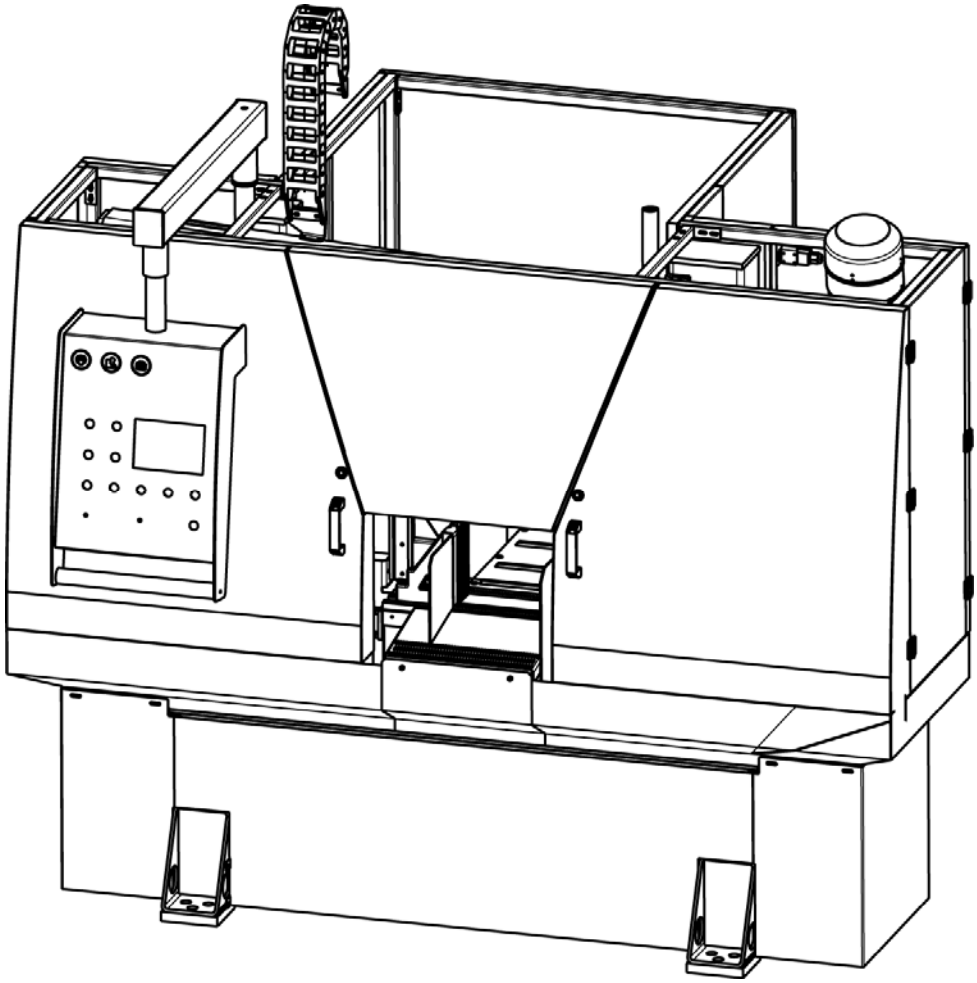
Series **Production**



Production 400.360 ANC

Operating instructions

Before transporting and using the machine, please read the instructions thoroughly!

Seriové číslo / Serien Nummer / Serial Number _____

Service and information

Your BOMAR dealer:

Direct BOMAR contact:		
BOMAR spol. s r.o. Těžební 1236/1 62700 Brno Czech Republic, EU	telefon: fax: e-mail: www:	+420 – 533 426 100 +420 – 533 426 109 info@bomar.cz http://www.bomar.cz
We are available:		
Mondays to Fridays	7^{00} – 16^{00}	
Version:		
1.00 / June 2011 rev. 1		

EC Declaration of Conformity

1) We

BOMAR, spol. s r.o.
Těžební 1236/1
627 00 Brno, The Czech Republic
Id.no: 48908827

declare herewith,

that the following designated device based on its conception and construction as well as the design launched by us meets the relevant basic safety requirements of the decrees of the government. In the event of any device modification not approved by us this declaration shall lose its validity.

Name: **Band Saw**

Type range: **Production 400.360 ANC**

Serial number: .....

Manufacturer: **BOMAR, spol. s r.o., Těžební 1236/1, 627 00 Brno**

Product data
Determination: for cross dividing and cutting of rolled and towed bars and profiles made of steel, stainless steel, non-ferrous metals and plastics.

Description: stand, table, cutting unit with the saw band and drive, clamping device , Hydraulic, cooling system, el. switch board with control panel.

Technical data: cutting rate 15–100 $m.min^{-1}$,
cutting angle 0°
Total dimensions in mm (l×w×h) 3300×2000×2350,
Supply voltage 400 V TN-C-S,
Total power requirement 11,5 kW,
weight 2000 kg

The applied decrees of governments: **No. 176/2008 Coll.** (Directive 2006/42/EC)
No. 616/2006 Coll. (Directive 2004/108/EC)
No. 17/2003 Coll. (Directive 2006/95/EC)

The applied harmonized standards,
National standards and technical specifications: ČSN EN ISO 12100:2011, ČSN EN 13 898+A1:2009, ČSN EN ISO 13857:2008, ČSN EN ISO4413:2011, ČSN EN 61000-6-2 ed. 2:2007, ČSN EN 61000-6-4:2002 ed.2:2007, ČSN EN 60204-1 ed.2:2007

The product is safe on condition of the common and determined usage.

The conformity judging was performed according to §12, par. 3, let. a), of the Law no. 22/1997 Coll. as amended
2) [2] The declaration of conformity was carried out in the cooperation with the TÜV SÜD Czech s.r.o, Novodvorská 994, 142 21 Prague 4 – Czech Republic, Identification number: 63987121 - Inspection body no. 4002

The inspection certificate no . 01.882.133/10/07/02/0 was issued.

BOMAR, spol. s r.o.
Těžební 1236/1, 627 00 Brno
Czech Republic
IČO: 48908827
DIČ: CZ48908827

Alfred Pichlmann, Managing Director

Point of issue, datum	Name and function of the responsible subject	Signature

1] Name, address and identification number of the subject issuing the conformity declaration (producer of importer)
2) The authorized or accredited body co-operating on the conformity judging

!	If the equipment is installed without safety equipment offered by BOMAR, spol. s ro or its agents and used by the customer (or buyer) then EC declaration loses validity. EC Declaration of conformity is valid only if customer (buyer) installed the BOMAR safety equipment with the machine or with some other with equivalent safety device in accordance with current applicable regulations and standards. All machine elements and components that were built into the device by BOMAR, spol. s ro have been declared "identical" to a safety device, as offered by BOMAR, spol. s ro or its agents.

Content

1. Safety notes

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The operating instructions must be read by the person, who keeps in touch with the machine before transportation, installation, using, servicing, reparation, stocking or removal!

The operating instructions include relevant information. The operator must familiarise himself with the install and operation, safety notes and machine servicing, because reliability and service life must be reached. The operating instructions must avoid risks, which are linked to work on the machine. Before transporting and using of the machine, please read the instructions thoroughly!

Attention!
The operating instructions must be available at the machine!
Keep the operating instructions in good condition!

1.1. Machine determination

The band saw **Production 400.360 ANC** is determined for cutting and shortening of rolled bars and drawn bars and profiles from steels, stainless steels, non-ferrous metals and plastics **without cutting angle** (0°).

Combustible materials are excepted for cutting! Any other usage and operation outside this range are unauthorized and the manufacturer/supplier does not accept any responsibility for any damages resulting from such misuse. **The operator has full responsibility!**

The machine is equipped with safety and protective guarding for operator and machine protection. Nevertheless, this safety and protective guarding cannot prevent injury. Service personnel must read this chapter and comprehend it, before he starts to work on the machine. **Always keep instructions about work safety!** Service personnel must take into account other aspects of the risk, which refer to the ambient conditions and the material.

Attention!
Consider the safety signs on the machine. Do not remove or damage them!

1.2. Protective suit and personal safety

Wear tight fitting overalls! Loose fitting clothes may be caught with machine parts and cause serious injury.

Wear protective gloves! Material cuts and saw band have sharp edges and may cause serious injuries.

Attention!
Gloves you can use only at working material replacement (saw band)! The machine and accessories must be inactive!
If the machine is running, you must not wear gloves! It is dangerous, because some parts of the machine can catch gloves!

Wear protective shoes with non-skid soles! The unsuitable shoes may cause balance loss and following injury. Falling work pieces may cause serious injuries too.

Wear protective goggles! Chips and cooling liquid may damage your eyes.

Always wear ear protections! Most of the machines emit up to 80 dB and may damage your hearing.

Do not wear jewellery and always tie back long hair! Moving machine parts can catch jewellery or loose hair and may cause serious injuries.

Operate the machine only when you are fit enough to work. Illnesses or injuries diminish concentration. Avoid machine work, which may compromise the safety of you and your colleagues!

1.3. Safety notes for machine operator

Attention!
Machine can be operated by person older than 18 years!
Machine can be operated only person physically and mentally fit for this activity

Machine can be operated only by one person. Machine operator is responsible for presence of other persons by the machine.

Keep instructions and orders about work safety!
Read the operating instructions, before you start to work on the machine! Keep the operating instructions in good condition!

Close covers before the machine starting and check, if the covers are not damaged. Damaged covers must be repaired or changed. Do not start the machine, if the cover is removed! Check, if the electric cables are not damaged.

Attention!
Do not connect the machine to electricity if the covers are removed. Do not touch the electrical equipment.

- Do not hold the material for clamping to the vice and for cutting!
- Do not operate with the buttons and the switches on the control panel, when you have gloves!
- For machine starting take care, that there is nobody in the working area of the machine (it means in the working area of the vice, the saw band, the saw arm etc.).
- In no circumstances touch the rotating elements.
- Work on the machine only when the machine is in good condition!
- Check at least once in a shift, if the machine is not damaged. If the machine is damaged, you must bring the machine in order and you must inform your superior!
- Keep your working area clean! Ensure sufficient lighting in the working area.
- Take off the spilt water or the oil from the floor and dry it. Do not touch the cooling liquid with bare hands! Do not set the nozzle of the cooling liquid, when the machine is started on
- Do not remove the chips from the working area of the machine, when the machine is started on!
- Do not use the compressed air for the machine cleaning or for the chips removing!
- Use the protective instruments for chips removal!

1.4. Safety notes for the servicing and repairs

Attention!
Only a qualified professional can carry out the servicing and repairs of the electric equipment! Take special care during the work with electrical equipment. High voltage shock can have fatal consequences! Always keep notes about work safety! Otherwise, there is possibility of heavy injury!

Switch off the main switch and lock it, before you start service work! Otherwise, there is possibility of hazardous machine starting.

Only qualified person can do the servicing and repairs. For parts changing, use only parts, which are identical with the originals. Otherwise, there is possibility of health hazard. Use only recommended type of the hydraulic oils and oils and lubricants!

Do not remove or do not lock the limit switches or safety equipments! Any use of the saw, accessories or machine parts other than that intended by the BOMAR, spol. s r.o. company is not permitted. The guarantee on this product will be afterward lost and BOMAR, spol. s r.o. takes no responsibility for caused damages.

1.5. Safety notes for the servicing and repairs on hydraulic unit

Compliance with the the principles of cleanliness is basic requirement for trouble-free operation of hydraulic equipment. Hydraulic components are products made with high accuracy, and any contamination leads to a reduction lifetime or even malfunction. The consequences are very difficult to remove and expensive.

Always use clean tools. Parts and fasteners, which are part of a hydraulic circuit, never put away the dirty surface. The best cleaning agent is crepe paper, because the fibers of the cleaning cloths can also cause malfunction.

Protective cap from the threaded chamber remove just before the assembly of the unit.

Hoses and pipes before mounting flush with gasoline or other cleaning agent and blow compressed air.

All fittings must be properly tightened. However, do not raw power.

1.6. Safety machine accessories

The machine is equipped with safety accessories. It protects the operator from injuries and the machine before damage. The safety accessories are blocking accessories, emergency switches and covers. Check once in a week the function of the safety accessories. If the safety accessories are functionless, you must stop work and repair or change the safety accessories.

Enhanced risk!
Do not come into or intervene in the cutting area. Otherwise, there is possibility of heavy injury.

1.6.1. Total Stop

TOTAL STOP button is used for emergency switching – off the machine in case defect or health hazard. By pressing **TOTAL STOP** button is interrupted the supply of the electrical power.

If any damages or fault appears, immediately press TOTAL STOP button!

After push ***TOTAL STOP*** button is shown warning message on LCD.

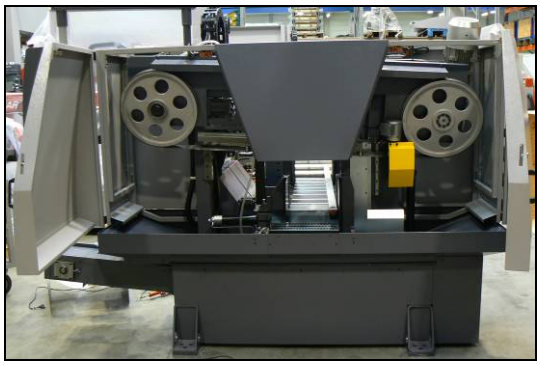
Release the pressing button is possible by twisting of the upper part of the button.

1.6.2. Arm covers

Left cover – It covers tightening wheel. If the cover is opened during operation, the limit switch is opened and the band saw is stopped. The band saw is not possible start in set mode.

Right cover – It covers driving wheel. If the cover is opened during operation, the limit switch is opened and the band saw is stopped. The band saw is not possible start in set mode.

Central cover – It covers band saw.

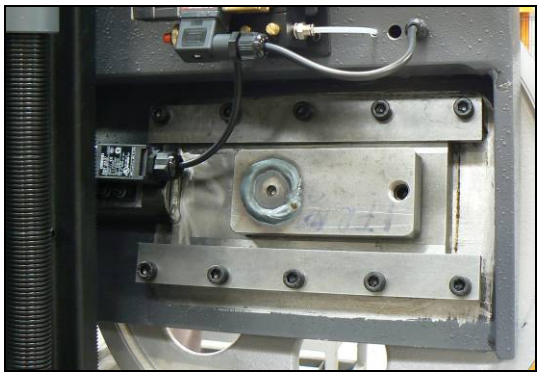


The band saw is stated to the operation, when the covers is closed!

Limit switches on saw arm control if cowers are open or not.

1.6.3. Saw band stretching and rupture inspection

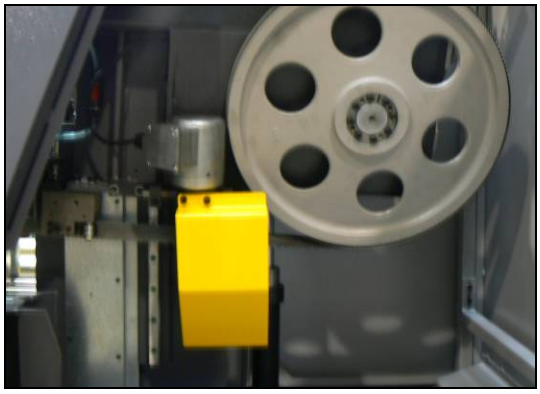
This device checks the saw band stretching and causes immediate machine shut – down in the event the band ruptures.



The device contains limit switch. Check the stretching carefully and periodically – eventually adjust.

1.6.4. Brush cover

It covers the brush and the brush engine of the saw band.



Never switch on the saw band driver if this cover is not mounted!

1.7. Safety notes for the cooling

Attention!

- *When handling cooling agents always wear hazardous fluid-proof gloves!*
- *Wear protective goggles!*
- *Cooling liquid can get in contact with your eyes and may cause permanent severe injuries*

1.7.1. Instructions for first help

1. Pull off and safely remove polluted, soaked clothing.
2. For breathing, go out in the fresh air or look for first aid treatment.
3. Wash with water or use crèmes for contact with the skin.
4. Flush with water for eyes and look for first aid treatment.
5. For swallowing, drink a lot of water and induce vomiting. Look for medical help.

1.7.2. Safety information for the chip remover

The chip remover is auxiliary equipment, following information applies only for equipment with this conveyor.

If the machine is switched on, operate it only using the control panel (see Chapter 3 Machine control).

Attention!
It is forbidden to enter the swarf conveyor area if the saw is in operation. All maintenance and other works on the swarf conveyor could be done only on equipment which has been switched off.

1.8. Laser beams

Machine for its function using laser sensors for control purposes. Laser sensors for control purposes are located on the feeder, vices and on the saw arm. In the vicinity of the security sticker.

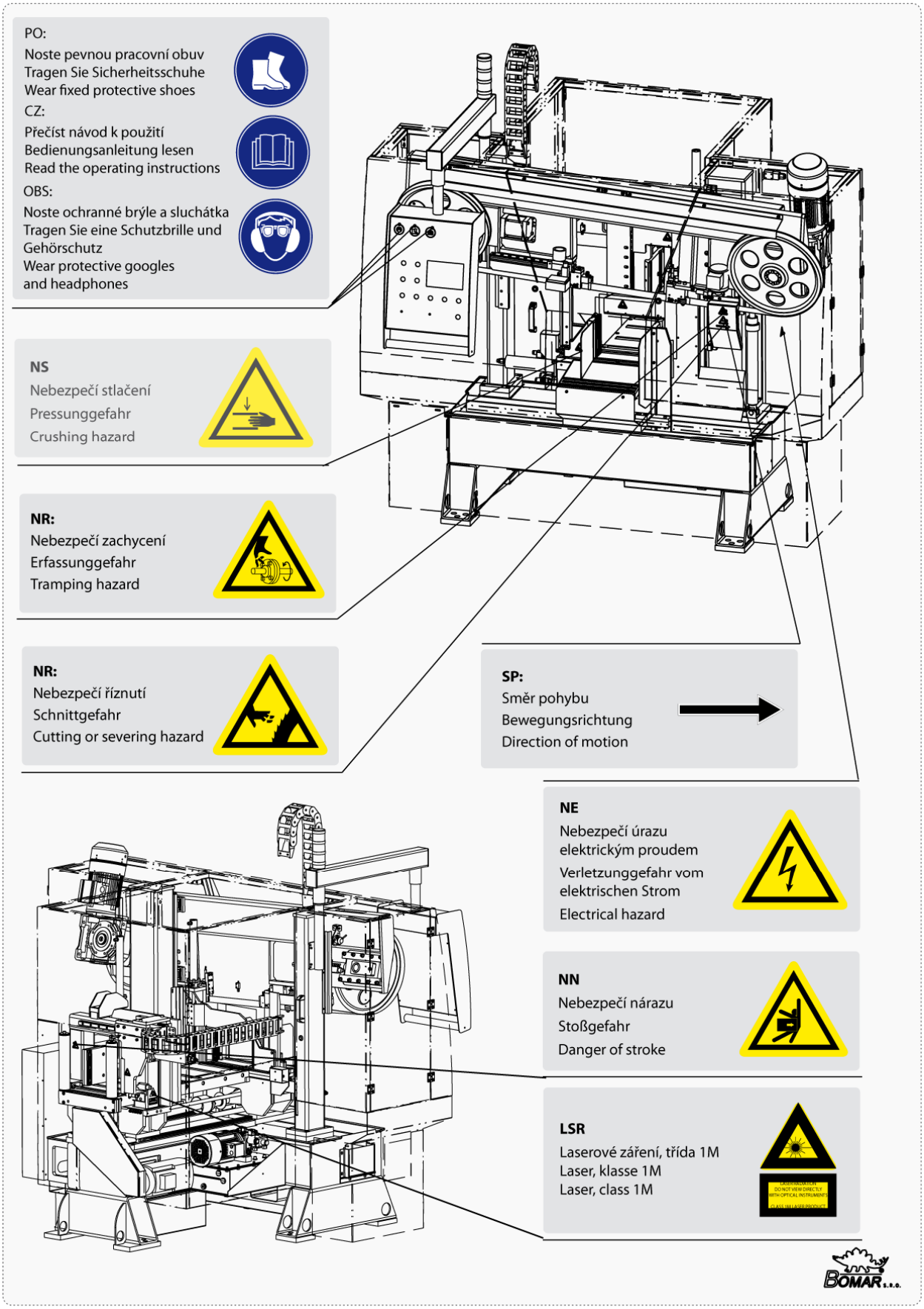
Laser used on the machine for feeding material class 1M.

It is forbidden to look into the laser beam barriers.

1.9. Umístění štítku stroje / Maschinenschild position / Position of machine label

The machine label is located on control panel arm.

1.10. Umístění bezpečnostních značek / Verteilung der Sicherheitszeichen / Position of safety symbols



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2. Machine documentation

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2.1. Technická data / Technische Daten / Technical data

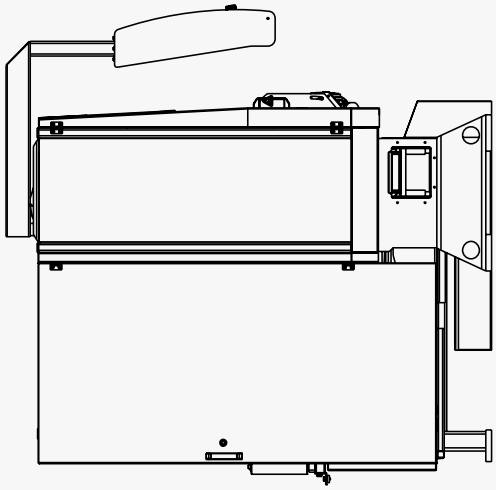
Hmotnost stroje / Maschinengewicht / Machine weight:	
• Hmotnost / Gewicht / Weight	2000 kg
Rozměry stroje / Maschinengröße / Machine size :	
• Délka / Länge / Lenght	3300 mm
• Šířka / Breite / Width	2000 mm
• Výška / Höhe / Height	2350 mm
Elektrické vybavení / Elektrische Ausrüstung / Electical equipment:	
• Napájení / Versorgungsspannun / Supply voltage	~ 3×400 V, 50 Hz, TN-C-S/TN-C
• Příkon / Gesamptschlusswert / Total Input	- kW
• Max.jištění / Max. Vorschaltsicherung / Max. Fuse	- A
• Krytí / Schutzart / Protection	IP 54
Akustický tlak / Schalldruckpegel / Acoustic pressure:	
• Production 400.360 ANC	L_{Aeqv} = 78,5 dB
Pohon / Atrieb / Drive:	
• Typ / Typ / Type	MDERAXX 100-32J B14
• Napájení / Versorgungsspannun / Supply voltage	~ 3×400 V, 50 Hz
• Výkon / Leistung / Output	3 kW
• Jmenovité otáčky / Motornenndrehzahl / Nominal speed	1420 m.min^{-1}
Hydraulické zařízení / Hydraulikeinrichtung / Hydraulic equipment	
• Typ / Typ / Type	92.001.048 (731-0507)
• Výkon / Leistung / Output	p_{max}=6,5 MPa/2,2 kW
Chladící zařízení / Kühlmiteleinrichtung / Cooling equipment:	
• Typ / Typ / Type	3COA4-12
• Obsah nádrže / Volumen vom Kühlmittel / Capacity	40 dm3
• MICRONISER	na přání / möglich / optional -
Rozměr pásu / Sägebanddimension / Band size:	
5445×41×1,3 mm	
Řezná rychlost / Schnittgeschwindigkeit / Cutting speed:	
15–120 m/min.	
Jeden Zdvih / Vorschublänge Einfachhub / One Upstroak:	
750 mm	
Max. Délka podání / Max. Vorschublänge / Max. feed:	
9999 mm	
Min. uříznutý materiál / Minimum abgeschnitten Material / Min.cutted material:	
10 mm	
Řezné rozsahy / Schnittbereiche / Cutting size:	

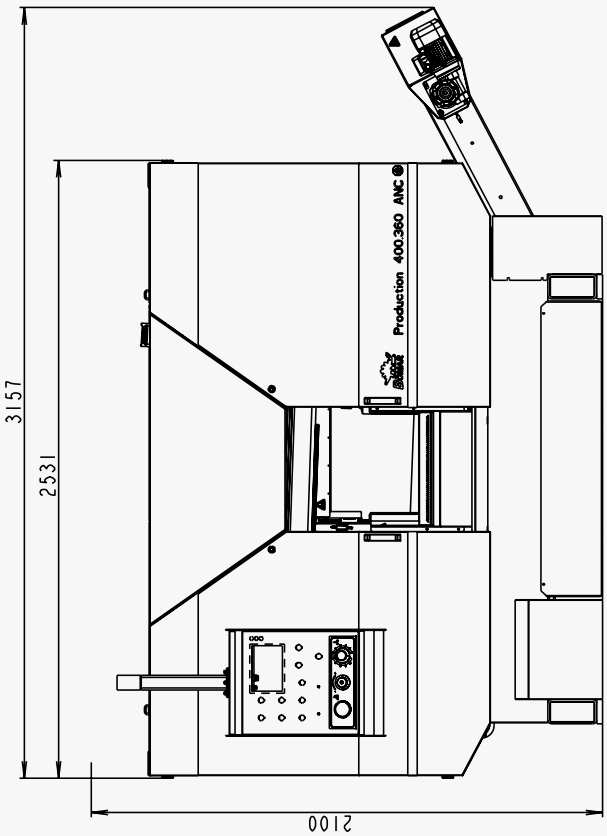
0°	Ø 360 mm	400×360 mm	400×360 mm	360×360 mm

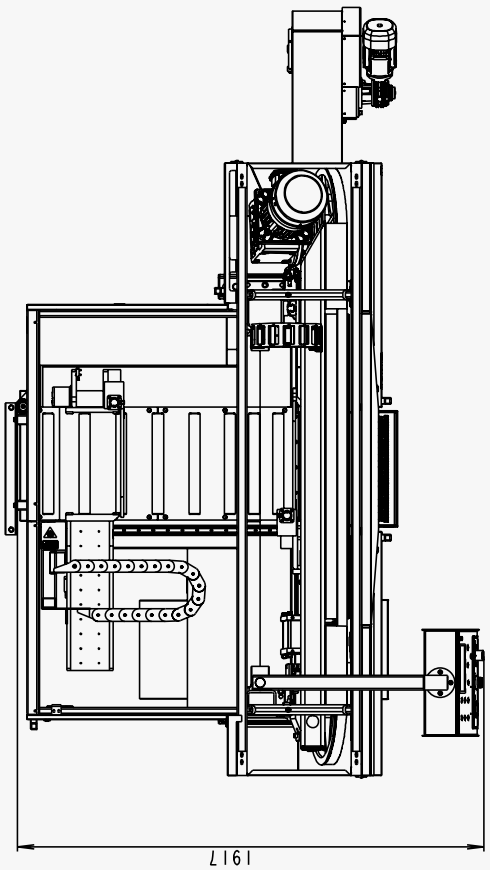
Acoustic pressure level:

The equivalent level of the acoustic pressure A (noise) in the position of the operator is L_{Aeqv}= 78,5 dB. The values are indicating the emission levels and may not present safety working levels. Among the factors, which influence the real values of the operator exposure, are properties of the workshop room, cut material and used saw bands – which may significantly influence the exposure levels.

2.2. Rozměrové schéma / Aufstellzeichnung / Installation diagram







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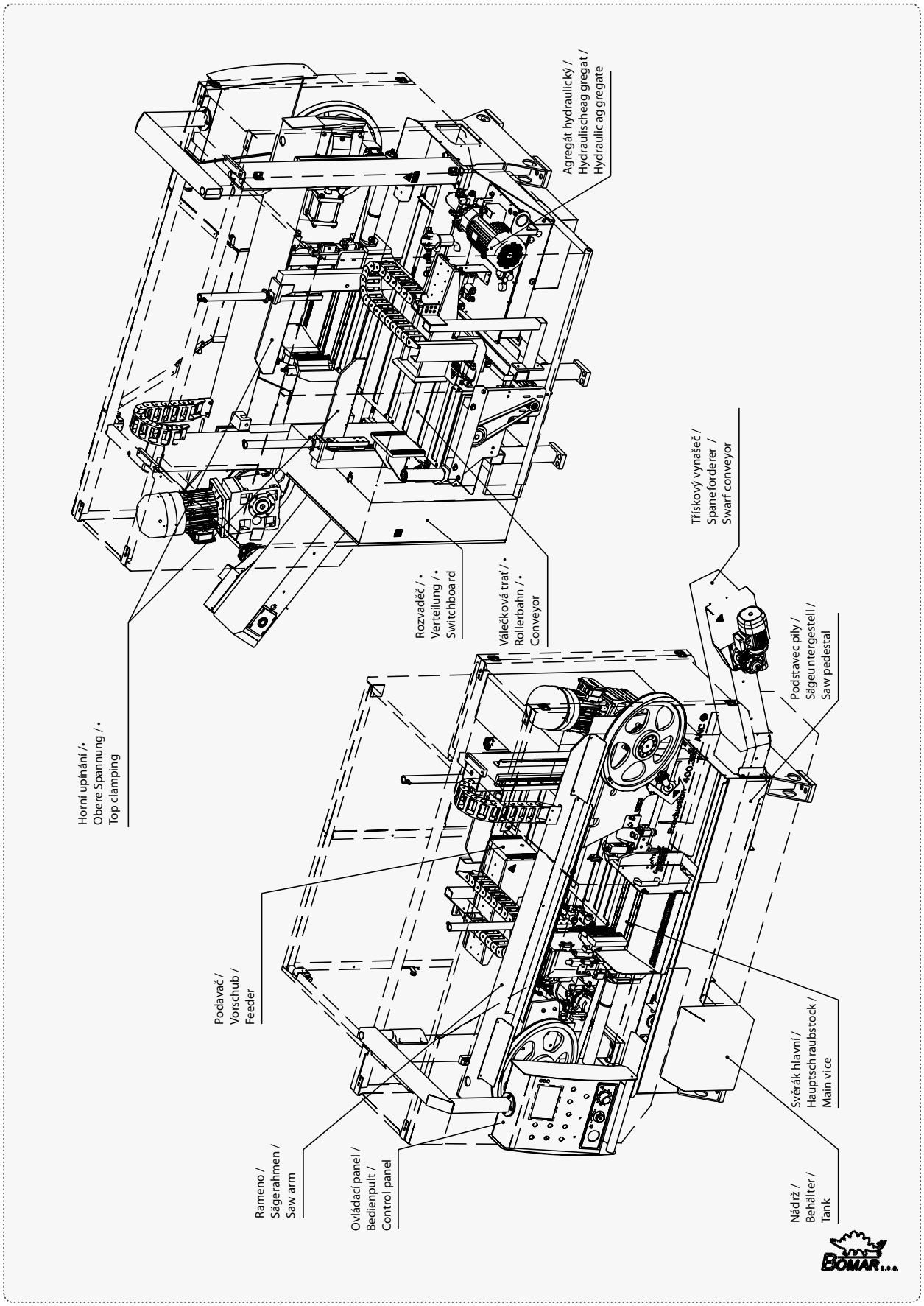
2.3. Popis / Beschreibung / Description



2.4. Transportation and stocking

2.4.1. Conditions for transportation and stocking

Keep recommendations for the manufacturers for transportation and stocking! If the recommendations are not kept, damage can occur to the machine.

- Don't use a forklift truck for handling the machine, if you do not have license for it!
- Don't move under suspended loads! Fault in lifting device may cause serious injury.
- Keep a safe distance from the machine during the transport.
- Temperature of the air from *-25°C to 55°C*, for a *short term* (max. 24 hours) temperature of the air until *70°C*
- Do not expose the machine to radiation (for example microwave radiation, ultraviolet radiation, laser radiation, x-ray radiation). Radiation can cause problems with the machine function and deteriorating condition of the isolation.
- Take measures, to prevent damage by dampness, by vibrations and by shakes.

2.4.2. Transport and stocking preparations

Close the vice and thoroughly oil all blank surfaces.

Lower the saw frame to the lowest position.

Make sure to empty the machine of all traces of the cooling agent.

Fasten all loose parts securely to the machine.

Pack and wrap the control desk securely to avoid damage during transport.

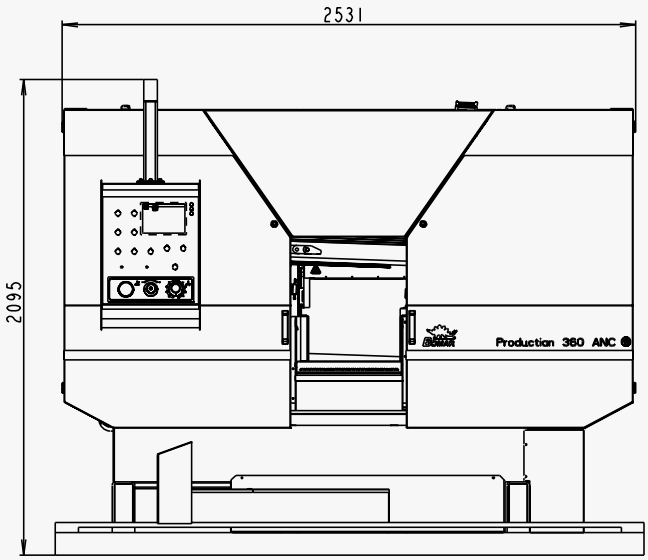
Fix the stickers stating the minimum approximate machine weight to at least five well visible places.

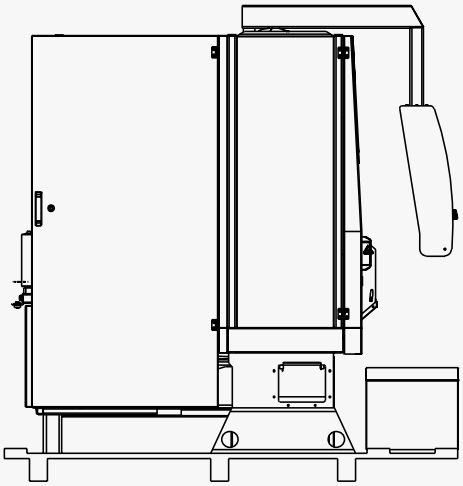
2.4.3. Transport and stocking

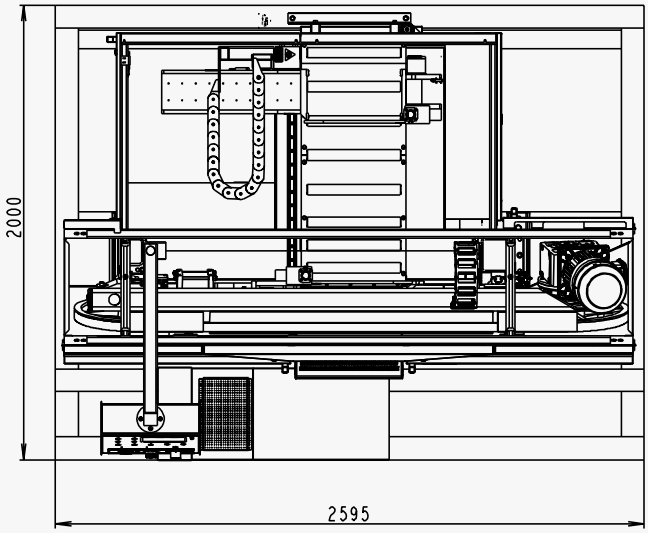
The machine must be secured during transportation. Screw on the palette to the floor of the van or the trailer. Be careful that the machine is not damaged during transportation. Store the machine only under conditions mentioned in the manual, to avoid damage of the machine.

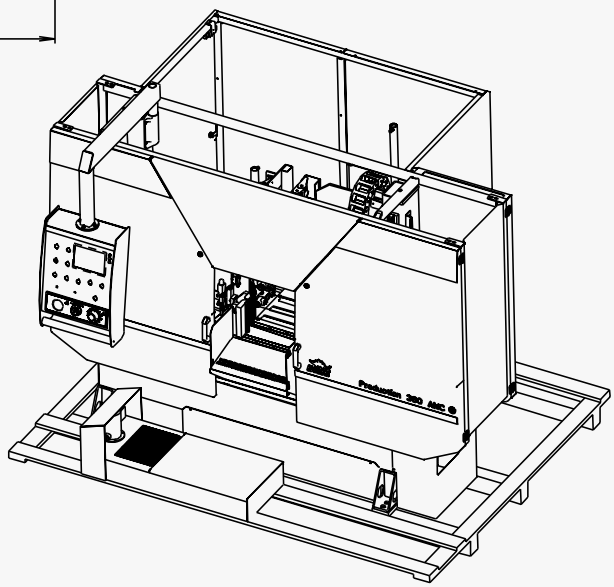
It is forbidden to handle the machine any other way, than it is written in this operating instructions, the machine can be damaged.

2.4.4. Transportní schéma / Transport schema / Transport scheme









2.5. Activation

2.5.1. Machine working conditions

Keep the conditions of the manufacturer for machine operating! If recommendations are not kept, damage can occur to the machine.

The manufacturer warrants the correct function of the machine for these conditions:

- At temperature air from ***5°C to 40°C***, the temperature average during 24 hours must ***not exceed over 35°C***.
- At relative dampness of the air in the interval from 30% to 95% (not concentrate). Altitude must be lower than 1000 metres.
- Do not expose the machine to the radiation (for example microwave radiation, ultra-violet radiation, laser radiation, x-ray radiation). Radiation can cause problems with the machine function and deteriorating condition of the isolation.

Attention!
If the ambient temperature drops below 15 ˚ C is required before operating the machine to have switch on hydraulic unit around 10 minutes and then made several motion few times (for example, in manual mode) by all hydraulic cylinders. The reason is to heat hydraulic oil to the operating temperature for proper function of the pressure switches (and choke).

2.6. Band saw unpacking and assembling

Remove the packing from the machine and unpack all parts.

Attention!
Switch off the main switch and lock it, before you start assembly! Otherwise, there is possibility of hazardous machine starting.

If the hydraulic unit is outside the machine (the machine only connected hoses and cables), it needs to be placed and mounted on a solid basis (floors, etc.). The mounting holes are used on the bottom (bases) of the tank.

2.6.1. Machine installing and levelling

Check the floor supporting capacity before machine installing. If the floor capacity does not agree with requirements, you must prepare the necessary base for the machine.

Minimal requirement:

machine weight – Production 400.360 ANC – 2000 kg

+ weight of accessories

+ maximum weight of material

- The machine must be levelled at the horizontal position. All feet of the machine must touch with the floor after levelling
- The machine must be levelled by means of the calibrated spirit level. Spirit level is put on the vice area. Set the roller conveyors according to the spirit level.
- For machine levelling, take care that there is sufficient available space for operation, repair work, servicing of the machine and handling the material..
- The machine including appended parts and accessories must be visible from the place of operation.

2.6.2. Machine disposal after lifetime

Blown out all service fluids (cooling liquid, hydraulic oil) into designated reservoir. Dismantle machine into separate parts and dispose them in accordance with valid directives.

2.6.3. First run of the power pack

Before the first run check:

- The direction of the Pump, while run the power pack for max. 2seconds.
- The cooling fan of the motor has to rotate in the same direction as the arrow on the top of the motor cowling indicates.
- In case of wrong rotational direction, the electrical phase in the connection box is to be changed. This check is required after every disconnection from the power source
- Wiring matches with electrical and hydraulic diagrams
- the electric motors (pump and cooler) are properly connected and have the prescribed rotation
- the hydraulic accumulator with nitrogen gas to the specified value
- aux. elements work right (thermometer, level gauge, heater)

First run (Attention – working pressure on securing valve is set by producer in accoring the hydraulic diagram):

- In the short intervals activate an electric pump
- check for leaks and noise
- Bleed the hydraulic circuit
- if possible, test the circuit function with minimum load
- test the electrical equipment
- during operation monitor measuring equipment, noise, height and temperature of oil in the tank
- During this time a careful bleeding off for the whole hydraulic system is necessary. In case there is no bleeder port, the power pack will bleed itself after a while via the air breather on the tank or the return line filter.
- After multiple start-up.

2.6.4. Filling the reservoir with hydraulic oil

Oil regulations and recommendations of the manufacturer in the technical documentation (appendix) are to be carefully observed. For standard power packs we recommend the oiltype OH-HM32 (DIN 51524) of all known oil manufacturers.

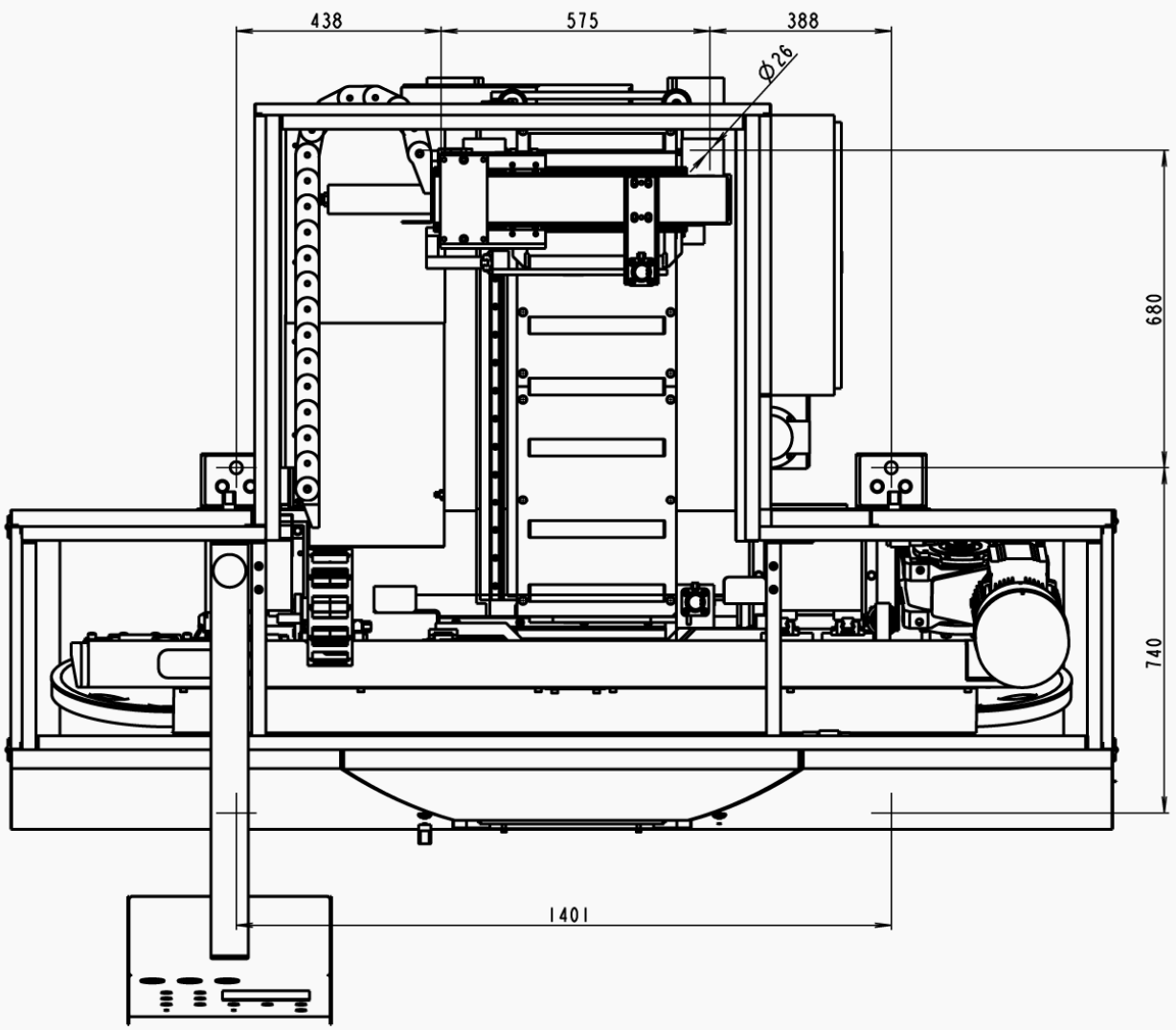
Power packs have to be filled up with clean, pre-filtered oil! The purity of the hydraulic fluid must correspond to the class 10 NAS 1638 (reachable with filter ß =75)!

Filling from container, such as barrels, backets, etc. is not recommended or permitted!

The maximum oil level will be shown on the upper marking at the dipstick or the sight level glass. Overfilling has to be prevent. The maximum filling rate of 15 l/min shouldn´t be exceed.

Oil type	Kinematic viscosity v in mm²/s in relationship to the fluid temperatur					Freezing point
	0°C	20°C	40°C	60°C	80°C	°C
OH-HM 32	220	100	32	15	7	-40
OH-HM 46	400	170	46	18	11	-30
OH-HM 68	700	170	68	26	14	-28
OH-HV 32	180	67	32	17	11	-40
OH-HV 46	350	110	46	25	14	-36

2.6.5. Kotevní plan / Verankerungsplan / Grounding plan



Kotvící materiál / Verankerungsmaterial / Grouding material

- 6× Hmoždina / Dübel / Plug – ø22 mm
- Vrtáno do hloubky / In die Tiefe gebohrt / Drilled to – 120 mm
- Šrouby / Schraube / Screws – 6×M20 + 6×M24

Šrouby podložit deskami o min. rozměrech P10×100-100
- Die Schrauben mit Platten mit Minimaldimensionen P10×100-100 unterlegen
Screew must be bottomed with plates (min. dimensions P10×100-100)

Požadavky na rovinnost podlahy / Anforderungen an die Bodenebenheit / Requirements for floor flatness

± 10 mm / 1 m

2.7. Electrical connection

Attention!
Only a qualified professional must carry out the servicing and repairs of the electric equipment! *Take special care during work with electrical equipment. High voltage shock can have fatal consequences! Always keep notes about work safety.*

Electrical parameters of the machine:

- Service voltage: ~ 3×400 V, 50 Hz, TN-C-S
- Total input / Max. fuse: - kW / - A

Before connecting switch off the main switch of the power supply circuit for the machine and ensure dry place when doing connecting works!

Service voltage must agree with the line voltage! Crosscut of the supply line must respond with rated current for max. machine load.

Note:
The values of the crosscut of the conductor and the rated current are in the norms.

2.7.1. Check the direction of the saw band

After the machine has been successfully connected, briefly switch on the machine and put the driving engine of the band in the running position. The direction must be in accordance with the arrow direction on the saw band cover. In case the direction of the saw band does not match, two phases at the terminal strip must be switched.

2.7.2. Check machine connection into electrical network

Attention!
When you connect the machine to the electrical network observe correct connection of all phases!
ENGINE IN IN HYDRAULIC AGGREGATE CANNOT BE OPERATED WITH REVERSE TURNING MORE THEN 10 SECONDS!!!

2.8. Filling of the cooling system

Prepare the mixture of the water and the cooling liquid. Keep the concentration specified by manufacturer. Shift away the cover from the drainage hole. Fill the mixture of the water and the cooling liquid to the tank of the cooling system. Area of the tank for the cooling liquid is discovered from the chapter *Technical data*.

Let the drainage hole opened and with the sieve during operation, because it secures the right work of the cooling system. Filling the tank with the cooling liquid, take care that the liquid does not drip out of the tank and the tank does not overflowed.

2.9. Check machine function

Check, if the machine or some parts of the machine were not damaged during transport.

Check, if covers are installed and functional. Check by means of the Tenzomat if the saw band is correctly stretched. If it is necessary, you can stretch the saw band according to chapter *Selection and replacement of the saw band*. Values of the saw band stretching are on the Tenzomat. Switch on the main switch and check the motors and systems (saw band drive, hydraulic pump, cooling pump, chips conveyor).

Open and close the main vice. Turn the saw frame of the band saw from one outer position to other outer position. Raise the saw frame to the top position and drop the saw frame to the lowest position.

Start the machine with the cooling pump and let it run without load until the cooling system will be filled with cooling liquid. As soon as the cooling liquid starts to escape from the nozzles of the cooling system, the cooling system is ready for the operation. Carry one cycle of cutting without material. Check, if the machine runs with no irregularities. If all machine functions are right, the machine is ready for operation..

2.10. Saw band

Refit the saw band cover only after you have installed and tightened the saw band.

2.10.1. Saw band size

5445×41×1,3 mm

2.10.2. Selection of the saw band tooth system

The manufacturers provide the saw bands with constant and variable tooth system. The important factor for selection of the tooth system is length of the cutting canal with respect to the size of the product

6. *Constant tooth system* – the saw band has parallel tooth pitch all over length. This way is suitable for cutting of solid material.

BOMAR for recommended Variable tooth system for band saw.

7. *Variable tooth system* – tooth pitch is variable. Variable tooth system is used for profiled materials and bundle cutting. Variable tooth pitch lowers vibration of the saw band, increases service life of the saw band and quality of the cutting area.

In tables, there are advised type of the tooth system depending on sizes and form of the cutting material.

Footnotes:

Z_pZ – teeth number on one inch S – tooth with zero angle of the teeth K – tooth with positive angle of the teeth

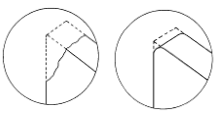
Examples of the tooth system marking:

32 S – number „32" means 32 teeth on one inch (that means constant tooth system), letter „S" marks teeth with zero angle of the tooth.

4–6 K – number „4–6" means 4 till 6 teeth on one inch
(that means variable tooth system); letter „K" marks teeth with positive angle of the teeth.

2.10.3. Saw band running-in

Running-in: Cut the material with the frame lowering reduced to 50% only. When vibrations occur increase or decrease the band speed.

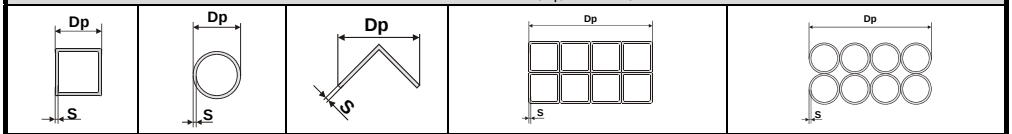


When cutting small pieces run the band until approximately 300 cm^2 of material has been cut. When cutting large pieces run the band for 15 minutes approximately. When the band has been run, increase the lowering-speed to normal speed. The running in of the saw band avoids micro-breaks on the cutting edges of new saw band ensuing from first excessive stress. This would decrease service life substantially. The optimal running in of the saw band produces ideal rounded cutting edges and therefore the conditions for an optimal service life.

***Note:** Run regrinding saw bands too.*

2.10.4. Tables for teeth selection

SHAPED MATERIAL (D_p, S = mm)

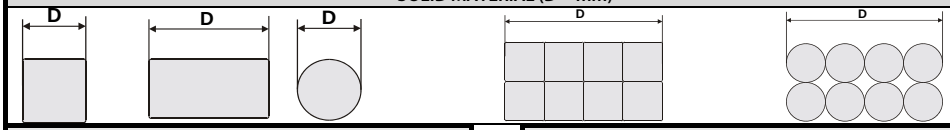


Note: Table shows tooth system selection for cutting one piece of the profile. For cutting of more pieces of the profiles (bundle), you must think of the size of the wall as double size of the wall of one profile (that means, size „S" equates to 2×S). In table, there are tooth systems constant and variable.

Size of the wall S [mm]	Tooth system (Z_pZ) Outer diameter of the profile D_p [mm]					
	20	40	60	80	100	120
2	32 S	24 S	18 S	18 S	14 S	14 S
3	24 S	18 S	14 S	14 S	10–14 S	10–14 S
4	24 S	14 S	10–14 S	10–14 S	8–12 S	8–12 S
5	18 S	10–14 S	10–14 S	8–12 S	6–10 S	6–10 S
6	18 S	10–14 S	8–12 S	8–12 S	6–10 S	6–10 S
8	14 S	8–12 S	6–10 S	6–10 S	5–8 S	5–8 S
10	-	6–10 S	6–10 S	5–8 S	5–8 S	5–8 S
12	-	6–10 S	5–8 S	5–8 S	4–6 K	4–6 K
15	-	5–8 S	5–8 S	4–6 K	4–6 K	4–6 K
20	-	-	4–6 K	4–6 K	4–6 K	3–4 K
30	-	-	-	3–4 K	3–4 K	3–4 K
50	-	-	-	-	-	3–4 K

Size of the wall S [mm]	Tooth system (Z_pZ) Outer diameter of the profile D_p [mm]					
	150	200	300	500	750	1000
2	10–14 S	10–14 S	8–12 S	6–10 S	5–8 S	5–8 S
3	8–12 S	8–12 S	6–10 S	5–8 S	4–6 K	4–6 K
4	6–10 S	6–10 S	5–8 S	4–6 K	4–6 K	4–6 K
5	6–10 S	5–8 S	4–6 K	4–6 K	4–6 K	3–4 K
6	5–8 S	5–8 S	4–6 K	4–6 K	3–4 K	3–4 K
8	5–8 S	4–6 K	4–6 K	3–4 K	3–4 K	3–4 K
10	4–6 K	4–6 K	4–6 K	3–4 K	3–4 K	2–3 K
12	4–6 K	4–6 K	3–4 K	3–4 K	2–3 K	2–3 K
15	4–6 K	3–4 K	3–4 K	2–3 K	2–3 K	2–3 K
20	3–4 K	3–4 K	2–3 K	2–3 K	2–3 K	2–3 K
30	3–4 K	2–3 K	2–3 K	2–3 K	1,4–2 K	1,4–2 K
50	2–3 K	2–3 K	2–3 K	1,4–2 K	1,4–2 K	1,4–2 K
75	-	2–3 K	1,4–2 K	1,4–2 K	1,4–2 K	0,75–1,25 K
100	-	-	1,4–2 K	0,75–1,25 K	0,75–1,25 K	0,75–1,25 K
150	-	-	-	0,75–1,25 K	0,75–1,25 K	0,75–1,25 K
200	-	-	-	0,75–1,25 K	0,75–1,25 K	0,75–1,25 K

SOLID MATERIAL (D = mm)



Constant tooth system	
length of the cut D	tooth system (Z_pZ)
to 3 mm	32
to 6 mm	24
to 10 mm	18
to 15 mm	14
15–30 mm	10
30–50 mm	8
50–80 mm	6
80–120 mm	4
120–200 mm	3
200–400 mm	2
300–800 mm	1,25
700–3000 mm	0,75

Variable tooth system	
length of the cut D	tooth system (Z_pZ)
to 30 mm	10 –14
20–50 mm	8–12
25–60 mm	6–10
35–80 mm	5–8
50–100 mm	4–6
70–120 mm	4–5
80–150 mm	3–4
120–350 mm	2–3
250–600 mm	1,4–2
500–3000 mm	0,75–1,25

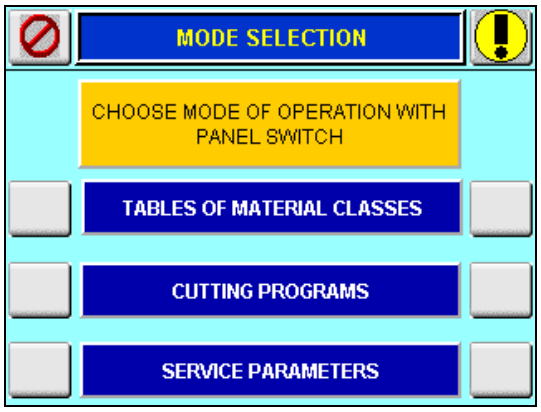
Manual version: 1.00 / June 2011
Manual rev.: 1

3. Machine control

Manual version: 1.00 / June 2011
Manual rev.: 1

3.1. Saw band start

1. Turn the main switch of the saw into ***position 1 – ON***. The main switch in on side of the control panel (right side from the point of view of operator standing behind the panel), see arrow.



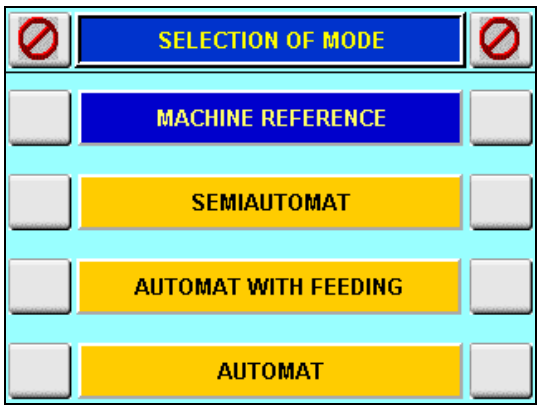
2. After start of the control system the initial window appears on LCD. The operator may select:

1.	Select ***machine operation with key switch***, see next point
2.	Make changes in ***the cutting parameters,*** see chapter ***Cut parameters***
2.	Make changes in ***the cutting programs,*** see chapter ***Machine control***
3.	Make changes in the maintenance parameters, see Service parameters chapter.

3. Select the machine mode by the key on the control panel (control panel, pos. 9)

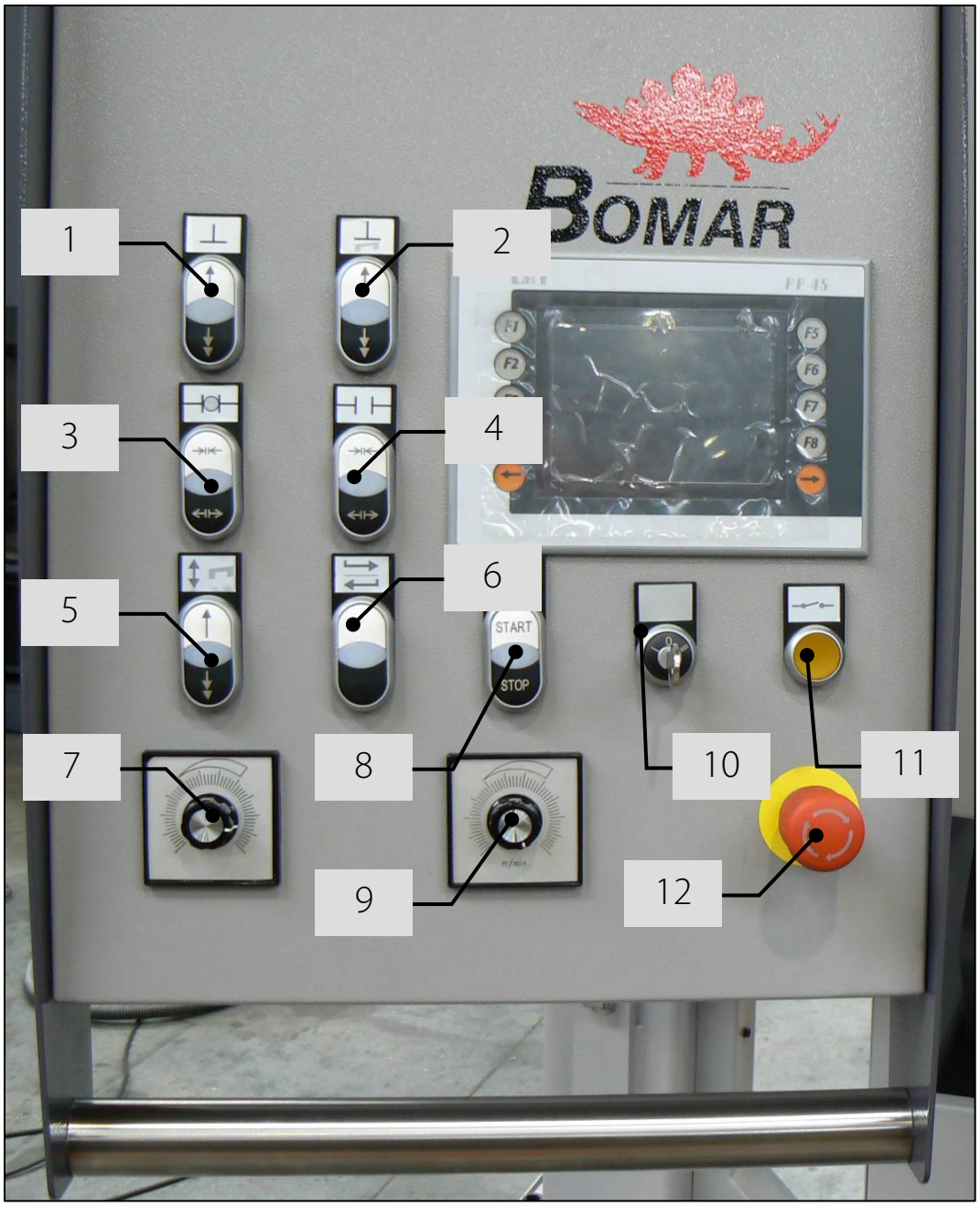
Key on I.	Switch to ***position 1*** to enter ***machine set up*** mode
Key on II.	Switch to ***position 2*** to turn machine ***into operational mode***

4. Machine referring (see chapter Machine referring) must be made before Semiautomatic or automatic mode mode is used.



5. After the machine is referred one of the machine operation modes may be used.

3.2. Control panel

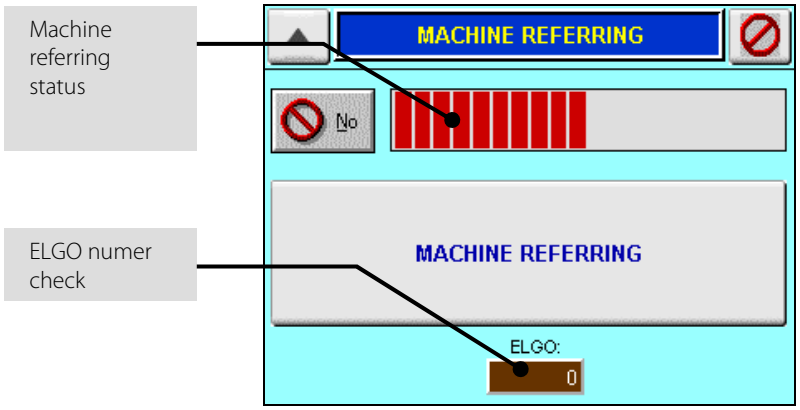


1	**Feeder vice top clamping** Buttons to tighten / release the feeder vice top clamping.
2	**Main vice top clamping** Buttons to tighten / release the main vice top clamping
3	**Feeder vice** Buttons to tighten / release the feeder vice jaws
4	**Main vice** Buttons to tighten / release the main vice jaws
5	**Frame up / down** If both buttons are pressed at the same time, the frame moves faster

6	**Feeder movement** Feeder movement to / from saw
7	**Speen into the cut + Pressure into the cut** The control element associates both functions. What parameter is setting, is displayed on the LCD
8	**STOP button** Interrupts the cycle, to restart press ***8 – START*** button. **START button** Press to start the work cycle. Press **8 – STOP** to stop the cycle.
9	**Frequency converter** Turn to change to speed of the saw band.
10	**Machine mode selection** • ***1 – Adjustment mode*** • ***2 – Machine operation mode*** • ***0 – Machine setting mode***
11	**Safety circuit** Press button to start the safety circuit
12	**TOTAL – STOP button** Immediately stops the machine in emergency.

3.3. Machine referring

Machine referring is necessary for correct operation of the saw in automatic mode.

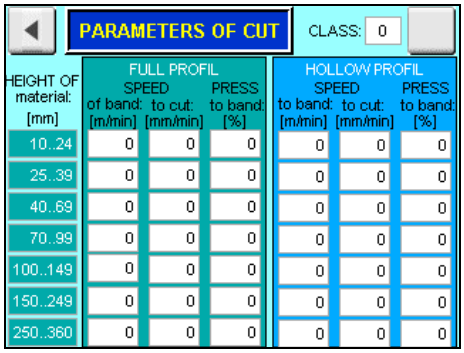


Machine referring button – press to perform the referring process. During process are made

ELGO – linear sensor on the feeder chek; does not measure any particular value, just checking the sensor operation.

3.4. Cutting parameters

Tables with cutting parameters are for automatic setup important values like saw blade speed, saw arm moving into cut, pressure into cut or material type.



HEIGHT OF material: [mm]	FULL PROFIL SPEED of band: [m/min]	SPEED to cut: [mm/min]	PRESS to band: [%]	HOLLOW PROFIL SPEED to band: [m/min]	SPEED to cut: [mm/min]	PRESS to band: [%]
10..24	0	0	0	0	0	0
25..39	0	0	0	0	0	0
40..69	0	0	0	0	0	0
70..99	0	0	0	0	0	0
100..149	0	0	0	0	0	0
150..249	0	0	0	0	0	0
250..360	0	0	0	0	0	0

In machine is implemented 10 tables witch cutting parameters. Eight tables is set from BOMAR in according of recommended values.

Table 9 and 10 are accessible and could be use by customer.

Classes are dividend by material type:

Class	Material
1.	**St. 37** 1,0037; **St 42** 1.0040; **C10** 1.0301; **C15** 1.0401;
2.	**St. 50** 1.0050; **St. 60** 1.0060; **C35** 1.0501; **C45** 1.0503;
3.	**16MnCr5:** 1.7131; **50CrV4:** 1.8159; **42CrMo4:** 1.7225;
4.	**100Cr6:** 1.3505; **C125W:** 1.1663;
5.	**S 6-5-2:** 1.3343; **S 2-10-1-8:** 1.3247;
6.	**40CrMnMo7:** 1.2311; **x40CrMoV51:** 1.2344; **40CrMnNiMo864:** 1.2738; **55NiMoV6:** 1.2713; **34CrAl6:** 1.8504;
7.	**X5CrNi1810:** 1.4301; **X6CrNiMoTi1810:** 1.4571;
8	Al 99.9; AlM64; $AlSi_6Cr_4$

Disabling Cut parameters tables – If needed setup cutting parameters individualy before each working cycle operator can disable automatic parameters loading in Service parameters 1, see chapter Service parameters. The settings are common for both automatic and semi-automatic cycle.

3.5. Service parameters

Attention!
Wrong setting of following parameters may damage the machine. ***Change the values reasonably!***

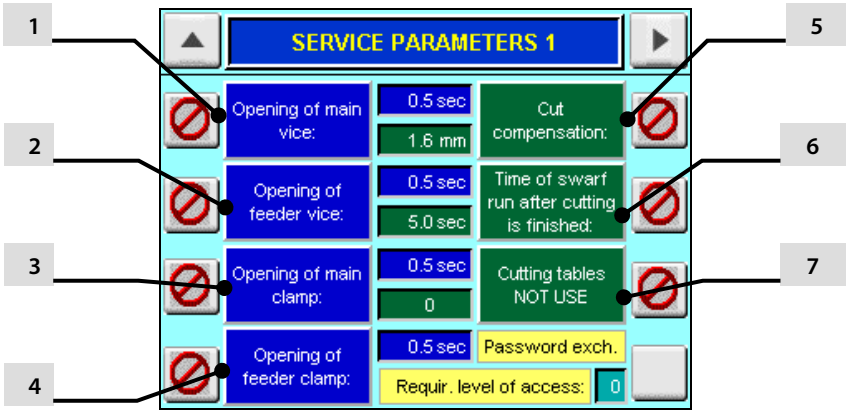
Enter the service parameters menu:

1.	**Turn the key switch into position 0** 
2.	**Select the item Service parameters on LCD** 
3.	**To leave the menu:** • Turn the key switch to different position • Press  button

Service parameters have 3 security levels:

- **Level 0** – without password, operator can change basic setting
- **Level 1** – password ***1234***, operator can change all common settings, important service parameters are blocked.
- **Level 2** – call support.

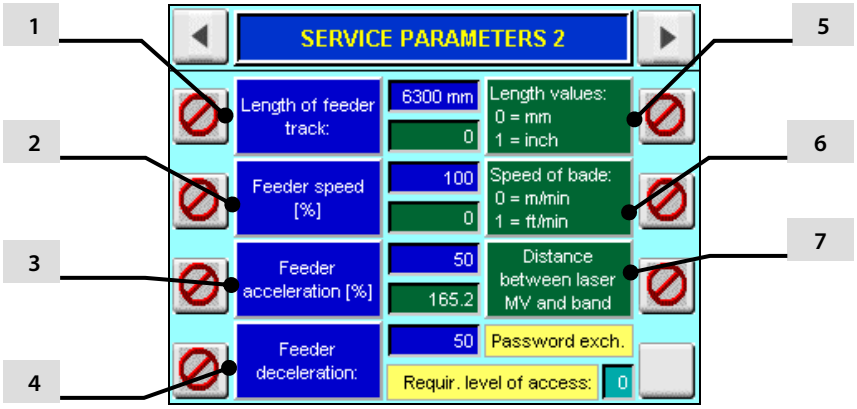
3.5.1. Service parameters 1



Pos.	Function
1.	**Main vice opening time –** vice opening time. The vice opens only for this period of time, does not opens fully to save the time.
2.	**Feeding vice opening time –** Guarding time of the hydraulics to open the feeding vice.
3.	**Main vice top clamping opening time –** top clamping opening time. The vice opens only for this period of time, does not opens fully to save the time.
4.	**Feeder vice top clamping opening time –** top clamping opening time. The vice opens only for this period of time, does not opens fully to save the time.
5.	**(Of)Cut compensation –** width of the saw band, important value for calculation of the lengths in automatic mode.

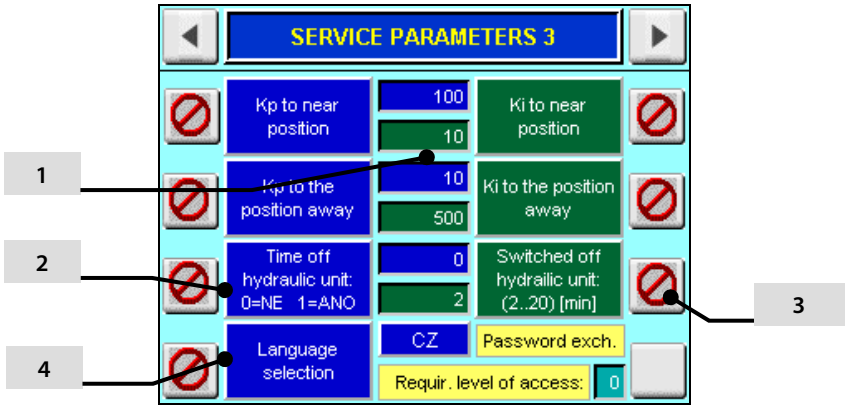
Pos.	Function
6.	**Operation time of the swarf remover after cutting** – Time of operation of the remover after the cut has been finished. ***Note:*** Chip remover is auxiliary accessory.
7.	**Cutting table – USE / NOT USE.** If operator choose NOT USE in both machine modes parameters for cut will notload from cutting parameters table. Parameters must be set individualy before each working cycle.

3.5.2. Service parameters 2



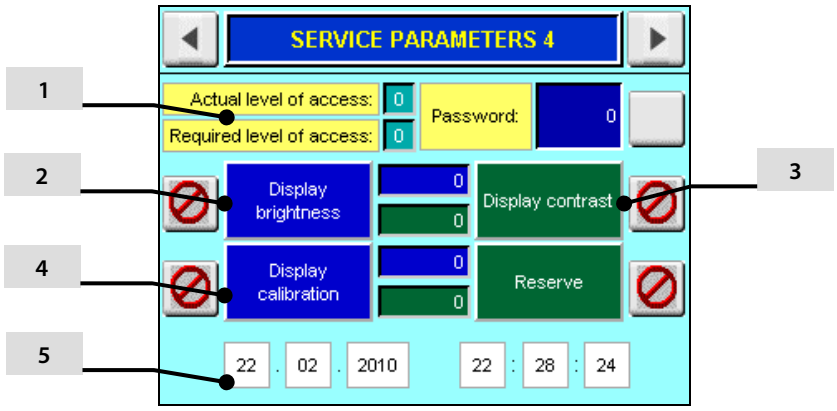
Pos.	Function
1.	**Feeder length –** parameter of the maximum feeder length for multiple feeds.
2.	**Feeder speed –** maximum speed of feeder
3.	**Feeder acceleration –** value of the feeder acceleration. The parameter is suitable for feeding heavy and unstable material (due to base shape and dimensions). These values are used only for movement with loaded feeder.
4.	**Feeder deceleration –** value of the feeder deceleration (breaking). The parameter is suitable for feeding heavy and unstable material (due to base shape and dimensions). These values are used only for movement with loaded feeder.
5.	**Selection of the units for length** in control system – • metric (mm) • imperial (inches)
6.	**Selection of the units for speed** in control system • $m.min^{-1}$ • $ft.min^{-1}$
7.	**Distance between laser MV and band –** distance between firs laser beam and band blade.

3.5.3. Service parameters 3



Pos.	Function
1	Constants for feeder moving. **Do not change!**
2.	Switch off the hydraulic system of the machine after certain period: • **YES** – the system switches off after selected period • **NO** – the hydraulic circuit will run until the machine is switched off
3.	The parameter sets the time for hydraulic system switch of.
4.	**Language selection** – displays following selection of the control software languages.

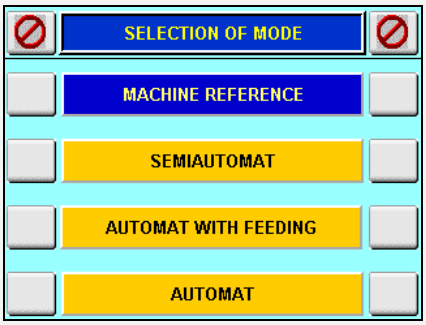
3.6. Service parameters 4

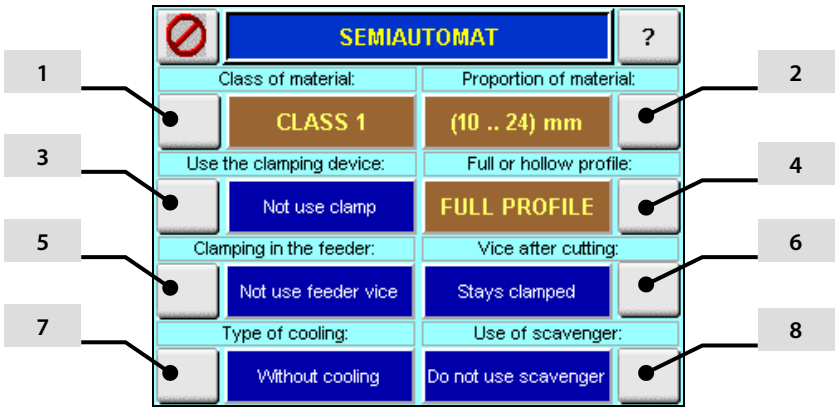


Pos.	Funkce
1.	Access rights – without logging into systém is not allowed to made ganges in settings.
2.	Setting of LCD brightness.
3.	Settin g of LCD contrast.
4.	Touch screen calibration.
5.	Date and time setting.

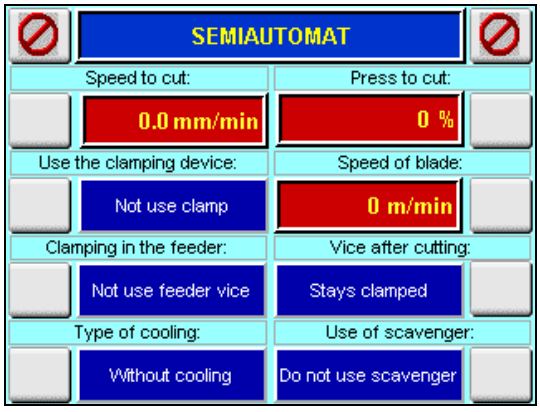
3.7. Machine operation – semiautomatic mode

To enter the semiautomatic mode:

1.	**Turn the key switch into position 2 – Working mode** 
2.	**Select semiautomatic mode on LCD** 
3.	**Enter the parameters for semiautomatic mode in the following menu.**



If operator disables loading parameters from cutting tables menu screen looks:



If appropriate, you can manually set the conveyer so that when cut run vice help stabilize the work piece. Choose the option "Use the clamping device".

Correct selection of cutting parameters provides appropriate settings for the selected material. Settings are used during whole cutting.

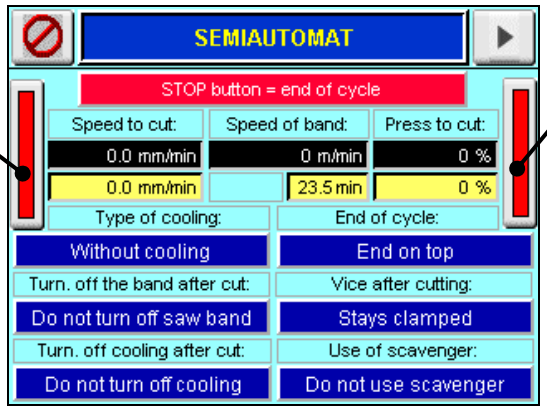
During the cut preparation buttons for vices and for arm moving are active. In preparing the cut is appropriate to set the position of the arm to a suitable distance above the material to minimize cycle time arm.

The **STOP** button can stop working cycle.

Position	Description
1	Choosen material class, see chapter Parameters of cut
2	Choosen material size, see chapter Parameters of cut
3	Use top clamping devices – **YES / NO**
4	Choosen material type, see chapter Parameters of cut
5	After the cut the feeder vice: • stays clamped • releases the clamped material
6	After the cut the main vice: • stays clamped • releases the clamped material
7	Cooling method during cutting: • Cooling liquid • Micronization (optional accessory) • No cooling
8	Use the chip remover during cutting – **YES/NO**.

3.7.1. Cutting procedure in One cut automatic mode

Push button or F2 and F3 key for speed to cut correction, value is changed by potentionmeter on pos. 7



Push button or F6 and F7 key for pressure into cut correction, value is changed by potentionmeter on pos. 7

After semiautomatic mode start-up are main cutting parameters are loaded from cutting tables. Values can be corrected by buttons on LCD sides. Selected button turns red and the parameter can be changed by potentiometer pos. 7.

- Saw arm speed into cut
- Saw blade speed
- Pressure into the cut

Cutting progress in "One cut automatic mode":

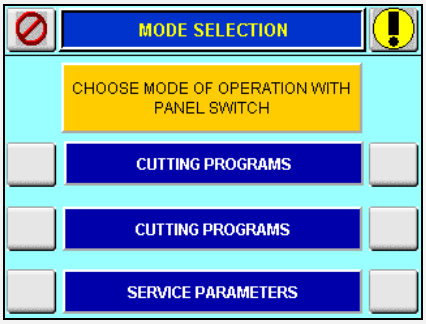
1.	Prepare the cutting material, load it to the saw and clamp into vice
2.	Set the parameters for semiautomatic mode, see previous text.
3.	Press ***START*** button to start.
4.	The following menu appears on LCD, the frame starts to descend into the cut – the semiautomatic cycle starts.
5.	End the semiautomatic mode by turning the key switch into other position.

3.8. Machine control – automatic cycle

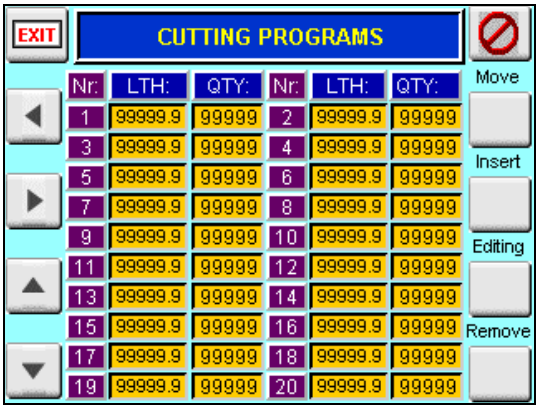
3.8.1. Cutting programs

The cutting programs are important part of the automatic cycle. It is possible to define up to 20 programs. It is always started from program no. 1. All sequence of the programs is performed until the first program without any parameters set (both values are zero).

To enter the cutting parameters selection mode:

1.	**Turn the key switch into position 0 – machine adjustment.** 
2.	**Select Cutting programs on LCD** 
3.	**The other way to display the Cutting parameters selection mode is to use Preset item in automatic cycle selection.** 

Entering of the cutting parameters:

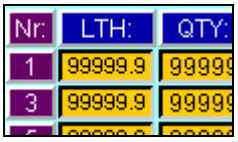


Function keys for Cutting programs selection:

Button	Description
	To move left in the values of Cutting programs table.
	To move right in the values of Cutting programs table.

Button	Description
	To move up in the values of Cutting programs table.
	To move down in the values of Cutting programs table.
	To move any program to different position in the list.
	To enter the program to a new place in the list.
	To edit the values of the program.
	To remove any program (reset the values).

The active field in the program list is displayed in red.

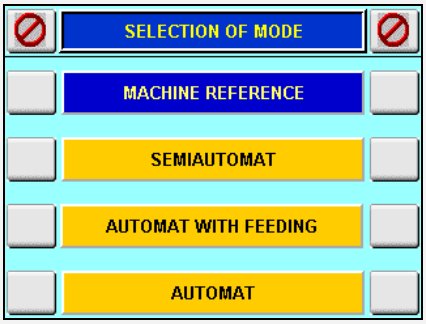


Two values are set for each program:

- Length of individual pieces
- Number of individual pieces

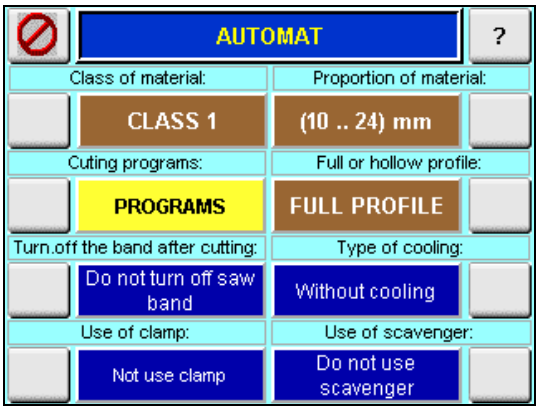
3.8.2. Automatic cycle

To enter the automatic cycle:

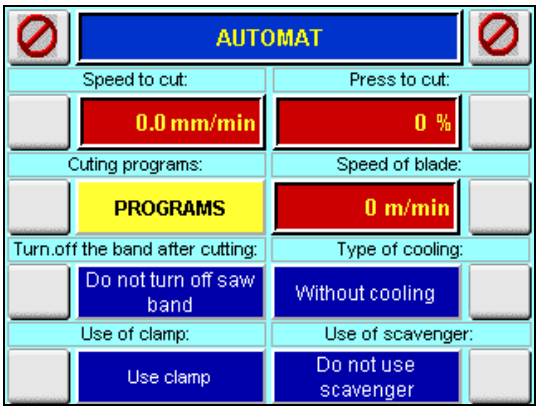
1.	**Turn the key switch into position 2 – Working mode** 
2.	**Select the item Automat with feeding or Automat on LCD** 
3.	**The menu to enter the new values for automatic cycle or menu allowing proceeding with started automatic mode follows.**

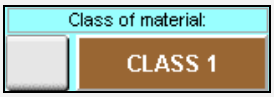
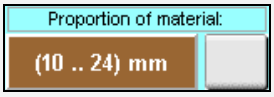
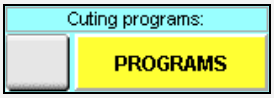
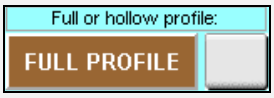
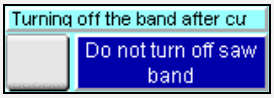
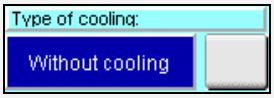
Preparation menu before start of the automatic mode:

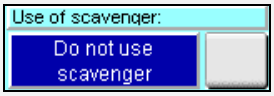
This menu allows entering the start program and parameters adjusting the automatic mode.



If operator ***disables*** loading parameters from cutting tables menu screen looks:

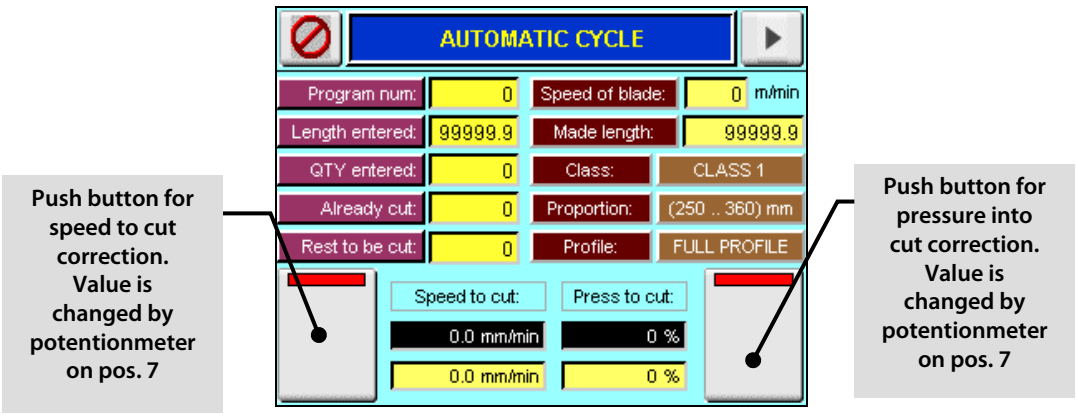


Button	Description
	Choosen material class, see chapter Parameters of cut
	Choosen material size, see chapter Parameters of cut
	Show programs menu, see chapter Cutting programs
	Choosen material type, see chapter Parameters of cut
	Switch off the saw band drive after cut – **Switch off the band / do not switch off the band**.
	Cooling method during cutting: • Cooling liquid • Micronization (optional accessory) • No cooling

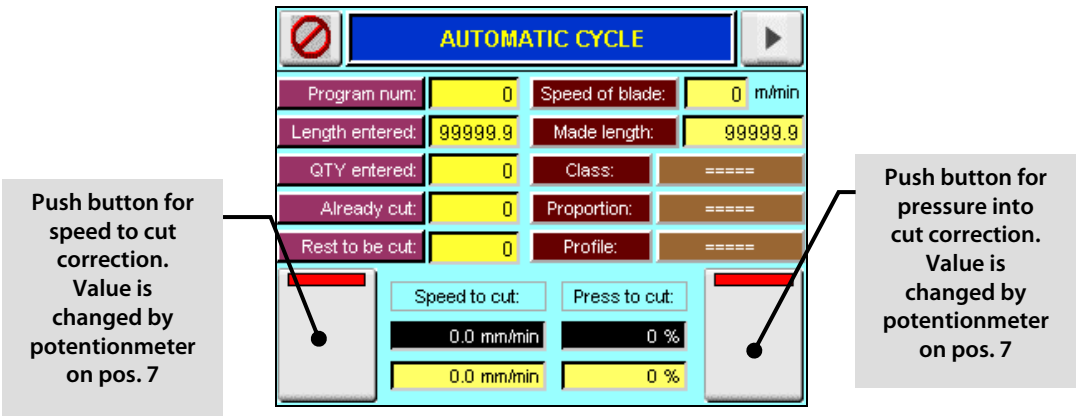
Button	Description
	Use the chip remover during cutting – **YES/NO**.

If the measurement frame (for detection of clamped material for cutting) is not installed, the operator is before the start of the automatic mode requested to set the saw frame into its highest position to the upper limit switch.

3.8.3. Cutting procedure durring automatic cut



If operator disables loading parameters from cutting tables automatic cycle screen looks:



Speed to cut and Press tu cut could be corrected by buttons on LCD sides and potentiometer on control panel. Selected button turns red and the parameter can be changed by potentiometer pos. 7.

Procedure for automatic cutting:

1.	Prepare the cut material
2.	Set the automatic cycle, see ***Preparation before start of the automatic cut***
3.	After ***START*** button is pressed, the software asks if the material in the first cut should be cut.
4.	The following menu appears on LCD, the frame starts to descend to the cut – semiautomatic cycle starts.

3.8.4. Work cycle interruption

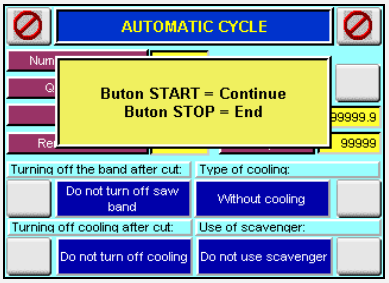
Attention!
When STOP button is pressed while moving some parts in the machine (frame, feeder…) the operation is finished and after that the machine is stopped. ***For emergency stop use TOTAL-STOP button.***

Possibilities for stopping:

» ***Stopping of the automatic cycle by TOTAL-STOP***

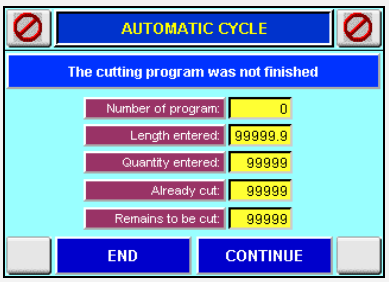
TOTAL-STOP button activation is indicated on LCD.

» ***Interruption of the automatic cycle by STOP:***



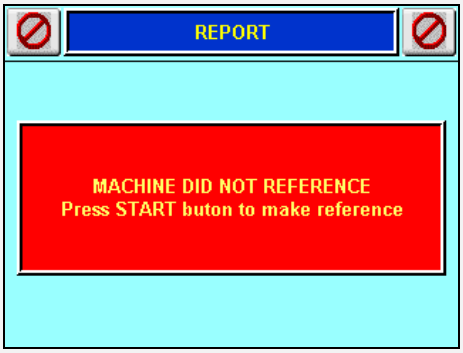
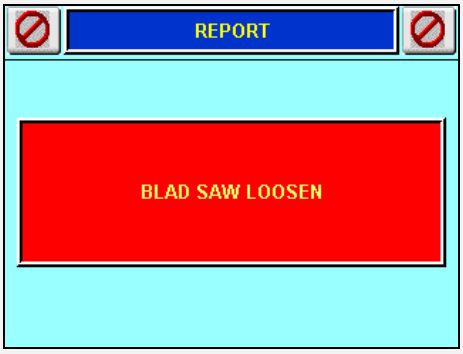
If the operator presses the ***STOP*** button, the cutting process is stopped. When ***START*** button is pressed, the cutting continues. Repeated pressing of ***STOP*** button stops the automatic cycle.

» ***Continue in automatic cycle***



The process interrupted in this way can be continued – if the operator returns to the Automatic mode, the following menu is displayed. Press the function button ***Continue*** to continue with the automatic cycle from the position of interruption. Select item ***Stop*** to finish the automatic process; the operator may start the new process with new values.

3.9. System error messages

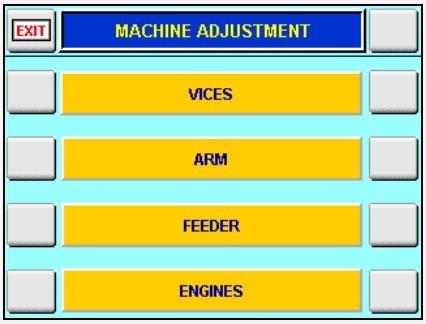
Error message	Description
	**Safety circuit** • The safety circuit is not switched on; the machine cannot be used. • Press the safety circuit button on the control panel (pos. 10)
	**Machine reference** • The machine cannot start without referencing – see chapter Referencing of the machine. • Proceed according to directions in message –turn the key to position 0 and select Machine referencing in the menu.
	**Saw band** • The system monitoring saw band stretching level detected insufficient stretching. • Stretch the band to recommended level.
	**Total Stop** • ***TOTAL-STOP*** has been pressed.

3.10. Band saw adjustment

The machine is able to perform the special adjustment code, which allows the operator to test and set the main peripherals of the machine.

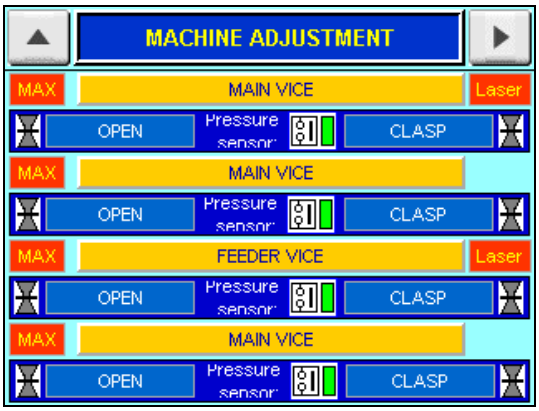
Further setting of the band saw, like setting of the cutting angle and others, is performed in the machine itself without the control software.

Entry to the Machine adjustment mode:

1.	**Turn the key switch to position 1 – Machine adjustment.** 
2.	**LCD panel shows the following menu with four parts of the band saw.**  ***Machine adjustment*** mode allows operators to test parts of the machine, e.g. after replacement of parts or adjustments.
3.	**To leave the menu:** • **Turn the key switch to other position** • **Press**  **button**

3.10.1. Vice adjustment

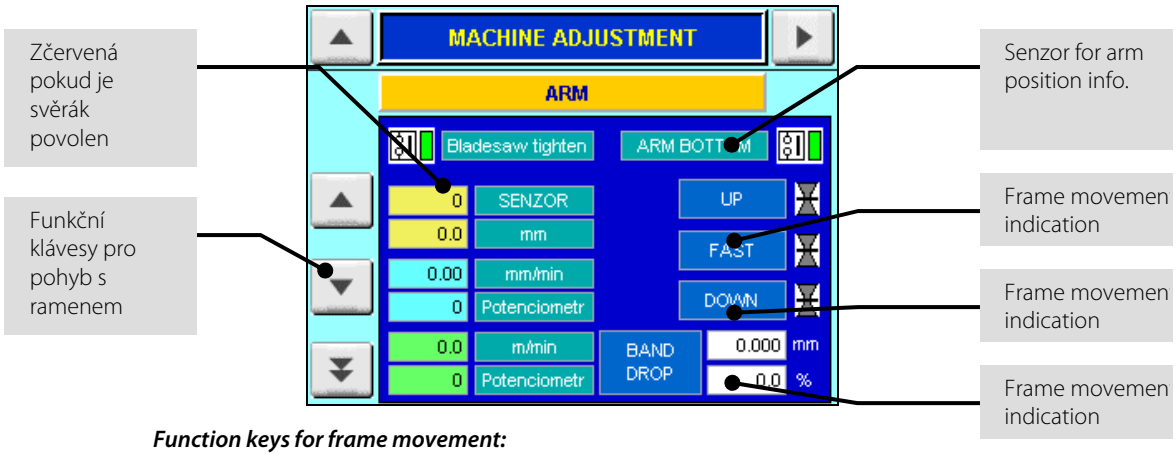
This menu allows testing both vices of the saw Production 400.360 ANC.



Vice movement is controlled by the respective buttons on the control panel (positions ***1*** and ***2.)***.

3.10.2. Frame adjustment

This menu allows checking the band saw frame movement. The menu "***Frame parameters"*** is also suitable for testing of the limit positions of the frame and adjustment of the limit switches.

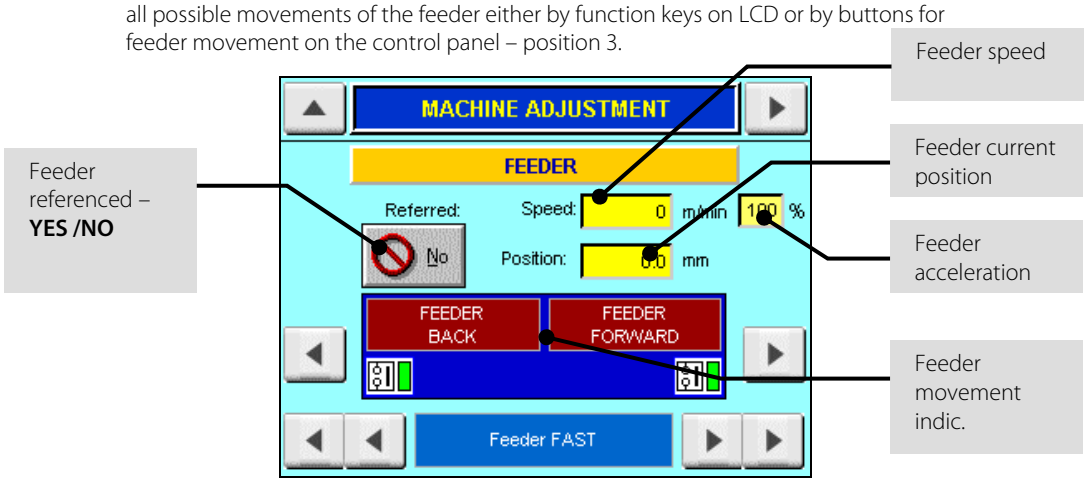


Function keys for frame movement:

Button	Description
	***Frame movement up***, the same movement is initiated by black part of the button on position 4 on the control panel.
	***Frame movement down***, the same movement is initiated by white part of the button on position 4 on the control panel.
	***Frame movement fast down***, the same movement is initiated by both buttons on position 4 on the control panel.

3.10.3. Feeder adjustment

This menu shows all parameters concerning the machine feeder. The operator can test all possible movements of the feeder either by function keys on LCD or by buttons for feeder movement on the control panel – position 3.



During feeder movement its speed and position is displayed as well as information about its correct referencing.

Function keys for feeder movement:

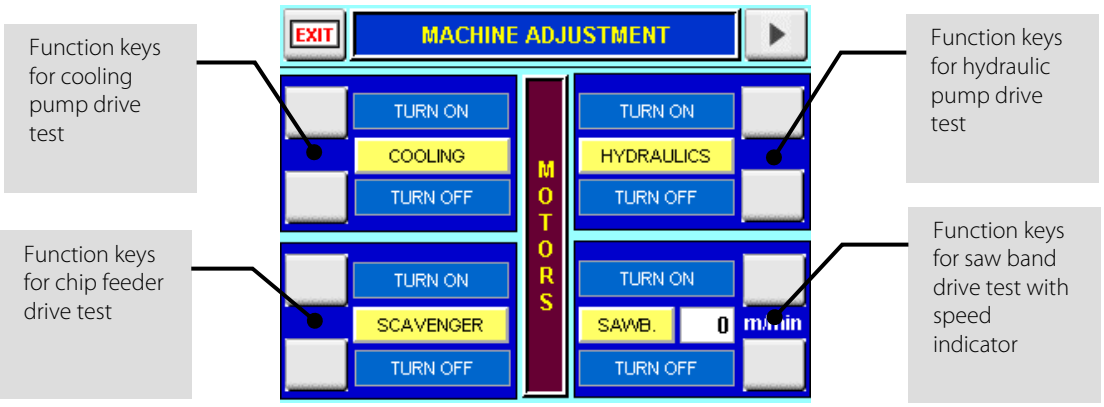
Button	Description
	***Normal speed feeder movement***.
	***Higher speed feeder movement***

3.10.4. Drive adjustment

The last item of the Machine adjustment menu allows to test individual drives.

The drives are as follows:

- Cooling pumps
- Hydraulic aggregates (hydraulic pump)
- Chip remover movement (chip remover is optional part of the machine)
- Band saw movement



3.10.5. Setting of the cutting speed

The speed of the saw band can be gradually adjusted from 20 to 120 $m.min^{-1}$. Set the speed as follows:

- Set the switch of the frequency changer **9** to required speed. The band speed is displayed during ***semiautomatic cycle (one cycle automatic).***

3.10.6. Saw frame lift stop setting

If you want to shorten the time of operations in automatic cycle, you have to adjust the height of the saw arm according to the height of the cutting material.

1. Lift the saw arm to the upper position.
2. Insert a material into the vice. Carefully lower the saw arm to the material.
3. Stop the saw arm 10mm above the material.
4. The lift stop setting is sensed by the limit switch.

3.10.7. Brush setting

The brush influence the cutting power, lifetime of the saw band, circular wheels, hardmetal guides and precision of the cutting. Replace the brush each shift.

1. Release the tightening bolt of the brush (see arrow) so the brush can be moved.
2. Set the brush to the saw band. Ends of the brush bristles should not touch the saw band teeth.
3. Tighten the bolt.
4. If the brush is not rotating properly (brush drive wheel slips on the saw band drive wheel) press down the wheel using the bolt to the saw band drive wheel.

3.11. Material insertion

- Never walk under a suspended load!
- Never climb onto the gravity-roller conveyor!
- Do not hold the material for clamping material to the vice! The vice can cause injury!

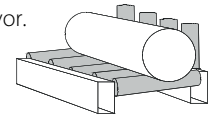
3.11.1. Handling agent selection

- Use the strong handling agents to lift and transfer the material!
- Handle with the material only with the lift truck or use the suspension strands and the crane!
- Do not use the lift truck or crane in case that you do not have the license to handle with it!

3.11.2. Insertion

Insert material to the vice and ensure that the material cannot move in the vice or fall from the vice after the clamping. If you cut long pieces of the material (for example rod, tube), you must use the roller conveyors for material shifting to the band saw. Contact Bomar for more information about roller conveyors

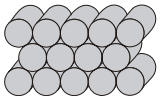
Make sure the conveyor is long enough and the material cannot tip off the conveyor.



Be especially careful with round materials that it always stays on two vertical rollers and that it cannot fall off the conveyor!

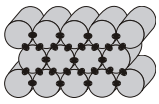
3.11.3. Bundle material cutting

If you want to cut the material in the bundle, there are suggestions for the positioning of bundles



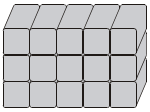
Round material bundle: Take care especially with round material that the bars are put according to the picture. If the bars are put differently, you may have problems with movement.

Always weld the material at the rear end of the bundle to secure it from moving.



Before welding always, switch the machine off at the main switch! The magnetic fields, which often occur during welding, may damage the controls!

Square material bundle:



Attention:
Not all material shapes are suitable for bundle cuts. Keep the recommendation of your supplier of the saw bands for material insertion to the bundle.

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4. Machine maintenance

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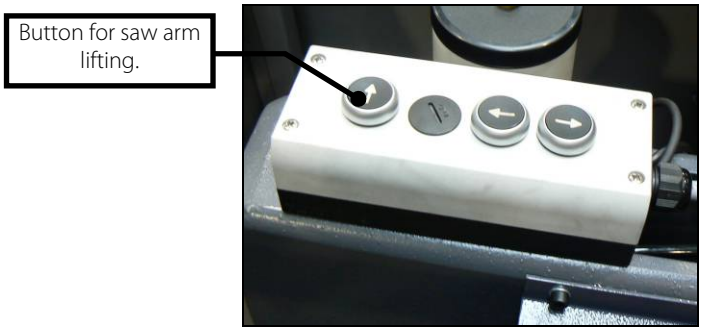
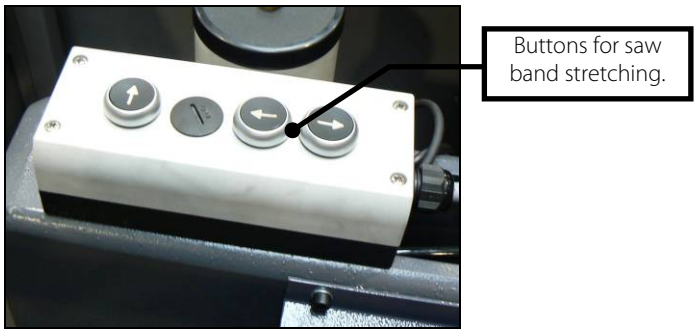
4.1. Saw band dismantling

1. Switch key switch into position "0". Total STOP button ***must not be*** active. Then is possible to use button on top of saw arm.



2. Lift the saw arm to maximum position with button on top of saw arm.
3. Open all front covers on the saw and remove central cover.
4. Release the screw holding the brush. Turn the brush to the side



5. Use buttons to release saw band stretching and pull down the saw band from the wheels.

6. Pull down the band from the wheels.
7. Pull up the saw band from the guiding cubes.

4.2. Saw band installation

1. Band saw must be in deblock mode – key switch into positon "0" and Total Stop button must be pressed.
2. Prior to installation, clean all track wheels, guide cubes and inner side of the arm thoroughly of all traces of chips and dirt. *Keep in mind the teeth direction when installing the saw band.*
3. Insert new saw band in the guide cubes. Make sure the saw band runs between both guide rollers and it is pushed all the way to the top.
4. Put the saw band on both guide wheels. Make sure that the saw band ridge fits tightly to the wheel rim. Then push the saw band as far back as possible.
5. Stretch the saw band by buttons on top saw arm. Band must not falls from wheels.

6. Move the brush to the saw band. Tighten the band with buttons.
7. Close the covers of both driving wheels.
8. Saw band installation is finished.

4.3. Saw band stretching and inspection

Right saw band stretching is one of the most important criteria's, which influents accuracy and saw band service life. Stretch the saw bands according to the selected saw band and the band saw. Keep the recommendation of your manufacturer.

4.3.1. Saw band stretching

- Switch on the hydraulic aggregate after the saw band installation check the saw band stretching on the manometer (arrow 1).
- Use the screw (arrow 2) to stretch the saw band until it is stretched to the recommended value.

4.3.2. Saw band inspection

Check the saw band in the guiding cubes and on the wheels

1. Check, if the saw band is right in the guiding cubes..
2. Switch on the saw band drive and then after 10 seconds switch off saw band drive. If the saw band drive is not possible to switch on, set the limit switch of the saw band stretching.
3. Switch off the main switch.
4. Open cover(s) of the wheels and check position of the saw band on the both wheels..

- If the distance between backside of the saw band and the offset wheel is **1 mm**, setting is right..
- If the distance is bigger than **1 mm**, or the saw band is on the offset of the wheel, set the saw band.

5. Close cover of the saw band.

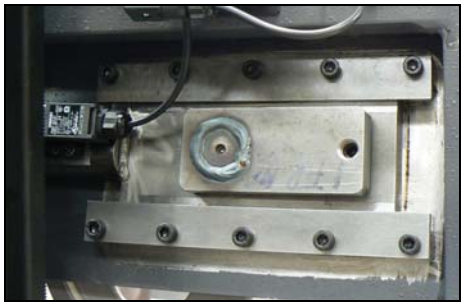
4.3.3. Saw band run setting

Saw band run is set with screw in the stretching cube on the saw arm. Right distance rear part of the saw band from wheel rim is **1 – 3 mm**.

- Turn with the screw to the right, the saw band is closer to the stretching wheel rim.
- Turn with the screw to the left, the saw band is far from the stretching wheel rim

Check saw band run adjustment again.

4.3.4. Adjusting of the limit switch of the saw band stretching



After the saw band is replaced, the saw band stretching must be checked. If the limit switch is not adjusted correctly, the band is stretched too little or too much.

- Tighten the saw band by means of the TENZOMAT on the optimal value (table is on the Tenzomat).

- If the drive engine is switched on, but it is not running, turn with the screw clockwise, until the engine begins run..
- If the drive engine is possible switched on, turn with the screw anticlockwise, until the engine is stopped and then turn with the screw clockwise, until the engine begins run.

4.4. Cooling agents and chips disposal

The quality of the cooling agent will deteriorate due to:	If the solution is too weak:	If the solution is too strong:
• use of contaminated water • impurity • outside oil contamination (hydraulics, gears) • high operating temperatures • lack of air circulation • wrong concentration	• corrosion protection is diminished • lubrication decreases • microbial attack is more likely	• the cooling ability is decreased • foam behaviour increases • emulsions stability deteriorates • sticky residue develops

4.4.1. Coolant device inspection

The state of the cooling agent has significant influence on the cutting quality and on the operational life of the machine. Lifetime of the cooling liquid is 1 year, after this time we recommend change the cooling liquid. This time is dependent on the degree of pollution cooling liquid (especially with oils) and on the other factors.

Check level of the cooling liquid and function of the pump periodically!

> ***Note:***
> *If the state of the cooling liquid is not satisfactory, the cooling liquid must be changed.*

Check the state of the cooling agent according to the following table:

Testing	Interval	Method	Condition	Precaution
Liquid level	daily	visually	too low	after concentration check, refill with water or emulsion
Concentration	daily	refractometer densimeter	too high too low	refill water refill base emulsion
Smell	daily	by sense of smell	unpleasant smell	good ventilation, add biocides or renew coolant
Contamination	daily	by sense of smell	visible oil leaks, sludge fungi	surface cleaning, fix leaks, add biocides or fungicides, or coolant renewal after added system cleanser*
Corrosion-protection	when necessary	visually chip test Herbert-test	insufficient corrosion protection	test stability, if necessary – increase concentration or pH value
Stability	when necessary	refractometer	oiling	add concentrate, enquiries to supplier
Foam reaction	when necessary	shaking test	too much foam, foam disperses too slowly	avoid aeration, increase water hardness, ix with defoamer

* According to manufacturers' instructions

4.4.2. Chips disposal

Chips resulting from cutting operations must be disposed of in accordance with the relevant regulations.

- Let the chips drip excess fluid!.

- Fill a watertight container with the chips! Be careful that the container does not leak, because even after a long dripping time, they still contain coolant residue.
- *Place the container into the care of a disposal company equipped for the disposal of chips contaminated with cooling liquid.* In case the machine is equipped with micro-spray installation, the chips must also be handed over to a disposal company.

4.5. Hydraulic, Greases and oils

4.5.1. Gearbox oils

In gearboxes, oil is used for the whole lifetime of the gearbox. We recommend replacing of the filling oil in case of repair.

Use oils with specification DIN 51517 in the gearboxes. Select the viscosity grade ISO VG according to the original oil fill.

Attention:
When replacing, use oils recommended by BOMAR or oils, which has comparable parameters from the other manufacturers. Do not forget, that mineral and synthetic oils must not be mixed!

Recommended oils and quantity according to the type of the band saw

Band saw	Gearbox oil	Capacity
Production 400.360 ANC	Shell Tivela S 320	3,3 l
Swarf conveyor	Shell Tivela S 320	0,075 l

Comparative table of the gearbox oils

Manufacturer	Viscosity grade		
	ISO VG 100	ISO VG 220	ISO VG 320
BP	Energol GR-XP 100	Energol GR-XP 220	Energol GR-XP 320
Castrol	Alpha SP 100 Alpha MW 100	Alpha SP 220 Alpha MW 220	
Elf	Reductelf SP 100	Reductelf SP 220 Reductelf Synthese 220	Reductelf SP 320
Esso	Spartan EP 100	Spartan EP 220	Spartan EP 320
Mobil	Mobilgear 627	Mobilgear SHC 220 Mobilgear 630	Mobilgear 632
ÖMV		PG 220	
Paramo	PP 7	Paramo CLP 220	Paramo CLP 320
Shell	Shell Omala 100	Shell Omala 220 Shell Tivela S 220	Shell Omala 320 Shell Tivela S 320
Total	Carter EP 100	Carter EP 220	Carter EP 320

4.5.2. Lubricant greases

We recommend using lithium based saponified grease, class NGLI-2 for lubrication. Different greases are mixable, if their oil bases and consistence type are identical.

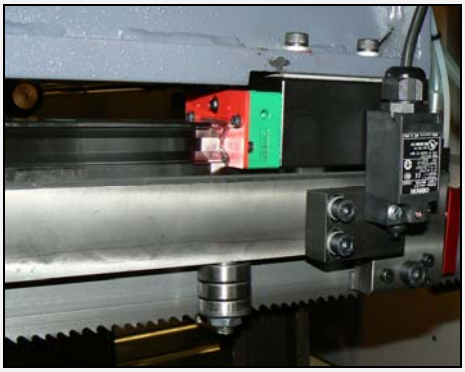
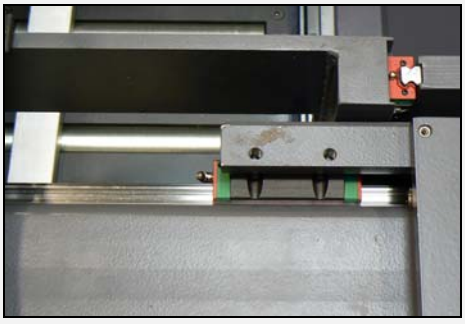
Comparative table of the lubricant greases:

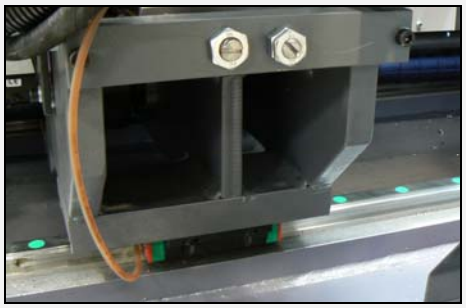
Manufacturer	Type of the lubricant grease
BP	Energrease LS - EP
DEA	Paragon EP1
Esso	FETT EGL 3144
	Beacon EP 1

Manufacturer	Type of the lubricant grease
	Beacon EP 2
FINA	FINA LICAL M12
Klüber	Microlube GB0
	Staburags NBU8EP
	Isoflex Spezial
Optimol	Optimol Longtime PD 0, PD1, PD2
Shell Aseol AG	ASEOL Litea EP 806-077
Texaco	Multifak EP1

4.5.3. Lubrication

There are several placing on the machine, which are necessary to grease periodically. It secures the right function of the machine.

Lubrication place	Lubrication
	**The linear guiding of the saw arm** Lubricate with grease once a three months (see chapter Lubricant greases). Use 3–5g grease on the every carriage of the linear guiding. Use the grease gun to the lubrication. Drive 3–5 times whole line of the linear guiding during lubrication. Lubricate both linear guiding trolleys on each side of saw arm.
	**Linear guiding for moveable guiding cube** Lubricate with grease once a three months (see chapter Lubricant greases). Use 3–5g grease on the every carriage of the linear guiding. Use the grease gun to the lubrication. Drive 3–5 times whole line of the linear guiding during lubrication.
	**Linear guiding for Top clamping on thefeeding vice** Lubricate with grease once a three months (see chapter Lubricant greases). Use 3–5g grease on the every carriage of the linear guiding. Use the grease gun to the lubrication. Drive 3–5 times whole line of the linear guiding during lubrication.

Lubrication place	Lubrication
	**Linear guiding for thefeeding vice** Lubricate with grease once a three months (see chapter Lubricant greases). Use 3–5g grease on the every carriage of the linear guiding. Use the grease gun to the lubrication. Drive 3–5 times whole line of the linear guiding during lubrication.

4.5.4. Hydraulic oils

Replace the hydraulic oil once in 2 years, because the oil can deteriorate its properties and cause problems the hydraulic equipment. If the hydraulic system is equipped with filter (2SF 56/48-0,063), replace the filter too.

Use oils with specification DIN 51524-HLP, ISO 6743-4 and viscosity grade ISO VG 46 in hydraulic aggregates. Hydraulic oils quantity – see chapter **Hydraulic oil level check**.

Note:
When replacing, use oils recommended by BOMAR or oils, which has comparable parameters from the other manufacturers. Do not forget, that mineral and synthetic oils may not be mixed!

Comparative table of the hydraulic oils

Manufacturer	Type	Manufacturer	Type
Agip	Oso 46	Ina	Hidraol 46 HD
Aral	Vitam GF 46	Klüber	Lamora HLP 46
Avia	Avilub RSL 46	Hungary	Hidrokomol P 46
Benzina	OH-HM 46	Mobil	Mobil DTE 25
BP	Energol HLP 46	ÖMV	HLP 46
Bulgaria	MX-M/46	Poland	Hydrol 30
Castrol	Hyspin AWS 46	Rumania	H 46 EP
Čepro	Mogul HM 46	Russia	IGP 30
DEA	Astron HLP 4hy6	Shell	Tellus Oil 46
Elf	Elfolna 46	Sun	Sunvis 846 WR
Esso	Nuto H 46	Texaco	Rando HD B 46
Fam	HD 5040	Valvoline	Ultramax AW 46
Fina	Hydran 46		

4.5.5. Hydraulic unit service

After 50 hours working time, or the latest 3 month after the first run, the first service should be carried out. This includes:

- checking off all screws and connections, fixing points, tubes and hoses for leakage
- Cheb hydraulic oil level
- During time of duty the oil temperature shouldn´t exceed 60-70°C
- check function of signaling components (thermometer, level gauge, dirty filter indicator)
- Check the adjustment of working pressure

To realise a high reliability of the power pack, the manufacturer lays down following inspection intervals

Interval	daily	weekly	monthly	three monthly	six monthly	annually
Hydraulic fluid						
Level	-	•	-	-	-	-
Temperature	-	•	-	-	-	-
Condition	-	-	•	-	-	-
Change interval	-	-	-	-	-	•
Filter						
Change interval	-	-	-	-	-	-
Other checks						
External Leakages	•	-	-	-	-	-
Contamination	•	-	-	-	-	-
Damages	•	•	-	-	-	-
Noise-(level)	•	-	-	-	-	-
Gauges	-	-	•	-	-	-

4.6. Machine cleaning

Clean the machine from the cooling liquid and impurities after every shift stopping. Conserve the guiding surfaces, mainly.

- Clamping jaws guiding of the vice.
- The guiding of the feeder.
- Loading surface of the vice.

4.7. Worn pieces replacement

4.7.1. Pushing bearing replacement

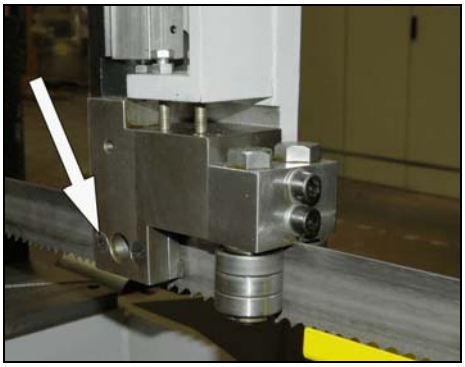
If it is impossible to adjust the bundle gripping assembly and the pushing bearing is worn, it needs to be replaced.

The bearing condition is possible discover, on the cube from the bottom side, for a better inspection is possible to put out the holder of the bearing from the cube.

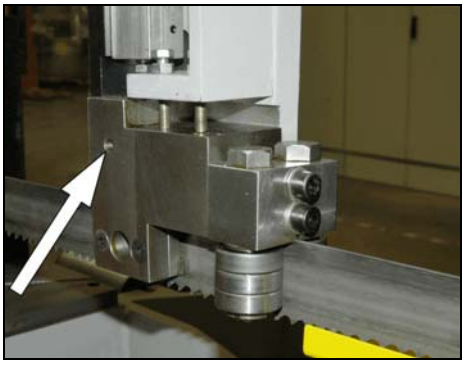
If the bearing is worn, there is a visible channel on it.

Bearing replacement:

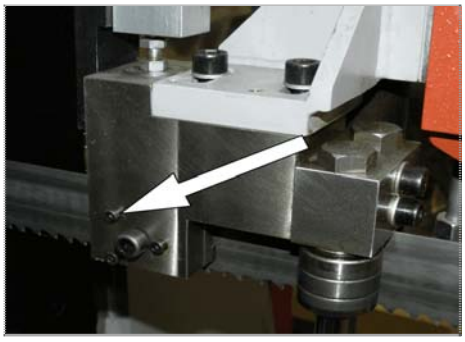
1. Dismantle the saw band.



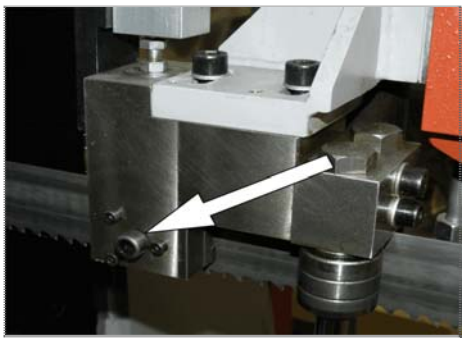
2. Release 2 Screws from hardmetal plate.



3. Release fixing screw with IMBUS (see arrow).



4. Release all 3 screws (see arrow).



5. Release center M10 screw after remove retaining ring. Remove hardmetal holder and bearing from bottom

Attention:
The vice has aluminium jaws, eventually, there has to be an aluminium agent to protect the pivot from damage.

6. Insert the pivot to the vice.
7. Remove the bearing pivot from the bearing holder by means of the swager.

8. Remove the worn bearing.

9. Fasten the holder to the vice.

Attention:
The vice has aluminium jaws, eventually, there has to be an aluminium agent to protect the pivot from damage.

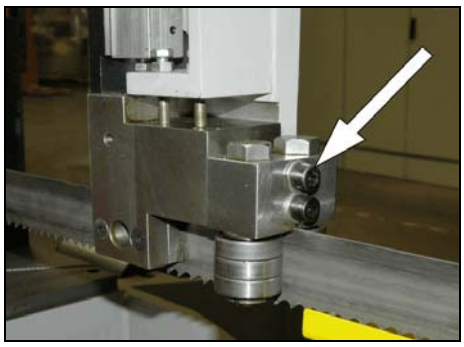
10. Insert the bearing and washers and return the pivot to its original place.

11. The pivot may not extend past the holder; otherwise, the bundle gripping assembly regulator gets worse.

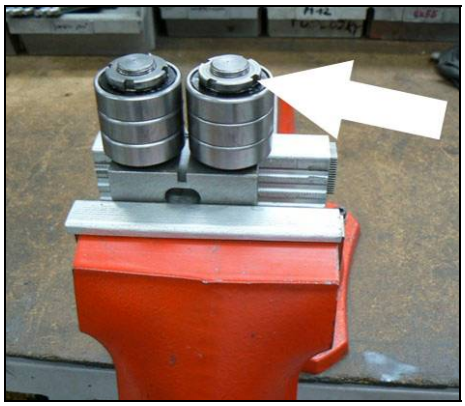
4.7.2. Saw band guiding pulleys replacement

If the saw band is not sufficiently guided by guiding pulleys or if the pulleys are obviously worn, the pulleys should be replaced.

Attention:
Guiding pulleys must be replaced together on both guiding cubes!



1. Release rear holder with 2 screws (see arrow). Dismantle the guiding cube of the saw band.

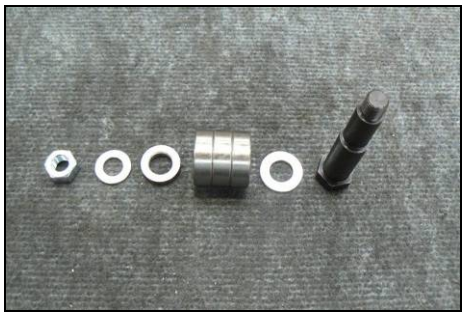


2. Tighten the guiding cube to the vice and dismantle both eccentrics with bearings following way.

Attention:
Mark both eccentrics placing and components on the eccentric! Eccentrics must not be replaced with each other!

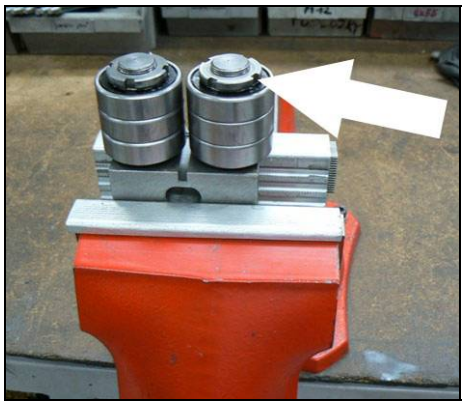
3. Screw off nuts from eccentrics.

4. Remove eccentrics from bearings by means of the swager.



5. Change all bearings and other worn parts.
6. Install eccentrics to the cubes. Install components on both eccentrics in given order. Put bearings by means of the preparation on eccentrics.

Attention:
Do not replace the eccentrics placing in the cube.



7. Screw on nuts on both eccentrics and tighten them.

8. Insert the saw band to the guiding cube (cca 15 – 20 cm). Secure the movable hard metal guide with scotch so, that the saw band is pressed with guides and it is possible to move with saw band.
9. Set the eccentrics by means of the wrenches, the saw band must run in the centre. Guide pulleys must not press too much on the band, but must spin freely during the band run.

Optimal distance between the band and the pulley is 0,05 mm.

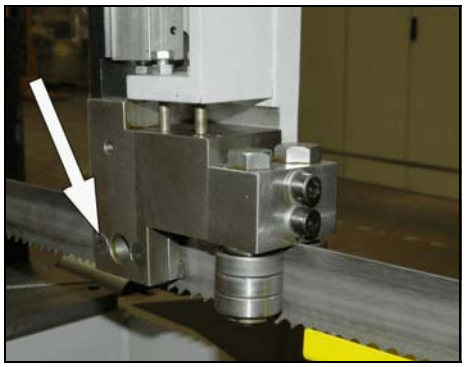
10. Tighten nuts on both eccentrics.
11. Remove the testing piece of saw band from the cube lead. Install the guiding cube on the machine.

4.7.3. Hard metal guides replacement

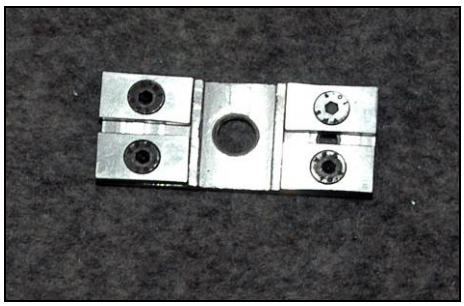
If the hard metal guides cannot be adjusted, they have to be replaced.

Attention:
Hard metal guides must be replaced together on both guiding cubes!

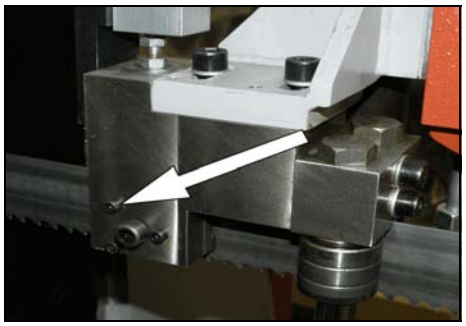
1. Disconnect the hose from the cooling agent.



2. Release 2 screws.



3. Remove fix hardmetal guidepost.



4. Release all 3 screws (see arrow).
5. Release center M10 screew after remove retaining ring.

6. Remove moveable hardmetal guide. From both hardmetal guides screw out worn hardmetals and change them with new ones.
7. Both hardmetals guides incl. press springs mount back. With 3 screws and aux. saw band setup optimal play between guides.

4.7.4. Brush replacement

If the chip removing brush is not able to fulfil its function, it has to be replaced.

1. Hold shaft of the brush by wrench.

2. Release the nut on the brush, replace worn brush on the new brush, screw on the nut.
3. Set the brush to the saw band.

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5. Troubleshooting

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Manual rev.: 1

5.1. Mechanical problems

Problem	Possible causes	Repair
1. Slanting cut	- Wrongly adjusted hard metal guides.	Set according to the chapter „Servicing and adjustment“
	- Worn hard metal guides.	Replace to the chapter „Worn pieces replacement“
	- Wrongly adjusted cubes of the saw band guiding.	Set according to the chapter „Servicing and adjustment“
	- Worn bearings of the saw band guiding.	Replace according to the chapter „Worn pieces replacement“
	- Wrongly adjusted swarf brush.	Set according to the chapter „Servicing and adjustment“
	- Worn swarf brush.	Replace according to the chapter „Worn pieces replacement“
	- Insufficient saw band stretching.	Rise the saw band stretching and set the limit switch.
	- Wrongly chosen tooth system of the saw band.	Replace the saw band and keep the instructions of manufacturer on new saw band choice.
	- Worn saw band.	Replace the saw band.
	- Wrongly balanced roller conveyor.	Set the roller conveyor.
	- Dirty feeding board.	Cleanse the feeding board from debris, chip and residue material.
	- Guiding arm and guiding cube are loosened.	Clamp the guiding arm.
	- Guiding arm and cube are too far from the material.	Set the guiding cube to the material.
	- Too fast cutting rate.	Lower the material feeding speed.
	- Unexpected oscillation in material quality.	Set the cut and feeding speed to the relevant material.
2. The cut is not cut upon desired angle	- Securing lever is loosened.	Check the securing lever efficiency and carry out its adjustment according to chapter „Servicing and adjustment“.
	- Set angle does not match the cut angle.	Check the angle adjustment with a protractor and possibly set it according to chapter „Servicing and adjustment“.
	- Insufficient saw band stretching.	Stretch the saw band and set the limit switch according to chapter „Servicing and adjustment“.
	- Guiding arm and guiding cube are loosened.	Fasten the guiding arm and the cube.
	- Dirt between material and clamping jaw.	Cleanse the material and mating jaw.
3. Short lifetime of the saw band	- Insufficient saw band stretching.	Raise the tightening of the saw band set the scanner of saw band tightening according to chapter „Servicing and adjustment“.
	- Worn swarf brush.	Check the swarf brush condition and replace it in case of excessive use as described in chapter „Worn pieces replacement“
	- Wrongly adjusted swarf brush.	Check swarf brush adjustment, set it according to chapter „Servicing and adjustment“
	- Over stretched saw band	Lower stretching of the saw band and set the limit switch of the saw band stretching according to chapter „Servicing and adjustment“
	- Wrongly adjusted hard metal guides.	Check the adjustment of the hard metal guides and carry out adjustment as described in chapter „Servicing and adjustment“
	- Worn hard metal guides of the saw band.	Check the condition of the hard metal guide and if it is too worn, replace hard metal guides according to chapter „Worn pieces replacement“

Problem	Possible causes	Repair
	- Worn saw band guide bearings.	Check guiding bearings and if you notice some sort of excessive damage, replace them according to chapter„Worn pieces replacement“
	- Wrongly adjusted guiding cubes of the saw band.	Set guiding cube according to chapter „Servicing and adjustment“
	- Wrongly adjusted down feed and saw band speed.	Adjust the feeding and speed of a saw band according to values published by saw band manufacturer.
	- Different material quality.	Adjust feeding and speed of a saw band according to desired material (try cut-test).
	- Low-class saw band	Replace the saw band (contact your local accessory supplier for more information)
	- Wrongly chosen saw band tooth system.	Replace the saw band and keep instructions of the manufacturer on the choice.
	- Wrongly adjusted tracking.	Check the space between top of a saw band and driving wheel. Perhaps adjust the tracking as described in chapter „Servicing and adjustment“
4. Insufficient cut output.	- Worn saw band.	Replace the saw band and keep instructions of the manufacturer on the choice.
	- Wrong saw band tooth system.	Replace the saw band and keep instructions of the manufacturer on the choice.
	- Wrongly set down feed and speed of a saw band.	Set feed and speed of a saw band according to values published by saw band manufacturer.
5. The cut is not finished.	- Wrongly adjusted lower stop point of the saw frame.	Check lower limit switch and screw.
	- Stop point surface is messed-up.	Cleanse stop point surface of the limit switch from debris and residue material.
6. By choke is not possible turn	- Metal clamps between valve and panel.	Clamps must be removed and put on the shaft O-Ring about 10x2 mm.
	- Metal clams are in body of valve.	Valve must be cleared or changed.
7. Saw band drive cannot be started.	- Pressure switch is adjusted wrong.	Set the pressure switch according to chapter „Servicing and adjustment“
	- Pressure switch is defective.	Replace defective parts of the pressure switch.
8. The saw bands are cracked.	- In stretching wheel is wrong adjusting geometry.	Adjust distance band from recess wheel c.2 mm according to operating instructions.
	- Hard metal plates of circuit saw band are not adjusting.	Hard metal plates of circuit saw band must be adjusting according to operating instructions.
	- Guiding cubes are not adjusting (bearings + hard metal circuit)	Guiding cubes must be adjusting (bearings + hard metal circuit) according to operating instructions.
	- Bearings of guiding cubes are used (rolling elements are damaged or outside ring of bearing has conical form).	Bearings of guiding cubes must be replaced. Bearings must be adjusting according to operating instructions.
9. Damage tooth system of the saw band	- In gripping the lifting cylinder is backlash.	
	- Squeezed pin upper or downer holder of the lifting cylinder.	Exchange complete upper or downer holder of lifting cylinder.
10. The saw is cut downing.	- Geometry of hardmetal guiding cubes is wrong adjusted.	Hardmetal guiding cubes must be adjusted.
	- Bearings of guiding cubes are used.	Bearings of guiding cubes must be replaced.
11. Cleansing of the saw band is not functional.	- Elastic wheel of the brush drive is worn-down.	Elastic wheel of the brush must be changed.
	- Knurling of the driving wheel is worn-down.	Driving wheel must be changed.
	- The shaft of the brush drive is rusted.	The shaft of the brush must be cleaned and oiled.

Problem	Possible causes	Repair
	- The brush position and the brush cover is adjusted wrong – with the brush cannot be turned.	The brush cover must be posed, in order to the brush can be turned.
12. The saw arm periodically rise and fall during the cut; this cause short lifetime of the saw band.	- Backslash in driving wheel lodgement on the shaft.	Change the driving shaft for a long one, new bearings, distance ring, new driving wheel, spring, two covers on the forehead of the shaft + screws.
	- Worn channel for spring.	

5.2. Electric and hydraulic problems

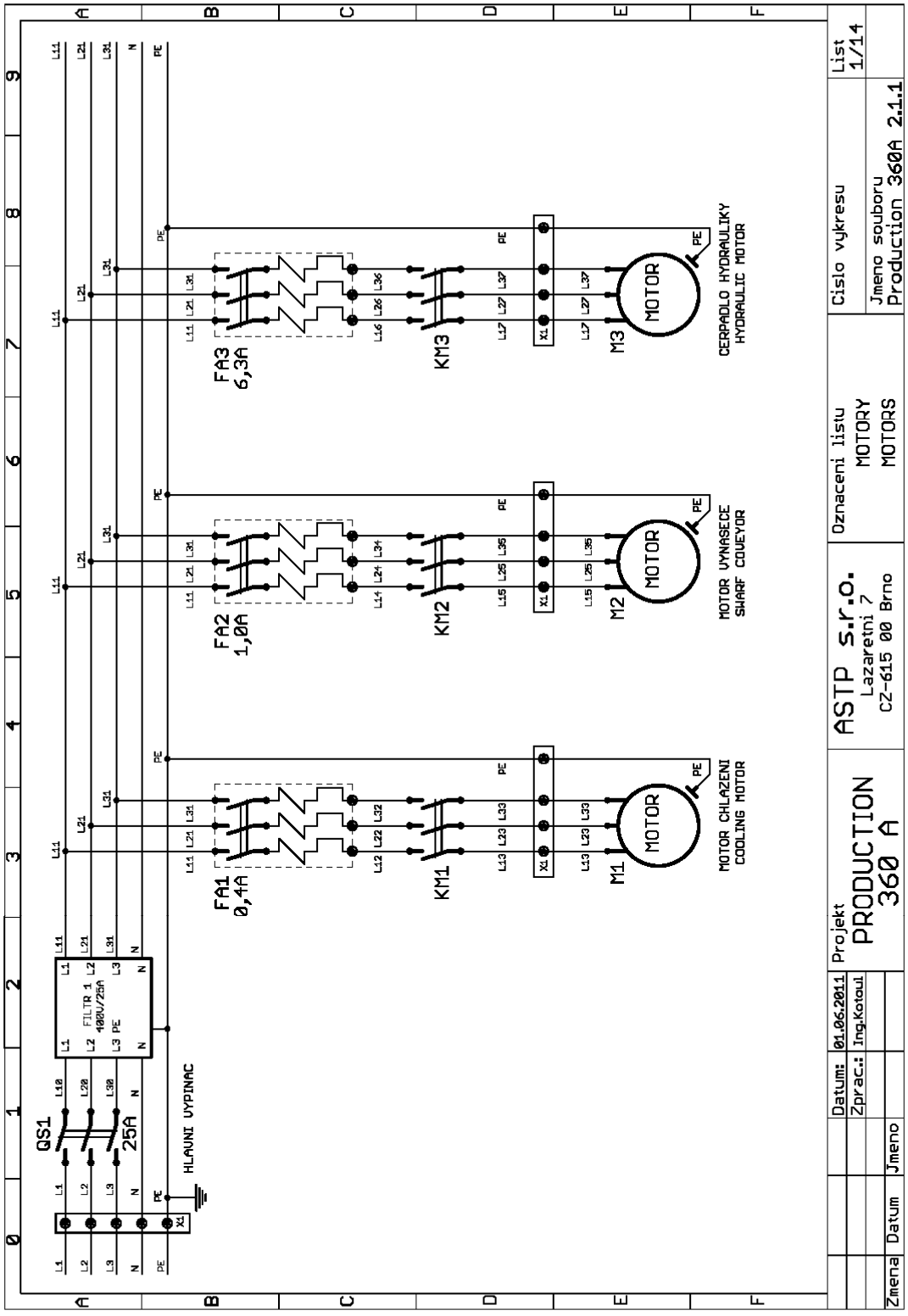
Problem	Possible causes	Repair
1. Machine is not possible start.	- In socket is not voltage	Line voltage must be checked.
	- Transfer relay is closed (thermal protector)	Each FA relay must be checked.
	- Limit switch of saw band stretching, cover of frame or cover of saw band is not started.	Check of saw band stretching and covers closing.
2. When cut is finished, the frame is not raising.	- Bottom limit switch is adjusted wrong.	Bottom limit switch must be adjusted according to chapter ADJUSTING.
	- In hydraulic (pneumatic) ring is error. HYTOS (BOSCH) is not acting to frame uplift.	Function of magnetic valve must be checked, valve must be closed, voltage of clamps and inductor must be checked.
3. Electric motor and pump are without voltage. Between contactor and thermal protector is not voltage.	- Wrong contactor.	Replace contactor of engine.
4. The indicator of speed saw band is not functional.	- Sensor of speed is not adjusted.	Sensor of speed must be adjusted.
	- Defective display	The display must be changed.
	- Wrong sensor – diode of indicator speed is not light.	Sensor must be changed and adjusted.
5. Protector is switched off from engine hydraulic aggregate MA3 sometimes.	- Into hydraulic system is high working pressure.	Service engineer must reduce the pressure in hydraulic system.
6. The hydraulic aggregate cannot be started	Auxiliary contact on thermo-relay FA1 is defective.	Replace the defective contact on motor starter FA1.
7. Hydraulic aggregate is switched on but the saw arm or the main vice is not functional	- Wrong connection of electrical supply. The electrical phases are connected conversely.	The phases must be switched. Only service engineer can do this.
8. Cooling is not active	Lack of cooling agent.	Fill the tank with cooling agent.
	- Thermal relay is defective	Change the thermal relay
	- Input hosepipe is broken or obstructed.	Check the cooling circuit and perhaps cleanse cooling system.
	- Cooling pump protection is defective	Check the protection of cooling pump if need change it.
	- Cooling pump is defective.	Replace the cooling pump.

5.3. Hydraulic problems

Problem	Possible causes	Repair
9. Hydrogenerator not supplying oil	• reverse rotation	Check the connections of each phase. Reconnect properly connection of the electrical phases.
	• shortage of oil in the tank	Add hydraulic oil
	• Oil viscosity does not correspond prescribed viscosity value	Change hydraulic oil.
	• Hydrogenerator malfunction	Call service
	• Wrong power supply connection.	Check the connections of each phase. Reconnect properly connection of the electrical phases.
10. Hydraulic oil contains bubbles	• Hydraulic circuit is not adequately deaerated	Make deaeration of hydraulic circuit.
	• Low oil level	Add hydraulic oil
	• the pump shaft seals damaged	Call service
11. Increased mechanical noise	• damaged joint drive	Call service
	• damaged or destroyed motor bearings	Call service
	• air intake	Check for leaks.
12. Low pressure, pump supplies oil	• problem in the safety valve	Wrong settings. Check the settings and adjust the safety valve.
	• pump wear	Call service
	• external or internal leakage	Call service
13. Hydrogenerator is seized	• damage by solid particles in oil	Make oil filtration, or call the service.
	• non-prescribed oil	Change hydraulic oil.
	• wrong type of oil	Change hydraulic oil.
	• exceeding the life of the pump	Call service
14. Overheating oil	• cooler malfunction	Check the cooler function or call service.
	• wear the pump, the energy is converted into heat	Call service
15. Hydraulic valve can not be readjusted	• electromagnet has no signal (voltage) - interrupted supply lines	Check again.
	• Electromagnet coil burnt	Replace coil – Call service.
	• spool valve sticking	Replace valve – Call service

6. Schémata / Schemas / Schematics

6.1. Elektrické schema / Elektroschema / Wiring diagrams



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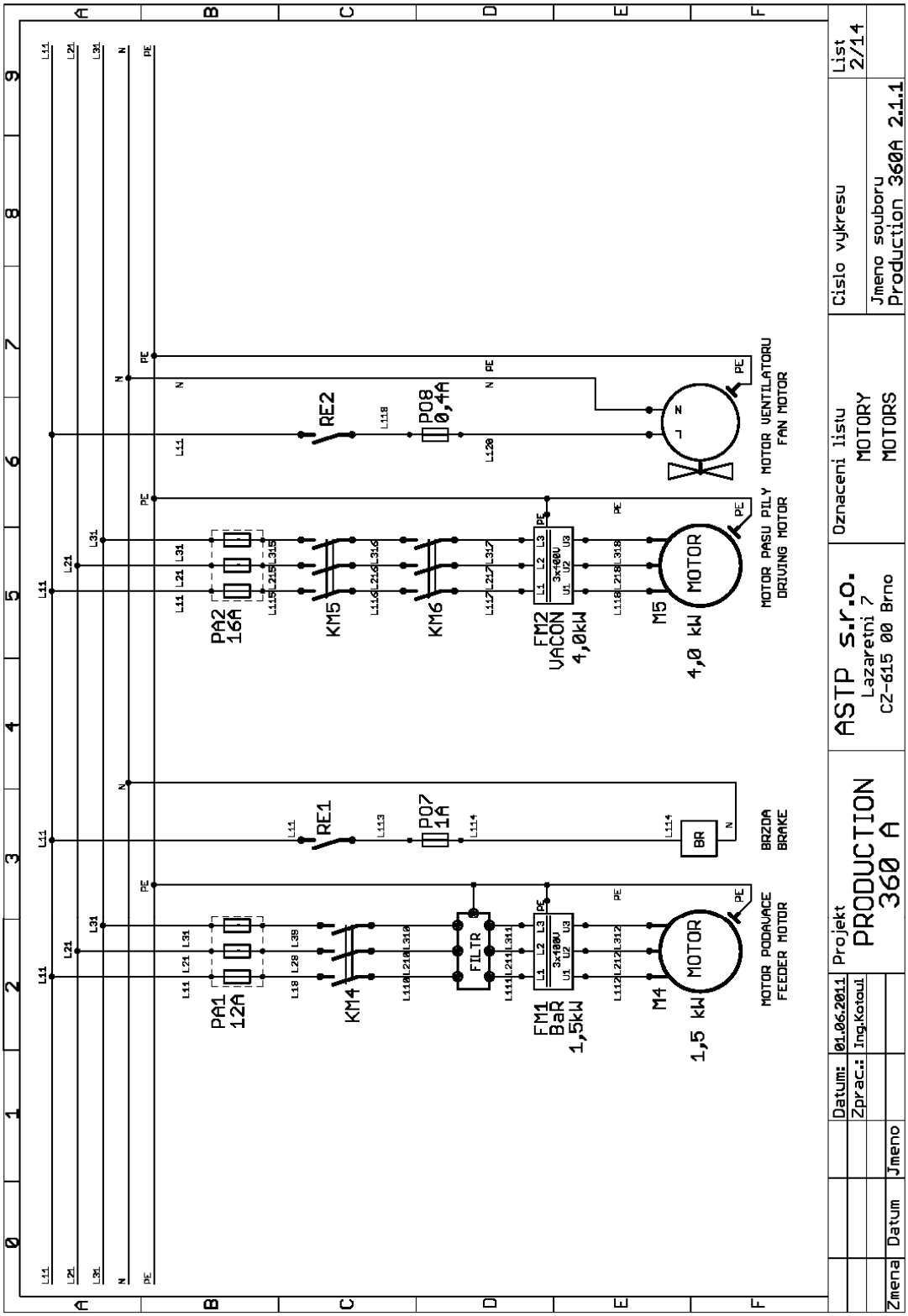

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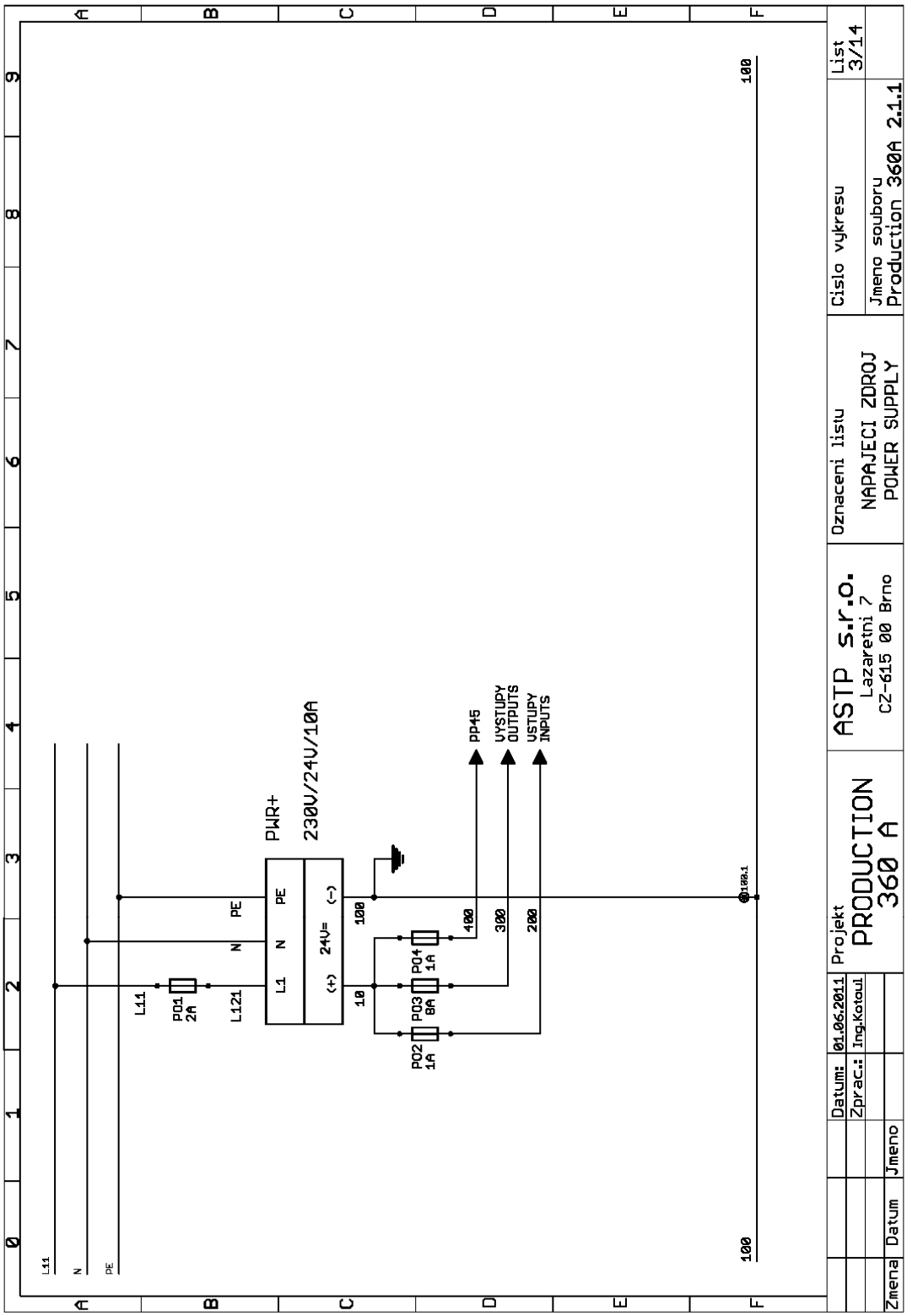

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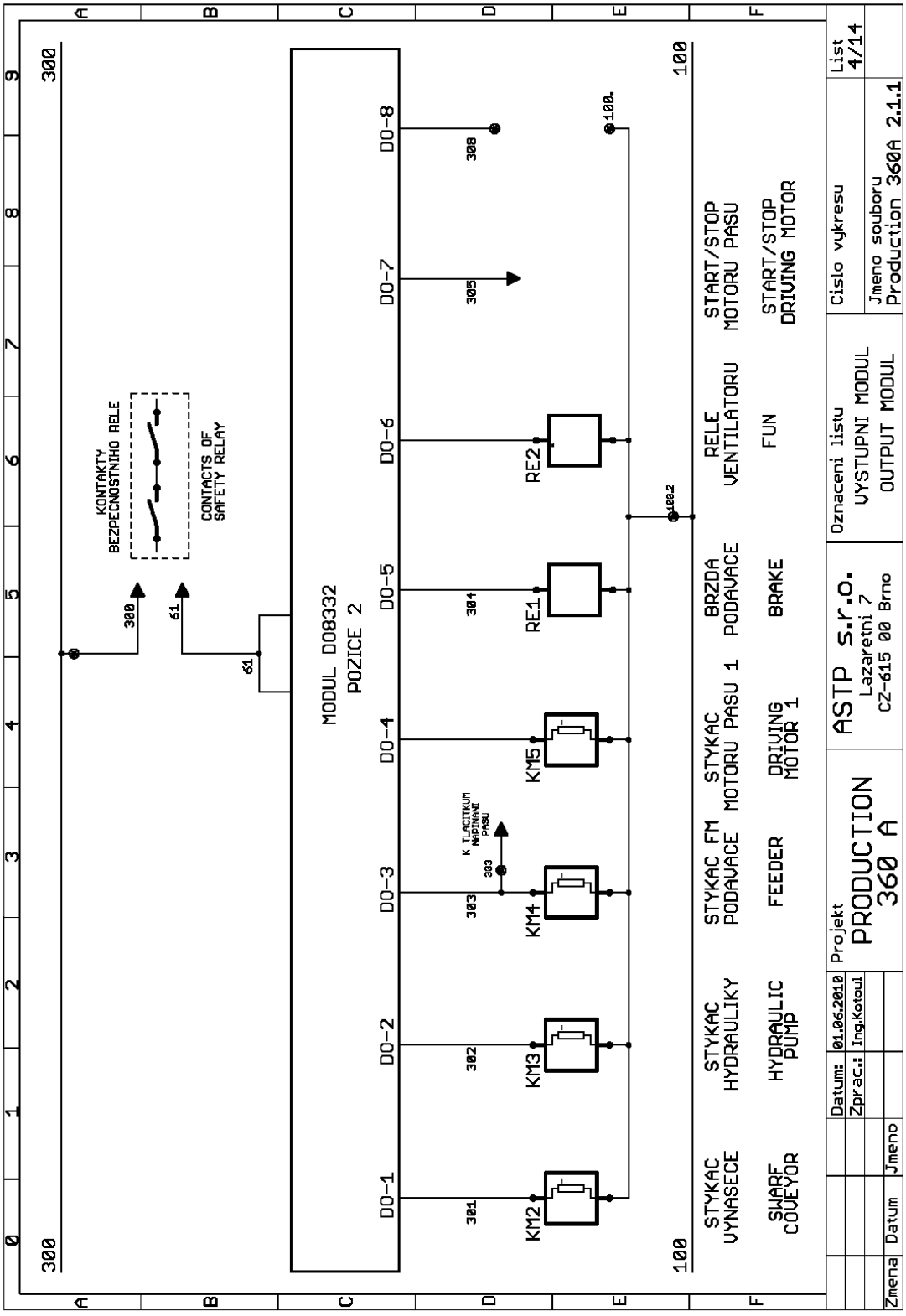

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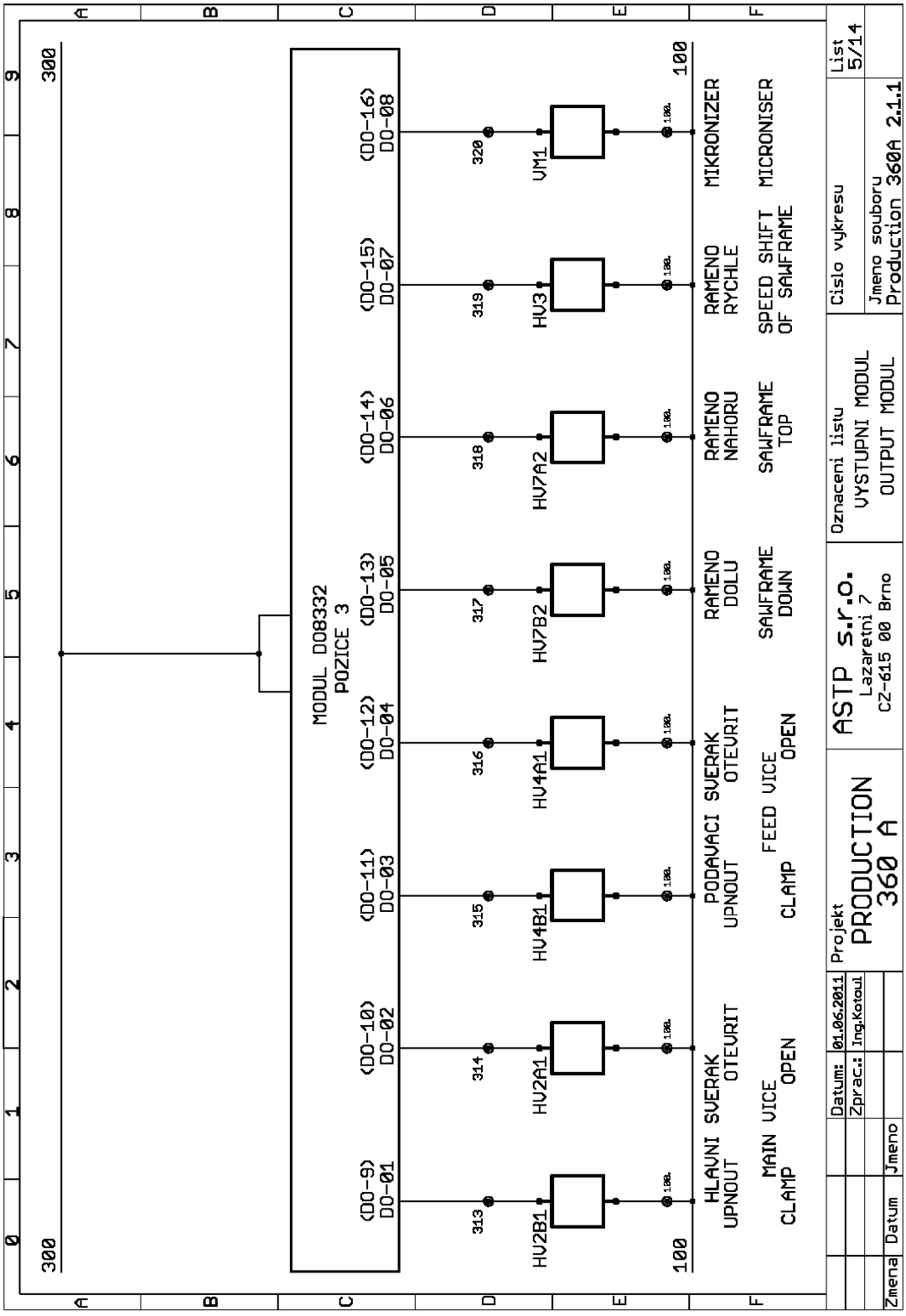

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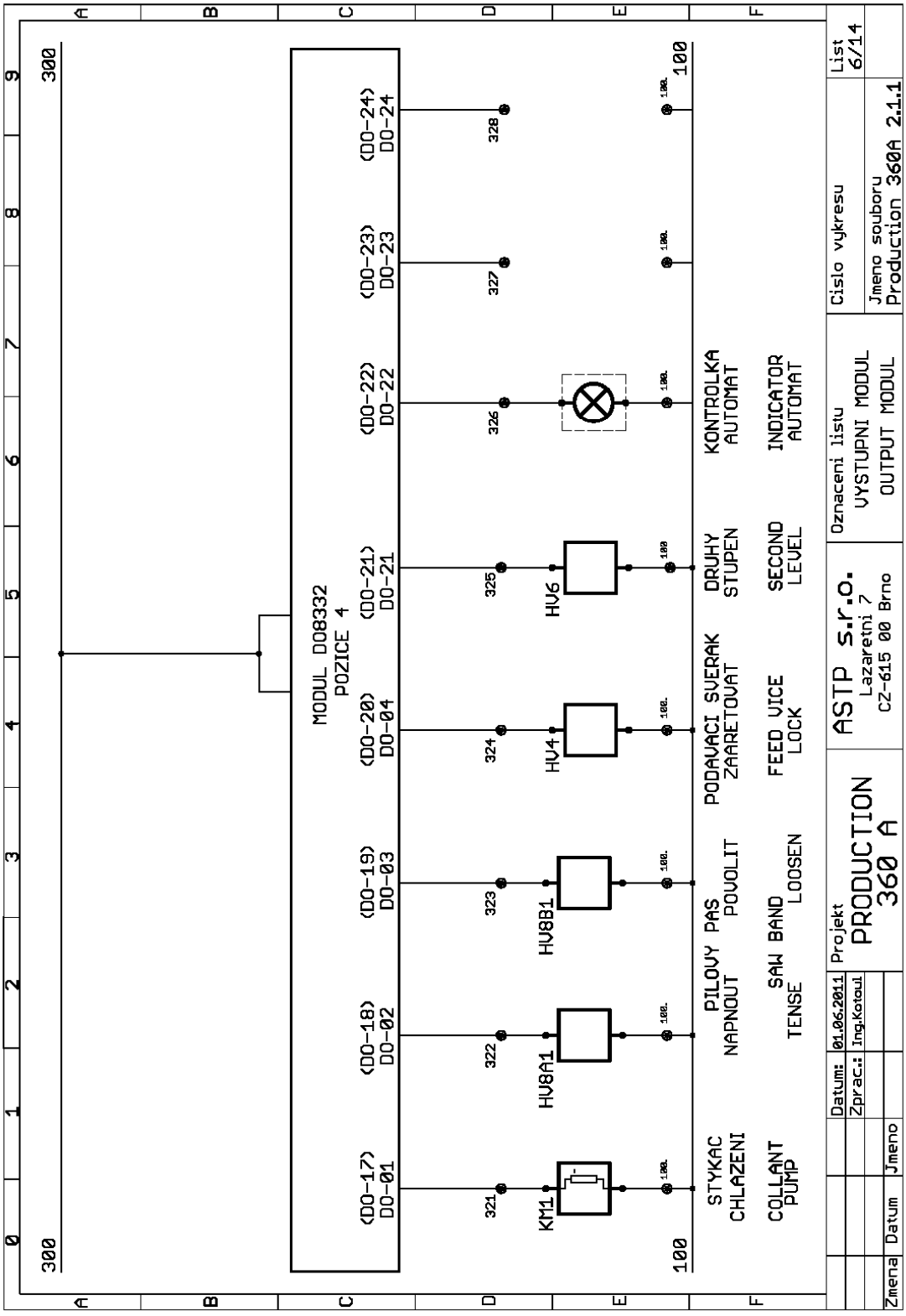

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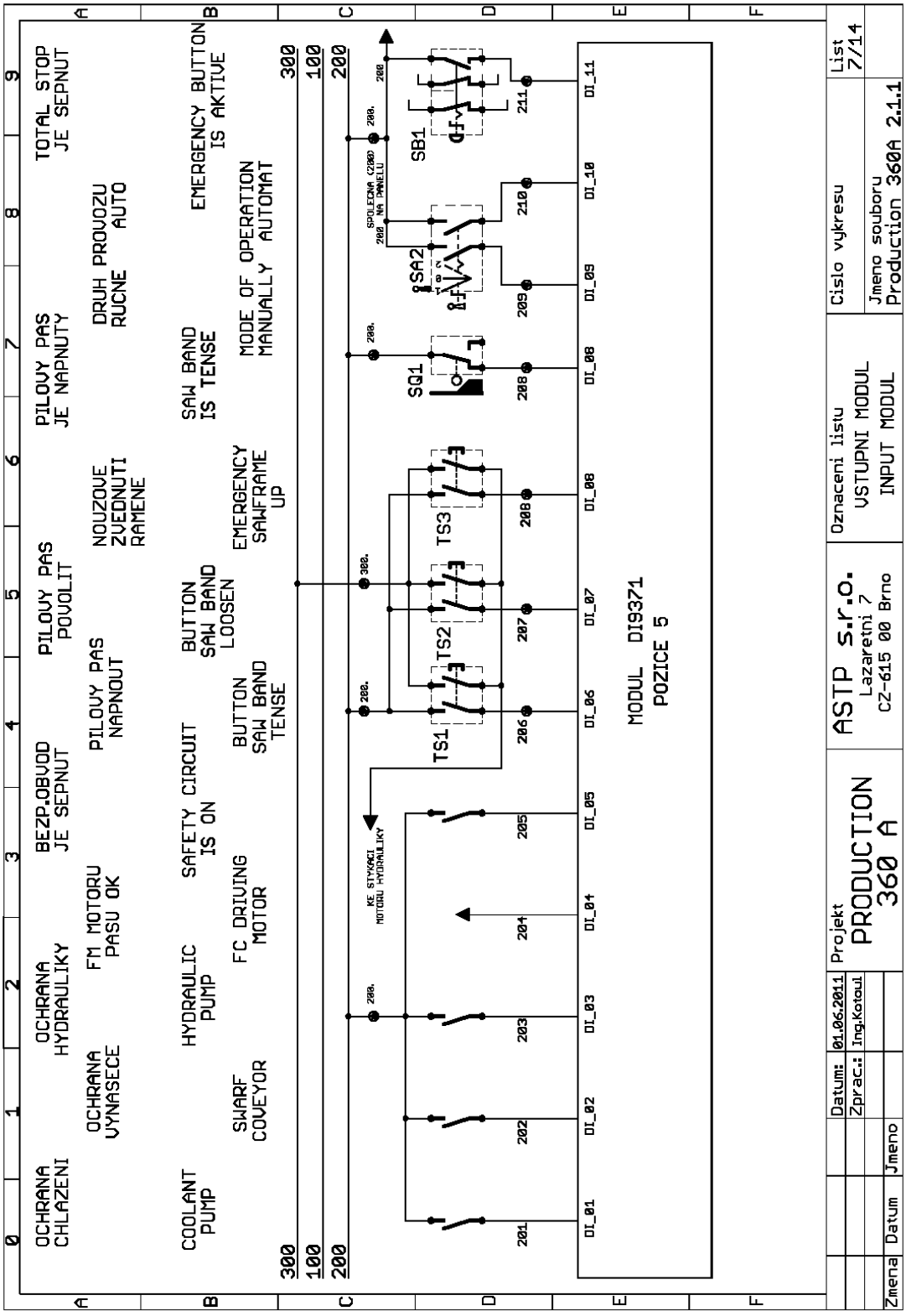

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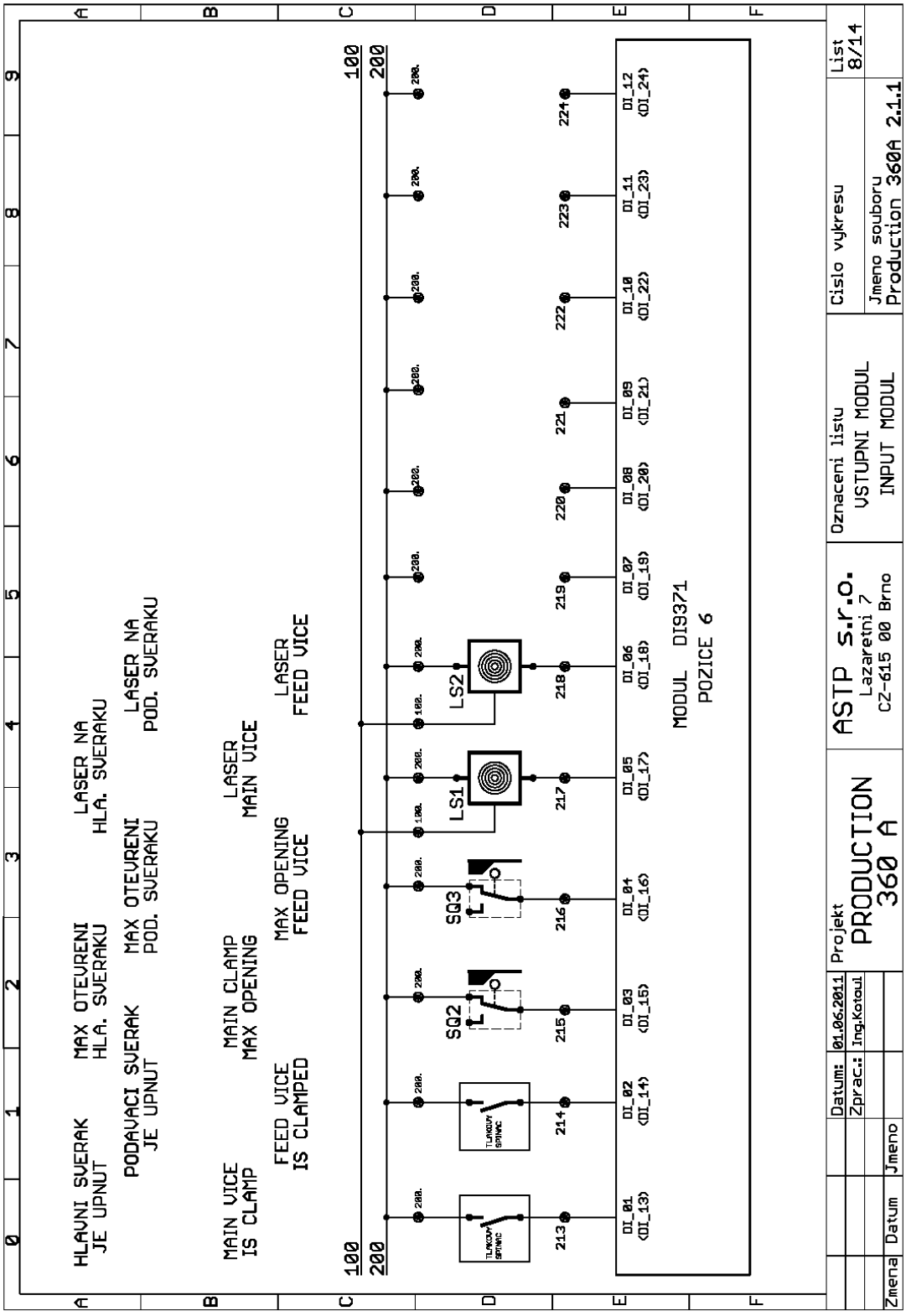
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LS2
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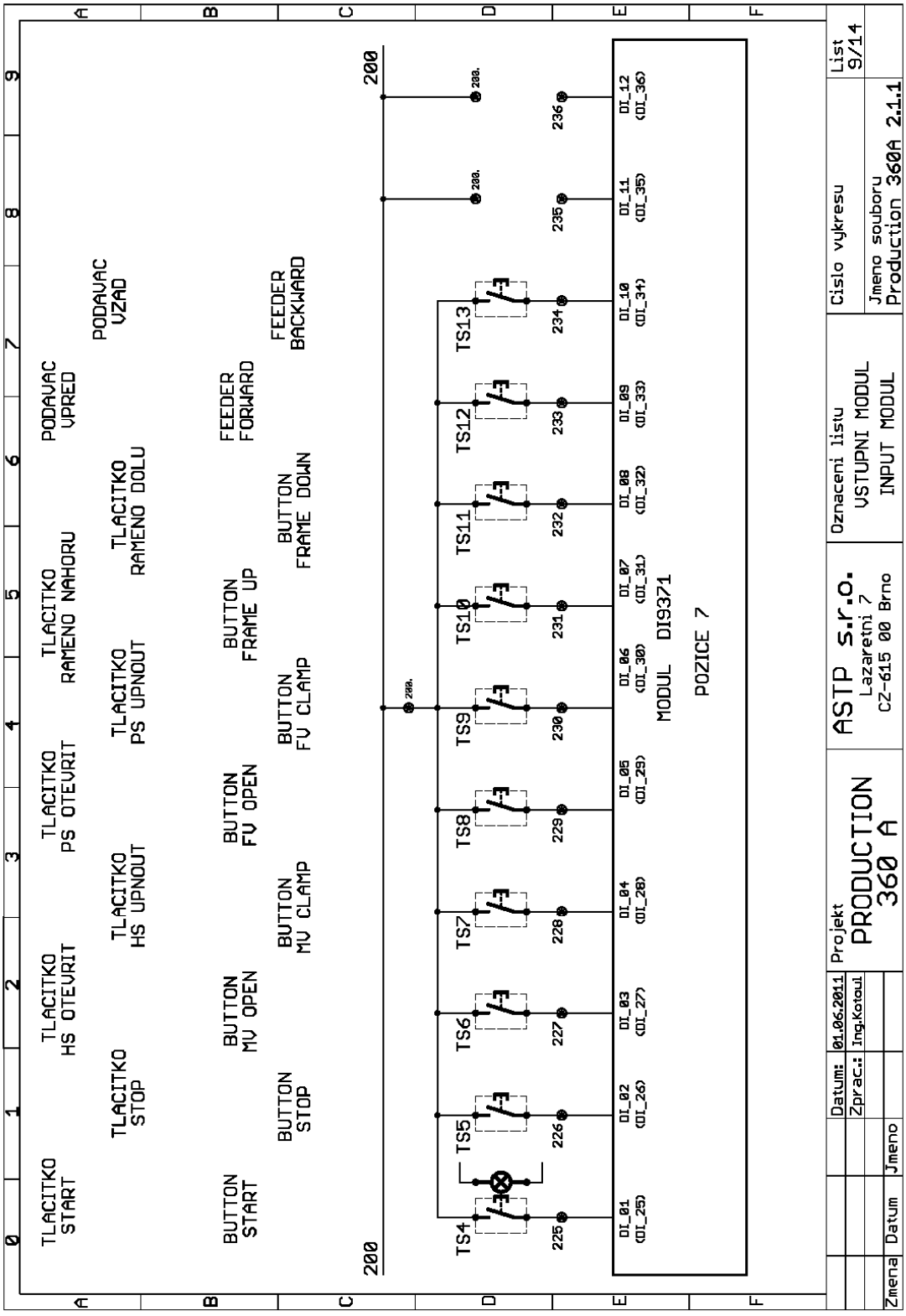
360 A
Oznaceni listu
VSTUPNI MODUL
INPUT MODUL
Cislo vykresu
Jmeno souboru
Production 360A 2.1.1
List
8/14
Datum:
01.06.2011
Zprac.:
Ing.Kotaul
Zmena
Datum
Jmeno



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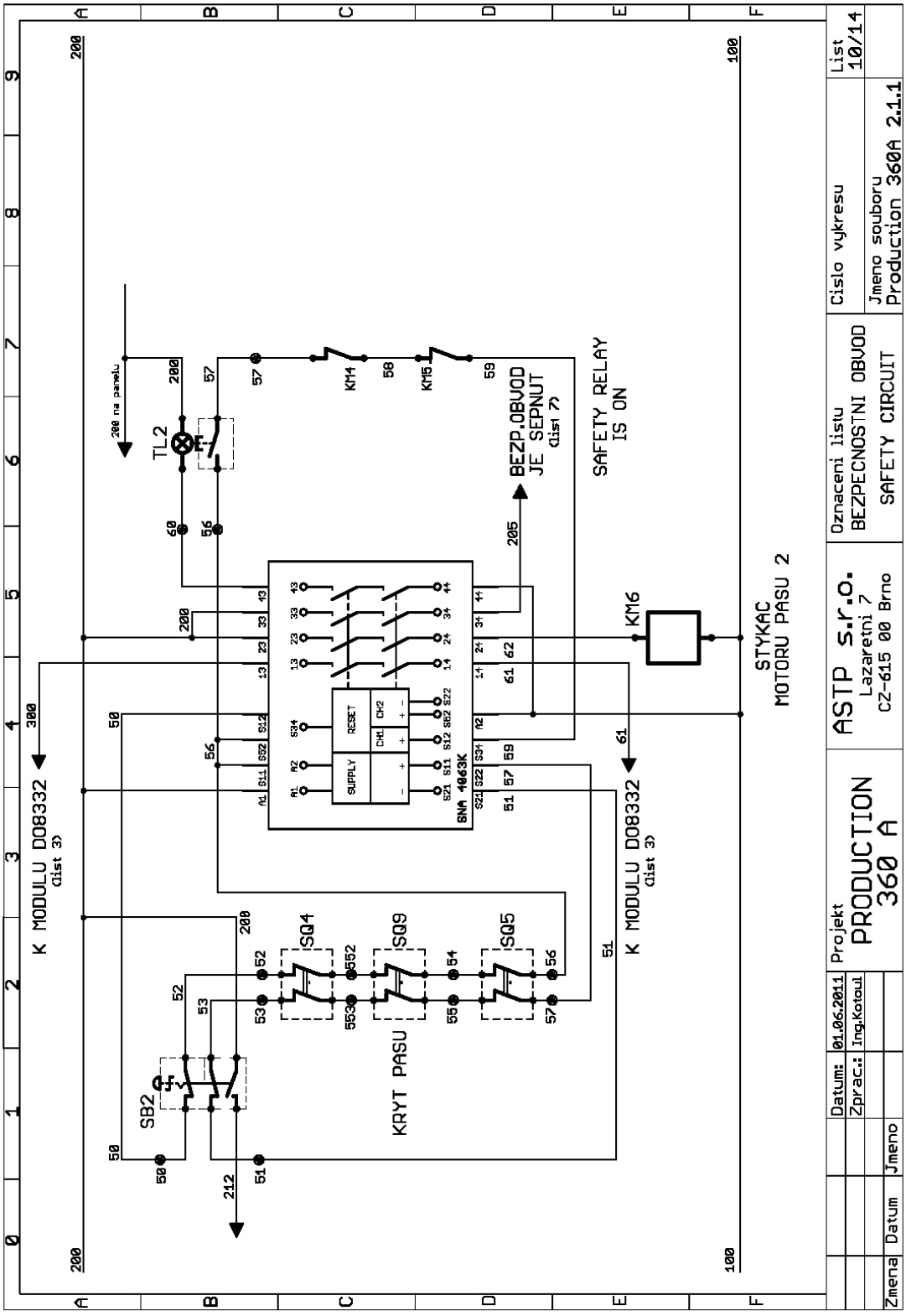

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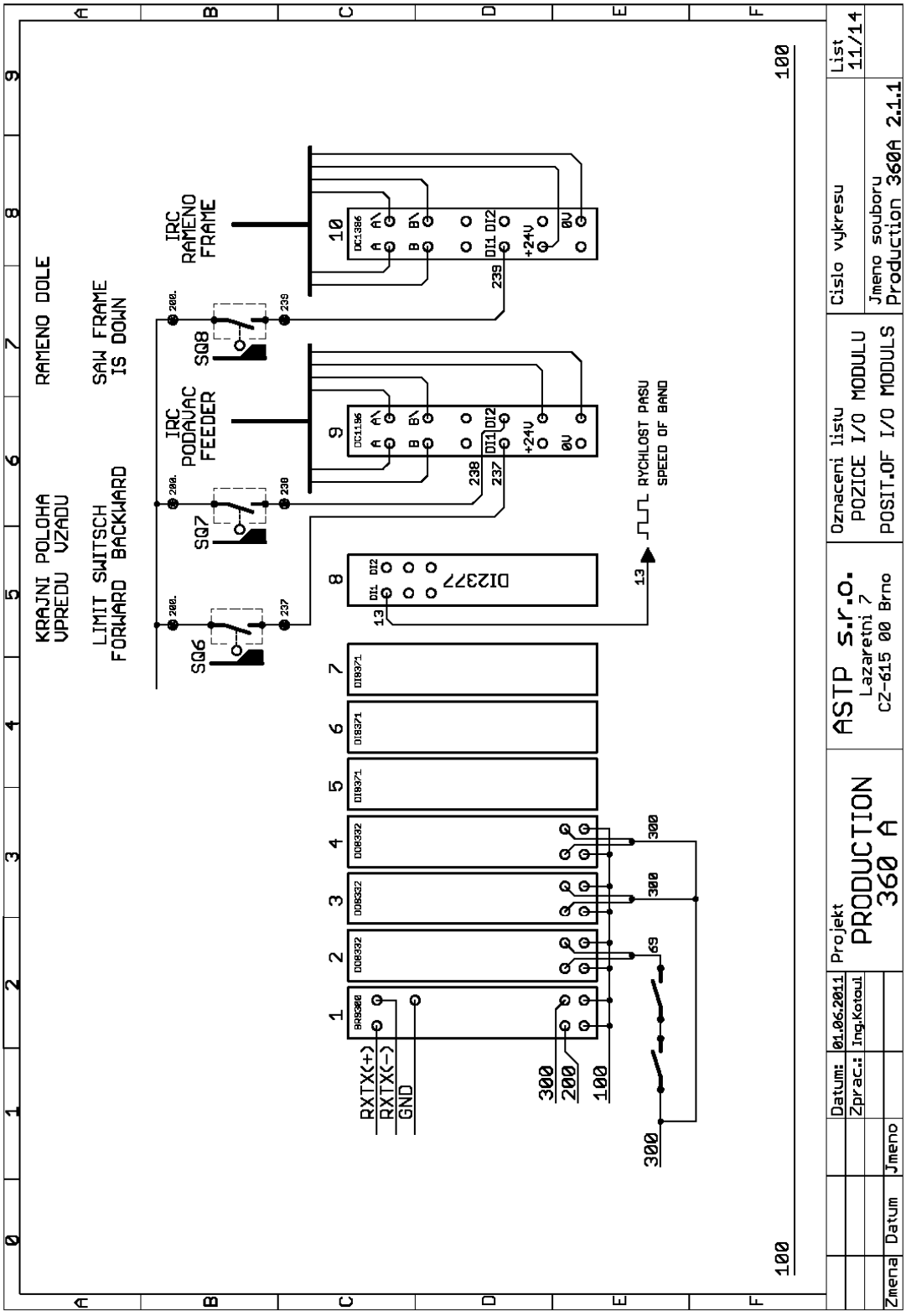

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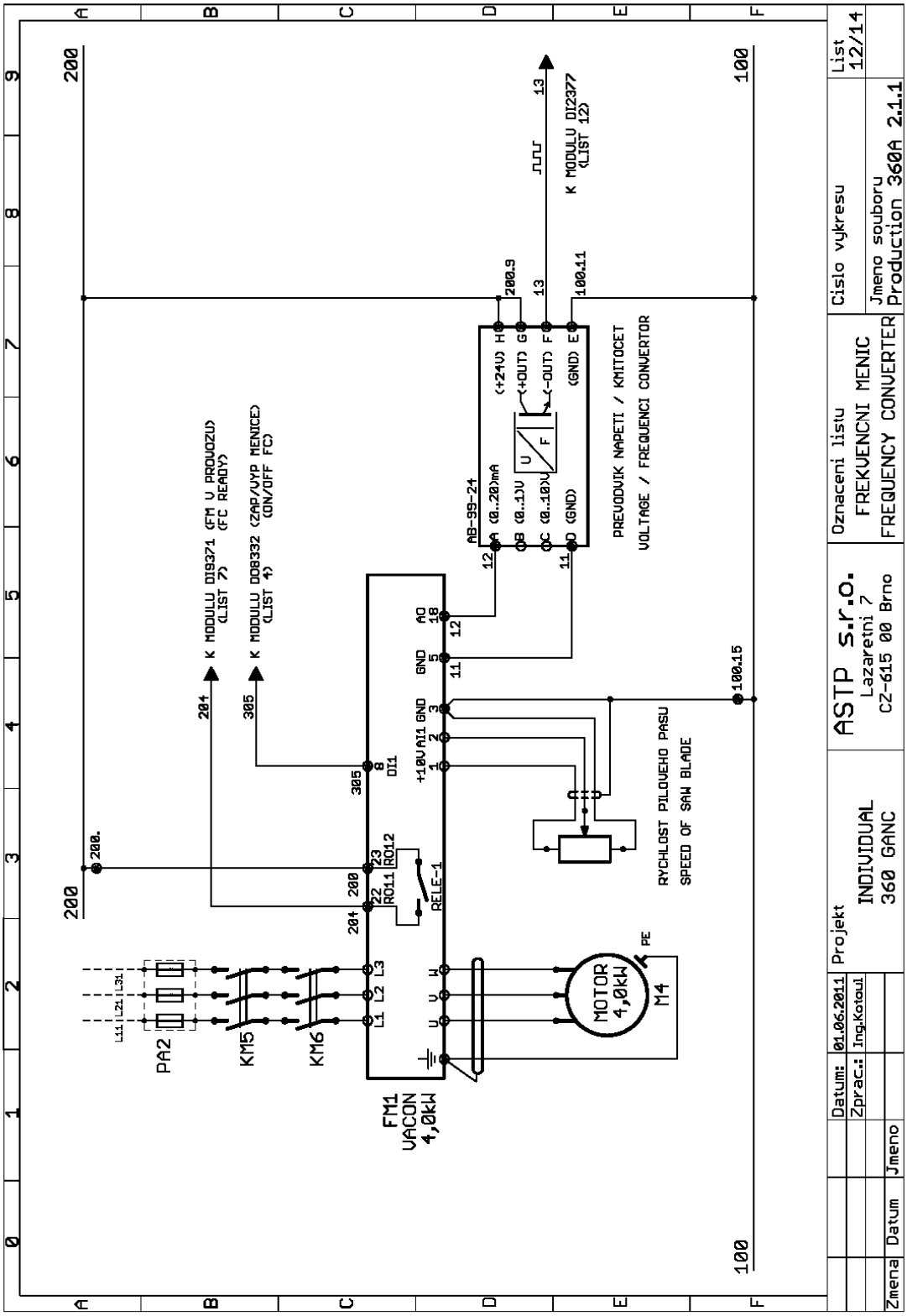

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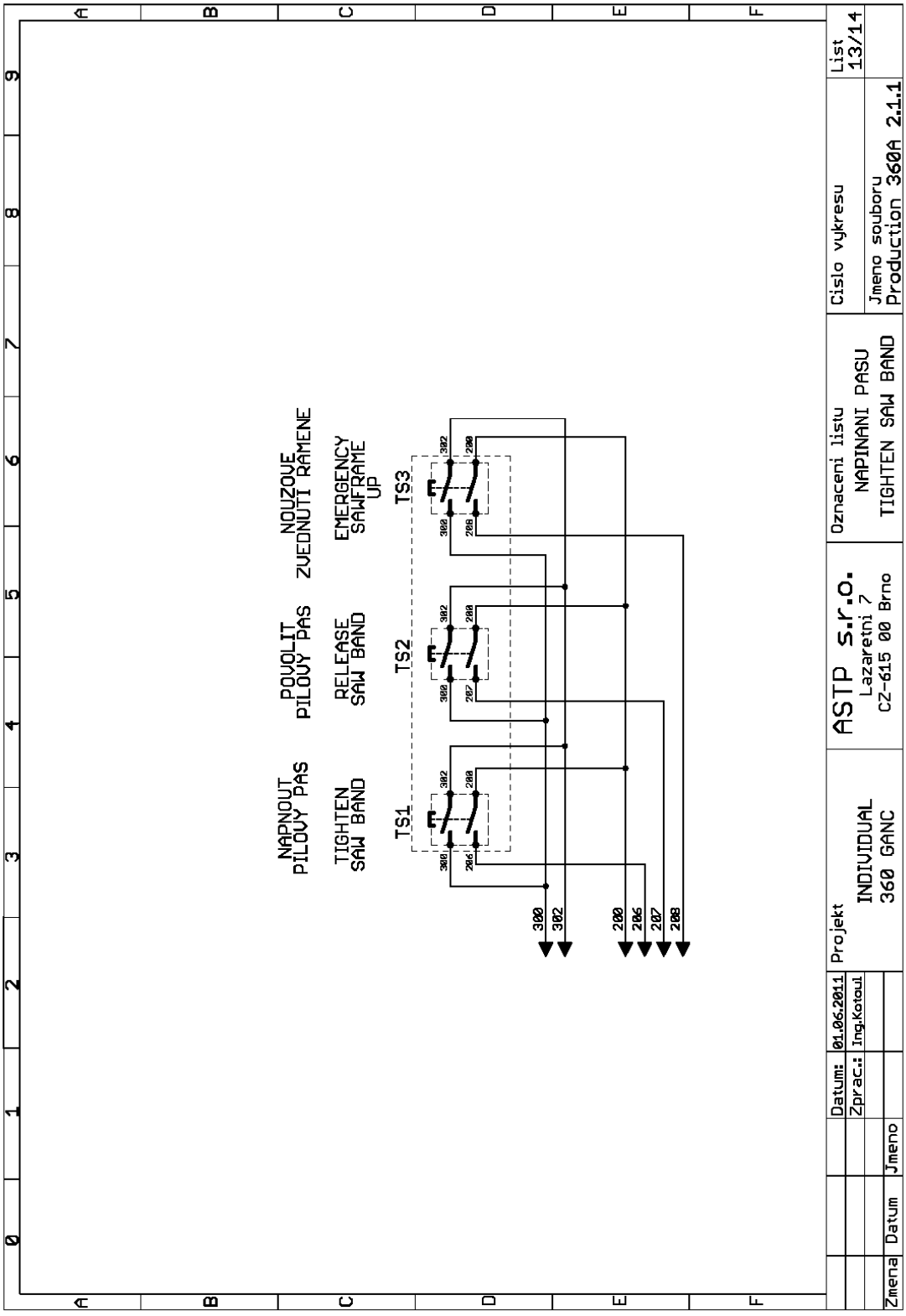

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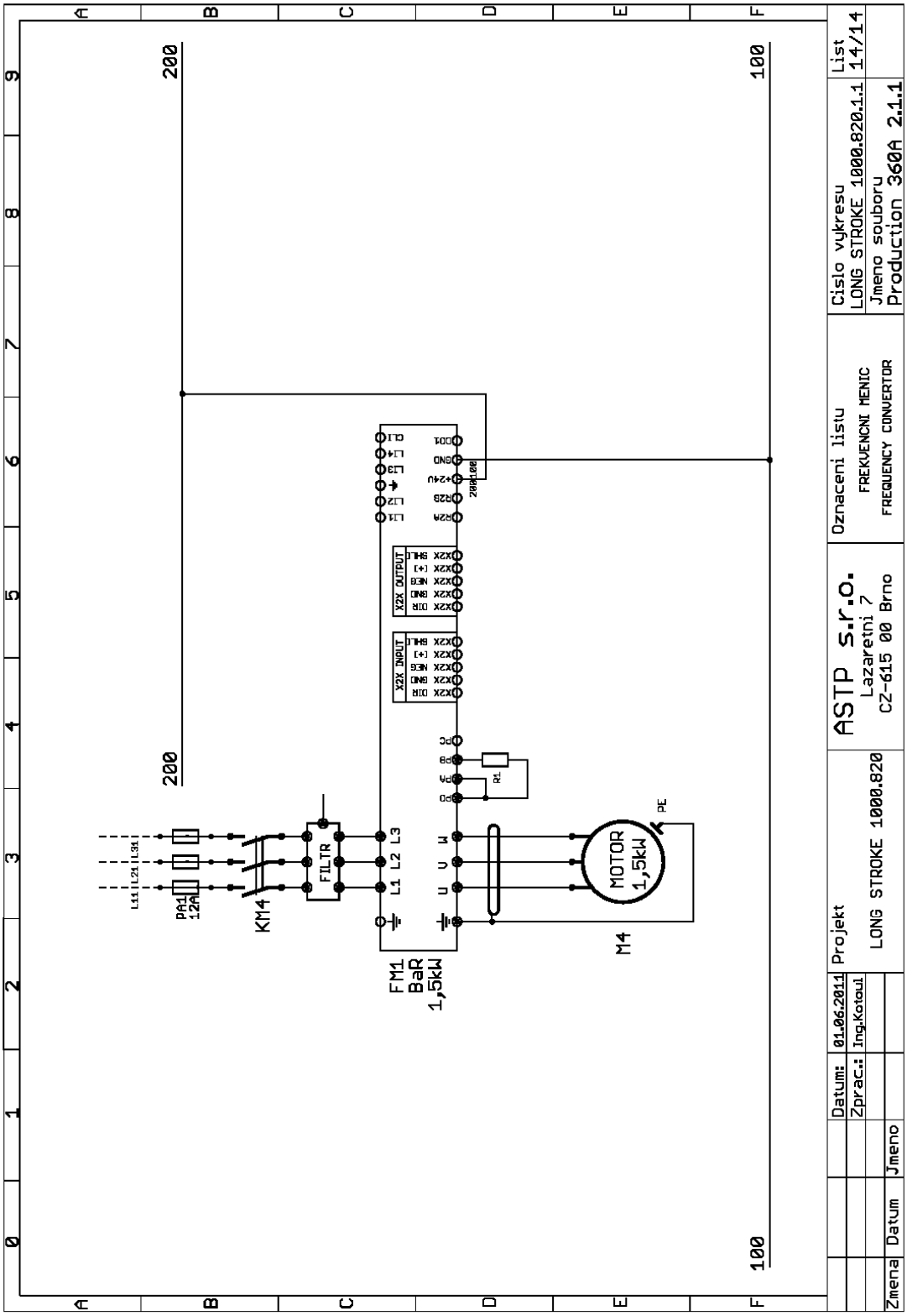
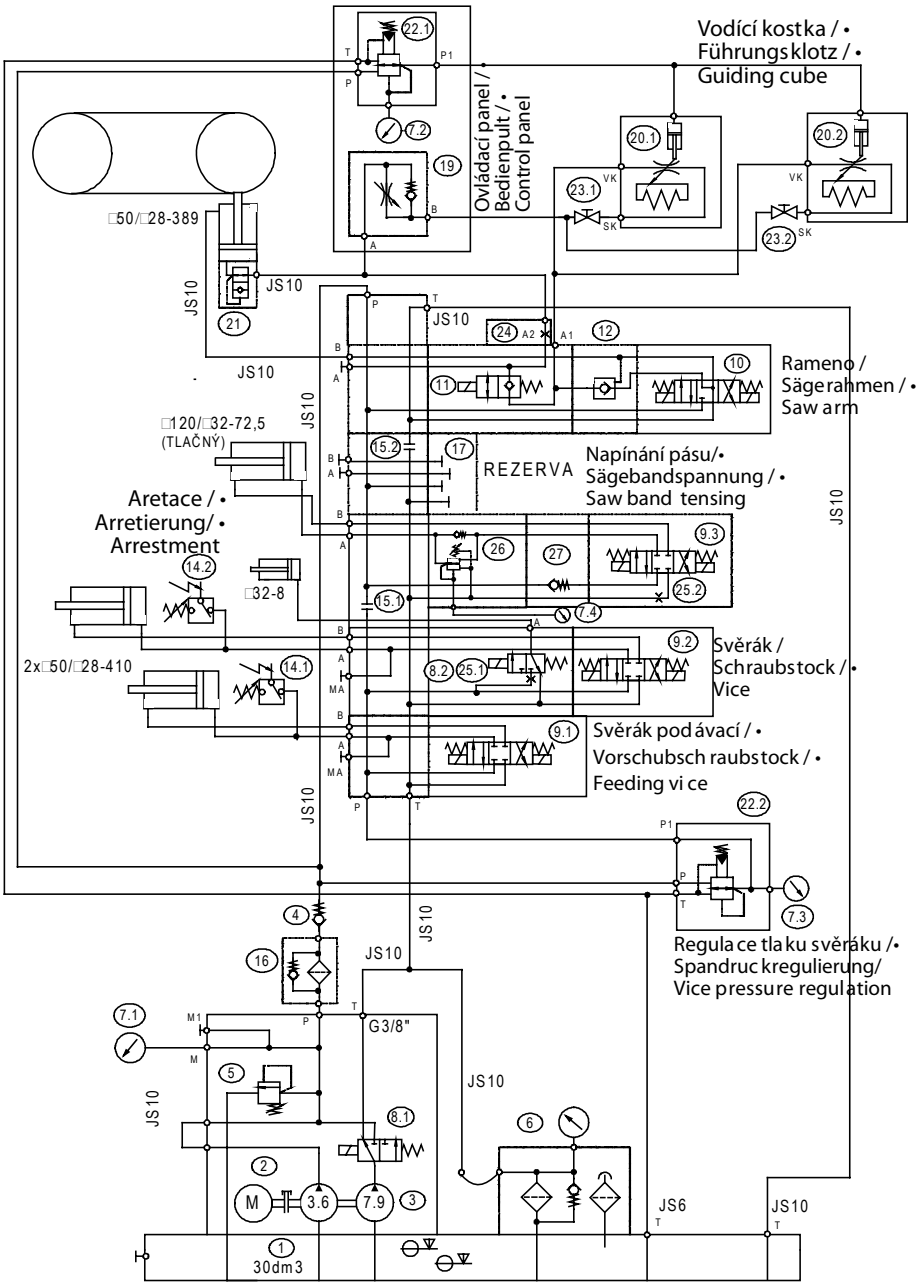


18.07.2011 09:23:24 C:\Program Files\Eagle\projects\Production\Production 360A 400V VC002\Production 360A 2.1.1.sch (Sh

6.2. Hydraulické schéma / Hydraulikschema / Hydraulic diagram



Typ / Type / Type	
Production 400.360 ANC, hydraulic regulation	
Hydraulický agregát / Hydroaggregat / Hydro aggregat	
92.001.065, S MA03-79,36/17. O-SDPO-V30M.0	
Neuvedené světlosti / Unerwähnt Lichtbreite / Unlisted inside diameters	
JS6	
Výstupní šroubení / Ausgangschraubung / Output screewing	
G1/4“	
Pmax	6,5 MPa
Q	10,6+4,9 dm³/min
n	1425 rpm
P	2,2 kW

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Poz.	Item	Type	Qty.
1	Nádrž / Behälter / Tank	N30-B0-II 30 dm^3	1
2	Elektromotor / Elektromotor / Electromotor	MA-AL100L 2,2 kW 400/230V,50Hz, 5,07 A	1
3	Hydrogenerátor / Hydraulikgenerator / Hydrogenerator	P 23-7,9/3,6 L.65334 7,9/3,6 cm^3/ot.	1
4	Jednosměrný ventil / Einwegventil / One-way valve	V J03-06-030-G-1	1
5	Přepouštěcí ventil / Bypaßventil / By pass valve	VPP2-04/S-10S 5 MPa	1
6	Zpětný filtr / Filter / Filter	FR043-166/0 (10 µm) 92.153.101/.039	1
7	Manometr / Manometer / Manometer	∅68 GLYCERIN 0-6 M P a	4
8	Rozvaděč / Verteilungsventil / Distributor	S D2E-A3/C2D 21 408-0328.003	2/1
9	Rozvaděč / Verteilungsventil / Distributor	RPE3-043Z11/02400E 1K 1 92.101.010	3
10	Rozvaděč / Verteilungsventil / Distributor	RPE3-043Y 11/02400E 1K 1 92.101.005	1
11	Blok rychloposuvu / Eilgangsblock / Speed shift block	729-0084 92.153.006	1
12	Hydraulický zámek / Hydraulisches Schloß / Hydraulic lock	VJR1-04/MA 92.103.002	1
13	--	--	--
14	Tlakový spínač / Druckschalter / Pressure switch	92.201.003	2
15	Zátka / Einfüllspund / Fill stopper	M6	2
16	Tlakový filtr / Druckfilter / Pressure filter	D042-153 (3 µm) 92.153.102 /.055	1
17	Deska / Platte / Plate	DK1-04/32-2 92.105.008	1
18	--	--	--
19	Ventil škrtící / Drosselventil / Choke	VS01-04/R2,5-O 92.152.001	1
20	Kostka regulace / Regulationklotz / Regulation cube		2
21	Ventil pojistný / Sicherungsventil / Retaining valve	VPNH 1/4" 92.151.001	1
22	Redukční ventil / Reduktionsventil / Control valve	VRN2-06/S-6R 252.020	2
23	Kulový ventil / Kugelventil / Globe valve	99.260.004	2
24	Clona / Schürze / Shield	∅1,0	1
25	Clona / Schürze / Shield	∅0,8	2/1
26	Redukční ventil / Reduktionsventil / Control valve	VRP 2-04-AS/6,3 92.154.002	1
27	Jednosměrný ventil / Einwegventil / One-way valve	VJ01-04/MP-05 92.104.001	1

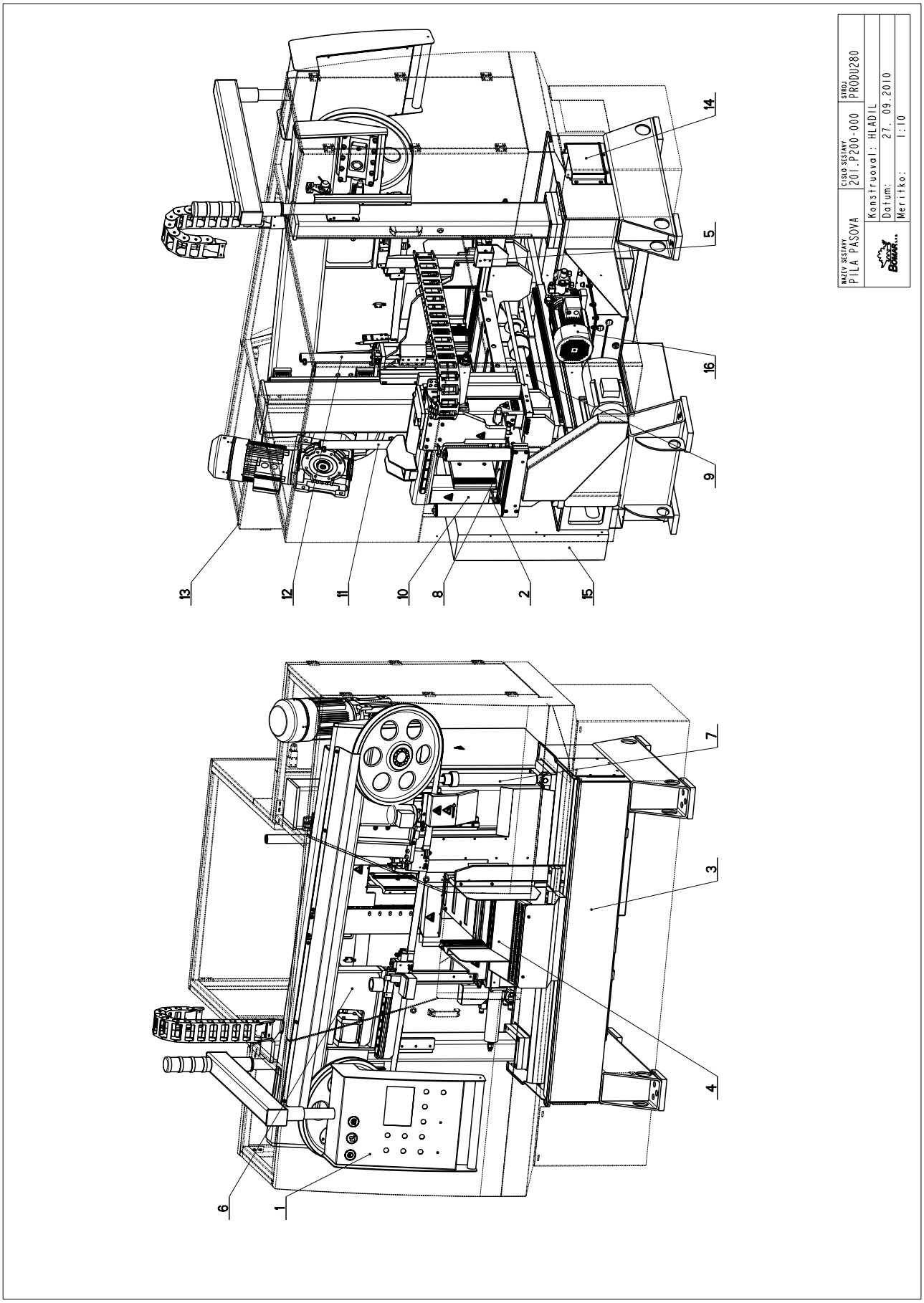
7. Výkresy sestav pro objednání náhradních dílů / Zeichnungen für Bestellung der Ersatzteile / Drawing assemblies for spare parts order

- Při objednávání náhradních dílů vždy uvádějte: typ stroje (např. practix Production 400.360 ANC) , výrobní číslo (např. 125) a rok výroby (např. 1999).

- In die Bestellung der Ersatzteile führen Sie immer an: Maschinentyp (z. B. Production 400.360 ANC), Serien Nr. (z. B. 125) und Baujahr (z. B. 1999).

- For spare parts order, you must always to allege: type of machine (for example Production 400.360 ANC), serial number (for example 125, see cover page) and year of construction (for example 1999).

7.1. Production 400.360 ANC



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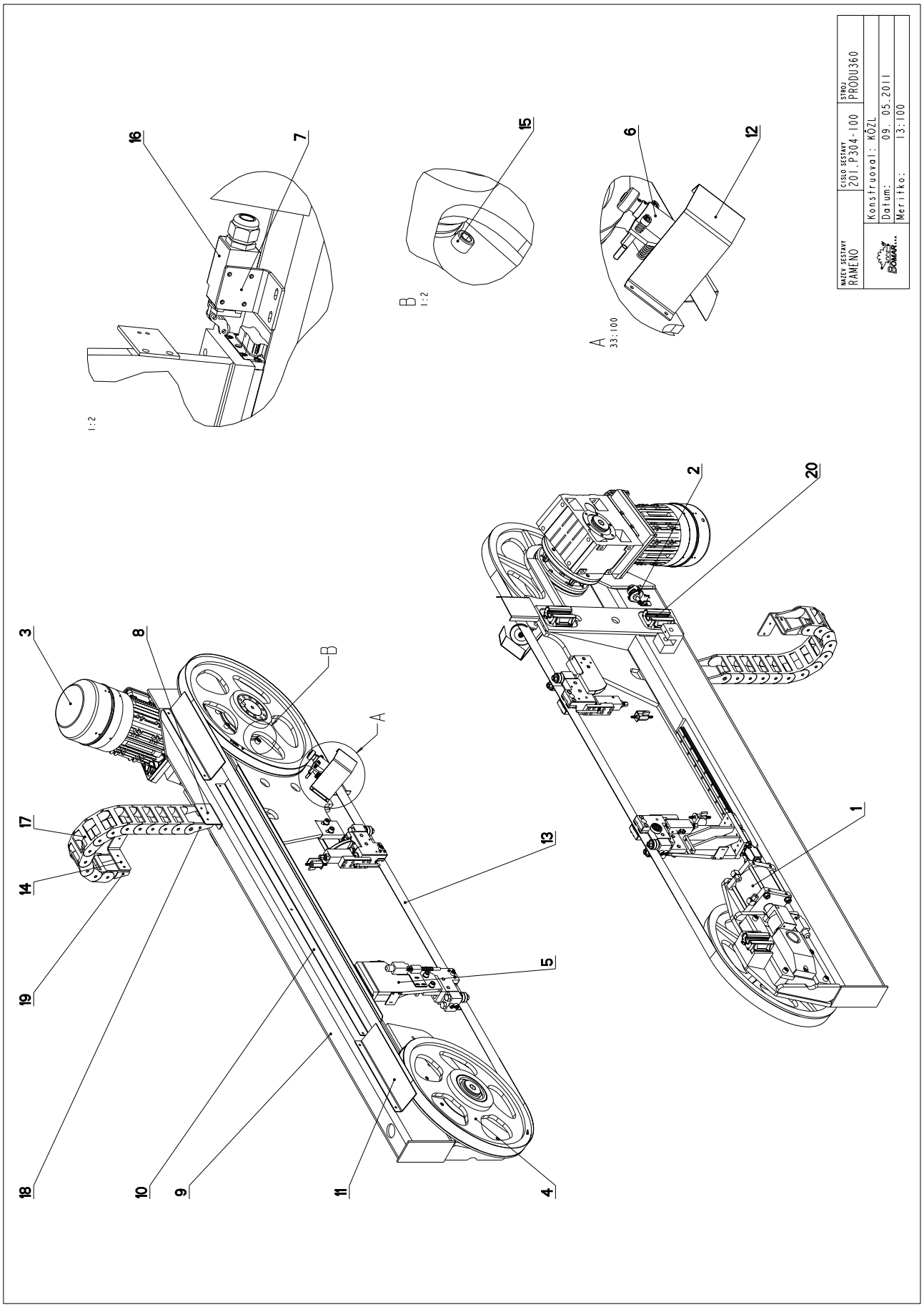
Cislo Sestavy	Ver.	Nazev sestavy
201.P300-100	0	PILA PASOVA/BAND SAW/BANDSÄGE

Poz.	Objednaci cislo	Ver.	Nazev polozky	Rozmer	Ks
1	201.P301-100	0	PODSTAVEC / BASE / UNTERSATZ		1
2	201.P303-080	0	ZAVORA OPTICKA / OPTICAL GATE / LICHTSCHRANKE		1
3	201.P303-100	0	SVERAK / VICE / SCHRAUBSTOCK		1
4	201.P304-100	0	RAMENO / SHOULDER / SÄGERAHMEN		1
5	201.P311-100	0	PODAVAC / FEEDER / VORSCHUB		1
6	201.P311-140	0	TRAT / TRACK / BAHN		1
7	201.P311-150	0	POHON / DRIVE / ANTRIEB		1
8	201.P311-160	0	VALEC VERTIKALNI / VERTICAL CYLINDER / VERTIKALZYLINDER		1
9	201.P314-000		UPINANI HORNI / TOP CLAM / SPANNVORRICHTUNG OBEN		1
10	201.P314-050		UPINANI HORNI / TOP CLAM / SPANNVORRICHTUNG OBEN		1
11	201.P317-000	0	DIL PRIPOJOVACI / ATTACHMENT PART / ANSCHLUSSTEIL		1
12	201.P318-100	0	KRYTY / COVERS / ABDECKUNGEN		1
13	201.P330-200	0	PANEL / PANEL / PANEL		1
14	31.0104-026	0	SAMOLEPKA / STICKER / AUFKLEBER		1
15	31.3199-003		SAMOLEPKA / STICKER / AUFKLEBER		1
16	31.P399-101	0	STITEK / LABEL / SCHILD	P 0.5x65	1
17	99.900.039		SAMOLEPKA / STICKER / AUFKLEBER	NEBEZP.STLACENI	6
18	99.900.043	0	SAMOLEPKA / STICKER / AUFKLEBER		2
19	99.900.045	0	SAMOLEPKA / STICKER / AUFKLEBER		1
20	99.900.046	0	SAMOLEPKA / STICKER / AUFKLEBER		1
21	99.900.053	0	SAMOLEPKA / STICKER / AUFKLEBER		2
22	99.900.057		SAMOLEPKA / STICKER / AUFKLEBER		4
23	99.901.032	0	SAMOLEPKA / STICKER / AUFKLEBER	CETIFIKACNI SAMOLEPKA	1
24	99.901.035		SAMOLEPKA / STICKER / AUFKLEBER		1

Cislo Sestavy/Number of assembly/Nummer der Baugruppe; Verze (Ver.)/Version/Version; Nazev sestavy/Assembly title/Name der Baugruppe; Pozice (Poz.)/Position/Position; Objednaci cislo/Purchase order number/Bestellnummer; Nazev polozky/Volume title/Name der Position; Rozmer/Stock size/Abmessung

7.3. Rameno / Sägerahmen / Saw arm



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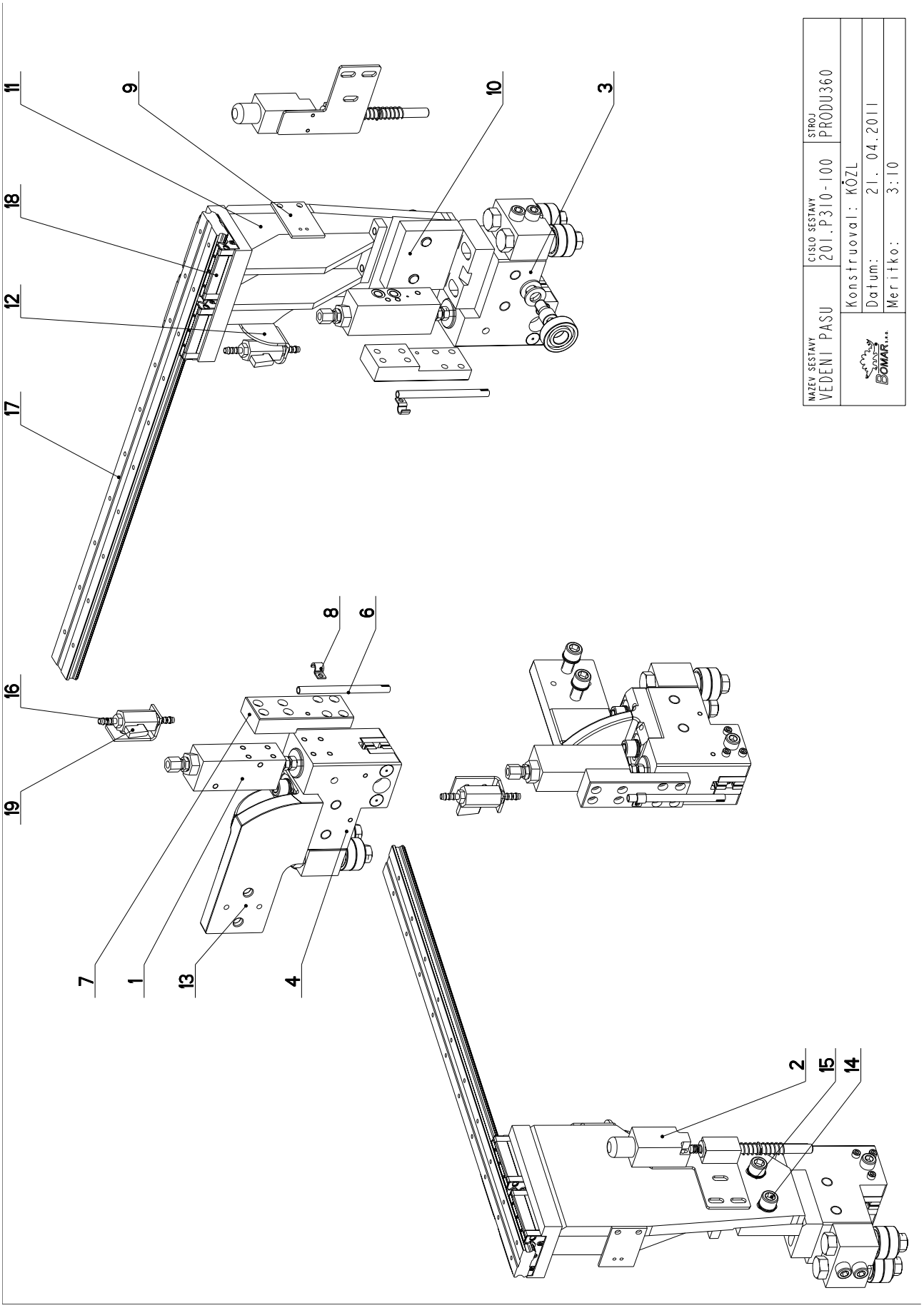
Cislo Sestavy	Ver.	Nazev sestavy
201.P304-100	0	RAMENO/SHOULDER/SÄGERAHMEN

Poz.	Objednaci cislo	Ver.	Nazev polozky	Rozmer	Ks
1	201.6707-400	3	VALEC NAPINACI / TENSIONING CYLINDER / SPANNZYLINDER		1
2	201.P304-190	0	ODMEROVANI / MEASURING / GEHRUNGSMESSUNG		1
3	201.P305-200	1	POHON / DRIVE / ANTRIEB		1
4	201.P308-100		NAPINANI / TENSIONING / SPANNUNG		1
5	201.P310-100	0	VEDENI PASU / BELT GUIDE / SÄGEBANDFÜHRUNG		1
6	201.P314-200	0	KARTAC / BRUSH / BÜRSTE		1
7	30.6614-764		DRZAK / HOLDER / HALTER	P 3x42x82	1
8	30.7114-142	1	DRZAK / HOLDER / HALTER	P 4 -100	1
9	30.P304-101	0	RAMENO / SHOULDER / SÄGERAHMEN		1
10	30.P304-107	0	KRYT / COVER / ABDECKUNG	P 2x138	1
11	30.P304-108	0	KRYT / COVER / ABDECKUNG	P 3-118	2
12	30.P304-109		DESKA / BOARD / PLATTE	P 2x80	1
13	30.P304-110	0	PAS PILOVY / SAW BELT / SÄGEBAND	41x1,3	1
14	30.Y404-005	0	DRZAK / HOLDER / HALTER	HR 50x5	1
15	90.001.25.062	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M12X50	8
16	91.173.009	0	SPINAC KONCOVY / END SWITCH / ENDSCHALTER		1
17	99.170.001	0	RETEZ ENERGII / ENERGY BELT / ENERGIEKETTE	0555.030.075.100	12
18	99.173.001	0	RETEZ ENERGII / ENERGY BELT / ENERGIEKETTE	KONCOVKA VNEJ	1
19	99.173.002	0	RETEZ ENERGII / ENERGY BELT / ENERGIEKETTE	KONCOVKA VNIT	1
20	99.201.007	0	VOZIK LINEARNIHO VEDENI / LINEAR GUIDE CART / LINEARFÜHRUNGSWAGEN	HGW30CC	3

7.5. Vedení pásu / Sägebandführung / Belt guide



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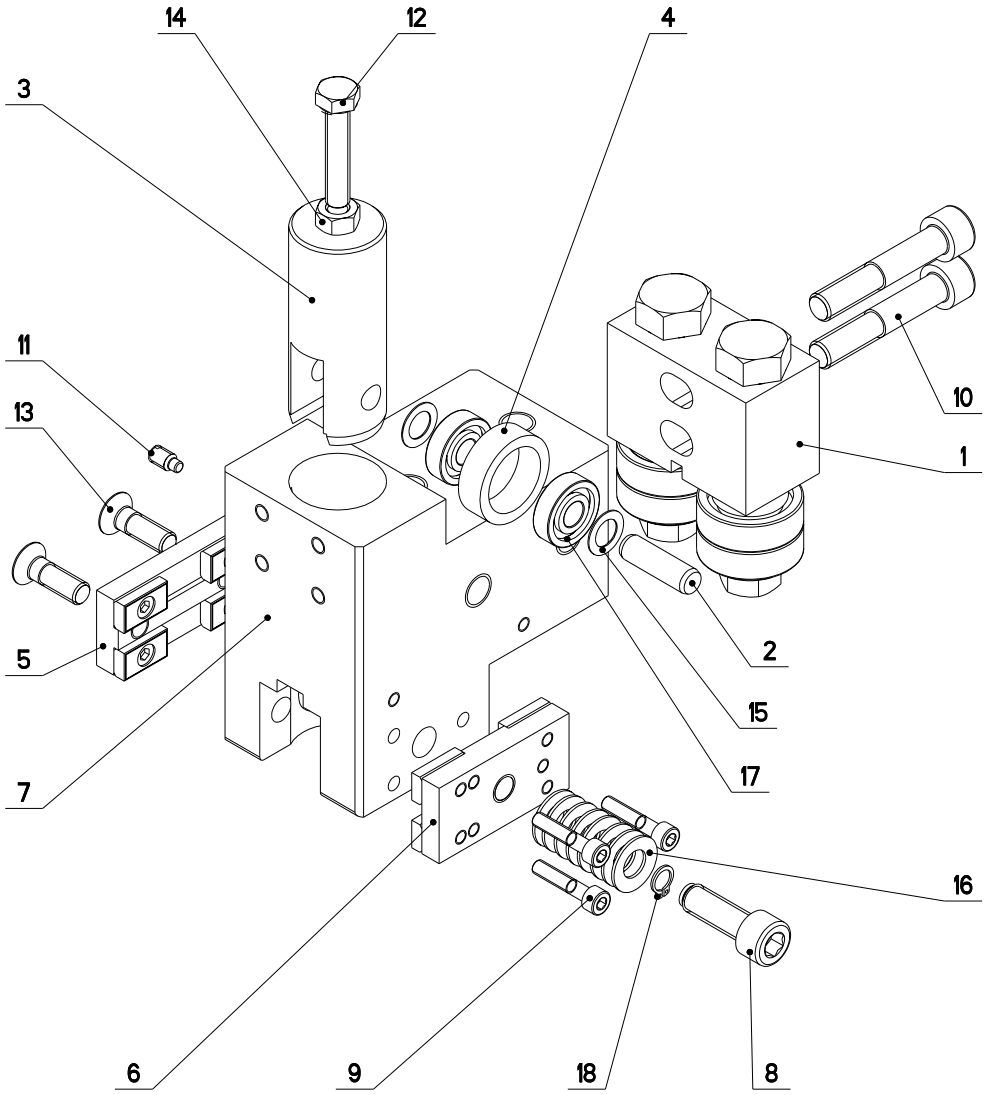
Cislo Sestavy	Ver.	Nazev sestavy
201.P310-100	0	VEDENI PASU/BELT GUIDE/SÄGEBANDFÜHRUNG

Poz.	Objednaci cislo	Ver.	Nazev polozky	Rozmer	Ks
1	201.6816-100	0	KOSTKA REGULACE / REGULATION CUBE / REGELUNGSWÜRFEL		2
2	201.6910-580	0	DORAZ / STOP PIECE / ANSCHLAG		1
3	201.P310-300	0	KOSTKA VODICI / LEAD CUBE / FÜHRUNGSKLOTZ		1
4	201.Y410-200	0	KOSTKA VODICI / LEAD CUBE / FÜHRUNGSKLOTZ		1
5	30.1814-011	0	DRZAK / HOLDER / HALTER	P 3- 76	1
6	30.3510-004	0	TRUBKA / TUBE / ROHR	TR 8x 1	2
7	30.6016-002	0	DESKA / BOARD / PLATTE	HR 40x20	2
8	30.9010-003	0	DRZAK / HOLDER / HALTER	P1.5x10	2
9	30.P310-005		DRZAK / HOLDER / HALTER		1
10	30.P310-102	0	DRZAK / HOLDER / HALTER		1
11	30.P310-103	0	KONZOLA / CONSOLE / KONSOLE		1
12	30.Y310-008		DRZAK / HOLDER / HALTER	P3-50	1
13	30.Y410-105	0	DRZAK / HOLDER / HALTER		1
14	90.001.25.059	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M12X35	6
15	90.163.00.003	0	PODLOZKA / WASHER / UNTERLEGSCHEIBE	NORD-LOCK 13	6
16	94.202.002	0	REDUKCE / REDUCTION / ADAPTOR / REDUKTION	REDUKCE 6/R1/4"	4
17	99.200.165		VEDENI LINEARNI / /	WER27	1
18	99.201.035		VOZIK LINEARNIHO VEDENI / LINEAR GUIDE CART / LINEARFÜHRUNGSWAGEN	WEH27CA	2
19	99.260.003	0	VENTIL / VALVE / VENTIL	1/4"	2

7.7. Vodící kostka / Führungsklotz / Guiding cube – 1

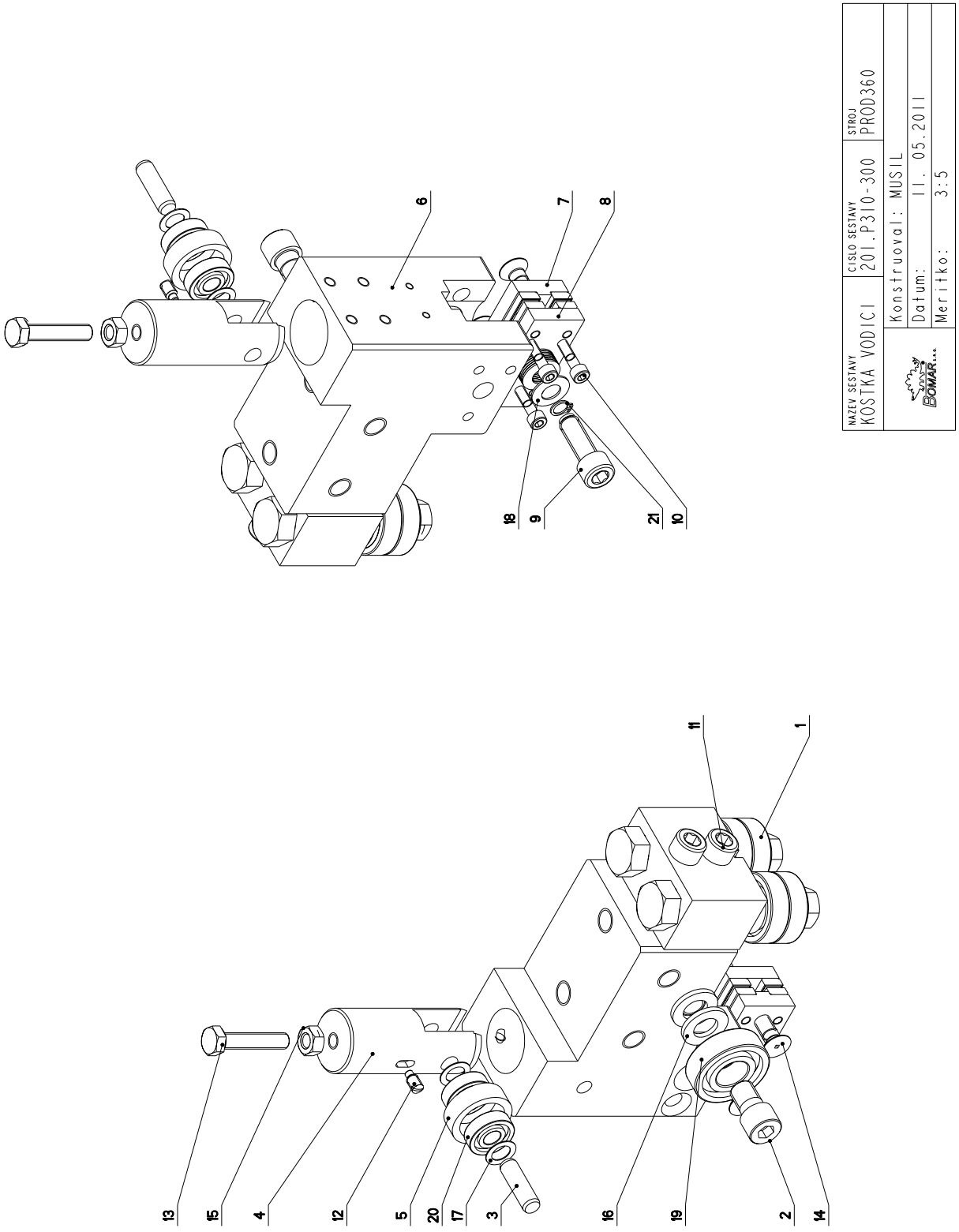


NAZEV SESTAVY	CISLO SESTAVY	STROJ
KOSTKA VODICI	201.Y410-200	IN460DGH
BOMAR S.R.O.	Konstruoval: MUSIL	
	Datum: 19. 01.2010	
	Meritko: 1:2	

Cislo Sestavy	Ver.	Nazev sestavy
201.Y410-200	0	KOSTKA VODICI/LEAD CUBE/FÜHRUNGSKLOTZ

Poz.	Objednaci cislo	Ver.	Nazev polozky	Rozmer	Ks
1	201.6110-510	0	VEDENI / GUIDE / BACKENFÜHRUNG		1
2	30.6710-108	1	KOLIK / PIN / BOLZEN	TYC 10	1
3	30.6710-109	0	PIST / PISTON / KOLBEN	d 32	1
4	30.6710-110	1	KROUZEK / RING / RING	LH 2403210	1
5	30.Y410-110	0	DRZAK TVRDOKOVU / POA HOLDER / HM-HALTER		1
6	30.Y410-120	0	DRZAK TVRDOKOVU / POA HOLDER / HM-HALTER		1
7	30.Y410-201	1	KOSTKA VODICI LEVA / LEAD CUBE / FÜHRUNGSKLOTZ	HR 110x70	1
8	30.Y610-503	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M10X30	1
9	90.001.25.011	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M5X25	3
10	90.001.25.053	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M10X55	2
11	90.004.2D.002	0	SROUB STAVECI / ADJUSTMENT BOLT / STELLSCHRAUBE	SROUB M6X12	1
12	90.005.55.019	0	SROUB 6HRANNY / 6 SIDED BOLT / SECHSKANTSCHRAUBE	SROUB M8X40	1
13	90.011.27.016	0	SROUB ZAPUSTNY / COUNTERSINK BOLT / SENKSCHRAUBE	SROUB M8X25	2
14	90.100.55.005	0	MATICE / NUT / MUTTER	MATICE _ M8	1
15	90.154.50.003	0	PODLOZKA / WASHER / UNTERLEGSCHEIBE	10x16x0.50	2
16	90.350.0Z.005	0	PRUZINA TALIROVA / DISC SPRING / TELLERFEDER	20X10.2X1.1	8
17	95.001.044	0	LOZISKO / BEARING / LAGER	609 2RS	2
18	95.800.002	0	KROUZEK POJIST.VNEJS / OUTSIDE SAFETY RING / SICHERUNGSRING AUßEN	POJISTNY KROUZEK 8	1

7.9. Vodící kostka / Führungsklotz / Guiding cube – 2



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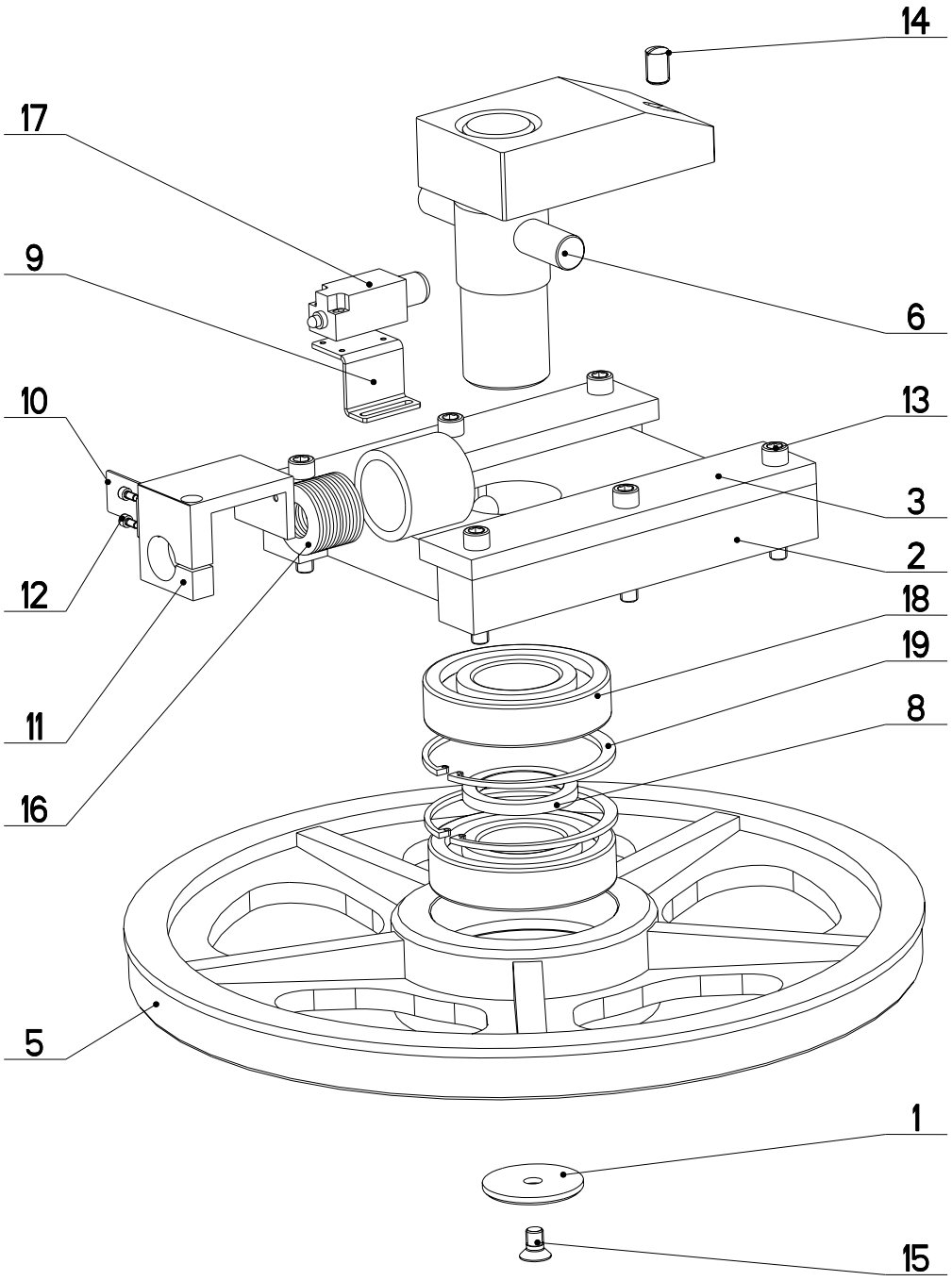
201.P310-300	0	KOSTKA VODICI/LEAD CUBE/FÜHRUNGSKLOTZ

Poz.	Objednaci cislo	Ver.	Nazev polozky	Rozmer	Ks
1	201.6110-510	0	VEDENI / GUIDE / BACKENFÜHRUNG		1
2	30.6710-103		SROUB / BOLT / SCHRAUBE	SROUB 12x20	1
3	30.6710-108	1	KOLIK / PIN / BOLZEN	TYC 10	1
4	30.6710-109	0	PIST / PISTON / KOLBEN	d 32	1
5	30.6710-110	1	KROUZEK / RING / RING	LH 2403210	1
6	30.P310-301	1	KOSTKA VODICI / LEAD CUBE / FÜHRUNGSKLOTZ	HR 110x70	1
7	30.Y410-110	0	DRZAK TVRDOKOVU / POA HOLDER / HM-HALTER		1
8	30.Y410-120	0	DRZAK TVRDOKOVU / POA HOLDER / HM-HALTER		1
9	30.Y610-503	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M10X30	1
10	90.001.25.011	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M5X25	3
11	90.001.25.054	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M10X60	2
12	90.004.2D.002	0	SROUB STAVECI / ADJUSTMENT BOLT / STELLSCHRAUBE	SROUB M6X12	1
13	90.005.55.019	0	SROUB 6HRANNY / 6 SIDED BOLT / SECHSKANTSCHRAUBE	SROUB M8X40	1
14	90.011.27.016	0	SROUB ZAPUSTNY / COUNTERSINK BOLT / SENKSCHRAUBE	SROUB M8X25	2
15	90.100.55.005	0	MATICE / NUT / MUTTER	MATICE _ M8	1
16	90.150.50.007	0	PODLOZKA / WASHER / UNTERLEGSCHEIBE	PODLOZKA 13	2
17	90.154.50.003	0	PODLOZKA / WASHER / UNTERLEGSCHEIBE	10x16x0.50	2
18	90.350.0Z.005		PRUZINA TALIROVA / DISC SPRING / TELLERFEDER	20X10.2X1	8
19	95.001.016	0	LOZISKO / BEARING / LAGER	6203 2RS	1
20	95.001.044	0	LOZISKO / BEARING / LAGER	609 2RS	2
21	95.800.002	0	KROUZEK POJIST.VNEJS / OUTSIDE SAFETY RING / SICHERUNGSRING AUßEN	POJISTNY KROUZEK 8	1

7.11. Napínání / Spannung / Stretching



&povrchova_uprava CSN/ISO 2768 mK NEOZNACENE HRANY SRAZIT &srazeni x 45°								
&nazev_rozmer	&delka	&mat_vychozi	&mat_konecny	73.72			SC 440A	1
NÁZEV - ROZMĚR	DÉLKA	MAT. VÝCHOZÍ	MAT. KONEČNÝ	Č.HM.	SESTAVA	STROJ		
MĚŘÍTKO 1:4	KONSTR. MUSIL KRESLIL: &kreslil &schvalil 21. 04.2011							
BOMAR S.R.O.	NAPINANI			201.P308-100			&c_zmeny	

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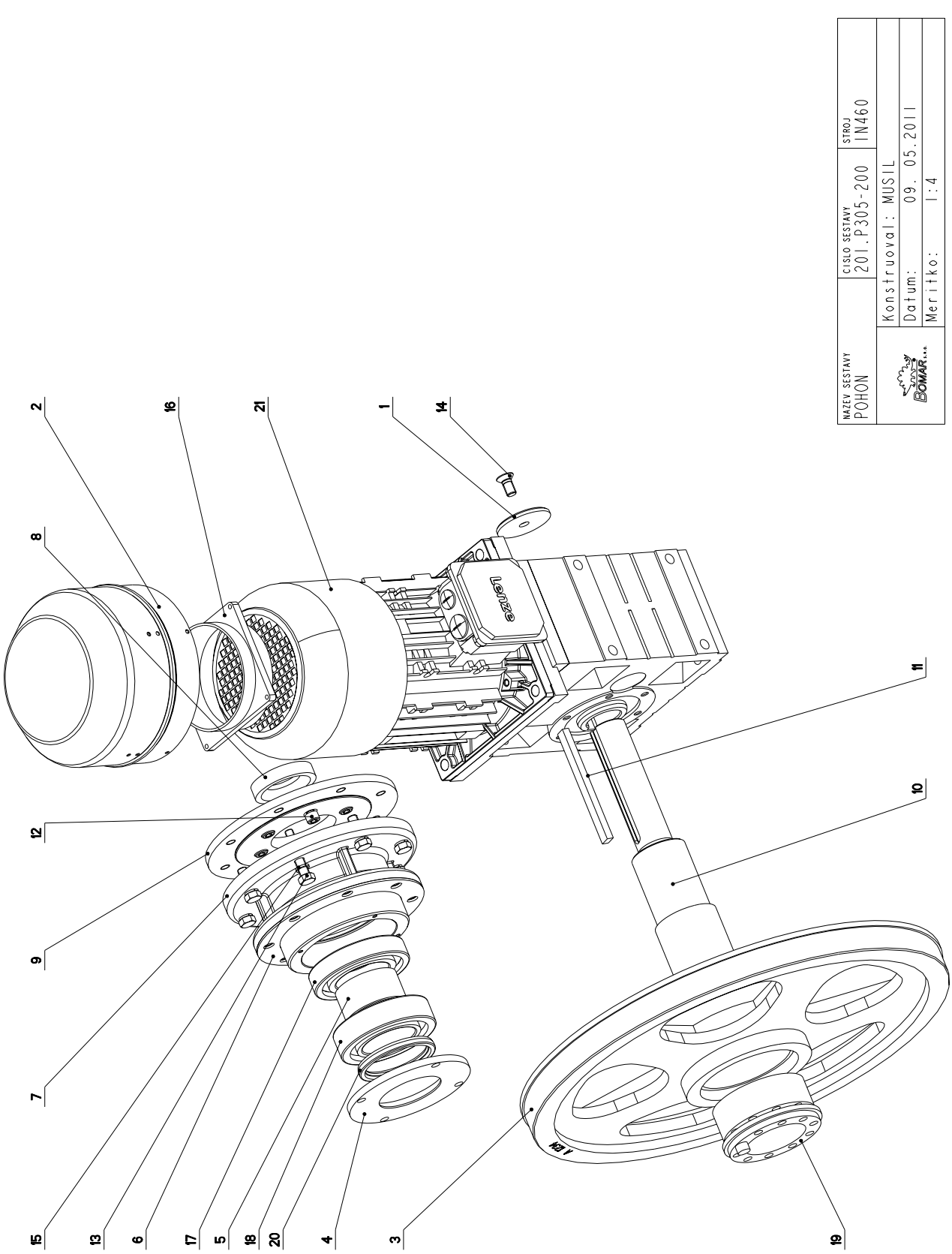
Cislo Sestavy	Ver.	Nazev sestavy
201.P308-100	&VERZE	NAPINANI/&NAZEV_EN/&NAZEV_DE

Poz.	Objednaci cislo	Ver.	Nazev polozky	Rozmer	Ks
1	30.1804-010	0	PODLOZKA / WASHER / UNTERLEGSCHEIBE	d 70	1
2	30.6008-002	0	LISTA VODICI / LEAD TRIM / FÜHRUNGSLEISTE	HR 40x40	2
3	30.6008-003	0	LISTA VODICI / LEAD TRIM / FÜHRUNGSLEISTE	HR 60x15	2
4	30.6008-004	1	NAPINANI / TENSIONING / SPANNUNG		1
5	30.6008-006	5	KOLO NAPINACI / TENSIONING WHEEL / UMLENKRAD		1
6	30.6008-014	1	CEP NAPINANI / TENSIONING LUG / SPANNUNGSBOLZEN	d 25 h6	1
7	30.6708-001	1	NAPINANI / TENSIONING / SPANNUNG		1
8	30.6708-002	1	KROUZEK DISTANCNI / DISTANCE RING / DISTANZRING	TRUBKA 82.5x12.5	1
9	30.6708-303	1	DRZAK / HOLDER / HALTER	P3x50	1
10	30.6708-304	0	DORAZ / STOP PIECE / ANSCHLAG	P 2x20x76	1
11	30.Y408-106	0	TRMEN / BINDER / BÜGEL	HR 70x70	1
12	90.001.25.007	0	SROUB IMBUS CERNENY / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M5X10	2
13	90.001.25.064	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M12X70	6
14	90.002.2D.028		SROUB STAVECI / ADJUSTMENT BOLT / STELLSCHRAUBE	SROUB M16x1,5x25	1
15	90.011.27.009	0	SROUB ZAPUSTNY / COUNTERSINK BOLT / SENKSCHRAUBE	SROUB M12X20	1
16	90.350.0Z.004		TAL.PRUZINA DIN 2093 A / DISC SPRING / TELLERFEDER	50X25.4X3	12
17	91.173.007	0	SPINAC KONCOVY / END SWITCH / ENDSCHALTER	-RIWK	1
18	95.001.041	0	LOZISKO / BEARING / LAGER	6312A	2
19	95.801.025	0	KROUZEK POJIST.VNITR / INSIDE SAFETY RING / SICHERUNGSRING INNEN	POJISTNY KROUZEK 130	2

7.13. Pohon / Antrieb / Drive



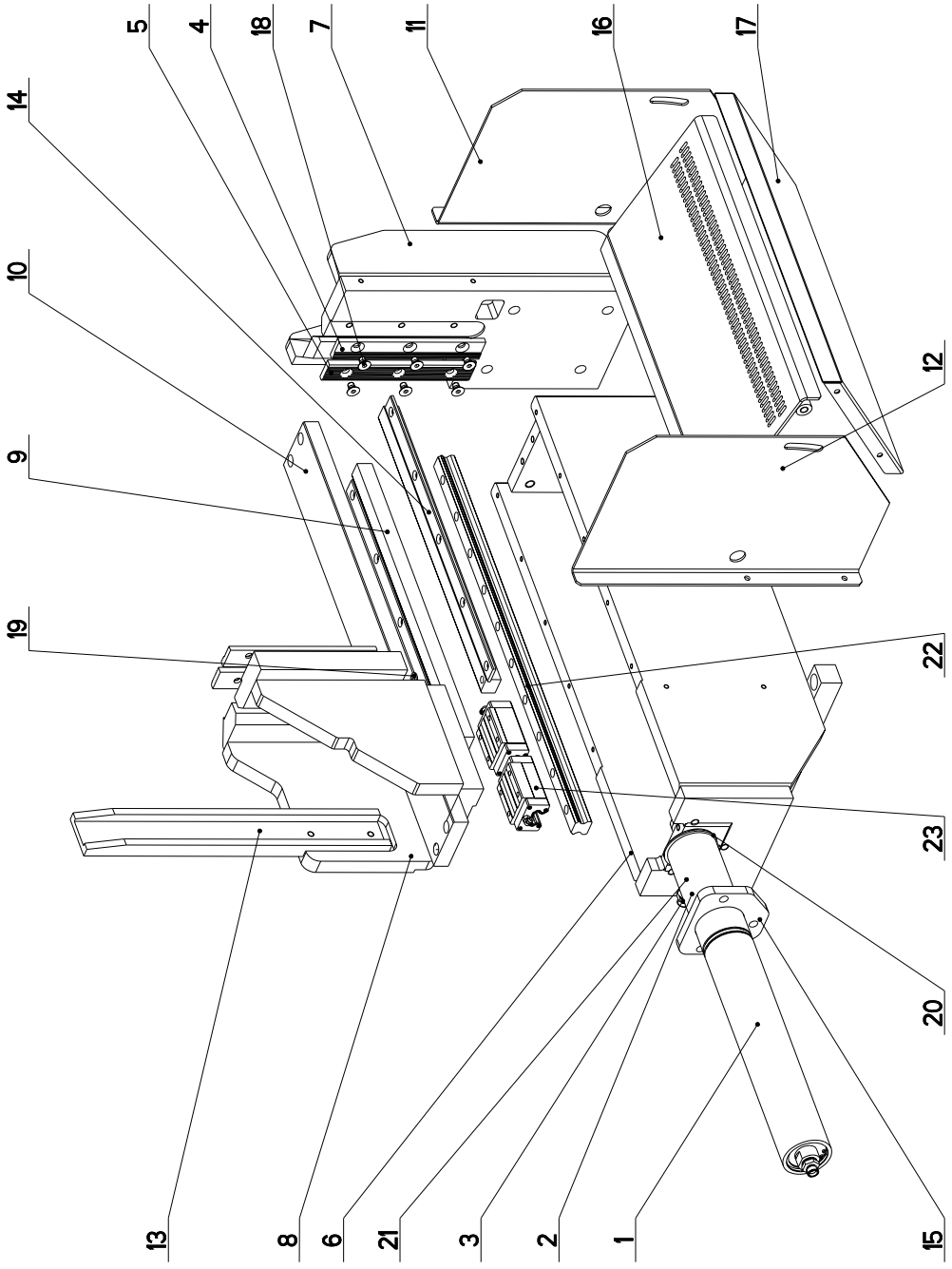
Manual version: 1.00 / June 2011
Manual rev.: 1

Cislo Sestavy	Ver.	Nazev sestavy
201.P305-200	1	POHON/DRIVE /ANTRIEB

Poz.	Objednaci cislo	Ver.	Nazev polozky	Rozmer	Ks
1	30.1804-010	0	PODLOZKA / WASHER / UNTERLEGSCHEIBE	d 70	1
2	30.4304-018	3	VENTILATOR / VENTILATOR / VENTILATOR		1
3	30.6005-001	3	KOLO HNACI / DRIVE WHEEL / ANTRIEBSRAD	ODLITEK	1
4	30.6105-604	0	VIKO / COVER / DECKEL	P 12x159	1
5	30.6105-605	0	KROUZEK DISTANCNI / DISTANCE RING / DISTANZRING	TR 80x5	1
6	30.6105-607	0	KROUZEK DISTANCNI / DISTANCE RING / DISTANZRING	P 4x220	1
7	30.6105-608	1	PRIRUBA / FLANGE / FLANSCHE	ODLITEK	1
8	30.P305-106	1	KROUZEK DISTANCNI / DISTANCE RING / DISTANZRING	d 80	1
9	30.P305-201		KROUZEK DISTANCNI / DISTANCE RING / DISTANZRING	P 15x250	1
10	30.P305-202	0	HRIDEL / SHAFT / WELLE	d 90	1
11	30.P305-207	0	PERO / SPRING / FEDER	HR 14x9	1
12	90.001.25.046	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M10X20	6
13	90.005.55.033	0	SROUB 6HRANNY / 6 SIDED BOLT / SECHSKANTSCHRAUBE	SROUB M12X35	8
14	90.011.27.025	0	SROUB ZAPUSTNY / COUNTERSINK BOLT / SENKSCHRAUBE	SROUB M12X25	1
15	90.158.50.009	0	PODLOZKA PRUZNA / SPRING WASHER / FEDERSCHEIBE	PODLOZKA 12	8
16	91.015.100	0	VENTILATOR / VENTILATOR / VENTILATOR		1
17	95.001.064	0	LOZISKO / BEARING / LAGER	6214A	1
18	95.201.007	0	LOZISKO / BEARING / LAGER	VALECKOVA L. IRADA	1
19	95.825.001	0	POUZDRO UPINACI / FIXING SLEEVE / SPANNHÜLSE	KTR210- 80x120	1
20	95.830.052	0	GUFERO / GIT SEAL / DICHTUNG	GUFERO 80X100X10	1
21	99.001.155		PREVODOVKA S MOTOREM / TRANSMISSION WITH MOTOR / GETRIEBE MIT MOTOR	GKS06	1

Cislo Sestavy/Number of assembly/Nummer der Baugruppe; Verze (Ver.)/Version/Version; Nazev sestavy/Assembly title/Name der Baugruppe; Pozice (Poz.)/Position/Position;
Objednaci cislo/Purchase order number/Bestellnummer; Nazev polozky/Volume title/Name der Position; Rozmer/Stock size/Abmessung

7.15. Svěrák / Schraubstock / Vice



NÁZEV SESTAVY	ČÍSLO SESTAVY	STROJ
SVERAK	201.P303-100	PRODU360

Konstruoval: HLADIL
Datum: 04. 05. 2011
Měřítko: 1:5

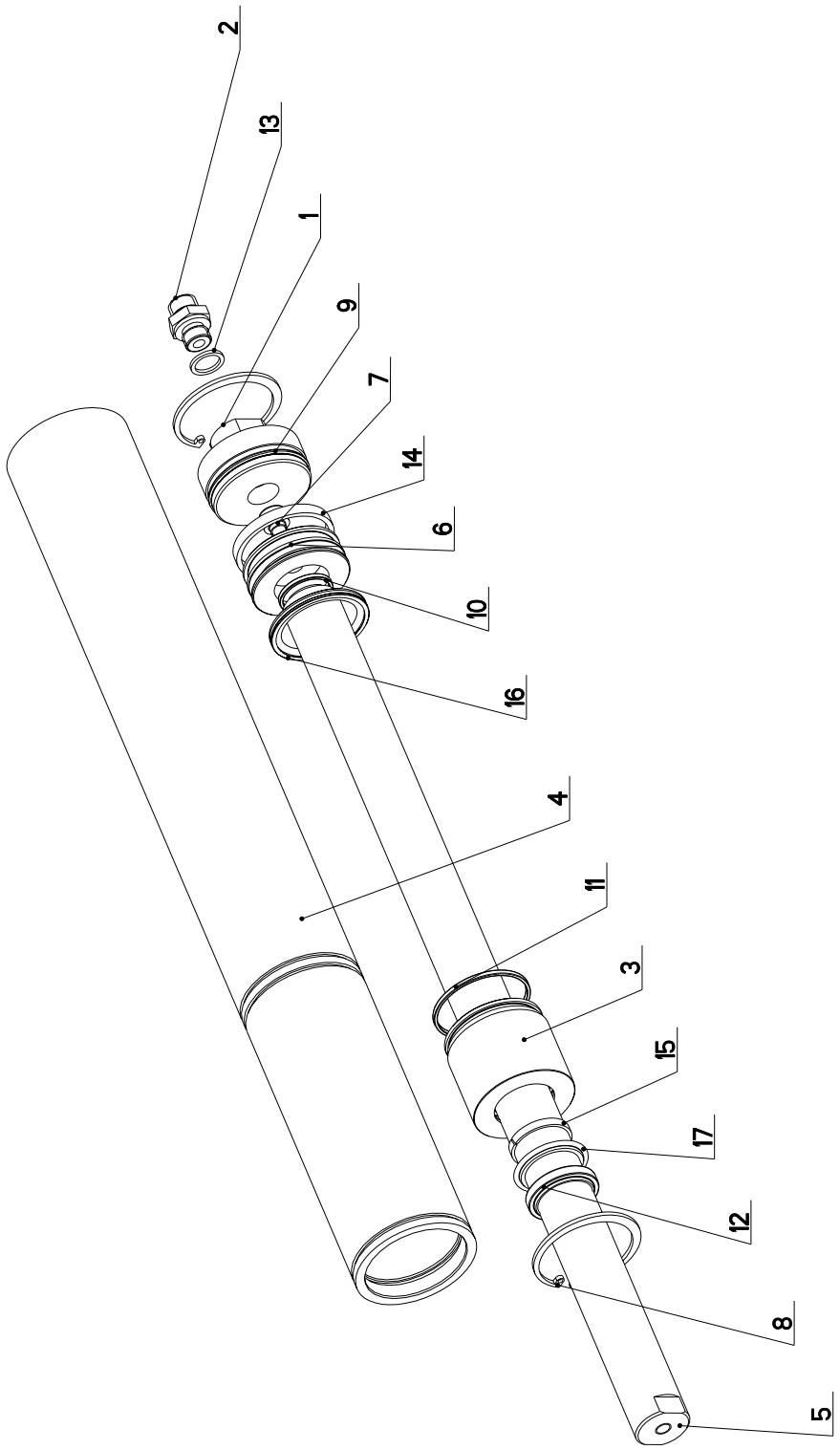
Manual version: 1.00 / June 2011
Manual rev.: 1

Cislo Sestavy	Ver.	Nazev sestavy
201.P303-100	0	SVERAK/VICE/SCHRAUBSTOCK

Poz.	Objednaci cislo	Ver.	Nazev polozky	Rozmer	Ks
1	201.P307-030	0	VALEC SVERAKU / VICE CYLINDER / SCHRAUBSTOCKZYLINDER		1
2	30.1807-005	3	SROUBENI / BOLTING / VERSCHRAUBUNG	6-HR 22	1
3	30.2807-109	0	SROUBENI PRIME / DIRECT BOLTING / GERADE VERSCHRAUBUNG		1
4	30.6903-109	1	LISTA CELISTI / JAW TRIM / BACKENLEISTE	HR 30x10	2
5	30.6903-110	1	LISTA CELISTI / JAW TRIM / BACKENLEISTE	HR 30x10	2
6	30.P303-001	0	TELESO SVERAKU / VICE BODY / SCHRAUBSTOCKKÖRPER		1
7	30.P303-002	0	CELIST PEVNA / SOLID JAW / FESTE BACKE		1
8	30.P303-005	0	CELIST POHYBLIVA / MOVING JAW / BEWEGLICHE BACKE		1
9	30.P303-007	0	LISTA / TRIM / LEISTE	HR 25x20	2
10	30.P303-008	0	LISTA / TRIM / LEISTE	HR 80x20	1
11	30.P303-013	0	BOCNICE / SIDE PLATE / SEITENTEIL	P3x267	1
12	30.P303-014	0	BOCNICE / SIDE PLATE / SEITENTEIL	P3x264	1
13	30.P303-015	0	LISTA VODICI / LEAD TRIM / FÜHRUNGSLEISTE	HR 60x20	1
14	30.P303-020	0	LISTA TRECI / FRICTION TRIM / FRIKTIONSLEISTE	P4x23	2
15	30.P303-021	0	PRIRUBA / FLANGE / FLANSCHE	P12x100	1
16	30.P303-111	0	SKLUZ / SLIDE / RUTSCH		1
17	30.P303-112	0	OKAP / GUTTER CHANNEL / BLECH	P1,5x240	1
18	90.011.27.007	0	SROUB / BOLT / SCHRAUBE	M8x12	6
19	90.150.50.005	0	PODLOZKA / WASHER / UNTERLEGSCHEIBE	PODLOZKA 8,4	2
20	95.800.021	0	KROUZEK POJIST.VNEJS / OUTSIDE SAFETY RING / SICHERUNGSRING AUßEN	POJISTNY KROUZEK 62	1
21	96.082.002	0	TESNENI / SEALING / DICHTUNG	KROUZEK CU 13/17	2
22	99.200.228	0	VEDENI LINEARNI / LINEAR GUIDE / LINEARE FÜHRUNG	HGR25R	1
23	99.201.014	0	VOZIK LINEARNIHO VEDENI / LINEAR GUIDE CART / LINEARFÜHRUNGSWAGEN	HGH 25-CA	2

Cislo Sestavy/Number of assembly/Nummer der Baugruppe; Verze (Ver.)/Version/Version; Nazev sestavy/Assembly title/Name der Baugruppe; Pozice (Poz.)/Position/Position;
Objednaci cislo/Purchase order number/Bestellnummer; Nazev polozky/Volume title/Name der Position; Rozmer/Stock size/Abmessung

7.17. Válec svěráku / Schraubstockzylinder / Vice cylinder 1



NÁZEV SESTAVY	ČÍSLO SESTAVY	STROJ
VALEC SVERAKU	201.P307-030	PRODU360
	Konstruoval: HLADIL	
	Datum: 19. 04. 2011	
	Měřítko: 1:2	

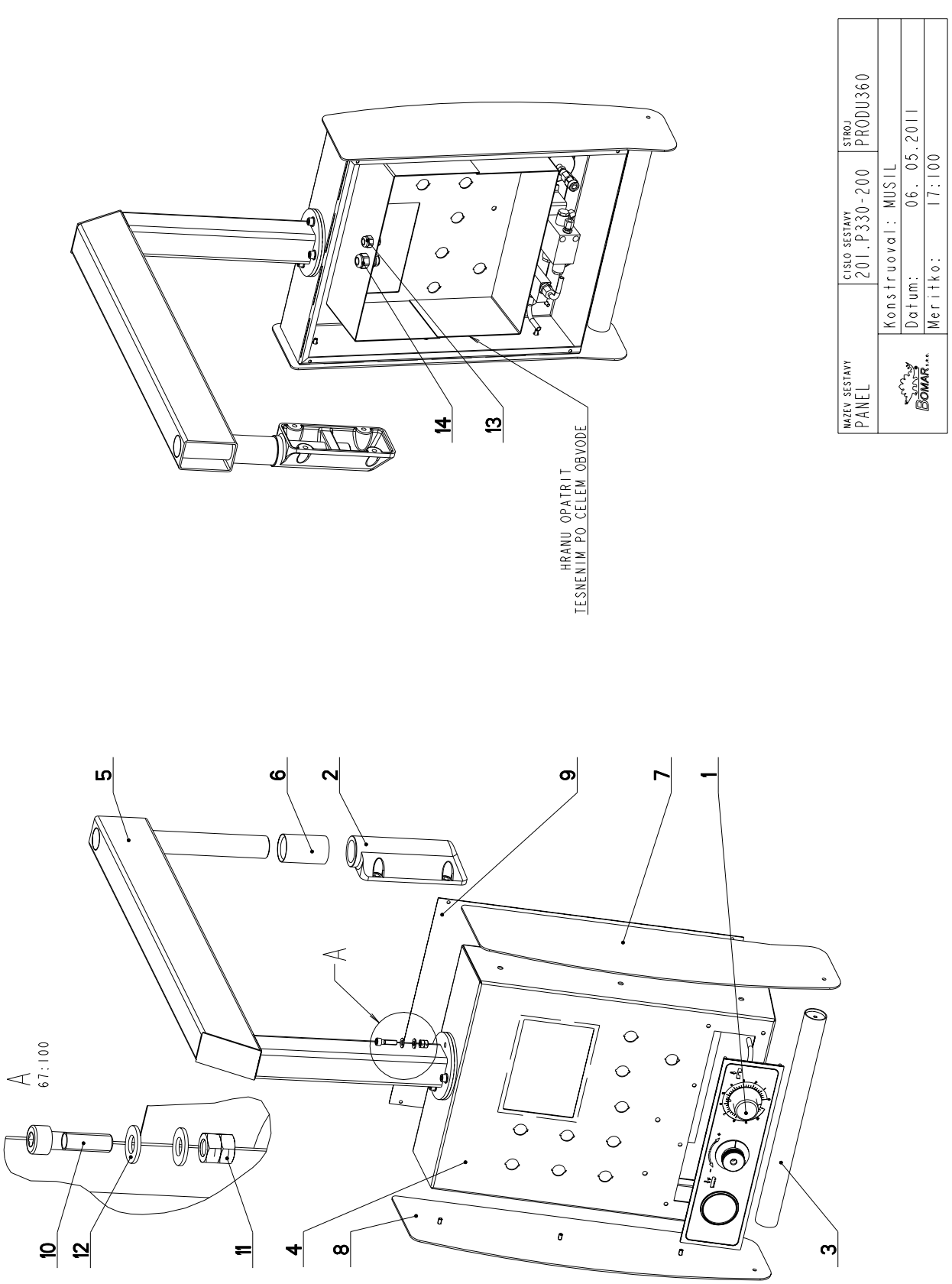
Manual version: 1.00 / June 2011
Manual rev.: 1

Cislo Sestavy	Ver.	Nazev sestavy
201.P307-030	0	VALEC SVERAKU/VICE CYLINDER/SCHRAUBSTOCKZYLINDER

Poz.	Objednaci cislo	Ver.	Nazev polozky	Rozmer	Ks
1	30.2007-304	0	VIKO / COVER / DECKEL	d 55	1
2	30.2807-109	0	SROUBENI PRIME / DIRECT BOLTING / GERADE VERSCHRAUBUNG		1
3	30.C407-012	1	VIKO / COVER / DECKEL	d 55	1
4	30.P307-031	0	VALEC / ROLLER / ZYLINDER	TR 62/50	1
5	30.P307-032	0	PISTNICE / PISTON ROD / KOLBENSTANGE	d 28 f8	1
6	30.Y307-035	0	PIST / PISTON / KOLBEN	d 55	1
7	90.001.25.032	0	SROUB IMBUS CERNENY / ALLEN HEAD BOLT / IMBUSSCHRAUBE	8x20	1
8	95.801.009	0	KROUZEK POJIST.VNITR / INSIDE SAFETY RING / SICHERUNGSRING INNEN	POJISTNY KROUZEK 52	2
9	96.001.013	0	KROUZEK O STATICKY / STATIC O RING / O-RING STATISCH	45X2	1
10	96.002.011	0	KROUZEK O DYNAMICKY / DYNAMIC O RING / O-RING DYNAMISCH	24X2	1
11	96.002.019	0	KROUZEK O DYNAMICKY / DYNAMIC O RING / O-RING DYNAMISCH	46X2	1
12	96.061.009	0	KROUZEK STIRACI / SCRAPER RING / ABSTREIFRING	WD2200280	1
13	96.082.002	0	TESNENI / SEALING / DICHTUNG	KROUZEK CU 13/17	1
14	96.084.001	0	KROUZEK VODICI / LEAD RING / FÜHRUNGSRING	GP6500500-T47	1
15	96.084.006	0	KROUZEK VODICI / LEAD RING / FÜHRUNGSRING	GR4300280-T47	1
16	96.900.001	0	TESNENI KOMBINOVANE / COMBINATION SEALING / KOMBIDICHTUNG		1
17	96.900.021	0	TESNENI KOMBINOVANE / COMBINATION SEALING / KOMBIDICHTUNG	RSK200280	1

Cislo Sestavy/Number of assembly/Nummer der Baugruppe; Verze (Ver.)/Version/Version; Nazev sestavy/Assembly title/Name der Baugruppe; Pozice (Poz.)/Position/Position;
Objednaci cislo/Purchase order number/Bestellnummer; Nazev polozky/Volume title/Name der Position; Rozmer/Stock size/Abmessung

7.19. Panel / Panel / Panel



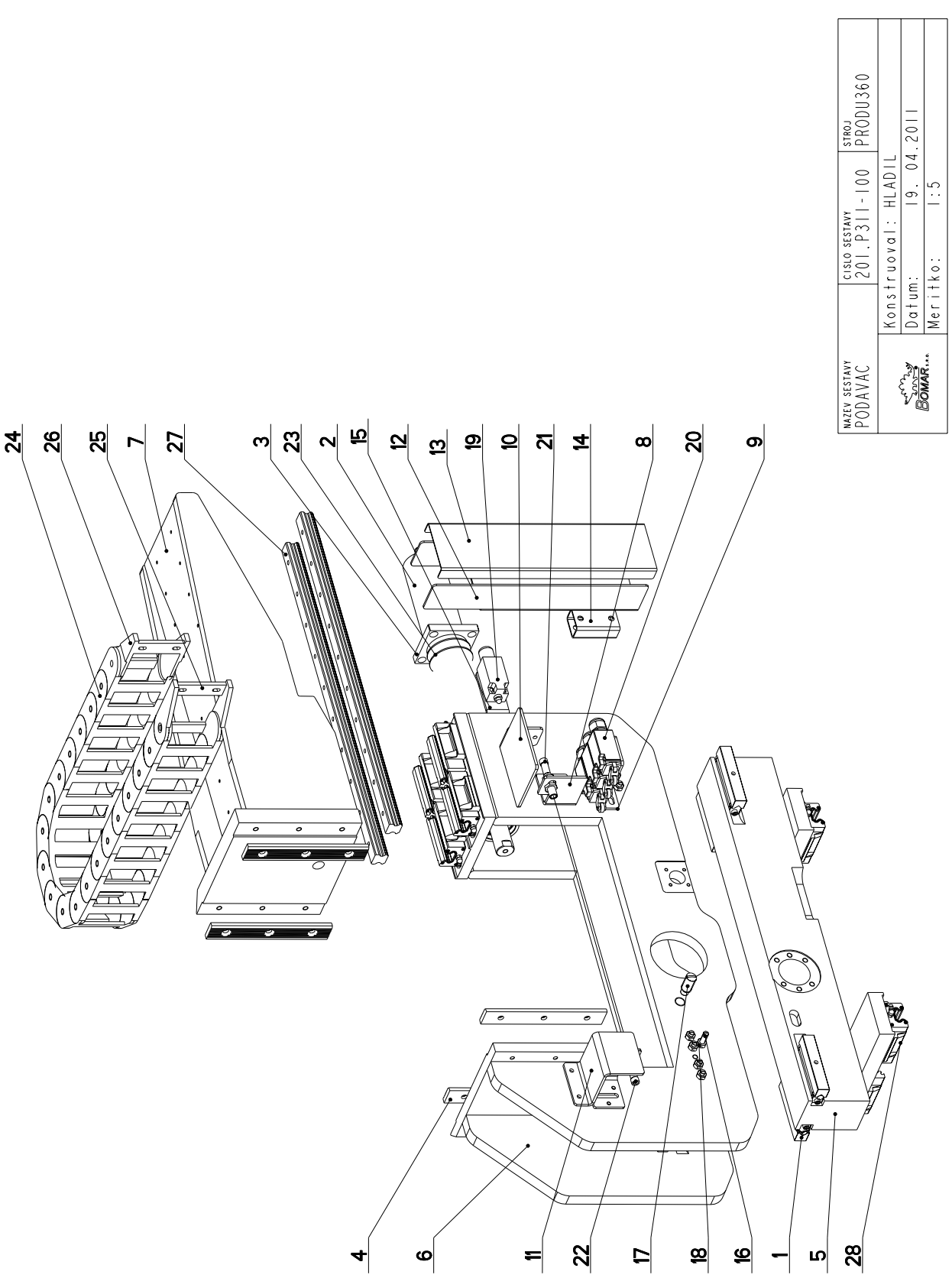
Manual version: 1.00 / June 2011
Manual rev.: 1

Cislo Sestavy	Ver.	Nazev sestavy
201.P330-200	0	PANEL/PANEL /PANEL

Poz.	Objednaci cislo	Ver.	Nazev polozky	Rozmer	Ks
1	201.8814-310	2	PANEL / PANEL / PANEL		1
2	30.2814-307	0	LOZISKO / BEARING / LAGER	ODLITEK	1
3	30.6918-563	0	MADLO / HANDLE / RAIL / HANDGRIFF		1
4	30.P330-201	0	PANEL / PANEL / PANEL		1
5	30.P330-203	0	KONZOLA / CONSOLE / KONSOLE		1
6	30.P330-204	0	KROUZEK DISTANCNI / DISTANCE RING / DISTANZRING	Tr 50x5	1
7	30.P330-205	0	BOCNICE / SIDE PLATE / SEITENTEIL		1
8	30.P330-206	0	BOCNICE / SIDE PLATE / SEITENTEIL		1
9	30.P330-207	0	KRYT / COVER / ABDECKUNG	P1,5 - 426	1
10	90.001.55.083	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M8X30	4
11	90.100.55.005	0	MATICE / NUT / MUTTER	MATICE _ M8	8
12	90.150.50.005	0	PODLOZKA / WASHER / UNTERLEGSCHEIBE	PODLOZKA 8,4	8
13	91.070.011	0	VYVODKA / BUSHING / TÜLLE	M16x1.5	1
14	91.070.012	0	VYVODKA / BUSHING / TÜLLE	M20x1.5	1

Cislo Sestavy/Number of assembly/Nummer der Baugruppe; Verze (Ver.)/Version/Version; Nazev sestavy/Assembly title/Name der Baugruppe; Pozice (Poz.)/Position/Position;
Objednaci cislo/Purchase order number/Bestellnummer; Nazev polozky/Volume title/Name der Position; Rozmer/Stock size/Abmessung

7.21. Podavač / Vorschub / Feeder



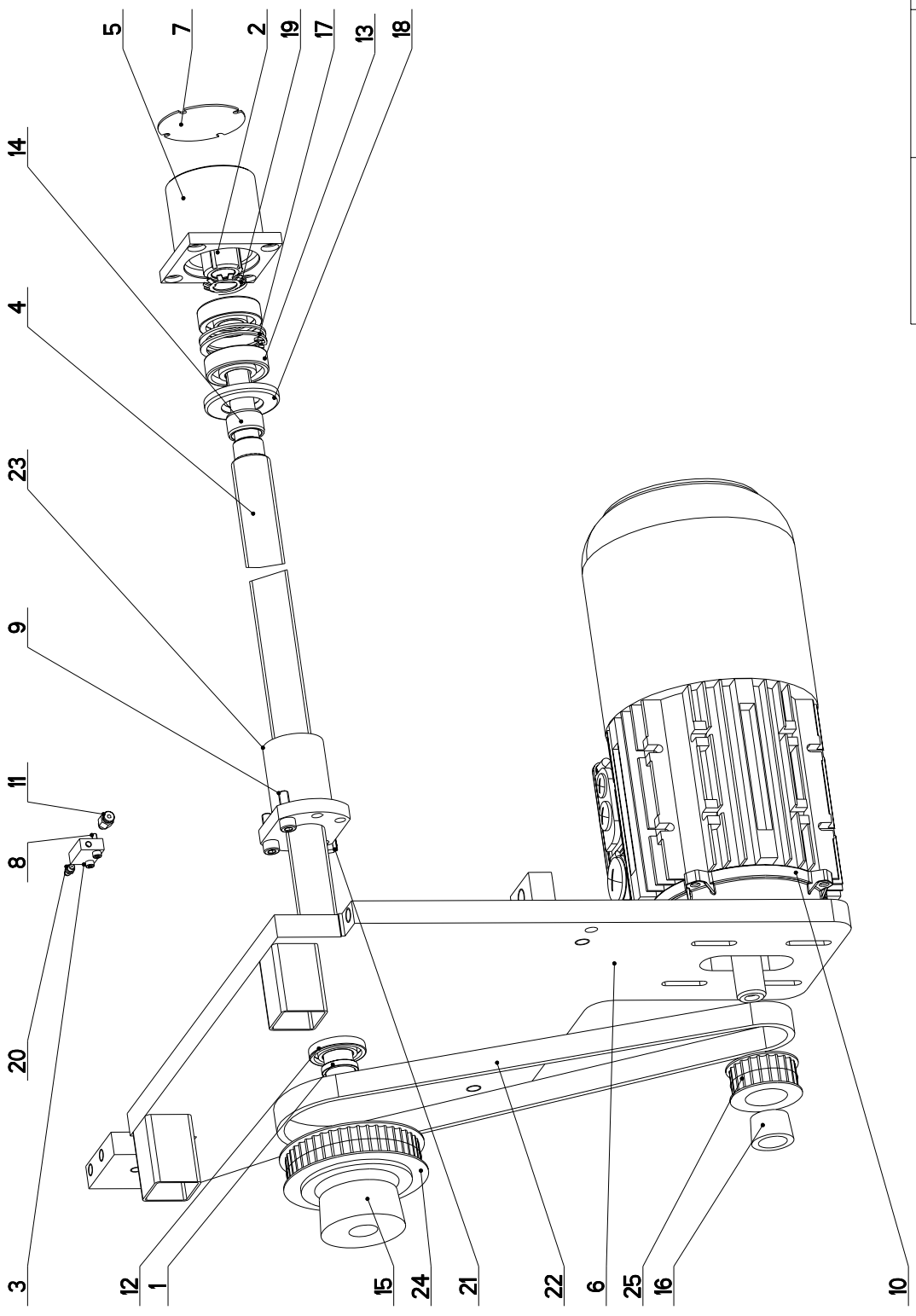
Manual version: 1.00 / June 2011
Manual rev.: 1

Cislo Sestavy	Ver.	Nazev sestavy
201.P311-100	0	PODAVAC/FEEDER/VORSCHUB

Poz.	Objednaci cislo	Ver.	Nazev polozky	Rozmer	Ks
1	201.2911-200	0	VEDENI LINEARNI / LINEAR GUIDE / LINEARE FÜHRUNG		4
2	201.P307-030	0	VALEC SVERAKU / VICE CYLINDER / SCHRAUBSTOCKZYLINDER		1
3	30.6007-107	0	PRILOZKA / STRAP / LASCHE	HR 80x12	1
4	30.6903-110	1	LISTA CELISTI / JAW TRIM / BACKENLEISTE	HR 30x10	4
5	30.P311-101	0	VOZIK / CART / WAGEN		1
6	30.P311-102	0	RAMENO PODAVACE / FEEDER SHOULDER / VORSCHUBARM		1
7	30.P311-103	0	CELIST POHYBLIVA / MOVING JAW / BEWEGLICHE BACKE		1
8	30.P311-121	0	DRZAK / HOLDER / HALTER	P4x70	2
9	30.P311-122	0	DRZAK / HOLDER / HALTER	P4x55	1
10	30.P311-123	0	KRYT / COVER / ABDECKUNG	P4x100	1
11	30.P311-124	0	KRYT / COVER / ABDECKUNG	P4x80	1
12	30.P311-125	0	KRYT / COVER / ABDECKUNG	P3x200	1
13	30.P311-126	0	KRYT / COVER / ABDECKUNG	P1.5x127	1
14	30.P311-127	0	DISTANC / DISTANCE / DISTANZ	J 40x25x2	1
15	30.P311-128	0	DRZAK / HOLDER / HALTER	P4x36	1
16	90.002.2D.013	0	SROUB STAVECI / ADJUSTMENT BOLT / STELLSCHRAUBE	SROUB M8X25	12
17	90.004.2D.019	0	SROUB STAVECI / ADJUSTMENT BOLT / STELLSCHRAUBE	SROUB M16X40	1
18	90.100.55.005	0	MATICE / NUT / MUTTER	MATICE _ M8	12
19	91.173.007	0	SPINAC KONCOVY / END SWITCH / ENDSCHALTER	-RIWK	1
20	91.173.009	0	SPINAC KONCOVY / END SWITCH / ENDSCHALTER		3
21	91.400.017	0	SNIMAC / SENSOR / SENSOR	BOS 12M	1
22	91.400.018	0	SNIMAC / SENSOR / SENSOR	BOS 12M	1
23	95.800.021	0	KROUZEK POJIST.VNEJS / OUTSIDE SAFETY RING / SICHERUNGSRING AUßEN	POJISTNY KROUZEK 62	2
24	99.170.001	0	RETEZ ENERGII / ENERGY BELT / ENERGIEKETTE	0555.030.075.100	19
25	99.173.001	0	RETEZ ENERGII / ENERGY BELT / ENERGIEKETTE	KONCOVKA VNEJ	1
26	99.173.002	0	RETEZ ENERGII / ENERGY BELT / ENERGIEKETTE	KONCOVKA VNIT	1
27	99.200.228	0	VEDENI LINEARNI / LINEAR GUIDE / LINEARE FÜHRUNG	HGR25R	2
28	99.201.008	0	VOZIK LINEARNIHO VEDENI / LINEAR GUIDE CART / LINEARFÜHRUNGSWAGEN	HGW 25CC	7

Cislo Sestavy/Number of assembly/Nummer der Baugruppe; Verze (Ver.)/Version/Version; Nazev sestavy/Assembly title/Name der Baugruppe; Pozice (Poz.)/Position/Position;
Objednaci cislo/Purchase order number/Bestellnummer; Nazev polozky/Volume title/Name der Position; Rozmer/Stock size/Abmessung

7.23. Pohon / Antrieb / Drive – 2



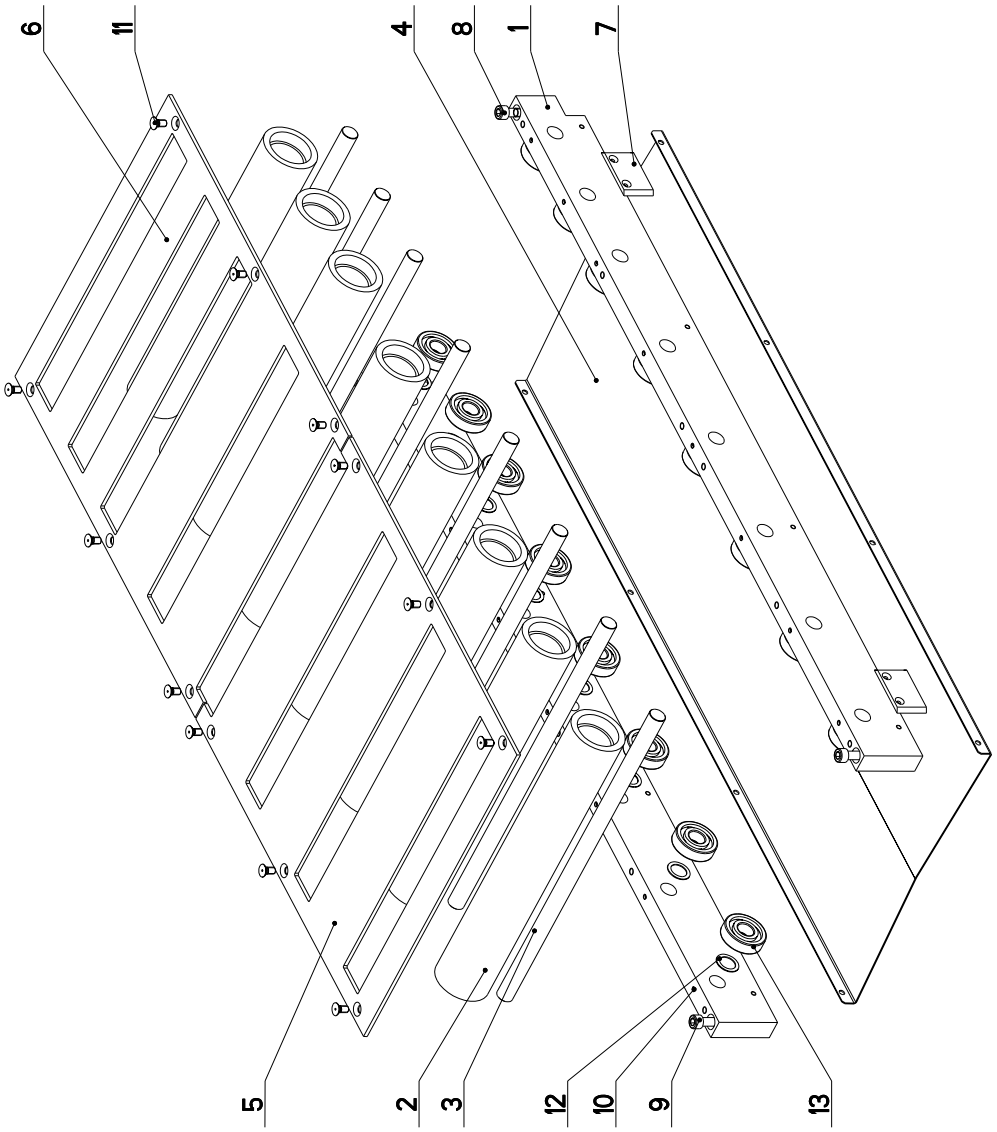
Manual version: 1.00 / June 2011
Manual rev.: 1

Cislo Sestavy	Ver.	Nazev sestavy
201.P311-150	0	POHON/DRIVE /ANTRIEB

Poz.	Objednaci cislo	Ver.	Nazev polozky	Rozmer	Ks
1	30.6611-359	0	KROUZEK DISTANCNI / DISTANCE RING / DISTANZRING	TRUBKA 32x5	1
2	30.6611-368	1	MATICE / NUT / MUTTER	TYC 32	1
3	30.6611-504	0	KOSTKA / CUBE / WÜRFEL	HR 20x10	1
4	30.P311-151	0	SROUB / BOLT / SCHRAUBE	KUL.SR. 32x10	1
5	30.P311-154	0	PRIRUBA / FLANGE / FLANSCHE	HR 80x80	1
6	30.P311-155	0	CELO / HEAD / STIRN		1
7	30.P311-156	0	VIKO / COVER / DECKEL	P1,5x72	1
8	90.001.25.004	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M4X16	2
9	90.001.25.033	0	SROUB IMBUS CERNENY / ALLEN HEAD BOLT / IMBUSSCHRAUBE	8x25	2
10	91.001.156	0	ELEKTROMOTOR / ELECTRIC MOTOR / ELEKTROMOTOR	MHEMAB1090 32	1
11	93.006.007	0	SROUBENI PRIME / DIRECT BOLTING / GERADE VERSCHRAUBUNG	M5-4	1
12	95.001.008	0	LOZISKO / BEARING / LAGER	6005 2RS	1
13	95.001.049	0	LOZISKO / BEARING / LAGER	7304 B	2
14	95.005.015	0	KROUZEK / RING / RING	IR 25x30x17	1
15	95.710.036	0	POUZDRO / SLEEVE / BÜCHSE	TAPER 2012-24	1
16	95.710.037	0	POUZDRO / SLEEVE / BÜCHSE	TAPER 1008-24	1
17	95.801.009	0	KROUZEK POJIST.VNITR / INSIDE SAFETY RING / SICHERUNGSRING INNEN	POJISTNY KROUZEK 52	2
18	95.830.007	0	GUFERO / GIT SEAL / DICHTUNG	GUFERO 30x62x7	1
19	95.855.006	0	POJISTNA PODLOZKA / WASHER / UNTERLEGSCHEIBE	MB4	1
20	95.860.001	0	HLAVICE MAZACI / HEAD / KOPF	KM5	1
21	95.860.002	0	PRIPOJ ROHOVY / /	1032630	1
22	99.024.028	0	REMEN OZUBENY / COG BELT / ZAHNRIEMEN	8M - 20	1
23	99.212.031	0	MATICE / NUT / MUTTER	R32 10K5	1
24	99.280.206	0	REMENICE / PULLEY / RIEMENSCHEIBE	HTD 44-8M-20 TL	1
25	99.280.207	0	REMENICE / PULLEY / RIEMENSCHEIBE	HTD 22-8M-20 TL	1

Cislo Sestavy/Number of assembly/Nummer der Baugruppe; Verze (Ver.)/Version/Version; Nazev sestavy/Assembly title/Name der Baugruppe; Pozice (Poz.)/Position/Position;
Objednaci cislo/Purchase order number/Bestellnummer; Nazev polozky/Volume title/Name der Position; Rozmer/Stock size/Abmessung

7.25. Trať / Bahn / Track



NÁZEV SESTAVY	ČÍSLO SESTAVY	STROJ
TRAT	201.P311-140	PRODU360

Konstruoval: HLADIL

Datum: 04. 05. 2011

Měřítko: 1:5

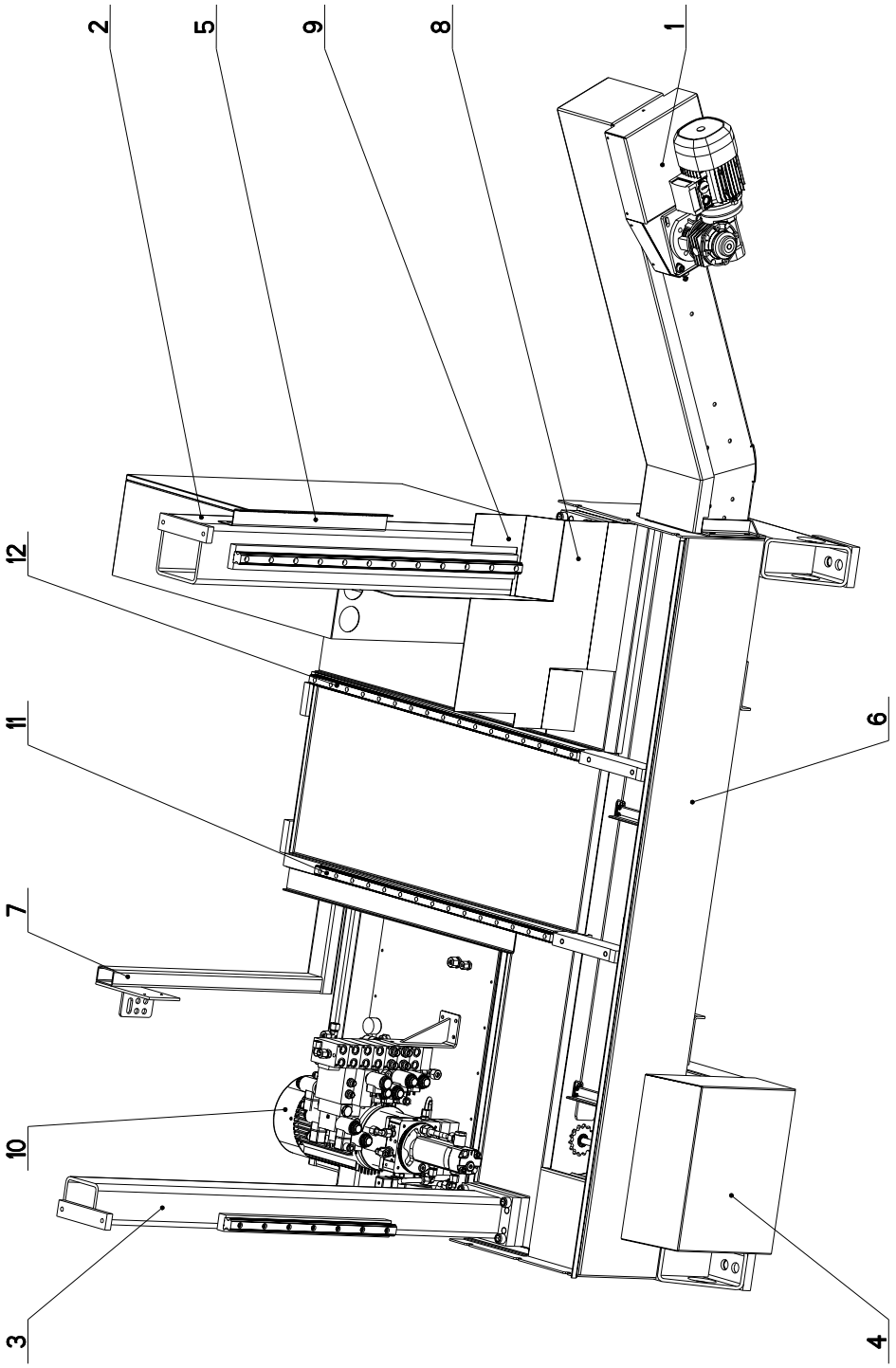
Manual version: 1.00 / June 2011
Manual rev.: 1

Cislo Sestavy	Ver.	Nazev sestavy
201.P311-140	0	TRAT/TRACK/BAHN

Poz.	Objednaci cislo	Ver.	Nazev polozky	Rozmer	Ks
1	30.P311-141	0	LISTA / TRIM / LEISTE	HR 80x25	2
2	30.P311-144	0	VALEC / ROLLER / ZYLINDER	TR 70x12.5	8
3	30.P311-145	0	OSA / AXLE / ACHSE	d 20	8
4	30.P311-146	0	KRYT / COVER / ABDECKUNG	P1,5x442	1
5	30.P311-147	0	ROST / GRILL / GITTER	P 5x463	1
6	30.P311-148	0	ROST / GRILL / GITTER	P 5x463	1
7	30.P311-149	0	DORAZ / STOP PIECE / ANSCHLAG	HR 40x5	2
8	90.001.25.050	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M10X40	2
9	90.001.25.054	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M10X60	2
10	90.002.2D.029	0	SROUB STAVECI / ADJUSTMENT BOLT / STELLSCHRAUBE	SROUB M6X8	16
11	90.011.27.012	0	SROUB ZAPUSTNY / COUNTERSINK BOLT / SENKSCHRAUBE	SROUB M8X16	12
12	90.154.50.011	0	PODLOZKA / WASHER / UNTERLEGSCHEIBE	20x28x1	16
13	95.001.024	0	LOZISKO / BEARING / LAGER	6304 2RSA	16

Cislo Sestavy/Number of assembly/Nummer der Baugruppe; Verze (Ver.)/Version/Version; Nazev sestavy/Assembly title/Name der Baugruppe; Pozice (Poz.)/Position/Position; Objednaci cislo/Purchase order number/Bestellnummer; Nazev polozky/Volume title/Name der Position; Rozmer/Stock size/Abmessung

7.27. Podstavec / Untersatz / Base



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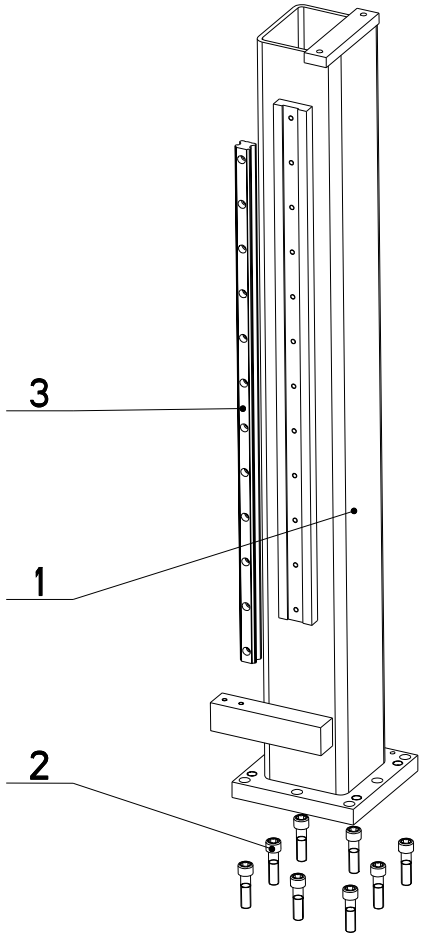
Cislo Sestavy	Ver.	Nazev sestavy
201.P301-100	0	PODSTAVEC/BASE/UNTERSATZ

Poz.	Objednaci cislo	Ver.	Nazev polozky	Rozmer	Ks
1	201.6717-300	0	VYNASEC TRISKOVY / CHIP EXTRACTOR / SPANABFÜHRUNG		1
2	201.P302-110	0	SLOUP / POLE / SÄULE		1
3	201.P302-120	0	SLOUP / POLE / SÄULE		1
4	201.P306-100	0	CHLAZENI / COOLING / KÜHLUNG		1
5	30.6704-019	0	HREBEN / COMB / KAMM	P 3x100x500	1
6	30.P301-101	0	PODSTAVEC / BASE / UNTERSATZ		1
7	30.P301-122	0	SLOUP / POLE / SÄULE		1
8	30.P314-101	0	SKLUZ / SLIDE / RUTSCH		1
9	31.P330-101	0	ROZVADEC / DISTRIBUTOR / VERTEILER		1
10	92.001.064	0	AGREGAT HYDRAULICKY / HYDRAULIC GENERATOR / HYDRAULIKAGGREGAT		1
11	99.200.203	0	VEDENI LINEARNI / LINEAR GUIDE / LINEARE FÜHRUNG	HGR25	1
12	99.200.204	0	VEDENI LINEARNI / LINEAR GUIDE / LINEARE FÜHRUNG	HGR25	1

Cislo Sestavy/Number of assembly/Nummer der Baugruppe; Verze (Ver.)/Version/Version; Nazev sestavy/Assembly title/Name der Baugruppe; Pozice (Poz.)/Position/Position;
Objednaci cislo/Purchase order number/Bestellnummer; Nazev polozky/Volume title/Name der Position; Rozmer/Stock size/Abmessung

Cislo Sestavy	Ver.	Nazev sestavy
201.P302-110	0	SLOUP/POLE/SÄULE

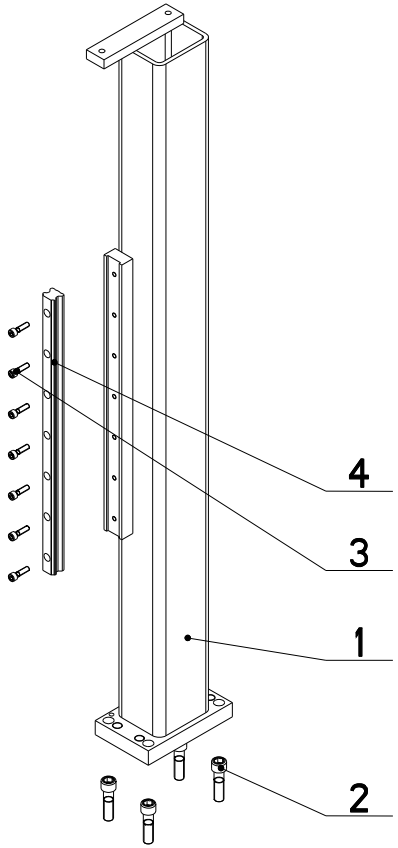
Poz.	Objednaci cislo	Ver.	Nazev polozky	Rozmer	Ks
1	30.P302-111	0	SLOUP / POLE / SÄULE		1
2	90.001.25.092	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M16X60	8
3	99.200.015	0	VEDENI LINEARNI / LINEAR GUIDE / LINEARE FÜHRUNG	HGR30R	1



Cislo Sestavy/Number of assembly/Nummer der Baugruppe; Verze (Ver.)/Version/Version; Nazev sestavy/Assembly title/Name der Baugruppe; Pozice (Poz.)/Position/Position; Objednaci cislo/Purchase order number/Bestellnummer; Nazev polozky/Volume title/Name der Position; Rozmer/Stock size/Abmessung

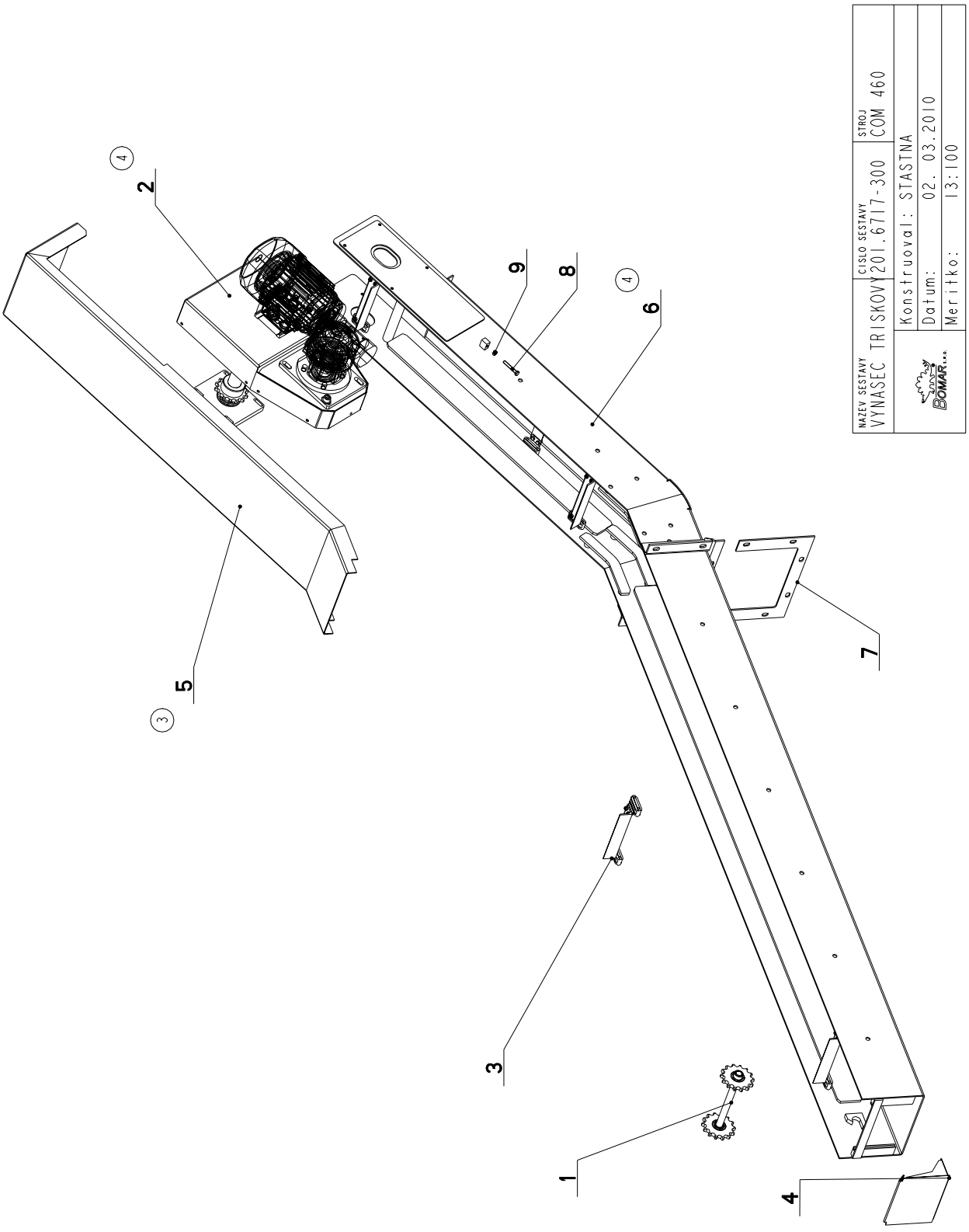
Cislo Sestavy	Ver.	Nazev sestavy
201.P302-120	0	SLOUP/POLE/SÄULE

Poz.	Objednaci cislo	Ver.	Nazev polozky	Rozmer	Ks
1	30.P302-121	0	SLOUP / POLE / SÄULE		1
2	90.001.25.092	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M16X60	4
3	90.001.55.083	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M8X30	7
4	99.200.023	0	VEDENI LINEARNI / LINEAR GUIDE / LINEARE FÜHRUNG	HGR30R	1



Cislo Sestavy/Number of assembly/Nummer der Baugruppe; Verze (Ver.)/Version/Version; Nazev sestavy/Assembly title/Name der Baugruppe; Pozice (Poz.)/Position/Position; Objednaci cislo/Purchase order number/Bestellnummer; Nazev polozky/Volume title/Name der Position; Rozmer/Stock size/Abmessung

7.31. Třískový vynašeč / Spaneforderer / Swarf conveyor



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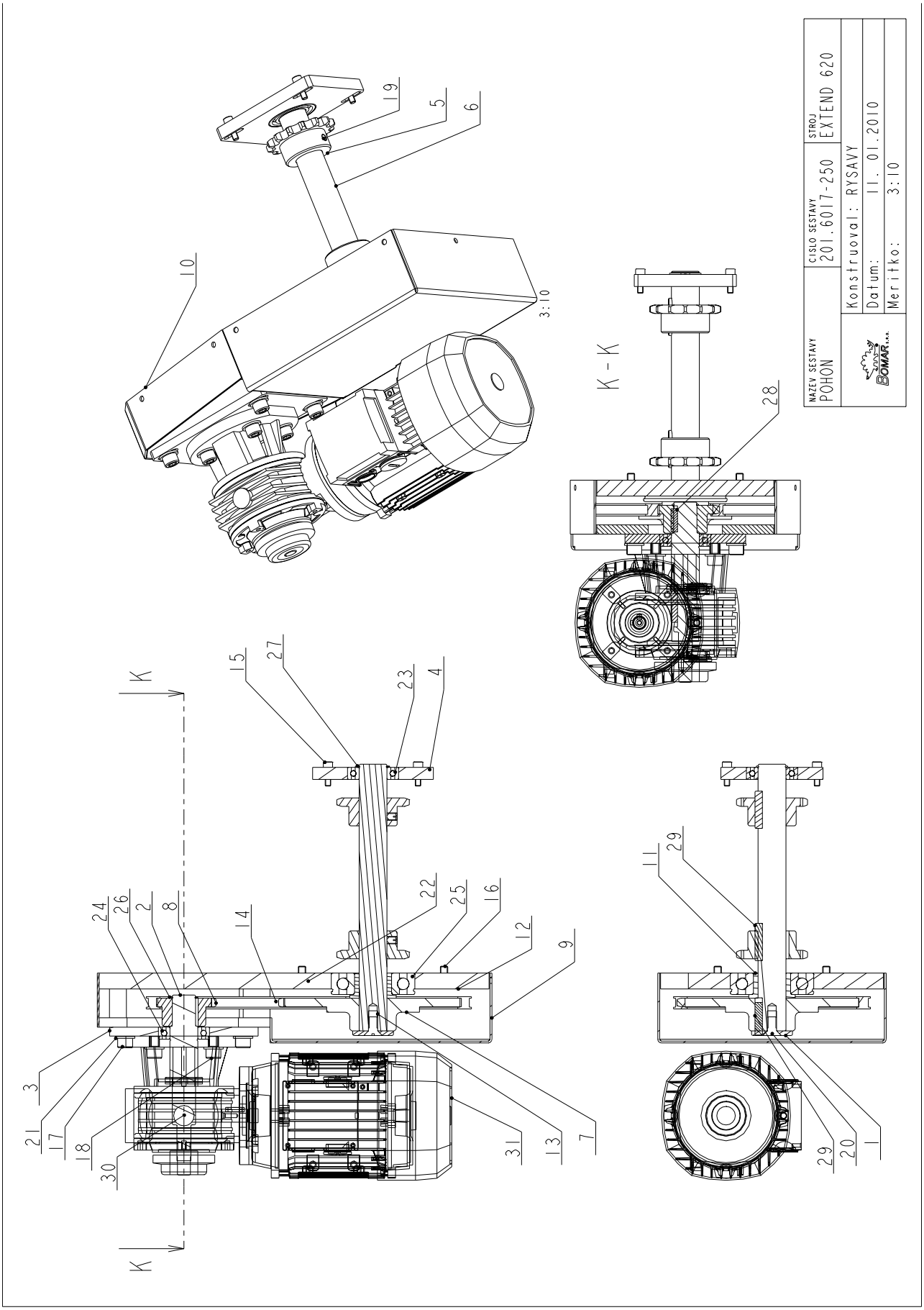
Cislo Sestavy	Ver.	Nazev sestavy
201.6717-300	0	VYNASEC TRISKOVY/CHIP EXTRACTOR/SPANABFÜHRUNG

Poz.	Objednaci cislo	Ver.	Nazev polozky	Rozmer	Ks
1	201.6017-103	0	KOLO NAPINACI / TENSIONING WHEEL / UMLENKRAD		1
2	201.6017-250	1	POHON / DRIVE / ANTRIEB		1
3	201.6717-304	1	RETEZ / CHAIN / KETTE		7
4	30.6017-121		SITO / SIEVE / GITTERWERK		1
5	30.6017-122	0	KRYT / COVER / ABDECKUNG		1
6	30.6717-401		KORYTO / CHANNEL / RINNE		1
7	31.7217-032	0	TESNENI / SEALING / DICHTUNG	TL4	1
8	90.005.55.012	0	SROUB 6HRANNY / 6 SIDED BOLT / SECHSKANTSCHRAUBE	SROUB M6X40	2
9	90.100.55.004	0	MATICE / NUT / MUTTER	MATICE _ M6	2

1.PRIDANO 2x 6HR SROUB M6x12 90.005.55.006, 2xMATICE M6 90.100.55.004. 102/ZM116 21.3.2007 SLEZACKOVA
2.ZRUSENO PLECH KRYCI 30.6717-303, 2xSROUB M6x12 90.005.55.006,2x MATICE M6 90.100.55.004. 163/ZM206 25.5.2007 SLEZACKOVA
3. NOVA SESTAVA POHONU; UPRAVA KRYTU 6017-122 ZM.314-2007 23.7.2007 JANCA
4.ZRUSEN POHON 201.6017-150 A NAHR. 201.6017-250,ZRUSENO KORYTO 30.6717-301 A NAHR. 30.6717-401. 192/ZM194 17.6.2008 SLEZACKOVA

7.33. Pohon / Antrieb / Drive



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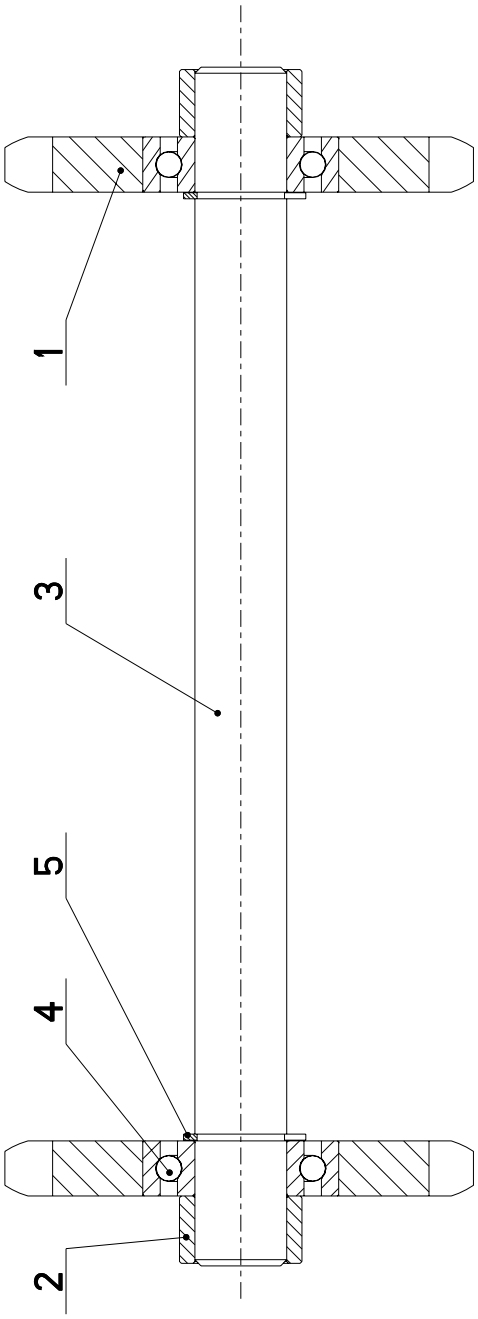
Cislo Sestavy	Ver.	Nazev sestavy
201.6017-250	1	POHON/DRIVE /ANTRIEB

Poz.	Objednaci cislo	Ver.	Nazev polozky	Rozmer	Ks
1	30.1502-465	0	PODLOZKA / WASHER / UNTERLEGSCHEIBE	d 45	1
2	30.6017-203	1	HRIDEL / SHAFT / WELLE	D 32	1
3	30.6017-206	0	DESKA / BOARD / PLATTE	HR 130x10	1
4	30.6017-207	0	DESKA / BOARD / PLATTE	HR 130x15	1
5	30.6017-208	0	KOLO RETEZOVE / CHAIN WHEEL / KETTENRAD	RET.KOLO z=14	2
6	30.6017-209	0	HRIDEL / SHAFT / WELLE	D 30	1
7	30.6017-211	0	KOLO RETEZOVE / CHAIN WHEEL / KETTENRAD	10B-1	1
8	30.6017-212	0	KOLO RETEZOVE / CHAIN WHEEL / KETTENRAD		1
9	30.6017-213	0	KRYT / COVER / ABDECKUNG	P2x335x390	1
10	30.6017-214	0	KRYT / COVER / ABDECKUNG	P2x58x511	1
11	30.6017-215	0	KROUZEK DISTANCNI / DISTANCE RING / DISTANZRING	D 50	1
12	30.6017-216	0	DRZAK / HOLDER / HALTER	SVARENO	1
13	30.6017-218	0	PERO / SPRING / FEDER	PERO 8x10	1
14	49.200.027	0	RETEZ / CHAIN / KETTE	10B-1	1
15	90.001.25.018	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M6X20	4
16	90.001.25.031	0	SROUB IMBUS CERNENY / ALLEN HEAD BOLT / IMBUSSCHRAUBE	8x16	4
17	90.001.25.046	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M10X20	4
18	90.001.25.106	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M10X22	4
19	90.003.2D.010	0	SROUB STAVECI / ADJUSTMENT BOLT / STELLSCHRAUBE	SROUB M8X10	2
20	90.011.27.008	0	SROUB ZAPUSTNY / COUNTERSINK BOLT / SENKSCHRAUBE	SROUB M10X20	1
21	90.150.50.006	0	PODLOZKA / WASHER / UNTERLEGSCHEIBE	PODLOZKA 10,5	8
22	90.163.00.002	0	PODLOZKA / WASHER / UNTERLEGSCHEIBE	PODLOZKA 8	4
23	95.001.009	0	LOZISKO / BEARING / LAGER	6006 2RS	1
24	95.003.005	0	LOZISKO / BEARING / LAGER	6006AN	1
25	95.003.006	0	LOZISKO / BEARING / LAGER	6308AN	1
26	95.800.012	0	KROUZEK POJIST.VNEJS / OUTSIDE SAFETY RING / SICHERUNGSRING AUßEN	POJISTNY KROUZEK 25	1
27	95.800.013	0	KROUZEK POJIST.VNEJS / OUTSIDE SAFETY RING / SICHERUNGSRING AUßEN	POJISTNY KROUZEK 30	1
28	95.810.007	0	PERO / SPRING / FEDER	PERO 8X7X25	1
29	95.810.010	0	PERO / SPRING / FEDER	PERO 10X8X40	3
30	95.810.016	0	PERO / SPRING / FEDER	PERO 8X7X40	1
31	99.001.073	0	PREVODOVKA / TRANSMISSION / GETRIEBE	VF 49 L2 F2 60 P71 B14 B8	1

7.35. Kolo napínací / Umlenkrad / Stretching wheel

Cislo Sestavy	Ver.	Nazev sestavy
201.6017-103	0	KOLO NAPINACI/TENSIONING WHEEL/UMLENKRAD

Poz.	Objednaci cislo	Ver.	Nazev polozky	Rozmer	Ks
1	30.6017-111	0	KOLO RETEZOVE / CHAIN WHEEL / KETTENRAD	RETEZKA z=14	2
2	30.6017-114	0	KROUZEK DISTANCNI / DISTANCE RING / DISTANZRING	TR.20x3	2
3	30.6017-117	0	HRIDEL / SHAFT / WELLE	d15	1
4	95.001.006	0	LOZISKO KUL I RADE / BEARING / LAGER	6002 2RS	2
5	95.800.006	0	KROUZEK POJIST.VNEJS / OUTSIDE SAFETY RING / SICHERUNGSRING AUßEN	POJISTNY KROUZEK 15	2



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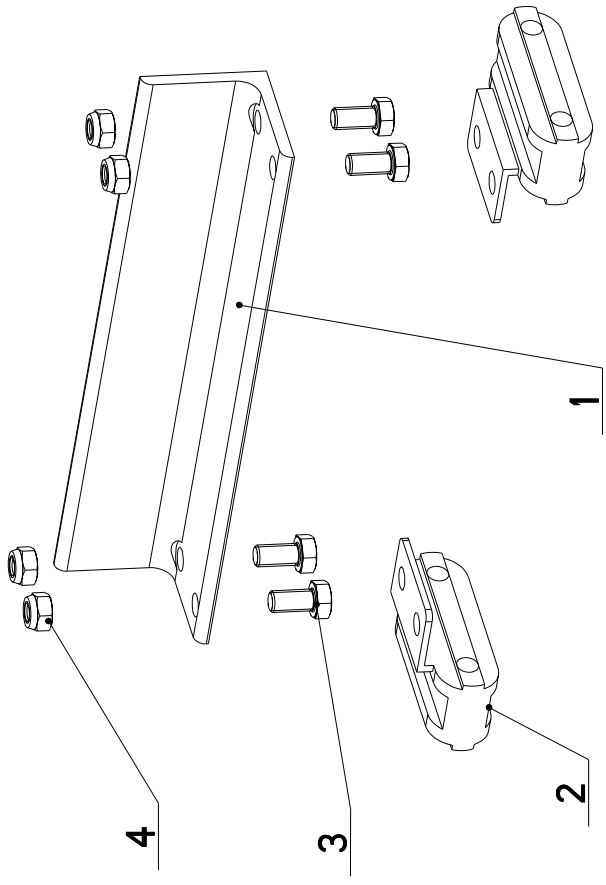
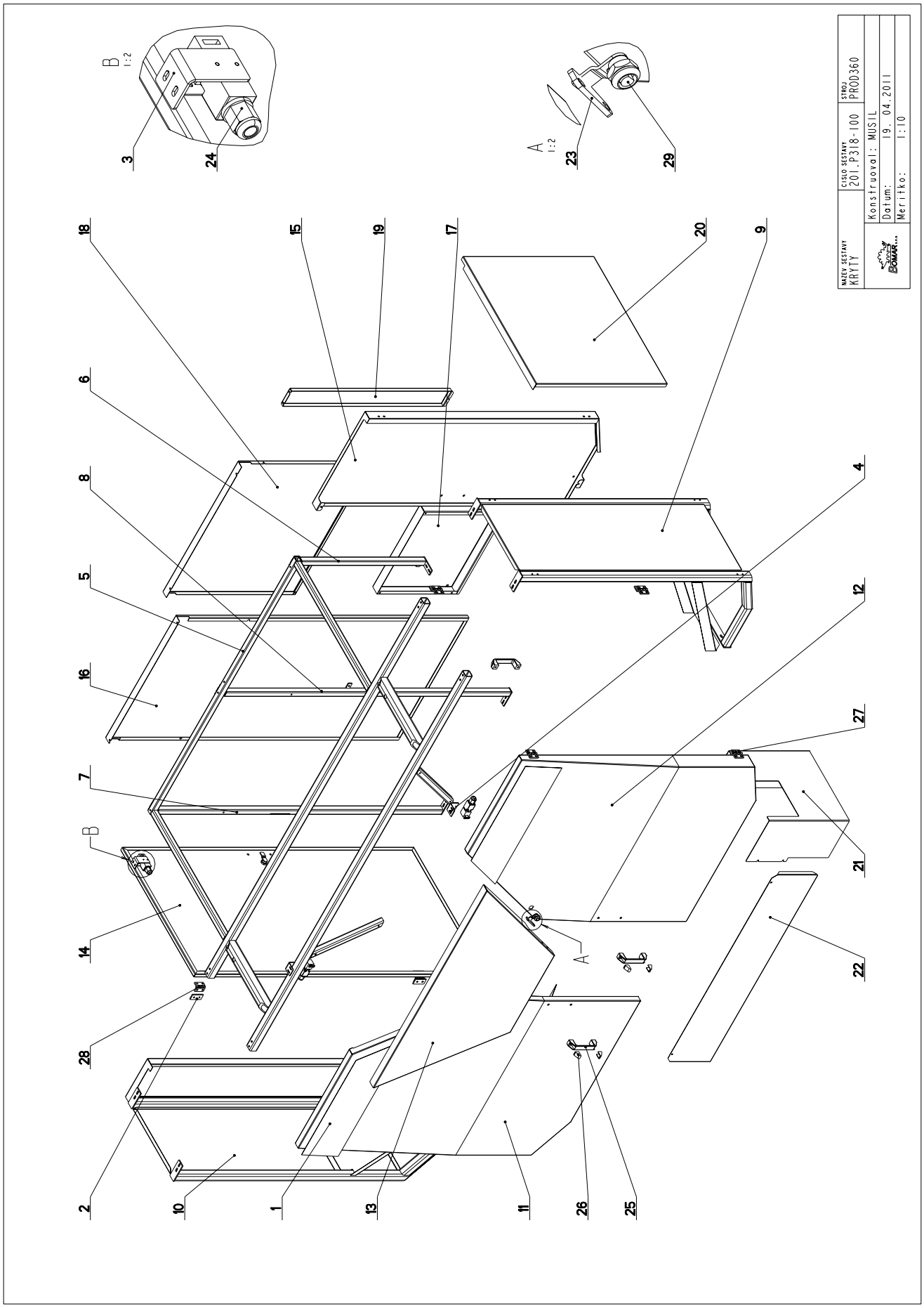
7.36. Řetěz / Kette / Chain

Cislo Sestavy	Ver.	Nazev sestavy
201.6717-304	1	RETEZ/CHAIN/KETTE

Poz.	Objednaci cislo	Ver.	Nazev polozky	Rozmer	Ks
1	30.6017-115	0	STERAC / WIPER / ABSTREIFER	PROFIL 30x30x3	1
2	30.6717-305	0	RETEZ POHONOVY / DRIVE BELT / ANTRIEBSKETTE	210BK3 (1 1/4x3/8)+un	2
3	90.005.55.002	0	6 HR SROUB ZIN / 6 SIDED BOLT / SECHSKANTSCHRAUBE	SROUB M5X10	4
4	90.100.08.005	0	MATICE / NUT / MUTTER	M5	4



7.37. Upínání horní / Spannvorichtung oben / Top clamp 1



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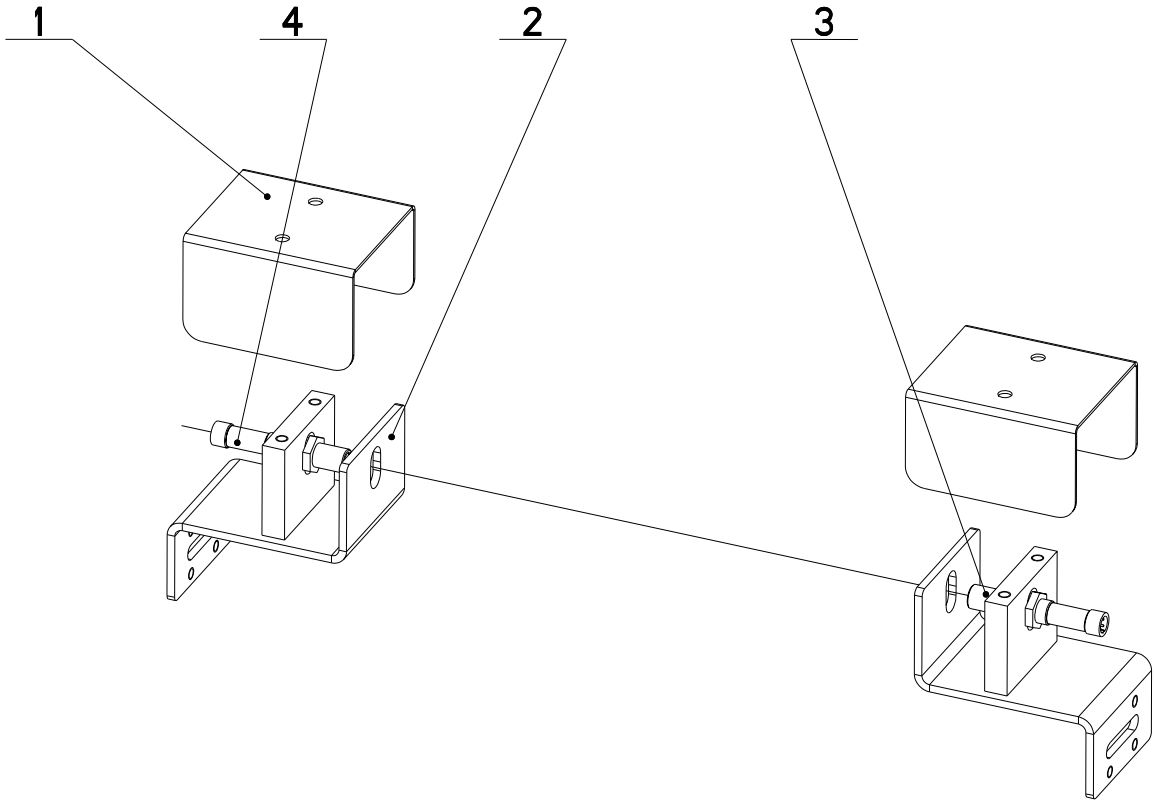
Cislo Sestavy	Ver.	Nazev sestavy
201.P318-100	0	KRYTY/COVERS/ABDECKUNGEN

Poz.	Objednaci cislo	Ver.	Nazev polozky	Rozmer	Ks
1		0	SAMOLEPKA / STICKER / AUFKLEBER		2
2	30.A418-233	0	DESKA / BOARD / PLATTE	HR 30x5	6
3	30.A418-235	0	DRZAK / HOLDER / HALTER	P 3x40	1
4	30.A418-236	0	DRZAK / HOLDER / HALTER	P 3x40	2
5	30.P318-101	0	RAM / FRAME / RAHMEN		1
6	30.P318-102	0	RAM / FRAME / RAHMEN		1
7	30.P318-103	0	RAM / FRAME / RAHMEN		1
8	30.P318-104	0	RAM / FRAME / RAHMEN		1
9	30.P318-105	0	RAM / FRAME / RAHMEN		1
10	30.P318-106	0	RAM / FRAME / RAHMEN		1
11	30.P318-107	0	DVERE / DOOR / TÜR		1
12	30.P318-108	0	DVERE / DOOR / TÜR		1
13	30.P318-110	0	KRYT / COVER / ABDECKUNG	P 1.5-624	1
14	30.P318-111	0	DVERE / DOOR / TÜR		1
15	30.P318-112	0	KRYT / COVER / ABDECKUNG	P 1,5x686	1
16	30.P318-113	0	KRYT / COVER / ABDECKUNG	P 1,5x860	1
17	30.P318-115	0	KRYT / COVER / ABDECKUNG	P 1,5x551	1
18	30.P318-116	0	KRYT / COVER / ABDECKUNG	P 1,5x801	1
19	30.P318-117	0	KRYT / COVER / ABDECKUNG	P 1,5x134	1
20	30.P318-118	0	KRYT / COVER / ABDECKUNG	P 1,5x789	1
21	30.P318-120	0	KRYT / COVER / ABDECKUNG	P 2x450	1
22	30.P318-121	0	KRYT / COVER / ABDECKUNG	P 1,5x267	1
23	81.E169-264	0	ZAMEK / LOCK / SCHLOSS	P5 x 22	2
24	91.173.012	0	SPINAC KONCOVY / END SWITCH / ENDSCHALTER	QKS8-2xNC	3
25	94.012.001	0	RUKOJET / HANDLE / GRIFF		4
26	94.012.002	0	ZATKA / PLUG / STOPFEN		8
27	99.100.011	0	PANT / HINGE / TÜRBAND	TYP 2189104	6
28	99.100.011	0	PANT / HINGE / TÜRBAND	TYP 218-9104	2
29	99.104.002	0	ZAMEK / LOCK / SCHLOSS	ZAMEK CINSKY	3

Cislo Sestavy/Number of assembly/Nummer der Baugruppe; Verze (Ver.)/Version/Version; Nazev sestavy/Assembly title/Name der Baugruppe; Pozice (Poz.)/Position/Position;
Objednaci cislo/Purchase order number/Bestellnummer; Nazev polozky/Volume title/Name der Position; Rozmer/Stock size/Abmessung

Cislo Sestavy	Ver.	Nazev sestavy
201.P303-080	0	ZAVORA OPTICKA/OPTICAL GATE/LICHTSCHRANKE

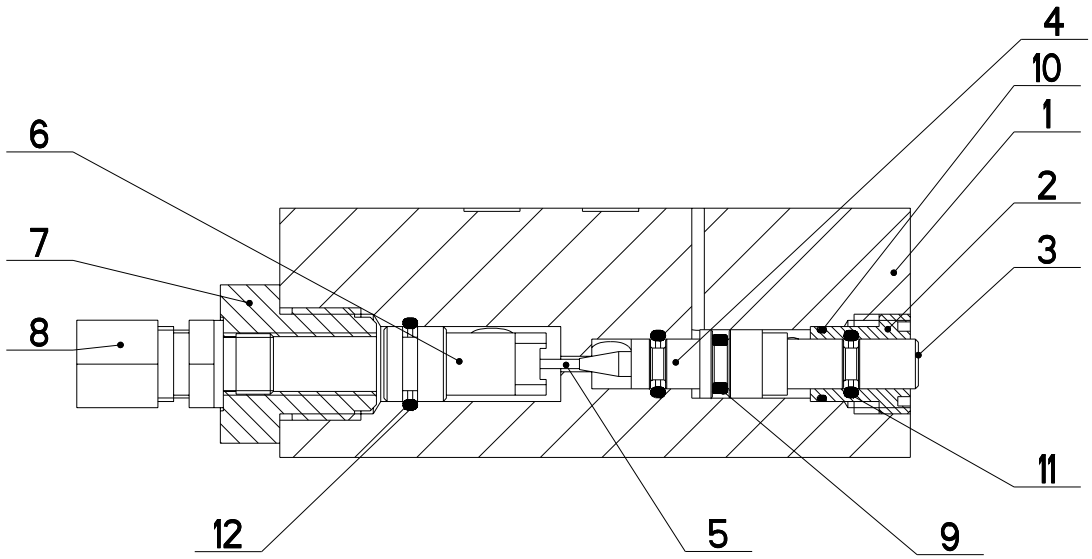
Poz.	Objednaci cislo	Ver.	Nazev polozky	Rozmer	Ks
1	30.P203-073	0	KRYT / COVER / ABDECKUNG	P1.5 - 90	2
2	30.P308-081	0	DRZAK / HOLDER / HALTER		2
3	91.400.017	0	SNIMAC / SENSOR / SENSOR	BOS 12M	1
4	91.400.018	0	SNIMAC / SENSOR / SENSOR	BOS 12M	1



Cislo Sestavy/Number of assembly/Nummer der Baugruppe; Verze (Ver.)/Version/Version; Nazev sestavy/Assembly title/Name der Baugruppe; Pozice (Poz.)/Position/Position; Objednaci cislo/Purchase order number/Bestellnummer; Nazev polozky/Volume title/Name der Position; Rozmer/Stock size/Abmessung

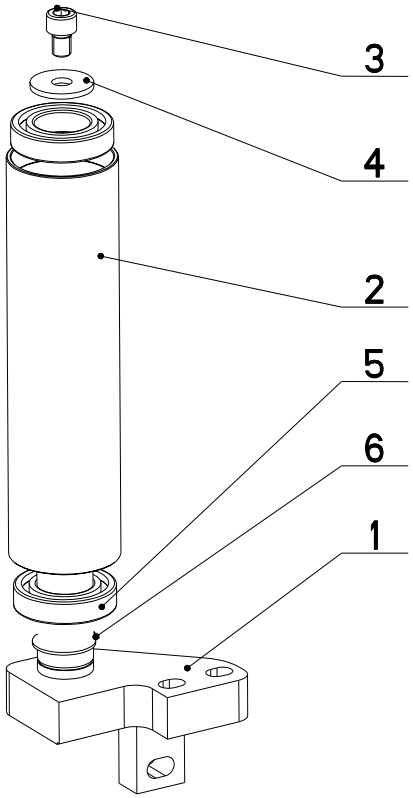
Cislo Sestavy	Ver.	Nazev sestavy
201.6816-100	0	KOSTKA REGULACE/REGULATION CUBE/REGELUNGSWÜRFEL

Poz.	Objednaci cislo	Ver.	Nazev polozky	Rozmer	Ks
1	30.6816-101	1	KOSTKA REGULACE / REGULATION CUBE / REGELUNGSWÜRFEL	TYC 40x40	1
2	30.6816-104	1	VIKO / COVER / DECKEL	TYC 16	1
3	30.6816-103	0	PIST / PISTON / KOLBEN	TYC 12	1
4	30.6816-108	0	JEHLA / NEEDLE / NADEL	TYC 8	1
5	95.690.001	0	JEHLA / NEEDLE / NADEL	1.5x11.8	1
6	30.6816-106	2	PIST / PISTON / KOLBEN	TYC 12	1
7	30.6816-107	0	VIKO / COVER / DECKEL	TYC 22	1
8	92.002.102	0	SROUBENI / BOLTING / VERSCHRAUBUNG	S-GEV-8LLR	1
9	96.002.003	0	O-KROUZEK DYNAMIC / DYNAMIC O RING / O-RING DYNAMISCH	6X2	1
10	96.002.041	0	O-KROUZEK DYNAMIC / DYNAMIC O RING / O-RING DYNAMISCH	10x1	1
11	96.001.001	0	O-KROUZEK STATIC / STATIC O RING / O-RING STATISCH	4X1,8	2
12	96.001.003	0	O-KROUZEK STATIC / STATIC O RING / O-RING STATISCH	8X2	1



Cislo Sestavy	Ver.	Nazev sestavy
201.P311-160	0	VALEC VERTIKALNI/VERTICAL CYLINDER/VERTIKALZYLINDER

Poz.	Objednaci cislo	Ver.	Nazev polozky	Rozmer	Ks
1	30.P311-161	0	DRZAK / HOLDER / HALTER		1
2	30.X104-802	0	VALEC VERTIKALNI / VERTICAL CYLINDER / VERTIKALZYLINDER	TR 60x3	1
3	90.001.25.044	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M10X14	1
4	90.151.50.001	0	PODLOZKA / WASHER / UNTERLEGSCHEIBE	PODLOZKA 10	1
5	95.001.009	0	LOZISKO / BEARING / LAGER	6006 2RS	2
6	95.800.013	0	KROUZEK POJIST.VNEJS / OUTSIDE SAFETY RING / SICHERUNGSRING AUßEN	POJISTNY KROUZEK 30	1



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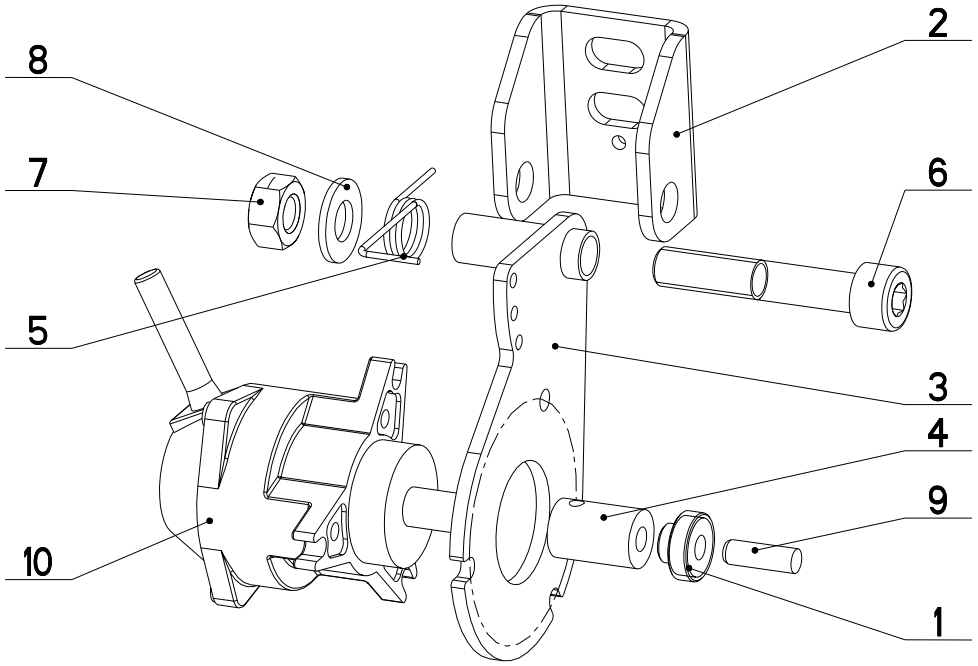
Cislo Sestavy	Ver.	Nazev sestavy
201.P304-190	0	ODMEROVANI/&NAZEV_EN/&NAZEV_DE

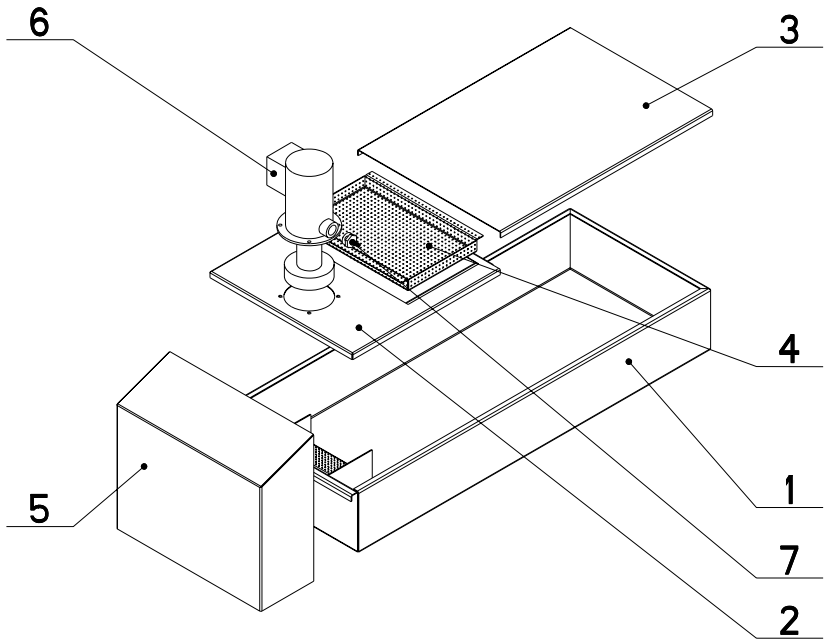
Poz.	Objednaci cislo	Ver.	Nazev polozky	Rozmer	Ks
1	30.6702-214	0	PASTOREK / PINION / RITZEL	z=12	1
2	30.P304-191	0	DRZAK / HOLDER / HALTER	P 3x40	1
3	30.P304-192	0	DRZAK / HOLDER / HALTER		1
4	30.P304-194	0	HRIDEL / SHAFT / WELLE	d 12	1
5	31.2902-113	0	PRUZINA / SPRING / FEDER	d 1.2	1
6	90.001.25.037	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M8X45	1
7	90.100.55.005	0	MATICE / NUT / MUTTER	MATICE _ M8	1
8	90.150.50.005	0	PODLOZKA / WASHER / UNTERLEGSCHEIBE	PODLOZKA 8,4	1
9	90.301.0Z.002	0	KOLIK VALCOVY / CYLINDRICAL PIN SOFT / ZYLINDERSTIFT WEICH	KOLIK 5X16	1
10	91.103.103	0	CIDLO / SENSOR / SENSOR	DKS 40	1



Cislo Sestavy/Number of assembly/Nummer der Baugruppe; Verze (Ver.)/Version/Version; Nazev sestavy/Assembly title/Name der Baugruppe; Pozice (Poz.)/Position/Position; Objednaci cislo/Purchase order number/Bestellnummer; Nazev polozky/Volume title/Name der Position; Rozmer/Stock size/Abmessung

Cislo Sestavy	Ver.	Nazev sestavy
201.P306-100	0	CHLAZENI/COOLING/KÜHLUNG

Poz.	Objednaci cislo	Ver.	Nazev polozky	Rozmer	Ks
1	30.P306-101	0	NADRZ / CONTAINER / BEHÄLTER		1
2	30.P306-102	0	VIKO / COVER / DECKEL	P 1.5 - 429	1
3	30.P306-103	0	VIKO / COVER / DECKEL	P 1.5x432	1
4	30.P306-104	0	SITO / SIEVE / GITTERWERK	P 1x282	1
5	30.P306-106	0	KRYT / COVER / ABDECKUNG	P 1,5x463	1
6	91.020.009	0	CERPADLO / PUMP / PUMPE	3COA 2-14	1
7	94.202.005	0	REDUKCE / REDUCTION / ADAPTOR / REDUKTION	3/4"-6	1



Cislo Sestavy/Number of assembly/Nummer der Baugruppe; Verze (Ver.)/Version/Version; Nazev sestavy/Assembly title/Name der Baugruppe; Pozice (Poz.)/Position/Position; Objednaci cislo/Purchase order number/Bestellnummer; Nazev polozky/Volume title/Name der Position; Rozmer/Stock size/Abmessung

Cislo Sestavy	Ver.	Nazev sestavy
201.6707-400	3	VALEC NAPINACI/TENSIONING CYLINDER/SPANNZYLINDER

Poz.	Objednaci cislo	Ver.	Nazev polozky	Rozmer	Ks
1	30.6707-401	2	VIKO / COVER / DECKEL	HR 130x40	1
2	30.6707-402	0	VALEC / ROLLER / ZYLINDER	TRUBKA 130/120	1
3	30.6707-403	2	VIKO / COVER / DECKEL	HR 130x30	1
4	30.6707-404	1	PIST / PISTON / KOLBEN	d 125	1
5	30.6707-405	1	PISTNICE / PISTON ROD / KOLBENSTANGE	TYC 32	1
6	30.6707-407 (3)	0	TYC ZAVITOVA / THREADED POLE / GEWINDESTANGE	TYC M12	4
7	30.K407-005 (1)	1	PODLOZKA / WASHER / UNTERLEGSCHEIBE	TYC 35	1
8	90.001.25.031 (1)	0	SROUB IMBUS CERNENY / ALLEN HEAD BOLT / IMBUSSCHRAUBE	8x16	1
9	90.100.25.006 (3)	0	MATICE / NUT / MUTTER	MATICE _ M12 _PEVNOSTNI	8
10	90.150.50.007 (3)	0	PODLOZKA / WASHER / UNTERLEGSCHEIBE	PODLOZKA B13	8
11	92.003.001	0	SROUBENI UHLOVE / ANGLE BOLTING / WINKELVERSCHRAUBUNG	P-RSWS-08LR	2
12	96.001.031	0	KROUZEK O STATICKY / STATIC O RING / O-RING STATISCH	114X3	2
13	96.002.007	0	KROUZEK O DYNAMICKY / DYNAMIC O RING / O-RING DYNAMISCH	16X2	1
14	96.042.007	0	TESNENI / SEALING / DICHTUNG	32x40x6.3	1
15	96.060.009	0	KROUZEK STIRACI / SCRAPER RING / ABSTREIFRING	32x40x5x6	1
16	96.084.003	0	KROUZEK VODICI / LEAD RING / FÜHRUNGSRING	GR 6500320	1
17	96.084.014 (2)	0	KROUZEK VODICI / LEAD RING / FÜHRUNGSRING	Páska	1
18	96.900.028 (2)	0	TESNENI KOMBINOVANE / COMBINATION SEALING / KOMBIDICHTUNG		1

1.ZRUS.PODLOZKA 8 90.151.50.005 A NAHR. PODLOZKOU 30.K407-005,
ZRUS.SROUB M8x10A NAHR. SROUBEM M8x16 90.001.25.031.
191/ZM224 4.6.2007 SLEZACKOVA

2.ZRUS."O" KROUZEK 96.002.044 A NAHRAZENO
TESNENI KOMBINOVANE 96.900.028.
ZRUS.PASKA 95.780.001 A NAHR. 96.084.014.
316/ZM337 27.8.2007 SLEZACKOVA

3.ZRUS.TYC 30.6707-406 A NAHR.30.6707-407,
ZRUS.PODLOZKA 90.150.50.006 A NAHR.90.150.50.007,
ZRUS.MATICE 90.100.55.006 A NAHR.90.100.25.006.
37/ZM098 4.5.2011 SLEZACKOVA