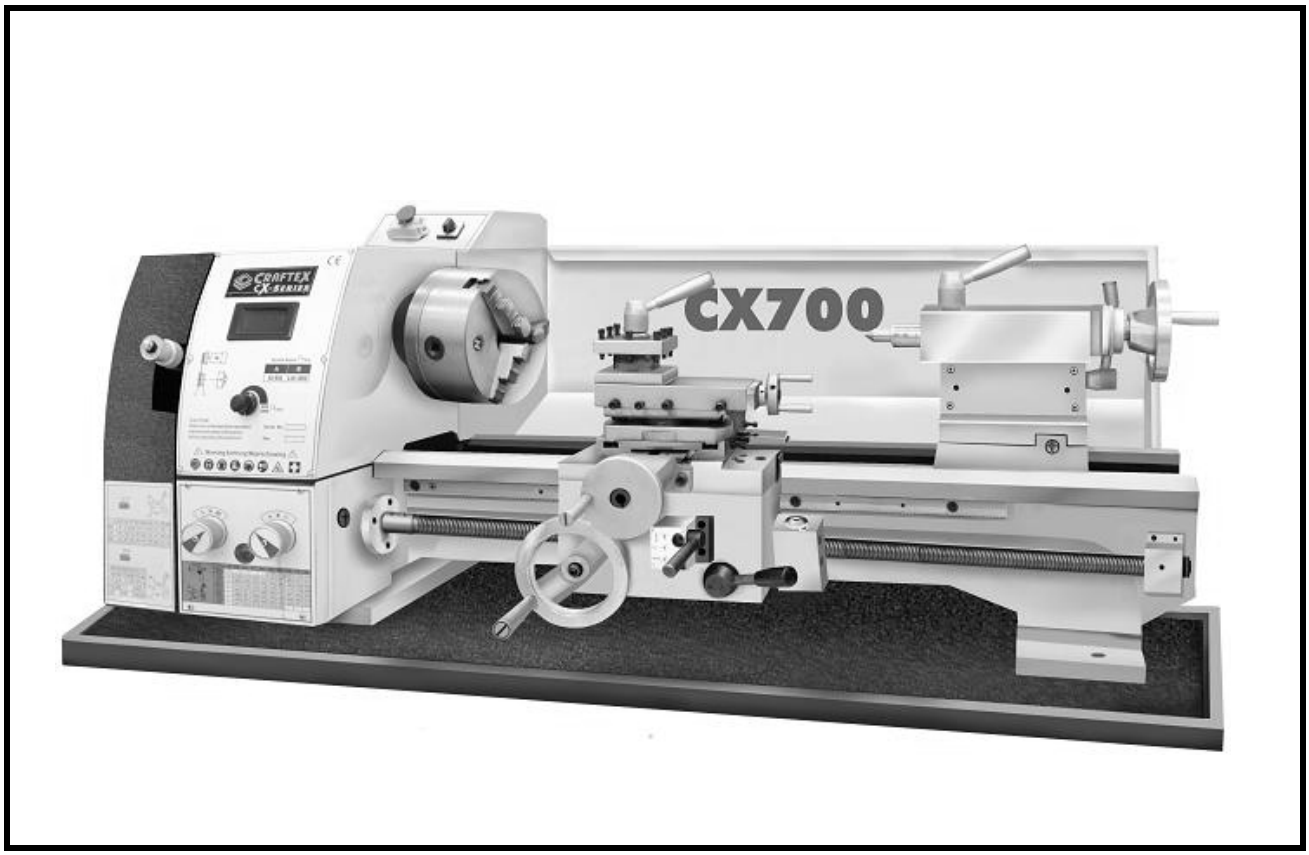
CX700
10” x 22” METAL LATHE
with DIGITAL READOUT
User Manual



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GENERAL SAFETY INSTRUCTIONS
FOR MACHINES

Extreme caution should be used when operating all power tools. Know your power tool, be familiar with its operation, read through the user manual and practice safe usage procedures at all times.

- **ALWAYS** read and understand the user manual before operating the machine.
- **CONNECT** your machine ONLY to the matched and specific power source.
- **ALWAYS** wear safety glasses respirators, hearing protection and safety shoes, when operating your machine.
- **DO NOT** wear loose clothing or jewelry when operating your machine.
- **A SAFE ENVIRONMENT** is important. Keep the area free of dust, dirt and other debris in the immediate vicinity of your machine.
- **BE ALERT! DO NOT** use prescription or other drugs that may affect your ability or judgment to safely operate your machine.
- **DISCONNECT** the power source when changing drill bits, hollow chisels, router bits, shaper heads, blades, knives or making other adjustments or repairs.
- **NEVER** leave a tool unattended while it is in operation.
- **NEVER** reach over the machine when the tool is in operation.
- **ALWAYS** keep blades, knives and bits sharpened and properly aligned.
- **ALL OPERATIONS MUST BE** performed with the guards in place to ensure safety.
- **ALWAYS** use push sticks and feather boards to safely feed your work through the machine and clamp the work-piece (when necessary) to prevent the work-piece from any unexpected movement.
- **ALWAYS** make sure that any tools used for adjustments are removed before operating the machine.
- **ALWAYS** keep the bystanders safely away while the machine is in operation.
- **NEVER** attempt to remove jammed cutoff pieces until the saw blade has come to a full stop.

CX700 - METAL LATHE
SPECIFIC SAFETY INSTRUCTIONS

- **This machine is designed and intended for use by properly trained and experienced personnel only.** If you are not familiar with the proper use of lathes, do not use this machine until proper training and knowledge has been obtained.
- **Keep guards in place.** Safety guards must be kept in place and in working order all the times to ensure safety.
- **Keep children and visitors away.** All children and visitors should be kept at a safe distance from the work area.
- **Wear proper apparel.** Loose clothing, gloves, neckties, rings, bracelets, or other jewelry may get caught in moving parts. Non-slip footwear is recommended. Wear protective hair covering to contain long hair. Do not wear any type of gloves.
- **Always use safety glasses.** For the safety of your eyes, safety glasses should be used while operating the lathe.
- **Do not use the lathe in dangerous environments.** Do no expose the machine to rain. Do not use the machine in wet locations.
- **Check for damaged parts.** Check for proper alignment of moving parts, broken parts, and any other conditions that may effect the tools operation.
- **Remove adjusting keys and wrenches.** Remove all the tools used for adjustment before turning the machine on.
- **Be careful.** Do not put your hand close to the cutter while the machine is running.
- **Never leave the lathe** unattended while it is running.
- **Do not over-reach.** Keep proper footing and balance at all times.
- **Maintain tools with care.** Keep tools sharp and clean for best and safest performance. Follow instructions given in the manual for lubrication and replacing accessories.
- **Turn the power OFF.** Before making any adjustments, make sure the switch is in the “OFF” position and the cord is un-plugged from the power outlet.
- **Make sure** you have read and understood all the safety instructions in the manual and you are familiar with your metal lathe, before operating it. If you fail to do so, serious injury could occur.

WARNING

***The safety instructions given above can not be complete because the environment in every shop is different. Always consider safety first as it applies to your individual working conditions*.**

CX700 – METAL LATHE

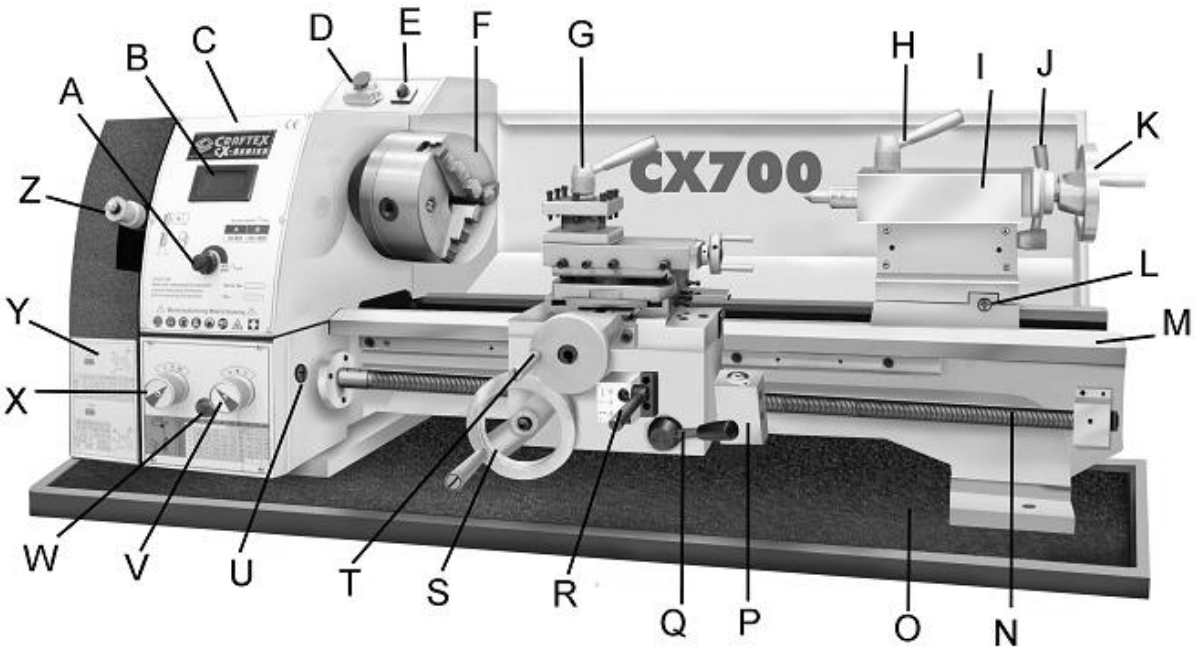
FEATURES

MODEL CX700 – 10” x 22” METAL LATHE WITH VARIABLE SPEED

As part of the growing line of Craftex metalworking equipment, we are proud to offer the CX700 a 10” x 28” Metal Lathe with Digital Readout. The Craftex name guarantees Craft Excellence. By following the instructions and procedures laid out in this user manual, you will receive years of excellent service and satisfaction. The CX700 is a professional tool and like all power tools, proper care and safety procedures should be adhered to.

- Motor ..... 1-HP, 0.75 KW, DC90 V, 8-Amps
- Swing Over Bed ..... 10” (250mm)
- Swing Over Cross Slide ..... 5-1/2” (140mm)
- Distance Between Centers ..... 21-3/4” (550mm)
- Width of Bed ..... 5-5/16” (135mm)
- Hole Through Spindle ..... 7/8” (21mm)
- Spindle Nose Taper MT3
- Number of Spindle Speeds ..... Variable
- Range of Spindle Speeds ..... A = 100 – 1100 RPM, B=200 – 2200 RPM
- Number of Metric Threads 15
- Range of Metric Threads ..... 0.35mm – 3.5mm
- Number of Imperial Threads 27
- Range of Imperial Threads ..... 8 – 56 T.P.I
- Tool Post Type 4-Way
- Max Compound Slide Travel ..... 3” (80mm)
- Max Cross Slide Travel ..... 4” (100mm)
- Maximum Carriage Travel ..... 22” (550mm)
- Tailstock Spindle Travel ..... 2-1/2” (65mm)
- Taper in Tailstock Spindle MT2
- Overall Dimension of the lathe ..... Length 47” x Width 26” x Height 22”
- Weight ..... 165 Kgs (364 lbs)
- Warranty 3-Years

CX700 - METAL LATHE
PHYSICAL FEATURES



A. Variable Speed Switch
B. Spindle RPM Digital Readout
C. Headstock
D. ON/OFF, Emergency Switch
E. Forward/Reverse Switch
F. 3-Jaw Chuck
G. Four Way Tool Post
H. Tail Stock Quill Lock Lever
I. Tail Stock
J. Tailstock Lock Lever
K. Tail Stock Hand Wheel
L. Tailstock Adjustment Screw
M. Lathe Bed
N. Lead Screw
O. Chip Tray
P. Thread Dial Indicator
Q. Half Nut Lever
R. Feed Selector Lever
S. Carriage Hand Wheel
T. Cross Slide Hand Wheel
U. Gearbox Oil Fill Plug
V. Feed/Thread Selector Knob
W. Oil Sight Glass
X. Feed Rate Selector Knob
Y. Threading/Feeding Table
Z. Feed Direction Lever

SETUP

Before setting up your machine you should read and understand the instructions given in this manual.

The unpainted surfaces of this lathe are coated with a rust preventive waxy oil and you will want to remove this before starting assembly. Use a solvent cleaner that will not damage painted surfaces.

WARNING

CX700 is a very heavy machine, do not over-exert yourself. Use fork truck or other mechanical devices for safe moving method

When setting up your machine, you will want to find an ideal spot where your metal lathe will most likely be positioned most of the time.

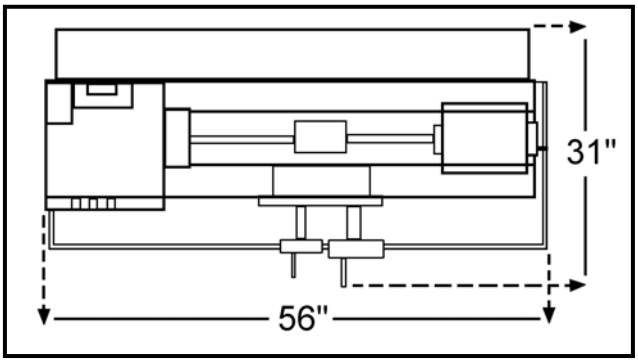


Figure-1 CX700 Foot print

UNPACKING

To ensure safe transportation this machine is properly packaged and shipped completely in crates. When unpacking, carefully inspect the crates and ensure that nothing has been damaged during transit. Open the crates and check that the machine and the parts are in good condition.

LIST OF CONTENTS **QTY**

A. Face Plate 1
B. Change Gears 17
C. 4-Jaw Chuck 1
D. 3-Jaw Chuck 1
E. Steady Rest 1
F. Follow Rest 1
G. External Jaws for 3-Jaw Chuck 3
H. Dead Center MT3, MT2 2
I. Oil Gun 1
J. Toolbox 1
K. 4-Way Tool Post 1
L. Wrenches (8-10, 12-14) 2
M. Hex Wrenches (2, 3, 4, 5, 6) 5
N. Chuck Keys 1
O. Screw Drivers (Flat & Cross Head) .. 2
P. Lathe (Not Shown) 1

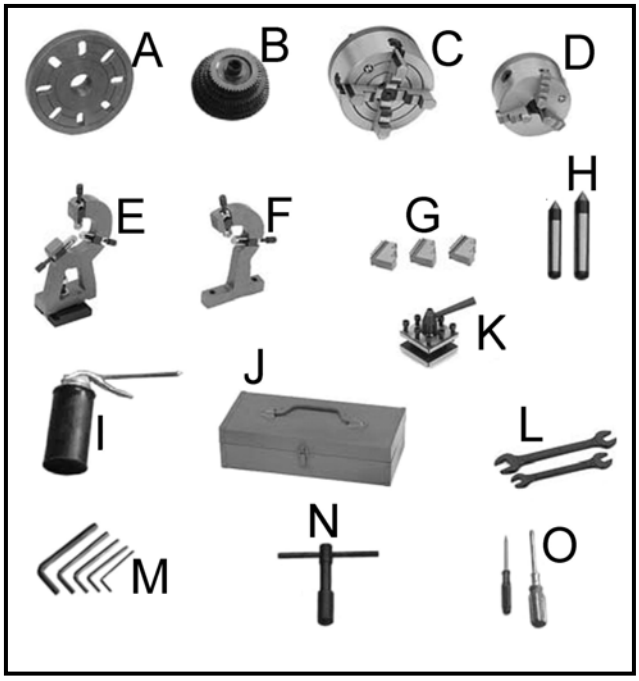


Figure-2 Inventory

While doing inventory, if you can not find any part, check if the part is already installed on the machine. Some of the parts come assembled with the machine because of shipping purposes.

PROPER GROUNDING

Grounding provides a path of least resistance for electric current to reduce the risk of electric shock.

CX700 is equipped with a DC 90-V single phase motor.

To prevent electrical hazards, have a qualified electrician ensure that the line is properly wired.

This lathe is for use on a normal 110 volt circuit. Make sure that the appliance is connected to an outlet having the same configuration as the plug. If an adaptor plug is used, it must be attached to the metal screw of the receptacle.

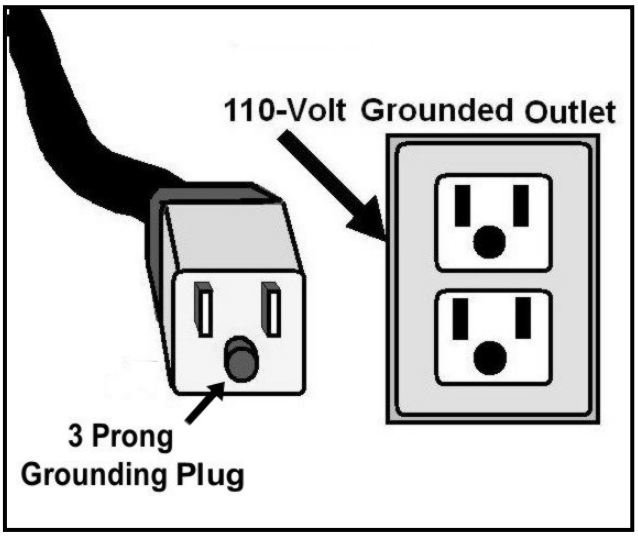


Figure-3 110-Volts Outlet for CX700

WARNING

Improper connection of the equipment-grounding conductor can result in a risk of electric shock. Check with a qualified electrician if you are in doubt as to whether the outlet is properly grounded.

It is strongly recommended not to use extension cords with your CX700. Always try to position your machine close to the power source so that you do not need to use extension cords.

Incase if you really find it necessary to use an extension cord, make sure the extension cord does not exceed 50-feet in length and the cord is 12-gauge to prevent motor damage.

Your CX700 should be wired with a plug having 3-prongs to fit a 3 prong grounding receptacle as shown in figure-3.

Do not remove the grounding prong to fit it into a 2-pronged outlet. Always check with a qualified electrician if you are in doubt.

CHUCK

CX700 comes equiped with a 125mm, 3-jaw chuck, a 125mm, 4-jaw chuck and a 220mm faceplate.

The 3-jaw chuck is a scroll type chuck, meaning that all three jaws move in union when adjusted while the 4-jaw chuck features four independent jaws. The 4-jaw chuck is used to clamp square or unevenly-shaped work-pieces.

The chucks feature three hex nut and three set screws for mounting as shown in figure-4.

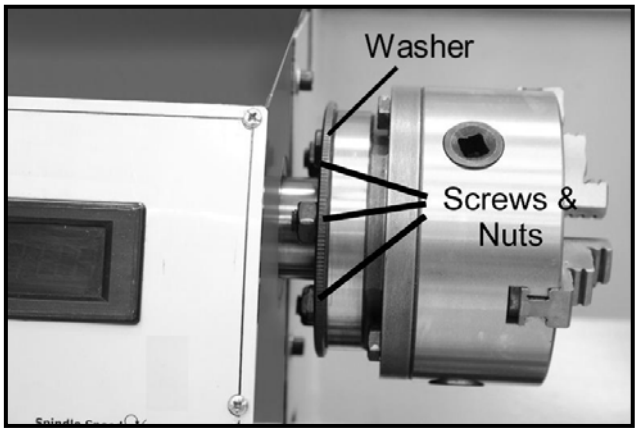


Figure-4 Chuck mounting screws and nuts

When removing the chuck, loosen the hex nuts, turn the washer counter-clockwise and pull out the chuck. See figure-4.

STEADY REST

The steady rest supports long, small diameter stock that otherwise could not be turned. The steady rest can also replace the tailstock to allow for cutting tool acces at the outboard end of your work-piece.

To mount the steady rest:

Secure the steady rest to the lathe bed from below with a locking plate.

A single cap screw, along with a nut and washer hold the steady rest in place as shown in figure-5.

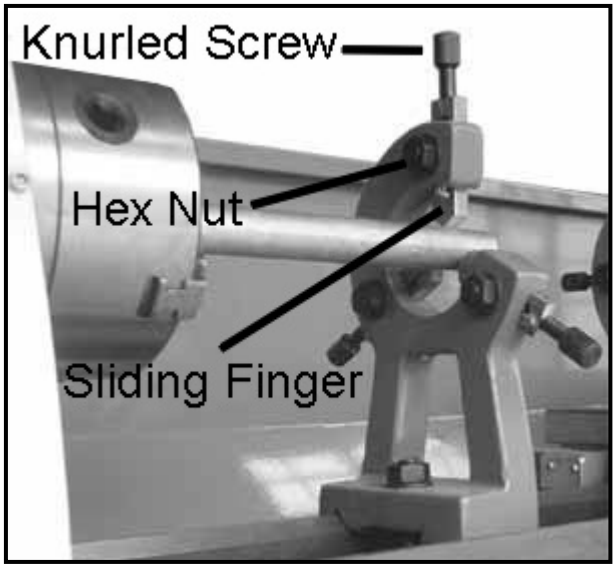


Figure-5 Steady rest

TO SET-UP THE STEADY REST:

Make sure the switch is in the OFF position and the cord is disconnected from the power source.

Loosen the hex nuts shown in figure-5.

Loosen knurled screw and open the sliding fingers until the steady rest can be moved with its finger around the work-piece. Secure the steady rest in position. See figure-5.

Tighten the knurled screw so that the fingers are snug but not tight against the work-piece. Tighten three nuts shown in figure-5 and lubricate the sliding points with machine oil.

The sliding fingers of the steady rest shown in figure-5 should receive periodic lubrication when used, to prevent premature wear.

FOLLOW REST

The follow rest is mounted on the saddle with two cap screws shown in figure-6 and it follows the movement of the turning tool. Only two sliding fingers are required. The place of the third finger is taken by turning tool. The follow rest is used for turning operations on long slender work-pieces. It prevents flexing of the work-piece under pressure from the turning tool.

Set the fingers snug to the work-piece and make sure not to over tighten. Lubricate the fingers during operation to prevent premature wear.

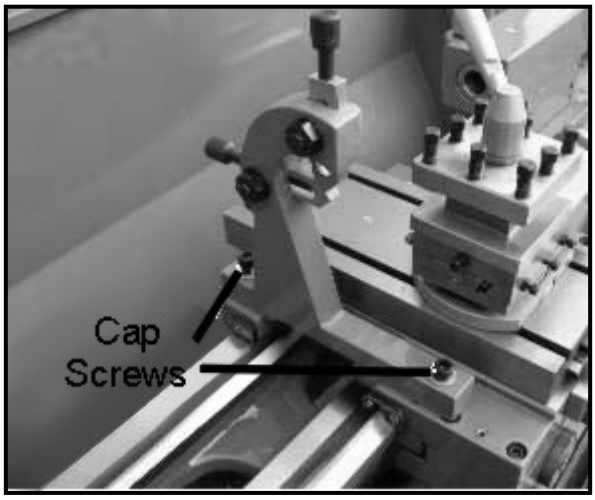


Figure-6 Follow rest installed

LATHE BED

The lathe bed is made of high quality iron. The lathe bed features high cheeks with strong cross ribs ensuring low vibration and rigidity. It integrates the headstock and drive unit, for attaching the carriage and leads crews. The two precision ground V-sideways are re-enforced by heat hardening and grinding to guide the carriage and the tailstock accurately. The main motor is mounted to the rear of the left side of the bed.

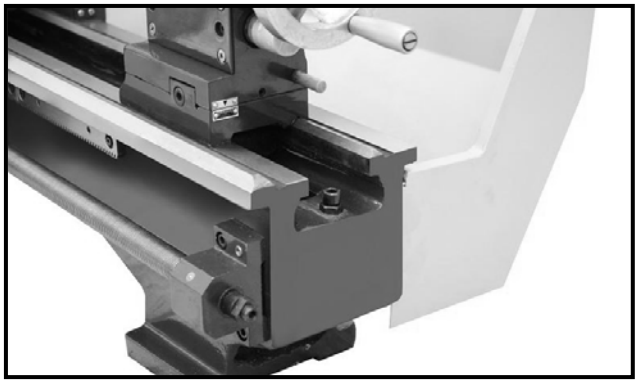


Figure-7 Lathe bed

HEADSTOCK

Made from high quality, cast iron for low vibration, the headstock is bolted to the bed with four screws. The headstock houses the main spindle with two precision taper roller bearings and the drive unit.

The main spindle transmits the torque during the turning process and it also holds the work-piece and clamping devices.

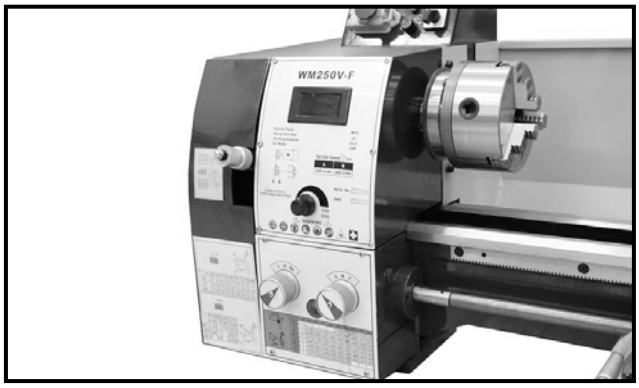


Figure-8 Headstock

GEARBOX

The gearbox is located on the left side of the lathe and is mounted on the bed. It is used to select the feeds for straight turning as well as for thread cutting. In order to achieve certain thread pitches, it is necessary to replace the change gears.

The torque of the work spindle is transmitted to the feed gears and thus to the lead screw.

Figure-9 Gearbox

HEADSTOCK CONTROLS

EMERGENCY ON/OFF BUTTON: The On/Off button allows to start and stop the machine.

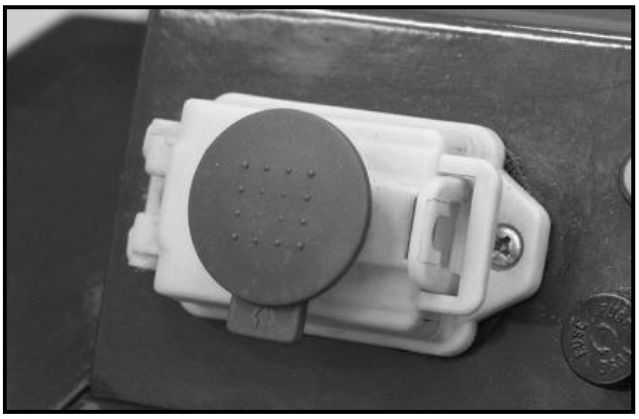


Figure-10 ON/OFF switch

FORWARD / REVERSE SWITCH: After the machine is switched ON, turn the switch to "F" position for counter-clockwise spindle rotation (forward).

Turn the switch to "R" position for clockwise spindle rotation (Reverse).

Turning the switch to "0" position the spindle remains idle.

Figure-11 Forward / Reverse switch

FEED RATE SELECTOR KNOB: Use the feed rate selector knob to set the desired feed or thread rates. See figure-12.

FEED THREAD SELECTOR KNOB: For thread selecting, shift the knob to the left and for feed selecting, shift the knob to the right. See figure-12.

FEED DIRECTION LEVER: Pull the knob on the feed direction lever to disengage and position the lever up or down to change the rotating direction of the carriage Release the nut to lock the lever in position.

Putting the lever in the top position, moves the carriage to the left along the bed and

moves the top slide towards the work-piece, while the spindle is turning counter-clockwise.

Putting the lever in the bottom position, moves the carriage to the right along the bed and moves the top slide away from the work-piece, while the spindle is turning counter-clockwise.

Putting the lever in the middle position, disengages the gears and the feed screw does not turn, while the spindle is turning counter-clockwise.

VARIABLE SPEED CONTROL KNOB: Turn the knob clockwise to increase the spindle speed and counter-clockwise to decrease the spindle speed. The possible speed range is dependent on the position of the drive belt. See figure-12.

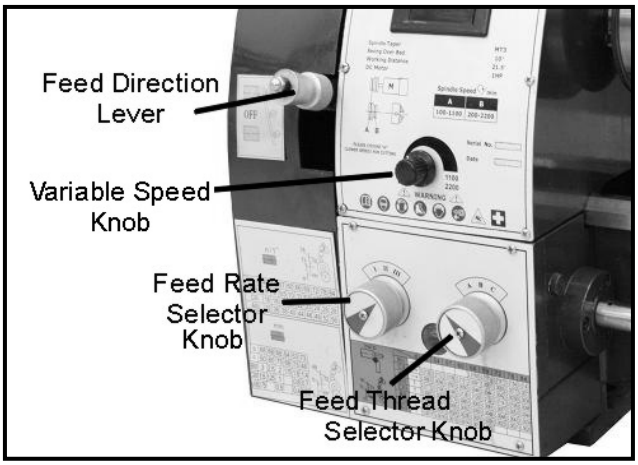


Figure-12 Headstock controls

APRON

The apron is mounted to the saddle and to the front side of the bed and it houses the half nut with an engaging lever for activating the automatic feed. The half nut gibs can be adjusted from the outside.

SADDLE

The saddle is made from high quality cast iron and all sliding parts are smoothly ground to fit the V on the bed without play.

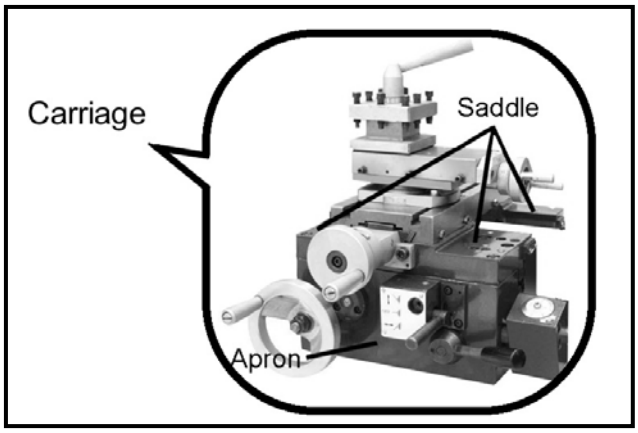


Figure-13 Saddle and apron

CARRIAGE CONTROLS

The carriage allows the cutting tool to move along the length of the lathe bed .The cross slide allows the cutting tool to travel perpendicular to the bed. The carriage features a top slide which allows linear movement of the cutting tool at any preset angle .This section will review the individual controls on the carriage and provide descriptions of their uses.

LONGITUDINAL TRAVEL HAND WHEEL: Turning the longitudinal hand wheel, moves the carriage left or right along the bed .The control is helpful when setting up the machine for turning, when manual movement is desired during turning operations. See figure-14.

CROSS SLIDE HAND WHEEL: Turning the cross slide hand wheel, moves the cross slide towards or away from the work-piece. The graduated scale can be adjusted

using the same method as the longitudinal scale. See figure-14.

TOP SLIDE HAND WHEEL: The top slide hand wheel controls the position of the cutting tool relative to the work-piece .The top slide is adjustable for angle as well as longitudinal travel. It can be adjusted a full 360°, if needed. The graduated scale is adjustable using the same method as the other hand wheels. See figure-14.

TOOL POST: A four-way tool post is supplied with the CX700. Cutting tools can be attached and removed by tightening or loosening the clamping bolt. See figure-14.

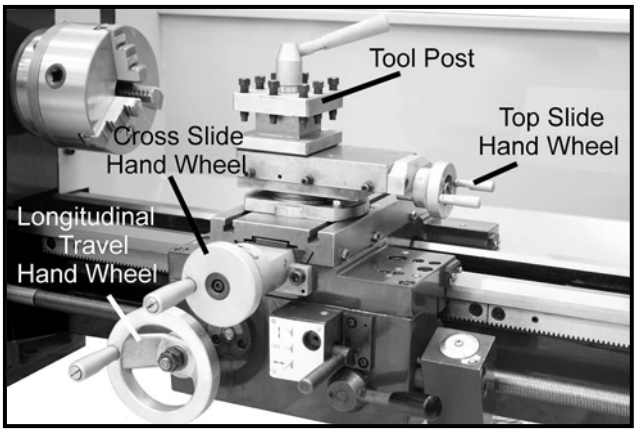


Figure-14 Carriage controls

FEED SELECTOR LEVER: Moving this lever upward engages the automation longitudinal feed. Moving this lever down engages the automation transverse feed. See figure-15.

WARNING

DO NOT simultaneously engage the feed selector lever and the half nut lever. Doing so will damage the lathe.

HALF NUT LEVER: This lever engages and disengages the half nut on the lead screw. The lever is only engaged while turning threads in stock. A lockout device feature in the lever mechanism engages when the feed selector is used.

THREADING DIAL INDICATOR: This indicator tells you when to engage the half nut for threading process. See figure-15.

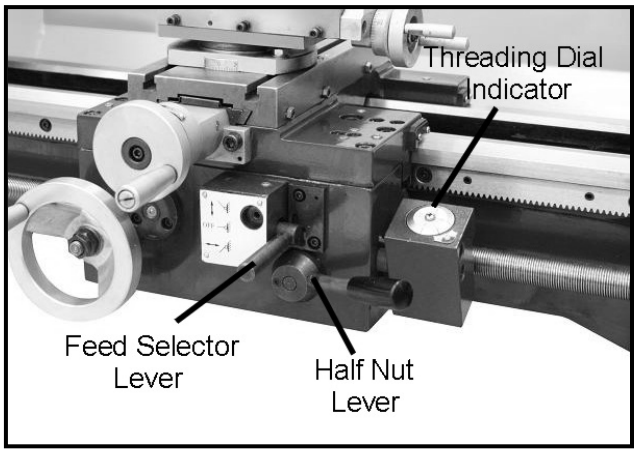


Figure-15 Carriage controls

LEAD SCREW

The lead screw is mounted on the front of the machine bed. It is connected to the gear box at the left for automatic feed and is supported by bearing on both ends.

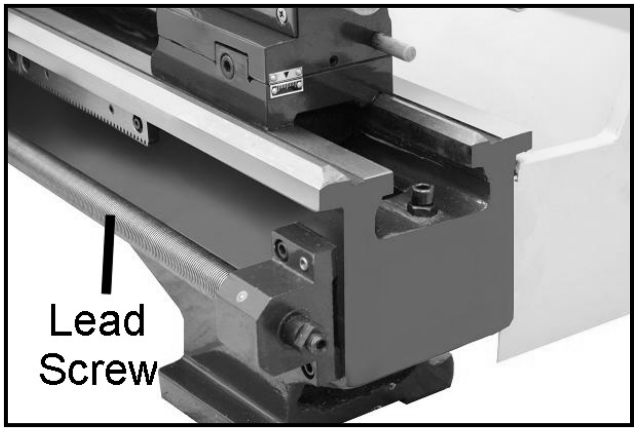


Figure-16 Lead screw

TAILSTOCK

The tailstock slides on a V-way and can be clamped at any location. The tailstock has a heavy duty spindle and the spindle can be clamped at any location with a clamping lever. The spindle is moved with a hand wheel at the end of the tailstock.

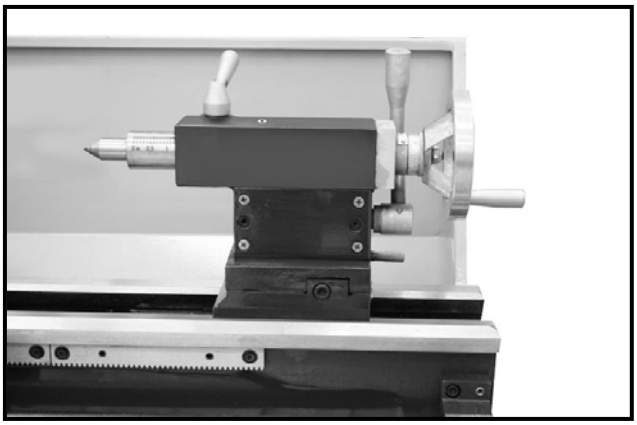


Figure-17 Tailstock

Make sure to install the securing screw at the end of the lathe as shown in figure-10 in order to prevent the tailstock from falling off the lathe bed.

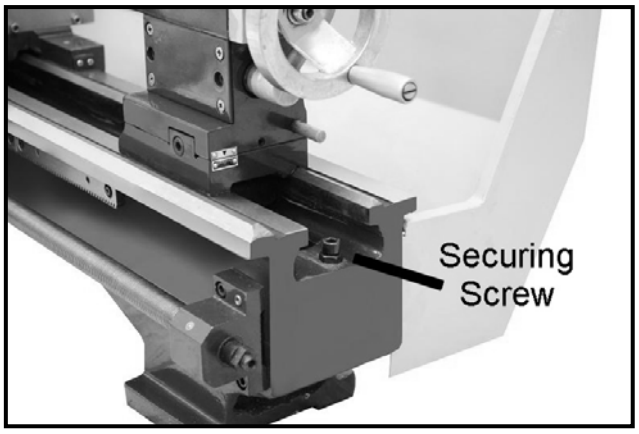


Figure-18 Installing the securing screw on the lathe bed

TAILSTOCK CONTROLS

TAILSTOCK HAND WHEEL: Turning the hand wheel advances or retracts the quill in the tailstock. The graduated scale on the hand wheel is adjustable. See figure-19.

QUILL LOCK LEVER: This lock lever locks the quill in position when tightened. See figure-19.

TAILSTOCK LOCK LEVER: Turn this lock lever up to lock and down to unlock the tailstock in position on the lathe bed. See figure-19.

ADJUSTMENT SCREW: This set screw is used to align the tailstock with the headstock. See page-21 for details on center alignment.

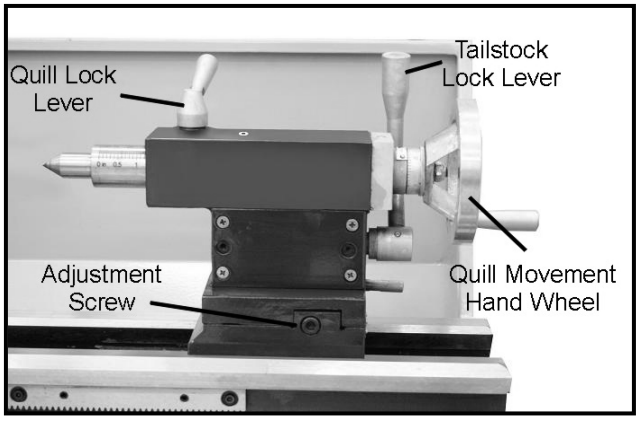


Figure-19 Tailstock controls

TEST RUN

Once you have assembled your lathe completely, it is then time for a test run to make sure that the lathe works properly and is ready for operation.

Remove all the tools used for assembling the machine and make sure all the guards are in place.

WARNING

Before starting the lathe, make sure that you have read and understood the manual and you are familiar with the functions and safety features on this machine. Failure to do so may cause serious personal injury.

To ensure the carriage controls do not move unexpectedly when the lathe is started, rotate the feed direction selector knob so that the arrow is pointing to the middle (neutral) position. See figure-20.

Figure-20 Feed direction selector knob

Connect the cord to the power outlet and turn the machine ON.

While test running the machine, check the following:

The Emergency Stop & ON/OFF buttons are working properly.

The chuck and jaws are properly secured and working properly.

While the machine is running, turn the variable speed control knob clockwise to make sure it is working properly.

Let the machine run for 10 minutes at the Low Speed.

During the test run if there is any unusual noise coming from the lathe or it vibrates excessively, turn OFF the power switch immediately and disconnect from the power source Investigate if you can find out the problem with your machine. See page-26 for troubleshooting.

If the machine is running smoothly, proceed to the next step.

Change the belt for High Speed and let the machine run for another 10 minutes. See page-16 for details on speed change.

Turn the machine OFF and turn the Forward/Reverse switch to “R” position. Turn the machine back ON and make sure the spindle is rotating clockwise (reverse).

WARNING

Do not make any adjustments while the machine is running. Failure to follow this warning can cause serious personal injuries to the operator and damage to the machine.

SPEED CHANGE

The rotating speed of the headstock is controlled by the positioning of the belts on the pulleys. These are accessed by removing the cover on the end of the headstock.

Refer to the plate on the headstock to determine which belt combinations produce what speeds. The speed settings available on the machine are 100 – 1100 RPM and 200 - 2200 RPM.

TO CHANGE THE SPINDLE SPEED:

Unscrew the two fastening knobs shown in figure-21 and remove the protective cover.

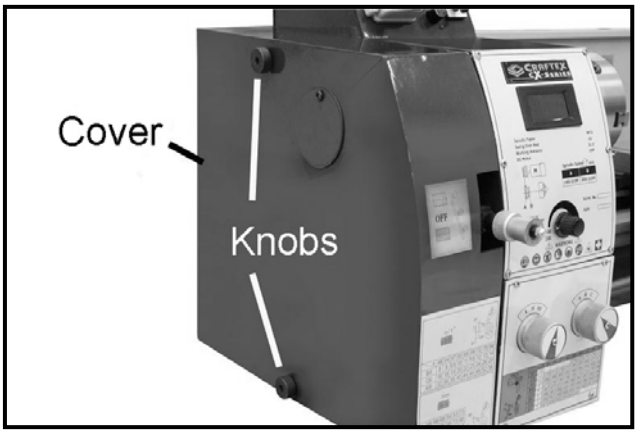


Figure-21 Removing the cover

Loosen the four nuts and screws shown in figure-22 and move the motor mounting pulley to release the tension on the belt.

Once the belt tension is released, reposition the belt on the pulleys grooves for high or low spindle speed.

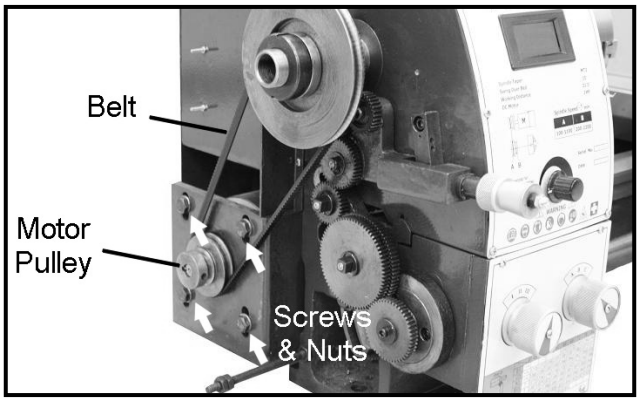


Figure-22 Screws and nuts securing the motor mounting plate

Position the belt on the pulleys for high and low speed according to figure-23.

The low spindle speed is 100 – 1100 RPM while the high spindle speed is 200 – 2200 RPM.

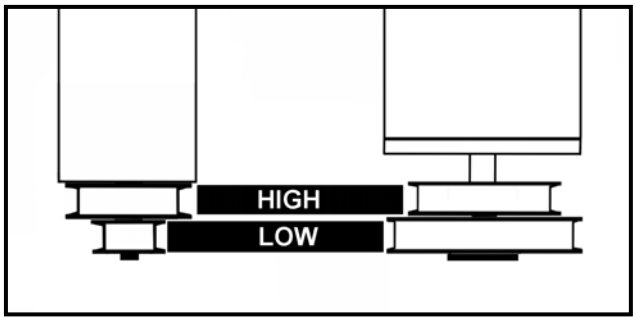


Figure-23 Belt position on the pulleys

Once the belt is on the right grooves, move the motor pulley back to its position to tension the belt.

Re-tighten the screws and nuts removed and re-install the protective cover.

IMPORTANT

We suggest selecting the low speed. It provides stronger torque while operation.

LONGITUDINAL TURNING WITH AUTO-FEED

Set the feed direction lever and feed rate selector knob shown in figure-24 to select the feed direction and feed speed.

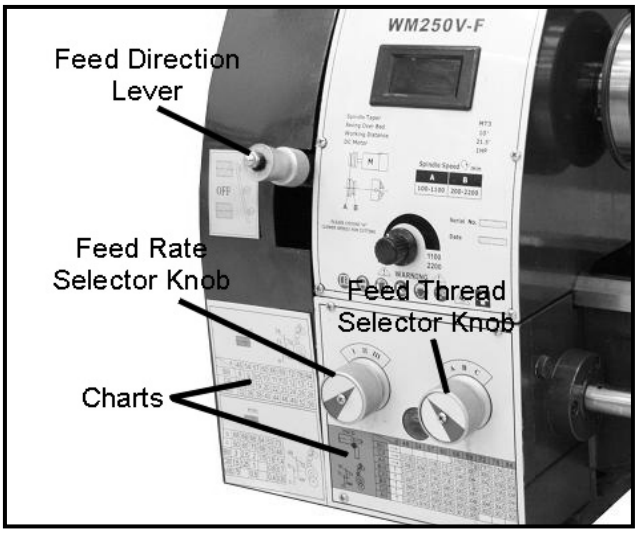


Figure-24 Feed rate selector knob, feed direction lever and chart

Use the chart on the lath for selecting the feed speed or the thread pitch. Select the proper gear set if the required feed or thread pitch can not be obtained with the installed gear set. Automatic feed is accomplished by moving the auto feed selector lever, up. See figure-25.

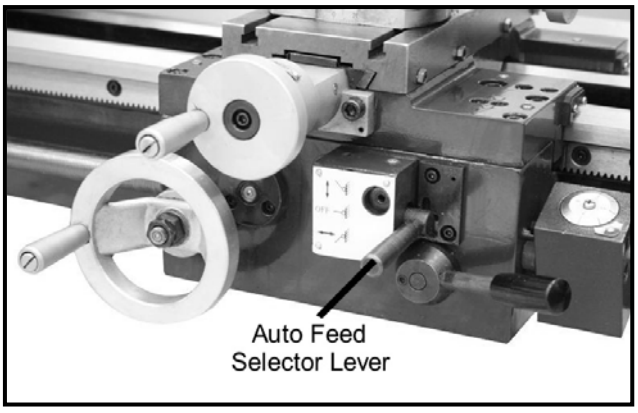


Figure-25 Auto feed selector lever

MANUAL LONGITUDINAL TURNING

In this turning operation, the tool feeds parallel to the axis of rotation (longitudinal) of the work-piece. Manual feed is accomplished by turning the carriage hand wheel on the lathe apron or the top slide. The cross feed for the depth of cut is achieved using the cross slide. See figure-26.

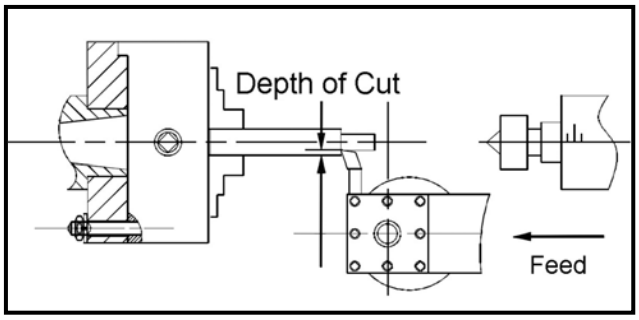


Figure-26 Straight turning

FACING AND RECESSES

In the facing operation, the tool feeds perpendicular to the axis of rotation of the work-piece. The feed is made manually with the cross slide hand wheel. The depth of cut is made with the top slide. See figure-27.

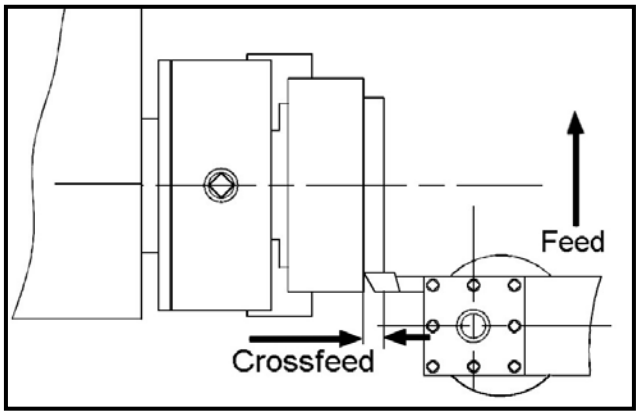


Figure-27 Facing & dressing

TURNING BETWEEN CENTERS

For turning between centers, it is necessary to remove the chuck from the spindle. Fit the MT2 center into the reducing sleeve (not provided) and fit the reducing sleeve into the spindle taper. If you are using the MT3 center (provided), you can simply fit the center into the spindle taper.

Mount the work-piece fitted with the driver dog between the centers. The driver is driven by a catch or face plate. See figure-28.

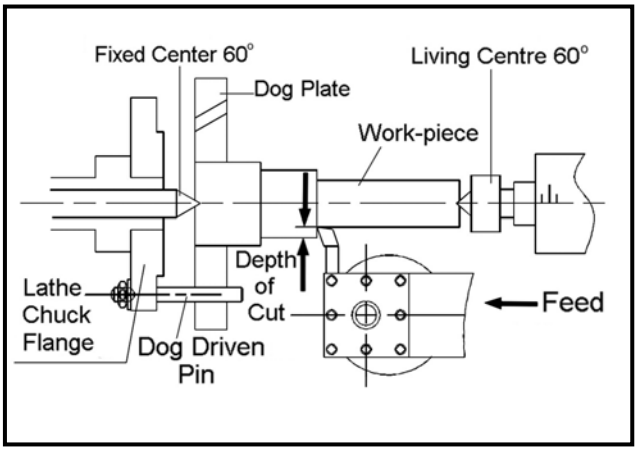


Figure-28 Turning between centers

IMPORTANT

Always use a small amount of grease on the tailstock center to prevent center tip from over heating.

THREAD CUTTING

Several different threads can be cut using the proper combination of gears and settings.

IMPERIAL THREAD: When cutting inch threads, the half nut and threading dial are used to thread in a conventional manner. The threading and feeding chart on the headstock specifies at which point a thread can be entered using the threading dial.

METRIC THREAD: The only difference in metric thread cutting is that the half nut must remain engaged during the entire threading process. The thread dial can not be utilized.

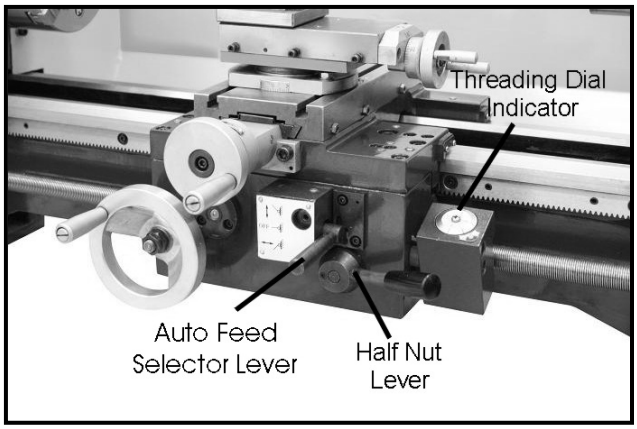


Figure-29 Half nut and threading dial

Set the machine up for the desired thread pitch.

Start the machine and engage the half nut. When the tool reaches the end of the cut, stop the machine by turning the motor off and at the same time back the tool out off the work-piece so that it clears the thread.

Do not disengage the half nut lever.

Reverse the motor direction allowing the cutting tool to traverse back to the starting point.

Repeat these steps until you have obtained results.

LEFT AND RIGHT THREAD CUTTING: The left and right thread cutting is done using the feed direction selector knob. Turning the feed direction selector knob counter-clockwise, cuts left thread while turning it clockwise, cuts right thread.

> ***IMPORTANT***
> *We suggest selecting the low speed. It provides stronger torque while operation.*

CHANGE GEARS REPLACEMENT

To replace the change gears:

Make sure the switch is in the OFF position and the cord is unplugged from the power outlet.

Unscrew the two fastening knobs and remove the protective cover to access the change gears.

Unscrew the bolt from the lead screw and the square bolts shown in figure-30 from the quadrant bolts in order to remove the change gears.

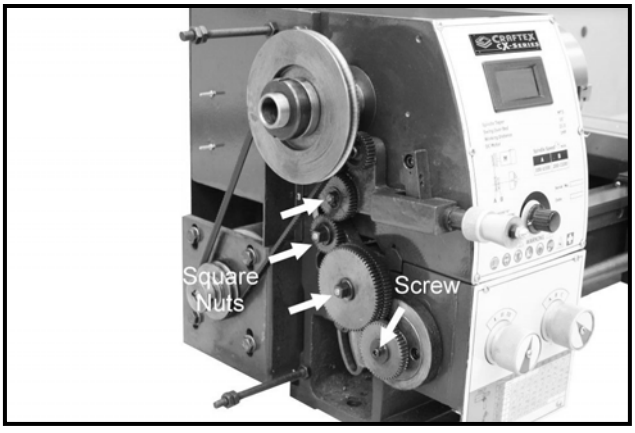


Figure-30 Change gears replacement

Select the proper gear set according to your requirements from the chart given on the head stock and install it onto the quadrant using nuts removed.

Re-install the protective cover.

GIBS ADJUSTMENT

There are two main gib screws adjustment for the machine; the cross slide gib screws and the top slide gib screws.

> ***WARNING***
> *Make sure the switch is in the OFF position and the cord is disconnected from the power source before making any adjustments. Failure to do so can result serious personal injury.*

CROSS SLIDE GIB SCREWS ADJUSTMENT

The adjustment gibs are located on the left side of the cross slide. To adjust gib, loosen the nuts holding the gibs. Tighten the gibs until excess movement is eliminated and retighten the nuts. See figure-31.

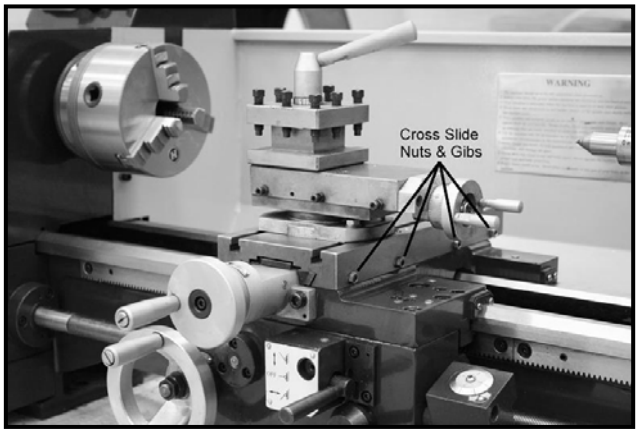


Figure-31 Cross slide adjustment gib screws

TOP SLIDE GIBS ADJUSTMENT

Locate the adjustment gibs on the side of the top slide as shown in figure-32. Loosen the nuts holding the gibs and then tighten the gibs until excess movement is eliminated. Once all the gibs are tightened properly, retighten the nuts.

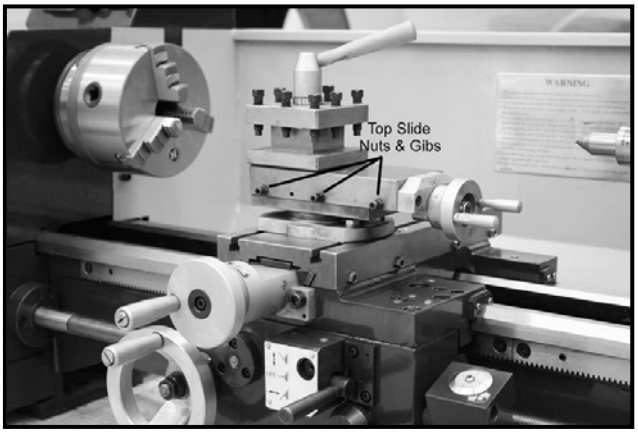


Figure-32 Top slide adjustment gibs screws

CHUCK RUN-OUT

If your lathe requires a higher level of accuracy, you may find it necessary to true-up the chuck to ensure minimal run-out.

To check and correct the chuck run-out:

Mount a piece of bar stock in the chuck. The stock should protrude approximately 50mm.

Use a dial indicator and measure the run-out at the end of the bar. In most cases, the amount of run-out will not exceed 0.12mm over 50mm which should be accurate enough for most applications. If the run-out on the chuck is excessive (e.g. greater than 0.15mm), the excess run-out should be eliminated.

Start by removing the chuck.

Remove the bolts, securing the back plate to the chuck. Tap along the edge of the mounting shoulder until the chuck and back plate are free of each other and thread back plate onto the spindle.

Remove about 0.12mm of material from the surface that the chuck mounts to. Be careful not to remove any material from the diameter of the shoulder. See figure-33.

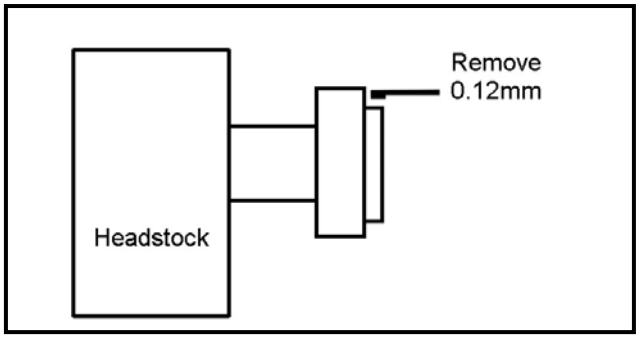


Figure-33 Turning the back plate

Install the chuck onto the back plate and check the run-out. If the run-out is not within an acceptable range, it may be necessary to turn a new shoulder on the back plate.

Before turning a new shoulder, measure the diameter of the recess in the back of the chuck accurately.

Remove approximately one half of the thickness of the shoulder (approximately 1.5mm). Remove the same thickness off the face of the mounting surface.

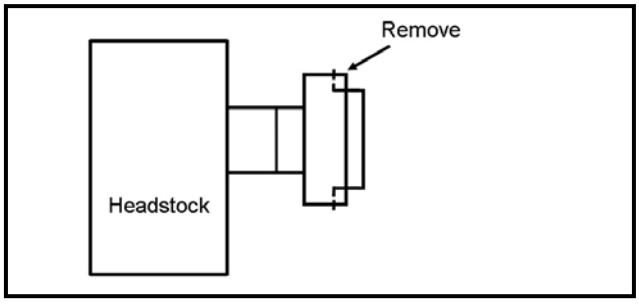


Figure-34 Turning new shoulder on back

The finished diameter of the shoulder should be 0.025mm larger than the diameter of the recess in the chuck. This is a critical step in minimizing chuck run-out.

Re-install the chuck and check for run-out.

HEADSTOCK & TAILSTOCK ALIGNMENT

The headstock and tailstock alignment has been adjusted properly in the factory before the machine is shipped to you. However, after lengthy operation, the headstock and tailstock may be out of alignment.

To check the centers alignment:

Center drill a 150mm piece of bar stock on one end and position it between the headstock and tailstock as shown in figure-35.

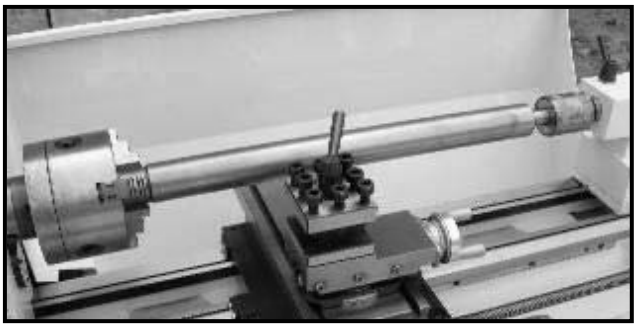


Figure-35 checking headstock and tailstock alignment

Turn approximately 0.025mm off diameter.

Measure the stock with a micrometer. If the stock is thicker at the tailstock end, the tailstock needs to be moved towards you to the amount of taper. See figure-36.

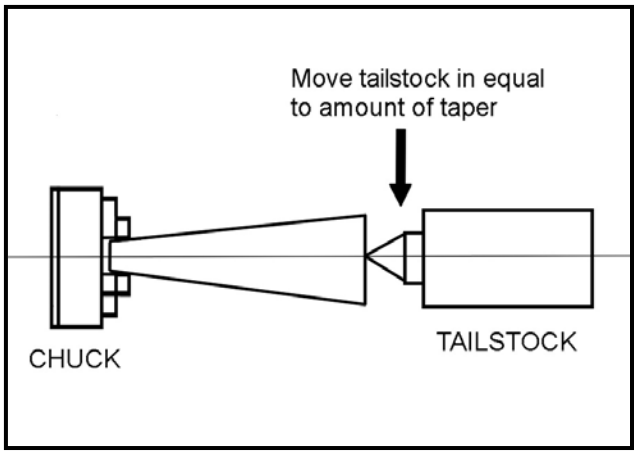


Figure-36 Stock thicker at the tailstock end

If the stock is thinner at the tailstock end, the tailstock needs to be moved away from you to the amount of taper. See figure-37.

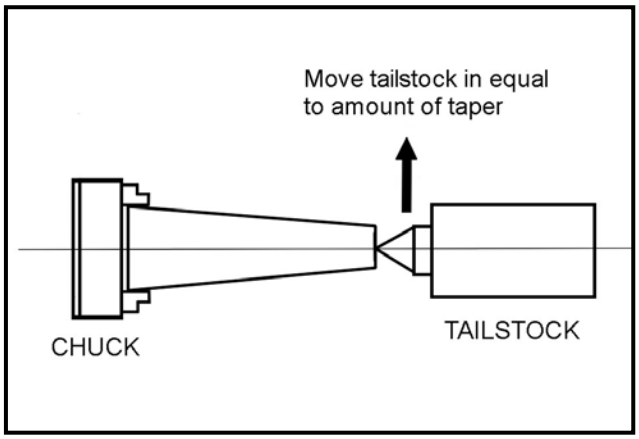


Figure-37 Stock thinner at the tailstock end

TO MOVE THE TAILSTOCK:

Make sure the switch is in the OFF position and the cord is disconnected from the power outlet.

Adjust the tailstock offset to the amount by turning the adjustment screw shown in figure-38.

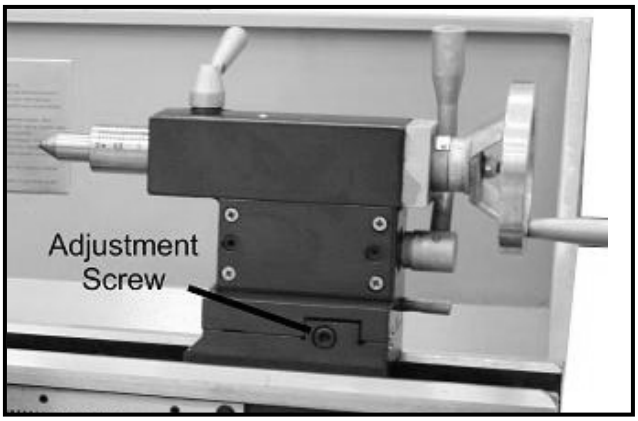


Figure-38 Tailstock offset adjustment screw

Turn another 0.5mm off the stock and check for taper. Repeat this procedure until the tailstock is aligned with the headstock.

MAIN SPINDLE BEARINGS

The main spindle bearings are adjusted at the factory. If end play becomes evident after considerable use, the bearings may be adjusted.

Loosen two hex socket cap screws in the slotted nut shown in figure-39. Tighten slotted nut until all end play is taken up. The spindle should still revolve freely.

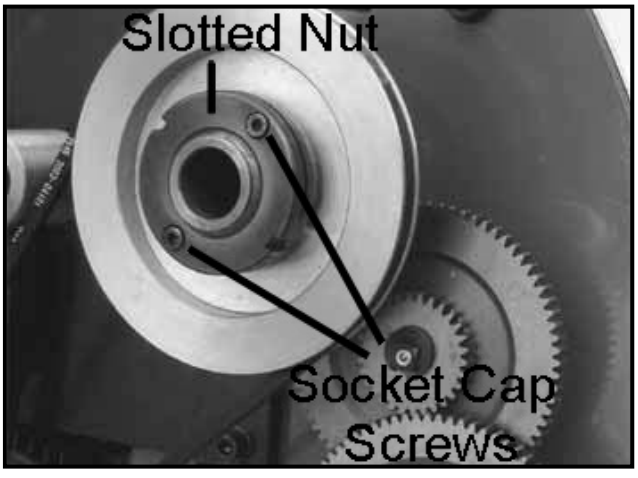


Figure-39 Main spindle bearing adjustment

Re-tighten the two hex socket cap screws.

CAUTION

Make sure not to tighten the hex socket cap screws excessively or it will damage the bearing.

LUBRICATION

Lubricate all slide-ways lightly before every use.

WARNING

Lathe must be serviced at all lubrication points and all reservoirs filled to operating level, before the lathe is placed into service. Failure to comply may cause serious damage.

GEARBOX

Oil must be up to the indicator mark in the oil sight glass as shown in figure-45. Fill by pulling plug shown in figure-40.

Figure-40 Fill plug location

CHANGE GEARS

Apply a few drops of oil on the gears teeth and avoid getting oil on the pulleys and belt.

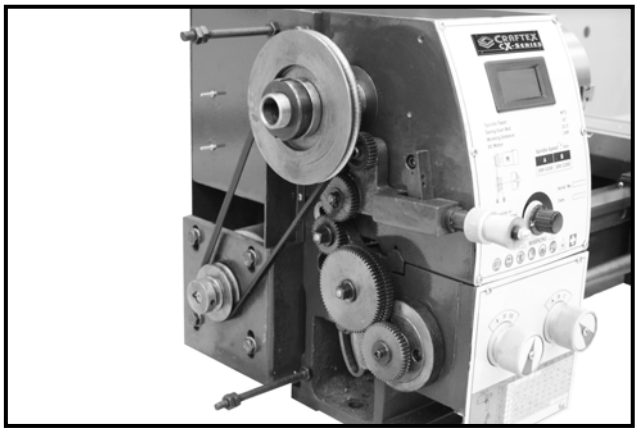


Figure-41 Gears

SADDLE

Lubricate the four oil ports (**A)** shown in figure-42 with 20W machine oil once daily.

CROSS SLIDE

Lubricate two oil ports **(B)** shown in figure-42 with 20W machine oil.

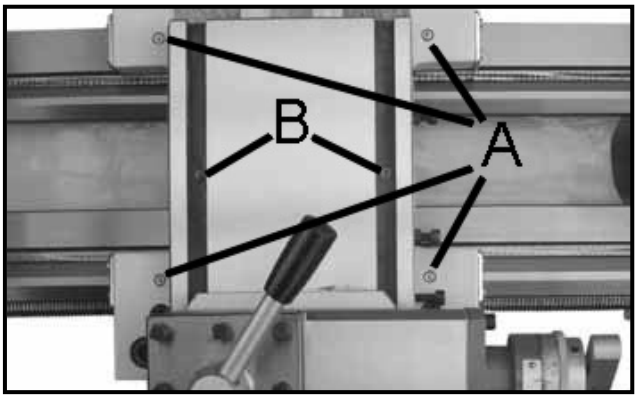


Figure-42 Oil ports locations

TOP SLIDE

Lubricate the two oil ports shown in figure-43 with 20W machine oil once daily.

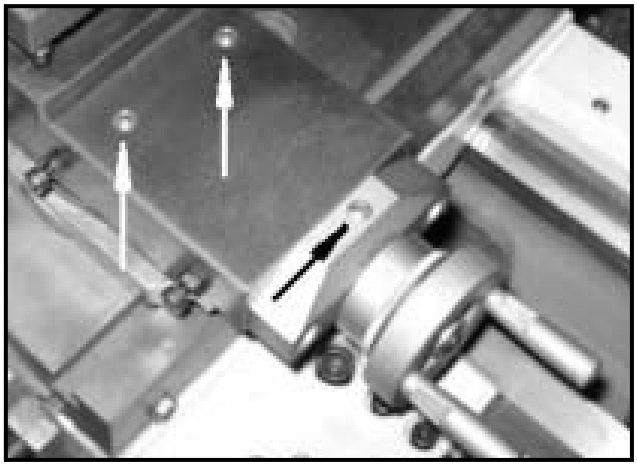


Figure-43 Top slide oil ports

LEAD SCREW

Lubricate the oil port (C) shown in figure-44 with 20W machine oil once daily.

TAILSTOCK

Lubricate the two oil ports (D) shown in figure-44 once daily.

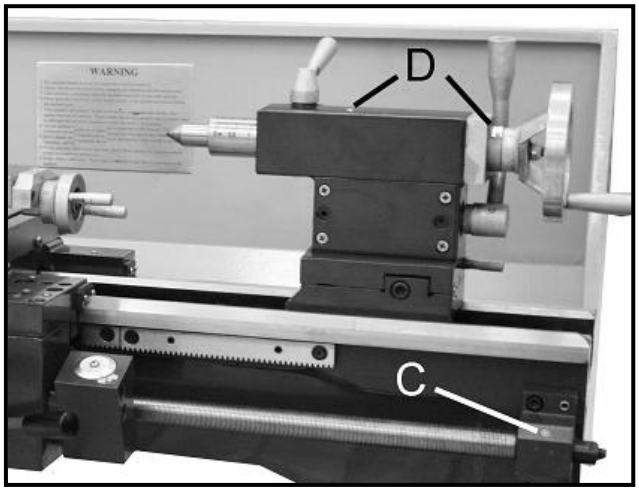


Figure-44 Oil ports locations

MAINTENANCE

During the life of your machine, you will need to practice some regular maintenance to keep your lathe in peak performance condition.

1. Treat the machine with care, keep it clean and grease and lubricate it regularly. Only through good care you can be sure that the working quality of the machine will remain constant.

> ***WARNING***
>
> *Make sure the machine is turned off and the cord is disconnected from the power source before servicing and removing/replacing any components on the machine.*

2. Oil, grease and cleaning agents are pollutants and must not be disposed off through the drains or in normal garbage. Dispose of those agents in accordance with current local environmental regulations. Cleaning rags impregnated with oil, grease and cleaning wool in a suitable closed vessel and disposed of in an environmentally sound way. Do not put them with normal garbage.

3. Lubricate all slide ways lightly before every use. The change gears and the lead screw must also be lightly lubricated with lithium based grease.

4. During operation, the chips which fall onto the sliding surface should be cleaned in a timely fashion. Frequent inspections should be made to prevent chips from falling into the position between the carriage and bed way.

> ***WARNING***
>
> *Do not remove the chips with your bare hands. There is a risk of cut due to sharp-edged chips. Never use flammable solvents or cleaning agents or agents that generate noxious fumes. Protect electrical components such as motors, switches, switch boxes, etc..., against humidity when cleaning.*

5. After the operation every day, eliminate all the chips and clean different parts of the machine tool and apply machine tool oil to prevent from rusting.

6. Make sure your work area is well ventilated.

7. Good housekeeping practice should be followed on a daily basis keeping your lathe clean and well lubricated.

OPTIONAL STAND

The CX700 features an optional stand and a chip tray Model CX700ST which can be bought separately.

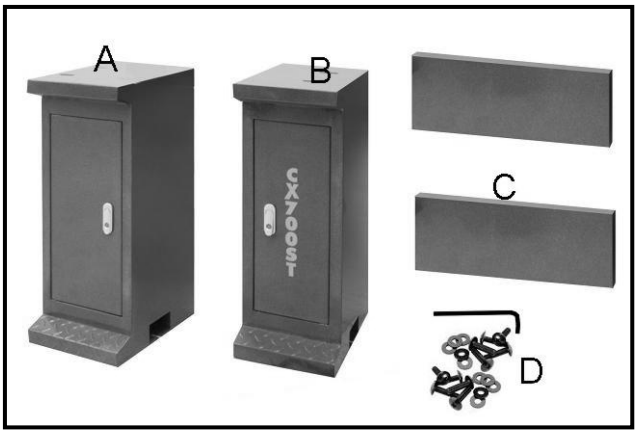


Figure-45 CX700 Stand inventory

LIST OF CONTENTS **QTY**

A. Left Cabinet..... 1
B. Right Cabinet 1
C. Connecting Brackets..... 2
D. Mounting Hardware..... 1 Bag

STAND ASSEMBLY

Before attaching the brackets to the stands, thread the bolts into the holes to break the paint ensuring smooth threading after.

Connect the left and right cabinet by attaching the brackets to the cabinets and securing those using screws and washers provided.

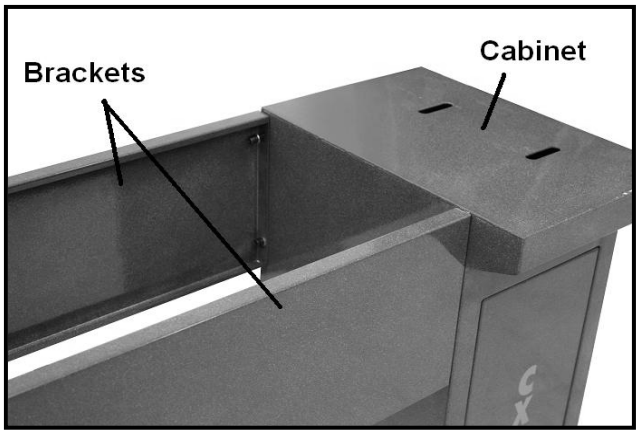


Figure-46 Mounting the lathe on the stand

Once both the brackets are properly secured to the cabinets, position the chip tray on the cabinets aligning the holes on the chip tray with the holes on the cabinet. Now, position the lathe on the stand using a fork truck. Align the holes on the machine with the holes on the chip tray and the cabinets.

Open the cabinets and insert the bolts and washers (provided with the stand) from the top and tighten the nuts, from inside cabinets.

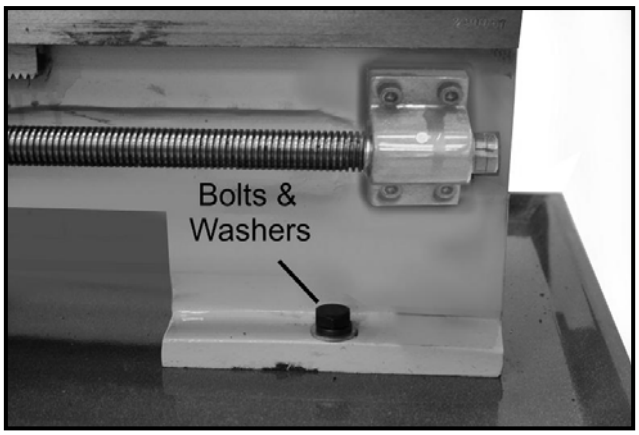
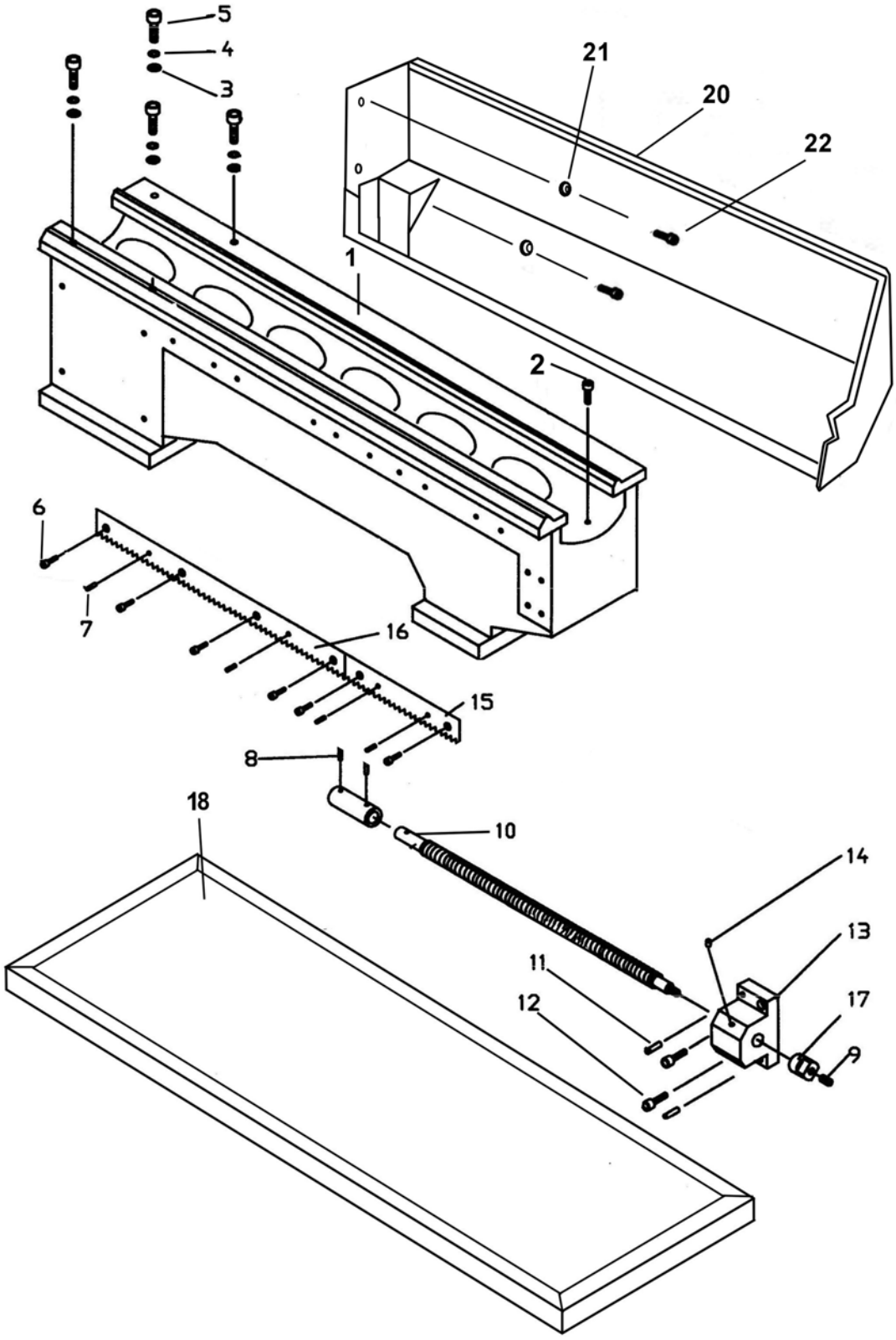


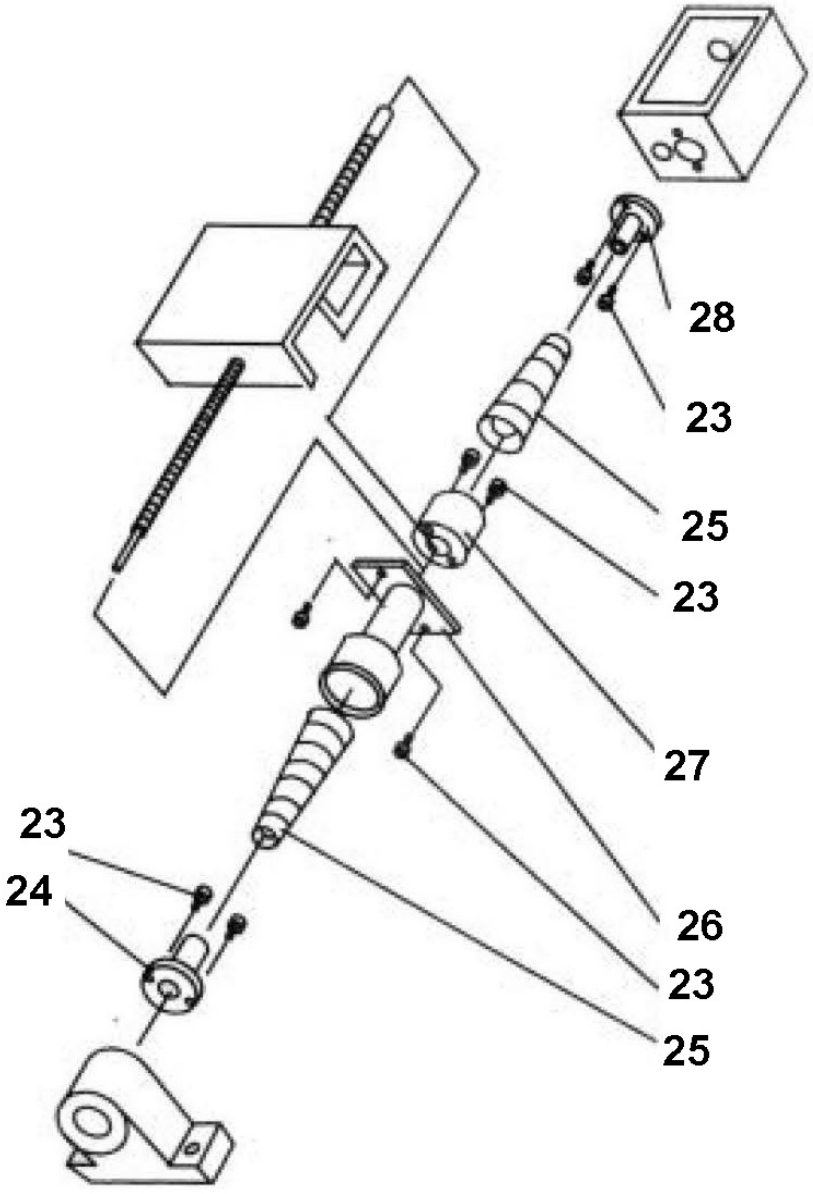
Figure-47 Lathe mounted on the stand

CX700 TROUBLESHOOTING

Problem	Possible Reason	Elimination
Surface of workpiece is too rough	Tool blunt Tool springs Feed too high Radius at the tool tip too small	Resharpen tool Clamp tool with less overhang Reduce feed Increase radius
Workpiece becomes coned	Centers are not aligned (tailstock has offset) Top slide not aligned well (cutting with the top slide)	Adjust tailstock to the center Align top slide well
Lathe is chattering	Feed too high Slack in main bearing	Reduce feed Adjust the main bearing
Center runs hot	Workpiece has expanded	Loosen tailstock center
Tool has a short edge life	Cutting speed too high Crossfeed too high Insufficient cooling	Reduce cutting speed Lower crossfeed(finishing allowance should not exceed 0.5mm) More coolant
Flank wear too high	Clearance angle too small Tool tip not adjusted to center high	Increase clearance angle Correct height adjustment of the tool
Cutting edge breaks off	Wedge angle too small (heat build-up) Grinding crack due to wrong cooling Excessive slack in the spindle bearing Arrangement (vibrations)	Increase wedge angle Cool uniformly Adjust the slack in the spindle bearing arrangement
Cut thread is wrong	Tool is clamped incorrectly or has been started grinding the wrong way Wrong pitch Wrong diameter	Adjust too to the center Grind angle correctly Adjust the right pitch Turn the workpiece to the correct diameter
Spindle does not activate	Emergency stop switch activated	Unlock emergency stop switch

BED PARTS BREAKDOWN

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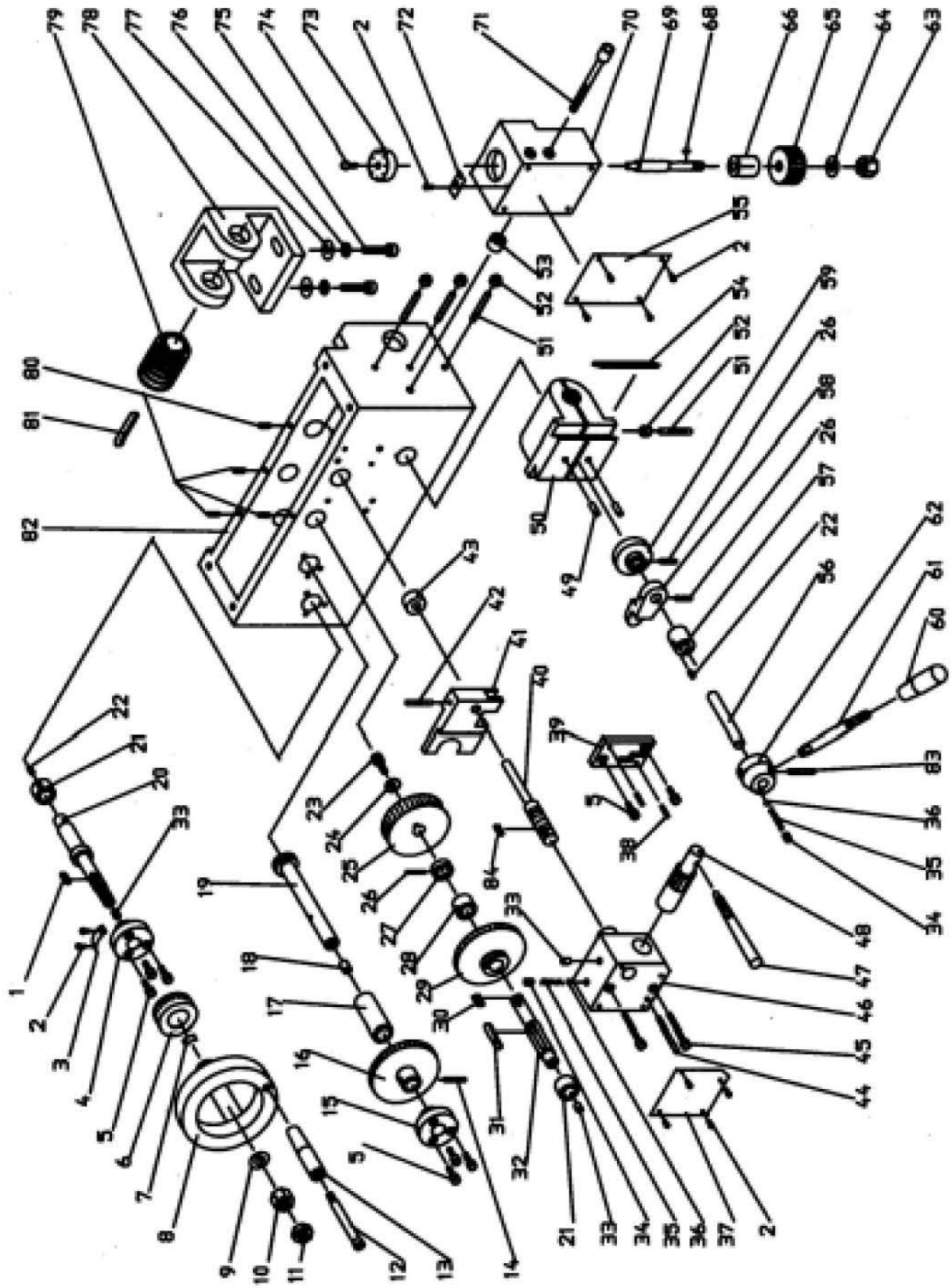
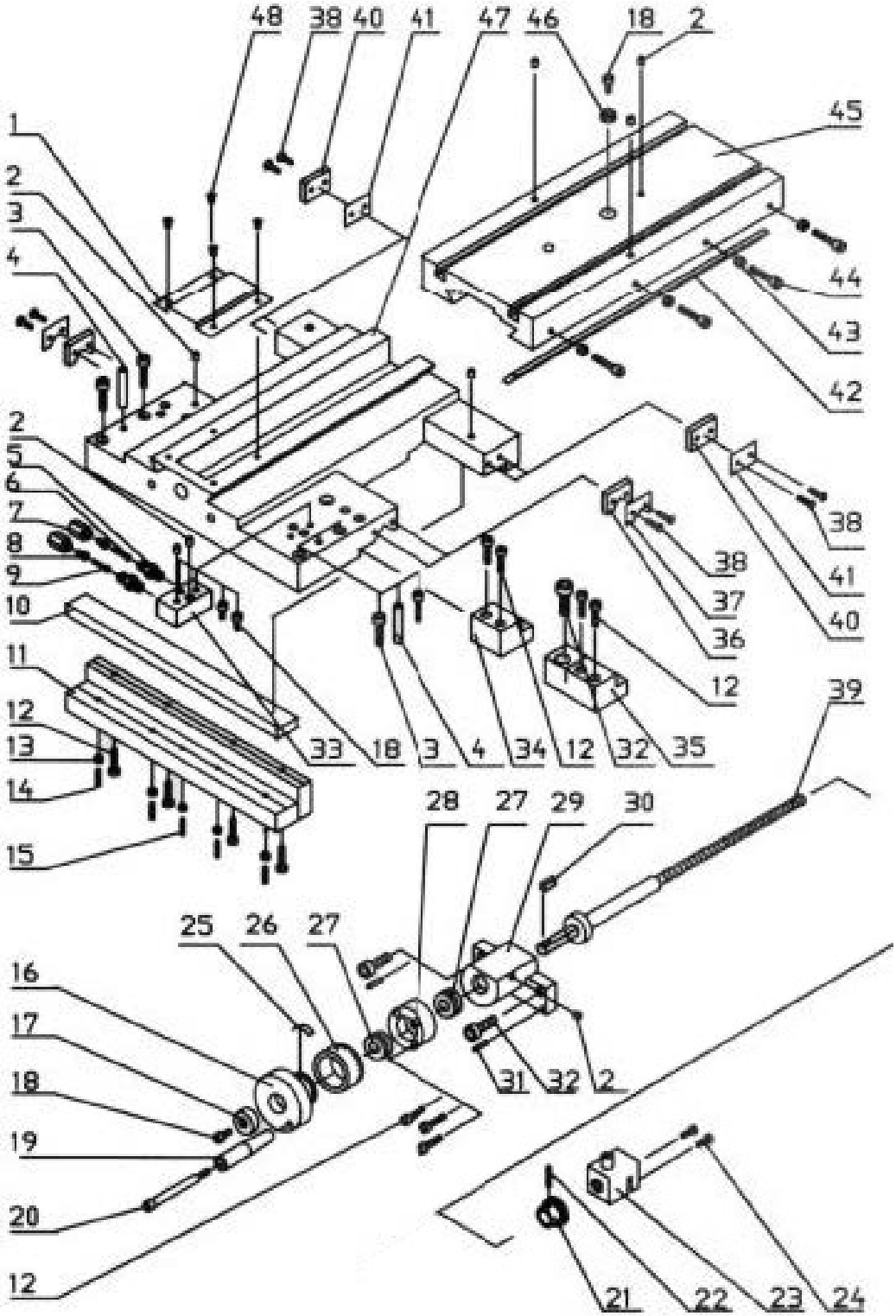
INDEX	DESCRIPTION
1	BED
2	SCREW CAP M8-1.25 X 16
3	WASHER FLAT M8
4	WASHER LOCK M8
5	SCREW CAP M8-1.25 X 25
6	SCREW CAP M4-0.7X 12
7	PIN 5 X 12
8	PIN 4 X 20
9	SCREW SET M10-1.50 X 8
10	LEADSCREW
11	PIN M6-1.0 X 25
12	SCREW CAP M6-1.0 X 16
13	BRACKET
14	OIL PORT M6
15	RACK SHORT
16	RACK LONG
17	NUT
18	CHIP TRAY
20	CHIP SHIELD
21	WASHER FLAT M6
22	SCREW CAP M6-1.0 X 8
23	SCREW M4-0.7 X 10
24	BRACKET
25	SCREW COVER
26	BRACKET
27	BRACKET
28	BRACKET

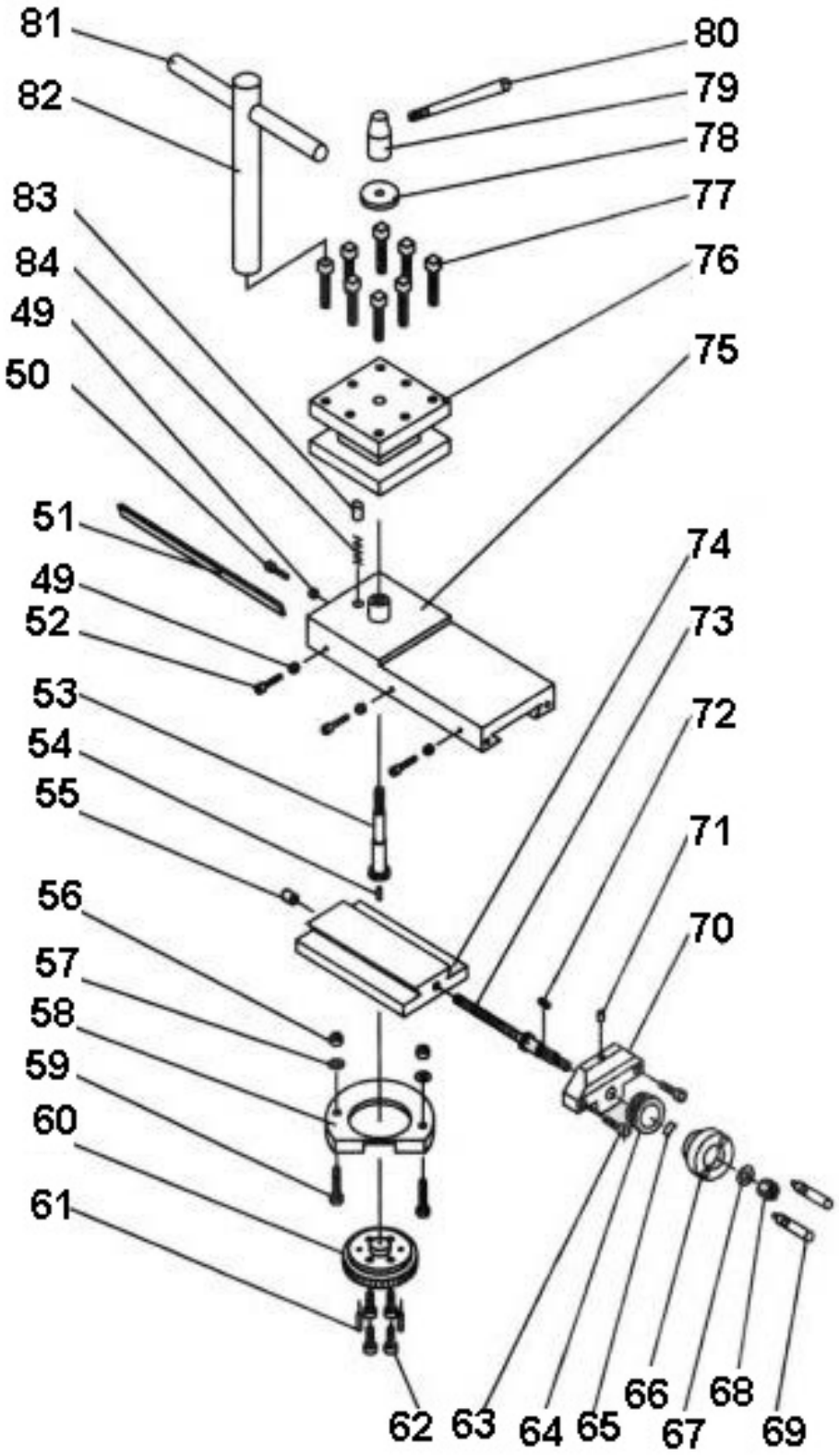
APRON PARTS BREAKDOWN



INDEX	DESCRIPTION
1	KEY A4-14
2	RIVET 2 X 4
3	PLATE
4	FLANGE
5	SCREW CAP M4-0.7 X 10
6	GRADUATED DIAL
7	CURSOR
8	HAND WHEEL
9	WASHER FLAT M10
10	NUT HEX M10
11	NUT HEX M10
12	HANDLE SCREW
13	HANDLE
14	PIN M4 X 20
15	FLANGE
16	GEAR 70T
17	SPACING RING
18	OIL PORT M8
19	GEAR SHAFT
20	GEAR SHAFT
21	BUSHING
22	SCREW M4-0.7 X 6
23	SCREW CAP M5-0.8 X 12
24	WASHER FLAT M5 (BIG)
25	GEAR 30T
26	PIN M3 X 18
27	SPACING RING
28	BUSHING
29	GEAR
30	KEY C4 X 10
31	KEY A5 X 30
32	SHAFT
33	OIL PORT M6
34	SCREW M6-1.0 X 6
35	SPRING
36	STEEL BALL M5
37	PLATE
38	PIN M3 X 12
39	LOCATING BLOCK
40	SHAFT
41	FORK
42	PIN M3 X 26
43	BUSHING
44	PIN M3 X 35
45	SCREW CAP M4-0.7 X 35
46	BRACKET
47	HANDLE
48	GEAR SHAFT
49	PIN M5 X 1
50	HALF NUT
51	SCREW M5-0.8 X 30
52	NUT HEX M5-0.8
53	WASHER
54	GIB
55	PLATE
56	SHAFT
57	BUSHING
58	LOCATING BLOCK
59	LOCKING CAM
60	LEVER HANDLE
61	LEVER
62	LEVER HAND
63	NUT HEX M8-1.25
64	WASHER FLAT
65	GEAR 45T
66	WASHER
68	KEY A3 X 8
69	SHAFT
70	BRACKET
71	SCREW CAP M6-1.0 X 60
72	PLATE
73	DIAL
74	SCREW M4-0.7 X 8
75	SCREW CAP M6-1.0 X 25
76	WASHER M6
77	WASHER BIG M6
78	BRACKET
79	WORM
80	SCREW M4-0.7 X 8
81	KEY A5 X 35
82	APRON CASTING
83	PIN M3 X 30
84	KEY A4 X 12

CROSS SLIDE PARTS BREAKDOWN

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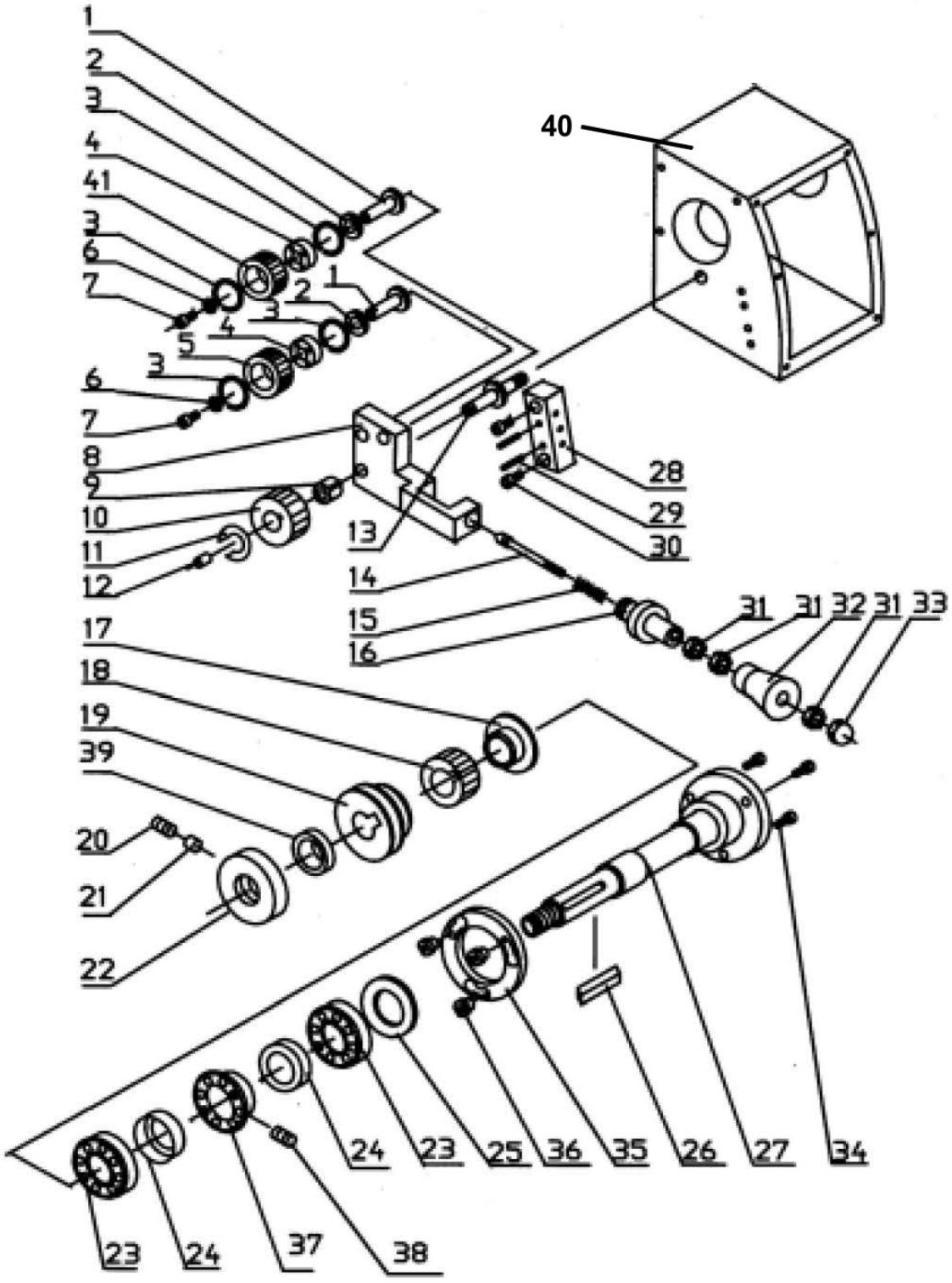
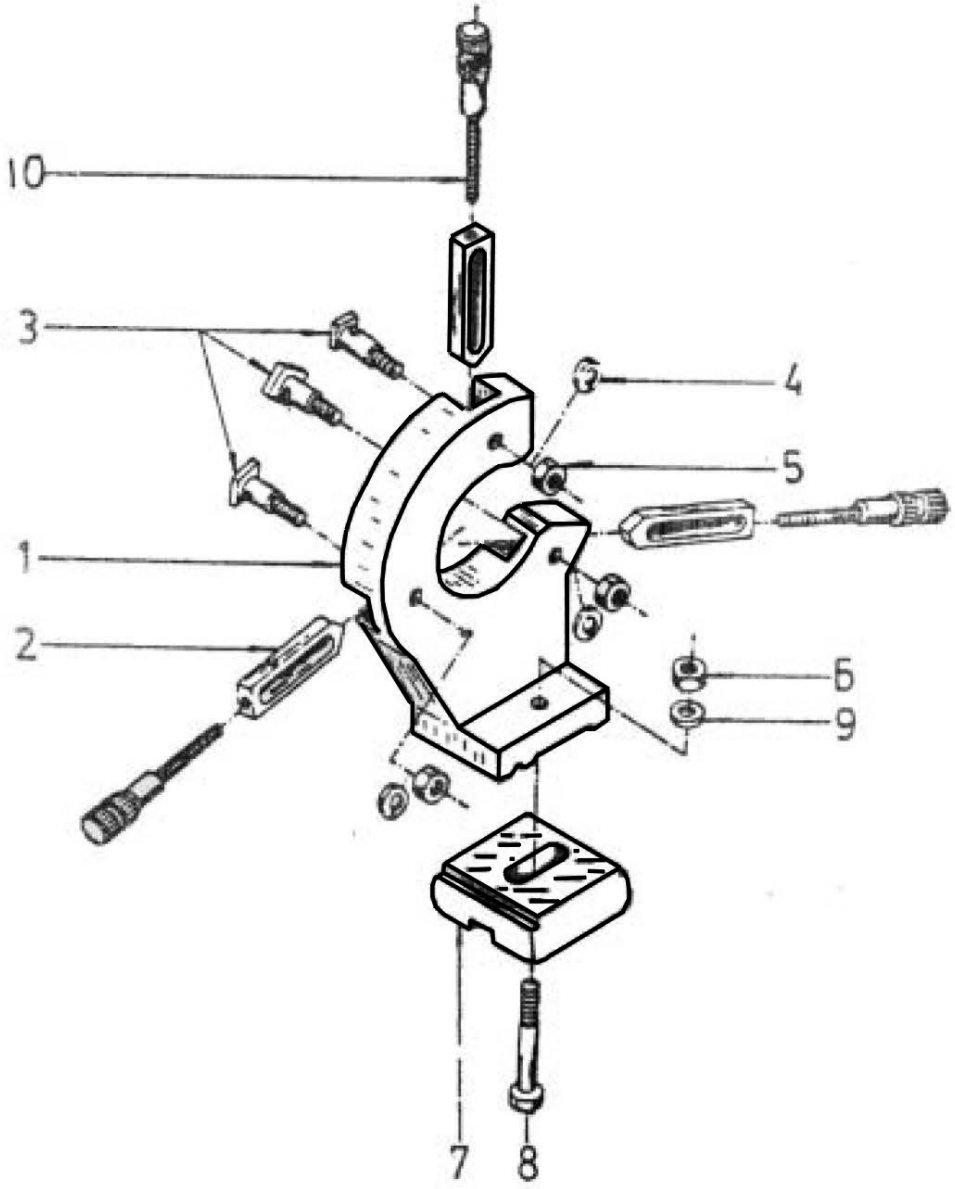
INDEX	DESCRIPTION
1	COVER
2	OIL PORT M6
3	SCREW CAP M6-1.0 X 35
4	PIN M6 X 35
5	NIPPER
6	PIPE
7	NIPPER NUT
8	PIPE BUSHING
9	PIPE
10	GIB
11	APRON TENSION BAR
12	SCREW CAP M5-0.8 X 20
13	NUT HEX M4-0.7
14	SCREW SET M4-0.7 X 16
15	SCREW SET M4-0.7 X 20
16	HAND WHEEL
17	WASHER
18	SCREW CAP M5-0.8 X 10
19	HANDLE
20	SCREW
21	GEAR 18T
22	PIN M4 X 20
23	NUT
24	SCREW SET
25	SPRING
26	GRADUATED DIAL
27	BEARING 12 X 26 X 9
28	BRACKET
29	BRACKET
30	KEY A4 X 83
31	PIN M3 X 16
32	SCREW CAP M8-1.25 X 20
33	BRACKET
34	SLIDE BLOCK
35	BRAKE CLIP
36	WAY WIPER
37	COVER
38	SCREW CAP M3- X 10
39	LEAD SCREW
40	WAY WIPER
41	COVER
42	GIB
43	NUT HEX M5-0.8
44	SCREW SET M5-0.8 X 25
45	CROSS SLIDE
46	WASHER
47	SADDLE
48	SCREW CAP M3- X 6
49	NUT HEX M4-0.7
50	SCREW CAP M4-0.7 X 12
51	GIB
52	SCREW CAP M4-0.7 X 20
53	SCREW
54	PIN M3 X 10
55	OIL PORT M10
56	NUT HEX M6-1.0
57	WASHER FLAT M6
58	COVER
59	SCREW HEX M6-1.0 X 25
60	GRADUATED DIAL
61	PIN M4 X 16
62	SCREW CAP M6-1.0 X 16
63	SCREW CAP M5-0.8 X 16
64	GRADUATED DIAL
65	SPRING
66	HAND WHEEL
67	WASHER FLAT M8
68	NUT HEX M8-1.25
69	HANDLE
70	LEAD SCREW MOUNT
71	OIL PORT M6
72	KEY A3 X 10
73	LEAD SCREW
74	SWIVEL BASE
75	COMPOUIND SLIDE
76	TOOL REST
77	SCREW SET M8-1.25 X 30
78	WASHER
79	NUT LOCKING
80	HANDLE
81	HANDLE
82	KEY
83	PIN
84	SPRING 0.5 X 3.5 X 17

GEAR BOX PARTS BREAKDOWN



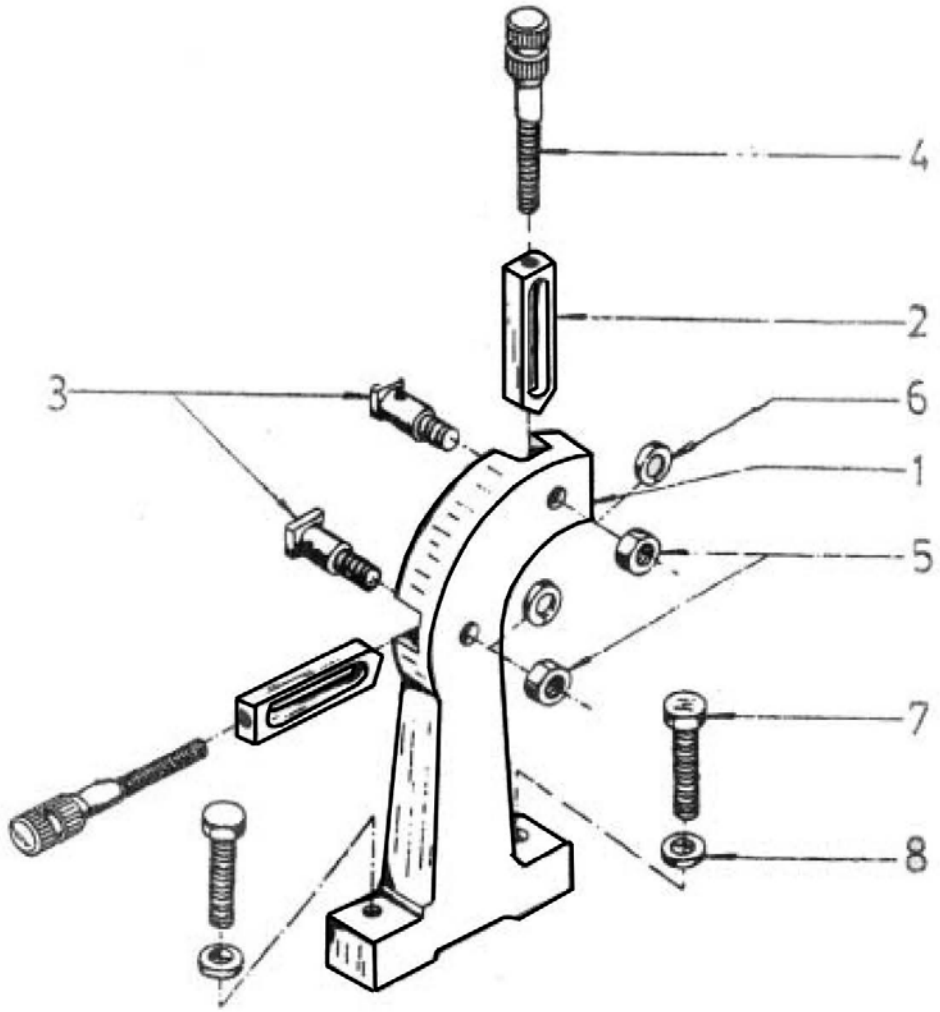
INDEX	DESCRIPTION
01	SHAFT
02	WASHER
03	C RING M22 (internal)
04	BEARING 1000900
05	GEAR 30T
06	WASHER FLAT M6
07	SCREW CAP M6-1.0 X 8
08	SHIFT ARM
09	BUSHING
10	GEAR 40T
11	WASHER SPECIAL M9
12	OIL PORT M6
13	SHAFT
14	LOCATING PIN
15	SPRING
16	BUSHING
17	SPACING RING
18	GEAR 40T
19	PULLEY
20	SCREW CAP M8-1.25 X 8
21	WASHER
22	SPANNER NUT
23	BEARING 2007107
24	COVER
25	GASKET
26	KEY A4 X 50
27	SPINDLE
28	LOCATING BLOCK
29	PIN M3 X 20
30	SCREW CAP- M6-1.0 X 16
31	NUT HEX M6-1.0
32	HANDLE
33	NUT CAP M6-1.0
34	SCREW CAP M6-1.0 X 12
35	WASHER
36	LOCATING BUSHING
37	RING
38	SCREW SET M4-0.7 X 8
39	SPACING RING
40	HEADSTOCK CASTING
41	GEAR 40T

STEADY REST PARTS BREAKDOWN



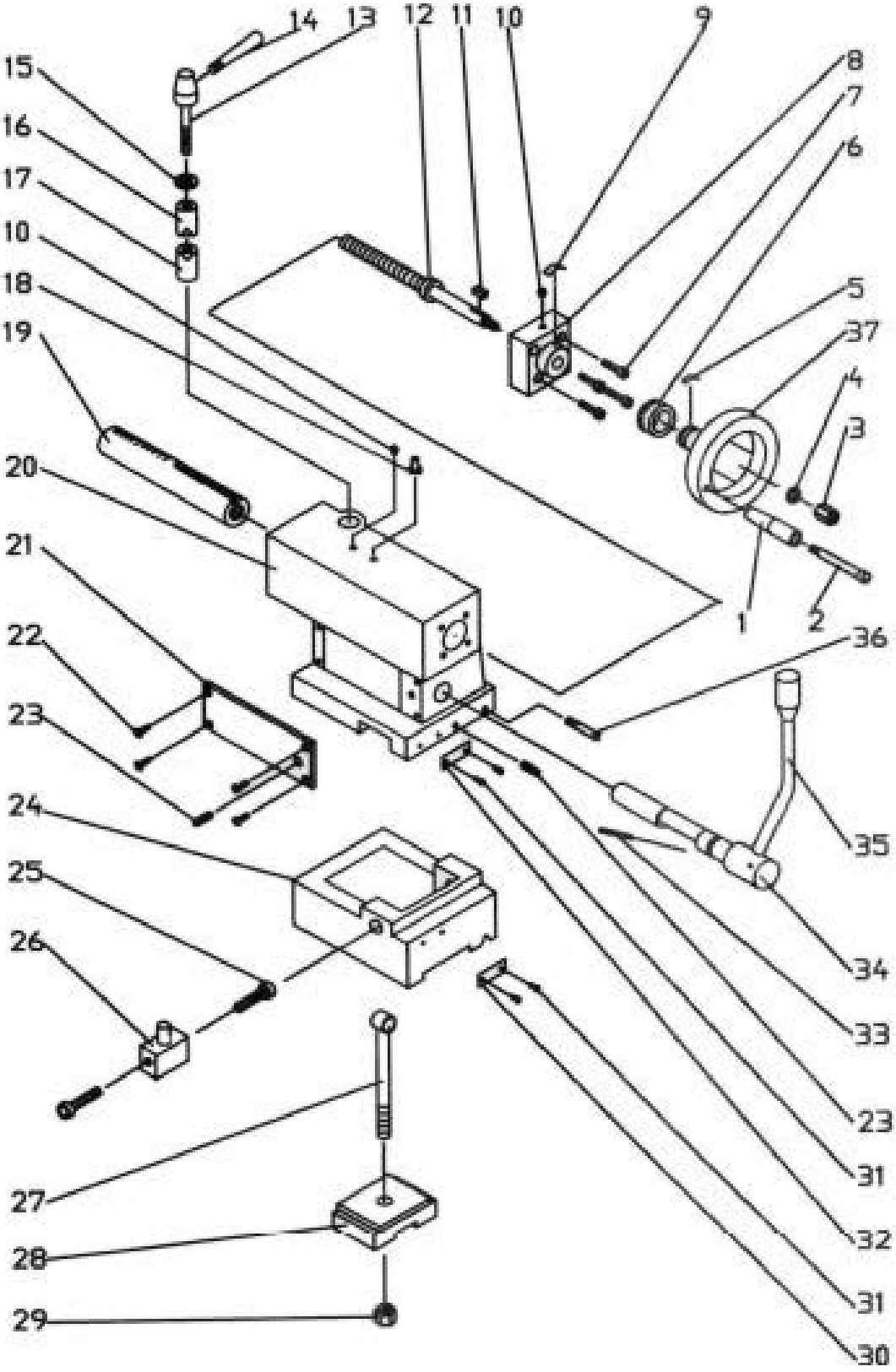
INDEX	DESCRIPTION
01	REST CASTING
02	JAW
03	SPECIAL SCREW
04	WASHER FLAT M10
05	NUT HEX M10-1.50
06	NUT HEX M12-1.75
07	CLAMPING PLATE
08	BOLT HEX HD M12-1.75 X 70
09	WASHER FLAT M12
10	ADJUSTING SCREW

FOLLOW REST PARTS BREAKDOWN



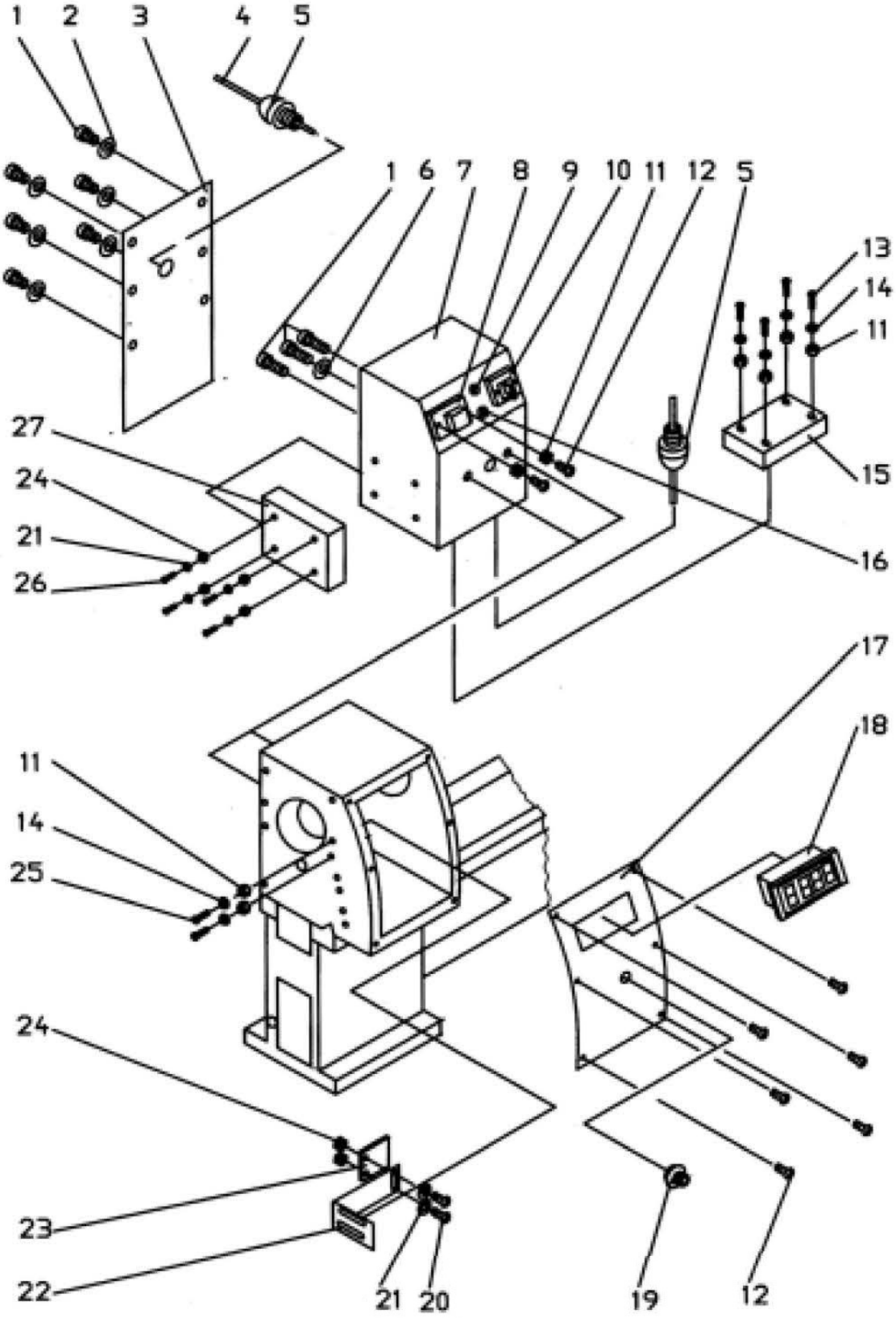
INDEX	DESCRIPTION
01	REST CASTING
02	JAW
03	SPECIAL SCREW
04	ADJUSTING SCREW
05	NUT HEX M10-1.50
06	WASHER FLAT M10
07	SCREW CAP M8-1.25 X 30
08	WASHER FLAT M8

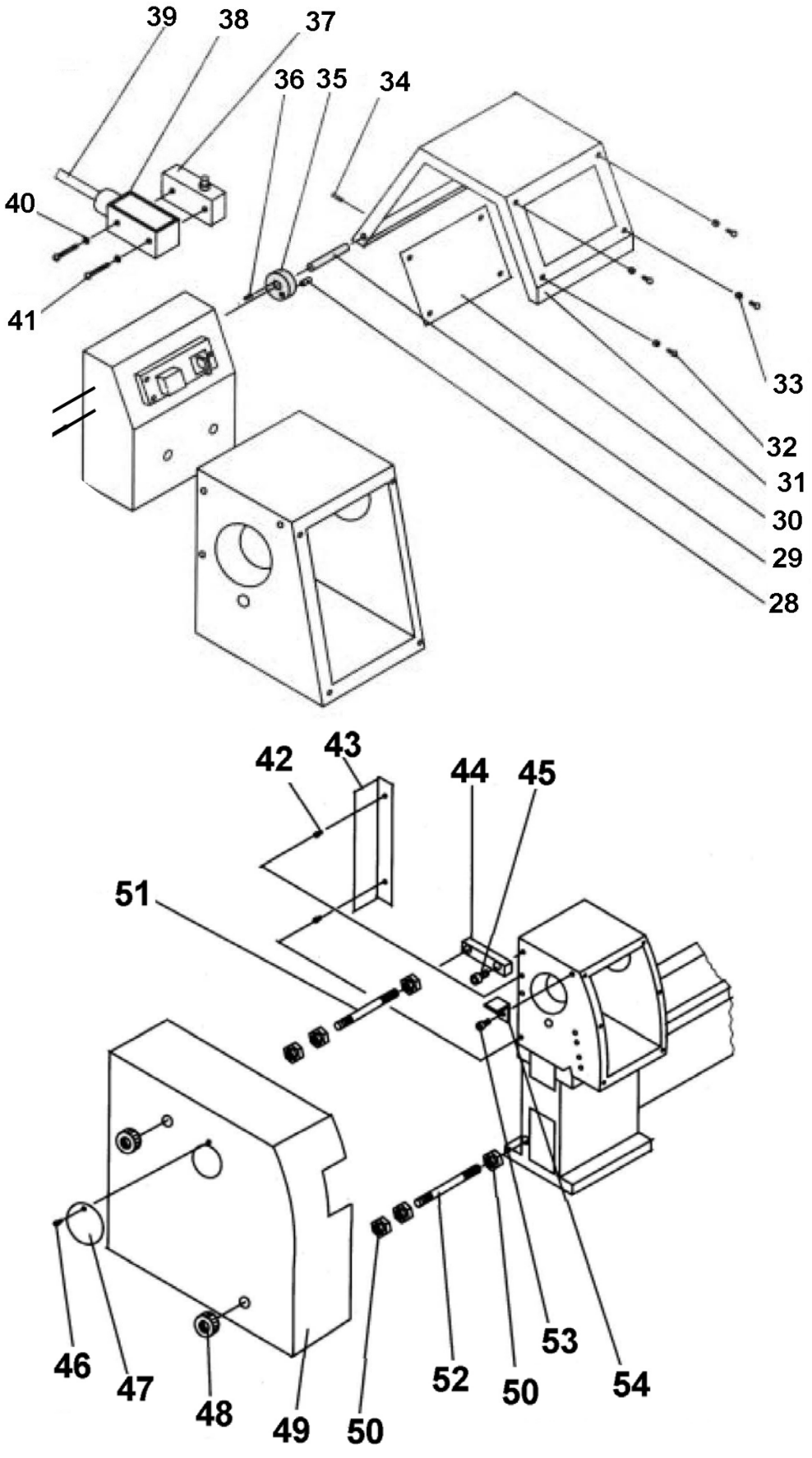
TAILSTOCK PARTS BREAKDOWN



INDEX	DESCRIPTION
01	HANDLE
02	HANDLE SCREW
03	NUT HEX M8-1.25
04	WASHER FLAT M8
05	SPRING
06	GRADUATED DIAL
07	SCREW CAP M5-0.8 X 25
08	END COVER
09	PLATE
10	OIL PORT M6
11	KEY C4 X 15
12	LEAD SCREW
13	CLAMPING SCREW
14	HANDLE
15	WASHER FLAT M8
16	CLAMP
17	CLAMP
18	KEY
19	TAIL STOCK RAM
20	TAIL STOCK BODY
21	COVER
22	SCREW CAP M4-0.7 X 5
23	SCREW M6-1.0 X 16
24	TAIL STOCK BASE
25	SCREW CAP M8-1.25 X 30
26	NUT
27	SCREW
28	CLAMPING PLATE
29	NUT HEX M12-1 X 1.75
30	PLATE
31	RIVET 2 X 4
32	PLATE
33	PIN 4 X 30
34	SHAFT
35	HANDLE
36	PIN
37	HAND WHEEL

HEADSTOCK PARTS BREAKDOWN

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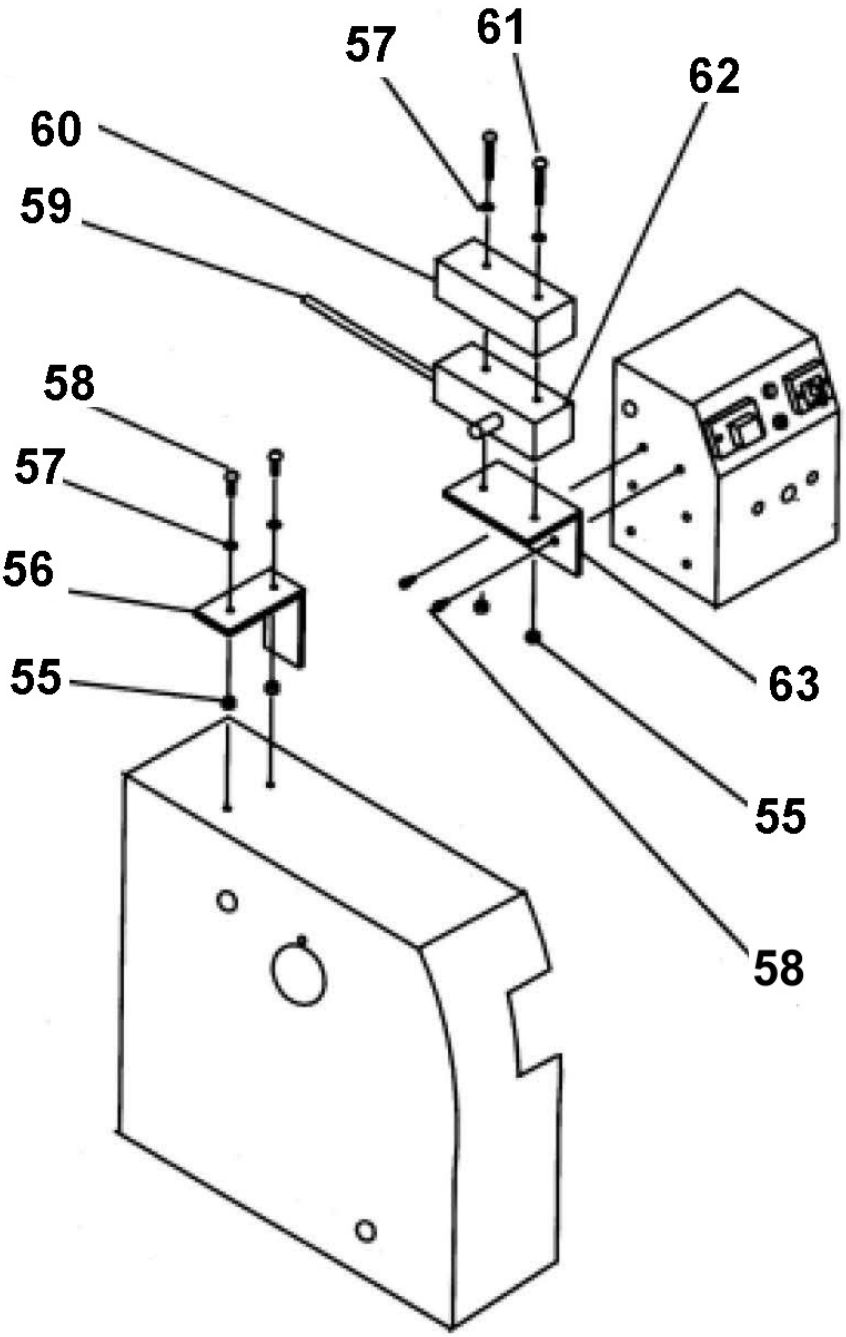
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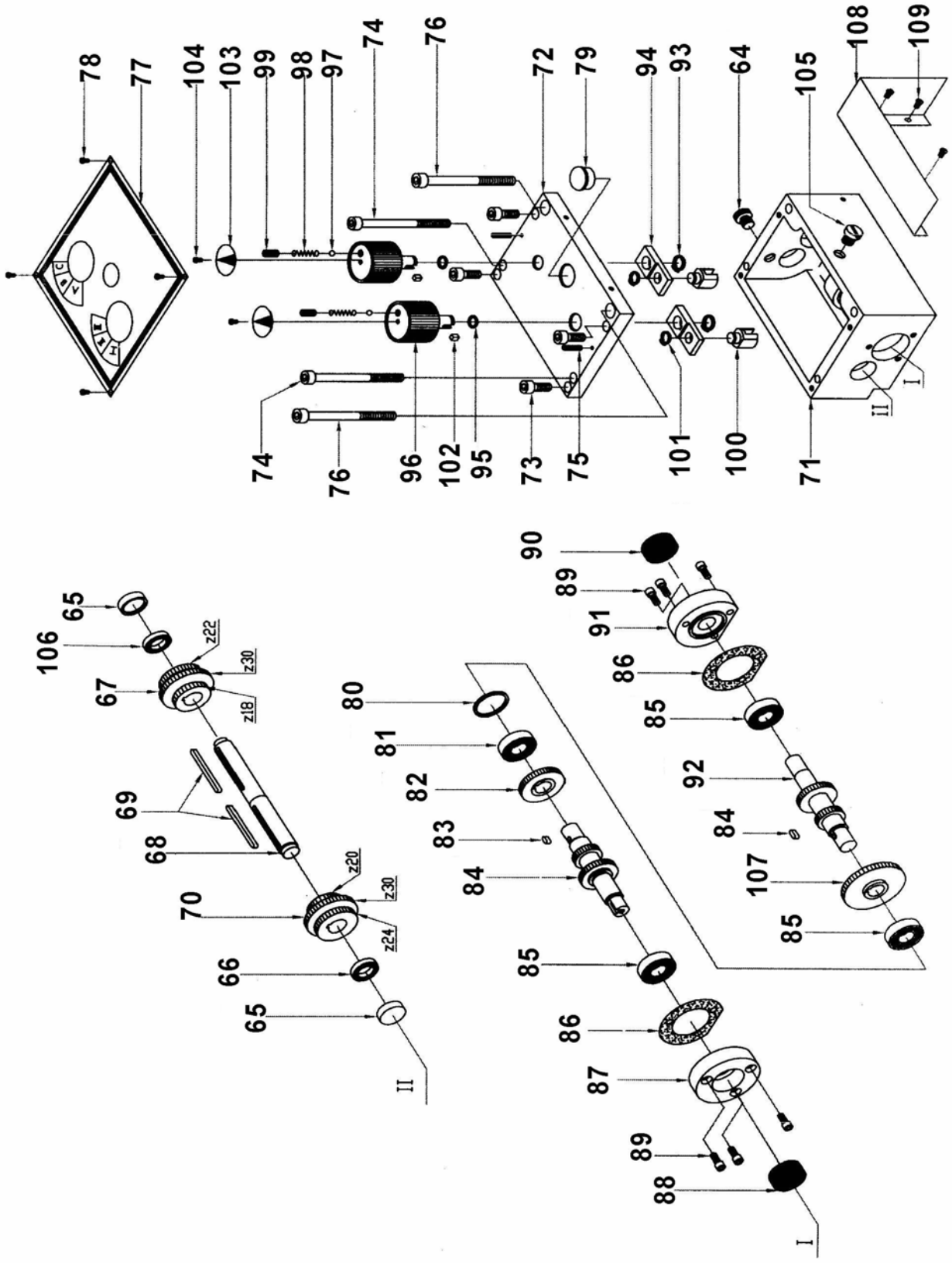
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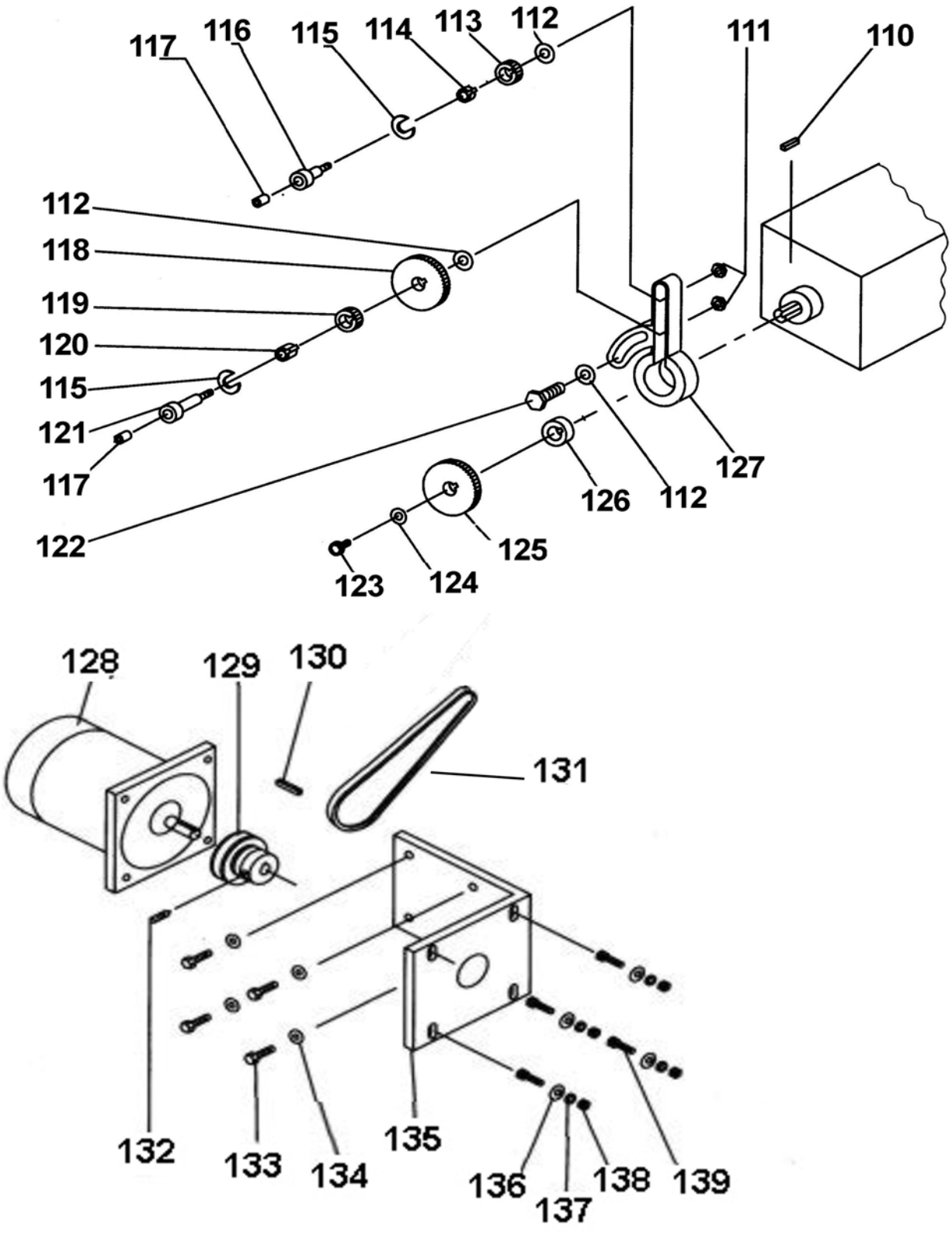
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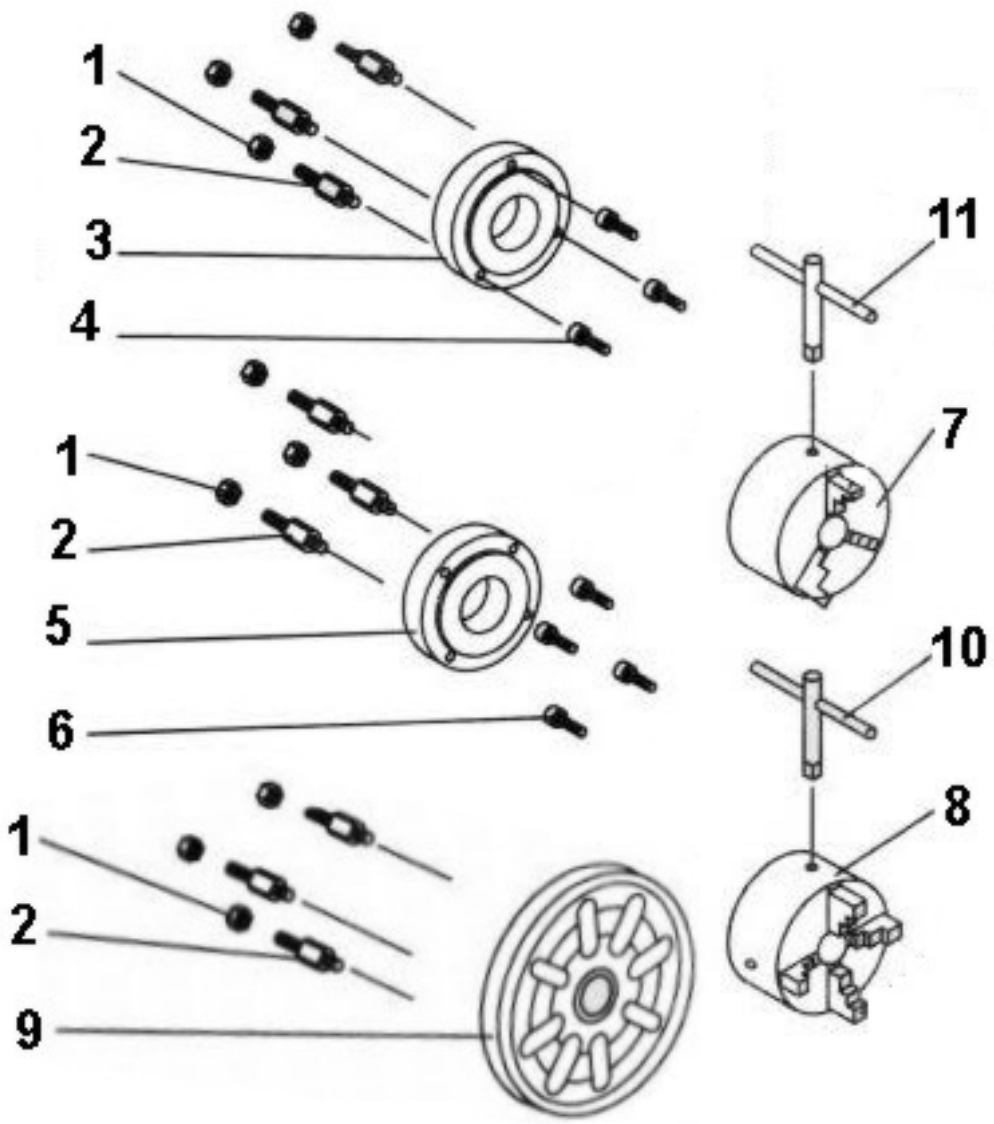
INDEX	DESCRIPTION
1	SCREW CAP M5-0.8 X 8
2	WASHER M5
3	COVER
4	CABLE
5	NUT
6	WASHER M5
7	HOUSING
8	SWITCH KJD17
9	LIGHT
10	SWITCH ZH-A
11	NUT HEX M4-0.7
12	SCREW CAP M4-0.7 X 8
13	SCREW CAP M4-0.7 X 12
14	WASHER M4
15	CIRCUIT BOARD
16	FUSE 10A
17	PLATE
18	DIGITAL SPEED DISPLAY
19	SPEED GOVERNOR
20	SCREW CAP M3- X 8
21	WASHER M3
22	SUPPORT
23	INDUCTOR
24	NUT HEX M3-
25	SCREW CAP M4-0.7 X 18
26	SCREW CAP M3- X 18
27	FILTER
28	PIN M5 X 12
29	SHAFT
30	COVER
31	COVER
32	SCREW M3- X 8
33	NUT HEX M3-
34	PIN M4 X 6
35	CAM
36	SCREW M4-0.7 X 6
37	SWITCH LXW5-11D1
38	COVER
39	CABLE 2 X 0.75
40	WASHER FLAT M4
41	SCREW M4-0.7 X 25
42	SCREW CAP M4-0.7 X 6
43	SHIELD
44	SUPPORT
45	SCREW CAP M10-1.5 X 20
46	SCREW CAP M6-1.0 X 10
47	COVER
48	NUT
49	COVER
50	NUT HEX M8-1.25
51	SCREW
52	SCREW
53	SCREW CAP M6-1.0 X 12
54	SUPPORT
55	NUT HEX M4-0.7
56	BRACKET
57	WASHER FLAT M4
58	SCREW M4-0.7 X 8
59	CABLE 2 X 0.75
60	SWITCH COVER
61	SCREW M4-0.7 X 30
62	SWITCH LXW5-11D1
63	BRACKET
64	BOLT HEX HD M10-1.5 X 1
65	PLUG
66	BEARING 1000802
67	GEAR
68	SHAFT
69	KEY A4 X 55
70	GEAR
71	GEAR BOX
72	COVER
73	SCREW CAP M5-0.8 X 20
74	SCREW CAP M6-1.0 X 90
75	PIN M3 X 20
76	SCREW CAP M8-1.25 X 90
77	PLATE
78	SCREW M4-0.7 X 8
79	SIGHT GLASS M20
80	SPACING RING
81	BEARING 202
82	GEAR 25T
83	KEY A4 X 83
84	SHAFT
85	BEARING 103
86	WASHER PAPER
87	FLANGE
88	OIL SEAL 17 X 30 X 10

89	SCREW CAP M5-0.8 X 20
90	OIL SEAL 15 X 30 X 10
91	FLANGE
92	GEAR SHAFT
93	RING M12
94	SHIFT LEVER
95	O-RING 9 X 1.8
96	HANDLE
97	STEEL BALL M5
98	SPRING
99	SCREW M6-1.0 X 6
100	FORK
101	RING M10
102	KEY B4 X 6
103	INDICATOR DISK
104	SCREW M4-0.7 X 8
105	BOLT M10-1.50 X 1
106	BEARING 6901
107	GEAR 36T
108	BRACKET
109	SCREW
110	KEY C5 X 14
111	NUT HEX M8-1.25
112	WASHER
113	GEAR 34T
114	BUSHING
115	WASHER SPECIAL
116	SHAFT
117	OIL PORT M6
118	GEAR 75T
119	GEAR 72T
120	BUSHING
121	SHAFT
122	HEX BOLT M8-1.25 X 20
123	SCREW CAP M5-0.8 X 12
124	WASHER
125	GEAR 48T
126	SPACING RING
127	BRACKET
128	MOTOR
129	PULLEY
130	KEY C4 X 32
131	V-BELT 7M730
132	SCREW SET M5-0.8 X 8
133	SCREW CAP M8-01.25 X 25

134	WASHER M8
135	BRACKET
136	WASHER M8
137	WASHER LOCKING M8
138	NUT HEX M8-1.25
139	SCREW CAP M8-1.25 X 30

CHUCKS / FACEPLATE PARTS BREAKDOWN



INDEX	DESCRIPTION
1	NUT HEX M10-1.50
2	SCREW
3	BACK PLATE FOR CX700CHUCK3
4	SCREW HEX M8-1.25 X 25 FOR CX700CHUCK3
5	BACK PLATE FOR CX700CHUCK4
6	SCREW CAP M8-1.25 X 20 FOR CX700CHUCK4
7	125MM 3 JAW CHUCK
8	125MM 4 JAW CHUCK
9	220MM FACE PLATE
10	CHUCK KEY FOR CX700CHUCK4
11	CHUCK KEY FOR CX700CHUCK3

WARRANTY

CRAFTEX 3 YEARS LIMITED WARRANTY

Craftex warrants every product to be free from defects in materials and agrees to correct such defects where applicable. This warranty covers **three years** for parts and 90 days for labor (unless specified otherwise), to the original purchaser from the date of purchase but does not apply to malfunctions arising directly or indirectly from misuse, abuse, improper installation or assembly, negligence, accidents, repairs or alterations or lack of maintenance.

Proof of purchase is necessary.

All warranty claims are subject to inspection of such products or part thereof and Craftex reserves the right to inspect any returned item before a refund or replacement may be issued.

This warranty shall not apply to consumable products such as blades, bits, belts, cutters, chisels, punches etceteras.

Craftex shall in no event be liable for injuries, accidental or otherwise, death to persons or damage to property or for incidental contingent, special or consequential damages arising from the use of our products.

RETURNS, REPAIRS AND REPLACEMENTS

To return, repair, or replace a Craftex product, you must visit the appropriate Busy Bee Tools showroom or call 1-800-461-BUSY. Craftex is a brand of equipment that is exclusive to Busy Bee Tools.

For replacement parts directly from Busy Bee Tools, for this machine, please call 1-800-461-BUSY (2879), and have your credit card and part number handy.

- All returned merchandise will be subject to a minimum charge of 15% for re-stocking and handling with the following qualifications.
- Returns must be pre-authorized by us in writing.
- We do not accept *collect* shipments.
- Items returned for warranty purposes must be insured and shipped pre-paid to the nearest warehouse
- Returns must be accompanied with a copy of your original invoice as proof of purchase. Returns must be in an un-used condition and shipped in their original packaging a letter explaining your reason for the return. Incurred shipping and handling charges are not refundable.
- Busy Bee will repair or replace the item at our discretion and subject to our inspection.
- Repaired or replaced items will be returned to you pre-paid by our choice of carriers.
- Busy Bee reserves the right to refuse reimbursement or repairs or replacement if a third party without our prior authorization has carried out repairs to the item.
- Repairs made by Busy Bee are warranted for 30 days on parts and labour.
- Any unforeseen repair charges will be reported to you for acceptance prior to making the repairs.
- The Busy Bee Parts & Service Departments are fully equipped to do repairs on all products purchased from us with the exception of some products that require the return to their authorized repair depots. A Busy Bee representative will provide you with the necessary information to have this done.
- For faster service it is advisable to contact the nearest Busy Bee location for parts availability prior to bringing your product in for repairs.