



# OWNER'S MANUAL

## GH-1340W/1440W Lathes



**JET EQUIPMENT & TOOLS, INC.**  
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# Important Information

**1-YEAR  
LIMITED WARRANTY**

**JET offers a one-year limited  
warranty on this product**

## REPLACEMENT PARTS

Replacement parts for this tool are available directly from JET Equipment & Tools.  
To place an order, call 1-800-274-6848. Please have the following information ready:

1. Visa, MasterCard, or Discover Card number
2. Expiration date
3. Part number listed within this manual
4. Shipping address other than a Post Office box.

## REPLACEMENT PART WARRANTY

JET Equipment & Tools makes every effort to assure that parts meet high quality and durability standards and warrants to the original retail consumer/purchaser of our parts that each such part(s) to be free from defects in materials and workmanship for a period of thirty (30) days from the date of purchase.

## PROOF OF PURCHASE

Please retain your dated sales receipt as proof of purchase to validate the warranty period.

## LIMITED TOOL AND EQUIPMENT WARRANTY

JET makes every effort to assure that its products meet high quality and durability standards and warrants to the original retail consumer/purchaser of our products that each product be free from defects in materials and workmanship as follows: 1 YEAR LIMITED WARRANTY ON THIS JET PRODUCT. Warranty does not apply to defects due directly or indirectly to misuse, abuse, negligence or accidents, repairs or alterations outside our facilities or to a lack of maintenance. JET LIMITS ALL IMPLIED WARRANTIES TO THE PERIOD SPECIFIED ABOVE FROM THE DATE THE PRODUCT WAS PURCHASED AT RETAIL. EXCEPT AS STATED HEREIN, ANY IMPLIED WARRANTIES OR MERCHANTABILITY AND FITNESS ARE EXCLUDED. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG THE 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. To take advantage of this warranty, the product or part must be returned for examination, postage prepaid, to an authorized service station designated by our Auburn office. Proof of purchase date and an explanation of the complaint must accompany the merchandise. If our inspection discloses a defect, JET will either repair or replace the product or refund the purchase price, if we cannot readily and quickly provide a repair or replacement, if you are willing to accept such refund. JET will return repaired product or replacement at JET's expense, but if it is determined there is no defect, or that the defect resulted from causes not within the scope of JET's warranty, then the user must bear the cost of storing and returning the product. This warranty gives you specific legal rights, and you have other rights, which vary, from state to state.

**JET Equipment & Tools • P.O. Box 1349, Auburn, WA 98071-1349 • (253) 351-6000**

## **WARNING**

- **Read and understand the entire instruction manual before attempting assembly or operation.**
- **These lathes are designed and intended for use by properly trained and experienced personnel only. If you are not familiar with the proper and safe operation of a lathe, do not use until proper training and knowledge have been obtained.**
- Always wear approved safety glasses/face shields while using this machine.
- Make certain the machine is properly grounded.
- Before operating the machine, remove tie, rings, watches, other jewelry, and roll up sleeves above the elbows. Remove all loose clothing and confine long hair. Do **not** wear gloves.
- Keep the floor around the machine clean and free of scrap material, oil and grease.
- Keep machine guards in place at all times when the machine is in use. If removed for maintenance purposes, use extreme caution and replace the guards immediately.
- Do **not** over reach. Maintain a balanced stance at all times so that you do not fall or lean against blades or other moving parts.
- Make all machine adjustments or maintenance with the machine unplugged from the power source.
- Use the right tool. Don't force a tool or attachment to do a job which it was not designed for.
- Replace warning labels if they become obscured or removed.
- Make certain the main power switch is in the **OFF** position before connecting the machine to the power supply.
- Give your work undivided attention. Looking around, carrying on a conversation, and "horse-play" are careless acts that can result in serious injury.
- Keep visitors a safe distance from the work area.
- Use recommended accessories; improper accessories may be hazardous.
- Make a habit of checking to see that keys and adjusting wrenches are removed before turning on the machine.
- Never attempt any operation or adjustment if the procedure is not understood.
- Keep fingers away from revolving parts and cutting tools while in operation.
- Keep belt guard in place and in working order.
- Never force the cutting action.
- Do **not** attempt to adjust or remove tools during operation.
- Always keep cutters sharp.
- Always use identical replacement parts when servicing.
- Never operate this machine under the influence of alcohol or drugs.
- Failure to comply with all of these warnings may cause serious injury.

**Specifications:****GH-1340W/1440W**

Stock Number.....	321810 GH-1340W-1
Stock Number.....	321820 GH-1340W-3
Stock Number.....	321830 GH-1440W-1
Stock Number.....	321840 GH-1440W-3

**Capacities:**

Swing Over Bed .....	13" (1340W)
.....	14" (1440W)
Swing Over Cross Slide.....	7-1/2" (1340W)
.....	8-1/2" (1440W)
Swing Through Gap.....	19" (1340W)
.....	20" (1440W)
Length of Gap.....	9-3/8"
Distance Between Centers .....	40"

**Headstock:**

Hole Through Spindle .....	1-1/2"
Spindle Nose.....	D1-4
Taper in Spindle Nose .....	MT-5
Spindle Taper Adapter.....	MT-3
Spindle Bearing Type .....	Taper Roller Bearing
Number of Spindle Speeds .....	12
Range of Spindle Speeds .....	40-1800 RPM

**Gearbox:**

Number of Longitudinal and Cross Feeds .....	40
Range of Longitudinal Feeds (inch/rev.).....	0.0012" - 0.0294"
Range of Cross Feeds (inch/rev.) .....	0.0003" - 0.0100"
Number of Inch Threads .....	40
Range of Inch Threads .....	4-112 T.P.I.
Number of Metric Threads .....	22
Range of Metric Threads .....	0.45 - 7.5mm
Leadscrew.....	7/8" x 49-1/2"
Feed Rod Diameter .....	3/4"

**Compound and Carriage:**

Toolpost Type.....	4-Way
Maximum Tool Size .....	5/8" x 5/8"
Maximum Compound Slide Travel .....	3-1/2"
Maximum Cross Slide Travel .....	6-3/8"
Maximum Carriage Travel.....	37-1/2"

**Tailstock:**

Tailstock Spindle Travel.....	4-3/4"
Diameter of Tailstock Spindle .....	1-25/32"
Taper in Tailstock Spindle.....	MT-3

## Miscellaneous:

Steady Rest Capacity .....	1/4" - 3-3/4"
Follow Rest Capacity .....	1/4" - 2-3/4"
Length of Bed.....	54-1/2"
Width of Bed.....	10-1/2"
Height of Bed.....	12-3/4"
Overall Dimensions .....	75-3/4"L x 29-1/2"W x 47-1/4"H
Main Motor (1340W-1 & 1440W-1) .....	3HP, 1Ph, <b>230V Only</b>
Main Motor (1340W-3 & 1440W-3) .....	3HP, 3Ph, 230V/460V <b>prewired 230V</b>
Net Weight (approx.).....	2,081 lbs. (1340W)
Net Weight (approx.).....	2,191 lbs. (1440W)
Shipping Weight (approx.) .....	2,351 lbs. (1340W)
Shipping Weight (approx.) .....	2,491 lbs. (1440W)

The specifications in this manual are given as general information and are not binding. JET Equipment and Tools reserves the right to effect, at any time and without prior notice, changes or alterations to parts, fittings, and accessory equipment deemed necessary for any reason whatsoever.

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**⚠ WARNING**

**Read and understand the entire contents of this manual before attempting set-up or operation!**

**Failure to comply may cause serious injury!**

**Contents of the Shipping Container**

- 1 Lathe
- 1 Steady Rest
- 1 Follow Rest
- 1 6" Three Jaw Chuck w/ Top Reversing Jaws (Direct Mount)
- 1 8" Four Jaw Chuck with Backplate
- 1 12" Face Plate (strapped to container floor)
- 1 Backplate
- 1 Tool Box

**Tool Box Contents:**

- 1 No. 1 Cross Point Screwdriver
- 1 No. 1 Flat Blade Screwdriver
- 4 Open End Wrench (9-11, 10-12, 12-14, 17-19mm)
- 6 Hex Socket Wrench (2.5, 3, 4, 5, 6, 8mm)
- 2 Shear Pin
- 1 30T Change Gear
- 1 32T Change Gear
- 2 40T Change Gear
- 1 Oil Can
- 2 No. 3 Morse Taper Dead Center
- 1 No. 5 to No. 3 Spindle Sleeve
- 6 Leveling Pads
- 1 Chuck Key
- 1 Key for Cam Locks
- 1 Tool Post Wrench
- 1 Owner's Manual
- 1 Warranty Card



## Uncrating and Clean-Up

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. Place two steel rods or pipes (of sufficient strength) into four holes (A, Fig. 1) of lathe stand. Sling the lathe with properly rated straps. **Do not lift by spindle.** With adequate lifting equipment, slowly raise the lathe off the shipping crate bottom. Make sure lathe is balanced before moving.
5. To avoid twisting the bed, the lathe's location must be absolutely flat and level. Check for a level condition using a machinist's precision level on the bedways both front to back and side to side. The leveling pads included in the tool box and the leveling screws in the lathe base will help you to reach a level condition. **The lathe must be level to be accurate.**
6. 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.
7. Open the end gear door. Clean all components of the end gear assembly and coat all gears with Mobilith® AW 1. Close the door.

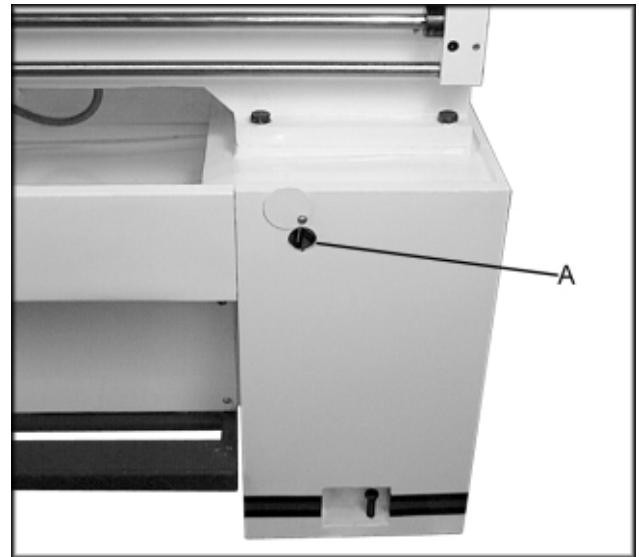


Fig. 1

## 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 tool box.
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. 3) on the camlock should be between the two indicator arrows (B, Fig. 3). 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.

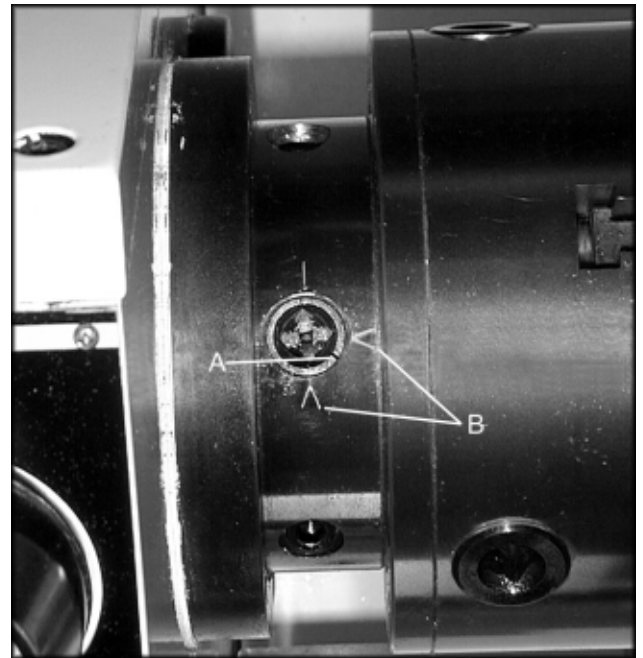


Fig. 2



## Lubrication

### CAUTION

Lathe must be serviced at all lubrication points and all reservoirs filled to operating level before the lathe is put 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. 3). Top off with Mobil DTE® Oil Heavy Medium. Fill by pulling plug (D, Fig. 3). To drain, remove drain plug (A, Fig. 4) with an 8mm hex wrench. Drain oil completely and refill after the first month of operation. Clean out any metal shavings. Then, change oil in the headstock annually.

2. **Gearbox** - Oil must be up to indicator mark in oil sight glass (B, Fig. 3). Top off with Mobil DTE® Oil Heavy Medium. Fill by lifting off thread chart cover (E, Fig. 3) and remove plug (C, Fig. 3) with an 8mm hex wrench. To drain, remove drain plug (A, Fig. 5) with an 8mm hex wrench. Drain oil completely and refill after the first month of operation. Then, change oil in the Gearbox annually.

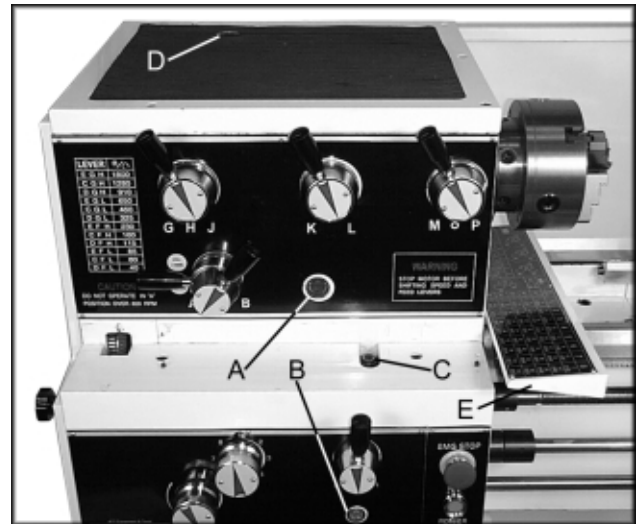


Fig. 3



Fig. 4

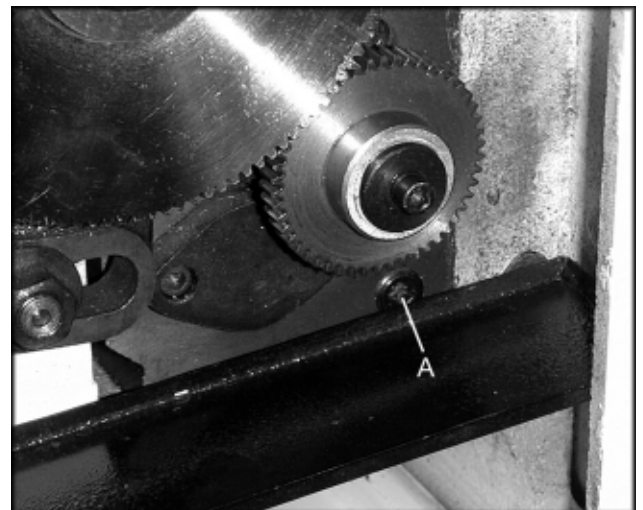


Fig. 5

3. **Apron** - oil must be up to indicator mark in oil sight glass (A, Fig. 6). Top off with Mobil DTE® Oil Heavy Medium. Remove oil cap (B, Fig. 6) on top of apron to fill. To drain, remove drain plug on bottom of apron. Drain oil completely and refill after the first month of operation. Then, change oil in the apron annually.

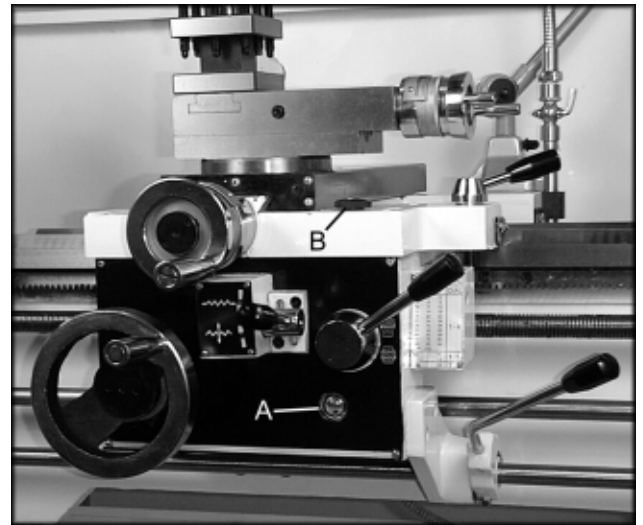


Fig. 6

4. **Leadscrew Feed Rod** - lubricate ball oiler (A, Fig. 7) on leadscrew/feed rod bracket with Mobil DTE® Oil Heavy Medium once daily.

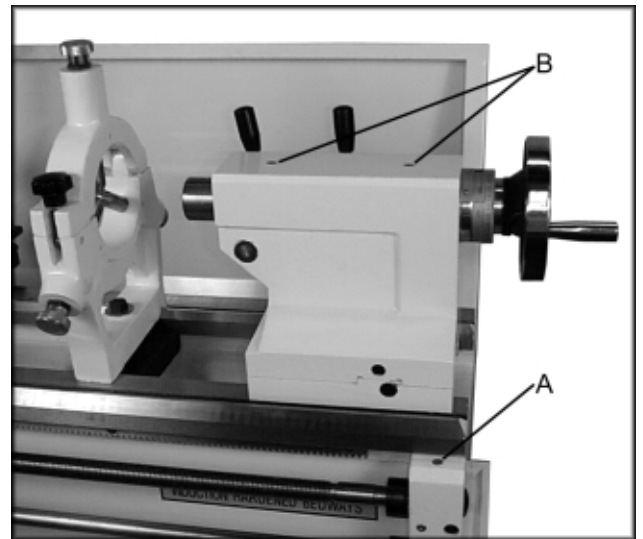


Fig. 7

5. **Tailstock** - lubricate two ball oilers (B, Fig. 7) on tailstock with Mobil DTE® Oil Heavy Medium once daily.

6. **Cross Slide** - lubricate four ball oilers (A, Fig. 8) with Mobil DTE® Oil Heavy Medium once daily.

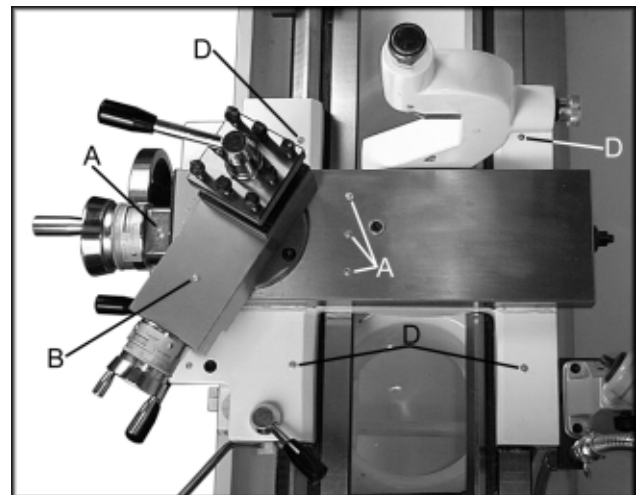


Fig. 8

7. **Compound Rest** - lubricate one ball oiler (B, Fig. 8) with Mobil DTE® Oil Heavy Medium once daily.

8. **Carriage** - lubricate four ball oilers (D, Fig. 8) with Mobil DTE® Oil Heavy Medium once daily.

## Coolant Preparation

### CAUTION

Follow coolant manufacturer's recommendations for use, care, and disposal.

1. Remove rear access cover on tailstock end. Make sure coolant tank has not shifted during transport and is located properly under the recovery chute (Fig. 9).
2. Pour three gallons of coolant mix into drip pan.
3. After machine has been connected to power, turn on coolant pump and check to see coolant is cycling properly.
4. Fasten coolant door to stand.



Fig. 9

## 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 GH-1340W-1 & GH-1440W-1 Gear Head Lathes are rated at 3HP, 1Ph, 230V only.** Confirm power available at the lathe's location is the same rating as the lathe.

**The GH-1340W-3 & GH-1440W-3 Gear Head Lathes are rated at 3HP, 3Ph, 230V/460V prewired 230V.** Confirm power available at the lathe's location is the same rating as the lathe.

#### **Lathe Power Source Junction Box:**

Remove the cover. Run the main power through the strain relief bushing and attach the ground, followed by power leads. Replace the cover.

**Main Power Switch:** Located on the backside of the machine. Turns the power to the machine on and off.

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

Power is connected properly when pulling up on the forward-reverse lever causes the spindle to rotate counter-clockwise as viewed from the tailstock. If the chuck rotates in the clockwise direction, disconnect the lathe from the power source, switch two of three power leads (for GH-1340W-3 & GH1440W-3), and connect the lathe to the power source.

**To Switch from 230V to 460V Operation  
GH-1340W-3 & GH1440W-3 Only**



**Main Motor:** Change the wires according to the diagram on the inside of the motor junction box.

**Transformer:** Remove electrical panel on rear of the machine, headstock side, switch wire from 230V terminal to 460V terminal as outlined on the transformer.

**Coolant Pump:** Open access panel on the base at the tailstock end. Change wires in coolant pump junction box according to diagram on the inside of the junction box cover.

## General Description

### 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 vee slideways, reinforced by heat hardening and grinding, are an accurate guide for the carriage and headstock. The main drive motor is mounted in the stand below headstock.

### Headstock

The headstock (B, Fig. 10) is cast from high grade, low vibration cast iron. It is bolted to the bed by four screws with two adjusting screws 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.

### Carriage

The carriage (A, Fig. 11) 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 (B, Fig. 11), which is mounted on the cross slide (C, Fig. 11), can be rotated through 360°. The top slide and the cross slide travel in a dovetail slide and have adjustable gibs. A four way tool post is fitted on the top slide.

### Four Way Tool Post

The four way toolpost (D, Fig. 11) is mounted on the top 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.

### Apron

The apron (E, 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.



Fig. 10

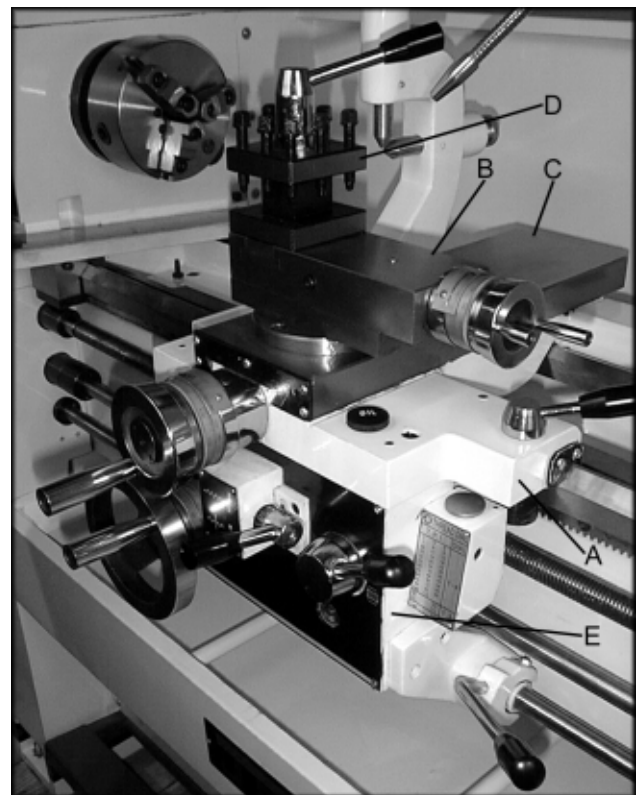


Fig. 11

## Tailstock

The tailstock (A, Fig. 12) 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.

## Leadscrew and Feed Rod

The leadscrew (B Fig. 12) and feed rod (C, Fig. 12) are mounted on the front of the machine bed. They are connected to the gearbox at the left for automatic feed and lead, and are supported by bushings on both ends. Both are equipped with brass shear pins.

## Gear Box

The gear box (D, Fig. 12) is made from high quality cast iron and is mounted to the left side of the machine bed.

## Steady Rest

The steady rest (E, Fig. 12) 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. To set the steady rest:

1. Loosen three hex socket screws.
2. Loosen knurled screw and open sliding fingers until the steady rest can be moved with its fingers around the workpiece. Secure the steady rest in position.
3. Set the fingers snugly to the workpiece and secure by tightening three hex socket cap screws. Fingers should be snug but not overly tight. Lubricate sliding points with Mobil DTE® Oil Heavy Medium.
4. After prolonged use, the fingers will show wear. Remill or file the tips of the fingers.

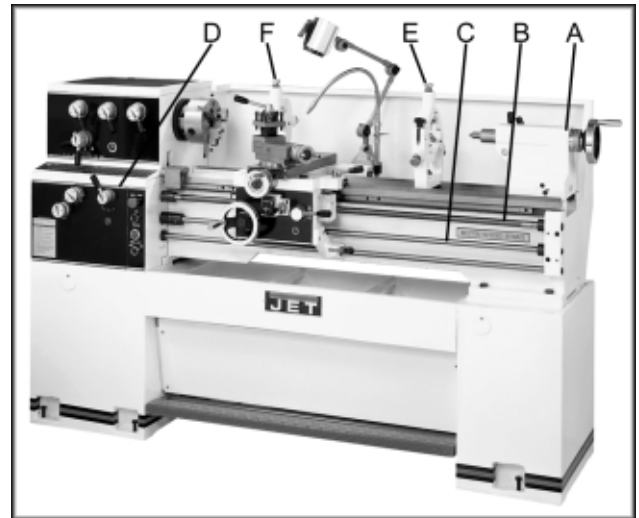


Fig. 12

## Follow Rest

The traveling follow rest (F, Fig. 12) is mounted on the saddle and follows the movement of the turning tool. Only two fingers are required as the place of the third is taken by the turning tool. The follow rest is used for turning 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. Always lubricate with Mobil DTE® Oil Heavy Medium.

## Controls

1. **Control Panel** - located on front of gearbox.
  - A. **Coolant On-Off Switch** (A, Fig. 13) - turns coolant pump on and off.
  - B. **Power Indicator Light** (B, Fig. 13) - lit whenever lathe has power.
  - C. **Emergency Stop Switch** (C, Fig. 13) - depress to stop all machine functions.  
**Caution:** lathe will still have power. Twist to re-set.
  - D. **Jog Switch** (D, Fig. 13) - depress and release to advance spindle momentarily.
2. **Headstock Gear Change Levers** (E, Fig. 13) - located on front of the headstock. Move levers according to speed chart for desired setting.
3. **Leadscrew/Feed Rod Directional Lever** (F, Fig. 13) - located on front of headstock. Moving the lever up causes carriage travel toward the tailstock. Moving the lever down causes carriage travel toward the headstock. When chuck is spinning in the forward or counter-clockwise direction. **Do not** move lever while machine is running.
4. **Feed/Lead Selector Lever** (G, Fig. 13) - located on the front of the headstock. Used whenever setting up for threading or feeding.

**Caution:** in the "A" position, never run the lathe higher than 650 RPM.

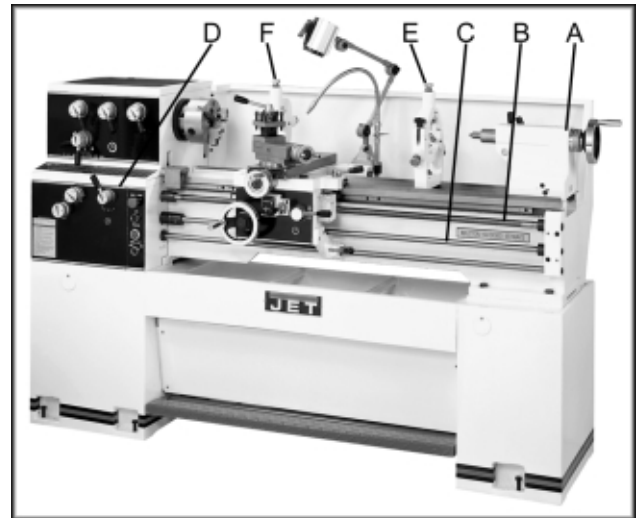


Fig. 12

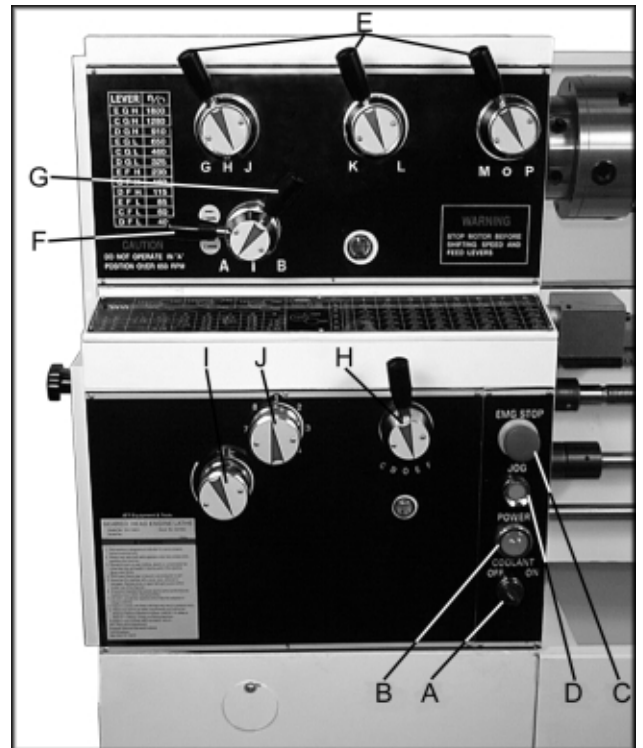


Fig. 13

5. **Feed/Lead Selector Lever** (H, Fig. 13) - located on the front of the gearbox. Used in setting up for feeding and threading. Positions "F" and "D" are for the feed rod. Positions "E" and "C" are for the feed screw. Position "0" is neutral.
6. **Lock Knob** (I, Fig. 13) - located on the front of the gearbox. With the knob in the six o'clock position, feed/lead selector knob (J, Fig. 13) may be adjusted. With the knob in the twelve o'clock position, the feed/lead selector knob (J, Fig. 13) is locked.
7. **Feed/Lead Selector Knob** (J, Fig. 13) - located on front of the gearbox. Used for setting up for feeding and threading.
8. **Compound Lock** (A, Fig. 14) - hex socket screw located on left side of compound. Turn clockwise to lock and counter-clockwise to unlock.
9. **Carriage Lock** (B, Fig. 14) - lock handle located on top of carriage. Turn clockwise to lock. Turn counter-clockwise to unlock.  
**Caution:** carriage lock must be unlocked before engaging automatic feeds or damage to lathe may occur.
10. **Longitudinal Traverse Hand Wheel** - (D, Fig. 14) - located on the apron assembly. Rotate hand wheel clockwise to move the apron assembly toward the tailstock. Rotate the wheel counter-clockwise to move the apron assembly toward the headstock.
11. **Feed Selector** (E, Fig. 14) - located in the center front of the apron assembly. Pushing lever to the left and down activates the crossfeed function. Pulling lever to the right and up activates the longitudinal function.
12. **Half Nut Engage Lever (thread cutting)** (F, Fig. 14) - located on front of the apron. Move the lever down to engage. Move the lever up to disengage.
13. **Cross Traverse Handwheel** (G, Fig. 14) - located above the apron assembly. Rotate clockwise or counter-clockwise to move, or position.
14. **Compound Rest Traverse Handwheel** (H, Fig. 14) - located on the end of the compound slide. Rotate clockwise or counter-clockwise to move, or position.

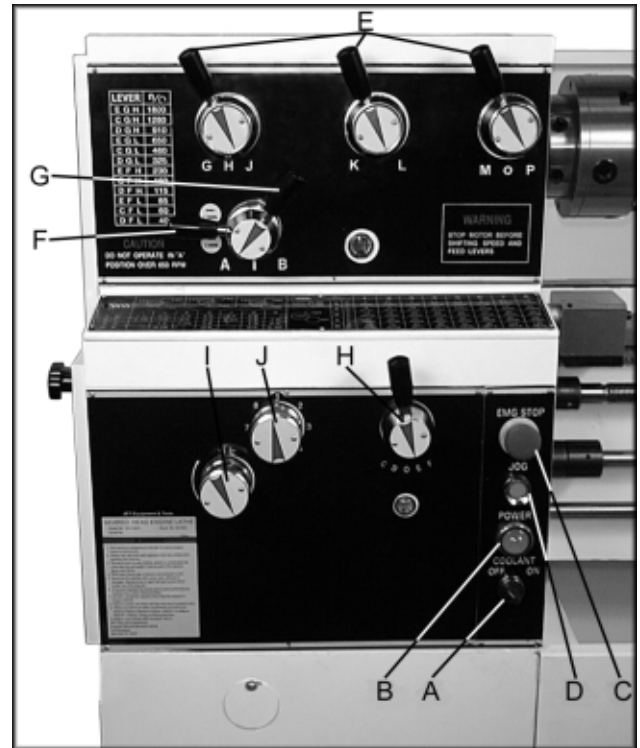


Fig. 13



Fig. 14



15. **Tool Post Clamping Lever (J, Fig. 14)** - located on top of the tool post. Rotate counter-clockwise to loosen and clockwise to tighten.

16. **Tailstock Quill Clamping Lever (A, Fig. 15)** - located on the tailstock. Lift up to lock the spindle. Push down to unlock.

17. **Tailstock Clamping Lever (B, Fig. 15)** - located on the tailstock. Lift up lever to lock. Push down lever to unlock.

18. **Tailstock Quill Traverse Handwheel (C, Fig. 15)** - located on the tailstock. Rotate clockwise to advance the quill. Rotate counter-clockwise to retract the quill.

19. **Tailstock Off-Set Adjustment (D, Fig. 15)** - two hex socket cap screws located on the tailstock base are used to off-set the tailstock for cutting tapers. Loosening one screw while tightening the other off sets the tailstock.

20. **Foot Brake (A, Fig. 16)** - located between stand pedestals. Depress to stop all lathe functions.

21. **Micro Carriage Stop (B, Fig. 16)** - located on the lathe bed. Loosen two hex socket cap screws underneath body and slide along bed to desired position. Tighten screws to hold in place.

22. **Main Power Switch (not shown)** - located on the electrical box door on the rear of the lathe. Turns main power to the lathe on and off.

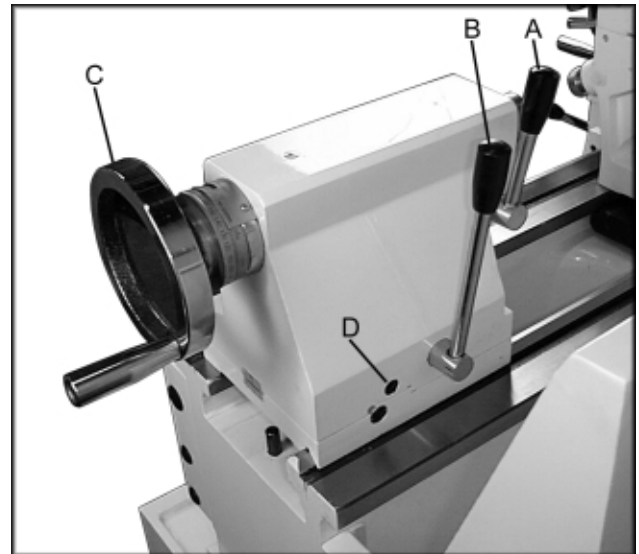


Fig. 15

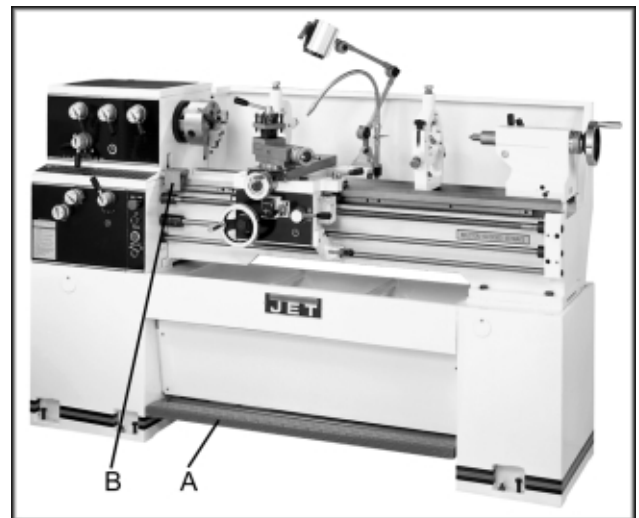


Fig. 16

## Break-In Procedure

During manufacture 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 650 R.P.M. for the first six hours of operation and use.

## Operation

### Feed and Thread Selection

1. Reference the feed and thread found on the gear box faceplate tables (A, Fig. 17 & page 22 of manual).
2. Move levers (B, C, D, E & F, Fig. 17) to the appropriate positions according to the chart.

### Change Gears Replacement

The 25T, 127T, 50T 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 30T, 32T, and two 40T gears found in the tool box are used with different combinations as indicated on feed and thread tables (A, Fig. 17).

1. **Disconnect the machine from the power source (unplug).**
2. Open the door on the left end of the headstock.
3. Loosen nuts (A & B, Fig. 18).
4. Move quadrant (C, Fig. 18) out of the way and hold in place temporarily by tightening nut (A & B, Fig. 18).
5. Remove hex socket cap screws (D and/or E, Fig. 18), depending on which gear is to be changed.
6. Install new gear(s) and tighten in place with a hex socket cap screw.
7. Loosen nut (B, Fig. 18), move quadrant back so teeth mesh on gears, and tighten nuts (A & B, Fig. 18).

**Caution:** Make sure there is a backlash of .002"-.003" between gears. Setting the gears too tight will cause excessive noise and wear.

8. Close the door and connect the machine to the power source.

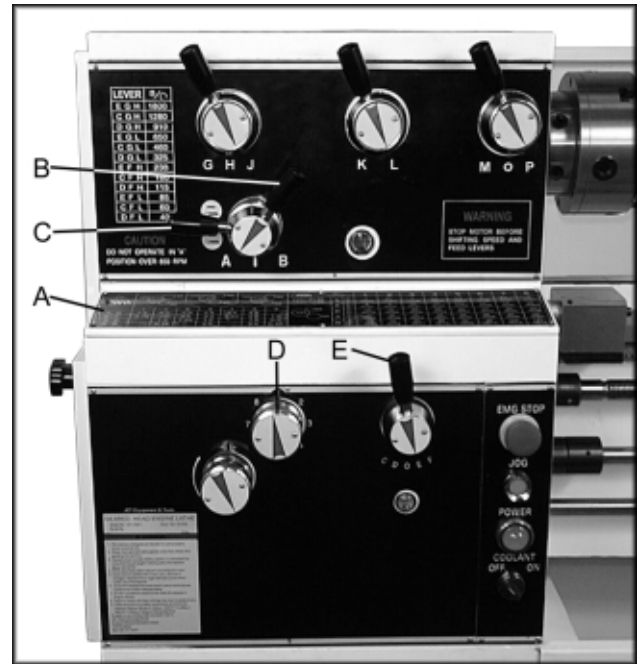


Fig. 17

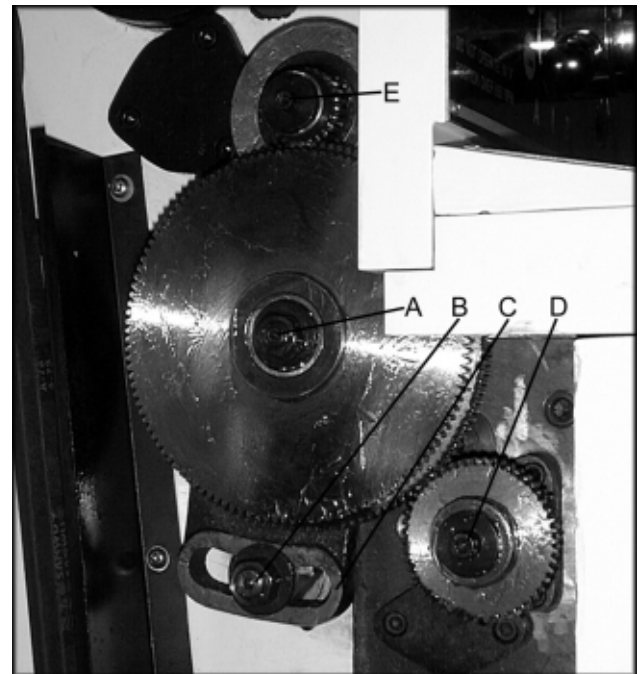


Fig. 18

## Automatic Feed Operation and Feed Changes

1. Move the forward/reverse selector (A, Fig. 19) up or down depending on desired direction.
2. Set selector levers (A, B, C, & D, Fig. 20) to desired rate.

**Note:** for feeding, lever (D) will be set at "F" or "D", depending on desired feed rate.

## Powered Carriage Travel

1. Push lever (B, Fig. 19) to the left and down to engage crossfeed.
2. Pull lever to the right and up to engage longitudinal feed.

## Thread Cutting

1. Set forward/reverse lever (A, Fig. 19) up or down depending on the desired direction.
2. Set selector levers (A, B, C, and D, Fig. 20) to desired rate.

**Note:** for threading, lever (D) will be set at "C" or "E", depending on desired thread.

3. Push lever (B, Fig. 19) to the right.
4. Engage the half nut lever (C, Fig. 19).
5. To cut inch threads, reference the feed and thread tables. 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.
6. 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).

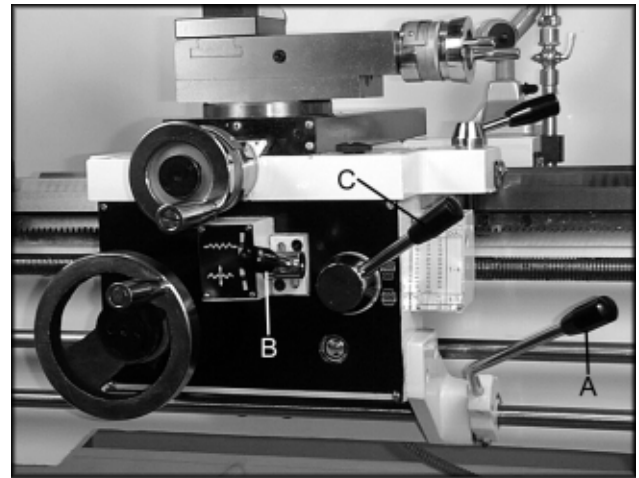


Fig. 19

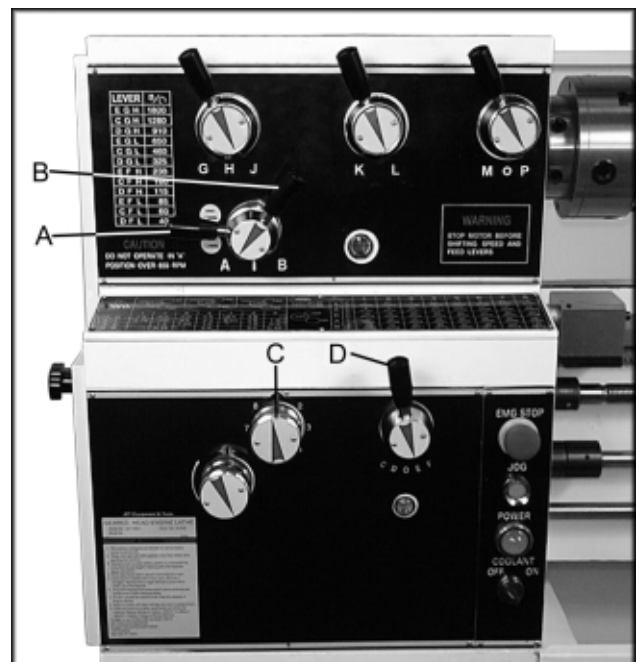


Fig. 20

### Metric Thread Table

		<b>1</b>	<b>3</b>	<b>6</b>	<b>3</b>	<b>1</b>	<b>2</b>
<b>A C</b>	<b>7.5</b>	<b>6.0</b>	<b>5.0</b>	<b>4.8</b>	<b>4.5</b>	<b>4.0</b>	
<b>B C</b>	<b>3.75</b>	<b>3.0</b>	<b>2.5</b>	<b>2.4</b>	<b>2.25</b>	<b>2.0</b>	<b>1.8</b>
<b>A E</b>		<b>1.5</b>	<b>1.25</b>	<b>1.2</b>		<b>1.0</b>	<b>0.9</b>
<b>B E</b>		<b>0.75</b>		<b>0.6</b>		<b>0.5</b>	<b>0.45</b>

### Inch Lead and Feed Table

			<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>
		<b>A</b>	<b>C</b>	4	4½	5	5½	5¾	6	6½
		<b>D</b>	.0294	.0261	.0235	.0214	.0205	.0196	.0181	.0168
	<b>A</b>	<b>C</b>	8	9	10	11	11½	12	13	14
		<b>D</b>	.0147	.0131	.0117	.0107	.0102	.0098	.0090	.0084
	<b>B</b>	<b>C</b>	16	18	20	22	23	24	26	28
		<b>D</b>	.0073	.0065	.0058	.0053	.0051	.0049	.0045	.0042
	<b>A</b>	<b>E</b>	32	36	40	44	46	48	52	56
		<b>F</b>	.0042	.0038	.0034	.0031	.0030	.0028	.0026	.0024
	<b>B</b>	<b>E</b>	64	72	80	88	92	96	104	112
		<b>F</b>	.0021	.0019	.0017	.0015	.0015	.0014	.0013	.0012

### Cross Feed Table

			<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>
	<b>A</b>	<b>D</b>	.0103	.0092	.0083	.0075	.0072	.0069	.0064	.0059
	<b>A</b>	<b>D</b>	.0052	.0046	.0042	.0038	.0036	.0035	.0032	.0030
		<b>B</b>	<b>D</b>	.0026	.0023	.0021	.0019	.0018	.0017	.0016
	<b>A</b>	<b>F</b>	.0013	.0012	.0010	.0010	.0009	.0008	.0008	.0007
		<b>B</b>	<b>F</b>	.0007	.0006	.0005	.0005	.0004	.0004	.0004

## Compound Rest

The compound rest is located on top of the cross slide and can be rotated 360 degrees. Loosen the two socket head cap screws (A, Fig. 21) on the compound rest base. There is a calibrated dial (in degrees B, Fig. 21) below the rest to assist in placement of the compound to the desired angle.

## Adjustments

After a period of time, wear in some of the moving components may need to be adjusted:

### Saddle

1. Locate four hex nuts found on the bottom rear of the cross slide and back off one full turn each.
2. Turn each of the four set screws with a hex wrench until a slight resistance is felt. Do not over tighten these screws.
3. Move the carriage with the hand wheel and determine if the drag is to your preference. Readjust the set screws as necessary to achieve the desired drag.
4. Hold the socket set screw firmly with a hex wrench and tighten the hex nut to lock the set screw in place.
5. Move the carriage again and adjust again if necessary.

**Note:** over adjustment will cause excessive premature wear of the gibs.

### Cross Slide

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

1. Loosen the rear gib screw (not shown) approximately one turn.
2. Tighten the front gib screw (B, Fig. 22) 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 the cross slide is properly adjusted, tighten the rear gib screw.

**Note:** over adjustment will cause excessive premature wear of the gibs.

## Compound Rest

Follow the same procedure as the cross slide adjustment to adjust the compound rest. Rear gib screw is shown (A, Fig. 22). Front gib screw (not shown) is by the handwheel.

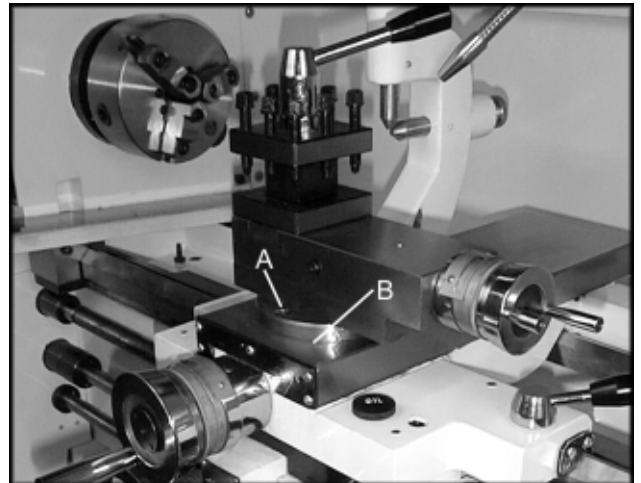


Fig. 21

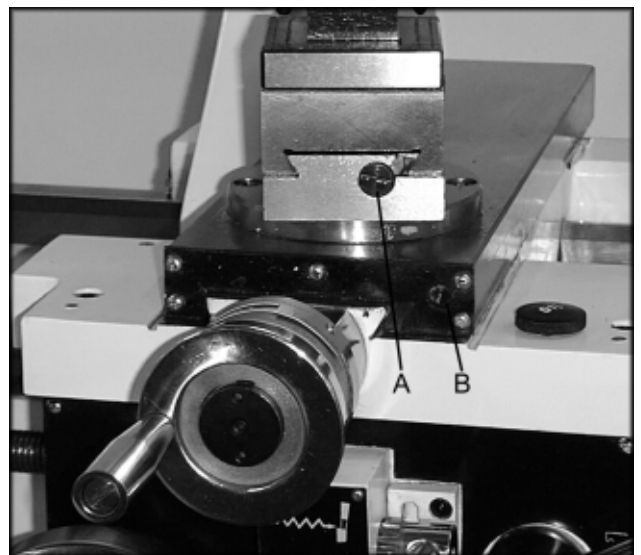


Fig. 22

## Tailstock

If the handle will not lock the tailstock, follow the procedure below :

1. Lower the handle to the unlocked position.
2. Slide the tailstock to an area that allows access to the underside of the tailstock.
3. Tighten tailstock clamping bolt (underside of tailstock) 1/4 turn. Test for proper locking. Repeat as necessary.

## Tailstock Off-Set

Follow the procedure below to off-set the tailstock to cut shallow tapers:

1. Lock tailstock in position by raising locking handle (A, Fig. 23).
2. Alternately loosen and tighten two hex socket cap screws (B, Fig. 23).

## Tailstock Gibs

Take up play in the tailstock by tightening two gib screws (C, Fig. 23) on either side of the tailstock base.

**Note:** Do not over tighten. Excessive tightening will lead to premature wear of the gibs and mating parts.

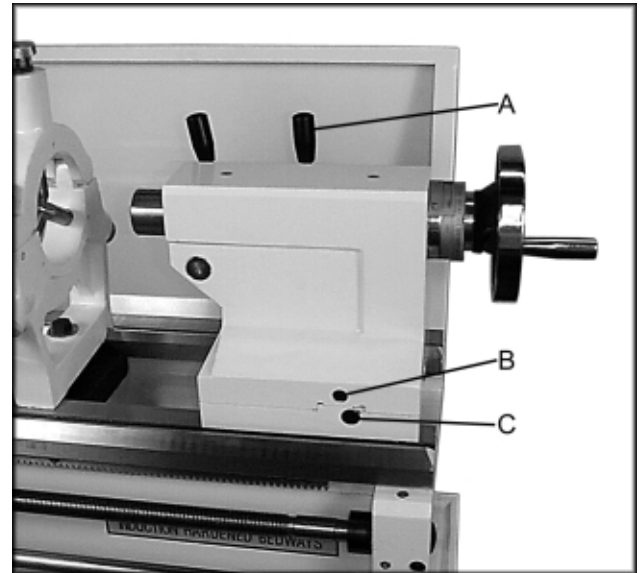


Fig. 23

## 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 a machinist'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.

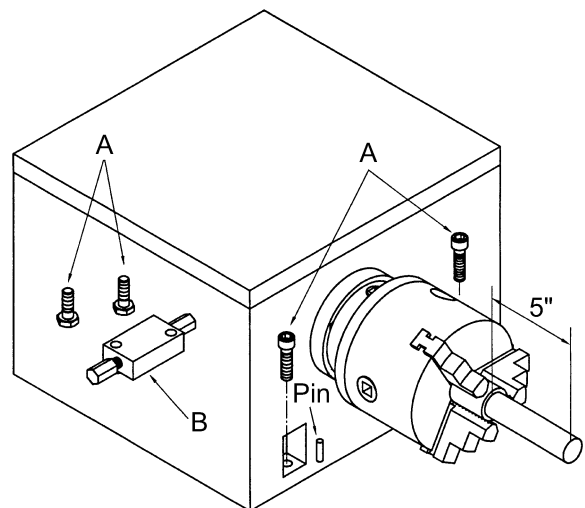


Fig. 24

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 hex socket cap screws (A, Fig. 24) which holds the headstock to the bed. **Do not** loosen completely; some drag should remain.
7. Adjust two screw nuts (B, Fig. 24) located on the endgear side of the headstock. Loosen one and tighten the other. Make another cut. Keep adjusting screw nuts after each cut until the bar stock measurements are the same. Tighten all headstock screws.

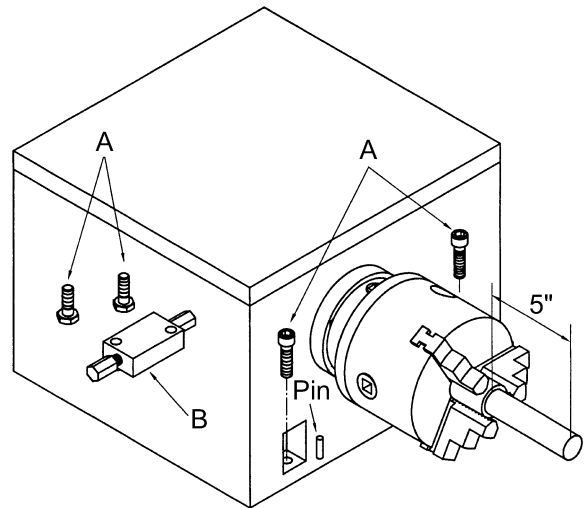


Fig. 24

### Removing Gap Section

1. To remove gap section, locate two nuts (A, Fig. 25) in the center of the gap section.
2. Using an open end wrench, tighten the two nuts. This will cause the taper pins to release. Remove the taper pins.
3. Remove six hex socket cap screws (B, Fig. 25) with a hex key wrench.
4. Gap section can now be removed.

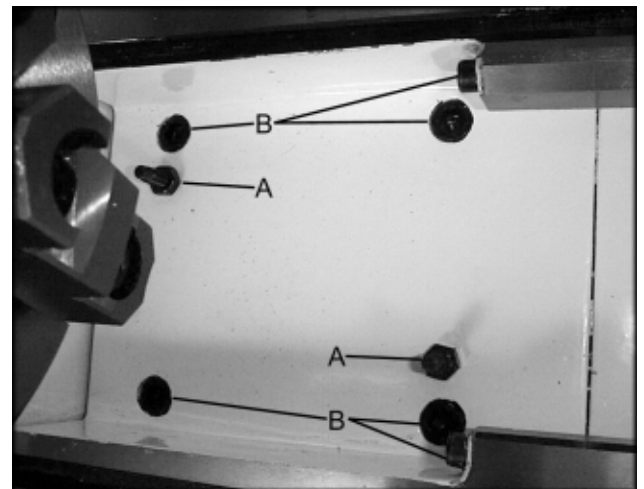


Fig. 25

### Installing Removable Gap Section

1. Clean the bottom and the ends of the gap section thoroughly.
2. Set gap section in place and align.
3. Remove nuts from the taper pins.
4. Slide taper pins in their respective holes and seat using a mallet. Install nuts on the taper pins finger tight.
5. Install six socket head cap screws and tighten securely.

## Belt Replacement and Adjustment

1. **Disconnect machine from the power source (unplug).**
2. Open the end gear cover and lower cover on the headstock side.
3. Take tension off old belts by loosening motor mount hex nut (A, Fig. 26).
4. Remove belts. Install new belts onto pulleys.
5. Tension by tightening motor mount hex nut until 8 lbs. force causes approximately 3/4" deflection on belts.
6. Close end gear door, install cover and connect lathe to the power source.

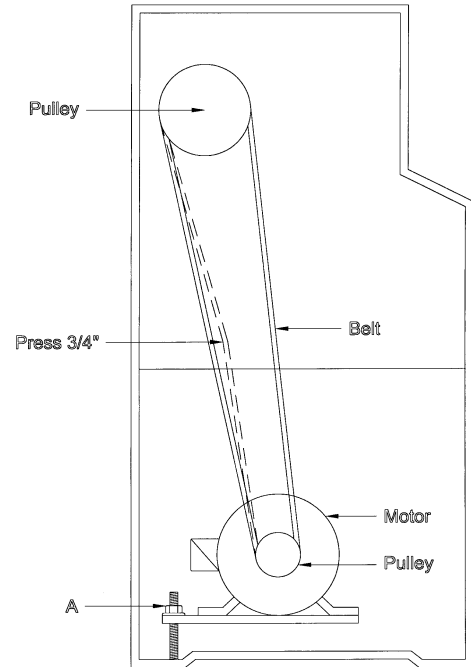


Fig. 26

## Aligning Tailstock to Headstock

Before proceeding, headstock should be aligned. See section labeled "Headstock Alignment".

1. Fit a 12" ground steel bar between centers of the headstock and tailstock (Fig. 27).
2. Fit a dial indicator to the compound slide and traverse the center line of the bar, using the carriage movement.
3. If tailstock adjustment is needed, alternately loosen and tighten front and rear hex socket cap screws (A, Fig. 28).

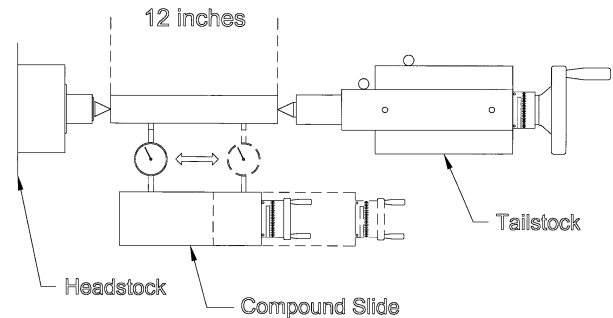


Fig. 27

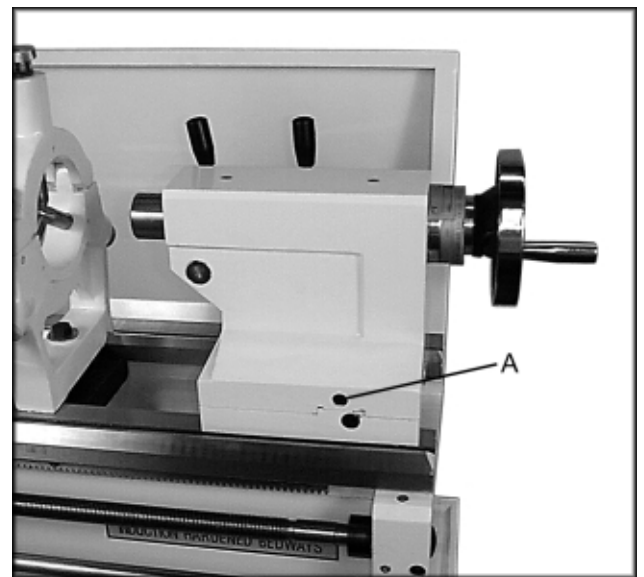


Fig. 28