

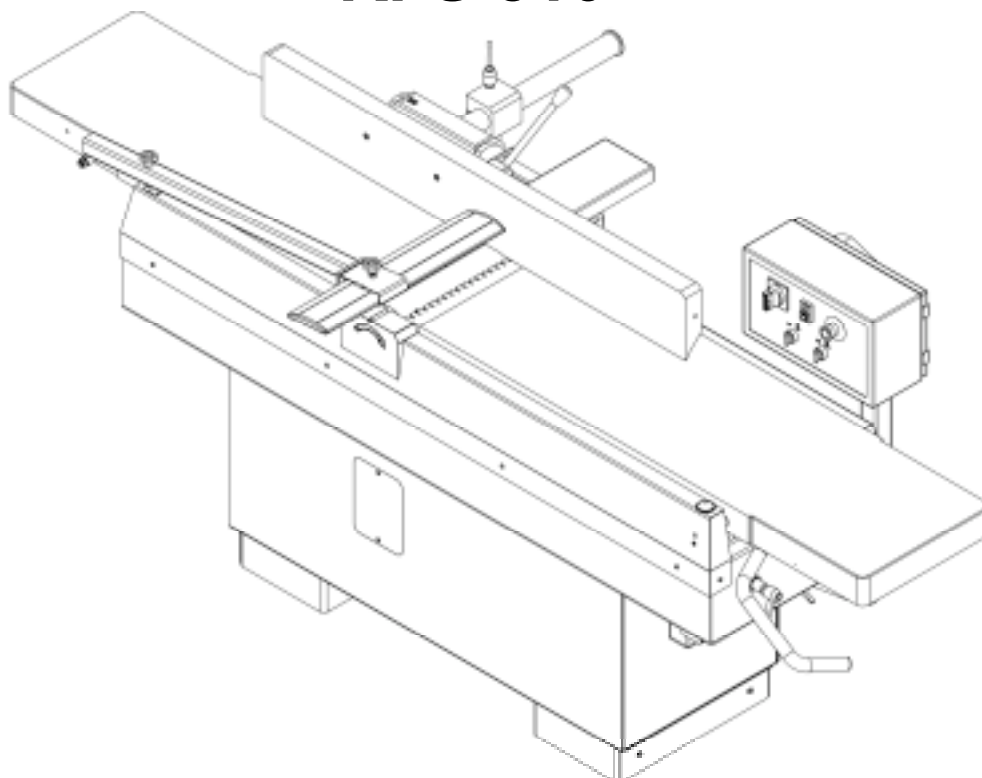


PLANER ~ JOINTER

RFS 310

RFS 410

RFS 510



Service instructions

updated 1/2004

ROJEK

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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 intended. It contains also all necessary information for a correct and safe operating.

The machine is equipped with various safety equipment protecting the operator and machine as well as usual technological using. These regulations, however, cannot sheet all other safety aspects. That is why the operator must peruse and make sense of this manual before starting of using the machine. 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 stress the importance of some basic passages better, they are printed in **heavy letters** and marked by some preceding symbols - Appeal recommending to follow entirely following regulation :



Breach of these regulations may cause the death or a grave health exposure of operating personnel.



Warning against improper techniques or using of machine that may cause an exposure of human health, machine functioning and environment or cause economic losses.



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

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Notice

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1.0 Machine use

This machine is designed as planer for use in joiners shops(plants) at lengthwise (related to wood fibres) processing of wood and materials on its base within the width of 300, 400 or 500 mm.

Machine is intended for being operated by one person.

Any manipulation with the machine is forbidden for children and youth.

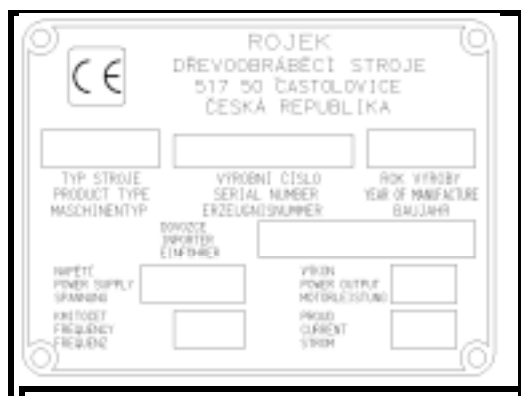
1.1 Qualification of workers

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

Machine must operate in workshop surroundings within temperature range +5°C - +40°C, relative air humidity 30% - 90% non condensing and altitude 1000 m above the sea in, surrounding classified : fire danger of combusitve dusts (BE2N2).

2.0 Machine signification



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

Type **RFS 310** – planer, planing width 310 mm

Type **RFS 410** – planer, planing width 410 mm

Type **RFS 510** – planer, planing width 510 mm



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

2.0 Technical data

		RFS 310	RFS 410	RFS 510
Length	mm	2400	2 600	2700
Width	mm	950	1120	1300
Height	mm	1070	1 070	1070
Table height	mm	890	890	890
Front table length	mm	1300	1 400	1450
Back table length	mm	1050	1 150	1200
Motor power	kW	2,2 (3)	3 (4)	4 (5,5)
Motor rotating speed	RPM	2 860 (3 432 at 60 Hz)	2 860 (3 432 at 60 Hz)	2 860 (3 432 at 60 Hz)
Cutterblock rotating speed	RPM	5 000	5 000	5000
Cutterblock diameter	mm	116	116	116
Number of knives in cutterblock	pcs.	4	4	4
Max. planing width	mm	300	400	500
Max. shavings thickness	mm	8	8	8
Tilting angle of tiltable ruler (degrees) °		0° – 45°		
Exhausting nozzle diameter	mm	150		
Voltage / frequency	V / Hz	1 phase + PE + N ; 230 V / 50 (60) Hz 3 phases + PE + N ; 400(230) V / 50 (60) Hz		
Line safeguarding	A	16 (25)		
Nett weight	kg	510	560	630
Gross weight	kg	500	550	620

3.1 Possible machine variants

electric motor power of - RFS 310....2,2 ; 3 kW (1 ph. and 3 phs.)
 - RFS 410....3 ; 4 kW (3 phs.), 3 kW (1 ph.)
 - RFS 510....4 ; 5,5 kW (3 phs.)

Operation voltage - 3 x 400V or 3 x 230V or 1 x 230V (only for 2,2 kW ; 3 kW)

Supply frequency - 50 Hz or 60 Hz

Brake of electric motor - without possibility of electrical releasing of electric motor brake
 - above mentioned possible (by switch on control pannel)

3.Values of shavings removal thickness, feeding and power

Power (kW)	Feeding speed (m/min)	Planed width (mm)	Shavings removal (mm)
2,2	5	300	2
3	5	300	3
4	5	300	4
5,5	5	300	5

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. at planing of harder woods and at 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 at planing of materials of small thickness considering the springing of planed material piece.

3.3 Appliance noise data(EN 859:1998; ISO 7960:1995)

		RFS 310	RFS 410	RFS 510
Nois level A in operator's place ($L_{pA_{eq}}$)	Without tools	$L_{pA_{eq}} = 75,8 \text{ dB(A)}$	$L_{pA_{eq}} = 79,2 \text{ dB(A)}$	$L_{pA_{eq}} = 78,4 \text{ dB(A)}$
	With tools	$L_{pA_{eq}} = 91,4 \text{ dB(A)}$	$L_{pA_{eq}} = 94,5 \text{ dB(A)}$	$L_{pA_{eq}} = 86,9 \text{ dB(A)}$
Acoustic power A (L_{WA})in operator pl. EN ISO 3746:1995 K = 4 dB	Without tools	$L_{WA} = 84,5 \text{ dB(A)}$	$L_{WA} = 85 \text{ dB(A)}$	$L_{WA} = 86,8 \text{ dB(A)}$
	With tools	$L_{WA} = 96,1 \text{ dB(A)}$	$L_{WA} = 100 \text{ dB(A)}$	$L_{WA} = 92,2 \text{ dB(A)}$

Above stated values are those of emissions and need not represent the safe working values. Although there is 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 noise, 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 machine user to a better estimation of risks.

3.4 List of used grounds

Government directive nr. 170/1997 of Collection, (Directive 98/37/EC)

Stating technical demand on machinery appliances

Machinery part

EN 292-1 : 1994 (EN 292-1 : 1991)

Machinery safety. Basic terms, general fundamentals for projecting, part 1 : basic terminology, methodology.

EN 292-2/A1 : 1997 (EN 292-2/A1 : 1995)

Machinery safety. Basic terms, general fundamentals for projecting, part 2 : Technical fundamentals and specifications.

EN 859 : 1998 (EN 859 : 1997)

Woodworking machinery safety – Planers with manual feeding.

EN 294 : 1994 (EN 294 : 1992)

Machinery safety. Safe distances to avoid a hand touching of dangerous places.

EN 953 : 1998 (EN 953 : 1997)

Machinery safety. Protective coverings. General demand on constructing and production of unmoved and movable protecting coverings.

EN 954-1 : 1998 (EN 954-1 : 1996)

Machinery safety. Safety parts of controllingsystems. Part 1: General fundamentals for construction.

EN 1050 : 1998 (EN 1050 : 1996)

Machinery safety. Fundamentals for determination of risks.

EN 349 : 1994 (EN 349)

Machinery safety. Least spaces for avoiding compression of human body parts.

EN ISO 7000 : 1994 (ISO 7000 : 1989)

Grafic signs substituting writings on appliance.

Electrotechnical equipment

Government directive nr. 169/1997 Coll., (Directive 89/336 EWG) stating technical demand on products concerning its electromagnetic compatibility.

Government directive nr. 168/1997 Sb., (Directive 73/23 EWG) stating technical demand on electric appliances of low voltage.

EN 60204 - 1 : 2000 (EN 60204-1 : 1998)

Machinery safety. Electrical equipment of machines. Part 1 : General demand.

IEC 38 : 1993 (IEC 38 : 1983)

Electrotechnical regulations. Normalized voltages IEC.

EN 60073 : 1997 (EN 60073 : 1996)

Electrotechnical regulations. Encoding of conveyers and controllers by help of collors and supplementary means.

EN 55011 : 1999 (EN 55011 : 1998)

Limit and measurement methods of characteristics of electromagnetic interference from industrial, scientific and medical (PLV) appliances.

4.0 Safety instructions

4.1 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, referring 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 function-ing, 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



Under any conditions do not touch the low voltage system on the electric control pannel, transformers, motors and terminal boards. Every of mentioned unit is indicated with a shield.

Make sure that all safety elements are in active position and check up its function **before connecting** the machine to the mains. In case of a necessity to remove doors or protecting shields : switch off the main switch and lock it or disconnect the machine from the mains by towing off the plug.

Do not connect the machine to the mains with removed door or protecting covering.



- Learn the location of switches before starting of machine to avoid improper operating.
- Remember the position (location) of the emmergency switch, so as to use it promptly whenever needed.

- Pay attention so as not to touch any switch by chance during machine run.
- Never touch rotating cutterblock by hands or with whatever else.

- In case that you are finishing operating at the planer : switch off the machine at the control pannel and disconnect it from the mains
- Before cleaning : Switch off the machine and always lock the main switch or disconnect the machine from mains by towing off the plug.
- Before practising maintenance : Switch off the machine and always lock the main switch or disconnect the machine by towing off the plug.
- When more operators work at the machine : never begin another operation without having instructed your cooperater how you intend to run on.
- Never adapt the machine in a way that could endanger its safe run .
- If you doubt about accuracy of by yours intended technique: discuss it with a specialist !



- Do not fail practising of regular surways in accordance with this instructions manual.
- Check up and make sure that nothing spurious occurs at the machine from user's side.

- After end of working adjust the machine so as to be ready for other serial of operations.
- If the mains supply is interrupted – switch off the main switch at once or disconnect the machine by towing off the plug from the socket.
- Do not paint over, smear, damage, adapt nor replace safety shields. If they get unreadable or lost – contact the producer 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 starting up of the machine.

- 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 undamaged. 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 or 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 this manual instructions for machine maintenance men at 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. Herewith you avoid an occasional 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 net 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 products 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 the whole set.
- 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 – 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 a safe and quality work.
- Never lay tools or other subjects onto working tables or coverings.

5.0 Transport and storage

5.1 Transport, stocking

Be especially careful during transport and manipulation and commit it to qualified personnel for it especially trained.



**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 resistant wooden box.

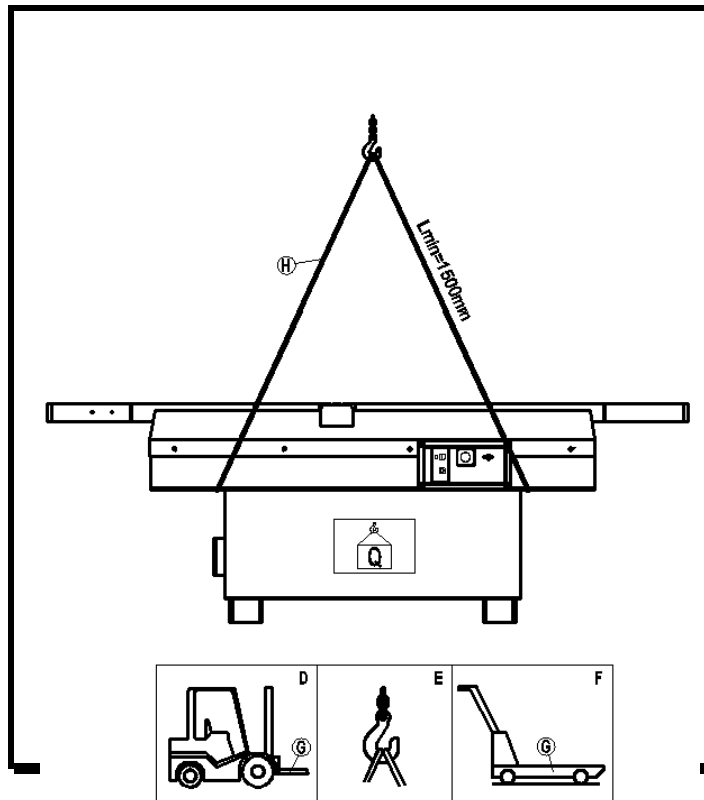
5.2 Machine lifting

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 lifting carriage



Use a high-lift of sufficient forks length !



Prepare a high-lift (D) or manual lifting carriage (F) of sufficient forks carrying capacity

- shift forks (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.

weight Q of RFS 310 is 500.kg

RFS 410 is 560 kg

RFS 510 is 620 kg

6.0 Positioning of

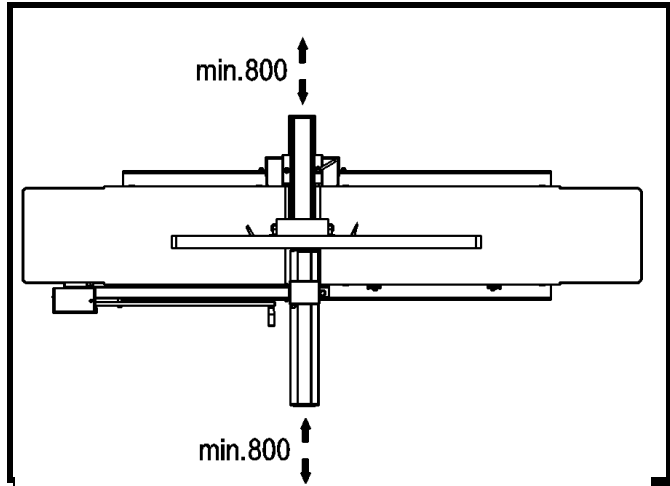
machine

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.

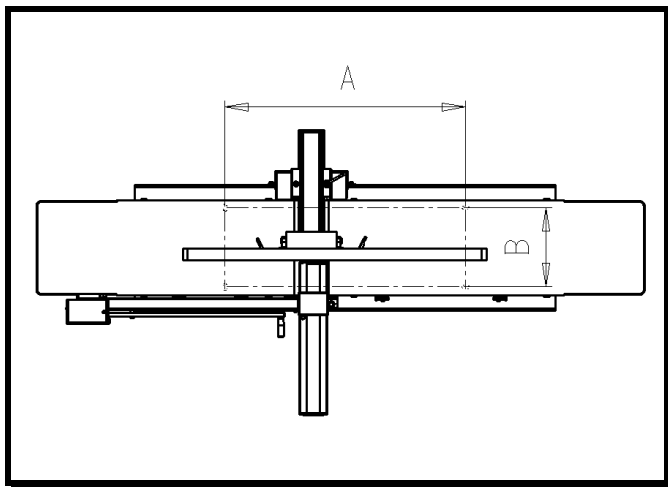
6.1 Working space



It is important to keep a free space of at least 0,8 m, requested as working space surrounding the machine.

If a long piece 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 is equipped with feet, (in lower frame part).

When the bottom is not flat, level the machine by help of fillers in allowance 1 mm/ 1000 mm and screw feet to the bottom (anchor the machine).

Attached drawing shows a lay-out of anchoring openings on the machine.

A x B = 1030 x 240 mm - RFS 310

A x B = 1030 x 340 mm - RFS 410

A x B = 1030 x 440 mm - RFS 510

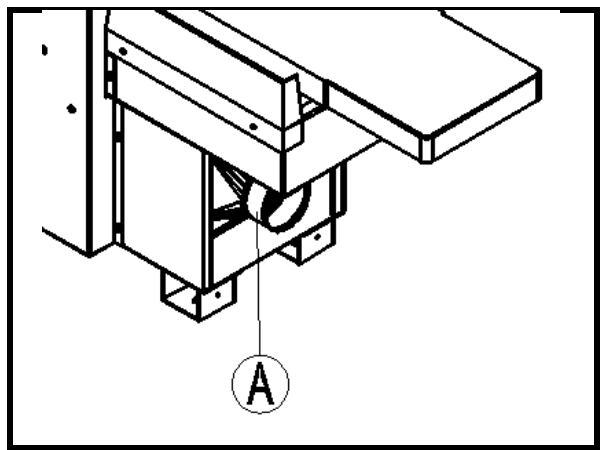
7.0 Connecting of exhaustion

An exhausting unit of minimal volumetric capacity $1270 \text{ m}^3 \text{ h}^{-1}$ and minimal air stream speed in the hose 20 ms^{-1} for dry particals, and $1780 \text{ m}^3 \text{ h}^{-1}$ 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 !**

Use a flexible exhausting hose of diameter 150 mm for connecting. Connect the exhausting hose to nozzle located as follows :



Exhaustion is connected in machine back part by a nozzle (A) of diameter 150 mm.

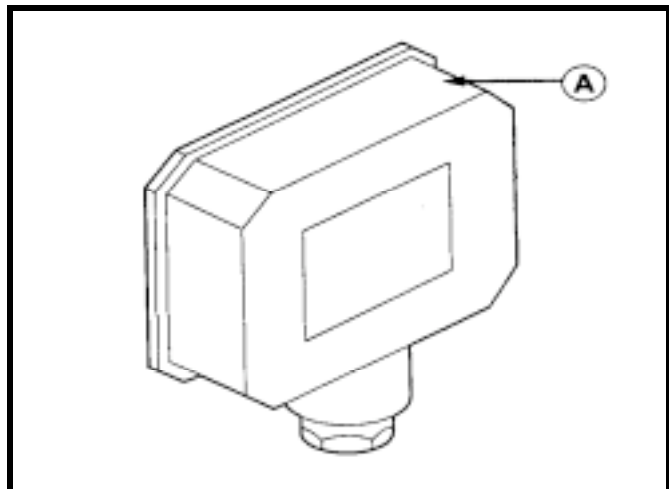
Wooden waste must be liquidated eco-friendly - not to worsen the environment.

8.0 Connecting to the mains



Only a qualified person is allowed to realize the first connection of the machine to the mains.

8.1 Connecting to mains



Make sure that no voltage is at the supply lead before connecting. Unscrew the cover of the terminal board (A), 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 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 network.



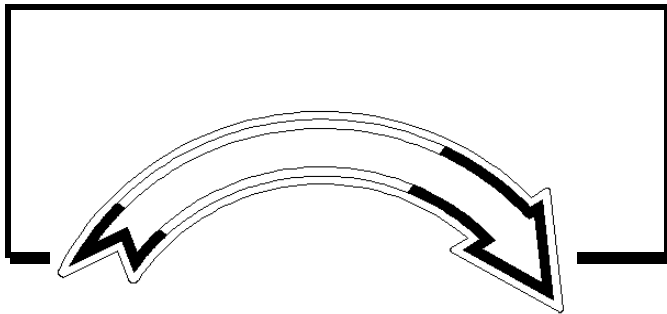
Always switch off the main switch and lock it or disconnect the machine by towing the plug from the socket before tools adjusting and replace and all adjusting, treatment and maintenance works. Herewith you avoid eventual machine starting by

chance by an else person.

8.3 Rotating direction



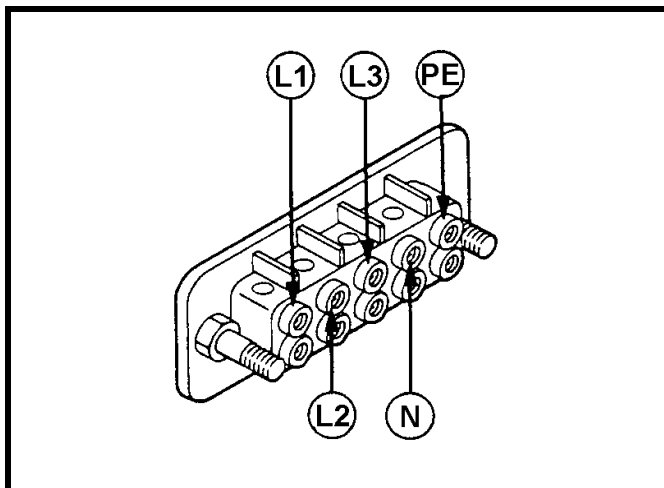
An injury danger menaces at improper rotating direction of cutterblock !



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.

Start the machine for a flash to learn the spindle rotating direction.

8.4 Rotating direction change



It is possible to change rotating direction 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. 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 !**

Start the machine without tools for a flash to learn its rotating direction.

8.5 Protection of electric parts

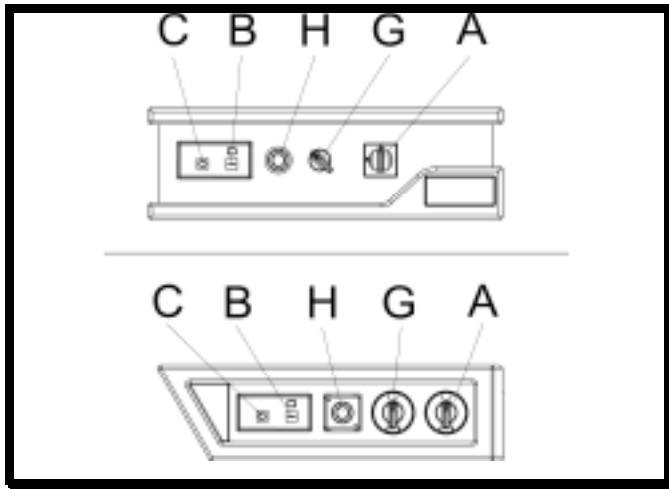
The electric motor of the planer is equipped with an electric brake, able to stop the spindle in required time (within 10 s).

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 Operating machinery from panel on stand machinery (lower operating)



8.6.1.1 Machine connecting

The connecting and disconnecting of machine is done by switching ON and OFF of the lockable main switch (A). Till the machine is disconnected, it cannot be started. The main switch can be secured with a pad lock against an ineligible machine starting.

8.6.1.2 Machine starting - stopping

The machine motor gets started by pushing the green knob (B) at the starter of the main control panel.

The motor gets stopped by pushing the red controller (C). In case of a mains failure the machine is switched off by a tapped coil, it means that after the voltage restoring the machine must

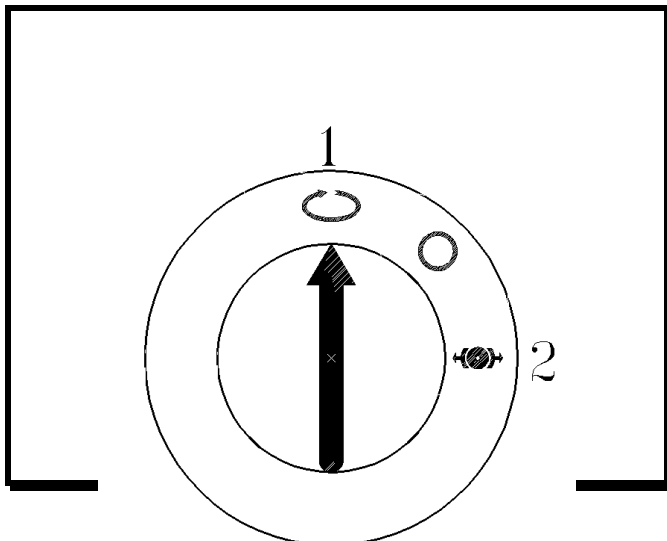
be switched on again. The inbuilt breaker will switch off the machine in case of motor overloading.

Check up the machine (motor function, blunt tools and the like) if the breaker switches it off several times in a sequence.

8.6.1.3 Controller of emergency stopping

The controller of emergency stopping (H), after having been used, will remain locked in the position OFF and before a new machine starting it is necessary to release it by indexing of the „mashroom“ head. The machine cannot be started without this releasing.

8.6.1.4 Main switch and electric motor brake release



The switch of motor brake releasing (only on machines equipped with CEG motors) is placed also at control panel and by help of it there is possible to release blocked electric motor drive of cutterblock at the exchange and adjusting of knives.

Position 0 - OFF

Position 1 - normal run

Position 2 - releasing

Releasing of electric motor – main switch in position ON, switch of releasing in position RELEASED.

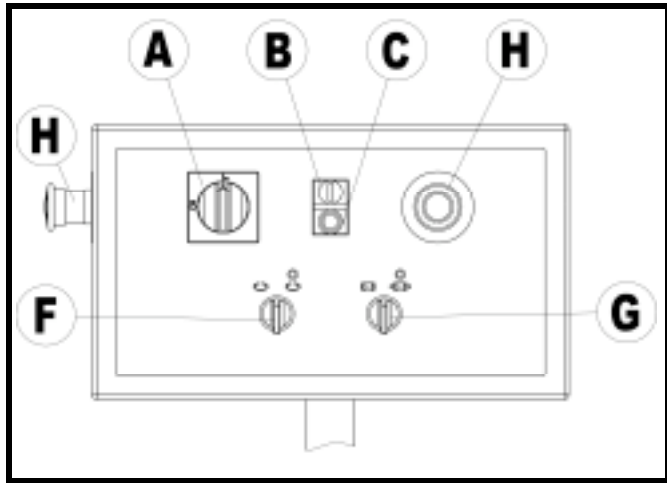
The motor gets released by pushing the green knob of operation switch.

Note : If the machine is equipped with reversible overswitch – it must be switched on in one of

two working positions.

Turn the releasing switch to position “released” and lock it before exchange or adjusting of tools. Herewith you avoid eventual starting the machine by chance by an else person.

8.6.2 Operating machinery from panel on the bracket arm (upper operating)



8.6.2.1 Machine connecting

The connecting and disconnecting of machine is done by switching ON and OFF of the lockable main switch (A). Till the machine is disconnected, it cannot be started. The main switch can be secured with a pad lock against an ineligible machine starting.

8.6.2.2 Machine starting - stopping

The machine motor gets started by pushing the green knob (B) at the starter of the main control panel.

ATTENTION ! As far as the machine is equipped with a reversible overswitch (F), the machine can be started even

after running out of the precautionary time period (c. 20 s) after connecting of the machine to the mains with the main switch (A). The motor gets stopped by pushing the red controller (C). In case of a mains failure the machine is switched off by a tapped coil, it means that after the voltage restoring the machine must be switched on again. The inbuilt breaker will switch off the machine in case of motor overloading.

Check up the machine (motor function, blunt tools and the like) if the breaker switches it off several times in a sequence.

8.6.2.3 Machine run reversion

Look at the cutterblock from the side of the material income table of the planer, against the guiding ruler. The cutterblock must rotate anticlockwise – means to the right, against inserted material of workpiece. The upfeed method of planing is concerned. As far as required by the technique (when using the mortiser as an auxiliary unit) - the cutterblock can be started in reverse sense of rotating – means to the left (as far as the machine is equipped with the reversion). The choice of required rotation sense is done by turning of overswitch (F) with pushed-in key into appropriate position. After running out of precautionary time period - the motor can be started by pushing of the green pusher (B). After turning of the overswitch (F) into position of the reversal rotation sense – to the left – this position is indicated by lighting up of the control light.

As far as the rotation sense is changed by the overswitch (F) during the machine run – at first the feed of electric power to the motor is interrupted, the motor stops and, as lately as the safety time period is ran out, the cutterblock can be started in reverse (contrary) rotation direction with the green controller (B).

8.6.2.4 Rebraking cutterblock

The cutterblock can be (after its stopping) – for an easier manipulation when exchanging the knives (cutters) – released by indexing of the controller (G) into the position „RELEASED“. The key must be put in the controller. After running out of the safety time period, the machine electric motor gets released and this stage is indicated by lighting up of the control light. The again-rebraking comes round after indexing of controller (G) into position braked (normal stage).

As far as the over switching of the release controller(G) comes during the machine run, at first the feed of electric power to the motor is interrupted, the motor stops and, as lately as the safety time period is ran out, the cutterblock will be released.

ATTENTION – It is necessary always to get back the release controller into the position “BRAKED”, otherwise the cutterblock motor cannot be started with the green controller (B).

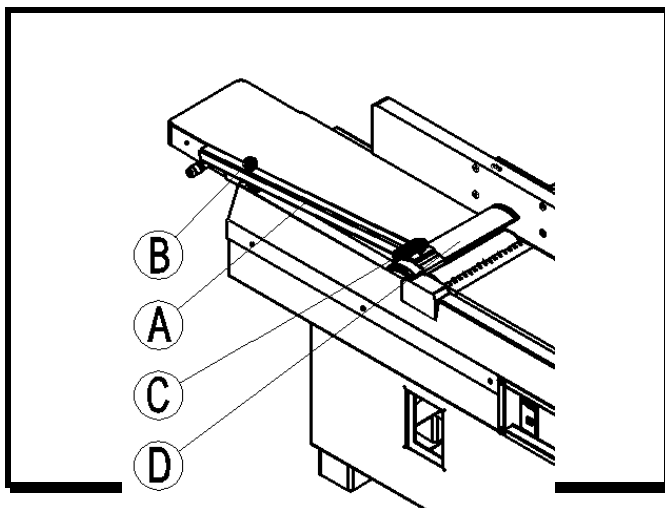
8.6.2.5 Controller of emergency stopping

The controller of emergency stopping (H), after having been used, will remain locked in the position OFF and before a new machine starting it is necessary to release it by indexing of the „mashroom“ head. The machine cannot be started without this releasing.

9.0 Operation and adjusting of machine

9.1 Adjusting and operation of protecting device

9.1.1 Adjusting of protecting device standard

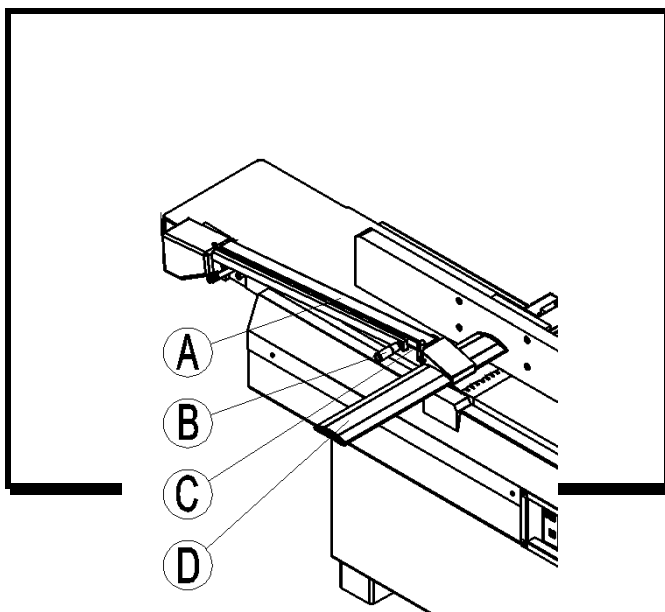


protection device CPS

Height of cutterblock covering (A) setting is adjustable by a screw (B). (max. 75 mm above back table).

Protecting covering (D) can be rebuilt parallelly with the cutterblock after releasing of a screw (C).

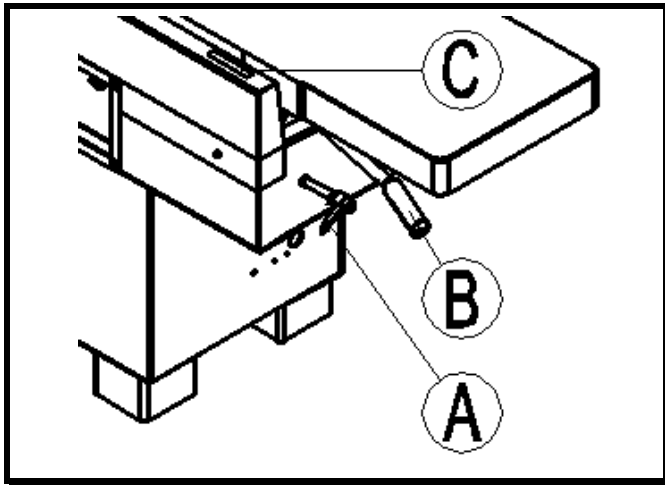
9.1.2 Operation and adjusting of



Height of cutterblock covering (A) setting is adjustable by a lever (B). Protecting covering returns automatically to its starting position. Lower and maximal upper position (max. 75 mm above back table) is determined by back stop screw.

Protecting covering (D) can be rebuilt parallelly with cutterblock axis after release of fixing lever (C).

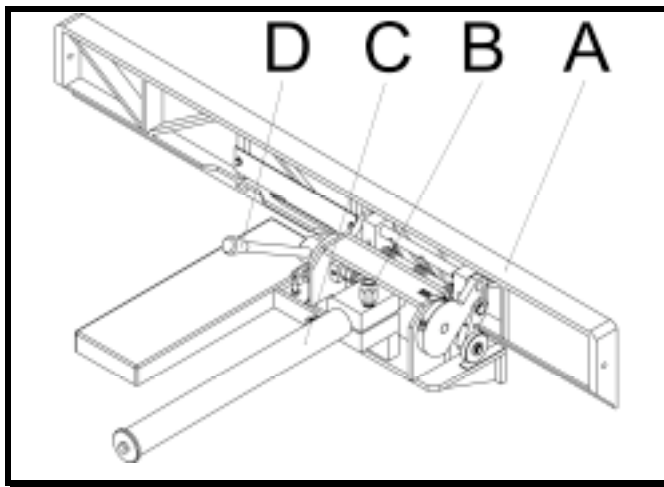
9.2 Setting of removal chip thickness



Removal chip thickness is adjustable by changing of front table position :

- release the table by fixing lever (A)
- change position of table by table adjusting lever (B) according to required removal chip thickness
- fix the table by fixing lever (A)
- the value of set chip thickness can be read at the scale (C).

9.3 Adjusting of tiltable ruler:



Along cutterblock endwise axe

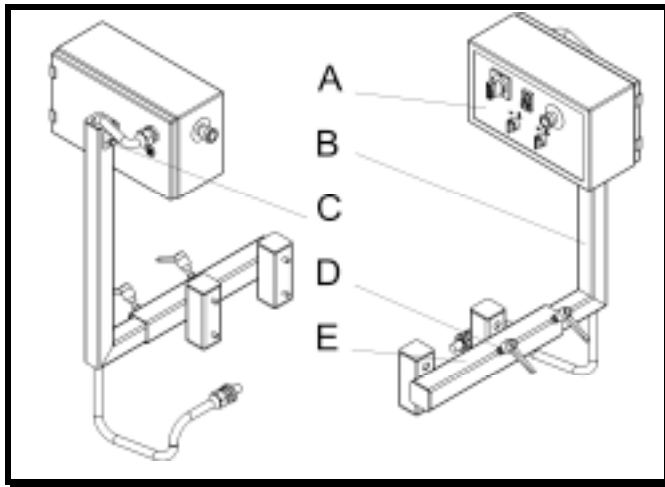
Release the fixing lever (B) of the leading (C) of the ruler (A),
- rebuild the ruler (A) along cutterblock lengthwise axe accordin. to the planed workpiece
- tighten the fixing lever(B) of leading (C) again.

Tilting

Release the fixing lever (D) of the ruler (A) tilting
- tilt the ruler (A) to the needy position
- tighten the fixing lever (D) of the ruler (A) tilting again.

Positions upright and tilted of 45° are assured by the back stop screws.

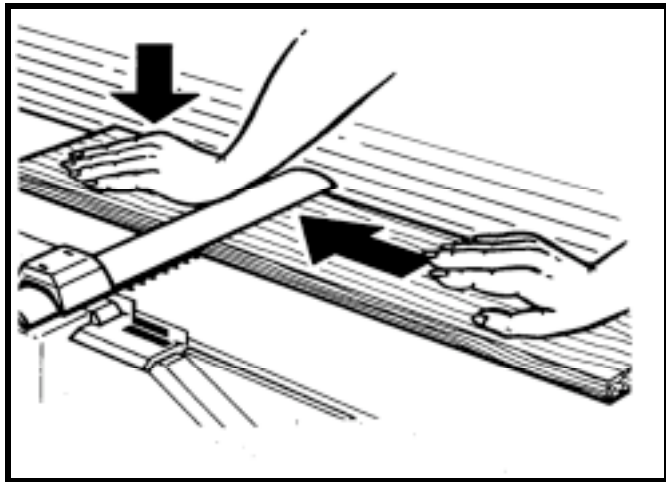
9.4 Adjusting of control pannel



The control pannel (A) can be tilted from its upright position by help of screws (C) at the arm (B).

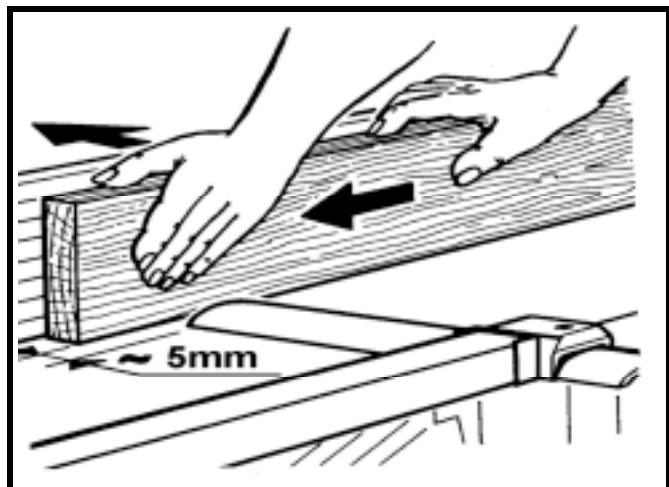
After release of tightening levers (D), the control pannel can be slid sidelong e.g. when using the mortiser upward over the workpiece input table or when tilting the leading ruler in direction beyond the table so as it does not interfere with the just used technique of planing.

9.5 Planing of flat workpieces



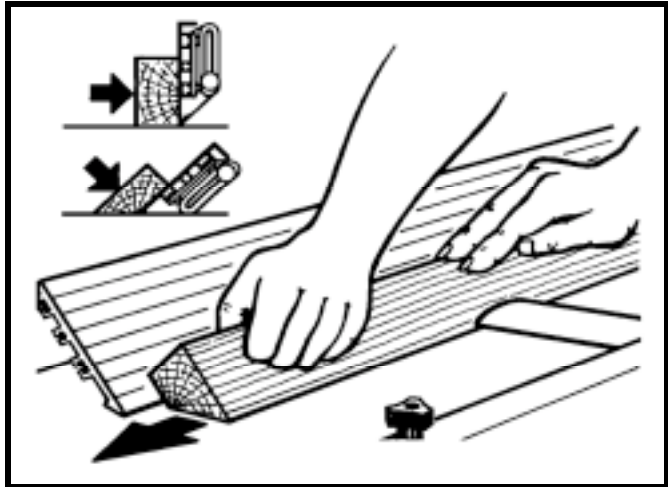
Put the flat piece on the planing table, take up the roller cover by left hand, adjust it to required height about 5 mm over input workpiece and switch on the machine. Push the workpiece towards the cutterblock, your hand is moving over the cutterblock cover, the workpiece is being shifted by hands -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

9.6 Planing of narrow pieces



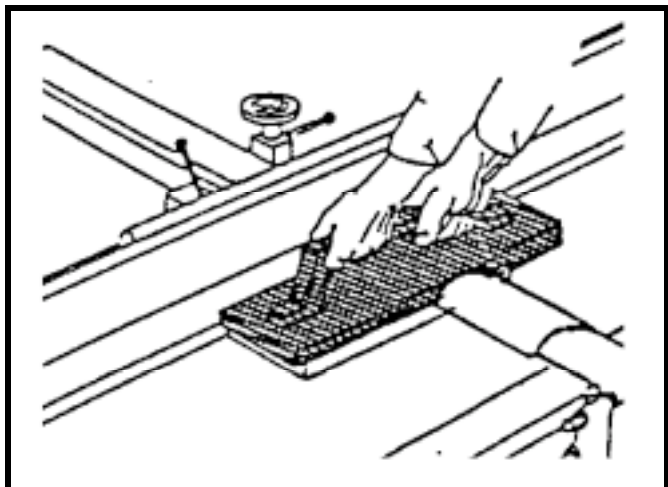
When planing narrow pieces set the cover of the cutterblock in such a position, so that the distance between the workpiece and cutterblock cover is max. 5 mm. Then switch on the machine and push and shift machined workpiece against cutterblock (between the cutterblock cover and ruler).

9.7 Planing with inclined ruler



Check the angle of the longitudinal ruler at loose tightening levers (the position 90° and 45° is fixed with backstop screws), tighten levers again and switch on the machine. Push chamfered workpiece forwards and against the ruler.

9.8 Planing of short pieces



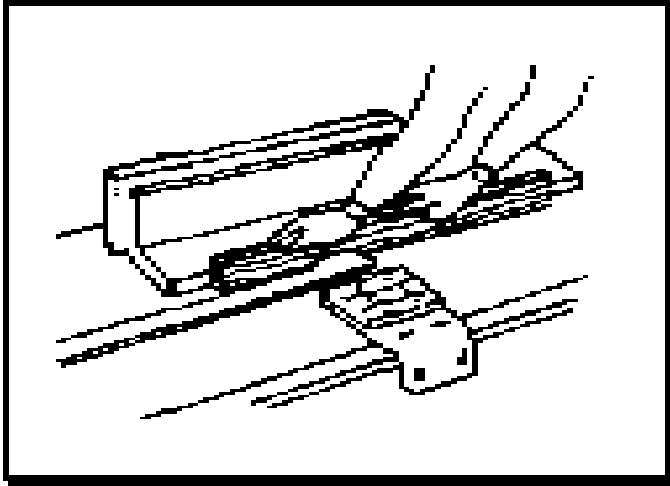
Use a special holder when planing short workpieces. A possible execution you can see on the picture.

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

9.9 Planing workpieces of small cross section

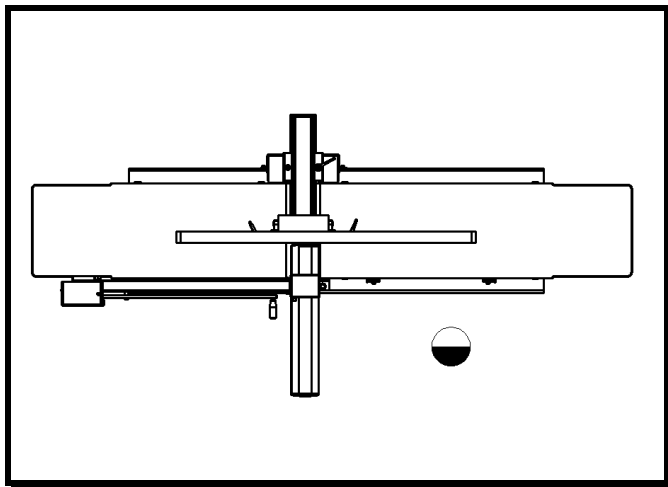
Attention !

Big injury danger arises when leading the workpiece along the high rule incorrectly !



The ruler must be supplemented with the auxiliary ruler for planing of thin materials. It must be wider than 60 mm, its height within 20 and 25 mm. You can offer the auxiliary ruler as a special machine accessories.

9.10 Working places



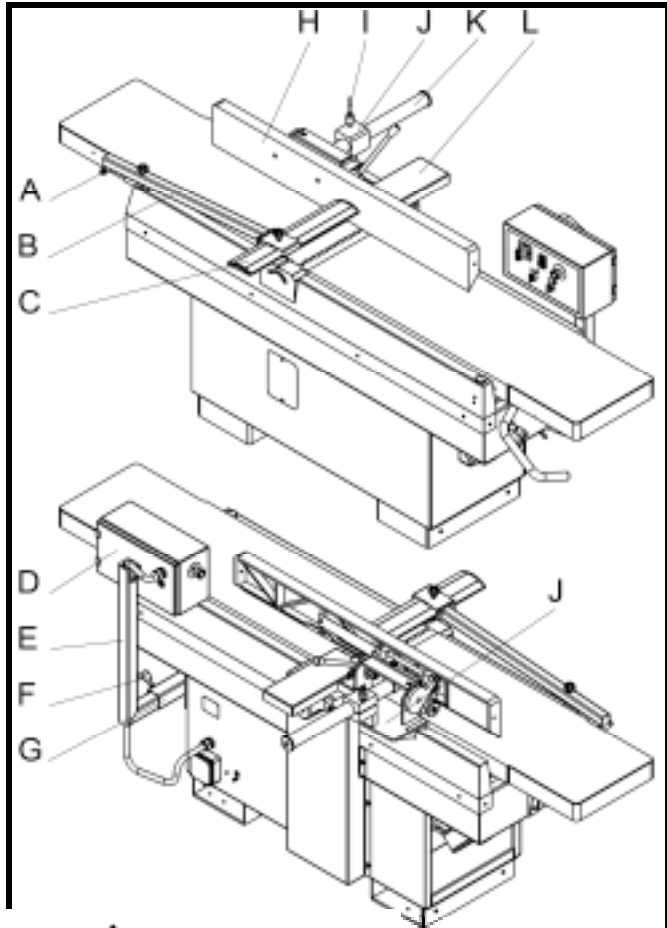
Picture shows the position of working place.

9. 11 Protecting instruments

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

9.12 Installation of demountable parts

Some parts of the machine can be dismantled according to the means of transport.



Do not mount dismantled parts onto the machine before having read all service instructions manual and learned about the machine thoroughly.

Mount the carrier beam(B) of the cutterblock onto the rear table. Lock it with the nut (A). Put the coverage(C) into the leading and lock it.

Insert the control panel(D) with the arm(E) into the holder(G) and fix it with fixing levers(F).

Insert the leading ruler(H) with the guide bar(K) into the bend of holder(J) and fix it with the fixing lever(I). The holder with the bend(J) is mounted at the rear machine table.

Do not forget to mount the rear cutterblock cover(L) onto the ruler holder.



9.13 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 interfere 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 at processing of big semiproducts workpieces
- remove shavings in cutterblock surroundings by hand or anything on running machine
- use other knives in cutterblock than recommended by machine producer
- use knives of width under 20 mm.

10.0 Tools



The machine is equipped with the motor electric brake.

Use electric releasing (if machine equipped with) of motor brake for easier turning with cutterblock when replacing cutting knives. Eventually use the adapter to be mounted onto the end of cutterblock spindle for setting in a socket wrench for this purpose. Spindle end is accessible after dismantling of small sideward covering. Dismount the adapter and put back the covering after adjusting of knives.

10.1 Recommended tools

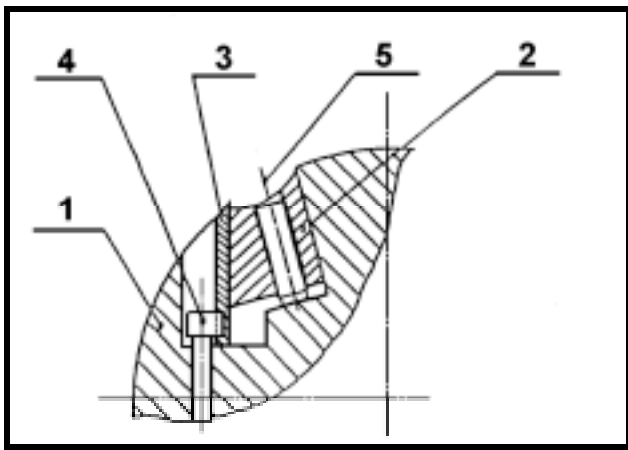


Do not use other cutterblock knives than supplied or recommended by machine producer. Do not use knives of width under 20 mm.

The cutterblock must be marked with name or logo (signification) of producer and maximal allowed rotating speed (RPM). Proper tools for using in this machine cutterblock are planing knives 310 (410; 510) x 30 x 3 mm (length x width x thickness) from steel HSS (HSS 18) with grooves for adjusting screws.

Accessories (vee strips, cutterblock screws) weight may differ in allowance within $\pm 0,25\%$. Knives must be fixed along all its length.

10.2 Exchange and adjusting of cutterblock knives



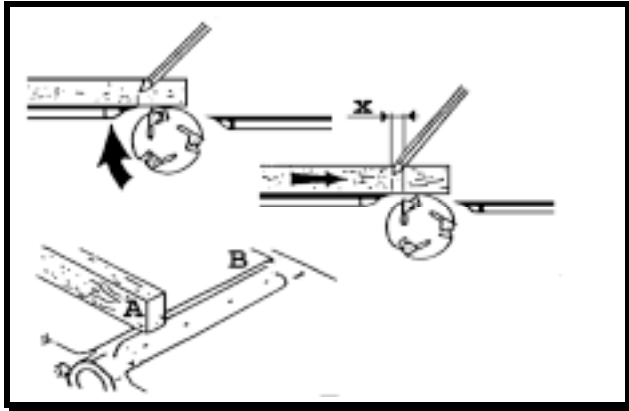
Standard machine equipment is the Rojek cutterblock system. Swing away the planing tables before exchange of knives. Release three screws (5) in the pressing-off wedge (2) by hexagonal spanner nr. 4. Release the pressing off wedge (2) by hammer (through a piece of wood). Remove the knife (3) by unscrewing 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 max. protrusion over cutterblock perimeter is 1,1 mm.

knives protrusion allowance 0,7- 0,8 mm.

The manufacturer recommends

Then tighten the pressing-off-wedge slightly with three hexagonal screws (5) so, as it is 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).

10.3 Knives adjusting control



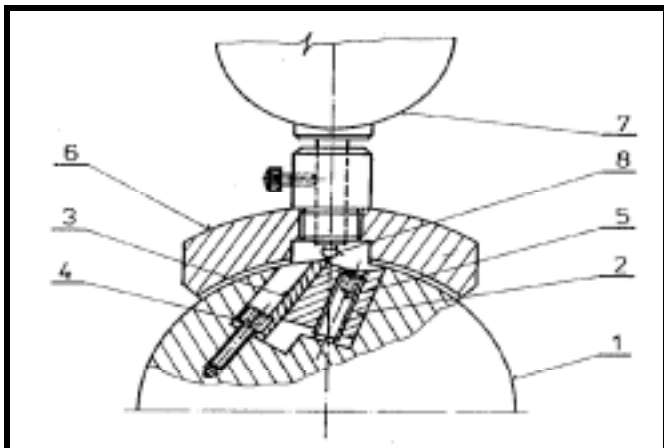
all screws.

A perfectly smooth processed wood surface can be achieved only with correctly adjusted knives.

Put a solid wood scanting(A) on the planing 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 knives 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

10.4 Adjusting control with a knife setter



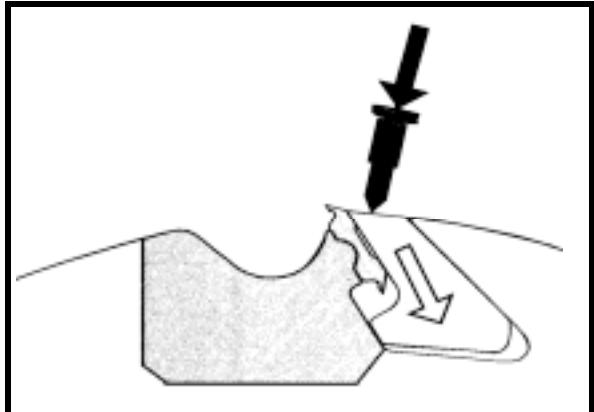
The knife setter is a part of the special equipment. First you have to clear the setter on cylindrical surface of cutterblock and then you can measure the height of knife extension over the cutterblock.

Control both sides and middle of the knife and on all knives in the cutterblock.

10.5 Exchange and adjusting of planing knives TERSA

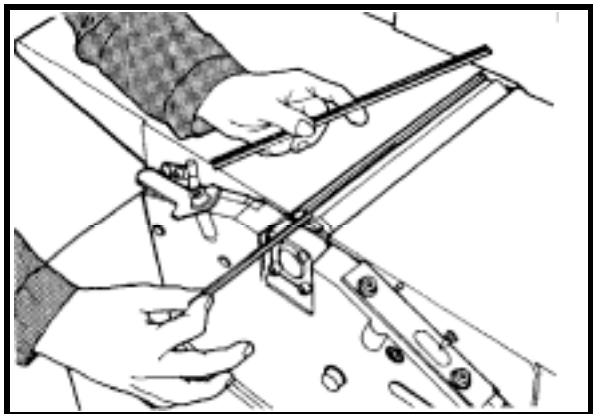
(This type of cutterblock is delivered especially on customer's order.)

10.5.1 Step one



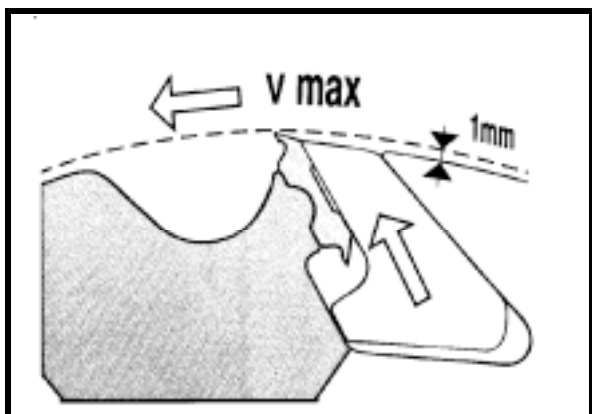
Discharge the knife in the cutter-block with knocking with the hammer of accessories onto the gasket.

10.5.2 Step two



Take the blunt knife out from cutterblock and replace it with a new one.

10.5.3 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!

blades all at once !

Exchange the

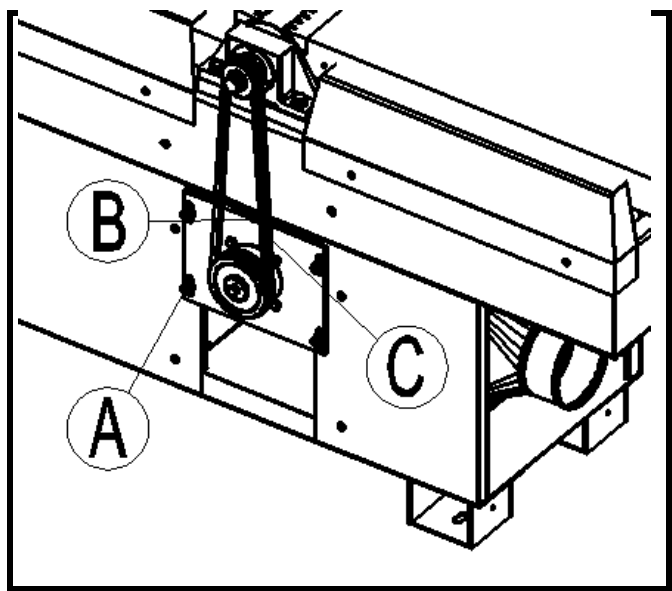
11.0 Maintenance and repairs



somebody else.

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

11.1 Cutterblock V-belt tightening



Take away dismountable covering in machine back part. Release fixing screws(A) of plate under motor flange and release fixing nut of tightening screw(B). Shift the motor downwards – herewith the V-belt(C) gets tightened. Tighten fixing nut of tightening screw(B), tighten fixing screws(A) of motor plate and put back dismountable covering. 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, 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.

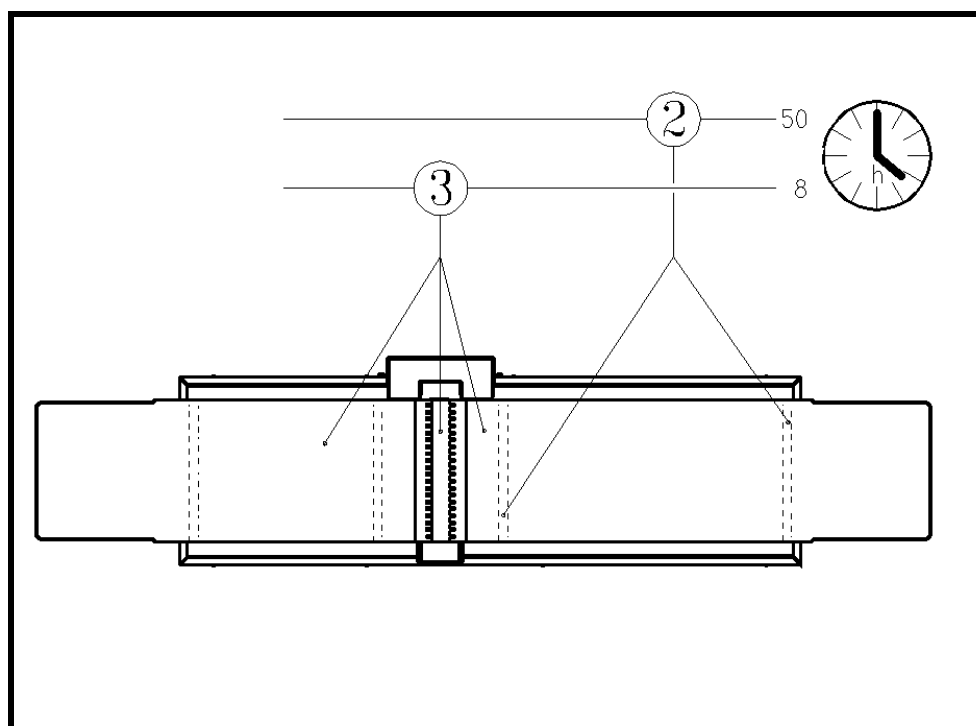
Clean the tables from resin by suitable solvent - for example by turpentine or petroleum, or by other suitable solvent according to your needs.

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. This should be done once a week at least.

Lubrication points survey

	Bearings of spindles	Lifting of front table, lifting pins	Table plates and cutterblock
Lubrication point Necessary act	1 (hour)	2 (hours)	3 (hours)
Permanent grease filling	At change		
Grease by spreading			
Grease with oil can		50	8
Plastic lubricant or oil	LV-2-3	OL-B5	OL-B5
Equivalent	ISO-L-XCBEA 3	ISO – LAN 68	



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 it gets jammed with the 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.

Front table moves with excessive resistance :

It is necessary to release fixing lever of table or lubricate bedding of table.

Machine output is insufficient :

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 it.

Machine vibrates:

Breach of fundamentals of chp. 10.1 - Recommended tools

Badly sharpened or adjusted knives

Knives differ in width, thickness.

Exceeded weight allowance of tool accessories (chp. 10.1)

Machine does not stand on flat surface.

Workpiece interferes with the back table :

Badly in height adjusted knives or front table.

Thinned end of workpiece :

Badly adjusted knives or tables.

Badly attached or led-along workpiece.

12.0 Delivery extent

Complete machine,
accessories according to list,
service instructions manual,
special accessories (if ordered).

12.1 Accessories

Name		RFS 310 pcs.	RFS 410 pcs.	RFS 510 pcs.	Note
wrench 13x16		1	1	1	
wrench 4		1	1	1	
wrench 6		1	1	1	
wrench 8		1	1		
balancing washer		4	4	4	machine balancing
adjusting instrument		1	1	1	for adjusting of cutterblock knives
PE bag with zip	250 x 350	1	1	1	for manual + added packing

13.0 Special accessories

Mortising attachment VDA 315,
knife setter with indicator,
instrument for planing of short pieces,
auxiliary ruler for planing of thin and narrow (of small cross-section) pieces,
TERSA cutterblock,
external feeding device.

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 Co., Masarykova 16, 5170 50 Castolovice, the Czech Republic, Europe. 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 life expiry

16.1 Dealing with packing

Our products are transported in packing from 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

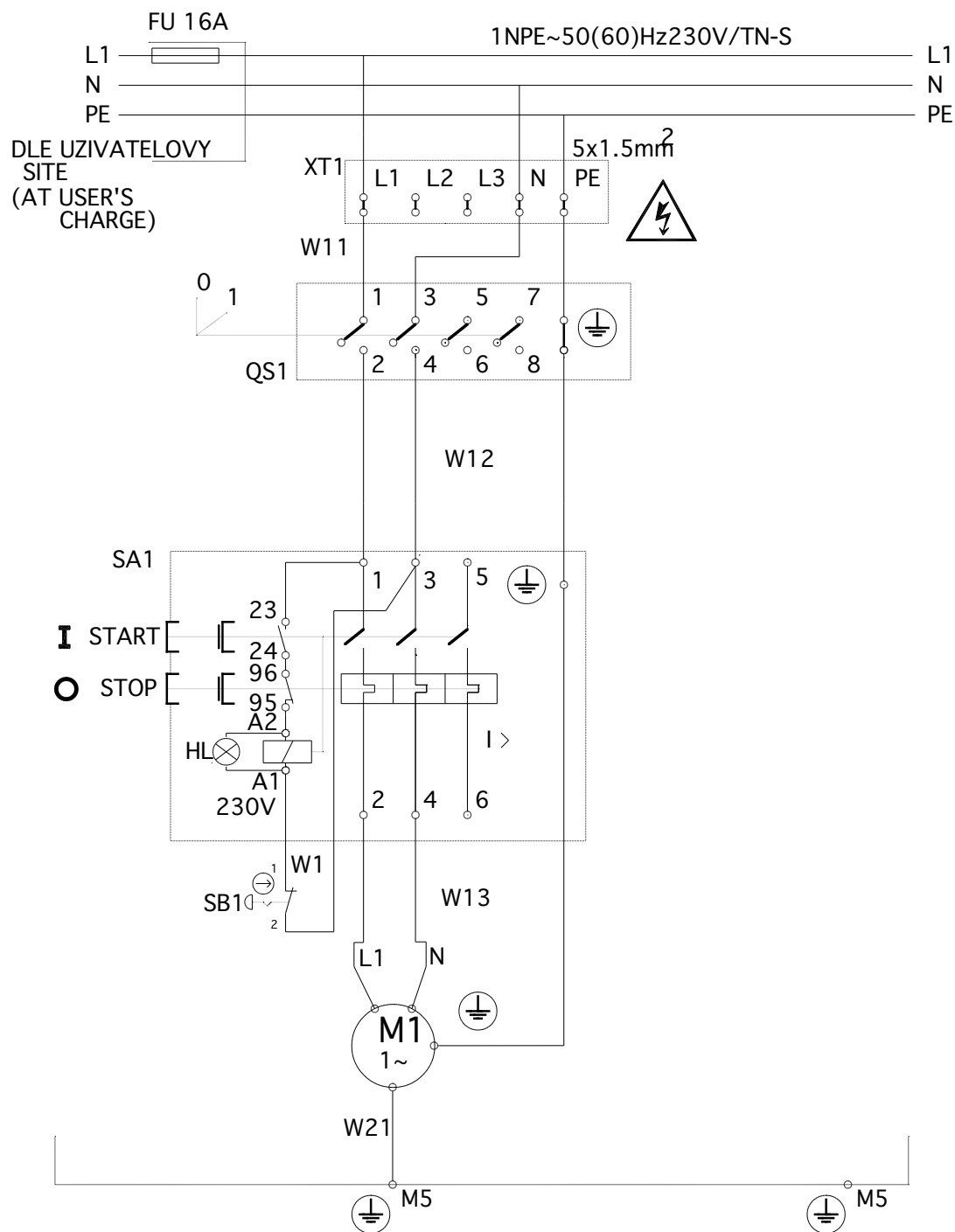
Service life of this machine depends particularly on usage way, working engagement intensity, frequency and kind of applied maintenance. The producer is responsible to machine user for evident losses caused by the machine for ten years.

Machine user is obliged to guarantee an environmentally safe liquidation of the machine according to country's in question laws about leavings – not to endanger the environment.

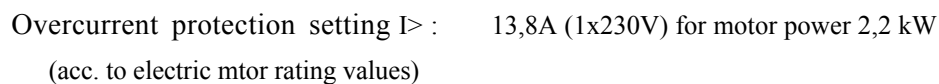
We recommend to run on as follows :

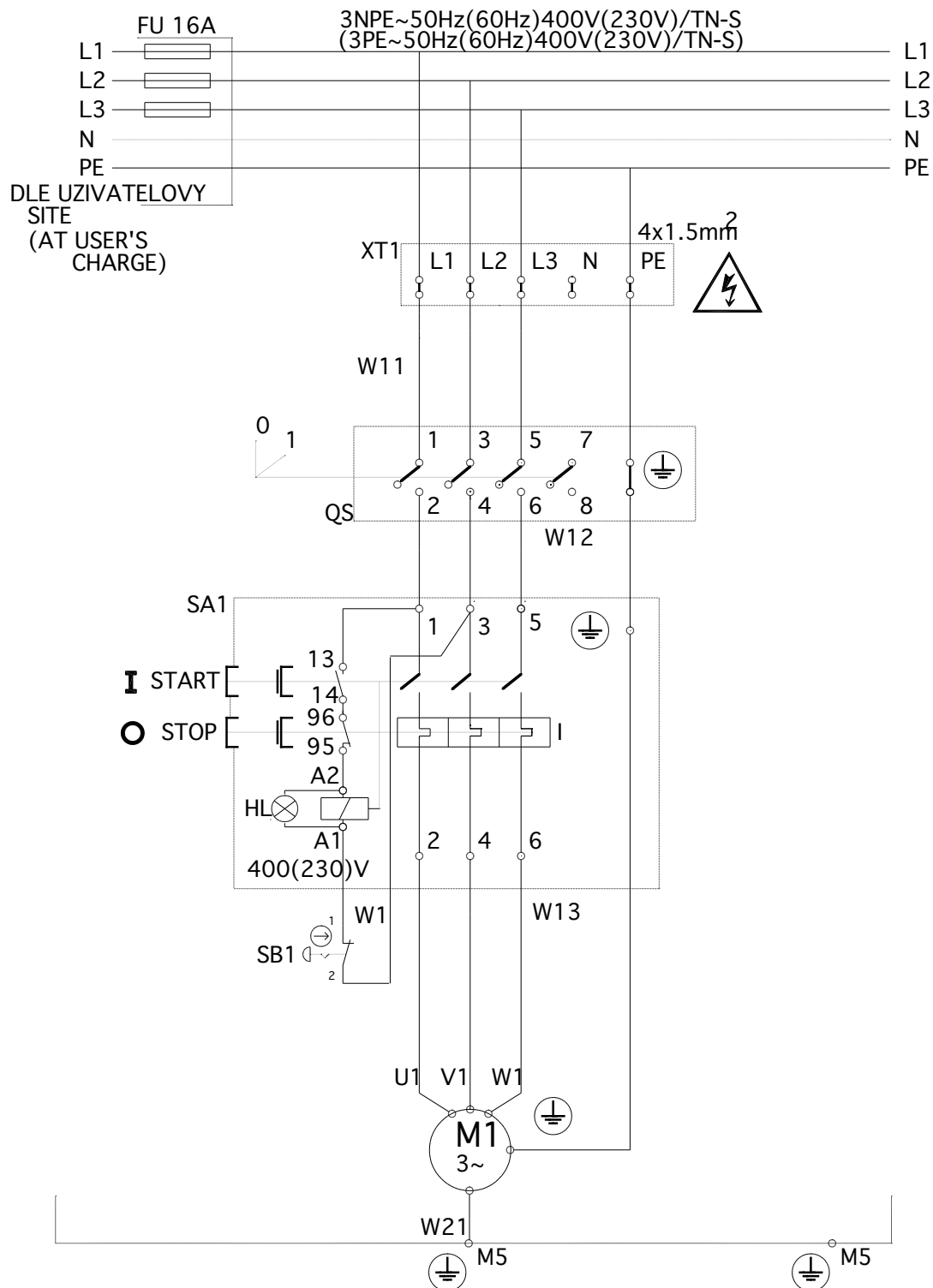
- 1) Demount all plastic parts and consign it to relevant accumulating containers.
- 2) Separate resting iron from non-iron parts and commit it to a specialized company for separate liquidation.

Setting of overcurrent protection : $I > 13,8\text{A}$ (1x230V) for motor power 2,2 kW
(acc. to rating values of electric motor)



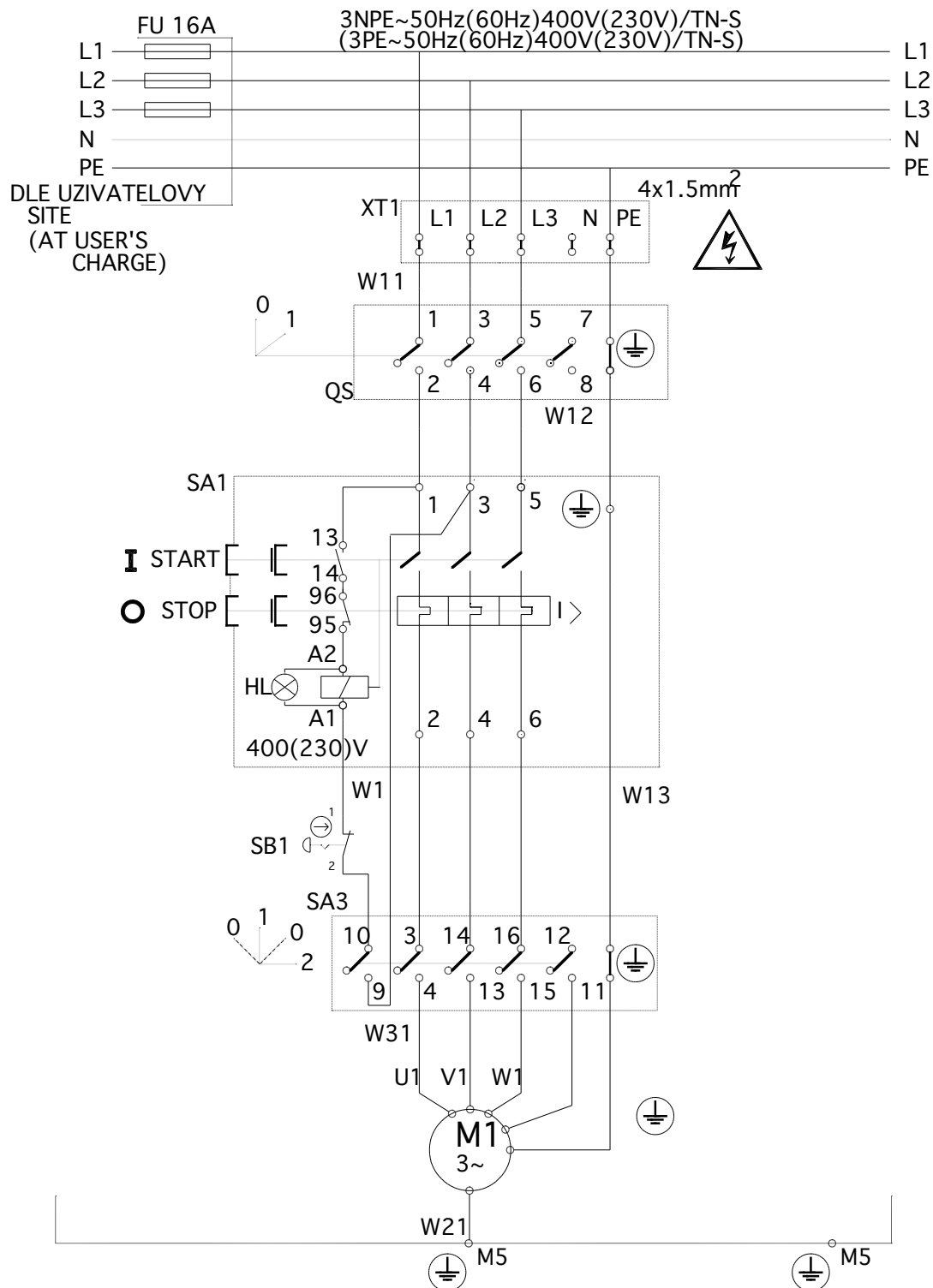
RFS 410 – 3 phases making (standard)





Overcurrent protection setting $I > :$ 6,55A (3x400V)/11,3A (3x230V) for motor power 3,0 kW
 (acc. to electric motor rating values) 9,1A (3x400V)/15,7A (3x230V) for motor power 4,0 kW

RFS 410 – 3 phases making (with motor brake releasing)



Overcurrent protection setting $I_{>}$: 6,55A (3x400V)/11,3A (3x230V) for motor power 3,0 kW
(acc. to el.motor rating values) 9,1A (3x400V)/15,7A (3x230V) for motor power 4,0 kW

LIST OF ELECTROTECHNICAL PARTS RFS 410								
Marking	Function	Type, technical data	1-phase	3-phases		Supplier	Substitute	Note
			2,2 kW pcs	3,0 kW pcs	4,0 kW pcs			
ELECTRIC MOTORS								
M1	Cutterblock drive	CEG M90L-2/FPC 2,2kW 1x230V 13,8A 50,60Hz 2850 /min IM B14	1	-	-	CEG Italy		
		CEG M100L-2/FPC 3,0kW 3x400/230V 6,55/11,3A 50,60Hz 2850 /min IM B14	-	1	-	CEG Italy		
		CEG M100L-2/FPC 4,0kW 3x400/230V 9,1/15,7A 50,60Hz 2913 /min IM B14	-	-	1	CEG Italy		
SWITCHES								
QS	Main switch	VS 16 1104 A8 VSC VZ1C PG21 Ie=16A Ue=400V IP 54	1	1	1	VDOBZOR Zlín, Czech Republic		
SA1	Operation switch	LE – 1 M35U722 Uc=230V/50,60 Hz Ie=16A Ue=400V IP54	1	-	1	TELEMEC ANIQUE France	Allen&Bradley 140-MN-1600 140-UV-A	1x230V 3x230V
		LE – 1 M35N714 Uc=400V/50,60 Hz Ie=16A Ue=400V IP54	-	1	-	TELEMEC ANIQUE France	Allen&Bradley 140-MN-1000 140-UV-N	
		LE – 1 M35N716 Uc=400V/50,60 Hz Ie=16A Ue=400V IP54	-	-	1	TELEMEC ANIQUE France	Allen&Bradley 140-MN-1000 140-UV-N	
		LE – 1 M35U716 Uc=230V/50,60 Hz Ie=16A Ue=400V IP54	-	1	-	TELEMEC ANIQUE France	Allen&Bradley 140-MN-1600 140-UV-A	3x230V
SA3	Switch of motor brake releasing	VS 16 VZ1C PG21 Ie=16A Ue=400V IP 54	1	1	1	VDOBZOR Zlín, Czech Republic		For variant with releasing break switch
SB1	Central stop pusher	XAL K 178 1"a+1"b" Ue=400V Ie=16A IP 54	1	1	1	TELEMEC ANIQUE France		
CONDUCTORS AND TERMINALS								
W1-10	Control circuits	H05VV-K1X1	1	1	1		CYSY 2A x 1mm ²	For UL cross- section. 1,5mm ²
W11-20	Power circuits	H05VV-K3G1,5	3	-	-		CYSY 3Bx1,5mm ²	For UL cross- section 2,5mm ²
		H05VV-K4G1,5	-	3	3		CYSY 4Bx1,5mm ²	
W21-30	Protecting circuits	H05V-K1G1,5	1	1	1		CYA 1,5 mm ²	
W31	Power circuits	H05V-K4G1,5	1	-	-		CYA 4Bx1,5 mm ²	
		H05V-K5G1,5	-	1	1		CYA 5Bx1,5 mm ²	
XT1	Supply termina	Branch line connection A11/8	1	1	1	BETR- MAN		

Note : Producer reserves himself the right for a change of component and its supplier.

LIST OF ELECTROTECHNICAL PARTS RFS 310								
Marking	Function	Type, technical data	1 phase	3 phases		Supplier	Substitute	Note
			2,2 kW pcs.	2,2 kW pcs.	3,0 kW pcs.			
ELECTRIC MOTORS								
M1	Cutterblock drive	CEG M90LB-2/FPC 2,2kW 1x230V 13,4A 50,60Hz 2850 /min IM B14	1	-	-	CEG Italy		
		CEG M90LA-2/FPC 2,2kW 3x400/230V 4.85/8,4A 50,60Hz 2850 /min IM B14	-	1	-	CEG Italy		
		CEG M100L-2/FPC 3,0kW 3x400/230V 6,55/11,3A 50,60Hz 2850 /min IM B14	-	-	1	CEG Italy		
SWITCHES								
QS	Main switch	VS 16 1104 A8 VSC VZ1C PG21 Ie=16A Ue=400V IP 54	1	1	1	VD OBZOR Zlín		
SA1	Operation switch	LE – 1 M35U722 Uc=230V/50,60 Hz Ie=16A Ue=400V IP54	1	1	-	TELEMEC ANIQUE France	Allen&Bradley 140-MN-1600 140-UV-A	1x230V 3x230V
		LE – 1 M35N712 Uc=400V/50,60 Hz Ie=16A Ue=400V IP54	-	1	-	TELEMEC ANIQUE France	Allen&Bradley 140-MN-0630 140-UV-N	
		LE – 1 M35N714 Uc=400V/50,60 Hz Ie=16A Ue=400V IP54	-	-	1	TELEMEC ANIQUE France	Allen&Bradley 140-MN-1000 140-UV-N	
		LE – 1 M35U716 Uc=230V/50,60 Hz Ie=16A Ue=400V IP54	-	-	1	TELEMEC ANIQUE France	Allen&Bradley 140-MN-1600 140-UV-A	3x230V
SA3	Switch of motor break release	VS 16 VZ1C PG21 Ie=16A Ue=400V IP 54	1	1	1	VD OBZOR Zlín		
SB2	Pusher of emer- gency stopping	XAL K 178 1"a"+1"b" Ue=400V Ie=16A IP 54	0(1)	0(1)	0(1)	TELEMEC ANIQUE France		
CONDUCTORS AND TERMINALS								
W1-10	Control circuits	H05VV-K1X1	according to scheme				CYSY 2A x 1mm ²	for UL sec- tion 1,5mm ²
W11-20	Power circuits	H05VV-K3G1,5	acc. to scheme				CYSY 3 Bx1,5mm ²	for UL sec- tion 2,5mm ²
		H05VV-K4G1,5	acc. to scheme				CYSY 4 Bx1,5mm ²	
W21-30	Protection circuits	H05V-K1G1,5	acc. to scheme				CYA 1,5 mm ²	
W31	Power circuits	H05V-K4G1,5	acc. to scheme				CYA 4 Bx1,5 mm ²	
		H05V-K5G1,5	acc. to scheme				CYA 5 Bx1,5 mm ²	
XT1	Supply termina	Branch line connection A11/8	1	1	1	BETR- MAN		

Note : The producer reserves himself the right for changing components and its supplier.

LIST OF ELECTROTECHNICAL PARTS RFS 510							
Marking	Function	Type, technical data	3 phases		Supplier	Substitute	Note
			4,0 kW pcs.	5,5 kW pcs.			
ELECTRIC MOTORS							
M1	Cutterblock drive	CEG M100L-2/FPC 4,0kW 3x400/230V 9,1/15,7A 50,60Hz 2913 /min IM B14	1	-	CEG Italy		
		CEG M112L-2/FPC 5,5kW 3x400/230V 12,2/21A 50,60Hz 2913 /min IM B14	-	1	CEG Italy		
SWITCHES							
QS	Main switch	VS 16 1104 A8 VSC VZ1C PG21 Ie=16A Ue=400V IP 54	1	1	VD OBZOR Zlín		
SA1	Operation switch	LE – 1 M35U722 Uc=230V/50,60 Hz Ie=16A Ue=400V IP54	1	-	TELEMECA NIQUE France	Allen&Bradley 140-MN-1600 140-UV-A	3x230V
		LE – 1 M35N716 Uc=400V/50,60 Hz Ie=16A Ue=400V IP54	1	-	TELEMECA NIQUE France	Allen&Bradley 140-MN-1000 140-UV-N	
		LE – 1 M35N722 Uc=400V/50,60 Hz Ie=16A Ue=400V IP54	-	1	TELEMECA NIQUE France	Allen&Bradley 140-MN-1600 140-UV-N	
SA3	Switch of moto breake release	VS 16 VZ1C PG21 Ie=16A Ue=400V IP 54	1	1	VD OBZOR Zlín		
SB2	Pusher of emergency stopping	XAL K 178 1"a"+1"b" Ue=400V Ie=16A IP 54	0(1)	0(1)	TELEMECA NIQUE France		
CONDUCTORS AND TERMINALS							
W1-10	Control circuits	H05VV-K1X1	according to scheme			CYSY 2A x 1mm²	for UL sec- tion 1,5mm²
W11-20	Power circuits	H05VV-K3G1,5	acc. to scheme			CYSY 3Bx1,5mm²	for UL sec- tion 2,5mm²
		H05VV-K4G1,5	acc. to scheme			CYSY 4Bx1,5mm²	
W21-30	Protection circuits	H05V-K1G1,5	acc. to scheme			CYA 1,5 mm²	
W31	Power circuits	H05V-K4G1,5	acc. to scheme			CYA 4Bx1,5 mm²	
		H05V-K5G1,5	acc. to scheme			CYA 5Bx1,5 mm²	
XT1	Supply termina	Branch line connection A11/8	1	1	BETR- MAN		

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