

Series **Practix Automatic**



Practix 285.230 GA

Operating Instructions for Band Saw

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

Seriové číslo / Serien Nummer / Serial Number _____

Service and information

Your BOMAR dealer:

Direct BOMAR contact:

BOMAR spol. s r.o.

Těžební 1236/1
62700 Brno
Czech Republic, EU

Phone: +420 – 533 426 100
Fax: +420 – 533 426 109
e-mail: info@bomar.cz
www: <http://www.bomar.cz>

We are available:

Mondays to Fridays

7⁰⁰ – 16⁰⁰

Version:

1.00 / May 2010
rev. 1

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: **Practix 285.230 GA**
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, hydraulic, feeder, cooling device, electric switchboard with control system, control.

Technical data: cutting rate 35/72 m.min⁻¹, cutting angle 0° - 60°,
Total dimensions in mm (l×w×h) 2250×1600×1350
Supply voltage ~ 3×400 V, 50 Hz TN-C-S or ~ 3×400 V, 50 Hz TN-C,
or ~ 3×230 V/50 Hz TN-C 400 V (dep. on saw version),
total power requirement 2 kW, weight 580 kg

The applied decrees of governments: **No. 24/2003 Coll. (Directive 98/37/EC)**
No. 616/2006 Coll. (Directive 2004/108/EC)
No. 17/2003 Coll. (Directive 2006/95/EC)

The applied harmonized standards,
National standards and technical specifications: ČSN EN ISO 12 100-2:2004, ČSN EN 13 898+A1:2009,
ČSN EN ISO 13857:2008, ČSN EN 982+A1:2008, ČSN EN 55 011 ed.2:2007, ČSN EN 61000-6-4
ed.2:2007, ČSN EN 60204-1 ed.2:2007

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

The conformity judging was performed according to §12, par. 3, let. a), of the Law no. 22/1997 Coll. as amended

2) ²⁾ The declaration of conformity was carried out in the cooperation with the TÜV SÜD Czech s.r.o., Novodvorská
994, 142 21 Prague 4 – Czech Republic, Identification number: 63987121 - Inspection body no. 4002

The inspection certificate no. 00.889.332/09/07/02/0 was issued.

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

Brno, 2.7. 2009

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

Content

1. SAFETY NOTES7

1.1. Band saw using	9
1.2. Protective suit and personal safety	9
1.3. Safety notes for machine operator	10
1.4. Safety notes for the servicing and repairs	10
1.5. Safety machine accessories.....	11
1.5.1. TOTAL STOP button	11
1.5.2. Saw arm cover	11
1.5.3. Saw band cover	11
1.5.4. Saw band stretching and rupture inspection	12
1.5.5. Protection grate for the operator station	12
1.6. Safety notes for cooling system	12
1.6.1. Instructions for first help	12
1.7. Umístění štítku stroje / Maschinenschild position / Position of machine label	13
1.8. Umístění bezpečnostních značek / Verteilung der Sicherheitszeichen / Position of safety symbols	14

2. MACHINE DOCUMENTATION15

2.1. Technická data / Technische Daten / Technical data	17
2.2. Rozměrové schéma / Aufstellzeichnung / Installation diagram	18
2.3. Popis / Beschreibung / Description	19
2.4. Transportation and stocking	20
2.4.1. Conditions for transportation and stocking	20
2.4.2. Transport and stocking preparations	20
2.4.3. Transport and stocking	20
2.5. Transportní schéma / Transportschema / Transport diagram	21
2.6. Activation	22
2.6.1. Machine working conditions	22
2.6.2. Band saw unpacking and assembling	22
2.6.3. Machine installing and levelling	22
2.6.4. Machine disposal after lifetime	22
2.7. Kotevní plan / Verankerungsplan / Grounding plan	23
2.8. Electrical connection	24
2.8.1. Check the direction of the saw band	24
2.9. Filling of the cooling system	24
2.10. Check machine functions	25
2.11. Saw band	25
2.11.1. Saw band size	25
2.11.2. Selection of the saw band tooth system	25
2.11.3. Saw band running-in	26
2.11.4. Tables for teeth selection	27

3. MACHINE CONTROL29

3.1. Machine start	31
3.2. The Control panel	32
3.3. Selection of the machine operation mode	34
3.3.1. Service mode	34
3.3.2. Manual mode	35
3.3.3. Automatic mode	36
3.4. Working cycle interruption	38
3.5. Error messages	38
3.6. Selection of saw band speed	38
3.7. Cutting angle setting	39
3.8. Guiding cube setting	39
3.9. Inserting the material	40
3.9.1. Inserting	40
3.9.2. Clamping material to the vice	40
3.9.3. Cutting of the bundle	40

4. MACHINE SERVICE41

4.1. Saw band dismantling	43
4.2. Saw band installation	43
4.3. Saw band stretching and inspection	43
4.3.1. Saw band stretching	43
4.3.2. Saw band inspection	44

4.4. Cooling agents and chips disposal	44
4.4.1. Coolant device inspection	44
4.4.2. Chips disposal	45
4.5. Greases and oils	45
4.5.1. Gearbox oils	45
4.5.2. Lubricant greases	46
4.6. Hydraulic oil level check and Hydraulic oils	46
4.6.1. Hydraulic oils	46
4.6.2. Hydraulic oil level check	47
4.7. Machine cleaning	47
5. TROUBLESHOOTING	49
5.1. Mechanical defects	51
5.2. Electrical defects	53
6. SCHÉMATA / SCHEMAS / SCHEMATICS	55
6.1. Elektrické schéma / Elektroschema / Wiring diagrams – 3×400 V, TN-C-S	56
6.2. Elektrické schéma / Elektroschema / Wiring diagrams – 3×230 V, TN-C	69
6.3. Elektrické schéma / Elektroschema / Wiring diagrams – 3×400 V, TN-C	82
6.4. Hydraulické schéma / Hydraulikschema / Hydraulic diagram	96
7. VÝKRESY SESTAV PRO OBJEDNÁNÍ NÁHRADNÍCH DÍLŮ / ZEICHNUNGEN FÜR BESTELLUNG DER ERSATZTEILE / DRAWING ASSEMBLIES FOR SPARE PARTS ORDER	99
7.1. Pila / Säge / Saw	100
7.2. Kusovník / Stückliste / Piece list – Pila / Säge / Saw	101
7.3. Skluz / Rutsch / Glide	102
7.4. Kusovník / Stückliste / Piece list – Skluz / Rutsch / Glide	103
7.5. Podstavec / Säge / Saw	104
7.6. Kusovník / Stückliste / Piece list – Podstavec / Säge / Saw	105
7.7. Konzola / Konsole / Console	106
7.8. Kusovník / Stückliste / Piece list – Konzola / Konsole / Console	107
7.9. Válec svěráku / Schraubstockzylinder / Vice cylinder	108
7.10. Kusovník / Stückliste / Piece list – Válec svěráku / Schraubstockzylinder / Vice cyl.	109
7.11. Svěrák / Schraubstock / Vice	110
7.12. Kusovník / Stückliste / Piece list – Svěrák / Schraubstock / Vice	111
7.13. Rameno / Sägerahmen / Saw arm	112
7.14. Kusovník / Stückliste / Piece list – Rameno / Sägerahmen / Saw arm	113
7.15. Rameno / Sägerahmen / Saw arm	114
7.16. Kusovník / Stückliste / Piece list – Rameno / Sägerahmen / Saw arm	115
7.17. Napínání / Spannung / Tension	116
7.18. Kusovník / Stückliste / Piece list – Napínání / Spannung / Tension	117
7.19. Podavač / Vorschub / Feeder	118
7.20. Kusovník / Stückliste / Piece list – Podavač / Vorschub / Feeder	119
7.21. Podavač / Vorschub / Feeder	120
7.22. Kusovník / Stückliste / Piece list – Podavač / Vorschub / Feeder 2	121
7.23. Váleček / Rolle / Roller	122
7.24. Kusovník / Stückliste / Piece list – Váleček / Rolle / Roller	123
7.25. Váleček / Rolle / Roller 2	124
7.26. Kusovník / Stückliste / Piece list – Váleček / Rolle / Roller 2	125
7.27. Váleček vertikální / Rolle vert. / Vert. Roller	126
7.28. Kusovník / Stückliste / Piece list – Váleček vertikální / Rolle vert. / Vert. Roller	127

1. **Safety notes**

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

The operating instructions must avoid risks, which are linked to work on the machine. Before transporting and using of the machine, please read the instructions thoroughly!

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.

Attention!

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

1.1. Band saw using

The band saw **Practix 285.230 GA** is used for cutting and shortening of rolled bars and drawn bars and profiles from steels, stainless steels, non-ferrous metals and plastics with cutting angles from **0° to 60° in manual mode** and angles from **0° to 45° in automatic mode**.

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.

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.

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, if 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

Switch off the main switch and lock it, before you start service work! When repair machine remove power cord from the outlet. 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!

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.

Do not start the machine, if the covers are not on their places!

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 button

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. Saw arm cover



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

1.5.3. Saw band cover

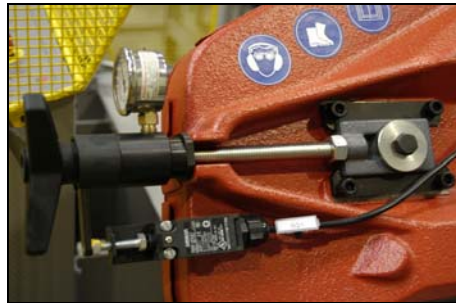
This protective cover envelops the saw band in the area from guiding cube to the arm.



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

1.5.4. Saw band stretching and rupture inspection

This device checks the saw band tension and causes immediate machine stop if the band incidentally ruptures.



The device includes a limit switch. Check the switch carefully and periodically – adjust it if necessary.

1.5.5. Protection grate for the operator station

The protection grate protects the operators from catching or pushing from the moving parts of the machine or the material.



Do not use the saw without protection grate.

1.6. Safety notes for cooling system

Attention!

*Keep notes about work safety for handling cooling liquid!
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



 BOMAR spol.s r.o. TEZEBNÍ 1236/1 627 00 Brno			
MADE IN CZECH REPUBLIC			
Practix 285.230 GA			
Nr			
	2250x1600x1350 mm		580 kg
	2720x0,9x27 mm	p	4 MPa
U	3x400V TN-C-S	f	50 Hz
P	2 kW		16 A
	35/72 m/min		

Machine label is located on the pedestal in the hydraulic aggregate access area.

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

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



SOL:

Směr otáčení doleva
Drehrichtung nach links
Direction of rotation left



NN

Nebezpečí nárazu
Stoßgefahr
Danger of stroke



NS

Nebezpečí stlačení
Pressungsgefahr
Crushing hazard



NR:

Nebezpečí říznutí
Schnittgefahr
Cutting or severing hazard



HV

Hlavní vypínač
Hauptschalter
Main switch



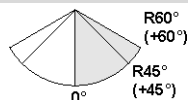
NE

Nebezpečí úrazu
elektrickým proudem
Verletzungsgefahr vom
elektrischen Strom
Electrical hazard

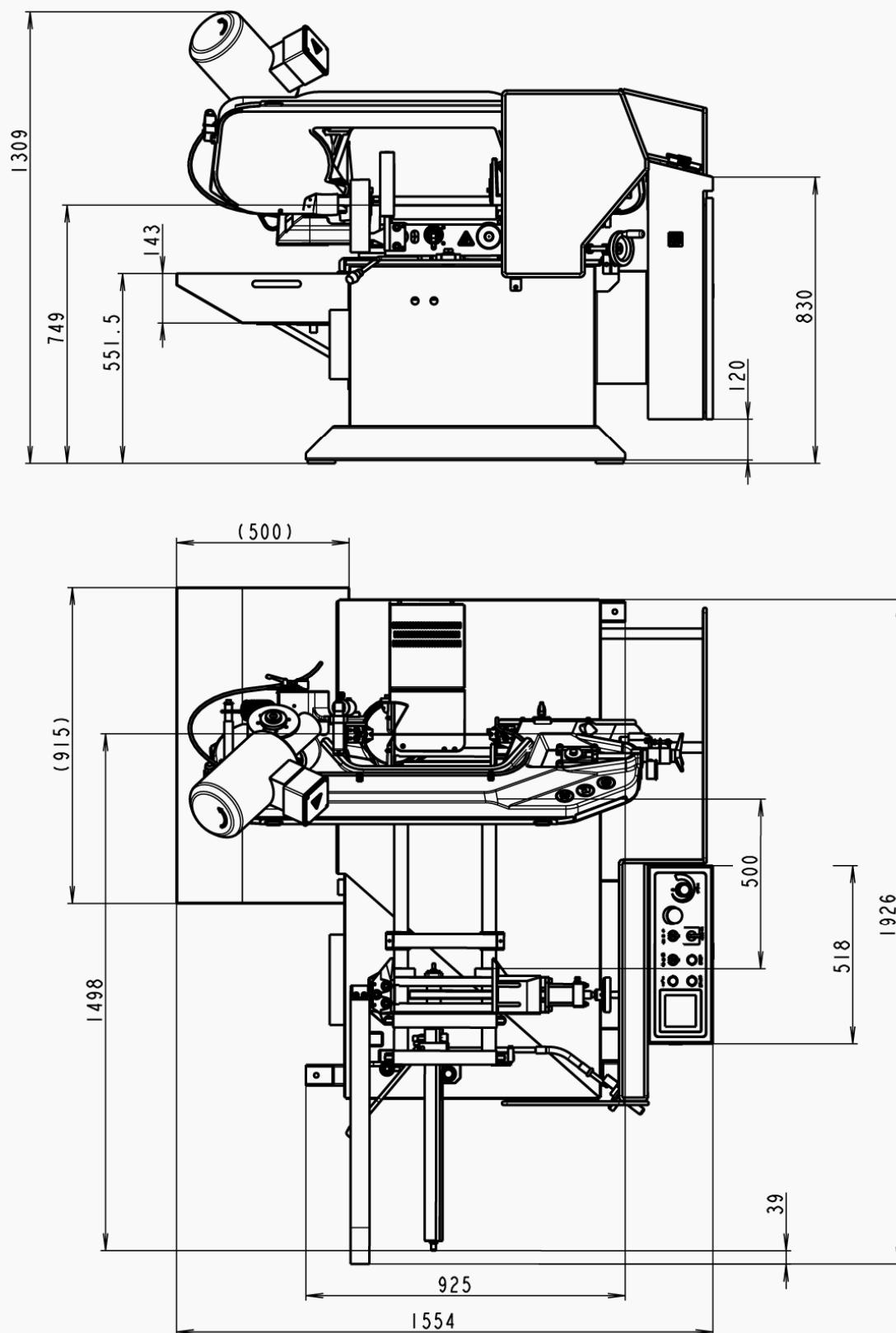


2. **Machine documentation**

2.1. Technická data / Technische Daten / Technical data

Hmotnost stroje / Maschinengewicht / Machine weight:				
• Hmotnost / Gewicht / Weight	580 kg			
Rozměry stroje / Maschinengröße / Machine size				
• Délka / Länge / Lenght	2250 mm			
• Šířka / Breite / Width	1600 mm			
• Výška / Höhe / Height	1350 mm			
Akustický tlak / Schalldruckpegel / Acoustic pressure:				
• Practix 285.230 GA	$L_{Aeqv}= 71,2 \text{ dB} / 73,6 \text{ dB} - 35 \text{ m} \cdot \text{min}^{-1} / 72 \text{ m} \cdot \text{min}^{-1}$			
Elektrické zařízení / Elektrische Ausrüstung / Electrical equipment:				
• Napájení / Versorgungsspannun / Supply voltage	~ 3×400 V, 50 Hz TN-C-S/TN-C, ~ 3×230 V/50 Hz TN-C			
• Příkon / Gesamtschlusswert / Total Input	2 kW			
• Max. jištění / Max. Vorschaltsicherung / Max. Fuse	16 A			
• Krytí / Schutzart / Protection	IP 54			
Motor pohonu pily / Antrieb / Sawband drive:				
• Typ / Typ / Type	MSD90L-8/4			
• Napájení / Versorgungsspannung / Supply voltage	~3×400 V, 50 Hz			
• Výkon / Leistung / Output	0,7/1,1 kW			
• Jmenovité otáčky / Motorenndrehzahl / Nominal speed	1420/690 min ⁻¹			
Hydraulické zařízení / Hydraulische Geräte / Hydraulic equipment:				
• Typ / Typ / Type	870-1395 (92.001.019)			
• Výkon / Leistung / Output	3 MPa / 0,55 kW			
• Obsah nádrže / Volumen vom Kühlmittel / Capacity	30 l			
Chladicí zařízení / Kühlmiteleinrichtung / Cooling equipment:				
• Typ / Typ / Type	91.020.019			
• Napájení / Versorgungsspannung / Supply voltage	~ 1×230V, 50Hz			
• Obsah nádrže / Volumen vom Kühlmittel / Capacity	20 l			
Rozměr pásu / Sägebandedimension / Band size:				
2720×27×0,90 mm				
Řezná rychlost / Schnittgeschwindigkeit / Cutting speed:				
35/72 m.min ⁻¹				
Řezné rozsahy / Schnittbereiche / Cutting size:				
				
0°	Ø225 mm	280×70 mm	245×225 mm	225×225 mm
R 45°	Ø180 mm	180×125 mm	200×170 mm	170×170 mm
R 60°	Ø120 mm	115×95 mm	95×95 mm	95×95 mm
Hladina akustického tlaku – practix 280.230 G:				
Equivalent level of acoustic pressure A (noise) at operator position are $L_{Aeqv} = 71,2 \text{ dB} / 73,6 \text{ dB}$ for 35 m.min ⁻¹ / 72 m.min ⁻¹ . 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



2.3. Popis / Beschreibung / Description

Napínání pásu /
Sägebandspannung /
Saw band tensing

Pohon pásu /
Bandantrieb /
Band drive

Otočná konzola /
Drehkonsole /
Turning console

Vana /
Wanne /
Tank

Chlazení /
Kühlung /
Cooling

Hydrogenerátor /
Hydraulikgenerator /
Hydrogenerator

Aretace /
Arretierung /
Arrestment

Nastavení šířky řeziva –
Pila /
Setze die Bildbreite
von Holz – Säge /
Set width of timber –
Saw

Nastavení šířky řeziva –
Podavač /
Setze die Bildbreite
von Holz – Vorschub /
Set width of timber –
Feeder

Válec podavače posouvaví /
Vorschubzylinder
des Vorschubes /
Feeder shifting cylinder

Rameno /
Sägerahmen /
Saw arm

Podavač /
Vorschub /
Feeder

Svěrák podávaví /
Vorschubschraubstock /
Feeding vice

Vertikální válečky /
Vertikalrollen /
Vertical rollers

Podstavec pily /
Sägeuntergestell /
Saw pedestal

Nastavení délky řeziva /
Set Länge von Holz /
Set length of timber

Válec zvedací /
Hebezylinder /
Lifting cylinder

Svěrák hlavní /
Hauptschraubstock /
Main vice

Skluz /
Rutsch /
Glide

Kryt /
Deckel /
Cover

Ovládací panel + El. rozvaděč /
Bedienpult + Schaltschrank /
Control panel + Switchboard

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.

- Do not use a forklift truck for handling the machine, if you do not have licence for it!
- Do not move under suspended loads! Fault in lifting device may cause serious injury.
- Keep a safe distance from the machine during the transport.

Conditions for transportation and stocking:

- 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, ultra-violet 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.
- The machine has to be screwed to a pallet for the transport!

2.4.3. Transport and stocking

Handle the machine only with the hand pallet truck or the forklift truck! If the machine is equipped with the shackles in the pedestal, you can use the suspension cable and the crane.

Make sure that the hand pallet truck; the forklift truck or the crane had sufficient capacity.

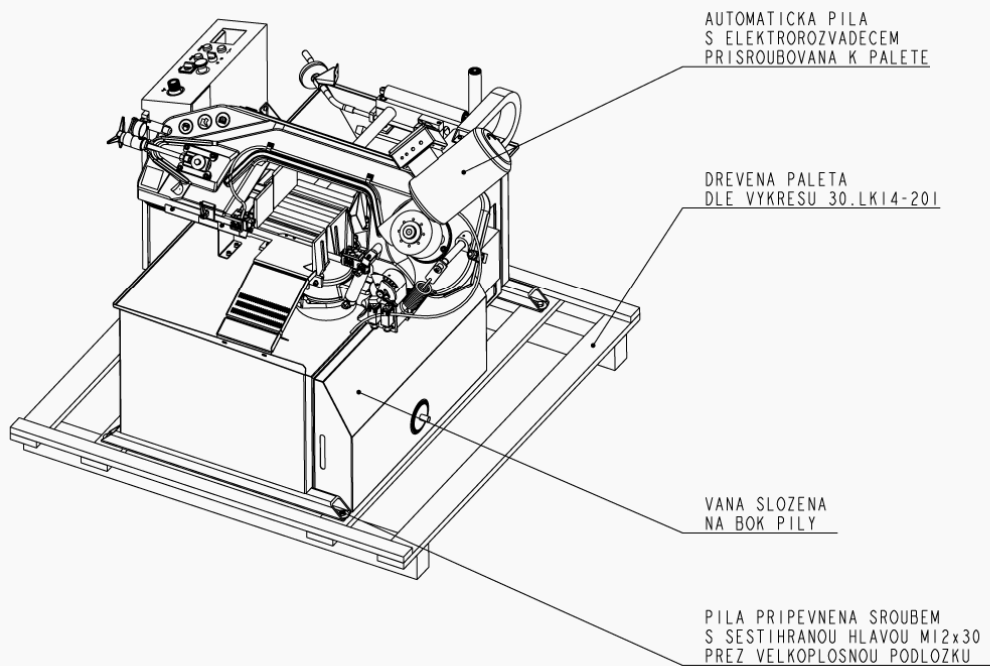
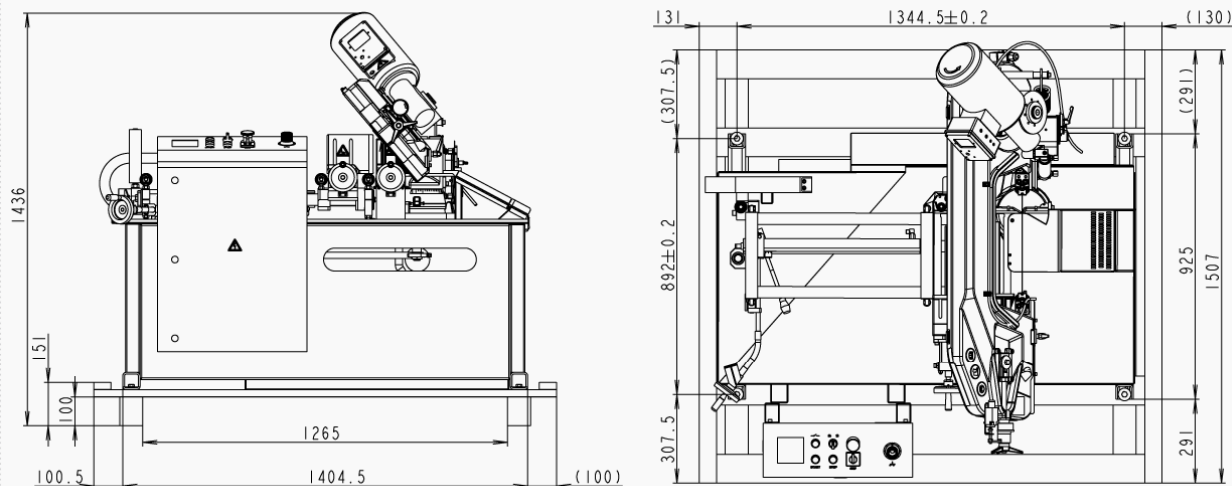
Make sure that the van or the trailer had sufficient capacity.

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.

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 (for example by, lifting by the saw frame of the band saw), than it is written in this operating instructions, the machine can be damaged!

2.5. Transportní schéma / Transportschema / Transport diagram



PILA PREPRAVOVANA NA DREVENE PALETE.
PREPRAVNÍ HMOTNOST PILY VČETNĚ OBALU A PALETY JE 580 Kg.

2.6. Activation

2.6.1. Machine working conditions

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

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

- At temperature air from **5°C to 40°C**, the temperature average during 24 hours must **not exceed over 35°C**.
- At relative dampness of the air in the interval from 30% to 95% (not concentrate).
- Altitude 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.

2.6.2. 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.

2.6.3. 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 – 580 kg

+ Weight of accessories

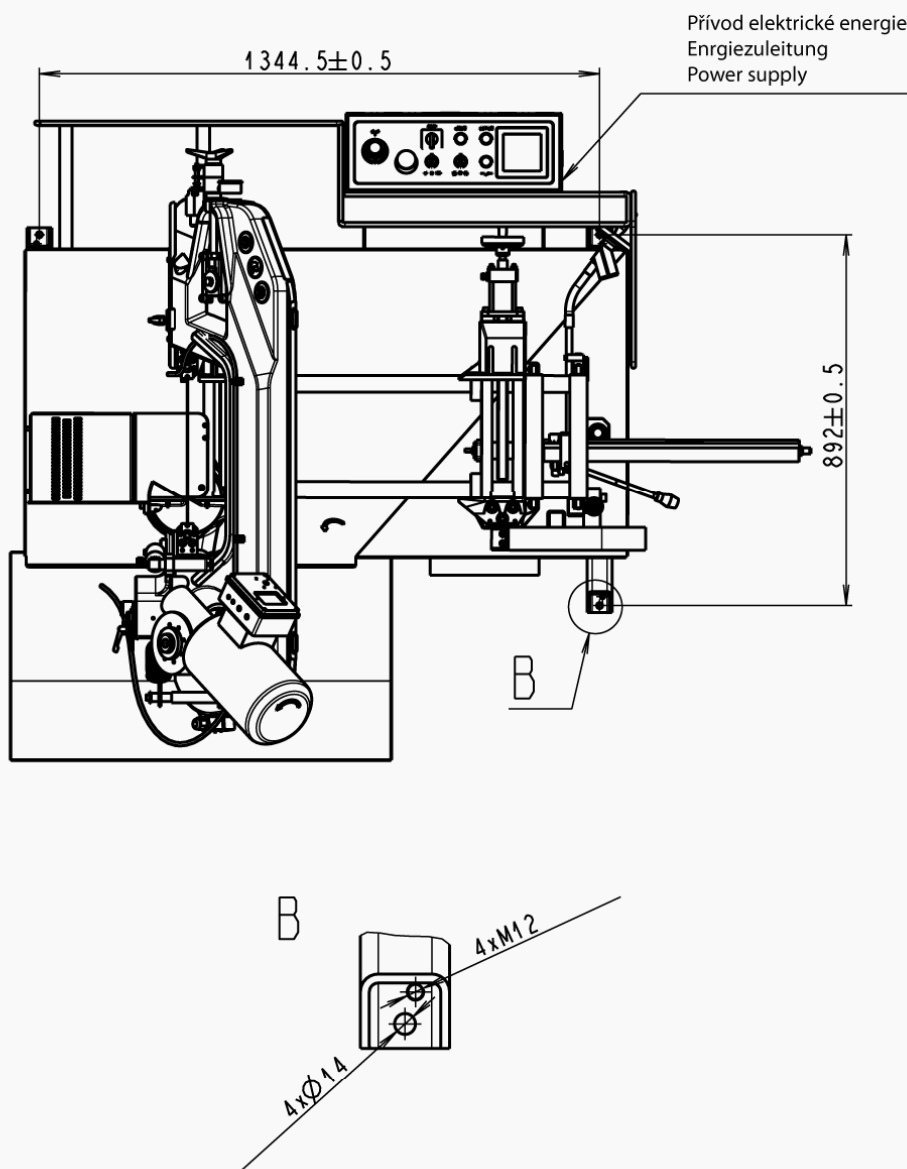
+ Maximum weight of material

- 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.

2.6.4. 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

2.7. Kotevní plan / Verankerungsplan / Grounding plan



Kotvící materiál / Verankerungsmaterial / Grouding material

- 4x Hmoždina / Dübel / Plug – $\varnothing 12$ mm
- Vrtáno do hloubky / In die Tiefe gebohrt / Drilled to – 95 mm
- Šrouby / Schraube / Screws – M12x135 a 4xM14

Šrouby podložit deskami o min. rozměrech P10x80-80

- Die Schrauben mit Platten mit Minimaldimensionen P10x80-80 unterlegen
- Screw must be bottomed with plates (min. dimensions P10x80-80)

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

± 10 mm / 1 m

2.8. Electrical connection

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

Electrical parameters of the machine:

- Service voltage: ~ 3×400 V, 50 Hz TN-C-S/TN-C nebo ~ 3×230 V/50 Hz TN-C
- Total input / Max. fuse: 2 kW / 16 A

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

Note:

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

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

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.*

2.8.1. 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.

2.9. Filling of the cooling system

Prepare the mixture of the water and the cooling liquid. Keep the concentration specified by manufacturer.

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**“.

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.



Keep by manufacturer specified recommendation for adding the anticorrosive agents, the antifreezes or other agents! For mixture of two different mixes can produce toxic and aggressive mixes, which can threaten your health or damage cooling system of the machine

2.10. Check machine functions

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 and the feeding vice. Drive the front feeder from the front position to the rear position. 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.

2.11. Saw band

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

2.11.1. Saw band size

2720×27×0,90 mm



2.11.2. 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 recommends use variable tooth systém.

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:

ZpZ – 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.

2.11.3. Saw band running-in

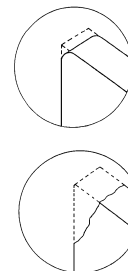
To ensure a full service life of the saw bands, we strongly recommend that you carry out the „RUN-IN“ process.

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

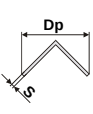
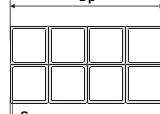
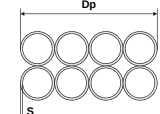
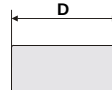
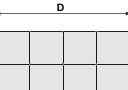
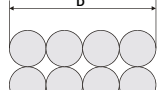
When cutting small pieces run the band until approximately 300 cm² of material has been cut. When cutting large pieces run the band for 15 minutes approximately. When the band has been run, increase the lowering-speed to normal speed.

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.



2.11.4. 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_pZ) Outer diameter of the profile D_p [mm]					
	20	40	60	80	100	120
2	32 S	24 S	18 S	18 S	14 S	14 S
3	24 S	18 S	14 S	14 S	10–14 S	10–14 S
4	24 S	14 S	10–14 S	10–14 S	8–12 S	8–12 S
5	18 S	10–14 S	10–14 S	8–12 S	6–10 S	6–10 S
6	18 S	10–14 S	8–12 S	8–12 S	6–10 S	6–10 S
8	14 S	8–12 S	6–10 S	6–10 S	5–8 S	5–8 S
10	-	6–10 S	6–10 S	5–8 S	5–8 S	5–8 S
12	-	6–10 S	5–8 S	5–8 S	4–6 K	4–6 K
15	-	5–8 S	5–8 S	4–6 K	4–6 K	4–6 K
20	-	-	4–6 K	4–6 K	4–6 K	3–4 K
30	-	-	-	3–4 K	3–4 K	3–4 K
50	-	-	-	-	-	3–4 K
Size of the wall S [mm]	Tooth system (Z_pZ) Outer diameter of the profile D_p [mm]					
	150	200	300	500	750	1000
2	10–14 S	10–14 S	8–12 S	6–10 S	5–8 S	5–8 S
3	8–12 S	8–12 S	6–10 S	5–8 S	4–6 K	4–6 K
4	6–10 S	6–10 S	5–8 S	4–6 K	4–6 K	4–6 K
5	6–10 S	5–8 S	4–6 K	4–6 K	4–6 K	3–4 K
6	5–8 S	5–8 S	4–6 K	4–6 K	3–4 K	3–4 K
8	5–8 S	4–6 K	4–6 K	3–4 K	3–4 K	3–4 K
10	4–6 K	4–6 K	4–6 K	3–4 K	3–4 K	2–3 K
12	4–6 K	4–6 K	3–4 K	3–4 K	2–3 K	2–3 K
15	4–6 K	3–4 K	3–4 K	2–3 K	2–3 K	2–3 K
20	3–4 K	3–4 K	2–3 K	2–3 K	2–3 K	2–3 K
30	3–4 K	2–3 K	2–3 K	2–3 K	1,4–2 K	1,4–2 K
50	2–3 K	2–3 K	2–3 K	1,4–2 K	1,4–2 K	1,4–2 K
75	-	2–3 K	1,4–2 K	1,4–2 K	1,4–2 K	0,75–1,25 K
100	-	-	1,4–2 K	0,75–1,25 K	0,75–1,25 K	0,75–1,25 K
150	-	-	-	0,75–1,25 K	0,75–1,25 K	0,75–1,25 K
200	-	-	-	0,75–1,25 K	0,75–1,25 K	0,75–1,25 K
SOLID MATERIAL ($D = \text{mm}$)						
						
Constant tooth system		Variable tooth system				
length of the cut D	tooth system (Z_pZ)	length of the cut D	tooth system (Z_pZ)			
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. Machine start

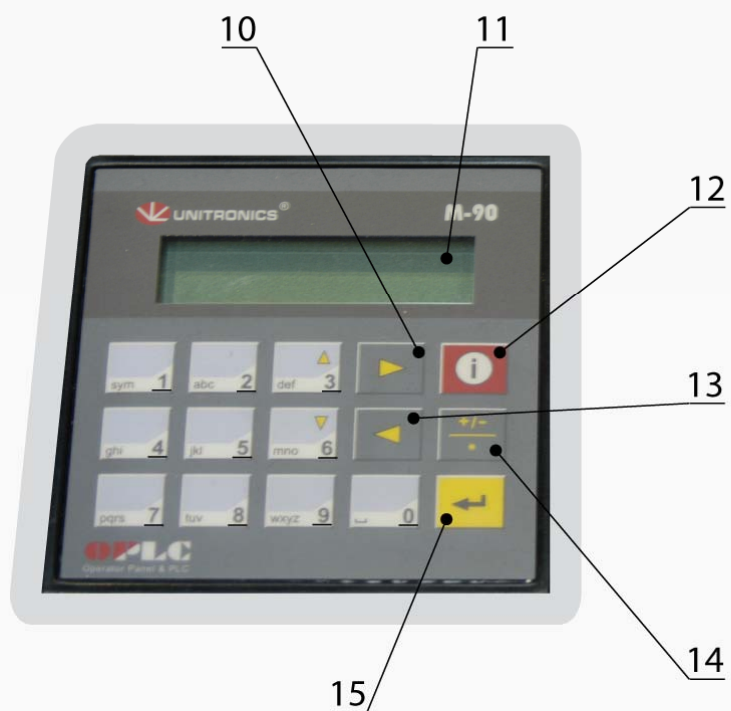
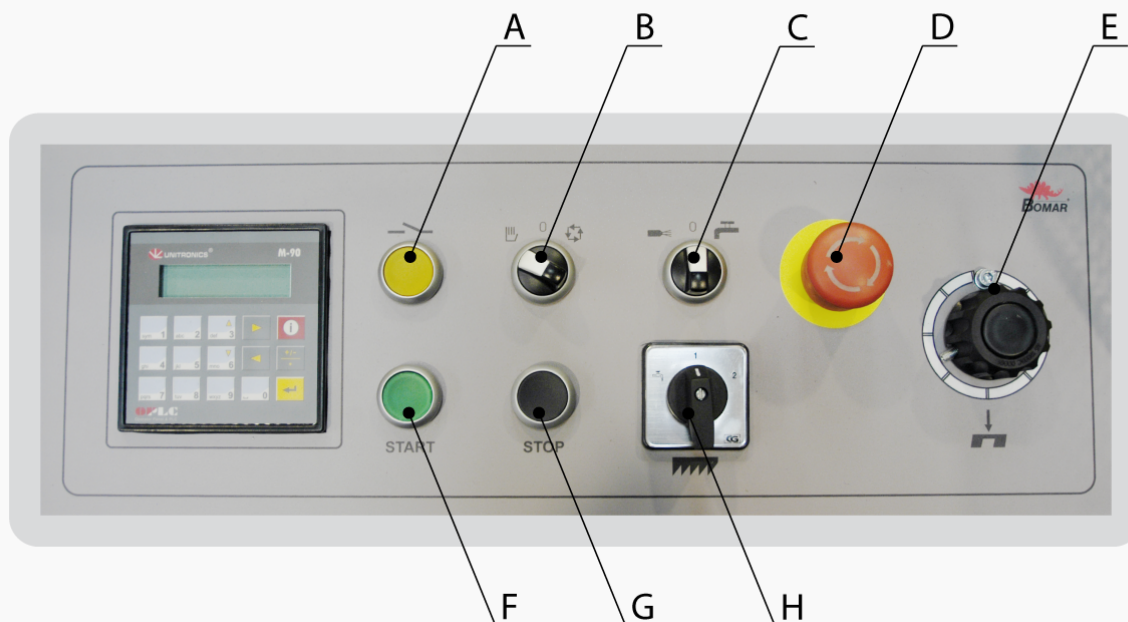


The master switch of Practix 285.230 GA is located on the left side of the control panel (from view of the controller standing behind the panel).

The LCD display shows:

LCD	Description
PX 285.230 A BOMAR s.r.o.	The main info after power up

3.2. The Control panel

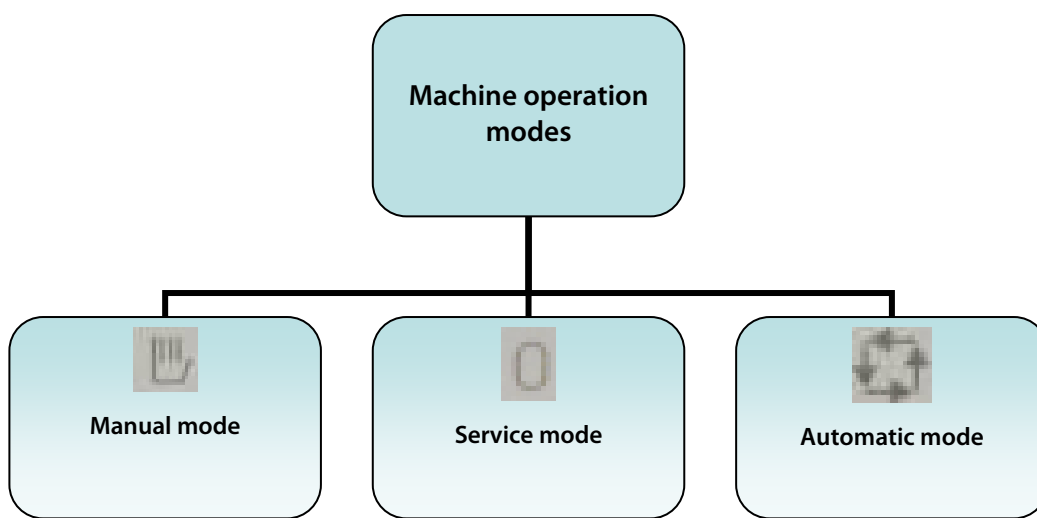


A	Button for starting of the control (safety) circuits The button switches on the control circuits of the control system. Starting of the circuits is signaled by light in the button.
B	Machine mode switch  – test mode of the machine  – automatic operation mode  – manual operation mode
C	Cooling switch  – switch off the cooling, e.g. for cast iron cutting  – standard cooling by the cooling fluid  – micronization (optional accessory)
D	TOTAL STOP button Stops the machine immediately in emergency
E	Setting of the frame lowering speed Continuous setting of lowering of the frame into the cut.
F	START button Starts automatic/semi-automatic cycle.
G	STOP button Stops automatic/semi-automatic cycle..
H	Cutting speed switch For selection of the saw band speed during cutting. Selection 1 for speed 35, selection for speed 72 m. min ⁻¹

0	Button 0 – num. value / no function in manual mode
1	Button 1 – num. value / in manual mode – clamp feeding vice
2	Button 2 – num. value / in manual mode – clamp main vice
3	Button 3 – num. value / in manual mode – frame up
4	Button 4 – num. value / in manual mode – release feeding vice
5	Button 5 – num. value / in manual mode – release main vice
6	Button 6 – num. value / in manual mode – frame down
7	Button 7 – num. value / in manual mode – switch on/off motor for saw band drive
8	Button 8 – num. value / in manual mode – switch on/off hydraulic aggregate
9	Button 9 – num. value / no function in manual mode
10	Button for feeder forward movement
11	Text LCD With 2x16 characters shows all necessary data and questions for machine operation
12	No function
13	Button for feeder backward movement
14	Button for switch in help for control / for entering numerical values – decimal point
15	Button ENTER – confirm data (values or selection)

3.3. Selection of the machine operation mode

The operation mode is selected by the three way switch.



3.3.1. Service mode

Switch the mode switch to position 0 (middle position) and press **ENTER** – , position 15 – to display service menu of the machine.

Scroll in the service menu using buttons  (pos. 10) and  (pos. 13), change parameters by button 3 and 6.

Parameter	Description
Band switch off	- choices – up, down, never: - switches of the band motor if the frame is up – finishes cutting of the material and returns to the initial position – or if the frame is down – finishes cutting - or the band motor is never switched off (e.g. if cutting short or small pieces of material).
Hydraulics switch off	- choices – 10 min, never - switches off the hydraulic aggregate if not operational for more than 10 minutes - or is not switched off – if Never is selected - press button 11 longer to enter the service code and gain access for more parameters
Band thickness	- service parameter - set according to band thickness

3.3.2. Manual mode

In manual mode the operator controls all functions of the machine and their order.

Machine control is facilitated by help in the first line of LCD display, press  (pos. 14) to toggle the help display.

Button	Function
	clamp feeding vice
	clamp main vice
	vice clamps material
	frame up
	release main vice
	frame down
	switch on/off motor for saw band drive
	switch on/off hydraulic aggregate
	feeder forward movement
	backward forward movement
	switch in help for operation
	set value or confirm selection

The second line of LCD in manual mode displays current operation and its state by symbols:

Symbol	Operation
< >	Vice opened
> <	Vice clamped
>0<	Vice clamped with material
M0	Band motor switched off
M1	Band motor switched on
↑	Frame moving up
↓	Frame moving down
→	Feeder moving forward
←	Feeder moving backward

3.3.3. Automatic mode

- The cutting process in the automatic mode is divided into several steps, given by different menu on LCD.

1. Mode selection	⇒	2. Machine setting	⇒	3. Set the mode parameters	⇒	4. Cutting	⇒	5. Stop or proceed
-------------------	---	--------------------	---	----------------------------	---	------------	---	--------------------

- Set required cutting angle before start of the automatic mode
- Enter the values in menu using numerical keys, press **ENTER** to confirm. Decimal point is entered by  (pos. 14), only one decimal position is available – tenths.

1. Mode selection

- Switching to automatic mode is always indicated on LCD

AUTOMAT

2. Machine setting

- Initial position with feeder behind and frame up.
- Before start of the works in the automatic mode the machine must set the initial position.
- If the initial position is set, the operator will not be required to set it again until the machine is switched off.



Set the initial position

**Press START for
start. position**

- If START is pressed, LCD shows this message during setting of the initial position.

**Start position
is setting**

- LCD after initial position is set.
- After short time the message disappears and the menu for selection of automatic mode parameters is set.

**Start position
is sett**

3. Setting of the mode parameters

- Setting of the cutting parameters for automatic mode:
 - Enter number of pieces** in the first menu – enter the required number of pieces on the first line of LCD, which the machine will cut in automatic cycle. The second line show number of already cut pieces from the previous automatic cycle.
 - Enter **the piece length** in the second menu – enter the length of cut material in automatic cycle. The length is set in millimeters with precision to one decimal point. Maximum length is 3270 mm.



Press **ENTER** to confirm entered values. When the length is entered, the current menu is displayed.

Qty: ____ pcs
xxxx pcs

Length: ____ mm
< xxxx pcs >

- LCD shows value of recalculated feed length,
 - Operator enters value on feeder ()
 - The second number indicates number of feeder feeds for one piece ()
 - The operator must clamp the material into vice.**



Press to continue after feeder is set and material clamped into vice.



Press for previous menu

Set:
< xxx mm x y >

The following menu determines if the material end is cut. If Yes is selected by START, the saw cuts end of material in position under the band. Starts the material cutting, LCD show information message. Continues without cutting (start of the automatic mode)	<pre>'TRIM cut:START' < NO ></pre> <pre>' Wait for end ' ' trim cut '</pre>
- If the button START is used for cutting of material, after it is finished LCD show the message: - After short time the message disappears and the following menu is displayed.	<pre>' Trim cut ' '...is done...'</pre>

4. Cutting

If in previous menu the option Material cut – YES, was selected, before the automatic mode cutting cycle the question for adding of the cut piece into required quantity Calculates the cut piece to total required quantity Does not calculate the cut piece to total required quantity	<pre>'Include piece?'</pre> <pre>'1-YES'...'2-NO''</pre>
Start of the automatic cycle Press START to start the automatic cycle according to parameters entered in previous menu. Stops the automatic cycle. If START is pressed, the operation continues in automatic mode.	<pre>Automatic cycle press START</pre> <pre>Stop Cycle ' START-cont. '</pre>
During operation of the machine in automatic mode LCD shows information about its progress. <pre>xx ks</pre> Number of finished pieces <pre>yy ks</pre> Total number of required pieces <pre>zz mm</pre> Selected piece length	<pre>'Cycle: xx pcs' ' zz mm yy pcs'</pre>
After the automatic cycle ends – the last piece is cut – the following information is displayed <pre>yy ks</pre> Total number of cut pieces <pre>zz mm</pre> Selected piece length Confirm information and continue to next menu	<pre>'COMPLETED ' ' zz mm yy pcs'</pre>

5. Stop or proceed

LCD shows question for next step (repeat) Repeat automatic cycle with the same parameters – same lengths and number of cycles) Proceed with new values – new setting for the mode parameters.	<pre>'Continue?START' 'New set?.....'</pre>
---	---

3.4. Working cycle interruption

- When **TOTAL STOP** is pressed, saw band operation is stopped.
- Press **STOP** button (pos. G) to stop the current cycle.

Press TOTAL STOP button in emergency.

Position of safety button TOTAL STOP and STOP button:



3.5. Error messages

- Safety circuit not switched on
- Press the safety circuit button to start the control circuits of the control system.
- Control circuits start is signalized by light in button.



Start the safety circuit using designated button on the control panel.

**'Safety button
is off'**

- Motor overload
- Motor is disconnected

**'Fault motor
protector'**

- End switch of belt tensioning detected problem
- Check saw belt tension, or re-tension it, see Tensioning and check of saw band.

**'Blade tension
fault'**

- **TOTAL STOP** safety button pressed

**'Total Stop
pressed'**

- Feeding vice clamp error
- Check if the material is correctly clamped (see chapter Clamping of material to vice)

**'Stop cycle
Main vice fault'**

- Main vice clamp error
- Check if the material is correctly clamped (see chapter Clamping of material to vice)

**'Stop cycle
Feed vice fault'**

- Wrong length set
- Max. length of cut piece is 3270 mm

**'Error max.
length 3270 mm'**

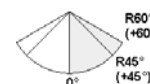
3.6. Selection of saw band speed

Selector in position 1	Selector in position 2
speed 35 m.min ⁻¹	speed 72 m.min ⁻¹



3.7. Cutting angle setting

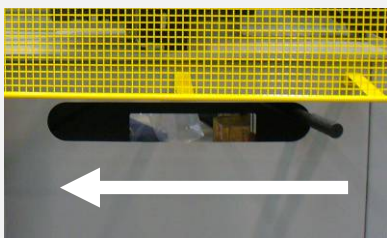
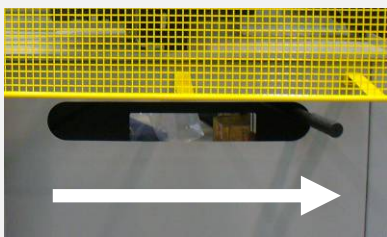
This machine allows to cut up to 60° angle. The limit positions 0° and 60° are equipped with stops.



Setting of the cutting angle according to machine mode:

Manual mode	Automatic mode
Cutting angle 0° to 60°	Cutting angle 0° to 45°

Procedure for setting the cutting angle:

1.	 - Release the saw console by the clamp lever - Move the lever completely to left to release - The clamping lever is located in the saw pedestal on the right from the control panel.
2.	 - Turn the frame to set required cutting angle - Cutting angle scale is on the front side of the console - Use frame to turn the belt tensioning bolt - The frame should be lifted to its maximum position.
3.	 - Secure the saw console by clamp lever - Move the lever completely to right to secure

3.8. Guiding cube setting

In order to achieve smooth cutting and sufficient precision of the cut, it is necessary to place the guiding cube as close to the cut material as possible.



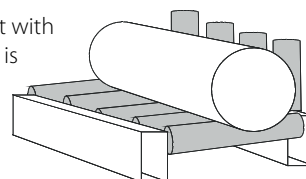
1. Release the lever (arrow) of the left guiding listel.
2. Move the left part of the guiding so that the edge of the left cube is as close to the cut material as possible.
3. Tighten the lever and check if the saw band guiding is not colliding with the material.

3.9. Inserting the material

- Do not stand under lifted loads!
- Never step on the roll conveyor!
- Do not hold or manipulate with material during clamping to the vice (using electronic control)! The vice may cause serious injury!

3.9.1. Inserting

- Insert the material into clamp in such a way, that it cannot move or fall from vice.
- When cutting long pieces of material (e.g. tubes or bars) use roll conveyors for transport to the band saw.
- Check that the length and width of the roll conveyor is sufficient with respect to the material size and that the conveyor maximum load is sufficient with respect to the material weight.
- For round material check that it rests on at least two vertical rolls so that it will not fall from the roll conveyor!



3.9.2. Clamping material to the vice

Vices of Practix 280.230 GA machine:

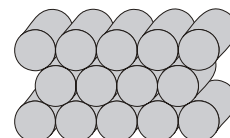
- Feeder clamp
- Main clamp

Procedure for clamping of the material to the vice:

1. Adjust distance of the vice jaws to approximately match the material size.
2. Insert the material.
3. Clamp the material by the clamp wheel to the stop and then turn back the wheel by half turn
4. Finish clamping of the material by the vice control buttons (pos. 1, 2, 4 and 5)

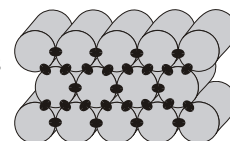
3.9.3. Cutting of the bundle

For cutting of the material in bundle follow some suggestions how to stack:



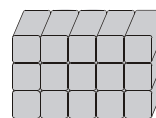
Stacking of the rounded material into bundle: pay special attention for rounded material – stack the material according to the picture. If the bars will be stored other way, there may be problems with feeding. The bars are moving against each other.

We recommend to weld the bundle at the ends before cutting so that individual parts of the bundle will not move.



Switch off the machine by the master switch before welding! Magnetic fields created during welding may damage the control system!

Bundling of four-edged material:



Bundling of angled material:



Attention!

Not all shapes of material are suitable for cutting in the bundle. Follow recommendations of your saw band supplier for placing material into bundle.

4. Machine service

4.1. Saw band dismantling

1. Detach the machine from socket. It is guaranteed that the random start is avoided.



2. Dismantle yellow protective cover of the arm. Two plastic-headed screws fasten the cover.
3. Open protective cover on the back side of the saw frame.



4. Turning the stretching screw to the left loose band tension
5. Take the band down from the swing wheels
6. Take the band out of guiding cubes carefully

4.2. Saw band installation

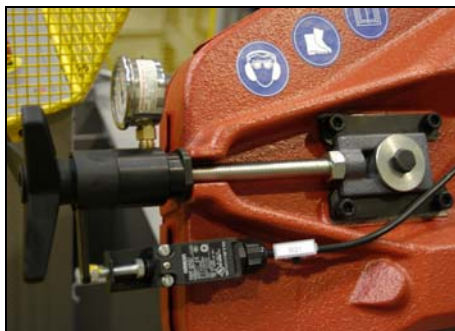
1. Prior to installation, clean all track wheels, guide cubes and inner side of the arm thoroughly of all traces of chips and dirt. **Keep in mind the teeth direction when installing the saw band.**
2. Insert new saw band in the guide cubes. Make sure the saw band runs between both guide rollers and 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 fit tightly to the wheel rim. Then push the saw band as far back as possible.
4. By turning the stretching star to the right, you will stretch the saw band slightly. Now remove the plastic cover of the saw band teeth.
5. Close the rear protective cover.
6. Install the yellow protective cover of the band. The arrow on the cover must match the direction of the arrow on the band. If it does not, turn the band round.

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

1. The saw band must not fall from the wheels after setting.



2. Install the Tenzomat on the saw band and secure it with screws.
3. 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.

4.4. Cooling agents and chips disposal

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

4.4.1. Coolant device inspection

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

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

Note:

If the state of the cooling liquid is not satisfactory, the cooling liquid must be changed.

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

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

* according to manufacturers' instructions

4.4.2. Chips disposal

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

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

4.5. 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!

Comparative table of the gearbox oils:

Manufacturer	Viscosity grade		
	ISO VG 100	ISO VG 220	ISO VG 320
BP	Energol GR-XP 100	Energol GR-XP 220	Energol GR-XP 320
Castrol	Alpha SP 100 Alpha MW 100	Alpha SP 220 Alpha MW 220	
Elf	Reductelf SP 100	Reductelf SP 220 Reductelf Synthese 220	Reductelf SP 320
Esso	Spartan EP 100	Spartan EP 220	Spartan EP 320
Mobil	Mobilgear 627	Mobilgear SHC 220 Mobilgear 630	Mobilgear 632

Manufacturer	Viscosity grade		
	ISO VG 100	ISO VG 220	ISO VG 320
ÖMV		PG 220	
Paramo	PP 7	Paramo CLP 220	Paramo CLP 320
Shell	Shell Omala 100	Shell Omala 220 Shell Tivela S 220	Shell Omala 320 Shell Tivela S 320
Total	Carter EP 100	Carter EP 220	Carter EP 320

4.5.2. Lubricant greases

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

Comparative table of the lubricant greases:

Manufacturer	Type of the lubricant grease
BP	Energrease LS - EP
DEA	Paragon EP1
Esso	FETT EGL 3144
	Beacon EP 1
	Beacon EP 2
FINA	FINA LICAL M12
Klüber	Microlube GB0
	Staburags NBU8EP
	Isoflex Spezial
Optimol	Optimol Longtime PD 0, PD1, PD2
Shell Aseol AG	ASEOL Litea EP 806-077
Texaco	Multifak EP1

4.6. Hydraulic oil level check and Hydraulic oils

4.6.1. Hydraulic oils

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

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

Note:

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

Comparative table of the hydraulic oils

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

Manufacturer	Type	Manufacturer	Type
Esso	Nuto H 46	Texaco	Rando HD B 46
Fam	HD 5040	Valvoline	Ultramax AW 46
Fina	Hydran 46		

4.6.2. 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 μ m or better) when you fill the oil. You avoid impurities penetration to the hydraulic system and troubles in hydraulic system.

4.7. Machine cleaning

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

- Vices jaws
- Vices guiding and vices load area
- Feeder
- Stand area

5. Troubleshooting

5.1. Mechanical defects

Problem	Possible causes	Repair
1. Slanting cut	- Wrongly adjusted hard metal guides.	Set according to the chapter „Machine service“
	- Worn hard metal guides.	Replace to the chapter „Worn pieces replacement“
	- Wrongly adjusted cubes of the saw band guiding.	Set according to the chapter „Machine service“
	- Worn bearings of the saw band guiding.	Replace according to the chapter „Worn pieces replacement“
	- Wrongly adjusted swarf brush.	Set according to the chapter „Machine service“
	- 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 „Machine service“.
	- Set angle does not match the cut angle.	Check the angle adjustment with a protractor and possibly set it according to chapter „Machine service“.
	- Insufficient saw band stretching.	Stretch the saw band and set the limit switch according to chapter „Machine service“.
	- 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 „Machine service“.
	- 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 „Machine service“
	- Over stretched saw band	Lower stretching of the saw band and set the limit switch of the saw band stretching according to chapter „Machine service“
	- Wrongly adjusted hard metal guides.	Check the adjustment of the hard metal guides and carry out adjustment as described in chapter „Machine service“
	- 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“

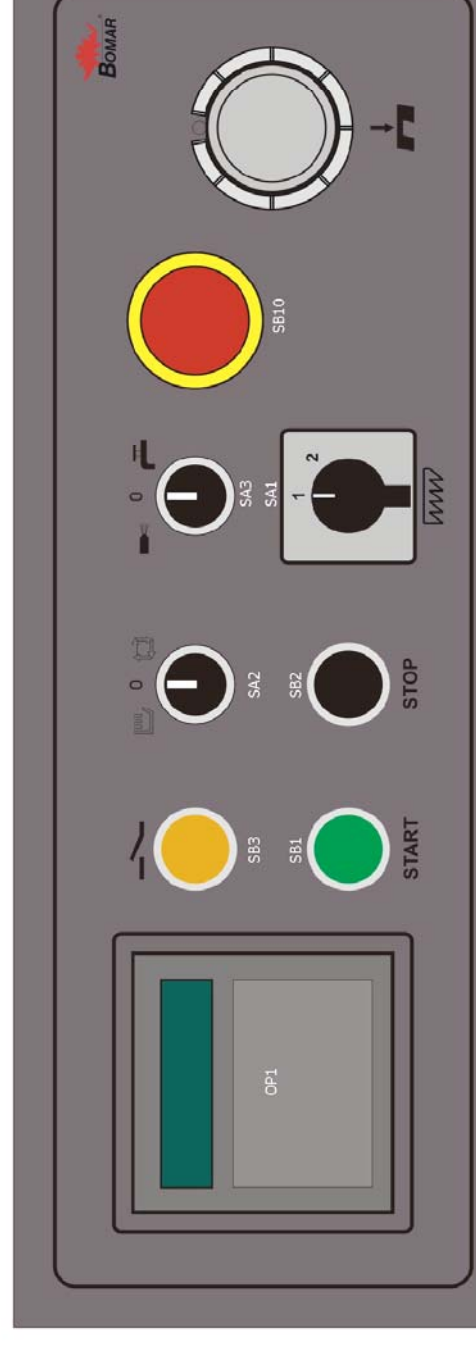
Problem		Possible causes	Repair
	-	Worn saw band guide bearings.	Check guiding bearings and if you notice some sort of excessive damage, replace them according to chapter „Worn pieces replacement“
	-	Wrongly adjusted guiding cubes of the saw band.	Set guiding cube according to chapter „Machine service“
	-	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 „Machine service“
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 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 „Machine service“
	-	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.

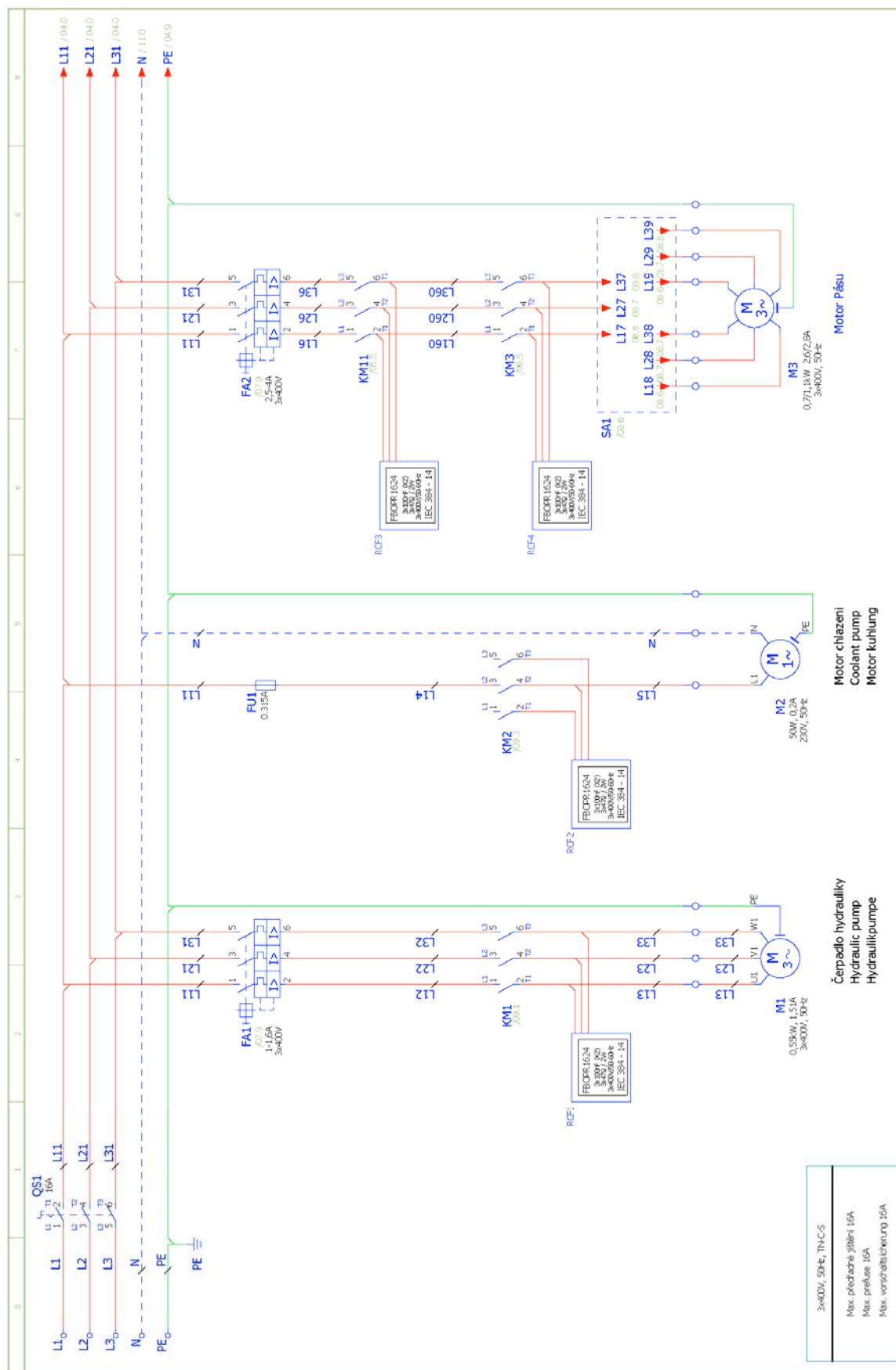
Problem	Possible causes	Repair
	- The brush position and the brush cover is adjusted wrong – with the brush cannot be turned.	The brush cover must be posed, in order to the brush can be turned.
12. The saw arm periodically rise and fall during the cut; this cause short lifetime of the saw band.	- Backlash 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. Electrical defects

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**

01		03 Doc. No.: ES/LKD-2030-2016/2.1 Control Project/Project: Technical Processed/It is verifiable: Datum/Date/Date:	03 Verz. 03 Verz. 03 Verz. 03
02	02 02 02	02 02 02	02 02 02
03	03 03 03	03 03 03	03 03 03
04	04 04 04	04 04 04	04 04 04
05	05 05 05	05 05 05	05 05 05
06	06 06 06	06 06 06	06 06 06
07	07 07 07	07 07 07	07 07 07
08	08 08 08	08 08 08	08 08 08
09	09 09 09	09 09 09	09 09 09
10	10 10 10	10 10 10	10 10 10

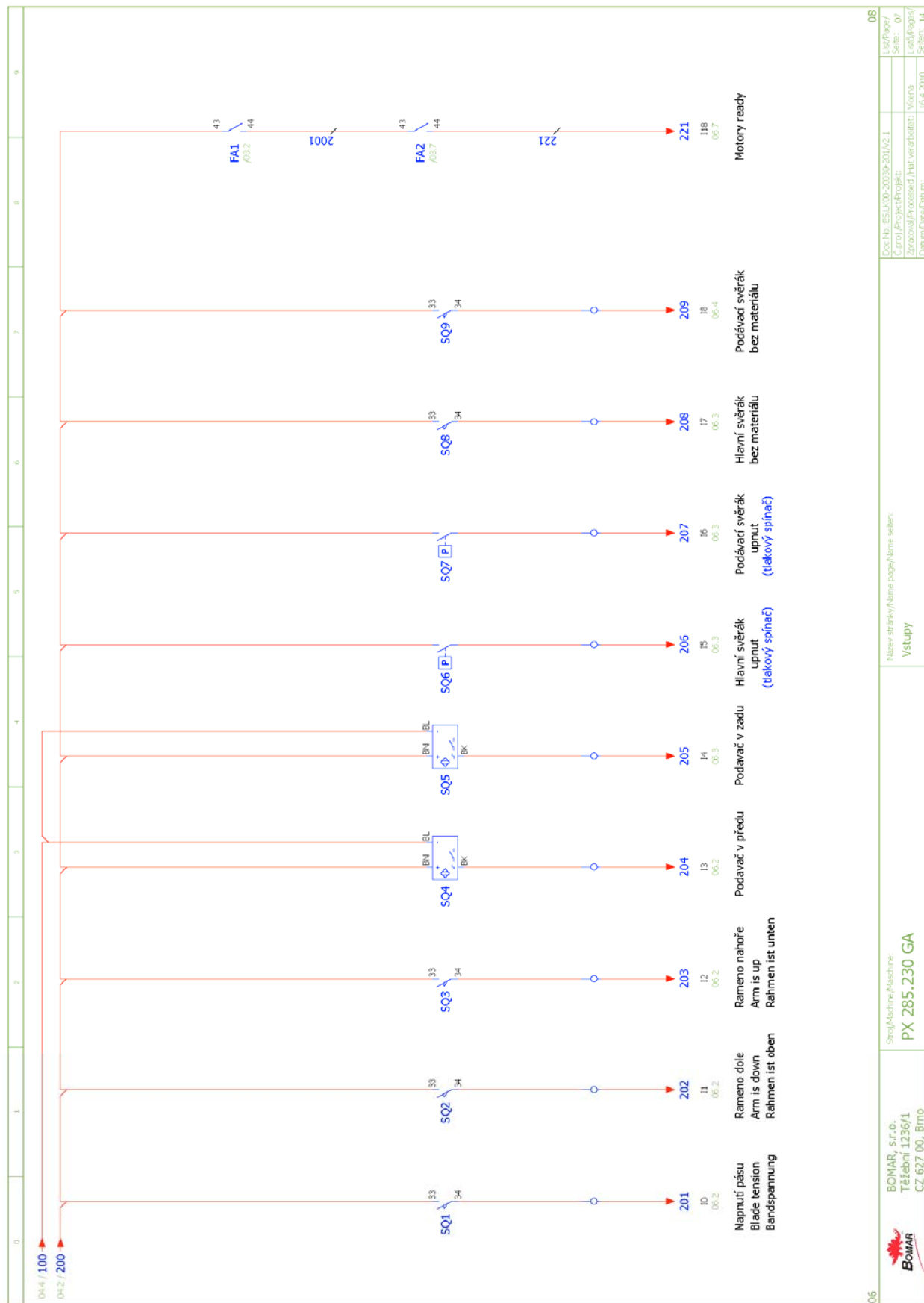


02	BOMAR, s.r.o. Těžební 1236/1 CZ 627 00, Brno	Stroj/Machine/Machine PX 285.230 GA	Název stránky/Name page/Name sheet: Slovní část M1-M3/Power part M1-M3/Feld partie M1-M3	Doc.Nr.: ES/LCO-20030-201/V2.1 C.d.r. Project/Projekt: Zpracoval/Processed/Has verbeitelt: Vojna Datum/Data/Datum: 19.4.2010 Seiten: 14
----	--	---	---	---

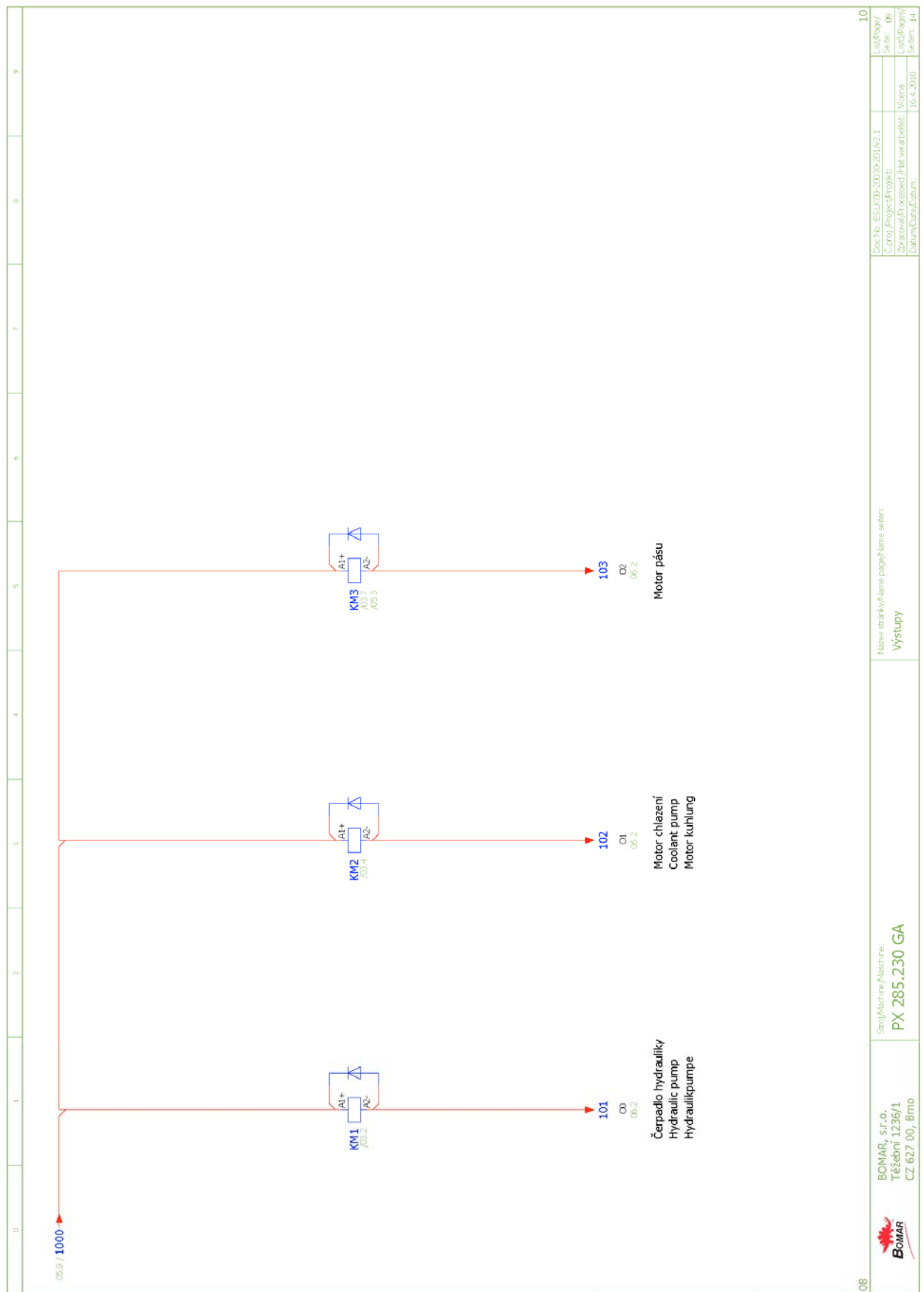






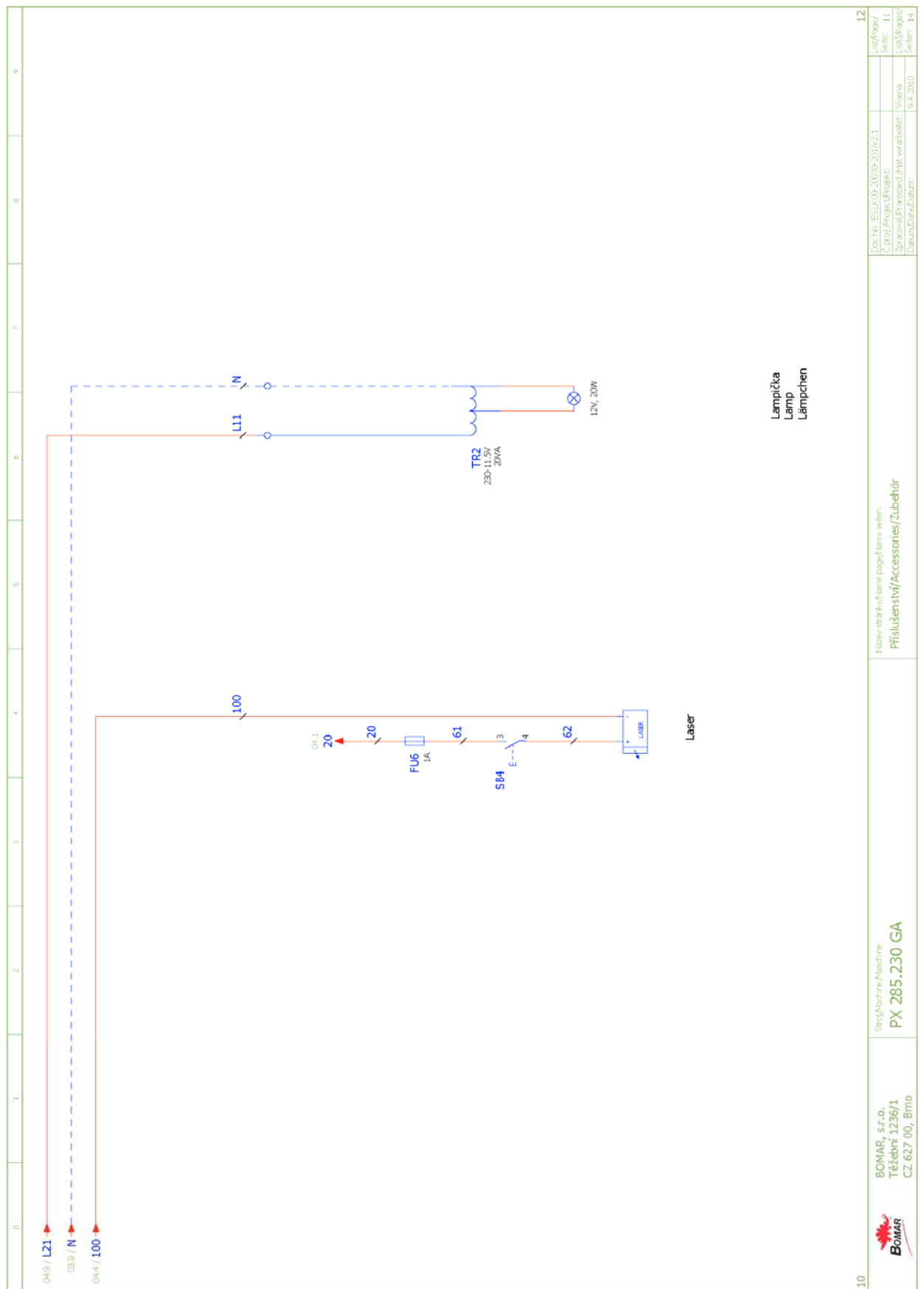






08	 BOMAR, s.r.o. Těšební 1236/1 CZ 627 00, Brno	Stroj/Machine/Maschine: PX 285.230 GA	Název strojky/Name page/Name setten: Výstup	Doc No: ES-LKD-2009-201A2.1 C. proj. Project/Projekt: Zpracoval/Processed/ hat verarbeitelt: Vienna Datum/Date/Datum: 16.4.2010	List/Popis/ Series: 09 List/Popis/ Series: 14
----	---	--	--	--	--





Souhrnný kusovník artiklů

Typ přístroje	Objednáací číslo	Výrobce	Skladové číslo	Množství
301.109	Laser	Petr Provazník	91.100.109	1
Bezpečnostní koncový spínač	QK58	KEDU	91.173.012	1
Bezpečnostní modul	SNA4064K	WIELAND	91.051.026	1
DIN lišta	DIN	WEIDMULLER	91.200.006	1
Dioda 3A	IN5408		91.280.003	7
Filtr RFC vývodový	FBOPR1624		91.041.015	4
Hlavice 2 polohového přepínače	M22-WKV	MOELLER	91.060.037	1
Hlavice 3 polohového přepínače	M22-WRK3	MOELLER	91.060.051	2
Hlavice hříbového ovládače do krabičky	M22-PVT 263467	MOELLER	91.060.030	1
Hlavice prosvětleného tlačítka zelená	M22-DL-G	MOELLER	91.060.031	1
Hlavice prosvětleného tlačítka žlutá	M22-DL-Y	MOELLER	91.060.053	1
Hlavice tlačítka černá	M22-D-S	MOELLER	91.060.035	1
Hlavní vypínač-ovládání	SE 16	GIOVENZANA	91.180.001	1
Hlavní vypínač 16A	P016	GIOVENZANA	91.170.003	1
Indukční snímač	JPS30D-081.5-PNOFC	Crompton Greaves	91.172.009	2
Kabel s konektorem zahrnutý	CF08L8-6	Crompton Greaves	91.142.004	2
Klaštinnová vývodka	M20x1.5mm vývodka	BIMED	91.070.012	6
Koncový spínač	D4N-4A31	OMRON	91.173.007	3
Koncový spínač	D4N-4A32	OMRON	91.173.010	2
Krabice na motor	Krabice	ABB	91.190.004	1
Lampička 12V, 20W	LBP-B-302	RNDR Zdeněk Martinásek	91.100.103	1
Matice	M20x1.5mm matice	BIMED	91.072.012	1
Motorový jistič 1 - 1,6A	GZ1M06	TELEMECANIQUE	91.235.024	1
Motorový jistič 2.5 - 4A	GZ1M08	TELEMECANIQUE	91.235.029	1
PLC	M91-2-R34	Uniltronics	91.995.594	1
Pojistka trubičková 1A, 5x20 pomalá	F1A/250V	ESKA	91.230.003	2
Pojistka trubičková 2A, 5x20	F2A/250V	ESKA	91.230.001	1
Pojistka trubičková 315mA, 5x20	F0,315A/250V	ESKA	91.230.009	1

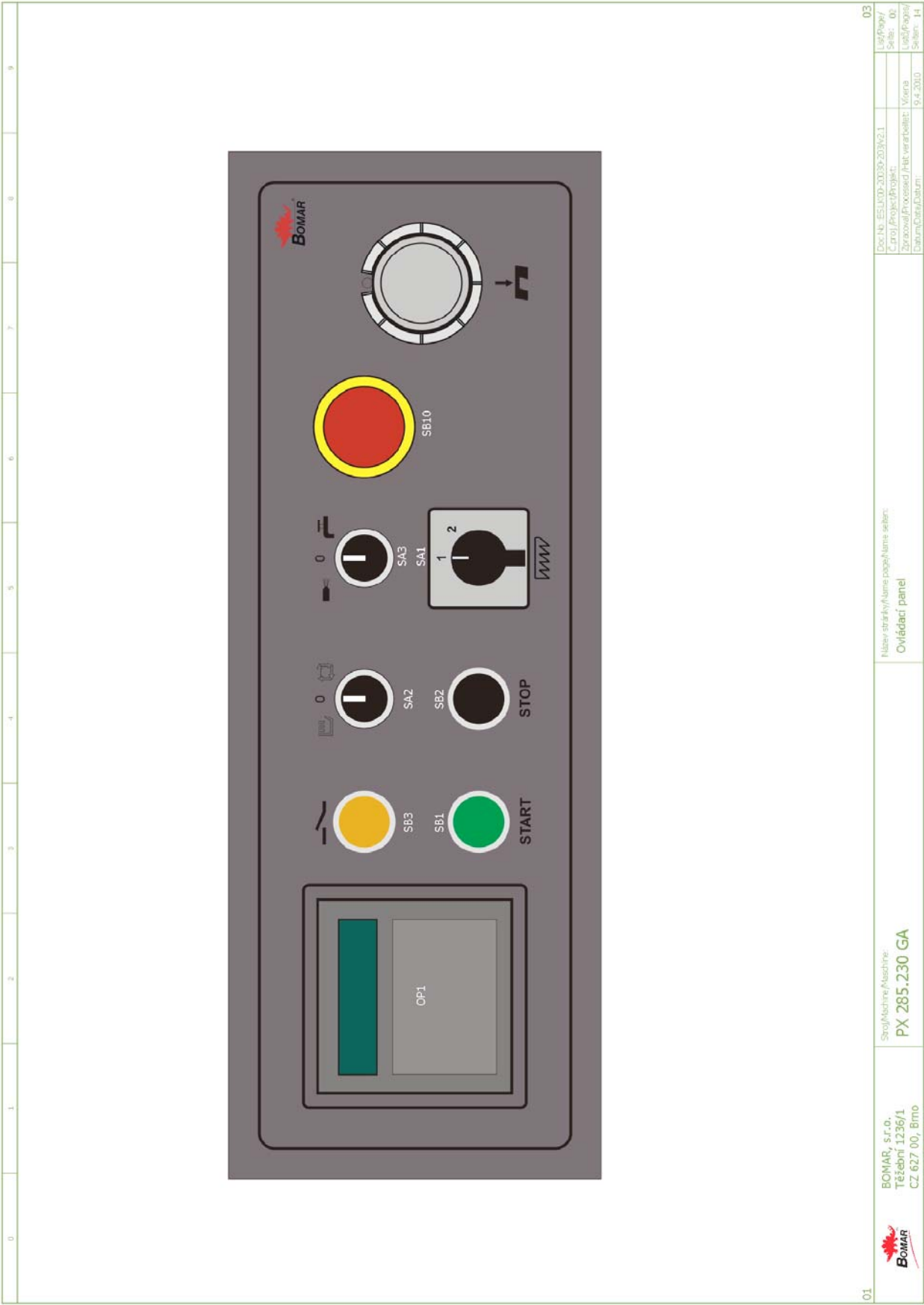
11	 BOMAR, s.r.o. Těšební 1236/1 CZ 627 00, Břmo	Stroj/Machine/Machine PX 285.230 GA	Název stránky/Name page/Nome selon: Souhrnný kusovník	Doc No. ESL100-2009-20142.1 Ctrl. Project/Projekt: Zpracoval/Prepared/Elab. ver. erstellt: Datum/Date/Datum:	12.a List/Sheet/ Series: 12 List/Projekt/ Series: 14

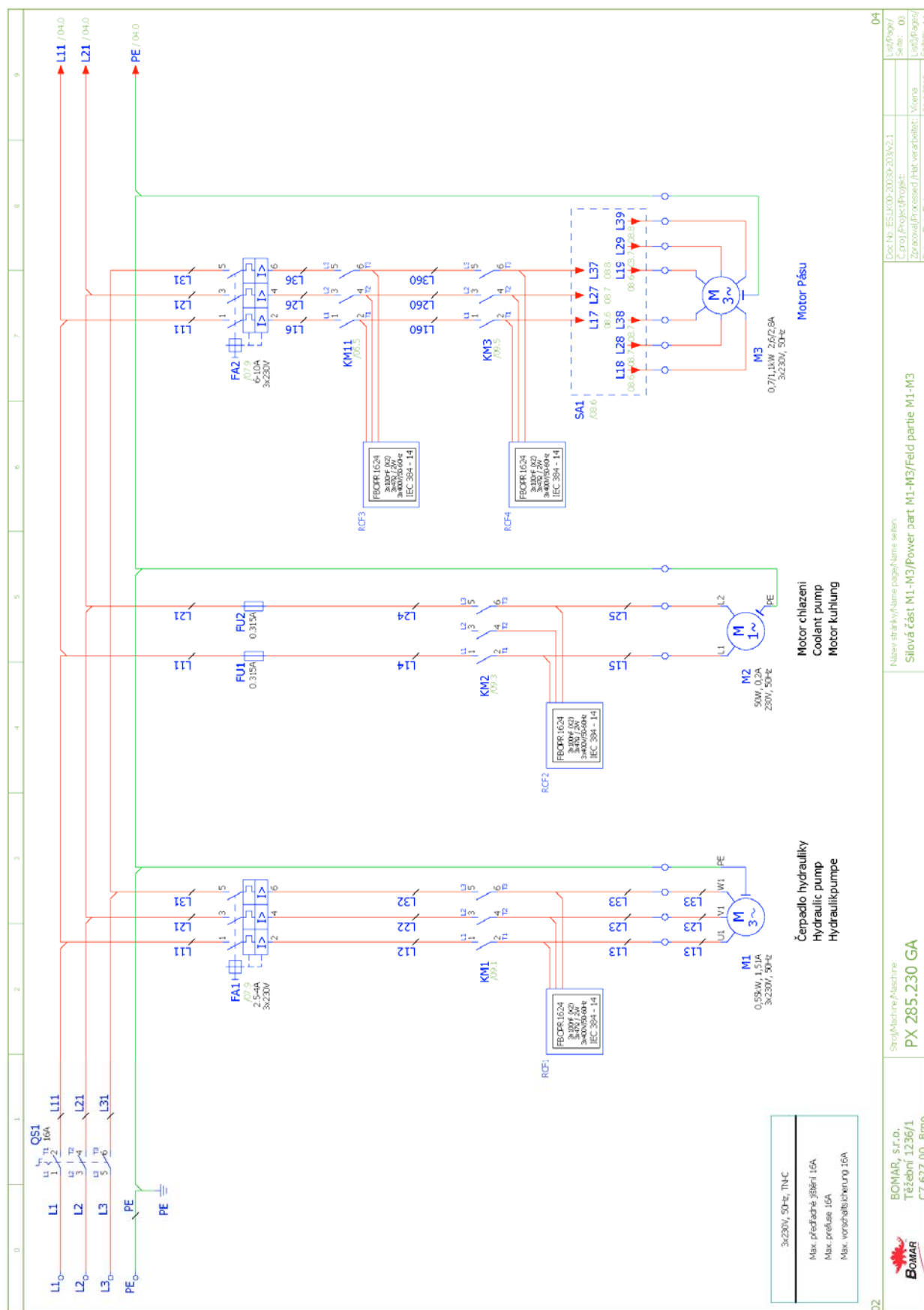


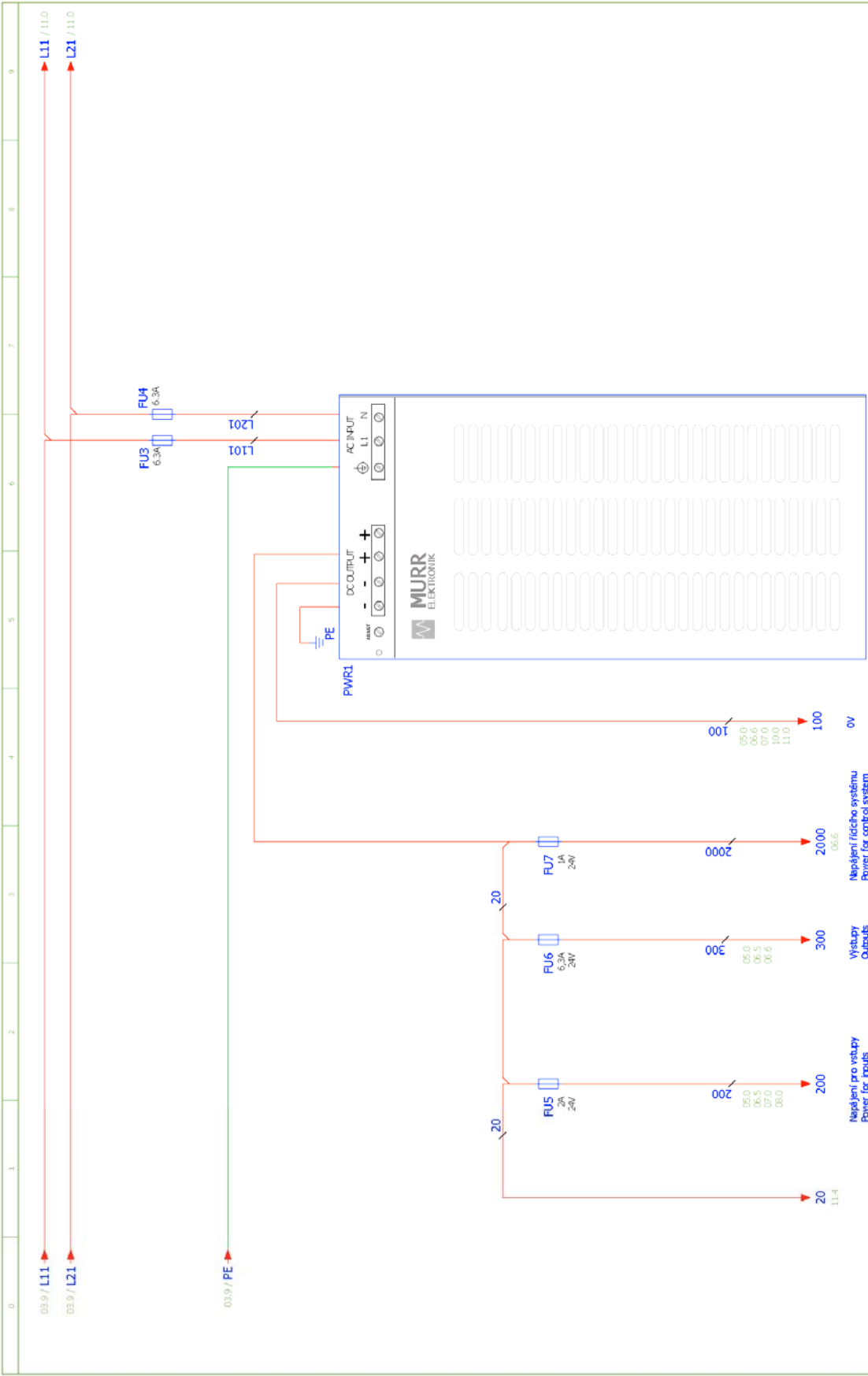
Souhrnný kusovník artiklů

Typ přístroje	Objednávací číslo	Výrobce	Skladové číslo	Množství
Pojistka trubičková 6.3A, 5x20 pomalá	F6.3A/250V	ESKA	91.230.002	1
Pojistka válcová 6A, 10x38 rychlá	PV10 6gG	OEZ	91.231.002	3
Pojistkové pouzdro	WK4/THS15...U	WIELAND	91.251.102	5
Pojistkový odpínač pro válcové vložky ver. 10	OPV10/3	OEZ	91.241.002	1
Pomocný kontakt motorového jističe	GZ1AN11	TELEMECANIQUE	91.046.004	2
Propojovací můstek	TVBWK 4-12	WIELAND	91.252.105	2
Přepínač 2 polohy	S10	Crompton Greaves	91.171.006	1
Přívodní svorka - PE	WK 4SL/U	WIELAND	91.250.027	3
Rozpínací jednotka	M22-KC01	MOELLER	91.061.025	1
Rozpínací jednotka na adaptér	M22-K01	MOELLER	91.061.024	2
Rozvaděčové koryto 25x60	T1-E 25x60 G	IBOCO	91.065.001	1
Rozvaděčové koryto 40x60	T1-E 40x60 G	IBOCO	91.065.002	1
Rozvaděčové koryto 60x60	T1-E 60x60 G	IBOCO	91.065.005	1
Signálka bílá na adaptér	M22-LED-W	MOELLER	91.061.034	1
Signálka zelená na adaptér	M22-LED-G	MOELLER	91.061.023	1
Síťový zdroj 5A, 24VDC	MURR Evolution 24V/5A	MURR	91.085.013	1
Spínací jednotka	M22-KC10	MOELLER	91.061.030	3
Spínací jednotka s adaptérem	M22-K10	MOELLER	91.061.021	5
Stykač	DIL EN-01-G 24V DC	MOELLER	91.040.024	2
Stykač	DIL EN-10-G	MOELLER	91.040.020	2
Svorka čelo	AP 2,5 - 4	WIELAND	91.252.101	4
Svorka koncová	RSD - 88	SEZ	91.251.106	12
Svorka modrá	WK4/U modrá	WIELAND	91.251.104	1
Svorka šedá	WK4/U	WIELAND	91.251.103	54
Trafo k lampičce 230/11.5V, 20VA	NT-20	RNDR Zdeněk Martinásek	91.100.104	1
Vývodka	M16x1.5mm	OBO	91.070.019	9

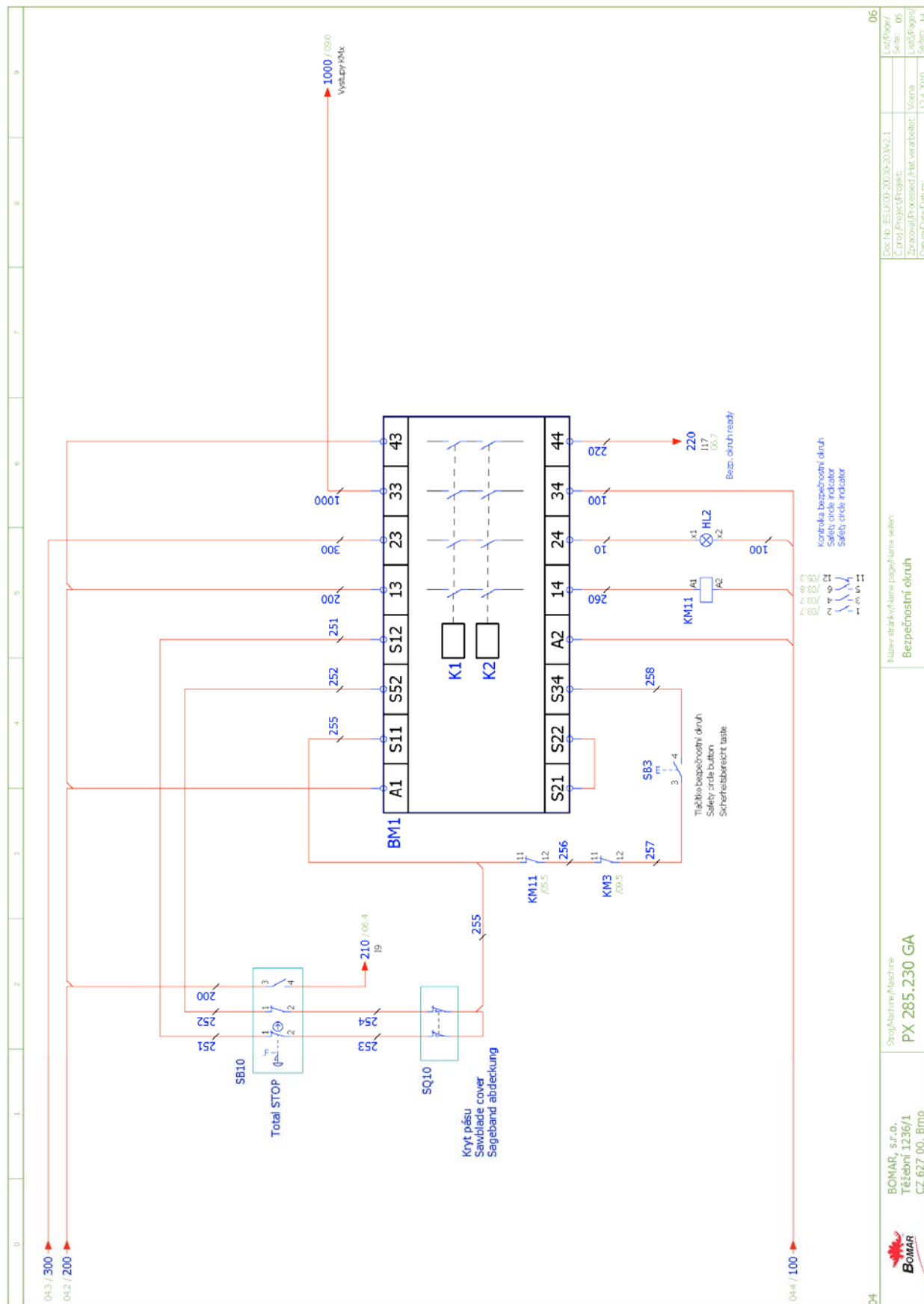
 BOMAR, s.r.o. Těšební 1236/1 CZ 627 00, Brno	Stroj/Machine/Машине: PX 285.230 GA	Název stránky/Name page/Наимя стр.: Souhrnný kusovník	Doc No: ESUK00-2009-201A2.1 C. proj. Project/Projekt: Zpracoval/Processed/Ист. ver. author: Viena Datum/Date/Datum: 23.4.2010	List/Page/ Series: 12.4 List/Лист/ Series: 14
--	---	---	--	--

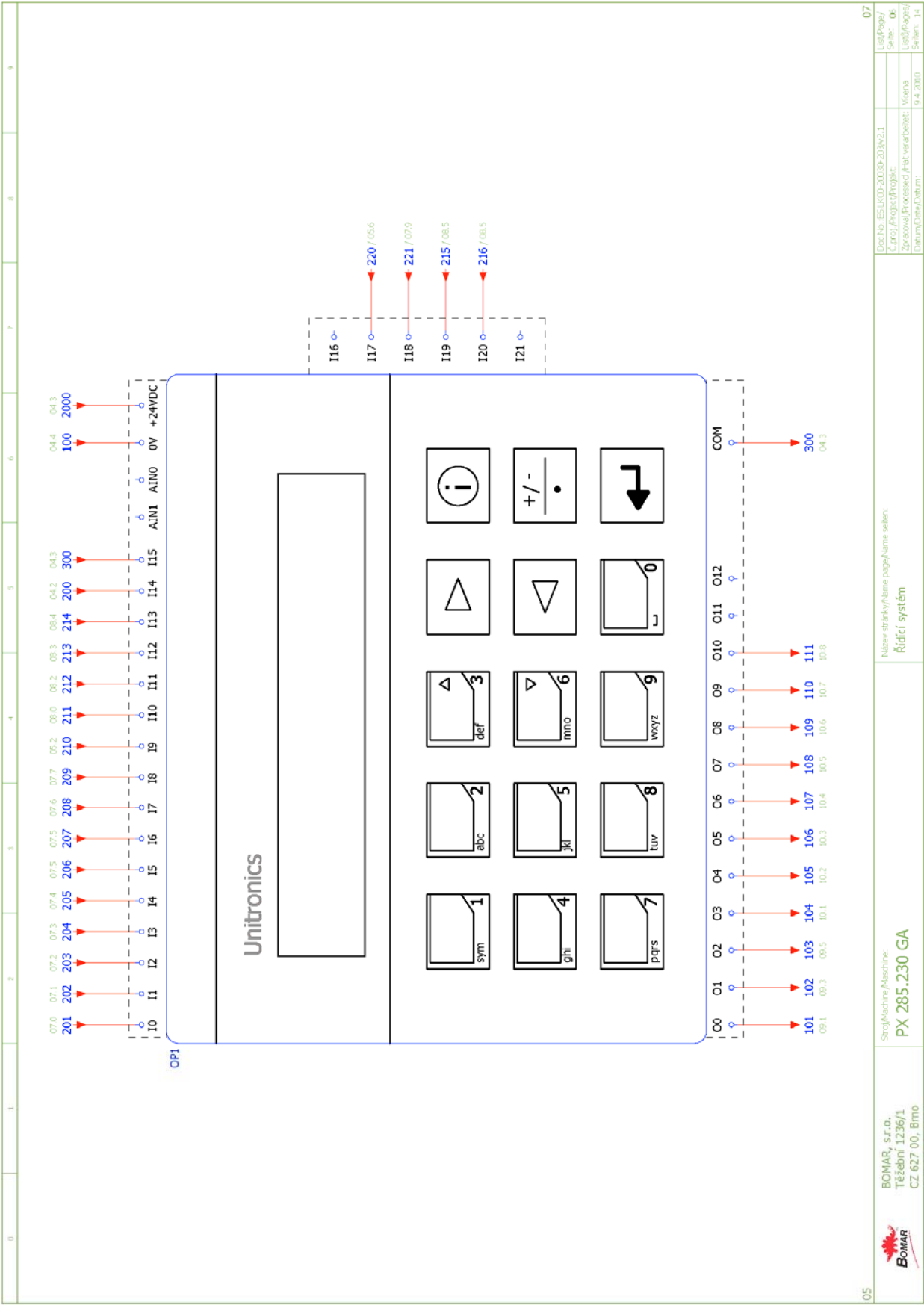




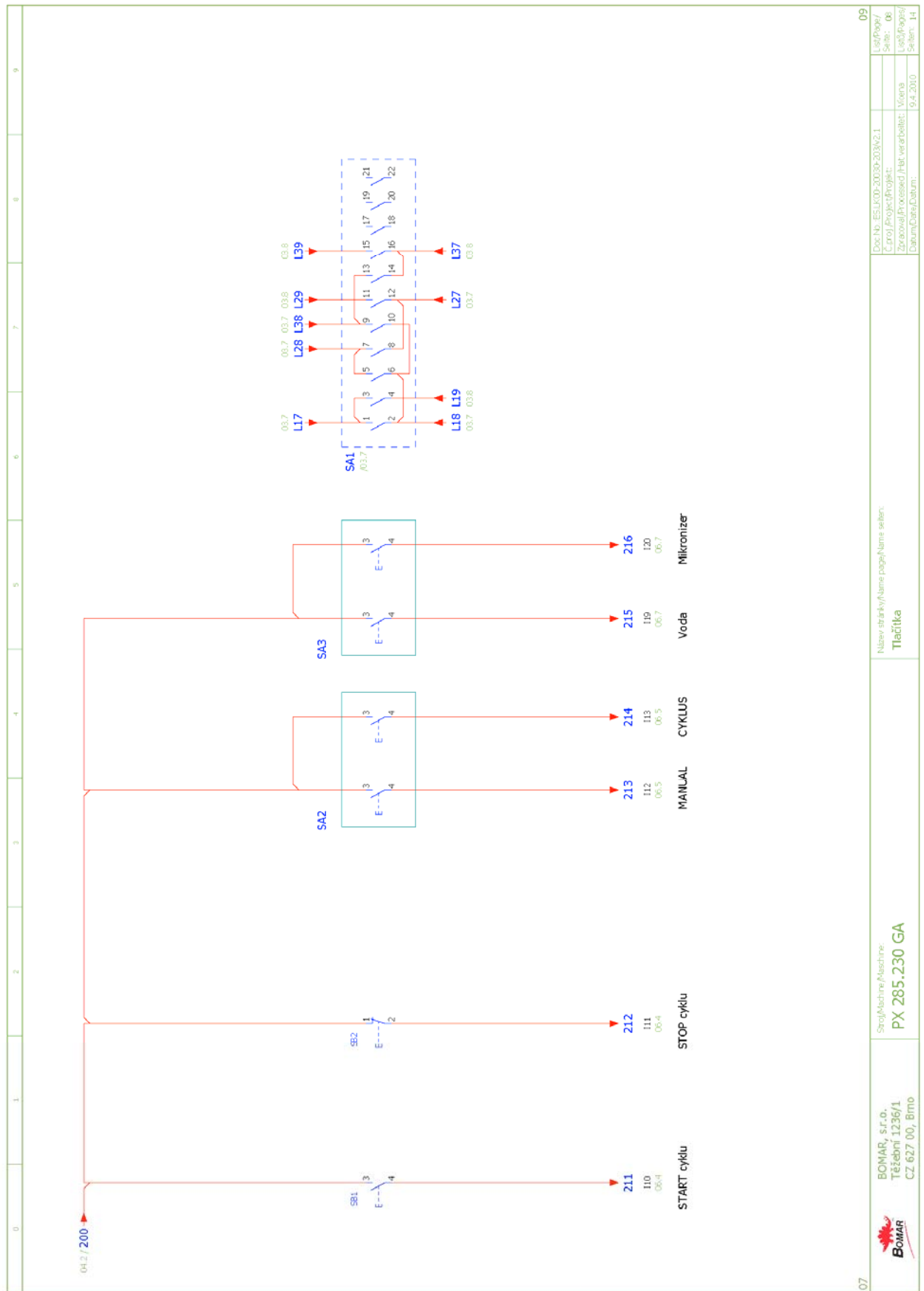


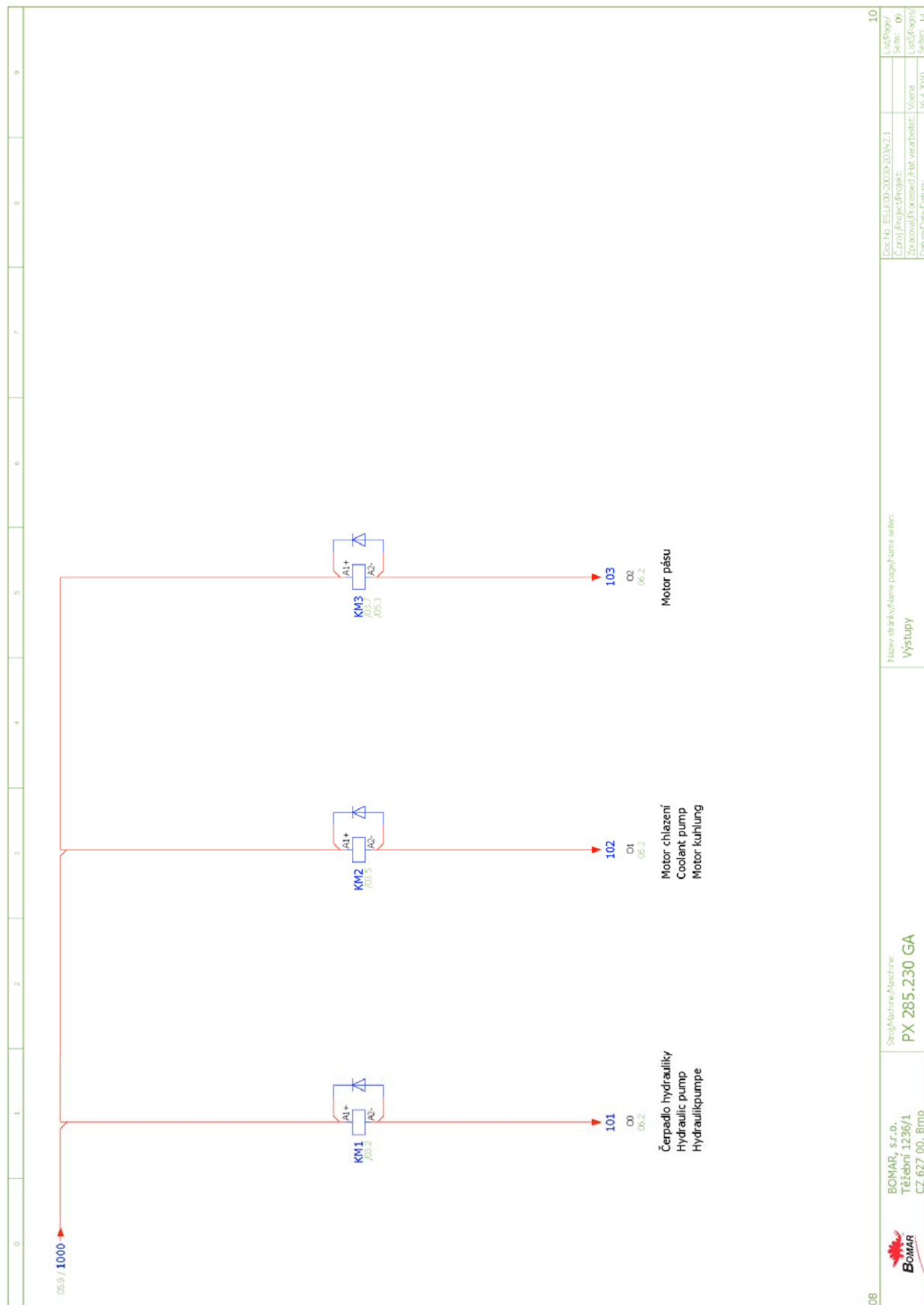
03	BOMAR, s.r.o. Těžební 1236/1 CZ 627 00, Břim	Stroj/Machine/Modellname: PX 285.230 GA	Název schémata/Name page/scheme set: Zapojení zdroje	Doc No.: ES-LK02-2003-203V2.1	List/Page/	05
				Upravení/Project/Projekt: Zpracování/Processing/Verarbeitung: Datum/Date/Datum:	Series: List/Projekt/Projekt: List/Projekt/Projekt: List/Projekt/Projekt:	04 04 14

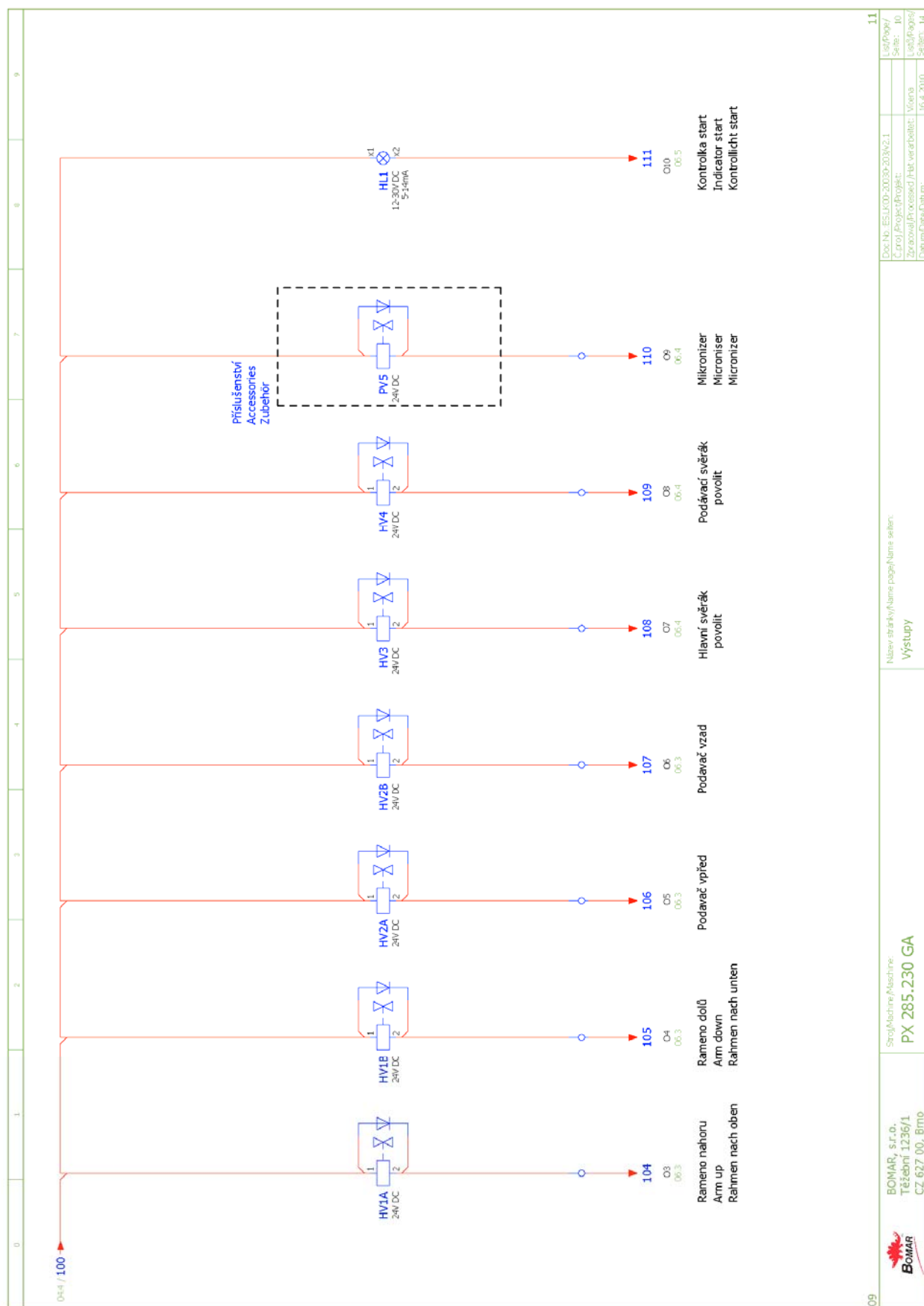


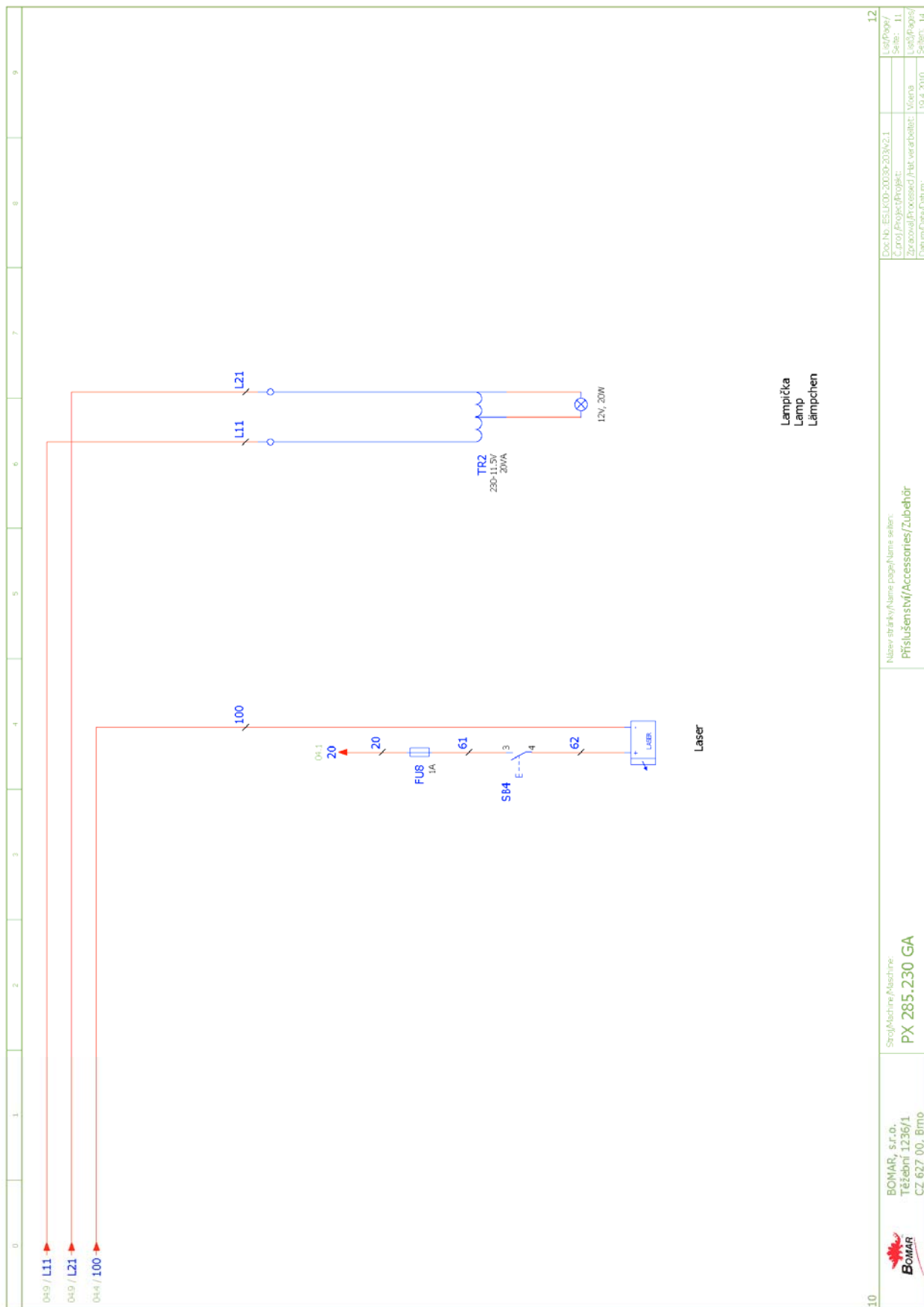














Souhrnný kusovník artiklů

0	1	2	3	4	5	6	7	8	9
Typ přístroje									
301.109	301.109	301.109	301.109	301.109	301.109	301.109	301.109	301.109	301.109
Bezpečnostní koncový spínač	Bezpečnostní koncový spínač	Bezpečnostní koncový spínač	Bezpečnostní koncový spínač	Bezpečnostní koncový spínač	Bezpečnostní koncový spínač	Bezpečnostní koncový spínač	Bezpečnostní koncový spínač	Bezpečnostní koncový spínač	Bezpečnostní koncový spínač
Bezpečnostní modul	Bezpečnostní modul	Bezpečnostní modul	Bezpečnostní modul	Bezpečnostní modul	Bezpečnostní modul	Bezpečnostní modul	Bezpečnostní modul	Bezpečnostní modul	Bezpečnostní modul
DIN lišta	DIN lišta	DIN lišta	DIN lišta	DIN lišta	DIN lišta	DIN lišta	DIN lišta	DIN lišta	DIN lišta
Dioda 3A	Dioda 3A	Dioda 3A	Dioda 3A	Dioda 3A	Dioda 3A	Dioda 3A	Dioda 3A	Dioda 3A	Dioda 3A
Filtr RFC vývodový	Filtr RFC vývodový	Filtr RFC vývodový	Filtr RFC vývodový	Filtr RFC vývodový	Filtr RFC vývodový	Filtr RFC vývodový	Filtr RFC vývodový	Filtr RFC vývodový	Filtr RFC vývodový
Hlavice 2 polohového přepínače	Hlavice 2 polohového přepínače	Hlavice 2 polohového přepínače	Hlavice 2 polohového přepínače	Hlavice 2 polohového přepínače	Hlavice 2 polohového přepínače	Hlavice 2 polohového přepínače	Hlavice 2 polohového přepínače	Hlavice 2 polohového přepínače	Hlavice 2 polohového přepínače
Hlavice 3 polohového přepínače	Hlavice 3 polohového přepínače	Hlavice 3 polohového přepínače	Hlavice 3 polohového přepínače	Hlavice 3 polohového přepínače	Hlavice 3 polohového přepínače	Hlavice 3 polohového přepínače	Hlavice 3 polohového přepínače	Hlavice 3 polohového přepínače	Hlavice 3 polohového přepínače
Hlavice hříbového ovládače do krabičky	Hlavice hříbového ovládače do krabičky	Hlavice hříbového ovládače do krabičky	Hlavice hříbového ovládače do krabičky	Hlavice hříbového ovládače do krabičky	Hlavice hříbového ovládače do krabičky	Hlavice hříbového ovládače do krabičky	Hlavice hříbového ovládače do krabičky	Hlavice hříbového ovládače do krabičky	Hlavice hříbového ovládače do krabičky
Hlavice prosvětleného tlačítka zelená	Hlavice prosvětleného tlačítka zelená	Hlavice prosvětleného tlačítka zelená	Hlavice prosvětleného tlačítka zelená	Hlavice prosvětleného tlačítka zelená	Hlavice prosvětleného tlačítka zelená	Hlavice prosvětleného tlačítka zelená	Hlavice prosvětleného tlačítka zelená	Hlavice prosvětleného tlačítka zelená	Hlavice prosvětleného tlačítka zelená
Hlavice prosvětleného tlačítka žlutá	Hlavice prosvětleného tlačítka žlutá	Hlavice prosvětleného tlačítka žlutá	Hlavice prosvětleného tlačítka žlutá	Hlavice prosvětleného tlačítka žlutá	Hlavice prosvětleného tlačítka žlutá	Hlavice prosvětleného tlačítka žlutá	Hlavice prosvětleného tlačítka žlutá	Hlavice prosvětleného tlačítka žlutá	Hlavice prosvětleného tlačítka žlutá
Hlavice tlačítka černá	Hlavice tlačítka černá	Hlavice tlačítka černá	Hlavice tlačítka černá	Hlavice tlačítka černá	Hlavice tlačítka černá	Hlavice tlačítka černá	Hlavice tlačítka černá	Hlavice tlačítka černá	Hlavice tlačítka černá
Hlavní vypínač-ovládání	Hlavní vypínač-ovládání	Hlavní vypínač-ovládání	Hlavní vypínač-ovládání	Hlavní vypínač-ovládání	Hlavní vypínač-ovládání	Hlavní vypínač-ovládání	Hlavní vypínač-ovládání	Hlavní vypínač-ovládání	Hlavní vypínač-ovládání
Hlavní vypínač 16A	Hlavní vypínač 16A	Hlavní vypínač 16A	Hlavní vypínač 16A	Hlavní vypínač 16A	Hlavní vypínač 16A	Hlavní vypínač 16A	Hlavní vypínač 16A	Hlavní vypínač 16A	Hlavní vypínač 16A
Indukční snímač	Indukční snímač	Indukční snímač	Indukční snímač	Indukční snímač	Indukční snímač	Indukční snímač	Indukční snímač	Indukční snímač	Indukční snímač
Kabel s konektorem zahrnutý	Kabel s konektorem zahrnutý	Kabel s konektorem zahrnutý	Kabel s konektorem zahrnutý	Kabel s konektorem zahrnutý	Kabel s konektorem zahrnutý	Kabel s konektorem zahrnutý	Kabel s konektorem zahrnutý	Kabel s konektorem zahrnutý	Kabel s konektorem zahrnutý
Kleštinová vývodka	Kleštinová vývodka	Kleštinová vývodka	Kleštinová vývodka	Kleštinová vývodka	Kleštinová vývodka	Kleštinová vývodka	Kleštinová vývodka	Kleštinová vývodka	Kleštinová vývodka
Koncový spínač	Koncový spínač	Koncový spínač	Koncový spínač	Koncový spínač	Koncový spínač	Koncový spínač	Koncový spínač	Koncový spínač	Koncový spínač
Koncový spínač	Koncový spínač	Koncový spínač	Koncový spínač	Koncový spínač	Koncový spínač	Koncový spínač	Koncový spínač	Koncový spínač	Koncový spínač
Krabice na motor	Krabice na motor	Krabice na motor	Krabice na motor	Krabice na motor	Krabice na motor	Krabice na motor	Krabice na motor	Krabice na motor	Krabice na motor
Lampička 12V, 20W	Lampička 12V, 20W	Lampička 12V, 20W	Lampička 12V, 20W	Lampička 12V, 20W	Lampička 12V, 20W	Lampička 12V, 20W	Lampička 12V, 20W	Lampička 12V, 20W	Lampička 12V, 20W
Matice	Matice	Matice	Matice	Matice	Matice	Matice	Matice	Matice	Matice
Motorový jistič 2.5 - 4A	Motorový jistič 2.5 - 4A	Motorový jistič 2.5 - 4A	Motorový jistič 2.5 - 4A	Motorový jistič 2.5 - 4A	Motorový jistič 2.5 - 4A	Motorový jistič 2.5 - 4A	Motorový jistič 2.5 - 4A	Motorový jistič 2.5 - 4A	Motorový jistič 2.5 - 4A
Motorový jistič 6 - 10 A	Motorový jistič 6 - 10 A	Motorový jistič 6 - 10 A	Motorový jistič 6 - 10 A	Motorový jistič 6 - 10 A	Motorový jistič 6 - 10 A	Motorový jistič 6 - 10 A	Motorový jistič 6 - 10 A	Motorový jistič 6 - 10 A	Motorový jistič 6 - 10 A
PLC	PLC	PLC	PLC	PLC	PLC	PLC	PLC	PLC	PLC
Pojistka trubičková 1A, 5x20 pomalá	Pojistka trubičková 1A, 5x20 pomalá	Pojistka trubičková 1A, 5x20 pomalá	Pojistka trubičková 1A, 5x20 pomalá	Pojistka trubičková 1A, 5x20 pomalá	Pojistka trubičková 1A, 5x20 pomalá	Pojistka trubičková 1A, 5x20 pomalá	Pojistka trubičková 1A, 5x20 pomalá	Pojistka trubičková 1A, 5x20 pomalá	Pojistka trubičková 1A, 5x20 pomalá
Pojistka trubičková 2A, 5x20	Pojistka trubičková 2A, 5x20	Pojistka trubičková 2A, 5x20	Pojistka trubičková 2A, 5x20	Pojistka trubičková 2A, 5x20	Pojistka trubičková 2A, 5x20	Pojistka trubičková 2A, 5x20	Pojistka trubičková 2A, 5x20	Pojistka trubičková 2A, 5x20	Pojistka trubičková 2A, 5x20
Pojistka trubičková 315mA, 5x20	Pojistka trubičková 315mA, 5x20	Pojistka trubičková 315mA, 5x20	Pojistka trubičková 315mA, 5x20	Pojistka trubičková 315mA, 5x20	Pojistka trubičková 315mA, 5x20	Pojistka trubičková 315mA, 5x20	Pojistka trubičková 315mA, 5x20	Pojistka trubičková 315mA, 5x20	Pojistka trubičková 315mA, 5x20

11	BOMAR, s.r.o. Těšební 1236/1 CZ 627 00, Břmo		Stroj/Machine/Машине: PX 285.230 GA		Název stránky/Name page/Наимя стр.: Souhrnný kusovník		Doc No: ES/LK00-2009-203V2.1 C. proj. Project/Проект: Zpracoval/Processed/Ист. ver. authorit.: Datum/Date/Datum:		12.a
									List/Sheet/ Series: 12 List/Sheet/ Series: 14

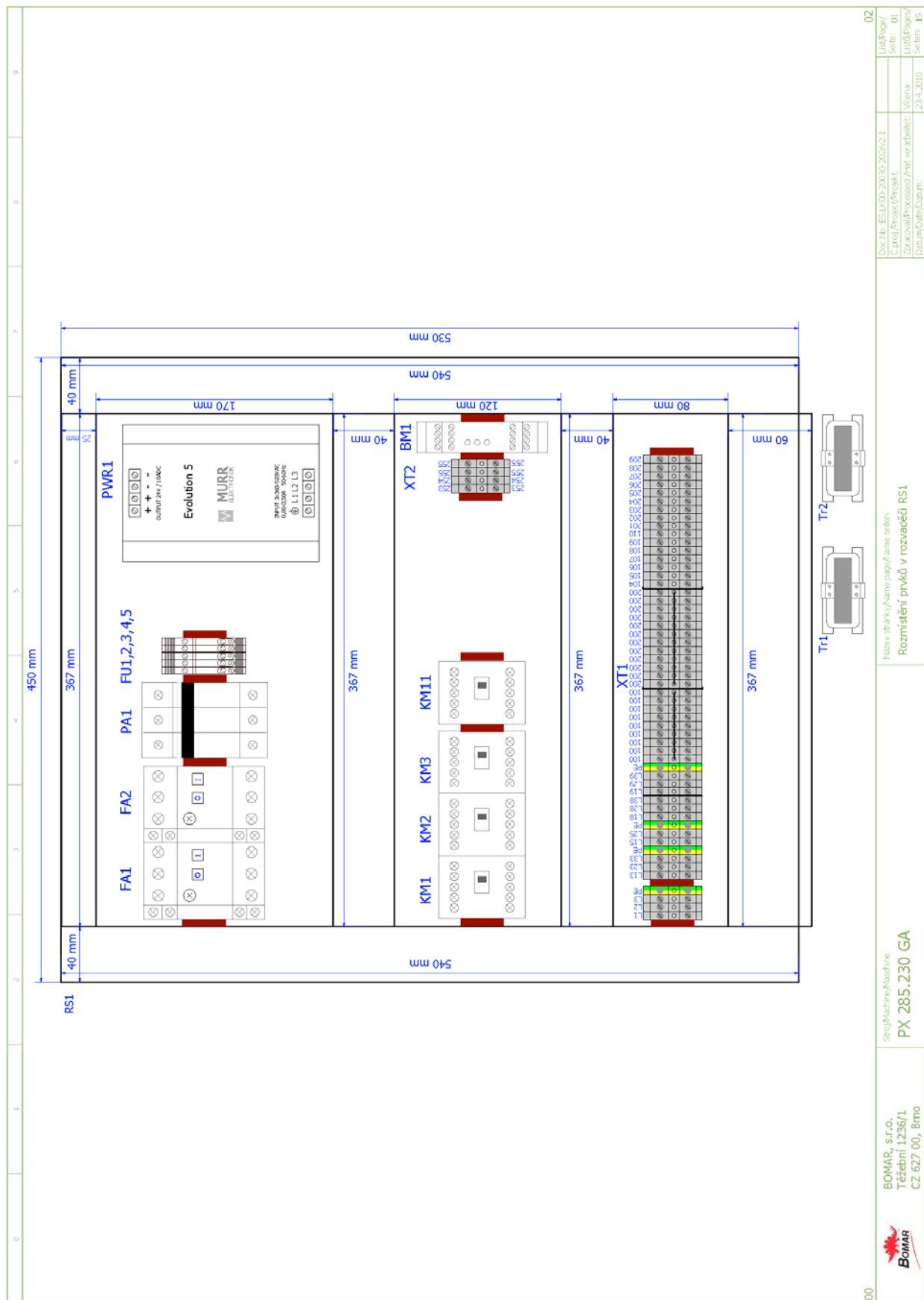
Souhrnný kusovník artiklů

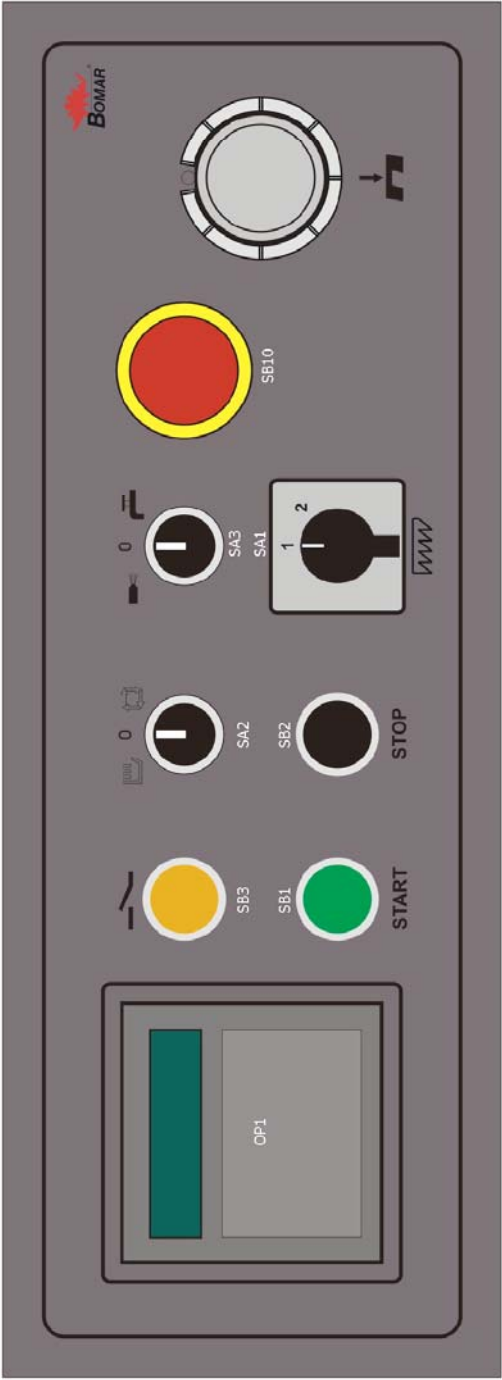
Typ přístroje	Objednáací číslo	Výrobce	Skladové číslo	Množství
Pojistka trubičková 6.3A, 5x20 pomalá	F6-3A/250V	ESKA	91.230.002	3
Pojistkové pouzdro	WK4/THSIS...U	WIELAND	91.251.102	8
Pomocný kontakt motorového jističe	GZ1AN11	TELEMECANIQUE	91.046.004	2
Propojovací můstek	TVBWK 4-12	WIELAND	91.252.105	2
Přepínač 2 polohy	S10	Crompton Greaves	91.171.006	1
Přívodní svorka - PE	WK 4SL/U	WIELAND	91.250.027	3
Rozpínací jednotka	M22-KC01	MOELLER	91.061.025	1
Rozpínací jednotka na adaptér	M22-K01	MOELLER	91.061.024	2
Rozvaděčové koryto 25x60	T1-E 25x60 G	IBOCO	91.065.001	1
Rozvaděčové koryto 40x60	T1-E 40x60 G	IBOCO	91.065.002	1
Rozvaděčové koryto 60x60	T1-E 60x60 G	IBOCO	91.065.005	1
Signálka bílá na adaptér	M22-LED-W	MOELLER	91.061.034	1
Signálka zelená na adaptér	M22-LED-G	MOELLER	91.061.023	1
Síťový zdroj 5A/100-240VAC/24VDC	MURR ECO-POWER 24V/5A	MURR	91.085.017	1
Spínací jednotka	M22-KC10	MOELLER	91.061.030	3
Spínací jednotka s adaptérem	M22-K10	MOELLER	91.061.021	5
Stykač	DIL EN-01-G 24V DC	MOELLER	91.040.024	2
Stykač	DIL EN-10-G	MOELLER	91.040.020	2
Svorka čelo	AP 2,5 - 4	WIELAND	91.252.101	4
Svorka koncová	RSD - 88	SEZ	91.251.106	12
Svorka šedá	WK4/U	WIELAND	91.251.103	57
Trafo k lampičce 230/11.5V, 20VA	NT-20	RNDR Zdeněk Martinásek	91.100.104	1
Vývodka	M16x1.5mm	OBO	91.070.019	9

12

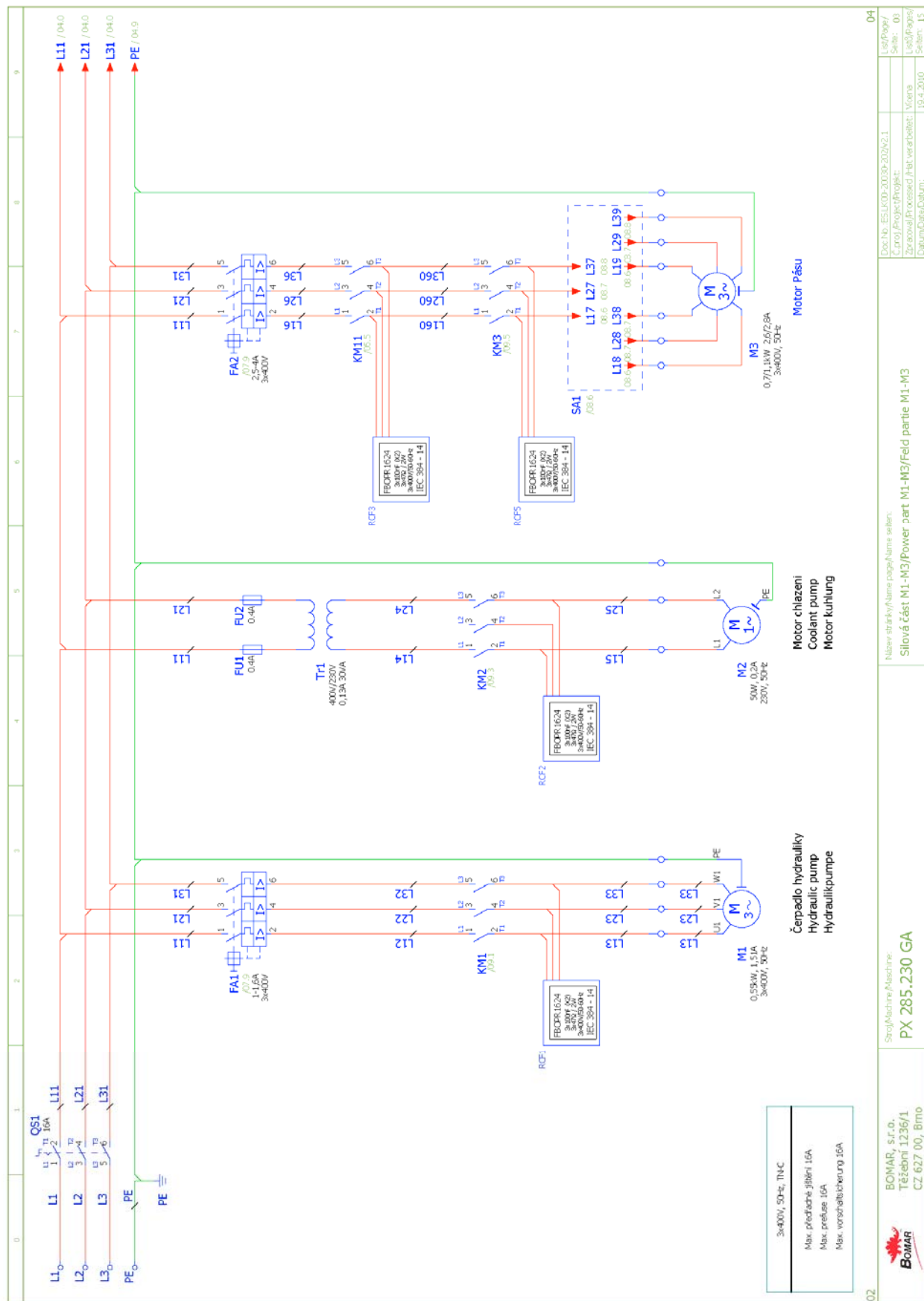
 BOMAR, s.r.o. Těšební 1236/1 CZ 627 00, Břmo	Stroj/Machine/Machine: PX 285.230 GA	Název stránky/Name page/Nom. selen: Souhrnný kusovník	Doc.No.: ES1100-2009-203W2.1 Proj. Project/Projekt: Zpracoval/Processed/Verarbeitet: M. Viera Datum/Date/Datum: 23.4.2010	List/Posyl: Series: 12.4 List/Posyl: Series: 14
---	--	---	--	--

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



01		03
BOMAR, s.r.o. Těšební 1236/1 CZ 627 00, Břmo	Stroj/Machine/Machine: PX 285.230 GA	Háček/strážky/Name page/Name setten: Ovládací panel
	Doc. No.: ES1302-2009-2024/2.1 Control Project/Projekt: Zpracování/Processing/Projektverteilung: Datum/Date/Date:	List/Seite/ Seite: 03 List/Seite/ Seite: 15

Schéματα
Schemas
Schematics



02	BOMAR, s.r.o. Těžební 1236/1 CZ 627 00, Břim
03	Stroj/Machine/Maschine: PX 285.230 GA
04	Název strojky/Name page/Name seiten: Slova část M1-M3/Power part M1-M3/Feld partie M1-M3
	Doc No: ES/LK00-2009-20242.1 C. proj. Project/Projekt: Zpracoval/Processed/Verarbeitet: Vienna Datum/Date/Datum: 19.4.2010

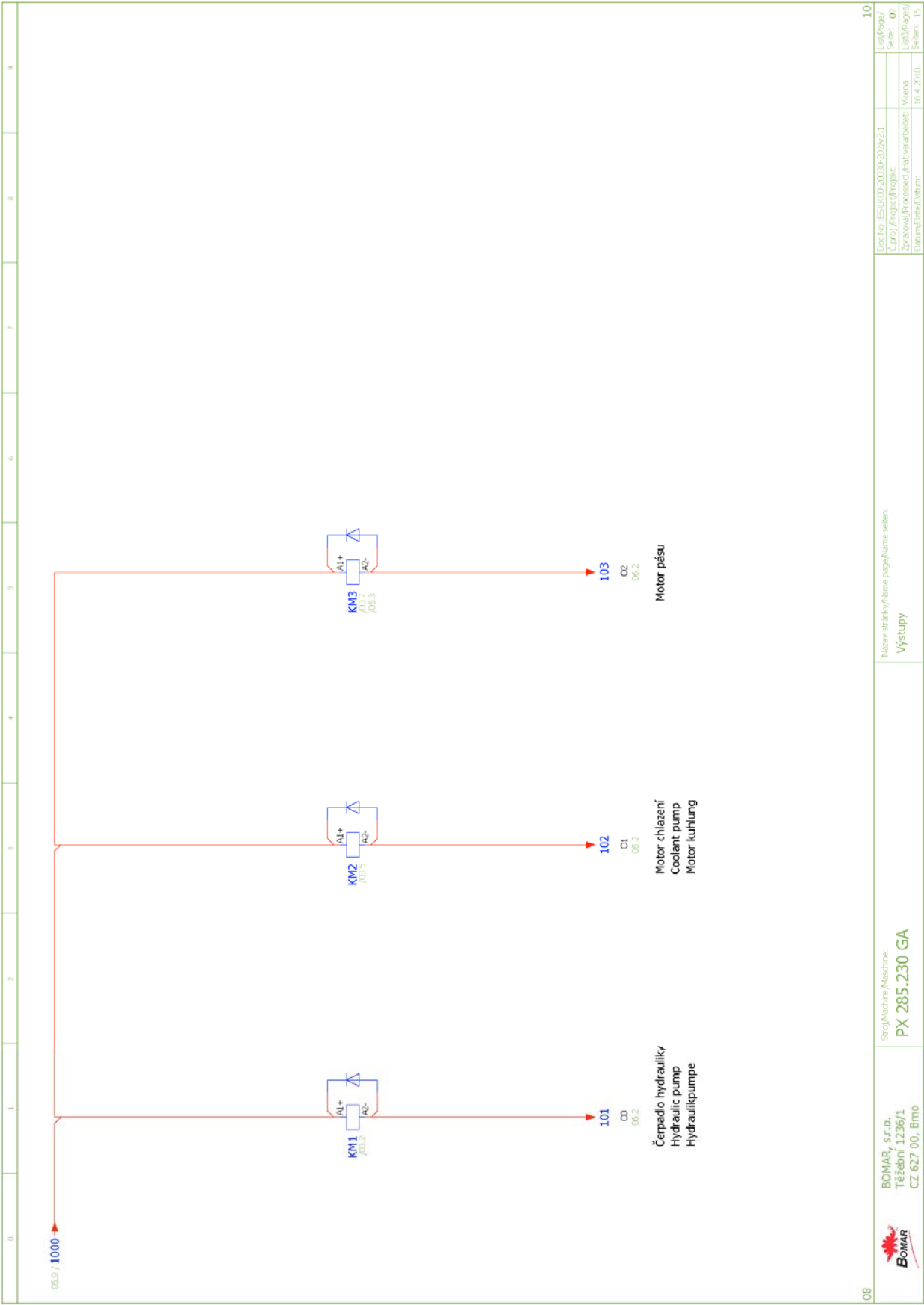




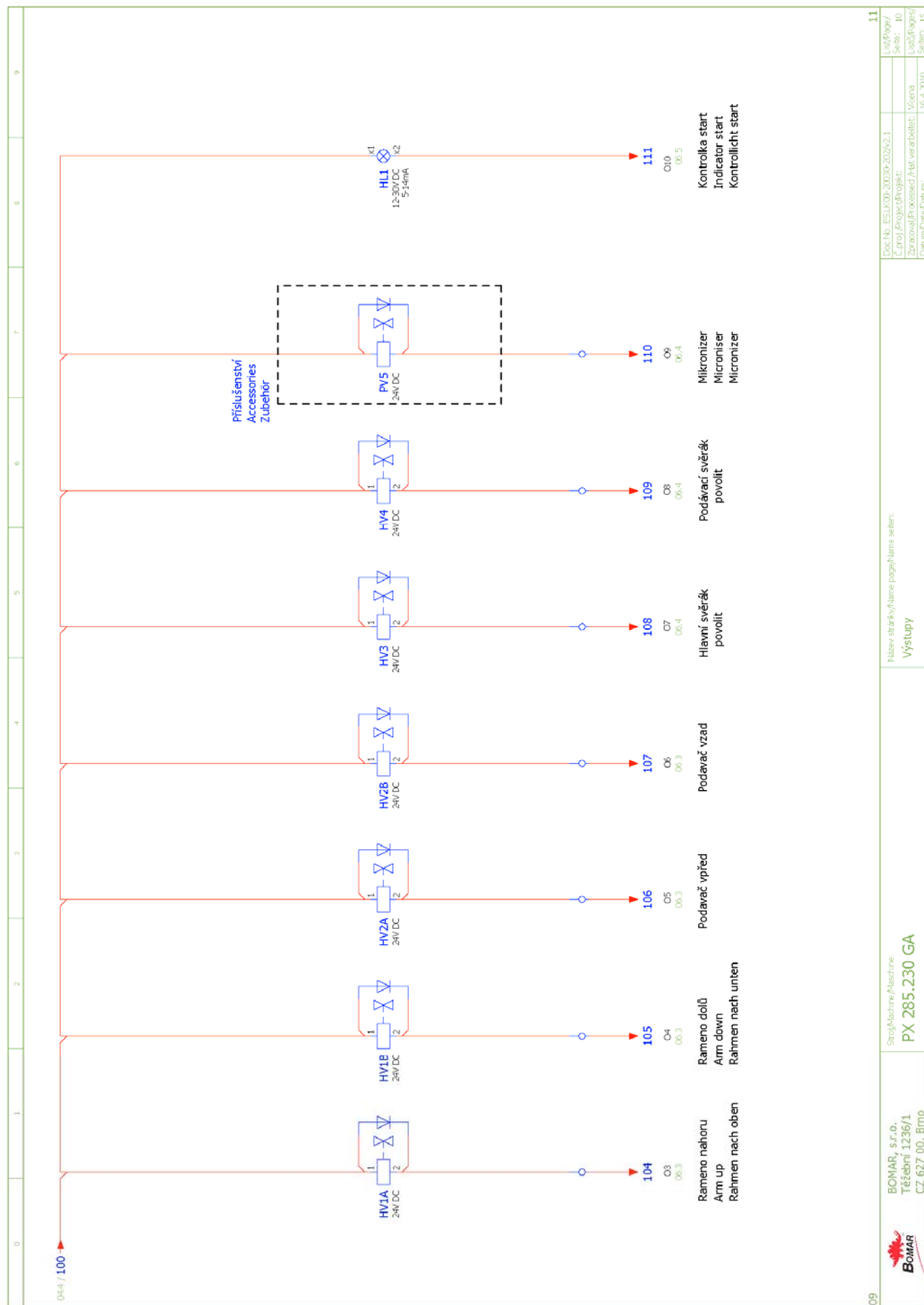


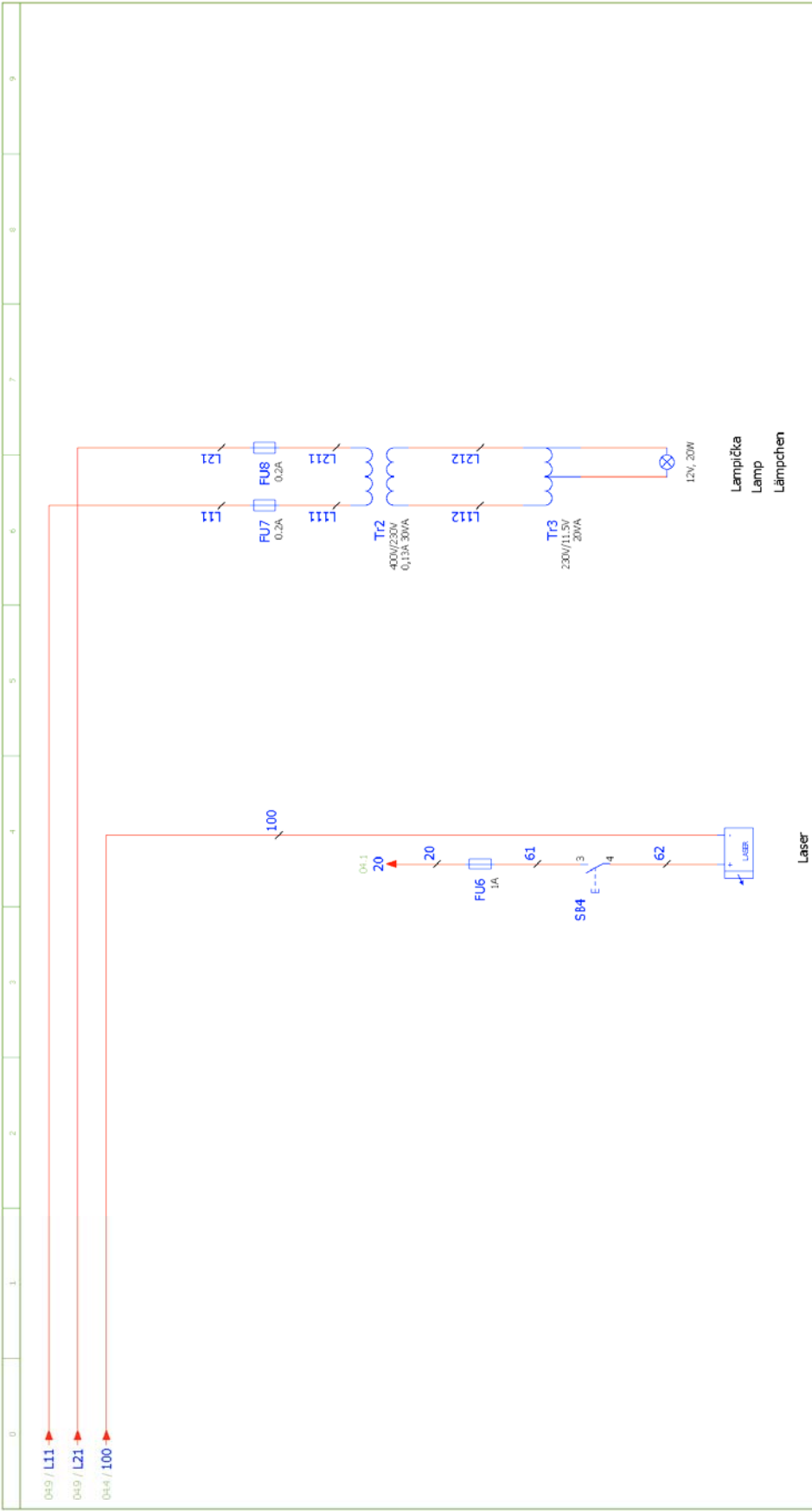






08	BOMAR, s.r.o. Těšební 1236/1 CZ 627 00, Břmo		Stroj/Machine/Maschine: PX 285.230 GA	Název strojky/Name page/Name setten: Výstup	Doc No: ES/LK02-20039-2024v2.1 C. proj. Project/Projekt: Zpracoval/Processed/ hat verarbeitelt: Viena Datum/Date/Datum: 16.4.2010	List/Popel/ Series: 09 List/Popel/ Series: 15	10
----	--	--	--	--	--	--	----





10	BOMAR, s.r.o. Těžební 1236/1 CZ 627 00, Břim	Stroj/Machine/Modellname: PX 285.230 GA	Název/drawing/Name page/Name section: Přístroj/Device/Accessories/Zubehör	Doc No.: ES-LK02-2009-2024v2.1 C. proj./Project/Projekt: Zpracoval/Processed/Has verarbeitelt: Vienna Datum/Date/Datum: 9.4.2010	12 List/Posel/ Series: 11 List/Posel/ Series: 15
----	--	--	--	---	--

Souhrnný kusovník artiklů

Typ přístroje	Objednáací číslo	Výrobce	Skladové číslo	Množství
301.109	Laser	Petr Provazník	91.100.109	1
Bezpečnostní koncový spínač	QK58	KEDU	91.173.012	1
Bezpečnostní modul	SNA4064K	WIELAND	91.051.026	1
DIN lišta	DIN	WEIDMULLER	91.200.006	1
Dioda 3A	IN5408		91.280.003	7
Filtr RFC vývodový	FBOPR1624		91.041.015	4
Hlavice 2 polohového přepínače	M22-WKV	MOELLER	91.060.037	1
Hlavice 3 polohového přepínače	M22-WRK3	MOELLER	91.060.051	2
Hlavice hříbového ovládače do krabičky	M22-PVT 263467	MOELLER	91.060.030	1
Hlavice prosvětleného tlačítka zelená	M22-DL-G	MOELLER	91.060.031	1
Hlavice prosvětleného tlačítka žlutá	M22-DL-Y	MOELLER	91.060.053	1
Hlavice tlačítka černá	M22-D-S	MOELLER	91.060.035	1
Hlavní vypínač-ovládání	SE 16	GIOVENZANA	91.180.001	1
Hlavní vypínač 16A	P016	GIOVENZANA	91.170.003	1
Indukční snímač	JPS30D-081.5-PNOFC	Crompton Greaves	91.172.009	2
Kabel s konektorem zahnutý	CF08L8-6	Crompton Greaves	91.142.004	2
Klaštinnová vývodka	M20x1.5mm vývodka	BIMED	91.070.012	6
Koncový spínač	D4N-4A31	OMRON	91.173.007	3
Koncový spínač	D4N-4A32	OMRON	91.173.010	2
Krabice na motor	Krabice	ABB	91.190.004	1
Lampička 12V, 20W	LBP-B-302	RNDR Zdeněk Martinásek	91.100.103	1
Matice	M20x1.5mm matice	BIMED	91.072.012	1
Motorový jistič 1 - 1,6A	GZ1M06	TELEMECANIQUE	91.235.024	1
Motorový jistič 2.5 - 4A	GZ1M08	TELEMECANIQUE	91.235.029	1
PLC	M91-2-R34	Uniltronics	91.995.594	1
Pojistka trubičková 0.2A, 5x20	F0.2A/250V	ESKA	91.230.037	2
Pojistka trubičková 1A, 5x20 pomalá	F1A/250V	ESKA	91.230.003	2
Pojistka trubičková 2A, 5x20	F2A/250V	ESKA	91.230.001	1

11		BOMAR, s.r.o. Těšební 1236/1 CZ 627 00, Břmo	Stroj/Machine/Maschine: PX 285.230 GA	Název stránky/Name page/Namc seiten: Souhrnný kusovník	Doc.No.: ES/LC/D-2009-2024/2.1 Ctrl. Proj.ect/Projekt: Zpracoval/Processed/Her. ver. erstellt: Datum/Date/Datum:	12.a Seiten: 12 List/Projekt: Seiten: 15

Souhrnný kusovník artiklů

Typ přístroje	Objednáací číslo	Výrobce	Skladové číslo	Množství
Pojistka trubičková 315mA, 5x20	F0315A/250V	ESKA	91.230.009	2
Pojistka trubičková 6.3A, 5x20 pomalá	F6.3A/250V	ESKA	91.230.002	1
Pojistka válcová 6A, 10x38 rychlá	PV10 6gG	OEZ	91.231.002	3
Pojistkové pouzdro	WK4/THS15...U	WIELAND	91.251.102	8
Pojistkový odpináč pro válcové vložky ve. 10	OPV10/3	OEZ	91.241.002	1
Pomocný kontakt motorového jističe	GZ1AN11	TELEMECANIQUE	91.046.004	2
Propojovací můstek	IV8WK 4-12	WIELAND	91.252.105	2
Přepínač 2 polohy	S10	Crompton Greaves	91.171.006	1
Přívodní svorka - PE	WK 4SL/U	WIELAND	91.250.027	3
Rozpínací jednotka	M22-KC01	MOELLER	91.061.025	1
Rozpínací jednotka na adaptér	M22-K01	MOELLER	91.061.024	2
Rozvaděčové krytí 25x60	T1-E 25x60 G	IBOCO	91.065.001	1
Rozvaděčové krytí 40x60	T1-E 40x60 G	IBOCO	91.065.002	1
Rozvaděčové krytí 60x60	T1-E 60x60 G	IBOCO	91.065.005	1
Signálka bílá na adaptér	M22-LED-W	MOELLER	91.061.034	1
Signálka zelená na adaptér	M22-LED-G	MOELLER	91.061.023	1
Síťový zdroj 5A, 24VDC	MURR Evolution 24V/5A	MURR	91.085.013	1
Spínací jednotka	M22-KC10	MOELLER	91.061.030	3
Spínací jednotka s adaptérem	M22-K10	MOELLER	91.061.021	5
Stykač	DIL EM-01-G 24V DC	MOELLER	91.040.024	2
Stykač	DIL EM-10-G	MOELLER	91.040.020	2
Svorka čelo	AP 2,5 - 4	WIELAND	91.252.101	4
Svorka koncová	RSD - 88	SEZ	91.251.106	12
Svorka šedá	WK4/U	WIELAND	91.251.103	57
Trafo k lampičce 230V/11.5V, 20VA	NT-20	RNDR Zdeněk Martinásek	91.100.104	1
Transformátor 400V/230V 0,13A 30VA	JOC E2520 - 022	ELEKTROKOV a.s. ZNOJMO	91.080.027	2

12

12.b


BOMAR, s.r.o.
Těžební 1236/1
CZ 627 00, BrnoStroj/Machine/Machine
PX 285.230 GA

Název stránky/name page/name sheet

Souhrnný kusovník

Doc.No.: ES-LX00-20030-200A2.1

C.proj./Project/Projekt:

Zpracoval/Processed/Heb. verarbeitet:

Datum/Date/Datum:

List/Seite/

Seite: 12.a

List/Seite/

Seite: 15

0

1

2

3

4

5

6

7

8

9

Souhrnný kusovník artiklů

Typ přístroje	Objednáací číslo	Výrobce	Skladové číslo	Množství
Vývodka	M16x1.5mm	OBO	91.070.019	9

12.a

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

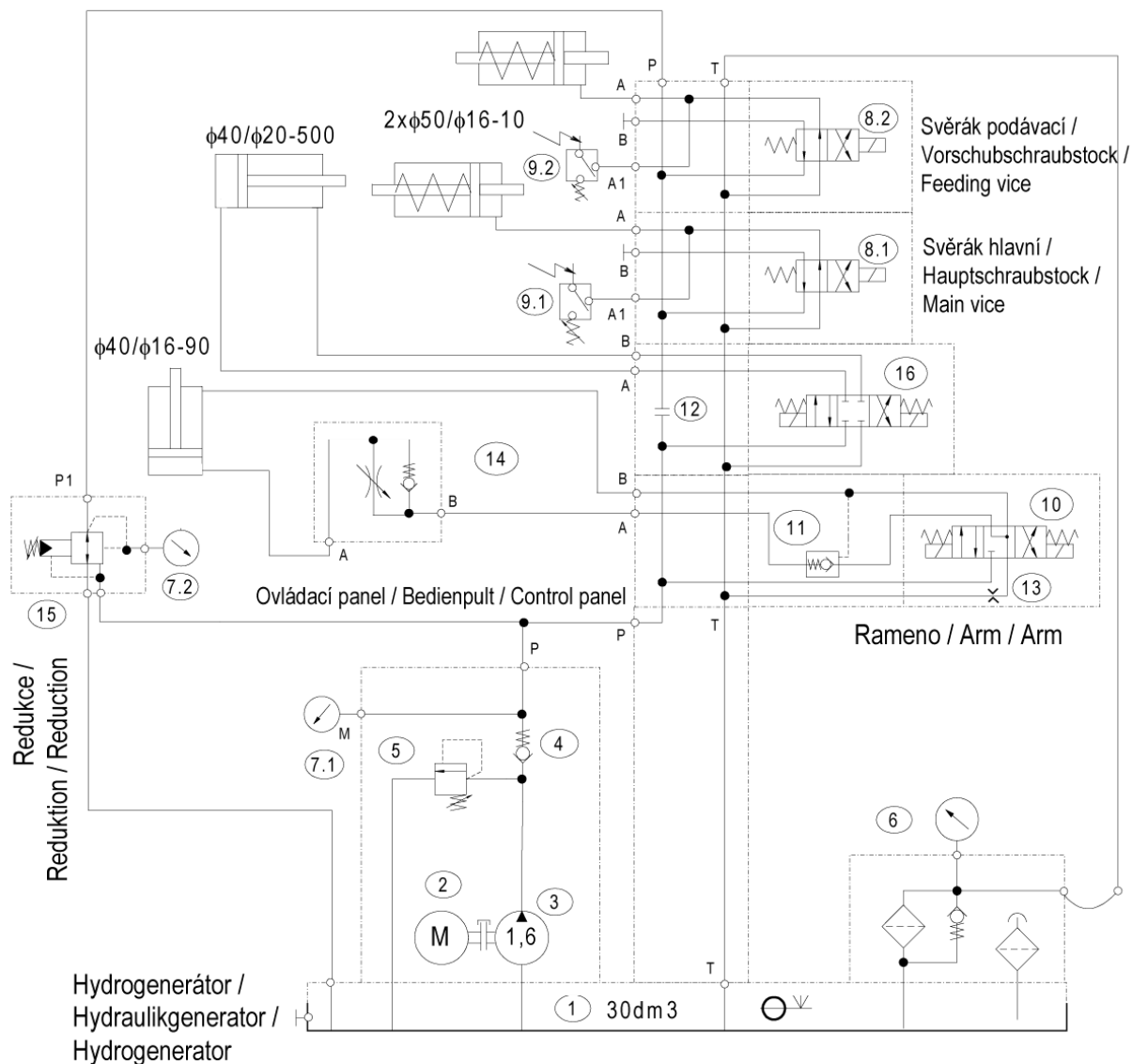
Stroj/Machine/Maschine:
PX 285.230 GA

Název stránky/Name page/Name seiten:
Souhrnný kusovník

Doc.No.: ES/LK/D-20039-202A2.1
C.proj./Project/Projekt:
Zpracováno/Processed/Verarbeitet: Viena
Datum/Date/Datum: 23.4.2010

Leaf/Pages/
Series: 12B
Leaf/Pages/
Series: 15

6.4. Hydraulické schéma / Hydraulikschema / Hydraulic diagram



Základní technické parametry
Technische Spezifikation
Technical specification

205.LK16-000
PR0618
LC/PX-230-A

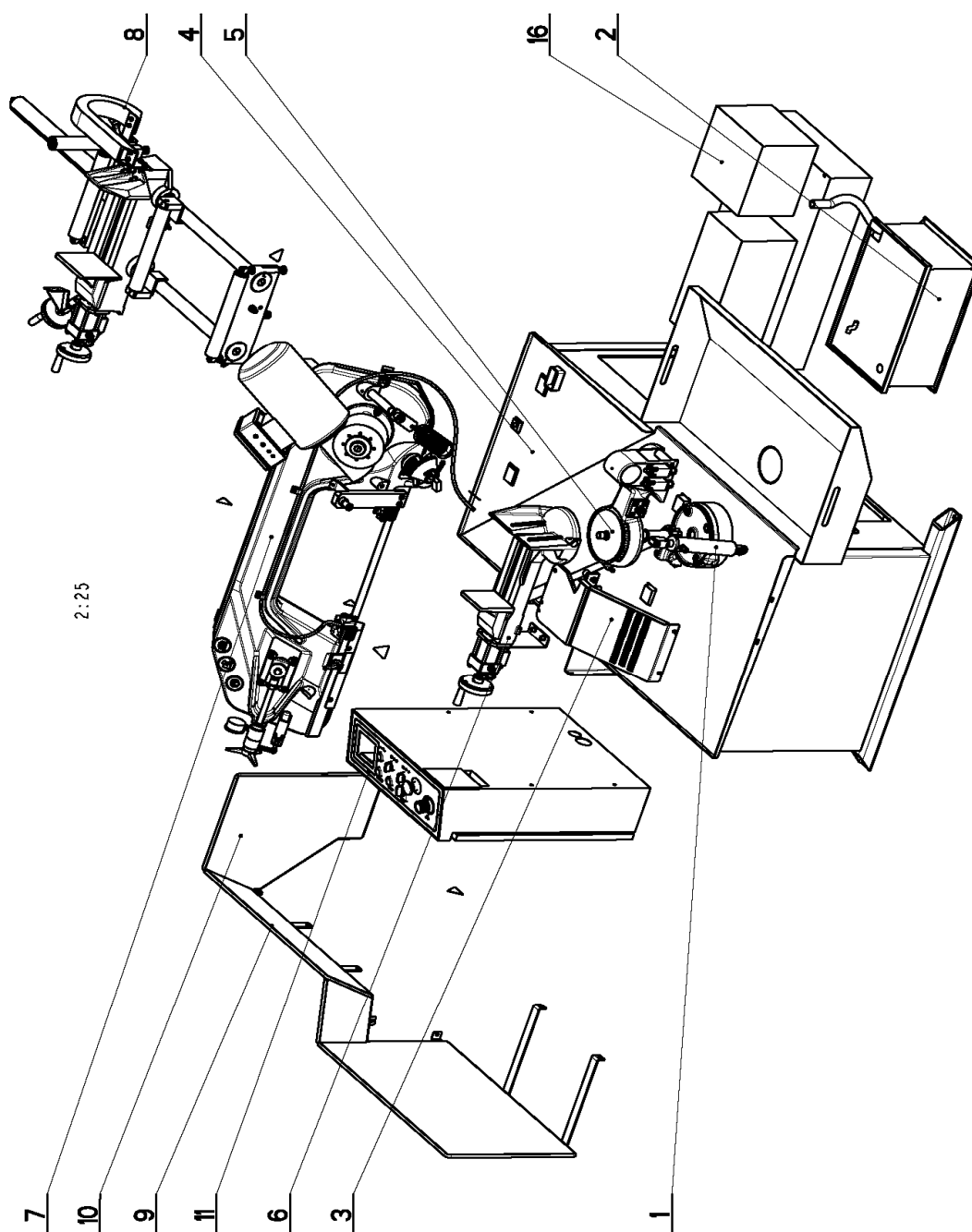
Typ / Type / Type		Practix 285.230 GA
Hydraulický agregát / Hydroaggregat		SMA03-48/13.0-S11.X-H33M.0-1395/02400
Hydro aggregat		92.001.019 (870-1395)
Neuvedené světlosti / Unerwähnt Lichtbreite		JS6
Unlisted inside diameters		
Výstupní šroubení / Ausgangsschraubung		G1/4"
Output screwing		
P _{max}		4 Mpa
Q		6,3 dm ³ /min
n		1390 ot./min
P		0,55 kW

Poz. Pos. Pos.	Název položky Bezeichnung Item		ks Mng. Pcs.
1	Nádrž / Behälter / Tank	speciál B O M A R/870-0707 30 dm ³	1
2	Elektromotor / Elektromotor / Electromotor	MA-AL 80-4 0,55 kW 400/230V/50Hz 1,51/2,6 A	1
3	Hydrogenerátor / Hydraulikgenerator / Hydrogenerator	P2-4,8L66017 4,8 c m 3/ot.	1
4	Jednosměrný ventil / Einwegventil / One-way valve	V J01-06/S G -1	1
5	Přepouštěcí ventil / Bypassventil / By pass valve	VPP 2-04/S-6S on 4 MPa	1
6	Zpětný filtr / Rückfilter / Reversal filter	F R043-166/0 (10 μm) 92.153.101/039	1
7	Manometr / Manometer / Manometer	0-6 MPa Ø68 GLYCERINE	1(2)
8	Rozvaděč / Verteilungsventil / Distributor	RP E 3-042R11/02400E1K1 92.101.001	2
9	Tlakový spínač / Druckschalter / Pressure switch	20-50bar, 166415031059	2
10	Rozvaděč / Verteilungsventil / Distributor	RPE3-043Y11/02400E1K1 92.101.005	1
11	Hydraulický zámek / Hydraulisches Schloß / Hydraulic lock	V JR1-04/M A 92.103.002	1
12	Zátka / Stopfen / Stopper	M6	1
13	Tryska / Düse / Nozzle	Ø 1,0	1
14	Ventil škrtící / Drosselventil / Choke	V S 01-04/R2,5-O 92.152.001	1
15	Redukční ventil / Reduktionsventil / Control valve	V RN 2-06/S -6R	0(1)
16	Rozvaděč / Verteilungsventil / Distributor	RP E 3-043Z11/02400E1K1 92.101.010	1

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

- Při objednávání náhradních dílů vždy uvádějte: typ stroje (např. practix 285.230 G manual) , výrobní číslo (např. 125) a rok výroby (např. 1999).
- In die Bestellung der Ersatzteile führen Sie immer an: Maschinentyp (z. B. practix 285.230 G manual), Serien Nr. (z. B. 125) und Baujahr (z. B. 1999).
- For spare parts order, you must always to allege: type of machine (for example practix 285.230 G manual), serial number (for example 125, see cover page) and year of construction (for example 1999).

7.1. Pila / Säge / Saw

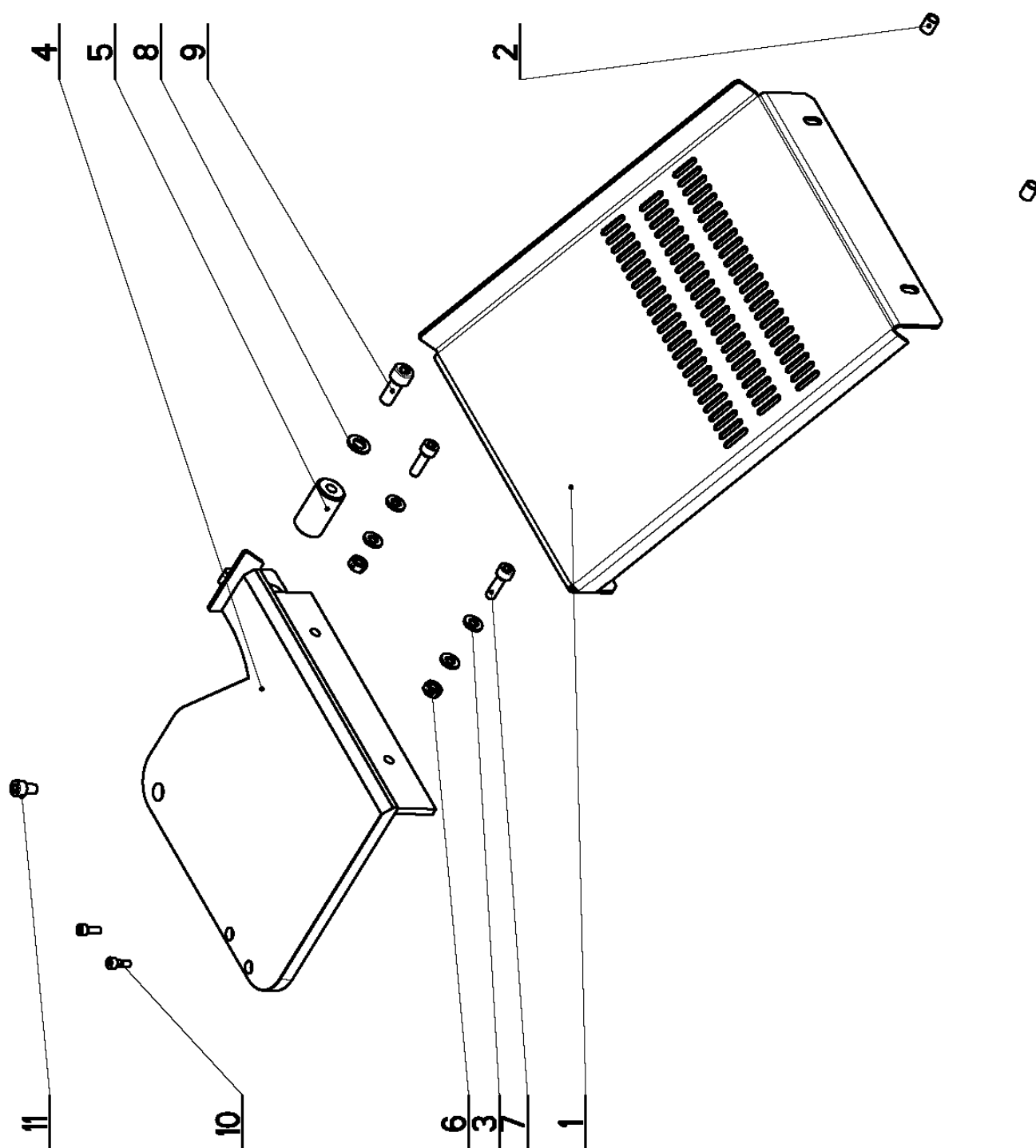


NAZEV SESTAVY PILA PASOVA	CISLO SESTAVY 201.LK00-200	STROJ LC 230 A
Konstruoval:		
Datum: 01. 10. 2009		
Meritko: 2:25		

7.2. Kusovník / Stückliste / Piece list – Pila / Säge / Saw

Cíle Settery 201.LK00-200		Ver. &VERZE	Název sestavy PILA PÁSOVÁ/BAND SAW/BANDSÄGE		Ver.	Název položky	Rožmer	Ka
Poz.	Objednací číslo	Ver.						
1	201.0007-910	0	VALEC ZVEDACI / LIFTING CYLINDER / HEBEZYLINDER				251.231	1
2	201.LC06-000	2	CHLAZENÍ / COOLING / KÜHLUNG				SESTAVA	1
3	201.LK01-220	0	SKLIZ / SLIDE / RUTSCH					1
4	201.LK01-280		PODSTAVEC / BASE / UNTERSATZ				SESTAVA	1
5	201.LK02-200	0	KONZOLA / CONSOLE / KONSOLE					1
6	201.LK03-200	0	SVĚTELNÝ VÍČE / VICE / SCHRAUBSTOCK				SESTAVA	1
7	201.LK04-250	0	RAMENO / SHOULDER / SÄGERAHMEN				SESTAVA	1
8	201.LK11-000		PODAVAC / FEEDER / VORSTÜB				SESTAVA	1
9	30.LK14-201		PLOT / FENCE / ZAUN				SVĚTELNO	1
10	30.LK14-202		PLOT / FENCE / ZAUN				SVĚTELNO	1
11	30.LK30-201		ELEKTROŠRIN / ELECTRIC BOX / ANSCHLUSSKASTEN					1
12	31.1899-004	0	SAMOLEPNA / STICKER / AUFLEBER				73x25	1
13	31.LK99-054		SAMOLEPNA / STICKER / AUFLEBER				40x1155	1
14	31.LK99-055		SAMOLEPNA / STICKER / AUFLEBER				178x23	1
15	31.LK99-201		STITEK / LABEL / SCHILD				P 0.5x63	1
16	92.001.019		AGREGAT HYDRAULICKÝ / HYDRAULIC GENERATOR / HYDRAULIKAGREGAT				870-1395	1
17	99.900.038	0	SAMOLEPNA / STICKER / AUFLEBER					2
18	99.900.040	0	SAMOLEPNA / STICKER / AUFLEBER					2
19	99.900.041	0	SAMOLEPNA / STICKER / AUFLEBER					1
20	99.900.045	0	SAMOLEPNA / STICKER / AUFLEBER					2
21	99.900.046	0	SAMOLEPNA / STICKER / AUFLEBER					1
22	99.900.047	0	SAMOLEPNA / STICKER / AUFLEBER					1
23	99.900.048	0	SAMOLEPNA / STICKER / AUFLEBER					1
24	99.900.048	0	SAMOLEPNA / STICKER / AUFLEBER					1
25	99.900.050	0	SAMOLEPNA / STICKER / AUFLEBER					1
26	99.900.051	0	SAMOLEPNA / STICKER / AUFLEBER					1

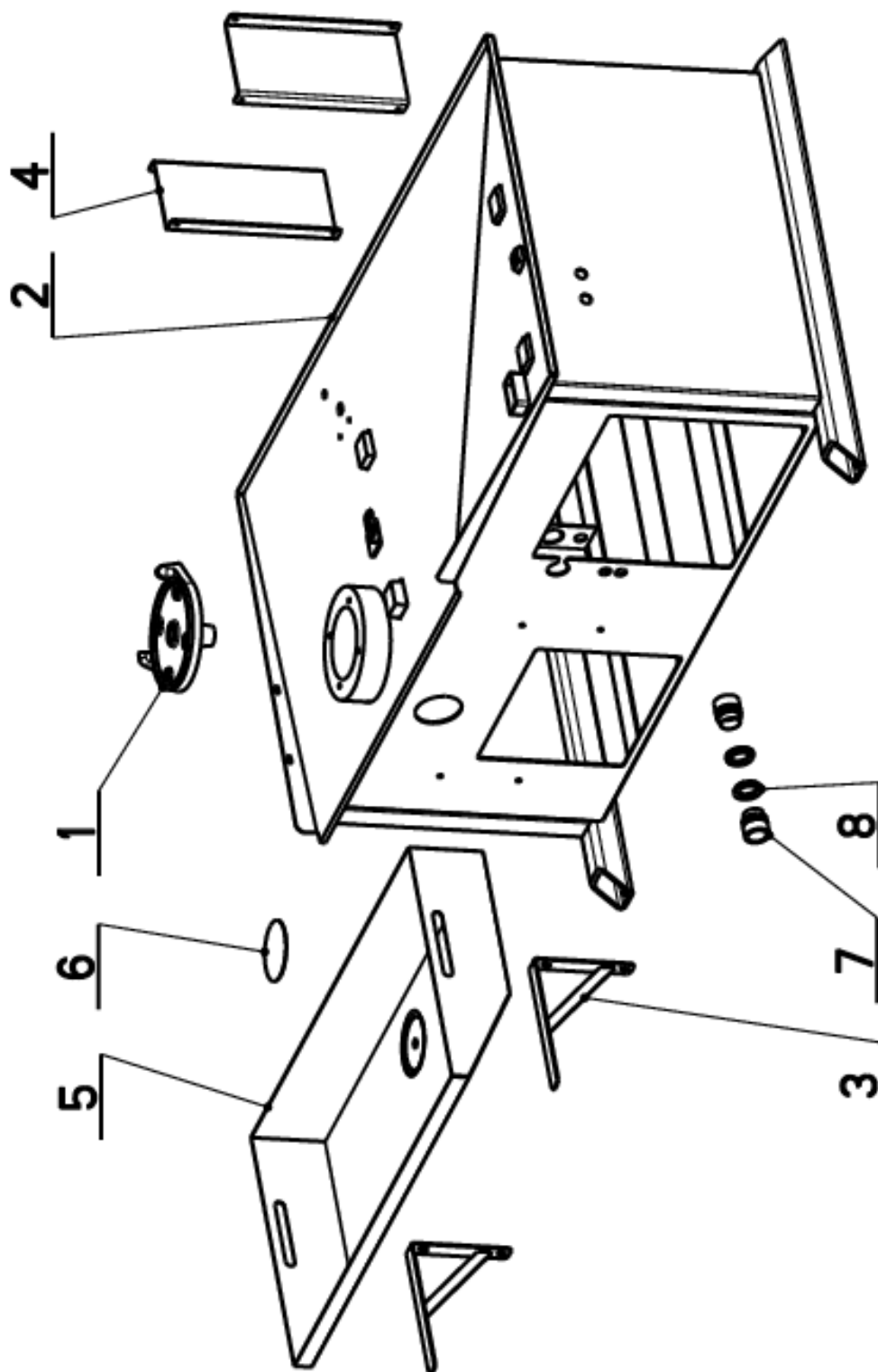
7.3. Skluz / Rutsch / Glide



7.4. Kusovník / Stückliste / Piece list – Skluz / Rutsch / Glide

Číslo Sestavy 201.LK01-220		Ver. 0	Název sestavy SKLUZ/SLIDE/RUTSCH		
Poz.	Objednací číslo	Ver.	Název položky	Rozměr	Ks
1	30.LK01-204	0	SKLUZ / SLIDE / RUTSCH		1
2	30.LK01-210	0	TRUBKA / TUBE / ROHR	TR 8x1	2
3	90.150.50.004	0	PODLOŽKA / WASHER / UNTERLEGSCHEIBE	PODLOŽKA 6,4	4
4	30.LK01-208	0	DESKA / BOARD / PLATTE		1
5	30.LK01-209	0	ČEP / LUG / BOLZEN	KR 20	1
6	90.100.55.004	0	MATICE / NUT / MUTTER	MATICE _ M6	2
7	90.001.25.018	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M6x20	2
8	90.153.50.001	0	PODLOŽKA / WASHER / UNTERLEGSCHEIBE	PODLOŽKA 8,4	1
9	90.001.25.032	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M8x1x20	1
10	90.001.25.003	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M4x12	2
11	90.001.25.015	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M6x10	1

7.5. Podstavec / Säge / Saw

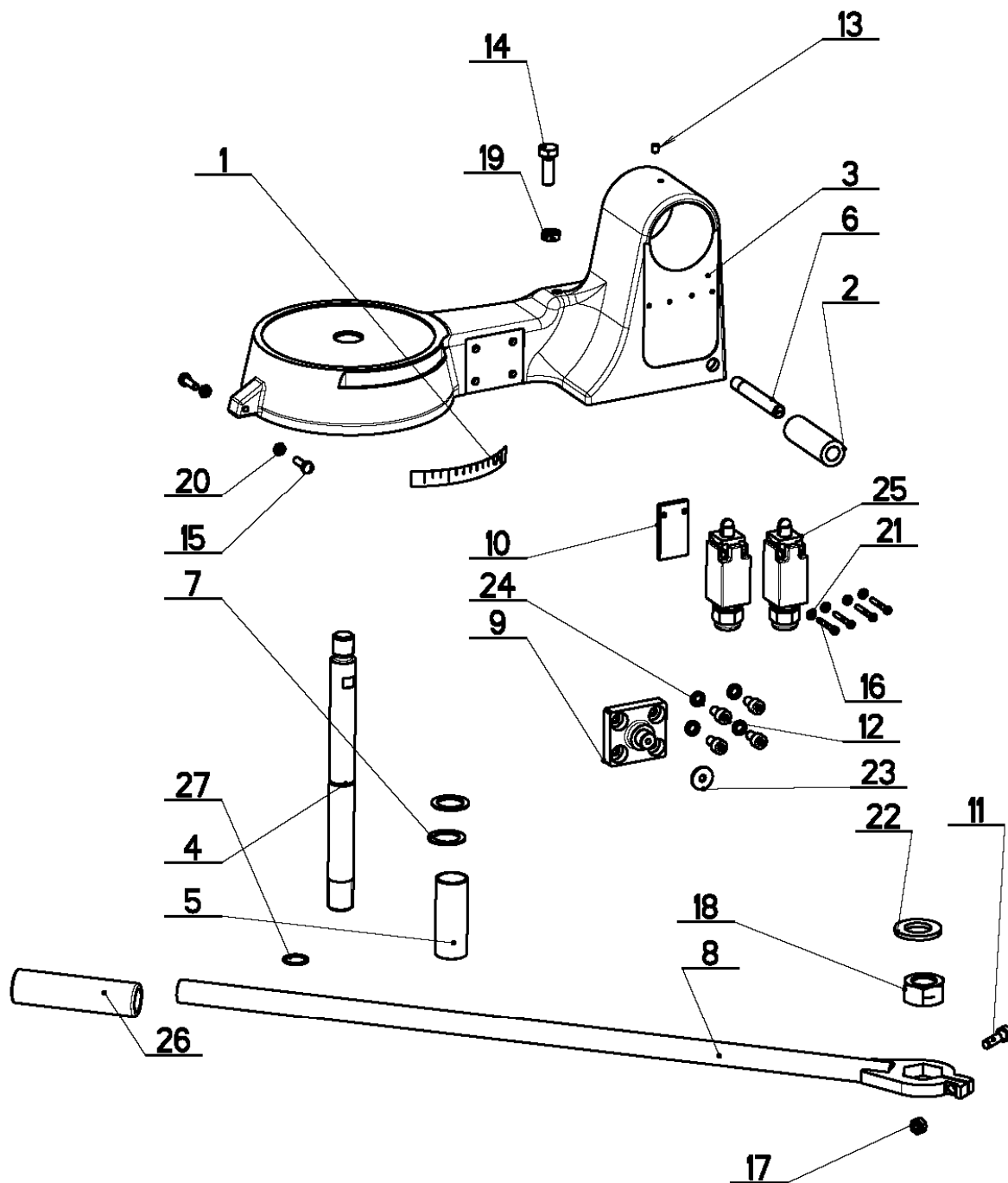


7.6. Kusovník / Stückliste / Piece list – Podstavec / Säge / Saw

Císlo Sestavy 201.LK01-280		Ver. 0	Název sestavy PODSTAVEC / BASE / UNTERSATZ	
Poz.	Objednací číslo	Ver.	Název položky	Ks
1	30.LK01-004		KONZOLA / CONSOLE / KONSOL	1
2	30.LK01-281		PODSTAVEC / BASE / UNTERSATZ	1
3	30.LK01-283		DRŽÁK / HOLDER / HALTER	2
4	30.LK30-203		DRŽÁK / HOLDER / HALTER	2
5	30.LK01-305	0	WANA / TANK / WANNE	1
6	30.LK01-308		SÍTO / SIEVE / GITTERWERK	1
7	91.071.004		PRŮCHODKA / LEADTHROUGH / DURCHFÜHRUNG	2
8	91.072.007		MATICE / NUT / MUTTER	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

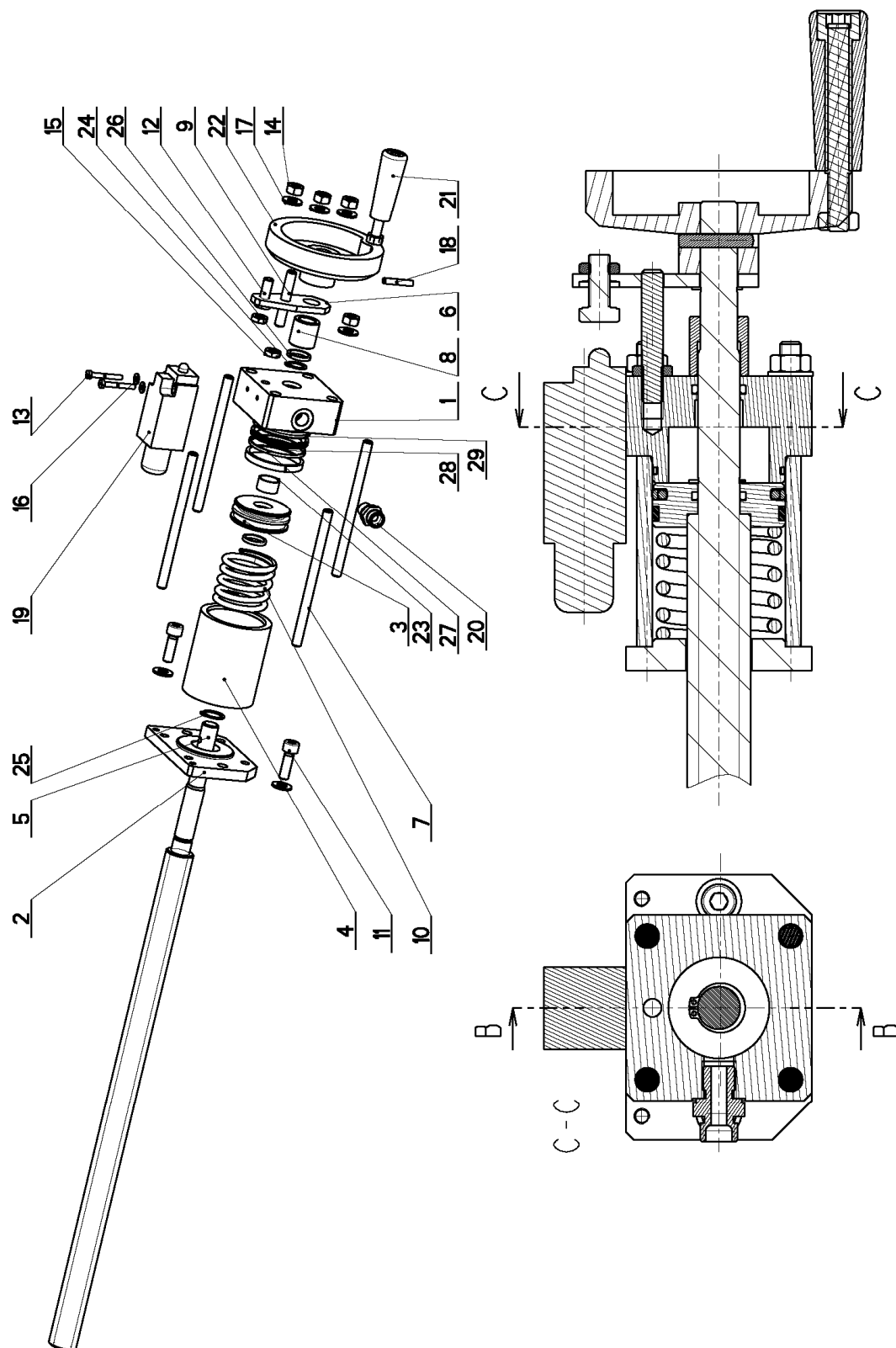
7.7. Konzola / Konsole / Console



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

Císlo Sestavy 201.LK02-200		Ver. 0	Název sestavy KONZOLA/CONSOLE/KONSOLE		
Poz.	Objednací číslo	Ver.	Název položky	Rozměr	Ks
1	30.LK02-005	0	INDIKATOR UHLU / ANGLE INDICATOR / WINKELINDIKATOR	P 0.5-15	1
2	30.LK02-102	0	TRUBKA / TUBE / ROHR	TR 25x5	1
3	30.LK02-201	0	KONZOLA / CONSOLE / KONSOLE	ODLITEK	1
4	30.LK02-202	0	SROUB / BOLT / SCHRAUBE	d 24	1
5	30.LK02-203	0	DISTANČNÍ TRUBKA / DISTANCE / DISTANZ	TR 30x2	1
6	30.LK02-204	0	SROUB / BOLT / SCHRAUBE	D 12	1
7	30.LK02-205	0	PODLOŽKA / WASHER / UNTERLEGSCHIEBE	P 1.5x35	2
8	30.LK02-207	0	PAKA / LEVER / HEBEL	SVARENO	1
9	30.LK02-210	0	DRŽÁK / HOLDER / HALTER	HR 60x60	1
10	30.LK04-024	0	PODLOŽKA / WASHER / UNTERLEGSCHIEBE	HR 30x5	1
11	90.001.25.034	0	SROUB IMBUS CERNÝ / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M8x30	1
12	90.001.55.082	0	SROUB IMBUS ZINEK / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M8x14	4
13	90.002.20.029	0	SROUB STAVEČI CERNÝ / ADJUSTMENT BOLT / STELLSCHRAUBE	SROUB M6x8	1
14	90.005.55.007	0	SROUB 6HRANNÝ ZN / 6 SIDED BOLT / SECHSKANTSCHRAUBE	SROUB M10x30	1
15	90.005.55.008	0	SROUB 6HRANNÝ ZN / 6 SIDED BOLT / SECHSKANTSCHRAUBE	SROUB M6x20	2
16	90.012.50.007	0	SROUB / BOLT / SCHRAUBE	SROUB M4x30	4
17	90.100.55.005	0	MATICE / NUT / MUTTER	MATICE - M8	1
18	90.100.55.010	0	MATICE / NUT / MUTTER	MATICE - M24	1
19	90.101.55.002	0	MATICE / NUT / MUTTER	MATICE M10	1
20	90.101.55.008	0	MATICE NÍZKA / NUT / MUTTER	MATICE M6	2
21	90.150.50.002	0	PODLOŽKA / WASHER / UNTERLEGSCHIEBE	PODLOŽKA 4,3	4
22	90.150.50.016	0	PODLOŽKA / WASHER / UNTERLEGSCHIEBE	25 (ZN)	1
23	90.151.50.004	0	PODLOŽKA / WASHER / UNTERLEGSCHIEBE	PODLOŽKA 6	1
24	90.183.00.001	0	PODLOŽKA / WASHER / UNTERLEGSCHIEBE	M8 NORD-LOCK	4
25	91.173.010	0	SPÍNÁČ KONCOVÝ / END SWITCH / ENDSCHALTER	FR 515 PIZZATO	2
26	94.004.502	0	RUKOJET / HANDLE / GRIFF	D22	1
27	96.002.046	0	KROUZEK O DYNAMICKÝ / DYNAMIC O RING / O-RING DYNAMISCH	20x2 NBR 70SH p	1

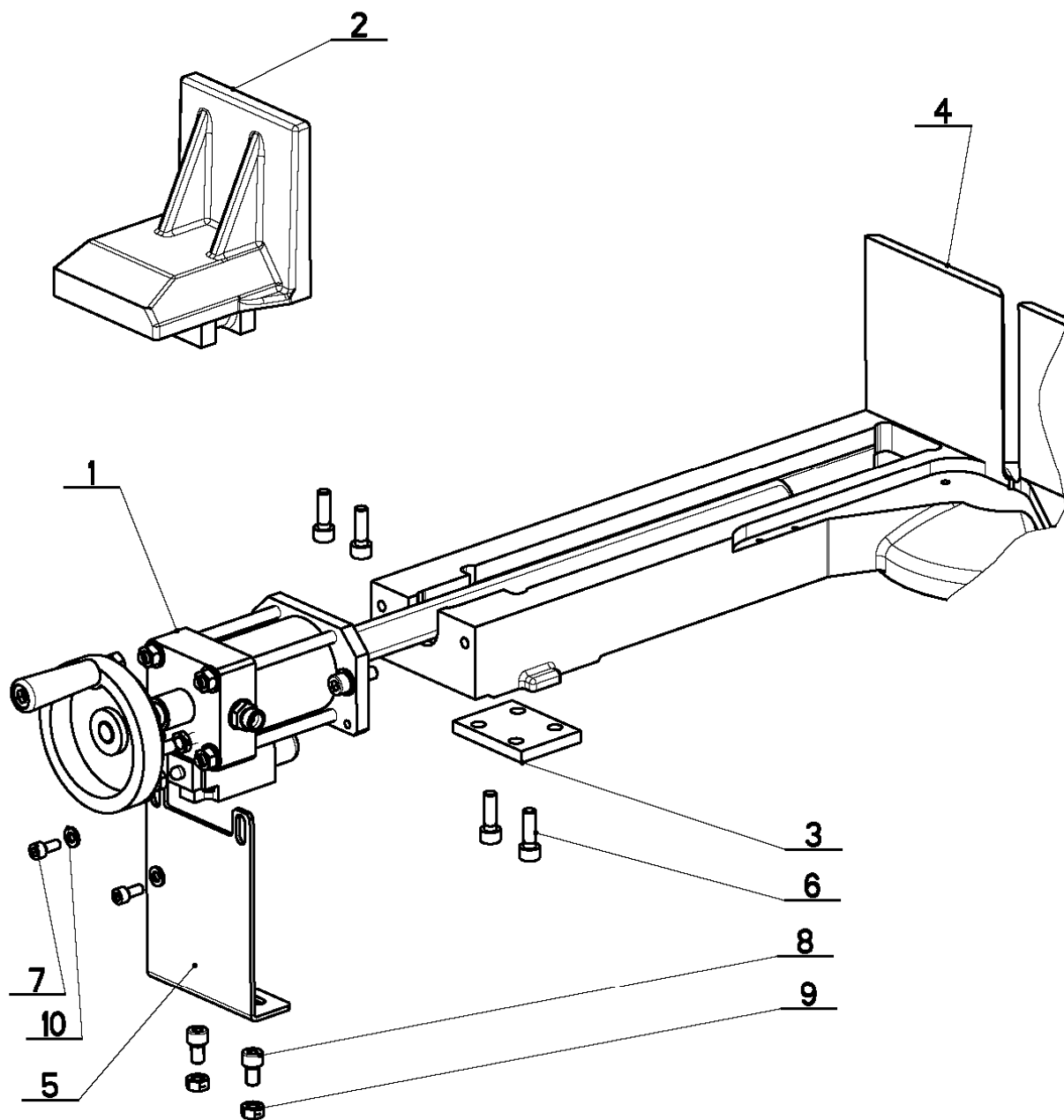
7.9. Válec svěráku / Schraubstockzylinder / Vice cylinder



7.10. Kusovník / Stückliste / Piece list –
Válec svěráku / Schraubstockzylinder / Vice cyl.

Císlo sestavy 201.LK03-150		Ver. 0	Název sestavy VALEC SVĚRAKU/VICE CYLINDER/SCHRAUBSTOCKZYLINDER			
Poz.	Objednávací číslo	Ver.	Název položky	Rozev	Ks	
1	30.LK03-151	1	VÍKO / COVER / DECKEL	HR 70x70	1	
2	30.LK03-152	0	VÍKO / COVER / DECKEL	HR 70x12	1	
3	30.LK03-153	1	PIST / PISTON / KOLBEN	d 55	1	
4	30.LK03-154	0	VALEC / CYLINDER / ZYLINDER	TR 62/50	1	
5	30.LK03-155	1	SROUB / BOLT / SCHRAUBE	TRAPEZ 24x5 L	1	
6	30.LK03-156	0	PAKA / LEVER / HEBEL	P 5-30	1	
7	30.LK03-157	0	TYC / POLE / STANGE	M 8	4	
8	30.LK03-158	0	DISTANC / DISTANCE / DISTANZ	TR 22x4	1	
9	30.LK03-159	0	TYC / POLE / STANGE	d8	1	
10	31.LK03-157	0	PRUZINA / SPRING / FEDER	d 5	1	
11	90.001.25.033	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	8x25	2	
12	90.005.55.015	0	SROUB GHŘANNÝ / 6 SIDED BOLT / SECHSKANTSCHRAUBE	SROUB M8X20	1	
13	90.012.50.007	0	SROUB / BOLT / SCHRAUBE	SROUB M4X30	2	
14	90.100.55.005	0	MATICE / NUT / MUTTER	MATICE - M8	4	
15	90.101.25.001	0	MATICE / NUT / MUTTER	MATICE - M8	2	
16	90.150.50.002	0	PODLOŽKA / WASHER / UNTERLEGSCHEIBE	PODLOŽKA 4,3	2	
17	90.150.50.005	0	PODLOŽKA / WASHER / UNTERLEGSCHEIBE	PODLOŽKA 8,4	6	
18	90.303.02.010	0	KOLIK PRUŽNÝ / PIN / BOLZEN	KOLIK 5X28	1	
19	91.173.007	0	SPINAC KONCOVÝ / END SWITCH / ENDSCHALTER		1	
20	92.002.001	0	SROUBENÍ / BOLTING / VERSCHRAUBUNG	G 1/4"	1	
21	94.010.002	0	RUKOJET / HANDLE / GRIFF		1	
22	94.010.004	0	KOLO / WHEEL / UMLENKRAD	d 100/14H7	1	
23	95.700.015	0	KU POUZDRO / SLEEVE / BÜCHSE	16x10	1	
24	95.800.005	0	KROUZEK POJIST.VNEJS / OUTSIDE SAFETY RING / SICHERUNGSRING AUBEN	POJISTNÝ KROUZEK 14	1	
25	95.800.007	0	KROUZEK POJIST.VNEJS / OUTSIDE SAFETY RING / SICHERUNGSRING AUBEN	POJISTNÝ KROUZEK 16	1	
26	96.002.008	0	KROUZEK O DYNAMICKÝ / DYNAMIC O RING / O-RING DYNAMISCH	16x2,5	2	
27	96.002.019	0	O-KROUZEK DYNAMIC / DYNAMIC O RING / O-RING DYNAMISCH	46x2	1	
28	96.084.001	0	KROUZEK VODICI / LEAD RING / FÜHRUNGSRING	GP6500500_Z61	1	
29	96.900.001	0	TESNENÍ KOMBINOVANÉ / COMBINATION SEALING / KONBIDICHTUNG		1	

7.11. Svěrák / Schraubstock / Vice

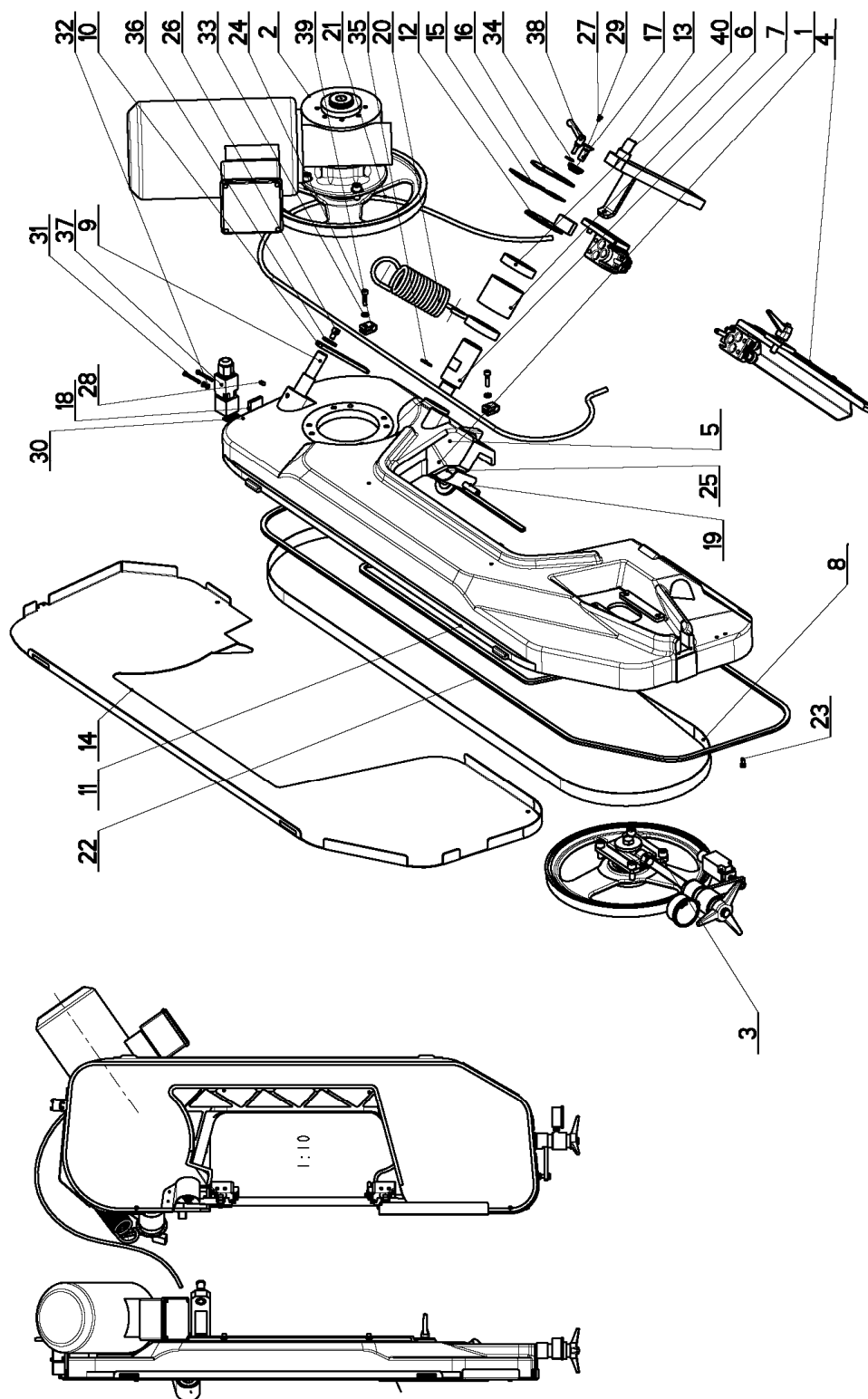


7.12. Kusovník / Stückliste / Piece list – Svěrák / Schraubstock / Vice

Císlo Sestavy 201.LK03-200		Ver. 0	Název sestavy SVĚRÁK/VICE/SCHRAUBSTOCK	
Poz.	Objednací číslo	Ver.	Název položky	Ka
1	201.LK03-150	0	VÁLEC SVĚRÁKU / VICE CYLINDER / SCHRAUBSTOCKZYLINDER	1
2	30.LK03-002	0	CELISTÝ POKRYTÍVKA / MOVING JAW / BEWEGLICHE BACKE	1
3	30.LK03-006	0	PRÍLOŽKA / STRAP / LASCHE	1
4	30.LK03-201	0	TELESO SVĚRÁKU / VICE BODY / SCHRAUBSTOCKKÖRPER	1
5	30.LK03-207	0	DRŽÁK / HOLDER / HALTER	1
6	90.001.25.033	0	SRUB IMBUS CERNÝ / ALLEN HEAD BOLT / IMBUSHSCRAUBE	4
7	90.001.25.092	0	SRUB IMBUS / ALLEN HEAD BOLT / IMBUSHSCRAUBE	2
8	90.001.55.082	0	SRUB IMBUS ZINĚK / ALLEN HEAD BOLT / IMBUSHSCRAUBE	2
9	90.100.55.005	0	MATICE / NUT / MUTTER	2
10	90.150.50.004	0	PODLOŽKA / WASHER / UNTERLEGSCHIBE	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

7.13. Rameno / Sägerahmen / Saw arm



NAZEV SESTAVY	ČÍSLO SESTAVY	STROJ
RAMENO	201.LK04-250	LC-230-M
Konstruoval: MAJZNER		
Datum: 05. 02. 2010		
Meritko: 7:50		

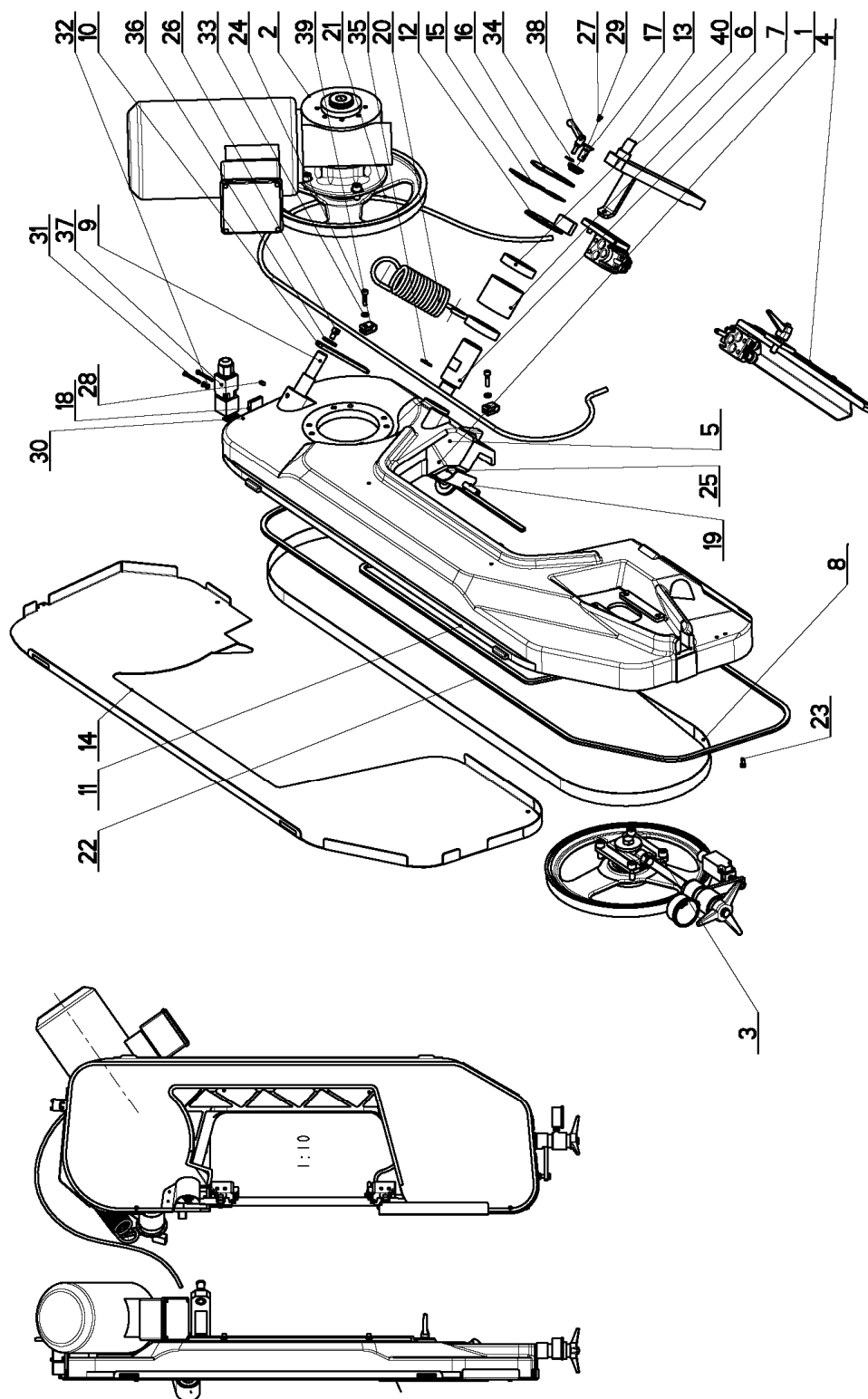
HMOTNOST cca 95 kg

TRANSPORTNÍ ROZMĚRY: 680x315x1430 mm
(VÝŠKA x ŠÍŘKA x DELKA VNITROPODNIKOVÉ PŘEPRAVY)

7.14. Kusovník / Stückliste / Piece list – Ramenno / Sägerahmen / Saw arm

Císlo Sestavy 201.LK04-250		Ver. 0	Název sestavy RAMENO/SHOULDER/SÄGERAHMEN	
Poz.	Objednávací číslo	Ver.	Název položky	Měřítko
1	201.0704-100	0	KARTAC / BRUSH / BÜRSTE	1
2	201.LK05-070	0	POHON / DRIVE / ANTRIEB	SESTAVA
3	201.LK08-250	0	MAPINANI / TENSIONING / SPANNUNG	SESTAVA
4	201.LK10-000	0	VEDENÍ / GUIDE / BACKENFÜHRUNG	SESTAVA
5	30.8014-005		KRYT KARTACKU / BRUSH COVER / BÜRSTENABDECKUNG	P 1,5 x 60
6	30.LK02-004	0	TRUBKA / TUBE / ROHR	TR 70x5
7	30.LK04-005	0	CEP / LUG / BOLZEN	d 42
8	30.LK04-010	0	PAS PÍLOVY 230 / SAW BELT / SÄGERAND	27x0.9
9	30.LK04-022	0	DRŽÁK / HOLDER / HALTER	d 25
10	30.LK04-026	0	TAHLO / GUY ROD / ZUGSTANGE	HR 35x6
11	30.LK04-101	0	RAMENO / SHOULDER / SÄGERAHMEN	ODLITEK
12	30.LK04-204	0	DORAZ / STOP PIECE / ANSCHLAG	
13	30.LK04-208	0	DRŽÁK / HOLDER / HALTER	SVARENÝ
14	30.LK04-217	0	KRYT / COVER / ABDECKUNG	
15	30.LK04-231	0	STUPNICE / SCALE / SKALA	P 1,5x109
16	30.LK04-252	0	STUPNICE / SCALE / SKALA	P3-87
17	30.LK04-253	0	CEP / LUG / BOLZEN	d 30
18	30.LK04-254	0	PODLOŽKA / WASHER / UNTERLEGSCHEIBE	HR 30x6
19	30.LK04-255	0	DISTANC / DISTANCE / DISTANZ	TR 10x2
20	31.LM04-006	0	PRUŽINA / SPRING / FEDER	d 7.1
21	42.020.001	0	HADICE / HOSE / SCHLAUCH	6x1.5
22	61.352.003	0	TESNĚNÍ / SEALING / DICHTUNG	9x5
23	90.001.25.007	0	ŠROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M5x10
24	90.001.25.019	0	ŠROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M6x25
25	90.001.25.026	0	ŠROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M6x65
26	90.001.25.029	0	ŠROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M8x12
27	90.001.55.086	0	ŠROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M4x6
28	90.002.20.023	0	ŠROUB STAVEČÍ / ADJUSTMENT BOLT / STELLSCHRAUBE	ŠROUB M6x10
29	90.011.27.014	0	ŠROUB ZAPUSTNÝ / COUNTERSINK BOLT / SENKSCHRAUBE	ŠROUB M12x30
30	90.012.50.003	0	SR. S VALC. HLAV. / BOLT / SCHRAUBE	ŠROUB M4x10
31	90.012.50.009	0	SR. S VALC. HLAV. / BOLT / SCHRAUBE	ŠROUB M4x40
32	90.150.50.002	0	PODLOŽKA / WASHER / UNTERLEGSCHEIBE	PODLOŽKA 4,3
33	90.150.50.004	0	PODLOŽKA / WASHER / UNTERLEGSCHEIBE	PODLOŽKA 6,4
34	90.150.50.005	0	PODLOŽKA / WASHER / UNTERLEGSCHEIBE	PODLOŽKA 8,4

7.15. Rameno / Sägerahmen / Saw arm



NAZEV SESTAVY	ČÍSLO SESTAVY	STROJ
RAMENO	201.LK04-250	LC-230-M
Konstruoval: MAJZNER		
Datum: 05. 02. 2010		
Meritko: 7:50		

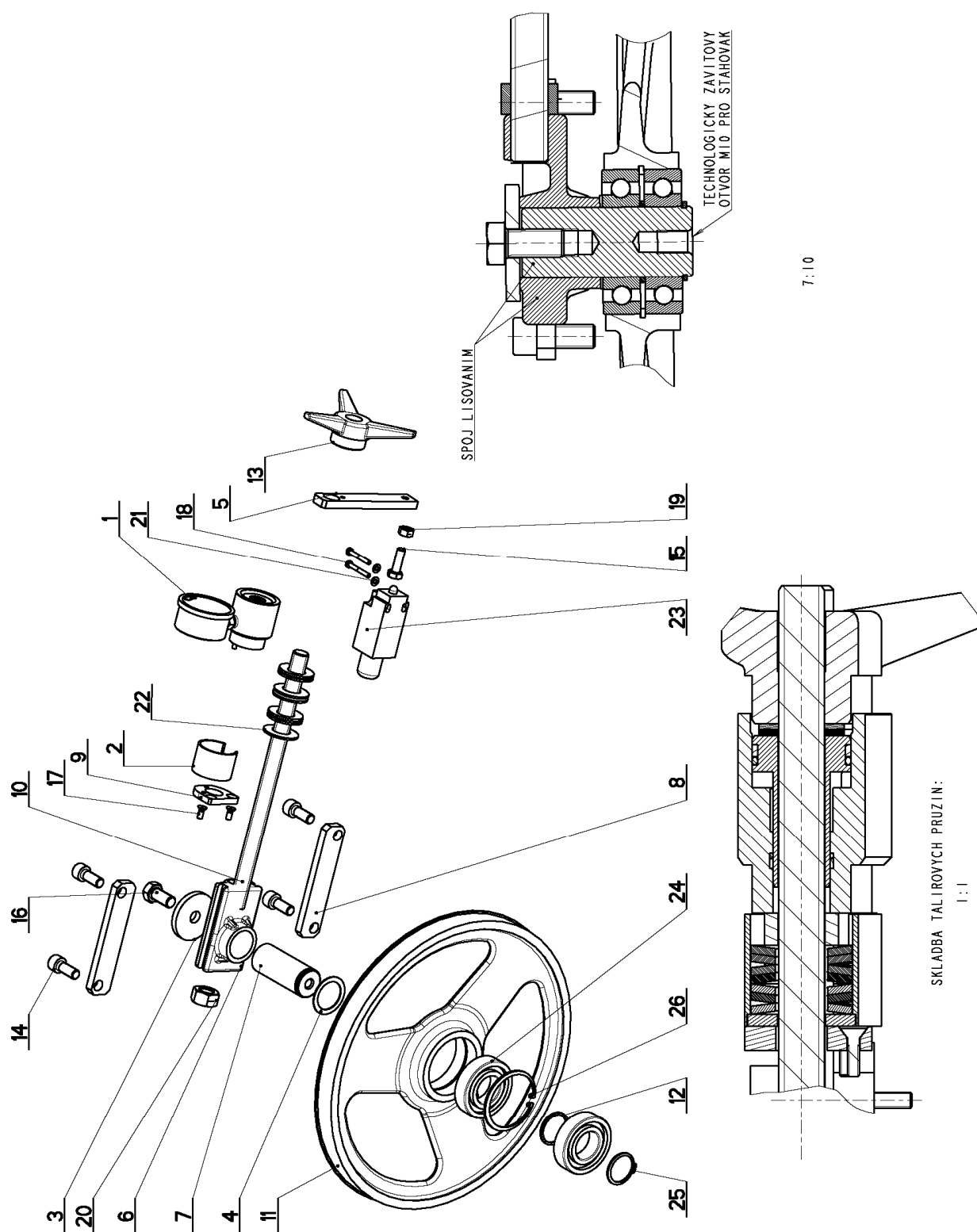
HMOTNOST cca 95 kg

TRANSPORTNÍ ROZMĚRY: 680x315x1430 mm
(VÝŠKA x ŠÍŘKA x DELKA VNITROPODNIKOVÉ PŘEPRAVY)

[illegible]

Ciasto Sestawy/Number of assembly/Nummer der Baugruppe; Verze (Ver.)/Version/Version; Nazwy sestawy/Assembly title/Name der Baugruppe; Pozice (Poz.)/Position/Position; Objednaci cislo/Purchase order number/Bestellnummer; Nazwy polozky/Volume title/Name der Position; Rozmery/Stock size/Abmessung

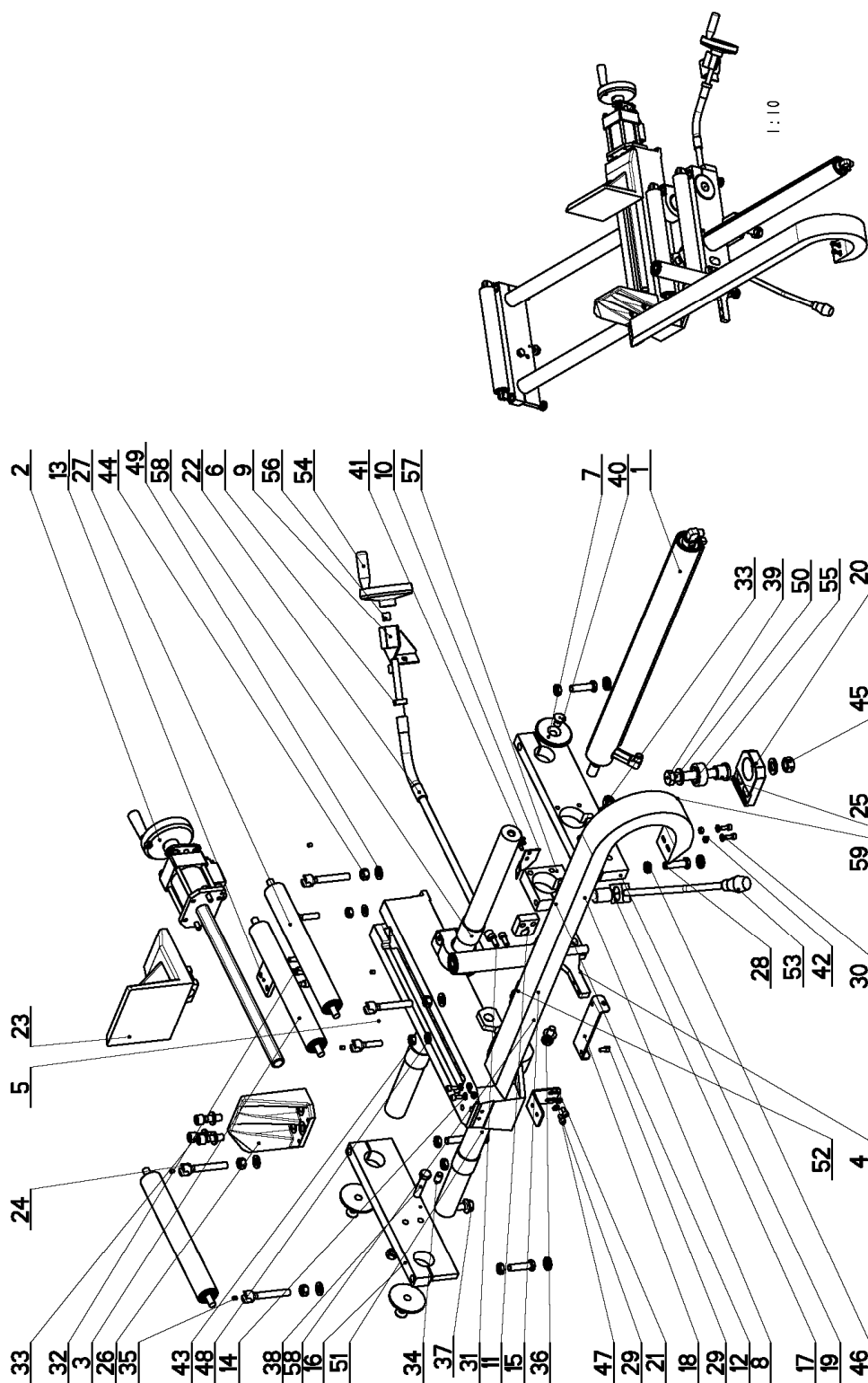
7.17. Napínání / Spannung / Tension



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

Císlo Sestavy 201.LK08-250		Ver. 0	Název sestavy NAPÍNÁNÍ / TENSIONING / SPANNUNG			
Poz.	Objednací číslo	Ver.	Název položky	Rozměr	Ks	
1	201.0512-100	2	INDIKACE NAPÍNÁNÍ / POWER INDICATOR / SPANNUNGSINDIKATOR	SESTAVA	1	
2	30.0104-004	2	DRŽÁK / HOLDER / HALTER		1	
3	30.0502-603	1	PODLOŽKA / WASHER / UNTERLEGSCHIEBE	d50	1	
4	30.0504-006	0	KROUZEK DISTANČNÍ / DISTANCE RING / DISTANZRING	VÝPALEK	1	
5	30.1708-004	3	DRŽÁK / HOLDER / HALTER	HR 20x8	1	
6	30.LK08-001	0	KOSTKA / CUBE / WÜRFEL	ODLITEK	1	
7	30.LK08-003	0	CEP NAPÍNÁNÍ / TENSIONING LUG / SPANNUNGSBOLZEN	d 32	1	
8	30.LK08-004	0	LISTA VODICÍ / LEAD TRIM / FÜHRUNGSLEISTE	HR 25x8	2	
9	30.LK08-101	1	MEZIKUS / INTERMEDIATE PIECE / PASSTÜCK	HR 40x6	1	
10	30.LK08-205	0	TYC ZAVÍTOVÁ / THREADED POLE / GEWINDESTANGE	M 16	1	
11	30.LK08-901	0	KOLO / /	ODLITEK	1	
12	30.LK08-007	0	KROUZEK / RING / RING	TR 35x6	1	
13	31.0104-006	0	HVEZDICE / STAR WHEEL / STERN	PLAST	1	
14	90.001.25.047	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M10x25	4	
15	90.005.55.016	0	SROUB 6HRANNÝ / 6 SIDED BOLT / SECHSKANTSCHRAUBE	SROUB M8x25	1	
16	90.005.55.031	0	SROUB 6HRANNÝ / 6 SIDED BOLT / SECHSKANTSCHRAUBE	SROUB M12x25	1	
17	90.011.27.029	0	SROUB ZAPUSTNÝ / COUNTERSINK BOLT / SENKSCHRAUBE	SROUB M5x12	2	
18	90.012.50.007	0	SROUB / BOLT / SCHRAUBE	SROUB M4x30	2	
19	90.100.55.005	0	MATICE / NUT / MUTTER	MATICE _ M8	1	
20	90.100.55.008	0	MATICE / NUT / MUTTER	MATICE _ M16	1	
21	90.150.50.002	0	PODLOŽKA / WASHER / UNTERLEGSCHIEBE	PODLOŽKA 4,3	2	
22	90.350.07.002	0	TALÍROVÁ PRUŽINA / DISC SPRING / TELLERFEDER	35,5X18,3X2,0X2,8	7	
23	91.173.007	0	SPINÁČ KONCOVÝ / END SWITCH / ENDSCHALTER		1	
24	95.001.019	0	LOŽISKO / BEARING / LAGER	6206 2RS	2	
25	95.800.013	0	KROUZEK POJIST.VNĚJŠÍ / OUTSIDE SAFETY RING / SICHERUNGSRING AUBEN	POJISTNÝ KROUZEK 30	1	
26	95.801.010	0	KROUZEK POJIST.VNITŘNÍ / INSIDE SAFETY RING / SICHERUNGSRING INNEN	POJISTNÝ KROUZEK 62	1	

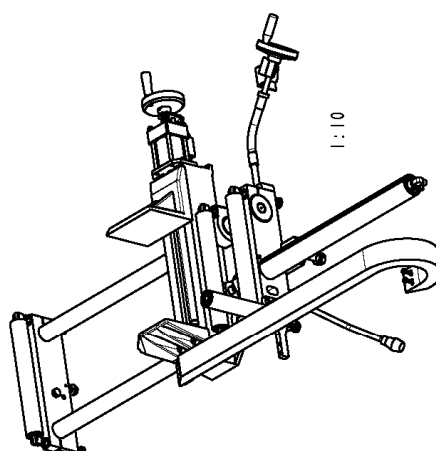
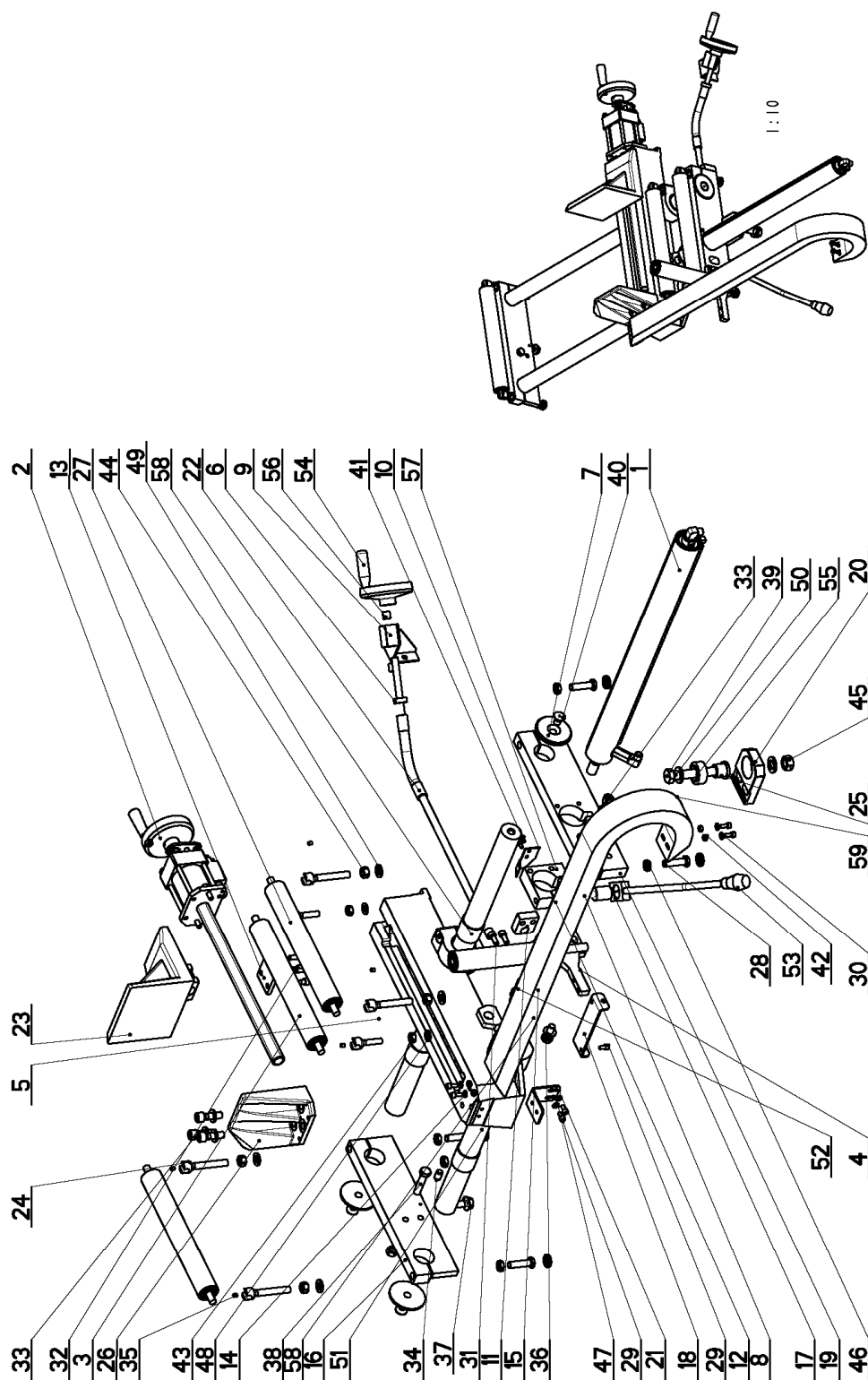
7.19. Podavač / Vorschub / Feeder



7.20. Kusovník / Stückliste / Piece list – Podavač / Vorschub / Feeder

Císlo Sestavy 201.LK11-000		Ver. 0	Název sestavy PODAVAC/FEEDER/VORSCHUB		
Poz.	Objednací číslo	Ver.	Název položky	Rozměr	Ks
1	201.2107-500	0	VALEC PODAVACE / FEEDER CYLINDER / VORSCHUBWALZE		1
2	201.LK03-150	0	VALEC SVĚRAKU / VICE CYLINDER / SCHRAUBSTOCKZYLINDER		1
3	201.LK11-050	0	VALECEK / ROLLER / ROLLE	SESTAVA	3
4	201.LK11-060	0	VALEC VERTIKÁLNÍ / VERTICAL CYLINDER / VERTIKALZYLINDER	SESTAVA	1
5	201.LK11-070	0	VALECEK / ROLLER / ROLLE	SESTAVA	1
6	30.0814-207	0	KROUZEK / RING / RING	d 25	1
7	30.1804-010	0	VÍKO / COVER / DECKEL	d 70	3
8	30.2111-021	0	SROUB / BOLT / SCHRAUBE		1
9	30.2112-501	0	KONZOLA / CONSOLE / KONSOLE		1
10	30.2311-202	0	STUPNICE / SCALE / SKALA	P2x54	1
11	30.9311-106	0	DRŽÁK / HOLDER / HALTER	HR 40x 15	1
12	30.9311-110	0	KOSTKA / CUBE / WÜRFEL	HR 80x 30	1
13	30.LK03-006	0	PŘILOŽKA / STRAP / LASCHE	HR 50x8	1
14	30.LK11-001	1	TELESO / BODY / KÖRPER	ODLITEK	1
15	30.LK11-002	0	TYC VODICI / LEAD POLE / FÜHRUNGSSTANGE	d 40 h6	2
16	30.LK11-006	0	DESKA / BOARD / PLATTE	HR 90x25	1
17	30.LK11-007	0	PAKA / LEVER / HEBEL	SVARENÍ	1
18	30.LK11-020	1	PŘILOŽKA / STRAP / LASCHE	P 3-40	1
19	30.LK11-024	0	DESKA / BOARD / PLATTE	HR 90x25	1
20	30.LK11-025	0	DRŽÁK / HOLDER / HALTER	HR 70x20	1
21	30.LK11-027	0	DRŽÁK / HOLDER / HALTER	P 3x40	1
22	30.LK11-080	0	HRDEL / SHAFT / WELLE		1
23	30.LK03-002	1	CELIST POHYBLIVÁ / MOVING JAW / BEWEGLICHE BACKE	ODLITEK	1
24	30.LM11-004	0	SROUB STAVEČÍ / ADJUSTMENT BOLT / STELLSCHRAUBE	d 22	4
25	30.LM11-005	1	DISTANC / DISTANCE / DISTANZ	d 32	1
26	30.LM11-009	1	CELIST / JAW / BACKE	ODLITEK	1
27	30.LM11-010	0	SROUB STAVEČÍ / ADJUSTMENT BOLT / STELLSCHRAUBE	d 22	2
28	30.LM11-012	0	SROUB / BOLT / SCHRAUBE	SROUB M12x45	4
29	90.001.25.016	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M6x12	4
30	90.001.25.017	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M6x16	4
31	90.001.25.032	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	8x20	2
32	90.001.25.034	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M8x30	4
33	90.001.25.060	0	SROUB IMBUS / ALLEN HEAD BOLT / IMBUSSCHRAUBE	M12x40	5
34	90.002.20.018	0	SROUB STAVEČÍ / ADJUSTMENT BOLT / STELLSCHRAUBE	SROUB M12x20	1

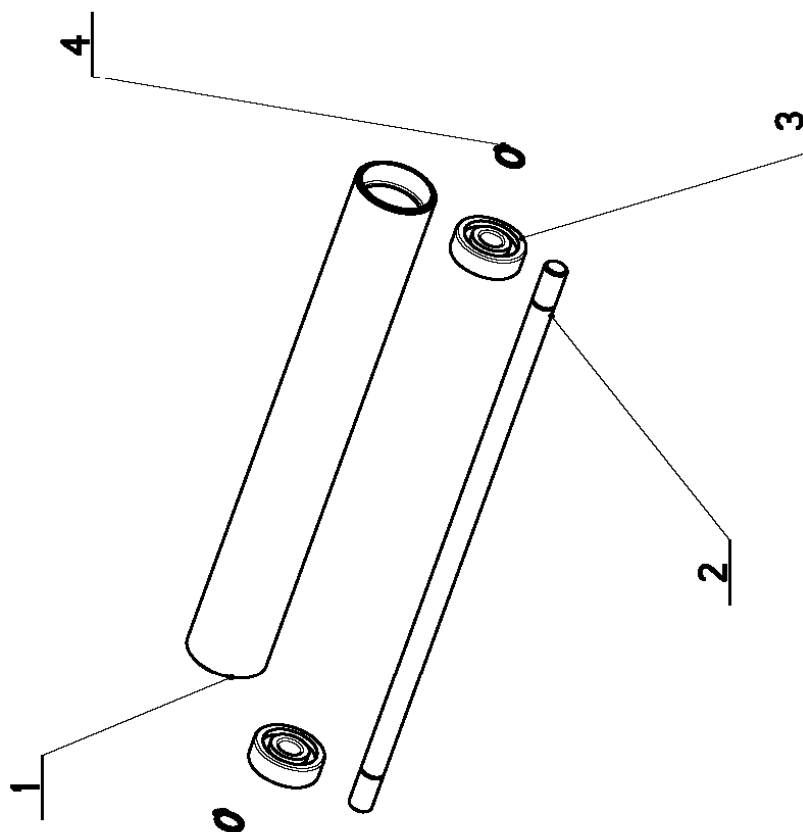
7.21. Podavač / Vorschub / Feeder



7.22. Kusovník / Stückliste / Piece list – Podavač / Vorschub / Feeder 2

[illegible]

7.23. Váleček / Rolle / Roller

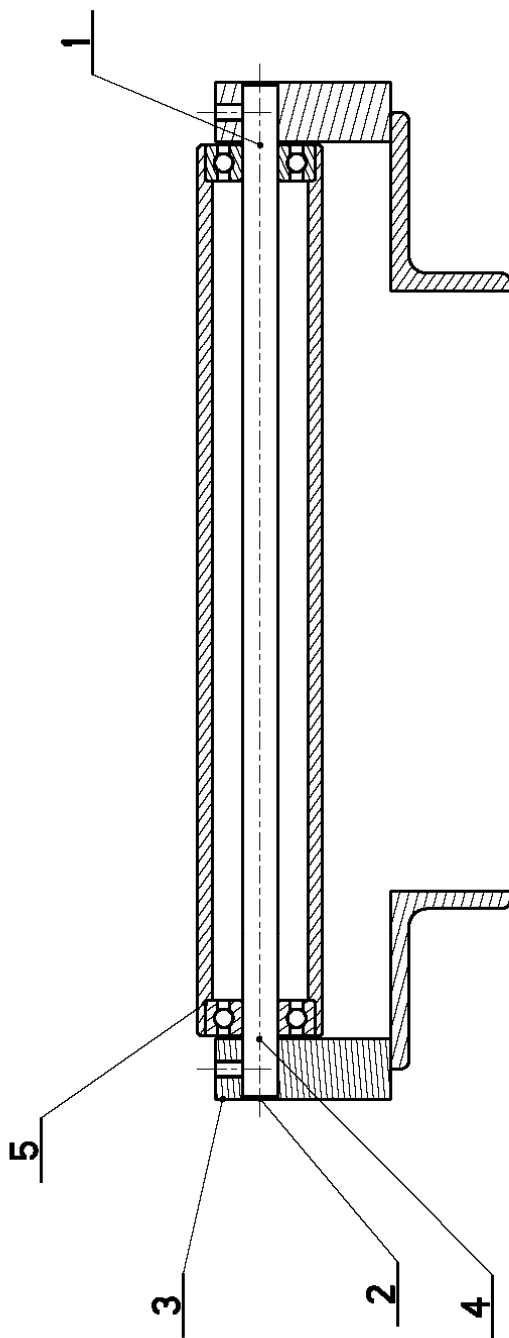


7.24. Kusovník / Stückliste / Piece list – Váleček / Rolle / Roller

Císlo Sestavy 201.LK11-050		Ver. 0	Název sestavy VALEČEK/ROLLER/ROLLE	
Poz.	Objednáací číslo	Ver.	Název položky	Ks
1	30.LK11-051	0	TRUBKA / TUBE / ROHR	1
2	30.LK11-053	0	OSA / AXLE / ACHSE	1
3	95.001.042	0	KUL. LOŽ. I RADE / BEARING / LAGER	2
4	95.800.004	0	SEGR HRÍDEL. / OUTSIDE SAFETY RING / SICHERUNGSRING AUßEN	2

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

7.25. Váleček / Rolle / Roller 2

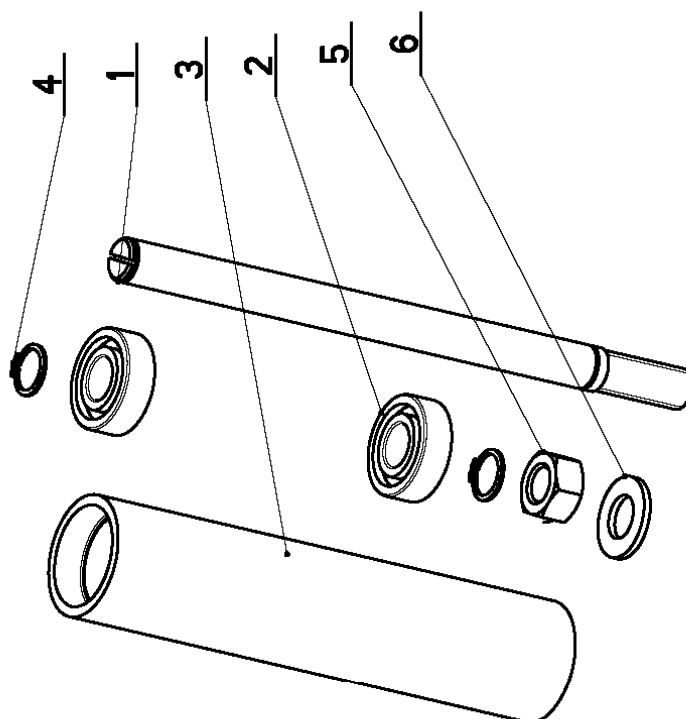


7.26. Kusovník / Stückliste / Piece list – Váleček / Rolle / Roller 2

Císlo Sestavy 201.LK11-070		Ver. 0	Název sestavy VALEČEK/ROLLER/ROLLE	
Poz.	Objednávací číslo	Ver.	Název položky	Rozměr
1	30.LK11-051	0	TRUBKA / TUBE / ROHR	TR 44.5x6.3
2	30.LK11-071	0	OSA / AXLE / ACHSE	d 12
3	30.LK11-072	0	DRŽÁK / HOLDER / HALTER	SVARENO
4	30.LK11-073	0	KROUZEK DISTANČNÍ / DISTANCE RING / DISTANZRING	TR 15x1.5
5	95.001.042	0	KUL. LOŽ. I RADE / BEARING / LAGER	6301 2RS
				Ks
				1
				1
				2
				2
				2

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

7.27. Váleček vertikální / Rolle vert. / Vert. Roller



7.28. Kusovník / Stückliste / Piece list –
Váleček vertikální / Rolle vert. / Vert. Roller

Císlo Sestavy 201.LM11-060		Ver. 0	Název sestavy VALEČEK VERTIKÁLNÍ/ROLLER/ROLLE		
Poz.	Objednací číslo	Ver.	Název položky	Rozměr	Ks
1	30.LM11-062	0	OSA / AXLE / ACHSE	d 15	1
2	95.001.015	0	KUL. LOŽ. I RADE / BEARING / LAGER	6202 2RS	2
3	30.LM11-061	0	TRUBKA / TUBE / ROHR	TR 44.5x6.3	1
4	95.800.006	0	SEGR HRÍDEL. / OUTSIDE SAFETY RING / SICHERUNGSRING AUßEN	POJISTNÝ KROUZEK 15	2
5	90.100.55.013	0	MATICE DIN 934 / NUT / MUTTER	MATICE _ M14	1
6	90.150.50.008	0	PODLOŽKA DIN125 / WASHER / UNTERLEGSCHIBE	PODLOŽKA 15	1

Císlo sestavy/Number of assembly/Numer 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