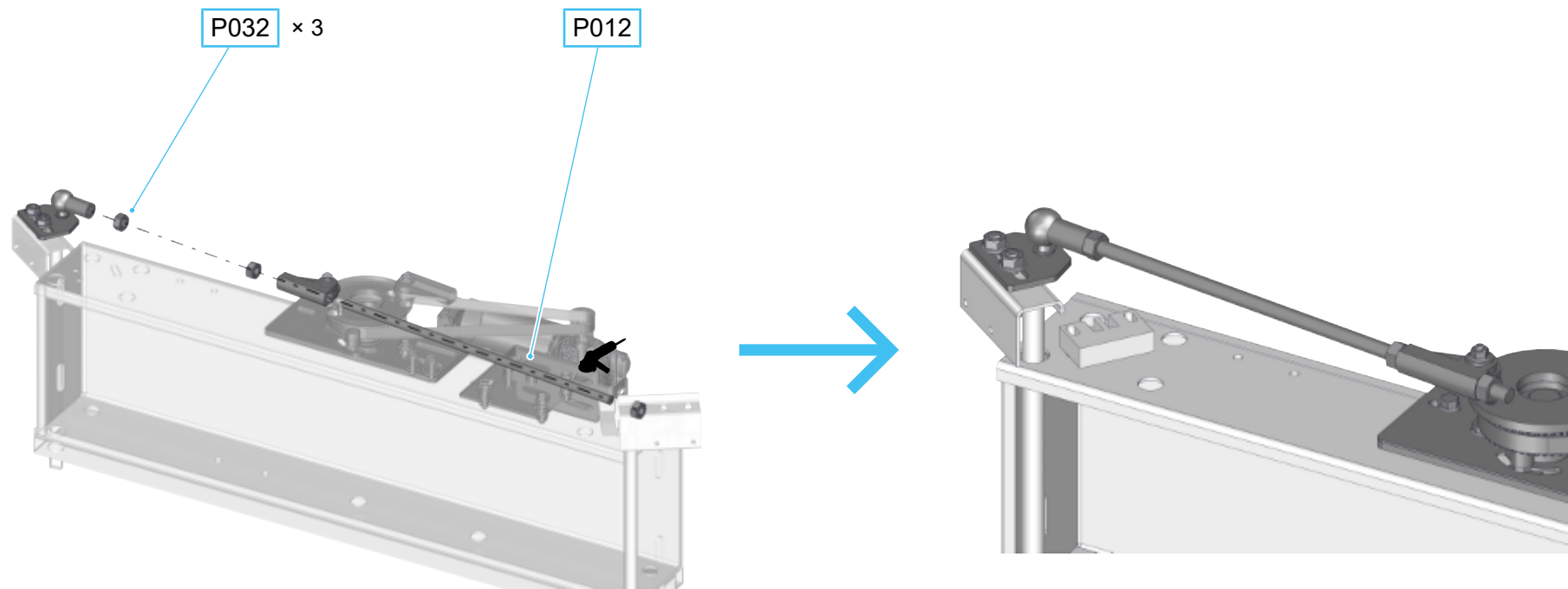
Pos.	Illustration	Item number	Description	Quantity
P009		1.20.23315	Plate	1
P012		1.20.23106	Threaded rod M10 × 500 mm, right	1
P013		1.20.23105	Hinge M10, L-shaped, right	1
P026		1.36.00710	Locking screw M8 × 16 mm	2
P027		1.36.00501	Nut M8	2
P032		1.36.00150	Nut M10	4

Tools

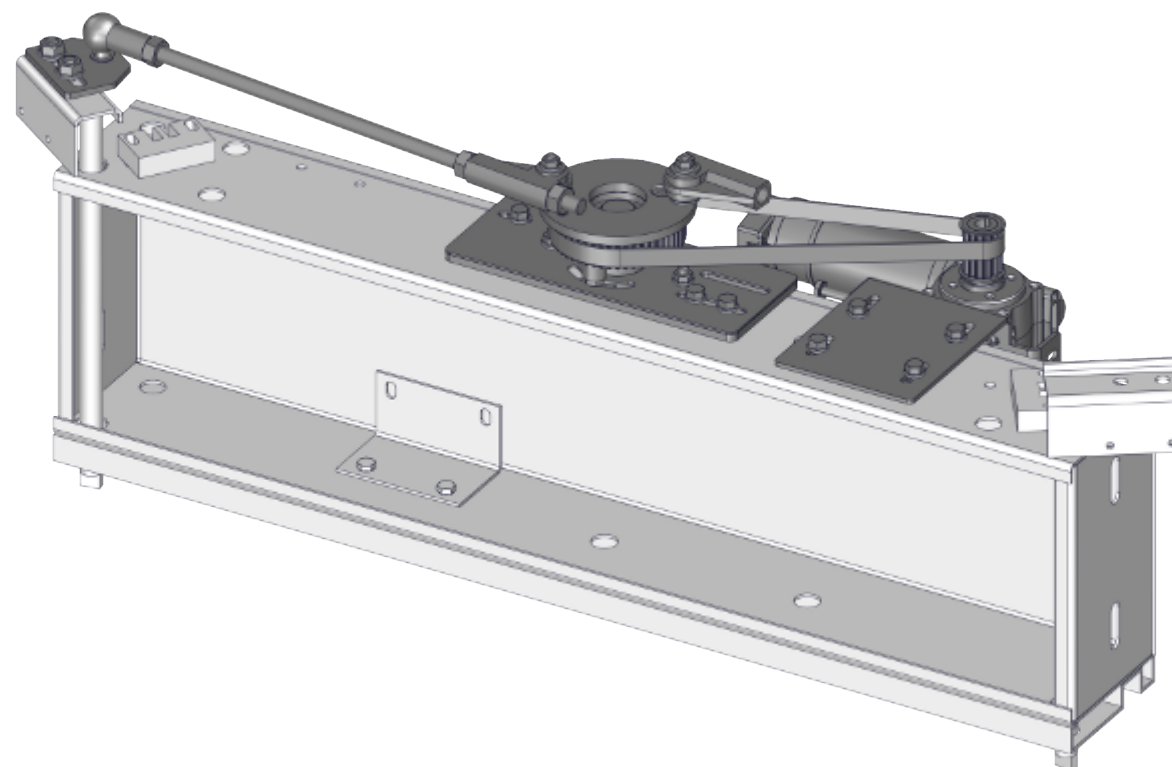
Pos.	Symbol	Description
T007		Angle grinder
T113		Combination wrench, size 13
T117		Combination spanner, size 17





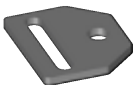


Shorten the threaded rod to the suitable length.



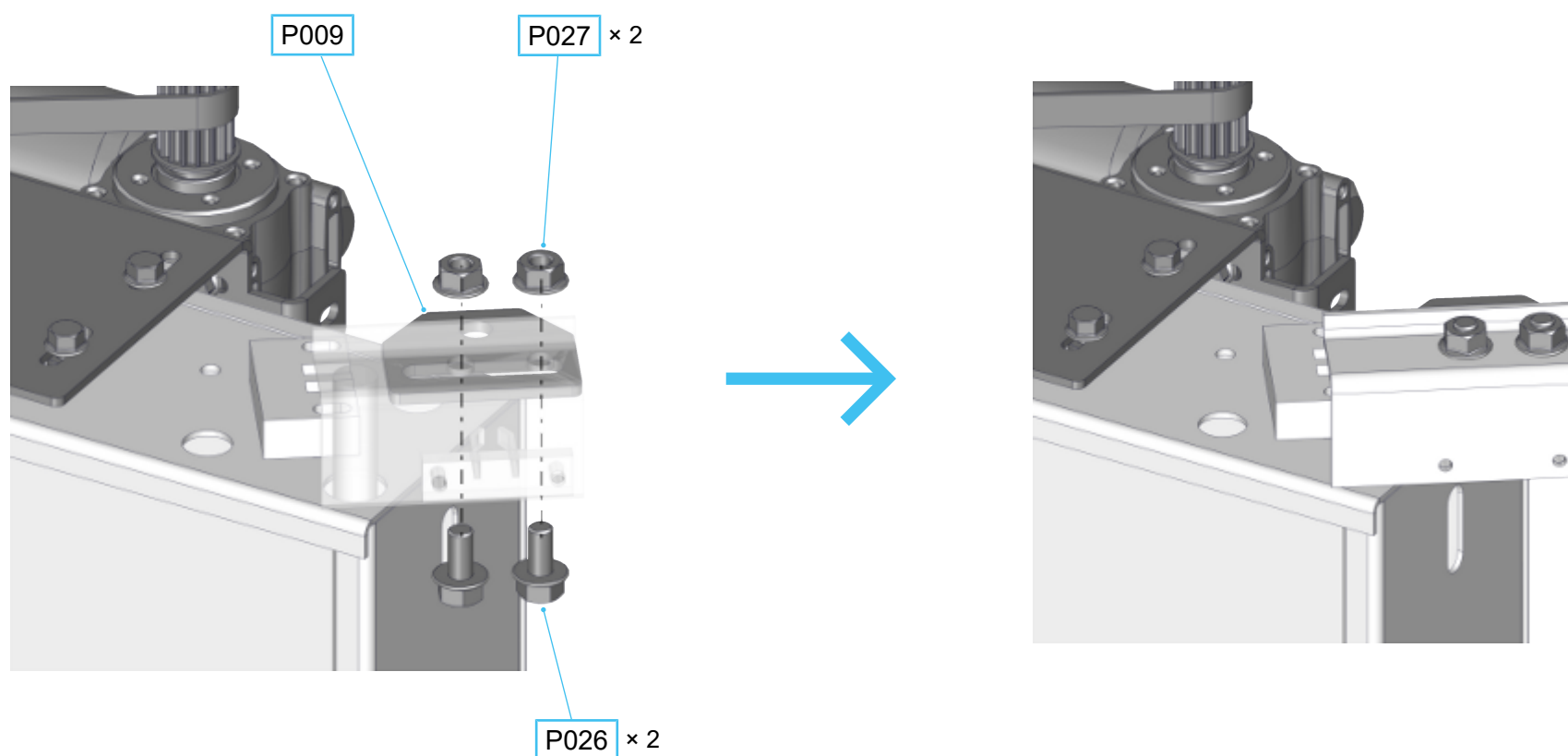
8.6 Mounting the right-hand mechanical arm

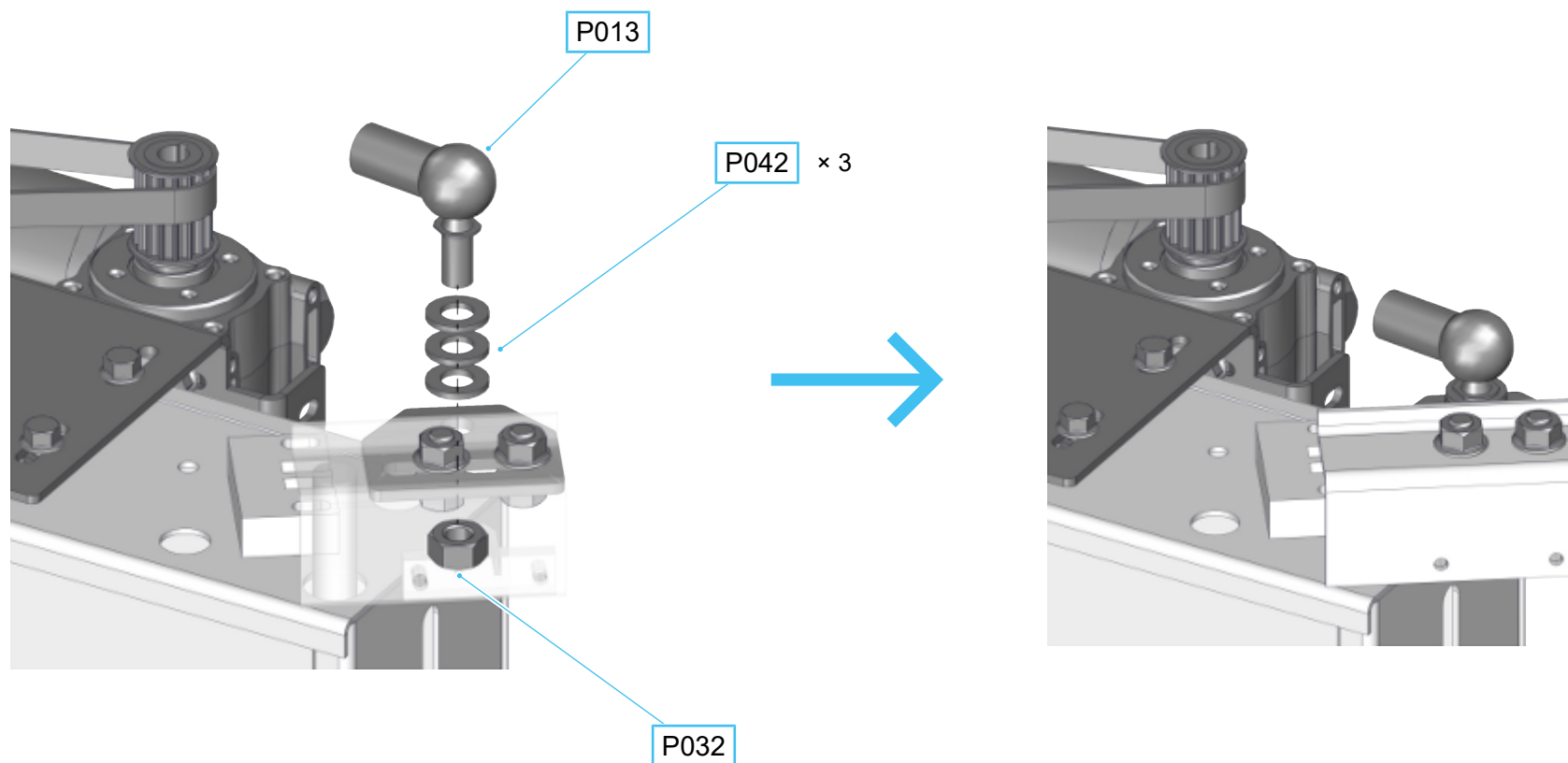
Components

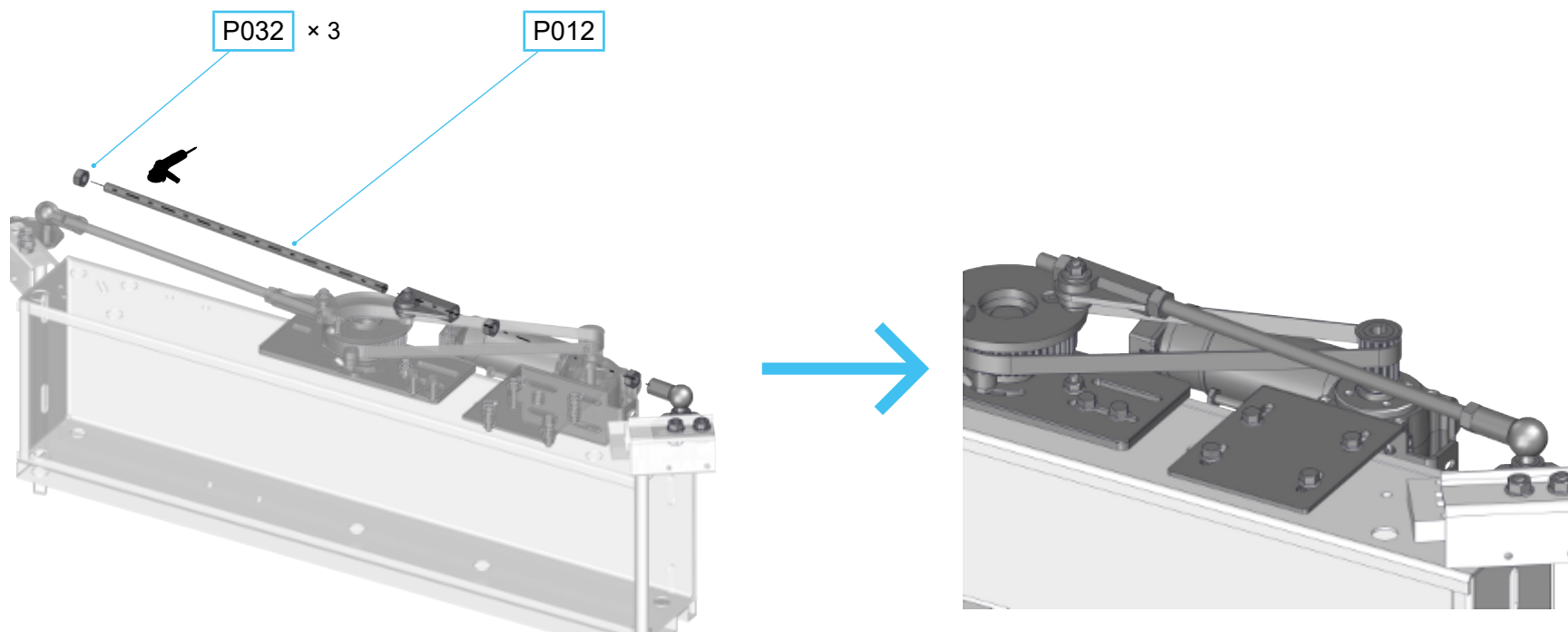
Pos.	Illustration	Item number	Description	Quantity
P009		1.20.23315	Plate	1
P012		1.20.23106	Threaded rod M10 × 500 mm, right	1
P013		1.20.23105	Hinge M10, L-shaped, right	1
P026		1.36.00710	Locking screw M8 × 16 mm	2
P027		1.36.00501	Nut M8	2
P032		1.36.00150	Nut M10	4
P042		1.36.00470	Washer M10	3

Tools

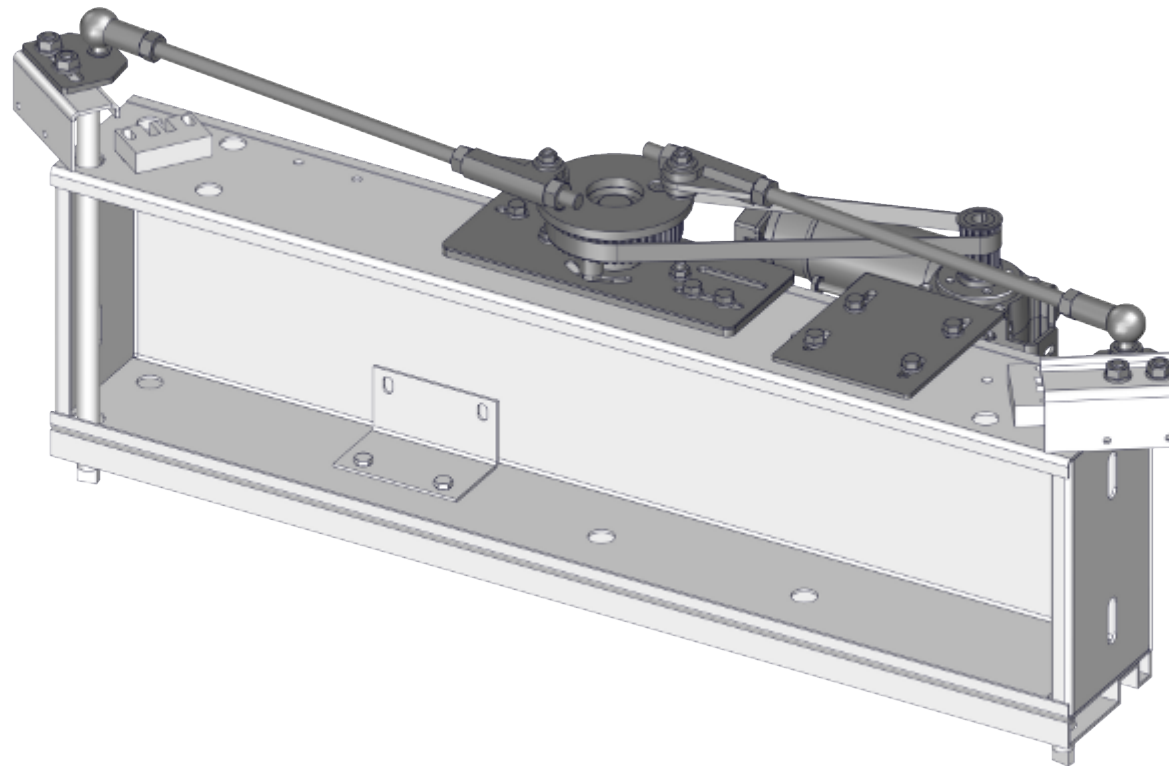
Pos.	Symbol	Description
T007		Angle grinder
T113		Combination wrench, size 13
T117		Combination spanner, size 17







Shorten the threaded rod to the suitable length.



9 Fitting, connecting and commissioning the door control unit

Fitting, connecting and commissioning the door control unit are described in detail in the **assembly instructions** supplied with the door control unit.



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