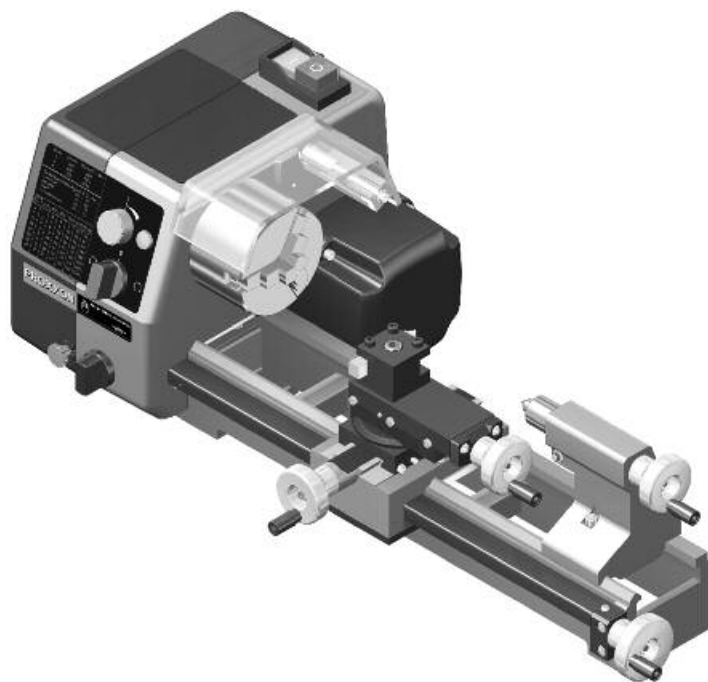


PROXXON

PD 250/E



Manual

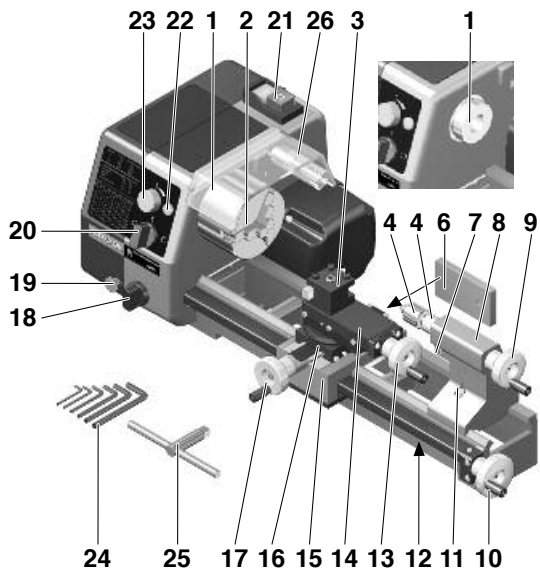


Fig. 1

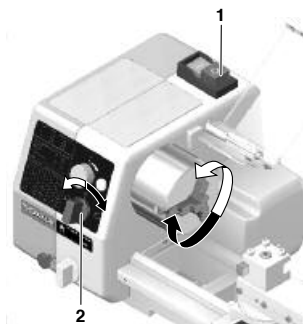


Fig. 2

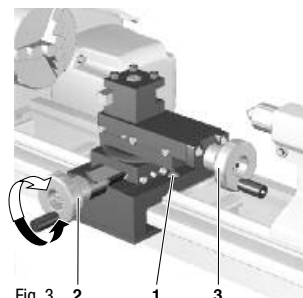


Fig. 3

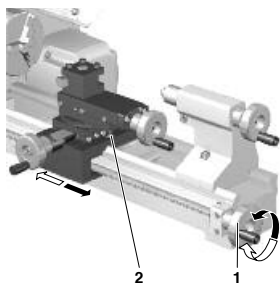


Fig. 4

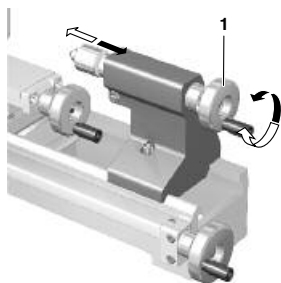


Fig. 5

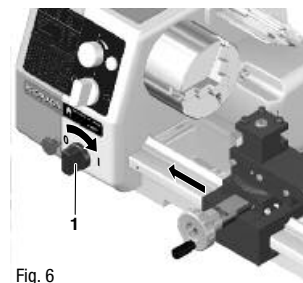


Fig. 6

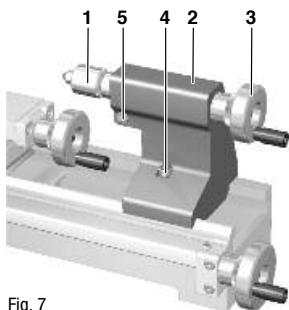


Fig. 7

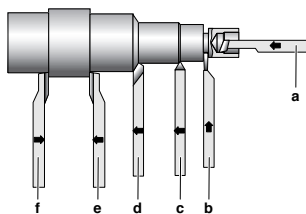


Fig. 8

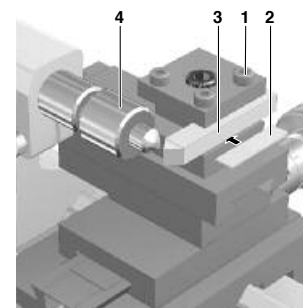


Fig. 9

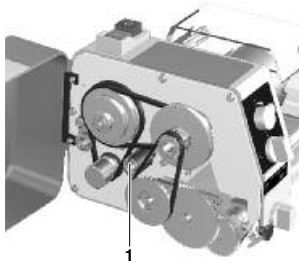


Fig. 10



Fig. 11

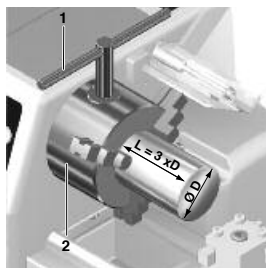


Fig. 12

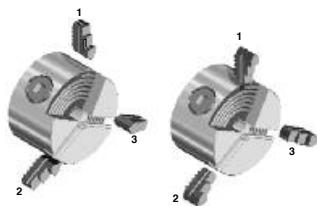


Fig. 13

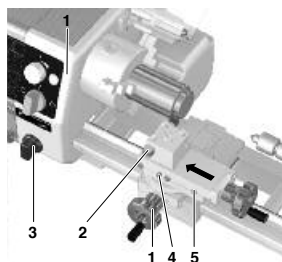


Fig. 14

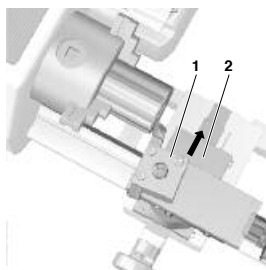


Fig. 15

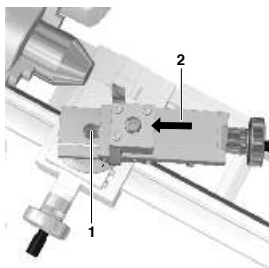


Fig. 16

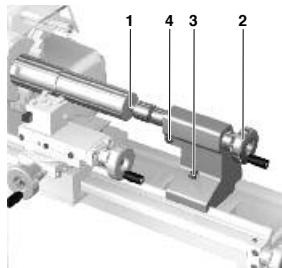


Fig. 17

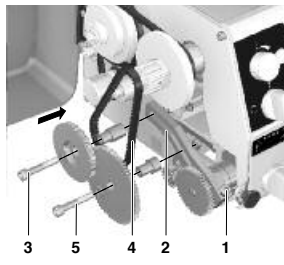


Fig. 18

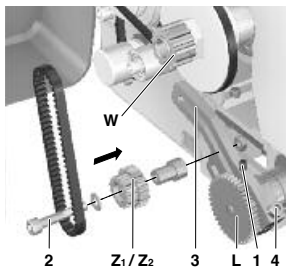


Fig. 19

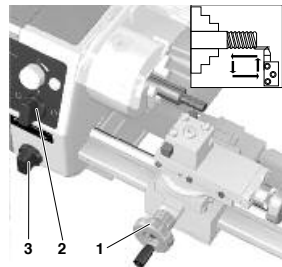


Fig. 20

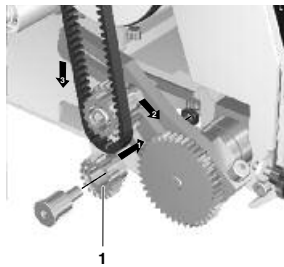


Fig. 21

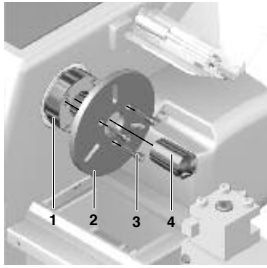


Fig. 22

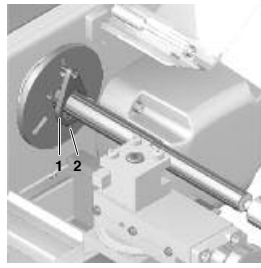


Fig. 23

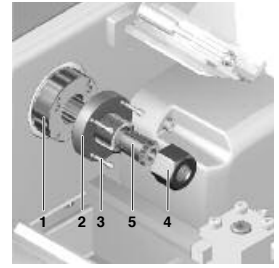


Fig. 24

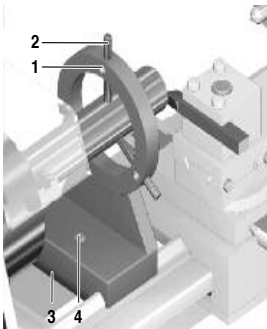


Fig. 25

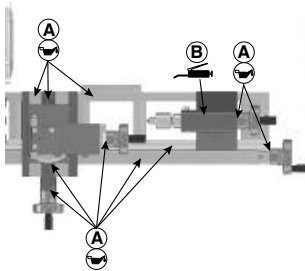


Fig. 26

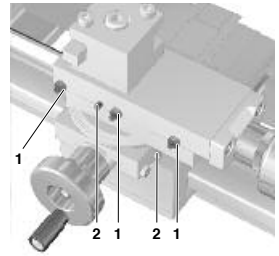


Fig. 27

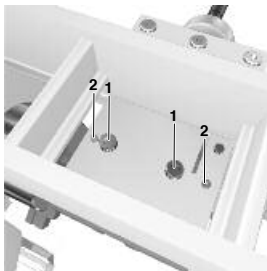


Fig. 28

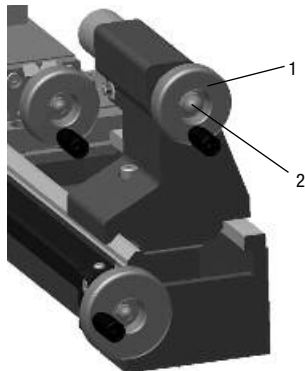


Fig. 29



Translation of the Original Operating Instructions

Foreword

Dear Customer,

By purchasing your PROXXON Lathe PD 250/E, you have chosen a good-quality, high-grade machine. The latest production and testing methods guarantee a high level of reliability for this machine.

This instruction manual covers:

- safety regulations
- operation and maintenance
- spare parts list

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.

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.

PROXXON GmbH

Safety guidelines:

Do not manipulate your machine!

Do not make any changes to the machine and do not manipulate anything! Changes or manipulations could impair the mechanical and electrical safety, but your safety in particular would also be at risk due to electric shock and further adverse effects. Injuries and material damage could be the result.

Never work without the designated safety mechanisms.

Make sure in any event that the machine chuck guard is folded down while working and that the motor cutoff operates reliably when the chuck guard is lifted!

Pay attention to environmental effects!

Use the machine only in dry environments and never in the vicinity of combustible liquids or gases. Make sure you have good lighting!

Wear protective goggles!

Wear hearing protection!

The sound pressure level when working with the machine can exceed 85 dB (A), therefore always work with hearing protection!

Wear suitable working clothes!

When working, never wear loose clothing, such as neckties or scarves, as this could get caught in one of the moving parts or the automatically moving workpiece during operation and cause injuries. If you have long hair, wear a hairnet and remove your jewellery.

Do not use any damaged or deformed cutting tools.

Please make absolutely sure the cutting tools are in perfect condition. Visually check for this intact condition before each use!

Keep children and non-participants away from the working area.

Make sure that children and non-participants maintain an appropriate safety distance! Youths below the age of 16 may only use the machine under professional instruction and for purposes of schooling. When not in use, keep the machine out of the reach of children!

Do not overstress your tool.

Of course, you will only achieve optimal work results within the performance range for which the machine is designed! Therefore, avoid making the infeed too large! Do not misuse the machine, and do not use it for work for which it is not intended.

Always be prudent and attentive!

Observe the machine during work and proceed sensibly. Do not use the machine if you are distracted, tired, or if you have consumed alcohol.

Handle the connecting cable with care!

Protect the connecting cable from heat and sharp edges, and lay the cable so that it cannot be damaged. Do not pull on the cable to disconnect the plug from the socket outlet, and do not lift the device by the cable. Ensure cleanliness: Protect the cable from grease and oil!

Clean thoroughly after work!

Disconnect the mains plug!

Always unplug the mains plug when not in use, before maintenance, when changing tools, cleaning or repairing! Removing the chips is also a part of cleaning!

Carefully read the operating instructions before use and keep them in a safe place!

Contents

| | Page |
|--|------|
| Foreword | 16 |
| Safety guidelines | 16 |
| Legend | 17 |
| Description of the machine | 17 |
| Technical data | 18 |
| Installation and setting up | 18 |
| Operating the handwheels | 18 |
| Switching on the automatic feed | 19 |
| Working with the tailstock | 19 |
| Selecting the turning tool | 19 |
| Inserting the cutting tool in the tool post | 19 |
| Setting the spindle speeds | 20 |
| Calculating the maximum spindle speed | 20 |
| Clamping the work piece in the lathe chuck | 20 |
| Exchanging the clamping jaws | 20 |
| Switching on the machine | 20 |
| Longitudinal turning | 21 |
| Face turning | 21 |
| Taper turning | 21 |
| Cutting off a work piece | 21 |
| Machining long work pieces with tailstock and centre | 22 |
| Fitting change gears for thread cutting | 22 |
| Thread cutting with the turning tool | 22 |
| Thread cutting using the top slide | 23 |
| Cutting left threads | 23 |
| Accessories for Lathe PD 250/E | 23 |
| Installing the centre lathe | 23 |
| Removing the centre | 23 |
| Four-jaw chuck | 23 |
| Collet chuck unit and collet chucks | 24 |
| Fastening the drill chuck | 24 |
| Fixed steady | 24 |
| Repair and Maintenance | 24 |
| Cleaning | 24 |
| Adjusting the play of the guides | 24 |
| Adjusting the play of the handwheels | 24 |
| EC Declaration of Conformity | 25 |
| Spare parts list | 126 |

Legend (Fig.1)

1. Main spindle
2. Lathe chuck
3. Turning tool holder
4. Rotating centre
5. Flange surface for milling unit
6. Sleeve
7. Clamp screw for sleeve
8. Tailstock
9. Sleeve adjusting handwheel
10. Handwheel for leadscrew
11. Clamp screw for tailstock
12. Leadscrew
13. Adjusting handwheel for top slide
14. Top slide
15. Support
16. Cross-slide
17. Adjusting handwheel for cross-slide
18. Clutch switch for automatic feed
19. Drive gearbox cover with speed table
20. Switch for anticlockwise rotation - stop - clockwise rotation
21. Main switch
22. Function display
23. Control
24. Hollow hexagon wrench
25. Lathe chuck wrench
26. Chuck guard

Description of the machine

The PROXXON lathe PD 250/E is an extensible system which consists of

- solid shaft electronics for high torques over the entire speed range
- automatic feed
- lathe chuck and
- rotating centre

for machining steel, brass, aluminium and plastics.

It can also be used for face turning, longitudinal turning and thread cutting.

The machine is also suitable for boring, milling work and grooving by using the appropriate accessories.

The ribbed, grey cast iron machine bed with ground prismatic guideways ensures vibration-free work.

Technical data

| | |
|----------------------------|---|
| Centre distance | 250 mm |
| Centre height | 70 mm |
| Height above support | 43 mm |
| Holding capacity | |
| - Inner jaws | 2 - 27 mm, max. 69 mm |
| - Outer jaws | 25 - 75 mm |
| Cross-slide adjustment | 60 mm |
| Top slide adjustment | 45 mm |
| Spindle passage | 10.5 mm |
| Nose support on chuck side | MK2 |
| Tool holder | 8x8 mm |
| Machine dimensions | 560x270x170 mm |
| Weight | approx. 10 kg |
| Possible thread leads | 0.5/0.625/0.7/0.75 0.8/1.0/1.25 and 1.5 mm |

| | |
|--------------------------|----------------------------|
| Spindle speeds | |
| - by shifting the V-belt | 300/900/ and 3000 rpm |
| - by control | 25% to 100% |
| Feed | 0.05 and 0.1 mm/revolution |
| Sleeve motion | 30 mm |
| Sleeve for morse taper | MK 1 |

Motor

| | |
|-------------------|-----------------------|
| Voltage: | 230 Volt, 50/60 Hz, ~ |
| Power consumption | 140 Watt |
| Noise emission | ≤70 dB (A) |

Only to be operated in closed rooms!



Do not dispose of the electrical device in the household waste!



Always work with hearing protection!



Wear safety glasses!

Noise/vibration information

The information on vibration and noise emission has been determined in compliance with the prescribed standardised and normative measuring methods and can be used to compare electrical devices and tools with each other.

These values also allow a preliminary evaluation of the loads caused by vibration and noise emissions.

Warning!

Depending on the operating conditions while operating the device, the actually occurring emissions could differ from the values specified above!

Please bear in mind that the vibration and noise emission can deviate from the values given in these instructions, depending

on the conditions of use of the tool. Poorly maintained tools, inappropriate working methods, different work pieces, too high a feed or unsuitable work pieces or materials or unsuitable bits and cutters (here: saw blade) can significantly increase the vibration load and noise emission across the entire work period.

To more accurately estimate the actual vibration and noise load, also take the times into consideration where the device is switched off, or is running but is not actually in use. This can clearly reduce the vibration and noise load across the entire work period.

Warning:

- Ensure regular and proper maintenance of your tool
- Stop operation of the tool immediately if excessive vibration occurs!
- Unsuitable bits and cutters can cause excessive vibration and noises. Only use suitable bits and cutters!
- Take breaks if necessary when working with the device!

Installation and setting up

The standard equipment of the PROXXON Lathe PD 250/E consists of the following parts:

- Metal working lathe complete with motor, automatic feed and triple jaw chuck including chuck key and chuck guard and accessories.
- rotating centre
- tool kit
- change gear kit for thread turning
- tool holder,
- Removable toothed belts.

The floor space must be even, vibration-free and stable. The machine must be fastened to a stable work bench using the bores provided.

Important

When lifting the machine, ensure that the plastic cover of the drive gearbox is closed. If it is not, the cap may break.

All naked metal parts are supplied in a corrosion protection preservative.

This preservative must be washed off with paraffin oil before using for the first time.

Subsequently oil all polished guides and spindles well. Fasten the chuck guard with screws.

Operating the handwheels

Important

If the support will not move easily, release screw 1 (Fig. 3) slightly.

Note:

The handwheels for the leadscrew, cross-slide, top slide and tailstock sleeve produce a 1 mm feed when turned once.

Important

If the automatic feed is switched on, manual adjustment of the support is not possible.

1. Turn the handwheel 2 (Fig. 3) for the cross-slide, the slide and the tool holder move at right angles to the bed.

Example: One turn of the handwheel
= 1 mm advance
= 2 mm change in diameter

2. Turn the handwheel 3 for the top slide, the top slide moves parallel to the bed.
3. Turn the handwheel 1 (Fig. 4) for the support adjustment, the support 2 moves lengthwise.
4. Turn the handwheel 1 (Fig. 5) for the sleeve, the sleeve moves lengthwise.

Switching on the automatic feed

Important

Only switch on the feed when the machine is stationary.

1. Turn the switch 1 (Fig. 6) to the right.
2. Turn the switch to the left to switch off the feed. If stiff, slightly move the handwheel of the leadscrew.

Important

When the automatic feed is switched on, always ensure that the support or turning tool do not collide with the lathe chuck or tailstock.

Note:

When the automatic feed is switched on, the support is pushed by 0.05 or 0.1 mm per turn depending on the gear combination.

Please note the sticker on the inside of the drive gearbox when adjusting the feed.

The support always moves from right to left when the spindle is turning normally (clockwise rotation) and the automatic feed is switched on. This is also the normal feed when turning.

Of course, the support can also be moved back to the output position automatically.

To do so, switch off the machine, slightly draw back the turning tool and then set the switch 2 (Fig. 2) to anticlockwise rotation.

Working with the tailstock

1. Release the clamp screw 4 (Fig. 7), push the tailstock 2 on the guide into the required position and re-tighten the clamp screw.

Note:

A mount is located on the sleeve for the drill chuck or rotating centre with Morse taper, size MK 1.

Important

Receiving tapers must always be perfectly clean.

Dirt, especially metal chips, affect the precision and can render the sleeve and shank taper unusable.

2. To insert a tool, e.g. the centre 1 (Fig. 7), extend the sleeve approx. 10 mm by turning the handwheel 3.
3. Firmly push the cone of the lathe center 1 (Fig. 7) by hand into the spindle sleeve. The cone is firmly seated and cannot be pulled out from the front.

4. To release an inserted tool, turn handwheel 3 to the left to stop.
5. Then turn approx. one further turn against the resistance. The taper is released and can be removed.

Note:

The sleeve can be clamped in any position by tightening the screw 5 (Fig. 7).

Selecting the turning tool

Important

For proper turning, it is essential that:

- the correct turning tool has been selected for the appropriate purpose
- the blade of the turning tool is sharp
- the blade of the turning tool sits exactly in the "centre" position
- and is operated at the correct speed.

Inside turning tools (a) (Fig. 8)

- are used for interior diameter turning.

Cut-off tools (b)

- for plunge-cutting grooves and cutting off work pieces.

Thread tools (c)

- are used for cutting outer threads.

Finishing or tapering tools (d)

- are used to achieve a clean surface when removing small chips.

Right side tools (e)

- is used to cut as many turning chips as possible in the right-hand direction of processing regardless of the quality of the work piece surface (so-called "rough-cutting").

Left side tools (f)

- are used to remove as many chips as possible in a short time when machining towards the left, regardless of the surface quality of the work piece.

Insert the cutting tool in the tool post

1. Unscrew both fastening screws 1 (Fig. 9) until the selected turning tool 3 fits into the mount.

Important

Give the turning tool as short an overhang as possible. Allowing the tool to project too far leads to vibrations, imprecision and an unclean surface.

2. Insert the turning tool 3 and tighten the fastening screws 1.
3. Move the turning tool to the centre 4 and check whether the height has been correctly adjusted.

Note:

For height deviations, small metal sheets 2 (e.g. valve sensor gauges) must be placed beneath the complete surface.

The tool holder provides the possibility of clamping two cutting tools at the same time. This simplifies work, because after adjusting the cutting tools between the individual machining stages for a workpiece, it is only necessary to swivel the tool holder in order to work with the respectively suitable tool.

To do so, simply loosen the Allen screw 5, swivel the tool holder and then retighten the screw 5. Of course it is possible to generally regulate the angle of the tool to the workpiece in this manner, if required.

Setting the spindle speeds

Important

Always disconnect the mains plug before working on the drive gearbox. Risk of injury.

The spindle speed must be adjusted to suit the work piece material and diameter.

Calculating the maximum spindle speed

The required spindle speed can be calculated when the specified maximum cutting speed for a certain material is known.

Maximum permissible spindle speed

$$= \frac{\text{Cutting speed} \times 1000}{\text{Working piece diameter} \times 3.14}$$

Example:

A work piece with a diameter of 20 mm is to be turned at a cutting speed of 50 rpm.

$$\frac{50 \times 1000}{20 \times 3.14} = 796/\text{min}$$

By shifting the V-belt (Fig. 10), set to the next highest speed. In this case, the speed is 1600 rpm. The correct speed is now set via the controls, and here is important to note that the controls cover a speed range of 25% to 100%, i.e. in our example, 400 rpm to 1600 rpm.

1. Release the clamp screw from the drive gearbox and open the flap.
2. Release V-belt tensioner 1 (Fig. 10).
3. Adjust the relevant speed by shifting the V-belt according to Fig. 11.
4. Re-tighten V-belt tensioner. Note the appropriate tension of the V-belt. Overtensioning increases the wear of the belt and bearing and reduces the motor power.
5. Close the drive gearbox before commencing turning work.

Clamping the work piece in the lathe chuck

Important

If work pieces are clamped in the lathe chuck using the tail-stock without a steady, the projection (Fig. 12) must not be greater than three times the diameter of the material ($L = 3 \times D$).

Note:

The normal lathe chuck has three steel jaws, which are uniformly adjusted and centre round work pieces automatically.

In the normal position, work pieces can be clamped up to a diameter of 35 mm. After turning the jaws, it is possible to clamp up to a diameter of 68 mm.

1. Turn the lathe chuck 2 (Fig. 12) using the wrench 1 until the work piece fits in the mount.

Important

Do not leave the wrench in the lathe chuck. Risk of injury.

2. Clamp the work piece tightly and remove the wrench from the chuck.
3. Check the running of the work piece and correct if necessary.

Important

Clamping a longer work piece which has been guided through the spindle and is projecting to the left increases the risk of injury. In this case, be particularly careful to ensure that no objects are caught in the rotating shaft. Protect this zone separately by fuse.

Exchanging the clamping jaws (Fig. 13)

Important

Remove mains plug.

Important

Do not clamp work pieces with a diameter greater than 68 mm. The clamping force of the jaws is then too small and the work piece may become loose. Danger of accident.

In order to clamp work pieces externally (e.g. for clamping solid steel bars with greater diameters, the included outside jaws must be inserted into the chuck instead of the factory-mounted inside jaws.

To reverse or exchange the jaws, please proceed as follows:

1. Disconnect the mains plug to prevent the machine from starting up unintentionally.
2. Use the chuck key to screw out the jaws as far as possible so that they can be removed from the chuck.
3. Reverse or exchange the jaws and reinsert. During the procedure, please pay attention to the identification: Numbers (1, 2, 3) have been imprinted on the jaws!
4. Screw down the chuck with the chuck key and check the centricity of the jaws. If required, correct the position of the jaws by reinserting in the chuck body so that the jaws grip the spiral in the correct position.
5. If you want to work with the inside jaw chuck again, repeat the steps described above.

Switching on the machine

Important

Before switching on the machine, ensure that the jaw chuck wrench is not in the chuck, the jaws are not protruding and that there is no-one in the danger zone.

Activation of the machine while clamping pins are in the chuck holes can fling these out or lead to jamming during starting.

Danger: Serious injuries or material damage may result as a consequence of this!

Only switch on the machine when the part to be turned is clamped in the chuck, as otherwise the jaws could become loose and cause injury.

Caution!

Always work within the intended performance range! Avoid spindle blockages caused by overloading. In the event of the spindle blocking during operation, please switch off the machine immediately and configure the feed and infeed for further machining to avoid overloading of the machine.

Caution!

Before inserting the mains plug, please check if the information on the rating plate matches the local conditions of your mains supply. If they do not match, then damage or hazards during work could be result!

Caution!

Always wear hearing protection and protective goggles while working!

Caution!

Avoid abnormal body posture! Make sure you stand securely and can keep your balance.

Caution!

Please comply with the following when commissioning and working with the PD 250/E: Your machine is equipped with an automatic safety shutdown and can only be operated when the chuck guard is folded down! As soon as the chuck guard is folded up during operation, the motor will shut off automatically! Only work with a folded down chuck guard! If the guard is defective, the machine may no longer be operated!

Avoid unnatural body positions. Ensure that you are standing in a safe position and keep your balance.

1. Set selection switch 2 (Fig. 2) to "0" position.
2. Switch on main switch 1. The function display should now illuminate.
3. Turn the selection switch 2 to the right for normal turning.
4. Turn the selection switch to the left for clockwise rotation.

Important

Only switch on when the machine is stationary.

5. When you have finished working, switch off the machine again using the main switch. Only then is the machine completely disconnected from the mains.

Longitudinal turning

Note:

Turning parallel to the rotational axis and machining cylindrical objects are the main uses of a lathe.

1. Select the spindle speed according to the table on your lathe.
2. Adjust the required speed by shifting the belt in the drive gearbox (see previous section).
3. Clamp a right side tool 2 (Fig. 14) in the tool holder (see previous section).

4. Switch off the automatic feed 3.
5. Move the support from the right to the left of the work piece.
6. Adjust the cutting depth using the cross-slide 1.

Important

Before switching on the machine, manually check whether the spindle, chuck and work piece are running free.

Do not allow the support or turning tool to collide with the lathe chuck.

7. Switch on the machine (clockwise rotation).
8. Manually feed or switch on the automatic feed 3, do not overload the machine.

Note:

If the top slide is not necessary, it is advisable to clamp it with the screw 4 (Fig. 14). The turning performance is improved by eliminating play.

Face turning

Note:

This method of working is used to turn off the face of a work piece.

1. Adjust the right side tool by approx. 2° to 3° (Fig. 15).
2. Move the cross-slide from outside inwards (to the centre) with the turning tool.

Important

The cutting speed from outside inwards differs considerably for work pieces with larger diameters. Therefore, push the cross-slide slowly and sensitively.

Taper turning

The top slide (Fig. 16) is equipped with a scale and can be swivelled by 45° on either side of zero for taper turning. To do so, release fastening screw 1, adjust top slide and then re-tighten.

Cutting off a work piece

1. Clamp the cut-off tool at right angles in the tool holder.

Important

Give the cut-off tool as short an overhang as possible (half of the diameter of the work piece + 1 mm). Similarly, give the work piece as short an overhang as possible.

Note the exact centre height of the cut-off tool. Work at low speeds and cool blade as often as possible.

2. Sensitively move the cross-slide from outside inwards (to the centre) with the turning tool.

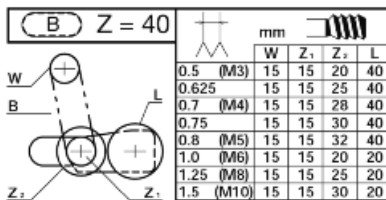
Machining longer work pieces with tailstock and centre

Important

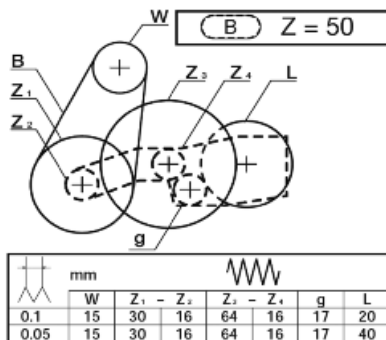
If the chuck projection is greater than three times the diameter of the work piece, the work piece must be held at the right end by the tailstock and centre.

For this purpose, a centre bore must be drilled on the right side of the work piece.

1. Face turn the right face.
2. Insert the drill chuck (accessories) in the tailstock and clamp the centring drill.
3. Move the tailstock with drill chuck and centring drill up to the face of the work piece.
4. Switch on the machine and drill centre bore using the sleeve feed.
5. Replace the drill chuck with the rotating centre 1 (Fig. 17).
6. Insert the centre in the centre bore and clamp the tailstock 3 securely.
7. Advance the sleeve 2 until all play is eliminated.
8. Secure the sleeve using a set screw 4.



| mm | | mm | | | |
|-----------|----------------|----------------|----------------|----------------|---|
| W | Z ₁ | Z ₂ | Z ₃ | Z ₄ | L |
| 0.5 (M3) | 15 | 15 | 20 | 40 | |
| 0.625 | 15 | 15 | 25 | 40 | |
| 0.7 (M4) | 15 | 15 | 28 | 40 | |
| 0.75 | 15 | 15 | 30 | 40 | |
| 0.8 (M5) | 15 | 15 | 32 | 40 | |
| 1.0 (M6) | 15 | 15 | 20 | 20 | |
| 1.25 (M8) | 15 | 15 | 25 | 20 | |
| 1.5 (M10) | 15 | 15 | 30 | 20 | |



| mm | | mm | | | | | |
|------|----------------|----------------|----------------|----------------|----|----|----|
| W | Z ₁ | Z ₂ | Z ₃ | Z ₄ | g | L | |
| 0.1 | 15 | 30 | 16 | 64 | 16 | 17 | 20 |
| 0.05 | 15 | 30 | 16 | 64 | 16 | 17 | 40 |

Fitting change gears for thread cutting

Note:

The PROXXON Lathe PD 250/E can be used to cut metric threads with a pitch of: 0.5 (M3), 0.625, 0.7 (M4), 0.75, 0.8 (M5), 1.0 (M6), 1.25 (M8), and 1.5 (M10).

The PD 250/E is supplied with installed gear arm and the change gear combination for the automatic feed of 0.05 mm/revolution. It is only necessary to replace the change gears installed on the gear arm for thread cutting.

1. Release the clamp screw 1 (Fig. 18) and tilt the gear arm 2 slightly upwards to remove the toothed belt 4.
2. Remove the fastening screws 3 and 5 from the normal gears for the automatic feed.

Note:

The number of teeth is imprinted on all change gears.

For example, if cutting a thread with a pitch of 1.0 mm, the table on the drive gearbox will show the following data:

W 15 - gear on the main spindle with 15 teeth. This gear is already installed on the shaft and must not be replaced.

Z₁ 15 - Z₂ 20 - Intermediate gear for the toothed belt of the main spindle with 15 teeth and permanently linked gear for the leadscrew with 20 teeth.

L20 - leadscrew gear with 20 teeth.

3. Fasten the change gear "Z₁-Z₂" with 15/20 teeth (Fig. 19) to the gear arm 3 using the screw 2, pulley, reduction sleeve and nut.

Note:

Do not yet tighten the fastening screw nut 2 (off-centre adjustment must still be possible).

The change gear "Z₁-Z₂" runs freely between pulley and sleeve.

The washer prevents the toothed belt from becoming detached from the gear "Z₁".

4. Release the set screw 1, remove the change gear "L40" and replace with the change gear "L20".

Note:

The grain of the leadscrew change "L" must always point to the lathe chuck.

The set screw 1 must be clamped onto the flattened part of the shaft.

Important

To ensure that there is sufficient play between the change gears, always insert a strip of newspaper between the teeth when pushing the change gears together. The thickness of the newspaper should correspond to the required tooth play.

5. Push the axle of the change gear "Z₁-Z₂" onto the arm so that it contacts the leadscrew gear "L" and then tighten the fastening screw nut 2.
6. Position the short toothed belt for the connection between the gears "W" and "Z₁" on the main spindles.
7. Push the gear arm 3 downwards and tighten the clamp screw 4.

Thread cutting with the turning tool

Note:

For the following operations, the work piece must be machined completely and have the correct thread outer diameter. It is advisable to work out a chamfer at the beginning of the thread. The thread turning tool must be clamped at an angle of 90° exactly.

1. Clamp the work piece.

2. Switch off the automatic feed and set the turning tool to the starting position.

Important

Use the lowest speed when cutting threads and proceed with utmost caution.

3. Press button 2 (Fig. 20) to switch on the machine (clockwise rotation).
4. Advance the turning tool on the cross-slide 1 and engage feed 3.
5. Switch off the machine when the required thread length has been reached 2.

Important

The automatic feed must remain switched on until completion of the thread. Disengaging between individual steps renders further work impossible.

Only switch over the motor switch once the lathe chuck has come to a complete standstill. Switching over immediately increases wear and reduces the service life of the motor.

6. Move back the turning tool slightly with the cross-slide.
7. Move the support back to the output position. To do so, switch over the turning direction of the main spindle.
8. Advance the turning tool and repeat the steps described above until the required thread depth is reached.

Thread cutting using the top slide

A perfect, good-quality thread can only be cut by using the top slide.

Advancing the thread tool is performed using the cross-slide as described above.

However, this causes the top slide to shift by 0.025 mm to the left and the same distance to the right.

The chip in the thread is therefore always only removed from one side.

Once the full thread depth has been reached, a final full cut is made by advancing slightly.

Cutting left threads

To cut left threads, the intermediate gear 1 (Fig. 21) must be installed between "Z₁-Z₂" and the leadscrew gear "L1".

In doing so, the turning direction of the leadscrew is reversed. The support runs from right to left when the chuck is turning clockwise.

Installation and operation are as described above.

Accessories for Lathe PD 250/E

Note:

The following accessories are not included in the standard equipment.

Installing the centre lathe (No. 24014)

Note:

Longer work pieces are clamped between the brad points of the main spindle and tailstock.

The work piece must have a centre bore on both faces.

An exact cylindrical work piece is only achieved if the points align in the horizontal position.

1. Remove three fastening screws from the three-jaw chuck and remove chuck.
2. Thoroughly clean the fit for the driving disc and centre and its fit in the main spindle.
3. Insert the centre 4 (Fig. 22) in the fit 1 of the main spindle.
4. Fit the driving disc 2 and fasten with three screws 3.
5. On the left side, insert driving pin in one of the three long holes on the driving disc and the centre in the centre bore.
6. Push the lathe carrier 1 (Fig. 23) onto the work piece (driving pin outwards) and tighten the fastening screw 2.
7. On the right side, attach the work piece using the tailstock and fixed or rotating centre.

Important

When using a centre fixed to the tailstock, regular lubrication of the centre and centre bore is necessary to prevent the temper from loosening.

Removing the centre

8. Guide a suitable aluminium or brass rod through the main spindle from left to right.
9. Hold the centre and release by lightly tapping the rod.

Four-jaw chuck (No. 24036)

Note:

Round, oval, square and irregularly shaped work pieces can be clamped as it is possible to adjust the jaws individually.

Centric or eccentric clamping is possible.

Unlike the three-jaw chuck, centring of the work piece must be performed manually.

Important

Remove mains plug.

1. Detach the three-jaw chuck and attach the four-jaw chuck.
2. Open the four jaws, clean the contact faces and clamp the work piece lightly according to visual estimation.
3. Move the support and turning tool onto the plane surface of the work piece.
4. Turn the chuck by hand to establish symmetrical deviations.
5. Adjust by opening one of the jaws and re-set the opposite jaw accordingly.
6. Tighten all four jaws evenly, alternating crosswise.

Important

In the normal clamping jaw position, only work pieces with an edge of up to max. 30 mm long can be clamped. The maximum length is 80 mm in the reverse position.

Larger work pieces are not securely held. Danger of accident.

Collet chuck unit and collet chucks (No. 24038)

Note:

The collet chuck unit is especially suitable for processing round parts with great precision. The truth of running is considerably greater than when working with a jaw chuck.

Important

Remove mains plug.

1. Remove three fastening screws from the three-jaw chuck and remove chuck.
2. Thoroughly clean the fit for the collet chuck mount 2 (Fig. 24) and the fit in the main spindle 1.
3. Attach the collet chuck mount 2 using four fastening screws 3.

Important

Always use the correct collet chuck to suit the work piece. Chucks with an oversized diameter are destroyed.

4. Insert the collet chuck 6 and loosely screw in the union nut 5.

Important

Never tighten the union nut when there is no work piece inserted.

5. Insert the appropriate work piece in the collet chuck and tighten the union nut 5 using the tool pins 4.

Fastening the drill chuck (No. 24020)

1. Remove the rotating centre from the sleeve. Thoroughly clean the grease and dirt from the shank taper and chuck bore.
2. Insert the journal in the sleeve and firmly push onto the drill chuck.

Note:

Releasing the drill chuck is performed in the same way as the rotating centre.

Fixed steady (No. 24010)

The steady is particularly suitable for hollowing out long work pieces with diameters up to 40 mm.

1. Release the fastening screw 4 (Fig. 25) and position retaining plate 3 crosswise.
2. Place the steady on the bed guide and set to the required position.
3. Swivel the retaining plate 3 parallel to the steady base and tighten fastening screw 4.

4. Release all clamp screws 1 and drive the individual retaining jaws 2 onto the work piece

Important

The jaws 2 must only touch the work piece and must not jam. Otherwise there is a risk of the work piece surface becoming scratched and the motor becoming overloaded.

If the work piece is not round and smooth at the support point, it must first be turned round.

Lubricate the jaws and work piece regularly when turning.

5. Check that the work piece is positioned in the steady free of play and re-tighten clamp screws 1.

Repair and Maintenance

Cleaning

Caution!

Always disconnect the mains plug for all adjustment and maintenance work! Risk of serious injuries or damage due to inadvertent starting up of the device, or hazard due to electric shock!

1. After use, thoroughly clean all chips from the machine using a brush or handbrush. Do not use compressed air for cleaning.
2. Regularly lubricate or oil all moving parts, spindles and guides!

The outside of the housing can be cleaned with a soft, dry or damp cloth. It is possible to use mild soap or other suitable cleaning agent here. Solvents or cleaning agents containing alcohol (e.g. petrol, cleaning alcohol etc.) should be avoided, since these can attack the plastic housing casings as well as wash off the lubricants.

Please observe:

Changing the power supply cord may only be carried out by our Proxxon-Service-Department or a qualified specialist!

Adjusting the play of the guides (Fig. 27)

Note:

Even if the guides are regularly lubricated or oiled, it is unavoidable that the guides will exhibit play after some time due to wear.

The procedure described here using the example of the upper carriage is the same for all guides, therefore it applies analogously to the other guides on your lathe. For that reason they will not be treated separately here. Adjust the guides according to the motto: As "tightly" as necessary, as easy running as possible!

Please consider: If guides are set too closely, this causes higher operating forces as well as increased wear!

1. Release and slightly unscrew the counter nuts 1 of the adjusting screws 2 for the upper carriage 3 using an open-end spanner 5.
2. Evenly turn in the adjusting screws 2 with an Allen key 4 until the play is eliminated.

3. Retighten the counter nuts 1. In the process, hold the adjusting screws 2 in position with the fixed spanner 5 so that they do not misadjust again.
4. Turn over the machine and slightly unscrew the set screw 2 (Fig. 28).
5. Then check if the support can still be moved easily and if it runs completely without play.

Adjusting the play of the handwheels (Fig. 29):

Just as for the guides, handwheel wear during operation cannot be avoided which ensures that the backlash increases slowly but consistently. To minimise this again, please proceed as follows:

1. Hold on to the handwheel 1 and release the cap nut 2.
2. Turn the handwheel slightly to the right.
3. Retighten the cap nut while still holding the handwheel.

Please consider here as well:

The complete elimination of the backlash and a too "tight" adjustment for the handwheels is unreasonable: If the handwheels are set too closely, this causes higher operating forces as well as increased wear here as well!

Disposal:

Please do not dispose of the device in domestic waste! The device contains valuable substances that can be recycled. If you have any questions about this, please contact your local waste management enterprise or other corresponding municipal facilities.

EC Declaration of Conformity

Name and address:
PROXXON S.A.
6-10, Hårebjerg
L-6868 Wecker

Product designation: PD 250/E
Article No.: 24002

In sole responsibility, we declare that this product conforms to the following directives and normative documents:

EU EMC Directive 2014/30/EC

DIN EN 55014-1 / 05.2012
DIN EN 55014-2 / 06.2009
DIN EN 61000-3-2 / 03.2015
DIN EN 61000-3-3 / 03.2014

EU Machinery Directive 2006/42/EC

DIN EN 62841-1 / 07.2016

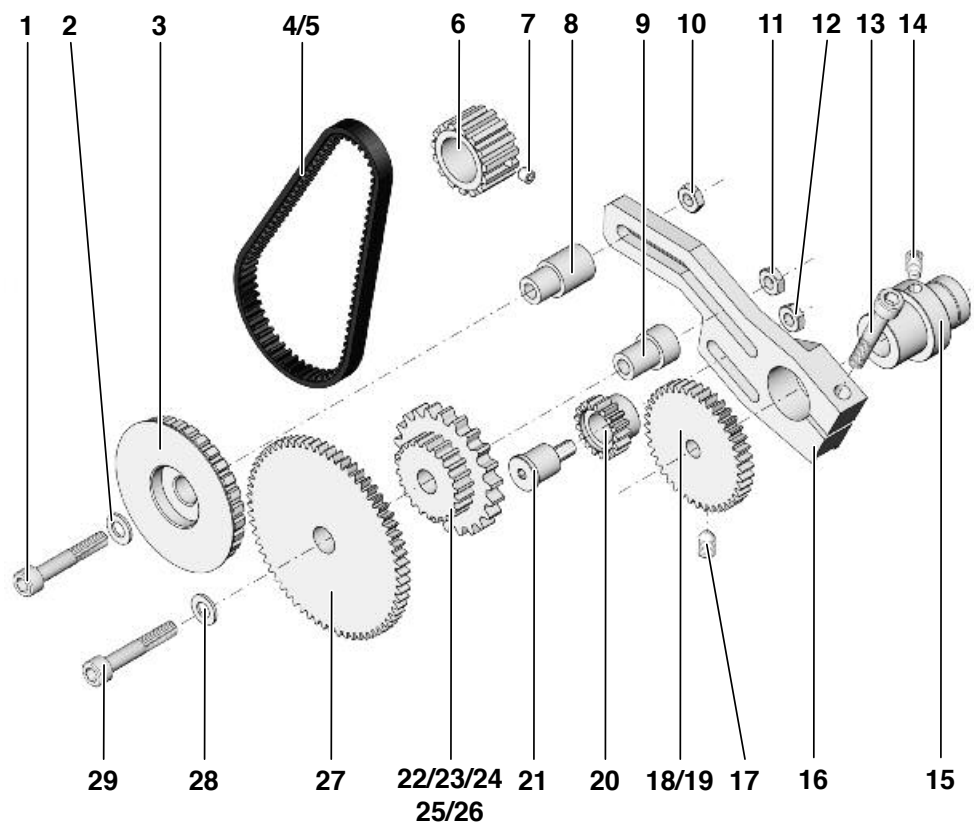
Date: 17.04.2018



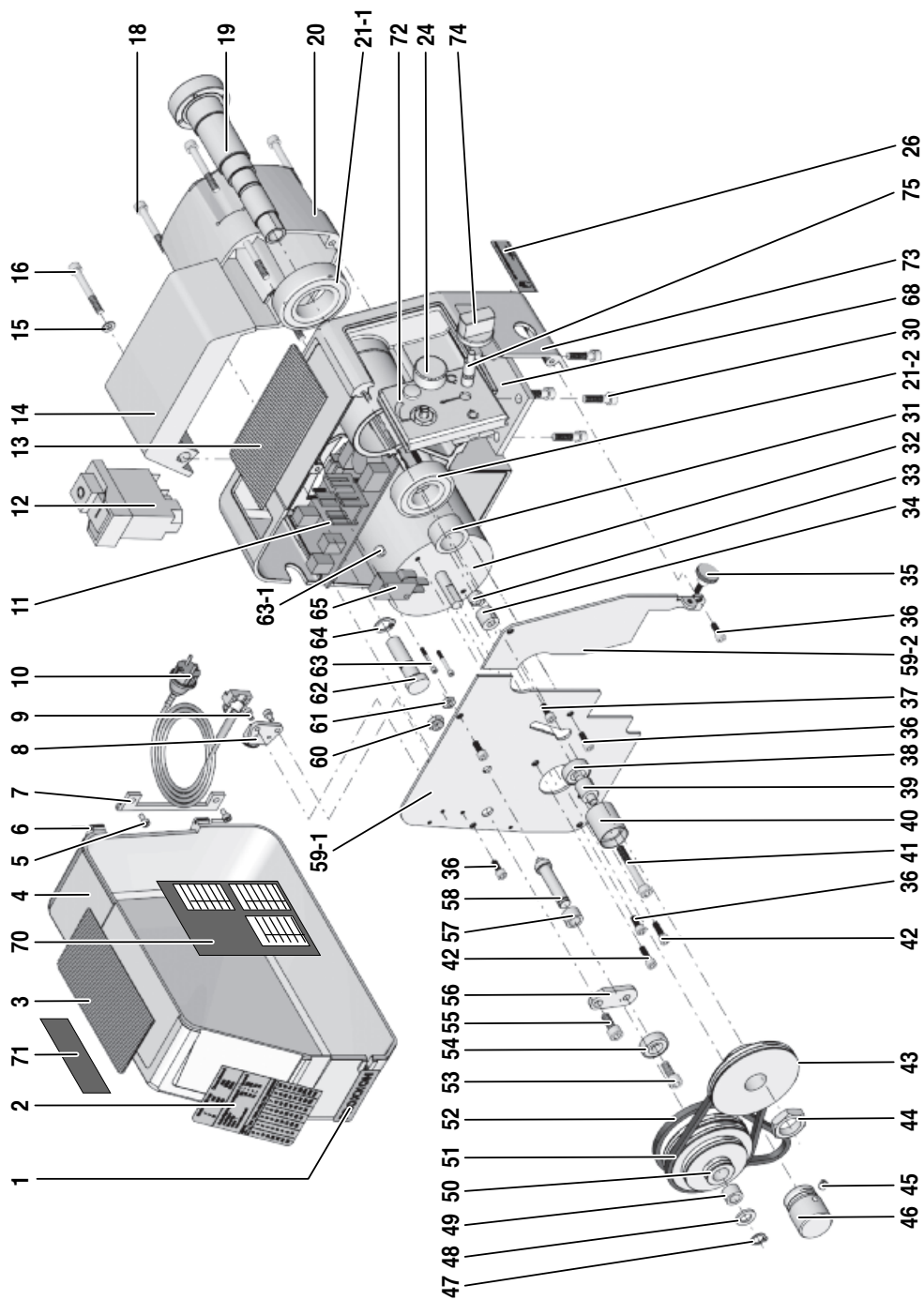
Dipl.-Ing. Jörg Wagner

PROXXON S.A.
Machine Safety Department

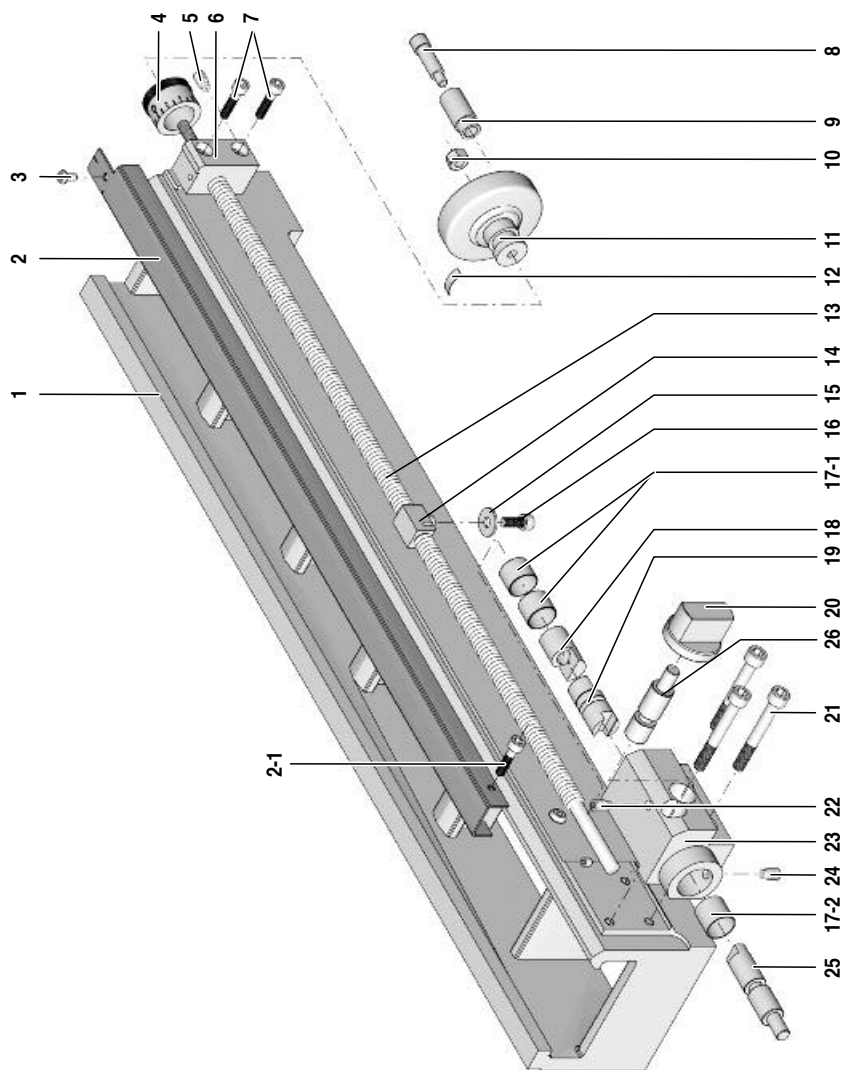
The CE document authorized agent is identical with the signatory.



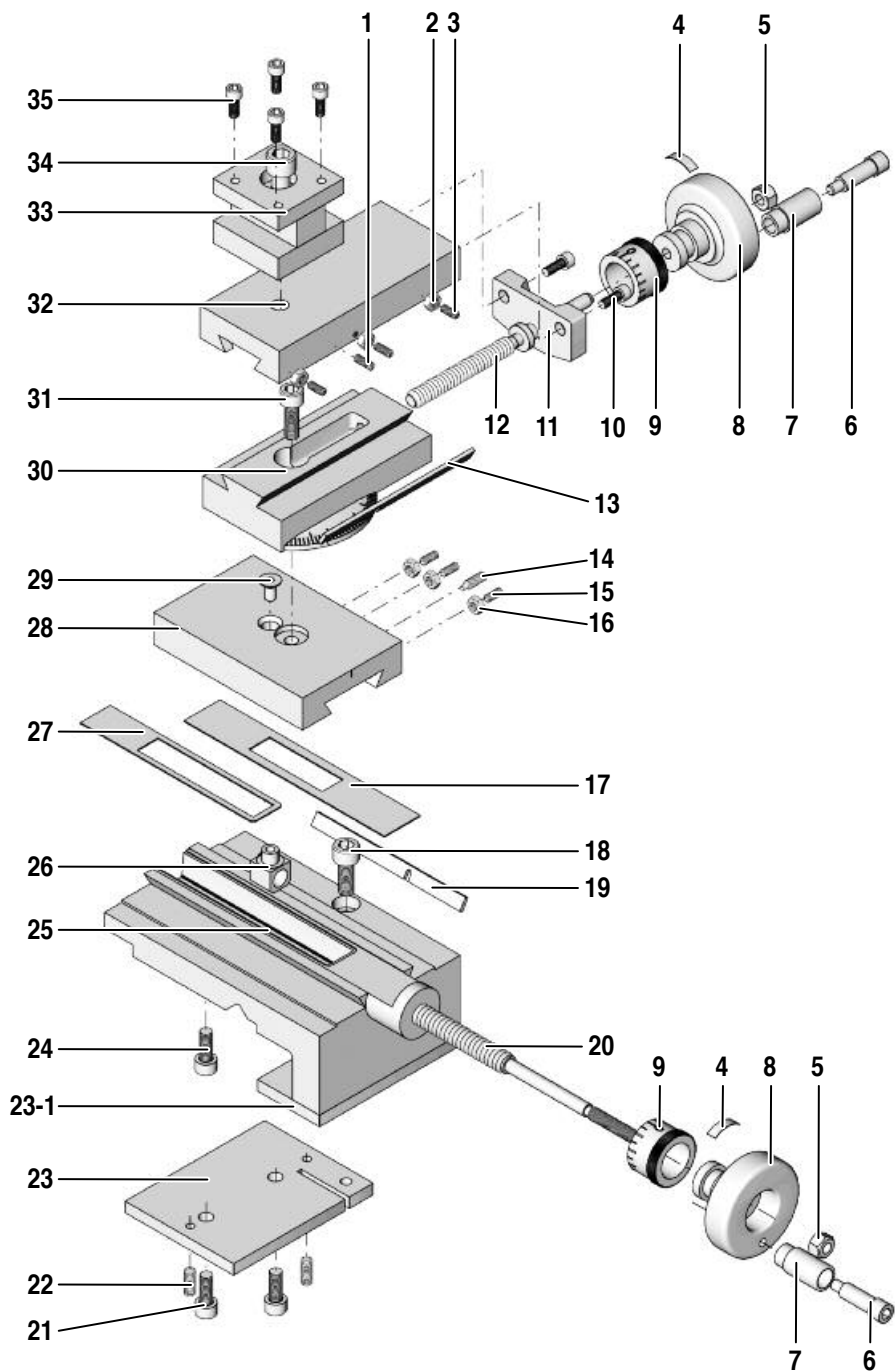
| ET-Nr.: | Designation |
|-------------|-------------------------------|
| 24002-00-01 | Fastening screw |
| 24002-00-02 | Washer |
| 24002-00-03 | Change gear 30/16 |
| 24002-00-04 | Toothed belt T 5 - 40 |
| 24002-00-05 | Toothed belt T 5 -50 |
| 24002-00-06 | Change gear 15 teeth |
| 24002-00-07 | Set screw |
| 24002-00-08 | Bushing |
| 24002-00-09 | Bushing |
| 24002-00-10 | Nut |
| 24002-00-11 | Nut |
| 24002-00-12 | Nut |
| 24002-00-13 | Clamp screw for gear arm |
| 24002-00-14 | Set screw for automatic feed |
| 24002-00-15 | Clutch |
| 24002-00-16 | Gear arm |
| 24002-00-17 | Set screw |
| 24002-00-18 | Leadscrew 20 teeth |
| 24002-00-19 | Leadscrew 40 teeth |
| 24002-00-20 | Intermediate gear |
| 24002-00-21 | Fastening screw |
| 24002-00-22 | Intermediate gear 15/30 teeth |
| 24002-00-23 | Intermediate gear 15/28 teeth |
| 24002-00-24 | Intermediate gear 15/25 teeth |
| 24002-00-25 | Intermediate gear 15/20 teeth |
| 24002-00-26 | Intermediate gear 15/32 teeth |
| 24002-00-27 | Change gear 64/16 teeth |
| 24002-00-28 | Washer |
| 24002-00-29 | Fastening screw |



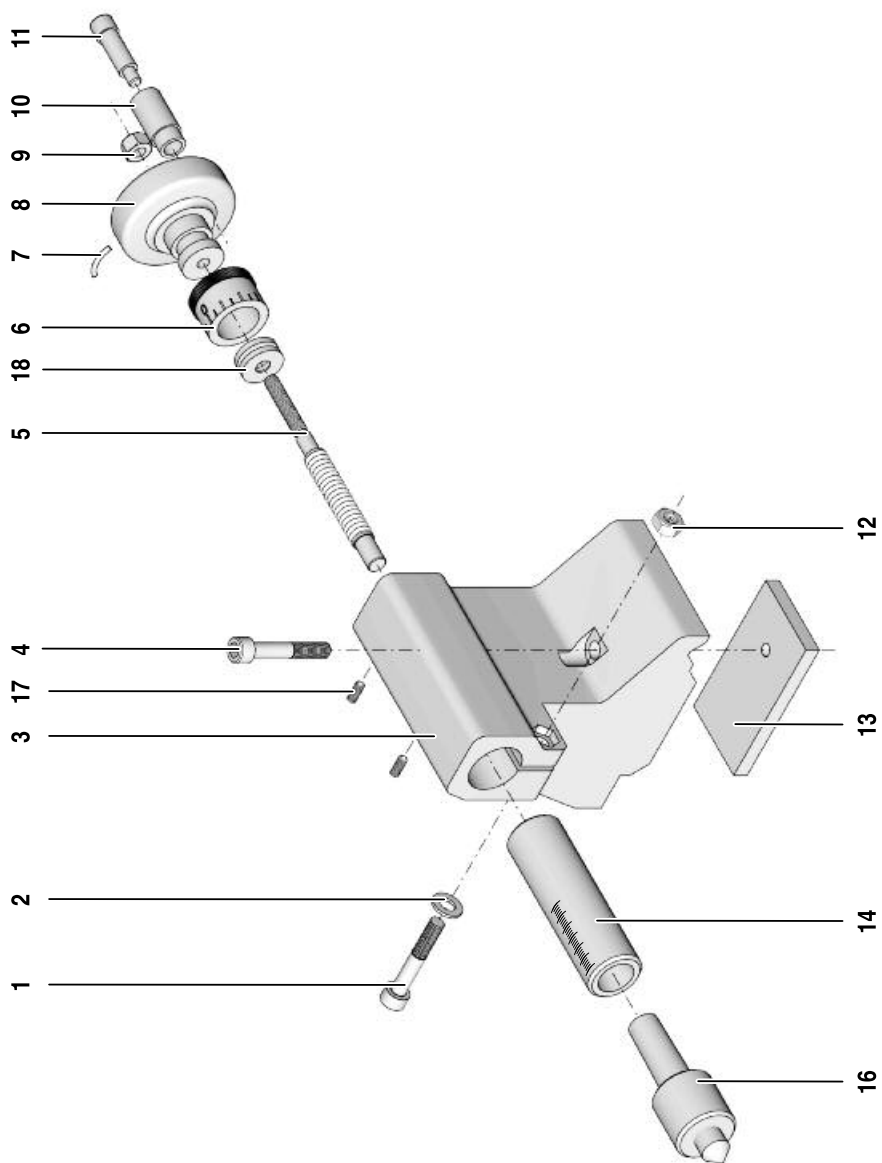
| ET-Nr.: | Designation | ET-Nr.: | Designation |
|----------------|-----------------------------|----------------|------------------------------------|
| 24002-01-01 | Brand-Logo | 24002-01-45 | Set screw |
| 24002-01-02 | Speed table | 24002-01-46 | Motor belt pulley |
| 24002-01-03 | Mat | 24002-01-47 | Retaining ring |
| 24002-01-04 | Gearbox | 24002-01-48 | Washer |
| 24002-01-05 | Screw | 24002-01-49 | Spacer sleeve |
| 24002-01-06 | Pin | 24002-01-50 | Intermediate belt pulley |
| 24002-01-07 | Gearbox hinge | 24002-01-51 | Drive-belt, main spindle |
| 24002-01-08 | Strain relief | 24002-01-52 | Drive-belt, engine |
| 24002-01-09 | Screw | 24002-01-53 | Screw |
| 24002-01-10 | Power supply cable | 24002-01-54 | Bearing |
| 24002-01-11 | Board (without LED) | 24002-01-55 | Screw |
| 24002-01-12 | Switch | 24002-01-56 | Plate |
| 24002-01-13 | Mat, short | 24002-01-57 | Bushing |
| 24002-01-14 | Chuck cover | 24002-01-58 | Shaft |
| 24002-01-15 | Sleeve | 24002-01-59-01 | Motor mounting plate, big |
| 24002-01-16 | Screw | 24002-01-59-02 | Motor mounting plate, small |
| 24002-01-18 | Screw | 24002-01-60 | Nut |
| 24002-01-19 | Main spindle | 24002-01-61 | Nut |
| 24002-01-20 | Motor Cover | 24002-01-62 | Cam |
| 24002-01-21-01 | Main spindle bearing, big | 24002-01-63-01 | Spacer |
| 24002-01-21-02 | Main spindle bearing, small | 24002-01-63 | Screw |
| 24002-01-24 | Rotary knob | 24002-01-64 | Circlips |
| 24002-01-25 | Rotary switch | 24002-01-65 | Switch |
| 24002-01-26 | Guide-Screw-Label | 24002-01-66 | Lathe chuck (not shown) |
| 24002-01-30 | Screw | 24002-01-67 | Lathe chuck spanner (not shown) |
| 24002-01-31 | Spacer ring | 24002-01-68 | Plate |
| 24002-01-32 | Motor | 24002-01-70 | Table of thread pitch |
| 24002-01-33 | Ring nut | 24002-01-71 | Type label |
| 24002-01-34 | Bushing | 24002-01-72 | Control-Panel, complete |
| 24002-01-35 | Knurled nut | 24002-01-73 | Head stock |
| 24002-01-36 | Screw | 24002 01-74 | Rotary knob |
| 24002-01-37 | Screw | 24002 01-75 | Axis |
| 24002-01-38 | Ball bearing | 24002-01-97 | Article packaging (not shown) |
| 24002-01-39 | Shaft | 24002-01-99 | Operating instructions (not shown) |
| 24002-01-40 | Tensioner poully | | |
| 24002-01-41 | Screw | | |
| 24002-01-42 | Screw | | |
| 24002-01-43 | Main spindle belt pulley | | |
| 24002-01-44 | Nut | | |



| ET-Nr.: | Designation |
|---------------|---------------------------|
| 24002-02-01 | Lathe bed |
| 24002-02-02 | Cover |
| 24002-02-02-1 | Screw |
| 24002-02-03 | Screw |
| 24002-02-04 | Scale ring |
| 24002-02-05 | Set screw |
| 24002-02-06 | Lead screw bearing |
| 24002-02-07 | Screw |
| 24002-02-08 | Screw |
| 24002-02-09 | Pin |
| 24002-02-10 | Cap nut |
| 24002-02-11 | Hand wheel |
| 24002-02-12 | Spring |
| 24002-02-13 | Guide screw |
| 24002-02-14 | Nut for guide screw |
| 24002-02-15 | Washer |
| 24002-02-16 | Screw |
| 24002-02 17-1 | Bush bearing |
| 24002-02 17-2 | Bush bearing |
| 24002-02-18 | Coupling shaft |
| 24002-02-19 | Coupling piece |
| 24002-02-20 | Knob for automatic feed |
| 24002-02-21 | Screw |
| 24002-02-22 | Set screw |
| 24002-02-23 | Housing |
| 24002-02-24 | Set screw |
| 24002-02-25 | Lead screw coupling peace |
| 24002-02-26 | Coupling shaft |



| ET-Nr.: | Designation |
|---------------|-------------------------|
| 24002-03-01 | Set screw |
| 24002-03-02 | Nut |
| 24002-03-03 | Set screw |
| 24002-03-04 | Spring |
| 24002-03-05 | Cap nut |
| 24002-03-06 | Screw |
| 24002-03-07 | Pin |
| 24002-03-08 | Handle |
| 24002-03-09 | Scale ring |
| 24002-03-10 | Screw |
| 24002-03-11 | Holder |
| 24002-03-12 | Spindle |
| 24002-03-13 | Adjusting plate |
| 24002-03-14 | Set screw |
| 24002-03-15 | Set screw |
| 24002-03-16 | Nut |
| 24002-03-17 | Cover |
| 24002-03-18 | Screw |
| 24002-03-19 | Adjusting plate |
| 24002-03-20 | Spindle |
| 24002-03-21 | Screw |
| 24002-03-22 | Set screw |
| 24002-03-23 | Plate |
| 24002-03-23-1 | Nut Plate |
| 24002-03-24 | Screw |
| 24002-03-25 | Support |
| 24002-03-26 | Spindle nut |
| 24002-03-27 | Cover |
| 24002-03-28 | Cross slide |
| 24002-03-29 | Screw |
| 24002-03-30 | Top slide (downer part) |
| 24002-03-31 | Screw |
| 24002-03-32 | Top-Slide (Downer part) |
| 24002-03-33 | Tool holder |
| 24002-03-34 | Screw |
| 24002-03-35 | Screw |



| ET-Nr.: | Designation |
|-------------|--------------------------------|
| 24002-04-01 | Screw |
| 24002-04-02 | Washer |
| 24002-04-03 | Tailstock body |
| 24002-04-04 | Screw |
| 24002-04-05 | Spindle |
| 24002-04-06 | Scale ring |
| 24002-04-07 | Spring |
| 24002-04-08 | Handwheel |
| 24002-04-09 | Cap Nut |
| 24002-04-10 | Grip |
| 24002-04-11 | Screw |
| 24002-04-12 | Nut |
| 24002-04-13 | Guide plate with threaded hole |
| 24002-04-14 | Sleeve |
| 24002-04-16 | Rotating centre |
| 24002-04-17 | Set screw |
| 24002-04-18 | Spindle bearing |

PROXXON

GB Service note

All PROXXON products are thoroughly inspected after production. Should a defect occur nevertheless, please contact the dealer from whom you purchased the product. Only the dealer is responsible for handling all legal warranty claims which refer exclusively to material and manufacturer error.

Improper use, such as capacity overload, damage due to outside influences and normal wear are excluded from the warranty.

You will find further notes regarding "Service and Spare Parts Management" at www.proxxon.com.