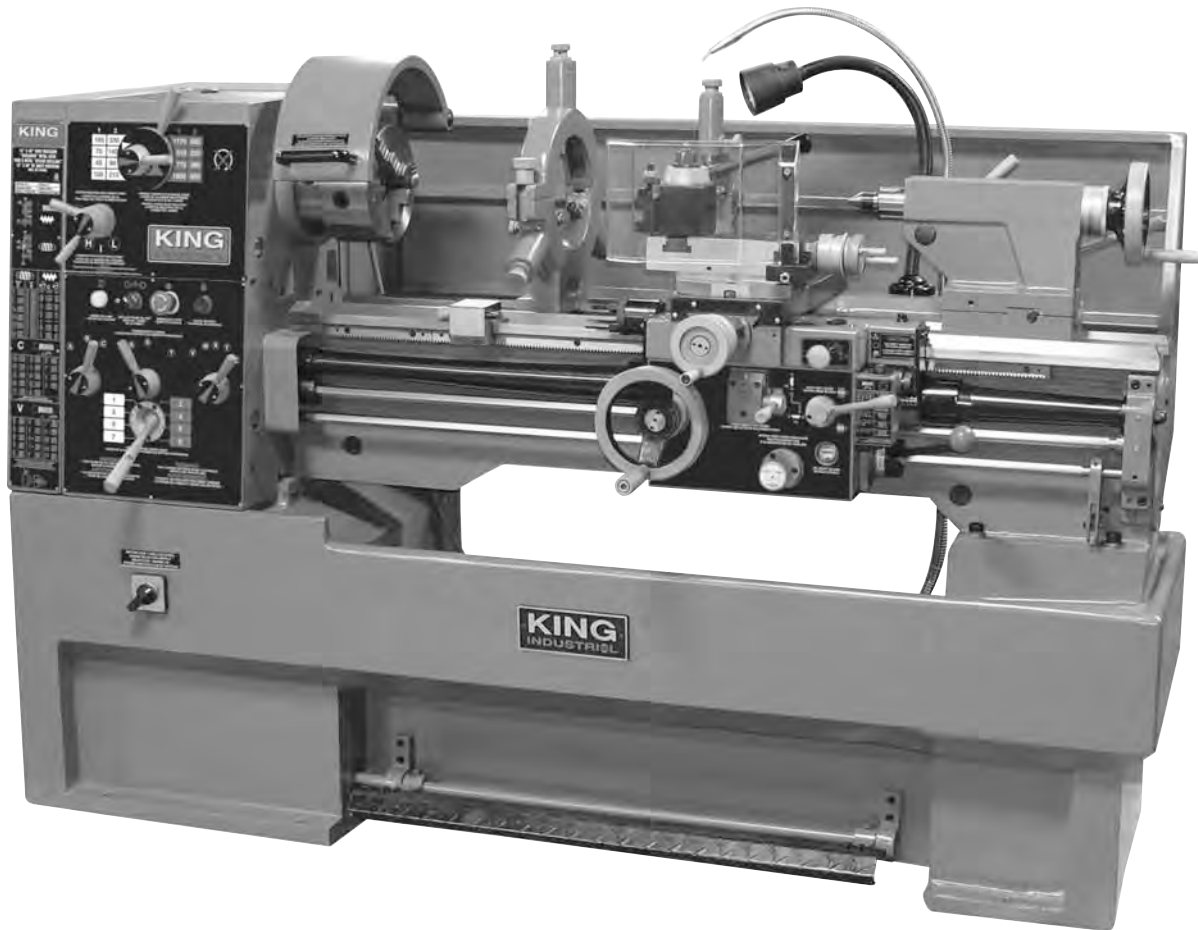




09/2013

16" X 40" HIGH PRECISION "TOOLROOM" METAL LATHE



MODEL: KC-1640ML

INSTRUCTION MANUAL

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WARRANTY INFORMATION

**2-YEAR
LIMITED WARRANTY
FOR THIS 16" X 40" 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 product are available at our authorized King Canada service centers across Canada.

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, normal wear and tear, negligence or accidents, repairs done by an unauthorized service center, 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 limited warranty, return the product at your expense together with your dated proof of purchase to an authorized King Canada service center. Contact your retailer or visit our web site at www.kingcanada.com for an updated listing of our authorized service centers. In cooperation with our authorized serviced center, King Canada will either repair or replace the product if any part or parts covered under this warranty which examination proves to be defective in workmanship or material during the warranty period.

NOTE TO USER

This instruction manual is meant to serve as a guide only. Specifications and references are subject to change without prior notice.

PARTS DIAGRAM & PARTS LISTS

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

KING CANADA INC. DORVAL, QUÉBEC, CANADA H9P 2Y4

www.kingcanada.com

GENERAL & SPECIFIC SAFETY INSTRUCTIONS FOR METAL LATHES



GENERAL SAFETY INSTRUCTIONS

- 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. 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 eye-glasses 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.

SPECIFIC SAFETY INSTRUCTIONS FOR METAL LATHES

- 1. CLEANING MACHINE:** To avoid entanglement and lacerations, do not clear chips by hand. Use a brush, and never clear chips while the lathe is operating.
- 2. USING CORRECT TOOLING:** Always select the right cutter for the job, and make sure cutters are sharp. The right tool decreases strain on the lathe components and reduces the risk of unsafe cutting.
- 3. ELIMINATING PROJECTILE HAZARDS:** Always remove the chuck key, and never walk away from the lathe with the chuck key installed. Always make sure workpiece is securely held in chuck before starting lathe. A workpiece thrown from the chuck could cause severe injury.
- 4. AVOIDING OVERLOADS:** Always use the appropriate feed and speed rates.
- 5. PREVENTING A CUTTING TOOL/CHUCK CRASH:** Always release automatic feeds after completing a job, and never leave lathe unattended while it is running.
- 6. AVOIDING STARTUP INJURIES:** Make sure workpiece, cutting tool, and tool post have adequate clearance before starting lathe. Check chuck clearance and saddle clearance before starting the lathe. Make sure spindle RPM is set correctly for part diameter before starting the lathe. Large parts can be ejected from the chuck if the chuck speed is set too high.
- 7. CHUCK SAFETY:** Chucks are surprisingly heavy and awkward to hold, so protect your hands and the lathe ways. Always use a chuck cradle or piece of plywood over the lathe ways.
- 8. WORKPIECE SUPPORT:** Support a long workpiece if it extends from the headstock so it will not wobble violently when the lathe is turned ON. If workpiece extends more than 2.5 times its diameter from the chuck, support it by a center or steady rest, or it may deflect and fall out of the chuck while cutting.
- 9. AVOIDING ENTANGLEMENT INJURIES:** Never attempt to slow or stop the lathe chuck by hand. Tie back long hair, ponytails, loose clothing, and sleeves so they do not dangle.



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:

THIS METAL LATHE MUST BE 'HARDWIRED' (connected directly to the circuit breaker without the use of a plug). We recommend that only a qualified electrician do the initial 'Hardwiring' of this metal lathe.

WARNING:

YOUR METAL LATHE MUST BE CONNECTED TO A 600V, 15-AMP (MINIMUM) BRANCH CIRCUIT WITH 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.

TECHNICAL INFORMATION KC-1640ML

Main Specifications

Max. swing over bed.....	16"
Max. swing over saddle gap.....	22"
Max. swing over cross slide.....	10"
Distance between centers.....	40"

Headstock

Spindle bore diameter.....	2"
Spindle bore taper.....	MT#6
Spindle speed range.....	16 (45-1800 R.P.M.)

Gear Box

Inch threads (number and range).....	.45 (2-72 T.P.I.)
Metric threads (number and range).....	.39 (0.2 - 14mm)
Modular pitches (number and range).....	18 (0.3 - 3.5 MP)
Diametrical pitches (number and range).....	.21 (8 - 44 DP)

Tool Post, Saddle, Tailstock

Top Slide travel.....	5-1/2"
Cross Slide travel.....	8-1/2"
Tailstock taper.....	MT#4
Tailstock quill travel.....	4-3/4"
Diameter of Tailstock quill.....	2"

Motor

Speeds.....	2 (high/low)
Horsepower.....	3-4 HP
Voltage.....	600V, 3 phase
Amperage.....	5 amp.
Motor frequency.....	60Hz

GETTING TO KNOW YOUR LATHE, CLEANING & PRETEST RUN

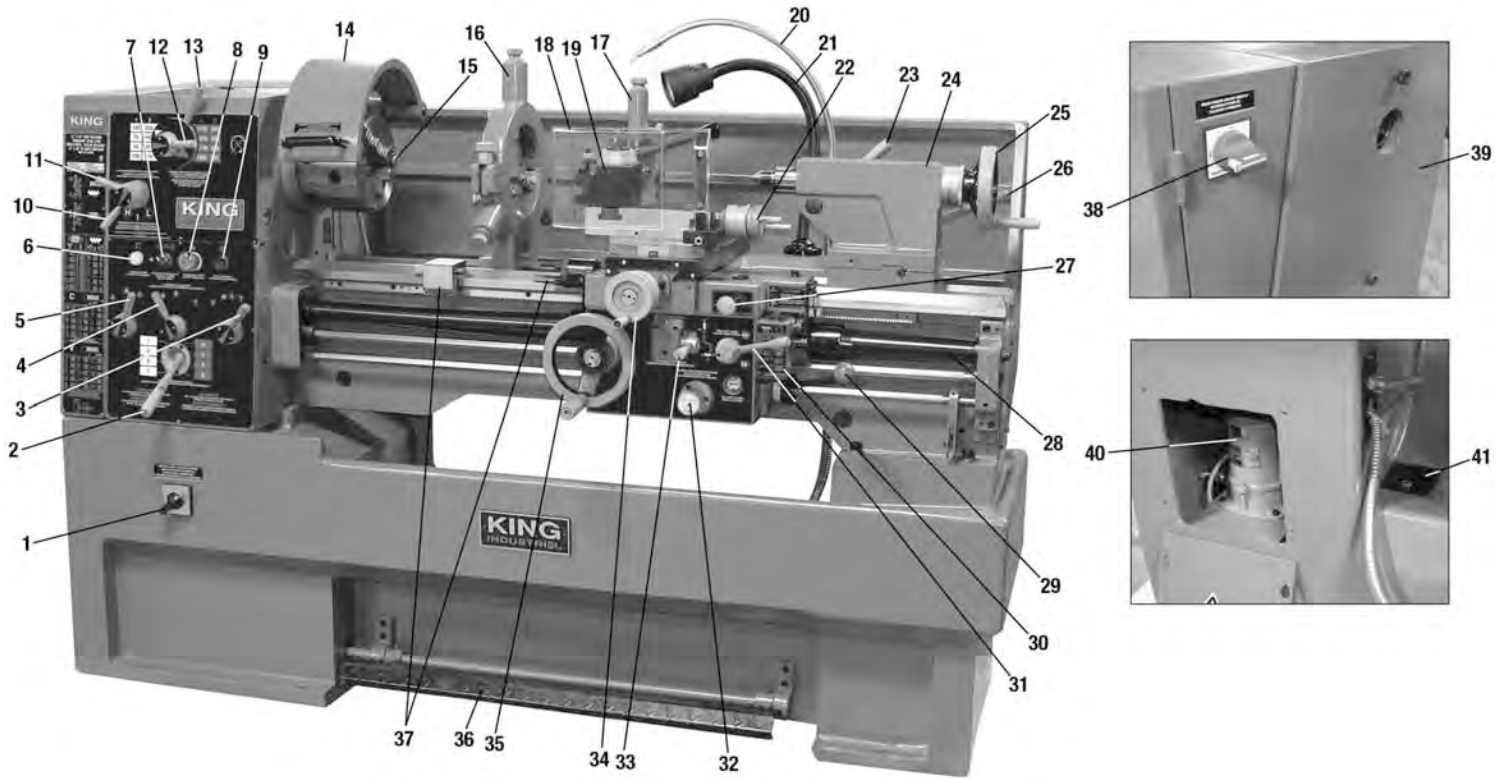


FIGURE 1

- | | | |
|--|-----------------------------------|------------------------------------|
| 1- Motor speed switch (high/low) | 16- Steady rest | 31- Halfnut lever |
| 2- Gearbox speed range lever | 17- Follow rest | 32- Carriage feed direction knob |
| 3- Gearbox ratio lever | 18- Tool post transparent guard | 33- Feed selector lever |
| 4- Gearbox ratio lever | 19- Quick change tool post | 34- Cross slide handwheel |
| 5- Gearbox ratio lever | 20- Coolant nozzle | 35- Carriage handwheel |
| 6- Power ON light | 21- Halogen lamp | 36- Foot brake |
| 7- Coolant pump switch | 22- Compound slide handwheel | 37- Manual micrometer stop |
| 8- Emergency stop button | 23- Tailstock sleeve lock lever | 38- Main On/Off switch |
| 9- Inching/Jogging button | 24- Tailstock | 39- Spindle/gear change cover |
| 10- Gearbox high/low range lever | 25- Tailstock handwheel | 40- Coolant pump/coolant reservoir |
| 11- Leadscrew/Feed rod direction lever | 26- Tailstock lock lever | 41- Coolant screen |
| 12- Headstock speed lever | 27- Carriage oil hand pump | |
| 13- Headstock low/high range lever | 28- Leadscrew protector | |
| 14- Chuck guard with limit switch | 29- Spindle rotation On/Off lever | |
| 15- Chuck | 30- Threading dial | |

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

CLEANING & PREPARING LATHE BEFORE THE FIRST TEST RUN

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" in the maintenance section in this manual before operating your lathe.

TEST RUN

WARNING!

TO AVOID CAUSING SEVERE DAMAGE TO THE METAL LATHE, NEVER SHIFT LATHE GEARS WHEN LATHE IS OPERATING. Make sure the half-nut lever and the feed lever are disengaged before starting the metal lathe. The lathe will feed the carriage towards the chuck or the tailstock.

A test run is recommended to determine if there are any problems before operating the lathe.

1. Turn the main On/Off switch (#38) Fig.1 to the On position.
2. Make sure the headstock oil level is full. See oil sight glass (A) Fig.3 Refer to maintenance section for lubrication instructions.
3. Make sure the chuck is mounted securely to the spindle. Refer to Mounting Chuck/Faceplate section for instructions.
4. Disengage the feed lever (A) Fig.2 (horizontal position), disengage half-nut lever (B) (pull upwards), move spindle rotation On/Off lever (C) to the centre neutral position (motor Off). See Fig.2 as reference.
5. Rotate emergency stop button (B) Fig.3 clockwise until it pops out.
6. Turn the motor high/low range switch (E) Fig.3 to the "1" position and the green power On light (C) Fig.3 will turn on.
7. Push the jog button (D) Fig.3 several times, the motor will turn On momentarily and the chuck will rotate.
8. Position headstock levers as shown in Fig.4. Position the headstock speed lever (A) Fig.4 to the left and the gearbox high/low lever (B) pointing downwards to obtain a spindle speed of 330 RPM.
9. Move the spindle rotation On/Off lever (C) Fig.2 downwards until the chuck turns. Push the emergency stop button to stop the lathe.
10. Reposition the spindle rotation On/Off lever (C) Fig.2 to the centre neutral position, reset emergency stop button and restart the lathe.
11. Push the foot brake (#36) Fig.1, the lathe should come to a complete stop.
12. Return the spindle rotation On/Off lever to the stop position, restart the lathe, let the lathe run for 10 minutes at 330 RPM in both directions.
13. After 10 minutes, stop the lathe, position headstock levers to the next highest RPM. Run for 10 minutes in both directions.
14. Repeat for the remaining RPM ranges increasing in RPM. Once done, the break-in of the lathe is now complete.
15. Drain and refill lubricant in the headstock. Refer to maintenance section for lubrication instructions.

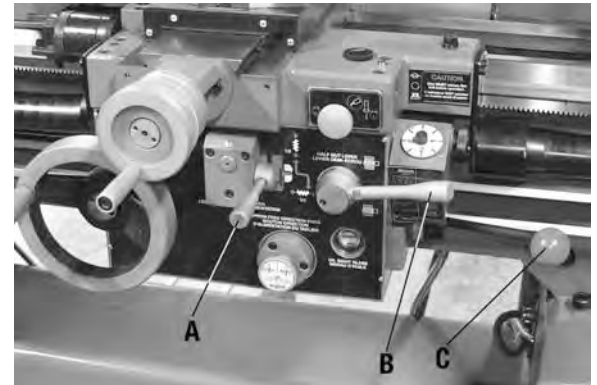


FIGURE 2



FIGURE 3



FIGURE 4

ADJUSTMENTS & OPERATION



Mounting or removing chuck or face plate

The 3-jaw chuck comes installed on the lathe, all three jaws move in unison when adjusted. The supplied 4-jaw chuck has independant jaws and is used for square or unevenly shaped workpieces. If neither chuck can hold your workpiece, the faceplate can be mounted using its t-bolts and slots to secure workpiece. The chucks and faceplate come with a D-6 camlock mount. Before mounting a chuck or face plate, it is very important that the mounting surfaces on both the spindle nose and the attachment are extremely clean.

All the camlocks (A) Fig.5 should be in their release position, the camlock mark line (B) line up with the spindle nose mark line (C). Mount the chuck or faceplate onto the spindle nose, once in position, each camlock must be tightened and locked into place. Camlocks (A) are tightened by turning them clockwise using the provided Camlock Key. The cams are properly locked into place when the camlock mark line (B) is inbetween the 2 V's (D) on the spindle nose, see Fig.5.

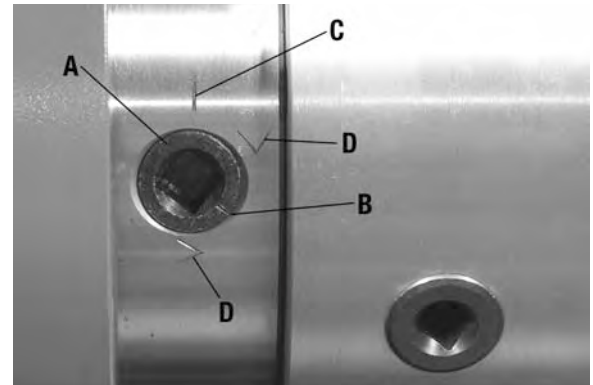


FIGURE 5

Adjusting and reversing chuck jaws

Chuck jaws (A) Fig.6 can be opened or closed by using the camlock key (B) in the jaw adjustment cams (C). Turning the camlock key 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.

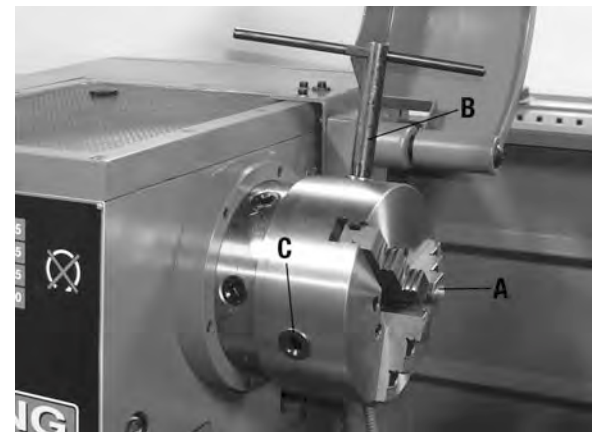


FIGURE 6

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.7 to the carriage using 2 cap screws. Install the steady rest (B) to the bedway (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 adjusting the position each bearing fingers (refer to knobs C & E) until they all contact the workpiece. Do not over tighten the bearing fingers. Once adjusted, tighten the lock knobs (D & F) of each bearing finger.

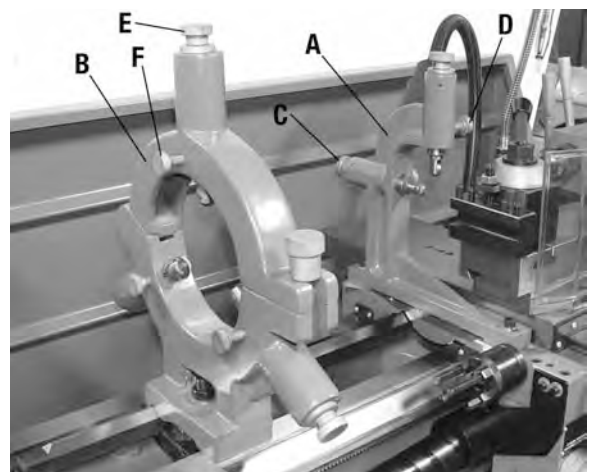


FIGURE 7

Tailstock Adjustments & Operation

The tailstock (A) Fig.8 can be moved freely on the bedway and fastened at any position using the tailstock lock lever (B). The tailstock quill (C) can be moved in and out by using handwheel (D) and then locked in place using quill locking lever (E). Dead centers or drill chucks are normally installed in the tailstock quill.

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 centre and the tailstock centre. Using a precise measuring tool, 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.9. If the distance is not the same, then a cross-wise adjustment to the tailstock is necessary.

To make a cross-wise adjustment, unlock tailstock lever (B) Fig.8 and adjust set screws (F) on both sides of the tailstock until the distance at both ends of the ground steel bar are the same.

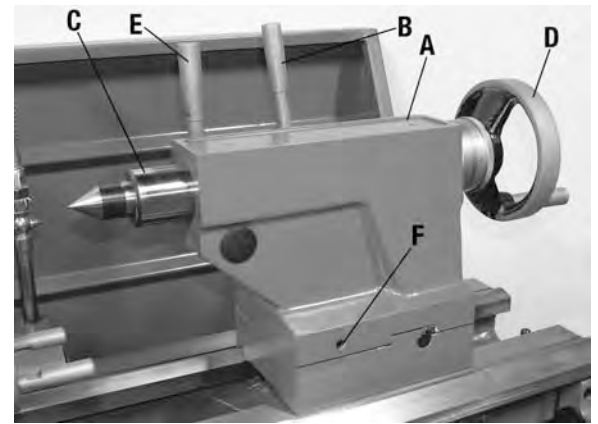


FIGURE 8

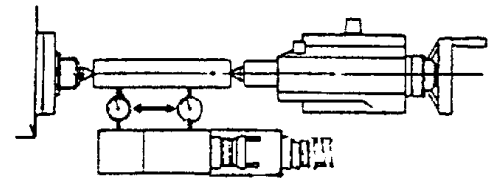


FIGURE 9

Tool Post & Holder Adjustments & Operation

The tool post assembly (A) Fig.10 is used to lock the cutting tool into place at the desired height and angle. The tool post can pivot 360° for various cutting situations. To pivot the tool post assembly, loosen lock nut (B) and pivot tool post, retighten lock nut. The tool post comes with a tool holder (C) which can be adjusted to a desired height using the shaft and nuts mechanism (D) to raise or lower the tool holder. Once the height of the tool holder is determined, use tool post lock handle (E) to lock tool holder in place. The tool holder has 4 locking set screws (F) which lock the cutting tool in place.

During all operations, the tool post safety guard (K) Fig.11 must be in the closed position as shown in order to protect user.

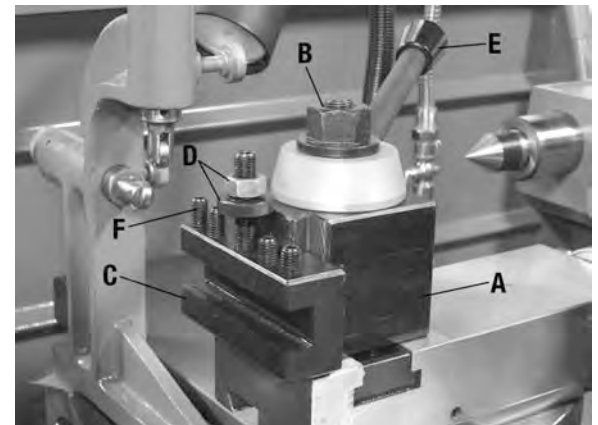


FIGURE 10

Cross & Top Slide Adjustments & Operation

The cross slide handwheel (A) Fig.11 is used to feed the cross slide (B), top slide and tool post with cutting tool towards the workpiece. After time the cross slide gib may become loose or too tight and an adjustment may be necessary. To adjust the gib, tighten or loosen the flat head bolt (C) until the cross slide moves freely without play.

The top slide handwheel (D) feeds the top slide (E) 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. To adjust the gib, tighten or loosen the flat head bolt (F) until the top slide moves freely without play.

The top slide (E) can be pivoted to a desired angle, to adjust the angle of the top slide simply loosen cap screws (G) on both sides of the top slide base. Use the angle scale (H) on the top of the cross slide as reference. Retighten cap screws once the adjustment is made.

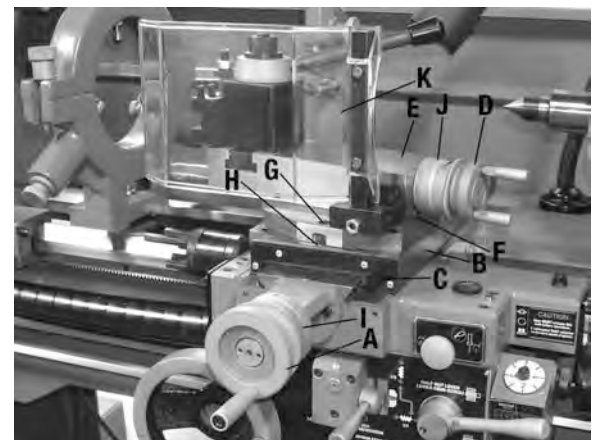


FIGURE 11

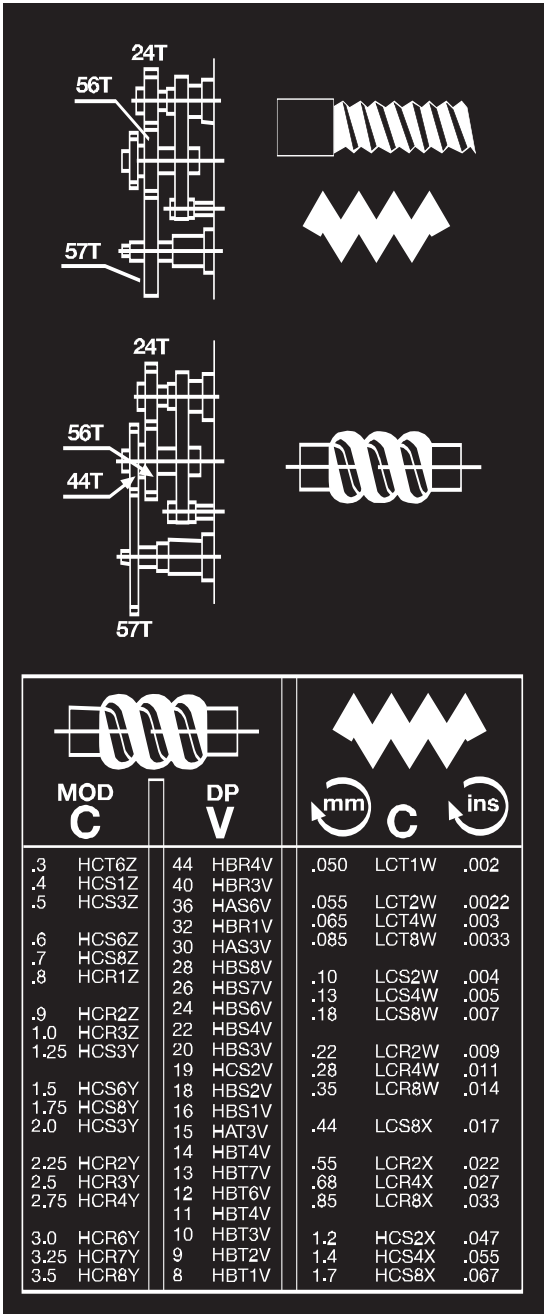
The cross and top slides come with imperial and metric dials (I & J) Fig.11. Simply turn the dials 180 degrees to switch from metric to imperial or vice versa.

METAL LATHE CHARTS

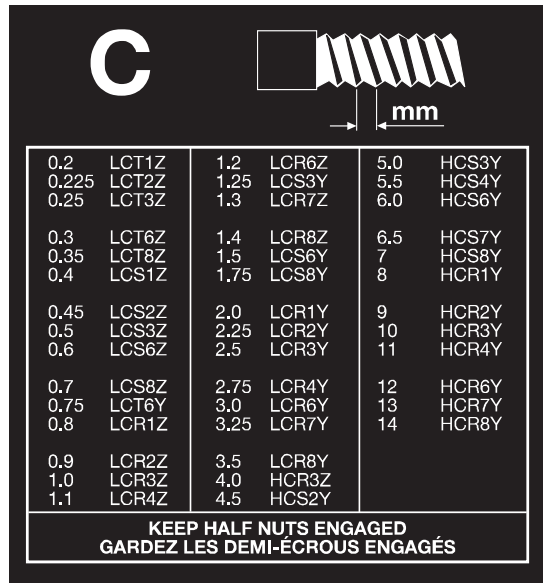


Metal Lathe Charts

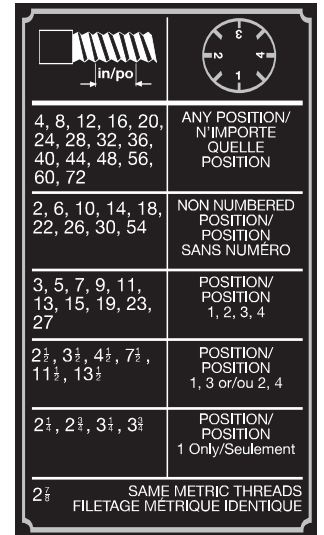
Below are all the charts which are found on the metal lathe plates. We have included these charts in this manual for reference purposes, in case one or many plates have been damaged and are no longer readable.



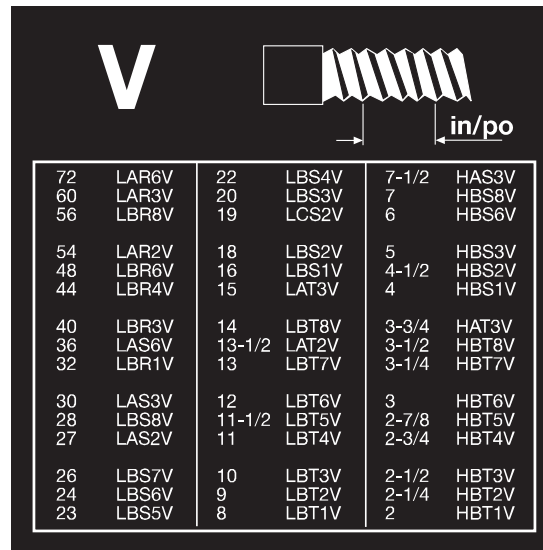
Change Gears Chart
Modular and Diametrical Thread Pitch Chart
Feed Speeds Chart
FIGURE 12



Metric Thread Pitch Chart
FIGURE 13



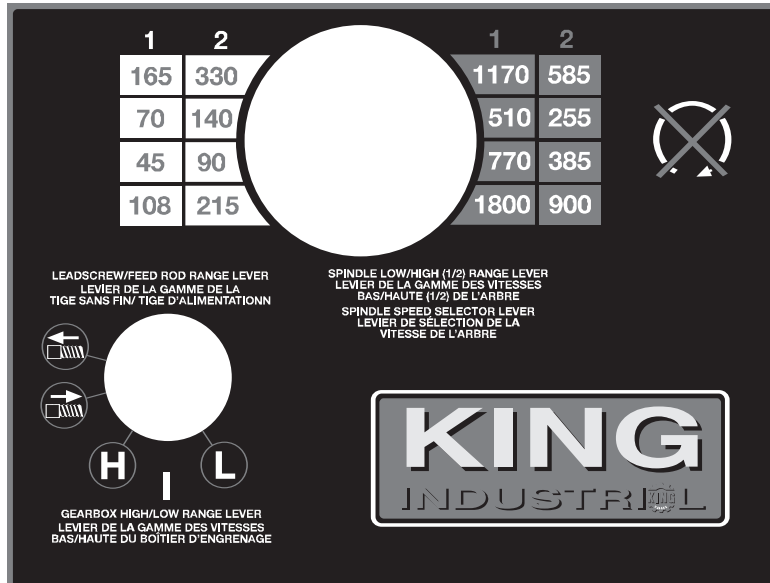
Thread Dial Indicator Chart
FIGURE 15



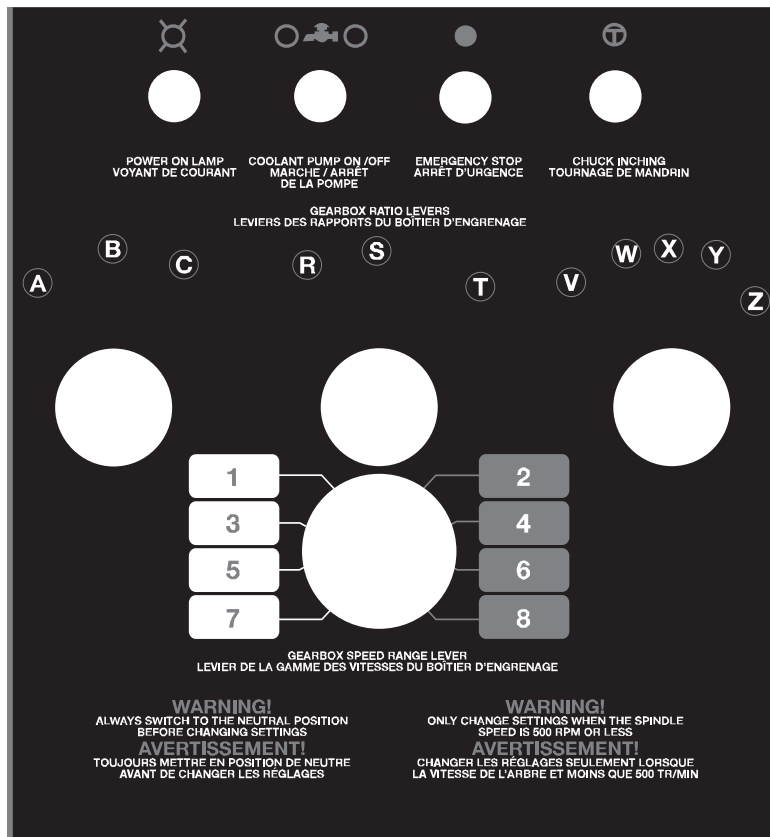
Imperial Thread Pitch Chart
FIGURE 14

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 one or many plates have been damaged and are no longer readable.



Spindle Speed Chart
FIGURE 16



Control Panel/Feed Rate/Thread Selection Chart
FIGURE 17

ADJUSTMENTS & OPERATION



Spindle Speeds

The spindle speed (spindle RPM) is controlled by two levers (A & B) Fig.18 at the top of the headstock and the 2 speed motor switch (C). The 2 speed motor allows for low or high range speed options presented in columns 1 (D) and 2 (E). Fig.18 shows an example of how to set the spindle speed to 1170 RPM.

1. Move the 2 speed motor switch (C) Fig.18 to the "1" position as shown.
Note: Position "1" activates both #1 columns (D) on the speed chart.
Note: Position "2" activates both #2 columns (E) on the speed chart.
Note: Position "0" cuts power to the motor.
2. Move the headstock low/high range lever (A) so that it points towards which ever range column your RPM is listed.
3. Move the headstock speed lever (B) so that the indicator points to 1170 RPM at the top of column number "1".



FIGURE 18

Gearbox Speed Range Lever

Warning! Only shift the gearbox levers when the spindle speed is less than 500 RPM and the gearbox speed range lever is in neutral.

The gearbox consists of a few levers to control the feed rod and leadscrew feed rates in relation with the spindle speed. Based on the threading and feed rate chart, you can shift the gearbox to obtain a large array of feed rates.

1. Depending on the position of the spindle range lever (A) Fig.19, the gearbox speed range lever (B) has 8 settings for various threading and power feed operations.
2. When the spindle range lever (A) is pointing towards the white spindle speed chart (C), the right hand selections 1, 3, 5, 7 (D) are available.
3. When the spindle range lever (A) is pointing towards the red spindle speed chart (E), the left hand selections 2, 4, 6, 8 (F) are available.



FIGURE 19

Feed Rod and Leadscrew

Warning! Only shift the gearbox levers when the spindle speed is less than 500 RPM and the gearbox speed range lever is in neutral.

1. The leadscrew/feed rod lever (A) Fig.20 engages and disengages the leadscrew and feed rods simultaneously. When moved up or down, the rotation of the lead screw and feed rods are simultaneously reversed.
2. The gearbox high/low range lever (B) Fig.20 will put the gearbox in high range (H), low range (L) or neutral (I).

Warning! Make sure to loosen the carriage lock bolt (A) Fig.21 before any power feed or threading operations. This carriage lock bolt is used to increase stability when performing facing operations.



FIGURE 20

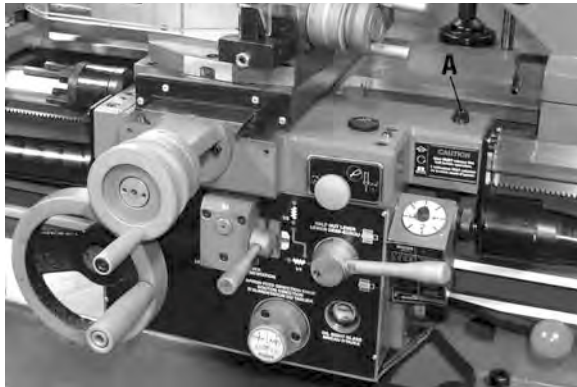


FIGURE 21



FIGURE 23

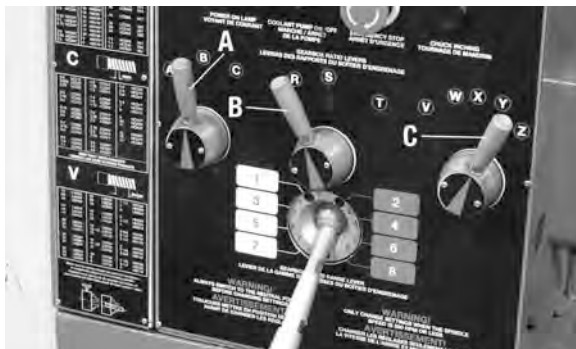


FIGURE 22

Gearbox Ratio Levers

Warning! Only shift the gearbox levers when the spindle speed is less than 500 RPM and the gearbox speed range lever is in neutral.

The gearbox has a series of levers used for controlling the feed rod and leadscrew feed rates in relation to the spindle speed. Based on the threading and feed rate chart, you can shift the gearbox to accommodate a large range of feed speeds.

1. The 3 gearbox range levers (A, B & C) Fig.22 which have multiple lettered positions, when placed according to the threading chart and example shown in Fig.24, you can quickly change the feed rate.
2. The example in Fig.24 shows the lathe set up for 3.5mm metric thread.
3. For threading, make sure the change gears (A) Fig.23 are set as shown in the metric/imperial threading gear positions illustration (A) Fig.24.
4. In the metric thread chart (B) Fig.24, a combination of letters and numbers appear next to the 3.5mm (LCR8Y), position levers in the corresponding positions as shown in Fig.24.

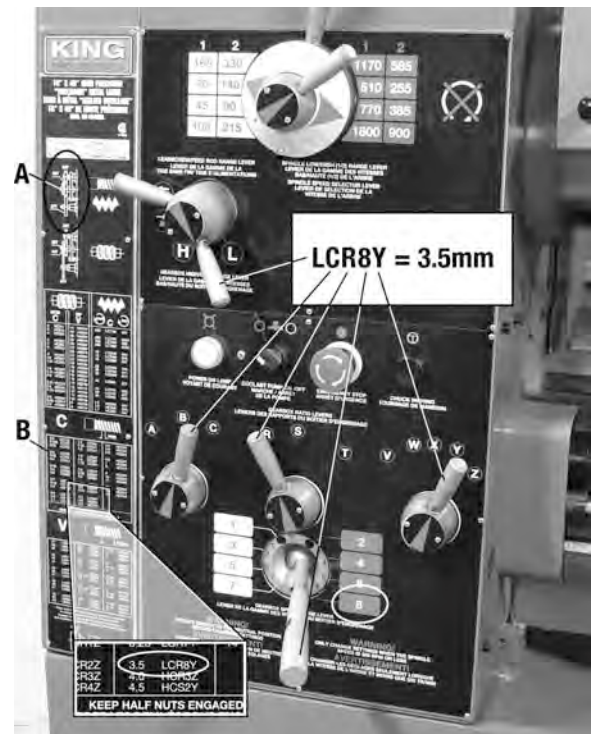


FIGURE 24

ADJUSTMENTS & OPERATION



Power Feed Direction Knob

This lathe can cut left and right while feeding, or in and out when facing. The feed direction is controlled by the feed direction knob (A) Fig.25.



FIGURE 25

Half-nut Lever and Thread Dial

The half-nut lever (A) Fig.26 clamps and releases the half-nut, which clamps around the leadscrew. Only engage this lever when cutting threads, use the feed lever (B) for general purpose feeding.

This lathe has imperial leadscrews, therefore the thread dial chart (A) Fig.27 can only be used for imperial (inch) threads. For all other threading operations, the half-nut lever (A) Fig.26 must stay engaged until the threads are complete.

If the feed lever (B) Fig.26 is engaged, the half-nut lever will be blocked from use, and vice versa.

The thread dial knob (C) Fig.26 is loosened, the thread dial housing (D) pivots so its gear can engage or disengage from the leadscrew. When engaged the dial (E) turns with the leadscrew and spindle.

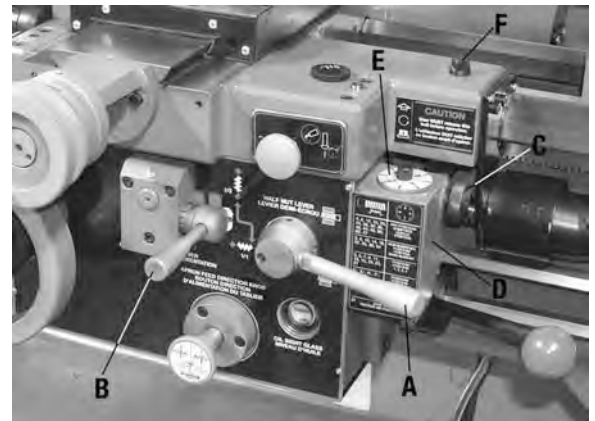


FIGURE 26

Note: Make sure to loosen the carriage lock bolt (F) when threading or using the power feed.

The thread TPI chart (left side of chart Fig.27) indicates when you can use the thread dial depending on the thread TPI being cut.

The dial chart (right side of chart Fig.27) indicates which position on the dial you must reengage the half-nut.

4, 8, 12, 16, 20, 24, 28, 32, 36, 40, 44, 48, 56, 60, 72	ANY POSITION/ N'IMPORTE QUELLE POSITION
2, 6, 10, 14, 18, 22, 26, 30, 54	NON NUMBERED POSITION/ POSITION SANS NUMÉRO
3, 5, 7, 9, 11, 13, 15, 19, 23, 27	POSITION/ POSITION 1, 2, 3, 4
$2\frac{1}{2}$, $3\frac{1}{2}$, $4\frac{1}{2}$, $7\frac{1}{2}$, $11\frac{1}{2}$, $13\frac{1}{2}$	POSITION/ POSITION 1, 3 or/ou 2, 4
$2\frac{1}{4}$, $2\frac{3}{4}$, $3\frac{1}{4}$, $3\frac{3}{4}$	POSITION/ POSITION 1 Only/Seulement
$2\frac{7}{8}$	SAME METRIC THREADS FILETAGE MÉTRIQUE IDENTIQUE

FIGURE 27

Manual Micrometer Stop

This lathe comes with a manual micrometer stop, see Fig.28. At the end of a cut as the cutting tool gets close to the shoulder of the workpiece, disengage the carriage and manually finish the cut by hand operating the carriage.

The micrometer stop is not an automatic carriage stop. If used this way the carriage can come into contact with the chuck, possibly causing serious damage to the lathe.

1. Loosen the two cap screws under the fixed block (A) Fig.28, position fixed block in desired location.
2. The fixed block comes with a dial (B) to set the distance of the fixed block stop (C).
3. The turn-style stops block (D) can then be pivoted to the appropriate position.

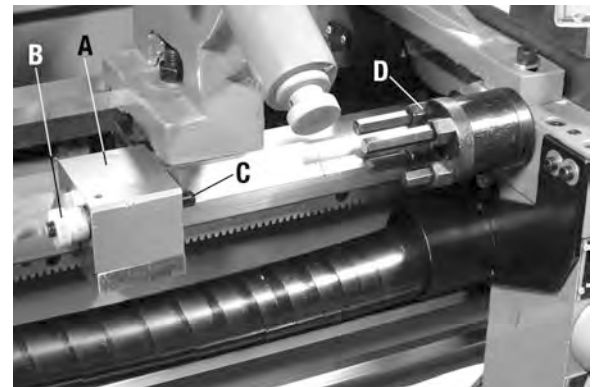


FIGURE 28

Gap removal

This lathe comes with a removable gap section (A) Fig.29, this gap can be removed when turning large diameter workpieces.

NOTE: It is nearly impossible to reinstall the gap perfectly as per original factory position, if the gap section is removed, it is recommended to leave the gap out and loose some carriage travel near the chuck.

1. Remove 4 cap screws (B) Fig.29 from the bottom of the gap and 2 cap screws (C) from the ends of the bed.
2. Loosen 2 set screws (D) from the bottom of the gap and 2 set screws from the bed, then tap the gap upwards using a rubber mallet to dislodge it.

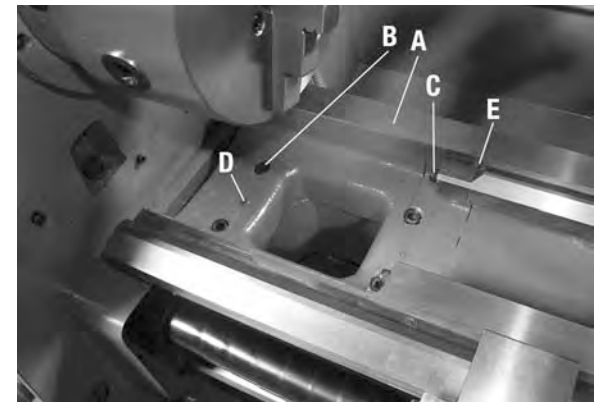


FIGURE 29

Coolant System

It is suggested to use the coolant system during operations involving high speed cutting. Excessive heat and damage to your cutting tool will be avoided if the coolant system is on with the spout directed towards the cutting tool and the work area during the cutting operation.

The coolant system operates by recycling the coolant flow from the coolant pump (A) Fig.30 up through the coolant spout (A) Fig.31, then falls into the chip tray (B) Fig.30 and drains back down through the screen (C) to the coolant pump and the cycle is repeated. To fill the system with coolant, simply pour coolant into the chip tray, it will flow down into the coolant bucket. Be careful not to overflow.

The amount of flow is controlled by a valve (B) Fig.31 at the base of the coolant spout. For maximum flow, open the valve completely, Fig.31 shows the valve in the open position, turn the valve a 1/4 turn in either direction to close it.

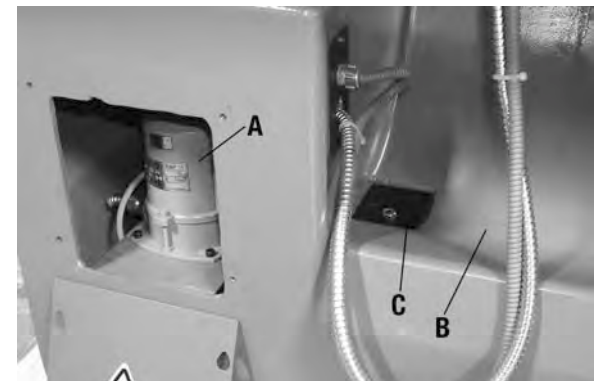


FIGURE 30

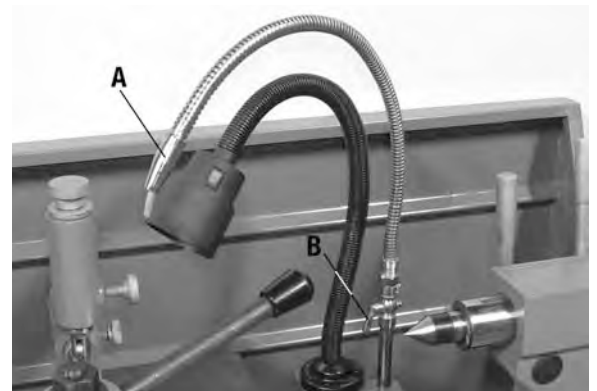


FIGURE 31

Lubrication

Before operating the metal lathe, check the oil level and lubricate all sliding surfaces such as the bed, half-nut, worm gear, leadscrew, feed rod, handle rod, tailstock quill before and after operating. For best performance, do not leave metal chips and coolant fluid on the bed, wipe down and oil the lathe after use.

Carriage, cross slide and top slide

The carriage oil level should be checked regularly. Change carriage oil after the first 3 months and once every year after. The carriage oil drain plug is found under the carriage, drain oil. Reinstall drain plug. The carriage is filled with 1.2 Litres of SAE-30 motor oil through the filling plug (A) Fig.32 on the top of the carriage. Fill oil until it reaches the 3/4 mark on the oil level indicator (B). Lubricate the ball oilers (C) with regular machine oil, most are shown in Fig.32.

To lubricate the carriage and the cross slide way guides, pull the pump knob (D) Fig.32 out and hold it for a few seconds, the pump will draw oil from the carriage reservoir, then push pump knob in to pump oil through drilled passages in the way guides. Repeat until properly lubricated.

Drive gears, headstock and gearbox

Lubricate the change gears (A) Fig.33 with thick bearing grease once a month.

After running for the first 3 months, change headstock oil. Change oil once a year after first initial oil change. To drain oil from the headstock, remove left end cover, remove oil drain bolt (B) Fig.33 and drain oil. Reinstall drain bolt. Open the top oil plug (C) and fill with 8 Litres of EP68 hydraulic oil until it reaches the 3/4 mark on the oil level indicator (A) Fig.34.

To drain oil from the gearbox, remove left end cover, remove oil drain bolt (D) Fig.33 and drain oil. Reinstall drain bolt. Remove oil fill bolt (E) and fill 1.3 Litres of SAE-30 motor oil until it reaches the 3/4 mark on the oil level indicator (B) Fig.34.

Tailstock

Lubricate the tailstock ball oilers (A) Fig.35 with regular machine oil. Oil the tailstock quill (B) weekly with regular machine oil. It is recommended to remove the tailstock monthly to wipe down the bed ways and relubricate.

Leadscrew, Feed Rod, Switch Control Rod, Rack and Guide ways

Make sure to lubricate the leadscrew (A) Fig.36, feed rod (B) and switch control rod (C) with machine oil. Apply machine oil to the racks (D) and guide ways (E). Make sure they are clean before lubricating. Lubricate the ball oilers (F) with regular machine oil.

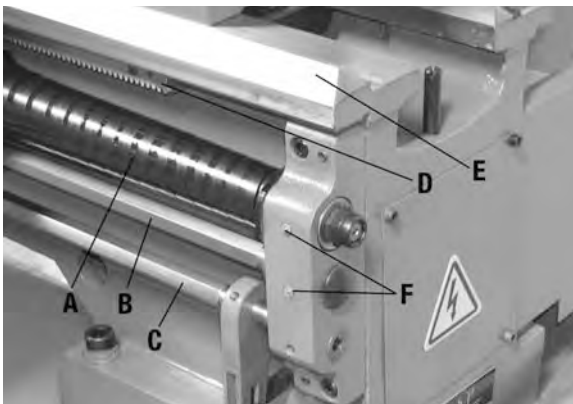


FIGURE 36

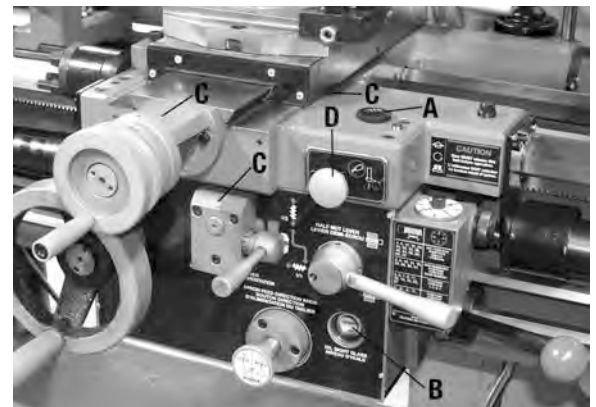


FIGURE 32

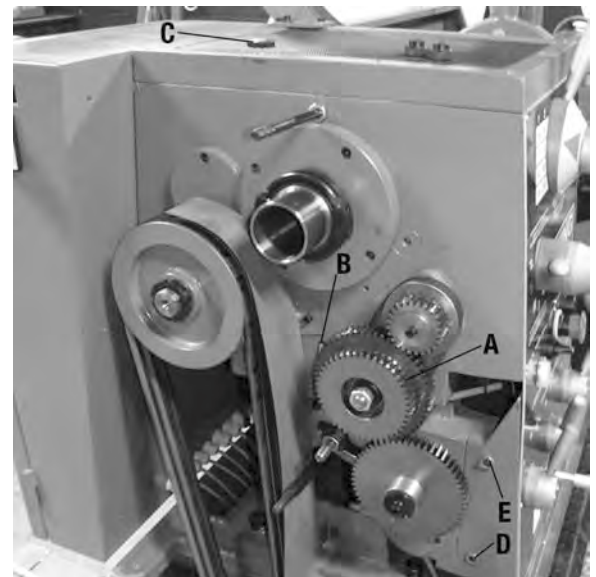


FIGURE 33



FIGURE 34

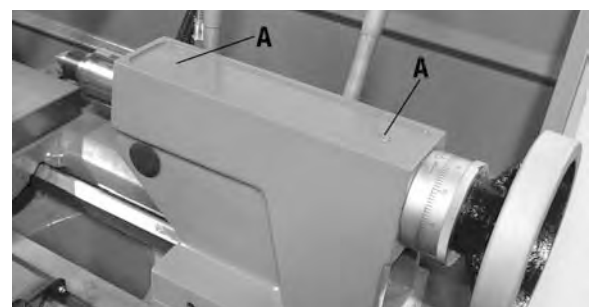


FIGURE 35

Coolant pump

Warning! BIOLOGICAL AND POISON HAZARD. Use appropriate personal equipment when handling coolant fluid. Follow fluid manufacturer requirements for handling and disposal.

The chip tray comes with a screen (A) Fig.37, it is important to prevent the screen from clogging. Coolant pump damage will result if it is operated for a period of time without coolant in the reservoir.



FIGURE 37

V-belts

It will be necessary to tension the V-belts to compensate for belt wear.

1. Open the side cover.
2. Adjust the belt tension hex. nuts (A) Fig.38 until there is approximately 1/2" belt deflection on each belt (B) when pressed firmly in the centre between the pulleys.
3. Reinstall side cover.

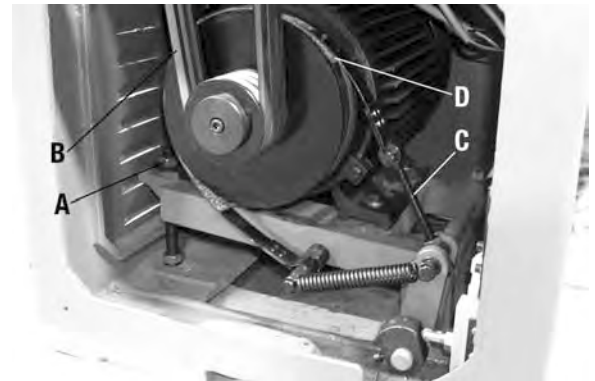


FIGURE 38

Brake

After consistent use of the lathe, it will be necessary to compensate for brake lining wear.

1. Open the side cover.
2. Adjust the brake rod (C) Fig.38 so when the foot pedal is pressed, the brake band (D) firmly clamps the drum. The brake band should be replaced once it has worn down to approximately 2mm thick.
3. Reinstall side cover.