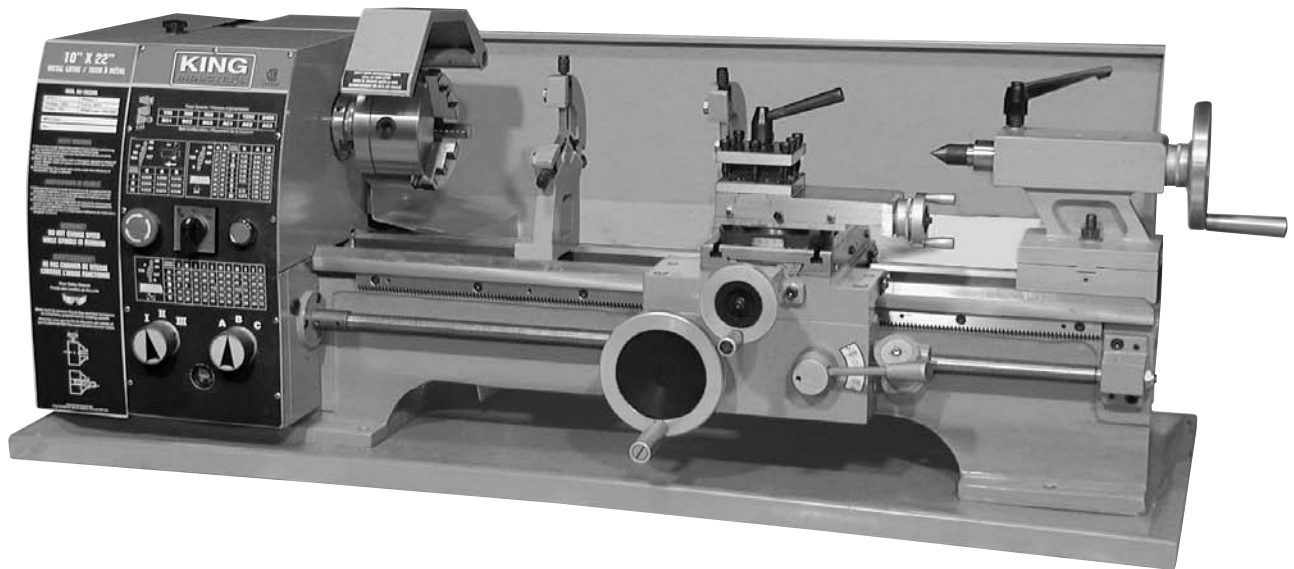


KING
INDUSTRIAL 

10" X 22"
GEARHEAD METAL LATHE



MODEL: KC-1022ML

INSTRUCTION MANUAL

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IMPORTANT INFORMATION



2-YEAR
LIMITED WARRANTY
FOR THIS 10" X 22" METAL LATHE

KING CANADA TOOLS
OFFERS A 2-YEAR LIMITED WARRANTY
FOR INDUSTRIAL USE.

PROOF OF PURCHASE

Please keep your dated proof of purchase for warranty and servicing purposes.

REPLACEMENT PARTS

Replacement parts for this tool are available at our authorized KING CANADA service centers across Canada. For servicing, contact or return to the retailer where you purchased your product along with your proof of purchase.

LIMITED TOOL WARRANTY

KING CANADA makes every effort to ensure that this product meets high quality and durability standards. KING CANADA warrants to the original retail consumer a 2-year limited warranty as of the date the product was purchased at retail and that each product is free from defects in materials. Warranty does not apply to defects due directly or indirectly to misuse, abuse, negligence or accidents, repairs or alterations and lack of maintenance. KING CANADA shall in no event be liable for death, injuries to persons or property or for incidental, special or consequential damages arising from the use of our products. To take advantage of this warranty, the product or part must be returned for examination by the retailer. Shipping and handling charges may apply. If a defect is found, KING CANADA will either repair or replace the product.

PARTS DIAGRAM & PARTS LISTS

Refer to the Parts section of the King Canada web site for the most updated parts diagram and parts list.



GENERAL SAFETY INSTRUCTIONS FOR POWER TOOLS

1. KNOW YOUR TOOL

Read and understand the owners manual and labels affixed to the tool. Learn its application and limitations as well as its specific potential hazards.

2. GROUND THE TOOL.

This tool is equipped with an approved 3-conductor cord and a 3-prong grounding type plug to fit the proper grounding type receptacle. The green conductor in the cord is the grounding wire. **NEVER** connect the green wire to a live terminal.

3. KEEP GUARDS IN PLACE.

Keep in good working order, properly adjusted and aligned.

4. REMOVE ADJUSTING KEYS AND WRENCHES.

Form habit of checking to see that keys and adjusting wrenches are removed from tool before turning it on.

5. KEEP WORK AREA CLEAN.

Cluttered areas and benches invite accidents. Make sure the floor is clean and not slippery due to wax and sawdust build-up.

6. AVOID DANGEROUS ENVIRONMENT.

Don't use power tools in damp or wet locations or expose them to rain. Keep work area well lit and provide adequate surrounding work space.

7. KEEP CHILDREN AWAY.

All visitors should be kept a safe distance from work area.

8. MAKE WORKSHOP CHILD-PROOF.

Use padlocks, master switches or remove starter keys.

9. USE PROPER SPEED.

A tool will do a better and safer job when operated at the proper speed.

10. USE RIGHT TOOL.

Don't force the tool or the attachment to do a job for which it was not designed.

11. WEAR PROPER APPAREL.

Do not wear loose clothing, gloves, neckties or jewelry (rings, watch) because they could get caught in moving parts. Non-slip footwear is recommended. Wear protective hair covering to contain long hair. Roll up long sleeves above the elbows.

12. ALWAYS WEAR SAFETY GLASSES.

Always wear safety glasses (ANSI Z87.1). Everyday eyeglasses only have impact resistant lenses, they are **NOT** safety glasses. Also use a face or dust mask if cutting operation is dusty.

13. DON'T OVERREACH.

Keep proper footing and balance at all times.

14. MAINTAIN TOOL WITH CARE.

Keep tools sharp and clean for best and safest performance. Follow instructions for lubricating and changing accessories.

15. DISCONNECT TOOLS.

Before servicing, when changing accessories or attachments.

16. AVOID ACCIDENTAL STARTING.

Make sure the switch is in the "OFF" position before plugging in.

17. USE RECOMMENDED ACCESSORIES.

Consult the manual for recommended accessories. Follow the instructions that accompany the accessories. The use of improper accessories may cause hazards.

18. NEVER STAND ON TOOL.

Serious injury could occur if the tool tips over. Do not store materials such that it is necessary to stand on the tool to reach them.

19. CHECK DAMAGED PARTS.

Before further use of the tool, a guard or other parts that are damaged should be carefully checked to ensure that they will operate properly and perform their intended function. Check for alignment of moving parts, breakage of parts, mounting, and any other conditions that may affect its operation. A guard or other parts that are damaged should be properly repaired or replaced.

20. NEVER LEAVE MACHINE RUNNING UNATTENDED.

Turn power "OFF". Don't leave any tool running until it comes to a complete stop.

ELECTRICAL & TECHNICAL INFORMATION



ELECTRICAL INFORMATION

WARNING!

ALL ELECTRICAL CONNECTIONS MUST BE DONE BY A QUALIFIED ELECTRICIAN. FAILURE TO COMPLY MAY RESULT IN SERIOUS INJURY! ALL ADJUSTMENTS OR REPAIRS MUST BE DONE WITH THE METAL LATHE DISCONNECTED FROM THE POWER SOURCE. FAILURE TO COMPLY MAY RESULT IN SERIOUS INJURY!

POWER SUPPLY

WARNING: YOUR METAL LATHE MUST BE CONNECTED TO A 120V, 15-AMP. DEDICATED BRANCH CIRCUIT AND USE A 15-AMP TIME DELAY FUSE OR CIRCUIT BREAKER. FAILURE TO CONNECT IN THIS WAY CAN RESULT IN INJURY FROM SHOCK OR FIRE.

THIS METAL LATHE MUST BE GROUNDED. IF NOT PROPERLY GROUNDED, THIS METAL LATHE CAN CAUSE ELECTRICAL SHOCK, PARTICULARLY WHEN USED IN DAMP LOCATIONS. TO AVOID SHOCK OR FIRE, IF THE POWER CORD IS WORN OR DAMAGED IN ANY WAY, HAVE IT REPLACED IMMEDIATELY. If your metal lathe should malfunction or breakdown, grounding provides a path of least resistance for electric current, to reduce the risk of electric shock. This metal lathe is equipped with a cord having an equipment-grounding conductor and grounding plug. The plug must be plugged into an appropriate outlet that is properly installed and grounded in accordance with all local codes and ordinances.

WARNING: TO MAINTAIN PROPER GROUNDING OF YOUR METAL LATHE, DO NOT REMOVE OR ALTER THE GROUNDING PRONG IN ANY MANNER.

TECHNICAL INFORMATION

Main Specifications

| | |
|-----------------------------------|-------------|
| Max. swing over bed | 10" (254mm) |
| Max. swing over cross slide | 6" (156mm) |
| Distance between centers | 22" (560mm) |

Headstock

| | |
|-----------------------------|---------------------|
| Spindle bore diameter | 1" (26mm) |
| Spindle bore taper | MT#4 |
| Spindle speed range | 6 (150-2400 R.P.M.) |

Gear Box

| | |
|-----------------------|---------------------------------|
| Thread cutting: | Inches- 24 kinds (8-72 T.P.I.) |
| | Metric- 18 kinds (0.25 - 3.5mm) |

Tool Post, Saddle, Tailstock

| | |
|-----------------------------------|----------------|
| Top Slide travel | 4-1/4" (107mm) |
| Cross Slide travel | 6-3/8" (161mm) |
| Tailstock taper | MT#3 |
| Tailstock quill travel | 2-1/2" (65mm) |
| Diameter of Tailstock quill | 1-1/4" (32mm) |

Motor

| | |
|-----------------------|---------------|
| Horsepower | 1 HP |
| Voltage | 120V, 1 phase |
| Amperage | 12 amp. |
| Motor R.P.M. | 1720 R.P.M. |
| Motor frequency | 60Hz |



CLEANING & GETTING TO KNOW YOUR LATHE

Before operating this metal lathe, read this instruction manual and familiarize yourself with the required adjustments, operation procedures, maintenance and lubrication.

CLEANING & PREPARING LATHE

After unpacking, remove the paper (or grease found on unpainted ground surfaces) from the machine and using a non-volatile solvent and a brush, remove grease.

During transport and unpacking, it is likely that debris will be present on top of the lathe. Do not move the carriage and the tailstock until the rest of the metal lathe (mainly the bed) has been thoroughly cleaned.

Remove all accessories and machine parts from the tool box and install all the handles and knobs. Fix the follow rest to the carriage using 2 cap screws and fix the steady rest inbetween the chuck and the carriage.

Make sure that all lubrication points and oil levels have been inspected before putting your metal lathe into operation. See "Lubrication Points" section further in this manual before operating your lathe.

This machine is equipped with a V-belt from the motor to the lower rear pulley. It is advisable to check the belt tension before starting the metal lathe. There should be no more than a 1/2" center deflection with light finger pressure. Adjust the V-belt tension using the tensioner as necessary. V-belts which are tensioned too tightly will damage the bearing.

Before performing any operations, set the metal lathe on the lowest speed and let the machine operate for 15 minutes. If everything is functioning normally, you can proceed with operations.

Getting to know your Metal Lathe

- | | | |
|----------------------------------|----------------------|-----------------------------|
| 1- Headstock | 7- Cross slide | 13- Carriage |
| 2- Chuck safety guard | 8- Bedway | 14- Feed lever |
| 3- Steady rest | 9- Tailstock | 15- Thread cutting dial |
| 4- Tool post | 10- Control switches | 16- Feed shaft |
| 5- Follow rest (not fully shown) | 11- Gear box | 17- Gear rack |
| 6- Top slide | 12- Chuck | 18- Thread & feed selectors |

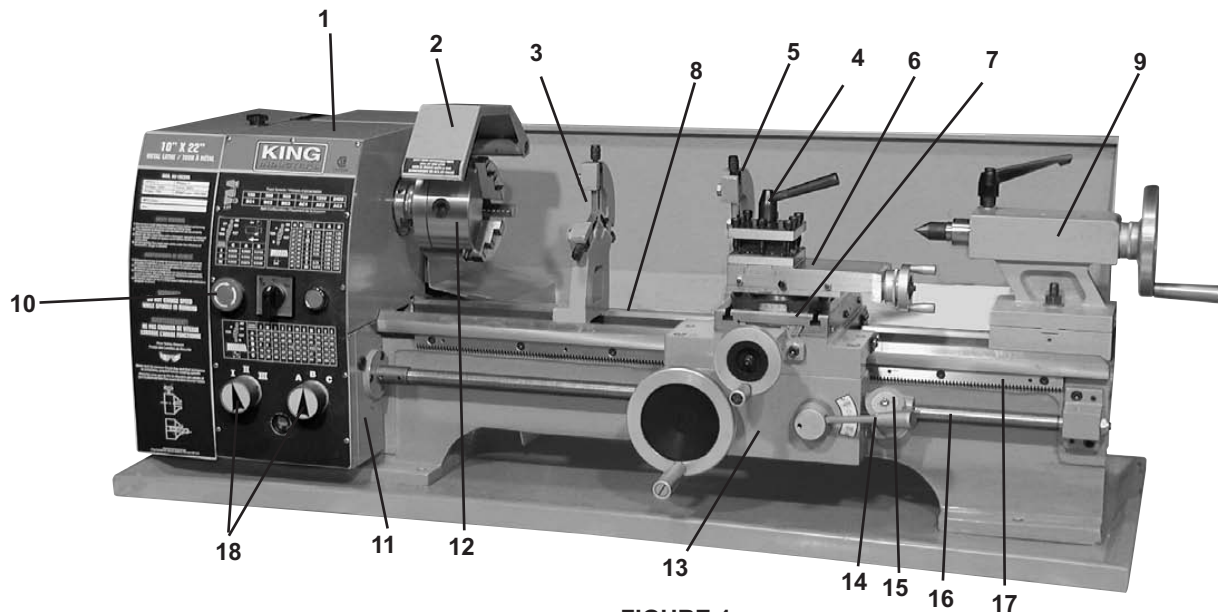


FIGURE 1

Optional Accessories available:

- KLC-3M -Live Center (MT#3)
- SS-1022 -Stand
- KM-057 -7pc. Deluxe Cutter Holder Set

OPERATING KNOBS & LEVERS



Metal Lathe Operating Knobs & Levers (Fig.2)

Headstock Control buttons

•Control buttons 1, 2, 3 are located on the front side of the headstock. Button 1 is the Emergency Stop button. Button 2 is the Forward/Reverse switch which allows you to change the rotation of the spindle and chuck. Button 3 is the Power ON button.

Quick Change Gear Box Knobs

•Knobs 4 and 5 are the thread and feed selectors, set these selectors as indicated in the metal lathe charts depending on the thread to be cut and the feed speed desired. Note: It will be necessary to verify and change the gear configuration on the left side of the headstock, check the metal lathe charts for proper gear configuration.

Caution: Always stop the spindle before changing the position of either knobs (Knobs 4 & 5).

Carriage Assembly Levers

- Handwheel 6 is used to manually move the carriage along the bedway of the lathe.
- The crossfeed handwheel 7 is used to manually move the cross slide in or out.
- The top slide handwheel 11 is used to manually move the tool post. The top slide is fully adjustable to any angle and is also used for threading or machining an angle on a workpiece.
- The longitudinal feed lever 8 is used to engage the half nuts when threading.
- The clamp lever 12 is used to secure the tool post block to the top slide.

Tailstock levers

- The handwheel 9 is used to feed or retreat the tailstock quill. Tip: Turning the handwheel completely counterclockwise until a full stop will automatically eject the turning tool used.
- The tailstock quill lock lever 10 prevents the quill from moving.

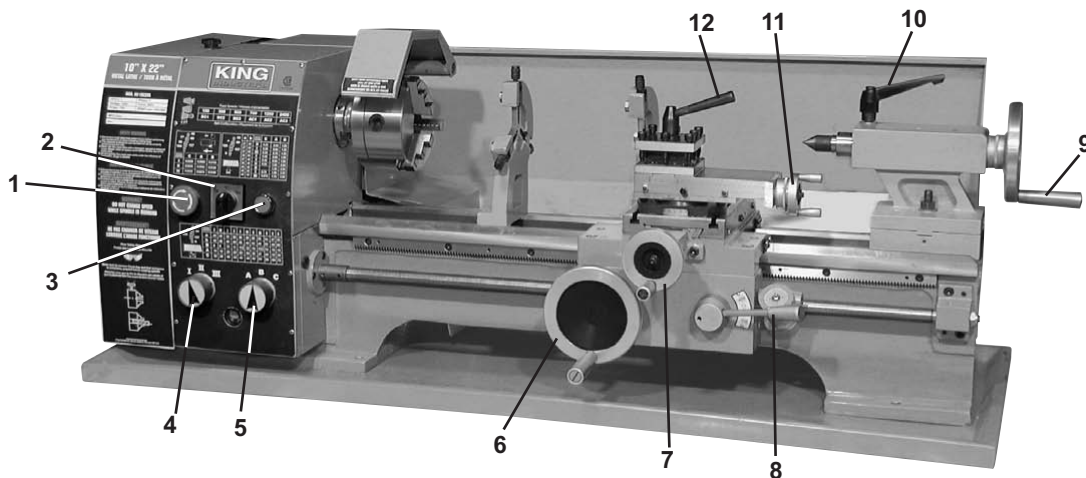


FIGURE 2



METAL LATHE CHARTS

Metal Lathe Charts

Below are all the charts which are found on the metal lathe plates. We have included these charts in this manual for reference purposes, in case any or many plates have been damaged and are no longer readable.



FIGURE 3- 6 Spindle Speeds Chart

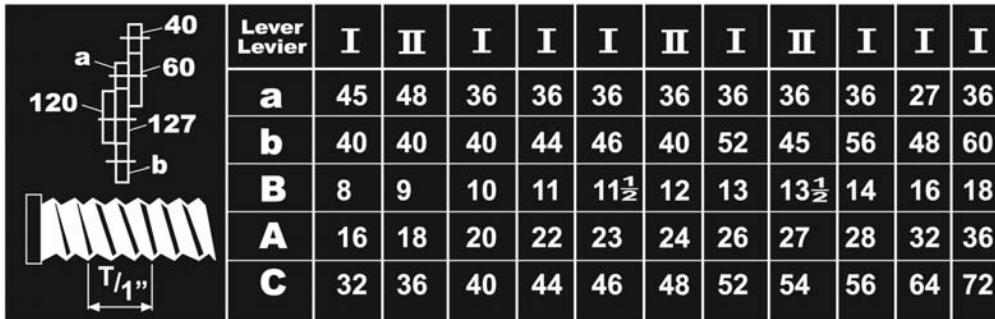


FIGURE 4- Inch Thread Chart

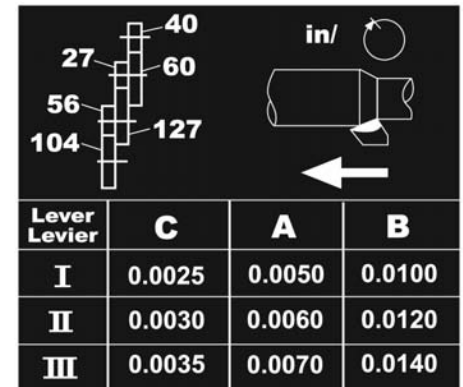


FIGURE 6- Feed Rate Chart

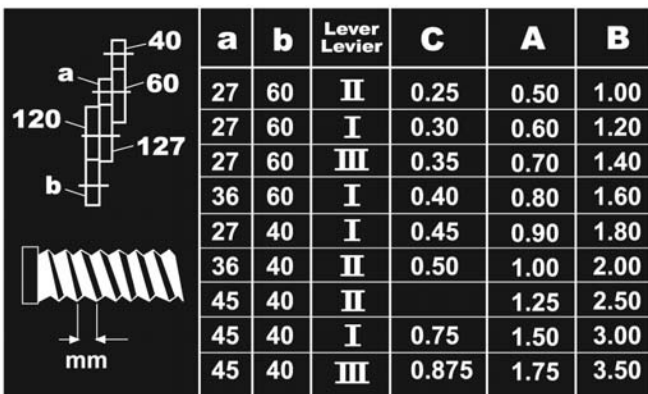


FIGURE 5- Metric Thread Chart

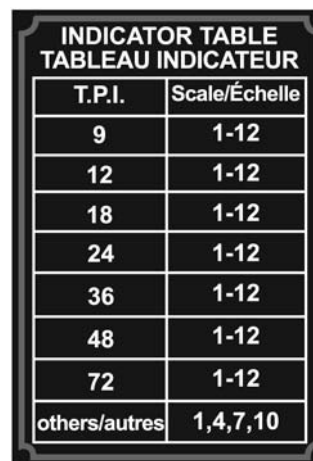


FIGURE 7- Thread Dial Indicator Chart

ADJUSTMENTS & OPERATION



Mounting or removing chuck or face plate

Before mounting a chuck (A) Fig.8, face plate or other attachments, it is very important that the mounting surfaces on both the spindle nose and the attachment are extremely clean.

The chuck (A) and chuck plate (B) are held together using cap screws, these two attachments are screwed (left handed thread) onto the spindle nose and secured by two fixing brackets (C) and cap screws (D).

To remove the chuck from the spindle, follow these instructions;

- 1) Remove cap screws (D) and fixing brackets (C).
- 2) Now the chuck and chuck plate must be unscrewed from the spindle nose. Note: To tighten, turn chuck counterclockwise. To loosen, turn chuck clockwise. It is necessary to use the chuck key (placed in chuck) and an additional rod (placed in spindle nose holes), force in opposite directions to unscrew chuck.

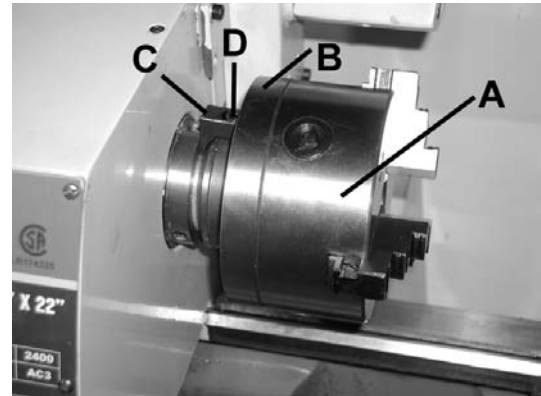


FIGURE 8

Adjusting and reversing chuck jaws

Chuck jaws (A) Fig.9 can be opened or closed by using the camlock key in the jaw adjustment cams (B). Turning the camlock key (C) clockwise will close the jaw opening and counterclockwise will open the jaw opening.

Before reversing the direction of the chuck jaws, two major points must be followed every time.

- 1) The chuck jaws are numbered (ex.: 3 jaw chuck- 1,2,3) and must be placed in numerical order into the chuck.
- 2) If the chuck jaws are to be removed, you must replace them in the identical slot which they were taken out of. (Make sure they are also in numerical order).

To remove chuck jaws, open jaw opening all the way using camlock key until the jaws practically fall out. Do not let the jaws fall, hold them while you open the jaw opening. Change the direction of each jaw and apply pressure on them towards the center of the chuck. Turn camlock key clockwise and make sure all jaws engage the spiral mechanism.

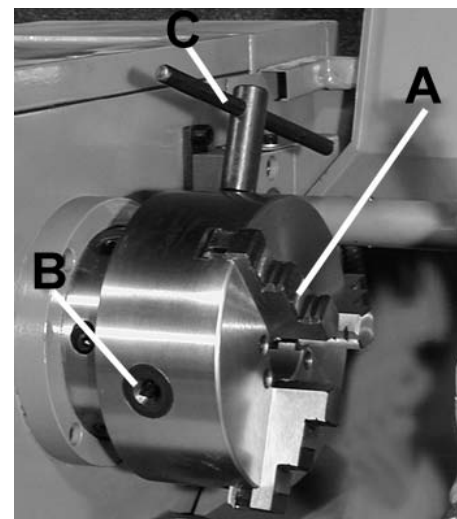


FIGURE 9

Installing and operating follow rest and steady rest

The follow and steady rests serve as workpiece supports during operations. Install the follow rest (A) Fig.10 to the saddle (B) using 2 cap screws. Install the steady rest (C) to the bedway (D) (inbetween the carriage and the chuck) using the clamp shoe, bolt and lock nut assembly.

The follow rest is installed near the cutting tool to give additional support. If the follow rest would not be used, the cutting tool pressure on the workpiece could warp your workpiece and give undesired results.

Position workpiece in the steady rest and the follow rest. Secure workpiece in rests by tightening the centers but do not overtighten.

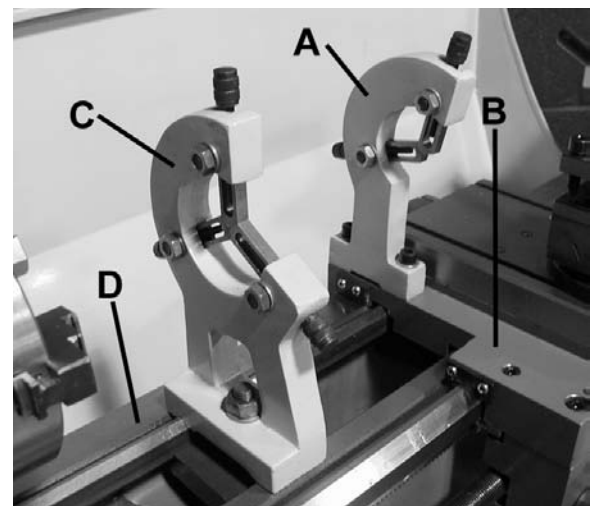


FIGURE 10

Tailstock Adjustments & Operation

The tailstock can be moved freely on the bedway and fastened at any position by tightening tailstock hex. nut (A) Fig.11. The tailstock quill can be moved in and out by using handwheel (B) and then fastened in place using quill locking lever (C). Dead centers or drill chucks are normally installed in the tailstock quill.

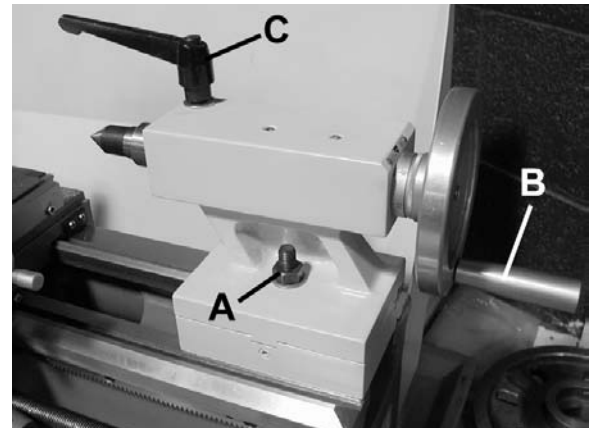


FIGURE 11

An important adjustment and verification must be done in order to obtain the best results using your tailstock. The tailstock must be perfectly aligned with the chuck. Fix a ground steel bar inbetween the chuck center and the tailstock center. Using a precise measuring tool (dial indicators), make sure the distance at both ends of the ground steel bar are the same using the top slide as starting reference point, see Fig.12. If the distance is not the same, then a crosswise adjustment to the tailstock is necessary. Adjust set screws (D) Fig.11 on both sides of the tailstock until the distance at both ends of the ground steel bar are the same.

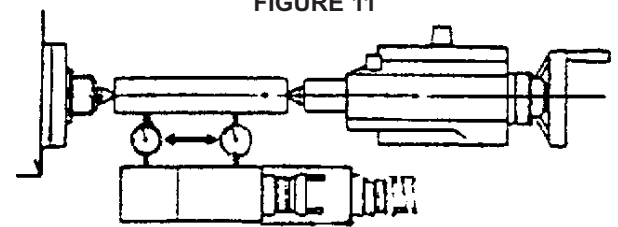


FIGURE 12

Tool Post Adjustments & Operation

The 4-way tool post assembly (A) Fig.13 can lock up to 4 cutting tools into place at a time (use at least 2 cap screws per cutting tool). The tool post can pivot 360° for various cutting situations. To pivot the tool post assembly, loosen handle (B) and pivot tool post, retighten handle.

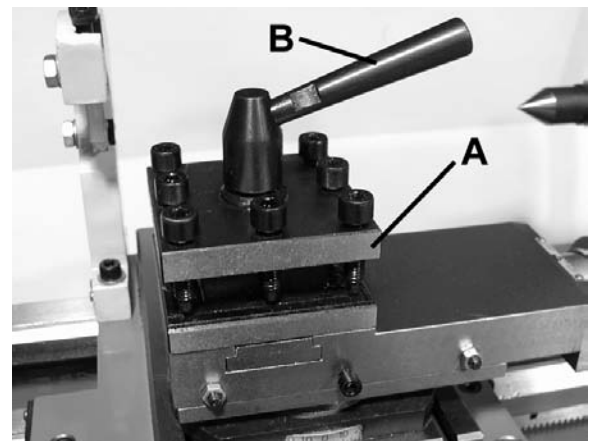


FIGURE 13

Cross & Top Slide Adjustments & Operation

The cross slide handwheel (A) Fig.14 is used to feed the entire cross slide, top slide and tool post with cutting tool towards the workpiece. After time the cross slide gib (B) may become loose or too tight and an adjustment may be necessary. To adjust the gib (B), tighten or loosen the hex. nuts and set screws (C) on the right side until the cross slide moves freely without play.

The top slide handwheel (D) feeds the entire top slide and tool post with cutting tool towards the chuck or the tailstock end of the lathe. After time the top slide gib may become loose or too tight and an adjustment may be necessary. The top slide can be pivoted to a desired angle, to adjust the angle of the top slide simply loosen hex. nuts (E) on both sides of the top slide base and pivot. Retighten hex. nuts (E) after adjustment.

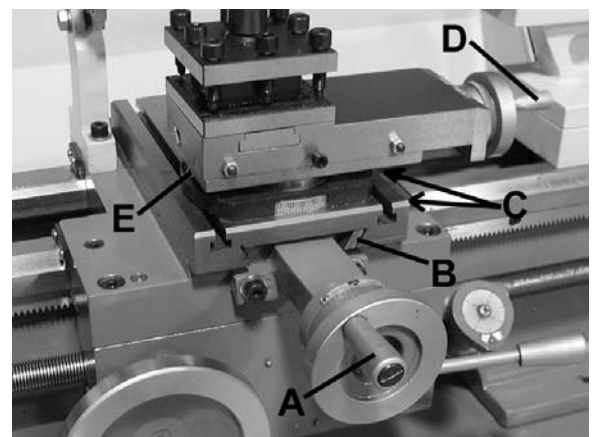


FIGURE 14

ADJUSTMENTS & OPERATION



Feed and Thread Selection

To set the desired feed rate and thread selection, look at the charts in Fig's.4 & 6 and determine the feed rate desired in relation to the thread to be cut. Once you have determined the job at hand, place the selectors (A & B) Fig.15 in the appropriate positions.

If Metric Threads are desired, change gears must be installed as shown in chart Fig.5 and as described below.

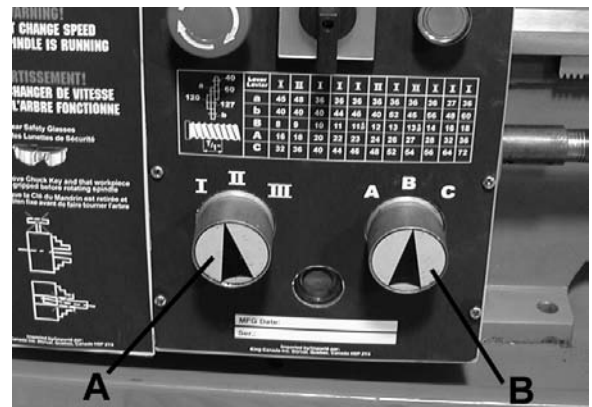


FIGURE 15

Change gears

To obtain imperial or metric threads the proper change gears must be installed inside the left side cover. Unscrew cover lock knob to gain access to the left side of the headstock.

Before changing gears, determine the thread pitch desired and look at which gear configuration is needed. See Thread charts as reference. Before trying to remove a gear, all the gears need to be distanced from each in order to be removed. To distance the gears from each other, unscrew cap screw (A) Fig.16 which secures the pivot bracket (B). This will allow you to lower the center gear assembly. Now unscrew special lock screw (C) and slide the center gears off the pivot bracket (B). Now all the gears are distanced and ready to be changed.

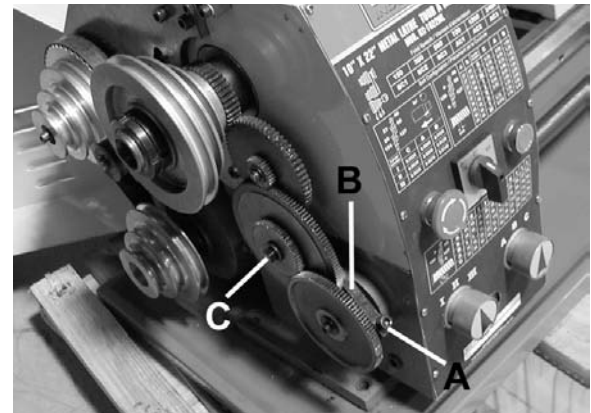


FIGURE 16

To replace the top gear (A) Fig 17, remove "C" clip (B) which holds it in place. Replace with appropriate gear and secure with "C" clip (B).

To replace the bottom gear (C), remove cap screw and washer (D). Replace with appropriate gear and secure it using the same cap screw and washer (D) removed previously.

The rear middle gear with 127T (E) does not get interchanged but the front middle gear (F) does. To replace the front middle gear (F), remove the retaining plate (G). Replace with appropriate gear and secure with retaining plate (G).

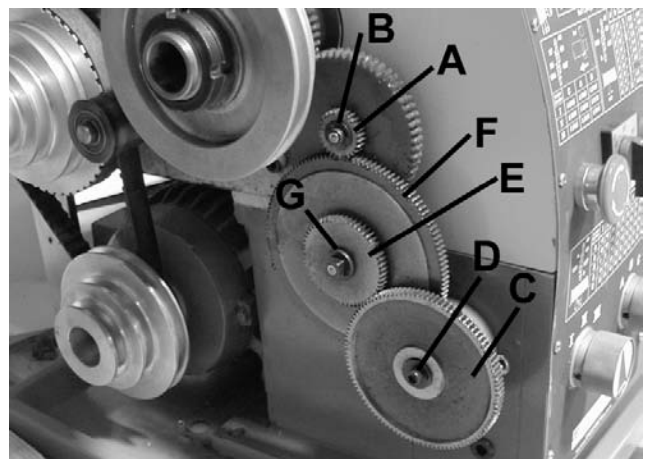


FIGURE 17

Once the change gears are in place, slide middle gears (E & F) back onto the pivot bracket until it snug against the bottom gear (C), secure with special lock screw (H) and make sure the retaining plate (G) is in place before securing middle gears. Raise the middle gears assembly upwards until it is snug with the top gear (A) and secure pivot bracket cap screw (A & B) Fig.16. Close the side cover and lock it using the same lock knob unscrewed previously.

Longitudinal Auto-Power Feed

To obtain a desired feed rate, the correct gear configuration must be set as shown in "Feed Rate" chart Fig.6. The longitudinal auto-feed lever (A) Fig.18 is used to engage the half-nuts for longitudinal feeding of the carriage. This lever has 2 positions; the lower position engages the half-nuts to start longitudinal feed and the upper position disengages the half-nuts to stop longitudinal feed.

For imperial threading operations, the auto-power feed can be engaged and disengaged at any time. To reverse the longitudinal feed, disengage the half-nuts (stops longitudinal feed) and manually move the carriage back using the carriage handwheel. The auto-power feed can then be engaged again for a second pass.

Note: The only difference in metric threading is the half-nuts must be engaged during the entire threading operation. The thread dial can not be used for metric threading operations.

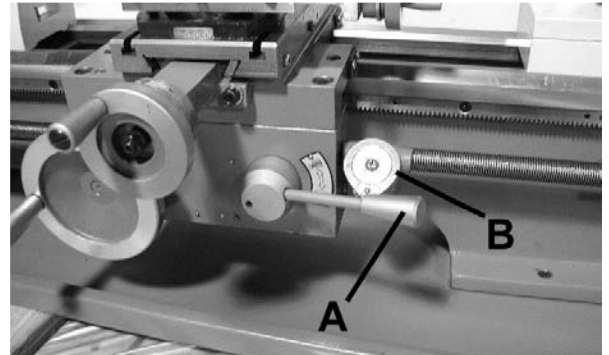


FIGURE 18

Thread Cutting Operation

In order to obtain the desired thread, all change gears must be installed in accordance to the thread charts. Failure to do so will give incorrect threads.

When cutting inch threads, the auto-power feed and thread cutting dial (B) Fig.18 are used. The threading dial Indicator chart Fig.7 specifies at which point a thread can be engaged using the threading dial.

When cutting metric threads, the auto-power feed is used. Note: The half-nuts must be engaged during the entire threading operation. The thread dial can not be used for metric threading operations.

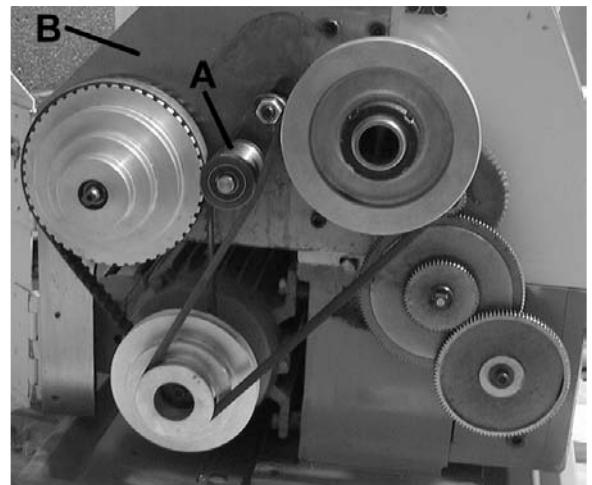


FIGURE 19

Thread Cutting Dial Operation

The thread cutting dial (B) Fig.18 is used to engage the half nuts with the leadscrew in the same thread that has been previously cut. The threading dial Indicator chart Fig.7 specifies at which point a thread can be engaged using the threading dial.

Changing spindle speed

In order to obtain the desired spindle speed, the belt configuration on the pulleys must be set as shown in spindle speed chart Fig. 3. The letters correspond to the required pulleys and the numbers correspond to the required pulley step. Pulley A Fig.3 is the motor pulley and pulley C Fig.3 is the spindle pulley. To obtain a spindle speed of 150 RPM, set the belt on step 1 of pulleys B & C Fig.3.

Tensioning Belt

A tensioner (A) Fig.19 is supplied to tension the belt. Once the belt is in position, lower the tensioner against the belt and apply necessary tension. Lock tensioner in place using open end key supplied to lock hex. nut behind support plate (B). Make sure the tensioner does not come in contact with any other part of the pulley or belt before locking it into place.

LUBRICATION POINTS



Before operating the metal lathe, check the oil level and lubricate all sliding surfaces such as the half nut, worm gear, feed rod, handle rod, tailstock quill before and after operating. Follow the main lubrication points illustrated below.

Lubrication Notes

Note: After running for the first 3 months, change the gear box oil (20W Machine Oil). Change oil once a year after first initial oil change. Remove set screw on left side of gear box and drain oil, replace set screw. To fill gear box with oil, remove set screw on right side of gear box and pour oil into gear box until it reaches the 3/4 mark on the oil level indicator.

Lubrication Points

- Headstock lubrication points (1).
- Gear Box lubrication points (2 & 3).
- Gear Change lubrication points (4). Oil nipples and grease gears.
- Saddle lubrication point (5).
- Handwheel lubrication points (6).
- Feedscrew & Bracket lubrication points (7).
- Tailstock lubrication points (8).
- Tool Post Slide lubrication point (9).
- Top slide lubrication points (10). (Behind Tool Post)
- Rack lubrication (11). Grease.

A light oil should be used on the bedway and all other reflective parts such as the tailstock quill.

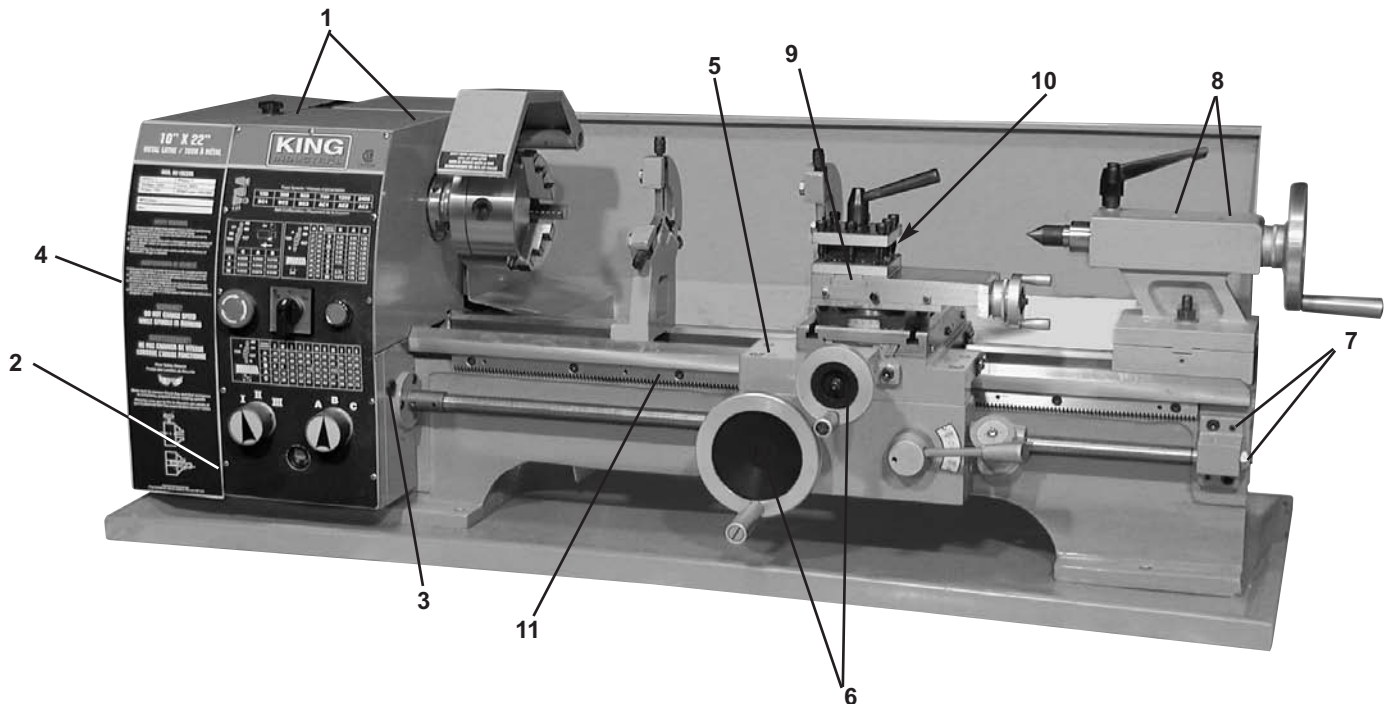


FIGURE 20

PARTS DIAGRAM & PARTS LISTS

Refer to the Parts section of the King Canada web site for the most updated parts diagram and parts list.