

Serie **Individual**



Individual 820.640 DGH

Operating instructions

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

Seriové číslo / Serien Nummer / Serial Number _____

Service and information

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We are available:

Mondays to Fridays

7⁰⁰ – 16⁰⁰

Version:

1.30 / Feb. 2013
rev. 2

BOMAR, spol. s r.o. © – Subject to modifications and amendments.

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: **Individual 820.640 (D)GH**

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 20–120 m.min⁻¹, cutting angle DGH:+60° bis -60°, GH: 0° bis 60°
 Total dimensions in mm (l×w×h) 3750×4050×2700,
 Supply voltage 400 V (dep. on machine version), TN-C-S / TN-C
 Total power requirement 10,5 kW, weight 2500 kg

The applied decrees of governments: **No. 17/2003 Coll.** (Directive 73/23/EEC)
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 12 100-2:2004, ČSN EN 13 898:2004, ČSN EN ISO 13857:2008, ČSN EN 982:1997 + A1:2008, ČSN EN 55 011 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 CZ s.r.o., Novodvorská 994, 142 21 Prague 4 – Czech Republic, Identification number: 63987121 - Inspection body no. 4002

The inspection certificate no. 00.480.140/09/07/02/0 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 r.o. 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 r.o. have been declared "identical" to a safety device, as offered by BOMAR, spol. s r.o. or its agents.

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1. **Safety notes**

The operating instructions must be read by the person, who keeps in touch with the machine before transportation, installation, using, servicing, repair, 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 **Individual 820.640 DGH** is determined for cutting and shortening of rolled bars and drawn bars and profiles from steels, stainless steels, non-ferrous metals and plastics **with cutting angle from -60° to 60°**.

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 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.

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

1.5.2. Arm covers

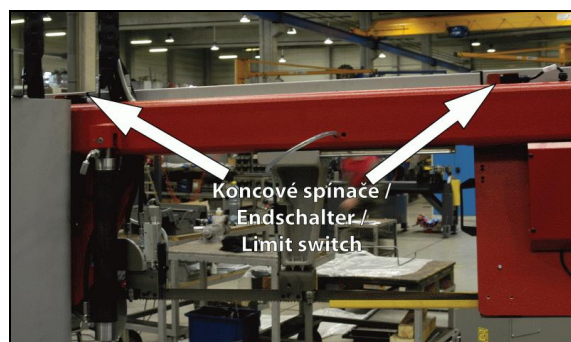
Left cover – It covers tightening wheel. If the cover is opened during operation, the limit switch is opened and the band saw is stopped. The band saw is not possible start in set mode.

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!



Two limit switches on saw arm control if covers are open or not.

1.5.3. Saw band stretching and rupture inspection

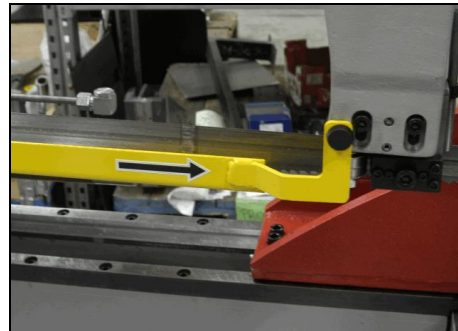
This device checks the saw band stretching and causes immediate machine shut – down in the event the band ruptures.



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

1.5.4. Band saw cover

It covers the visible area of the saw band from left guiding cube to the frame.



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

1.6. Safety notes for the cooling

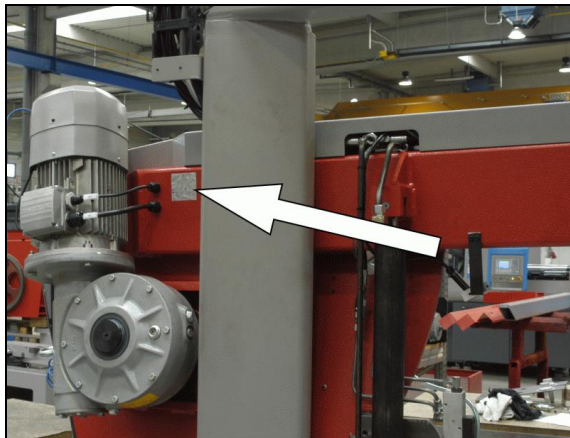
Attention!

- *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*

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

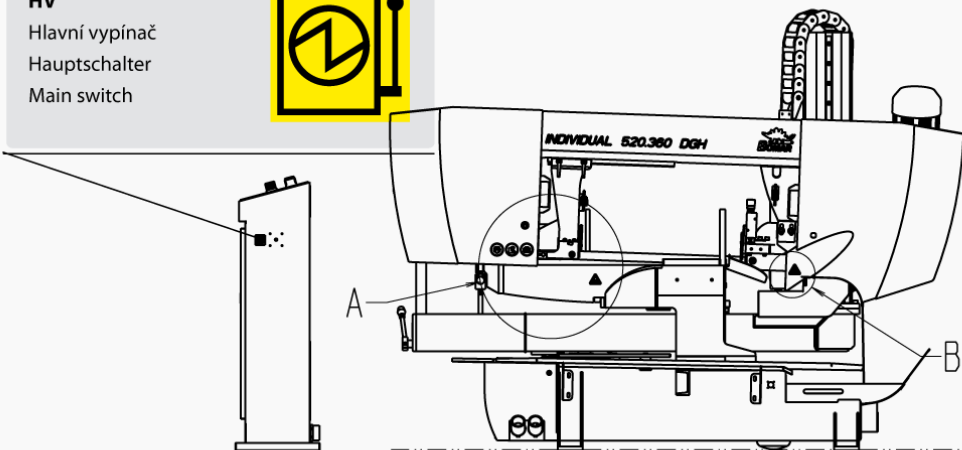


Machine label is located at the rear of saw arm near the electromotor.

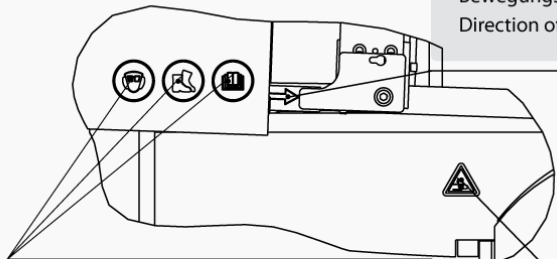
1.8. Umístění bezpečnostních značek / Verteilung der Sicherheitszeichen / Position of safety symbols

HV
Hlavní vypínač
Hauptschalter
Main switch

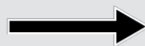




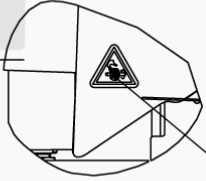
A




SP:
Směr pohybu
Bewegungsrichtung
Direction of motion




B




PO:
Noste pevnou pracovní obuv
Tragen Sie Sicherheitsschuhe
Wear fixed protective shoes




CZ:
Přečíst návod k použití
Bedienungsanleitung lesen
Read the operating instructions




OBS:
Noste ochranné brýle a sluchátka
Tragen Sie eine Schutzbrille und
Gehörschutz
Wear protective goggles
and headphones




NE
Nebezpečí úrazu
elektrickým proudem
Verletzungsgefahr vom
elektrischen Strom
Electrical hazard

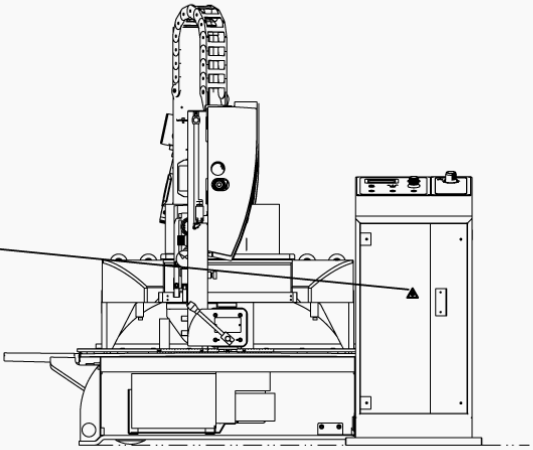



NR:
Nebezpečí zachycení
Erfassungsfahr
Tramping hazard



NS
Nebezpečí stlačení
Pressungsgefahr
Crushing hazard

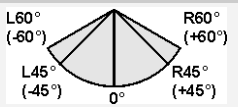


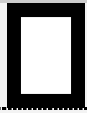







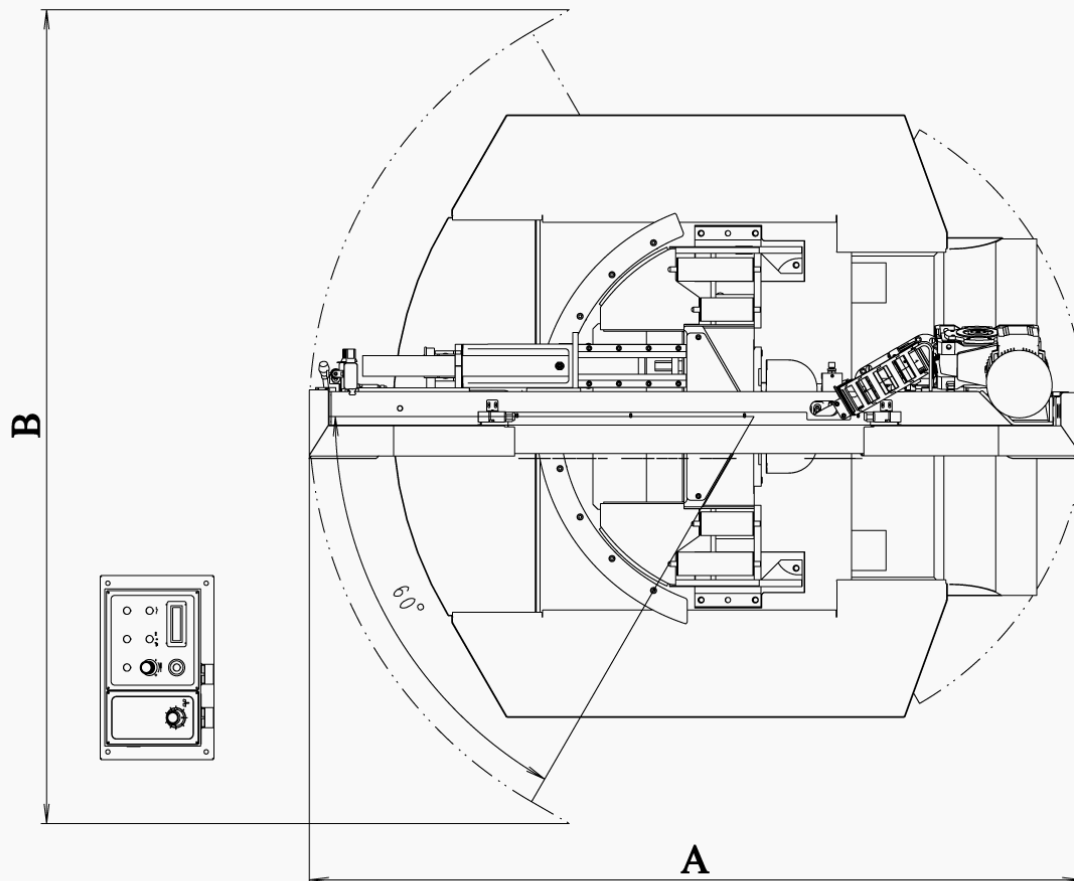
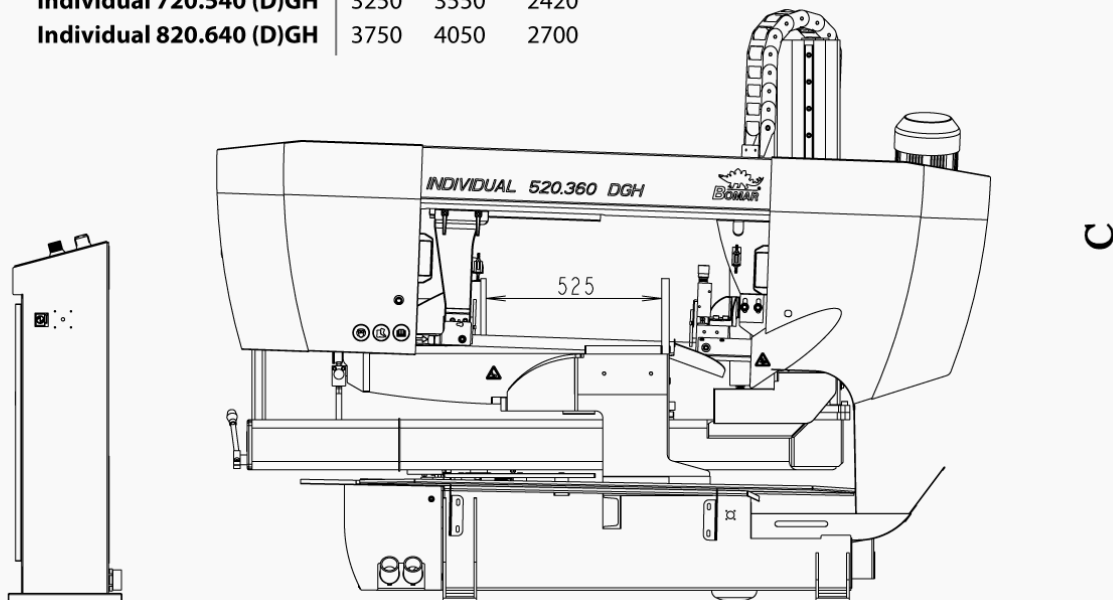
2. **Machine documentation**

2.1. Technická data / Technische Daten / Technical data

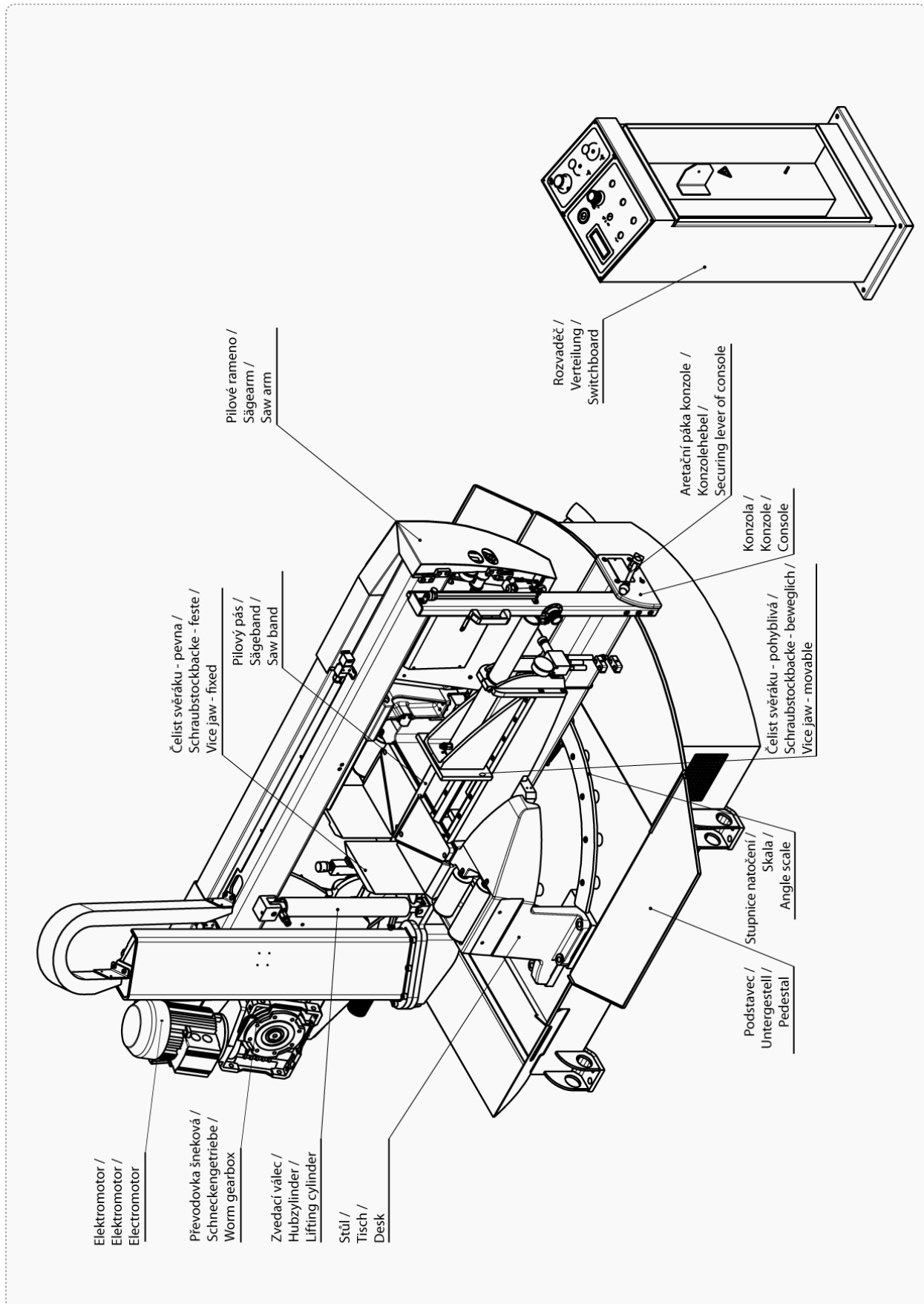
Hmotnost stroje / Maschinengewicht / Machine weight:				
• Hmotnost / Gewicht / Weight	2500 kg			
Rozměry stroje / Maschinengröße / Machine size :				
• Délka / Länge / Length	3750 mm			
• Šířka / Breite / Width	4050 mm			
• Výška / Höhe / Height	2700 mm			
Elektrické vybavení / Elektrische Ausrüstung / Electrical equipment:				
• Napájení / Versorgungsspannung / Supply voltage	~3 x 400 V , 50Hz, TN-C			
• Příkon / Gesamtschlusswert / Total Input	10,5 kW			
• Max.jištění / Max.Vorschaltsicherung / Max.Fuse	32 A			
• Krytí / Schutzart / Protection	IP 54			
Akustický tlak / Schalldruckpegel / Acoustic pressure:				
• Individual 820.640 DGH	$L_{Aeqv}=76,3$ dB			
Pohon / Atrieb / Drive:				
• Typ / Typ / Type	MDERA 132-12(dep. on saw ver.)			
• Napájení / Versorgungsspannung / Supply voltage	~3 x 400V, 50Hz (dep. on saw ver.)			
• Výkon / Leistung / Output	5,5 kW			
• Jmenovité otáčky / Motornendrehzahl / Nominal speed	1440 min ⁻¹			
Hydraulické zařízení / Kühlmiteleinrichtung / Hydraulic equipment:				
• Typ / Typ / Type	SMA 03/870-1554			
• Výkon / Leistung / Output	8 MPa/3 kW			
Chladicí zařízení / Kühlmiteleinrichtung / Cooling equipment:				
• Typ / Typ / Type	3-COA4-12			
• Výkon / Leistung / Output	0,05 kW			
• Obsah nádrže / Volumen vom Kühlmittel / Capacity	35 l			
Rozměr pásu / Sägebanddimension / Band size:				
7880×54×1,6 mm				
Řezná rychlost / Schnittgeschwindigkeit / Cutting speed:				
20–120 m/min.				
Řezné rozsahy / Schnittbereiche / Cutting size:				
				
0°	Ø640 mm	820×640 mm	820×640 mm	640×640 mm
45° R	Ø550 mm	560×300 mm	480×640 mm	550×550 mm
45° L	Ø580 mm	580×520 mm	540×640 mm	560×560 mm
60° R	Ø380 mm	380×310 mm	305×640 mm	360×360 mm
60° L	Ø400 mm	405×450 mm	370×640 mm	400×400 mm
Level of acoustic pressure:				
Equivalent level of acoustic pressure A (noise) at operator position are $L_{Aeqv}=76,3$ dB. Mentioned values are levels of emission which doesn't have to represent safe levels. Factors which influence real level of acoustic pressure on machine operator are: working place characteristics, cut material, saw band. These factors have significantly influence on acoustic pressure.				

2.2. Rozměrové schéma /
Aufstellzeichnung /
Installation diagram

	A	B	C
Individual 520.360 (D)GH	2350	2450	2100
Individual 620.460 (D)GH	3000	3200	2350
Individual 720.540 (D)GH	3250	3550	2420
Individual 820.640 (D)GH	3750	4050	2700



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.

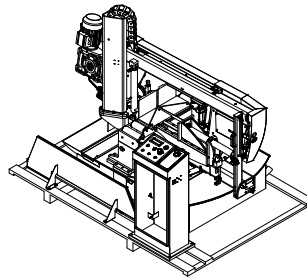
2.4.2. Transport and stocking preparations

- 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.

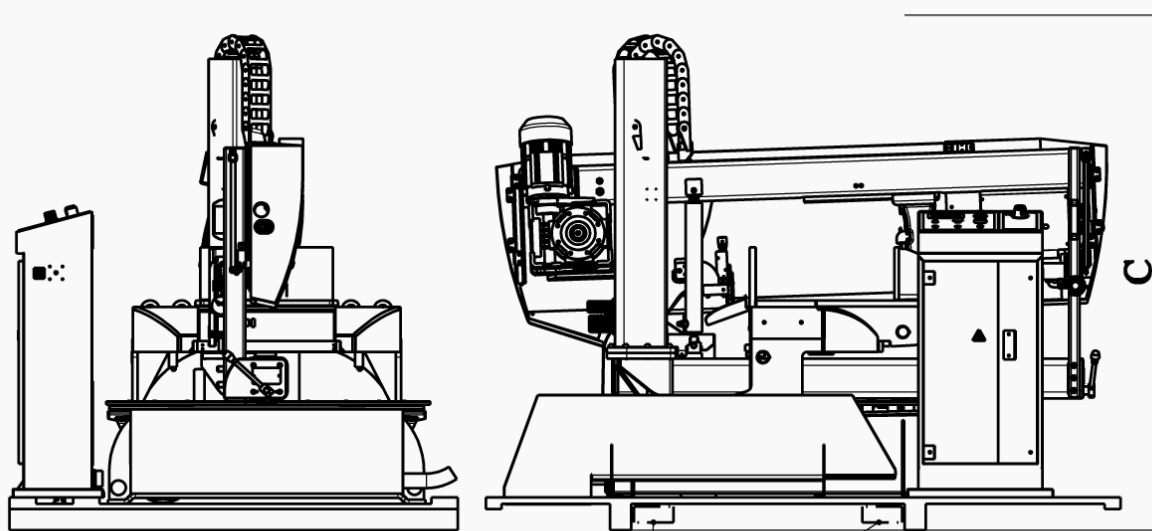


- Make sure that the hand pallet truck; the forklift truck or the crane and the suspension cables had sufficient capacity.
- Make sure that the van or the trailer had sufficient capacity.
- The machine must be secured during transportation.
- Screw on the palette to the floor of the van or the trailer.
- Be careful that the machine is not damaged during transportation. Make sure that the van or the trailer had sufficient capacity.
- 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.

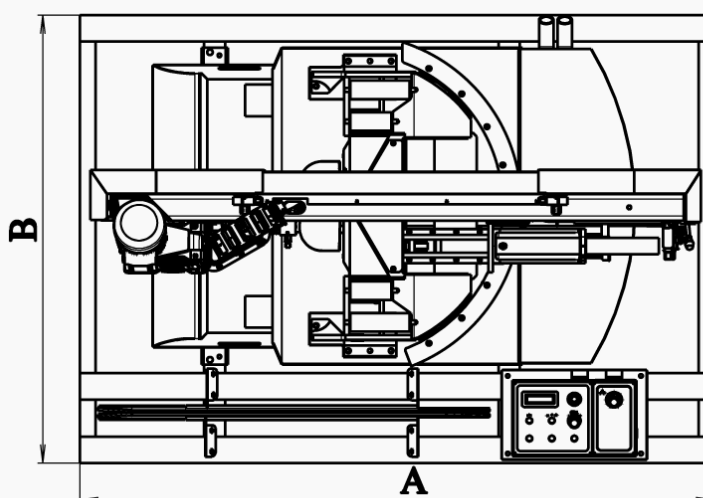
It is forbidden to handle the machine any other way, than it is written in this operating instructions, the machine can be damaged.

2.4.4. Transportní schéma /
Transport schema /
Transport scheme

	A	B	C	X
Individual 520.360 (D)GH	2400	1695	1950	1200
Individual 620.460 (D)GH	3100	1695	2260	1200
Individual 720.540 (D)GH	3300	1930	2430	1225
Individual 820.640 (D)GH	3600	1930	2600	1225



Místo pro lyžiny
vysokozdvížeňého vozíku
Die Stelle für Greifen mit
der Gabel des Gabelstaplers
Place for forklift's skides



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 extend from 30% to 95% (not concentrate)
- Altitude 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.

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.

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 – Individual 820.640 DGH – 2500 kg

+ weight of accessories

+ maximum weight of material

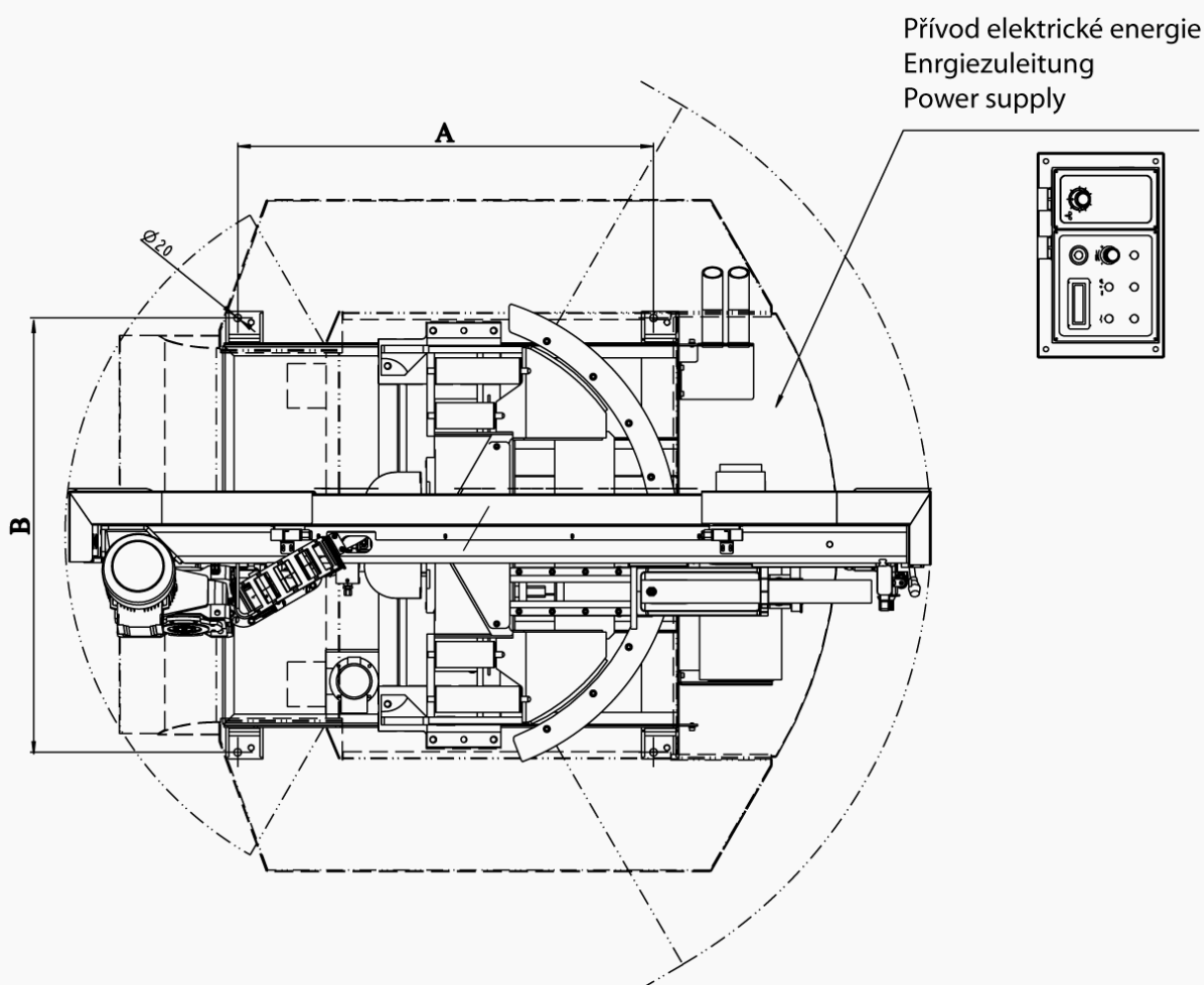
- The machine must be levelled at the horizontal position. All feet of the machine must touch with the floor after levelling
- The machine must be levelled by means of the calibrated spirit level. Spirit level is put on the vice area. Set the roller conveyors according to the spirit level.
- For machine 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. Kotevní plan / Verankerungsplan / Grounding plan

	A	B	Příkon Gesamtschlusswert Total Input [kW]	Max.jištění Vorschaltsicherung Max. Fuse [A]	Únosnost podlahy Vorschaltsicherung Carrying capacity [kg/m ²]
Individual 520.360 (D)GH	1114	1164	5,2 kW	16	1100
Individual 620.460 (D)GH	1114	1164	8,7 kW	32	1500
Individual 720.540 (D)GH	1107	1482	8,7 kW	32	1700
Individual 820.640 (D)GH	1107	1482	10,5 kW	32	2000



Kotvicí materiál / Verankerungsmaterial / Grouding material

- 4x Hmoždina / Dübel / Plug – $\varnothing 18$ mm
- Vrtáno do hloubky / In die Tiefe gebohrt / Drilled to – 140 mm
- Šrouby / Schraube / Screws – M16

- Šrouby podložit deskami o min. rozměrech P10×100-100
- Die Schrauben mit Platten mit Minimaldimensionen P10×100-100 unterlegen
- Screw 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: $\sim 3 \times 400 \text{ V}, 50 \text{ Hz}, \text{TN-C}$
- Total input / Max. fuse: 10,5 kW / 32 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.

Note:

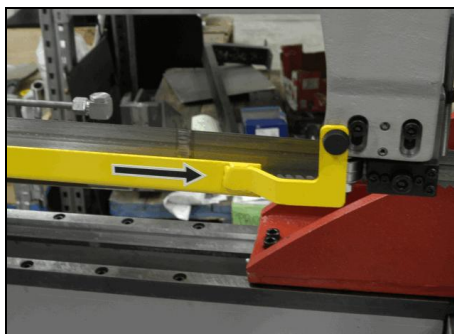
The socket with the fork can be used only at the machines with the rated current less than 16 A and total input less than 3 kW.

In case the machine is connected with a direct connection, an extra main switch must be added which can be locked in zero position.

Attention!

In this case the extra main switch becomes primary and the main switch on the machine has only secondary function.

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.

2.8. 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

7880x54x1,6 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

1. *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.

2. *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:

Z₁Z – 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:

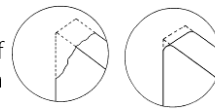
32 S – number „32“ means 32 teeth on one inch (that means constant tooth system), letter „S“ marks teeth with zero angle of the tooth.

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

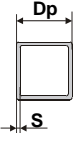
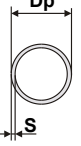
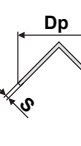
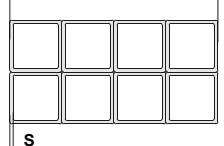
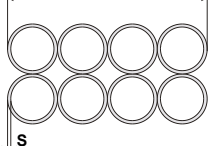

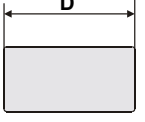

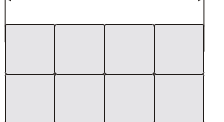
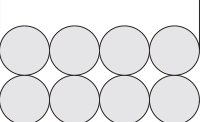
Running-in: Cut the material with the frame lowering reduced to 50% only. When vibrations occur increase or decrease the band speed.

When cutting small pieces run the band until approximately 300 cm² 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 ($D_p, S = \text{mm}$)						
						
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 2xS). In table, there are tooth systems constant and variable.						
Size of the wall S [mm]	Tooth system (Z_p, Z)					
	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_p, Z)					
	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 ($D = \text{mm}$)						
						
Constant tooth system		Variable tooth system				
length of the cut D	tooth system (Z_p, Z)	length of the cut D	tooth system (Z_p, Z)			
to 3 mm	32	to 30 mm	10-14			
to 6 mm	24	20-50 mm	8-12			
to 10 mm	18	25-60 mm	6-10			
to 15 mm	14	35-80 mm	5-8			
15-30 mm	10	50-100 mm	4-6			
30-50 mm	8	70-120 mm	4-5			
50-80 mm	6	80-150 mm	3-4			
80-120 mm	4	120-350 mm	2-3			
120-200 mm	3	250-600 mm	1,4-2			
200-400 mm	2	500-3000 mm	0,75-1,25			
300-800 mm	1,25					
700-3000 mm	0,75					

Despite the above recommendations, please follow your supplier's advice!

3. **Machine control**

3.1. Starting the band saw

- » 1. Switch on the **Main switch** of the band saw. The main switch is situated on the side of the switchboard.

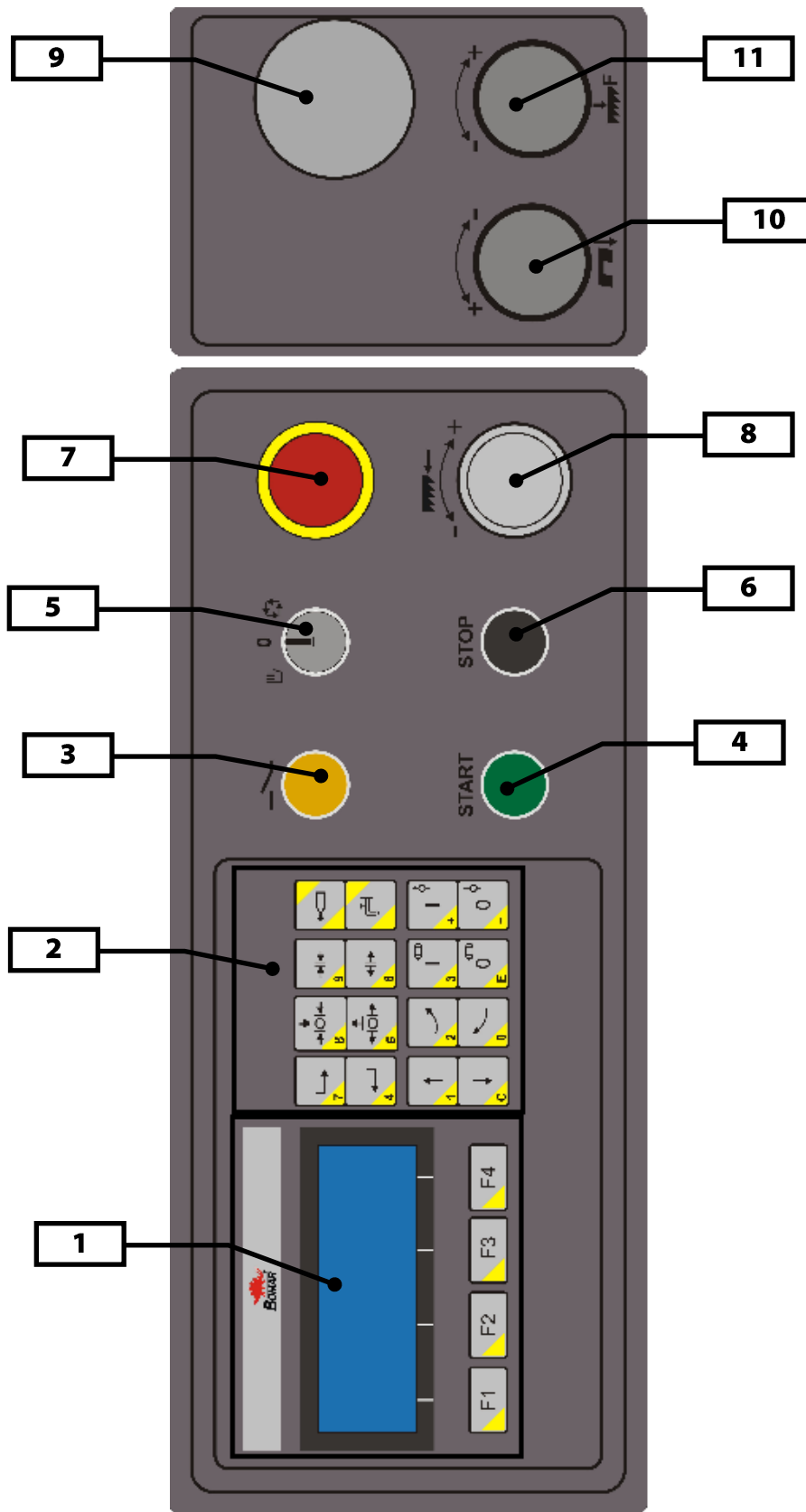


2. Switch on the **Safety circuit** of the band saw **Safety circuit** (button **2**) on control panel of the band saw.





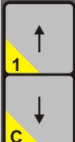








3.2. Control panel

Ovládání stroje
Bedienung der Maschine
Machine control



3.2.1. Control panel description

<p>1</p>	<p>LCD Display Onto display are described all running processes, control with functional buttons F1-F4</p>
<p>2</p>	<p>Control buttons / numeric keypad</p>
	<p>GH version – no function DGH version – vice movement right/left</p>
	<p>Clamp / release vice clamp</p>
	<p>Clamp / release vice In manual cycle pressing and holding the button allows you to release pressure or clamping vise.</p>
	<p>Cooling system selection Cooling with Microniser (optional accessories) Cooling with water cooling pump runs even when the saw band drive is switched off.</p>
	<p>Movement of the arm Pressing and holding a button or trigger arm lifts the lifting hydraulic cylinder. When lifting the arm using the arm can be lifted in its entirety lifting cylinder. On the down can be activated by simultaneously pressing the rapid move functional button F1.</p>
	<p>No function</p>
	<p>Turn on / off the band drive In manual mode the button is displayed "I" switched band drive, the button with the symbol "0" switch off</p>
	<p>Turn on / off the hydraulic circuit Button with the symbol "I" turns the hydraulic circuit, the button with the symbol "0" disables the hydraulic circuit. The hydraulic circuit is automatically switched on when needed.</p>
<p>3</p>	<p>Safety circuit Switch on the safety circuit by pressing button.</p>
<p>4</p>	<p>Button START - Switch on the semi-automatic cycle After pressing the button will start the cutting cycle</p>

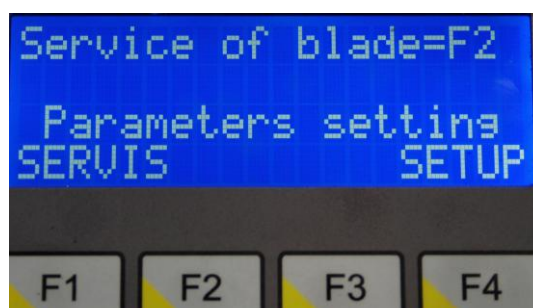
5	Selecting a mode machines
	 for servicing and settings  manual mode  semi-automatic mode
	<p>Note: The functions performed in both manual and semi-automatic mode are the same, but only in semi-automatic cycle it is possible to use the START / STOP (ie start / off cycle)</p>
6	Button STOP - Switch off on the semi-automatic cycle After pressing the button will turn off the interruption or of cutting cycle
7	TOTAL - STOP button In emergency causes the machine must be immediately switched off.
8	Frequency convertor Turn to change the speed of the saw band in the range of 20-120 m / min
9	Cutting pressure manometer Pointer to cut pressure adjustment
10	Cutting pressure regulation Adjust the arm pressure to the cut.
	<p>Notice! If you keep closing the throttle valve too tightly, the valve seat may wear off which causes its leakage. Therefore, close the valve always gently.</p>
11	Governing valve for adjust the speed of the arm sinking to the cut Adjust the speed of the arm sinking to the cut by governing valve.
	<p>Notice! If you keep closing the throttle valve too tightly, the valve seat may wear off which causes its leakage. Therefore, close the valve always gently.</p>

3.3. Machine setup

Machine setup mode is activated by switch on control panel. Switch must be in "0" position.

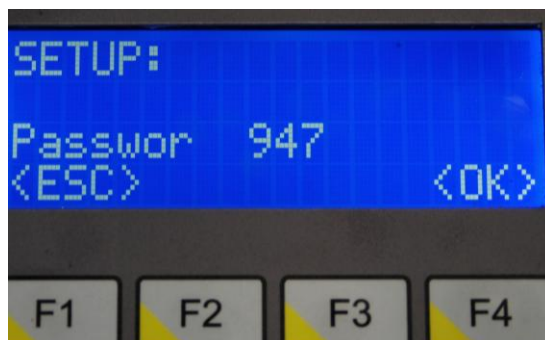


After switching into position "0" is displayed on LCD this screen.

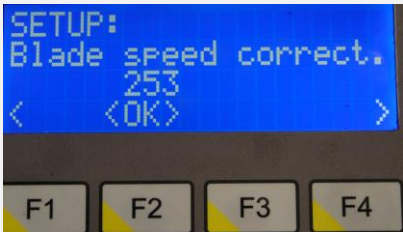

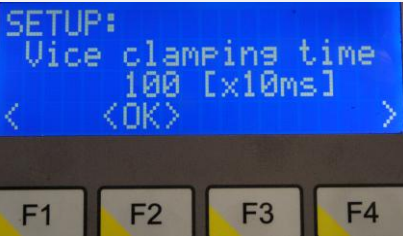



3.3.1. SERVIS

After pressing the **F1** functional key can be set servis parameters that are password protected (947).

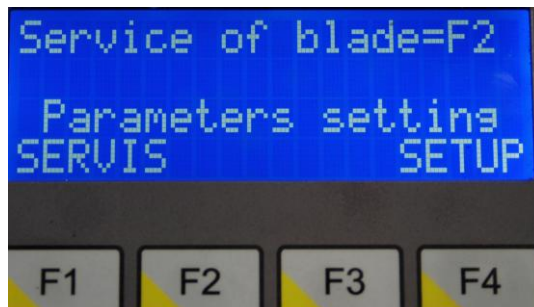


Control and movement in SERVIS can be set using the function keys **F1 - F4**.

On display	Description
	<p>Blade speed correction</p> <ul style="list-style-type: none"> Constant for calculation of blade speed display values from analog input. F1 go back, F4 next menu screen, F2 enter value
	<p>Sensor</p> <ul style="list-style-type: none"> Display variable sensor arm (optional accessories) Use to check the functionality of the sensor on the arm Read only F1 go back, F4 next menu screen
	<p>Vice clamping time</p> <ul style="list-style-type: none"> Watch vice clamping time in ms. F1 go back, F4 next menu screen, F2 enter value
	<p>The type of machine.</p> <ul style="list-style-type: none"> Display the machine type (the value set by the manufacturer) Read only

3.3.2. SETUP

After pressing the **F4** functional key can be set setup parameters that are not password protected.



Control and movement in SETUP can be set using the function keys **F1 - F4**.

On display	Description
	<p>Finish of cycle</p> <ul style="list-style-type: none"> At the top – arm after cut starts above the material and cutting cycle ends At the bottom – arm after cut remains in the lower position, the above material does not exit F1 go back, F4 next menu screen, F2 enter value
	<p>Turn off motor after cut</p> <ul style="list-style-type: none"> Up position – saw arm move up after cut and then turn off drive of saw blade. Down position – drive of saw band turn off immediately after cut. F1 go back, F4 next menu screen
	<p>Upper vice</p> <ul style="list-style-type: none"> Allows to able / disable the upper vice in the cutting process F1 go back, F4 next menu screen, F2 enter value
	<p>Vice opening time</p> <ul style="list-style-type: none"> Watch vice opening time in ms. F1 go back, F4 next menu screen, F2 enter value



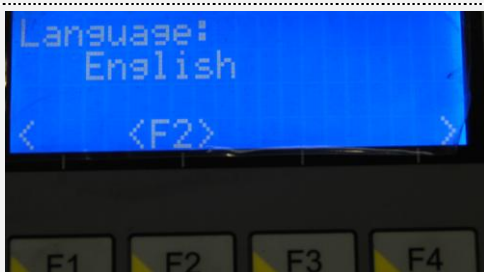
Upper vice opening time

- Watch upper vice opening time in ms.
- **F1** go back, **F4** next menu screen, **F2** enter value



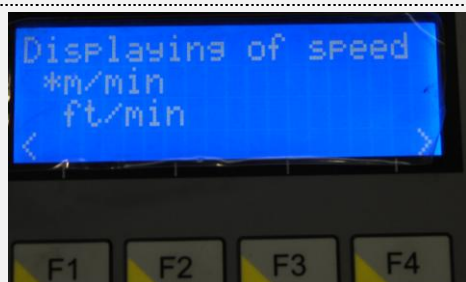
Switch off hydraulic

- Setting the hydraulic unit off when idle machines
- **F1** go back, **F4** next menu screen, **F2** enter value



Language

- Choose menu language
- **F1** go back, **F4** next menu screen, **F2** enter value



Displaying of speed





- Displaying of band speed according to the selected units (m / min or ft / min)
- **F1** go back, **F4** next menu screen, **F2** enter value

3.4. Machine error messages

Error	Information
<div style="background-color: #0056b3; color: white; padding: 10px; text-align: center; font-weight: bold;">SAFETY BUTTON is OFF</div> <div style="display: flex; justify-content: space-around; margin-top: 5px;"> <div style="border: 1px solid black; padding: 2px 10px; background-color: #ccc;">F1</div> <div style="border: 1px solid black; padding: 2px 10px; background-color: #ccc;">F2</div> <div style="border: 1px solid black; padding: 2px 10px; background-color: #ccc;">F3</div> <div style="border: 1px solid black; padding: 2px 10px; background-color: #ccc;">F4</div> </div>	<p>Safety button (pos. 2 on kontrol panel) is not ON. Press F4 to confirm error.</p>
<div style="background-color: #0056b3; color: white; padding: 10px; text-align: center; font-weight: bold;">TOTALSTOP pressed</div> <div style="display: flex; justify-content: space-around; margin-top: 5px;"> <div style="border: 1px solid black; padding: 2px 10px; background-color: #ccc;">F1</div> <div style="border: 1px solid black; padding: 2px 10px; background-color: #ccc;">F2</div> <div style="border: 1px solid black; padding: 2px 10px; background-color: #ccc;">F3</div> <div style="border: 1px solid black; padding: 2px 10px; background-color: #ccc;">F4</div> </div>	<p>Total Stop button is active. Turn button TOTAL STOP according to the arrows. Press F4 to confirm error.</p>
<div style="background-color: #0056b3; color: white; padding: 10px; text-align: center; font-weight: bold;">Blade tension faulty</div> <div style="display: flex; justify-content: space-around; margin-top: 5px;"> <div style="border: 1px solid black; padding: 2px 10px; background-color: #ccc;">F1</div> <div style="border: 1px solid black; padding: 2px 10px; background-color: #ccc;">F2</div> <div style="border: 1px solid black; padding: 2px 10px; background-color: #ccc;">F3</div> <div style="border: 1px solid black; padding: 2px 10px; background-color: #ccc;">F4</div> </div>	<p>Saw blade in properly tensioned. Press F4 to confirm error.</p>
<div style="background-color: #0056b3; color: white; padding: 10px; text-align: center; font-weight: bold;">Faulty motor protec.</div> <div style="display: flex; justify-content: space-around; margin-top: 5px;"> <div style="border: 1px solid black; padding: 2px 10px; background-color: #ccc;">F1</div> <div style="border: 1px solid black; padding: 2px 10px; background-color: #ccc;">F2</div> <div style="border: 1px solid black; padding: 2px 10px; background-color: #ccc;">F3</div> <div style="border: 1px solid black; padding: 2px 10px; background-color: #ccc;">F4</div> </div>	<p>Engine temperature protection is active. Do not overload saw! Press F4 to confirm error.</p>

3.5. Machine control


3.5.1. Semi-automatic cycle

1. Lift the saw arm to the top position by pressing button 
2. Open the vice by pressing button 
3. Clamp material to the vice by pressing button 
4. Lower the frame about 10 mm above the material by button 

Attention!

Do not move the saw frame to the material, when the saw band driving is not running! Do not move the saw frame to the material with accelerated motion! The saw band can be damaged!

5. Select the max. height of the arm with limit switch.

You can clear the register of the performed cycles by button  and stop on 5 seconds.

6. Press button **START** (position **4**) of semi-automatic cycle.


Set the saw band speed according to the kind of the cutting material.

Set the speed of the arm sinking by adjust **governing valve** (position **10**).

Attention!

Press button „5“ (STOP of semi-automatic cycle). In risk of injury or damage of the band saw, press the emergency button TOTAL STOP „10“!

7. The band saw clamps the material to the vice and it makes the cut.

8. Open the vice. If the vice is not opened, you can open it by button  Remove the blank (cut off a piece of material).
9. You can repeat whole process.

3.5.2. Cycle breaking

- »
- **STOP button**
Semi-automatic cycle is interrupted by pressing button **STOP** (position **6**) of the semi-automatic cycle.
The arm is lifted to the top position and the saw band drive is stopped..
By pressing button **START** (position **4**) of the semi-automatic cycle, you can start the cycle.
 - **TOTAL STOP button**
In case of the risk, press button **TOTAL STOP** (position **7**).
After pressing **TOTAL STOP** button, saw band drive is immediately broken and the arm sinking is stopped.
 - **Reactivation**
 1. Turn button **TOTAL STOP** according to the arrows (on the button).
 2. Switch on the **Safety circuit** by button (position **3**).
 3. By pressing button **START** (position **4**) of the semi-automatic cycle, you can start the cycle. The arm is lifted to the top position and the saw band starts the cycle.

3.6. Band saw adjusting

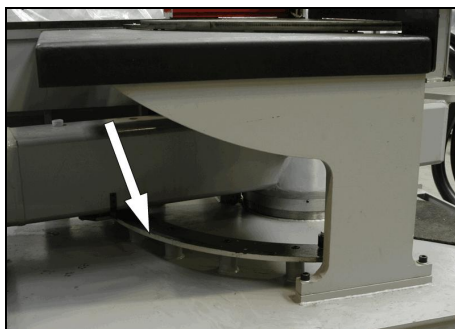
3.6.1. Angular cut setting

The machine enables angular cuts under $\pm 60^\circ$. The cut angle can be set fluently from 0° to 60° on both sides.

1. Release securing lever of the console.



2. Swivel the frame to the desired angle by pulling the saw arm. Angle is shown on scale (see arrow)



3. After cutting angle setup tighten securing lever.

Attention!

Moving parts of the vice must be moved when saw arm has zero angle of rotation and closed vice jaws.

Moving vice jaw of vice must be in endmost position otherwise there is a danger of collision saw arm with vice.

Electronic admeasurement (252.178/252.177) – optional accessories:



Desired cutting angle is shown on LCD. How to use electronic admeasurement is described in special instruction manual.

3.6.2. Adjusting band guides

If you want to achieve a smooth and precise cut, it is helpful to position the guide cube as close as possible to the material.

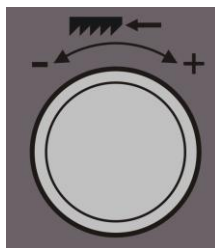


1. Press button **STOP** (position **6**) to switch off the hydraulics and stop on 2 second.
2. Release the stopping lever of the listel (see picture).
3. Move the left part of the guide apparatus so that the left guide cube edge is as close to the cut material as possible.
4. Tighten the lever of the gib and check the guide cube setting for possible collision with binding table or vice jaw.

Note:

Position of the guiding cubes is secure by the limit switch. The limit switch is activated after switch lever hits the listel.

3.6.3. Cutting speed adjusting



Speed of the saw band is possible change from **20 to 120 m/min**. You can effect to adjusting speed of the saw band following.

Use the frequency convertor by button **8** on control panel to adjust requested speed of the saw band. You can see the speed on display. Band speed is displayed on the Display **1** on control panel during one semi-automatic cycle.

3.6.4. Adjustment of pressure to the cut

The band saw is equipped with cutting pressure regulation on the both guiding cubes.

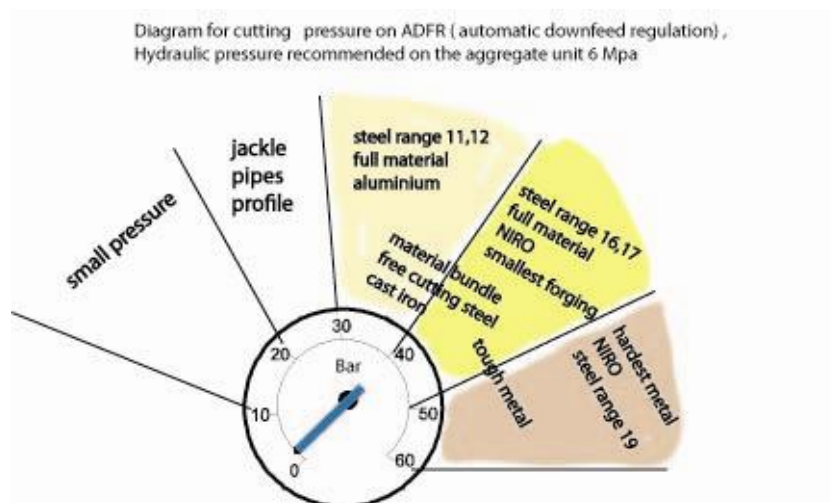
Pressure adjusting is performed with governing valve **11** on control panel. The pressure to the cut is displayed on the cutting pressure manometer **9** on control panel.



Notice:

If you keep closing the throttle valve too tightly, the valve seat may wear off which causes its leakage. Therefore, close the valve always gently.

- **Lower** pressure to the cut – turn the wheel **against the clock's** direction.
- **Higher** pressure to the cut – turn the wheel **to the clock's** direction.



3.6.5. Speed adjustment of the arm lowering

Set the speed of the arm lowering to the cut by control valve for Cutting pressure regulation **10** on control panel.



- Set the **lower** speed of the arm lowering to the cut by turning the switch **clockwise**.
- Set the **higher** speed of the arm lowering to the cut by turning the switch **anti-clockwise**.

Notice:

If you keep closing the throttle valve too tightly, the valve seat may wear off which causes its leakage. Therefore, close the valve always gently.

3.6.6. Saw frame lift stop setting






Notice:

Arm Position is monitored by a limit switch. If the limit switch lever hits the bar and goes, then you can not run a semi-automatic cycle.

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. Height adjustment is sensed by a limit switch

2. Press button  and lift the saw arm to the upper position.

3. Insert a material into the vice. Carefully lower the saw arm button  to the material (or  + F1 for **rapid move**)

4. Stop the saw arm 10mm above the material.
5. The lift stop setting is sensed by the limit switch

Set the stop just above arm height sensor - slide stop turning the locking knob close to the limit switch

3.6.7. Saw arm lower position stop adjustment

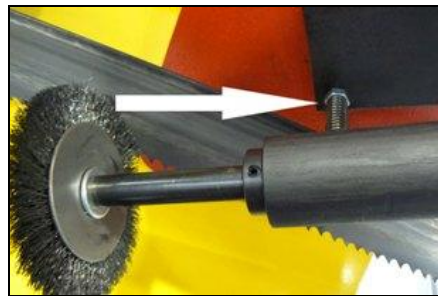
The lower stop limits the lowest position of the saw arm. This stop point has to be checked at least once a month. If the lower stop point is wrongly adjusted, the cutting table can be deeply cut or the material will not be cut completely.



Adjusting of the saw arm lower position stop is adjusted by adjustable excenter on saw arm pile.

3.6.8. Brush adjustment

The brush for chip removal from the saw band influences cutting durability, saw band lifetime and wheels lifetime, hard metal guides and finally the cut accuracy. Brush adjustment must be checked every shift.



1. Release the fixative screw of the brush. It is possible to move with the brush.
2. Set the brush to the saw band according to the picture.

Attention!

*The brush **must not** touch the bottom of the saw teeth!*

3. Tighten the fixative screw.
4. In case, that the brush is not turned right (driving wheel slips on the driving wheels of the saw band), push by means of the screw (see arrow) driving wheel of the brush to the driving wheel of the saw band.

Attention!

*The screw **must not** be tightened with heavy force, because driving wheel of the brush can be damaged or the lifetime of the bearings of the driving wheel of the band can be lowered!*

3.7. 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!

3.7.1. Handling agent selection

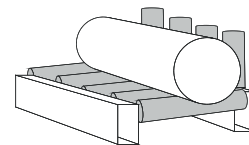
- Use the strong handling agents to lift and transfer the material!
- Handle with the material only with the lift truck or use the suspension strands and the crane!
- Do not use the lift truck or crane in case that you do not have the license to handle with it!

3.7.2. 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.

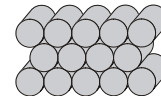
Be especially careful with round materials that it always stays on two vertical rollers and that it cannot fall off the conveyor!



3.7.3. Bundle material cutting

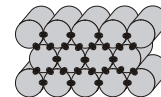
If you want to cut the material in the bundle, there are suggestions for the positioning of bundles

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.

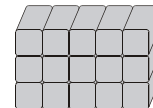


Always weld the material at the rear end of the bundle to secure it from moving.

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.

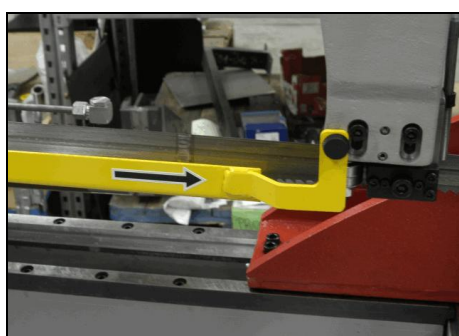
4. Machine service

4.1. Saw band dismantling

1. Lift the saw arm to maximum position.
2. **STOP hydraulic** with button.



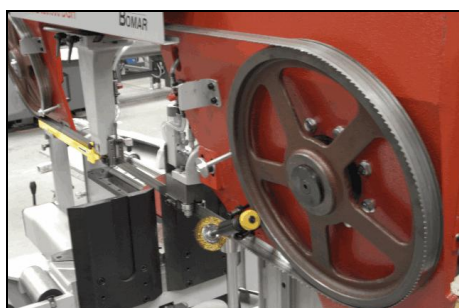
3. Open all three covers on the saw arm.



4. Dismantle left protective cover of the band (arrow). Cover is fastened by screws..
5. Release the screw holding the brush. Turn the brush to the side



6. Turn by stretching star to the left side, release saw band stretching and pull down the saw band from the wheels.



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

4.2. Saw band installation

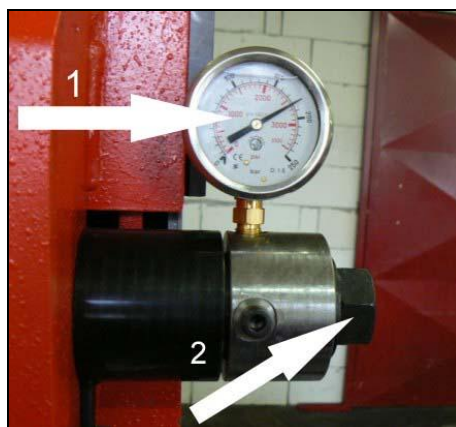
1. Prior to installation, clean all track wheels, guide cubes and inner side of the arm thoroughly of all traces of chips and dirt. *Keep in mind the teeth direction when installing the saw band.*
2. Insert new saw band in the guide cubes. Make sure the saw band runs between both guide rollers and it is pushed all the way to the top.
3. 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.
4. Stretch the saw band by means of the screw, that the band did not falls from wheels.
5. Install yellow protective cover of the band.
6. Move the brush to the saw band. Tighten the securing screw.
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 (arrow) 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:
<ul style="list-style-type: none"> • use of contaminated water • impurity • outside oil contamination (hydraulics, gears) • high operating temperatures • lack of air circulation • wrong concentration 	<ul style="list-style-type: none"> • corrosion protection is diminished • lubrication decreases • microbial attack is more likely 	<ul style="list-style-type: none"> • 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
Individual 820.640 DGH	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 SP 220	
	Alpha MW 100	Alpha MW 220	
Elf	Reductelf SP 100	Reductelf SP 220	Reductelf SP 320
		Reductelf Synthese 220	
Esso	Spartan EP 100	Spartan EP 220	Spartan EP 320
Mobil	Mobilgear 627	Mobilgear SHC 220	Mobilgear 632
		Mobilgear 630	
ÖMV		PG 220	
Paramo	PP 7	Paramo CLP 220	Paramo CLP 320
Shell	Shell Omala 100	Shell Omala 220	Shell Omala 320
		Shell Tivela S 220	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.

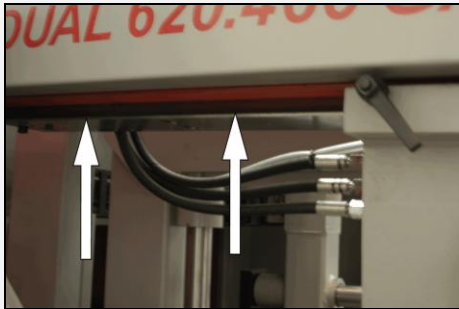
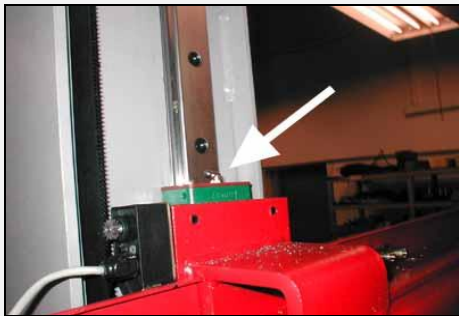
Comparative table of the lubricant greases:

Manufacturer	Type of the lubricant grease
BP	Energrease LS - EP
DEA	Paragon EP1
Esso	FETT EGL 3144
	Beacon EP 1
	Beacon EP 2
FINA	FINA LICAL M12
Klüber	Microlube GBO
	Staburags NBU8EP
	Isoflex Spezial

Manufacturer	Type of the lubricant grease
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
	<p>The guiding cubes leading – grease with oil from both sides once a week.</p>
	<p>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.</p>

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

Manufacturer	Type	Manufacturer	Type
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 oil level check



Pull up the gauge and check the state of the oil. The oil level must be situated between water-glas.

Fill the hydraulic oil, if it is necessary. Use always the filter (10 μm or better) when you fill the oil. You avoid impurities penetration to the hydraulic system and troubles in hydraulic system.

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.

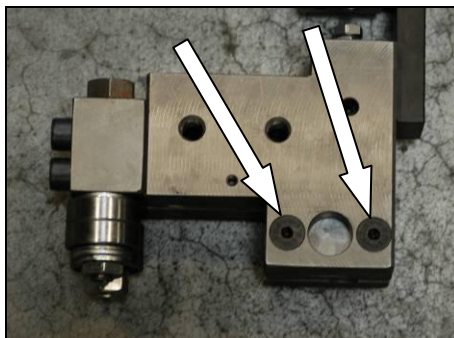
4.7. Worn pieces replacement

4.7.1. Pushing bearing replacement

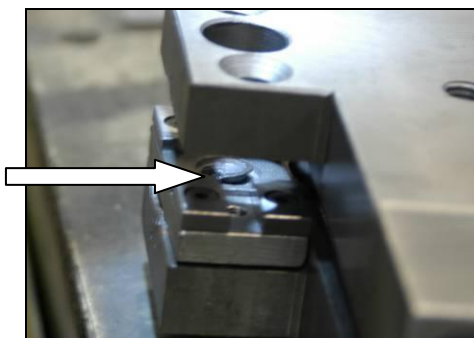
If it is impossible to adjust the bundle gripping assembly and the pushing bearing is worn, it needs to be replaced



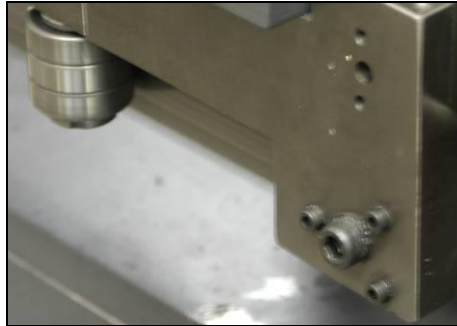
1. Dismantle the saw band.
2. Disconnect the hose from the cooling agent eventually unmount microniser.
3. Unmount guiding cube from holder on saw.



4. Loosen the 2 clamp screws solid carbide guides and remove them..
5. Remove fixed hardmetal.



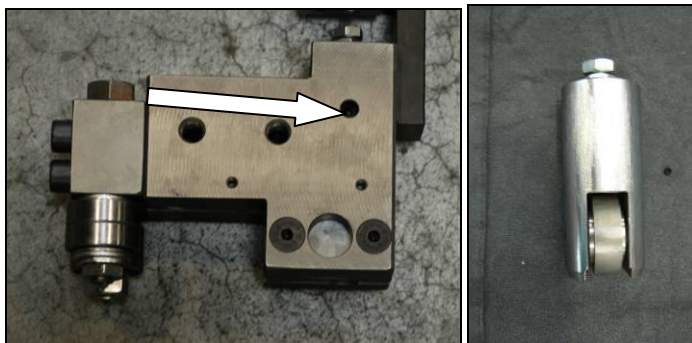
6. Remove retaining ring. Then unmount adjusting screw.



7. Remove other three screws.



8. Carefully remove the hardmetal. Remove disc springs.



9. Loosen the mounting worm (allen wrench no.3). Remove the pivot with bearing from the guiding cube.



10. Insert the pivot to the vice.

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

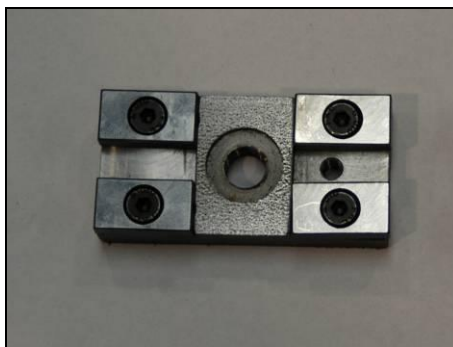
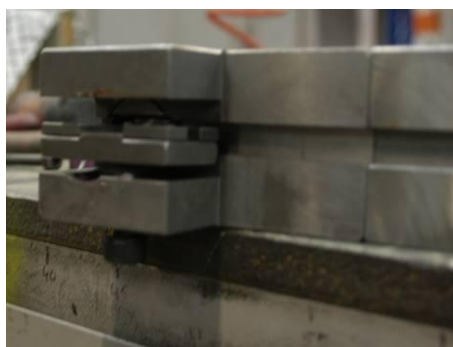
11. Remove the bearing pivot from the bearing holder by means of the swager.



12. Remove the worn bearing and other damaged parts.
13. Fasten the holder to the vice.
14. Insert the bearing and washers and return the pivot to its original place.
15. Place the assembled piston guide cube. Piston must move freely in a guiding cube.
16. Worm screw defines the operation of the piston (piston has a slot in which is the worm). Tighten the worm, but with a minimum clearance to the piston could move.

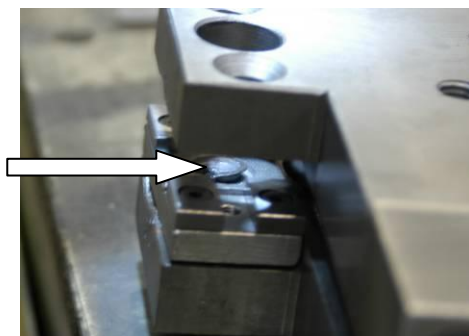


17. Insert the disc springs. The number of disc springs must match the number of dismantled springs. Disc springs are folded against each other 1 to 1. Odd plate spring is near the hard metal carbide.

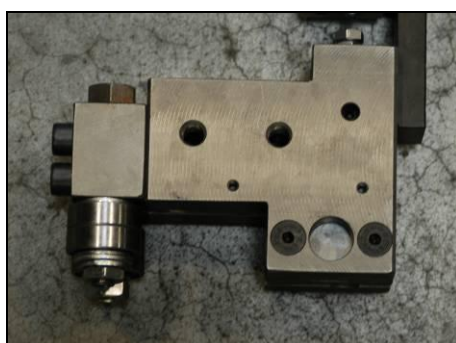


18. Insert the new hard metal guide. **Attention, Do not lose disc springs.** Ensure proper position of carbide guides – holes for 3 stop screws must be in the same position as the holes in a guiding cube.

19. Insert and tighten central screw.



20. Insert the retaining ring on central screw.
21. Insert 3 stop screw around central screw.



22. Insert fixed hardmetal guiding and mount hard metal with two screws.

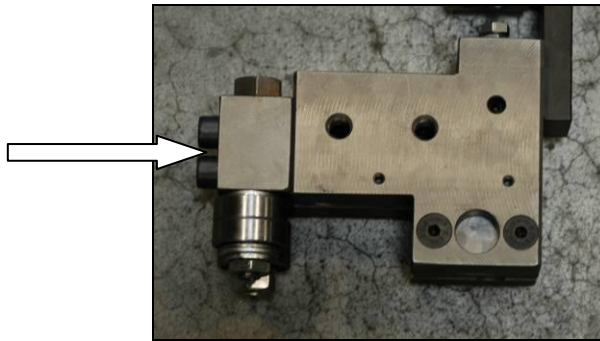


23. Using a short piece of the blade used on the machine, adjust the width of the gap between the guides. Loosen the central screw. Set the gap by central adjusting screw. Belt guides must walk freely without large and will also not scrub.

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 2 screws. Dismantle the guiding cube of the saw band.

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



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

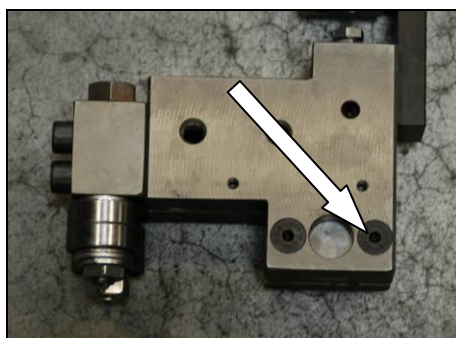
10. Tighten nuts on both eccentrics.
11. Remove the testing piece of saw band from the cube lead. Install the guiding cube on the machine.

4.7.3. Hard metal guides replacement

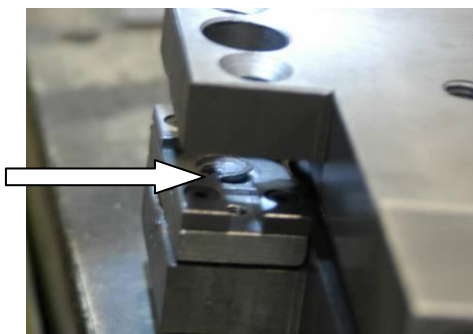
If the hard metal guides cannot be adjusted, they have to be replaced

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

1. Dismantle the saw band.
2. Disconnect the hose from the cooling agent eventually unmount microniser.
3. Unmount guiding cube from holder on saw.



4. Loosen the 2 clamp screws solid carbide guides and remove them..
5. Remove fixed hardmetal.



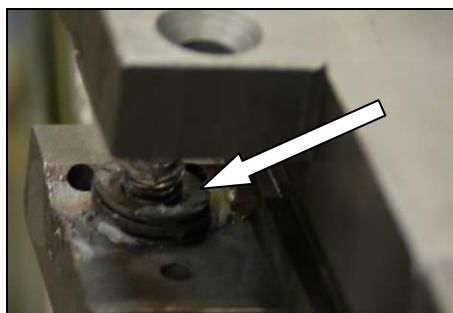
6. Remove retaining ring. Then unmount adjusting screw.



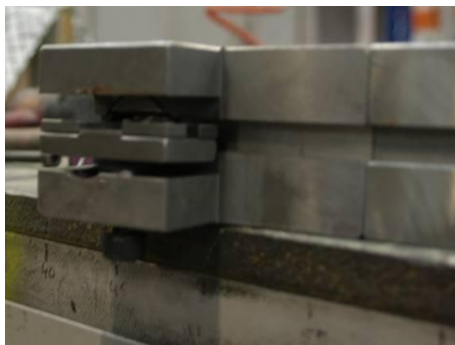
7. Remove other three screws..



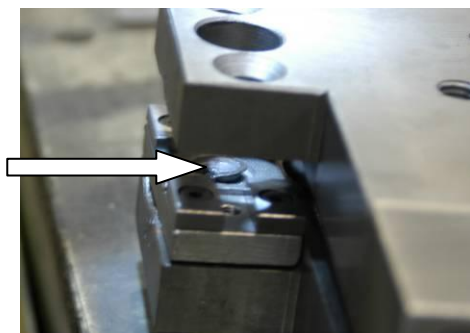
8. Carefully remove the hardmetal. **Pozor, nesmí dojít ke ztrátě taliřových pružin.**



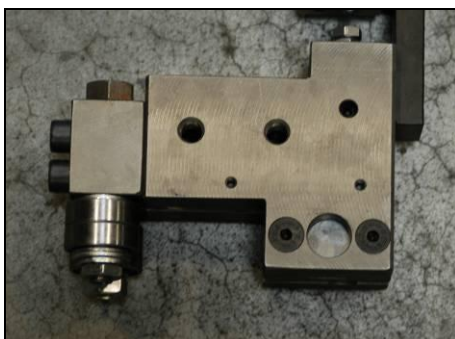
9. The number of disc springs must match the number of dismantled springs. Disc springs are folded against each other 1 to 1 Odd plate spring is near the hardmetal carbide.



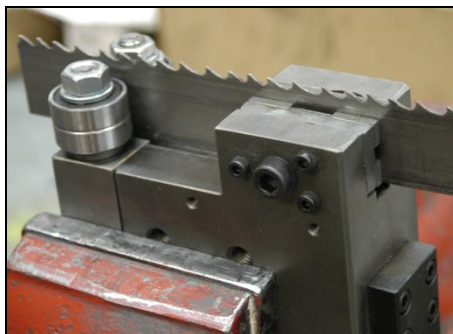
10. Insert the new hard metal guide. **Attention, Do not lose disc springs.** Ensure proper position of carbide guides – holes for 3 stop screws must be in the same position as the holes in a guiding cube.
11. Insert and tighten central screw.



12. Insert the retaining ring on central screw.
13. Insert three stop screw around central screw.



14. Insert fixed hardmetal guiding and mount hard metal with two screws.



15. Using a short piece of the blade used on the machine, adjust the width of the gap between the guides. Loosen the central screw. Set the gap by central adjusting screw. Belt guides must walk freely without large and will also not scrub.

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, and screw on the nut.
3. Set the brush to the saw band.

5. **Závady / Troubleshooting**

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.	- Backlash 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

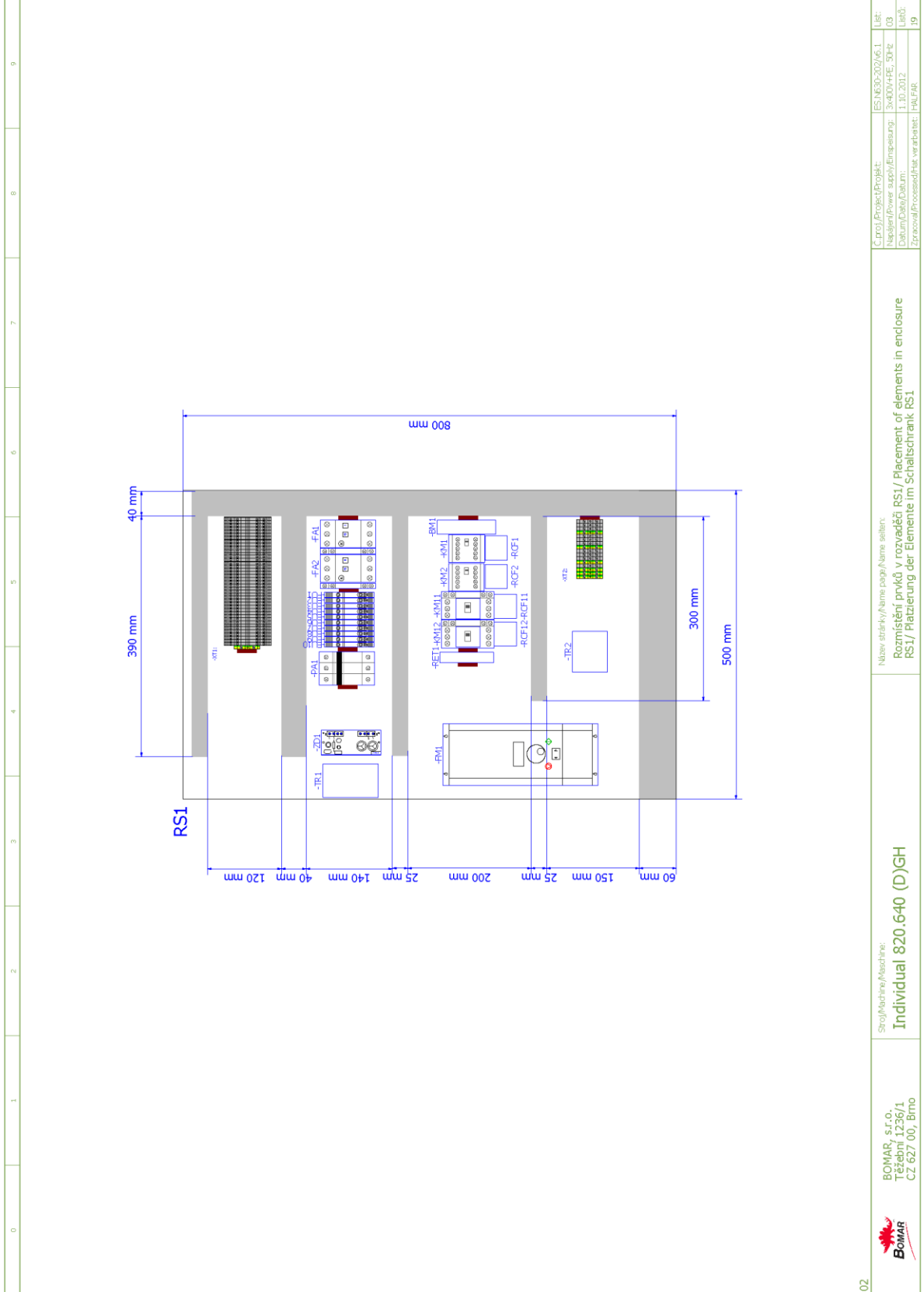
Problem	Possible causes	Repair
1. Machine is not possible start.	- In socket is not voltage	Line voltage must be checked.
	- Transfer relay is closed (thermal protector)	Each FA relay must be checked.
	- Limit switch of saw band stretching, cover of frame or cover of saw band is not started.	Check of 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.

6. **Schémata / Schemas / Schematics**

6.1. Elektrické schema /
 Elektroschema /
 Wiring diagrams – 3×400 V, TN-C,50 Hz

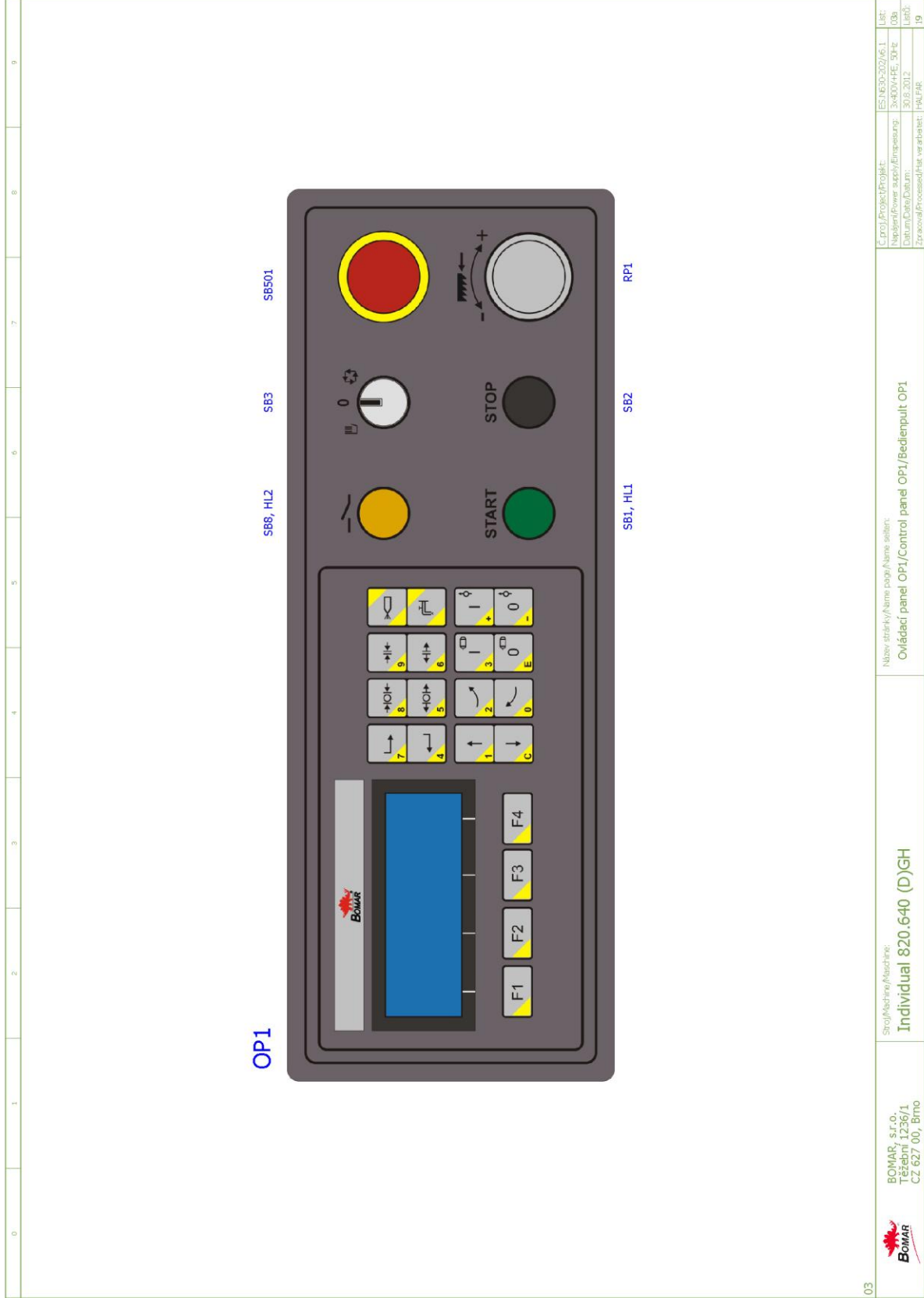
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Obsah									
Stránka/Page/Seite	Název stránky/Name page/Name Seite	Datum/Date/Datum							
00	Úvodní strana/Start page/Startseite	30.6.2012							
01	Obsah/ Table of contents/ Inhaltsverzeichnis	3.9.2012							
02	I/O řídicí systém / I/O Control station / I/O Steuerung	2.9.2012							
03	Rozmístění prvků v rozvaděči RS1/ Placement of elements in enclosure RS1/ Platzierung der Elemente im Schaltschrank RS1	1.10.2012							
03a	Ovládací panel OP1/Control panel OP1/Bedienpult OP1	30.6.2012							
04	Silová část M1-M3/Power part M1-M3/Feld partie M1-M3	1.10.2012							
04b	Silová část M4, M5/Power part M4, M5/Feld partie M4, M5	1.10.2012							
05	Deska zdroje/Power board/Netzgerat-Platte	12.9.2012							
06	Stykače motorů/Motor contactor/Motor-Schutzschalter	1.10.2012							
07	Hydraulické ventily/Hydraulic valve/Hydroventil	30.6.2012							
07.a	Hydraulické ventily/Hydraulic valve/Hydroventil	31.6.2012							
08	Vstupy/Inputs/Eingänge	30.6.2012							
09	Tlačítka ovládací panel/Button control panel/Taste Bedienpult	31.6.2012							
10	Bezpečnostní okruhy/Safety circle/Sicherheitsbereich	1.10.2012							
11	Řídicí systém/Control system/Steuersystem	13.9.2012							
12	Příslušenství/Accessories/Zubehör	1.10.2012							
13	Kusovník artiklů/ Parts list/ Artikelstückliste	1.10.2012							
13.a	Kusovník artiklů/ Parts list/ Artikelstückliste	1.10.2012							
13.b	Kusovník artiklů/ Parts list/ Artikelstückliste	1.10.2012							
00	 BOMAR, s.r.o. Těšební 1236/1 CZ 627 00, Brno							Spoj/Mech/Assembley: Individual 820.640 (D)GH	
Název stránky/Name page/Name seite: Obsah/ Table of contents/ Inhaltsverzeichnis							C.proj./Project/Projekt: ES N630-202/A6.1		List: 01
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Datum/Date/Datum: Zpracoval/Processed/Verarbeitet:							Datum/Date/Datum: 1.10.2012		List: 19
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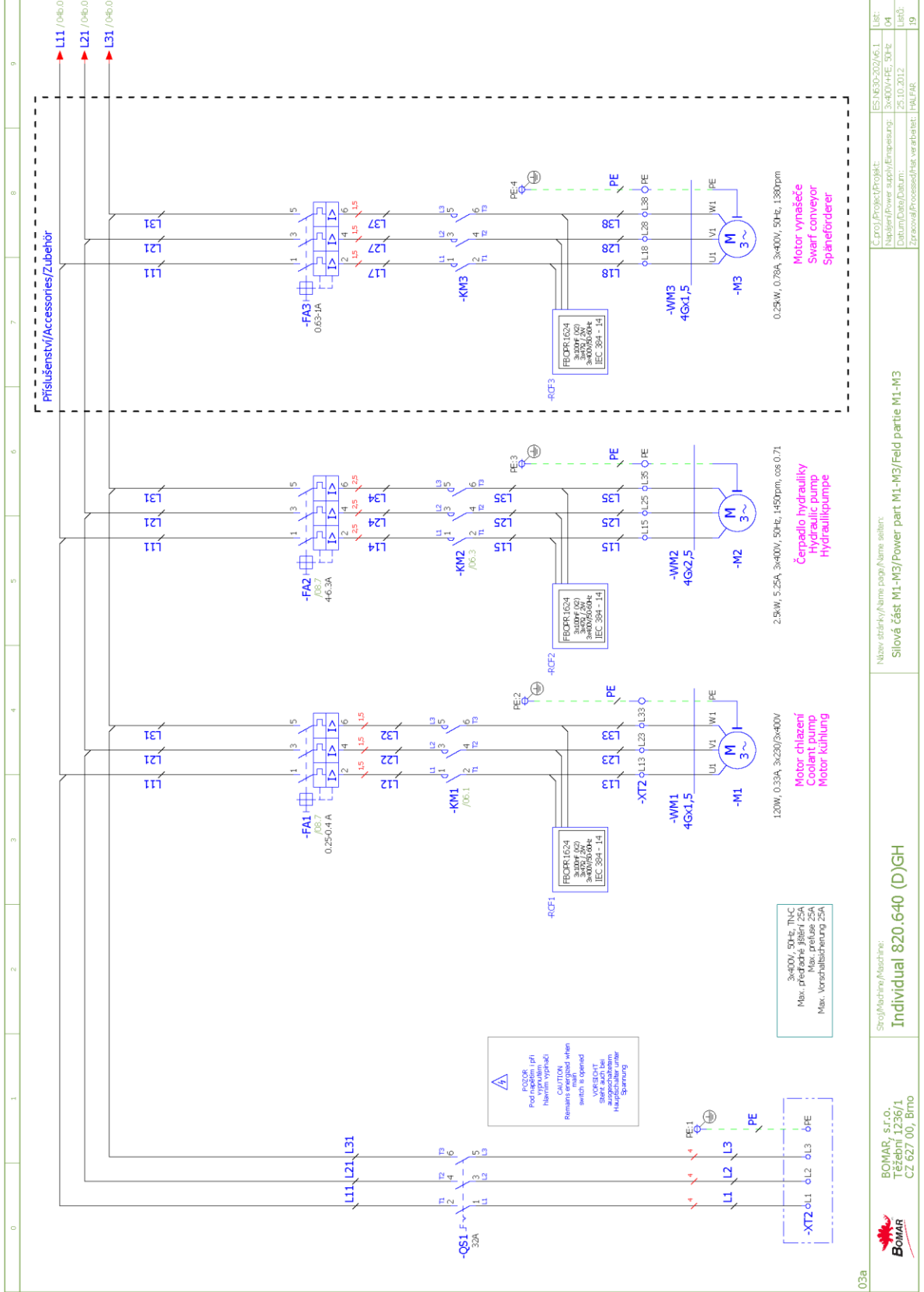
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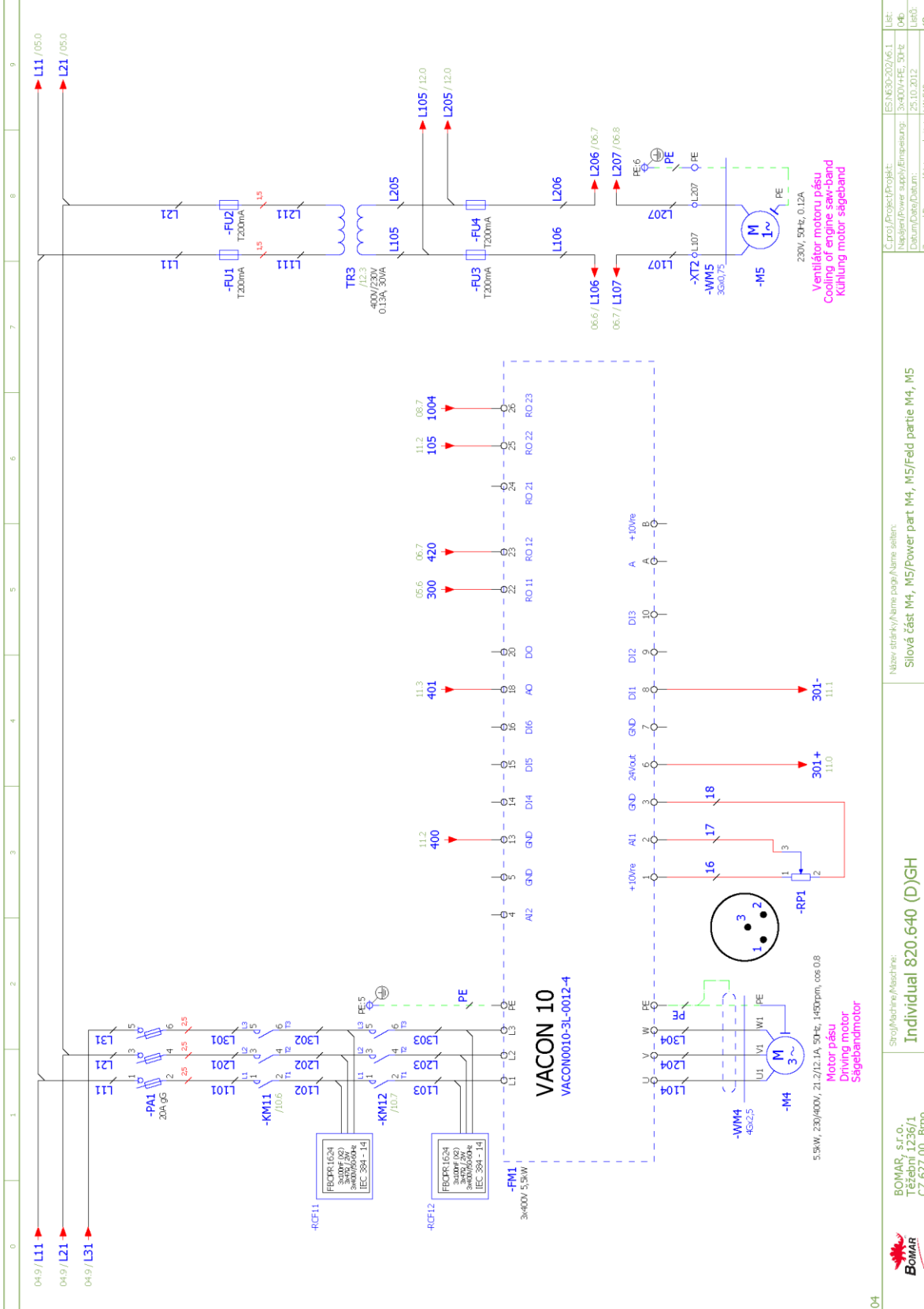
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Schemata
Schemata
Schematics



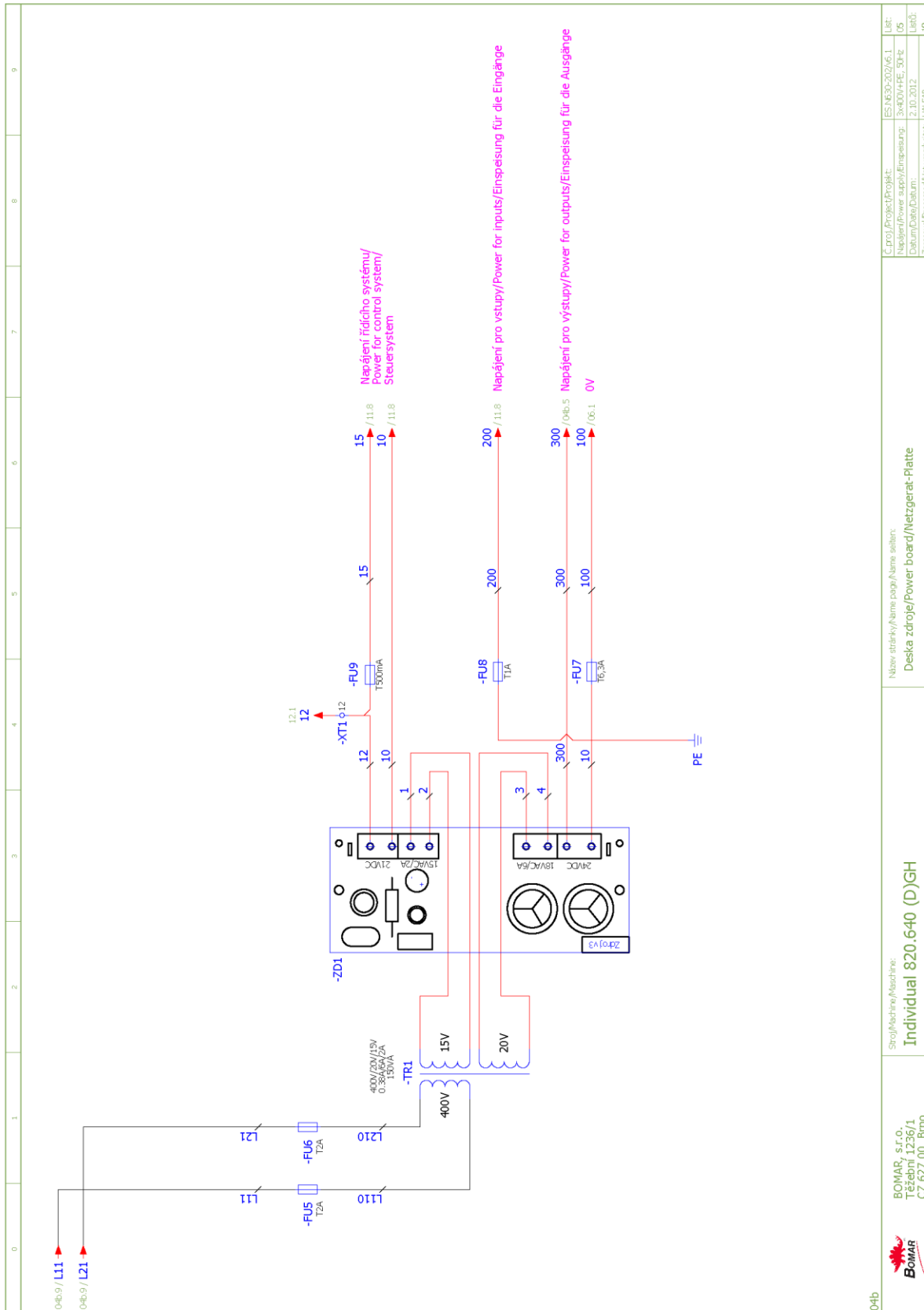


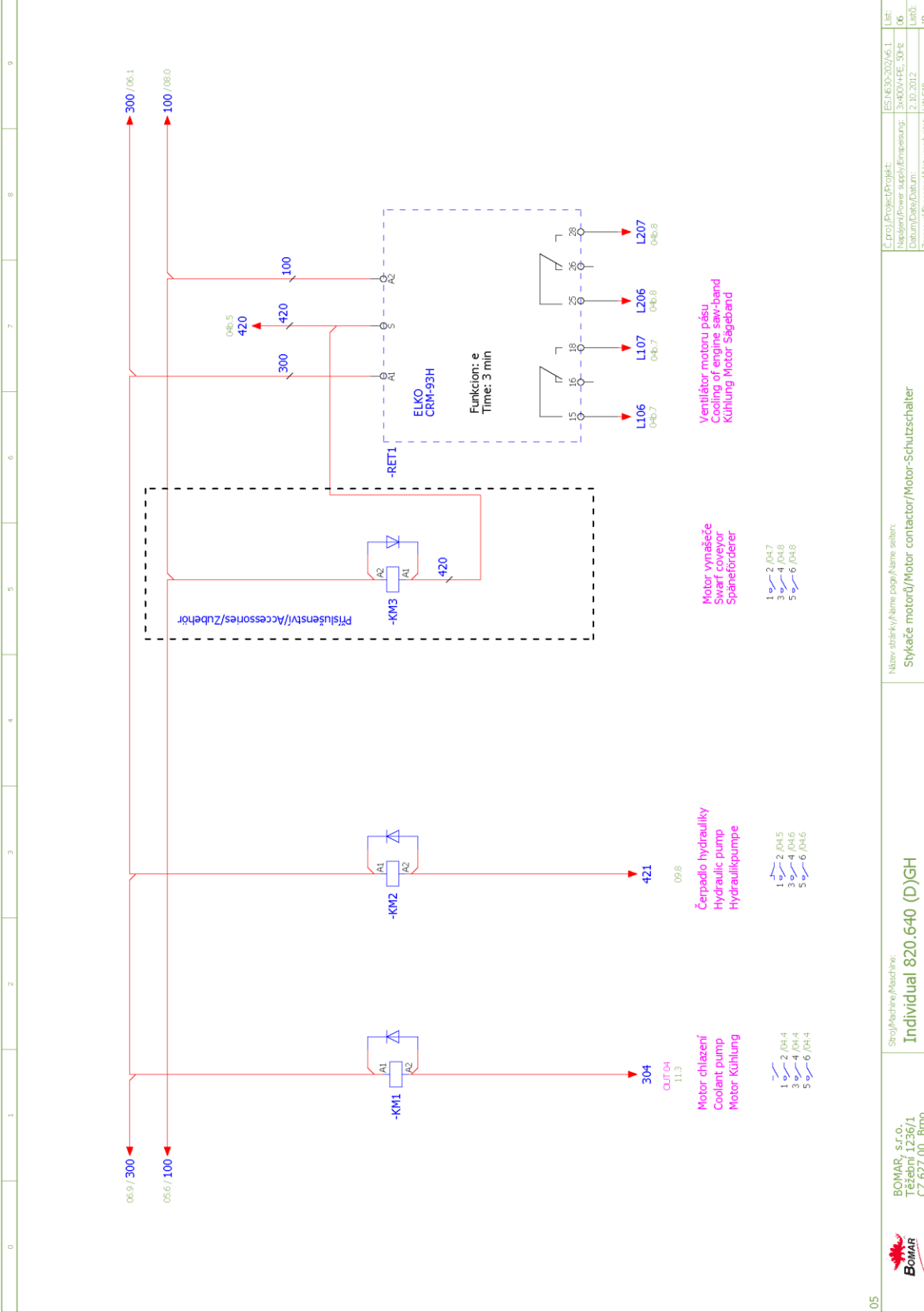
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3x400V+PE, 50Hz	04b
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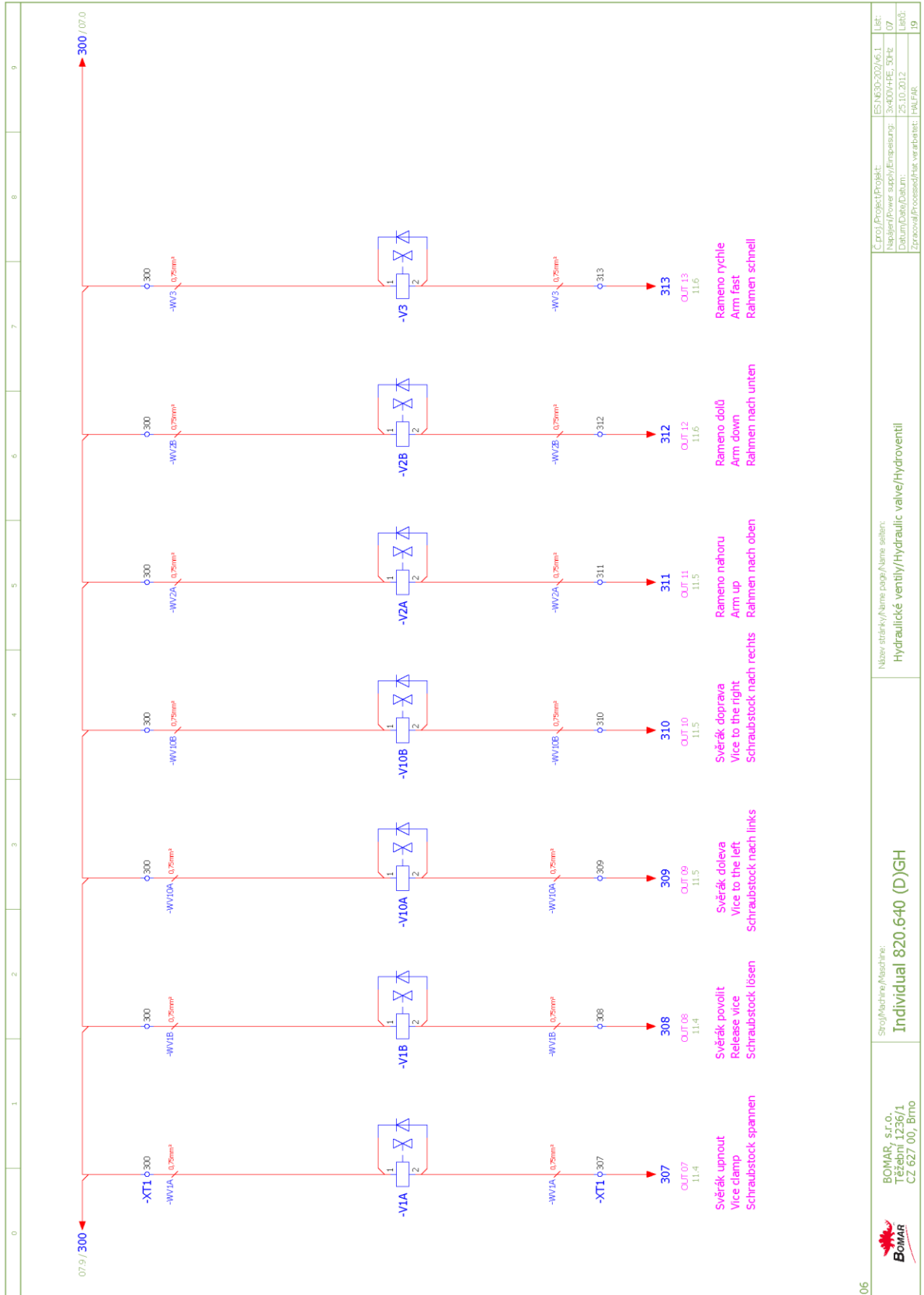
**Schemata
Schemata
Schematics**





05	 BOMAR, s.r.o. Těšební 1236/1 CZ 627 00, Brno	Stroj/Machine/Abstrich: Individual 820.640 (D)GH	Název/dřevky/Name part/Name selbst: Stýkače motorů/Motor contactor/Motor-Schutzschalter	C.proj./Project/Projekt: ES N630-202/A6.1	List:
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**Schemata
Schemata
Schematics**

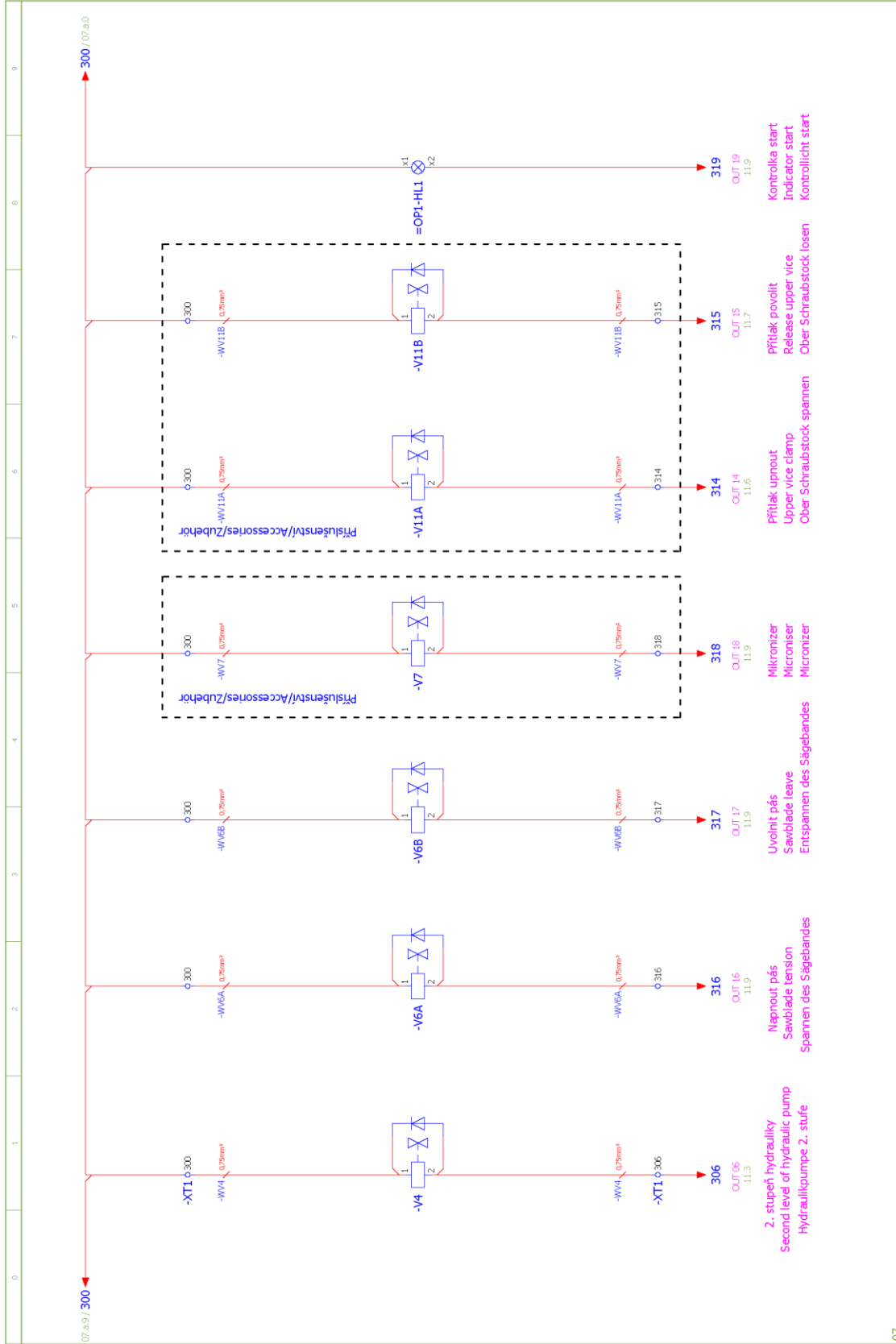


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Napájení/Power supply/Einspeisung:	3x400V+PE, 50Hz
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Zpracoval/Processed/Verarbeitet:	HALFAR
Libř:	07
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Název obrázku/název stránky/název schéma:
Hydraulické ventily/Hydraulic valve/Hydroventil

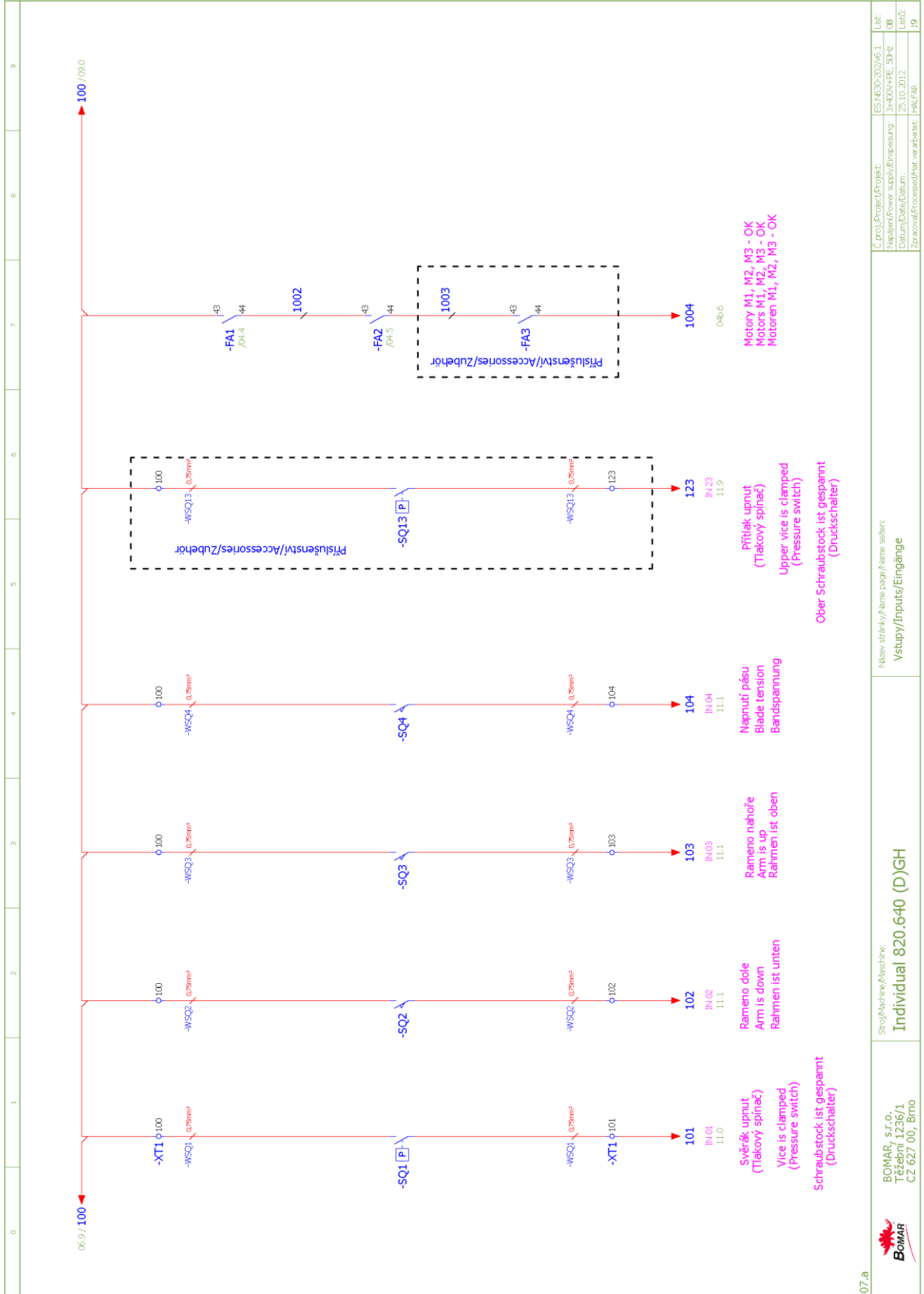
Stroj/Machine/Maschine:
Individual 820.640 (D)GH

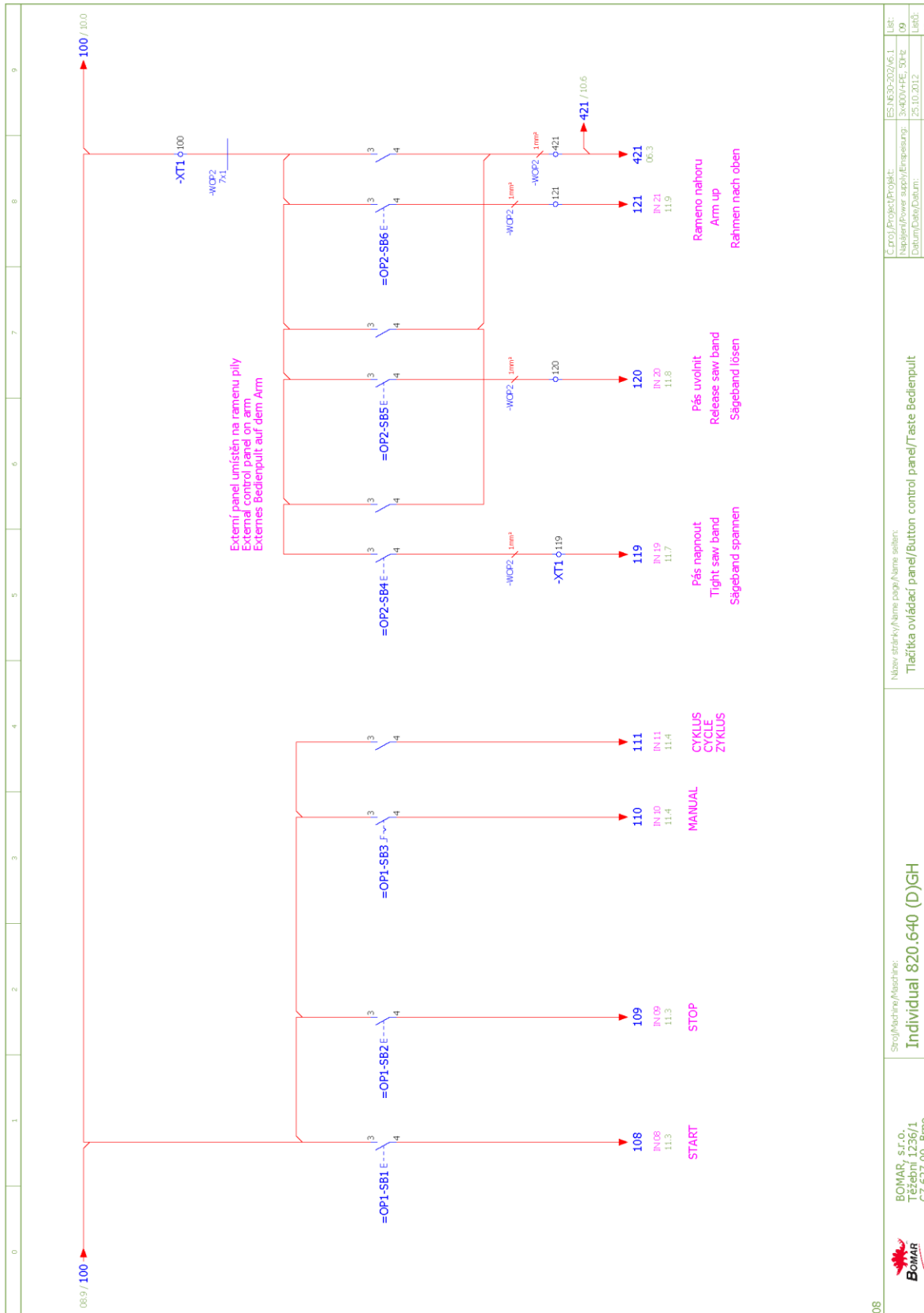
BOMAR, s.r.o.
Těšební 1236/1
CZ 627 00, Brno



07	Stroj/Mechine/Abzählhe: Individual 820.640 (D)GH	Název strojky/Name page/Name selbst: Hydraulické ventily/Hydraulic valve/Hydroventil	C:proj/Projekt/Projekt: ES N630-202/A6.1	Lib: 07.a
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Schemata Schematics

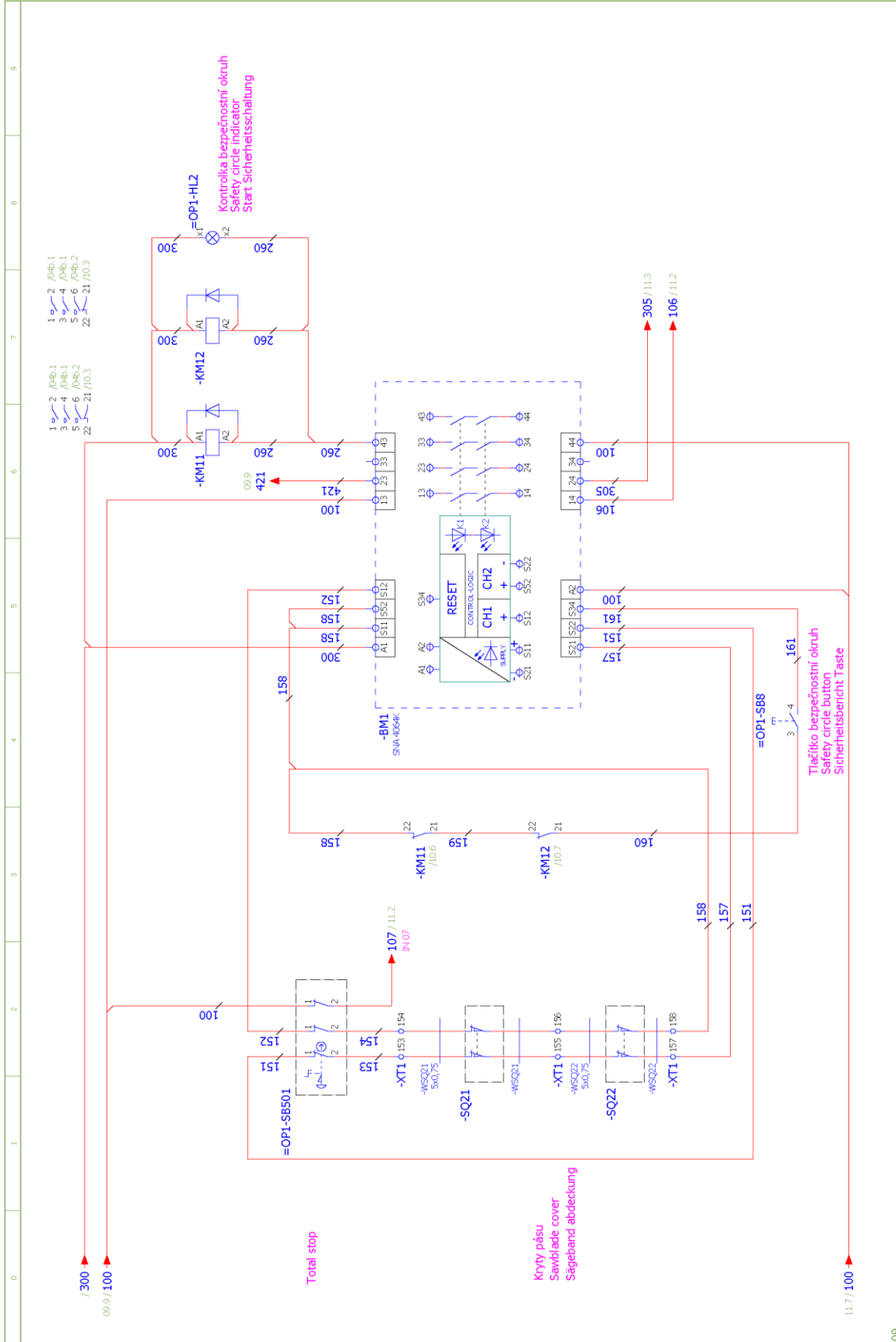




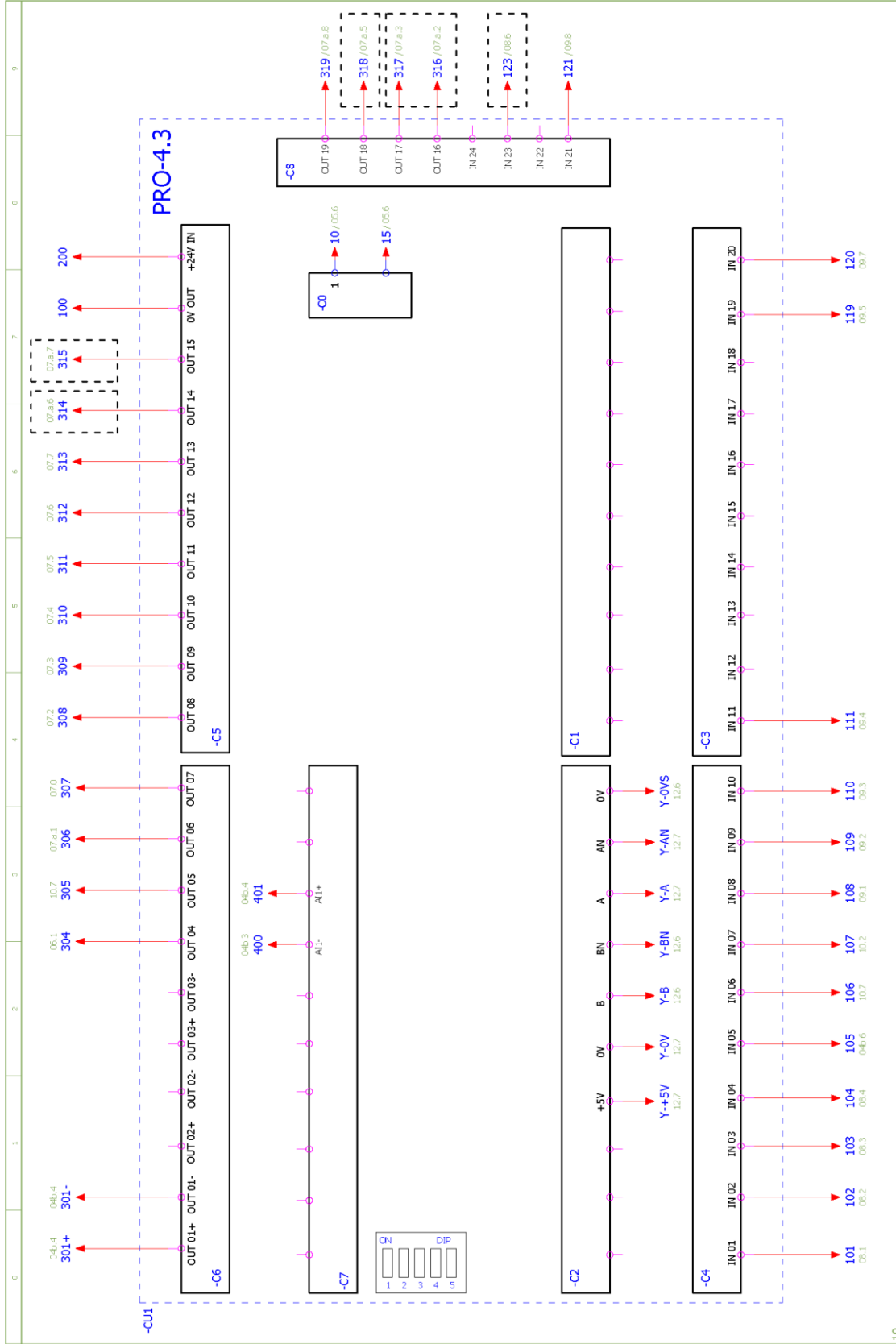
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Schemata Schematics

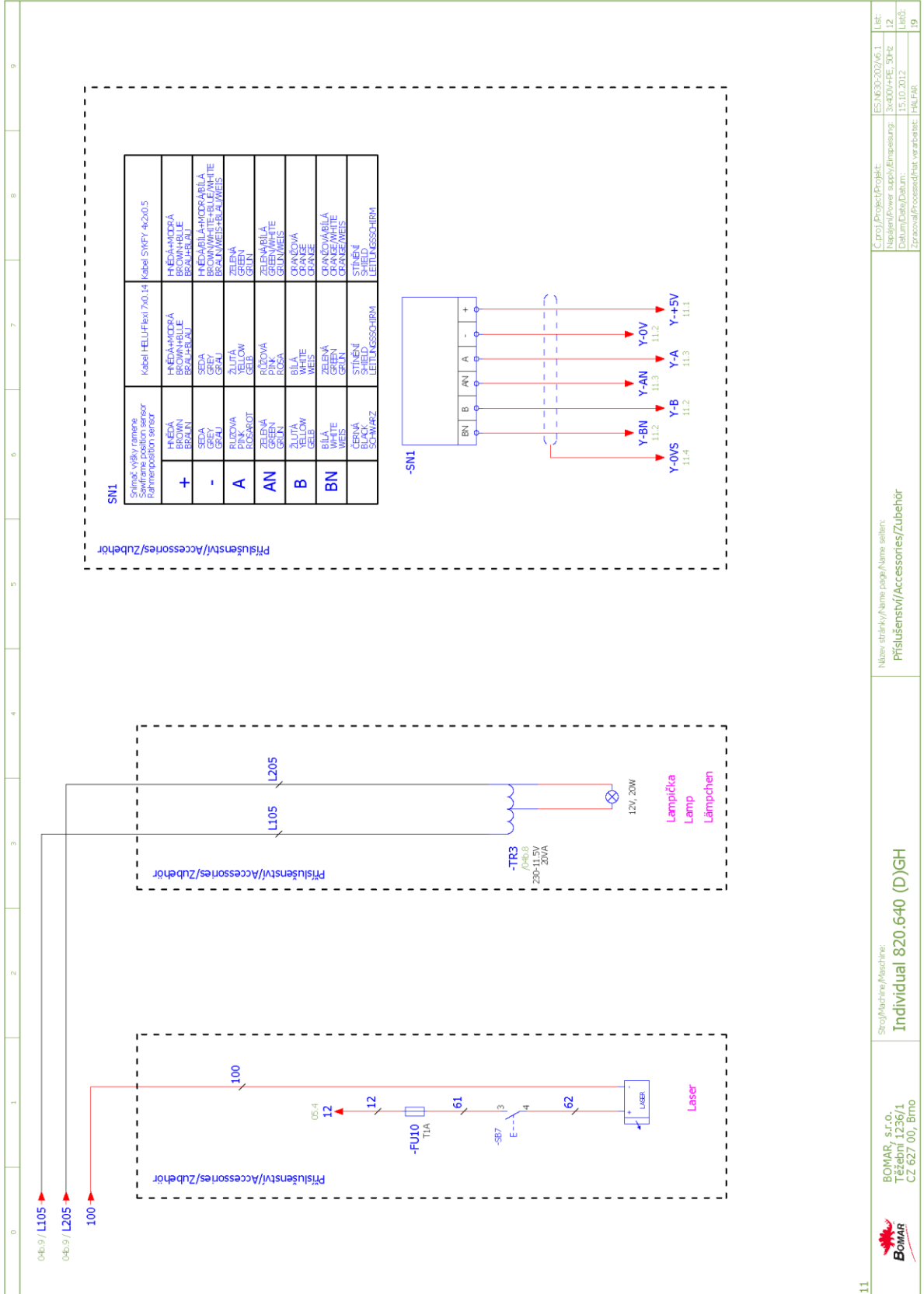



09	<p>BOMAR, s.r.o. Těšební 1236/1 CZ 627 00, Brno</p>	<p>Spotřeba/Verbrauch: Individual 820.640 (D)GH</p>	<p>Název obrázky/název page/Name sheet: Bezpečnostní okruh/Safety circle/Sicherheitsbereich</p>	<p>C. proj./Project/Projekt: ES N630-202/A6.1</p>
		<p>Stroj/Machine/Maschine: Individual 820.640 (D)GH</p>	<p>Číslo obrázky/název page/Sheet no.: 09</p>	<p>Číslo projektu/Projekt no.: ES N630-202/A6.1</p>
				<p>Náplň/Power supply/Einspeisung: 3x400V+PE, 50Hz</p>
				<p>Datum/Date/Datum: 25.10.2012</p>
				<p>Verze/Version: 1.0</p>
				<p>Zpracoval/Processed/hat. verarbeitete: HALFAR</p>
				<p>Libř: 19</p>



	BOMAR, s.r.o. Těšební 1236/1 CZ 627 00, Brno	Společnost/Abstrakt: Individual 820.640 (D)GH	Název souboru/Name page/Name sheet: Řídicí systém/Control system/Steuersystem	C:proj/Project/Projekt: ES N630-202/A6.1	List: 11
				Napájení/Power supply/Einspeisung: 3x400V+PE, 50Hz	List0: 19
				Datum/Date/Datum: 13.9.2012	List1: 11
				Zpracoval/Processed/Verarbeitet: HALFR.	List2: 19

Schemata Schemata Schematics



0	1	2	3	4	5	6	7	8	9
Parts list									
Device tag	Device type	Type number	Manufacturer	Part number	Quantity	Page			
=RCF1	RCF filter	FBOPRL624		91.041.015	1	/04.3			
=RCF2	RCF filter	FBOPRL624		91.041.015	1	/04.4			
=RCF11	RCF filter	FBOPRL624		91.041.015	1	/04b.0			
=RCF12	RCF filter	FBOPRL624		91.041.015	1	/04b.0			
=RP1	Potentiometer 5k	TP195 4x7/IN20A		91.283.015	1	/04b.3			
=OP1-SB501	Emergency-stop mushroom push-button + 3MNC	YW1B-V4E02R		91.060.084	1	/10.2			
=ZD1	Power supply unit - 15VAC/24VDC; 20VAC/28VDC	ZDR-03	Bomar	265.915	1	/05.2			
=KM1	Contact - 4kW, 9A, 3NO+1NO, 24VDC	DILEM-10-G(24VDC)	EATON	91.040.020	1	/06.1			
=KM2	Contact - 4kW, 9A, 3NO+1NC, 24VDC	DILEM-01-G(24VDC)	EATON	91.040.024	1	/06.3			
=KM11	Contact - 7,5KW, 18A, 3NO+1NC, 24VDC	DILM17-01(RDC24)	EATON	91.040.022	1	/10.6			
=KM12	Contact - 7,5KW, 18A, 3NO+1NC, 24VDC	DILM17-01(RDC24)	EATON	91.040.022	1	/10.7			
=OP1-HL1	Green light for Eaton adapter	M22-LED-G	EATON	91.061.023	1	/07.a.8			
=OP1-HL2	White light for Eaton adapter	M22-LED-W	EATON	91.061.034	1	/10.8			
=OP1-SB1	Green translucent switch head	M22-DL-G	EATON	91.060.031	1	/09.1			
=OP1-SB1	Attaching adapter + NO contact	M22-AK10	EATON	91.061.021	1	/09.1			
=OP1-SB2	Attaching adapter + NO contact	M22-AK10	EATON	91.061.021	1	/09.2			
=OP1-SB2	Black switch head	M22-D-S	EATON	91.060.035	1	/09.2			
=OP1-SB3	Head of 3 positional switch	M22-WRK3	EATON	91.060.051	1	/09.3			
=OP1-SB3	NO contact for Eaton adapter	M22-K10	EATON	91.061.022	1	/09.3			
=OP1-SB3	Attaching adapter + NO contact	M22-AK10	EATON	91.061.021	1	/09.3			
=OP1-SB8	Attaching adapter + NO contact	M22-AK10	EATON	91.061.021	1	/10.4			
=OP1-SB8	Yellow translucent switch head	M22-DL-Y	EATON	91.060.053	1	/10.4			
=OP2-SB4	Black switch head	M22-D-S	EATON	91.060.035	1	/09.5			
=OP2-SB4	NO contact	M22-KC10	EATON	91.061.030	2	/09.5			
=OP2-SB4	Pushbutton fingerboard - arrow	M22-XD-S-X7	EATON	91.062.002	1	/09.5			
=OP2-SB4	Box - 3 holes	M22-13 IP66	EATON	91.190.052	1	/09.5			
=OP2-SB5	NO contact	M22-KC10	EATON	91.061.030	2	/09.7			
=OP2-SB5	Black switch head	M22-D-S	EATON	91.060.035	1	/09.7			
 BOMAR, s.r.o. Těšební 1236/1 CZ 627 00, Brno		Spoj/Mechy/Moduly: Individual 820.640 (D)GH		Název stránky/Name page/Name sheet: Kusovník artiklů/ Parts list/ Artikelstückliste		C:proj/Project/Projekt: ES N630-202/A6.1		List: ES N630-202/A6.1	
				Napájení/Power supply/Ernennung: 3x400V+PE, 50Hz		Datum/Date/Datum: 2.10.2012		List: 13	
						Zpracoval/Processed/Verarbeitet: HALFR.		List: 19	

0	1	2	3	4	5	6	7	8	9
Parts list									
Device tag	Device type	Type number	Manufacturer	Part number	Quantity	Page			
=OPZ-SB5	Pushbutton fingerboard - arrow	M22-XD-S-X7	EATON	91.062.002	1	/09.7			
=OPZ-SB6	Pushbutton fingerboard - arrow	M22-XD-S-X7	EATON	91.062.002	1	/09.8			
=OPZ-SB6	NO contact	M22-KC10	EATON	91.061.030	2	/09.8			
=OPZ-SB6	Black switch head	M22-D-S	EATON	91.060.035	1	/09.8			
-TR2	Transformer 400V/230V, 0.13A, 30VA	JOC E2520-0022	ELEKTROKOV	91.080.027	1	/04b.8			
-FU1	Tube fuse - 200mA/250V, slow, 5x20	T200mA/250V	ESKA	91.230.037	1	/04b.8			
-FU2	Tube fuse - 200mA/250V, slow, 5x20	T200mA/250V	ESKA	91.230.037	1	/04b.8			
-FU3	Tube fuse - 200mA/250V, slow, 5x20	T200mA/250V	ESKA	91.230.037	1	/04b.8			
-FU4	Tube fuse - 200mA/250V, slow, 5x20	T200mA/250V	ESKA	91.230.037	1	/04b.8			
-FU5	Tube fuse - 2A/250V, slow, 5x20	T2A/250V	ESKA	91.230.001	1	/05.0			
-FU6	Tube fuse - 2A/250V, slow, 5x20	T2A/250V	ESKA	91.230.001	1	/05.1			
-FU7	Tube fuse - 6.3A/250V, slow, 5x20	T6.3A/250V	ESKA	91.230.002	1	/05.4			
-FU8	Tube fuse - 1A/250V, slow, 5x20	T1A/250V	ESKA	91.230.003	1	/05.4			
-FU9	Tube fuse - 500mA/250V, slow, 5x20	T500mA/250V	ESKA	91.230.011	1	/05.4			
-FU10	Tube fuse - 1A/250V, slow, 5x20	T1A/250V	ESKA	91.230.003	1	/12.1			
-M1	Pump - 120W, 230/400V	4C0A4-12H	EmP	91.020.015	1	/04.4			
-TR1	Toroidal transformer - 0-230-400V/20V/15V, 0.65-0.38A/6A/2A, 150VA	1502304002015	KARBAN s.r.o.	91.080.026	1	/05.1			
-SQ21	Safety limit switch, 2xNC	QKS8	KEDU	91.173.012	1	/10.2			
-SQ22	Safety limit switch, 2xNC	QKS8	KEDU	91.173.012	1	/10.2			
-PA1	Fuse case for cylindrical fuse 10x38mm - 3P, size 10	OPV10/3	OEZ	91.241.002	1	/04b.1			
-PA1	Cylindric fuse - 20A, 10x38, fast, gG characteristic	PV10 20A gG	OEZ	91.230.038	3	/04b.1			
-SQ4	Limit switch - 1NC+1NO, M20, slow	D4N-4A32	OMRON	91.173.010	1	/08.4			
-SQ2	Limit switch - 1NO + 1NC, roller, M2, snap action	FR 605-M2	PIZZATO	91.173.009	1	/08.2			
-SQ3	Limit switch - 1NO + 1NC, roller, M2, snap action	FR 605-M2	PIZZATO	91.173.009	1	/08.3			
-FA1	Motor-overcurrent circuit breaker 0.25-0.4A	GZ1M03	SCHNEIDER	91.235.022	1	/04.4			
-FA1	Auxiliary contact of MCCB - 1xNO+1xNC	GZ1AN11	SCHNEIDER	91.046.004	1	/04.4			
-FA2	Motor-overcurrent circuit breaker 4-6.3A	GZ1M10	SCHNEIDER	91.235.026	1	/04.5			
-FA2	Auxiliary contact of MCCB - 1xNO+1xNC	GZ1AN11	SCHNEIDER	91.046.004	1	/04.5			



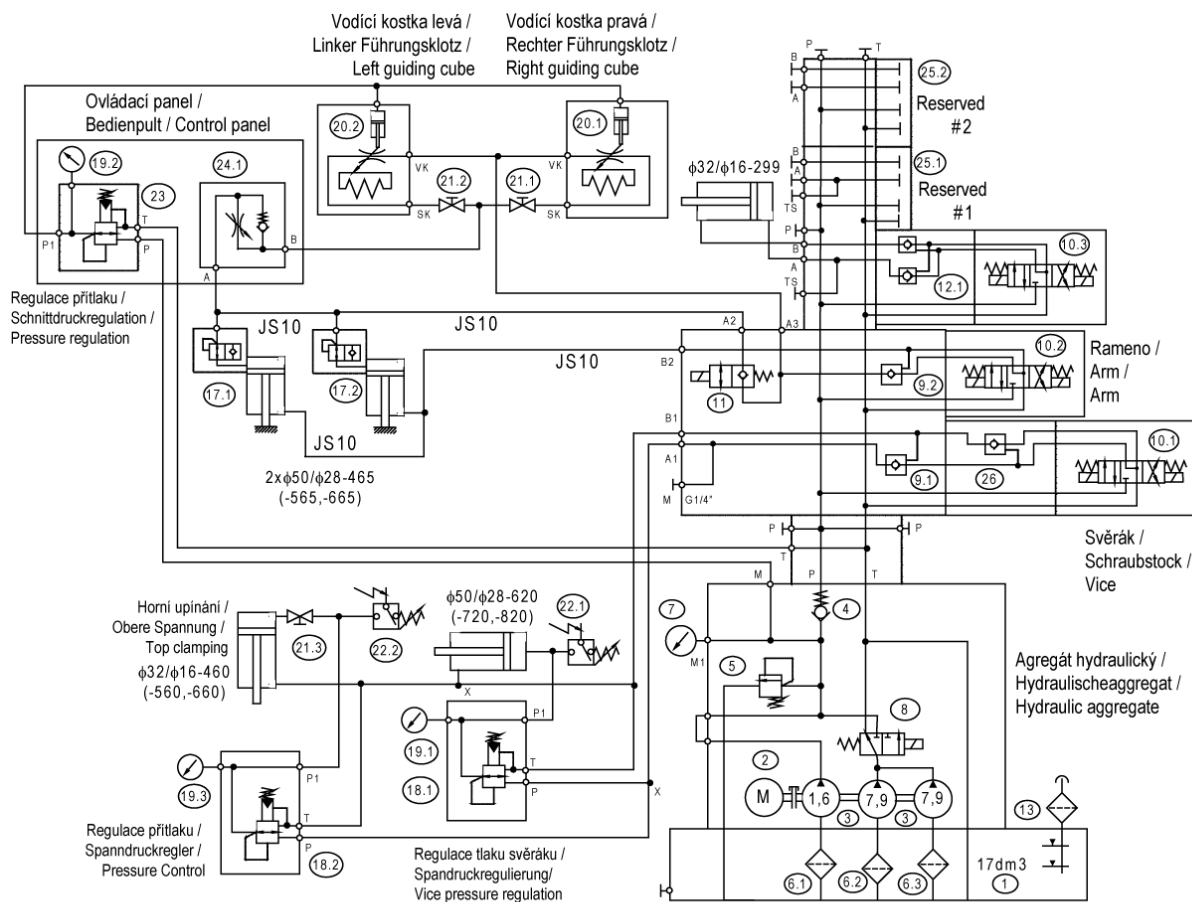
BOMAR, s.r.o.
Teřebnı́ 1236/1
CZ 627 00, Brno

Stroj/Machine/Abstrich:
Individual 820.640 (D)GH

Název stříčky/Name page/Name seller:
Kusovník artiklů/ Parts list/ Artikelstückliste

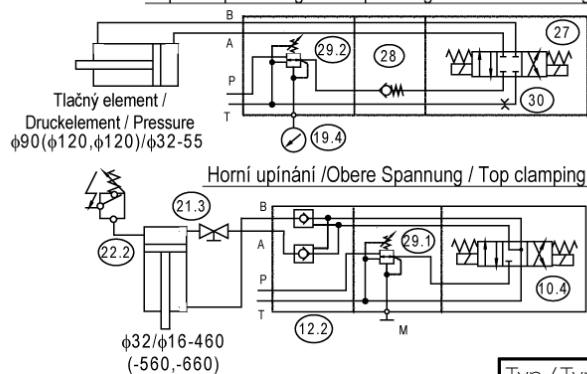
C:proj./Project/Projekt: ES N630-202/A6.1
Napájení/Power supply/Ernährung: 3x400V+PE, 50Hz
Datum/Date/Datum: 1.10.2012
Zpracoval/Processed/Verarbeitet: HALFR.
List: ES N630-202/A6.1
List: 13a
List: 19

6.2. Hydraulické schéma / Hydraulikschema / Hydraulic diagram

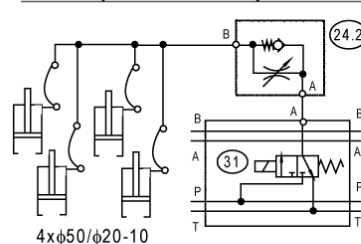


Nestandardní výbava
Nicht-standard-Ausrüstung
Non-standard equipment

Napínání pásu / Sägebandspannung / Saw band tensing



Zdvih stroje / Reise-Tools / Hydraulic saw lift



Základní technické parametry
Technische Spezifikation
Technical specification

205.Y416-000
 TIN7
 INDIV. 620.460 GH,DGH
 INDIV. 720.540 GH,DGH
 INDIV. 820.640 GH,DGH
 15.11.2010

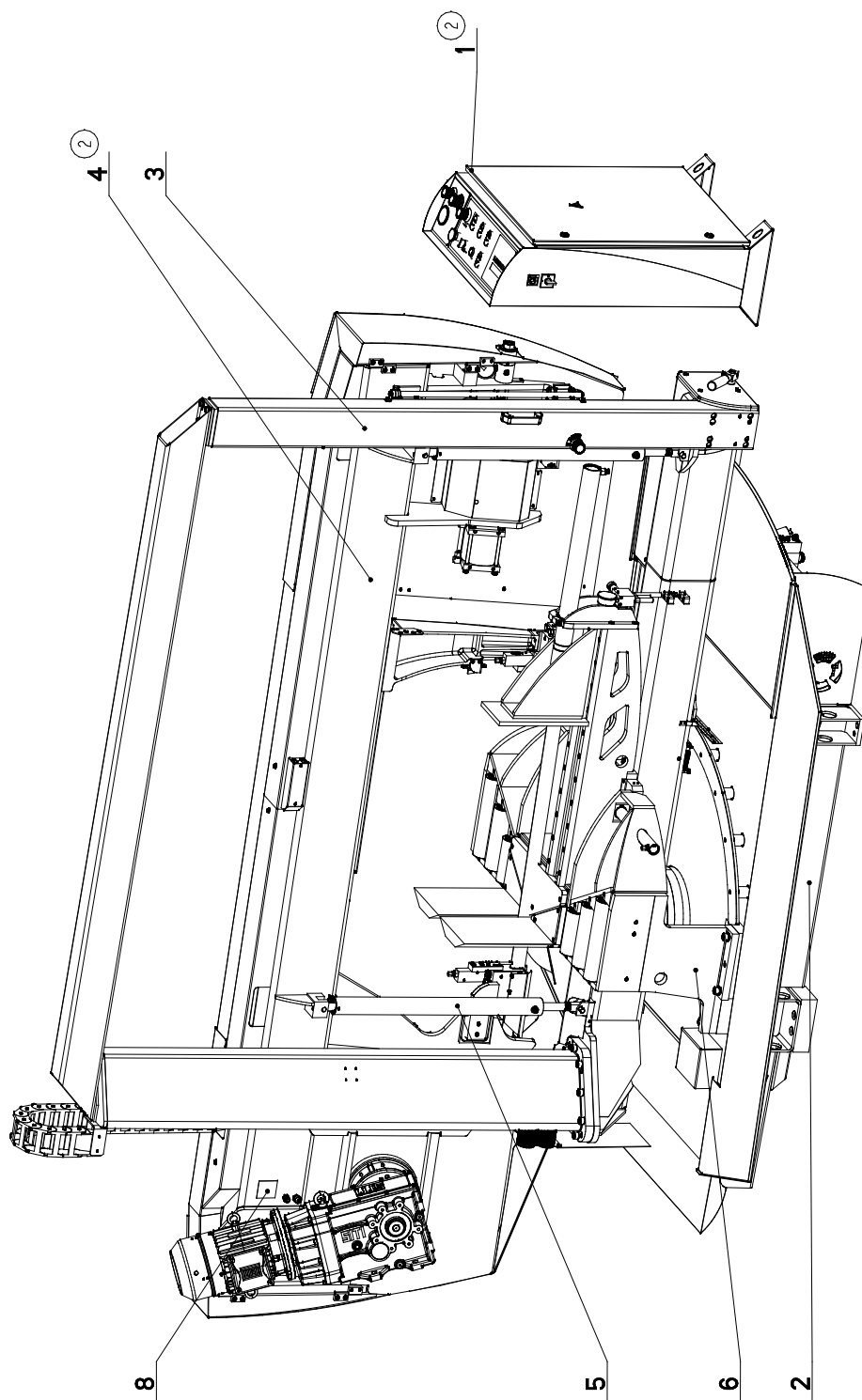
Typ / Type / Type	Individual 460, 540, 640 (D)GH (TIN7)
Hydraulický agregát / Hydroaggregat	SSM-3/79+79+16-1/3-17/02400
Hydro aggregat	92.001.062 (19753500)
Neuvedené světlosti / Unerwähnt Lichtbreite	JS6
Unlisted inside diameters	
Výstupní šroubení / Ausgangsschraubung	G1/4"
Output screwing	
P_{max}	8 Mpa
Q	21,2+2,2 dm ³ /min
n	1425 ot./min
P	3 kW


Poz.	Název položky		ks
Pos.	Bezeichnung		Menge
Pos.	Item		Pcs.
1	Nádrž / Behälter / Tank	Ø220-610 mm, 17 l	1
2	Elektromotor / Elektromotor / Electromotor	MA-AL100L 400/230V 50 Hz, 3 kW, 6,68 A	1
3	Hydrogenerátor / Hydraulikgenerator / Hydrogenerator	P23-7,9/7,9/1,6 L62334	1
4	Jednosměrný ventil / Einwegventil / One-way valve	VJ01-06/SG-1	1
5	Přepouštěcí ventil / Bypašventil / By pass valve	VPN1-06/S-10S/M 27999700	1
6	Sací filtr / Filter / Suction filter	2SF56/48-0,063 63 um	3
7	Manometr / Manometer / Manometer	Ø68 0-10 MPa	1
8	Rozváděč / Schaltschrank / Switchboard	SD2E-A3/C2D21 408-0328.003	1
9	Hydraulický zámek / Hydraulisches Schloß / Hydraulic lock	RJV1-05-0	2
10	Rozváděč / Schaltschrank / Switchboard	RPE3-04Y11/02400E1K1 92.101.005	4(3/2)
11	Rozváděč / Schaltschrank / Switchboard	ROE3-042S2/02400E1K1	1
12	Hydraulický zámek / Hydraulisches Schloß / Hydraulic lock	VJR1-04/MC 92.103.003	2(1/0)
13	Nalévací zátka / Stopfen / Fill stopper	L1.0406	1
14	---	---	-
15	---	---	-
16	---	---	-
17	Pojistný ventil / Sicherungventil / Safety valve	VPNH ¼ 92.151.001	2
18	Redukční ventil / Reduktionventil /	VRN2-06/S-6R 92.154.001	2(1)
19	Manometr / Manometer / Manometer	Ø68, 0-6 MPa	3(2)
20	Kostka regulace / Regulationklotz / Regulation cube		1
21	Kulový ventil / Kugelventil / Globe valve	99.260.004	1(0)
22	Tlakový spínač / Druckschalter / Pressure switch	0166415031059 20-50 bar	2(1)
23	Redukční ventil / Reduktionventil /	VRN2-06/S-6R	1
24	Škrtící ventil / Drosselventil / Throttle-valve	VS01-04/R2,5 92.152.001	2(1)
25	Krycí deska / Schutzplatte / Cover platte	DK 1-04/32-2	2/3(2/3)
26	Hydraulický zámek / Hydraulisches Schloß / Hydraulic lock	VJR1-04/MB 92.103.003	1(0)
27	Rozváděč / Schaltschrank / Switchboard	RPE3-043Z11/02400E1K1 92.101.010	1(0)
28	Jednosměrný ventil / Einwegventil / One-way valve	VJ01-04/MP-30 92.104.001	1(0)
29	Redukční ventil / Reduktionventil /	VRP2-04-PS/6,3 92.154.003	2(0)
30	Clona / Schürze / Shield	0,8 92.153.022	1(0)
31	Rozváděč / Schaltschrank / Switchboard	SD2E-A3/S2D26 408-0328.003	1(0)

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 Individual 820.640 DGH) , výrobní číslo (např. 125) a rok výroby (např. 1999).
- In die Bestellung der Ersatzteile führen Sie immer an: Maschinentyp (z. B. Individual 820.640 DGH), Serien Nr. (z. B. 125) und Baujahr (z. B. 1999).
- For spare parts order, you must always to allege: type of machine (for example Individual 820.640 DGH), serial number (for example 125, see cover page) and year of construction (for example 1999).

7.1. Individual 820.640 DGH 1



NAZEV SESTAVY PILA PASOVA	CISLO SESTAVY 201.Y600-000	STROJ IN 640DGH
		Konstruoval: MUSIL
		Datum: 02. 08. 2010
		Meritko: 7:100

7.2. Kusovník / Stückliste / Piece list – Individual 820.640 DGH 1

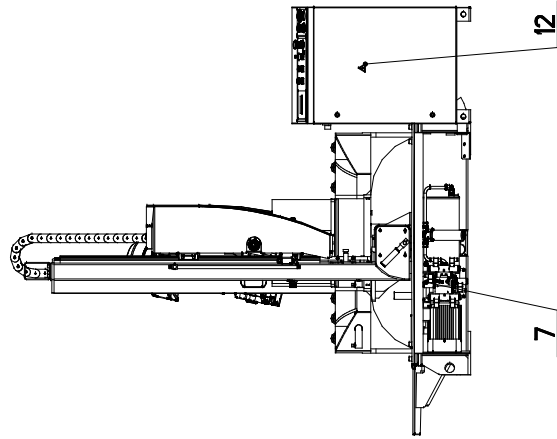
Císlo Sestavy 201.Y600-000		Ver. 2		Název sestavy PILA PASOVA/BAND SAW/BANDSÄGE	
Poz.	Objednací číslo	Ver.	Název položky	Rozměr	Ks
1	201.Y430-000 (2)	0	OVLADACÍ PANEL / CONTROL PANEL / BEDIENPULT		1
2	201.Y601-100	3	PODSTAVEC / BASE / UNTERSATZ		1
3	201.Y602-100	2	KONZOLA / CONSOLE / KONSOLE		1
4	201.Y604-200 (2)	0	RAMENO / SHOULDER / SÄGERAHMEN		1
5	201.Y607-010	3	VALEC ZVEDACÍ / LIFTING CYLINDER / HEBEZYLINDER		2
6	201.Y609-000	1	SVERAK / VICE / SCHRAUBSTOCK		1
7	31.0899-004	0	SAMOLEPKA / STICKER / AUFKLEBER		1
8	31.Y699-001	0	STÍTEK TYPOVÝ / /	P 0.5x65	1
9	99.900.039		SAMOLEPKA / STICKER / AUFKLEBER	NEBEZP.STLACENI	1
10	99.900.040	0	SAMOLEPKA / STICKER / AUFKLEBER		1
11	99.900.043	0	SAMOLEPKA / STICKER / AUFKLEBER		1
12	99.900.045	0	SAMOLEPKA / STICKER / AUFKLEBER		1
13	99.900.046	0	SAMOLEPKA / STICKER / AUFKLEBER		1
14	99.900.047	0	SAMOLEPKA / STICKER / AUFKLEBER		1
15	99.900.048	0	SAMOLEPKA / STICKER / AUFKLEBER		1
16	99.900.049	0	SAMOLEPKA / STICKER / AUFKLEBER		1
17	99.900.053	0	SAMOLEPKA / STICKER / AUFKLEBER		1
18	99.901.031	0	SAMOLEPKA / STICKER / AUFKLEBER	IN820.640 DGH	1
19	99.901.032 (1)	0	SAMOLEPKA / STICKER / AUFKLEBER	CETIFIKACNI SAMOLEPKA	1

1. PRIDANA CERTIFIKACNI SAMOLEPKA 40/ZM227 2.8.2010 SLEZACKOVA

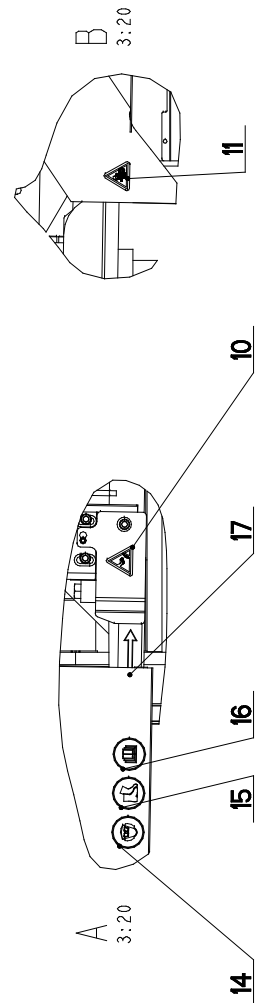
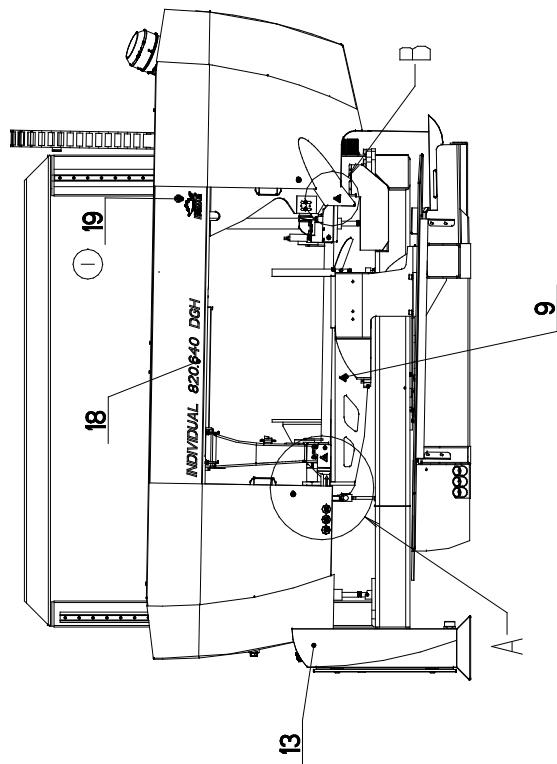
2. ZRUS. RAMENO 201.Y604-100 A NAHR. 201.Y604-200, ZRUS. ROZVADEC 201.6030-400 A NAHR. 201.Y430-000. 219/ZM281
8.11.2011 SLEZACKOVA


Císlo Sestavy/Number of assembly/Nummer der Baugruppe; Verze (Ver.)/Version/Version; Název sestavy/Assembly title/Name der Baugruppe; Pozice (Poz.)/Position/Position;
Objednací číslo/Purchase order number/Bestellnummer; Název položky/Volume title/Name der Position; Rozměr/Stock size/Abmessung

7.3. Individual 820.640 DGH 2



MALEPIT NA CIFERNIK MANOMETRU
NA HODNOTU 40 bar



NAZEV SESTAVY PILA PASOVA	CISLO SESTAVY 201.Y600-000	STROJ IN 640DGH
		
Konstruoval: MUSIL		
Datum: 02. 08. 2010		
Meritko: 1:25		

7.4. Kusovník / Stückliste / Piece list – Individual 820.640 DGH 2

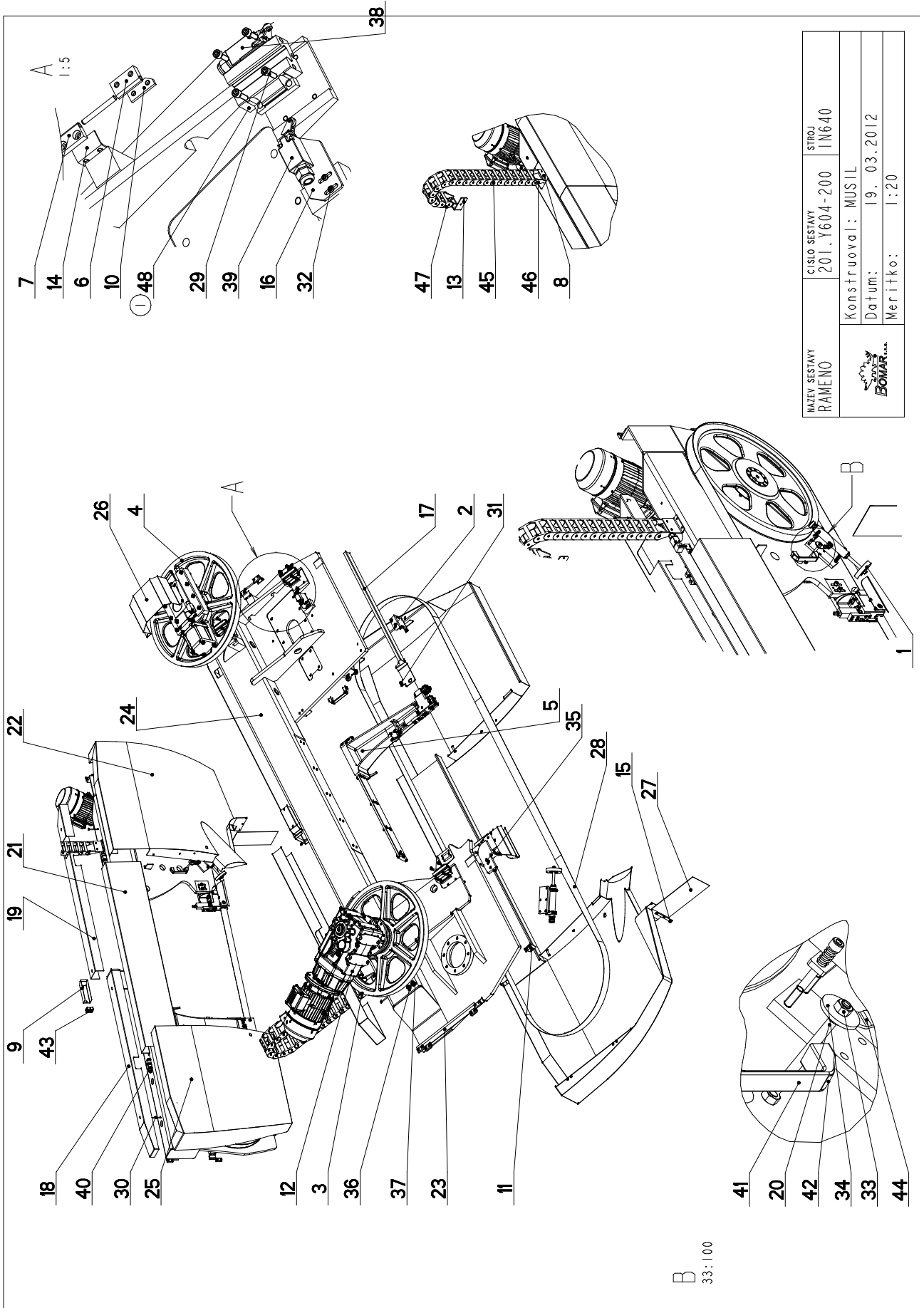
Císlo Sestavy 201.Y600-000		Ver. 2		Název sestavy PILA PASOVA/BAND SAW/BANDSÄGE	
Poz.	Objednací číslo	Ver.	Název položky	Rozměr	Ks
1	201.Y430-000 (2)	0	OVLADACÍ PANEL / CONTROL PANEL / BEDIENPULT		1
2	201.Y601-100	3	PODSTAVEC / BASE / UNTERSATZ		1
3	201.Y602-100	2	KONZOLA / CONSOLE / KONSOLE		1
4	201.Y604-200 (2)	0	RAMENO / SHOULDER / SÄGERAHMEN		1
5	201.Y607-010	3	VALEK ZVEDACÍ / LIFTING CYLINDER / HEBEZYLINDER		2
6	201.Y609-000	1	SVERAK / VICE / SCHRAUBSTOCK		1
7	31.0899-004	0	SAMOLEPKA / STICKER / AUFKLEBER		1
8	31.Y699-001	0	STÍTEK TYPOVÝ / /	P 0.5x65	1
9	99.900.039		SAMOLEPKA / STICKER / AUFKLEBER	NEBEZP.STLACENI	1
10	99.900.040	0	SAMOLEPKA / STICKER / AUFKLEBER		1
11	99.900.043	0	SAMOLEPKA / STICKER / AUFKLEBER		1
12	99.900.045	0	SAMOLEPKA / STICKER / AUFKLEBER		1
13	99.900.046	0	SAMOLEPKA / STICKER / AUFKLEBER		1
14	99.900.047	0	SAMOLEPKA / STICKER / AUFKLEBER		1
15	99.900.048	0	SAMOLEPKA / STICKER / AUFKLEBER		1
16	99.900.049	0	SAMOLEPKA / STICKER / AUFKLEBER		1
17	99.900.053	0	SAMOLEPKA / STICKER / AUFKLEBER		1
18	99.901.031	0	SAMOLEPKA / STICKER / AUFKLEBER	IN820.640 DGH	1
19	99.901.032 (1)	0	SAMOLEPKA / STICKER / AUFKLEBER	CETIFIKACNI SAMOLEPKA	1

1. PRIDANA CERTIFIKACNI SAMOLEPKA 40/ZM227 2.8.2010 SLEZACKOVA

2. ZRUS. RAMENO 201.Y604-100 A NAHR. 201.Y604-200, ZRUS. ROZVADEC 201.6030-400 A NAHR. 201.Y430-000. 219/ZM281
8.11.2011 SLEZACKOVA

Císlo Sestavy/Number of assembly/Nummer der Baugruppe; Verze (Ver.)/Version/Version; Název sestavy/Assembly title/Name der Baugruppe; Pozice (Poz.)/Position/Position;
Objednací číslo/Purchase order number/Bestellnummer; Název položky/Volume title/Name der Position; Rozměr/Stock size/Abmessung

7.5. Rameno / Sägerahmen / Saw arm 1



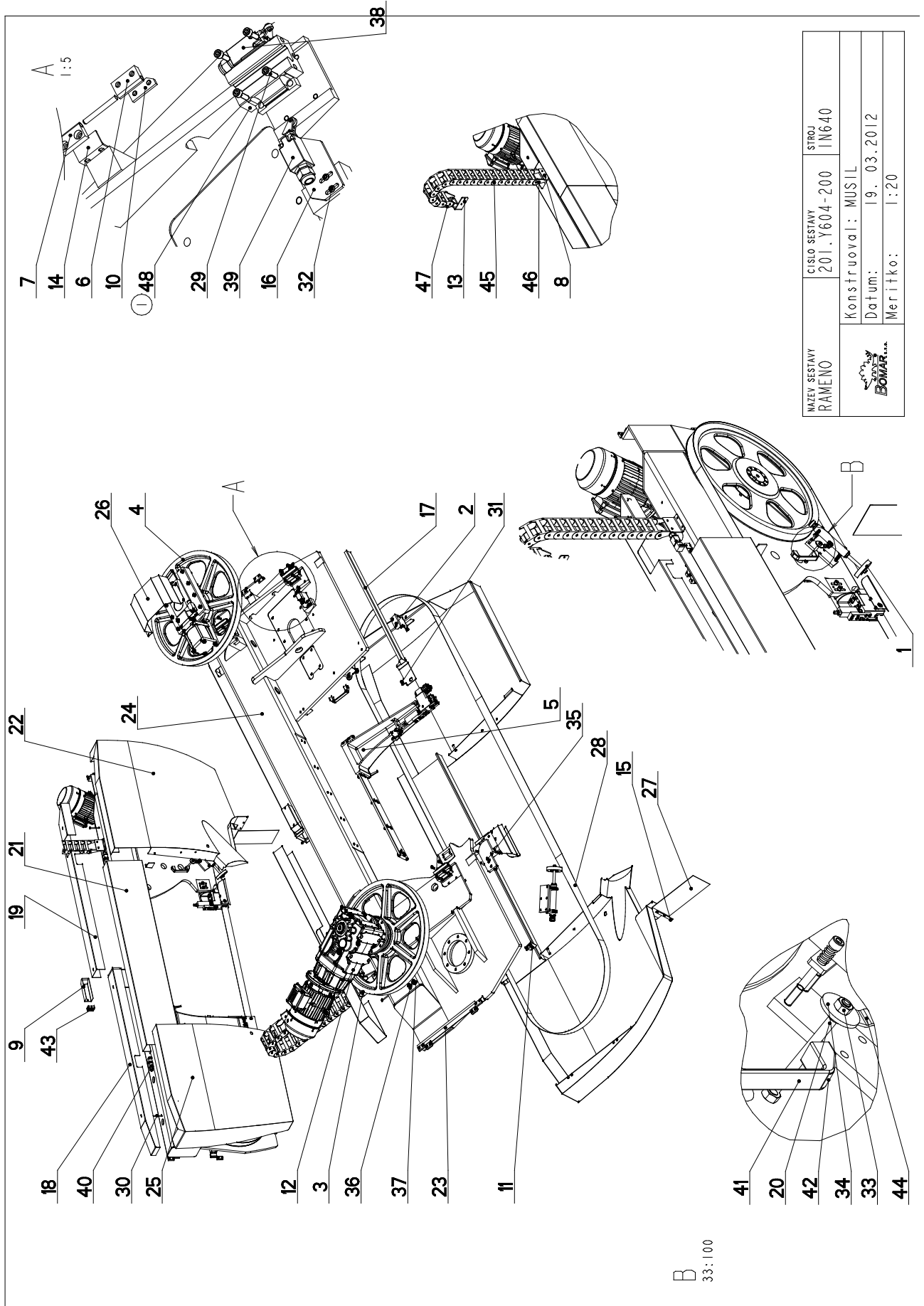
NAZEV SESTAVY RAMENO	CISLO SESTAVY 201.Y604-200	STROJ IN640
Konstruoval: MUSIL		
Datum: 19. 03. 2012		
Meritko: 1:20		

7.6. Kusovník / Stückliste / Piece list – Rameno / Sägerahmen / Saw arm 1

Císlo Sestavy 201.Y604-200		Ver. 1	Název sestavy RAMENO/SHOULDER/SÄGERAHMEN		
Poz.	Objednací číslo	Ver.	Název položky	Rozměr	Ks
1	201.6114-100	0	KARTAC / BRUSH / BÜRSTE		1
2	201.Y604-070	0	VEDENÍ / GUIDE / BACKENFÜHRUNG		1
3	201.Y605-100	0	POHON / DRIVE / ANTRIEB		1
4	201.Y608-100	1	MAPINANI / TENSIONING / SPANNUNG		1
5	201.Y610-000	2	VEDENÍ PASU / BELT GUIDE / SÄGEBANDFÜHRUNG		1
6	30.6014-109	1	PANT / HINGE / TÜRBAND		4
7	30.6014-110	1	PANT / HINGE / TÜRBAND	HR 30x12	4
8	30.7114-142	1	DRŽAK / HOLDER / HALTER	P 4 - 100	1
9	30.8914-220	1	KRYT / COVER / ABDECKUNG	P 1.5 - 153	1
10	30.Y304-035	0	DESKA / BOARD / PLATTE	HR 20x5	4
11	30.Y304-038	0	ZAMEK / LOCK / SCHLOSS	P4 - 67	2
12	30.Y304-039	0	DRŽAK / HOLDER / HALTER	P3 - 34	2
13	30.Y404-005	0	DRŽAK / HOLDER / HALTER	HR 50x5	1
14	30.Y404-034	0	DRŽAK / HOLDER / HALTER	L 30x20x3	1
15	30.Y504-030	0	PLECH / PLATE / BLECH	P 1-15	1
16	30.Y604-003	0	DRŽAK / HOLDER / HALTER	P 5-60	1
17	30.Y604-009	0	KRYT PASU / BELT COVER / BANDABDECKUNG		1
18	30.Y604-018	0	KRYT / COVER / ABDECKUNG		1
19	30.Y604-019	0	KRYT / COVER / ABDECKUNG	P2 - 275	1
20	30.Y604-020	0	TVC ZAVITOVÁ / THREADED POLE / GEWINDESTANGE	M10	2
21	30.Y604-022	0	KRYT / COVER / ABDECKUNG		1
22	30.Y604-031	0	KRYT RAMENE / SHOULDER COVER / RAHMENABDECKUNG		1
23	30.Y604-035	0	DRŽAK / HOLDER / HALTER	L 30x20x3	1
24	30.Y604-101	4	RAMENO / SHOULDER / SÄGERAHMEN	SVARENO	1
25	30.Y604-132	0	KRYT RAMENE / SHOULDER COVER / RAHMENABDECKUNG		1
26	30.Y604-202	0	KRYT / COVER / ABDECKUNG	P1,5-225	1
27	31.PK02-054	0	GUMA / RUBBER / GUMMI	G2 - 206	1
28	44.103.012	0	PAS PÍLOVÝ / SAW BELT / SÄGEBAND	54x1,6M42 z=2/3	1
29	90.001.25.033	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	8x25	16
30	90.001.25.070	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M6x90	4
31	90.001.25.092	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M6x14	1
32	90.013.27.007	0	SROUB PULKULATÝ / HALF ROUND BOLT / HALBRUNDSCHRAUBE	M6x10	2

Císlo Sestavy/Number of assembly/Nummer der Baugruppe; Verze (Ver.)/Version/Version; Název sestavy/Assembly title/Name der Baugruppe; Pozice (Poz.)/Position/Position;
Objednací číslo/Purchase order number/Bestellnummer; Název položky/Volume title/Name der Position; Rozměr/Stock size/Abmessung

7.7. Rameno / Sägerahmen / Saw arm 2



NAZEV SESTAVY RAMENO	CISLO SESTAVY 201.Y604-200	STROJ IN640
Konstruoval: MUSIL		
Datum: 19. 03. 2012		
Meritko: 1:20		

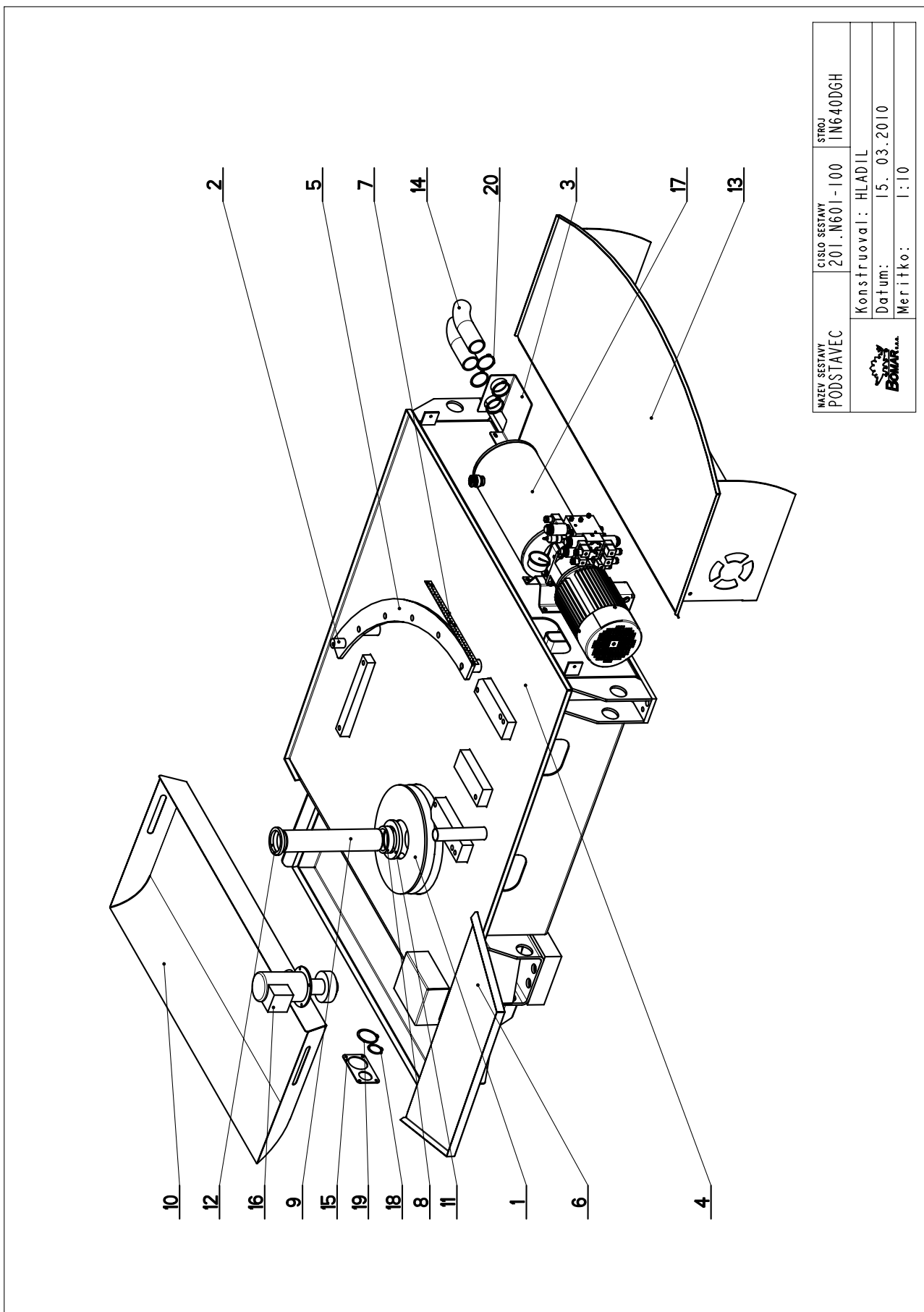
7.8. Kusovník / Stückliste / Piece list – Rameno / Sägerahmen / Saw arm 2

33	90.100.55.006	0	MATICE / NUT / MUTTER	MATICE - M10	6
34	90.151.50.002	0	PODLOZKA / WASHER / UNTERLEGSCHIEBE	PODLOZKA I2	2
35	90.300.07.011	0	KOLIK VALC. KAL. / CYLINDRICAL PIN TEMPERED / ZYLINDERSTIFT GEHARTET	KOLIK 8X40	2
36	91.070.011	0	VYVODKA / BUSHING / TÜLLE	M16x1.5	1
37	91.070.012	0	VYVODKA / BUSHING / TÜLLE	M20x1.5	1
38	91.173.009	0	SPINAC KONC.S KLADK. / END SWITCH WITH PULLEY / ENDSCHALTER MIT ROLLE	FR 605-M2	1
39	91.173.009	0	SPINAC KONCOVY / END SWITCH / ENDSCHALTER	ØKS8-2XNC	2
40	91.173.012	0	SPINAC KONCOVY / END SWITCH / ENDSCHALTER		2
41	94.012.001	0	RUKOJET / HANDLE / GRIFF		4
42	94.012.002	0	ZATKA / PLUG / STOPFEN		2
43	94.204.005	0	DRZAK / HOLDER / HALTER	LBG 14/14-PP	2
44	99.104.002	0	ZAMEK / LOCK / SCHLOSS	ZAMEK CINSKY	2
45	99.170.001	0	RETEZ ENERGI / ENERGY BELT / ENERGIEKETTE	0555.030.075.100	19
46	99.173.001	0	RETEZ ENERGI / ENERGY BELT / ENERGIEKETTE	KONCOVKA VNEJ	1
47	99.173.002	0	RETEZ ENERGI / ENERGY BELT / ENERGIEKETTE	KONCOVKA VNIT	1
48	99.201.056	0	VOZIK LINEARNIHO VEDENI / LINEAR GUIDE CART / LINEARFUHRUNGSWAGEN	MSA35ESSFON	4

I.ZRUS.VOZIK LIN.VEDENI 99.201.011 A NAHR 99.201.056 . 056/ZM099 19.3.2012 SLEZACKOVA

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

7.9. Podstavec / Untersatz / Base

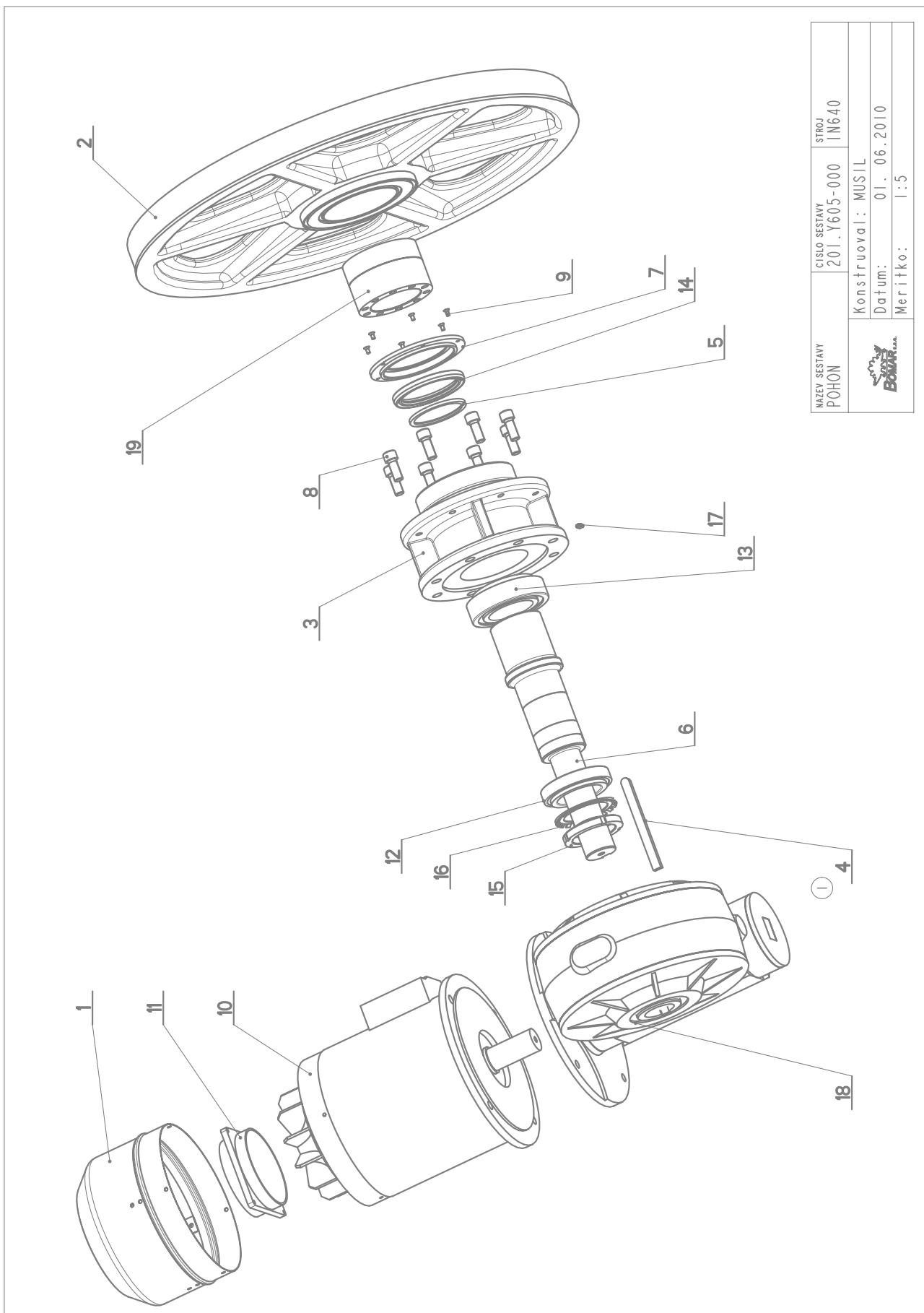



NAZEV SESTAVY PODSTAVEC	CÍSLO SESTAVY 201.N601-100	STROJ IN640DGH
Konstruoval: HLADIL		Datum: 15. 03.2010
Meritko: 1:10		

7.10. Kusovník / Stückliste / Piece list –
Podstavec / Untersatz / Base

Cislo Sestavy 201.N601-100		Ver. 0		Nazev sestavy PODSTAVEC/BASE/UNTERSATZ	
Poz.	Objednací číslo	Ver.	Nazev položky	Rozmer	Ks
1	30.7202-008	0	PRIRUBA / FLANGE / FLANSCH	P 8-352	1
2	30.N301-005	0	EXCENTR / CAM / EXZENTER	d 30	1
3	30.N301-010	0	DRZAK / HOLDER / HALTER	P3 - 234	1
4	30.N501-101	0	PODSTAVEC / BASE / UNTERSATZ		1
5	30.N501-103	0	SEGMENT / SEGMENT / SEGMENT	P 12- 227	1
6	30.N514-017		SKLUZ / SLIDE / RUTSCH		1
7	30.N601-041	0	STUPNICE / SCALE / SKALA	P0,5-22	1
8	30.Y501-004	0	KROUZEK / RING / RING	TR 89x12,5	1
9	30.Y501-103	0	CEP / LUG / BOLZEN	d 70	1
10	30.Y501-110	0	VANA / TANK / WANNE		1
11	30.Y511-005	0	KROUZEK / RING / RING	Tr 133x25	1
12	30.Y601-005	0	KROUZEK / RING / RING	TR 89x12,5	1
13	30.Y601-202	0	KRYT HYDRAULIKY / HYDRAULIC COVER / HYDRAULIKABDECKUNG		1
14	41.001.006	0	HADICE / HOSE / SCHLAUCH	55/46	2
15	81.Y502-262	0	UCHYTKA / CLIP / HALTER	P3-80	1
16	91.020.015	0	CERPADLO / PUMP / PUMPE	3COM4-12	1
17	92.001.062	0	AGREGAT HYDRAULICKY / HYDRAULIC GENERATOR / HYDRAULIKAGREGAT	19753500	1
18	95.800.016	0	KROUZEK POJIST.VNEJS / OUTSIDE SAFETY RING / SICHERUNGSRING AUBEN	POJISTNY KROUZEK 42	1
19	95.800.021	0	KROUZEK POJIST.VNEJS / OUTSIDE SAFETY RING / SICHERUNGSRING AUBEN	POJISTNY KROUZEK 62	1
20	95.800.034	0	KROUZEK POJIST.VNEJS / OUTSIDE SAFETY RING / SICHERUNGSRING AUBEN	POJISTNY KROUZEK 55	4

7.11. Pohon / Antrieb / Drive



NAZEV SESTAVY POHON	CÍSLO SESTAVY 201.Y605-000	STROJ IN640
		
Konstruoval: MUSIL		
Datum: 01. 06. 2010		
Meritko: 1:5		

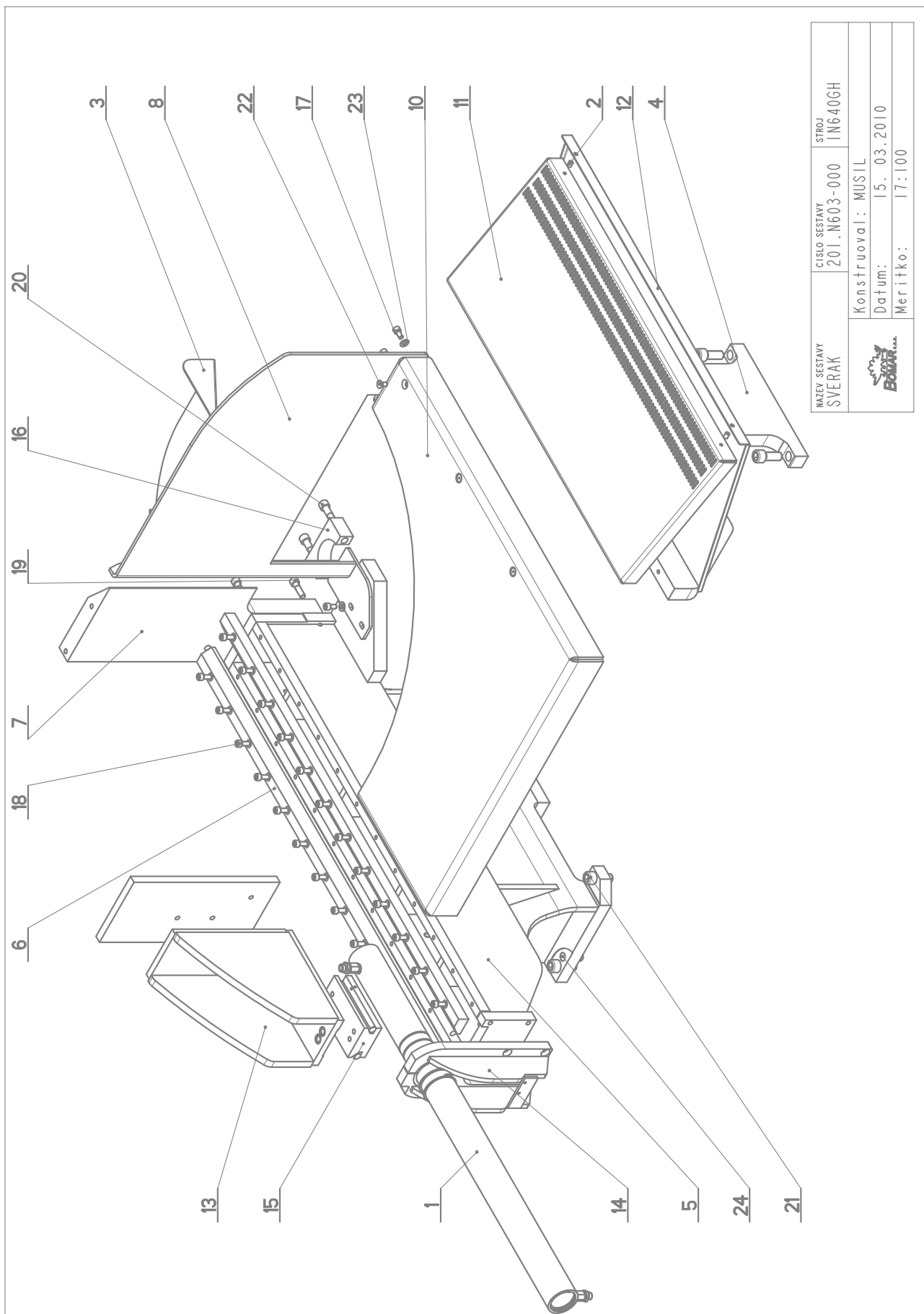
7.12. Kusovník / Stückliste / Piece list – Pohon / Antrieb / Drive


Cislo Sestavy 201.Y605-000		Ver. 0		Nazev sestavy POHON/DRIVE / ANTRIEB	
Poz.	Objednací číslo	Ver.	Nazev položky	Rozmer	Ks
1	30.6704-018	2	VENTILATOR / VENTILATOR / VENTILATOR		1
2	30.7504-007	2	KOLO HNACI / DRIVE WHEEL / ANTRIEBSRAD	KOLO	1
3	30.Y605-001	0	PRIRUBA / FLANGE / FLANSCH		1
4	30.Y605-002 (1)	0	PERO / SPRING / FEDER	HR. 14x9	1
5	30.Y605-003	0	KROUZEK / RING / RING	TR 102x10	1
6	30.Y605-004	0	HRIDEL / SHAFT / WELLE	d 100	1
7	30.Y605-006	0	VÍKO / COVER / DECKEL	P 15 -160	1
8	90.001.25.107	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M14x35	8
9	90.011.27.003	0	SROUB ZAPUSTNY / COUNTERSINK BOLT / SENKSCHRAUBE	SROUB M5x10	6
10	91.001.060	0	ELEKTROMOTOR / ELECTRIC MOTOR / ELEKTROMOTOR	ILAT-130-4AA-B5	1
11	91.015.100	0	VENTILATOR / VENTILATOR / VENTILATOR		1
12	95.300.028	0	LOZISKO KUZELIK / BEARING / LAGER	32015AX	1
13	95.300.029	0	LOZISKO KUZELIK / BEARING / LAGER	33215A	1
14	95.830.047	0	GUFERO / GIT SEAL / DICHTUNG	GUFERO 95x120x12	1
15	95.850.015	0	MATICE KM / KM NUT / KM-MUTTER	MATICE KM15	1
16	95.855.016	0	POJISTNA PODLOZKA / WASHER / UNTERLEGSCHIEBE	MB15	1
17	95.860.001	0	HLAVICE MAZACI / HEAD / KOPF	KM5	1
18	99.001.103	0	PREVODOVKA SNEKOVA / WORM GEAR TRANSMISSION / SCHNECKENGETRIEBE	VF150 i=46	1
19	99.710.013	0	SPOJKA / JOINT / KUPPLUNG	85x125	1

I.PRIDANO PERO 30.Y605-002. I37/ZM168 I.6.2010 SLEZACKOVA

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

7.13. Svěrák / Schraubstock / Vice



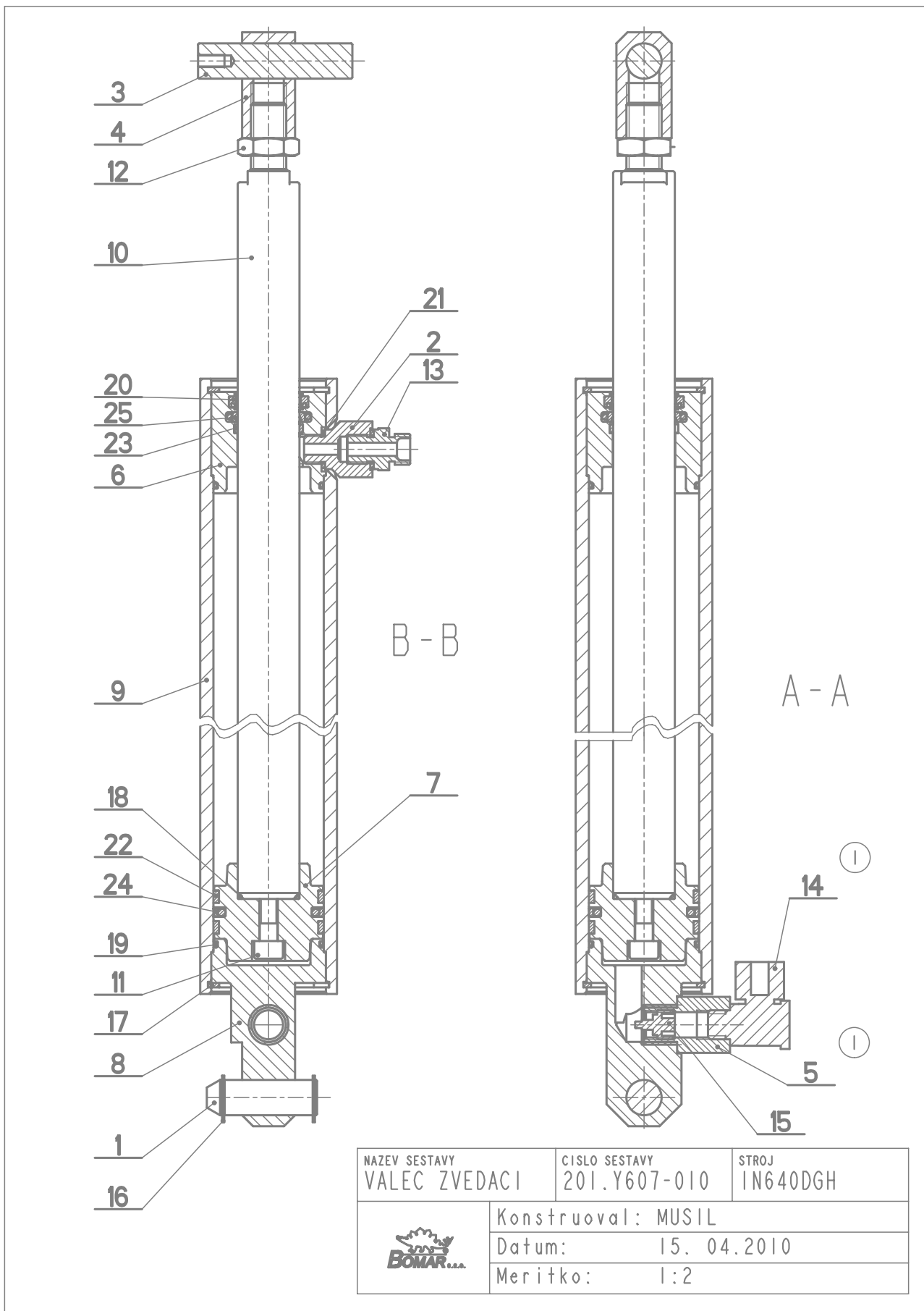
NAZEV SESTAVY SVĚRÁK	CÍSLO SESTAVY 201.N603-000	STROJ IN640GH
		
Konstruoval: MUSIL		
Datum: 15. 03. 2010		
Meritko: 17:100		

7.14. Kusovník / Stückliste / Piece list – Svěrák / Schraubstock / Vice

Císlo Sestavy 201.N603-000		Ver. 0		Název sestavy SVERAK/VICE/SCHRAUBSTOCK	
Poz.	Objednací číslo	Ver.	Název položky	Rozměr	Ks
1	201.Y607-030	0	VALEC SVERAKU / VICE CYLINDER / SCHRAUBSTOCKZYLINDER		1
2	30.3509-015	1	KROUZEK DISTANČNÍ / DISTANCE RING / DISTANZRING	TR 8x1	2
3	30.N314-002	0	SKLUZ / SLIDE / RUTSCH	P1,5-180	1
4	30.N503-013	0	NOHA / LEG / STÄNDER	P30-490	1
5	30.N503-101	0	TELESO SVERAKU / VICE BODY / SCHRAUBSTOCKKÖRPER		1
6	30.N503-102	0	LISTA VODICI / LEAD TRIM / FÜHRUNGSLEISTE	HR 40x25	2
7	30.N603-004	0	CELIST PEVNA / SOLID JAW / FESTE BACKE	P40-198	1
8	30.N603-006	0	BOČNICE / SIDE PLATE / SEITENTEIL		1
9	30.N603-007	0	CELIST / JAW / BACKE	HR 160x16	1
10	30.N603-010	0	STUL / TABLE / TISCH		1
11	30.N603-020	0	ROST / GRILL / GITTER	P3 - 394	1
12	30.N603-021	0	SKLUZ / SLIDE / RUTSCH	P 1,5 - 423	1
13	30.N603-108	0	CELIST / JAW / BACKE		1
14	30.Y303-104	1	DRZAK / HOLDER / HALTER		1
15	30.Y303-206	0	KLUZAK / GLIDER / GLEITER		1
16	30.Y509-008	0	PRÍLOŽKA / STRAP / LASCHE	HR 80x50	1
17	90.001.25.031	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	HR 50x30	1
18	90.001.25.032	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	8x16	4
19	90.001.25.049	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	8x20	24
20	90.001.25.062	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M10x35	4
21	90.001.25.086	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M12x50	2
22	90.011.27.012	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M16x40	7
23	90.150.50.005	0	SROUB ZAPUSTNÝ / COUNTERSINK BOLT / SENKSCHEIBE	SROUB M8x16	3
24	90.300.02.035	0	KOLÍK VALCOVÝ KALENÝ / CYLINDRICAL PIN TEMPERED / ZYLINDERSTIFT GEHÄRTET	PODLOŽKA 8,4	4
				KOLÍK 16x45	2

Císlo Sestavy/Number of assembly/Nummer der Baugruppe; Verze (Ver.)/Version/Version; Název sestavy/Assembly title/Name der Baugruppe; Pozice (Poz.)/Position/Position;
Objednací číslo/Purchase order number/Bestellnummer; Název položky/Volume title/Name der Position; Rozměr/Stock size/Abmessung

7.15. Válec zvedací / Hebezyylinder / Lifting cylinder

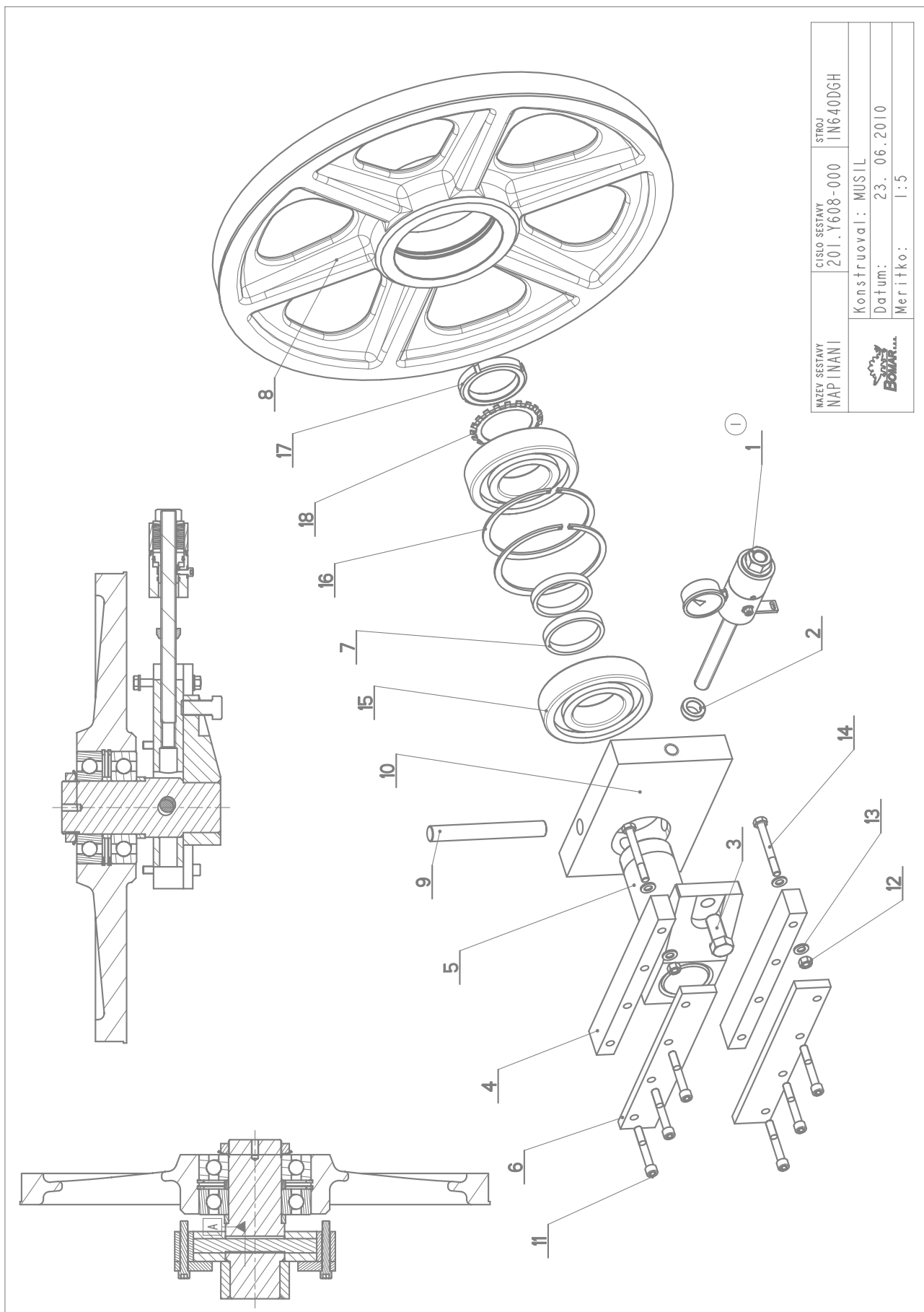



7.16. Kusovník / Stückliste / Piece list – Válec zvedací / Hebezyylinder / Lifting cylinder

Císlo Sestavy 201.Y607-010		Název sestavy VÁLEC ZVEDACÍ/LIFTING CYLINDER/HEBEZYLINDER			
Poz.	Objednávací číslo	Ver.	Název položky	Rozměr	Ks
1	30.0807-009	1	CEP / LUG / BOLZEN	d 16h9	1
2	30.1807-005	3	SROUBENI / BOLTING / VERSCHRAUBUNG	6-HR 22	1
3	30.8307-205	0	CEP / LUG / BOLZEN	d 16h9	1
4	30.8607-001	0	DRZAK / HOLDER / HALTER	HR 25x25	1
5	30.9107-509	0	SROUBENI / BOLTING / VERSCHRAUBUNG	6HR 22	1
6	30.C407-012	1	VIKO / COVER / DECKEL	d 55	1
7	30.LM07-504	0	PIST / PISTON / KOLBEN	d 55	1
8	30.Y307-005	3	VIKO / COVER / DECKEL	d 55	1
9	30.Y607-011	0	VALEC / ROLLER / ZYLINDER	TR 62/50H8	1
10	30.Y607-012	0	PISTNICE / PISTON ROD / KOLBENSTANGE	d 28 f8	1
11	90.001.25.034	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M8X30	1
12	90.101.55.003	0	MATICE / NUT / MUTTER	MATICE M16	1
13	92.002.001	0	SROUBENI PRIME / DIRECT BOLTING / GERADE VERSCHRAUBUNG	GES 08LR	1
14	92.003.001	0	SROUBENI UHLOVE / ANGLE BOLTING / WINKELVERSCHRAUBUNG	P-RSWS-08LR	1
15	92.151.001	0	VENTIL POJISTNY / SAFETY VALVE / SICHERUNGSVENTIL	VPN-H 1/4"	1
16	95.800.007	0	KROUZEK POJIST.VNEJS / OUTSIDE SAFETY RING / SICHERUNGSRING AUBEN	POJISTNY KROUZEK 16	2
17	95.801.009	0	KROUZEK POJIST.VNITR / INSIDE SAFETY RING / SICHERUNGSRING INNEN	POJISTNY KROUZEK 52	2
18	96.002.011	0	KROUZEK O DYNAMICKY / DYNAMIC O RING / O-RING DYNAMISCH	24X2	1
19	96.002.019	0	KROUZEK O DYNAMICKY / DYNAMIC O RING / O-RING DYNAMISCH	46X2	2
20	96.061.009	0	KROUZEK STIRACI / SCRAPER RING / ABSTREIFRING	WD2200280	1
21	96.082.002	0	TESNENI / SEALING / DICHTUNG	KROUZEK CU 13/17	2
22	96.084.001	0	KROUZEK VODICI / LEAD RING / FÜHRUNGSRING	GP6500500-T47	2
23	96.084.006	0	KROUZEK VODICI / LEAD RING / FÜHRUNGSRING	GR4300280-T47	1
24	96.900.001	0	TESNENI KOMBINOVA NE / COMBINATION SEALING / KOMBIDICHTUNG		1
25	96.900.021	0	TESNENI KOMBINOVA NE / COMBINATION SEALING / KOMBIDICHTUNG	RSK200280	1

I.ZRUS.SROUBENI 92.002.005 A MAHR.92.003.001,ZRUS.SROUBENI 30.6107-510 A MAHR.30.9107-509,ZRUS.2xTESNENI 96.082.002 (ZUSTAVAJI 2 ks). 071/ZM067 15.4.2010 SLEZACKOVA

7.17. Napínání / Spannung / Tensioning



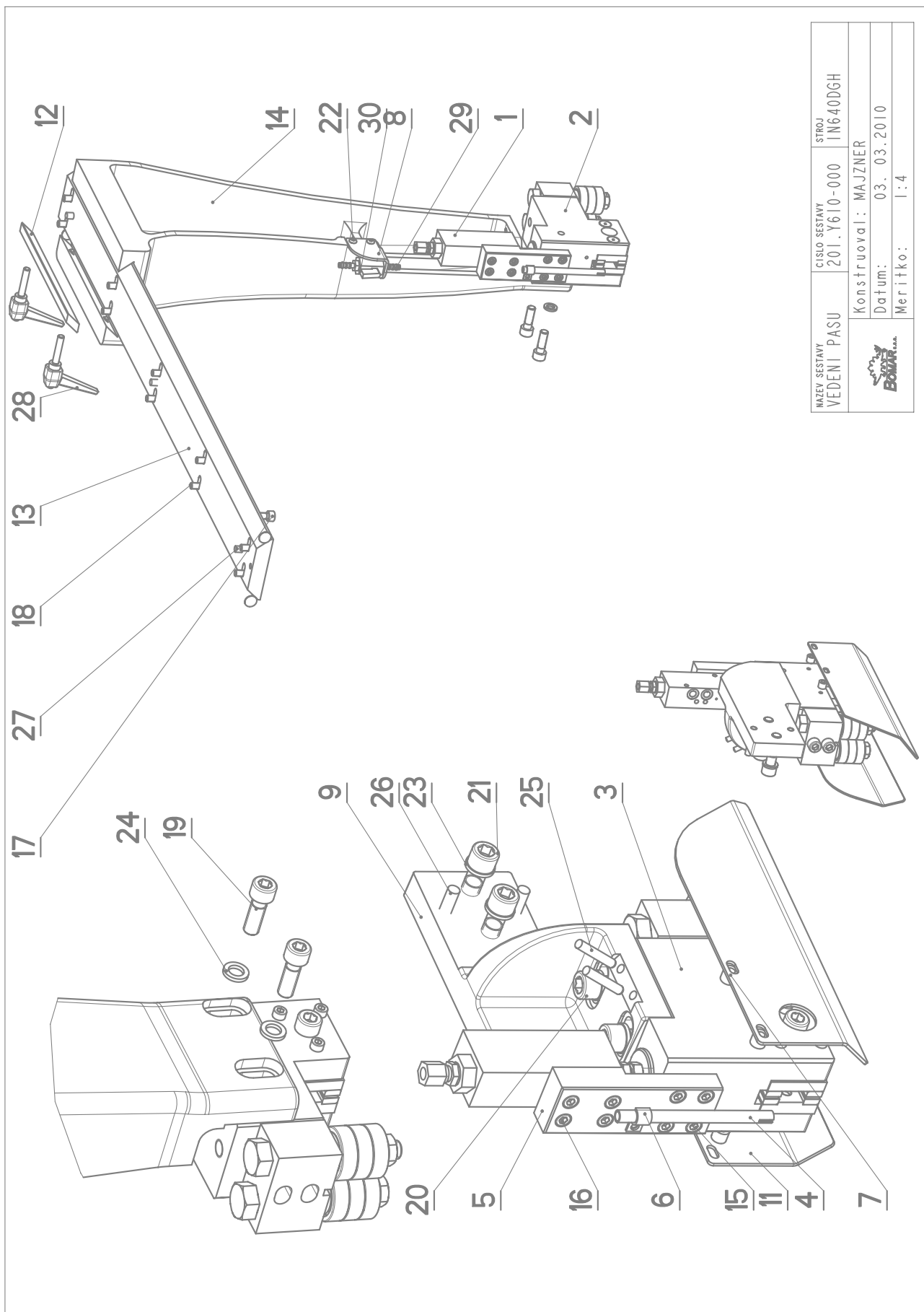
NAZEV SESTAVY NAPÍNÁNÍ	CÍSLO SESTAVY 201.Y608-000	STROJ IN640DGH
		Konstruoval: MUSIL
		Datum: 23. 06. 2010
		Meritko: 1:5

7.18. Kusovník / Stückliste / Piece list –
Napínání / Spannung / Tensioning

Císlo Sestavy 201.Y608-000		Ver. 1		Název sestavy NAPÍNÁNÍ / TENSIONING / SPANNUNG	
Poz.	Objednací číslo	Ver.	Název položky	Rozměr	Ks
1	201.Y608-003 (1)	0	VALEC / ROLLER / ZYLINDER	SESTAVA	1
2	30.6008-011	0	KROUZEK / RING / RING	d 38	1
3	30.6208-004	0	SROUB / BOLT / SCHRAUBE	TYC 32	1
4	30.6208-105	2	LISTA / TRIM / LEISTE	TYC 50x30	2
5	30.7508-001	2	CEP NAPÍNAČI / TENSIONING LUG / SPANNUNGSBOLZEN		1
6	30.7508-004	2	LISTA / TRIM / LEISTE	TYC 60x15	2
7	30.7508-005	3	KROUZEK / RING / RING	TR 102x10	2
8	30.7508-006	1	KOLO NAPÍNAČI / TENSIONING WHEEL / UMLENKRAD	KOLO	1
9	30.7508-007	0	CEP / LUG / BOLZEN	TYC 25j6	1
10	30.Y608-001	1	KOSTKA / CUBE / WÜRFEL	HR 200x50	1
11	90.001.25.065	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M12X80	6
12	90.100.55.007	0	MATICE / NUT / MUTTER	MATICE – M12	2
13	90.150.50.007	0	PODLOZKA / WASHER / UNTERLEGSCHLEIBE	PODLOZKA 13	4
14	90.401.07.002	0	ZAVÍRAČI SROUB / /	SROUB M12X100	2
15	95.001.053	0	LOŽISKO / BEARING / LAGER	6317A	2
16	95.801.033	0	KROUZEK POJIST.VNITR / INSIDE SAFETY RING / SICHERUNGSRING INNEN	POJISTNY KROUZEK 180	2
17	95.850.012	0	MATICE KM / KM NUT / KM-MUTTER	MATICE KM17	1
18	95.855.011	0	POJISTNA PODLOZKA / WASHER / UNTERLEGSCHLEIBE	MB17	1

I.ZRUS.VALEC 201.6107-350 A NAHR.VALCEM 201.Y608-003. 146/ZM197 23.6.2010 SLEZACKOVA

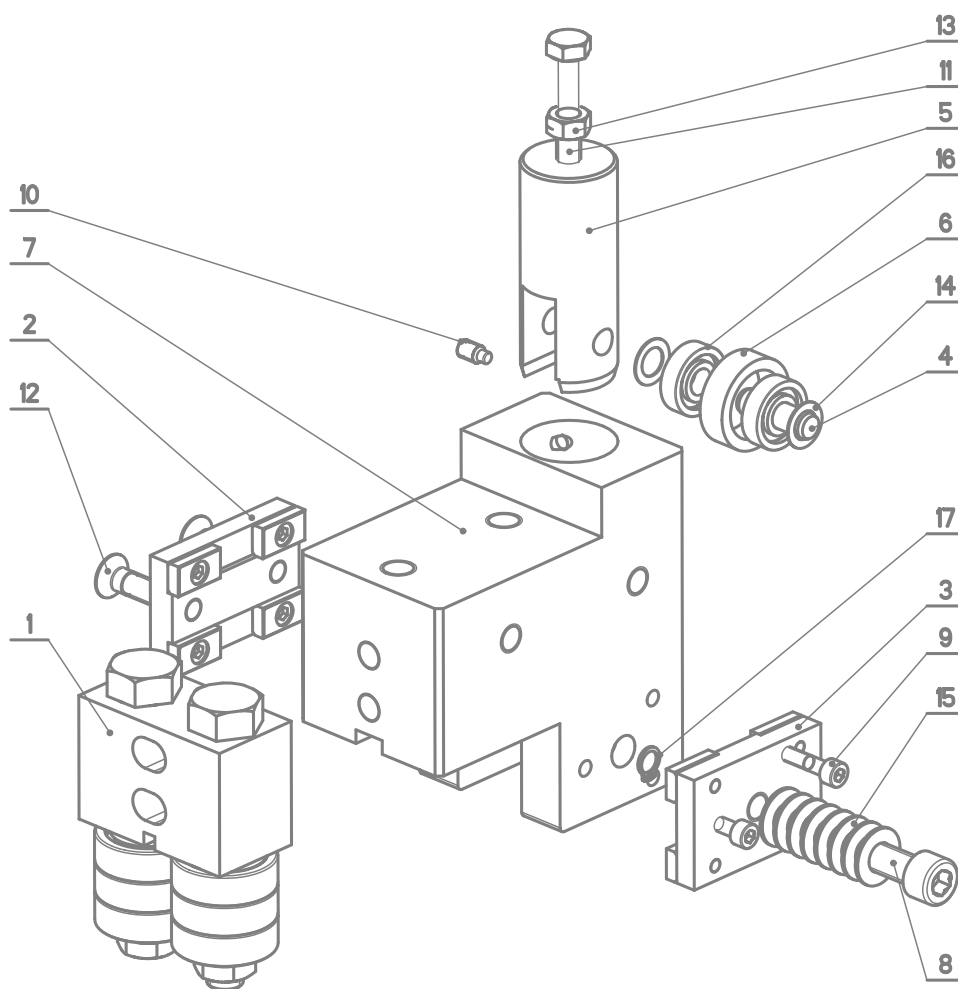
7.19. Vedení pásu / Sägebandführung / Belt guide



7.20. Kusovník / Stückliste / Piece list – Vedení pásu / Sägebandführung / Belt guide

Císlo Sestavy 201.Y610-000		Ver. 0	Název sestavy VEDENÍ PASU/BELT GUIDE/SÄGEBANDFÜHRUNG		
Poz.	Objednávací číslo	Ver.	Název položky	Rozměr	Ks
1	201.6816-100	0	KOSTKA REGULACE / REGULATION CUBE / REGULINGSWÜRFEL		2
2	201.Y610-100	0	KOSTKA VODÍČI / LEAD CUBE / FÜHRUNGSKLOTZ		1
3	201.Y610-200	0	KOSTKA VODÍČI / LEAD CUBE / FÜHRUNGSKLOTZ		1
4	30.3510-004	0	TRUBKA / TUBE / ROHR	TR 8x 1	2
5	30.6016-002	0	DESKA / BOARD / PLATTE	HR 40x20	2
6	30.9010-003	0	DRŽAK / HOLDER / HALTER	PI.5x10	2
7	30.Y310-007	0	KROUZEK / RING / RING	TR 10x2,5	4
8	30.Y310-008	0	DRŽAK / HOLDER / HALTER	P3-50	1
9	30.Y510-005	0	DRŽAK / HOLDER / HALTER	-	1
10	30.Y510-006	0	KRYT PASU / BELT COVER / BANDABDECKUNG	P2-90	1
11	30.Y510-008	0	KRYT PASU / BELT COVER / BANDABDECKUNG	P2-90	1
12	30.Y510-011	0	LISTA / TRIM / LEISTE	HR 30x10	1
13	30.Y610-003	0	LISTA / TRIM / LEISTE	HR 90x20	1
14	30.Y610-104	0	KONZOLA / CONSOLE / KONSOLE		1
15	90.001.25.017	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M6X16	8
16	90.001.25.019	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M6X25	8
17	90.001.25.031	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	8x16	2
18	90.001.25.032	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	8x20	10
19	90.001.25.048	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M10X30	2
20	90.001.25.059	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M12X35	2
21	90.001.25.061	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M12X45	2
22	90.013.27.003	0	SROUB / BOLT / SCHRAUBE	M5X10	2
23	90.163.00.003	0	PODLOZKA / WASHER / UNTERLEGSCHIEBE	NORD-LOCK	4
24	90.163.00.004	0	PODLOZKA / WASHER / UNTERLEGSCHIEBE	NORD-LOCK	2
25	90.300.02.007	0	KOLÍK VALCOVÝ KALENÝ / CYLINDRICAL PIN TEMPERED / ZYLINDERSTIFT GEHÄRTET	KOLÍK 6X36	2
26	90.300.02.011	0	KOLÍK VALCOVÝ KALENÝ / CYLINDRICAL PIN TEMPERED / ZYLINDERSTIFT GEHÄRTET	KOLÍK 8X40	2
27	90.302.02.002	0	KOLÍK KUŽELOVÝ / TAPER PIN / KEGELBOLZEN	KOLÍK 8X30	3
28	94.008.003	0	PAKA UPÍNACÍ / ATTACHMENT LEVER / SPANNHEBEL	M8x40	2
29	94.202.002	0	REDUKCE / REDUCTION / ADAPTOR / REDUKTION	REDUKCE 6/R1/4"	2
30	99.260.003	0	VENTIL / VALVE / VENTIL	1/4"	1

7.21. Vodící kostka / Führungsklotz / Guiding cube 1



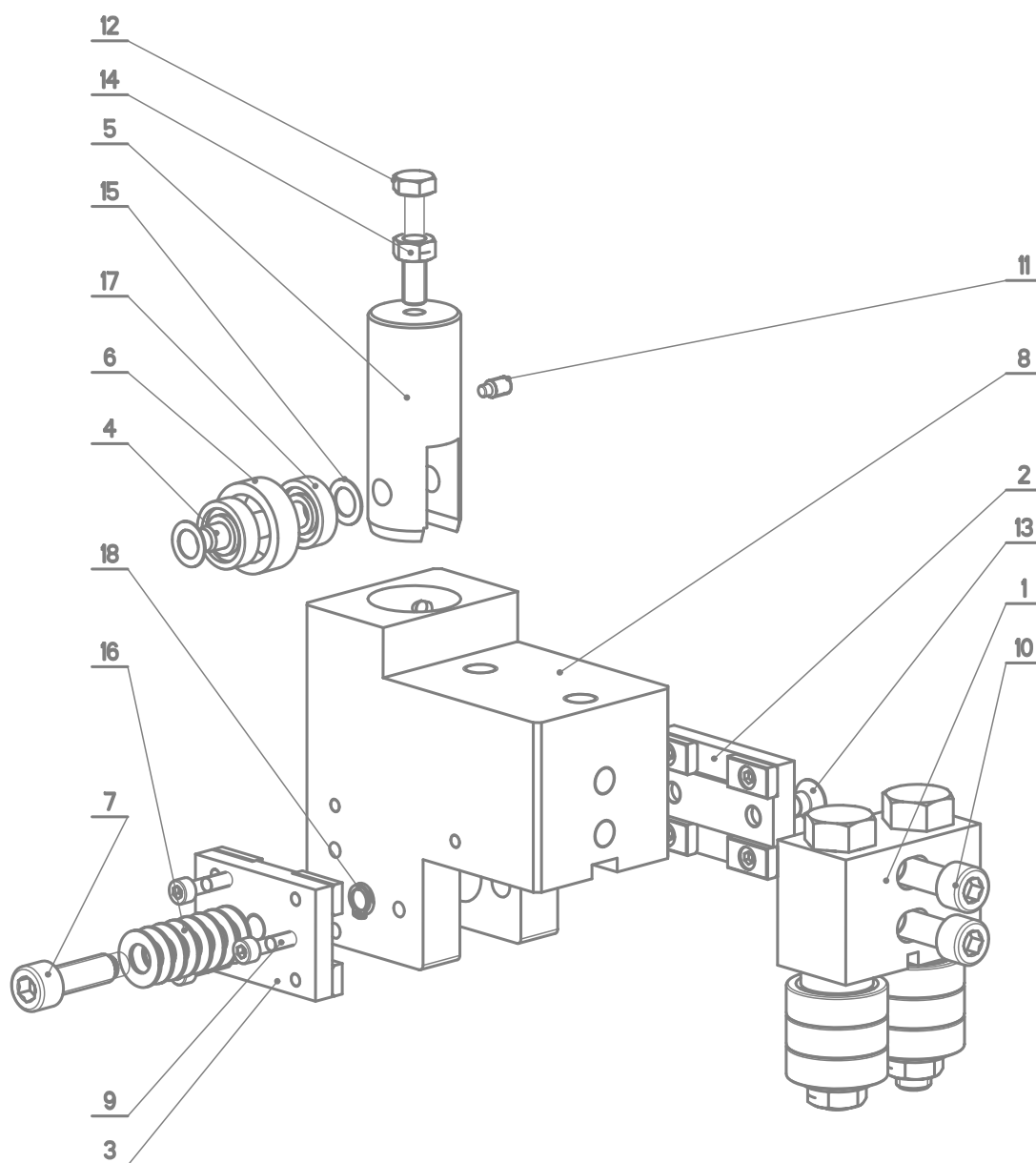
NAZEV SESTAVY KOSTKA VODICI	CISLO SESTAVY 201.Y610-100	STROJ 1N15/6
	Konstruoval: MUSIL	
	Datum: 03. 03.2010	
	Meritko: 1:2	

7.22. Kusovník / Stückliste / Piece list – Vodící kostka / Führungsklotz / Guiding cube 1

Cislo Sestavy 201.Y610-100		Název sestavy KOSTKA VODICI/LEAD CUBE/FÜHRUNGSKLOTZ			
Poz.	Objednací číslo	Ver.	Název položky	Rozměr	Ks
1	201.C410-510	0	VEDENÍ / GUIDE / BACKENFÜHRUNG		1
2	201.Y610-110	0	DRŽÁK TVRDOKOVU / POA HOLDER / HM-HALTER		1
3	201.Y610-120	0	DRŽÁK TVRDOKOVU / POA HOLDER / HM-HALTER		1
4	30.6710-108	1	KOLÍK / PIN / BOLZEN	TYC 10	1
5	30.6710-109	0	PIST / PISTON / KOLBEN	d 32	1
6	30.6710-110	1	KROUZEK / RING / RING	LH 2403210	1
7	30.Y610-101	1	KOSTKA VODICI / LEAD CUBE / FÜHRUNGSKLOTZ	HR 120x80	1
8	30.Y610-106	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M10x30	1
9	90.001.25.011	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M5X25	3
10	90.004.2D.002	0	SROUB STAVECI / ADJUSTMENT BOLT / STELLSCHRAUBE	SROUB M6X12	1
11	90.005.55.019	0	SROUB 6HRANNÝ / 6 SIDED BOLT / SECHSKANTSCHRAUBE	SROUB M8X40	1
12	90.011.27.016	0	SROUB ZAPUSTNÝ / COUNTERSINK BOLT / SENKTSCHRAUBE	SROUB M8X25	2
13	90.100.55.005	0	MATICE / NUT / MUTTER	MATICE – M8	1
14	90.154.50.003	0	PODLOZKA / WASHER / UNTERLEGSCHEIBE	10x16x0.50	2
15	90.350.0Z.005	0	PRUŽINA TALIROVA / DISC SPRING / TELLERFEDER	20X10.2X1.1	8
16	95.001.044	0	LOŽISKO / BEARING / LAGER	609 2RS	2
17	95.800.002	0	KROUZEK POJIST.VNEJS / OUTSIDE SAFETY RING / SICHERUNGSRING AUBEN	POJISTNY KROUZEK 8	1

Cislo Sestavy/Number of assembly/Nummer der Baugruppe; Verze (Ver.)/Version/Version; Název sestavy/Assembly title/Name der Baugruppe; Pozice (Poz.)/Position/Position;
Objednací číslo/Purchase order number/Bestellnummer; Název položky/Volume title/Name der Position; Rozměr/Stock size/Abmessung

7.23. Vodící kostka / Führungsklotz / Guiding cube 2



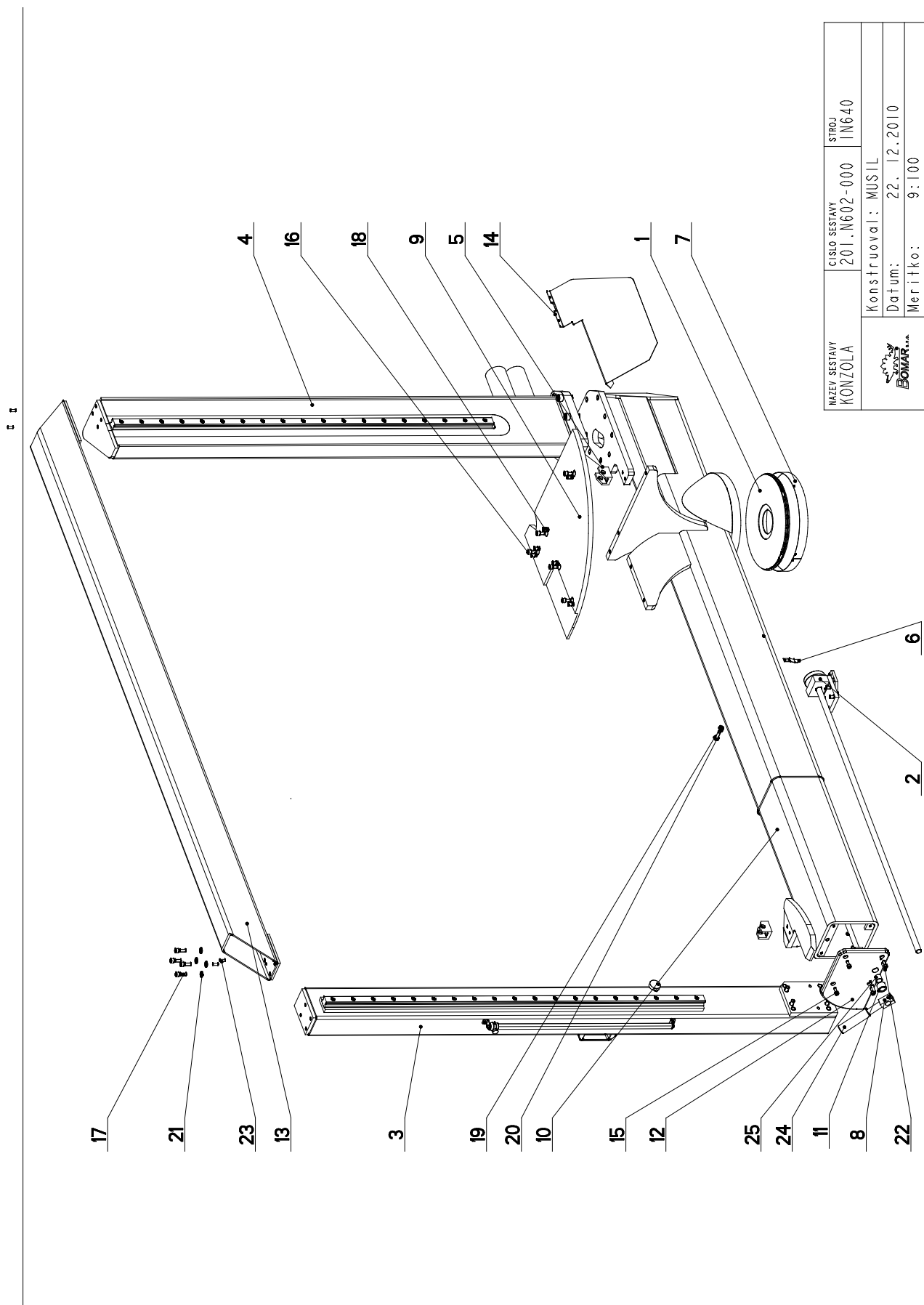
NAZEV SESTAVY KOSTKA VODICI	CISLO SESTAVY 201.Y610-200	STROJ 1N5/6
	Konstruoval: MUSIL	
	Datum: 03. 03.2010	
	Meritko: 1:2	

7.24. Kusovník / Stückliste / Piece list – Vodící kostka / Führungsklotz / Guiding cube 2

Císlo Sestavy 201.Y610-200		Ver. 0		Název sestavy KOSTKA VODICI/LEAD CUBE/FÜHRUNGSKLOTZ	
Poz.	Objednací číslo	Ver.	Název položky	Rozměr	Ks
1	201.C410-510	0	VEDENÍ / GUIDE / BACKENFÜHRUNG		1
2	201.Y610-110	0	DRŽÁK TVRDOKOVU / POA HOLDER / HM-HALTER		1
3	201.Y610-120	0	DRŽÁK TVRDOKOVU / POA HOLDER / HM-HALTER		1
4	30.6710-108	1	KOLÍK / PIN / BOLZEN	TYC 10	1
5	30.6710-109	0	PIST / PISTON / KOLBEN	d 32	1
6	30.6710-110	1	KROUZEK / RING / RING	LH 2403210	1
7	30.Y610-106	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M10x30	1
8	30.Y610-201	1	KOSTKA VODICI / LEAD CUBE / FÜHRUNGSKLOTZ	HR 120x80	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	90.004.20.002	0	SROUB STAVECÍ / ADJUSTMENT BOLT / STELLSCHRAUBE	SROUB M6X12	1
12	90.005.55.019	0	SROUB 6HRANNÝ / 6 SIDED BOLT / SECHSKANTSCHRAUBE	SROUB M8X40	1
13	90.011.27.016	0	SROUB ZAPUSTNÝ / COUNTERSINK BOLT / SENKSCHRAUBE	SROUB M8X25	2
14	90.100.55.005	0	MATICE / NUT / MUTTER	MATICE - M8	1
15	90.154.50.003	0	PODLOŽKA / WASHER / UNTERLEGSCHIBE	10x16x0.50	2
16	90.350.02.005	0	PRUŽINA TALIROVA / DISC SPRING / TELLERFEDER	20X10.2X1.1	8
17	95.001.044	0	LOŽISKO / BEARING / LAGER	609 2RS	2
18	95.800.002	0	KROUZEK POJIST.VNEJS / OUTSIDE SAFETY RING / SICHERUNGSRING AUBEN	POJISTNY KROUZEK 8	1

Císlo Sestavy/Number of assembly/Nummer der Baugruppe; Verze (Ver.)/Version/Version; Název sestavy/Assembly title/Name der Baugruppe; Pozice (Poz.)/Position/Position;
Objednací číslo/Purchase order number/Bestellnummer; Název položky/Volume title/Name der Position; Rozměr/Stock size/Abmessung

7.25. Konzola / Konsole / Console



NAZEV SESTAVY KONZOLA	ČÍSLO SESTAVY 201.N602-000	STROJ IN640
Konstruoval: MUSIL		Datum: 22. 12. 2010
Meritko:		9:100

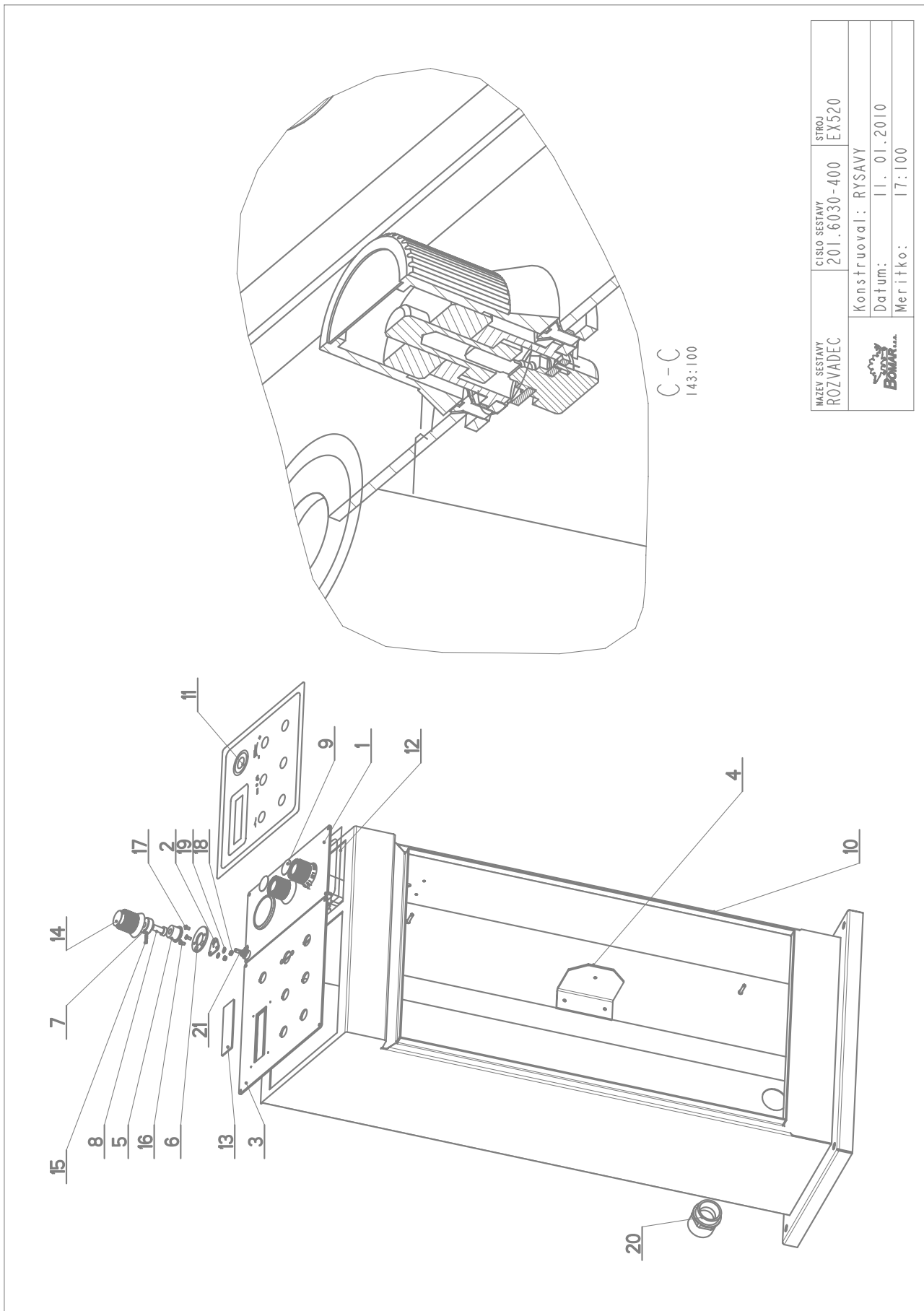
7.26. Kusovník / Stückliste / Piece list – Konzola / Konsole / Console

Císlo Sestavy 201.N602-000		Ver. 1		Název sestavy KONZOLA/CONSOLE/KONSOLE	
Poz.	Objednací číslo	Ver.	Název položky	Rozměr	Ks
1	201.7102-100	0	LOŽISKO / BEARING / LAGER		1
2	201.Y602-020	0	BRZDA / BRAKE / BREMSE		1
3	201.Y602-050	3	SLOUP / POLE / SÄULE		1
4	201.Y602-160	3	SLOUP / POLE / SÄULE		1
5	30.0807-008	2	DRŽAK / HOLDER / HALTER	HR 40x40	2
6	30.4604-004	0	UKAZATEL / INDICATOR / ZEIGER	P 1,5x15	1
7	30.7202-123	2	PLECH / PLATE / BLECH	P 0,8 - 33	1
8	30.8602-505	0	PAKA / LEVER / HEBEL		1
9	30.N502-004	0	STUL / TABLE / TISCH	P 20 - 506	1
10	30.N602-001	0	KONZOLA / CONSOLE / KONSOLE	SVARENO	1
11	30.Y302-204	0	KROUZEK DISTANČNÍ / DISTANCE RING / DISTANZRING	TR 30x5	1
12	30.Y502-203	1	DESKA / BOARD / PLATTE	P15-200	1
13	30.Y602-002	0	PRICKA / BRACE / QUERLATTE		1
14	30.Y614-301	0	SKLUZ / SLIDE / RUTSCH	PI-334	1
15	90.001.25.032	0	ŠROUB IMBUS ČERNÝ / ALLEN HEAD BOLT / IMBUSSCHRAUBE	8x20	4
16	90.001.25.046	0	ŠROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M10X20	5
17	90.001.25.048	0	ŠROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M10X30	8
18	90.002.2D.017	0	ŠROUB STAVEČI / ADJUSTMENT BOLT / STELLSCHRAUBE	ŠROUB M12X16	6
19	90.005.55.025	0	ŠROUB 6HRANNÝ / 6 SIDED BOLT / SECHSKANTSCHRAUBE	ŠROUB M10X30	1
20	90.101.55.002	0	MATICE / NUT / MUTTER	MATICE M10	1
21	90.150.50.006	0	PODLOŽKA / WASHER / UNTERLEGSCHIBE	PODLOŽKA 10,5	8
22	90.300.07.010	0	KOLÍK VALC. KAL. / CYLINDRICAL PIN TEMPERED / ZYLINDERSTIFT GEHARTET	KOLÍK 8X32	2
23	90.301.07.021	0	KOLÍK VALCOVÝ / CYLINDRICAL PIN SOFT / ZYLINDERSTIFT WEICH	KOLÍK 8X22	4
24	94.004.502	0	RUKOJET / HANDLE / GRIF	D22	1
25	95.700.004	0	POUZDRO / SLEEVE / BÜCHSE	20X20	1

I. ZRUSENO 2xPOUZDRO 95.720.003. 290/ZM325 15.12.2011 SLEZACKOVA

Císlo Sestavy/Number of assembly/Nummer der Baugruppe; Verze (Ver.)/Version/Version; Název sestavy/Assembly title/Name der Baugruppe; Pozice (Poz.)/Position/Position;
Objednací číslo/Purchase order number/Bestellnummer; Název položky/Volume title/Name der Position; Rozměr/Stock size/Abmessung

7.27. Rozvaděč / Verteiler / Distributor



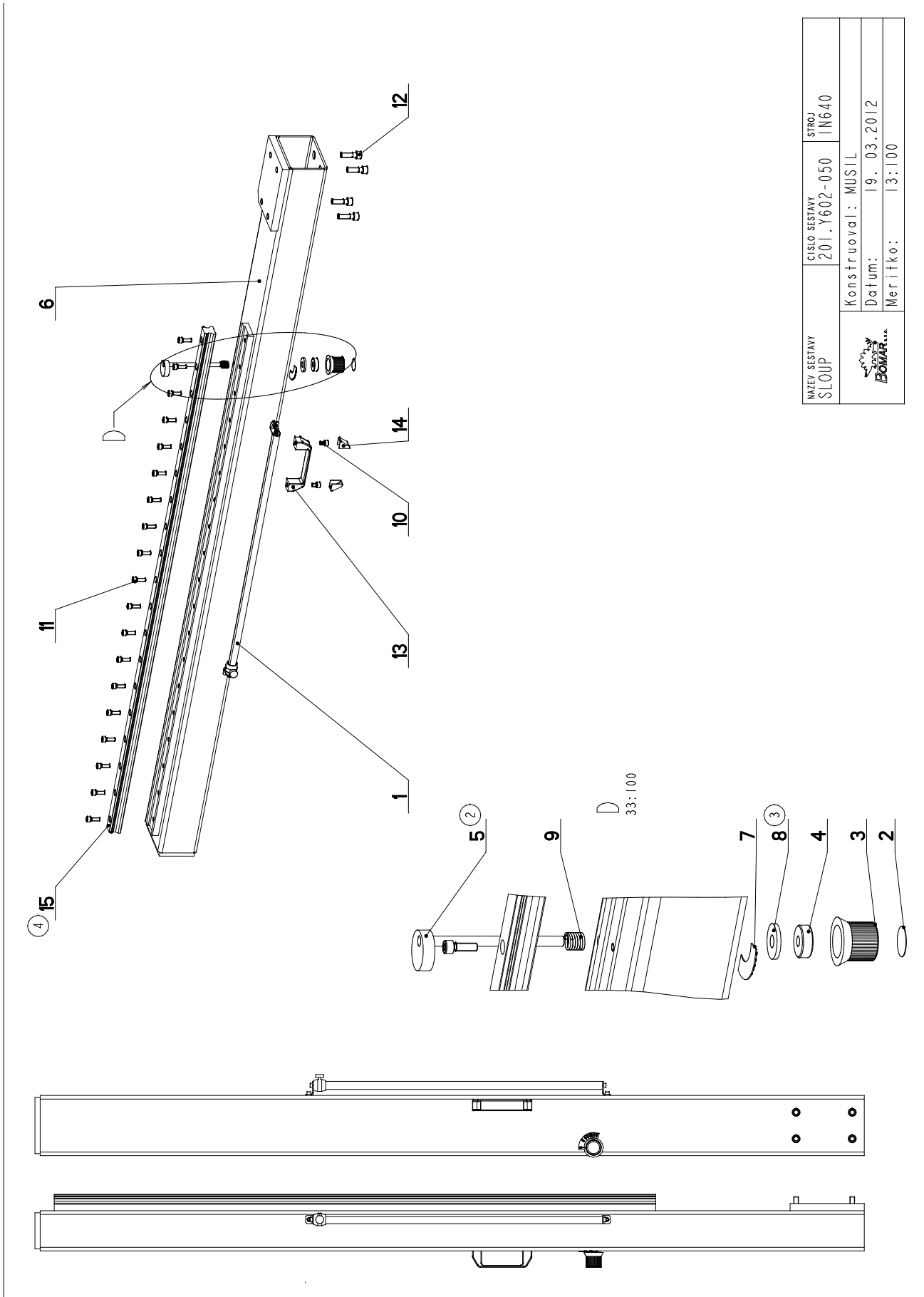
NAZEV SESTAVY ROZVADEC	CISLO SESTAVY 201.6030-400	STROJ EX520
Konstruoval: RYSAVY		Datum: 11. 01. 2010
		Meritko: 17:100



7.28. Kusovník / Stückliste / Piece list – Rozvaděč / Verteiler / Distributor

Císlo Sestavy 201.6030-400		Ver. 3		Název sestavy ROZVADEČ/DISTRIBUTOR/VERTEILER	
Poz.	Objednávací číslo	Ver.	Název položky	Rozměr	Ks
1	201.6030-420	1	OVLADACÍ PANEL / CONTROL PANEL / BEDIENPULT		1
2	30.5002-003	0	DRŽÁK / HOLDER / HALTER		1
3	30.6030-406	3	PANEL ELEKTRO / ELECTRO PANEL / PANEL	P 3x297x285	1
4	30.6030-413	1	DRŽÁK / HOLDER / HALTER	P3x110x140	1
5	30.6130-007	0	ULOŽENÍ / MOUNTING / LAGERUNG	d 30	1
6	30.6130-009	0	PŘÍLOŽKA / STRAP / LASCHE	P 3 - 50	1
7	30.6130-010	0	VLOŽKA / INSERT / EINLAGE	d 30	1
8	30.6130-011	0	VEDENÍ / GUIDE / BACKENFÜHRUNG	d 16	1
9	30.6130-012	0	VÍKO / COVER / DECKEL	P 0.5x 30x30	3
10	31.6030-401	0	ELEKTROKRIN / ELECTRIC BOX / ANSCHLUSSKASTEN		1
11	31.6030-409	0	PANEL / PANEL / PANEL		1
12	31.6030-410	0	PANEL / PANEL / PANEL		1
13	31.6030-414	0	SKLO ORGANICKE / PLEXIGLASS / PLEXIGLAS	3x30x150	1
14	31.6130-008	0	HLAVICE / HEAD / KOPF		1
15	90.002.2D.001	0	SROUB STAVECÍ / ADJUSTMENT BOLT / STELSCHRAUBE	SROUB M4X6	2
16	90.008.50.003	0	SROUB ZAPŮSTNÝ / COUNTERSINK BOLT / SENKSCHRAUBE	SROUB M4X10	2
17	90.011.27.001	0	SROUB ZAPŮSTNÝ / COUNTERSINK BOLT / SENKSCHRAUBE	SROUB M4X8	2
18	90.100.55.002	0	MATICE / NUT / MUTTER	MATICE – M4	2
19	90.150.50.002	0	PODLOŽKA / WASHER / UNTERLEGSCHLEIBE	PODLOŽKA 4,3	2
20	91.071.005	0	VÝVODKA / BUSHING / TÜLLE		2
21	91.283.001	0	POTENCIOMETR / POTENTIOMETER / POTENTIOMETER		1

7.29. Sloup / Saule / Pole 1



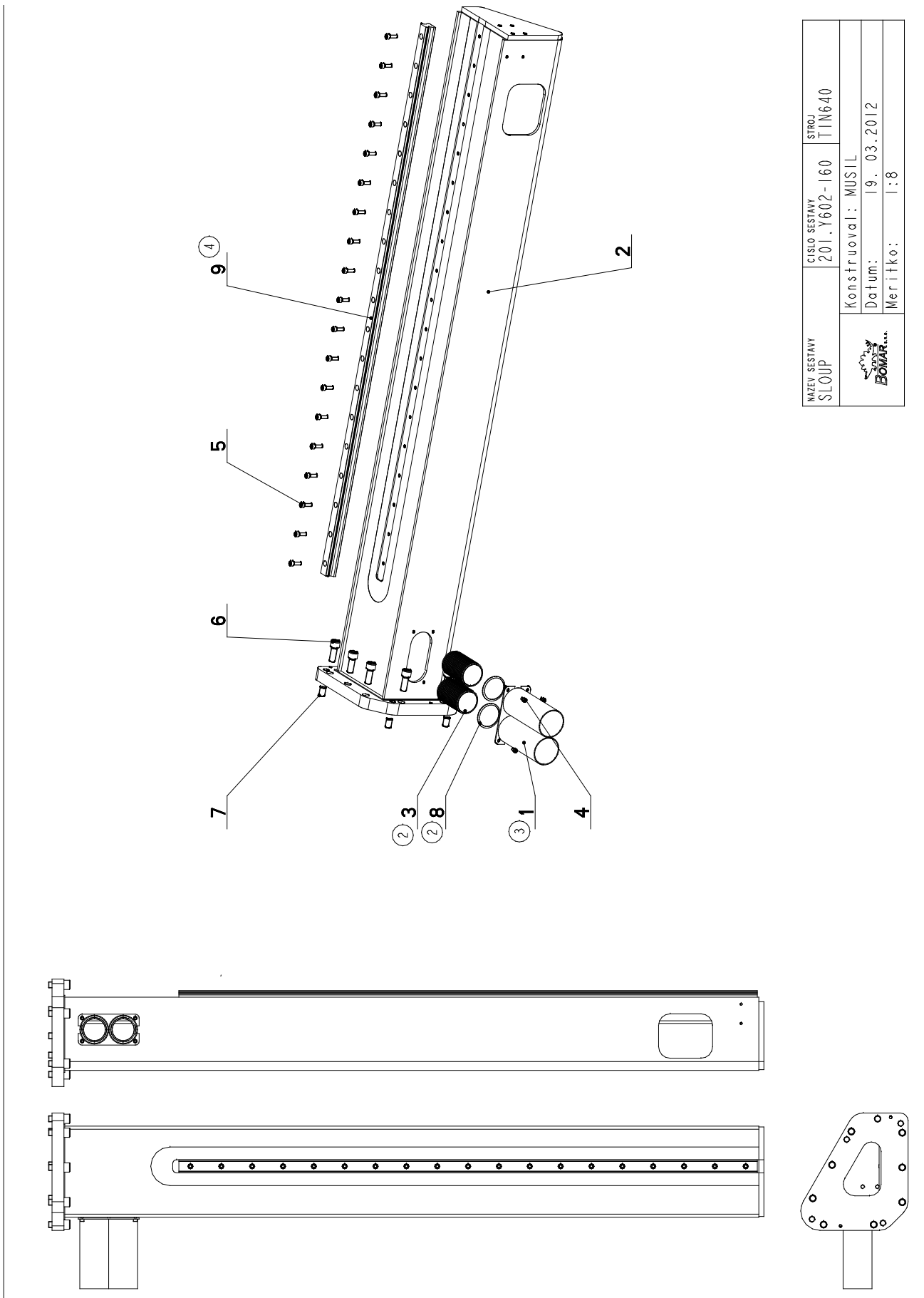
7.30. Kusovník / Stückliste / Piece list – Sloup / Saule / Pole 1

Císlo Sestavy 201.Y602-050		Ver. 4		Název sestavy SLOUP/POLE / SÄULE	
Poz.	Objednací číslo	Ver.	Název položky	Rozměr	Ks
1	201.Y602-070	1	ODMĚROVANI / MEASURING / GEHRUNGSMESSUNG	SESTAVA	1
2	30.6130-012	0	VÍKO / COVER / DECKEL	P 0.5x 30x30	1
3	30.6130-020	0	OVLADANI / CONTROLS / STEUERUNG	VYLÍSEK	1
4	30.Y302-058	1	VLOŽKA / INSERT / EINLAGE	ø 32	1
5	30.Y402-055 (2)	1	OSA / AXLE / ACHSE	SVARENO	1
6	30.Y602-051	2	SLOUP / POLE / SÄULE		1
7	30.Y602-054	0	STUPNICE / SCALE / SKALA	P 0,5-43	1
8	31.K107-006 (3)	1	GUMA / RUBBER / GUMMI	ø35	1
9	31.T302-054	0	PRUŽINA / SPRING / FEDER	ø 2,24	1
10	90.001.25.029	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M8X12	2
11	90.001.25.033	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	8x25	19
12	90.001.25.060	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M12X40	4
13	94.012.001	0	RUKOJET / HANDLE / GRIFF		1
14	94.012.002	0	ZATKA / PLUG / STOPFEN		2
15	99.200.263 (4)	0	VEDENÍ LINEARNÍ / LINEAR GUIDE / LINEARE FUHRUNG	MSA 35R 1500 30/30N	1

1. ZRUS.LIN.VEDENÍ HSR35 L=1500 (99.200.134) A NAHR.LIN.VEDENÍM HGR35R L=1500 (99.200.076). 290/ZM303 5.11.2010 SLEZACKOVA
 2. ZRUS.SOUCAST 30.Y502-055 A NAHR. 30.Y402-055. 319/ZM336 9.12.2010 SLEZACKOVA
 3. ZRUS.GUMA 30.Y302-157 A NAHR.31.K107-006. 125/ZM141 10.6.2011 SLEZACKOVA
 4. ZRUS.LIN.VEDENÍ 99.200.076 A NAHR.99.200.263 . 056/ZM099 19.3.2012 SLEZACKOVA

Císlo Sestavy/Number of assembly/Nummer der Baugruppe; Verze (Ver.)/Version/Version; Název sestavy/Assembly title/Name der Baugruppe; Pozice (Poz.)/Position/Position;
 Objednací číslo/Purchase order number/Bestellnummer; Název položky/Volume title/Name der Position; Rozměr/Stock size/Abmessung

7.31. Sloup / Saule / Pole 2



NAZEV: SESTAVY SLOUP	CISLO SESTAVY 201.Y602-160	STROJ TTN640
Konstruoval: MUSIL		Datum: 19. 03. 2012
Meritko: 1:8		

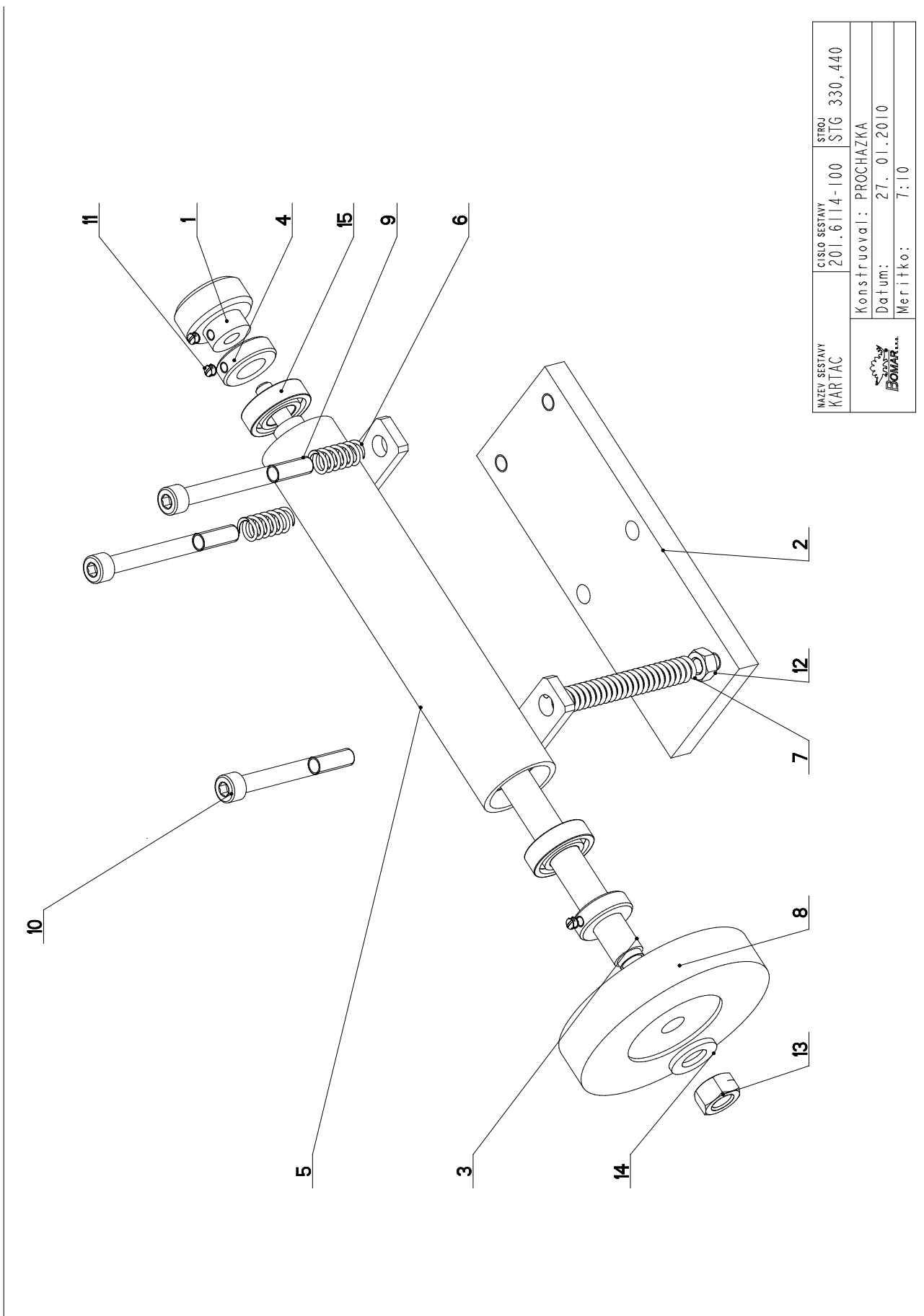
7.32. Kusovník / Stückliste / Piece list – Sloup / Saule / Pole 2

Císlo Sestavy 201.Y602-160		Ver. 4		Název sestavy SLOUP/POLE/SAULE	
Poz.	Objednací číslo	Ver.	Název položky	Rozměr	Ks
1	30.V302-125 (3)	0	DRZAK / HOLDER / HALTER		1
2	30.Y602-161	2	SLOUP / POLE / SAULE		1
3	41.001.006 (2)	0	HADICE / HOSE / SCHLAUCH	PG48	2
4	90.001.25.015	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M6X10	4
5	90.001.25.033	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	8x25	19
6	90.001.25.086	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M16X40	9
7	90.002.2D.028	0	SROUB STAVECI / ADJUSTMENT BOLT / STELLSCHRAUBE	SROUB M16x1,5x25	4
8	95.800.021 (2)	0	SEGR HR IDEL. / OUTSIDE SAFETY RING / SICHERUNGSRING AUßEN	POJISTNY KROUZEK 62	2
9	99.200.263 (4)	0	VEDENI LINEARNI / LINEAR GUIDE / LINEARE FUHRUNG	MSA 35R 1500 30/30N	1

1. ZRUS.LIN.VEDENI HSR35 L=1500 (99.200.134) A NAHR.LIN.VEDENIM HGR35R L=1500 (99.200.076). 290/ZM303 5.11.2010 SLEZACKOVA
 2. ZRUS.UCHYTKA 30.Y502-162 A NAHR.30.Y502-163.ZRUS.POJ.KROUZEK 95.800.016 A NAHR.95.800.021,
 ZRUS.HADICE PG36 (41.001.005) A NAHR.41.001.06) . 326/ZM017 28.1.2011 SLEZACKOVA
 3. ZRUSEN DRZAK 30.Y502-163 A NAHR.30.V302-125. 290/ZM325 15.12.2011 SLEZACKOVA
 4. ZRUS.LIN.VEDENI 99.200.076 A NAHR.99.200.263 . 056/ZM099 19.3.2012 SLEZACKOVA

Císlo Sestavy/Number of assembly/Nummer der Baugruppe; Verze (Ver.)/Version/Version; Název sestavy/Assembly title/Name der Baugruppe; Pozice (Poz.)/Position/Position;
 Objednací číslo/Purchase order number/Bestellnummer; Název položky/Volume title/Name der Position; Rozměr/Stock size/Abmessung

7.33. Kartáč / Bürste / Brush



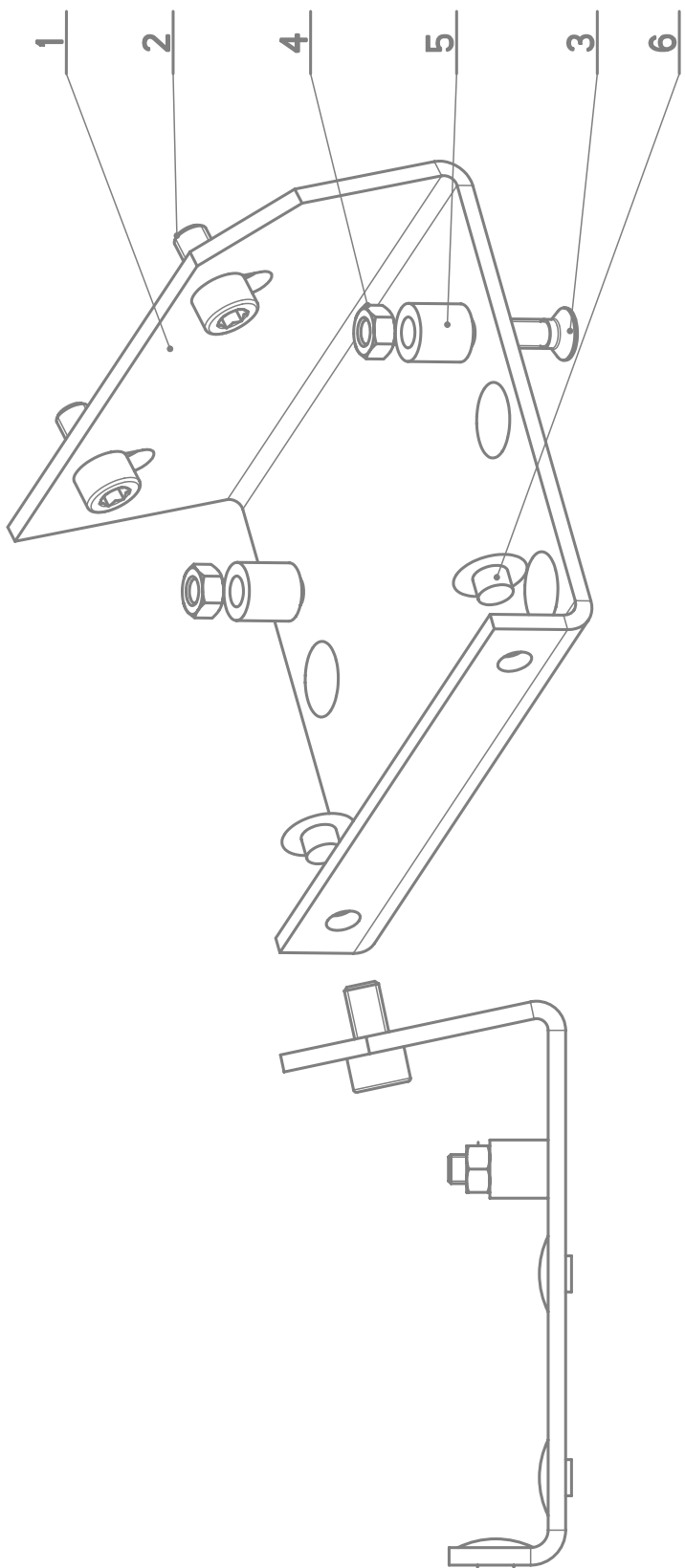
NAZEV SESTAVY KARTAC	CISLO SESTAVY 201.6114-100	STROJ STG 330,440
Konstruoval: PROCHAZKA		
Datum: 27. 01. 2010		
Meritko: 7:10		

7.34. Kusovník / Stückliste / Piece list – Kartáč / Bürste / Brush

Císlo Sestavy 201.6114-100		Ver. 0		Název sestavy KARTAC/BRUSH/BÜRSTE	
Poz.	Objednací číslo	Ver.	Název položky	Rozměr	Ks
1	30.0814-204	0	KOLEČKO / WHEEL / ROLLE	SESTAVA	1
2	30.6114-105	0	DESKA / BOARD / PLATTE	HR. 70x12	1
3	30.6114-116	0	HRÍDEL / SHAFT / WELLE	D 15	1
4	30.6114-119	1	KROUZEK / RING / RING	d 28	2
5	30.6114-128	0	DRŽAK / HOLDER / HALTER		1
6	31.1506-115	0	PRUŽINA / SPRING / FEDER	1.6x12x25x7.5	2
7	31.2107-206	0	PRUŽINA / SPRING / FEDER		1
8	49.250.017	0	KARTAC / BRUSH / BÜRSTE	SPB 100x12	1
9	90.001.25.067	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M8x80	2
10	90.001.25.095	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M8x70	1
11	90.003.20.001	0	SROUB STAVECI / ADJUSTMENT BOLT / STELLSCHRAUBE	SROUB M5X6	3
12	90.100.55.005	0	MATICE / NUT / MUTTER	MATICE – M8	1
13	90.100.55.007	0	MATICE / NUT / MUTTER	MATICE – M12	1
14	90.150.50.007	0	PODLOZKA / WASHER / UNTERLEGSCHEIBE	PODLOZKA 13	1
15	95.001.006	0	LOŽISKO / BEARING / LAGER	6002 2RS	2

7.35. Vedení / Backenführung / Guide

Cislo Sestavy 201.Y604-070		Název sestavy VEDENÍ / GUIDE / BACKENFÜHRUNG			
Poz.	Objednací číslo	Ver.	Název položky	Rozměr	Kčs
1	30.Y604-071	0	DRŽÁK / HOLDER / HALTER	P3 - 100	1
2	90.001.25.016	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M6X12	2
3	90.011.27.024	0	SROUB ZAPUSTNÝ / COUNTERSINK BOLT / SENKSCHRAUBE	SROUB M5X20	2
4	90.100.55.003	0	MATICE / NUT / MUTTER	MATICE - M5	2
5	90.163.00.006	0	DISTANČ / DISTANCE / DISTANZ	TR 10/5.3	2
6	94.101.029	0	ZATKA / PLUG / STOPFEN	PRO IMBUS M8	6

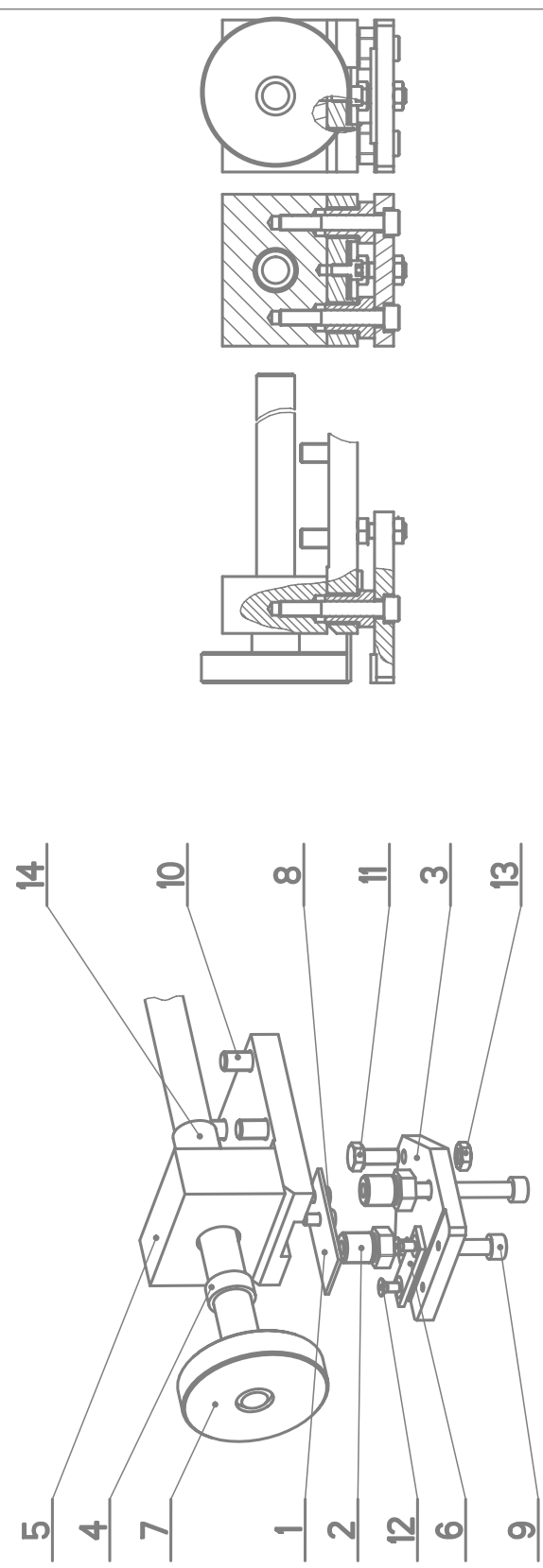


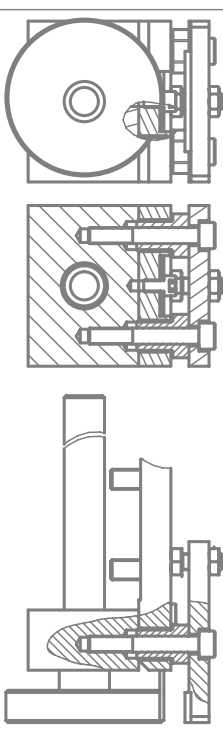
7.36. Ložisko / Lager / Bearing

Cislo Sestavy 201.7102-100		Ver. 0		Nazev sestavy LOZISKO/BEARING/LAGER	
Poz.	Objednaci cislo	Ver.	Nazev polozky	Rozmer	Ks
1	30.7102-103	0	CEP / LUG / BOLZEN	d 16	8
2	31.7102-101	0	KOTOUC / DISC / SCHEIBE	340x125x2.2	2
3	81.7102-102	0	KOTOUC / DISC / SCHEIBE	P 2 -348	1
4	95.692.001	0	VALECEK / CYLINDER / ROLLE	12x12	36

7.37. Brzda / Bremse / Brake

Cislo Sestavy 201.Y602-020		Nazev sestavy BRZDA/BRAKE/BREMSE			
Poz.	Objednaci cislo	Ver.	Nazev polozky	Rozmer	Ks
1	30.Y402-022	0	DESKA / BOARD / PLATTE	P2-30	1
2	30.Y402-023	0	SROUB STAVECI / ADJUSTMENT BOLT / STELSCHRAUBE	6HR 19	2
3	30.Y402-024	0	DESKA / BOARD / PLATTE	HR 80x10	1
4	30.Y402-027	0	KROUZEK / RING / RING	TR 25x5	1
5	30.Y402-028	0	TELESO / BODY / KÖRPER		1
6	30.Y402-029	0	DESKA / BOARD / PLATTE	P 3-15	1
7	30.Y602-025	0	EXCENTR / CAM / EXZENTER		1
8	90.001.25.015	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M6X10	2
9	90.001.25.039	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M8X55	2
10	90.001.25.046	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M10X20	4
11	90.005.55.015	0	SROUB 6HRANNY / 6 SIDED BOLT / SECHSKANTSCHRAUBE	SROUB M8X20	1
12	90.011.27.003	0	SROUB ZAPUSTNY / COUNTERSINK BOLT / SENKSCHEIBE	SROUB M5X10	2
13	90.101.55.001	0	MATICE / NUT / MUTTER	MATICE M8	1
14	95.700.004	0	POUZDRO / SLEEVE / BÜCHSE	20X20	1

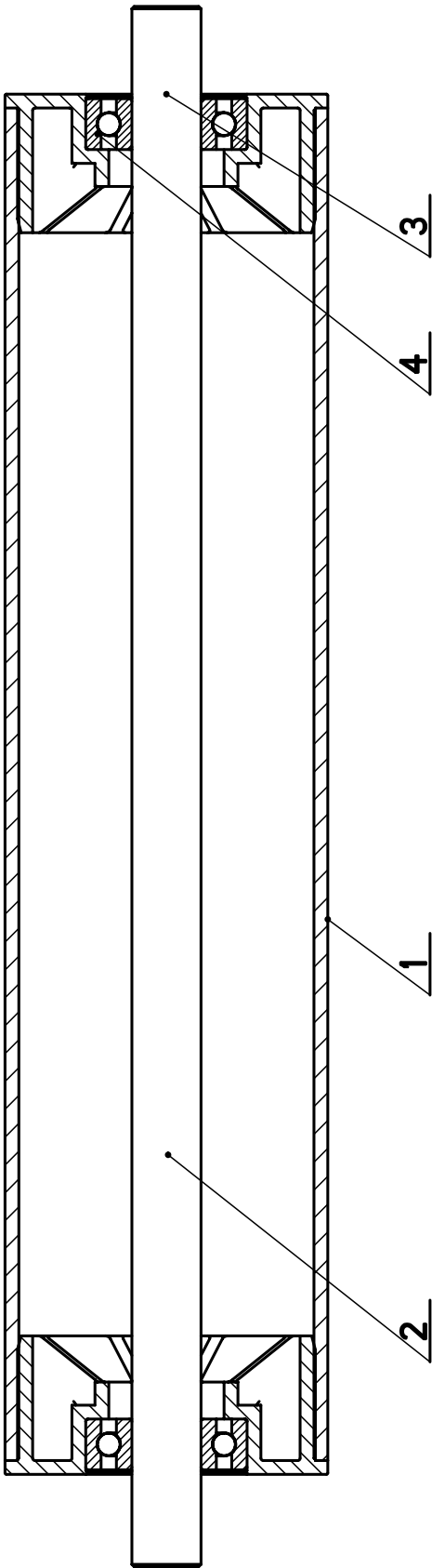




Cislo Sestavy/Number of assembly/Nummer der Baugruppe; Verze (Ver.)/Version/Version; Nazev sestavy/Assembly title/Name der Baugruppe; Pozice (Poz.)/Position/Position;
 Objednaci cislo/Purchase order number/Bestellnummer; Nazev polozky/Volume title/Name der Position; Rozmer/Stock size/Abmessung

7.38. Váleček / Rolle / Cylinder

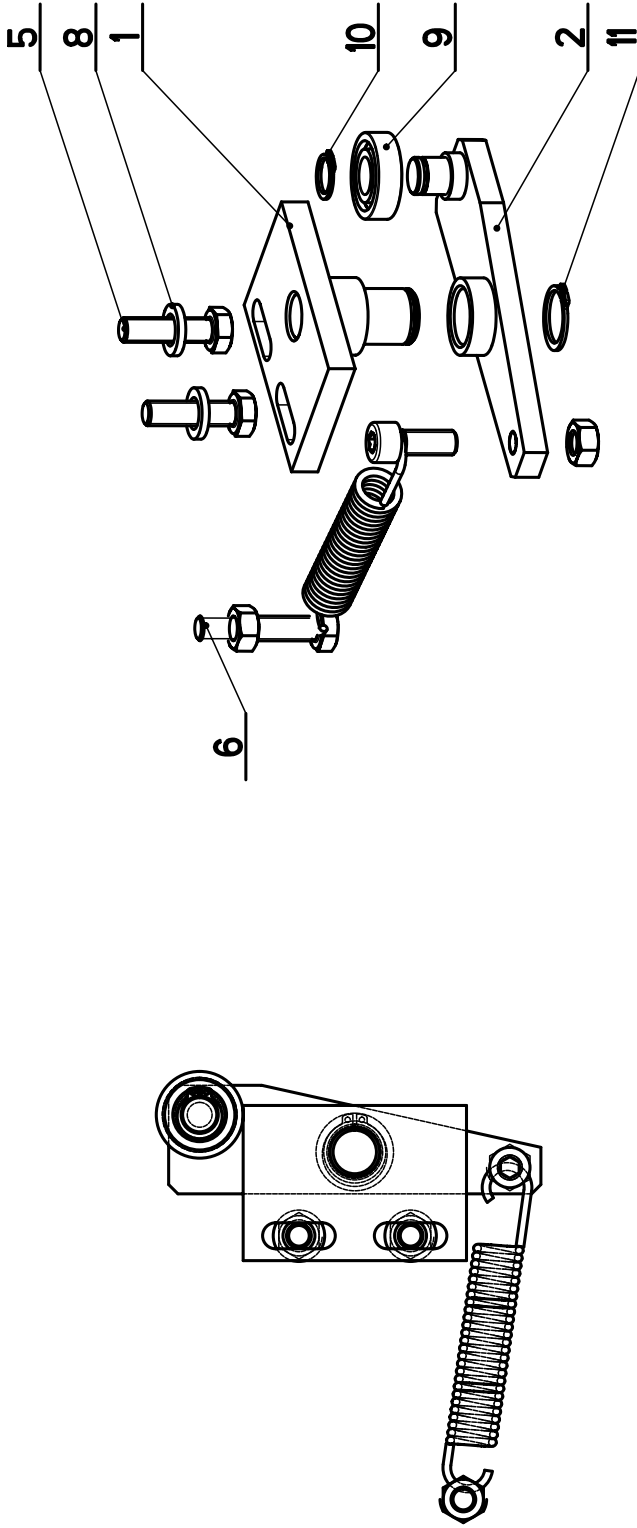
Cislo Sestavy 201.Y517-030		Ver. 0		Nazev sestavy VALECEK/CYLINDER/ROLLE	
Poz.	Objednaci cislo	Ver.	Nazev polozky	Rozeber	Ks
1	30.Y517-031	0	TRUBKA / TUBE / ROHR	Tr 70x3	1
2	30.Y517-032	0	CEP / LUG / BOLZEN	d 15	1
3	31.1313-502	0	VINKO / COVER / DECKEL	d 60	2
4	95.001.015	0	LOZISKO / BEARING / LAGER	6202 2RS	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; Rozeber/Stock size/Abmessung

7.39. Centrování / Zentrieren / Centering

Císlo Sestavy 201.Y302-030	Ver. 0	Název sestavy CENTROVÁNÍ / CENTERING / ZENTRIEREN	Rozměr	Ks
Poz.	Objednací číslo	Ver.	Název položky	
1	30.Y302-031	0	CEP / LUG / BOLZEN	1
2	30.Y302-032	0	PAKA / LEVER / HEBEL	1
3	31.0206-005	0	PRUŽINA / SPRING / FEDER	1
4	90.001.25.032	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	1
5	90.005.55.017	0	SROUB 6HRANNÝ / 6 SIDED BOLT / SECHSKANTSCHRAUBE	2
6	90.005.55.019	0	SROUB 6HRANNÝ / 6 SIDED BOLT / SECHSKANTSCHRAUBE	1
7	90.100.55.005	0	MATICE / NUT / MUTTER	2
8	90.163.00.004	0	PODLOZKA / WASHER / UNTERLEGSCHIEBE	2
9	95.001.005	0	LOŽISKO / BEARING / LAGER	1
10	95.800.004	0	KROUZEK POJIST.VNEJS / OUTSIDE SAFETY RING / SICHERUNGSRING AUßEN	1
11	95.800.008	0	KROUZEK POJIST.VNEJS / OUTSIDE SAFETY RING / SICHERUNGSRING AUßEN	1



7.40. Kostka regulace / Regulation cube / Regelungswürfel

Cislo Sestavy 201.6816-100		Název sestavy KOSTKA REGULACE/REGULATION CUBE/REGELUNGSWÜRFEL			
Poz.	Objednací číslo	Ver.	Název položky	Rozměr	Ks
1	30.6816-101	1	KOSTKA REGULACE / REGULATION CUBE / REGELUNGSWÜRFEL	TYC 40x40	1
2	30.6816-104	1	VÍKO / 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	VÍKO / COVER / DECKEL	TYC 22	1
8	92.002.102	0	SROUBENÍ / 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

