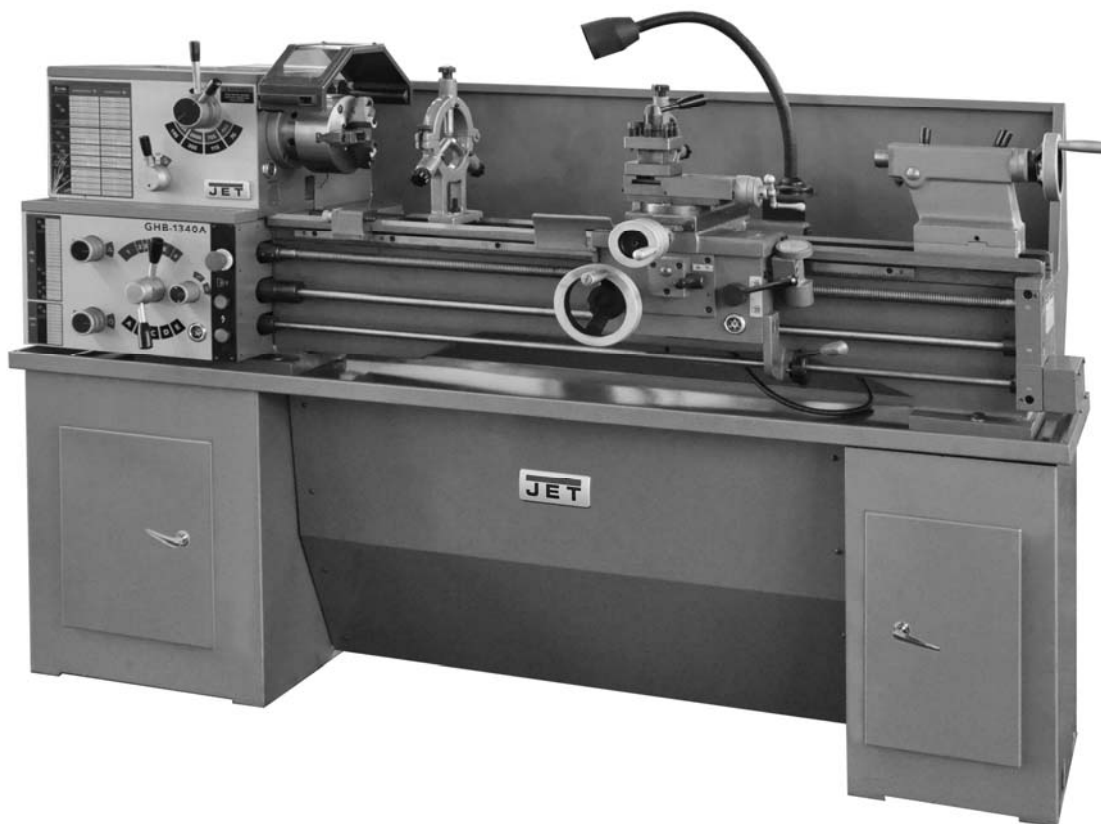


# Operation and Maintenance Instructions Geared Head Bench Lathe

Models GHB-1340A, GHB-1440A



(GHB-1340A shown with optional stand 321443AK)

**For Parts List and Electrical Diagrams, see document M-321357A**

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**Part No. M-321357A-1**  
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## 1.0 IMPORTANT SAFETY INSTRUCTIONS

Read and understand the entire owner's manual before attempting set-up or operation of this lathe.

1. This machine is designed and intended for use by properly trained and experienced personnel only. If you are not familiar with the proper and safe use of lathes, do not use this machine until proper training and knowledge have been obtained.
2. Keep guards in place. Safety guards must be kept in place and in working order.
3. Remove adjusting keys and wrenches. Before turning on machine, check to see that any adjusting wrenches are removed from the tool.
4. Reduce the risk of unintentional starting. Make sure switch is in the OFF position before plugging in the tool.
5. Do not force tools. Always use a tool at the rate for which it was designed.
6. Use the right tool. Do not force a tool or attachment to do a job for which it was not designed.
7. Maintain tools with care. Keep tools sharp and clean for best and safest performance. Follow instructions for lubrication and changing accessories.
8. Always disconnect the tool from the power source before adjusting or servicing.
9. Check for damaged parts. Check for alignment of moving parts, breakage of parts, mounting, and any other condition that may affect the tool's operation. A guard or any part that is damaged should be repaired or replaced.
10. Turn power off. Never leave a tool unattended. Do not leave a tool until it comes to a complete stop.
11. Keep work area clean. Cluttered areas and benches invite accidents.
12. Do not use in a dangerous environment. Do not use power tools in damp or wet locations, or expose them to rain. Keep work area well lighted.
13. Keep children and visitors away. All visitors should be kept a safe distance from the work area.

14. Make the workshop child proof. Use padlocks, master switches, and remove starter keys.
15. 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 glove.
16. Always use safety glasses. Every day glasses only have impact resistant lenses; they are not safety glasses.
17. Do not overreach. Keep proper footing and balance at all times.
18. Do not place hands near the chuck while the machine is operating.
19. Do not perform any set-up work while machine is operating.
20. Read and understand all warnings posted on the machine.
21. This manual is intended to familiarize you with the technical aspects of this lathe. It is not, nor was it intended to be, a training manual.
22. Failure to comply with all of these warnings may result in serious injury.

**⚠ WARNING:** This product can expose you to chemicals including lead and cadmium which are known to the State of California to cause cancer, and phthalates which are known to the State of California to cause birth defects or other reproductive harm. For more information go to <http://www.p65warnings.ca.gov>.

**⚠ WARNING:** Some dust, fumes and gases created by power sanding, sawing, grinding, drilling, welding and other construction activities contain chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. Some examples of these chemicals are:

- lead from lead based paint
- crystalline silica from bricks, cement and other masonry products
- arsenic and chromium from chemically treated lumber

Your risk of exposure varies, depending on how often you do this type of work. To reduce your exposure to these chemicals, work in a well-ventilated area and work with approved safety equipment, such as dust masks that are specifically designed to filter out microscopic particles. For more information go to <http://www.p65warnings.ca.gov/> and <http://www.p65warnings.ca.gov/wood>.

Familiarize yourself with the following safety notices used in this manual:

**CAUTION** This means that if precautions are not heeded, it may result in minor injury and/or possible machine damage.

**WARNING** This means that if precautions are not heeded, it may result in serious, or possibly even fatal, injury.

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## 3.0 Warranty and service

JET warrants every product it sells against manufacturers' defects. If one of our tools needs service or repair, please contact Technical Service by calling 1-800-274-6846, 8AM to 5PM CST, Monday through Friday.

### Warranty Period

The general warranty lasts for the time period specified in the literature included with your product or on the official JET branded website.

- JET products carry a limited warranty which varies in duration based upon the product. (See chart below)
- Accessories carry a limited warranty of one year from the date of receipt.
- Consumable items are defined as expendable parts or accessories expected to become inoperable within a reasonable amount of use and are covered by a 90 day limited warranty against manufacturer's defects.

### Who is Covered

This warranty covers only the initial purchaser of the product from the date of delivery.

### What is Covered

This warranty covers any defects in workmanship or materials subject to the limitations stated below. This warranty does not cover failures due directly or indirectly to misuse, abuse, negligence or accidents, normal wear-and-tear, improper repair, alterations or lack of maintenance. JET woodworking machinery is designed to be used with Wood. Use of these machines in the processing of metal, plastics, or other materials may void the warranty. The exceptions are acrylics and other natural items that are made specifically for wood turning.

### Warranty Limitations

Woodworking products with a Five Year Warranty that are used for commercial or industrial purposes default to a Two Year Warranty. Please contact Technical Service at 1-800-274-6846 for further clarification.

### How to Get Technical Support

Please contact Technical Service by calling 1-800-274-6846. **Please note that you will be asked to provide proof of initial purchase when calling.** If a product requires further inspection, the Technical Service representative will explain and assist with any additional action needed. JET has Authorized Service Centers located throughout the United States. For the name of an Authorized Service Center in your area call 1-800-274-6846 or use the Service Center Locator on the JET website.

### More Information

JET is constantly adding new products. For complete, up-to-date product information, check with your local distributor or visit the JET website.

### How State Law Applies

This warranty gives you specific legal rights, subject to applicable state law.

### Limitations on This Warranty

JET LIMITS ALL IMPLIED WARRANTIES TO THE PERIOD OF THE LIMITED WARRANTY FOR EACH PRODUCT. EXCEPT AS STATED HEREIN, ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE EXCLUDED. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU.

JET SHALL IN NO EVENT BE LIABLE FOR DEATH, INJURIES TO PERSONS OR PROPERTY, OR FOR INCIDENTAL, CONTINGENT, SPECIAL, OR CONSEQUENTIAL DAMAGES ARISING FROM THE USE OF OUR PRODUCTS. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.

JET sells through distributors only. The specifications listed in JET printed materials and on official JET website are given as general information and are not binding. JET reserves the right to effect at any time, without prior notice, those alterations to parts, fittings, and accessory equipment which they may deem necessary for any reason whatsoever. JET® branded products are not sold in Canada by JPW Industries, Inc.

### Product Listing with Warranty Period

90 Days – Parts; Consumable items
1 Year – Motors; Machine Accessories
2 Year – Metalworking Machinery; Electric Hoists, Electric Hoist Accessories; Woodworking Machinery used for industrial or commercial purposes
5 Year – Woodworking Machinery
Limited Lifetime – JET Parallel clamps; VOLT Series Electric Hoists; Manual Hoists; Manual Hoist Accessories; Shop Tools; Warehouse & Dock products; Hand Tools; Air Tools

NOTE: JET is a division of JPW Industries, Inc. References in this document to JET also apply to JPW Industries, Inc., or any of its successors in interest to the JET brand.

## 4.0 About this manual

This manual is provided by JET, covering the safe operation and maintenance procedures for a JET Model GHB-1340A and GHB-1440A Lathe. This manual contains instructions on installation, safety precautions, general operating procedures, and maintenance instructions. Your machine has been designed and constructed to provide consistent, long-term operation if used in accordance with the instructions as set forth in this document.

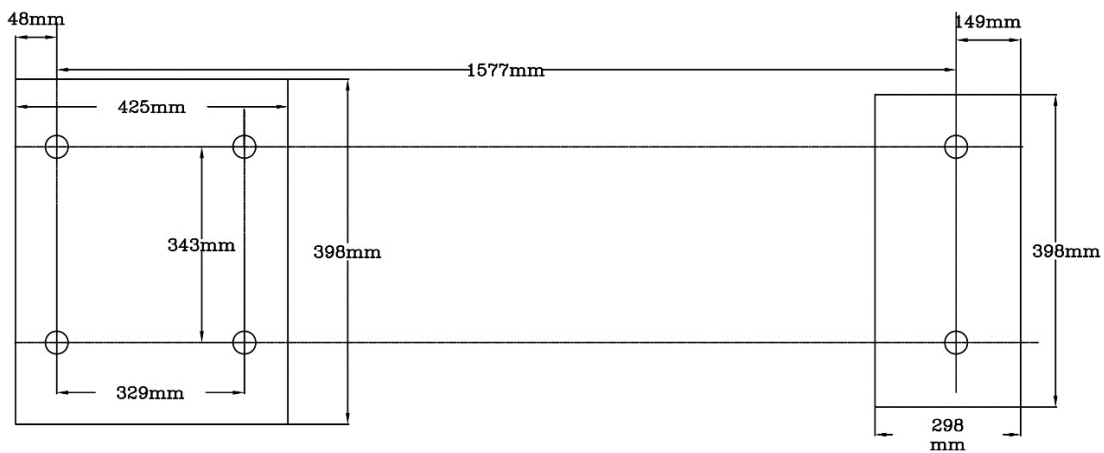
If there are questions or comments, please contact your local supplier or JET. JET can also be reached at our web site: [www.jettools.com](http://www.jettools.com).

Retain this manual for future reference. If the machine transfers ownership, the manual should accompany it.

**⚠ WARNING** Read and understand the entire contents of this manual before attempting assembly or operation! Failure to comply may cause serious injury!

## 5.0 Dimensions for optional stand (p/n 321443AK)

To purchase this optional stand for the GHB-1340A Lathe, contact your dealer or call JET customer service.



height: 598mm

Figure 1

## 6.0 Specifications

Stock Number ..... **321357A** ..... **321359A**  
 Model Number..... GHB-1340A..... GHB-1440A

### Capacities:

Swing Over Bed ..... 13" ..... 14-1/5"  
 Swing Over Cross Slide ..... 7-25/32" ..... 9"  
 Swing Through Gap ..... 18-3/4" ..... 20"  
 Length of Gap ..... 8" ..... 8"  
 Distance Between Centers..... 40" ..... 40"

### Headstock:

Hole Through Spindle ..... 1-3/8" ..... 1-3/8"  
 Spindle Nose..... D1-4..... D1-4  
 Taper in Spindle Nose..... MT-5..... MT-5  
 Spindle Taper Adapter ..... MT-3..... MT-3  
 Spindle Bearing Type..... Taper Roller Bearing..... Taper Roller Bearing  
 Number of Spindle Speeds ..... 8..... 8  
 Range of Spindle Speeds ..... 70-2000 RPM..... 70-2000 RPM

### Gearbox:

Number of Longitudinal and Cross Feed Rates ..... 22/22..... 22/22  
 Range of Longitudinal Feeds (inch/rev) ..... 0.0018" – 0.0374" ..... 0.0018" – 0.0374"  
 Range of Cross Feeds (inch/rev) ..... 0.0006" – 0.0130" ..... 0.0006" – 0.0130"  
 Number of Inch Threads ..... 38..... 38  
 Range of Inch Threads..... 3-1/2 – 80 TPI..... 3-1/2 – 80 TPI  
 Number of Metric Threads ..... 23..... 23  
 Range of Metric Threads..... 0.45 - 10mm..... 0.45 - 10mm  
 Leadscrew ..... 7/8" x 8 TPI..... 7/8" x 8 TPI  
 Feed Rod Diameter ..... 3/4" ..... 3/4"

### Compound and Carriage:

Toolpost Type ..... 4-Way..... 4-Way  
 Maximum Tool Size..... 5/8" x 5/8" ..... 5/8" x 5/8"  
 Maximum Compound Slide Travel ..... 2-11/16" ..... 2-11/16"  
 Maximum Cross Slide Travel ..... 6-5/16" ..... 6-5/16"  
 Maximum Carriage Travel..... 35" ..... 35"

### Tailstock:

Tailstock Spindle Travel ..... 3-3/4" ..... 3-3/4"  
 Diameter of Tailstock Spindle ..... 1-1/4" ..... 1-1/4"  
 Taper in Tailstock Spindle..... MT-3..... MT-3

### Miscellaneous:

Steady Rest Capacity..... 1/4" – 2-5/8" ..... 1/4" – 2-5/8"  
 Follow Rest Capacity ..... 1/4" – 2-3/4" ..... 1/4" – 2-3/4"  
 Length of Bed..... 54" ..... 54"  
 Width of Bed..... 7-3/8" ..... 7-3/8"  
 Height of Bed ..... 12" ..... 12"  
 Overall Dimensions ..... 79"L x 28-1/2"W x 30"H..... 79"L x 28-1/2"W x 30"H  
 Main Motor ..... 2HP, 1PH, 230V only..... 2HP, 1PH, 230V only  
 Net Weight (approx.) ..... 1155 lbs..... 1210 lbs.  
 Shipping Weight (approx.)..... 1365 lbs..... 1430 lbs.

*The specifications in this manual were current at time of publication, but because of our policy of continuous improvement, JET reserves the right to change specifications at any time and without prior notice, without incurring obligations.*

## 7.0 Setup and assembly

### 7.1 Shipping contents

See Figure 2.

- 1 Lathe
- 1 Steady Rest (mounted on lathe)
- 1 Follow Rest (mounted on lathe)
- 1 6" Three Jaw Chuck (mounted on lathe)
- 1 8" Four Jaw Chuck
- 1 12" Face Plate (strapped to container)
- 3 Cam Locks
- 3 Socket Head Cap Screws
- 1 Tool Box (strapped to container)
- 1 Chip Tray
- 1 Splash Guard
- 1 Lifting Hook
- 2 Lifting Blocks

#### **Tool Box:**

- 3 Open End Wrenches (9/11, 10/12,12/14mm)
- 1 Touch-Up Paint
- 1 Oil Can
- 1 Hex Key Set (2, 2.5, 3, 4, 5, 6, 8mm)
- 2 Shear Pins
- 1 33T Gear
- 1 44T Gear
- 1 46T Gear
- 1 48T Gear
- 1 52T Gear
- 2 T-Handle Chuck Wrenches
- 1 Tool Post Wrench
- 2 MT-3 Centers
- 1 MT-3 to MT-5 Center Sleeve
- 1 Cross Point Screwdriver
- 1 Flat Head Screwdriver
- 1 Key for Cam Locks
- 1 Operating Instructions
- 1 Part's List
- 1 Warranty Card



Figure 2

## 7.2 Uncrating and Cleanup

**⚠WARNING** Machine is heavy. Use an appropriate lifting device and use extreme caution when moving the machine to its final location. Failure to comply may cause serious injury.

1. Finish removing the wooden crate from around the lathe.
2. Unbolt the lathe from the shipping crate bottom.
3. Choose a location for the lathe that is dry, has good lighting, and has enough room to be able to service the lathe on all four sides.
4. Move the carriage and tailstock to the tailstock end of the bed.
5. Assemble parts fastened to the crate bottom used to lift the lathe. See Fig. 3. (Note: Lifting parts are not tightened in Fig. 3 to show detail.) Using a piece of leather or a block of wood under the metal block to protect the ways during lifting is highly recommended.

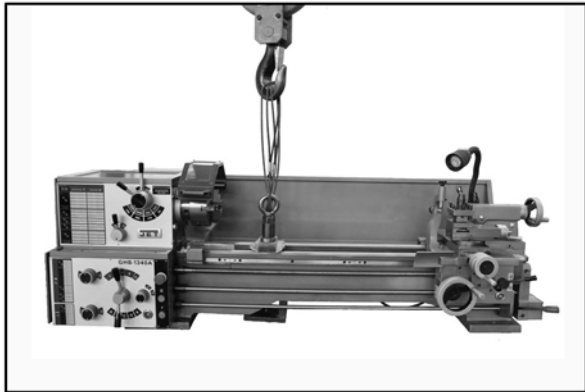


Figure 3

6. With adequate lifting equipment, slowly raise the lathe off the shipping crate bottom. Make sure lathe is balanced before moving to sturdy bench or optional stand.
7. To avoid twisting the bed, the lathe's location must be absolutely flat and level. Bolt the lathe to the stand (if used). If using a bench, through-bolt for best performance.
8. Clean all rust protected surfaces using a mild commercial solvent, kerosene or diesel fuel. Do not use paint thinner, gasoline, or lacquer thinner. These will damage painted surfaces. Cover all cleaned surfaces with a light film of Mobil DTE® Oil Heavy Medium.
9. Remove the end gear cover. Clean all components of the end gear assembly and coat all gears with a heavy, non-slinging grease.
10. Using a machinist's precision level on the bedways, check to make sure lathe is level side to side and front to back. Loosen

mounting bolts, shim, and tighten mounting bolts, if necessary. The lathe must be level to be accurate.

## 7.3 Chuck Preparation (Three Jaw)

**⚠WARNING** Read and understand all directions for chuck preparation. Failure to comply may cause serious injury and/or damage to the lathe.

**Note:** Before removing the chuck from the spindle, place a way board across the bedways under the chuck.

1. Support the chuck while turning three camlocks 1/4 turn counter-clockwise with the chuck key enclosed in the toolbox. Figure 4 shows the cam in the secure position. Line up the two marks (A, Fig. 4) for removal.

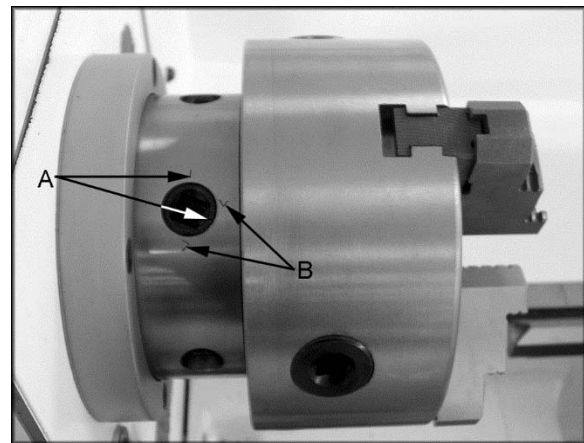


Figure 4

2. Carefully remove the chuck from the spindle and place on an adequate work surface.
3. Inspect the camlock studs. Make sure they have not become cracked or broken during transit. Clean all parts thoroughly with solvent. Also clean the spindle and camlocks.
4. Cover all chuck jaws and scroll inside the chuck with Mobilith® AW2. Cover the spindle, cam locks, and chuck body with a light film of Mobil DTE® Oil Heavy Medium.
5. Lift the chuck up to the spindle nose and press onto the spindle. Tighten in place by turning the cam locks 1/4 turn clockwise. The index mark (A, Fig. 4) on the camlock should be between the two indicator arrows (B, Fig. 4). If the index mark is not between the two arrows, remove the chuck and adjust the camlock studs by either turning out one full turn (if cams will not engage) or turning in one full turn (if cams turn beyond indicator marks).
6. Install chuck and tighten in place.

**ATTENTION:** Only when the incised line on the chuck lines up with that on the spindle, can the chuck be mounted.



## 7.4 Chuck Guard Installation

Install the chuck guard to the headstock, if it is not already mounted. (See parts breakdown if clarification is needed for assembly.)

## 8.0 Lubrication

**CAUTION** 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 to the lathe.

1. **Headstock** - Oil must be up to indicator mark in oil sight glass (A, Fig. 5). Top off with Mobil DTE® Oil Heavy Medium. Fill by pulling plug located on top of the headstock cover, underneath the rubber mat. Drain oil by removing drain plug (B, Fig. 6) and refill after the first month of operation. Clean out any metal shavings. Then, change oil in the headstock annually.
2. **External Gears** - Coat all gears with a heavy, non-slinging grease, see Figure 6.
3. **Gear Shaft** - Remove the set screw (C, Fig. 6) and oil with a couple drops of Mobil DTE® Oil Heavy Medium once weekly.
4. **Gearbox** - Oil must be up to indicator mark in oil sight glass (D, Fig. 7). Top off with Mobil DTE® Oil Heavy Medium. Fill by removing plug (E, Fig. 6). Drain oil by removing drain plug (F, Fig. 6) and refill after the first month of operation. Then, change oil in the gearbox annually.
5. **Apron** - Oil must be up to indicator mark in oil sight glass (A, Fig. 7). Top off with Mobil DTE® Oil Heavy Medium. Fill by removing oil plug (B, Fig. 7). After the first three months of operation, drain oil completely (drain is on the bottom of the apron) and refill with Mobil DTE® Oil Heavy Medium, or equivalent to the indicator line. Then, change oil annually.
6. **Feed Selector** - Lubricate ball oiler (C, Fig. 7) once daily with Mobil DTE® Oil Heavy Medium.
7. **Carriage** - Lubricate two ball oilers (D, Fig. 7) once daily with Mobil DTE® Oil Heavy Medium.
8. **Threading Dial Indicator** - Lubricate ball oiler (E, Fig. 7) once daily with Mobil DTE® Oil Heavy Medium.

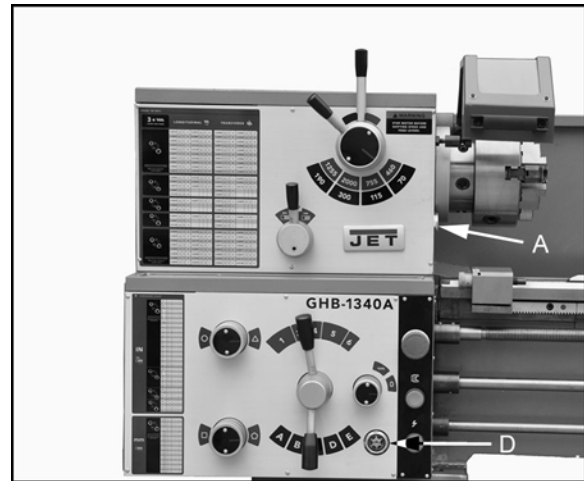


Figure 5



Figure 6

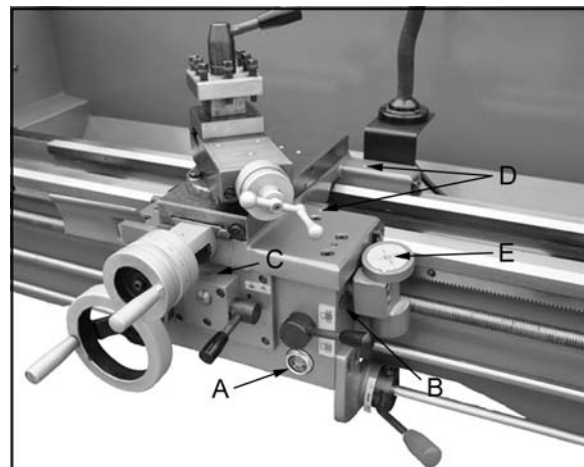


Figure 7

9. **Compound Rest** - Lubricate three ball oilers (F, Fig. 8) once daily with Mobil DTE® Oil Heavy Medium.
10. **Cross Slide** - lubricate four ball oilers (G, Fig. 8) once daily with Mobil DTE® Oil Heavy Medium.
11. **Longitudinal Feed Handwheel** - Lubricate ball oiler (H, Fig. 8) once daily with Mobil DTE® Oil Heavy Medium.

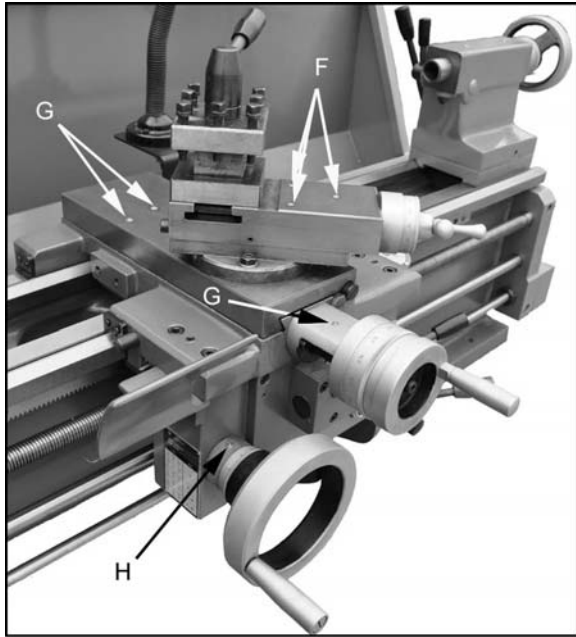


Figure 8

12. **Tailstock** - Lubricate three ball oilers (I, Fig. 9) once daily with Mobil DTE® Oil Heavy Medium.
13. **Leadscrew/Feed Rod** - Lubricate three ball oilers once daily (J, Fig. 9) with Mobil DTE® Oil Heavy Medium.

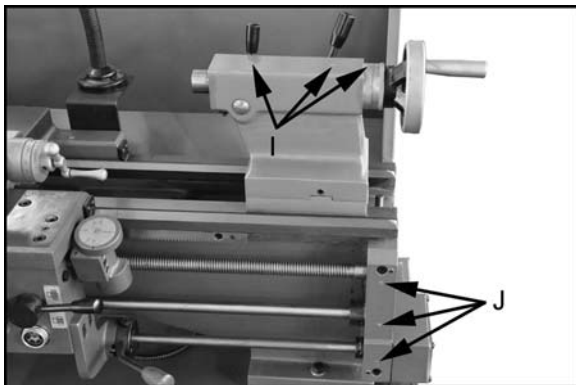


Figure 9

## 9.0 Electrical Connections

**⚠WARNING** All electrical connections must be completed by a qualified electrician. Failure

to comply may cause serious injury and/or damage to the machinery and property.

The GHB-1340A and GHB-1440A bench lathes are rated at 2HP, 1PH, 230V only. Confirm power available at the lathe's location is the same rating as the lathe.

**Make sure the lathe is properly grounded.**

## 10.0 General Description

### 10.1 Lathe Bed

The lathe bed (A, Fig. 10) is made of high grade cast iron. By combining high cheeks with strong cross ribs, a bed with low vibration and high rigidity is realized. Two precision ground V-slideways, reinforced by heat hardening and grinding, are an accurate guide for the carriage and headstock. The main drive motor is mounted to the rear of the bed.

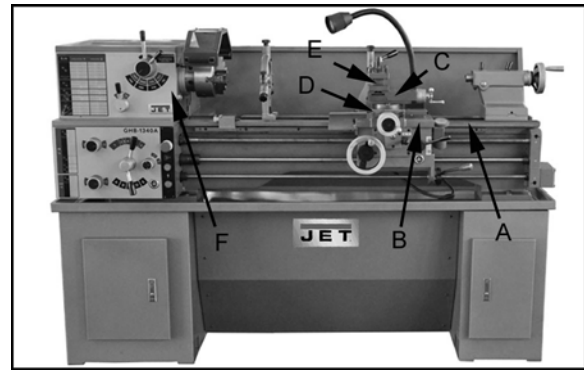


Figure 10

### 10.2 Carriage

The carriage (B, Fig. 10) is made from high quality cast iron. The sliding parts are smooth ground. The cross-slide is mounted on the carriage and moves on a dove-tailed slide which can be adjusted for play by means of the gibs.

The compound slide (C, Fig. 10), which is mounted on the cross slide (D, Fig. 10), can be rotated through 360°. The compound slide and the cross slide travel in a dovetail slide and have adjustable gibs. A four-way tool post (E, Fig. 10) is fitted on the compound slide.

### 10.3 Headstock

The headstock (F, Fig. 10) is cast from high grade, low vibration cast iron. It is mounted to the bed by four bolts with two adjusting bolts for alignment. In the head, the spindle is mounted on two precision taper roller bearings. The hollow spindle has Morse Taper #5 with a 1-1/2" bore.

### 10.4 Four Way Tool Post

The four-way tool post (E, Fig. 10) is mounted on the compound slide and allows a maximum of four tools to be mounted simultaneously. Remember to

use a minimum of two clamping screws when installing a cutting tool.

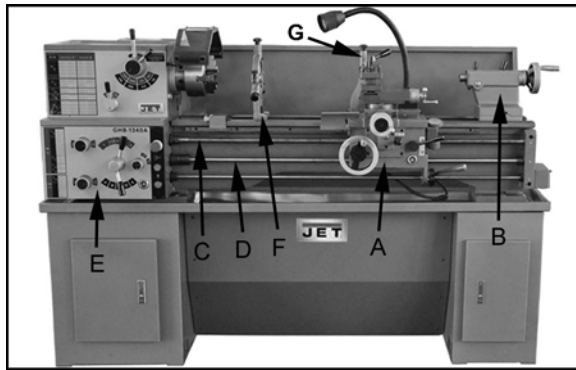


Figure 11

### 10.5 Apron

The apron (A, Fig. 11) is mounted to the carriage. In the apron a half nut is fitted. The half nut gibs can be adjusted from the outside. The half nut is engaged by use of a lever. Quick travel of the apron is accomplished by means of a bed-mounted rack and pinion, operated by a hand wheel on the front of the apron.

### 10.6 Tailstock

The tailstock (B, Fig. 11) slides on a v-way and can be locked at any location by a clamping lever. The tailstock has a heavy-duty spindle with a Morse Taper #3.

### 10.7 Leadscrew and Feed Rod

The leadscrew (C Fig. 11) and feed rod (D, Fig. 11) are mounted on the front of the machine bed. They are connected to the gearbox at the left for automatic feed and lead. They are supported by bushings on both ends. Both are equipped with brass shear pins.

### 10.8 Gear Box

The gear box (E, Fig. 11) is made from high quality cast iron and is mounted to the left side of the machine bed.

### 10.9 Steady Rest

The steady rest (F, Fig. 11) serves as a support for shafts on the free tailstock end. The steady rest is mounted on the bedway and secured from below with a bolt, nut and locking plate. The sliding fingers require continuous lubrication at the contact points with the workpiece to prevent premature wear.

### 10.10 Follow Rest

The traveling follow rest (G, Fig. 11) is mounted on the saddle and follows the movement of the turning tool. Only two fingers are required as the turning tool takes the place of the third. The follow rest is

used for tuning operations on long, slender workpieces. It prevents flexing of the workpiece from the pressure of the cutting tool.

The sliding fingers are set similar to the steady rest, free of play, but not binding. The sliding fingers require continuous lubrication at the contact points with the workpiece to prevent premature wear.

## 11.0 Controls

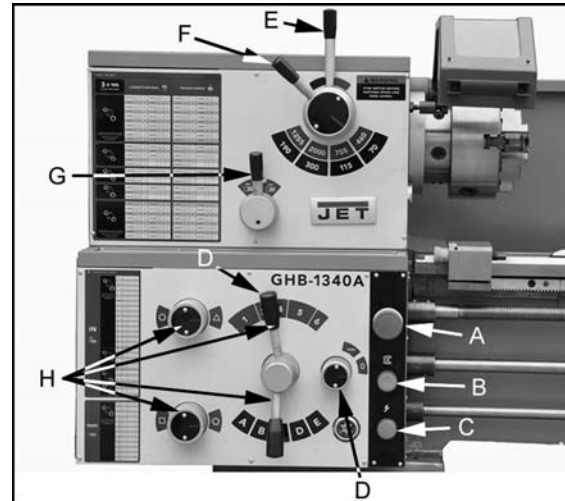


Figure 12

1. **Emergency Stop Switch** (A, Fig. 12) - depress to stop all machine functions. Caution: lathe will still have power. Turn clockwise to re-set.
2. **Jog Switch** (B, Fig. 12) - Depress and release to advance spindle momentarily.
3. **Power Indicator Light** (C, Fig. 12) - Lit whenever lathe has power.
4. **Feed Rod/Leadscrew Selector** (D, Fig. 12) Use knob and lever to activate leadscrew and feed rod.
5. **High/Low Speed Selector Lever** (E, Fig. 12) - Move to the left for low speed range. Move to the right for high speed range.
6. **Four Step Speed Selector Lever** (F, Fig. 12) - Use to select one of four spindle speeds in either high or low range.
7. **Feed Direction Selector** (G, Fig. 12) - Selects carriage travel direction when the chuck is rotating in the forward direction or counter-clockwise as viewed from the front of the chuck.
8. **Feed Rate Selector** (H, Fig. 12) - Use knobs and handles to set desired feed, or lead rates.
9. **Forward/Reverse Lever** (I, Fig. 13) - Pull lever up for clockwise spindle rotation (reverse). Push lever down for counter-clockwise spindle rotation (forward). Neutral

position is a center detent and the spindle remains idle.

10. **Compound Rest Lock** (J, Fig. 13) - Turn hex nut clockwise to lock and counter-clockwise to unlock.
11. **Compound Slide Lock** (K, Fig. 13) - Turn set screw clockwise to tighten and counter-clockwise to loosen.
12. **Cross Slide Lock** (L, Fig. 13) - Turn set screw clockwise, and tighten to lock. Turn counter-clockwise and loosen to unlock. **Caution:** *Cross slide lock screw must be unlocked before engaging automatic feeds or damage to the lathe may occur.*
13. **Carriage Lock** (M, Fig. 13) - Turn hex socket cap screw clockwise and tighten to lock. Turn counterclockwise and loosen to unlock. **Caution:** *Carriage lock screw must be unlocked before engaging automatic feeds or damage to lathe may occur.*
14. **Longitudinal Traverse Hand Wheel** (A, Fig. 14) – Rotate hand wheel clockwise to move the apron assembly toward the tailstock (right). Rotate the wheel counterclockwise to move the apron assembly toward the headstock (left).
15. **Feed Selector** (B, Fig. 14) – Push lever to the left and down to activate the crossfeed function. Pull lever to the right and up to activate the longitudinal function.
16. **Half Nut Engagement Lever** (thread cutting) (C, Fig. 14) – Move the lever down to engage. Move the lever up to disengage.
17. **Cross Traverse Handwheel** (D, Fig. 14) – Clockwise rotation moves the cross slide toward the rear of the machine.
18. **Compound Rest Traverse Handwheel** (E, Fig. 14) – Rotate clockwise or counterclockwise to move or position.
19. **Tool Post Clamping Lever** (F, Fig. 14) – Rotate counter-clockwise to loosen and clockwise to tighten. Rotate the tool post when the lever is unlocked.
20. **Threading Dial** (G, Fig. 14) – Engage by pushing into the leadscrew. Pull out to disengage. The dial indicator and chart will specify at which point a thread can be entered.
21. **Tailstock Quill Clamping Lever** (H, Fig. 15) – Lift up to lock the spindle. Push down to unlock.
22. **Tailstock Clamping Lever** (I, Fig. 15) – Lift up lever to lock. Push down lever to unlock.
23. **Tailstock Quill Traverse Handwheel** (J, Fig. 15) – Rotate clockwise to advance the quill. Rotate counter-clockwise to retract the quill.

24. **Tailstock Off-Set Adjustment** (K, Fig. 15) – Three set screws located on the tailstock base are used to off-set the tailstock for cutting tapers. Loosen lock screw on tailstock end. Loosen one side set screw (K, Fig. 15) while tightening the other until the amount of off-set is indicated on scale. Tighten lock screw.

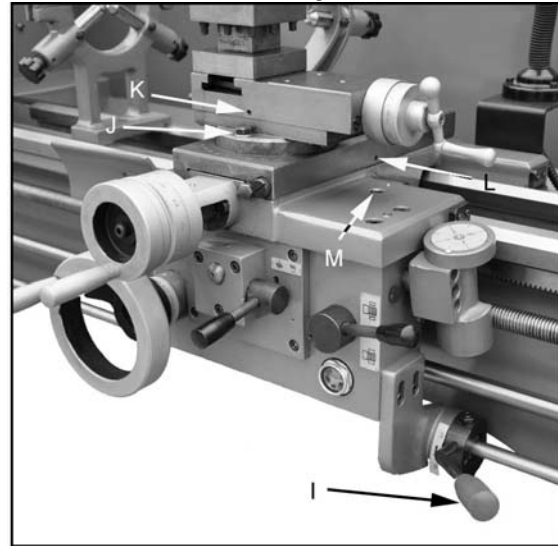


Figure 13

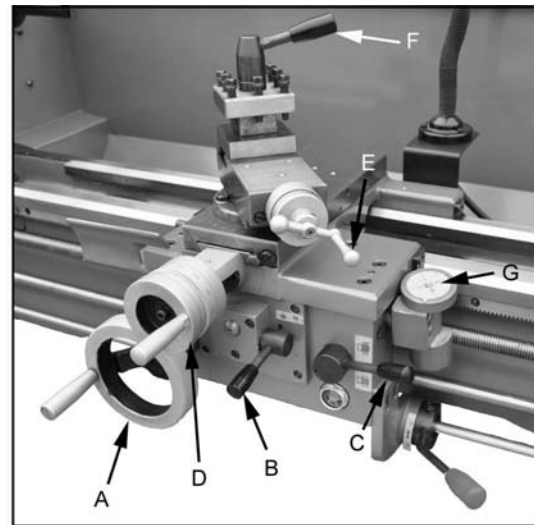


Figure 14

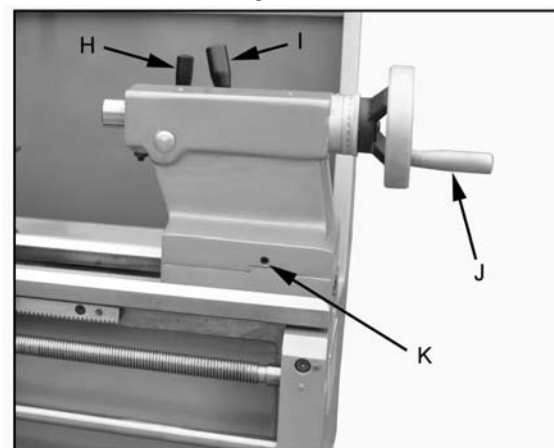


Figure 15

## 12.0 Operation

### 12.1 Break-In Procedure

During manufacturing and testing, this lathe has been operated in the low R.P.M. range for three hours.

To allow time for the gears and bearings to break-in and run smoothly, do not run the lathe above 755 R.P.M. for the first six hours of operation and use.

### 12.2 Feed and Thread Selection

1. Reference the feed and thread table (A, Fig. 16).
2. Move knobs and handle (B, Fig. 16) to the appropriate position.

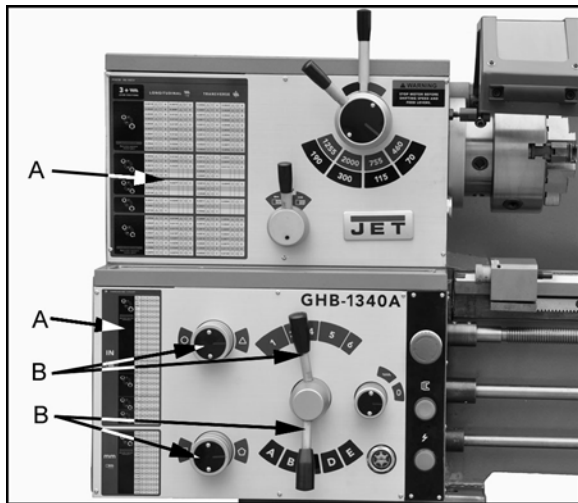


Figure 16

### 12.3 Change Gear Replacement

**Note:** the 32T x 127T x 48T gears are installed in the end gear compartment when delivered from the factory. This combination will cover most inch feeds and threads under normal circumstances. The additional gears found in the toolbox are used for some metric threads and feeds.

1. Disconnect the machine from the power source.
2. Open the end cover on the left end of the headstock.
3. Loosen the socket head cap screw (D, Fig. 17) and hex nuts (E & F, Fig. 17). Move the quadrant out of the way.
4. Change gears (G, Fig. 17) to match the feed and thread chart.
5. Thoroughly clean and install new gears.
6. Move the quadrant so the large gear meshes with the smaller gears and tighten to secure in place. Note: Make sure there is backlash of 0.002" – 0.003" between gears. Setting the

gears too tight will cause excessive noise and wear.

7. Close the cover and connect the machine to the power source.

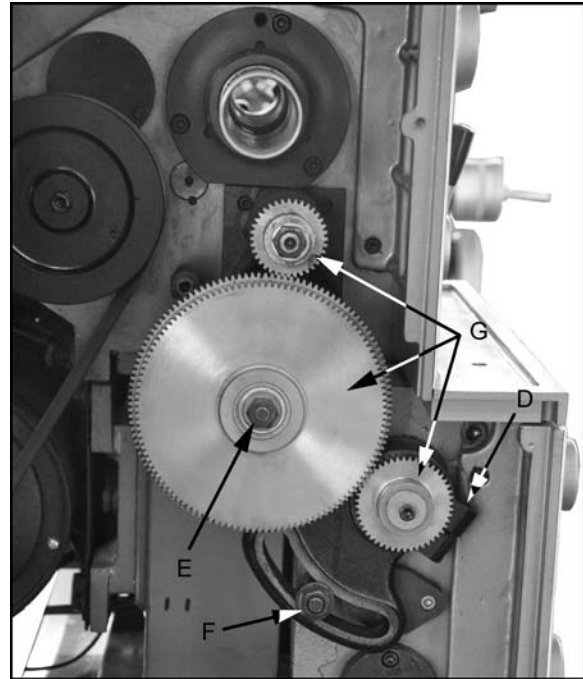


Figure 17

### 12.4 Automatic Feed Operation and Feed Changes

1. Move the forward/reverse selector (A, Fig. 18) up or down depending on desired direction.

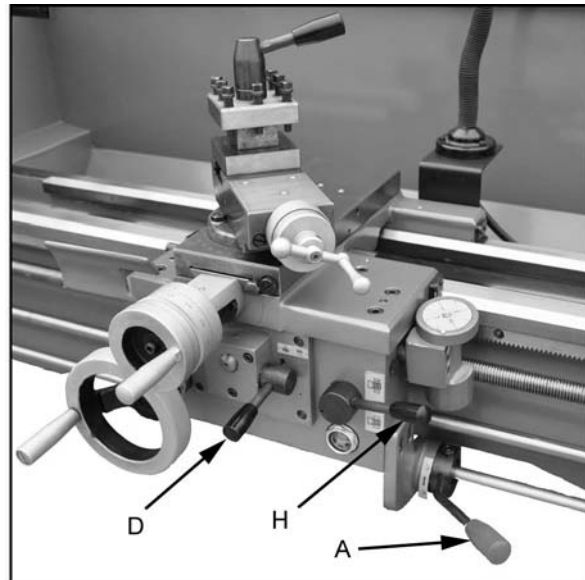


Figure 18

2. Set the selector handle (B, Fig. 19) to the "3" position and turn knob (C, Fig. 19) counter-clockwise so the arrow is pointing up to start the feed rod rotating.

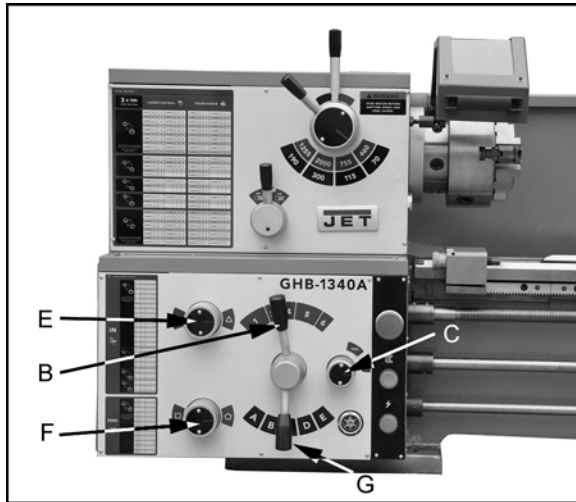


Figure 19

## 12.5 Powered Carriage Travel

Push lever (D, Fig. 18) to the left and down to engage crossfeed. Pull lever to the right and up to engage longitudinal feed.

## 12.6 Thread Cutting

1. Set feed rate selectors (B, E, F, G, Fig. 19) in proper position for the correct feed rate of the thread pitch to be cut.
2. Move knob (C, Fig. 19) to the "0" position to disengage the feed rod.
3. Engage the half nut lever (H, Fig. 18).
4. The half nut lever and the threading dial are used to thread in the conventional manner. The thread dial chart specifies at which point a thread can be entered using the threading dial.
5. To cut metric threads, the half nuts must be left continually engaged once the start point has been selected and the half nut is initially engaged (thread dial cannot be used).

## 13.0 Adjustments

### 13.1 Saddle adjustment

1. Loosen four hex nuts (A, Fig. 20) found on the bottom rear of the cross slide.
2. Turn each of the four set screws (B, Fig.20) equally with a hex wrench until a slight resistance is felt. Do not over tighten.
3. Move the carriage with the hand wheel and determine if drag is to your preference. Readjust the setscrews as necessary to achieve the desired drag.
4. Hold socket set screw firmly with a hex wrench and tighten hex nut to lock in place.

5. Move the carriage again and adjust if necessary. **Note:** over adjustment will cause excessive premature wear of the gibs.

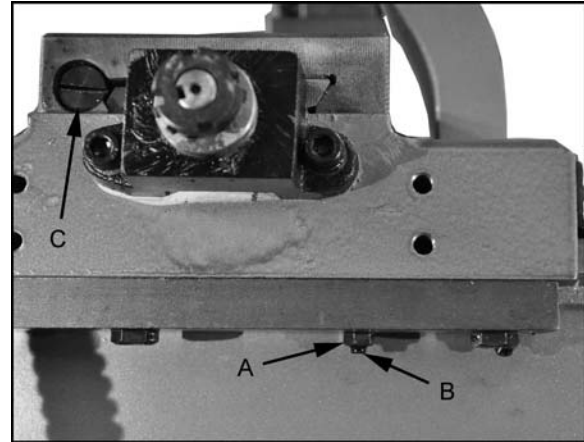


Figure 20

### 13.2 Cross Slide adjustment

If the cross slide is too loose, follow procedure below to tighten:

1. Loosen the rear gib screw (C, Fig. 20) approximately one turn.
2. Tighten front gib screw a quarter turn. Turn the cross slide handwheel to see if the cross slide is still loose. If it is still loose, tighten the front screw a bit more and try again.
3. When cross slide is properly adjusted, snug rear gib screw. Do not overtighten; this will cause premature wear on the gib and mating parts.

### 13.3 Compound Slide adjustment

Follow the same procedure, as the cross slide adjustment, to adjust the compound rest.

### 13.4 Tailstock adjustment

If the handle will not lock the tailstock securely, use the following procedure:

1. Lower handle to the unlocked position.
2. Slide tailstock to an area that will allow you to reach under the tailstock.
3. Tighten tailstock clamping nut 1/4 turn, and re-test for proper locking. Repeat as necessary.

### 13.5 Half Nut Gib adjustment

1. Remove the thread dial assembly by unscrewing the screw (D, Fig. 21).
2. Loosen three hex nuts (E, Fig. 21) found on the side of apron, and turn three set screws (F, Fig. 21) equally with a hex wrench.
3. Adjust properly for wear and play. Hold socket set screw firmly with a hex wrench and tighten hex nut to lock in place. **Note:** over adjustment will cause excessive premature wear on gib and mating parts.

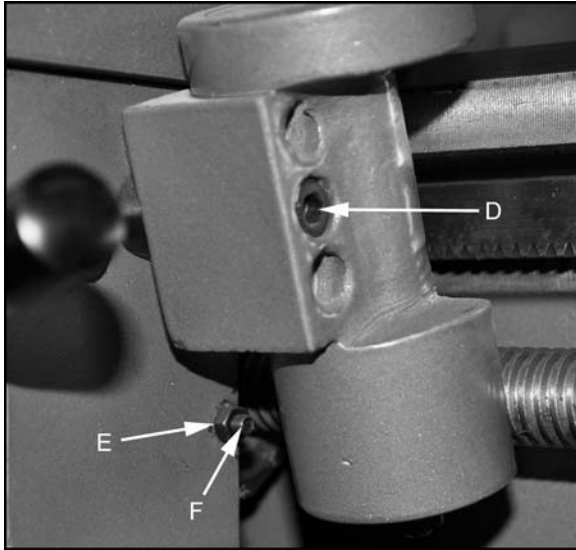


Figure 21

### 13.6 Headstock Alignment

The headstock has been aligned at the factory and should not require adjustment. However, if adjustment is deemed necessary, follow the procedure below to align the headstock.

1. Using an engineer's precision level on the bedways, make sure the lathe is level side to side and front to back. If the lathe is not level, correct to a level condition before proceeding. Re-test alignment if any leveling adjustments were made.
2. From steel bar stock of approximately two inches in diameter, cut a piece approximately eight inches long.
3. Place two inches of bar stock into chuck and tighten chuck. Do not use the tailstock or center to support the other end.
4. Set up and cut along five inches of the bar stock.
5. Using a micrometer, measure the bar stock next to the chuck and at the end. The measurement should be the same.
6. If the measurements are not the same and adjustment is required, loosen the four bolts

that hold the headstock to the bed. Do not loosen completely; some drag should remain.

7. Loosen two hex nuts found on the two adjusting bolts located on the backside of headstock just above the motor mount bracket. Adjust the bolts for alignment and tighten hex nuts. Tighten the headstock bolts and make another cut. Keep adjusting screws after each cut until the bar stock measurements are the same. Tighten all headstock bolts and jam nuts on adjusting screws.

### 13.7 Removing Gap Bridge

1. Using an open end wrench, tighten the two hex nuts (A, Fig. 22). This will cause the taper pins (B, Fig. 22) to release. Remove the taper pins.
2. Remove the four hex socket cap screws (C, Fig. 22) with a hex key wrench.
3. Gap bridge can now be removed.

### 13.8 Installing Gap Bridge

1. Clean the bottom and the ends of the gap bridge thoroughly.
2. Set gap bridge in place and align.
3. Remove nuts (A, Fig. 22) from the taper pins (B, Fig. 22).
4. Slide taper pins in their respective holes and seat using a mallet. Install nuts on the taper pins finger tight.
5. Install four socket head cap screws (C, Fig. 22) and tighten securely.

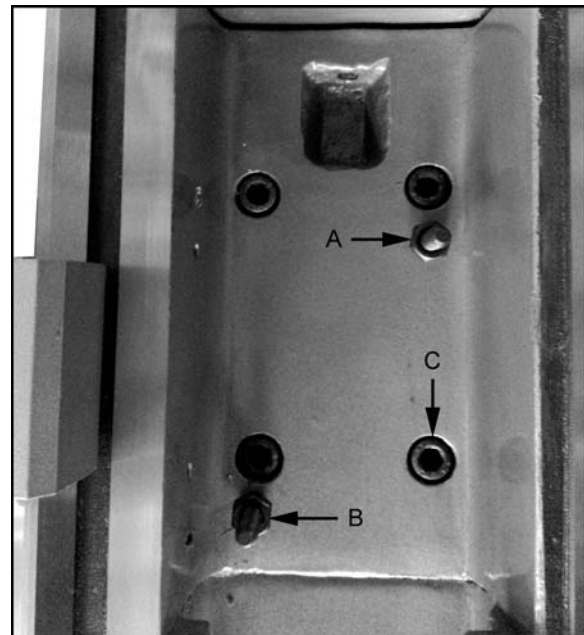



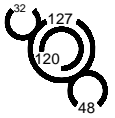

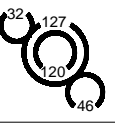

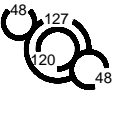
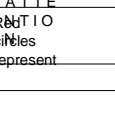


Figure 22

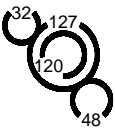


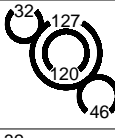
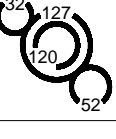
# 14.0 Thread and Feed Chart

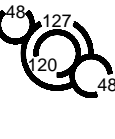

FEED IN / REV

3+  LEVER POSITIONS		LONGITUDINAL 			TRANSVERSE 			
	0.0018	△	□	A	0.0073	△	□	A
	0.0020	△	□	E	0.0081	△	□	E
	0.0030	△	□	B	0.0122	△	□	B
	0.0033	△	□	C	0.0133	△	□	C
	0.0035	△	□	D	0.0139	△	□	D
	0.0037	○	□	A	0.0146	○	□	A
	0.0041	○	□	E	0.0162	○	□	E
	0.0061	○	□	B	0.0244	○	□	B
	0.0066	○	□	C	0.0266	○	□	C
	0.0070	○	□	D	0.0278	○	□	D
stacked gears 	0.0036	△	□	A	0.0162	△	□	E
	0.0041	△	□	E	0.0292	○	□	A
	0.0073	○	□	A	0.0325	○	□	E
	0.0081	○	□	E				
	0.0146	△	□	A				
	0.0035	△	□	C	0.0277	○	□	C
	0.0069	○	□	C				
	0.0139	△	□	C				
	0.0031	△	□	C	0.0245	○	□	C
	0.0061	○	□	C				
	0.0122	△	□	C				
	0.0026	△	□	A	0.0104	△	□	A
	0.0029	△	□	E	0.0115	△	□	E
	0.0043	△	□	B	0.0173	△	□	B
	0.0047	△	□	C	0.0187	△	□	C
	0.0052	○	□	A	0.0207	○	□	A
	0.0058	○	□	E	0.0230	○	□	E
	0.0086	○	□	B	0.0345	○	□	B
	0.0093	○	□	C	0.0374	○	□	C
	0.0006	△	□	A	0.0025	△	□	A
	0.0007	△	□	E	0.0028	△	□	E
	0.0010	△	□	B	0.0042	△	□	B
	0.0011	△	□	C	0.0046	△	□	C
	0.0012	△	□	D	0.0048	△	□	D
	0.0013	○	□	A	0.0050	○	□	A
	0.0014	○	□	E	0.0056	○	□	E
	0.0021	○	□	B	0.0084	○	□	B
	0.0023	○	□	C	0.0091	○	□	C
	0.0024	○	□	D	0.0096	○	□	D



 THREADING CHART

 <b>IN</b> 	3½	○	◇	6	D		
	4	○	◇	6	B		
	5¼	○	◇	2	D		
	5½	○	◇	2	C		
	6	○	◇	4	C		
	7	△	◇	6	D		
	8	△	◇	6	B		
	9	○	◇	2	E		
	10½	○	◇	2	A		
	10	△	◇	2	D		
	11	△	◇	2	C		
	12	△	◇	4	C		
	14	○	□	6	D		
	16	○	□	6	B		
	18	△	◇	2	E		
	20	△	◇	2	A		
	21	○	□	2	D		
	22	○	□	2	C		
	24	○	□	4	C		
	28	△	□	6	D		
	32	△	□	6	B		
	36	○	□	2	E		
	40	○	□	2	A		
	42	△	□	2	D		
	44	△	□	2	C		
	48	△	□	4	C		
	72	△	□	2	E		
	80	△	□	2	A		
		4½	○	◇	2	E	
		5	○	◇	2	A	
		9	△	◇	2	E	
		10	△	◇	2	A	
		18	○	□	2	E	
		20	○	□	2	A	
		36	△	□	2	E	
		40	△	□	2	A	
			5¾	○	◇	4	C
			11½	△	◇	4	C
	23		○	□	4	C	
	46		△	□	4	C	
	6½	○	◇	4	C		
	13	△	◇	4	C		
	26	○	□	4	C		
	52	△	□	4	C		

 <b>mm</b> 	0.45	△	□	2	A
	0.50	△	□	2	E
	0.75	△	□	4	C
	0.90	○	□	2	A
	1.0	○	□	2	E
	1.25	△	□	1	B
	1.50	○	□	4	C
	1.75	△	◇	5	E
	1.80	△	◇	2	A
	2.00	△	◇	2	E
	2.25	○	□	6	B
	2.50	○	□	1	B
	2.75	△	◇	4	B
	3.00	△	◇	4	C
	3.50	○	◇	5	E
	3.60	○	◇	2	A
	4.00	○	◇	2	E
	4.50	△	◇	6	B
	5.00	△	◇	1	B
	5.50	○	◇	4	B
6.00	○	◇	4	C	
9.00	○	◇	6	B	
10.0	○	◇	1	B	

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