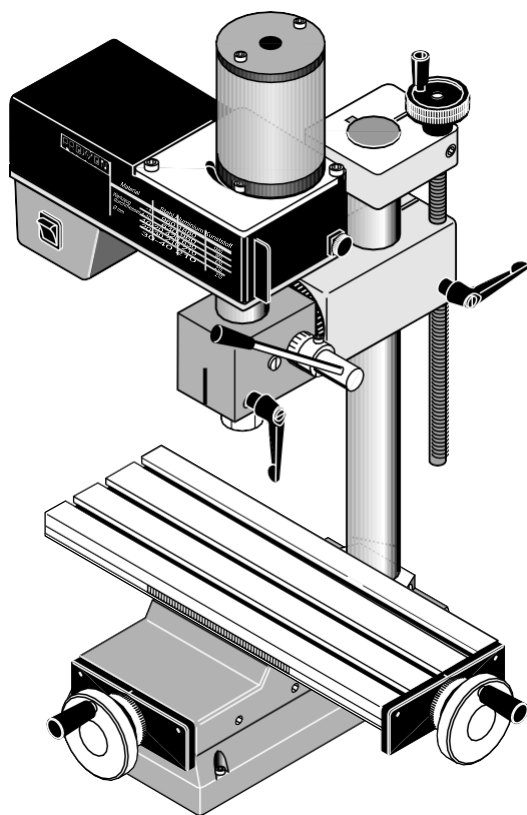


PROXXON

FF 230



Manual

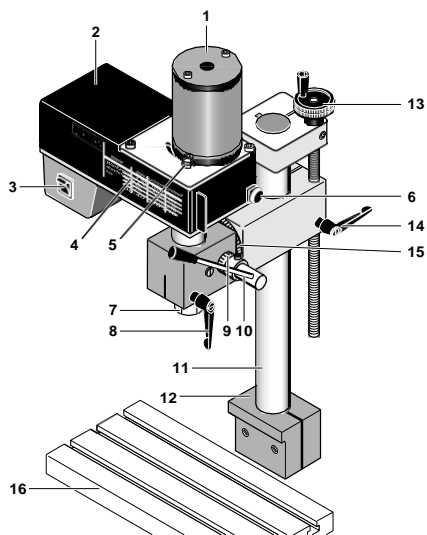


Fig. 1

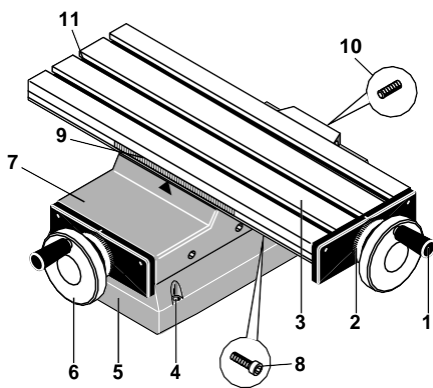


Fig. 2

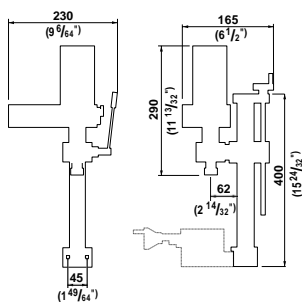


Fig. 3

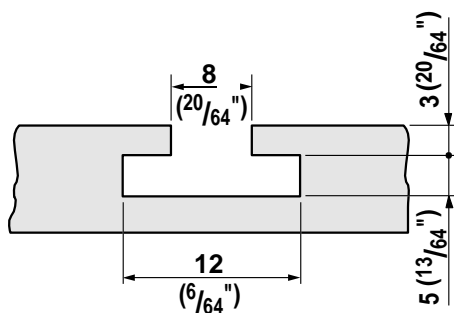


Fig. 4

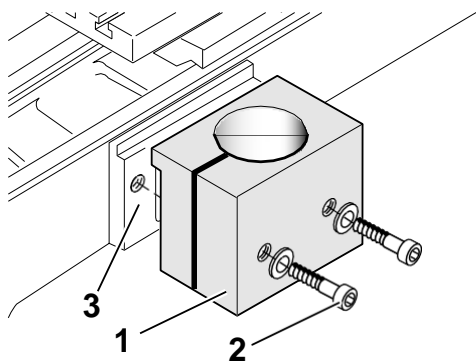


Fig. 5

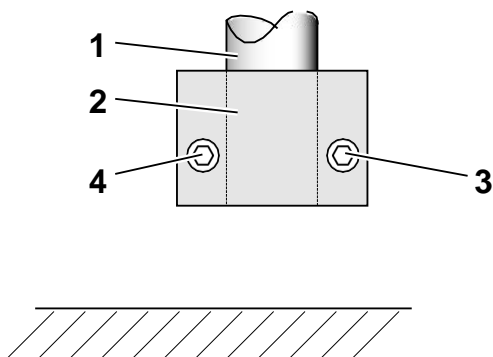


Fig. 6

Foreword

Dear Customer,

This instruction manual deals with the PF 230 and the compound-type table KT 230 to be used with it. It addresses those of our customers having purchased the compoundtype table, the milling machine, or both as the type FF 230 machine. No matter what your preference was: Read this manual carefully before using your machine and observe the instructions. Please pay particular attention to the safety instructions and always work with due care.

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Please read carefully!

Using this instruction manual will

- **make it easier for you** to get used to the machine
- **help prevent** faults occurring due to improper use and
- **increase** the service life of your machine.

Safety regulations

1. **KEEP GUARDS IN PLACE** and in working order.
2. **REMOVE ADJUSTING KEYS AND WRENCHES.** Form habit of checking to see that keys and adjusting wrenches are removed from tool before turning it on.
3. **WORK AREA CLEAN.** Cluttered areas and benches invite accidents.
4. **DON'T USE IN DANGEROUS ENVIRONMENT.** Don't use power tools in damp or wet locations, or expose them to rain. Keep work area well lighted.
5. **KEEP CHILDREN AWAY.** All visitors should be kept safe distance from work area.
6. **MAKE WORKSHOP KID PROOF** with padlocks, master switches, or by removing starter keys.

7. **DON'T FORCE TOOL.** It will do the job better and safer at the rate for which it was designed.
8. **USE RIGHT TOOL.** Don't force tool or attachment to do a job for which it was not designed.
9. **USE PROPER EXTENSION CORD.** Make sure your extension cord is in good condition. When using an extension cord, be sure to use one heavy enough to carry the current your product will draw. An undersized cord will cause a drop in line voltage resulting in loss of power and overheating. Table 1 shows the correct size to use depending on cord length and nameplate ampere rating. If in doubt, use the next heavier gage. The smaller the gage number, the heavier the cord. Exception No. 1: The reference to the table and the table itself may be omitted if a statement indicating the appropriate gage and length is incorporated into the instruction. Exception No. 2: The information regarding extension cords need not be provided for a permanently connected tool.
10. **WEAR PROPER APPAREL.** Do not wear loose clothing, gloves, neckties, rings, bracelets, or other jewelry which may get caught in moving parts. Non-slip footwear is recommended. Wear protective hair covering to contain long hair.
Exception: The reference to gloves may be omitted from the instructions for a grinder.
11. **ALWAYS USE SAFETY GLASSES.** Also use face or dust mask if cutting operation is dusty. Everyday eyeglasses only have impact resistant lenses, they are NOT safety glasses.
12. **SECURE WORK.** Use clamps or a vise to hold work when practical. It's safer than using your hand and it frees both hands to operate tool.
13. **DON'T OVERREACH.** Keep proper footing and balance at all times.
14. **MAINTAIN TOOLS WITH CARE.** Keep tools sharp and clean for best and safest performance. Follow instructions for lubricating and changing accessories.
15. **DISCONNECT TOOLS** before servicing; when changing accessories, such as blades, bits, cutters, and the like.
16. **THE RISK OF UNINTENTIONAL STARTING.** Make sure switch is in off position before plugging in.
17. **USE RECOMMENDED ACCESSORIES.** Consult the owner's manual for recommended accessories. The use of improper accessories may cause risk of injury to persons.
18. **NEVER STAND ON TOOL.** Serious injury could occur if the tool is tipped or if the cutting tool is unintentionally contacted.
19. **CHECK DAMAGED PARTS.** Before further use of the tool, a guard or other part that is damaged should be carefully checked to determine that it will operate properly and perform its intended function - check for alignment of moving parts, binding of moving parts, breakage of parts, mounting, and any other conditions that may affect its operation. A guard or other part that is damaged should be properly repaired or replaced.
20. **OF FEED.** Feed work into a blade or cutter against the direction of rotation of the blade or cutter only.
21. **NEVER LEAVE TOOL RUNNING UNATTENDED. TURN POWER OFF.** Don't leave tool until it comes to a complete stop.

Additional safety instructions

This milling machine is for indoor use only. Do not expose to rain or use in damp locations.

Use only accessories recommended for this milling machine. Follow the instructions that accompany accessories. Use of improper accessories may cause hazards.

Do not attempt to modify this tool or create accessories not recommended for use with this tool. Any such alteration or modification is misuse and could result in hazardous condition leading to possible serious injury.

To avoid injury from unexpected starting or electrical shock, do not plug the power cord into a power source receptacle during unpacking and assembly. This cord must remain unplugged whenever you are working on the milling machine.

If any part is missing or damaged, do not plug the milling machine in until the missing or damaged part is replaced, and assembly is complete. To avoid electrical shock, use only identical replacement parts when servicing grounded tools.

For your safety, never connect the plug to the power source receptacle until the assembly and adjustment steps are completed, and you have read and understood the safety and operating instructions.

To avoid injury from accidental start, make sure the switch is in the OFF position and the plug is not connected to the power source receptacle before changing any parts or tools (i. e. miller).

To avoid injury from accidental start, make sure the switch is in the OFF position and the plug is not connected to the power source receptacle before making any adjustments.

For your own safety, do not plug the tool into the power source receptacle or insert the switch key, until the parts are correctly installed and adjustments have been made.

For your own safety, use only millers sized and recommended for this milling machine. Follow the instructions that accompany the millers.

To avoid fire or toxic reaction, never use gasoline, naphtha, acetone, lacquer thinner, or similar highly volatile solvents to clean the milling machine.

Do not allow brake fluids, gasoline, or penetrating oils to come in contact with the plastic parts. They contain chemicals that can damage or destroy plastics.

Only qualified service technicians should do all electrical or mechanical repairs.

When servicing use only PROXXON replacement parts. Use of any other parts may create a hazard or cause product damage.

Any attempt to repair or replace electrical parts on this lathe may create a hazard unless repair is done by a qualified service technician. Repair service is available at your PROXXON service center (You find the address at the back of this manual).

Grounding instructions

1. All grounded, cord-connected tools:

In the event of a malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This tool is equipped with an electric cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into a matching outlet that is properly installed and grounded in accordance with all local codes and ordinances. Do not modify the plug provided -if it will not fit the outlet, have the proper outlet installed by a qualified electrician.

Improper connection of the equipment-grounding conductor can result in a risk of electric shock. The conductor with insulation having an outer surface that is green with or without yellow stripes is the equipment-grounding conductor. If repair or replacement of the electric cord or plug is necessary, do not connect the equipment-grounding conductor to a live terminal. Check with a qualified electrician or service personnel if the grounding instructions are not completely understood, or if in doubt as to whether the tool is properly grounded. Use only 3-wire extension cords that have 3-prong grounding plugs and 3-pole receptacles that accept the tool's plug.

Repair or replace damaged or worn cord immediately.

2. Grounded, cord-connected tools intended for use on a supply circuit having a nominal rating less than 150 volts:

This tool is intended for use on a circuit that has an outlet that looks like the one illustrated in Sketch A in Figure 18. The tool has a grounding plug that looks like the plug illustrated in Sketch A in Figure 18. A temporary adapter, which looks like the adapter illustrated in Sketches B and C, may be used to connect this plug to a 2-pole receptacle as shown in Sketch B if a properly grounded outlet is not available. The temporary adapter should be used only until a properly grounded outlet can be installed by a qualified electrician. The green-colored rigid ear, lug, and the like, extending from the adapter must be connected to a permanent ground such as a properly grounded outlet box.

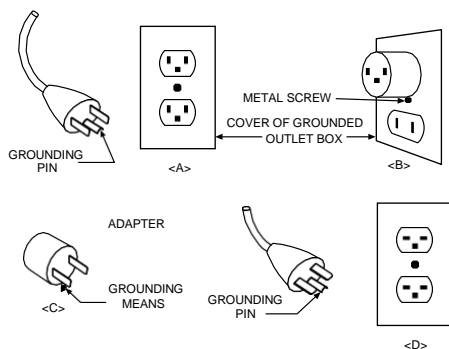


Fig. 18

Grounding methods

Table 1**Minimum gage for cord**

Ampere Rating		Volts	Total length of cord in feet			
		120 V	25 ft.	50 ft.	100 ft.	150 ft.
		240 V	50 ft.	100 ft.	200 ft.	300 ft.
More Than	Not More Than	AWG				
0	6		18	16	16	14
6	10		18	16	14	12
10	12		16	16	14	12
12	16		14	12	Not Recommended	

Note:

Keep this instruction manual in an easily accessible place. Only operate this machine if you are qualified to do so and follow the guidelines in this instruction manual.

PROXXON does not accept responsibility for the safe functioning of the machine

- if it is handled in a manner which constitutes improper use,
- if it is used for other purposes which are not specified in the instruction manual,
- if the safety regulations are not observed.

Warranty claims are invalid if

- the machine is incorrectly operated,
- the machine has not been sufficiently maintained.

In the interests of your safety, please always observe the safety regulations. Only use genuine PROXXON spare parts. We reserve the right to make further alterations for the purpose of technical progress. We wish you every success with your machine.

Description of the machine

The PROXXON KT 230 Compound Table and the PF 230 Milling Machine are ideally suited to the machining of plastics, light metals or steel. When working with the compound table, please always observe the safety regulations for the drilling or milling machine which is in use and please remember that the compound table and milling machine are precision tools. Therefore, please always work with due care.

Warning:

This Milling machine for indoor use only. Do not expose to rain or use in damp locations!

Warning:

Do not attempt to modify this tool or create accessories not recommended for use with this tool. Any such alternation or modification is misuse and could result in hazardous condition leading to possible serious injury!

Warning:

While using the compound table always follow the security instructions of the used drilling or milling device!

We offer you the following options for the 230 fine milling system:

KT 230:

- Operating instructions and safety regulations
- Compound-type table

PF 230:

1. Milling spindle, complete with motor and belt transmission
2. Pillar (Ø 34mm)
3. Mounting block for lathe (not included in FF 230)
4. Collet chucks Ø 6, 8, and 10 mm incl. union nut
5. Milling table with T-grooves (not included in FF 230)
6. Auxiliary tools
7. Operating instructions and safety regulations

FF 230:

1. Comprises the PF 230 milling assembly complete with KT 230 compound-type table, but without groove table, item 16 in Fig. 1.

General view, PF 230 milling machine (Fig. 1)

1. Motor
2. Cover
3. On / Off switch
4. Speed Table
5. Motor mounting screw
6. Knurled screw for cover
7. Union nut for collet chuck
8. Clamp screw for sleeve
9. Scale for depth adjustment
10. Drill lever
11. Pillar (Ø 34mm)
12. Mounting block for lathe
13. Handwheel for height adjustment
14. Screw for height adjustment
15. Scale for angle adjustment
16. Milling table for lathe PD 230/E
(Not included with FF 230 milling machine, but only with PF 230)

General view, KT 230 compound-type table (Fig. 2)

1. Handwheel for X direction (170 mm travel)
2. Scale ring
3. Work table (270 mm x 80 mm)
4. Table mounting hole
5. Pedestal
6. Handwheel for Y direction (60 mm travel)
7. Support
8. Clamping screw
9. Scale
10. Pillar clamping screw
11. T-grooves

The PROXXON PF 230 milling machine may be used in conjunction with a compound-type table or the PROXXON PD 230/E lathe (in the latter case, the lathe support is used in place of the compound-type table).

Technical data

PF 230 milling machine technical data

Voltage:	115 Volt, 60Hz
Power rating:	140 Watt
Short-term operation	10 min.
6 spindle revolutions by re-positioning the belt: 280, 540, 780, 910, 1710 and 2500/rpm	
Sleevestroke	30 mm ($1 \frac{9}{32}$ "
Vertical adjusting displacement	200 mm ($7 \frac{1}{16}$ "
Generated noise	≤ 70 dB (A)
Vibrations	≤ 2.5 m/s ²
Dimensions:	refer to Fig. 3
Weight	approx. 7.5 kg (16.5 lb)

Only for operation in closed rooms.

KT 230 compound-type table technical data

Work area:	270 mm x 80 mm
Adjustment travel in X direction:	170 mm ($10 \frac{5}{8}$ " x $3 \frac{5}{32}$ ")
Adjustment travel in Y direction:	60 mm ($2 \frac{3}{8}$ ")
Weight:	9.5 kg (21 lb)
Dimensions of T-grooves:	refer to Fig. 4
Groove spacing:	25 mm (1")
Feed per rotation:	1.5 mm ($\frac{1}{16}$ ")
Feed per graduation line:	0.05 mm ($\frac{2}{64}$ ")

Assembly of the milling machine

Warning:

To avoid injury from unexpected starting or electrical shock, do not plug the power cord into a power source receptacle during unpacking and assembly. This cord must remain unplugged whenever you are working on the milling machine.

Warning:

If any part is missing or damaged, do not plug the milling machine in until the missing or damaged part is replaced, and assembly is complete. To avoid electrical shock, use only identical replacement parts when servicing grounded tools.

Warning:

For your safety, never connect the plug to the power source receptacle until the assembly and adjustment steps are completed, and you have read and understood the safety and operating instructions.

Mounting on lathe PD 230/E

1. Mounting lathe on a firm base.
2. Attach the mounting block 1 (Fig. 5) to the lathe 3, using screws 2 (Do not tighten screws yet!)
3. Tighten screw 3 (Fig. 6) and insert pillar 1.
4. Tighten screw 4 to clamp the pillar.
5. Attach the milling table 3 (Fig. 7) to the lathe support using screws 2 and square nuts 1.

Mounting of milling machine on KT230 compound-type table

Note:

Safe and precise operation is only possible if the machine is properly fastened to a stable work surface.

1. Attach compound-type table to work surface using 4 screws 1 (i.e. M4, not included, look at Fig. 8).
2. Insert pillar in flange and clamp using screws 2.

Warning:

For your own safety, do not plug the tool into the power source receptacle, until the parts are correctly installed and adjustments have been made.

Important!

To avoid injury from accidental start, make sure the switch is in the OFF position and the plug is not connected to the power source receptacle before changing any parts or tools (i. e. cutter)

Adjustment of the milling spindle

The milling spindle of the PF 230 can be height-adjusted in 2 ways:

1. By using the fine feed 1 (Fig. 9)
2. By using the drilling lever 2

Vertical adjustment via fine tolerance feed

1. Loosen screw 3 (Fig. 9).
2. Adjust to the desired height using the hand wheel 1 (1 rotation corresponds to 1 mm feed).
3. Screw 3 must always be tightened again.

Feed via the drilling lever

1. Loosen screw 4 (Fig. 9).
2. Loosen screw 6 and set scale 5 to zero.
3. Retighten screw 6.
4. Adjust to the desired height using the drill lever 2.
5. Retighten screw 4.

Note:

The drilling lever is not just used for height adjustment. It can be also be used for drilling. Do not tighten the screw 4 when drilling.

Swivelling the milling spindle

The entire milling spindle can be swivelled around two axes. To swivel around the vertical axis, release screw 4 (Fig. 6) and swivel the column completely into the required position. Then retighten the screw. To swivel around the lateral axis, release screw 1 (Fig. 10) and swivel the milling spindle. Set the required number of degrees on the scale 2 and retighten screw 1.

Assembly of the clamping devices for the milling machine:

Important

Never insert the collet chuck alone into the spindle! Always engage the collet chuck into the nut first! Always ensure that collet chuck and milling tool have the correct diameter for proper fit.

Please note: Further collet chuck dimensions are available as accessory equipment in addition to those collet chucks supplied. These are listed in our equipment catalogue.

Please consult our customer service department for further information.

Warning:

Use only accessories recommended for this milling machine. Follow the instructions that accompany accessories. Use of improper accessories may cause hazards!

1. Loosen union nut (7, see Fig. 1).
2. Place desired collet chuck 2: (see Fig. 11) into union nut 1 and allow to engage.
3. Insert union nut with collet chuck in the spindle and turn slightly by hand.
4. Insert milling tool into collet chuck.
5. Lock milling spindle using the spanners supplied and tighten union nut.
6. To remove collet chuck loosen union nut and remove milling tool.
7. Now remove union nut with collet chuck completely from milling spindle.
8. Disengage collet chuck using light sideways pressure 3 (Fig. 11) and remove from union nut.

Setting the spindle rotational speed

A total of 6 spindle speeds may be adjusted by shifting the V-belt (Fig. 12 a/b): 280, 540, 780, 910, 1710, and 2500 rpm.

Note:

Tighten belt only lightly! A belt installed too tightly places excessive loads on the motor and machine mechanical system!

1. Loosen knurled screw 4 (Fig.13) and open cover 7.
2. Loosen screw 5 using an Allen key by approx. 2 turns in order to release belt pulley tension.
3. Place both belts in the desired position.
4. Press belt pulley 1 outwards with the belt tightener 8 below the gear wheels until the belt is tight. Tighten screw 5.
5. Should both belts be tensioned unevenly, the upper belt may be tensioned separately. To do so, loosen screw 2 and push motor 3 outwards until upper belt is tensioned.
6. Retighten screw 2.

Important:

The belt cover must always be closed during operation.

Only tension the belts lightly. A too highly tensioned belt strains the motor and the mechanics of the machine!

Replacement belts are available from the PROXXON central service team (address on the rear side of these instructions).

Working with the machine

Important:

The belt cover must always be closed during operation.

Important

Always wear protective goggles when milling. Take great care to observe the safety regulations above.

1. Securely fasten the work piece using clamps, in a vice, or to the support of the lathe chuck. Alternatively, you can clamp the work piece in a machine vice and mount the vice on the work table using the T-grooves.
2. Adjust desired milling depth.
3. Tighten clamping screws 3 and 4 (Fig. 9).
4. Ensure that the milling tool does not touch the work piece.
5. Ensure that the proper spindle speed has been adjusted.
6. Switch on milling machine at switch 3 (Fig. 1).
7. Work using a suitable feed

Note:

The feed must always take place against the cutting direction of the milling cutter (also refer Fig.14.)

Important!

Always provide feed by hand only! When using the milling machine in conjunction with the lathe PD 230/E, feed action must not occur via the lathe's automatic feed. Risk of injury!

Repair and maintenance

Important:

Disconnect mains power before cleaning and maintaining unit.

Do not use compressed air when cleaning.

Setting compound-type table guide play

If, after a time, the compound-type table guide is found to have too much or too little play, the play can be reset using the adjusting screws 2 (Fig. 15). For this purpose, loosen adjustment screw lock nuts 1 and screw in all adjustment screws evenly until play is eliminated. Retighten lock nuts afterwards.

Setting compound-type table spindle play

If play of the spindles increases, release the nut 1 using a socket spanner 2 or i. e. a ratchet. (Fig. 16) approx. one half turn. Then turn the hand wheel to the right hand direction until the play has been eliminated. Now retighten the nut 1 firmly, while holding the handwheel in the position it has been adjusted.

Note:

See exploded view, page 10: Where necessary, play in the individual spindle threads can also be achieved by slightly tightening the spindle nut, Item 3, with the bolt, Item 25.

Warning

To avoid fire or toxic reaction, never use gasoline, naphtha, acetone, lacquer thinner, or similar highly volatile solvents to clean the Milling machine.

Do not allow brake fluids, gasoline, or penetrating oils to come in contact with the plastic parts. They contain chemicals that can damage or destroy plastics.

Turn switch OFF and always remove plug from power source before making any adjustments or repairs.

All electrical or mechanical repairs should be done only by qualified service technicians.

When servicing use only PROXXON replacement parts. Use of any other parts may create a hazard or cause product damage.

Any attempt to repair or replace electrical parts on this lathe may create a hazard unless repair is done by a qualified service technician. Repair service is available at your PROXXON service center (You find the address at address at the back of this manual)

Lubricating the machine

To ensure a long service life of your machine, please observe the lubrication diagram in Fig. 17 (A: Lubricate each time before use / B: Lubricate once a month). Only use acid-free machine oil for lubrication.

Only use acid-free machine oil.

Replacement of the belts

Important:

Use only accessories recommended for this lathe. Follow the instructions that accompany accessories. Use of improper accessories may cause hazards.

If the belts become worn, you can change them yourself. Replacement belts are available from the PROXXON central service team (address on the rear side of these instructions).

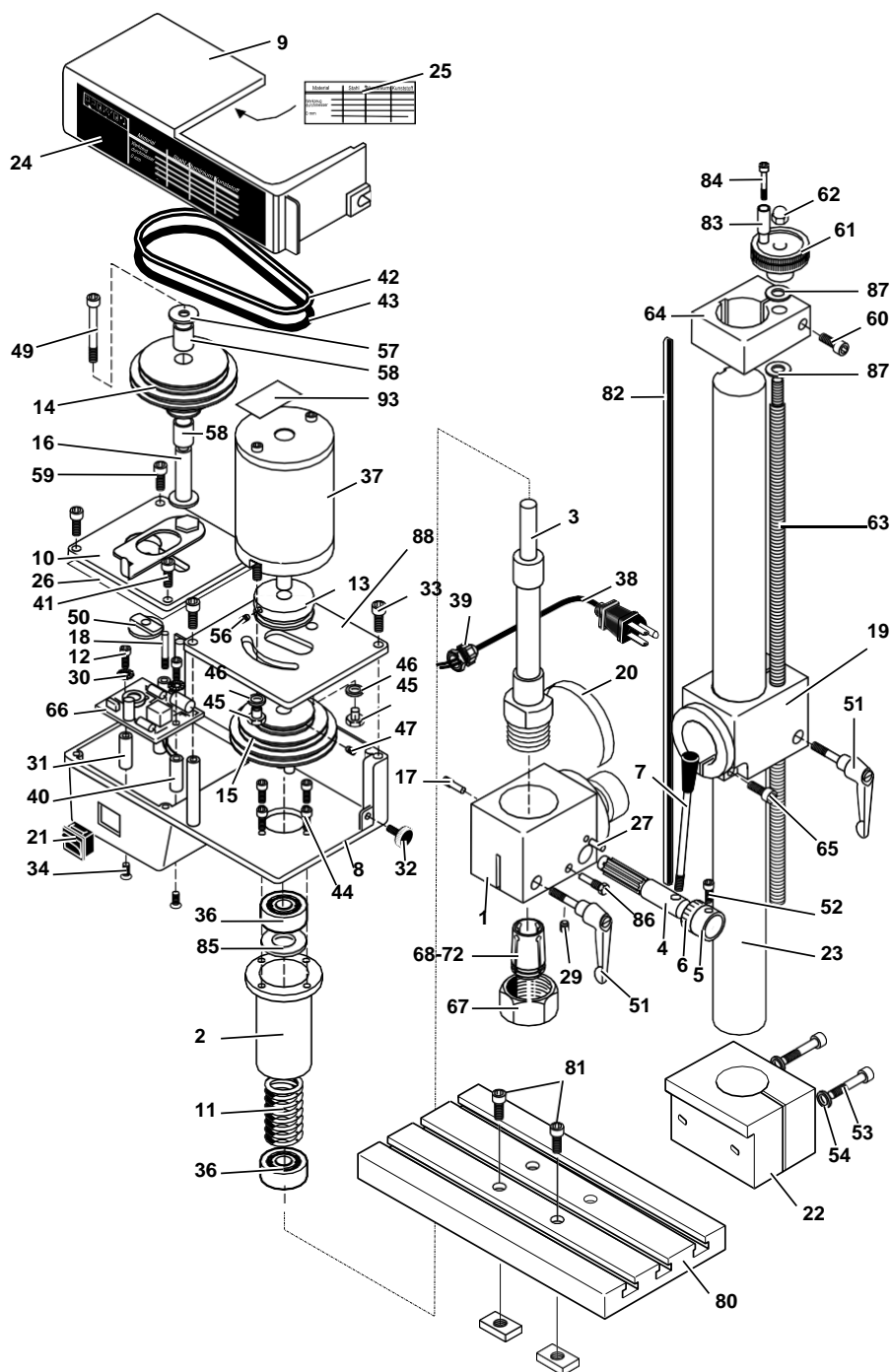
- Unscrew screw 5 (Fig.13) to release the belt pulley 1.
- Unscrew the 3 screws 6 (Fig.13) and lift out the motor.
- You can now remove and replace the belts.
- Re-assemble in reverse order.

After use

Attention:

Disconnect milling machine mains plug before cleaning!

Clean compound-type table and milling machine using a soft cloth and brush after use. Then lightly oil the guides and distribute the oil by moving the table. Never use compressed air for cleaning the compound-type table as cuttings entering the guides in this manner could destroy the guides.



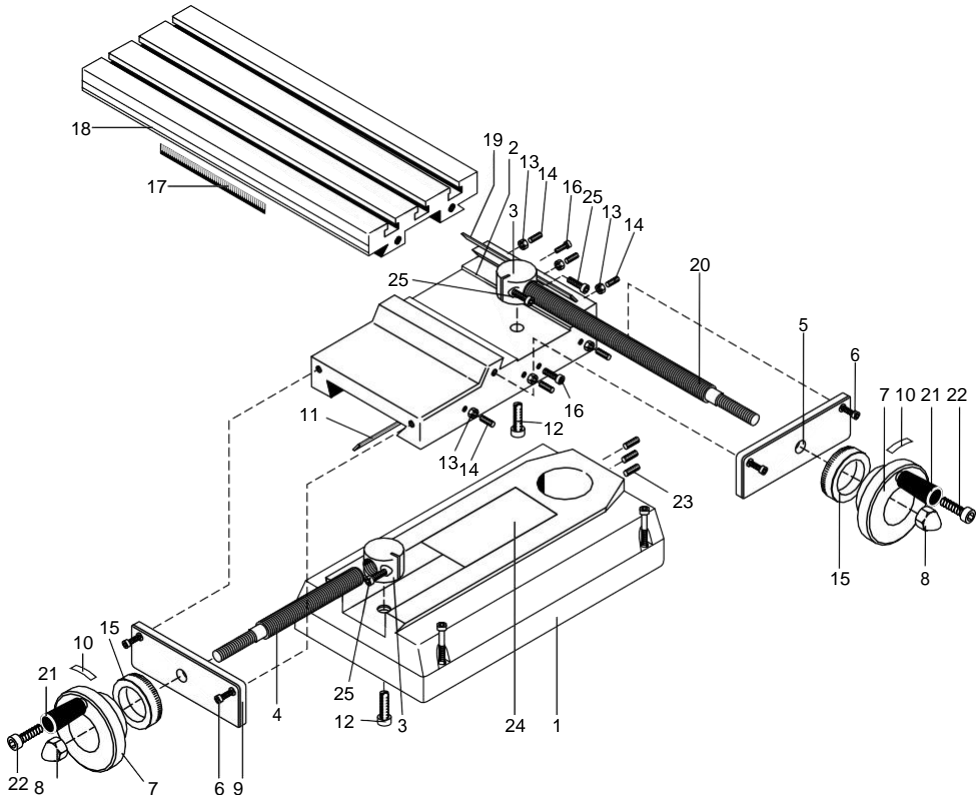
Spare parts list

Please order spare parts in writing from PROXXON Central Service (Address on back of instruction manual)

Milling machine PF 230

Article No. 34 104

Part No.:	Designation	Part No.:	Designation
24 104- 01	Boring head	24 104- 46	Washer
24 104- 02	Sleeve	24 104- 47	Set screw
24 104- 03	Drill spindle	24 104- 49	Screw
24 104- 04	Shaft for feed	24 104- 50	Slider
24 104- 05	Scale ring	24 104- 51	Clamping bolt
24 104- 06	Sticker for scale ring	24 104- 52	Screw
24 104- 07	Drill lever	24 104- 56	Set screw
24 104- 08	Gear unit housing	24 104- 57	Washer
24 104- 09	Cover	24 104- 58	Bushing
24 104- 10	Cover for switch housing	24 104- 59	Screw
24 104- 11	Return spring	24 104- 60	Screw
24 104- 12	Screw	24 104- 61	Handwheel
24 104- 13	Motor belt pulley	24 104- 62	Cap nut
24 104- 14	Intermediate belt pulley	24 104- 63	Threaded rod
24 104- 15	Spindle belt pulley	24 104- 64	Flange
24 104- 16	Shaft for belt pulley	24 104- 65	Screw
24 104- 17	Screw for sleeve guide	24 104- 66	Board
24 104- 18	Shaft for cover	24 104- 67	Union nut for spindle
24 104- 19	Flange for boring head	24 104- 68	Collet chuck, 3 mm (Assessory)
24 104- 20	Scale for angle adjustment	24 104- 69	Collet chuck, 4 mm (Assessory)
34 104- 21	On / Off switch	24 104- 70	Collet chuck, 6 mm
24 104- 23	Pillar Ø 34 mm.	24 104- 71	Collet chuck, 8 mm
34 104- 24	Table for cutting speeds	24 104- 72	Collet chuck, 10 mm
34 104- 25	Table for spindle speeds	24 104- 82	Ledge
24 104- 26	Plastic cover	24 104- 83	Bushing
24 104- 27	Pin	24 104- 84	Screw
24 104- 29	Set screw	24 104- 85	Washer
24 104- 30	Toothed disc	24 104- 86	Screw
24 104- 31	Sleeve (metal)	24 104- 87	Washer
24 104- 32	Knurled screw	24 104- 88	Plate
24 104- 33	Screw	34 104- 93	Label
24 104- 34	Screw	34 104- 99	Operating Instructions
24 104- 36	Ball bearing		
34 104- 37	Motor	not included in 34108:	
34 104- 38	Power lead with plug	24 104- 22	Flange for milling machine
24 104- 39	Strain relief	24 104- 53	Screw
24 104- 40	Sleeve (plastic)	24 104- 54	Washer
24 104- 41	Screw	24 104- 80	Milling machine table
24 104- 42	Belt for motor belt pulley	24 104- 81	Fastening screws with nuts
24 104- 43	Belt for spindle belt pulley		
24 104- 44	Screw		
24 104- 45	Nut		



Spare parts list

Please order spare parts in writing from PROXXON Central Service (Address on back of instruction manual)

Compound Table KT 230

Article No. 24 106

Part No.:	Designation	Part No.:	Designation
24 106-01	Machine base	24 106-14	Set screw
24 106-02	Support	24 106-15	Scale ring
24 106-03	Spindle nut	24 106-16	Screw
24 106-04	Spindle for Y adjustment	24 106-17	Scale
24 106-05	Front plate	24 106-18	Table
24 106-06	Bolt	24 106-19	Insert for X adjustment
24 106-07	Handwheel	24 106-20	Spindle for X adjustment
24 106-08	Cap nut	24 106-21	Sleeve
24 106-09	Friction bearing	24 106-22	Screw
24 106-10	Spring	24 106-23	Set screw
24 106-11	Insert for Y adjustment	24 106-24	Cover plate
24 106-12	Bolt	24 106-25	Screw
24 106-13	Lock nut		

LIMITED WARRANTY OF PROXXON POWER TOOLS FOR HOME USE

Prox-Tech, Inc., ("Seller") warrants to the original purchaser only, that all PROXXON consumer power tools will be free from defects in material or workmanship for a period of two years from the date of purchase. Seller's sole obligation and your exclusive remedy under this limited warranty and, to the extent permitted by law, any warranty or condition implied by law, shall be the repair or replacement of parts, without charge, which are defective in material or workmanship and which have not been misused, carelessly handled, or misrepaired by persons other than Seller or Authorized Service Station. In the event of a failure of a product to conform to this written warranty, please refer to the Service and Repair section on the back of this manual and take action accordingly.

This Limited Warranty does not apply to accessory items such as circular saw blades, drill bits, router bits, jigsaw blades, sanding belts, grinding wheels and other related items. Damage to the product resulting from tampering, accident, abuse, negligence, unauthorized repairs or alterations, unapproved attachments or other causes unrelated to problems with material or workmanship are not covered by this warranty.

Any implied warranties shall be limited in duration to two years from date of purchase. Some states in the U.S. and some Canadian provinces do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

In no event shall seller be liable for any incidental or consequential damages (including but not limited to liability for loss of profits) arising from the sale or use of this product. Some states in the U.S. and some Canadian provinces do not allow the exclusion or limitation of incidental or consequential damages; so the above limitation or exclusion may not apply to you. This limited warranty gives you specific legal rights, and you may also have other rights, which vary from state to state in the U.S., province to province in Canada and from country to country. This limited warranty applies only to PROXXON power tools sold within the United States of America, Canada, the commonwealth of Puerto Rico and Mexico. For warranty coverage within other countries contact your local PROXXON Importer.

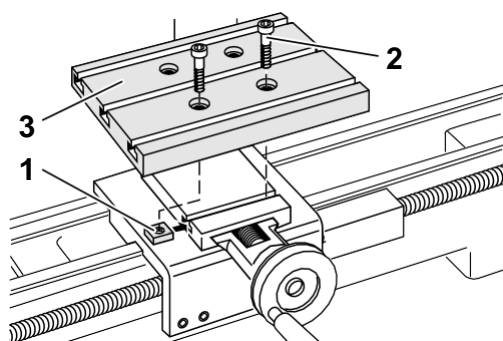


Fig. 7

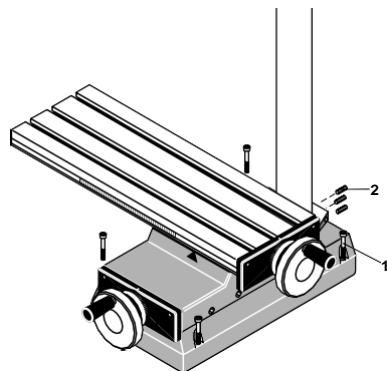


Fig. 8

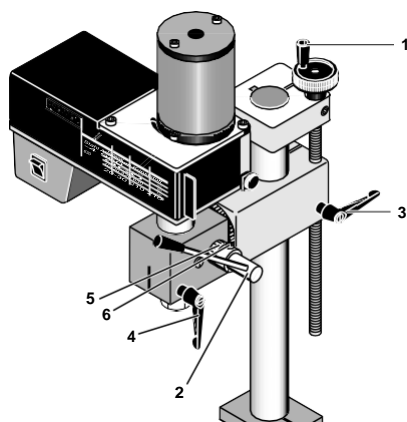


Fig. 9

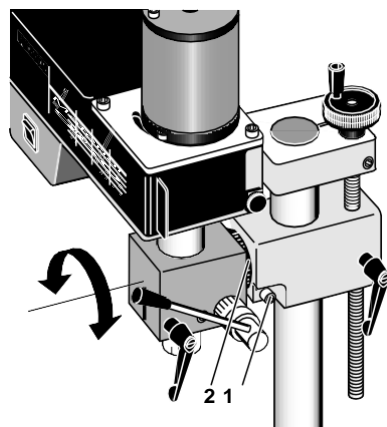


Fig. 10

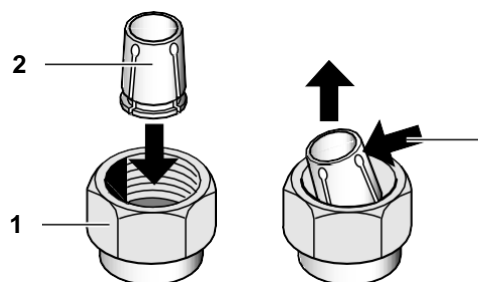


Fig. 11

Fig. 12a

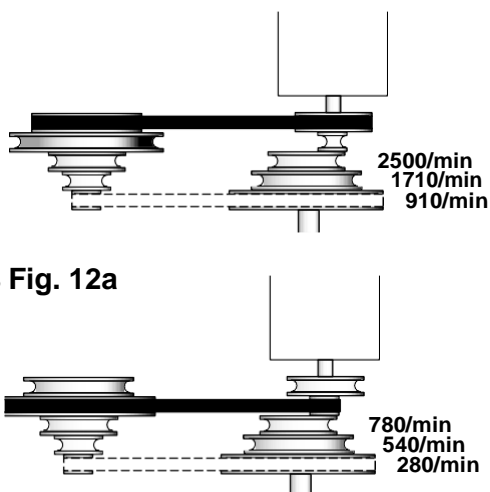


Fig. 12b

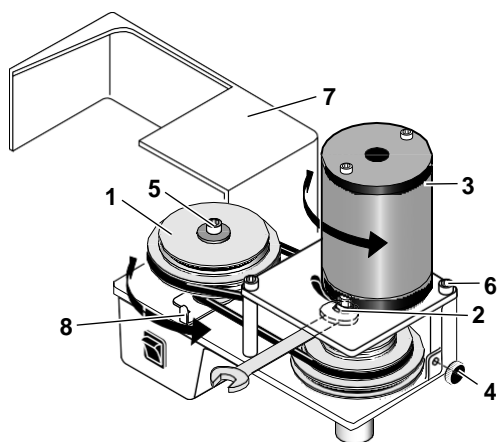


Fig. 13

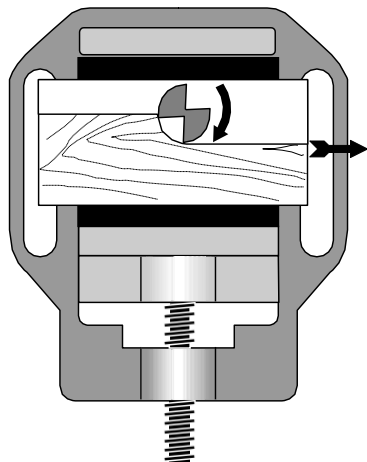


Fig. 14

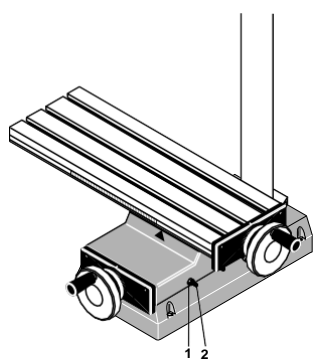


Fig. 15

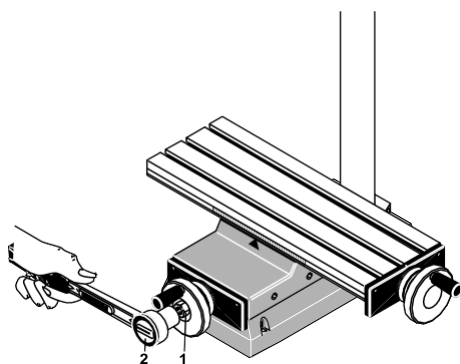


Fig. 16

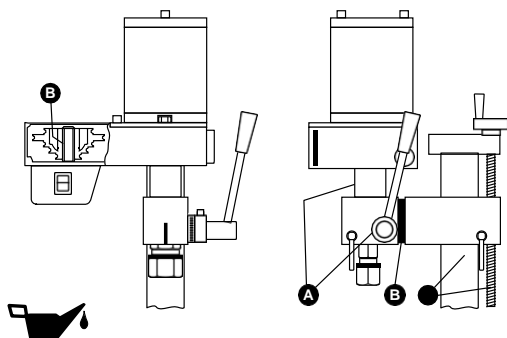


Fig. 17

