We hope that the information contained in this manual will be of help to you. It is based on concrete data and on the best of our current knowledge.
Read the contents of this manual carefully, including warnings and recommendations.

Machine HOYER COMET C

Serial No.

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NOTE:

All the drawings show the machine and stations for production on two lines.
If the dimensions of the product allow, production on three lines is also possible.

HOYER COMET C

1 - MACHINE IDENTIFICATION DATA

Contents

1.1 Introduction

Thank you for buying a machine manufactured by Tetra Pak Hoyer.
We recommend you read this manual as it is essential for 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 gain familiarity with all parts of the machine.

1.2 Identification plate

For maintenance and service operations not described in this manual, or for any other problems 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.

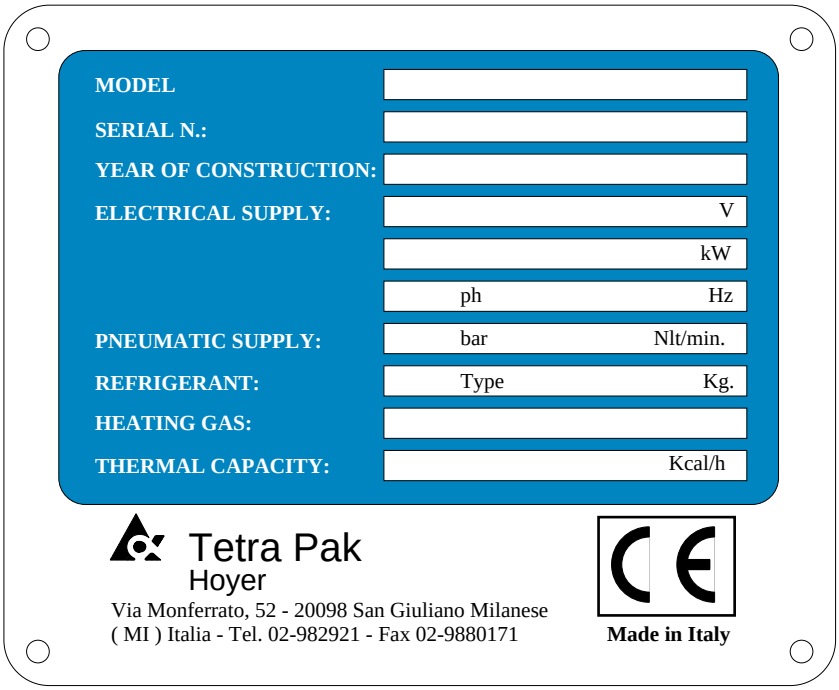

Fig. 1.1 - Identification plate

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 technical service under warranty to Tetra Pak Hoyer machines.

EUROPE and MIDDLE EAST:

Tetra Pak Hoyer ApS
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Tetra Pak Hoyer France
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HOYER COMET C

2 - GENERAL

Contents

2.1 Declaration of conformity

This machine has been manufactured in accordance with international standards and hygiene and sanitary legislation applicable to food machinery. In particular, Tetra Pak Hoyer certifies, through the Declaration of Conformity supplied together with the machine, that the **HOYER COMET C** production unit has been designed and manufactured in accordance with the provisions of Directive 89/392/CE (Machinery Directive) and in line with the above mentioned standards applicable to this Directive.

2.2 Preliminary points

- The illustrations and drawings showing the machine are intended for general reference only and are not necessarily accurate in every detail.
- The machine dimensions and specifications given in this manual are not binding and may change without advance warning.
- The drawings and all other documents provided as a part of 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 the instructions for all accessories mounted on the standard machine .
- **The machine is covered by 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 accident to yourself or to others.
- DO NOT attempt the 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 the guards and safety covers are in position BEFORE starting the machine.
- NEVER leave tools, mechanical parts or other foreign materials on or inside the machine.
- If a malfunction occurs, press the emergency stop button.
- NEVER PLACE YOUR HANDS INSIDE THE MACHINE WHILE IT IS RUNNING.
- Proceed with the utmost care even when the main switch is in the OFF position as the power cables are still live.
- Turn off the air supply before disconnecting any pneumatic parts.
- Make sure that all guards and safety covers are correctly in place BEFORE restarting the production cycle subsequent to maintenance or repair operations.
- Proceed with caution at all times. Remember that you are responsible for your own safety and for that of your colleagues.
- Make sure that all the 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 main switch must be in the OFF position, the air valve closed and a "work in progress" sign affixed to the machine.
- The user must make sure that all the instructions given in this manual are strictly observed.
- Users will be solely responsible for risks caused by tampering with the safety system.
- The safety of other plant used together with this machine, unless supplied directly by Tetra Pak Hoyer, is the responsibility of the customer.
- The pressure, speed, temperature and voltage limits and all instructions given are indispensable for the 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 also be observed.

2.5 Ambient operating limits

The machine is able to operate within the following ambient limits:

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

☞ **NOTE**:

Our company will accept no responsibility for damage or injury caused by failure to comply with the above warnings.

HOYER COMET C

3 - DESCRIPTION OF THE MACHINE AND TECHNICAL SPECIFICATIONS

Contents

3.1 Description of the machine

The HOYER COMET C is a machine used for filling a variety of ice-cream containers.
The structure of the machine, the mechanical components and the commercial components are all fabricated in stainless steel or corrosion proof materials. All the parts directly in contact with the product are in corrosion proof material or other materials approved for use in the food industry.
In order to prevent accidental contact between parts of the body and any moving parts in the machine, the machine itself has been fitted with protective panels and shields, screw-down covers and/or systems requiring special tools and the deliberate action of the operator to remove them.
The machine consists of:

1. Steel structure with adjustable feet.
2. Mechanical transmission system driven by an electric motor fitted with an inverter.
3. Indexing gear unit for jog feed.
4. Set of lamellas with slots *(Part.3 Fig.3.1)* specifically designed to hold the type of container in production. The lamellas are supported by two members which guide the chains driven by the gear wheels.
5. Vacuum generator.
6. Pneumatic system.
7. Control panel with operator interface program *(Part.4 Fig.3.1)*.
8. Various operating stations.

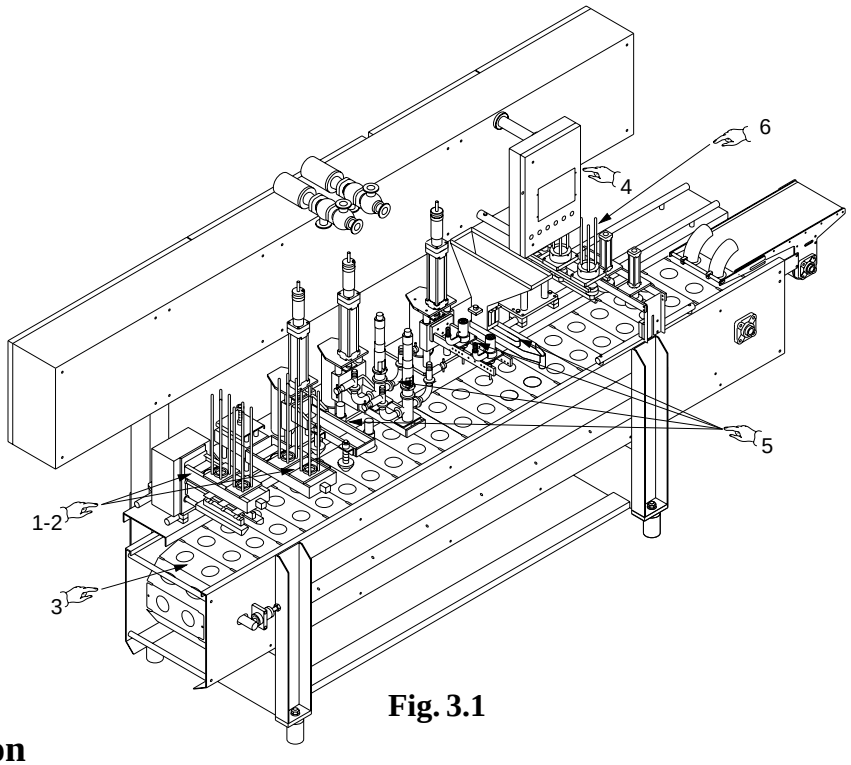


Fig. 3.1

3.2 Operation

- A stack of empty containers and a stack of covers are placed manually in the relative magazines *(Part.1 e Part. 2, Fig.3.1)*.
- The lamellas, with the appropriate slots *(Part.3 Fig.3.1)*, move forward with a jogging action. During the standstill period, an empty container per line is placed in the slot.
- The lamella *(Part.3 Fig.3.1)* with the empty containers is jogged forward once (a number of times) and stops under the dosing stations *(Part.5 Fig.3.1)*.The dosers fill the containers with the required quantity of ice-cream, chocolate and granules.
- The lamella with the full containers is jogged forward once (a number of times) and stops under the lid feed station *(Part.6 Fig.3.2)*. One lid per row is positioned over the containers. At the next station, the lids are pressed onto the container. (An ink-jet date stamping station is also available on request.).
- At the end of the conveyor, the sealed containers are ejected by an electrically powered combined lifting, extraction and transfer system.

3.3 Technical specifications

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

Installed power

Main motor:	0.75 kW
Belt motor:	0.37 kW
Total installed power:	3.5 kW

Net weight: 1300 Kg

Gross weight: 1900 Kg

Compressed air

Inlet pressure:	6 bar minimum
Consumption:	1300 Nl/min
Inlet pipe diameter:	3/4" gas

Dimensionis

A (length)	= 4050 mm
B (width)	= 1170 mm
C (height)	= 1970 mm

No. of operators: 2

Equivalent A-weighted sound pressure level at 1 metre: 67.5 dBA
Maximum instantaneous C-weighted sound pressure level at the work stations : lower than 130 dB/ 20uPa

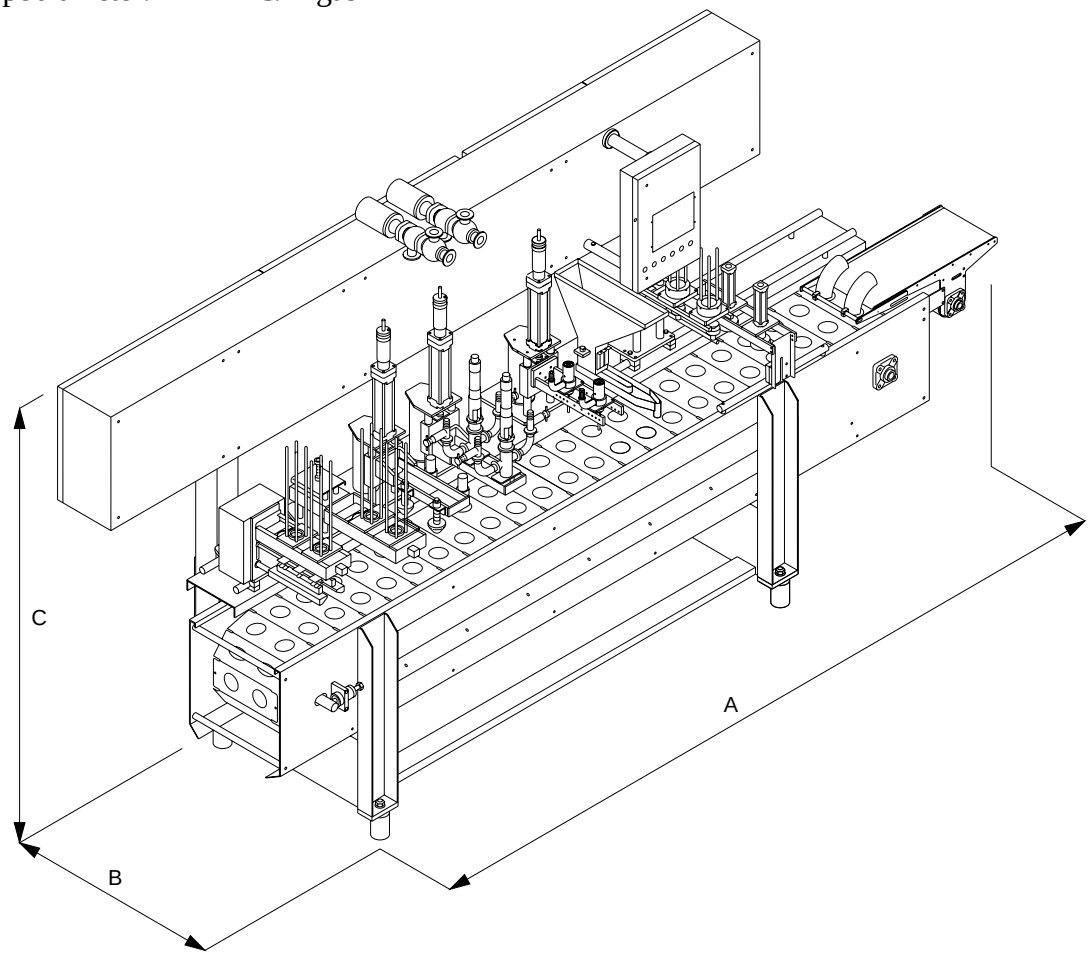


Fig. 3.2

☞ **NOTE:**

Fig. 3.2 shows a machine for the production of cones or cups.

3.4 Programming and control panel

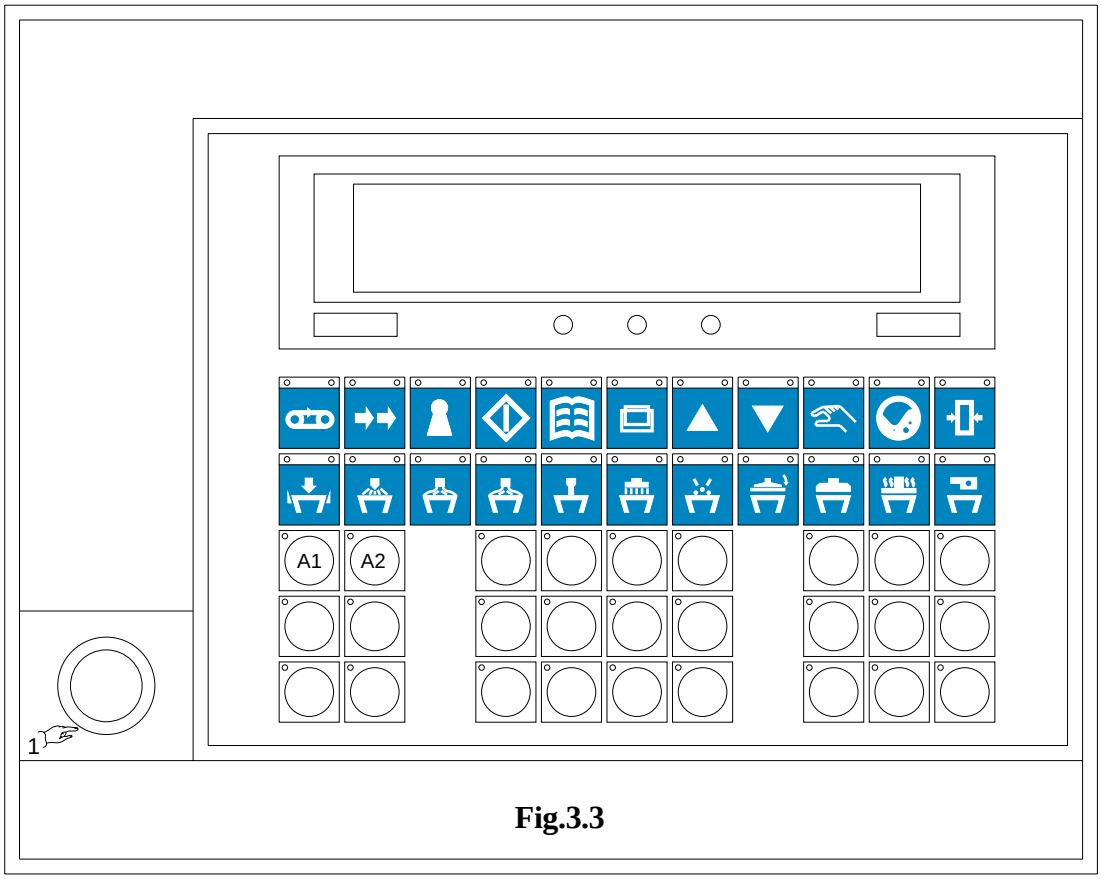


Fig.3.3

- Start/Stop main motor
- Jog main motor
- Select production cycle Auto/Manual
- Start/Stop stations and C.I.P. cycle
- Data settings
- Select format
- Save data
- Apply data
- Position stations (for automatic start-up of the production cycle), password “1 2 3 4”
- Set C.I.P. data
- Reset
- Start/Stop loading cones-cups
- Start/Stop spraying chocolate
- Start/Stop doser 1
- Start/Stop doser 2
- Start/Stop pencil filler
- Start/Stop topping
- Start/Stop granule
- Start/Stop loading sheets
- Start/Stop pressing sheets
- Start/Stop sealing resistance
- Start/Stop date stamp

A1: Chocolate tank resistances

A2: Ice-cream bypass

Pos.1: Emergency push-button

HOYER COMET C

4 - INSTALLATION

Contents

4.1 Unpacking and delivery checks

The HOYER COMET C machine and the various operating stations are transported in special containers, generally wooden crates. Unpacking must be done near to the final installation position of the machine. The crates can be easily transported by a lift truck.
When the crate has been positioned correctly, unpack as follows:

a. Unnail the lid and remove it. Do the same thing with the side panels. Pay particular attention to the wooden spacer blocks located between the sides of the crate.
b. Remove the spare parts box and other components from the crate.
c. Unnail the wooden blocks that hold the machine in place during transport and remove the cellophane sheet.
d. Check that the contents of the crate correspond to the description given in the shipping documents.
e. Check that all the covers and panels have been correctly fitted and that there are no loose parts.
f. Visually inspect all the electrical components to make sure that they are not damaged.
g. If any part/component is missing, stop unpacking and immediately notify Tetra Pak Hoyer.
h. If the machine has been damaged during transit, notify the insurance company immediately. Do not proceed beyond unpacking until you are authorised to do so

4.2 Transport and installation

The following measures must be adopted during the installation of the machine:

a. Position the machine at the place of production. Move the machine using a fork lift truck of suitable capacity *(Part.1 Fig.4.1 fork positions)*, checking that there is sufficient space to remove the guards and allow ease of access to the internal machine parts.
b. Adjust the feet *(Part.2 Fig.4.1)* until the machine is perfectly level both longitudinally and transversally.

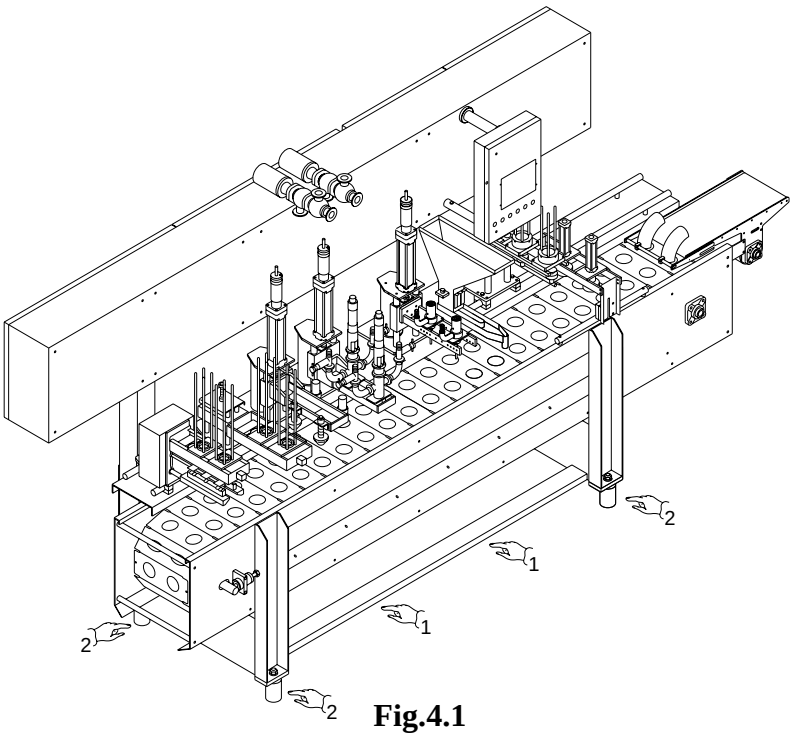


Fig.4.1

4.3 Electrical connection

The machine's electrical system has been factory checked by Tetra Pak Hoyer engineers.
The machine's components are electrically protected against short-circuits.

WARNING:

The connection must be made exclusively by competent technicians familiar with accident prevention legislation.

It is recommended that the power is taken from a master switch fitted with thermal overload cutout and ultra-rapid fuses of adequate amperage.

WARNING:

The differential cutout switch must be class "A" and suitable for protecting inverter electronic power circuits.

- Check the data on the identification plate *(Fig.4.2)* to ensure that the machine is compatible with the factory voltage.
- Connect the three phases to terminals R S T and the earth wire to the earth terminals in the electric panel.

For the minimum sections of the power supply cable, refer to the voltage and power values reported on the identification plate *(Fig.4.2)* and the standards in force in the country of installation.

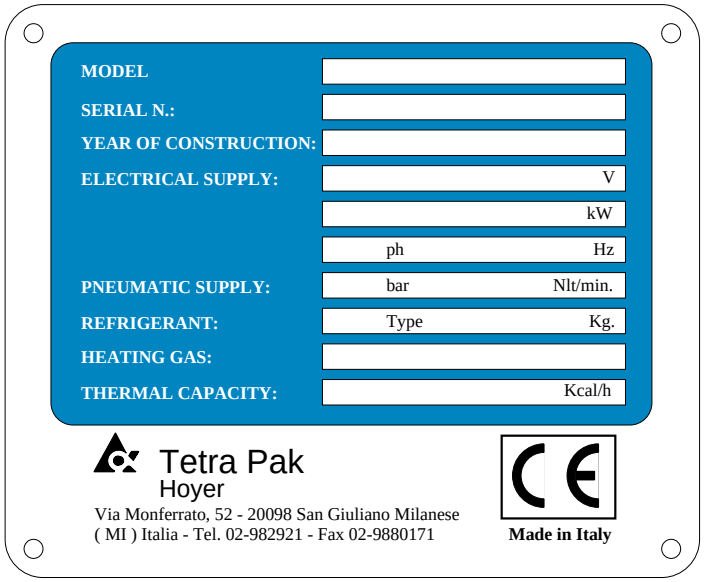


Fig. 4.2

4.4 Pneumatic connection

Connect the machine to the compressed air supply.
The minimum working pressure is 6 bar.
If the pressure is less than 4 bar, a factory-set pressure switch will disable the machine's functions.
Refer to **CHAPTER 3 - DESCRIPTION OF THE MACHINE AND TECHNICAL CHARACTERISTICS** for air consumption and pipe sizes.

4.5 Checking the direction of rotation

After having made the electrical and pneumatic connections, check the direction of rotation of the machine as follows:

- Make sure that there are no foreign bodies which may prevent the machine from operating.
- Release the emergency stop button.
- Rotate the main switch.
- Slowly turn on the air supply.
- Press the jog button and check that the lamellas move from left to right *(Part.2 Fig.4.3)* when looking at the machine from the operator's side.
- Press the stop to stop the chain.

WARNING:

If the direction of rotation is incorrect, invert the two phases at the terminal board.
This operation must be carried out exclusively by competent technicians familiar with accident pre-

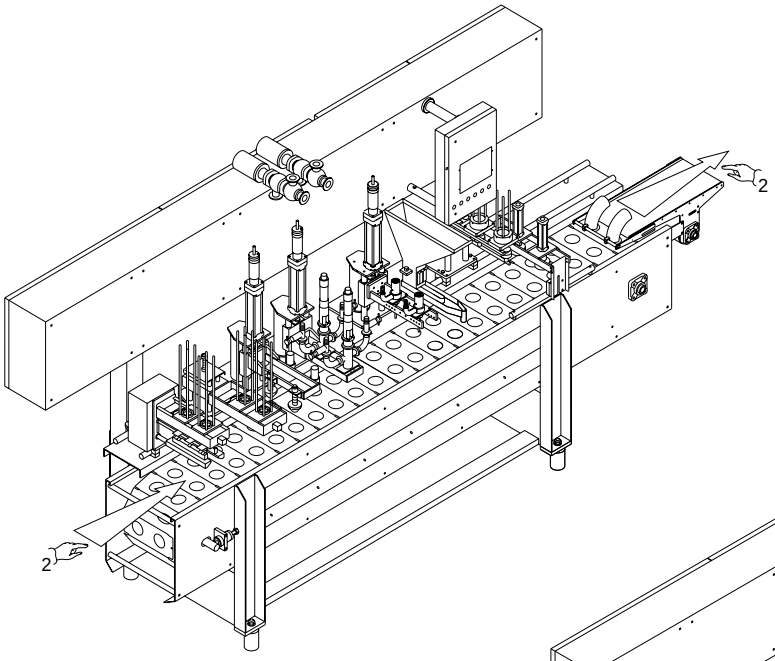


Fig.4.3

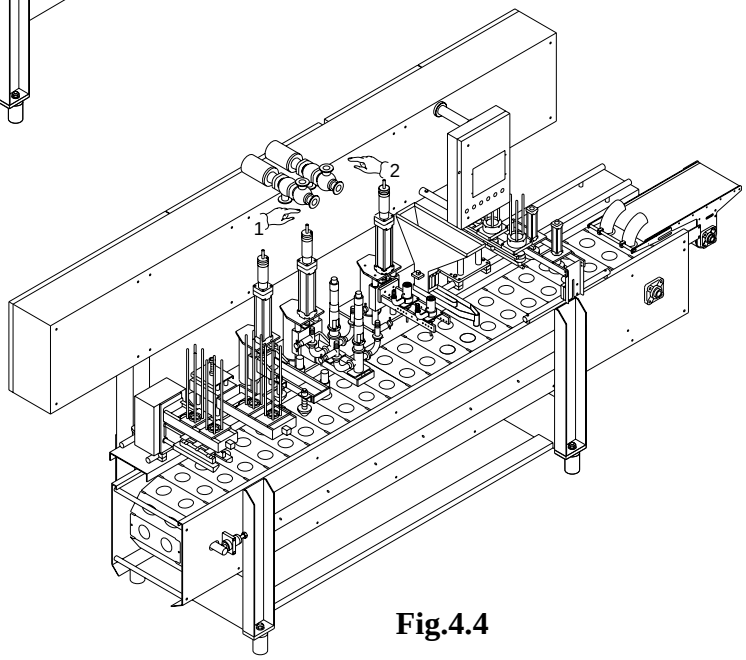


Fig.4.4

4.6 Freezer connection

Make sure that the ice-cream pipes from the bypass valve *(Part.1/2 Fig.4.4)* to the dosers are connected as required.
Connect the ice-cream pipes from the freezers to the ice-cream dosers through the bypass valves *(Part.1/2 Fig.4.4)* located above the pneumatic panel.
Before starting-up the freezers connected to the machine, place a container under the ice-cream bypass outlet pipe and another under the product collection chute.

HOYER COMET C

5 - ADJUSTMENTS AND FORMAT CHANGE PROCEDURES

Contents

5.1 Product change

The HOYER COMET C is a machine designed for filling and sealing containers (cones and cups). The machine can handle cones and cups up to 80 mm diameter on three lines or 115 mm on two lines.

The production of standard cones makes use of the following stations:

- cone feed *(Part. 1, Fig. 5.1)*;
- chocolate dosing and spray *(Part. 3, Fig. 5.1)*;
- one or more ice cream or one or two flavour ice cream mix dosing stations *(Part. 4, Fig. 5.1)*;
- topping *(Part. 5, Fig. 5.1)*;
- granule *(Part. 6, Fig. 5.1)*;
- lid positioning *(Part. 7, Fig. 5.1)*;
- lid sealing *(Part. 8, Fig. 5.1)*;
- product ejector *(Part. 10, Fig. 5.1)*;
- product unloading belt *(Part. 9, Fig. 5.1)*;

The production of standard cups makes use of the following stations:

- cup feed *(Part. 2, Fig. 5.1)*;
- ice cream or one or two flavour ice cream mix doser *(Part. 4, Fig. 5.1)*;
- lid positioning *(Part. 7, Fig. 5.1)*;
- lid sealing *(Part. 8, Fig. 5.1)*;
- product ejector *(Part.11, Fig. 5.1)*;
- product unloading belt *(Part. 9, Fig. 5.1)*.

When changing from one cone/cup format to another of different size, the lamella set, the cone feed magazine, the sizing pads, the lid feed magazines and crimper all need to be changed.

The production of standard flame shape cone/cup makes use of the following stations:

- cone/cup feed *(Part. 2, Fig. 5.1)*;
- chocolate spray *(Part. 3, Fig. 5.1)*;
- one or two flavour ice cream or ice cream mix dosing stations *(Part. 4, Fig. 5.1)*;
- lid positioning *(Part. 7, Fig. 5.1)*;
- lid sealing *(Part. 8, Fig. 5.1)*;
- product ejector *(Part.11, Fig. 5.1)*;
- product unloading belt *(Part. 9, Fig. 5.1)*.

When changing format from cones to cups, the lamella set needs to be changed, the cup feed and relative suckers need to be installed, the lid feed magazine changed, the cone crimpers need to be replaced with lid presses, and the cone ejector station *(Part. 10, Fig. 5.1)* replaced with the cup ejector *(Part. 11, Fig. 5.1)* and the relative ejector disks.

☞ **NOTE:**
When the machine is set-up for the production of cones and cups, the topping and granule stations can be used for decorating standard cups.

As the machine is controlled by an operator interface program, each product (format) requires a different working program.

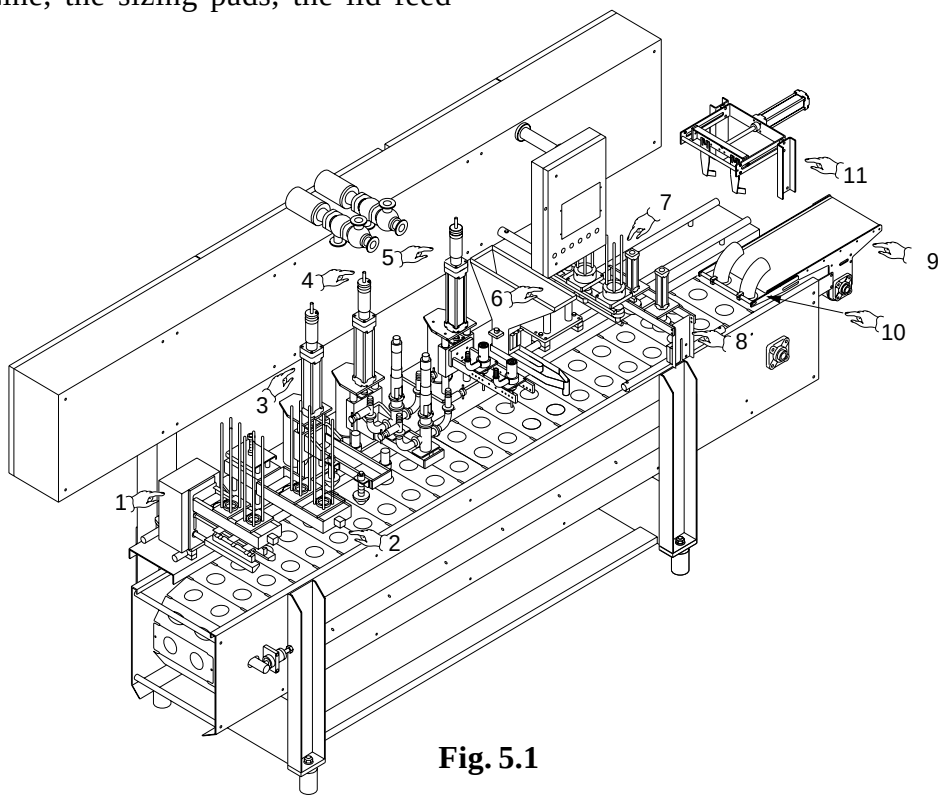


Fig. 5.1

5.2 Mechanical adjustments

5.2.1 Cone feed station adjustment

Press button F12 *(Fig. 5.14)* on the control panel to start the cone feed station.
Press jog button F2 *(Fig. 5.14)* until the upper cone stop blades open.
With the machine stopped and the cone stop blades open, inset two cones in the magazine *(Part.1, Fig. 5.2)*.
Check that the cone in the released position rests correctly in the calliper holes of the oscillating levers *(Part.2, Fig. 5.2)*, then check that the cone in the released position is 5 mm below the cone stop blade.
Make sure that the oscillating cone release levers hold the cornets without exerting too much pressure.

If the distance is greater than 5 mm, lower the mobile part of the cone stop blade and magazine support. If the released cone is between the cone stop blades, raise the mobile part of the cone stop blade and magazine support to the required distance.
After having carried out the above adjustment, make sure that the cone pusher plate just touches the edge of the cornet, otherwise adjust the position of the cone pusher plate *(Part.3, Fig. 5.2)*.
At this point check that at low speed the cone is released immediately after the lamella chain has stopped.

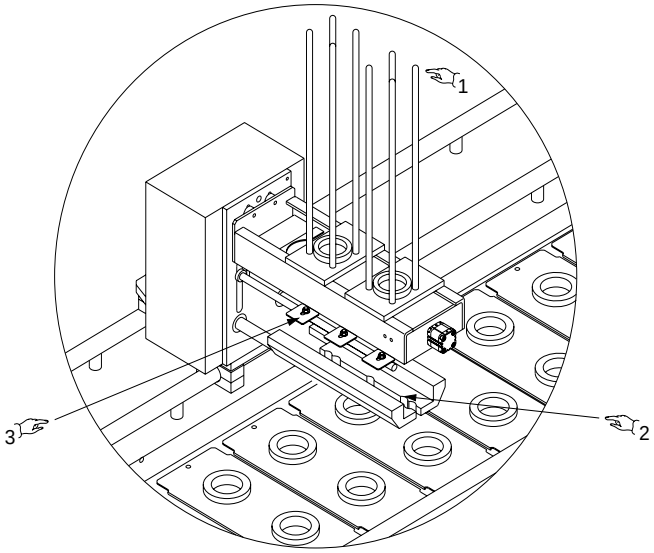


Fig. 5.2

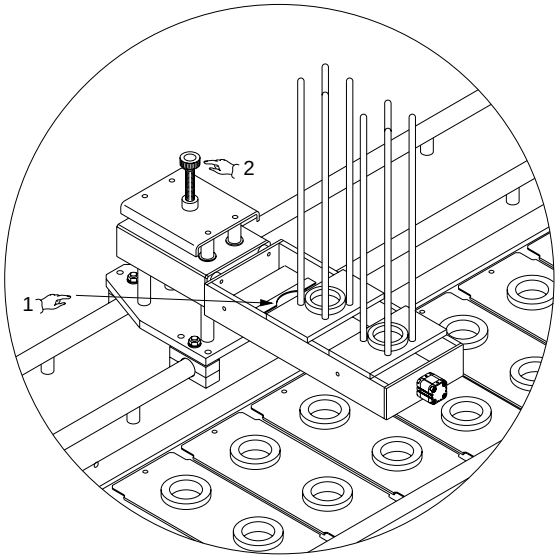


Fig. 5.3

5.2.2 Cup feed station adjustment

Use the jog command F2 *(Fig. 5.14)* to position the suction cups at their maximum height.
Then place an ice-cream cup in the magazine and check that the blades *(Part. 1, Fig. 5.3)* hold the cup without squashing it. Adjust the height of the cup feed by rotating the adjusting screw *(Part. 2, Fig. 5.3)* such that the suction cups touch the bottom of the container.

Follow the above procedure when changing format.

☞ **NOTE:**

In the case of a machine set-up to produce different types of cups, it is advisable to make a note of the different adjustments in order to make format changes easier and quicker.

5.2.3 Cone gauging - chocolate spray station adjustment

The cone gauging station is necessary for spreading the mouth of the paper wrapped around the cones which tends to fold over during feeding.
The height of the spray nozzle can be adjusted by slackening the adjusting screw *(Part. 1, Fig. 5.4)* and rotating ring nut *(Part. 2, Fig. 5.4)* clockwise to increase the travel of the pneumatic actuator and anticlockwise to reduce it.
At the end of the adjustment, tighten screw *(Part. 1, Fig. 5.4).*

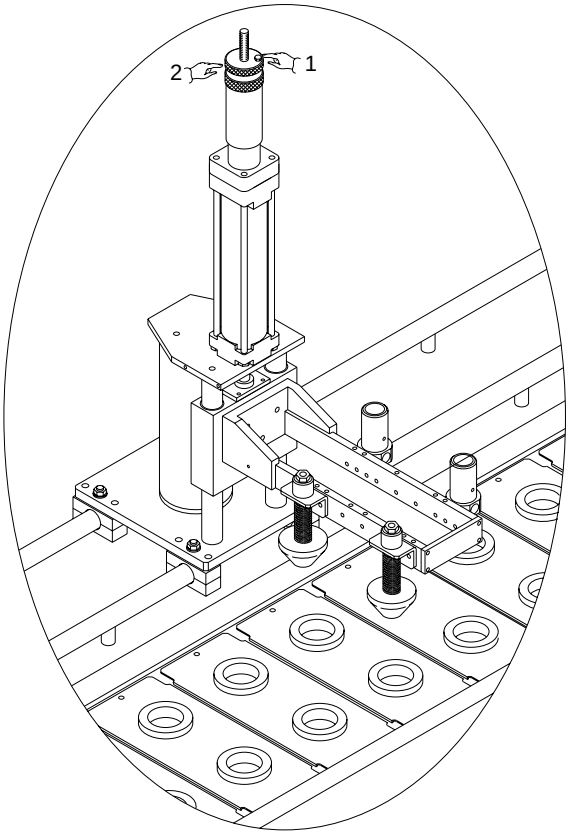


Fig. 5.4

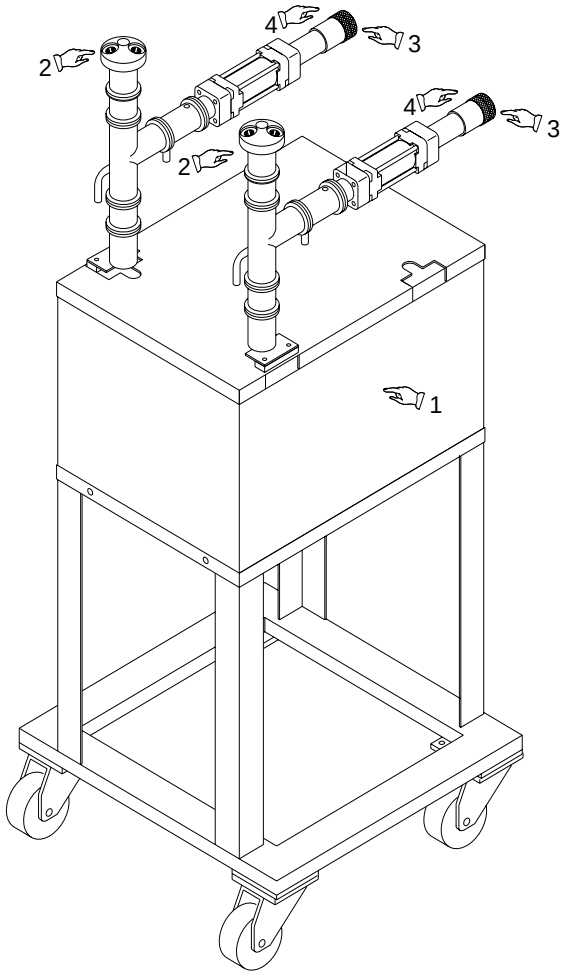


Fig. 5.4a

5.2.3a Chocolate spray pump flow adjustment

The chocolate spray pump is assembled on a temperature-controlled tank *(Part. 1, Fig. 5.4a)* located outside of the filler and connected to the sprayers through hoses coming from the distributor *(Part. 2, Fig. 5.4a).*
To adjust pump flow, loosen the fastening ring nut *(Part. 3, Fig. 5.4a)* and turn it clockwise to increase the travel of the pneumatic actuator or anticlockwise to decrease the travel. Upon completion of this operation, tighten the ring nut *(Part. 3, Fig. 5.4a)* again.
Turn on the chocolate heating resistance thirty minutes before starting production by pressing push button A1 *(Part. 4; Fig. 5.14).*

☞ **NOTE:**

Make sure that there is water in the jacket at all times to prevent the resistances from burning out.

after pressing the lid.

5.2.4 Ice-cream dosing/decorating station adjustment

To adjust the height, slacken screw *(Part. 1, Fig. 5.5)* and rotate ring nut *(Part. 2, Fig. 5.5)* until the required doser position is reached (clockwise to increase the stroke of the pneumatic actuator and anticlockwise to reduce it).
At the end of the adjustment, tighten screw *(Part. 1, Fig. 5.5)*.
The normal position of the end part of the dosing nozzles when in the dosing position should be inside the container below the lid positioning level in order not to cause damage to the ice-cream decoration after pressing the lid.

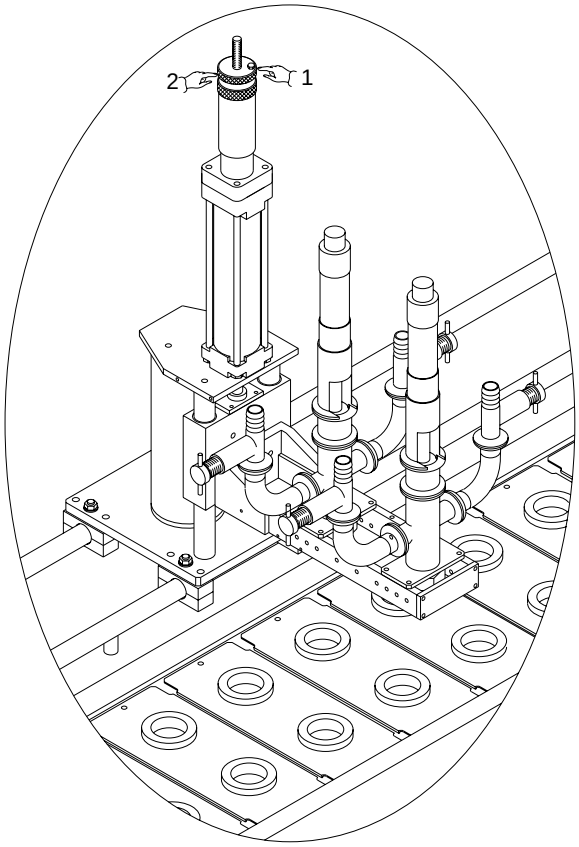


Fig. 5.5

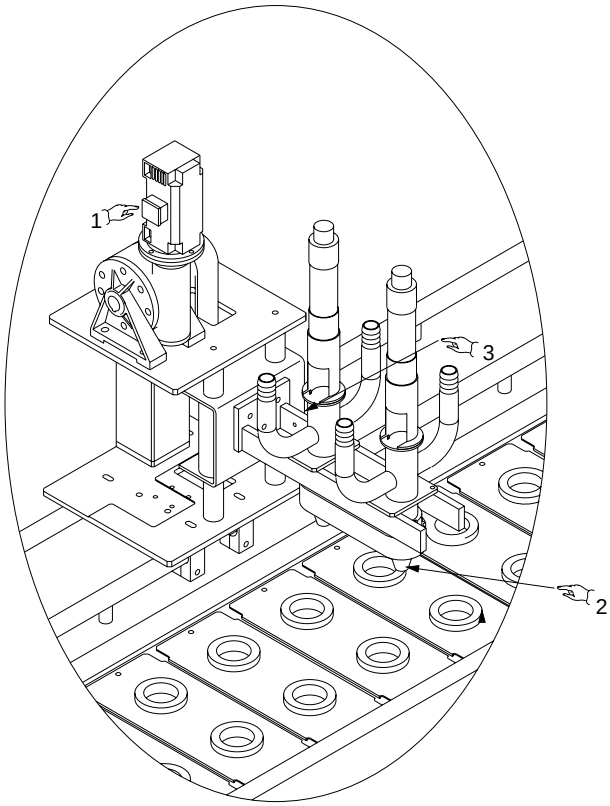


Fig. 5.5a

5.2.4a Ice cream dosing station adjustment for flame shape cone/cup

Dosers are moved by a servomotor *(Part. 1, Fig. 5.5a*) connected to the raise/lower slider by a toothed belt.
The doser raise/lower speed is controlled by the PLC.
The two dosing nozzles *(Part. 2, Fig. 5.5a*) are rotated by a pneumatic motor *(Part. 3, Fig. 5.5a*) and a toothed belt.
Rotation time is controlled by the PLC.
For information on rotation speed adjustment, refer to section 3.3.

5.2.5 Topping station adjustment

Check that the dosing nozzles are positioned at the centre of the slots. Otherwise, slacken the screws on the fixing blocks *(Part. 1/2, Fig. 5.6)* and move the unit to the required position.

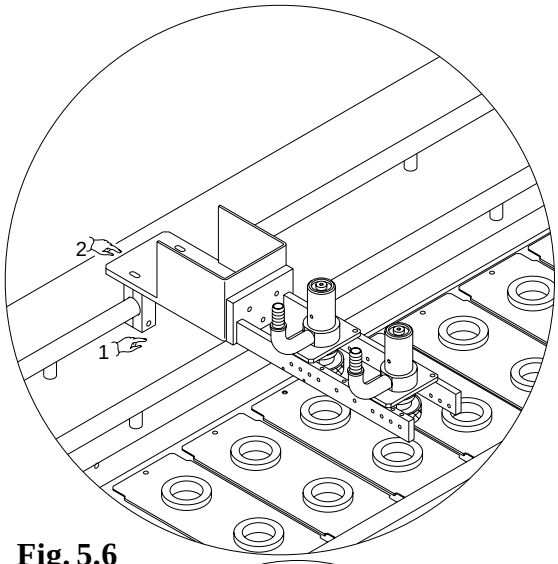


Fig. 5.6

5.2.5a Pencil filler station adjustment

To adjust the height, slacken the locking ring nut *(Part. 1, Fig. 5.6a)* and rotate the ring nut *(Part. 2, Fig. 5.6a)* until the required position is reached (clockwise to increase the stroke of the pneumatic actuator and anticlockwise to reduce it).
At the end of the adjustment, tighten the locking ring nut *(Part. 1, Fig. 5.6a)*.

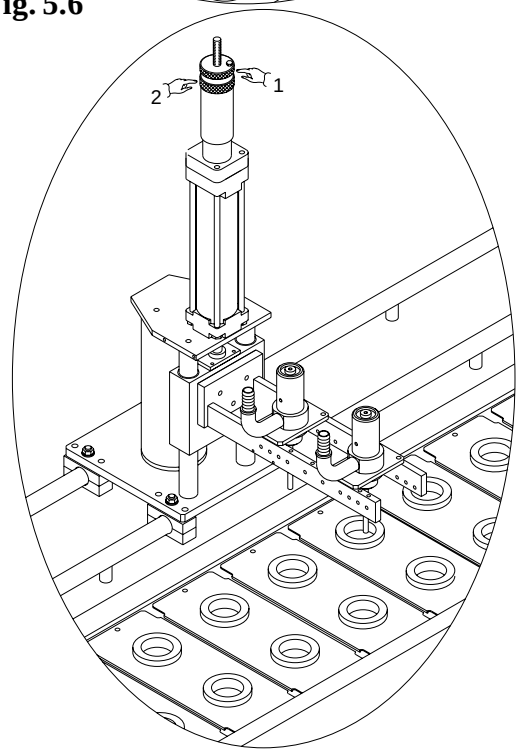


Fig. 5.6a

5.2.6 Granule station adjustment

Before starting production, check that the hopper and dosing channels are completely dry.
Also check that the dosing channels are positioned at the centre of the slots. If not, move the station by slackening screws *(Part. 1, Fig. 5.7)* on the fixing blocks.

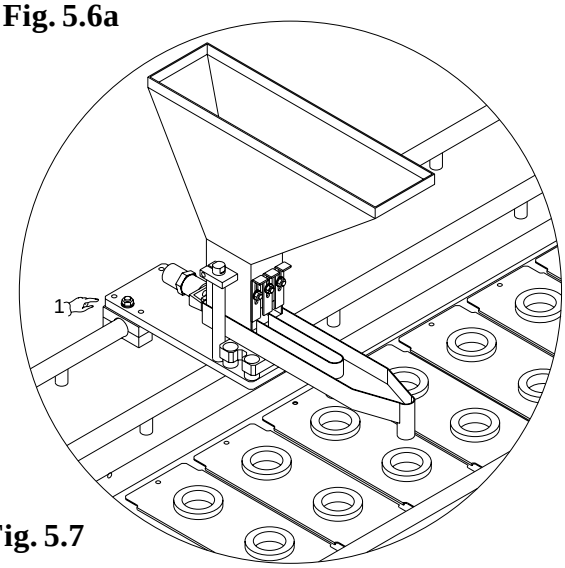


Fig. 5.7

5.2.7 Lid feed station adjustment

Make sure that the lid feed station is switched off (button F19 *(Fig. 5.14)* in position OFF) with the suction cups in the up position.
Check that the suction cups *(Part. 4, Fig. 5.8)* are in direct contact with the lids inside the magazine. Otherwise, screw the stem of the lifitng cylinder *(Part. 3, Fig. 5.8)* in a clockwise direction (inside the block) in order to raise the suction cups *(Part. 4, Fig. 5.8)* to a position where they are in direct contact with the lids.
To adjust the height, slacken the locking ring nut *(Part. 1, Fig. 5.8)* and rotate the ring nut *(Part. 2, Fig. 5.8)* until the required position is reachead (clockwise to increase the stroke of the pneumatic actuator and anticlockwise to reduce it).
At the end of the adjustment, tighten the locking ring nut *(Part. 1, Fig. 5.8)*.
With the machine at its slowest speed, check that when the lid feed station is activated, the suction cup mounting shaft drops downs immediately after the lamella chain has stopped, and then check that it moves back up beofre the chain starts moving again.

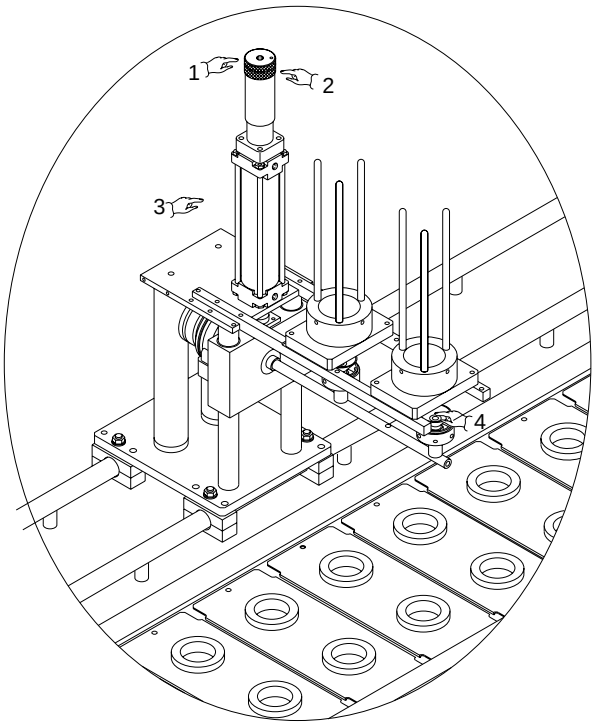


Fig. 5.8

5.2.7a Lid feed station adjustment for flame shape cone/cup

To adjust the height, slacken the locking ring nut *(Part. 1, Fig. 5.8a)* and rotate the ring nut *(Part. 2, Fig. 5.8a)* until the required position is reachead (clockwise to increase the stroke of the pneumatic actuator and anticlockwise to reduce it).
At the end of the adjustment, tighten the locking ring nut *(Part. 1, Fig. 5.8a)*.
To centre the station so that the lid magazines are in line with the slots, slacken the bin support locking screws and adjust their position with the slots *(Pos. 3, Fig. 5.8a)*.
At the end of the adjustment, tighten the locking screws.
Adjust the supports of the actuators controlling the lip grippers *(Part. 4, Fig. 5.8a*) so that they are in the correct position.

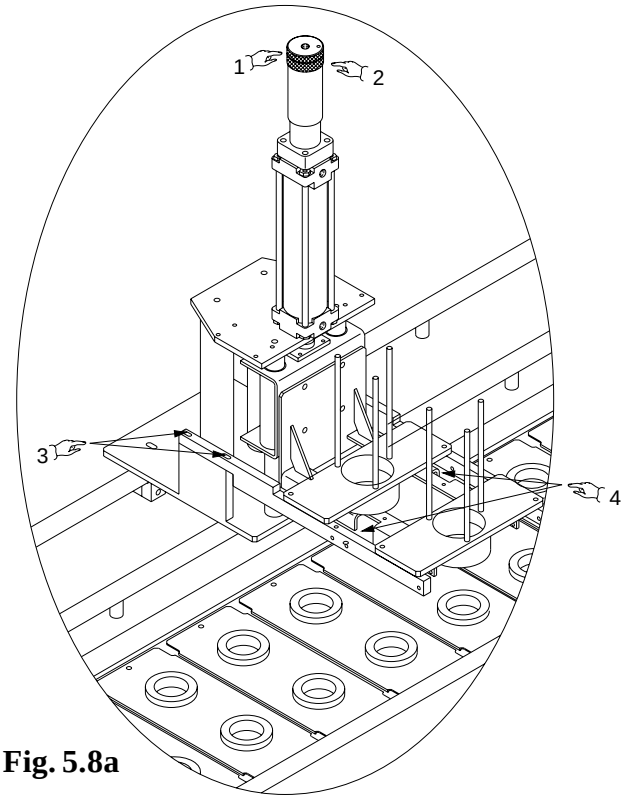
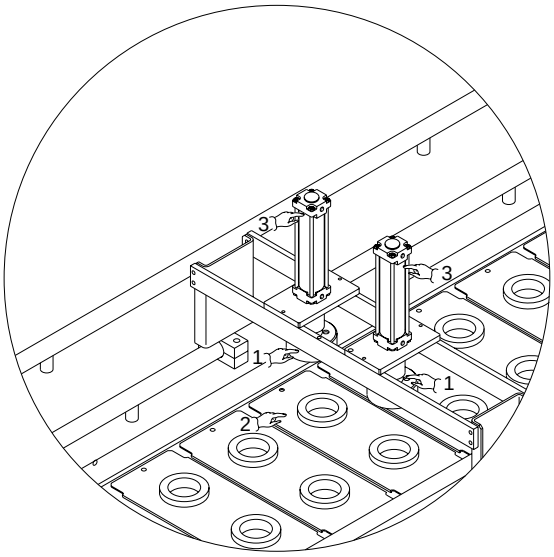


Fig. 5.8a

5.2.8 Cone lid closing station adjustment

Check that the crimper *(Part. 1, Fig. 5.9)* rests on the outside of the slot *(Part. 2, Fig. 5.9)* and compresses the inner part of the crimper in order to close-off the cone perfectly. If the cone is not closed-off correctly, lower the crimper *(Part. 1, Fig. 5.9)* by rotating it in a clockwise direction after having slackened the nut anchoring it to the cylinder stem *(Part. 3, Fig. 5.9)*.
If the closing-off is too accentuated, rotate the crimper *(Part. 1, Fig. 5.9)* in an anticlockwise direction until the correct type of closing is obtained.
On completion of the adjustment, remember to tighten the crimper lock nut.

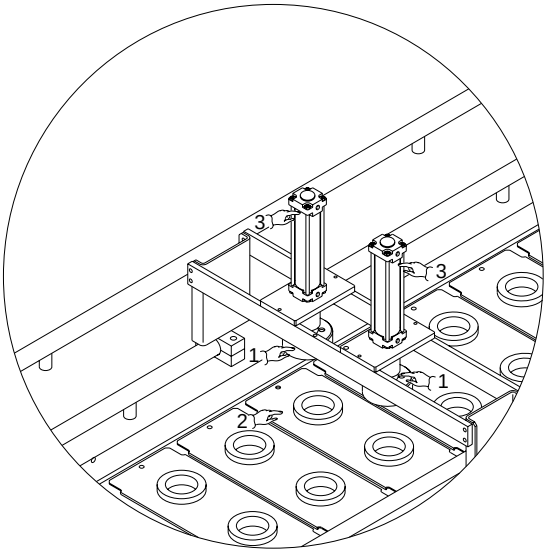
Fig. 5.9



5.2.9 Cup lid closing station adjustment

Check that the lid pressing plate *(Part. 1, Fig. 5.10)* compresses the lid in the cup in such a manner that closes-off the cup perfectly. If the closing-off is not correct, lower the plate by rotating it in a clockwise direction after having slackened the lock nut fixing it to the cylinder stem *(Part. 3, Fig. 5.10)*.
If the closing-off is too accentuated, rotate the plate *(Part. 1, Fig. 5.10)* in an anticlockwise direction until the correct closing is obtained.
On completion of the adjustment, remember to tighten the plate lock nut.

Fig. 5.10



5.2.10 Cone ejector station adjustment

Adjust the positions of the ejector bends *(Part. 1, Fig. 5.11)*, unloading plate *(Part.3, Fig. 5.11)* and product conveyor belt such that when the cones are ejected they do not interfere with these parts.

The angle of the ejector bends *(Part. 1, Fig. 5.11)* can be adjusted by slackening fixing screws *(Part. 2, Fig. 5.11)* and correcting the positioning of the cone on the belt.

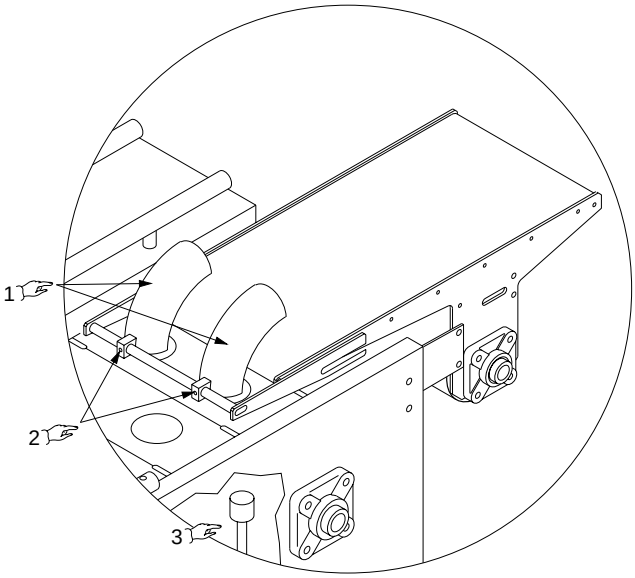


Fig. 5.11

5.2.11 Cup ejector station adjustment

Adjust the position of the ejector plates *(Part. 1, Fig. 5.12)* and product conveyor belt *(Part. 2, Fig. 5.12)* so that when the cup is ejected it does not interfere with these parts, otherwise slacken the fixing screws and move the belt *(Part. 2, Fig. 5.12)*. Check that the ejector plates *(Part. 1, Fig. 5.12)* push the cup onto the product conveyor belt *(Part. 2, Fig. 5.12)*.

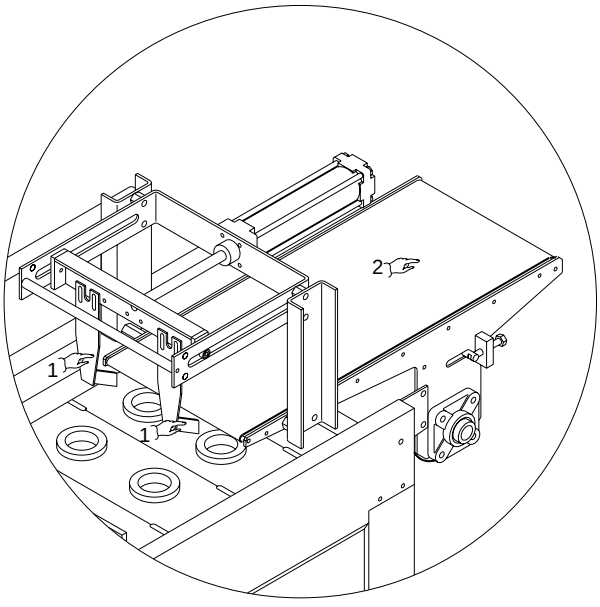


Fig. 5.12

5.3 Pneumatic adjustments

5.3.1 Granule adjustment

The flow of product to dose can be optimised by adjusting the angle of action of the vibrator. This is done by slackening the screws on the vibrator support.
To increase or reduce the volume of product dosed, adjust pressure regulator *(Part. 1, Fig. 5.13)* in a clockwise direction to increase the intensity of the vibrations and in an anticlockwise direction to decrease them.
It is also possible to adjust the insertion “time” of the vibrator for each cycle by changing the relative parameters, indicated as the start and finish angle. on a 360° cycle.

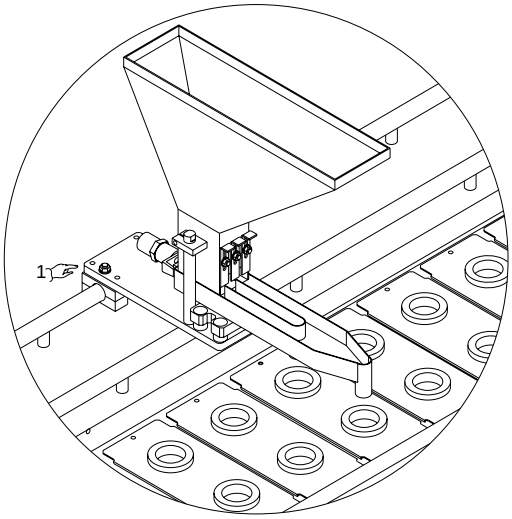


Fig. 5.13

5.3.2 Gauging - chocolate spray station adjustment

The spray angle can be modified by adjusting the pneumatic regulator.
The gauges are mounted on springs enabling them to adjust themselves perfectly to the cone in the slot (even if the height of the chocolate dose is changed).

5.3.3 Doser rotation speed adjustment for flame shape cone/cup

The rotation of the doser nozzles *(Part.1, Fig. 5.13a)* is obtained by a pneumatic motor *(Part. 2, Fig. 13.5a)* and threaded belt.
To adjust the nozzle rotation speed, operate on the flow regulator of the pneumatic motor.
The rotation time adjustment is obtained by PLC.

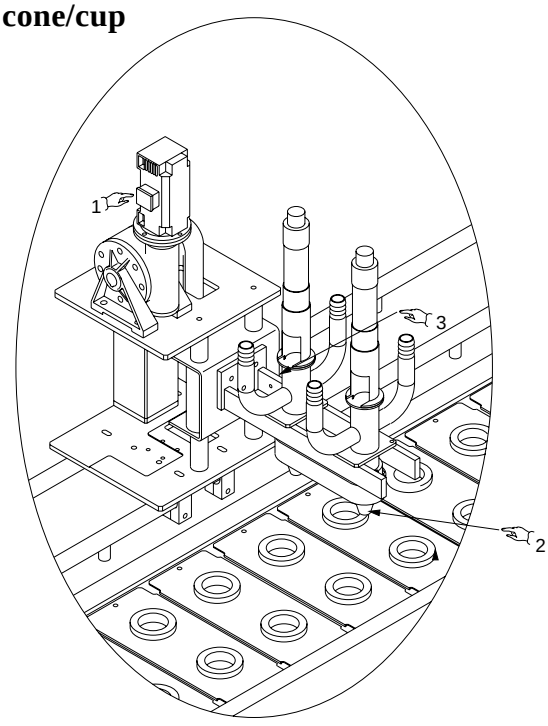


Fig. 5.13a

5.4 Control panel adjustments

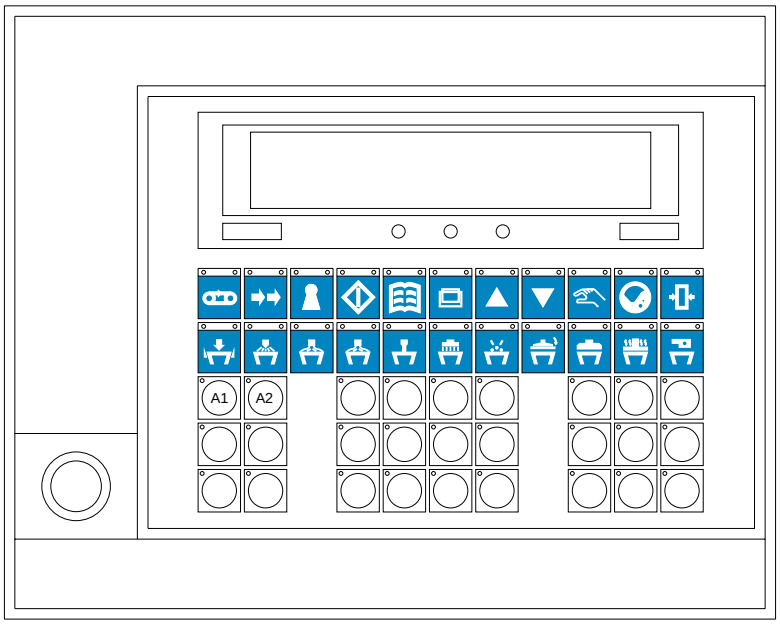


Fig. 5.14

5.4.1 PLC settings

The various functions of the production line are controlled by a PLC. Use the keypad *(Fig. 5.14)* to programme the PLC as described below.

NOTE:

The programme is set in the factory. Every time the control panel is turned on, the main screen with the text COMET C, the encoder degrees and machine status will be displayed.
Two led's come on: the "POWER" led indicating that the power is on and the "BATTERY" led which will come on when the battery is low. The "X O" led will flash if there is no communication between the keypad and the PLC.

: START/STOP MAIN MOTOR

Starts or stops main motor.

: JOG MAIN MOTOR

Jogs or stops the step-by-step chain.

: SELECT PRODUCTION CYCLE AUTO/MANUAL

When the power is on, the led on the keypad display will flash if the machine is in manual mode.
Press this key to display the machine's current status on the display.
To put the machine in automatic mode, press F3; the led will stay on without flashing and the display will indicate that the machine is in automatic mode.

NOTE:

The keys at the top (F1 through F11) are for functions to be added to the machine.

: START/STOP STATIONS AND CIP CYCLE

Turns stations F12 through F22 on and off. This key is also used for the CIP washing cycle at the end of production.

To perform CIP washing, stop the stations by pressing the , key, then enter the required wash time setting using the key.

After setting the duration press to begin washing.

: **DATA SETTINGS**

Press this key to display a series of video pages on all the stations on the machine.
Use the Pgup and Pgdn keys to reach the station you wish to edit or enable.
Press the key to enable data editing. When you have finished editing data, press Enter to confirm.
Press F7, "**Save data**" , to save the format in the operator panel and then press F8, "**Apply data**", to transfer the format to the PLC.
Press CLR to go back to the first page of the display, indicating encoder degrees and machine status.

: **SELECT FORMAT**

Press this key to call up a video page containing formats provided by Tetra Pak Hoyer and those entered by the customer for production.
The following example will appear on the next page of the video:

CODE: 1
DESCRIPTION: STANDARD CONE

: **SAVE DATA**

After entering the required format, save it by pressing F7 and then Enter; next press F8 to transfer the format to the PLC.

: **APPLY DATA**

Transfers data to the PLC.

: **POSITION STATIONS (for automatic start-up of the production cycle); password "1234"**

Enter the password "1234" to view the video page containing all the stations installed on the machine. Enter the progressive number of steps from the first to last station, and when you have finished entering the steps of the last station, press Enter to store the production cycle in memory.

: **SET C.I.P. DATA**

To perform CIP washing, stop the stations by pressing , then enter wash time settings using the key.

After setting wash time, press to begin washing.

: **RESET**

Resets alarms, broken microswitches, inverter malfunctions, etc.
When an alarm is displayed, the technician must check and repair the problem as necessary.

Press RESET on the display to remove the alarm from the display.

: **START/STOP LOADING CONES/CUPS**

Starts or stops loading of cones or cups if enabled by the current format.

: **START/STOP SPRAYING CHOCOLATE**

Starts or stops the chocolate spray device if enabled by the current format.

: **START/STOP DOSER 1**

Starts/stops doser 1 if enabled by the current format.

 : **START/STOP DOSER 2**

Starts/stops doser 2 if enabled by the current format.

 : **START/STOP PENCIL FILLER**

Starts/stops pencil filler if enabled by the current format.

 : **START/STOP TOPPING (chocolate/jam)**

Starts/stops topping if enabled by the current format.

 : **START/STOP GRANULE**

Starts/stops granule station if enabled by the current format.

 : **START/STOP LOADING SHEETS**

Starts/stops the sheet loading station if enabled by the current format.

 : **START/STOP PRESSING SHEETS**

Starts/stops the sheet press if enabled by the current format.

 : **START/STOP SEALING RESISTANCE (optional)**

Starts/stops sealing resistance if enabled by the current format.

 : **START/STOP DATE STAMP**

Starts/stops date stamp if enabled by the current format.

A1: **CHOCOLATE TANK RESISTANCES**

Enter all the resistances on the machine: the resistances in the chocolate spray tank, the topping tank, and the sprayers are controlled by a thermometer in the tank.

A2: **ICE CREAM BY-PASS**

This push button works automatically and manually. When enabled, it energises the by-pass valve that closes/opens the ice cream/mix by-pass in the dosers.
When the doser is ready (cooled to the required temperature) production may begin.

5.4.1 Factory-set standard program

STANDARD PROGRAM FOR CONE FORMAT

Page 1/23 **DATA SETTING**

CODE:	1
DESCRIPTION:	STANDARD CONE

Page 2/23 **GENERAL PARAMETERS**

SAFETY CAM:	ON: 220	OFF: 330

Page 3/23 **CONE DISPENSER**

CONSENT:	1	
CONE RELEASE:	ON: 280	OFF: 325
CONE DOWNLOAD:	ON: 355	OFF: 200
WAFER CONTROL:	ON: 060	OFF: 150
CONE BLOW:	ON: 035	OFF: 055

Page 4/23 **CHOCO SPRAYER**

CONSENT:	1	
SPRAYER DOWN:	ON: 330	OFF: 080
SPRAYER OPEN:	ON: 350	OFF: 060
SPRAYER PUMP:	ON: 010	OFF: 100

Page 6/23 **DOSER 1**

CONSENT:	1	
DOSER DOWN:	ON: 330	OFF: 080
DOSER OPEN:	ON: 025	OFF: 070

Page 9/23 **TOPPING 1**

CONSENT:	1	
TOPPING OPEN:	ON: 340	OFF: 070

Page 10/23 **DRY NUT 1**

CONSENT:	1	
DRY NUT OPEN:	ON: 000	OFF: 070

Page 11/23 **LID DISPENSER**

CONSENT:	1	
LID DOWN:	ON: 310	OFF: 110
LID ROTATION:	ON: 355	OFF: 140
LID VACUUM:	ON: 240	OFF: 105
LID BLOW:	ON: 000	OFF: 000

Page 12/23 **CRIMPER**

CONSENT:	1	
CRIMPER DOWN:	ON: 010	OFF: 060

To save the data entered in the recipe, press “ENTER” >  > “ENTER” >  : the data is now memorised in the recipe.

STANDARD PROGRAM FOR CUP FORMAT

Page 1/23	**DATA SETTING**		
	CODE:	1	
	DESCRIPTION:	STANDARD CUP	
Page 2/23	**GENERAL PARAMETERS**		
	SAFETY CAM:	ON: 220	OFF: 330
Page 4/23	**CUP DISPENSER**		
	CONSENT:	1	
	CUP RELEASE:	ON: 060	OFF: 130
	CUP VACUUM.	ON: 010	OFF: 190
	CUP BLOW:	ON: 000	OFF: 000
Page 6/23	**DOSER 1**		
	CONSENT:	1	
	DOSER DOWN:	ON: 330	OFF: 080
	DOSER OPEN:	ON: 025	OFF: 070
Page 9/23	**TOPPING 1**		
	CONSENT:	1	
	TOPPING OPEN:	ON: 340	OFF: 070
Page 10/23	**DRY NUT 1**		
	CONSENT:	1	
	DRY NUT OPEN:	ON: 000	OFF: 070
Page 11/23	**LID DISPENSER**		
	CONSENT:	1	
	LID DOWN:	ON: 310	OFF: 110
	LID ROTATION:	ON: 355	OFF: 140
	LID VACUUM:	ON: 240	OFF: 105
	LID BLOW:	ON: 000	OFF: 000
Page 12/23	**CRIMPER**		
	CONSENT:	1	
	CRIMPER DOWN:	ON: 010	OFF: 060
Page 15/23	**CUP EJECTION**		
	CONSENT:	1	
	CUP EJECTION:	ON: 075	OFF: 260

To save the data entered in the recipe, press “ENTER” >  > “ENTER” >  : the data is now memorised in the recipe.

HOYER COMET C

6 - OPERATING PROCEDURES

Index

6.1 Preliminary controls

Perform the following checks before starting the machine:

a. Make sure that all the panels and guards in the machine are fixed securely in place.
b. Make sure that the machine has been thoroughly washed and cleaned. The cleaning and washing procedures are described in **CHAPTER 7 - CLEANING AND MAINTENANCE.**
c. Make sure that the electrical power supply cable is correctly connected.
d. Make sure that the compressed air supply is correct and that the pressure reducer housed in the pneumatic panel is set to 6 bar.
e. Make sure that the ice cream line clamps are properly tightened.
f. Make sure that the ice cream bypass containers are in position.
g. Make sure that the emergency stop buttons *(Part. 7/8 Fig. 6.1)* are disengaged.
h. Connect the bypass valves to the freezers *(Part. 6 Fig. 6.1)*.
i. Make sure that the compartments of the chocolate container *(Part. 3 Fig. 6.1)* have been correctly filled and that the chocolate is at the right temperature (between approximately 34°C and 37°C).
l. Make sure that the containers have been correctly positioned in the feed magazines *(Part. 1/2, Fig. 6.1)*.
m. Make sure that the granule hopper has been filled correctly *(Part. 4, Fig. 6.1)*.
n. Make sure that the lids have been correctly positioned in the lid feed magazines *(Part. 5, Fig. 6.1*).

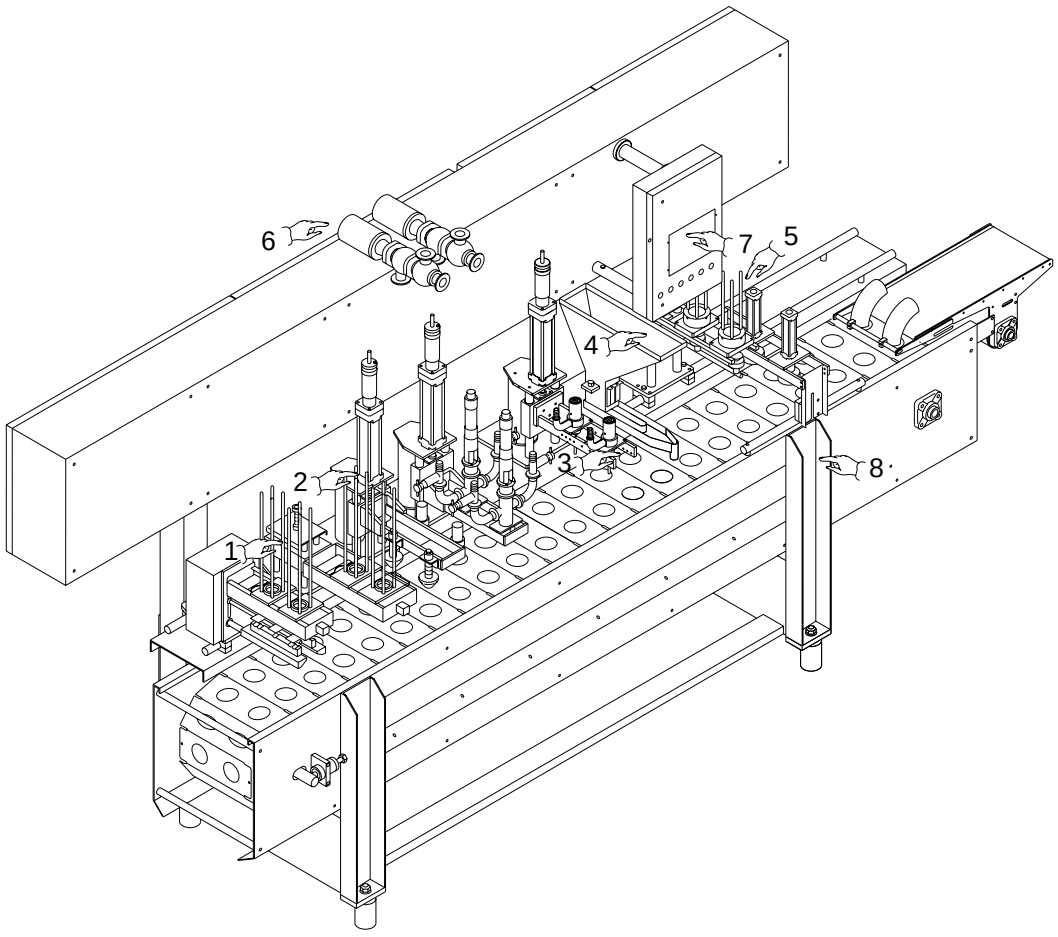


Fig. 6.1

6.2 Cone production equipment

6.2.1 Cone feed station

The function of the cone feeders *(Fig. 6.2)* mounted at the end of the machine is to deposit the cones in the slots in the lamellas. This action is synchronised with the movement of the trays.
The cone feeder consists of magazines *(Pos. 1/2, Fig. 6.2)*, in which the cones must be placed manually, and a cone dispenser driven by pneumatic actuators. The station is activated by the cone feed button  *(Fig. 6.13)* on the control panel.

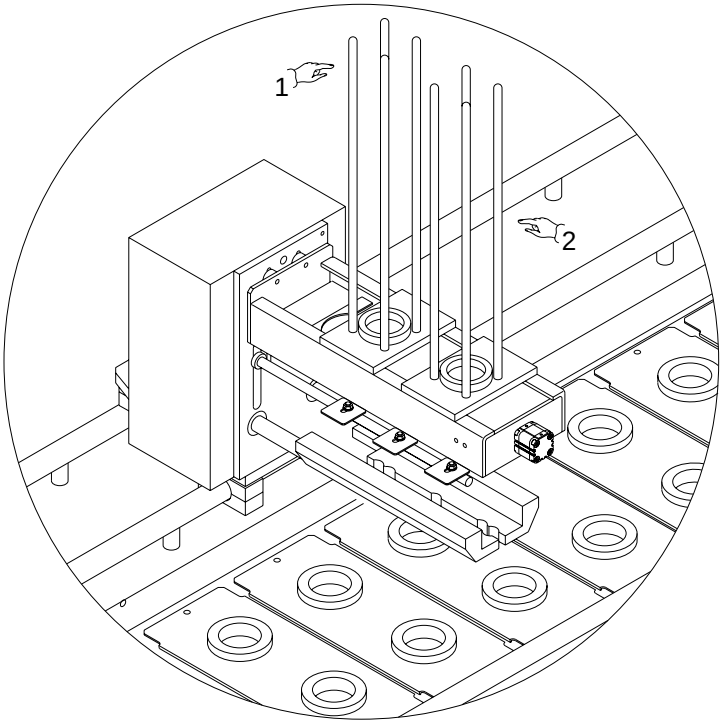


Fig. 6.2

6.2.2 Gauge and chocolate spray station

A fixed structure supports a pneumatic actuator which controls the up and down movement of the mobile frame. The travel of the pneumatic actuator can be adjusted by slackening screw *(Part. 1, Fig. 6.3)* and rotating ring nut *(Part. 2, Fig. 6.3)* clockwise to increase the travel of the pneumatic actuator and anticlockwise to shorten it.
At the end of the adjustment, tighten screws *(Part.1, Fig. 6.3)*.
If the travel of the pneumatic actuator has been changed, then the position of the chocolate spray nozzle in the cone must also be adjusted.
Two gauges *(Part. 3/4, Fig. 6.3)* are mounted on the front of the frame and two chocolate sprays *(Pos. 5/6, Fig. 6.3)* on the rear.
The station is activated by the "chocolate spray" button on the control panel  *(Fig. 6.13)*.

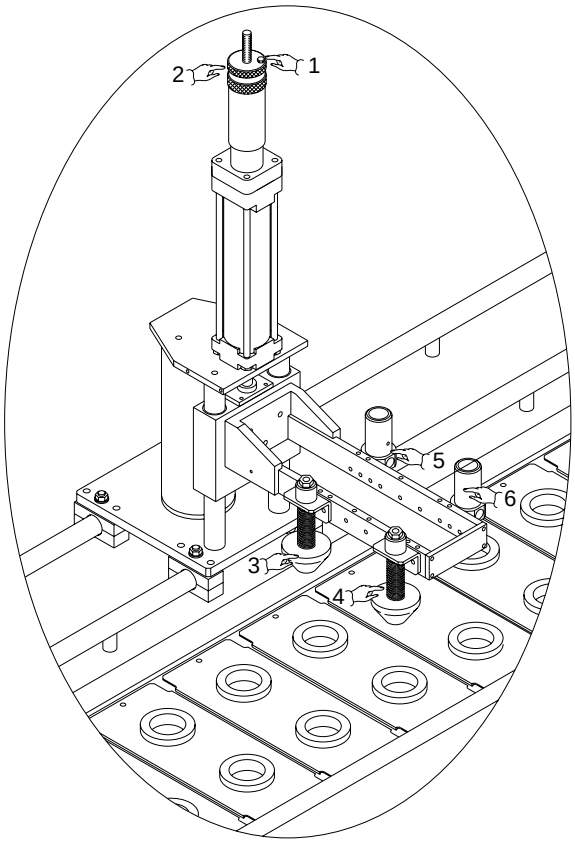


Fig. 6.3

6.2.3 Chocolate spray pump equipment

A frame on wheels *(Pos. 1, Fig. 6.4)* supports the thermostatically controlled chocolate tank *(Pos. 2, Fig. 6.4),* kept at a temperature of approximately 34°C to 37°C by water contained in the jacket which is heated by electrical resistances.
The rate of flow of the displacement pump may be adjusted by slackening the screws *(Part. 3, Fig. 6.4)* and using a wrench to turn the ring nut *(Part. 4, Fig. 6.4)* clockwise to increase the stroke of the pneumatic actuator or anticlockwise to decrease it. Tighten the screw *(Part. 3, Fig. 6.4)* with the wrench when finished.
During production, the tank must be filled manually.
To start heating the chocolate, press the "heat chocolate tank" button *A1(Fig. 6.13).*
To circulate the chocolate from the tank to the sprayers and back when the machine is stopped, press the "chocolate spray" button *F13(Fig. 6.13).*
The chocolate return route to the tank is necessary because the pipes are not heated, and the bypass prevents the chocolate from stopping in the pipe and solidifying.
During production, the dosage volume can be regulated by reducing or increasing the travel of the displacement pump. This is done by adjusting the limit switch screws and setting the spray nozzle opening time on the programmer.
Time is adjusted by modifying the degrees on the cam.
The chocolate is fed into the cones by the spray nozzle.
The incoming chocolate is atomised by compressed air sent to the appropriate connection.
As the air carrying the chocolate comes into contact with the product, it must first be filtered through a microfilter, an odour filter and a sterile filter.
For hygiene reasons, the machine is supplied with a sealed sterile cartridge.
The customer is responsible for sterilisation of the line downstream of the filter.

WARNING:

The water in the jacket must be heated at least half an hour before use. The water is heated by pressing button *A1(Fig. 6.13).*

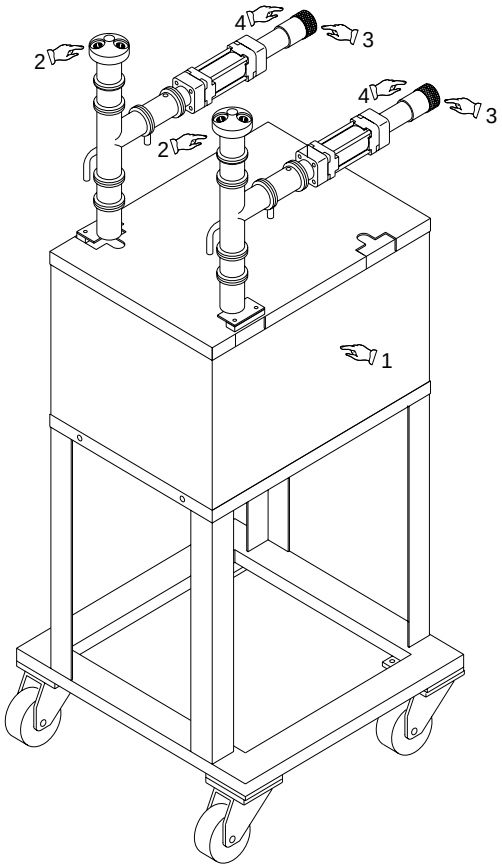


Fig. 6.4

6.2.4 Ice cream dosing station

The cones are filled with ice cream by dosers *(Pos.1, Fig. 6.5)* activated by pneumatic actuators *(Pos.2, Fig. 6.5)*.
A fixed structure supports the pneumatic actuator *(Pos.3, Fig. 6.5)* which controls the upward and downward movement of the mobile frame. The travel of the pneumatic actuator can be adjusted by slackening screw *(Part.4 Fig. 6.5)* with the wrench and rotating ring nut *(Part.5 Fig. 6.5)* clockwise to increase the travel of the pneumatic actuator and anticlockwise to reduce it.
At the end of the operation tighten screw *(Part. 4 Fig. 6.5)* using the wrench.
The start and finish of the mobile frame movement, which must be synchronised with the stop phase of the lamellas, can be adjusted from the control panel which is interfaced with the PLC.
Two dosers *(Pos. 1, Fig. 6.5)* are mounted on the frame. These dosers feed the required quantity of ice cream into the cones which have already been sprayed with chocolate.
The quantity of ice cream required can be obtained by changing the speed of the freezer and, from the control panel, adjusting the start and duration of the dose.
It is also possible to balance the quantity of ice cream dosed by each dosing nozzle on the lines by adjusting the flow regulators *(Pos. 6, Fig. 6.5)*.
The dosing station is activated by pressing "ice cream doser" buttons  *(Fig. 6.11)* which automatically close the bypass.

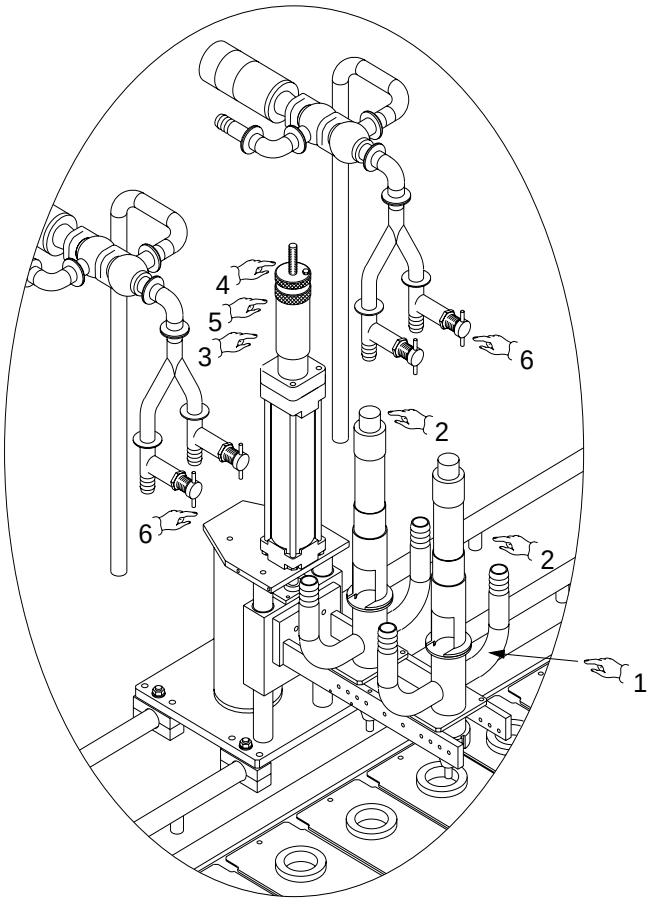


Fig. 6.5

6.2.5 Decoration station

Ice cream cones are decorated by dosers *(Pos. 1, Fig. 6.6)* driven by pneumatic actuators *(Pos. 2, Fig. 6.6)*.

A fixed structure supports a pneumatic actuator *(Pos. 3, Fig. 6.6)* which controls the upward and downward movement of the mobile frame. The stroke of the pneumatic actuator may be adjusted by slacking the screw *(Part. 4, Fig. 6.6)* with the wrench and turning the ring nut *(Part. 5, Fig. 6.6)* clockwise to increase the stroke of the pneumatic actuator or anticlockwise to decrease it.

Tighten the screw *(Part. 4, Fig. 6.6)* with the wrench when finished making the adjustment.

The beginning and duration of movement of the mobile frame while the lamellas are stationary may be set using the operator control panel which interfaces with the PLC.

Two dosers assembled on the frame *(Pos. 1, Fig. 6.6)* dose the required quantity of ice cream into the chocolate-coated cones. Freezer speed can be changed and dosing start and duration adjusted on the operator interface panel to obtain the required quantity of ice cream.

The quantity of ice cream dispensed by each doser in the rows may be balanced by adjusting the flow regulators *(Pos. 6, Fig. 6.6)*. The dosing station is activated using the "ice cream doser" buttons   *(Fig. 6.13)* which automatically close the by-pass.

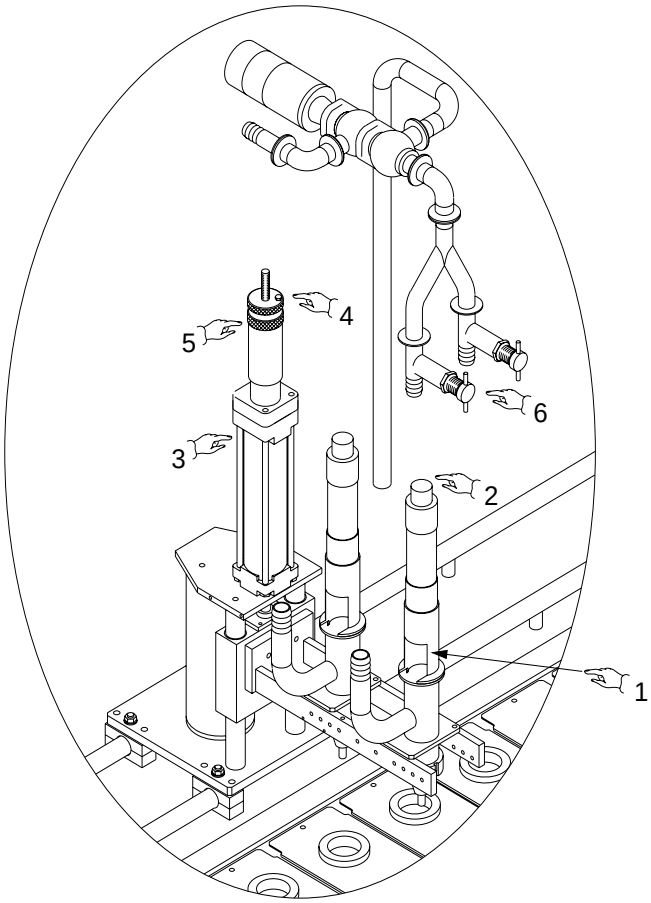


Fig. 6.6

6.2.6 Pencil filler station

The pencil filler station consists of nozzles *(Pos. 1, Fig. 6.7)* connected through hoses to an optional feed tub and driven by pneumatic actuators *(Pos. 2, Fig. 6.7)*.

A fixed structure supports a pneumatic actuator *(Pos. 3, Fig. 6.7)* which controls the upward and downward movement of the mobile frame. The stroke of the pneumatic actuator may be adjusted by slacking the screw *(Part. 4, Fig. 6.7)* with the wrench and turning the ring nut *(Part. 5, Fig. 6.7)* clockwise to increase the stroke of the pneumatic actuator or anticlockwise to decrease it.

Tighten the screw *(Part. 4, Fig. 6.7)* with the wrench when finished making the adjustment.

The beginning and duration of movement of the mobile frame while the lamellas are stationary may be set using the operator control panel which interfaces with the PLC.

Two nozzles assembled on the frame *(Pos. 1, Fig. 6.7)* dose the required quantity of product into the ice cream-filled chocolate-coated wafer cones.

The quantity of product dispensed may be adjusted by controlling the beginning and duration of dosing using the operator interface panel. The dosing station is activated using the "pencil filler"  buttons *(Fig. 6.13)* which automatically close the by-pass.

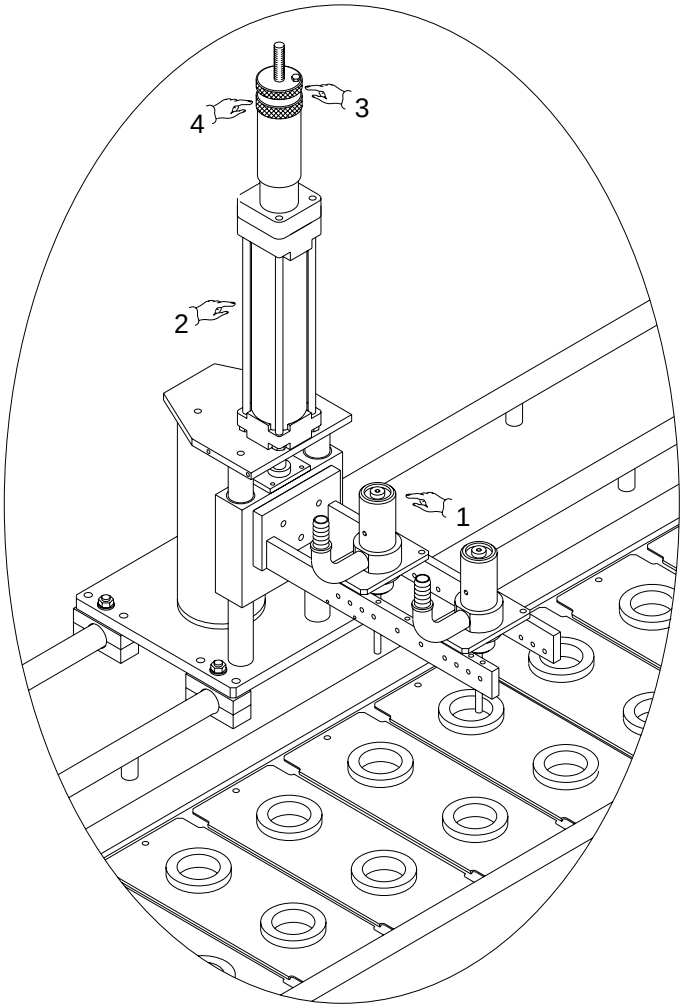


Fig. 6.7

6.2.7 Topping station

The topping station allows the top of the ice cream cones to be covered with a liquid product.
The station consists of a fixed structure *(Part. 1, Fig. 6.8)* housing nozzles *(Part. 2, Fig. 6.8)* which dispense product.
The rate of flow of the displacement pump may be adjusted by slacking the screw *(Pos. 3, Fig. 6.8)* with the wrench and turning the ring nut *(Part. 4, Fig. 6.4)* clockwise to increase the stroke of the pneumatic actuator or anticlockwise to decrease it. Tighten the screw *(Part. 3, Fig. 6.4)* with the wrench when finished making the adjustment.
During production, the tanks must be filled manually.
To start heating the chocolate, press the "chocolate tank heater" button A1*(Fig. 6.13)*.
To keep chocolate circulating from the tank to the sprayer and back again while the machine is stopped, press the "chocolate sprayer" button  *(Fig. 6.13)*.

The chocolate return route to the tank is necessary because the pipes are not heated, and the bypass prevents the chocolate from stopping in the pipe and solidifying.
During production, the dosage volume can be regulated by adjusting the limit switch screws to reduce or increase the travel of the displacement pump and by setting the spray nozzle opening time on the programmer.
Time is adjusted by modifying the degrees on the cam.
The chocolate is fed into the cones by a gravity-operated spray nozzle.

WARNING:

The water in the chocolate tank jacket must be heated at least half an hour before use. The water heater is switched on by pressing button *(A1 Fig. 6.13)*.

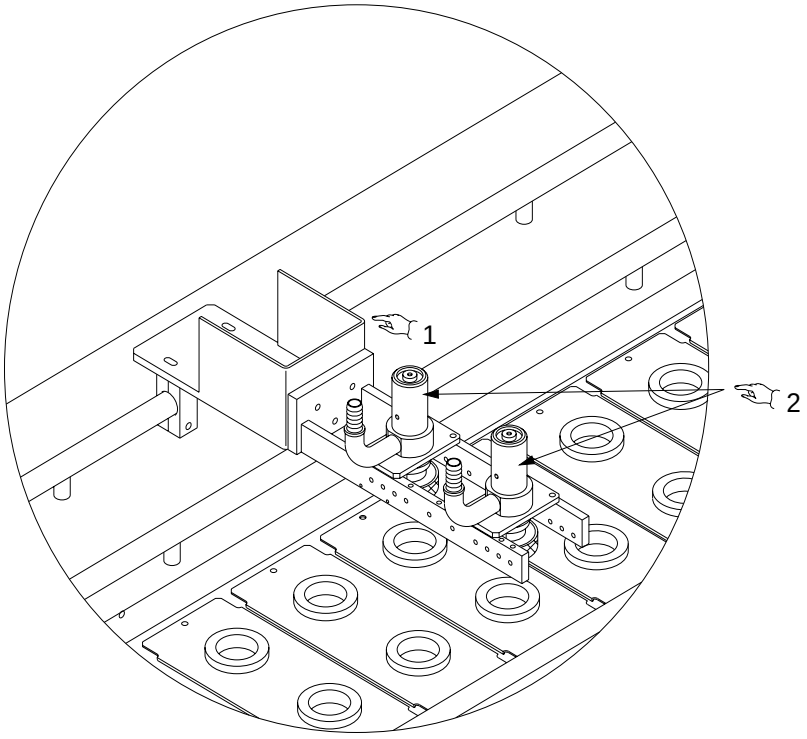


Fig. 6.8

6.2.8 Granule station

This device, which is mounted on the structure, is used to spread nut granules, chocolate flakes or similar onto the product. The unit consists of a hopper *(Pos. 1, Fig. 6.9)* connected to distribution channels *(Pos. 2, Fig. 6.9)* along which the product flows due to the effect of the vibration induced by a vibrator.
The quantity of product to feed is obtained by suitably adjusting the start and duration of the dose on the programmer.
The quantity of granules can also be balanced as follows:

- slacken screws *(Part. 3 Fig. 6.9)* using the wrench and move the adjustable baffle *(Part. 4 Fig. 6.9)*, lifting it increases the granule feed while lowering it reduces the feed.
  At the end of the adjustment, tighten the screws *(Part. 3 Fig. 6.9)* using the wrench;
- rotate the pressure regulator *(Part. 5 Fig.6.9)* clockwise to increase the working pressure of the vibrator in proportion to the quantity of granules fed, and anticlockwise to reduce the quantity.
  Adjust the position of the vibrator by varying its inclination with respect to the granule transfer channels.

The station is activated by pressing the button  *(Fig. 6.13)*.

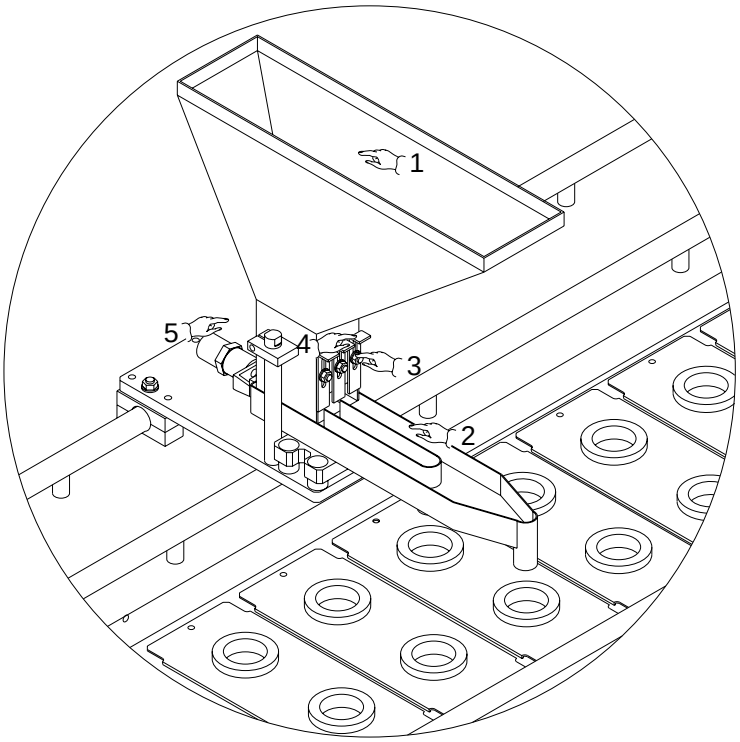


Fig. 6.9

6.2.9 Lid feed station

This station consists of lid magazines *(Part. 1, Fig. 6.10)* mounted on a support fixed to the structure and a mobile cross-member *(Part. 2, Fig. 6.10)*, controlled by a pneumatic actuator *(Part. 3, Fig. 6.10)*, which moves the lid pick-up suction cups.
During its upward travel, the suction cup support *(Part. 4, Fig. 6.10)* is rotated 180° by a rotary actuator *(Part. 5, Fig. 6.10)* which brings the suction cups into contact with the lids stacked in the magazines *(Part. 1, Fig. 6.10)*.
When the suction cups make contact with the lids, a vacuum is generated allowing the lids to be picked up.
During the downward movement, the suction cup support *(Part. 4, Fig. 6.10)* is rotated 180° to position the lids over the cones. The vacuum switches off and the lids are released.

The station is activated by pressing the button  *(Fig. 6.13)*. The vacuum control and the rotation of the cylinder are adjusted by means of the associated cams.

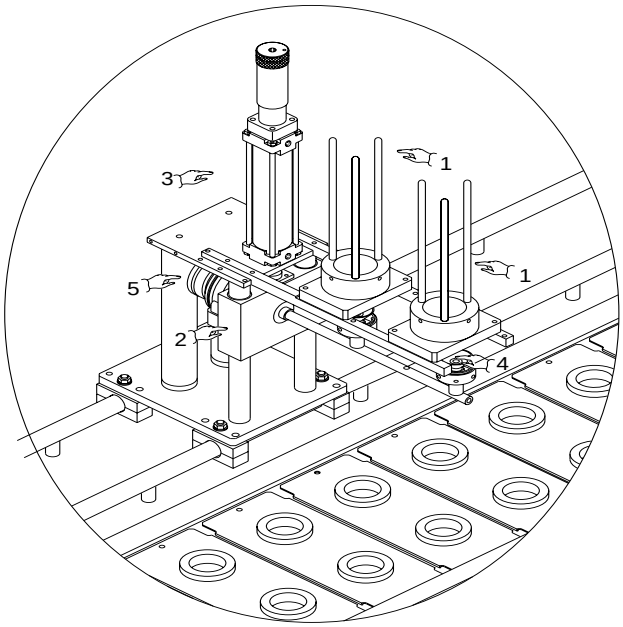


Fig. 6.10

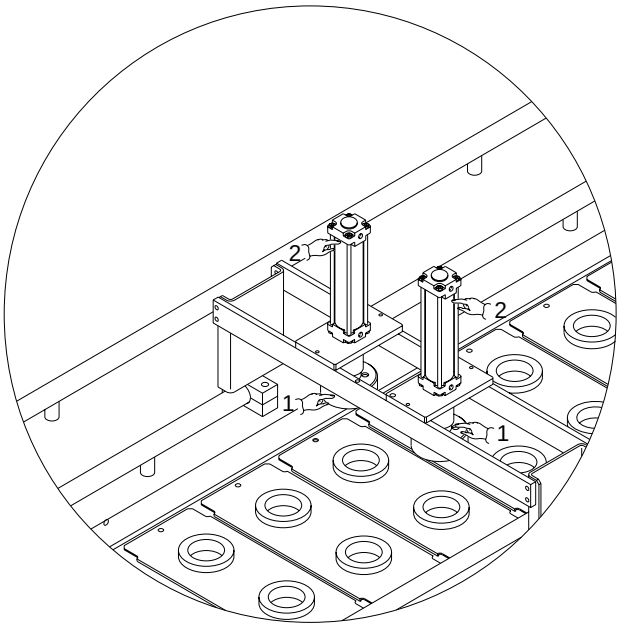


Fig. 6.11

6.2.10 Lid closing station

This station consists of crimping tools *(Part. 1, Fig. 6.11)* mounted on the structure and controlled by pneumatic actuators *(Part. 2, Fig. 6.11)*.
The downward movement induced by the pneumatic actuators *(Part. 2, Fig. 6.11)* brings the crimping tools *(Part. 1, Fig. 6.11)* into contact with the cones and lids, allowing the lids to be fixed in position.

The process is activated by pressing button F20  *(Fig. 6.13)* and adjusted by means of cams through the operator interface, with the appropriate inputs in the electronic programmer.
The position of each crimping tool is adjusted independently of the others by adjusting the nut and lock nut anchoring it to the stem of the cylinder.

6.2.11 Cone ejector station

This station is mounted underneath the lamellas. It is controlled by a cam on the main shaft and supports the pushers which eject the cones.
The upward movement allows the ejectors to lift the cones from the slots *(Part. 1, Fig. 6.12)* in the lamellas enabling them to be discharged onto the belt *(Part. 2, Fig. 6.12)* by the ejector bends *(Part. 3, Fig. 6.12)*.

The adjustment of the positions of the ejector bends and belt is described in section **5.2, Mechanical adjustments.**

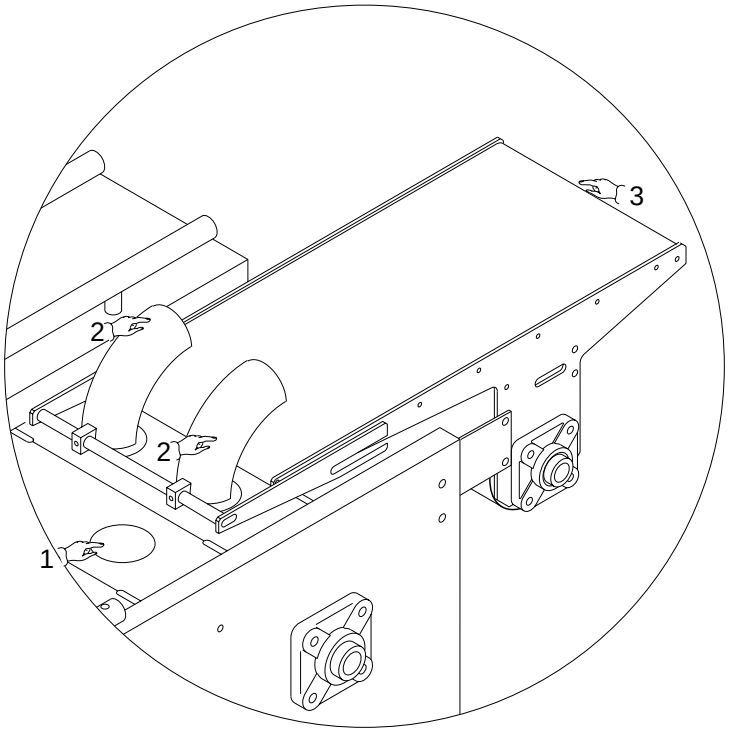


Fig. 6.12

6.2.12 Start-up

Proceed as follows to start the machine:

a. Switch on the electric power supply to the machine by turning the main switch to the "ON" position.

b. Press the chocolate tank heater button A1 *(Fig. 6.11)*.

c. Place a suitable container under the by-pass valve drain.

d. Place a suitable container under the doser discharge chute.

e. Start feeding ice cream from the freezer.

f. Wait until the ice cream coming from the bypass is of the required consistency.

g. Position the bypass valves to feed the dosers by pressing button A2 *(Fig. 6.11)*.

h. Wait until the ice cream coming from the bypass is of the required consistency.

i. Press the run and doser start-up buttons   *(Fig. 6.11)*. The lamellas will start moving in synchrony with the dosing.

Press the automatic production start button. The machine will start the production cycle automatically. If the manual production cycle is selected, start each individual station with the relevant station enable buttons.

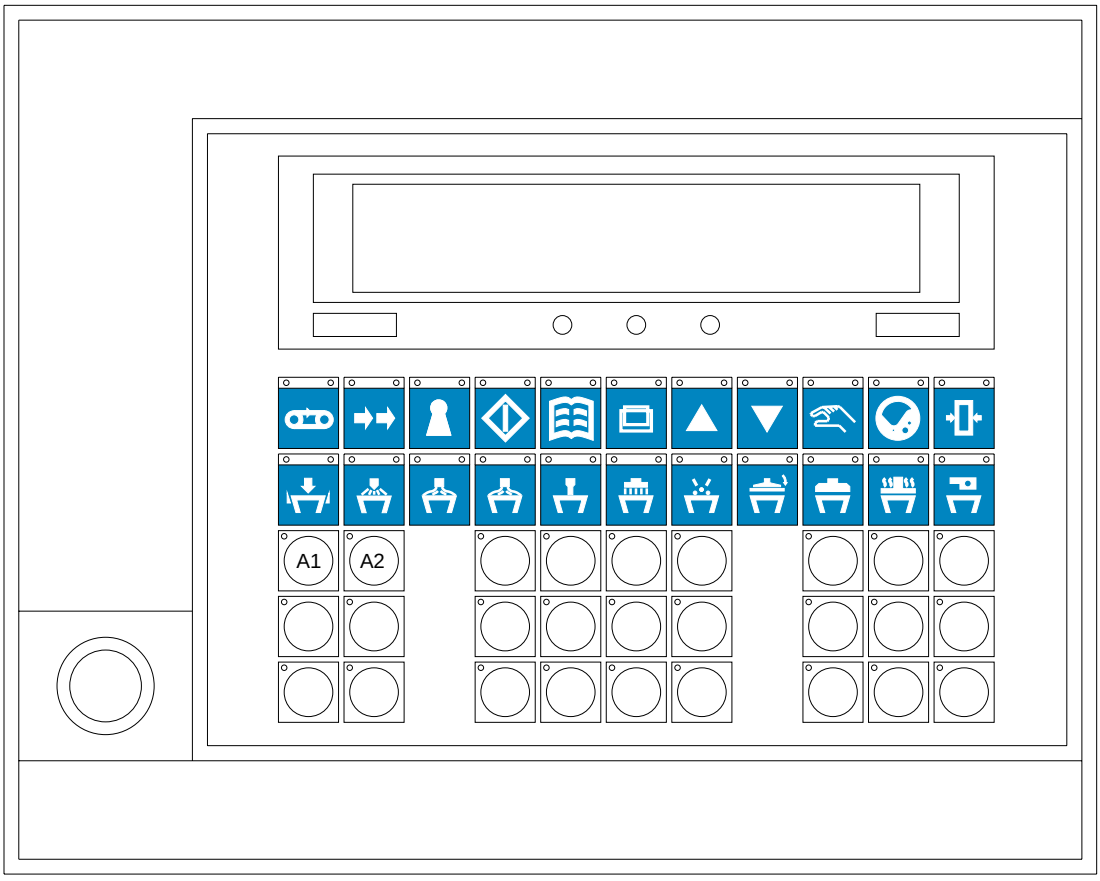


Fig. 6.13

WARNING:

This description and the drawing apply to a generic cone type. The procedure may vary depending on the type of product to be made.

6.2.13 Emergency stop

If any component malfunctions, press the emergency stop button *(Part. 1/2, Fig. 6.14)* to disable all the machine's electrical functions.
To reset the machine, first remedy the cause of the malfunction, rotate the emergency stop button *(Part.1, Fig. 6.14*) anticlockwise and release it, then press the reset button  *(Fig. 6.13)*on the operator interface panel or press the button on the cord emergency stop switch *(Part. 2, Fig. 6.14*) and then press the reset button  *(Fig. 6.13)*.

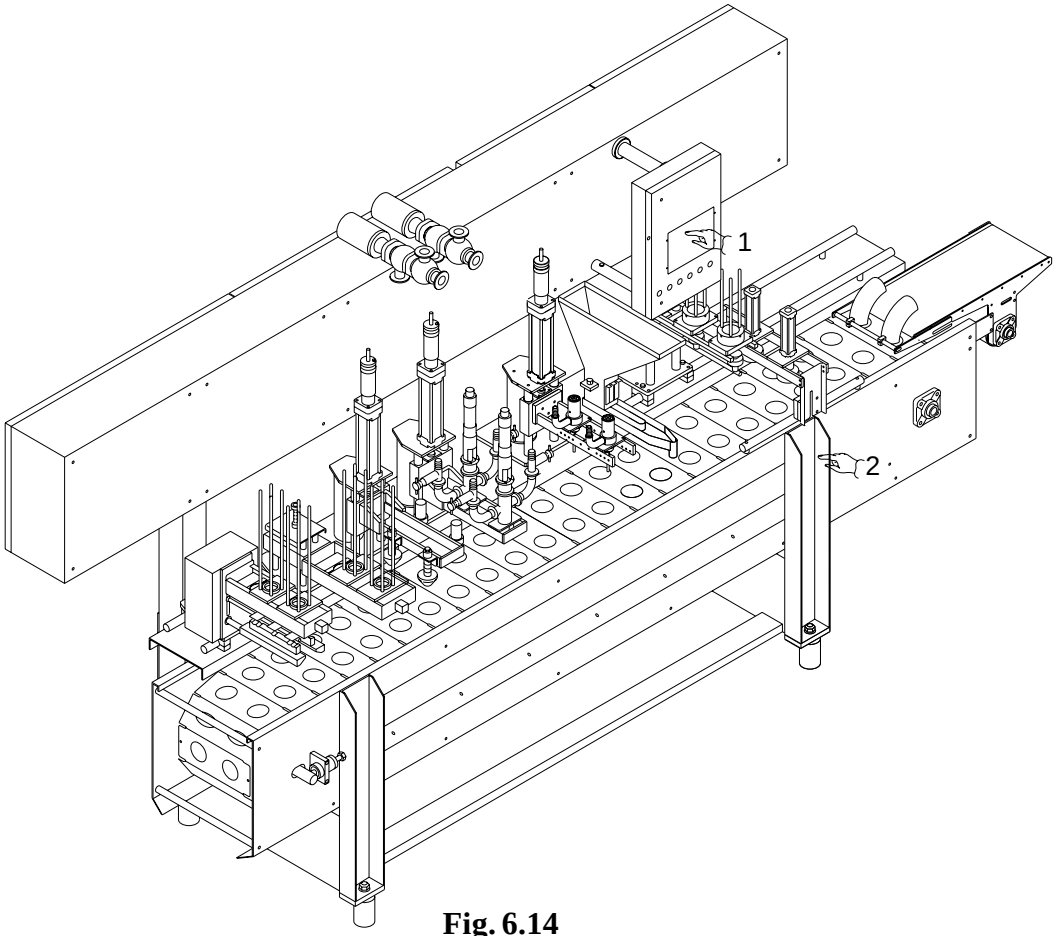


Fig. 6.14

6.2.14 End of production

To stop the machine in automatic cycle mode, proceed as follows:

- Press the end of production button *(Pos.*  *Fig. 6.13)*. All the operating stations in memory will stop automatically.

To stop the machine manually:

- To deactivate the stations, press the individual station buttons on the operator interface panel.

Cleaning and washing procedures are described in **CHAPTER 7- CLEANING AND MAINTENANCE.**

6.3 Cup production equipment

6.3.1 Cup feed station

The cup feeders *(Fig. 6.15)* mounted at the end of the machine feed the cups into the slots in the lamellas in synchrony with the movement of the trays.
The station consists of magazines *(Pos. 1/2, Fig. 6.15)*, into which the cups are loaded manually, and a cup dispenser driven by pneumatic actuators *(Pos. 3, Fig. 6.15)*.
The station is activated by pressing cup feed button  *(Fig. 6.26)* on the control panel.
The timing of the movements can be modified by adjusting the corresponding cams.
The release and the insertion of the cup in the slot take place with a combination of movements: the pneumatic opening of the plates located at the lower end of the magazine; a mechanical movement, created by a cam mechanism, of a carriage carrying the suction cups which grip the bottom of the cups, and the action of the suction cups which, by means of the vacuum, grip the cups at the top dead centre position and the release them once they are in the slots.
Various types of adjustment are possible:

- adjustment of the height of the magazine support frame, in that the travel of the suction cup carriage is fixed, and as a result, the height of the magazines must be altered to move the bottom of the ice cream cup nearer to the suction cup.

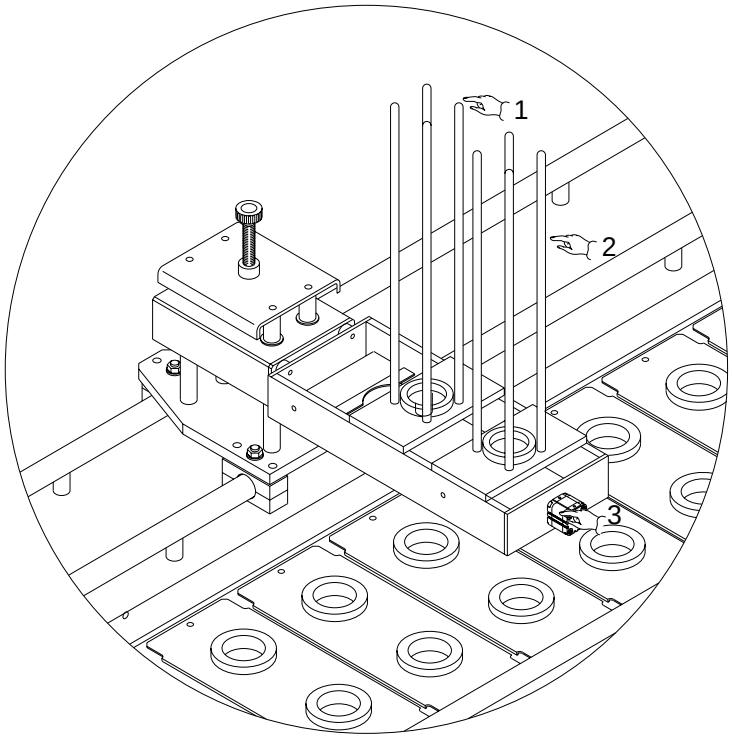


Fig. 6.15

6.3.2 Ice cream dosing station

The cups are filled with ice cream by dosers *(Pos.1, Fig.6.16)* controlled by means of pneumatic actuators *(Pos. 2, Fig. 6.16)*.
A fixed structure supports a pneumatic actuator *(Pos. 3, Fig. 6.16)* which controls the upward and downward movement of the mobile frame. The travel of the pneumatic actuator can be adjusted by slackening screws *(Part. 4, Fig. 6.16)* and turning ring nut *(Part. 5, Fig. 6.13)* clockwise to increase the travel of the pneumatic actuator or anticlockwise to reduce it.
At the end of the adjustment, tighten screws *(Part.4, Fig. 6.16)*.
The start and duration of the mobile frame movement, which must take place while the lamellas are stationary, can be adjusted from the operator's panel which is interfaced with the PLC.
Two dosers *(Pos. 1, Fig. 6.16)* mounted on the frame feed the required quantity of ice cream into the cup.
The quantity of ice cream to be fed to the cups can be obtained by modifying the speed of the freezer and by adjusting the start and duration of the dosing action from the operator interface panel.
The quantity of ice cream output by each doser can be balanced between the lines by adjusting the flow controllers *(Pos. 6, Fig. 6.16)*.
The dosing station is activated by pressing the "ice cream dosing" button  *(Fig. 6.26)* which automatically closes the bypass.

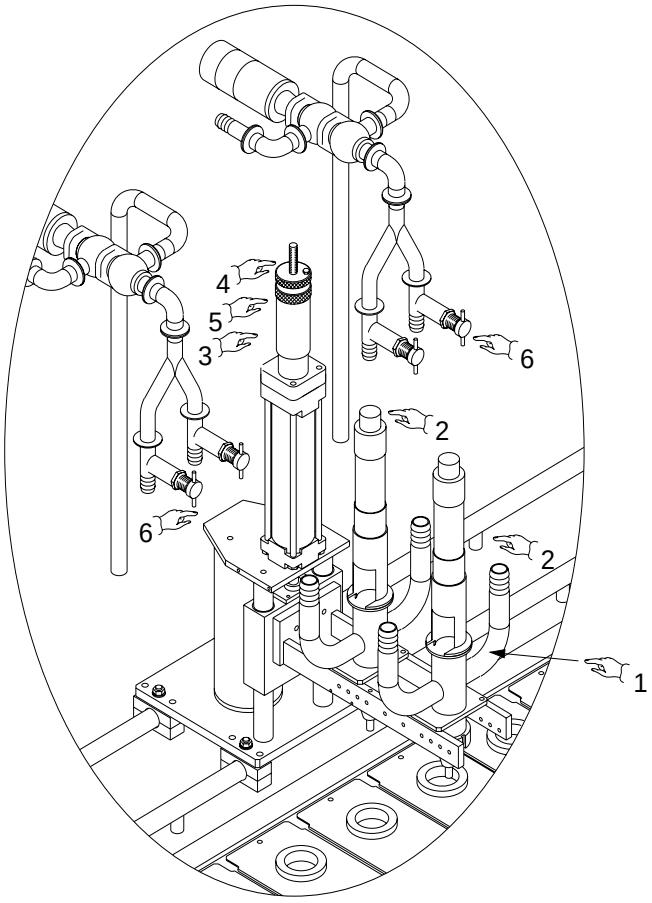


Fig. 6.16

6.3.3 Decorating station

The cups are decorated with ice cream by dosers *(Pos. 1, Fig. 6.17)* controlled by means of pneumatic actuators *(Pos. 2, Fig. 6.17)*.
A fixed structure supports a pneumatic actuator *(Pos. 3, Fig. 6.17)* which controls the upward and downward movement of the mobile frame. The travel of the pneumatic actuator can be adjusted by slackening screws *(Part. 4, Fig. 6.17)* and turning ring nut *(Part. 5, Fig. 6.13)* clockwise to increase the travel of the pneumatic actuator or anticlockwise to reduce it.
At the end of the adjustment, tighten screws *(Part. 4, Fig. 6.17)*.
The start and duration of the mobile frame movement, which must take place while the lamellas are stationary, can be adjusted from the operator's panel which is interfaced with the PLC.
Two dosers *(Pos. 1, Fig. 6.17)* mounted on the frame feed the required quantity of ice cream into the cup.
The quantity of ice cream to be fed to the cups can be obtained by modifying the speed of the freezer and by adjusting the start and duration of the dosing action from the operator interface panel.
The quantity of ice cream output by each doser can be balanced between the lines by adjusting the flow controllers *(Pos. 6, Fig. 6.17)*.
The dosing station is activated by pressing the "ice cream dosing" button  *(Fig. 6.26)* which automatically closes the bypass.

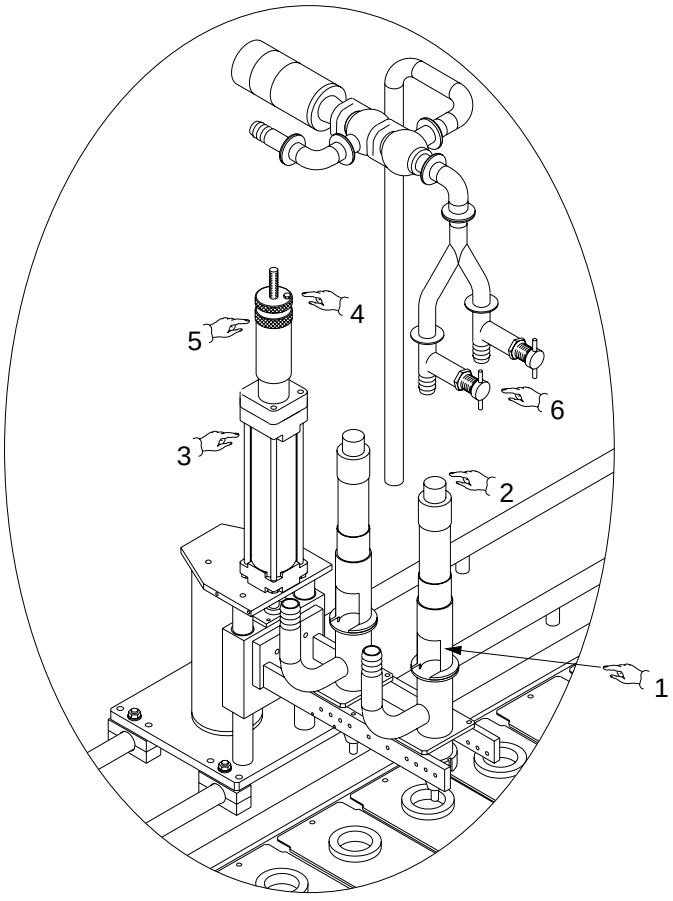


Fig. 6.17

6.3.4 Pencil filler station

The pencil filler station consists of nozzles *(Pos. 1, Fig. 6.18)* connected through hoses to an optional feed tub and driven by pneumatic actuators *(Pos. 2, Fig. 6.18)*.

A fixed structure supports a pneumatic actuator *(Pos. 3, Fig. 6.18)* which controls the upward and downward movement of the mobile frame. The stroke of the pneumatic actuator may be adjusted by slacking the screw *(Part. 4, Fig. 6.18)* with the wrench and turning the ring nut *(Part. 5, Fig. 6.18)* clockwise to increase the stroke of the pneumatic actuator or anticlockwise to decrease it.

Tighten the screw *(Part. 4, Fig. 6.18)* with the wrench when finished making the adjustment.

The beginning and duration of movement of the mobile frame while the lamellas are stationary may be set using the operator control panel which interfaces with the PLC.

Two nozzles assembled on the frame *(Pos. 1, Fig. 6.18)* dose the required quantity of product into the ice cream-filled cups.

The quantity of product dispensed may be adjusted by controlling the beginning and duration of dosing using the operator interface panel. The dosing station is activated using the "pencil filler" button  *(Fig. 6.26)*.

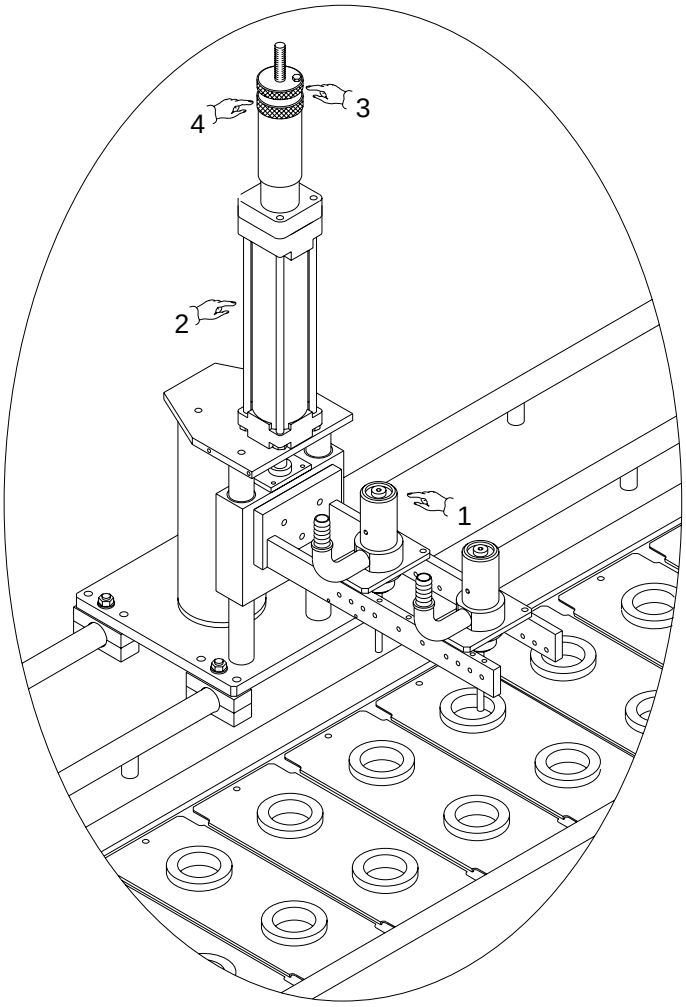


Fig. 6.18

6.3.5 Topping station

The topping station allows the top part of the cups to be covered with a liquid product.
The station consists of a fixed structure *(Part. 1, Fig. 6.19)* housing nozzles *(Pos. 2, Fig. 6.19)* which dispense product.
A frame on wheels *(Pos. 1, Fig. 6.4)* supports a chocolate tank *(Pos. 2, Fig. 6.4)* kept at a temperature of approximately 34°C to 37°C by water contained in the jacket, which is heated by electrical resistances
The rate of flow of the displacement pump may be adjusted by slacking the screw *(Part. 3, Fig. 6.4)* with the wrench and turning the rin nut *(Part. 4, Fig. 6.4)* clockwise to increase the stroke of the pneumatic actuator or anticlockwise to decrease it.
Tighten the screw *(Part. 3, Fig. 6.4)* with the wrench when finished making the adjustment.
During production, the tanks must be filled manually.
To start heating the chocolate, press the "chocolate tank heater" button A1 *(Fig. 6.26)*.
To keep chocolate circulating from the tank to the sprayer and back again while the machine is stopped, press the "chocolate sprayer" button  *(Fig. 6.26)*.

The chocolate return route to the tank is necessary because the pipes are not heated, and the bypass prevents the chocolate from stopping in the pipe and solidifying.
During production, the dosage volume can be regulated by adjusting the limit switch screws to reduce or increase the travel of the displacement pump and by setting the spray nozzle opening time on the programmer.
Time is adjusted by modifying the degrees on the cam.
The chocolate is dispensed into the cups by a spray nozzle.

WARNING:

The water in the chocolate tank jacket must be heated at least half an hour before use. The water heater is switched on by pressing button A1 *(Fig. 6.26)*.

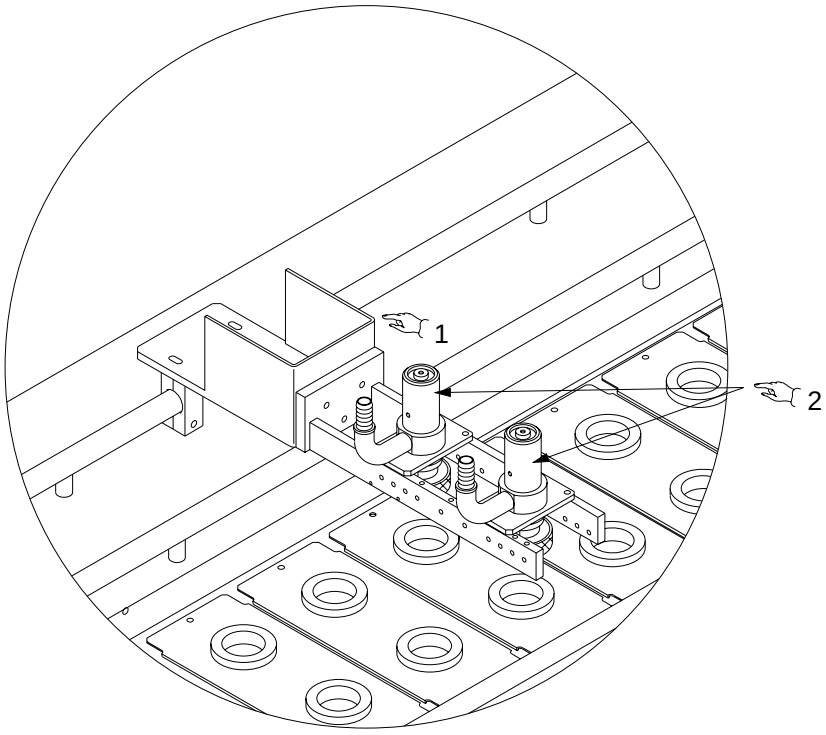


Fig. 6.19

6.3.6 Granule station

This device, which is mounted on the structure, is used to spread nut granules, chocolate flakes or similar onto the product. The unit consists of a hopper *(Pos. 1, Fig. 6.20)* connected to distribution channels *(Pos. 2, Fig. 6.20)* along which the product flows due to the effect of the vibration induced by a vibrator.
The quantity of product to feed is obtained by suitably adjusting the start and duration of the dose on the programmer.
The quantity of granules can also be balanced as follows:

- slacken screws *(Part. 3, Fig. 6.20)* using the wrench and move the adjustable baffles *(Part. 4 Fig. 6.20)*, lifting them to increase granule feed or lowering them to reduce feed.

At the end of the adjustment, tighten screws *(Pos. 3, Fig. 6.20)* using the wrench;
rotate the pressure regulator *(Part. 5 Fig. 6.20)* clockwise to increase the working pressure of the vibrator in proportion to the quantity of granules fed, or anticlockwise to reduce it.
Adjust the position of the vibrator by varying its inclination with respect to the granule transfer channels. The station is activated by pressing button  *(Fig. 6.26)*.

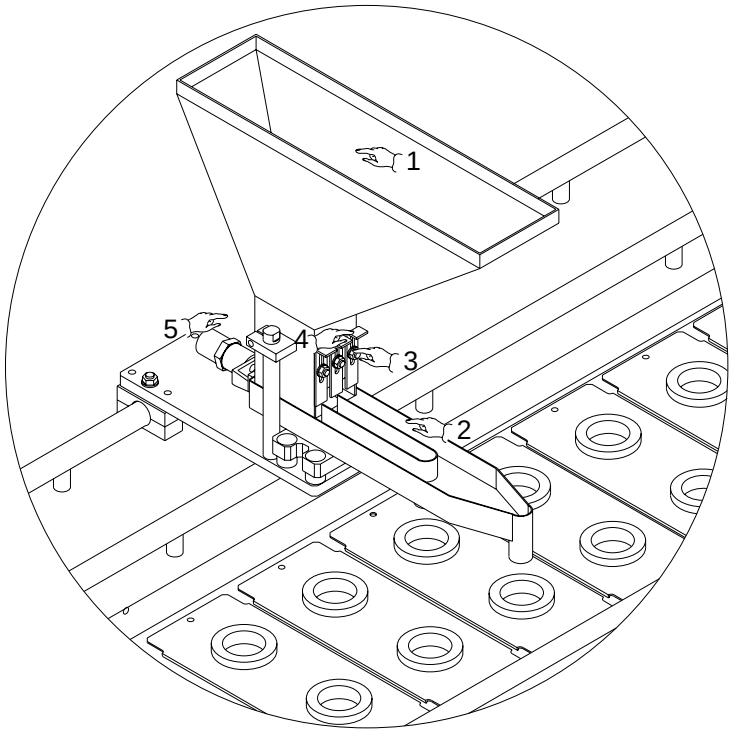


Fig. 6.20

6.3.7 Lid feeding station

This station consists of lid magazines *(Part. 1, Fig. 6.21)* mounted on a support fixed to the structure and a mobile cross-member *(Part. 2, Fig. 6.21)*, controlled by a pneumatic actuator *(Part. 3, Fig. 6.21)*, which moves the lid pick-up suction cups.
During its upward travel, the suction cup support *(Part. 4, Fig.6.21)* is rotated 180° by a rotary actuator *(Part. 5, Fig. 6.21)* which brings the suction cups into contact with the lids stacked in the magazines *(Part. 1, Fig. 6.21)*.
When the suction cups make contact with the lids, a vacuum is generated allowing the lids to be picked up.
During the downward movement, the suction cup support *(Part. 4, Fig. 6.21)* is rotated 180° to position the lids over the cups. The vacuum switches off and the lids are released.

If even one lid is missing, the vacuum switch in the pneumatic cabinet detects that the vacuum is not present and disables the rotation and descent of the lid positioning arm.
If a lid is lost during the rotation, the downward and rotation movement is stopped.
This safety device is necessary for preventing the suction cup, minus lid, from touching the product, getting covered with ice cream or chocolate which would compromise its operation on subsequent products.

The station is activated by pressing button  *(Fig. 6.26)*. The vacuum control and the rotation of the cylinder are adjusted by means of the corresponding cams.

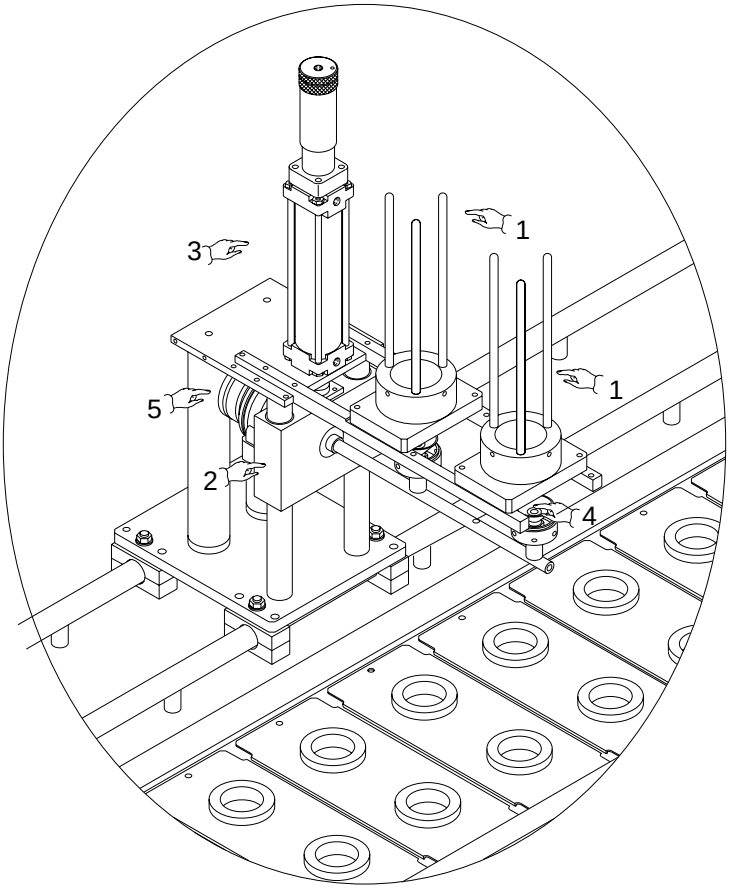


Fig. 6.21

6.3.8 Lid closing station

This station consists of crimping tools *(Part. 1, Fig. 6.22)* mounted on the structure and controlled by pneumatic actuators *(Part. 2, Fig. 6.22)*.
The downward movement induced by the pneumatic actuators *(Part. 2, Fig. 6.22)* brings the crimping tools *(Part. 1, Fig. 6.22)* into contact with the cups and lids, allowing the latter to be fixed in position.

The process is activated by pressing the button 

(Fig. 6.26) and adjusted by means of cams through the operator interface, with the appropriate inputs in the electronic programmer.
The position of each crimping tool is adjusted independently of the others by adjusting the nut and lock nut anchoring it to the stem of the cylinder.

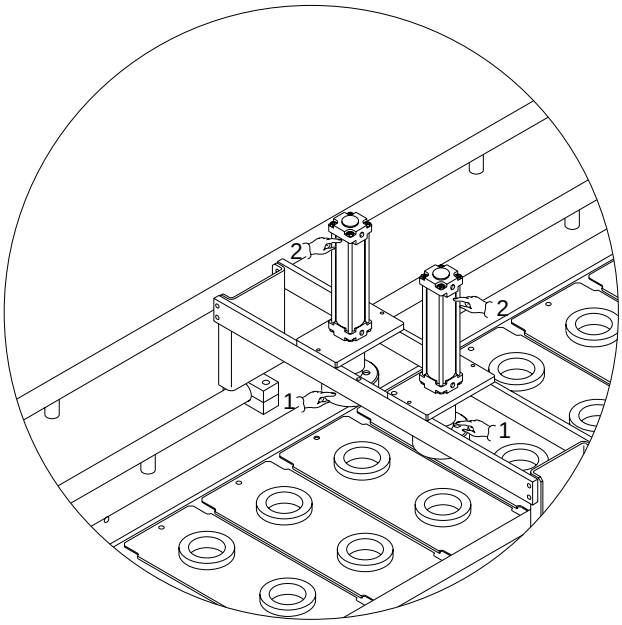


Fig. 6.22

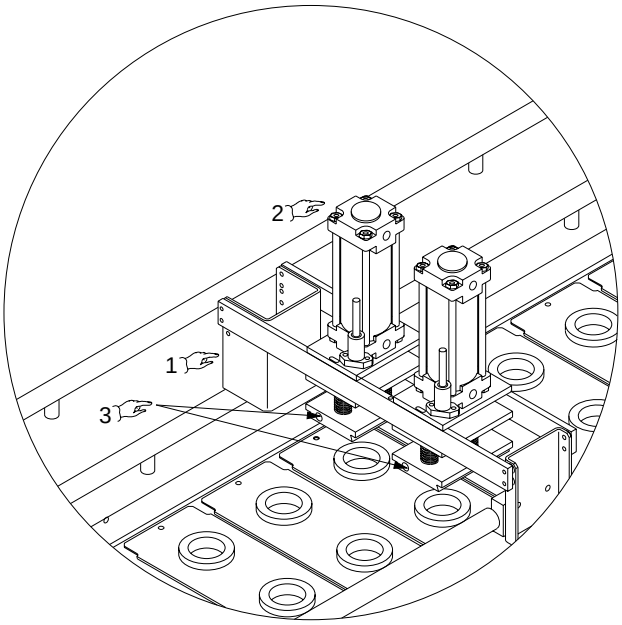


Fig. 6.23

6.3.9 Lid sealing station

This station consists of sealing heads *(Part. 3, Fig. 6.23)* assembled on the structure *(Part. 1, Fig. 6.23)* and controlled by pneumatic actuators *(Part. 2, Fig. 6.23)*.
The downward movement due to the pneumatic actuators *(Part. 2, Fig. 6.23)* brings the sealing heads *(Part. 3, Fig. 6.23)* into contact with the cups and covers so that it can seal them.

The process is activated by pressing button 

(Fig. 6.26) and controlled by cams through the operator interface which controls the input to the electronic programme.
The position of each sealing head can be adjusted independently of the others by adjusting the nut and lock nut anchoring it onto the stem of the cylinder.

6.3.10 Lid stamping station

This station consists of stamps *(Part. 3, Fig. 6.24*) assembled on the structure *(Part. 1, Fig. 6.24*) and controlled by pneumatic actuators.
Two feelers controlled by a pneumatic actuator *(Part. 2, Fig. 6.24*) detect the presence of a lid and enable stamping.

The process is activated by pressing button F17 *(Fig. 6.26)* and controlled by cams through the operator interface which controls the input to the electronic programme.

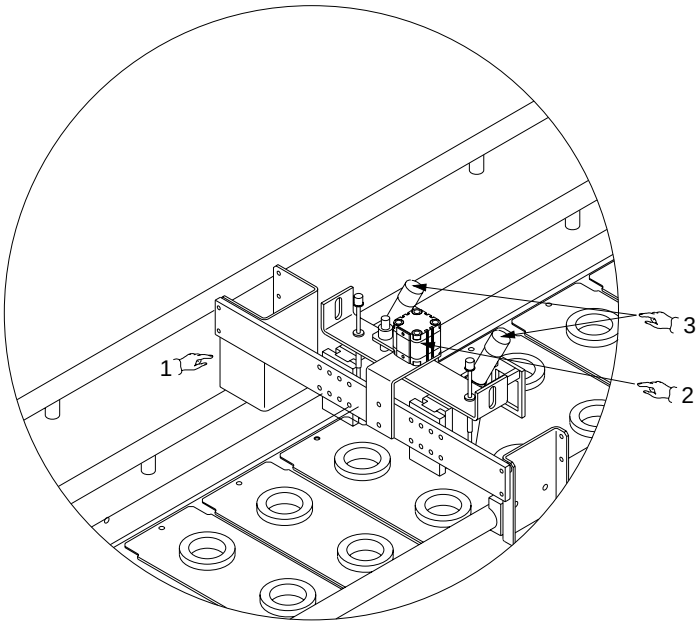


Fig. 6.24

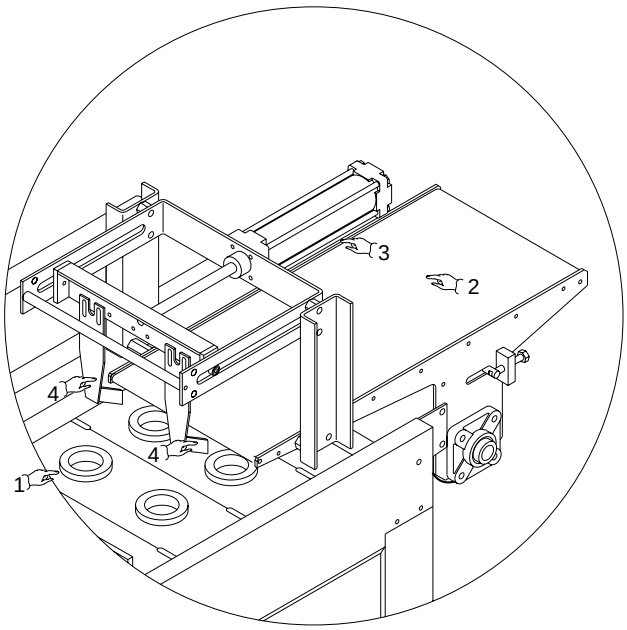


Fig. 6.25

6.3.11 Cup ejector station

This station is mounted underneath the lamellas. It is controlled by a cam and supports the pushers which eject the cups.
The upward movement allows the ejectors to lift the cups from the lamellas *(Part. 1, Fig. 6.25),* enabling them to be discharged onto the belt *(Part. 2, Fig. 6.25)* by the pneumatic actuator *(Part. 3, Fig. 6.25)* which controls two pick-up devices *(Pos. 4, Fig. 6.25)* and ejected.

Adjustment of belt position:
If cup diameter has been changed during a format change, it may be necessary to change the forks which push the product onto the belt or the diameter or shape of the ejector plates and adjust the position of the belt along the longitudinal axis in order to improve the transfer of the cup.

6.3.12 Start-up

Proceed as follows to start the machine:

a. Switch on the electric power supply to the machine by turning the main switch to the "ON" position.

b. Press the chocolate tank heater button A1 *(Fig. 6.26)*.

c. Place a suitable container under the by-pass valve drain.

d. Place a suitable container under the doser discharge chute

e. Start feeding ice cream from the freezer.

f. Wait until the ice cream coming from the BY-PASS is of the required consistency.

g. Position the bypass valves to feed the dosers by pressing button A2 *(Fig. 6.26)*.

h. Wait until the ice cream coming out of the dosers is of the required consistency

i. Press the run and doser start-up button F9  *(Fig. 6.26)*. The lamellas will start moving.

Press the automatic production start button. The machine will start the production cycle automatically. If the manual production cycle is selected, start each individual station with the relevant station enable buttons.

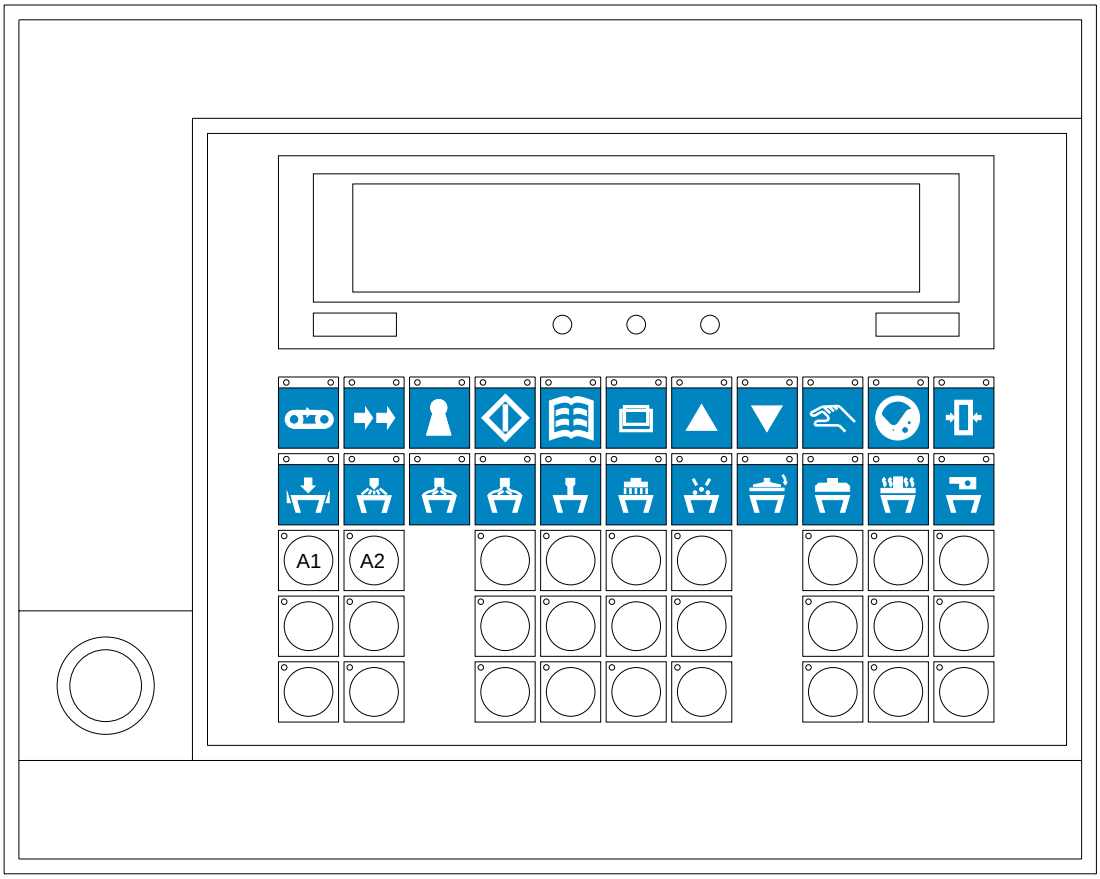


Fig. 6.26

WARNING:

This description and the drawings refer to a generic cup type. The procedure may vary depending on the type of product to be made.

6.3.13 Emergency stop

If any component malfunctions, press the emergency stop buttons *(Part. 1/2, Fig. 6.20)* to disable all the machine's electrical functions.
The reset the machine, first remedy the cause of the malfunction, rotate the emergency stop button *(Part.1, Fig. 6.20)* anticlockwise and release it, then press the reset button button *(Fig. 6.20)* on the operator interface panel or press the button on the cord emergency stop switch *(Part. 2, Fig. 6.20)* and then press the reset button *(Fig. 6.20)*.

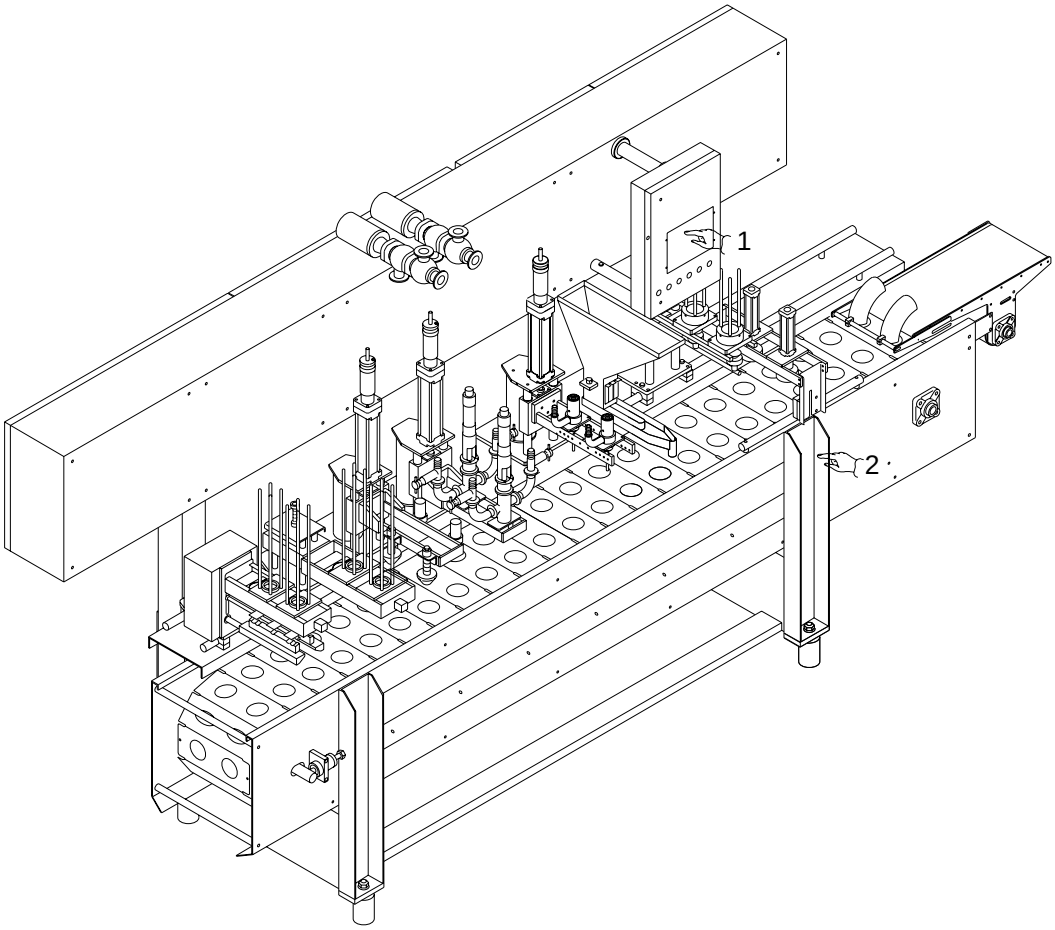


Fig. 6.27

6.3.13 End of production

To stop the machine in automatic cycle mode, proceed as follows:

- Press the end of production button *(Fig. 6.20)*. All the operating stations in memory will stop automatically.

To stop the machine manually:

- To deactivate the stations, press the individual station buttons on the operator interface panel.

Cleaning and washing procedures are described in **CHAPTER 7- CLEANING AND MAINTENANCE.**

6.4 Flame-shape production devices

6.4.1 Cup feed station

The cup feeders *(Fig. 6.28)* mounted at the end of the machine feed the cups into the slots in the lamellas in synchrony with the movement of the trays.
The station consists of magazines *(Pos. 1/2, Fig. 6.28)*, into which the cups are loaded manually, and a cup dispenser driven by pneumatic actuators *(Pos. 3, Fig. 6.28)*.
The station is activated by pressing the cup feed button  *(Fig. 6.26)* on the control panel.
The timing of the movements can be modified by adjusting the corresponding cams.
The release and the insertion of the cup in the slot take place with a combination of movements: the pneumatic opening of the plates located at the lower end of the magazine: a mechanical movement, created by a cam mechanism, of a carriage carrying the suction cups which grip the bottom of the cups, and the action of the suction cups which, by means of the vacuum, grip the cups at the top dead centre position and the release them once they are in the slots.
Various types of adjustment are possible:

- adjustment of the height of the magazine support frame, in that the travel of the suction cup carriage is fixed, and as a result, the height of the magazines must be altered to move the bottom of the ice cream cup nearer to the suction cup.
- if cup diameter changes following a format change, it may be necessary to replace the suction cups with new ones of the appropriate diameter.

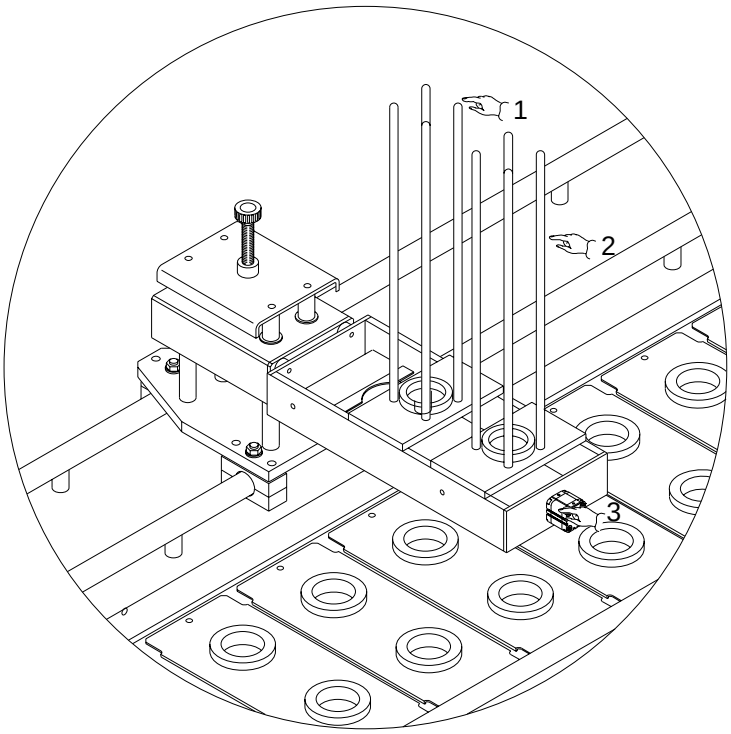


Fig. 6.28

6.4.2 Chocolate spraying station

A fixed structure supports a pneumatic actuator *(Part. 1, Fig. 6.29)* which controls the upward and downward movement of the mobile frame. The travel of the pneumatic actuator can be adjusted by slackening screw *(Part. 2 Fig. 6.29)* and rotating ring nut *(Part. 3 Fig.6.29)* clockwise to increase the travel of the pneumatic actuator or anticlockwise to shorten it.
At the end of the adjustment, tighten screws *(Part.2 Fig. 6.29)*.
Adjustment of the travel of the pneumatic actuator is necessary to adjust the entry of the chocolate spray nozzle into the cone.
Two chocolate sprayers *(Part. 4, Fig. 6.29)* are mounted on the rear of the frame.
The station is activated by the "chocolate spray" button on the control panel  *(Fig. 6.13)*.

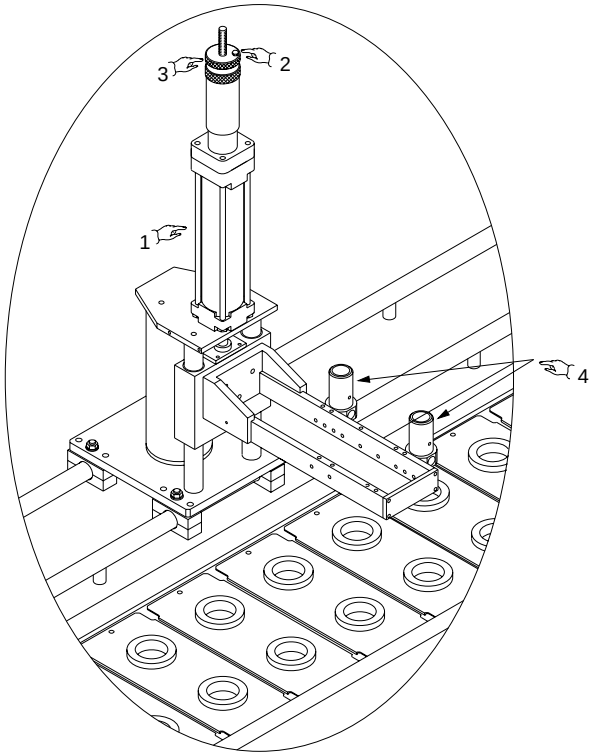


Fig. 6.29

6.4.3 Chocolate spray pump

A frame on wheels *(Pos. 1, Fig. 6.4)* supports the thermostatically controlled chocolate tank *(Pos. 2, Fig. 6.4)*, kept at a temperature of approximately 34°C to 37°C by water contained in the jacket which is heated by electrical resistances.
The rate of flow of the displacement pump may be adjusted by slackening the screws *(Part. 3, Fig. 6.4)* and using a wrench to turn the ring nut *(Part. 4, Fig. 6.4)* clockwise to increase the stroke of the pneumatic actuator or anticlockwise to decrease it.
Tighten the screw *(Part. 3, Fig. 6.4)* with the wrench when finished.
During production, the tank must be filled manually.
To start heating the chocolate, press the "heat chocolate tank" button *A1 (Fig. 6.13)*.
To circulate the chocolate from the tank to the sprayers and back when the machine is stopped, press the "chocolate spray" button *(Fig. 6.13)*.
The chocolate return route to the tank is necessary because the pipes are not heated, and the bypass prevents the chocolate from stopping in the pipe and solidifying.

During production, the dosage volume can be regulated by reducing or increasing the travel of the displacement pump and setting the spray nozzle opening time on the programmer.
Time is adjusted by modifying the degrees on the cam.
The chocolate is fed into the cones by the spray nozzle.
The incoming chocolate is atomised by compressed air sent to the appropriate connection.
As the air carrying the chocolate comes into contact with the product, it must first be filtered through a microfilter, an odour filter and a sterile filter.
For hygiene reasons, the machine is supplied with a sealed sterile cartridge.
The customer is responsible for sterilisation of the line downstream of the filter.

WARNING:

The water in the jacket must be heated at least half an hour before use. The water is heated by pressing button *A1 (Fig. 6.13)*.

6.4.4 Ice cream dosing station

The cups are filled with ice cream by dosers *(Pos. 3, Fig. 6.30)* controlled by means of pneumatic actuators *(Pos.4, Fig. 6.30)*.
A fixed structure supports a servomotor *(Pos.1, Fig. 6.30)* which controls the upward and downward movement of the mobile frame.
The start and duration of the mobile frame movement, which must take place while the lamellas are stationary, can be adjusted from the operator's panel which is interfaced with the PLC.
Two dosers *(Pos. 3, Fig. 6.30)* with rotating nozzles *(Pos. 4, Fig. 6.30*) mounted on the frame feed the required quantity of ice cream into the cup.
The quantity and shape of ice cream to be fed to the cups can be obtained by modifying the speed of the freezer and by adjusting the start and duration of the dosing action from the operator interface panel.
The quantity of ice cream output by each doser can be balanced between the lines by adjusting the flow controllers *(Pos. 6, Fig. 6.30)*.
The dosing station is activated by pressing the "ice cream dosing" button  *(Fig. 6.26)* which automatically closes the bypass.

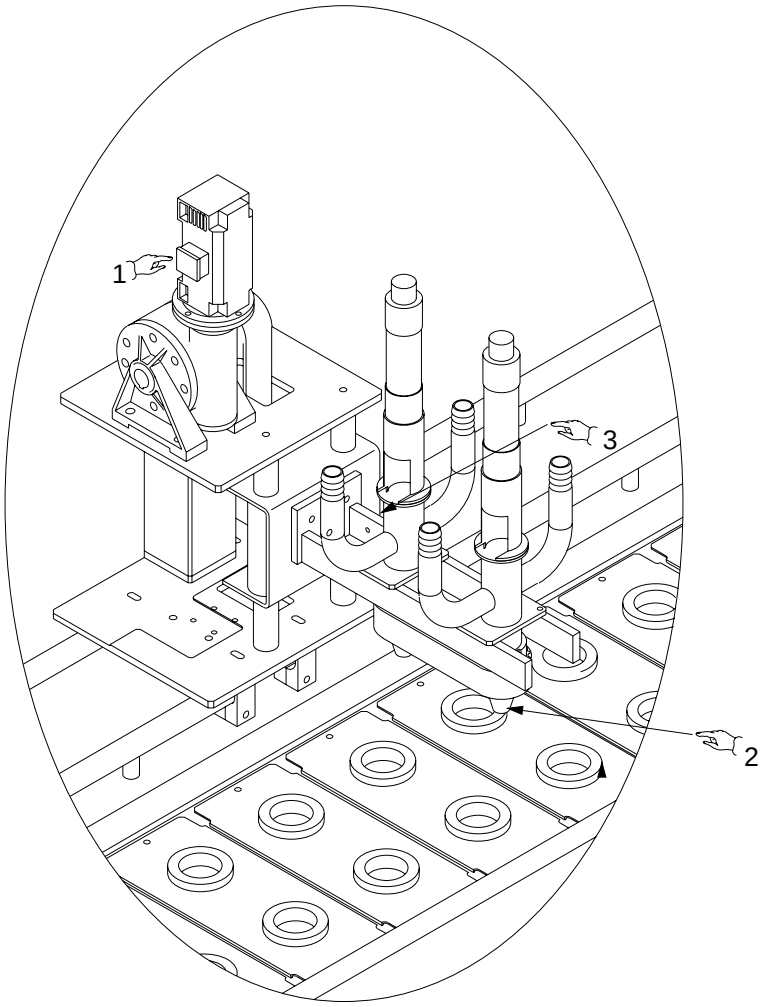


Fig. 6.30

6.4.5 Lid feed station

This station consists of lid magazines mounted on a support fixed to the structure and a mobile cross-member controlled by a pneumatic actuator *(Part.1, Fig. 6.31)*, which moves the lid pick-up grippers *(Part. 4, Fig. 6.31)*.
The pick-up movement of the grippers *(Part. 4, Fig. 6.31)* is controlled by pneumatic microcylinders.
A fixed structure supports a pneumatic actuator *(Pos. 2, Fig. 6.31)* which controls the upward and downward movement of the mobile cross-member.
The stroke of the pneumatic actuator *(Part. 1, Fig. 6.31)* may be adjusted by slacking the screw *(Part. 2, Fig. 6.31)* and turning the ring nut *(Part. 3, Fig. 6.31)* clockwise to increase the stroke of the pneumatic actuator or anticlockwise to decrease it.
Tighten the screw *(Part. 2, Fig. 6.31)* with the wrench when finished making the adjustment.

The station is activated by pressing the button  *(Fig. 6.26)*.

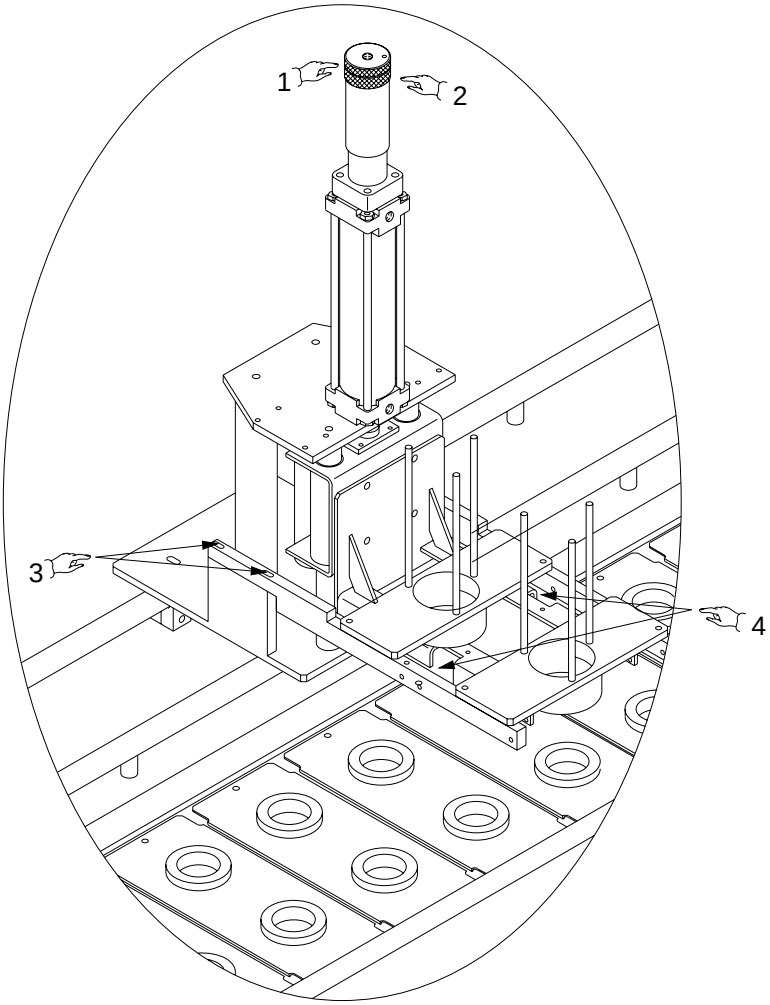


Fig. 6.31

6.4.6 Cup ejector station

This station is mounted underneath the lamellas. It is controlled by a cam and supports the pushers which eject the cups.
The upward movement allows the ejectors to lift the cups from the slots *(Part. 1, Fig. 6.32)* on the lamellas, enabling them to be discharged onto the belt *(Part. 2, Fig. 6.32)* by the pneumatic actuator *(Part. 3, Fig. 6.32)* which controls two pick-up devices *(Part. 4, Fig. 6.32)* and ejected.

Adjustment of belt position:
If cup diameter has been changed during a format change, it may be necessary to change the forks which push the product onto the belt or the diameter or shape of the ejector plates and adjust the position of the belt along the longitudinal axis in order to improve the transfer of the cup.

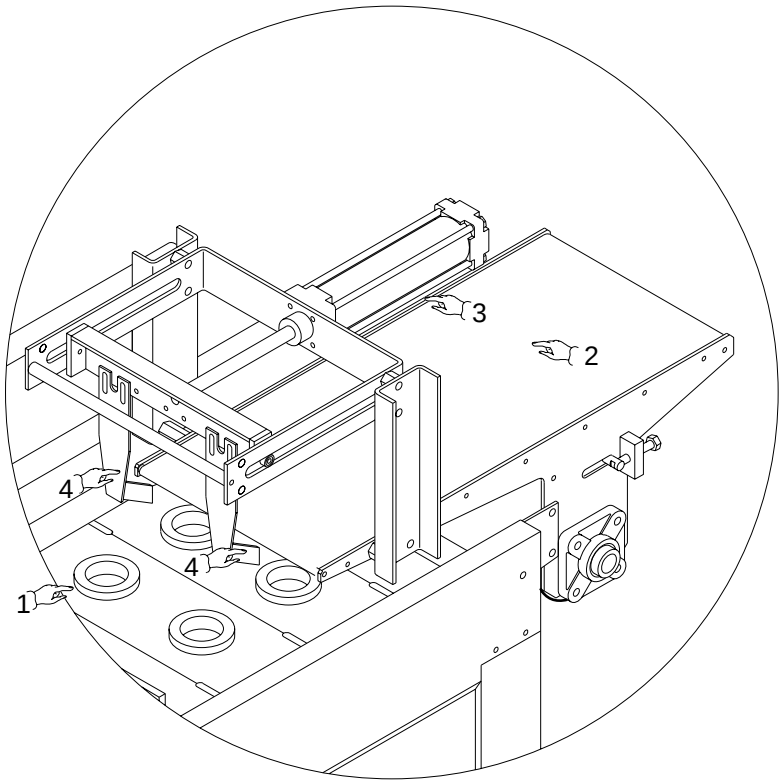


Fig. 6.32

6.4.7 Start-up

Proceed as follows to start the machine:

a. Switch on the electric power supply to the machine by turning the main switch to the "ON" position.

b. Press the chocolate tank heater button A1 *(Fig. 6.33)*.

c. Place a suitable container under the by-pass valve drain.

d. Place a suitable container under the doser discharge chute.

e. Start feeding ice cream from the freezer.

f. Wait until the ice cream coming from the BY-PASS is of the required consistency.

g. Position the bypass valves to feed the dosers by pressing button A2 *(Fig. 6.33)*.

h. Wait until the ice cream coming out of the dosers is of the required consistency.

i. Press the run and doser start-up button  *(Fig. 6.33)*. The lamellas will start moving.

Press the automatic production start button. The machine will start the production cycle automatically. If the manual production cycle is selected, start each individual station with the relevant station enable buttons.

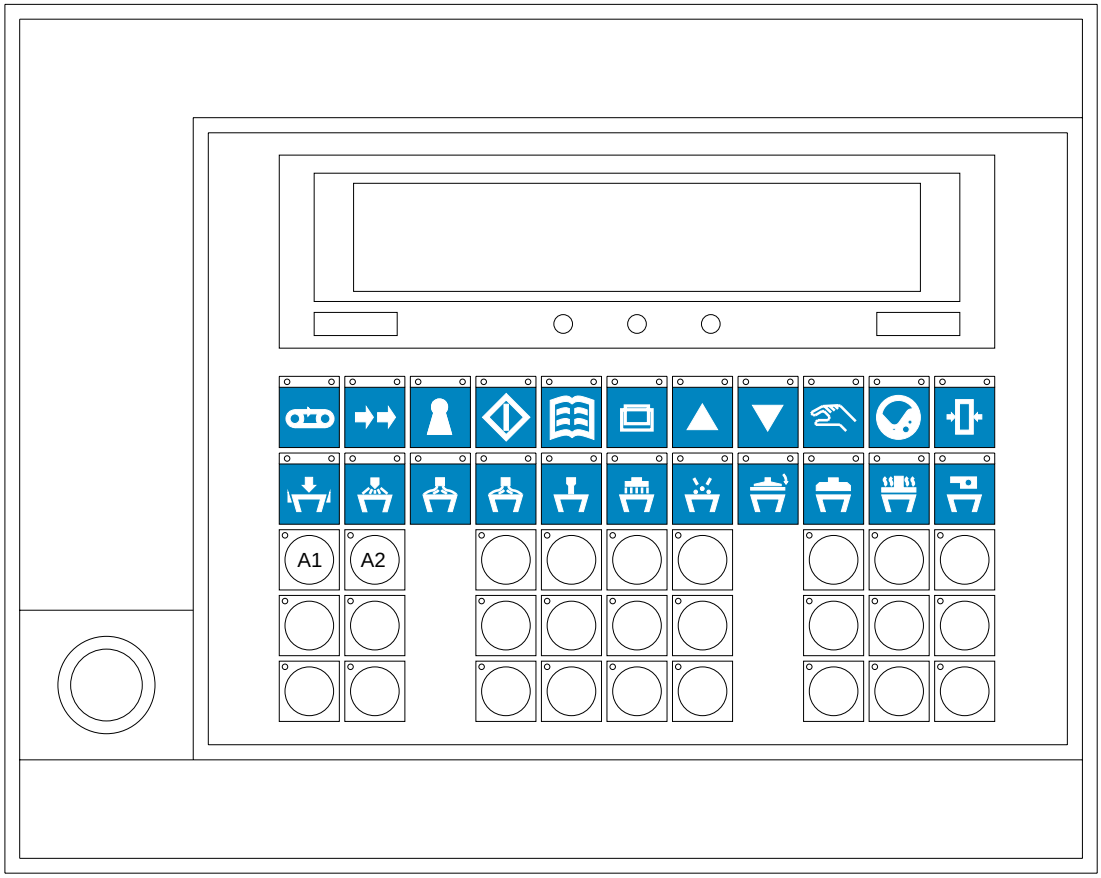


Fig. 6.33

WARNING:

This description and the drawings refer to a generic cup type. The procedure may vary depending on the type of product to be made.

6.4.8 Emergency stop

If any component malfunctions, press the emergency stop buttons *(Part. 1/2, Fig. 6.34)* to disable all the machine's electrical functions.
The reset the machine, first remedy the cause of the malfunction, rotate the emergency stop button *(Part. 1, Fig. 6.34)* anticlockwise and release it, then press the reset button  *(Fig. 6.33)* on the operator interface panel or press the button on the cord emergency stop switch *(Part. 2, Fig. 6.34)* and then press the reset button  *(Fig. 6.33)*.

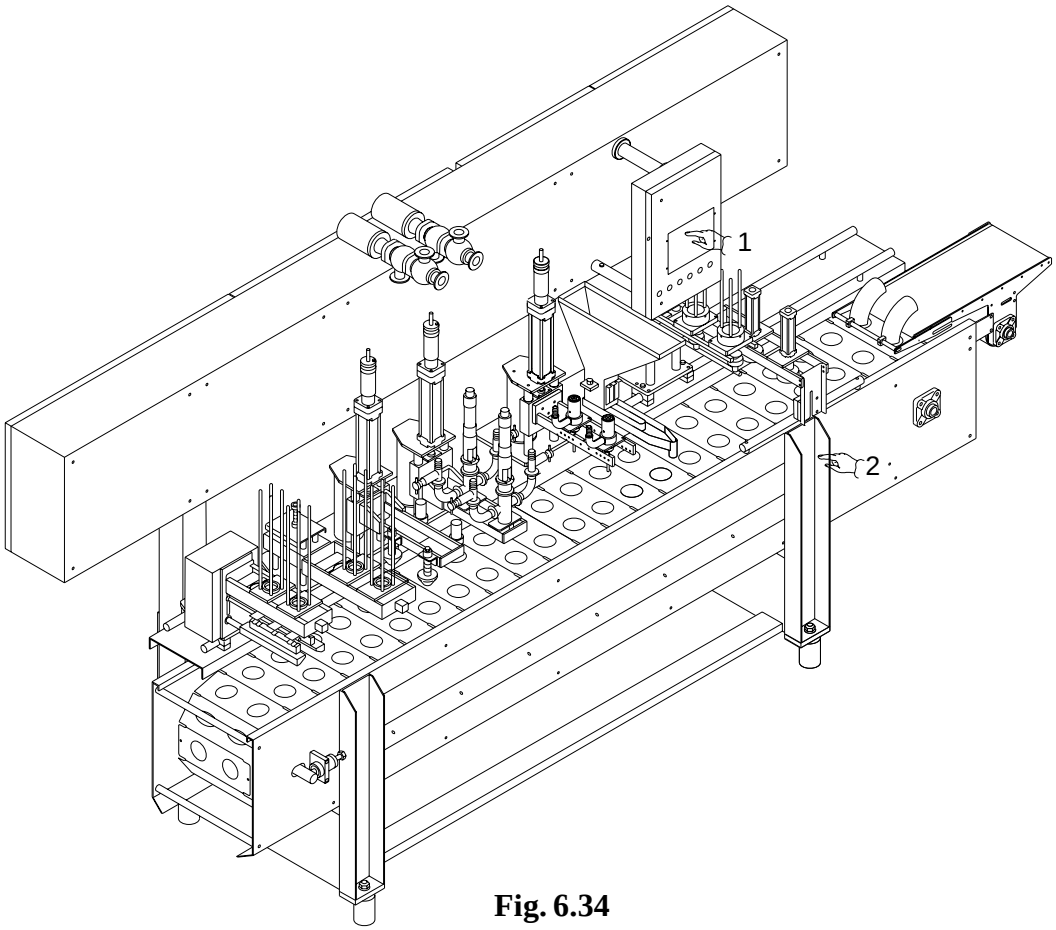


Fig. 6.34

6.4.9 End of production

To stop the machine in automatic cycle mode, proceed as follows:

- Press the end of production button  *(Fig. 6.33)*. All the operating stations in memory will stop automatically.

To stop the machine manually:

- To deactivate the stations, press the individual station buttons on the operator interface panel.

Cleaning and washing procedures are described in **CHAPTER 7- CLEANING AND MAINTENANCE**.

HOYER COMET C

7 - CLEANING AND MAINTENANCE

Contents

7.1 Cleaning and washing

Make sure that the main switch is OFF before washing the machine.

The filling machine washing operations comprise the following stages:

a- Prewash with hot water (50°).

b- Detergent wash. Use a foam-forming alkaline detergent or gel with high fat-emulsifying power. Concentration may vary between 2% and 10% according to the amount of dirt and the hardness of the water used.

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

d- Descaling wash. Use a low-viscosity acid descaler containing a mixture of wetting and emulsifying agents. Concentration may vary between 2% and 3%. The minimum recommended contact time is 15 - 20 minutes.

e- Rinse with water.

f- Disinfectant wash. Use a suitable disinfectant diluted in water. Concentration may vary between 1% and 1.2%. The minimum recommended contact time is 15 - 20 minutes.

g- Rinse with water.

Warning:

Do not use high-pressure water jets.

7.1.1 Recommended products

Detergent	Descaler	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 After extended period of disuse

- wash the machine thoroughly;
  see paragraph **7.1 - Cleaning and washing**
- remove the dosers and pipes then thoroughly wash and disinfect;
- check the condition of the seals and replace if necessary;
- lubricate the seals;
  material required: vaseline oil;
- check that the emergency stop buttons and cords work correctly;
- perform a general inspection and tighten all loose screws;
- make sure that none of the connections leak;
- check that all moving parts work correctly and replace if necessary;

7.2.2 Daily

- wash the machine at the end of the production shift;
  see points **a-b-c-d-e** in paragraph **7.1 - Cleaning and washing.**
- dismantle the dosers then wash and disinfect thoroughly;
  material required: water - detergent - disinfectant;
- lubricate the seals, then dry the various components and lubricate them using neutral vaseline before refitting.
  material necessary : vaseline oil.
- check the oil level in vibrator lubricator glass or twister dosers.

7.3 Chocolate spray nozzle maintenance

Each day, at the end of the working cycle use the dosing pump to pump warm water through the chocolate feed pipe.
Periodically, and when required, dismantle the end of the chocolate spray nozzle *(Pos.1, Fig.7.1)* to restore its correct operation.

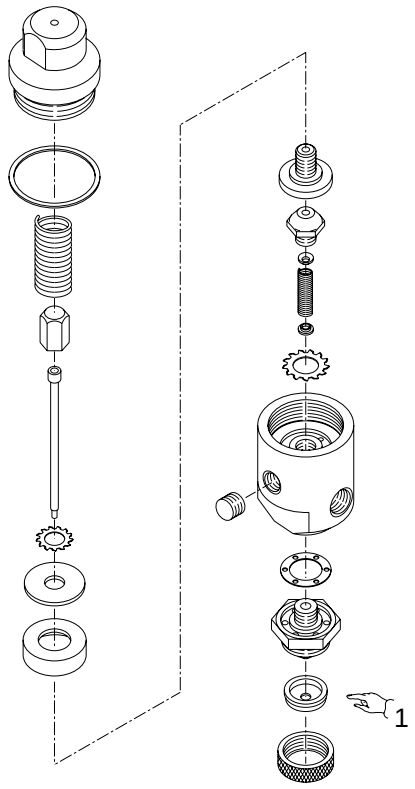


Fig. 7.1

7.4 Doser maintenance

Periodically check the efficiency of the dosers.
Proceed as follows:

1 - Shut-off the compressed air supply;
2 - Slacken the screws holding the doser retaining bar;
3 - Remove the doser;
4 - Dismantle the doser:
- by unscrewing the bottom ring-nut *(Pos.1, Fig.7.2)*;
- opening the joining clamp between the lower and upper parts *(Pos.2, Fig.7.2)*;
- extracting the doser piston shaft *(Pos.3, Fig.7.2)*.
With the doser dismantled, check the efficiency of the O-rings *(Pos.4-5, Fig.7.2)* on the stem. If worn, ice-cream will leak from the top of the doser.
5 - Wash using the recommended products (see washing table) and reassemble.

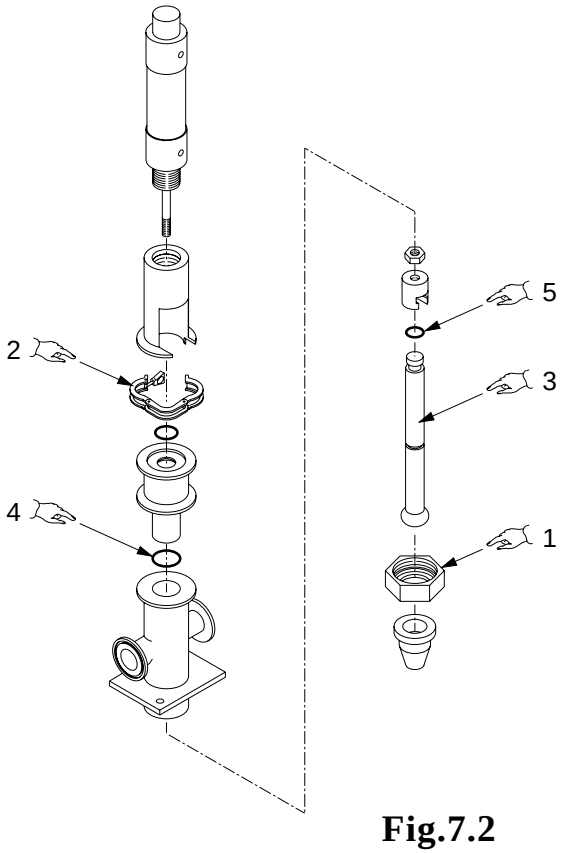


Fig.7.2

7.5 Topping maintenance

Each day, at the end of the working cycle use the dosing pump to pump warm water through the chocolate feed pipe.
Periodically, and when required, dismantle the ends of the doser *(Pos.1, Fig.7.3)* and the cover *(Pos.2, Fig.7.3)*.
With the doser dismantled, check the efficiency of the O-rings *(Pos.4-5-6, Fig.7.3)*.
Wash using the recommended products (see washing table), and reassemble.

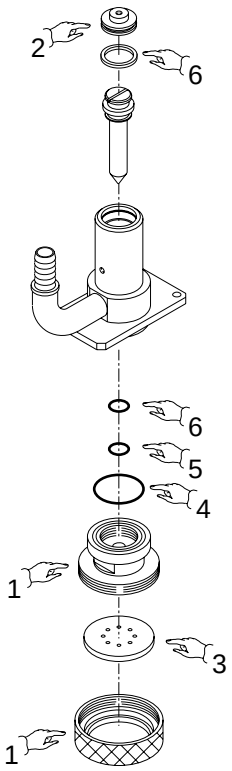


Fig. 7.3

7.6 Pencil filler maintenance

Each day, at the end of the working cycle use the dosing pump to pump warm water through the feed pipe.
Periodically, and when required, dismantle the doser nozzle *(Pos.1, Fig.7.4)* and the cover *(Pos.2, Fig.7.4)*.
When the doser dismantled, check the efficiency of the O-rings *(Pos.3-4-5, Fig.7.4)*.
Wash using the recommended products (see washing table), and reassemble.

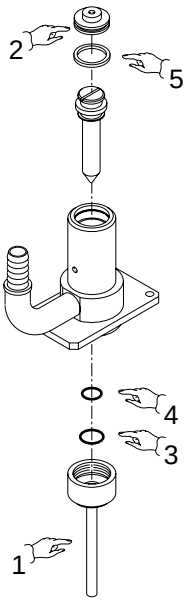


Fig.7.4

7.7 Spray nozzle unit air filter maintenance

Every 6 months

- Replace sterilising filter.
- Replace activated carbon filter (the upper of the dual filter).

WARNING:

The new filter cartridge must be unwrapped only at the moment the substitution is made. Handle with care.

- **Every 12 months**

- Replace the oil separation filter
- Replace the high-efficiency filter (the lower of the dual filter).

WARNING:

The new filter cartridge must be unwrapped only at the moment the substitution is made. Handle with care.

7.8 Lamella drive chain tension

Periodically check the tension of the lamella drive chain. Proceed as follows:

1 - Unscrew the lock-nut *(Pos.1, Fig.7.5)* and adjust the tensioning screw *(Pos.2, Fig.7.5)* until the correct working tension is obtained;

2 - Tighten the lock-nut *(Pos.1, Fig.7.5)*.

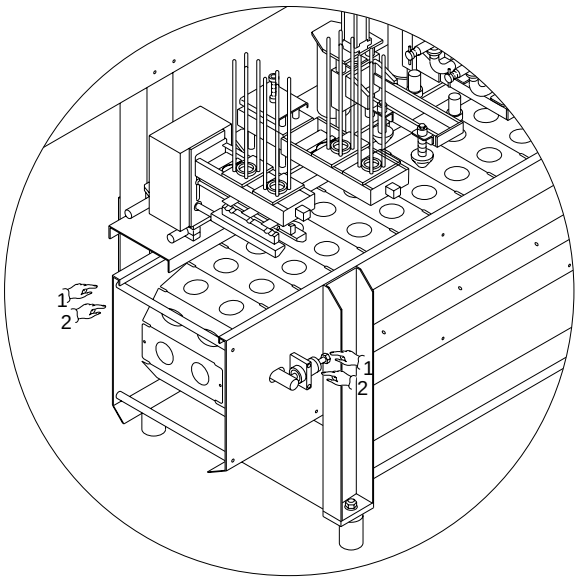


Fig.7.5

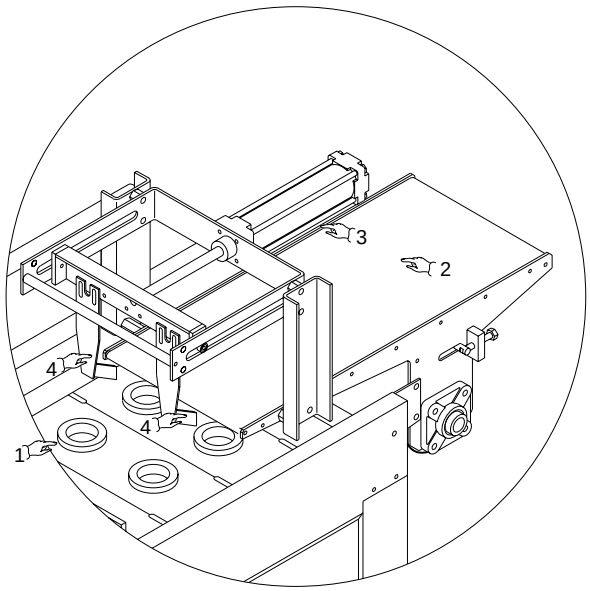


Fig. 7.6

7.9 Belt tension

Periodically check the tension of the smooth conveyor belt. Proceed as follows:

1 - Unscrew the lock-nut *(Pos.1, Fig.7.6)* and adjust the tensioning screw *(Pos.2, Fig.7.6)* until the correct working tension is obtained;

2 - Tighten the lock-nut *(Pos.1, Fig.7.6)*.

HOYER COMET C

8 - TROUBLESHOOTING

Contents

8.1 Troubleshooting

PROBLEM	PROBABLE CAUSE	REMEDY
The machine does not start.	- No electric power.	- Check the electrical connections at the junction box.
	- Main switch faulty.	- Check main switch.
The machine does not start or stops.	- Power supply.	- Check electrical connections and the voltage.
	- Chain overloaded.	- Check movement or inverter.
	- Compressed air	- Check pneumatic connections and pressure.
	- Motor thermal relay.	- Open the electric panel and reset.
	- Delay in the upward movement of one or more pneumatic pistons, causing the proximity switches to trip.	- Increase upward movement speed.
		- Check the adjustment of the dosers and press.
The machine does not reach its maximum design speed.	- Inverter.	- Check connections, settings and adjustment.
The machine only runs at maximum speed.	- Inverter.	- Check connections or wear. Replace.
The cycle does not start.	- No air in the plant.	- Check slide valve.
		- Check for leaks in the pneumatic plant.
	- Incorrect pressure switch setting or switch faulty.	- Check pressure switch adjustment or efficiency.
	- PLC alarm menu.	- Check which alarm has tripped on the display.

PROBLEM	PROBABLE CAUSE	REMEDY
The cycle is interrupted.	- Electric signal loss.	- Check the efficiency of the pneumatic cylinder limit switches.
		- Check position of pneumatic cylinder limit switches.
	- PLC alarm menu.	- Check which alarm has tripped on the display.
One or more stations do not work or malfunction.	- Parameter settings.	- Check the values set for station movement.
		- Check the zero point.
		- Check cam settings.
	- Pneumatic valves.	- Check operation.
	- Pneumatic cylinders.	- Check seals and wear.
	- Station lifting carriages.	- Check for wear on the sliding bushes.
The cones do not descent.	- Station adjustments.	- Check station position with respect to slots.
		- Check “cone pusher” plate adjustment.
		- Check position of cone with respect to cone stop plate.
The cups do not descend into the slots, or more than one cup descends.	- Program.	- Check parameter settings of cup stop plates.
	- Insufficient vacuum.	- Check cleanliness of vacuum generator/suction cup silencer/ pipes.
		- Check pipe fitting seals.
	- Unit height adjustment.	- Lower the unit if more than one cup descends, raise if no cups descend.

PROBLEM	PROBABLE CAUSE	REMEDY
The cups jump out of the slots when being fed.	- Vacuum time too long in the vacuum/suction cup cycle.	- Stop the vacuum earlier.
No chocolate comes out of the sprayer.	- Chocolate pipes, tank.	- Check that the pipes are not blocked. - Check that the chocolate is liquid and preferably lump-free. - Check tank resistances. - Check that there is water in the tank jacket.
	- Chocolate sprayer.	- Check for the presence of solidified chocolate and wash. - Check tank resistances. - Check chocolate valve efficiency or adjustment. - Check pneumatic valve. - Check for blockage in sanitary air line filters.
	- Chocolate pump.	- Check pneumatic cylinder. - Check cylinder travel adjustment. - Check cylinder opening setting. - Check electrovalve efficiency. - Check coil wiring and pneumatic wiring.

PROBLEM	PROBABLE CAUSE	REMEDY
		- Check flow controller operation and adjustment.
		- Check that there are no blockages preventing the product from breathing.
		- Check for wear on the pump seals.
		- Check that the holes in the plates are not blocked by solidified chocolate.
Chocolate spray misses the cone.	- Carriage position.	- Adjust the height of the carriage to dose inside the cone.
	- Excessive sanitary air.	- Adjust the quantity of air to reduce the spray angle.
	- Carriage movement.	- Check carriage movement by disconnecting the pneumatic cylinder.
	- Downward movement of pneumatic cylinder.	- Check cylinder efficiency.
		- Check spray opening time setting.
		- Check electrovalve efficiency.
		- Check flow controller efficiency and adjustment.
Quantity of ice-cream dosed incorrect.	- Doser cycle adjustment.	- Check parameter settings.
Dosage incorrect.	- Clamp adjustment.	- Check.
	- Carriage travel adjustment.	- Adjust travel.
	- Movement locking-up.	- Check efficiency of bushes.

PROBLEM	PROBABLE CAUSE	REMEDY
Inconsistent filling of the lines.	- One or more cylinders worn.	- Check efficiency of pneumatic cylinders.
No chocolate comes from the topping tank.	- Tank.	- Check that the chocolate is liquid and lump-free.
		- Check that the holes in the plates are not blocked by solidified chocolate.
		- Check that the resistances are working.
		- Check that there is water in the tank jacket.
	- Pneumatic cylinder.	- Check cylinder efficiency.
		- Check cylinder opening setting.
		- Check electrovalve efficiency.
		- Check coil wiring and pneumatic wiring.
		- Check operation and adjustment of flow controllers.
Chocolate drips onto lamellas not in sync.	- The topping does not shut-off completely.	- Lumps of chocolate prevent the stems from closing.
		- Flow control ring-nuts not adjusted.
		- Pneumatic cylinder mounted incorrectly.
Irregular granules.	- Vibrator.	- Vibrator faulty.
		- Loose screws.
		- Vibrator operating angle.
The lids do not descend.	- Vacuum generator.	- Check efficiency of vacuum generator.

PROBLEM	PROBABLE CAUSE	REMEDY
		- Check that there are no blockages in the vacuum pipes.
		- Replace vacuum generator.
		- Lid magazine empty or loaded badly.
		- Adjust lid stop screws in the magazine, too closed.
		- Check that the suction cups are in contact with the lids.
		- Check the condition of the springs.
Incorrect bevelling.	- Springs.	- Check that the seamer presses correctly.
	- Positioning.	- Check cylinder efficiency.
Product discharge onto belt irregular.	- Pneumatic cylinder.	- Check cylinder opening settings.
		- Check coil wiring and pneumatic wiring.
		- Check operation and adjustment of flow controllers.
	- Plate height.	- Check and/or adjust plate height.
	- Product pick-up systems incorrect.	- Check that those relating to the container in production have been mounted.
Chain not synchronised with stations.	- Chain slack.	- Check tension of jogging chain.
	- Chain out-of-sync.	- Check tightness of lamella drive wheel screws.
		- Check position of lamellas during stationary period of jogging action (centreline at 105 mm from the motor shaft centreline).

PROBLEM	PROBABLE CAUSE	REMEDY
Irregular or noisy movement.	- Drive chain tension.	- Check chain tension and adjust if necessary.
Irregular carriage movement.	- Worn or seized bearings.	- Check and replace if necessary.
	- Bushes.	- Check bush wear.
	- Cam.	- Check wear on cam face.
	- Roller.	- Check lever movement cam rollers.
Suction cup holder carriage movement and discharge in-phase.	- Cam adjustment.	- Check cam adjustment in relation to jogger.
One or more carriages overrun at the end of their travel.	- Lever adjustment.	- Check that the clamps are tight and that the carriages are at the end of their travel at the start of the jogging pause.
One or more carriages do not ascend.	- Levers incorrectly fixed.	- Check clamp tightness.

HOYER COMET C

9 - LIST OF SPARE PARTS FOR BASIC UNIT

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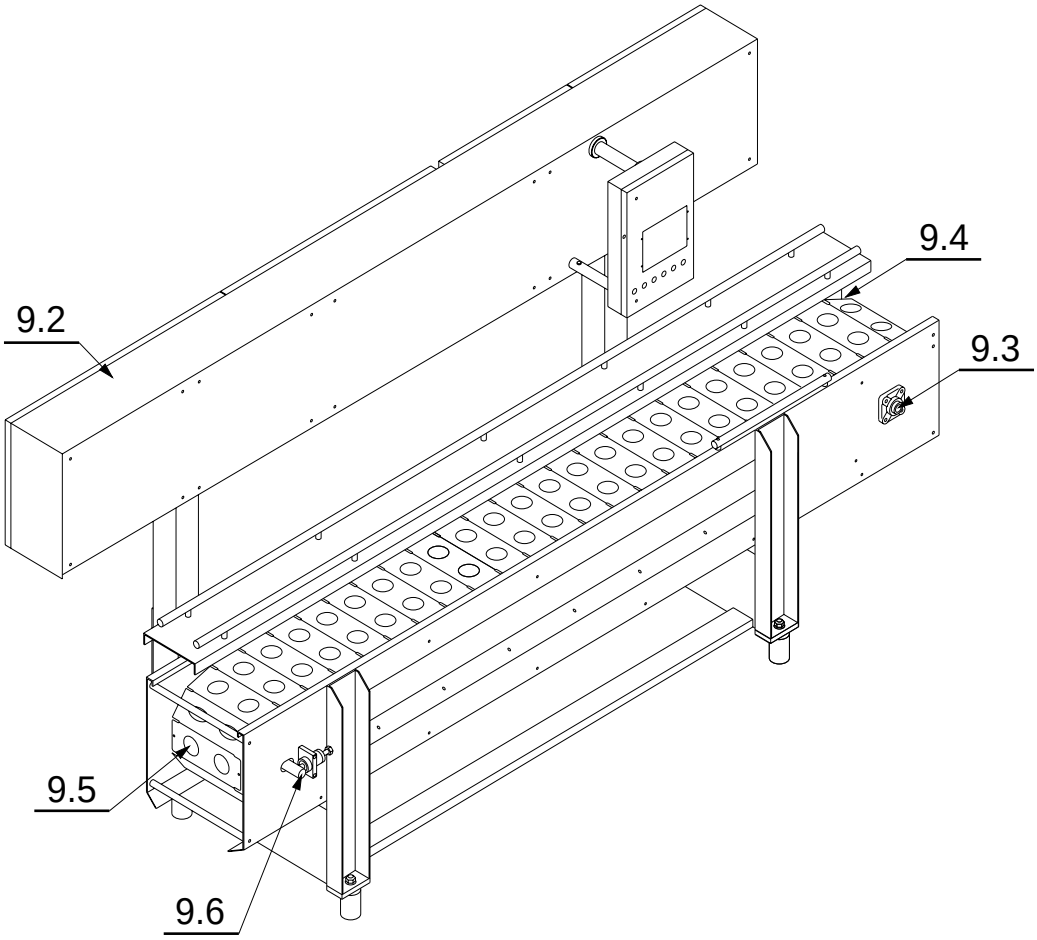

Fig. 9.1 - General layout

Structure - Fig. 9.2

POS.	CODE	DESCRIPTION	Q.TY
1	12040002	Electro-pneumatic panel	1
2	12040003	Panel connection tube	1
3	12040014	Chain guide	2
4	12040013	Chain guide spacer	24
5	12040015	Lower chain guide	2
6	12040008	Motor LH side panel	1
7	12040017	Station support bar	2
8	12040004	Motor casing	1
9	12040019	Bar spacer	2
10	12040018	External support bar	1
11	12040012	Spacer	14
12	12040006	Spacer	2
13	12040009	Outer RH panel	1
14	12040010	Indexing gear unit support bracket	1
15	12040001	Load bearing frame	1
16	12040020	Control panel	1
17	12040023	Panel support bar	2
18	12040016	End spacer	4
19	12040005	Casing support pin	2
20	12040007	Spacer	4

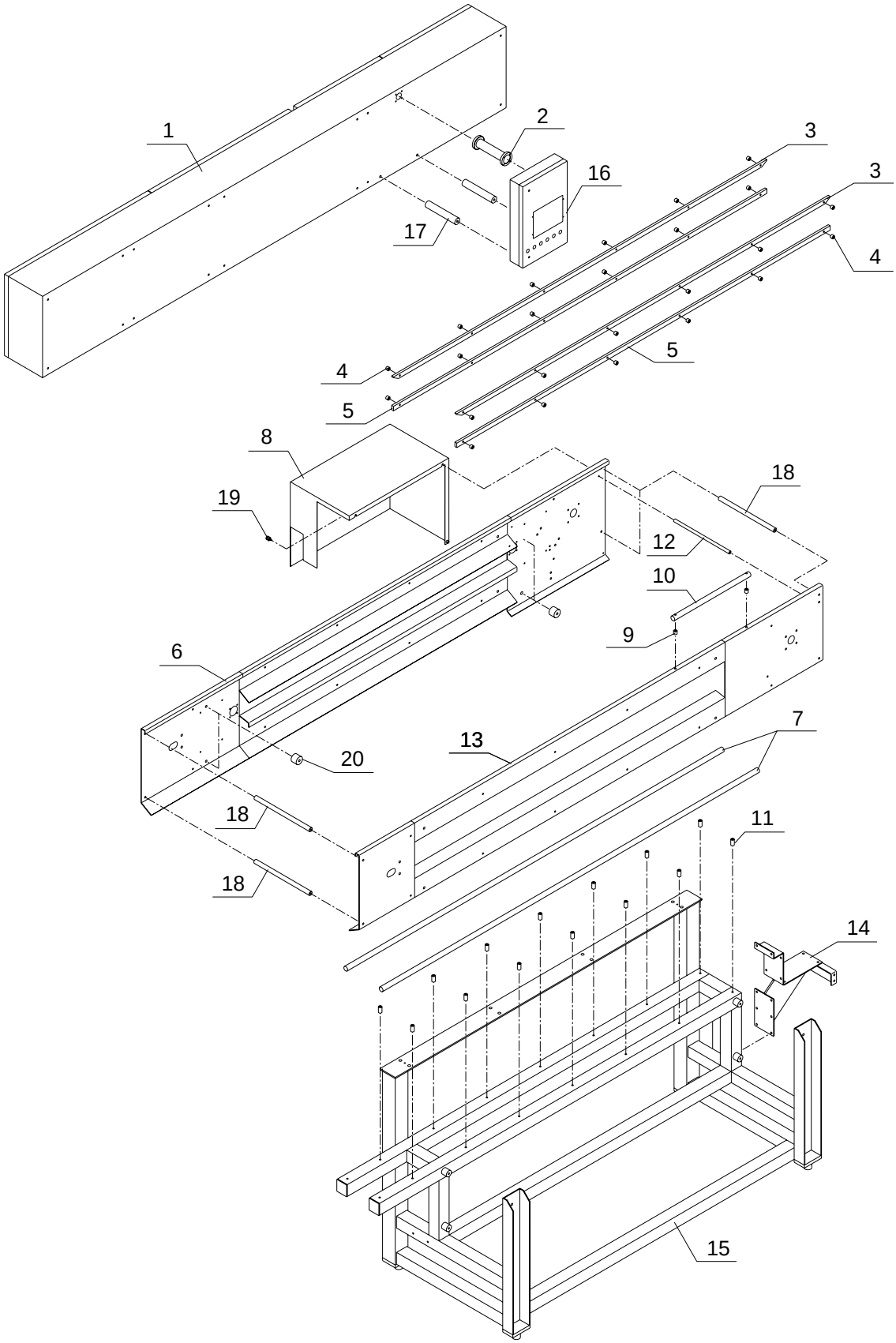

Fig. 9.2 - Structure

Motor drive - Fig. 9.3

POS.	CODE	DESCRIPTION	Q.TY
1	336071173	Corteco seal	2
2	336001306	Bearing	2
3	326019137	Circlip	2
4	12040064	Gear wheel	1
5	12040033	Tensioning pin	1
6	12040032	Tensioner support	1
7	12040030	Tensioning pin spacer	1
8	326013111	Key	1
9	120400069	Tapered bush	1
10	12040072	Proximity washer	1
11	540500161	Support o proximity	1
12	12040070	Proximity support	1
13	12040071	Plate for tapered bush	1
14	336007057	Motor gear wheel	2
15	12040051	Backing washer	2
16	326013156	Key	2
17	120040049	Chain motor shaft	1
18	12040043	Drive wheel	2
19	12040024	Indexing gear unit pinion	1
20	12040050	Load/Unload can	1
21	336017353	Chain	1
22	12040068	Indexing gear unit	1
23	336010185	Reduction gear	1
24	17040007	Motor	1
13a	12040284	Motor gear wheel for pitch 210	1

Plate for tapered bush
Motor gear wheel for pitch 140
Support
336017058 + 336017346

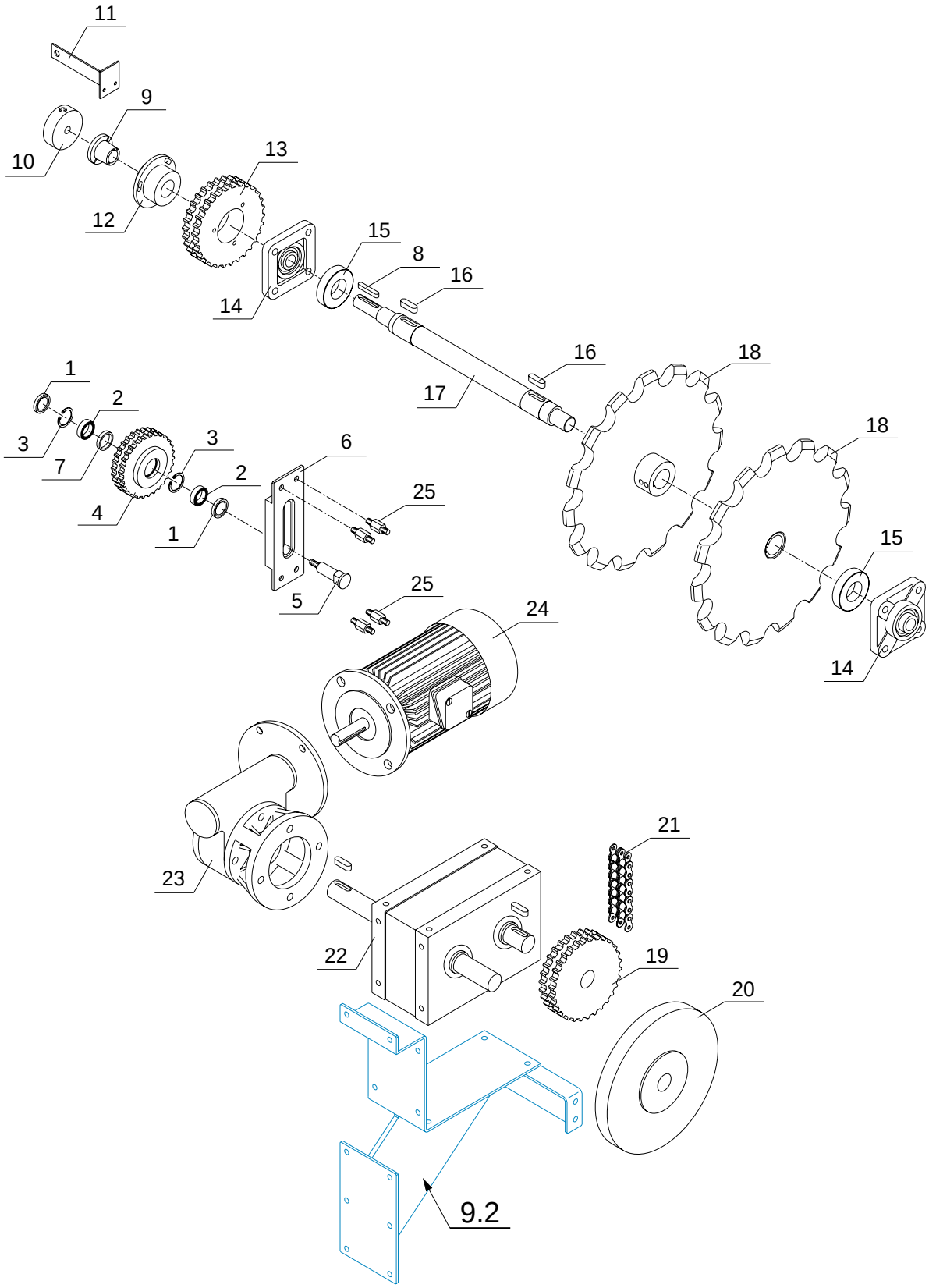

Fig. 9.3 - Motor drive

Ejector - Fig. 9.4

POS.	CODE	DESCRIPTION	Q.TY
1	12040060	Uniball anchor pin	2
2	336078069	JAML 12 coupling	2
3	HF6020	Tie bolt	1
4	336078054	JAM 12 coupling	1
5	12040066	Spacer	1
6	12040036	Kinematic motion rod	1
7	336008105	Idler pin	1
8	12040031	Roller spacer	1
9	17000048	UFL-59204 kojo support	4
10	12040205	Load side shaft	1
11	12040203	Unload side shaft	1
12	12040035	Carriage lever	1
13	12040037	Double lever	1
14	HF6060	Fixing spacer	4
15	12040062	Guide fixing bracket	2
16	336005052	Bush	4
17	12040063	Unload side carriage	1
18	336003151	Idler pin	1
19	12040061	Guide column	2
20	12040038	Lever tie rod	1
21	12040092	Crosspiece	1
22	12040813	Carriage extension	1

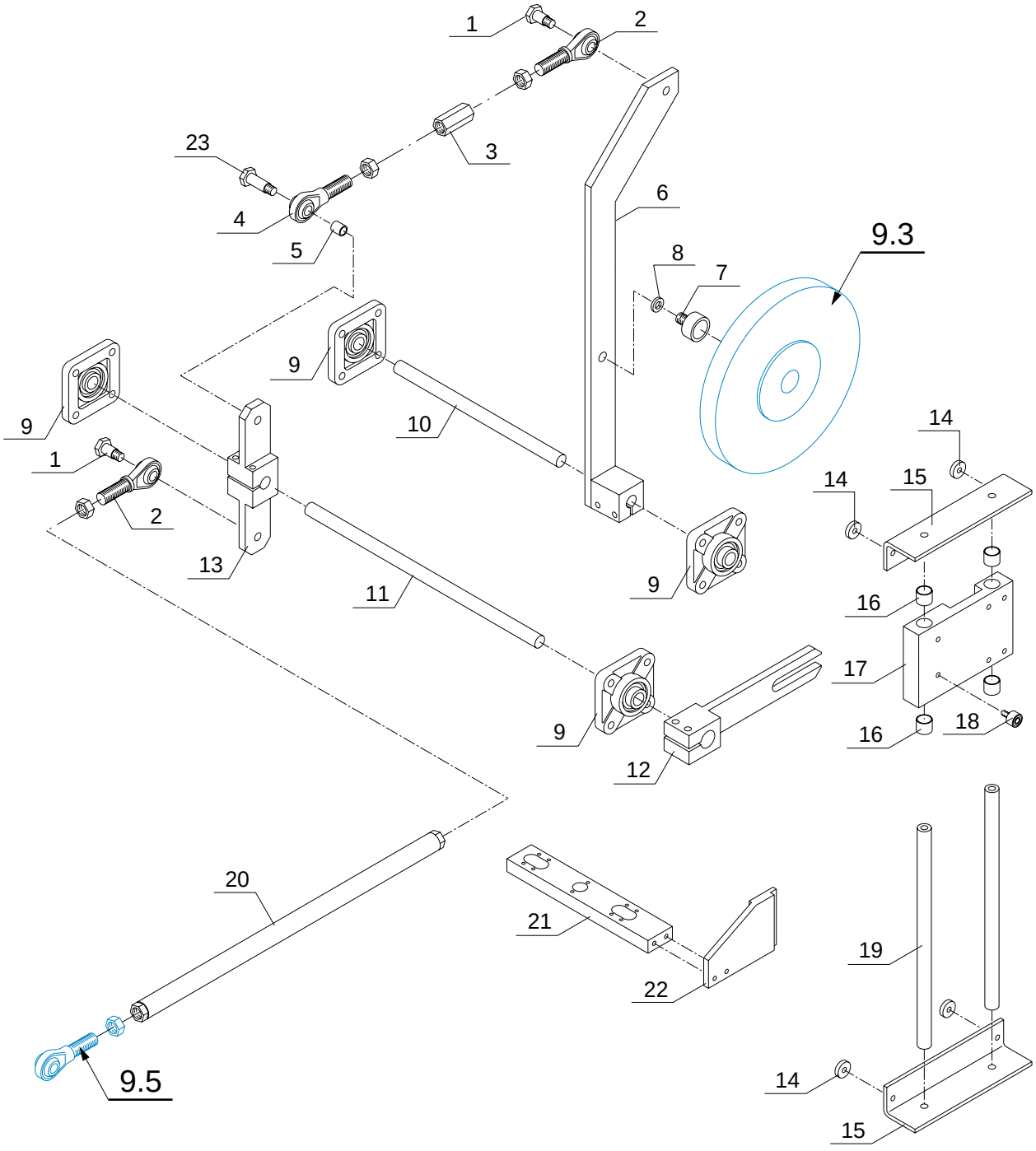

Fig. 9.4 - Ejector

Feed - Fig. 9.5

POS.	CODE	DESCRIPTION	Q.TY
1	12040060	Uniball fixing pin	1
2	336078069	JAM 12 coupling	1
3	12040036	Lever	1
4	17000049	UCF204 kojo support	2
5	12040205	Load side shaft	1
6	12040035	Lever	1
7	HF6060	Fixing spacer	4
8	12040062	Guide fixing bracket	2
9	12040061	Guide column	2
10	336005052	Bush	4
11	12040063	Load side carriage	1
12	336003151	Idler pin	1
13	12040092	Crosspiece	1
14	12040813	Carriage extension	1

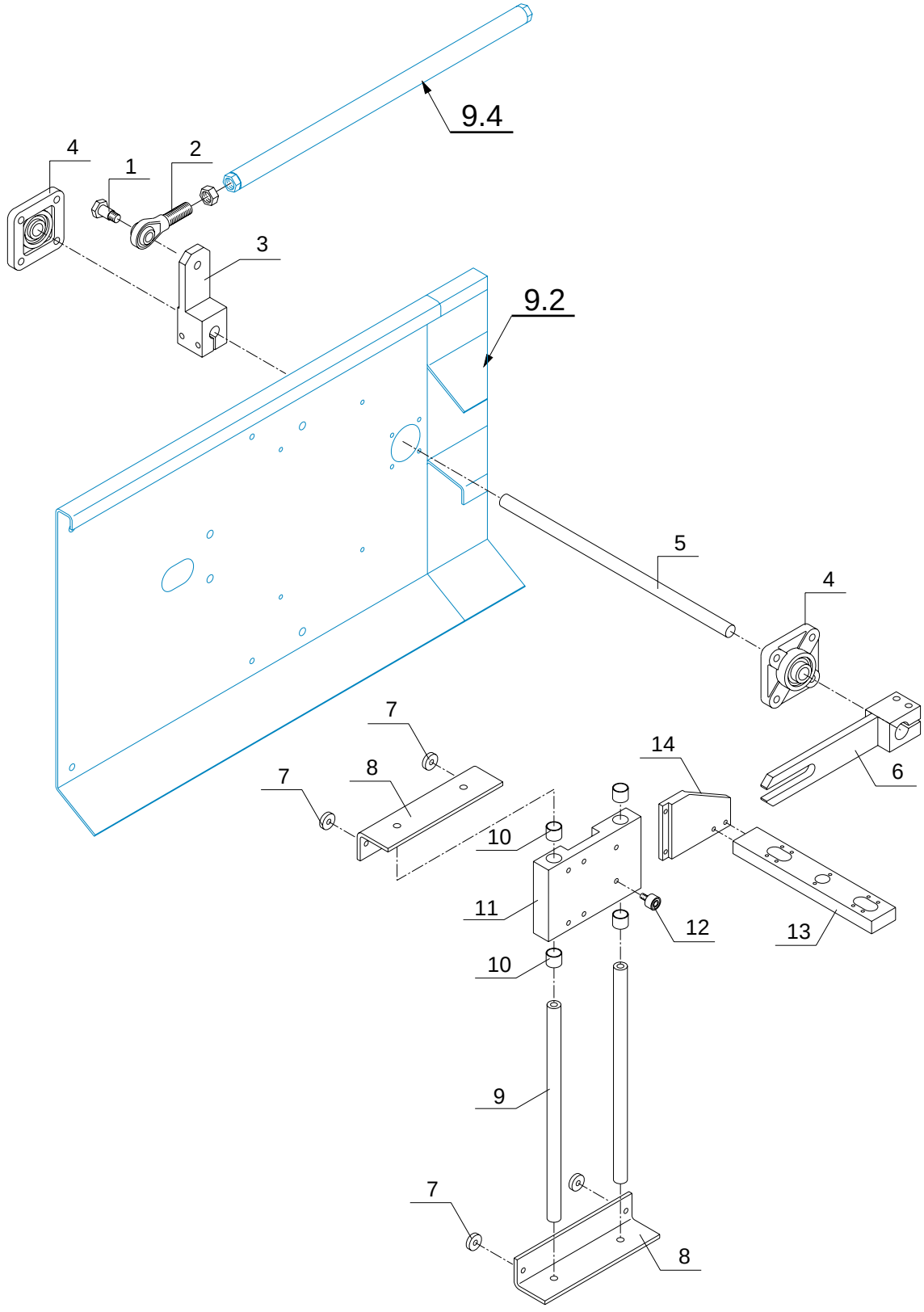

Fig. 9.5 - Feed

Tensioner - Fig. 9.6

POS.	CODE	DESCRIPTION	Q.TY
1	12040058	Tensioner end piece	2
2	12040057	Spring cap	2
3	12040056	Tensioning spring	2
4	12040059	Tensioning piston	2
5	12040042	Support	2
6	12040053	Tensioner body	2
7	12040048	Driven shaft	1
8	12040051	Backing washer	2
9	12040044	Driven wheel	2
10	12040052	Stop ring	2
11	12040190	Chain for pitch 140	1 2
11a	12040192	Chain for pitch 210	2

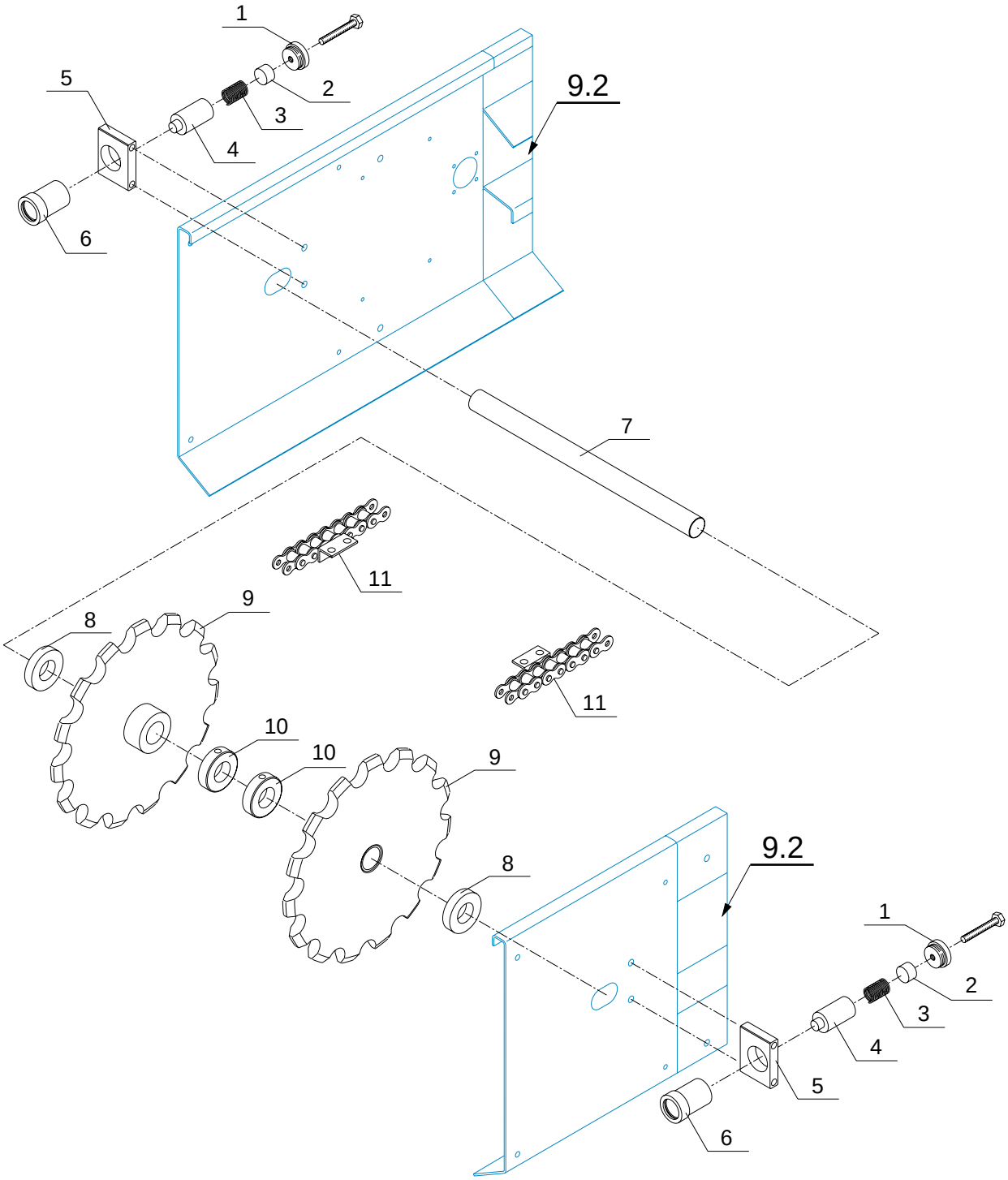

Fig. 9.6 - Tensioner

HOYER COMET C

10 - LIST OF SPARE PARTS FOR CONE PRODUCT

Index

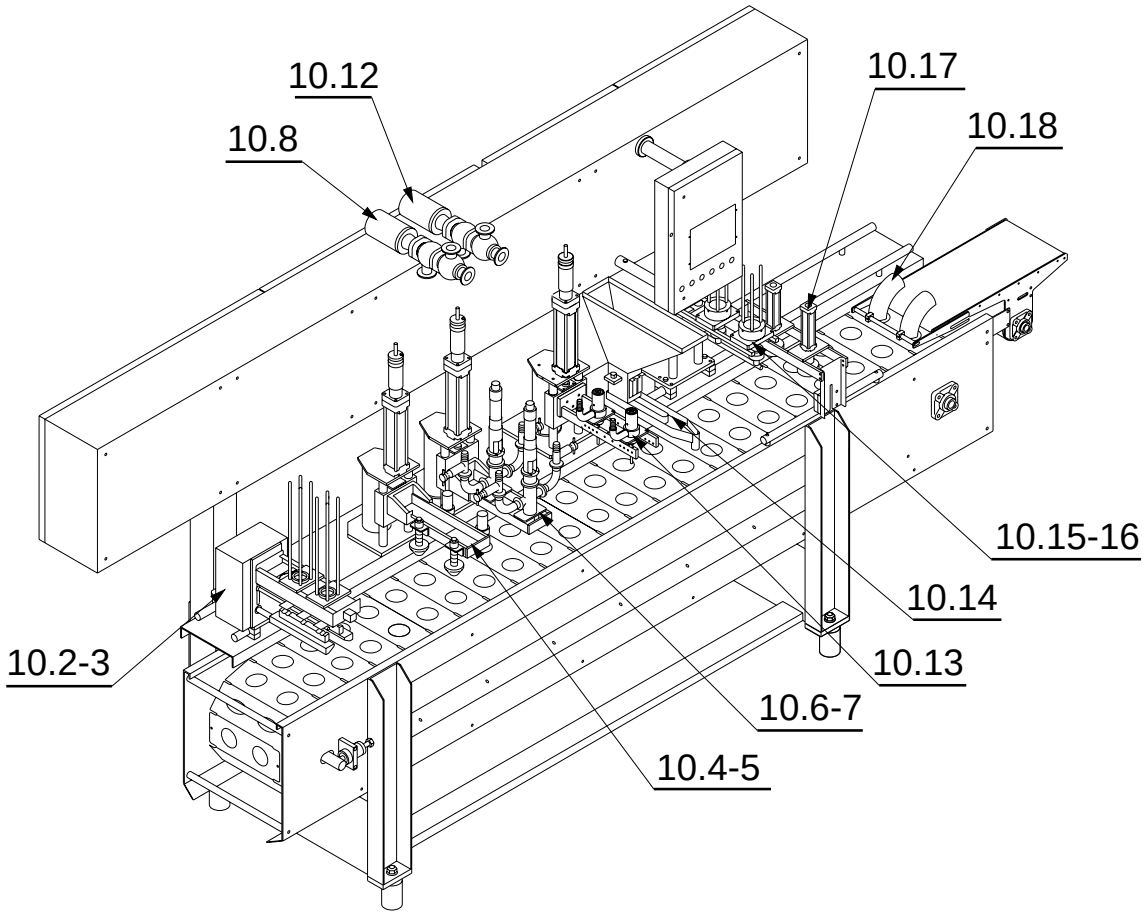

Fig. 10.1 - General layout

Cone feed - Fig. 10.2

POS.	CODE	DESCRIPTION	Q.TY
1	12040827	Cone feed kinematic motion casing	1
2	12040201	Left cone stop bar	1
3	17000008	Cylinder	1
4	17000045	SGS coupling	1
5	12040104	Cylinder connecting pin	1
6	12040097	Special pin for bush	2
7	336005050	Bush	2
8	12040095	Cone release movement connecting rod	1
9	12040094	Cone release movement lever	1
10	12040202	Release rod movement hinge	1
11	326019015	E15 circlip	2
12	336001383	Bearing	4
13	12040079	Upper clamp	3
14	12040078	Lower clamp	3
15	12040224	Base plate	1
16	336071135	Corteco seal	2
17	12040197	Right cone stop bar	2
18	12040106	Cone release rod	2
19	33607114	Seal	3
20	12040223	Vertical plate	1
21	12040225	Bearing bush	2
22	12040226	Reinforcing plate	1

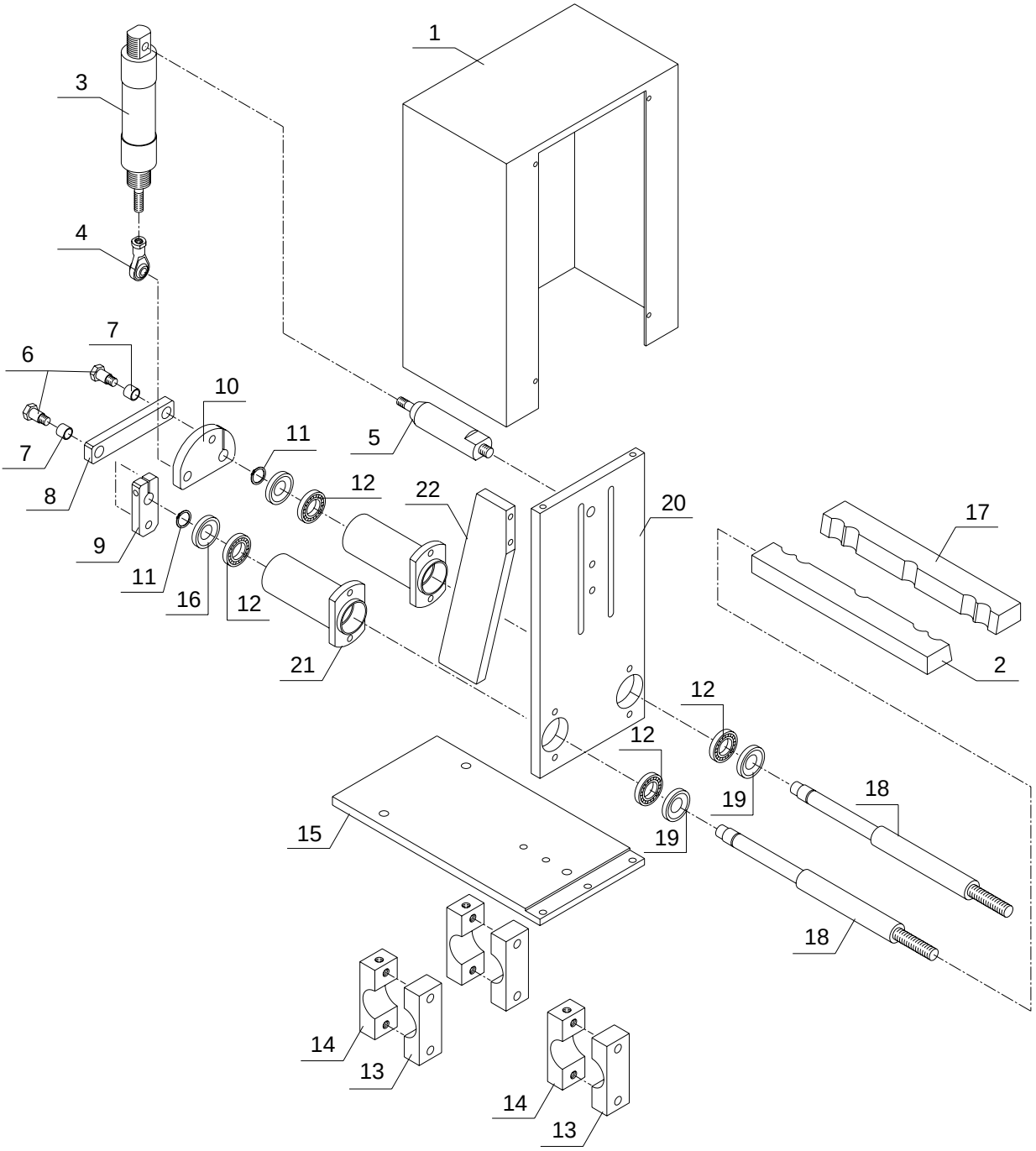

Fig. 10.2 - Cone feed

Cone feed - Fig. 10.3

POS.	CODE	DESCRIPTION	Q.TY 2 rows	Q.TY 3 rows
1	333001053	Actuator	1	1
2	12040099	Cone release blade guide	2	2
3	12040098	Magazine support spacer	4	4
4	17000007	Cylinder	2	2
5	540212003	Coupling	2	2
6	12040200	Magazine support frame	1	1
7	12040096	Cone release blade	4	6
13	12040106	Blade control shaft	1	1
14		Blade – two rows (depending on format)	2	-
14a		Blade – three rows (depending on format)	-	2
9	12040101	Blade control shaft	1	1
10	12040809	Blade control shaft	1	1
11	12040807	Supporto albero palette	3	3
12	12040808	Blade lever	2	2
13		Coupling	1	1
14	12040810	Tightener	1	1
15		Coupling	1	1

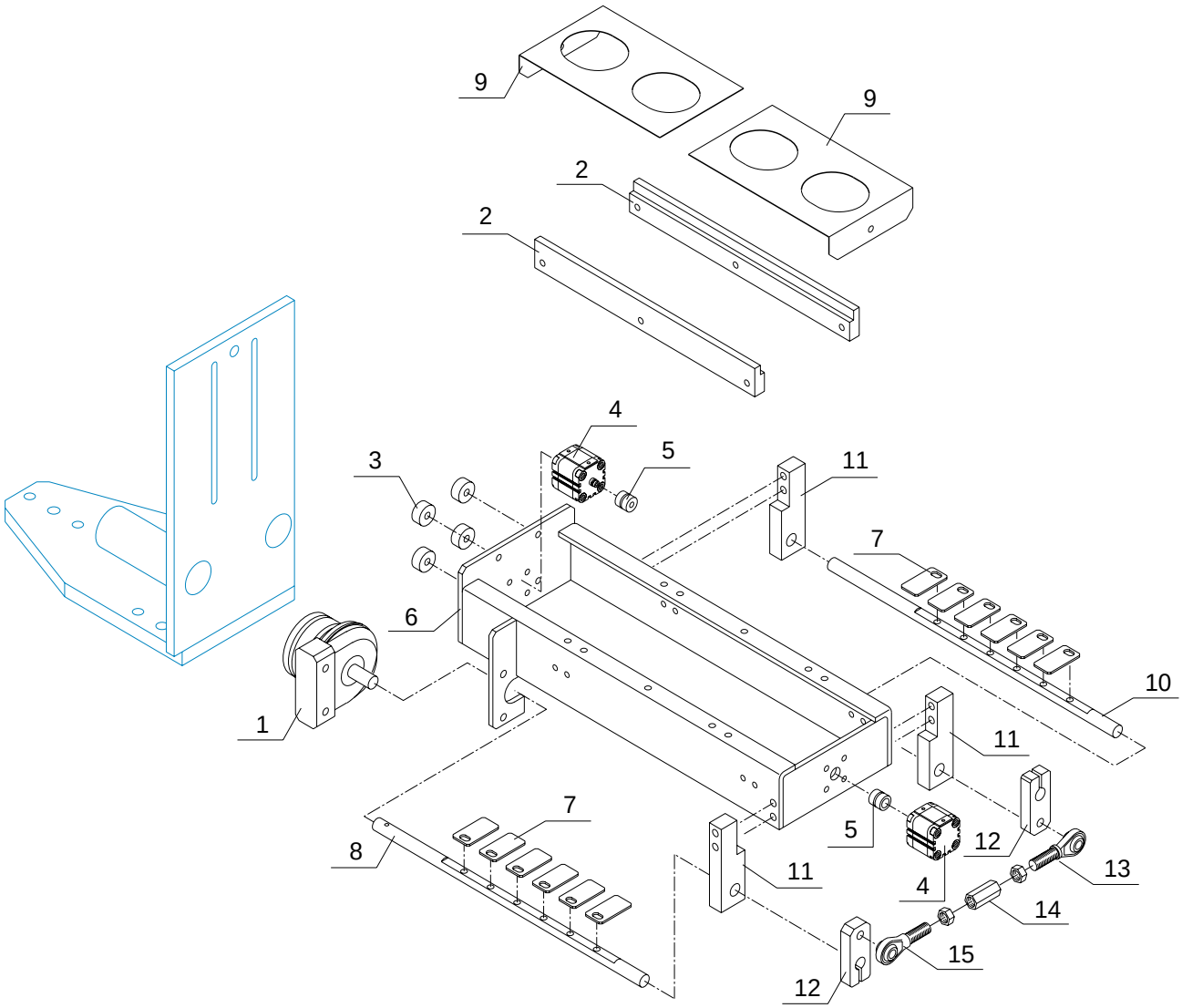

Fig. 10.3 - Cone feed

Gauge and chocolate spray station - Fig. 10.4

POS.	CODE	DESCRIPTION	Q.TY
1	17000056	Fixing	2
2	12040076	Support plate	1
3	17000053	Fixing	1
4	336005055	Bush	4
5	12040083	Frame mounting slide	1
6	12040080	Slide guide column	2
7	12040081	Support column	1
8	12040077	Base plate	1
9	12040079	Upper clamp	4
10	12040078	Lower clamp	4
11	12040075	Lock nut	1
12	12040074	Cylinder travel adjusting nut	1
13	541120121	Adjusting screw	1
14	341690101	Cylinder joint	1
15	336067370	O-ring OR 4143	1
16	12040073	Cylinder mounting sleeve	1
17	17000009	Cylinder	1

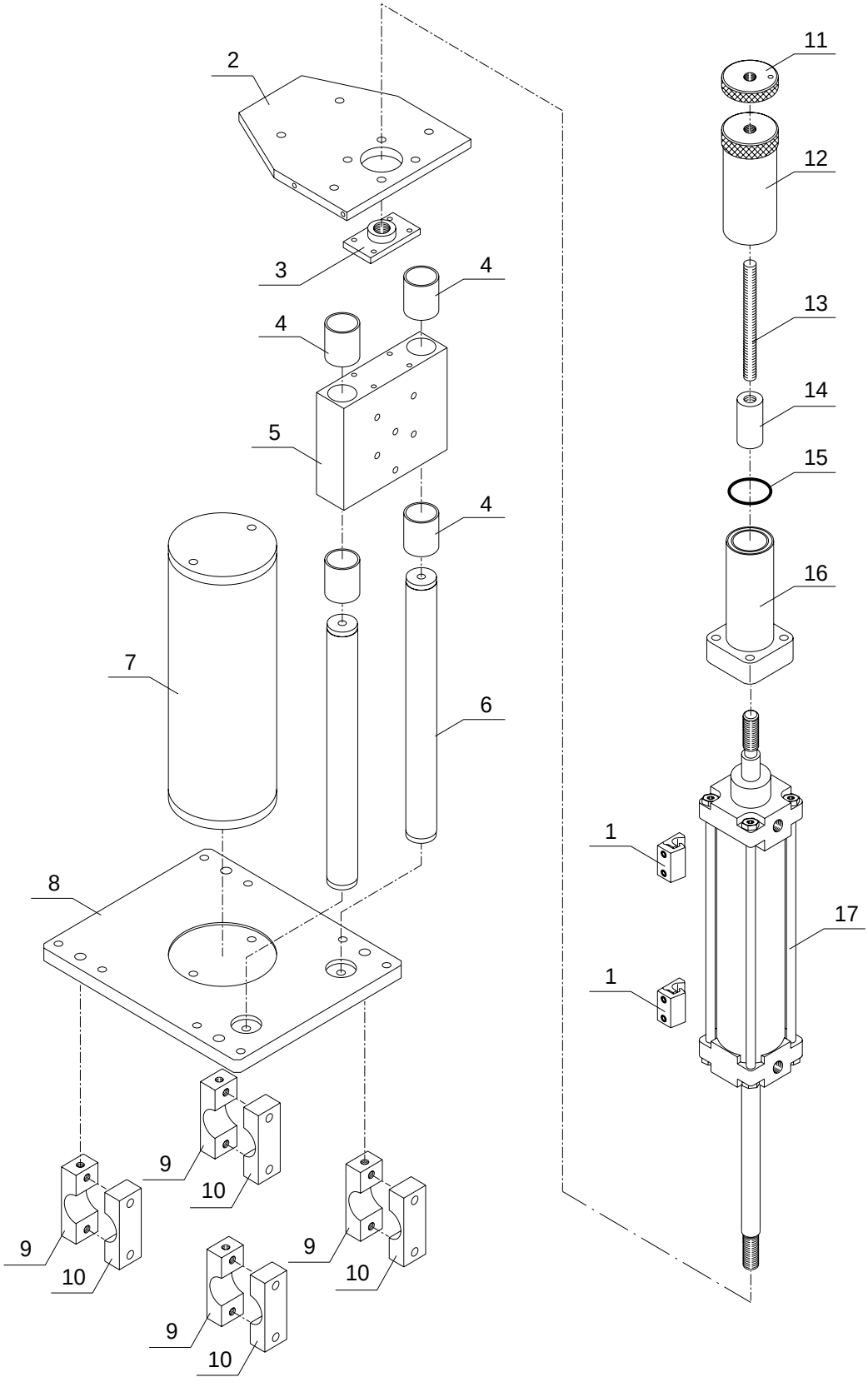

Fig. 10.4 - Gauge and chocolate spray station

Gauge and chocolate spray station - Fig. 10.5

POS.	CODE	DESCRIPTION	Q.TY 2 rows	Q.TY 3 rows
1	12040109	Support frame	1	1
2	011070112	Sprayer	2	3
3	12040217	Sprayer support	2	3
4	540302006	Gauge guide bush	2	3
5	12040219	Gauge support bracket	2	3
6	D-FM0606	Spring	2	3
7	D-FM0605	Tie rod	2	3
8	FM0607	Cone enlarger plug	2	3
9	12040221	Distributor	1	1

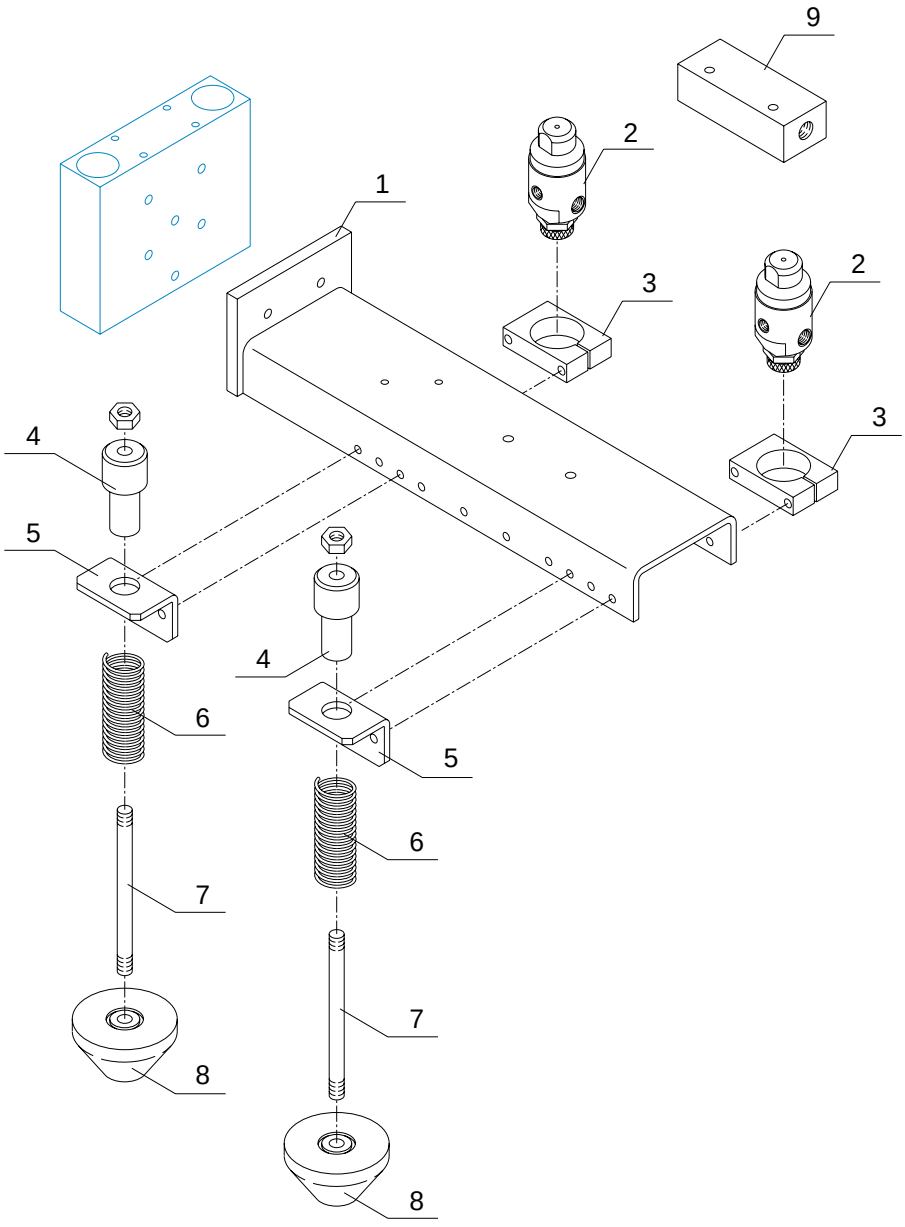

Fig. 10.5 - Gauge and chocolate spray station

Dosers - Fig. 10.6

POS.	CODE	DESCRIPTION	Q.TY
1	17000056	Fixing	2
2	12040076	Support plate	1
3	333001557	Fixing	1
4	336005055	Bush	4
5	12040083	Frame mounting slide	1
6	12040080	Slide guide column	2
7	12040081	Support column	1
8	12040077	Base plate	1
9	12040079	Upper clamp	4
10	12040078	Lower clamp	4
11	12040075	Lock nut	1
12	12040074	Cylinder travel adjusting nut	1
13	541120121	Adjusting screw	1
14	341690101	Cylinder joint	1
15	336067091	O-ring OR 4143 OR 4143X OR 4150	1
16	12040073	Cylinder mounting sleeve	1
17	17000009	Cylinder	1

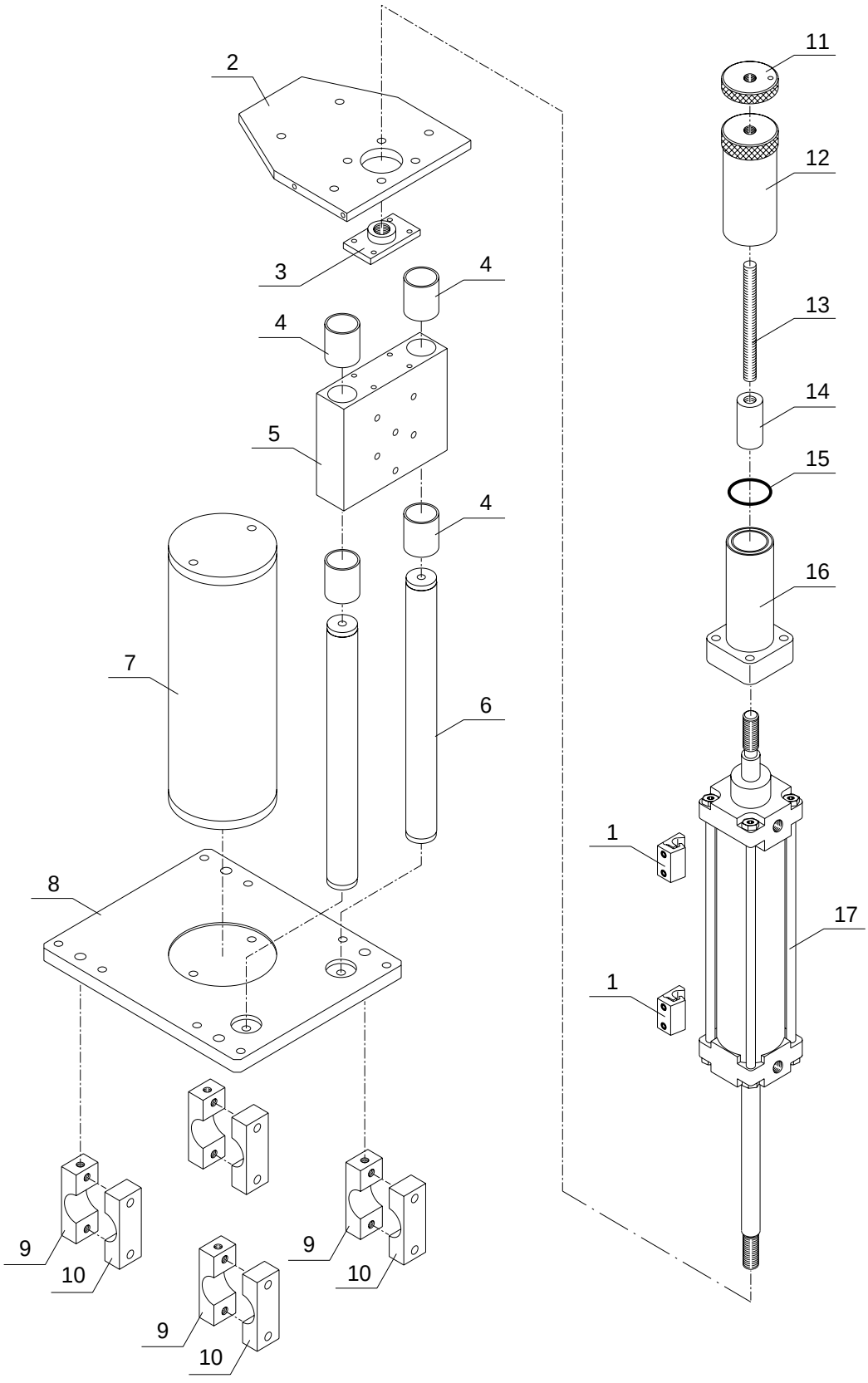

Fig. 10.6 - Dosers

Dosers - Fig. 10.7

POS.	CODE	DESCRIPTION	Q.TY	Q.TY
			2 rows	3 rows
1	17000010	Cylinder	2	3
2	12040213	Cylinder connection	2	3
3	016060219	2” A304 clamp	2	3
4	336067042	O-ring 3081	4	6
5	12040210	Upper cylinder half	2	3
5a	12040782	Upper half of variegator cylinder	2	3
6	336067051	O-ring 3118	2	3
7	12042030	Dual doser body	2	3
8	12040027	Joint	2	3
9	336067036	O-ring 119	2	3
10	12040948	Centre perforated piston	2	3
11	12040211	Lock nut	2	3
12	540204063	Nozzle	2	3
13	540204050	Elbow	2	3
14	336067020	Seal	6	9
15	016060218	Clamp	6	9
16	141040364	Rubber seal support	6	9
17	12040110	Support frame	1	1

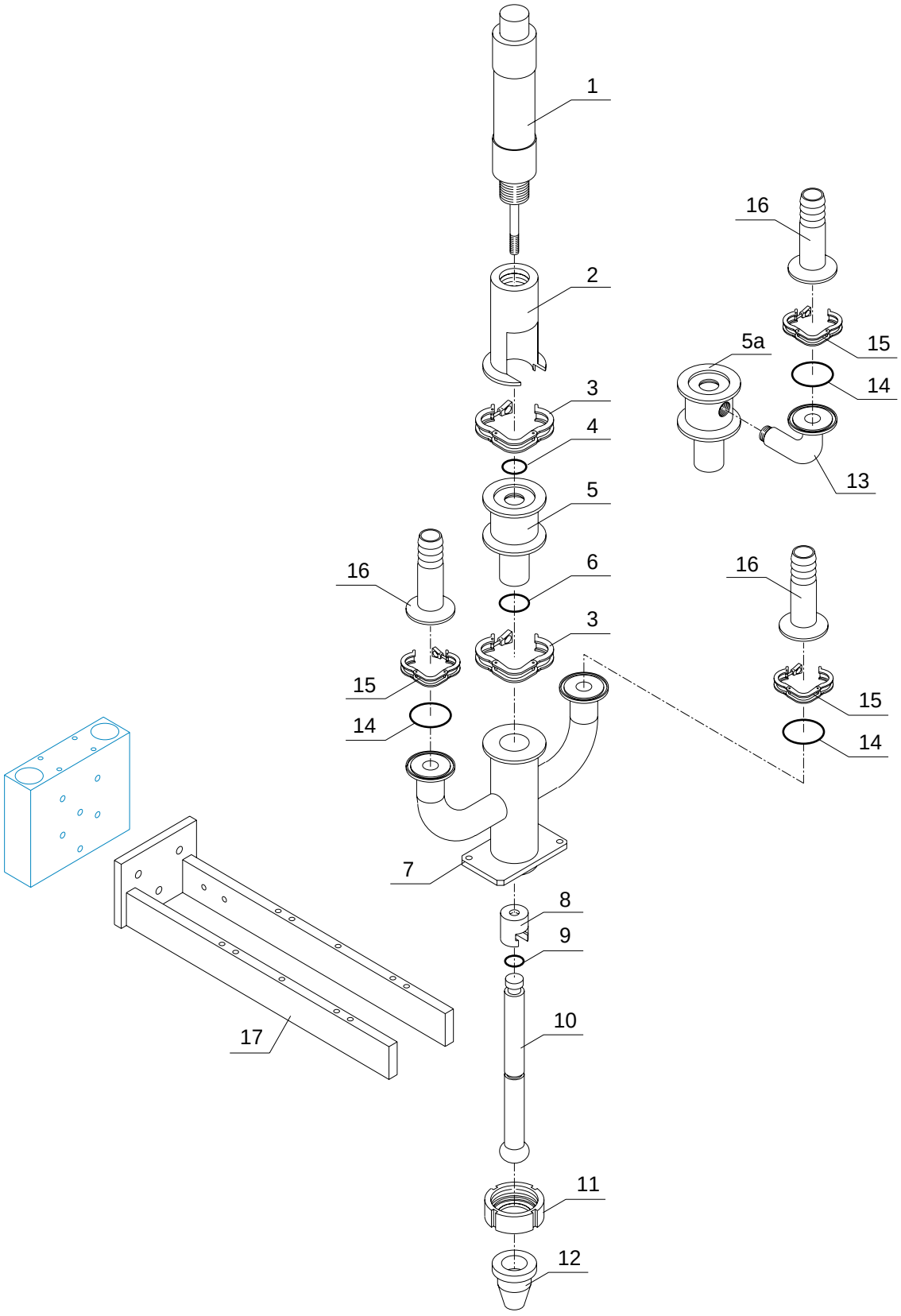

Fig. 10.7 - Dosers

Double by-pass - Fig. 10.8

POS.	CODE	DESCRIPTION	Q.TY
1	17040009	Pneumatic valve	1
2	17000317	Union tee	1
3	141040344	Rubber seal support	1
4	016060218	Clamp	7
5	018020582	Seal	7
6	17000279	Pipe	1
7	540303018	Union Y	1
8	016060218	Clamp	2
9	018020582	Seal	2
10	542320022	Balancing body	2
11	542320029	Lock nut	2
12	336067038	Seal	4
13	542320023	Equaliser cock	2
14	018060961	Clip	4
15	1700279	Pipe	2
16	12040936	Bracket	1

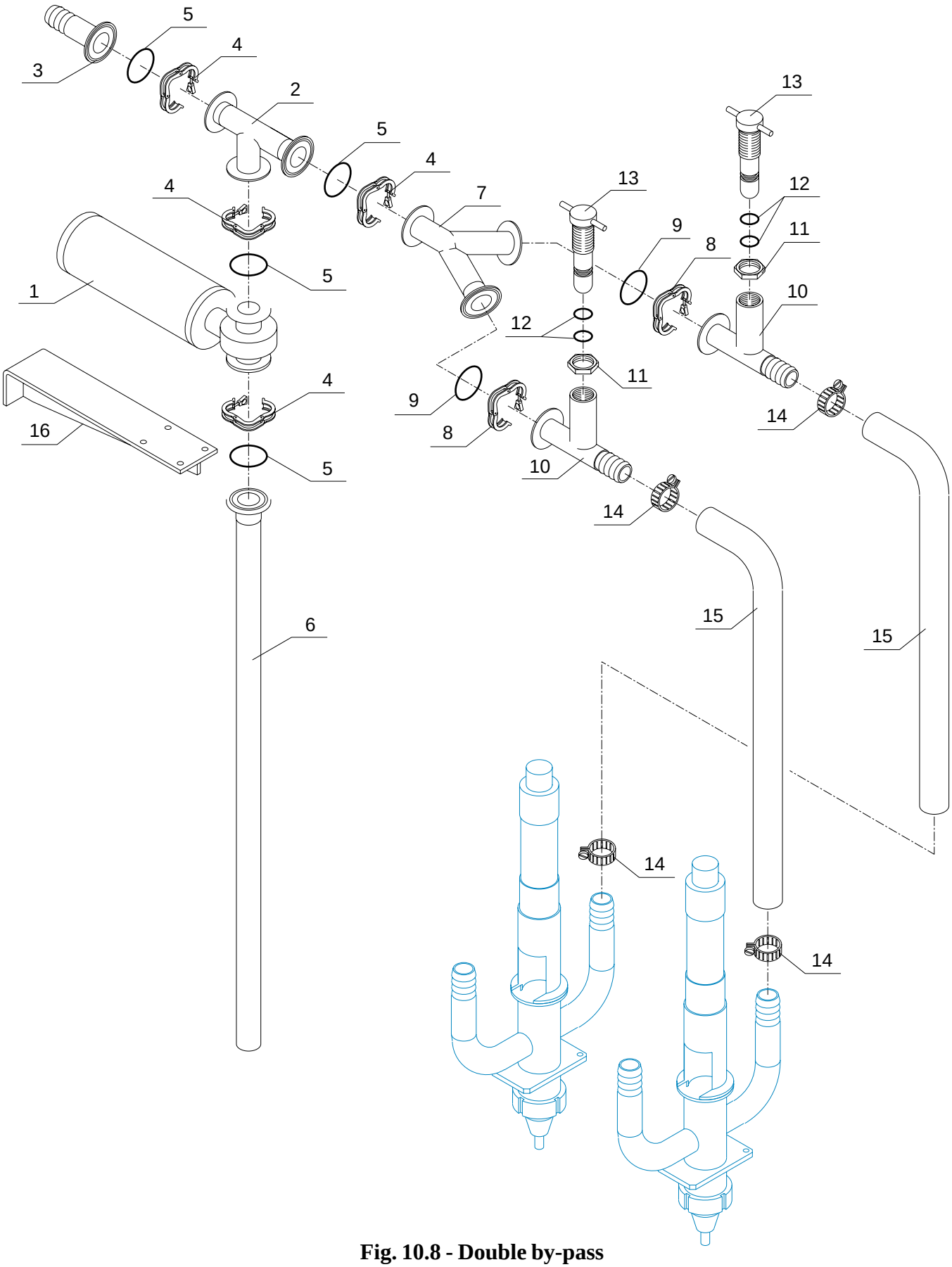

Fig. 10.8 - Double by-pass

Pencil filler - Fig. 10.9

POS.	CODE	DESCRIPTION	Q.TY	Q.TY
			2 rows	3 rows
1	17000056	Fixing	2	2
2	12040076	Support plate	1	1
3	17000053	Fixing	1	1
4	336005055	Bush	4	4
5	12040083	Frame fixing slide	1	1
6	12040080	Slide guide column	2	2
7	12040081	Support column	1	1
8	12040077	Base plate	1	1
9	12040079	Upper clamp	4	4
10	12040078	Lower clamp	4	4
11	12040075	Lock nut	1	1
12	12040074	Cylinder travel adjusting nut	1	1
13	541120121	Adjustment screw	1	1
14	341690101	Cylinder joint	1	1
15	336067370	O-ring 4143	1	1
16	12040073	Cylinder mounting sleeve	1	1
17	17000009	Cylinder	1	1
18	12040109	Support frame	1	1
19	12040539	Nozzle	2	3
20	336067030	Seal	2	3
21	336067014	Seal	2	3
22	12041127	Valve body	2	3
23	018060957	Clip	2	3
24	540214002	Bottom	2	3
25	336067020	Seal	2	3
26	540214001	Piston	2	3

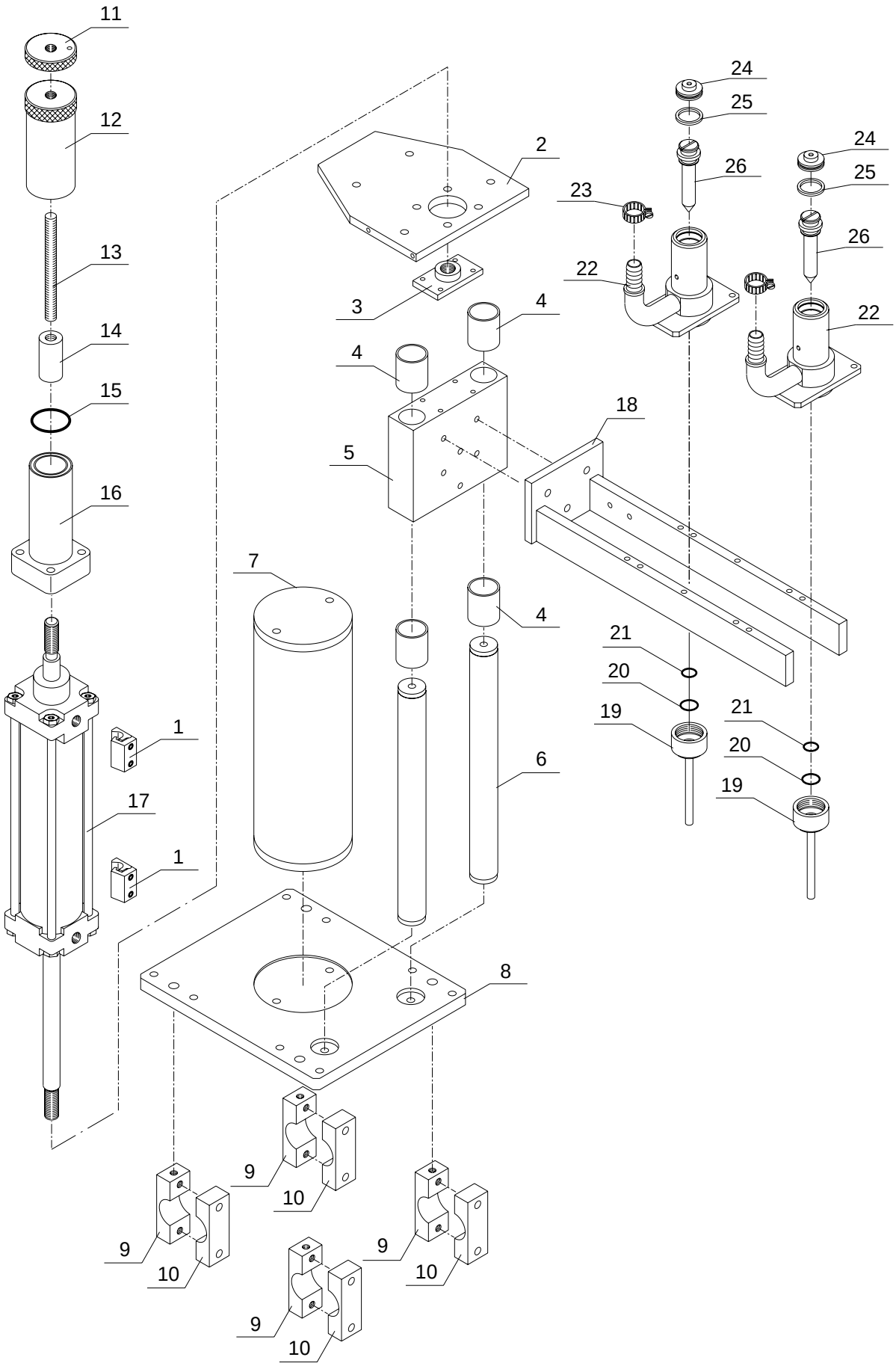

Fig. 10.9 - Pencil filler

Decorators - Fig. 10.10

POS.	CODE	DESCRIPTION	Q.TY
1	17000056	Fixing	2
2	12040076	Upper plate	1
3	333001557	Fixing	1
4	336005055	Bush	4
5	12040083	Frame fastening slider	1
6	12040081	Support column	1
8	12040077	Base plate	1
9	12040079	Upper clamp	4
10	12040079	Lower clamp	4
11	12040075	Locking ring nut	1
12	12040074	Cylinder stroke adjustment ring nut	1
13	541120121	Adjustment screw	1
14	341690101	Cylinder joint	1
15	336067091	O-ring 4150	1
16	12040073	Cylinder support sleeve	1
17	17000009	Cylinder	1

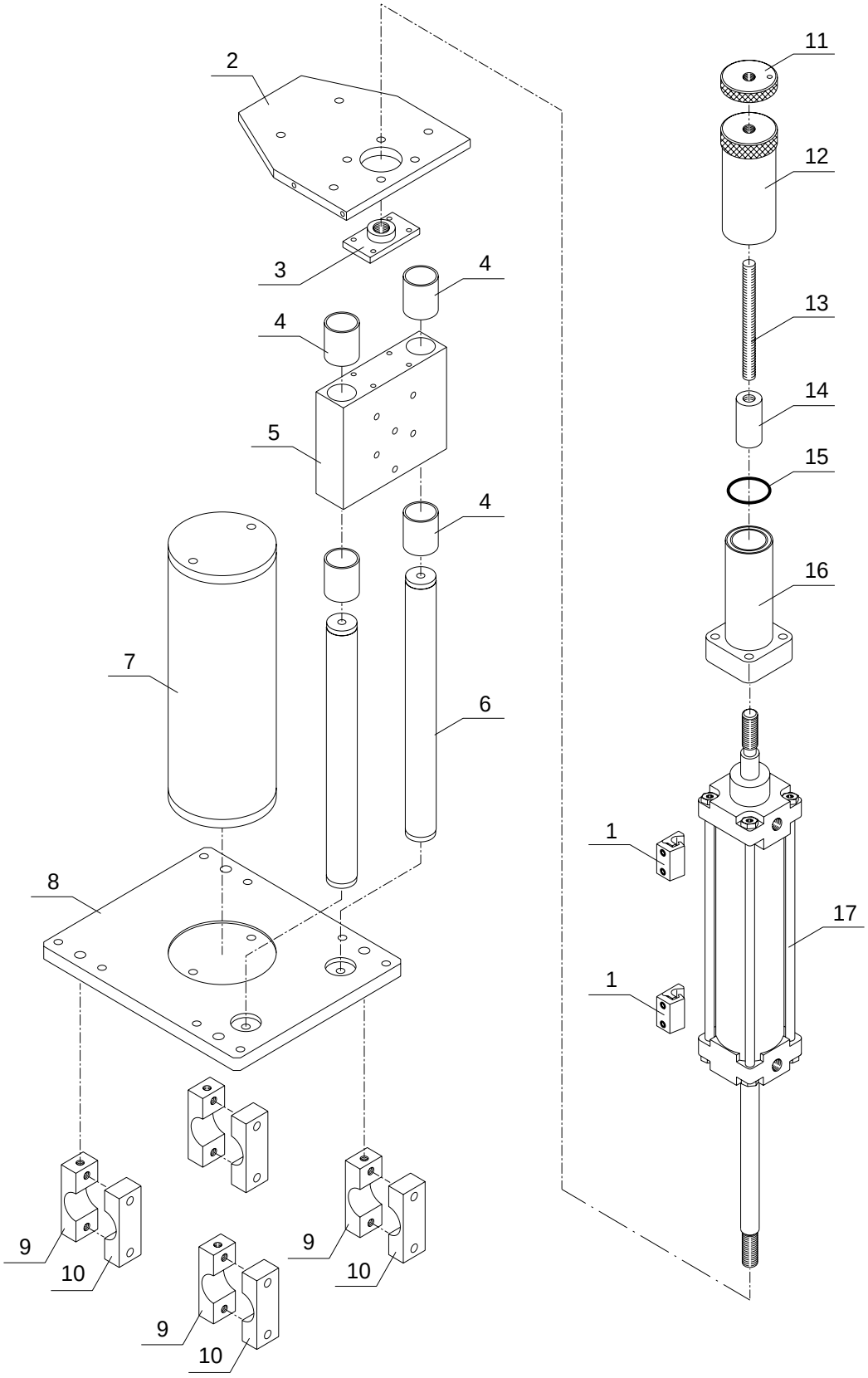

Fig. 10.10 - Decorators

Decorators - Fig. 10.11

POS.	CODE	DESCRIPTION	Q.TY 2 rows	Q.TY 3 rows
1	17000010	Cylinder	2	3
2	12040213	Cylinder connection	2	3
3	016060219	2” A304 clamp	4	6
4	336067042	O-ring 3081	4	6
5	12040210	Upper cylinder half	2	3
5a	12040782	Upper half of variegator cylinder	2	3
6	336067051	O-ring 3118	2	3
7	12040209	Dual head	2	3
8	12040027	Joint	2	3
9	336067036	O-ring 119	2	3
10	540204075	Centrexxxfoxxxxd piston	2	3
11	12040211	Lock nut	2	3
12	540204063	Nozzle	2	3
13	12040110	Support frame	1	1
14	336067020	Seal	2	3
15	016060218	Clamp	2	3
16	141040264	Rubber seal support	2	3

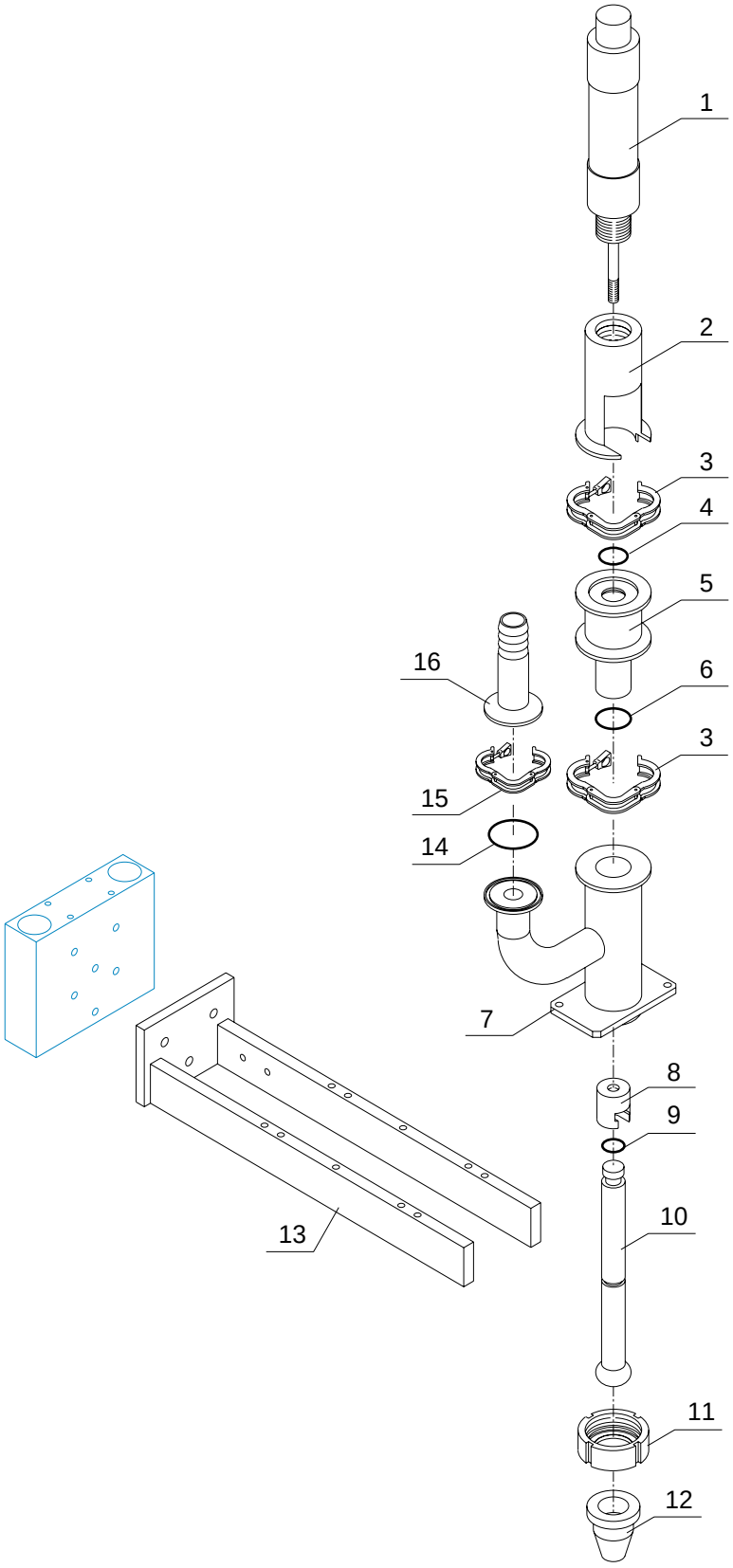

Fig. 10.11 - Decorators

Single by-pass - Fig. 10.12

POS.	CODE	DESCRIPTION	Q.TY
1	17040009	Pneumatic valve	1
2	17000317	Union tee	1
3	141040344	Rubber seal holder	1
4	016060218	Clamp	7
5	018020582	Seal	7
6	17000279	Pipe	1
7	540303018	Union Y	1
8	016060218	Clamp	2
9	018020582	Seal	2
10	542320022	Balancing body	2
11	542320029	Lock nut	2
12	336067038	Seal	4
13	542320023	Equaliser cock	2
14	018060961	Clip	4
15	1700279	Pipe	2
16	12040936	Bracket	1

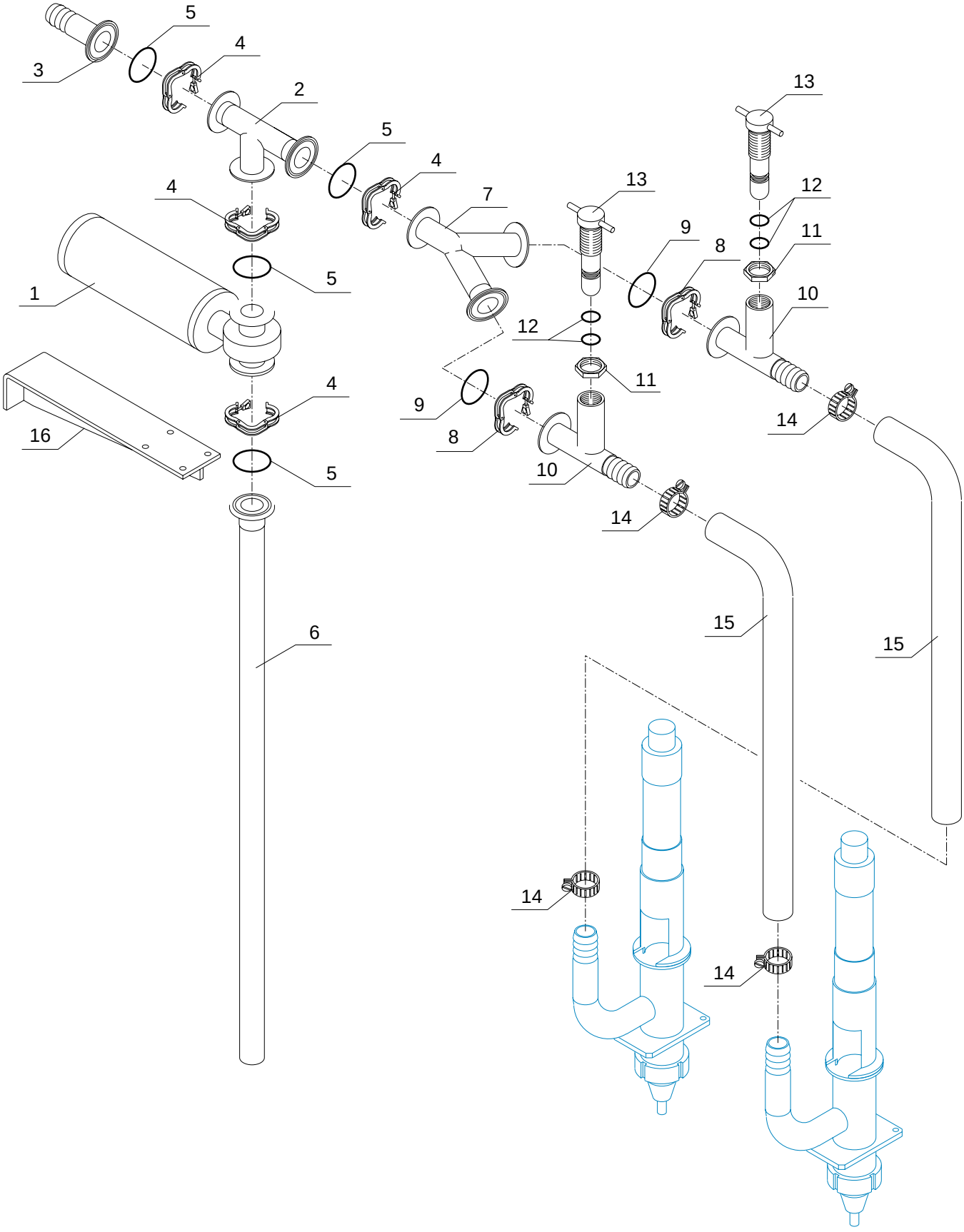

Fig. 10.12 - Single by-pass

Topping station - Fig. 10.13

POS.	CODE	DESCRIPTION	Q.TY 2 rows	Q.TY 3 rows
1	12010078	Lower clamp	3	3
2	12040079	Upper clamp	3	3
3	D01H00016A	Topping ring nut	2	3
4	D01H00016B	Topping disk	2	3
5	12042031	Topping nozzle	2	3
6	336067030	Seal	2	3
7	336069466	Seal	4	6
8	12040110	Doser mounting	1	1
9	12040823	Base	1	1
10	540214002	Bottom	2	3
11	336067020	Seal	2	3
12	018060957	Clamp	2	3
13	12040527	Valve body	2	3
14	540214001	Piston	2	3

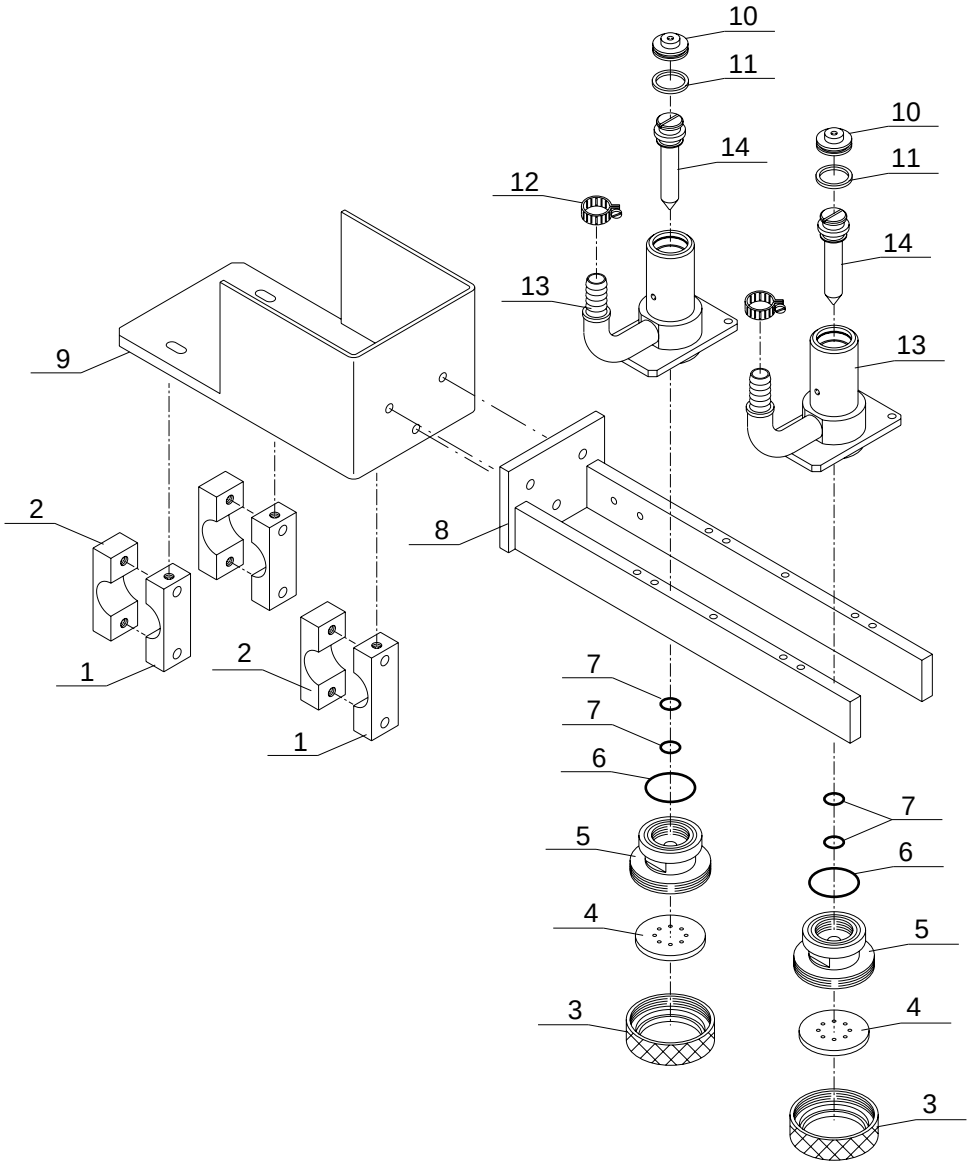

Fig. 10.13 - Topping station

Granule station - Fig. 10.14

POS.	CODE	DESCRIPTION	Q.TY 2 rows	Q.TY 3 rows
1	12040116	Granule hopper	1	1
2	12040117	Flow controller	3	3
3	336091002	Pneumatic vibrator	1	1
4	540213015	Vibrator fork	1	1
5	12040121	Two-lane granule channel	1	-
5a	12040919	Three-lane granule channel	-	1
6	336055001	Vibration damper	4	4
7	540309008	Column	2	2
8	12040115	Support plate	1	1
9	12040079	Upper clamp	3	3
10	12040078	Lower clamp	3	3

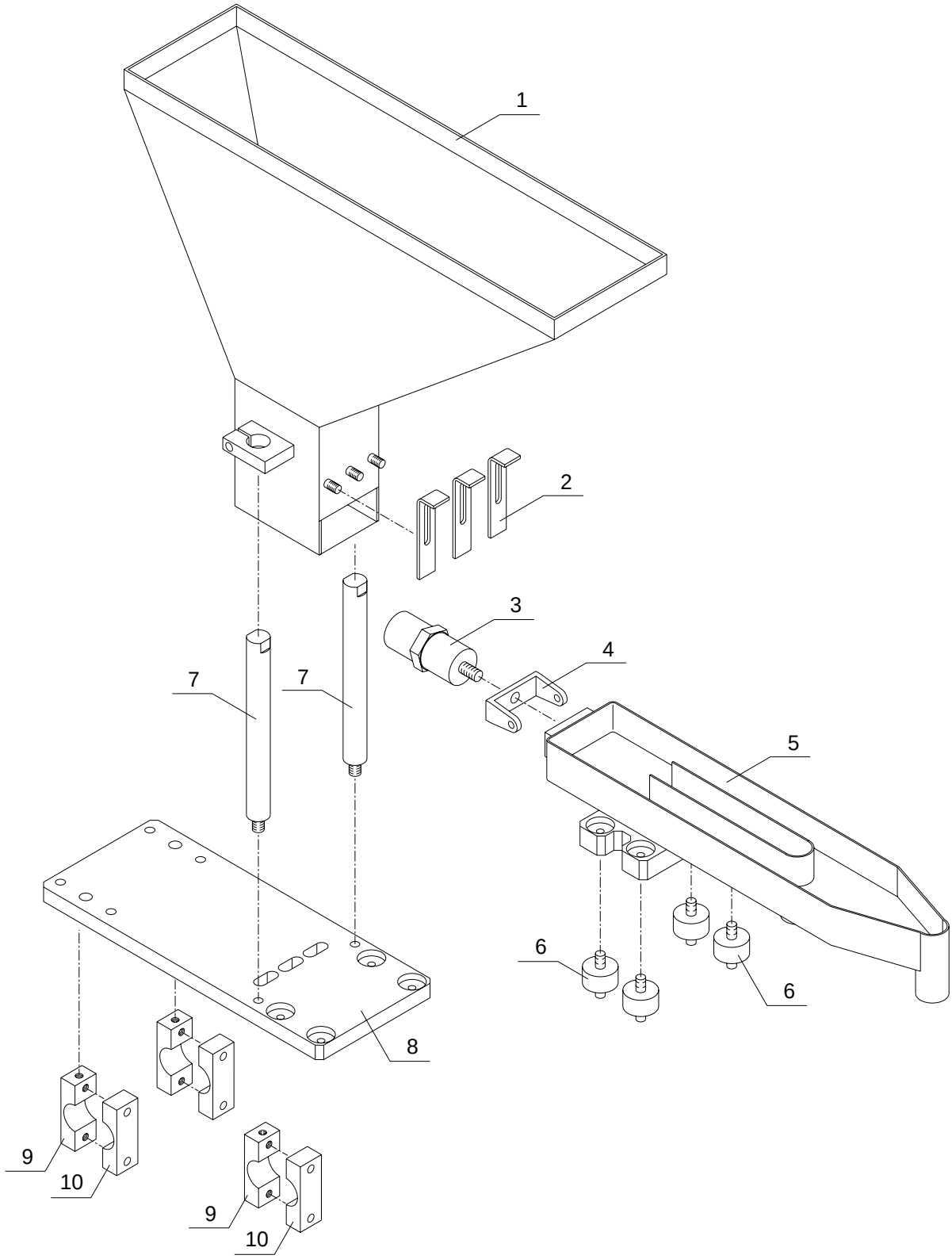

Fig. 10.14 - Granule station

Lid feed - Fig. 10.15

POS.	CODE	DESCRIPTION	Q.TY 2 rows	Q.TY 3 rows
1	12040133	Left hand magazine support plate	1	1
2	12040075	Lock nut		1
3	12040134	Right hand magazine support plate	1	1
4	12040125	Upper plate	1	1
5	336005055	Bush	4	4
6	17000052	Fixing	1	1
7	12040128	Frame fixing slide	1	1
8	12040127	Slide guide column	2	2
9	12040126	Plate support column	2	2
10	12040123	Base	1	1
11	12040078	Lower clamp	4	4
12	12040079	Upper clamp	4	4
13		Lid guide rod (depending on format)	6	9
14		Lid magazine (depending on format)	2	3
15	D-FM0847	Lid stop dowel	6	9
16	12040074	Cylinder travel adjusting nut	1	1
17	541120121	Adjustment screw	1	1
18	341690101	Cylinder joint	1	1
19	336067091	O-ring 4150	1	1
20	12040073	Cylinder mounting sleeve	1	1
21	17000056	Fixing	2	2
22	17000009	Cylinder	1	1

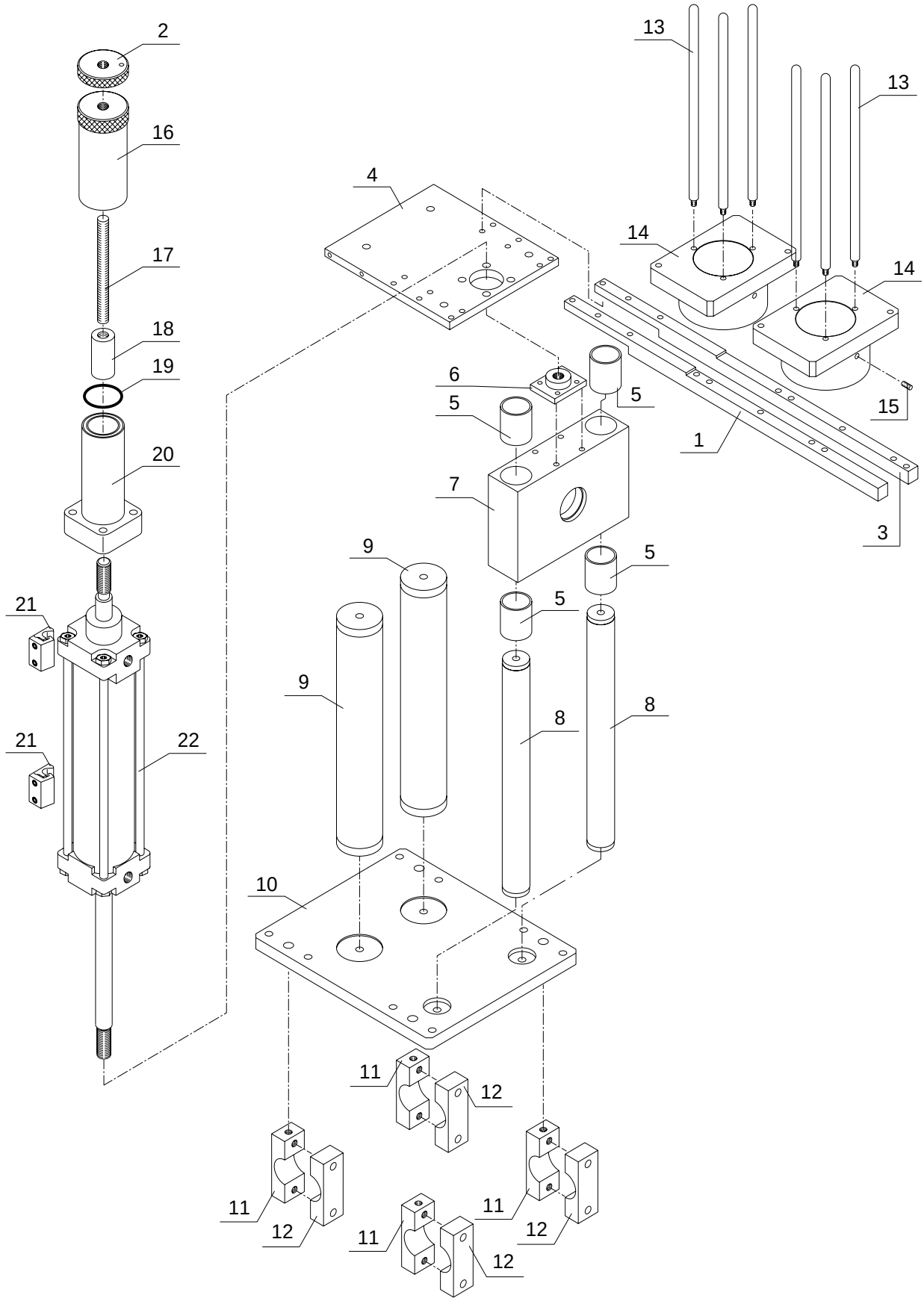

Fig. 10.15 - Lid feed

Lid feed - Fig. 10.16

POS.	CODE	DESCRIPTION	Q.TY 2 rows	Q.TY 3 rows
1	333001007	Actuator	1	1
2	336007150	Corteco seal	1	1
3	336001306	Bearing	2	2
4		Suction cup (according to format)	2	3
5		Suction cup holder (according to format)	2	3
6		Suction cup mounting extension (according to format)	2	3
7	12040130	Suction cup support shaft	1	1
8	336071173	Corteco seal	1	1
9	326019135	I35 circlip	2	1

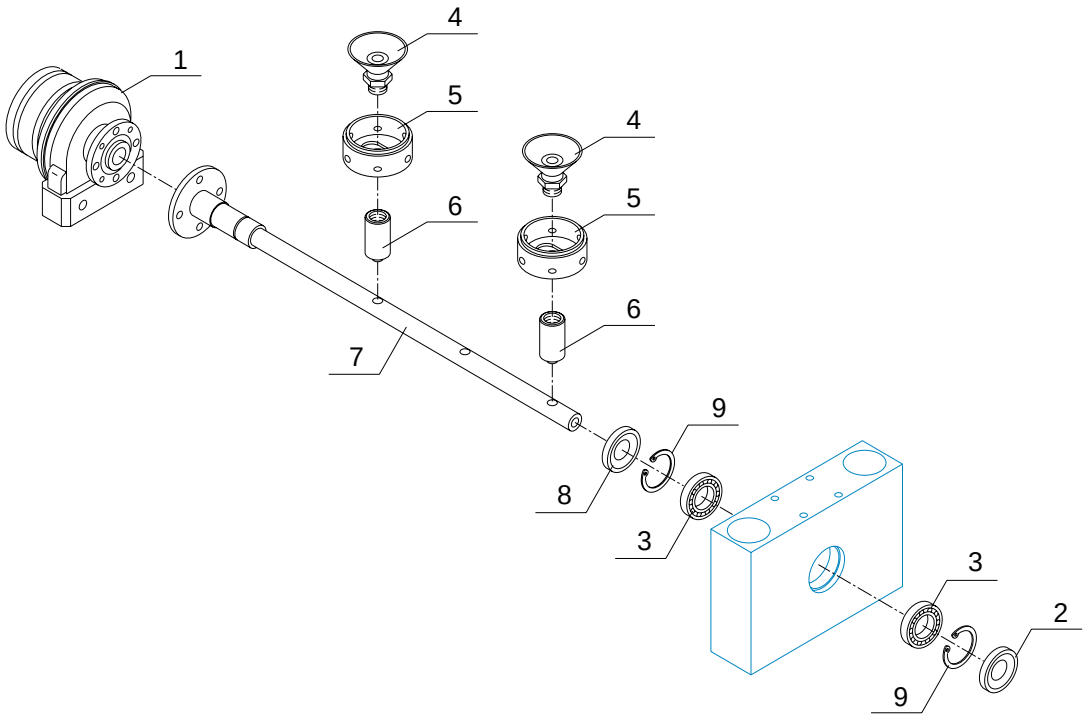

Fig. 10.16 - Lid feed

Lid closing station - Fig. 10.17

POS.	CODE	DESCRIPTION	Q.TY 2 rows	Q.TY 3 rows
1	17000055	Fixing	4	6
2	17000013	Cylinder	2	3
3	12040173	Cylinder support plate	2	3
4		Bush (according to format)	2	3
5		Beader spring (according to format)	2	3
6		Body (according to format)	2	3
7	12040174	Spacer	8	8
8	12040172	Support bar	2	2
9		Plug (according to format)	2	3
10	12040175	Beader end piece	1	1
11	12040079	Upper clamp	1	1
12	12040078	Lower clamp	1	1
13	12040177	Beader end piece	1	1
14	12040179	Station fixing clamp	2	2
15	12040720	Contrast polyzene	3	3
16	12040719	Contrast cross-piece	1	1

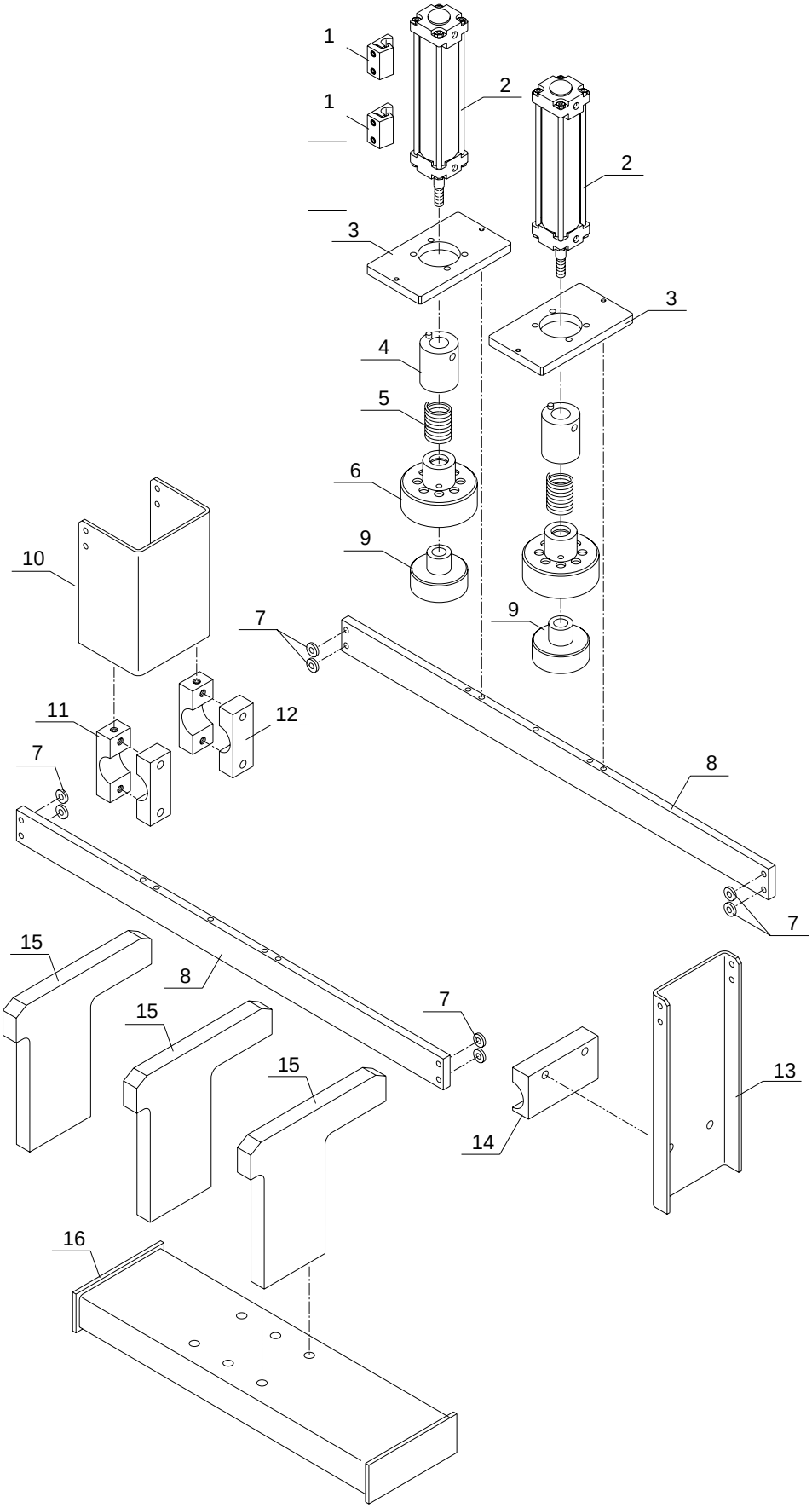

Fig. 10.17 - Lid closing station

O-belt - Fig. 10.18

POS.	CODE	DESCRIPTION	Q.TY
1	12040144	Plate spacer	8
2	12040145	Belt support plate	1
3	336020552	Belt	1
4	336010080	Ratio motor	1
5	326019012	E12 circlip	8
6	12040143	Tensioning shaft pin	2
7	12040148	Tensioner block	2
8	12040233	Ratio motor mounting	4
9	12040232	Right belt shoulder	1
10	12014730	Bracket tie rod	1
11	12040147	Drive roller	1
12	326013101	Key 8x7x20	2
13	12040139	Rotation shaft	2
14	12030142	Tensioner shaft	1
15	336071090	Corteco seal	6
16	336007056	Koyo support	1
17	336001363	Bearing	6
18	12040236	Return roller	3
19	12040231	Left belt shoulder	1
20	12040219	Guide bracket	2
21	12040289	Cone ejection guide	2
22	12040236	Support angle bracket	1
24	12040235	Front support	2
25	12030234	Rear support	2

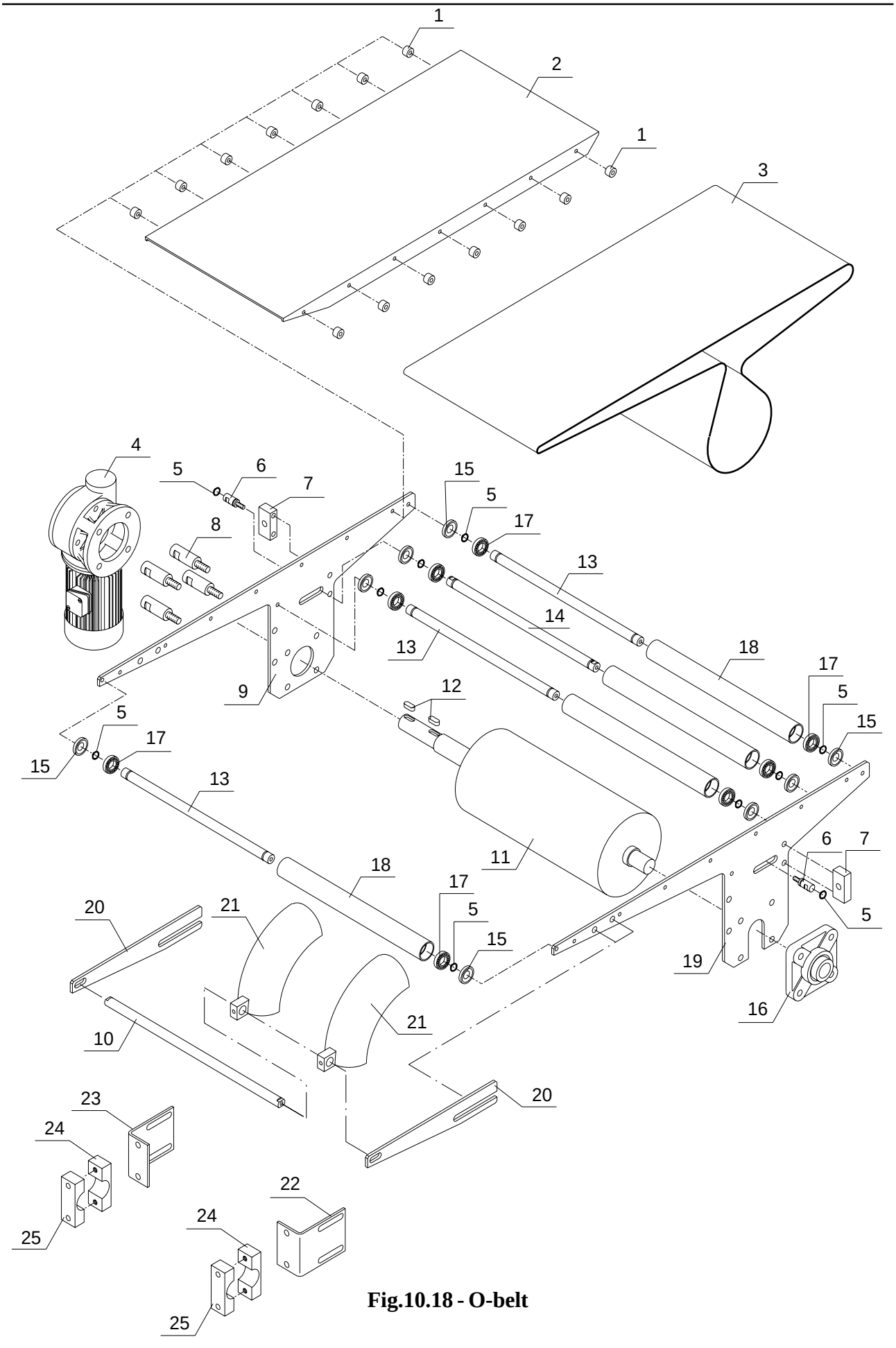

Fig.10.18 - O-belt

Chocolate tank - Fig. 10.19

POS.	CODE	DESCRIPTION	Q.TY
1	12040816	Tank support frame	1
2	016060218	Clamp	2
3	018020582	Seal	2
4	336054078	Wheel DM100	4
5	017975020	Resistance	1
6	12040814	Chocolate tank	1
7	12040926	Chocolate dipping tube	2
8	12040818	Cover for tank	1
9	12040820	Chocolate filtering grid	1
10	12040819	Chocolate return outlet	2
11	016020003	Ball valve	1
12	017088239	BSA Thermostat	1

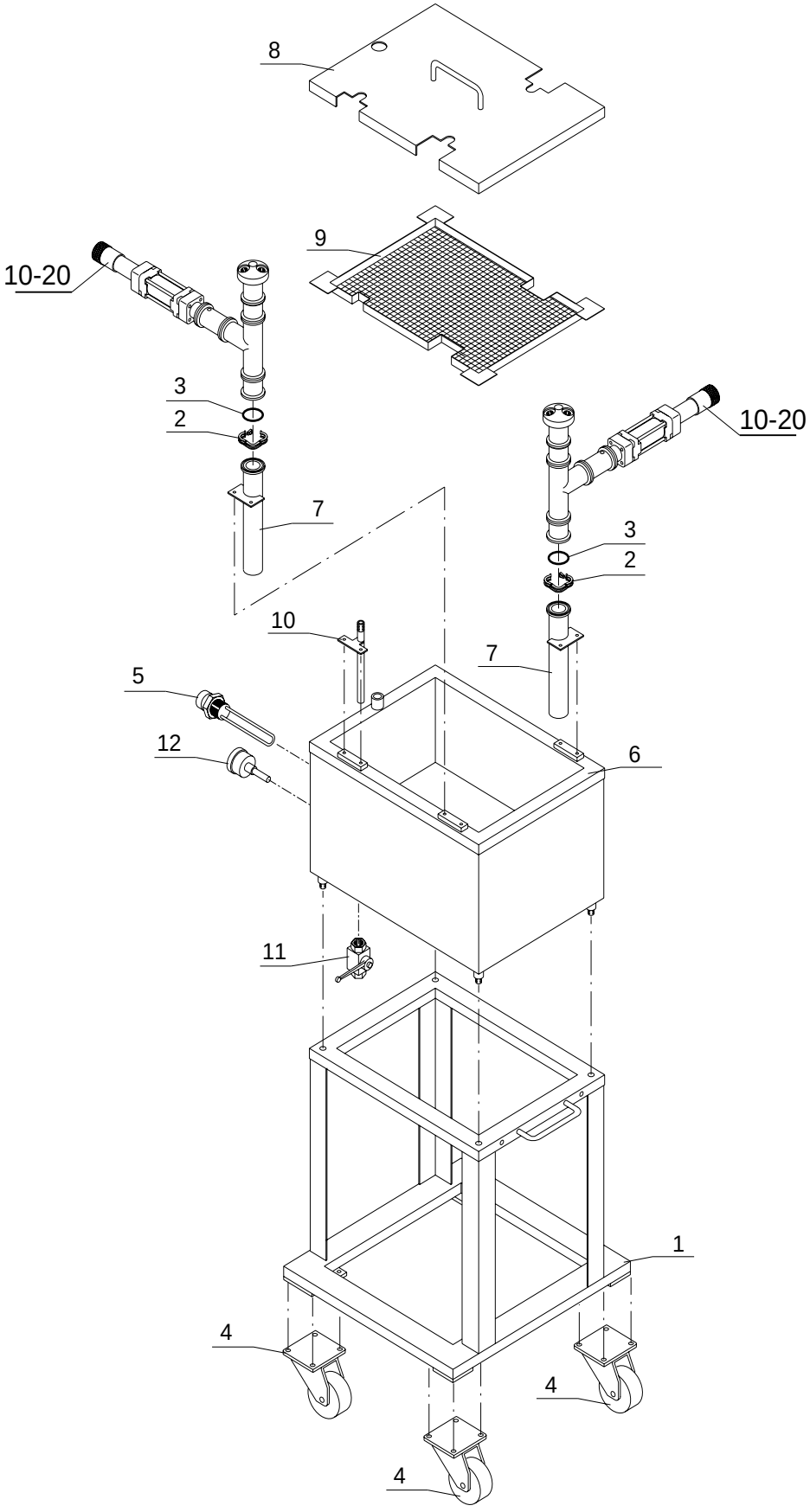

Fig. 10.19 - Chocolate tank

Chocolate spray pump - Fig. 10.20

POS.	CODE	DESCRIPTION	Q.TY
1	12040665	Ring nut	1
2	12040715	Adjustment sleeve	1
3	12040716	Adjustment screw	1
4	12040663	Joint	1
5	336067082	Seal	1
6	12040709	Control sleeve	1
7	17000309	Cylinder	1
8	12040712	Ring nut with connection	1
9	540204053	Coupling	1
10	17000310	Seal	2
11	12040714	Central piston	1
12	018020582	Seal	5
13	016060218	Clamp connection	5
14	12040713	Double sleeve	1
15		Union tee	1
16	12040711	Spring	2
17	336003999	Ball	2
18	12040710	Spring container	2
19	12040806	Nipple with two outlets	1

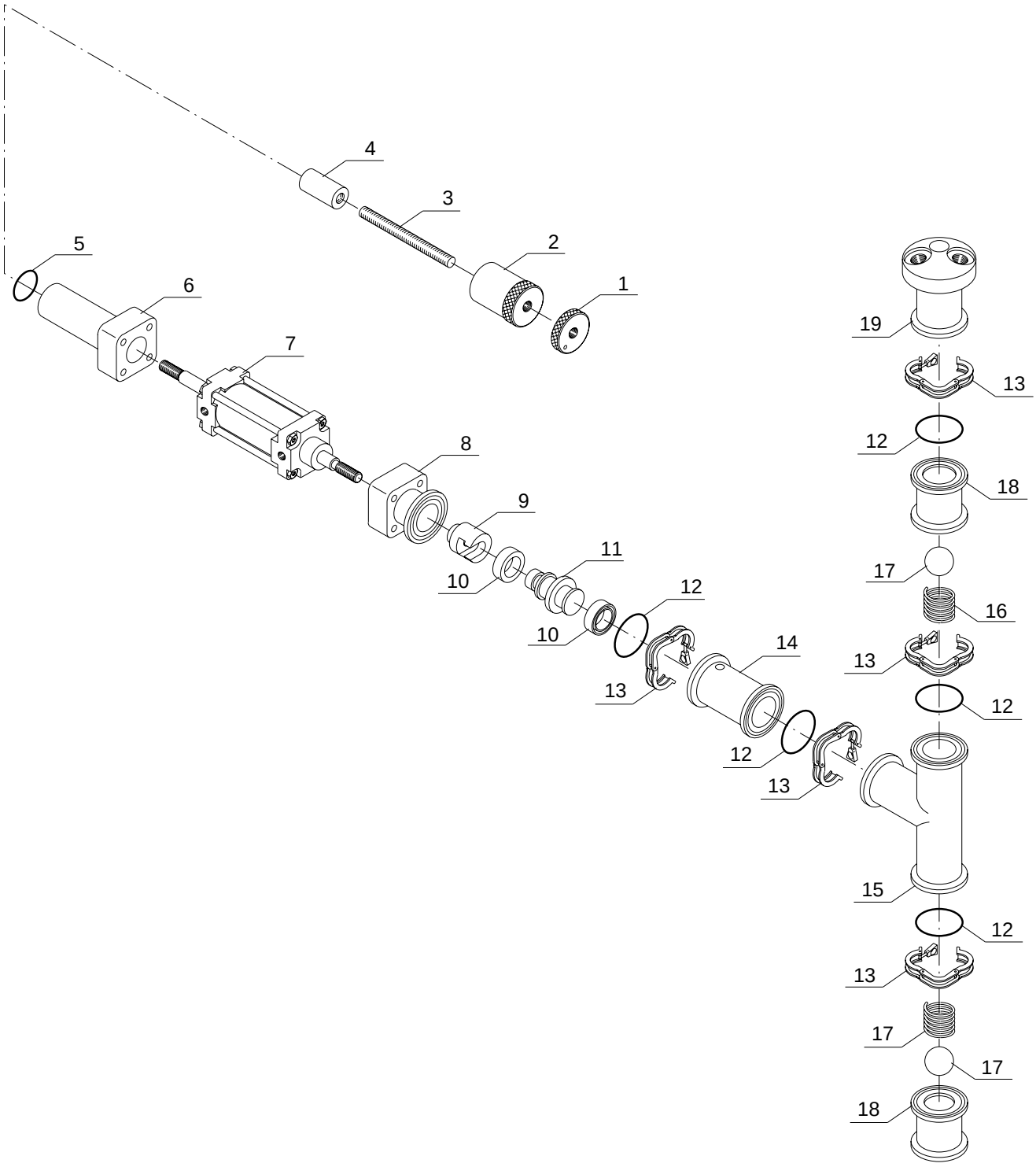

Fig. 10.20 - Chocolate spray pump

HOYER COMET C

11 - LIST OF SPARE PARTS FOR CUP PRODUCT

Index

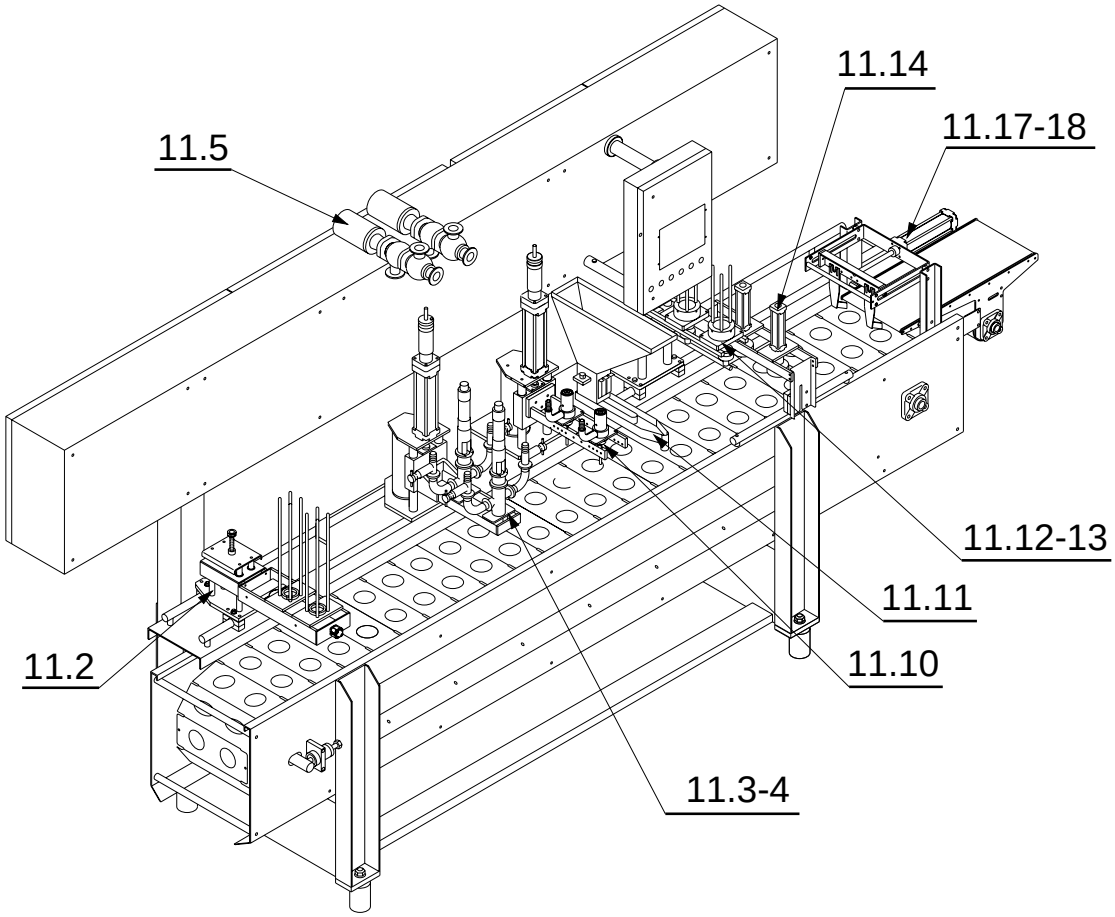

Fig. 11.1 - General layout

Cup feed station - Fig. 11.2

POS.	CODE	DESCRIPTION	Q.TY
1	336057055	Handwheel	1
2	12040088	Upper adjusting plate	1
3	HL0111	Adjusting screw	1
4	540203006	Thrust washer	1
5	540203008	Screw bush	1
6	540203005	Lifting block	1
7	540203007	Screw stop	1
8	336005076	Bush	4
9	12040087	Vertical adjustment slide	1
10	12040086	Slide guide column	4
11	12040085	Support plate	1
12	12040079	Upper clamp	3
13	12040078	Lower clamp	3
14	12040089	Frame support spacer	4
15	17000007	Cylinder	2
16	540212003	Coupling	2
17	12040091	Stop blade guide	2
18	12040090	Magazine support frame	1
19		Blade for two rows (depending on format)	2
19a		Blade for 3 rows (depending on format)	2

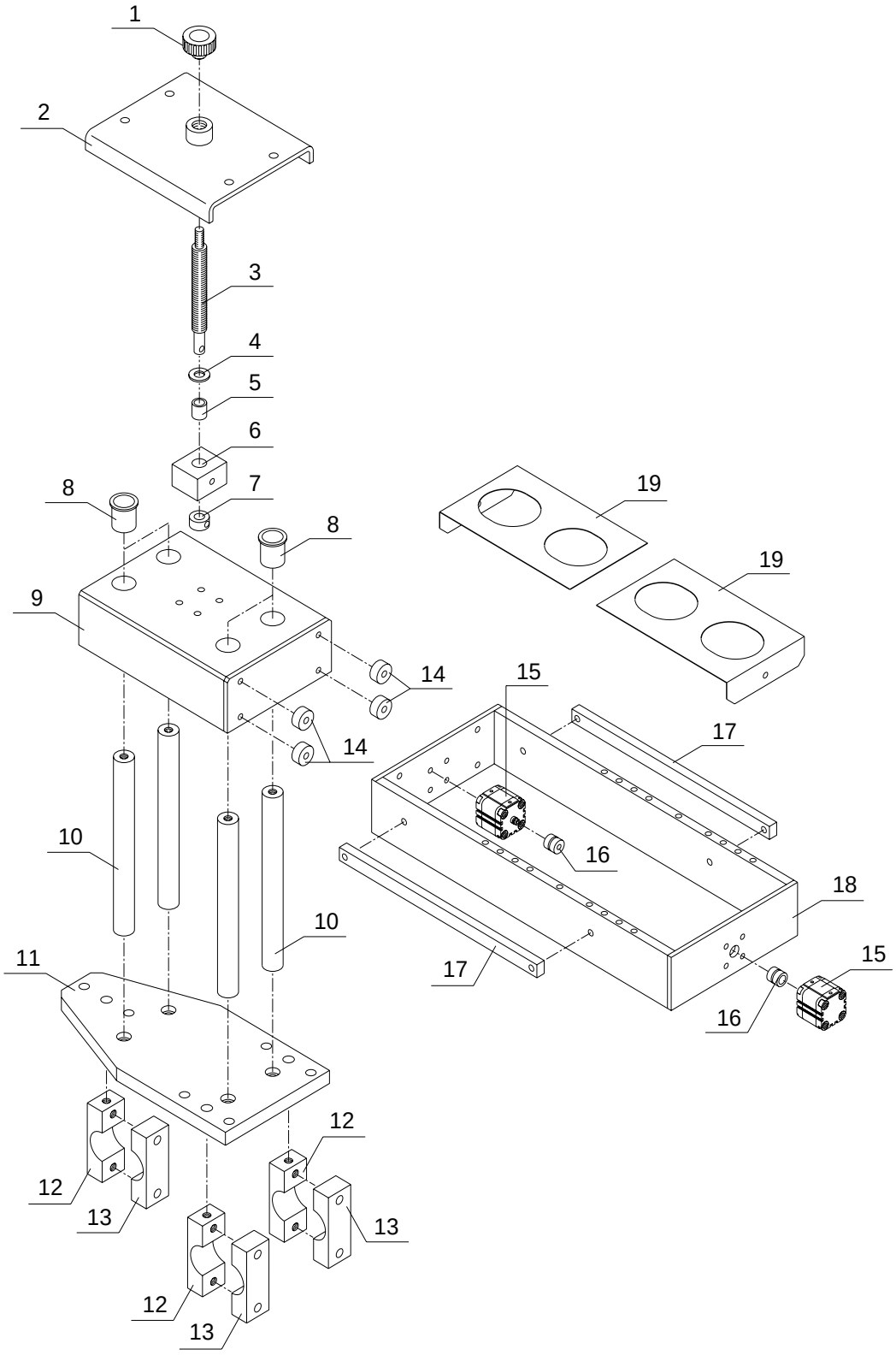

Fig. 11.2 - Cup feed station

Dosers - Fig. 11.3

POS.	CODE	DESCRIPTION	Q.TY
1	17000056	Fixing	2
2	12040076	Support plate	1
3	333001557	Fixing	1
4	336005055	Bush	4
5	12040083	Frame mounting slide	1
6	12040080	Slide guide column	2
7	12040081	Support column	1
8	12040077	Base plate	1
9	12040079	Upper clamp	4
10	12040078	Lower clamp	4
11	12040075	Lock nut	1
12	12040074	Cylinder travel adjusting nut	1
13	541120121	Adjusting screw	1
14	341690101	Cylinder joint	1
15	336067091	O-ring OR 4150	1
16	12040073	Cylinder mounting sleeve	1
17	17000009	Cylinder	1

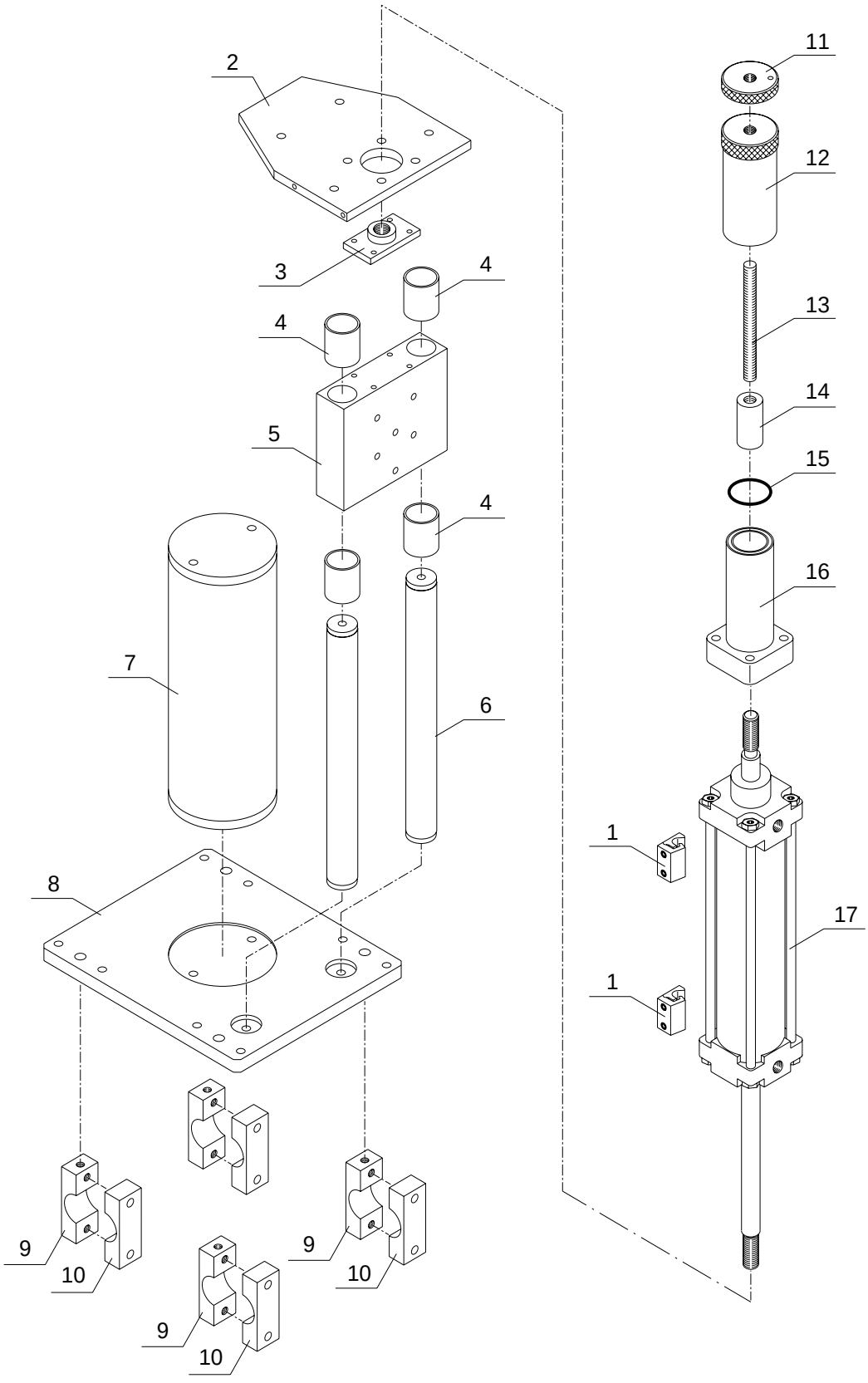

Fig. 11.3 - Dosers

Dosers - Fig. 11.4

POS.	CODE	DESCRIPTION	Q.TY 2 Rows	Q.TY 3 Rows
1	17000010	Cylinder	2	3
2	12040213	Cylinder connection	2	3
3	016060219	2” A304 clamp	2	3
4	336067042	O-ring 3081	4	6
5	12040210	Upper cylinder half	2	3
5a	12040782	Upper half of variegator cylinder	2	3
6	336067051	O-ring 3118	2	3
7	12040209	Dual doser body	2	3
8	12040027	Joint	2	3
9	336067036	O-ring 119	2	3
10	12040948	Centre perforated piston	2	3
11	12040211	Lock nut	2	3
12	540204063	Nozzle	2	3
13	540204050	Elbow	2	3
14	336067020	Seal	6	9
15	016060218	Clamp	6	9
16	141040364	Rubber seal support	9	9
17	12040110	Support frame	1	1

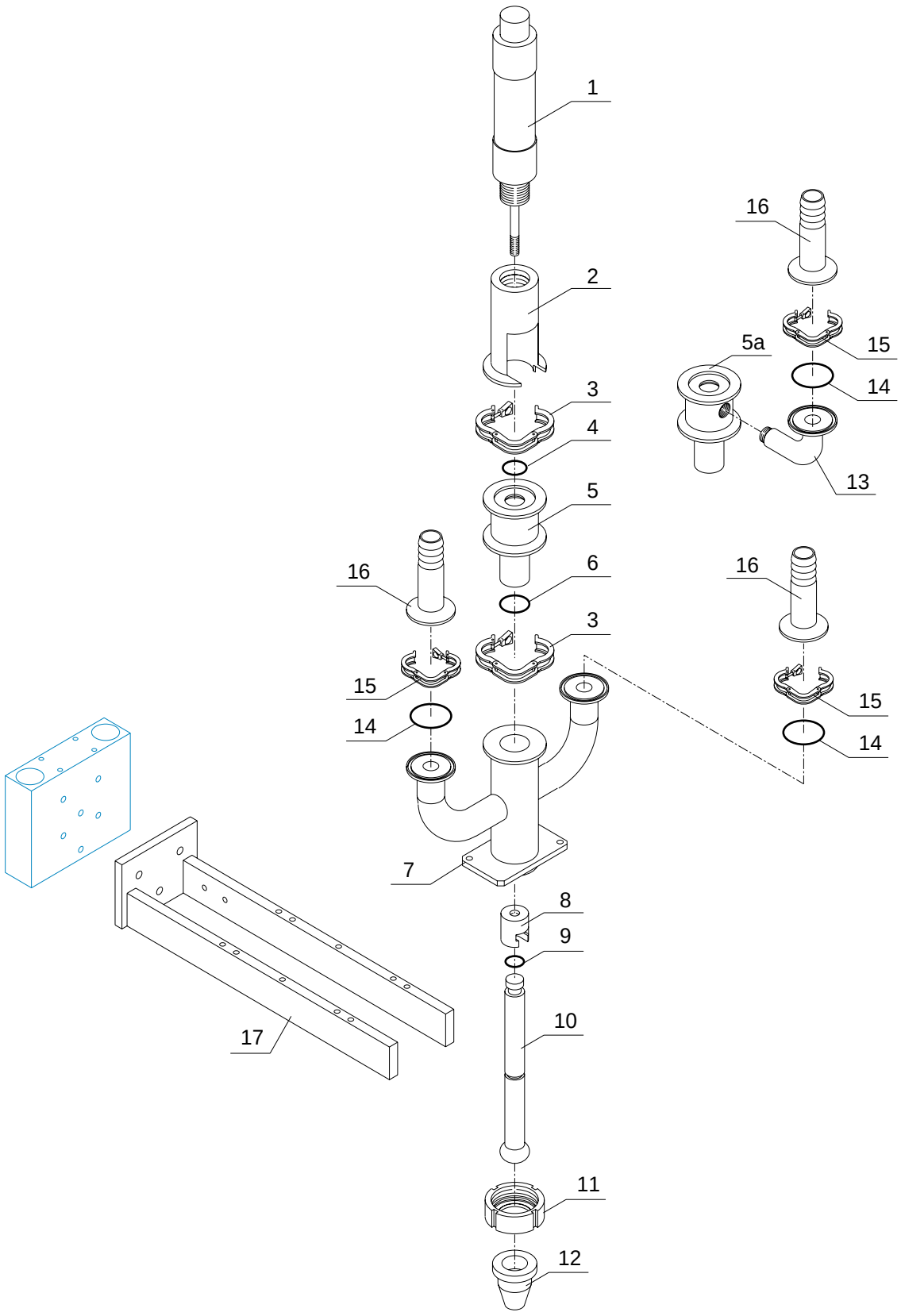

Fig. 11.4 Doser

Double by-pass - Fig. 11.5

POS.	CODE	DESCRIPTION	Q.TY
1	17040009	Pneumatic valve	1
2	17000317	Union tee	1
3	141040344	Rubber seal support	1
4	016060218	Clamp	7
5	018020582	Seal	7
6	17000279	Pipe	1
7	540303018	Union Y	1
8	016060218	Clamp	2
9	018020582	Seal	2
10	542320022	Balancing body	2
11	542320029	Lock nut	2
12	336067038	Seal	4
13	542320023	Equaliser cock	2
14	018060961	Clip	4
15	1700279	Pipe	2
16	12040936	Bracket	1

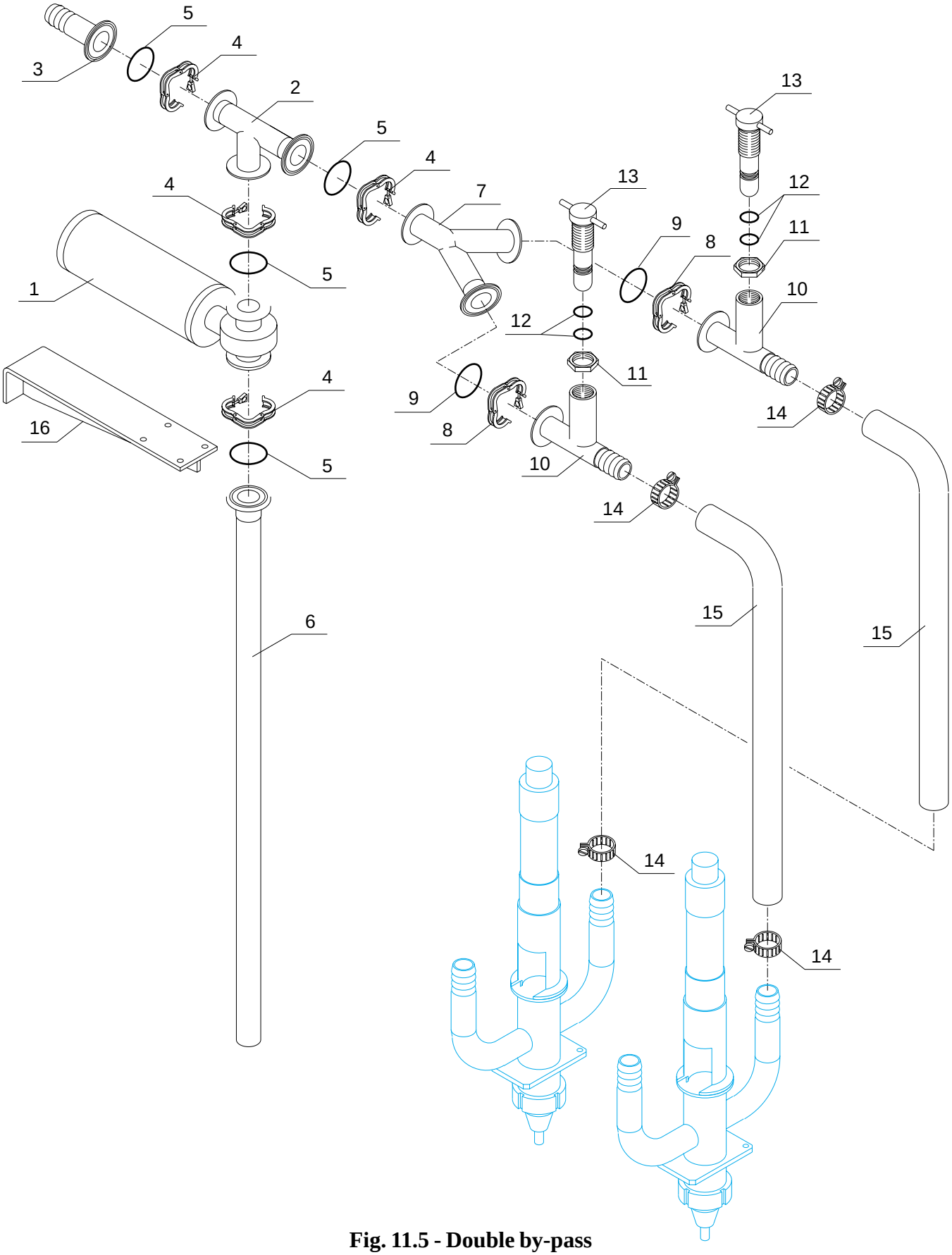

Fig. 11.5 - Double by-pass

Pencil filler - Fig. 11.6

POS.	CODE	DESCRIPTION	Q.TY 2 Rows	Q.TY 3 Rows
1	17000056	Fixing	2	2
2	12040076	Support plate	1	1
3	17000053	Fixing	1	1
4	336005055	Bush	4	4
5	12040083	Frame fixing slide	1	1
6	12040080	Slide guide column	2	2
7	12030081	Support column	1	1
8	12040077	Base plate	1	1
9	12040079	Upper clamp	4	4
10	12040078	Lower clamp	4	4
11	12040075	Lock nut	1	1
12	12040074	Cylinder travel adjusting nut	1	1
13	541120121	Adjustment screw	1	1
14	341690101	Cylinder joint	1	1
15	336067370	O-ring 4143	1	1
16	12040073	Cylinder mounting sleeve	1	1
17	17000009	Cylinder	1	1
18	12040109	Support frame	1	1
19	12040539	Nozzle	2	3
20	336067030	Seal	2	3
21	336067014	Seal	2	3
22	12041127	Valve body	2	3
23	018060957	Clip	2	3
24	540214002	Bottom	2	3
25	336067020	Seal	2	3
26	540214001	Piston	2	3

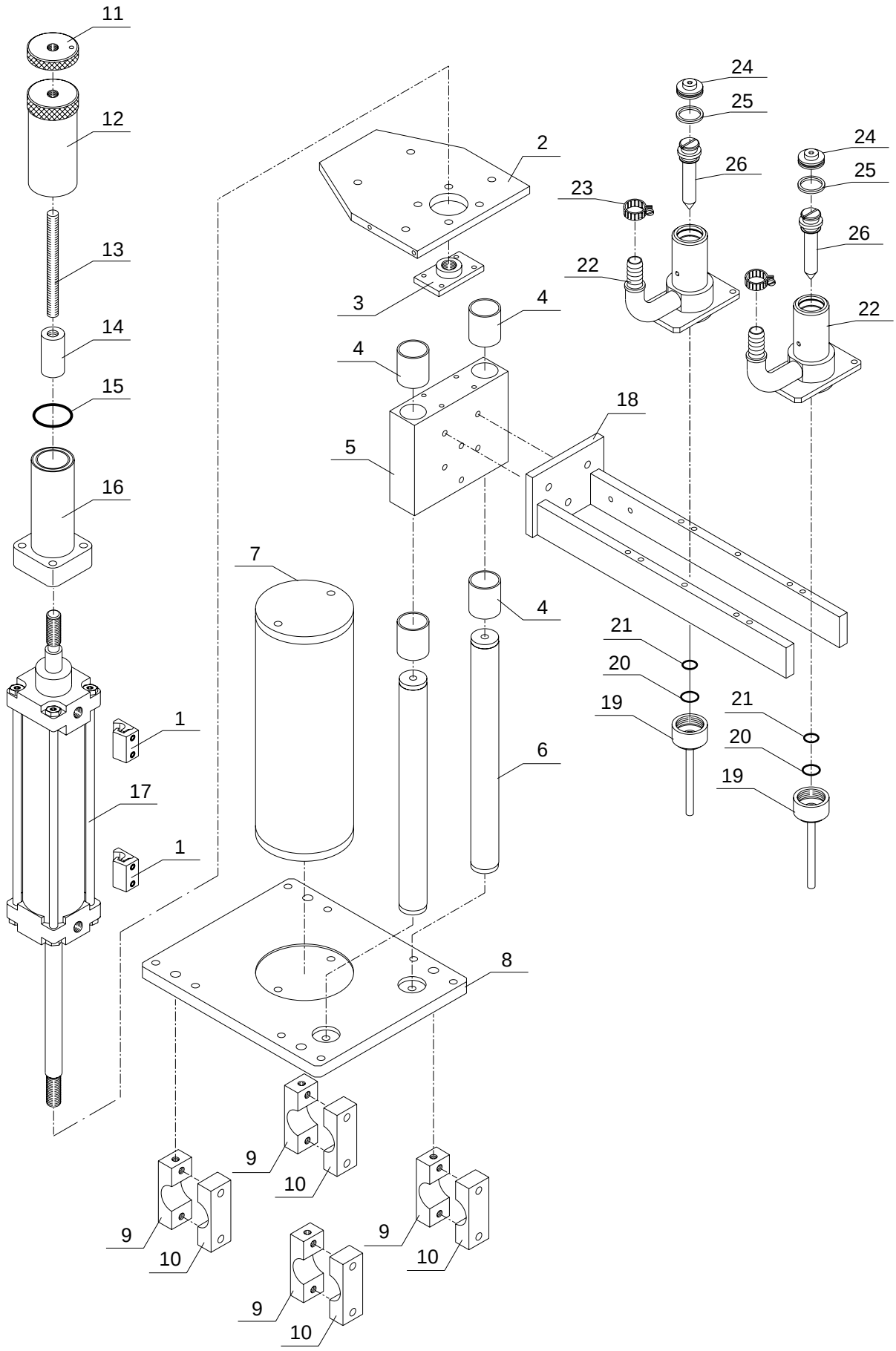

Fig. 11.6 - Pencil filler

Decorators - Fig. 11.7

POS.	CODE	DESCRIPTION	Q.TY
1	17000056	Fixing	2
2	12040076	Upper plate	1
3	333001557	Fixing	1
4	336005055	Bush	4
5	12040083	Frame fastening slide	1
6	12040080	Slide guide column	2
7	12040081	Support column	1
8	12040077	Base plate	1
9	12040079	Upper clamp	4
10	12040078	Lower clamp	4
11	12040075	Locking ring nut	1
12	12040074	Cylinder stroke adjustment ring nut	1
13	541120121	Adjustment screw	1
14	341690101	Cylinder joint	1
15	336067091	O-ring 4150	1
16	12040073	Cylinder support sleeve	1
17	17000009	Cylinder	1

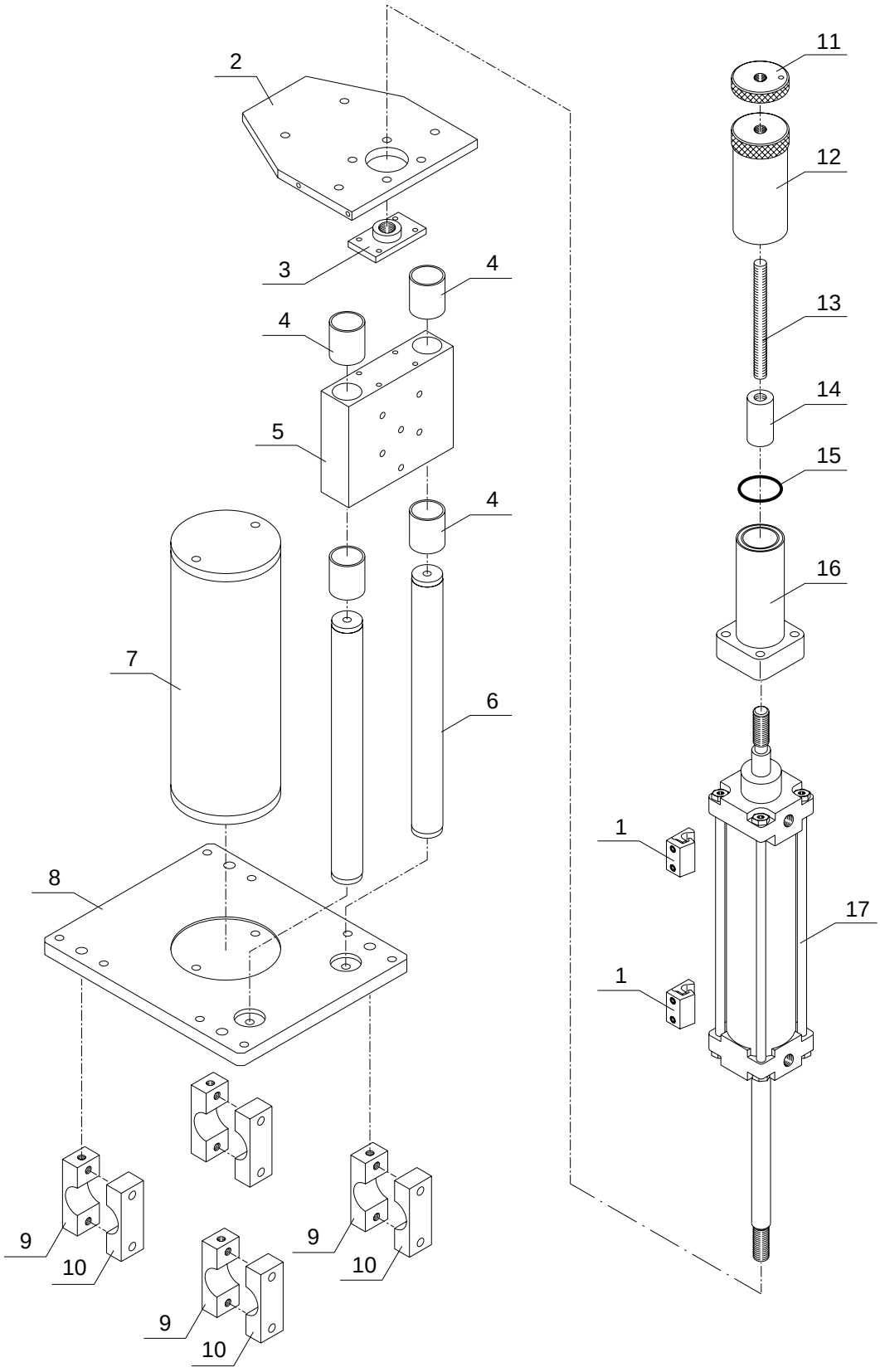

Fig. 11.7- Decorators

Decorators - Fig. 11.8

POS.	CODE	DESCRIPTION	Q.TY 2 Rows	Q.TY 3 Rows
1	17000010	Cylinder	2	3
2	12040213	Cylinder connection	2	3
3	016060219	2” A304 clamp	4	6
4	336067042	O-ring 3081	4	6
5	12040210	Upper cylinder half	2	3
5a	12040782	Upper half of variegator cylinder	2	3
6	336067051	O-ring 3118	2	3
7	12042030	Dual head	2	3
8	12040027	Joint	2	3
9	336067036	O-ring 119	2	3
10	12040948	Central perforated piston	2	3
11	12040211	Lock nut	2	3
12	540204091	Nozzle 540204091	2	3
13	12040110	Support frame	1	1
14	336067020	Seal	2	3
15	016060218	Clamp	2	3
16	141040264	Rubber seal support	2	3

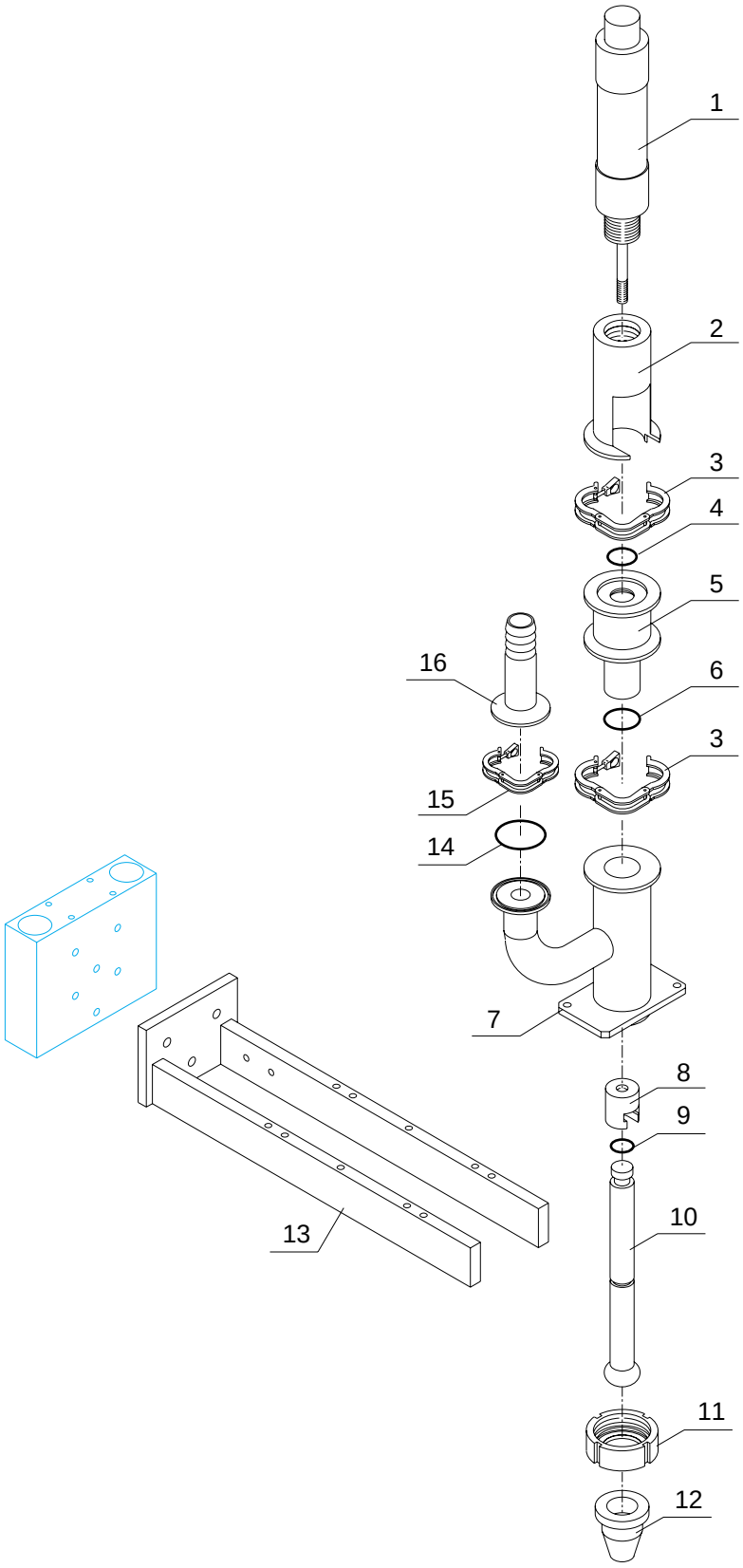

Fig. 11.8 - Decorators

Single by-pass - Fig. 11.9

POS.	CODE	DESCRIPTION	Q.TY
1	17040009	Pneumatic valve	1
2	17000317	Union tee	1
3	141040344	Rubber seal holder	1
4	016060218	Clamp	7
5	018020582	Seal	7
6	17000279	Pipe	1
7	540303018	Union Y	1
8	016060218	Clamp	2
9	018020582	Seal	2
10	542320022	Balancing body	2
11	542320029	Lock nut	2
12	336067038	Seal	4
13	542320023	Equaliser cock	2
14	018060961	Clip	4
15	1700279	Pipe	2
16	12040936	Bracket	1

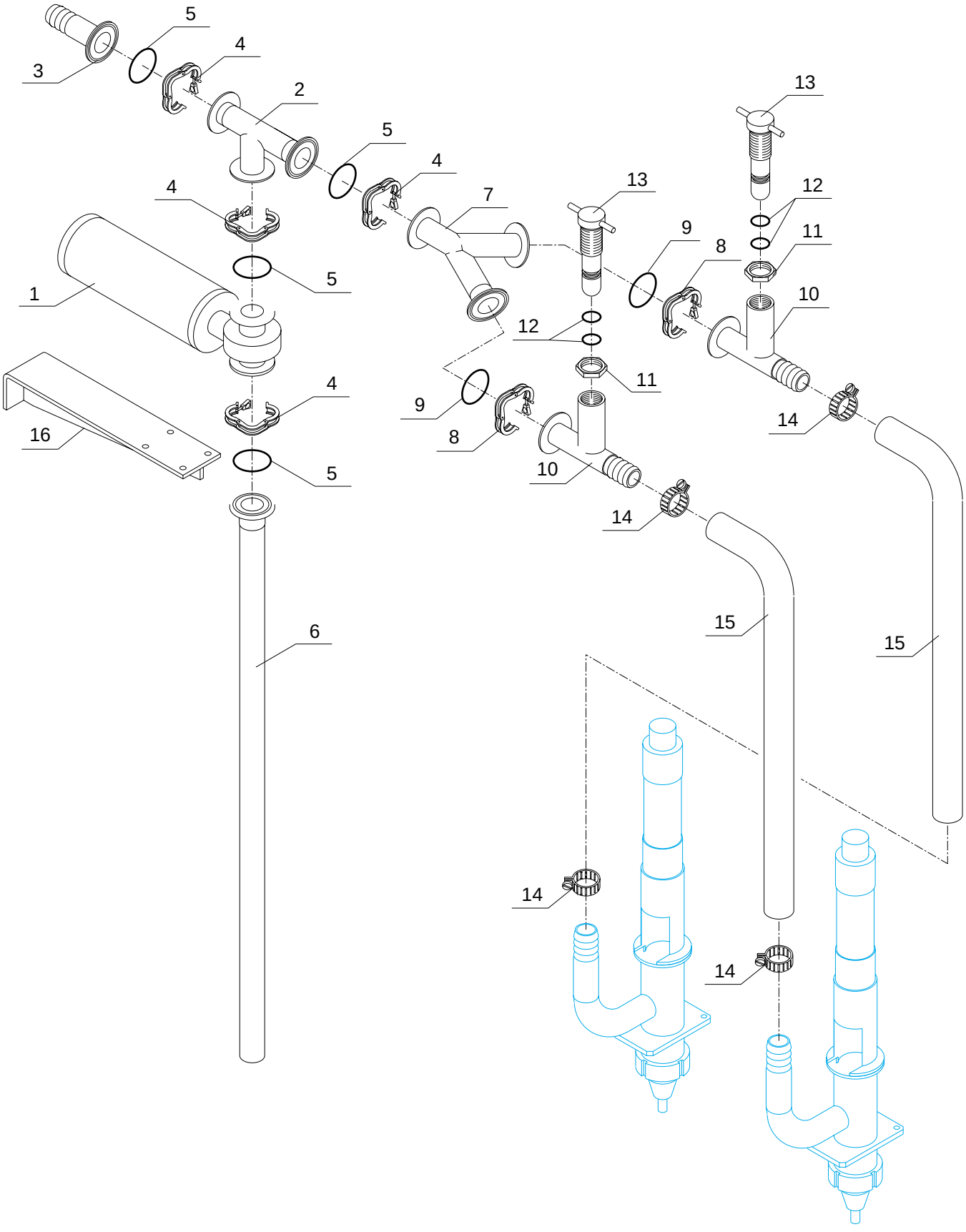

Fig. 11.9 - Single by-pass

Topping station - Fig. 11.10

POS.	CODE	DESCRIPTION	Q.TY 2 Rows	Q.TY 3 Rows
1	12010078	Lower clamp	3	3
2	12040079	Upper clamp	3	3
3	540209012	Topping ring nut	2	3
4	540209011	Topping disk	2	3
5	12042031	Topping nozzle	2	3
6	336067030	Seal	2	3
7	336069466	Seal	4	6
8	12040110	Doser mounting	1	1
9	12040823	Base	1	1
10	540214002	Bottom	2	3
11	336067020	Seal	2	3
12	018060957	Clamp	2	3
13	12040527	Valve body	2	3
14	540214001	Piston	2	3

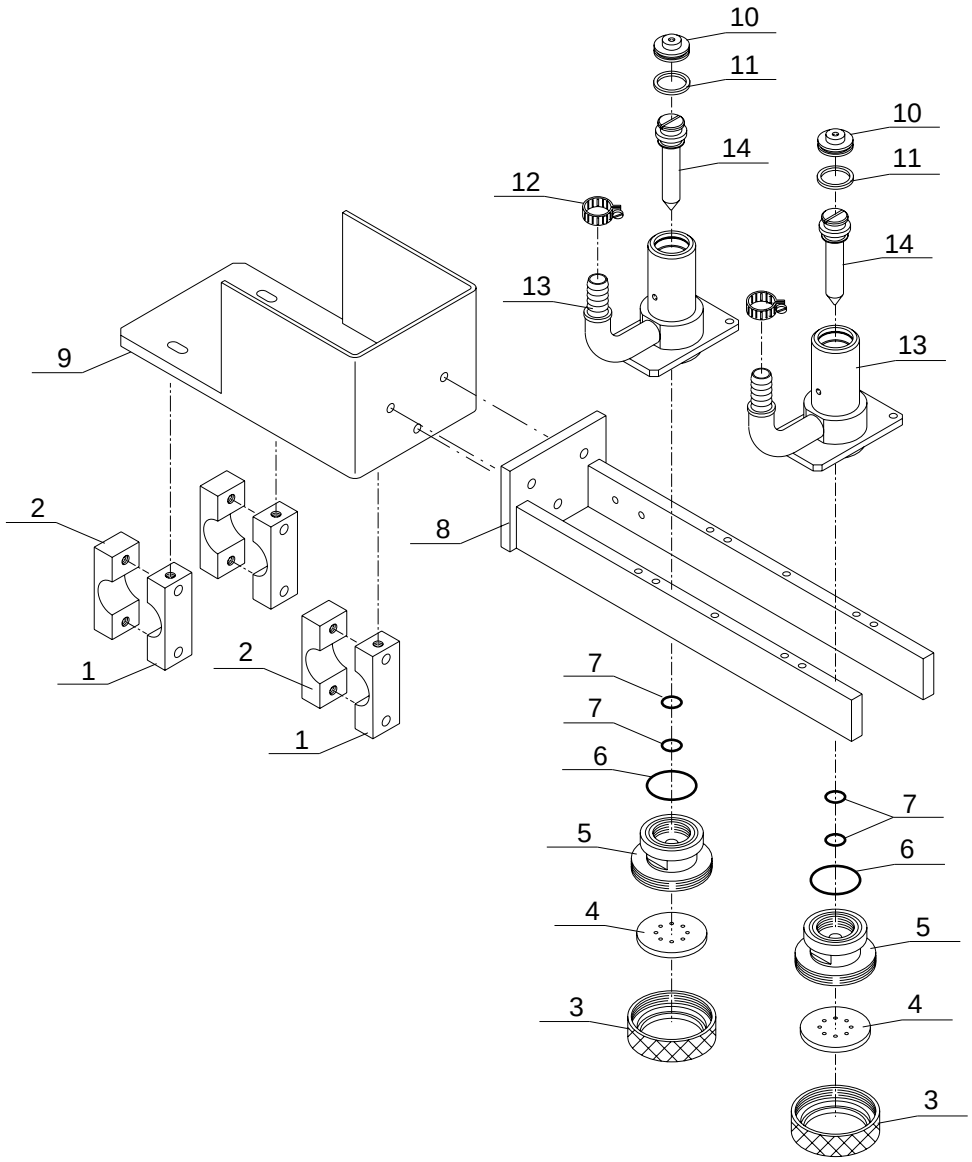

Fig. 11.10 - Topping station

Granule station - Fig. 11.11

POS.	CODE	DESCRIPTION	Q.TY 2 Rows	Q.TY 3 Rows
1	12040116	Granule hopper	1	1
2	12040117	Flow controller	3	3
3	336091002	Pneumatic vibrator	1	1
4	540213015	Vibrator fork	1	1
5	12040121	Two-lane granule channel	1	-
5a	12040919	Three-lane granule channel	-	1
6	336055001	Vibration damper	4	4
7	540309008	Column	2	2
8	12040115	Support plate	1	1
9	12040079	Upper clamp	3	3
10	12040078	Lower clamp	3	3

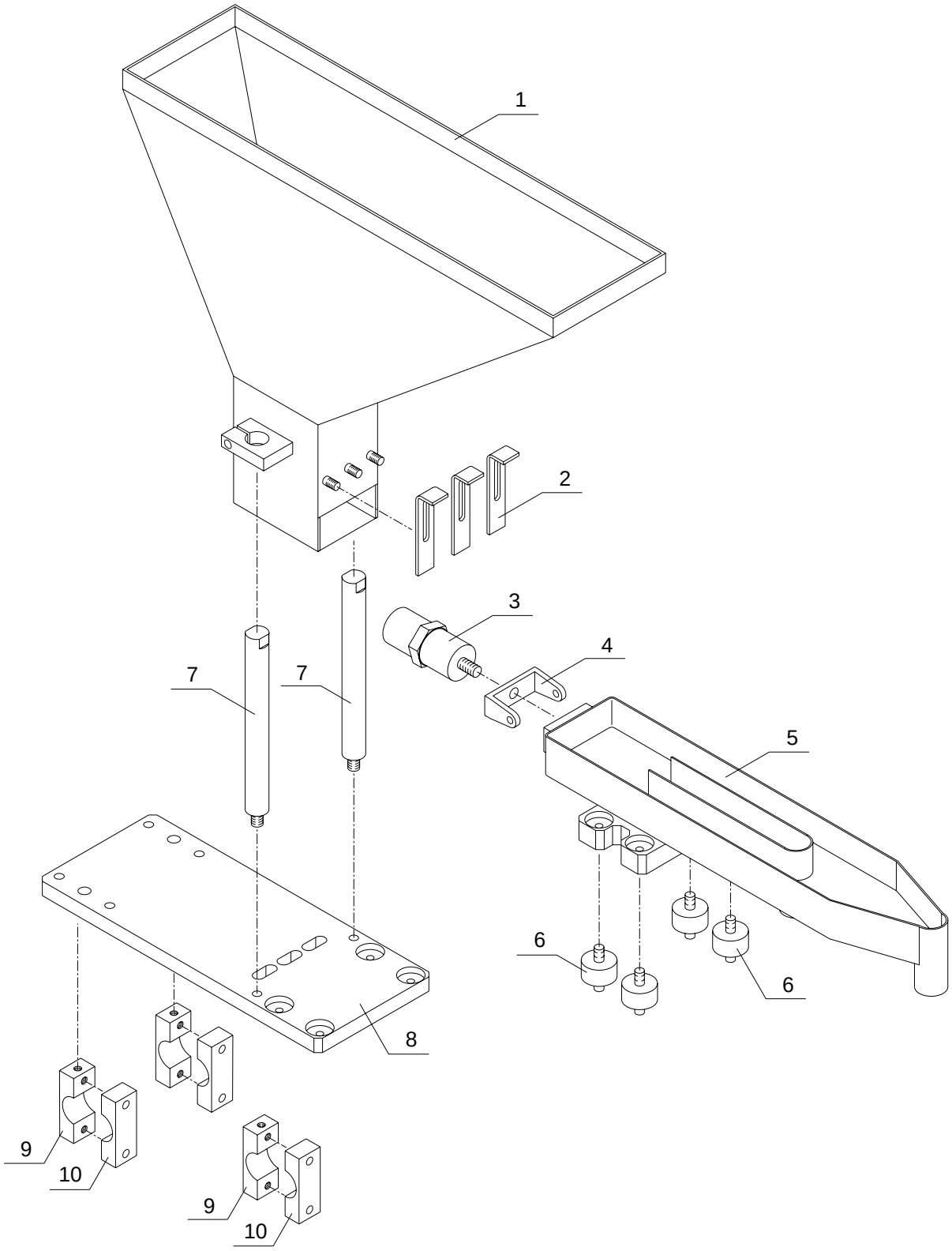

Fig. 11.11 - Granule station

Lid feed - Fig. 11.12

POS.	CODE	DESCRIPTION	Q.TY 2 Rows	Q.TY 3 Rows
1	12040133	Left hand magazine support plate	1	1
2	12040075	Lock nut		1
3	12040134	Right hand magazine support plate	1	1
4	12040125	Upper plate	1	1
5	336005055	Bush	4	4
6	17000052	Fixing	1	1
7	12040128	Frame fixing slide	1	1
8	12040127	Slide guide column	2	2
9	12040126	Plate support column	2	2
10	12040123	Base	1	1
11	12040078	Lower clamp	4	4
12	12040079	Upper clamp	4	4
13		Lid guide rod (depending on format)	6	9
14		Lid magazine (depending on format)	2	3
15	D-FM0847	Lid stop dowel	6	9
16	12040074	Cylinder travel adjusting nut	1	1
17	541120121	Adjustment screw	1	1
18	341690101	Cylinder joint	1	1
19	336067091	O-ring 4150	1	1
20	12040073	Cylinder mounting sleeve	1	1
21	17000056	Fixing	2	2
22	17000009	Cylinder	1	1

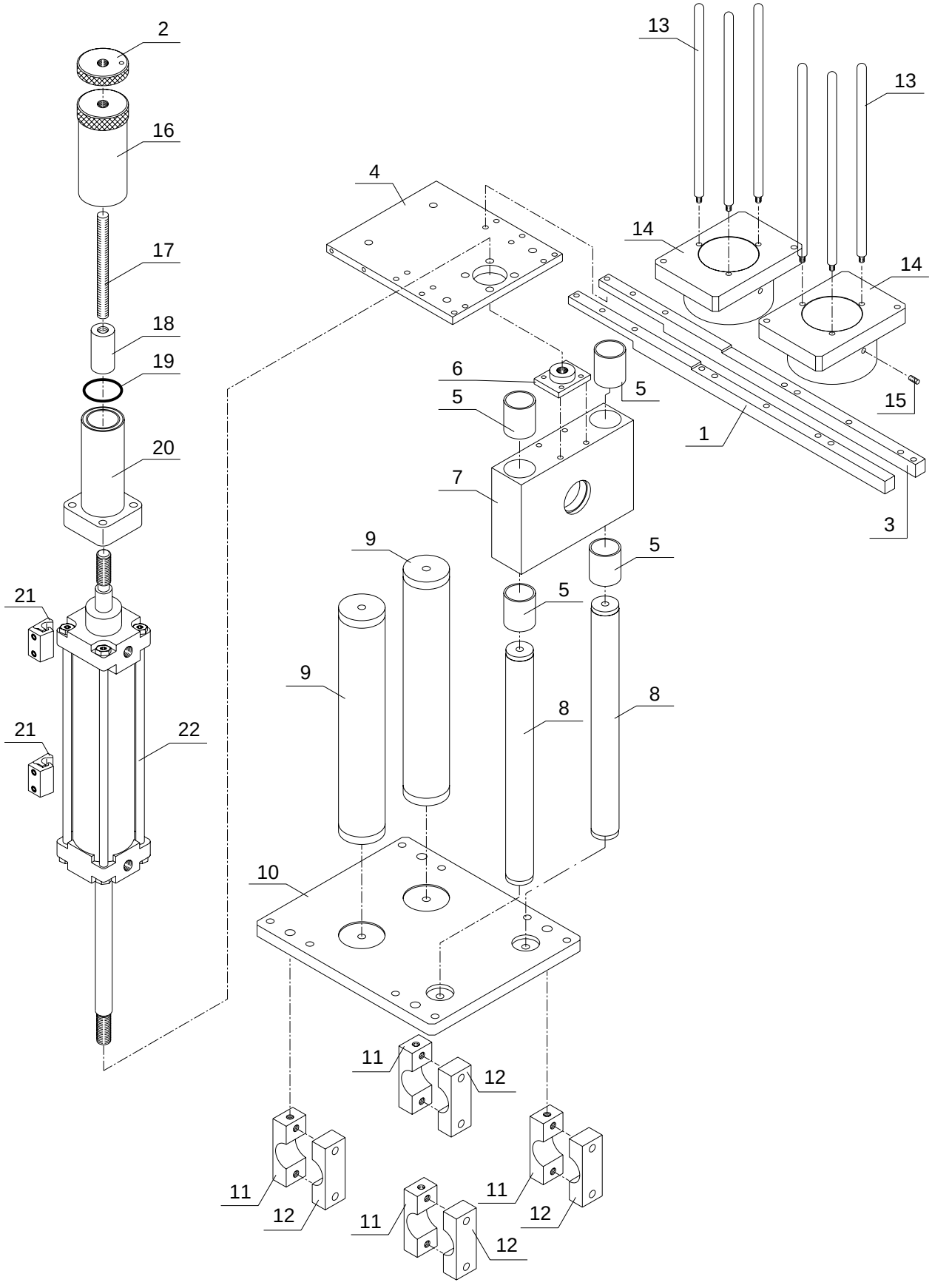

Fig. 11.12 - Lid feed

Lid feed - Fig. 11.13

POS.	CODE	DESCRIPTION	Q.TY 2 Rows	Q.TY 3 Rows
1	333001007	Actuator	1	1
2	336007150	Corteco seal	1	1
3	336001306	Bearing	2	2
4		Suction cup (according to format)	2	3
5		Suction cup holder (according to format)	2	3
6		Suction cup mounting extension (according to format)	2	3
7	12040130	Suction cup support shaft	1	1
8	336071173	Corteco seal	1	1
9	326019135	I35 circlip	2	1

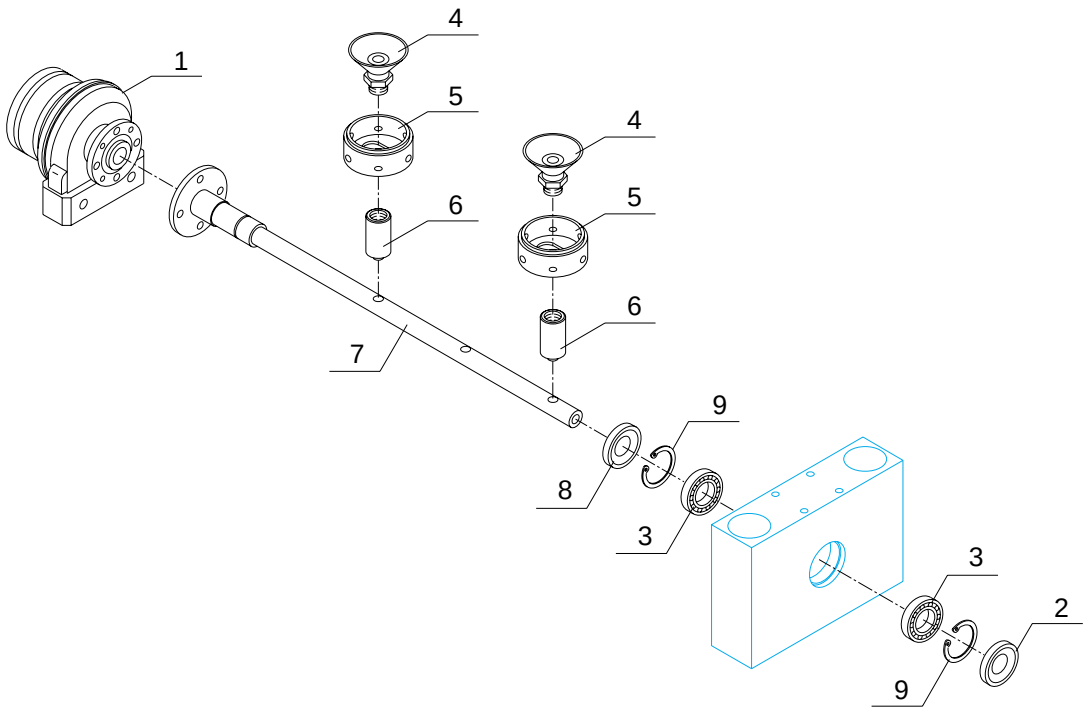

Fig. 11.13 - Lid feed

Lid closing station - Fig. 11.14

POS.	CODE	DESCRIPTION	Q.TY 2 Rows	Q.TY 3 Rows
1	17000055	Fixing	4	6
2	17000013	Cylinder	2	3
3	12040173	Cylinder support plate	2	3
4		Plug (according to format)	2	3
5	12040720	Contrast polyzene	3	3
6	12040719	Contrast cross-piece	1	1
7	12040174	Spacer	8	8
8	12040172	Support bar	2	2
9	12040179	Station fixing clamp	2	2
10	12040175	Beader end piece	1	1
11	12040079	Upper clamp	1	1
12	12040078	Lower clamp	1	1
13	12040177	Beader end piece	1	1

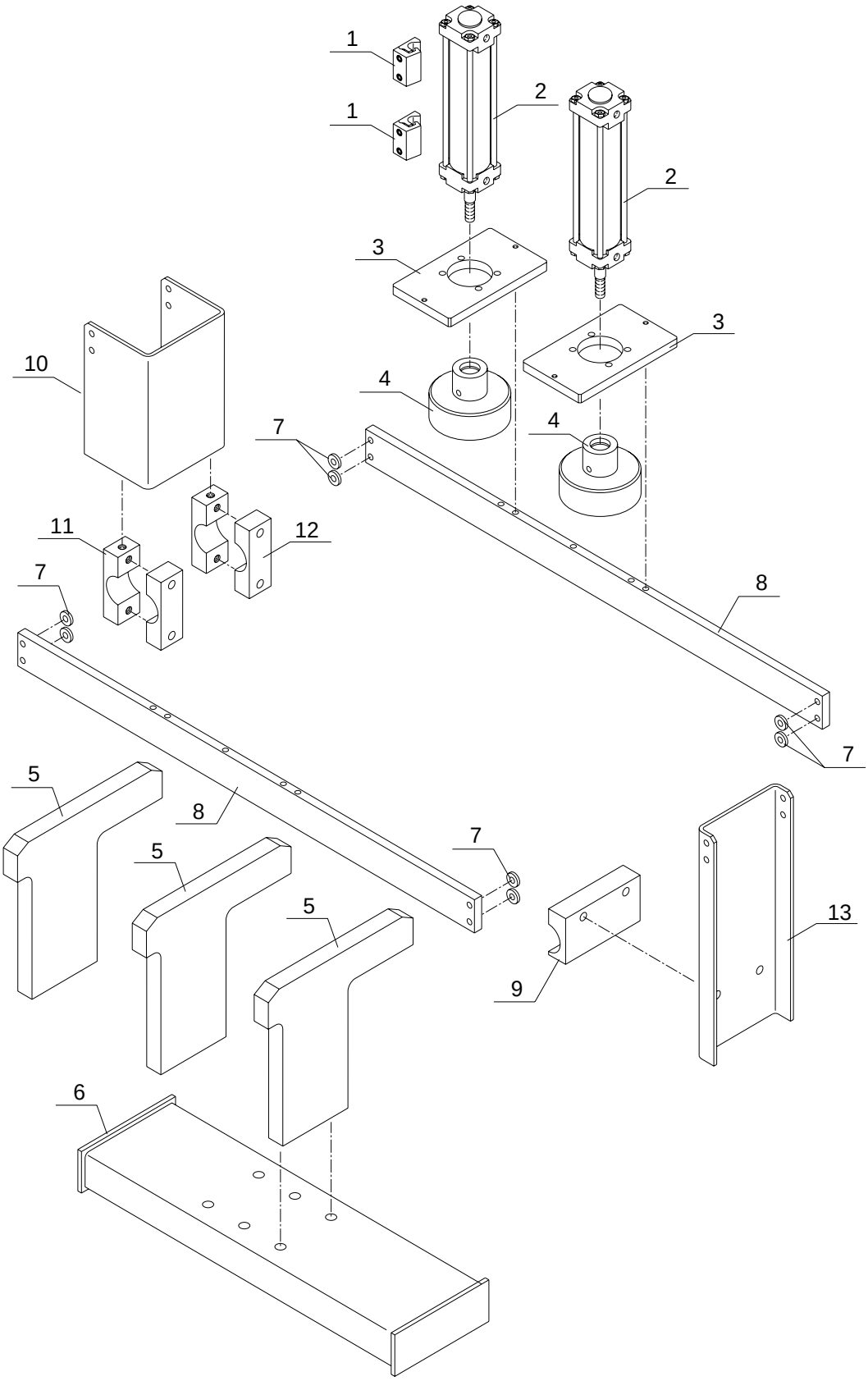

Fig. 11.14 - Lid closing station

Lid stamping station - Fig. 11.15

POS.	CODE	DESCRIPTION	Q.TY 2 rows	Q.TY 3 Rows
1	12040687	Inner end piece	1	1
2	12040174	Spacer	6	6
3	12040686	Outer end piece	1	1
4	12040079	Lower clamp	2	2
5	12040078	Upper clamp	2	2
6	12040688	Support bar	1	1
7	17000270	Cylinder	1	1
8	12040689	Bracket	1	1
9	07600215	Bush	1	1
10	12040691	Column	1	1
11	12040690	Feeler bracket	1	1
12	CM50T41001	Guide bush	2	2
13	CM40541003	Feeler	1	1
14	336090206	Marker	2	3
15	12040179	Clamp	1	1

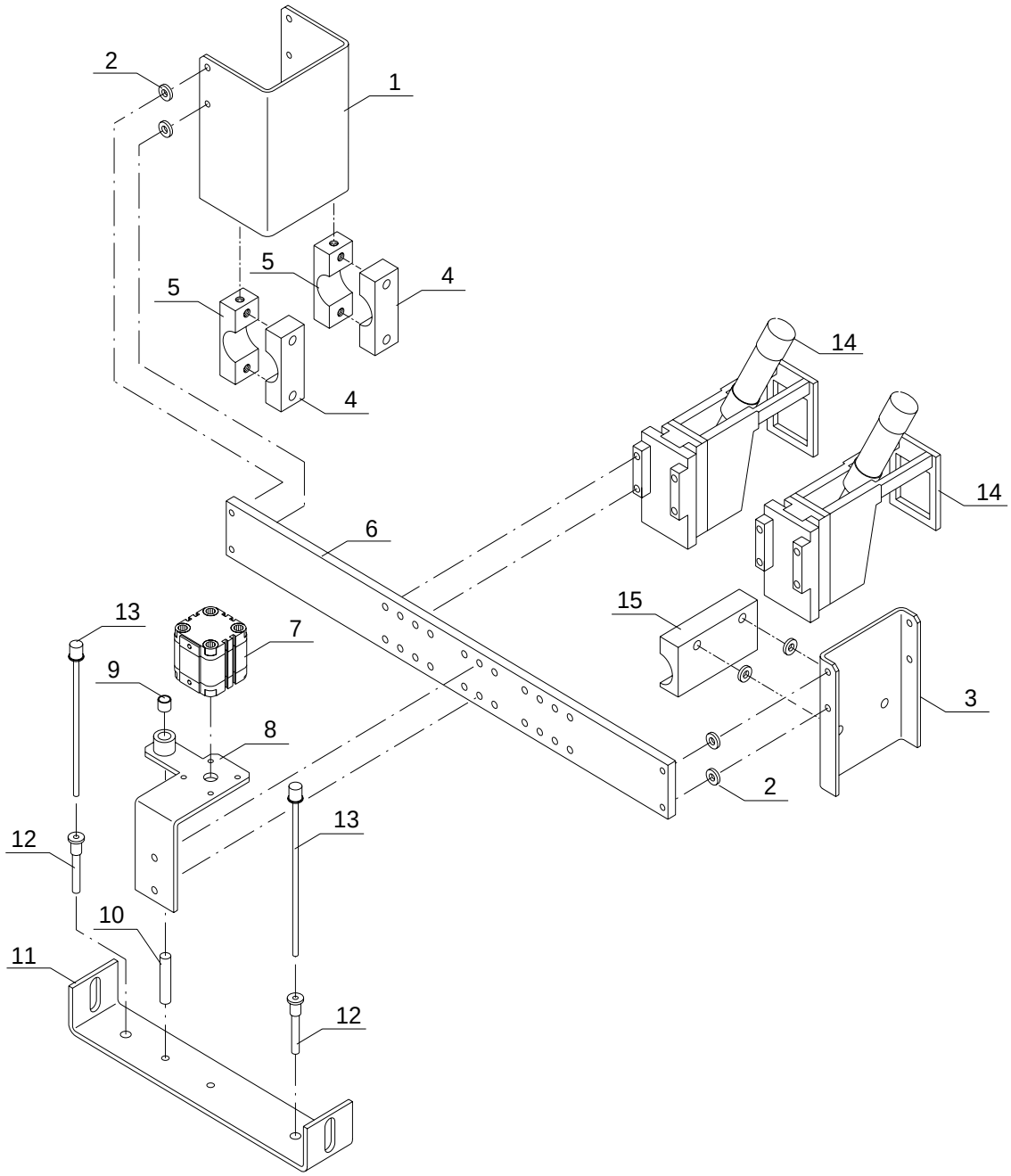

Fig. 11.15 - Lid stamping station

Lid sealing station - Fig. 11.16

POS.	CODE	DESCRIPTION	Q.TY 2 rows	Q.TY 3 Rows
1	12040687	Inner end piece	1	1
2	12040686	Outer end piece	1	1
3	12040172	Support bar	2	2
4	12040174	Spacer	10	10
5	12040179	Clamp	1	1
6	12040079	Lower clamp	2	2
7	12040079	Upper clamp	2	2
8	12040971	Support plate	2	3
9	336085056	Bush	8	12
10	12040970	Sleeve	4	6
11	540313052	Antirotation guide	4	6
12	17000271	Cylinder	2	3
13	12040972	Intermediate plate	2	3
14	540313028	Spacer	8	12
15	540313057	Spring	8	12
16	540313029	Tie rod	8	12
17	540313051	Lock nut	2	3
18	12040973	Sealer support plate	2	3

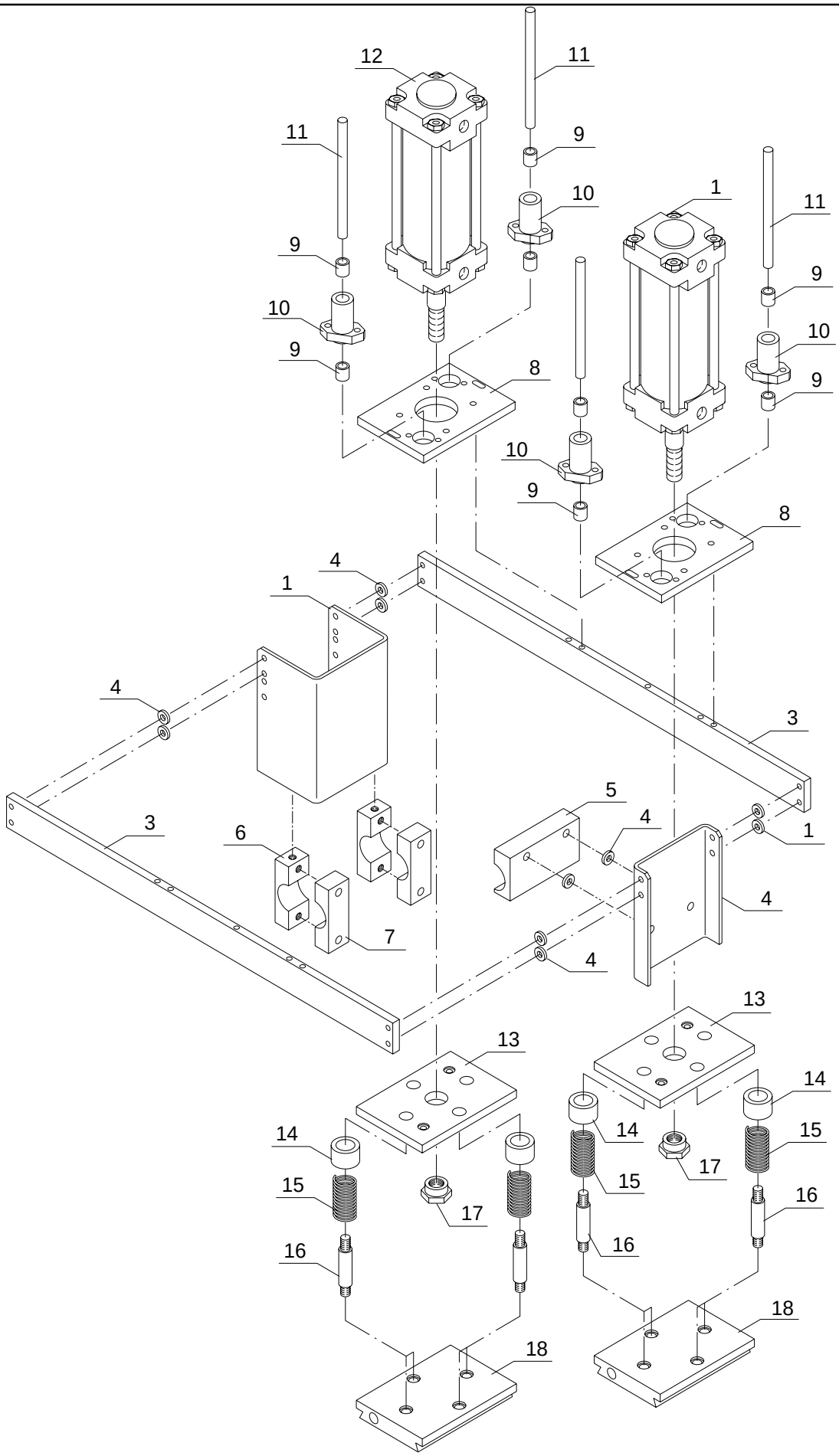

Fig. 11.16 - Lid sealing station

O-belt - Fig. 11.17

POS.	CODE	DESCRIPTION	Q.TY
1	HF75U16009	Plate spacer	8
2	HF75U01012	Belt support plate	1
3	336020552	Belt	1
4	336010080	Ratio motor	1
5	326019012	E12 circlip	8
6	HF75U16011	Tensioning shaft pin	2
7	HF75U08002	Tensioner block	2
8	HF75U16019	Ratio motor mounting	4
9	HF75U01010	Right belt shoulder	1
10	HF75U01011	Left belt shoulder	1
11	HF75U16020	Drive roller	1
12	326013101	Key 8x7x20	2
13	HF75U16013	Rotation shaft	2
14	HF75U16018	Tensioner shaft	1
15	336071090	Corteco seal	6
16	336007056	Koyo support	1
17	336001363	Bearing	6
18	HF75U16012	Return roller	3

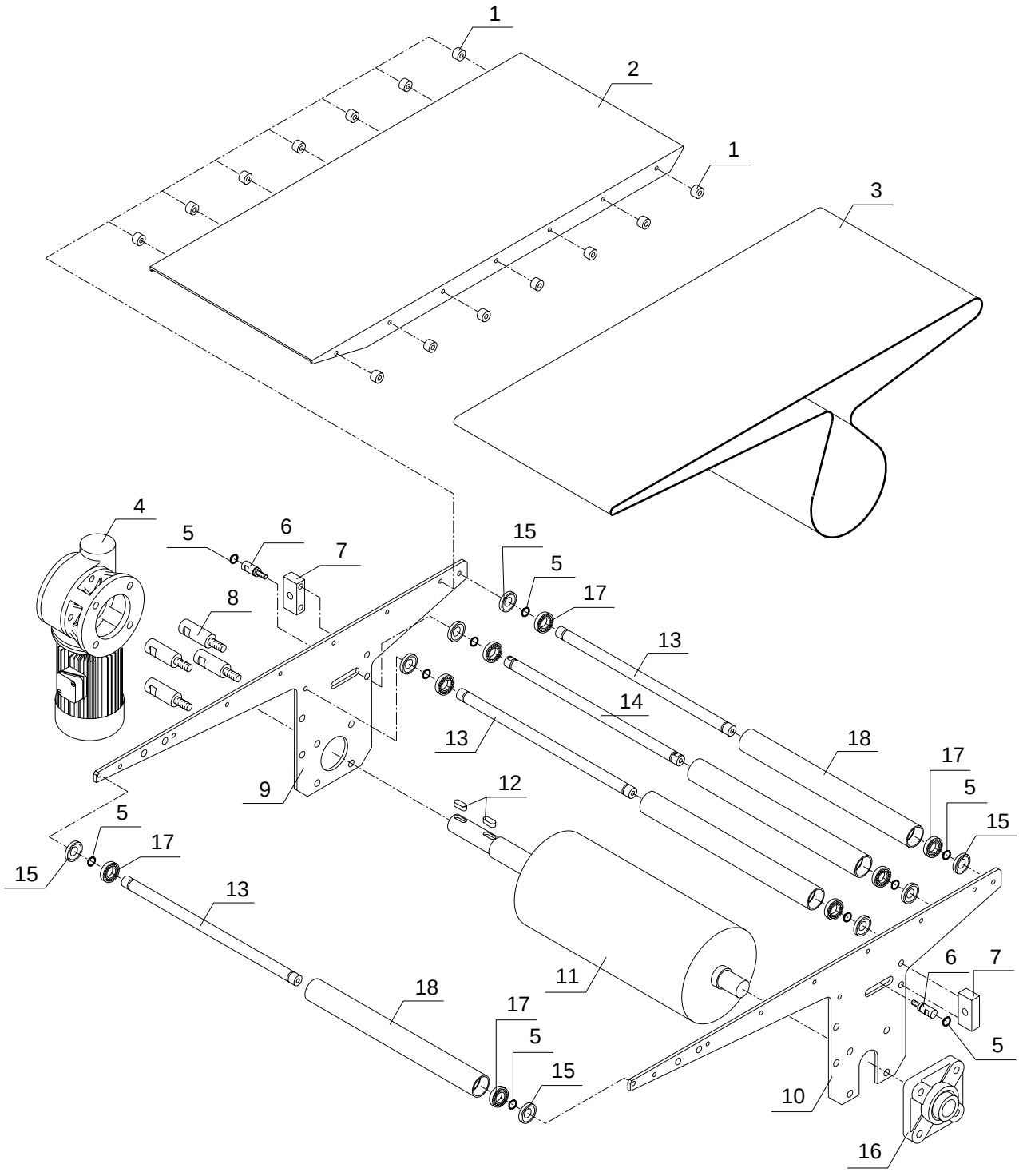

Fig.11.17 - O-belt

O-belt - Fig. 11.18

POS.	CODE	DESCRIPTION	Q.TY
1	336003151	Idler pin	2
2	12040153	Blade mounting cross member	1
3		Cup ejection blade (according to format)	2
4	17000014	Cylinder	1
5	12040155	Side member pin	8
6	12040151	Cylinder support fork	1
7	12040154	Tie rod	1
8	120401522	Fork support	2
9	12040236	Support angle bracket	1
10	12040552	Support angle bracket	1
11	12040235	Front support	2
12	12040234	Rear support	2

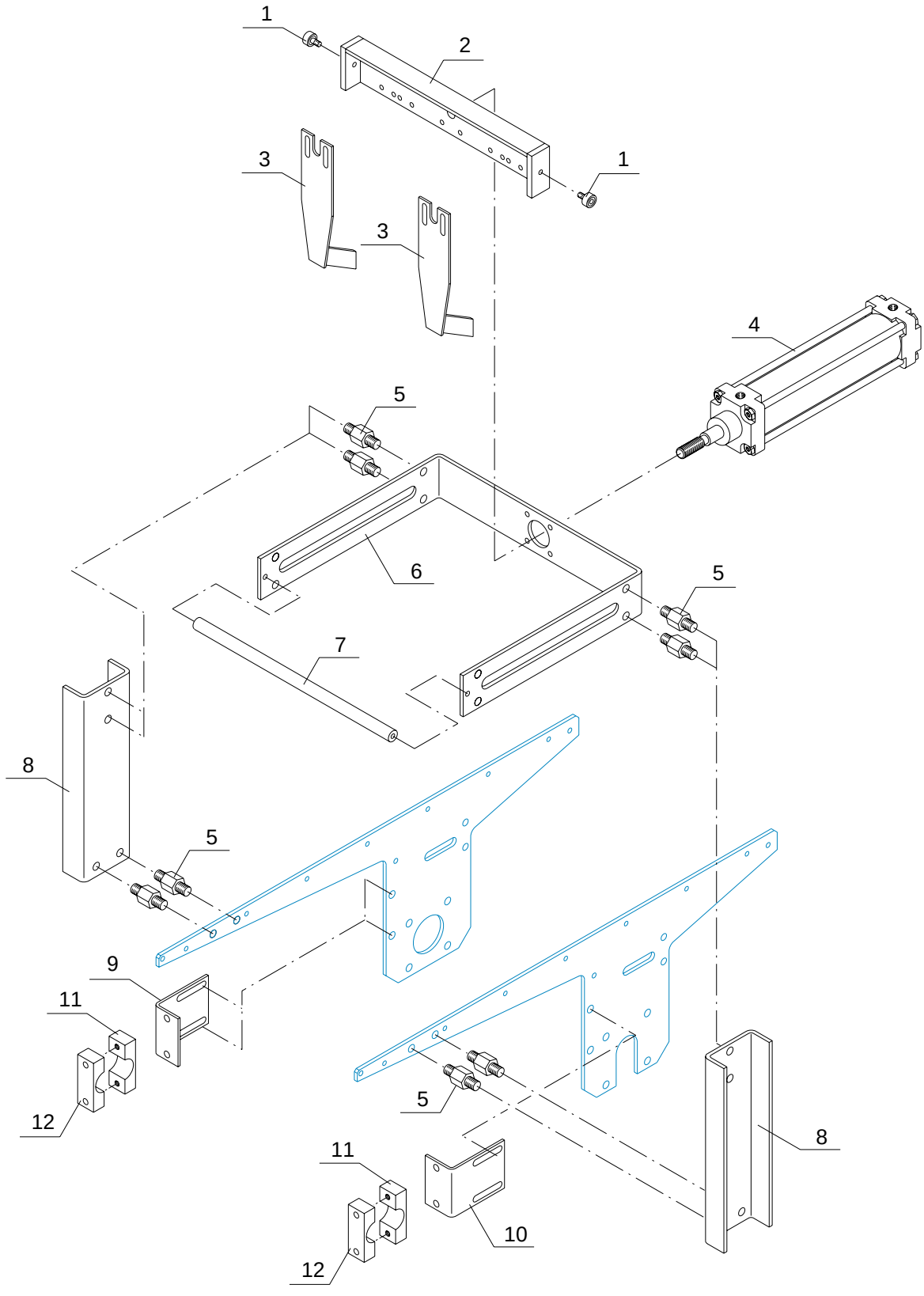

Fig.11.18 - O-belt

Chocolate tank - Fig. 11.19

POS.	CODE	DESCRIPTION	Q.TY
1	12040816	Tank support frame	1
2	016060218	Clamp	2
3	018020582	Seal	2
4	336054078	Wheel DM100	4
5	017975020	Resistance	1
6	12040814	Chocolate tank	1
7	12040926	Chocolate dipping tube	2
8	12040818	Cover for tank	1
9	12040820	Chocolate filtering grid	1
10	12040819	Chocolate return outlet	2
11	016020003	Ball valve A304	1
12	017088239	BSA Thermostat	1

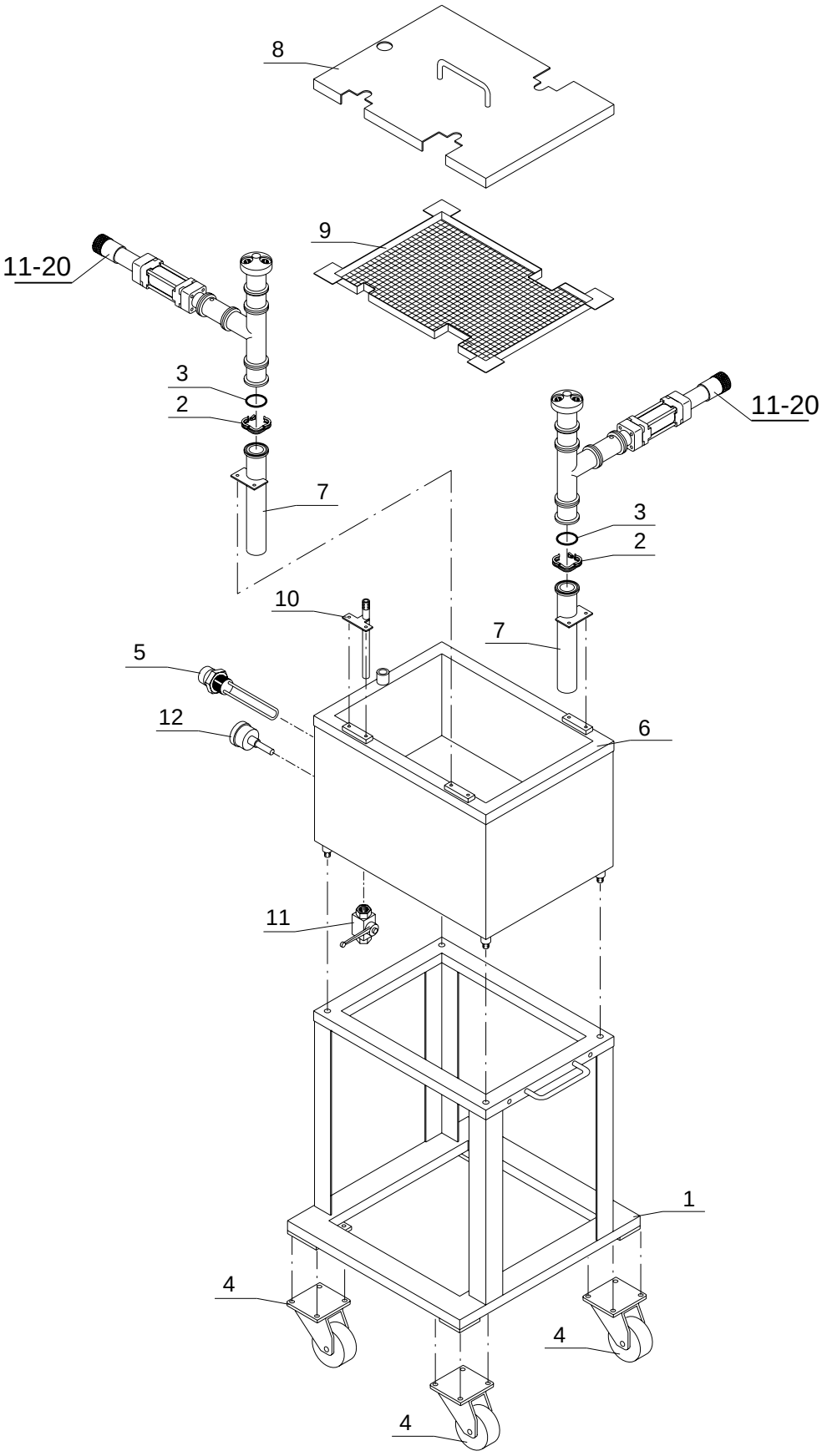

Fig. 11.19 - Chocolate tank

Chocolate spray pump - Fig. 11.20

POS.	CODE	DESCRIPTION	Q.TY
1	12040665	Ring nut	1
2	12040715	Adjustment sleeve	1
3	12040716	Adjustment screw	1
4	12040663	Joint	1
5	336067082	Seal	1
6	12040709	Control sleeve	1
7	17000309	Cylinder	1
8	12040712	Ring nut with connection	1
9	540204053	Coupling	1
10	17000310	Seal	2
11	12040714	Central piston	1
12	018020582	Seal	5
13	016060218	Clamp connection	5
14	12040713	Double sleeve	1
15		Union tee	1
16	12040711	Spring	2
17	336003999	Ball	2
18	12040710	Spring container	2
19	12040806	Nipple with two outlets	1

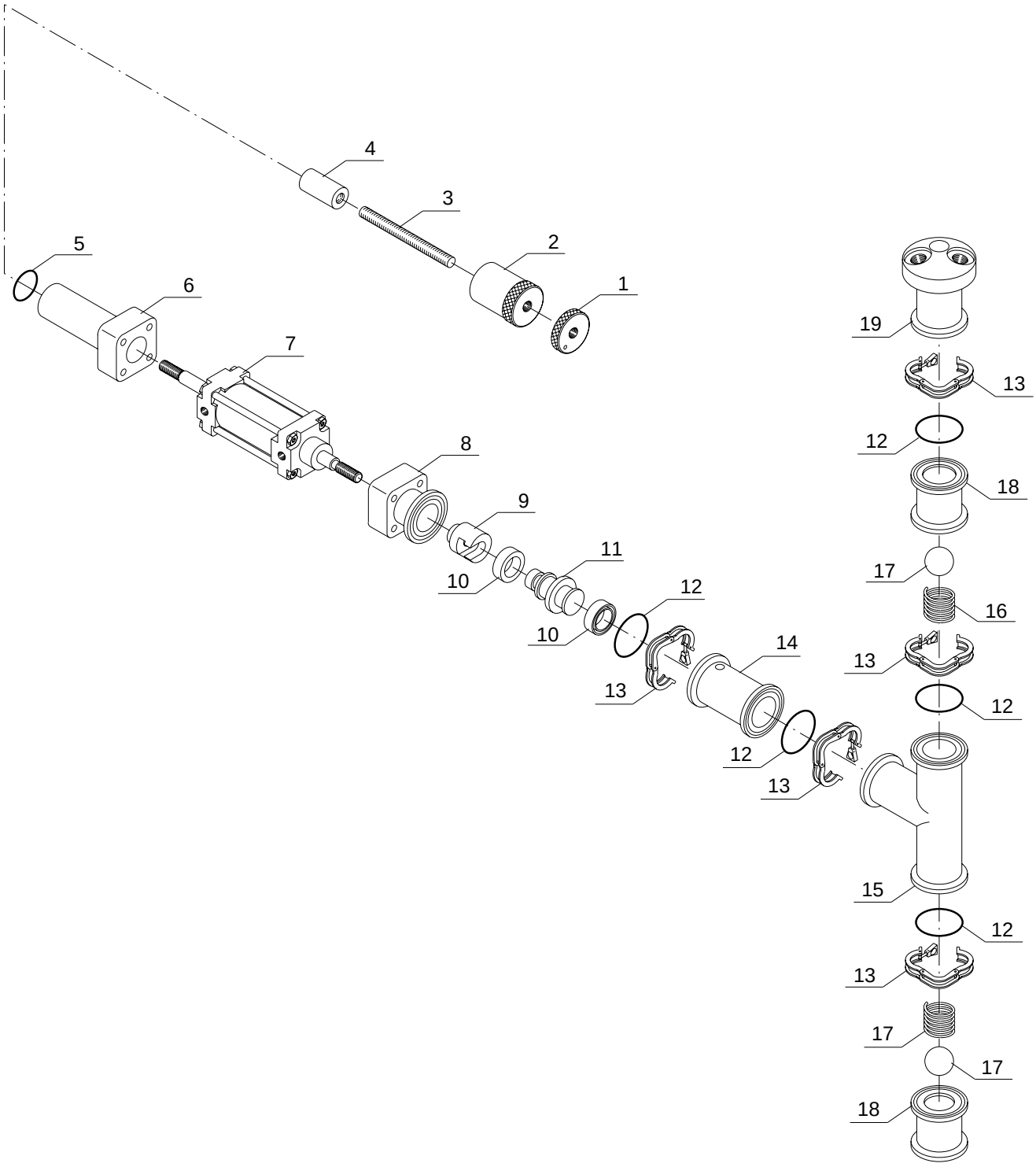

Fig. 11.20 - Chocolate spray pump

HOYER COMET C

12 - LIST OF SPARE PARTS FOR FLAME-SHAPE PRODUCT

Index

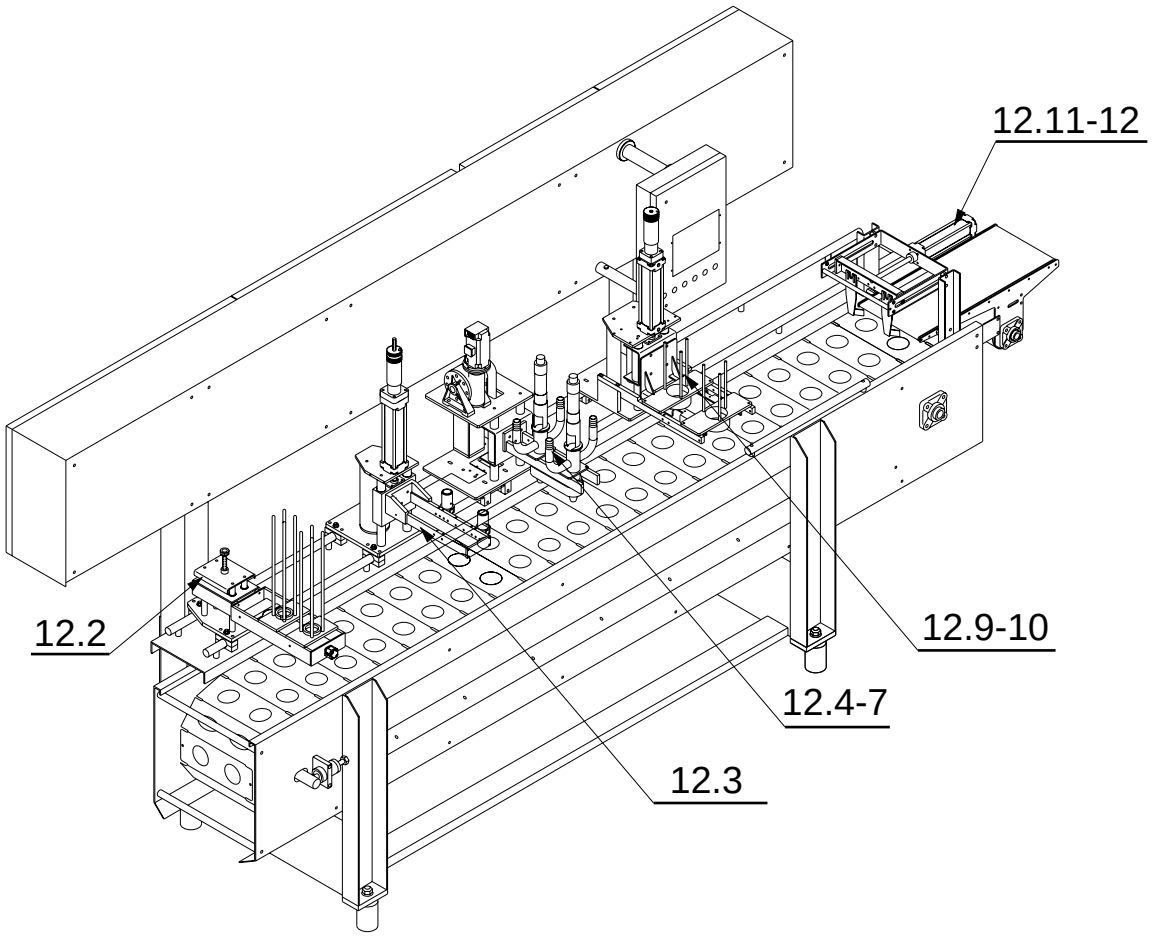

Fig. 12.1 - General layout

Cup feed - Fig. 12.2

POS.	CODE	DESCRIPTION	Q.TY
1	336057055	Handwheel	1
2	12040088	Upper adjusting plate	1
3	HL0111	Adjusting screw	1
4	540203006	Thrust washer	1
5	540203008	Screw bush	1
6	540203005	Lifting block	1
7	540203007	Screw stop	1
8	336005076	Bush	4
9	12040087	Vertical adjustment slide	1
10	12040086	Slide guide column	4
11	12040085	Support plate	1
12	12040079	Upper clamp	3
13	12040078	Lower clamp	3
14	12040089	Frame support spacer	4
15	17000007	Cylinder	2
16	540212003	Coupling	2
17	12040091	Stop blade guide	2
18	12040090	Magazine support frame	1
19		Blade for two rows (according to format)	2

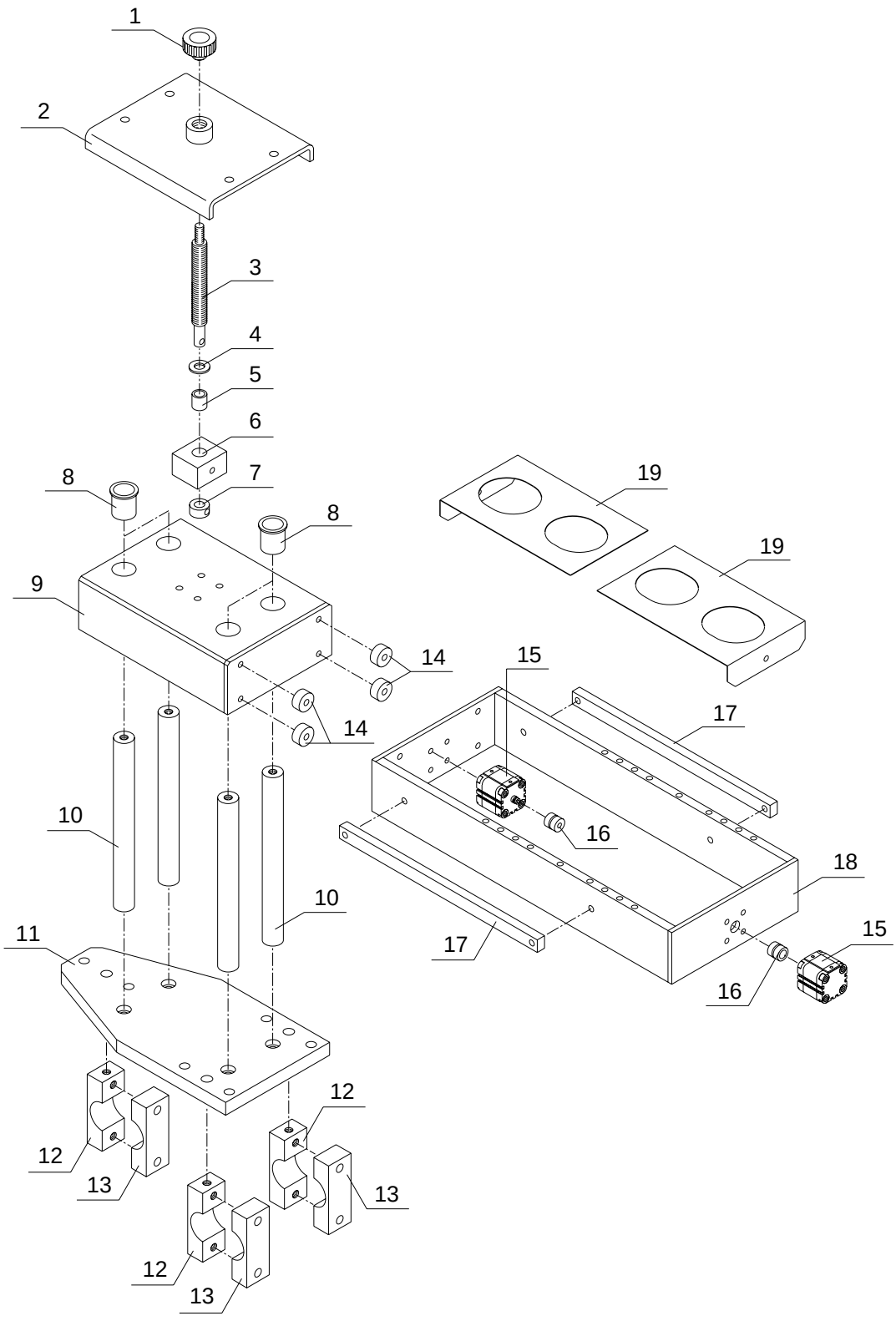

Fig. 12.2 - Cup feed

Chocolate spray station - Fig. 12.3

POS.	CODE	DESCRIPTION	Q.TY
1	17000056	Fixing	2
2	12040076	Upper plate	1
3	17000053	Fixing	1
4	336005055	Bush	4
5	12040083	Frame mounting slide	1
6	12040080	Slide guide column	2
7	12040081	Support column	1
8	12040077	Base plate	1
9	12040079	Upper clamp	4
10	12040078	Lower clamp	4
11	12040075	Locking ring	1
12	12040074	Cylinder travel adjusting nut	1
13	541120121	Adjusting screw	1
14	341690101	Cylinder joint	1
15	336067370	O-ring 4143	1
16	12040073	Cylinder support sleeve	1
17	17000009	Cylinder	1
18	12040109	Support frame	1
19	011070112	Sprayer	2
20	12040217	Sprayer support	2
21	12040221	Distributor	1

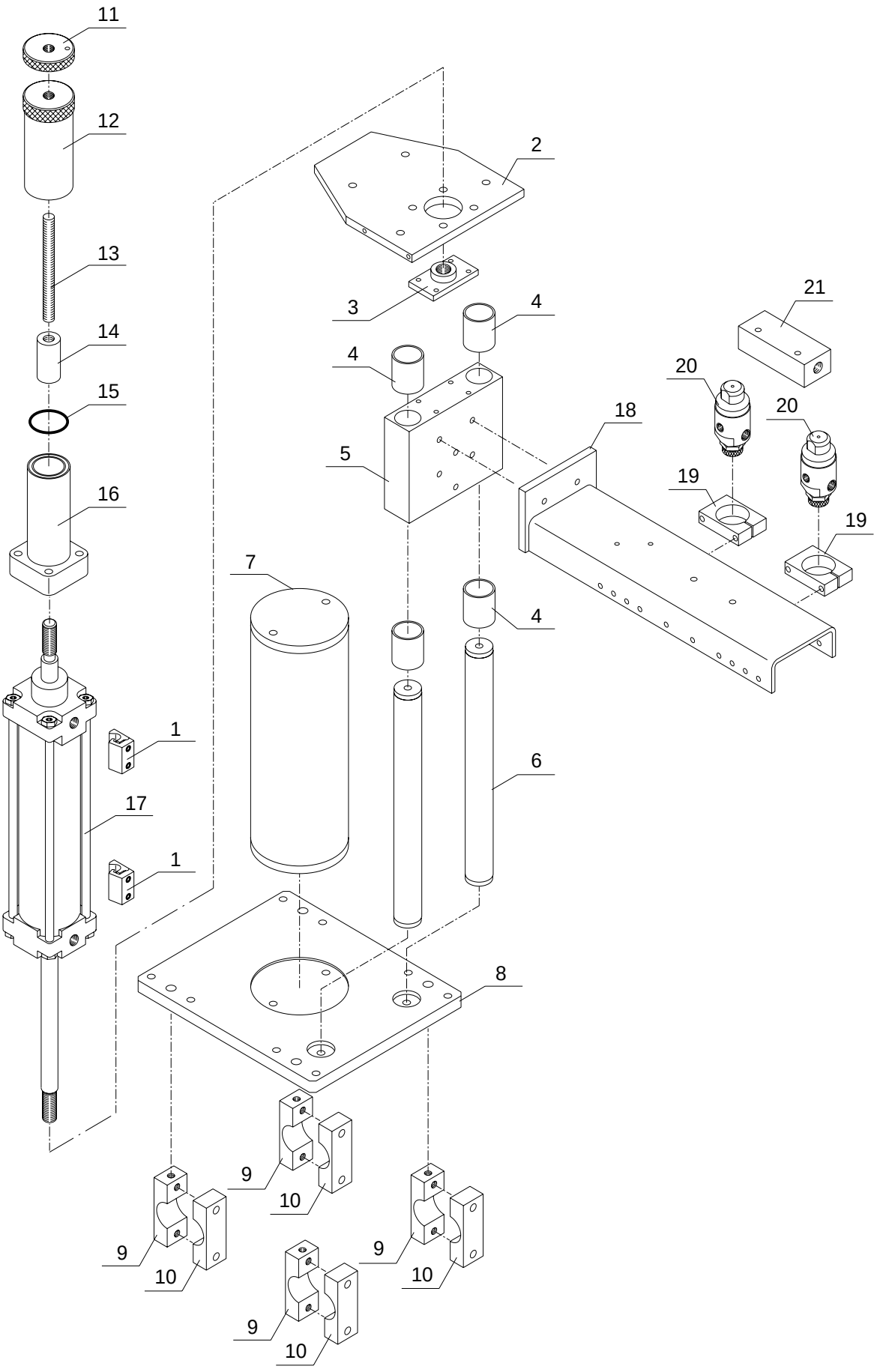

Fig. 12.3 - Chocolate spray station

Dosers - Fig. 12.4

POS.	CODE	DESCRIPTION	Q.TY
1	12040878	Base	1
2	12040903	Central column	1
3	12040080	Slide guide column	2
4	336005055	Bush	4
5	12040907	Slide	1
6	12040881	Upper plate	1
7	12040110	Frame	1
8	12040079	Upper clamp	4
9	12040078	Lower clamp	4

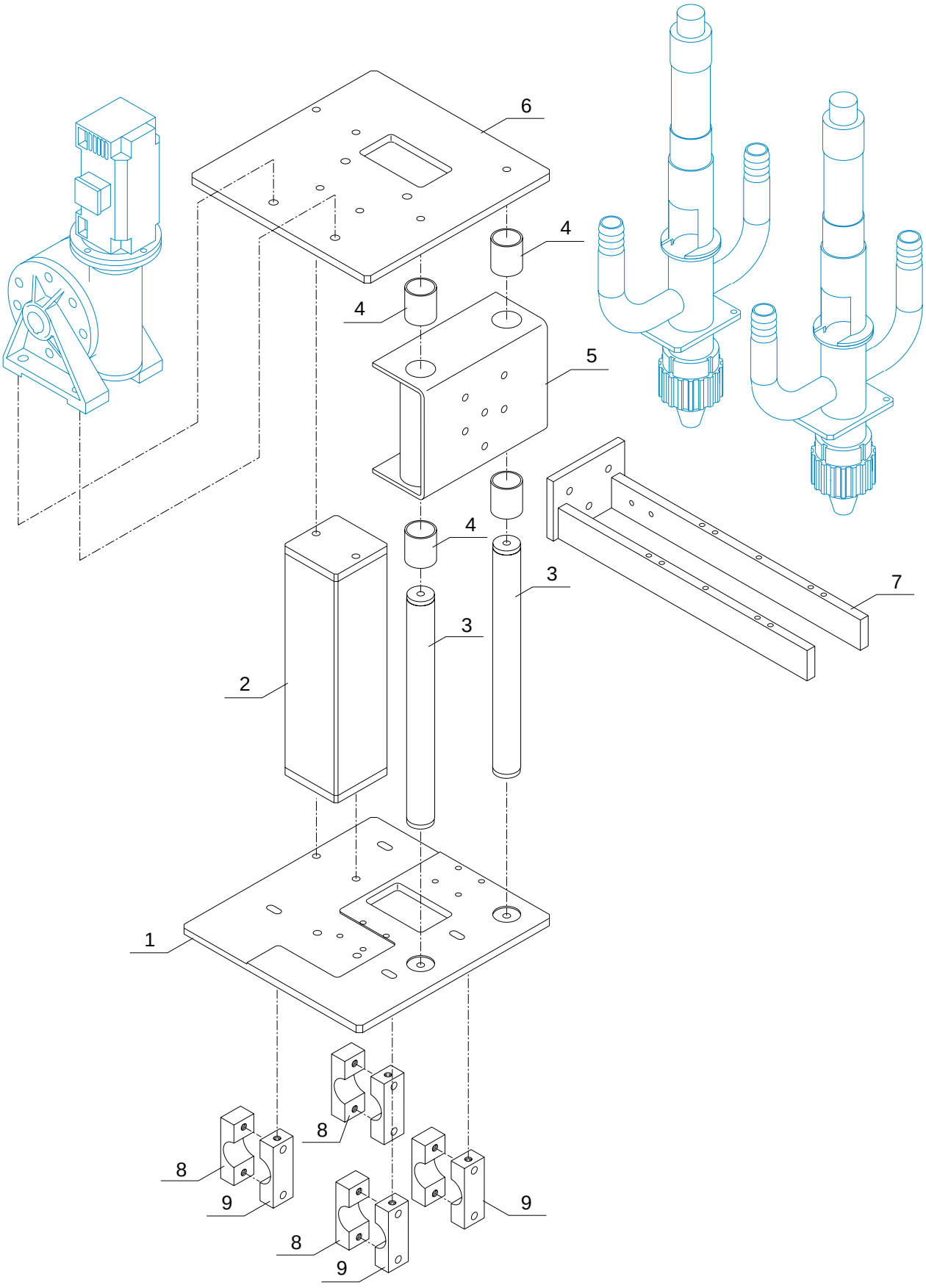

Fig. 12.4 - Dosers

Dosers - Fig. 12.5

POS.	CODE	DESCRIPTION	Q.TY
1	17060007	Servomotor	1
2	17000397	Reducer	1
3	12040902	Shaft	1
4	326013109	Key	1
5	336026882	Pulley	1
6	17000395	Belt	1
7	12040905	Tie rod pin	1
8	12040904	Plate	2
9	12060293	Plate	2
10	336071190	Seal ring	2
11	326019147	Circlip	2
12	336001443	Bearing	2
13	12040895	Driven pulley	1
14	12040906	Spacer	2

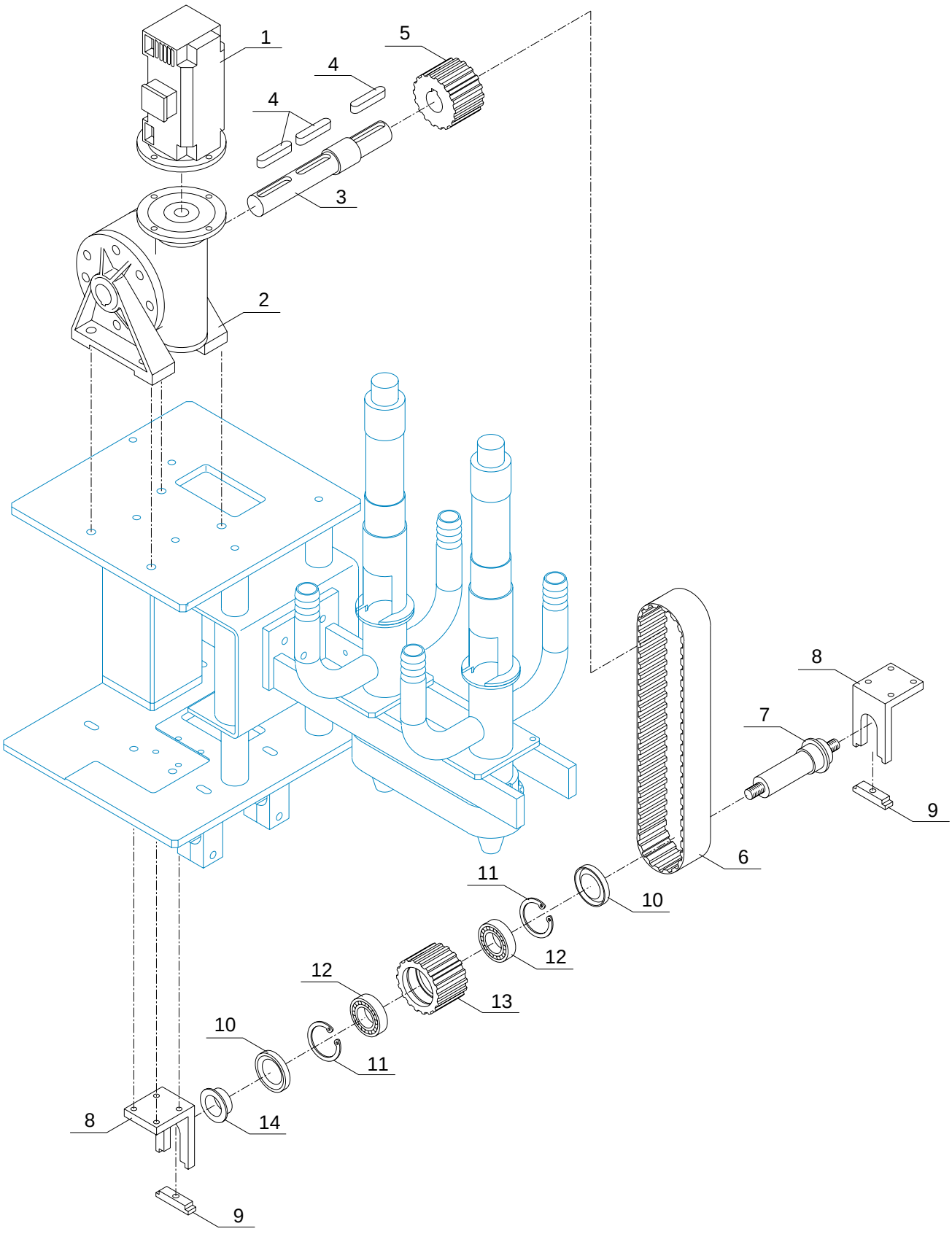

Fig. 12.5 - Dosers

Dosers - Fig. 12.6

POS.	CODE	DESCRIPTION	Q.TY
1	17000010	Cylinder	2
2	12040213	Cylinder connection	2
3	016060219	2” A304 clamp	4
4	336067042	O-ring OR 3081	4
5	12040210	Upper cylinder half	2
5a	12040782	Upper half of variegator cylinder	2
6	336067051	O-ring OR 3118	2
7	12042030	Dual doser body	2
8	12040027	Joint	2
9	336067036	O-ring OR 119	2
10	12040948	Centre perforated piston	2
12	540204050	Elbow	6
13	336067020	Seal	6
14	016060218	Clamp	6
16	141040364	Rubber seal support	2

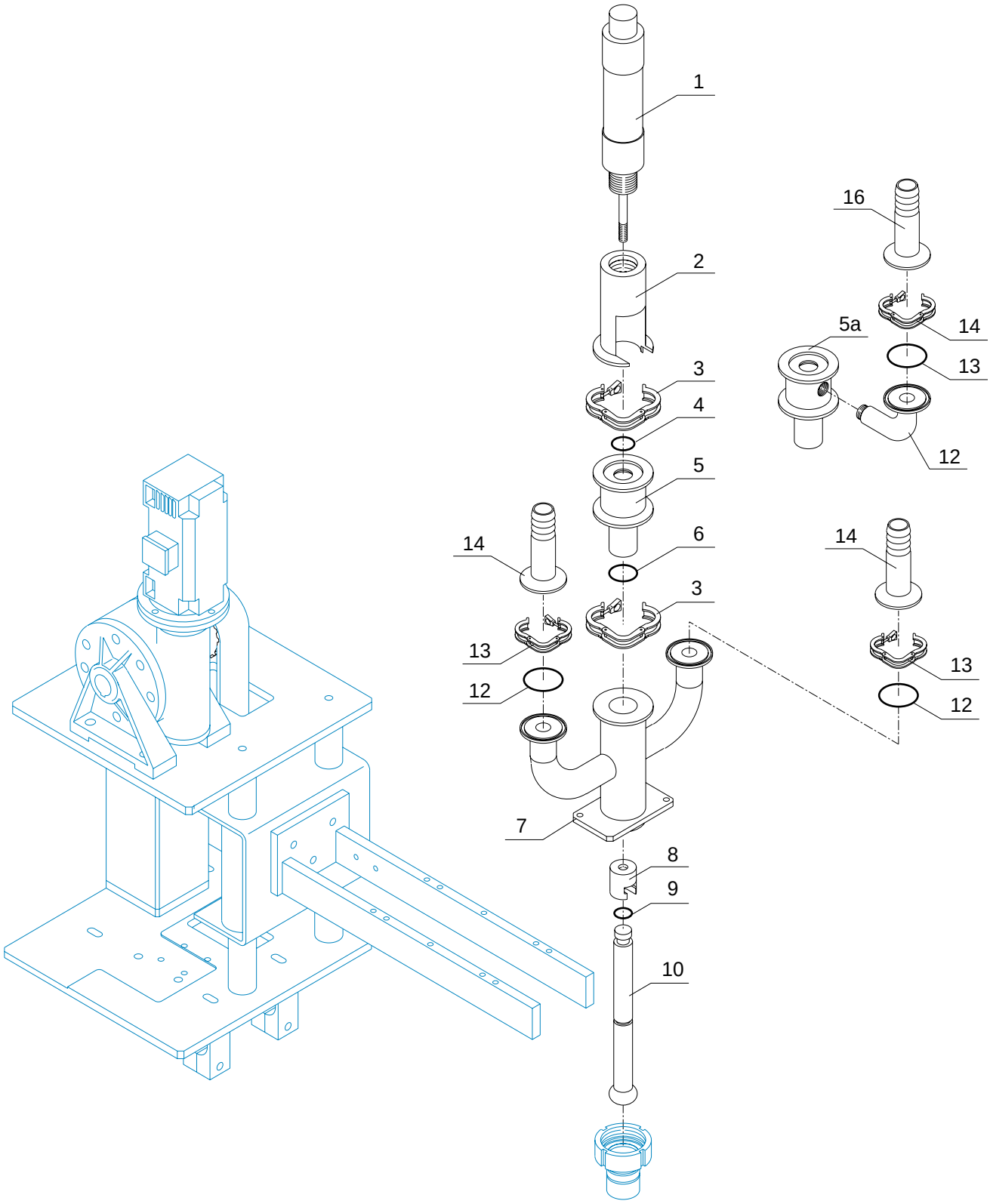

Fig. 12.6 - Dosers

Dosers - Fig. 12.7

POS.	CODE	DESCRIPTION	Q.TY
1	333001053	Actuator	1
2	12041154	Support bracket	1
3	12040870	Driving pulley	1
4	12040974	Flange	2
5	12040867	Bush	2
6	326019035	Circlip	4
7	336021270	Seal ring	4
8	336001301	Bearing	4
9	326019147	Circlip	2
10	12040875	Rotating nozzle	2
11	336019994	Belt	

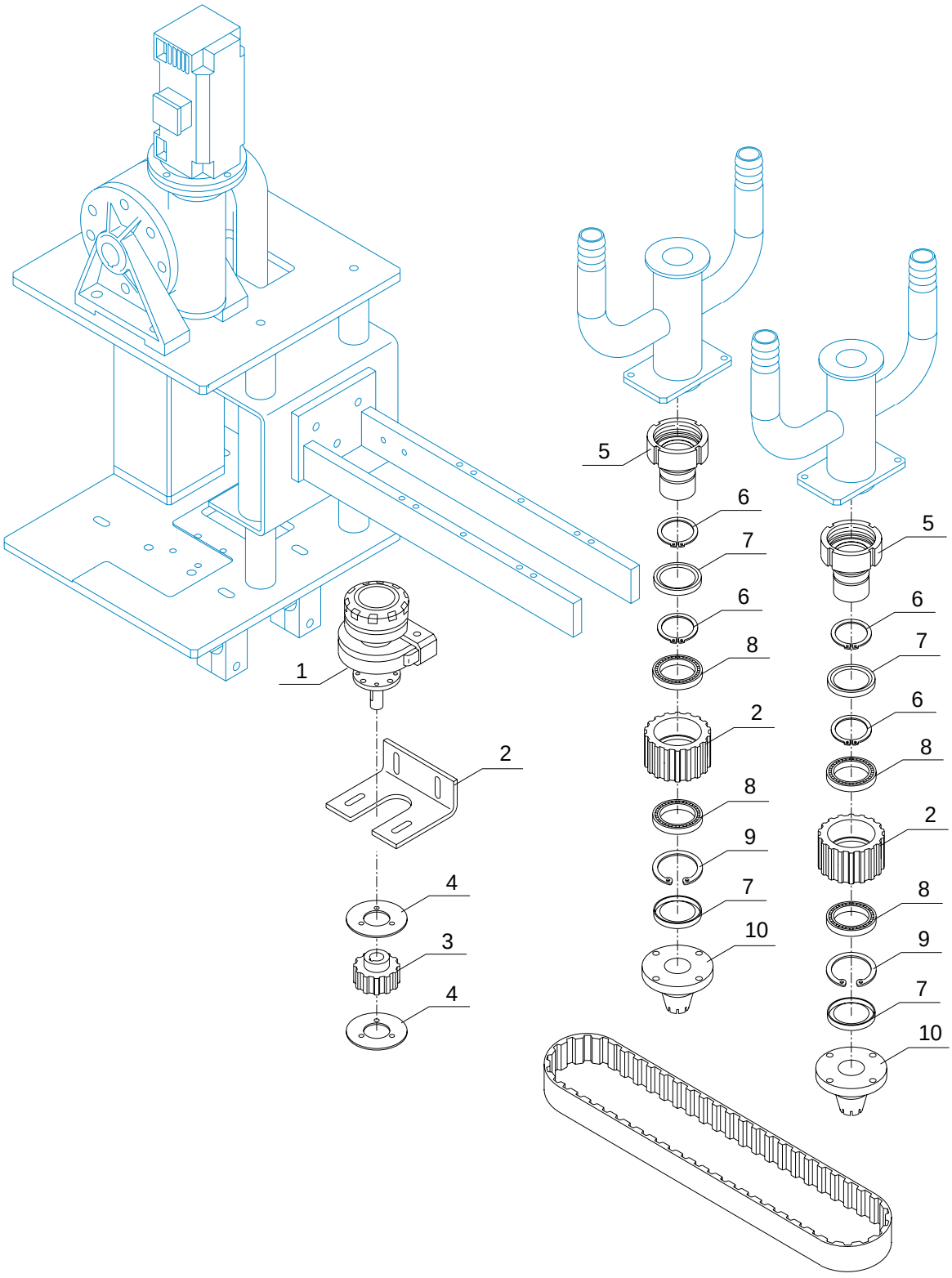

Fig. 12.7 - Dosers

Double by-pass - Fig. 12.8

POS.	CODE	DESCRIPTION	Q.TY
1	17040009	Pneumatic valve	1
2	17000317	Union tee	1
3	141040344	Rubber seal support	1
4	016060218	Clamp	7
5	018020582	Seal	7
6	17000279	Pipe	1
7	540303018	Union Y	1
8	016060218	Clamp	2
9	018020582	Seal	2
10	542320022	Balancing body	2
11	542320029	Lock nut	2
12	336067038	Seal	4
13	542320023	Equaliser cock	2
14	018060961	Clip	4
15	1700279	Pipe	2
16	12040936	Bracket	1

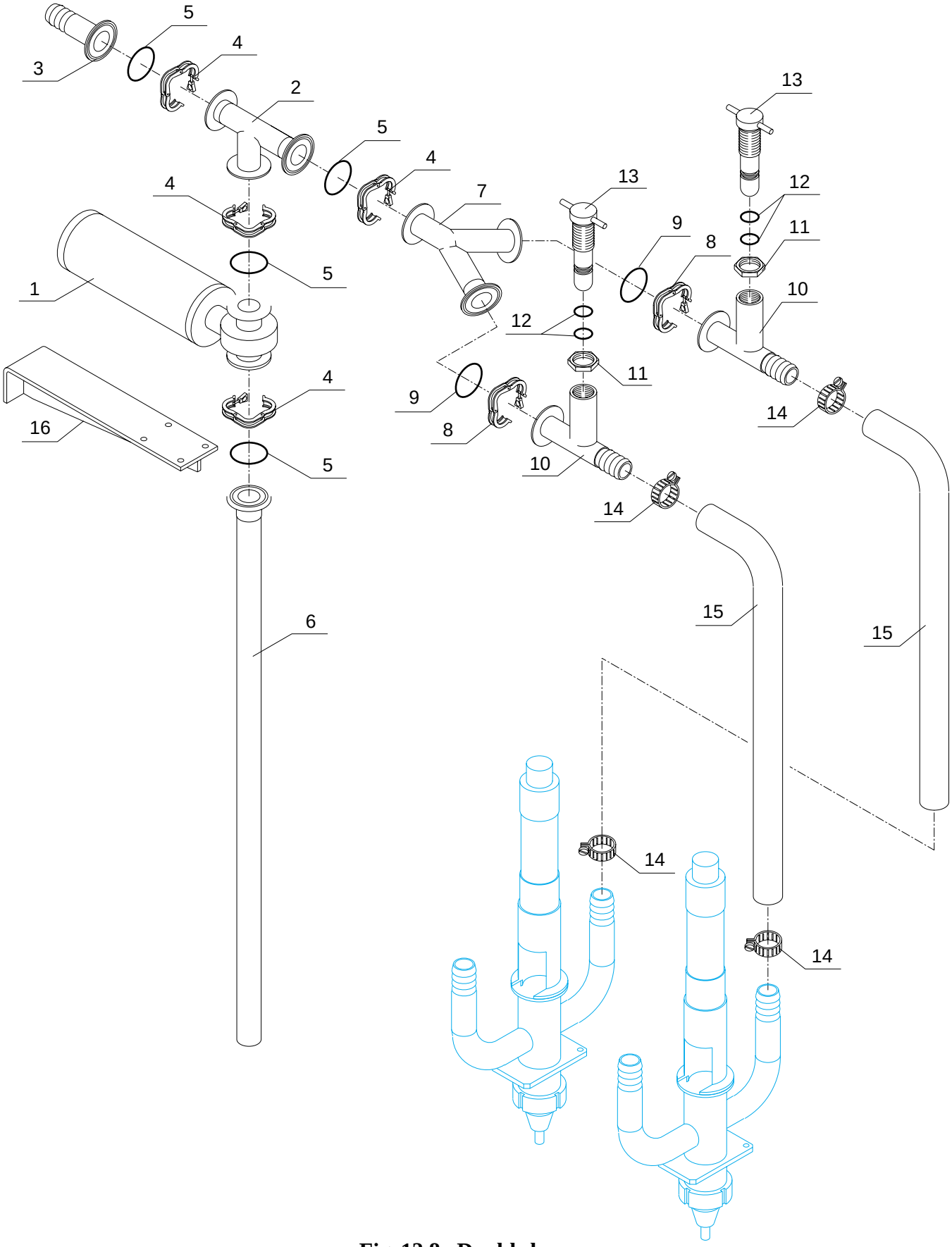

Fig. 12.8 - Double by-pass

Lid feed - Fig. 12.9

POS.	CODE	DESCRIPTION	Q.TY
1	12040125	Upper plate	1
2	17000053	Fixing	1
3	336005055	Bush	4
4	12040126	Column	2
5	12040127	Column	2
6	12040912	Base	1
7	12040078	Lower clamp	4
8	12040079	Upper clamp	4
9	12040665	Locking ring nut	1
10	12040662	Adjustment sleeve	1
11	12040664	Adjustment screw	1
12	12040663	Cylinder joint	1
13	336067370	Seal	1
14	12040661	Adjustment sleeve	1
15	17000009	Cylinder	1
16	12040908	Slide	1

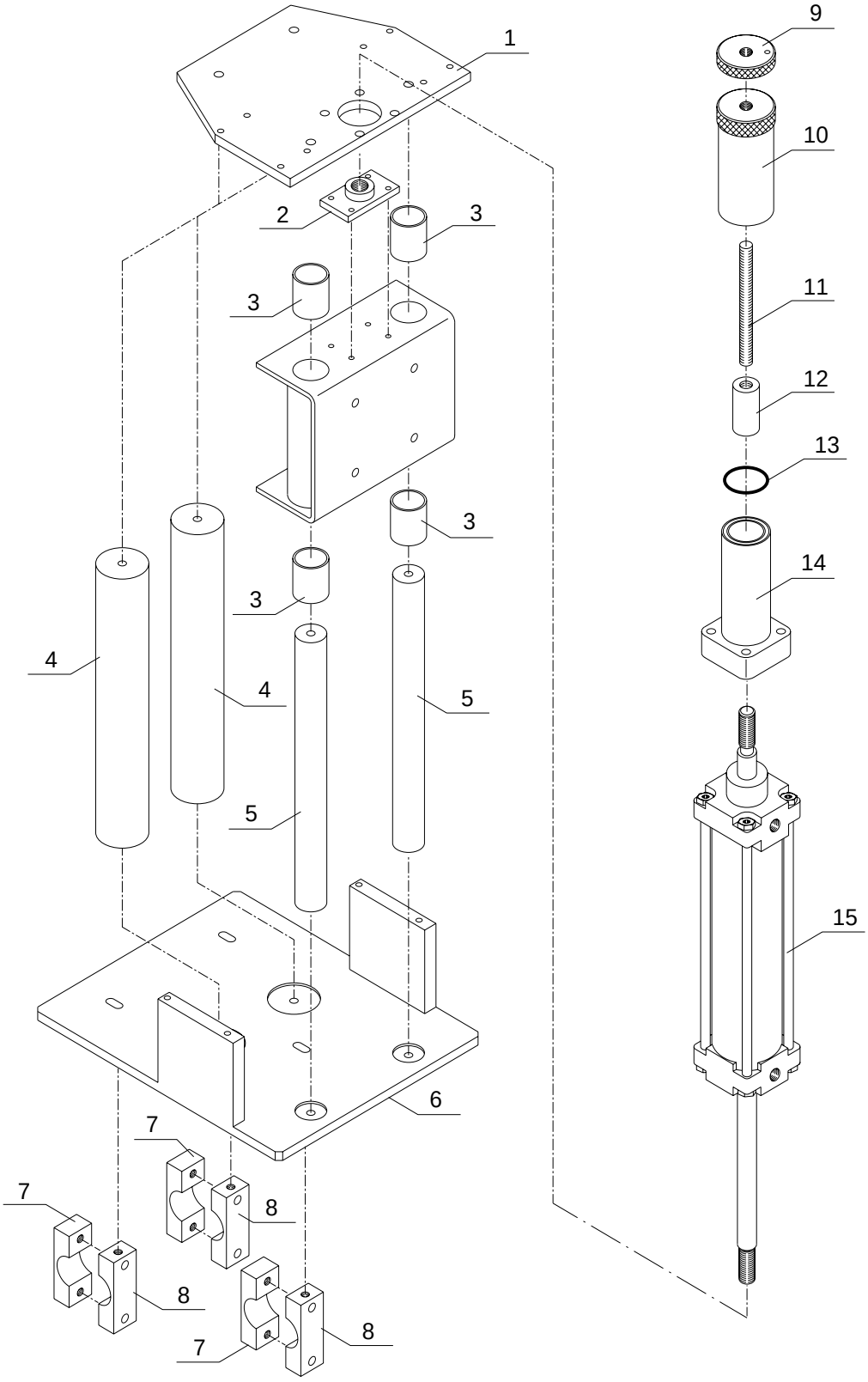

Fig. 12.9 - Lid feed

Lid feed - Fig. 12.10

POS.	CODE	DESCRIPTION	Q.TY
1	12040133	Right hand support plate	1
2	12040134	Left hand support plate	1
3	12040915	Tie rod	1
4	12040909	Lid magazine	2
5	12040914	Lid blade	2
6	12040916	Antirotation guide	2
7	12040913	Bracket	2
8	17000007	Actuator	2
9	12040911	Gripper frame	1

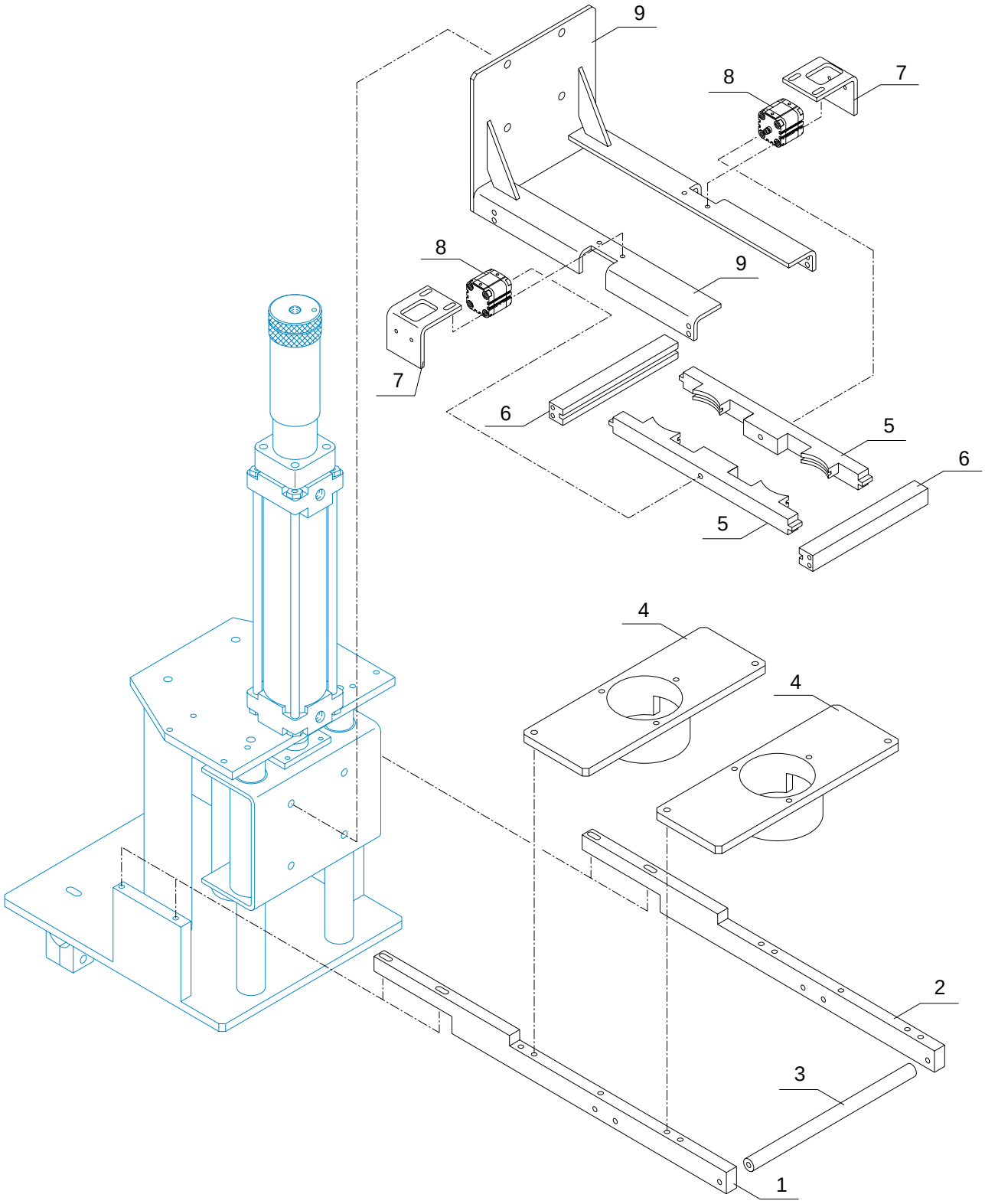

Fig. 12.10 - Lid feed

O-belt - Fig. 12.11

POS.	CODE	DESCRIPTION	Q.TY
1	HF75U16009	Plate spacer	8
2	HF75U01012	Belt support plate	1
3	336020552	Belt	1
4	336010080	Ratio motor	1
5	326019012	E12 circlip	8
6	HF75U16011	Tensioning shaft pin	2
7	HF75U08002	Tensioner block	2
8	HF75U16019	Ratio motor mounting	4
9	HF75U01010	Right belt shoulder	1
10	HF75U01011	Left belt shoulder	1
11	HF75U16020	Drive roller	1
12	326013101	Key 8x7x20	2
13	HF75U16013	Rotation shaft	2
14	HF75U16018	Tensioner shaft	1
15	336071090	Corteco seal	6
16	336007056	Koyo support	1
17	336001363	Bearing	6
18	HF75U16012	Return roller	3

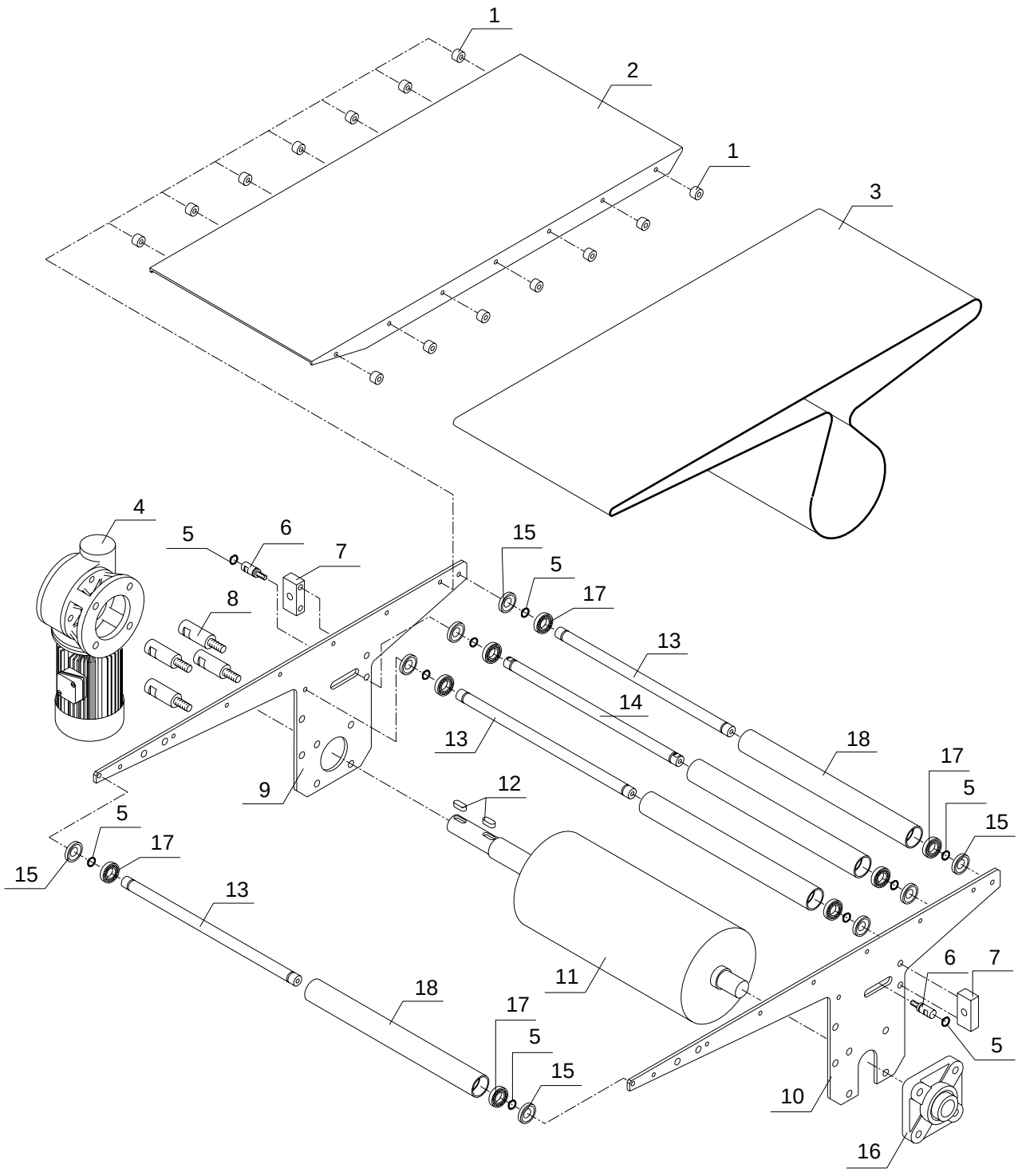

Fig.12.11 - O-belt

O-belt - Fig. 12.12

POS.	CODE	DESCRIPTION	Q.TY
1	336003151	Idler pin	2
2	12040153	Blade mounting cross member	1
3		Cup ejection blade (according to format)	2
4	17000014	Cylinder	1
5	12040155	Side member pin	8
6	12040151	Cylinder support fork	1
7	12040154	Tie rod	1
8	120401522	Fork support	2
9	12040236	Support angle bracket	1
10	12040552	Support angle bracket	1
11	12040235	Front support	2
12	12040234	Rear support	2

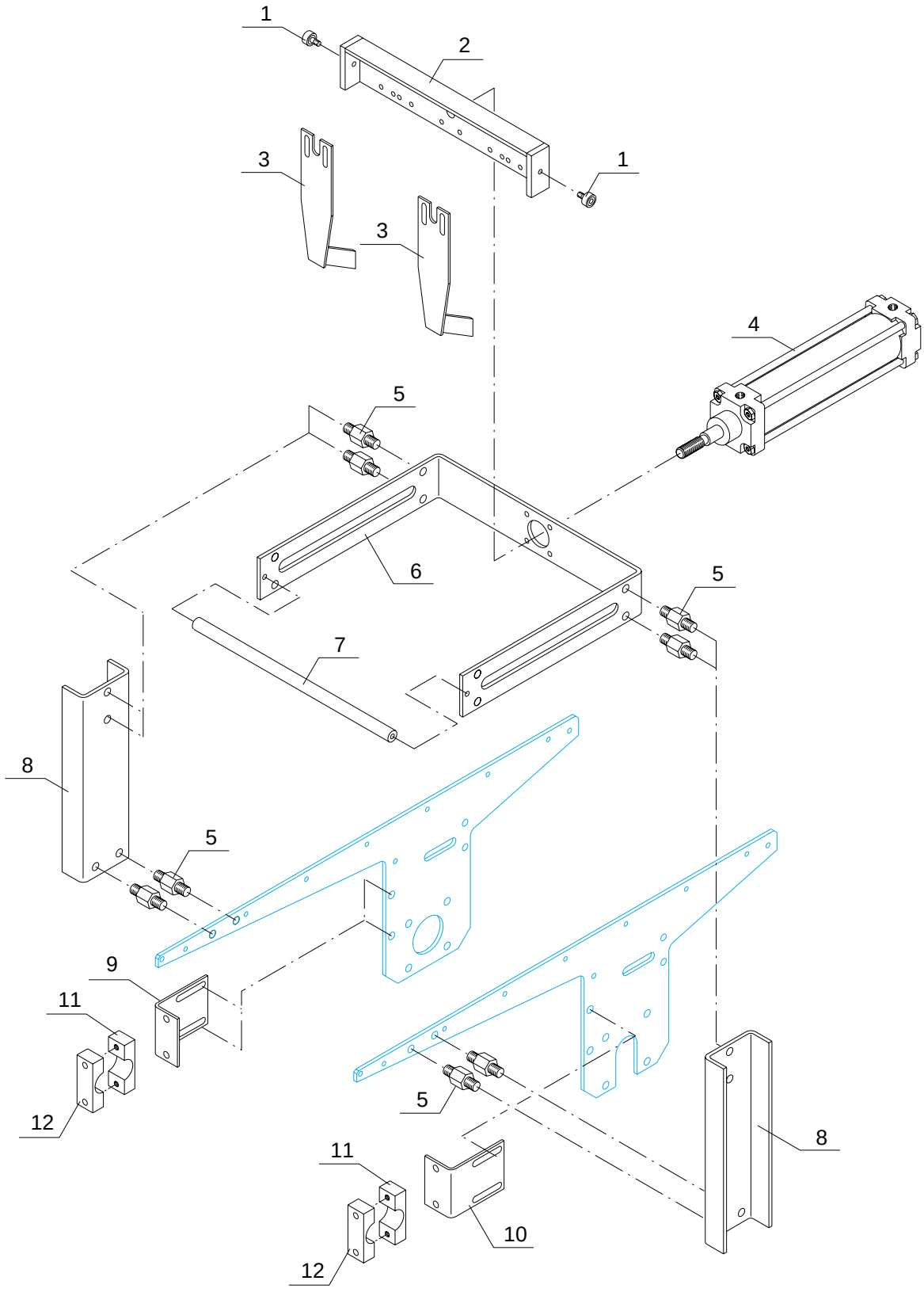

Fig.12.12 - O-belt

Chocolate tank - Fig. 12.13

POS.	CODE	DESCRIPTION	Q.TY
1	12040816	Tank support frame	1
2	016060218	Clamp	2
3	018020582	Seal	2
4	336054078	Wheel DM100	4
5	017975020	Resistance	1
6	12040814	Chocolate tank	1
7	12040926	Chocolate dipping tube	2
8	12040818	Cover for tank	1
9	12040820	Chocolate filtering grid	1
10	12040819	Chocolate return outlet	2
11	016020003	Ball valve A 304	1
12	017088239	BSA Thermostat	1

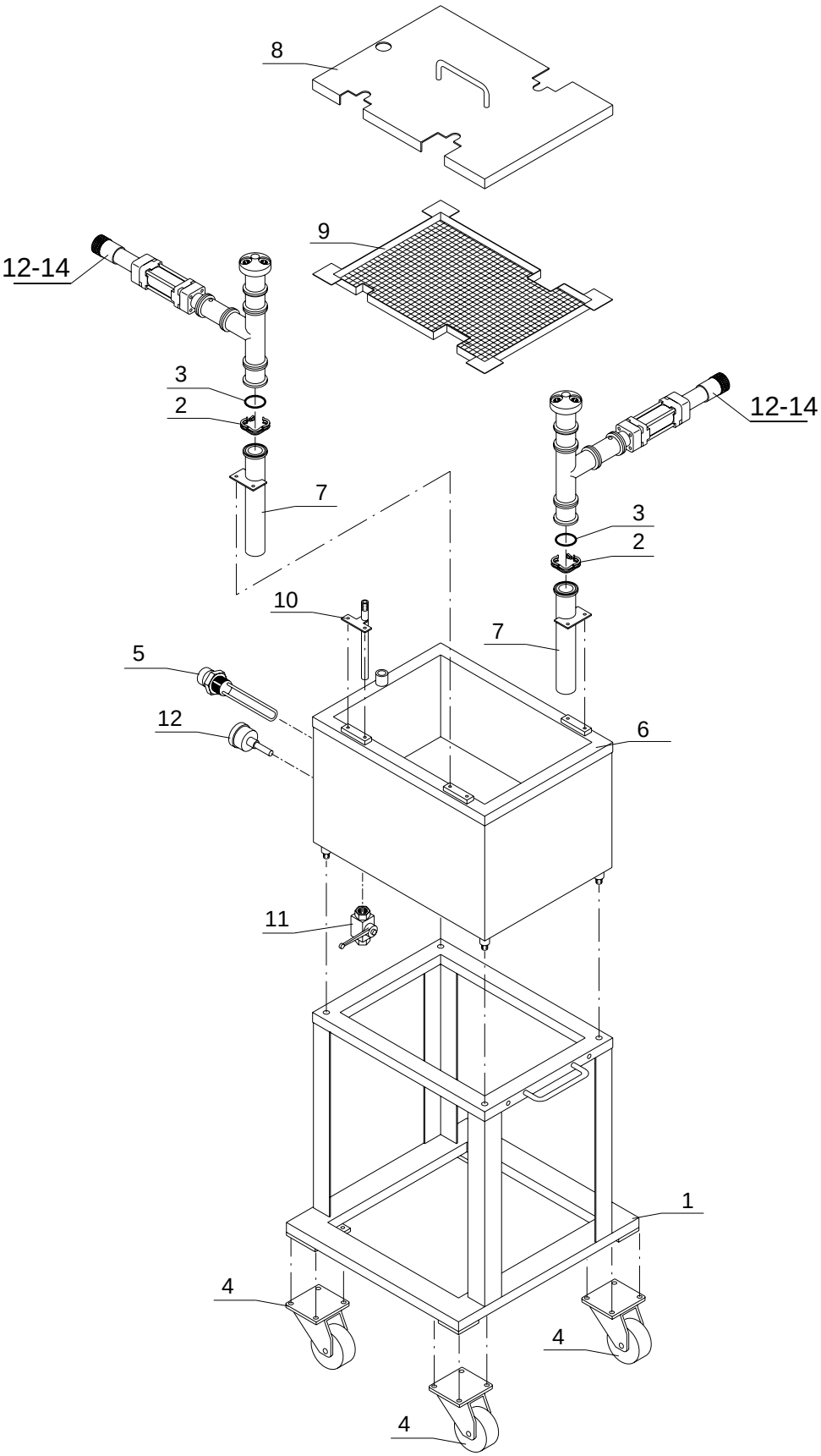

Fig. 12.13 - Chocolate tank

Chocolate spray pump - Fig. 12.14

POS.	CODE	DESCRIPTION	Q.TY
1	12040665	Ring nut	1
2	12040715	Adjustment sleeve	1
3	12040716	Adjustment screw	1
4	12040663	Joint	1
5	336067082	Seal	1
6	12040709	Control sleeve	1
7	17000309	Cylinder	1
8	12040712	Ring nut with connection	1
9	540204053	Coupling	1
10	17000310	Seal	2
11	12040714	Central piston	1
12	018020582	Seal	5
13	016060218	Clamp connection	5
14	12040713	Double sleeve	1
15		Union tee	1
16	12040711	Spring	2
17	336003999	Ball	2
18	12040710	Spring container	2
19	12040806	Nipple with two outlets	1

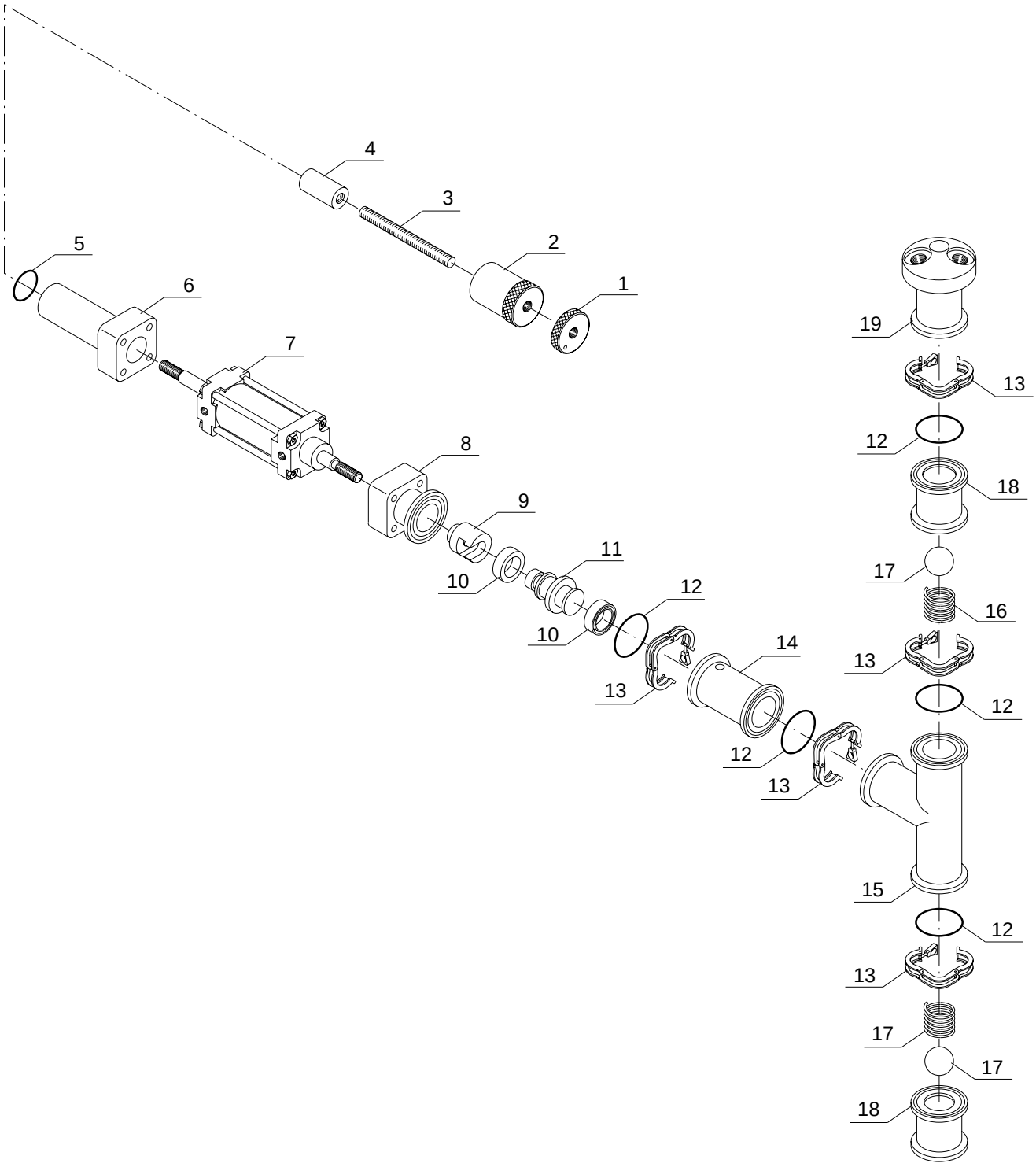

Fig. 12.14 - Chocolate spray pump