Series **Performance**

Performance 460

Operating instructions

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

Seriové číslo / Serien Nummer / Serial Number _____

Service and information

Your BOMAR dealer:

Direct BOMAR contact:

BOMAR spol. s r.o.
Těžební 1236/1
62700 Brno
Czech Republic, EU

telefon: +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 7^{00} – 16^{00}

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1. Safety notes

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

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

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

1.1. Machine determination

The band saw **Performance 460** is determined for cutting and shortening of rolled bars and drawn bars and profiles from steels, stainless steels, non-ferrous metals and plastics **without angle cuts** (0°).

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

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

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

1.2. Protective suit and personal safety

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

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

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

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

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

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

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

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

1.3. Safety notes for machine operator

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

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

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

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

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

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

1.4. Safety notes for the servicing and repairs

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

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

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

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

1.5. Safety machine accessories

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

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

1.5.1. Total Stop

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

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

Total STOP button location

Total STOP button is located on the control panel

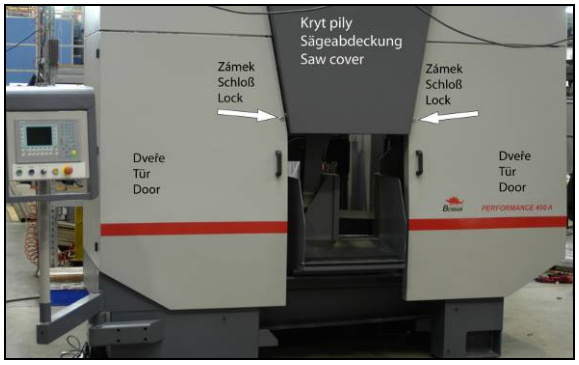
After push ***TOTAL STOP*** button is shown warning message on LCD.

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

1.5.2. Arm covers

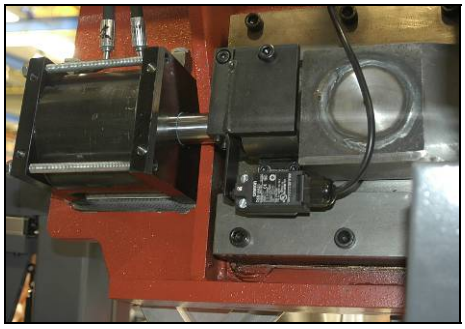
The saw is equipped with covers. In several places are covered with openable. Each openable cover is equipped with a safety limit switch. Where are the covers opened while machine works, the protective switch automatically disconnects the drive and saw stops. It is also impossible to start the cutting process with open shelters.

Before starting the cutting centers, make sure the covers are closed and locked saws!



1.5.3. Saw band stretching and rupture inspection

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



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

1.5.4. Laser beams

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

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

It is forbidden to look into the laser beam barriers.

1.6. Safety notes for the cooling

Attention!

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

1.6.1. Instructions for first help

1. Pull off and safely remove polluted, soaked clothing.
2. For breathing, go out in the fresh air or look for first aid treatment.
3. Wash with water or use crèmes for contact with the skin.

4. Flush with water for eyes and look for first aid treatment.

5. For swallowing, drink a lot of water and induce vomiting. Look for medical help.

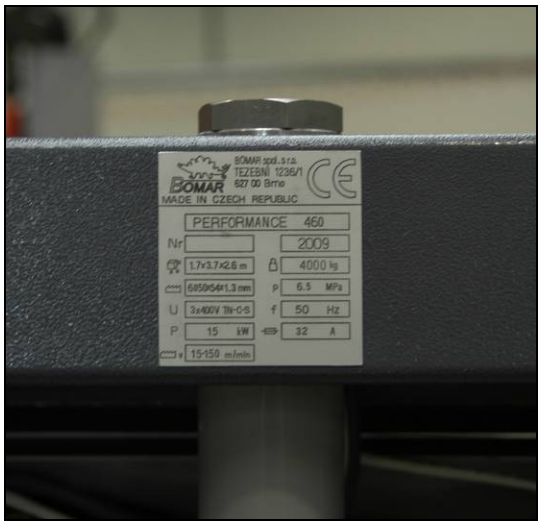
1.7. Safety information for the chip remover

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

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

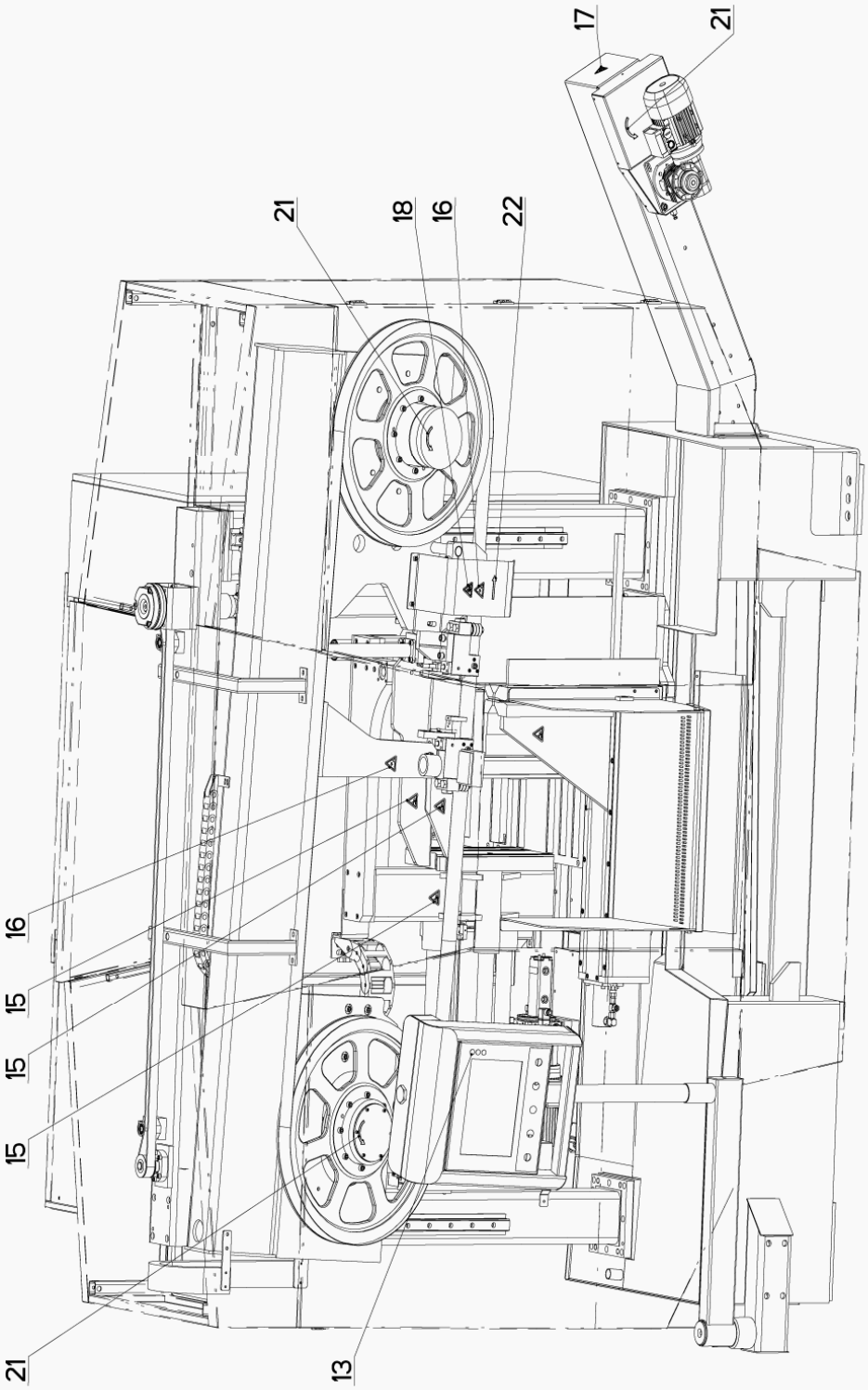
If the machine is switched on, operate it only using the control panel (see Chapter 3 Machine control).

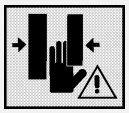
1.8. Umístění štítku stroje / Maschinenschild position / Position of machine label



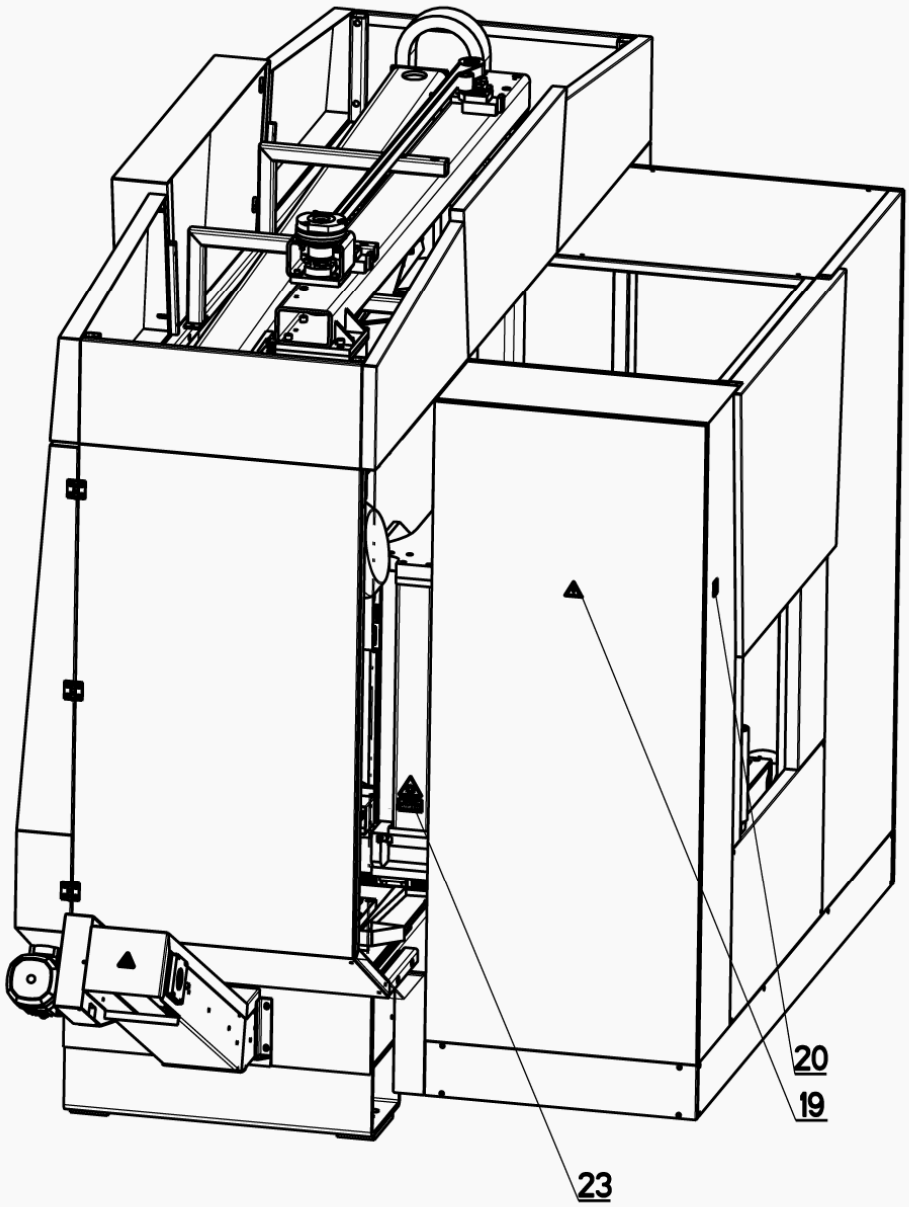
Machine label is placed on a movable main control panel from the rear.

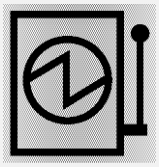
1.9. Umístění bezpečnostních značek / Verteilung der Sicherheitszeichen / Position of safety symbols 1



Poz. Pos. Pos.	Obj. číslo Bestell - Nr. Reference No.	Název položky Bezeichnung Item		ks Mng. Pcs.
13	99.900.047	Samolepka / Aufkleber / Self-adhesive label	 OBS – Noste ochranné brýle a slu-chátka / Tragen Sie eine Schutzbrille und Gehörschutz / Wear protective googles and headphones	1
13	99.900.048	Samolepka / Aufkleber / Self-adhesive label	 PO – Noste pevnou pracovní obuv / Tragen Sie Sicherheitsschuhe / Wear fixed protective shoes	1
13	99.900.049	Samolepka / Aufkleber / Self-adhesive label	 CZ – Přečíst návod k použití / Bedienungsanleitung lesen / read the operating instructions	1
15	99.900.039	Samolepka / Aufkleber / Self-adhesive label	 NS – Nebezpečí stlačení / Pressung-gefahr / Crushing hazard	4
16	99.900.040	Samolepka / Aufkleber / Self-adhesive label	 NR – Nebezpečí říznutí / Schnittgefahr / Cutting or severing hazard	2
17	99.900.042	Samolepka / Aufkleber / Self-adhesive label	 NV – Nebezpečí vtažení / Einzuggefahr / Drawing – in hazard	1
18	99.900.043	Samolepka / Aufkleber / Self-adhesive label	 NZ – Nebezpečí zachycení / Erfassunggefahr / Tramping hazard	1
21	99.900.050	Samolepka / Aufkleber / Self-adhesive label	 SOL – Směr otáčení doleva / Drehrichtung nach links / direction of rotation left	3
22	99.900.053	Samolepka / Aufkleber / Self-adhesive label	 SP – Směrová šipka / Bewegungsrichtung / Direction of motion	1

1.10. Umístění bezpečnostních značek / Verteilung der Sicherheitszeichen / Position of safety symbols 2

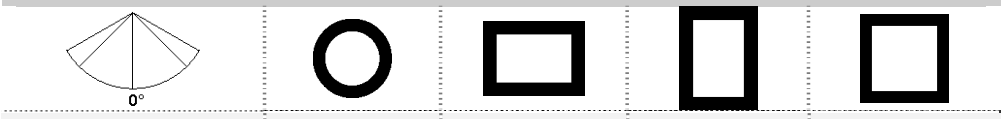


Poz. Pos. Pos.	Obj. číslo Bestell - Nr. Reference No.	Název položky Bezeichnung Item		ks Mng. Pcs.
19	99.900.045	Samolepka / Aufkleber / Self-adhesive label	 NE – Nebezpečí úrazu elektrickým proudem / Verletzunggefahr vom elektrischen Strom / Electrical hazard	1
20	99.900.046	Samolepka / Aufkleber / Self-adhesive label	 HV – Hlavní vypínač / Hauptschalter / Main switch	1
23	99.900.057	Samolepka / Aufkleber / Self-adhesive label	 L – Laser / Laser / Laser	3

2. Machine documentation

2.1. Technická data / Technische Daten / Technical data

Hmotnost stroje / Maschinengewicht / Machine weight:	
• Hmotnost / Gewicht / Weight	4000 kg
Rozměry stroje / Maschinengröße / Machine size :	
• Délka / Länge / Lenght	1700 mm
• Šířka / Breite / Width	3700 mm
• Výška / Höhe / Height	2600 mm
Elektrické vybavení / Elektrische Ausrüstung / Electical equipment:	
• Napájení / Versorgungsspannun / Supply voltage	3×400 V, 50 Hz, TN-C-S
• Příkon / Gesamptschlusswert / Total Input	15 kW
• Max.jištění / Max. Vorschaltsicherung / Max. Fuse	63 A
• Krytí / Schutzart / Protection	IP 54
Akustický tlak / Schalldruckpegel / Acoustic pressure:	
• Performance 460	L_{Aeqv} = 68,1 dB
Pohon / Atrieb / Drive:	
• Typ / Typ / Type	Lenze MDERA 132-12J
• Napájení / Versorgungsspannun / Supply voltage	~ 3×400 V, 50 Hz
• Výkon / Leistung / Output	7,5 kW
• Jmenovité otáčky / Motornenndrehzahl / Nominal speed	1455 $m.min^{-1}$
Hydraulické zařízení / / Hydraulic equipment	
• Typ / Typ / Type	19323800
• Výkon / Leistung / Output	6,5 MPa
Chladící zařízení / Kühlmiteleinrichtung / Cooling equipment:	
• Typ / Typ / Type	Chemical emulzion
• Obsah nádrže / Volumen vom Kühlmittel / Capacity	80 dm^3
• MICRONISER	YES
Rozměr pásu / Sägebanddimension / Band size:	
6050×54×1,3 mm	
Řezná rychlost / Schnittgeschwindigkeit / Cutting speed:	
15–150 m/min.	
Jeden Zdvih / Vorschublänge Einfachhub / One Upstroak:	
750 mm	
Max. Délka podání / Max. Vorschublänge / Max. feed:	
9999 mm	
Řezné rozsahy / Schnittbereiche / Cutting size:	

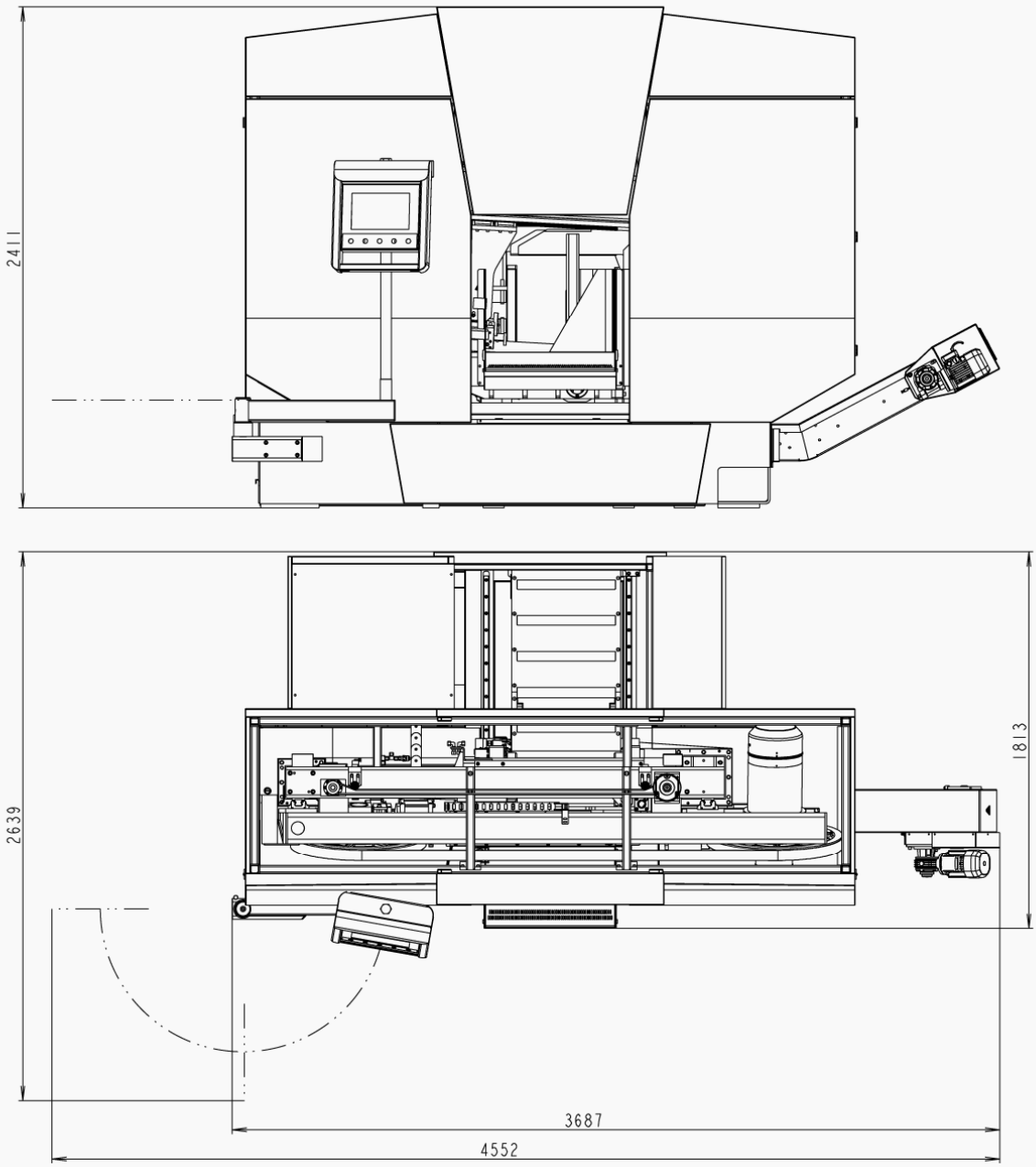


0°	Ø460 mm			460×460 mm

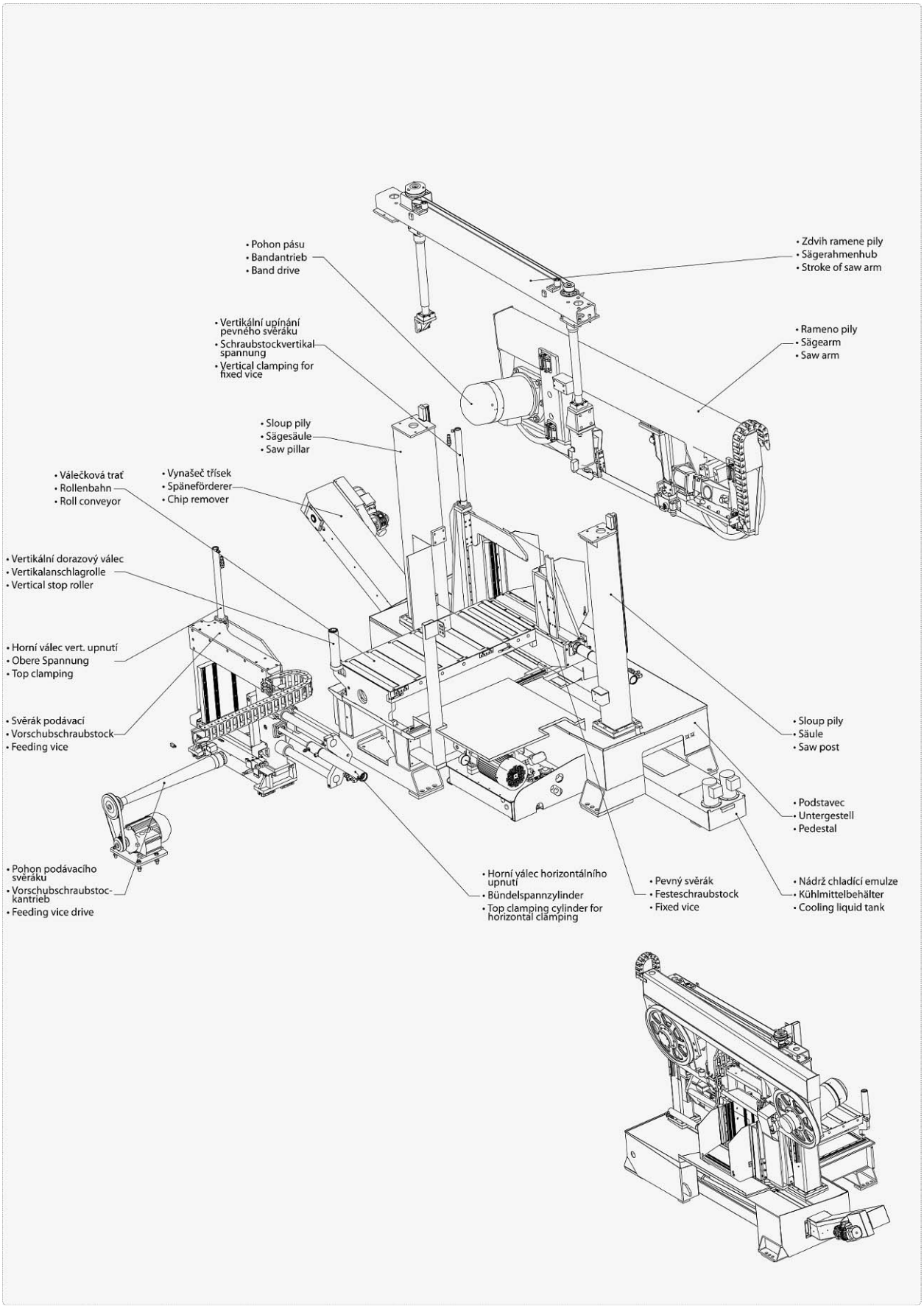
Acoustic pressure level:

The equivalent level of the acoustic pressure A (noise) in the position of the operator is L_{Aeqv}= 68,1 dB. The values are indicating the emission levels and may not present safety working levels. Among the factors, which influence the real values of the operator exposure, are properties of the workshop room, cut material and used saw bands – which may significantly influence the exposure levels.

2.2. Rozměrové schéma / Aufstellzeichnung / Installation diagram



2.3. Popis / Beschreibung / Description



2.4. Transportation and stocking

2.4.1. Conditions for transportation and stocking

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

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

2.4.2. Transport and stocking preparations

Close the vice and thoroughly oil all blank surfaces.

Lower the saw frame to the lowest position.

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

Fasten all loose parts securely to the machine.

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

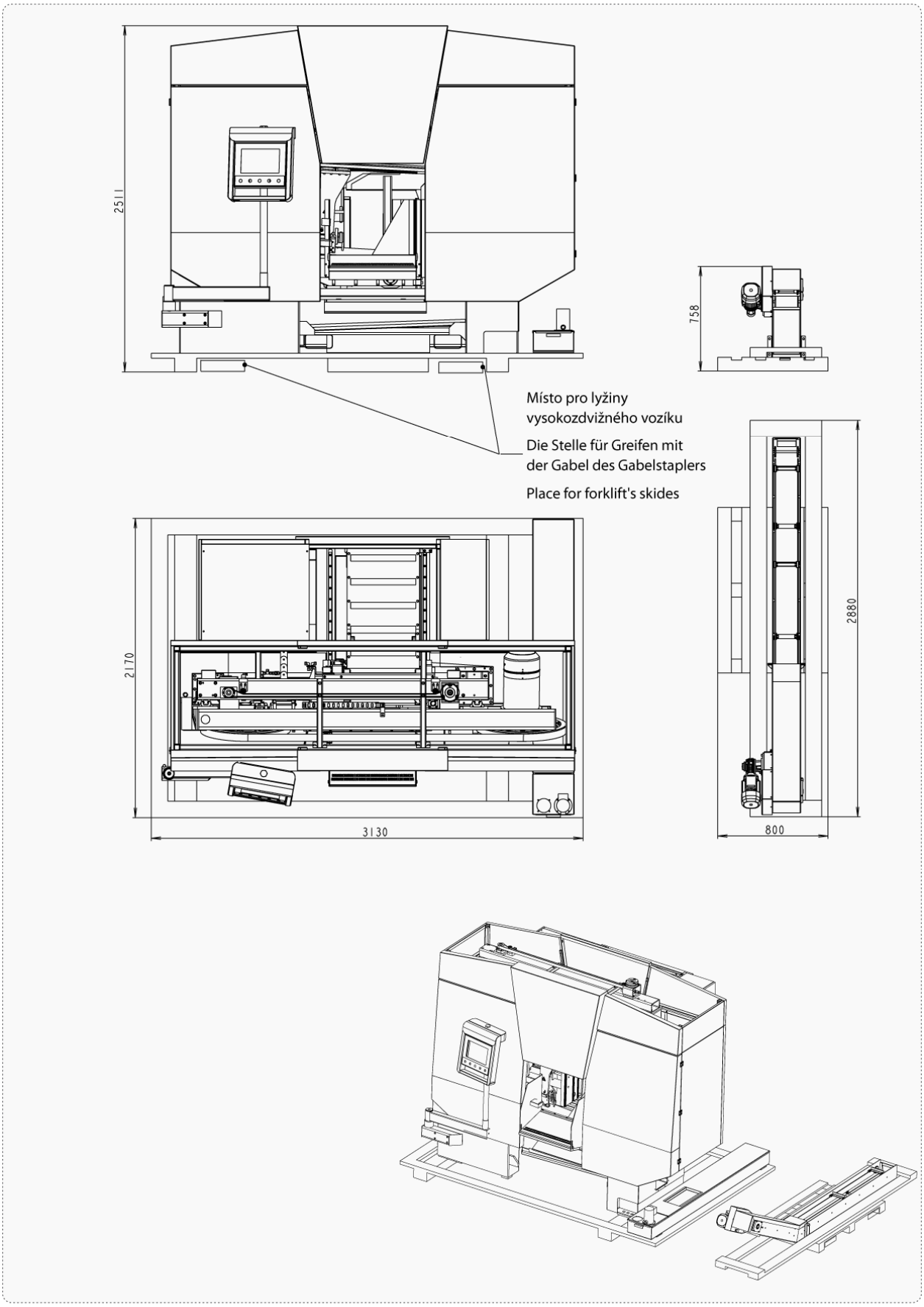
Fix the stickers stating the minimum approximate machine weight to at least five well visible places.

2.4.3. Transport and stocking

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

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

2.4.4. Transportní schéma / Transportschema / Transport



2.5. Activation

2.5.1. Machine working conditions

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

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

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

2.6. Band saw unpacking and assembling

Remove the packing from the machine and unpack all parts.

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

2.6.1. Machine installing and levelling

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

Minimal requirement:

machine weight – Performance 460 – 4000 kg

+ weight of accessories

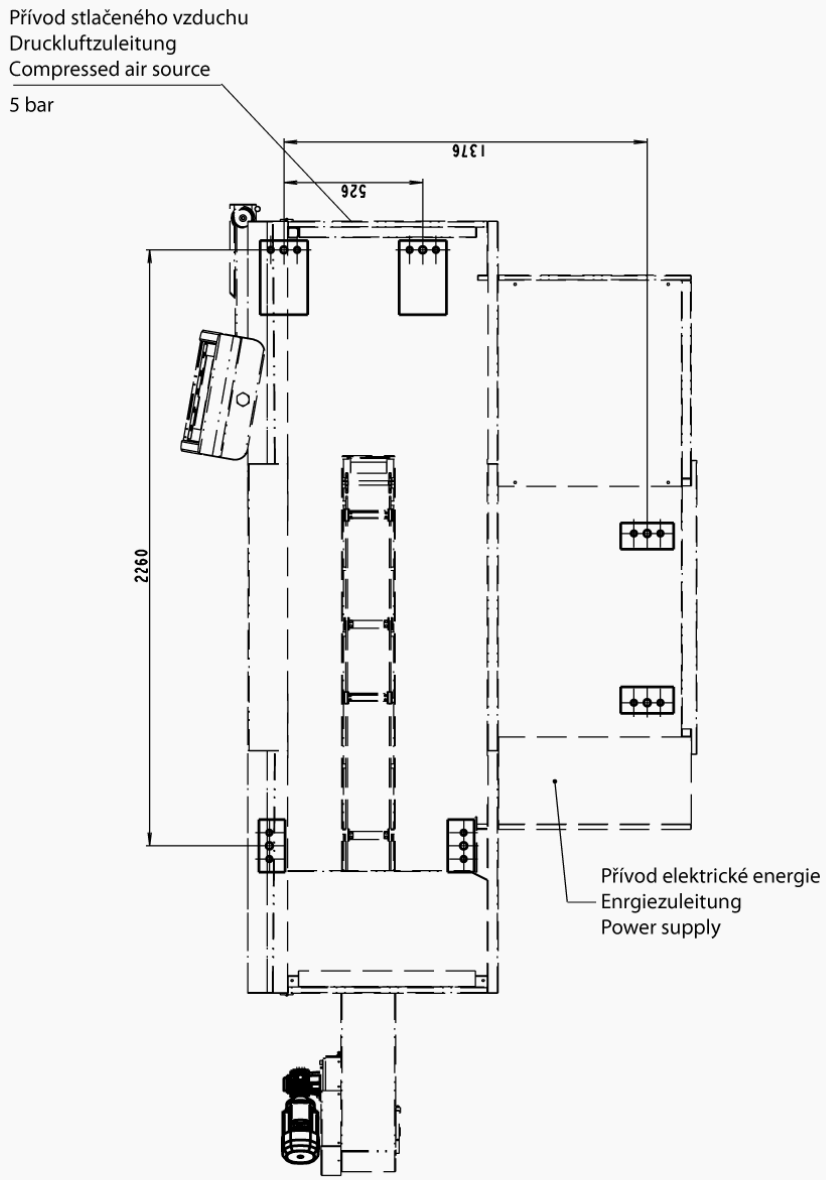
+ maximum weight of material

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

2.6.2. Machine disposal after lifetime

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

2.6.3. Kotevní plan / Verankerungsplan / Grounding plan



Kotvící materiál / Verankerungsmaterial / Grouding material

- 6× Hmoždina / Dübel / Plug – ø18 mm
- Vrtáno do hloubky / In die Tiefe gebohrt / Drilled to – 140 mm
- Šrouby / Schraube / Screws – M16

Šrouby podložit deskami o min. rozměrech P200×100×10 mm
- Die Schrauben mit Platten mit Minimaldimensionen P200×100×10 mm unterlegen
Screew must be bottomed with plates (min. dimensions P200×100×10 mm)

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

± 10 mm / 1 m

2.7. Electrical connection

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

Electrical parameters of the machine:

- Service voltage: ~ 3×400 V, 50 Hz, TN-C-S
- Total input / Max. fuse: 15 kW / 63 A

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

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

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

2.7.1. Check the direction of the saw band

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

2.8. Filling of the cooling system

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

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

2.9. Check machine function

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

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

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

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

2.10. Saw band

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

2.10.1. Saw band size

6050×54×1,3 mm

2.10.2. Selection of the saw band tooth system

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

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

BOMAR for recommended Variable tooth system for band saw.

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

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

Footnotes:

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

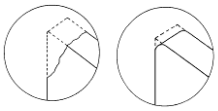
Examples of the tooth system marking:

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

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

2.10.3. Saw band running-in

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

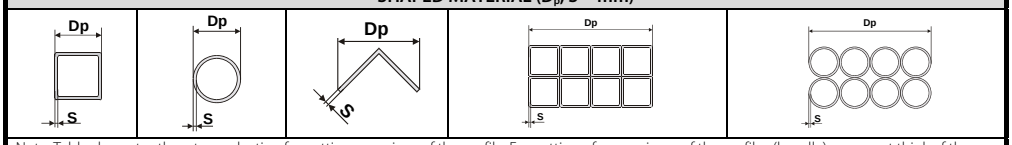


When cutting small pieces run the band until approximately 300 cm^2 of material has been cut. When cutting large pieces run the band for 15 minutes approximately. When the band has been run, increase the lowering-speed to normal speed. The running in of the saw band avoids micro-breaks on the cutting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

Note: *Run regrinding saw bands too.*

2.10.4. Tables for teeth selection

SHAPED MATERIAL (D_p, S = mm)

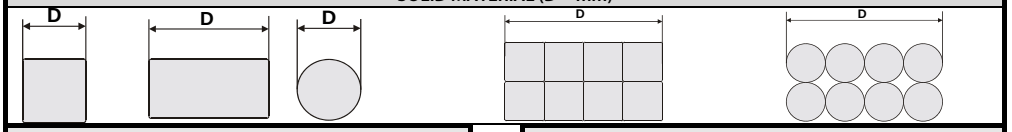


Note: Table shows tooth system selection for cutting one piece of the profile. For cutting of more pieces of the profiles (bundle), you must think of the size of the wall as double size of the wall of one profile (that means, size „S" equates to 2×S). In table, there are tooth systems constant and variable.

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

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

SOLID MATERIAL (D = mm)



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

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

3. Machine control

3.1. Saw band start

Machine is started by main switch, which is located on saw's cover on material insertion side. After control system booting is shown welcome screen on LCD. As long as "not start" control system is the intermediate state displayed at the top of operator panel.

Also, other states machines are displayed in the upper panel. Eg.:

- Please wait while the machine accrues
- Control On / Off Control
- Mode manually
- Automatic Mode
- Automatic mode runs
- Stopping automatic cycle

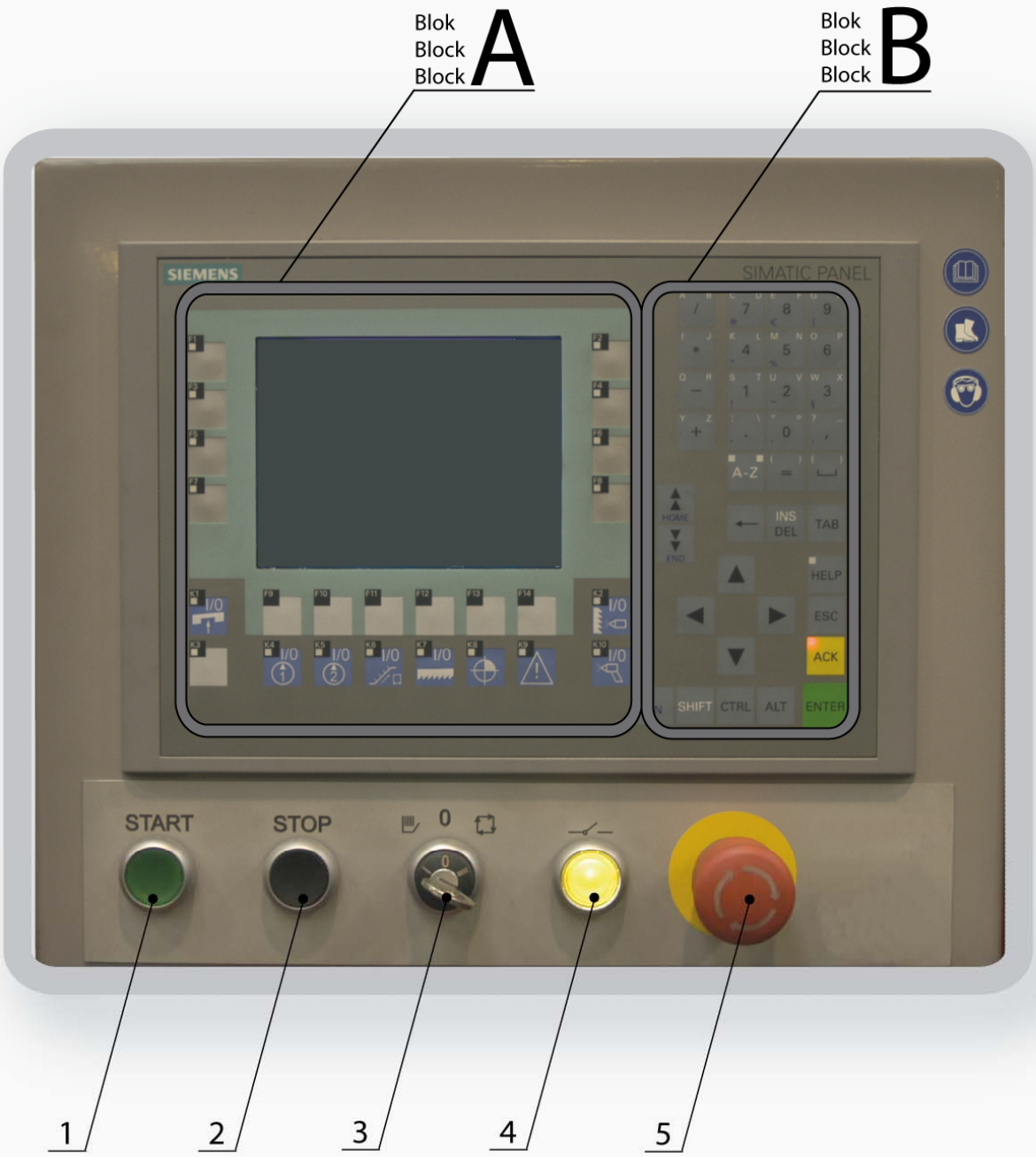
3.1.1. Turn-on Process

1. By yellow button with symbol which is placed on bottom of the control panel We start controlling (or safety) circuit. On-state is indicated by light in button. When the button is off is important to check:

   - Position of TOTAL STOP button. Button must be released.
   - All covers must be closed

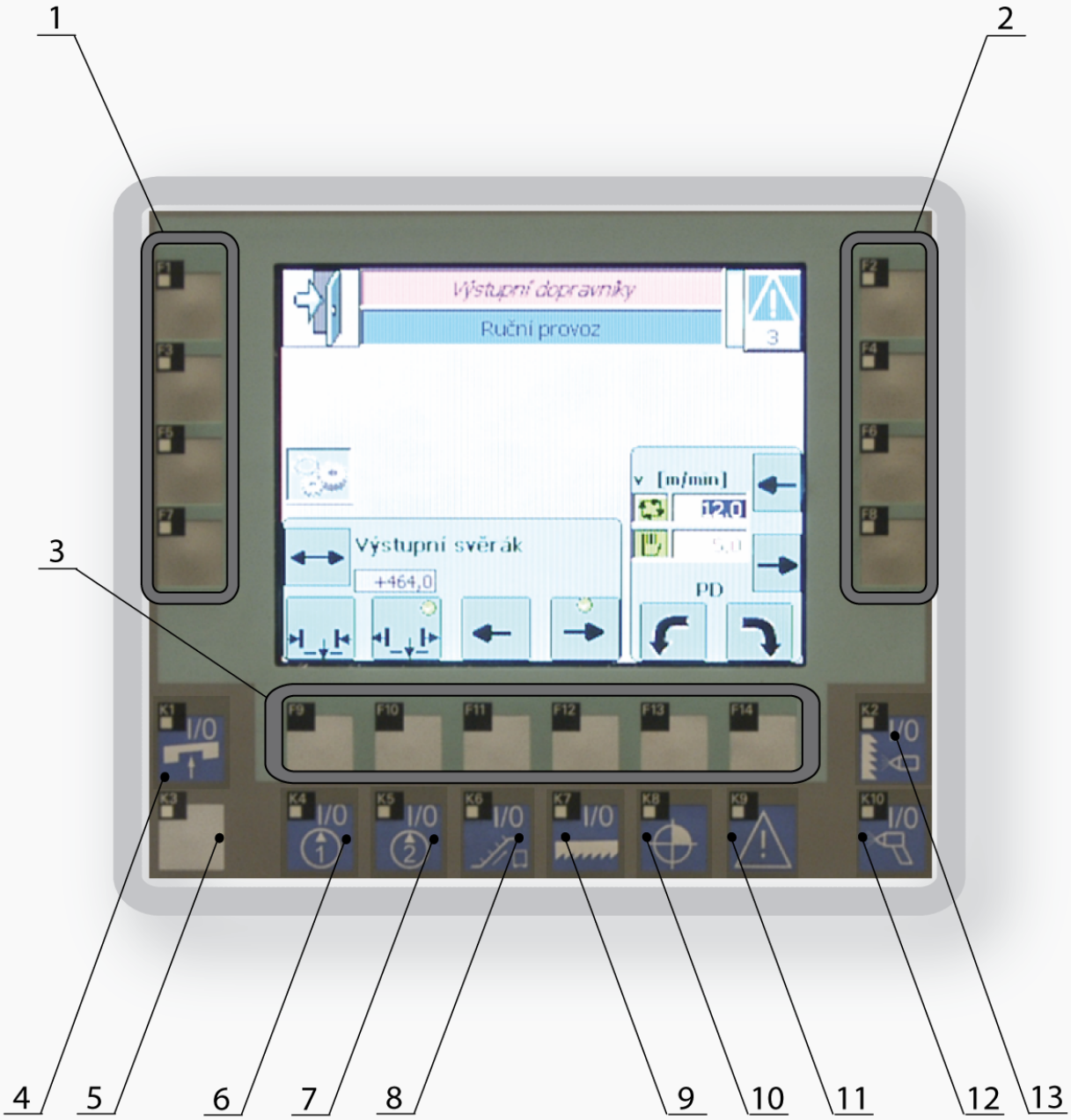
2. In next step, machine must be referred. Without referring machine's positioning functions not work. Most important is well-referred feeder vice..

3.2. Control Panel



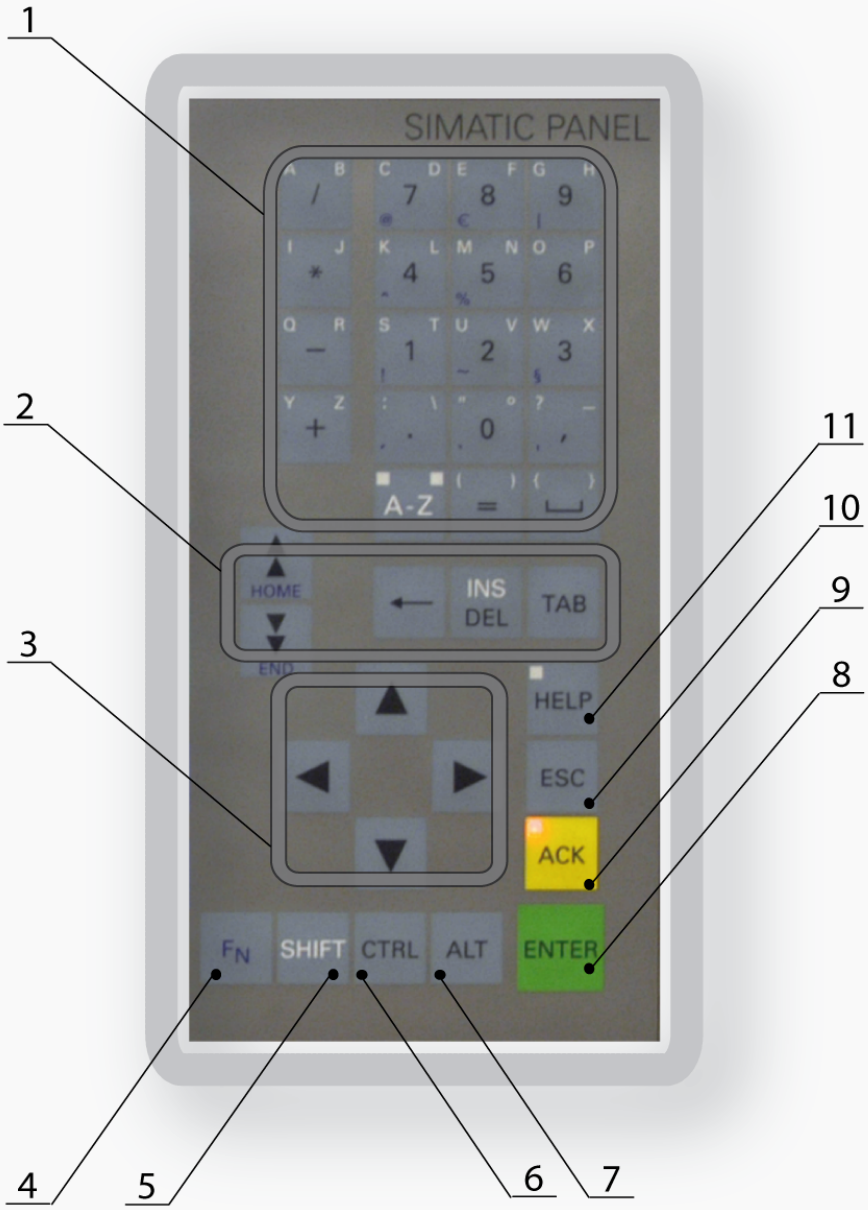
A	**Block with LCD, function keys and contextual keys** Blocks F1 through F14 keys are soft keys, K1 to K10 are fixed function keys with associated functions
B	**Block typing and moving around menus** The keys in this block allow you to jump in graphical menus, move the text block and its input into the appropriate fields in the offers
1	**START Button** Begin automatic/semiautomatic cycle.
2	**STOP Button** Stop automatic/semiautomatic cycle.
3	**Choice of operating mode machines** Key-switch selects the mode of machine working. Switching to left selects manual mode, switching to the right select automatic mode. In the middle position 0 is activated service mode.
4	**Safety circuit** Must be turn on for machine working.
5	**Total STOP button** Safety button.

3.2.1. Control Panel, Block A



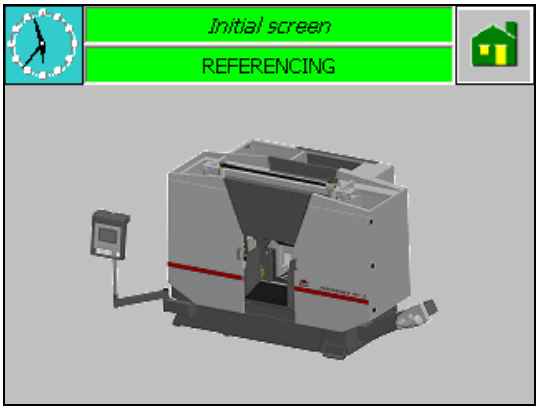
1	**Context buttons F1, F3, F5 a F7** Contextual function keys F3, F5 and F7 keys varies according to the LCD F1 function key to return back.
2	**Context buttons F2, F4, F6 a F8** Contextual function keys F4, F6 and F8 keys varies according to the LCD. F2 – back to the main screen, from main green jump to the Systém Servis menus.
3	**Context buttons F9 – F14** The function of these keys performs the appropriate function or display a second menu, which is indicated by the graphic or text element on the LCD above the keyboard.
4	**Button K1 – lift saw arm** Push button for lifting saw arm into upper position.
5	**Button K3 –** No function
6	**Button K4 – Turn ON/OFF hydraulic circuit**
7	**Button K5 –** No function
8	**Button K6 – Swarf conveyer** Turn On/Off swarf conveyer, state of swarf conveyer is indicated by LED in upper left corner.
9	**Button K7 – Turn ON/OFF drive of saw band blade** Turn On/Off drive of saw band blade, state of drive of saw band blade is indicated by LED in upper left corner.
10	**Button K8 – Refering** Po zapnutí stroje je pořeba provést tímto tlačítkem proces referování.
11	**Button K9 – List of error messages** Show or hire list of error messages.
12	**Button K10 – Turn ON/OFF pump for rinsing pistol**
13	**Button K2 – Saw band blade lubrication**

3.3. Control Panel, Block B



1	**Alphanumeric buttons** Use these buttons to enter numbers and letters.
2	Button block for moving in text or in graphic menu. Jump to start of menu/text Jump to end of menu/text Delete charecter behind cursor Primari delete character or selected text. With Shift key work as insert key. By this button is selected all elements in order.
3	**Cursor keys** Used to move the cursor
4	**Key FN** Allows you to select the alternative function of certain keys. Alternative function is the key marked with blue text / symbol.
5	**Key SHIFT** Allows you to specify an alternative text / function. Alternative function is the key marked with white text / symbol.
6	**Key CTRL (control)** Push CTRL and a key is triggered by the corresponding function.
7	**Key ALT** Push ALT and a key is triggered by the corresponding function.
8	**Key ENTER** ENTER key has the same function as the ENTER key on a PC. Use the button to confirm a value / text.
9	**Key ACK** Quitting – confirmation of defects, unless the failure is confirmed not start the machine cycle.
10	**Key ESC** Escape without changes
11	**Key HELP** Show help

3.4. Referencing the machine



Referencing consists of several consecutive steps:

1. The saw vice and feeder jaws open out. The exit vice moves from the saw band to the end position at the belt conveyor. Then it starts to open out. When jaws of all vices stop moving, referencing continues by step 2.
2. The saw arm starts moving slowly upward and the feeder away from the saw.
3. The saw arm moves to the top position to the reference limit detector. When the detector triggers, the saw arm is referenced.
4. The feeder runs in the back position to the reference detector. When the detector triggers, the feeder is referenced.
5. If all necessary units are referenced, a green light in the K8 key on the operator panel lights up.

In manual mode, individual axes may be moved with even if the machine is not referenced. However, when a certain unit runs into the end position, an error message displays announcing that the particular unit has reached a mechanical limit detector. This message may be verified only when the unit stands out of this detector. In practise this means, that a reverse move needs to be induced (the unit will move off the limit detector).

If the machine is referenced, appropriate control of the given drive will not allow reaching these limit positions. The drive stops in so called "software limits" which are set in service screens of the saw and the feeder.

Attention!
Non-referenced machine may not be started in automatic mode!

3.5. Machine control

3.5.1. Machine modes

The machine is equipped with two basic operating modes and one adjusting mode. A current mode of the machine may be recognised according to the position of the key controller 0 . Further the current mode is written in the middle of the top part of the display. The mode is selected by the key controller in the bottom part of the control panel.

- **Left position – manual mode** – All moves of the equipment may be controlled. Individual moves are performed only as long as an appropriate button is pressed. Releasing the button leads to an immediate stop of the move. Control is performed with programmable buttons on the operator panel, grouped by their functions in individual windows of the panel.

- **Middle position – adjusting mode** – In this mode, neither the hydraulic pump nor the saw band may be started, only the saw band may be replaced in the saw service screen.

> ***Attention!***
> ***These operations may not be performed by operators but only by specialised servicemen.***

- **Right position – automat** – After turning the key to this position the machine is ready for the automatic cycle to be started. The cycle itself is started by pressing the START green button.

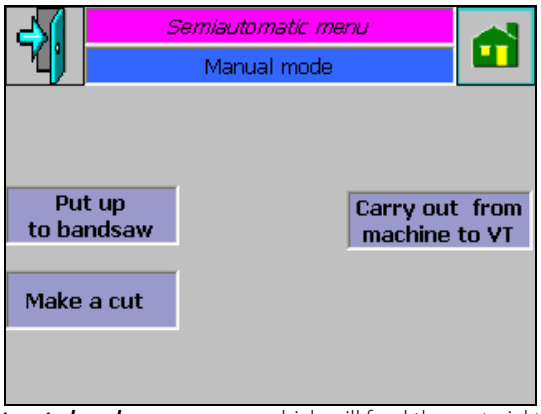
3.5.2. Manual mode

By turning the key left the manual mode is selected.

- **Feeder** – buttons for operating the POD feeder and its vice (horizontal and vertical)
- **Vices** – buttons for operating the jaws of both vices
  - Feeder vice – POD
  - Saw vice – PSV
- **Saw** – buttons for operating the POD feeder forward-backward, the feeder vice, the ZRP saw arm, and the PSV saw vice

The machine is equipped with a step program. With this program, individual parts of the automatic mode may be performed gradually step by step. The manual mode must be selected with the key. After pressing the START button, the display shows a menu of individual step sequences.

A required sequence is selected by pressing an appropriate contextual button.

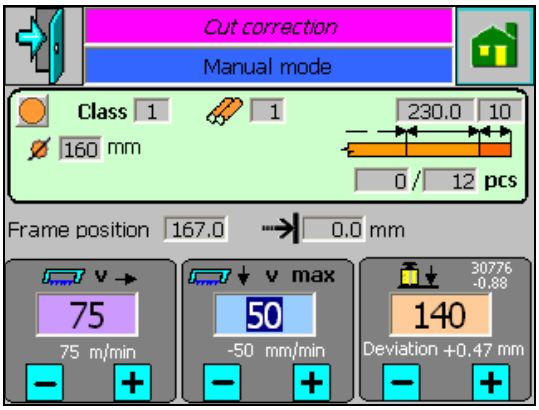


F5 starts the ***Put up to bandsaw*** sequence which will feed the material to a position ready for cutting.

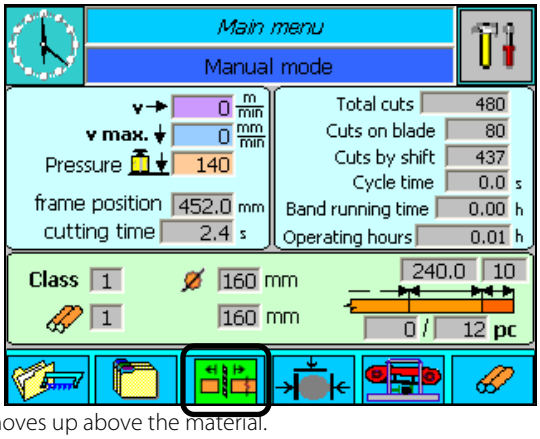
- In the first step, vice jaws of the saw feeder open out to the maximum opening and the saw arm moves to the maximum top position.
- If only a single pole is fed, the feeder grips the pole and moves it under the saw band into the required position.
- The feeder feeds the material directly to the required dimension. If the cutting-in dimension is set, the feeder feeds the material to this dimension.

F6 starts the ***Carry out from machine to VT*** sequence, which will discharge the material to the exit conveyor.

F7 starts the Cutting sequence. This sequence will cut the fed material. Even in manual mode the material parameters must be entered correctly before the cutting starts (dimensions – **material height/diameter**, class).



- According to the material selected, cutting parameters are automatically loaded – band speed, speed of feeding to depth, and pressure to depth.
- Cutting parameters may be adjusted during cutting with F9–F14 buttons.
- Incorrectly set material height leads to the risk of a collision of the material with the band and its possible destruction.
- Material is clamped with the saw vice (PSV).
- Fast-feed of the saw arm starts downward and stops in the required height above the material (the parameter is edited in the saw limit service screen) and changes to the speed to depth set according to a table for the given material.
- To save the band at running into the material, the soft cutting-in function may be utilised. After parameters are set in the saw service screen (loading ramp and coefficient of the speed to depth), the saw arm will run to the material with the speed given by multiplying the set speed to depth with the speed to depth coefficient. With this speed it will move above the material and up to the set travel of the loading ramp in the material. After running the set travel, the speed will return to the preset value. However, this value will be adjusted by a feedback of the band pressure to the material. Example: If the set speed is 100 mm/min, loading ramp 7 mm, and coefficient 0.5, the resultant speed with which the arm will run to the material is 50 mm/min. As soon as the arm touches the material, the 7mm distance measuring will start. When this travel is run in the material, the speed will return to 100 mm/min. However, this value will probably not be reached because the pressure feedback will start taking effect. The higher value of the pressure is set, the more the real speed will approach the set speed and vice versa.
- After finishing the cutting (triggered detector of the arm bottom position SQ76) or setting a particular position of the offcut, the saw band stops.
- Optionally offset is performed, if band offsetting is selected, saw vice is released, material removed by the feeder, and the saw band pushed away from the material. This selection is activated with the **F11** button in the main menu screen.



- The arm moves up above the material.

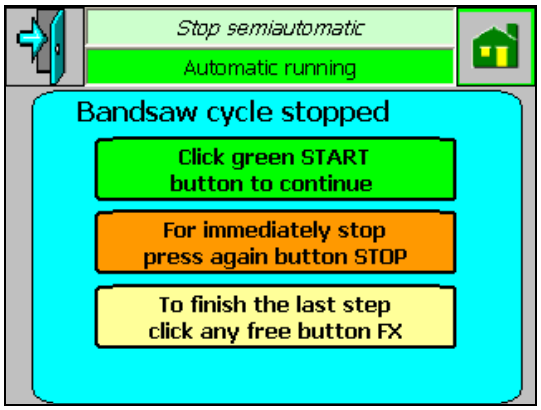
The Cutting sequence is finished.

3.5.3. Automatic mode

Prior to starting the operating mode it is necessary to fill in required data about the material to be cut. These data form an order (see the description of an order form in the screens description, chapter Orders *Selection of order editing* menu).

Then the saw band starts and the saw arm moves above the material (speed is edited in the saw parameters screen – as speed in automatic mode). After reaching this position the saw starts moving according to parameters set in the order (band speed, speed to depth, pressure to depth). If soft cutting-in is included, the speed to depth is decreased to a value given by the coefficient set in the saw service screen, with which it moves along the set travel. Only then it proceeds to the speed set in the order. When proceeding from fast-feed to the required speed, band lubrication and chip remover are started, provided these function are included (saw service screen).

3.6. Operating mode / machine move interruption, machine shutdown



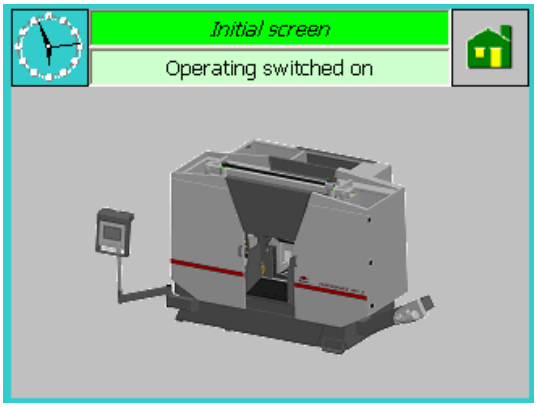
The whole machine may be immediately shut down any time with the main switch or emergency switch. However, this is not advisable for stopping or interrupting the operating mode. For these situations the machine is equipped with the STOP button. This button is universal for all types of stopping.

If an operating cycle is running, pressing the STOP button will pause the cycle – see the screen above. The display will show a help screen with various types of the operating cycle stopping:

- By pressing the START button the cycle may be continued.
- By repressing the STOP button the cycle immediately stops (vices will open, the saw arm will move above the material, the band will stop). The cycle may not be continued, a new cycle must be started.
- Correct stopping is performed, which means that individual phases of the automatic mode are completed and only then the cycle stops. *Automatic cycle stopping* is shown in the upper part of the display.

3.7. Description of control system screen

3.7.1. Initial screen, control panel



The same screen is shown on the display after the machine is turned on and all systems of the cutting centre are correctly started..

Except the display view, the above-shown picture contains also all buttons of the main control panel. Further screen descriptions will contain only contextual and functional buttons located around the display.

F1 to F14 contextual buttons – their function changes depending on the current activity. Only F1 and F2 have the same function in most menus:

Key	Function and its description
F1	**Return button**, leaving the current menu and returning to previous one
F2	Back to Main **menu**

K1 to K10 functional buttons – these have a particular function ascribed (see **Control panels and elements ⇨ Main control panel, block A**).

Buttons to the right of the control panel serve for entering characters, moving within the text and menus. Moving along individual parameters within a menu is performed with cursor keys or the TAB key, the current object is highlighted with a black frame. Values are entered with alphanumerical keys and confirmed with ENTER. The same key serves for entering drop-down lists or selecting (pressing) buttons which are not assigned to keys.

3.7.2. Main menu

The main menu shows basic set parameters of the machine and current order specifications. From the main menu menus of individual logical blocks of the machine control may be entered.

Control logical blocks:

1. Orders
2. Saw feeder
3. Vices
4. Saw

- Displayed current cutting parameters
  1. Saw band speed (v➔)
  2. Speed of saw arm descending to depth (v🡻)
  3. Pressure to depth
  4. Saw arm current position (acc. to sensors)
  5. Cutting time (calculated time)
- Cutting centre statistical data – the data are suitable both for the machine utilisation statistics (number of cuts per shift, cycle time) and for service purposes (total number of cuts, cuts per band).
- Current order parameters
- Entries to individual menus of control logical blocks

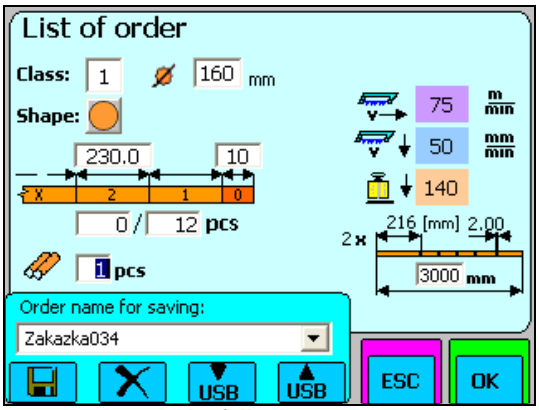
Main menu is a basic menu for controlling the machine, it may be entered immediately from anywhere within the control system by pressing the **F2** contextual key, or gradually by repeated pressing the F1 key – this key serves for returning to previous screen.

Table of contextual keys:

Key	Function and its description
F2	**Control system service parameters**
F9	**Selection** (change) **of cutting parameters** Allows their change even during cutting (processing a set order).
F10	**Orders** – entering the **Selection of order editing** menu (see next chapter)
F11	**Offset**
F12	**Vices** – entering the **Vice programs** menu
F13	**Saw** – entering the **Saw parameters** menu
F14	**Material**

3.7.3. *Order editing* menu

By pressing the **F9** contextual key, the Selection of order editing menu will be displayed. Here the method of order processing may be selected.



The Order sheet menu contains the following parameters:

- **Class** – serves for recording the processed material class (1–10). The class number will be used for selecting the saw control parameters.
- **Shape** – solid or sectional, the selected class shape will be used for selecting the saw control parameters.
- **Height/diameter** – serves for entering the processed material height/ diameter (acc. to the shape). The set value will be used for entering the saw control parameters.
- **Height** – serves for entering the processed material height. If round timber is set, this specification is cancelled and not entered.
- **Required length** – serves for entering the required material cutting length.
- **Cutting-in** – indicates the length of band edge cutting-in to the material before actual cutting. If this is a zero value, cutting-in is not performed.
- **Number of pieces** – number of required pieces/already cut pieces.

Warning:
*If adjusting an order, in which some cuts have already been performed, or a previously processed order, the **number of already cut pieces** is a non-zero value and most parameters of the order may not be changed. To change the parameters, the **number of already cut pieces** value must be set to zero*

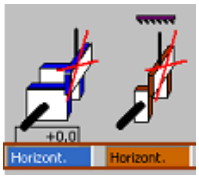
- **Number of poles cut at once** – to be entered to the field with a pictogram of two poles; if the parameter is higher than one, another parameter will be shown to the right of this field, see the following point.
- **Max. difference in length of poles cut in bundles** – indicates maximum difference in length of poles when more poles are cut; this value must not exceed 50 mm. This parameter serves for determining the position of feeder vice clamping at the end of the bundle.
- **Band speed** – value for the saw cutting control, inserted automatically after setting all three key parameters (class, shape, material height).
- **Speed to depth** – value for the saw cutting control, inserted automatically after setting all three key parameters (class, shape, material height).
- **Pressure** – value for the saw cutting control, inserted automatically after setting all three key parameters (class, shape, material height).
- **Total material length** – parameter entered to a field below the graphic representation of an order.
- **Graphic representation of an order** – interactive, serves for simple optimisation of the order, from set parameters it calculates the remains length (waste) after cutting and number of input material poles necessary for completing the order.
- **Order title for saving** field – equals to the title from receptures.

Table of contextual keys – *Order sheet* menu:

Key	Function and its description
F9	**Saving an order to a file**
F10	Deleting an order selected in the **Order title for saving** drop-down list
F11	**Saving** an order to USB
F12	**Loading** an order to USB
F13	**ESC – escaping the order sheet** without changes made
F14	**OK** – confirming set parameters of an order and entering them to a box

3.7.4. *Vice program* menu

Setting of both vices of the saw is grouped into the "Vice programs" menu.



Selecting the vice clamping jaws (repeated pressing of F3, F4 buttons) for manual control:

1. Horizontal jaws (pictured) – moving of horizontal jaws
2. Vertical jaws – moving of vertical jaws
3. Vice program – moving of jaws acc. to the program

Volba „program svěráku":

Pod interaktivními obrázky svěráků je pro každý svěrák rozbalovací nabídka ve které lze upřesnit volbu kombinací pohybů čelistí svěráků, kterými se bude upínat materiál – tzv. Program svěráku

"Vice program" selection:

1. both vertical and horizontal jaws simultaneously
2. 1.Ho 2.Ve – the material is clamped first by horizontal jaw(s), then by vertical jaw(s) (graphically indicated by order numbers at the jaws)
3. 1.Ve 2.Ho – the material is clamped first by vertical jaw(s), then by horizontal jaw(s) (graphically indicated by order numbers at the jaws)
4. Horizont. – clamping by horizontal jaw(s) only (indicated by crossed vertical jaw). This selection is pictured for all vices.
5. Vertikal. – clamping by vertical jaw(s) only (indicated by crossed horizontal jaws)

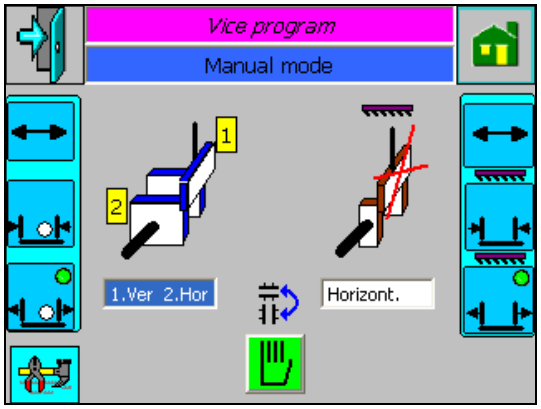
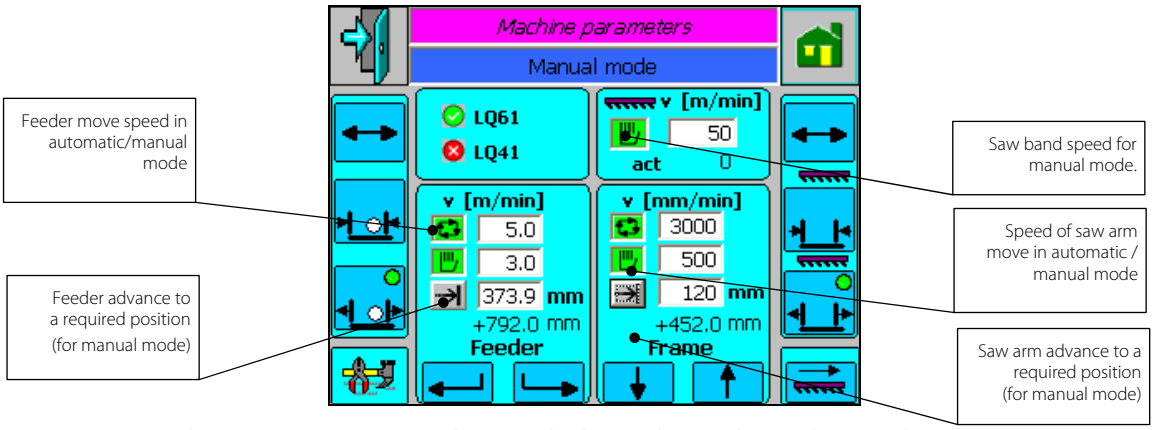


Table of contextual keys –*Vice program* menu:

Key	Function and its description	
F3	Feeder vice	**Selecting vice jaws** which will be moved with. Change is made by repeated pressing F3 and indicated by a changing pictogram. **Selection options** (by repeated pressing F3):
F5		**Clamping the vice jaws**. Clamping the material with selected jaws is done by pressing and holding the button; clamping complexion is indicated by a green circle.
F7		**Releasing the vice jaws.** Releasing the material is done by pressing and holding the button; max. opening of the vice is indicated by a green circle (see Figure).
F4	Saw vice	**Selecting the vice jaws** which will be moved with. Change is made by repeated pressing F4 and indicated by a changing pictogram.
F6		**Clamping the vice jaws**. Clamping the material with selected jaws is done by pressing and holding the button; clamping complexion is indicated by a green circle.
F8		**Releasing the vice jaws**. Releasing the material is done by pressing and holding the button; max. opening of the vice is indicated by a green circle.
F14	**Service of the vices** – setting auxiliary times and some positions of the vices. See chapter **Descriptions of service screens**.	
	Selection of vice control - manually / automatically. If automatic control is selected, the saw will select e.g. 1 vertical vice and 2 horizontal vices for cutting in bundles.	

3.7.5. *Machine parameters* menu



The menu parameters are distinguished according to the machine mode:

- Machine in automatic mode – parameter marking
- Machine in manual mode – parameter marking

Selections of jaws control (F3, F4):

- Horizontal jaws (pictured)
- Vertical jaws
- Vice program – jaws moving according to a program selected

Advance of the feeder and saw arm to a required position:

If the machine is referenced and switched to manual mode, the feeder or saw arm positions may be user-set. The setting is performed by entering the required position and running to symbol.

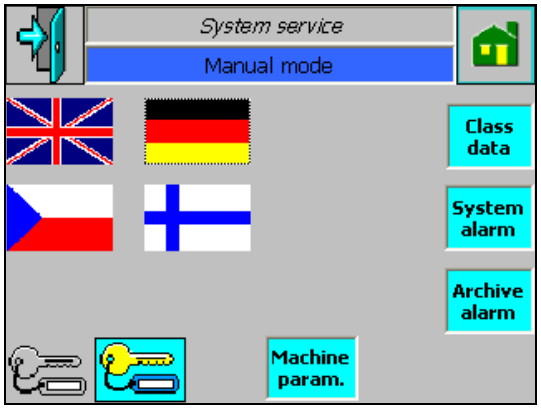
Table of contextual keys – Machine parameters menu:

Key	Function and its description	
F3	Controlling the **feeder vice**	**Selecting vice jaws** which will be moved with. Change is made by repeated pressing F3 and indicated by a changing pictogram.
F5		**Clamping the vice jaws**. Clamping the material with selected jaws is done by pressing and holding the button; (F3, or a drop-down menu below the vice graphics); clamping complexion is indicated by a green circle.
F7		**Releasing the vice jaws.** Releasing the material is done by pressing and holding the button; max. opening of the vice is indicated by a green circle (see Figure).
F10	Controlling the **feeder moving**	Button for **feeder moving – backward** In manual mode, the button allows feeder moving in selected speed.
F11		Button for **feeder moving – forward** In manual mode, the button allows feeder moving in selected speed.
F4	Controlling the **fixed saw vice**	**Selecting vice jaws** which will be moved with. Change is made by repeated pressing F4 and indicated by a changing pictogram.
F6		**Clamping the vice jaws**. Clamping the material with selected jaws is done by pressing and holding the button; clamping complexion is indicated by a green circle.
F8		**Releasing the vice jaws.** Releasing the material is done by pressing and holding the button; max. opening of the vice is indicated by a green circle.
F12	Controlling the **saw arm moving**	Button for **saw arm moving – downward** In manual mode, the button allows saw arm moving in set speed.
F13		Button for **saw arm moving – upward** In manual mode, the button allows saw arm moving.
F9	**Saw service** – detailed setting of the saw parameters. See chapter **Descriptions of service screens**.	
F14	**Starting the saw band drive** In manual mode, the F14 button will start the saw band drive.	

3.8. Descriptions of service menus

Warning!
Values in these menus are set by the manufacturer with respect to the best and most efficient functioning of the machine possible. Incompetent changes may cause incorrect functioning of the saw and its peripheries.

3.8.1. Basic service menu – „System service“



This menu is accessible via the F2 contextual key from the "Main menu", see chapter "Main menu".

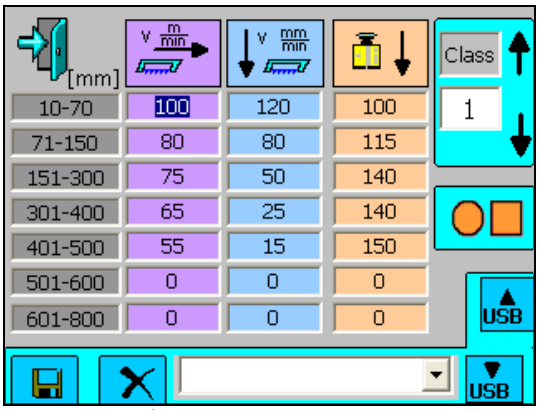
Table of contextual keys – "Servis systému" (*System service*) menu:

Key	Function and its description
F3	System language selection
F5	System language selection
F4	**Data tříd (*Classes data*) menu –** table of cutting parameters for 10 classes, from dimensional parameters and shapes (sectional, solid)
F6	**Systém Alarm menu** – table of system error messages
F8	**Archiv alarm** – archived error messages on MMC card

3.8.2. Classes data menu

This menu includes libraries of cutting parameters (band speed, speed to depth, pressure to depth) for individual dimensions and shapes. Upon values from these libraries cutting parameters are selected during processing orders (see chapter Order entering –Order menu).

Basic libraries are preset by the manufacturer. A library consists of 20 classes for a sectional material and 20 classes for a solid material. One half of each group is intended for a bimetal band, the other half for a hard-metal band. Eight classes for each band and material are occupied by data preset by the manufacturer, last 2 classes are free for specific user-setting of the saw.



The cutting parameters are set for a material width interval (in millimetres).

If these parameters are entered in the settings, they are further multiplied by coefficients (e.g. softness to depth).

The system enables fine adjustments of the cutting parameters according to materials used by the machine user and their consequent saving to memory.

The classes are saved to the control system memory. To the operator panel memory the classes are saved individually, not as a complex. They are open in the same way to a number of currently displayed class. Complete records of classes saved in the operator panel memory may be exported from/imported to USB.

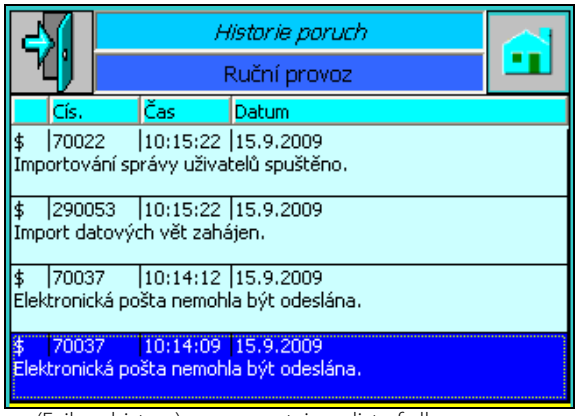
Table of contextual keys::

Key	Function and its description
F2	**Changing the class - upward** The class change is made by repeated pressing the F2 key.
F4	**Changing the class - downward** The class change is made by repeated pressing the F4 key.
F6	**Changing the material shape** Selection of the material shape – solid / sectional

Key	Function and its description
F9	**Saving the class** Pressing F9 saves the class under the name entered to the drop-down list on the right.
F10	**Deleting the class** The class selected in the drop-down list is deleted.

3.8.3. System alarm and Archiv alarm

The System alarm menu contains a list of system error messages.

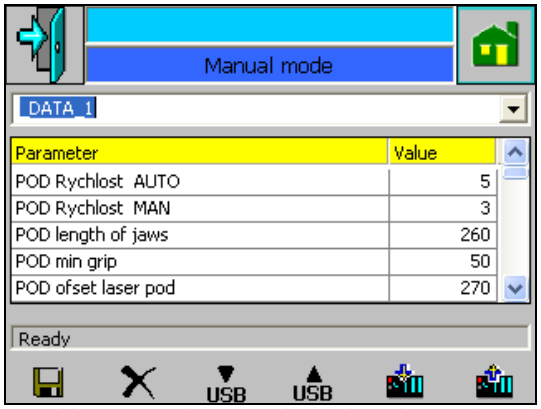


The Archiv alarm (Failure history) menu contains a list of all error messages occurred.

Each error message has its own identification number; date, time and the error message itself are recorded.

System alarm and Archiv alarm are intended especially for diagnostic and service purposes.

3.8.4. Machine parameters



In this menu, settings libraries may be created, saved (to the machine memory as well as to USB) and deleted.

The table contains all machine parameters that are set in individual menus of the machine control.

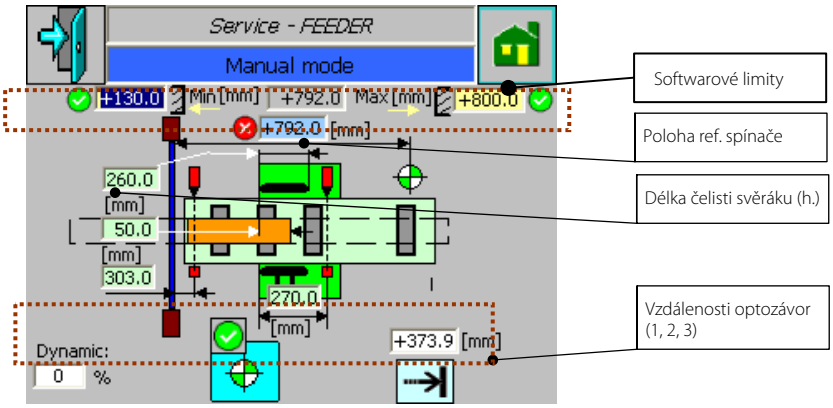
The parameters table may be backed-up as a formulation in the operator panel or loaded to a USB disc in CSV format. This enables to set the whole machine immediately (F13 button). Other sets of service parameters may be created and titled with own names. Thus the machine may be immediately set according to a required set of parameters.

Table of contextual keys:

Key	Function and its description
F9	**Saving the setting** – saving a set of service parameters to the operator panel

Key	Function and its description
F10	**Deleting the setting** – deleting a selected library
F11	**Saving the setting to USB** Saving service parameters to USB (backing-up)
F12	**Loading the settings to USB** Saving a settings library to the operator panel under an entered name
F13	**Recording** a selected set of parameters to **the control system**
F14	Reading service parameters from the control system. The parameters may be then saved to the operator panel under different names.

3.8.5. Saw feeder service menu



- **Software limits** – if the machine is correctly referenced, then these values mean min. and max. positions which the feeder can reach. The feeder will always stop at these limits.
- **Reference detector position** – indicates the length which the feeder travels before it is registered by the reference detector. It is a distance from the saw band up to the reference point (the detector position).
- **Jaw length** – the length of feeder vice horizontal jaws.
- **Minimum clamping length of material** – in the above picture the min. length of the material, which the feeder vice may clamp, is set to 50 mm. When cutting the material is being finished, the feeder clamps the material end in such a way so that it is clamped in the set length.
- **Distance of optical latches from certain points of the feeder** – the following two distances are important:
  1. Distance of the latch from the saw band (fixed detector)
  2. Distance of the feeder latch from the front edge of the feeder vice (the detector moves together with the feeder)

Table of contextual keys –*FEEDER Service* menu:

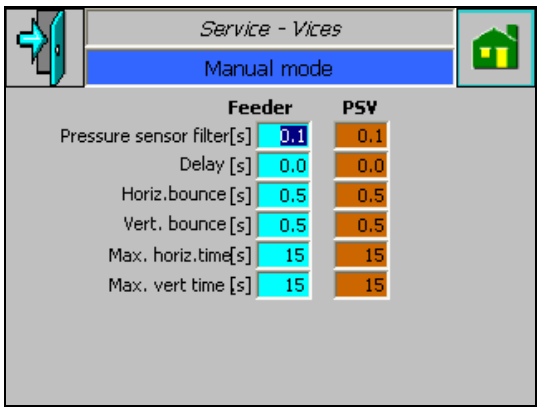
Key	Function and its description
F11	**Referencing the feeder** Only the feeder may be referenced by pressing the button.
F13	**Selecting running the feeder to a position** In manual mode this allows to set a distance to which the feeder shall move. After pressing the F13 button the feeder will move to this position.

3.8.6. Vices service menu

Vices parameters are divided to two columns:

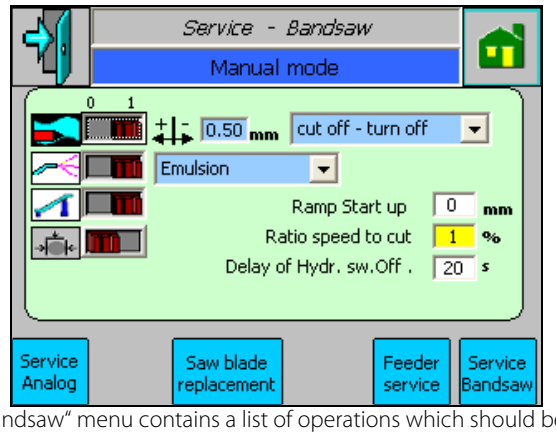
- for feeder vice (FEEDER)
- for saw vice (PSV)

P Fields of values for a certain vice are of the same colour. The following table contains a description of possible service parameters of the machine vices. If not stated otherwise, the parameters may be entered for each vice.



Parameter	Description
Pressure gauge filter [s]	In seconds When the material is clamped by the vice, the pressure gauge must be triggered for this set time. Only then further steps may follow.
Delay [s]	In seconds; if gradual clamping of jaws is selected, this period will determine the time in which the second jaw starts clamping. At zero value, the second jaw starts clamping after the first one is clamped. If the delay value is entered, the second jaw does not wait for the first one to finish its clamping, but starts clamping the material after this period has passed. The delay parameter may accelerate clamping.
Horizontal offset [s]	In seconds Indicates the material releasing time. The system does not wait for complete release of the vice, but the material is considered to be released in the time specified by these parameters.
Vertical offset [s]	
Max. time horizontal [s]	In seconds Guard time If opening of particular vice jaws (to the max. or required distance) takes longer than specified by these two parameters, a failure is announced.
Max. time vertical [s]	

3.8.7. Saw service setting –*Service Bandsaw* menu



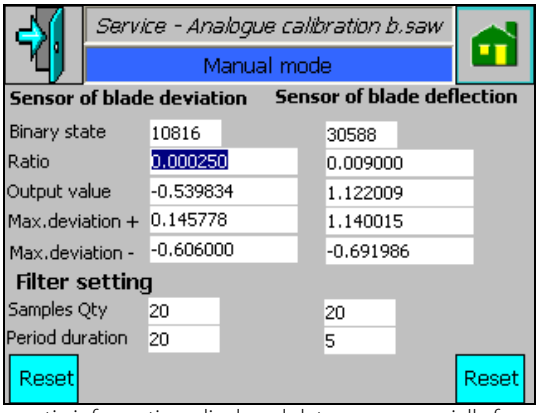
The "Service Bandsaw" menu contains a list of operations which should be included in the machine operating cycle. Individual operations may be turned on/off, and for turned-on operations basic parameters may be specified.

Parameter	Description
Band deflection	The switch turns on/off the usage of saw band deflection control. A field for the maximum deflection value. A drop-down list for selecting an activity to be performed if the deflection is bigger than the specified maximum deflection.
Band lubrication	The switch turns on/off band lubrication during cutting. A required method of band lubrication may be selected from a drop-down list (according to selected accessories): 1. Without lubrication 2. Micronization 3. With an emulsion
Chip remover	The switch turns on/off the chip remover.
Hold with vice	The material will be held by the POD vice during cutting.
Loading ramp + Coefficient of speed to depth	Due to the reduction of the saw band wear the **Loading ramp** and **Coefficient of speed to depth** parameters are set. When the band touches the material, it runs along a travel specified by the *Loading ramp* parameter with speed multiplied by the *Coefficient of speed to depth* parameter. If the *Loading ramp* is zero-value, the saw runs to the material without speed correction, or the running is performed as set in orders.

Table of contextual keys – Service – bandsaw setting

Key	Function and its description
F9	Entry to **Servis Analog** menu (see chapter **Service – analog inputs calibration**)
F11	Entry to **Band replacement** menu (see chapter **Service – Band replacement)**

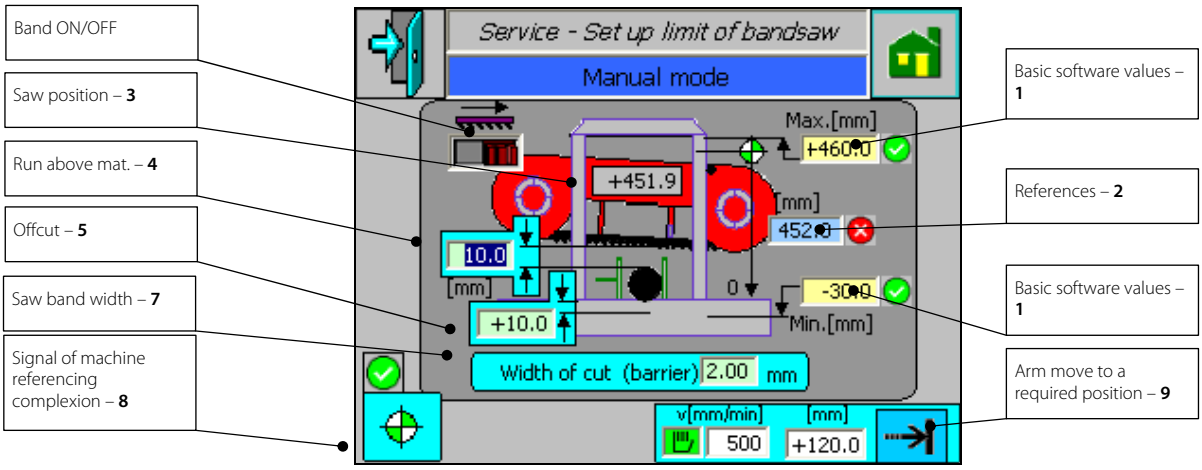
3.8.8. Service – analog inputs calibration

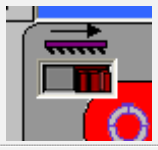


Screen with diagnostic information, displayed data serve especially for expert service of the machine.

The displayed values are constantly updated from detectors and most values may not be set or changed by any means. Only the coefficient and parameters of filters may be set.

3.8.9. Service – Saw limits setting menu

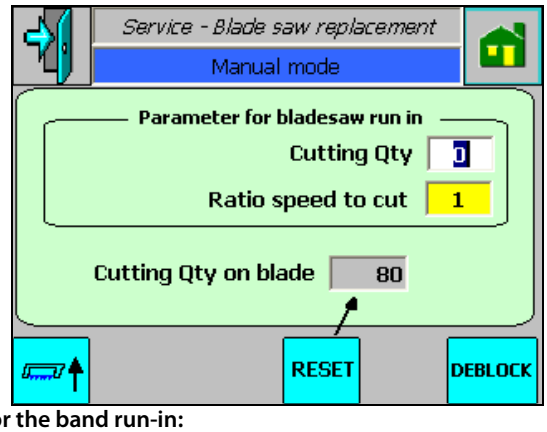


Parameter	Description
1 **Basic software values of positions**	• In millimetres • Max. and min. positions of the arm • If the machine is correctly referenced, these values are never exceeded.
2 **References**	• In millimetres • Reference point position • Distance of the saw band bottom part from the table board (measured at the fixed jaw of the saw vice).
3 **Saw position**	• Directory current position of the saw arm
4 **Run above material**	• In millimetres • Value showing how high the saw band runs above the material in fast-feed.
5 **Offcut**	• In millimetres • It is desirable for this value to be as high as possible. • The value is limited by "Basic software values" setting. • The offcut value is guarded by a detector and depends also on the clamped material width. • **Attention!** The value must be negative.
6 	• If the change-over switch is on the left, the band will start neither in automatic nor semiautomatic modes. • The function serves for testing the pressure regulation. • For **normal operation** the switch must be **turned-on** – position **right**
7 **Saw band width**	• Saw band width for calculations in automatic mode. • Affects accuracy. • The entered value must be checked at band replacement!
8 **Signal of machine referencing complexion**	• Signalisation whether the machine is referenced.
9 **Arm moving**	• If the machine is referenced, it will set cutting speed for manual mode and will move the saw arm to the value entered.

3.8.10. Service – Band replacement, DEBLOCK

The service menu for the band replacement is the only point in the control system where the "Number of cuts per band" statistic value may be deleted". This value is displayed also in the "Main menu" screen.

This value is an important parameter for the band saw service because the saw band condition directly affects cutting properties and quality of cuts.



Parameters for the band run-in:

More information on the band run-in may be obtained from your saw bands supplier or in chapter 2, subchapter **Saw band and its replacement**.

Number of cuts – indicates how many cuts shall be performed within new saw band run-in. If the value is zero, the band run-in is not performed.

Coefficient of speed to depth – indicates by which coefficient the currently selected band speed shall be multiplied. In the above picture, the coefficient is 0.5 which means that within the entered number of cuts during run-in the band will move with half speed entered.

Table of contextual keys – Service, band replacement:

Key	Function and its description
F9	**Arm moving upward**
F12	**RESET** – resetting the number of cuts per band. This options is strongly recommended to be performed always and only after the saw band replacement.
F14	**DEBLOCK mode** A special mode of the saw in which service operations are possible to be performed on the machine even if the machine is turned on. More information follows.

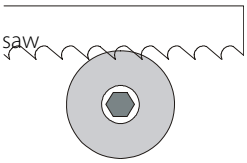
Deblock:

- By pressing the **F14** key the **deblock mode** is activated, which is indicated by a bold report on LCD and a flashing icon above the F14 key.
- In this mode **neither the saw nor its peripheries may be used** by any means! Only the arm may be moved upward.
- Only in the deblock mode the functional control elements for loosening / tightening the band are located on the saw arm (at the right drive-wheel).
- The deblock mode is finished by repressing the F14 key.

3.9. Brush setting

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

1. Release the tightening bolt of the brush so the brush can be moved
2. Set the brush to the saw band. Ends of the brush bristles should not touch the saw band teeth.
3. Tighten the bolt.



3.10. Material insertion

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

3.10.1. Handling agent selection

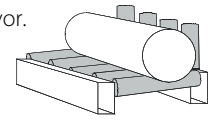
- Use the strong handling agents to lift and transfer the material!
- Handle with the material only with the lift truck or use the suspension strands and the crane!
- Do not use the lift truck or crane in case that you do not have the license to handle with it!

3.10.2. Insertion

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

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

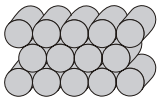
Be especially careful with round materials that it always stays on two vertical rollers and that it cannot fall off the conveyor!



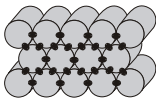
3.10.3. Bundle material cutting

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

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

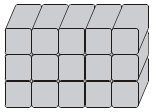


Always weld the material at the rear end of the bundle to secure it from moving.



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

Square material bundle:



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

4. Machine maintenance

4.1. Check and maintenance

For the smooth and safe operating the machine must be checked and if necessary repair the different parts of the machine.

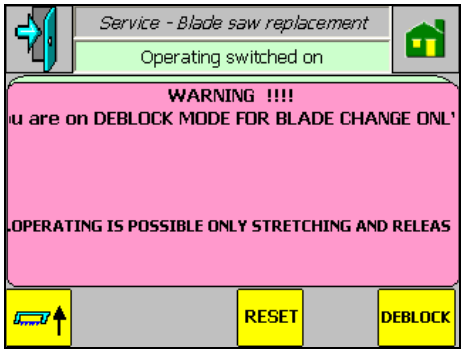
Attention:
I tis necessary that the maintenance of the machines to ensure all conditions under the chapter Safety instructions for maintenance and repairs.

- Regularly check the tension of the saw blade
- Regularly check your settings, running a band saw
- Check regularly pump function
- quality cut material ensures that the correct coolant level
- Regularly lubricate important machine parts, see chapter Lubrication.
- Before beginning work on a machine to check and maintain proper levels of hydraulic oil
- Check the condition of hydraulic hoses. Service life of hydraulic hose is influenced by many factors including: the environment in which they are used, how big is the pressure of hydraulic oil, if the operation bends, etc. It is recommended to check the status of hydraulic hose, and after six years replace old hose with new
- Ensure correct functionality of the laser gates. Do not let their proximity to accumulate dirt, chips, after sawing, etc.
- **after the end of each shift, clean machine, pay particular attention to**:
  - cleaning of coolant
  - cleansing of impurities captured on the machine

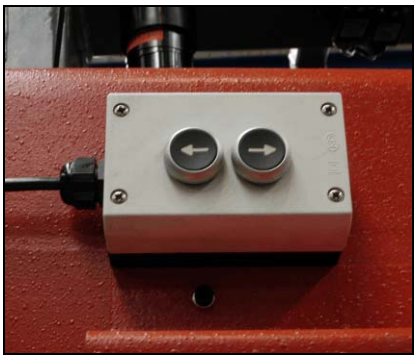
4.2. Saw band dismantling and installation

4.2.1. Saw band dismantling

1. Turn key switch into position "0"
2. Switch saw into DEBLOCK mode – Main memu ⇨ Saw [F13] ⇨ Service [F9] ⇨ v In service munu choose „Saw band replacement“ [F13] ⇨ then choose Deblock [F14].



3. On LCD is displayed message „DEBLOCK is active“. In this mode is possible to open safety covers and control element for saw band tension is active (control element is palced on left side of saw arm).
4. Remove sensor for displacement of saw band.



5. Loose saw band blade with buttons.
6. Remove the saw band on both guide wheels.
7. Po stáhnutí pásu z kol vytáhněte opatrně pilový pás z vodících kostek, tak že roztáhněte tvrdokovy – otáčením imbusovým klíčem M8 doprava se pás povolí. Po stáhnutí pásu z oběžných kol vytáhněte opatrně pilový pás z vodících kostek

4.2.2. Saw band installation

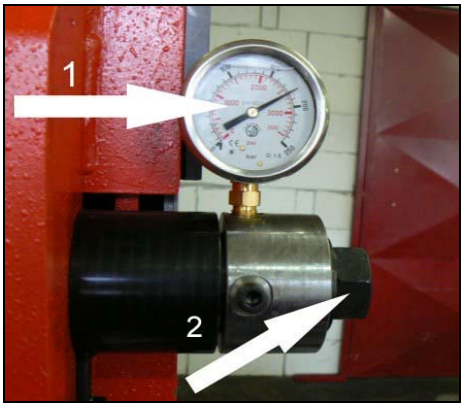
1. Prior to installation, clean all track wheels, guide cubes and inner side of the arm thoroughly of all traces of chips and dirt. *Keep in mind the teeth direction when installing the saw band.*
2. Insert new saw band in the guide cubes. Make sure the saw band runs between both guide rollers and it is pushed all the way to the top.
3. Put the saw band on both guide wheels. Make sure that the saw band ridge fits tightly to the wheel rim. Then push the saw band as far back as possible.
4. Stretch the saw band by means of the screw, that the band did not falls from wheels.
5. Install yellow protective cover of the band.
6. Move the brush to the saw band. Tighten the securing screw.
7. Close the covers of both driving wheels.
8. Saw band installation is finished.

4.3. Saw band stretching and inspection

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

4.3.1. Saw band stretching

- Switch on the hydraulic aggregate after the saw band installation check the saw band stretching on the manometer (arrow 1).



- Use the screw (arrow 2) to stretch the saw band until it is stretched to the recommended value.

4.3.2. Saw band inspection

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

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

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

5. Close cover of the saw band.

4.3.3. Saw band run setting

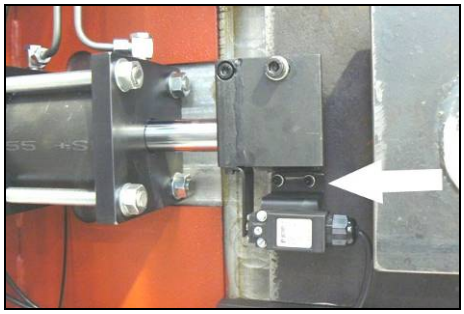
Saw band run is set with screw (arrow) in the stretching cube on the saw arm. Right distance rear part of the saw band from wheel rim is **1 – 3 mm**.

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

Check saw band run adjustment again.

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

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



- Tighten the saw band by means of the TENZOMAT on the optimal value (table is on the Tenzomat).
- If the drive engine is switched on, but it is not running, turn with the screw clockwise, until the engine begins run.
- If the drive engine is possible switched on, turn with the screw anticlockwise, until the engine is stopped and then turn with the screw clockwise, until the engine begins run.

4.4. Cooling agents and chips disposal

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

4.4.1. Coolant device inspection

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

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

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

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

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

* According to manufacturers' instructions

4.4.2. Chips disposal

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

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

4.5. Hydraulic, Greases and oils

4.5.1. Gearbox oils

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

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

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

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

Band saw	Gearbox oil	Capacity
Performance 460	Shell Tivela S 320	3,3 l
Swarf conveyor	Shell Tivela S 320	0,075 l

Comparative table of the gearbox oils

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

4.5.2. Lubricant greases

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

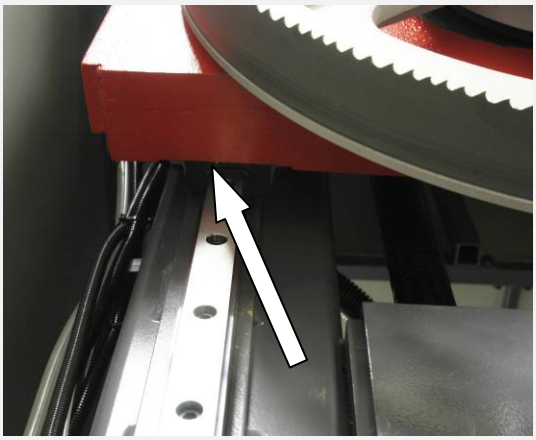
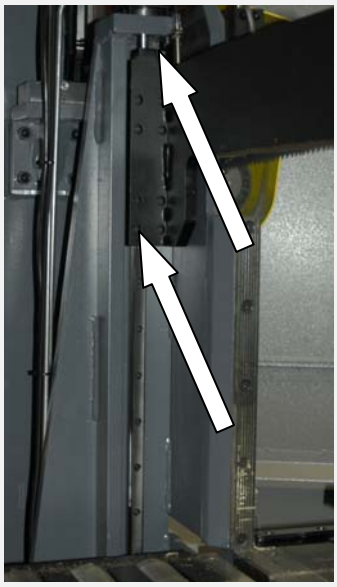
Comparative table of the lubricant greases:

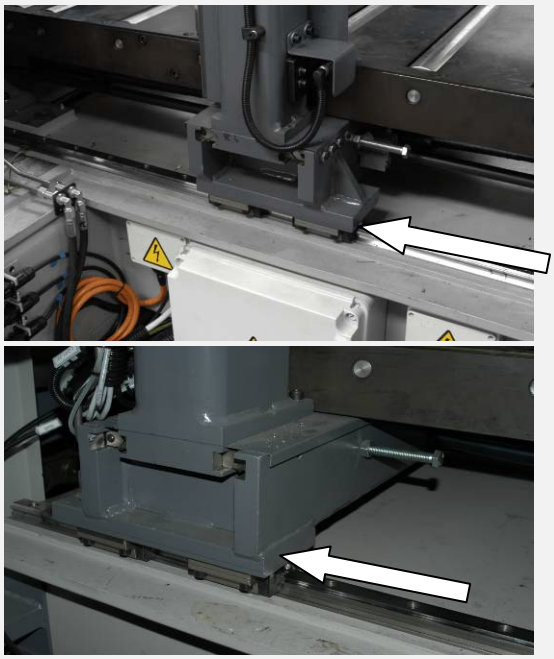
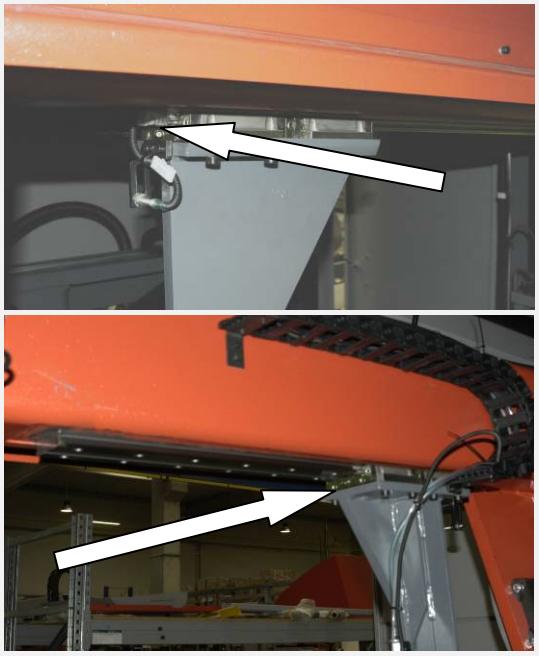
Manufacturer	Type of the lubricant grease
BP	Energrease LS - EP
DEA	Paragon EP1
Esso	FETT EGL 3144
	Beacon EP 1
	Beacon EP 2
FINA	FINA LICAL M12
Klüber	Microlube GB0
	Staburags NBU8EP
	Isoflex Spezial
Optimol	Optimol Longtime PD 0, PD1, PD2

Manufacturer	Type of the lubricant grease
Shell Aseol AG	ASEOL Litea EP 806-077
Texaco	Multifak EP1

4.5.3. Lubrication

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

Lubrication place	Lubrication
Saw arm lifting	lubricate with grease once a three months (see chapter Lubricant greases). Use 1–3g grease on the every carriage of the linear guiding. Use the grease gun to the lubrication. Drive 3–5 times whole line of the linear guiding during lubrication.
Linear guiding of saw arm 	lubricate with grease once a three months (see chapter Lubricant greases). Use 1–3g grease on the every carriage of the linear guiding. Use the grease gun to the lubrication. Drive 3–5 times whole line of the linear guiding during lubrication.
Vertical linear guiding of main vice 	lubricate with grease once a three months (see chapter Lubricant greases). Use 1–3g grease on the every carriage of the linear guiding. Use the grease gun to the lubrication. Drive 3–5 times whole line of the linear guiding during lubrication.

Horizontal guiding of feeding vice 	1× per month grease
Taxiway horizontal linear guide feed vice 	lubricate with grease once a three months (see chapter Lubricant greases). Use 1–3g grease on the every carriage of the linear guiding. Use the grease gun to the lubrication. Drive 3–5 times whole line of the linear guiding during lubrication.
Linear guiding for guiding cubes 	lubricate with grease once a three months (see chapter Lubricant greases). Use 1–3g grease on the every carriage of the linear guiding. Use the grease gun to the lubrication. Drive 3–5 times whole line of the linear guiding during lubrication.

4.5.4. Hydraulic oils

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

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

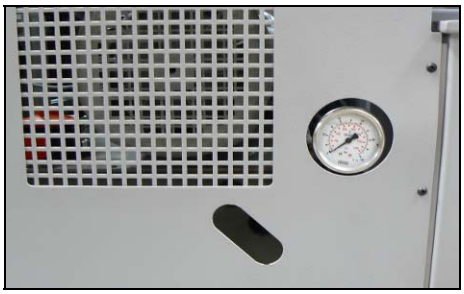
Note:
When replacing, use oils recommended by BOMAR or oils, which has comparable parameters from the other manufacturers. Do not forget, that mineral and synthetic oils may not be mixed!

Comparative table of the hydraulic oils

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

4.5.5. Hydraulic oil level check

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



Saw Performance 460 has hydraulic agregat placed in rear of saw stand.

The hydraulic system is necessary to regularly check the oil. If you need - oil level in the measure is outside the desired interval - add hydraulic oil.

Při doplňování oleje vždy **používejte filtr** (10 µm nebo lepším). Zabráníte tím vniknutí nečistot do hydraulického systému a jeho poruchám.

Hydraulic equipment

saw hydraulic unit (bottom cover is removed)

detail aggregates to gauge the level of hydro. oils

4.6. Machine cleaning

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

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

5. Troubleshooting

5.1. Mechanical problems

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

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

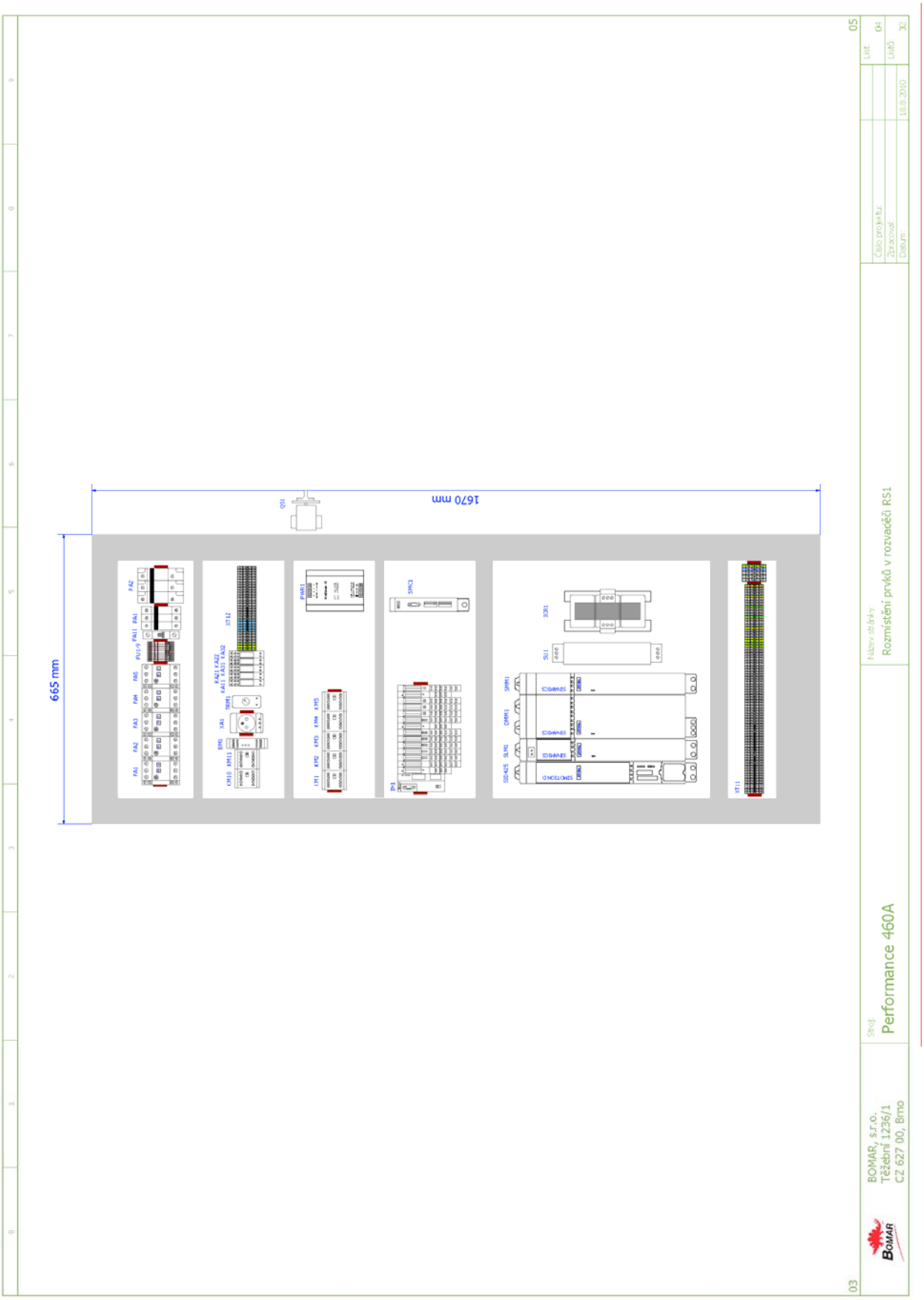
Problem	Possible causes	Repair
	- The brush position and the brush cover is adjusted wrong – with the brush cannot be turned.	The brush cover must be posed, in order to the brush can be turned.
12. The saw arm periodically rise and fall during the cut; this cause short lifetime of the saw band.	- Backslash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

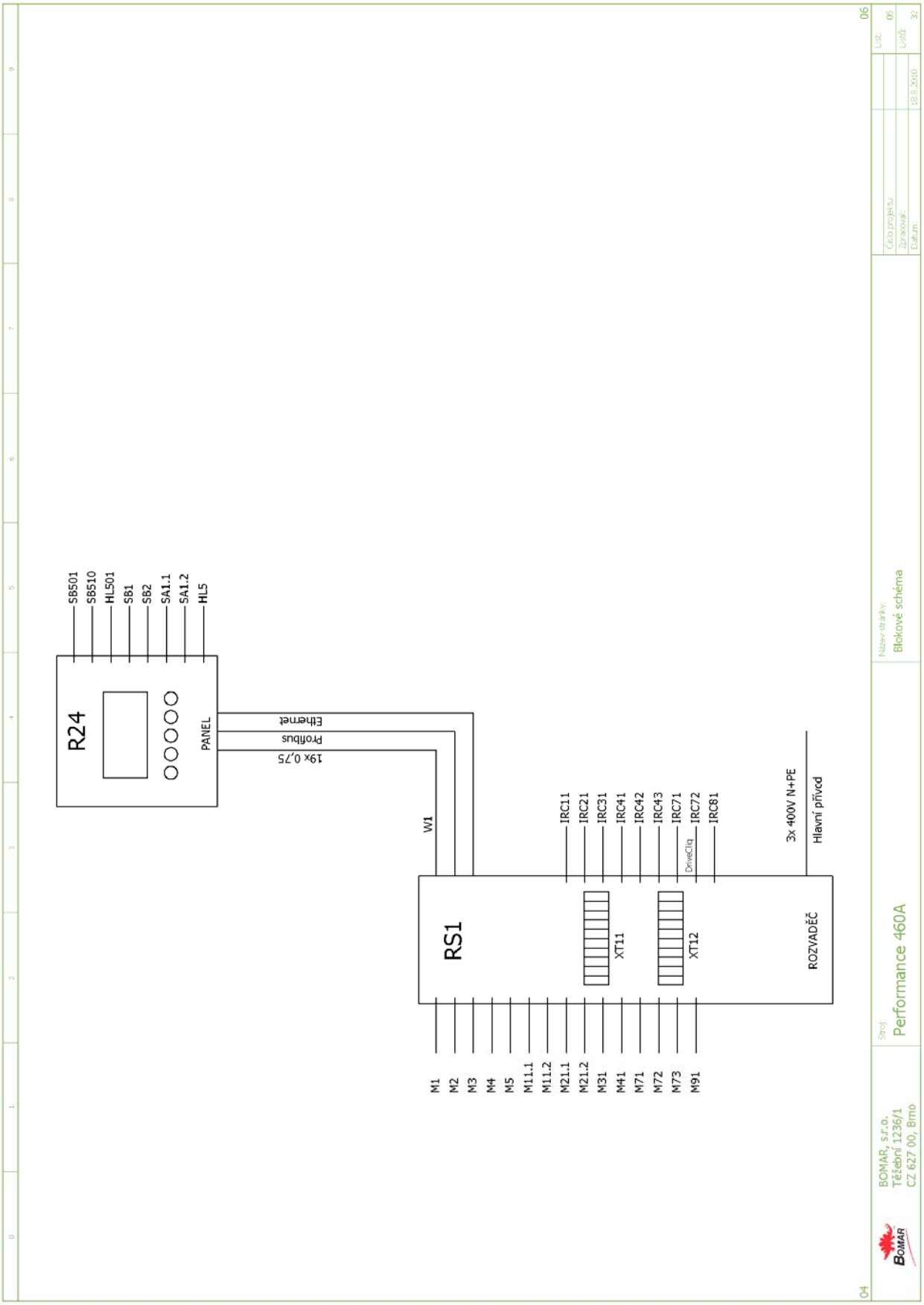
5.2. Electric and hydraulic problems

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

6. Schémata / Schemas / Schematics

6.1. Elektrické schema / Elektroschema / Wiring diagrams




R24
PANEL
SB501
SB510
HL501
SB1
SB2
SA1.1
SA1.2
HL5
Ethernet
Profibus
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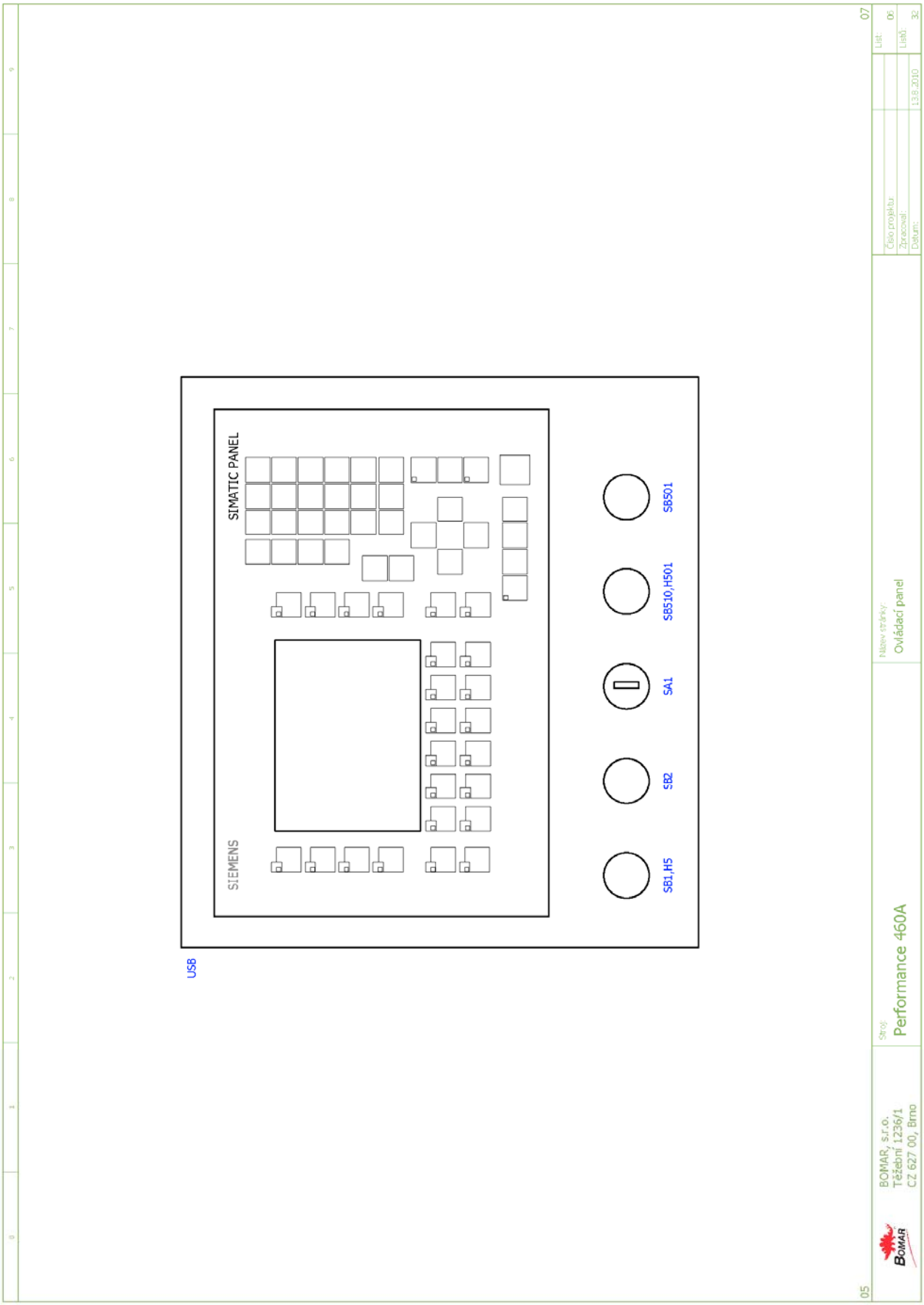
W1
RS1
ROZVADĚČ
XT11
XT12
IRC11
IRC21
IRC31
IRC41
IRC42
IRC43
IRC71
IRC72
IRC81
DriveCliq
3x 400V N+PE
Hlavní přívod
M1
M2
M3
M4
M5
M11.1
M11.2
M21.1
M21.2
M31
M41
M71
M72
M73
M91
BOMAR, s.r.o.
Těžební 1236/1
CZ 627 00, Brno
Stroj:
Performance 460A
Název stránky:
Blokové schéma
Číslo projektu:
Zpracoval:
Datum:
18.8.2010
List:
06
Listů:
32
06
04


SIMATIC PANEL
SIEMENS
SB1,H5
SB2
SA1
SB510,H501
SB501
USB
07
05
List: 06
Listů: 32
Číslo projektu:
Zpracoval:
Datum: 13.8.2010
Název stránky:
Ovládací panel
Stroj:
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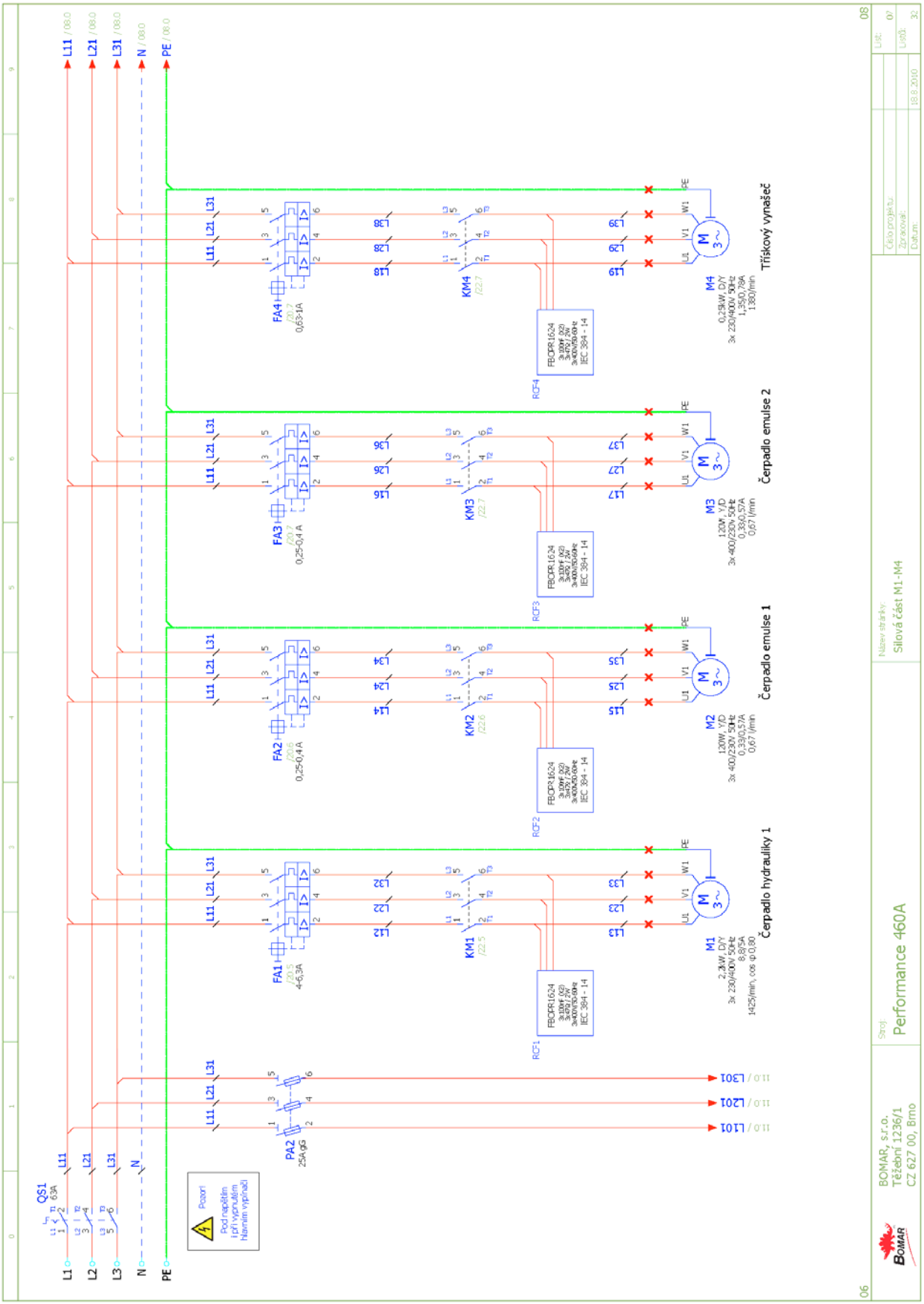
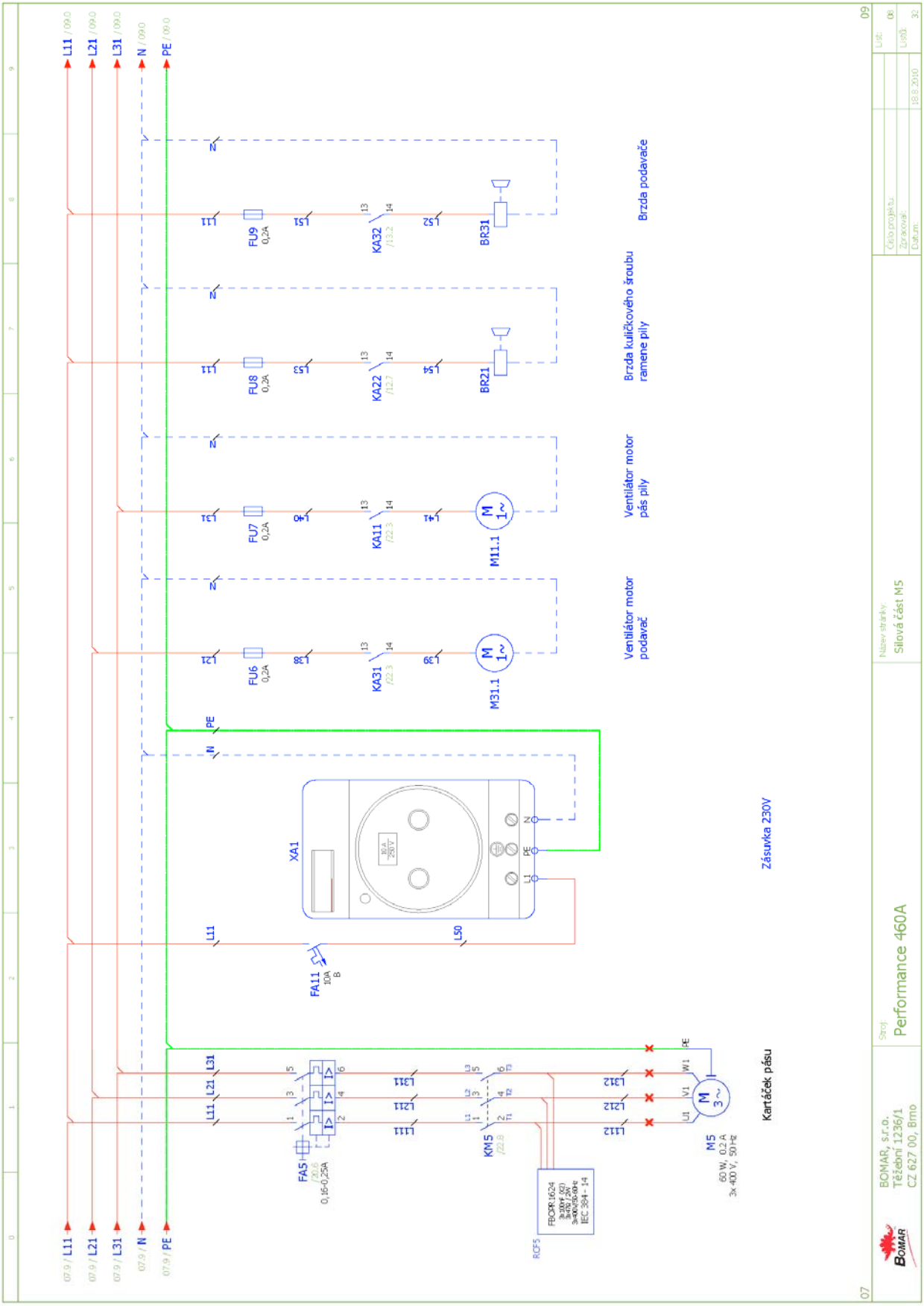
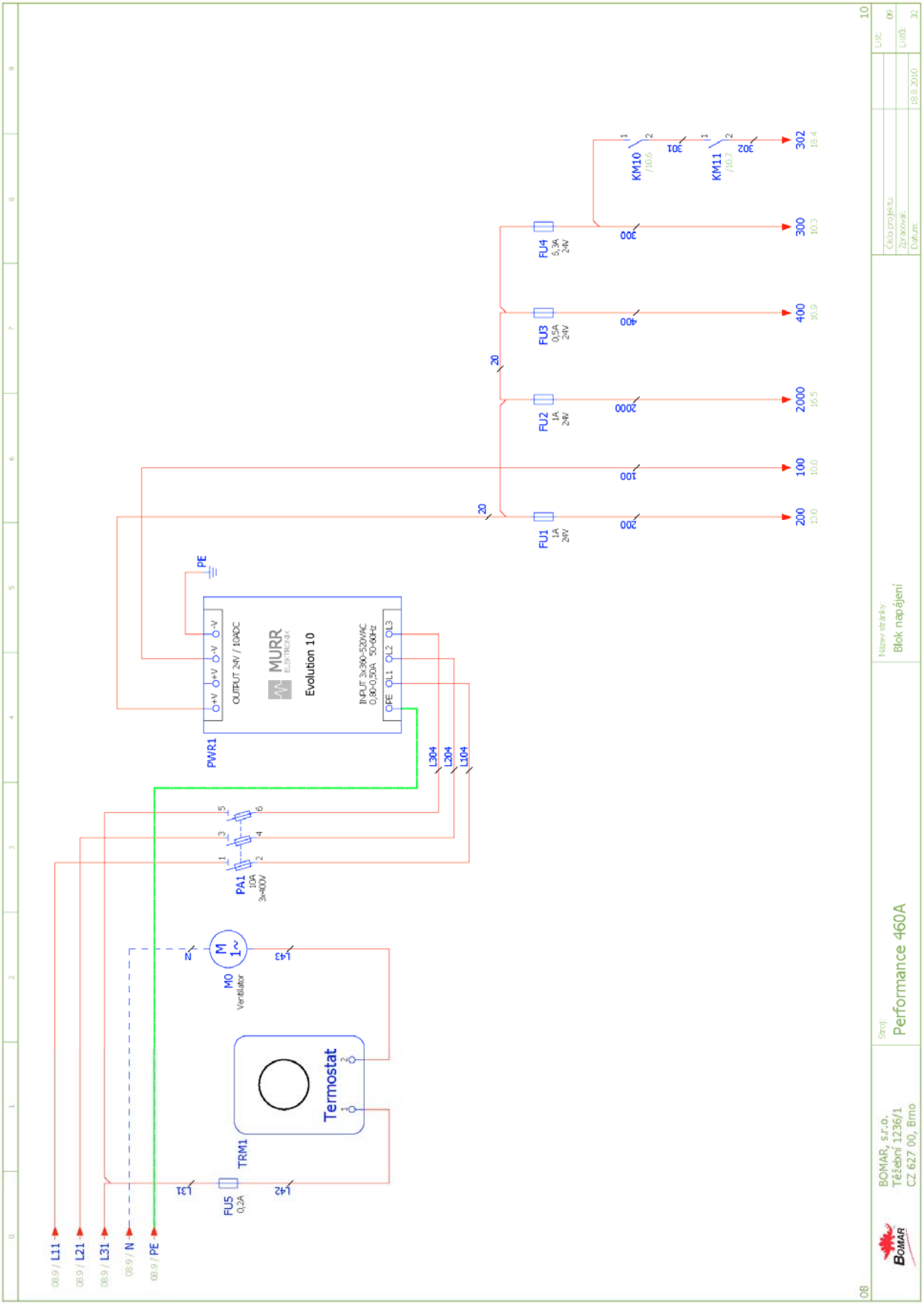
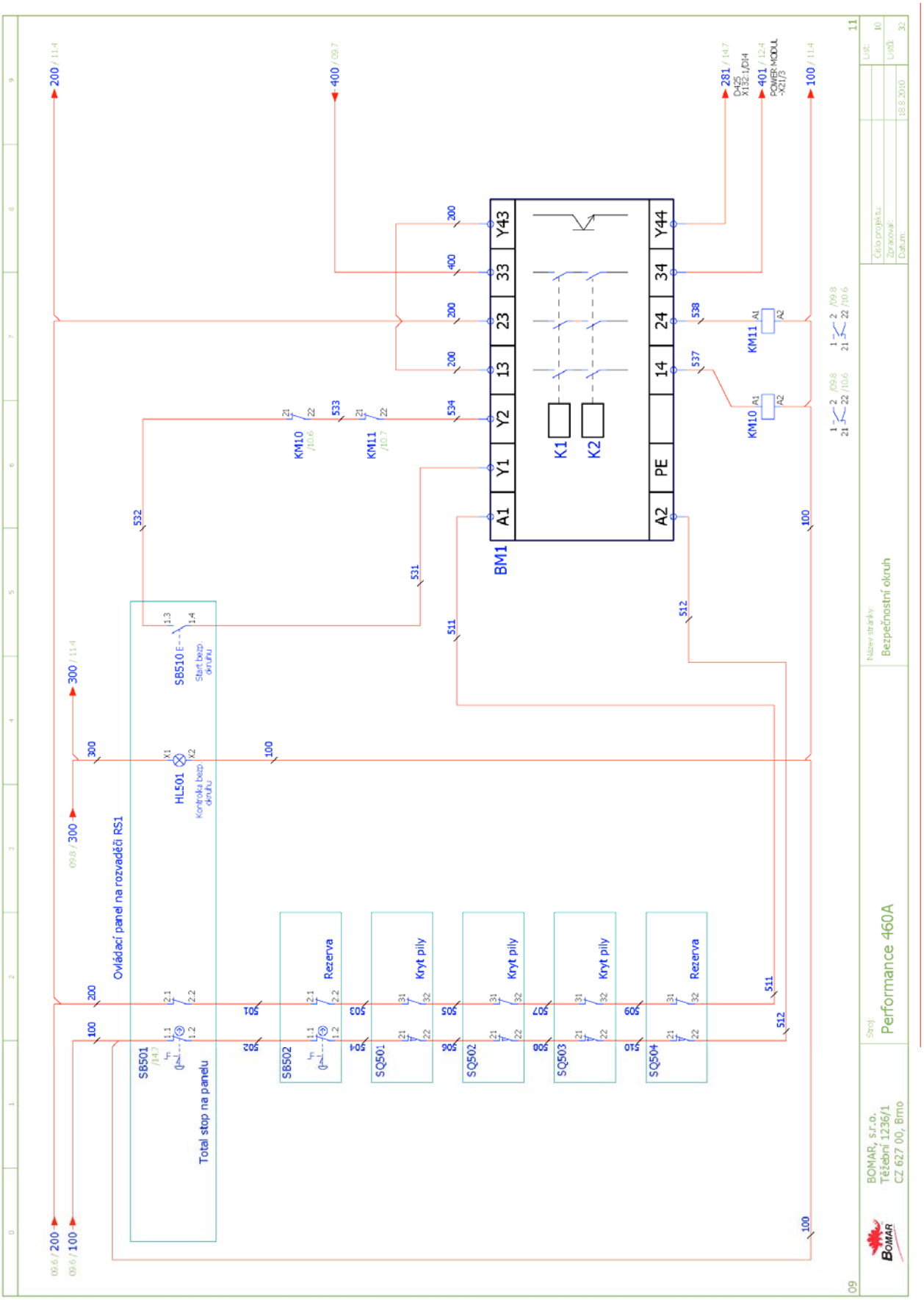
BOMAR, s.r.o.
Těžební 1236/1
CZ 627 00, Brno

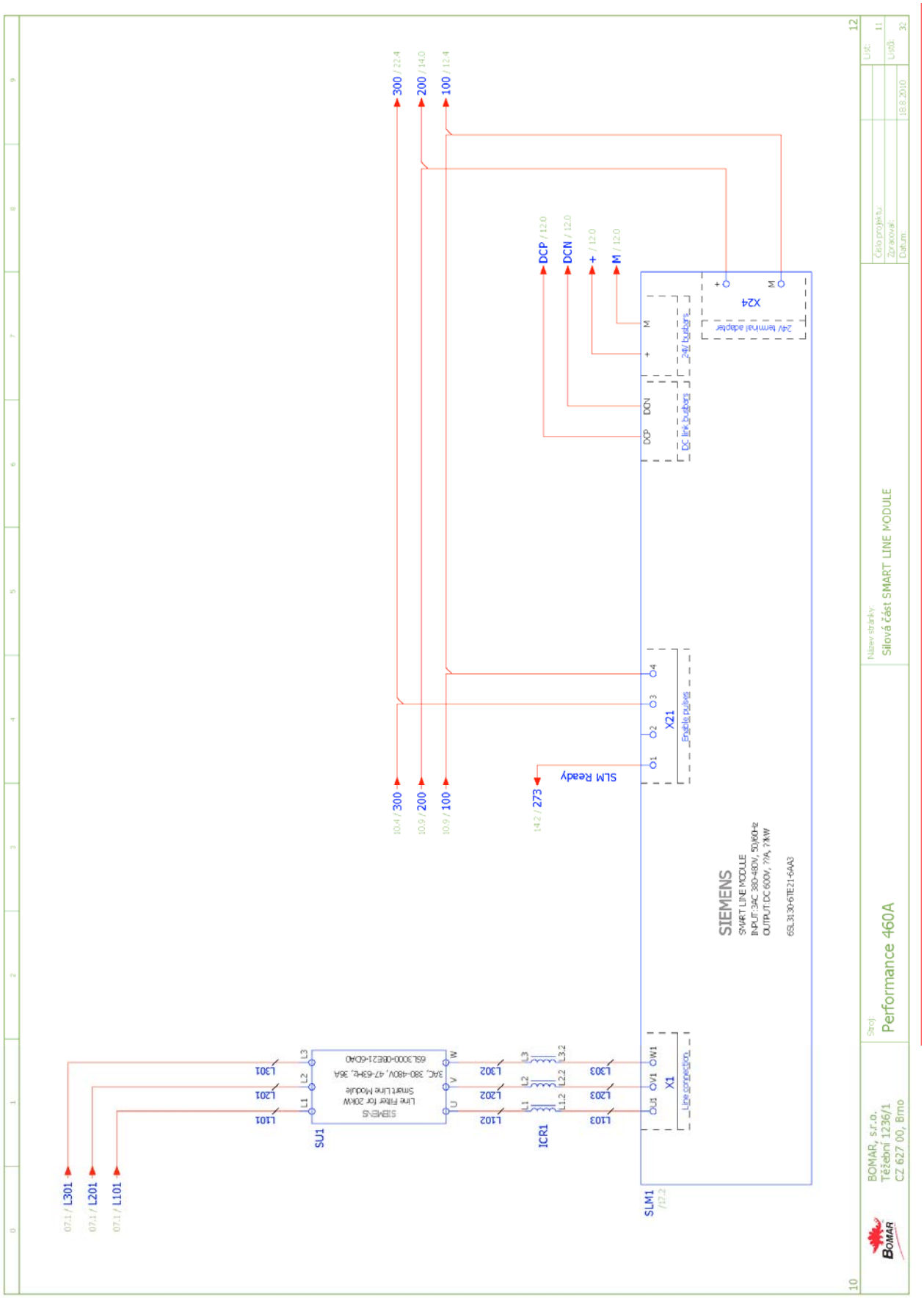

Třískový vynašeč
Čerpadlo emulse 2
Čerpadlo emulse 1
Čerpadlo hydrauliky 1
Pozor!
Pod napětím i při vypnutém hlavním vypínači
Stroj:
Performance 460A
Název stránky:
Silová část M1-M4
BOMAR, s.r.o.
Třešňová 1236/1
CZ 627 00, Brno

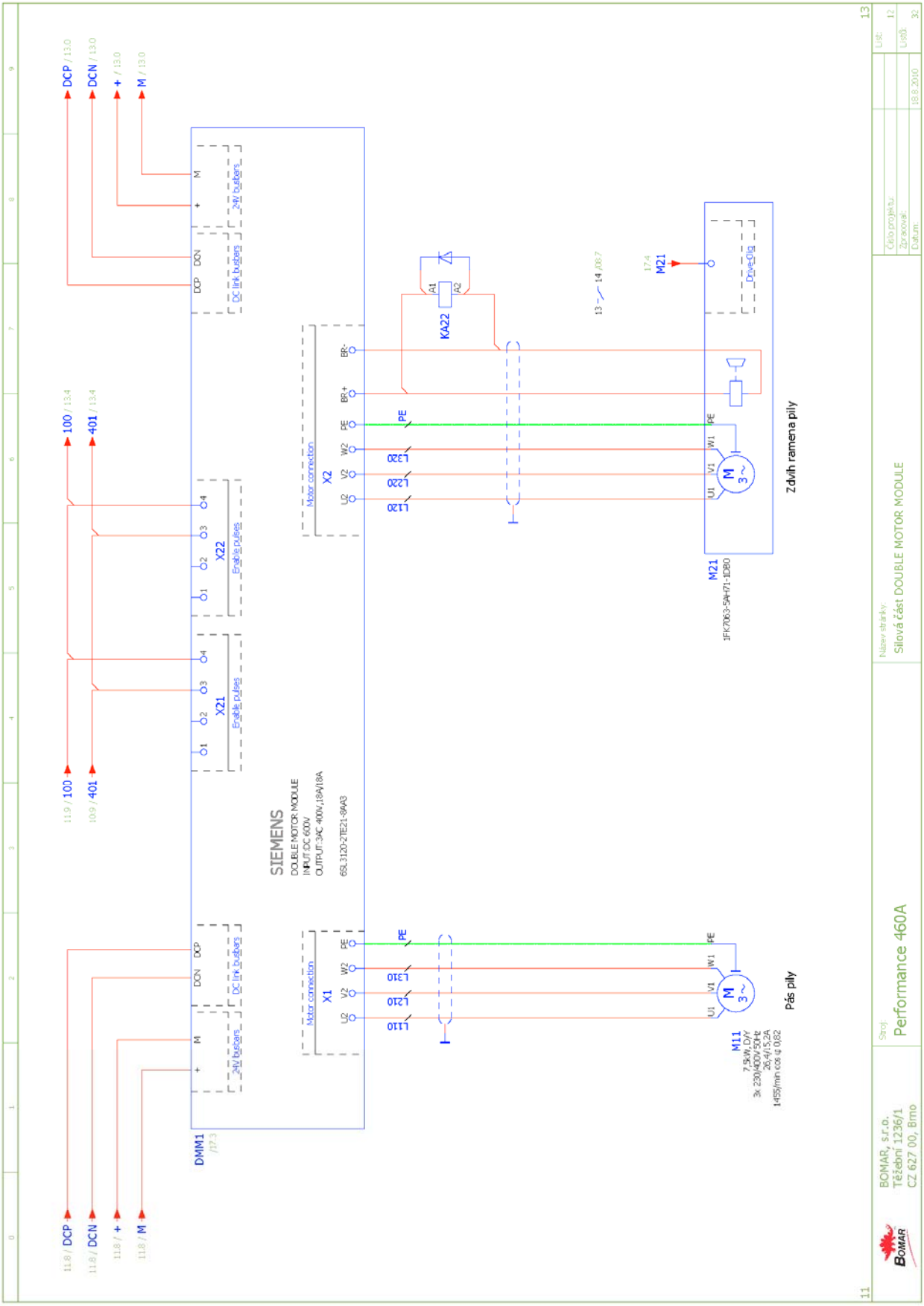

L11 / 09.0
L21 / 09.0
L31 / 09.0
N / 09.0
PE / 09.0
FU9 0,2A
KA32 /13.2
BR31
Brzda podavače
FU8 0,2A
KA22 /12.7
BR21
Brzda kuličkového šroubu ramene pily
FU7 0,2A
KA11 /22.3
M11.1
Ventilátor motor pás pily
FU6 0,2A
KA31 /22.3
M31.1
Ventilátor motor podavač
XA1
Zásuvka 230V
FA11 10A B
FA5 /20.6 0,16-0,25A
KM5 /22.8
RCF5
M5 60 W, 0,2 A 3x 400 V, 50 Hz
Kartáček pásu
Název stránky: Silová část M5
Stroj: Performance 460A
BOMAR, s.r.o.
Těžební 1236/1
CZ 627 00, Brno
Číslo projektu:
Zpracoval:
Datum: 18.8.2010
List: 08
Listů: 32
07
09

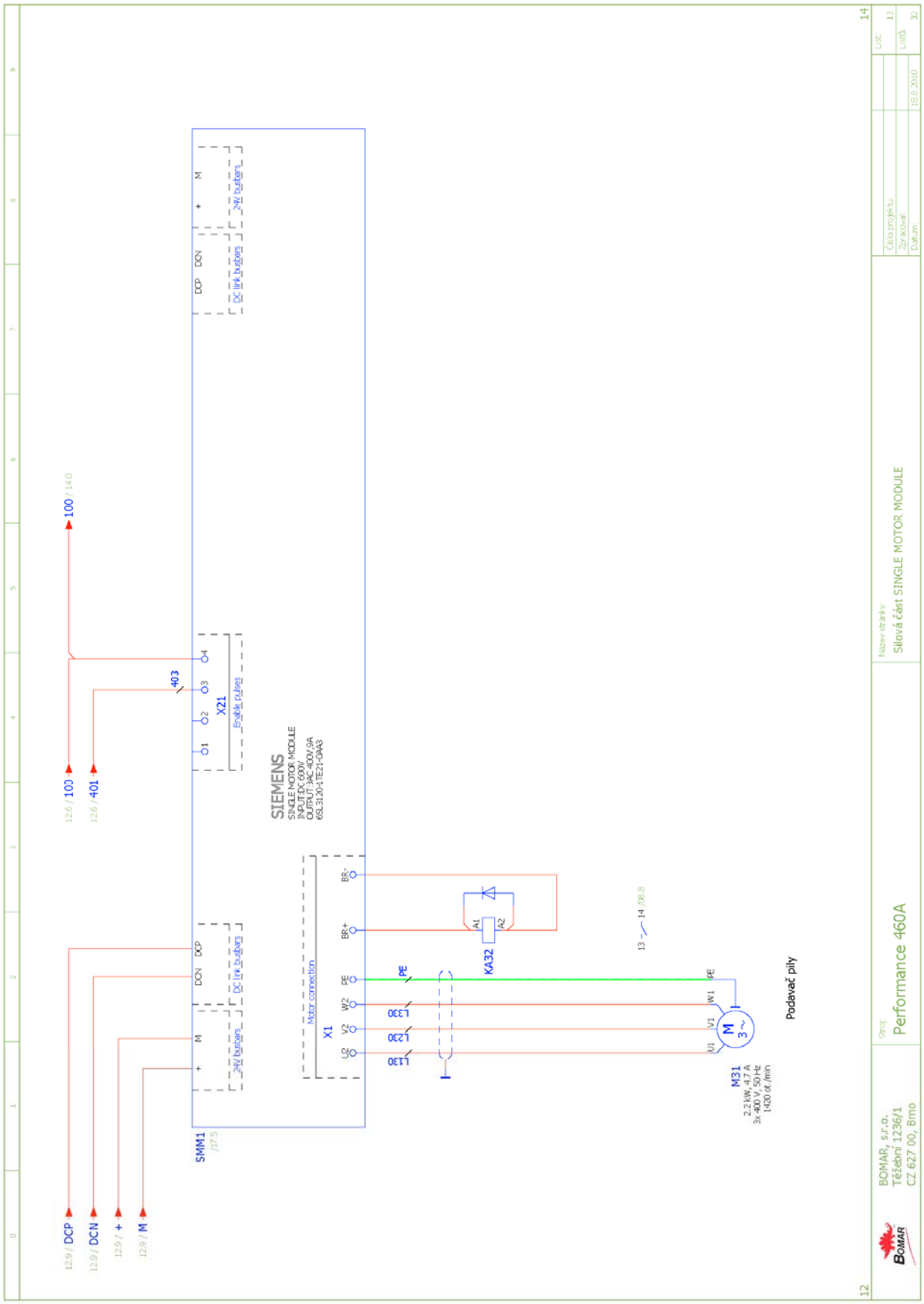

08.9 / L11
08.9 / L21
08.9 / L31
08.9 / N
08.9 / PE
FU5
0,2A
TRM1
Termostat
M0
Ventilator
PA1
10A
3x400V
PWR1
OUTPUT 24V / 10ADC
MURR
ELEKTRONIK
Evolution 10
INPUT 3x360-520VAC
0,80-0,50A 50-60Hz
PE
L304
L204
L104
FU1
1A
24V
FU2
1A
24V
FU3
0,5A
24V
FU4
5,5A
24V
KM10
KM11
200
100
2000
400
300
302
Stroj:
Performance 460A
Název stránky:
Blok napájení
BOMAR, s.r.o.
Těžební 1236/1
CZ 627 00, Brno
Číslo projektu:
Zpracoval:
Datum:
18.8.2010

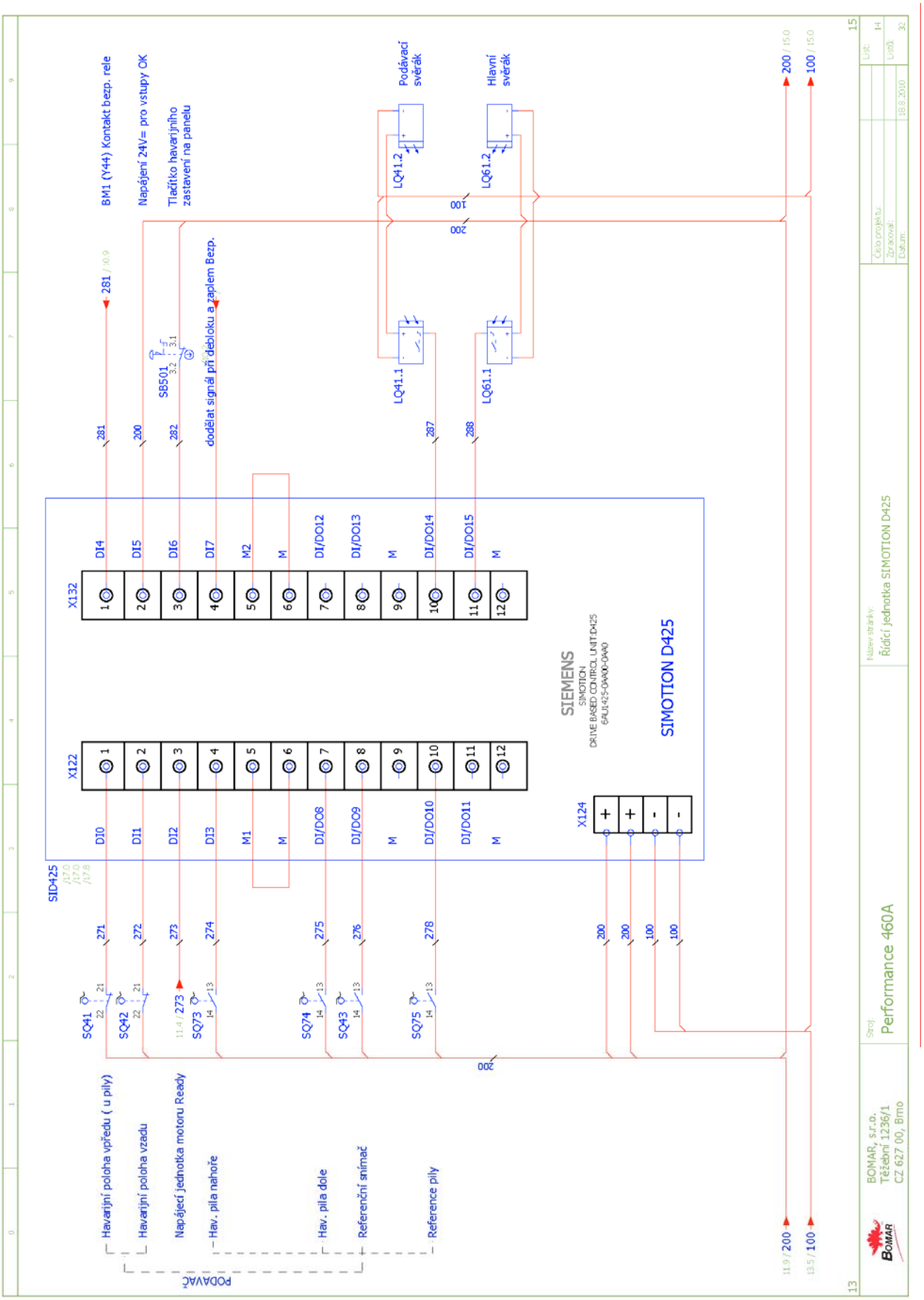


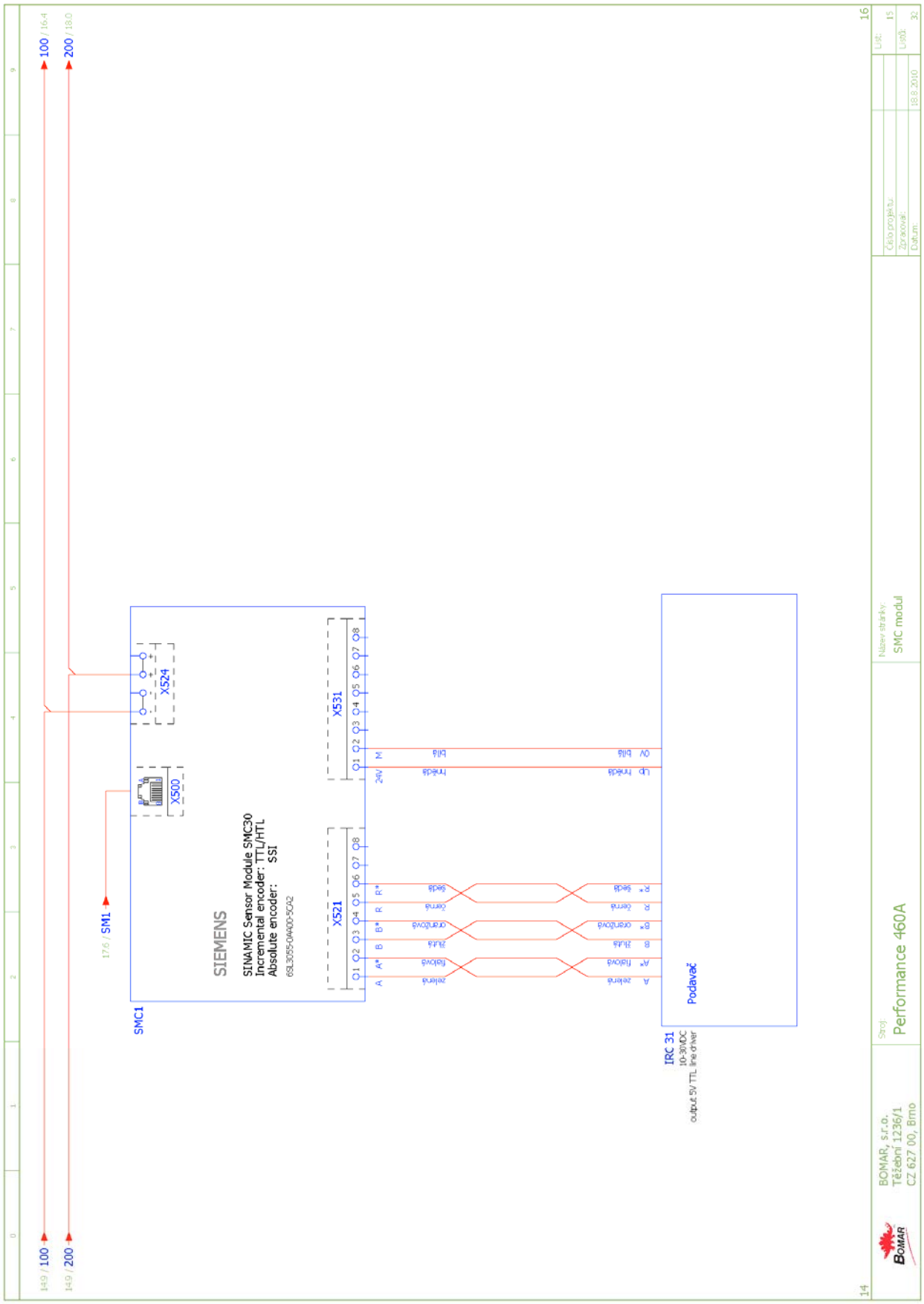
Manual version: 1.00 / Aug. 2010
Manual rev.: 1


SIEMENS
SMART LINE MODULE
INPUT:3AC 380-480V, 50/60Hz
OUTPUT:DC 600V, ??A, ?kW
6SL3130-6TE21-6AA3
SLM1
X1
Line connection
X21
Enable pulses
X24
24V terminal adapter
DC link busbars
24V busbars
DCP
DCN
SLM Ready
SU1
ICR1
L101
L201
L301
L102
L202
L302
L103
L203
L303
300
200
100
Název stránky:
Silová část SMART LINE MODULE
Stroj:
Performance 460A
BOMAR, s.r.o.
Těžební 1236/1
CZ 627 00, Brno


DCP / 13.0
DCN / 13.0
+ / 13.0
M / 13.0
100 / 13.4
401 / 13.4
119 / 100
109 / 401
118 / DCP
118 / DCN
118 / +
118 / M
DMM1
/17.3
24V busbars
DC link busbars
Enable pulses
X21
X22
Motor connection
X1
X2
SIEMENS
DOUBLE MOTOR MODULE
INPUT:DC 600V
OUTPUT:3AC 400V,18A/18A
6SL3120-2TE21-6AA3
PE
L110
L210
L310
L120
L220
L320
BR-
BR+
KA22
A1
A2
13 — 14 /06.7
17.4
M21
DriveClip
M11
7,5kW, D/Y
3x 230/400/50Hz
26,4/5,2A
1455/min cos φ 0,82
Pás pily
M21
1FK7063-5AH71-1DB0
Zdvih ramena pily
Název stránky:
Silová část DOUBLE MOTOR MODULE
Stroj:
Performance 460A
BOMAR, s.r.o.
Těžební 1236/1
CZ 627 00, Brno
Číslo projektu:
Zpracoval:
Datum:
18.8.2010
List:
12
Listů:
32
11
13


SIEMENS
SINGLE MOTOR MODULE
INPUT:DC 600V
OUTPUT:3AC 400V,9A
6SL3120-1TE21-0AA3
SMM1
X1
X21
Enable pulses
Motor connection
DC link busbars
24V busbars
DCP
DCN
M
+
BR-
BR+
PE
W2
V2
U2
L130
403
100 / 14.0
126 / 100
126 / 401
129 / DCP
129 / DCN
129 / +
129 / M
KA32
A1
A2
13 — 14 /06.8
M31
2.2 kW, 4.7 A
3x 400 V, 50 Hz
1400 ot./min
Podavač pily
Název stránky:
Silová část SINGLE MOTOR MODULE
Číslo projektu:
Zpracoval:
Datum:
18.8.2010
List:
13
Listů:
32
Stroj:
Performance 460A
BOMAR, s.r.o.
Těžební 1236/1
CZ 627 00, Brno
12
14


BM1 (Y44) Kontakt bezp. rele
Napájení 24V= pro vstupy OK
Tlačítko havarijního zastavení na panelu
dodělat signál při dobíjení a zaplem Bezp.
Podávací svěrák
Hlavní svěrák
LQ41.2
LQ61.2
LQ41.1
LQ61.1
SB501
X132
X122
X124
SID425
SIEMENS
SIMOTION
DRIVE BASED CONTROL UNIT D425
6AU1425-0AA00-0AA0
SIMOTION D425
DI4
DI5
DI6
DI7
M2
M
DI/DO12
DI/DO13
DI/DO14
DI/DO15
DI0
DI1
DI2
DI3
M1
DI/DO8
DI/DO9
DI/DO10
DI/DO11
SQ41
SQ42
SQ73
SQ74
SQ43
SQ75
Havarijní poloha vpředu (u pily)
Havarijní poloha vzadu
Napájecí jednotka motoru Ready
Hav. pila nahoře
Hav. pila dole
Referenční snímač
Reference pily
PODAVAČ
Název stránky:
Řídící jednotka SIMOTION D425
Stroj:
Performance 460A
BOMAR, s.r.o.
Těžební 1236/1
CZ 627 00, Brno


100 / 16.4
200 / 18.0
149 / 100
149 / 200
176 / SM1
SMC1
X524
X500
SIEMENS
SINAMIC Sensor Module SMC30
Incremental encoder: TTL/HTL
Absolute encoder: SSI
6SL3055-0AA00-5CA2
X521
X531
Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8
A A* B B* R R*
24V M
zelená
fialová
žlutá
oranžová
černá
šedá
hnědá
bílá
IRC 31
10-30VDC
output 5V TTL line driver
Podavač
Název stránky:
SMC modul
Stroj:
Performance 460A
BOMAR, s.r.o.
Těžební 1236/1
CZ 627 00, Brno
Číslo projektu:
Zpracoval:
Datum:
18.8.2010
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14
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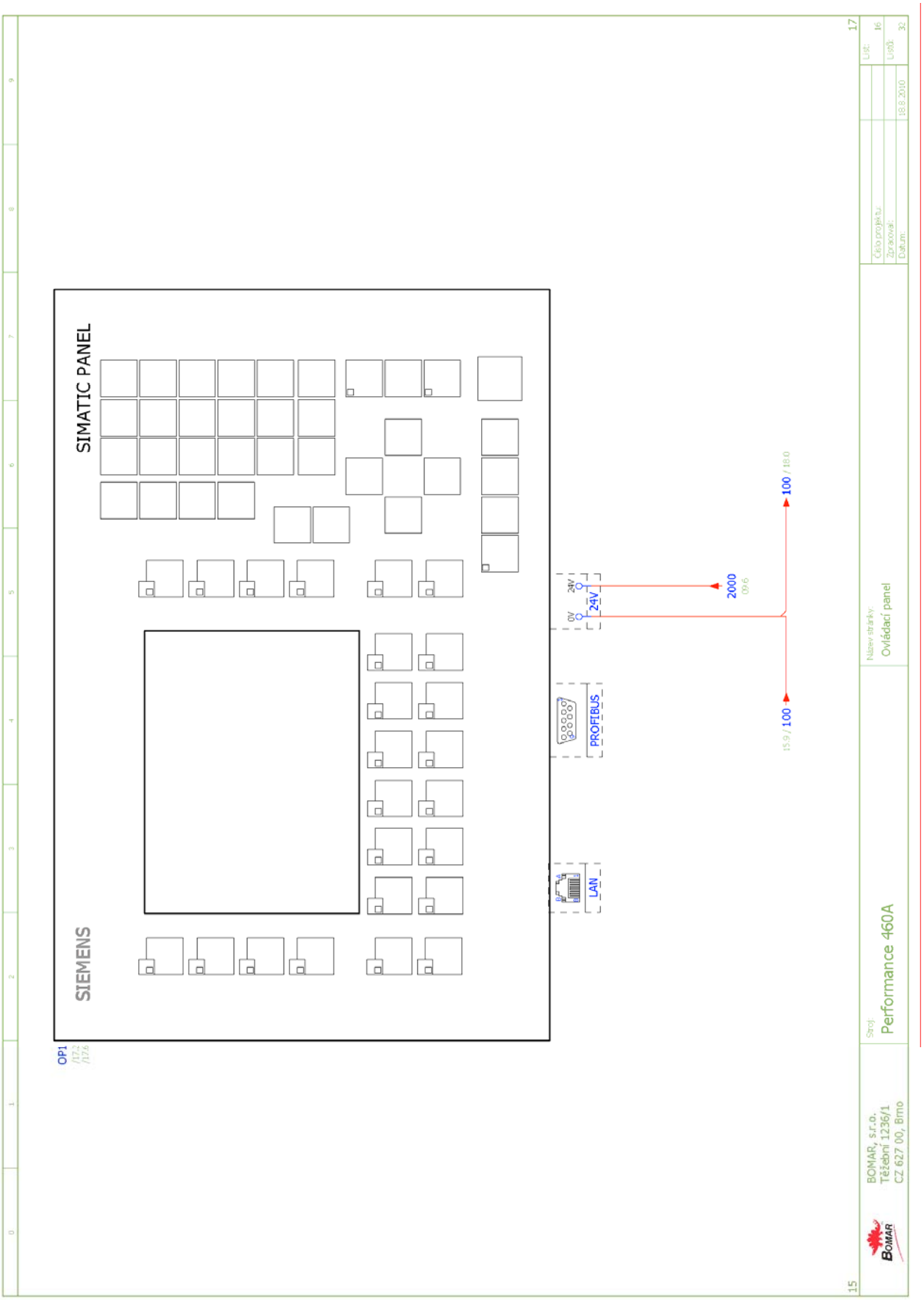
SIMATIC PANEL
SIEMENS
OP1
LAN
PROFIBUS
0V
24V
24V
2000
09.6
100 / 18.0
15.9 / 100
Název stránky:
Ovládací panel
Stroj:
Performance 460A
BOMAR, s.r.o.
Těžební 1236/1
CZ 627 00, Brno
Číslo projektu:
Zpracoval:
Datum:
18.8.2010
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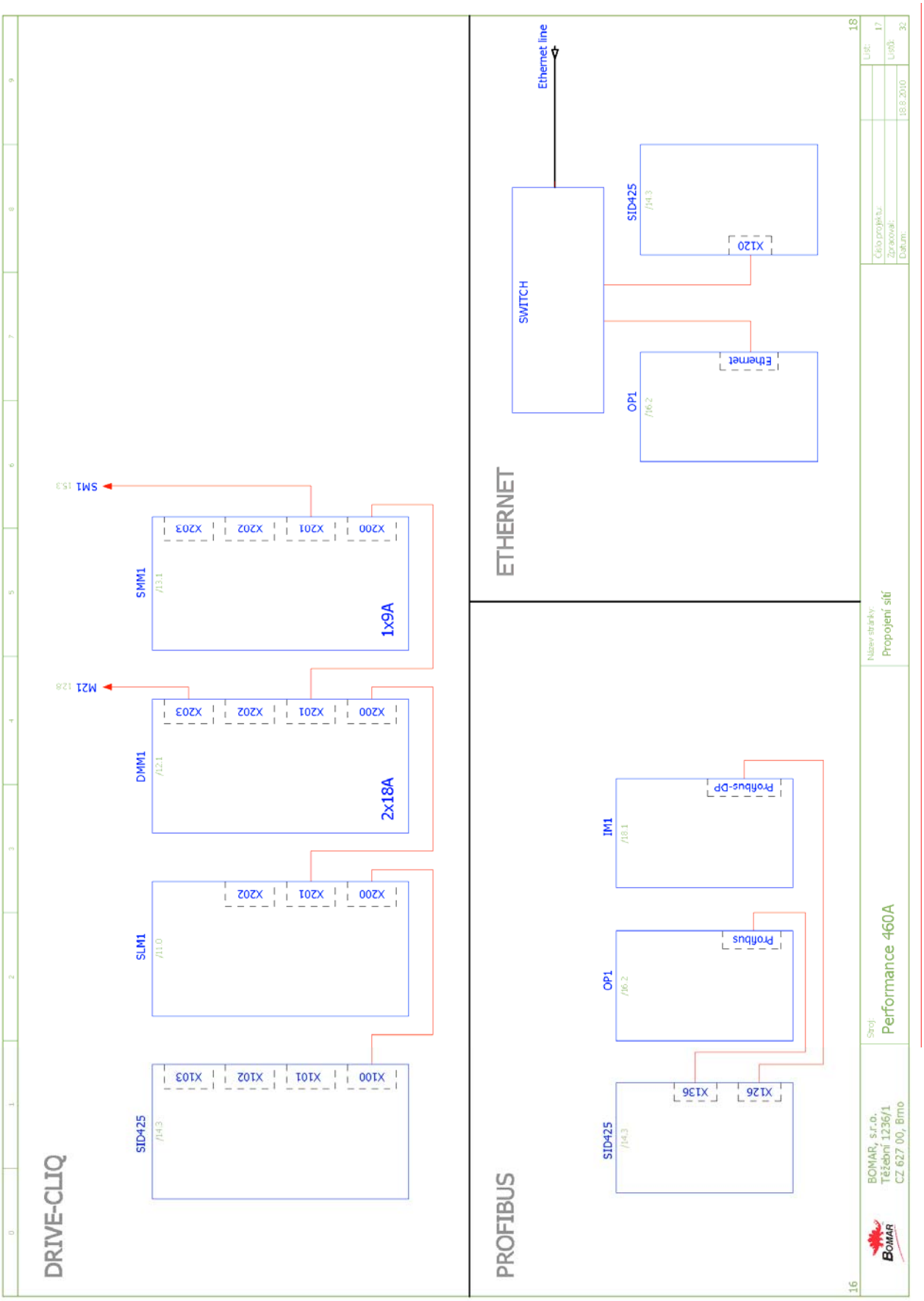
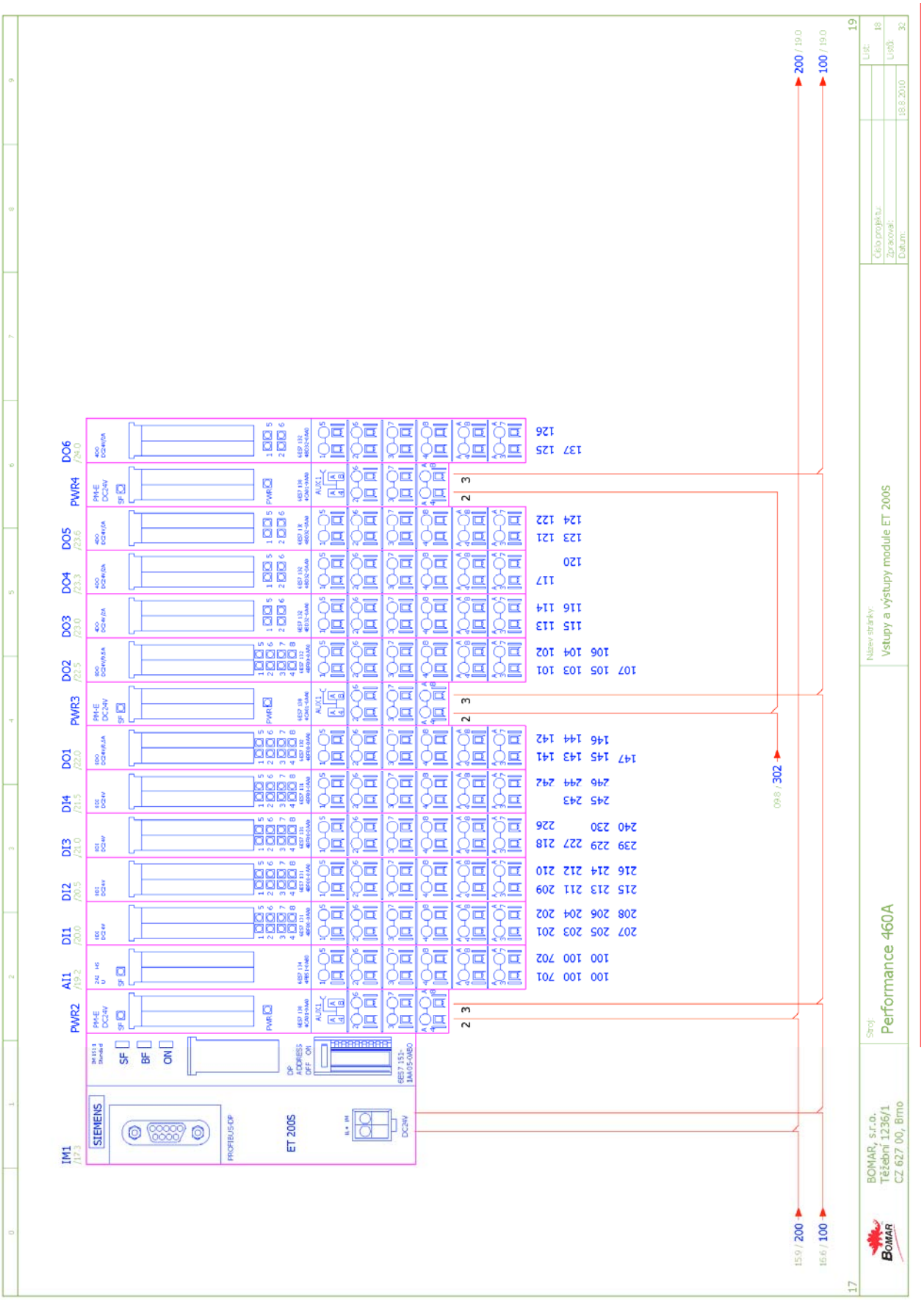
16
Listů:
32
17
15


DRIVE-CLIQ
SID425
/14.3
X100
X101
X102
X103
SLM1
/11.0
X200
X201
X202
DMM1
/12.1
2x18A
X200
X201
X202
X203
M21 12.8
SMM1
/13.1
1x9A
X200
X201
X202
X203
SM1 15.3
PROFIBUS
SID425
/14.3
X126
X136
OP1
/16.2
Profibus
IM1
/18.1
Profibus-DP
ETHERNET
SWITCH
Ethernet line
OP1
/16.2
Ethernet
SID425
/14.3
X120
16
18
BOMAR, s.r.o.
Těžební 1236/1
CZ 627 00, Brno
Stroj:
Performance 460A
Název stránky:
Propojení sítí
Číslo projektu:
Zpracoval:
Datum:
18.8.2010
List:
17
Listů:
32


IM1
SIEMENS
ET 200S
PROFIBUS-DP
SF
BF
ON
DP ADDRESS OFF ON
6ES7 153-1AA03-0XB0
DC24V
PWR2
AI1
DI1
DI2
DI3
DI4
DO1
PWR3
DO2
DO3
DO4
DO5
PWR4
DO6
100 100 701
100 100 702
207 205 203 201
208 206 204 202
215 213 211 209
216 214 212 210
239 229 227 218
240 230 226
245 243
246 244 242
147 145 143 141
146 144 142
107 105 103 101
106 104 102
115 113
116 114
117
120
123 121
124 122
137 125
126
09.8 / 302
200 / 19.0
100 / 19.0
15.9 / 200
16.6 / 100
17
19
Stroj:
Performance 460A
Název stránky:
Vstupy a výstupy module ET 200S
BOMAR, s.r.o.
Těžební 1236/1
CZ 627 00, Brno
Číslo projektu:
Zpracoval:
Datum:
18.8.2010
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18
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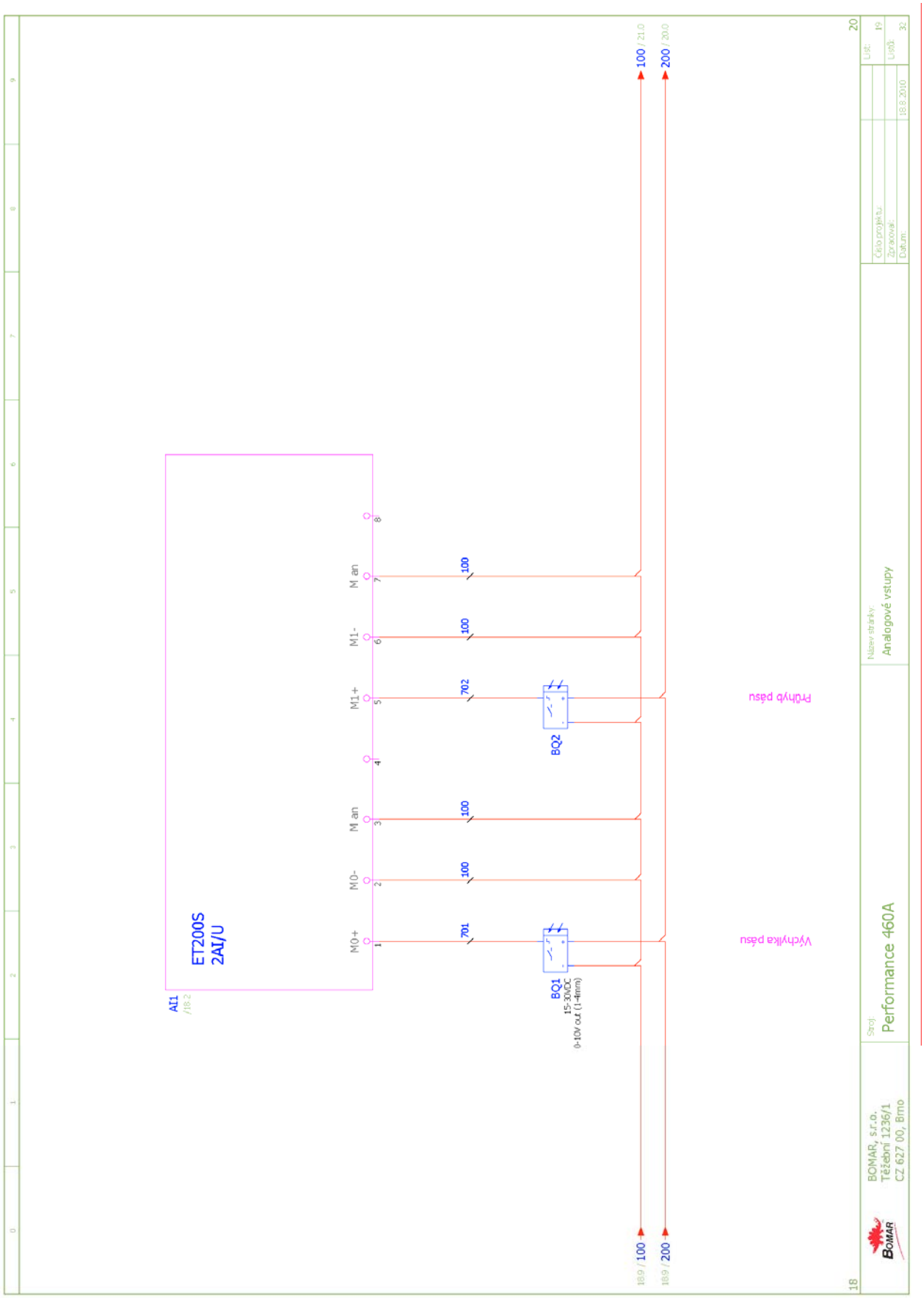
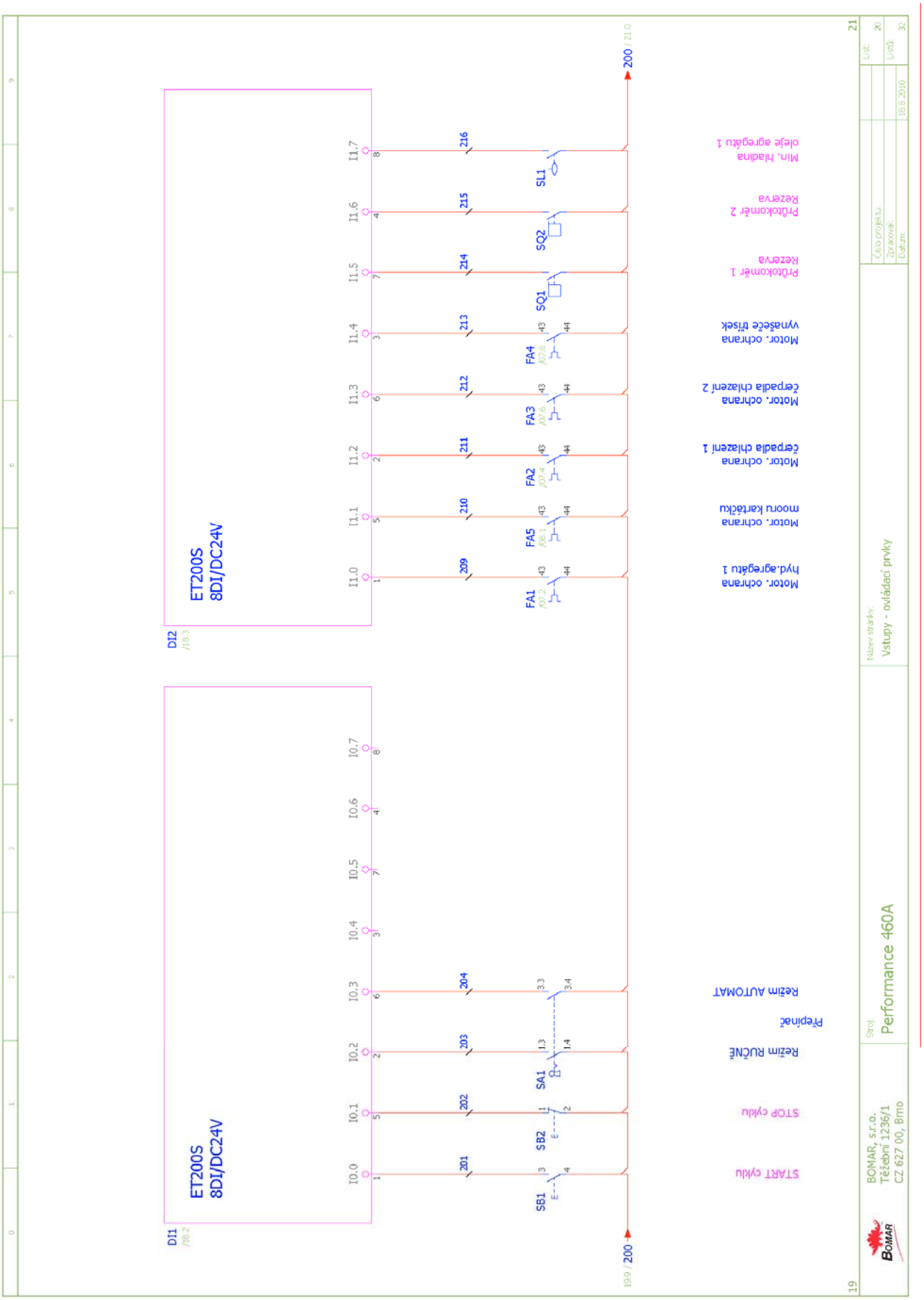
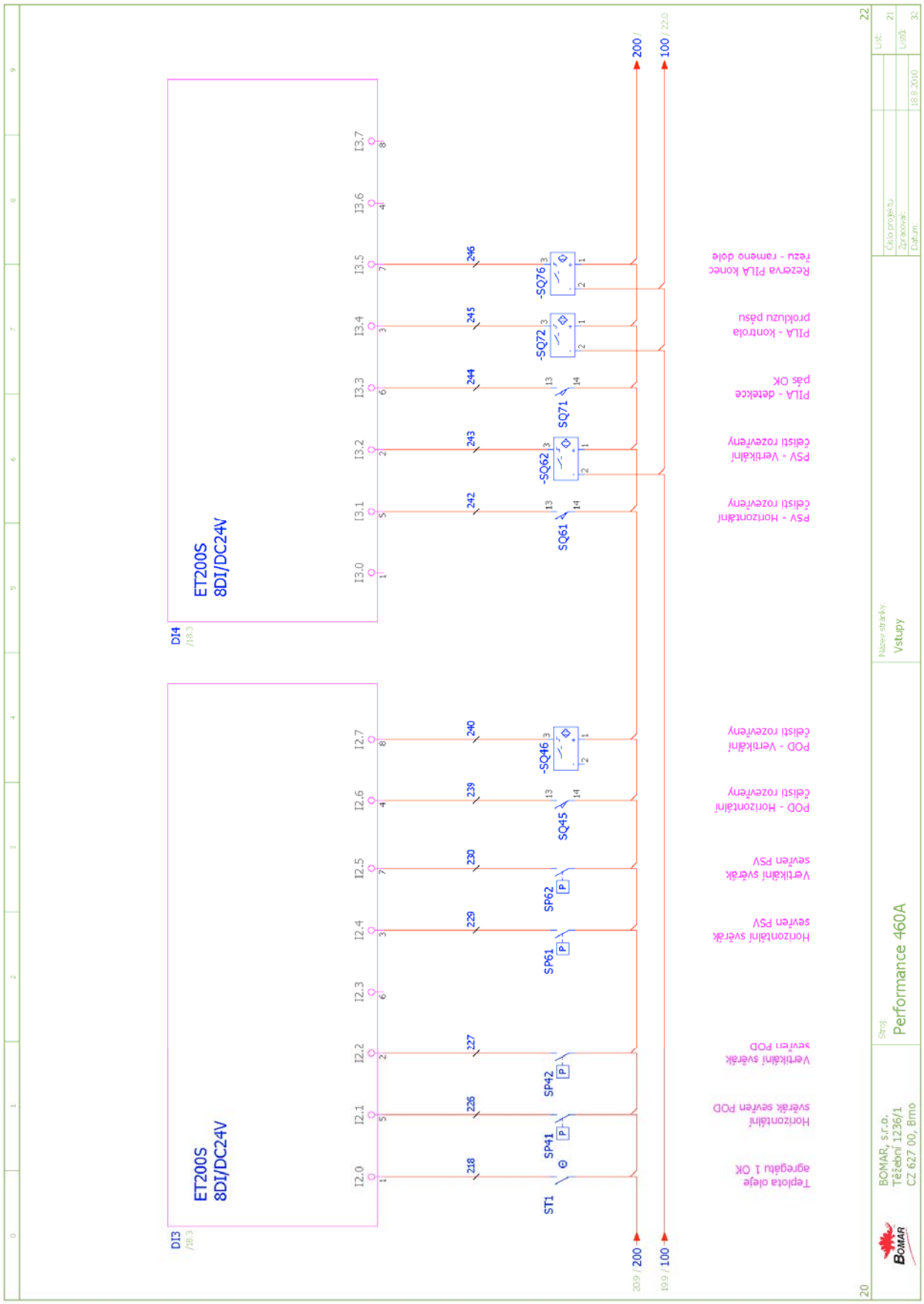
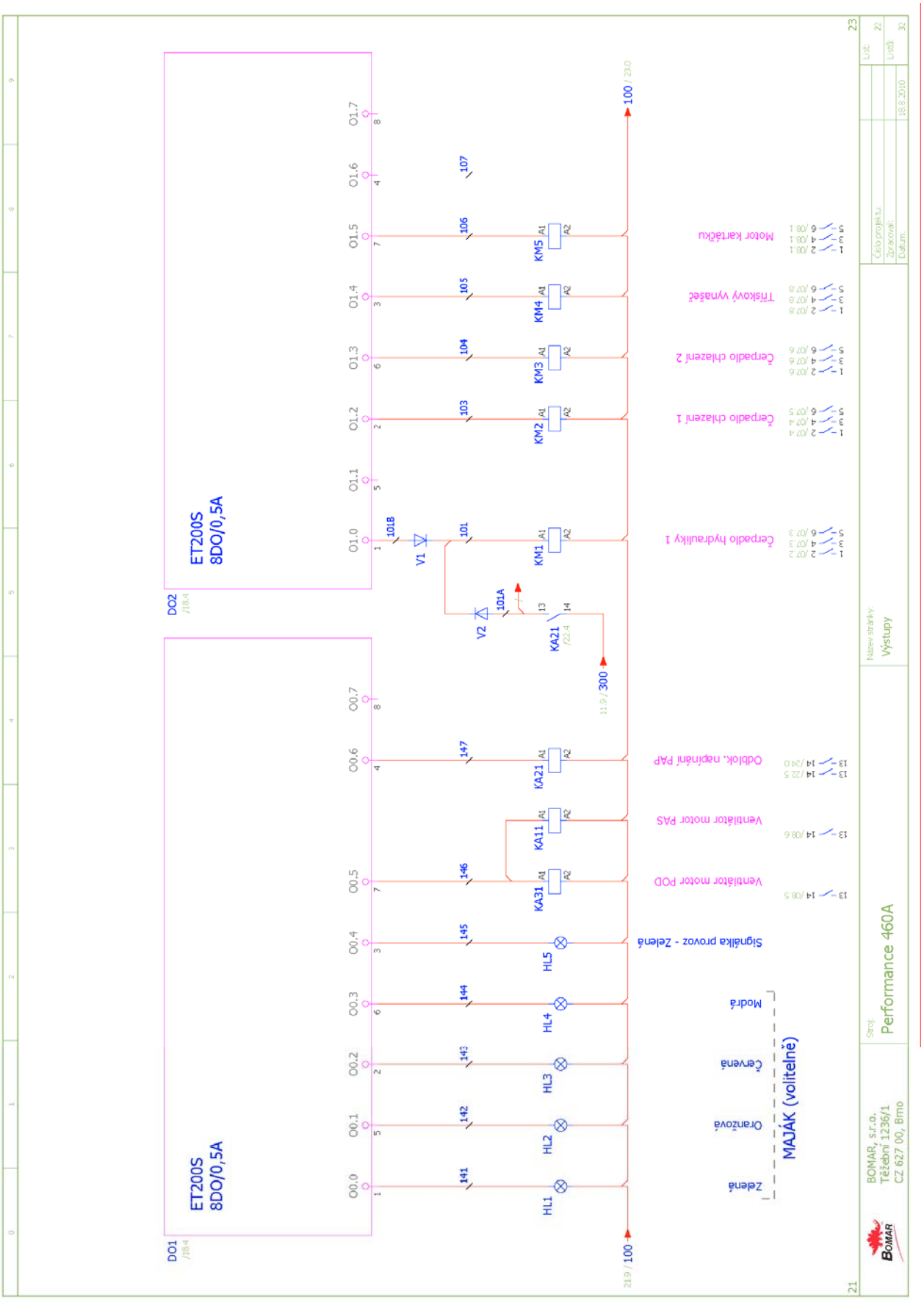
32

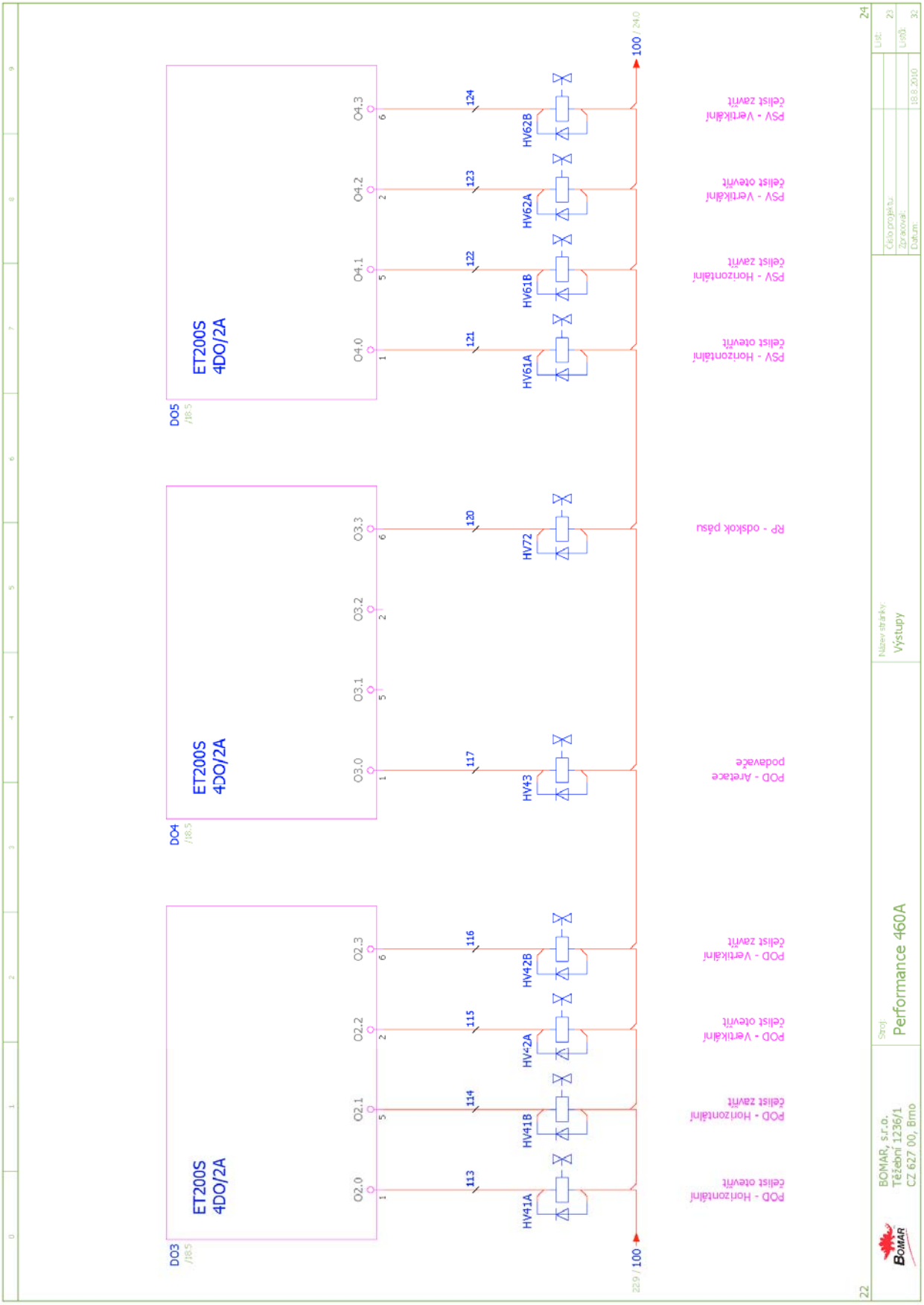

AI1
/18.2
ET200S
2AI/U
M0+
M0-
M an
M1+
M1-
M an
1
2
3
4
5
6
7
8
701
100
100
702
100
100
BQ1
15-30VDC
0-10V out (1-4mm)
BQ2
Výchylka pásu
Průtyk pásu
189 / 100
189 / 200
100 / 21.0
200 / 20.0
18
20
BOMAR, s.r.o.
Těžební 1236/1
CZ 627 00, Brno
Stroj:
Performance 460A
Název stránky:
Analogové vstupy
Číslo projektu:
Zpracoval:
Datum:
18.8.2010
List:
19
Listů:
32

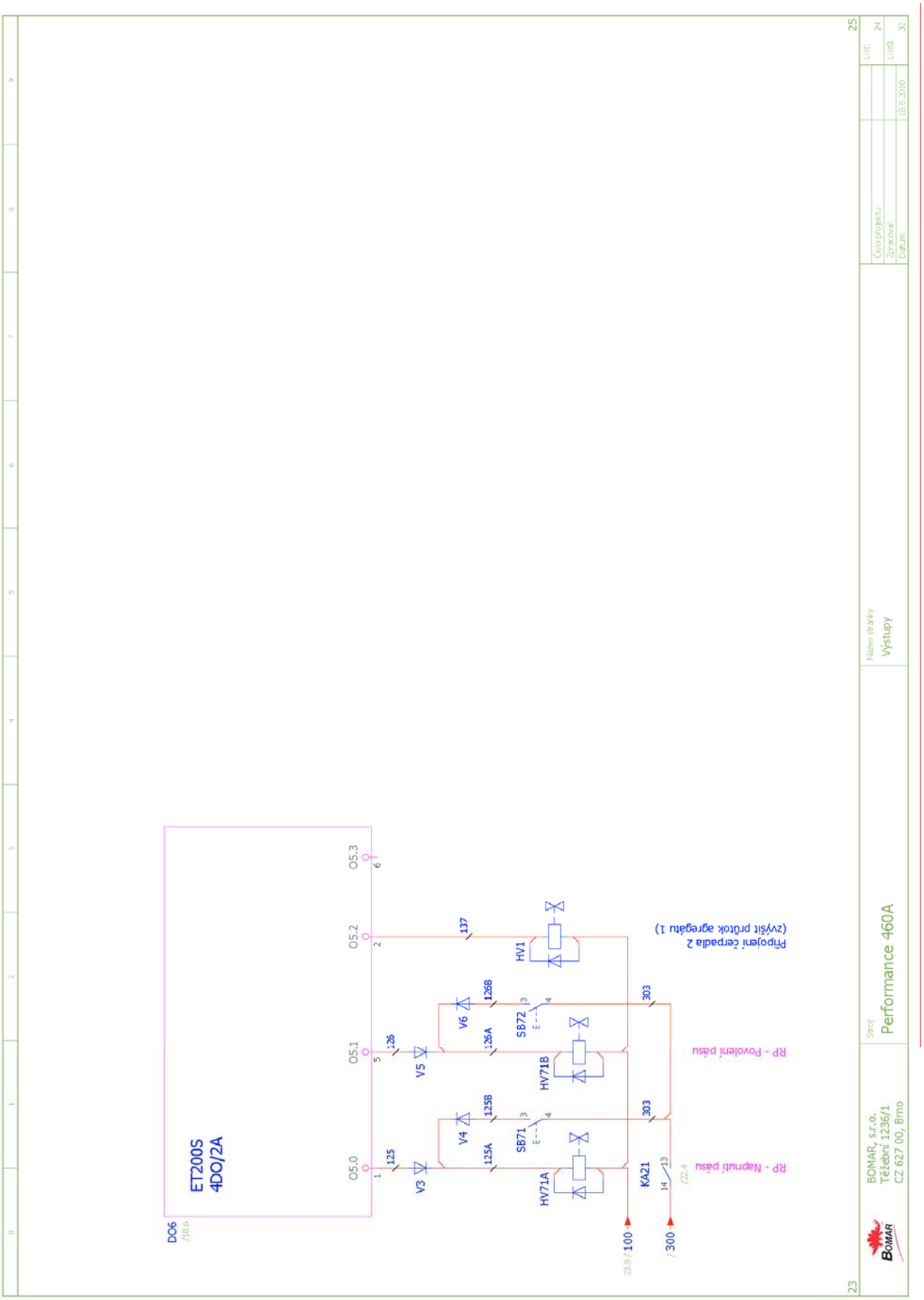

DI1
ET200S
8DI/DC24V
DI2
ET200S
8DI/DC24V
I0.0
I0.1
I0.2
I0.3
I0.4
I0.5
I0.6
I0.7
I1.0
I1.1
I1.2
I1.3
I1.4
I1.5
I1.6
I1.7
201
202
203
204
209
210
211
212
213
214
215
216
SB1
SB2
SA1
FA1
FA2
FA3
FA4
FA5
SQ1
SQ2
SL1
199 / 200
200 / 21.0
START cyklu
STOP cyklu
Režim RUČNĚ
Přepínač
Režim AUTOMAT
Motor. ochrana hyd.agregátu 1
Motor. ochrana motoru kartáčků
Motor. ochrana čerpadla chlazení 1
Motor. ochrana čerpadla chlazení 2
Motor. ochrana vynášeče třísek
Průtokoměr 1 Rezerva
Průtokoměr 2 Rezerva
Min. hladina oleje agregátu 1
Název stránky:
Vstupy - ovládací prvky
Stroj:
Performance 460A
BOMAR, s.r.o.
Těžební 1236/1
CZ 627 00, Brno
Číslo projektu:
Zpracoval:
Datum:
18.8.2010
List:
20
Listů:
32
19
21

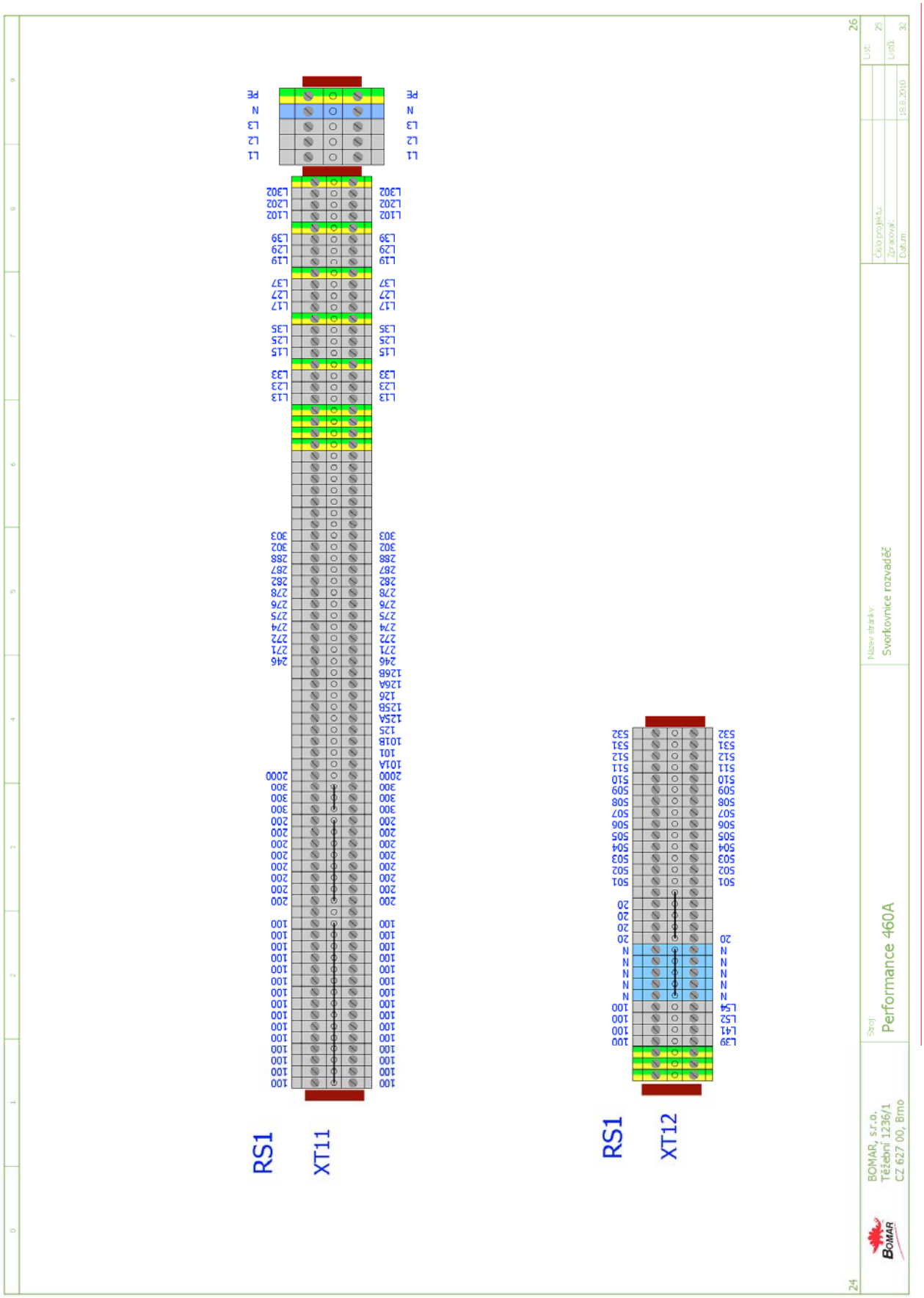

ET200S
8DI/DC24V
DI3
/18.3
ET200S
8DI/DC24V
DI4
/18.3
I2.0
I2.1
I2.2
I2.3
I2.4
I2.5
I2.6
I2.7
I3.0
I3.1
I3.2
I3.3
I3.4
I3.5
I3.6
I3.7
ST1
SP41
SP42
SP61
SP62
SQ45
-SQ46
SQ61
-SQ62
SQ71
-SQ72
-SQ76
218
226
227
229
230
239
240
242
243
244
245
246
Teplota oleje agregátu 1 OK
Horizontální svěrák sevřen POD
Vertikální svěrák sevřen POD
Horizontální svěrák sevřen PSV
Vertikální svěrák sevřen PSV
POD - Horizontální čelisti rozevřeny
POD - Vertikální čelisti rozevřeny
PSV - Horizontální čelisti rozevřeny
PSV - Vertikální čelisti rozevřeny
PILA - detekce pás OK
PILA - kontrola prokluzu pásu
Rezerva PILA konec řezu - rameno dole
200 / 209
100 / 199
200 /
100 / 22.0
Název stránky:
Vstupy
Stroj:
Performance 460A
BOMAR, s.r.o.
Těžební 1236/1
CZ 627 00, Brno
Číslo projektu:
Zpracoval:
Datum:
18.8.2010
List:
Listů:
20
22



Manual version: 1.00 / Aug. 2010
Manual rev.: 1


DO3
/18.5
ET200S
4DO/2A
O2.0
O2.1
O2.2
O2.3
113
114
115
116
HV41A
HV41B
HV42A
HV42B
POD - Horizontální
čelist zavřít
POD - Horizontální
čelist otevřít
POD - Vertikální
čelist zavřít
POD - Vertikální
čelist otevřít
DO4
/18.5
ET200S
4DO/2A
O3.0
O3.1
O3.2
O3.3
117
120
HV43
HV72
POD - Aretace
podavače
RP - odskok pásu
DO5
/18.5
ET200S
4DO/2A
O4.0
O4.1
O4.2
O4.3
121
122
123
124
HV61A
HV61B
HV62A
HV62B
PSV - Horizontální
čelist otevřít
PSV - Horizontální
čelist zavřít
PSV - Vertikální
čelist otevřít
PSV - Vertikální
čelist zavřít
229 / 100
100 / 240
22
24
BOMAR, s.r.o.
Těžební 1236/1
CZ 627 00, Brno
Stroj:
Performance 460A
Název stránky:
Výstupy
Číslo projektu:
Zpracoval:
Datum:
18.8.2010
List:
23
Listů:
32


ET200S
4DO/2A
DO6
O5.0
O5.1
O5.2
O5.3
V3
V4
V5
V6
HV71A
HV71B
HV1
SB71
SB72
KA21
RP - Navinutí pásu
RP - Povolení pásu
Připojení čerpadla 2
(zvýšit průtok agregátu 1)
Stroj:
Performance 460A
Název stránky:
Výstupy
BOMAR, s.r.o.
Těžební 1236/1
CZ 627 00, Brno


RS1
XT11
RS1
XT12
Stroj:
Performance 460A
Název stránky:
Svorkovnice rozvaděč
BOMAR, s.r.o.
Těžební 1236/1
CZ 627 00, Brno
Číslo projektu:
Zpracoval:
Datum:
18.8.2010
List:
Listů:

Kusovník artiklů

Označení přístroje	Typ přístroje	Objednací číslo	Výrobce	Skladové číslo	Množství	Umístění (strana.sloupec)
-AI1	Modul 2 analogových vstupů U, ET 200S	6ES7134-4FB51-0AB0	SIEMENS		1	/19.2
-AI1	Univerzální připojovací modul pro ET 200S	6ES7193-4CA40-0AA0	SIEMENS		1	/19.2
-BM1	Bezpečnostní modul	XPSAC5121	TELEMECANIQUE	91.995.564	1	/10.5
-BQ1	Analogový snímač průhyb pásu	BAW M12MF2-UAC40F-BP00, 2-GS04	BALLUFF		1	/20.2
-BQ2	Analogový snímač	BIL-ED0-P160A-01-S75	BALLUFF		1	/20.4
-BR21		*** chybí artikl ***			1	/08.7
-BR31		*** chybí artikl ***			1	/08.8
-DI1	Modul 8 digitálních vstupů, ET 200S	6ES7131-4BF00-0AA0	SIEMENS	91.995.525	1	/19.2
-DI2	Modul 8 digitálních vstupů, ET 200S	6ES7131-4BF00-0AA0	SIEMENS	91.995.525	1	/19.3
-DI3	Modul 8 digitálních vstupů, ET 200S	6ES7131-4BF00-0AA0	SIEMENS	91.995.525	1	/19.3
-DI4	Modul 8 digitálních vstupů, ET 200S	6ES7131-4BF00-0AA0	SIEMENS	91.995.525	1	/19.3
-DI2	Univerzální připojovací modul pro ET 200S	6ES7193-4CA40-0AA0	SIEMENS		1	/19.3
-DI3	Univerzální připojovací modul pro ET 200S	6ES7193-4CA40-0AA0	SIEMENS		1	/19.3
-DI4	Univerzální připojovací modul pro ET 200S	6ES7193-4CA40-0AA0	SIEMENS		1	/19.3
-DI1	Univerzální připojovací modul pro ET 200S	6ES7193-4CA40-0AA0	SIEMENS		1	/19.2
-DMM1	Motorový modul dvouosý 2x18A, SINAMICS S120	6SL3120-2TE21-8AA3	SIEMENS		1	/12.1
-DO5	Modul 4 digitálních výstupů 24V/2A, ET 200S	6ES7132-4BD32-0AA0	SIEMENS	91.995.527	1	/19.5
-DO6	Modul 4 digitálních výstupů 24V/2A, ET 200S	6ES7132-4BD32-0AA0	SIEMENS	91.995.527	1	/19.6
-DO3	Modul 4 digitálních výstupů 24V/2A, ET 200S	6ES7132-4BD32-0AA0	SIEMENS	91.995.527	1	/19.5
-DO4	Modul 4 digitálních výstupů 24V/2A, ET 200S	6ES7132-4BD32-0AA0	SIEMENS	91.995.527	1	/19.5
-DO1	Modul 8 digitálních výstupů 24V/0.5A, ET 200S	6ES7132-4BF00-0AA0	SIEMENS	91.995.582	1	/19.4
-DO2	Modul 8 digitálních výstupů 24V/0.5A, ET 200S	6ES7132-4BF00-0AA0	SIEMENS	91.995.582	1	/19.4
-DO3	Univerzální připojovací modul pro ET 200S	6ES7193-4CA40-0AA0	SIEMENS		1	/19.5
-DO4	Univerzální připojovací modul pro ET 200S	6ES7193-4CA40-0AA0	SIEMENS		1	/19.5
-DO6	Univerzální připojovací modul pro ET 200S	6ES7193-4CA40-0AA0	SIEMENS		1	/19.6
-DO5	Univerzální připojovací modul pro ET 200S	6ES7193-4CA40-0AA0	SIEMENS		1	/19.5
-DO1	Univerzální připojovací modul pro ET 200S	6ES7193-4CA40-0AA0	SIEMENS		1	/19.4
-DO2	Univerzální připojovací modul pro ET 200S	6ES7193-4CA40-0AA0	SIEMENS		1	/19.4

Výrobce si vyhrazuje použít ekvivalentní náhrady přístrojů.

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CZ 627 00, Brno

Stroj: Performance 460A

Název stránky: Kusovník

Číslo projektu:
Zpracoval:
Datum: 18.8.2010

List: 26
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Kusovník artiklů

Označení přístroje	Typ přístroje	Objednací číslo	Výrobce	Skladové číslo	Množství	Umístění (strana.sloupec)
-FA3	Pomocný kontakt motorového jističe	GZ1AN11	TELEMECANIQUE	91.046.004	1	/07.6
-FA2	Motorový jistič 0.25-0.4 A	GZ1M03	TELEMECANIQUE	91.235.022	1	/07.4
-FA2	Pomocný kontakt motorového jističe	GZ1AN11	TELEMECANIQUE	91.046.004	1	/07.4
-FA1	Motorový jistič 4...6.3 A	GZ1M10	TELEMECANIQUE	91.235.026	1	/07.2
-FA1	Pomocný kontakt motorového jističe	GZ1AN11	TELEMECANIQUE	91.046.004	1	/07.2
-FA4	Pomocný kontakt motorového jističe	GZ1AN11	TELEMECANIQUE	91.046.004	1	/07.8
-FA5	Motorový jistič 0.16-0.25A	GZ1M02	TELEMECANIQUE	91.235.032	1	/08.1
-FA5	Pomocný kontakt motorového jističe	GZ1AN11	TELEMECANIQUE	91.046.004	1	/08.1
-FA3	Motorový jistič 0.25-0.4 A	GZ1M03	TELEMECANIQUE	91.235.022	1	/07.6
-FA4	Motorový jistič 0.63...1A	GZ1M05	TELEMECANIQUE	91.235.023	1	/07.8
-FA11	1-pólový jistič, charakteristika B	LSE 10B/1	OEZ	91.235.028	1	/08.2
-FU8	Pojistkové pouzdro	WK4/THSi5...U	WIELAND	91.251.102	1	/08.7
-FU7	Pojistkové pouzdro	WK4/THSi5...U	WIELAND	91.251.102	1	/08.6
-FU6	Pojistkové pouzdro	WK4/THSi5...U	WIELAND	91.251.102	1	/08.5
-FU2	Pojistkové pouzdro	WK4/THSi5...U	WIELAND	91.251.102	1	/09.6
-FU5	Pojistkové pouzdro	WK4/THSi5...U	WIELAND	91.251.102	1	/09.0
-FU4	Pojistkové pouzdro	WK4/THSi5...U	WIELAND	91.251.102	1	/09.8
-FU9	Pojistkové pouzdro	WK4/THSi5...U	WIELAND	91.251.102	1	/08.8
-FU1	Pojistkové pouzdro	WK4/THSi5...U	WIELAND	91.251.102	1	/09.6
-FU3	Pojistkové pouzdro	WK4/THSi5...U	WIELAND	91.251.102	1	/09.7
-HL1	Žárovka do majáku	BA15D 24V 5W	WERMA	91.063.014	1	/23.0
-HL2	Žárovka do majáku	BA15D 24V 5W	WERMA	91.063.014	1	/23.1
-HL3	Žárovka do majáku	BA15D 24V 5W	WERMA	91.063.014	1	/23.1
-HL4	Žárovka do majáku	BA15D 24V 5W	WERMA	91.063.014	1	/23.2
-HL5	Signálka zelená na adaptér	M22-LED-G	MOELLER	91.061.023	1	/23.2
-HL501	Hlavice hřibového ovládače do krabičky	M22-LED-W	MOELLER	91.060.030	1	/10.4
-HL1	Základna majáku	WE64081000	WERMA	91.063.010	1	/23.0
-HL3	Maják červená barva	WE64110000	WERMA	91.063.015	1	/23.1

Výrobce si vyhrazuje použít ekvivalentní náhrady přístrojů.

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CZ 627 00, Brno

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Číslo projektu:
Zpracoval:
Datum: 18.8.2010

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Kusovník artiklů

Označení přístroje	Typ přístroje	Objednací číslo	Výrobce	Skladové číslo	Množství	Umístění (strana.sloupec)
-HL1	Maják zelená barva	WE64120000	WERMA	91.063.012	1	/23.0
-HL2	Maják oranžová barva	WE64130000	WERMA	91.063.013	1	/23.1
-HL4	Maják modrá barva	WE64150000	WERMA	91.063.017	1	/23.2
-ICR1		6SL3000-0CE21-6AA0			1	/11.1
-IM1	Standardní modul rozhraní IM151-1,ET 200S	6ES7151-1AA05-0AB0	SIEMENS		1	/19.1
-IRC31	Lineální inkrementální snímač s magnetickou páskou	LMIX2-026-08.0-1-01	ELGO	91.270.006	1	/15.2
-KA31	Relé	40.52.9.024	FINDER	91.051.001	1	/23.3
-KA11	Relé	40.52.9.024	FINDER	91.051.001	1	/23.3
-KA21	Relé	40.52.9.024	FINDER	91.051.001	1	/23.4
-KA32	Patice relé	95.95.3	FINDER	91.051.003	1	/13.2
-KA31	Patice relé	95.95.3	FINDER	91.051.003	1	/23.3
-KA11	Patice relé	95.95.3	FINDER	91.051.003	1	/23.3
-KA21	Patice relé	95.95.3	FINDER	91.051.003	1	/23.4
-KA22	Patice relé	95.95.3	FINDER	91.051.003	1	/12.7
-KA22	Relé	G2R-2 24VDC	OMRON	91.051.007	1	/12.7
-KA32	Relé	G2R-2 24VDC	OMRON	91.051.007	1	/13.2
-KM10	Stykač	DIL EM-01-G 24V DC	MOELLER	91.040.024	1	/10.6
-KM11	Stykač	DIL EM-01-G 24V DC	MOELLER	91.040.024	1	/10.7
-KM5	Stykač	DIL EM-10-G 24V DC	MOELLER	91.040.020	1	/23.8
-KM4	Stykač	DIL EM-10-G 24V DC	MOELLER	91.040.020	1	/23.7
-KM3	Stykač	DIL EM-10-G 24V DC	MOELLER	91.040.020	1	/23.7
-KM2	Stykač	DIL EM-10-G 24V DC	MOELLER	91.040.020	1	/23.6
-KM1	Stykač	DIL EM-10-G 24V DC	MOELLER	91.040.020	1	/23.5
-LQ41.1	Snímač laserový - přijímač	BOS12M-PA-LE10-S4	BALLUFF	91.400.017	1	/14.7
-LQ61.1	Snímač laserový - přijímač	BOS12M-PA-LE10-S4	BALLUFF	91.400.017	1	/14.7
-LQ41.2	Snímač laserový - vysílač	BOS12M-XT-LS11-S4	BALLUFF	91.400.018	1	/14.9
-LQ61.2	Snímač laserový - vysílač	BOS12M-XT-LS11-S4	BALLUFF	91.400.018	1	/14.9
-M21	Synchronní servomotor s brzdou	1FK7063-5AH71-1DB0	SIEMENS		1	/12.5

Výrobce si vyhrazuje použít ekvivalentní náhrady přístrojů.

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Kusovník artiklů

Označení přístroje	Typ přístroje	Objednací číslo	Výrobce	Skladové číslo	Množství	Umístění (strana.sloupec)
-M31		1LA7106-4AA11			1	/13.1
-M11	Asynchronní motor 3x400V, 50Hz, 7.5kW	1LA7133-4AA11	SIEMENS		1	/12.2
-M2	Čerpadlo 3x230/400V, 50Hz, 120W	3COA4-14HP1		91.020.0xx	1	/07.4
-M3	Čerpadlo 3x230/400V, 50Hz, 120W	3COA4-14HP1		91.020.0xx	1	/07.6
-M5		91.001.097			1	/08.1
-M4	Asynchronní motor 3x230/400V, 50Hz, 0,25kW	BN71A4	BONFIGLIOLI		1	/07.8
-M1	Asynchronní motor 3x400V, 50Hz	EP MA-AL100L28F215-4	EP		1	/07.2
-M0	Motor ventilátoru	FPF13 KR230	FANCIS	91.015.106	1	/09.2
-M31.1	Motor ventilátoru	FPF13 KR230	FANCIS	91.015.106	1	/08.5
-M11.1	Motor ventilátoru	FPF13 KR230	FANCIS	91.015.106	1	/08.6
-M0	Větrací mřížka	FPF13 KRG-100	FANCIS	91.015.107	1	/09.2
-M11.1	Větrací mřížka	FPF13 KRG-100	FANCIS	91.015.107	1	/08.6
-M31.1	Větrací mřížka	FPF13 KRG-100	FANCIS	91.015.107	1	/08.5
-OP1	Ovládací panel SIMATIC OP277	6AV6643-0BA01-1AX0	SIEMENS	91.995.523	1	/17.2
-PA2		25A gG			3	/07.1
-PA1	Pojistkový odpínač pro válcové vložky vel. 10	OPV10/3	OEZ	91.241.002	1	/09.3
-PA2	Pojistkový odpínač pro válcové vložky vel. 14	OPV14/3	OEZ	91.241.003	1	/07.1
-PWR4	Napájecí modul PM-E, ET 200S	6ES7138-4CA01-0AA0	SIEMENS	91.995.528	1	/19.6
-PWR3	Napájecí modul PM-E, ET 200S	6ES7138-4CA01-0AA0	SIEMENS	91.995.528	1	/19.4
-PWR2	Napájecí modul PM-E, ET 200S	6ES7138-4CA01-0AA0	SIEMENS	91.995.528	1	/19.2
-PWR2	Připojovací modul pro napájecí moduly PM-E, ET 200S	6ES7193-4CD20-0AA0	SIEMENS		1	/19.2
-PWR4	Připojovací modul pro napájecí moduly PM-E, ET 200S	6ES7193-4CD20-0AA0	SIEMENS		1	/19.6
-PWR3	Připojovací modul pro napájecí moduly PM-E, ET 200S	6ES7193-4CD20-0AA0	SIEMENS		1	/19.4
-PWR1	Síťový zdroj 10A, 3x360-520VAC / 24VDC	MURR Evolution 24V/10A	MURR	91.085.012	1	/09.4
-QS1	Hlavní vypínač 63 A	VCF3-63A	TELEMECANIQUE	91.170.011	1	/07.0
-RCF5	Filtr RFC vývodový	FBOPR1624		91.041.015	1	/08.0
-RCF3	Filtr RFC vývodový	FBOPR1624		91.041.015	1	/07.5
-RCF1	Filtr RFC vývodový	FBOPR1624		91.041.015	1	/07.2

Výrobce si vyhrazuje použít ekvivalentní náhrady přístrojů.

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CZ 627 00, Brno

Stroj: Performance 460A

Název stránky: Kusovník

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Datum: 18.8.2010

List: 29
Listů: 32

Kusovník artiklů

Označení přístroje	Typ přístroje	Objednací číslo	Výrobce	Skladové číslo	Množství	Umístění (strana.sloupec)
-RCF2	Filtr RFC vývodový	FBOPR1624		91.041.015	1	/07.3
-RCF4	Filtr RFC vývodový	FBOPR1624		91.041.015	1	/07.7
-SA1	Upevňovací adaptér + spínací kontakt	M22-AK10	MOELLER	91.061.021	1	/21.1
-SA1	Spínací jednotka na adaptér	M22-K10	MOELLER	91.061.022	1	/21.1
-SA1	Hlavice 3 polohového přepínače, klíček	M22-WRS3	MOELLER	91.060.058	1	/21.1
-SB510	Upevňovací adaptér	M22-A	MOELLER		1	/10.5
-SB501	Upevňovací adaptér	M22-A	MOELLER		1	/10.2
-SB2	Upevňovací adaptér + rozpínací kontakt	M22-AK01	MOELLER	91.061.020	1	/21.1
-SB71	Upevňovací adaptér + spínací kontakt	M22-AK10	MOELLER	91.061.021	1	/25.1
-SB1	Upevňovací adaptér + spínací kontakt	M22-AK10	MOELLER	91.061.021	1	/21.0
-SB71	Hlavice tlačítka černá	M22-D-S	MOELLER	91.060.035	1	/25.1
-SB2	Hlavice tlačítka černá	M22-D-S	MOELLER	91.060.035	1	/21.1
-SB72	Hlavice tlačítka černá	M22-D-S	MOELLER	91.060.035	1	/25.2
-SB72	Upevňovací adaptér + spínací kontakt	M22-AK10	MOELLER	91.061.021	1	/25.2
-SB1	Hlavice prosvětleného tlačítka zelená	M22-DL-G	MOELLER	91.060.031	1	/21.0
-SB510	Hlavice prosvětleného tlačítka žlutá	M22-DL-Y	MOELLER	91.060.053	1	/10.5
-SB2	Rozpínací jednotka na adaptér	M22-K01	MOELLER	91.061.024	1	/21.1
-SB501	Rozpínací jednotka na adaptér	M22-K01	MOELLER	91.061.024	3	/10.2
-SB510	Spínací jednotka na adaptér	M22-K10	MOELLER	91.061.022	2	/10.5
-SB501	Hlavice hřibového ovládače do krabičky	M22-PVT 263467	MOELLER	91.060.030	1	/10.2
-SB502	Box nouzového zastavení	XALK01	TELEMECANIQUE	91.190.027	1	/10.2
-SB502	Hlavice hřibového ovládače	ZB5 AS844	TELEMECANIQUE	91.060.012	1	/10.2
-SB502	Rozpínací jednotka	ZENL1121	TELEMECANIQUE	91.061.029	3	/10.2
-SID425	Řídící jednotka SIMOTION D425	6AU1425-0AA00-0AA0	SIEMENS	91.995.510	1	/14.3
-SID425	Paměťová karta pro SIMOTION D	6AU1400-2PA00-0AA0-Z M42	SIEMENS		1	/14.3
-SL1		*** chybí artikl ***			1	/21.8
-SLM1		6SL3130-6TE21-6AA3			1	/11.0
-SMC1	Modul snímačů SMC30, SINAMICS S120	6SL3055-0AA00-5CA2	SIEMENS		1	/15.2

Výrobce si vyhrazuje použít ekvivalentní náhrady přístrojů.

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Stroj: Performance 460A

Název stránky: Kusovník

Číslo projektu:
Zpracoval:
Datum: 18.8.2010

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Kusovník artiklů

Označení přístroje	Typ přístroje	Objednací číslo	Výrobce	Skladové číslo	Množství	Umístění (strana.sloupec)
-SMM1	Motorový modul jednoosý 9A, SINAMICS S120	6SL3120-1TE21-0AA3	SIEMENS		1	/13.1
-SQ62	Koncový snímač indukčnostní	BES M08MI-PSC15B-BV06	BALLUFF	91.172.001	1	/22.6
-SQ46	Koncový snímač indukčnostní	BES M08MI-PSC15B-BV06	BALLUFF	91.172.001	1	/22.4
-SQ72	Koncový snímač indukčnostní	BES M18MI-PSC80B-BV03	BALLUFF	91.172.005	1	/22.7
-SQ76	Koncový snímač indukčnostní	BES M18MI-PSC80B-BV03	BALLUFF	91.172.005	1	/22.7
-SQ45	Koncový spínač	D4N-4A31	OMRON	91.173.007	1	/22.3
-SQ71	Koncový spínač	D4N-4A31	OMRON	91.173.007	1	/22.7
-SQ43	Koncový spínač	D4N-4A32	OMRON	IFS	1	/14.2
-SQ75	Koncový spínač	D4N-4A32	OMRON	IFS	1	/14.2
-SQ73	Koncový spínač	D4N-4A32	OMRON	IFS	1	/14.2
-SQ41	Koncový spínač	D4N-4A32	OMRON	IFS	1	/14.2
-SQ42	Koncový spínač	D4N-4A32	OMRON	IFS	1	/14.2
-SQ74	Koncový spínač s kladkou, 1xNO/1xNC	PZ-FR555-M2	PIZZATO	91.173.018	1	/14.2
-SQ501	Bezpečnostní koncový spínač, 2xNC	QKS8	KEDU	91.173.012	1	/10.2
-SQ502	Bezpečnostní koncový spínač, 2xNC	QKS8	KEDU	91.173.012	1	/10.2
-SQ503	Bezpečnostní koncový spínač, 2xNC	QKS8	KEDU	91.173.012	1	/10.2
-SU1		6SL3000-0BE21-6DA0			1	/11.1
-TRM1	Termostat	DBK	VYRCBC	91.030.102	1	/09.1
-XA1	Zásuvka 1F	ZSE	OEZ		1	/08.2

Výrobce si vyhrazuje použít ekvivalentní náhrady přístrojů.

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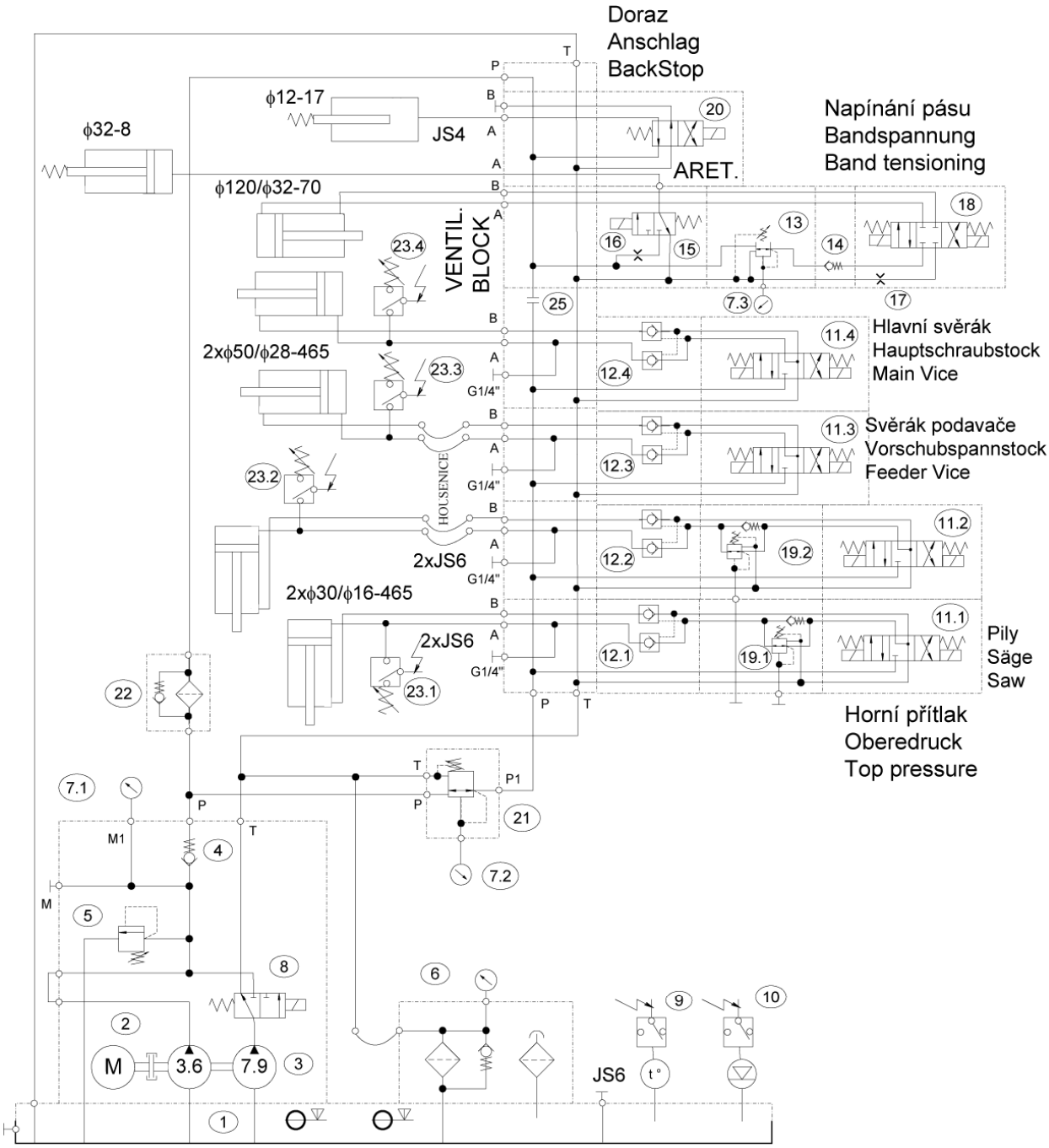
6.2. Hydraulické schéma / Hydraulikschema / Hydraulic diagram



Základní technické parametry
Technische Spezifikation
Technical specification

205.A416-000
PR0578

Typ / Type / Type	SZ 460 (Performance 460)
Hydraulický agregát / Hydroaggregat Hydro aggregat	19323800 92.001.059
Neuvedené světlosti / Unerwähnt Lichtbreite Unlisted inside diameters	JS10
Výstupní šroubení / Ausgangschraubung Output screewing	G1/4"
p	6,5 Mpa
Q	10,6 + 4,9 dm^3/min
n	1425 rpm
P	2,2 kW

Poz.	Název	Typ	Počet
1	Nádrž / Behälter / Tank	N30-B0-II 30 dm^3	1
2	Elektromotor / Elektromotor / Electromotor	MA-AL100L 2,2 kW 400/230V,50Hz, 5,07 A	1
3	Hydrogenerátor / Hydraulikgenerator / Hydrogenerator	P 23-7,9/3,6 L.65334 7,9/3,6 cm^3/ot.	1
4	Jednosměrný ventil / Einwegventil / One-way valve	V J01-06/S G-1	1
5	Přepouštěcí ventil / Bypaßventil / By pass valve	VPP2-04/S-10S 6,5 MPa	1
6	Zpětný filtr / Filter / Filter	FR043-166/0 (10 µm) 92.153.101 /.039	1
7	Manometr / Manometer / Manometer	∅68 S GLYCERINEM 0-6 M P a	1
8	Rozvaděč / Verteilungsventil / Distributor	S D2E -A 3/C2D 21 408-0328.003	2
9	Rozvaděč / Verteilungsventil / Distributor	RPE3-043Z 11/02400E 1K 1 92.101.010	2
10	Rozvaděč / Verteilungsventil / Distributor	RPE3-043Y 11/02400E 1K 1 92.101.005	1
11	Blok rychloposuvu / Eilgangsblock / Speed shift block	729-0084 92.153.006	1
12	Hydraulický zámek / Hydraulisches Schloß / Hydraulic lock	VJR1-04/MA 92.103.002	1
13	Rozvaděč / Verteilungsventil / Distributor	RPM2-043Z11/04-24M IKRO 92.101.024	1
14	Zátka / Einfüllspund / Fill stopper	M6	1
15	Tlakový spínač / Druckschalter / Pressure switch	166415031059 20-50bar 92.201.003	2
16	Tlakový filtr / Druckfilter / Pressure filter	D042-153 (3 µm) 92.153.102 /.055	1
17	Kostka regulace / Regulationklotz / Regulation cube		1
18	Zátka / Einfüllspund / Fill stopper		1
19	Clona / Schürze / Shield	∅0,8 92.153.022	1
20	Škrtící ventil / Drosselventil / Throttle-valve	V S 01-04/R2,5-O 92.152.001	1
21	Ventil pojistný / Sicherungsventil / Retaining valve	VPNH 1/4" 92.151.001	1