TRANSLATION OF THE ORIGINAL MANUAL

OPERATION MANUAL

BRINE INJECTOR
MHM-21/42

METALBUD Sp. z o.o.
96-200 Rawa Mazowiecka
Podlas, Tomaszowska 90
tel. +48 46 814-55-00 - centrala
fax.+48 46 814-22-15

service
+48 46 814-55-08
service@metalbud.com

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1. DECLARATION OF CONFORMITY EC

Manufacturer: „Metalbud" Ltd.
Poland
96-200 Rawa Mazowiecka
Podlas, Tomaszowska 90

We hereby declare under our sole responsibility that the following products:

Machine name: *Brine injector*
Type: *MHM-21A*

have been designed and manufactured in accordance with the following Standards and Harmonized European Standards:

PN-EN 614-1+A1:2009	PN-EN 1672-2+A1:2009	PN-EN ISO 13849-1:2016-02
PN-EN 14120+A1:2016-03	PN-EN 60204-1:2010	PN-EN ISO 13850:2016-03
PN-EN 1037+A1:2010	PN-EN ISO 12100:2012	PN-EN 13534+A1:2010

and in conformity with:

- Machine Directive 2006/42/EC
- EMC Directive 2014/30/UE

The declaration of conformity has been issued based on the technical documentation, to preparation of which Mr. Ł. Fau is authorized.

The above qualifies for placing on the machine the CE mark.

This declaration loses validity if any changes in the machine have been made without agreed upon in writing with us.

Date & place of issue: 17.11.2017, Podlas

Technical director

M.Sc.Eng. Marek Gwóźdź

2. SAFETY INFORMATION DESCRIPTION

2.1. Safety information

- A warning about an existing or potential hazard
- Information about measures that need to be taken in order to avoid hazard
- A description of procedures minimising the risk of an accident
- Information about behaviours that guarantee the keeping of safety standards

Safety information are presented with pictograms and verbal description.

2.2. Pictograms

A warning about an existing or potential hazard, or a note

A necessity to proceed in a specified way or follow safety measures

Proscription of activities or behaviours specified

2.3. Pictograms on the machine

A risk of damage by a sharp tool

This pictogram says:
Electrical device

This pictogram says:
Disconnect from electricity before beginning repairs

This pictogram says:
Washing with water or water-based fluids forbidden while power connected

3. NOTES FOR THE USER

3.1. The purpose of this manual

The following manual applies to:

- Brine injector MHM series, in particular:
  MHM-21/84

The operation manual:

- describes the functions, installation, structure, maintenance and storage of the machine,
- contains important safety information.

The manual should be stored in a place that is easily accessible for the personnel operating the machine and performing maintenance work.

Due to the continuous improvement of products manufacturer reserves the right to make changes that may be not included in this manual.

3.2. Directions for the user

Before placement, using or repairs, read the proper section of this manual, in order to use the machine properly.

Familiarity with user manual is mandatory for a safe operation of the machine. Preparation of the bench safety instruction (on the basis of this manual) lies with the recipient.

4. BEFORE STARTING THE MACHINE

4.1. Transport and storage

The machine is shipped fully assembled. Motoreducer is filled with an appropriate oil. For the duration of transport and storage, the external surfaces of the machine are coated with a thin layer of preservative.

If required by the purchaser, for transport commissioned to other companies the machine may be delivered on a loading pallet or in a wooden box. A method of transport with forklift is shown on fig. 1a. The machine should be transported prevented from slipping during braking, rollover, shocks and possibility of mechanical damage.

In other cases, the device is not packed or it is only protected with a plastic wrap.

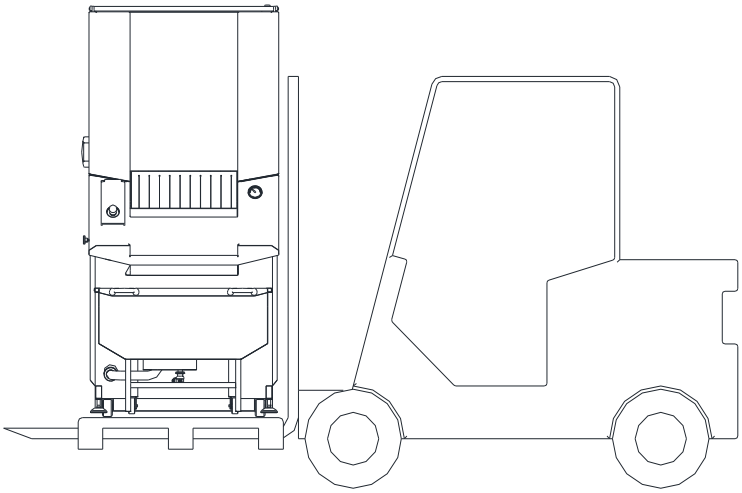


Figure 1a. Transportation of the machine on a loading pallet

The device should be stored in a dry room that provides protection from the elements and has the following storage conditions:

- temperature from + 5°C to +25°C,
- humidity not exceeding 95%.

It is recommended that only authorized personnel with the necessary qualifications and experience can operate with lifting-transporting equipment.

4.2. Installation

The place for installing the device should ensure comfortable and safe working conditions. The distances between the machine and adjacent objects (walls, posts and other devices) are shown in the figure 1b.

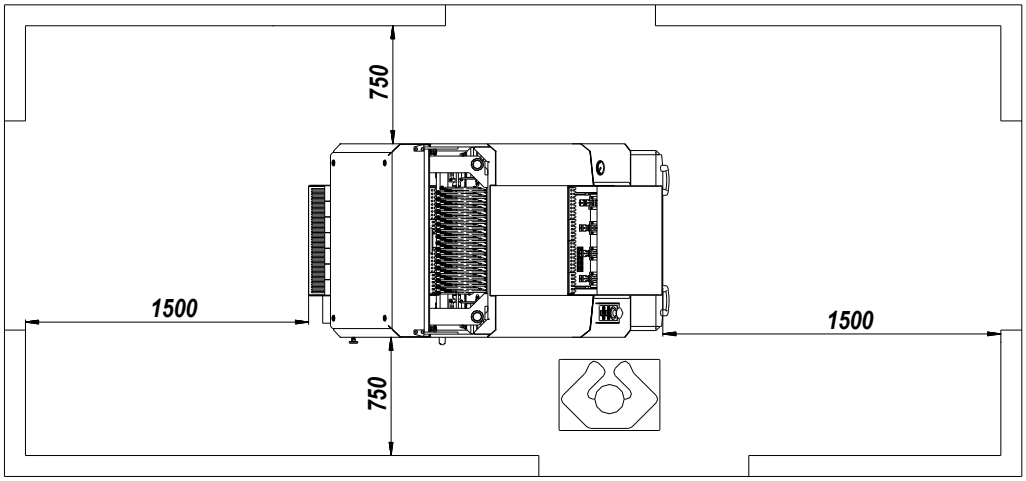


Figure 1b. Safety distances and position of the operator

The minimum height of the room should be:

2450 mm for the MHM-21/84 injector,

The condition of the surface should:

- have no unevennesses, cracks or gaps,
- make possible thorough cleaning, washing and disinfection,
- prevent slipping and tripping,
- bear the load of 0.5 MPa.

Connection to any kind of installations should be carried out only by qualified personnel.

4.3. Power supply

The user's obligation to install 3P+PE lub 3P+N+PE (32 A)* socket, with dagree of protection IP67 with cut-off switch a protection degree suitable for the conditions in the operation area of the machine. Use the same cross-sections of the wires and protections, as with stationary connection..

Any work involving the planning of power supply, installation, maintenance and repair of electrical devices may be carried out only by qualified personnel and in accordance with the principles of electrotechnology. During carrying out of the above-mentioned work, local electrical regulations apply. The user of the device shall bear civil liability for improper connection to the local power supply.

The cables supplying electricity should be placed in such a manner as not to be exposed to mechanical damage and not pose the risk of tripping and fall for the operator.
For that reason, it is recommended that, according to the valid regulations and norms in this field, cables should be installed in pipes or protective trays with clamps or cable tapes.

It is forbidden to place electric cables on the floor.

4.4. Installation and start up

In case of a low temperatures during transport, before starting, place the injector in a room with temperature from + 5°C to +25°C and humidity not exceeding 95% *for the duration of at least 24 hours*. The purpose of the required waiting period of the machine is for the mechanical, electrical and electronic systems of the machine to reach their working temperature.

1. Before the first start the machine should be cleaned in accordance with the procedures adopted at the factory.
2. Agents approved for use in the food industry should be used for cleaning and users should strictly adhere to the instructions of the manufacturer of these agents.

In order to start the machine:

1. Transport it to its designated place of operation and place it according to the directions (see chapter 4.2.)
2. Block the injector road wheels with the brakes.
3. Attach the covers and chutes.
4. Insert drip filters into the guides
5. Set the brine tank (stuffing cart 200dm3 or smaller) under the drip filters, place the pump suction on the bottom of the tank.
6. Switch on the power with the main power switch or by inserting the plug into the socket. Switch on the power of the control by unblocking the EMERGENCY STOP button.
7. Open the injection head cover.
8. Adjust the bumpers of the injection head (as in p. 6.15. Adjusting the injection head bumpers),
9. Close the injection head cover and secure it against opening (lock on the side of the injector).
10. Switch on the drive of the injection head and the conveyor. Check if the motor of the drive of the injector head and the conveyor is rotating in the right direction (the motion of the conveyor begins at the moment of the injection head reaching its upper extreme position). If the conveyor moves during the injection head's downward movement (improper direction of rotations of the drive's motor), switch the two phase cables in the power circuit.
11. Switch on the pump and compare the direction of the motor's movement with the direction of the arrow on the casing. IF the directions are not the same, switch the phase cables connecting the pump motor with the frequency inverter's output.
12. With the pump switched on, check:
    - the value of the brine pressure in the system, maximum pressure indicated by the manometer must not exceed 0.32 MPa.

Wheels are used only for transport the machine to the destination.

It is forbidden to work the machine left on running wheels.

With the injection head drive inactive, the brine pump will be automatically switched off after 25 seconds of operation.

Before starting to use the device and every time after changing the place of connection, the user must perform measurements of the insulation resistance of the electric system and check the effectiveness of the fire protection used, according to valid energetic regulations in that area.

5. STRUCTURE AND USE

5.1. Intended use

The injector is designed to corn meat with bone or without bone and raw animal fats by the method of injection. Machine is designed to be used in meat and poultry processing plants. Machine can be use also in other food industry branches (ex. Injection of fish fillets, fruits). Depending on the sort of meat and its composition, the volume of injection can vary from 6 to 55% of the injected mass.
For correct operation do not feed machine with too large amount of meat.

The manufacturer is not legally responsible for using the machine inconsistently with its purpose and for modifications to the device without their knowledge and approval.

As the optimal conditions for proper use are considered: ambient temperature from 5 to 25°C and air humidity not exceeding 95% - without condensation.

5.2. Technical information

Injector type	**MHM-21/42**	
Pump drive type	continous pressure regulation	
Number of pumps	1	
Injection head drive type	two-geared motor	frequency inverter
Number of sockets	21	
Conveyor belt advance distances	3 gears	
Number of cycles per minute	22/44	one cycle adjustment between 22-44
Efficiency	500-2000 kg/godz.	
The maximum height of product	170 mm for standard version	
Brine pressure (adjusted)	0,05-0,32 MPa	
Size of injection	6-55% of mass	
Power installed	**P=2,4kW**	**P=2,3kW**
Power of the injection head drive motor	P=0,75/0,85kW; first and second gear	P=0,75kW
Power of the brine pump motor	P=1,5 kW	P=1,5 kW
Voltage and frequency of electric current	**3 x 400V; 50Hz (3P+N+PE) lub (3P+PE)**	
Maximum load current	**~12A**	
Switch power supply: - fuses - wire cross section	 3 x 25 A 2,5 mm^2	
Acoustic level pressure	not exceeding 70dB(A)	
Conveyor width	326 mm	
External dimensions: - length	1400 mm	
- width	757 mm	
- height	1840 mm	
Mass of injector	330 kg	

5.3. Units and systems of the machine

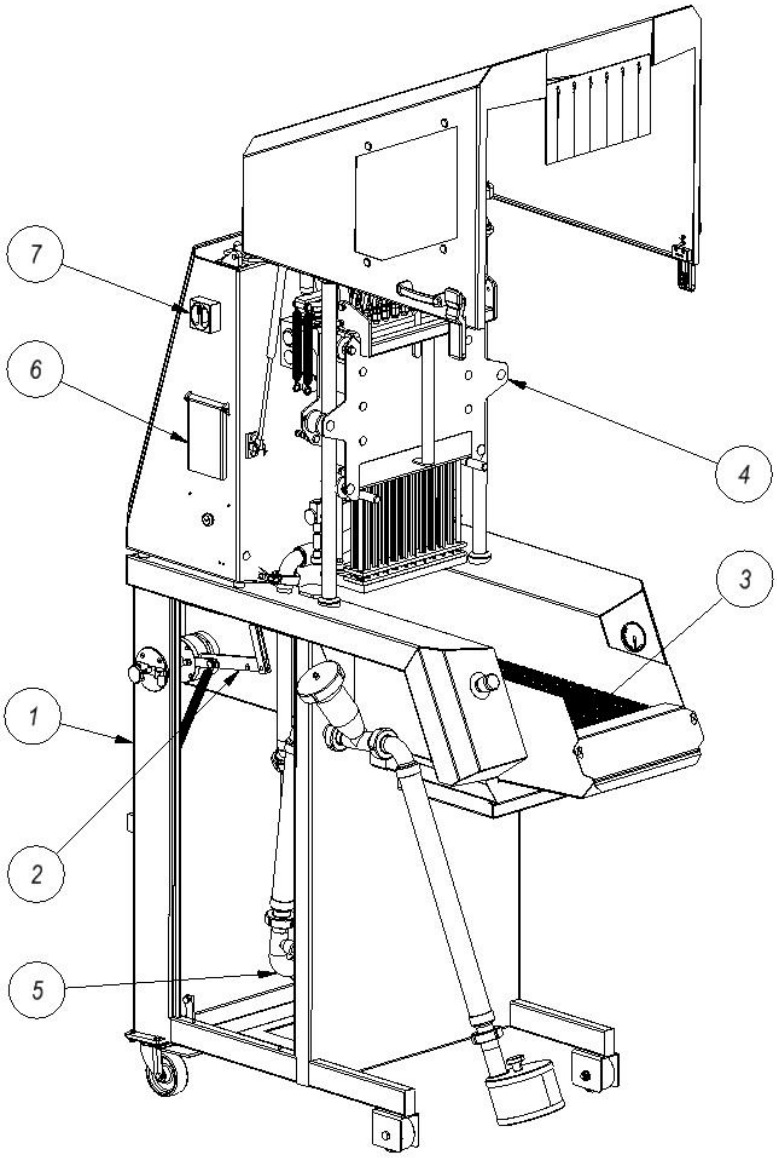


Figure 2. Units and systems of the injector

1 - body, 2 – drive unit, 3 – belt conveyor, 4 – injection system, 5 – pumping and filtering system, 6 – control panel, 7 – main switch

The main units of the injector are:

Body – p. 1 - it is made entirely of stainless steel. The top part of the casing is in the shape of a trough permanently fixed to the supporting structure, to which supports are attached for installing the drive unit and covers.

Drive unit – p.2 – consists of a motoreducer, cam and lever mechanism with a one-way clutch propelling the belt conveyor p.3 and a crank mechanism moving the injection system p.4.

Belt conveyor –p. 3 - consists of a driving and tensioning shaft, and plastic plates connected by joints.

Injection system –p. 4 - consists of a collector, plates for guiding and settling of the needles, guides with needles and springs, a plate with guides and springs that acts as a pusher and two guiding pipe columns. The needles are fixed in a beam to which brine is supplied from the collector. Access to the injection system is prevented by a cover made of stainless sheet, permanently fixed to the casing.

The pumping and filtering system – p. 5 - consists of a rotor pump, a suction filter called a suction hood and a manometer. The system's task is to feed brine under pressure to the injection system and to catch solid particles from the brine solution, which, circulating in the brine circuit, could block the outlet holes of the injection needles.
The control panel – p.6 - is used to set technological parameters, such as brine pressure, number of injection system cycles, etc.

The injector has two additional elements for increase safety during operation. This is protective curtain on the transporter entrance side and plastic screens at the transporter exit.

5.4. Additional equipment

The injector's additional equipment are:
- a drip insert used in washing and rinsing of the injection system,
- set of needles (optional),
- injection heads with set of needles (optional),
- pistol for cleaning the needles (optional).

Auxiliaries are normalized carts with the capacity of 200 dm^3.

Optionally, the injector can work with the rotary brine filter or with filter and brine mixer. In such situation, one should follow not only this operation manual but also the manual of other devices.

5.5. Electrical equipment

The electrical components of the injector include:
- a motor driving the belt conveyor and the injection head,
- a brine pump motor (two in case of MHM-136/408)
- a frequency inverter,
- an open cover signaling sensor,
- connecting and controlling equipment detailed in the wiring diagram.

The motoreductor driving the conveyor and the injection head, as well as the control equipment are mounted above the injector's trough and encased by covers. The brine pump motor and the electrical cabinet with a protection degree of IP 55 and connecting equipment are mounted under the injector's trough and enclosed by side covers. The electric system is powered by alternating current with a voltage of 3 x 400V and frequency 50Hz.

As normal ambient conditions, in which the elements of the electric equipment of the injector work without problems, are considered:
- ambient temperature not lower than 5°C and not higher than 25°C
- relative air humidity not exceeding 95%
- power voltage fluctuations in the range of 400 V ±10% of the nominal voltage and frequency fluctuations in the range of 50 Hz ±2%.

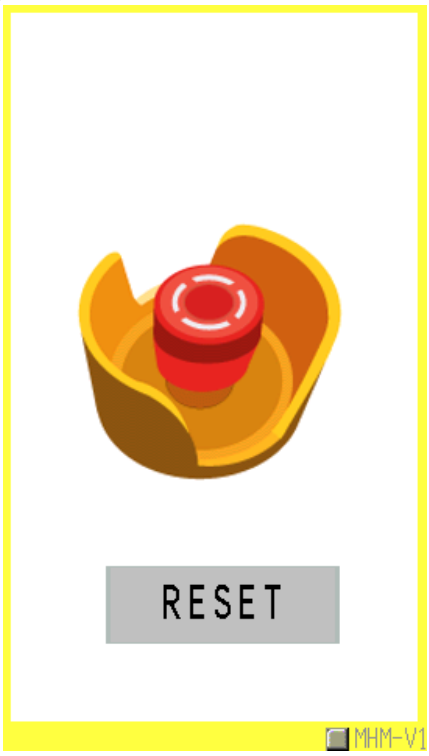
6. CONTROL

6.1. Communication control:

When the machine is powered, a flashing light appears on the screen. This indicates the correct communication between the PLC and the HMI screen. If this LED is not flickering, it indicates a PLC-HMI communication problem.

6.2. Emergency stop:

When the safety switch is pressed, a screen is displayed to indicate the emergency state of the machine and the machine stops:



Unlocking the emergency stop and selecting the RESET button activates the control of the machine.

The RESET button can be graphically displayed on the HMI screen or can be a separate button. In both cases it has the same function.

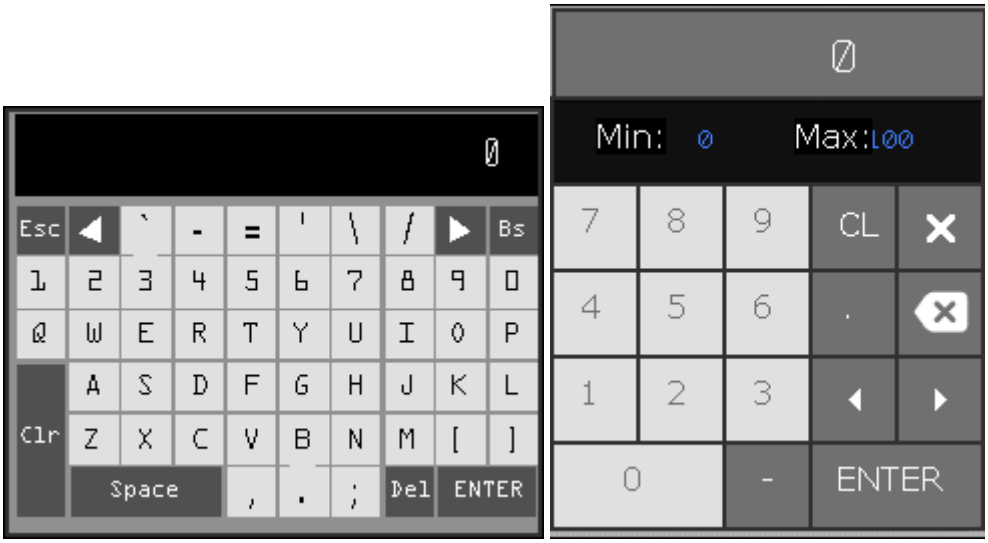
6.3. Open guards:

When the guards are open, a screen is displayed to indicate the emergency state of the machine and the machine stops:

Restoration of machine readiness occurs after closing the covers.

6.4. Data input:

For entering data from the operator panel, also called the HMI, the operator has two keypads available: an alphanumeric one and a numeric one, called as needed. The keypad selection is showed in the pictures:

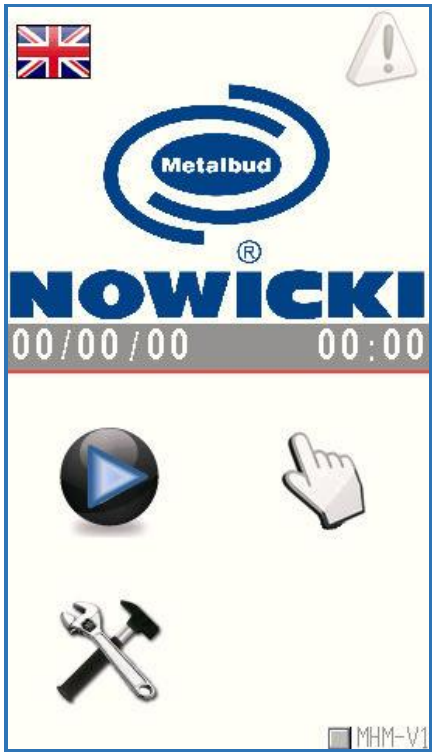


Both keypads have a preview of the typed expression function. In addition, the numeric keypad displays minimum and maximum values which limit the range of possible numerical values to be entered. These limits change dynamically depending on the selected edited field.

The keypad closes with the ESC key for the alphanumeric keypad, or X for the numeric keypad.

6.5. HOME screen:

This screen is displayed when the machine is in the standby mode:



From this screen, the operator can switch to one of the machine modes, change settings, or watch alarms appear. Selecting the appropriate machine mode is possible choosing icons indicating respectively:

 - Automatic operation

 - Manual operation

 - Service menu of the machine (accessing the service screen is possible after entering the password)

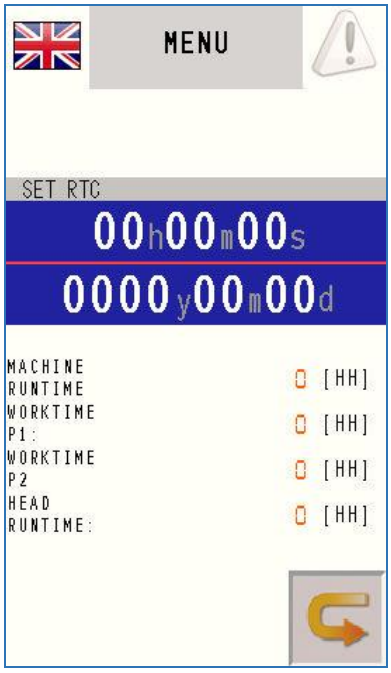
 - Active alarms (accessing the alarm screed is possible when the alarm is active)

 - Language selection

In addition, after selecting the date/time bar, the date/time menu screen appears.

6.6. MENU screen:

In the RTC set section: the operator can set the current date and time. Select the appropriate fields to edit. The  button - return to HOME screen.



Below, the RTC SET section, the information on the current runtimes of the individual machine components is located. And so:

MACHINE RUNTIME: indicates the time in which the machine is switched on with the control on;

WORKTIME P1: indicates pump 1 operating time in hours;

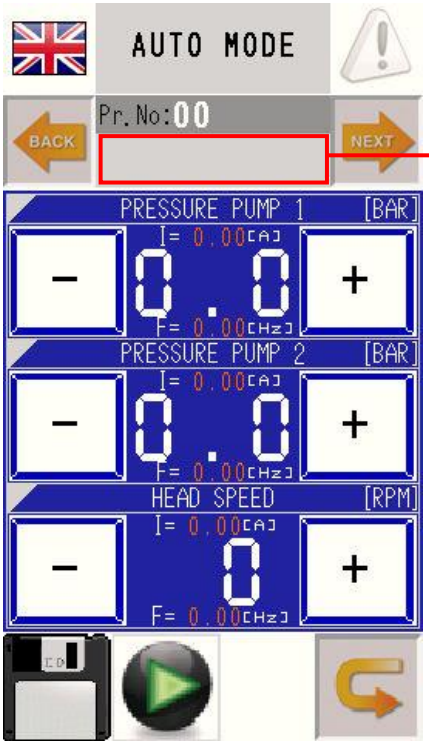
WORKTIME P2: indicates pump 2 operating time in hours;

HEAD RUNTIME: indicates the head drive operating time in hours.

Resetting the counters is possible after entering the service code.

6.7. Automatic operation programming screen:

This screen is displayed when the machine is in a selected recipe editing mode:



The controller allows creating 30 recipes. Each recipe may contain its name [10 characters max].

The current recipe is selected with the arrows: 

By holding the recipe selection arrow for over 1 second, the operator gains access to the TURBO function - fast scrolling of recipes.
Depending on the selected machine mode: NORMAL or EXPERT, the screen may display additional information about the drives, such as:
I = - current input by the drive, indicating the load on the machine;
F = - the frequency of the drive operation.

Recipe parameters:

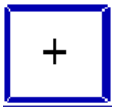
PUMP 1 PRESSURE:
In this parameter the operator can set the working pressure for the first pump. This pressure can be set depending on the options in [BAR] or [PSI]. The setting range is defined according to the type of machine. Changes can be made using the numeric keypad, or the keys to decrease or increase the value.

- reduce the value;

- increase the value.

PUMP 2 PRESSURE:
In this parameter the operator can set the working pressure for the second pump. This pressure can be set depending on the options in [BAR] or [PSI]. The setting range is defined according to the type of machine. Changes can be made using the numeric keypad or the keys to reduce or increase the value.

- reduce the value;



- increase the value;

HEAD SPEED
In this parameter, depending on the machine version, the operator defines the speed or the run of the head. If the machine is equipped with the speed setting option, the setting range is defined according to the type of machine. Changes can be made using the numeric keypad, or the keys to decrease or increase the value.

- reduce the value;

- increase the value;

If the machine comes with a two-speed head, the setting range is equal to the choice whether the head is to run on gear 1 or gear 2. The gear changes are made using the buttons 1, 2.

- gear 1.

- gear 2.

Turning off the drive of the two-speed head is possible once the same gear has been re-selected.

By holding the value increase or decrease key for more than 1 second, the operator gains access to the TURBO function - a rapid value change.

The  button saves the selected recipe.

The  button starts the machine with the selected recipe

The  button - return to HOME screen.

The value of real pressure in the system is read from the manometer (5 – fig. 4)

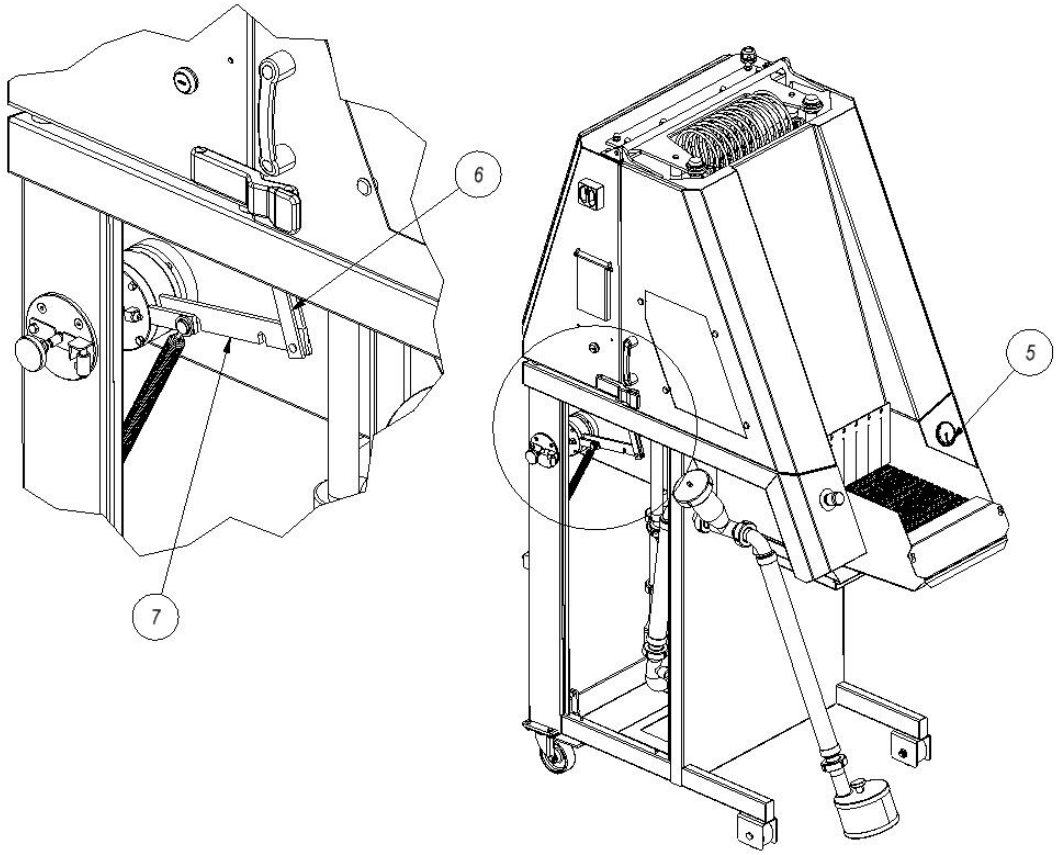


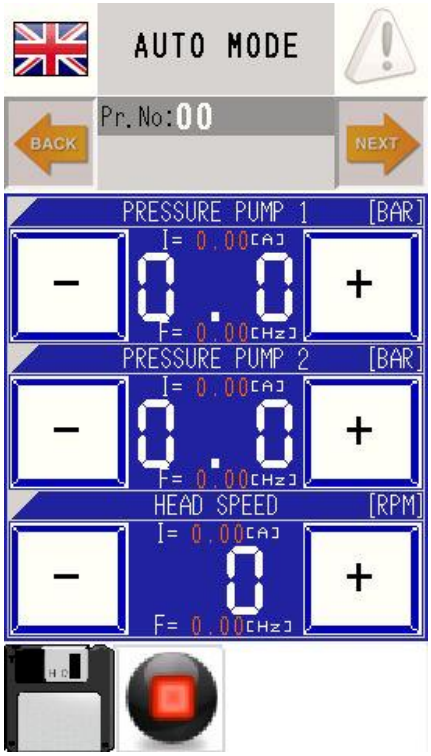
Figure 4. Elements used for controlling the injector's parameters

6.8. Adjustment of the conveyor belt advance speed

The belt advance speed is carried out by changing the position of the tension member (6 – fig. 4) on the clutch lever (7 – fig. 4).

6.9. Automatic operation screen:

This screen is displayed when the machine is in operating mode:



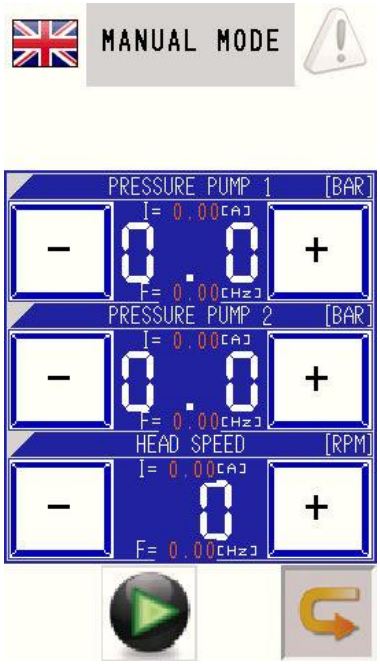
In the automatic mode it is possible to adjust the operating parameters in the same way as in the programming mode.

The machine is equipped with a safety device to stop the injection head if the pumps are idle for 25 seconds.
The machine is equipped with a safety device to stop the pumps if the injection head is idle for 25 seconds

Stop the program execution by selecting the button: 

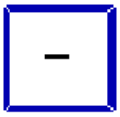
6.10. Manual operation screen:

This screen is displayed when the machine is in the manual operation mode:

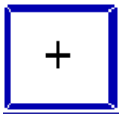


Depending on the selected machine mode: NORMAL or EXPERT, the screen may display additional information about the drives, such as:
I = - current input by the drive, indicating the load on the machine;
F = - the frequency of the drive operation.
Manual mode parameters:

PUMP 1 PRESSURE:
In this parameter the operator has the possibility to set the working pressure for the first pump. This pressure can be set depending on the options in [BAR] or [PSI]. The setting range is defined according to the type of machine. Changes can be made using the numeric keypad, or the keys to decrease or increase the value.

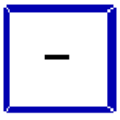


- reduce the value;



- increase the value;

PUMP 2 PRESSURE:
In this parameter the operator has the possibility to set the working pressure for the second pump. This pressure can be set depending on the options in [BAR] or [PSI]. The setting range is defined according to the type of machine. Changes can be made using the numeric keypad, or the keys to decrease or increase the value.



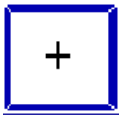
- reduce the value;

- increase the value;

HEAD SPEED

In this parameter, depending on the machine version, the operator defines the speed or the run of the head. If the machine is equipped with the speed setting option, the setting range is defined according to the type of machine. Changes can be made using the numeric keypad, or the keys to decrease or increase the value.

- reduce the value;



- increase the value;

If the machine comes with a two-speed head, the setting range is equal to the choice whether the head is to run on gear 1 or gear 2. The gear changes are made using the buttons 1, 2.

- gear 1.

- gear 2.

Turning off the drive of the two-speed head is possible once the same gear has been re-selected.

By holding the value increase or decrease key for more than 1 second, the operator gains access to the TURBO function - a rapid value change.

The  button starts the machine with the selected settings

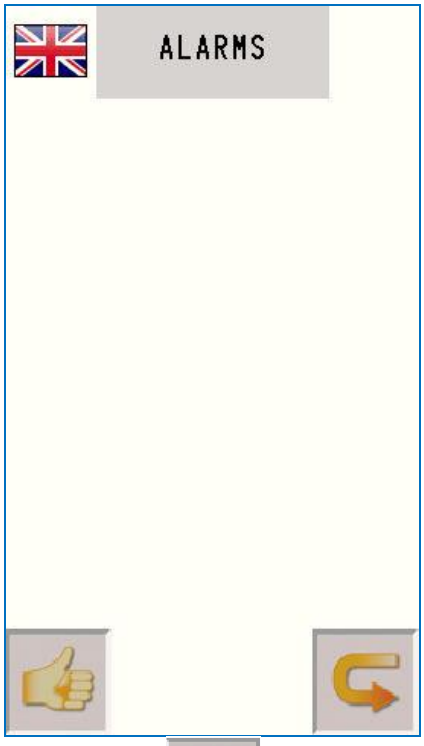
The  button - return to HOME screen.

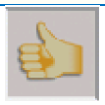
Stop the program execution selecting the  button.

6.11. Alarms:

When the machine is in the alarm state, the following icon is activated on the screens: ALARM

After selecting the icon, the controller goes to the current alarm display screen:



Resetting an alarm occurs after selecting the  button:

All the ALARMS are active until reset

6.12. List of alarms:

AL1 - NO PLC-HMI COMMUNICATION	*- error indicates a problem with the PLC communication cable connection to the HMI panel.*
AL2- POWER ERROR	*- error indicates incorrect connection of the machine or incorrect power supply parameters.*
AL3- PUMP 1 DRIVE ERROR	*- error indicates the problem with the first pump motor.*
AL4- PUMP 2 DRIVE ERROR	*- error indicates the problem with the second pump motor.*
AL5- HEAD DRIVE ERROR	*- error indicates the problem with the head motor.*
AL6- NO BRINE	*- error indicates lack of brine, it is an option to protect pumps against dry work.*
AL7- ERROR RS485	*- error indicates communication problems between controller and inverter.*
AL8- INVERTER COMM. ERROR	*- error indicates communication problems between controller and inverter.*
AL9- INVERTER PUMP 1 INT. ERROR	*- error indicates the problem detected on pump 1 inverter*
AL10- INVERTER PUMP 2 INT. ERROR	*- error indicates the problem detected on pump 2 inverter*
AL11- INVERTER HEAD INT. ERROR	*- error indicates the problem detected on the head inverter*
AL12- FILTER NOT READY	*- error indicates filter is not working*

6.13. Wymiana igieł

It is forbidden to sharpen the needles, as this affects their structure and can result in separation of the needle tip.
Blunt, bent or damaged needles must be replaced.

For model MHM-21/64:

In order to replace the needles:

- stop the injection head in the middle of its stroke height,
- unscrew the knobs securing the covers (located on the sides of the casing, under the front apron),
- raise the injection head cover,
- unblock the screws blocking the bumpers (described in point 6.15 – Adjustment of injection head bumpers),
- Unblock the replaceable injection head p. 4 - fig. 5 by raising the lever 1; block the lever in the raised position with the block p. 2,
- slide the injection head p. 4 outside,
- remove the needles p. 3.

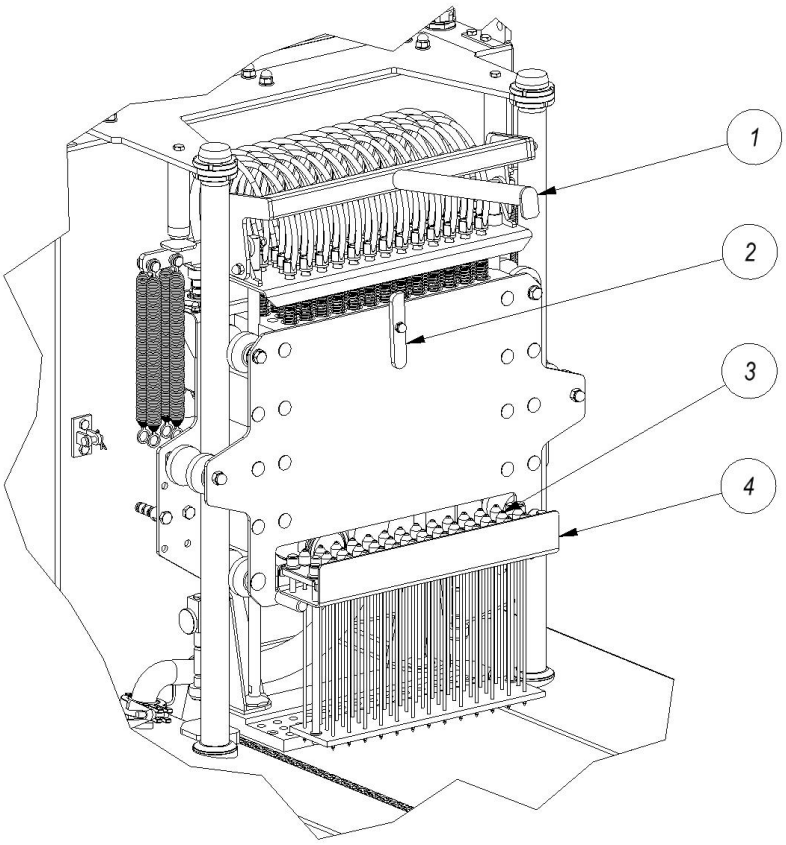


Figure 5. Needles replacement

After the procedure check placement of the needles inside the beam. Needles which are not seated properly in the beam holes must be replaced.

The injection head can be unfastened only in its middle position.

After replacing the needles it is necessary to:

- insert the head pos.4,
- move the lock pos. 2
- lower and press lever, pos. 1,
- close the top cover.

After the procedure check placement of the needles inside the beam. Needles which are not seated properly in the beam holes must be replaced.

6.14. Placing the injection head above the conveyor

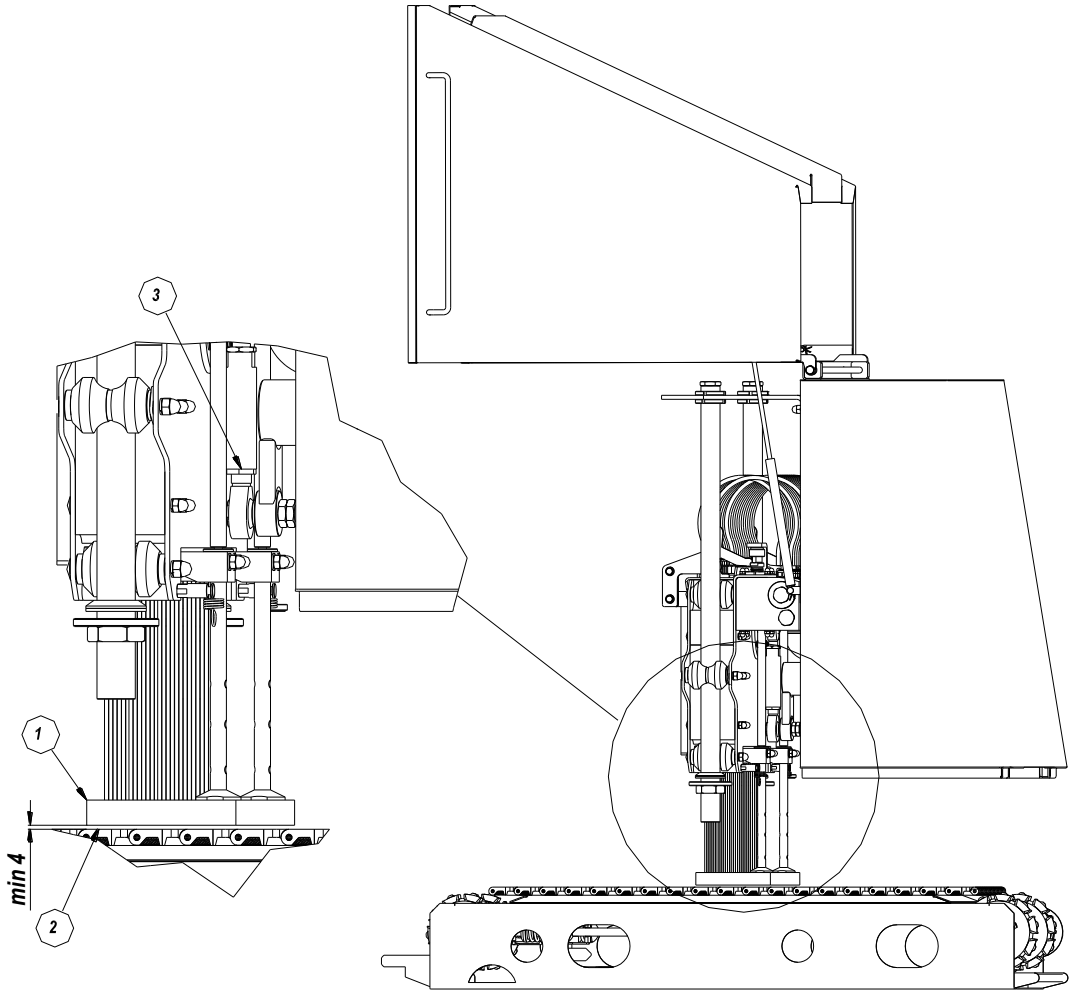


Figure 6. Placing the pressure plate above the conveyor

The distance of the pressure plate (1) from the plates of the conveyor (2) should not be less than 4mm. In order to adjust it, shorten or lengthen the crosshead (3 – turnbuckle).
After adjusting the distances of the pressure plate, the crosshead (3 – turnbuckle) should be secured with control nuts.

6.15. Adjustment of injection head bumpers

The injection head is fitted with two bumpers, located symmetrically on the opposite sides of the longitudinal axis of the machine.
A complete bumper includes:

- blocking screw – p.1,
- bumper shaft – p. 2,
- fixing sheet – p.3.

Before beginning work, set the bumpers on an appropriate (identical) level (the bumpers stop the pushing plate at a sufficient distance from the conveyor belt). In the case of injecting boneless meat, the pushing plate should be placed at a distance of 20÷40 mm above the product layer. In the case of injecting bone-in meat, the bumper should stop the plate in its lowest position.

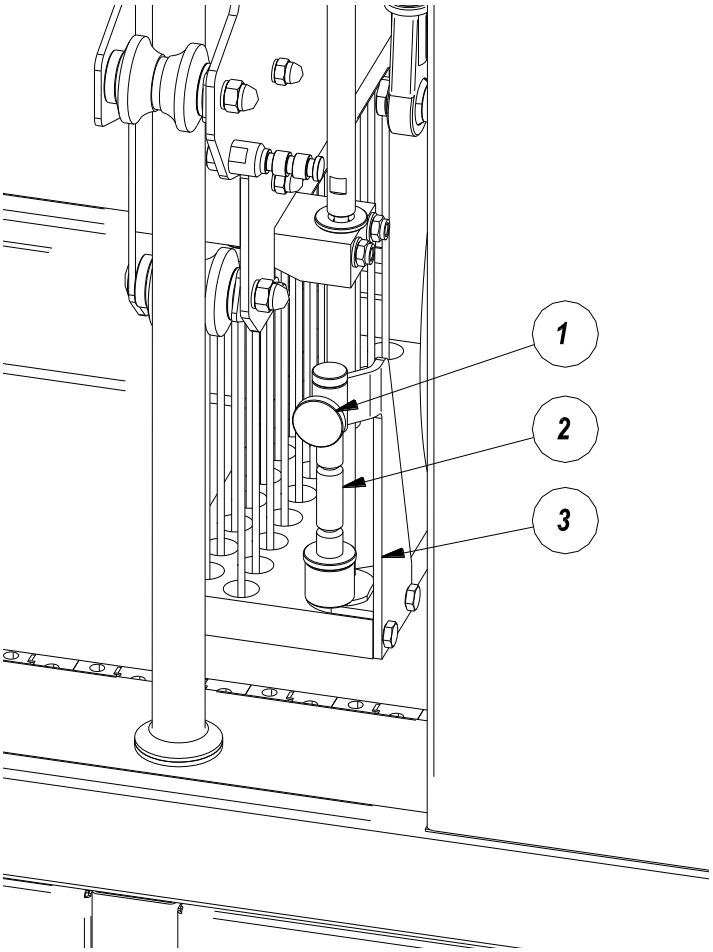


Figure 7. Adjustment of injection head bumpers

In order to adjust (set) the bumpers:

- stop the injection head in its topmost position,
- raise the injection head cover,
- unscrew the blocking screw p.1,
- place the bumper shaft p.2 on the appropriate groove notched on its surface,
- tighten the blocking screw p. 1 (the nut has to be placed in the notch of the shaft).
- set the other bumper in a similar way.

Check the block (tightening of the blocking screws) after every change of height of the bumpers and every day before beginning work.

It is forbidden to work with bumpers that are unblocked or set at different heights. Not complying with the above condition may cause damage to the bumpers or other elements of the injection head.

6.16. Adjustment of injection head rollers

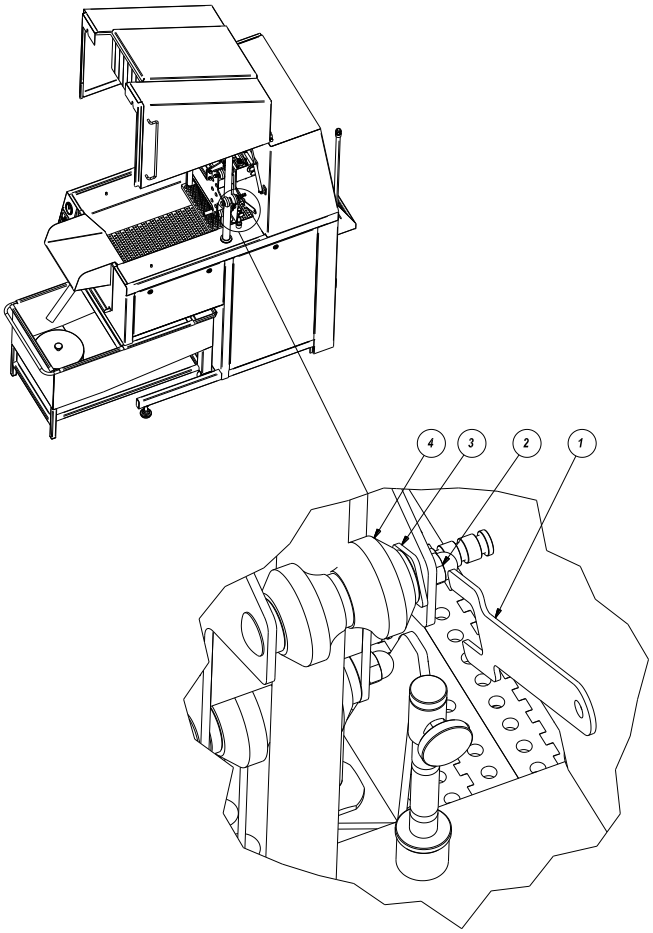


Figure 8. Adjustment of injection head rollers

The injector head is fitted with six guiding rollers.
In order to adjust the rollers:

- switch off the pump and the injection head drive,
- press the EMERGENCY STOP safety button,
- open the injection head cover,
- manually turn each roller.

Rollers that turn smoothly or do not touch the surface of the column with its rolling surface, should be regulated in the following way:

- place the spanner p.1, fig. 8 in the outline of the washer p.3,.
- loosen the nut p. 2,.
- by turning the spanner p.1, slide to and lightly press the surface of the roller to the surface of the guiding column,
- tighten the nut p. 2.

Repeat the regulation procedure for every easily turning roller.

Pressing the roller too tightly to the column causes heating of the roller and the column, which shortens the life of the roller.

7. USE

7.1. Preparation for work

Before the first injection into the product, wash the device with warm water and washing agents approved for use in the food industry.

- Before beginning work:
  - insert the replaceable injection head into the injection head casing (the external surfaces of the replaceable head's sheets and the head's casing should be aligned in one plane),
  - turn the block by 90° and lower the lever into its bottom position (vertical).
  - set the bumpers at the desired level and secure them with blocking screws (acc. to point 6.15 Adjustment of injection head bumpers).
- Before beginning work each time after that, check:
  - if there are no unnecessary items in the working space of the injector,
  - if the aspirator and the filtration sieves are not dirty,
  - the condition of all covers – they should be closed and secured with locks or nuts,
  - the external condition of control and electrical elements, as well as pressure tubes,
  - the operation of the EMERGENCY STOP safety switch and other safety and control elements.
  - the condition of the screws blocking the bumpers of the injection head.

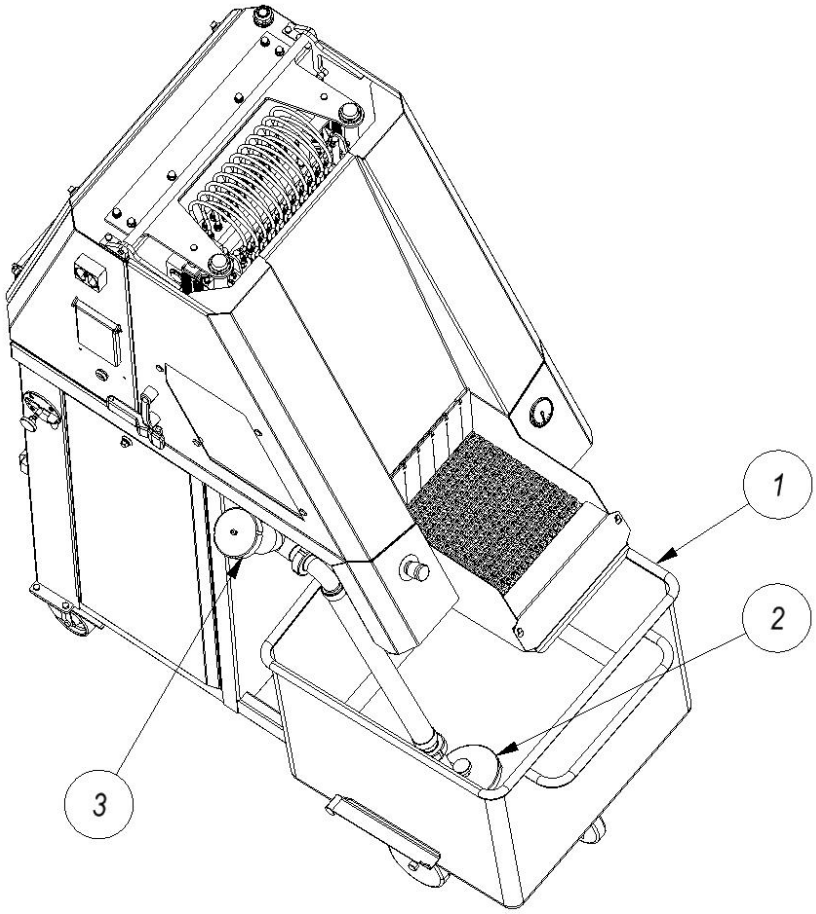
It is forbidden to:

1. **Start the injector with damaged electrical installation or mechanical damage.**
2. **Work with damaged needles.**
3. **Work with damaged seals on the pump or needles.**
4. **Work with bumpers that are unblocked or set at different heights.**

Before starting the brine pump, the aspirator must be made passable and flooded with brine. Not complying with the above condition causes damage to the pump rotor and a drop of injection pressure. The aspirator must necessarily be flooded with brine during operation.

7.2. Procedures during work

- Position the brine tank pos.1 under the drain opening of the injector trough,
- Put suction chest pos.2 on the bottom of the brine tank.
- Unscrew the lid pos.3 and fill the pump with brine by pouring 3-4 dm3 into the brine funnel.
- Screw on the lid pos.3.



- Adjust the amount of conveyor belt advance as needed acc. to ch. 6.8.
- Switch on the power with the main power switch.
- Enable the controls by unblocking the EMERGENCY STOP safety switch.
- Proceed according to chapters describing manual or automatic work.
- Check the advance of the conveyor belt and the patency of injecting needles.
- Place the cart with meat by the loading chute, the other cart under the exit chute and begin to put the meat on the conveyor belt.

During operation of the injector, it is important to control the amount of brine in the tank (or the rotary filter tank); too small an amount may lower the degree of injection.

It is forbidden to:

1. **Operate the device by unauthorised and untrained persons.**
2. **Starting the device without installed protective covers.**
3. **Have unauthorised persons present in the operation area.**
4. **Leave unnecessary items in the operation area.**
5. **Remove faults and carry out repairs by unauthorised persons.**
6. **Put too large quantities of meat on the conveyor belt or distribute it unevenly. The height of the meat layer may not exceed 170mm.**
7. **Manually pushing the meat on the conveyor belt.**
8. **Run the pump without first priming it with brine.**
9. **Start the pump if there is no brine left in the pumping/injection system.**
10. **Use the brine pump in case of noticing a pump leak.**

7.3. Procedures after finishing work

1. Empty the machine from brine and remove remaining brine from the pump. In order to do that:
- switch off the injection head drive with the START in manual work mode,
- remove the side cover of the injector body,
- unscrew the brine drain plug from the pump (pos.1) and empty the pump
- screw in the brine drain plug from the pump (pos. 1),
- remove suction components (pos. 2),
- pull the locking pin (pos. 3, fig.10), what will disconnect the belt conveyor drive
- Dismount draining board (pos. 4), filters (pos. 5), cover (pos. 6)
- pull out and dismantle elements of the conveyor (pulling out and dismantling of the conveyor should be done by min. 2 people),
- wash the injector - according to the provisions of section 9.1.

It is prohibited to start the pump if there is no more brine in the pump and injection system. Failure to observe this prohibition will result in damage to the pump.

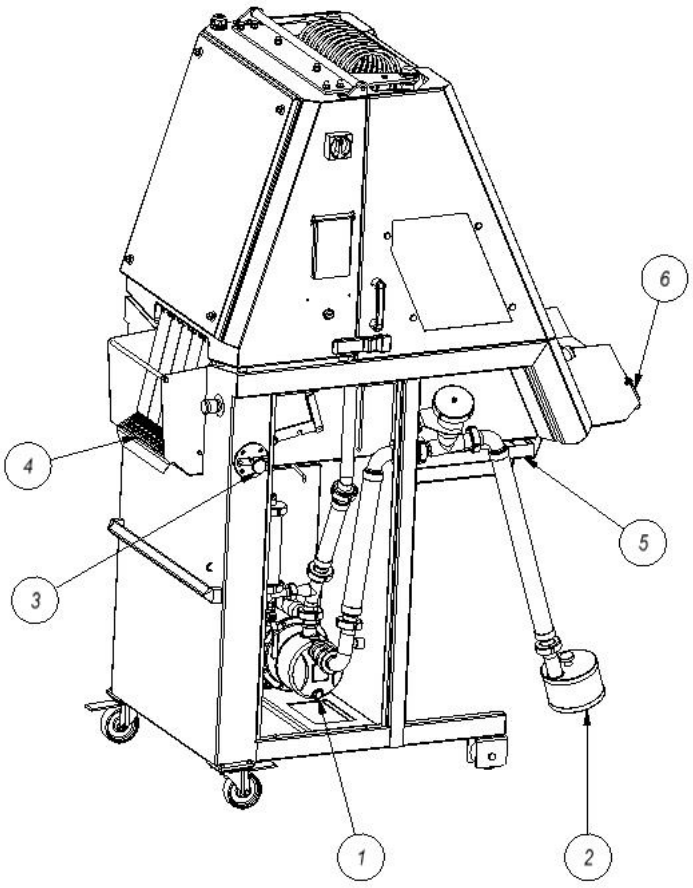


Figure 10. Discharge valve location

During every stop of the injector, check the contamination of the suction filter and the drip filters, remove the dirt if necessary.

8. USE-RELATED HAZARDS

8.1. Mechanical hazards

In case of there being any danger, with the exception of the electric shock hazard, press the EMERGENCY STOP button on the control panel; this causes an emergency shutdown of the injector's drives.

Accidental contact with moving parts of the drive and the injection system causes a risk of mechanical trauma. In order to eliminate this risk, the following safety measures were implemented:

- All drive elements are covered with permanent side covers.
- Moving parts of the injection system are covered with permanent covers of sheet steel or organic glass.

8.2. Electric shock hazard

The injector belongs to devices with the second degree of electric shock hazard. Because of that, there were used:

- **Protection from direct touch in the form of**:
  - insulation of active parts with electric resistance and strength required by the applicable regulations and norms;
  - placing of the active parts of the connecting and control equipment in a casing providing a protection level of IP 55.
- **Protection from touch is provided by:**
  - PE protection clamps with the protective-neutral PEN cable in a TN-C electric grid or with a protective PE cable in a TN-S grid.

Moreover, protection from direct and indirect touch is provided by the protective 24V DC voltage used in the control circuit of the machine.

In case of there being any kind of hazard, together with the electric shock hazard, the power should be first disconnected with the main cut-off switch outside of the machine and then the EMERGENCY STOP safety switch on the control panel should be pressed, this causes emergency shutdown.

It is forbidden to:

1. **Direct a stream of water on the control panel of the machine and electric equipment, as well as into the space where electric control and drive units are housed.**
2. **Wash the machine with a stream of water with the power on and with open covers of the electric equipment.**
3. **Switch on the electric control of the machine without drying individual control elements.**

8.3. Biological hazard

While using the injector, there is a risk of infection, disease or infection. In order to eliminate these hazards, the following technological protections were used:

- Elements that come into contact with meat are made of stainless steel of an AISI 304 (or higher) grade, that is easy to clean, disinfect and rinse, and is approved for contact with food.

- These elements are joined by welding and in the structure of the injector, there was minimised the number of protruding edges, corners and hidden recesses that could be favourable for the lingering of post-production residue.
- Everywhere it was advisable and possible, large passage radii were used.
- Easy outflow of post-production fluids, washing agents, disinfectants and rinsing fluids was ensured.

8.4. Physical hazard

Noise - measurment of machine acoustic pressure (noise level) the user must perform in accordance with applicable regulations in this regard. In manufacturer conditions acoustic pressure level do not exceed 70 dB(A).
Foreign matter in the product – when machine is proper using, the entering possibility of the machine parts or oil/grease to the product practically does not exist. In order to completely eliminate the risk of entrance contaminated products is suggested to use a metal detector. Using oils and grease should be intended for contact with food.

8.5. Procedures in case of danger

In case of there being any hazard, switch off the device with the EMERGENCY STOP safety button located on the control panel and disconnect the machine form the power grid with the main cut-off switch.

8.6. Obligations of the user

The injector can be operated only by personnel that:
- is familiar with the basic principles of work safety and accident prevention
- has the necessary knowledge of the machine's structure
- has read and understood the operation manual.

The user must comply with the European legal norms.

8.7. Obligations of the personnel

Before beginning work, the personnel assigned to operate the machine, is obliged to the following:
- reading and complying with the instruction manual,
- applying the basic principles of health and safety at work and accident prevention.

8.8. Personal protective measures

No specialised protective clothing is required for operating the machine. During maintenance and repairs, the personnel is obliged to use:

— protective gloves

— protective footwear

— protective appron
or/and other in accordance to safety regulations.

9. MAINTENANCE AND INSPECTIONS

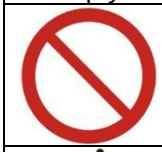
9.1. Washing directions

The injector must be washed immediately after finishing the injection process.

It is forbidden to wash the device with water with temperature higher than 35°C.

For washing use only washing agents approved for use in the food industry, with certificates compliant with:
- **a PZH certificate (Poland),**
- **the FDA 21 CFR 170÷199 regulation (USA) ,**
- **the CFIA (Canada) regulation.**

Strictly apply to the recommendations of the producer.

1. First rinsing with cold water	
– fill the brine tank with clean cold water, – adjust the tank to ensure open water circulation (flushing water must not flow back into the tank), – turn on the pump to flush the system thoroughly, – pay particular attention to the needle patency, unblocked needles must be removed (see chapter 6.13.) and cleaned, – Switch off the pump, – empty the brine tank.	
	**It is forbidden to switch on the pump if there is no water in the brine tank - this may damage the pump.**
	**Rinsing with clean, cold water must be carried out immediately after finishing the injection process.** **Not obeying this procedure causes internal dirtying of the brine installation and mechanical parts of the machine, as well as clogging of the needles. This leads to damage, including destruction of the pump impeller.**
2. Main washing with the use of washing agents	
During the main washing, the brine tank should remain under the exit chute of the injector, in order to provide closed circulation washing solution.	

– fill the brine tank with warm water at max. 35°C and add approved cleaning agents, strictly following the instructions of the agent manufacturer,
– Switch on the pump for approx. 15 minutes,
– set the injection system to the upper position,
– Switch off the control system using the EMERGENCY STOP button and disconnect the power supply using a switch installed outside the machine,
– remove and dismantle the conveyor belt and the pump suction,
– wash the injector and the disassembled elements,
– replace the washed belt conveyor and the pump suction,
– turn on the electrical power supply to the injector and lower the injector head to the lower position.

When using a high-pressure cleaning device for washing, do not direct the water jet on the control panel and electric equipment elements.

3. Second rinsing with cold water

Proceed similarly as in the case of the first rinse, and then:
- rinse carefully all external surfaces of the trough (that come into contact with the product being injected), the external surfaces of the injection head,
- press the blocking bolt in – p. 3, fig. 10, which will connect the belt conveyor drive,
- wash the brine circulation tubes by disconnecting the DN quick connection.

Every time after finishing the washing process, unblock and slide out the replaceable injection head acc. to ch. 6.13.
Leaving a blocked injection head for the idle time may cause the sticking of needle seals to the frame surface, which might make later disassembly impossible.

9.2. Maintenance

No.	Recommended:		Frequency not less frequently than:
	activities	substances	
1.	Washing the surface contacting the product and brine	clean water and water with washing agents	- daily
2.	Checking the oils condition in the motoreductor, refilling to the required level	spanners, oil feeder, synthetic oil ISO VG 220	- monthly
3.	Oil change in the motoreductor	Synthetic oil ISO VG 220	- every 10000 hours or every two years
4.	Lubricate all movement joints that are equipped with a grease nipple Lubrication of all other movement joints	lubricator, grease Optimol Longtime Blanc lub Multi T.P. Lubricate by hand after disassembly grease Optimol Longtime Blanc lub Multi T.P.	- once per week - once per week (max. every 30 hours of operation).
5.	Maintenance of the spring system	spanners, lubricant (as above), clean water and water with washing agents	- once per month
6.	Checking and tightening of screw connections	Spanners	- once per week
7.	Checking the condition of electrical equipment, wiring and the power circuit: - check electrical connections and especially the connections of protective cables - conduct measurements and resistance test of the insulation, the effectiveness of the fire protection used and conduct the measurements of motor loads.	specialist electrical measurement equipment	- every 6 months. but not less frequent than every 12 months

It is forbidden to mix synthetic and mineral lubricants.
It is forbidden to lubricate the outer surfaces of the rollers and head leading columns.
In case of replacement of spare parts - only original spare parts must be used. – non-original parts use, cause damage of other parts of the machine.

9.3. Inspections

No.	Inspection object	Checking for possible faults in the form of:	Frequency of inspections, not less frequently than:
1.	**Work station**		
1.	The condition of the floor surface	- levelling of unevennesses and cracks	once per year or as needed
2.	Placement and levelling of the injector	- deviations from level	once per 6 months or as needed
		- improper tilt in the direction of the drain opening	once per 6 months or as needed

No.	Inspection object	Checking for possible faults in the form of:	Frequency of inspections, not less frequently than:
2.	**Mechanical units and elements**		
1.	Trough with the supporting structure	- cracks, surface damage and deformations	once per month
2.	Permanent covers of moving parts	- loosened or missing fastenings	once per 6 months
		- damage and deformations	once per month
		- removed and unused covers	daily
3.	Cam and lever mechanisms	- excessive play	once per week
		- loosened connections	once per week
		- deformations of levers and arms	once per month
		- cam track wear	once per year
4.	One-way clutch	- excessive play (clattering)	once per year
		- damaged elements	once per year
		- worn tracks	once per year
5.	Cogged gear	- excessive noise	once per week
6.	Pushing plate springs	- damage (breaking)	daily
7.	Roller system	See ch. 6.16.	daily
8.	All movable connections	Lack of lubricant	See ch. 9.2
9.	Arm with roller and cam	- nadmierne luzy rolki (łożyska) - arm deformation	Once a week
3.	**Brine circulation system**		
1.	Rigid connections	- loss of external tightness	once per weak
2.	Flexible conduits	- loss of external tightness or other damage	daily
3.	Filters	- excessive dirt impeding the work of the system	daily
4.	Needles	- damage	daily
5.	Brine pump*	- leakiness - impeller wear - wear of the inside of the casing	daily once per month once per year
4.	**Electric control systems**		
1.	External cables	- traces of insulation damage	daily
2.	Internal cables	- traces of insulation damage	once per 3 months
3.	Clamp connections of power and control cables	- loosening of cable connections on the clamps, especially in current (power) circuits	once per 3 months
4.	The condition of resistance of the electric system insulation and the effectiveness of the fire-protection system	- damage of the connecting and control equipment	after every replacement of a connecting or control device in the electric system
5.	Testing of the condition of resistance of the electric system insulation and the effectiveness of additional fire-protection	- periodically, according to energy use regulations, not less frequently than once per year	

* owing to the variation in the pumped medium (brine), it is recommended that pump seals be replaced after ca. 2200 hours of work. In the case of pumping of fluids containing P_2O_5 phosphates, seals may become worn twice as quickly.

It is forbidden to:
1. **Perform any of the above-mentioned operations with the power on.**
2. **Performing any repairs and maintenance operations by unauthorised persons.**

9.4. List of parts not included in warranty

- Brine pump seals
- Brine head needle seals
- Trough entry and exit zone aprons
- Needles

10. FAULT IDENTIFICATION AND ELIMINATION

No.	Symptoms	Possible cause	Elimination procedure
1.	Too low brine pressure in the system or absence of flow, no manometer indications	– dirty suction filter – damaged manometer	– clean and rinse the filter – replace the manometer, pay attention to careful washing and rinsing
2.	Pump leak	– damaged seal	– replace the seal
3.	Irregular movement of the injection system	– worn rollers – excessive play in joint connections	– replace the rollers – replace the joints
4.	The pushing plate blocked on the needles	– bent needles – damaged springs – not defrosted meat	– replace the bent needles – call the manufacturer's service – inject only defrosted meat
5.	No belt advance or irregular advance	– worn one-way clutch – play in the cam and lever system	– call the manufacturer's service – call the manufacturer's service
6.	Loud and slow work of the motoreducer	– too little or no oil – damaged bearings – worn gear cogs	– replenish the oil to the desired level – replace the bearings – call the manufacturer's service
7.	Breaking and bending of needles	– dirty needle surface (dried dirt)	– replace damaged needles, wash the device every time after finishing the injection process
8.	On the touch panel there is a message: Check inverter	– overload of the converter supplying power to the brine pump motor	– check the overload cause, restart the converter
9.	On the touch panel there is a message: Check head temp.	– overload of the converter supplying power to the injection head motor – overload of the motor driving the injection head	– check the cause of overload, restart the converter – check the status of the overcurrent protection of the motor and start again - if the fault should recur, call the manufacturer's service
10.	On the touch panel there is a message: OPEN COVER	– open cover of the injector head, damaged magnetic sensor of the needle head cover	– check if the cover is well closed, replace the magnetic sensor

Appendix 1 Frequency converter – emergency statuses and locating faults

Diagnostics

In the event of an alarm a protective function is activated that stops the converter. The PU display panel or programmator will display the alarm indication. If the error does not correspond to any of the following descriptions, please contact your nearest Mitsubishi dealer.

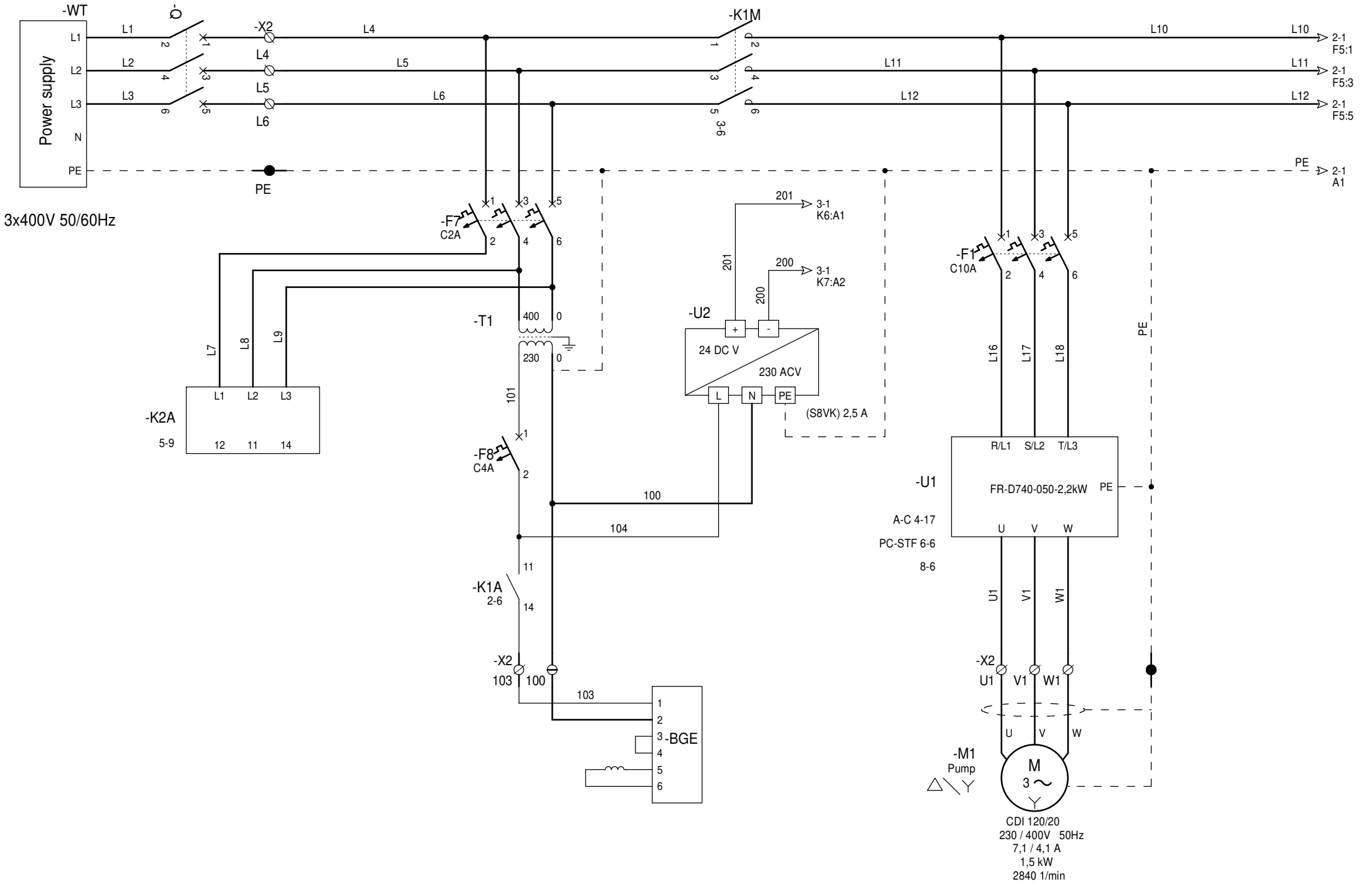
- Error output signal backup..... In case of converter supply contactor trip (MC) due to protection activaion, there is no power supply to the converter and the alarm output is not maintained.
- Alarm or error display..... When activated, it protects the programmator display from automatic switching and displays alarm notification.
- Reseting method.....When the converter protective function is activated, the converter power output is disconnected (the engine stops in the rundown mode) The converter can start again only after reset has been executed or automatic reset function has been configured. Caution should be exercised when the reset is performed or during automatic restart configuration.
- When the protective function is active (ie, the inverter has been stopped and the error notification is displayed), follow the recommendations outlined in the description of particular errors and alarms. It is particularly important that: in the case of the converter output ground fault and too high power supply voltage, the cause is determined prior to restarting of the converter. Recurrence of t these errors can lead to shorter life of equipment components or even to the converter damage. Reset and restart of the converter is allowed only after finding and removing the causes of these errors.

Alarm list

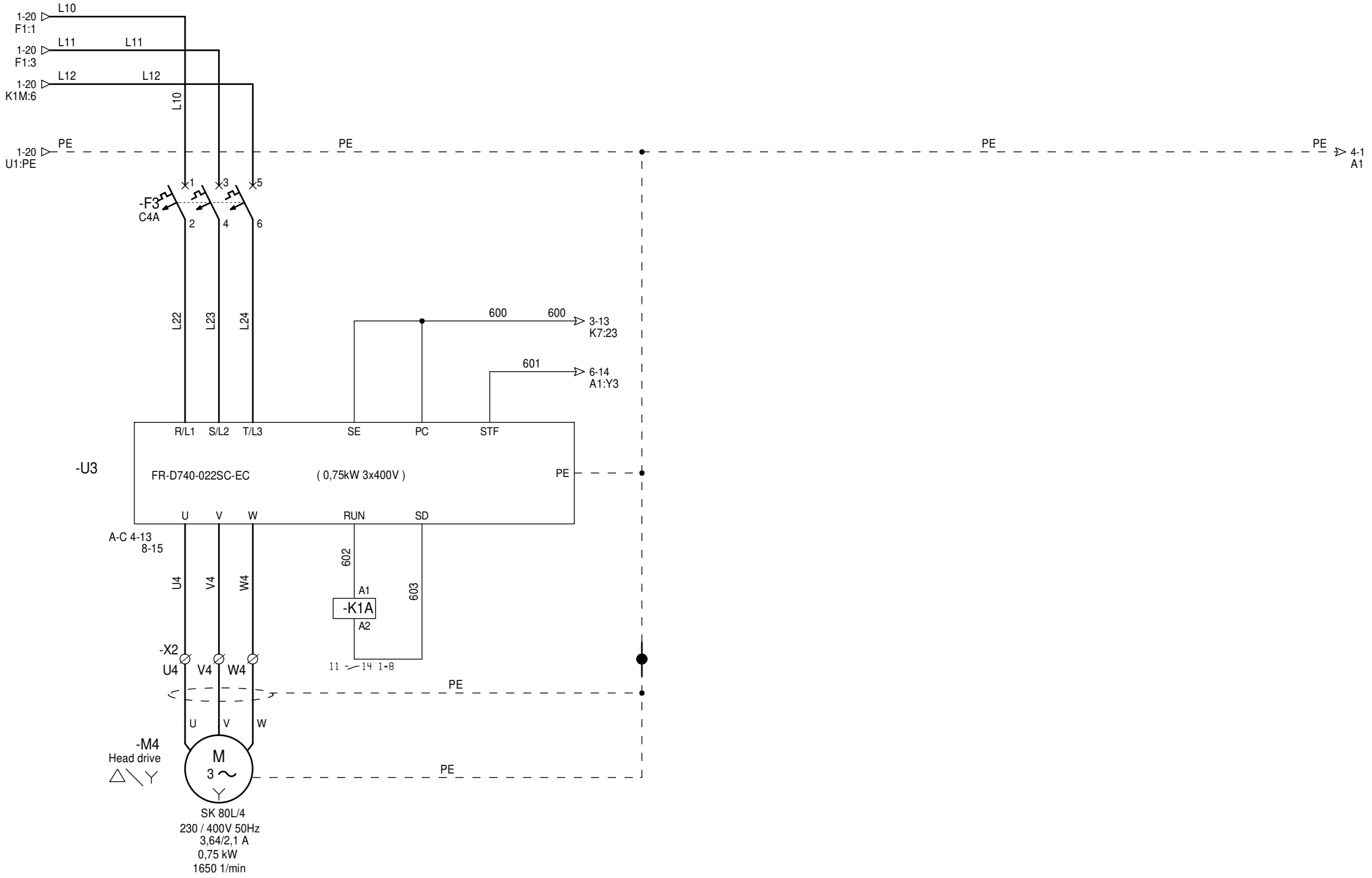
Operation Panel Indication			Name	Refer to Page
Error message	E- - -	E---	Faults history	241
	HOLd	HOLD	Operation panel lock	246
	LOCd	LOCd	Password locked	246
	Er 1 to Er4	Er1 to 4	Parameter write error	246
	Err.	Err.	Inverter reset	247
Warnings	OL	OL	Stall prevention (overcurrent)	247
	oL	oL	Stall prevention (overvoltage)	247
	rb	RB	Regenerative brake prealarm	248
	TH	TH	Electronic thermal relay function prealarm	248
	PS	PS	PU stop	248
	MT	MT	Maintenance signal output	248
	UV	UV	Undervoltage	248
Alarm	Fn	FN	Fan fault	249
Fault	E.OC1	E.OC1	Overcurrent trip during acceleration	249
	E.OC2	E.OC2	Overcurrent trip during constant speed	249
	E.OC3	E.OC3	Overcurrent trip during deceleration or stop	249
	E.OV1	E.OV1	Regenerative overvoltage trip during acceleration	250
	E.OV2	E.OV2	Regenerative overvoltage trip during constant speed	250
	E.OV3	E.OV3	Regenerative overvoltage trip during deceleration or stop	250
	E.THT	E.THT	Inverter overload trip (electronic thermal relay function)	250
	E.THM	E.THM	Motor overload trip(electronic thermal relay function)	250
	E.FIN	E.FIN	Fin overheat	251

Operation Panel Indication			Name	Refer to Page
Fault	E.ILF	E.ILF *	Input phase loss	251
	E.OLT	E.OLT	Stall prevention	251
	E. bE	E. BE	Brake transistor alarm detection	251
	E. GF	E.GF	Output side earth(ground) fault overcurrent at start	251
	E. LF	E.LF	Output phase loss	252
	E.OHT	E.OHT	External thermal relay operation	252
	E.PTC	E.PTC*	PTC thermistor operation	252
	E. PE	E.PE	Parameter storage device fault	252
	E.PUE	E.PUE	PU disconnection	252
	E.rET	E.RET	Retry count excess	253
	E.CPU	E.CPU	CPU fault	253
	E.CdO	E.CDO*	Output current detection value exceeded	253
	E.IOH	E.IOH *	Inrush current limit circuit fault	253
	E.AIE	E.AIE *	Analog input fault	253

* If a fault occurs when using with the FR-PU04, "Fault 14" is displayed on the FR-PU04.



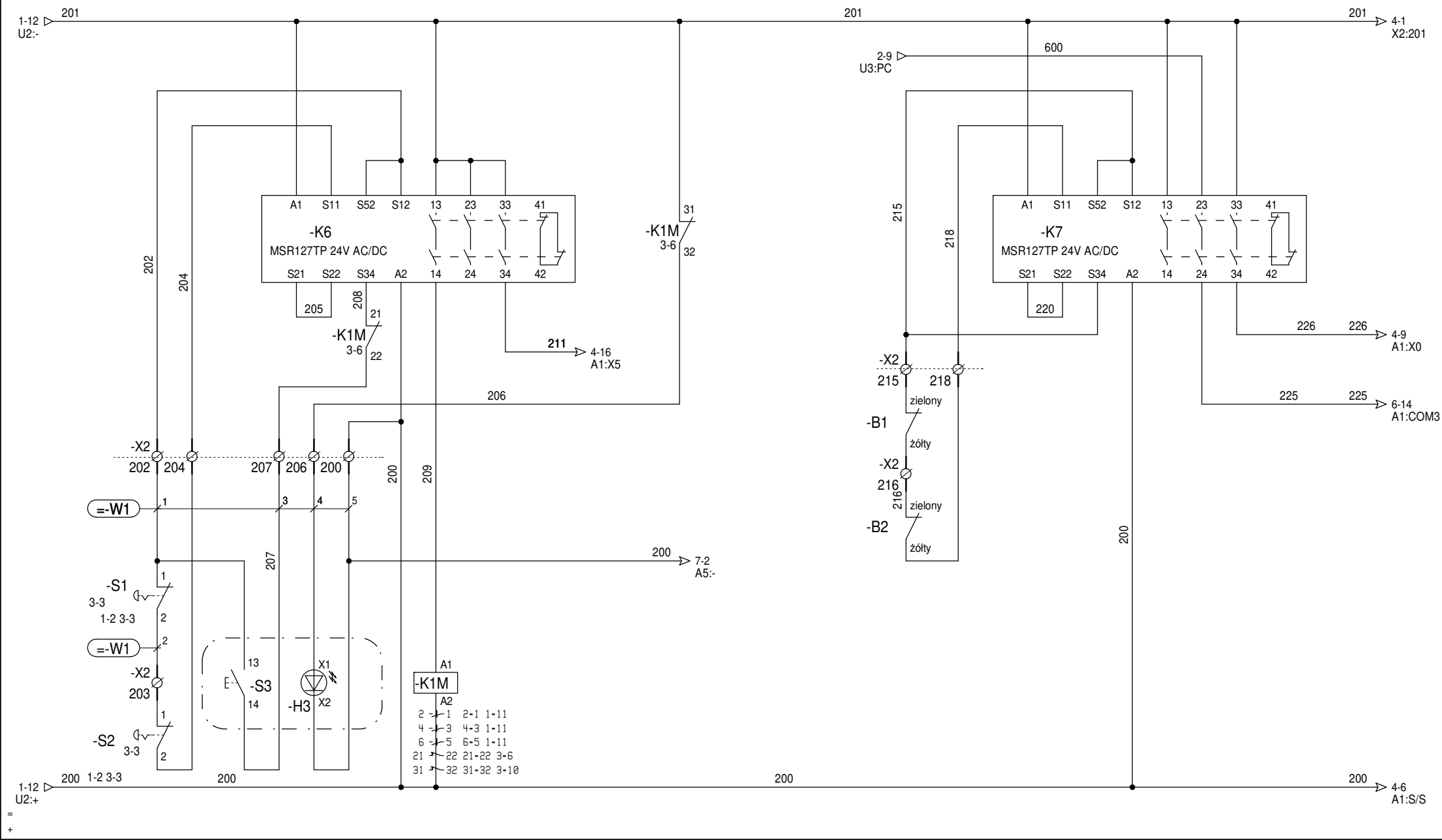
DRAWN : M.Czerwiński						INJECTOR MHM-21/84 no.(629-635)
CHECKED : M.Jarzębski						Power circuit 1
DATE OF CREATION : 15-10-2020	A	10.06.2009			Document n° :	SHEET 1 ◄ 2 ►
	INDEX	DATE	MODIFICATION	DES.		Software SEE v. 4.10



DRAWN : M.Czerwiński						INJECTOR MHM-21/84 no.(629-635)	SHEET 2
CHECKED : M.Jarzębski						Power circuit 2	◄ 1 3 ►
DATE OF CREATION : 15-10-2020	A	10.06.2009			Document n° :		Software SEE v. 4.10
	INDEX	DATE	MODIFICATION	DES.			

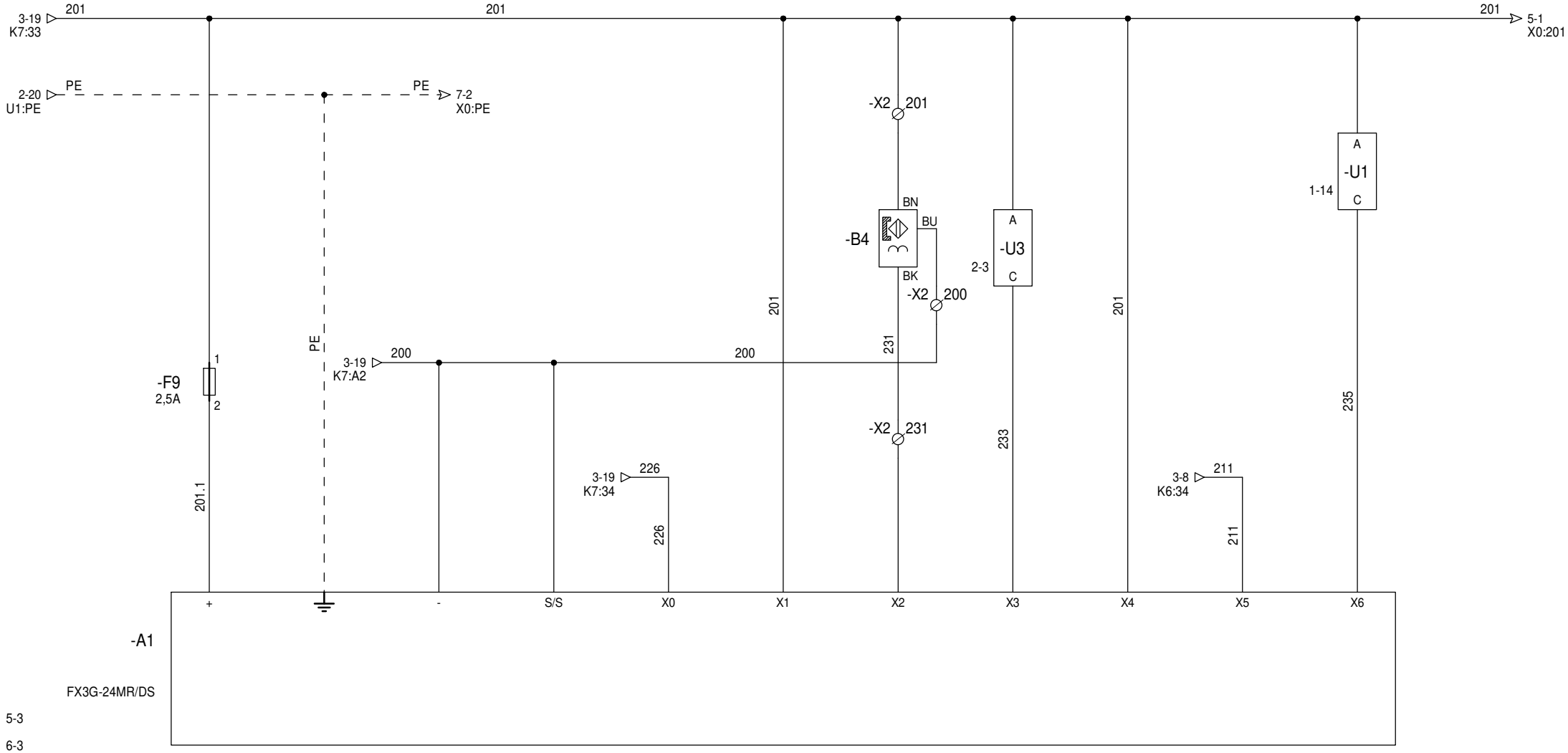
Safety relay - STOP

Safety relay - position of guard control



DRAWN : M.Czerwiński						INJECTOR MHM-21/84 no.(629-635)	SHEET 3
CHECKED : M.Jarzebski						Safety relay	◄ 2 4 ►
DATE OF CREATION : 15-10-2020	A	10.06.2009			Document n° :		Software SEE v. 4.10
	INDEX	DATE	MODIFICATION	DES.			

Power supply	Common inputs	Sensors covers	Filter status	Brine level sensor	Protection motor head	Status of the refrigeration unit	Switching control	Inverter status
				OPTION				



DRAWN : M.Czerwiński						INJECTOR MHM-21/84 no.(629-635)	SHEET 4
CHECKED : M.Jarzębski						Control circuit 1	◄ 3 5 ►
DATE OF CREATION : 15-10-2020	A	10.06.2009			Document n° :		Software SEE v. 4.10
	INDEX	DATE	MODIFICATION	DES.			

				Phase sequence sensor		

4-20
A1:X4

201

201

201

7-2
X0:201

11

-K2A

1-3

14

201

240

X7 X10 X11 X12 X13 X14 X15

-A1

4-3

=
+

DRAWN : M.Czerwiński					
CHECKED : M.Jarzębski					
DATE OF CREATION : 15-10-2020	A	10.06.2009			Document n° :
	INDEX	DATE	MODIFICATION	DES.	

INJECTOR MHM-21/84 no.(629-635)

Control circuit 2

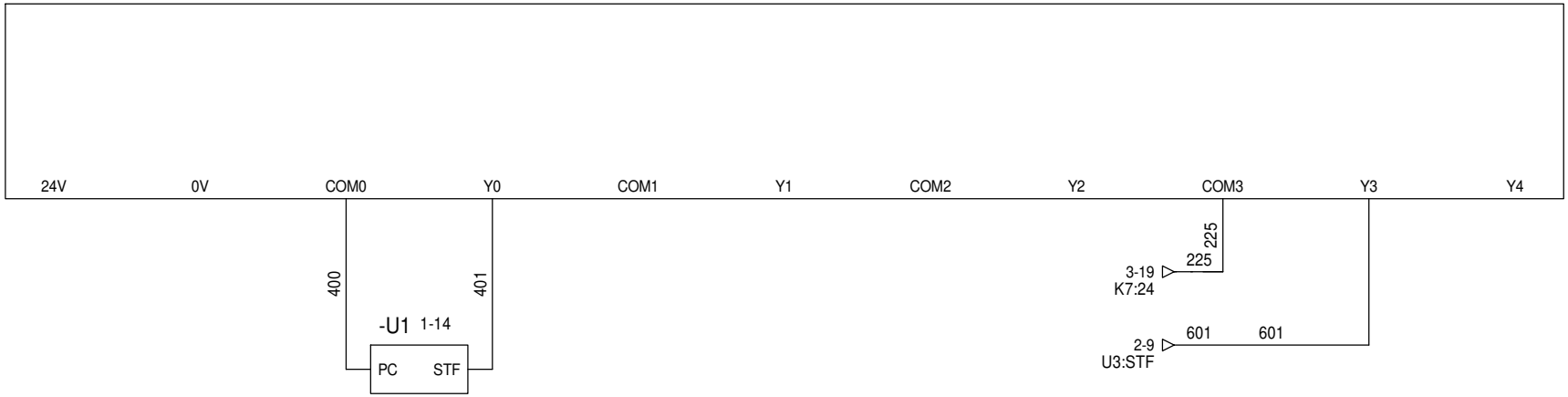
SHEET 5

◄ 4 6 ►

Software SEE v. 4.10

		Power output	Start Pump	Power output	Start Pump 2	Power output	Reset	Power output	Start head	

-A1
4-3



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+

DRAWN : M.Czerwiński						INJECTOR MHM-21/84 no.(629-635)	SHEET 6
CHECKED : M.Jarzębski						Control circuit 3	◄ 5 7 ►
DATE OF CREATION : 15-10-2020	A	10.06.2009			Document n° :		Software SEE v. 4.10
	INDEX	DATE	MODIFICATION	DES.			

Power output

-A1
4-3

RS-422

Y5 COM4 Y6 Y7 Y10 Y11

GT10-C30R4-8P

5-20
A1:X4

201

=-W1

-X2 201 6

4-6
A1

PE -X2 PE PE PE

3-10
X2:200

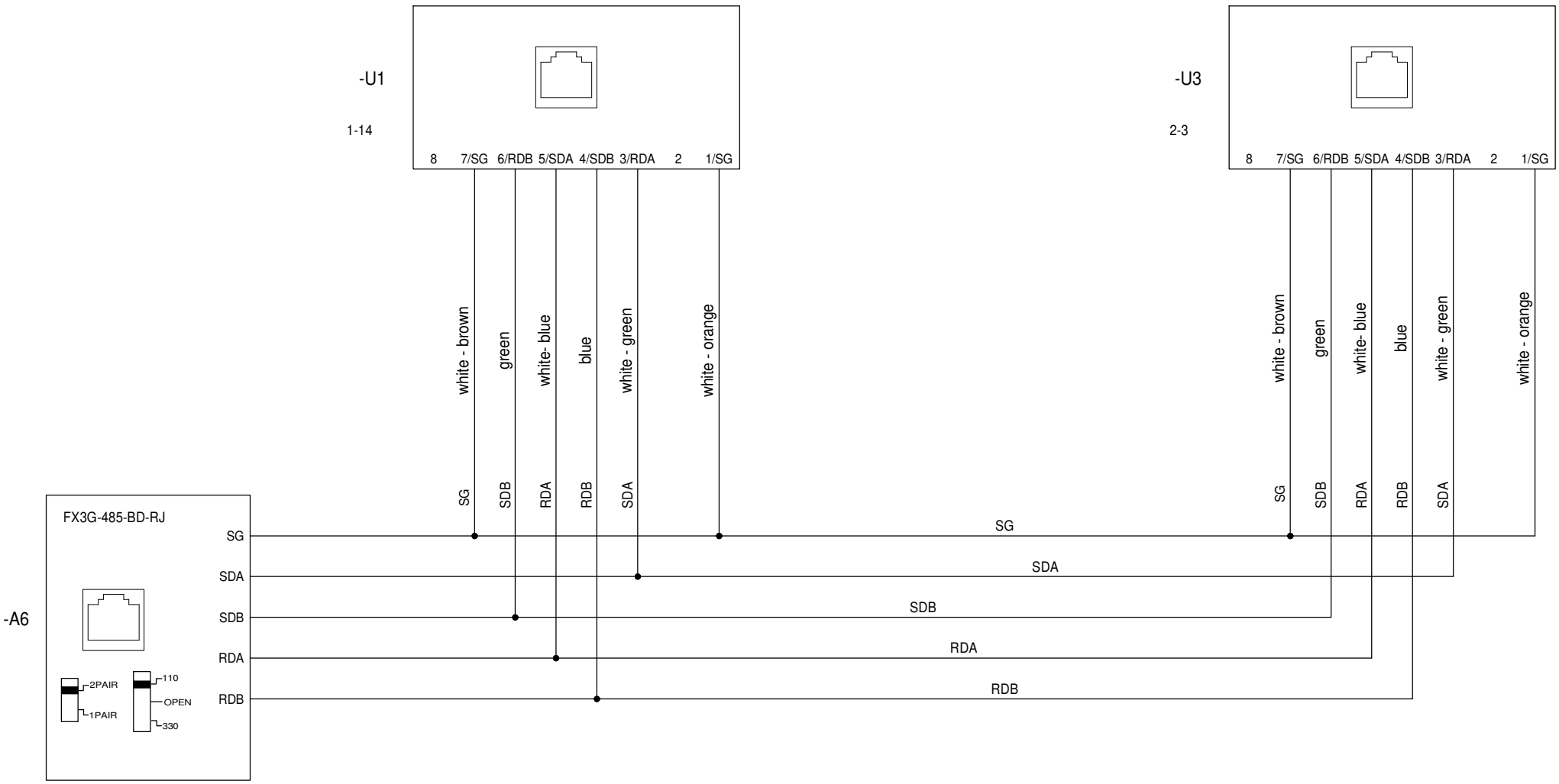
200 200 201

Brązowy /Brown
Czerwony /Red
Pomarańczowy/Orange
Żółty/Yellow
Zielony/Green
Czarny/Black
Biały/White

+ 24VDC - PE SDA SDB RDA RDB SG RSA RSB CSA CSB
9 8 7 6 5 4 3 2 1

-A5
PFXGP4116T2D

DRAWN : M.Czerwiński						INJECTOR MHM-21/84 no.(629-635)	SHEET 7
CHECKED : M.Jarzębski						Control circuit 4	◄ 6 8 ►
DATE OF CREATION : 15-10-2020	A	10.06.2009			Document n° :		Software SEE v. 4.10
	INDEX	DATE	MODIFICATION	DES.			



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

DRAWN :						INJECTOR MHM-21/84 no.(629-635)
CHECKED :						Control circuit 5
DATE OF CREATION : 15-10-2020	A	10.06.2009			Document n° :	SHEET 8 ◄ 7 ►
	INDEX	DATE	MODIFICATION	DES.		Software SEE v. 4.10

Electric diagram description of injector type MHM-21/84

529-635 – 151020

A1	Controller PLC
A5	Control Panel
A6	Module RS-485
B1	Magnetic sensor for neddle cover
B2	Magnetic sensor for side cover
B4	Brine level sensor (option)
BGE	Brake release (brake) drum motor drive I (M4)
F1	Over-current protection of inverter (U1)
F3	Over-current protection of inverter (U3)
F7	Over-current protection of transformer (T1) , relay (K2A)
F8	Over-current protection of secondary transformer side T1
F9	Over-current protection of controller (A1)
H3(S3)	Reset – illuminated safety button
M1	Pump motor
M4	Head drive motor
K1M	Main contactor
K6	Safety relay – emergency switch off control of injector
K7	Safety relay – control of the position of cover
K1A	Auxiliary relay of brake (BGE)
K2A	Multi-function phase control relay
U1	Frequency inverter of motor M1
U2	Feeder 230V AC/24V DC – supply of controller A1 and controller inputs
U3	Frequency inverter of motor M4
S1, S2	Emergency STOP button – control off
T1	Control transformer 400V / 230V AC – supply control circuit
X2	Terminal strip in electric box of injector
Q	Main switch
WT	Power plug

SPARE PARTS CATALOGUE

NAME **Brine injector**

TYPE **MHM-21 A**

NO. **509s**

Wzór tabeli, według której należy zamawiać części zamienne. /
Design of table, according to which one should order spare parts

NAZWA MASZYNY / MACHINE NAME	TYP MASZYNY / MACHINE TYPE	NR MASZYNY / MACHINE NO.	INDEX	NAZWA / PART NAME	ILOŚĆ / QTY.	NR RYS. / FIGURE NO.

FIGURE NAME	FIGURE NO.
Nastrzykiwarka / Brine injector MHM-21 A	**K36.00.00.000-509s**

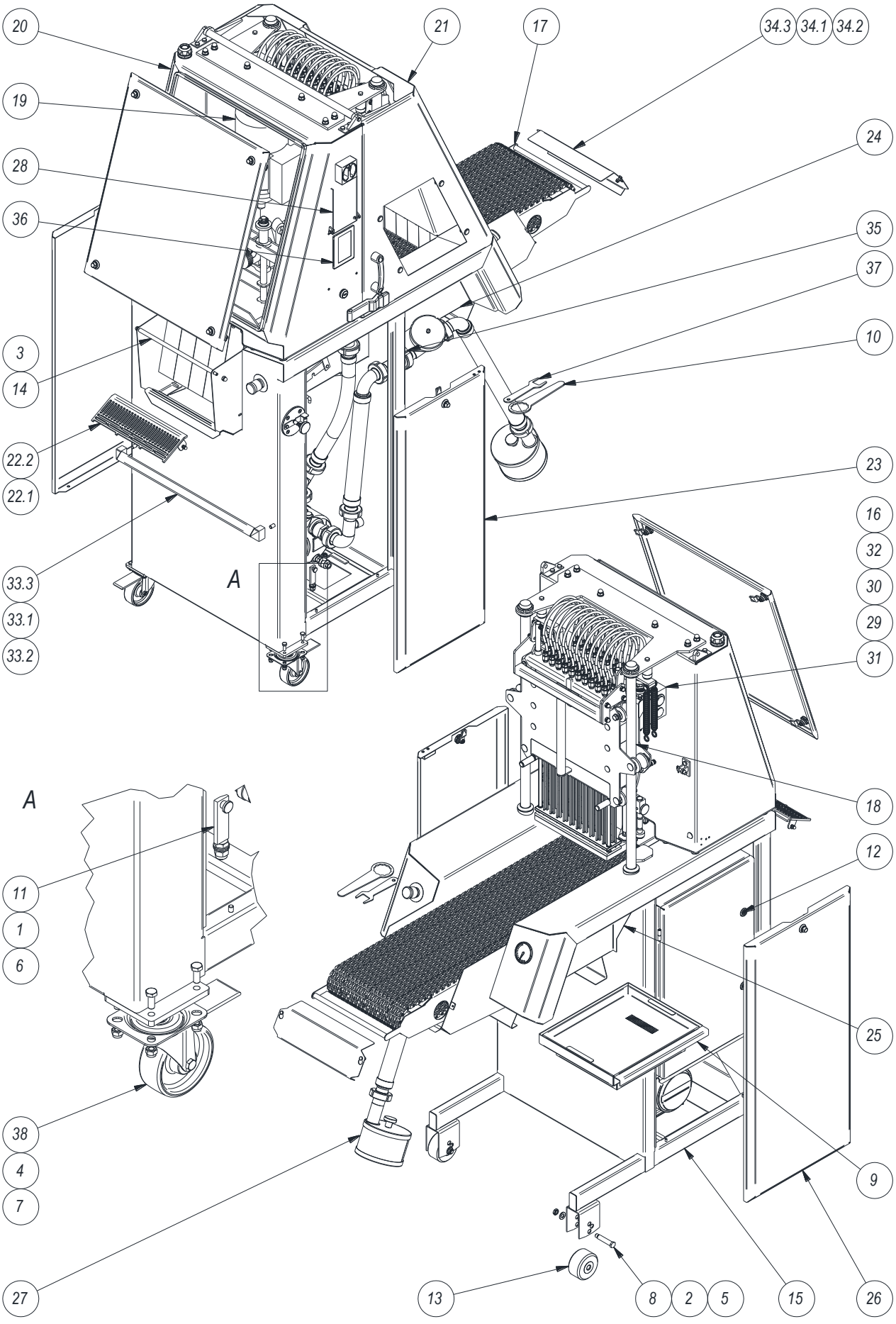


FIGURE NAME				FIGURE NO.			
Nastrzykiwarka / Brine injector MHM-21 A				**K36.00.00.000-509s**			
POS.	INDEX	NAME	QTY.	POS.	INDEX	NAME	QTY.
1	MA00003389	Podkładka / Washer	2	24	K36.13.02.000-101	Osłona boczna / Side shield	1
2	MA00003392	Podkładka / Washer	2	25	K36.13.02.000-101 lustro	Osłona boczna / Side shield	1
3	MA00002590	Nakrętka kołpakowa / Acorn nut	2	26	K36.13.03.000-508s	Osłona / Shield	1
4	MA00004590	Śruba / Bolt	8	27	K36.14.00.000-509s	Instalacja solanki / Brine system	1
5	MA00009322	Nakrętka / Nut	2	28	K36.17.00.000-503	Osłona / Shield	1
6	MA00002628	Nakrętka / Nut	1	29	K36.40.00.000-505	Głowica x3 / Head x3	1
7	MA00002633	Nakrętka / Nut	8	30	K36.41.00.000-505	Głowica x2 / Head x2	1
8	K01.00.00.007	Oś koła / Wheel axle	2	31	K36.43.00.000-505	Głowica x3 / Head x3	1
9	K23.05.00.000	Szuflada / Drawer	1	32	K36.44.00.000-505	Głowica x4 / Head x4	1
10	K34.00.00.003	Klucz / Spanner	1	33.1	MA00003389	Podkładka / Washer	2
11	K34.06.26.000-075	Wspornik sprężyny / Spring bracket	1	33.2	MA00006063	Śruba / Bolt	2
12	K34.20.00.000-024a	Obudowa styczników / Contactors shield	1	33.3	K36.51.01.000-507	Zaczep / Catch	1
13	K36.00.00.001-508s	Koło jezdne / Wheel	2	34.1	MA00006074	Śruba / Bolt	2
14	K36.00.00.100-295	Pręt / Rod	1	34.2	MA00002632	Nakrętka / Nut	2
15	K36.01.00.000-509s	Korpus / Housing	1	34.3	K36.60.00,001-295	Blacha / Metal plate	1
16	K36.02.00.000-505	Głowica / Head	1	35	K36.80.00.000-509s	Uchwyt kpl / Holder	1
17	K36.03.00.000-350	Przenośnik / Conveyor	1	36	K70.10.00.000-508	Panel sterujący / Control panel	1
18	K36.04.00.000-505	Zespół kolumn / Collumn set	1	37	DE00008213	Klucz / Spanner	1
19	K36.06.00.000-214	Układ napędowy / Drive unit	1	38	MA00020525	Koło / Wheel	2
20	K36.07.00.000-508s	Osłona motoreduktora / Motoreducer shield	1				
21	K36.08.00.000-508s	Osłona głowicy / Head shield	1				
22.1	MA00002589	Nakrętka kołpakowa / Acorn nut	2				
22.2	K36.11.00.000-350	Ociek / Drip moulding	1				
23	K36.13.01.000-508s	Osłona / Shield	1				

FIGURE NAME	FIGURE NO.
Szuflada / Drawer	**K23.05.00.000**

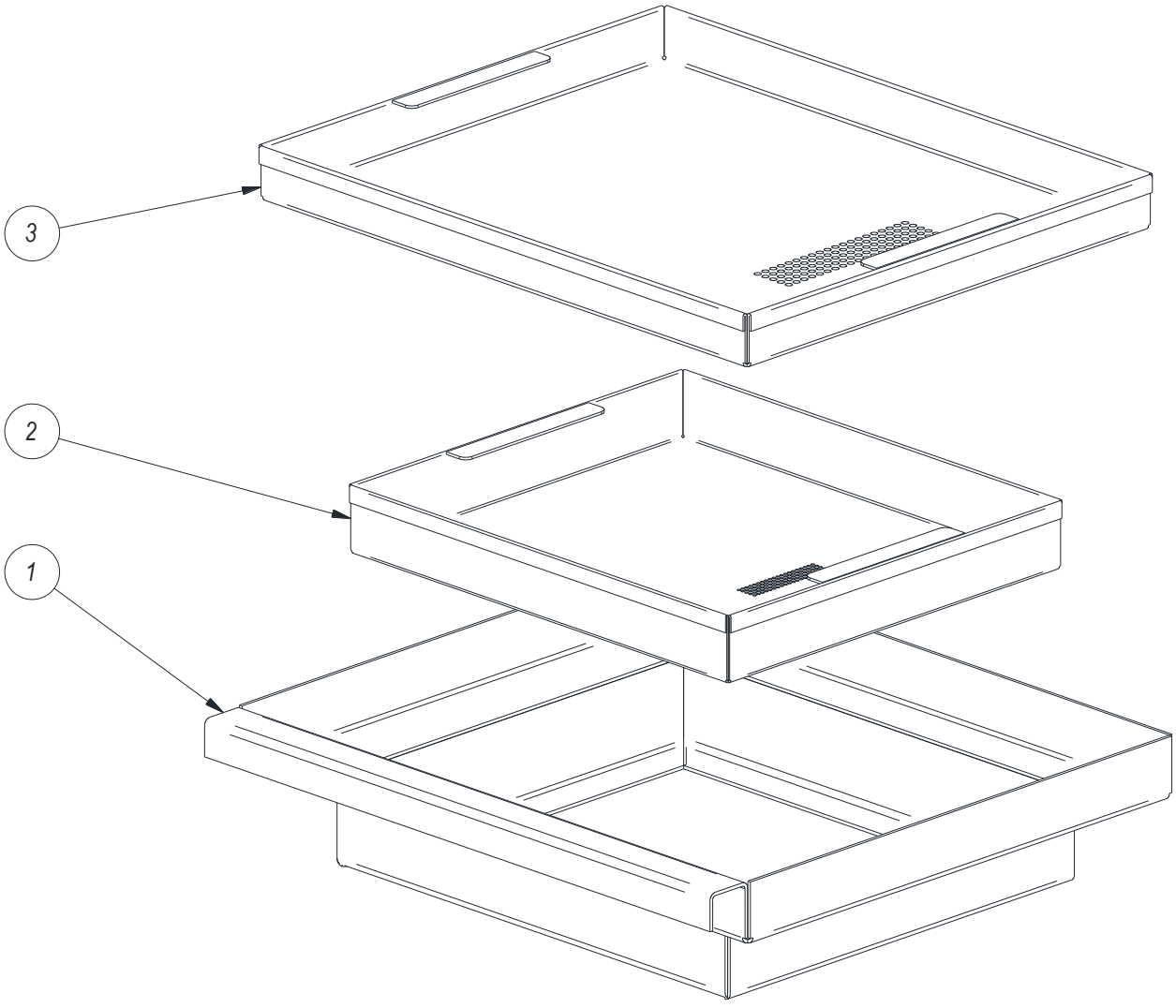


FIGURE NAME				FIGURE NO.			
Szuflada / Drawer				**K23.05.00.000**			
POS.	INDEX	NAME	QTY.	POS.	INDEX	NAME	QTY.
1	K23.05.01.000	Korpus szuflady / Drawer body	1	25			
2	K23.05.02.000	Sito 1 / Sieve 1	1	26			
3	K23.05.03.000	Sito 2 / Sieve 2	1	27			
4				28			
5				29			
6				30			
7				31			
8				32			
9				33			
10				34			
11				35			
12				36			
13				37			
14				38			
15				39			
16				40			
17				41			
18				42			
19				43			
20				44			
21				45			
22				46			
23				47			
24				48			

FIGURE NAME	FIGURE NO.
Głowica / Head	**K36.02.00.000-505**

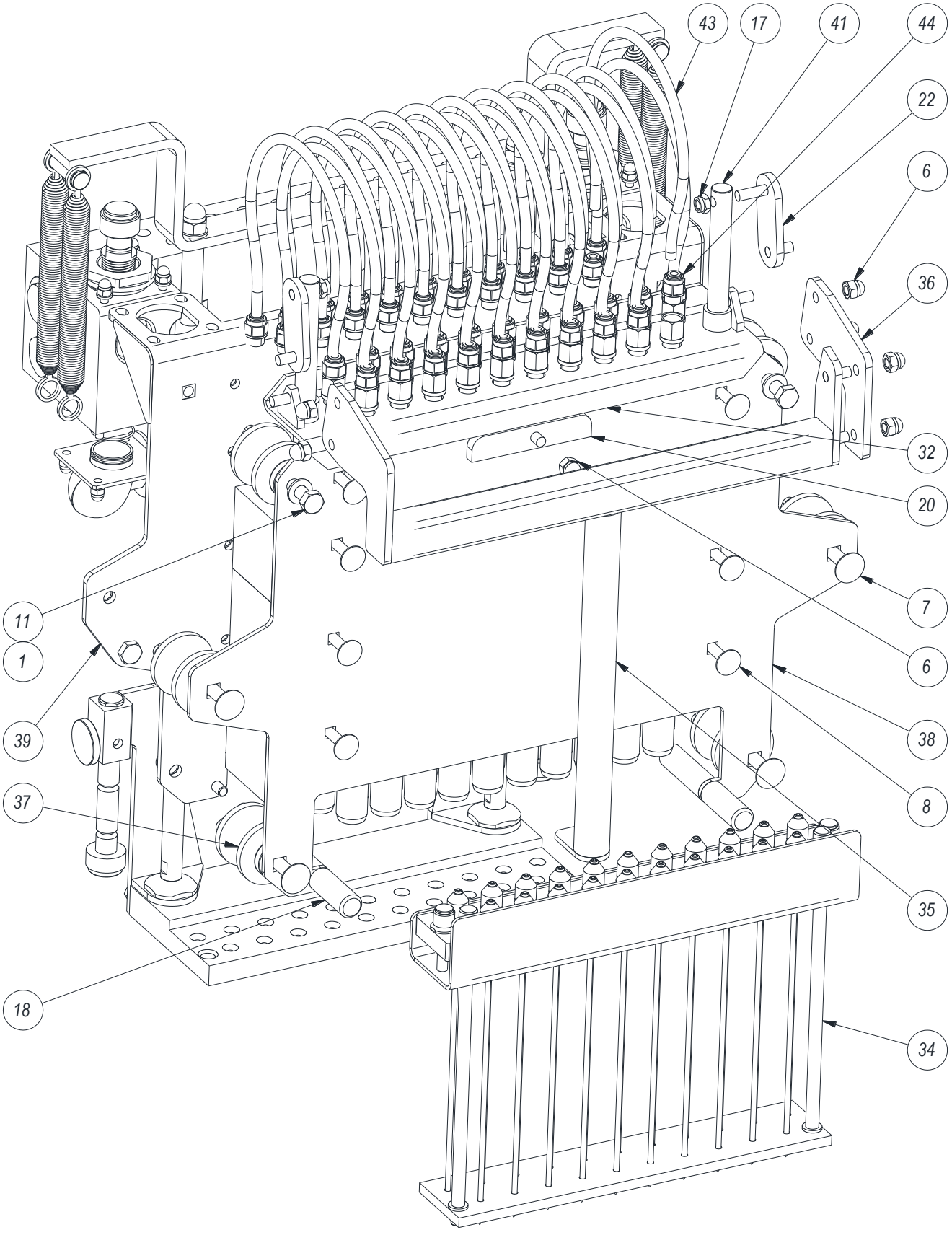


FIGURE NAME	FIGURE NO.
Głowica / Head	**K36.02.00.000-505**

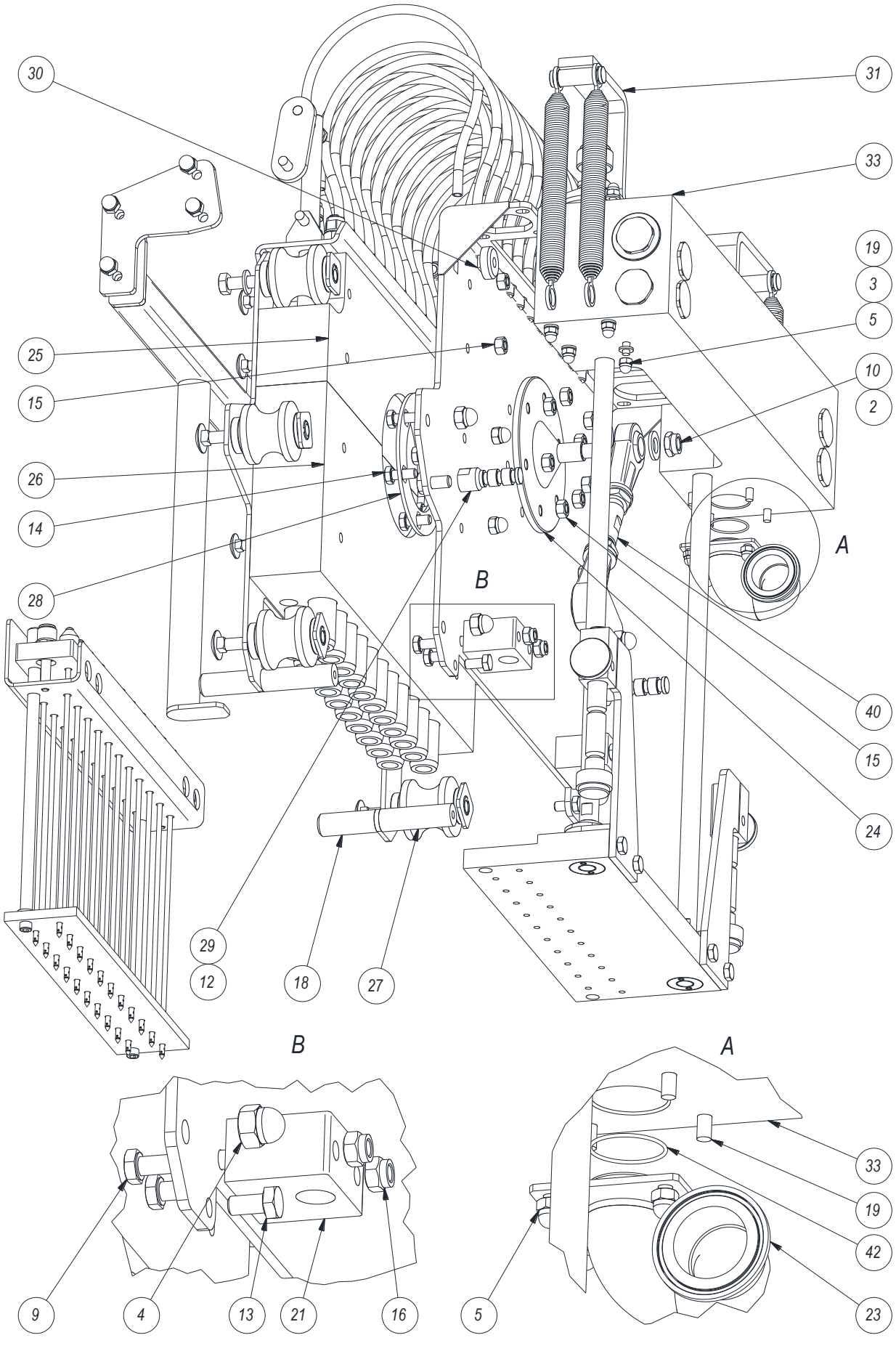


FIGURE NAME				FIGURE NO.			
Głowica / Head				**K36.02.00.000-505**			
POS.	INDEX	NAME	QTY.	POS.	INDEX	NAME	QTY.
1	MA00003389	Podkładka / Washer	2	25	K36.02.00.002-505	Płyta górna / Upper plate	1
2	MA00003392	Podkładka / Washer	1	26	K36.02.00.004-505	Płyta / Plate	1
3	MA00003413	Podkładka / Washer	12	27	K36.02.00.007-026	Walek 1 / Shaft 1	2
4	MA00002585	Nakrętka kołpakowa / Acorn nut	4	28	K36.02.00.010-025	Blacha zabezp. / Protective plate	1
5	MA00002589	Nakrętka kołpakowa / Acorn nut	16	29	K36.02.00.012-025	Pręt 1 / Rod 1	2
6	MA00002590	Nakrętka kołpakowa / Acorn nut	11	30	K36.02.00.020-502	Nakrętka / Nut	2
7	MA00004617	Śruba / Bolt	4	31	K36.02.01.000-505	Sprzęg kpl / Coupling set	1
8	MA00004620	Śruba / Bolt	8	32	K36.02.02.000-505	Zespół amortyzacji igiel / Needle shock absorber	1
9	MA00004606	Śruba / Bolt	4	33	K36.02.04.000-504	Zespół płyty głównej / Main boar set	1
10	MA00005963	Nakrętka / Nut	1	34	K36.02.05.000-505	Głowica wymienna / Exchangeable head	1
11	MA00004457	Śruba / Bolt	2	35	K36.02.06.000-505	Dźwignia / Lever	1
12	MA00006063	Śruba / Bolt	2	36	K36.02.06.006-505	Zaczep 6 / Catch 6	1
13	MA00004588	Śruba / Bolt	2	37	K36.02.08.000-025	Rolka 2 kpl / Roll 2 set	6
14	MA00004590	Śruba / Bolt	6	38	K36.02.14.000-505	Zespół blachy / Plate set	1
15	MA00002620	Nakrętka / Nut	10	39	K36.02.21.000-505	Blacha kpl / Metal plate set	1
16	MA00002633	Nakrętka samozabezpieczająca / Self-locking nut	4	40	K36.06.01.000-025	Cięgno / String	1
17	MA00002633	Nakrętka samozabezpieczająca / Self-locking nut	2	41	K39.02.00.014-100	Zaczep 1 / Catch 1	2
18	K34.02.00.008-022	Walek 2 / Shaft 2	2	42	MA00002951	Oring	1
19	K34.02.00.011-022	Szpilka M6 / Pin M6	8	43	MA00010237	Wąż pneumat. / Pneumatic hose L=630	21
20	K34.02.00.015-507	Płaskownik / Flat bar	1	44	MA00005812	Złączka / Connector	42
21	K34.02.00.050-507	Kostka / Cube	2	45			
22	K34.02.09.000-507	Zaczep / Catch	2	46			
23	K34.14.19.000-022	Króciec głowicy / Head connector	1	47			
24	K36.02.00.001-025	Czop / Pivot	1	48			

FIGURE NAME	FIGURE NO.
Sprzęg kpl / Coupling set	**K36.02.01.000-505**

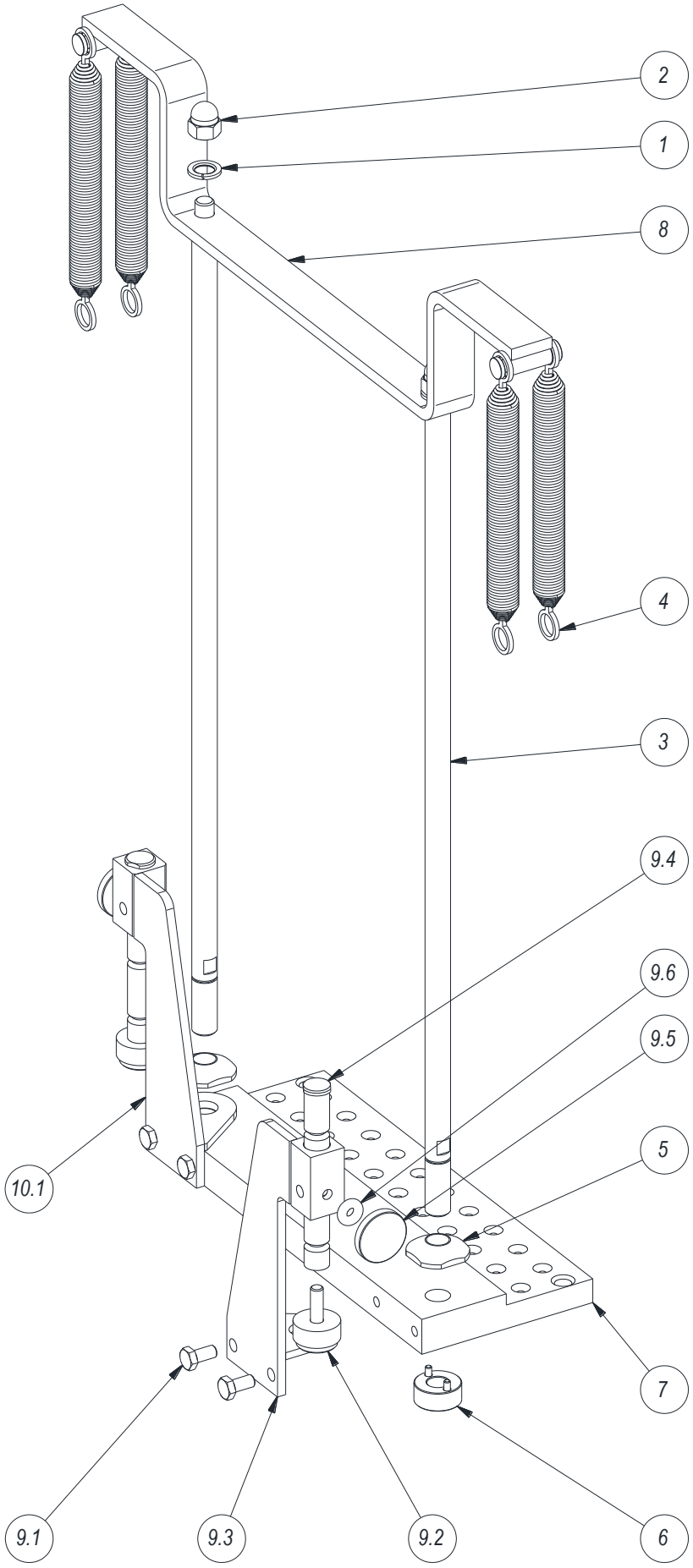


FIGURE NAME				FIGURE NO.			
Sprzęg kpl / Coupling set				**K36.02.01.000-505**			
POS.	INDEX	NAME	QTY.	POS.	INDEX	NAME	QTY.
1	MA00003391	Podkładka sprężysta / Spring washer	2				
2	MA00002586	Nakrętka kołpakowa / Acorn nut	2				
3	K34.02.01.001-507	Pręt / Rod	2				
4	K34.02.01.400-088	Sprężyna naciągowa / Tesion spring	4				
5	K34.02.05.102-035	Nakrętka / Nut	2				
6	K34.02.05.160-022	Nakrętka oporowa / Back nut	2				
7	K36.02.01.002-505	Belka spychająca / Beam	1				
8	K36.02.01.100-086	Belka / Beam	1				
9.1	MA00004588	Śruba / Bolt	4				
9.2	K34.02.15.200-506	Odbój / Fender	2				
9.3	K36.02.15.100-500	Zderzak / Buffer	1				
9.4	K36.02.15.105-500	Pręt / Rod	2				
9.5	K39.02.15.109-027	Pokrętło / Handwheel	2				
9.6	MA00017578	Oring	2				
10.1	K36.02.20.100-500	Zderzak / Buffer	1				

FIGURE NAME	FIGURE NO.
Zespół amortyzacji igiel / Needle shock absorber	**K36.02.02.000-505**

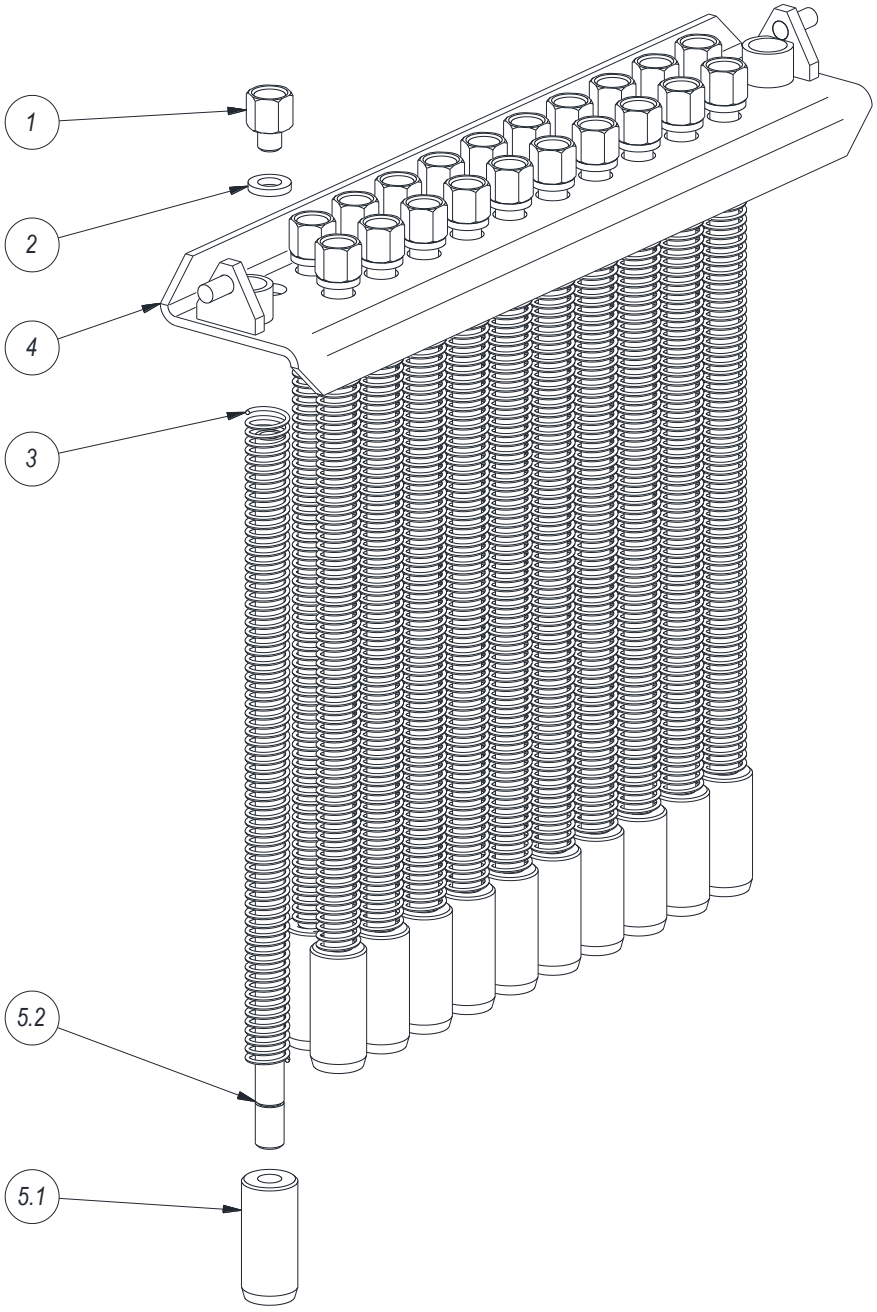


FIGURE NAME				FIGURE NO.			
Zespół amortyzacji igiel / Needle shock absorber				**K36.02.02.000-505**			
POS.	INDEX	NAME	QTY.	POS.	INDEX	NAME	QTY.
1	K10.02.00.005_a	Redukcja M10 na G1/4" / Reduction	21				
2	K34.02.02.001-022	Podkładka 1 / Washer 1	21				
3	K34.02.02.005-035	Sprężyna igieł / Needle spring	21				
4	K36.02.02.100-025	Zespół blachy / Plate set	1				
5.1	K39.02.02.201-100	Tuleja / Bush	21				
5.2	K39.02.02.202-100	Rura / Pipe Ø12x2	21				

FIGURE NAME	FIGURE NO.
Zespół płyty głównej / Main board set	**K36.02.04.000-504**

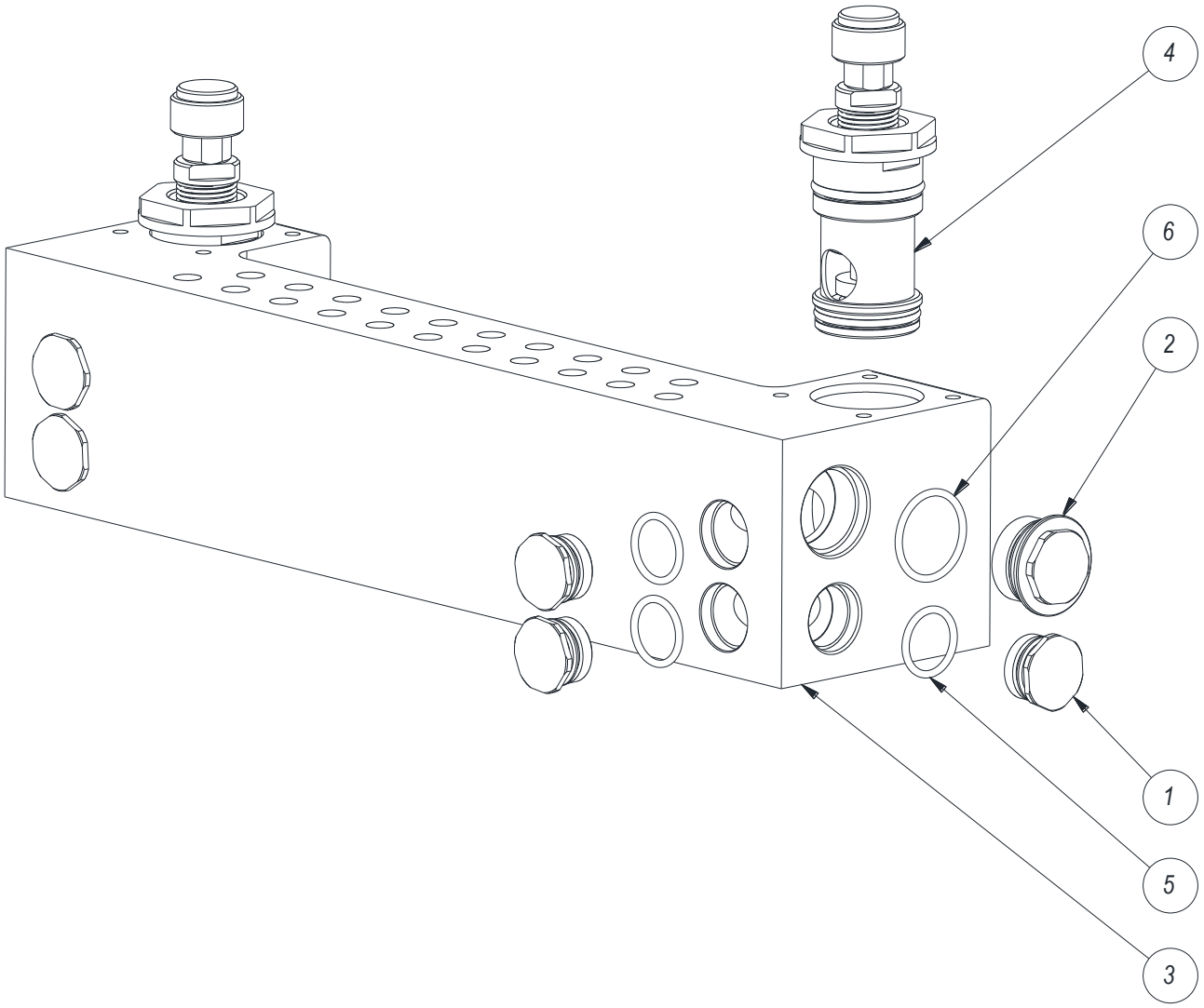


FIGURE NAME				FIGURE NO.			
Zespół płyty głównej / Main board set				**K36.02.04.000-504**			
POS.	INDEX	NAME	QTY.	POS.	INDEX	NAME	QTY.
1	K34.02.00.006-022	Korek głowicy 1 / Head plug 1	6	25			
2	K36.02.00.009-025	Korek głowicy 2 / Head plug 2	2	26			
3	K36.02.04.001-025	Płyta górna / Upper plate	1	27			
4	K36.02.04.200-504	Zawór odcinający / Cut-off valve	2	28			
5	MA00002928	Oring	6	29			
6	MA00002956	Oring	2	30			
7				31			
8				32			
9				33			
10				34			
11				35			
12				36			
13				37			
14				38			
15				39			
16				40			
17				41			
18				42			
19				43			
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23				47			
24				48			

FIGURE NAME	FIGURE NO.
Zawór odcinający / Cut-off valve	**K36.02.04.200-504**

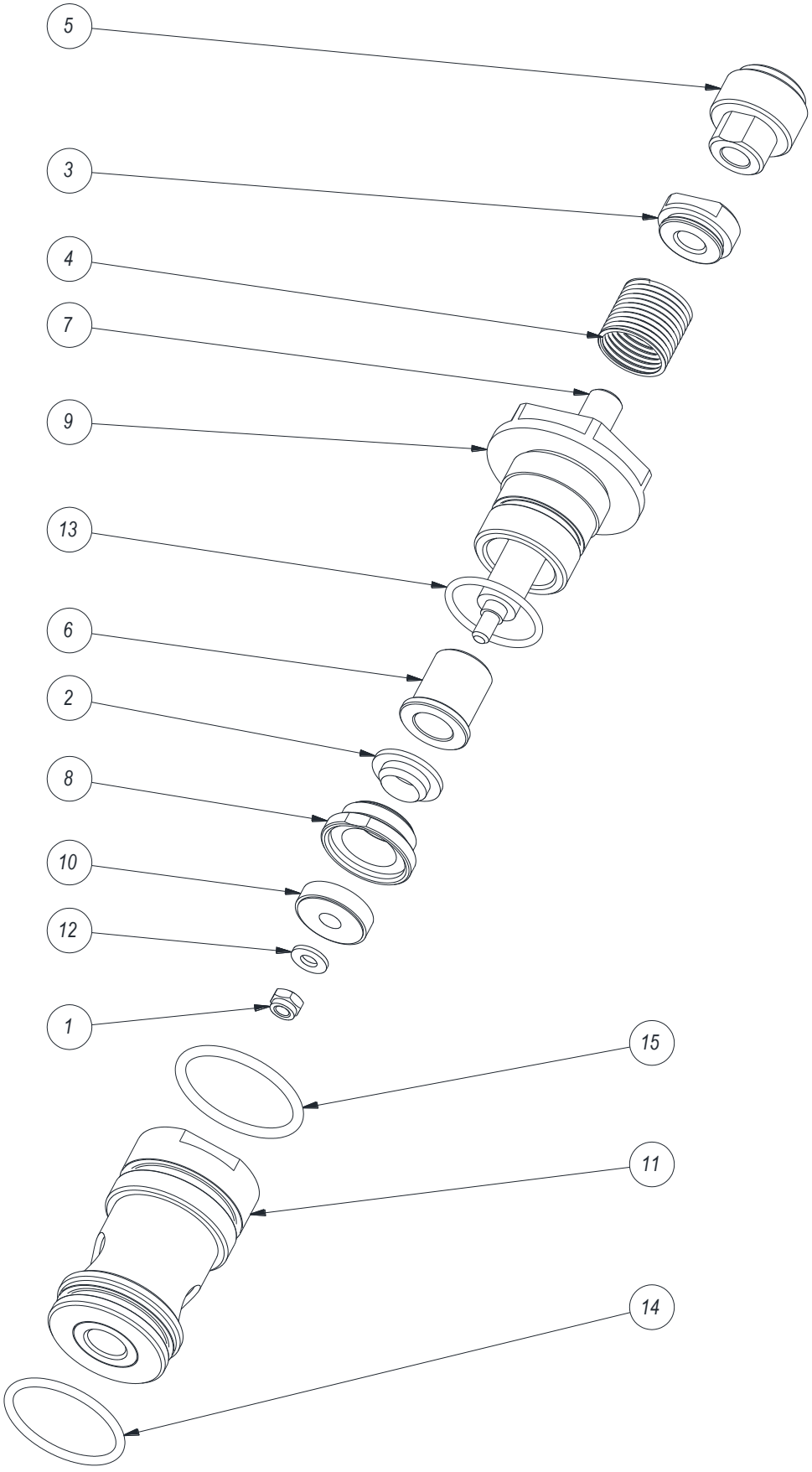

FIGURE NAME				FIGURE NO.			
Zawór odcinający / Cut-off valve				**K36.02.04.200-504**			
POS.	INDEX	NAME	QTY.	POS.	INDEX	NAME	QTY.
1	MA00002632	Nakrętka samozabezpieczająca / Self-locking nut	1	25			
2	K01.04.02.007	Zgarniacz / Drift fender A8	1	26			
3	K01.04.02.010	Nakrętka / Nut M12	1	27			
4	K01.04.02.012-a	Sprężyna zaworu / Valve spring	1	28			
5	K01.04.02.100	Zderzak / Buffer	1	29			
6	K33.02.08.340	Tuleja ślizgowa / Slide bush	1	30			
7	K34.02.04.201-022	Trzpień / Arbor	1	31			
8	K34.02.04.202-022	Tulejka dociskowa / Pressure sleeve	1	32			
9	K34.02.04.204-022	Korpus zaworu / Valve body	1	33			
10	K34.02.04.220-022	Grzybek / Valve head	1	34			
11	K36.02.04.210-025	Korpus / Body	1	35			
12	K36.02.04.224-504	Podkładka / Washer	1	36			
13	MA00002945	Oring	1	37			
14	MA00002961	Oring	1	38			
15	MA00002968	Oring	1	39			
16				40			
17				41			
18				42			
19				43			
20				44			
21				45			
22				46			
23				47			
24				48			

FIGURE NAME	FIGURE NO.
Głowica wymienna / Exchangeable head	**K36.02.05.000-505**

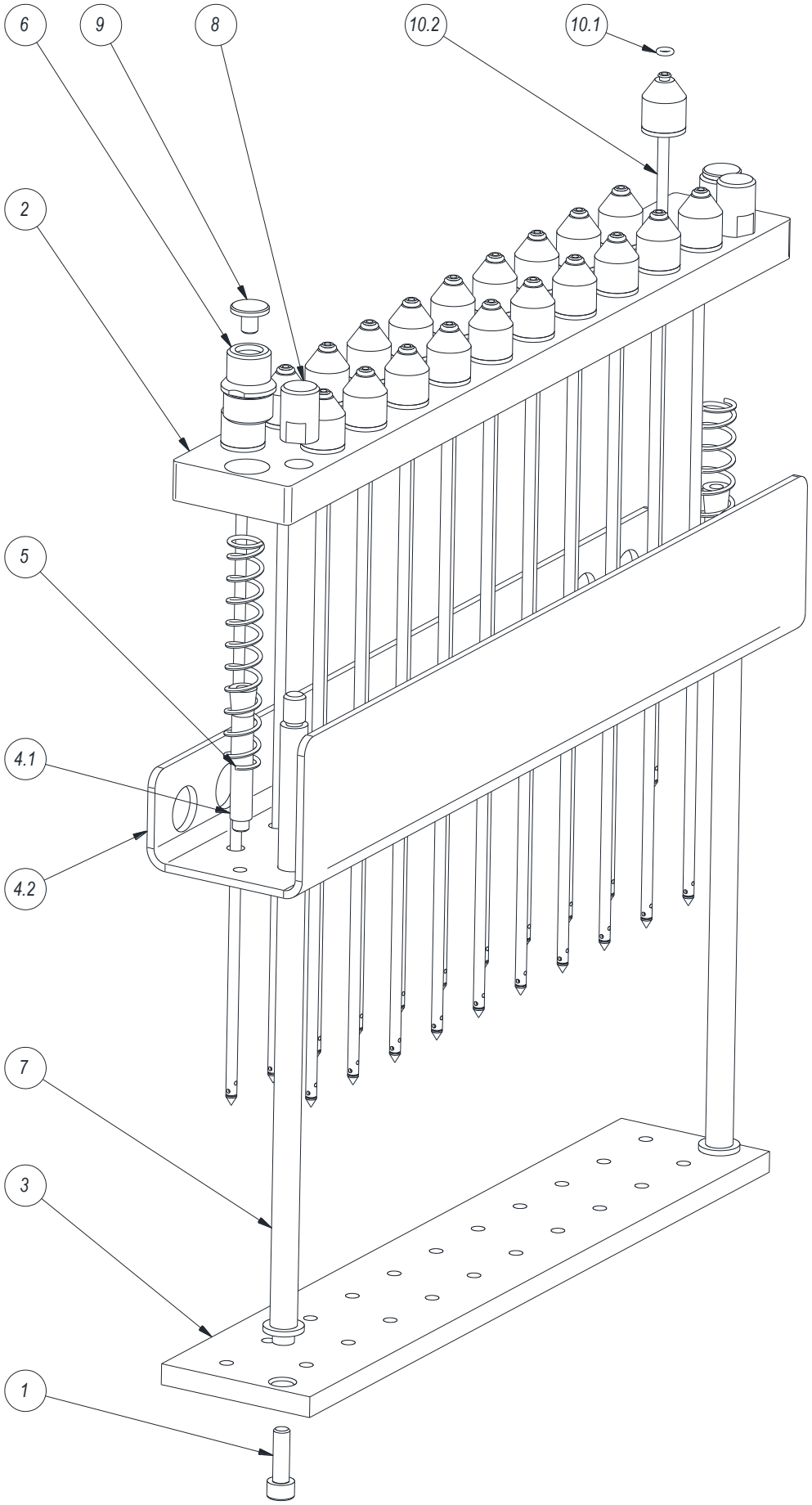

FIGURE NAME				FIGURE NO.			
Głowica wymienna / Exchangeable head				**K36.02.05.000-505**			
POS.	INDEX	NAME	QTY.	POS.	INDEX	NAME	QTY.
1	MA00004569	Śruba / Bolt	2				
2	K36.02.05.203-505	Płyta / Plate	1				
3	K36.02.05.205-505	Płyta / Plate	1				
4.1	K34.02.05.252-507	Trzpień / Pin	2				
4.2	K36.02.05.251-505	Blacha igłowa / Needles metal plate	1				
5	K39.02.16.005a-100	Sprężyna / Spring	2				
6	K39.02.16.007-100a	Tulejka / Bush	2				
7	K39.02.16.206-100	Pręt / Rod	2				
8	K39.02.16.207-100a	Podkładka / Washer	2				
9	K59.51.16.206	Śruba / Bolt	2				
10.1	MA00011373	Oring	21				
10.2	P247.00.00.000	Igła / Needle Ø4	21				

FIGURE NAME	FIGURE NO.
Rolka 2 kpl. / Roll 2 set	**K36.02.08.000-025**

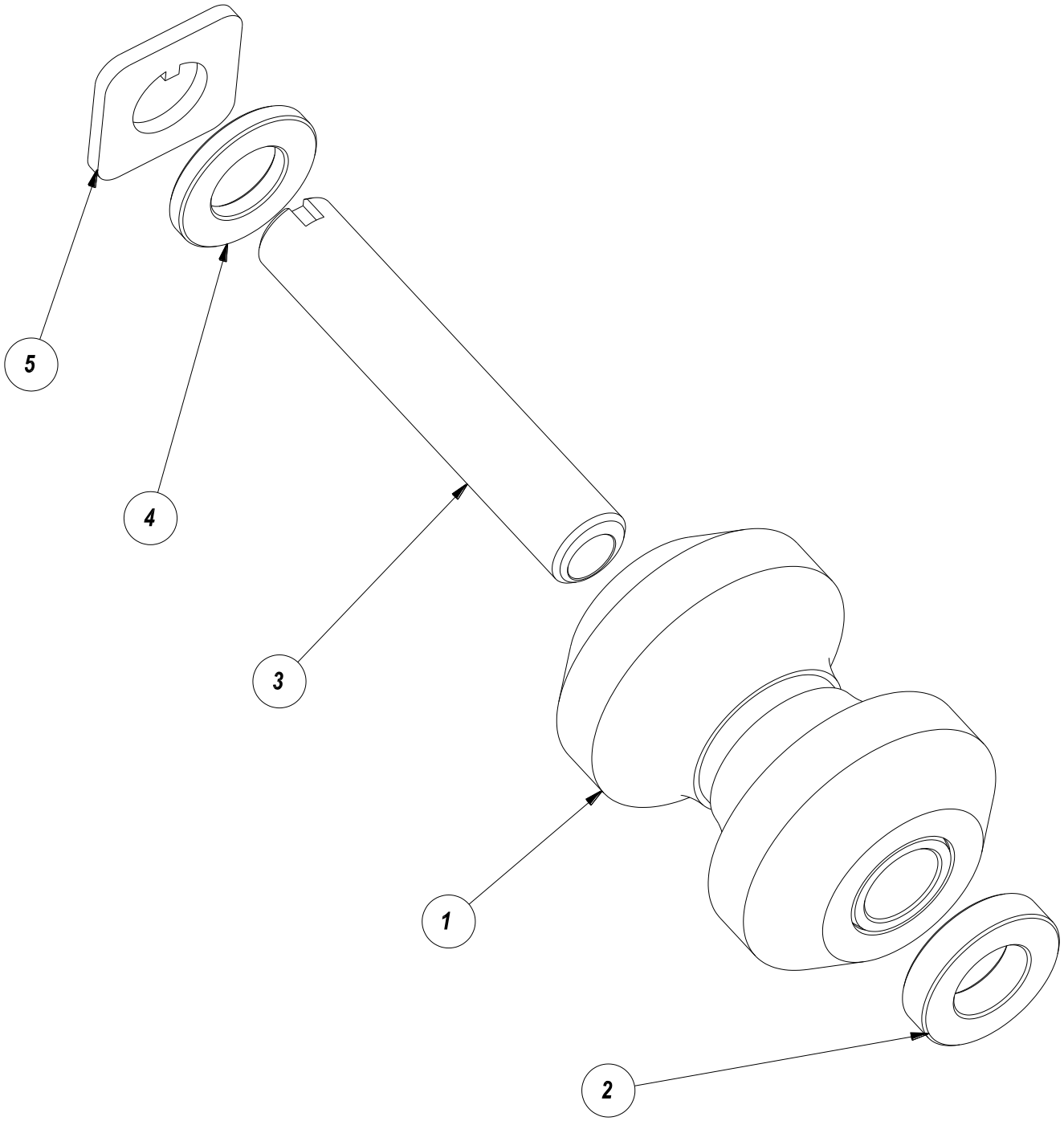

FIGURE NAME				FIGURE NO.			
Rolka 2 kpl. / Roll 2 set				**K36.02.08.000-025**			
POS.	INDEX	NAME	QTY.	POS.	INDEX	NAME	QTY.
1	K36.02.07.100-025	Rolka / Roll	1	25			
2	K34.02.07.003-022	Podkładka dystansowa / Distance washer	1	26			
3	K36.02.08.001-025	Tulejka 1 / Bush 1	1	27			
4	K34.02.08.002-022	Podkładka dystansowa / Distance washer	1	28			
5	K34.02.08.003-022	Podkładka regulacyjna / Adjustment washer	1	29			
6				30			
7				31			
8				32			
9				33			
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FIGURE NAME	FIGURE NO.
Cięgło / String	**K36.06.01.000-025**

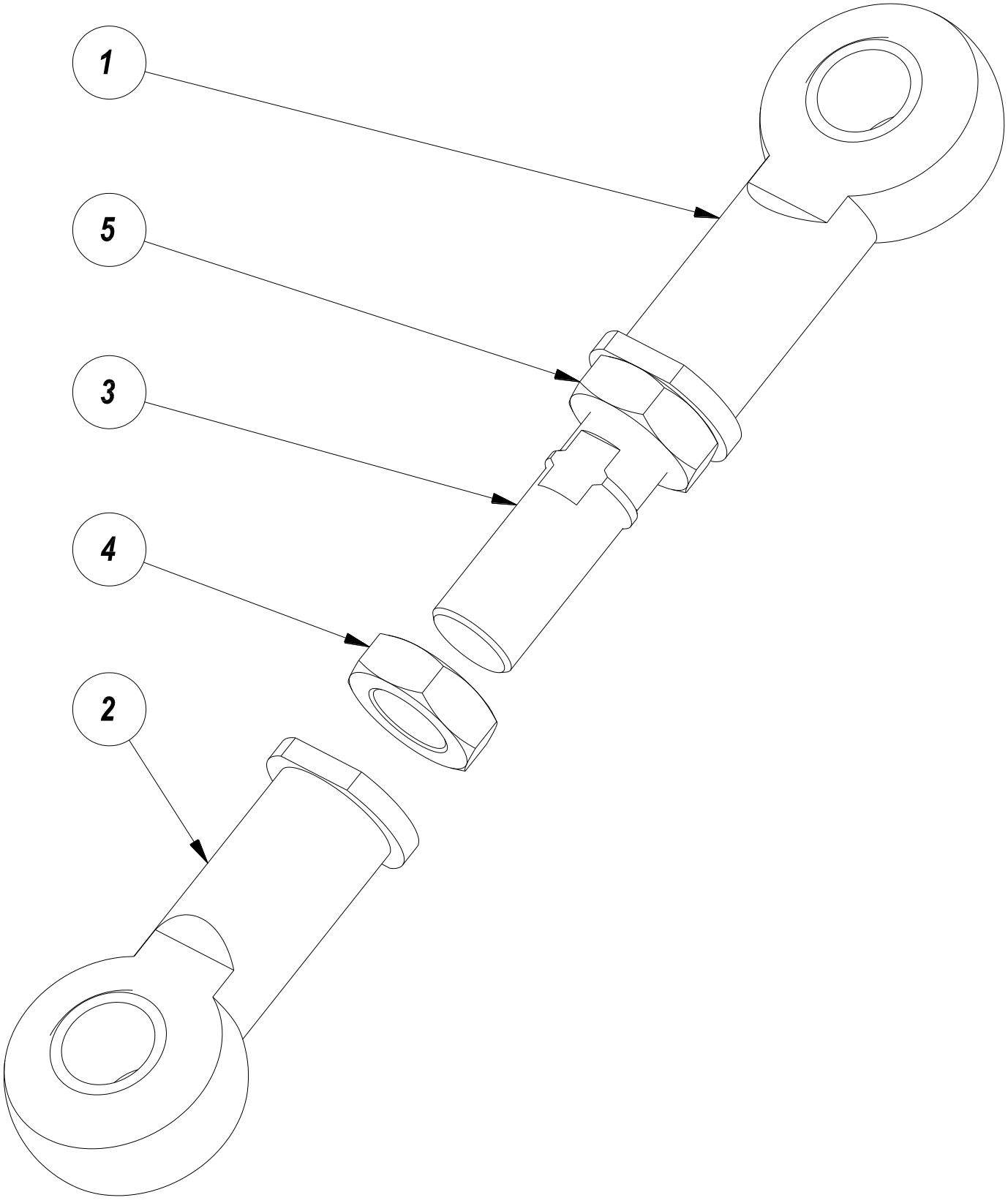

FIGURE NAME				FIGURE NO.			
Cięgło / String				**K36.06.01.000-025**			
POS.	INDEX	NAME	QTY.	POS.	INDEX	NAME	QTY.
1	MA00015689	Główka cięgła z gwintem wew. / Rod head	1	25			
2	MA00015690	Główka cięgła z gwintem wew. / Rod head	1	26			
3	K36.06.01.001/025	Wałek / Shaft	1	27			
4	MA00005906	Nakrętka / Nut	1	28			
5	MA00009359	Nakrętka M16L / Nut	1	29			
6				30			
7				31			
8				32			
9				33			
10				34			
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FIGURE NAME	FIGURE NO.
Przenośnik / Conveyor	**K36.03.00.000-350**

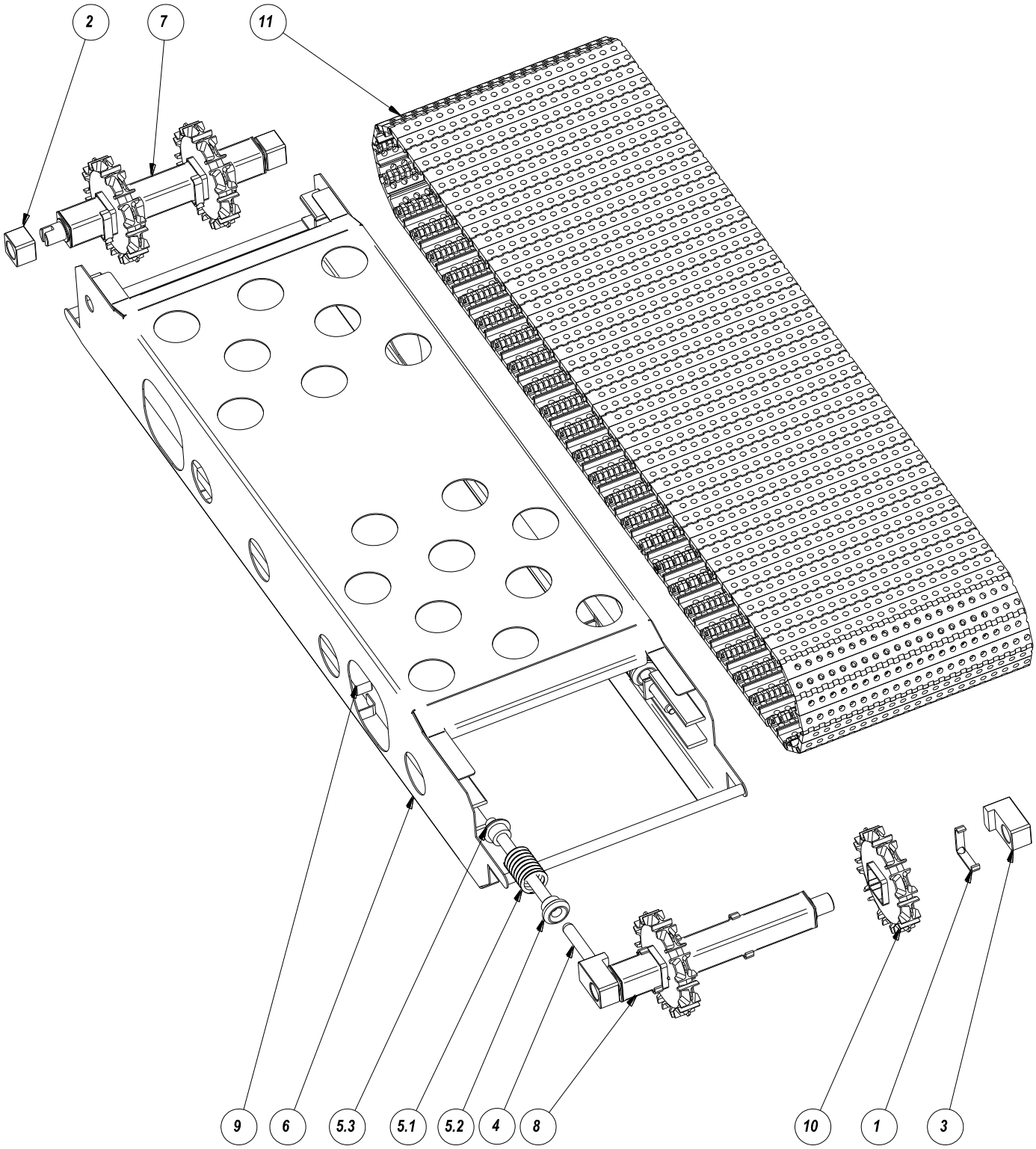

FIGURE NAME				FIGURE NO.			
Przenośnik / Conveyor				**K36.03.00.000-350**			
POS.	INDEX	NAME	QTY.	POS.	INDEX	NAME	QTY.
1	MA00000997	Pierścień blokujący / Lock ring	12				
2	K01.05.05.000	Kostka / Cube	2				
3	K24.03.04.000	Kostka / Cube	2				
4	K24.03.05.000	Trzpień / Arbor	2				
5	K24.03.06.000	Napinacz / Stretcher	2				
5.1	K02.05.00.300	Sprężyna regulatora / Regulator spring	1				
5.2	K24.03.06.001/a	Trzpień / Arbor	1				
5.3	K27.07.19.002	Podkładka / Washer	1				
6	K36.03.01.000-295	Sanki / Frame	1				
7	K36.03.02.000-036	Wałek 1 / Shaft 1	1				
8	K36.03.03.000-036	Wałek 2 / Shaft 2	1				
9	K39.03.00.001-018	Listwa / Bar	2				
10	MA00014807	Koło zębate / Gear wheel	6				
11	MA00014806	Taśma / Belt	1				

FIGURE NAME	FIGURE NO.
Zespół kolumn / Collumn set	**K36.04.00.000-505**

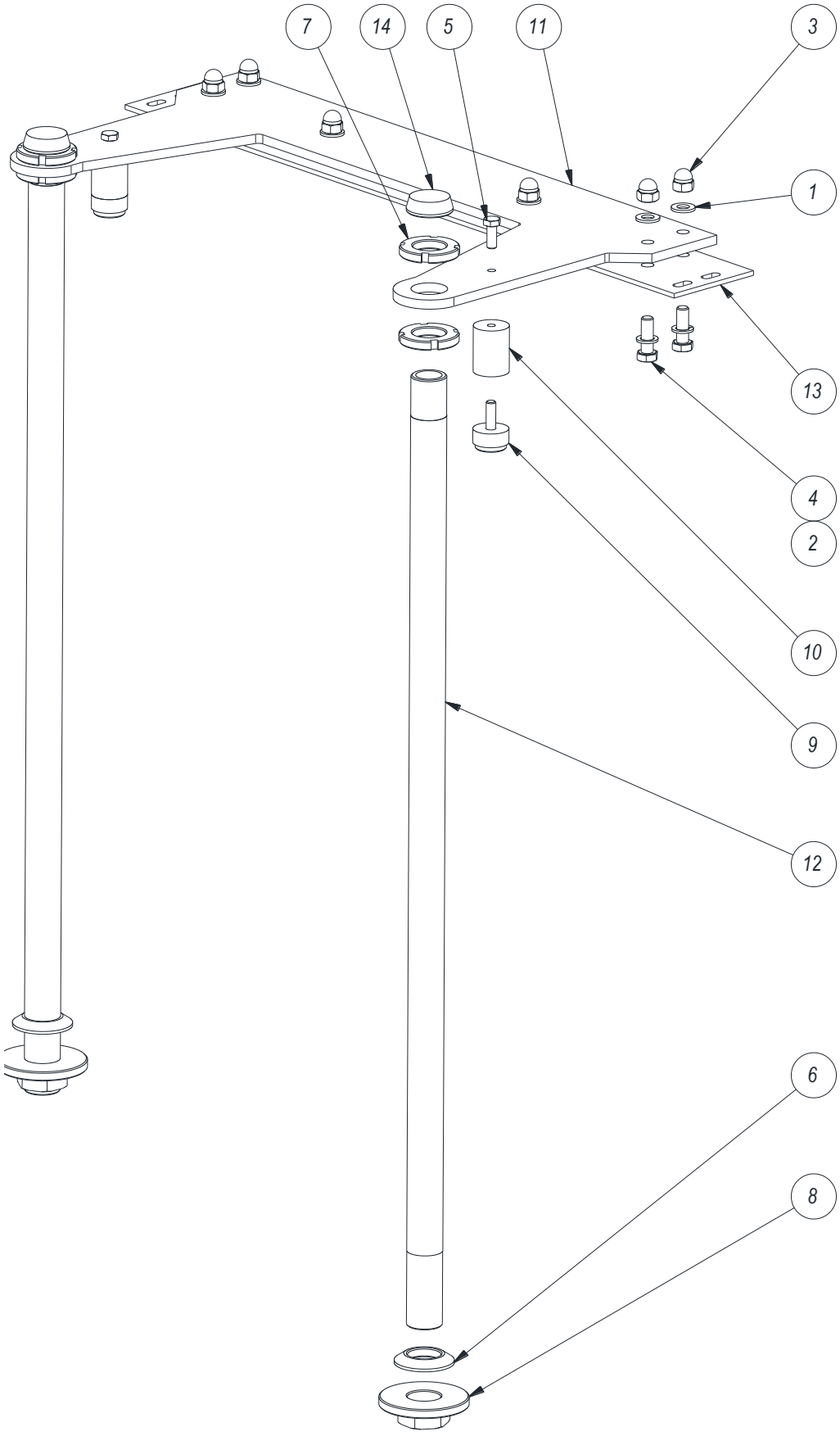

FIGURE NAME				FIGURE NO.			
Zespół kolumn / Collumn set				**K36.04.00.000-505**			
POS.	INDEX	NAME	QTY.	POS.	INDEX	NAME	QTY.
1	MA00003389	Podkładka / Washer	6	25			
2	MA00003388	Podkładka sprężysta / Spring washer	6	26			
3	MA00002585	Nakrętka / Nut	6	27			
4	MA00004446	Śruba / Bolt	6	28			
5	MA00004590	Śruba / Bolt	2	29			
6	K22.03.04.000	Podkładka / Washer 1	2	30			
7	K22.03.05.000	Nakrętka / Nut M30x2	4	31			
8	K22.03.07.000	Nakrętka / Nut	2	32			
9	K34.02.15.200-506	Odbój / Fender	2	33			
10	K36.04.00.002-505	Wałek / Shaft	2	34			
11	K36.04.11.001-101	Balcha 1 / Metal plate 1	1	35			
12	K36.04.14.000-101	Rura 1 / Pipe 1	2	36			
13	K36.04.15.000-101	Wspornik / Bracket	1	37			
14	K36.04.16.000-025	Zaślepka / Plug	2	38			
15				39			
16				40			
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FIGURE NAME	FIGURE NO.
Układ napędowy / Drive unit	**K36.06.00.000-214**

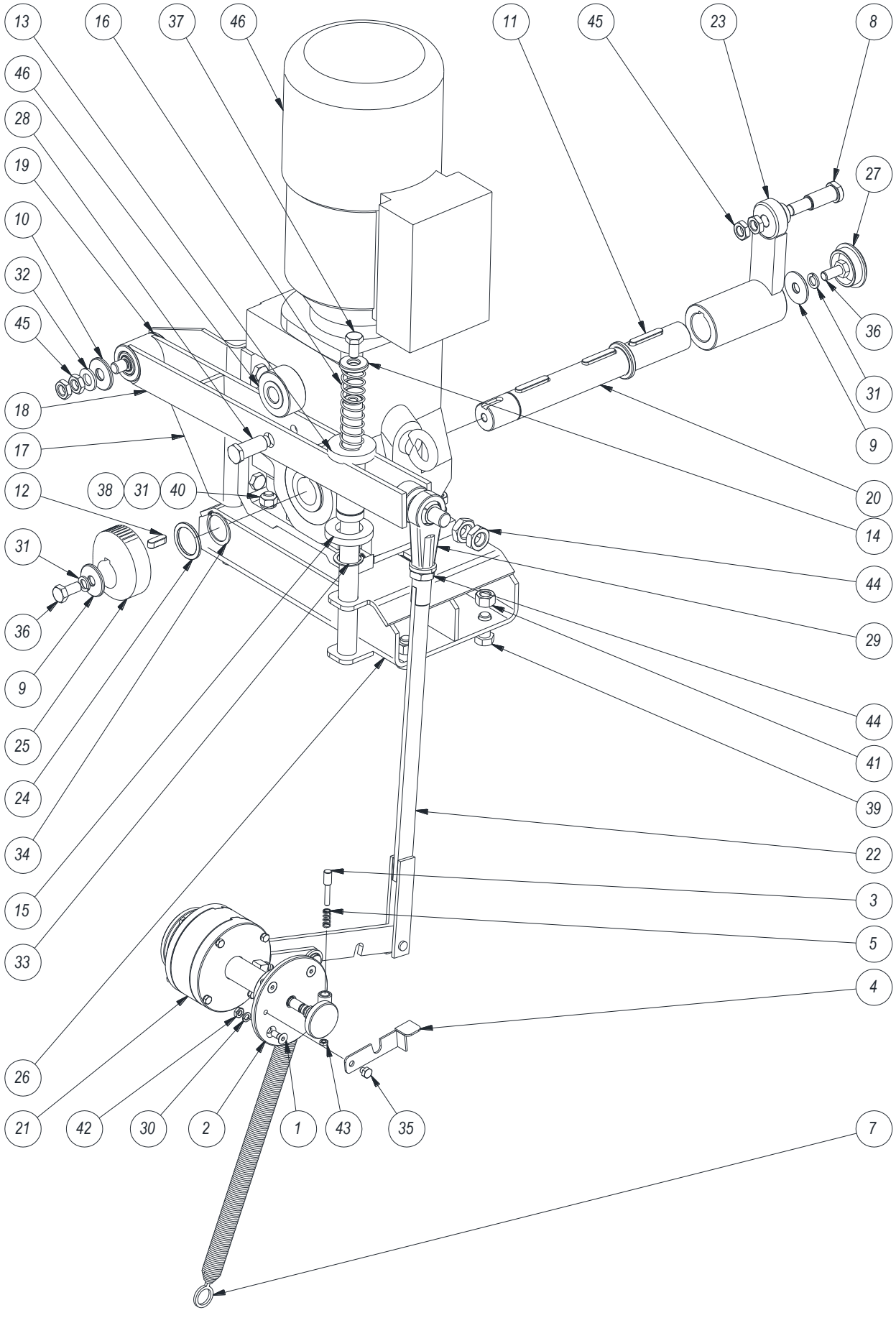

FIGURE NAME				FIGURE NO.			
Układ napędowy / Drive unit				**K36.06.00.000-214**			
POS.	INDEX	NAME	QTY.	POS.	INDEX	NAME	QTY.
1	MA00005428	Śruba z łbem stoż / Bolt	4	25	K36.06.12.000-064	Krzywka / Cam	1
2	K01.02.11.000	Tarcza / Disk	1	26	K36.06.13.000-101	Podstawa mot. / Motoreducer base	1
3	K01.02.14.000	Trzpień / Arbor	1	27	K36.06.25.001	Zaślepka / Plug	1
4	K01.02.15.000	Dźwignia / Lever	1	28	MH-2-26-17-00-006	Sworzeń 2 / Pin 2	1
5	K01.02.16.000	Sprężyna zatrzasku / Catch spring	1	29	MA00015690	Główka / Rod end	1
6	K01.13.00.002	Koło dźwigni posuwu / Lever wheel	1	30	MA00003412	Podkładka sprężysta / Spring washer	4
7	K02.00.00.100a	Sprężyna naciągowa / Pull spring	1	31	MA00003388	Podkładka sprężysta / Spring washer	10
8	K08.06.00.001	Sworzeń / Pin	1	32	MA00003392	Podkładka / Washer	1
9	K12.00.00.005	Podkładka korbowodu / Connecting rod washer	2	33	MA00011180	Pierścień osadczy sprężynujący / Circlip	1
10	K12.00.00.007	Podkładka / Washer	1	34	MA00003212	Pierścień osadczy sprężynujący / Circlip	1
11	K12.06.00.002	Klin 1 / Taper key 1	3	35	MA00010097	Śruba / Bolt	1
12	K12.06.00.003/1	Klin 2 / Taper key 2	1	36	MA00006218	Śruba / Bolt	2
13	K24.06.21.002/a	Tuleja / Sleeve	1	37	MA00005882	Śruba / Bolt	1
14	K24.06.21.005	Podkładka / Washer	1	38	MA00009188	Śruba / Bolt	8
15	K24.06.21.006	Pierścień / Ring	1	39	MA00004464	Śruba / Bolt	4
16	K24.06.25.000	Sprężyna / Spring	1	40	MA00002593	Nakrętka / Nut	8
17	K36.06.02.000-026	Wspornik / Support	1	41	MA00002594	Nakrętka / Nut	4
18	K36.06.03.000-101	Dźwignia / Lever	1	42	MA00002618	Nakrętka / Nut	4
19	K36.06.03.006-026	Tuleja 1 / Sleeve 1	1	43	MA00002617	Nakrętka / Nut	1
20	K36.06.04.000-025	Wał motoreduktora / Motoreducer shaft	1	44	MA00005906	Nakrętka / Nut	3
21	K36.06.05.000-214	Sprzęg / Coupling	1	45	MA00009322	Nakrętka / Nut	4
22	K36.06.06.001-101	Cięgno / Rod	1	46	MA00006651	Motoreduktor / Gear motor	1
23	K36.06.07.000 -025	Korba / Crank	1	47			
24	K36.06.10.000-101	Tulejka dystans. 1 / Distance sleeve	1	48			

FIGURE NAME	FIGURE NO.
Sprzęg / Coupling	**K36.06.05.000-214**

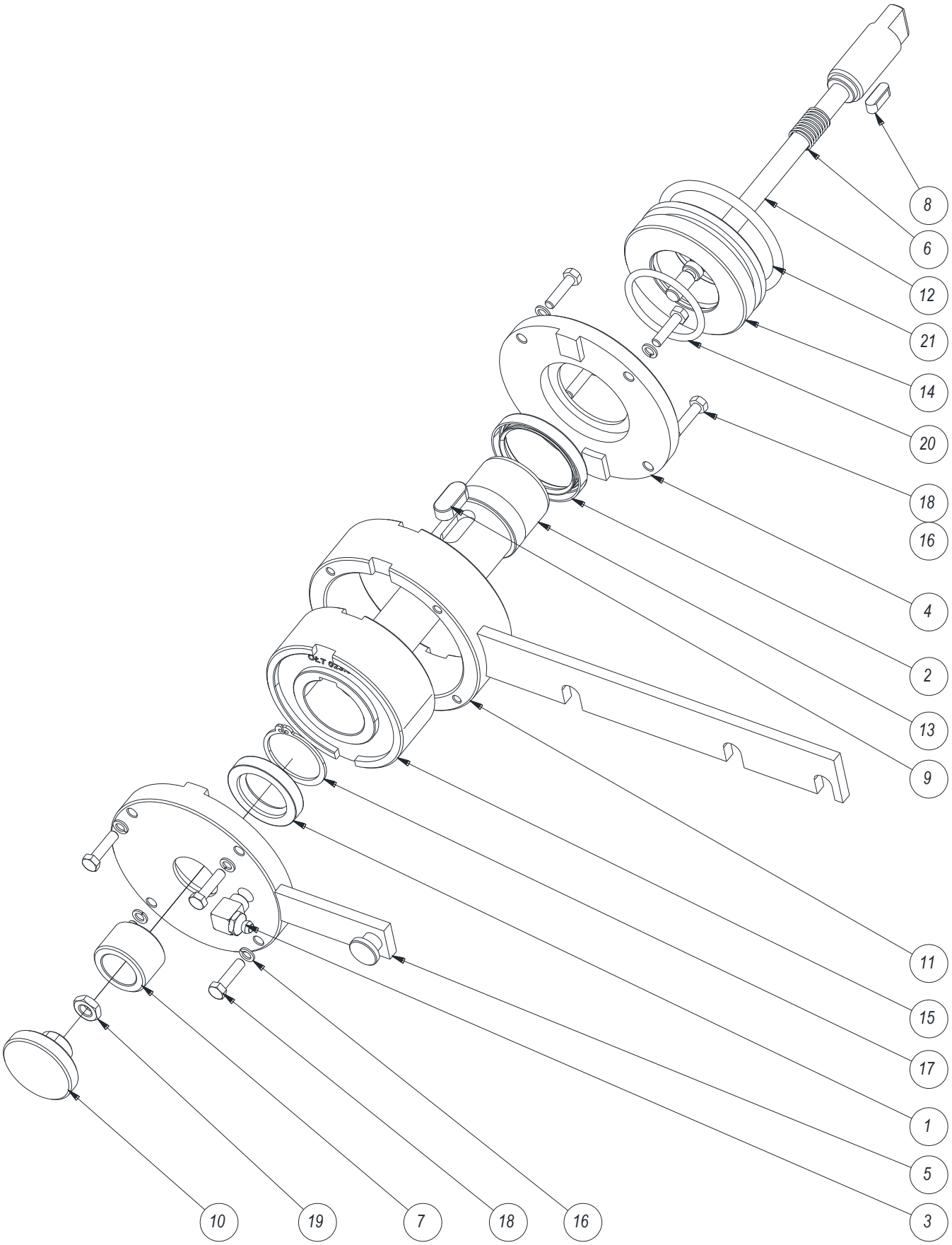

FIGURE NAME				FIGURE NO.			
Sprzęg / Coupling				**K36.06.05.000-214**			
POS.	INDEX	NAME	QTY.	POS.	INDEX	NAME	QTY.
1	MA00005009	Pierścień uszcz / Seal ring	1	25			
2	MA00005023	Pierścień uszcz / Seal ring	1	26			
3	MA00004324	Smarowniczka / Grease nipple	1	27			
4	K01.02.03.000	Pokrywa lewa / Left cover	1	28			
5	K01.02.04.000/a	Pokrywa prawa / Right cover	1	29			
6	K01.02.06.000/a	Sprężyna sprzęgu / Coupler spring	1	30			
7	K01.02.10.000	Tuleja ślizgowa II / Slide sleeve II	1	31			
8	K05.16.00.001/120	Klin / Tapper key	1	32			
9	K05.16.00.002/120	Klin / Tapper key	1	33			
10	K05.16.00.004/120	Gałka / Knob	1	34			
11	K23.06.05.001	Korpus sprzęgła kpl / Coupling housing	1	35			
12	K23.06.05.002	Wałek sprzęgający 1 / Coupler shaft	1	36			
13	K36.06.05.003-214	Wałek 1 / Shaft 1	1	37			
14	K36.06.05.020-214	Tuleja ślizgowa / Slide sleeve	1	38			
15	MA00004409	Sprzęgła jednokierunkowe / Undirectional clutch	1	39			
16	MA00003409	Podkładka sprężysta / Spring washer	8	40			
17	MA00003214	Pierścień osadczy zewnętrzny / Circlip	1	41			
18	MA00004554	Śruba / Bolt	8	42			
19	MA00002620	Nakrętka / Nut	1	43			
20	MA00002967	Oring	1	44			
21	MA00011482	Oring	1	45			
22				46			
23				47			
24				48			

FIGURE NAME	FIGURE NO.
Osłona motoreduktora / Motoreducer shield	**K36.07.00.000-508s**

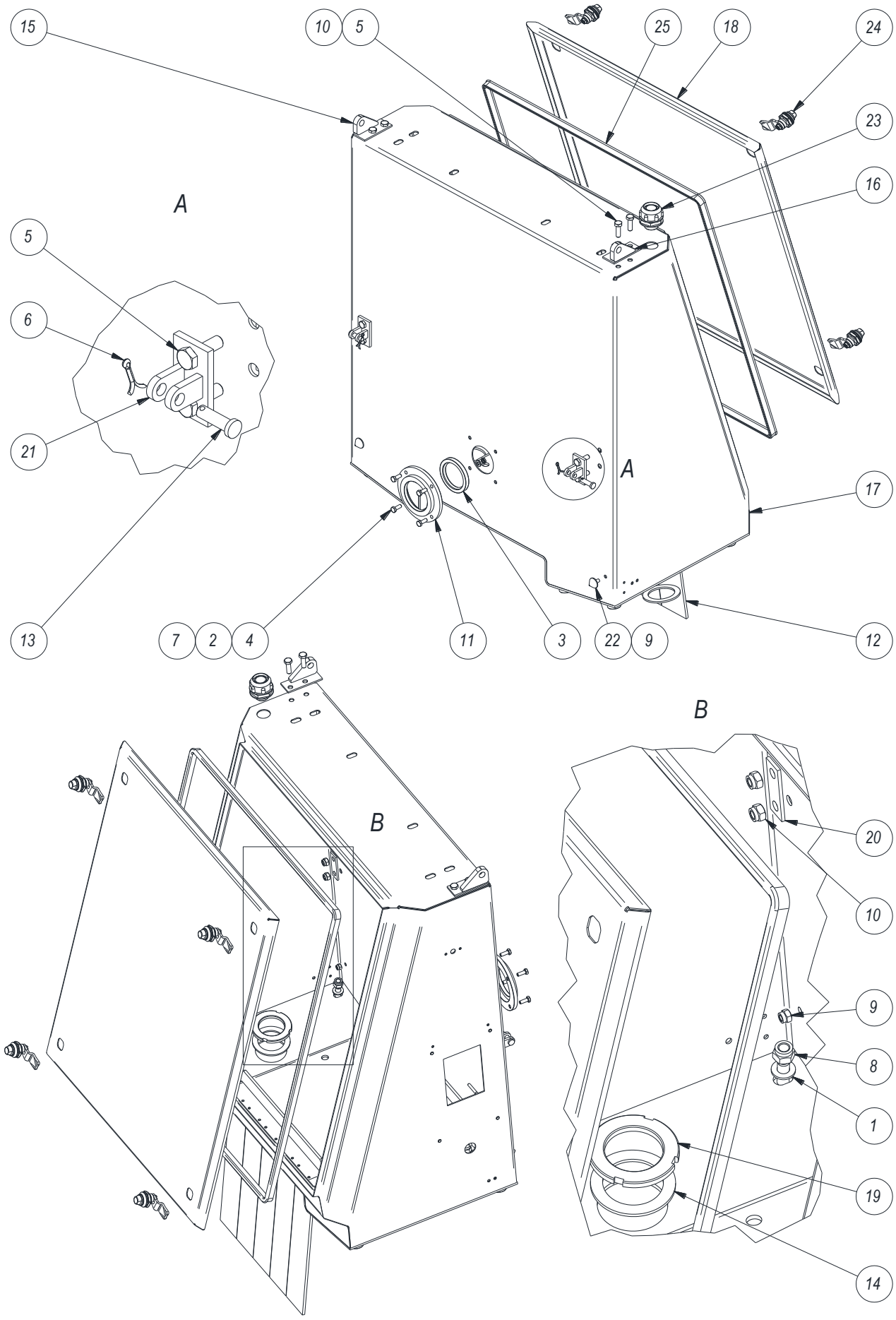

FIGURE NAME				FIGURE NO.			
Osłona motoreduktora / Motoreducer shield				**K36.07.00.000-508s**			
POS.	INDEX	NAME	QTY.	POS.	INDEX	NAME	QTY.
1	MA00003389	Podkładka / Washer	10	25	EL00005964	Uszczelka / Gasket	1
2	MA00003413	Podkładka / Washer	4	26			
3	MA00006090	Pierścień uszczelniający / Sealing ring	1	27			
4	MA00006074	Śruba / Bolt	4	28			
5	MA00004592	Śruba / Bolt	8	29			
6	MA00005899	Zawleczka / Cotter pin	2	30			
7	MA00002632	Nakrętka / Nut	4	31			
8	MA00002628	Nakrętka samozabezpieczająca / Self-locking nut	10	32			
9	MA00002632	Nakrętka samozabezpieczająca / Self-locking nut	2	33			
10	MA00002633	Nakrętka samozabezpieczająca / Self-locking nut	8	34			
11	K23.07.04.000	Gniazdo / Socket	1	35			
12	K23.09.02.000/14	Płytka / Plate	5	36			
13	K24.07.07.000	Sworzeń / Pin	2	37			
14	K34.07.00.001-075	Podkładka / Washer	2	38			
15	K34.07.03.000-075	Wspornik / Bracket	1	39			
16	K34.07.03.000-075 lustro	Wspornik / Bracket	1	40			
17	K36.07.01.000-508s	Osłona / Shield	1	41			
18	K36.07.02.000-101	Blacha 1 / Metal plate 1	1	42			
19	K38.05.07.002-12	Nakrętka / Nut	1	43			
20	K39.07.03.000	Blacha 2 / Metal plate 2	2	44			
21	K39.07.04.000	Wspornik / Bracket	2	45			
22	K39.07.06.000	Prowadnik / Guide	2	46			
23	EL00006008	Dławik / Packing gland	1	47			
24	DE00066732	Zamek / Lock	4	48			

FIGURE NAME	FIGURE NO.
Osłona głowicy / Head shield	**K36.08.00.000-508s**

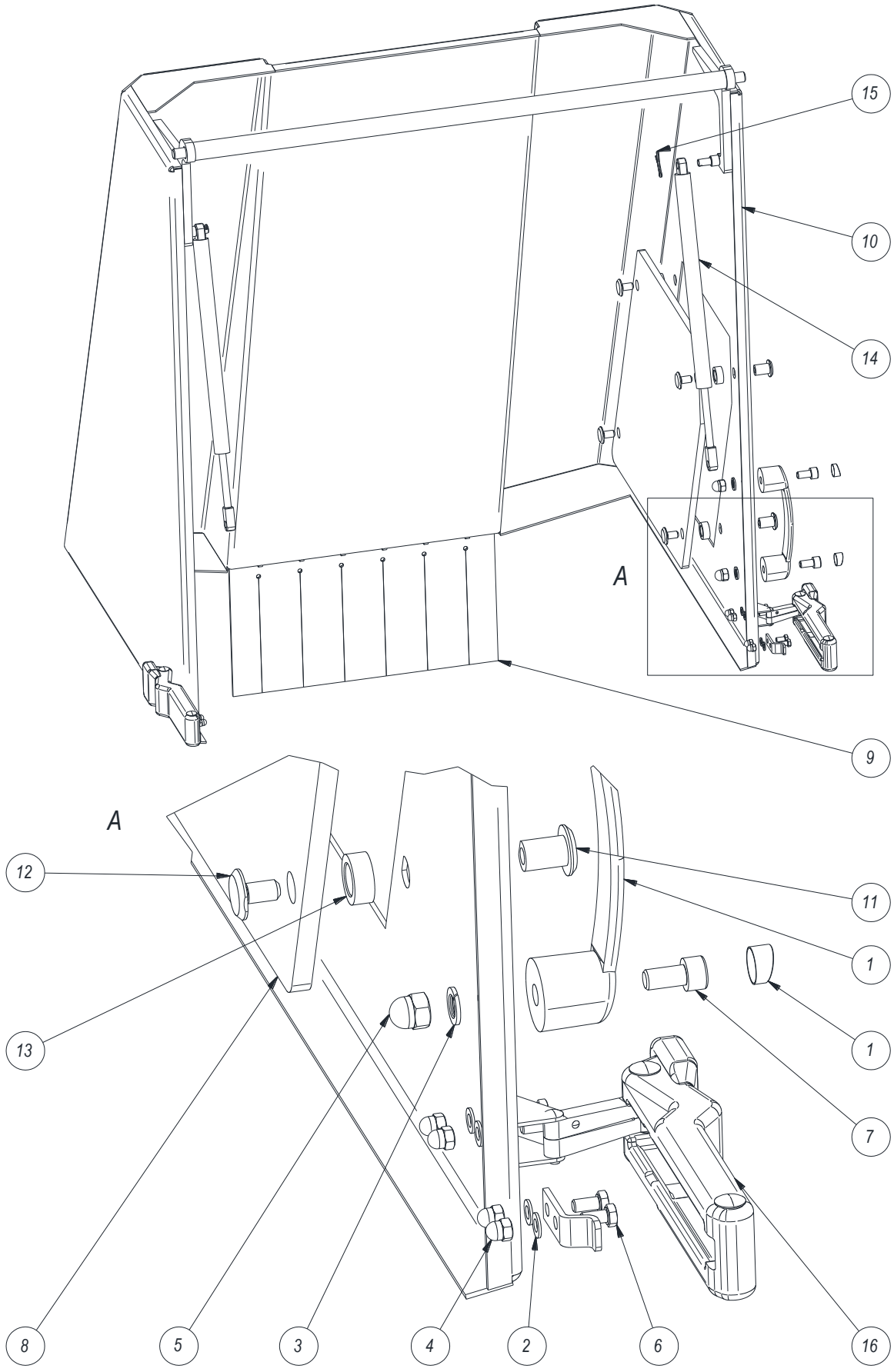

FIGURE NAME				FIGURE NO.			
Osłona głowicy / Head shield				**K36.08.00.000-508s**			
POS.	INDEX	NAME	QTY.	POS.	INDEX	NAME	QTY.
1	MA00004955	Uchwyt drzwi / Door holder	1	25			
2	MA00003410	Podkładka / Washer	8	26			
3	MA00003415	Podkładka sprężysta / Spring washer	2	27			
4	MA00009047	Nakrętka kołpakowa / Acorn nut	8	28			
5	MA00002590	Nakrętka kołpakowa / Acorn nut	2	29			
6	MA00004548	Śruba / Bolt	8	30			
7	MA00004589	Śruba / Bolt	2	31			
8	K36.08.00.001-508s	Szyba / Glass	1	32			
9	K36.08.00.006-295	Folia / Foil	1	33			
10	K36.08.01.000-508s	Osłona / Shield	1	34			
11	K50.05.01.108a	Nakrętka / Nut	4	35			
12	K50.05.01.109a	Śruba / Bolt	4	36			
13	K50.05.01.110	Tulejka dystansowa / Distance bush	4	37			
14	MA00004347	Spr gazowa / Gas spring	2	38			
15	MA00005899	Zawleczka / Cotter pin	2	39			
16	MA00005630	Zamek pociągowy / Pull lock	2	40			
17				41			
18				42			
19				43			
20				44			
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FIGURE NAME	FIGURE NO.
Instalacja solanki / Brine system	**K36.14.00.000-509s**

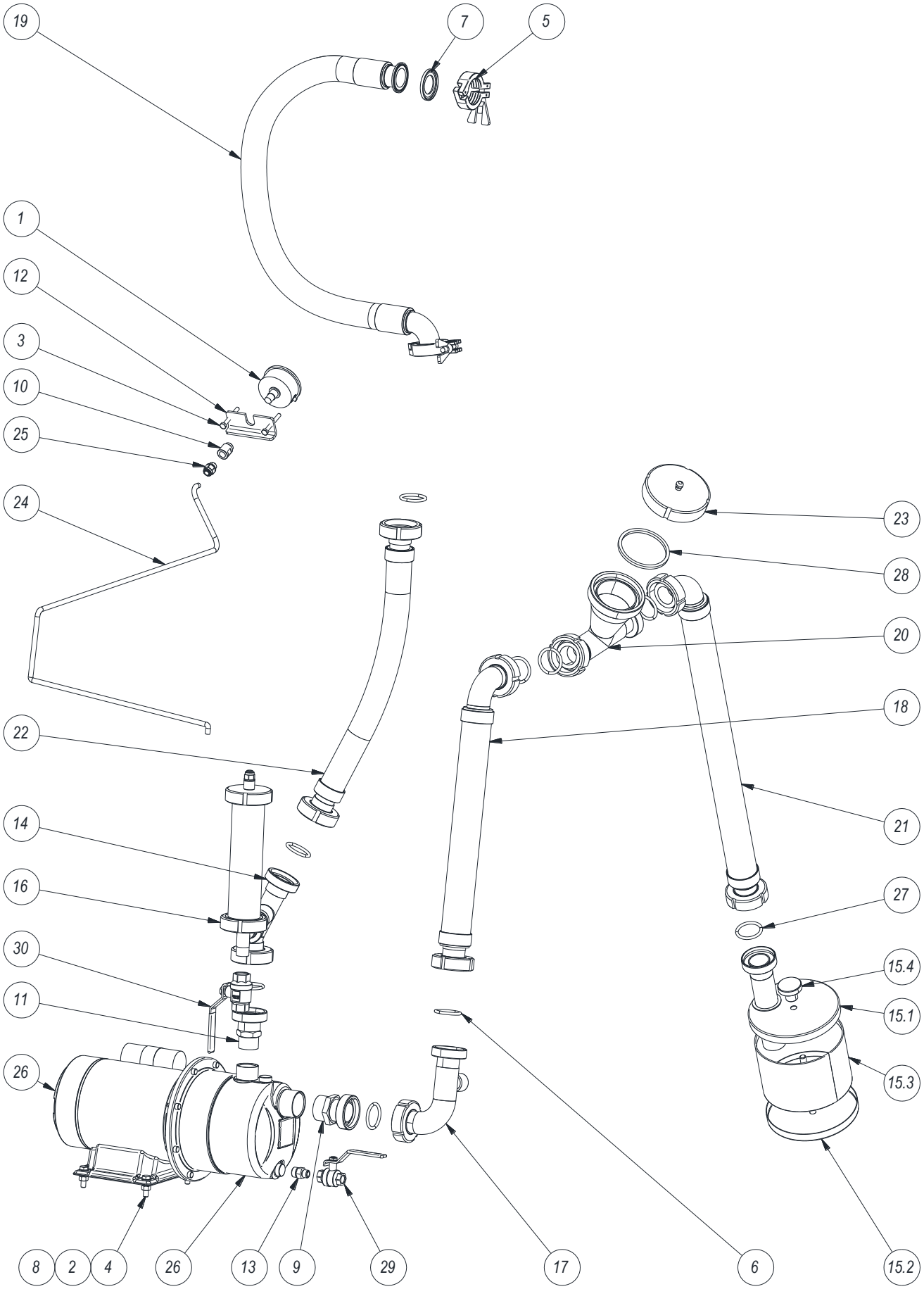

FIGURE NAME				FIGURE NO.			
Instalacja solanki / Brine system				**K36.14.00.000-509s**			
POS.	INDEX	NAME	QTY.	POS.	INDEX	NAME	QTY.
1	MA00002316	Manometr / Manometer	1	22	K36.14.43.000-509s	Wąż / Hose	1
2	MA00003416	Podkładka / Washer	4	23	MA00002571	Nakrętka / Nut	1
3	MA00004578	Śruba / Bolt	2	24	MA00010237	Przewód / Hose	1
4	MA00004594	Śruba / Bolt	4	25	MA00005812	Złączka / Connection	1
5	MA00005886	Klamra masywna / Clamp	2	26	MA00020411	Pompa JE150 Ebara / Pump	1
6	MA00005095	Uszczelka / Gasket	9	27	MA00005095	Uszczelka / Gasket	1
7	MA00006093	Uszczelka / Gasket	2	28	MA00005097	Uszczelka / Gasket	1
8	MA00002620	Nakrętka / Nut	4	29	MA00017644	Zawór kulowy / Ball valve	1
9	K33.03.02.000	Króciec 2 / Connector 2	1	30	MA00005699	Zawor kulowy / Ball valve	1
10	K34.14.16.001-022	Tulejka 1 / Bush 1	1				
11	K34.14.17.000-074	Króciec pompy 1" / Pump connector 1”	1				
12	K34.14.18.000-022	Blokada / Lock	1				
13	K36.14.00.001-508s	Redukcja / Reduction	1				
14	K36.14.01.000-508s	Rurociąg / Pipeline	1				
15.1	K36.14.02.300-508s	Dekiel / Cover	1				
15.2	K40.14.02.100-1	Dno / Bottom	1				
15.3	K40.14.02.200-1	Sito / Sieve	1				
15.4	P10.00.00.001	Nakrętka / Nut spec.	1				
16	K36.14.09.000-025	Akumulator / Accumulator	1				
17	K36.14.11.000-508s	Króciec / Connector	1				
18	K36.14.33.000-508s	Wąż zakuwany / Armoured hose	1				
19	K36.14.33.400-365	Wąż zakuwany z DN32 / Armoured hose	1				
20	K36.14.40.000-509s	Przyłącze / Connection	1				
21	K36.14.41.000-508s	Wąż zakuwany / Armoured hose	1				

FIGURE NAME	FIGURE NO.
Akumulator / Accumulator	**K36.14.09.000-025**

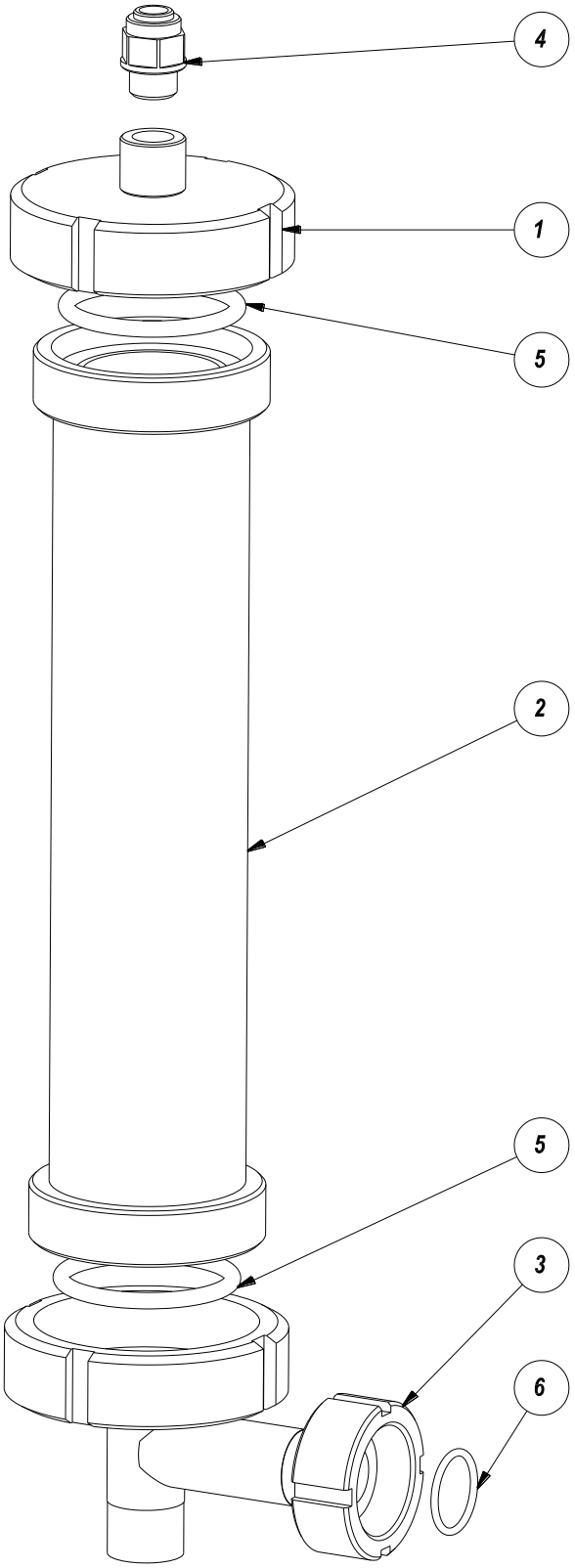

FIGURE NAME				FIGURE NO.			
Akumulator / Accumulator				**K36.14.09.000-025**			
POS.	INDEX	NAME	QTY.	POS.	INDEX	NAME	QTY.
1	K34.14.09.100-022	Dekiel górny / Upper cover	1	25			
2	K36.14.09.001-025	Płaszcz akumulatora / Accumulator casing	1	26			
3	K34.14.09.200-022	Dekiel dolny / Lower cover	1	27			
4	MA00005812	Złączka / Connection	1	28			
5	MA00005096	Uszczelka / Gasket	2	29			
6	MA00005093	Uszczelka / Gasket	1	30			
7				31			
8				32			
9				33			
10				34			
11				35			
12				36			
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FIGURE NAME	FIGURE NO.
Osłona / Shield	**K36.17.00.000-503**

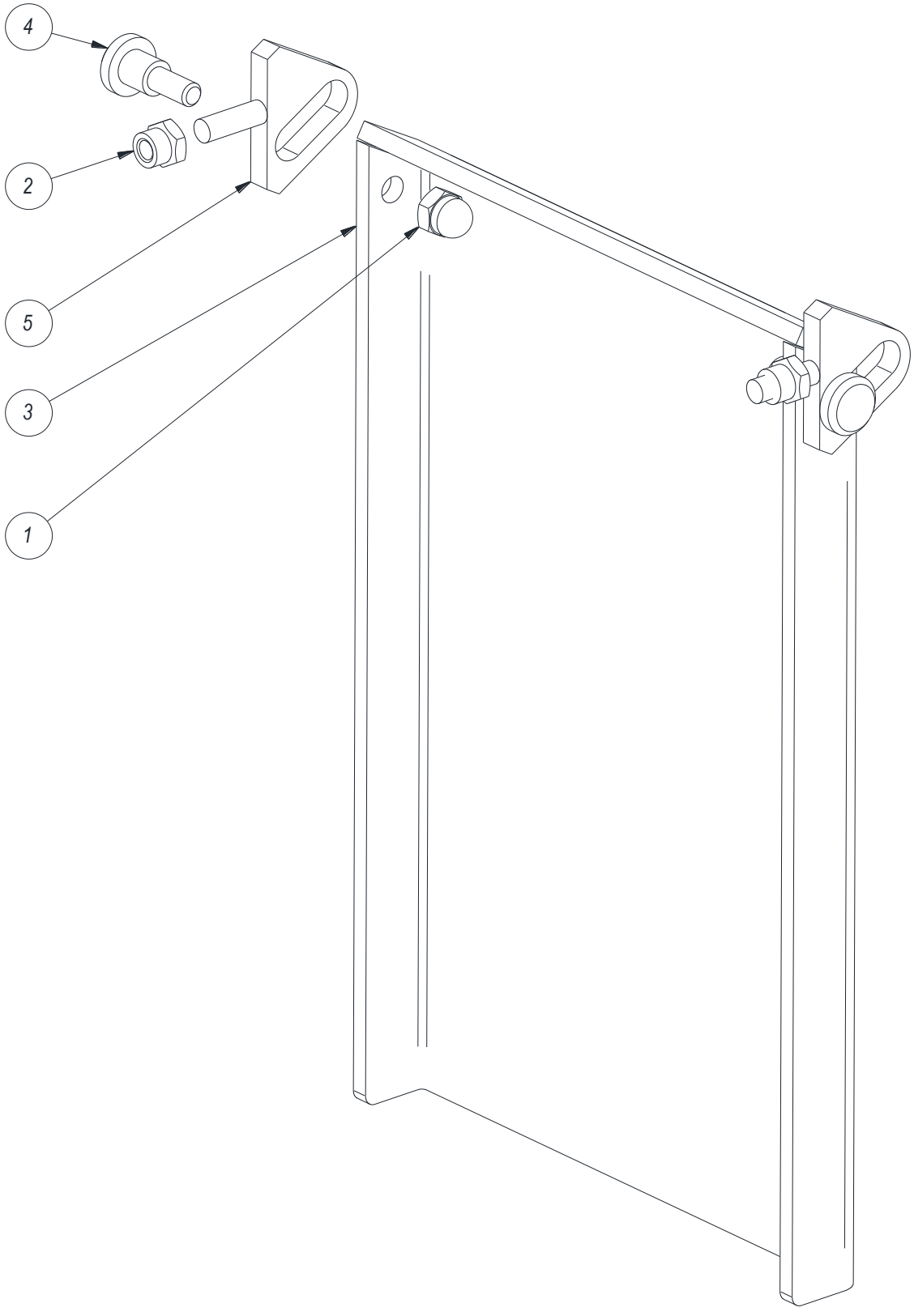

FIGURE NAME				FIGURE NO.			
Osłona / Shield				**K36.17.00.000-503**			
POS.	INDEX	NAME	QTY.	POS.	INDEX	NAME	QTY.
1	MA00018636	Nakrętka / Nut	2	25			
2	MA00010738	Nakrętka / Nut	2	26			
3	K36.17.00.001-501	Osłona / Shield	1	27			
4	K36.17.00.008-501	Sworzeń / Pin	2	28			
5	K36.17.02.000-501	Ucho kpl / Lug set	2	29			
6				30			
7				31			
8				32			
9				33			
10				34			
11				35			
12				36			
13				37			
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FIGURE NAME	FIGURE NO.
Głowica / Head x3	**K36.40.00.000-505**

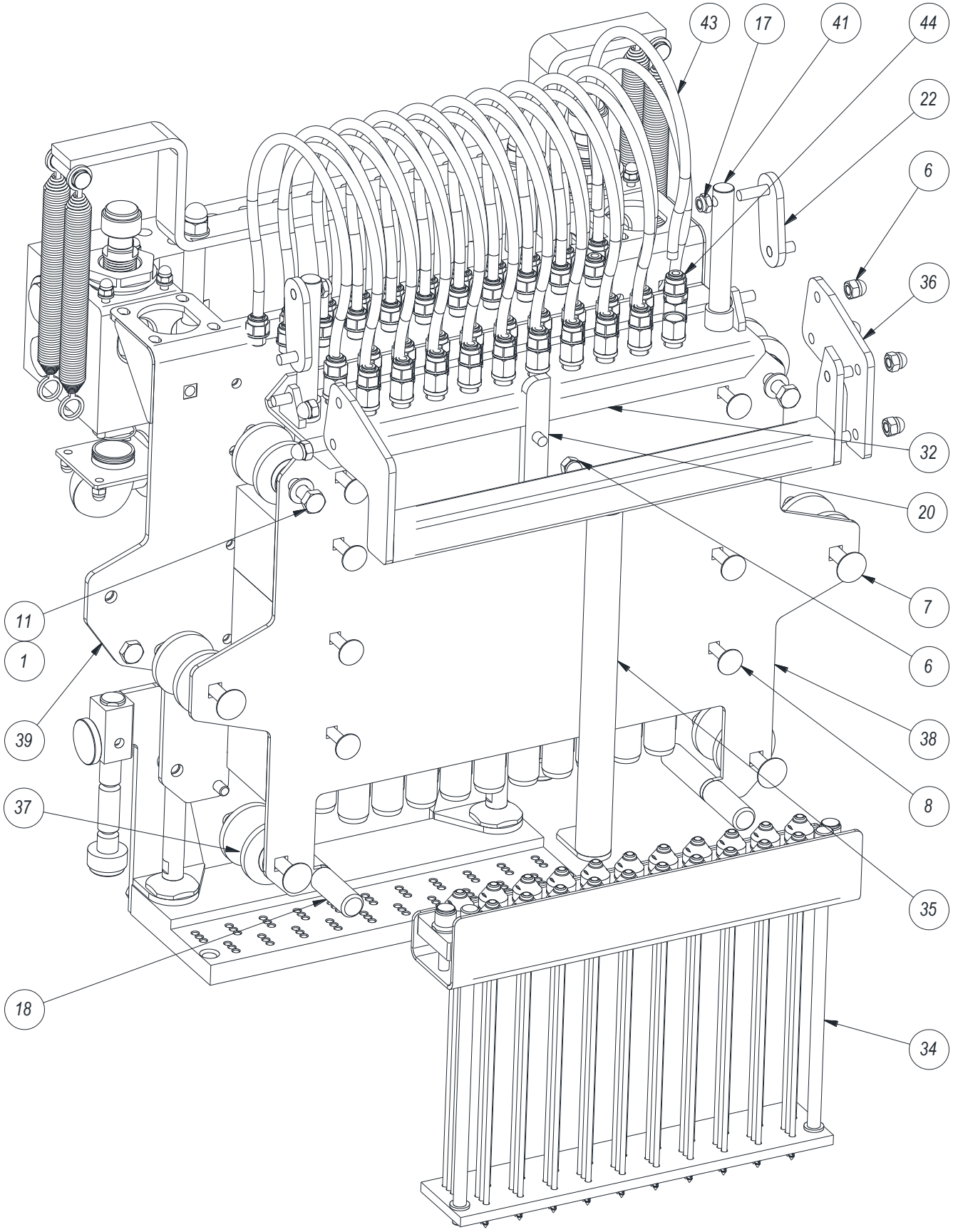

FIGURE NAME	FIGURE NO.
Głowica / Head x3	**K36.40.00.000-505**

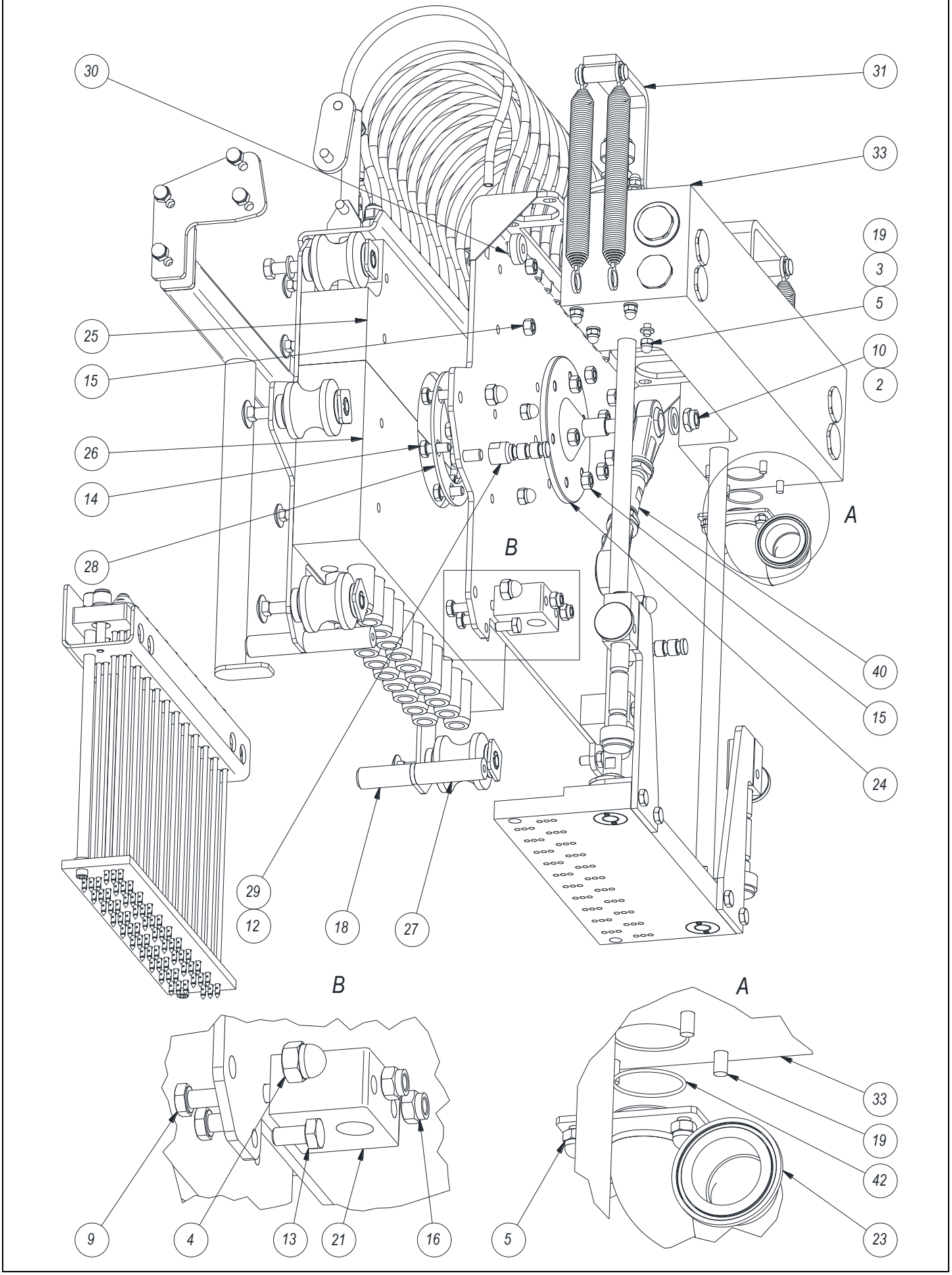

FIGURE NAME				FIGURE NO.			
Głowica / Head x3				**K36.40.00.000-505**			
POS.	INDEX	NAME	QTY.	POS.	INDEX	NAME	QTY.
1	MA00003389	Podkładka / Washer	2	25	K36.02.00.002-505	Płyta górna / Upper plate	1
2	MA00003392	Podkładka / Washer	1	26	K36.02.00.004-505	Płyta / Plate	1
3	MA00003413	Podkładka / Washer	12	27	K36.02.00.007-026	Walek 1 / Shaft 1	2
4	MA00002585	Nakrętka kołpakowa / Acorn nut	4	28	K36.02.00.010-025	Blacha zabezp. / Protective plate	1
5	MA00002589	Nakrętka kołpakowa / Acorn nut	16	29	K36.02.00.012-025	Pręt 1 / Rod 1	2
6	MA00002590	Nakrętka kołpakowa / Acorn nut	11	30	K36.02.00.020-502	Nakrętka / Nut	2
7	MA00004617	Śruba / Bolt	4	31	K36.40.01.000-505	Sprzęg kpl / Coupling set	1
8	MA00004620	Śruba / Bolt	8	32	K36.02.02.000-505	Zespół amortyzacji igiel / Needle shock absorber	1
9	MA00004606	Śruba / Bolt	4	33	K36.02.04.000-504	Zespół płyty głównej / Main boar set	1
10	MA00005963	Nakrętka / Nut	1	34	K36.02.19.000-505	Głowica wymienna x3 / Exchangeable head x3	1
11	MA00004457	Śruba / Bolt	2	35	K36.02.06.000-505	Dźwignia / Lever	1
12	MA00006063	Śruba / Bolt	2	36	K36.02.06.006-505	Zaczep 6 / Catch 6	1
13	MA00004588	Śruba / Bolt	2	37	K36.02.08.000-025	Rolka 2 kpl / Roll 2 set	6
14	MA00004590	Śruba / Bolt	6	38	K36.02.14.000-505	Zespół blachy / Plate set	1
15	MA00002620	Nakrętka / Nut	10	39	K36.02.21.000-505	Blacha kpl / Metal plate set	1
16	MA00002633	Nakrętka samozabezpieczająca / Self-locking nut	4	40	K36.06.01.000-025	Cięgno / String	1
17	MA00002633	Nakrętka samozabezpieczająca / Self-locking nut	2	41	K39.02.00.014-100	Zaczep 1 / Catch 1	2
18	K34.02.00.008-022	Walek 2 / Shaft 2	2	42	MA00002951	Oring	1
19	K34.02.00.011-022	Szpilka M6 / Pin M6	8	43	MA00010237	Wąż pneumat. / Pneumatic hose L=630	21
20	K34.02.00.015-507	Płaskownik / Flat bar	1	44	MA00005812	Złączka / Connector	42
21	K34.02.00.050-507	Kostka / Cube	2	45			
22	K34.02.09.000-507	Zaczep / Catch	2	46			
23	K34.14.19.000-022	Króciec głowicy / Head connector	1	47			
24	K36.02.00.001-025	Czop / Pivot	1	48			

FIGURE NAME	FIGURE NO.
Sprzęg kpl / Coupling set	**K36.40.01.000-505**

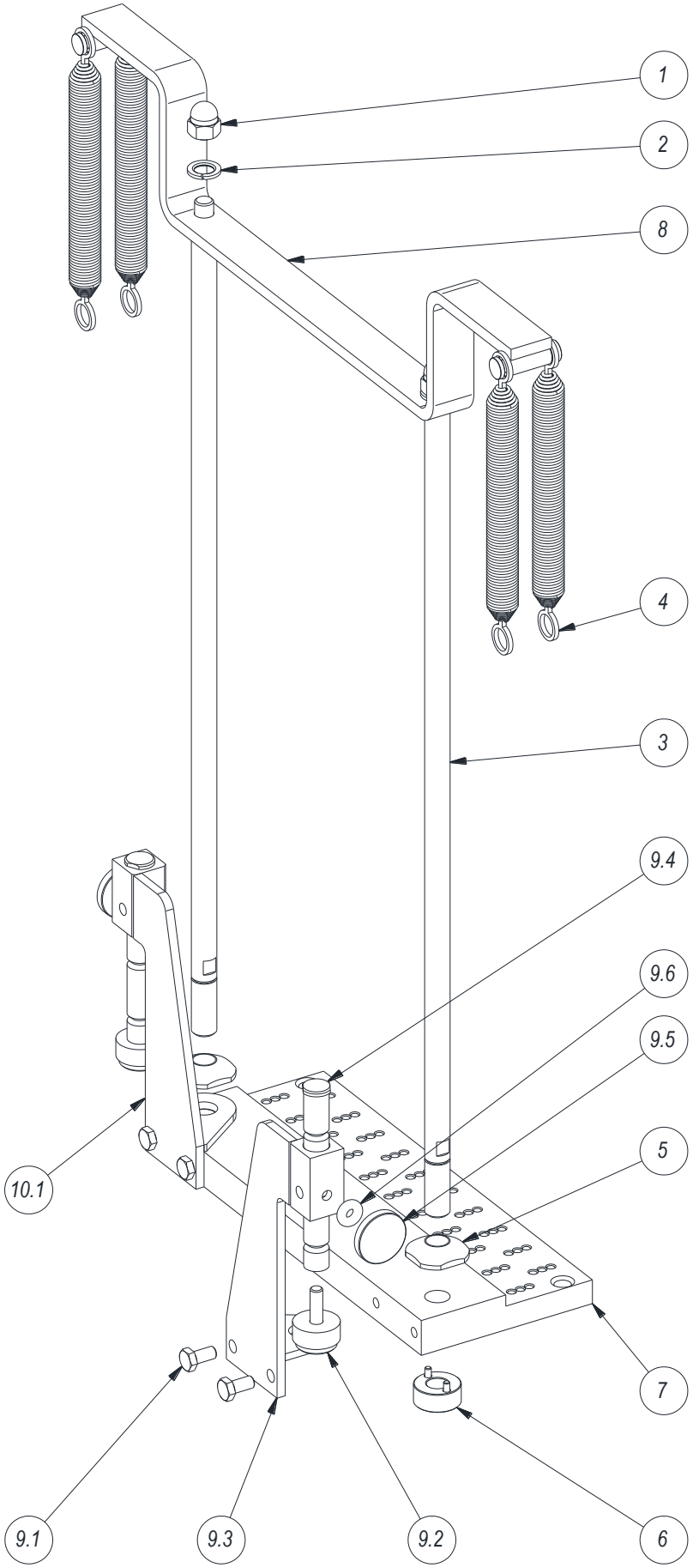

FIGURE NAME				FIGURE NO.			
Sprzęg kpl / Coupling set				**K36.40.01.000-505**			
POS.	INDEX	NAME	QTY.	POS.	INDEX	NAME	QTY.
1	MA00002586	Nakrętka / Nut	2				
2	MA00003391	Podkładka sprężysta / Spring washer	2				
3	K34.02.01.001-507	Pręt / Rod	2				
4	K34.02.01.400-088	Sprężyna naciągowa / Tension spring	4				
5	K34.02.05.102-035	Nakrętka / Nut	2				
6	K34.02.05.160-022	Nakrętka oporowa / Back nut	2				
7	K36.40.01.002-505	Belka spychająca / Push beam	1				
8	K36.02.01.100-086	Belka / Beam	1				
9.1	MA00004588	Śruba / Bolt	4				
9.2	K34.02.15.200-506	Odbój / Fender	2				
9.3	K36.02.15.100-500	Zderzak / Buffer	1				
9.4	K36.02.15.105-500	Pręt / Rod	2				
9.5	K39.02.15.109-027	Pokrętło / Handwheel	2				
9.6	MA00017578	Oring	2				
10.1	K36.02.20.100-500	Zderzak / Buffer	1				

FIGURE NAME	FIGURE NO.
Głowica wymienna / Exchangeable head x3	**K36.02.19.000-505**

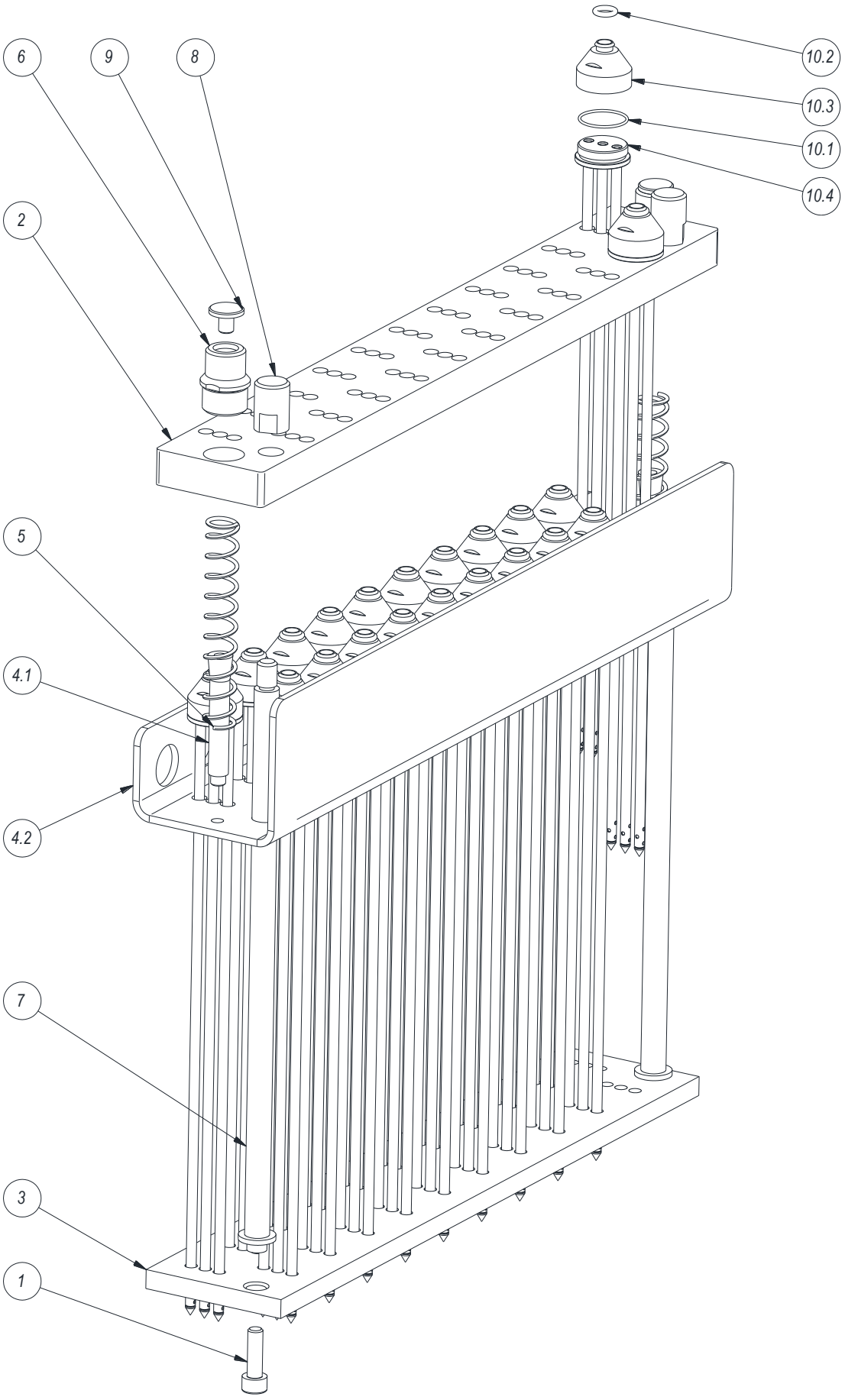

FIGURE NAME				FIGURE NO.			
Głowica wymienna / Exchangeable head x3				**K36.02.19.000-505**			
POS.	INDEX	NAME	QTY.	POS.	INDEX	NAME	QTY.
1	MA00004569	Śruba / Bolt	2				
2	K36.02.19.203-505	Płyta / Plate	1				
3	K36.02.19.205-505	Płyta / Plate	1				
4.1	K34.02.05.252-507	Trzpień / Pin	2				
4.2	K36.02.19.251-505	Blacha igłowa / Needles metal plate	1				
5	K39.02.16.005a-100	Sprężyna / Spring	2				
6	K39.02.16.007-100a	Tulejka / Bush	2				
7	K39.02.16.206-100	Pręt / Rod	2				
8	K39.02.16.207-100a	Podkładka / Washer	2				
9	K59.51.16.206	Śruba / Bolt	2				
10.1	MA00009708	Oring	21				
10.2	MA00010098	Oring	21				
10.3	P208.01.00.003	Główka / Needle head	21				
10.4	P304.02.00.000	Korpus / Housing	21				

FIGURE NAME	FIGURE NO.
Głowica / Head x2	**K36.41.00.000-505**

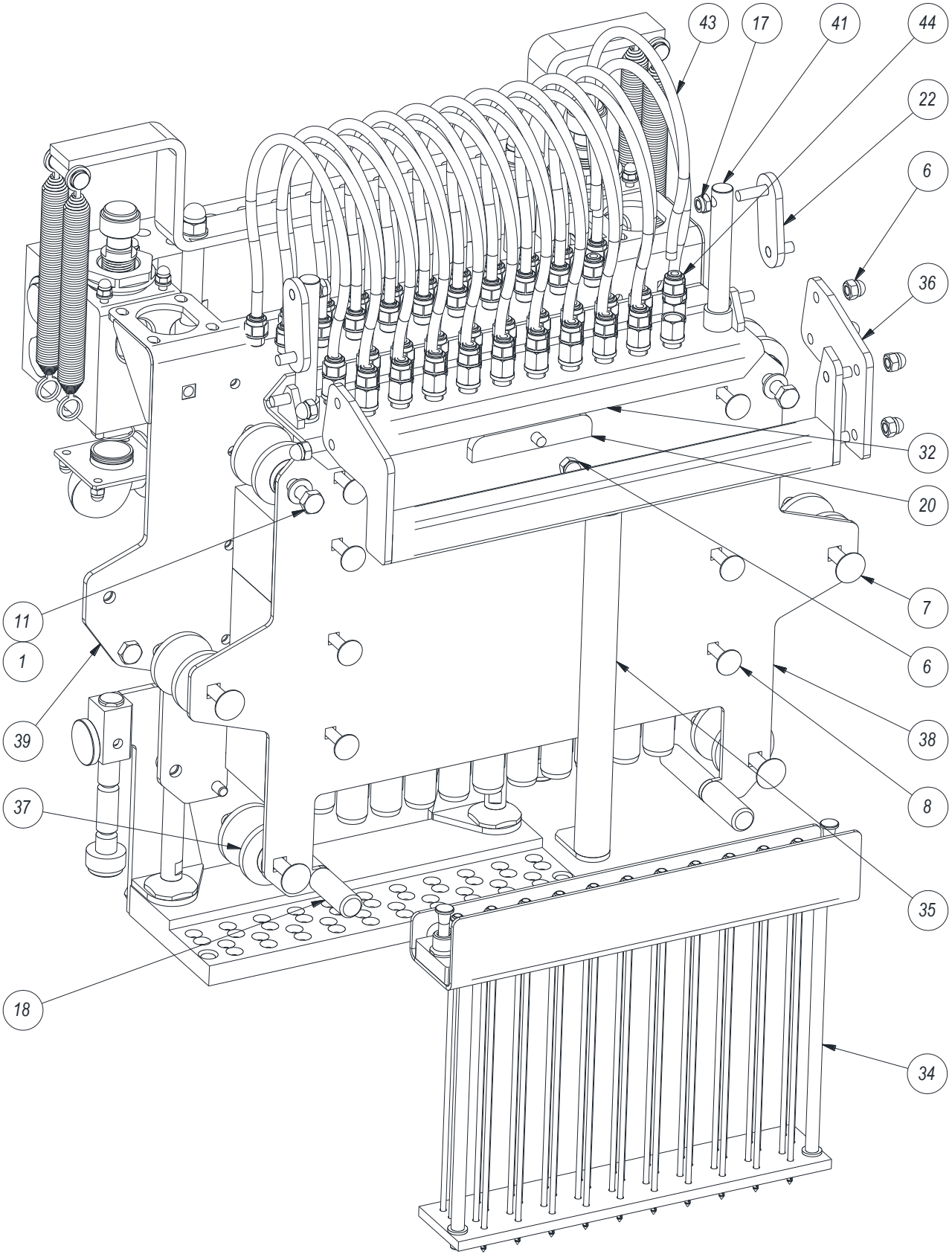

FIGURE NAME	FIGURE NO.
Głowica / Head x2	**K36.41.00.000-505**

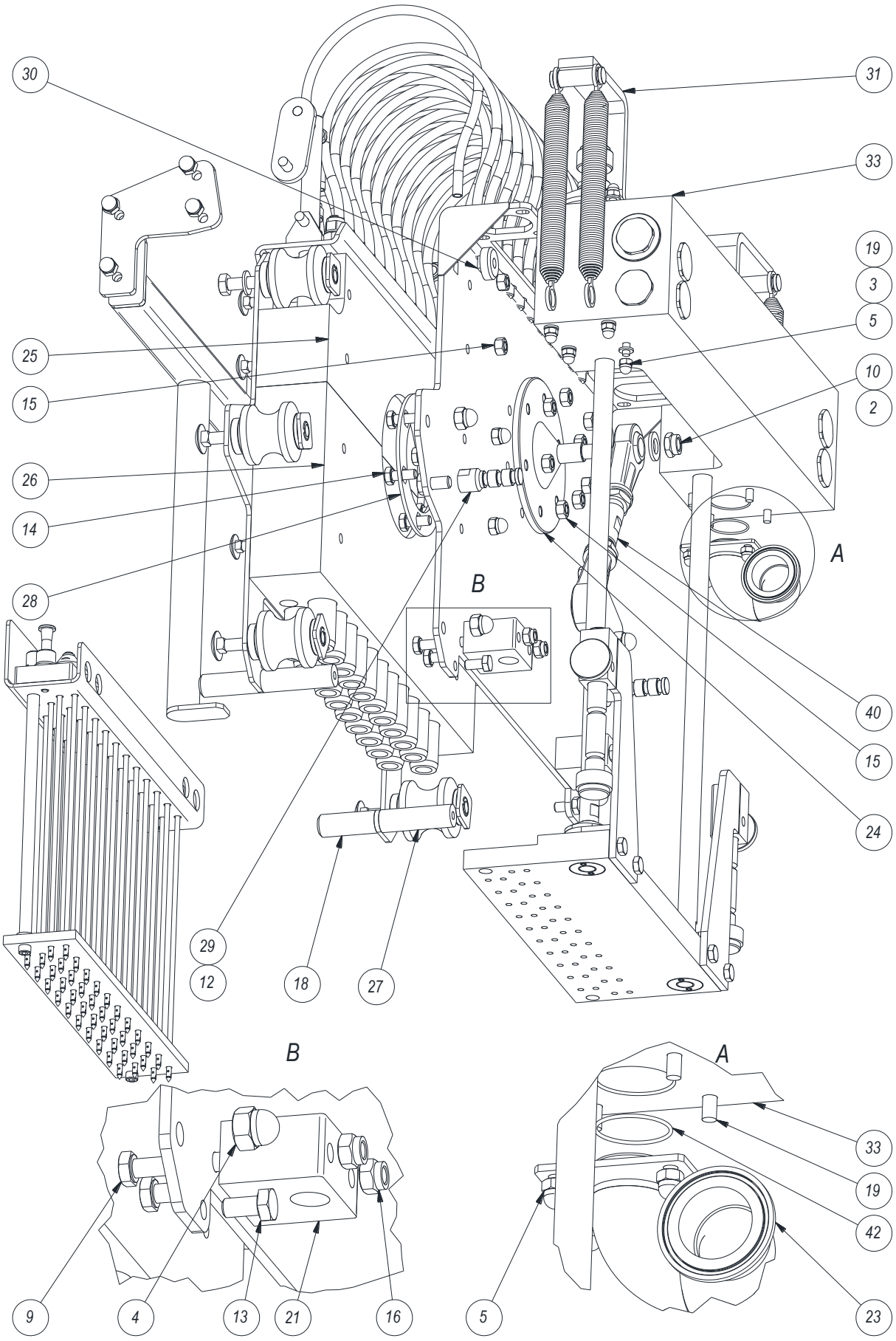

FIGURE NAME				FIGURE NO.			
Głowica / Head x2				**K36.41.00.000-505**			
POS.	INDEX	NAME	QTY.	POS.	INDEX	NAME	QTY.
1	MA00003389	Podkładka / Washer	2	25	K36.02.00.002-505	Płyta górna / Upper plate	1
2	MA00003392	Podkładka / Washer	1	26	K36.02.00.004-505	Płyta / Plate	1
3	MA00003413	Podkładka / Washer	12	27	K36.02.00.007-026	Walek 1 / Shaft 1	2
4	MA00002585	Nakrętka / Nut	4	28	K36.02.00.010-025	Blacha zabezp. / Protective plate	1
5	MA00002589	Nakrętka / Nut	16	29	K36.02.00.012-025	Pręt 1 / Rod 1	2
6	MA00002590	Nakrętka / Nut	11	30	K36.02.00.020-502	Nakrętka / Nut	2
7	MA00004617	Śruba / Bolt	4	31	K36.41.01.000-505	Sprzęg kpl / Coupling set	1
8	MA00004620	Śruba / Bolt	8	32	K36.02.02.000-505	Zespół amortyzacji igiel / Needle shock absorber	1
9	MA00004606	Śruba / Bolt	4	33	K36.02.04.000-504	Zespół płyty głównej / Main boar set	1
10	MA00005963	Nakrętka / Nut	1	34	K36.02.18.000-505	Głowica wymienna / Exchangeable head x2	1
11	MA00004457	Śruba / Bolt	2	35	K36.02.06.000-505	Dźwignia / Lever	1
12	MA00006063	Śruba / Bolt	2	36	K36.02.06.006-505	Zaczep 6 / Catch 6	1
13	MA00004588	Śruba / Bolt	2	37	K36.02.08.000-025	Rolka 2 kpl / Roll 2 set	6
14	MA00004590	Śruba / Bolt	6	38	K36.02.14.000-505	Zespół blachy / Plate set	1
15	MA00002620	Nakrętka / Nut	10	39	K36.02.21.000-505	Blacha kpl / Metal plate set	1
16	MA00002633	Nakrętka samozabezpieczająca / Self-locking nut	4	40	K36.06.01.000-025	Cięgno / String	1
17	MA00002633	Nakrętka samozabezpieczająca / Self-locking nut	2	41	K39.02.00.014-100	Zaczep 1 / Catch 1	2
18	K34.02.00.008-022	Walek 2 / Shaft 2	2	42	MA00002951	Oring	1
19	K34.02.00.011-022	Szpilka M6 / Pin M6	8	43	MA00010237	Wąż pneumat. / Pneumatic hose L=630	21
20	K34.02.00.015-507	Płaskownik / Flat bar	1	44	MA00005812	Złączka / Connector	42
21	K34.02.00.050-507	Kostka / Cube	2	45			
22	K34.02.09.000-507	Zaczep / Catch	2	46			
23	K34.14.19.000-022	Króciec głowicy / Head connector	1	47			
24	K36.02.00.001-025	Czop / Pivot	1	48			

FIGURE NAME	FIGURE NO.
Sprzęg kpl / Coupling set	**K36.41.01.000-505**

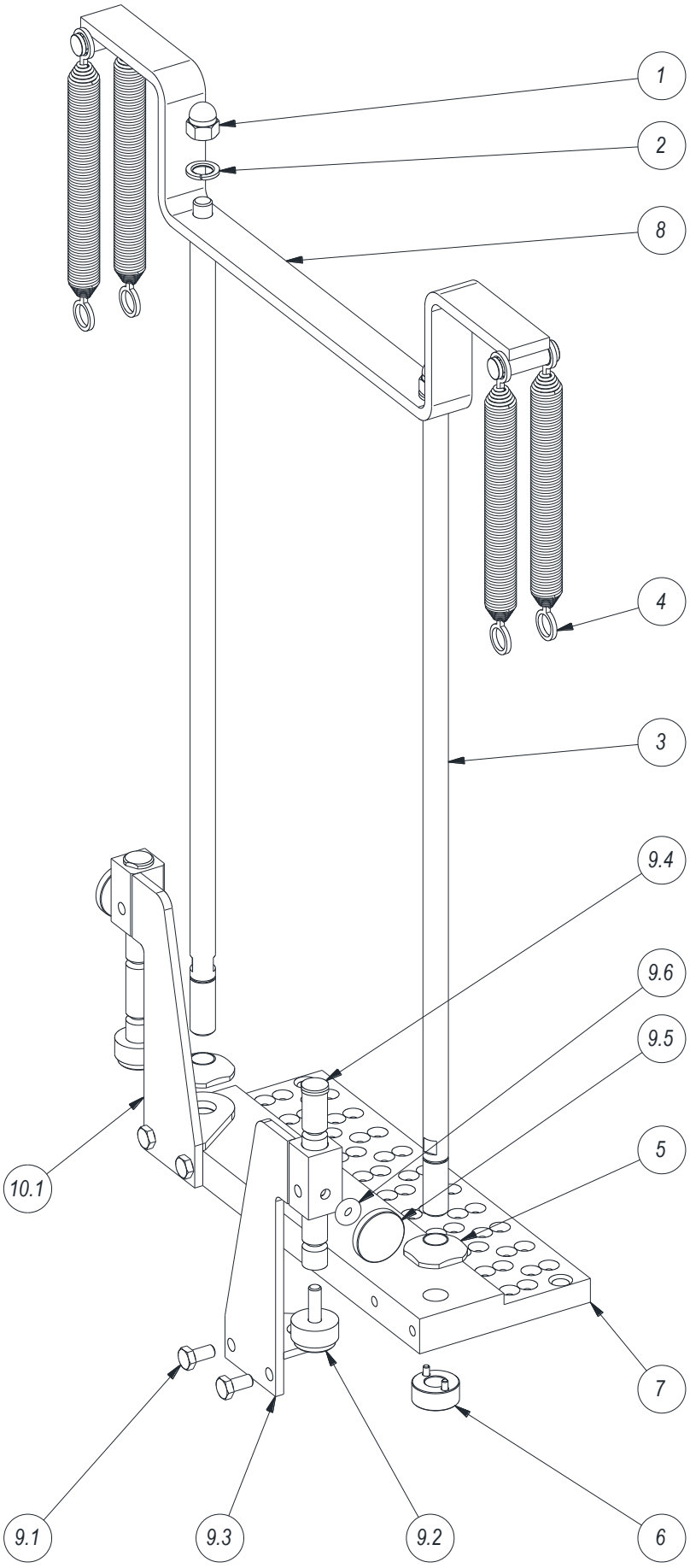

FIGURE NAME				FIGURE NO.			
Sprzęg kpl / Coupling set				**K36.41.01.000-505**			
POS.	INDEX	NAME	QTY.	POS.	INDEX	NAME	QTY.
1	MA00002586	Nakrętka / Nut	2				
2	MA00003391	Podkładka sprężysta / Spring washer	2				
3	K34.02.01.001-507	Pręt / Rod	2				
4	K34.02.01.400-088	Sprężyna naciągowa / Tension spring	4				
5	K34.02.05.102-035	Nakrętka / Nut	2				
6	K34.02.05.160-022	Nakrętka oporowa / Back nut	2				
7	K36.41.01.002-505	Belka spychająca / Push beam	1				
8	K36.02.01.100-086	Belka / Beam	1				
9.1	MA00004588	Śruba / Bolt	4				
9.2	K34.02.15.200-506	Odbój / Fender	2				
9.3	K36.02.15.100-500	Zderzak / Buffer	1				
9.4	K36.02.15.105-500	Pręt / Rod	2				
9.5	K39.02.15.109-027	Pokrętło / Handwheel	2				
9.6	MA00017578	Oring	2				
10.1	K36.02.20.100-500	Zderzak / Buffer	1				

FIGURE NAME	FIGURE NO.
Głowica wymienna / Exchangeable head x2	**K36.02.18.000-505**

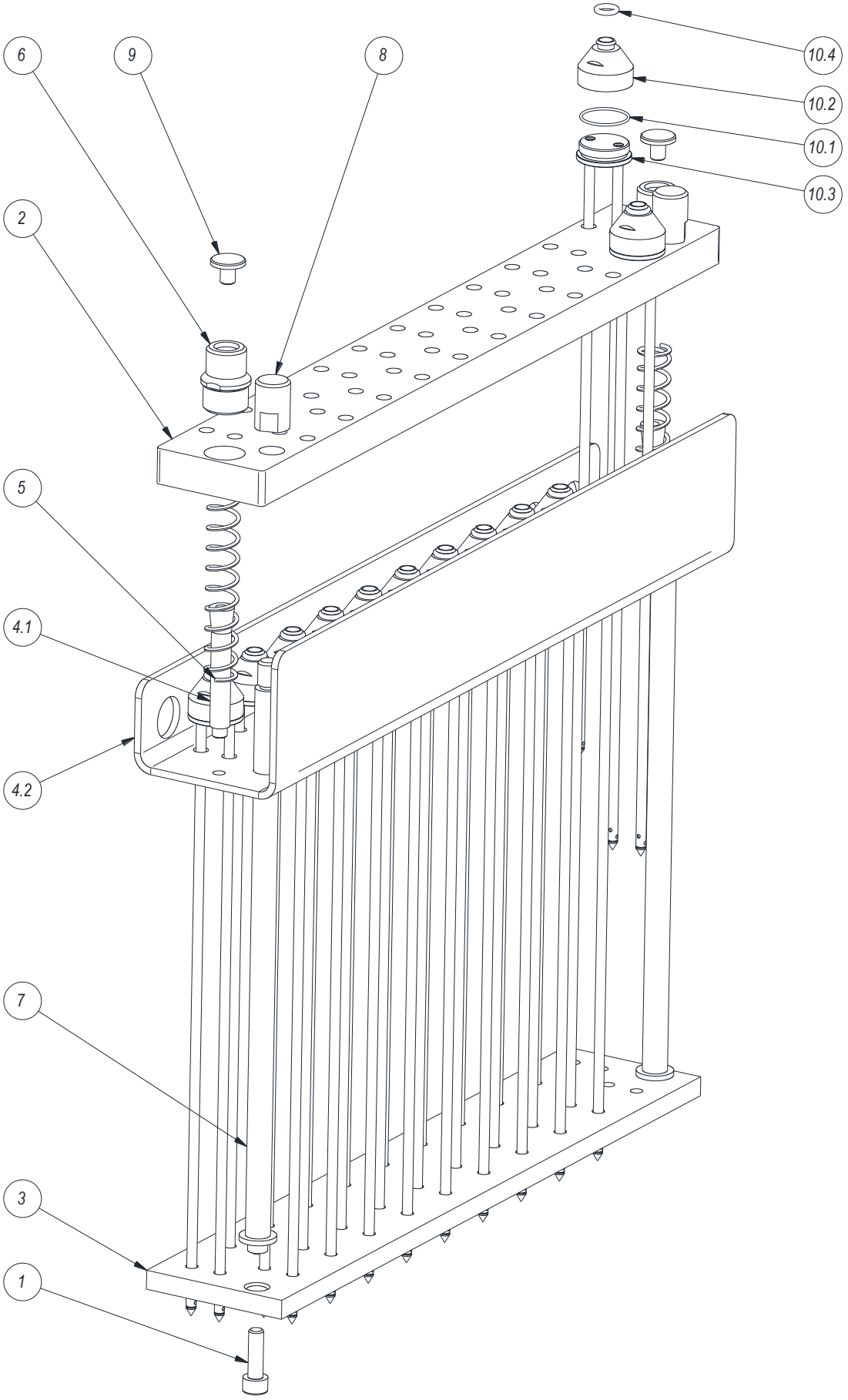

FIGURE NAME				FIGURE NO.			
Głowica wymienna / Exchangeable head x2				**K36.02.18.000-505**			
POS.	INDEX	NAME	QTY.	POS.	INDEX	NAME	QTY.
1	MA00004569	Śruba / Bolt	2				
2	K36.02.18.203-505	Płyta / Plate	1				
3	K36.02.18.205-505	Płyta / Plate	1				
4.1	K34.02.05.252-507	Trzpień / Pin	2				
4.2	K36.02.18.251-505	Blacha igłowa / Needles metal plate	1				
5	K39.02.16.005a-100	Sprężyna / Spring	2				
6	K39.02.16.007-100a	Tulejka / Bush	2				
7	K39.02.16.206-100	Pręt / Rod	2				
8	K39.02.16.207-100a	Podkładka / Washer	2				
9	K59.51.16.206	Śruba / Bolt	2				
10.1	MA00009708	Oring	21				
10.2	P208.01.00.003	Główka / Needle head	21				
10.3	P208.02.00.000a	Korpus / Housing	21				
10.4	MA00010098	Oring	21				

FIGURE NAME	FIGURE NO.
Głowica / Head x3	**K36.43.00.000-505**

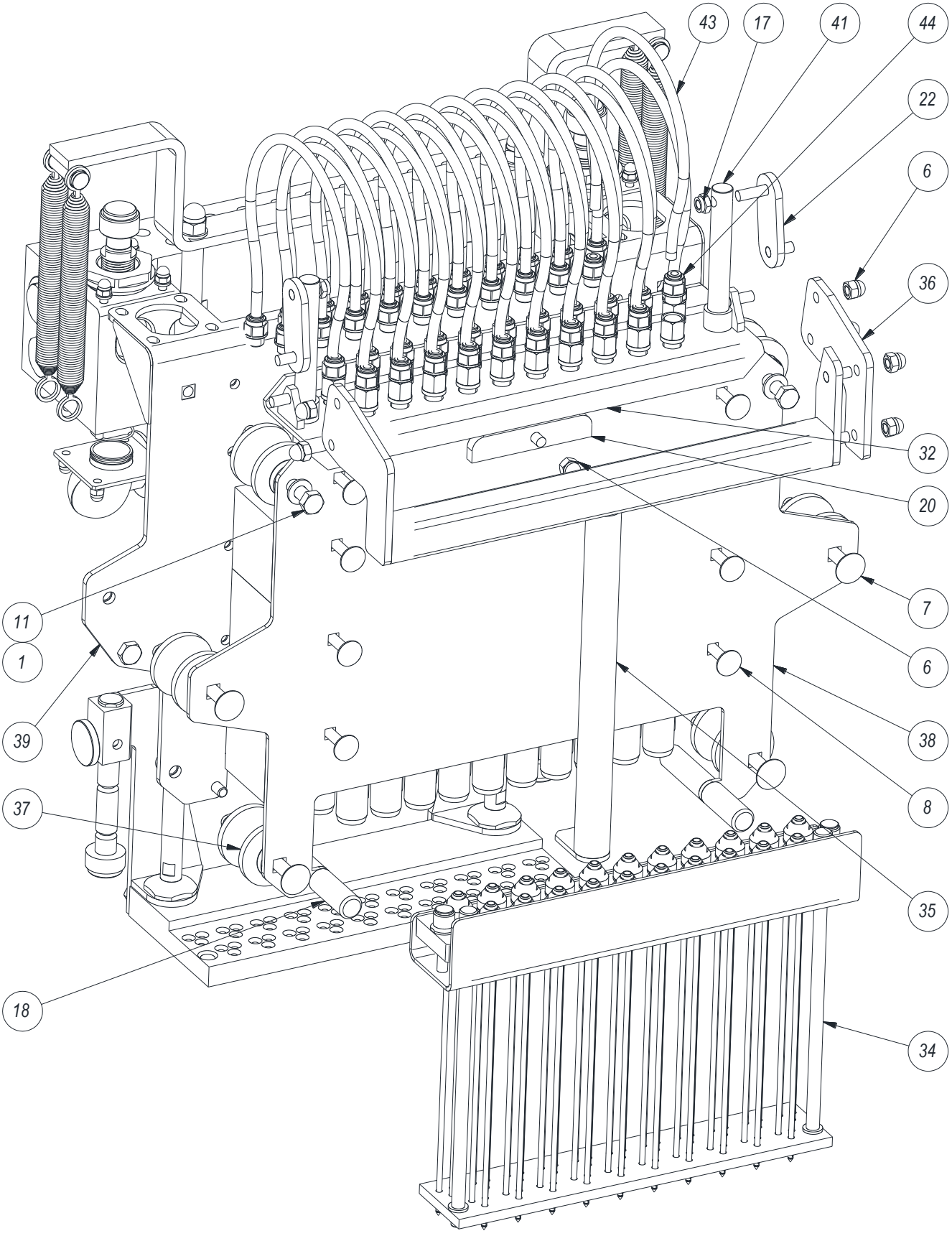

FIGURE NAME	FIGURE NO.
Głowica / Head x3	**K36.43.00.000-505**

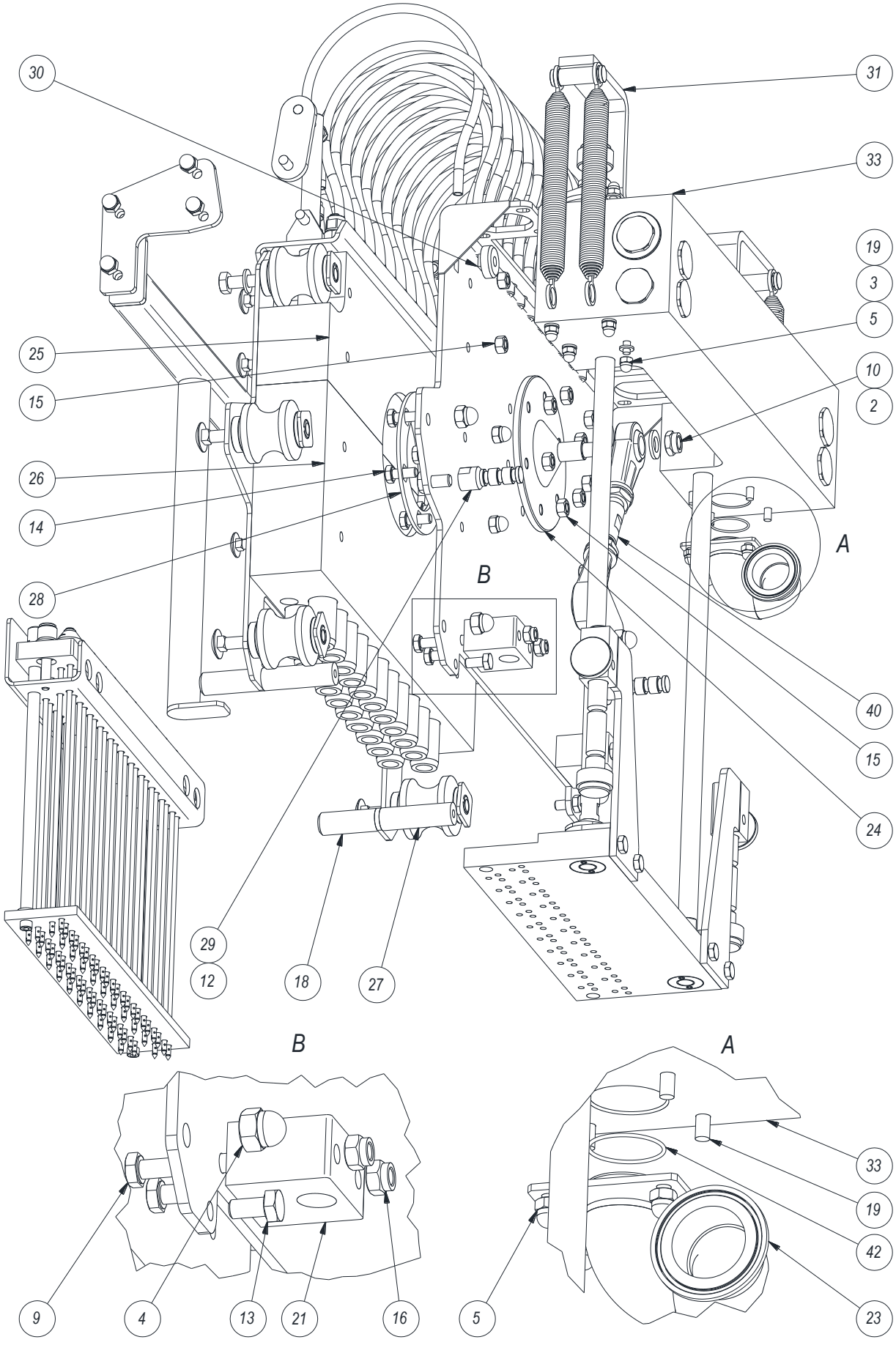

FIGURE NAME				FIGURE NO.			
Głowica / Head x3				**K36.43.00.000-505**			
POS.	INDEX	NAME	QTY.	POS.	INDEX	NAME	QTY.
1	MA00003389	Podkładka / Washer	2	25	K36.02.00.002-505	Płyta górna / Upper plate	1
2	MA00003392	Podkładka / Washer	1	26	K36.02.00.004-505	Płyta / Plate	1
3	MA00003413	Podkładka / Washer	12	27	K36.02.00.007-026	Walek 1 / Shaft 1	2
4	MA00002585	Nakrętka / Nut	4	28	K36.02.00.010-025	Blacha zabezp. / Protective plate	1
5	MA00002589	Nakrętka / Nut	16	29	K36.02.00.012-025	Pręt 1 / Rod 1	2
6	MA00002590	Nakrętka / Nut	11	30	K36.02.00.020-502	Nakrętka / Nut	2
7	MA00004617	Śruba / Bolt	4	31	K36.43.01.000-505	Sprzęg kpl / Coupling set	1
8	MA00004620	Śruba / Bolt	8	32	K36.02.02.000-505	Zespół amortyzacji igiel / Needle shock absorber	1
9	MA00004606	Śruba / Bolt	4	33	K36.02.04.000-504	Zespół płyty głównej / Main boar set	1
10	MA00005963	Nakrętka / Nut	1	34	K36.02.30.000-505	Głowica wymienna / Exchangeable head x3	1
11	MA00004457	Śruba / Bolt	2	35	K36.02.06.000-505	Dźwignia / Lever	1
12	MA00006063	Śruba / Bolt	2	36	K36.02.06.006-505	Zaczep 6 / Catch 6	1
13	MA00004588	Śruba / Bolt	2	37	K36.02.08.000-025	Rolka 2 kpl / Roll 2 set	6
14	MA00004590	Śruba / Bolt	6	38	K36.02.14.000-505	Zespół blachy / Plate set	1
15	MA00002620	Nakrętka / Nut	10	39	K36.02.21.000-505	Blacha kpl / Metal plate set	1
16	MA00002633	Nakrętka samozabezpieczająca / Self-locking nut	4	40	K36.06.01.000-025	Cięgno / String	1
17	MA00002633	Nakrętka samozabezpieczająca / Self-locking nut	2	41	K39.02.00.014-100	Zaczep 1 / Catch 1	2
18	K34.02.00.008-022	Walek 2 / Shaft 2	2	42	MA00002951	Oring	1
19	K34.02.00.011-022	Szpilka M6 / Pin M6	8	43	MA00010237	Wąż pneumat. / Pneumatic hose L=630	21
20	K34.02.00.015-507	Płaskownik / Flat bar	1	44	MA00005812	Złączka / Connector	42
21	K34.02.00.050-507	Kostka / Cube	2	45			
22	K34.02.09.000-507	Zaczep / Catch	2	46			
23	K34.14.19.000-022	Króciec głowicy / Head connector	1	47			
24	K36.02.00.001-025	Czop / Pivot	1	48			

FIGURE NAME	FIGURE NO.
Sprzęg kpl / Coupling set	**K36.43.01.000-505**

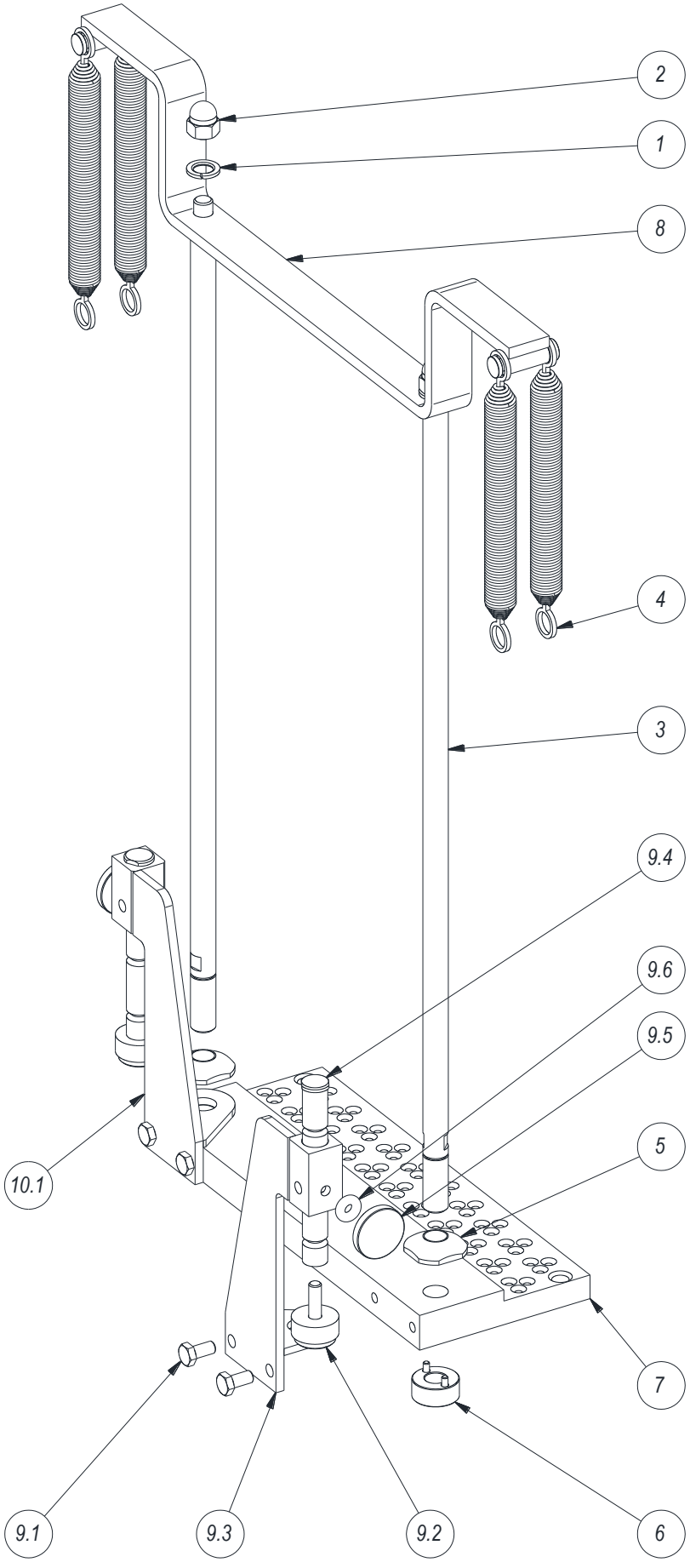

FIGURE NAME				FIGURE NO.			
Sprzęg kpl / Coupling set				**K36.43.01.000-505**			
POS.	INDEX	NAME	QTY.	POS.	INDEX	NAME	QTY.
1	MA00003391	Nakrętka / Nut	2				
2	MA00002586	Podkładka sprężysta / Spring washer	2				
3	K34.02.01.001-507	Pręt / Rod	2				
4	K34.02.01.400-088	Sprężyna naciągowa / Tension spring	4				
5	K34.02.05.102-035	Nakrętka / Nut	2				
6	K34.02.05.160-022	Nakrętka oporowa / Back nut	2				
7	K36.43.01.002-505	Belka spychająca / Push beam	1				
8	K36.02.01.100-086	Belka / Beam	1				
9.1	MA00004588	Śruba / Bolt	4				
9.2	K34.02.15.200-506	Odbój / Fender	2				
9.3	K36.02.15.100-500	Zderzak / Buffer	1				
9.4	K36.02.15.105-500	Pręt / Rod	2				
9.5	K39.02.15.109-027	Pokrętło / Handwheel	2				
9.6	MA00017578	Oring	2				
10.1	K36.02.20.100-500	Zderzak / Buffer	1				

FIGURE NAME	FIGURE NO.
Głowica wymienna / Exchangeable head x3	**K36.02.30.000-505**

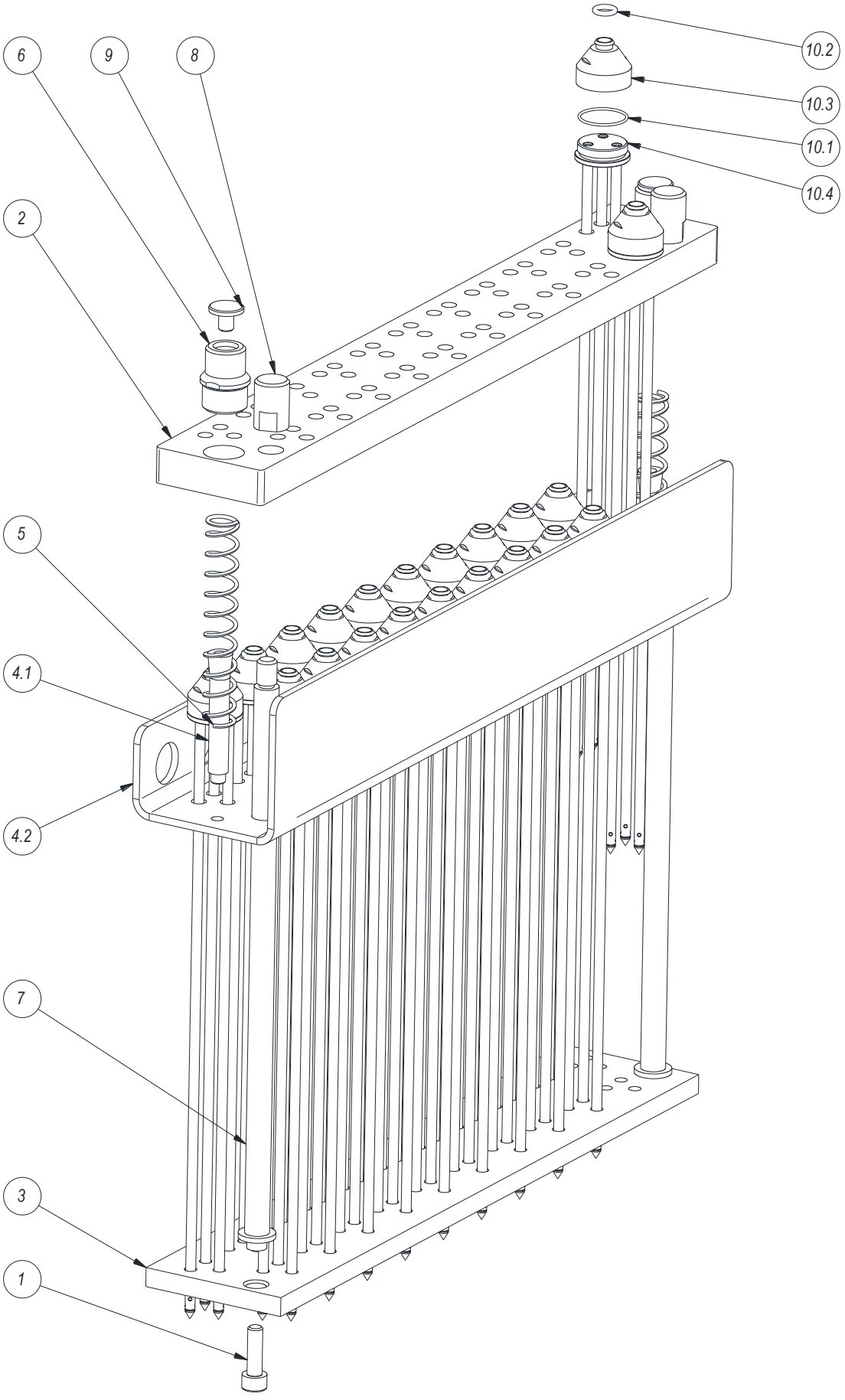

FIGURE NAME				FIGURE NO.			
Głowica wymienna / Exchangeable head x3				**K36.02.30.000-505**			
POS.	INDEX	NAME	QTY.	POS.	INDEX	NAME	QTY.
1	MA00004569	Śruba / Bolt	2				
2	K36.02.30.203-505	Płyta / Plate	1				
3	K36.02.30.205-505	Płyta / Plate	1				
4.1	K34.02.05.252-507	Trzpień / Pin	2				
4.2	K36.02.30.251-505	Blacha igłowa / Needles metal plate	1				
5	K39.02.16.005a-100	Sprężyna / Spring	2				
6	K39.02.16.007-100a	Tulejka / Bush	2				
7	K39.02.16.206-100	Pręt / Rod	2				
8	K39.02.16.207-100a	Podkładka / Washer	2				
9	K59.51.16.206	Śruba / Bolt	2				
10.1	MA00009708	Oring	21				
10.2	MA00010098	Oring	21				
10.3	P208.01.00.003	Główka / Needle head	21				
10.4	P212.02.00.000a	Korpus / Housing	21				

FIGURE NAME	FIGURE NO.
Głowica / Head x4	**K36.44.00.000-505**

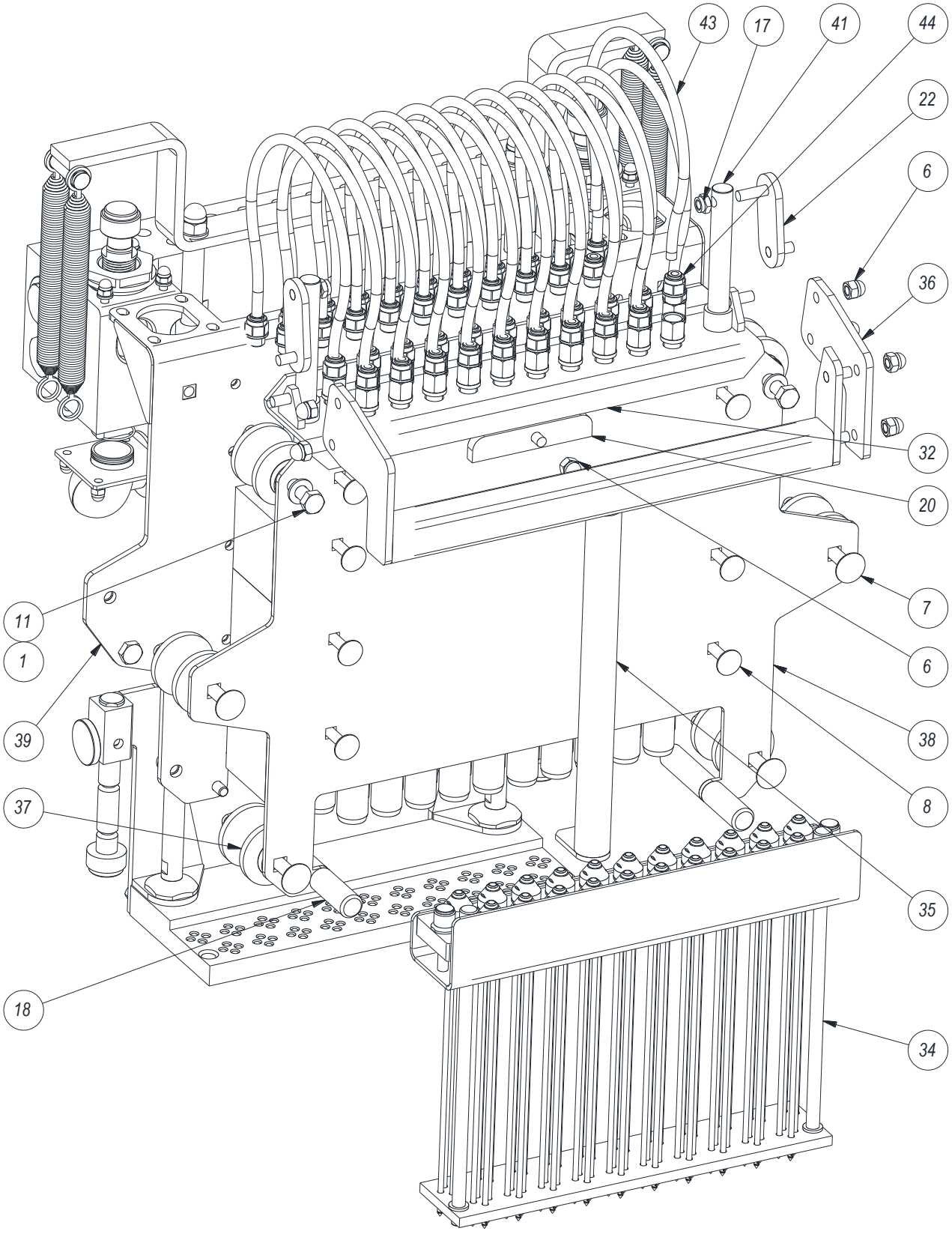

FIGURE NAME	FIGURE NO.
Głowica / Head x4	**K36.44.00.000-505**

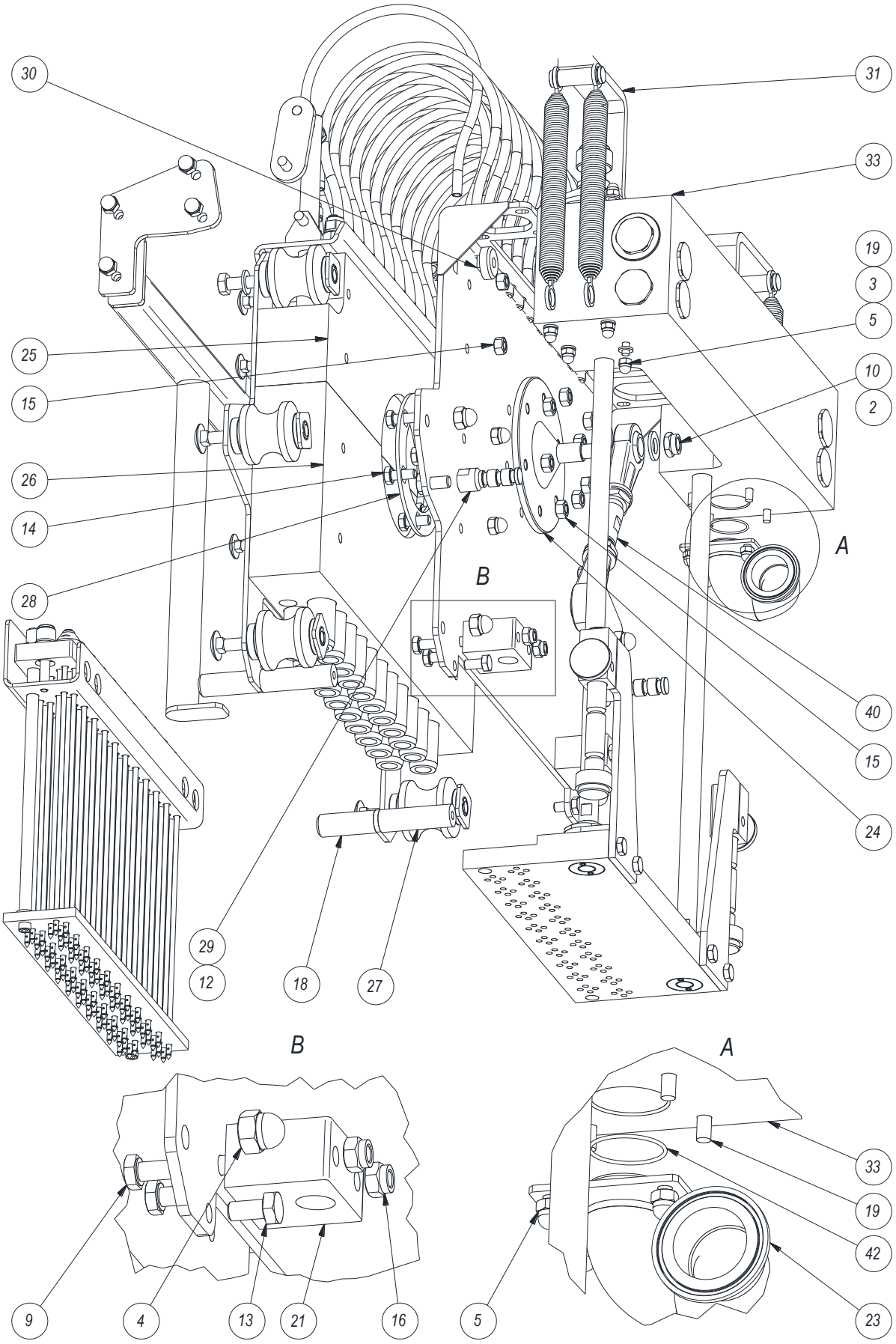

FIGURE NAME				FIGURE NO.			
Głowica / Head x4				**K36.44.00.000-505**			
POS.	INDEX	NAME	QTY.	POS.	INDEX	NAME	QTY.
1	MA00003389	Podkładka / Washer	2	25	K36.02.00.002-505	Płyta górna / Upper plate	1
2	MA00003392	Podkładka / Washer	1	26	K36.02.00.004-505	Płyta / Plate	1
3	MA00003413	Podkładka / Washer	12	27	K36.02.00.007-026	Walek 1 / Shaft 1	2
4	MA00002585	Nakrętka / Nut	4	28	K36.02.00.010-025	Blacha zabezp. / Protective plate	1
5	MA00002589	Nakrętka / Nut	16	29	K36.02.00.012-025	Pręt 1 / Rod 1	2
6	MA00002590	Nakrętka / Nut	11	30	K36.02.00.020-502	Nakrętka / Nut	2
7	MA00004617	Śruba / Bolt	4	31	K36.44.01.000-505	Sprzęg kpl / Coupling set	1
8	MA00004620	Śruba / Bolt	8	32	K36.02.02.000-505	Zespół amortyzacji igiel / Needle shock absorber	1
9	MA00004606	Śruba / Bolt	4	33	K36.02.04.000-504	Zespół płyty głównej / Main boar set	1
10	MA00005963	Nakrętka / Nut	1	34	K36.02.17.000-505	Głowica wymienna / Exchangeable head x4	1
11	MA00004457	Śruba / Bolt	2	35	K36.02.06.000-505	Dźwignia / Lever	1
12	MA00006063	Śruba / Bolt	2	36	K36.02.06.006-505	Zaczep 6 / Catch 6	1
13	MA00004588	Śruba / Bolt	2	37	K36.02.08.000-025	Rolka 2 kpl / Roll 2 set	6
14	MA00004590	Śruba / Bolt	6	38	K36.02.14.000-505	Zespół blachy / Plate set	1
15	MA00002620	Nakrętka / Nut	10	39	K36.02.21.000-505	Blacha kpl / Metal plate set	1
16	MA00002633	Nakrętka samozabezpieczająca / Self-locking nut	4	40	K36.06.01.000-025	Cięgno / String	1
17	MA00002633	Nakrętka samozabezpieczająca / Self-locking nut	2	41	K39.02.00.014-100	Zaczep 1 / Catch 1	2
18	K34.02.00.008-022	Walek 2 / Shaft 2	2	42	MA00002951	Oring	1
19	K34.02.00.011-022	Szpilka M6 / Pin M6	8	43	MA00010237	Wąż pneumat. / Pneumatic hose L=630	21
20	K34.02.00.015-507	Płaskownik / Flat bar	1	44	MA00005812	Złączka / Connector	42
21	K34.02.00.050-507	Kostka / Cube	2	45			
22	K34.02.09.000-507	Zaczep / Catch	2	46			
23	K34.14.19.000-022	Króciec głowicy / Head connector	1	47			
24	K36.02.00.001-025	Czop / Pivot	1	48			

FIGURE NAME	FIGURE NO.
Sprzęg kpl / Coupling set	**K36.44.01.000-505**

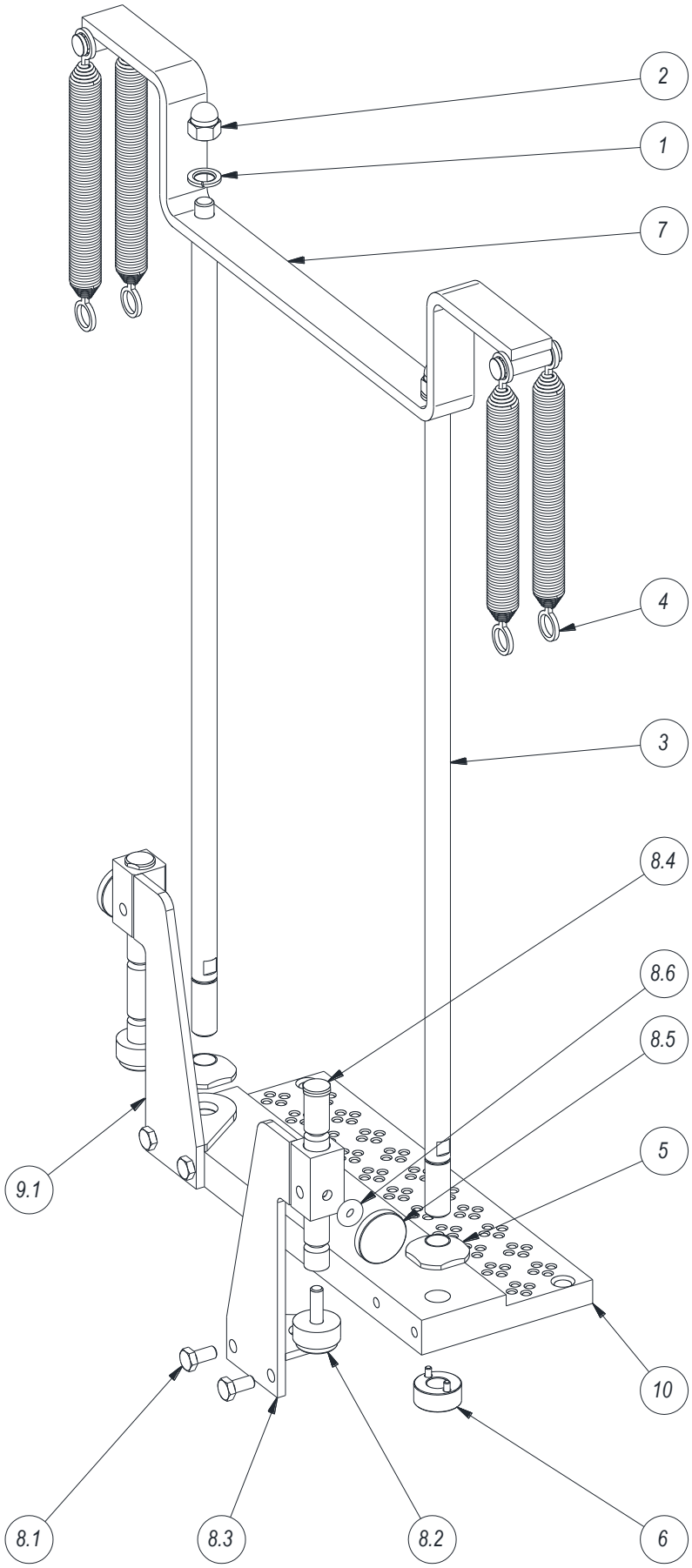

FIGURE NAME				FIGURE NO.			
Sprzęg kpl / Coupling set				**K36.44.01.000-505**			
POS.	INDEX	NAME	QTY.	POS.	INDEX	NAME	QTY.
1	MA00003391	Podkładka sprężysta / Spring washer	2				
2	MA00002586	Nakrętka kołpakowa / Acorn nut	2				
3	K34.02.01.001-507	Pręt / Rod	2				
4	K34.02.01.400-088	Sprężyna naciągowa / Tension spring	4				
5	K34.02.05.102-035	Nakrętka / Nut	2				
6	K34.02.05.160-022	Nakrętka oporowa / Back nut	2				
7	K36.02.01.100-086	Belka / Beam	1				
8.1	MA00004588	Śruba / Bolt	4				
8.2	K34.02.15.200-506	Odbój / Fender	2				
8.3	K36.02.15.100-500	Zderzak / Buffer	1				
8.4	K36.02.15.105-500	Pręt / Rod	2				
8.5	K39.02.15.109-027	Pokrętło / Handwheel	2				
8.6	MA00017578	Oring	2				
9.1	K36.02.20.100-500	Zderzak / Buffer	1				
10	K36.44.01.002-505	Belka spychająca / Push beam	1				

FIGURE NAME	FIGURE NO.
Głowica wymienna / Exchangeable head x4	**K36.02.17.000-505**

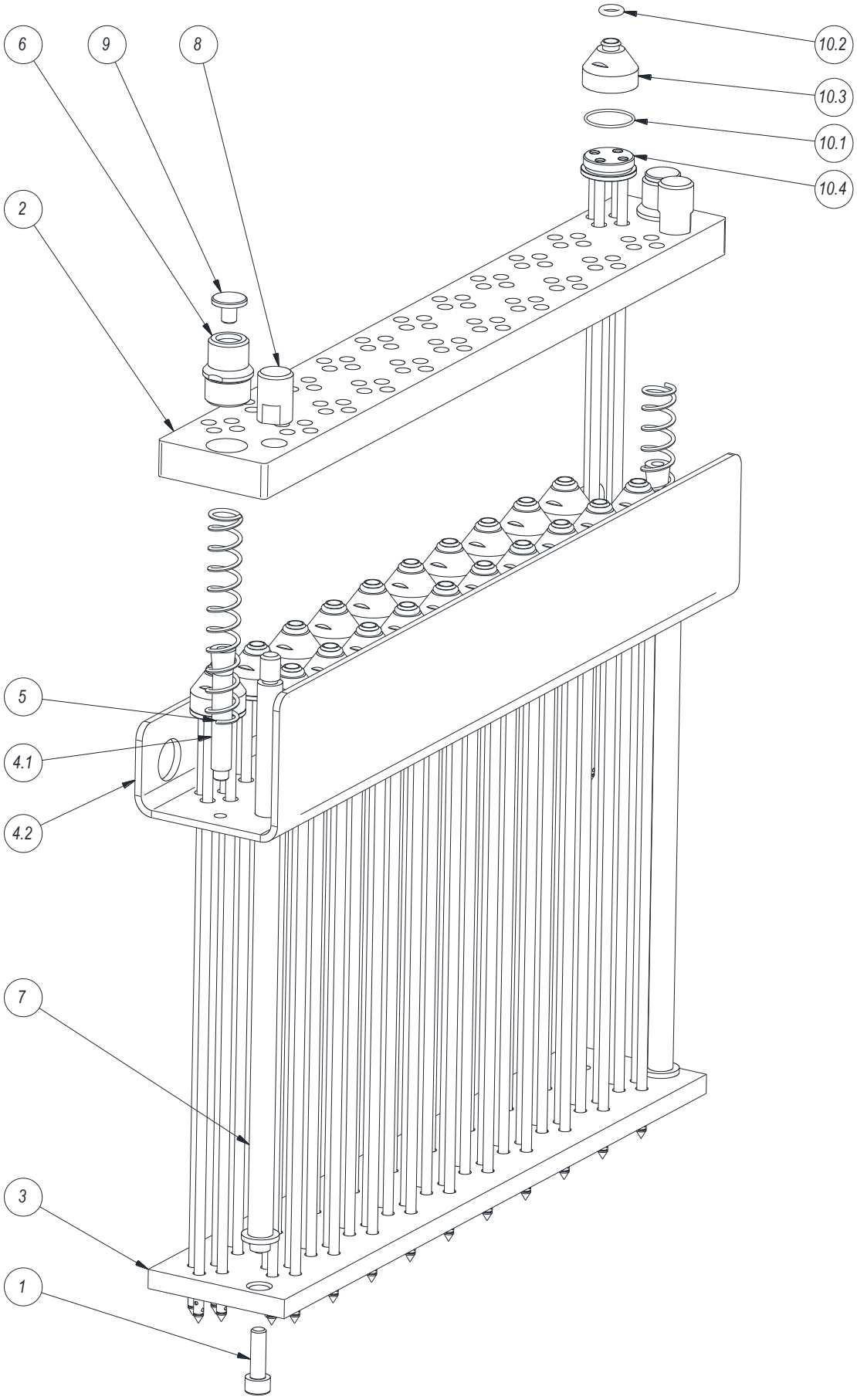

FIGURE NAME				FIGURE NO.			
Głowica wymienna / Exchangeable head x4				**K36.02.17.000-505**			
POS.	INDEX	NAME	QTY.	POS.	INDEX	NAME	QTY.
1	MA00004569	Śruba / Bolt	2				
2	K36.02.17.203-505	Płyta / Plate	1				
3	K36.02.17.205-505	Płyta / Plate	1				
4.1	K34.02.05.252-507	Trzpień / Pin	2				
4.2	K36.02.17.251-505	Blacha igłowa / Needles metal plate	1				
5	K39.02.16.005a-100	Sprężyna / Spring	2				
6	K39.02.16.007-100a	Tulejka / Bush	2				
7	K39.02.16.206-100	Pręt / Rod	2				
8	K39.02.16.207-100a	Podkładka / Washer	2				
9	K59.51.16.206	Śruba / Bolt	2				
10.1	MA00009708	Oring	21				
10.2	MA00010098	Oring	21				
10.3	P208.01.00.003	Główka / Needle head	21				
10.4	P214.02.00.000a	Korpus / Housing	21				