We hope the information contained in this manual will be of use to you. It is based on concrete data and on the best of our current knowledge. Please read this manual carefully, including all warnings and recommendations. No part of this manual may be reproduced or transmitted to a third party without the prior written permission of TETRA PAK HOYER.

Machine HOYER DINO C

Serial number

MACHINERY WORLD

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HOYER DINO C

1 - IDENTIFICATION OF THE MACHINE

Contents

1.1 Introduction

Thank you for having chosen a Tetra Pak Hoyer machine. We recommend you read this manual carefully, as it contains essential information regarding the installation, checking and maintenance operations required to keep your machine in perfect condition.

The manual contains tables, drawings and diagrams which will allow you to familiarise yourself with all parts of the machine.
Please let us now if any information is missing or is not sufficiently detailed. Your comments will be used to improve this manual.

1.2 Identification plate

For maintenance and service operations not described in this manual or for any other problem of a technical nature, our Service Department is at your complete disposal for information or to arrange for the necessary measures to be taken.

When contacting our Service Department, please quote the data given on the identification plate affixed to the machine and shown in Fig. 1.1.

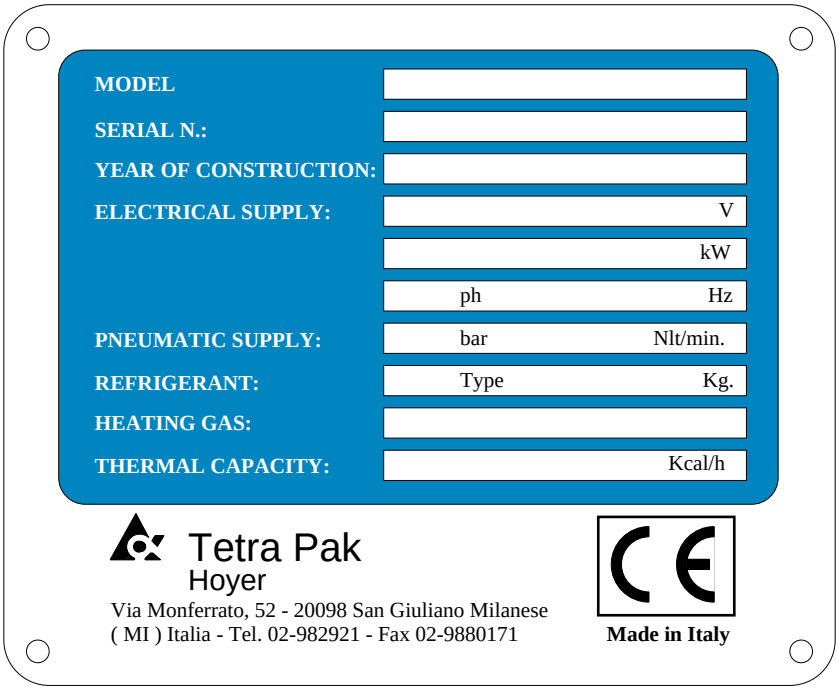

Fig. 1.1 - Identification plate

1.3 Service Centres

If you have any requirement or problem that requires our assistance, please contact one of the following service centres, which are authorised to perform maintenance and provide technical service under warranty for Tetra Pak Hoyer machines.

EUROPE and MIDDLE EAST:

Tetra Pak Hoyer ApS
Soeren Nymarks Vej 13
DK-8270 Hoejbjerg
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Fax: +45 86 29 22 00
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Tetra Pak Hoyer France
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HOYER DINO C

2 - GENERAL INFORMATION

Contents

2.1 Declaration of conformity

This machine has been manufactured in accordance with international standards and hygiene and sanitary legislation applicable to food processing machinery. In the Declaration of Conformity supplied with the machine, Tetra Pak Hoyer specifically certifies that the **HOYER DINO** C machine is designed and manufactured in accordance with the provisions of Directive 89/392/EC (Machinery Directive) and with above-mentioned standards.

2.2 Preliminary comments

- The illustrations and drawings of the machine are intended for general reference use only, and are not necessarily accurate in every detail;
- The machine dimensions and specifications given in this Manual are not binding and may be changed without prior notice;
- The drawings and all other documents supplied with this machine remain the property of Tetra Pak Hoyer and must not be passed on to third parties without the written permission of Tetra Pak Hoyer.
- The manual includes instructions for all accessories mounted on the standard machine.
- **This machine is covered by a warranty as laid down in the purchase contract. Any repair work not authorised by Tetra Pak Hoyer carried out during the warranty period will automatically invalidate the warranty.**

2.3 General safety rules

- THESE SAFETY RULES HAVE BEEN DRAWN UP IN YOUR INTEREST. Strict observance will reduce the risk of injury to yourself or to others.
- DO NOT attempt to move, install or operate the machine before reading and assimilating the contents of this manual. Ask your superior in case of doubt.
- Make sure that all guards and safety covers are in position BEFORE starting the machine.
- NEVER leave tools, mechanical parts or other foreign material on or inside the machine.
- In the event of a malfunction, press the emergency stop button.
- NEVER PUT YOUR HANDS INSIDE THE MACHINE WHEN IT IS IN OPERATION.
- Be very careful even when the general switch is set to “OFF”, because there is still voltage in the power supply cables.
- Shut off the compressed air supply before disconnecting any pneumatic component.
- BEFORE starting up production again after maintenance or repair work, make sure that all guards and protective covers have been replaced correctly.
- Proceed with caution at all times. Remember that you are responsible for your own safety and for that of your colleagues.
- Make sure that applicable regulations are observed when moving or lifting the machine.

2.4 Special warnings 

- All personnel operating the machine must be familiar with the general safety rules and must observe them strictly. Failure to follow these rules may result in personal injury or damage to machine components.
- Maintenance work must be performed with the machine turned off. The general switch must be set to “OFF”, the air valve closed and a “work is in progress” sign affixed to the machine.
- The user must make sure that all instructions given in this manual are observed strictly.
- Users will be solely responsible for risks caused by tampering with the safety system.
- The safety of machines used in conjunction with this machine, if not supplied directly by Tetra Pak Hoyer, is the responsibility of the customer.
- The pressure, speed, temperature, and voltage limits and all other instructions given are indispensable for correct operation of the machine and must always be complied with by the customer.
- Ambient conditions must be taken into consideration during installation.
- National legislation governing this type of machine must be observed.

2.5 Ambient operating limits

The machine is suitable for operation in the following ambient conditions:

- Temperature : from 4°C to 40°C
- Humidity : from 20% to 95%.

☞ **NOTE**:

Tetra Pak Hoyer will accept no responsibility for damage or injury caused by failure to comply with the above warnings.

HOYER DINO C

3 - DESCRIPTION OF THE MACHINE AND TECHNICAL DATA

Contents

3.1 Description of the machine

The Hoyer Dino C multiple row pick-up system may be used with a wide range of products (products on stick handles, ball cones, wafer cups and products without sticks).

The Hoyer Dino C pick-up machine is composed of the following main components:

Product pick-up unit with a series of interchangeable grippers (***Pos. 1, Fig. 3.1)***.
Product transport with interchangeable rollers *(Pos. 2, Fig. 3.1)*.
Chocolate coating tank for products on sticks and ball cones *(Pos. 3, Fig. 3.1)*.
Set of tanks for coating products on sticks with fruit juice.
Set of interchangeable grippers *(Pos. 4, Fig. 3.1)* for releasing products on sticks and ball cones onto a belt synchronised by a Hoyer Charta single row wrapping unit.
Smooth belt for conveying products without sticks *(Pos. 5, Fig. 3.1)*.
Electrical cabinet *(Pos. 6, Fig. 3.1)*.
Pneumatic cabinet *(Pos. 7, Fig. 3.1)*.
Operator interface panel *(Pos. 8, Fig. 3.1)*.

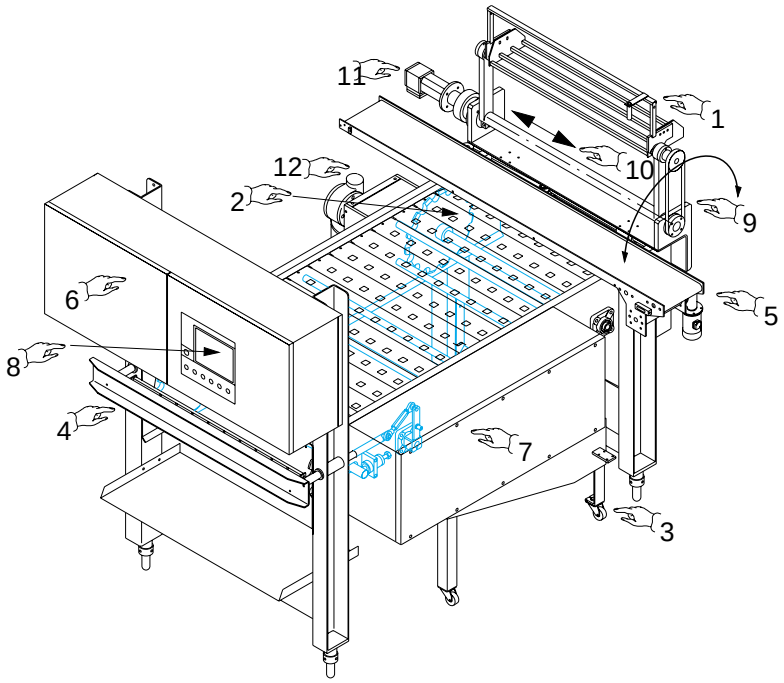


Fig. 3.1

3.2 Operation

The pick-up unit, which is constructed with a rotating arm *(Pos. 9, Fig. 3.1)* holding the grippers, picks up hardened products from the worktable at the tunnel exit.
The grippers are opened and closed to pick up products by pneumatic cylinders integrated and controlled in parallel by a single pneumatic valve located inside the pneumatic cabinet. Movement is synchronised by an encoder under the worktable and the PLC programmer located inside the electrical cabinet, which interfaces with the main tunnel programme.
Before the grippers close, the arm follows the movement of the products onto the trays *(Pos. 10, Fig. 3.1)*.
Once the products have been gripped, a hammer positioned underneath the trays detaches the products from the trays.
The set of products that has been picked up is positioned on the rollers as the arm rotates *(Pos. 9, Fig. 3.1)*.
The rotation of the arm and its movement following the products to be picked up are controlled by two servomotors *((Pos. 11, Fig. 3.1)* to ensure

synchronisation no matter what the production speed in the SL C tunnel.
Products are supported and transported to the coating station on stainless steel rollers *(Pos. 2, Fig. 3.1)*. Each roller carries nine sets of products picked up together.
A sufficient number of rollers is provided to permit a one-minute drying and hardening time for chocolate at the maximum speed of the tunnel.
The rollers are hooked up to a chain positioned on either side of the body of the machine.
The stainless steel chain has a 70 mm step, is extensible and does not require lubrication.
The roller conveyor motor *(Pos. 12, Fig. 3.1)* is positioned to one side of the machine and connected to the serrated wheels through an intermitter; it is driven in step with the line.
A proximity sensor makes the motor stop.
The optional coating station *(Pos. 3, Fig. 3.1)* consists of a set of tanks assembled on wheels so that they can easily be removed for washing and maintenance.
Level control is not automatic and so the level in the tanks must be topped up manually from time to time during production.
The tank unit consists of a stationary body made of stainless steel surrounded by a space which is filled with water to keep the chocolate at the correct temperature and a tank with raising/lowering motion to contain the chocolate for coating the products.
The water is kept at the correct temperature by an immersed electrical resistor.
A pump designed on the principle of the Archimedean screw carries chocolate and nut bits (if any) from the stationary tank to the mobile tank.
The level of chocolate in the mobile tank is maintained by allowing chocolate to overflow out of the mobile tank into the stationary tank below it.
The shape of the tank permits collection of drops of chocolate which fall of products during the first 20 seconds of drying.
The raising and lowering motion is created by a pneumatic cylinder connected to the pick-up machine programme, which raises the tank when the roller is positioned above the mobile tank and lowers it before the roller moves on for the next cycle.
The Hoyer Dino C multiple row pick-up machine may also be equipped with a fruit juice coating station, which consists of a product pre-cooling area in which the first three rows of products are immersed in liquid nitrogen while the two rows behind them are immersed in fruit juice. After the four stages involved in hardening the juice, the last two rows are immersed in the liquid nitrogen.
The maximum thickness of the fruit juice layer is 1 to 1.5 mm.
The last station in the multiple row pick-up machine is the product rejection station *(Pos. 8, Fig. 3.1)*, with automatic step conveyance on a belt with lamellas which is synchronised with the line.
The operator interface panel on the door of the electrical cabinet *(Pos. 3, Fig. 3.1)* may be used to select a working programme and modify the factory settings to optimise operation of the machine under actual operating conditions, which may vary in accordance with the type of product being made.
The pick-up machine is run by a PLC with a programme capable of synchronising the belts that travel through the cooling tunnel of the line for coating products without sticks. When producing products without sticks, such as bars, an optional smooth belt *(Pos. 5, Fig. 3.1)*. must be positioned on top of the roller for removal and conveyance of products arriving from the pick-up station to the Hoyer Hoyrobe 350 coating machine.
The speed of the evacuation belt is controlled by an inverter which is set automatically by the tunnel programme; when the operator adjusts the speed of production in the tunnel, the belt speed and following movement are automatically adjusted.

3.3 Technical data

Standard power supply:
220 - 440 V / 3 Ph / 50-60 Hz

Installed power

Total installed power: 9 kW

Compressed air

Pressure of air supply:	min. 6 Bar
Consumption:	1300 Nl/min
Diameter of air hose:	3/4" gas

Dimensions

A (length)	= 1800 mm
B (width)	= 2640 mm
C (height)	= 2160 mm

Number of operators: 1

Equivalent Weighted Noise Level A at a distance of 1 metre: 67.5 dBA
Max. Instantaneous Weighted Noise Level C in the workplace: less than 130 dB/20uPa.

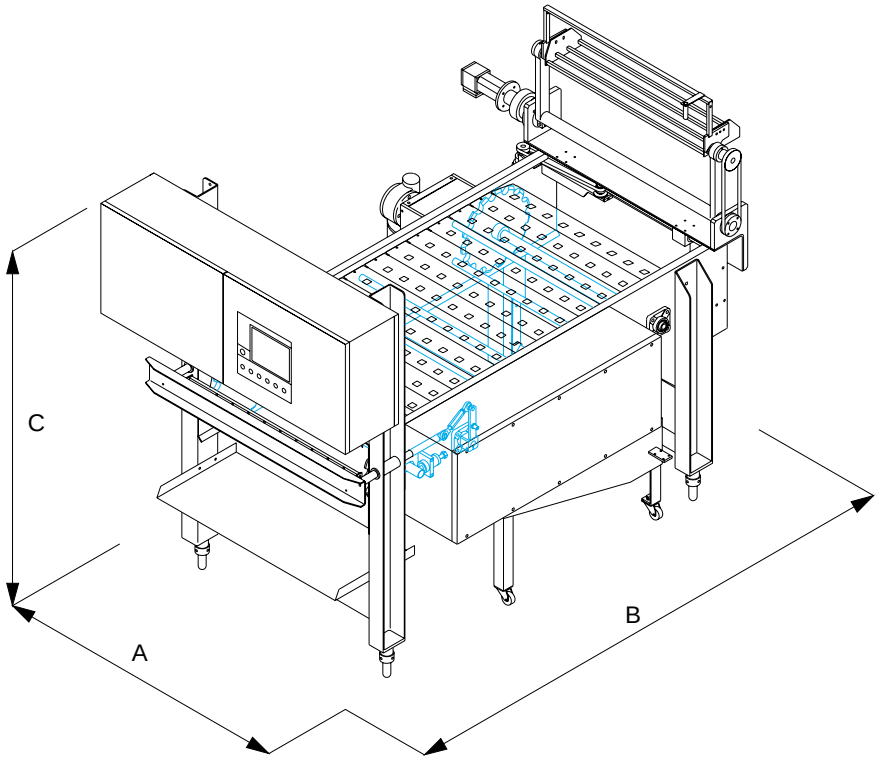


Fig. 3.2

3.4 Programming and control panel

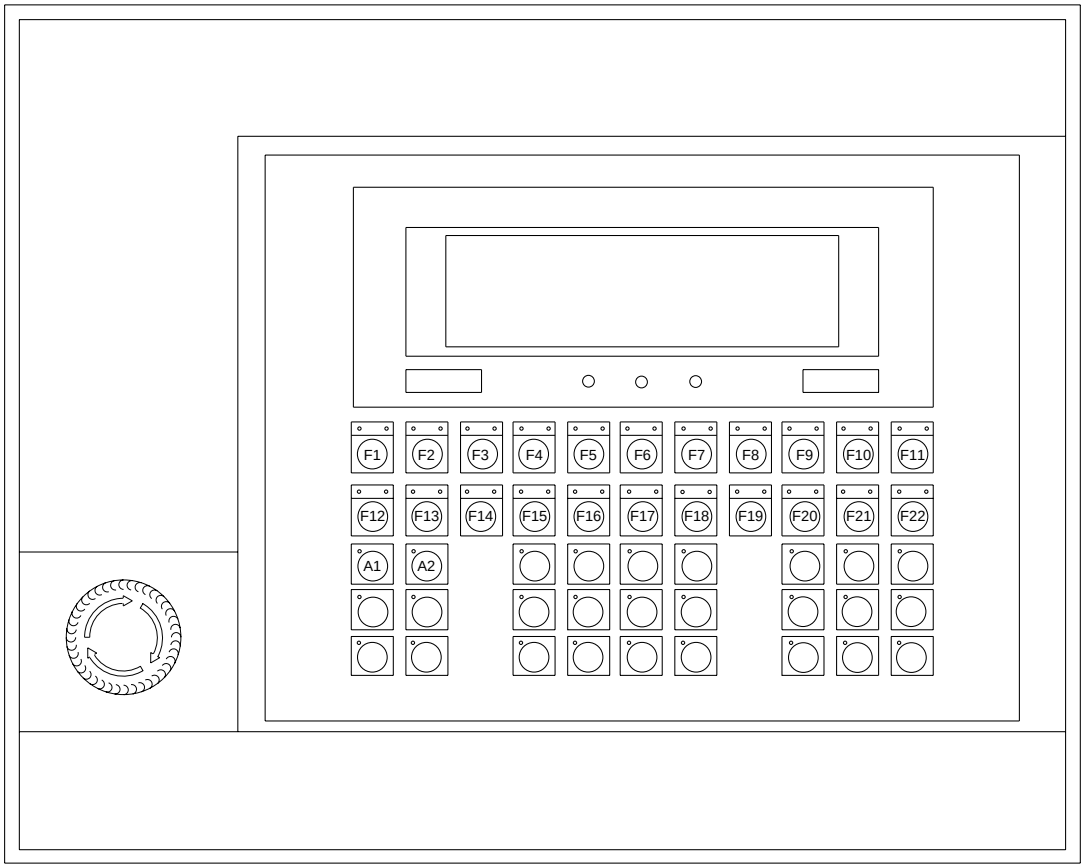


Fig.3.3

F1 Chain drive
F2 Jog (continuous chain control)
F3 Selection of automatic/manual cycle
F4 Start/stop of automatic cycle
F5 Edit recipe
F6 Activate recipe
F7 Save recipe
F8 Send recipe to PLC
F9
F10
F11 Reset
F12 Coating
F13 Coating resistance
F14 Coating pump
F15 Nitrogen control
F16
F17 Start pick-up movement
F18
F19
F20
F21
F22
A1: By-pass release
A2: Overlaying

HOYER DINO C

4 - INSTALLATION

Contents

4.1 Unpacking and checking the contents

The HOYER Dino C pick-up machine and its various components are delivered in special packaging, normally in a wooden crate. The crate should be unpacked as close to the location of installation as possible; it may be transported with a forklift.
When the crate has been positioned correctly, proceed with unpacking as follows:

a. Extract the nails from the top of the crate and remove the top. Repeat this operation for the sides of the crate. Watch out for the wooden spacers positioned between the sides of the crate.
b. Remove the box of spare parts and other components from the crate.
c. Extract the nails from the wooden blocks used to secure the machine in transit and remove the protective cellophane.
d. Check that the contents of the packages correspond to the items indicated in the shipping documents.
e. Check that the top and side panels of the crate were correctly fixed and that no parts have come loose in transit.
f. Visually inspect all electrical components, looking for signs of damage.
g. If a part/component is missing, stop unpacking the machine and notify Tetra Pak Hoyer immediately.
h. If the machine has been damaged in transit, notify the insurance company immediately and do not proceed further with unpacking until authorised to do so by the insurance company.

4.2 Positioning and installation

The installation procedure requires the following steps:

a. Position the machine at the production location (refer to the annexed layout), using a forklift of adequate capacity to move it *(Pos. 1, Fig.4.1 illustrates correct insertion of forks)*. Make sure that there is sufficient space to permit removal of protection and allow access to components inside the machine.
b. Adjust the adjustable feet *(Pos. 3, Fig. 4.2)* so that the machine is perfectly level both lengthways and crossways.
c. Connect the pick-up machine to the tunnel, fastening it using the tie rods provided *(Pos. 3, Fig. 4.1)*.
d. Check that the roller surface is at the right height.

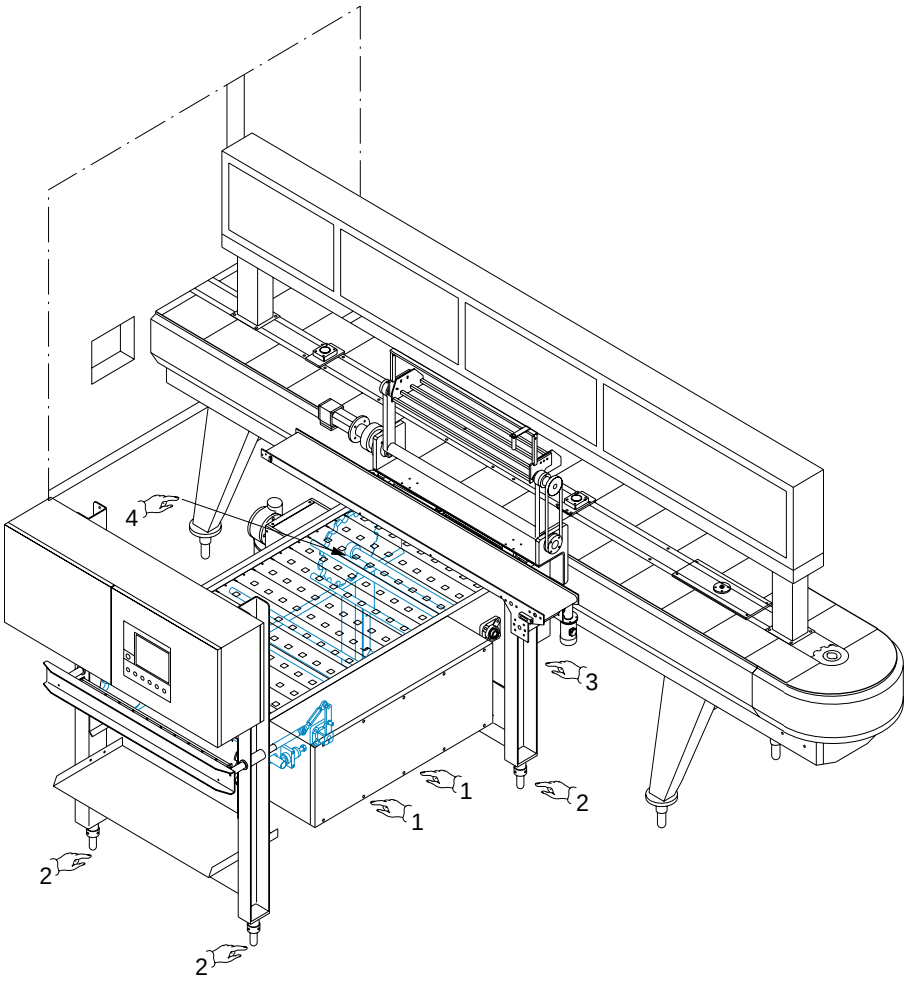


Fig.4.1

4.3 Electrical connection

The machine's electrical system has been factory tested by Tetra Pak Hoyer technicians.
The machine components are electrically protected from short circuits:

WARNING:

Electrical connection must be performed by skilled technicians who are familiar with safety legislation.

It is recommended that power be obtained from a box containing a main switch with thermal protection and ultra-rapid fuses of adequate amperage.

For information on connections, refer to the annexed wiring diagram.

WARNING:

The differential protection switch must be class "A", suitable for protection of the inverter's electronic power circuits.

- Check the identification plate *(Fig. 4.2)* to make sure that the machine is compatible with local voltage.
- Connect the three phases to the R S T terminals and the ground wire to the ground terminals in the electrical panel.

For the minimum section of the power cable, refer to the voltage and power reported on the identification plate *(Fig. 4.2)* in relation to the regulations in effect in the place where the machine is installed.

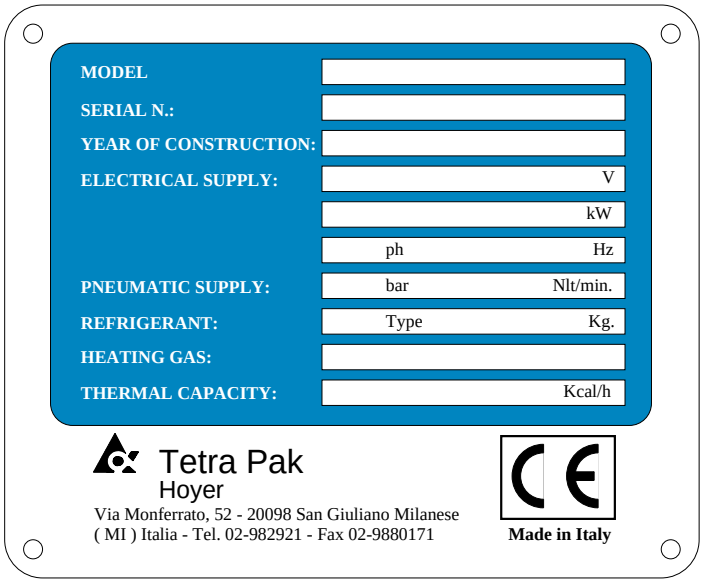


Fig. 4.2

4.4 Pneumatic connection

Connect the machine to the compressed air supply.
The minimum operating pressure is 6 bar.
The machine is equipped with a safety pressure switch which will stop pneumatic operations if the supply pressure falls below 4 bar.
For figures on air consumption and air supply hose dimensions, refer to **CHAPTER 3 – DESCRIPTION OF THE MACHINE AND TECHNICAL DATA.**

4.5 Checking the direction of rotation

After electrical and pneumatic connection, check the machine's direction of rotation as follows:

- First make sure that there are no foreign materials in the machine which might impede its movement.
- Release the emergency stop button.
- Turn the main switch.
- Turn on the air supply.
- Press the intermittent operation push button and make sure that the rollers move from left to right *(Pos. 1, Fig. 4.3)* when looking at the machine from the operator's side.
- Press the stop button to stop the chain.

WARNING:

If the machine rotates in the wrong direction, invert the two phases in the terminal board.
This operation must be carried out by trained technicians who are familiar with safety legislation.

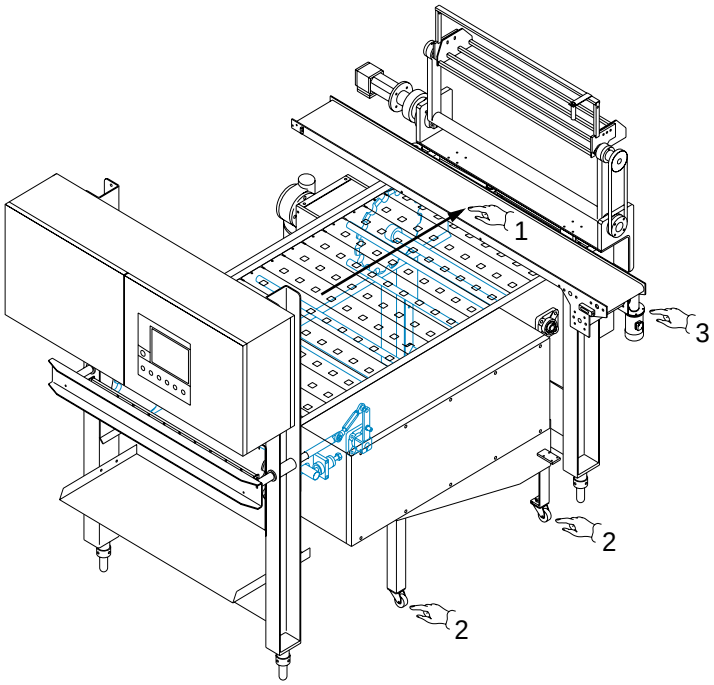


Fig.4.3

4.6 Positioning accessories

- Position the coating tank assembled on its wheels *(Pos. 2, Fig. 4.3)* in the correct position underneath the pick-up machine.
- Position the smooth belt for products without sticks *(Pos. 3, Fig. 4.3)* in the correct position on top of the pick-up machine.
  Connect the coating tank *(Pos. 1, Fig. 4.4)* to the control panel of the pick-up machine *(Pos. 2, Fig. 4.4)* using the multiple connection cable provided.
- Connect the coating tank to the pneumatic panel of the pick-up machine.
- Connect the smooth belt *(Pos.3, Fig. 4.4)* to the control panel of the pick-up machine *(Pos. 4, Fig. 4.4)* using the multiple connection cable provided.

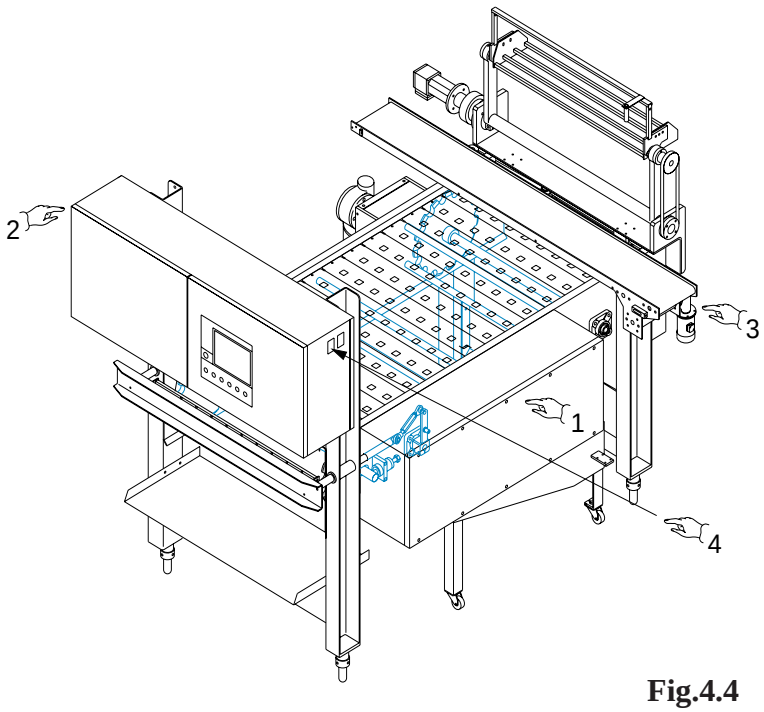


Fig.4.4

HOYER DINO C

5 -ADJUSTMENT AND FORMAT CHANGE PROCEDURES

Contents

5.1 Product change

The Hoyer Dino C multiple row pick-up machine may be used with a wide range of products (products with stick handles, ballcones, wafer cups and products without sticks).

Format changes involve replacement of:
- pick-up tools *(Pos. 1, Fig. 5.1)*;
- conveyor rollers *(Pos. 2, Fig. 5.1)*;
- release tools *(Pos. 3, Fig. 5.1)*.

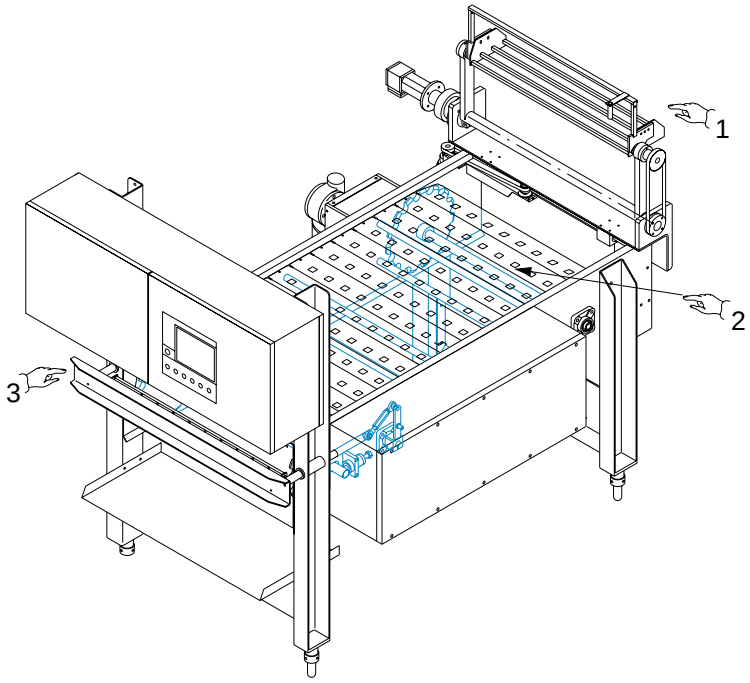


Fig. 5.1

5.1.1 Coated products

- Position the coating tank assembled on wheels *(Pos. 1, Fig. 5.2)* in the correct position underneath the pick-up machine.
- Connect the coating tank *(Pos. 1, Fig. 5.2)* to the control panel of the pick-up machine *(Pos. 2, Fig. 5.2)* using the multiple connection cable provided.
- Connect the coating tank to the pneumatic panel of the pick-up machine.
- Adjust the rise of the mobile coating tank so that the product is immersed correctly.

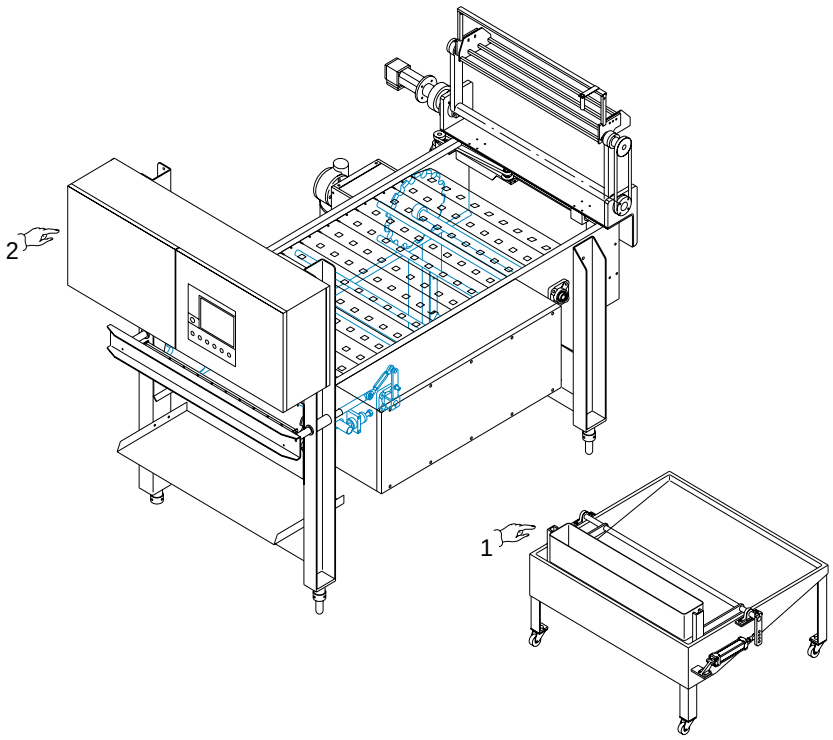


Fig. 5.2

5.1.2 Products on sticks

- Replace the pick-up gripper holder support *(Pos. 1, Fig. 5.3)*.
- Replace the release gripper holder support *(Pos. 3, Fig. 5.3)*.
- Replace the rollers *(Pos. 2, Fig. 5.3)*.
- Connect the pneumatic cylinders for rotation to the pneumatic panel using the hoses connected with the pick-up machine.
- Check that the rotation cylinders turn the gripper support 90°, adjusting the limit switches.
- Check that the roller opening cylinders are functioning correctly.

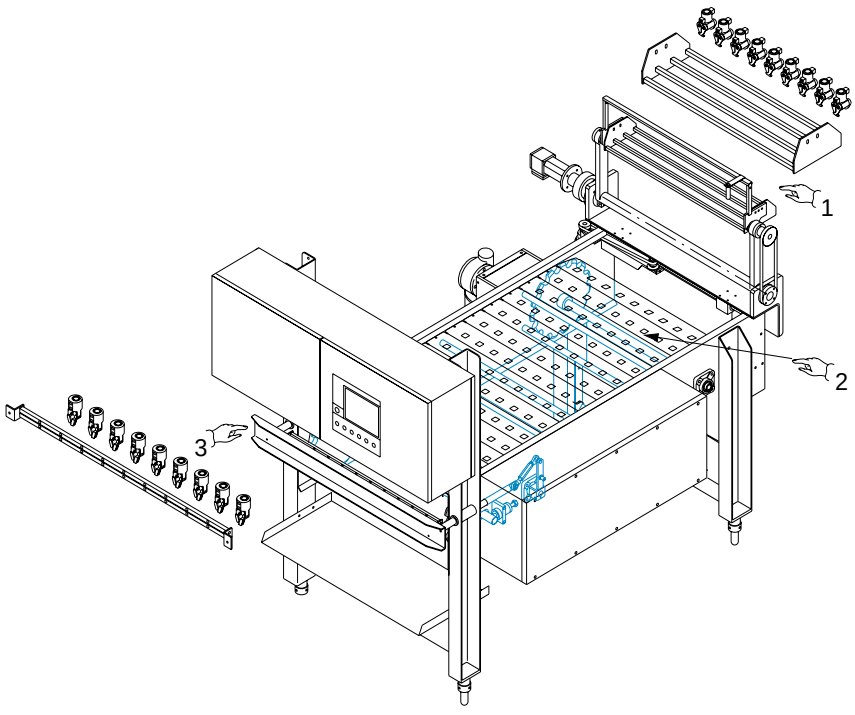


Fig. 5.3

5.1.3 Ball cone and wafer cup products

- Replace the pick-up gripper holder support *(Pos. 1, Fig. 5.4)*.
- Replace the release gripper holder support *(Pos. 3, Fig. 5.4)*.
- Replace the rollers *(Pos. 2, Fig. 5.4)*.
- Deactivate the roller opening cylinders.
- Check that the bypass cylinders are functioning correctly.

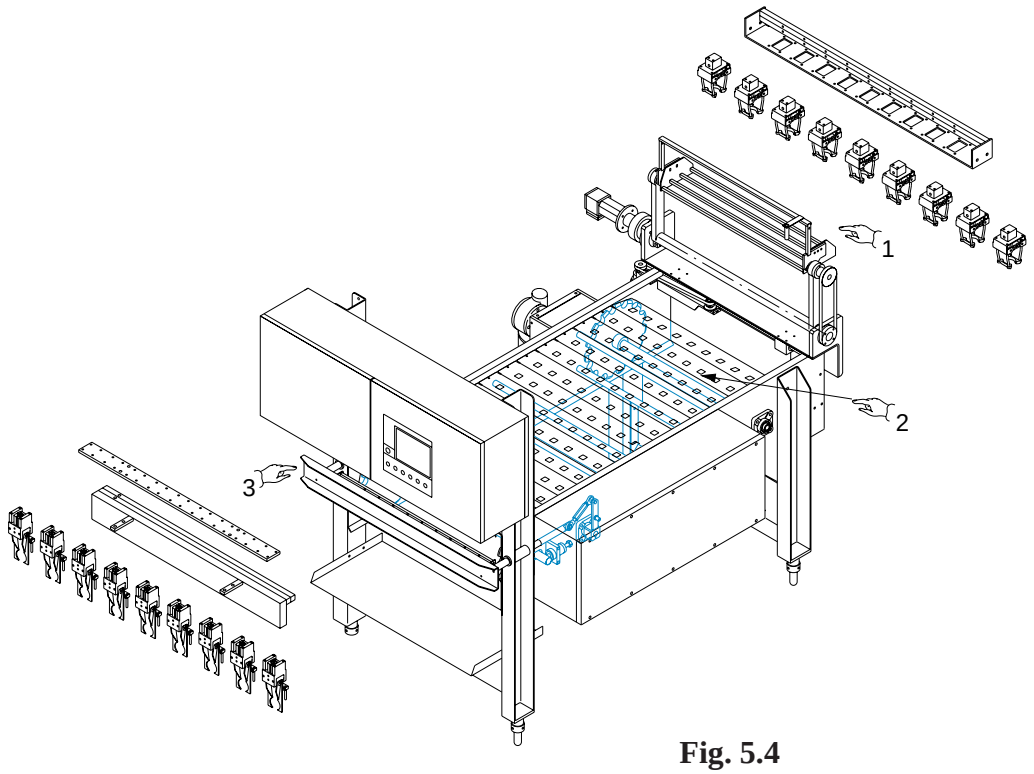


Fig. 5.4

5.1.4 Products without sticks

- Replace the pick-up gripper holder support *(Pos. 1, Fig. 5.5)*.
- Position the smooth belt for products without sticks *(Pos. 2, Fig. 5.5)* in the correct position on top of the pick-up machine.
- Connect the smooth belt *(Pos. 2, Fig. 5.5)* to the pick-up machine control panel.
- When the smooth belt is in place, a safety switch must be turned on which will disable roller movement and enable a working programme which causes the pick-up arm to rotate and release products onto the smooth belt.

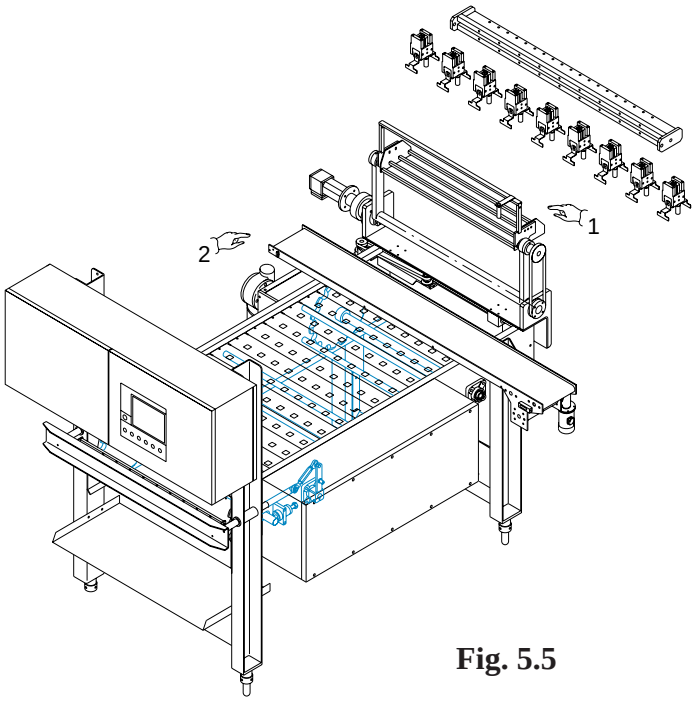


Fig. 5.5

5.2 Adjustment from the control panel

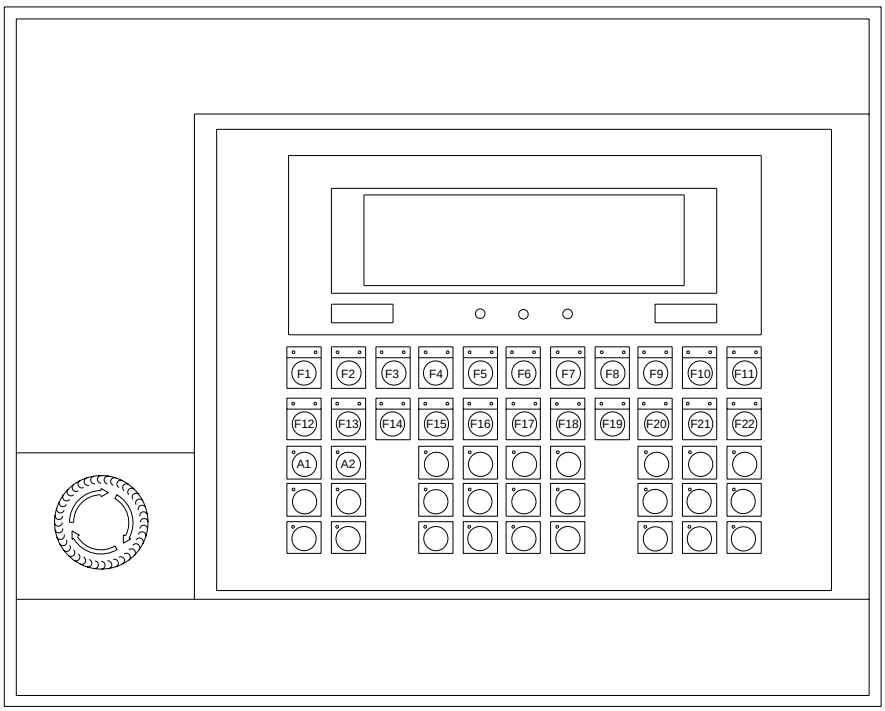


Fig. 5.2

The various functions of the production line are controlled by a PLC *(Pos. 1, Fig. 5.14)*.
For references, refer to **CHAPTER 3 – DESCRIPTION OF THE MACHINE AND TECHNICAL DATA.**
Press F5 to display pages on the PLC and modify the settings as required.

HOYER DINO C

6 - OPERATING PROCEDURES

Contents

6.1 Preliminary checks

Before starting the machine carry out the following checks:

a. Check that all panels and guards are solidly fixed.

b. Check that the machine has been thoroughly washed and cleaned. The procedures for washing and cleaning the machine are described in **CHAPTER 7 – CLEANING AND MAINTENANCE**.

c. Check that the power supply cable has been connected to the power supply correctly.

d. Check that the compressed air supply is correct and that the pressure reducer in the pneumatic panel is set to 6 bar.

e. Check that the emergency push buttons *(Pos. 7/8, Fig. 6.1)* are released *(Pos. 6, Fig. 6.1)*.

f. Check that the chocolate tank *(Pos. 3, Fig. 6.1)* has been filled to the correct level and that the chocolate is at the right temperature (around 34° to 37° C).

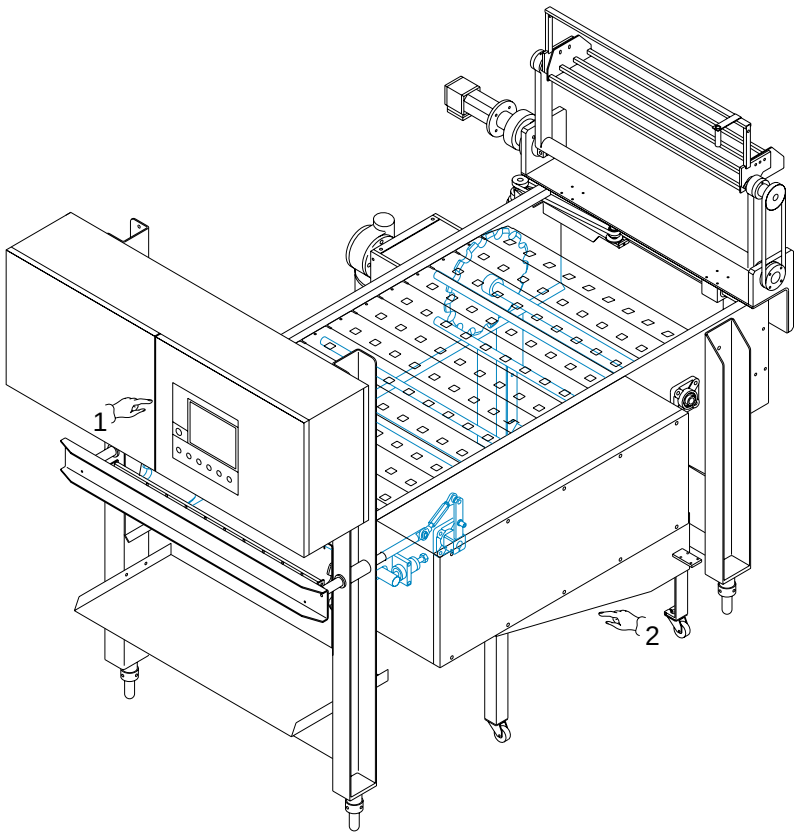


Fig. 6.1

6.2 Production cycle

6.2.1 Beginning production

To turn on the machine, perform the following steps:

a. Turn on the power to the machine by turning the main switch to the "ON" position.

b. About ½ hour before beginning production, press F13 to warm up the coating vat.

c. Press F14 *(Fig. 6.2)* to keep the chocolate in motion with the pump.

d. Press F1 *(Fig. 6.2)* to start up the chain, and then press F3 *(Fig. 6.2)* MAN/AUTO.

Press F4 *(Fig. 6.2)* to start automatic production. The machine will automatically begin the production cycle.

Press F17 *(Fig. 6.2)* to start the pick-up movement. If the manual production cycle is selected, activate the individual stations by pressing the station enabling buttons.

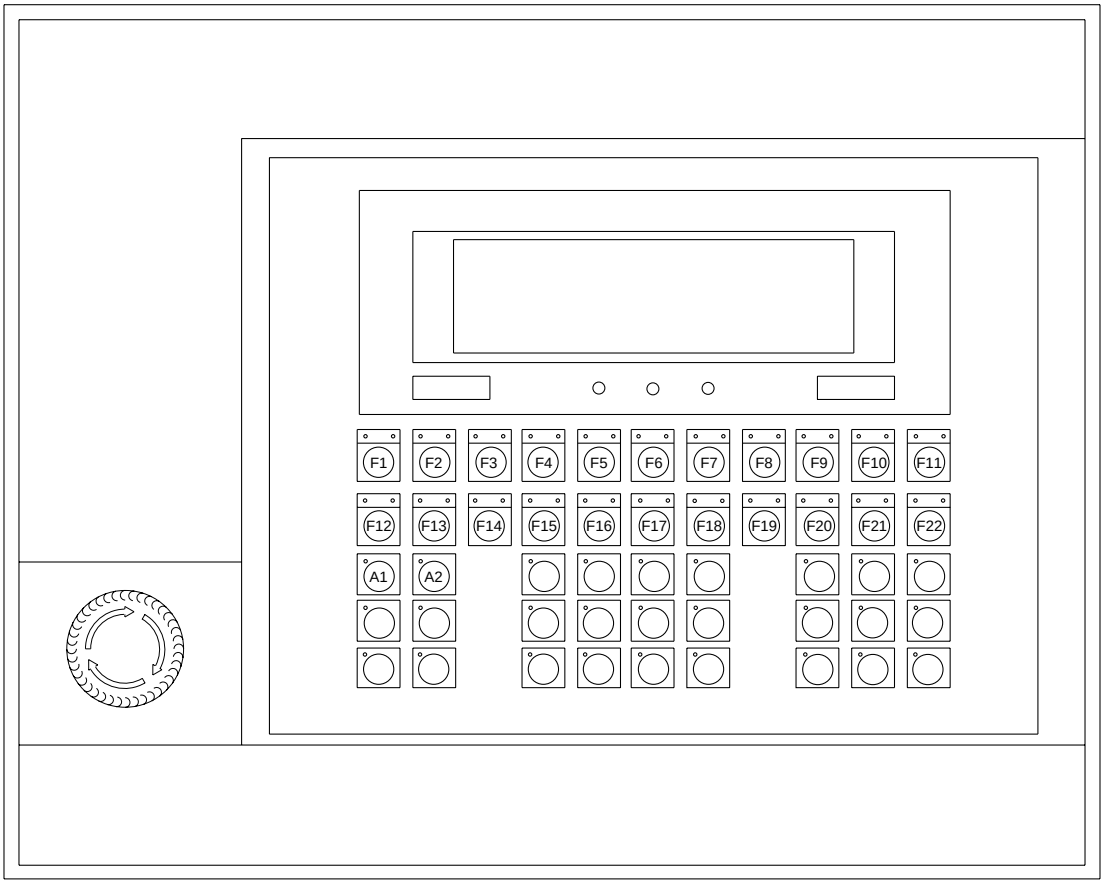
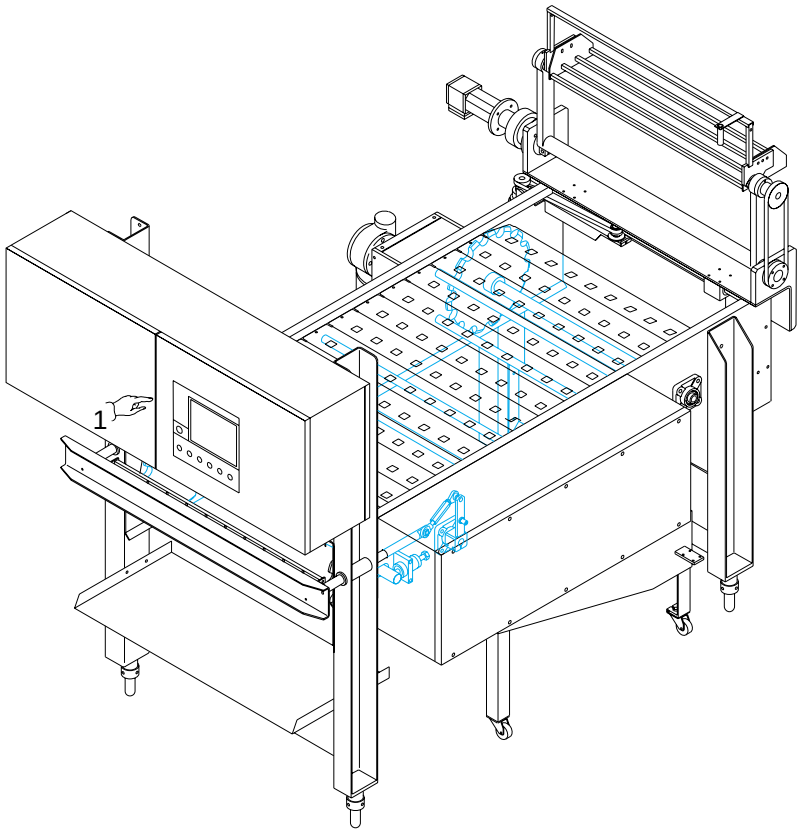


Fig. 6.2

6.2.2 Emergency stop

In the event of malfunctioning of any component, press the emergency stop button *(Pos. 1, Fig. 6.3)* to deactivate all of the machine's electrical functions. To resume operation of the machine when the cause of the problem has been eliminated, turn the emergency push button *(Pos. 1, Fig. 6.3)* anticlockwise and release it and press reset F11 *(Fig. 6.2)* on the interface panel.



6.2.3 End of production

To stop the machine when operating automatically, proceed as follows:

- Press the end of production button F4 *(Fig. 6.2)*. All memorised operating stations will automatically stop in order.

To stop the machine when operating manually:

- Deactivate the stations by pushing the individual buttons on the operator interface panel.

The procedures for cleaning and washing are described in **CHAPTER 7 – CLEANING AND MAINTENANCE.**

HOYER DINO C

7 - CLEANING AND MAINTENANCE

Contents

7.1 Cleaning and washing

The procedure for washing the pick-up machine is as follows:

a- Prewashing with hot water (50°C).

b- Washing with detergent. Use a foam-producing alkaline detergent or a gel with good oil-emulsifying properties. Use in concentrations from 2% to 10%, according to the quantity of dirt present and the hardness of the water used.

c- Rinse with water. Wait 10 minutes and then rinse thoroughly to remove the emulsified dirt.

d- Removal of deposits. Use an acidic deposit remover with low viscosity containing a blend of wedding agents and emulsifiers. Use in concentrations from 2% to 3%. The recommended minimum contact time is 15 – 20 minutes.

e- Rinse with water.

f- Washing with disinfectant. Use a suitable disinfectant diluted in water. Use in concentrations from 1% to 1.2%. The recommended minimum contact time is 15 – 20 minutes.

g- Rinse with water.

Warning:

Do not use high-pressure water jets.

7.1.1 Recommended products:

Detergent	Deposit remover	Disinfectant
SU928 (Diversey Lever)	P3-topax 52 (50/60°) (Henkel Ecolab)	P3-topax 99 (60°) (Henkel Ecolab)
SU616 (Diversey Lever)		
P3-topax 17 (60°) (Henkel Ecolab)		

7.2 Routine maintenance

7.2.1 Beginning of the season

- Wash the pick-up machine and chocolate vat thoroughly; refer to point **7.1 – CLEANING AND WASHING;**
- Check the water level in the space surrounding the tank;
- Check the condition of the seals, and replace them if necessary;
- Lubricate seals;
  material required:
  Vaseline oil
- Check that the emergency stop button is functioning properly;
- Conduct an overall inspection and tighten any screws which may have come loose;
- Check that there is no leakage at any of the connections;
- Check that all moving parts are working efficiently, and replace them if necessary.

7.2.2 Every day

- Wash the pick-up machine and the chocolate tank thoroughly at the end of production; refer to point **7.1 – CLEANING AND WASHING, points a, b, c, d, and e;**
- Lubricate seals;
  material required:
  Vaseline oil

7.2.3 Every week

- Wash the pick-up machine and the chocolate tank thoroughly at the end of production; refer to point **7.1 – CLEANING AND WASHING, points a, b, c, d, and e;**
- Check the water level in the space surrounding the tank.
- Lubricate seals, then, when the various components are dry, lubricate them with neutral Vaseline before reassembling them.
  material required:
  Vaseline oil

7.2.4 At the end of the season

- Wash and dry all components, lubricating them (especially seals) with Vaseline oil before reassembling them.

  material required:
  Vaseline oil

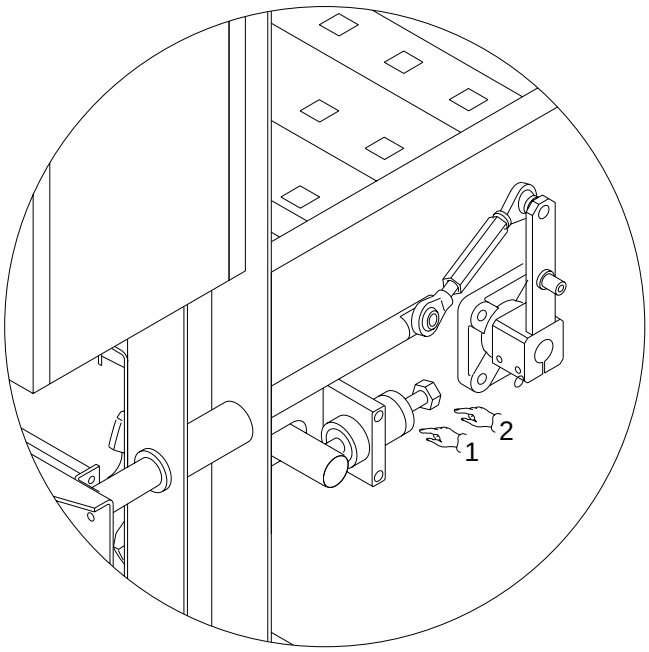
7.3 Tightening roller drive chain

Periodically check the tension of the roller drive chain; proceed as follows:

1- Unscrew the lock nut *(Pos. 1, Fig. 7.1)* and adjust the tension screw *(Pos. 2, Fig. 7.1)* to obtain the correct tension for operation;

2- Tighten the lock nut *(Pos. 1, Fig. 7.1)*.

Fig.7.1



HOYER DINO C

9 - SPARE PARTS

Contents

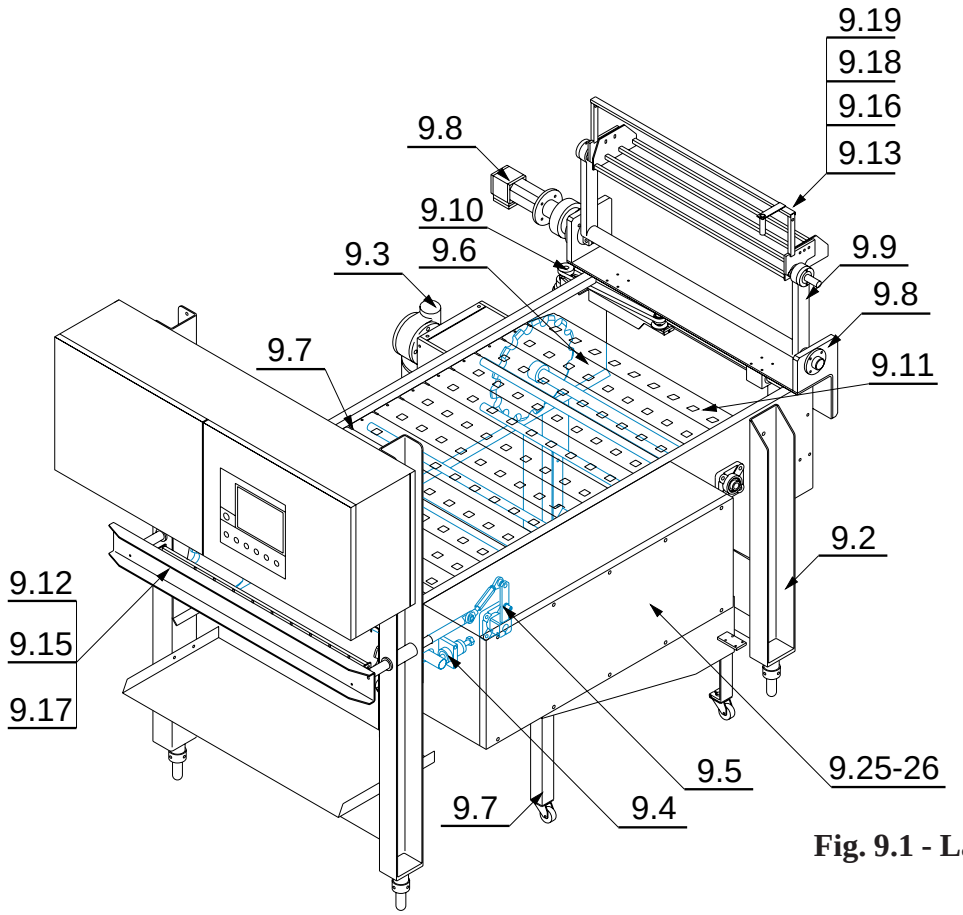


Fig. 9.1 - Lay-out

Structure - Fig. 9.2

POS.	CODE	DESCRIPTION	QTY
1	12060201	Right shoulder	1
2	12060202	Left shoulder	1
3	12060833	Oil pan on motor side	1
4	12060203	Rear support	2
5	12060204	Front support	2
6	12060205	Connection cross-piece	2
7	12060624	Adjustable ring nut	4
8	12000002	Foot	4
9	12060240	Spacer shaft	6
10	12060242	Intermitt. support	1
11	12060685	Chain guide spacer	12
12	12060678	Upper chain guide	2
13	12060241	Lower chain guide	2
14	12061145	Cross-piece for handler support	1
15	12060834	Oil pan on pneumatic side	1
16	12060918	Slide	1

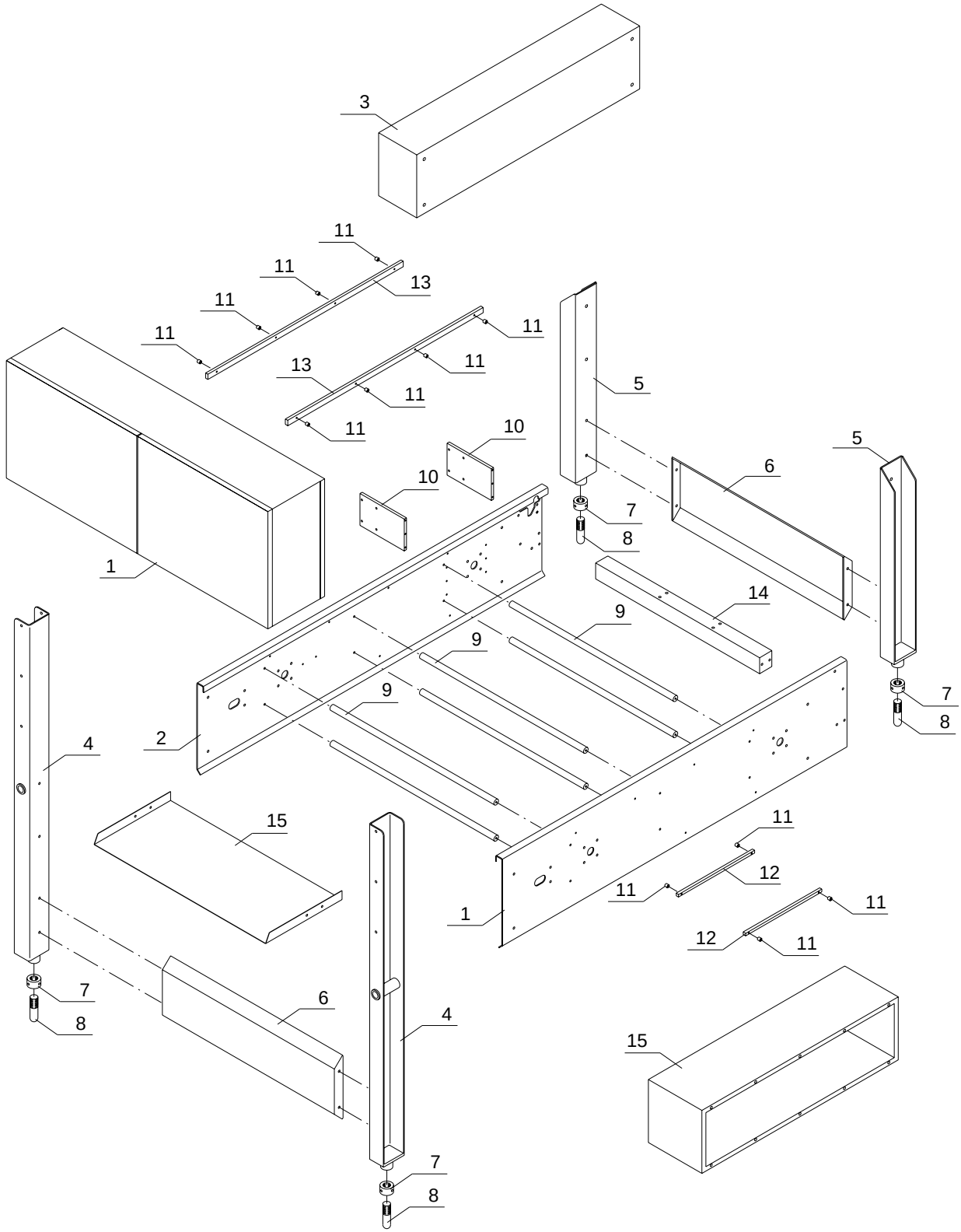


Fig. 9.2 - Structure

Motor drive - Fig. 9.3

POS.	CODE	DESCRIPTION	QTY
1	1700264	Motor	1
2	1700263	Reducer	1
3	336014190	Intermitter	1
4	120060242	Support	1
5	12060687	Connection	1
6	12060679	Connection	1
7	17000070	Support	2
8	120040051	Shoulder washer	1
9	12060209	Motor wheel	1
10		8 x 32 key	1
11		12 x 32 key	2
12	12060210	Shaft	1

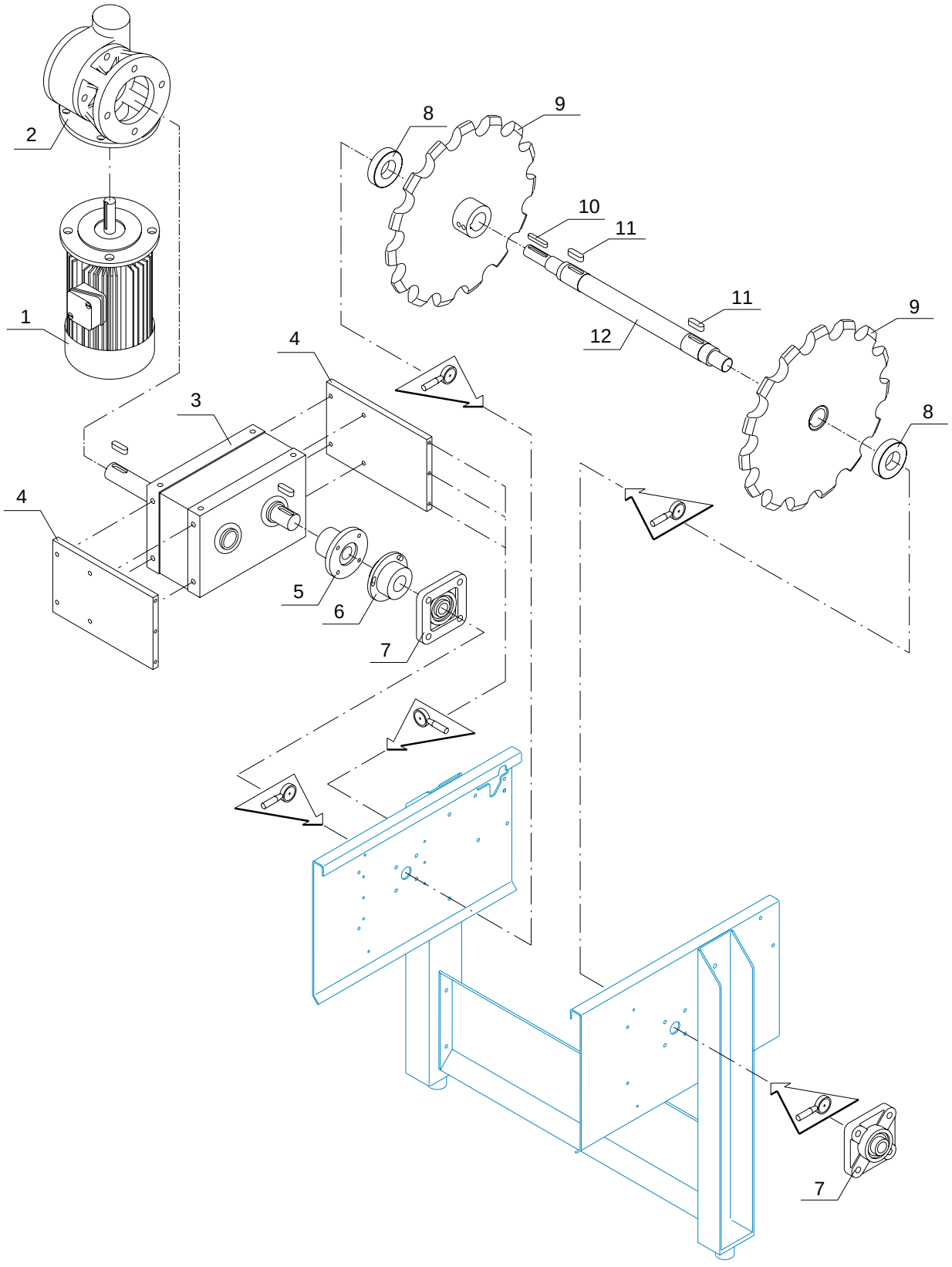


Fig. 9.3 - Motor drive

Tightening pulley - Fig. 9.4

POS.	CODE	DESCRIPTION	QTY
1	12040058	Tightener base	2
2	12040057	Spring cap	2
3	12040056	Tightener spring	2
4	12040059	Tightener piston	2
5	12040042	Support	2
6	12040053	Tightener body	2
7	12060210	Driven shaft	1
8	12040051	Shoulder washer	2
9	12060206	Driven wheel	2
10	13060013	Chain	2

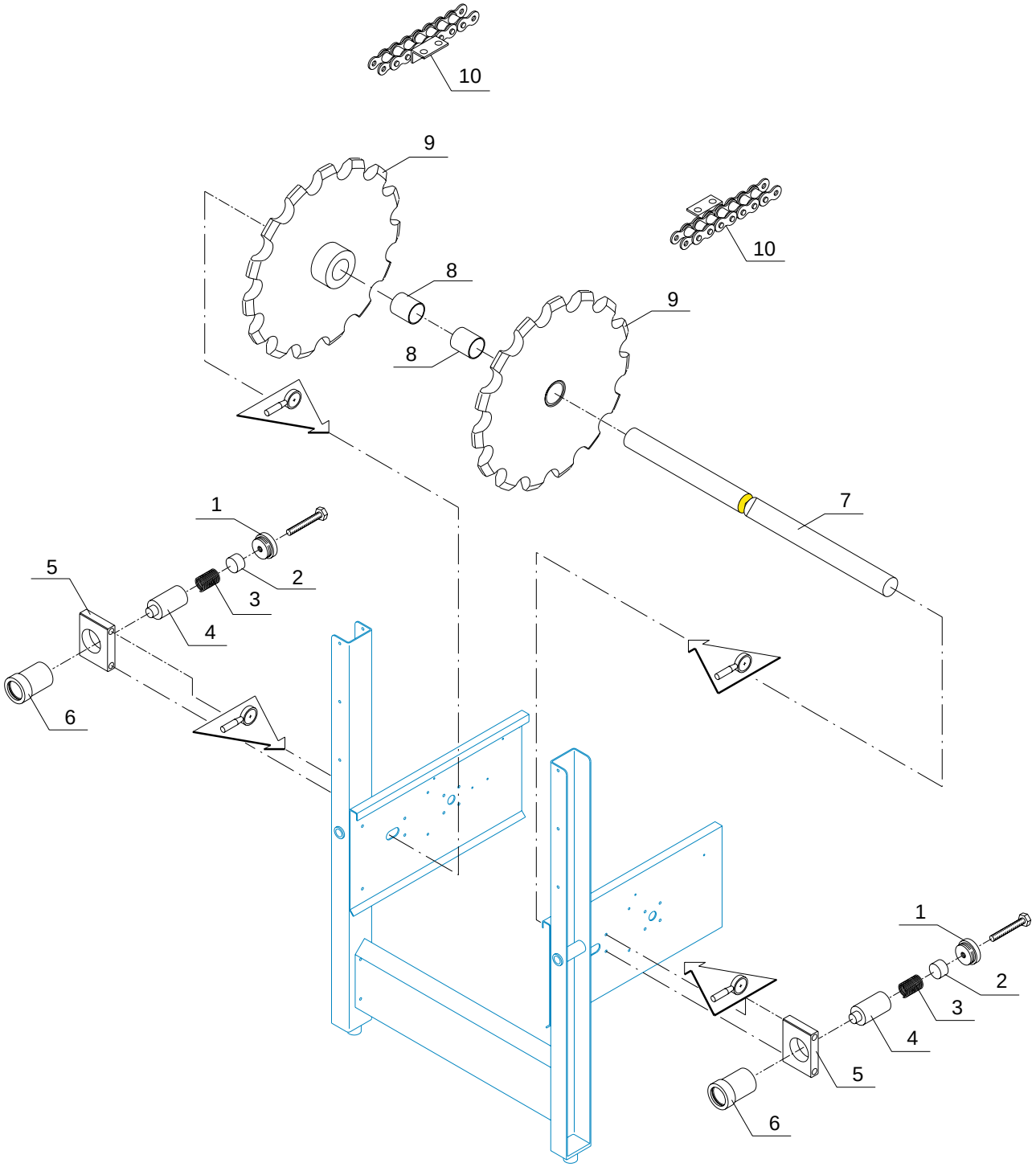


Fig. 9.4 - Tightening pulley

Extraction - Fig. 9.5

POS.	CODE	DESCRIPTION	QTY
1	17000067	Cylinder	1
2	12060213	Support	1
3	12060214	Support	2
4	12060215	Articulated joint for cylinder	1
5	336005051	Bushing	2
6	17000064	Articulated joint	1
7	12060212	Lever	2
8	17000062	Articulated joint	2
9	17000063	Articulated joint	2
10	12060217	Hexagonal bar	2
11	12060214	Support	2
12	12060211	Extraction shafts	1
13	12060216	Shaft	2
14	17000069	Bushing	4
15	12060217	Extraction support	1

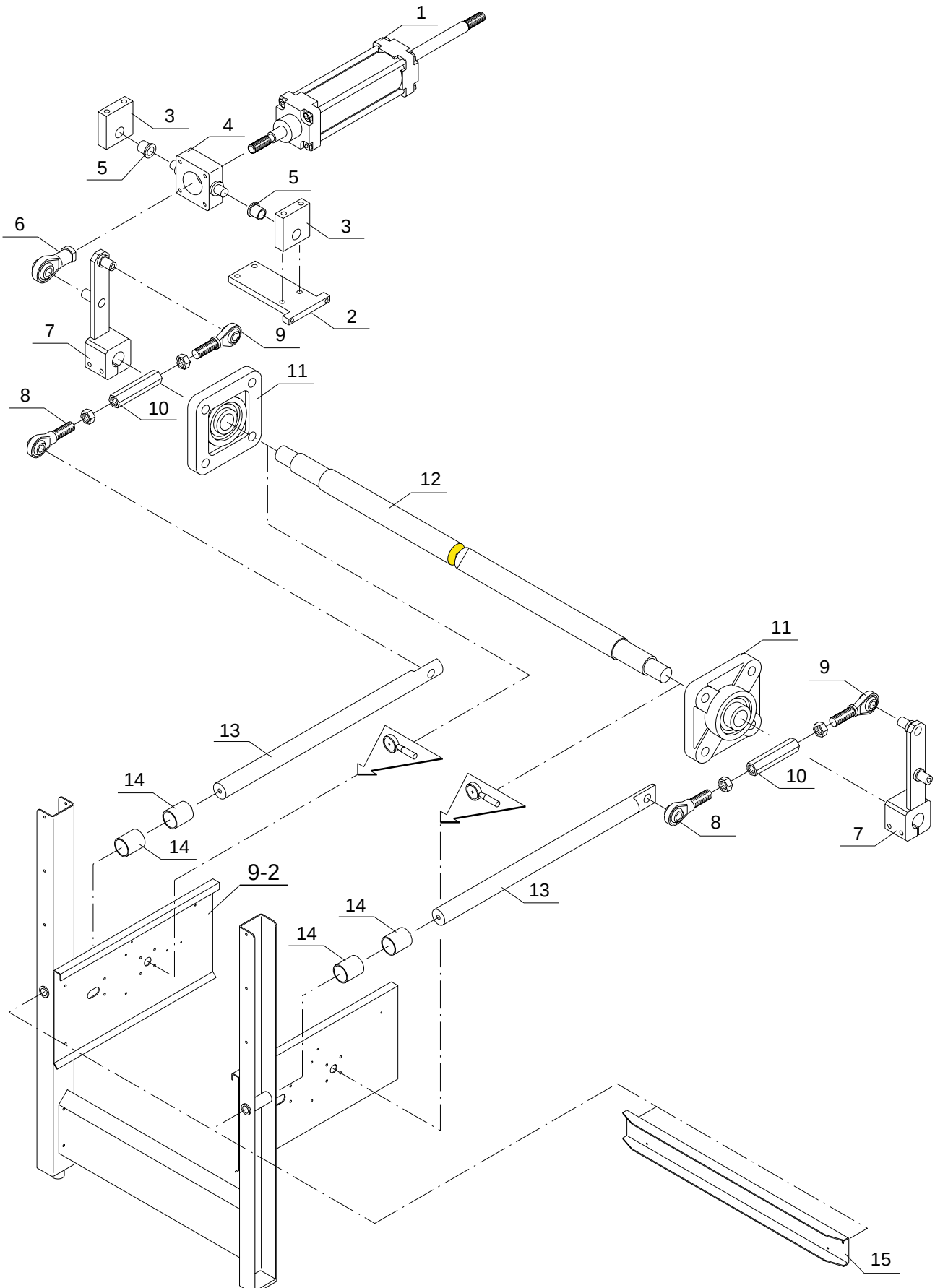


Fig. 9.5 - Extraction

Opening of load grippers - Fig. 9.6

POS.	CODE	DESCRIPTION	QTY
1	17000008	Cylinder	2
2	12061144	Gripper opening terminal	2
3	12061043	Cylinder block	2
4	12061104	Expulsion rod	1

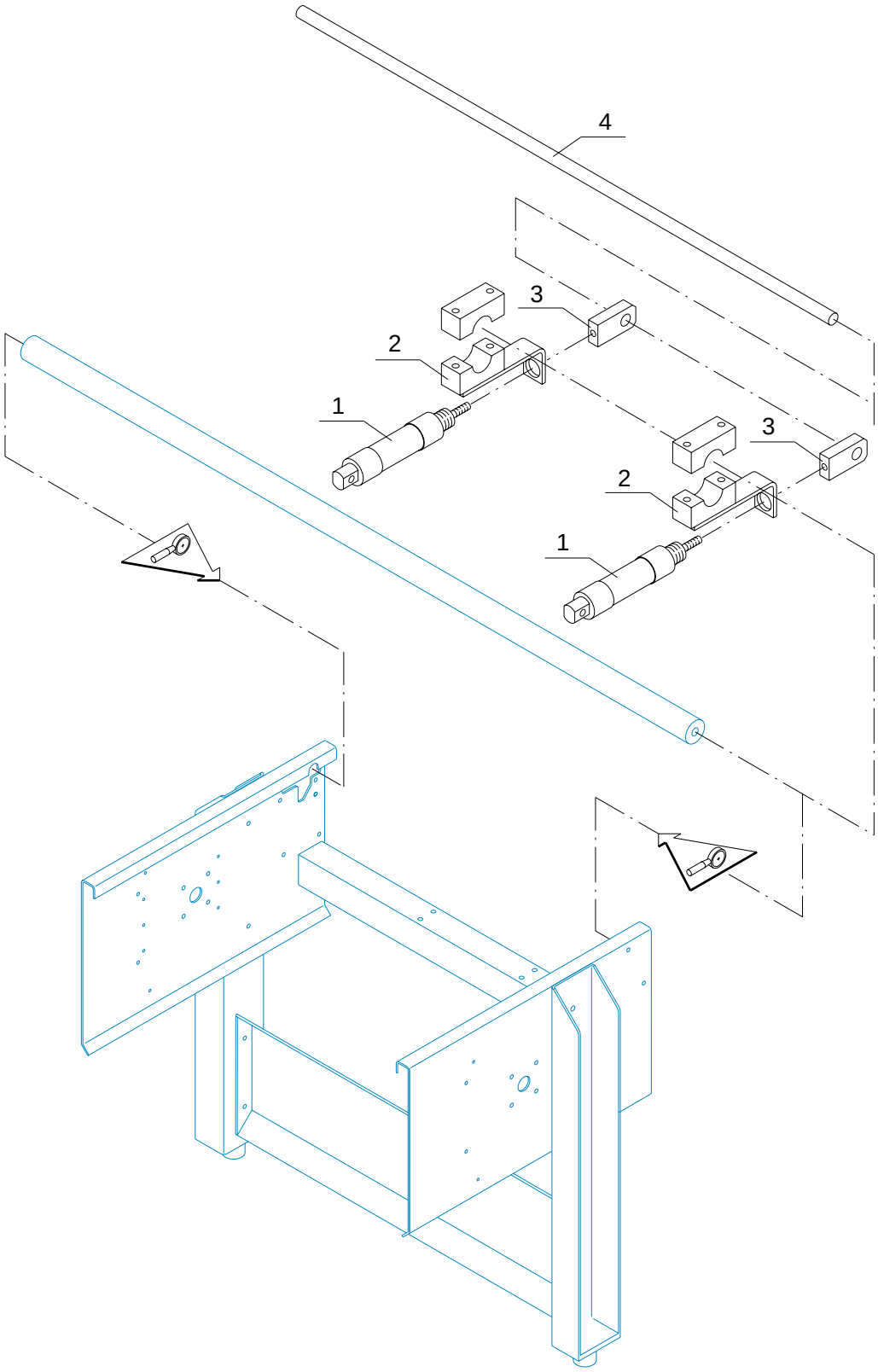


Fig. 9.6 - Opening of load grippers

Opening of release grippers - Fig. 9.7

POS.	CODE	DESCRIPTION	QTY
1	17000008	Cylinder	4
2	12061142	Extraction terminal	4
3	12061043	Cylinder block	4
4	12061104	Expulsion rod	1

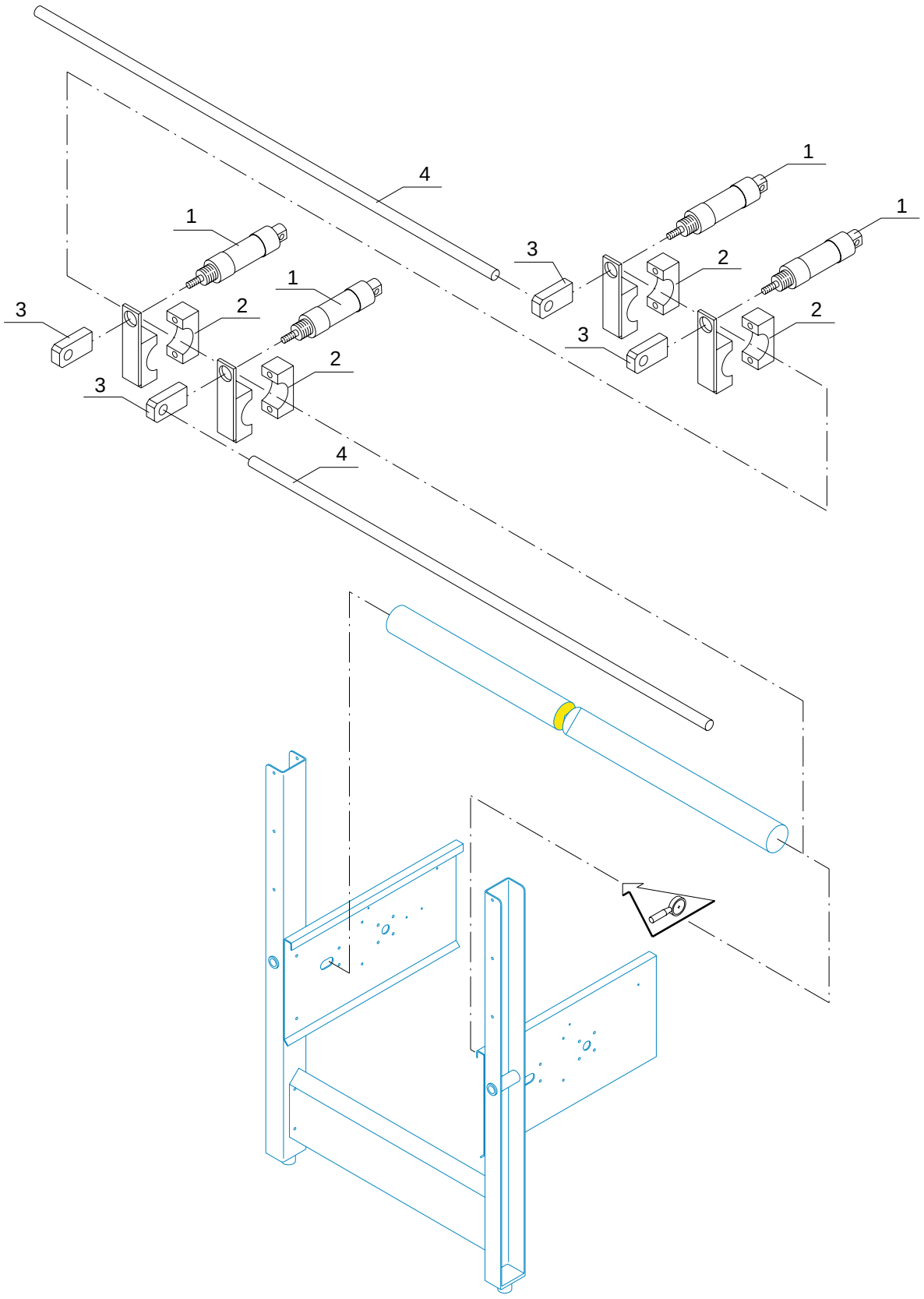


Fig. 9.7 - Opening of release grippers

Translation - Fig. 9.8

POS.	CODE	DESCRIPTION	QTY
1	12060244	Translation support	1
2	12060502	Guiding shaft	2
3	12060503	Drive block	4
4	12061146	Guiding shaft support	2
5	12060612	Pulley support	1
6	12060853	Serrated pulley	1
7	17000051	Reducer	1
8	17060007	Servomotor	1
9		Seeger ring	8
10	336071220	Corteco	8
11	17000368	Ball bushing	4
12	17000387	At10-25 belt	1

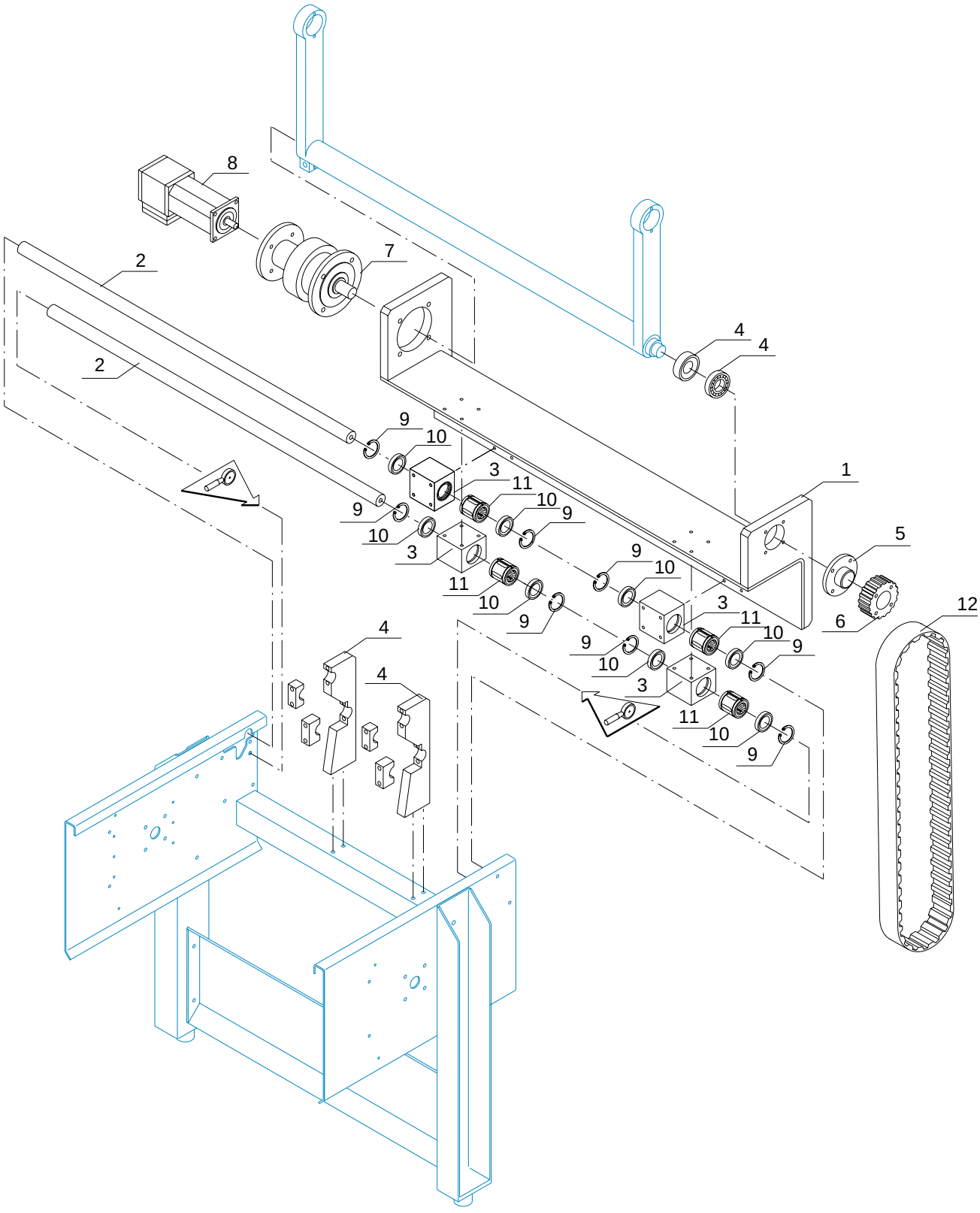


Fig. 9.8 - Translation

Translation - Fig. 9.9

POS.	CODE	DESCRIPTION	QTY
1	12060246	Translation support	1
2	326019162	Seeger 162	6
3		Bearing	4
4	12060248	Bearing support bushing	2
5	12060852	Serrated pulley	1

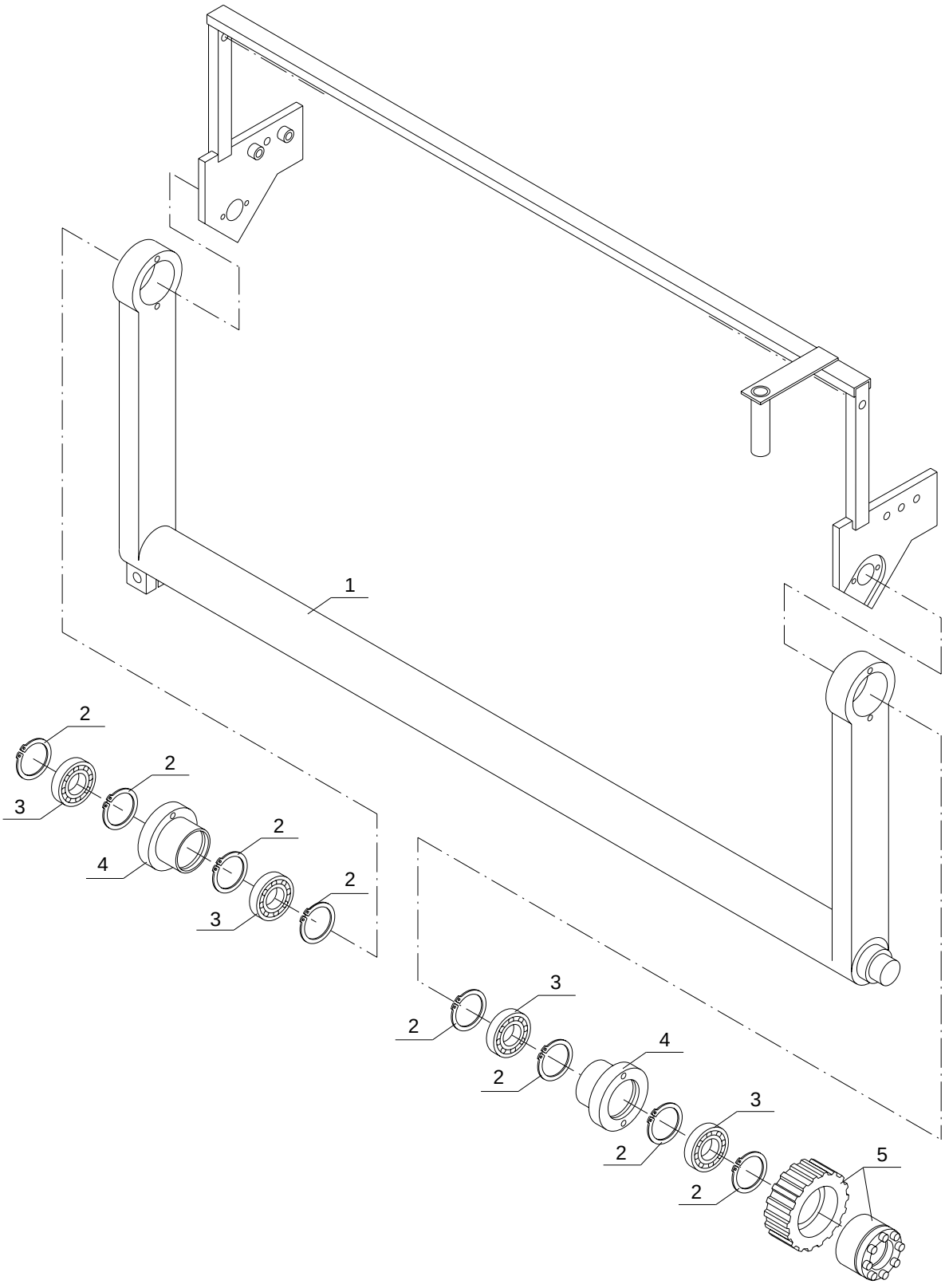


Fig. 9.9 - Translation

Translation - Fig. 9.10

POS.	CODE	DESCRIPTION	QTY
1	17060006	Servomotor	1
2	17060050	Reducer	1
3	17060361	Serrated pulley	1
4	17060359	Belt	1
5	17060243	Servomotor support	1
6	17060296	Fifth wheel	1
7	17060293	Base	1
8	17060297	Pin	1
9	17060304	Ball bearing	2
10	17060878	Pulley	1
11	17060294	Lock washer	1

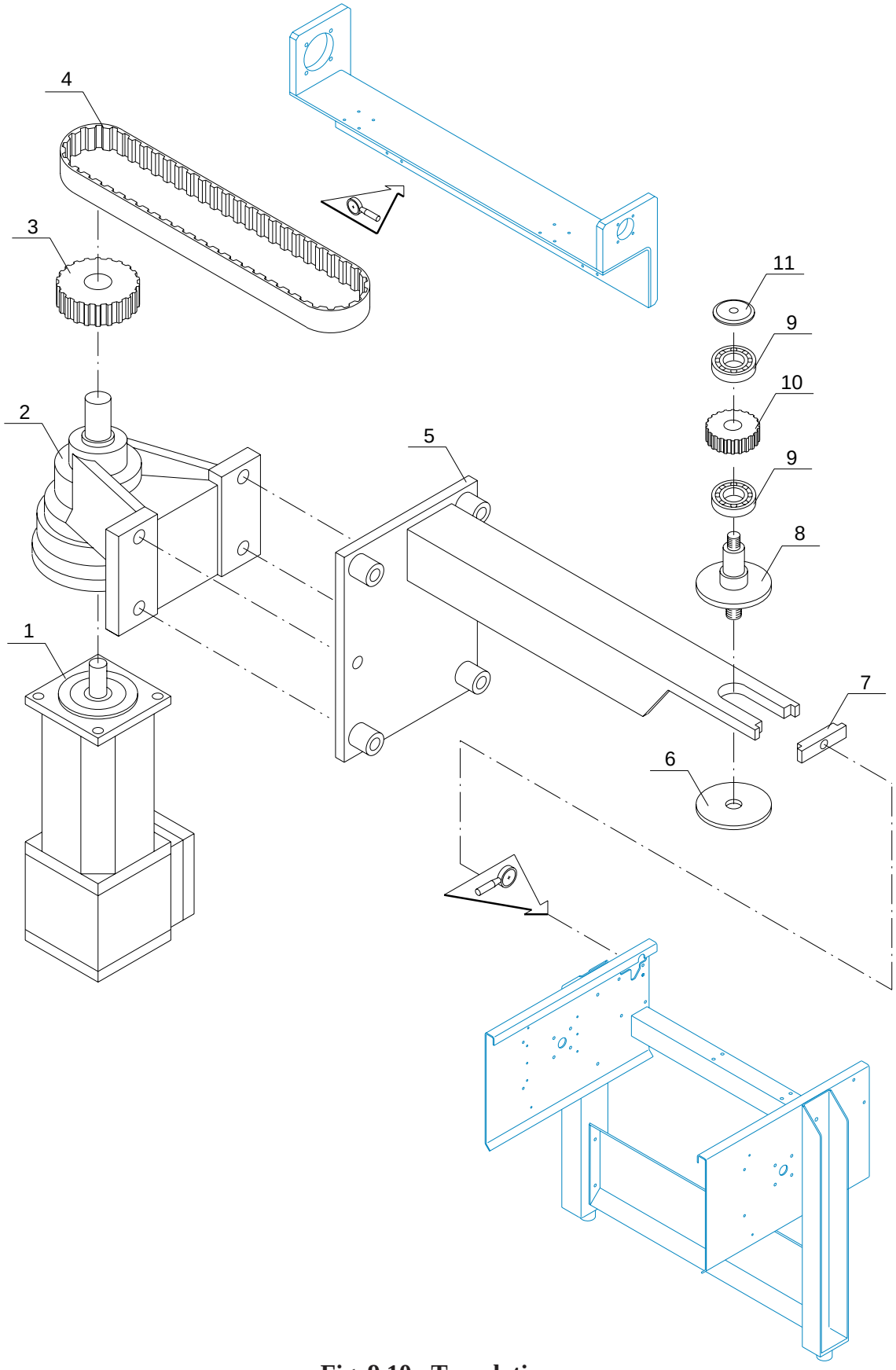


Fig. 9.10 - Translation

Stick roller - Fig. 9.11

POS.	CODE	DESCRIPTION	QTY
1	12060164	Roller for sticks	1
2	12060166	Spring	9
3	12060165	Stick roller pin	9

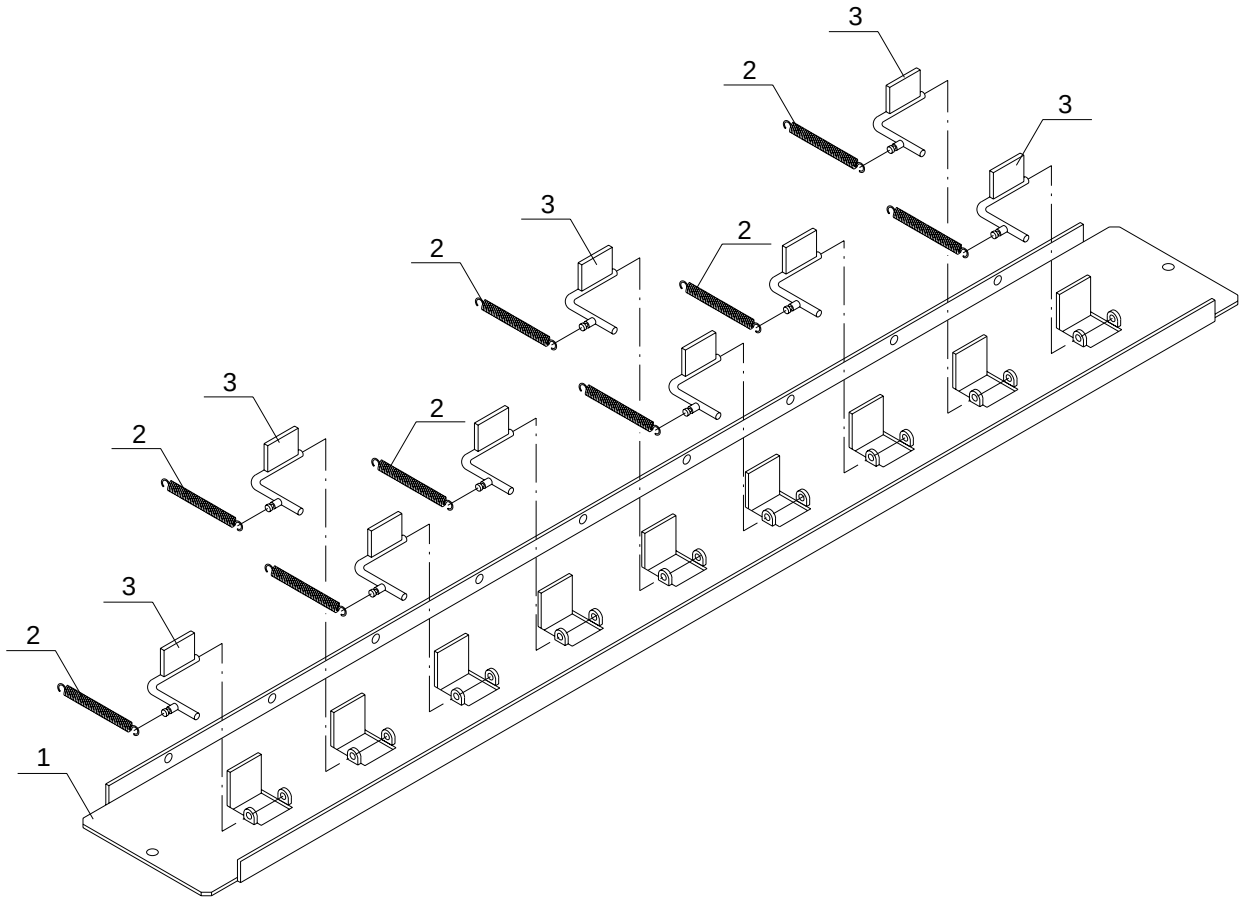


Fig. 9.11 - Stick roller

Stick release - Fig. 9.12

POS.	CODE	DESCRIPTION	QTY
1	12060239	Double finger	1
2	12060238	Single finger	1
3		Plug	4
4	E16826805	Serrated ring nut	2
5	C16826508	Piston	1
6		O-ring	1
7		Seal	1
8	E16826507	Seal	1
9		Seal	1
10	E16826168	Seal	1
11	326019125	Seeger 25I	1
12	12060231	Gripper body	1

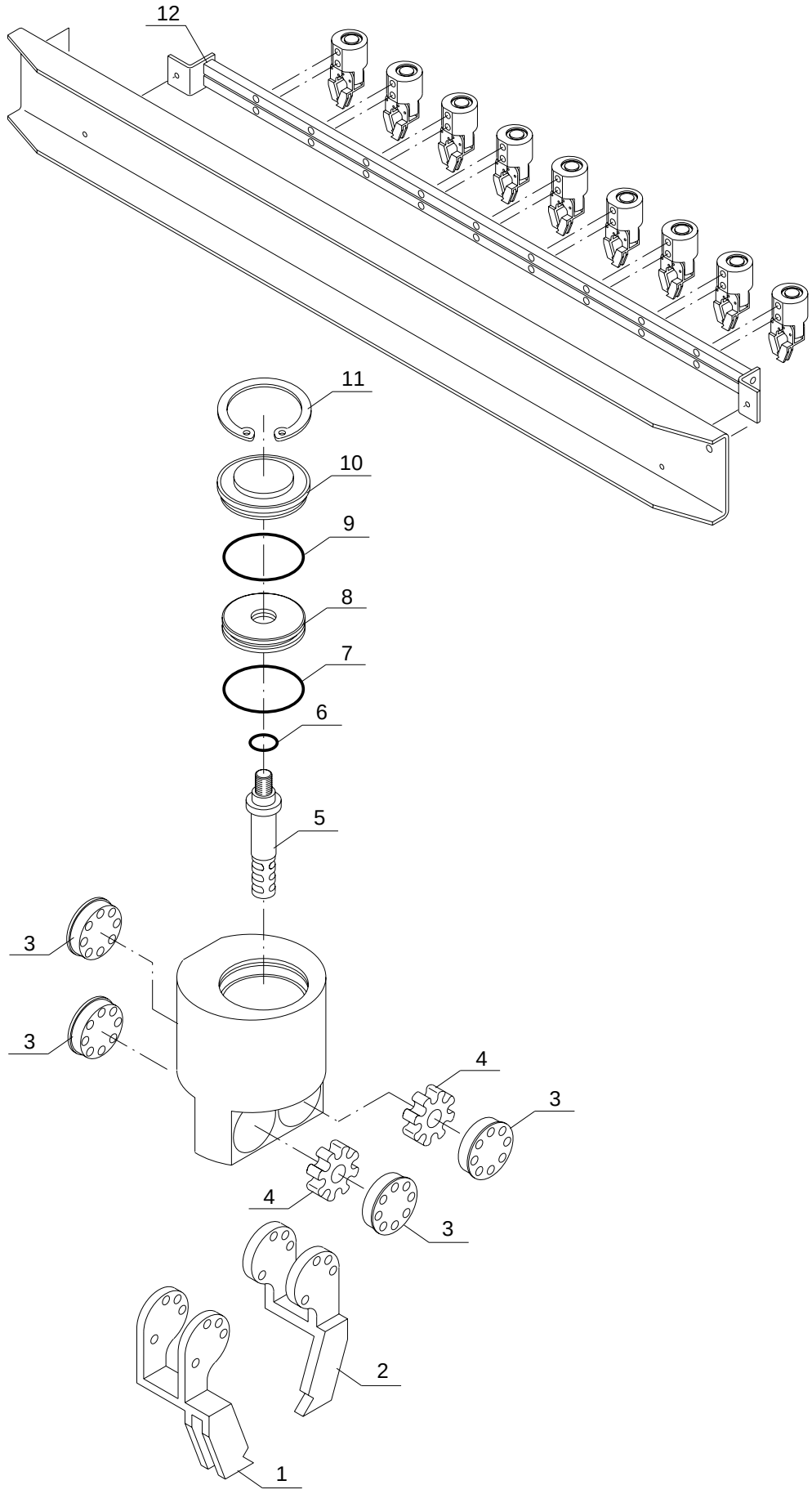


Fig. 9.12 - Stick release

Stick pick-up - Fig. 9.13

POS.	CODE	DESCRIPTION	QY
1	12060245	Support for rotation	1
2	12060249	Pin on motor side	1
3	12060252	Pulley pin	1
4	12060247	Gripper support	1
5	12060501	Pin for articulated joint of cylinder	2
6	17000008	Cylinder	2
7	333001644	Articulated joint	2

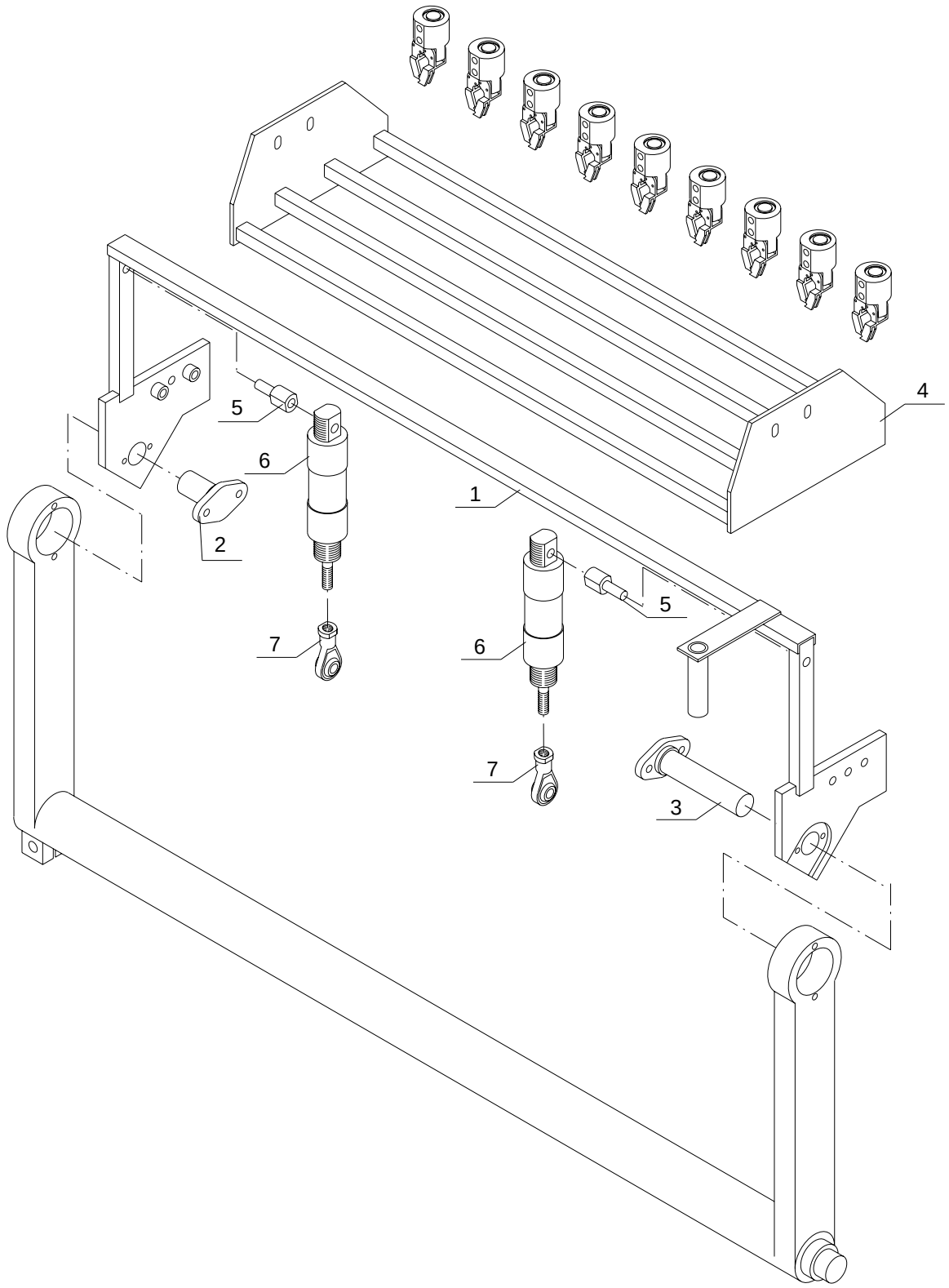


Fig. 9.13 - Stick pick-up

Candy bar pick-up - Fig. 9.14

POS.	CODE	DESCRIPTION	QTY
1	E16827583	Finger on candy bar gripper	2
2	E16827582	Finger on candy bar gripper	2
3	E16826803		4
4	E16827804		4
5	A16827426		1
6	E16826805		2
7	E16826806		2
8	C16826508		1
9		O-ring	1
10		Seal	1
11	E16826507	Seal	1
12		Seal	1
13	E16826168	Seal	1
14	326019125	Seeger 25I	1
15	12060688	Candy bar gripper support	1
16	13060151	Gripper	12

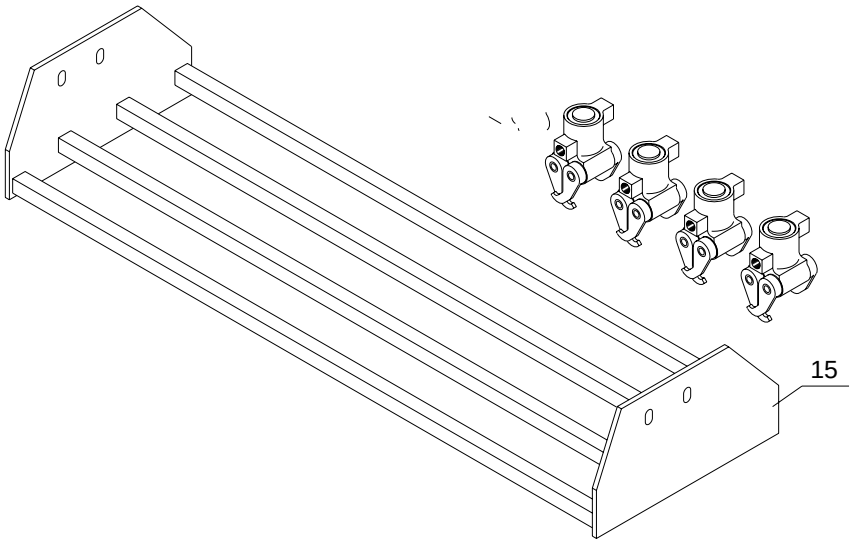


Fig. 9.14 - Candy bar pick-up

Cone release - Fig. 9.15

POS.	CODE	DESCRIPTION	QTY
1	17000007	Cylinder	9
2	541120391	Plate	9
3	541120390	Retainer	18
4	12060803	Gripper body	9
5	541400253	Fulcrum axis	18
6	12060824	Control piston	9
7	541411254	Lever	18
8	12061001	Left finger	9
9	12061001	Right finger	9
10	12061000	Support	1
11	12060814	Plate	1
12	13060048	Gripper	9

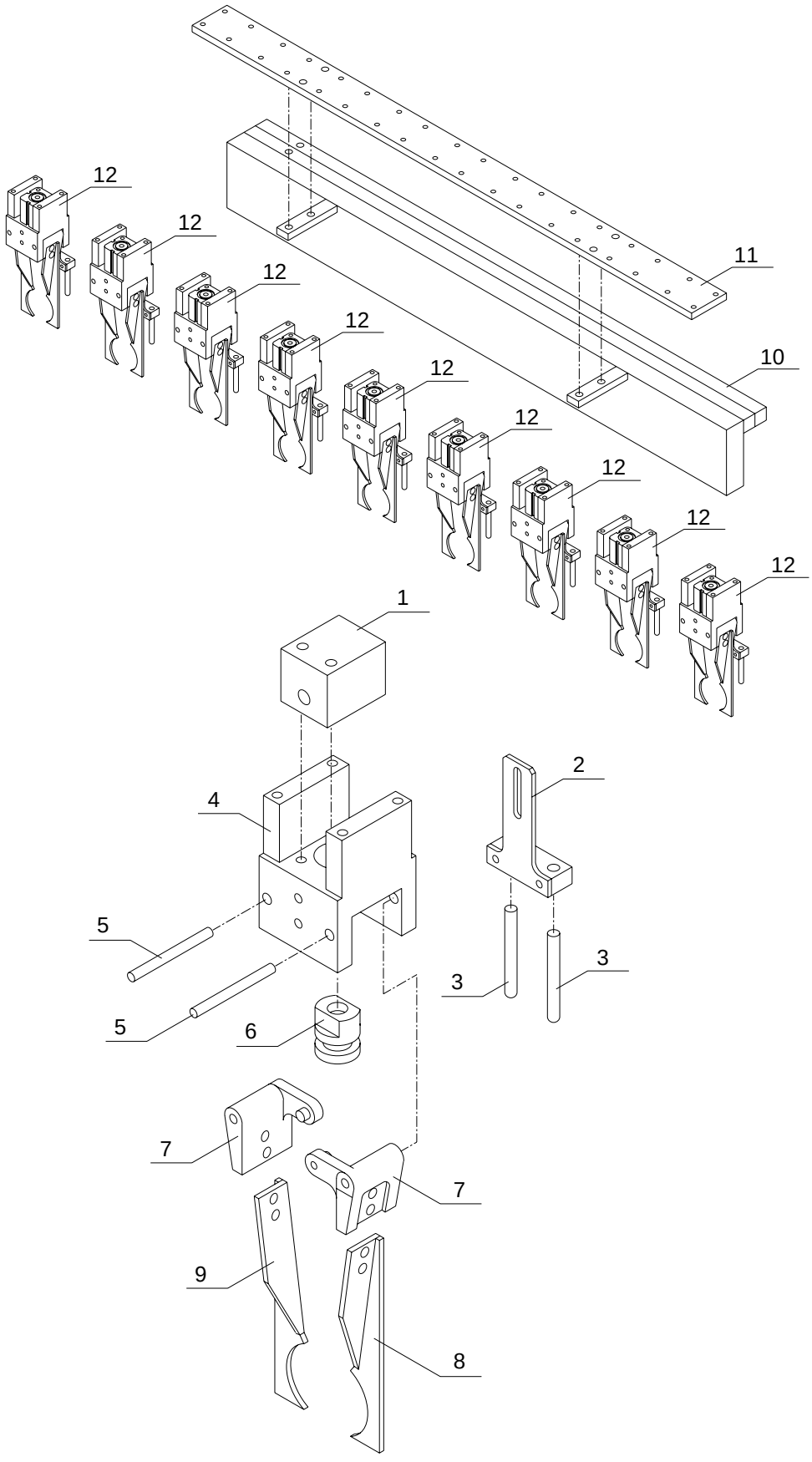


Fig. 9.15 - Cone release

Cone pick-up - Fig. 9.16

POS.	CODE	DESCRIPTION	QTY
1	12060801	Gripper holding plate	1
2	17000007	Cylinder	9
3	541120113	Gripper body	9
4	541120117	Fixed pin	18
5	12060824	Control piston	9
6	12060823	Spacer	9
7	12060841	Spacer	9
8	12060822	Jaw	18
9	54400260	Pin	18

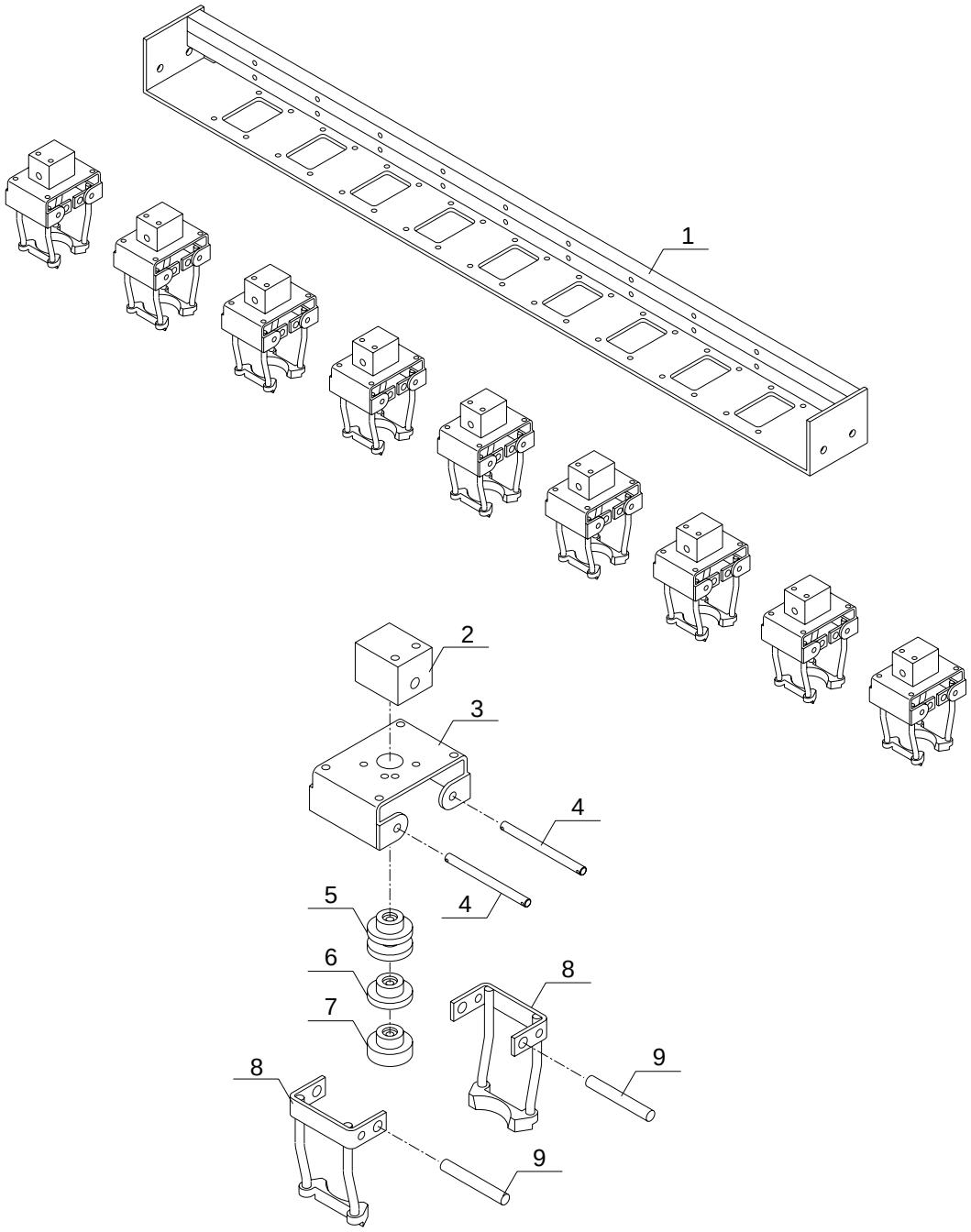


Fig. 9.16 - Cone pick-up

Wafer cup release - Fig. 9.17

POS.	CODE	DESCRIPTION	QTY
1	17000007	Cylinder	9
2	541120391	Plate	9
3	541120390	Retainer	18
4	12060803	Gripper body	9
5	541120253	Fulcrum axis	18
6	12060824	Control piston	9
7	541120254	Lever	18
8	12061029	Left finger	9
9	12061028	Right finger	9
10	12061000	Support	1
11	12061023	Plate	1

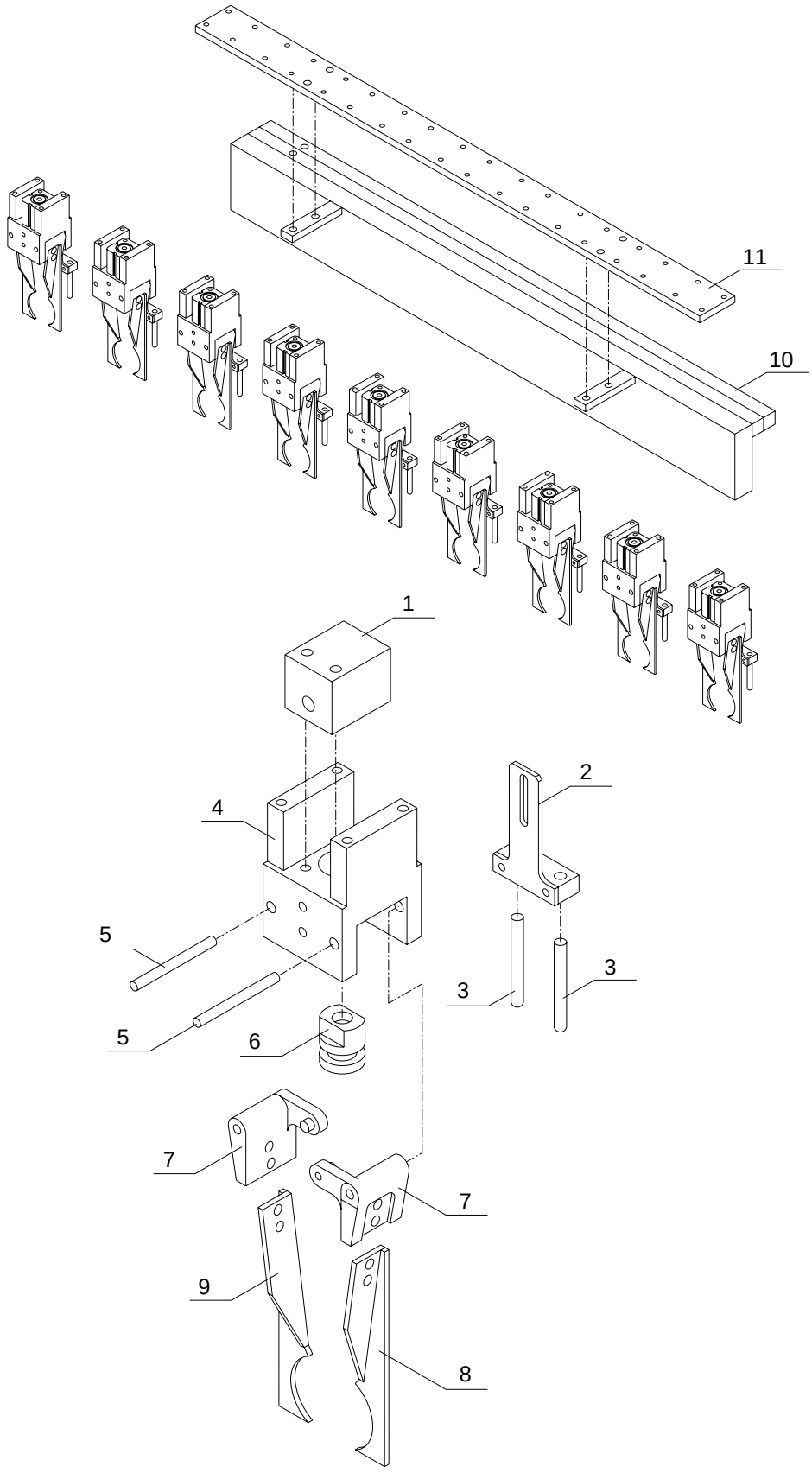


Fig. 9.17 - Wafer cup release

Wafer cup pick-up - Fig. 9.18

POS.	CODE	DESCRIPTION	QTY
1	12060023	Gripper holding plate	1
2	17000007	Cylinder	9
3	541120113	Gripper body	9
4	541120117	Fixed pin	18
5	12060824	Control piston	9
6	12060024	Spacer	9
7	551120011	Jaw	18
8	54400260	Pin	18

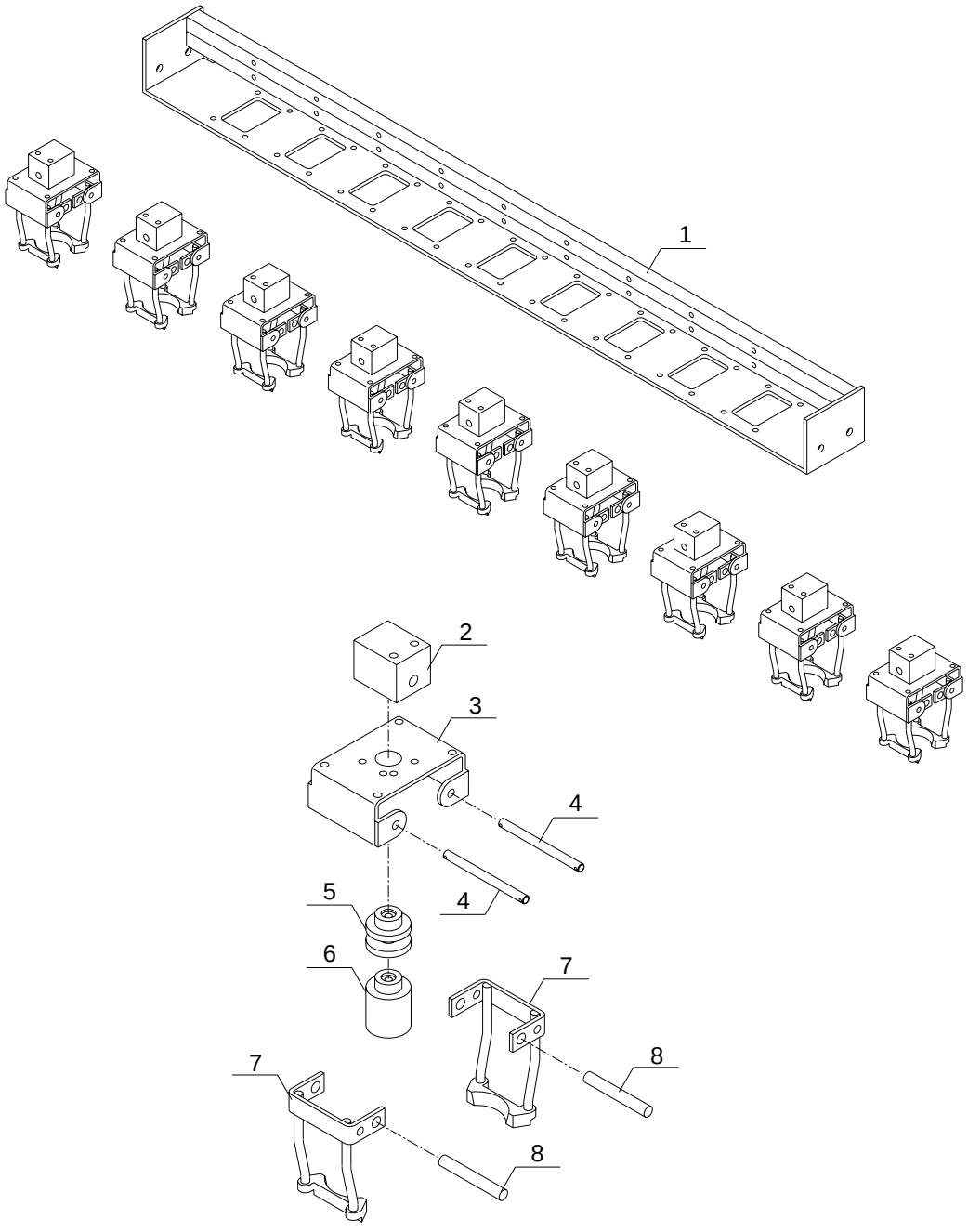


Fig. 9.18 - Wafer cup pick-up

Bricket pick-up - Fig. 9.19

POS.	CODE	DESCRIPTION	QTY
1	12061004	Gripper holding plate	1
2	541400253	Fulcrum axis	18
3	12060803	Gripper body	9
4	12061002	Control piston	9
5	541400257	Stop plate	9
6	17000007	Cylinder	9
7	541400260	Pin	18
8		Finger	18

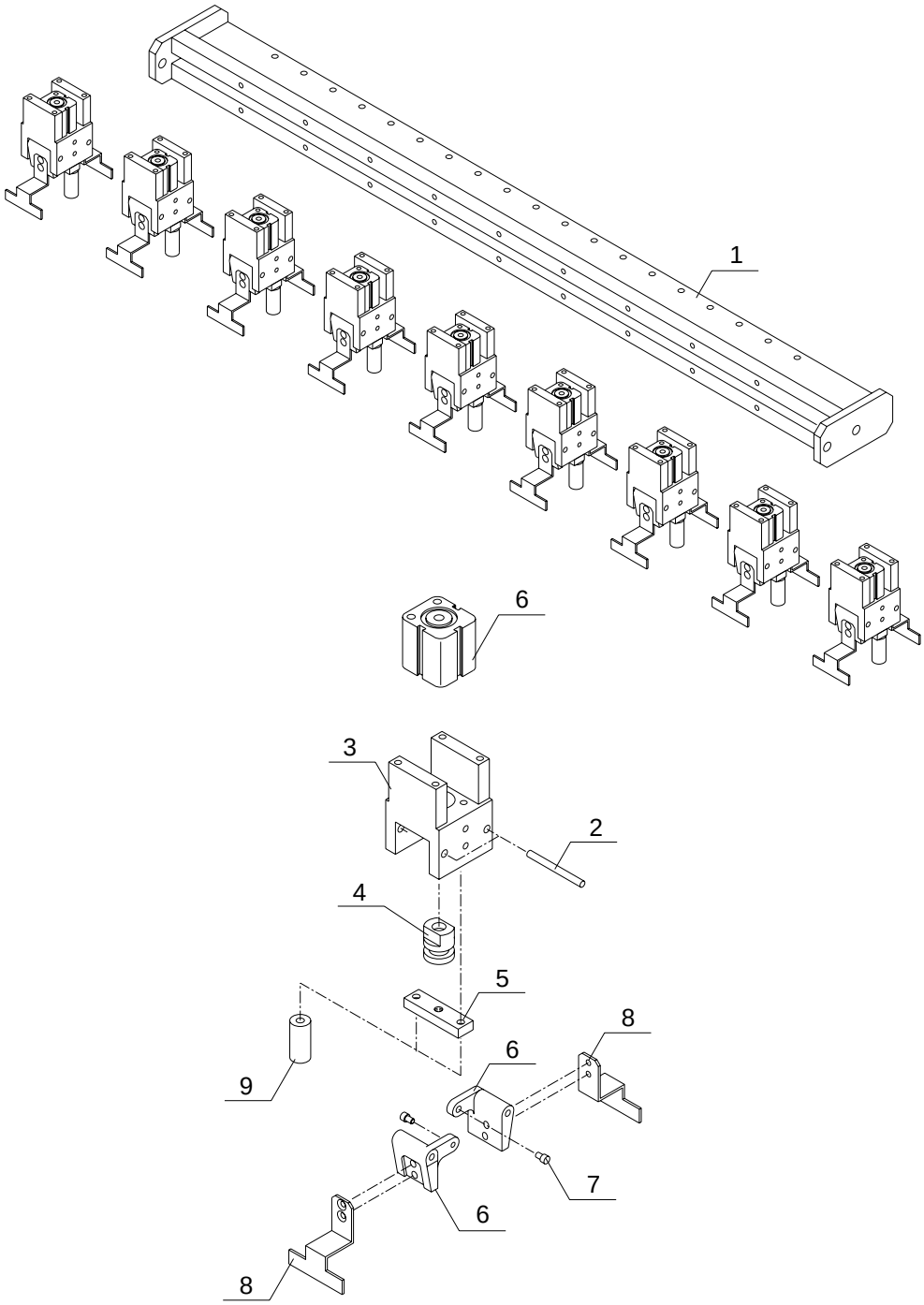


Fig. 9.19 - Bricket pick-up

Juice coating device - Fig. 9.20

POS.	CODE	DESCRIPTION	QTY
1	12061127	Lower frame	1
2	12061122	Lower vat	1
3	12061121	Support for lower tank	2
4	12061126	Supporting frame	2
5	12061116	Left leg	2
6	12061115	Right leg	2
7	17000419	Wheel	4
8	12061070	Frame spacer	2
9	12061119	Rear panel	1
10	12061118	Side panel	1
11	12061120	Front panel	1
12	12061117	Side panel	1

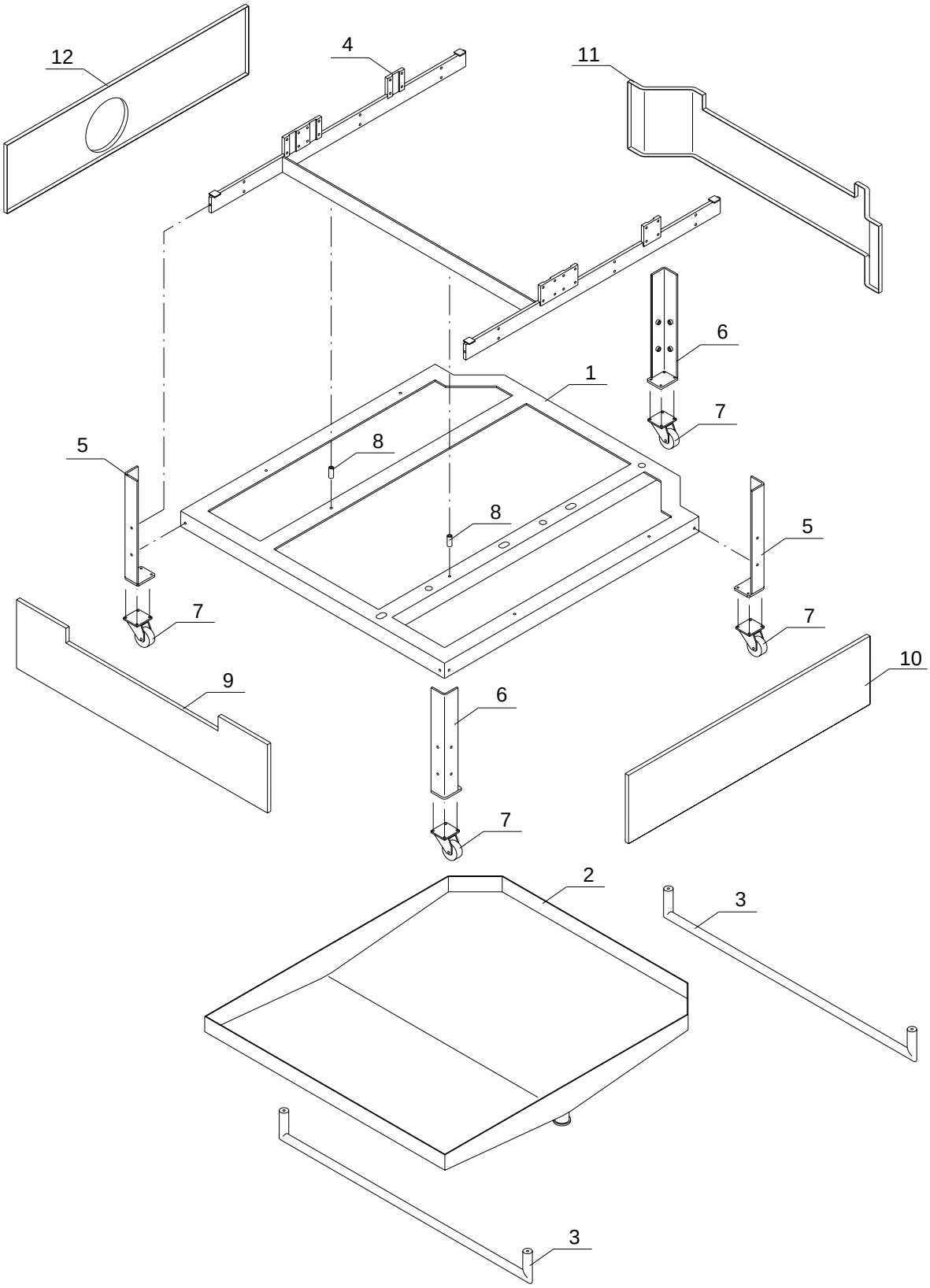


Fig. 9.20 - Juice coating device

Juice coating device - Fig. 9.21

POS.	CODE	DESCRIPTION	QTY
1	12061125	Nitrogen tank at entrance	1
2	12061123	Juice tank	1
3	12061124	Nitrogen tank at exit	1

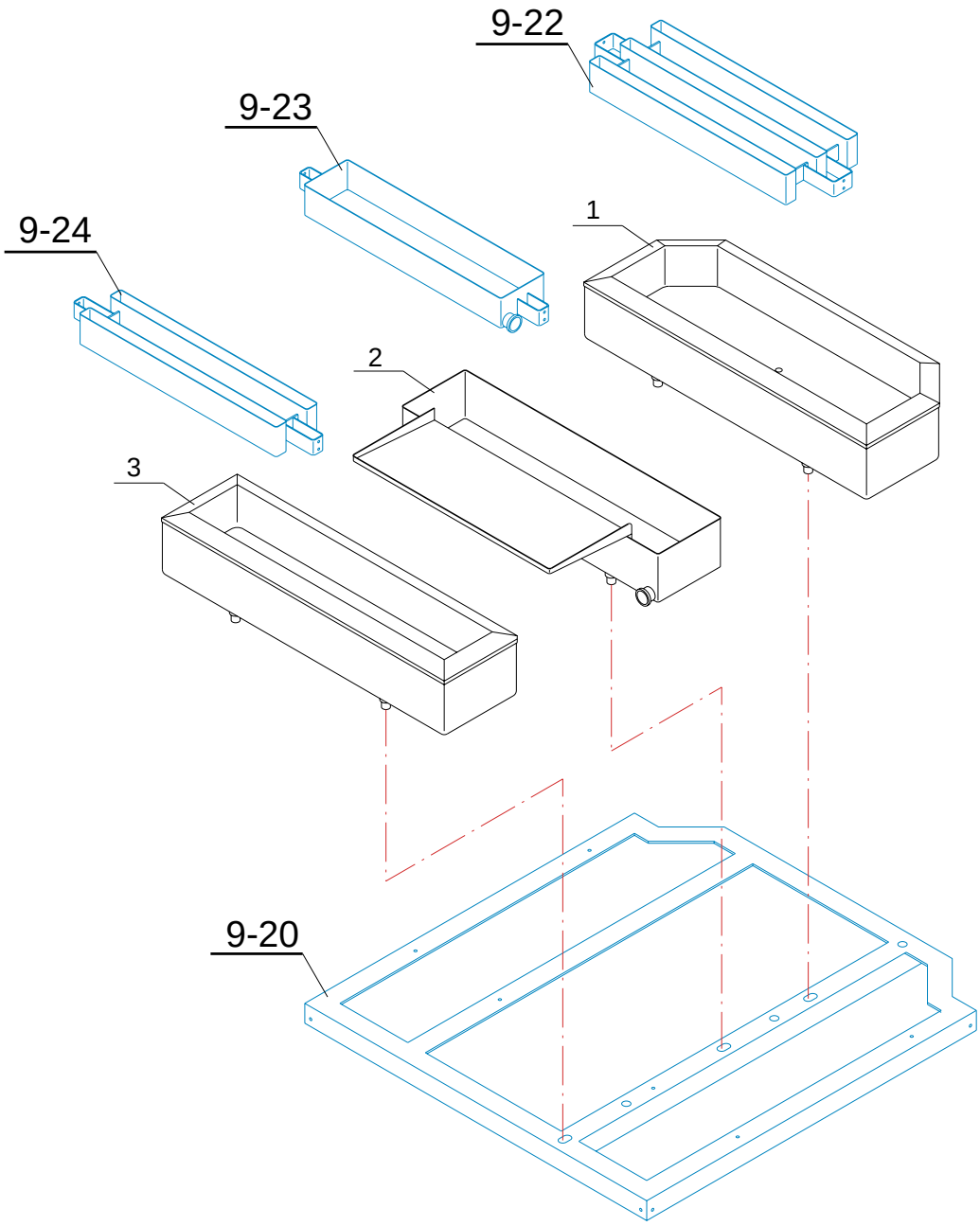


Fig. 9.21 - Juice coating device

Juice coating device - Fig. 9.22

POS.	CODE	DESCRIPTION	QTY
1	12061067	Nitrogen tank at entrance	1
2	12061063	Tank support	2
3	12061065	Upper tank guide	2
4	12061064	Lower tank guide	2
5	12061069	Lever for raising tanks	1
6	17000018	Support	2
7	12061114	Stationary tank guide with cylinder support	1
8	12061113	Stationary tank guide	1
9	12061111	Cylinder support	1
10		Bushing diam. 16/18 x 15	2
11	12061112	Fulcrum pin	1
12	326019016	Seeger ring	2
13	12061110	Cylinder hinge	1
14	17000407	Cylinder	1
15	333001647	Articulated joint	1
16	12061128	Fastening pin	1

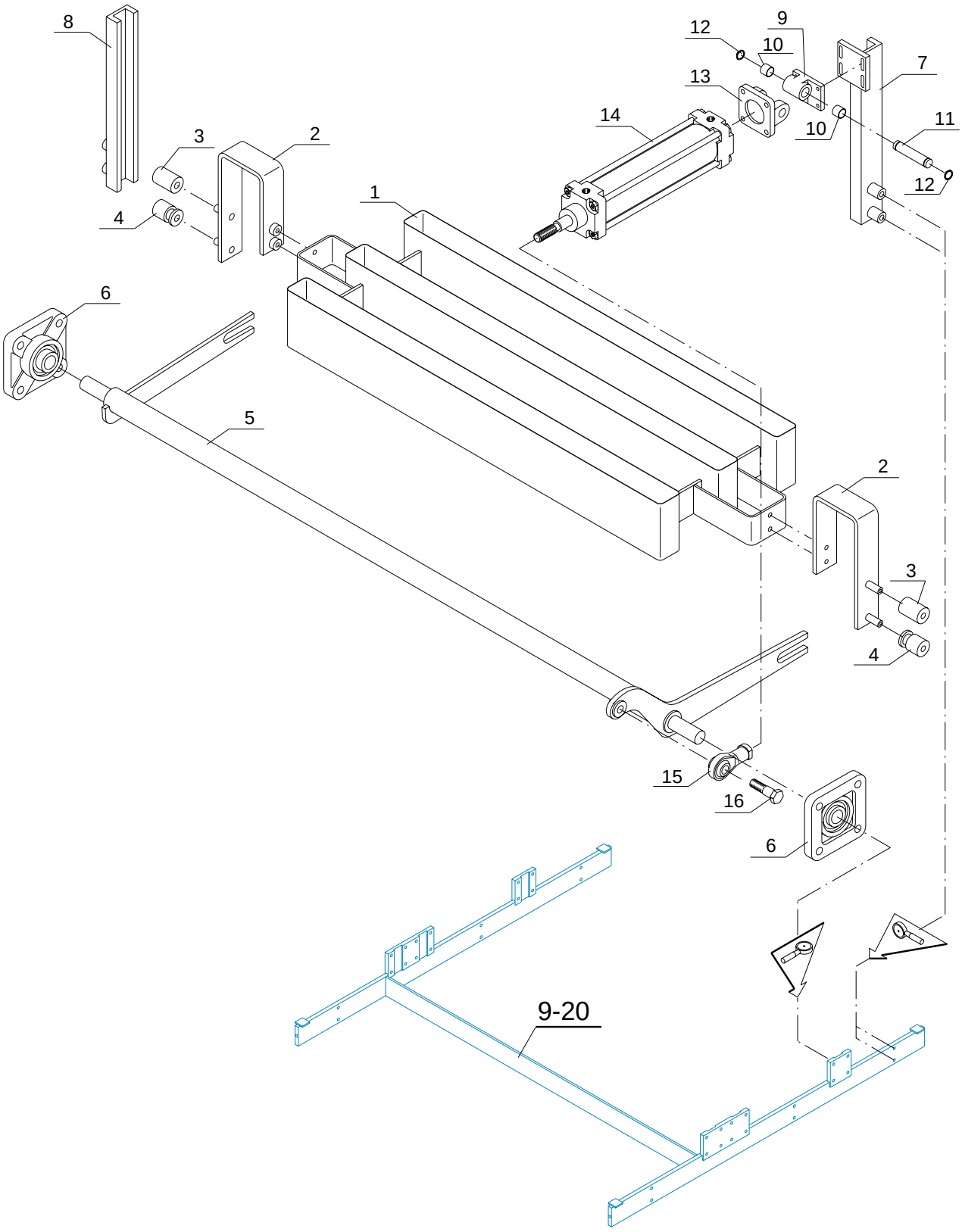


Fig. 9.22 - Juice coating device

Juice coating device - Fig. 9.23

POS.	CODE	DESCRIPTION	QTY
1	12061066	Juice tank	1
2	12061063	Tank support	2
3	12061065	Upper tank guide	2
4	12061064	Lower tank guide	2
5	12061069	Lever for raising tanks	1
6	17000018	Support	2
7	12061114	Stationary tank guide with cylinder support	1
8	12061113	Stationary tank guide	1
9	12061111	Cylinder support	1
10		Bushing diam. 16/18 x 15	2
11	12061112	Fulcrum pin	1
12	326019016	Seeger ring	2
13	12061110	Cylinder hinge	1
14	17000407	Cylinder	1
15	333001647	Articulated joint	1
16	12061128	Fastening pin	1

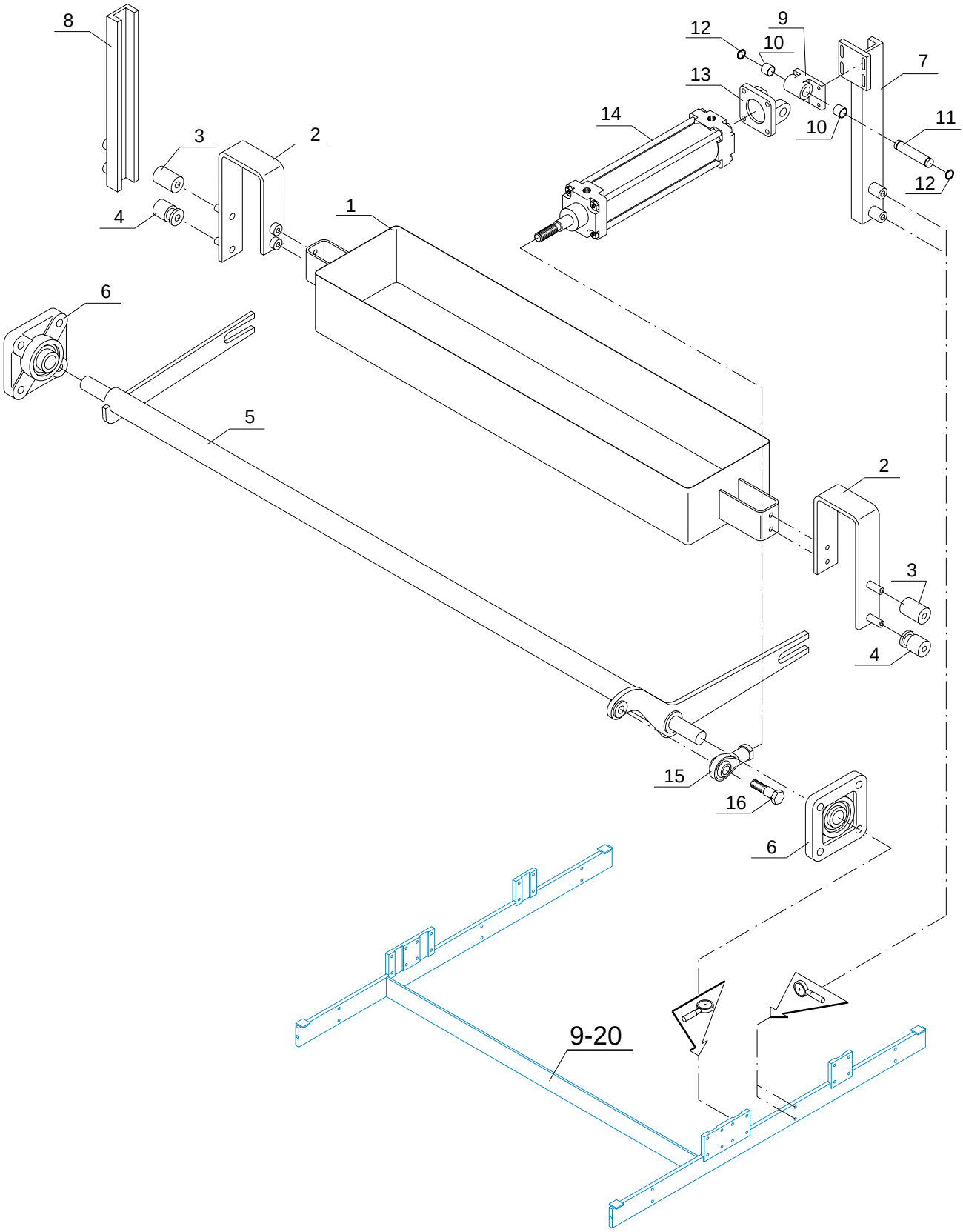


Fig. 9.23 - Juice coating device

Juice coating device - Fig. 9.24

POS.	CODE	DESCRIPTION	QTY
1	12061068	Nitrogen tank at exit	1
2	12061063	Tank support	2
3	12061065	Upper tank guide	2
4	12061064	Lower tank guide	2
5	12061069	Lever for raising tanks	1
6	17000018	Support	2
7	12061114	Stationary tank guide with cylinder support	1
8	12061113	Stationary tank guide	1
9	12061111	Cylinder support	1
10		Bushing diam. 16/18 x 15	2
11	12061112	Fulcrum pin	1
12	326019016	Seeger ring	2
13	12061110	Cylinder hinge	1
14	17000407	Cylinder	1
15	333001647	Articulated joint	1
16	12061128	Fastening pin	1

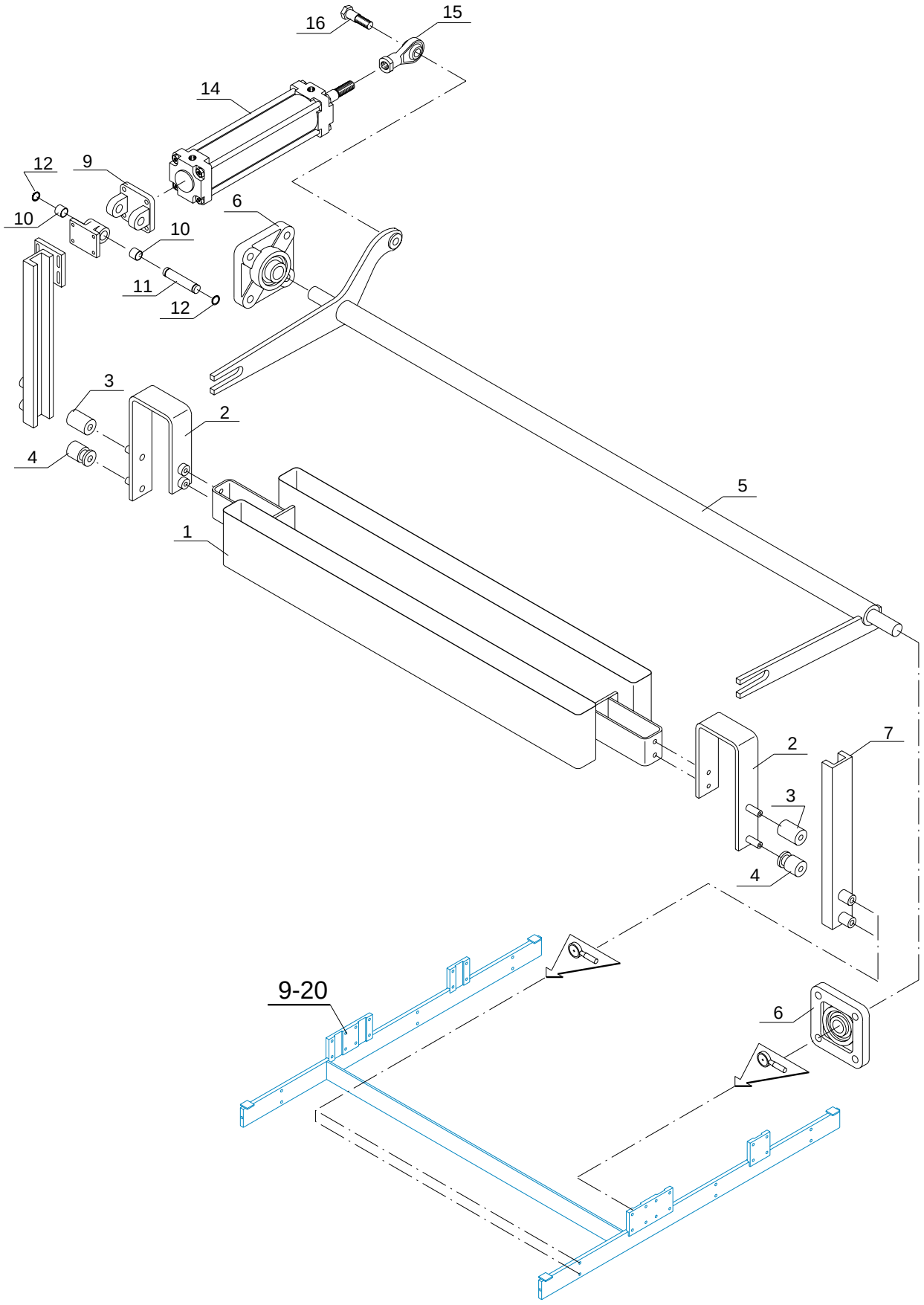


Fig. 9.24 - Juice coating device

Chocolate tank - Fig. 9.25

POS.	CODE	DESCRIPTION	QTY
1	12060670	Main tank	1
2	12060815	Grille cover	1
3	12060808	Raising rod	1
4	17000261	Support	2
5	12060812	Connecting rod	1
6	12060816	Pin	1
7	17000272	Articulated joint	1
8	17000271	Cylinder	1
9	17000265	Flange	1
10	17000266	Hinge support	1
11		Wheel	4

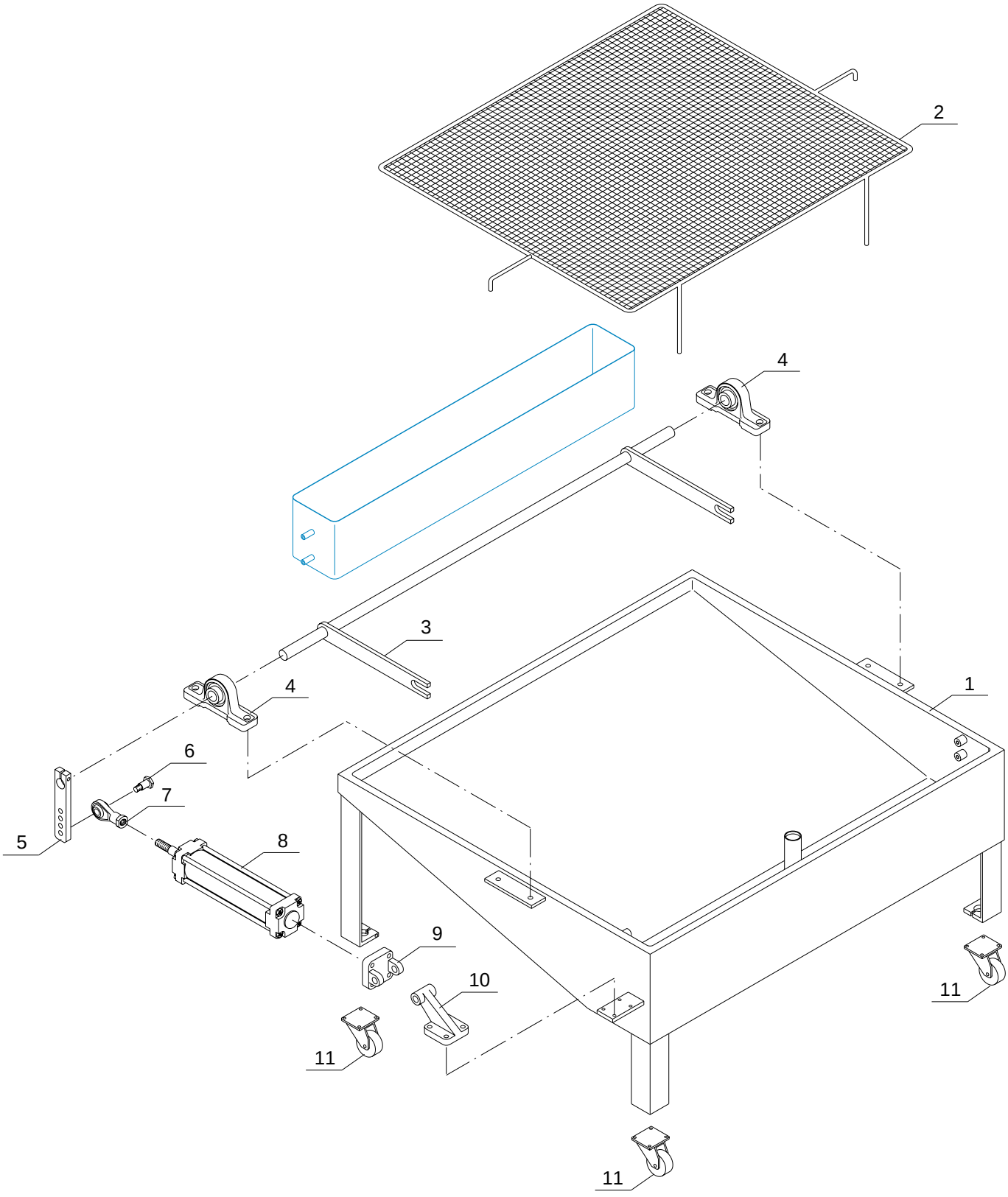


Fig. 9.25 - Chocolate tank

Chocolate tank - Fig. 9.26

POS.	CODE	DESCRIPTION	QUANTITY
1	12060807	Translating coating tank	1
2	12060805	Bushing	2
3	12060806	Guide	2
4	12060804	Bushing	2
5	12060811	Cover guide	1
6	12060809	Archimedean screw cover	1
7	12060810	Archimedean screw	1
8	12060802	Archimedean screw drive shaft	1
9		Key	1
10	336071206	Corteco	1
11	017088239	Thermostat	1
12	17000306	Resistance	1
13-5	17060019	Gearmotor	1

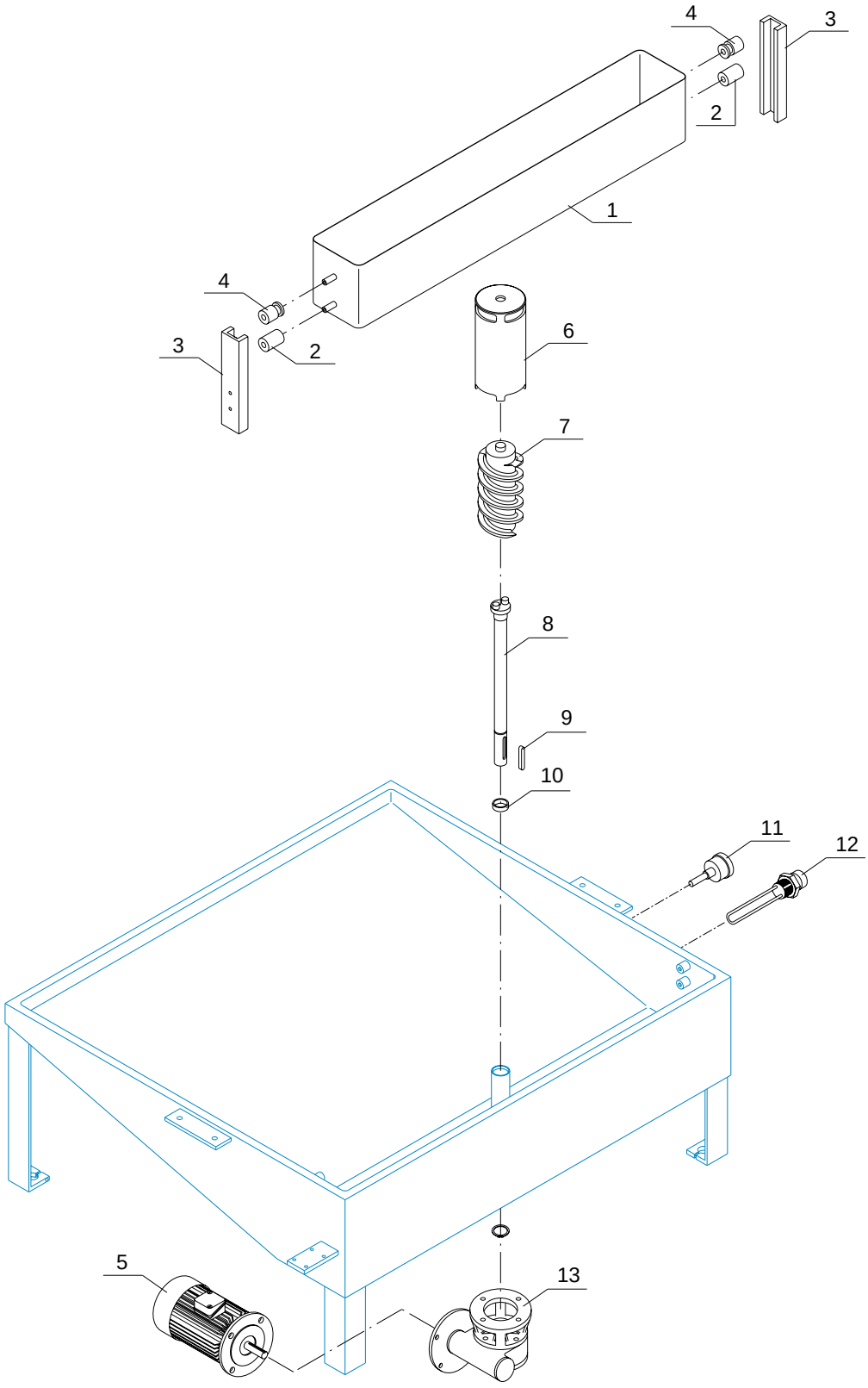


Fig. 9.26 - Chocolate tank