



Crusader Lathe

Operation Manual

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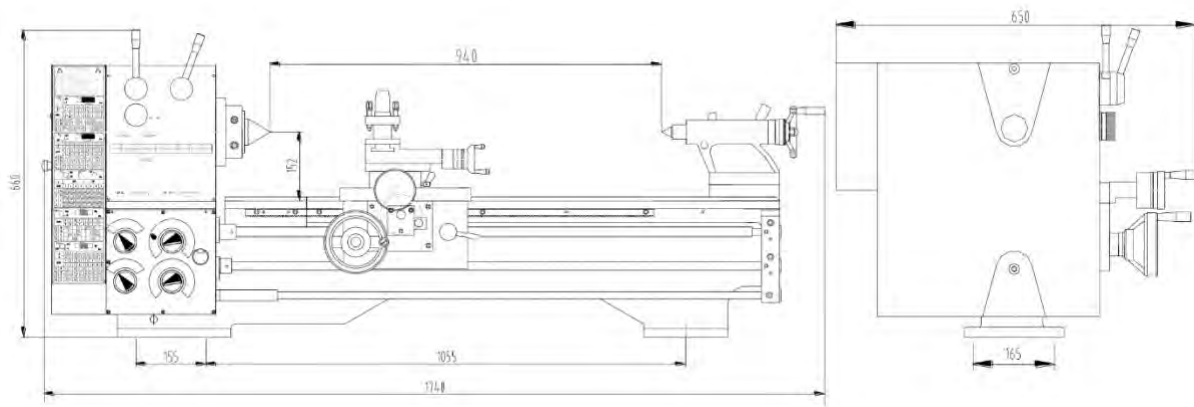
Contents

- 1. Machine Specifications**
- 2. Electrical System**
- 3. Installation**
- 4. Levelling**
- 5. Lubrication Chart**
- 6. Operation Instruments**
- 7. Protection Instruments**
- 8. Troubleshooting**
- 9. Maintenance**
- 10. Parts List and Diagrams**

1. Machine Specification

The Crusader Lathe has been designed for small to medium sized workpieces and suitable for use in machining workshops, tool rooms, and repair workshops to machine shafts, sleeves and disc shaped workpieces. This machine can also be used to cut imperial, diametric and module pitch threads. The machine is easy and reliable to operate, easy to repair, offers high efficiency and low noise levels. The sliding surfaces of the bed have been hardened using a supersonic frequency heat-treatment method, this allows the sliding surfaces wear resistance.

Overall Measurements



Technical Data

| | | |
|-------------------------------|----------|-------------------------------|
| Swing over bed | | 300mm |
| Swing over gap | | 440mm |
| Swing over saddle | | 173mm |
| Distance between centres | | 810mm |
| Length of bed | | 1473mm |
| Width of bed | | 185mm |
| Hole through spindle | | 38mm |
| Tailstock quill travel | | 100mm |
| Cross slide travel | | 130mm |
| Tool slide travel | | 85mm |
| Carriage travel | | 850mm |
| Spindle Taper | | MT5 |
| Tailstock Taper | | MT3 |
| Spindle speed range | | 50-1200rpm |
| Leadscrew diameter | | 22mm |
| Feed rod diameter | | 19mm |
| Leadscrew thread pitch | | 8TPI (Imperial); 3mm (Metric) |
| Threads that can be cut | Imperial | 34 kinds; 4-56TPI |
| | Metric | 26 kinds; 0.4-7mm |
| Motor power | | 1.5kW (2hp) |
| Net weight with/without stand | | 450Kg |
| Noise level | | <83dB |

2. Electrical System

This machine has been wired as either a 230V Single Phase machine or a 415V 50hz 3 Phase machine.

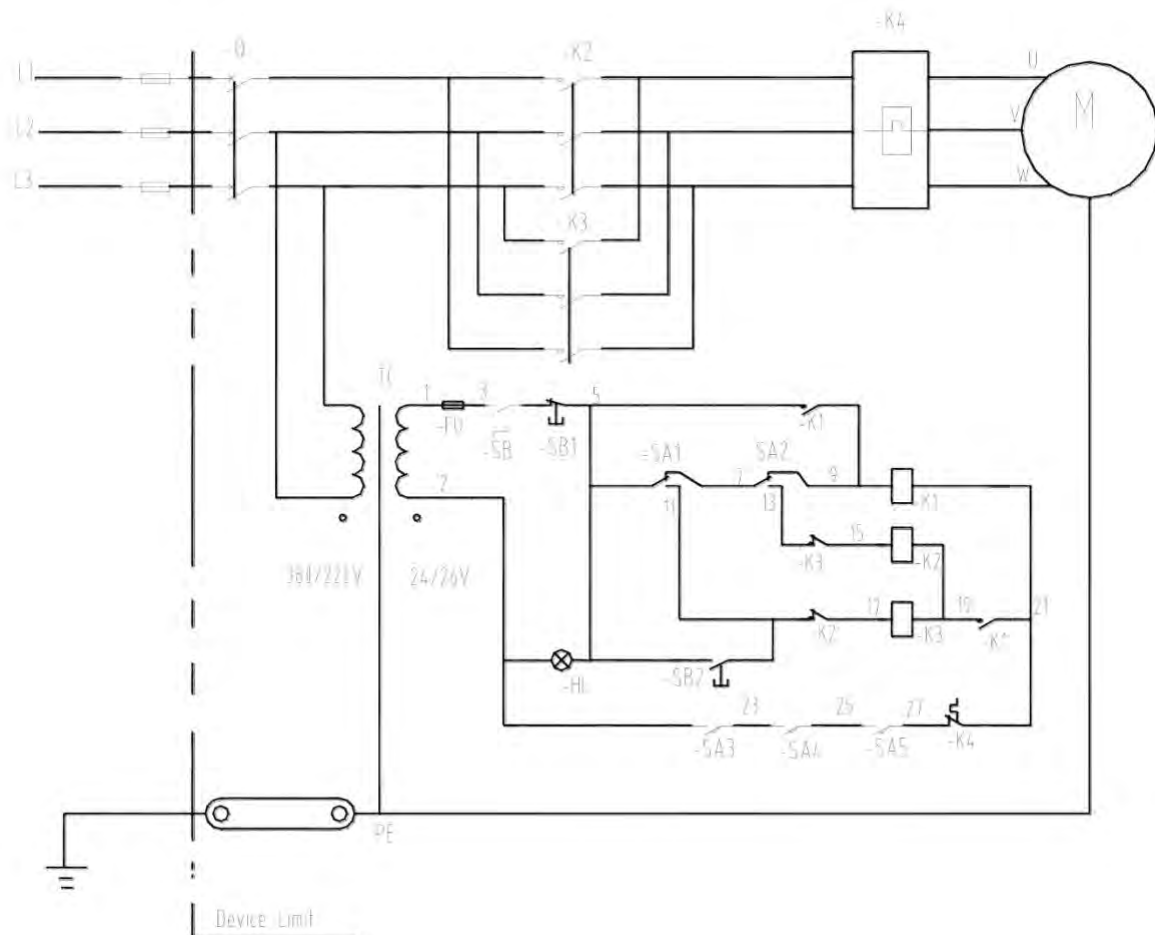
The electrical system in the lathe has been installed and adjusted prior to delivery, as such it should not normally be necessary to open the electrical box. Connect the machine to the power supply making sure that the ground has been correctly wired. If this is a three-phase machine, turn the machine on and start the spindle to check that it is turning in the correct direction, if the direction is incorrect, turn off the machine and swap any two of the wires into the machine and then recheck.

Caution!

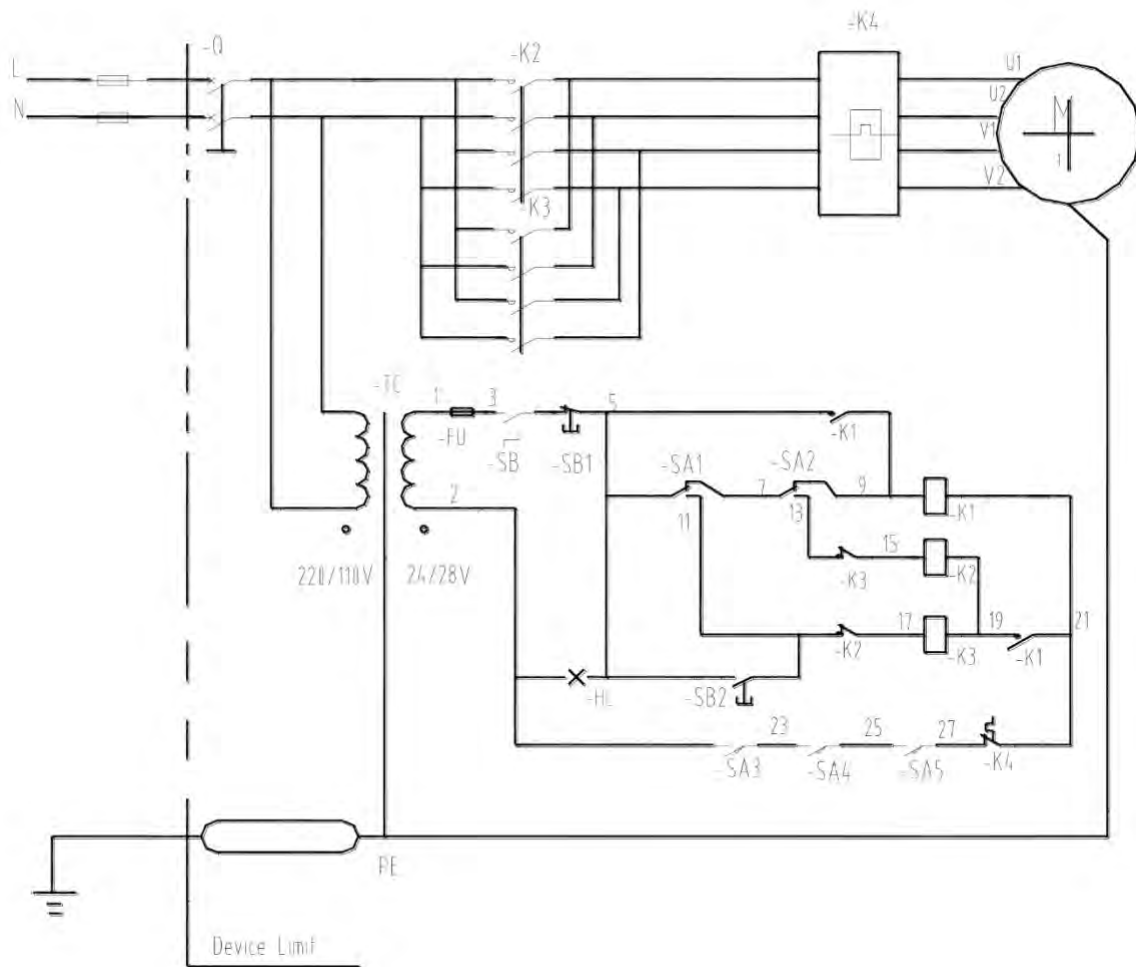
If there is a need to carry out any maintenance or repair work on the electrical system of this machine, only a qualified electrician should be allowed to carry out such works. Make sure any electrical works are carried out as per the electrical drawings.

2.1 Electrical Drawings

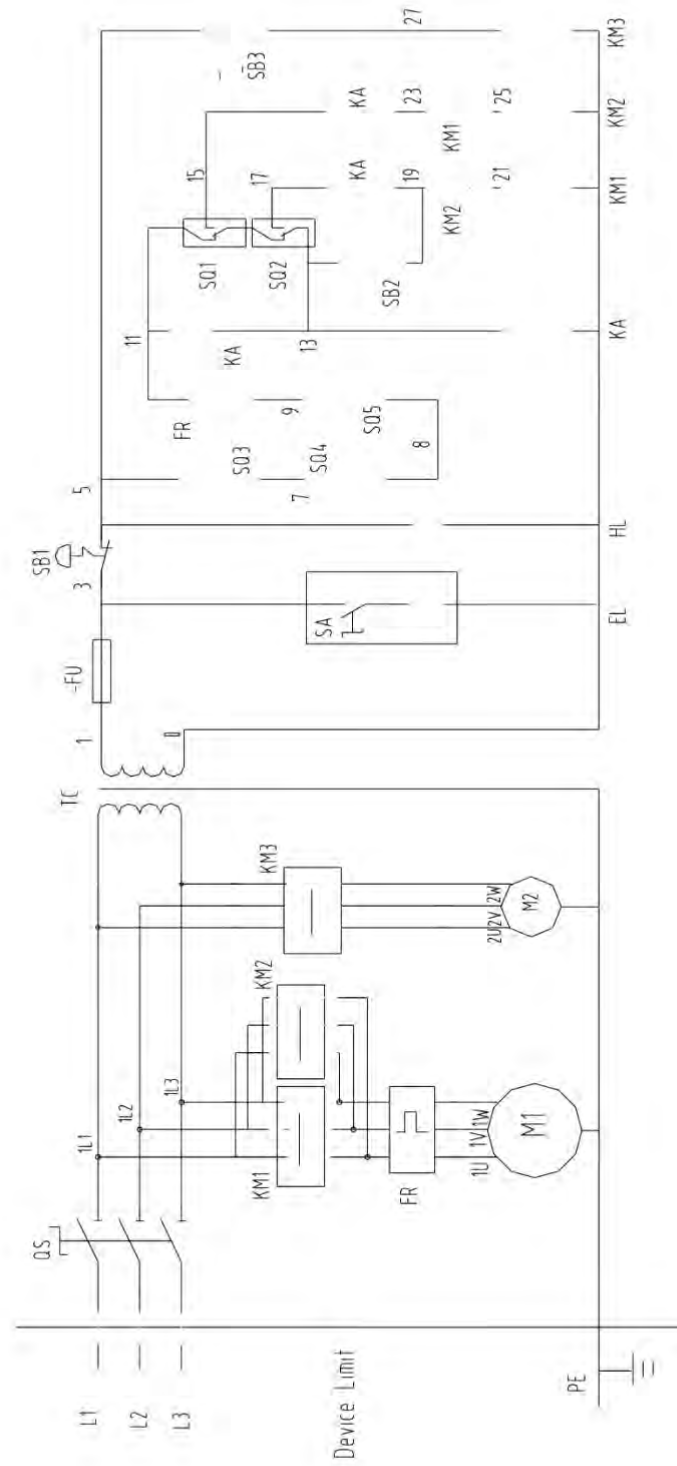
Three Phase



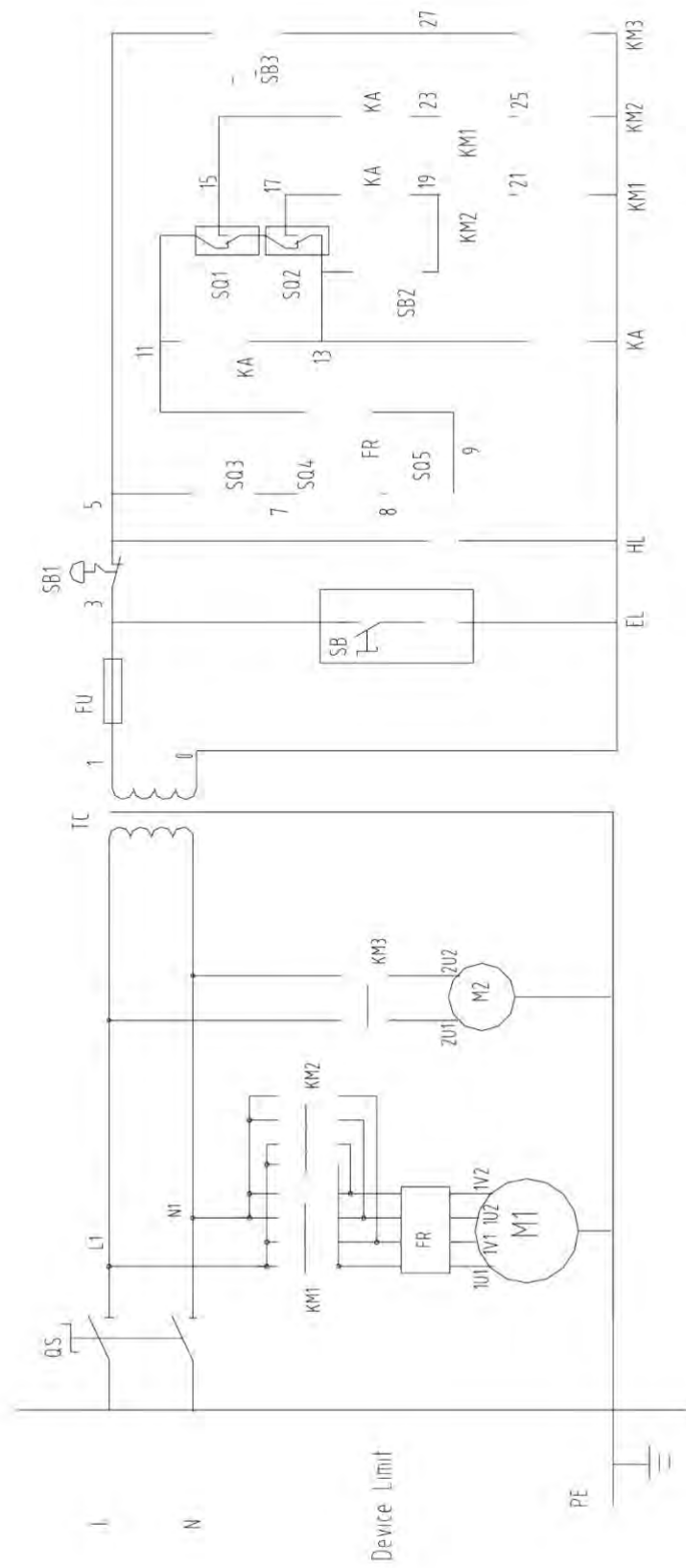
Single Phase



2.2 Wire Chart Three Phase



Single Phase



2.3 Description

| Symbol | Name | Symbol | Name |
|--------|-----------------------|--------|-----------------------------------|
| M | Motor | SB2 | Jog Switch |
| TC | Transformer | SQ3 | End Gear Train Cover Limit Switch |
| HL | Indicator Light | SQ4 | Chuck Guard Limit Switch |
| EL | Work Light | SQ5 | Brake Switch |
| SB1 | Stop Switch | FR | Thermal Relay |
| SB3 | Emergency Stop Button | | |

3. Installation

Caution!

The machine must be securely and stably fitted. Do not turn, lower or make any sharp movements through shaking, wind force, or any other external movements.

3.1 Foundation

The base that this machine is to be installed on must be solid and heavy enough to support the weight and must be level.

A concrete floor is the best foundation, it provides a rigid base and helps minimise the vibration from any other machines.

When determining the position of the installation, leave a certain distance around the machine in accordance to the overall dimensions and installation dimensions of the machine to allow the machine to be easily operated and repaired.

When installing the stand, mark and drill eight holes in the base as per the foundation plan, see below, then place the foundation bolts into the holes. Place the stands on to the base and place the two adjustable iron spaces at the front and back of each stand. Secure the connecting block for the left and right stands then secure the stand to the base, then lift the lathe onto the stand, securing it in place using the bolts and nuts.

3.2 Lifting the Machine

The lathe should be lifted as per the following diagram:



Place soft material between the surface of the machine and the lifting ropes/straps to avoid damaging the machines surfaces.

The machine weighs in total approximately 390Kg (330Kg for the machine and 60Kg for the stand), keep the machine balanced when lifting to avoid tilting the machine in

any direction.

The carriage, tailstock and other sliding parts of the lathe are locked before delivery, do not loosen these until the machine is installed in its final location. Before lifting the machine, confirm that these items are fully locked down to prevent causing an accident in the event they are not locked and move. Carefully lower the lathe on to the foundation to prevent causing any damage to the machine.

3.3 Cleaning

This machine has been coated with a layer of anti-rust oil to all of the bare metal surfaces to prevent rusting. Before moving the carriage or the tailstock, use a cleaning solvent to remove the oil making sure that all of the anti-rust oil is removed. Apply a thin layer of oil to the machines bare metal surfaces to protect them from rust.

4. Levelling

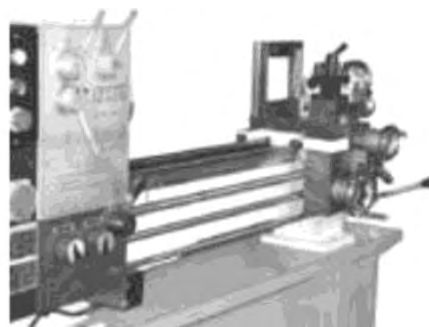
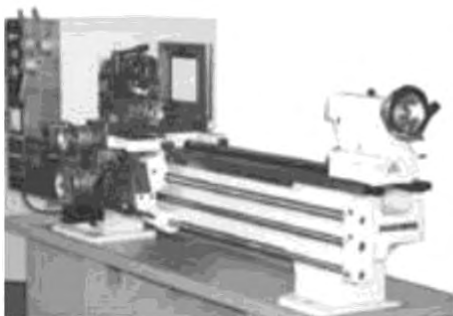
To ensure the continued accuracy of the machine, the machine must be kept level at all times. To level the machine, use the following procedure:

A. Longitudinal Level

Once the guideways have been cleaned thoroughly, loosen the nuts holding the machine to the foundation and place a 150mm precision machinists level onto the cross slide in the longitudinal direction and move the carriage along the full length of the travel, adjust the level of the machine by adjusting the adjustable spacers and recheck the reading on the level. Continue this process until the machine is fully level along the full length of the machine bed.

B. Cross Level

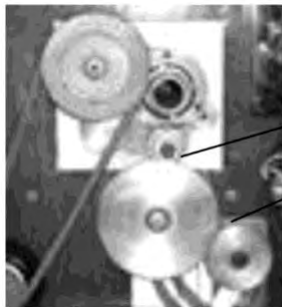
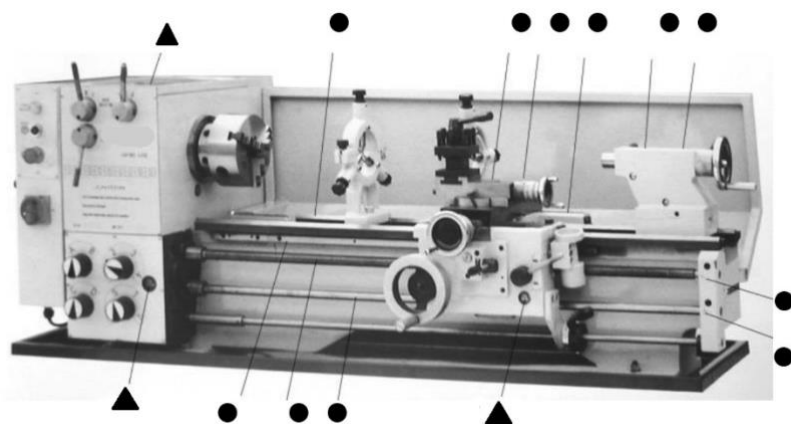
Place the spirit level onto the cross slide in the cross direction (across the bed) and move the carriage along the guideways in the longitudinal direction towards the headstock, take a reading and then move the carriage towards the tailstock. The reading at this end must match the reading from the tailstock, there must not be allowed to be any twist in the bed. If the reading is different, adjust the levelling wedges until the bed is level.



Any adjustments at one end of the bed will affect the reading at the other end, the levelling procedure may need to be repeated several times until the bed is level along the length of the guideway. Once any adjustments are complete, carefully tighten the foundation screws, the tension should not change the level of the machine, re-check the levels and make minor adjustments if necessary.

After the machine has been in operation for a period of time, check the levels to make sure that the accuracy of the machine is maintained. Make any adjustments as mentioned above if necessary. Periodic level checks should be part of a routine maintenance schedule.

5. Lubrication Chart

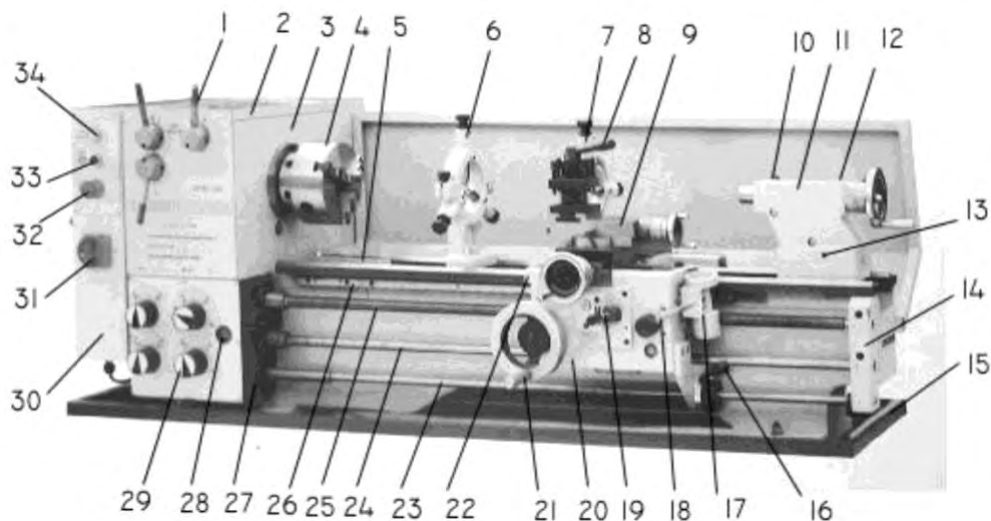


- ▲ Add oil up to the indicator mark in the oil window.
- Lubricate at the start of each shift
- Check the lubrication at the start of each shift

Caution!

Lubrication of the machine is extremely important to ensure the continued operation of the lathe. Make sure to only lubricate with the correct amount of oil, if there is insufficient lubrication, it could affect the accuracy of the lathe and increase the rate of wear on the slideways. Adding too much lubricant will be a waste of oil and will lead to a dirty workspace. Too much oil could cause a leak through the top of the headstock due to the movement of the gears in the headstock.

9. Operation Instructions



1. Speed Levers and Feed Direction Lever; 2. Headstock Cover; 3. Headstock; 4. Three Jaw Chuck; 5. Gap; 6. Steady Rest; 7. Follow Rest; 8. Tool Post Handle; 9. Tool Post Slide; 10. Tailstock Quill Clamping Lever; 11. Tailstock; 12. Tailstock Clamping Lever; 13. Adjusting Screw; 14. Three Rod Support Seat; 15. Chip pan; 16. Control Lever; 17. Threading Dial; 18. Half Nut Lever; 19. Cross/Longitudinal Feed Lever; 20. Apron; 21. Longitudinal Feed Handwheel; 22. Carriage; 23. Control Rod; 24. Feed Rod; 25. Leadscrew; 26. Rack; 27. Limit Switch Box; 28. Oil Level Gauge; 29. Change Gear Handle; 30. Pulley Cover; 31. Power Switch; 32. Emergency Stop Button; 33. Start Switch; 34. Indicator Light

Caution!

- Do not operate the lathe before you have thoroughly read the operation manual and fully understand all of the controls and functions on the lathe. Before starting to cut a workpiece, make a trial cut to help you familiarize yourself with the functions of the machine.
- Before operating the machine, check the oil levels and the lubrication of all of the sliding and rotating parts, if there is not enough lubrication, check the lubrication chart and lubricate the machine as per the chart.
- The lathe has been provided with a lamp, however, the operator should provide adequate lighting to remove any shadows from the work area to prevent any accidents due to poor light conditions.
- Make sure that the workpiece is clamped correctly to prevent it from flying off. The protruding workpiece should not be too long to help maintain the working precision.
- In the event of an emergency when turning, press the emergency stop button or press the foot brake to stop the machine immediately. Make sure any issues are resolved before putting the machine back into operation.
- Cutting Depth Selection: When choosing the cut depth, take into consideration the

limitations of the lathe, the tool and the rigidity of the workpiece. Do not overload the machine by taking too large a cut. As a guide, the following chart gives an idea on the cutting speed, depth and feed rate when cutting metals, when cutting wood, plastic and other non-metals, the cut depth can be increased.

| Workpiece Diameter | Cut Speed | Cut Depth | Feed Amount |
|--------------------|-----------|-----------|-------------|
| ≥150 | <160rpm | <0.5mm | <0.1mm/RPM |
| ≥100-150 | <200rpm | <0.5mm | <0.1mm/RPM |
| ≥50-100 | <400rpm | <1mm | <0.15mm/RPM |
| ≥30-50 | <1000rpm | <1.5mm | <0.15mm/RPM |
| <30 | <1300rpm | <1mm | <0.1mm/RPM |

Note:

When the rate of the outstanding length and diameter of the workpiece is over 100mm, the cut depth and feed rate should be reduced.

- Once the operation is complete, turn off the power and clean the lathe.
- When the machine requires maintenance or repairs, disconnect the lathe from the power supply and place a sign on the machine stating it is under repair/maintenance.

9.1 Headstock

The main spindle is driven by gears, three sets of sliding gears have been installed, the position of which can be changed by operating lever 1. The machine has been equipped with a belt from the motor to the spindle pulley, the tension of the belt has been adjusted to the correct tension before the lathe was shipped, we would advise checking the tension of the belt before starting the machine. When correctly tensioned, the belt should depress by approximately $\frac{1}{2}$ " when pressed under normal finger pressure, too tight and the belt could damage the bearings, too loose could lead to premature wear and slipping. When it is necessary to adjust the belt tension, you will need to adjust the bolt under the motor bracket to move the motor to the correct position. The oil in the headstock should be changed regularly, the first change should occur approximately 15 days after delivery, the second 45 days later then every 6-12 months depending on the amount of use the machine is subject to and the condition of the oil. There is a drain hole under the headstock which has a screw to block the oil, remove the screw to allow the oil to drain from the headstock, once the oil has drained, clean the inside of the headstock with kerosene or other cleaning solvent then fill the headstock with clean oil until the oil level reached the mid-point of the oil sight glass.

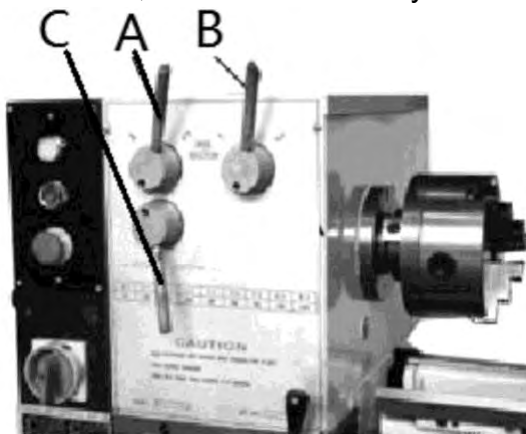
Caution!

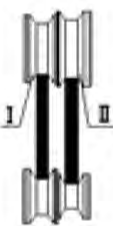
The oil level must be kept topped up, if the level of oil in the headstock is below the middle of the oil sight glass, add oil to the machine until the correct level is reached.

9.2 Spindle Speed

The main spindle is capable of 18 speed steps which can be achieved by changing the lever position, the speed can be adjusted as follows:

1. Move the control lever to the middle position to turn off the main motor.
2. According to the speed chart, the belt should be moved to either groove I or II (high or low speeds)
3. Move the two levers A and B and make the arrow head point at the line for ABC or 123 as shown on the speed lever for the desired speed. If moving the lever is difficult, rotate the chuck by hand to make sure that the gear engages.



|  | SPINDLE SPEED r/min | | | | | | | |
|---|--|-----|------|------|----|-----|------|------|
| | I | 1 | 2 | 3 | II | 1 | 2 | 3 |
| | A | 94 | 542 | 422 | A | 67 | 387 | 300 |
| | B | 312 | 1800 | 1400 | B | 223 | 1300 | 1000 |
| | C | 192 | 1110 | 860 | C | 137 | 790 | 620 |

Caution!

Do not change the spindle speeds whilst the spindle is running!

9.4 Main Spindle Rotation

Starting, stopping, forward and reverse of the spindle can be achieved by using the control lever, when using the control pull it away from the headstock and then move the lever either up (reverse) or down (forward).



When the control lever is in the middle position, the machine will stop.

9.5 Gearbox

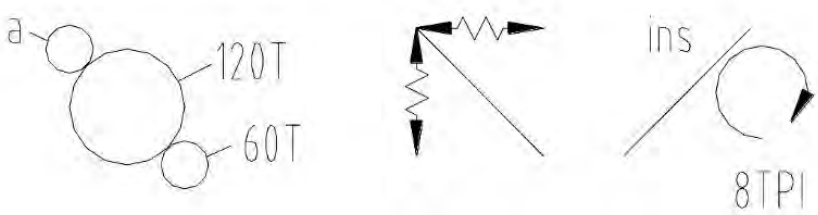
Note: To avoid the rotation of the leadscrew, the handle must point to the black dot when feeding.

Thread cutting can be completed by operating all four handles as per the thread chart and operating the thread cutting engagement lever down. It should be engaged with the leadscrew in order to obtain the longitudinal travel of the carriage, this is the thread cutting feed.

The direction of thread cutting is controlled by the feed direction selector at the headstock, the thread pitch can be selected by the position of the 4 handles.

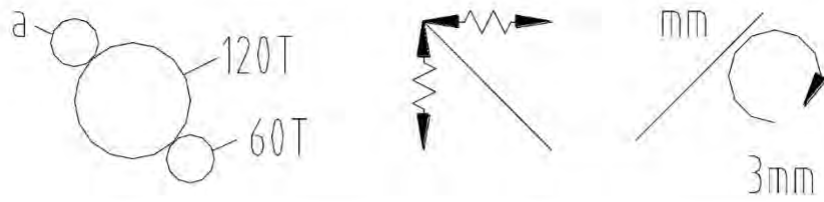
Feed Table

a) Longitudinal and Cross Feed Table, Imperial Leadscrew



| a | | 60T | | | | 30T | | | |
|-------|---|-------|-------|-------|-------|-------|-------|-------|-------|
| LEVER | | T | S | R | V | T | S | R | V |
| A | D | .0548 | .0512 | .0411 | .0328 | .0274 | .0256 | .0205 | .0164 |
| | | .0187 | .0175 | .0140 | .0112 | .0094 | .0087 | .0070 | .0056 |
| B | D | .0274 | .0256 | .0205 | .0164 | .0137 | .0128 | .0102 | .0082 |
| | | .0094 | .0087 | .0070 | .0056 | .0047 | .0044 | .0035 | .0028 |
| A | C | .0137 | .0128 | .0102 | .0082 | .0069 | .0064 | .0051 | .0041 |
| | | .0047 | .0044 | .0035 | .0028 | .0024 | .0022 | .0017 | .0014 |
| B | C | .0069 | .0064 | .0051 | .0041 | .0034 | .0031 | .0025 | .0020 |
| | | .0024 | .0022 | .0017 | .0014 | .0012 | .0011 | .0009 | .0007 |

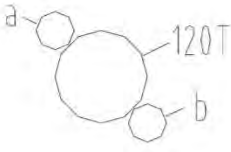
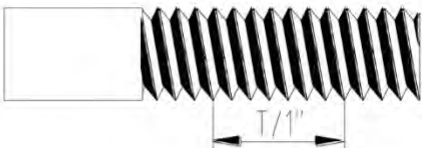
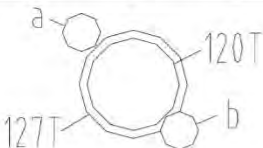
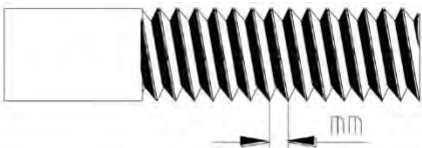
b) Longitudinal and Cross Feed Table, Metric Leadscrew




| a | | 60T | | | | 30T | | | |
|-------|---|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| LEVER | | T | S | R | V | T | S | R | V |
| A | D | 1392 .380 | 1300 351 | 1044 282 | .835 226 | .696 188 | .650 175 | .522 141 | .418 113 |
| B | D | .696 188 | .650 176 | .522 141 | .418 113 | .348 094 | .325 088 | .261 070 | .208 056 |
| A | C | .348 094 | .325 088 | .261 070 | .208 056 | .174 047 | .162 044 | .130 035 | .104 028 |
| B | C | .174 047 | .162 044 | .130 035 | .104 028 | .087 024 | .081 022 | .065 017 | .052 014 |

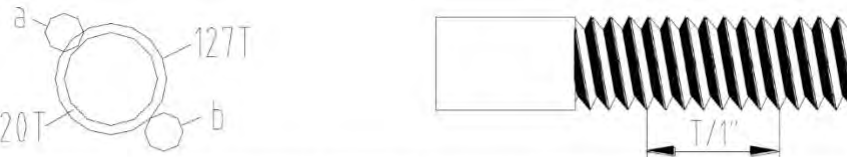
Thread Table

a) Thread Table, Imperial Leadscrew

| | | | | | | | | | | |
|---|---|--|-------|-------|------|-------|--------|-----|-------|------|
|  | |  | | | | | | | | 8TPI |
| a | | 60 | 60 | 60 | 60 | 60 | 60 | 56 | 60 | 60 |
| b | | 60 | 54 | 57 | 60 | 66 | 69 | 54 | 78 | 63 |
| LEVER | | 4 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 3 |
| | | V | V | V | V | V | V | V | V | V |
| A | D | 4 | 4 1/2 | | 5 | 5 1/2 | | 6 | 6 1/2 | 7 |
| B | D | 8 | 9 | 9 1/2 | 10 | 11 | 11 1/2 | 12 | 13 | 14 |
| A | C | 16 | 18 | 19 | 20 | 22 | 23 | 24 | 26 | 28 |
| B | C | 32 | 36 | 38 | 40 | 44 | 46 | 48 | 52 | 56 |
|  | |  | | | | | | | | 8TPI |
| a | | 56 | 60 | 60 | 30 | 60 | 60 | 30 | 60 | 56 |
| b | | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 63 |
| LEVER | | 4 | 1 | 3 | 4 | 1 | 3 | 1 | 3 | 3 |
| | | R | R | S | T | V | R | T | V | V |
| A | D | 7.0 | 6.0 | | 5.0 | | 4.5 | 4.0 | | |
| B | D | 3.5 | 3.0 | | 2.5 | | 2.25 | 2.0 | 1.8 | 1.6 |
| A | C | 1.75 | 1.5 | 1.4 | 1.25 | 1.2 | | 1.0 | 0.9 | 0.8 |
| B | C | | 0.75 | 0.7 | | 0.6 | | 0.5 | 0.45 | 0.4 |

b) Thread Table, Metric Leadscrew

| | | | | | | | | | | |
|--|---|------|------|-----|------|-----|------|-----|------|-----|
|  | | | | | | | | | | |
| a | | 56 | 60 | 60 | 30 | 60 | 60 | 30 | 60 | 56 |
| b | | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 63 |
| LEVER | | 4 | 1 | 3 | 4 | 1 | 3 | 1 | 3 | 3 |
| | | R | R | S | T | V | R | T | V | V |
| A | D | 7.0 | 6.0 | | 5 | | 4.5 | 4.0 | | |
| B | D | 3.5 | 3.0 | | 2.5 | | 2.25 | 2.0 | 1.8 | 1.6 |
| A | C | 1.75 | 1.5 | 1.4 | 1.25 | 1.2 | | 1.0 | 0.9 | 0.8 |
| B | C | | 0.75 | 0.7 | | 0.6 | | 0.5 | 0.45 | 0.4 |

| | | | | | | | | | | |
|--|---|----|-------|-------|----|-------|--------|----|-------|----|
|  | | | | | | | | | | |
| a | | 60 | 60 | 60 | 60 | 60 | 60 | 56 | 60 | 60 |
| b | | 60 | 54 | 57 | 60 | 66 | 69 | 54 | 78 | 63 |
| LEVER | | 4 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 3 |
| | | V | V | V | V | V | V | V | V | V |
| A | D | 4 | 4 1/2 | | 5 | 5 1/2 | | 6 | 6 1/2 | 7 |
| B | D | 8 | 9 | 9 1/2 | 10 | 11 | 11 1/2 | 12 | 13 | 14 |
| A | C | 16 | 18 | 19 | 20 | 22 | 23 | 24 | 26 | 28 |
| B | C | 32 | 36 | 38 | 40 | 44 | 46 | 48 | 52 | 56 |

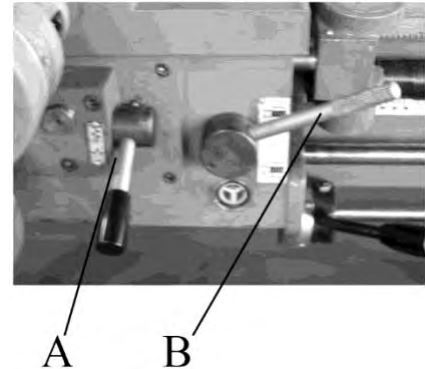
9.6 Carriage

The function of the carriage is to securely support the tool post and carry it when moving in both the longitudinal and cross directions.

1. Power Feed

When performing external turning and facing operations, turn the lever to the black dot on the gear box to engage the feed rod. To engage the power feed in the longitudinal direction, pull the feed lever (A) up, to engage the cross feed push the lever (A) down.

When the cross/longitudinal feed lever is engaged, the half nut engagement lever (B) cannot be engaged, a built-in safety interlock mechanism prevents the simultaneous engagement of both levers.



When threading, place the levers on the gearbox to the required settings to engage the leadscrew, the half nut lever (B) should then be engaged, this engages the half nut with the leadscrew which in turn moves the carriage along the length of the bed.

Caution!

Do not force the half nut lever when engaging with the leadscrew.

2. Threading Dial

When threading a workpiece, the thread dial can be used and is located on the right-hand side of the apron.

Using the thread dial indicator will allow the operator to correctly engage the leadscrew so that the same groove will be cut on every pass, the dial is marked with line numbered 1, 2, 3 and 4, in between each number are lines without numbers, these are called un-numbered lines. When the dial is engaged with the leadscrew, the dial will rotate, a single line is marked on the housing (fixed line), this is used to correctly engage the half nut.

A plate is riveted to the front of the thread dial indicator which shows the selection and sequence to match the rotating dial with the fixed line.

To start thread cutting, engage the half nut at the appropriate number as indicated on the scale column on the thread dial plate, 1-4 on the scale means that the half nut can be engaged on any of the numbered lines, for each successive cut only the numbered lines can be used. 1-3/2-4 on the scale means that the half nut can only be engaged on 1 and 3 or 2 and 4, for example, if you engage the half nut on number 1, then any

successive cuts must be made on number 1 or 3. 1-8 means that the half nut can be engaged on any line.

If the half nut is left engaged when cutting the thread then the dial indicator does not need to be used, in this case once each cut has been completed, stop the machine, back the tool off and reverse the spindle back to the start position. This process can then be repeated until the thread has been full cut.



9.7 Four-Way Tool Post

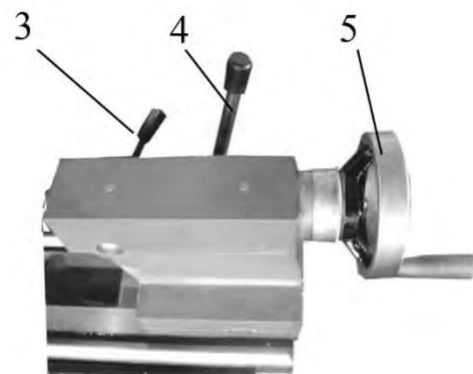
The main function of the tool post is to secure the cutting tool, the tool thickness must be less than the groove in the tool post. When installing a tool, make sure to confirm the height of the tool to the centre line of the rotating workpiece, use a spacer to adjust the height of the tool before securing it in place. If the tool post needs to be turned, turn the tool post locking handle counter-clockwise to loosen the locking handle, the tool post can then be turned to the desired angle. Lock the tool post by turning the handle clockwise.

9.8 Compound Slide

By using the compound slide, tasks such as taper cutting can be completed. Loosen the screws on the saddle and then rotate the compound slide to the required angle using the graduated dial on the side and lock the screws. A taper can then be cut using the handwheel on the end of the compound slide.

9.9 Tailstock

The tailstock has been installed on top of the lathe bed and can be moved along the guideways and locked by using the clamping lever (4). The tailstock quill has been fitted with an end pin to prevent it from being fully extracted. Rotating the handwheel (5) will extend or retract the quill, the handle (3) can then be used to lock the tailstock quill in position (for example, when using a live centre). The tailstock has been adjusted to match the centre line of the spindle before it has been shipped, if you wish to use the tailstock for taper turning, make sure that the clamp lever is in the released position and adjust the set screw to alter the centre of the tailstock in comparison to the spindle. Once the desired angle has been reached, clamp the tailstock in position using the tailstock clamping lever. Reposition the tailstock back into its original position once the taper turning operation has



been completed.

When correcting the position of the tailstock, use the following procedure:

1. Fit a 305mm ground steel bar between the centres of the headstock and tailstock (Fig 27).
2. Fit a dial indicator to the compound slide and feed along the centre line of the bar using the carriage movement.
3. If the tailstock needs adjustment, loosen and tighten the front and rear hex socket screws on the tailstock.

10. Troubleshooting

Caution!

Before performing any maintenance or carrying out any repairs, make sure that the power supply to the lathe is disconnected.

1. Turn on the power, the spindle does not rotate.
 - A. The voltage is incorrect or the main switch has not been turned to on – Adjust the voltage or turn the main power on at the source.
 - B. The fuse in the electrical box has blown – Check the fuse and replace if necessary.
 - C. A connection in the electrical cabinet is loose – Check the connections and make sure that they are secure.
2. The motor is too hot or it is not producing the correct power.
 - A. The voltage is too low – adjust the voltage into the machine.
 - B. The motor is overloaded or been working for too long a time – reduce the load on the motor.
 - C. The motor is damaged – replace the motor.
 - D. The fuse has tripped or the wire connection is poor – check the fuse and connections and replace if necessary.
 - E. The belt is too tight – loosen the belt and adjust the belt to the correct tension.
3. The temperature of the spindle bearings is too high.
 - A. Not enough lubrication oil – fill the oil to the correct level.
 - B. The bearing assembly is too tight – Adjust the bearings until the spindle runs smoothly.
 - C. High speed turning for long periods of time – reduce the cut depth.
4. Spindle does not move well when the motor is on.
 - A. The belt is too loose or is worn – Adjust the belt to the correct tension, replace if necessary.
 - B. The motor is damaged – Replace the motor.
 - C. The fuse has blown – Replace the fuse.

5. A small taper is cut when making an external cut between centres.
 - A. The workpiece is not on the same line between the spindle and tailstock – Adjust the tailstock position.
 - B. The movement line of the tool with the carriage is not parallel with the spindle – loose the headstock locking screws and adjust the spindle centre to the required position and lock the headstock into position.
6. The cut surface of the workpiece is rough during the cutting operation.
 - A. The clearance of the spindle bearings is too large – adjust the spindle bearings and replace if required.
 - B. The space between the saddle and the gib is too large – adjust the clearance.
 - C. The tool is not sharp – sharpen the tool or replace the insert (indexable tooling).
 - D. The workpiece is not secured tightly in the chuck – tighten the chuck.
 - E. The precision of the spindle bearing is poor or has worn – change the bearing for a more precise unit.
7. Static charge felt when touching the machine surface.
 - A. The power cable is damaged or worn – change the cable into the machine.
 - B. The machine has not been earthed correctly – secure the earth cable
 - C. The terminals in the electrical cabinet are loose – secure all of the terminals.

11. Maintenance

Performing regular maintenance on this machine will help maintain the machines accuracy as well as prolong the service life. Regular maintenance will help reduce the amount of repairs.

1. Daily Maintenance

- A. Before starting the machine, fill all of the oil cups with lubrication oil and lubricate all of the moving parts.
- B. If the spindle temperature is too high or the machine is noisy, stop the machine immediately and make an inspection, do not restart the machine until the problem has been resolved.
- C. Do not overload the lathe, take lighter cuts if necessary.
- D. Before leaving the workshop, clean the work area, turn the power to the lathe off and carefully clean away the waste material. Finally apply a thin layer of machine oil to the bare metal surfaces to help prevent rust.

2. Weekly Maintenance

- A. Clean and protect the leadscrew and the feed rod.
- B. Check the sliding and rotating surfaces and add lubrication oil if the lubricant level is too low.

3. Monthly Maintenance

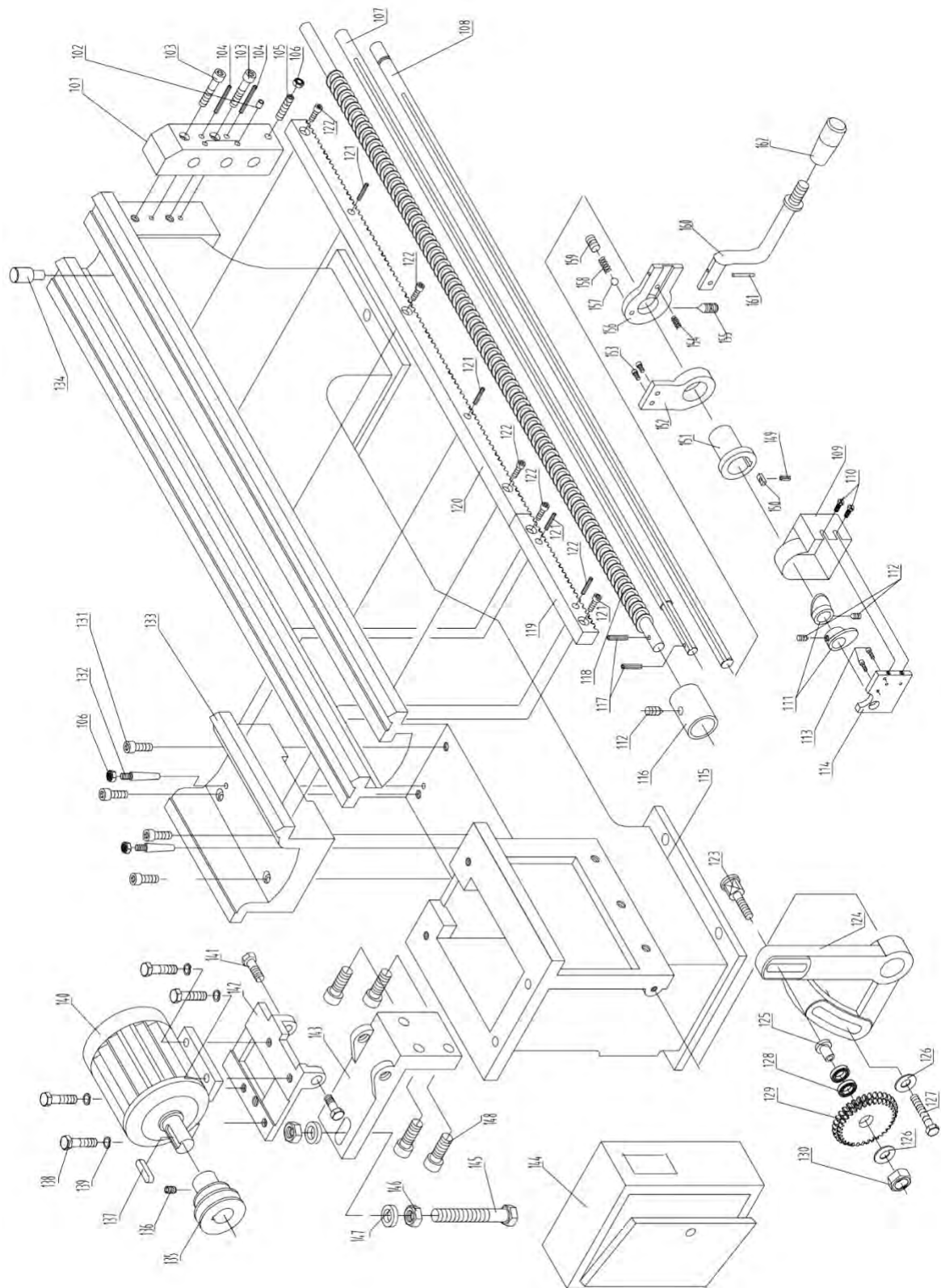
- A. Adjust the saddle gib to ensure the continued precision of the lathe.
- B. Lubricate the worm gear, half nut and bearing in order to prevent premature wear.

4. Annual Maintenance

- A. Check the level of the machine and adjust if necessary.
- B. Check the terminals, switches and other electrical components to make sure that they are not loose, replace any damaged components.
- C. Check the accuracy of the machine using a test piece, adjust the position of the headstock and tailstock if necessary.

Parts List and Drawings

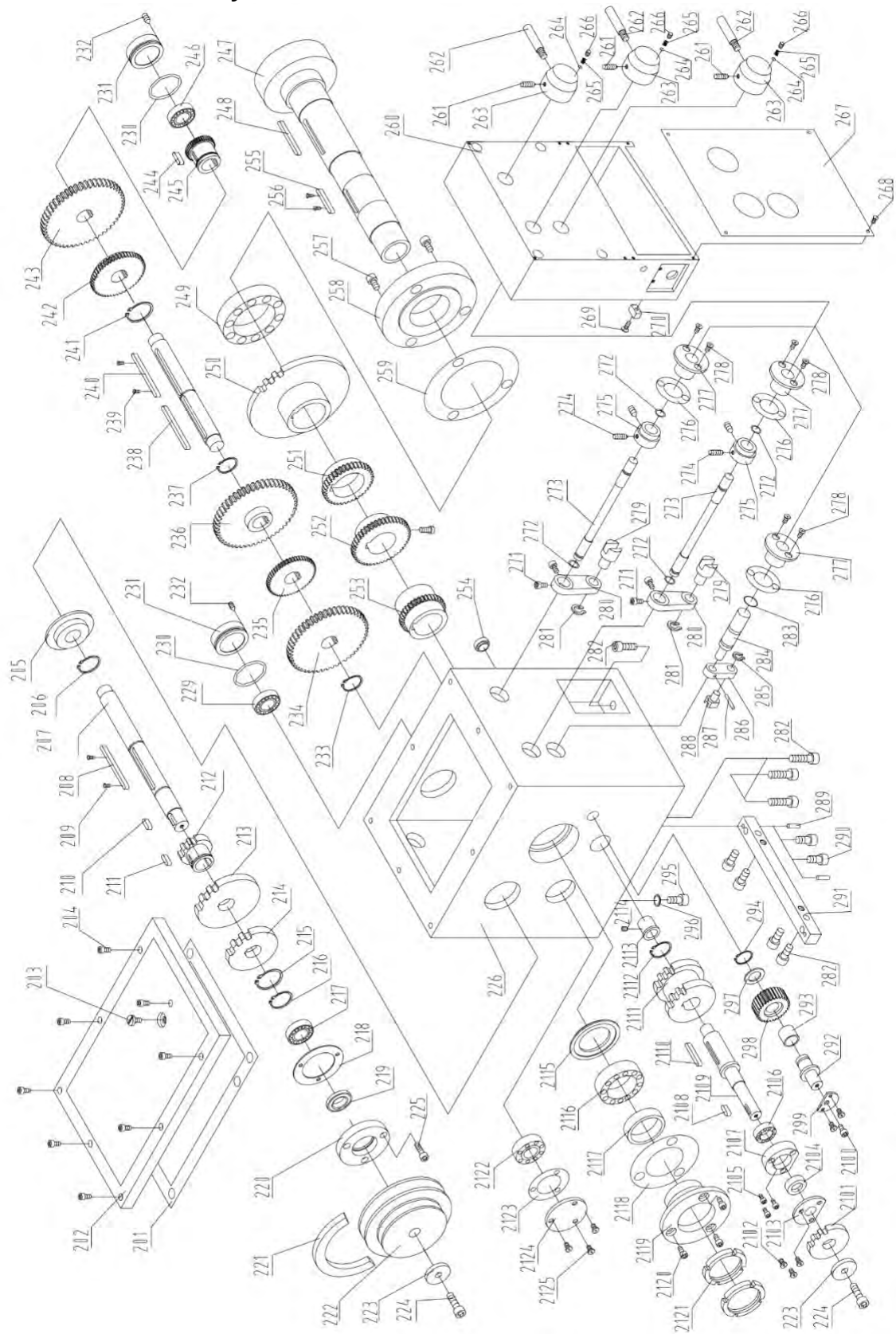
Bed Assembly



| No. | Part No. | Description | Qty |
|-----|---------------------|----------------------------|-----|
| 101 | CM1224C-01-011 | Fixing block | 1 |
| 102 | JB/T7940.4 | Oil cup 6 | 2 |
| 103 | GB/T70 | Screw M8x25 | 2 |
| 104 | GB/T879 | Spring pin 5x25 | 2 |
| 105 | GB/T77 | Screw M8x20 | 1 |
| 106 | GB/T41 | Nut M8 | 1 |
| 107 | CM1237CHG-01-009 | Feeding Rod | 1 |
| 108 | CM1237CHG-01-013 | Switch lever | 1 |
| 109 | CM1224C-01-011 | Switch cover | 1 |
| 110 | GB/T65 | Screw M6x12 | 2 |
| 111 | CM1224C-01-014 | Eccentric block | 2 |
| 112 | GB/T77 | Screw M6x6 | 3 |
| 113 | GB/T70 | Screw M6x12 | 2 |
| 114 | CM1224C-01-016 | Switch board | 1 |
| 115 | CM1237CHG01-010 | Bed | 1 |
| 116 | CM1224C-01-005 | Sleeve | 1 |
| 117 | GB/T879 | Spring pin 5x30 | 2 |
| 118 | CM1237CHG01-006 | Longitudinal Leadscrew | 1 |
| 119 | CM1237CHG01-007(2) | Rack (left) | 1 |
| 120 | CM1237CHG01-007(1) | Rack (Right) | 1 |
| 121 | GB/T70 | Screw M6x20 | 5 |
| 122 | GB/T879 | Spring Pin 5x30 | 4 |
| 123 | CM1224C-01-002 | Change Gear Shaft | 1 |
| 124 | CM1224C-01-001 | Change Gear Bracket | 1 |
| 125 | CM1224C-01-003 | Bearing Sleeve | 1 |
| 126 | GB/T95 | Washer 10 | 2 |
| 127 | GB/T5780 | Bolt M10x40 | 1 |
| 128 | GB/T276 | Bearing 6003-Z | 2 |
| 129 | CM1224C-01-004 | Change Gear | 1 |
| 130 | GB/T41 | Nut M10 | 1 |
| 131 | GB/T70 | Screw M10x34 | 4 |
| 132 | GB/T881 | Taper Pin with Thread 8x75 | 2 |
| 133 | CM1237CHG-01-010(1) | Gap | 1 |
| 134 | CM1224C-01-017 | Stop Pin | 1 |
| 135 | CZ1237G-02-059D | Motor Pulley | 1 |
| 136 | GB/T77-85 | Screw M6x8 | 2 |
| 137 | GB/T1096-79 | Key 8x25 | 1 |
| 138 | GB/T5780 | Bolt M8x25 | 4 |
| 139 | GB/T96 | Washer 8 | 4 |
| 140 | Y90L-4 | Motor 1.5kW | 1 |
| 141 | CM1224C-02-042 | Bolt | 2 |

| | | | |
|-----|----------------|----------------|---|
| 142 | CM1224C-02-005 | Motor Seat | 1 |
| 143 | CM1224C-02-006 | Motor Seat | 1 |
| 144 | CZ1237A-00-001 | Pulley Cover | 1 |
| 145 | GB/T5783 | Bolt M12x90 | 1 |
| 146 | GB/T6172 | Nut M12 | 2 |
| 147 | GB/T96 | Washer 12 | 2 |
| 148 | GB/T70-85 | Screw M8x30 | 4 |
| 149 | GB/T879 | Spring Pin 3x5 | 1 |
| 150 | GB/T1096 | Key B5x18 | 1 |
| 151 | CM1224-06-005 | Sleeve | 1 |
| 152 | CM1224-06-002 | Arm | 1 |
| 153 | GB/T70 | Screw M6x12 | 2 |
| 154 | CM1224-07-004 | Spring 1x6x22 | 1 |
| 155 | GB/T78 | Screw M8x12 | 1 |
| 156 | CM1224-07-003 | Cover | 1 |
| 157 | GB/T308 | Steel ball 6 | 1 |
| 158 | CM1224-07-006 | Spring 1x6x9 | 1 |
| 159 | GB/T77 | Screw M8x10 | 1 |
| 160 | CM224-07-001 | Lever | 1 |
| 161 | GB/T119 | Pin B5x35 | 1 |
| 162 | GB/T4141.14 | Grip | 1 |

Headstock Assembly



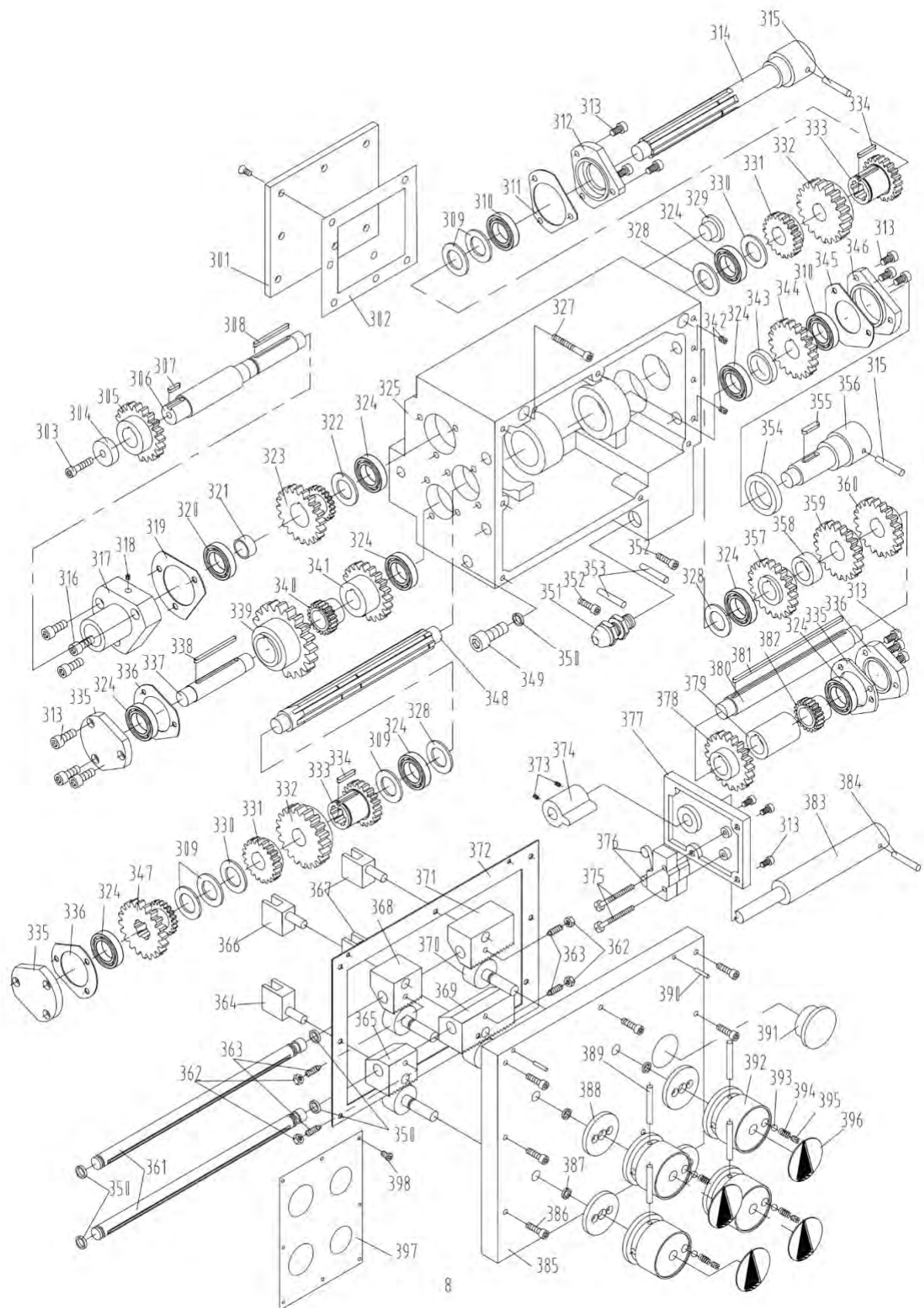
| Index No. | Part No. | Description | QTY. |
|-----------|-------------------|------------------------------|------|
| 201 | CZ1237G-02-055 | Gasket | 1 |
| 202 | CZ1237A-02T01-001 | Cover | 1 |
| 203 | CM1224C-03-034 | Oil fill plug | 1 |
| 204 | GB/T70 | Screw M6×25 | 8 |
| 205 | CZ1237G-02-024 | Round fork | 1 |
| 206 | GB/T894.2 | Retaining ring (external) 25 | 1 |
| 207 | CZ1237G-02-025 | Input shaft | 1 |
| 208 | GB/T1096 | Key 8×80 | |
| 209 | GB/T65 | Screw M3×8 | 2 |
| 210 | GB/T1096 | Key 5×14 | 1 |
| 211 | GB/T1096 | Key 8×20 | 1 |
| 212 | CZ1237G-02-022 | Gear | 1 |
| 213 | CZ1237G-02-021 | Gear | 1 |
| 214 | CZ1237G-02-020 | Gear | 1 |
| 215 | GB/T894.2 | Retaining ring (external) 38 | 1 |
| 216 | GB/T894.2 | Retaining ring (external) 25 | 1 |
| 217 | GB/T276 | Bearing 6205P6 | 1 |
| 218 | CZ1237G-02-017 | Gasket | 1 |
| 219 | GB/T9877.1 | Oil seal B25×40×7 | 1 |
| 220 | CZ1237G-02-015 | Cover | 1 |
| 221 | GB/T1174 | B-Belt B914 | 1 |
| 222 | CZ1237G-02-060C | Pulley | 1 |
| 223 | CM1224C-03-008 | Washer | 2 |
| 224 | GB/T70 | Screw M6×14 | 2 |
| 225 | GB/T70 | Screw M6×20 | 3 |
| 226 | CZ1237G-02-002 | Headstock | 1 |
| 229 | GB/T276 | Bearing 6204P6 | 1 |
| 230 | GB/T7757.2 | O-Ring gasket 43.7×1.8 | 2 |
| 231 | CZ1237G-02-026 | Plug | 2 |
| 232 | GB/T71 | Screw M6×10 | 2 |
| 233 | GB/T894.2 | Retaining ring (external) 25 | 1 |
| 234 | CZ1237G-02-013 | Gear | 1 |
| 235 | CZ1237G-02-014 | Gear | 1 |
| 236 | CZ1237G-02-23 | Gear | 1 |
| 237 | GB/T894.2 | Retaining ring (external) 25 | 1 |

| | | | |
|-----|-------------------|------------------------------|---|
| 238 | GB/T1096 | Key 8×80 | 1 |
| 239 | GB/T65 | Screw M3×8 | 2 |
| 240 | GB/T1097 | Key 8×80 | 1 |
| 241 | Gb/t894.2 | Retaining ring (external) 38 | 1 |
| 242 | CZ1237G-02-028 | Gear | 1 |
| 243 | CZ1237G-02-027 | Gear | 1 |
| 244 | GB/T1096 | Key 8×20 | 1 |
| 245 | CZ1237G-02-029 | Gear | 1 |
| 246 | GB/T276 | Bearing 6204P6 | 1 |
| 247 | CZ1237G-02-034 | Spindle | 1 |
| 248 | GB/T1096 | Key 8×80 | 1 |
| 249 | GB/T297 | Bearing 30211P5 | 1 |
| 250 | CZ1237G-02-031 | Gear | 1 |
| 251 | CZ1237G-02-033 | Gear | 1 |
| 252 | CZ1237G-02-032 | Gear | 1 |
| 253 | CZ1237G-02-037 | Gear | 1 |
| 254 | GB/T1160 | Oil level indicator | 1 |
| 255 | GB/T1096 | Key 8×70 | 1 |
| 256 | GB/T65 | Screw M6×8 | 1 |
| 257 | GB/T70 | Screw M8×30 | 3 |
| 258 | CZ1237G-02-035 | Cover | 1 |
| 259 | CZ1237G-02-030 | Gasket | 1 |
| 260 | CZ1237G-02T01-004 | Inlaid block | 1 |
| 261 | GB/T78 | Screw M8×14 | 3 |
| 262 | CZ1237G-02-046 | Handle | 3 |
| 263 | CZ1237G-02-045 | Handle seat | 3 |
| 264 | GB/T308 | Steel ball | 3 |
| 265 | GB/T2089 | Spring 1×5×20 | 3 |
| 266 | GB/T73 | Screw M8×5 | 3 |
| 267 | CZ1237G-02T01-006 | Name plate | 1 |
| 268 | GB/T818 | Screw M4×8 | 4 |
| 269 | CZ1237G-02T01-002 | Block | 1 |
| 270 | GB/T819 | Screw M4×12 | 1 |
| 271 | GB/T71 | Screw M6×10 | 4 |
| 272 | GB/T7757.2 | O-Ring gasket | 4 |
| 273 | CZ1237G-02-043 | Shaft | 2 |
| 274 | GB/T71 | Screw M6×10 | 4 |
| 275 | CZ1237G-02-054 | Collar | 2 |
| 276 | CZ1237G-02-047 | Gasket | 3 |

| | | | |
|------|------------------|------------------------------|---|
| 277 | CZ1237G-02-044 | Fixing seat | 3 |
| 278 | GB/T819 | Screw M5×10 | 6 |
| 279 | CZ1237G-02-040 | Fork | 2 |
| 280 | CZ1237G-02-039 | Arm | 2 |
| 281 | GB/T894.2 | Retaining ring (external) 15 | 2 |
| 282 | GB/T70 | Screw M10×35 | 6 |
| 283 | GB/T7757.2 | O-Ring gasket | 1 |
| 284 | CZ1237G-02-048 | Shaft | 1 |
| 285 | GB/T894.2 | Retaining ring (external) 10 | 1 |
| 286 | CZ1237G-02-049 | Arm | 1 |
| 287 | GB/T879 | Spring pin 4×20 | 1 |
| 288 | CZ1237G-02-050 | Fork | 1 |
| 289 | GB/T119 | Pin 8×26 | 2 |
| 290 | GB/T70 | Screw M10×30 | 4 |
| 291 | CZ1237G-02-001 | Adjusting bar | 1 |
| 292 | CZ1237G-02-005 | Shaft | 1 |
| 293 | CZ1237G-02-007 | Collar | 1 |
| 294 | GB/T894.2 | Retaining ring (external) 20 | 1 |
| 295 | GB/T70 | Screw M10×16 | 1 |
| 296 | GB/T7757.2 | O-Ring gasket 10×1.8 | 1 |
| 297 | CZ1237G-02-008 | Washer | 1 |
| 298 | CZ1237G-02-006 | Gear | 1 |
| 299 | CZ1237G-02-038 | Cover | 1 |
| 2100 | GB/T819 | Screw M5×10 | 3 |
| 2101 | CZ300A-03-001(4) | Gear | 1 |
| 2102 | GB/T822 | Screw M3×10 | 3 |
| 2103 | CZ1237G-02-038 | Cover | 1 |
| 2104 | GB/T9877.1 | Oil seal FB20×35×7 | 1 |
| 2105 | GB/T70 | Screw M5×16 | 3 |
| 2106 | GB/T276 | Bearing 61804P6 | 1 |
| 2107 | CZ1237G-02-056 | Cover | 1 |
| 2108 | GB/T1096 | Key 5×14 | 2 |
| 2109 | CZ1237G-02-004 | Shaft | 1 |
| 2110 | GB/T1096 | Key 8×40 | 1 |
| 2111 | CZ1237G-02-003 | Gear | 1 |
| 2112 | GB/T894.2 | Retain ring (external) 26 | 1 |
| 2113 | CZ1237G-02-036 | Sleeve | 1 |
| 2114 | GB/T71 | Screw M6×10 | 1 |
| 2115 | CZ1237G-02-009 | Flashing ring | 1 |

| | | | |
|------|----------------|-------------------|---|
| 2116 | GB/T297 | Bearing 32010P6 | 1 |
| 2117 | CZ1237G-02-053 | Spacer | 1 |
| 2118 | CZ1237G-02-016 | Gasket | 1 |
| 2119 | CZ1237G-02-010 | Cover | 1 |
| 2120 | GB/T70 | Screw M6×14 | 3 |
| 2121 | GB/T812 | Round nut M50×1.5 | 2 |
| 2122 | GB/T276 | Bearing 6205P6 | 1 |
| 2123 | CZ1237G-02-019 | Gasket | 1 |
| 2124 | CZ1237G-02-011 | Cover | 1 |
| 2125 | GB/T819 | Screw M5×10 | 3 |

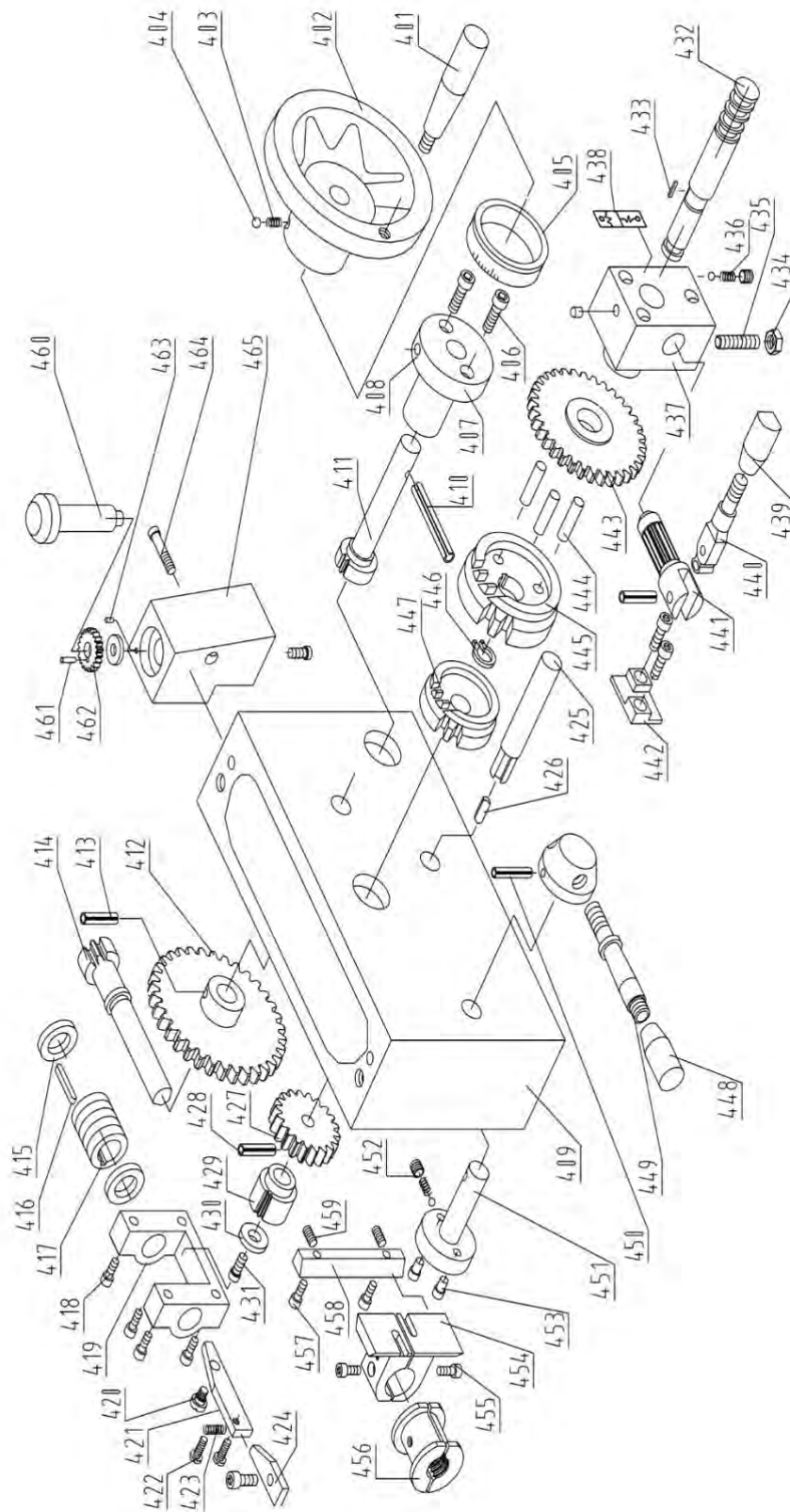
Gearbox Assembly



| Index No. | Part No. | Description | Size | Qty. |
|-----------|----------------|---|---------|------|
| 301 | CZ1237A-03-019 | Cover | | 1 |
| 302 | CZ1237A-03-018 | Gasket | | 1 |
| 303 | GB/T70 | Screw | M6×16 | 1 |
| 304 | CZ1340G-03-007 | Shaft Cover | | 1 |
| 305 | CZ1340G-07-008 | Gear(30T,54T,56T,57T, 60T,63T,66T,69T,78T) | | 9 |
| 306 | CZ1237A-03-006 | Shaft | | 1 |
| 307 | GB/T1096 | Key | 5×18 | 1 |
| 308 | GB/T1096 | Key | 5×45 | 1 |
| 309 | GB/T894 | Retain ring (external) | 20 | 5 |
| 310 | GB/T276 | Bearing | 6004 | 2 |
| 311 | CZ1340G-07-018 | Gasket | | 1 |
| 312 | CZ1340G-07-021 | Cover | | 1 |
| 313 | GB/T70 | Screw | M5×12 | 18 |
| 314 | CZ1237A-03-009 | Shaft | | 1 |
| 315 | GB/T117 | Pin | 3×32 | 2 |
| 316 | GB/T70 | Screw | M6×20 | 3 |
| 317 | CZ1340G-07-009 | Cover | | 1 |
| 318 | GB/T1155 | Oil Ball | 6 | 1 |
| 319 | CZ1340G-07-010 | Gasket | | 1 |
| 320 | GB/T276 | Bearing | 6203 | 1 |
| 321 | CZ1237A-03-005 | Spacer | | 1 |
| 322 | GB/T894 | Retain ring (external) | 16 | 2 |
| 323 | CZ1340G-07-011 | Gear | 24T,16T | 1 |
| 324 | GB/T276 | Bearing | 6202 | 9 |
| 325 | CZ1237A-03-001 | Gear box | | 1 |
| 327 | GB/T70 | Screw | M8×65 | 2 |
| 328 | CZ1237A-03-015 | Spacer | | 3 |
| 329 | CM1224C-03-034 | Oil Cover | | 1 |
| 330 | GB/T894 | Retain ring (external) | 26 | 2 |
| 331 | CZ1340G-07-053 | Gear | 24T | 2 |

| | | | | |
|-----|----------------|------------------------------|---------|---|
| 332 | CZ1340G-07-052 | Gear | 28T | 2 |
| 333 | CZ1340G-07-051 | Gear | | 2 |
| 334 | GB/T1096 | Key | 4×22 | 2 |
| 335 | CZ1340G-07-005 | Cover | | 3 |
| 336 | CZ1340G-07-004 | Gasket | | 3 |
| 337 | CZ1237A-03-007 | Shaft | | 1 |
| 338 | GB/T1096 | Key | 4×55 | 1 |
| 339 | CZ1237A-03-004 | Gear | 24T | 1 |
| 340 | CZ1340G-07-007 | Gear | 16T | 1 |
| 341 | CZ1340G-07-014 | Gear | 32T | 1 |
| 342 | GB/T77 | Screw | M5×16 | 2 |
| 343 | CZ1237G-03-013 | Spacer | | 1 |
| 344 | CZ1237A-03-014 | Gear | 32T | 1 |
| 345 | CZ1340G-07-045 | Gasket | | 1 |
| 346 | CZ1340G-07-044 | Cover | | 1 |
| 347 | CZ1340G-07-002 | Gear | 16T | 1 |
| 348 | CZ1237A-03-003 | Shaft | | 1 |
| 349 | GB/T70 | Screw | M10×16 | 1 |
| 350 | GB/T3452.1 | O-Ring | 9.5×1.8 | 5 |
| 351 | D97-4-20 | Locking Connector of Tube | | 1 |

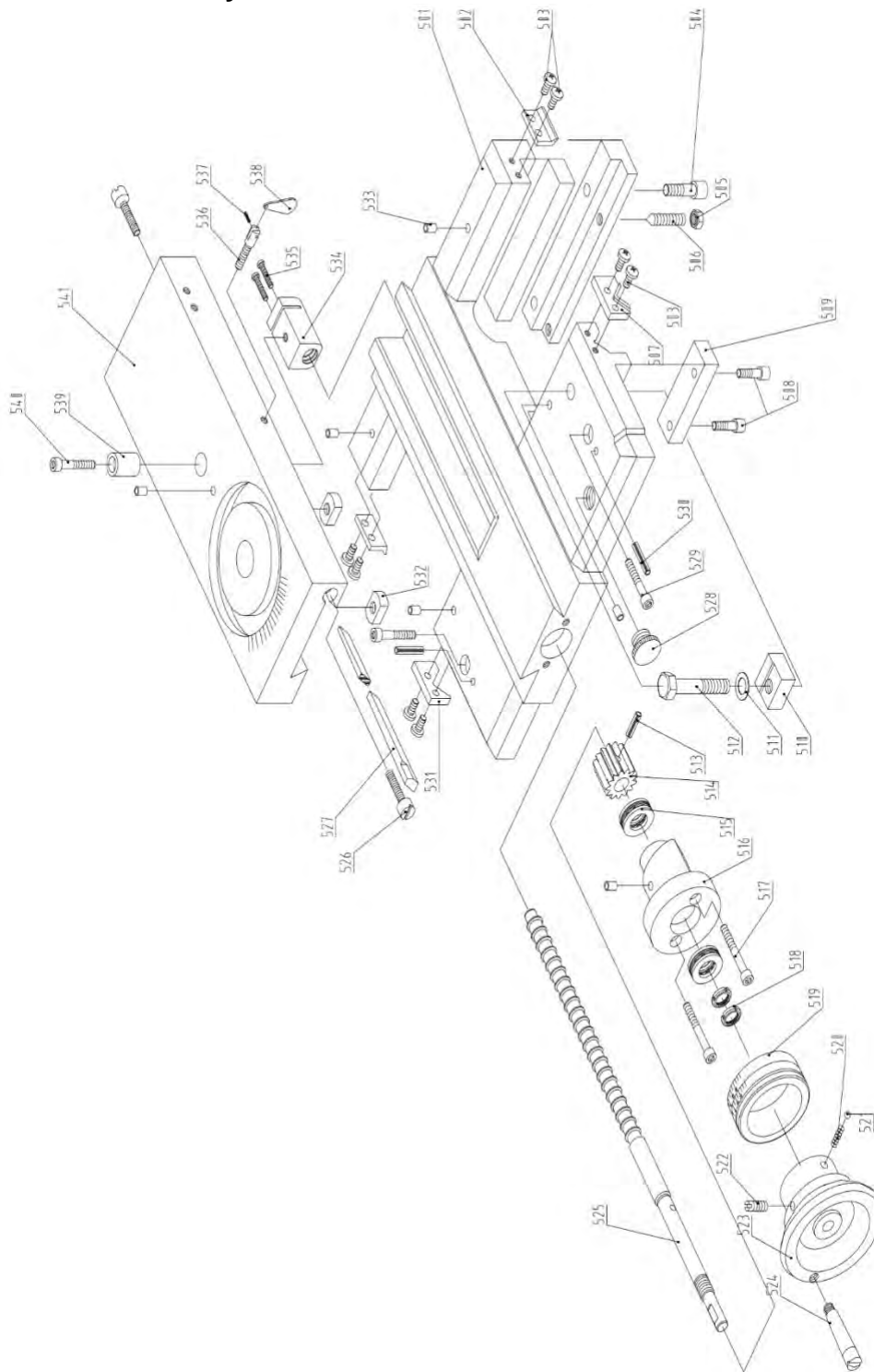
Apron Assembly



| Index No. | Part No. | Description | Qty. |
|-----------|---------------|-------------------|------|
| 401 | JB/T7270.1 | Handle BM8×63 | 1 |
| 402 | CM1224-04-011 | Handwheel | 1 |
| 403 | CM1224-06-007 | Spring | 2 |
| 404 | GB/T308 | Steel ball 6 | 3 |
| 405 | CM1224-04-013 | Indicate ring | 1 |
| 406 | GB/T70 | Screw M6×16 | 3 |
| 407 | CM1224-04-014 | Handwheel seat | 1 |
| 408 | GB/T7940.4 | Oil cup 6 | 2 |
| 409 | CM1224-04-015 | Box | 1 |
| 410 | GB/T879 | Pin 5×60 | |
| 411 | CM1224-04-012 | Gear | 1 |
| 412 | CM1224-04-016 | Gear | 1 |
| 413 | GB/T879 | Pin 5×30 | 1 |
| 414 | CM1224-04-010 | Shaft | 1 |
| 415 | CM1224-04-037 | Washer | 2 |
| 416 | GB/T1096 | Key 5×32 | 1 |
| 417 | CM1224-04-022 | Worm | 1 |
| 418 | GB/T70 | Screw M6×25 | |
| 419 | CM1224-04-021 | Nut support | 1 |
| 420 | GB/T830 | Screw M6×6 | |
| 421 | CM1224-04-035 | Safe pin | 1 |
| 422 | GB/T65 | Screw M4×14 | |
| 423 | CM1224-04-034 | Spring | 1 |
| 424 | CM1224-04-032 | Block | 1 |
| 425 | CM1224-04-007 | Arbor | 1 |
| 426 | GB/T1096 | Key 4×20 | 1 |
| 427 | CM1224-04-006 | Gear | 1 |
| 428 | GB/T879 | Pin 5×24 | 2 |
| 429 | CM1224-04-023 | Worm | 1 |
| 430 | CM1224-04-031 | Washer | 2 |
| 431 | GB/T70 | Screw M6×12 | 4 |
| 432 | CM1224-04-020 | Shaft | 1 |
| 433 | GB/T1096 | Key 4×8 | 1 |
| 434 | GB/T6170 | Nut M8 | 1 |
| 435 | GB/T75 | Screw M8×35 | 1 |
| 436 | CM1224-04-038 | Spring | 2 |
| 437 | CM1224-04-017 | Change lever seat | 1 |

| | | | |
|-----|---------------|---------------------------|---|
| 438 | CM1224-04-011 | Feeding plate | 1 |
| 439 | JB/T7271.5 | Grip BM10×50 | 1 |
| 440 | CM1224-04-001 | Change lever | 1 |
| 441 | CM1224-04-018 | Change rod | 1 |
| 442 | CM1224-04-002 | Safe guide piece | 1 |
| 443 | CM1224-04-008 | Gear | 1 |
| 444 | GB/T119 | Pin A6×30 | 3 |
| 445 | CM1224-04-009 | Gear | 1 |
| 446 | GB/T894.1 | Retain ring (external) 16 | 1 |
| 447 | CM1224-04-019 | Clutch | 1 |
| 448 | CM1224-04-003 | Handle | 1 |
| 449 | CM1224-04-036 | Knob | 1 |
| 450 | GB/T879 | Pin 5×40 | 1 |
| 451 | CM1224-04-004 | Rod | 1 |
| 452 | GB/T77 | Screw M8×8 | 2 |
| 453 | CM1224-04-024 | Pin | 2 |
| 454 | CM1224-04-026 | Half nut seat | 1 |
| 455 | GB/T70 | Screw M6×8 | 2 |
| 456 | CM1224-04-025 | Half nut | 1 |
| 457 | GB/T70 | Screw M5×16 | 2 |
| 458 | CM1224-04-029 | Pressure bar | 1 |
| 459 | GB/T78 | Screw M6×12 | 2 |
| 460 | CM1224-04-028 | Indicate arbor | 1 |
| 461 | GB/T119 | Pin 3×12 | 1 |
| 462 | CM1224-04-030 | Gear | 1 |
| 463 | GB/T827 | Rivet 2.5×5 | 1 |
| 464 | GB/T70 | Screw M6×45 | 1 |
| 465 | CM1224-04-027 | Threading seat | 1 |

Saddle Assembly



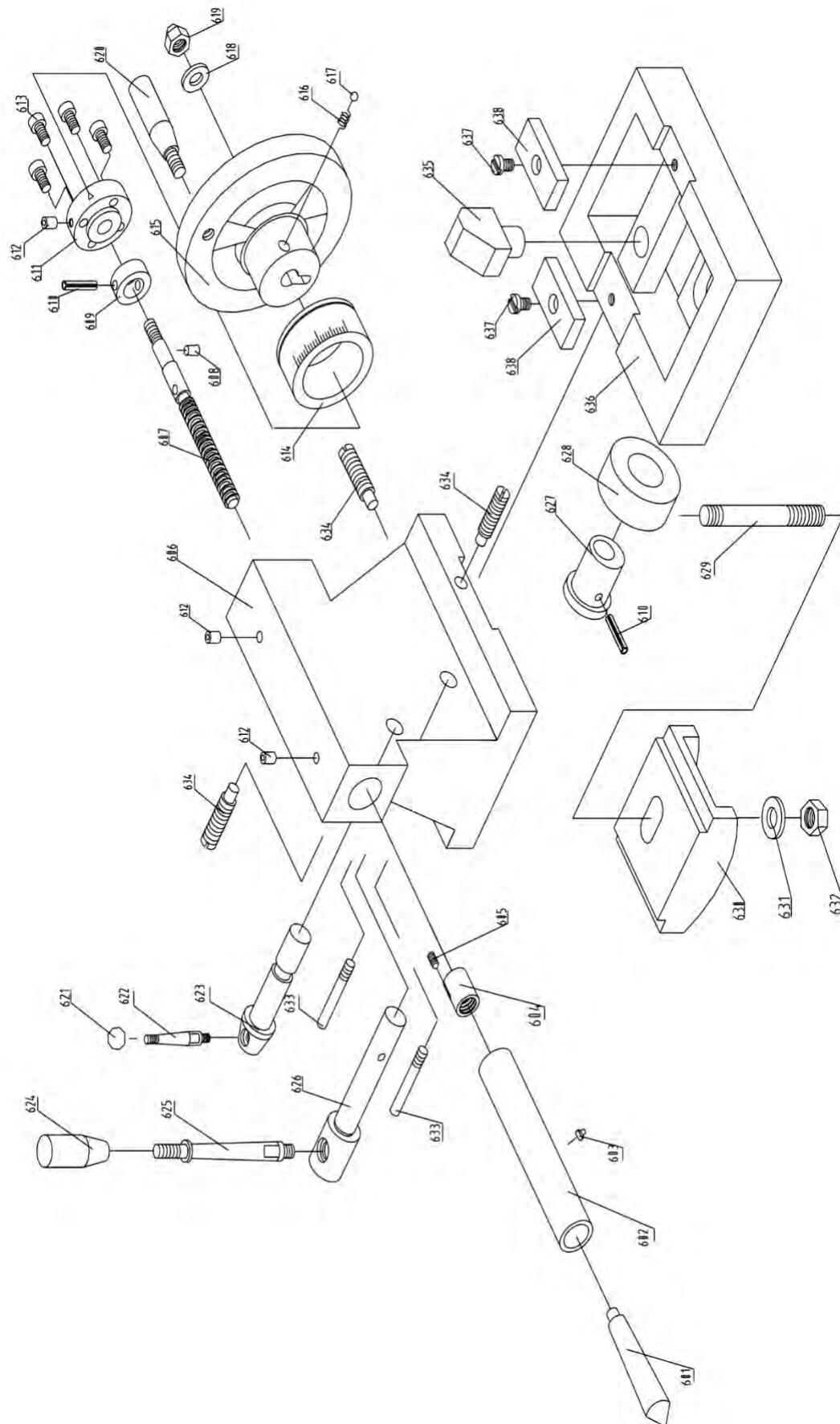
| Index No. | Part No. | Description | QTY. |
|-----------|-----------------|----------------------|------|
| 501 | CM1224C-05-003 | Saddle | 1 |
| 502 | CM1224C-05-044 | Wiper | 2 |
| 503 | GB/T818 | Screw M5×12 | 8 |
| 504 | GB/T70 | Screw M8×25 | 3 |
| 505 | GB/T41 | Nut M8 | 3 |
| 506 | GB/T78 | Screw M8×22 | 3 |
| 507 | CM1224C-05-041 | Wiper | 1 |
| 508 | GB/T70 | Screw M6×16 | 4 |
| 509 | CM1224C-05-040 | Block slide | 2 |
| 510 | CM1224C-05-032 | Locking block | 1 |
| 511 | GB/T95 | Washer 10 | 1 |
| 512 | GB/T5780 | Bolt M10×60 | 1 |
| 513 | GB/T879 | Pin 5×20 | 1 |
| 514 | CM1224C-05-039 | Gear | 1 |
| 515 | GB/T301 | Bearing 51101 | 2 |
| 516 | CM1224C-05-038 | Lead screw seat | 1 |
| 517 | GB/T70 | Screw M6×45 | 2 |
| 518 | GB/T810 | Nut M12×1.25 | 2 |
| 519 | CM1224C-05-037 | Graduation collar | 1 |
| 520 | CM1224C-06-007 | Compressing spring | 2 |
| 521 | GB/T308 | Steel ball 6 | 1 |
| 522 | GB/T77 | Screw M6×16 | 1 |
| 523 | CM1224C-05-023 | Handwheel | 1 |
| 524 | CM1224C-05-024 | Handle | 1 |
| 525 | CM1224C-05-004 | Lead screw of saddle | 1 |
| 526 | CM1224C-05-034 | Adjusting screw | 2 |
| 527 | CM1224C-05-035 | Gib | 1 |
| 528 | CM1224C-03-034 | Plug | 1 |
| 529 | GB/T70 | Screw M8×30 | 2 |
| 530 | GB/T879 | Pin 5×35 | 2 |
| 531 | CM1224C-05-042 | Wiper | 1 |
| 532 | CM1224C-05-008 | Fixing block | 2 |
| 533 | JB/T7940.1 | Oil cup 6 | 6 |
| 534 | CM1224C-05-006 | Lead screw nut | 1 |
| 535 | GB/T818 | Screw M4×20 | 2 |
| 536 | CM1224C-05-022A | Locking screw | 2 |
| 537 | GB/T879 | Pin 2×8 | 2 |

| | | | |
|-----|-----------------|---------------|---|
| 538 | CM1224C-05-022B | Locking lever | 2 |
| 539 | CM1224C-05-007 | Fixing seat | 1 |
| 540 | GB/T70 | Screw M6×20 | 1 |
| 541 | CM12224C-05-005 | Cross slide | 1 |

[illegible]

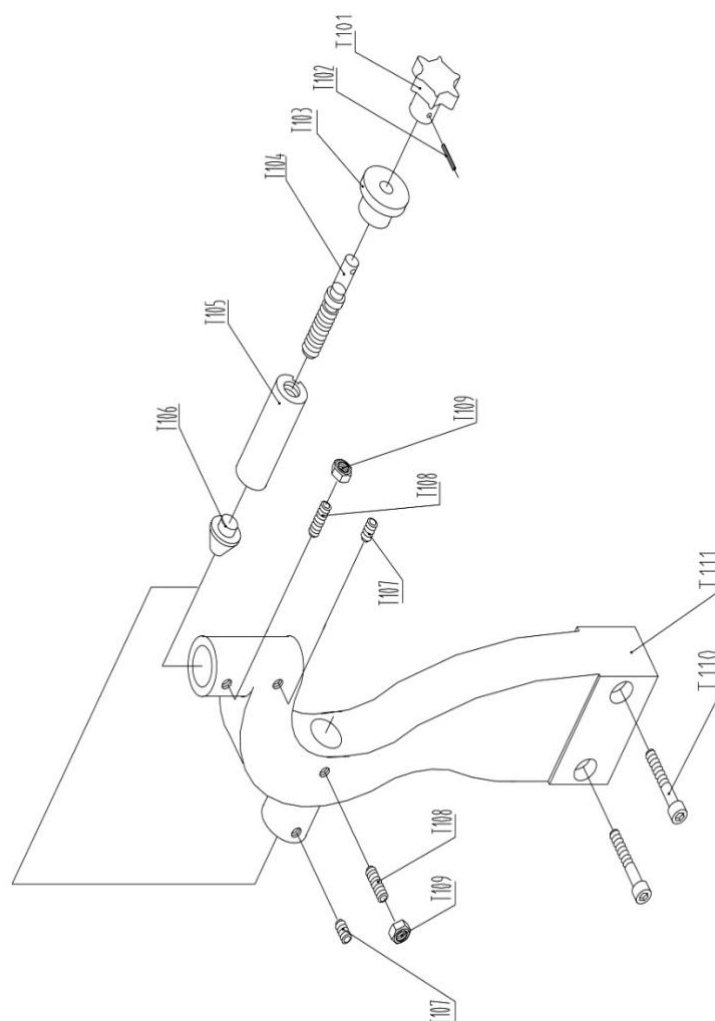
| Index No. | Part No. | Description | QTY. |
|-----------|-------------------|--------------------|------|
| 542 | CM1224C-05-031 | Handle | 1 |
| 543 | CM1224C-05-030 | Handle | 1 |
| 544 | CM1224C-05-029 | Handwheel | 1 |
| 545 | GB/T77 | Screw M6×16 | 2 |
| 546 | GB/T308 | Steel ball6 | 1 |
| 547 | CM1224C-06-007 | Pressure spring | 1 |
| 548 | CM1224C-05-028 | Graduation collar | 1 |
| 549 | GB/T810 | Nut M10×1 | 2 |
| 550 | GB/T301 | Bearing 51100 | 1 |
| 551 | GB/T70 | Screw M4×30 | 2 |
| 552 | CM1224C-05-027 | Leadscrew seat | 1 |
| 553 | CM1224C-00-006 | Indicator plate | 1 |
| 554 | JB/T7940.4 | Oil cup 6 | 1 |
| 555 | CM1224C-05-025 | Leadscrew | 1 |
| 556 | CM1224C-05-020 | Adjusting screw | 2 |
| 557 | GB/T879 | Pin 2×8 | 2 |
| 558 | CM1224C-05-022(B) | Clamping knob | 1 |
| 559 | CM1224C-05-022(A) | Clamping screw | 1 |
| 560 | CM1224C-05-010 | Base of tool post | 1 |
| 561 | CM1224C-05-026 | Leadscrew nut | 1 |
| 562 | CM1224C-05-019 | Gib | 1 |
| 563 | GB/T70 | Screw M8×24 | 2 |
| 564 | CM1224C-05-009 | Swivel base | 1 |
| 565 | GB/T78 | Screw M6×12 | 1 |
| 566 | CM1224C-05-016 | Locking screw | 1 |
| 567 | CM1224C-05-043 | T-block | 1 |
| 568 | CM1224C-05-011 | Compressing spring | 1 |
| 569 | CM1224C-05-012 | Locating block | 1 |
| 570 | CM1224C-05-014 | Tool post | 1 |
| 571 | CM1224C-05-013 | Screw | 8 |
| 572 | CM1224C-05-015 | Washer | 1 |
| 573 | CM1224C-05-017 | Lever | 1 |
| 574 | CM1224C-05-018 | Handle | 1 |

Tailstock Assembly



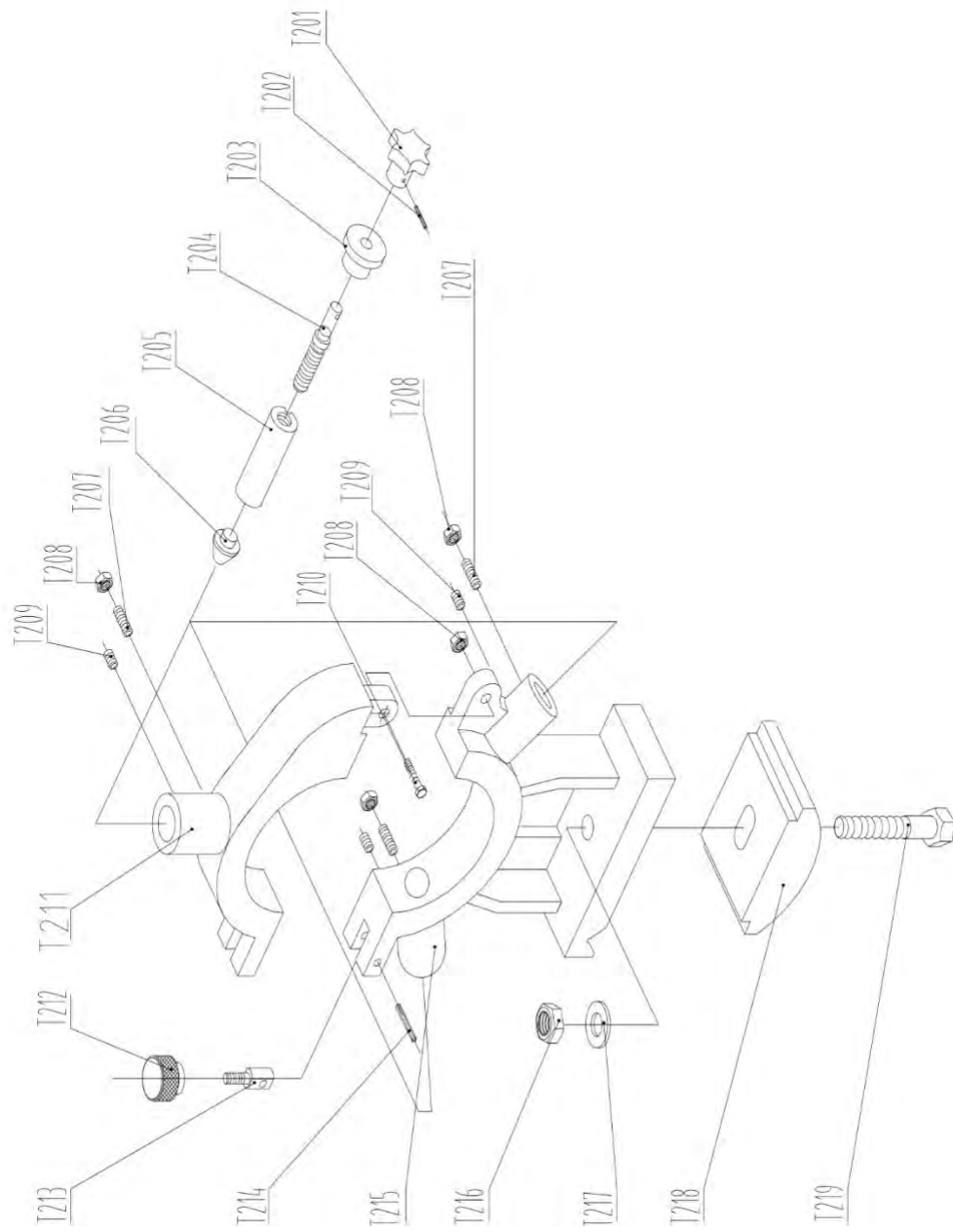
| Index No. | Part No. | Description | QTY. |
|-----------|----------------|--------------------------|------|
| 601 | GB/T9204.1 | Center M.T.3. | 1 |
| 602 | CM1224C-06-002 | Tailstock quill | 1 |
| 603 | CM1224C-06-021 | T-Key | 1 |
| 604 | CM1224C-06-004 | Nut of leadscrew | 1 |
| 605 | GB/T78 | Screw M6×10 | 1 |
| 606 | CM1224C-06-001 | Tailstock | 1 |
| 607 | CM1224C-06-003 | Leadscrew | 1 |
| 608 | GB/T119 | Pin 5×8 | 1 |
| 609 | CM1224C-06-022 | Sleeve | 1 |
| 610 | GB/T879 | Spring pin5×24 | 2 |
| 611 | CM1224C-06-005 | Leadscrew seat | 1 |
| 612 | JB/T7940.4 | Oil cup | 3 |
| 613 | GB/T70 | Screw M6×16 | 4 |
| 614 | CM1224C-06-006 | Graduation collar | 1 |
| 615 | CM1224C-06-016 | Handwheel | 1 |
| 616 | CM1224C-06-007 | Spring | 1 |
| 617 | GB/T308 | Steel ball 6 | 1 |
| 618 | GB/T97.1 | Washer 10 | 1 |
| 619 | GB/T923 | Nut M10 | 1 |
| 620 | GB/T4141.1 | Handle BM8×63 | 1 |
| 621 | GB/T4141.11 | Lever ball M6×20 | 1 |
| 622 | CM1224C-06-008 | Lever | 1 |
| 623 | CM1224C-06-009 | Eccentric axle | 1 |
| 624 | GB/T4141.14 | Lever grip M10×50 | 1 |
| 625 | CM1224C-06-015 | Lever | 1 |
| 626 | CM1224C-06-014 | Clamping shaft | 1 |
| 627 | CM1224C-06-011 | Sleeve of eccentric axle | 1 |
| 628 | CM1224C-06-010 | Sleeve | 1 |
| 629 | CM1224C-06-019 | Double end bolt | 1 |
| 630 | CM1224C-06-018 | Fixing block | 1 |
| 631 | GB/T97.1 | Washer 12 | 1 |
| 632 | GB/T6170 | Nut M12 | 1 |
| 633 | CM1224C-06-013 | Clamping axle | 2 |
| 634 | GB/T75 | Screw M10×40 | 3 |
| 635 | CM1224C-06-017 | Fixing bracket | 1 |
| 636 | CM1224C-06-020 | Base plate | 1 |
| 637 | GB/T68 | Screw M6×12 | 2 |
| 638 | CM1224C-06-012 | Fixing block | 2 |

Follow Rest Assembly



| Index No. | Part No. | Description | QTY. |
|-----------|-------------------|-------------------|------|
| T101 | JB/T727404 | Star handle M8×30 | 2 |
| T102 | GB/T879 | Pin 3×16 | 2 |
| T103 | CM1224C-05T02-003 | Collar | 2 |
| T104 | CM1224C-05T02-002 | Adjusting screw | 2 |
| T105 | CM1224C-05T02-004 | Sleeve | 2 |
| T106 | CM1224C-05T02-005 | Clamping block | 2 |
| T107 | GB/T78 | Screw M6×8 | 2 |
| T108 | GB/T71 | Screw M6×16 | 2 |
| T109 | GB/T6170 | Nut M6 | 2 |
| T110 | GB/T70 | Screw M8×35 | 2 |
| T111 | CM1224C-05T02-002 | Follow rest | 1 |

Steady Rest Assembly



| Index No. | Part No. | Description | QTY. |
|-----------|-------------------|----------------------|------|
| T201 | JB/T7274.4 | Star handle M8×30 | 3 |
| T202 | GB/T879 | Pin 3×16 | 3 |
| T203 | CM1224C-05T02-003 | Collar | 3 |
| T204 | CM1224C-05T02-002 | Adjusting screw | 3 |
| T205 | CM1224C-05T02-004 | Sleeve | 3 |
| T206 | CM1224C-05T02-005 | Clamping block | 3 |
| T207 | GB/T71 | Screw M6×16 | 3 |
| T208 | GB/T6170 | Nut M6 | 4 |
| T209 | GB/T78 | Screw M6×8 | 3 |
| T210 | GB/T27 | Bolt M6×25 | 3 |
| T211 | CM1224C-05T03-003 | Cover of steady rest | 1 |
| T212 | CM1224C-05T03-002 | Knob | 1 |
| T213 | CM1224C-05T03-001 | Lever | 1 |
| T214 | GB/T879 | Pin 5×30 | 1 |
| T215 | CM1224C-05T03-004 | Base of steady rest | 1 |
| T216 | GB/T41 | Nut M12 | 1 |
| T217 | GB/T95 | Washer 12 | 1 |
| T218 | CM1224C-06-018 | Fixing plate | 1 |
| T219 | GB/T5780 | Bolt M12×70 | 1 |