R 1000 HD
BAND SAW
WITH INTEGRATED FEEDING

USE AND MAINTENANCE MANUAL

centauro

I	F	D	GB	ES

1st EDITION

CE

Cod. 006gb10

centauro

INDEX

NOTICE: Read the instructions booklet carefully and keep it for future reference.

1. WARRANTY

Warranty consists of the replacement free of charge of defective mechanical parts, which will be shipped to you free at our plant.
It is valid for one year as of the date of our invoice and does not include the motors and electric and electronic components.
In addition, it does not cover the trouble or defects due to external factors, errors in maintenance, improper use of the machine, using the machine in overload conditions, errors in assembly, or other causes not ascribable to us.
Any requests for after-sales service or spare parts need to be addressed to our authorized area dealer.

2. TECHNICAL PARTICULARS

Tab. 2-1 Technical particulars

BAND SAW R 1000 HD		
Diameter of saw wheels	mm.	1000
saw wheels width	mm.	100
Max cutting height	mm.	520
Max cutting width	mm.	970
Table height from floor	mm.	1050
Table size	mm.	1500x920
Max width of blade	mm.	110x1
Min width of blade	mm.	80x1
Max lenght of blade	mm.	6570
Min lenght of blade	mm.	6380
Motor power	kW (Hp)	22 (30)
R.P.M. of wheels	R.P.M.	570
Sawblade speed	m/sec	30
Dusts extraction outlet	mm.	3x120
Required capacity for extraction system (*)	m^3/ h	4275
Operating pressure	bar	2 ÷ 6
Compressed air consumption	l/min	80
Net weight	kg	2100
Overall diomensions: see diagram page.11		

(*) air speed: 35 m/sec.

Tab. 2-2 Technical particulars feeders

RVP500		
Max height of feeding roller	mm	320
Min. height of feeding roller	mm	175
Feeding roller diameter	mm	135
Max. height of roller fence	mm	325
Lenght of roller fence	mm	600
Max. Roller-blade clearence	mm	300
Max. fence-blade clearence	mm	465
Max. piece heighr	mm	500
Max. piece width	mm	740
Motor power	kW (Hp)	0,75 (1)
Variable feed speed rate	m/min	0÷40
Operating pressure	bar	3÷6
Compressed air consumption	l/min	61
Net weight	kg	260
Net weight saw R 1000 HD + feeder	kg	2310

Tab. 2-3 Technical particulars feeders

RTF400		
Max feeding rollers (standard roller fence)	N.	4
Max feeding rollers (optional roller fence)	N.	6
Height of feeding roller	mm	50
Height of standard rollers fence	mm	200
Height of additional rollers fence, optional	mm	310
Lenght of roller fence	mm	600
Max. Roller-blade clearance	mm	300
Max. fence-blade clearance	mm	380
Rollers fence tilt		0 - 45°
Max. piece width	mm	680
Max. piece height	mm	500
Motor power	kW (Hp)	0,75 (1)
Variable feed speed rate	m/min	0÷60
Operating pressure	bar	3÷6
Compressed air consumption	l/min	50
Net weight	kg	240
Net weight saw R 1000 HD + feeder	kg	2290

3. STANDARD EQUIPMENT OF THE MACHINE

- Automatic ⅄ △ starter
- fixed table
- Steel blade ready for use
- Top and bottom blade guide with wooden inserts (guide elements CHACO)
- Hand-operated hydraulic sawblade tensioning
- Telescopic blade guard
- Rackwork
- Pneumatic brake
- Digital amperometer
- Dust scrapers on wheels
- Blade cleaning felt with diesel oil tank
- Spanner 10/13, 17/19, 22/24 mm
- Hexagon spanner 3-4-5-6-8 mm
- Use and maintenance handbook
- Electric diagram
- Pneumatic diagram

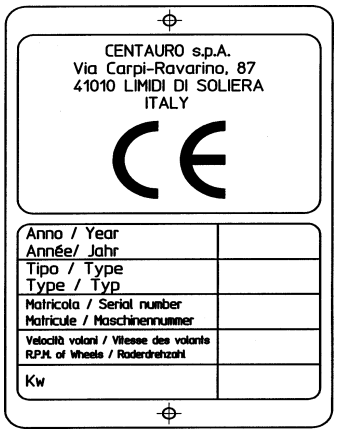
4. ACCESSORIES ON REQUEST

- Modific speed blade ±15%
- Steel blade with deposit of stellite ready for use
- Additional fence roller unit

5. CE TYPE EXAMINATION CERTIFICATION

CE type examination certification issued for the R 1000 HD with integrated feeding band saw by:
ICE - Istituto Certificazione Europea S.r.l.- 40011 Anzola Emilia (BO) - Via Garibaldi 20, with the number:
M 0303 04 3205

6. MACHINE SPECIFICATION LABEL



7. NOISE EMISSION

Tab. 6-1 Noise emission

Lm	[dB(A)]	
LW	[dBw(A)]	
	[mW(A)]	
Lpc	[dB(A)]	

L_m = Mean level of acoustic radiation pressure
L_w = Acoustic power level
L_{pc} = Instant acoustic power level

According to ISO 7960 standards attachment J.

The values of noise level given are emission levels and do not necessarily represent safe operating levels. Although there is a relationship between levels of emission and levels of exposure, this cannot be used reliably to establish whether further precautions are necessary. The factors determining the level of exposure the labour force is subject to include the duration of exposure, the characteristics of the work room, other sources of dust and noise, etc., that is the number of machines and other adjacent processes. The allowed levels of exposure may also vary from one country to another. In any case, this information will enable the user of the machine to make a better evaluation of the danger and of the risk.

8. DUST EMISSION

The tests carried out at our plant have given the following values:

9. INDIVIDUAL PROTECTION FACILITIES

- Gloves for handling material and changing blades
- Non-slip and crush-proof footwear
- Protective eyewear
- Soundproof helmet or earmuffs
- Dust-proof face-mask

10. FORESEEN USE OF THE MACHINE AND CONTRA-INDICATIONS OF USE

The machine has been designed and made to cut pieces of wood or similar materials (cork, cardboard, plastic materials, chipboard panels), in the dimensional limits indicated in the technical data and in compliance with the safety, use and maintenance instructions given in this manual. The wood can be cut either longitudinally or crosswise with respect to the grain.
Feeding is obtained by means of motor-driven roller towing units (feeders) designed in several types, whose descriptions and features are given in the table on page 5.
Two operators are usually employed in normal use, one at the front operates all the controls necessary for operation and inserts the pieces into the cutting area, while the other one, at the rear, receives the cut pieces and sorts them. He has an emergency stop control within reach.
These persons will need to have had a sufficient period of training on use and maintenance and to have the minimum age required by the law in force in the relative country.
The individual protection facilities will have to be used and the precautions given in this booklet will have to be taken. Use other facilities, if any, that may be necessary depending on the work environment and conditions.
Any equipment to lift and handle pieces (roller conveyors, etc.) will have to be of a type corresponding to the standards and installed by the user. Centauro S.p.A. accepts no liability on this matter.
If the machine is going to be used in line with others, a new certification has to be requested that includes the whole line.
All the safety measures have been taken in relation to the above, so it is forbidden to use the machine to carry out other work and/or to make modifications without the prior agreement of the manufacturer.
In particular, using the machine to cut metals is excluded.
In addition, it cannot be used in places where there is a risk of explosion.

11. WARNINGS ON REMAINING RISKS

The height adjustment of the top blade guide must be done carefully to avoid contact with the closing roller.
If you have to work with the fence slanting (RTF400 only), it will be necessary to use the special drive rollers which are supplied on request (see the enclosed feeders handbook).

12. CONSTRUCTIVE SAFETY SYSTEMS

12.1 Controls

The control members are clearly visible, identifiable and easily accessible by the operator, situated far from dangerous areas.
They can only be operated intentionally by the operator.

After a period of downtime due to any reason, restarting is only possible after re-establishing the safety conditions (guards, emergency devices).

A brake release holding button permits manual rotation of the flywheels to arrange the blade when fitting it onto the machine. This condition is signalled by a yellow indicator light close to it.
An emergency cord control, at the front at a distance of 900 mm from the danger area, prevents the operator in front from getting close to this area, while a second stop control, but with a push-button, is fitted at the rear within reach of the second operator.

12.2 Insufficient or no power supply to the power and control circuits

Cutting off, resetting or changing the electrical power supply in any sense creates no situation of danger. In particular, they do not produce:
- untimely starting;
- an obstacle to stopping if the order has already been given;
- an obstacle to manual or automatic stopping of the moving parts;
- inefficiency of the safety devices.

12.3 Protection against mechanical risks

12.3.1 Stability

The machine is equipped with holes in its foot to be safely fixed to the floor. This has the purpose of only preventing it tilting over, but the screws must not be tightened fully since this would cause vibration during operation. It is therefore advised to use stud bolts and self-locking nuts that have to remain at a distance of 2 ÷ 3 mm. from the foot.

12.3.2 Risk of breakage during operation

The entire path of the blade inside the machine is protected with interlocked fixed or mobile guards, except for the section strictly involved in sawing, minimizing this risk.
The passage of the blade through the work table block is protected by a wooden insert to prevent its coming into contact with metal parts.

12.3.3 Risks due to rough surfaces and corners

All the precautions have been taken to prevent any risk of injury.

12.3.4 Risks of accessing moving parts

Flywheels, pulleys and belts are completely protected by cowlings obtained in the base and by doors interlocked by means of microswitches that prevent starting the machine if they are not closed.
An additional locking system with microswitches and a mechanical delay in opening the doors prevents access to moving parts until they have come to a complete stop.
An electropneumatic braking system on the flywheels ensures the machine stops within 10 sec. of operating any control.

12.4 Protection against non-mechanical risks

12.4.1 Fire and explosion

There are sawdust extraction mouths and instructions are provided for their connection in order to obtain efficient extraction.

12.4.2 Noise

Measures have been adopted to reduce noise emissions. This manual gives the values measured and the test method (§ 6).

12.4.3 Emission of shavings and dust

There are two extraction hoods in such a position as to exploit the dynamic ventilation of the moving parts and through which a connection can be made to a centralized system or to a mobile appliance. The technical data table gives the diameter and volumetric flow rate required for effective extraction.

12.4.4 Electricity

The electric system is in conformity with the EN60204-1 standards.

12.4.5 Ergonomics and positioning

All the controls have been positioned in relation to the ergonomic and anthropometric data, they are therefore fully visible and easily operated from the work position.
Using the machine requires no tiring movement or effort: any lifting or handling facilities will have to be installed by the user in relation to the weight of the pieces to be cut.

12.4.6 Vibration

The flywheels are balanced, so they do not give rise to vibration. It is however advised to place vibration-damping plates between the floor and the foot, also to reduce noise emissions.

12.4.7 Information for Use - Maintenance

In addition to the information contained in this booklet, indelible plates have been affixed to the machine to identify the controls.

13. RECOMMENDATIONS AND ADVICE FOR SAFE USE

13.1 Machine isolation procedure

Before doing any maintenance, repair, or other work, the machine must be isolated by turning onto position '0' and padlocking the knob of the master switch on the door of the electric cabinet on the back of the machine.
This must be done by the same person doing the work. If it is a simple maintenance job, this person may be the operator.
When the machine is out of order, mark it with a sign.

13.2 General recommendations

- Machines for processing wood, given the high speed of the tools and the speed of execution, are considered the most dangerous ones, therefore it is necessary not to underestimate the risks and to concentrate on the job.
- The safety devices must not be neutralized for any reason whatsoever, but on the contrary they must be kept at peak efficiency.
- Avoid using the machine if your psycho-physical condition is not good, which may impair your reflexes or attention.
- Wear clothing suited to the work requirements. Do not wear loose clothing, scarves, bracelets, or other objects that could get caught up or be dragged. Protect long hair with a cap.

13.3 At the workplace

- Use the individual protection facilities (see § 8) if work conditions require them.
- Keep the work area in order, sufficiently illuminated; arrange spaces to store the raw and processed materials and to move around the machine. Likewise, keep the floor clean of dust and sawdust. Untidiness is synonymous with the risk of accident.
- Make sure the table block insert is in a good state; if the blade passage slot has widened or is chipped, replace it.

13.4 During work

- Always start up extraction even if cutting just a single piece.
- Do not use blades that are not sharp enough as they can produce abnormal vibration.
- In the event of trouble, never act on the machine in movement: operate the stop control and wait for it to stop completely.
- Never cut materials that can cause sparks or overheating of the shavings and therefore fire or explosion as they pass through the extraction pipes.
- In the event of the belt breaking, even when operating the stop control **the top flywheel is not braked**. It is therefore necessary to wait for it to have stopped completely before opening the doors to prevent the risk of the belt being thrown.
- Do not work with the fence slanting if the special drive rollers have not been requested for this type of work.

13.5 During maintenance

- Regular maintenance of the mechanical and electric parts, as well as extending the service-life of the machine and ensuring better performance, is an important safety factor.
- It is absolutely forbidden to set up mechanical members and do maintenance without having beforehand carried out the isolation procedure given above (§ 13.1).
- Do not climb onto the machine.
- At the end of each operation involving opening or removing protections, reassemble them checking their correct positioning and operation and that no tool or foreign body has been forgotten inside.
- Wear protective gloves while replacing the blade.
- Replacement of mechanical parts must be done exclusively with genuine parts. The electrical components must be the ones indicated in the list accompanying the wiring diagram, or with others having the same safety features. If in doubt, consult the manufacturer.

Non-observance of this point involves losing the manufacturer's liability on the **safety of the machine.**

13.6 Advice for use

- Do not over tighten the sawblade. Use the specific equipment (see Chap. 15.1) and tighten according to the width of the sawblade mounted.
- Never work with blades that are not sharp enough or that cut obliquely. Sharpening and setting must be done correctly and frequently.
- Always unloose the blade after use.
- The blade guide plugs must be carefully adjusted so as to skim over the blade, but without blocking it, as they have the task of preventing the blade bending sideways, especially when there is mechanical feeding.
- Periodically check the state of the flywheels to verify whether there is any rocking due to play in the bearings, too high a temperature of the bearings, errors in parallelism or alignment.
- Thorough cleaning of the outer face of the flywheels is essential to remove any lumps of resin and sawdust. Check the scrapers often and keep them efficient, replacing them when they get too worn.
- Check and if necessary restore the level of the blade coolant.
- Keep all parts of the machine clean, cleaning according to how much the machine is used.
- Remove sawdust regularly from all parts of the machine where it tends to accumulate.

14. INSTALLATION

14.1 Overall dimensions

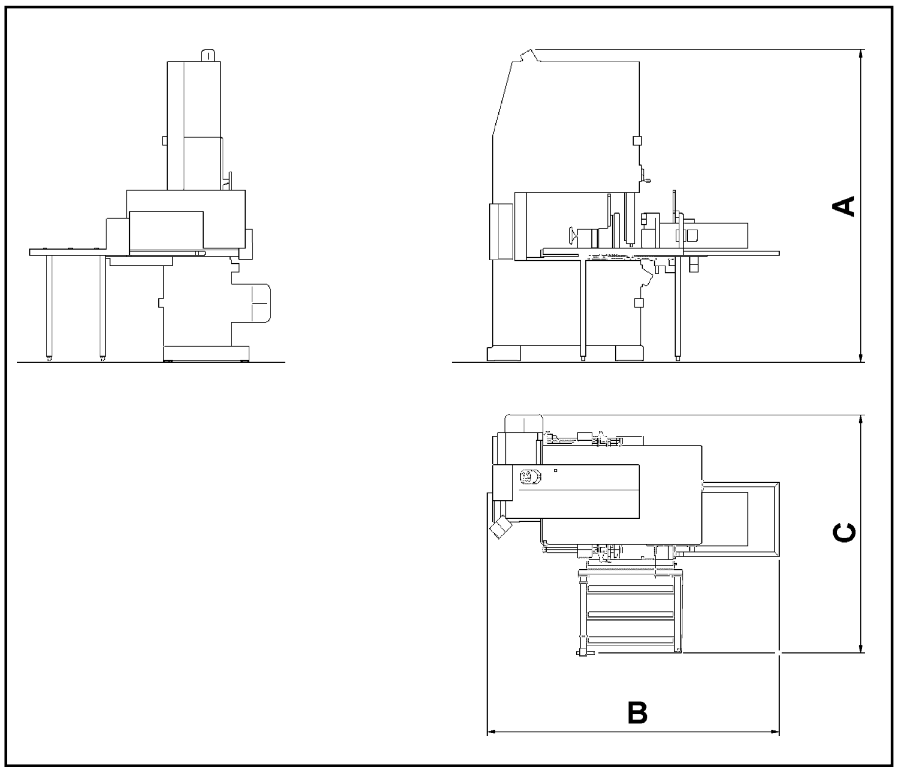


Fig. 14-1 Overall dimensions

Tab. 14-1 Overall dimensions

	R1000HD+RVP500	R1000HD+RTF400
A	2918	2918
B	2680	2255
C	2270	1990

14.2 Workplace

L_n = Length required for the machine
L_w = Length required for work and maintenance
L_a = Auxiliary length required

W_n = Width required for the machine
W_w = Width required for work and maintenance
W_a = Auxiliary width required

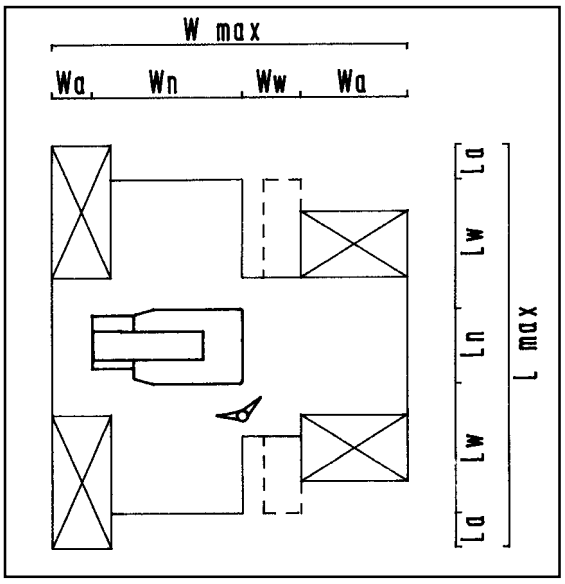


Fig. 14-2 Workplace

14.3 Lifting

To lift use a forklift truck as shown in Fig. 14-3, remove part **A** after it has been placed on the ground. If, for transporting-related reasons, the top wheel and its cover have been removed then the eyebolts **B** (fig.14-3) may also be used.

Tab. 14-2 Weight

	R1000HD+RVP500	R1000HD+RTF400
Kg.	2310	2290

Do not lift or move the machine by acting directly on the work table block.

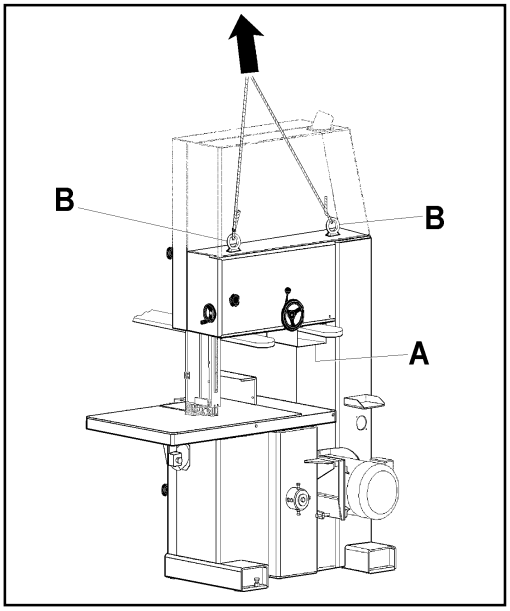


Fig. 14-3 Lifting

14.3.1 Wheel lifting

If the machine is delivered with the top wheel off, lifting must be done using hook "**D**" (standard accessory that comes with the machine) as illustrated in Figure 14-3-1.

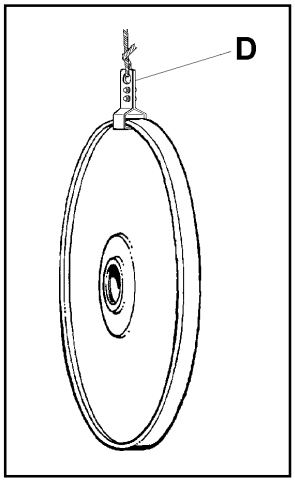


Fig. 14-3-1 Wheel lifting

14.4 Positioning and levelling

The machine is provided with holes in the foot to be safely fixed to the floor. This has the purpose only of preventing it tilting over, but the screws must not be fully tightened since this would cause vibration during operation. It is therefore advised to use stud bolts and self-locking nuts that have to be at a distance of 2 ÷ 3 mm. from the foot.
Use the adjustment screws on the machine's feet to level it.
It is advised to put vibration-damping plates between the floor and the foot as well, to reduce noise emission.

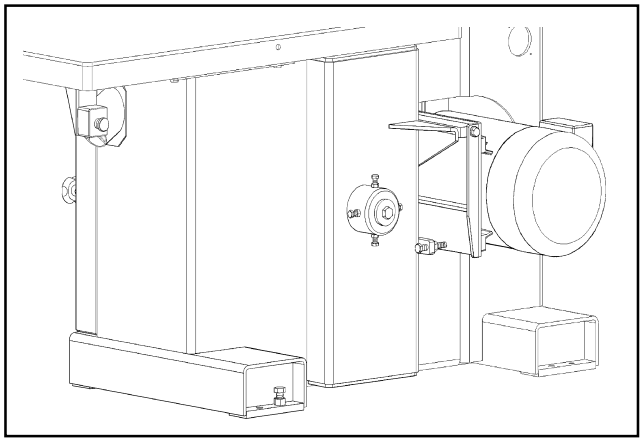


Fig. 14-4 Positioning and levelling

14.5 Connection to the extraction system

It is compulsory to use the extractor.
For connecting to centralized systeme or to extaction unit, use flexible pipe with inner diameter 120 mm.
In the technical data table on page 5, see the capacity required by the system for effective extraction.

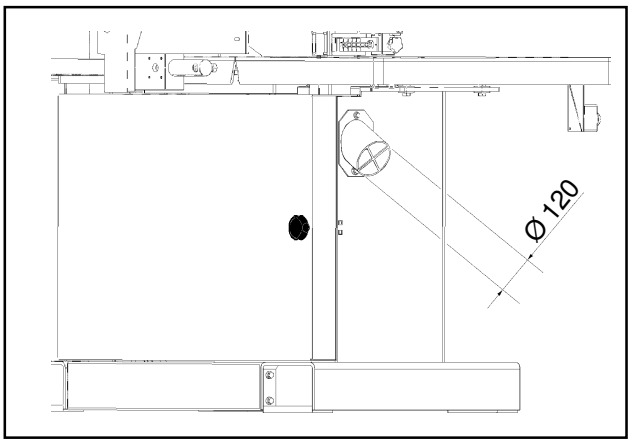


Fig. 14-5 Connection to the extraction system

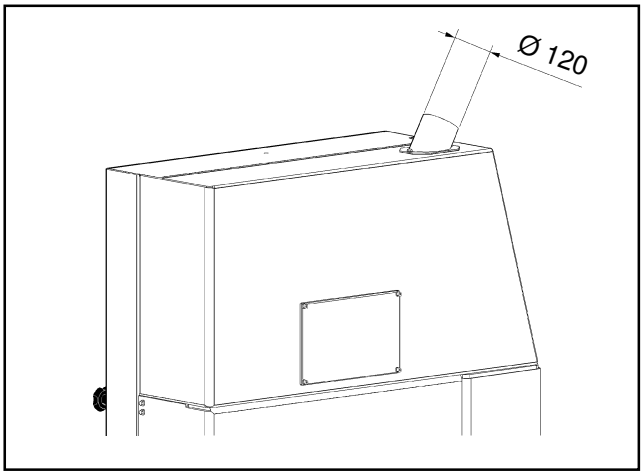


Fig. 14-5-1 Connection to the extraction system

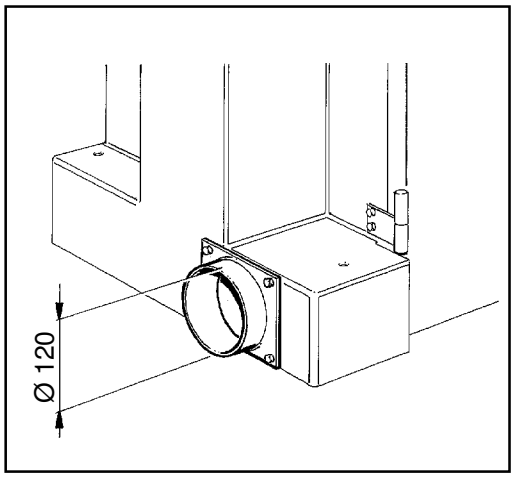


Fig.14-5-2 Connection to the extraction system

If the machine is fitted with the RTF400 feeder, use the 120 Ø opening under the feeder casing and the 80 Ø opening under the saw table (Fig. 14-5-3).

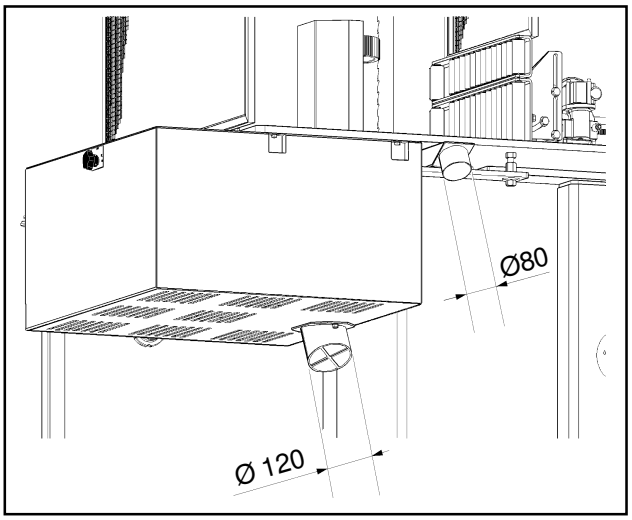


Fig. 14-5-3 Connection to the extraction system

14.6 Electrical connection

It is advised to assign this operation to qualified personnel.
The power supply cable must be connected directly to the terminals **L1**, **L2**, **L3** of the master switch, passing through the cable-clamp that will have to be fully tightened once the connection has been made. The yellow-green earth lead is to go to the terminal marked **PE**.
The minimum cross-section of each (copper) conductor must be 10 mm².

N.B. - If in the start up phase described in the following paragraph the flywheels are found to turn in the opposite direction, swap over two of the leads that have just been connected to the terminals of the switch.

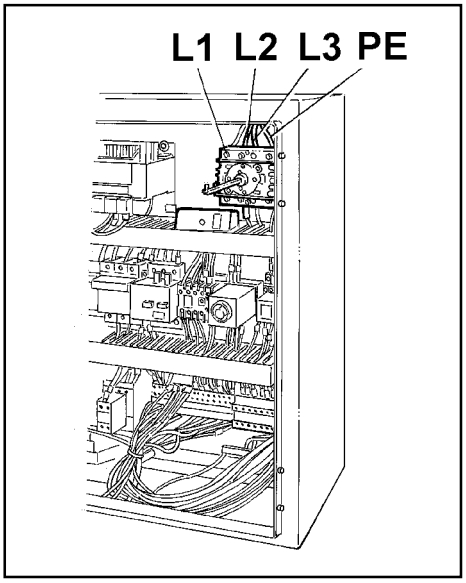


Fig. 14-6 Electrical connection

14.7 Starting

Check beforehand that the doors are properly closed, the emergency stop buttons are not in the held position, the safety cable **BA** is correctly fastened, and that the telescopic protection of the blade is properly adjusted

- Turn the knob of the master switch from position 'O' to position '1': the white indicator light **H** will come on signalling that the machine is ready for operation.
- Press the button **G** and wait for a few seconds for the flywheels to reach full speed.
- If the feeder is pneumatically controlled, press the button **O** which causes the tow roller to come up to the blade.
- Press the tow roller start button **M**.

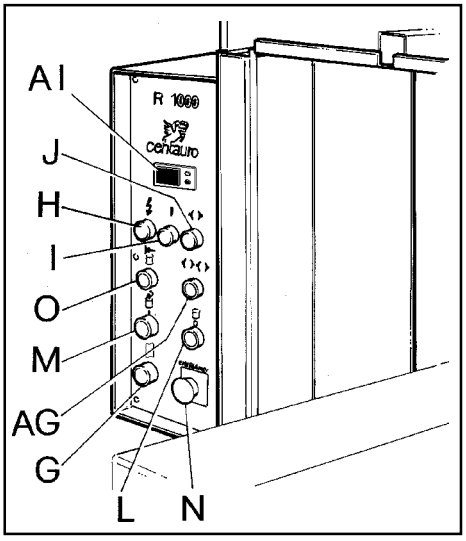


Fig. 14-7 Starting

14.8 Stopping

To stop the machine, press the red button **N**.

14.9. Emergency Stop

In addition to the control **N** on the main panel there is a push-button emergency stop control **AH** at the rear of the machine under the work table block and a cable control **BA** at the front preventing the operator from getting close to the danger area.
Caution:
These controls, when operated, stay held and to restore conditions of normal operation it is necessary to release them by turning the mushroom-head buttons clockwise or pressing the yellow button on the cable microswitch **BB**.

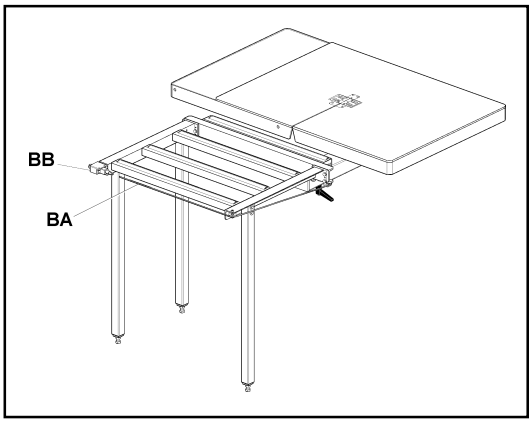


Fig. 14-9 Safety cable supports

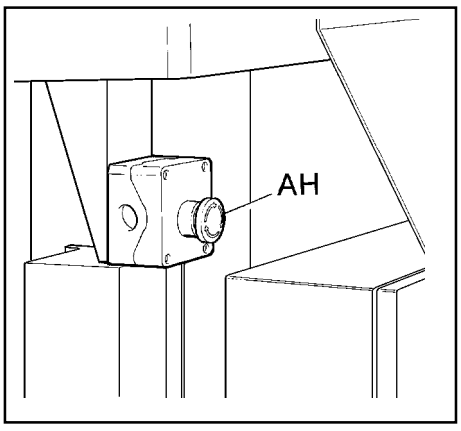


Fig. 14-8 Emergency Stop

15. USING THE MACHINE

15.1 Fitting and adjusting the blade

Release wire **BA** and levers **BC**. Move the roller unit **A** sideways, in the direction indicated by the arrow, to have free access to the sawblade.
Open the doors, the protection door under the table block, and the transparent protection of the top blade guide.
Take out the roller **A**, the board **C** and **P** and the bolt **B** which is under the table block; then unloose the handle **D** and move the top blade guide fully back.
Insert the blade starting from the top flywheel (whereas for dismantling start from the bottom one); once in position, close knob **F** completely and open cock **H,** tension the sawblade by means of lever **E** (Fig. 15-3). To reach the pressure value wanted (gauge **G**) utilise diagram **I** according to the width of the sawblade. When you read the right pressure on gauge **G**, close cock **H** to keep the sawblade taut.

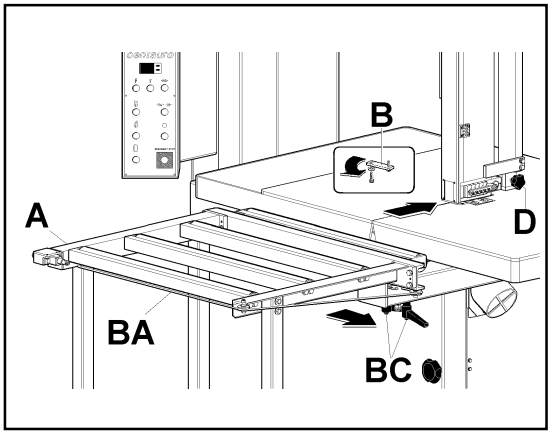


Fig. 15-1 Fitting and adjusting the blade

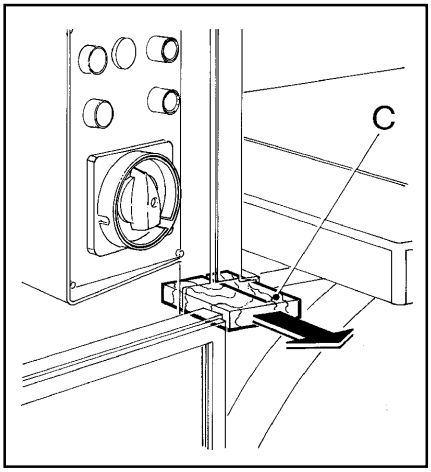


Fig. 15-2 Fitting and adjusting the blade

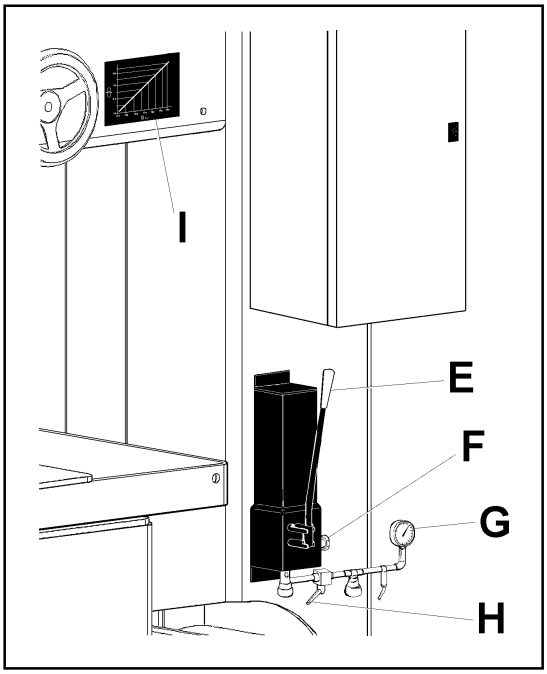


Fig. 15-3 Blade tensioning

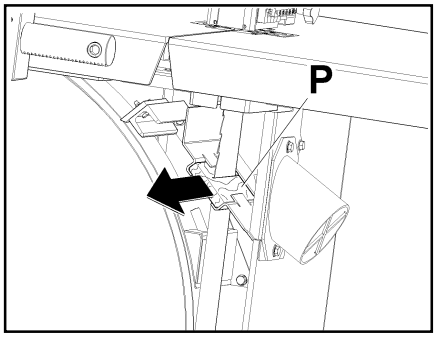


Fig. 15-4 Fitting and adjusting the blade

From time to time check the pressure level, which should remain constant in time.
After this tensioning phase, keeping the brake release button **AG** (fig.15-7) pressed, manually turn the flywheels (1/2 turn ÷ 1 turn max.) so as to make it settle in a stable position (the yellow indicator light **J** signals that the brake is released).
Carefully check that all along its path it does not come into contact with metal parts.
An ideal condition for correct operation over time is for the teeth of the blade to stick out from the face of the flywheels.
The machine is factory set for the maximum blade width.

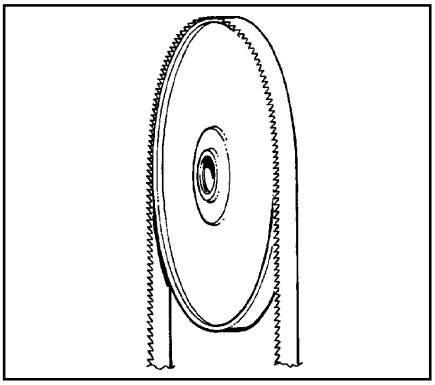


Fig. 15-5 Posizione lama su volano

When, after subsequent grindings, sawblade width becomes narrower, the initial conditions can be restored by slanting the top wheel with handwheel **AB**.
Sawblade tension can then be perfected utilising diagram **I** (Fig.15-3). If this, when it is correctly stretched, has changed its position on the face of the flywheel, it is necessary to repeat the tilting adjustment of the top flywheel.
Once the operation is finished, fit all guards up again in their original position, close the doors, fit plates **C** and **P** as well as latch **B**. Finally reposition the in-feed roller **A** and connect the safety cable **BA**.

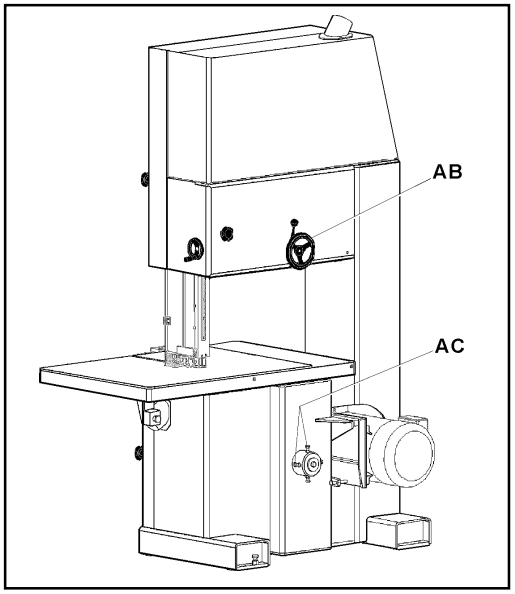


Fig. 15-6 Flywheel tilting

15.2 Blade guide adjustment

Unloose the handle **S**. and turn the handwheel **R** to take the blade guide to such a minimum height as not to interfere with the tow roller when it is closed up for work.
Lock the handle **S**.

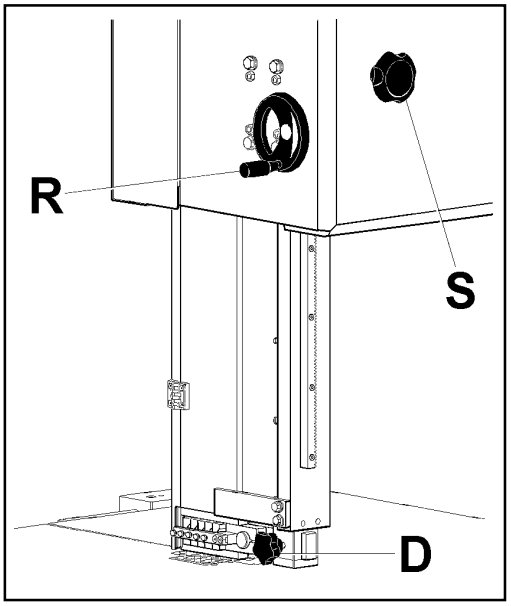


Fig. 15-7 Blade guide adjustment

15.2.1 Longitudinal adjustment

Unloose the handle **D** (fig.15-7) and position the blade guide so that the teeth of the blade do not come into contact with the guide inserts.
Periodically adjust the guide inserts against the sides of the sawblade after having loosened the setscrews **T** (Fig.15-8) and **U** (Fig.15-9).

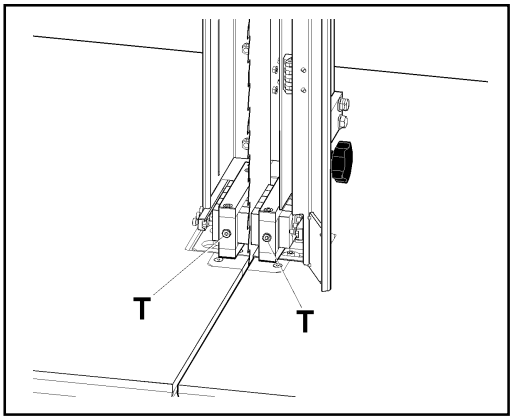


Fig. 15-8 Longitudinal adjustment

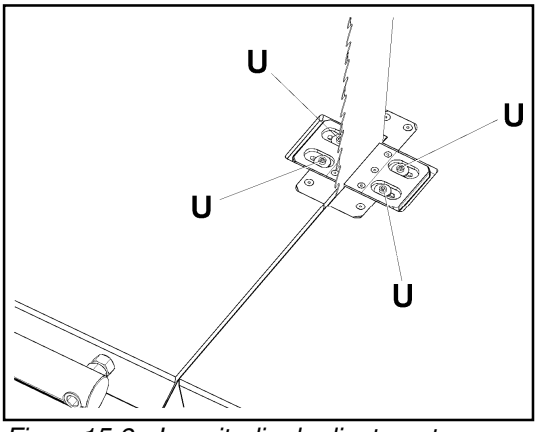


Fig. 15-9 Longitudinal adjustment

15.3 Extraction table

Board **C** (Fig.15-2) improves sawdust suction and must be replaced when the slot for the sawblade is damaged.
To make this slot on a new board, insert it into its seat with the blade fitted and trace the exact position of where the blade passes.
Then, after closing the door and putting the machine back in running order, complete the cut on the table normally down to the necessary depth.

15.4. Work

After making all the above described adjustments, work can be started. Therefore carry out the starting procedure described on page 15.
The foot control permits the feeding roller opening for the needed time to allow the timber fitting in. After that, the roller closes and feeds timber against the blade to start cutting.
The feed speed, in the RTF 400 and RVP models, equipped with a variator, can be adjusted continuously from 0 to the top speed given in the table on page 5.

The ammeter **AI** (Fig.14-7) monitors motor stress when it is running: it is advisable to adjust feeder speed so as not to exceed the Ampere values given in Table 15-1 according to motor voltage and frequency.

Tab.. 15-1 Work

Volt/Hz	**A**
220/50	74
230/60	80
380/50	40.7
400/50	41
415/50	41.7
440/60	44.4
460/60	42.5

16. BLADE CHOICE AND UPKEEP

Blade maintenance must be done with the utmost care since the quality and volume of work done as well as the service-life of the blades depend directly on it.
Very often, the causes of trouble habitually attributed to the machine are in actual fact due to poor or even wrong handling of the blades.
We therefore believe it extremely useful to give hereunder some instructions taken from the manual which the Swedish firm «UDDEHOLM» promotes for a better use of the belt saw. For the belt saw to give the utmost efficiency it is necessary to observe the following instructions:

1) Right blade thickness

Below we give the table for choosing the blade thickness in relation to the diameter of the flywheels.

Tab. 15-1 Maximum dimensions

Width	mm.	110
Thickness	mm.	1,0
Extension	mm.	6570

2) Appropriate toothing for the work to be carried out

The shape of the tooth should be chosen in relation to the type of wood to be cut:
Ordinary toothing is suitable for dry and seasoned woods, spaced toothing is suitable for soft, green or fibrous and even resinous woods, the gullet tooth is better if you have a sharpener suitable for sharpening this type of tooth.
The pitch of the tooth should be chosen in relation to the type of wood and to the cutting height to be made: for dry woods and low cuts, short pitches, for green woods and high cuts, long pitches.
In other words, the empty space of the tooth must be able to discharge all the sawdust its cutting edge produces.

3) Exact setting of the teeth

The teeth must be set carefully and precisely. The teeth must never be bent down to the base because this causes the blades to crack. The teeth must be set so that the bending should not go over half their height and their side deviation (for each tooth) the blade thickness (figs. 16-1 and 16-2).

Example: a blade of thickness 0.90 mm. must have a maximum overall setting of 1.80 mm. It is necessary to observe that the maximum setting may be suitable for very green woods, whereas for seasoned woods an overall setting of roughly one and a half times the thickness of the blade is to be preferred. Example: thickness 0.90 mm., setting 1.35 mm.

Moreover, those who wish to leave the tooth neutral for discharging the sawdust (as normally occurs for soft, green and resinous woods) have to proceed as follows:

Set a right-hand tooth, a left-hand one, then leave a straight tooth and so on. All other methods are wrong. With pitches over 25 mm. it is better to leave one neutral tooth every four teeth.

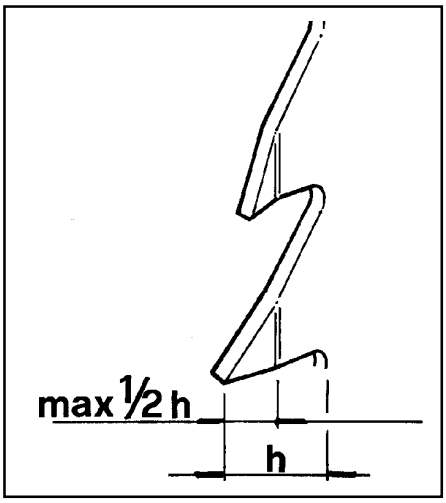


Fig. 16-1 Tooth bending

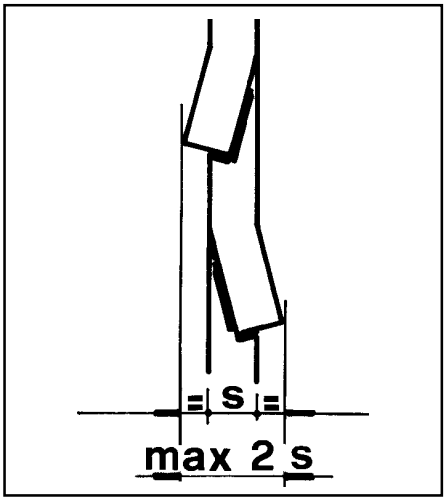


Fig. 16-2 Tooth bending

4) Perfect initial and subsequent sharpening

Sharpening must be done as soon as the teeth lose their cutting edge and the blade starts forcing the cut.

It can be done, especially for teething with a short pitch, with a triangle file. In this case the triangle, whether by hand or machine, must have round edges, to join the bottom of the teeth well and to prevent the start of cracking (fig. 16-3).

When using emery grinding wheel sharpeners it is absolutely necessary to prevent the bottom of the teeth from heating up to a yellow or blue colour, which easily happens when not paying the due attention to using these machines. Overheating the teeth causes a self-hardening action and consequently a change in the structure of the steel that becomes hard like glass, with the consequence of inevitable cracking and breakage of the blades. In addition, the emery grinding wheels have often to be dressed with special equipment and the edge must be kept adequately round to the extent of the bottom of the tooth that has to be sharpened.

It is generally advised to use number 60 for the grain of the emery grinding wheel.

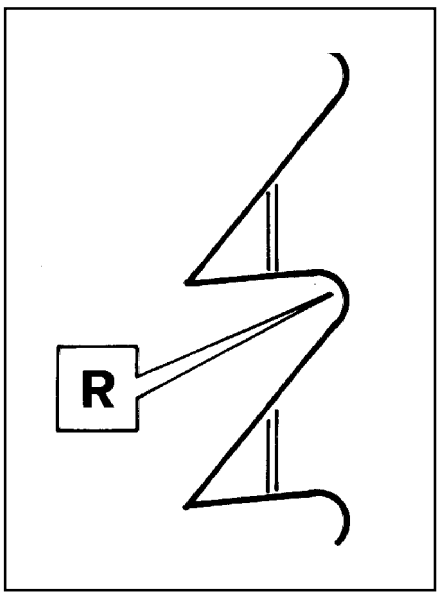


Fig. 16-3 Tooth bottom

5) Rational welding, well flattened and straight

The welding may be done in two ways: with the brazing system by overlapping, or by electric melting by means of automatic machines.

In the first case (brazing), the ends of the blade are cut square and bevelled so that they can overlap for a section of ten times the thickness of the blade (fig. 16-4).

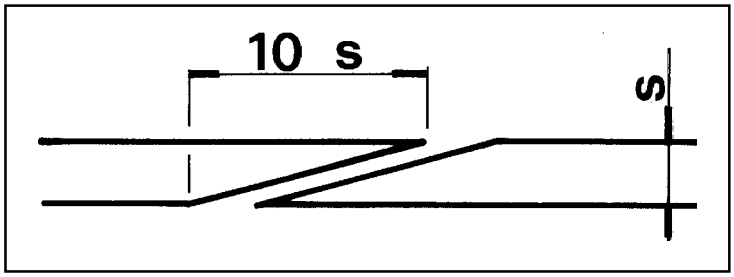


Fig. 16-4 Cut for brazing

The ends prepared in this way are then locked on the welding appliance, taking care of their alignment, and a plate of special alloy is placed between the surfaces of the bevel that have to be spread with de-oxidant (borax, which should be diluted with clean water so as to create a mush).

If the heating for welding is done electrically, it must be done slowly so as to reach incandescence; if it is done with pressed irons, they need to have a temperature of approximately 900°C (light red).

Cooling must also be done slowly so that a very fragile hardening structure is not formed in the steel. In the event of cooling coming about quickly (electric equipment for brazing), it is necessary to temper the part affected by taking it up to a dark red colour for over twenty seconds. If the welding is done by electric melting, it is necessary to take special care over the tempering operation. Having made the joint, it is necessary to flatten and level the blade so that the thickness is as equal as possible to the rest of the blade.

It is likewise necessary to check by means of a check-rule that the welding is perfectly flat and straight to prevent dangerous oscillation of the blade during operation.

Notes:

- When a new blade is being fitted, it is a good rule to run the machine without a load for 10 ÷ 15 minutes in order to allow a perfect adaptation of its convexity with that of the flywheel.
- During the first hour of work it is advisable to keep a reduced feed speed.

16.1 Cooling and cleaning the blade

Fill tank **U** with a suitable liquid.
Open cock V and regulate the rate at which the liquid drops on felt AD (with regulators Y downstream from the cock - one for the top wheel, one for the bottom wheel).
The same cock **V** must be closed when the machine is at rest.
Periodically check that the flywheel-scrapers **Z** and **X** stay permanently in contact with the outer face of the flywheel.
When they reach too great a degree of wear they have to be replaced.

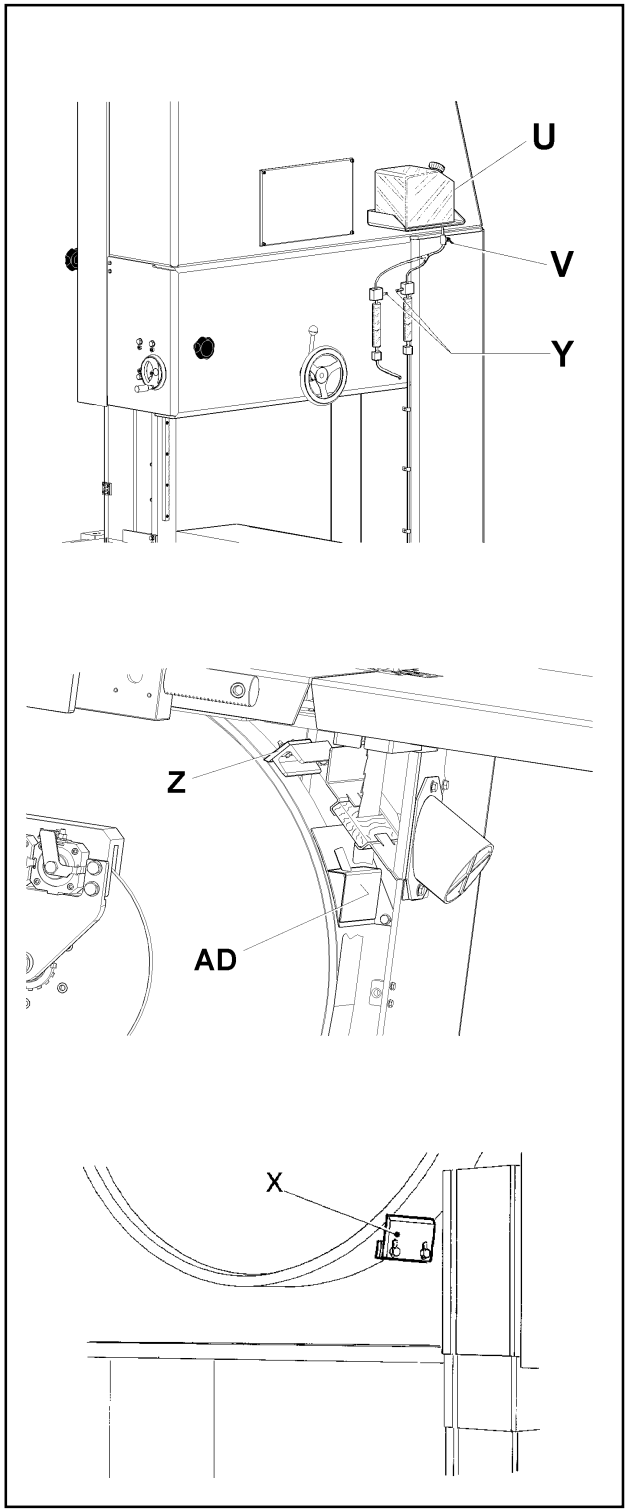


Fig. 16-5 Cooling and cleaning the blade

17. MAINTENANCE

17.1 Lubricating blade tensioning unit

Remove the door behind the head of the machine.
Lubricate the slide guides with oil as illustrated in Figure 17-1.

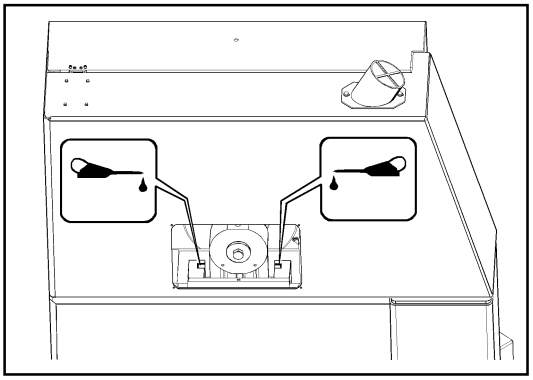


Fig. 17-1 Lubricating blade tensioning unit

17.2 Flywheel adjustment

- Any adjustment of the flywheels must be made by qualified personnel.
- Do not therefore tamper with the regulators marked **AC.**

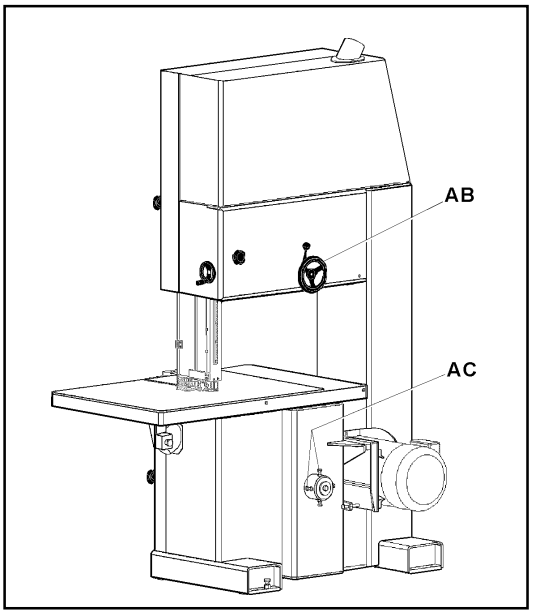


Fig. 17-2 Flywheel adjustment

17.3 Belt replacement

- Loosen the two screws that are NOT marked.
- Disconnect the brake's pneumatic power.
- Loosen the two **AD** screws.
- Completely slacken the belt-tightener screw **AE**.
- Remove the bottom flywheel after taking out the screw and the stop washer.
- Place the new belts correctly into the corresponding races of the flywheel and of the pulley on the motor, while the flywheel is partially inserted.
- Lock the flywheel with washer and screw.
- Stretch the belt correctly with the screw **AE**.

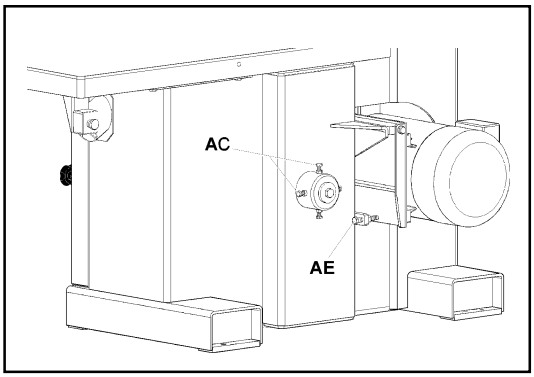


Fig. 17-3 Belt replacement

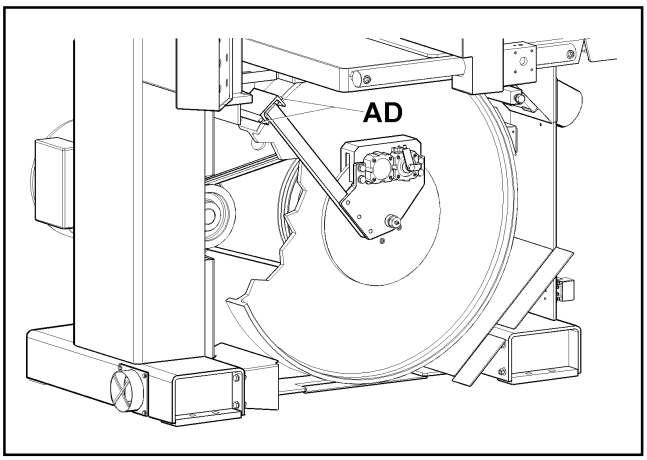


Fig. 17-4 Belt replacement

17.4 Flywheel bearing replacement

Only a qualified person should be allowed to replace the bearings which is why it is necessary to contact an authorised dealer.

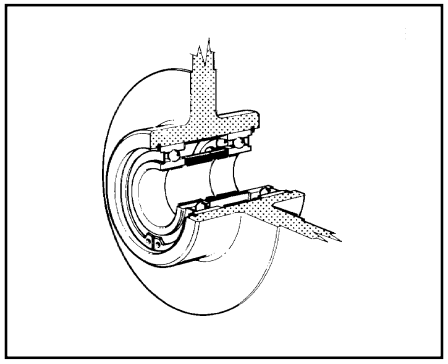


Fig. 17-5 Flywheel bearing replacement

17.5 Lubricating the wheel bearings

Lubricate the bearings of both wheels, pumping grease through the greasers **AG** as shown in Fig. 17-6.
If the machine is used every day, lubrication must be repeated every three months using 150 g of grease each time.
We recommend using "ESSO BEACON 2", "TOTAL ACANTIHS", "AGIP GRMUZ" grease or a similar type of other brands.

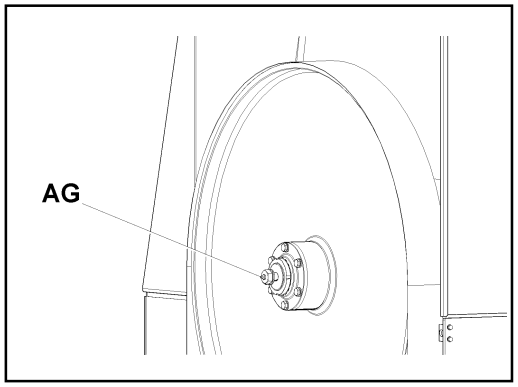


Fig. 17-6 Lubricating the wheel bearings

17.6 Brake maintenance

The R1000HD machine is fitted with a system that detects when the brake pads are worn: this condition is signalled when the yellow pilot light **J** (Fig.14-7) turns on with a steady light.
To replace the pads simply pull the calipers **BF** out loosening screws **BE** completely.
It is advisable to change all four pads at the same time.

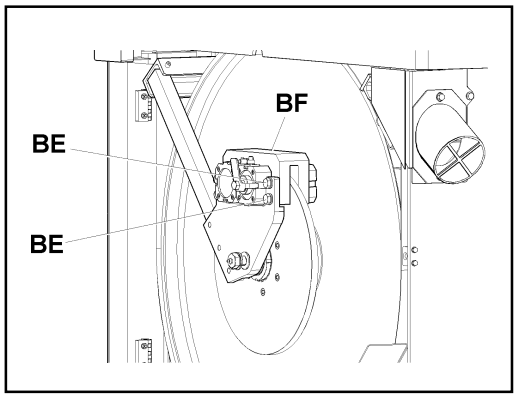


Fig. 17-7 Brake maintenance

18. MAIN TROUBLE AND RELATIVE REMEDIES

Tab. 18-1 Trouble, causes and remedies

The motor will not start	Current is not getting to the motor	Have the electric system checked by qualified personnel
Poor motor efficiency	Wrong motor connection	Have the electric system checked by qualified personnel
The motor quickly overheats	The motor is connected to a different voltage than that of the line	Change the connection following the diagram given on its plate
The blade does not cut straight	Imperfect tooth sharpening and setting	Sharpen and set again (see page 19) taking care this is symmetric, that is the same on the right and on the left
The blade cracks at the bottom of the teeth	Blade thickness inadequate for the diameter of the flywheels	Choose the thickness according to the table on page 18
	Teething not appropriate for the work to be done	See page 18
	Bottom of the teeth too sharp	See page 19
	Wrong setting because the teeth are bent at the base	See page 19
	Sharpening not correct because the bottom of the teeth has been overheated	See page 19
	Blade not slackened after use	See page 11
	Flywheels not aligned	Request the intervention of a qualified engineer
	Too much play in the bearings (especially in the bottom one)	Replace the bearings (see page 23)
The blade is cracked on its back	Welding not perfectly straight	Eliminate the welded area and repeat the operation correctly (see page 20)
The blade breaks close to the welding	Overheating of the blade during welding	Temper the part concerned or eliminate and redo the welding (see page 19)
	Cooling too fast after welding	
The blade moves forwards and backwards during the movement	Welding not straight	Redo the welding (see page 20)

A. SAFE WORK PROCEDURES (TC142 WG3)

A.1 NOISE REDUCTION

Working procedure affect the levels of noise produced by band saws. To this regard the provisions of Attachment C must be taken into consideration along with the following.

A.1.1 Choice of blade. The choice of blade must take into account the information supplied by the manufacturer on the noise levels linked with the various forms and categories of tools.

A.1.2 The state of the blade is important for the limitation of the noise levels during cutting. The blade must be subject to careful maintenance, paying attention to the following points:

a) The brazed or welded joint must be trued to the edge of the blade.
b) The teeth must be set or prepared for the foreseen operation.
c) The sharpness of the teeth must be checked at regular intervals.
d) The cleaning devices must be checked regularly to see they prevent the formation of deposits of resin on theblade.
e) A more appropriate choice of the feed speed.

A.1.3 The noise in loadless operation is caused by the vibration of the blade. It is possible to resort to some simple maintenance procedures to significantly reduce this phenomenon. For example, a band saw with a bad adjustment of the wheel scrapers causes a slow worsening from the maximum level of cutting noise to the minimum level of loadless noise.

a) Careful adjustment of the wheel scrapers and of the sawdust deflectors.
b) Maintenance of the dust extraction systems in observance of the planning parameters.
c) Maintenance of the blade lubrication systems in the feeders and rip saws.
d) Precise alignment of the blade.
e) Care for the blades under tension.

A.2 DUST EXTRACTION

Routine checks and maintenance of the extraction system.

Routine checks and maintenance of the seals of the pulley guards.

A.3 TRAINING THE OPERATORS

All the band saw operators must receive adequate training relative to:
a) machine operating principles, correct use and adjustment of the tilting table and of the guide, use of jigs, locks and templates;
b) choice of the most suitable blade for the work, setting the teeth, tensioning and aligning the blade;
c) safe movement of the piece during cutting, position of hands with respect to the blade and safe stacking of pieces before and after cutting;
d) correct adjustment of the top guide and of the guard.

A.4 TOOLS

A.4.1 CHOICE

With table band saws, the width of the blade must be chosen according to the cutting radius, the pitch of the tooth according to the thickness of the material and the shape of the teeth according to the type of material sawn.

A.4.2 HANDLING

It is necessary to pay great attention not to damage the blade. Before use they must be checked for the presence of damaged or cracked teeth.
To prevent the formation of cracks, tensioned blades must be kept as shown in Fig. A-10.

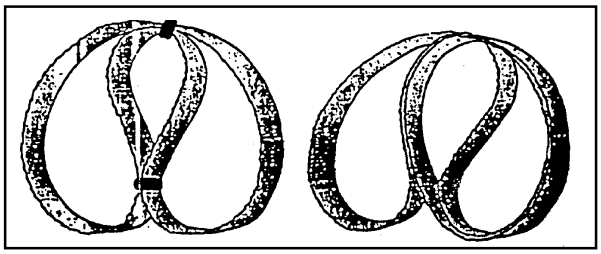


Fig. A-10 Handling

To change a band saw blade of a certain length, at least two operators are needed.

The operators must wear special gloves (or other suitable clothing) while handling the blades.

A.9.3 The blades must be set or prepared and sharpened carefully; setting must always be done before sharpening.

Setting allows obtaining teeth of a greater width than the thickness of the belt and prevents the belt rubbing against the piece and overheating. Excessive setting easily causes the blade to break.

A.9.4 The information and advice given by the manufacturer for setting/sharpening, tensioning, aligning, and checking the blades must be incorporated in the users' work procedures.

A.4.5 TENSIONAMENTO DI LAME LARGHE

The blade is put under tension to:
a) stiffen the cutting edge;
b) prevent the saw "skidding" off the fly-wheel;
c) compensate for the expansion of the blade, especially on the cutting edge, due to the increase in temperature during work. It is important for the engineer assigned to the saw to apply the right tension to the wide blades (according to the manufacture's instructions). Too high or too low a tension determines a reduction in the contact between the blade and the edge of the fly-wheel.

Consult the blade manufacturer for advice with respect to the most suitable procedures for "running in" new blades before applying the load.

A.4.6 BREAKAGE OF THE BLADES

The risk of blades breaking is increased by the following factors:

(a) incorrect use of blades jointed with imprecise brazing or butt welding;
(b) cracked blades;
(c) sharp corners in the space between the teeth causing the formation of cracks;
(d) bending of the blade during cutting, due to using too wide a blade;
(e) incorrect adjustment of the guides or of the contrast wheel, with the consequence that the guides restrain the blade;
(f) residues wedging between the blade and a slot in the worn table;
(g) feeding the piece wrongly (the piece is forced against the blade with excessive speed);
(h) torsion of the piece during cutting;
(i) deposits of resin on the blade;
(j) blade tensioning mechanism getting blocked;
k) blade teeth blunt or badly set;
l) wrong tensioning of the wide blades;
m) burning or cracking due to wrong grinding;
n) grinding at too distant intervals.

A.9.7 If cracks are formed in the space between the teeth, there is a danger of breaking the blade. The blades must be examined regularly to check for signs of cracking and to be repaired by a competent engineer or scrapped.

The impossibility of correct alignment of a blade may be indicative of the imminent formation of cracking.

B. SPARE PARTS

Notification

In order to ensure a prompt delivery of the required spare parts, please indicate:

1) Type and serial number of the machine.

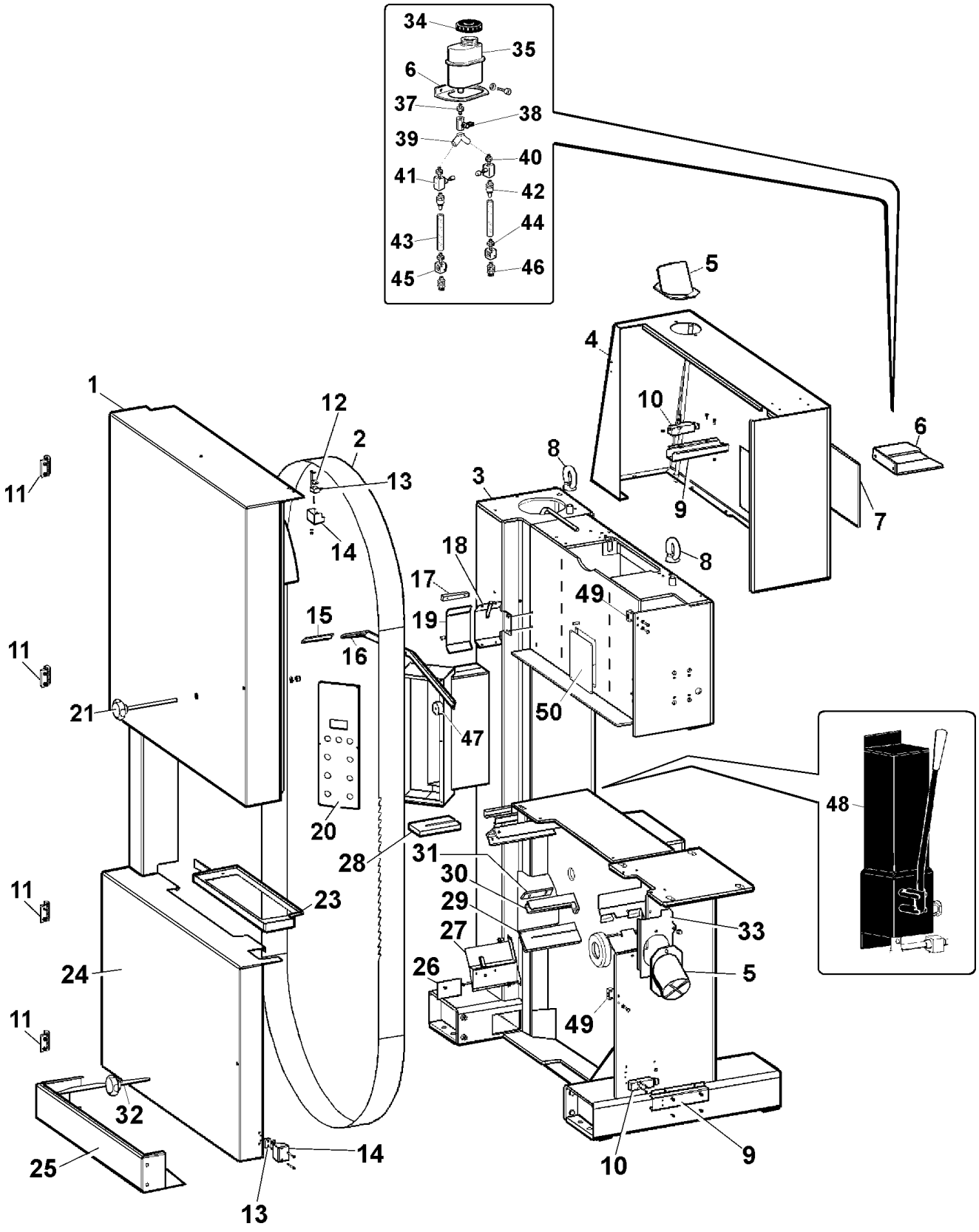
2) Table number, reference and code number of the required spares.

3) Quantity.

Tab. 1 **R1000HD**

Rif. Ref. N.	CODICE - CODE	Rif. Ref. N.	CODICE - CODE
1	43010110	**41**	-
2	02310403	**42**	-
3	43011001	**43**	-
4	43010002	**44**	-
5	48115500 (solo RVP500)	**45**	-
6	43010160	**46**	-
7	43010132	**47**	48219600
8	14010206	**48**	26071702
9	43010111	**49**	43010119
10	05062011	**50**	43010174
11	27111721	**51**	
12	43010113	**52**	
13	-	**53**	
14	43010112	**54**	
15	43010115	**55**	
16	43010114	**56**	
17	43010095	**57**	
18	43010094	**58**	
19	-	**59**	
20	43010118	**60**	
21	43010116	**61**	
22	-	**62**	
23	43011025 (solo RVP500)	**63**	
24	43011017 (RVP500) - 43501063 (RTF400)	**64**	
25	43011016	**65**	
26	-	**66**	
27	43010182	**67**	
28	43010097	**68**	
29	43010096	**69**	
30	43010092	**70**	
31	43010093	**71**	
32	43010117	**72**	
33	43500107 (solo RVP500)	**73**	
34	-	**74**	
35	-	**75**	
36	-	**76**	
37	-	**77**	
38	-	**78**	
39	-	**79**	
40	-	**80**	

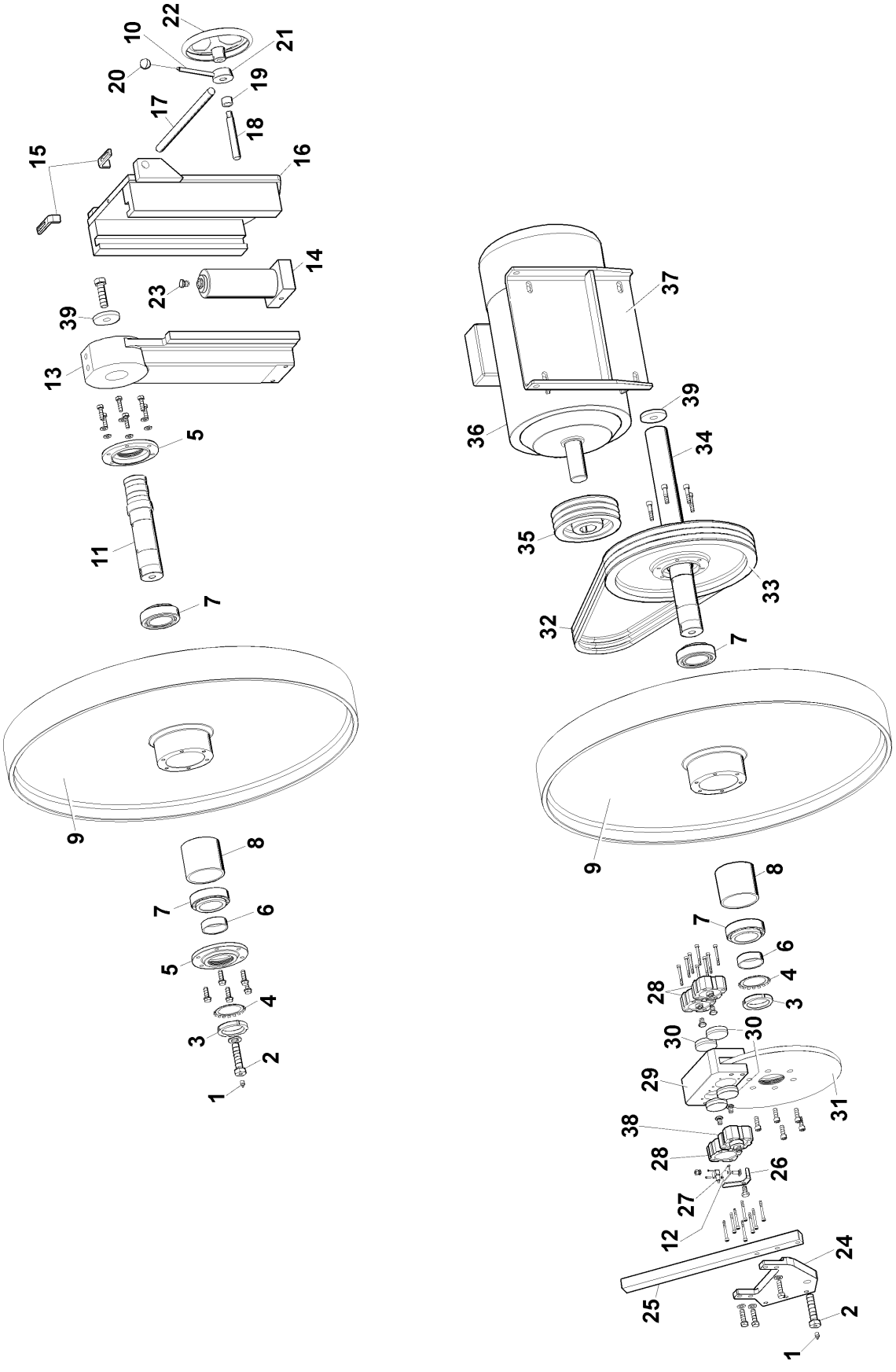
Tab. 1 **R1000HD**



Tab. 2 **R1000HD**

Rif. Ref. N.	CODICE - CODE	Rif. Ref. N.	CODICE - CODE
1	12030338	**41**	
2	43010155	**42**	
3	24020525	**43**	
4	13334192	**44**	
5	43010180	**45**	
6	43010058	**46**	
7	01700200	**47**	
8	43010157	**48**	
9	43010177	**49**	
10	43010053	**50**	
11	43010056	**51**	
12	43010184	**52**	
13	43010044	**53**	
14	43010050	**54**	
15	43010059	**55**	
16	43010047	**56**	
17	43010048	**57**	
18	43010051	**58**	
19	43010175	**59**	
20	10034651	**60**	
21	43010052	**61**	
22	10045052	**62**	
23	43010055	**63**	
24	43010098	**64**	
25	43010102	**65**	
26	43010183	**66**	
27	05061904	**67**	
28	26512000	**68**	
29	43010099	**69**	
30	43010101	**70**	
31	43010179	**71**	
32	03650000	**72**	
33	43010178	**73**	
34	43010089	**74**	
35	43010090	**75**	
36	-	**76**	
37	43010091	**77**	
38	26512001	**78**	
39	43010121	**79**	
40		**80**	

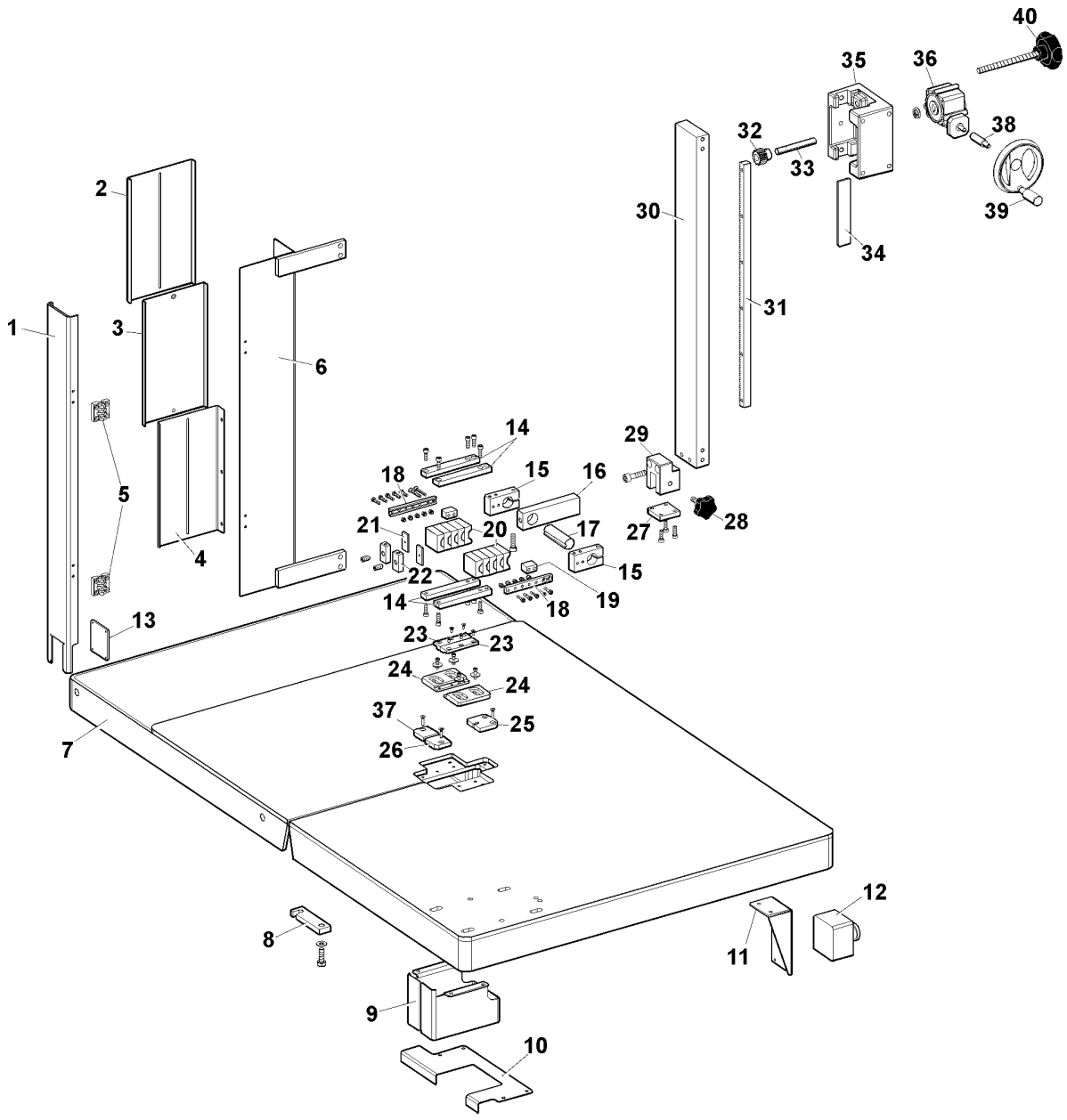
Tab. 2 **R1000HD**



Tab. 3 **R1000HD**

Rif. Ref. N.	CODICE - CODE	Rif. Ref. N.	CODICE - CODE
1	43010077	**41**	
2	43010078	**42**	
3	43010079	**43**	
4	43010080	**44**	
5	27111708	**45**	
6	43010076	**46**	
7	43011032 (solo RVP500)	**47**	
8	48213000	**48**	
9	43011031	**49**	
10	43011030	**50**	
11	48219826	**51**	
12	05070204	**52**	
13	43010082	**53**	
14	43010070	**54**	
15	43010069	**55**	
16	43010068	**56**	
17	48210900	**57**	
18	43010071	**58**	
19	43010072	**59**	
20	24070018	**60**	
21	48215300	**61**	
22	48215500	**62**	
23	43010157	**63**	
24	43010151	**64**	
25	43010152	**65**	
26	43010154	**66**	
27	43010067	**67**	
28	10011172	**68**	
29	43010066	**69**	
30	43010060	**70**	
31	43010061	**71**	
32	43064040	**72**	
33	43010065	**73**	
34	43010063	**74**	
35	43010062	**75**	
36	21081056	**76**	
37	43010153	**77**	
38	43010064	**78**	
39	10040020	**79**	
40	10011620	**80**	

Tab. 3 **R1000HD**



Tab. 4 **R1000HD**

Rif. Ref. N.	CODICE - CODE	Rif. Ref. N.	CODICE - CODE
1	05061915	41	
2	43500106	42	
3	43500098	43	
4	27120300	44	
5	43500094	45	
6	27440000	46	
7	43500093	47	
8	43500090	48	
9	-	49	
10	43500092	50	
11	10066632	51	
12	13134057	52	
13	43500089 (RVP500) - 38501062 (RTF400)	53	
14	43500091	54	
15		55	
16		56	
17		57	
18		58	
19		59	
20		60	
21		61	
22		62	
23		63	
24		64	
25		65	
26		66	
27		67	
28		68	
29		69	
30		70	
31		71	
32		72	
33		73	
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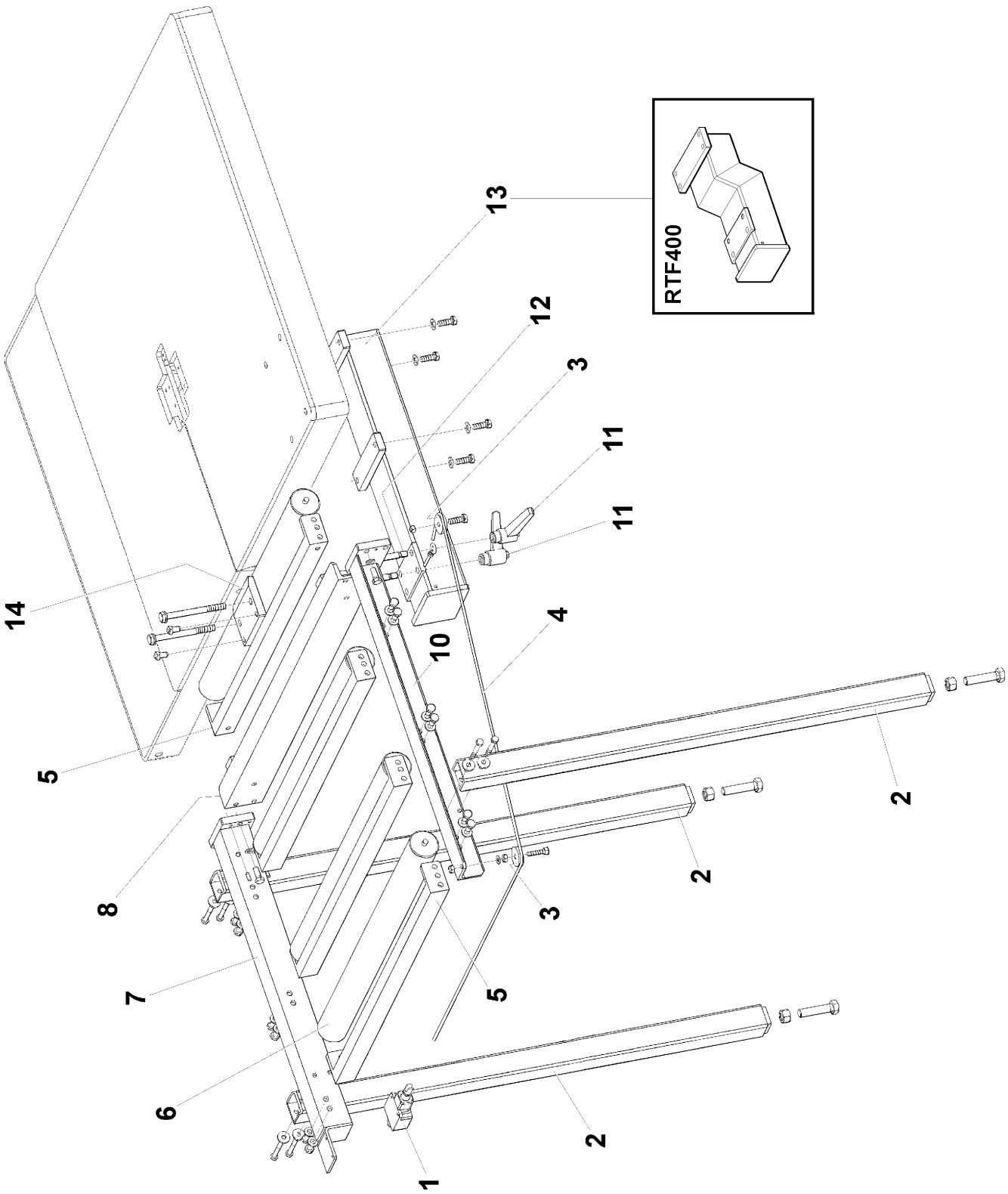
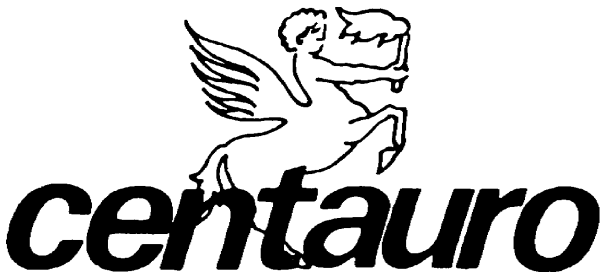
35		75	
36		76	
37		77	
38		78	
39		79	
40		80	

Tab. 4 **R1000HD**





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