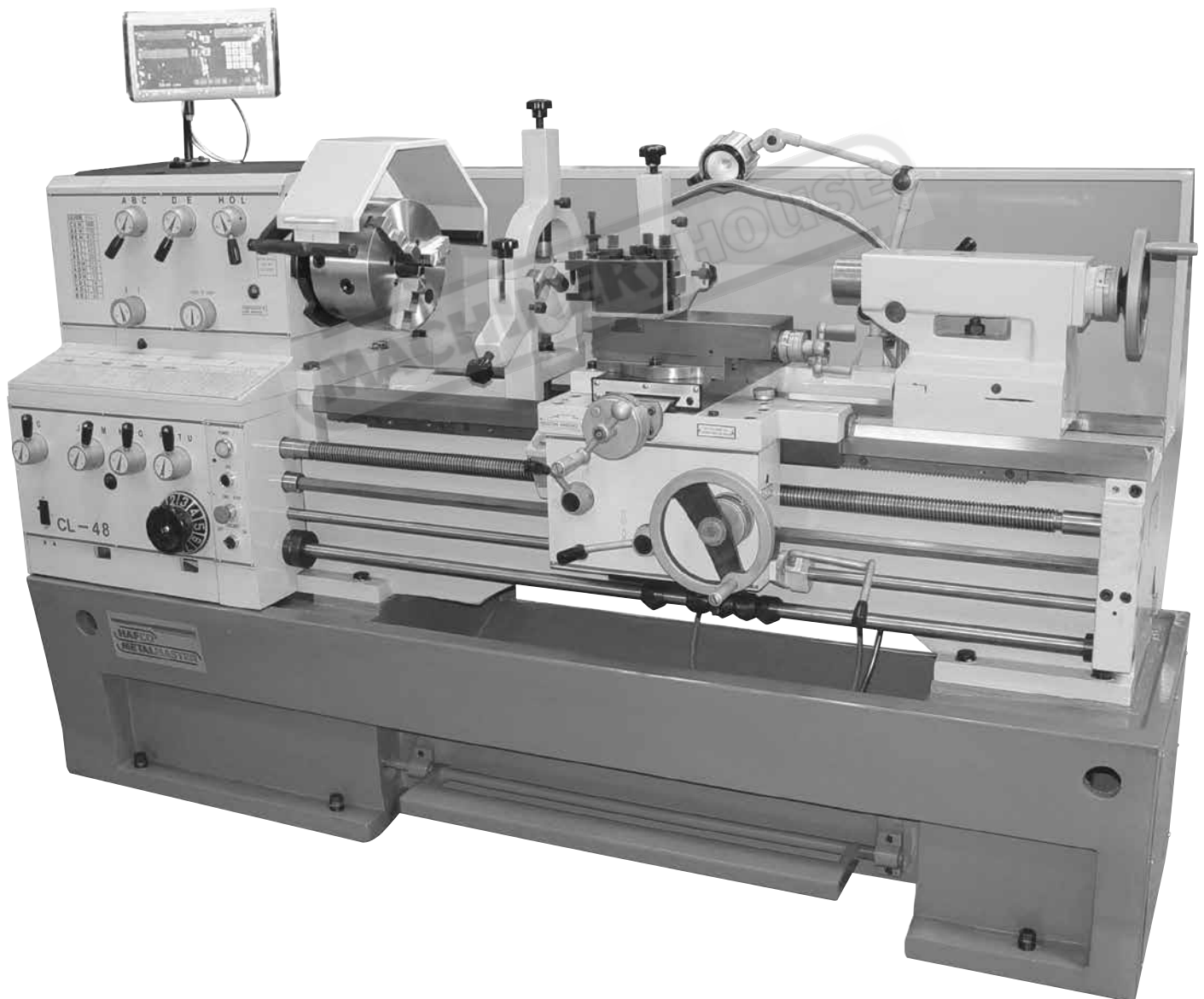


# INSTRUCTION MANUAL

## CL-48 Centre Lathe (415V) 470 x 1000mm Turning Capacity

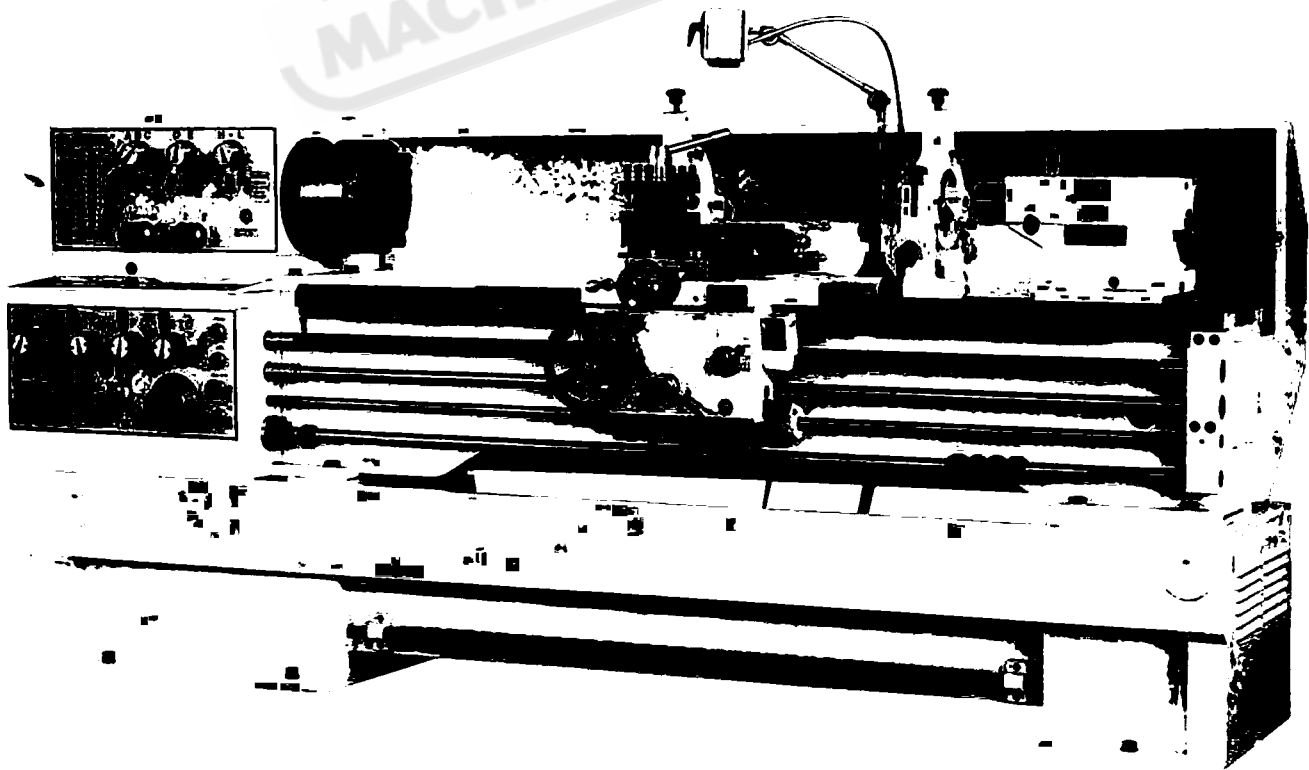


L580D

# OPERATOR'S MANUAL

## Heavy Duty Gear Head Gap Bed Engine Lathes

MACHINERYHOUSE



**WARNING**

- Read and understand the entire instruction manual before operating machine
- 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.
- This machine is designed and intended for use by properly trained and experienced personnel only. If you are not familiar with the proper safe use of lathe, do not use this machine until proper training and knowledge has 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 motor 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 guards 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.
- Failure to comply with all of these warnings may cause serious injury.

## Table of Contents

	page
Safety Warnings·····	1
Table of Contents·····	2
Application·····	3
Features·····	3
Specifications·····	4-7
Uncrating and Clean-up·····	8
Chuck preparation·····	9
Lubrication·····	10-11
Coolant preparation·····	12
Electrical Connections·····	12
General Description·····	12-14
Controls·····	15-16
Break-in Procedure·····	17
Operation·····	17-21
Adjustments·····	21-24

**Application**

The lathe is a heavy duty geared head gap bed engine lathe. It can perform various turning operation, as well as boring, drilling, grooving and other operations. It can also be used for turning metric and inch threads, diametral and modulus threads. It is used in repairing workshops and is suitable for metal manufacture in single piece, small, medium and large batch production.

**Features:**

- Large 3 1/8" spindle bore
- Heavy-duty D1-8 spindle is supported by double row cylindrical roller bearing and angular contact ball bearing
- Bedways are induction hardened and ground
- Removable gap bed for large diameter work
- One-piece cast iron base
- Headstock gears are hardened and ground
- Headstock is lubricated by means of pump and oil bath
- Easily cut screw
- Five-position auto carriage stop
- Spindle foot brake
- Automatic feeding and threading are fully inter locked

MACHINERY HOUSE

**Specification**

Note: If you buy metric lathe, please refer to specification (for metric lathe).

Specification (for inch lathe)

Model	1440	1660	1860	2080
<b>Capacities:</b>				
Swing Over Bed	14"	16"	18"	
Swing Over Cross Slide	7.25"	8.75"	11.2"	
Swing Over Gap	22.25"	25.63"	27.4"	
Length of Gap	12.6"	12.6"	12.6"	
Distance Between Centers	40"	60"	60"	
<b>Headstock:</b>				
Hole Through Spindle	3-1/8"	3-1/8"	3-1/8"	
Spindle Nose	D1-8	D1-8	D1-8	
Taper in spindle Nose	MT-6	MT-6	MT-6	
Spindle Taper Adapter	MT-4	MT-4	MT-4	
Spindle Bearing Type	double row cylindrical roller bearing angular contact ball bearing			
Number of Spindle Speeds	12	12	12	
Range of Spindle Speeds(RPM)	40-1600	40-1600	40-1600	
<b>Gearbox:</b>				
Number of Longitudinal Feeds	60	60	60	
Range of longitudinal Feeds(inch/rev.)	0.0012"-0.0672"	0.0012"-0.0672"	0.0012"-0.0672"	
Number of Cross Feeds	60	60	60	
Range of Cross Feeds(inch/rev.)	0.0005"-0.0288"	0.0005"-0.0288"	0.0005"-0.0288"	
Number of Inch Threads	60	60	60	
Range of Inch Threads(T.P.I)	2-112	2-112	2-112	
Number of Metric Threads	41	41	41	
Range of Metric Threads	0.1-14mm	0.1-14mm	0.1-14mm	
Leadscrew	1.41" × 4T.P.I	1.41" × 4T.P.I	1.41" × 4T.P.I	
Feed Rod Diameter	1-1/8"	1-1/8"	1-1/8"	

**Specification(for inch lathe)**

<b>Model</b>	<b>1440</b>	<b>1660</b>	<b>1860</b>	<b>2080</b>
<b>Compound and Carriage:</b>				
Toolpost Type	4-way	4-way	4-way	
Maximum Tool Size	1" x 1"	1" x 1"	1" x 1"	
Maximum Compound Slide Travel	4-3/4"	4-3/4"	4-3/4"	
Maximum Cross Slide Travel	9"	9"	9"	
<b>Tailstock:</b>				
Tailstock Spindle Travel	5"	5"	5"	
Diameter of Tailstock Spindle	2-3/4"	2-3/4"	2-3/4"	
Taper in Tailstock Spindle	MT-5	MT-5	MT-5	
<b>Miscellaneous:</b>				
Steady Rest Capacity	4 1/2"	4 1/2"	4 1/2"	
Follow Rest Capacity	4"	4"	4"	
Length of Bed	79.7"	100"	100"	
Width of Bed	19.6"	19.6"	19.6"	
Height of Bed	16.4"	16.4"	16.4"	
Overall Dimensions(L x W x H)	100" x 45" x 47"	120" x 45" x 49"	120" x 45" x 51"	
Main Motor	3PH,230V/460V	3PH,230V/460V	3PH,230V/460V	
	60HZ 7-1/2HP	60HZ 7-1/2HP	60HZ 7-1/2HP	
Net Weight(approx.)	4850 lbs	5700 lbs	6900 lbs	

**Specification(for metric lathe)**

<b>Model</b>	<b>1440</b>	<b>1660</b>	<b>1860</b>	<b>2080</b>
<b>Capacities:</b>				
Swing Over Bed	360mm	400mm	460mm"	
Swing Over Cross Slide	184mm	222mm	285mm	
Swing Over Gap	565mm	651mm	696mm	
Length of Gap	320mm	320mm	320mm	
Distance Between Centers	1000mm	1500mm	1500mm	
<b>Headstock:</b>				
Hole Through Spindle	80mm	80mm	80mm	
Spindle Nose	D1-8	D1-8	D1-8	
Taper in spindle Nose	MT-6	MT-6	MT-6	
Spindle Taper Adapter	MT-5	MT-5	MT-5	
Spindle Bearing Type	double row cylindrical roller bearing angular contact ball bearing			
Number of Spindle Speeds	12	12	12	
Range of Spindle Speeds(RPM)	40-1600	40-1600	40-1600	
<b>Gearbox:</b>				
Number of Longitudinal Feeds	60	60	60	
Range of Longitudinal Feeds(mm/rev.)	0.030-1.66	0.030-1.66	0.030-1.66	
Number of Cross Feeds	60	60	60	
Range of Longitudinal Feeds(mm/rev.)	0.02-1.21	0.02-1.21	0.02-1.21	
Number of Metric Threads	41	41	41	
Range of Metric Threads	0.1-14mm	0.1-14mm	0.1-14mm	
Number of Inch Threads	60	60	60	
Range of Inch Threads(T.P.I)	2-112	2-112	2-112	
Leadscrew (mm)	36 × 6	36 × 6	36 × 6	
Feed Rod Diameter (mm)	28	28	28	

**Specification(for metric lathe)**

Model	1440	1660	1860	2080
<b>Compound and Carriage:</b>				
Toolpost Type	4-way	4-way	4-way	
Maximum Tool Size	25mm x 25mm	25mm x 25mm	25mm x 25mm	
Maximum Compound Slide Travel	120mm	120mm	120mm	
Maximum Cross Slide Travel	220mm	220mm	220mm	
<b>Tailstock:</b>				
Tailstock Spindle Travel	130mm	130mm	130mm	
Diameter of Tailstock Spindle	70mm	70mm	70mm	
Taper in Tailstock Spindle	MT-5	MT-5	MT-5	
<b>Miscellaneous:</b>				
Steady Rest Capacity				
Follow Rest Capacity				
Length of Bed	2025mm	2545mm	2545mm	
Width of Bed	500mm	500mm	500mm	
Height of Bed	417mm	417mm	417mm	
Overall Dimensions(L x W x H)	2540x1143x1293mm	3048x1143x1244mm	3048x1143x1295mm	
Main Motor	3PH,380V	3PH,415V	3PH,415V	
	50HZ,5.5KW	50HZ,5.5KW	50HZ,5.5KW	
Net Weight(approx.)	2200kg	2600kg	3130kg	

**Specification(for metric lathe)**

Model	1440	1660	1860	2080
<b>Compound and Carriage:</b>				
Toolpost Type	4-way	4-way	4-way	
Maximum Tool Size	25mm x 25mm	25mm x 25mm	25mm x 25mm	
Maximum Compound Slide Travel	120mm	120mm	120mm	
Maximum Cross Slide Travel	220mm	220mm	220mm	
<b>Tailstock:</b>				
Tailstock Spindle Travel	130mm	130mm	130mm	
Diameter of Tailstock Spindle	70mm	70mm	70mm	
Taper in Tailstock Spindle	MT-5	MT-5	MT-5	
<b>Miscellaneous:</b>				
Steady Rest Capacity				
Follow Rest Capacity				
Length of Bed	2025mm	2545mm	2545mm	
Width of Bed	500mm	500mm	500mm	
Height of Bed	417mm	417mm	417mm	
Overall Dimensions(L x W x H)	2540x1143x1293mm	3048x1143x1244mm	3048x1143x1295mm	
Main Motor	3PH,380V	3PH,380V	3PH,380V	
	50HZ,5.5KW	50HZ,5.5KW	50HZ,5.5KW	
Net Weight(approx.)	2200kg	2600kg	3130kg	

## 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. Sling lathe with adequate lifting equipment as diagrammed in Fig.1, (Do not lift by spindle.) 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 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 alcohol thinner. These will damage painted surfaces. Cover all cleaned surfaces with a light film of machine oil NO.30.
7. Remove the end gear cover. Clean all components of the end gear assembly and lubricate all gears with calcium grease NO.2. Replace cover.

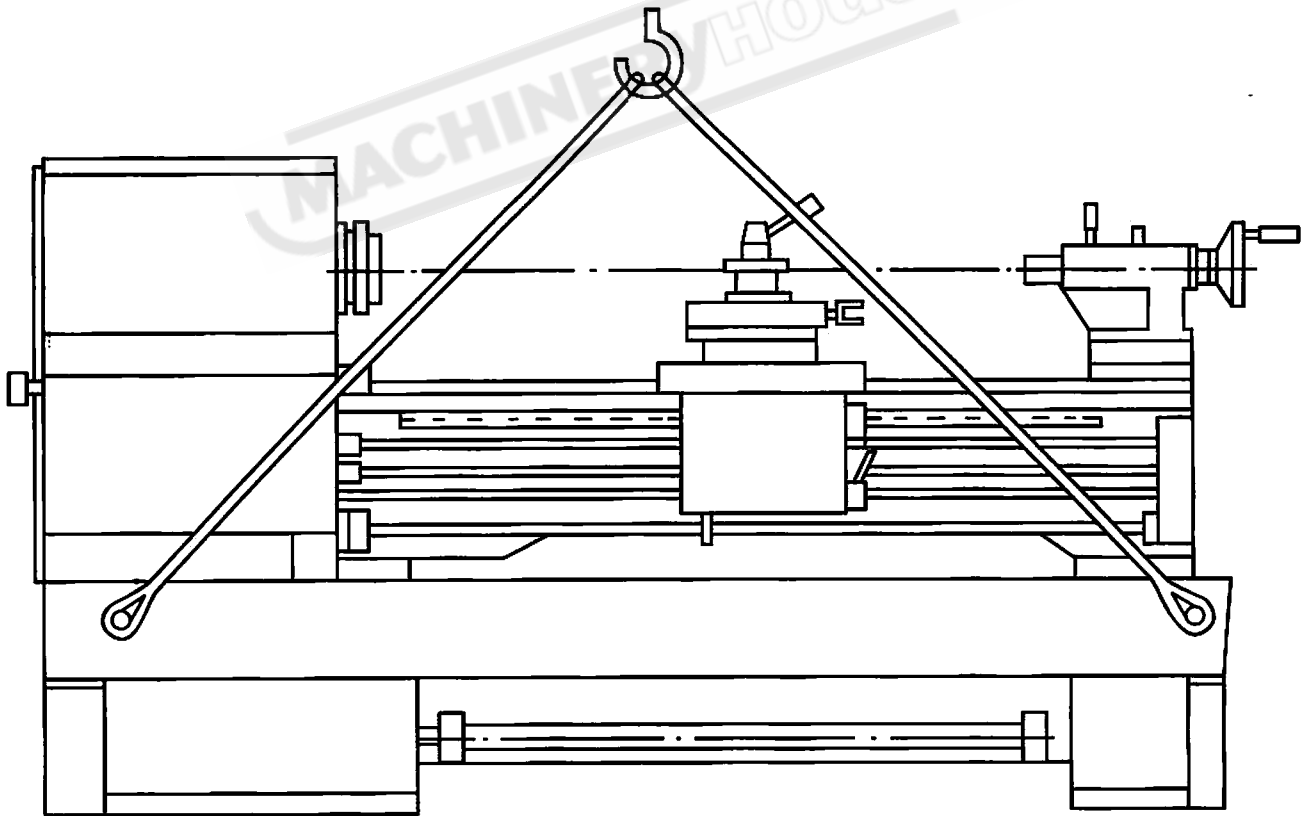


Fig.1

**Chuck preparation (Three jaw )****WARNING**

Read and understand all directions for chuck preparation!

Failure to comply may cause serious injury or damage to the lathe!

1. Support the chuck while turning three camlocks 1/4 turn counter-clockwise with the cam lock 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 #2 lithium tube grease. Cover the spindle, cam locks, and chuck body with a light film of 20W oil.
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 on the camlock should be between the two indicator arrows. 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.

## 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**—Headstock is lubricated by means of pump and oil bath, oil must be up to indicator mark in oil sight glass (1, Fig. 2). Top off with machine oil NO. 30 or equivalent. Fill by opening the cover (2, Fig. 2). To drain, open the change gear cover door and remove the hex nut (3, Fig. 2). Drain oil completely, wash the headstock with kerosene, refill after the first 10 days of operation, then change oil in the headstock every 50 days.
2. **Change gear**—open change gear cover door and lubricate the change gear with calcium grease NO. 2 once per week, lubricate oiler on the shaft with machine oil NO. 30 once per shift.
3. **Gear box**—oil must be up to indicator mark in oil sight glass (4, Fig. 2). Top off with machine NO. 30 or equivalent. Fill by removing the top cover (4, Fig. 2). To drain, open the change gear cover door and remove drain plug (6, Fig. 2). Drain oil completely and refill after the first 10 days of operation. Then change oil in the gearbox every 50 days.
4. **Apron**—oil must be up to indicator mark in oil sight glass (7, Fig. 2). Top off with machine oil NO. 30 or equivalent. Remove oil plug (8, Fig. 2). In left of apron to fill. To drain, remove drain plug on bottom of apron. Drain oil completely and refill after the first 10 days of operation. Then change oil in the apron every 50 days.
5. **Cross slide**—Lubricate four oil ports (9, Fig. 2). With machine oil NO. 30 once per shift.
6. **Compound rest**—Lubricate two oil ports (10, Fig. 2). With machine oil NO. 30 once per shift.
7. **Carriage**—Lubricate three oil ports (11, Fig. 2). With machine oil NO. 30 once per shift.
8. **Leadscrew (Feed rod)**—Lubricate leadscrew (feed rod) with machine oil NO. 30 by oil gun in the tool box once per shift.
9. **Tailstock**—Lubricate three ports (12, Fig. 2) with machine oil NO. 30 once per shift.

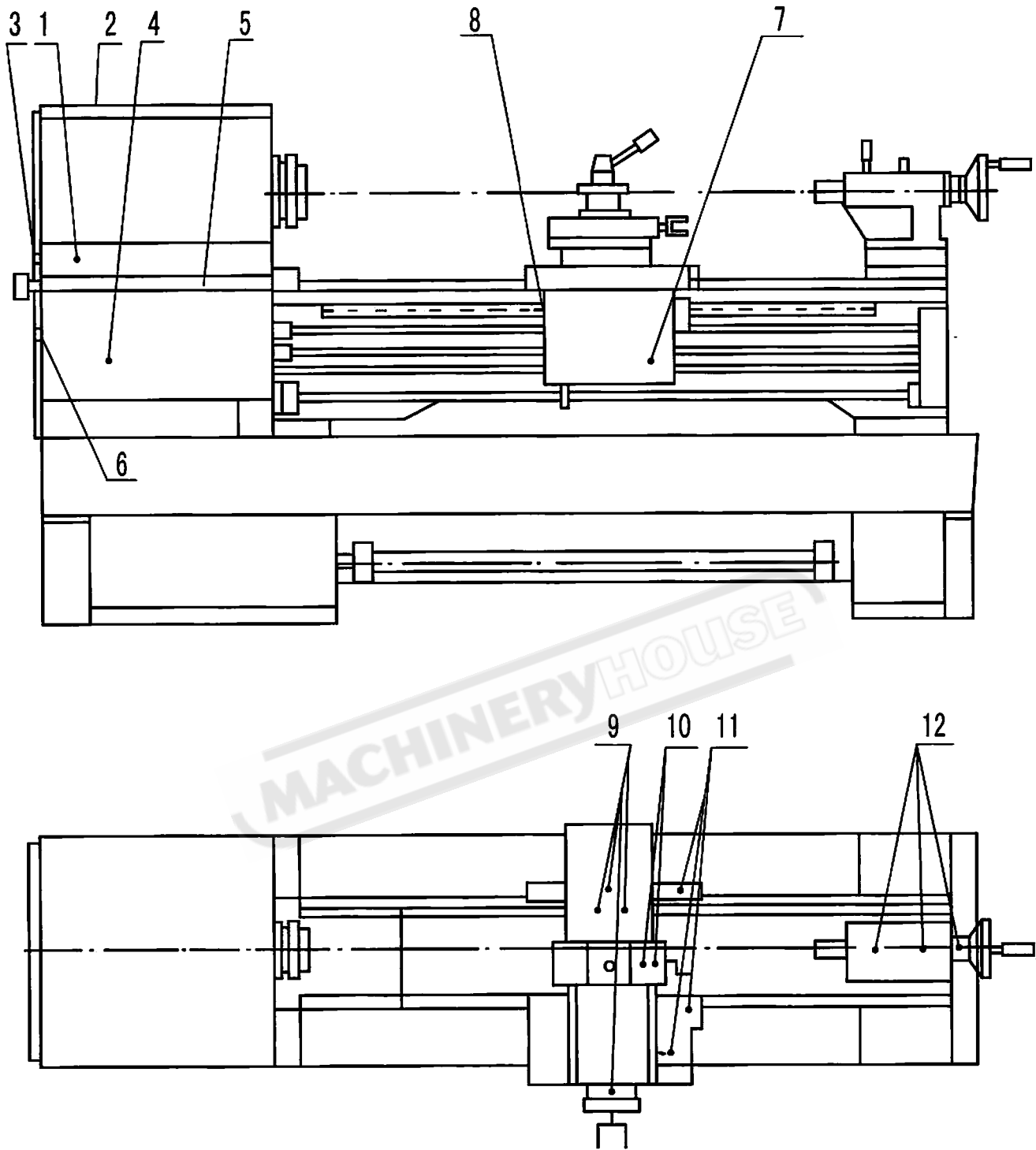


Fig.2

### Coolant Preparation

1. Remove cover in the right end of cast iron base.
2. Pull out the coolant tank and pour coolant mix into the coolant tank.
3. After machine has been connected to power, turn on coolant pump and check to see coolant is cycling properly.
4. Fasten cover to the right end cast iron base.

### Electrical Connections

#### WARNING

All electrical connections must be completed by a qualified electrician!  
Failure to comply may cause serious injury and damage to the machinery and property!

The heavy duty gear head lathe is rated at 7-1/2HP, 3ph, 230v/460v, 60HZ or 5.5kw, 3ph, 380v, 50hz power, make sure the lathe is properly grounded.

### General Description

#### Lathe Bed

The lathe bed (1, Fig. 3) is made of high grade cast iron. By combining high cheeks with strong 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 cast iron base below headstock.

#### One-piece Cast Iron Base

The base (2, Fig. 3) is cast from high grade, low vibration cast iron. The left base and the right base are cast in one single piece.

#### Headstock

The headstock (3, Fig. 3) 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 a precision double row cylindrical roller bearing and a precision angular contact ball bearing. The hollow spindle has Morse Taper #6 with a 3-1/8" bore.

**Carriage**

The Carriage(4, Fig.3) 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 gibbs. The top slide(5, Fig.3) which is mounted on the cross slide(6, Fig.3), can be rotated through 360°, the top slide and the cross slide travel in a dovetail slide and have adjustable gibbs. A four way tool post is fitted on the top slide.

**Four Way Tool Post**

The four way tool post (7, Fig.3) 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(8, Fig.3) is mounted to the carriage. In the apron a half nut and a steel ball over load clutch are fitted. In case of over load, the clutch jumps away automatically. The half nut gibbs 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.

**Tailstock**

The tailstock(9, Fig.3) 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 #4.

**Leadscrew and Feed Rod**

The leadscrew (10, Fig.3) and feed rod (11, Fig.3) 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 the left end and bracket on the right end. Both are equipped with shear pins.

**Longitudinal touch-stop device**

The longitudinal touch-stop device(12, Fig.3) is mounted on the front of the machine bed, It is connected to the gear box at the left end and has five position for auto carriage stop.

**Gear box**

The gear box(13, Fig.3) is made from high quality cast iron and is mounted to the left side of the machine bed.

### Steady Rest

The steady rest 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 cap 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 lead based grease.
4. After prolonged use, the fingers will show wear. Remill or file the tips of the fingers.

### Follow Rest

The traveling follow rest 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 adequately with lead based grease during operation.

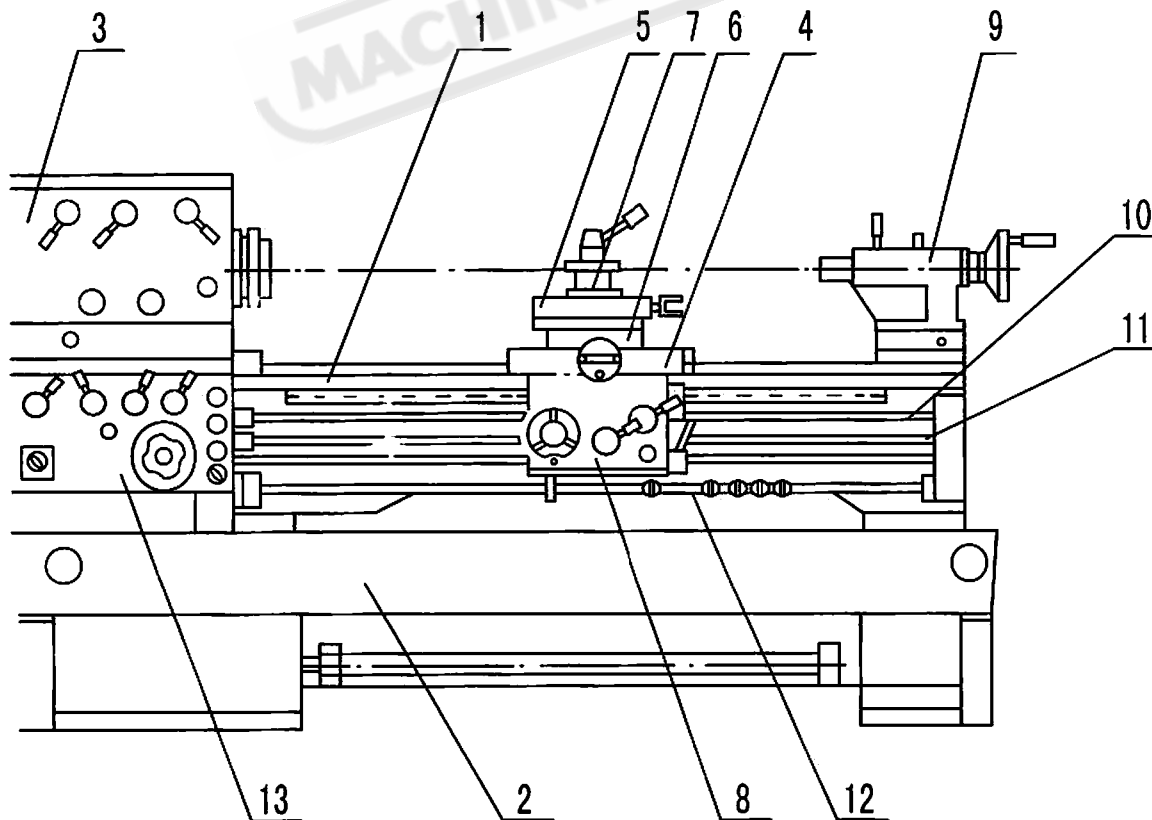


Fig.3

## Controls

1. **Headstock Geat Change Levers** (1, Fig.4)-Located on the front of the headstock at the top. Move levers according to the chart to desired spindle speed.
2. **Leadscrew/Feedrod Directional knob** (2, Fig.4)-Located on the front of the headstock. Turning the knob causes carriage travel toward the headstock or the tailstock. Do not turn the knob while machine is running.
3. **Feed/Lead Selector lever** (3, Fig.4)-located on the front of the headstock, Used whenever setting up for threading or feeding.
4. **Coolant on-off Switch** (4, Fig.4)-located on the front of the gear box. Turns coolant pump on and off.
5. **Eergency Stop Switch** (5, Fig.4)-located on the front of the gear box, Depress to stop all machine functions.
6. **Jog Swich** (6, Fig.4)-Depress and release to advance spindle momentarily.
7. **Power Indicator Light** (7, Fig.4)-Lit whenever lathe has power.
8. **Feed/lead Rate Selector Hand Wheel** (8, Fig.4)-Located on the front of the gear box Used in setting up for feeding and threading.
9. **Feed/Lead Rate Selector lever** (9, Fig.4)-located on the front of the gear box. Used in setting up for feeding and threading.
10. **Change Gear Lever** (10, Fig.4)-located on the front of the gear box. Used in setting up for feeding and threading. Moving the change gear lever to cut all kinds of inch (metric) and DP (MP) threads in the feed and thread tables with no change gears to replace. It's more easier to cut thread.
11. **Power Swith** (11, Fig.4)-Located on the front of the gear box. Turns main power to lathe on and off.
12. **Longitudial Touch-Stop Hand wheel** (12, Fig.4)-Located on the right side of the gear box. Turning the hand wheel to change the position of auto carriage stop.
13. **Auto feed on-off Lever** (13, Fig.4)-located on the front of the apron. Move the lever up, auto feed is on. Move the lever down, auto feed is off.
14. **Feed selector and Half Nut Engage Lever** (14, Fig.4)-Located on front of the apron assembly. Move the lever down to engage, thread can be cut, (Note: The auto feed on-off lever must be moved down). Move the lever up to active the crossfeed and the longitudinal functions. (Note: The auto feed on-off lever must be moved up.)
15. **Longitudinal Traverse Hand Wheel** (15, Fig.4)-Located on the apron assembly. Rotate hand wheel clockwise to move the apron assembly toward the tailstock (right). Rotate the wheel counter-clockwise to move the apron assembly toward the headstock (left).
16. **Spindle Forward/Reverse Selector Lever** (16, Fig.4)-Move the lever down or up to change the spindle rotation direction.

17. **Cross Traverse Hand wheel** (17, Fig.4)-Located above the apron assembly. Clockwise rotation moves the cross slide toward the rear of the machine.
18. **Compound Rest Traverse Handwheel** (18, Fig.4)-Located on the end of the compound slide. Rotate clockwise or counter-clockwise to move the position.
19. **Tool Post Clamping Lever** (19, Fig.4)-located on the top to the tool post. Rotate counter-clockwise to loosen and clockwise to tighten.
20. **Tailstock Quill Clamping Lever** (20, Fig.4)-Located on the tailstock. Lift up to lock the spindle. Push down lever to unlock.
21. **Tailstock Clamping Lever** (21, Fig.4)-located on the tailstock, Lift up lever to lock. Push down lever to unlock.
22. **Tailstock Quill Traverse Handwheel** (22, Fig.4)-Located on the tailstock. Rotate clockwise to advance the quill. Rotate counter-clockwise to retract the quill.
23. **Tailstock off-set Adjustment** (23, Fig.4)-a hex socket cap screw located on the tailstock base is used to off-set the tailstock for cutting tapers.
24. **Foot Brake** (24, Fig.4)-Located on the one piece cast iron base. Depress to stop all lathe functions.

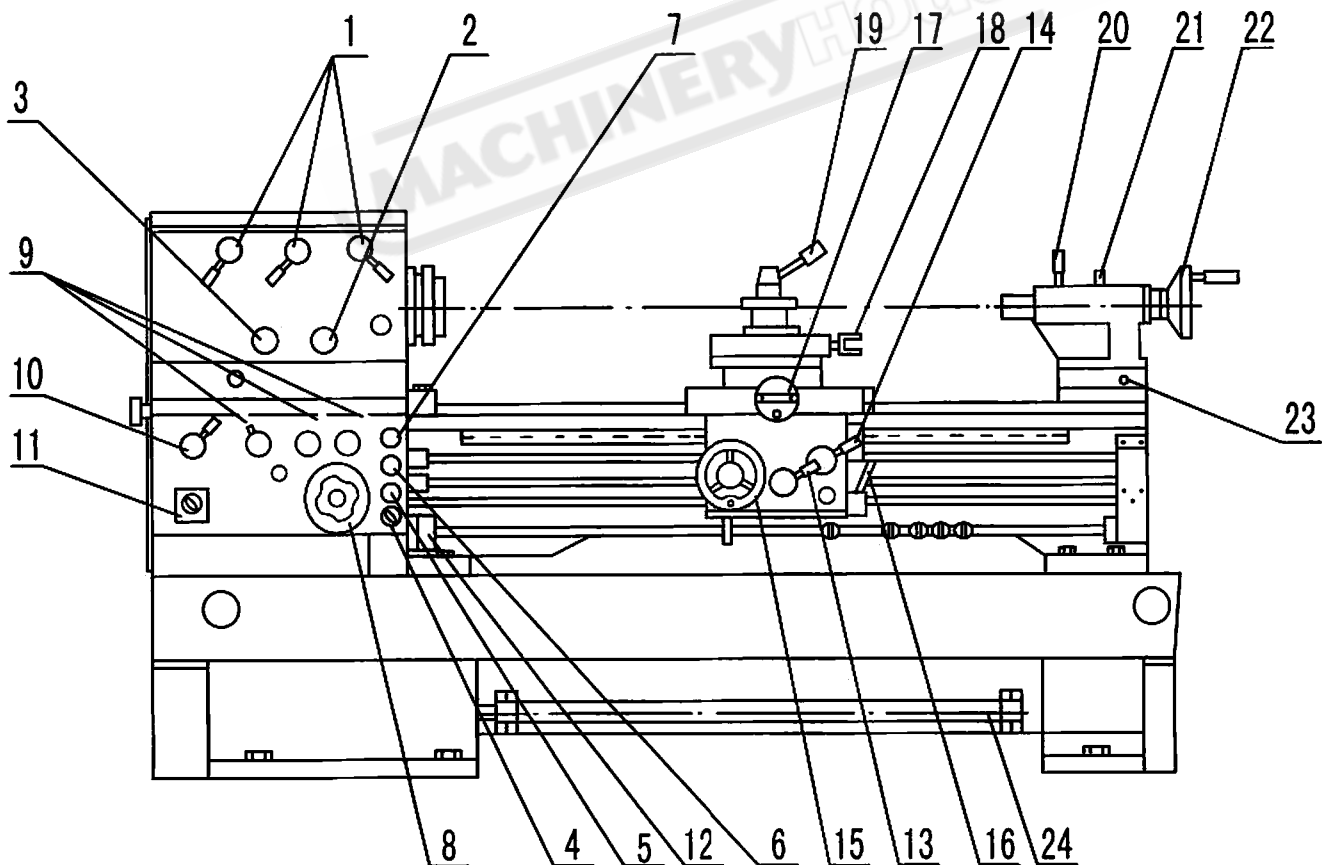


Fig.4

### **Break-In procedure**

During manufacture and testing. This lathe has been operated in the low R.P.W, range for three hours . To allow time for the gears and bearings to break-in and run smoothly.

### **Operation**

#### **Feed and Thread Selection**

1. Reference the feed and thread tables found on the top cover of the gear box.
2. Move levers to the appropriate positions according to the chart.

#### **Automatic Feed Operation and Feed Changes**

1. Move the forward/reverse selector lever up or down depending desired direction.
2. Move the auto feed on-off lever up.
3. Set selector levers to desired rate. Refer to chart 3.
4. Move the feed selector and half nut engage lever up to proper position.

#### **Thread Cutting**

1. Set forward/reverse lever up or down depending on the desired direction.
2. Move the auto feed on-off lever down.
3. Set selector levers to desired rate.
4. Engage the half nut lever To cut inch threads, refer to the chart 1.

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 thread, the half nuts must be left continually engaged once the start point has been selected and the half nut is initially engaged. (thread dial can not be used).
6. To cut DP or MP thread, refer to the chart 2.

**Note:** IF you buy metric lathe, please refer to the metric lathe chart (4,5,6)


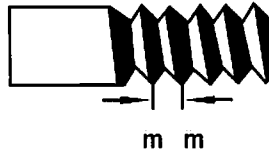
G															
LNCH THREED TABLE							METRIC THREED TABLE								
 <p>T / I"</p>							 <p>m m</p>								
LEVER	II JPR	II JQR	II KQR	I JPR	I JQR	I KQR	II MQS	II MPS	II MNS	II MPU	I MQS	II MNU	I MQU	I MPU	I MNU
1	64	32	16	8	4	2	0.1	0.2	0.4		0.8	1	2	4	8
2	72	36	18	9	4 1/2	2 1/4			0.45		0.9		2.25	4.5	9
3	76	38	19	9 1/2	4 3/4	2 3/8									
4	80	40	20	10	5	2 1/2		0.25	0.5			1.25	2.5	5	10
5	88	44	22	11	5 1/2	2 3/4			0.55				2.75	5.5	11
6	92	46	23	11 1/2	5 3/4	2 7/8									
7	96	48	24	12	6	3	0.15	0.3	0.6	0.75		1.5	3	6	12
8	104	52	26	13	6 1/2	3 1/4			0.65				3.25	6.5	13
9	108	54	27	13 1/2	6 3/4	3 3/8									
10	112	56	28	14	7	3 1/2		0.35	0.7			1.75	3.5	7	14

Chart 1 (for inch lathe)



F													
DP THREAD TABLE							MP THREAD TABLE						
 <p>D P</p>							 <p>M P</p>						
LEVER	II JQR	II KPR	II JPR	II JQR	I KQR	II MPS	II MNS	I MQS	II MNU	I MPS	I MQU	I MPU	I MNU
1	64	32	16	8	4	0.1	0.2	0.4		0.8	1	2	4
2	72	36	18	9	4 1/2			0.45		0.9		2.25	4.5
3	76	38	19	9 1/2	4 3/4								
4	80	40	20	10	5		0.25	0.5			1.25	2.5	5
5	88	44	22	11	5 1/2			0.55				2.75	5.5
6	92	46	23	11 1/2	5 3/4								
7	96	48	24	12	6	0.15	0.3	0.6	0.75		1.5	3	6
8	104	52	26	13	6 1/2			0.65				3.25	6.5
9	108	54	27	13 1/2	6 3/4								
10	112	56	28	14	7		0.35	0.7			1.75	3.5	7

Chart 2 (for inch lathe)



<b>G</b>												
<b>FEED TABLE</b>												
												
LEVER	II MQT	II MPT	II MNT	I MQT	I MPT	I MNT	II MQT	II MPT	II MNT	I MQT	I MPT	I MNT
1	0.00120	0.00240	0.00480	0.00960	0.01920	0.03340	0.00050	0.00100	0.00200	0.00400	0.00800	0.01600
2	0.00130	0.00260	0.00520	0.01040	0.02080	0.04160	0.00056	0.00112	0.00224	0.00448	0.00896	0.01792
3	0.00140	0.00280	0.00560	0.01120	0.02240	0.04480	0.00060	0.00120	0.00240	0.00480	0.00960	0.01920
4	0.00150	0.00300	0.00600	0.01200	0.02400	0.04800	0.00063	0.00126	0.00252	0.00504	0.01008	0.02016
5	0.00165	0.00330	0.00660	0.01320	0.02640	0.05280	0.00070	0.00140	0.00280	0.00560	0.01120	0.02240
6	0.00170	0.00340	0.00680	0.01360	0.02720	0.05440	0.00073	0.00146	0.00292	0.00584	0.01168	0.02336
7	0.00180	0.00360	0.00720	0.01440	0.02880	0.05760	0.00080	0.00160	0.00320	0.00640	0.01280	0.02560
8	0.00195	0.00390	0.00780	0.01560	0.03120	0.06240	0.00083	0.00166	0.00332	0.00664	0.01328	0.02656
9	0.00200	0.00400	0.00800	0.01600	0.03200	0.06400	0.00086	0.00172	0.00344	0.00688	0.01376	0.02752
10	0.00210	0.00420	0.00840	0.01680	0.03360	0.06720	0.00090	0.00180	0.00360	0.00720	0.01440	0.02880

Chart 3 (for inch lathe)

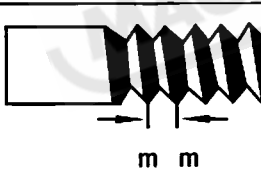

<b>F</b>															
<b>METRIC THRRAD TABLE</b>										<b>LNCH THREAD TARLE</b>					
															
LEVER	II MQS	II MPS	II MNS	II MPU	I MQS	II MNU	I MQU	I MPU	I MNU	II JPR	II JQR	II KQR	I JPR	I JQR	I KQR
1	0.1	0.2	0.4		0.8	1	2	4	8	64	32	16	8	4	2
2			0.45		0.9		2.25	4.5	9	72	36	18	9	4 1/2	2 1/4
3										76	38	19	9 1/2	4 3/4	2 3/8
4		0.25	0.5			1.25	2.5	5	10	80	40	20	10	5	2 1/2
5			0.55				2.75	5.5	11	88	44	22	11	5 1/2	2 3/4
6										92	46	23	11 1/2	5 3/4	2 7/8
7	0.15	0.3	0.6	0.75		1.5	3	6	12	96	48	24	12	6	3
8			0.65				3.25	6.5	13	104	52	26	13	6 1/2	3 1/4
9										108	54	27	13 1/2	6 3/4	3 3/8
10		0.35	0.7			1.75	3.5	7	14	112	56	28	14	7	3 1/2

Chart 4 (for metric lathe)



G													
MP THREAD TABLE							DP THREAD TABLE						
 M P							 D P						
LEVER	II MPS	II MNS	I MQS	II MNU	I MPS	I MQU	I MPU	I MNU	II JQR	II KPR	II JPR	II JQR	I KQR
1	0.1	0.2	0.4		0.8	1	2	4	64	32	16	8	4
2			0.45		0.9		2.25	4.5	72	36	18	9	4 1/2
3									76	38	19	9 1/2	4 3/4
4		0.25	0.5			1.25	2.5	5	80	40	20	10	5
5			0.55				2.75	5.5	88	44	22	11	5 1/2
6									92	46	23	11 1/2	5 3/4
7	0.15	0.3	0.6	0.75		1.5	3	6	96	48	24	12	6
8			0.65				3.25	6.5	104	52	26	13	6 1/2
9									108	54	27	13 1/2	6 3/4
10		0.35	0.7			1.75	3.5	7	112	56	28	14	7

Chart 5 (for metric lathe)

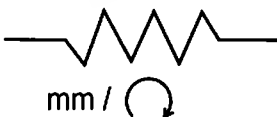
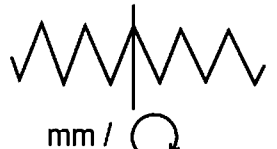
F												
FEED TABLE												
 mm / (rotation)						 mm / (rotation)						
LEVER	II MQT	II MPT	II MNT	I MQT	I MPT	I MNT	II MQT	II MPT	II MNT	I MQT	I MPT	I MNT
1	0.030	0.060	0.120	0.240	0.480	0.960	0.020	0.040	0.080	0.160	0.320	0.640
2	0.034	0.068	0.136	0.272	0.544	1.088	0.022	0.044	0.088	0.176	0.352	0.704
3	0.036	0.072	0.144	0.288	0.576	1.152	0.024	0.048	0.096	0.192	0.384	0.768
4	0.038	0.076	0.152	0.304	0.608	1.216	0.026	0.052	0.104	0.208	0.416	0.832
5	0.042	0.084	0.168	0.336	0.672	1.344	0.028	0.056	0.112	0.224	0.448	0.896
6	0.044	0.088	0.176	0.352	0.704	1.408	0.030	0.060	0.120	0.240	0.480	0.960
7	0.046	0.092	0.184	0.368	0.736	1.472	0.032	0.064	0.128	0.256	0.512	1.024
8	0.048	0.096	0.192	0.384	0.768	1.536	0.034	0.068	0.136	0.272	0.544	1.088
9	0.050	0.100	0.200	0.400	0.800	1.600	0.036	0.072	0.144	0.288	0.576	1.152
10	0.052	0.104	0.208	0.416	0.832	1.664	0.038	0.076	0.152	0.304	0.608	1.216

Chart 6 (for metric lathe)

### Compound Rest

The compound rest is located on top of the carriage and can be rotated 360 degrees.

There is a calibrated dial (in degrees) 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.

### Spindle Bearing

Adjust the clearance of Spindle bearing as following:

1. Loosen the hex socket cap screw(A, Fig.5)
2. Adjust the nut(B, C, Fig.5) to proper position.
3. Tighten the hex socket cap screw (A, Fig.5)

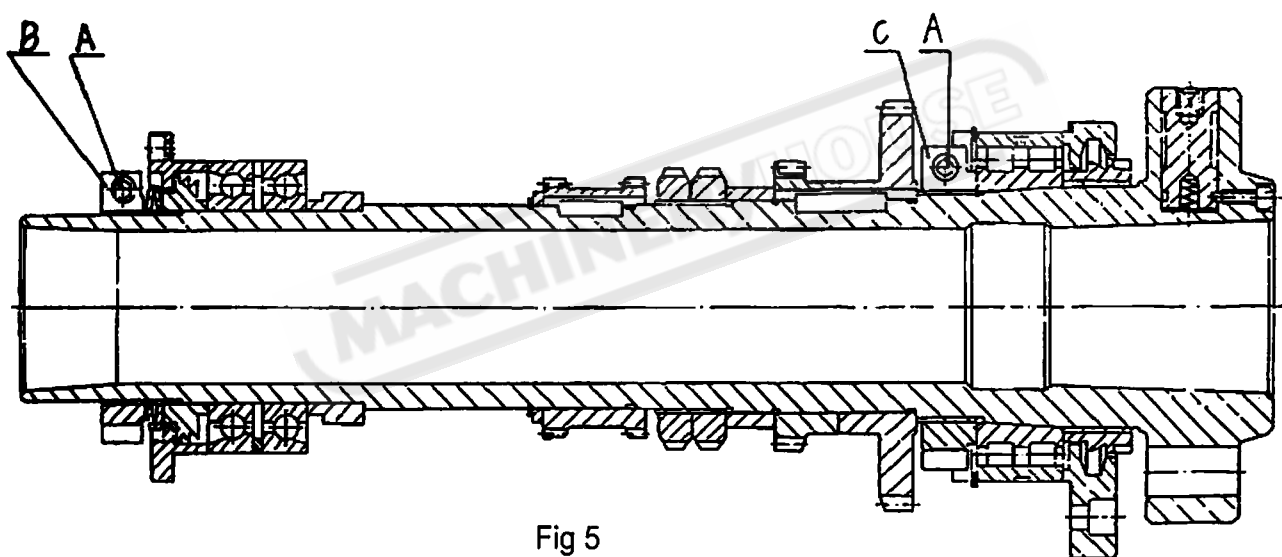


Fig 5

### Cross Feed Nuts

Adjust the clearance of cross feed nuts on the saddle as following:

1. Loosen two hex socket screw(A, Fig.6)
2. Rotate the screw(B, Fig.6) down until the wedge(C, Fig.6) moves up, the clearance of cross feed nuts disappear.
3. Tighten the two hex socket screws(A, Fig.6)

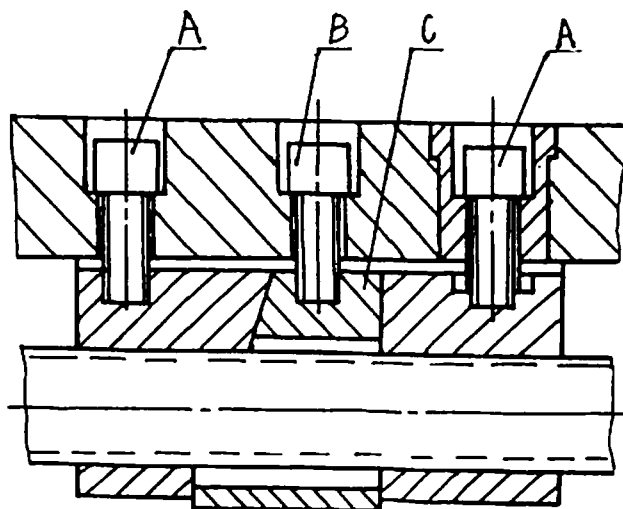


Fig 6

### Overload clutch

A over load clutch is fitted in apron. In case of over load, the worm (5, Fig. 7) stop rotating, but the gear (4, Fig. 7) continue rotating. The over load clutch jumps away automatically and depress the spring (3, Fig. 7). As a result, the worm is disengaged from the worm gear and auto-feed is off.

#### Adjust as following:

1. Remove the end cover (1, Fig. 7)
2. Properly adjust the nut (2, Fig. 7). (Note: do not over tighten)
3. Tighten the end cover (1, Fig. 7) again.

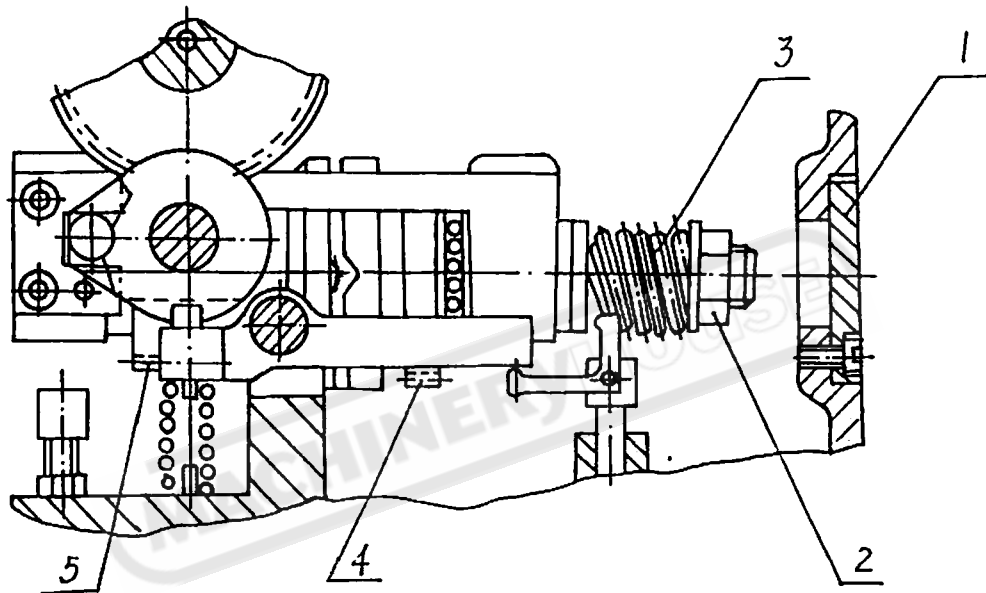


Fig: 7

### Tailstock off-set

Follow the procedure below to offset the tailstock to cut shallow tapers:

1. Lock tailstock in position by raising clamping lever (1, Fig. 8)
2. Alternately loosen and tighten front and rear setscrews (2, Fig. 8)
3. Tighten both set screws (2, Fig. 8)

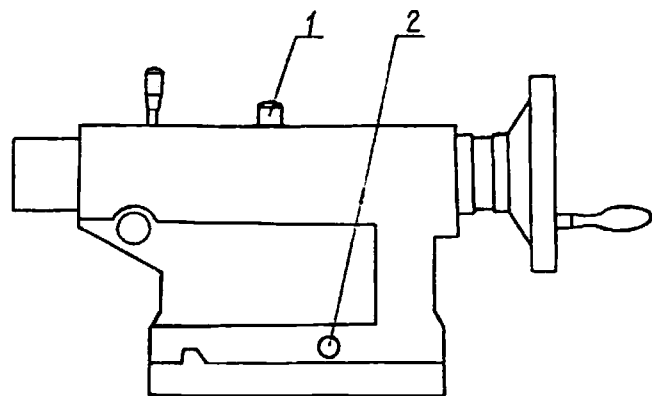


Fig: 8

## 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 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 at the end. The measurement should be the same.
6. If the measurements are not the same and adjustment is required, Loosen the screws that hold the headstock to the bed. Do not loosen completely, some drag should remain.
7. Adjust two screw nuts 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.

## V Belt and Foot Brake

After a period of time, it's necessary to adjust the v belt and foot brake, follow the procedure below.

1. Disconnect machine from the power source.
2. Remove the end cover on the left side of the base.
3. Loosen the hex nut (1, Fig. 9) and tighten the hex nut (2, Fig. 9) until the tension is proper.
4. Install cover and connect lathe to the power source.

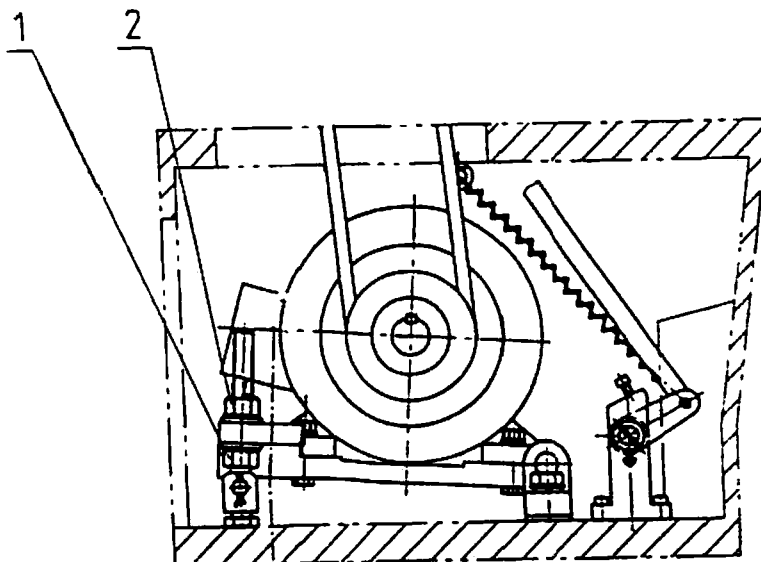
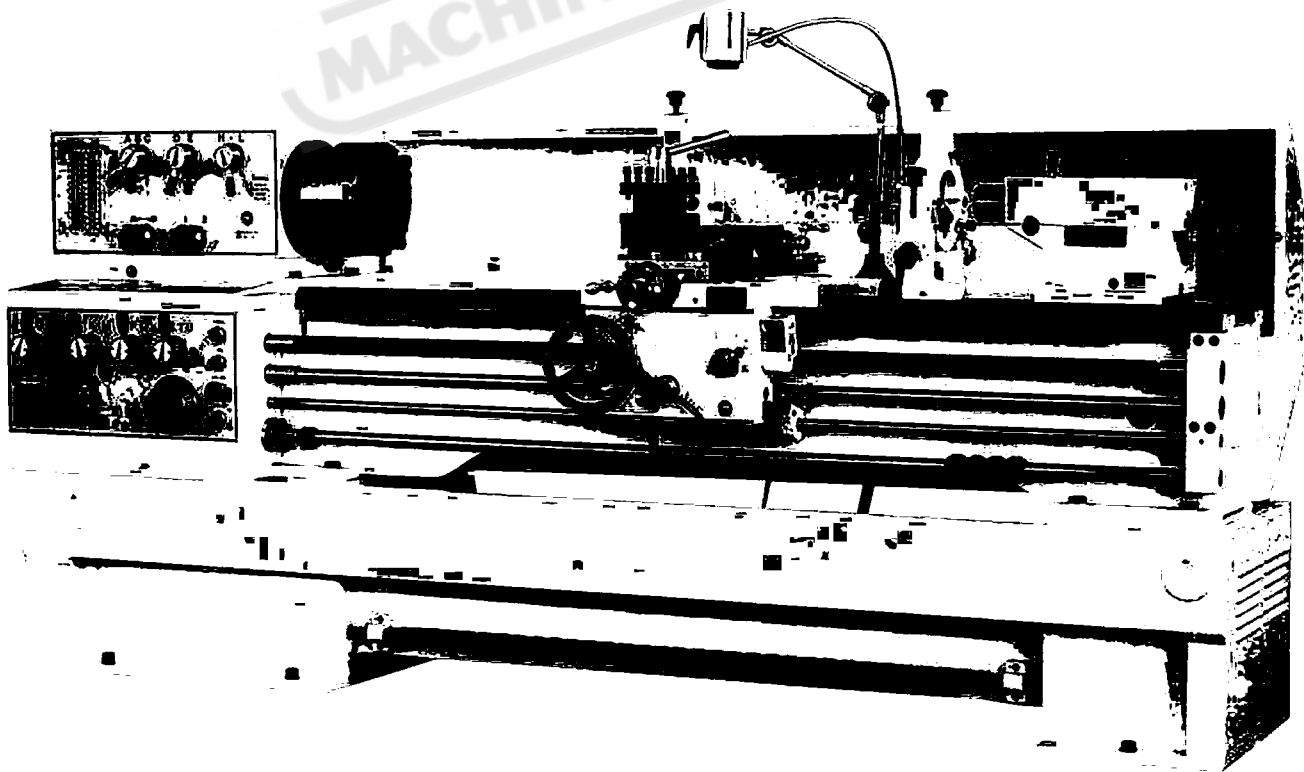


Fig: 9

# PACKING LIST

## Heavy Duty Gear Head Gap Bed Engine Lathes



# PACKING LIST

## Lathe and main accessories

NO	Description	Spec	Qty	Notes
1	Lathe		1 set	
2	3-jaw Chuck	10"	1 set	Mounted on the lathe
3	Center	MT-4	1 pce	In the tool box
4	Center	MT-5	1 pce	In the tool box
5	Center Sleeve	MT-5(hole)	1 pce	In the tool box
6	Hand-push oil gun		1 pce	In the tool box
7	Screw driver with cross-way	6"	1 pce	In the tool box
8	Double-end wrench	27-30	1 pce	In the tool box
9	Double-end wrench	22-24	1 pce	In the tool box
10	Double-end wrench	17-19	1 pce	In the tool box
11	Inner-hexagon spanner	4.5.6.8.10.12	6 pce	In the tool box
12	Cam lock key		1 pce	In the tool box
13	Spanner for tool post		1 pce	In the tool box
14	Chuck key		1 pce	In the tool box
15	Flat screw driver	8"	1 pce	In the tool box
16	Taper pins		4 pce	In the tool box
17	Leveling pad		6 pce	In wooden box made in the works
18	Fuse cores	660V2A4A	6 pce	In the tool box
19	Tool box		1 pce	In wooden box made in the works
20	Operator's manual		1 pce	
21	Certificate of inspection		1 pce	
22	Packing list		1 pce	
23	4-jaw Chuck	12 3/8"	1 set	Original packing
24	Steady rest		1 set	Mounted on the lathe
25	Follow rest		1 set	Mounted on the lathe
26	Face plate	19 1/4 "	1 set	In wooden box made in the works

Packing inspector: \_\_\_\_\_

Date: