

**zinken
compact 21
instruction
manual**

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Congratulations:

you now own a Zinken Compact 21!

The first thing you must do is send the guarantee request card which is in the envelope your dealer gave you, to Zinken Italiana S.p.A., Trezzano s/N (Milan), Italy. We will send your guarantee certificate by return mail. We will also send you the ZC 21 spare parts catalogue which will enable you to accurately identify any spare part you wish to request from our factory if this unfortunate necessity should arise.

You must keep your guarantee certificate for the whole period your machine is in guarantee.

Every detail of the combined woodworking machine which you have purchased has been designed and manufactured on the basis of extensive research and testing.

It is a very compact machine, equipped with all the most modern devices and components which make it precise and easy to use and maintain. Special aluminium alloys have been used in its construction, making the ZC 21 a very sturdy machine.

The work tables are clad in stainless steel to ensure that your machine is never marred by scratches or abrasions.

Even though the ZC 21 is absolutely suitable for professional use, do-it-yourself fans have fallen in love with its compact size and portability. Because of the ZC 21's popularity with hobbyists, we decided to include some information in this manual which may seem obvious to the more expert users. We also decided to describe some supplementary operations like replacing the drive belts and the ball bearings and to discuss some of the optional accessories such as the special squaring saddle the base, the safety devices, the carrying rods, etc.

Please read this manual carefully and carry out all the operations described; they may seem complicated, but they're really easy. A few minutes spent on these preliminaries will enable you to get the most out of your ZC 21.

We hope you enjoy working with this machine.

ZINKEN ITALIANA S.p.A.

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Characteristics

CONSTRUCTION	Cast aluminum, reinforced with cast iron details; some steel parts and first rate machining; ribbed and ground work tables clad in stainless steel; chrome-plated ways and guide rods; moving parts mounted on double sealed prelubricated ball bearings.
MOTOR	Single or three-phase, 1.5 HP (1100 W); inextensible drive belts; one selector lever for all six operations (lockable); the whole output is transmitted to only one operation.
SIZE	Overall dimensions: 890 x 840 x 470 mm.
WEIGHT	Total weight approx 105 kg, complete with mortiser and standard accessories. Shipping weight: approx 115 kg. Shipping weight with base: approx 135 kg.

OPERATIONS

- Surfacing planer* Maximum planing width: 210 mm; overall work table length: 750 mm, both tables adjustable; cutterblock speed: 4600 rpm; three-knife cutterblock with prismatic locking bar; adjustable tilting fence; guard with hinged sections.
- Thickening planer* Maximum planing width: 210 mm; maximum workpiece thickness: 110 mm; automatic feed rate 7 m/min; cutterblock speed: 4600 rpm; table height adjusting handwheel with scale in millimeters; guard over cutter acts as shavings chute; antikickback fingers.
- Circular saw* Blade diameter: 220 mm; center hole \varnothing 20 mm; spindle speed: 3500 rpm; depth of cut adjustable from 0 to 60 mm; work table dimensions: 700 x 340 mm table tilts through 45°; adjustable tilting fence; double flanged guard on riving knife (can be removed when the blade is retracted).
- Spindle moulder* Spindle diameter: 30 mm; spindle speed: 8000 rpm; work table dimensions: 700 x 340, can be tilted through 45°; metal guard with adjustable fence plates; maximum cutterblock diameter: 90 mm; completely retractable spindle; working height adjustable from 0 to 55 mm; collet chuck for end mills with 9.5 mm shank (standard equipment); collet chuck for 6 and 8 mm shanks or other types (mill with threaded female shank) available on request.
- Borer-Mortiser* Table equipped with stops travels both lengthwise and crosswise on two pairs of ground rods; maximum longitudinal travel: 130 mm; maximum cross travel 100 mm; chuck (right hand rotation) for 16 mm shanks, reducing bushes supplied for 8, 10 and 13 mm shanks; spindle speed: 4600 rpm; maximum distance from table to bit axis: 60 mm; eccentric holddown device.
- Tenoning saddle* Can be used with circular saw and spindle moulder; travel: 500 mm (on special self-lubricating bushes). Uses the eccentric holddown device supplied with borer. Equipped with protractor.

Safety

Woodworking tools rotate at high speed and this causes many accidents.

We have done our best to make the Zinken Compact 21 a very safe machine; the transmission is completely enclosed in the bed and the dangerous tools are protected by adequate guards.

The operator must always use these guards; their use is explained under each operation and on page 29. The machine must also be connected to a good ground by means of the ground conductor in the supply cable. Obviously the operator must shut off the machine before changing the tools or cleaning it.

Furthermore, the operator should wear the right kind of clothes: never even come near the machine with a loose tie or unbuttoned cuffs because they might get caught in the tools.

Special care must be used when the workpiece is small: never hold it directly in your hands, *always* push it or guide it with bigger strips.

Assembling your ZC 21

The ZC 21 is packed on a pallet in a cardboard box.

The mechanical parts are already assembled. But the guards for the thickening planer, the circular saw and the spindle moulder (and the special guards if you ordered them) are lying on top of the work tables. Furthermore, the packing has been designed to contain the knock-down base.

You will also find a cardboard box containing: two clamping knobs for the spindle moulder guard, the surfacing planer guard, the spindle moulder guard and two jute bags. One bag contains the wrenches and the other contains the following:

- One holddown device arm (in addition to the one already mounted on the mortiser)
- Three reducing bushes for the mortiser chuck (8, 10, 13 mm)
- One clamping screw for mortiser chuck
- Two washers to be used with the spindle moulder guard clamping knobs
- One 9.5 mm collet chuck for the spindle moulder
- One spindle moulder cutterblock clamping screw
- One spindle moulder extension (30 mm dia) with five spacers
- One spindle moulder spindle locking pin
- Two keys for selector lever lock.

Connecting your ZC 21 to the mains

Once the machine has been installed on its base (see page 30 if our base is used), it will have to be connected to the mains. Make sure that the supply voltage corresponds to the motor voltage shown on the nameplate.

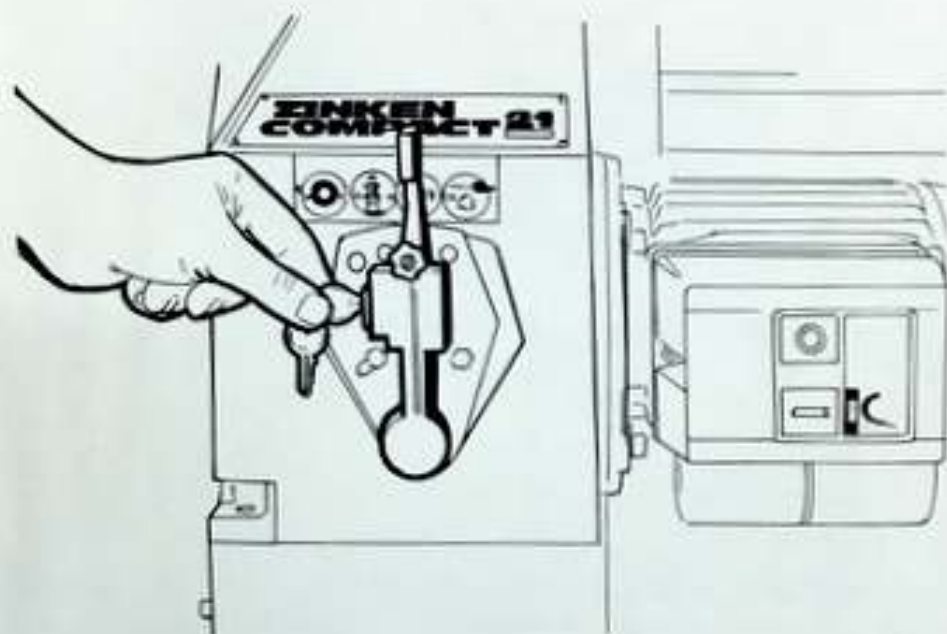
The machines equipped with a three-phase motor have a supply cable with four conductors; the yellow-green conductor is the ground. After the connection has been made, start the machine (see page 9, right after the illustration) and make sure that the tools rotate in the right direction. If they do not, you will have to invert a phase (i.e., switch two of the three phase conductors on the plug).

The supply cable on the machines equipped with a single-phase motor only have three conductors; the yellow-green one is the ground.

FOR YOUR OWN SAFETY, MAKE SURE THAT THE MACHINE IS PROPERLY GROUNDED.

Using the ZC 21

The selector lever automatically controls the tool you want and excludes the others.



To select an operation, unlock the selector lever and place it in the desired position, corresponding to one of the symbols. There are three symbols; from left to right they are: circular saw, spindle moulder and planer-mortiser. When the selector lever is in the OFF position (between the spindle moulder and the planer-mortiser symbols), the machine is in neutral: the motor runs but it does not drive any tool.

Therefore you can prevent unauthorized persons – and children – from using the machine by placing the selector lever in neutral, locking it and removing the key.

REMEMBER THAT THE MOTOR MUST BE TURNED OFF EACH TIME YOU SELECT AN OPERATION. Before you shift the selector lever to a new operation, you must turn off the motor and wait until the tool has stopped rotating.

Sometimes the selector may not « engage » properly; if this happens, move the tool you want to use slightly by hand and try again.

During the first hours of operation, one of the tools which you are not using may rotate slowly together with the tool you are using. This phenomenon is quite normal: the prelubricated, sealed bearings which have to go through a running in period. This problem will gradually disappear in a short time.

Surfacing planer

Select the desired operation by pulling out the spring-loaded locking pin and shifting the lever to the position shown in Fig. 1.

**THE MOTOR MUST ALWAYS BE TURNED OFF AND THE TOOLS
MUST HAVE STOPPED BEFORE SHIFTING**



fig. 1

The surfacing planer is used to smooth wood surfaces. The tool consists of a cylinder with three knives mounted on it; these knives are located an equal distance apart and they run lengthwise on the cylinder. The depth of cut can be adjusted by adjusting the height of one of the work tables (« A » in Fig. 2; the other work table is « B »).

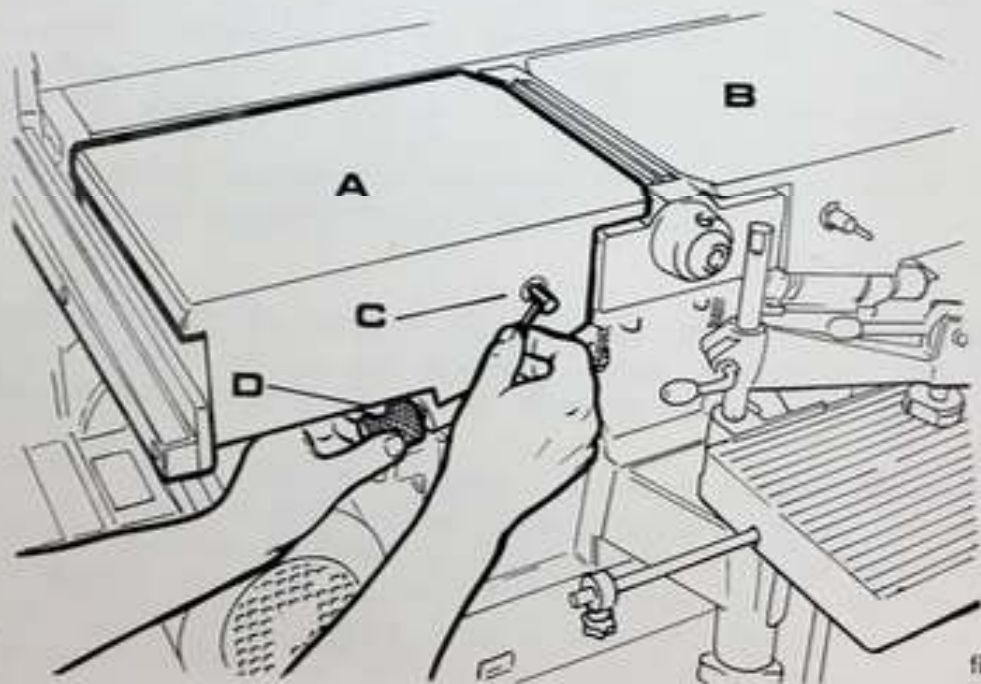


fig. 2

The height of the tables can be adjusted by loosening the table clamping levers « C » and turn the knurled adjusting knobs « D » (clockwise for up, counterclockwise for down).

Work table « B » is used to position the knives; the knives must be level with this table.

Use a wooden straight edge to check the position of the knives. With the straight edge resting on table « B », turn the planer head spindle; the blades should just barely graze the straight edge (Fig. 3 and 4).

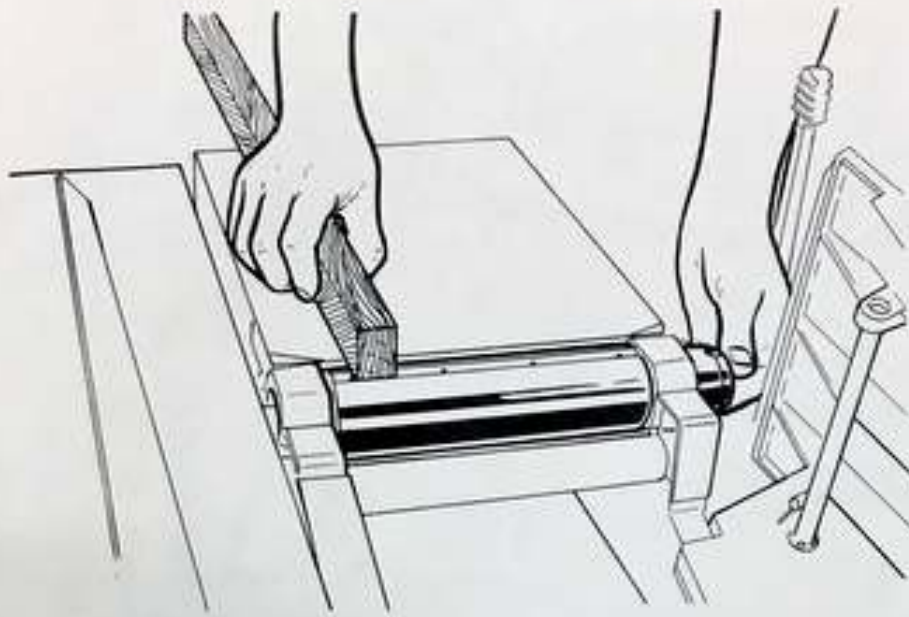


fig. 3

Once this table has been properly positioned, tighten the table clamping lever « C ». No future adjustment will be required, except for a periodic check (or when the blades are replaced).

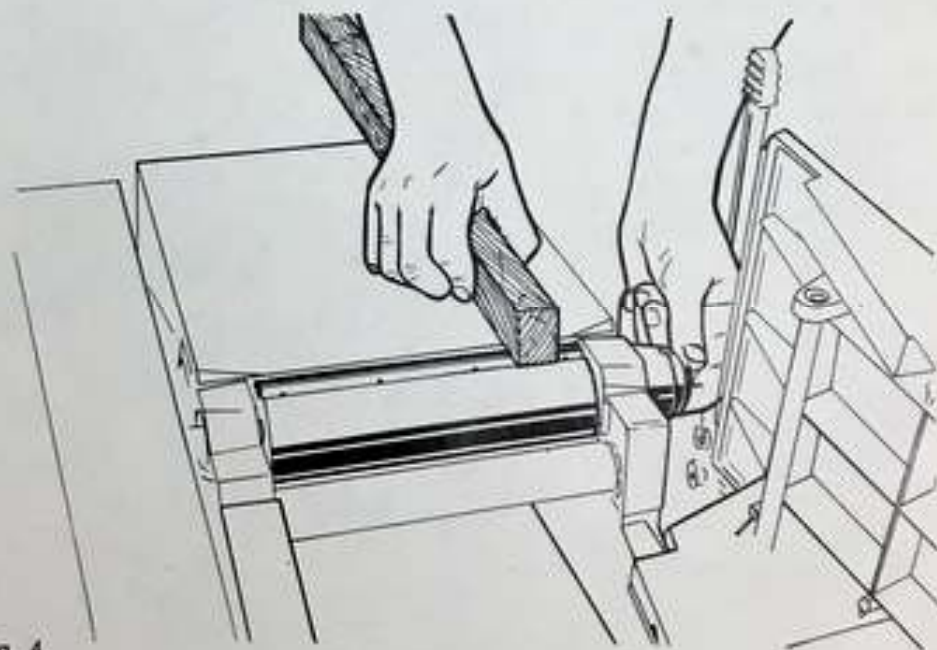


fig. 4

Lowering or raising table « A » increases or decreases the depth of cut, the amount of stock removed with each pass. The clamping lever for this table also has to be loosened before adjusting the height and tightened before planing (Fig. 2).

The adjustable tilting fence is used to guide the workpiece during planing. When it is tilted, surfaces with different angles can be obtained.

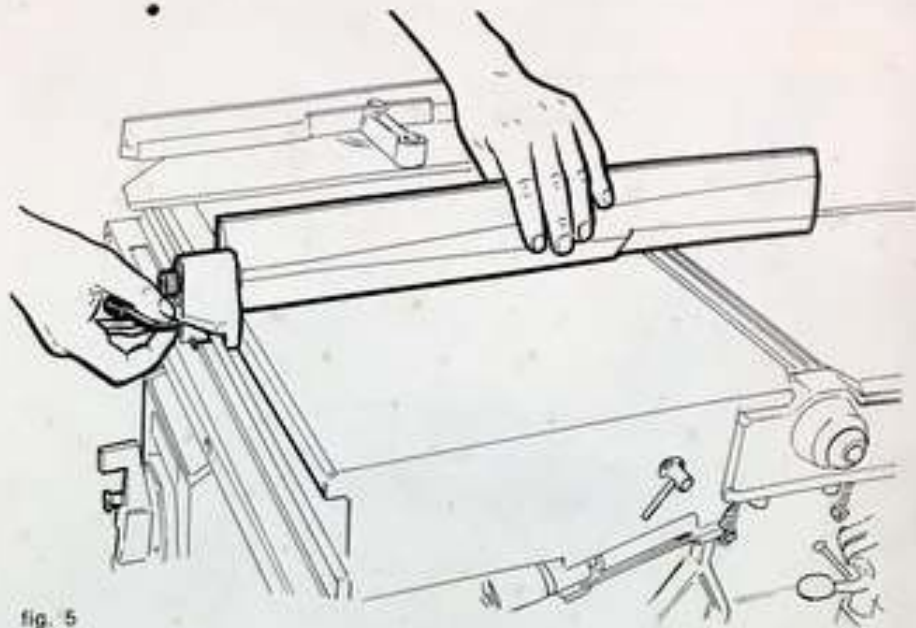


fig. 5

The hinged guard must be used to cover that part of the planer head which is not being used so the operator's hands will be protected.



To mount the hinged guard, just clip the prongs at the end of the guard over the hooks mounted on the inside planer support. Just squeeze the prongs between thumb and forefinger, as shown in Fig. 6.

fig. 6

The drawings below show how to remove the planer knives for sharpening or replacement.

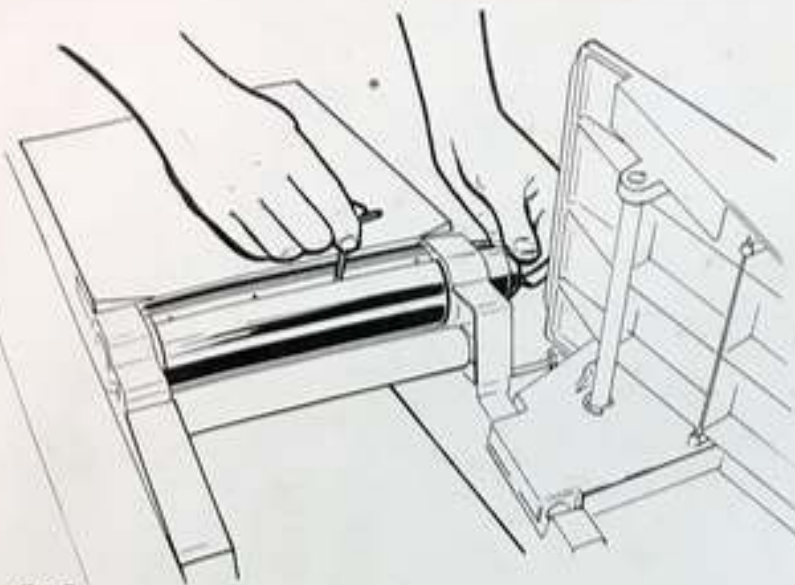


fig. 7

Slightly loosen the knife clamping screws (do not remove them).

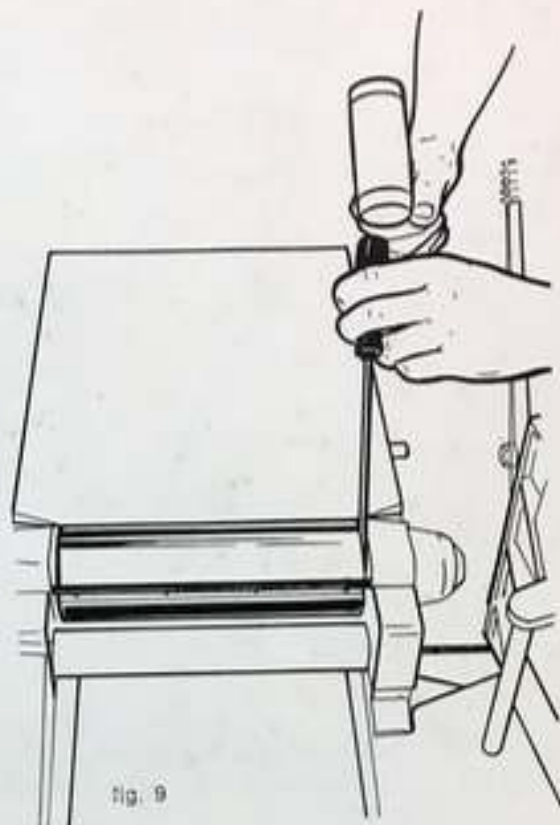


fig. 9

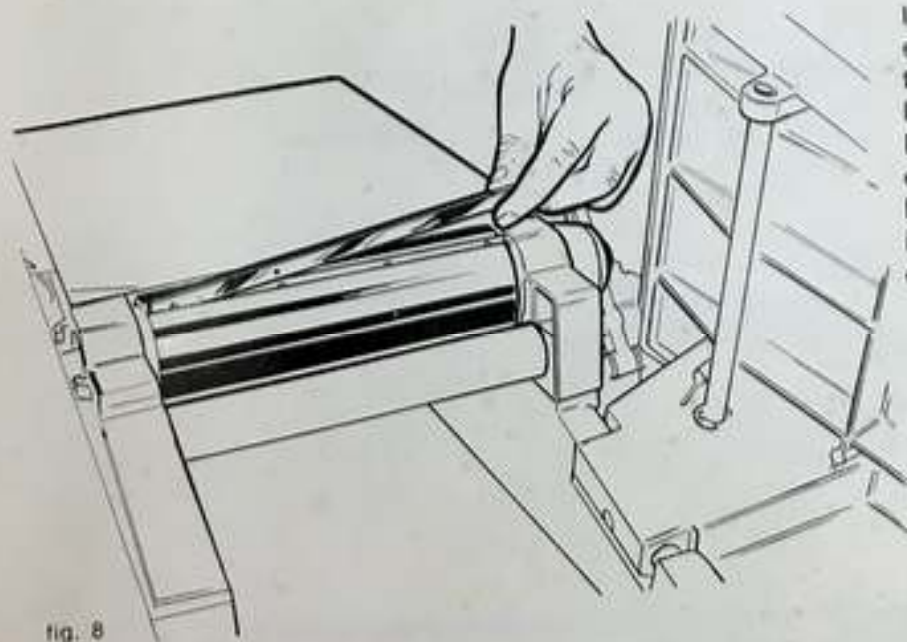


fig. 8

Insert a screwdriver between the end of the knife to be removed and the frame. Hit it lightly with a mallet if necessary.

If it is difficult to remove the knife even when the screws have been loosened, push the prismatic locking bar down; this should make it easier to remove the knife.

The same sequence of operations should be followed to remove the other knives. For safety's sake extreme care should be used in mounting and securing the knives.

When mounting the knives, follow the steps described above but in the opposite order: insert the knife in the cutterblock (it should protrude one millimeter from the prismatic locking bar) tighten the clamping screws slightly, repeat the operations of page 11 and tighten.

Thicknessing planer

Select the desired operation by pulling out the spring-loaded locking pin and shifting the lever to the position shown in Fig. 10.

THE MOTOR MUST ALWAYS BE TURNED OFF AND THE TOOLS MUST HAVE STOPPED BEFORE SHIFTING



fig. 10

To prepare the machine for thicknessing, loosen and partially extract the table clamping levers shown in Figure 2 and swing back tables «A» and «B».

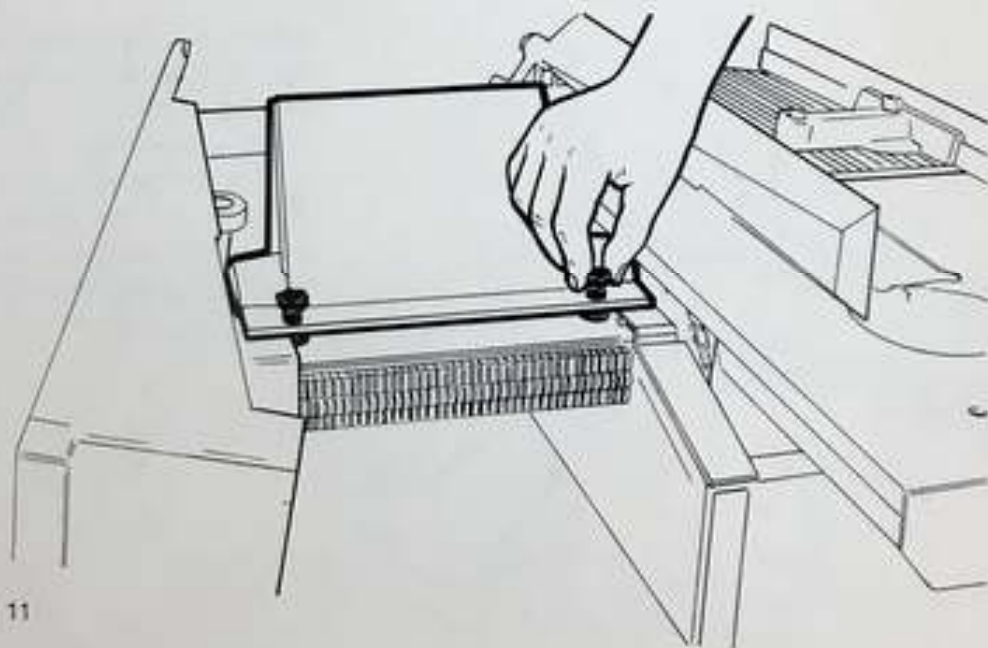


fig. 11

Then mount the guard over the cutterblock; make sure that the clamping screws (Fig. 11) are tight. The guard also acts as a chute for shavings. Besides smoothing the surface of a piece of wood, the thicknessing planer is used to reduce the thickness of the board. The board travels horizontally under the knives; the distance between the thicknesser table and these knives is adjustable. Furthermore, two feed rolls (one of them grooved) feed the board at 7 m/min.

The automatic feed lever is shown in the drawing below; *the motor must be running when you operate this lever*. Turn the automatic feed off when you have finished planing to avoid unnecessary wear on the drive when the machine is being used for other operations.



fig. 12

Insert the board to be planed underneath the antikickback fingers. Maximum workpiece width and thickness: 210 x 110 mm.

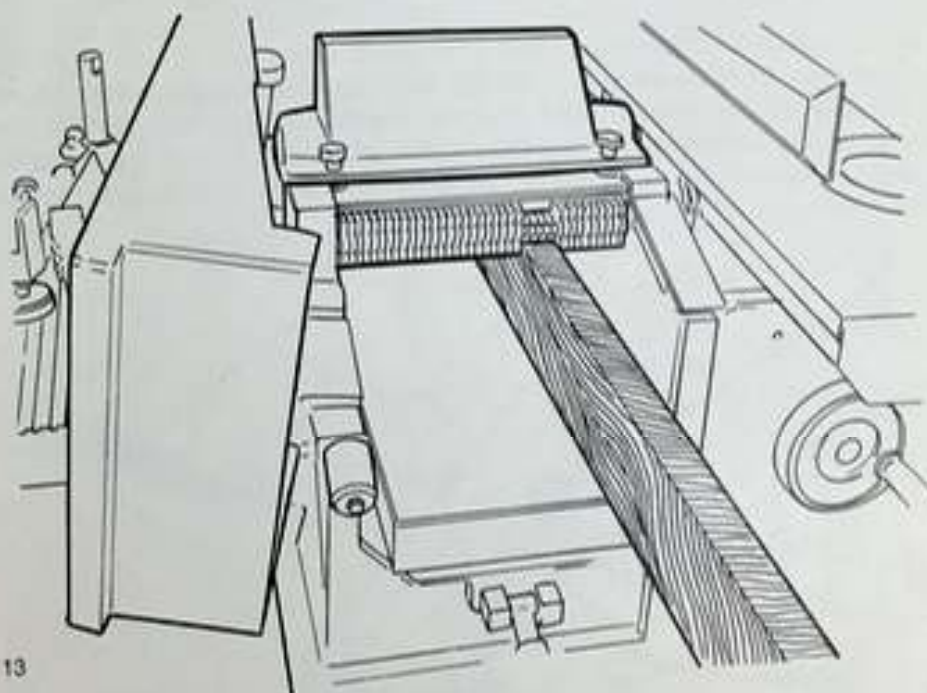


fig. 13

The height of the thicknesser table can be adjusted by turning the hand-wheel; the height can be read directly on the graduated scale located to the right of the bedplate. Remove 2 or 3 mm of stock with each pass in order to obtain a better surface.

If you are planing more than one board to the same dimensions, you should lock the thicknesser table at the desired height by sliding the support bracket near the motor until it touches the table and tightening the clamp. (Obviously you will have to loosen the clamp and slide it down before you can lower the table again).

Circular saw

Select the desired operation by pulling out the spring-loaded locking pin and shifting the lever to the position shown in Fig. 14.

THE MOTOR MUST ALWAYS BE TURNED OFF AND THE TOOLS MUST HAVE STOPPED BEFORE SHIFTING



fig. 14

This tool consists of a circular plate with teeth along the rim. It is thicker at the rim than in the center to prevent binding. The blades used on the ZC 21 have a 20 mm center hole and the maximum diameter is 220 mm. The steel blade mounted on the ZC 21 has 40 teeth; it can be replaced with blades made from a different material and with a different number of teeth if the type of wood make this necessary.



fig. 15

With a 220 mm blade, the maximum depth of cut is 60 mm; it can be set by adjusting the distance between the top of the blade and the top of the work table. To make this adjustment, loosen the blade clamping knob and use the handle to move the blade to the desired position; then tighten the clamping knob (Fig. 15).

The work table can be tilted through 45° (Fig. 16). Loosen the clamping nuts on the two semicircular guides underneath the table, tilt it to the desired position (indicated on the protractor) and tighten the nuts.

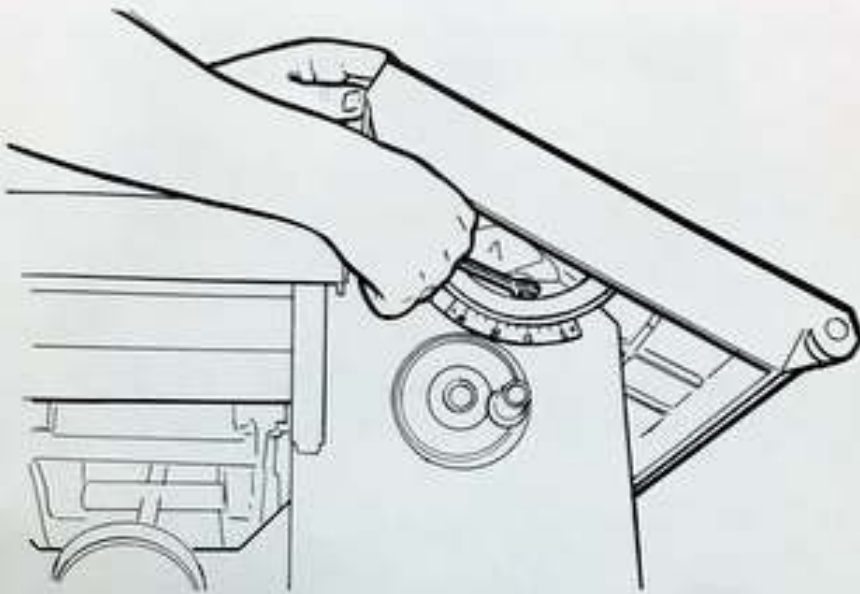


fig. 16

The tilting fence can be moved laterally if you want to make a series of parallel cuts. The fence unit with the work clamping device and the miter gauge will let you make both simple and compound miter and bevel cuts.

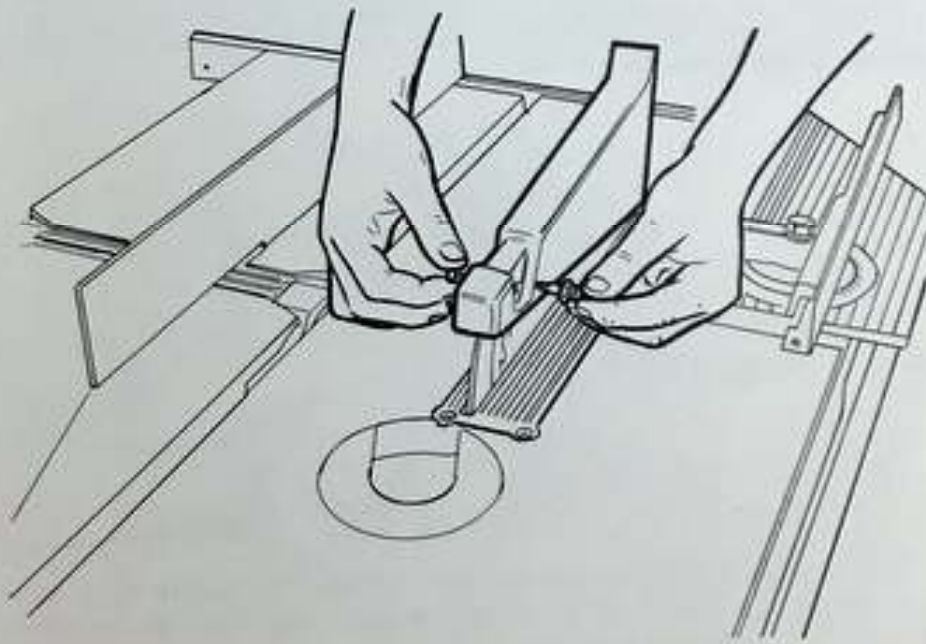


fig. 17

The double flanged guard must be mounted on the riving knife before you use the saw. Slip the bolt through the mounting holes and tighten the butterfly nut.

Replacing the saw blade

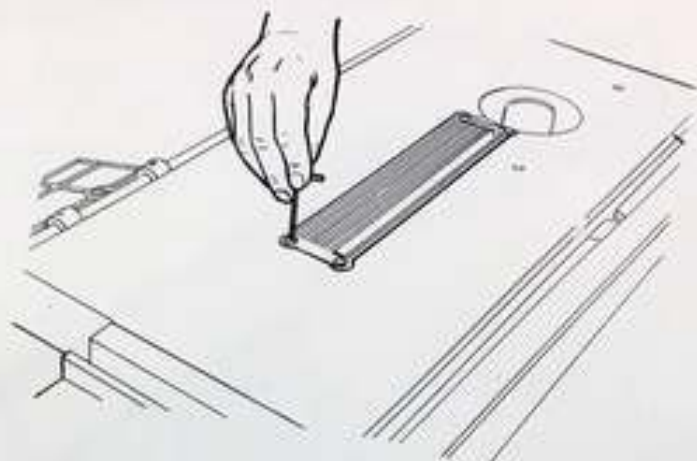


fig. 18

In order to remove and replace the blade you have to take off the black plastic cover by unscrewing the four Allen screws that secure it to the work table (Fig. 18).

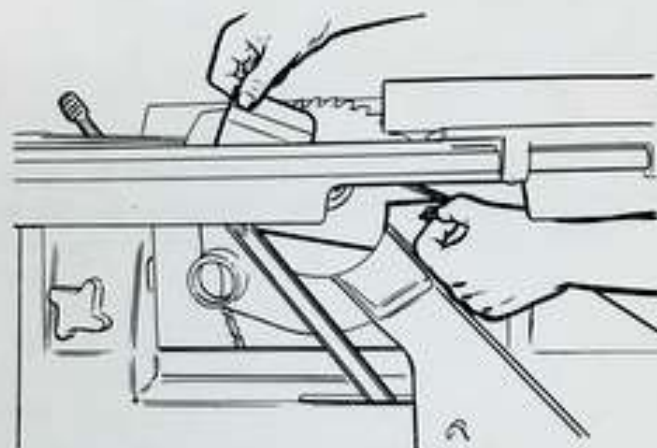


fig. 19

Then you have to remove the metal blade guard from the saw support by unscrewing the butterfly nut (Fig. 19).

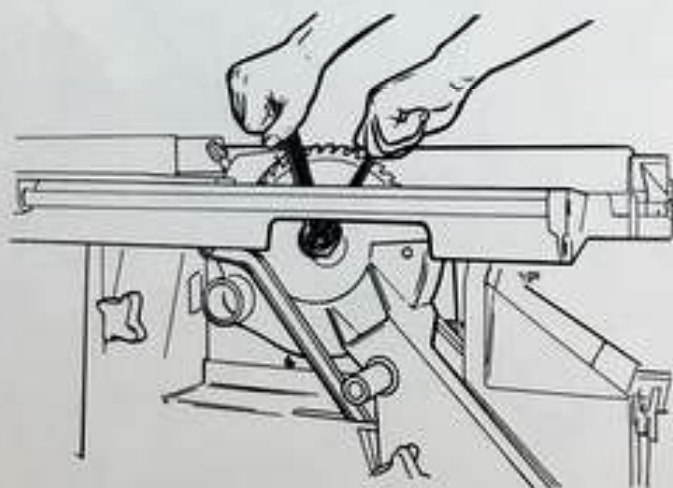


fig. 20

Now lift the saw as far as it will go and tighten the blade lock knob. Loosen the blade clamping nut by turning it clockwise with the wrenches supplied with the machine, as shown in Fig. 20. To install a new blade (or the old one which has been sharpened), just follow the above steps in the opposite order. If the blade has been sharpened, its diameter may be less than 220 mm; in this case the riving knife will have to be adjusted so that it is 2 mm lower than the blade (otherwise it would not be possible for the depth of cut to be less than the workpiece thickness).

Spindle moulder

Select the desired operation by pulling out the spring-loaded locking pin and shifting the lever to the position shown in Fig. 21.

**THE MOTOR MUST ALWAYS BE TURNED OFF AND THE TOOLS
MUST HAVE STOPPED BEFORE SHIFTING**

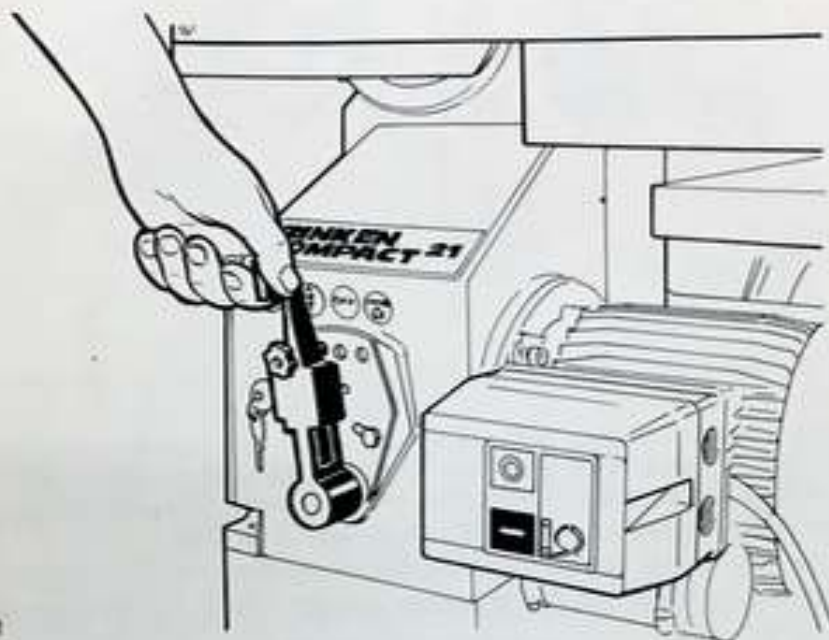


fig. 21

To mount the spindle moulder cutters, you must first lock the spindle by inserting the locking pin in the hole underneath the work table (see Fig. 22), then tighten the tool clamping screw with the Allen wrench.

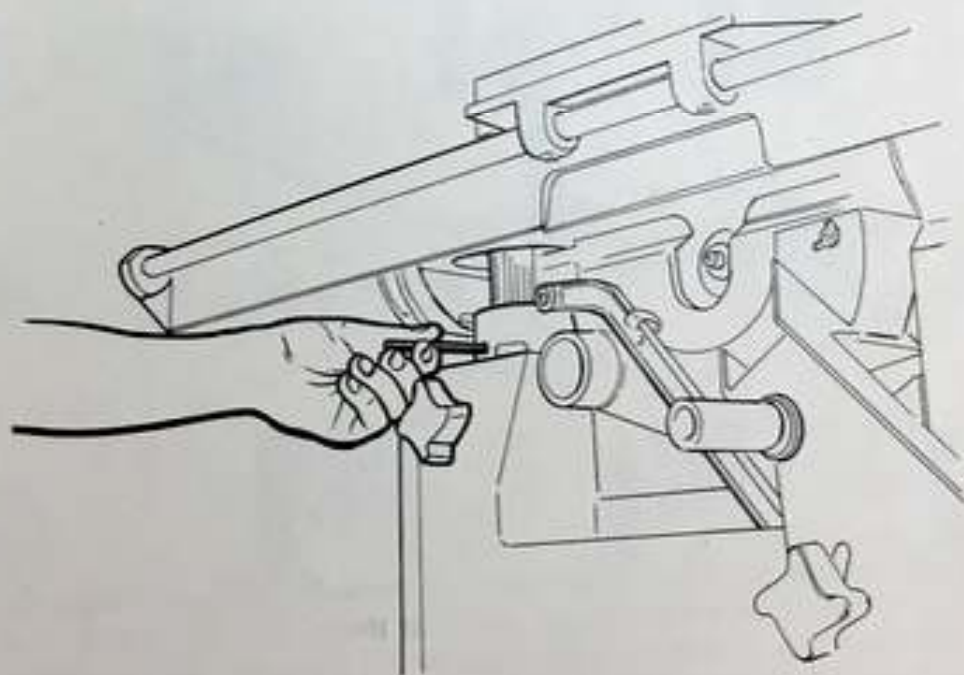


fig. 22

CAUTION! Do not forget to remove the locking pin from the spindle before starting the motor. Always make sure that the spindle clamping knob underneath the table has been tightened before you start working.

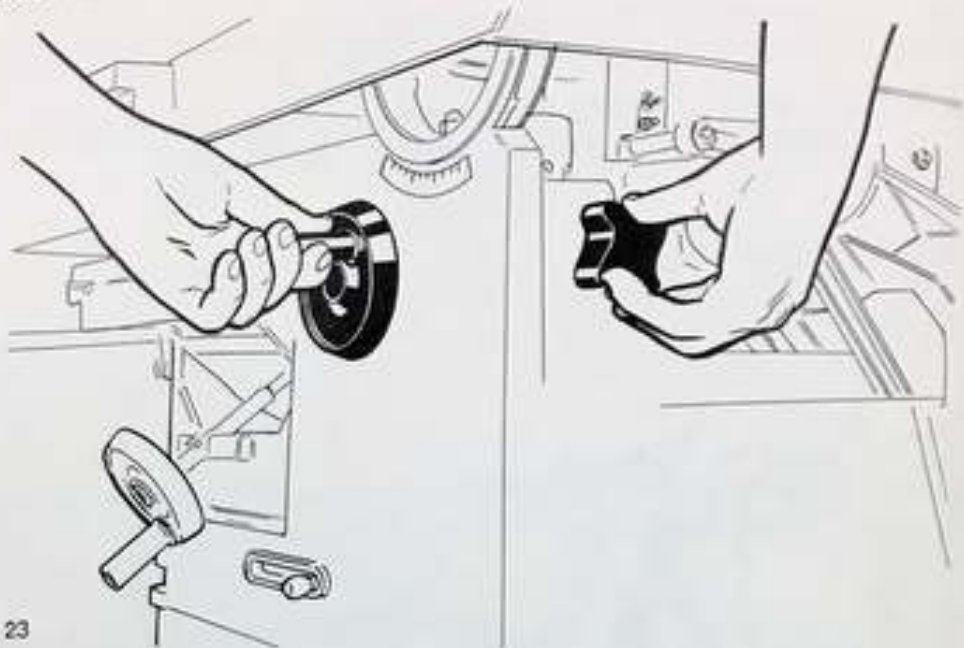


fig. 23

The spindle can be raised or lowered by loosening the spindle clamping knob and turning the spindle positioning hand wheel. The clamping knob must be tightened before you start working (see Fig. 23).

If the spindle has to be raised or lowered more than 10 or 15 mm, the motor should be running but for smaller adjustments it is not necessary to turn the motor on.

Be sure to mount the aluminum guard support and tighten the clamping knobs after you have mounted the tool. The adjustable fence plates are mounted on this guard (see Fig. 24).

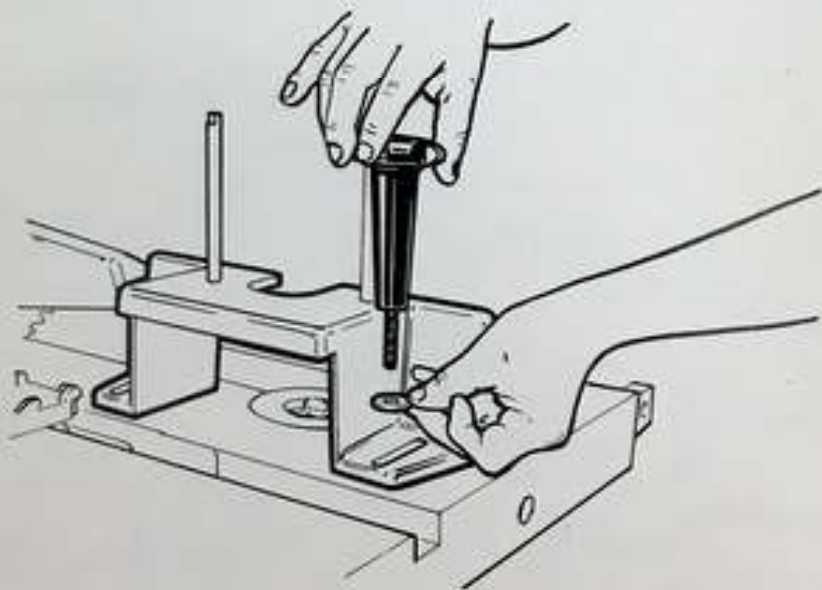


fig. 24

The spindle rotates very fast (8000 rpm), so it would be very dangerous if a cutter broke or a knife slipped out. Therefore the red guard must always be used. Fig. 25 shows how it should be mounted on the vertical guide rods on the guard support.

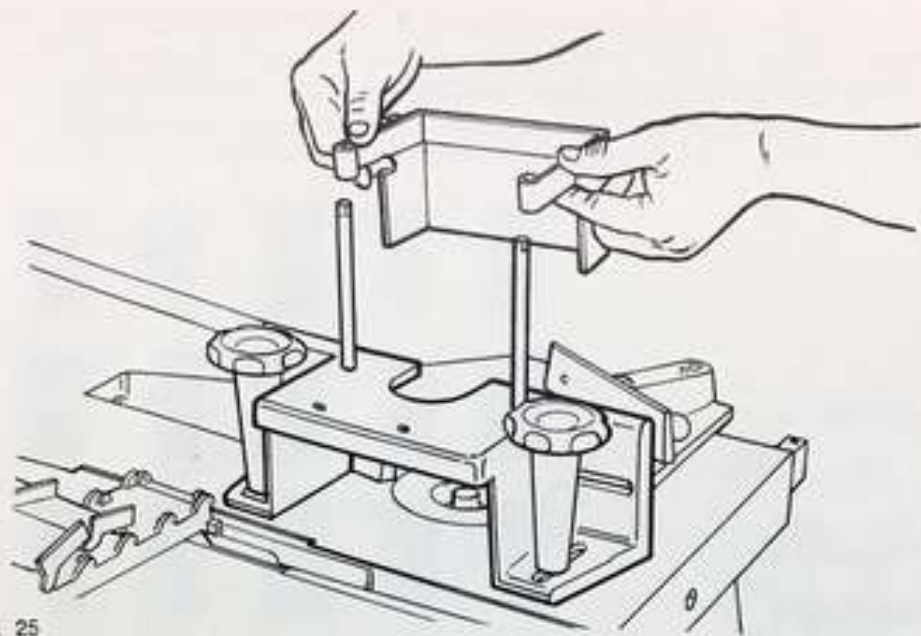


fig. 25

Like with the circular saw, the table can be tilted through 45° and you can use the standard fence unit.

As with the circular saw and the surfacing planer, the workpiece has to be pushed smoothly against the rotating tool, one side of the work slides along the fence.

The spindle moulder is used to cut mouldings, grooves, tongues, etc. in boards which have already been planed or brought to the desired dimensions. These different operations can be performed by using the many different types of profile tools which are available. These tools can be combined in many ways to obtain a great variety of profiles, some of which are illustrated in the table below.

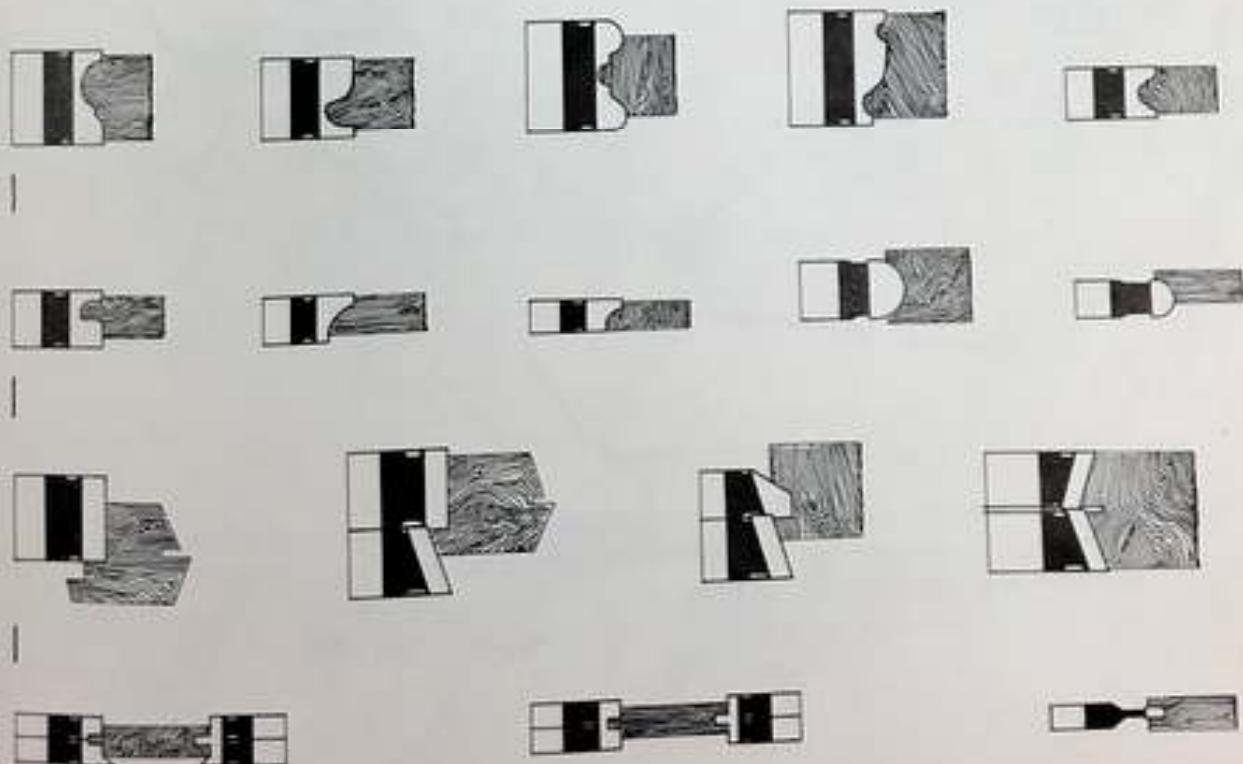


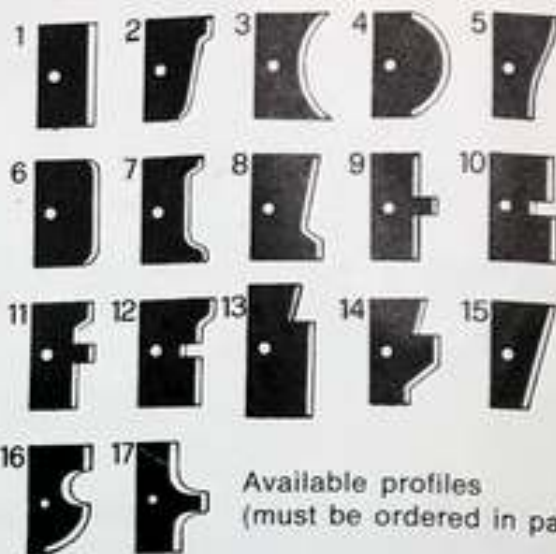
fig. 26

It is advisable to use a steel cutter block on which the profile knives can be mounted. Two knives with the same profile must always be used; furthermore they must be mounted so that the cutter is perfectly balanced. This system is the inexpensive way of obtaining a large number of profiles.



fig. 27

Cutterblock



Available profiles
(must be ordered in pairs)

The cutterblock can be mounted by screwing the extension supplied with the machine on to the spindle nose, inserting the spacers, placing the cutterblock on the spindle and tightening the clamping screw (you must insert the spindle locking pin; see Fig. 22).

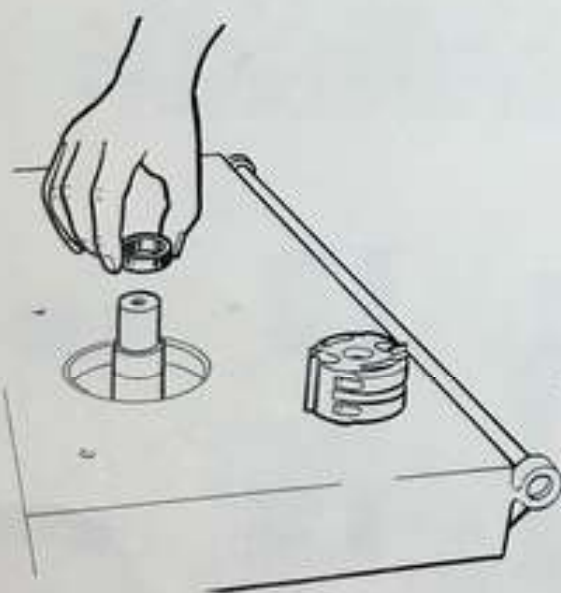


fig. 28



fig. 29



fig. 30

If you want to change the knives, unscrew the knife clamping screws with the Allen wrench, remove the knives and insert the new (or resharpened) ones. Make sure that they are properly aligned; both knives must protrude the same distance on both sides and in the front. When they have been aligned, tighten the knife clamping screws.



fig. 31

You can also use end mills on the spindle moulder. These should be mounted directly on the spindle (do not use the extension) by means of the collet for end mills with 9.5 mm shanks (supplied with the machine). The spindle locking pin has to be inserted while you tighten the clamping screw (see Fig. 32).

Collets for end mills with 6 and 8 shanks and for Zinken System cutters with universal mounting (12 x 1 - 10 x 1) are available on request.

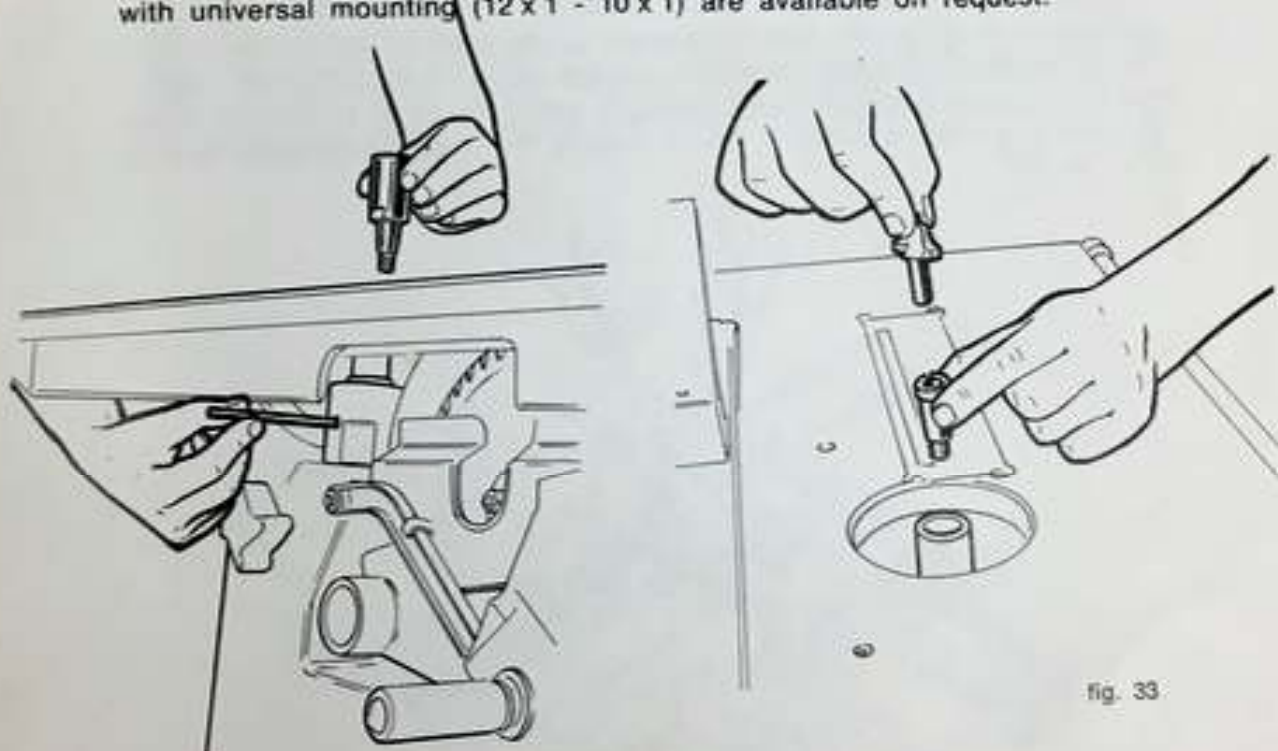


fig. 32

fig. 33

The spindle moulder can be used for many different operations: tenoning, dovetailing, tongue and grooving for matchboards, mouldings for doors, window and frames, etc. In each case, all you have to do is select the tool with the right profile and set up the fence and the tool height correctly.

Borer - Mortiser

Select the desired operation by pulling out the spring-loaded locking pin and shifting the lever to the position shown in Fig. 34.

THE MOTOR MUST ALWAYS BE TURNED OFF AND THE TOOLS MUST HAVE STOPPED BEFORE SHIFTING

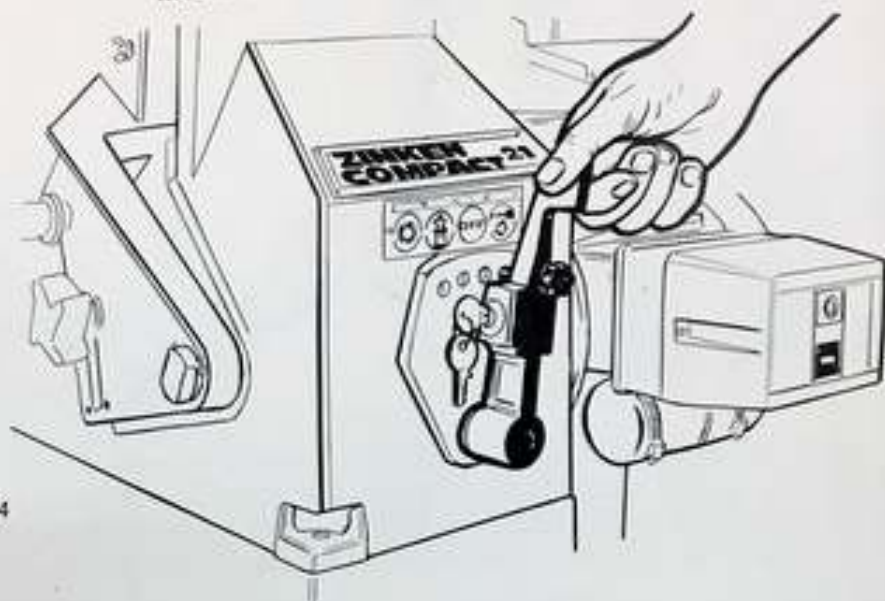


fig. 34

The borer-mortiser is basically a horizontal drill which is used to cut holes and mortises for joints. The workpiece is clamped to the table which travels longitudinally and crosswise on two pairs of ground rods. Table height is also adjustable. The mortise (a series of holes joined together to make a rectangular hole) is cut by moving the workpiece longitudinally (Fig. 36-37).

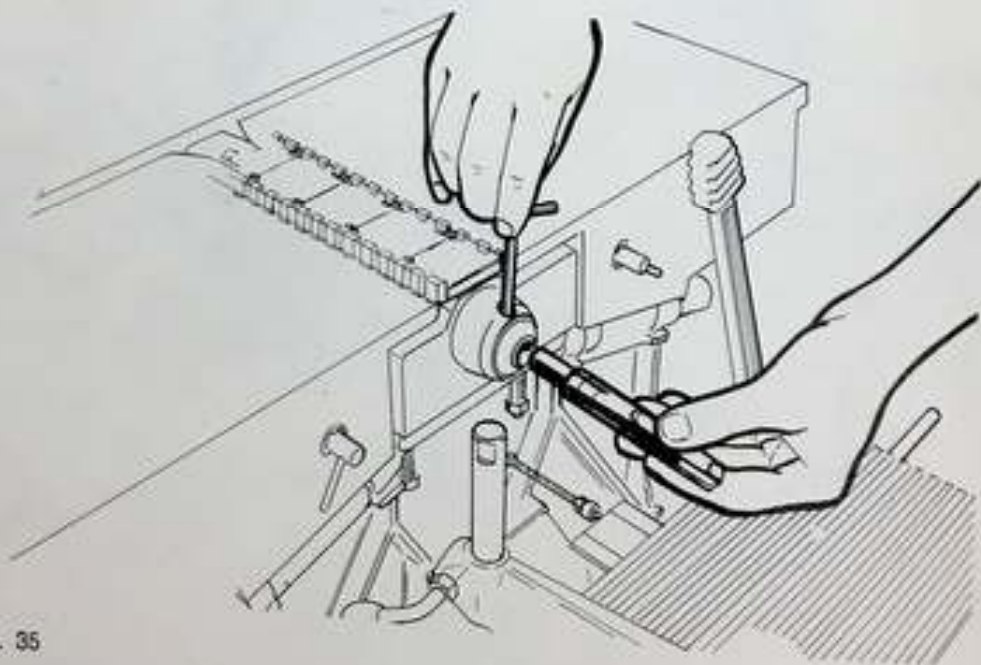


fig. 35

The mortising bits rotate clockwise and they should be mounted by tightening the clamping screw with the Allen wrench. *Do not forget to remove the wrench when you have finished.* Reducing bushes are supplied for smaller shank diameters (Fig. 35). Since the mortiser chuck is mounted on the planer spindle, the hinged guard must be mounted on the planer before you start work.

If you are cutting a through mortise, you will push the piece of wood clamped to the table until the bit has come through the other side. But if you are making a blind mortise, you must set the stop before you start cutting. You will also have to set the longitudinal stops so that the mortise will be the right length.

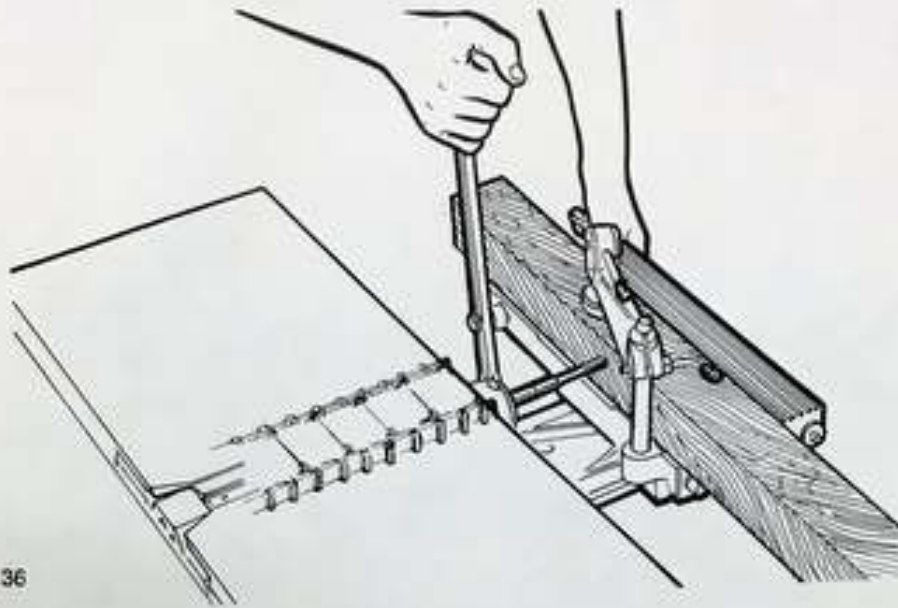


fig. 36

Remember that the mortiser chuck takes bits with a 16 mm diameter shank only. If you want to use smaller diameter shanks, use the reducing bushes (for 8, 10 and 13 mm diameters) supplied in the jute bag, together with the bit clamping screw.

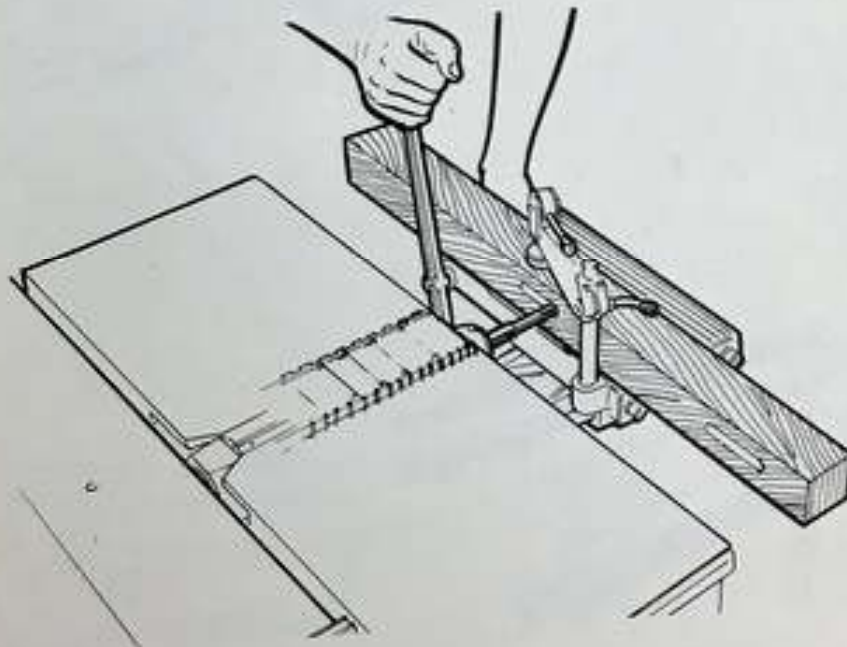


fig. 37

Caution! It is advisable to remove the bit clamping screw when you have finished mortising because otherwise it might fall out and damage the machine.

The special squaring saddle

Before mounting the special squaring saddle you must remove the standard saddle by unscrewing the Allen screw located at one end of the guide rod and sliding the rod (B) out. Mount the support on this rod and tighten the Allen screw (A).

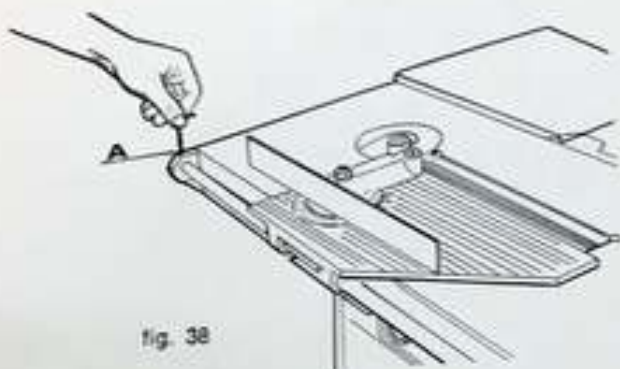


fig. 38



fig. 39

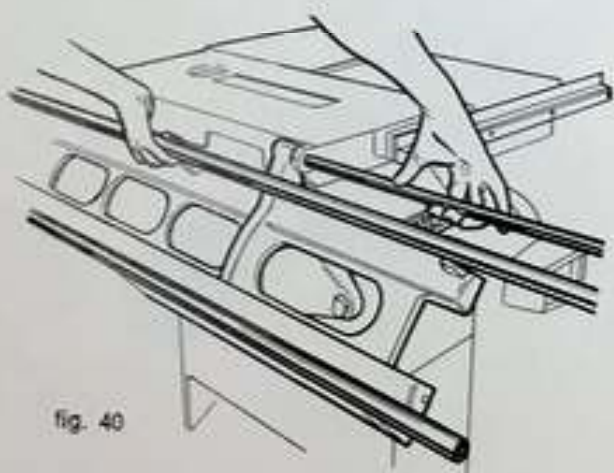


fig. 40

Now the table can be installed; place bearings (C) and (D) on the upper way (E), then place bearing (F) on the lower way. If bearing (H) is not properly aligned, it can be lowered by loosening clamping screw (L) and rotating eccentric pin (I) by inserting a lever in the hole.

Once the table has been properly positioned, rotate pin (I) in the opposite direction until bearing (H) touches the upper way (E). The table can be aligned with the fixed table of the machine by adjusting the two alignment knobs (M) and the two alignment screws (N). Now lock the knobs by tightening the two locking nuts (O) and tighten the Allen screws (N) to eliminate all play in the table support. Alignment can be checked with a straight edge or with the fence (P). Insert the stand rod (Q) in the hole in the head of the clamping bolt, push the threaded end through the hole on the sliding table support, then screw on and tighten nut (S).

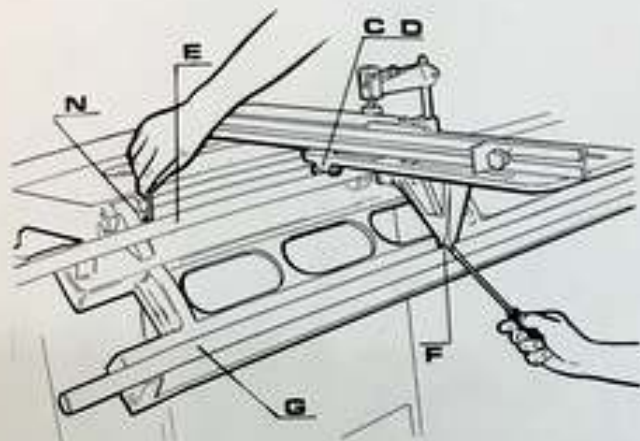


fig. 41

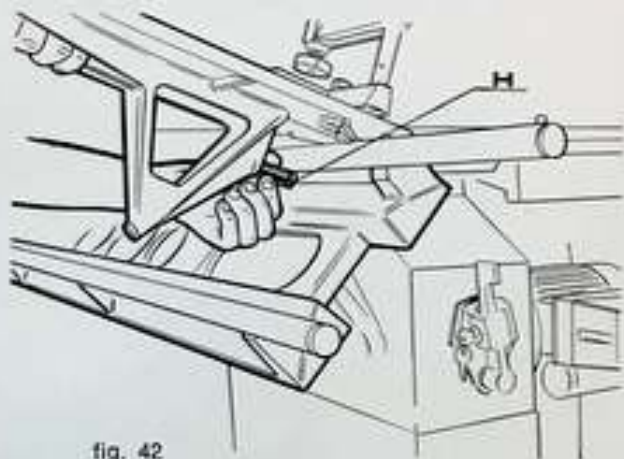


fig. 42

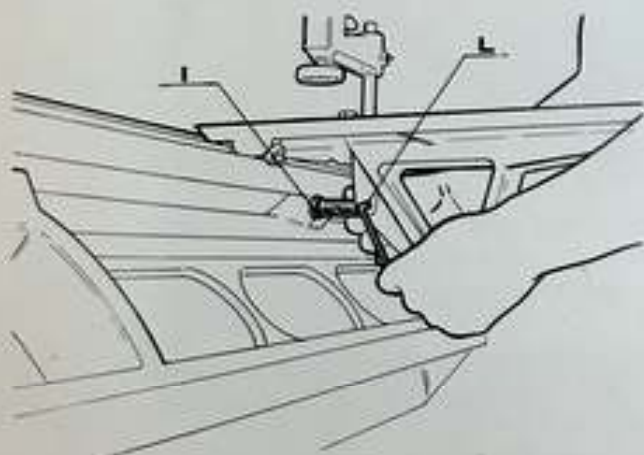


fig. 43

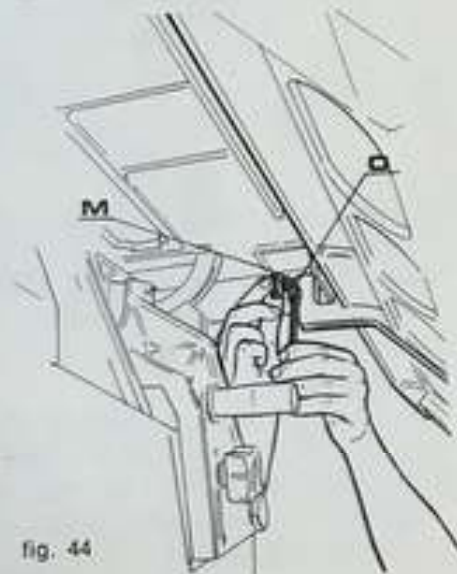


fig. 44

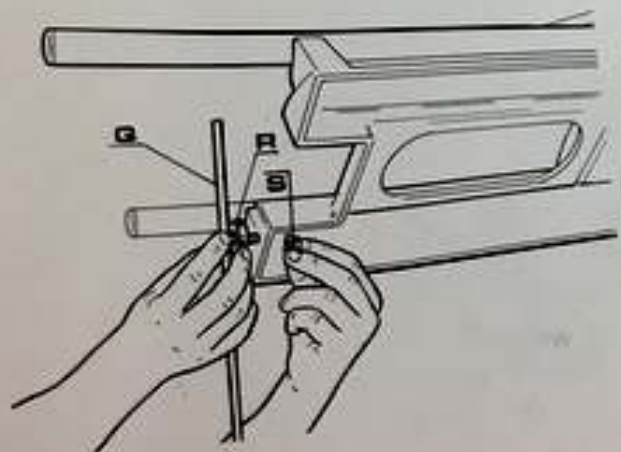


fig. 45

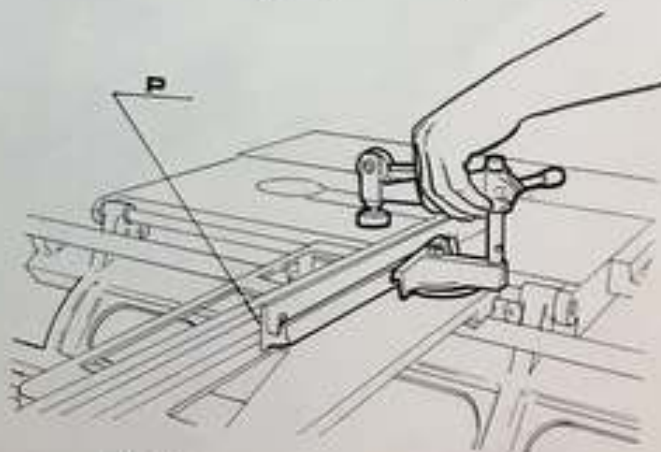


fig. 46

Special international guards

As you know, Zinken Italiana supplies special guards which will offer you maximum safety, to international standards. These guards have been designed to be used with this machine and they never get in your way.

Let's see how to mount them:

1) For the special guard on the surfacing planer, just screw the support on to the side of table B (Fig. 47) using the holes which have been provided.

This fiber glass guard can be moved both horizontally and vertically and it can be swung back out of the way.

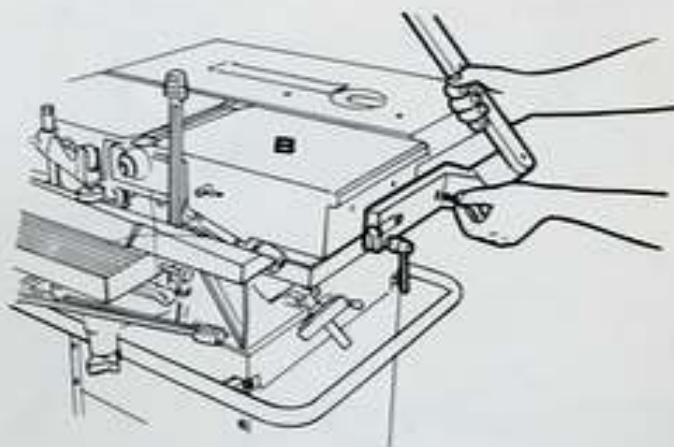


fig. 47

2) The same support is also used for mounting the special guard on the circular saw (Fig. 47).

Insert the short end of the tubular mounting arm in the hole provided in the support and tighten the locking handle. The guard arm should now be mounted on the tubular arm and the locking handle should be tightened (Fig. 48).

This guard is independent of the riving knife and it allows you to make cuts where the teeth of the blade do not project beyond the upper surface of the workpiece in absolute safety.

Furthermore, the whole guard assembly can be swung back out of the way when not in use.

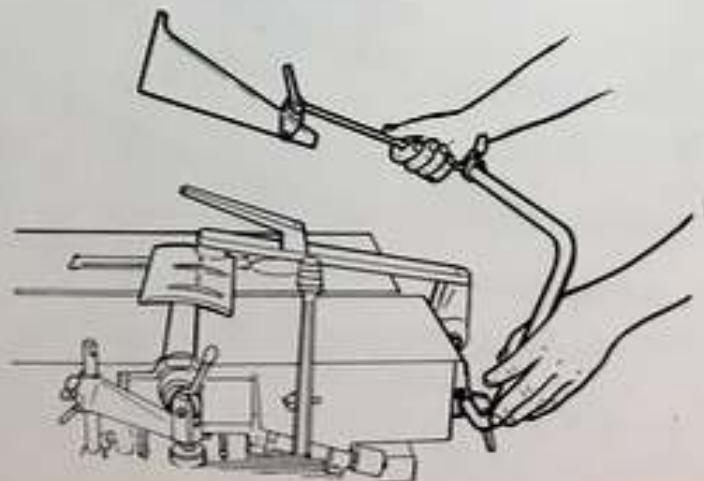


fig. 48

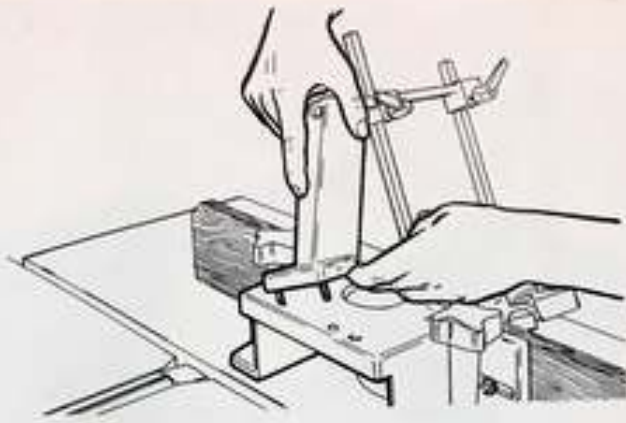


fig. 49

3) To mount the shown guard on the spindle moulder, first you should mount the standard aluminum guard support using the two black threaded clamping knobs. Then mount the rod support and tighten the clamping screws. Insert the horizontal rod in this support and mount the vertical and horizontal pressure units on it and position them. This guard makes it impossible for the operator to get his hands near the cutting tool.

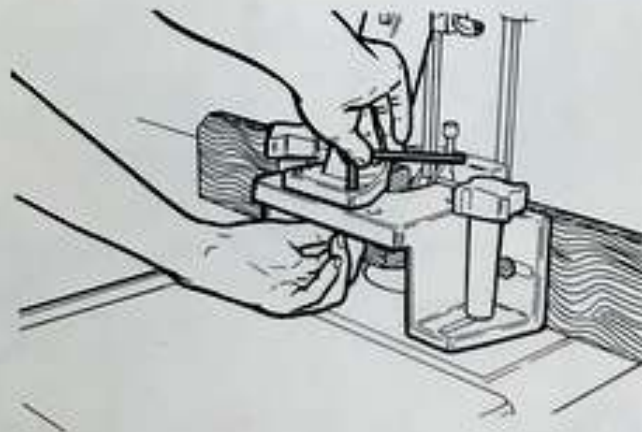


fig. 50

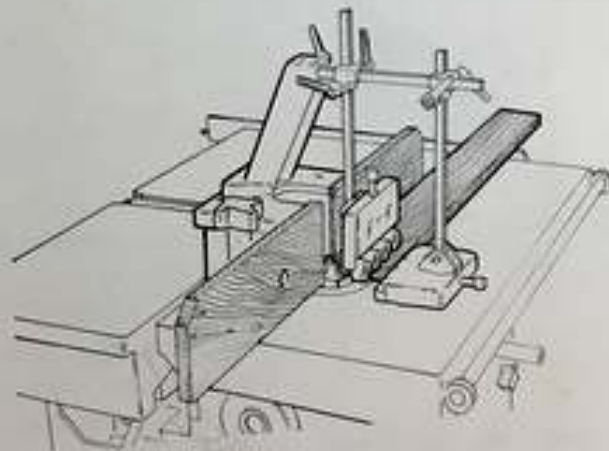


fig. 51

Base

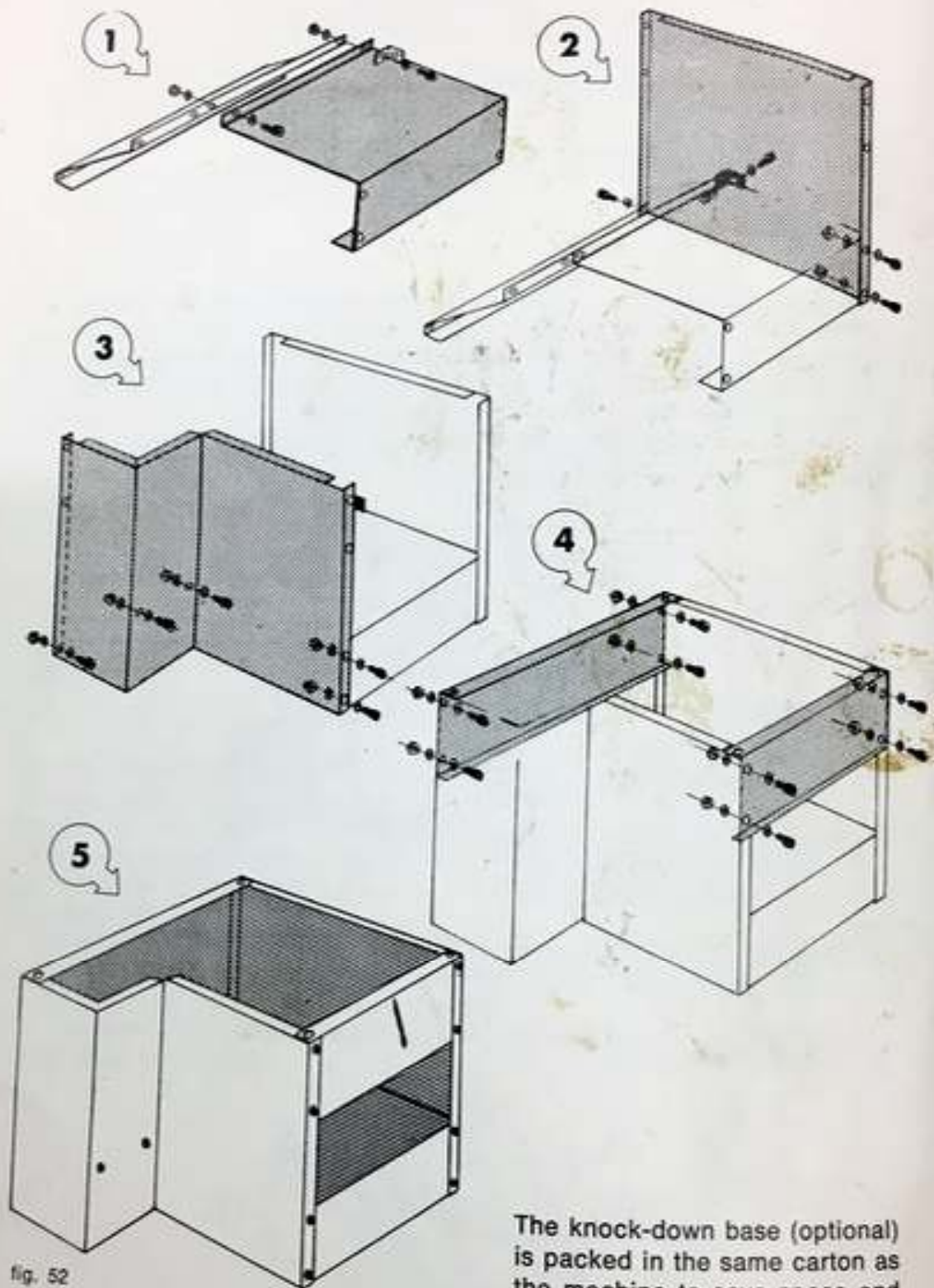


fig. 52

The knock-down base (optional) is packed in the same carton as the machine to save space and shipping costs.

The base also provides an exhaust chute for shavings and convenient tool storage.

It is very easy to assemble, especially since all the bolts are identical. The above drawings show the different assembly steps. You should follow this procedure, starting by assembling the two gray components shown in Fig. 52-1.

Carrying rods

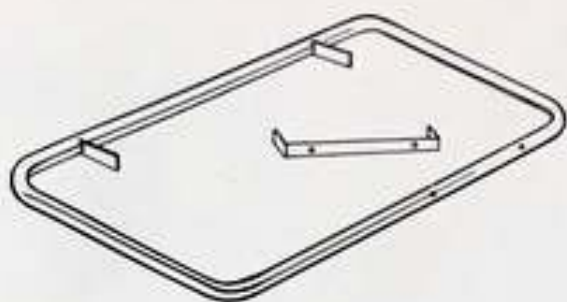


fig. 53

The convenient carrying rods are a wonderful accessory when you have to move the machine.

They are easy to mount: just insert the prongs in the slots provided on the circular saw-spindle moulder side, then place the connecting strip in the slots on the mortiser side and fasten the rods to it with the two screws which have been provided.



fig. 54

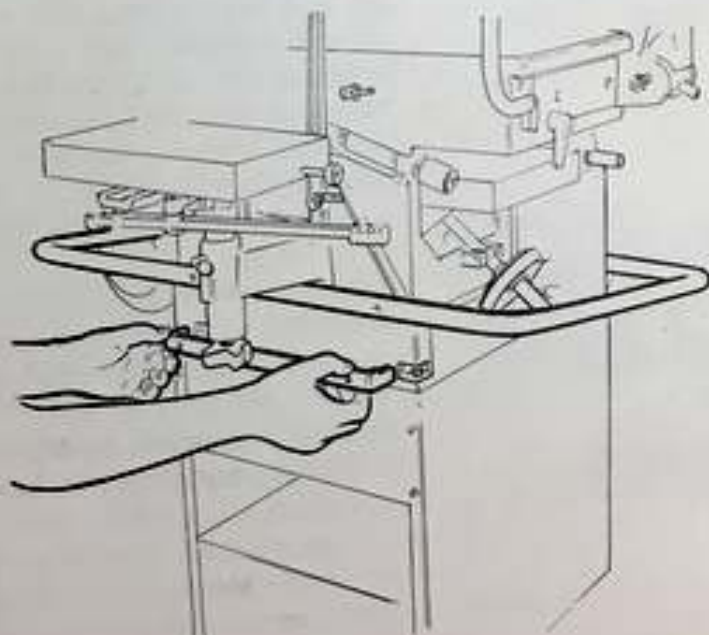


fig. 55

Belts replacement

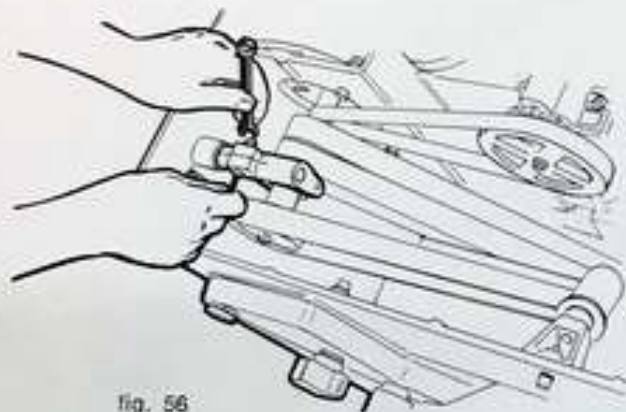


fig. 56

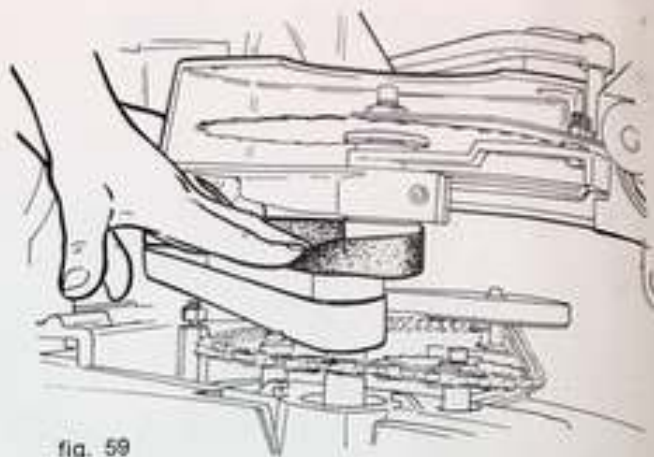


fig. 59



fig. 60

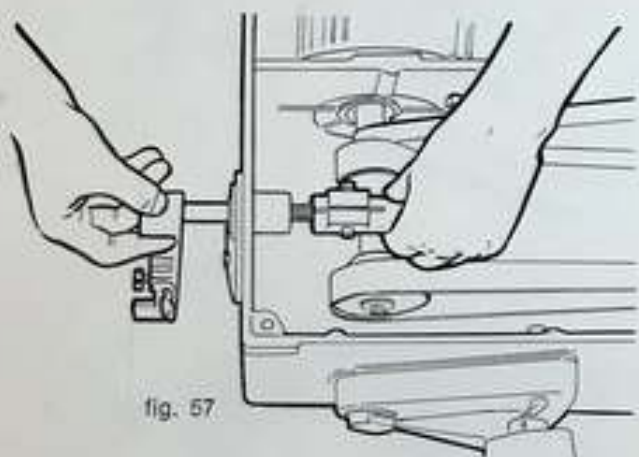


fig. 57

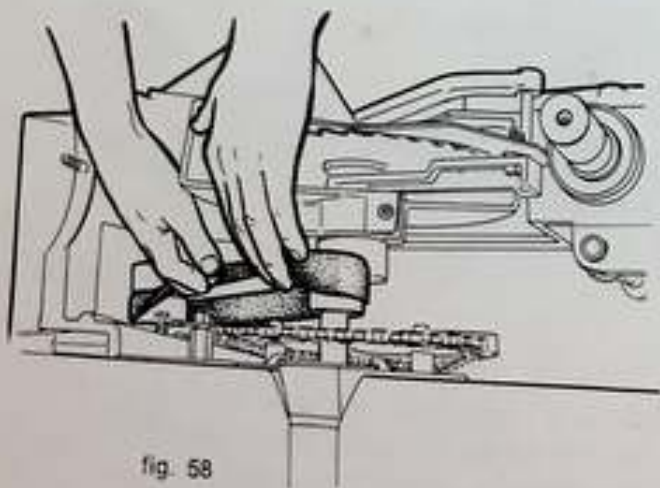


fig. 58

HOW TO REMOVE THEM

Turn the machine upside down. To replace the automatic feed, planer and saw drive belts, the first thing to do is remove the shifting fork (Fig. 56). This can be done by unscrewing the nut with an open end wrench while you prevent the bolt from turning with an Allen wrench. Hold the shifting fork in one hand and pull the selector lever out with the other (Fig. 57). Now the belt that has to be changed can be removed from the pulley first and then from the drive shaft. Figures 58, 59 and 60 show how this should be done for the feed, planer and saw drive belts.

NB: You have to remove the spindle moulder drive belt from the motor pulley (Fig. 60) before you can remove the other belts.

You do not have to remove the shifting fork to change the spindle moulder drive belt.

Obviously you have to remove the planer and saw drive belts before you can remove the automatic feed belt. And to remove the planer drive belt you have to remove the saw drive belt first (but not the feed drive belt, because it is the farthest inside).

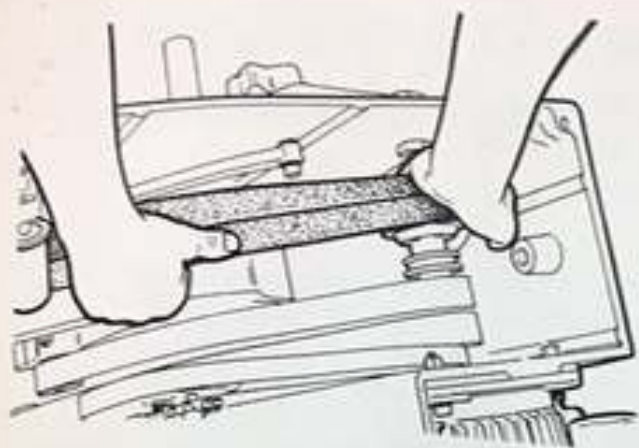


fig. 61

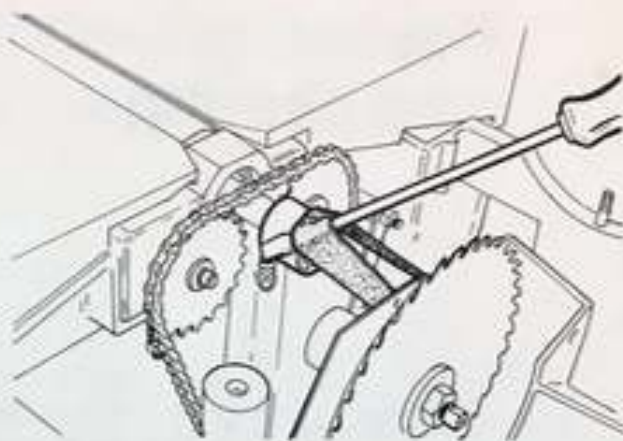


fig. 62

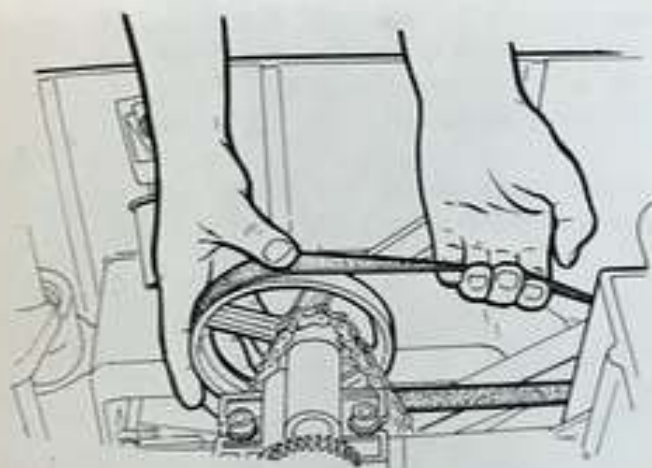


fig. 63

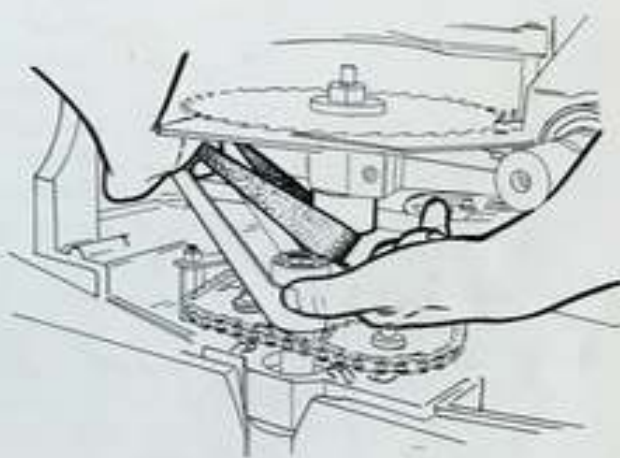


fig. 64

HOW TO INSTALL NEW BELTS

- 1) Mount the automatic feed drive belt on the drive shaft since it does not have any pulleys. Then mount the planer and saw drive belts on their drive pulleys.
- 2) Mount the automatic feed drive belt on its driven pulley; do the same with the planer and saw drive belts.
- 3) Mount the spindle moulder drive belt on the spindle *first*, then pass it under the belt tensioning device (Fig. 65) and mount it on its drive pulley.

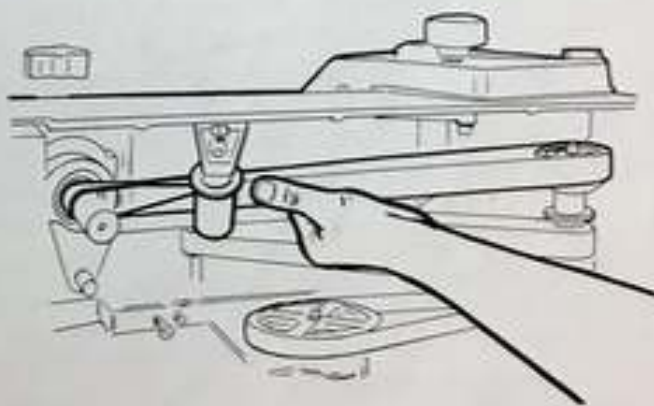


fig. 65

Replacing circular saw bearings



fig. 66

To replace the circular saw bearings, you must lift up and remove the work table (unscrew the nuts completely). Then you have to remove the metal blade guard, the blade, the drive belt and the pulley (see pages 18 and 33). Loosen the Allen screw and its nut which secure the arbor and bearings to the aluminum casting and pull them out.

Remove the retaining ring from the arbor; now you can remove the arbor from the bearings (a few light blows with a mallet may be necessary). Now you can remove the bearings from the bushing and replace them. To reassemble, just follow the same steps in the opposite order: put the bushing complete with arbor and new bearings back in its seat, replace the retaining ring and tighten the Allen screw and the nut on the casting.

Replace the metal blade guard, the blade, pulley and drive belt and the work table.

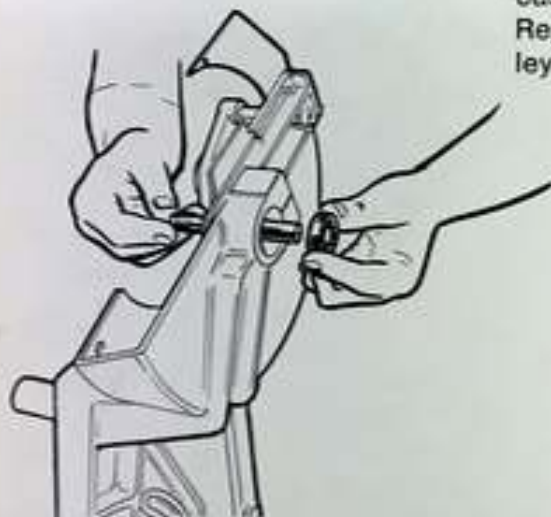


fig. 67

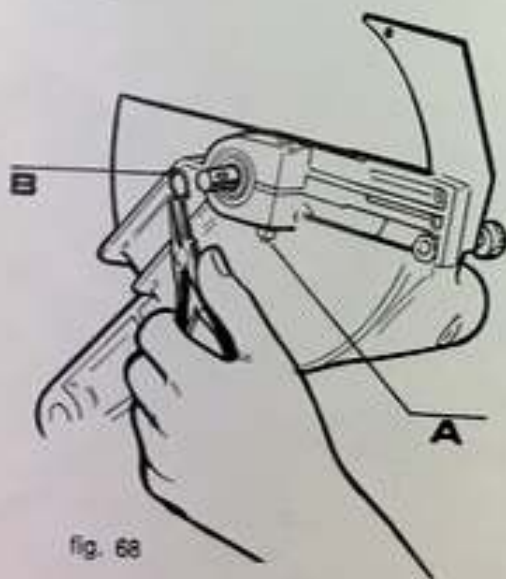


fig. 68

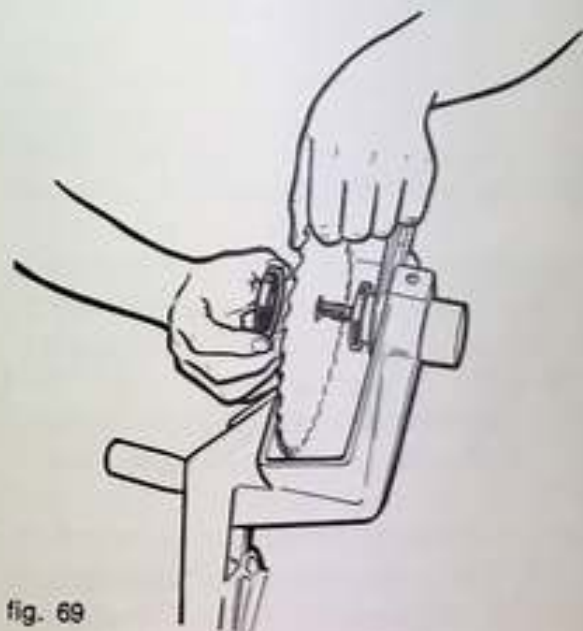


fig. 69

Replacing drive shaft bearings

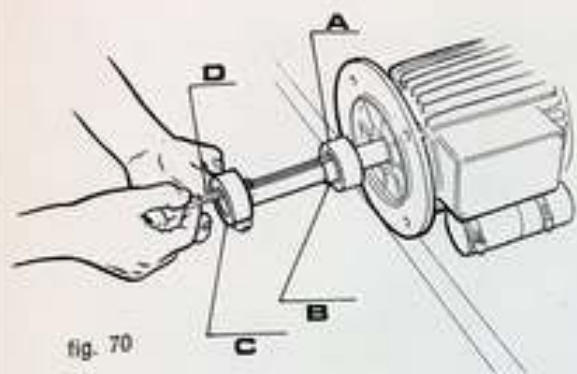


fig. 70

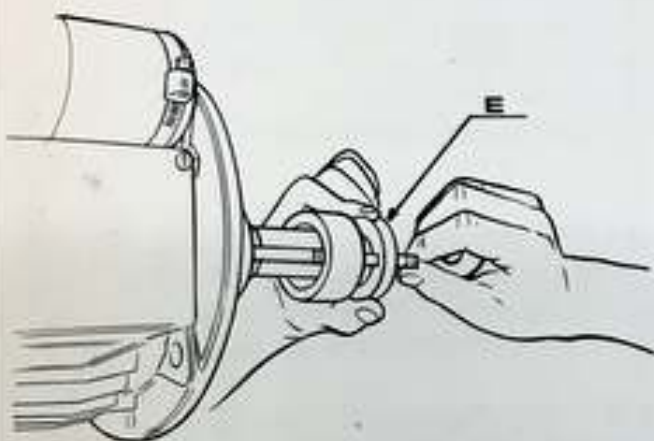


fig. 71

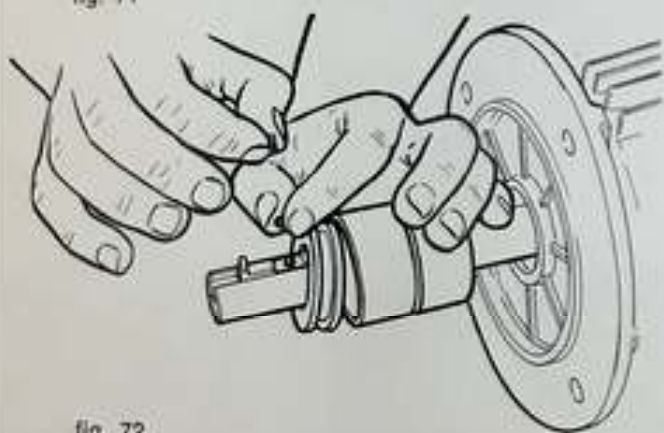


fig. 72

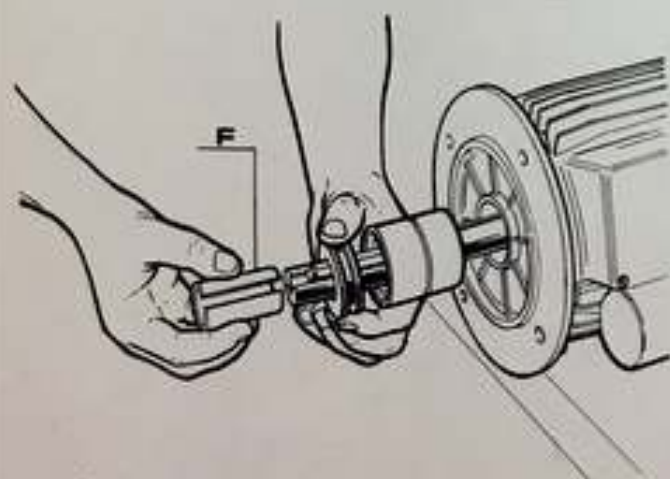


fig. 73

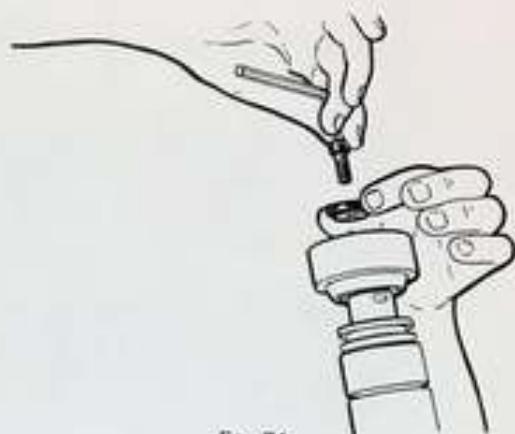


fig. 74

We will explain how the drive shaft and pulleys were mounted so that you will be able to understand the operations involved in disassembling them.

First of all, we placed the retaining ring in its groove and mounted the first pulley (A) – planer drive – with the bearing already mounted on it. The pulley was pushed down the shaft until it was touching the retaining ring.

Then we mounted the spacer (B), followed by the next pulley (C) – saw drive. – The key (D) was placed in the groove on the shaft (Fig. 70). Before sliding the key all the way along the groove on the drive shaft, we mounted the spacer (E). Then we mounted the steel ball and the spring in the hole on the key; these are held in place by the spacer (E) (see Fig. 72). Next we slid the spindle moulder spacer (F) on the drive shaft until it touched the sides of the key; a few light blows with a mallet drove it into the hole in the center of spacer (E).

Finally, we mounted the spindle moulder drive pulley on the drive shaft and secured the whole assembly with the cap and the Allen screw shown in Fig. 74.

To replace the drive shaft bearings, you must first remove the Allen screw and the cap (Fig. 74) (if necessary, you should remove the shifting fork beforehand); then use a puller (many different drive shaft and replace the bearings. Then reassemble the drive shaft assembly as described above.

Problems which may arise and how to eliminate them

You may have one of the following problems with your machine:

- 1) When your machine is new, one of the tools which you are not using may rotate slowly together with the one you are using. This phenomenon is quite normal: the sealed, prelubricated bearings have to go through a running-in period. This problem will gradually disappear in a short time.
- 2) The miter fence on the tenoning saddle does not travel parallel to the saw blade. If this should happen, make sure that it runs parallel in the portion corresponding to the saw blade diameter, within a tolerance of 1 mm. If it is out of parallel in this portion by more than 1 mm, use the four adjusting screws in the semicircular guides underneath the work table to bring it within the specified tolerance. The fence has been designed to be somewhat out of parallel in order to facilitate outfeed.
- 3) The spindle moulder table no longer tilts through 45° because the grooves the semicircular guides slide along have become clogged with shavings. If this should happen, remove the table and clean the grooves thoroughly; remount the table and line the reference mark up with 0°.

CAUTION: When raising or lowering the thicknessing planer table or the spindle moulder spindle, be careful not to turn the handwheels too far.

Maintenance

Thanks to its special design and to the special sealed ball bearings, your ZC 21 never needs any maintenance. Just make sure that you clean it after use.

We recommend that you clean the tenoning saddle guide rod carefully; give it a light coat of oil if necessary. Remove the shavings which accumulate under the planer tables frequently.

We also recommend lubricating the thickening planer feed rolls every 50-60 hours of use; inject the lubricant in the appropriate holes underneath the planer spindle support. If you are not going to be using the machine for a long time or if you use it in a damp room, we recommend protecting all the steel parts with a thin coat of rust preventer; you should also check the drive belts, because they may deteriorate if the humidity is high.

The Zinken Italiana S.p.A. is allowed to make all modifications or variations on the universal woodworking ZC 21 any time and without notice.

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