

Operating manual

Version 2.2.2

Lathe

TU 2506 Item No. 9684509

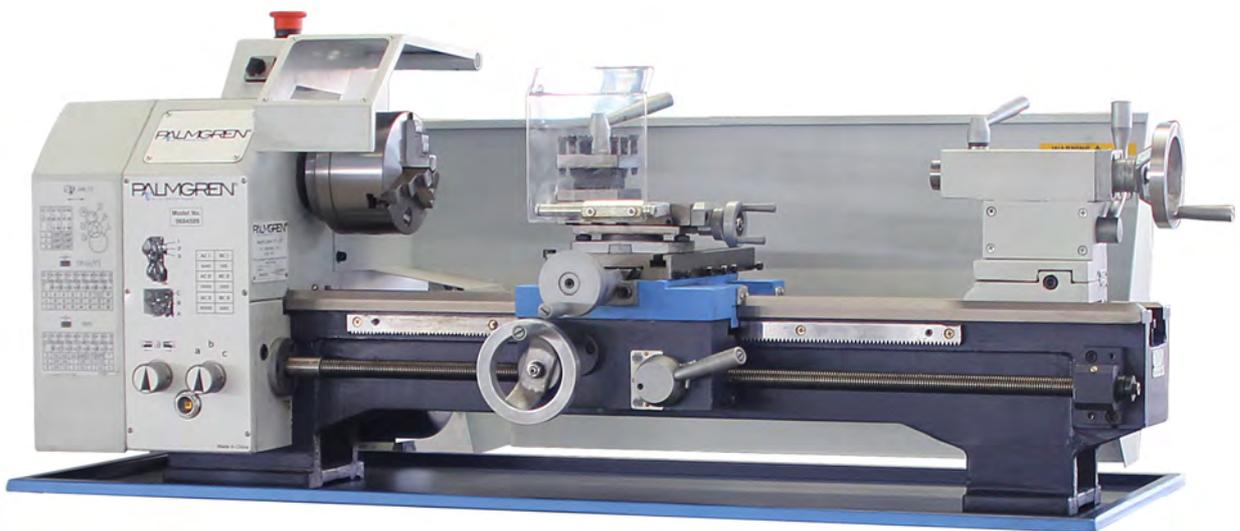


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Preface

Dear customer,

Thank you very much for purchasing a product made by company.

Company metal working machines offer a maximum of quality, technically company solutions and convince by an outstanding price performance ratio. Continuous enhancements and product innovations guarantee state-of-the-art products and safety at any time.

Before commissioning the machine please thoroughly read these operating instructions and get familiar with the machine. Please also make sure that all persons operating the machine have read and understood the operating instructions beforehand.

Keep these operating instructions in a safe place nearby the machine.

Information

The operating instructions include indications for safety-relevant and proper installation, operation and maintenance of the machine. The continuous observance of all notes included in this manual guarantee the safety of persons and of the machine.

The manual determines the intended use of the machine and includes all necessary information for its economic operation as well as its long service life.

In the paragraph "Maintenance" all maintenance works and functional tests are described which the operator must perform in regular intervals.

The illustration and information included in the present manual can possibly deviate from the current state of construction of your machine. Being the manufacturer we are continuously seeking for improvements and renewal of the products. Therefore, changes might be performed without prior notice. The illustrations of the machine may be different from the illustrations in these instructions with regard to a few details. However, this does not have any influence on the operability of the machine.

Therefore, no claims may be derived from the indications and descriptions. Changes and errors are reserved!

Your suggestion with regard to these operating instructions are an important contribution to optimising our work which we offer to our customers. For any questions or suggestions for improvement, please do not hesitate to contact us.

If you have any further questions after reading these operating instructions and you are not able to solve your problem with a help of these operating instructions, please contact your specialised dealer or

C.H.HANSON
2000 North Aurora Rd.
Naperville,IL 60563
Call 800-827-3398

1 Safety

Glossary of symbols

| | |
|---|------------------------------|
|  | gives additional indications |
|  | calls on you to act |
|  | Enumerations |

This part of the operating manual

- explains the meaning and use of the warning references contained in the operating manual,
- explains how to use the lathe properly,
- highlights the dangers that might arise for you or others if these instructions are not obeyed,
- tells you how to avoid dangers.

In addition to this operating manual please observe

- applicable laws and regulations,
- legal regulations for accident prevention,
- the prohibition, warning and mandatory signs as well as the warning notes on the lathe.

Consult OSHA, state and local regulations in order to determine compliance, danger and risks to the operator.

Always keep this documentation close to the lathe.

If you would like to order another operating manual for your machine, please indicate the serial number of your machine. Please find the serial number on the type plate.



1.1 Type plates



INFORMATION

If you are unable to solve a problem using this manual, please contact us for advice:

Exclusive USA Agent

C.H.HANSON

2000 North Aurora Rd.

Naperville, IL 60563

Call 800-827-3398

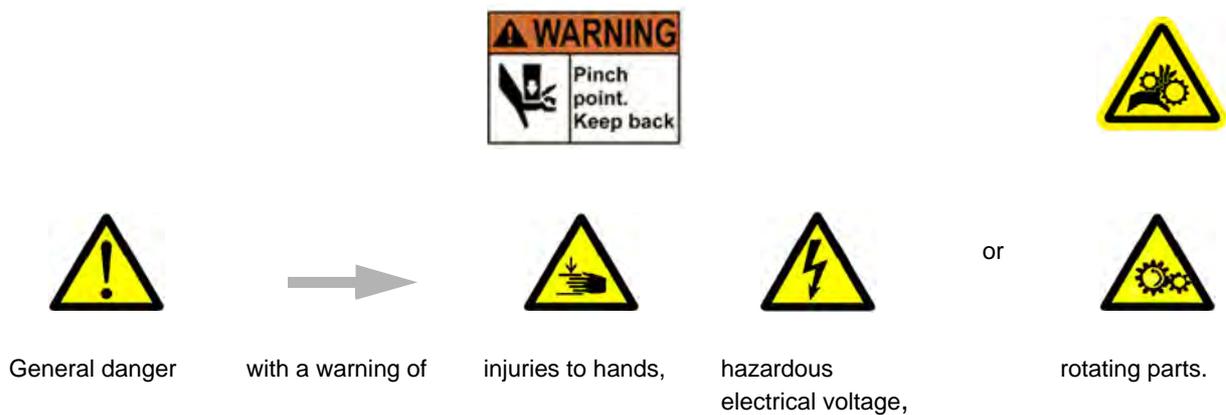
1.2 Safety warnings (warning notes)

1.2.1 Classification of hazards

We classify the safety warnings into various levels. The table below gives an overview of the classification of symbols (pictograms) and warnings for the specific danger and its possible consequences.

| Pictogram | Alarm expression | Definition/Consequences |
|--|--------------------|---|
|  | DANGER! | Imminent danger that will cause serious injury or death to personnel. |
| | WARNING! | Risk: A danger that might cause serious injury or death to personnel. |
| | CAUTION! | Danger or unsafe procedure that might cause injury to personnel or damage to property. |
|  | ATTENTION! | Situation that could cause damage to the machine and product and other types of damage. No risk of injury to personnel. |
|  | INFORMATION | Application tips and other important or useful information and notes. No dangerous or harmful consequences for personnel or objects. |

In the case of specific dangers, we replace the pictogram



1.2.2 Other pictograms



Be aware of slipping!



Activation forbidden!



Pull the mains plug!



Use protective goggles!



Use ear protection!



Use protective gloves!



Use protective boots!



Wear a safety suit!



Protect the environment!



Contact address

1.3 Proper use

WARNING!

Improper use of the lathe

- will endanger personnel,
- will endanger the machine and other material property of the operator,
- may affect proper operation of the machine.



The machine is designed and manufactured to be used in environments where there is no potential danger of explosion.

The lathe is designed and manufactured for straight turning and facing round or regularly formed three-, six- or twelve-square workpieces in cold metal, castings and plastics or similar materials that do not constitute a health hazard or do not create dust, such as wood, Teflon®, etc. The lathe must only be installed and operated in a dry and well-ventilated place. The workpieces may only be clamped in the lathe chuck using self ejecting chuck-key provided.

If the lathe is used in any way other than described above, or modified without authorization, then the lathe- is being used improperly.

We do not take liability for damage caused by improper use.

We would like to stress that any modifications to the construction, or technical or technological modifications that have not been authorized will also render the warranty null and void.

It is also part of proper use that

- the maximum values for the lathe are complied with,
- the operating manual is observed,
- inspection and maintenance instructions are observed.

☞ "Technical data" on page 16

In order to achieve company cutting performance, it is essential to choose the right turning tool, feed, tool pressure, cutting speed and coolant.

WARNING!

Very serious injury due to improper use.

It is forbidden to make any modifications or alterations to the operating values of the machine. These could endanger personnel and cause damage to the machine.



1.4 Possible dangers caused by the machine

The lathe has undergone a safety inspection (analysis of danger with assessment of risks). It has been designed and built on the basis of this analysis using the latest technological advances.

Nonetheless, there remains a residual risk, since the machine operates with

- high revolutions,
- rotating parts,
- electrical voltage and currents.

We have used construction resources and safety techniques to minimise the health risk to personnel resulting from these hazards.

If the lathe is used and maintained by personnel who are not duly qualified, there may be a risk resulting from incorrect operation or unsuitable maintenance.

INFORMATION

All personnel involved in assembly, commissioning, operation and maintenance must

- be duly qualified,
- follow this operating manual.

Disconnect the machine from main power source whenever cleaning or maintenance work is being carried out.

WARNING!

The lathe may only be used with the safety devices activated.

Disconnect the lathe from main power source whenever you detect a failure in the safety devices or when they are not fitted!

All additional installations carried out by the operator must incorporate the prescribed safety devices.

As the machine operator, this will be your responsibility!

 **"Safety devices" on page 11**



1.5 Qualification of personnel

1.5.1 Target group

This manual is addressed to

- operators,
- users,
- maintenance staff.

The warning notes therefore refer to both operation and maintenance of the machine.

Always disconnect the machine plug from the from main power source. This will prevent it being used by unauthorized personnel.



INFORMATION

All personnel involved in assembly, commissioning, operation and maintenance must

- be duly qualified,
- follow this operating manual.

In the event of improper use

- there may be a risk to personnel,
- there may be a risk to the machine and other material property,
- correct functioning of the lathe may be affected.



1.5.2 Authorized personnel

WARNING!

Incorrect use and maintenance of the machine constitutes a danger for personnel, objects and the environment.

Only authorized personnel may operate the machine!

The only personnel authorized to use this machine and perform maintenance on it are trained and instructed technical staff working for the operator and manufacturer.



1.5.3 Obligations of the operator

The operator must instruct staff at least once a year on

- all safety standards that apply to the machine,
- operation,
- accredited technical guidelines.

The operator must also

- check staff's understanding,
- document training/instruction,
- require staff to confirm participation in training/instruction by means of a signature,
- check whether the staff are aware of safety and of dangers in the workplace and whether they observe the operating manual.

1.5.4 Obligations of the user

The user must

- have read and understood the operating manual,
- be familiar with all safety devices and regulations,
- be able to manipulate the machine.

1.5.5 Additional qualification requirements

For work on electrical components or equipment there are additional requirements:

- This work must only be carried out by a qualified electrician or person working under the instructions and supervision of a qualified electrician.
- Before carrying out work on electric components or operating units the following measures must be taken, in the order given.

- ➔ Disconnect all main electrical power.
- ➔ Ensure that the machine cannot be turned on again.
- ➔ Check that there is no voltage.

1.6 User positions

The user must stand in front of the machine.

1.7 Safety measures during operation

CAUTION!

Risk due to inhaling health hazardous dusts and mist.

Depending on the material being processed and any additional dusts and mist in the work area, conditions might impair your health.

Make sure that the generated health hazardous dusts and mist are safely removed at the point of origin and are collected and/or filtered from the working area. Use an appropriate dust collection/filter unit.



CAUTION!

Risk of fire and explosion by using flammable materials or cooling lubricants.

Take additional preventive measures in order to safely avoid health hazards before processing flammable materials (e.g. aluminum, magnesium) or before using flammable additives (e.g. alcohol).



CAUTION!

Risk of winding-up or cutting damages when using hand tools.

The machine is not designed for the use of hand tools (e.g. emery cloth or files). It is forbidden to use any hand tools on this machine.



1.8 Safety devices

Use the lathe only with properly functioning safety devices.

Stop the lathe immediately if there is a failure in the safety device or if it is not functioning for any reason.

It is your responsibility!

If a safety device has been activated or has failed, the lathe must only be used when

- the cause of the failure has been removed,
- it has been verified that there is no resulting danger for personnel or objects.

WARNING!

If you bypass, remove or override a safety device in any other way, you are endangering yourself and other personnel working with the machine. The possible consequences are

- damage as a result of components or parts of components flying off at high speed,
- contact with rotating parts,
- fatal electrocution.



WARNING!

The separating protective equipment which is made available and delivered together with the machine is designed to reduce the risk of injury from workpieces or fractions of them which being expelled, but not to remove the risk completely.



The lathe includes the following safety devices:

- self-latching, lockable EMERGENCY STOP button,
- a protective cover on the headstock with interlock switch,
- a self-ejecting key for the lathe chuck,
- a lathe chuck guard with position switch.

1.9 EMERGENCY-STOP

The EMERGENCY-STOP turns the lathe off.

Pushing the emergency stop device triggers an emergency stop.

After actuating the switch, turn it to the right, in order to reset it.

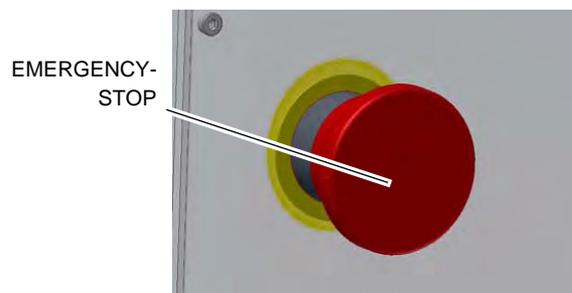


Fig. 1-1: EMERGENCY-STOP

1.9.1 Lockable main switch

It is possible to secure the lockable main switch with a padlock at the position "0" against switching on by mistake or unauthorized switching on.

When the main switch is switched off, the power supply to the machine is completely interrupted.

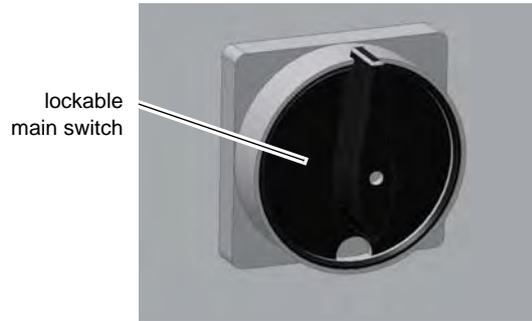


Fig. 1-2: Lockable main switch

1.9.2 Protective cover with safety switch

The spindle head of the lathe is equipped with a fixed, separating protective cover.

The locked position is monitored by means of an interlock switch.

INFORMATION

It is not possible to start the machine until the protective cover is completely closed.

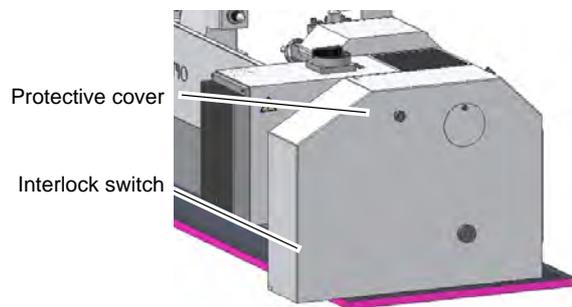


Fig. 1-3: Protective cover of spindle head

1.9.3 Lathe chuck guard

The lathe is provided with chuck guard. The lathe can only be turned on when the chuck guard is closed.

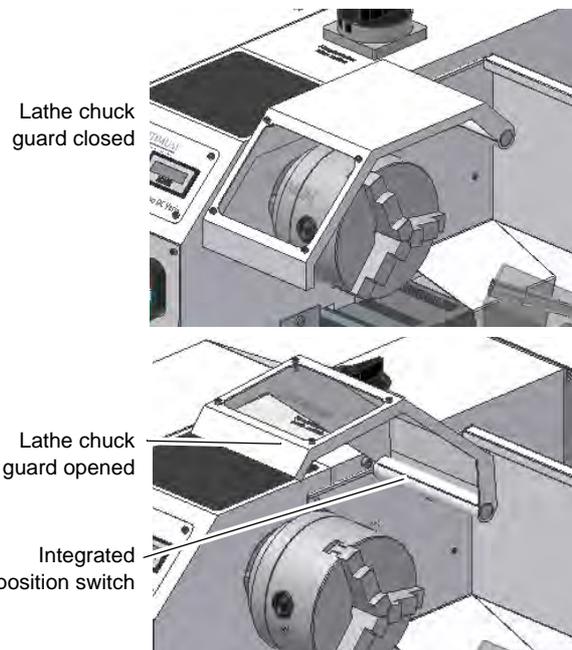


Fig. 1-4: Integrated position switch

1.9.4 Lathe chuck key

The lathe is equipped with self-ejecting key for chucks. Once the chuck key has been released, it will be ejected from the lathe chuck by its spring.

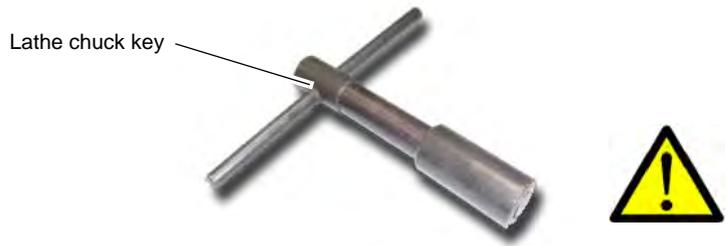


Fig. 1-5: Lathe chuck key

CAUTION!

Exclusively use the supplied chuck key to adjust the lathe chuck.

1.10 Safety check

Check the lathe at least once per shift. Inform the person responsible immediately of any damage, defect or change in operating function.

Check all safety devices

- at the beginning of each shift (with the machine stopped)
- once a week (with the machine in operation)
- after every maintenance and repair operation

| General check | | |
|-------------------|---------------------------------------|----|
| Equipment | Check | OK |
| Lathe chuck guard | Fitted, firmly bolted and not damaged | |
| Labels, markings | Installed and legible | |
| Date: | Checked by (signature): | |

| Run test | | |
|---|---|----|
| Equipment | Check | OK |
| EMERGENCY-STOP switch | When the EMERGENCY-STOP switch is activated, the lathe should switch off automatically. | |
| Lathe chuck key | After releasing the lathe chuck key it has to eject out of the lathe chuck by itself. | |
| Lathe chuck guard/ Protective cover headstock | You may only switch on with the button "ON" after closing the lathe chuck guard/ Protective cover headstock | |
| Date: | Checked by (signature): | |

1.11 Individual protection gear

For certain work individual protection gear is required.

Protect your face and eyes: During all work, and specifically work during which your face and eyes are exposed to hazards, a safety helmet with a face guard should be worn.



Use protective gloves when lifting or handling pieces with sharp edges.



Wear safety shoes when fitting, dismantling or transporting heavy components.



Use ear protection if the noise level (immission) in the workplace exceeds 80 dB(A).



Before starting work, make sure that the prescribed individual protection gear is available in the workplace.

CAUTION!

**Dirty or contaminated body protection gear can cause disease.
Clean it after every use and once a week.**



1.12 Safety during operation

In the description of work with and on the machine we highlight the dangers specific to that work.

WARNING!

Before activating the lathe, double check that this will not endanger other people and cause damage to equipment.



Avoid unsafe working practices:

- Make sure your work does not endanger anyone.
- Clamp the workpiece tightly before activating the lathe.
- For clamping workpieces, only use the self-ejecting chuck key supplied.
- Observe the maximum chuck opening.
- Use protective goggles.
- Do not remove turning chips by hand. To remove turning chips, use a chip hook and/or handbrush.
- Clamp the turning tool at the correct height and with the least possible overhang.
- Turn off the lathe before measuring the workpiece.
- The instructions in this manual must be observed during assembly, handling, maintenance and repair.
- Do not work on the lathe if your concentration is reduced, for example, because you are taking medication.
- Observe the rules for preventing accidents issued by your association for the prevention of occupational accidents and safety in the workplace or other inspection authorities.
- Inform the inspector of any danger or failure.
- Stay by the lathe until all rotating parts have come to a halt.
- Use prescribed protection gear. Make sure to wear a well-fitting work suit and, where necessary, a hairnet.

1.13 Disconnecting the lathe and making it safe

- Disconnect the lathe from power before beginning any maintenance or repair work. All machine components and hazardous voltages and movements must have been disconnected.
- Secure the machine using a padlock on the lockable main switch.
- Place a warning sign on the machine.



1.14 Using lifting equipment

WARNING!

Use of unstable lifting and suspension gear that might break under load can cause very serious injuries or even death.

Check that the lifting and load suspension gear is of sufficient load capacity and in perfect condition.

Observe the rules for preventing accidents issued by your association for the prevention of occupational accidents and safety in the workplace or other inspection authorities.

Hold the loads properly.

Never walk under suspended loads!



1.15 Mechanical maintenance work

Remove protection and safety devices as required before beginning maintenance work and re-install them once the work has been completed. These include:

- Covers
- Safety indications and warning signs
- Earth (ground) connection

If you remove protection or safety devices, refit them immediately after completing the work.

Check that they are working properly!

2 Technical data

The following information gives the dimensions and weight and is the manufacturer's authorized machine data.

| 2.1 Power connection | | |
|-----------------------------|------------------------------------|-----------------------------------|
| connection | TU2506 | TU2807V |
| Motor | 115V,~ 60Hz, 1Ph, 0.75 kW (1Hp) | 230V,~ 60Hz, 1Ph, 1.5 kW (2Hp) |

| 2.2 Machine specifications | TU2506 | TU2807V | |
|---|---|--|---------------|
| Diameter three-jaw chuck | 125mm (4.92") | | |
| Distance between centers | 550mm (21.63") | 700mm (27.6") | |
| Swing over machine bed | 250mm (9.84") | 266mm (10.47") | |
| Bed width | 135mm (5.31") | 180mm (7.08") | |
| Spindle speed [rpm] | 150 - 2400 | 40 - 4000 | 30 - 4000 |
| Number of speeds | 6 | 3 steps VARIO | 4 steps VARIO |
| Spindle taper | MT 4 | | |
| Spindle thru hole | 26mm (1.02") | | |
| Longitudinal feed | 0.003" 0.004" 0.006" 0.008" 0.012" 0.016" | 0.002" 0.003" 0.004" 0.006" 0.008" 0.012" | |
| Longitudinal Lead Screw size | 3/4" Dia - 10 TPI | | |
| Longitudinal Feed Dial graduation | 0.01" (1rev = 0.780") | 0.02" (1rev = 1.180") | |
| Thread Cutting Pitches - Inches [tpi] | 8 9 9 10 11 12 12.5 14 16 18 20 22 24 25 28 32 36 40 44 48 50 56 | | |
| Thread Cutting Pitches - Metric [mm] | 0.2 0.3 0.4 0.5 0.6 0.625 0.75 0.8 0.875 1.0 1.2 1.25 1.5 1.75 2.0 2.5 3.0 3.5 4.0 | | |
| Operating travel cross slide | 110mm (4.33") | 160mm (6.30") | |
| Cross feed Lead Screw size | 9/16" Dia - 10 TPI | | |
| Cross feed Dial graduation | 0.002" (1rev = 0.2") indirect | | |
| Operating travel top slide | 70mm (2.75") | 60mm (2.36") | |
| Adjustment range of the top slide | + - 90° | | |
| Top slide feed Lead Screw size | 5/16" Dia - 20 TPI | | |
| Top slide feed Dial graduation | 0.001" (1rev = 0.050") | | |
| Distance from Turning Center to Quadruple Tool Holder Surface | 13.5mm (0.531") | 13mm (0.512") | |
| Distance from Turning Center to Top slide's Surface | 25.5mm (1.004") | 25mm (0.984") | |
| Distance from Turning Center to Cross slide's Surface | 75mm (2.95") | 87mm (3.43") | |
| Taper bore of tailstock sleeve | MT 2 | | |

| 2.2 Machine specifications | TU2506 | TU2807V |
|-----------------------------------|----------------------|----------------|
| Tailstock - sleeve diameter | 30mm (1.181") | |
| Tailstock sleeve travel | 65mm (2.56") | 85mm (3.35") |
| Tailstock cross adjustment | + - 10 mm (0.39") | |
| Tailstock feed Lead Screw size | 9/16" Dia - 10 TPI | |
| Tailstock feed Dial graduation | 0.001" (1rev = 0.1") | |

| 2.3 Work area | | |
|----------------------|----------------|-----------------|
| | TU2506 | TU2807V |
| Height | 2000mm (78.7") | 2000mm (78.74") |
| Length | 2200mm (86.6") | 2200mm (86.61") |
| Depth | 1900mm (74.8") | 1900mm (74.8") |

| 2.4 Environmental conditions | | |
|-------------------------------------|---------------|----------------|
| | TU2506 | TU2807V |
| Temperature | 40 - 95 °F | |
| Humidity | 25 - 80 % | |

| 2.5 Operating material | | |
|--|---|----------------|
| | TU2506 | TU2807V |
| Feed gear | Mobilgear 627 or equivalent oil see also  "Lubricant" on page 91 | |
| Bright steel parts and lubricating nipples | Non-corrosive lubricating oil | |
| Change gears | Chain oil (spray) | |

2.6 Emissions

The level of noise emitted by the lathe is less than 78 dB(A).

INFORMATION

This numeric value had been measured on a new machine under conventional operating conditions. Depending on the age or wear of the machine, the noise behavior of the machine might change.



Furthermore, the extent of the noise emission is also depending on manufacturing influence factors, such as speed, material and clamping conditions.

INFORMATION

The mentioned numerical value is an emission level and not necessarily a safe working level.



Unless the degree of noise emission and the degree of noise disturbance are depending on one another it is not possible to use it in order to reliably determine if it is necessary to take further preventive measures or not.

The following factors influence the actual degree of the noise disturbance of the operator:

- Characteristics of the working chamber, e.g. size or damping behavior,
- Other noise sources, e.g. the number of machines,
- Other processes proceeding nearby and the period during which the operator is exposed to the noise.

Furthermore, the admissible pollution level may be different from one country to another due to the national regulations.

This information regarding the noise emission should allow the operator of the machine to perform a better evaluation of the endangerments and risks.

CAUTION!

The machine operator has to wear an appropriate ear protection depending on the overall stress caused by noise and on the basic limit values.

We generally recommend using a sound and ear protection.



2.7 Dimensions, installation plan TU2506

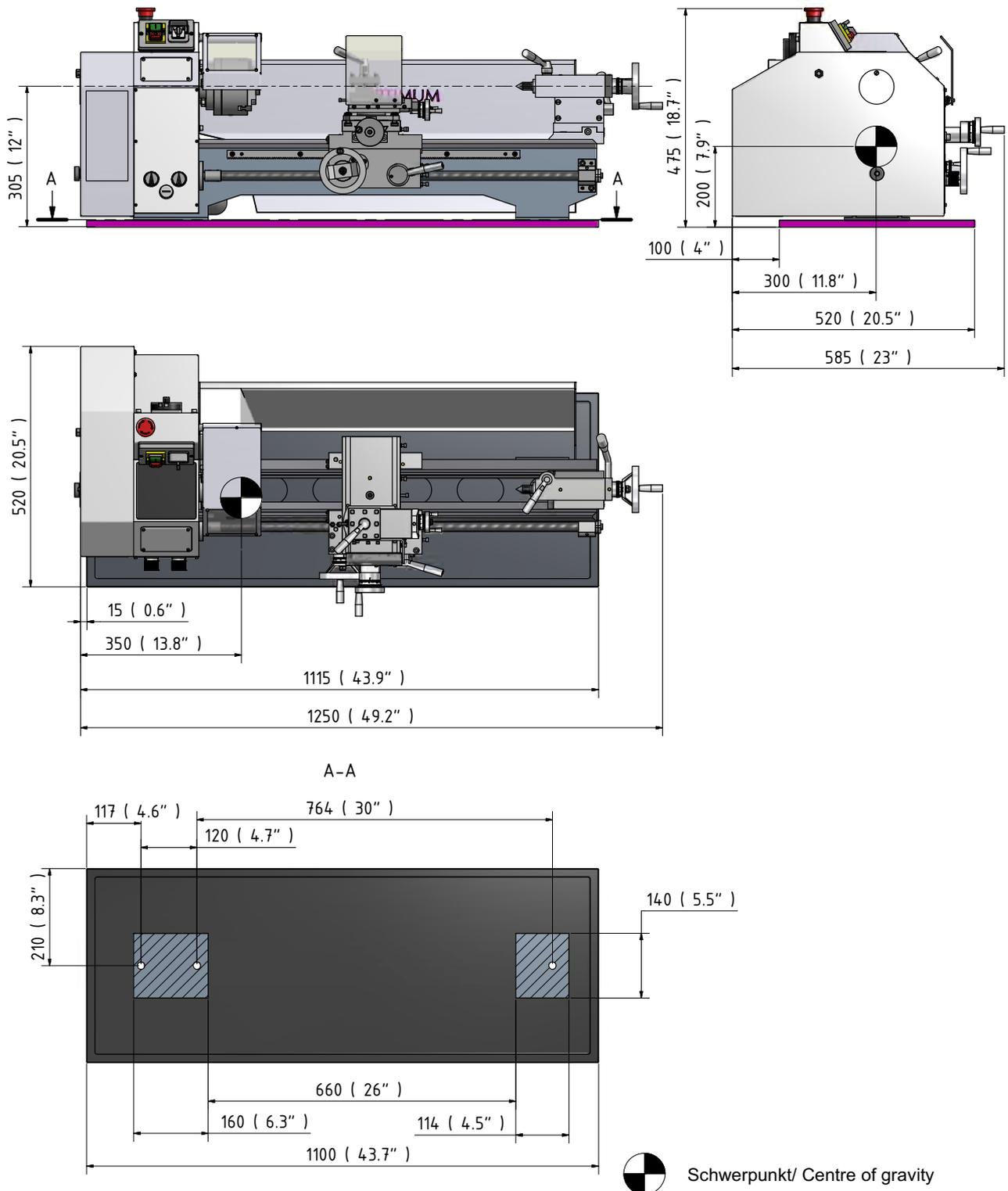


Fig.2-1: Dimensions, installation plan TU2506

2.9 Distance between centres, height of centres TU2506

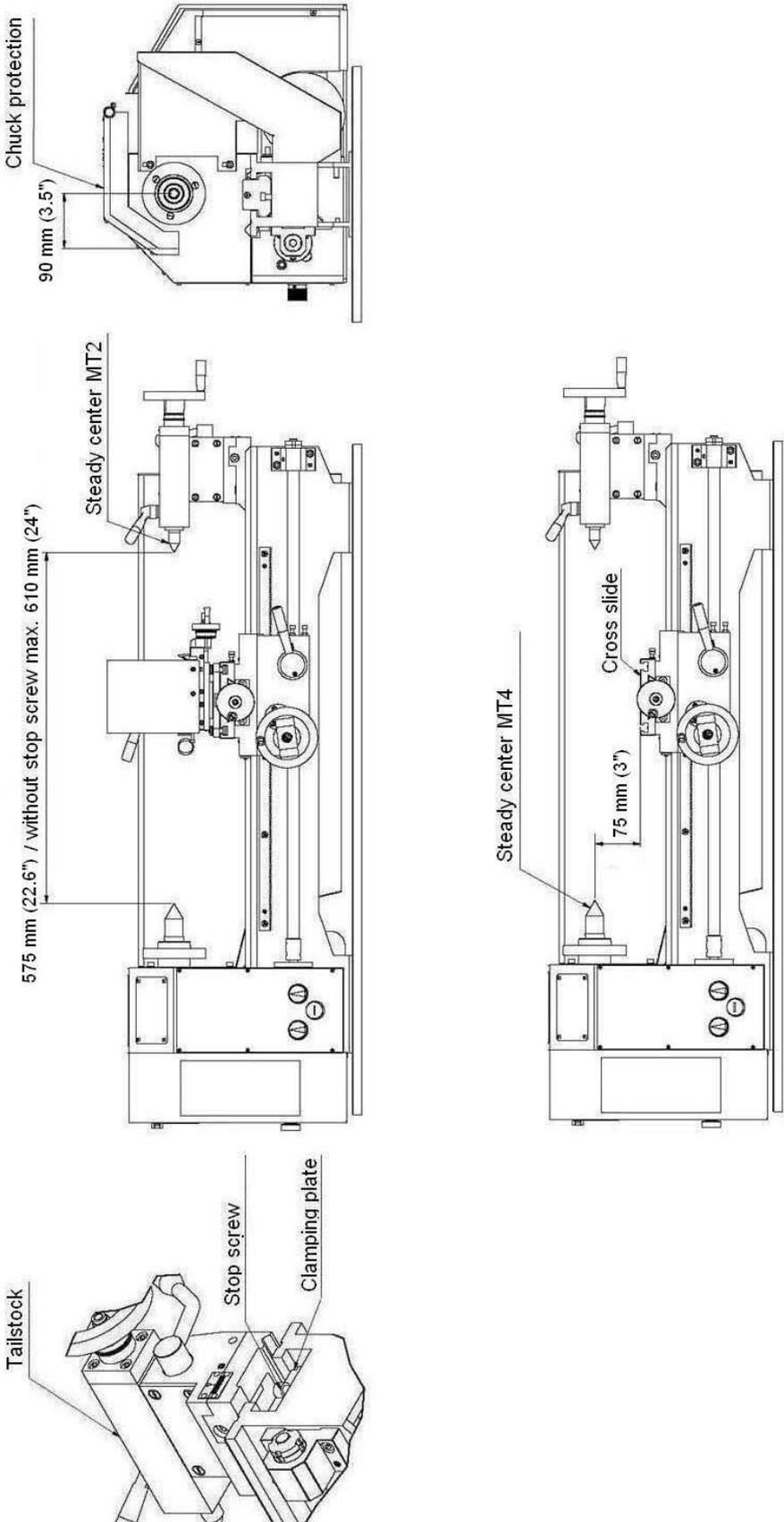


Fig.2-3: Distance between centres, height of centres

2.10 Distance between centres, height of centres TU2807V

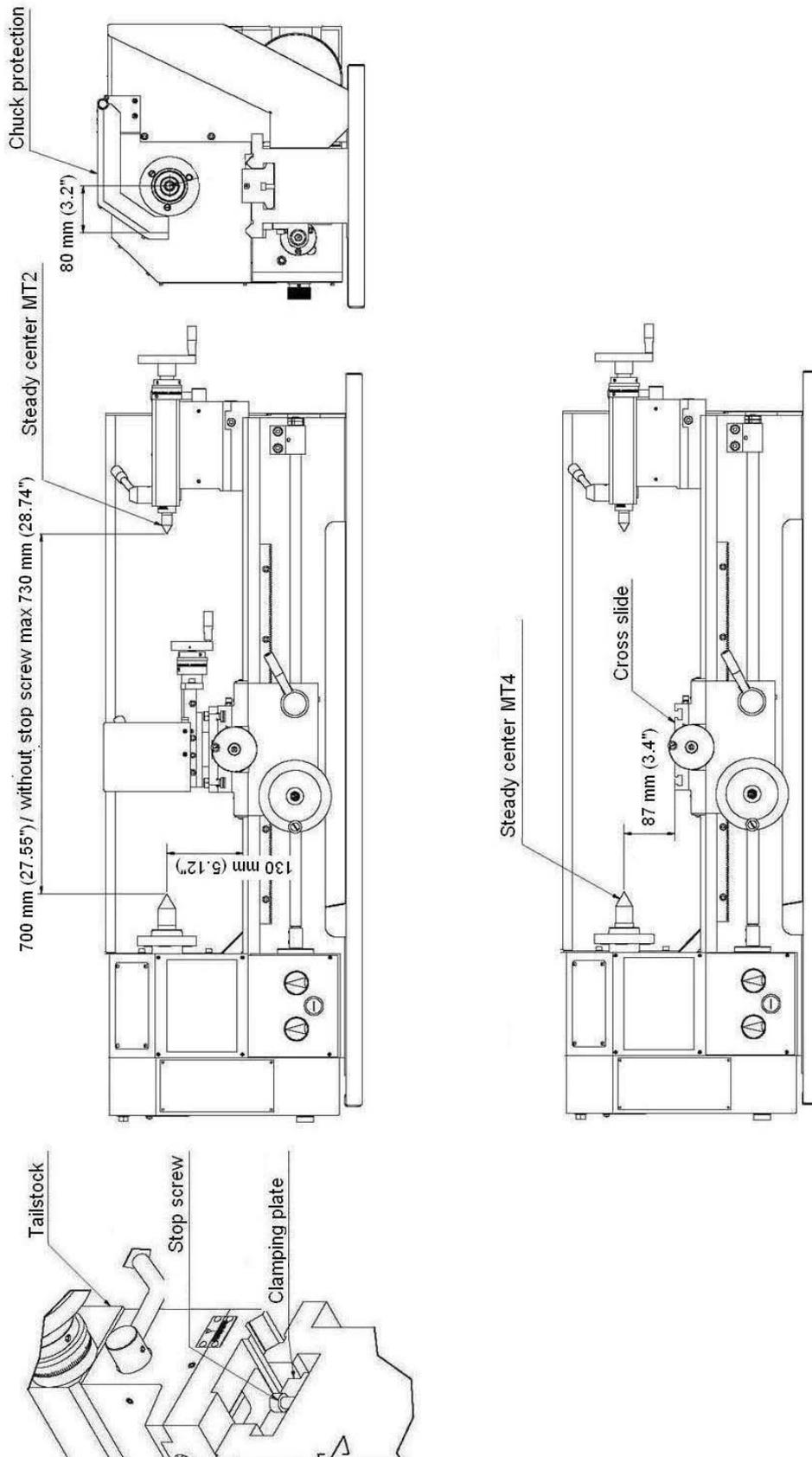


Fig.2-4: Distance between centres, height of centres

3 Assembly

INFORMATION

The lathe comes pre-assembled.



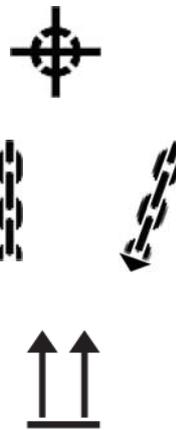
3.1 Extent of supply

When the machine is delivered, check immediately that the lathe has not been damaged during shipping and that all components are included. Also check that no fastening screws have come loose.

Compare the parts supplied with the information on the packaging list.

3.2 Transport

- Center of gravity
- Attachment positions (marking the positions for the attachment position gear)
- Prescribed transport position (marking the top side)
- Means of transportation to be used
- Weights



WARNING!

Machine parts which fall off forklift trucks or other transport vehicles could cause very serious or even fatal injuries. Follow the instructions and information on the box.



WARNING!

Use of unstable lifting and load suspension gear that breaks under load can cause very serious injuries or even death.

Check that the lifting and load suspension gear has sufficient load capacity and is in perfect condition. Observe the rules for preventing accidents issued by your association for the prevention of occupational accidents and safety in the workplace or other inspection authorities.



Hold the loads properly. Never walk under suspended loads!

3.3 Storage

ATTENTION!

Improper storage may cause important parts to be damaged or destroyed. Store packed or unpacked parts only under the following ambient conditions. Please follow the instructions and indications on the transportation box:



- Fragile goods (goods require careful handling)



- Protect against humidity and humid environments
☞ "Environmental conditions" on page 17



- Prescribed position of the packaging box (marking the top side – arrows pointing upward)



- Maximum stacking height

Example: non-stackable – do not pile any further packaging boxes on top of the first packaging box



3.4 Installation and assembly

3.4.1 Requirements of the installation site

ATTENTION!

Before installing the machine, have the load bearing capacity of the subsoil checked by a specialist. The floor and the ceiling of the hall have to bear the weight of the machine plus all additional parts and additional aggregates as well as the operator and the stocked materials. Reinforce the subsoil, if necessary.



INFORMATION

In order to provide for good functionality and high machining accuracy as well as long durability of the machine the site should fulfill certain criteria.



Observe the following items:

- The device must only be installed and operated in dry ventilated places.
- Avoid places nearby machines generating chips or dust.
- The site has to be vibration-free, i.e. at a distance from presses, planing machines, etc.
- The substructure has to be appropriate for turning. Also make sure that the load bearing capacity and the evenness of the floor are appropriate.
- The substructure has to be prepared in a way that possibly used coolant cannot penetrate into the ground.
- Protruding parts such as stops, handles, etc. need to be secured by measures provided by the customer if necessary in order to avoid dangers for persons.

- Provide sufficient space for assembly and operating staff as well as for material transport.
- Also allow for accessibility for setting and maintenance works.
- Make sure that the main power supply for the machine is freely accessible.
- Provide for sufficient illumination (minimum value: 300 lux, measured at the turning tool tip). In case of insufficient intensity of illumination provide for additional illumination i.e. by a separate workplace illuminator.

INFORMATION

The main power supply for the lathe has to be freely accessible for quick action disconnect.



3.4.2 Load suspension point

- Fasten the load suspension gear around the lathe bed.
- Make sure that you distribute the loads evenly so that the lathe cannot turn over while lifting.
- Make sure that no add-on pieces or varnished parts are damaged due to the load suspension.

3.4.3 Installation

WARNING!

Danger of crushing and overturning. The lathe must be installed by at least 2 people.

- Check the horizontal orientation of the base of the lathe with level.
- Check that the foundation has sufficient floor-load capacity and rigidity.



ATTENTION!

Insufficient rigidity of the foundation leads to the superposition of vibrations between the machine and the foundation (natural frequency of components). Insufficient rigidity of the entire lathe assembly also rapidly causes the lathe to reach critical speeds, with unpleasant vibrations, leading to bad turning results.

- Position the lathe on the intended foundation.
- Secure the lathe to the foundation or stand of the machine using the through holes.
- 📖 "Dimensions, installation plan TU2506" on page 19,
- 📖 "Dimensions, installation plan TU2807V" on page 20.



3.5 First use

WARNING!

Personnel and equipment may be endangered if the lathe is first used by inexperienced personnel.

We do not take liability for damage caused by incorrect commissioning.



3.5.1 Cleaning and greasing

- Remove the anticorrosive agent applied to the machine for transport and storage purposes. We recommend the use of WD-40 oil.
- Do not use any solvents, thinners or other cleaning agents which could corrode the varnish on the machine. Follow the specifications and indications of the manufacturer of the cleaning agent.
- Lubricate all bright machine parts with non-corrosive machine oil.
- Grease the machine using the lubrication chart.
☞ "Inspection and maintenance" on page 54

3.5.2 Visual inspection

Check the oil level in the inspection glass of the feed gear.
Fig.5-2: "Oil inspection glass of the feed gear" on page 55

3.5.3 Run test

- Check smooth running of all spindles.
- Check the state of the lathe chuck and the turning jaws.

3.5.4 Power supply

- Connect the lathe to electrical power supply.
- Check the fuse protection (fuse) of your electrical supply according to the technical specifications for the total connected load of the lathe.

3.5.5 Functional test

- Clamp a workpiece into the lathe chuck of the machine or close the jaws of the lathe chuck fully before turning on the machine.

WARNING!

- **Observe the maximum chuck opening.**
- **Do not stand in front of the lathe chuck when turning on the machine for the first time.**



3.6 Optional machine accessories

WARNING!

Risk by using improper workpiece clamping fixtures or by operating the machine with inadmissible speed.



Only use the clamping fixtures (e.g. lathe chuck) which had been delivered together with the machine or as optional equipment offered by company.

Use the working clamping fixtures only in the provided admissible speed range.

Workpiece clamping fixtures must only be modified according to the recommendations of company or of the clamping fixture manufacturer.

| Description | Item No. | Description | Item No. |
|------------------------------------|----------|-------------------------------|----------|
| TU2506 | | TU2807V | |
| • Surface plate 240mm (9.5") | 344 1352 | • Surface plate 265mm (10.4") | 344 1452 |
| • Steady rest | 344 1315 | • Steady rest | 344 1415 |
| • Movable rest | 344 1310 | • Movable rest | 344 1410 |
| | | • Chuck flange 160mm | 344 1413 |
| TU2506 and TU2807V | | | |
| • Chuck flange 125mm | 344 1311 | | |
| • 4-Jaw Chuck 125mm | 344 2812 | | |
| • Collet chuck holder ER 25 | 344 1305 | | |
| • Collet chuck holder ER 32 | 344 1306 | | |
| • Quick change tool holder SWH 1-A | 338 4301 | | |

3.7 Mounting instructions

3.7.1 Mounting instruction chuck flange

Clean the flange and spindle nose, put the flange onto the spindle nose screws.

Measure the mounting hole of the chuck and turn the flange to a diameter as a H7 fit.

Put the jaw chuck onto the flange.

INFORMATION

Position the chuck on the spindle nose step and tap it in with rubber-faced hammer (distribute uniformly easy strokes over the front panel).



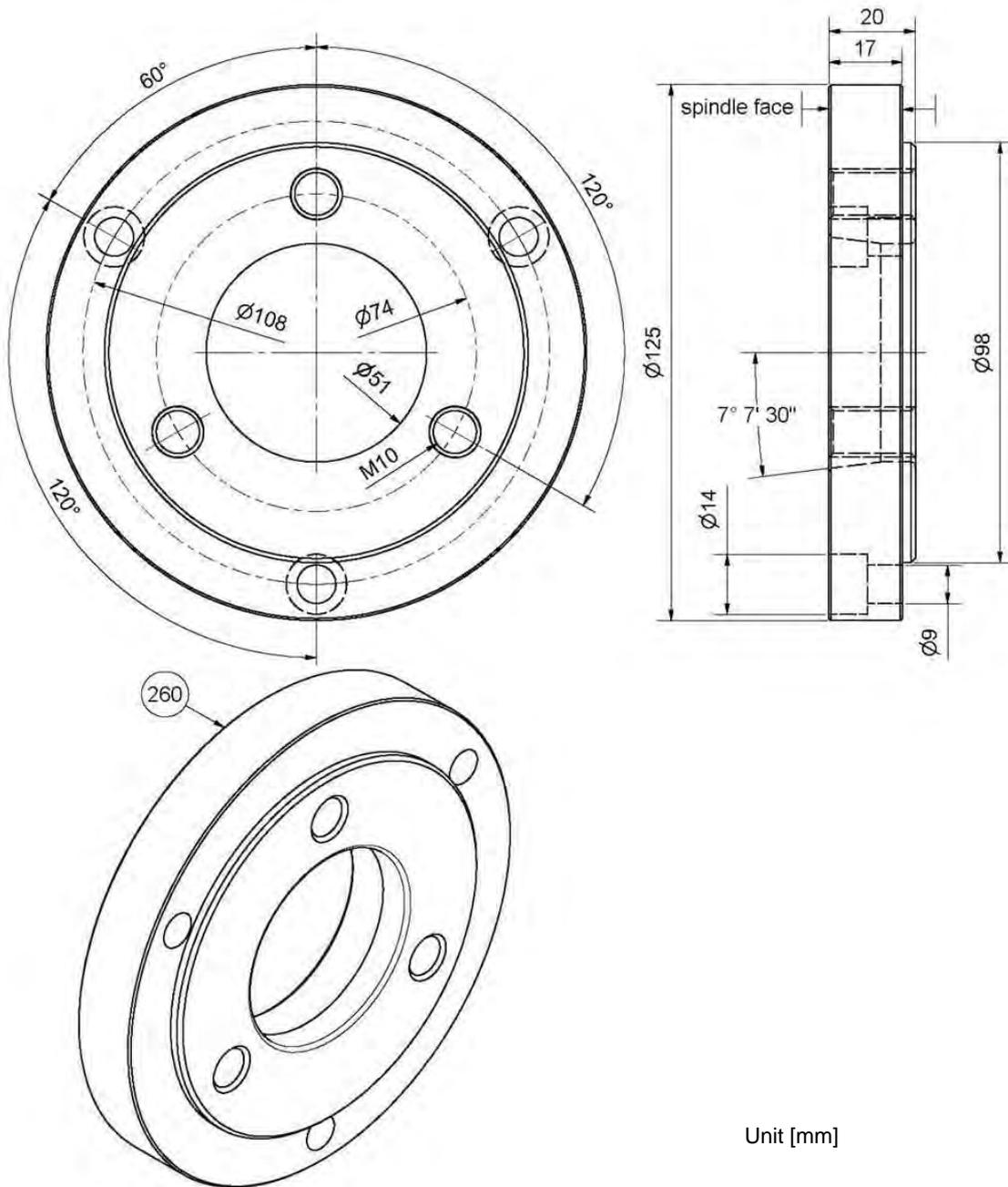
Tighten studs nuts alternatingly and uniformly.

Do not ever tighten studs when installing them into the chuck flange as this could deform chuck's body - jaws will lock in place or would be hard to move.

Furthermore, radial runout can occur.

Recutting chuck jaws is inadmissible!

3.7.2 Chuck flange TU2506 / TU2807V



Unit [mm]

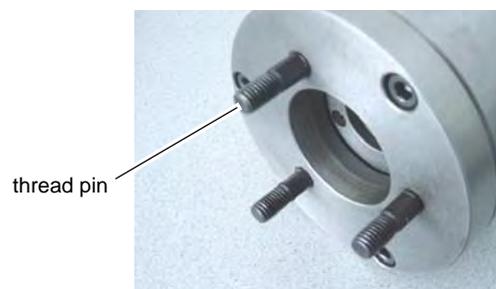
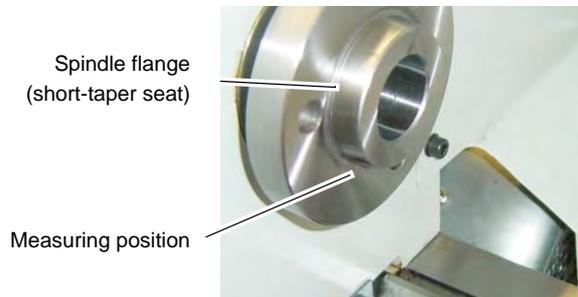
Fig. 3-1: Chuck flange TU2506 / TU2807V

3.7.3 Mounting instruction of collet chuck holder

Mounting of collet chuck holder 344 1305 on your lathe TU2506 and TU2807V.

Proceed as follows.

- Mark out the position of the lathe chuck at the spindle flange before dismantling with an e.g. felt-tipped pen.
- Dismantle the lathe chuck.
- Clean all faces of the spindle nose and of the collet chuck holder extremely thoroughly.
- Remove threaded studs from the lathe chuck and install into the collet chuck holder.
- Measure the true running of the spindle nose. Mark out the greatest positive amplitude of the dial gauge at the spindle nose with an e.g. felt-tipped pen.



- Attach the collet chuck holder to the spindle flange, hand tighten the nuts. Tighten in the nuts stepwise once and uniformly alternating at least three times in successively (only this way you will get the best true running).
- Measure the true running of the collet chuck holder at the conical surface.



- Position the collet chuck holder by turning each 120° at the spindle flange to the highest run out precision is achieved.
- Mark out the position of the highest circularity accuracy of spindle flange with collet chuck holder and assemble then the collet chuck holder on the highest circularity accuracy position.

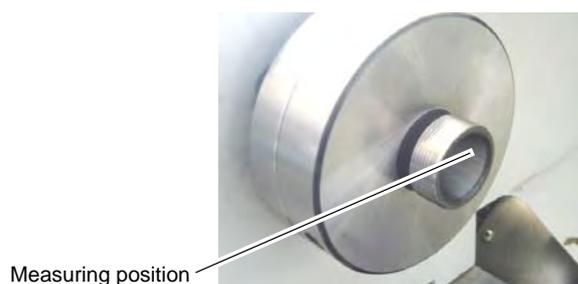


Fig.3-2: 344 1305 without union nut

3.7.4 Mounting of movable rest - TU2506

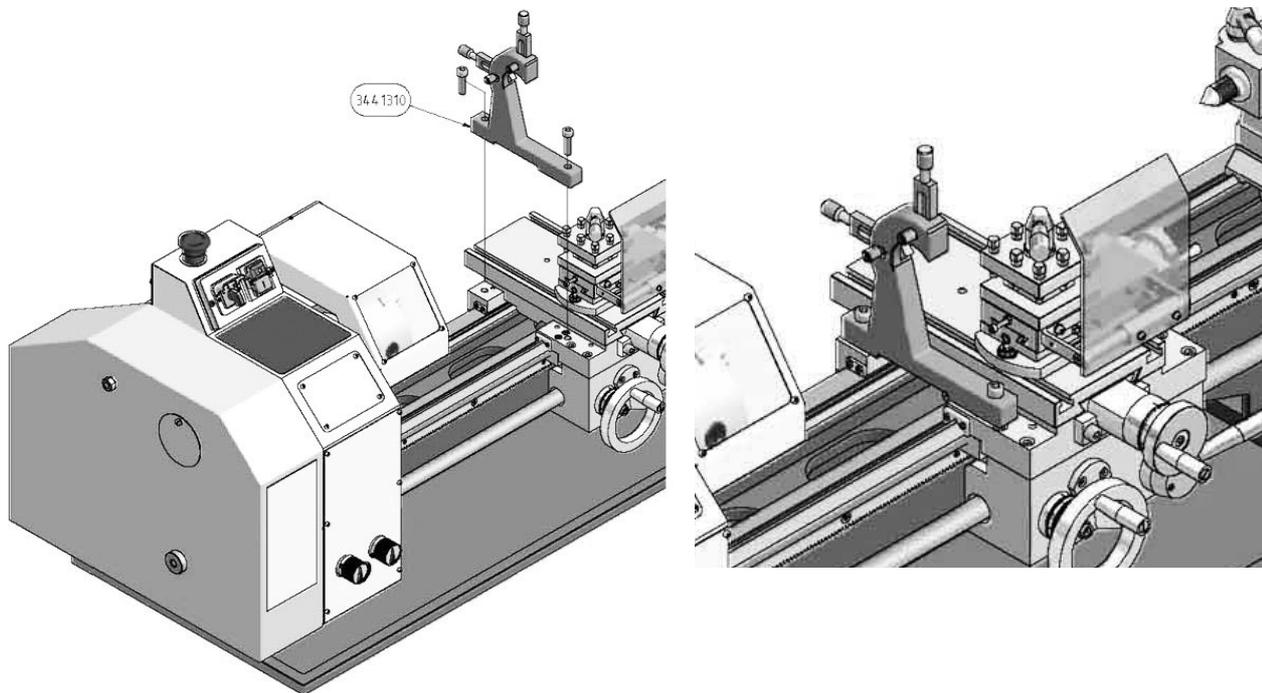


Fig.3-3: Movable rest - TU2506

3.7.5 Mounting of movable rest - TU2807V

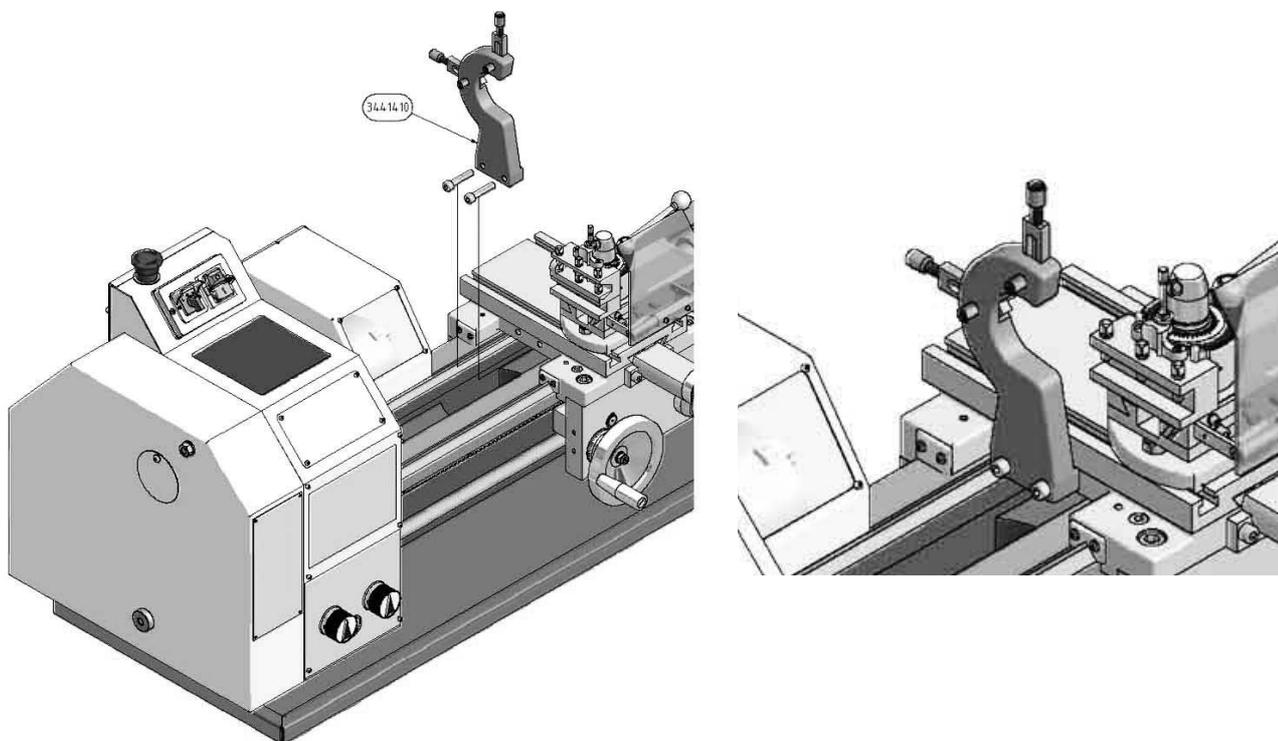


Fig.3-4: Movable rest - TU2807V

3.7.6 Mounting of steady rest - TU2506

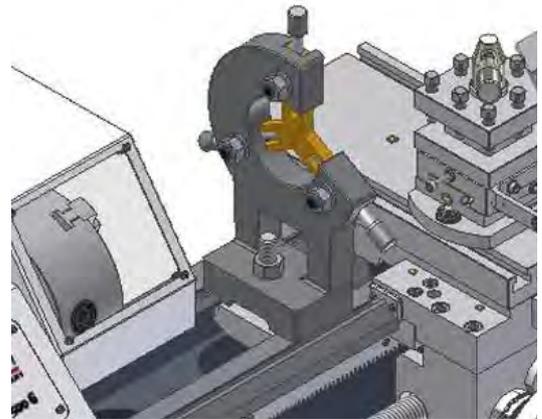
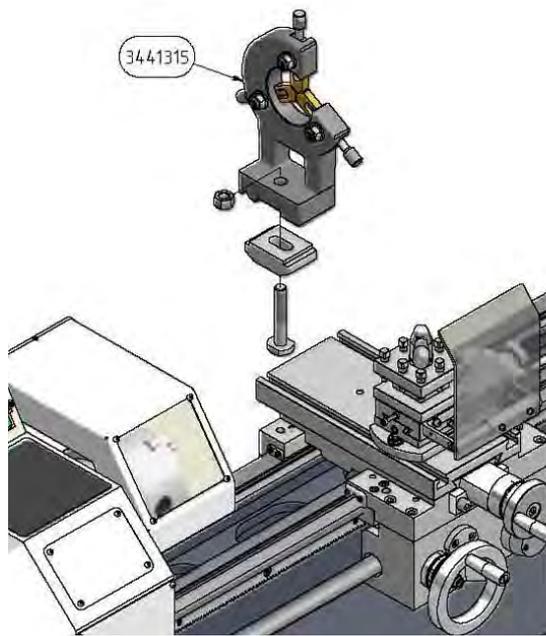


Fig.3-5: Steady rest - TU2506

3.7.7 Mounting of steady rest - TU2807V

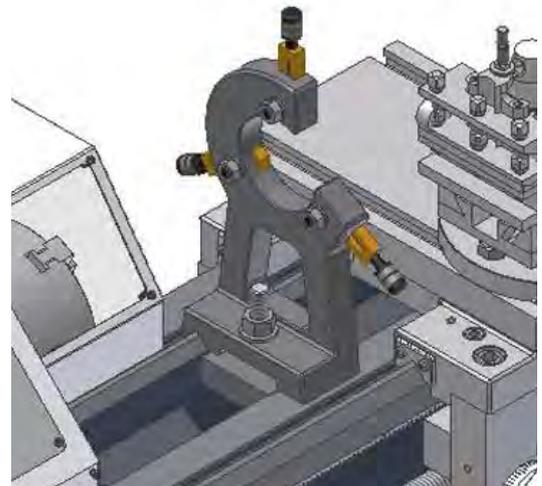
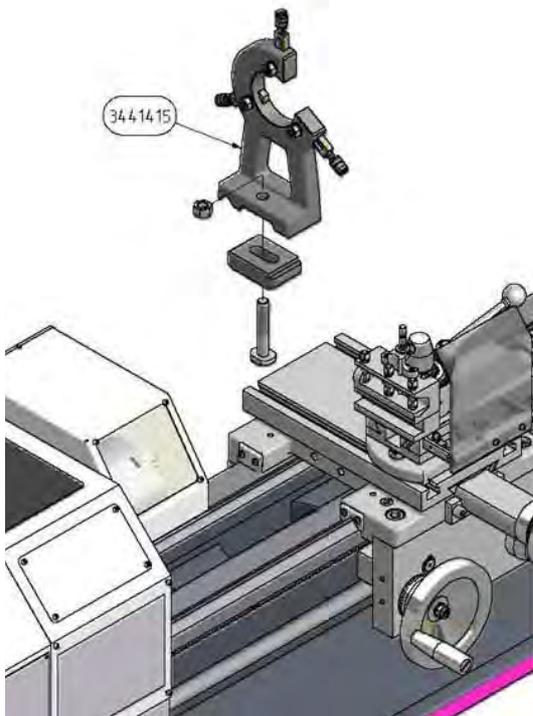


Fig.3-6: Steady rest - TU2807V

4 Operation

4.1 Safety

Use the lathe only under the following conditions:

- The lathe is in proper working order.
- The lathe is used as prescribed.
- The operating manual is followed.
- All safety devices are installed and activated.

All Troubleshooting should be eliminated immediately. Stop the machine immediately in the event of any abnormality in operation and make sure it cannot be started up accidentally or without authorisation.

Notify the person responsible immediately of any modification.

☞ "Safety during operation" on page 14



4.2 General working advice - coolant

Friction during the cutting process causes high temperatures at the cutting edge of the tool.

The tool should therefore be cooled during the cutting process. Cooling the tool with a suitable cooling lubricant ensures better working results and a longer edge life of the cutting tool.

INFORMATION

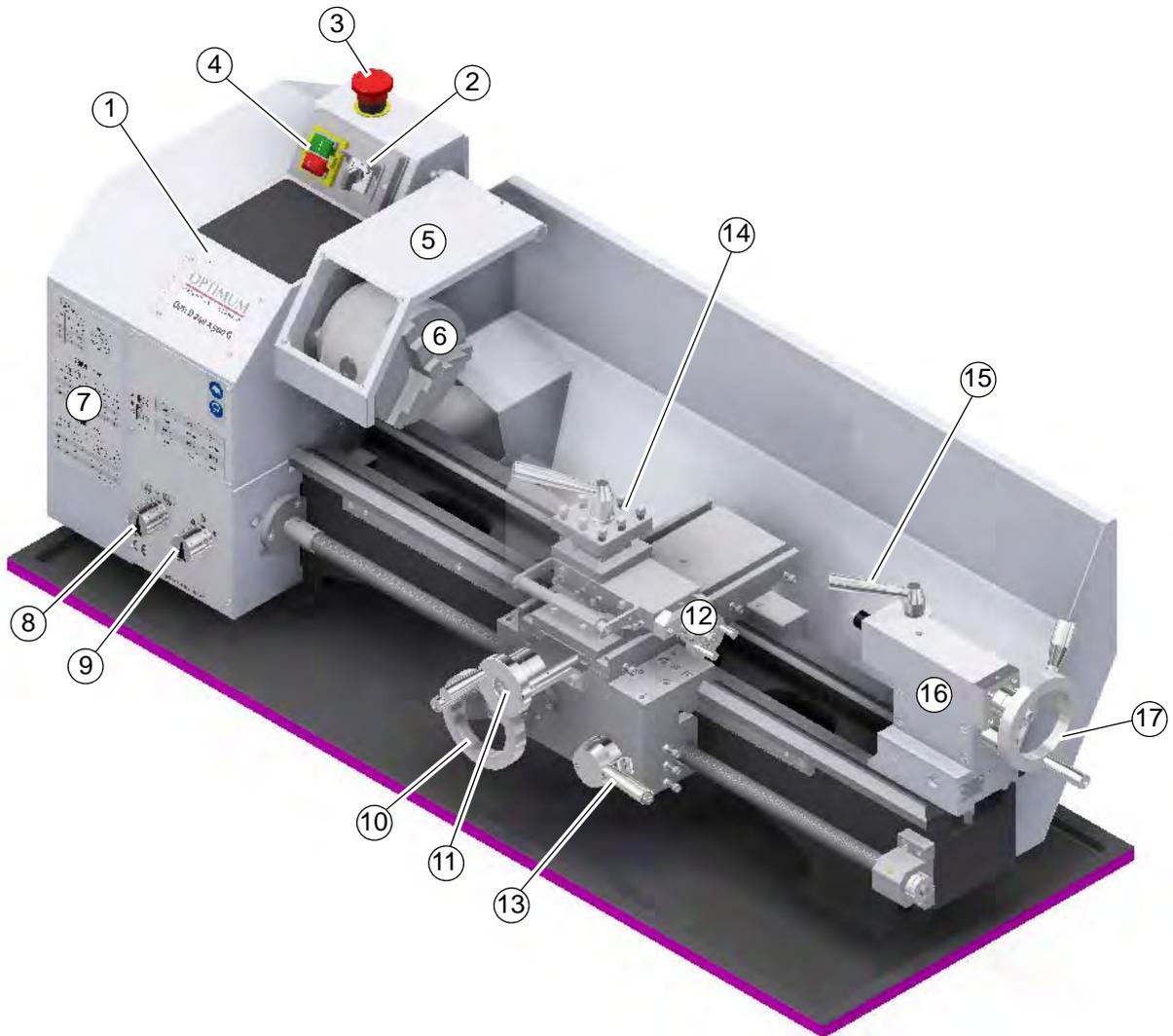
Use a water-soluble and non-pollutant emulsion as a cooling agent. This can be acquired from authorized distributors.

Make sure that the cooling agent is properly retrieved. Respect the environment when disposing of any lubricants and cooling agents. Follow the manufacturer's disposal instructions.



4.3 Operation TU2506

4.3.1 Control and indicating elements



| No. | Description | No. | Description |
|-----|---|-----|--------------------------------------|
| 1 | Protective cover of headstock | 2 | Change-over switch with OFF position |
| 3 | Emergency stop button | 4 | Switch ON/ OFF |
| 5 | Lathe chuck guard | 6 | Jaw chuck |
| 7 | Change gears and pitch/ feed table | 8 | Selector switch for feed direction |
| 9 | Selector switch for speed of feed of lathe saddle | 10 | Handwheel lathe saddle |
| 11 | Handwheel cross slide | 12 | Handwheel top slide |
| 13 | Feed activation lever | 14 | Quadruple toolholder |
| 15 | Clamping lever for tailstock sleeve | 16 | Tailstock |
| 17 | Handwheel tailstock sleeve | | |

4.3.2 Switching elements

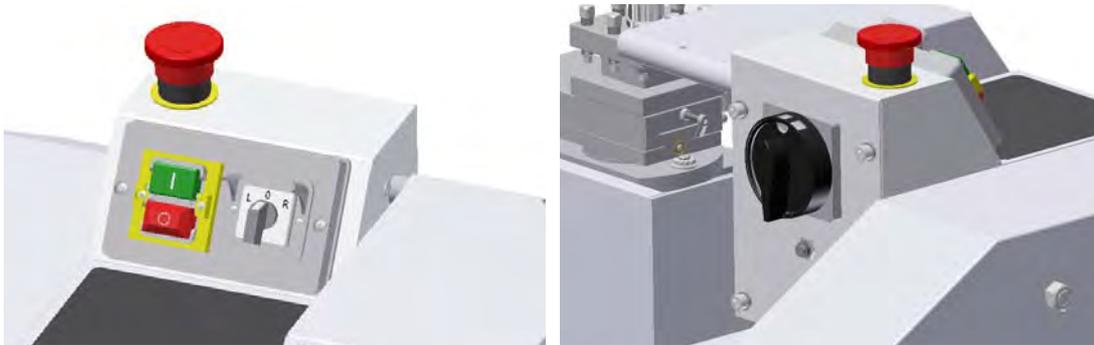


Fig.4-1: panel

Hand actuated auxiliary switch ON

The “hand actuated auxiliary switch ON” switches the rotation of the lathe on.

Hand actuated auxiliary switch OFF

The “hand actuated auxiliary switch OFF” switches the rotation of the lathe off.

Main switch

Disconnects or connects the power supply.

Change-over switch

The direction of rotation of the spindle can be switched by actuating the change-over switch.

It is possible to select a speed for each direction of rotation.

- The labeling “R” means right-handed rotation (clockwise).
- The labeling “L” means left-handed rotation.

ATTENTION!

Wait until the rotation of the spindle has come to complete standstill before changing the direction of rotation by actuating the change-over switch.

If the direction of rotation is changed during operation, the motor and the change-over switch might get damaged.



4.3.3 Turning ON the machine

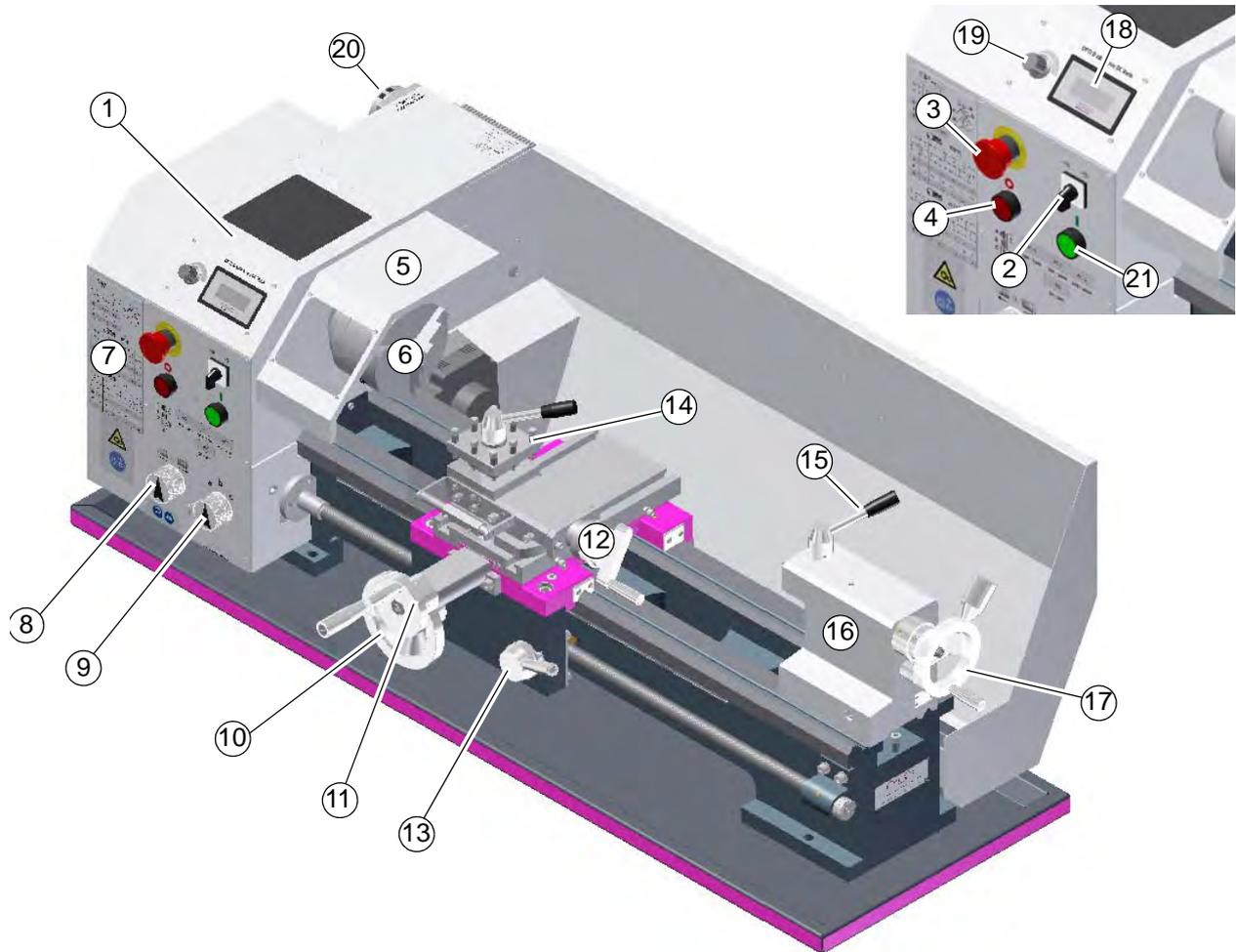
- ➔ Perform basic setting on the lathe (speed stage, infeed, etc.).
- ➔ Check if the lathe chuck guard and the protective cover are closed – close the protective covers if necessary.
- ➔ Select the direction of rotation.
- ➔ Actuate the hand-actuated auxiliary switch “On”.

4.3.4 Turning OFF the machine

- ➔ Actuate the hand-actuated auxiliary switch “Off”.
- ➔ If the machine stands still for a longer period of time, turn off the main power supply.

4.4 Operation TU2807V

4.4.1 Control and indicating elements



| No. | Description | No. | Description |
|-----|---|-----|--------------------------------------|
| 1 | Protective cover of headstock | 2 | Change-over switch with OFF position |
| 3 | Emergency stop button | 4 | Push button ON |
| 5 | Lathe chuck guard | 6 | Jaw chuck |
| 7 | Change gears and pitch/ feed table | 8 | Selector switch for feed direction |
| 9 | Selector switch for speed of feed of lathe saddle | 10 | Handwheel lathe saddle |
| 11 | Handwheel cross slide | 12 | Handwheel top slide |
| 13 | Feed activation lever | 14 | Quadruple toolholder |
| 15 | Clamping lever for tailstock sleeve | 16 | Tailstock |
| 17 | Handwheel tailstock sleeve | 18 | Speed display |
| 19 | Infinitely variable speed adjustment | 20 | Main switch |
| 21 | Push button OFF | | |

4.4.2 Switching elements

Hand actuated auxiliary switch ON

The “hand actuated auxiliary switch ON” switches the rotation of the lathe on.



Hand actuated auxiliary switch OFF

The “hand actuated auxiliary switch OFF” switches the rotation of the lathe off.



Speed adjustment

It is possible to set the required speed using the speed adjustment.



Main switch

Disconnects or connects the power supply.



Change-over switch

The direction of rotation of the spindle can be switched by actuating the change-over switch.

It is possible to select a speed for each direction of rotation.

- The labeling “R” means right-handed rotation (clockwise).
- The labeling “L” means left-handed rotation.



ATTENTION!

Wait until the rotation of the spindle has come to complete standstill before changing the direction of rotation by actuating the change-over switch.

If the direction of rotation is changed during operation, the motor and the change-over switch might get damaged.



4.4.3 Turning ON the machine

- ➔ Perform basic setting on the lathe (speed stage, infeed, etc.).
- ➔ Check if the lathe chuck guard and the protective cover are closed – close the protective covers if necessary.
- ➔ Turn the main switch on.
- ➔ Select the direction of rotation.
- ➔ Actuate the hand-actuated auxiliary switch “On”.

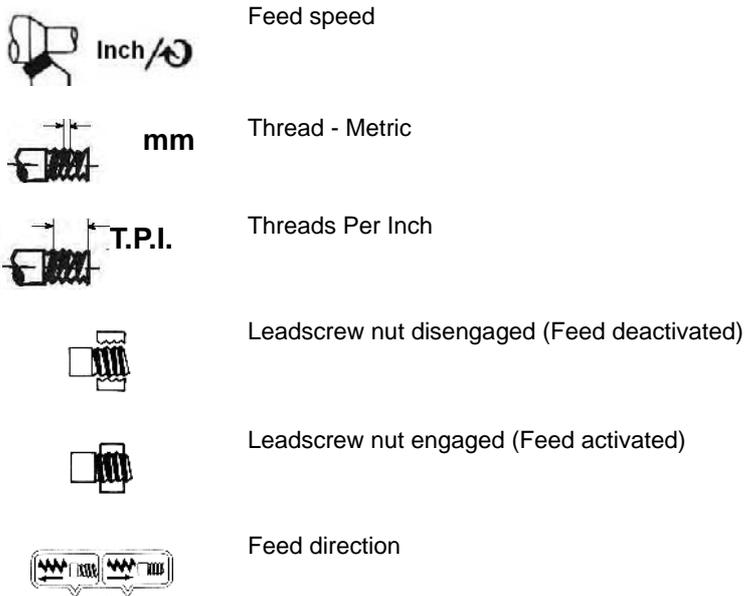


4.4.4 Turning OFF the machine

- ➔ Actuate the hand-actuated auxiliary switch “Off”.
- ➔ If the machine stands still for a longer period of time, switch off the main switch.



4.5 Operating elements for infeed



4.6 Toolholder

Clamp the turning tool into the toolholder.

The tool must be clamped firmly and with the least possible overhang in order to absorb well and reliably the cutting force generated during the chip formation.

Adjust the height of the tool. Use the tailstock with lathe centre to adjust the tool to the required height. If necessary, use steel spacer shims under the tool to get the required height.

4.7 Lathe chuck

The workpieces must be clamped firmly and securely onto the lathe before they are machined. The clamp should be tight enough to ensure that the workpiece will not come out (fly out) during machining, but not so tight that it is damaged or deformed.

WARNING!

Do not clamp any workpieces that exceed the permitted chucking capacity of the lathe chuck. The clamping force of the chuck is too low if its capacity is being exceeded. The jaws might break off and fly out.



ATTENTION!

When disassembling the jaw chuck might fall on the lathe bed and might damage the guide rail. Put a wooden board or another appropriate part on the lathe bed in order to prevent damages.



- Disconnect the lathe from the electrical power supply.
- Block the turn of the spindle. Put an extension levers into one of the square key of the jaw chuck. Make sure that the lathe bed is not damaged by the extension lever.

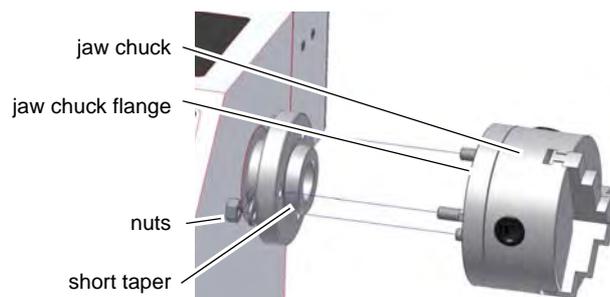


Fig. 4-2: jaw chuck

- Unscrew the 3 nuts holding chuck's studs.
- Remove the chuck.

→ If necessary, loosen the chuck by hitting it gently with a plastic-tipped hammer or a rubber mallet.

4.8 Adjusting the speed

WARNING!

Disconnect the lathe from electrical power before opening the protective cover.

Adjust the speed by changing the position of the V-belt on the pulleys.

With the "Vario" equipment variant, the speed can be regulated within the corresponding speed ranges with the aid of a frequency converter. The speed can then be adjusted using the potentiometer on the control panel of the lathe.

In order to change the speed or feed, you must first remove the protective cover.

- Unscrew the two thumb nuts.
- Remove the protective cover.

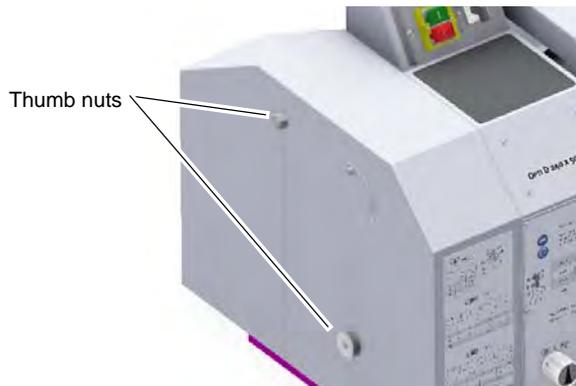


Fig.4-3: Protective cover of the headstock

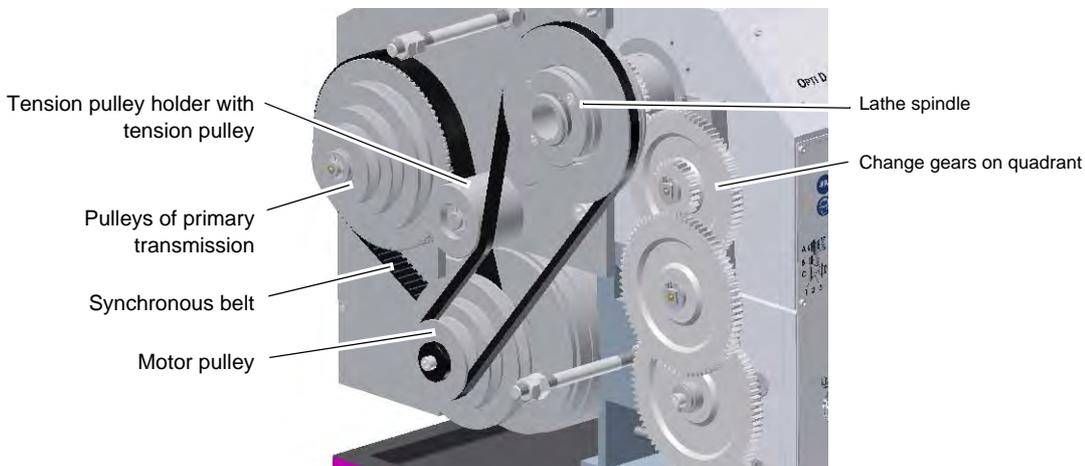


Fig.4-4: TU2506

4.8.1 Changing the speed range

- ➔ Loosen the nut on the tension pulley holder and release the tension of the V-belt.
- ➔ Install the V-belt into the corresponding position.

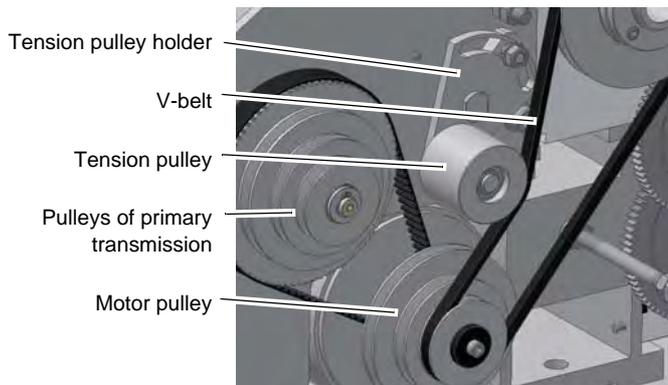


Fig.4-5: Tension pulley TU2506V

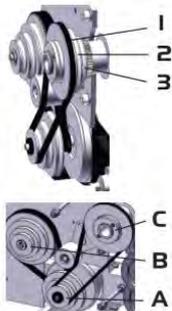
- Depending on the speed selected, the V-belt will have to be lifted directly onto the motor pulley or onto the pulley of the primary transmission. Handle the V-belt with care. It must not be damaged or overstretched.
- ➔ Tighten the tension pulley and fasten the nut again.
- The correct tension of the synchronous belt has been reached when you can still bend it approximately 3 mm with your index finger.

ATTENTION!

Make sure the tension pulley is in contact with the outside of the V-belt at all times!
Make sure the tension of the V-belt is correct. Excessive or insufficient tension can cause damage to the bearings and belt itself.

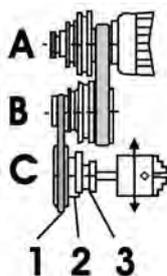


4.8.2 Speed table TU2506



| | |
|------|------|
| AC 1 | BC 1 |
| 640 | 135 |
| AC 2 | BC 2 |
| 1000 | 220 |
| AC 3 | BC 3 |
| 2000 | 420 |

4.8.3 Speed table TU2807V



| | | |
|-------------------|-------------------|-------------------|
| AC 1 | AC 2 | AC 3 |
| 140 - 1400 | 300 - 3000 | 400 - 4000 |
| | BC | |
| | 30 - 300 | |



4.9 Adjusting the feed

4.9.1 Selector switches

Use the selector switches to select the feed direction and feed speed.

ATTENTION!

Wait until the machine has come to a complete halt before making any change to the selector switches.

Selector switch for feed direction

Selector switch for feed speed and thread pitch



Fig.4-6: Selector switches

INFORMATION

Use the table on the lathe for selecting the feed speed or the thread pitch. Change the change gears if the required thread pitch cannot be obtained with preinstalled gear set.



4.9.2 Changing the change gears

The change gears for the feed are mounted on a quadrant.

- Disconnect power supply.
- Loosen the locking screw on the quadrant.

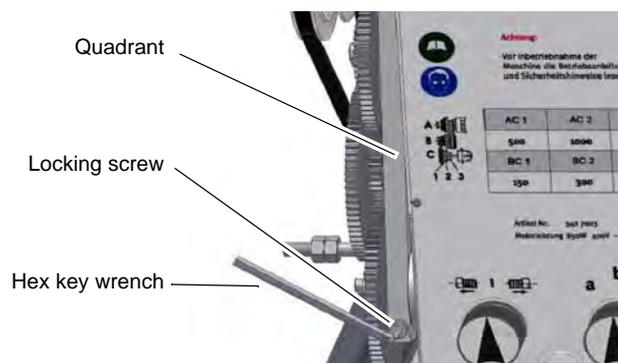


Fig.4-7: Side view of the change gears

- Swing the quadrant to the right.

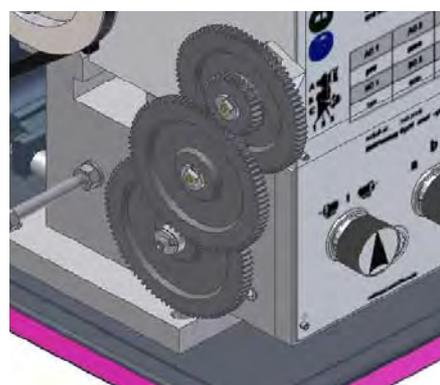


Fig.4-8: Front view of the change gears

- Loosen the clamping nuts on the change gears.

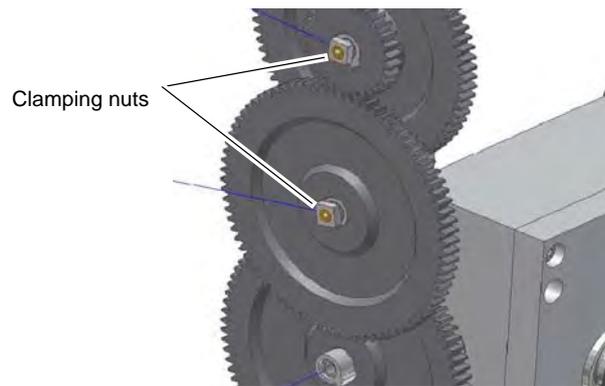


Fig. 4-9: Attachment of change gears

- Remove the slotted washers.
- Remove the screw from the shaft of the feed gear.

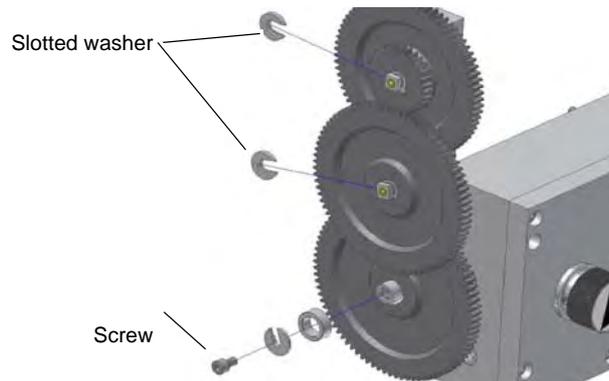


Fig. 4-10: Attachment of change gears

- Install the gear couples using the feed or change gear table and secure the gears onto the quadrant again.
- Swing the quadrant to the left until the gears have engaged again.
- Readjust gear flank clearance by inserting a normal sheet of paper as an adjusting or distance aid between the gearwheels.
- Immobilise the quadrant with the locking screw.
- Attach the protective cover of the headstock and reconnect the machine to the power supply.

4.10 Assembly of the change gears

1. change gear (drive unit)
with 40 teeth, standard

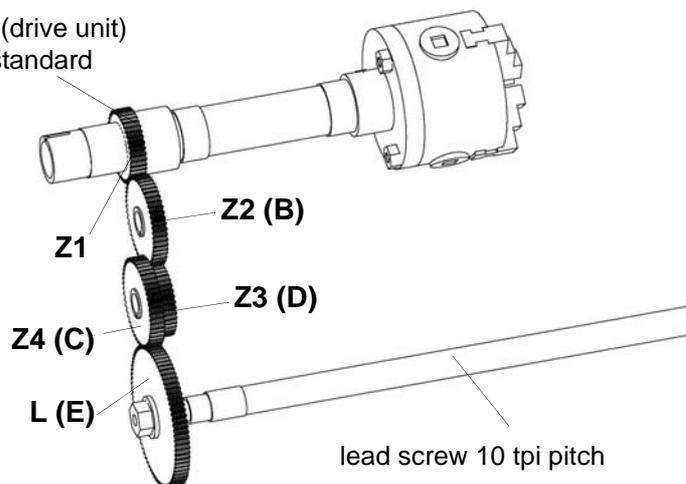


Fig. 4-11: Change gear

INFORMATION

The assembly of the change wheels may be performed in the sequence that the standard gear (1st drive unit) first cams into gear B, then gear B to gear D and gear C to gear E.



General

According to DIN 868, the gear transmission ratio is the ratio of the driving gears to the driven gears.

Example

To calculate metric pitch (mm), multiply lead screw pitch (mm) by gear transmission ratio:

$$\text{Pitch (mm)} = \frac{25.4}{10} \times \frac{Z1 \times Z2 \times Z4}{Z2 \times Z3 \times Z5} \times Vg = 2.54 \times \frac{40 \times C}{D \times E} \times Vg$$

To calculate imperial pitch (tpi), divide lead screw pitch tpi (threads per inch) by gear transmission ratio:

$$\text{Pitch (tpi)} = 10 : \frac{Z1 \times Z2 \times Z4}{Z2 \times Z3 \times Z5} \times Vg = 10 : \frac{40 \times B \times C}{B \times D \times E} \times Vg = 10 : \frac{40 \times C}{D \times E} \times Vg = 10 \times \frac{D \times E}{40 \times C} \times Vg$$

The number 10 in the above calculation is the tpi pitch of the lead screw.

The number 40 is the number of the teeth on 1st drive unit.

Vg in the above calculation is gearbox transmission ratio:

- (Vg) position "A" transmission ratio = 1
- (Vg) position "B" transmission ratio = 0.5
- (Vg) position "C" transmission ratio = 2

Gear Z2 (B) acts as idler gear and does not have any effect on gear transmission ratio.

4.10.1 Gear threading tables

INFORMATION

The leads of thread, and/or longitudinal feeds represented in the following tables are possible with the gear wheels in the scope of supply.

The tables are built up in a way that you may assemble the required combination of the gears to cut a thread without having to look up the details. Ligatures from one figure to the following one represent the coming of one gear to the following one. The identifier "H" stands for bushing or a small gear as distance spacer. This smaller gear used as distance spacer must of course not be camed in with any other gear.



TU2506

TU2807V

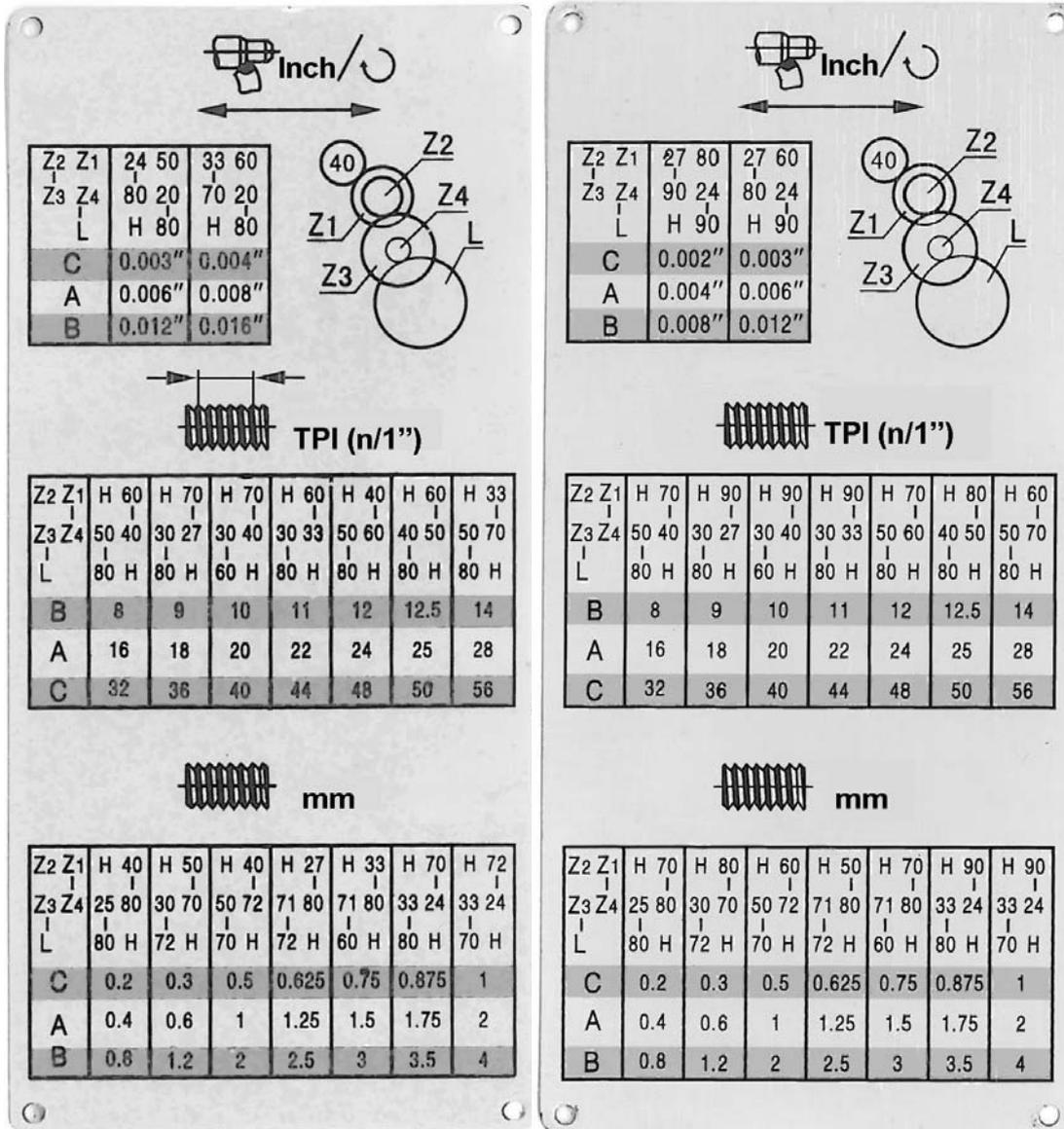


Fig.4-12: Threading tables

4.10.2 Example - assembly of gear wheels for thread 14 TPI, 28 TPI and 56 TPI on TU2506

Ligatures from one figure to the following one represent the coming of one gear to the following one. The identifier "H" stands for bushing or a small gear as an auxiliary distance, see position 523 of spare parts drawing.

With the shims, see position 518 and 519 of the spare parts drawing, the disalignment of the gear wheels is reached.

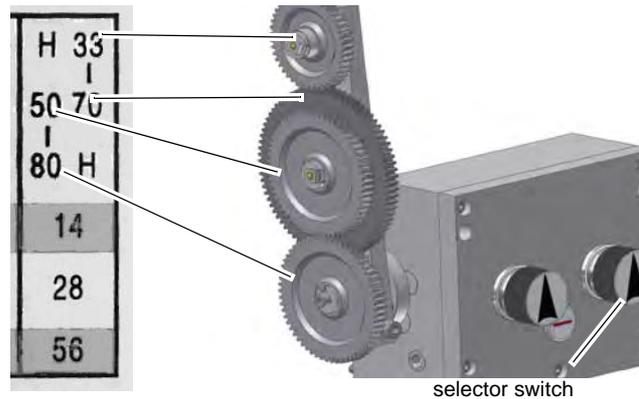


Fig.4-13: example of gear wheel combination for TU2506

The designation a b c of the threading table is the meaning of the position of selector switch on feed gear.

4.11 Engaging lever

- The automatic longitudinal feed and the feed for thread-cutting are activated and deactivated using the engaging lever. The feed is transmitted via the leadscrew nut.
- ➔ Pull on the handle of the lever and push the engaging lever downwards.
- ➔ The leadscrew nut is engaged and the automatic longitudinal feed is activated.

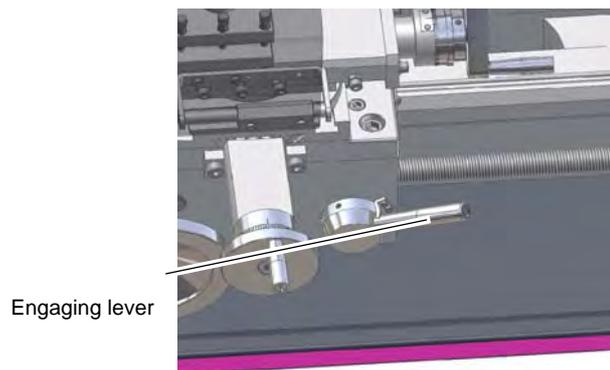


Fig.4-14: apron TU2807V

INFORMATION

Move the handwheel slightly to lock the engaging lever in place..



4.12 Immobilising the lathe saddle

The cutting force produced during facing, recessing or slicing process may displace the lathe saddle.

- Secure the lathe saddle using the tightening screw.

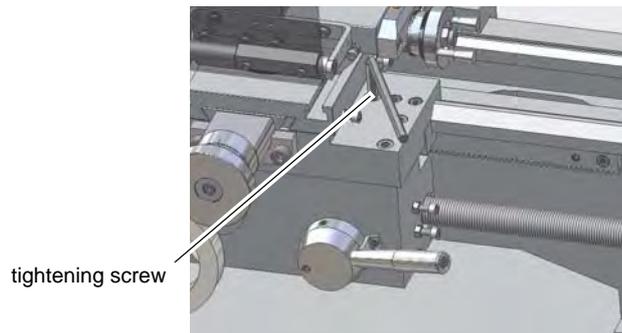


Fig. 4-15: Lathe saddle TU2506

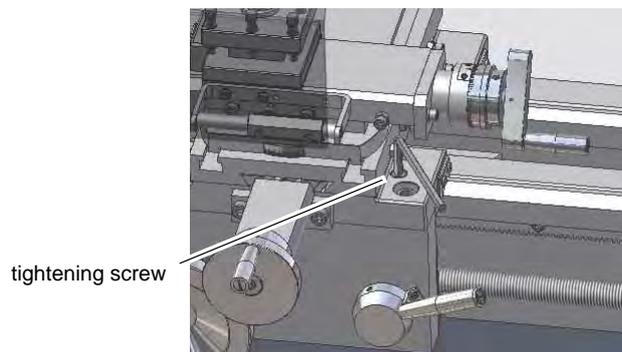


Fig. 4-16: Lathe saddle TU2807V

4.12.1 Turning tapers with the top slide

See also  "Turning Speeds & Feeds" on page 48

It is possible to turn short tapers with the top slide. The scaling takes place to 60° degree of angle. Adjusting of the top slide over the 60° angle mark outside is possible.

- Loosen the two nuts on the left and the right of the top slide.
- Swivel the top slide.
- Clamp the top slide again.

4.12.2 Cross-adjustment of the tailstock

See also  "Turning Speeds & Feeds" on page 48

The cross-adjustment of the tailstock is used for turning long, thin shafts.

- Loosen the locking handle of the tailstock.
- Unscrew the locking screw approximately half a turn.
- By alternately loosening and tightening the two (front and rear) adjusting screws, the tailstock is moved out of the central position. The desired cross-adjustment can be read off the scale.
- First retighten the locking handle and then the two (front and rear) adjusting screws.

ATTENTION!

Check clamping of the tailstock and the quill, respectively, for turning jobs between centres! Fit the securing screw at the end of the lathe bed in order to prevent the tailstock from falling off the lathe bed.



4.13 Tailstock sleeve

The tailstock quill is used to hold the tools (bits, lathe centres, etc.)

➔ Install the required tool in the tailstock quill.

○ Use the scale on the quill to re-adjust and / or adjust the tool.

➔ Clamp the quill with the clamping lever.

○ Use the handwheel to move the quill back and forth.

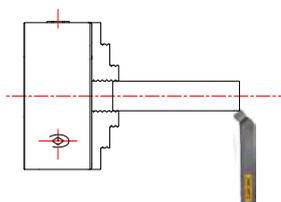
The quill of the tailstock can be used to hold a drill chuck for holding bits and countersinks.

4.14 Clamping a workpiece into the lathe chuck

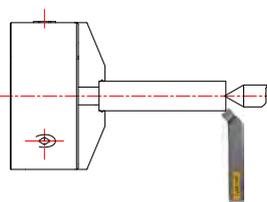
When the workpiece is being clamped unprofessionally, there is a risk of injury as the workpiece may fly off or the jaws may break. The following examples do not show all possible situations of danger.

incorrect

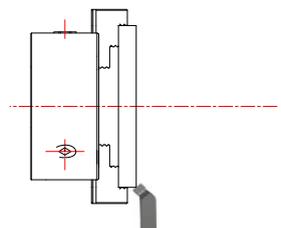
correct



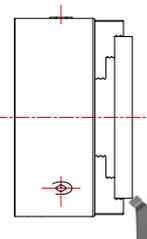
Clamping length too long, overhang too long.



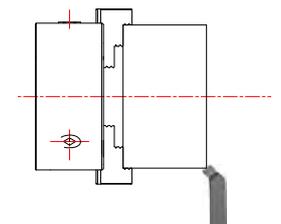
Additional support over center.



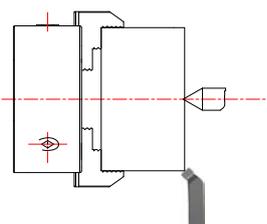
Clamping diameter too large.



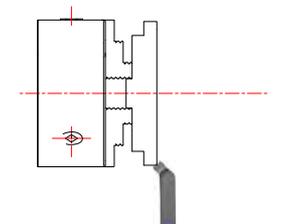
Use larger lathe.



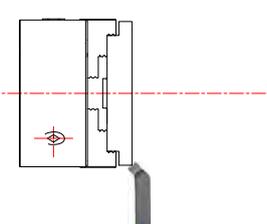
Workpiece is too heavy and clamping grade too short.



Support over center, enlarges clamping grade. Enlarged clamping grades are not available for this three-jaw chuck. Possibly use larger lathe.



Clamping diameter too short.



Clamp on the largest clamping diameter possible.

4.15 Replacing the clamping jaws on the lathe chuck

The clamping jaws and the three-jaw chuck are provided with numbers. Check before the change, if the numbers are readable and, if necessary, mark the jaws and their primary position. Insert the clamping jaws at the correct position and in the right order into the three-jaw chuck.

After the replacement, bring the jaws completely together in order to see if they are inserted correctly.

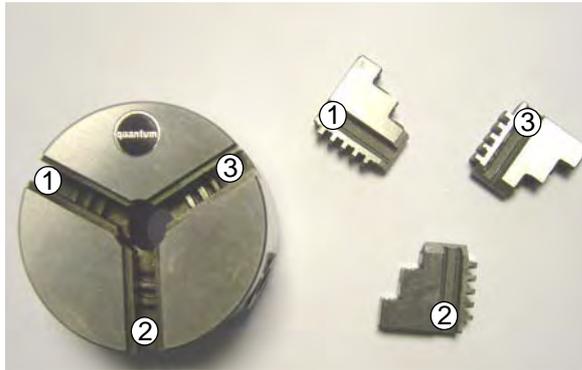


Fig.4-17: Three- jaw chuck / clamping jaws

4.16 Turning Speeds & Feeds

There are rules and principles of cutting speeds and RPM (revolutions per minute) calculations that apply to all metal cutting operations. The operating speed for all metal cutting operations is based on the cutting tool material and the hardness of the material to be cut. The hardness of the work material has a great deal to do with the recommended cutting speed. The harder the work material, the slower the cutting speed. The softer the work material, the faster the recommended cutting speed Fig. 4-18: „Recommended cutting speed“ auf Seite 48.

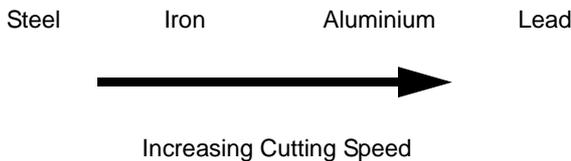


Fig. 4-18: Recommended cutting speed

The hardness of the cutting tool material influences recommended cutting speed as well. The harder the cutting tool material, the faster the cutting speed. The softer the cutting tool material, the slower the recommended cutting speed Fig. 4-19: „Recommended cutting speed“ auf Seite 48.

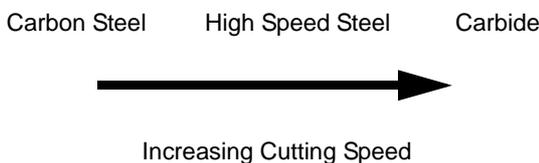


Fig. 4-19: Recommended cutting speed

The depth of the cut and the feed rate will also affect the cutting speed, but not to as great as the workpiece hardness. These three factors, cutting speed, feed rate and depth of cut, are known as cutting conditions. Cutting conditions are determined by the machinability rating. Machinability is the comparing of materials on their ability to be machined. From machinability ratings you can derive recommended cutting speeds. Recommended cutting speeds are given in charts. These charts can be found in your Machinery's Handbook or in a chart given to you by your tool salesperson. In Table 3 you will find a typical recommended cutting speed chart.

4.17 Recommended Cutting Speeds in Feet per Minute for Turning Ferrous and Nonferrous Metals*

| Material | Condition | Hardness HB | Cutting Speed, fpm | |
|--|--------------|-------------|--------------------|---------|
| | | | High-Speed Steel | Carbide |
| <i>Free Machining, Plain Carbon Steels (Resulphurized)</i> AISI B1111, B1112, B1113, 1113, 1119, 1212, 1213 | HR, A | 100 to 150 | 160 | 500 |
| | CD | 150 to 200 | 180 | 600 |
| AISI 1108, 1115, 1118, 1120, 1126 | HR, A | 100 to 150 | 140 | 450 |
| | CD | 150 to 200 | 150 | 500 |
| AISI 1132, 1137, 1140, 1145, 1151 | HR, A, N, CD | 175 to 225 | 130 | 500 |
| | Q & T | 275 to 325 | 90 | 250 |
| | Q & T | 325 to 375 | 50 | 175 |
| | Q & T | 375 to 425 | 30 | 140 |
| Plain Carbon Steels AISI 1012, 1015, 1018, 1019, 1020, 1022, 1024, 1025 | HR, A, N, CD | 100 to 125 | 140 | 500 |
| | HR, A, N, CD | 125 to 175 | 120 | 400 |
| | HR, A, N, CD | 175 to 225 | 100 | 350 |
| | CD | 225 to 275 | 70 | 300 |

| Material | Condition | Hardness HB | Cutting Speed, fpm | |
|--|---------------|----------------|---------------------|---------|
| | | | High-Speed Steel | Carbide |
| AISI 1027, 1029, 1030, 1032, 1035, 1037, 1040, 1043, 1045, 1047, 1050 | HR, N, A, CD | 125 to 175 | 120 | 400 |
| | HR, N, A, CD | 175 to 225 | 100 | 350 |
| | N, CD, Q & T, | 225 to 275 | 70 | 300 |
| | N, Q & T | 275 to 325 | 60 | 240 |
| | Q & T | 325 to 375 | 50 | 200 |
| AISI 1055, 1060, 1065, 1070, 1074, 1080, 1085, 1090, 1095 | HR, N, A, CD | 125 to 175 | 100 | 375 |
| | HR, N, A, CD | 175 to 225 | 90 | 325 |
| | N, CD, Q & T, | 225 to 275 | 65 | 275 |
| | N, Q & T | 275 to 325 | 55 | 225 |
| | Q & T | 325 to 375 | 45 | 180 |
| <i>Free Machining Alloy Steels</i> (Resulphurized) AISI 3140, 4140, 4150, 8640 | HR, N, A, CD | 175 to 200 | 125 | 450 |
| | HR, N, A, CD | 200 to 250 | 100 | 400 |
| | Q & T | 250 to 300 | 70 | 325 |
| | Q & T | 300 to 375 | 60 | 225 |
| | Q & T | 375 to 425 | 40 | 150 |
| <i>Alloy Steels</i> AISI 1320, 2317, 2512, 2517, 3115, 3120, 3125, 3310, 3316, 4012, 4017, 4023, 4028, 4320, 4615, 4620, 4720, 4815, 4820, 5015, 5020, 5024, 5120, 6118, 6120, 6317, 6325, 6415, 8115, 8615, 8620, 8625, 8720, 8822, 9310, 9315 | HR, A, CD | 150 to 175 | 110 | 400 |
| | HR, A, N, CD | 175 to 220 | 80 | 350 |
| | CD, N, Q & T | 220 to 275 | 70 | 300 |
| | N, Q & T | 275 to 325 | 60 | 250 |
| | N, Q & T | 325 to 375 | 50 | 200 |
| | Q & T | 375 to 425 | 40 | 175 |

* Based upon a feed of 0.012 inch per revolution and a depth of cut 0.125 inch.

Material Condition: HR - Hot Rolled, A - Annealed, N - Normalized, CD - Cold Drawn or Cold Rolled, Q & T - Quenched and Tempered, AC - As Cast, ST & A - Solution Treated and Aged.

The lathe RPM must be set so that the cutting tool will be operating at the correct cutting speed. To set the proper speed, you need to calculate the proper revolution per minute or RPM setting.

4.18 Calculating RPM

The RPM setting depends on the cutting speed and the diameter of the part. The RPM setting will change with the diameter of the part. As the diameter of the part gets smaller, the RPM must increase to maintain the recommended surface feed. Conversely, as the diameter of the part gets larger, the RPM must decrease. Therefore, to maintain the recommended cutting speed, larger diameter parts must be run at slower speeds than a smaller diameter part.

To calculate the proper RPM for the tool and the workpiece, the following formula should be used:

$$\frac{\text{Cutting Speed (Cs) x 4}}{\text{Part Diameter (D)}}$$

This simplified version of the RPM formula can be used for other machining operations as well.

Let's use this formula to work in calculating the RPM for the machining example below. Use the recommended cutting speed charts  "Recommended Cutting Speeds in Feet per Minute for Turning Ferrous and Nonferrous Metals**" on page 48.

A cut is to be made with a high-speed steel (HSS) tool on a 2-inch diameter piece of 1018 steel with a Brinell Hardness of 150 HB. Calculate the RPM setting to perform this cut.

Cutting Speed (CS) = 120 fpm

Diameter of part (D) = 2"

$$\text{RPM} = \frac{\text{Cs x 4}}{\text{D}} = \frac{120 \times 4}{2} = \frac{480}{2} = 240 \text{ RPM}$$

Since the available spindle speed settings are generally not infinitely variable, the machine cannot be set precisely to the calculated RPM setting. Some judgment must be made in selecting the speed to use. Try to get to the speed which is nearest to the calculated RPM, but if you can't, consider these conditions. Are you roughing or finishing? If you are roughing, go slower. If you are finishing, go faster. What is your depth of cut? If it is a deep cut, go to the slower RPM setting. Is the setup very rigid? Go slower for setups that lack a great deal of rigidity. Are you using coolant? You may be able to go to the faster of the two settings if you are using coolant.

The greatest indicator of cutting speed is the color of the chip. When using a high-speed steel cutter the chips should never be turning brown or blue. Straw-colored chips indicate that you are on the maximum edge of the cutting speed for your cutting conditions. When using carbide, chip colors can range from amber to blue, but never black. A dark purple color will indicate that you are on the maximum edge of your cutting conditions.

Let's try some other examples:

A cut is to be taken with a (HSS) turning tool on a 1/2 inch piece of 1045 steel with a Brinell Hardness of 250 HB. Calculate the RPM setting to perform this cut.

Cutting Speed (CS) = 70 fpm

Diameter of part (D) = 0.5"

$$\text{RPM} = \frac{\text{Cs x 4}}{\text{D}} = \frac{70 \times 4}{0.5} = \frac{280}{0.5} = 560 \text{ RPM}$$

A 3/8-inch (HSS) drill is used on a 4-inch diameter piece of 1012 steel with a hardness of 100 HB. Calculate the RPM setting to perform this drilling operation.

Cutting Speed (CS) = 140 fpm

Diameter of the drill (D) = 0.375"

$$\text{RPM} = \frac{\text{Cs x 4}}{\text{D}} = \frac{140 \times 4}{0.375} = \frac{560}{0.375} = 1493 \text{ RPM}$$

Note that the diameter of the drill and not the workpiece was used for RPM calculation. This was done because the cutting takes place at the diameter of the drill, not on the outside diameter of the workpiece.

A turning operation is to be done on a 3.00-inch piece of 4140-alloy steel with a hardness of 200 HB. A carbide turning tool is to be used. Calculate the RPM setting to perform this cut.

Cutting Speed = 400 fpm

Diameter of part = 3"

$$\text{RPM} = \frac{Cs \times 4}{D} = \frac{400 \times 4}{3} = \frac{1600}{3} = 533 \text{ RPM}$$

4.18.1 Selecting Feed per Revolution

There are three factors that make up cutting conditions; cutting speed, depth of cut, and feed rate. The feed rate for turning is given in terms of inches per revolution (IPR). Inches per revolution is the rate at which the tool will advance for every revolution of the workpiece Fig.4-20: „Feed per revolution“ auf Seite 51. The feed rate is determined by the size of the chip that the tool can withstand. The feed rate in inches per tooth is also known as chip load. Because turning tools have only one cutting edge, the chip load is expressed as inch per revolution.

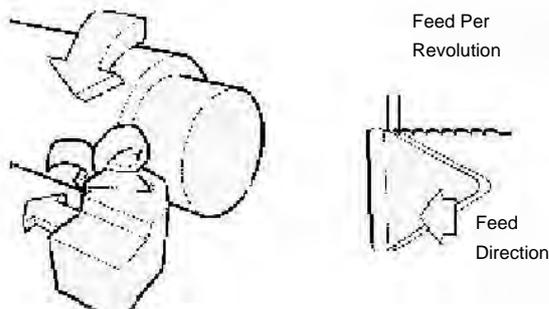


Fig.4-20: Feed per revolution

The recommended values for chip load are based on the cutting tool material and the hardness or machinability rating of the workpiece material. The recommended values for IPR (chip load) can be found in charts in the Machinery's Handbook and charts given to you by your turning tool salesperson. A typical feed in inches per revolution is shown  "Recommended Feed Rate Selection in Inches Per Revolution for Turning" on page 52.

4.18.2 Recommended Feed Rate Selection in Inches Per Revolution for Turning

| Material | High-Speed Steel | | Carbide | |
|-------------------|------------------|----------------|----------------|----------------|
| | Roughing | Finishing | Roughing | Finishing |
| Low Carbon Steel | 0.010 to 0.020 | 0.002 to 0.008 | 0.008 to 0.035 | 0.006 to 0.010 |
| Med. Carbon Steel | 0.008 to 0.018 | 0.002 to 0.008 | 0.008 to 0.030 | 0.006 to 0.010 |
| High Carbon Steel | 0.008 to 0.015 | 0.002 to 0.008 | 0.008 to 0.030 | 0.006 to 0.010 |
| Cast Iron | 0.010 to 0.025 | 0.003 to 0.010 | 0.010 to 0.040 | 0.008 to 0.012 |
| Bronze | 0.015 to 0.025 | 0.003 to 0.010 | 0.010 to 0.040 | 0.008 to 0.012 |
| Aluminum | 0.015 to 0.030 | 0.003 to 0.012 | 0.015 to 0.045 | 0.008 to 0.012 |

While the recommended feed rates found in these charts represent good fundamental machining practice, they are only recommended values. Deviations from these values may be necessary due to certain circumstances, such as long, small diameter workpieces. The feed rate used on small diameter workpieces may need to be reduced. The work-holding technique has a great deal to do with the feed rate selection. Setups, which lack rigidity, may require a slower feed rate. The distance that the unsupported part sticks out of the work-holding mechanism must be kept to a minimum to assure proper rigidity. The required workpiece finish will also affect the feed rate selection. Finer finish requirement will require a slower feed rate selection. When using carbide-turning tools, the available horsepower and the rigidity of the spindle bearings could influence the feed rate as well.

5 Maintenance

In this chapter you will find important information about

- Inspection
- Maintenance
- Repair

of the lathe.

The diagram below shows which of these headings each task falls under.

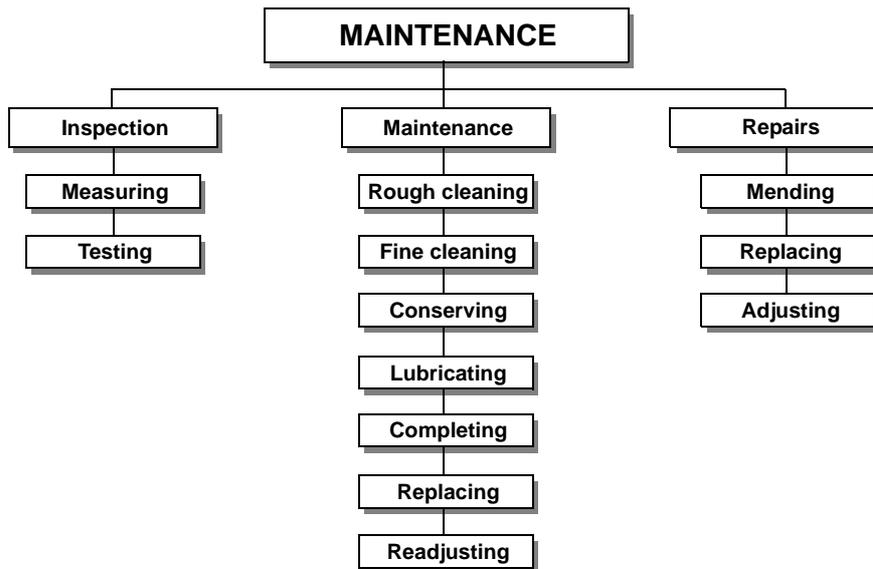


Fig.5-1: Maintenance - Definition according to DIN 31051

ATTENTION!

Properly-performed regular maintenance is an essential prerequisite for

- safe operation
- fault-free operation
- long service life of the lathe and
- the quality of the products you manufacture.

Installations and equipment from other manufacturers must also be in company condition.

ENVIRONMENTAL PROTECTION

During work on the bit-holder head, make sure that

- collector vessels are used, with sufficient capacity for the amount of liquid to be collected.
- liquids and oils are not spilt on the ground.

Clean up any spilt liquid or oils immediately using proper oil-absorption methods and dispose of them in accordance with current legal requirements on the environment.

Cleaning up spillages

Do not re-introduce liquids spilt outside the system during repair or as a result of leakage from the reserve tank: collect them in a collecting vessel to be disposed of.

Disposal

Never dump oil or other pollutant substances in water inlets, rivers or channels.

Used oils must be delivered to a collection centre. Consult your superior if you do not know where the collection centre is.



5.1 Safety

WARNING!

The consequences of incorrect maintenance and repair work may include:

- Very serious injury to personnel working on the lathe
- Damage to the lathe

Only qualified personnel should carry out maintenance and repair work on the lathe.



5.1.1 Preparation

WARNING!

Only carry out work on the lathe if it has been unplugged from the main power supply.

☞ "Disconnecting the lathe and making it safe" on page 15

Attach a warning label.



5.1.2 Restarting

Before restarting run a safety check.

☞ "Safety check" on page 13

WARNING!

Before connecting the machine you must check that there is no danger for personnel and the lathe is undamaged.

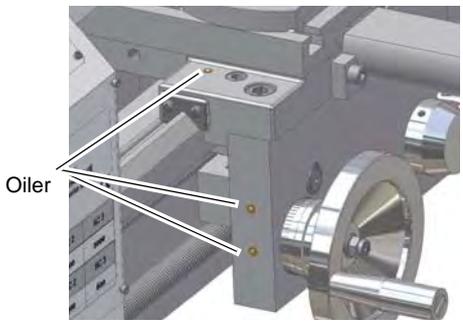


5.2 Inspection and maintenance

The type and extent of wear depends to a large extent on individual usage and service conditions. For this reason, all the intervals are only valid for the authorized conditions.

| Interval | Where? | What? | How? |
|--|--------|-----------------------------|--|
| Start of work after every maintenance and repair operation | Lathe | ☞ "Safety check" on page 13 | |
| Start of work after every maintenance and repair operation | Lathe | Lubricate | <ul style="list-style-type: none"> ➔ Lubricate all slideways. ➔ Lubricate the change gears and leadscrew slightly with lithium-based grease. |

| Interval | Where? | What? | How? |
|--|-----------|-------------------|---|
| Start of work after every maintenance and repair operation | Feed gear | Visual inspection | <ul style="list-style-type: none"> ➔ Check the oil level in the gear's inspection glass. It must reach at least the centre of the inspection glass. ➔ If necessary, fill up to the reference mark with Mobilgear 627 or equivalent oil. <div style="text-align: right; margin-top: 10px;">  </div> <p style="text-align: right; margin-top: 5px;">Fig.5-2: Oil inspection glass of the feed gear</p> |
| First after 200 hours in service, then after every year | Feed gear | Oil change | <ul style="list-style-type: none"> ➔ Use an adequate collector vessel with sufficient capacity for the oil change. ➔ Unscrew the bolt of the outlet. ➔ Unscrew the bolt of the charging hole. ➔ Close the outlet when no more oil is running off. ➔ Refill with Mobilgear 627 or an equivalent oil up to the reference mark in the centre of the inspection glass using a suitable funnel in the filling hole. <div style="text-align: right; margin-top: 10px;">  </div> <p style="text-align: right; margin-top: 5px;">Fig.5-3: Gear openings</p> |

| Interval | Where? | What? | How? |
|---------------------------------|------------------------|-----------------------|---|
| every month | Lathe TU2506 / TU2807V | Lubricate | <p>→ Lubricate all oilers with machine oil , do not use a grease gun or similar greasing equipment. Use the oil bottle in the delivery volume.</p> <p>📖 "Operating material" on page 17</p>  <p>Illustr. 5-4: Example, oiler on TU2807V</p> |
| All 100 and 500 operation hours | Jaw chuck | Cleaning and greasing | <p>Approximately every 100 operation hours a cleaning of the jaw guidance is to be performed, depending on the operating conditions, a complete cleaning is to be performed about every 500 operating hours.</p> <p>→ Leave the jaw chuck on the machine.</p> <p>→ Clean the jaws (do not use compressed air) and then unscrew them. Thoroughly clean with kerosene or with benzine.</p> <p>→ Relubricate with Molykote TP 42.</p> <p>→ Make sure that the jaws are in the correct order.</p> <p>WARNING!</p> <p>Unadequate lubricants may reduce the clamping force by more than 50%</p> |

INFORMATION

The spindle bearings are permanently greased. Greasing during the maintenance intervals is not necessary. Further greasing of the spindle bearings is only necessary in case of de- and remounting of the spindle bearing.



5.3 Repair

Repairs must be carried out only by qualified technical staff; and must follow the instructions and guidelines given in this manual. Should technical assistance be required, contact C.H.HANSON Industries at (630) 785-6437.

Company and C.H.HANSON Industries are not liable for, nor do they guarantee against, damage or operating malfunctions resulting from alteration, abuse, lack of maintenance or this product's use for other than its intended purpose. Failure to read and follow this operating manual is not covered.

For repairs only use

- Proper and suitable tools,
- Parts purchased from company, or its authorized agent.

6 Spare parts - TU2506

6.1 Top slide

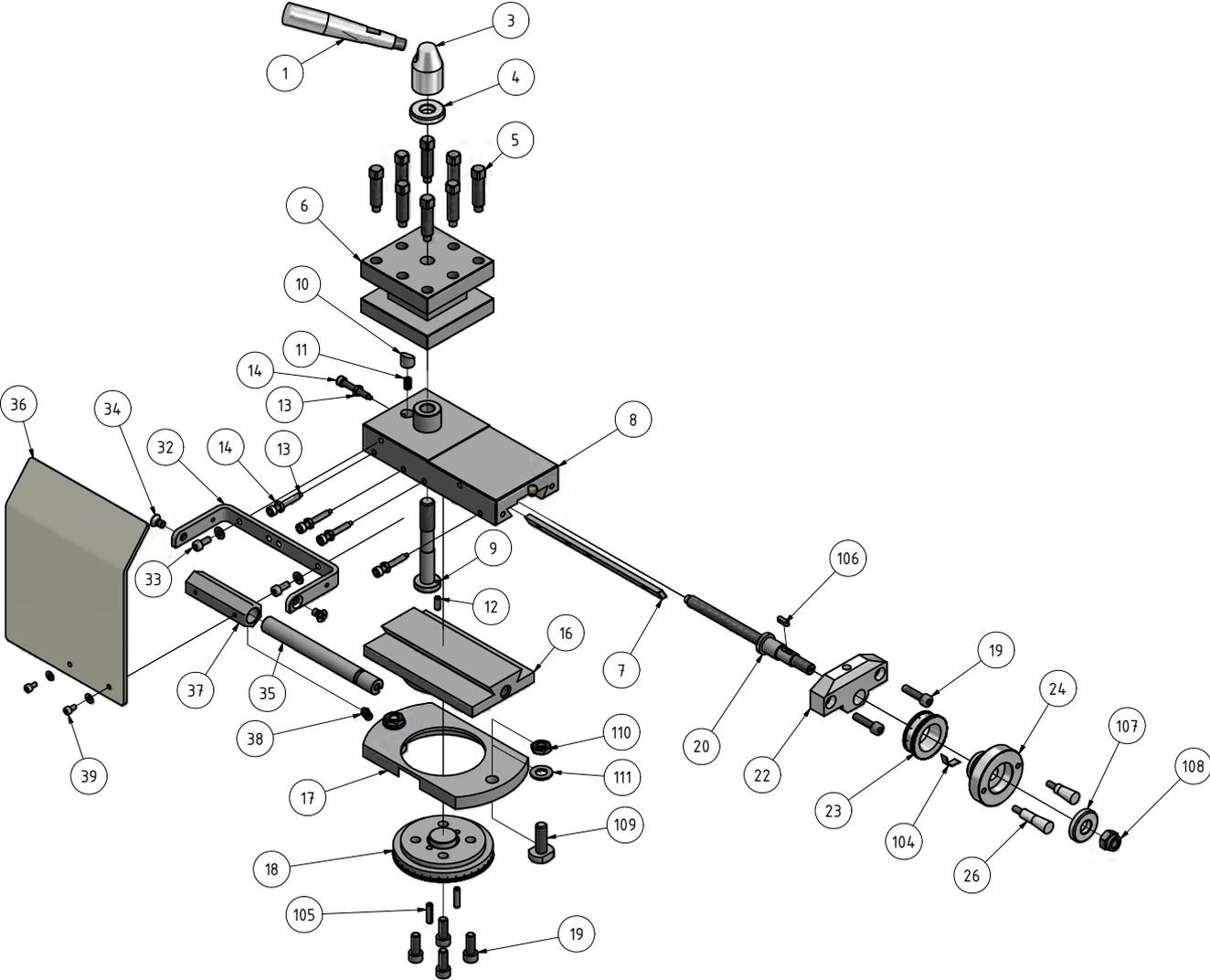


Fig.6-1: Top slide TU2506

6.2 Cross slide

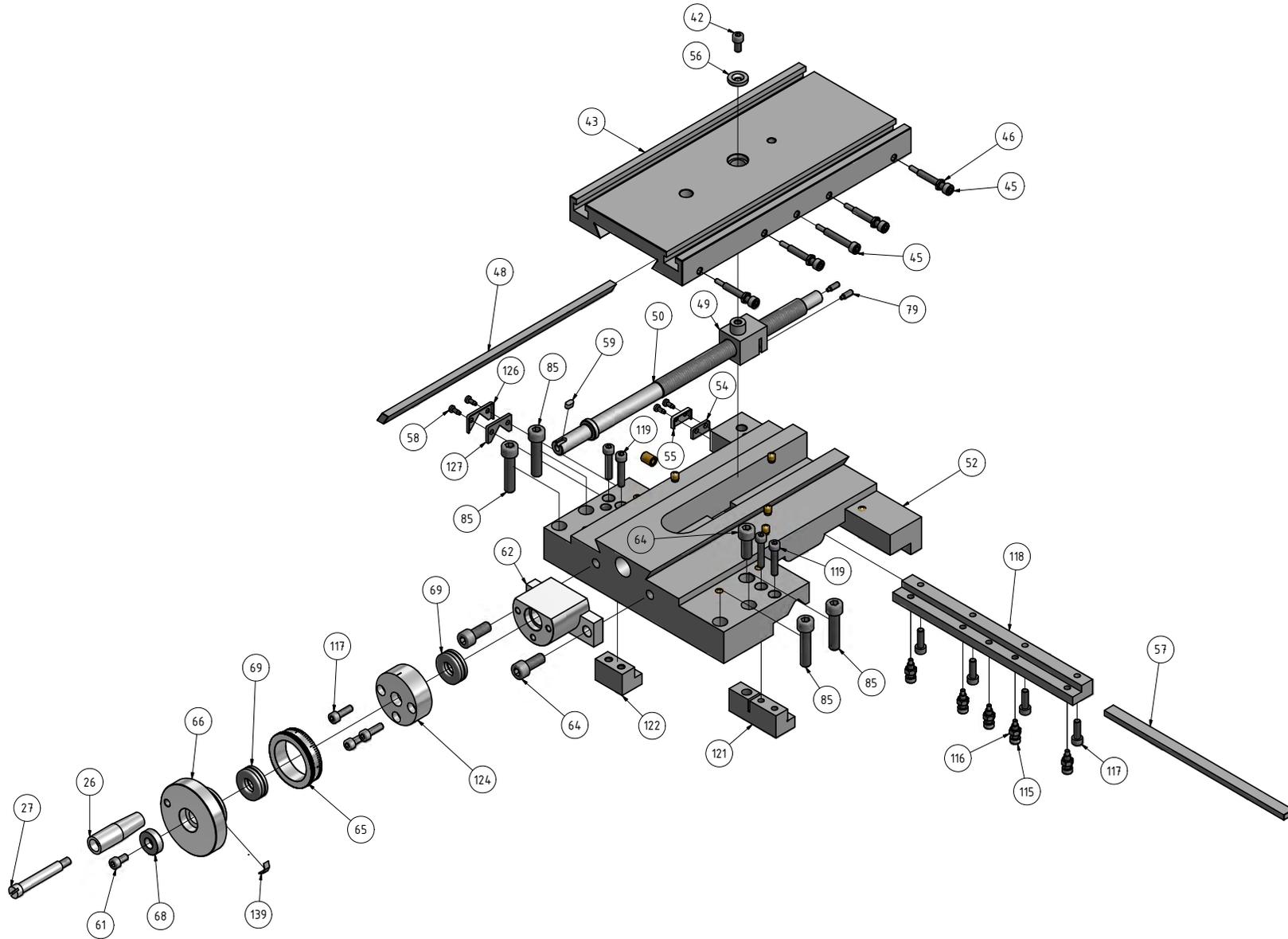


Fig.6-2: Cross slide TU2506

6.4 Tailstock

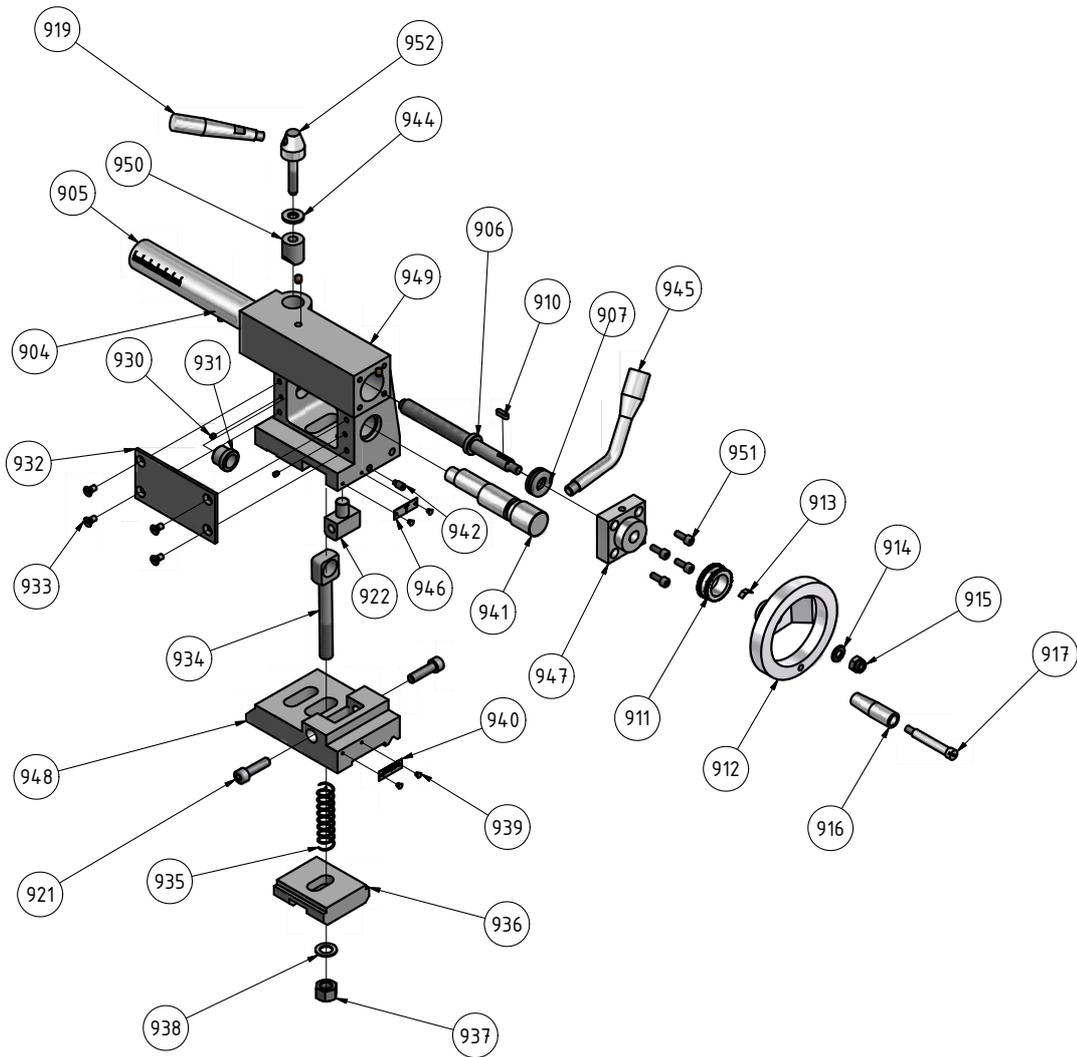


Fig.6-4: Tailstock TU2506

6.6 Feed gear 1 of 2

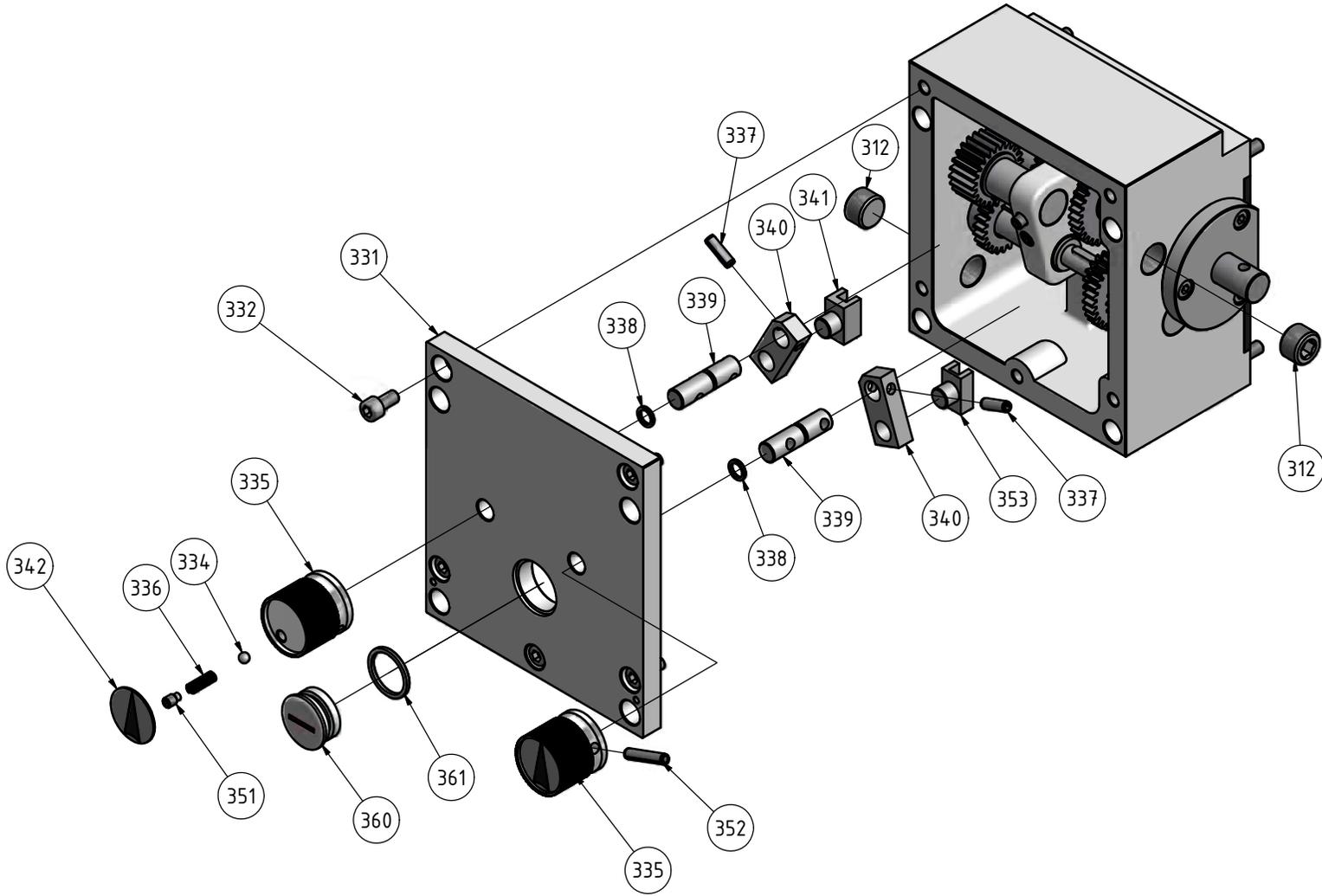


Fig.6-6: Feed gear TU2506 1 of 2

6.7 Feed gear 2 of 2

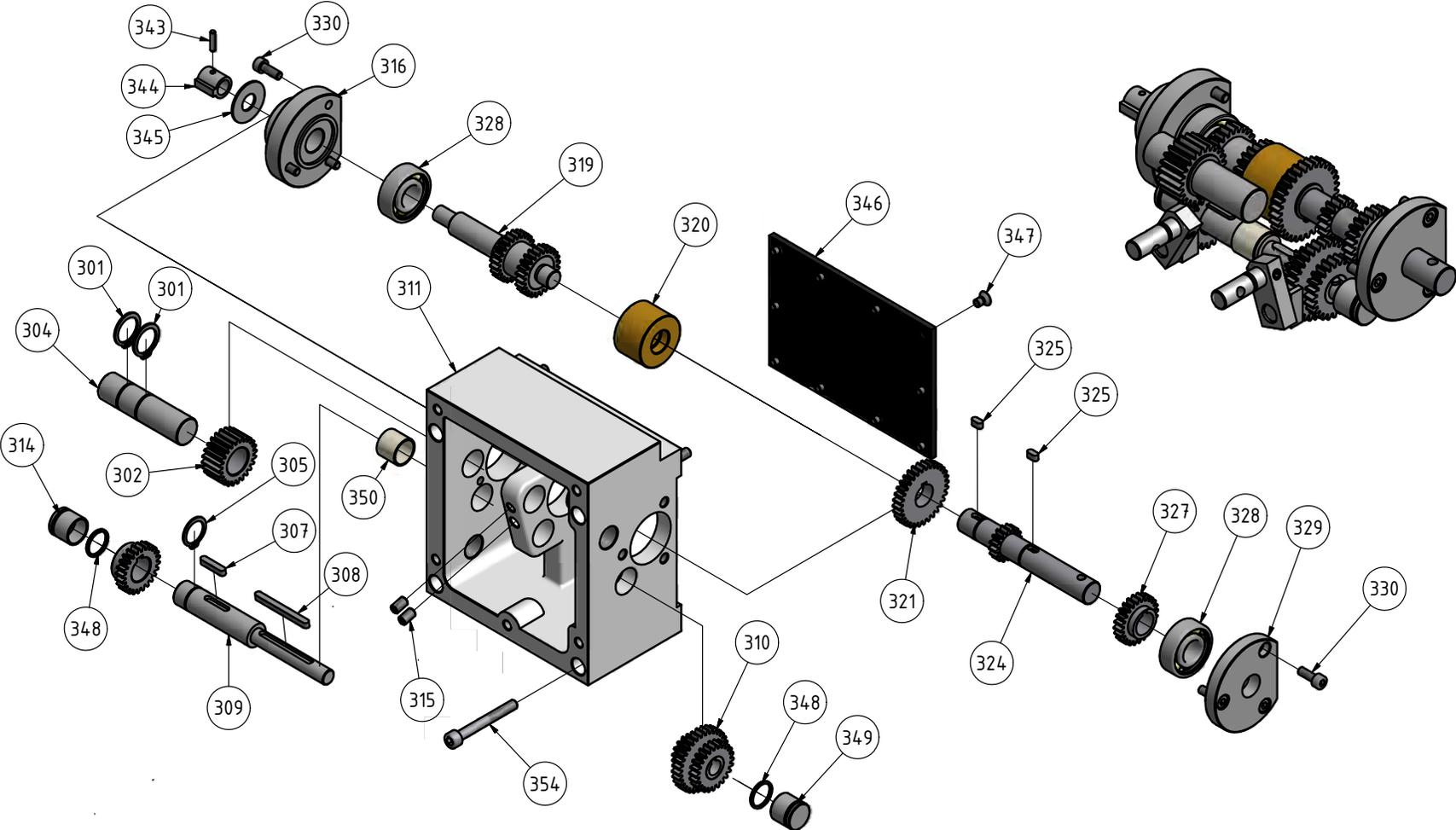


Fig.6-7: Feed gear TU2506 2 of 2

6.8 Headstock 1 of 2

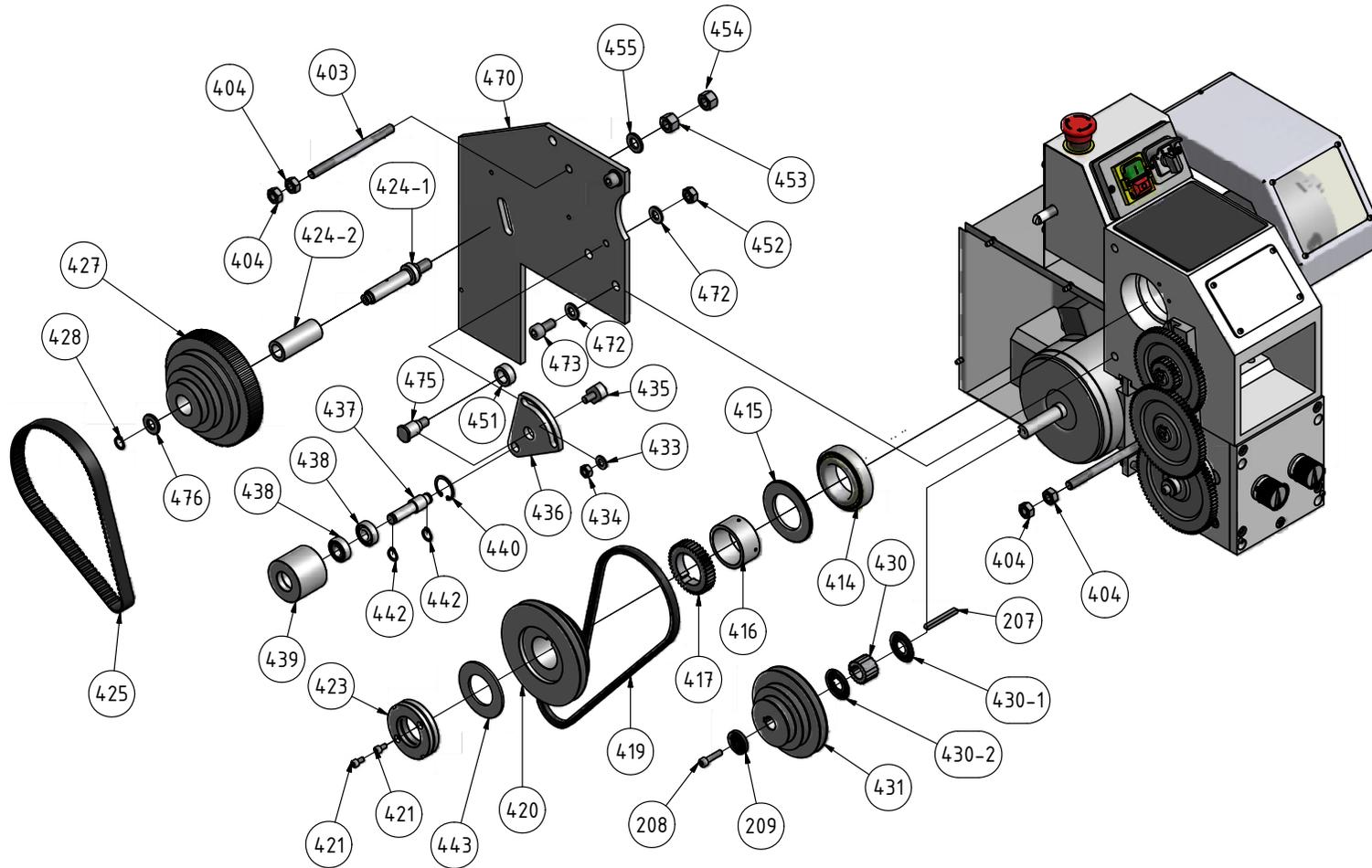


Fig.6-8: Headstock TU2506 1 of 2

6.10 Change gear

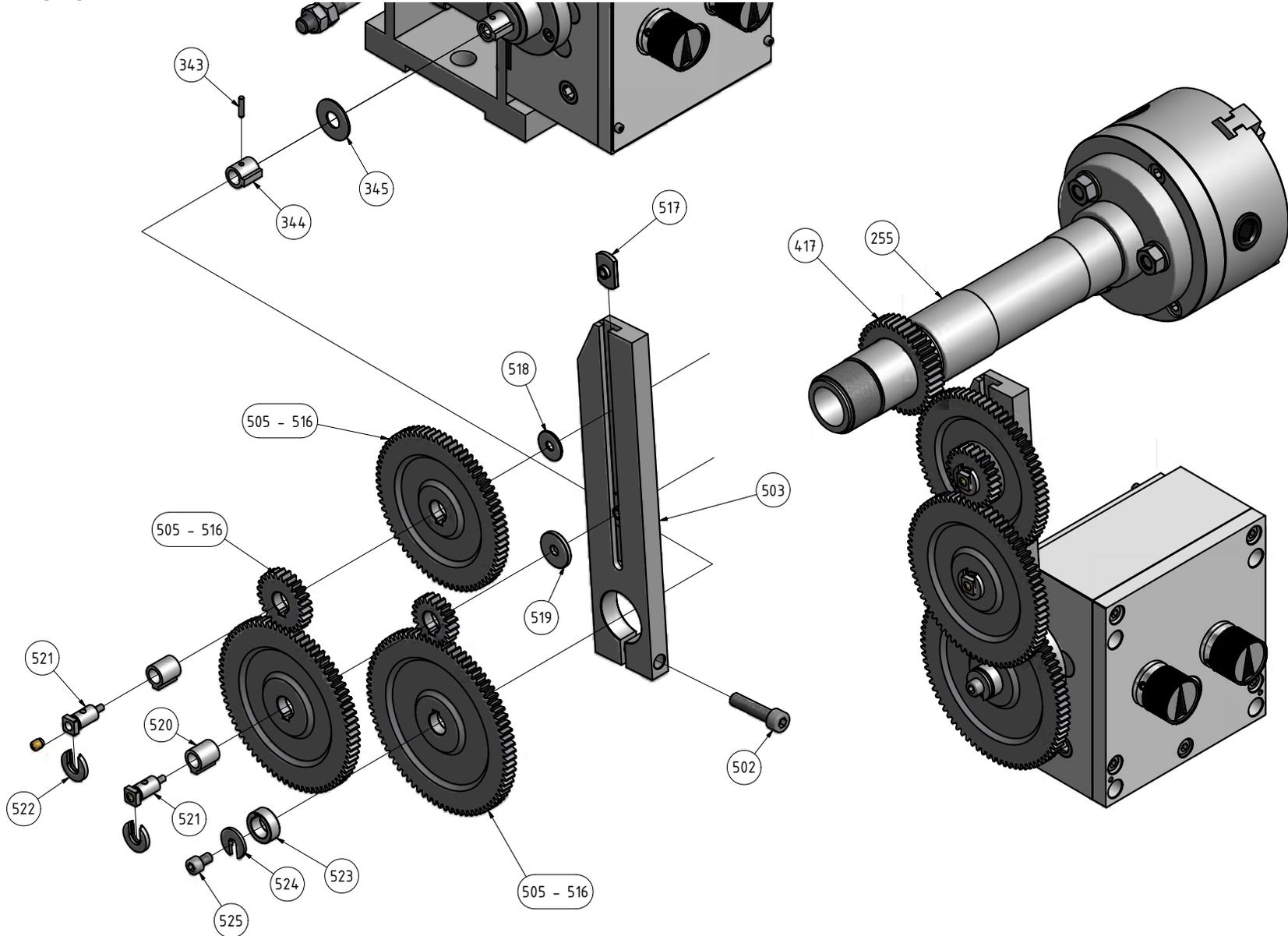


Fig.6-10: Change gear

6.11 Operating panel

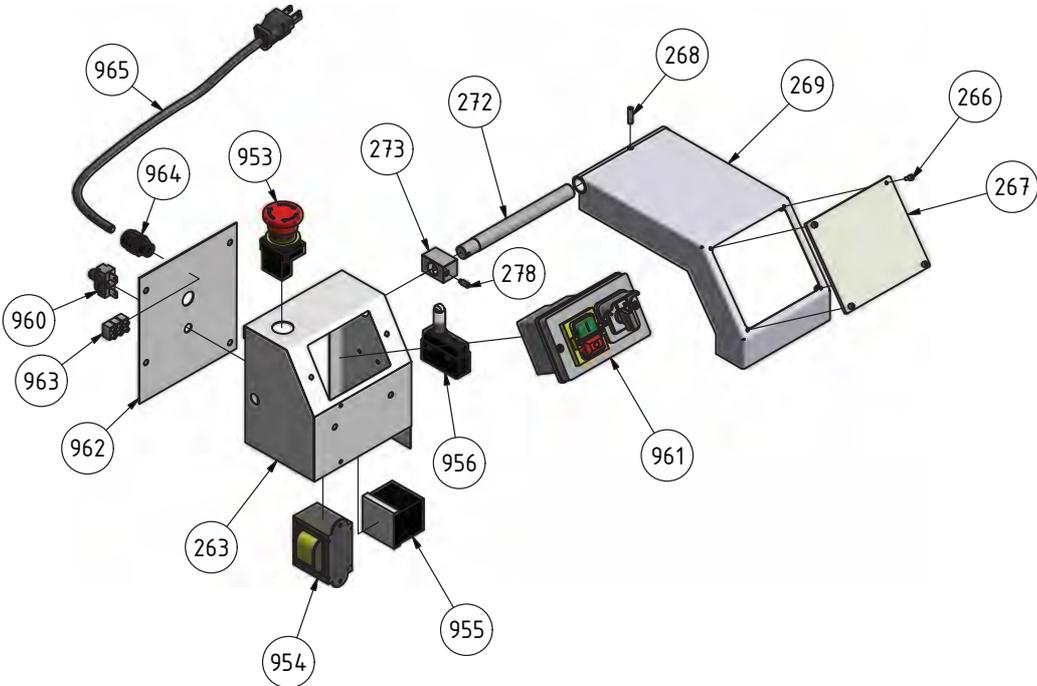


Fig.6-11: switching elements USA

6.12 Spare parts list TU2506

| TU2506 | | | | |
|--------|---------------------------------------|------|----------------------------|-----------------|
| Pos. | Description | Qty. | Size | Item no. |
| 1 | Handle locking lever | 1 | | 034250011 |
| 3 | Clamping nut tool holder | 1 | | 034250013 |
| 4 | Washer clamping nut | 1 | | 034250014 |
| 5 | Clamping screw | 8 | | 034250015 |
| 6 | Quadruple tool holder | 1 | | 034250016 |
| 7 | Pressure border top slide | 1 | | 034250017 |
| 8 | Top slide | 1 | with included inch thread | 034250018-inch |
| 9 | Threaded rod quadruple tool holder | 1 | | 034250019 |
| 10 | Fixing pin | 1 | | 0342500110 |
| 11 | Spring | 1 | | 0342500111 |
| 12 | Spring pin | 1 | ISO 8752 - 4x10 - A | |
| 13 | Nut | 5 | ISO 4032 - M4 | |
| 14 | Socket head screw | 5 | GB 70-85 - M4 x 30 | |
| 16 | Dove tail guidance top slide | 1 | inch | 0342500116-inch |
| 17 | Clamping ring top slide | 1 | | 0342500117 |
| 18 | Angle scales ring top slide | 1 | | 0342500118 |
| 19 | Socket head screw | 1 | GB 70-85 - M6 x 16 | |
| 20 | Spindle top slide | 1 | inch | 0342500120-inch |
| 22 | Saddle spindle top slide | 1 | | 0342500122 |
| 23 | Scales ring handwheel top slide | 1 | inch | 0342500123-inch |
| 24 | Guide disk scales ring | 1 | | 0342500124 |
| 25 | Lever handle | 1 | | 0342500125 |
| 26 | Handle handwheel top slide | 2 | | 0342500126 |
| 26 | Handle handwheel cross slide | 1 | | 0342500126 |
| 27 | Fixing bolt for handle handwheel | 1 | | 0342500127 |
| 32 | Holder | 1 | | 0342500132 |
| 33-1 | Socket head screw | 2 | GB 70-85 - M4 x 10 | |
| 33-2 | Washer | 2 | DIN 125-1 4 mm | |
| 34 | Countersunk screw | 2 | DIN EN ISO 7046-1 H M5 x 8 | |
| 35 | Shaft | 1 | | 0342500135 |
| 36 | Splinter shield | 1 | | 0342500136 |
| 37 | Hexagonal case | 1 | | 0342500137 |
| 38-1 | Socket head screw | 2 | GB 70-85 - M3 x 8 | |
| 38-2 | Nut | 1 | ISO 4035 M3 | |
| 39-1 | Socket head screw | 2 | GB 70-85 - M3 x 8 | |
| 39-2 | Washer | 2 | DIN 125-1 3 mm | |
| 40 | Oiler | 11 | 6 mm | 0342500140 |
| 42 | Socket head screw | 2 | GB 70-85 - M5 x 10 | |
| 43 | Cross slide | 1 | | 0342500143 |
| 44 | | 2 | ISO 8752 - 5 x 26 | |
| 45 | Set screw | 5 | M5x40 | 0342500145 |
| 46 | Hexagon nut | 4 | ISO 4035 - M5 | |
| 48 | Pressure border cross slide | 1 | | 0342500148 |
| 49 | Spindle nut | 1 | inch | 0342500149-inch |
| 50 | Spindle cross slide | 1 | inch | 0342500150-inch |
| 52 | Dove tail guidance cross slide | 1 | | 0342500152 |
| 54 | Cleaner | 1 | | 0342500154 |
| 55 | Holder for cleaner | 1 | | 0342500155 |
| 56 | Washer | 1 | | 0342500156 |
| 57 | Pressure border bed slide | 1 | | 0342500157 |
| 58 | Cross slot flat head thread cut screw | 4 | GB 6560-86 - M3x8 | |
| 59 | Key | 1 | | 0342500159 |
| 61 | Socket head screw | 1 | GB 70-85 - M5 x 10 | |
| 62 | Saddle spindle cross slide | 1 | | 0342500162 |
| 64 | Socket head screw | 3 | GB 70-85 - M8 x 20 | |
| 65 | Scales ring cross slide | 1 | inch | 0342500165-inch |
| 66 | Handwheel cross slide | 1 | | 0342500166 |
| 67 | Oiler | 1 | 10 mm | 0342500167 |
| 68 | Socket | 1 | | 0342500168 |
| 69 | Axially grooved ball bearing | 2 | 51101 | 0342500169 |
| 70 | Case | 1 | | 0342500170 |
| 71 | Apron | 1 | | 0342500171 |
| 72 | Handwheel bed slide | 1 | | 0342500172 |
| 73 | Handle handwheel bed slide | 1 | | 0342500173 |
| 74 | Fixing bolt handle handwheel | 1 | | 0342500174 |
| 75-1 | Toothed wheel | 1 | | 03425001751 |

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| Pos. | Description | Qty. | Size | Item no. |
|-------------|---|-------------|-------------------------|-------------------|
| 75-2 | Toothed shaft | 1 | | 03425001752 |
| 79 | Threaded pin with tap | 2 | ISO 7435 - M4 x 12 | |
| 80 | Toothed shaft | 1 | | 0342500180 |
| 81 | Key | 1 | DIN 6885 - A 4 x 4 x 12 | |
| 82 | Socket head screw | 6 | GB 70-85 - M4 x 8 | |
| 83 | Washer | 1 | ISO 7090 - 8 - 140 HV | |
| 84 | Hexagon nut | 1 | DIN 6924 - M8 | |
| 85 | Socket head screw | 4 | GB 70-85 - M8 x 35 | |
| 86 | Scales ring handwheel bed slide | 1 | inch | 0342500186-inch |
| 87 | Flange | 1 | | 0342500187 |
| 89 | Disc for lever longitudinal feed | 1 | | 0342500189 |
| 90 | Movement disk | 1 | | 0342500190 |
| 91 | Cylindrical pin | 2 | ISO 2338 - 5 h8 x 12 | |
| 92 | Lock nut | 1 | | 0342500192 |
| 93 | Pressure border lock nut | 1 | | 0342500193 |
| 95 | Threaded pin with tap | 1 | ISO 7435 - M4 x 20 | |
| 96 | Hexagon nut | 4 | ISO 4032 - M5 | |
| 97 | Shaft movement disk | 1 | | 0342500197 |
| 98 | Cylindrical pin | 1 | ISO 2338 - 3 h8 x 18 | |
| 99 | Threaded pin with tap | 1 | ISO 7435 - M4 x 12 | |
| 99 | Socket | 1 | | 0342500199 |
| 100 | Set screw | 3 | M5 x 40 | 03425001100 |
| 101 | Threaded pin | 1 | ISO 4027 - M4 x 8 | |
| 102 | Flange | 1 | | 03425001102 |
| 104 | Spring piece | 1 | | 03425001104 |
| 105 | Spring pin | 2 | ISO 8752 - 4 x 16 - A | |
| 106 | Key | 2 | DIN 6885 - A 3 x 3 x 10 | |
| 107 | Washer | 1 | | 03425001107 |
| 108 | Hexagon nut | 1 | DIN 6924 - M8 | |
| 109 | Slot screw | 2 | | 03425001109 |
| 110 | Hexagon nut | 2 | ISO 4035 - M8 | |
| 111 | Washer | 2 | DIN 125-1 - B 8.4 | |
| 115 | Set screw | 5 | M5x15 | 03425001115 |
| 116 | Hexagon nut | 5 | ISO 4032 - M5 | |
| 117 | Socket head screw | 7 | GB 70-85 - M5 x 16 | |
| 118 | Guide rail bed slide | 1 | | 03425001118 |
| 119 | Socket head screw | 4 | GB 70-85 - M5 x 25 | |
| 121 | Bed slide guidance + clamping part | 1 | | 03425001121 |
| 122 | Bed slide guidance | 1 | | 03425001122 |
| 124 | Bushing | 1 | | 03425001124 |
| 125 | Socket head screw | 2 | GB 70-85 - M8 x 30 | |
| 126 | Holder for cleaner | 1 | | 03425001126 |
| 127 | Cleaner | 1 | | 03425001127 |
| 128 | Socket head screw | 2 | GB 70-85 - M3 x 6 | |
| 129 | Rest sheet metal engaging lever feed motion | 1 | | 03425001129 |
| 130 | Threaded pin | 2 | ISO 4028 - M6 x 16 | |
| 131 | Threaded pin | 1 | ISO 4026 - M6 x 6 | |
| 132 | Spring rotary switch | 1 | | 03425001132 |
| 133 | Steel ball | 1 | 5 mm | 03425001133 |
| 134 | Handle engaging lever | 1 | | 03425001134 |
| 135 | Circlip | 1 | DIN 7993 - A 7 | |
| 136 | Shaft engaging lever | 1 | | 03425001136 |
| 137 | Spring | 1 | | 03425001137 |
| 138 | Cheese head screw with slot | 1 | ISO 1207 - M5 x 8 | |
| 139 | Spring plate | 1 | | 03425001139 |
| 140 | Key | 1 | DIN 6885 - A 5 x 5 x 10 | |
| 141 | Socket | 1 | | 03425001141 |
| 207 | Key | 1 | DIN 6885 - A 5 x 5 x 50 | |
| 208 | Socket head screw | 1 | GB 70-85 - M6 x 25 | |
| 209 | Fixing disc | 1 | | 03425001209 |
| 228 | Hexagon nut | 4 | ISO 4035 - M8 | |
| 229 | Threaded pin | 4 | DIN 835 - M8 x 35 | |
| 230 | Washer | 4 | DIN 125-2 - B 8.4 | |
| 231-1 | Motor | 1 | 115V ~ 60Hz | 03420321101M-60Hz |
| 231-2 | Motor | 1 | 230V ~ 50Hz | 03420321101M |
| 235 | Machine bed | 1 | | 03425001235 |
| 236-1 | Rack left section | 1 | | 034250012361 |

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| Pos. | Description | Qty. | Size | Item no. |
|-------------|--|-------------|------------------------------|------------------|
| 236-2 | Rack right section | 1 | | 034250012362 |
| 237 | Countersunk screw | 6 | ISO 7046-1 - M5 x 12 - 4.8 | |
| 238 | Lead screw | 1 | inch | 03425001238-inch |
| 239 | Connecting piece | 1 | | 03425001239 |
| 240 | Socket head screw | 2 | GB 70-85 - M6 x 14 | |
| 242 | Saddle | 1 | | 03425001242 |
| 243 | Cylindrical pin | 6 | GB 120-86 - 6 x 16 | |
| 244 | Washer | 2 | DIN 125 - A 10.5 | |
| 245 | Groove nut | 2 | DIN 1804 - M12 | |
| 250 | Washer | 4 | DIN 125 - A 8.4 | |
| 251 | Socket head screw | 4 | GB 70-85 - M8 x 35 | |
| 256 | Hexagon nut | 3 | GB 6170-86 - M10 | |
| 257 | Pin jaw chuck flange | 3 | | 03425001257 |
| 258 | Washer | 3 | GB 95-85 - 10 | |
| 259 | Socket head screw | 4 | GB 70-85 - M8 x 20 | |
| 260 | Jaw chuck flange | 1 | | 03425001260 |
| 261 | 3 - jaw chuck | 1 | 125 mm | 03425001261 |
| 262 | Key for 3 - jaw chuck | 1 | 10 mm | 03425001262 |
| 263 | Switch housing | 1 | | 03425001263-US |
| 265 | Cheese head screw | 2 | ISO 7045 - M4 x 16 - 4.8 - H | |
| 266 | Socket head screw | 4 | GB 70-85 M3 x 8 | |
| 267 | Sight jaw ckuck protection | 1 | | 03425001267 |
| 268 | Spring pin | 1 | GB 879-86 5 x 18 | |
| 269 | Frame jaw ckuck protection | 1 | | 03425001269 |
| 270 | Washer | 4 | DIN 125-1 A 3.2 | |
| 271 | Nut | 4 | DIN EN 24 032 M3 | |
| 272 | Shaft jaw ckuck protection | 1 | | 03425001272 |
| 273 | Fixing part jaw ckuck protection | 1 | | 03425001273 |
| 274 | Position switch | 2 | LXW5 | 03425001274 |
| 275 | Washer | 2 | DIN 125 - A 6.4 | |
| 276 | Socket head screw | 6 | GB 70-85 - M6 x 10 | |
| 277 | Strain relief connection cable | 1 | PG 19 | 03425001277 |
| 278 | Threaded pin | 1 | DIN 915 M5 x 12 | |
| 279 | Cover switch housing | 1 | | 03425001279 |
| 295 | Deep groove ball thrust bearing, on one side working | 2 | 51102 | 03425001295 |
| 297 | Brass shear pin | 1 | | 03425001297 |
| 298 | Cylindrical pin | 1 | ISO 2338 - 5 m6 x 22 | |
| 301 | Circlip | 2 | DIN 471 - 18 x 1.2 | |
| 302 | Gear wheel | 1 | 24 Z m1.25 15 mm | 03425001302 |
| 304 | Shaft | 1 | | 03425001304 |
| 305 | Circlip | 1 | DIN 471 - 16 x 1 | |
| 306 | Gear wheel | 1 | 24 Z m1.25 6 mm | 03425001306 |
| 307 | Key | 1 | DIN 6885 - A 4 x 4 x 20 | |
| 308 | Key | 1 | DIN 6885 - A 4 x 4 x 45 | |
| 309 | Shaft | 1 | | 03425001309 |
| 310 | Gear wheel combination | 1 | | 03425001310 |
| 311 | Housing feed gear | 1 | | 03425001311 |
| 312 | Oil plug | 2 | | 03425001312 |
| 314 | Socket | 1 | | 03425001312 |
| 315 | Allan screw with point | 2 | GB 78-85 - M6 x 10 | |
| 316 | Flange | 1 | | 03425001316 |
| 319 | Entrance shaft | 1 | | 03425001319 |
| 320 | Sliding bearing | 1 | | 03425001320 |
| 321 | Gear wheel | 1 | 32 Z m1.25 6 mm | 03425001321 |
| 324 | toothed shaft | 1 | 16Z m1.25 | 03425001324 |
| 325 | Key | 2 | DIN 6885 - A 4 x 4 x 8 | |
| 326 | Circlip | 2 | DIN 471 - 15 x 1 | 03425001326 |
| 327 | Gear wheel | 1 | 24 Z m1.25 6 mm | 03425001327 |
| 328 | Grooved ball bearing | 2 | 6202 | 03425001328 |
| 329 | Flange | 1 | | 03425001329 |
| 330 | Socket head screw | 6 | GB 70-85 - M5 x 14 | |
| 331 | Cover feed gear | 1 | | 03425001331 |
| 332 | Socket head screw | 5 | GB 70-85 - M6 x 12 | |
| 334 | Steel ball | 2 | 5 mm | 03425001334 |
| 335 | Rotary switch | 2 | | 03425001335 |
| 336 | Spring | 2 | | 03425001336 |
| 337 | Spring pin | 2 | ISO 8752 - 5 x 16 | |

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| Pos. | Description | Qty. | Size | Item no. |
|-------------|------------------------------------|-------------|-----------------------------------|-----------------|
| 338 | O-ring | 2 | DIN 3771 - 7.1 x 1.8 - N - NBR 70 | |
| 339 | Shaft rotary switch | 2 | | 03425001339 |
| 340 | Adjusting lever | 2 | | 03425001340 |
| 341 | Transmission fork | 1 | | 03425001341 |
| 342 | Marking rotary switch | 2 | | 03425001342 |
| 343 | Cylindrical pin | 1 | ISO 2338 - 3 h8 x 14 | |
| 344 | Case | 1 | | 03425001344 |
| 345 | Washer | 1 | | 03425001345 |
| 346 | Backwall cover | 1 | | 03425001346 |
| 347 | Countersunk screw | 10 | GB 819-85 - M5x8 | |
| 348 | O-ring | 2 | DIN 3771 - 15 x 1.8 - N - NBR 70 | |
| 349 | Socket right | 1 | | 03425001349 |
| 350 | Sliding bearing intermediate shaft | 1 | | 03425001350 |
| 351 | Threaded pin | 2 | DIN 915 - M5 x 8 | |
| 353 | Transmission fork | 1 | | 03425001353 |
| 354 | Socket head screw | 4 | GB 70-85 - M6 x 50 | |
| 360 | Oil sight glass | 1 | 25 mm | 03425001360 |
| 361 | O-ring | 1 | DIN 3771 - 20 x 2.65 - N - NBR 70 | |
| 403 | Threaded pin | 2 | GB 897-88 - A M10x120 | |
| 404 | Hexagon nut | 7 | ISO 4032 - M10 | |
| 405 | Nut protection cover | 1 | | 03425001405 |
| 406 | Spindle | 1 | | 03425001406 |
| 407 | Key | 1 | DIN 6885 - A 8 x 7 x 40 | |
| 408 | Bearing cover in front | 1 | | 03425001408 |
| 414 | Taper roller bearing | 2 | 32009 | 03425001414 |
| 415 | Bearing cover in in the back | 1 | | 03425001415 |
| 416 | Spacer | 1 | | 03425001416 |
| 417 | Toothed wheel | 1 | 40 Z, m1,5 | 03425001417 |
| 419 | V - belt | 1 | 10 x 750 Li | 0391290 |
| 420 | Spindle V-belt pulley | 1 | | 03425001420 |
| 421 | Socket head screw | 4 | GB 70-85 - M5 x 10 | |
| 423 | Shaft nut | 1 | | 42303425001 |
| 424-1 | Shaft | 1 | | 034250014241 |
| 424-2 | Case | 1 | | 034250014242 |
| 425 | Toothed belt | 1 | 230XL 070 | 0395350 |
| 427 | Toothed belt disk | 1 | | 03425001427 |
| 428 | Circlip | 1 | DIN 471 - 12 x 1 | |
| 430 | Toothed belt disk | 1 | | 03425001430 |
| 430-2 | Flanged washer in front | 1 | | 034250014302 |
| 430-1 | Flanged washer in the back | 1 | | 034250014301 |
| 431 | Motor V-belt pulley | 1 | | 03425001431 |
| 433 | Washer | 1 | DIN 125 - A 8.4 | |
| 434 | Hexagon nut | 1 | ISO 4032 - M8 | |
| 435 | Clamping piece | 1 | | 03425001435 |
| 436 | Eccentric disk idler | 1 | | 03425001436 |
| 437 | Shaft for idler | 1 | | 03425001437 |
| 438 | Grooved ball bearing | 1 | 6001 | 03425001438 |
| 439 | Idler | 1 | | 03425001439 |
| 440 | Circlip | 1 | DIN 472 - 28 x 1.2 | |
| 441 | Protection cover headstock | 1 | | 03425001441 |
| 441-1 | Washer | 1 | DIN 125 - A 5.3 | |
| 441-2 | Cheese head screw with slot | 1 | ISO 1207 M 5 x 8 | |
| 441-3 | Drop cover | 1 | | 034250014413 |
| 442 | Circlip | 2 | DIN 471 - 12 x 1 | |
| 451 | Case | 1 | | 03425001451 |
| 452 | Hexagon nut | 1 | ISO 4032 - M10 | |
| 453 | Hexagon nut | 1 | ISO 4032 - M12 | |
| 454 | Hexagon nut | 1 | ISO 4035 - M12 | |
| 455 | Washer | 1 | DIN 125 - A 13 | |
| 470 | Baseplate | 1 | | 03425001470 |
| 472 | Washer | 3 | DIN 125 - A 10.5 | |
| 473 | Socket head screw | 2 | GB 70-85 - M10 x 20 | |
| 475 | Bolt | 1 | | 03425001475 |
| 476 | Disk for toothed belt disk | 1 | | 03425001476 |
| 502 | Socket head screw | 1 | DIN 912 M8 x 35 | |
| 503 | Change gear train | 1 | | 03425001503 |
| 504 | Saddle change gear train | 1 | | 03425001504 |
| 505 | Socket head screw | 3 | DIN 912 M5 x 10 | |

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| Pos. | Description | Qty. | Size | Item no. |
|-------------|--|-----------------|--------------------------|--------------------------|
| 506 - 516 | Change gear | 2 | 80 T Module 1.5 | 03425001-80 T Module 1.5 |
| | Change gear | 1 | 72 T Module 1.5 | 03425001-72 T Module 1.5 |
| | Change gear | 1 | 71 T Module 1.5 | 03425001-71 T Module 1.5 |
| | Change gear | 1 | 70 T Module 1.5 | 03425001-70 T Module 1.5 |
| | Change gear | 1 | 60 T Module 1.5 | 03425001-60 T Module 1.5 |
| | Change gear | 1 | 50 T Module 1.5 | 03425001-50 T Module 1.5 |
| | Change gear | 1 | 40 T Module 1.5 | 03425001-40 T Module 1.5 |
| | Change gear | 1 | 33 T Module 1.5 | 03425001-33 T Module 1.5 |
| | Change gear | 1 | 30 T Module 1.5 | 03425001-30 T Module 1.5 |
| | Change gear | 1 | 27 T Module 1.5 | 03425001-27 T Module 1.5 |
| | Change gear | 1 | 25 T Module 1.5 | 03425001-25 T Module 1.5 |
| Change gear | 1 | 24 T Module 1.5 | 03425001-24 T Module 1.5 | |
| Change gear | 1 | 20 T Module 1.5 | 03425001-20 T Module 1.5 | |
| 517 | Groove stone change gear | 2 | M5 | 03425001517 |
| 518 | Shim | 1 | 1,5 mm | 03425001518 |
| 519 | Shim | 1 | 3 mm | 03425001519 |
| 520 | Connecting case of change gears | 2 | | 03425001520 |
| 521 | Clamping screw change gear | 2 | | 03425001521 |
| 522 | Attachment ring | 1 | | 03425001522 |
| 523 | Case change gear | 1 | | 03425001523 |
| 524 | Washer | 1 | | 03425001524 |
| 525 | Socket head screw | 1 | DIN 912 M6 x 10 | |
| 600 | Motor cover | 1 | | 03425001600 |
| 601 | Splash wall | 1 | TU2506 | 03425001601 |
| 602 | Cross slot flat head thread cut screws | 6 | GB 6560-86 - M5x10 | |
| 603 | Cover plate | 1 | | 03425001603 |
| 604 | Screen + number of revolutions table | 1 | | 03425001604-US |
| 605 | Socket head screw | 10 | GB 70-85 - M3 x 5 | |
| 606 | Cover plate + identification plate | 1 | | 03425001606-US |
| 607 | Thread cutting table | 1 | | 03425001607 |
| 607 | Thread cutting table TU2506 | | | 03425006607-US |
| 611 | Chip pan | 1 | | 03425001611 |
| 612 | Rubber | 1 | | 03425001612 |
| 615 | Switch box for Vario type | 1 | | 03425001615 |
| 901 | Tailstock top part | 1 | | 03425001901 |
| 902 | Clamping piece spindle sleeve down | 1 | | 03425001902 |
| 903 | Clamping piece spindle sleeve top | 1 | | 03425001903 |
| 904 | Piece of centering of spindle sleeve | 1 | | 03425001904 |
| 905 | Spindle sleeve | 1 | inch | 03425001905-inch |
| 906 | Spindle | 1 | inch | 03425001906-inch |
| 907 | Axially grooved ball bearing | 1 | 51101 | 03425001907 |
| 908 | Saddle | 1 | | 03425001908 |
| 909 | Socket head screw | 1 | | 03425001909 |
| 910 | Key | 1 | DIN 6885 - A 4 x 4 x 14 | |
| 911 | Scales ring | 1 | inch | 03425001911-inch |
| 912 | Hand wheel | 1 | | 03425001912 |
| 913 | Spring plate | 1 | | 03425001913 |
| 914 | Washer | 1 | ISO 7090 - 8 - 140 HV | |
| 915 | Hexagon nut | 1 | DIN 6924 - M8 | |
| 916 | Case for handle | 1 | | 03425001916 |
| 917 | Fixing bolt for case | 1 | | 03425001917 |
| 918 | Head clamping lever | 1 | | 03425001918 |
| 919 | Clamping lever | 1 | | 03425001919 |
| 920 | Base plate | 1 | | 03425001920 |
| 921 | Socket head screw | 2 | GB 70-85 - M8 x 30 | |
| 922 | Piece of centering of spindle sleeve | 1 | | 03425001922 |
| 923 | Clamping screw | 1 | M6x15 | 03425001923 |
| 924 | Nut | 1 | M6 | 03425001924 |
| 925 | Washer | 1 | D = 6 | 03425001925 |
| 926 | Socket head screw | 1 | GB 70-85 - M6 x 40 | |
| 930 | Threaded pin | 1 | ISO 4028 - M4 x 5 | |
| 931 | Guide bush | 1 | | 03425001931 |
| 932 | Cover | 1 | | 03425001932 |
| 933 | Countersunk screw | 4 | ISO 2009 - M5 x 10 | |
| 934 | Tightening screw | 1 | | 03425001934 |
| 935 | Spring | 1 | | 03425001935 |
| 936 | Clamping plate | 1 | | 03425001936 |
| 937 | Hexagon nut | 1 | ISO 4035 - M12 | |

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| Pos. | Description | Qty. | Size | Item no. |
|-------------|-----------------------------|-------------|--------------------|-------------------|
| 938 | Washer | 1 | | 03425001938 |
| 939 | Rivet | 4 | | 03425001939 |
| 940 | Scale | 1 | | 03425001940 |
| 941 | Eccentric cam | 1 | | 03425001941 |
| 942 | Threaded pin | 1 | ISO 4028 - M6 x 12 | |
| 944 | Washer | 1 | | 03425001944 |
| 945 | Clamping lever | 1 | | 03425001945 |
| 946 | Scale | 1 | | 03425001946 |
| 947 | Saddle | 1 | | 03425001947 |
| 948 | Base plate tailstock | 1 | | 03425001948 |
| 949 | Tailstock upper section | 1 | | 03425001949 |
| 950 | Clamping part collar | 1 | | 03425001950 |
| 951 | Socket head screw | 4 | GB 70-85 - M5 x 14 | |
| 952 | Head clamping lever | 1 | | 03425001952 |
| 953 | Emergency stop button | 1 | | 0302024190 |
| 954 | Transformer | 1 | 115V / 24V ~ 60Hz | 03425001954-115V |
| 955 | Magnetic contactor | 1 | | 0460025 |
| 956 | Limit switch | 1 | | 03425001274 |
| 957-1 | Cover capacitor | 1 | | 03425001957 |
| 957-2 | Cover capacitor | 1 | | 034250019581 |
| 958-1 | Capacitor (230V) | 1 | 25µF | 03425001959 |
| 958-2 | Capacitor (230V) | 1 | 150µF | 034250019601 |
| 958-3 | Capacitor (115V) | 1 | 65µF | 034250019583-115V |
| 958-4 | Capacitor (115V) | 1 | 400µF | 034250019584-115V |
| 960 | Circuit breaker | 1 | 20A long delay | 03420322748-20A-T |
| 961 | Combination switch assembly | 1 | 115V | 0342151-115V |
| 962 | Cover plate | 1 | | 03425001962 |
| 963 | Terminal block | 1 | | 03425001963 |
| 964 | Strain Relief | 1 | | 03425001964 |
| 965 | Line cable 115V | 1 | SJT14AWG | 03425001965 |
| 966 | Switch | 1 | QKS8 | 0329035017 |
| 967 | Switch closer | 1 | | 0460054 |

7 Spare parts - TU2807V

7.1 Top slide

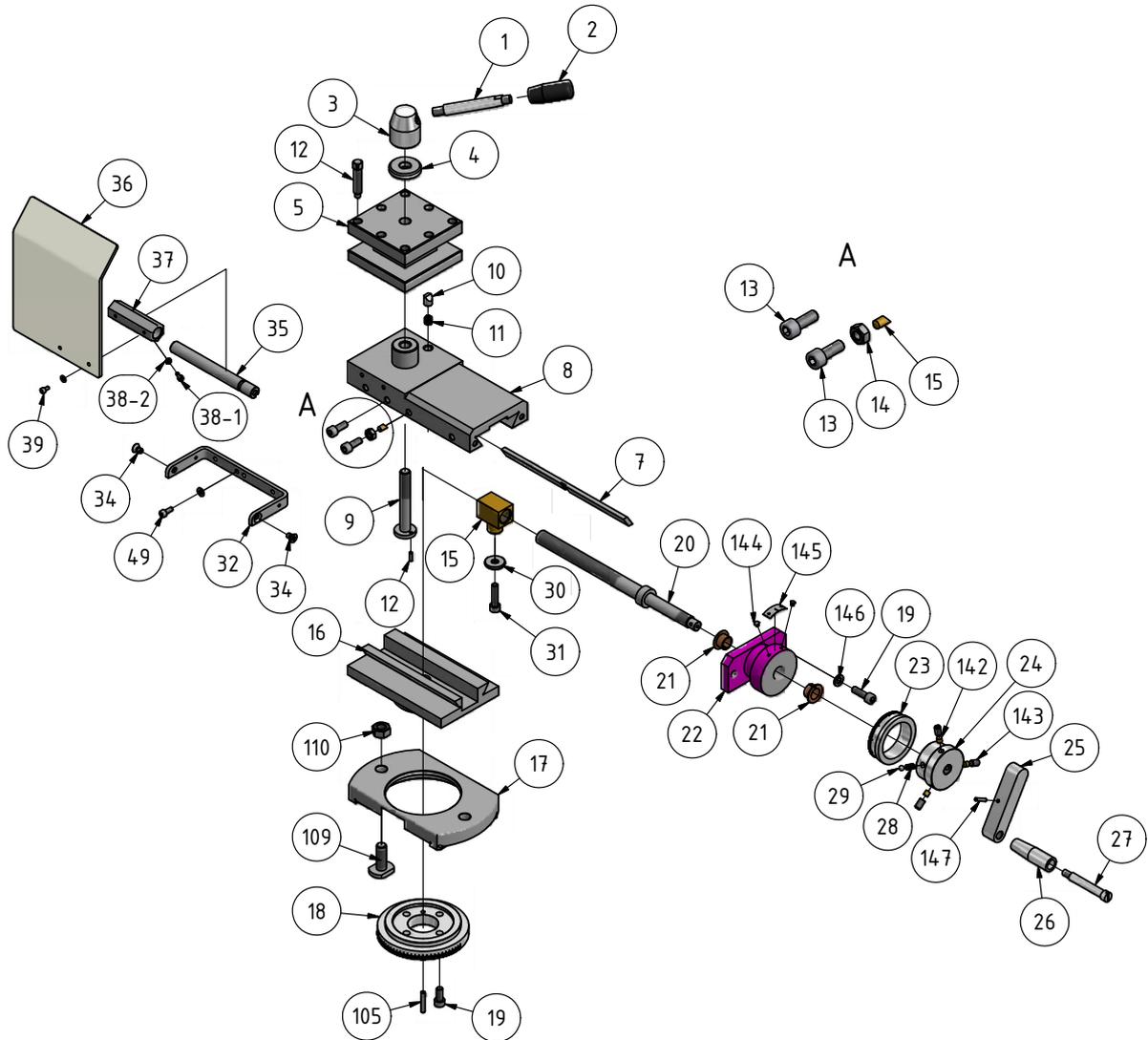


Fig. 7-1: Top slide TU2807V

7.3 Bed slide

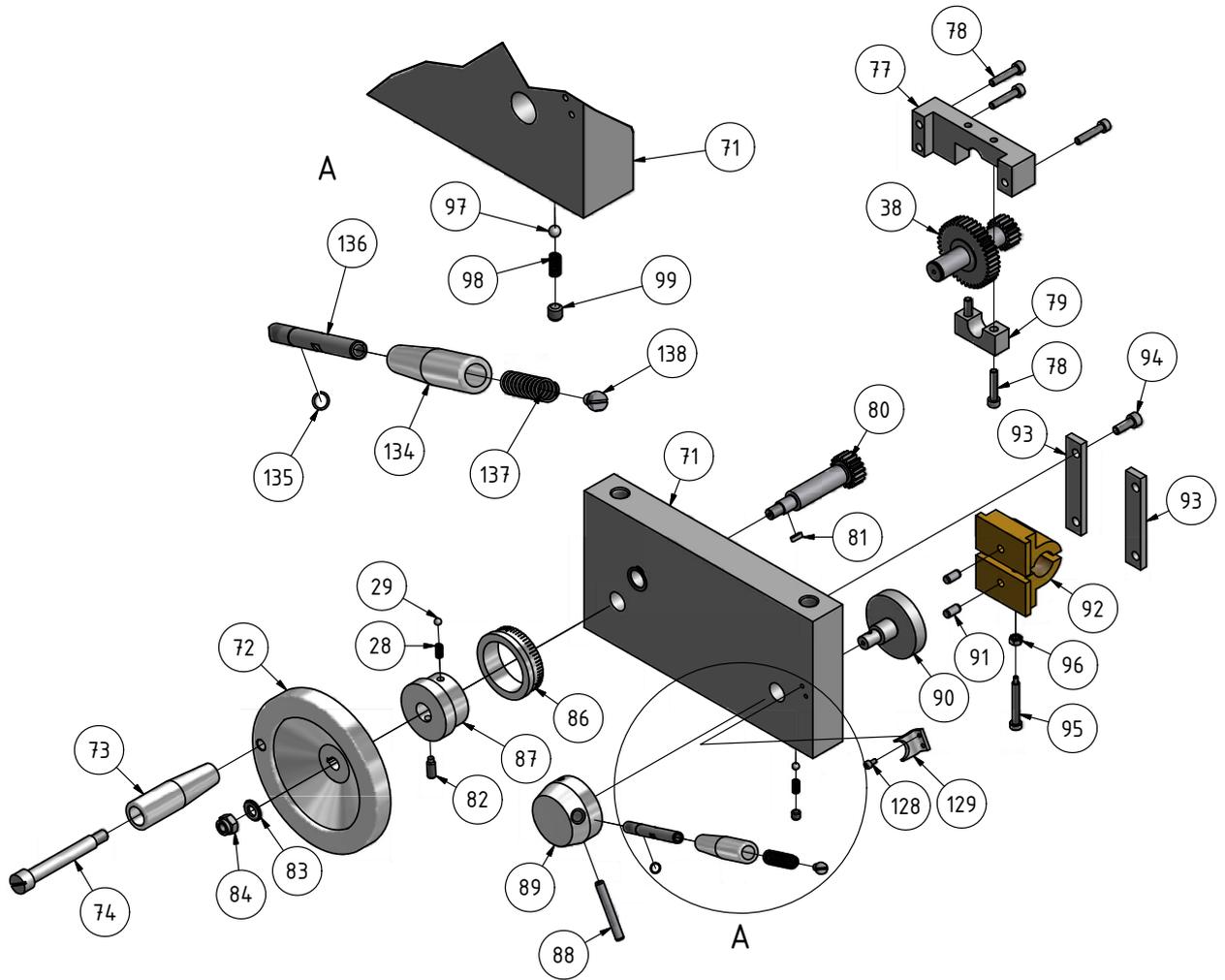


Fig.7-3: lathe saddle TU2807V

7.5 Machine bed

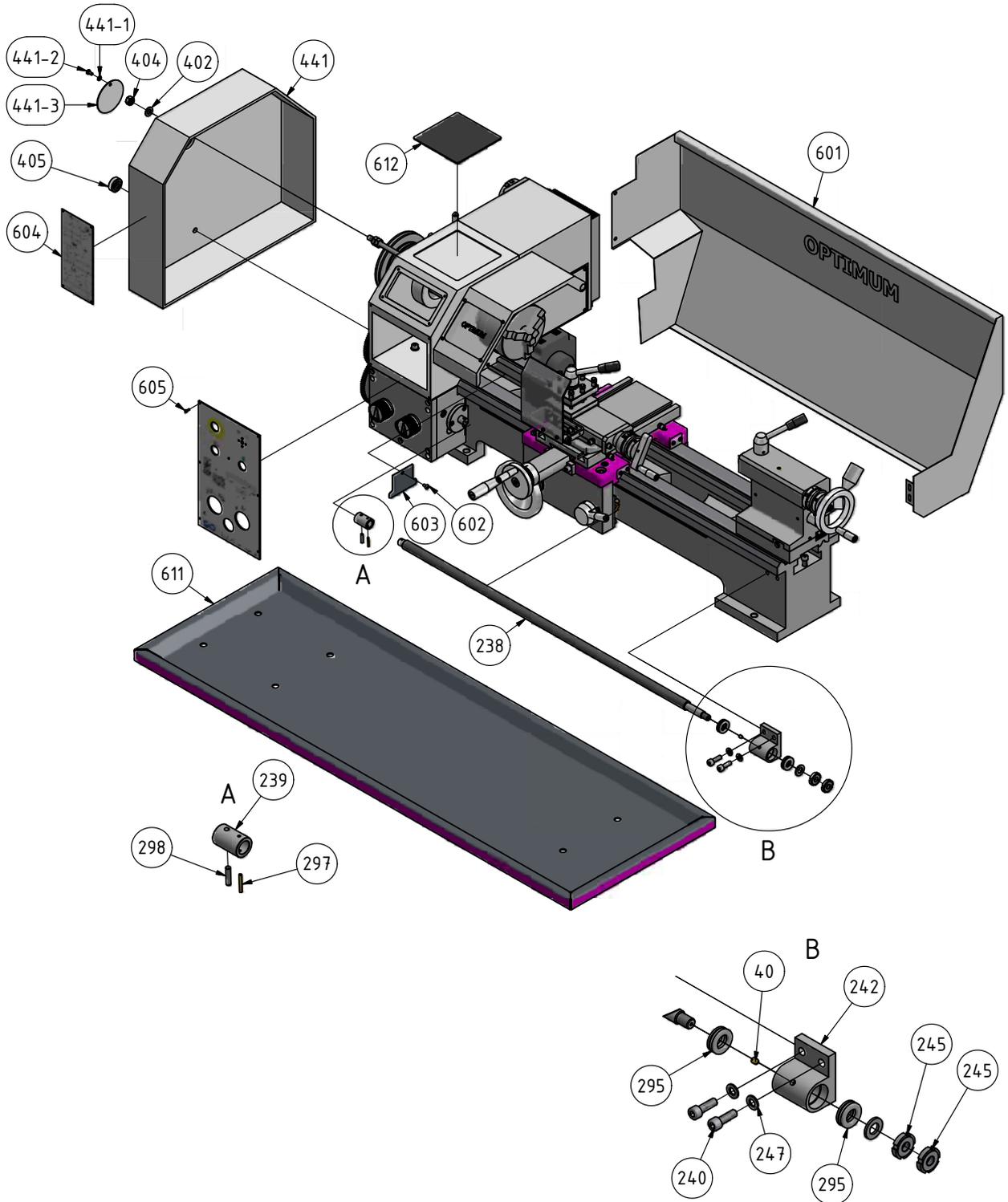


Fig. 7-5: Machine bed

7.6 Feed gear 1 of 2

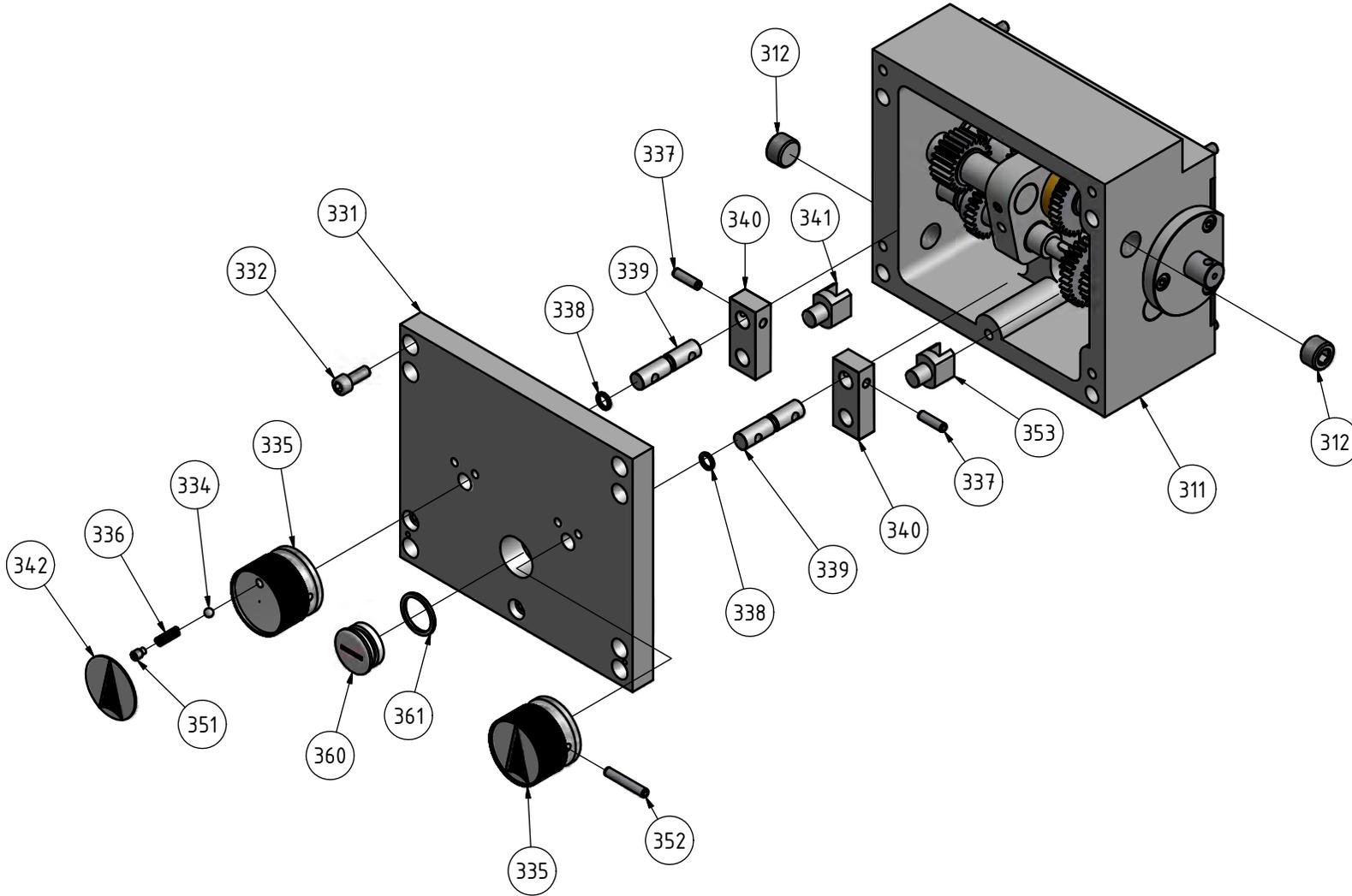


Fig.7-6: Feed gear TU2807V 1 of 2

7.8 Headstock 1 of 2

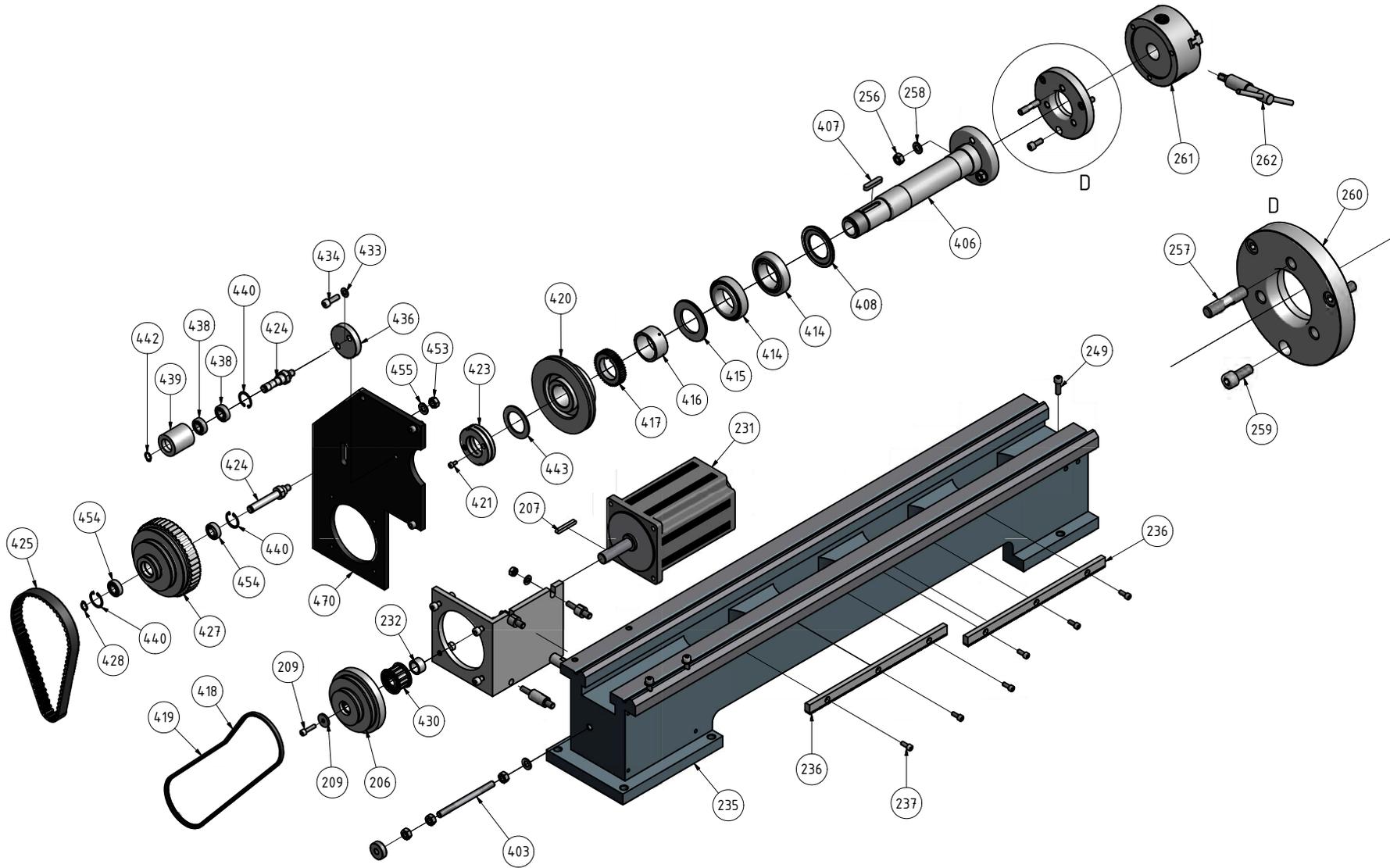


Fig.7-8: Headstock 1-2

7.9 Headstock 2 of 2

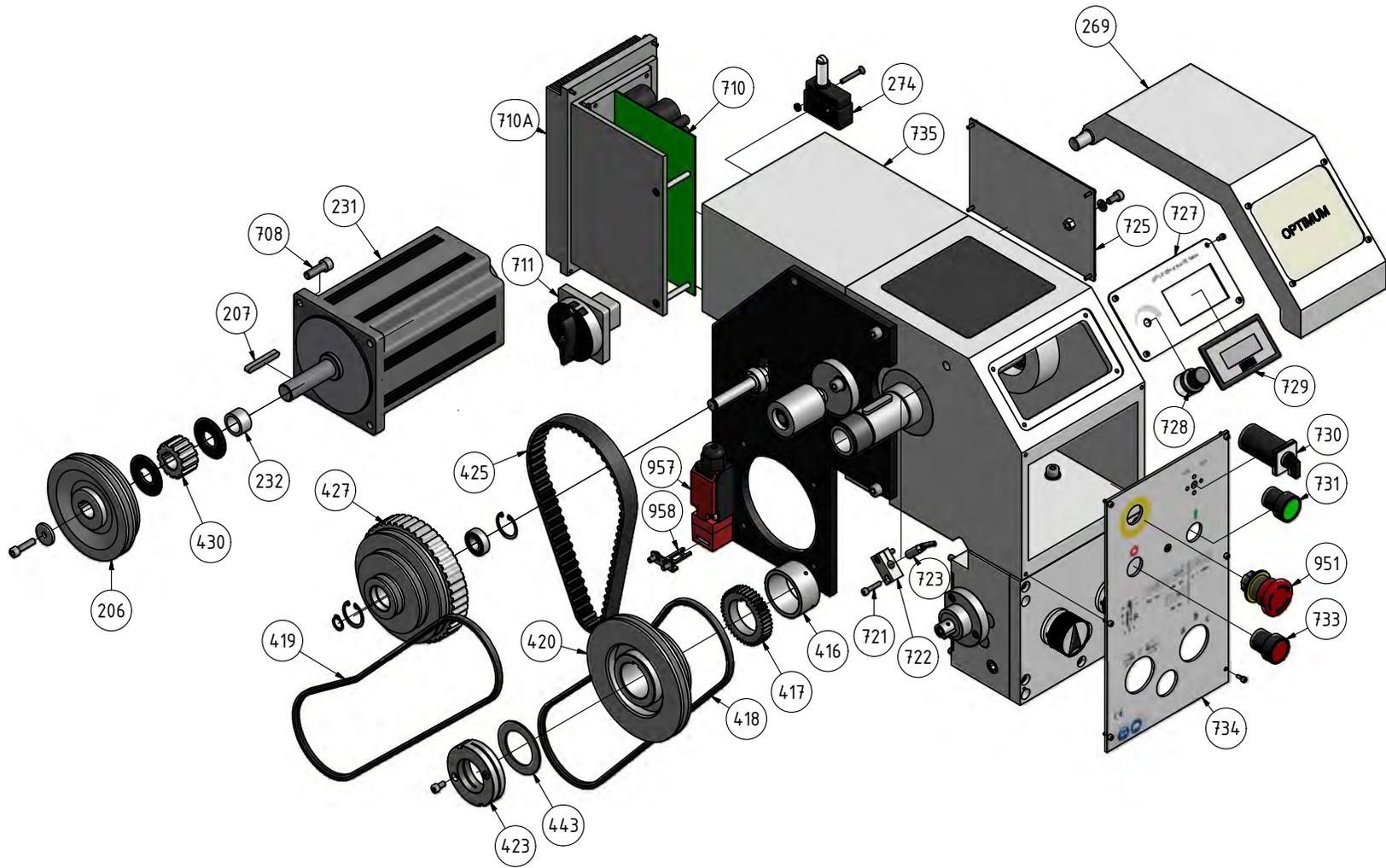


Fig.7-9: Headstock 2-2

7.10 Change gear

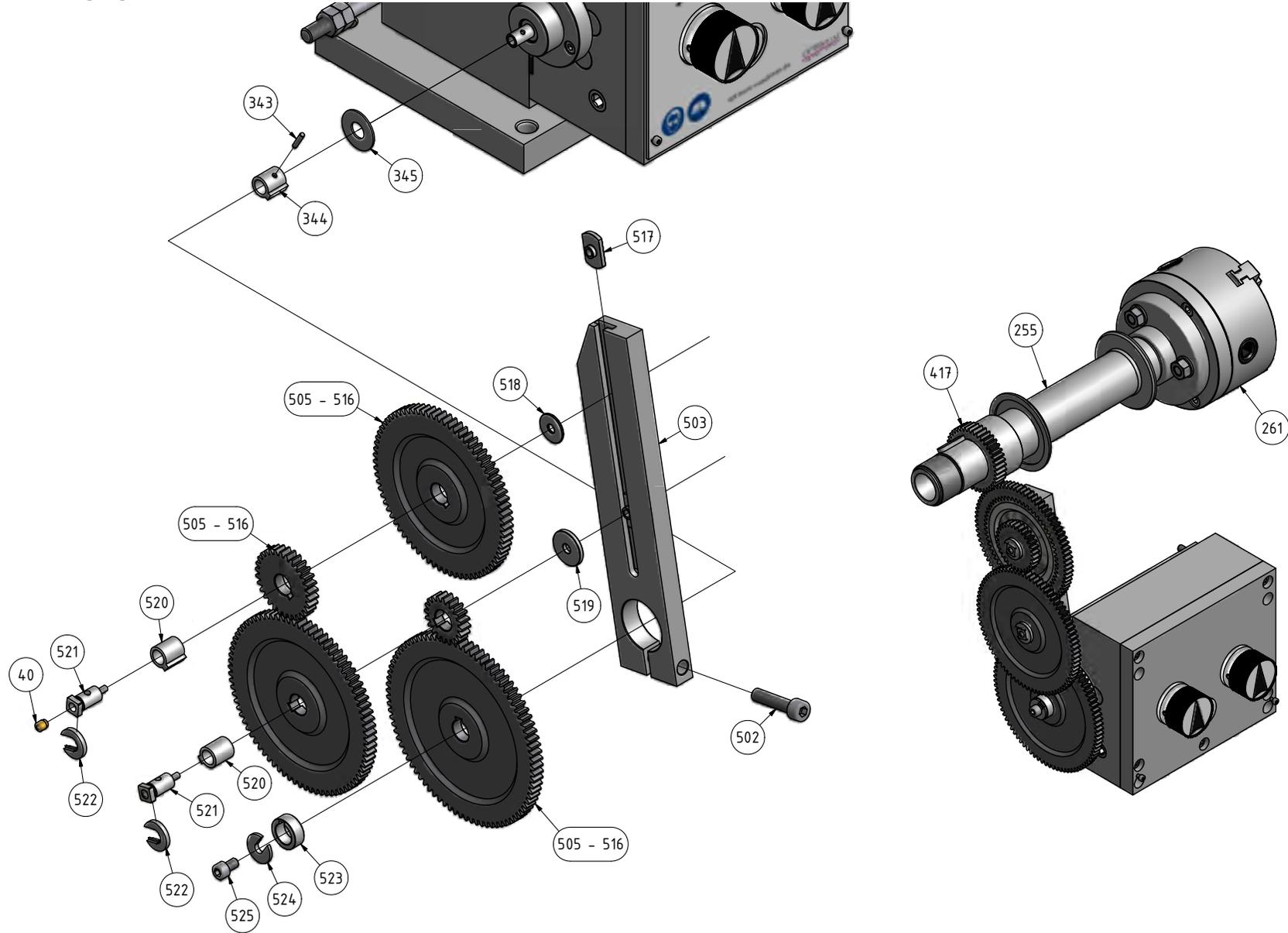


Fig.7-10: Change gear

7.11 Spare parts list TU2807V

| TU2807V | | | | |
|---------|---------------------------------------|------|-------------------------------|-----------------|
| Pos. | Description | Qty. | Size | Item no. |
| 1 | Clamping lever tool holder | 1 | | 034270011 |
| 2 | Handle locking lever | 1 | | 034270012 |
| 3 | Clamping nut tool holder | 1 | | 034270013 |
| 4 | Washer clamping nut | 1 | | 034270014 |
| 5 | Quadruple tool holder | 1 | | 034270015 |
| 7 | Pressure border top slide | 1 | | 034270017 |
| 8 | Top slide | 1 | | 034270018 |
| 9 | Threaded rod quadruple tool holder | 1 | | 034270019 |
| 10 | Fixing pin | 1 | | 0342700110 |
| 11 | Spring | 1 | | 0342700111 |
| 12 | Spring pin | 1 | ISO 8752 - 3 x 10 A | |
| 12 | Threaded pin with square head and tap | 8 | GB 85-88 - M8 x 35 | |
| 13 | Socket head screw | 4 | GB 70-85 - M6 x 16 | |
| 14 | Hexagon nut | 3 | ISO 4032 - M6 | |
| 15 | Spindle nut top slide | 1 | inch | 0342700115-inch |
| 16 | Dove tail guidance top slide | 1 | | 0342700116 |
| 17 | Clamping ring top slide | 1 | | 0342700117 |
| 18 | Angle scales ring top slide | 1 | | 0342700118 |
| 19 | Socket head screw | 2 | GB 70-85 - M6 x 20 | |
| 19 | Socket head screw | 4 | GB 70-85 - M6 x 14 | |
| 20 | Spindle top slide | 1 | inch | 0342700120-inch |
| 21 | Floating bushing, Sliding bearing | 2 | | 0342700121 |
| 21 | Guide rail bed slide | 1 | | 0342700121 |
| 22 | Saddle spindle top slide | 1 | | 0342700122 |
| 23 | Scales ring handwheel top slide | 1 | inch | 0342700123-inch |
| 24 | Guide disk scales ring | 1 | | 0342700124 |
| 25 | Lever handwheel top slide | 1 | | 0342700125 |
| 26 | Handle handwheel | 1 | | 0342700126 |
| 27 | Fixing bolt for handle handwheel | 1 | | 0342700127 |
| 28 | Spring | 1 | | 0342700128 |
| 28 | Spring rotary switch | 1 | | 0342700128 |
| 29 | Steel ball | 1 | 5 mm | 0342700129 |
| 30 | Disc | 1 | | 0342700130 |
| 31 | Socket head screw | 1 | GB 70-85 - M6 x 25 | |
| 32 | Holder | 1 | | 0342700132 |
| 34 | Countersunk screw | 2 | ISO 7046-1 - M5 x 8 - 4.8 - H | |
| 35 | Shaft | 1 | | 0342700135 |
| 36 | Splinter shield | 1 | | 0342700136 |
| 37 | Hexagonal case | 1 | | 0342700137 |
| 38-1 | Socket head screw | 1 | GB 70-85 - M3 x 8 | |
| 38-2 | Hexagon nut | 1 | ISO 4035 - M3 | |
| 38 | Gear wheel combination | 1 | | 0342700138 |
| 39 | Socket head screw | 2 | GB 70-85 - M3 x 6 | |
| 40 | Oiler | 14 | 6 mm | 0342700140 |
| 41 | Threaded pin | 1 | ISO 4027 - M6 x 8 | |
| 42 | Socket head screw | 1 | GB 70-85 - M8 x 12 | |
| 43 | Cross slide | 1 | | 0342700143 |
| 44 | Brass pin | 3 | | 0342700144 |
| 45 | Socket head screw | 3 | GB 70-85 - M6 x 30 | |
| 46 | Hexagon nut | 4 | ISO 4032 - M6 | |
| 47 | Set screw | 1 | | 0342700147 |
| 48 | Pressure border cross slide | 1 | | 0342700148 |
| 49 | Spindle nut cross slide | 1 | inch | 0342700149-inch |
| 50 | Spindle cross slide | 1 | inch | 0342700150-inch |
| 52 | Dove tail guidance cross slide | 1 | | 0342700152 |
| 54 | Cleaner | 2 | | 0342700154 |
| 55 | Holder for cleaner | 2 | | 0342700155 |
| 58 | Cross slot flat head screw | 8 | GB 6560-86 - M4x12 | |
| 59 | Key | 1 | DIN 6885 - A 4 x 4 x 8 | |
| 61 | Socket head screw | 1 | GB 70-85 - M5 x 10 | |
| 62 | Saddle spindle cross slide | 1 | | 0342700162 |
| 64 | Socket head screw | 2 | GB 70-85 - M8 x 20 | |
| 65 | Scales ring cross slide | 1 | inch | 0342700165-inch |
| 66 | Handwheel cross slide | 1 | | 0342700166 |
| 68 | Socket | 1 | | 0342700168 |

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| Pos. | Description | Qty. | Size | Item no. |
|-------------|---|-------------|--|-----------------|
| 69 | Axially grooved ball bearing | 2 | 51101 | 0342700169 |
| 71 | Apron | 1 | | 0342700171 |
| 72 | Handwheel bed slide | 1 | | 0342700172 |
| 73 | Handle handwheel bed slide | 1 | | 0342700173 |
| 74 | Fixing bolt handle handwheel | 1 | | 0342700174 |
| 76 | Circlip | 1 | DIN 471 - 15 x 1 | |
| 77 | Saddle | 1 | | 0342700177 |
| 78 | Socket head screw | 5 | GB 70-85 - M5 x 25 | |
| 79 | Back support | 1 | | 0342700179 |
| 80 | toothed shaft | 1 | | 0342700180 |
| 81 | Key | 1 | DIN 6885 - A 3 x 3 x 10 | |
| 82 | Threaded pin | 1 | ISO 4028 - M6 x 16 | |
| 83 | Washer | 1 | ISO 7090 - 8 - 140 HV | |
| 84 | selflocking nut | 1 | DIN 6924 - M8 | |
| 85 | Socket head screw | 2 | GB 70-85 - M12 x 35 | |
| 86 | Scales ring handwheel bed slide | 1 | inch | 0342700186-inch |
| 87 | Guide disk scales ring | 1 | | 0342700187 |
| 88 | Spring pin | 1 | ISO 8752 - 6 x 45 A | |
| 89 | Disc for lever longitudinal feed | 1 | | 0342700189 |
| 90 | Movement disk | 1 | | 0342700190 |
| 91 | Cylindrical pin | 2 | ISO 2338 - 6 h8 x 12 | |
| 92 | Lead screw half nut | 1 | inch | 0342700192-inch |
| 93 | Guide rail lock nut | 2 | | 0342700193 |
| 94 | Socket head screw | 4 | GB 70-85 - M6 x 16 | |
| 95 | Set screw | 1 | | 0342700195 |
| 96 | Hexagon nut | 1 | ISO 4032 - M5 | |
| 97 | Steel ball | 1 | | 0342700197 |
| 98 | Spring | 1 | | 0342700198 |
| 99 | Threaded pin | 1 | ISO 4026 - M6 x 6 | |
| 105 | Spring pin | 1 | ISO 8752 - 4 x 24 A | |
| 109 | Slot screw | 2 | | 03427001109 |
| 110 | Hexagon nut | 2 | ISO 4032 - M10 | |
| 117 | Socket head screw | 3 | GB 70-85 - M5 x 16 | |
| 118 | Socket head screw | 5 | GB 70-85 - M8 x 30 | |
| 121 | Shim lathe slide guidance | 1 | | 03427001121 |
| 122 | bed slide guidance | 1 | | 03427001122 |
| 124 | Bush | 1 | | 03427001124 |
| 125 | Socket head screw | 2 | GB 70-85 - M8 x 40 | |
| 126 | Holder fo V cleaner | 2 | | 03427001126 |
| 127 | V cleaner | 2 | | 03427001127 |
| 128 | Socket head screw | 2 | GB 70-85 - M3 x 6 | |
| 129 | Rest sheet metal engaging lever feed motion | 1 | | 03427001129 |
| 134 | Handle engaging lever | 1 | | 03427001134 |
| 135 | Circlip | 1 | DIN 7993 - A 7 | |
| 136 | Shaft engaging lever | 1 | | 03427001136 |
| 137 | Spring | 1 | | 03427001137 |
| 138 | Cheese head screw with slot | 1 | ISO 1207 - M5 x 8 | |
| 139 | Spring plate | 1 | | 03427001139 |
| 142 | Piece of centering | 3 | | 03427001142 |
| 143 | Threaded pin | 3 | ISO 4026 - M6 x 10 | |
| 144 | Rivet | 2 | DIN 7337 - A2.4 x 6 | |
| 145 | Marking | 1 | | 03427001145 |
| 146 | Washer | 2 | DIN 125 - A 6.4 | |
| 147 | Spring pin | 1 | ISO 8752 - 3 x 16 A | |
| 206 | Motor V-belt pulley | 1 | DC 230V | 0342700601 |
| 207 | Key | 1 | | 0342700607 |
| 208 | Socket head screw | 1 | GB 70-85 - M6 x 25 | |
| 228 | Hexagon nut | 4 | GB 6170-86 - M8 | |
| 229-2 | Spacer down | 2 | | 034270012292 |
| 229-1 | Spacer above | 2 | | 034270012291 |
| 230 | Washer | 10 | DIN 125 - A 8.4 | |
| 231 | Motor | 1 | DC Vario 230V MBL-123HM-300HA-L Hall Sensor 240° 9.5 amps 1.5 KW | 03020245189 |
| 232 | Spacer | 1 | | 0342700605 |

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| Pos. | Description | Qty. | Size | Item no. |
|-------------|--------------------------------|-------------|----------------------|------------------|
| 235 | Lathe bed | 1 | | 03427001235 |
| 236 | Rack | 2 | | 03427001236 |
| 237 | Socket head screw | 6 | GB 70-85 - M6 x 16 | |
| 238 | Lead screw | 1 | inch | 03427001238-inch |
| 239 | Connecting piece | 1 | | 03427001239 |
| 240 | Socket head screw | 3 | GB 70-85 - M8 x 25 | |
| 242 | Saddle | 1 | | 03427001242 |
| 245 | Groove nut | 2 | DIN 1804 - M12 | |
| 246 | Washer | 1 | DIN 125 - A 13 | |
| 247 | Washer | 10 | DIN 125 - A 8.4 | |
| 249 | Socket head screw | 3 | GB 70-85 - M8 x 25 | |
| 251 | Socket head screw | 2 | GB 70-85 - M8 x 35 | |
| 257 | Threaded pin jaw chuck flange | 3 | | 03427001257 |
| 258 | Washer | 6 | DIN 125 - A 10.5 | |
| 259 | Socket head screw | 3 | GB 70-85 - M8 x 20 | |
| 260 | chuck flange | 1 | | 03425001260 |
| 261 | Three jaw chuck | 1 | 125 mm | 03425001261 |
| 262 | Key for 3 - jaw chuck | 1 | 10 mm | 03425001262 |
| 266 | Socket head screw | 4 | GB 70-85 - M3 x 8 | |
| 267 | Sight jaw ckuck protection | 1 | | 03427001267 |
| 268 | Spring pin | 1 | GB 879-86 - 5 x 18 | |
| 269 | Frame jaw ckuck protection | 1 | | 03427001269 |
| 271 | Hexagon nut | 4 | ISO 4032 - M3 | |
| 272 | Shaft | 1 | | 03427001272 |
| 273 | Flange | 1 | | 03427001273 |
| 274 | Limit switch | 1 | | 03425001274 |
| 275 | Washer | 8 | DIN 125 - A 6,4 | |
| 276 | Socket head screw | 8 | GB 70-85 - M6 x 10 | |
| 277 | Strain relief connection cable | 1 | PG 19 | 03425001277 |
| 278 | Threaded pin | 1 | DIN 915 M5 x 12 | |
| 279 | Cover switch housing | 1 | | 03427001279 |
| 280 | Threaded pin | 1 | DIN 915 - M5 x 12 | |
| 282 | Hexagon nut | 2 | ISO 4032 - M4 | |
| 295 | Axially grooved ball bearing | 2 | 51102 | 03427001295 |
| 297 | Brass shear pin | 1 | | 03427001297 |
| 298 | Cylindrical pin | 1 | ISO 2338 - 5 m6 x 22 | |
| 301 | Circlip | 2 | DIN 471 - 18 x 1,2 | |
| 302 | Gear wheel | 1 | 24 Z m1.25 15 mm | 03427001302 |
| 304 | Shaft | 1 | | 03427001304 |
| 305 | Gear wheel | 1 | | 03427001305 |
| 305-1 | Gear wheel | 1 | | 034270013051 |
| 305-2 | Retaining ring | 1 | DIN 471/16-1 | |
| 310 | Threaded pin | 1 | ISO 4027 - M6 x 10 | |
| 311 | Housing feed gear | 1 | | 03427001311 |
| 312 | Oil plug | 2 | | 03427001312 |
| 314 | Socket | 1 | | 03427001312 |
| 315 | Threaded pin | 1 | ISO 4028 - M6 x 16 | |
| 316 | Flange | 1 | | 03427001316 |
| 319 | Entrance shaft | 1 | | 03427001319 |
| 320 | Sliding bearing | 1 | | 03427001320 |
| 321 | Gear wheel | 1 | 32 Z m 1.25 6 mm | 03427001321 |
| 324 | toothed shaft | 1 | 16 Z m1.25 | 03427001324 |
| 325 | Key | 2 | | 03427001325 |
| 326 | Circlip | 2 | DIN 471 - 15 x 1 | |
| 327 | Gear wheel | 1 | 24 Z m1.25 6 mm | 03427001327 |
| 328 | Grooved ball bearing | 2 | 6202 | 03427001328 |
| 329 | Flange | 1 | | 03427001329 |
| 330 | Socket head screw | 6 | GB 70-85 - M5 x 10 | |
| 331 | Cover feed gear | 1 | | 03427001331 |
| 332 | Socket head screw | 5 | GB 70-85 - M6 x 16 | |
| 335 | Rotary switch | 2 | | 03427001335 |
| 343 | Cylindrical pin | 1 | ISO 2338 - 3 h8 x 14 | |
| 343 | Cylindrical pin | 1 | ISO 2338 - 3 h8 x 14 | |
| 344 | Case | 1 | | 03427001344 |
| 345 | Disc | 1 | | 03427001345 |
| 346 | Backwall cover | 1 | | 03427001346 |
| 347 | Countersunk screw | 10 | GB 819-85 - M5x8 | |

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| Pos. | Description | Qty. | Size | Item no. |
|-------------|------------------------------------|-------------|----------------------------------|--------------------------|
| 348 | O-ring | 2 | DIN 3771 - 15 x 1.8 - N - NBR 70 | |
| 349 | Socket right | 1 | | 03427001349 |
| 350 | Sliding bearing intermediate shaft | 1 | | 03427001350 |
| 354 | Socket head screw | 4 | GB 70-85 - M6 x 50 | |
| 360 | Oil sight glass | 1 | 25 mm | 03427001360 |
| 361 | O-ring | 1 | DIN 3771 20x2,65 | |
| 402 | Washer | 6 | DIN 125 - A 10.5 | |
| 403 | Threaded pin | 2 | GB 897-88 - A M10x120 | |
| 404 | Hexagon nut | 10 | GB 6170-86 - M10 | |
| 405 | | 1 | | 03425001405 |
| 406 | Spindle | 1 | | 03427001406 |
| 407 | Key | 1 | DIN 6885 - A 8 x 7 x 40 | |
| 408 | Bearing cover in front | 1 | | 03427001408 |
| 414 | Taper roller bearing | 2 | 32009 | 03427001414 |
| 415 | Bearing cover in in the back | 1 | | 03427001415 |
| 416 | Spacer | 1 | | 03427001416 |
| 417 | Toothed wheel | 1 | | 03427001417 |
| 418 | V - belt short | 1 | 7M710 | 030202838 |
| 419 | V - belt long | 1 | 7M875 | 0392850 |
| 420 | Spindle V-belt pulley | 1 | | 0342700617 |
| 421 | Socket head screw | 4 | GB 70-85 - M5 x 10 | |
| 423 | Shaft nut | 1 | | 03427001423 |
| 424 | Shaft | 1 | | 03427001424 |
| 425 | Timing belt | 1 | 240L075 | 0392800 |
| 427 | Toothed belt disk | 1 | | 0342700601 |
| 428 | Circlip | 2 | DIN 471 - 12 x 1 | |
| 430-1 | Flanged washer in front | 1 | | 034270014301 |
| 430-2 | Flanged washer in the back | 1 | | 034270014302 |
| 430 | Motor V-belt pulley | 1 | | 03427001430 |
| 433 | Washer | 1 | DIN 125 - A 8,4 | |
| 434 | Socket head screw | 1 | GB 70-85 - M8 x 35 | |
| 436 | Eccentric disk idler | 1 | | 03427001436 |
| 437 | Shaft for idler | 1 | | 03427001437 |
| 438 | Grooved ball bearing | 2 | 6001RZ | 03427001438 |
| 439 | Idler | 1 | | 03427001439 |
| 440 | Circlip | 3 | DIN 472 - 28 x 1.2 | |
| 441 | Protection cover headstock | 1 | | 03427001441 |
| 441-3 | Drop cover | 1 | | 034270014413 |
| 441-2 | Cheese head screw with slot | 1 | ISO 7045 - M5 x 10 | |
| 441-1 | Washer | 1 | DIN 125 - A 5.3 | |
| 443 | Washer | 1 | | 03427001443 |
| 453 | Hexagon nut | 1 | ISO 4032 - M10 | |
| 454 | Grooved ball bearing | 2 | 6001_Z | 03427001454 |
| 455 | Washer | 1 | DIN 125 - A 10.5 | |
| 470-1 | Baseplate 230V | 1 | | 03427001470 |
| 470-2 | Baseplate 115V | 1 | | 03427001470A |
| 472 | Washer | 3 | DIN 125 - A 8.4 | |
| 473 | Socket head screw | 2 | GB 70-85 - M8 x 20 | |
| 502 | Socket head screw | 1 | DIN 912 M8 x 35 | |
| 503 | Change gear train | 1 | | 03425001503 |
| 504 | Saddle change gear train | 1 | | 03427001504 |
| 505 | Socket head screw | 3 | DIN 912 M5 x 10 | |
| 506 - 516 | Change gear | 2 | 90 T Module 1.5 | 03425001-90 T Module 1.5 |
| | Change gear | 2 | 80 T Module 1.5 | 03425001-80 T Module 1.5 |
| | Change gear | 1 | 72 T Module 1.5 | 03425001-72 T Module 1.5 |
| | Change gear | 1 | 71 T Module 1.5 | 03425001-71 T Module 1.5 |
| | Change gear | 1 | 70 T Module 1.5 | 03425001-70 T Module 1.5 |
| | Change gear | 1 | 60 T Module 1.5 | 03425001-60 T Module 1.5 |
| | Change gear | 1 | 50 T Module 1.5 | 03425001-50 T Module 1.5 |
| | Change gear | 1 | 40 T Module 1.5 | 03425001-40 T Module 1.5 |
| | Change gear | 1 | 33 T Module 1.5 | 03425001-33 T Module 1.5 |
| | Change gear | 1 | 30 T Module 1.5 | 03425001-30 T Module 1.5 |
| | Change gear | 1 | 27 T Module 1.5 | 03425001-27 T Module 1.5 |
| | Change gear | 1 | 25 T Module 1.5 | 03425001-25 T Module 1.5 |
| | Change gear | 1 | 24 T Module 1.5 | 03425001-24 T Module 1.5 |
| 517 | Groove stone change gear | 2 | M5 | 03425001517 |
| 518 | Shim | 1 | 1,5 mm | 03425001518 |

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| Pos. | Description | Qty. | Size | Item no. |
|-------------|---|-------------|-------------------------|------------------|
| 519 | Shim | 1 | 3 mm | 03425001519 |
| 520 | Connecting case of change gears | 2 | | 03425001520 |
| 521 | Clamping screw change gear | 2 | | 03425001521 |
| 522 | Attachment ring | 1 | | 03425001522 |
| 523 | Case change gear | 1 | | 03425001523 |
| 524 | Washer | 1 | | 03425001524 |
| 525 | Socket head screw | 1 | DIN 912 M6 x 10 | |
| 601 | Splash wall | 1 | | 03427001601 |
| 601 | Splash wall TU2807V | 1 | | 03427006601 |
| 602 | Cross slot flat head thread cut screws | 6 | GB 6560-86 - M5x10 | |
| 603 | Cover plate | 1 | | 03427001603 |
| 604 | Screen + number of revolutions table | 1 | | 03427001604 |
| 605 | Socket head screw | 10 | GB 70-85 - M3 x 8 | |
| 605 | Socket head screw | 10 | GB 70-85 - M3 x 5 | |
| 606 | Cover plate + identification plate | 1 | | 03427001606 |
| 607 | Thread cutting table | 1 | | 03427001607 |
| 607 | Thread cutting table TU2807V | 1 | | 03427006607 |
| 611 | Chip pan | 1 | | 03427001611 |
| 612 | Rubber | 1 | | 03427001612 |
| 613 | Screen + number of revolutions table for Vario type | 1 | | 03427001613 |
| 614 | Cover plate + identification plate for Vario type | 1 | | 03427001614 |
| 615 | Switch box for Vario type | 1 | | 03425001615 |
| 706 | Motor bracket | 1 | | 03427006606 |
| 708 | Socket head screw | 4 | | 03427006608 |
| 710 | Brushlesscontroller Analog | 1 | | 0302033563 |
| 710A | Heat sink | 1 | | 0342700710 |
| 711 | Main switch | 1 | | 03338120S1.1 |
| 714 | Bolt | 2 | | 03427006614 |
| 721 | Socket head screw | 2 | | 03427006621 |
| 722 | Bracket | 1 | | 03427006622 |
| 723 | Rotation speed sensor | 1 | | 03338120279 |
| 725 | Cover | 1 | | 03427006625 |
| 727 | Plate | 1 | TU2807V | 03427006627 |
| 728 | Potentiometer | 1 | | 03338120R1.5 |
| 729 | Rotation speed display | 1 | | 03338120P1 |
| 730 | Change-over switch | 1 | | 0460009 |
| 731 | Start switch | 1 | | 0302024185 |
| 733 | Stop switch | 1 | | 0302024186 |
| 734-2 | Front label | 1 | TU2807V DC 230V | 03427001L07-US |
| 735 | Cover | 1 | | 03427006635 |
| 901 | Base plate tailstock | 1 | | 03427001901 |
| 902 | Socket head screw | 2 | GB 70-85 - M8 x 40 | |
| 903 | Tailstock upper section | 1 | | 03427001903 |
| 904 | Adjustment device | 1 | | 03427001904 |
| 905 | Threaded pin | 1 | ISO 4028 - M6 x 16 | |
| 906 | Clamping piece spindle sleeve | 2 | | 03427001906 |
| 907 | Clamping piece spindle sleeve | 1 | | 03427001907 |
| 908 | Spindle sleeve | 1 | inch | 03427001908-inch |
| 909 | Spindle | 1 | inch | 03427001909-inch |
| 910 | Piece of centering of spindle sleeve | 1 | | 03427001910 |
| 911 | Socket head screw | 2 | GB 70-85 - M5 x 16 | |
| 912 | Scale ring | 1 | inch | 03427001912-inch |
| 913 | Centering ring | 1 | | 03427001913 |
| 914 | Steel ball | 1 | D = 5 mm | 03427001914 |
| 915 | Spiral spring | 1 | | 03427001915 |
| 916 | Key | 1 | DIN 6885 - A 3 x 3 x 10 | |
| 917 | Socket head screw | 3 | ISO 4026 - M6 x 10 | |
| 918 | Brass clamping piece | 3 | | 03427001918 |
| 919 | Handwheel | 1 | | 03427001919 |
| 920 | Hexagon nut | 1 | DIN EN 24 032 M8 | |
| 921 | Disc | 1 | | 03427001921 |
| 922 | Handle handwheel | 1 | | 03427001922 |
| 923 | Fixing bolt for handle handwheel | 1 | | 03427001923 |
| 925 | Clamping nut | 1 | | 03427001925 |
| 926 | Disc | 1 | D = 8 | 03427001926 |
| 927 | Handle clamping lever | 1 | | 03427001927 |
| 928 | Clamping lever | 1 | | 03427001928 |

TU2807V

| Pos. | Description | Qty. | Size | Item no. |
|-------------|--------------------------------------|-------------|---------------------|-----------------|
| 929 | Innensechskantschraube | 1 | | 03427001929 |
| 930 | Spring pin | 1 | ISO 8752 - 4 x 28 A | |
| 931 | Guide bush | 1 | | 03427001931 |
| 932 | Spring pin | 1 | ISO 8752 - 4 x 24 A | |
| 933 | Threaded rod | 1 | | 03427001933 |
| 934 | Tightening screw | 1 | | 03427001934 |
| 935 | Spring | 1 | | 03427001935 |
| 936 | Clamping plate | 1 | | 03427001936 |
| 937 | Hexagon nut | 1 | ISO 4035 - M12 | |
| 938 | Washer | 2 | DIN 125-1 A 13 | |
| 939 | Piece of centering of spindle sleeve | 1 | | 03427001939 |
| 940 | Skale | 1 | | 03427001940 |
| 941 | Eccentric cam | 1 | | 03427001941 |
| 942 | Threaded pin | 2 | ISO 4028 - M5 x 12 | |
| 945 | Clamping lever | 1 | | 03427001945 |
| 946 | Marking | 1 | | 03427001946 |
| 948 | Base plate | 1 | | 03427001948 |
| 949 | Tailstock upper section | 1 | | 03427001949 |
| 950 | Rivet | 4 | DIN 7337 - A2.4 x 6 | |
| 951 | Emergency stop button | 1 | | 0302024190 |
| 952 | Transformer | 1 | | 03427001952 |
| 953 | Change over switch | 1 | | 03427001953 |
| 957 | Switch | 1 | QKS8 | 0329035017 |
| 958 | Switch closer | 1 | | 0460054 |

| Lubricant | Viskosity ISO VG DIN 51519 mm ² /s (cSt) | Designation according DIN 51502 |  |  |  |  |  |  |  |
|----------------|--|---------------------------------------|---|---|---|---|---|---|---|
| Gear oil | VG 680 | CLP 680 | Aral Degol BG 680 | BP Energol GR-XP 680 | SPARTAN EP 680 | Klüberoil GEM 1-680 | Mobilgear 636 | Shell Omala 680 | Meropa 680 |
| | VG 460 | CLP 460 | Aral Degol BG 460 | BP Energol GR-XP 460 | SPARTAN EP 460 | Klüberoil GEM 1-460 | Mobilgear 634 | Shell Omala 460 | Meropa 460 |
| | VG 320 | CLP 320 | Aral Degol BG 320 | BP Energol GR-XP 320 | SPARTAN EP 320 | Klüberoil GEM 1-320 | Mobilgear 632 | Shell Omala 320 | Meropa 320 |
| | VG 220 | CLP 220 | Aral Degol BG 220 | BP Energol GR-XP 220 | SPARTAN EP 220 | Klüberoil GEM 1-220 | Mobilgear 630 | Shell Omala 220 | Meropa 220 |
| | VG 150 | CLP 150 | Aral Degol BG 150 | BP Energol GR-XP 150 | SPARTAN EP 150 | Klüberoil GEM 1-150 | Mobilgear 629 | Shell Omala 150 | Meropa 150 |
| | VG 100 | CLP 100 | Aral Degol BG 100 | BP Energol GR-XP 100 | SPARTAN EP 100 | Klüberoil GEM 1-100 | Mobilgear 627 | Shell Omala 100 | Meropa 100 |
| | VG 68 | CLP 68 | Aral Degol BG 68 | BP Energol GR-XP 68 | SPARTAN EP 68 | Klüberoil GEM 1-68 | Mobilgear 626 | Shell Omala 68 | Meropa 68 |
| | VG 46 | CLP 46 | Aral Degol BG 46 | BP Bartran 46 | NUTO H 46 (HLP 46) | Klüberoil GEM 1-46 | Mobil DTE 25 | Shell Tellus S 46 | Anubia EP 46 |
| | VG 32 | | Aral Degol BG 32 | BP Bartran 32 | NUTO H 32 (HLP 32) | LAMORA HLP 32 | Mobil DTE 24 | Shell Tellus S 32 | Anubia EP 32 |
| Gear grease | | G 00 H-20 | Aral FDP 00 (Na-verseift) Aralub MFL 00 (Li-ver- seift) | BP Energ grease PR-EP 00 | FIBRAX EP 370 (Na-ver- seift) | MICRO- LUBE GB 00 | Mobilux EP 004 | Shell Alvania GL 00 (Li- verseift) | Marfak 00 |
| Bearing grease | | K 3 K-20 (Li- verseift) | Aralub HL 3 | BP Energ grease LS 3 | BEACON 3 | CENTO- PLEX 3 | Mobilux 3 | Shell Alvania R 3 Alvania G 3 | Multifak Premium 3 |

8 Wiring diagrams

8.1 TU2506

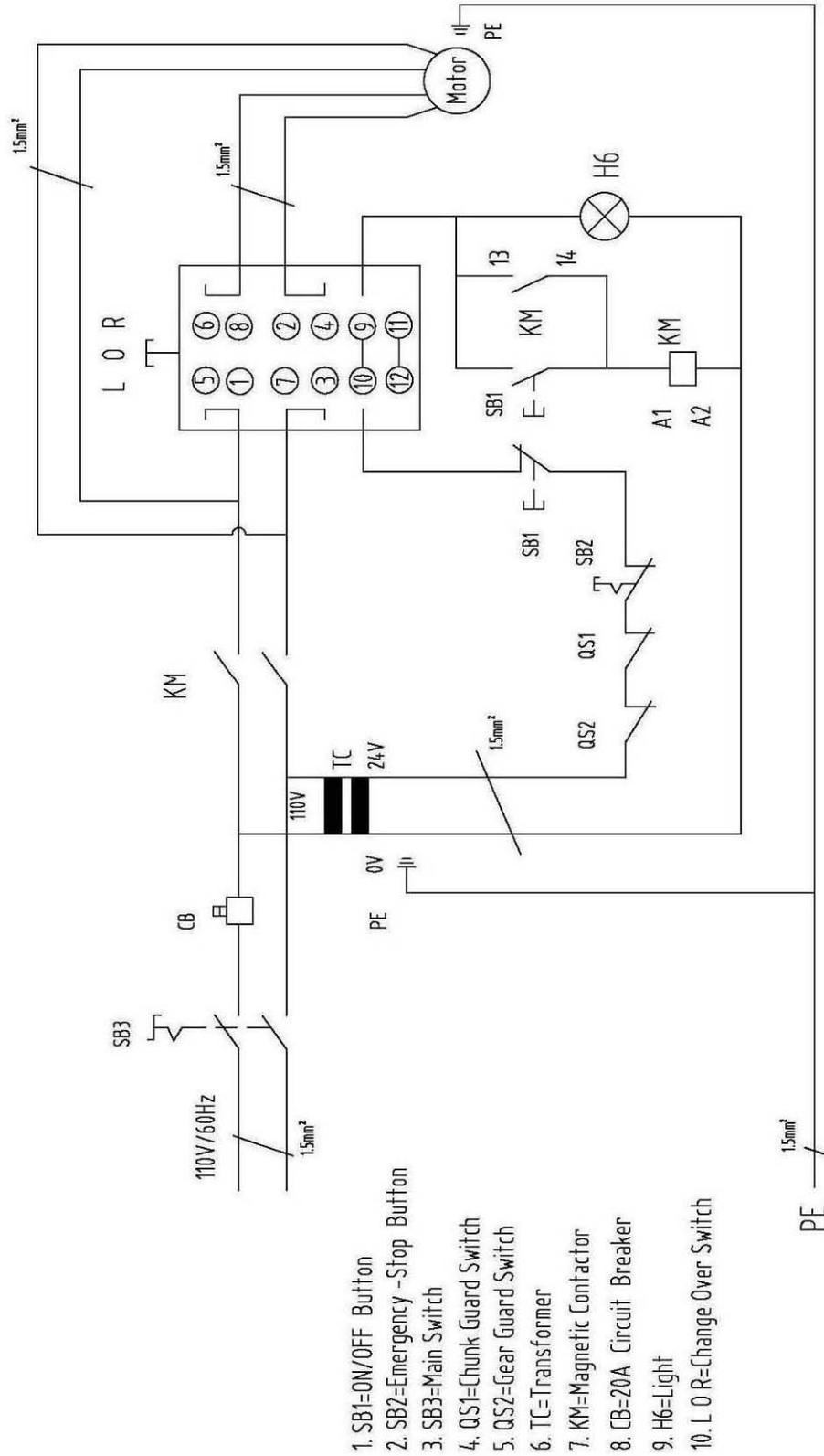


Fig.8-1: Wiring diagram-TU2506

8.2 TU2807V (230V)

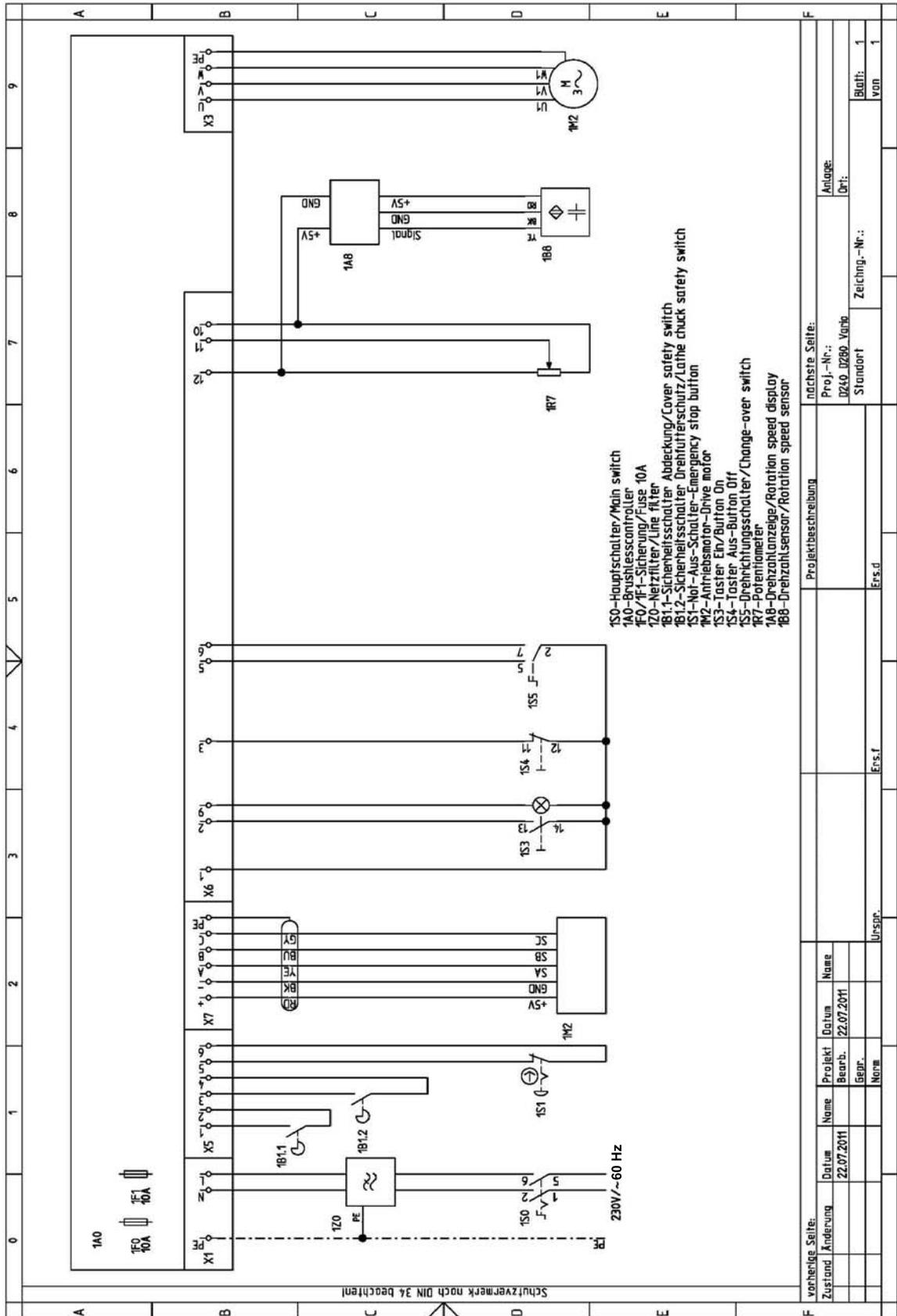


Fig.8-2: Wiring diagram-TU2807V

9 Troubleshooting

9.1 Troubleshooting in the lathe

| Problem | Cause / possible effects | Solution |
|--------------------------------|---|---|
| Machine does not switch-on | <ul style="list-style-type: none"> • Precedence of switch-on not considered. • The position switch of the lathe-chuck guard switches the lathe off. • The position switch of the protective cover on the headstock switches the lathe off. • EMERGENCY-STOP button actuated. • Circuit breaker on the back of the control box tripped. | <ul style="list-style-type: none"> •  "Power supply" on page 26 • Check and adjust the position switch of the lathe chuck guard. • Check and adjust the position switch of the protective cover on the headstock. • Release the EMERGENCY-STOP button. • Reset circuit breaker. |
| Surface of workpiece too rough | <ul style="list-style-type: none"> • Tool blunt • Tool springs • Feed too high • Radius at the tool tip to little | <ul style="list-style-type: none"> • Resharpener tool • Clamp tool with less overhang • Reduce feed • Increase radius |
| Workpiece is becoming coned | <ul style="list-style-type: none"> • Center are not aligned (tailstock has offset) • Top slide not aligned well (cutting with the top slide) | <ul style="list-style-type: none"> • Adjust tailstock to the center • Align top slide well |
| Lathe is chattering | <ul style="list-style-type: none"> • Feed too high • Main bearings have clearance | <ul style="list-style-type: none"> • Reduce feed • Have the main bearing readjusted |
| Centre runs hot | <ul style="list-style-type: none"> • Workpiece has expanded | <ul style="list-style-type: none"> • Loosen tailstock tip |
| Tool has a short edge life | <ul style="list-style-type: none"> • Cutting speed too high • Crossfeed too high • Insufficient cooling | <ul style="list-style-type: none"> • Reduce cutting speed • Lower crossfeed/smooth finish (allowance not over 0.5 mm) • More coolant |
| Flank wear too high | <ul style="list-style-type: none"> • Clearance angle too small (tool "pushes") • Tool tip not adjusted to centre height | <ul style="list-style-type: none"> • Increase clearance angle • Correct height adjustment of the tool |
| Cutting edge breaks off | <ul style="list-style-type: none"> • Wedge angle too small (heat build-up) • Grinding crack due to wrong cooling • Excessive clearance in the spindle bearing arrangement (vibrations) | <ul style="list-style-type: none"> • Increase wedge angle • Cool uniformly • Have the clearance in the spindle bearing arrangement readjusted |
| Cut thread is wrong | <ul style="list-style-type: none"> • Tool is clamped incorrectly or has been started grinding the wrong way • Wrong pitch • Wrong diameter | <ul style="list-style-type: none"> • Adjust tool to the centre - Grind angle correctly • Adjust the right pitch • In a previous step, turn the workpiece to the correct diameter |

10 Appendix

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10.2 Terminology/glossary

| Term | Explanation |
|----------------|---|
| headstock | Housing for spindle driving mechanism. |
| lead screw nut | Split nut which engages in the lead screw. |
| lathe chuck | Clamping tool for holding the workpiece. |
| drill chuck | Device for holding the bit |
| lathe saddle | Slide on the slideway of the machine bed which feeds parallel to the tool axis. |
| cross slide | Slide on the lathe saddle which moves transversely to the tool axis. |
| top slide | Swivelling slide on the cross slide. |
| taper arbor | Taper of the bit, the drill chuck, the center. |
| tool | Cutting tool, bit, etc. |
| workpiece | Piece to be turned or machined. |
| tailstock | Movable turning aid. |
| rest | Follow or steady support for turning long workpieces. |
| lathe dog | Device or clamping aid for driving pieces to be turned between centers. |

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