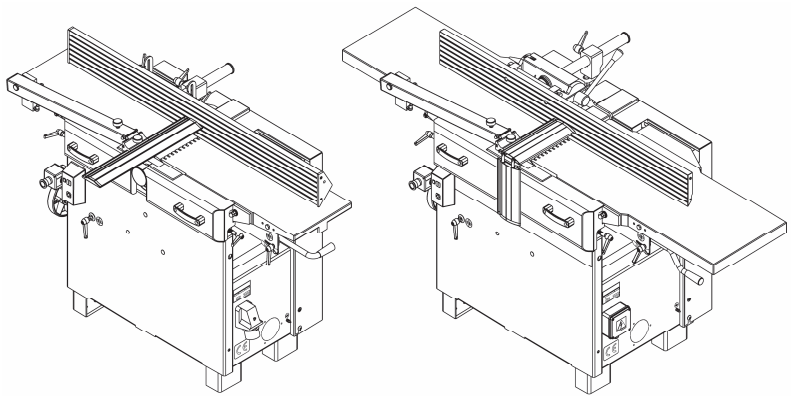
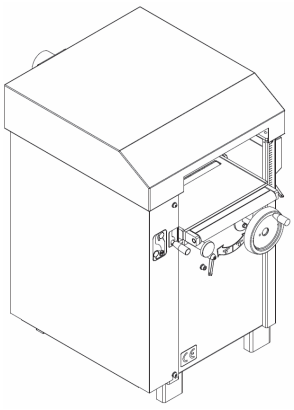
COMBINED PLANING AND THICKNESSING MACHINE

MSP 315 - MSP 415 - SP 410



MP 415

ONE-SIDED THICKNESSING MACHINE



translation of the original ***Service instructions handbook***

updated 11/ 2017

ROJEK

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Contents

Introduction

This manual was conceived at the manufacturer and is an indivisible part of the delivery enclosed with the machine. It contains basic information for qualified operating staff and describes the surroundings and using ways of the machine for those it is intented. It contains also all necessary information for a correct and safe operating.
The machine is equipped with various safety equipment protecting operator and machine as well at usual technological using. These regulations, however, cannot sheet all other safety aspects. That is why operator must peruse and make sense of this manual before starting of machine use. Installation and operation mistakes will be foreclosed herewith.
Do not try to start the machine before having read all instructions manual delivered with the machine and understood every function and technique.
Some information or drawings need not be intended especially for by yours bought type, for this manual contains all information of other this type variants we produce. By comparing of competent manual part with your machine - you will learn whether they correspond.

The producer reserves himself the right for particular variants in frames of a fluent technical development of the machine.

To better stress the importance of some basic passages, they are printed in heavy letters and marked by some preceding symbols - Appeal recommending to follow entirely following regulation :

Appeal recommending to act entirely according to following safety regulation. Disobservance of this regulation can be very **dangerous** and cause a killing or grave health exposure of operating personnel.

Warning from improper techniques or way of machine use that can endanger human health, machine functions, enviromnent or cause economic loss. Breach of these regulation may cause a killing or a grave health exposure of operator.

Caution is an appeal to a due care for practising following operations. Non-performing this caution may cause a human injury or damage of the machine.

Regard the instructions explicit on shields herewith the machine is equipped. In case of its damage contact the producer and renew the shield in any way.

Caution

EU Conformity Declaration

Producer: **Rojek woodworking machinery, joint stock company ID nr. CZ25266411**

Place of business : **Masarykova 16, 517 50 Častolovice, the CZECH REPUBLIC**

Product term: **Combined planing and thicknessing machine**
One side thicknessing machine
Combined planing and thicknessing machine

Type designation: **MSP 315, MSP 415**
MP 415
SP 410, SP 510

Type designation: Woodworking machine for planing and thicknessing wood intermediatesand those on wood base

We, at own exclusive responsibility, declare that the explicit product was produced in accordance with following regulations and norms:

EU Directive 2006/42/ES stating technical requirements on machinery
EU Directive 2014/35/EU stating technical requirements on electrical appliances of low voltage
EU Directive 2014/30/EU stating technical requirements on electromagnetic compatibility.

Applied norms:
EN ISO 12100 : 2010, EN 860+A2 : 2012,EN 861+A2 : 2012, EN ISO 13857 : 2008
EN 349 : 1993 + A1 : 2008, EN ISO 13850: 2015, ISO 447 : 1984, EN 614-1 : 2006 + A1 : 2009),
ISO 14120 : 2015, EN ISO 13849-1 : 2015, EN 1037: 1995 + A1 : 2008, EN ISO14119:2013,
epv HD 60364-1 : 2008, epv HD384.4.482 S1, epv HD 60364-5-51 : 2009, EN 5011:2009,
EN 60204-1 : 2006, EN 60073: 2002, EN 80416-1 : 2009, EN 80416-2 : 2001.

The conformity was reviewed in cooperation with a notified body, the Czech state test facility :
Státní zkušební ústav SZÚ Brno, NB 1015

Certificate type: E-30-20162-18, E-30-20163-18, E30-00354-18

The last 2 figures of the calendary year nr., the electric device was granted the mark CE in: 02

Častolovice — Evžen Rojek

2. 5. 2018 — executive director — signature

1.0 Use of machine

The machine is designed as a combined planer and thicknesser or a one-side thicknessing machine for use in joiners shops(plants) at lengthwise (related to wood fibres) processing of wood and materials on its base within workpiece width of 300 or 400 mm.
Machine is intended for being operated by one person.
Any manipulation with the machine is forbidden for children and youth.

1.1 Qualification of workers

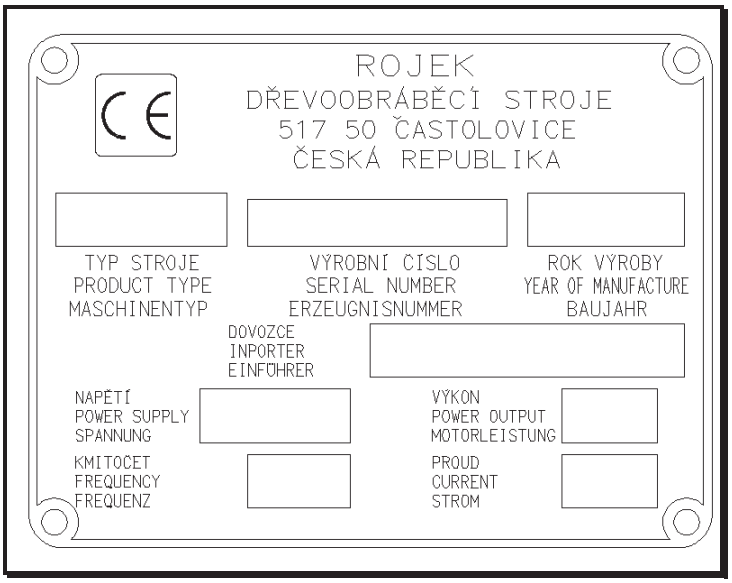
Only a man or woman trained in woodworking branche or instructed and schooled by such a specialist can operate the machine. Machine operator is obliged to learn this manual and abide with all safety regulations, rules and appointments, valid in country in question.

1.2 Working surroundings

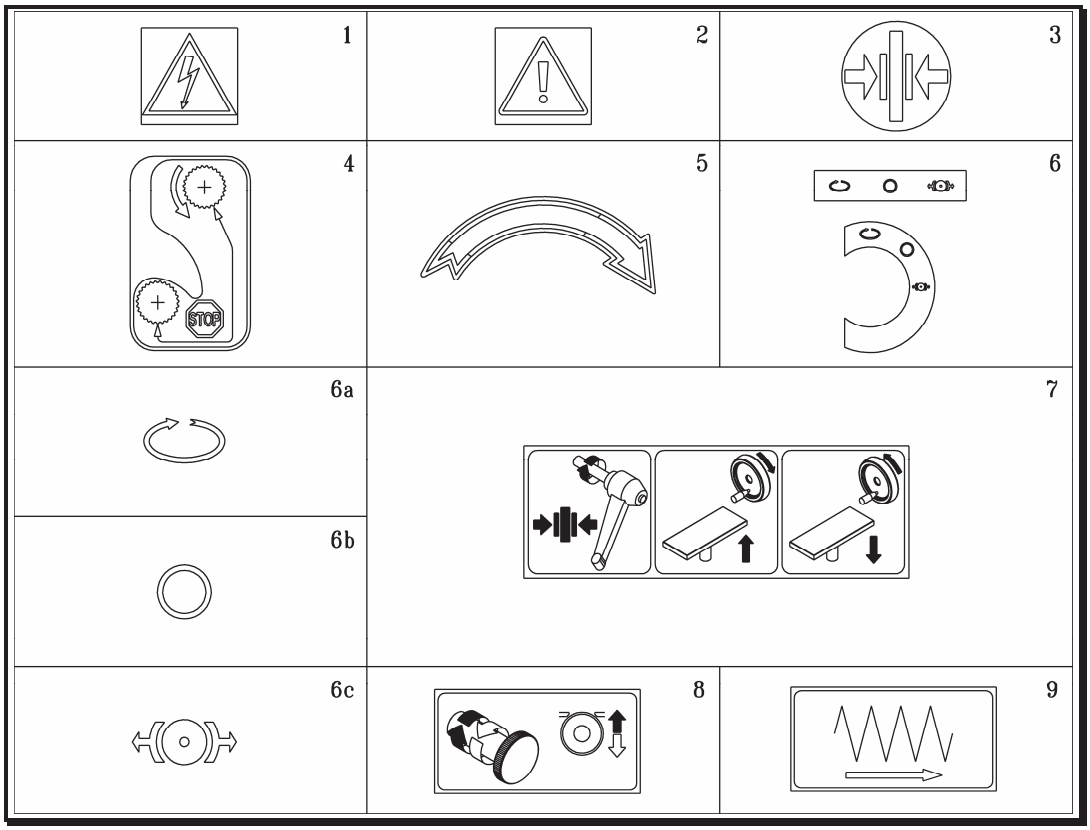
The machine must operate in workshop surroundings of temperature range +5°C - +40°C, relative air humidity 30% - 95% non condensing and altitude 1000 m above the sea in surrounding classified according to CSN 33 2000-1, ed.2: CSN 33 2000-5-51 ed.3 fire danger of combustive dusts (BE2N2).

2.0 Machine signification

The machine type can be identified at the production shield located on the machine frame.



MSP 315 combined planer and thicknesser with tiltable tables, planing width 310 mm
MSP 415 combined planer and thicknesser with tiltable tables, planing width 410 mm.
SP 410 combined planer and thicknesser with tiltable tables, planing width 410 mm.
MP 415 one-side thicknessing machine.



Informative shields and shields warning against dangers are placed at the machine.

1. attention, electric parts
2. attention, warning
3. fixing
4. feeding rolls control
5. rotating direction
6. switch for unbraked - brake released
6a. operating rotation direction
6b. switched off, stillstand
6c. unbraked - brake released
7. thicknessing table adjustement
8. Control of table rollers
9. Control of feeding motor

3.0 Technical data

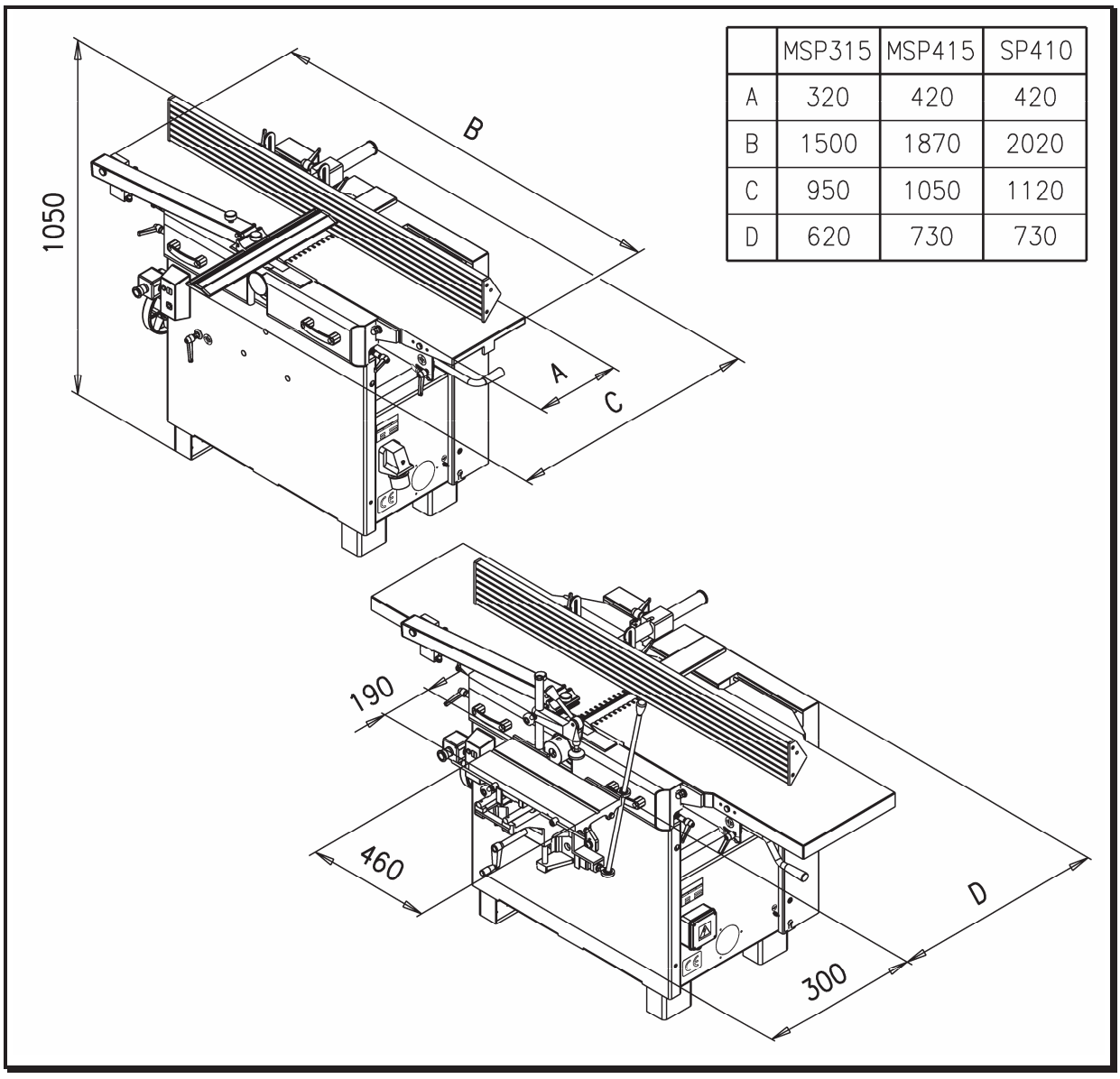
3.1 Technical data of MSP 315; MSP 415 and SP 410

		MSP 315	MSP 415	SP 410
length	mm	1 600	1 870	2 020
width	mm	950	1 050	1 120
heigth	mm	1 050		
planning tabels height	mm	890		
planer table dimensions	mm	1 500 x 320	1 870 x 420	2 020 x 420
thicknesser table dimensions	mm	750 x 308	720 x 410	720 x 410
motor power	kW	3,7	3,7	4
motor rotating speed	RPM/min	2 860 (3 432 při 60 Hz)		
cutterblock rotating speed	RPM/min	4 200		
cutterblock diameter	mm	95		
number of knives in cutterblock	pcs	3 (4)		
max. width of planed workpiece	mm	310	410	410
max. thicknessed workpiece width	mm	300	400	400
max. thicknessed workpiece height	mm	230		
max. thicknessing chip removal	mm	5		
max. planing chip removal	mm	4		
feeding rollers diameter	mm	40		
thicknessing feeding speed	m/min	8	8 (7,5/15 ; 5/10)	8 (7,5/15 ; 5/10)
tiltable fence tilting angle - grades	°	0^o – 45^o		
exhausting nozzle diameter	mm	100		
voltage / frequency	V/Hz	3f + PE + N ; 400(230) V / 50 (60) Hz 1f + PE + N ; 230 V / 50 (60) Hz		
line safeguarding	A	16		
dimensions in packing	mm	1 620 x 700 x 1 050	1 900 x 810 x 1 050	2 050 x 810 x 1 050
machine weight brutto	kg	330*	390*	420*
machine weight netto	kg	305*	360*	390*

- Weight of machines can varied according machine execution and options.

Machine dimensions

MSP 315, MSP 415, SP 410



	MSP315	MSP415	SP410
A	320	420	420
B	1500	1870	2020
C	950	1050	1120
D	620	730	730

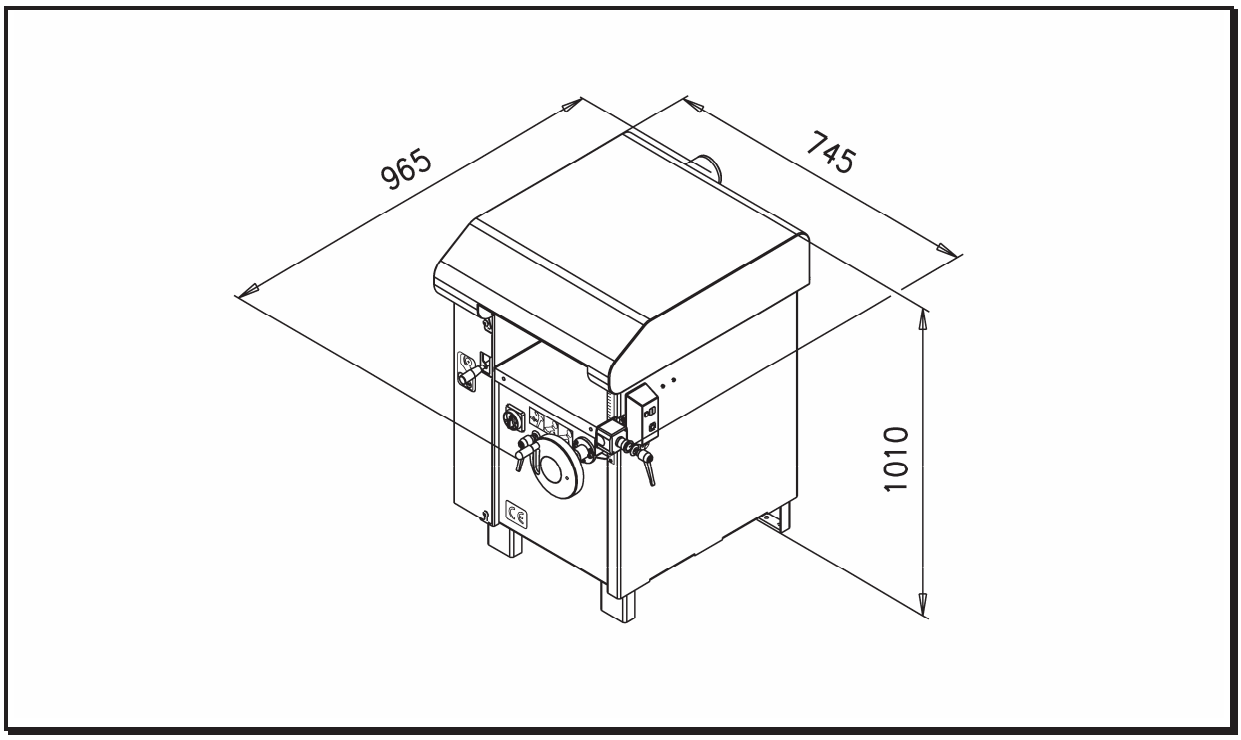
3.2 Technical data MP 415

		MP 415
Length	mm	965
width	mm	745
height	mm	1010
thicknesser table dimensions	mm	720 x 410
motoru power	kW	3,7
motor rotating speed RPM	/min	2 860 (3 432 by 60 Hz)
cutterblock rotating speed RPM	/min	4 200
cutterblock diameter	mm	95
number of knives in cutterblock	ks	3 (4)
maximum thicknessing width	mm	400
maximum thicknessing height	mm	230
maximum splitter removal thicknessing	mm	5
diameter of feeding rolls	mm	40
feeding speed thicknessing	m/min	8 (7,5/15; 5/10)
exhausting nozzle/ hose diameter	mm	100
voltage / frequency		1f + PE + N ; 230 V / 50 (60) Hz 3f + PE + N ; 400 (230) V / 50 (60) Hz
line safeguarding	A	16
dimensions in packing	mm	975 x 810 x 1060
weight brutto	kg	245*
weight netto	kg	235*

- Weight of machines can varied according machine execution and options.

Machine dimensions

MP 415



3.3 Possible machine variants

	MSP 315	MSP 415	SP 410	MP 415
Motor power - 2,2 kW 1F - 3; 2,2 kW 3F - 3,7 kW 3F (only 3x400V) - 4,0 kW 3F (only 3x400V)	 1 1 1 -	 1 1 1 -	 - - 1 1	 1 1 1 -
Operation voltage: - 1 x 230 V - 3 x 230 V or 3 x 400 V	 1 1	 1 1	 1 1	 1 1
Frequency: 50 or 60 Hz	1	1	1	1
independent feeding drive thicknessing: - 2-speed motor 3x400V 0,3/0,45 kW (7,5/15 m/min)	-	1	1	1
cutterblock: 3 knives 4 knives Tersa	1 1 1	1 1 1	1 1 1	1 1 1
table prolongation by rolls	1	1	1	1
Table rollers	-	1	1	1
Mortiser VDA 315	1	1	-	-
Undercarriage	1	1	1	1
Cutterblock brake release (only with CEG selfbraking motors)	1	1	1	1

3.3 Values of removal wood layer thickness, feeding speed and machine motor power

power (kW)	feeding speed (m/min)	processed workpiece width (mm)	removal wood layer thickness (mm)
2,2	5	300	2
3	5	300	3
3	5	400	2
4	5	400	2,7

Above mentioned values are valid for spruce wood at relative air humidity of 12 - 15 % and sharp knives in cutterblock. These values can be regarded as starting ones at taking the machine to operation. At longer machine use these values can be partly changed e. g. when planing of harder wood pieces and knives getting blunt it is necessary to count with adequate reduction of stated values.
Shavings removal thickness related to planed width and hardness of wood can be chosen only within the values at those driving motor does not get overloaded. On the contrary the protection of motor will act and the machine will get stopped.
It is necessary to count with worsened quality of processing when working pieces of small thickness considering the springing of processed material piece.

3.4 Data of machine operation noise (CSN EN 861+A2; CSN ISO 7960/1997)

		MSP 315	**MSP 415**	**MP 415**
nois level A in operator´s place (L_pA_{eq})	idle run	L_pA_{eq} = 89,5 dB(A)	L_pA_{eq} = 81,5 dB(A)	L_pA_{eq} = 81,5 dB(A)
	working	L_pA_{eq} = 91,6 dB(A)	L_pA_{eq} = 88,4 dB(A)	L_pA_{eq} = 91,4 dB(A)
acoustic power level A (L_{WA}) CSN EN ISO 3760 (2011) K = 4 dB	idle run	L_{WA} = 95,9 dB(A)	L_{WA} = 89,9 dB(A)	L_{WA} = 89,5 dB(A)
	working	L_{WA} = 98,2 dB(A)	L_{WA} = 95,1 dB(A)	L_{WA} = 98,7 dB(A)

Above stated values are those of emissions and need not represent the safe working values. Although there exists a correlation between emissions values and levels of exposition, these values cannot be used for a reliable statement whether other precautions are necessary or not. Agents, influencing real exposure of workers, include other working space attributes, other sources of nois, etc., e.g. the number of machines and other from neighbourhood influencing processes. The most permissible exposition levels can differ according to country in question, too. This information will serve for a machine user to a better astimation of risks.

3.5 List of used documents

Directive 2006/42/EU of the European Parliament and of the Council, as amended, laying down technical requirements for machinery
Directive 2014/35/EU of the European Parliament and of the Council, as amended,
on the assessment of conformity of electrical equipment, intended for use in certain marginal voltage, when placed on the market.
Directive 2014/30/EU of the European Parliament and of the Council, as amended,
on the assessment of conformity of products in terms of electromagnetic compatibility, when they are placed on the market.

EN ISO 12100 : 2011 (EN ISO 12100 : 2010)
Safety of machinery - General fundamentals for designing - Risks appreciation and dispraise
EN 860+A2 : 2012 (EN 860+A2 : 2012)
Safety of woodworking machinery - One-sided thicknessing machines

EN 861+A2 : 2012 (EN 861+A2 : 2012)
Safety of woodworking machines. Combined planing and thicknessing machines.
EN ISO 13857: 2008 (EN ISO 13857: 2008)
Safety of machinery - Safe distances to prevent reach of dangerous places by the upper and lower limbs
EN 349 + A1: 2008 (EN 349: 1993 + A1: 2008)
Safety of machinery - Smallest gaps to prevent compression of parts of the human body.
ISO 13850: 2017 (EN ISO 13850: 2015)
Safety of machinery - Emergency stop function - Design principles
ISO 447: 1992 (ISO 447: 1984)
Machine tools - Direction and sense of movement of controls
EN 614-1 + A1: 2009 (EN 614-1: 2006 + A1: 2009) Safety of machinery - Ergonomic design principles - Part 1: Terminology and general principles
ISO 14120: 2017 (ISO 14120: 2015)
Safety of machinery. Protective covers. General requirements for the construction and manufacture of fixed and movable guards
ISO 13849-1: 2017 (EN ISO 13849-1: 2015)
Safety of machinery - Safety parts of control systems - Part 1: General principles for construction
EN 1037 + A1: 2008 (EN 1037: 1995 + A1: 2008)
Safety of machinery - Prevent unintentional start-up
ISO 14119: 2014 (EN ISO 14119: 2013)
Safety of machinery - Locking device associated with protective covers - Principles for design and selection
EN 55011 ed.3: 2010 (EN 55011: 2009)
Industrial, Scientific and Medical Devices - High Frequency Interference Characteristics - Limits and Methods of Measurement.
EN 60204-1 ed. 2: 2007 (EN 60204-1: 2006)
Safety of machinery - Electrical machinery - Part 1: General requirements
EN 60073 ed.2: 2003 (EN 60073: 2002)
Basic and Safety Principles for Human Machine Interface, Marking and Identification - Coding Policy for Communicators and Drivers
EN 80416-1 ed.2: 2009 (EN 80416-1: 2009)
Basic rules for graphical symbols for use on articles - Part 1: Creation of graphic markers for registration.
EN 80416-2: 2002 (EN 80416-2: 2001)
Basic rules for graphical symbols for use on articles - Part 2: shape and using of arrows.

4.0 Safety instructions

4.1 in general

This machine is provided with various safety equipment protecting the operator and the machine as well. This, however, cannot involve all safety aspects. Therefore the operator must read through and understand this chapter. He must moreover respect also other aspects of danger, refering to surroundings conditions and processed materials.

This manual takes in 3 categories of instructive safety symbols :

Appeal recommending to proceed entirely according to following instruction(s). A dispatch or operator´s heavy injury impends in case of non-performing this regulation.

Warning against improper techniques or machine using ways, those can endanger human health, machine functioning, environment or cause economic worses.

Caution is an appeal to appropriate care during practising of following activities. Non-performance of this caution can cause a small sized injury or machine damage.

Follow instructions stated on shields, fixed on the machine. Do not remove nor damage the shields. In any case of a shield damaging – always contact the producer !

4.2 Basic safety requirements

Never touch the low voltage system on the electric control pannel, transformers, motors and terminal boards. Every of mentioned unit is indicated with a shield.

- Before connecting machine to mains: Make sure that all safety parts are in active position and check up their functioning. In case of necessary removing doors or protecting coverings – switch off main switch and lock it or disconnect by towing plug from mains socket.
- Catchers of eventual back throw must be freely movable and its functioning controled regularly several times a day.

- When door or protecting covering are apart - Do not connect machine to mains.

To avoid incorrect operating – learn positions of switches before machine starting.
Remember position (location) of emergency switch to be able to use it at once any time.

- Avoid touching some switch(es) by chance on running machine.
- Never touch rotating tool by hands or somewhat else.
- When you will not work on at the machine – switch it off by control pannel switch and disconnect from the mains.
- Before cleaning : Switch off the machine and lock the main switch or tow plug off socket.

- Before doing maintenance inside machine : Always switch it off and lock main switch or disconnect plug from mains socket.
- When more workers operate the machine – do not begin another work not having in-formed other worker about your intention how you will run on.
- Do not do up the machine in any way able to endanger its safe operating.
- In doubts about correctness of technique – contact responsible person.

- Do not neglect practising of regular inspections in tune with service manual instructions.
- Check up and make sure that nothing troublesome ocurs . on the machine.
- After finishing of work adjust machine to be ready for following series of operations.
- In case of mains outage – switch off immediately main switch or tow plug out from socket.
- Do not overpaint smear, damage, do up nor get off safety shields. If they get unreadable or lost – contact production plant and renew them.

4.3 Dress and personal safety

- Experience shows that various personally worn objects e.g. finger rings, watches, wristbands and the like used to cause injuries. Hence put them away before beginning of work, fasten sleeves, remove tie – those could be caught by various parts of working machines. Brace your hair so as not to fly free and wear suitable shoes recommended or rated by working safety rules of a country in question.
- Wear safety outfit (glasses, apron, safety footwear and the like).
- In case of obstacles above your head in working space – wear a helmet.
- Wear always a protecting mask during planing material – source of dust (when planed).
- Never wear free working dress.
- Never work on the machine under influence of drugs or spirit drinks.
- If you suffer from stuggers, fade or swoon – do not work on the machine.

4.4 Safety regulations for operator

Get up content of this manual before machine starting up.

- Check up whether electric cabels are not damaged so as an electric current fading would not cause an injury (electric shock).
- Check up regularly whether safety coverings are properly mounted and if they are unda-maged. Damaged coverings repair immediately or replace with other ones.
- Do not start the machine with removed protecting covering.
- Never use deformed or cracked tools.
- Replace blunt tools as soon as possible, for blunt tools often cause injuries or damages .
- Never use tools at higher speed than recommended by its producer.
- Stop all machine functions before replacing of tools.
- Do not remove nor in any else interfer to safety elements like coverings, limit switches, nor practise its mutual blockage.
- Require an assistance for manipulation with parts exceeding your abilities.
- At a storm we recommend : Do **not** operate at the machine !

4.5 Safety rules for maintenance

Get up manual instruction for machine maintenance men in all points before starting any maintenance work.

- Before beginning with maintenance works: Switch off always the main switch and lock it or disconnect the machine by towing off the plug from socket. Hererwith you avoid an occassional starting of machine by chance by another else person.

- A qualified person must practise maintenance works on electric parts.
- The machine is not disconnected from voltage when it gets stopped. Switch off always the main switch and lock it or disconnect machine by towing off the plug from socket.
- Do not clean the machine or its peripheral system if machine is completely out of run as long as the main switch is not switched off or the plug towed out from the mains socket.
- Keep your fingers distant from belts and belts pulleys and from chains and chain wheels. Before exchange of machine electric parts – switch off the main switch, lock it or disconnect the machine by towing off the plug from the socket. For replacing of defected pro ducts use those consistent with specification of originals.
- Do not remove or do up blocking of limit switches or other safety components.
- Keep always tidy the space for maintenance including your working place.

- Maintenance works must be practised by qualified personnel in tune with producer´s instructions.
- Read through all the instructions manual for maintenance men patiently.
- For an exchange of parts and needy subjects – ensure in advance equal ones with the original type or corresponding with the norms.
- Use only specified brands of lubricant (oil or grease) or with these equal ones.
- When one belt of used set of belts gets drained more than rated – exchange all belts.
- Do not use compressed air for machine cleaning or removing of wood chips.
- Control results of maintenance in presence of a responsible person.

4.6 Safety rules for working place

- Ensure always sufficient working space and free access to the machine and its peripheral device.
- Place the tools and other obstacles at a place for this intended and remote from the machine.
- Ensure sufficient lighting in working space that will not throw shadows or cause a stroboscopic effect. Hygienic norms indicate 500 lx for minimal lighting for safe and quality work.
- Never lay tools or other subjects onto working tables or coverings.

5.0 Transport and storage

5.1 Transport and storage

Be especially careful during transport and manipulation and commit it to qualified personnel especially trained for this kind of action.

You must secure that no person nor subject could be folded by the machine during loading and unloading it ! Never enter the space under machine lifted up by crane or high-lift !

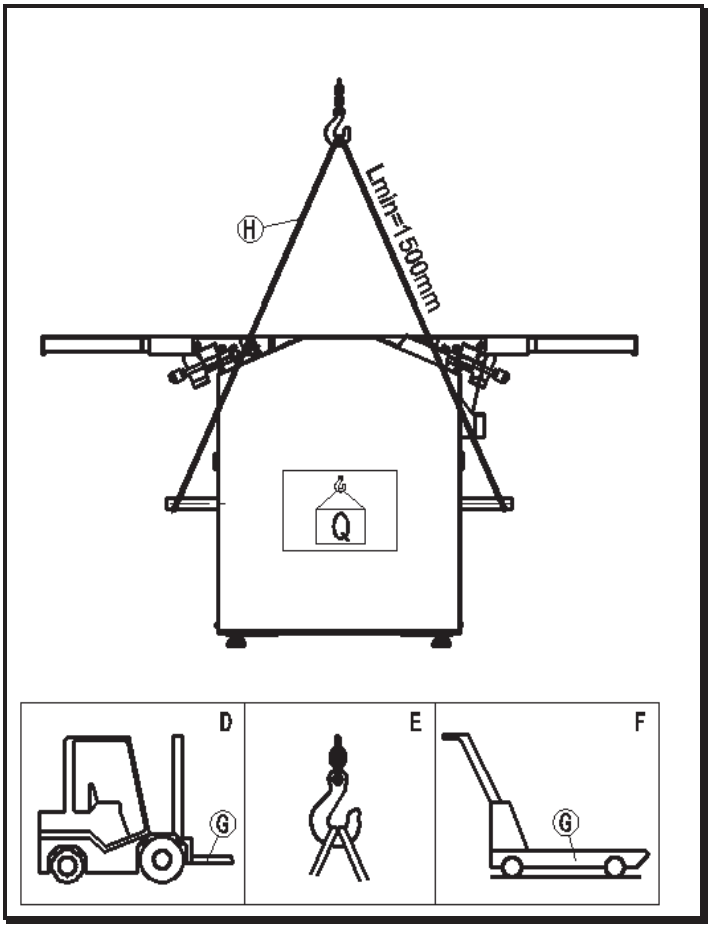
The machine must be protected against excessive vibrations and moisture during transport. It must be stored indoor in temperature range (minus) - 25°C to + 55°C.
The machine is modularly wrapped in shrinkable folio when transported. On customer´s wish the machine can be packed in a cartoon or resistant wooden box.

5.2 Machine lifting

The machine or its separate parts can be lifted only with an approved lifting appliance of certified carrying capacity. We recommend to use : D - high-lift; E - crane or other lifting appliance; F - manual fork lift.

Use a high-lift of sufficient fork length !

Prepare a high-lift (D) or manual lifting carriage (F) of sufficient forks carrying capacity - shift the fork (G) under the machine.



When using a crane(E)or similar lifting mechanism - proceed followingly:
- prepare 4 lifting ropes (H) of minimal length 2 m
- bend ropes onto the crane hook of demanded carrying capacity
- place the second end of ropes under machine frame
- check up the stability of machine hang at a moderate lifting up
- lift the machine carefully and slowly and then relocate it without sudden changings of moving onto chosen place.

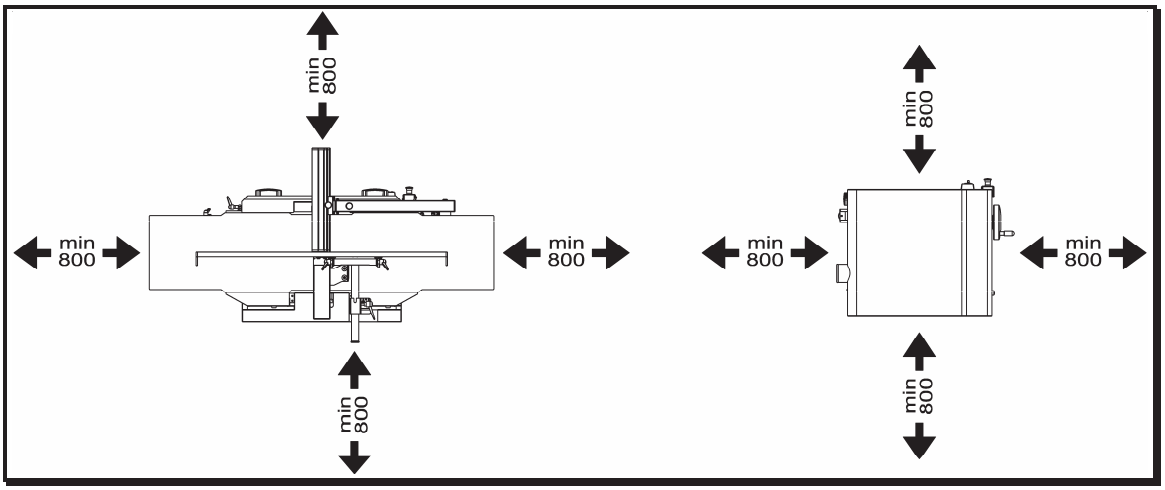
The weight of MSP 315 is 305 kg
MSP 415 is 360 kg
SP 410 is 390 kg
MP 415 is 235 kg.

6.0 Machine positioning

Remove protecting coat from table and other machine parts with a solvent. Do not use petrol or kindred solvents for this action. They can cut down resistance against corrosion of some machine parts.

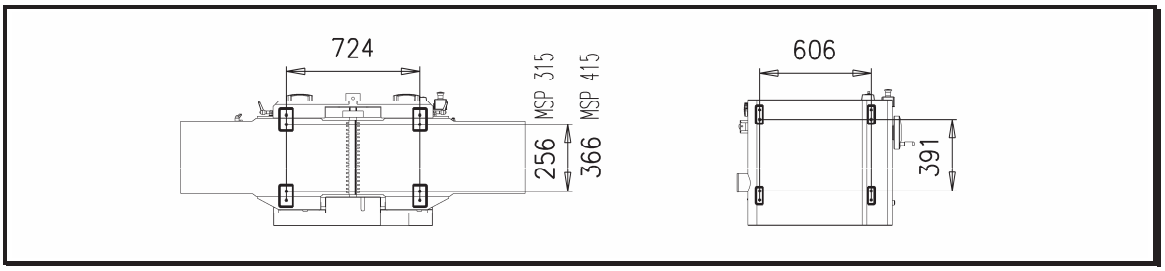
The working space extent depends on machine dimensions, intended working operations and dimensions of processed material.
Do not forget to let free a big enough space for installment of a sufficiently effective exhausting unit or hoses connecting with the central exhausting system.

6.1 Working space



It is important to keep a free space of at least 800mm, requested as working space surrounding the machine.
If a long peace is planed, it is necessary to have a sufficient space in front of and behind the machine in places of material in - and output.

6.2 Machine levelling and fixing



The machine (in lower part of stand) has feet with levelling screws and bores for anchoring bolts. Use steel washers (part of delivery) under levelling screws and balance the machine in plane with the clearance limit 1 mm/1metre
and screw down machine feet into the bottom (anchor the machine).
Attached drawing shows a lay-out of anchoring openings on the machine.

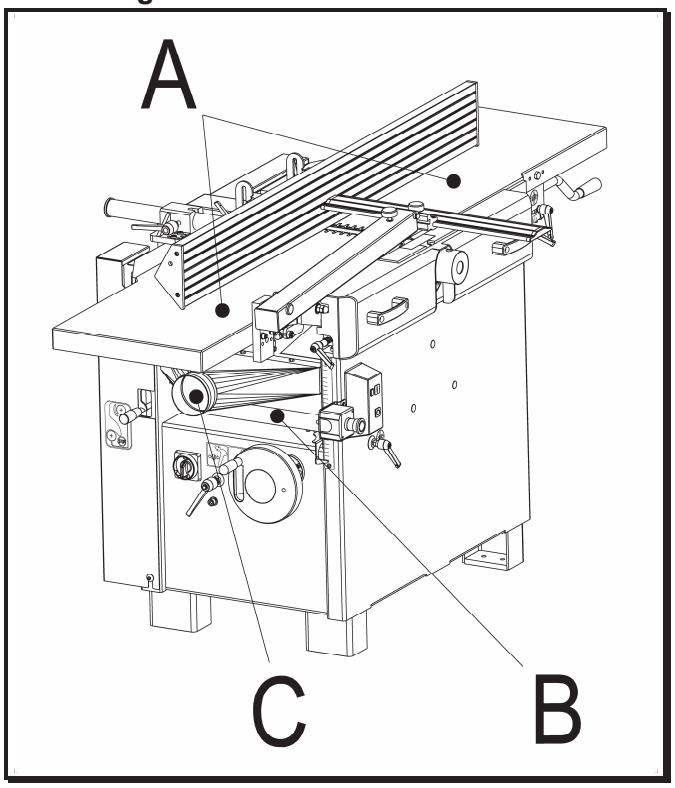
7.0 Exhausting connection

An exhausting unit of minimal volumetric capacity 570 m^3h^{-1} and minimal air stream speed in the hose 20 ms^{-1} for dry particals, and 790 m^3h^{-1} at minimal air stream speed in hose of 28 ms^{-1} for wet particals, is necessary for proper functioning of the machine.

Always operate machine only with running exhausting !
Start the machine and the exhausting unit all at once or start exhausting unit first and than machine!

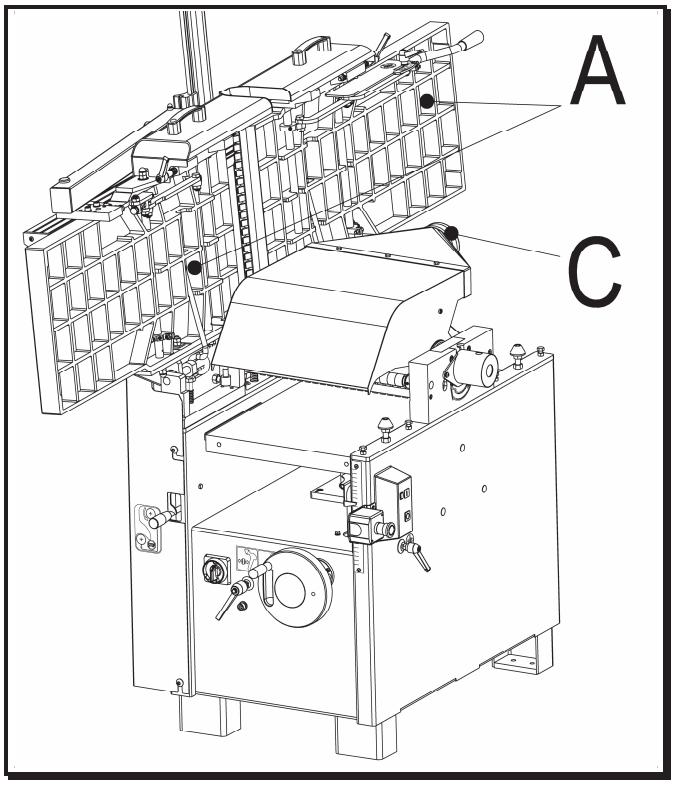
Use a flexible exhausting hose of diameter 100 mm for connecting. Connect the exhausting hose to nozzle, located as follows :

7.1 Planing



Both planing tables (A) have to be closed when planing. Suction hood (C) is flipped under to the back planing table and thicknessing table. To have enough space between these two tables is necessary to come down with thicknessing table on the value 160mm according to the scale. Suction tube must be connected to outlet (C)
Suction outlet diameter is 100mm.

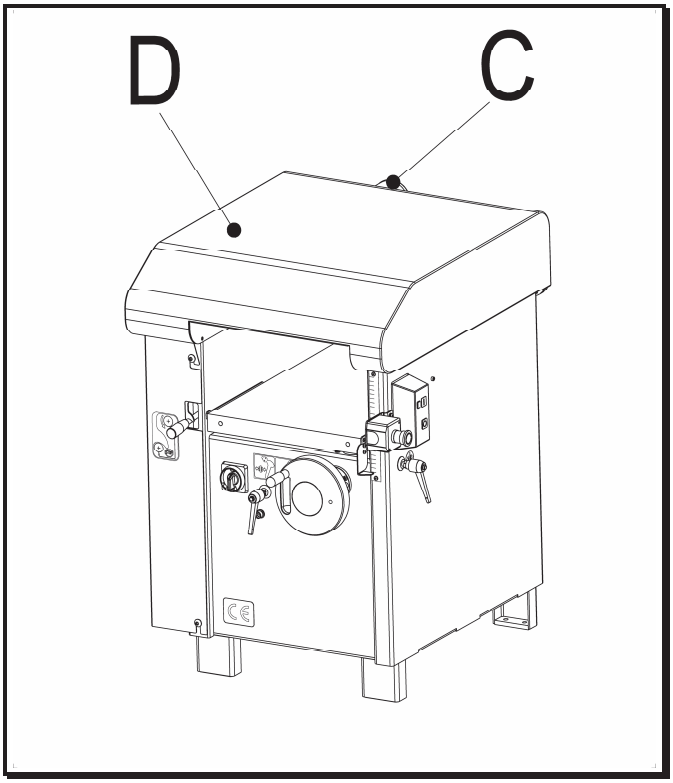
Before folding tables to the thickness position, move the fence to the front end position. There is a risk of damage to the cover on the back of the fence and the side cover of the machine.



7.2 Thicknessing

Both planing tables (A) have to be open. It is necessary to tilt over the suction hood (C) into the working position - dust hood nozzle is oriented out from the machine.

7.3 MP 415



Exhausting nozzle (C) is fixed part of tiltable cutterblock cover (D).

Suction outlet diameter is 100mm.

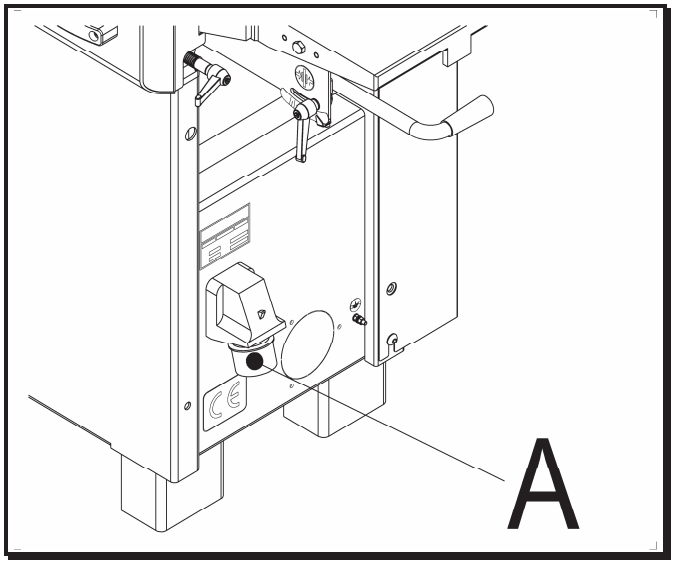
Wooden waste must be liquidated eco-friendly - not to worsen the environment .

8.0 Connecting to mains

Only a qualified person is allowed to connect machine initially to the mains.

8.1 Connecting to mains

The mains socket, the machine is supplied from, must be grounded (or neutralized) according to regulations and safeguarded with at least a 16 A fusible cut-out or with an L – circuit breaker. According to ČSN 33 2000-4-482 (epv HD 384.4.482 S1, according to Article 482.1.7) in the distribution system other than the cables with mineral insulated and busbar distribution systems, they must be protected against insulation faults in TN networks by means of current protectors 300 mA (see IEC 364-5-53, Article 531.2.4, relevant standards for the product). ≤ ≥∆with a rated tripping current of I

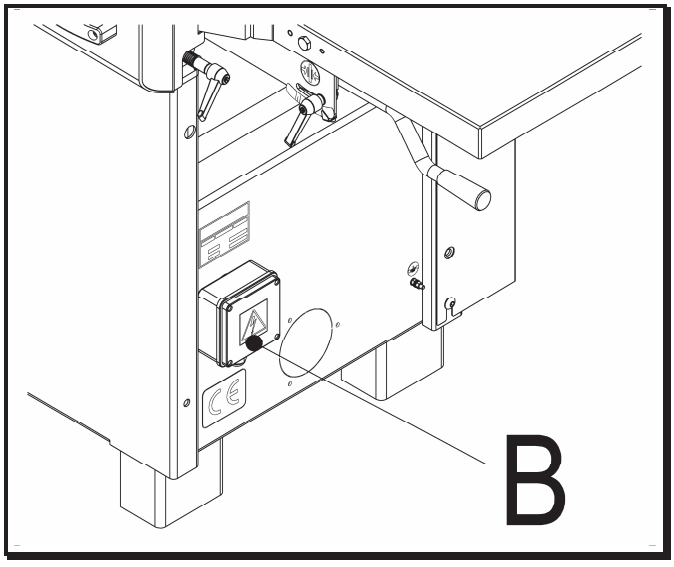


8.1.1 Machine connecting - up to 3 kW (installed motor power up to 3 kW includingly)

A 4-wire cabel with socket CEE 16 A (A) and plug CEE 16 A is used for supplying. The mains socket, the machine is supplied from, must be grounded (or neutralized) according to regulations and safeguarded with at least a 16 A fusible cut-out or with an L – circuit breaker.

8.1.2 Machine connecting - over 3 kW

(installed motor power over 3 kW)



Make sure that no voltage is at the supply lead before connecting. Unscrew the cover of the terminal board (B), put the connecting cable through - into the box with the terminal board and connect individual phase conductors with corresponding clamps. Connect the protective conductor (yellow-green) to the clamp PE and the central conductor (pale blue) to the clamp N, if it is required. Cross- sections of phase conductors and of the protective conductor must be conformable with legal standard norms. Check up the rightness of connecting and fasten the terminal cover with screws again.

8.2 Operation safety

Damaged supplying lead must be replaced immediately by a competent specialist. Machine run with damaged supply cables is dangerous to life and for it forbidden

Before establishing the machine to the run make sure that the voltage and frequency stated on the machine rating plate answer to those of supplying mains.

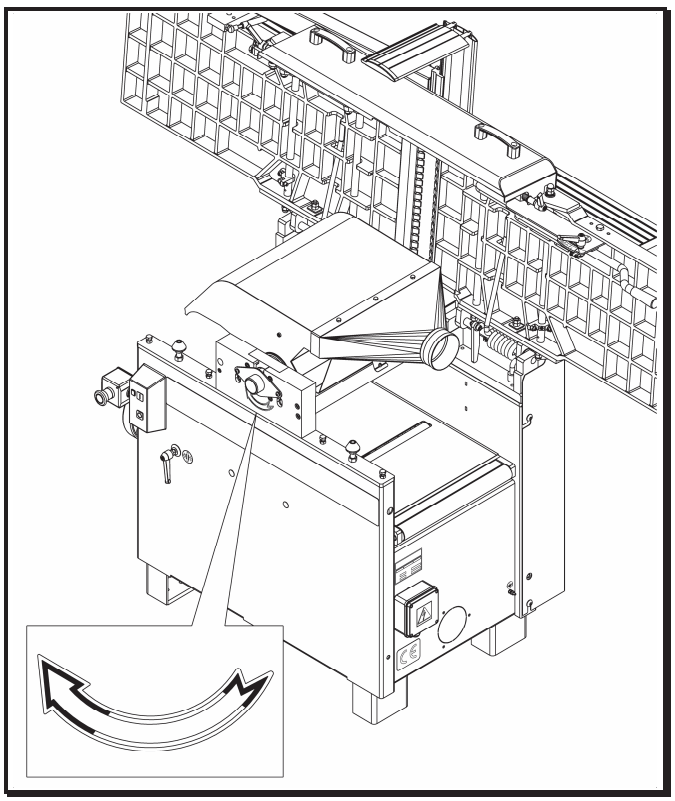
Always switch off the main switch and lock it or disconnect the machine by towing the plug from the socket before tools adjusting and replace and all adjusting, treatment and maintenance works. Herewith you avoid an occasional starting of machine by any else person.

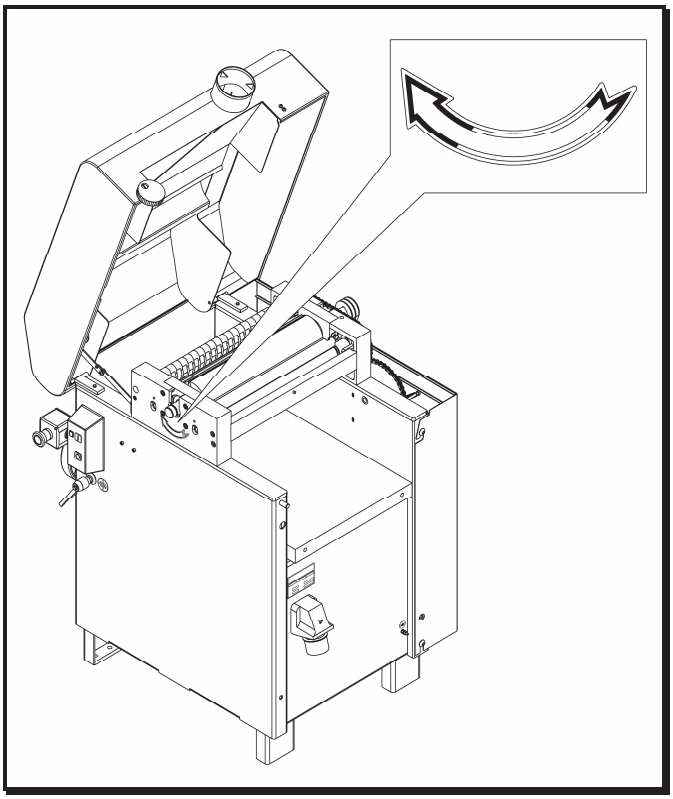
8.3 Rotating direction

An injury danger menaces at improper rotating direction of cutterblock !

MSP 315; MSP 415; SP 410

When standing at the input table side of planer against guiding ruler - the cutterblock must rotate against incoming material, i. e. to the right in direction of arrow situated at cutterblock.





MP 415
By openning the upper machine casing - the motor stops driving and the cutterblock runs down out. Do notice the rotation sense at this moment - it must be to the right when looking at the free cutterblock spindle end as the arrow marks up. Knives in the lower cutterblock part must move against the put in workpiece.

8.4 Rotating direction change

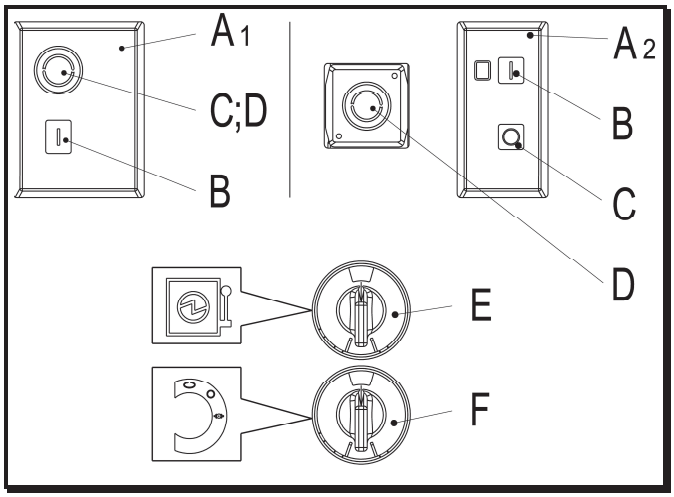
It is possible to change rotating direc-tion of 3-phases motors by exchanging (switch-over) of conductors one instead of another (between 2 black ones or a brown and a black one) on supplying plug or at terminal board. Attention ! Avoid of mistaken changing of yellow-green wire with the phase !
Entirely a specialist qualified in electrotechnics is allowed to make this change and to realize the connecting !

8.5 Protection of electric parts

The electric motor of the planer is equipped with an electric brake, able to stop the spindle in required time (within 10 s).
If the electric brake does not work well (spindle run out is more than 10 s) it is forbidden to work on the machine !
The protection against dangerous contact of inanimate parts is assured with a self acting disconnecting from the mains according to the norm EN 60 204-1 and IEC 60 364-4-41.

8.6 Machine control

8.6.1 Operation switch and switch of emergency stopping



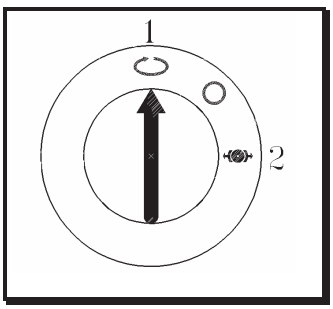
The machine gets connected or disconnected from the mains by pushing plug into or towing it off the mains socket, eventually by switching on/off the lockable main switch **E**. As long as machine is not connected with the mains-it cannot be started by operation switch **A**.

The machine starts by pushing the green knob **B** at the operation switch **A** and is switched off by pushing the red knob **C** at operation switch **A**. After finishing of work disconnect the machine from the mains by towing off supplying cable plug from the mains socket or do switch off the main switch **E**.The switch automatically disconnects by means of mechanical protecting element in case of the mains outage. It means it is necessary to start the machine again after the voltage restoring. The inbuilt breaker will switch off the machine in case of motor overloading. Check up the machine (motor func-tion, blunt tools, etc.) if the mechanic breaker switches it off several times in a sequence.

The **emergency switch D** will stay secured in position OFF after being used and it is necessary to release it by turning of the “mushroom“ head. Without this release machine cannot be started again. Emergency stopping switch is accessible from separate working places.

operation switch, emergency stop :

If the machine is equiped with the braked electric motor, the brake release overswitch **F** can be installed for an easier manipulation at cuterblock knives exchange. Brake release switch **F** facilitates better manipulation with the cutter block while changing the knives **F**.



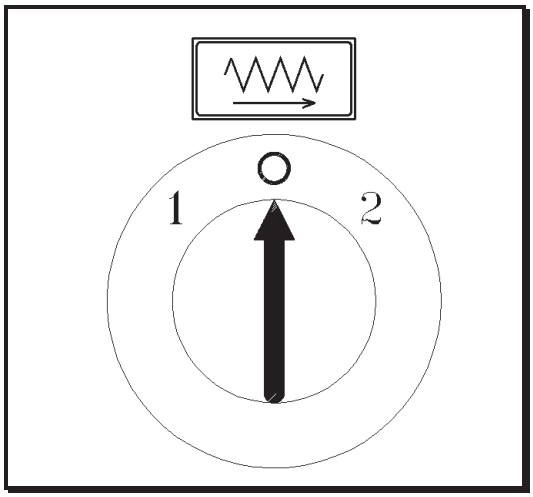
position 1 - normal operation

position 2 - brake released; so as to release the brake - do turn it to the position 2 and press green button **B** of the operating switch **A** : the cutter block will release after a few seconds.

position 0 = off position

Note: Machine must be started always by pressing the green button **B** of the operation switch **A**, after choosing the position 1 or 2.

8.6.2 Feeding drive switch for 2-speed-electric motor: only for machine variants of 3x400 V



The thicknessing feeding drive of MSP 415 (SP 410) can be provided by a 2-rotation speed-electric motor.,
The drive starts with a cam change-overswitch. (G)

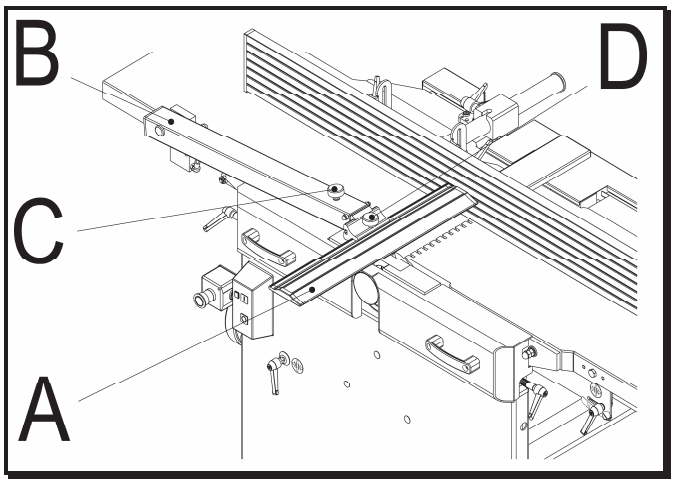
position 0 - the drive switched **off** .
position 1 - **slower** drive speed switched **on**
position 2 - **faster** drive speed switched **on**

The drive of thicknessing is blocked - it cannot be started without forecoming starting of the cu-terblock electric motor.

9.0 Machine operating and adjusting

9.1 Adjusting of planer

During planning, use the hand lever at the thicknesser inlet to switch off the drive roller for feeding - press down on the lever and lock in the lower position.



9.1.1 Adjusting and operating of protecting device

The cutter block cover **A** carried on arm **B** is fixed to the infeed planing table.

The height of cutterblock cover **A** is adjustable with a star-head screw **C**.

rotating to the right - the cover runs up

rotating to the left - the cover sinks.

The cover **A** is laterally cross-wise set-up after releasing 2. star-head screw **D**.

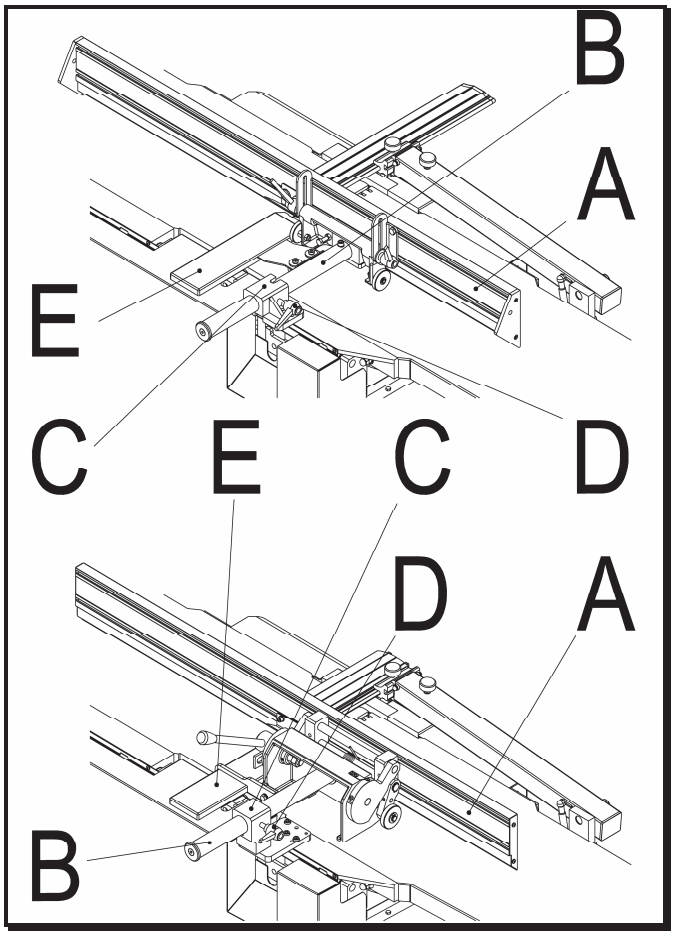
Herewith you change an extent of protected part of cutterblock.

Tighten slightly the star-head screw **D** after adjusting. The ruler can be tipped from working position after releasing of screw with lever **E** .

When planing - set the cutterblock covering to be max. 5 mm above input workpiece.

9.1.2 Tilting fence

9.1.2.1 Side adjusting of the fence

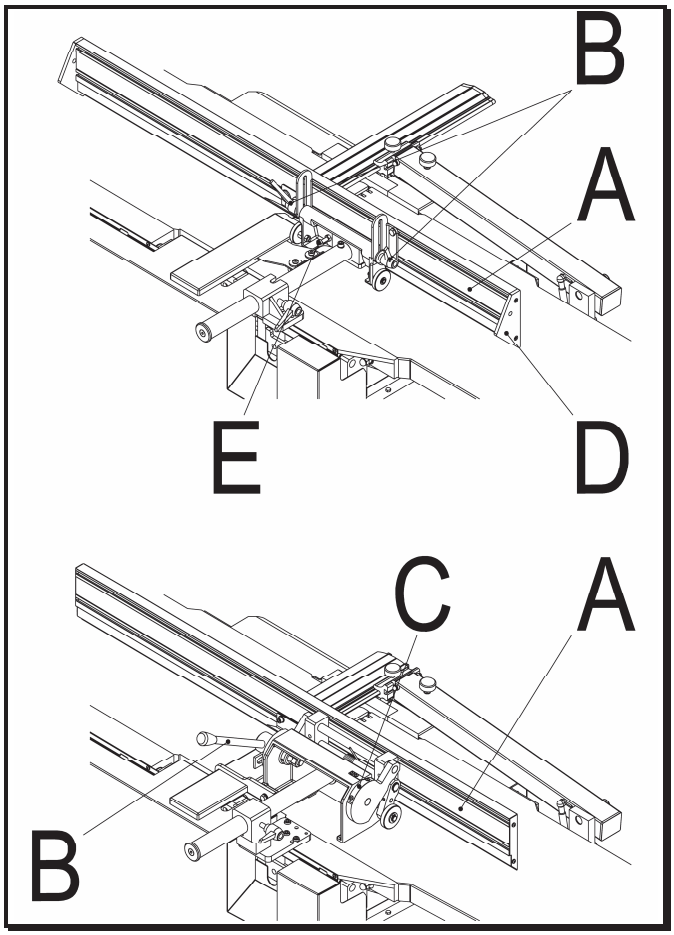


Tilting surface planer fence (A) on the round leading bar (B) with cast iron holder (C) is mounted to the outfeed planing table. Use the screw (D) for releasing the fence (A) and adjust the required planing width on the bar (B). After setting the fence (A) into the required positon tighten a screw (D) again.

Cutter block is from the back side of the fence (A) covered by iron-plate cover (E). Iron-plate cover (E) is fixed on the fence fixture (A).

Pict. According machine type MSP 315 (415) –SP410

9.1.2.2 Tilting of the fence



For tilting the surface planer fence (A) from 90° to 45° release the screw handle (B)..

MSP 315 (415)

Position 45° is determinated by fence ends (D). Position 90° is determinated by screw (E).

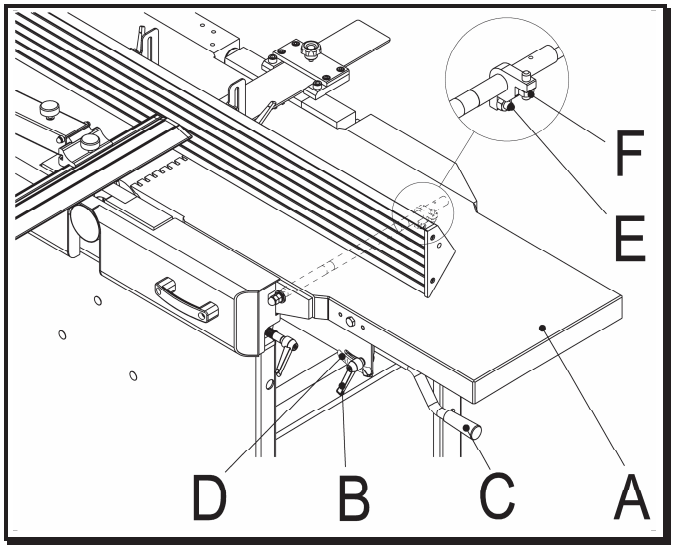
SP 410

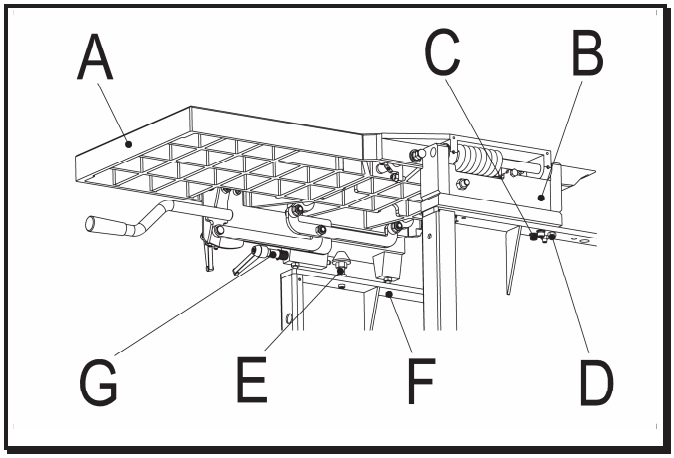
There is a scale with a nee-dle (C) on the cast iron holder for controlling the exact angle positon.

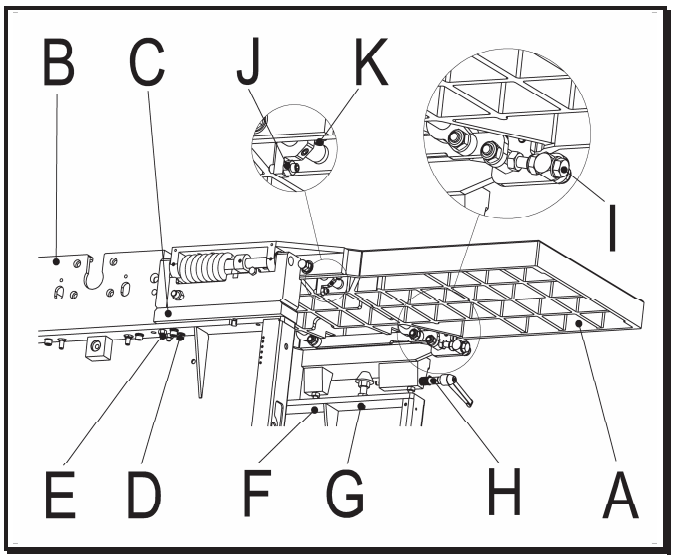
Tilt the fence (A) to required position (up to 45°) by help of lever (B).

Position 45° and 90° is limited by screws.

9.1.3 Infeed table adjustment







9.1.3.1 Stock removal adjustment

Set the required stock removal by adjusting the infeed planing table (A).
Release the screw handle (B) and by lever (C) up / down move the table (A) up/down and adjust the required stock removal.
Value of stock removal you can read on scale D indicated by needle. Maximal stock removal is 4 mm
and is determinated by screw (E).
Table adjustement at „0“, what is upper position of infeed table is determined by screw (F).
After stock removal adjusting do tighten the handle (B) again.

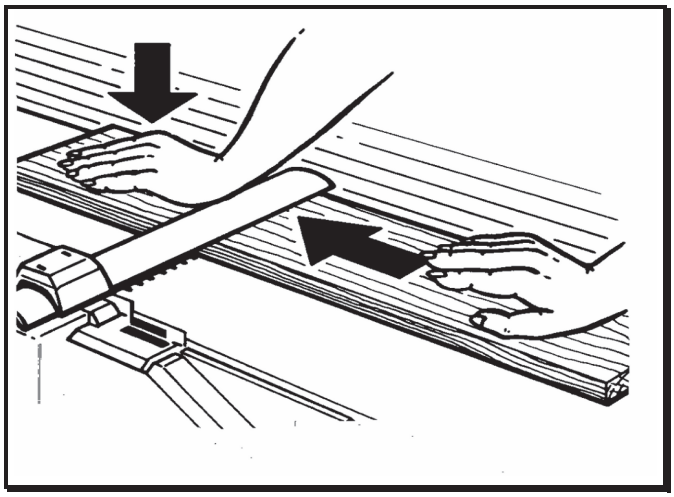
9.1.3.2 Infeed planing table adjustment

Do the infeed table adjustment (A)
In the level with outfeed table is provided at the side of the table pivot-hinge
by the change of the position
of the holder (B). Holder (B) is fixed
to the machine body with four thrust screws (C) with lock-nuts (D).By help of adjusting screws (F) on the other side of machine body, you can adjust plane of infeed table. By height change of screw (E) is possible to adjust proper function of arretation eccentr (G), which holds infeed table in right working position at planing.

9.1.4 Outfeed planing table adjustment

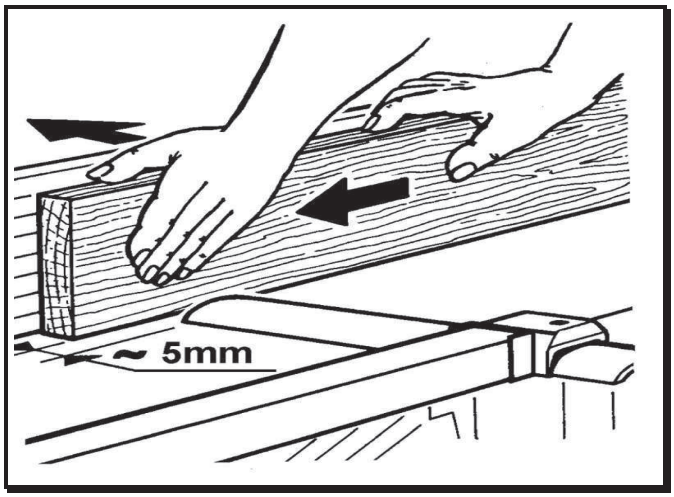
Do the outfeed table alingement (A) at the side of the table pivot-hinge by the change of the position of the holder (C) (use finished area of the bearings holder (B) for plane adjustment). Holder (C) is fixed to the machine body with four thrust screws (D) with lock-nuts (E). By help of adjustement of screws (F), you can adjust plane of outfeet table. By height change of screw (G) is possible to adjust proper function of arretation eccentr (H), which holds infeed table in right working position at planing.
Adjust the outfeed table (A) to the plane with cutter block with knives is providing by turning the screw (I). Upper positionof outfeed table is limited by screw (K) – value some tenth-milimiters above cutter block. Bottom position is limited by stop screw (J) - max. 1,1 mm below cutter block.

9.1.5 Planing of flat workpieces



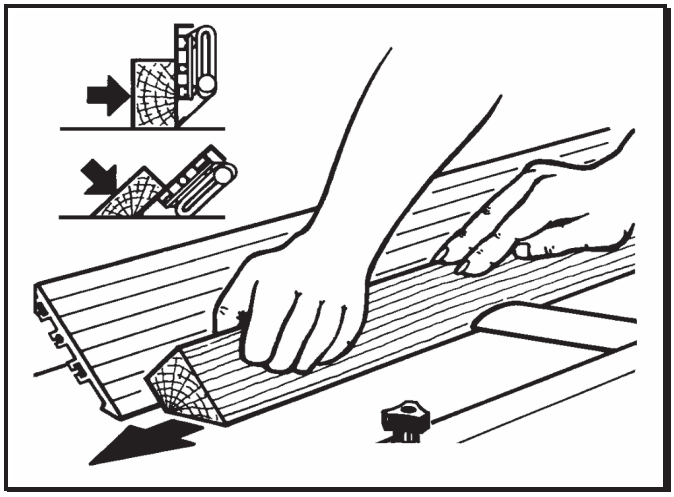
Put the flat piece on the planing table, take up the roller cover by left hand, adjust it to required height about 5 mm over input workpiece and switch on the machine. Push the workpiece towards the cutterblock, your hand is moving over the cutterblock cover, the workpiece is being shifted by hands - not by your entire body!
Do not push the workpiece backwards over the cutterblock !

9.1.6 Planing of narrow pieces



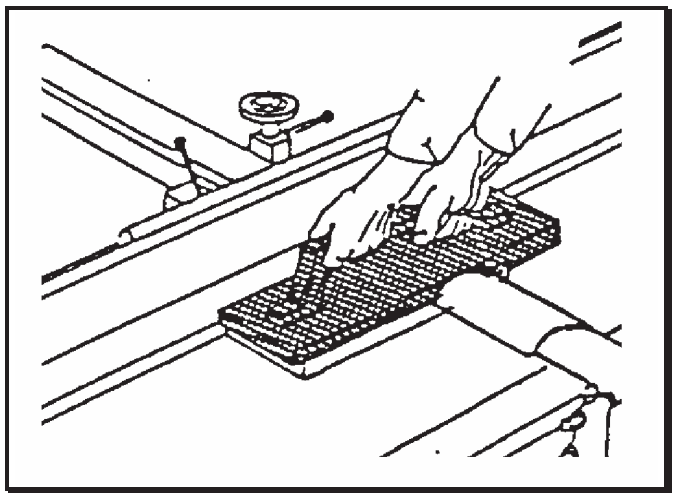
When planing narrow pieces set the cover of the cutterblock in such a position, so that the distance between the workpiece and cutterblock cover is max. 5 mm. Then switch on the machine and push and shift machined.workpiece against cutterblock (between the cutterblock cover and ruler).

9.1.7 Planing with inclined ruler



Check the angle of the longitudinal ruler at loose tightening levers (the position 90° is fixed), tighten levers again and switch on the machine. Push chamfered workpiece forwards and against the ruler.

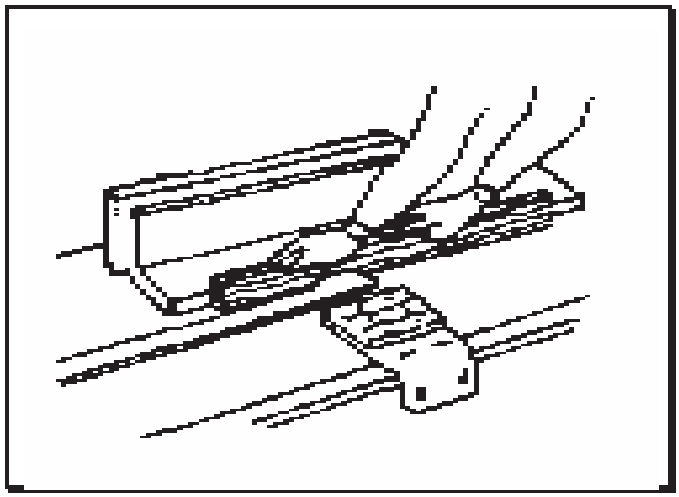
9.1.8 Planing short workpieces



Use a special holder when planing short workpieces. You can see a possible execution on the picture.

You can offer the holder as a special accessories of the machine.

9.1.9 Small cross-section pieces

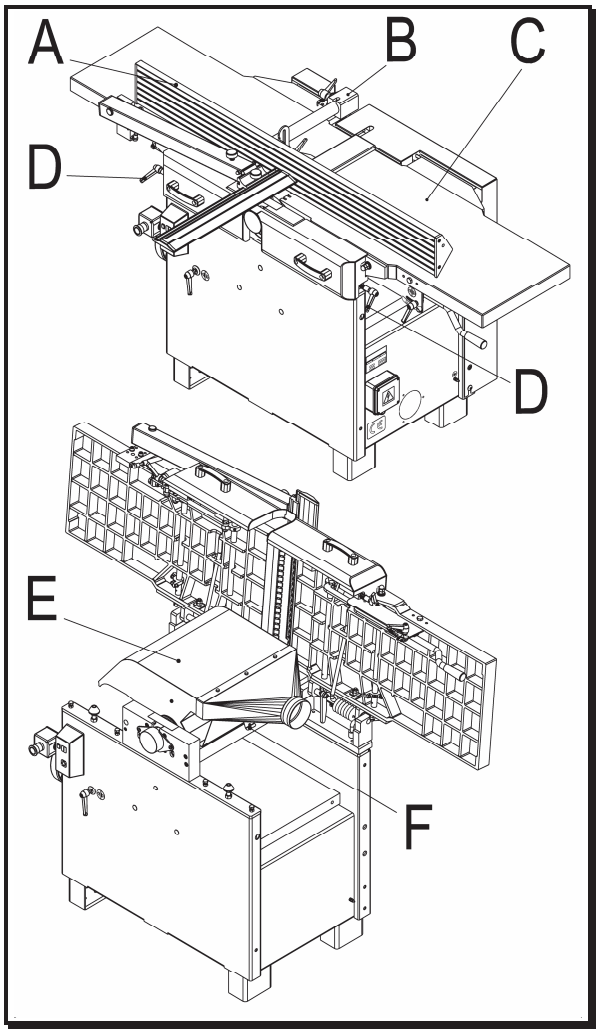


Attention !
A big injury danger arises when leading the workpiece along the high rule improperly
The ruler must be supplemented with an auxiliary ruler for planing of thin materials. It must be wider than 60 mm of a height 20-25 mm.

9.2 Adjusting of thicknessing machine

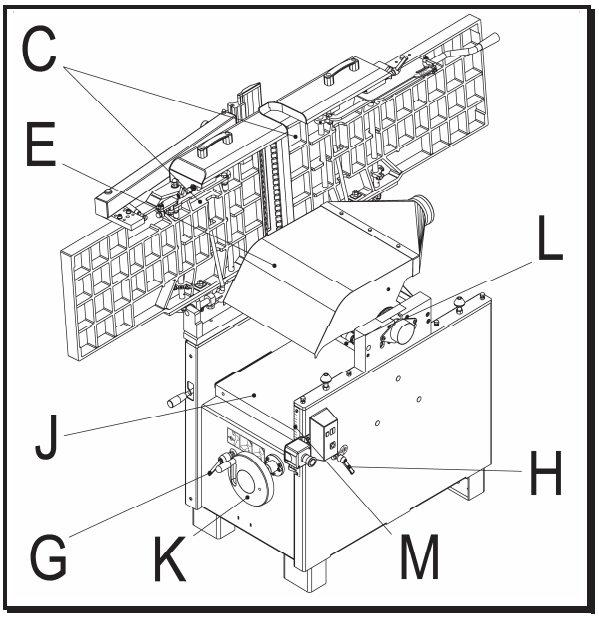
9.2.1 Thicknessing

Is necessary to convert the planer to the thicknessing machine at first. Before planer table lifting into position for thicknessing, is necesseary to move the fence into full front position. If not, there is a risk of damage of back cutter block cover and side cover of machine.



- the fence (A) move into full front position, determined by edge of holder (B).
- after loosing the arresting eccentre (D), lift both planning tables (C) continuosly.
- Move the cutter block protection (E) to the right outside position for thicknessing and fix it flexible steel strip (F) with hole for pin

At oposite procedure, when you will re-adjust machine from thicknessing to planning, first of all, tilt the suction hood (E) into working position for planing. (thicknessing table is necesseary to adjust at height approx. 160mm), than tilt continuosly, (without impact) tilt back planing tables (C) and lock them by arresting eccentres (D)

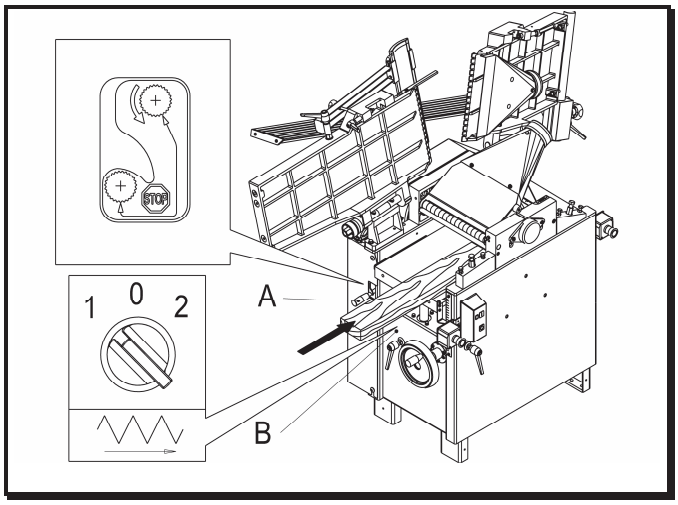


9.2.2 Adjusting machine for thicknessing
9.2.2.1 Setup the height of thicknessing table

Loose the table fixing lever (**G**) and (**H**) and set the thicknessing table to required height with the hand wheel (**K**). Put the workpiece onto thicknessing table, not worked side up. Protrude the table by turning the hand wheel (**K**) as high to touch the limitting ribbon (**L**) of maximum chip removal.

Turn the hand wheel back and return the workpiece lower to position of required removed chip height. A maximum thickness (height) of removed chip is 5 mm. The height of processed workpiece is shown at the measure (**M**) of table position. Fix the table with an incident lever (**G**) and (**H**) after adjusting. Start the machine and feed the workpiece to the cutterblock engagement. Do always process the higher workpiece front-end at first. Spread a slight parafine coat onto table before working a pitchy (fat) lightwood.

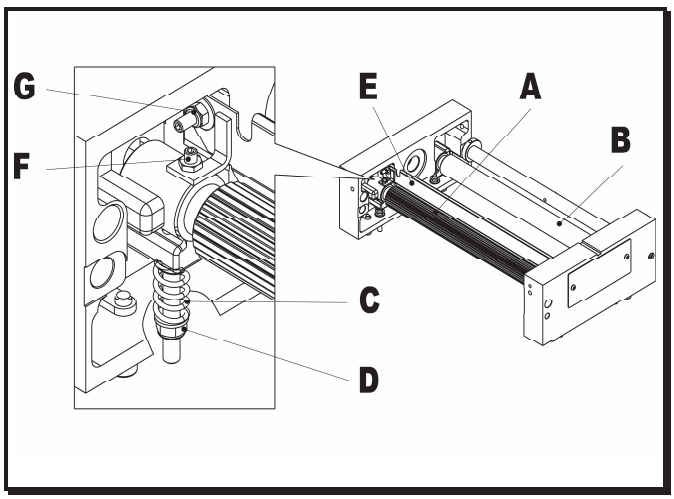
9.2.2.2 Start feeding Feeding drive by friction-gearing



In case the machine is equipped with feeding drive by friction - gearing, start/stop the feeding with lever (A). Feeding is on, if the lever is in upper position, feeding is off, if the lever is in lower position.

feeding drive with separate motor :
In case the machine is equipped with separate motor for feeding, start/stop the feeding with special switch situated in the place (B) on the machine.
See the instructions in chapter 8.6.2.

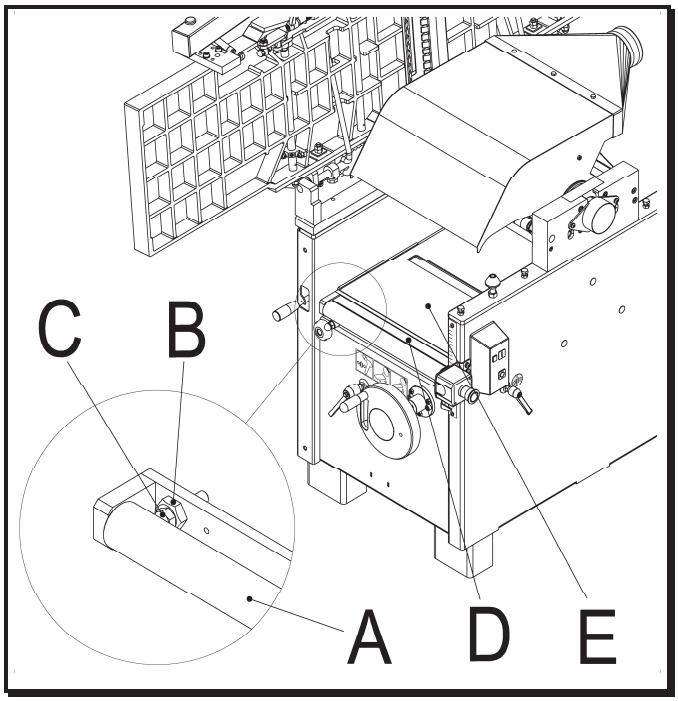
9.2.3 Adjustment of pressing power of feeding rollers



Feeding rollers – infeed rollers (A) – outfeed rollers (B) have on their ends of the lodgments springs (C). It is possible to change the pressing power of the springs (C) with the screws, marked with letter (D). Stock removal rectifier (E) is controlled by infeed rollers (A) and its lifting. If there is a workpiece under the infeed roller (A), the stock removal rectifier (E) with infeed roller (A) are going up. Lower edge of the stock removal rectifier is adjusted to the plane with the lower part of the infeed roller (A) by the detent screw (F). If the workpiece leaves the infeed

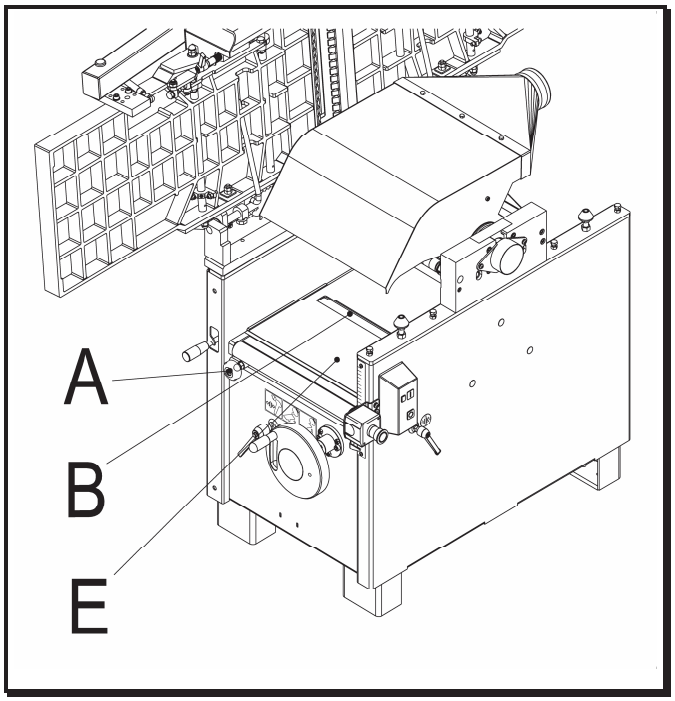
roller, the stock removal rectifier slides on the workpiece untill the workpiece leaves this area. On that ground free movement of the stock removal rectifier must be kept, because of that do not tight the screw (G).

9.2.4 Extension of thicknessing table - added rolls (MSP 315, MSP 415, SP 410, MP 415)



The extension can be applied at workpiece entry or leaving the table (**E**) as well.
Adjustement of rollers for thicknessing table (**A**) is provided by turning eccenre (**B**) after loosing the fixing screw (**C**). We recommend to set the roller about 0.1 mm above the table flat.
After adjustement is neccesseary to fix the position of eccenter (**B**) by tightenn the screw (**C**).
Set up each roll side separately.
Safety cover (**D**) covers the gap between the roll and the table edge.
These rollers are optional.

9.2.5 Rollers in thicknessing table (MSP 415, SP 410, MP 415)



Rollers in thicknessing table (**B**) are loctaed in specialy modified thicknessing table (**E**) and allow better feeding of material through the machine. These rollers are not powered with possibility of height adjustement. Adjustement is provided by rosette (**A**). Turning to the right you increase the height and oposite. **Height of the roller above table surface is possible to adjust in range 0 up to 1 mm according to the request of quality of worked surface and worked material. The greater the roller exposure, the greater inaccuracy the flatness of the worked part and the possibility of deteriorating the quality of the machined surface.**
These rollers are optional.

9.3 Working positions of machine operator

The picture dislocates operator´s working positions around the machine at diffrent operations.

place **1** - **planing** : The operator stands by flank to the front planing table.
place **2** - **mortising** :The machine operator stands at this place when mortising on the mortising attachment.
place **3** - **thicknessing** : When putting the workpiece in - the operator stands in front of thicknessing table on side of hand wheel for table adjusting.

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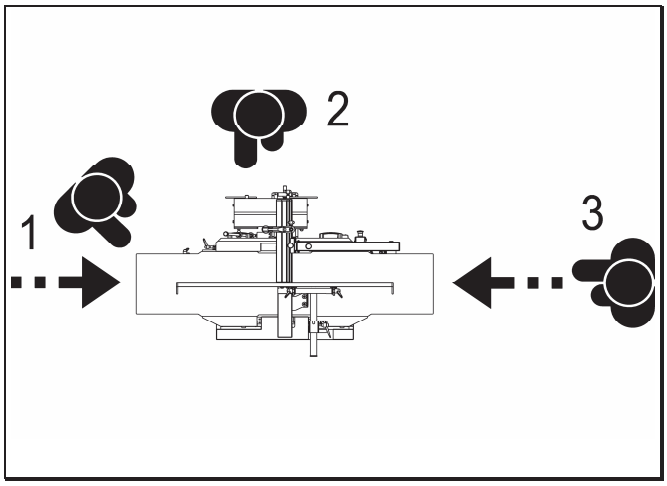
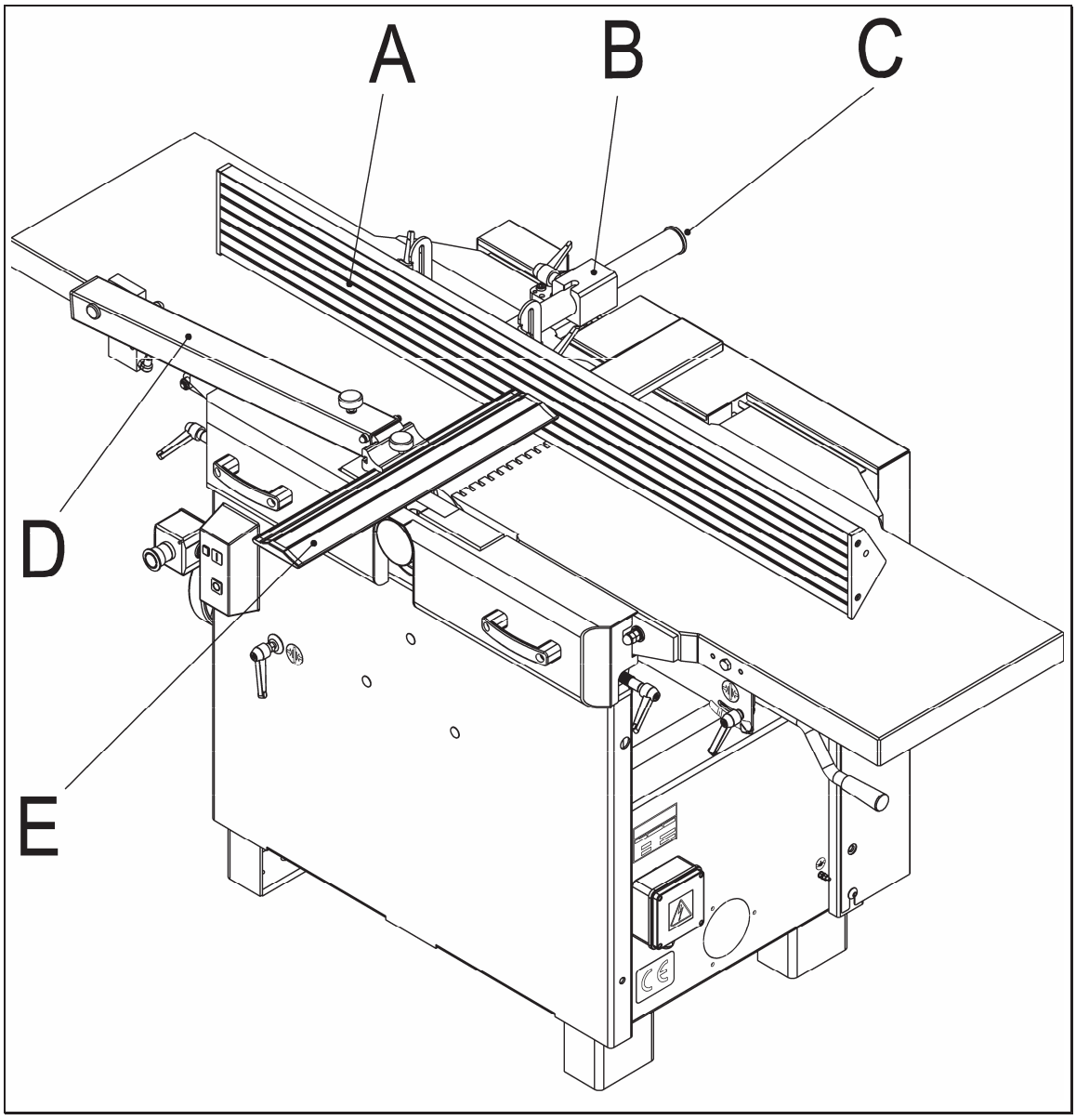


9.4 Safety instruments

A short stiff aipron and protection of eyes are rated for the work on the planing and thicknessing machine. It is proper to use adequate protection of hearing and recommended working shoes. Wearing of working coats is forbidden.

9.5 Installation of demountable parts

Do not mount demounted parts from the machine before having thoroughly read and learned all service instructions manual and without particular identification with the machine.



Into holder (**B**) insert tiltable fence (**A**), on the end of guide bar fix end stop washer (**C**). Adjust the fence according to the instruction (chapter 9.1.2)
Install the fence (B) on the infeed table - put it on the guide bar (C) - if the guide bar is disassembled, assembly it first. (the fence adjustment is described in the chapter 9.2.1).

Mount the arm of cutter block coverage (**D**) onto the outfeed table (MSP315, MSP 415, SP 410). Into this arm, insert cutter block cover (**E**)

9.6 Forbidden manipulations

There is forbidden on the machine:

to make any treatments of machine safety elements not approved by the producer,
to make any manipulations in contrary with this manual safety instructions (chp. 3.0)
- touch or interfer with the cutterblock or its near surroundings and other moving parts
- plane other material than wood or those on its base
- process workpieces in cross-direction. Machine is intended only for planing in lengthwise direction of wood fibres
- overload the machine by processing of too big workpieces
- remove shavings from cutterblock surroundings by hand or anything on running machine
- use other knives in cutterblock than recommended by machine producer
- use knives wide less than 20 mm.

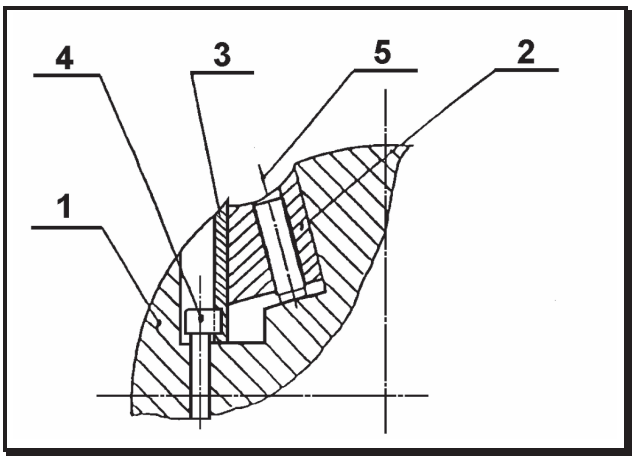
10.0 Tools

10.1 Recommended tools

Do not use other cutterblock knives than delivered or recommended by machine producer.
Do not use knives wide less than 20 mm.
Cutterblock must be marked with name or logo (signification) of producer and maximal allowed rotating speed (RPM) and must be produced according to ČSN EN 847-1: 2014.

Proper tools to be used on this machine cutterblock are knives 310 (410) x 30 x 3 mm (length x width x thickness) from steel HSS or HSS 18 with grooves for adjusting screws.

10.2 Exchange and adjusting of cutterblock knives
10.2.1 System with screws - knives are pushed up by screws

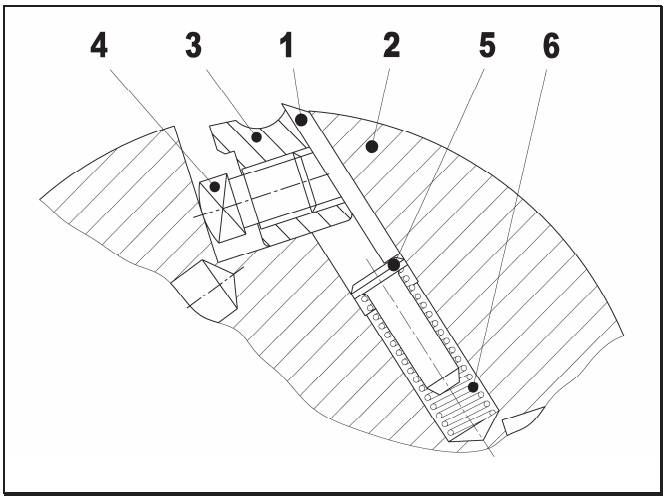


Swing away the planing tables before exchange of knives. Release three screws (5) in the pressing-off-wedge (2) by a hexagonal spanner nr. 4. Release the pressing off wedge (2) by hammer (through a piece of wood). Remove the knife (3) by unscrewing two hexagonal screws (4). Clean the wedge fitting surface and the new knife carefully. Insert the new knife by screwing two hexagonal screws (4) so as its maximal protrusion over cutterblock perimeter is 1 mm.

Then tighten the pressing-off-wedge slightly with three hexagonal screws (5) to be possible to move the knife without restrain, but impossible to take it out. Set the proper and definitive height of knife with a solid wood scanting and two hexagonal screws (4) according to the article 10.5. Tighten all three hexagonal screws (5) in the pressing-off-wedge (2).

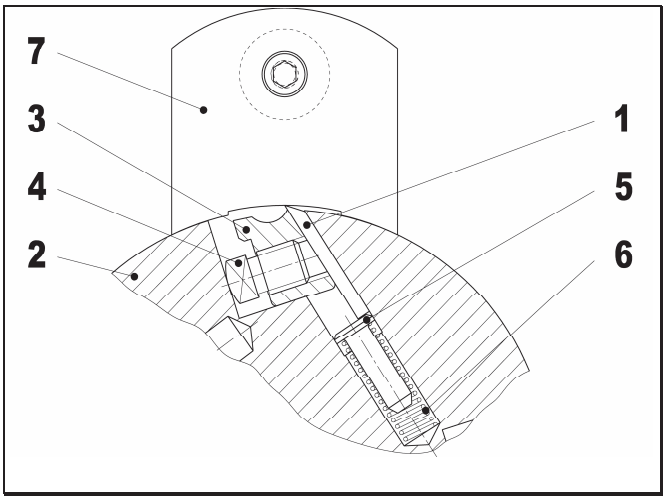
10.2.2 System with springs - Knives are pushed up by springs.

Knives (1) are put in the wedge-shape slot (2) and fixed by wedge (3). After releasing the screws (4) the knives are pushed up by pins (5) with springs (6). It is possible to remove the knives.
Put in a new knife (1), press it down to the level of the cutter block body (2) and tight the screws (4) lightly. - The knife is ready for adjusting.
If the knife is changed for sharp wear - do change all 3 knives together!!!



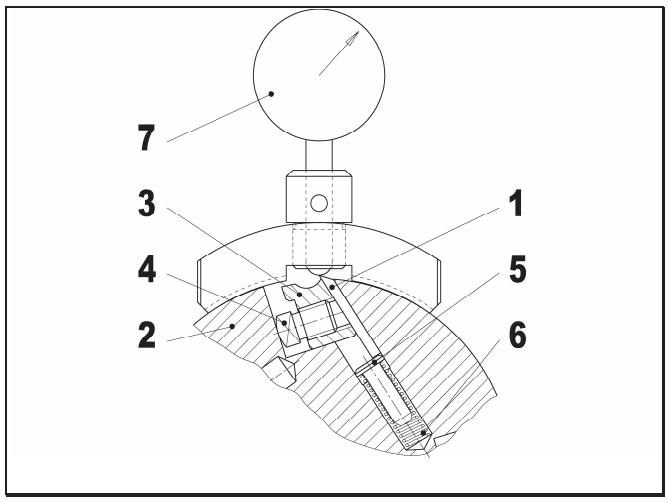
10.3 Knives adjusting control
10.3.1 Setting by the help of setting instrument

After releasing the screws (4) the knives (1) are pushed up by pins (5) with springs (6).
The knife is pushed against the stirrup (7) of the knife setting instrument.
Stirrup functions like stop and the height of knife (1) over the cutter block body (2) conform to 0,9 mm.
Hold the knife setting instrument pressed to the cutter block body and tight the wedge screws (4) step by steps - preferable tight the screws from the middle part to both ends.
Repeat the procedure with all knives.



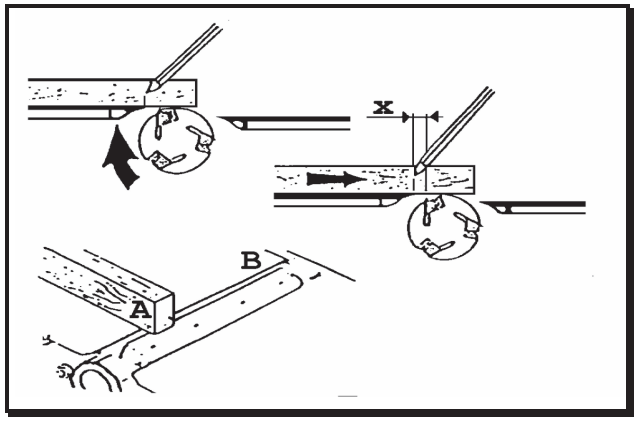
10.3.2 Knives setting with setting gauge

After releasing the screws (4), the knives (1) are pushed up by pins (5) with springs (6). Knife comes cca. 1 mm over the upper surface of the cutter block.
Push the knife back into the cutter block body (2). Control the height of the knife with knife setting gauge (7) to, that is mentioned on the picture below. Height position of all knives must be always controlled on both sides and in the middle as well.
After setting the knife into exact position tight the screws (4) properly - start with the screws in the middle and go on to the ends.

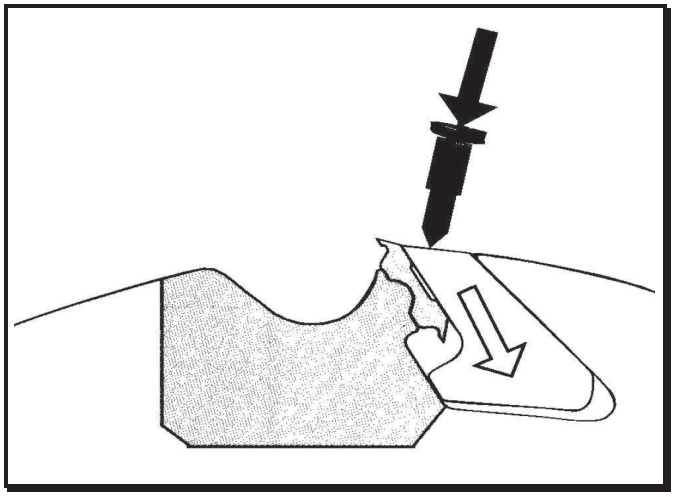


10.3.3 Setting with a scantling

A perfectly smooth processed wood surface can be achieved only with correctly adjusted knives.
Put a solid wood scanting(A) on the plan-ing table (B) and make the line (with pencil) on that side, where the table ends. After that turn the cutterblock manually by 1/4 of a turn. The scanting must slide forwards slightly. Mark another point and measure the distance between lines.
In case that the adjustment of knifes is correct, the dimension between the lines should be about 3 mm (value X at the picture). Make adjustment of all four knives twice, always on the left side and also on the right side of cutterblock. Then retighten all screws.

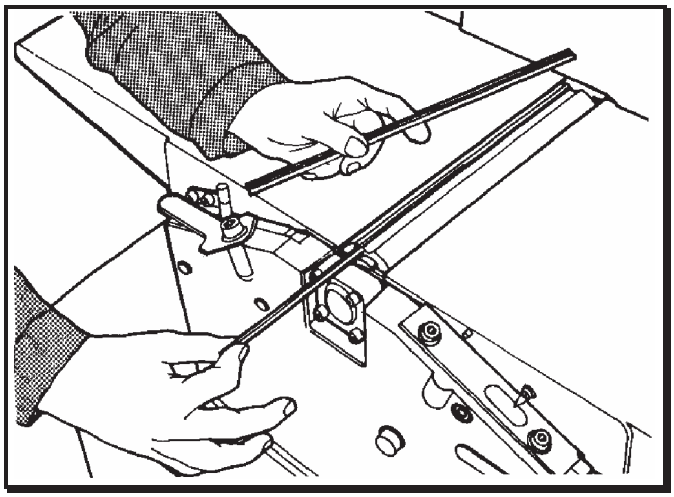


10.4 Exchange and knives setting of TERSA cutterblocks
(cutterblock delivered on a special order)
10.4.1 Step one



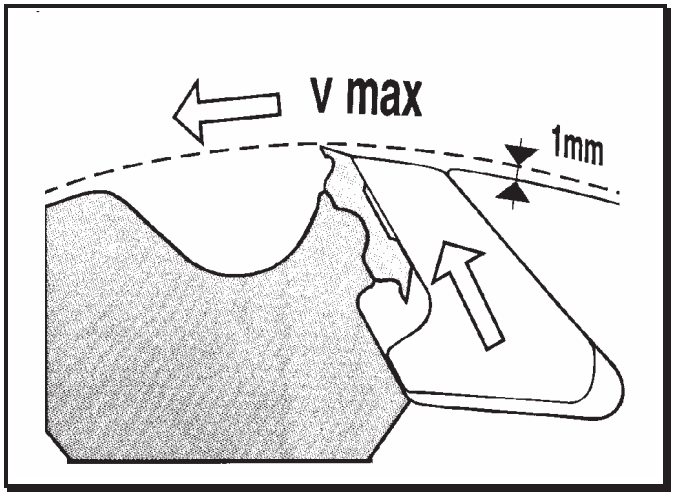
Discharge the knife in the cutter-block by knocking with accessories hammer onto the gasset.

10.4.2 Step two



Take the blunt knife out from cutter-block and replace it with a new one.

10.4.3 Step three



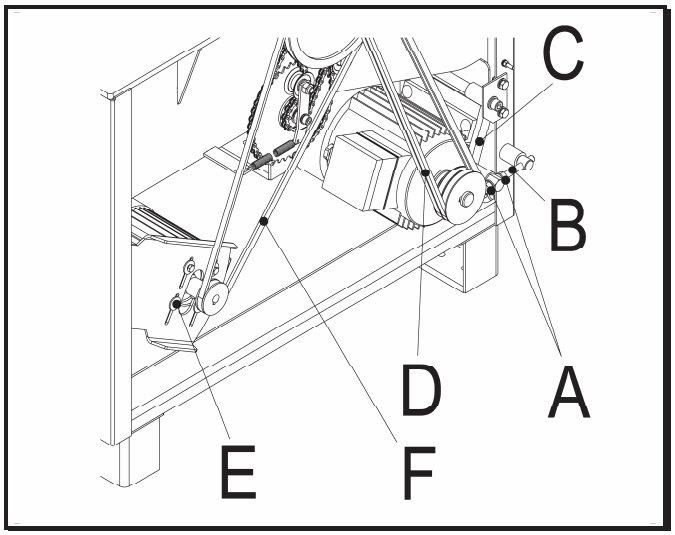
Eccentric power fixes the position of knives in cutterblock after starting the machine.
The knife is reversible. As soon as both cutting edges of any knife is blunt - do not sharpen them, but replace with new ones !
The knife is reversible. As soon as both cutting edges of knife are blunt - do not sharpen them, but replace with new ones!

Exchange the knives all at once !

11.0 Maintenance and repairs

Always disconnect the machine from the mains before any maintenance or repair ! Switch off and lock the main switch or disconnect the machine by towing off the plug. Herewith you avoid a possibility of an occasional starting the machine by somebody else.

11.1 V-belt tightening for cutterblock and feeding



Take away the dismountable machine side covering. By means of 2 nuts (**A**) at the tightening screw (**B**) change the position of machine holder(**C**) deflecting so as the V-belt of cutterblock drive (**D**) is sufficiently tightened. Fix the position again by tightening the nuts.
After loosening of screws (**E**) do shift (in slots) the feeding drive motor so as the V-belt (**F**) is sufficiently tightened. Tighten the screws again and put on the removable covering.
A properly tightened V-belt should sag of nearly 10 mm when pressing to its middle by force of about 20 N (2 kg).

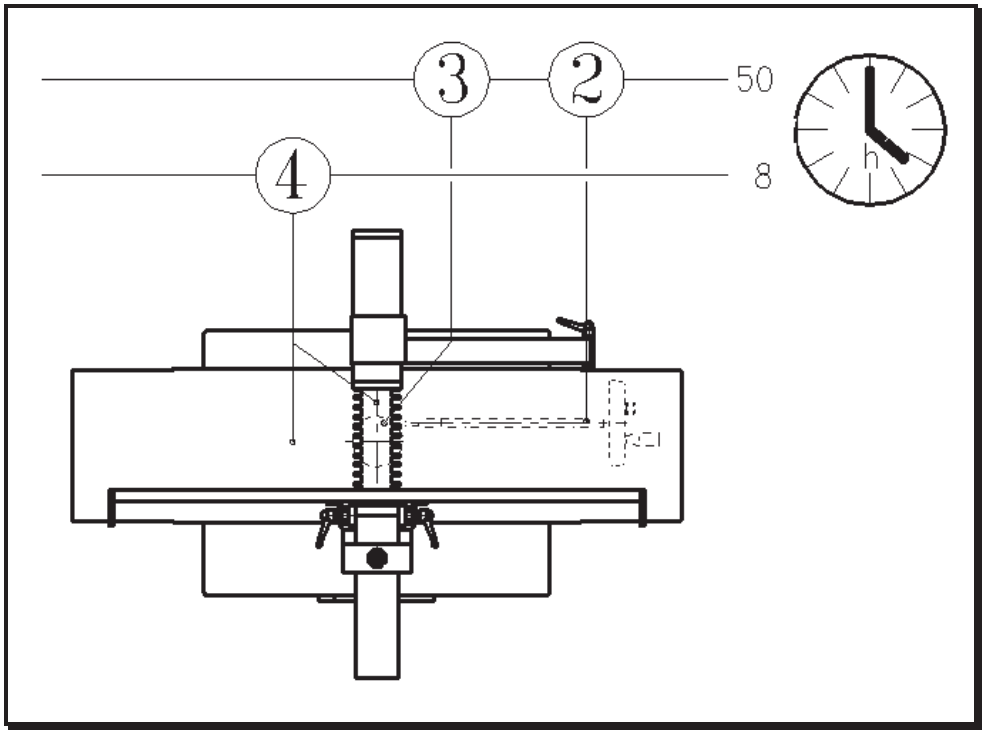
11.2 Cleaning and lubricating

Clean the machine regularly. Oil bars, gudgeons, screw bars and other parts amenable fret. The oiling frequency depends on the way of working, but apply it minimally once a month. Bearings of electric motors and shafts have a permanent grease filling and are sealed (closed). For this reason - do not grease them.
Clean the tables from resin with suitable solvent - for example by turpentine or petroleum, or by other suitable solvent according to your need.
Take care that the belts are not fouled (dirty) with oil or grease. In case it happens, clean the belts only with paper.
Clean the machine from dust with a vacuum cleaner. It should be done once a week at least.

Lubrication points - surway table

Lubrication point	spindles bearings	motion screws	leading of planing table	table plates and cutterblock
Necessary act (at every)	1 (hour)	2 (hours)	3 (hrs.)	4 (hrs.)
Permanent fat filling	at exchange			
Lubricate - spread		50		
Lubricate by oil can			50	8
Plastic lubricant/ oil	LV-2-3	LV-2-3	OL-B5	OL-B5
Equal lubricant	ISO-L-XCBEA 3		ISO - LAN 68.	

Lubrication points - scheme to table



11.3 Faults remedy

No defects should arise at a correct use and proper maintenance of the machine.
If the shavings exhausting gets jammed - it is necessary to switch off the machine before carrying out the remedy. Stop the machine immediately if getting jammed with workpiece !
Blunt tool - cutterblock knife/-ves is often a cause of electric motor overheating.
If the machine excessively vibrates - check up its levelling and attachment, respectively fixing and ballancing of knives used in cutterblock.

Machine does not work :
It is necessary to check up electric installation and connecting to the mains.

Thicknessing table moves with excessive resistance :
It is necessary to release the table tightening lever or to lubricate the post.

Insufficient machine output:
Tools are not sharp.
Too thick shavings removal is set - it is necessary to regard workpiece width and wood hardness.
Front or back table is fouled.
Cutterblock V-belt is insufficiently tightened.
Electric motor does not give full output. – A specialist should solve the fault.

Machine vibrates:
Badly sharpened or set-in-cutterblock knives.
Knives differ in section width, thickness.
Machine does not stand on flat ground.

Thicknessing on machine is not possible :
too thick removal chip
Thicknessing table is not clean.

Material rubs the back table:
badly in-height-adjusted knives or the back table.

Thinned end of workpiece:
uneven/ rough planed workpiece plate
badly adjusted knives or tables
badly attached or led-along workpiece.

12.0 Delivery extent

A complete machine,
accessories according to list,
service instructions manual,
special accessories (when ordered).

12.1 Accessories

Part name	Norm, part nr.	MSP 315, MSP 415, SP 410, MP 415 pcs	Note
Wrench 13x16	ČSN 23 0610	1	
Wrench 4	ČSN 23 0710	1	
Wrench 6	ČSN 23 0710	1	
Adjusting gauge	2 912 886	1	For knive adjustement
PE bag zipped	250 x 350	2	for added packing and service instructions handbook
Leveling shim	3 155 920	4	for machine leveling

13.0 Special accessories

Mortising attachment VDA 315 + mortising head cover (not for MP415 and SP410)
- knife setter with indicator
- instrument for working short pieces (not for MP 415)
- extension of thicknessing table - roller (set 1.pc. for input + 1 pc. for output)
- TERSA cutterblock
- undercarriage.

14.0 Spare parts

When ordering spare parts : Mention always the machine production number, type and year (from machine rating plate) and the part position number in spars drawing. If an enclosure with listed spare parts is a part of this manual, it is available to state numbers and names of spares according to this enclosure.

15.0 Guarantee

Works and operations, not mentioned here, involve a written agreement of the ROJEK a.s., Masarykova 16, cz - 517 50 Czech Republic. Every machine and equipment is provided with a guarantee certificate. It is important to fill the warranty certificate just during purchasing it with a respect of possibility to set up eventual guarantee claim and for sake of product´s safety. If the machine is not installed in a proper way, it may cause damage on it own or an injury to the operator. In this case we do not bear any responsibility. Possible guarantee claims have to be asserted at machine seller.
When the guarantee period expires, you can get the machine repaired at any specialized repair shop.

16.0 Dealing with packing and machine service after life expiry

16.1 Dealing with packing

Our products are transported in packing fron cartoon or PE folio. Producers of these packings issued a legal declaration about their product. They concluded a contract about filling duties of taking back and usage of the vaste from packings with an authorized company.

One of duties of these companies is also to inform the clients how taking it back is assured.

16.2 Dealing with machine

Service life of this machine depends particularly on usage way, working engagement intensity, frequency and kind of applied maintenance. The producer is responsible to user for evident losses, caused by the machine, for ten years.
Machine user is obliged to guarantee an eco-friendly machine liquidation according to country´s in question laws about leavings - not to endanger the environment.
We recommend to run on as follows :

1) Demount all plastic parts and consign it to relevant accumulating containers.
2) Separate resting iron from non-iron parts and commit it to a specialized company for separate liquidation.

Enclosure A Wiring diagram

Diagram 014-1-1 (2,2 kW, 1x230 V, 50 (60) Hz, socket, stop-button, brake release)

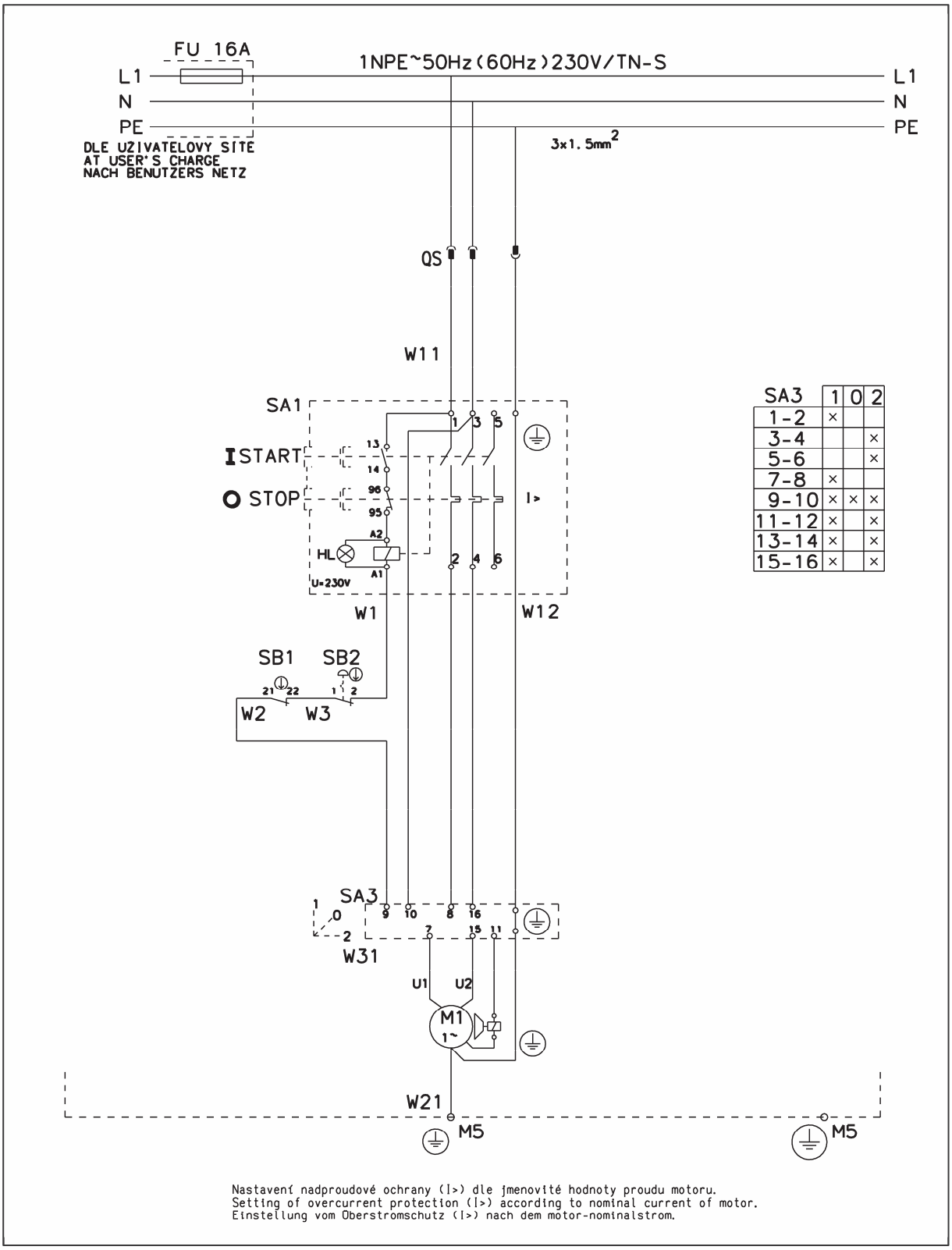


Diagram 015-1-1 (2,2 kW, 1x230 V, 50 (60) Hz, socket, stop-button, reverse, brake release)

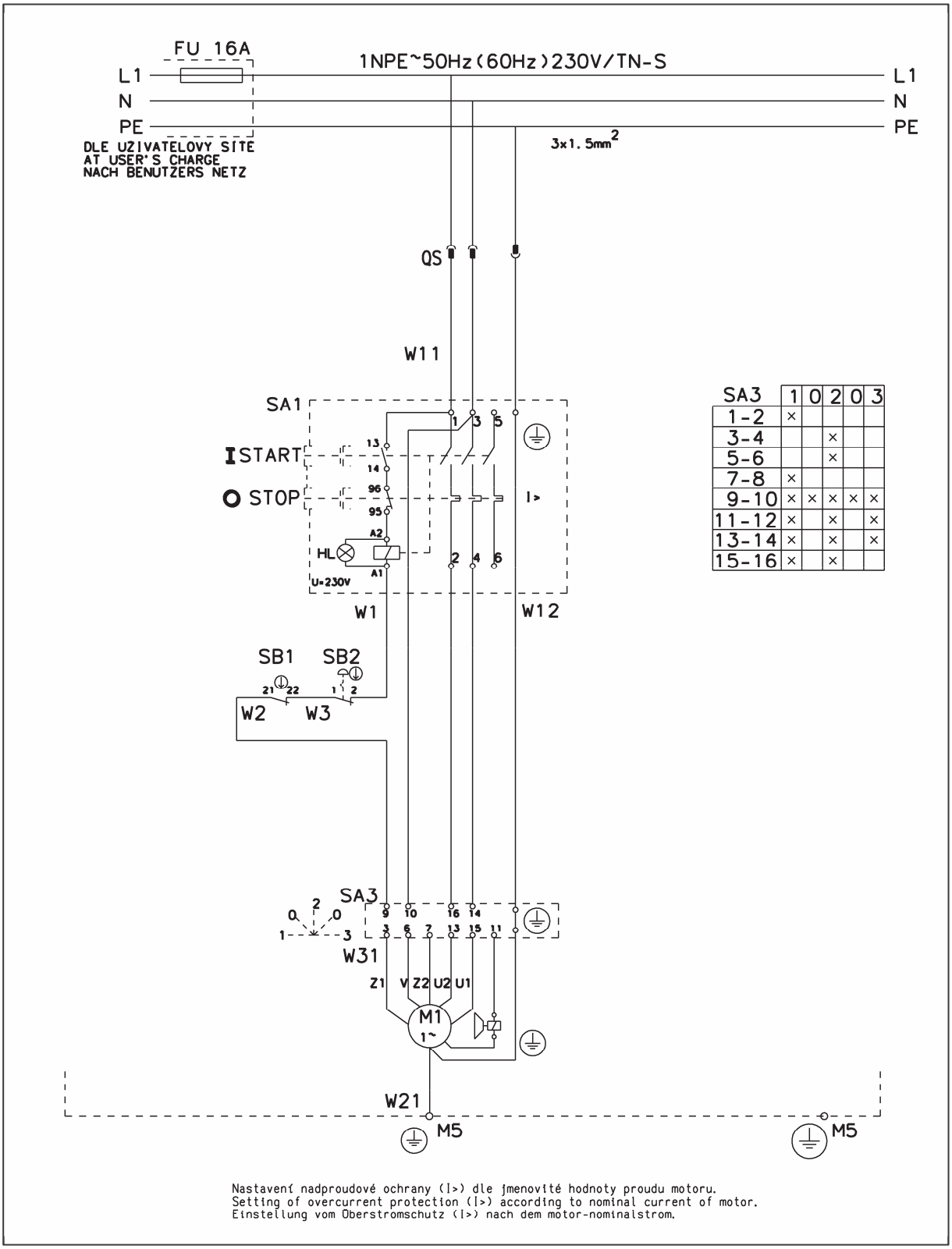


Diagram 016-3-1 (3,0 kW, 3x400 (230) V, 50 (60) Hz, socket, stop-button, brake release)

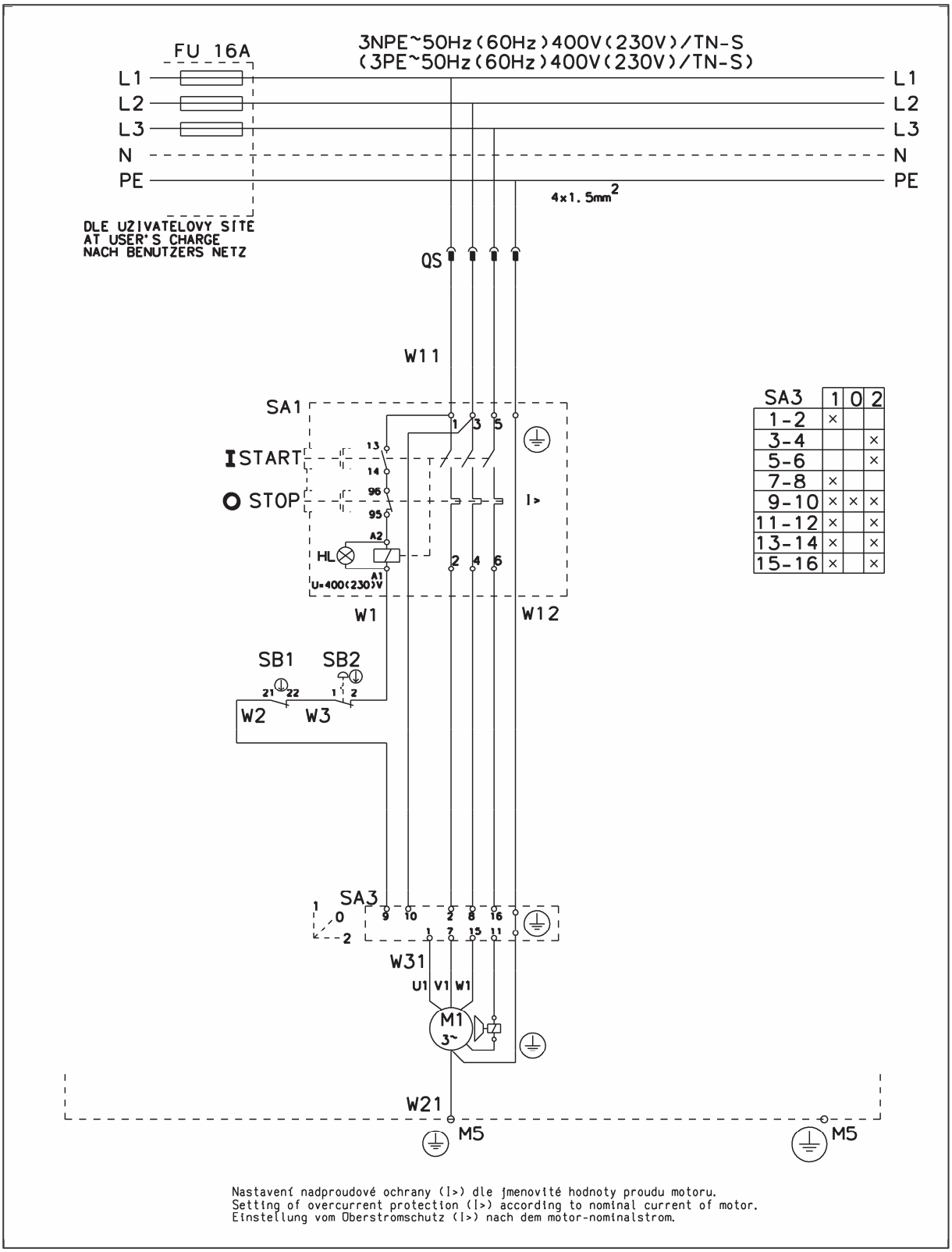


Diagram 017-3-1 (3,0 kW, 3x400 (230) V, 50 (60) Hz, socket, stop-button, reverse, brake release)

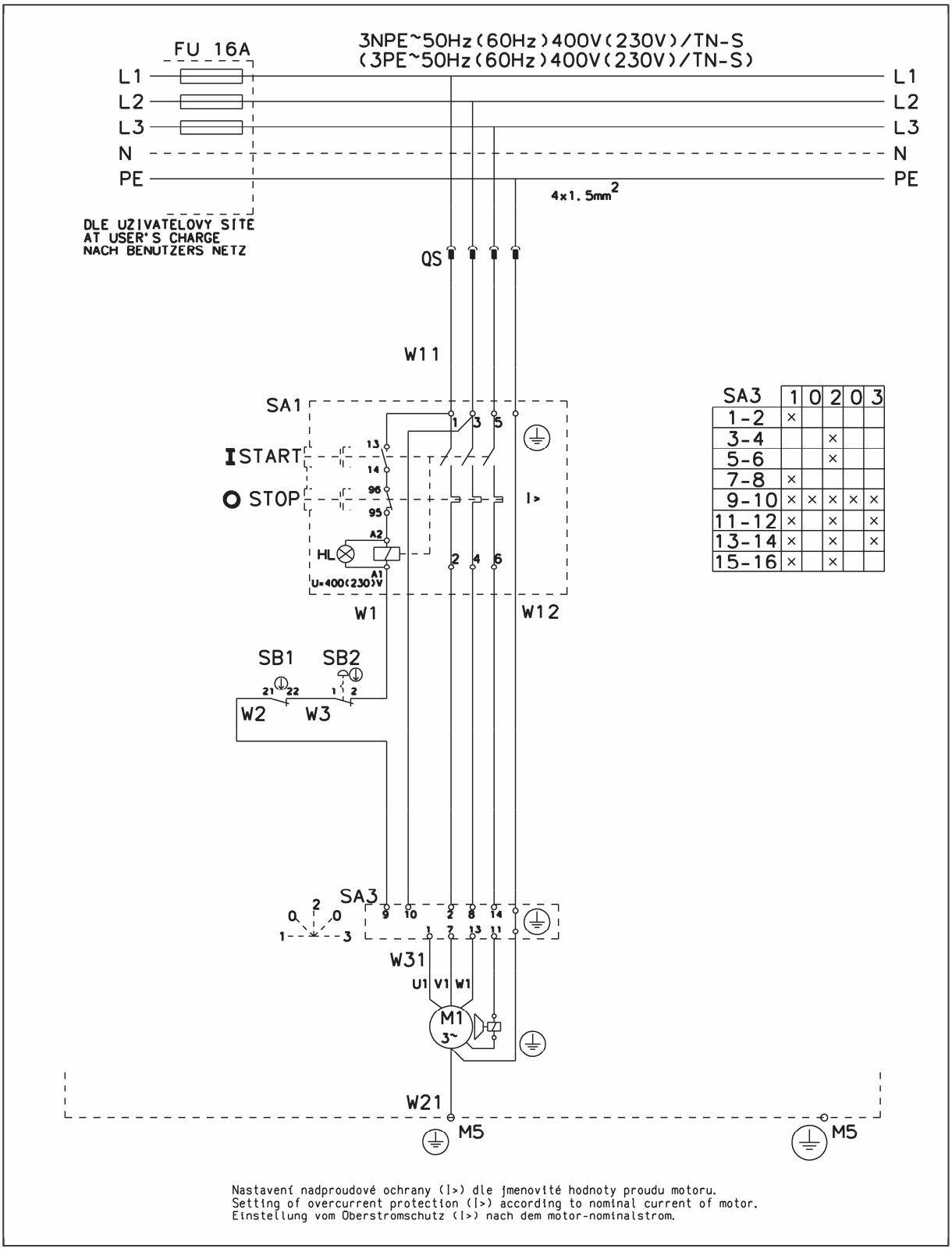


Diagram 018-3-1 (3,7 kW, 3x400 (230) V, 50 (60) Hz, main switch, connection box, stop-button, brake release)

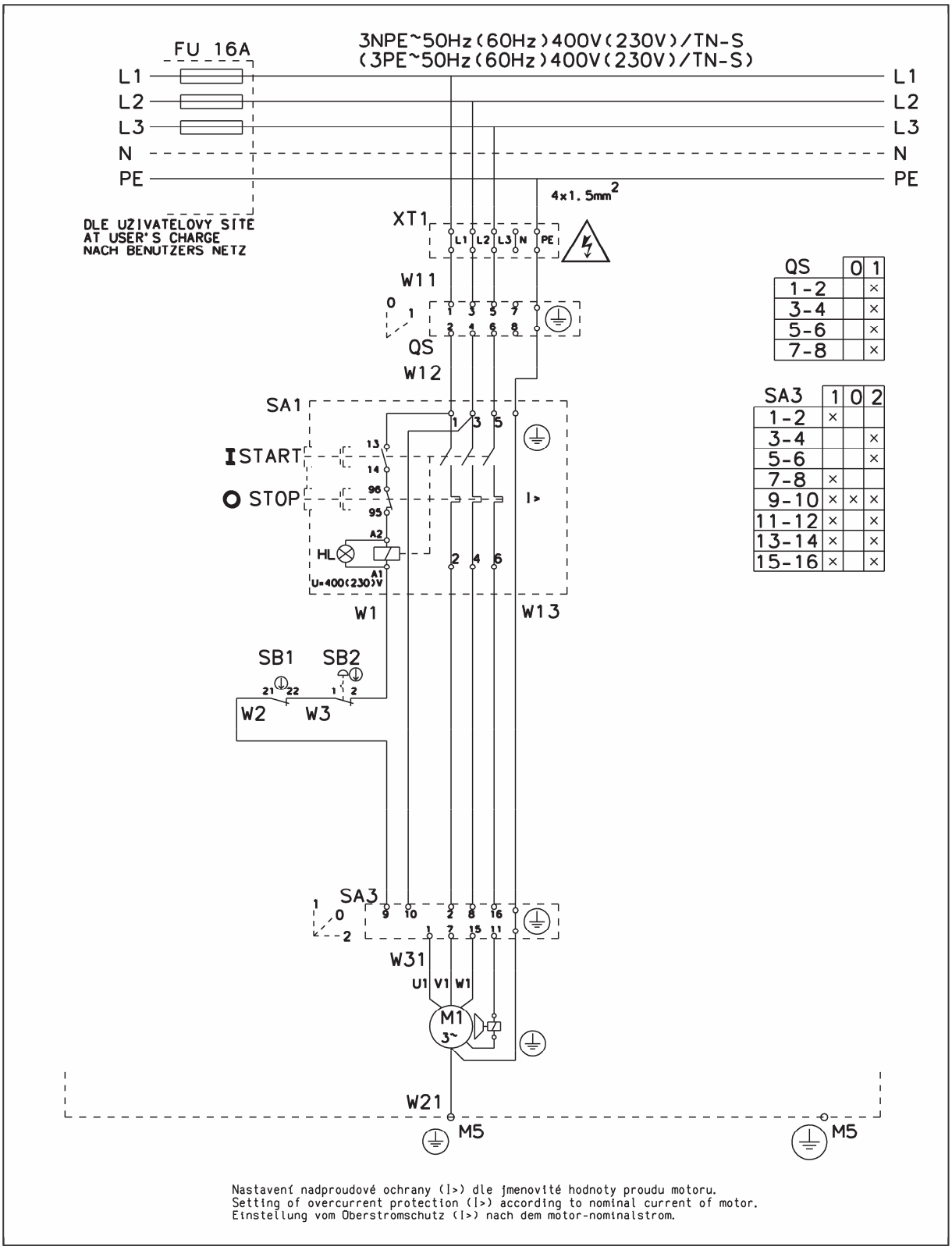


Diagram 019-3-2 (3,0/3,7 kW, 3x400 (230) V, 50 (60) Hz, main switch, connection box, stop-button, brake release, two speed feeding motor)

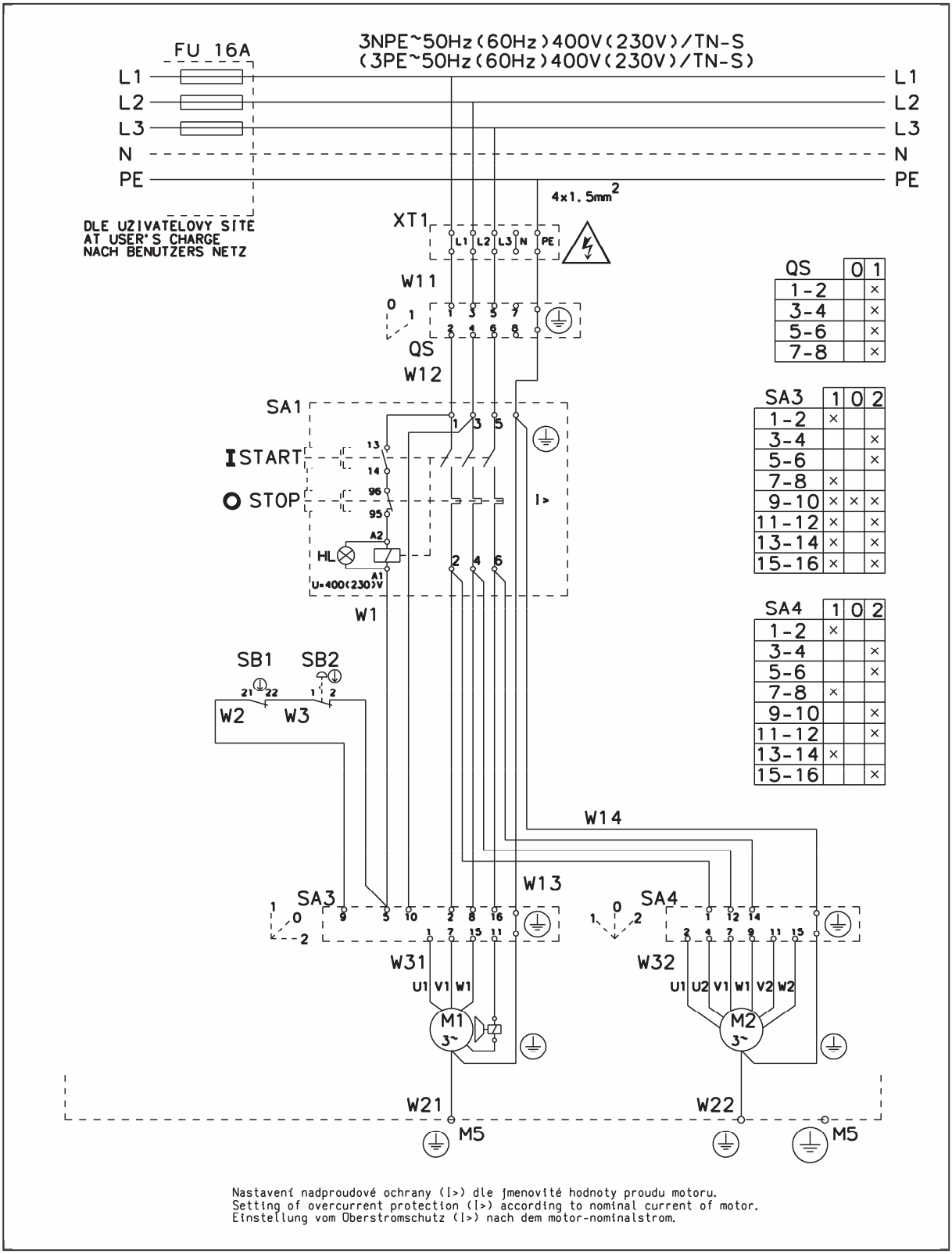
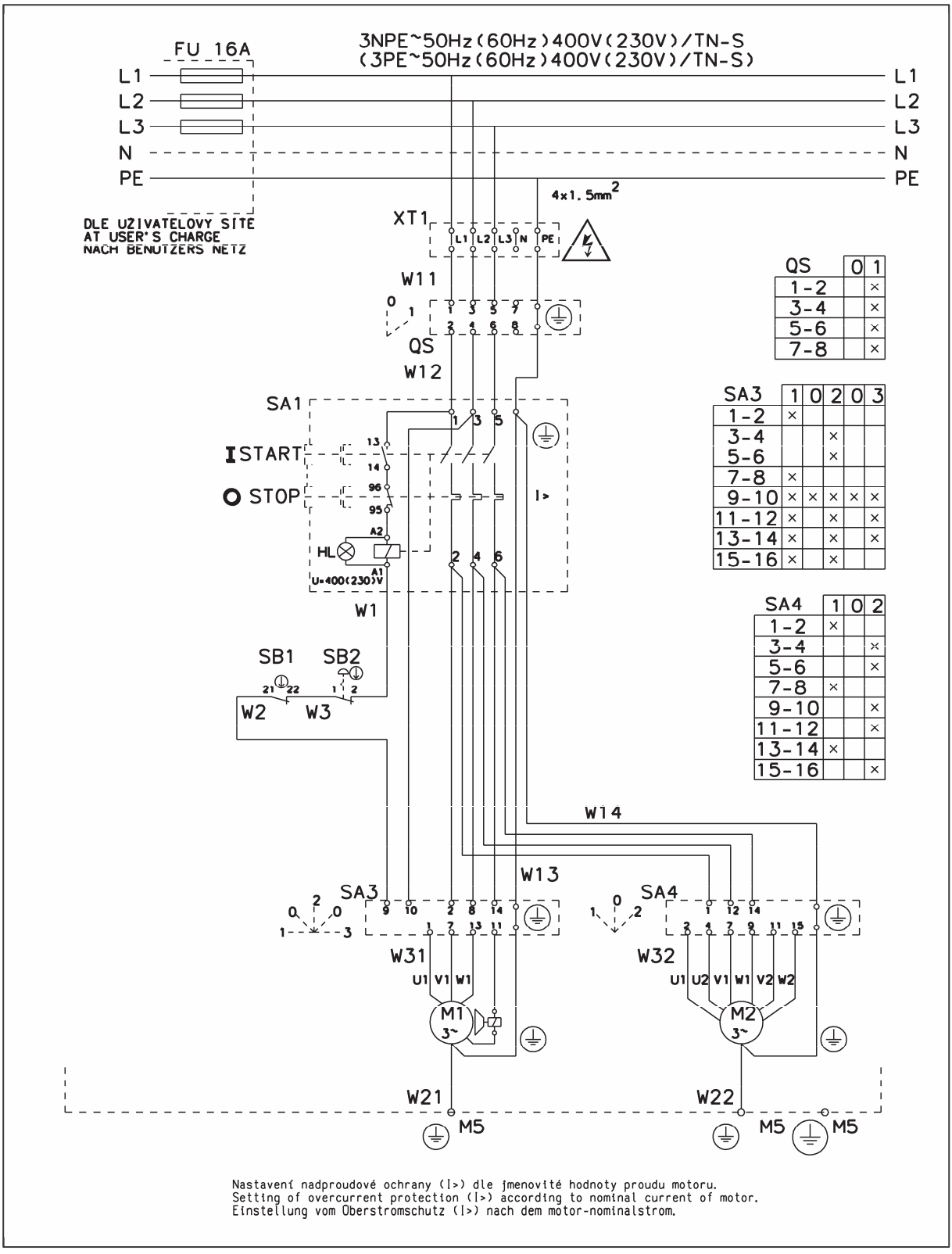


Diagram 020-3-2 (3,0/3,7 kW, 3x400 (230) V, 50 (60) Hz, main switch, connection box, stop-button, reverse, brake release, two speed feeding motor)



Ensloure B List of electrical parts

List of electrical parts									
Descrip-tion	Function	Type, technical data	1-phase 2,2kW pc	3-phase			Supplier	Replacement	Note
				2,2kW pc	3,0kW pc	3,7kW pc			
ELECTRIC ENGINES									
M1	Power of planing and thicknessing cutter block	CEG M90lb 2,2kW 1x230V 13,4A 50/60Hz 2740/min B3	1	-	-	-	CEG Italy	CEG M90lb/FPC 2,2kW 1x230V 13,4A 50/60Hz 2740/min B3	
		CEG M90 – 2 2,2kW 3x400/230V 4,8/8,4A 50/60Hz 2830/min B3	-	1	-	-		CEG M90 – 2 2,2kW 3x400/230V 4,8/8,4A 50/60Hz 2830/min B3	
		CEG M90L-2 3,0kW 3x400/230V 6,55/11,3A 50,60Hz 2850 /min IM B3	-	-	1	-		CEG M90L-2/FPC 3,0kW 3x400/230V 6,55/11,3A 50,60Hz 2850 /min IM B3	
		CEG M90L-2 3,7kW 3x400/230V 9,3/16,1A 50,60Hz 2840 /min IM B3	-	-	-	1		CEG M90L-2/FPC 3,7kW 3x400/230V 9,3/16,1A 50,60Hz 2840 /min IM B3	Only for voltage 3x400V
M2	Power of feeding	CEG M71b 0,3/0,45kW 3x400V 1,3/1,5A 50/60Hz 1435/2910/min B14	-	1	1	1	CEG Italy		For two speed feeding.

Contactors									
SA1	Main contactor	LE - 1 M35U716 Uc=230V/50,60 Hz Ie=16A Ue=400V IP54	-	1	-	-	TELE-MECA-NIQUE Francie		for 3x230V
		LE – 1 M35U722 Uc=230V/50,60 Hz Ie=16A Ue=400V IP54	1	-	-	-	TELE-MECA-NIQUE Francie		For var.1x230V With motor-CEG
		LE – 1 M35N712 Uc=400V/50,60 Hz Ie=16A Ue=400V IP54	-	1	-	-	TELE-MECA-NIQUE Francie		
		LE – 1 M35N714 Uc=400V/50,60 Hz Ie=16A Ue=400V IP54	-	-	1	-	TELE-MECA-NIQUE Francie		And for 2,2kW 3x400V +feeding
		LE – 1 M35N716 Uc=400V/50,60 Hz Ie=16A Ue=400V IP54	-	-	-	1	TELE-MECA-NIQUE Francie		
SA3	Switch for brake release	VS 16 VZ1C PG21 Ie=16A Ue=400V IP 54	1	1	1	1	VD OBZOR Zlín		Variant with brake release or reverse
SB1	End stop switch for tables	XCK – A 102 1“a“+1“b“ Ue=400V Ie=16A IP 54	1(0)	1(0)	1(0)	1(0)	TELE-MECA-NIQUE Francie		
SB2,3	Emergency stop button	XAL K 178 1“a“+1“b“ Ue=400V Ie=16A IP 54	1(2)	1(2)	1(2)	1(2)	TELE-MECA-NIQUE Francie		SB3 at variant with variable feeding speed
QS	Main switch	VS 16 1104 A8 VSC VZ1C PG21 Ie=16A Ue=400V IP 54	0(1)	0(1)	0(1)	1	VD OBZOR Zlín		At variant with feeding always
SA4	Change over switch for two speed	VS 16 VZ1C PG21 Ie=16A Ue=400V IP 54	-	1	1	1	VD OBZOR Zlín		
Wires									
W1-10	Control circuit.	H05VV-K1X1	Dle varianty stroje					CYSY 2A x 1mm^2	
W11-20 W31-40	Power cicuit	H05VV-K3G2,5	Dle varianty stroje					CYSY 3Bx2,5mm^2	
		H05VV-K4G2,5	Dle varianty stroje					CYSY 4Bx2,5mm^2	
		H05VV-K4G1,5	Dle varianty stroje					CYSY 4Bx1,5mm^2	
		H05VV-K5G1,5	Dle varianty stroje					CYSY 4Bx1,5mm^2	
		H05VV-K7G1,5	Dle varianty stroje					CYSY 5Bx1,5mm^2	
W21-30	Protection circuit	H05V-K1G1,5	Dle varianty stroje					CYA 1,5 mm^2	
XT1	Connection box.	Y connection box	0(1)	0(1)	0(1)	1(2)	GEWISS		

Note: The producer reserves himself the right for a change of part(s) and its supplier.