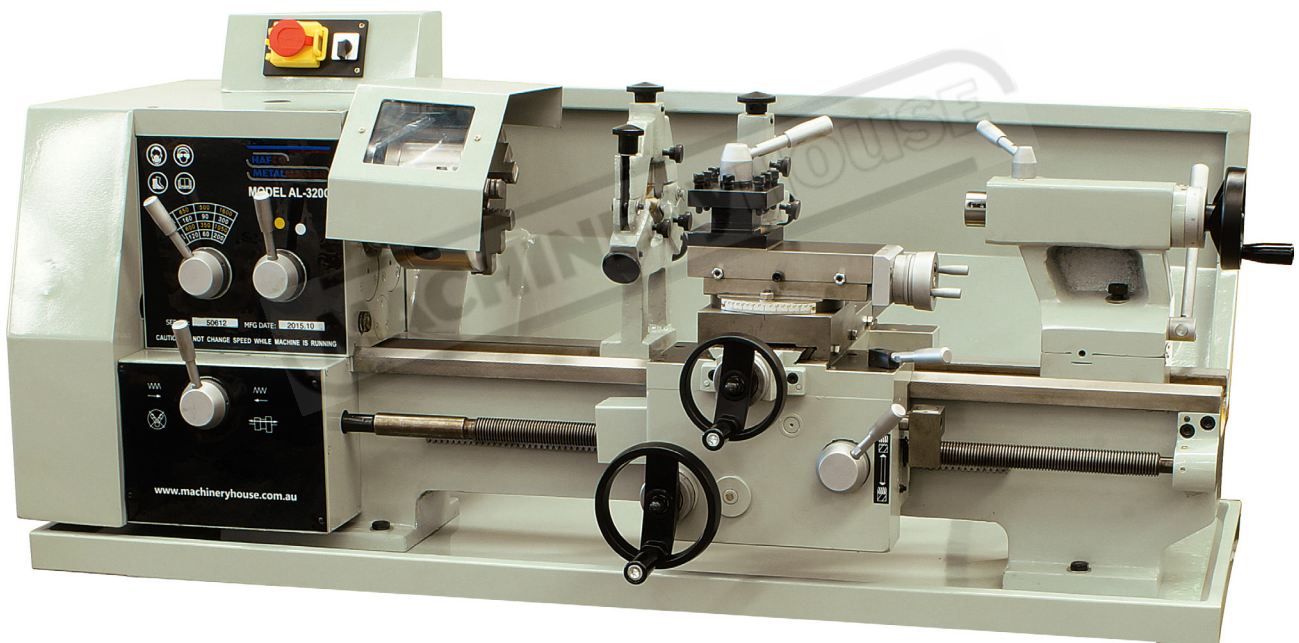


**HAFCO METALMASTER**

# Metal Cutting Lathe

## OPERATION MANUAL



## Model AL-320G

Order Code L141

*Edition No* :LA-320-2

*Date of Issue* :01/2020

[www.machineryhouse.com.au](http://www.machineryhouse.com.au)

# HAFCO METALMASTER

## MACHINE DETAILS

<b>MACHINE</b>	<input type="text" value="METAL CUTTING LATHE"/>
<b>MODEL NO.</b>	<input type="text" value="AL-320G"/>
<b>SERIAL NO.</b>	<input type="text"/>
<b>DATE OF MANF.</b>	<input type="text"/>

Distributed by



[www.machineryhouse.com.au](http://www.machineryhouse.com.au)  
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**NOTE:**

This manual is only for your reference. Owing to the continuous improvement of the Hafco Metalmaster machines, changes may be made at any time without obligation or notice. Please ensure the local voltage is the same as listed on the specification plate before operating this electric machine.



**NOTE:**

In order to see the type and model of the machine, please see the specification plate. Usually found on the back of the machine. See example (Fig.1)

**HAFCO**  
PRODUCT SPECIFICATION

MODEL:

CAPACITY:

SER. NO:

MFG DATE:

WEIGHT:

VOLTS:

MOTOR Kw:

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Made in China

Fig.1

# HAFCO METALMASTER

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# HAFCO METALMASTER

## GENERAL SAFETY REQUIREMENTS

DO NOT use this machine unless you have read this manual or have been instructed in the use of this machine in its safe use and operation



## WARNING

This manual provides safety instructions on the proper setup, operation, maintenance, and service of this machine. Save this manual, refer to it often, and use it to instruct other operators. Failure to read, understand and follow the instructions in this manual may result in fire or serious personal injury—including amputation, electrocution, or death.

The owner of this machine is solely responsible for its safe use. This responsibility includes, but is not limited to proper installation in a safe environment, personnel training and authorization to use, proper inspection and maintenance, manual availability and comprehension, of the application of the safety devices, integrity, and the use of personal protective equipment.

The manufacturer will not be held liable for injury or property damage from negligence, improper training, machine modifications or misuse.



Safety glasses must be worn at all times in work areas. Earmuffs should be worn if the work area is noisy.



Sturdy footwear must be worn at all times in work areas.



Gloves should NOT be worn when operating machinery. Should only be worn when handling the material



Long and loose hair must be contained with a net or under a hat

**OWNER'S MANUAL.** Read and understand this owner's manual before using the machine.

**DISCONNECT POWER FIRST.** Always disconnect the machine from power supply before making adjustments, or servicing the machine. This prevents any risk of injury from unintended startup or contact with live electrical equipment

**TRAINED OPERATORS ONLY.** Operators that have not been trained have a higher risk of being seriously injured. Only allow trained or supervised people to use this machine. When the machine is not being used, disconnect the power, to the machine to prevent unauthorized use—especially around children. Make the workshop safe.

# HAFCO METALMASTER

## GENERAL SAFETY REQUIREMENTS Cont.

**WEARING PROPER APPAREL** Do not wear clothing, apparel or jewelry that can become entangled in moving parts. Always tie back or cover long hair. Wear non-slip footwear to avoid accidental slips, which could cause loss of operating control.

**HEARING PROTECTION.** Always wear hearing protection when operating or observing loud machinery. Extended exposure to this noise without hearing protection can cause permanent hearing loss.

**REMOVE ADJUSTING TOOLS.** Tools left on machinery can become dangerous projectiles upon startup. Never leave chuck keys, wrenches, or any other tools on machine. Always verify removal before starting!

**USE CORRECT TOOL FOR THE JOB.** Only use this tool for its intended purpose. Do not force the machine or its attachments to do a job for which they were not designed. Never make unapproved modifications. Modifying the machine or using it differently than intended may result in malfunction or mechanical failure that can lead to personal injury or death!

**AWKWARD POSITIONS.** Keep proper footing and balance at all times when operating machine. Do not overreach! Avoid awkward hand positions that make operating control difficult. This could increase the risk of accidental injury

**ELECTRICAL EQUIPMENT INJURY RISKS.** There is a risk of being shocked, burned, or killed by touching live electrical components or improperly grounded machinery. To reduce this risk, only allow qualified service personnel to do electrical installation or repair work, and always disconnect power before accessing or exposing electrical equipment.

**FORCING MACHINERY.** Do not force the machine. It will do the job safer and better at the rate for which it was designed.

**NEVER STAND ON MACHINE.** Serious injury may occur if the machine is tipped or if the cutting tool is unintentionally contacted

**STABLE MACHINE.** Unexpected movement during operation greatly increases risk of injury or loss of control. Before starting, verify machine is stable and if using a mobile base it is locked in position.

**UNATTENDED OPERATION.** To reduce the risk of accidental injury, turn the machine OFF and ensure all moving parts have completely stopped before walking away. Never leave the machine running while unattended.

**MAINTAIN WITH CARE.** Follow all maintenance instructions and lubrication schedules to keep the machine in good working condition. A machine that is improperly maintained could malfunction, leading to serious personal injury or death.

**CHECK DAMAGED PARTS.** Regularly inspect the machine for any condition that may affect the safe operation. Immediately repair or replace damaged or parts that are incorrectly fitted before operating.

**MAINTAIN POWER CORDS.** When disconnecting the cord-connecting the machines from the power, hold and pull the plug—not the cord. Pulling the cord may damage the wires inside. Do not handle cord/plug with wet hands. Avoid cord damage by keeping it away from heated surfaces, high traffic areas, harsh chemicals, and wet/damp locations.

# HAFCO METALMASTER

## GENERAL SAFETY REQUIREMENTS Cont.

**SPEED RATES.** Operating this lathe at the wrong speed could cause machine parts to break or the workpiece to come loose, which will result in dangerous projectiles that could cause severe impact injuries. Large or non-concentric workpieces must be turned at slow speeds. Always use the appropriate feed and speed rates

**CHUCK KEY SAFETY.** A chuck key left in the chuck can become a deadly projectile when the spindle is started. Always remove the chuck key after using it. Develop a habit of not taking your hand off of a chuck key unless it has been removed from the machine.

**SAFE CLEARANCES.** Workpieces that crash into other components on the lathe may throw dangerous projectiles in all directions, leading to impact injury and damaged equipment. Before starting the spindle, make sure the workpiece has adequate clearance by hand-rotating it through its entire range of motion. Also, check the tool and tool post, chuck, and saddle clearance.

**LONG WORKPIECE SAFETY.** Long workpiece can whip violently if not properly supported, causing serious impact injury and damage to the lathe. Reduce this risk by supporting any stock that extends from the chuck/headstock more than three times its own diameter. Always turn long stock at slow speeds.

**SECURING WORKPIECE.** An improperly secured workpiece can fly off the lathe spindle with deadly force, which can result in a severe impact injury. Make sure the workpiece is properly secured in the chuck or on the faceplate before starting the lathe.

**CRASHES.** Aggressively driving the cutting tool or other lathe components into the chuck may cause an explosion of metal fragments, which can result in severe impact injuries and major damage to the lathe. Reduce this risk by releasing automatic feeds after use, not leaving lathe unattended, and checking clearances before starting the lathe.

Make sure no part of the toolholder, compound rest, cross slide, or carriage will contact the chuck during operation.

**TOOL SELECTION.** Cutting with an incorrect or dull tool increases the risk of accidental injury due to the extra force required for the operation. Always select the right lathe tool for the job and make sure it is sharp.

A correct, sharp tool decreases strain and provides a better finish.

**GUARDS & COVERS.** Guards and covers reduce accidental contact with moving parts or flying debris. Make sure they are properly installed, undamaged, and working correctly.

**CHILDREN & BYSTANDERS.** Keep children and bystanders at a safe distance from the work area. Stop using machine if they become a distraction.

**CLEARING CHIPS.** Metal chips can easily cut bare skin—even through a piece of cloth. Avoid clearing chips by hand or with a rag. Use a brush or vacuum to clear metal chips.

**USE RECOMMENDED ACCESSORIES.** Consult this manual or the manufacturer for recommended accessories. Using improper accessories will increase the risk of serious injury.

# HAFCO METALMASTER

## LATHE SAFETY PRECAUTIONS



Safety glasses must be worn at all times when using the lathe. Earmuffs should be worn when noisy applications are operating



Gloves must not be worn when using this machine. Avoid wearing loose clothes, rings and loose jewelry



Appropriate footwear with substantial uppers must be worn



Do Not operate the machine until the manual has been read and understood.

### Safety Checks Before Operating

1. Check workspaces and walkways to ensure no slip/trip hazards are present.
2. Locate and ensure you are familiar with the operation of the ON/OFF button
3. Ensure all guards are in place.
4. Check that the job is clamped tight in the chuck.
5. Remove all tools from the bed and slides of the machine.
6. Ensure correct speed for machining process is selected.
7. Remove the chuck key before starting the lathe.
8. Do not try to lift chucks or face plates that are too heavy for you.
9. The lathe should not be used if faulty

### Safety Checks While Operating

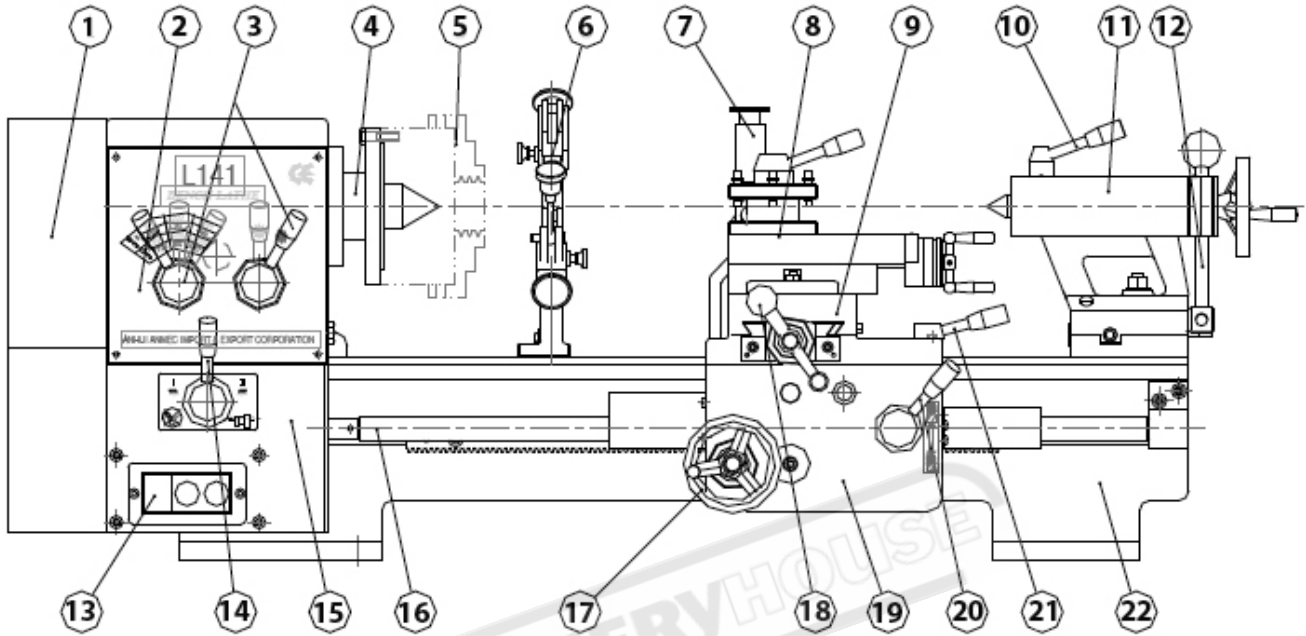
1. Never leave the lathe running unattended.
2. Before making adjustments or measurements switch off and bring the machine to a complete stop.
3. Do not attempt to slow/stop the chuck or revolving work by hand.
4. Avoid letting swarf build up on the tool or job. Stop the machine and remove it.
5. Always remove the chuck key from the chuck.
6. Do not store tools and parts on top of the machine.

### Potential Hazards

- Flying objects - chuck key left in chuck
- Cutting tool injury when cleaning, filing or polishing
- Rotating machine parts - entanglement
- Metal splinters/swarf
- Eye injuries

# HAFCO METALMASTER

## A. OVERVIEW OF THE MACHINE



- |                                    |   |
|------------------------------------|---|
| 1. Gear Train Cover                | 12. Tailstock Locking Lever             |
| 2. Headstock                       | 13. Main Switch                         |
| 3. Speed Changing Lever            | 14. Forward-reverse Feeding Handle      |
| 4. Main Spindle                    | 15. Feeding Box                         |
| 5. Chuck                           | 16. Longitudinal Leadscrew              |
| 6. Steady Rest                     | 17. Longitudinal Feeding Hand-Wheel     |
| 7. Toolpost                        | 18. Cross Feed Handle                   |
| 8. Toolpost Slide                  | 19. Apron                               |
| 9. Cross Slide                     | 20. Half-nut Lever                      |
| 10. Tailstock Sleeve Locking Lever | 21. Handle for Longitudinal/cross Feeds |
| 11. Tailstock                      | 22. Bed                                 |

## B. MAIN USAGE AND FEATURES

The machine is used mainly for the turning, drilling, threading, reaming and knurling, of metal work pieces.

The machine is designed for easy operation and is suitable for use in small workshops, repair shops, schools or for personal hobbies.



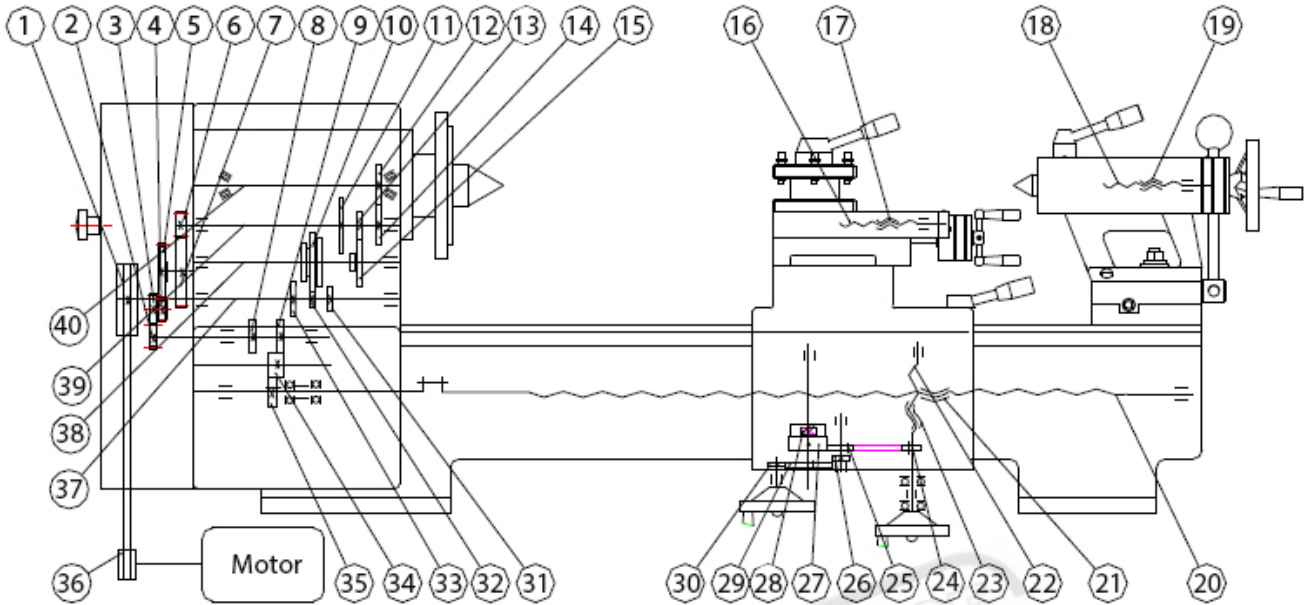
# HAFCO METALMASTER

## C. MAIN SPECIFICATIONS

Order Code	P141
<b>Model</b>	<b>AL-320G</b>
Swing Over The Bed (mm)	320
Distance Between Centres (mm)	600
Spindle Bore (mm)	38
Swing Over Cross-slide (mm)	210
Digital Readout System Fitted	Optional
Quick Change Toolpost Fitted	Optional
Tool Height To Suit (mm)	12
Centre Height (mm)	160
Spindle Nose Size or Type	Fixed
Bed Width (mm)	160
Headstock Spindle Taper (MT)	5
Tailstock Taper (MT)	3
Cross Slide Travel (mm)	150
Compound Slide Travel (mm)	100
Leadscrew Type	Metric
Metric Cross Feed (X-Axis) (mm / rev)	0.022 - 0.15
Metric Longitudinal Feed (Z-Axis) (mm / rev)	0.1 - 1.4
Metric Thread Steps & Pitch (No / mm)	11 (0.5 - 4)
Imperial Thread Steps & TPI (No / tpi)	27 (9 - 48)
Spindle Steps / Speeds (No / rpm)	12 (60 - 1600)
Motor Power (kW / hp)	0.75 / 1
Voltage / Amperage (V / amp)	240 / 10
Shipping Dimensions (L x W x H) (cm)	137 x 73 x 73
Nett Weight (kg)	280

# HAFCO METALMASTER

## D. TRANSMISSION SYSTEM



- |                                    |  |
|------------------------------------|--|
| 1. Input Pulley                    | 21. Half-nut for Longitudinal Lead Screw |
| 2. Change Gear                     | 22. Cross Slide Lead Screw               |
| 3. Change Gear                     | 23. Cross Slide Lead Screw Nut           |
| 4. Change Gear                     | 24. Gears                                |
| 5. Change Gears                    | 25. Gears                                |
| 6. Output Gears                    | 26. Gears                                |
| 7. Gears                           | 27. Worm Gears                           |
| 8. Gears                           | 28. Worm                                 |
| 9. Gears                           | 29. Gears                                |
| 10. Triple Joined Sliding Gears    | 30. Gears                                |
| 11. Gears                          | 31. Gears                                |
| 12. Spindle Gears                  | 32. Gears                                |
| 13. Headstock Gears                | 33. Gears                                |
| 14. Headstock Gears                | 34. Sliding Gears                        |
| 15. Duplicate Joined Sliding Gears | 35. Gears                                |
| 16. Top Slide Lead Screw           | 36. Motor Pulley                         |
| 17. Top Slide Lead Screw Nut       | 37. Input Shaft                          |
| 18. Tailstock Lead Screw           | 38. Middle Shaft                         |
| 19. Tailstock Lead Screw Nut       | 39. Output Shaft                         |
| 20. Longitudinal Lead Screw        | 40. Main spindle                         |

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## D.1 Main Transmission System

Power comes from the motor pulley to the input shaft of the gearbox via v-belt. From the input pulley of the gearbox the main spindle shaft has a range of 6 speeds by operating the speed changing handles on the head stock. (Fig.2) The pulley has two belt positions, and by changing the belt, the main spindle can achieve 12 speeds.



Fig. 2



Fig. 3

## D.2 FEEDING SYSTEM

### D.2.1 The Longitudinal And Cross Feeding Of Toolpost

The Auto Feeding systems is powered from the main spindle through a selection of change gears, which can be swapped to change the feed rate of the auto feed.

The feed travel direction can be changed with the lever in Fig. 3 with a neutral position in the middle to stop the rotation of the lead screw shaft. This lever should not be changed while the spindle is running.

To engage the auto feed use the handle on the carriage. It has three positions, 1 neutral (no feed engagement), 2 feed to the cross slide or 3 feed to the longitudinal travel. (Fig 5) The machine feed gears are factory set to A=24, B=50, C=25, D=48, producing 0.100mm per revolution longitudinal travel and 0.022mm per revolution cross travel. This feed step up is recommended for most general purpose work. If a coarser feed rate is required or for threading operations please refer to chart on page 10.

**NOTE:** To reverse the direction of the feed travel, move the lever in the picture (Fig.3) right or left. The lever should not be moved when the spindle is turning (Fig. 4)



Fig. 4

Do Not change direction with the spindle running

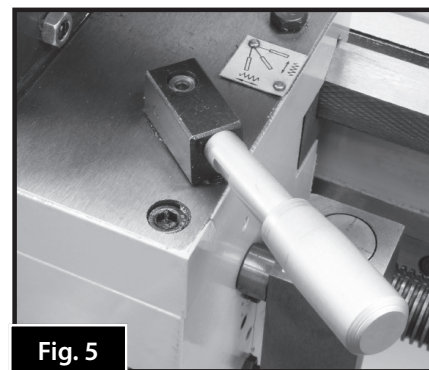


Fig. 5

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## D.2.2 THREADING

When cutting threads, open the door to the change gear box, and check the change gear chart to select suitable gears to produce the threads required. (the change gears are standard accessories). After the gears are changed, the gear box door must be closed. To engage the threading mode, the half-nut on the saddle must be engaged through the lever shown in the picture below. (Fig. 6) When the half nut is engaged the longitudinal and cross feeds are inter-locked and will only allow one option to operate. The direction of the threading, can be achieved by switching the direction change shift on the feeding box. (Fig. 3)

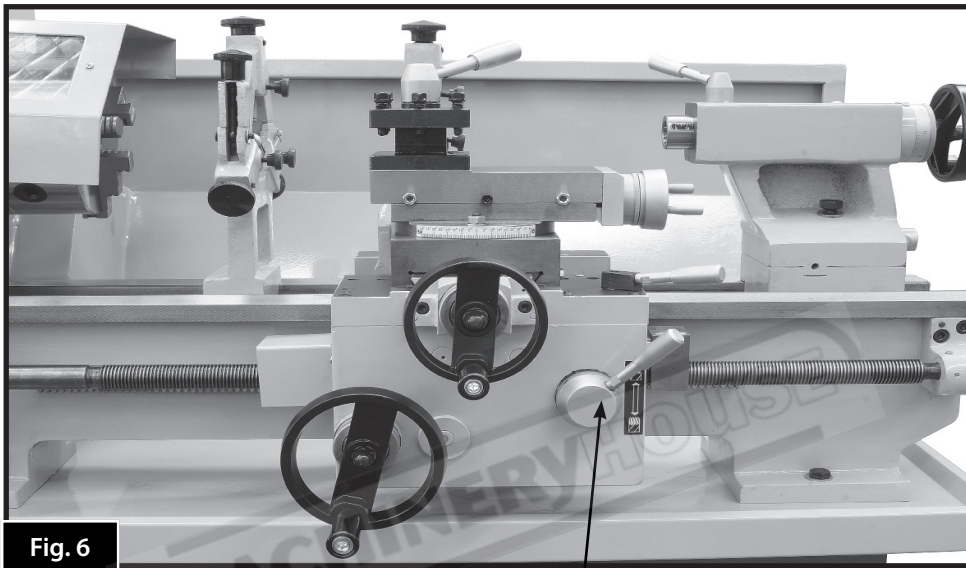


Fig. 6

Half Nut Lever

### Change Gears

To make changes to the gear train, remove the clips, loosen the T bolt and locking nut on the pack. Change the necessary gears, replace the clips, and adjust the space backlash between the gears. Once the backlash has been set then lock the T bolt on the pack. (Fig.7)

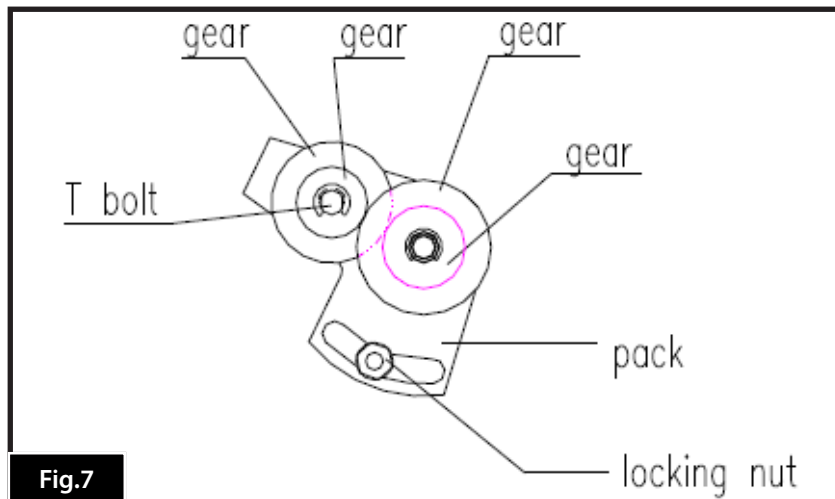


Fig.7

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## THREAD CHART

	M = 24 N = 60	M = 28 N = 35	A X C		mm		mm	
			B	D	M = 24 N = 60	M = 28 N = 35	M = 24 N = 60	M = 28 N = 35
			$\frac{24}{50}$	$\frac{25}{48}$	0.100	0.200	0.022	0.045
	18	9	$\frac{32}{28}$	$\frac{35}{34}$	0.493	0.986	0.105	0.210
	20	10	$\frac{30}{27}$	$\frac{40}{47}$	0.443	0.886	0.095	0.190
	22	11	$\frac{32}{30}$	$\frac{36}{40}$	0.400	0.800	0.085	0.170
	23	11.5	$\frac{27}{42}$	$\frac{40}{28}$	0.385	0.770	0.082	0.164
	24	12	$\frac{30}{34}$	$\frac{32}{32}$	0.370	0.740	0.078	0.156
	26	13	$\frac{32}{35}$	$\frac{32}{36}$	0.340	0.680	0.072	0.144
	28	14	$\frac{30}{27}$	$\frac{34}{50}$	0.316	0.632	0.068	0.136
	30	15	$\frac{35}{32}$	$\frac{27}{42}$	0.295	0.590	0.062	0.124
	32	16	$\frac{35}{34}$	$\frac{27}{42}$	0.277	0.554	0.059	0.118
	34	17	$\frac{32}{36}$	$\frac{28}{40}$	0.260	0.520	0.055	0.110
	36	18	$\frac{30}{34}$	$\frac{28}{42}$	0.246	0.592	0.052	0.104
	40	20	$\frac{30}{32}$	$\frac{27}{48}$	0.221	0.442	0.047	0.094
	48	24	$\frac{25}{32}$	$\frac{27}{48}$	0.185	0.370	0.039	0.078
	0.5	1	$\frac{28}{35}$	$\frac{25}{48}$	0.175	0.350	0.037	0.074
	0.6		$\frac{24}{36}$	$\frac{30}{40}$	0.210	0.420	0.044	0.088
	0.7		$\frac{28}{36}$	$\frac{30}{40}$	0.244	0.488	0.052	0.104
	0.75	1.5	$\frac{25}{40}$	$\frac{32}{32}$	0.262	0.532	0.056	0.112
	0.8		$\frac{28}{32}$	$\frac{32}{42}$	0.280	0.560	0.060	0.120
mm	1	2	$\frac{30}{32}$	$\frac{32}{38}$	0.350	0.700	0.074	0.148
	1.25	2.5	$\frac{30}{32}$	$\frac{40}{38}$	0.436	0.872	0.093	0.186
	1.5	3	$\frac{30}{38}$	$\frac{42}{28}$	0.524	1.048	0.111	0.222
	1.75	3.5	$\frac{35}{30}$	$\frac{40}{32}$	0.612	1.224	0.130	0.260
	2	4	$\frac{35}{30}$	$\frac{40}{28}$	0.700	1.400	0.150	0.300

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## D2.3 SETTING THE CUTTING TOOL WITH SPINDLE CENTERLINE

The tip of the cutting tool should be set up so that it is in line with the centre line of the spindle, as illustrated in Fig. 8.

The cutting tool can be raised by placing steel shims underneath it. The shims should be as long and as wide as the cutting tool to properly support it.

There are a number of ways to check that the cutting tool is on the centre line of the spindle.

Below are two common methods:

- Move the tailstock centre over the cross slide and use a fine ruler to measure the distance from the surface of the cross slide to the tip of the centre. Adjust the cutting tool height so it is the same distance above the cross slide as the tailstock centre.

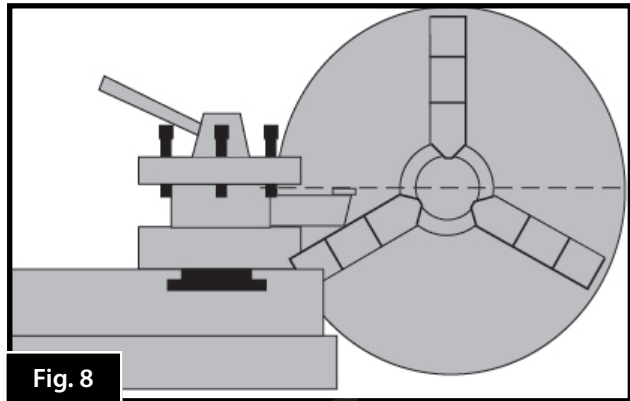


Fig. 8

- Align the tip of the cutting tool with a tailstock centre, as described in the following procedure.

1. Mount the cutting tool and secure the post so the tool faces the tailstock.
2. Install a centre in the tailstock, and position the tip near the cutting tool.
3. Lock the tailstock and quill in place.
4. Adjust the height of the cutting tool tip to meet the centre tip, as shown. (Fig.9)

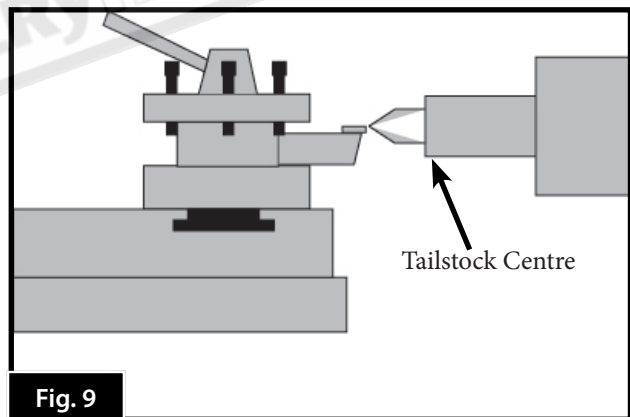


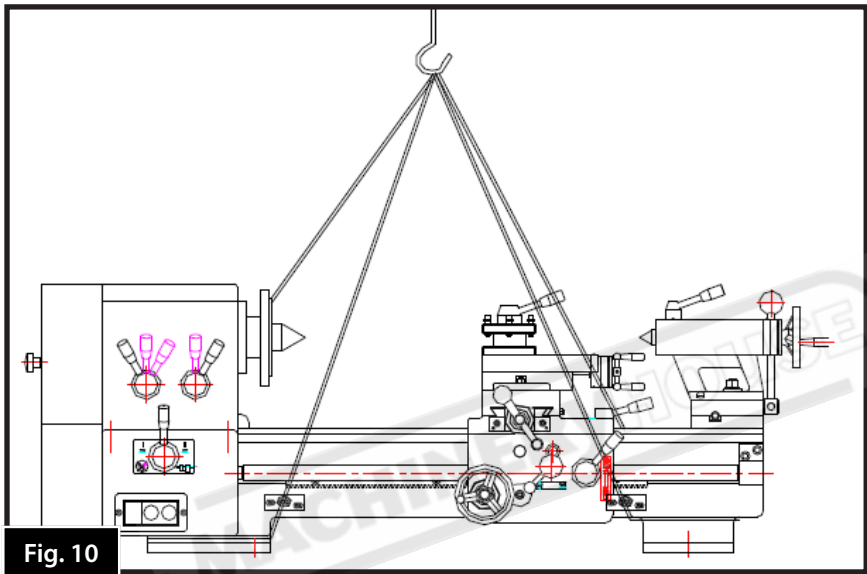
Fig. 9

# HAFCO METALMASTER

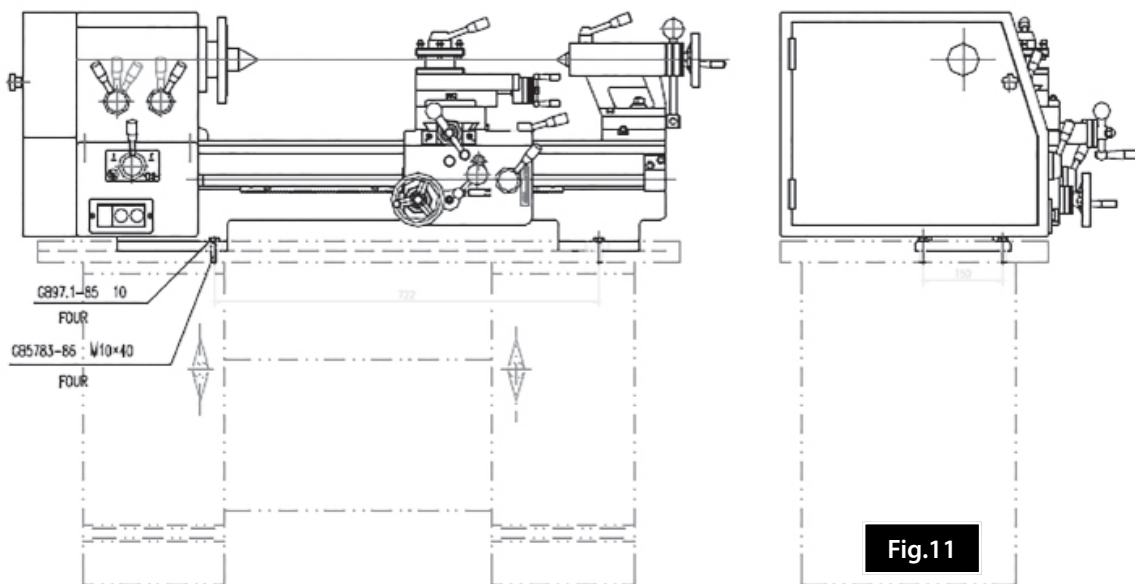
## E. INSTALLATION AND ADJUSTMENT OF THE LATHE

### E.1 Installation

When lifting the machine it is recommended that the method used in the diagram below is used or a fork lift is used. Since there is no obvious hand holding places, please do not lift or carry the lathe by hand. When lifting the lathe, the use of soft slings or rope should be used to avoid any damage. To keep the lathe in balance, the carriage and the tailstock should be moved away from the headstock, to the opposite end of the bed. It is important to ensure that the tailstock is clamped in order to avoid moving or falling off the end of the bed. (Fig.10)



Place the lathe on the Stand, using the four recommended bolts to secure the lathe on the Stand. The Stand is an optional accessory which can be supplied by your distributor. (Fig. 11)



# HAFCO METALMASTER

## E.2 ADJUSTMENT OF THE LATHE

### E.2.1 Adjustment Of Main Spindle

The main spindle has been adjusted correctly before leaving the factory and you are not required to make any adjustment. However over the life of the machine it may be necessary to adjust the spindle to correct the bearing tolerance. If adjustment is required then tighten the spanner nut until tight then back the nut off half a turn. Ensure that the spindle turns freely. If it doesn't then back the nut off until it does. (Fig. 12)

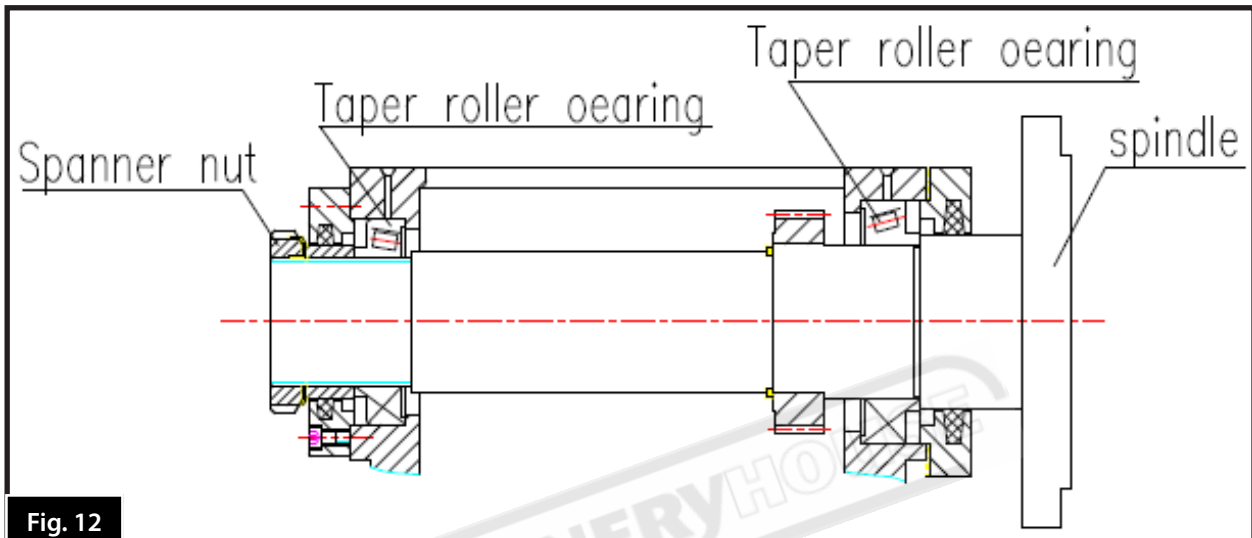


Fig. 12

### E.2.2 Adjustment Of Clearance Between The Top Slide, Worktable And Cross Slide

The clearance of the top slide and cross slide have been adjusted before leaving the factory. If any adjustment is required, please make the change by adjusting the wedges and nuts as per the instructions shown in the picture below. The clearance is very important for the accuracy of the lathe. Ensure that the adjustment is not too tight as this could cause the slideway to wear unevenly making it difficult for the carriage to move; if there is too much clearance in the slides, this will cause the tool to be pushed away or towards the work piece when taking a cut and also cause chatter and inaccuracy. After making the adjustment take a trial cut to determine if the finish cut on the work piece has improved. A magnetic base and dial indicator can also be used to check the lateral movement of the slides. The places to adjust are pictured below. (Fig. 13)

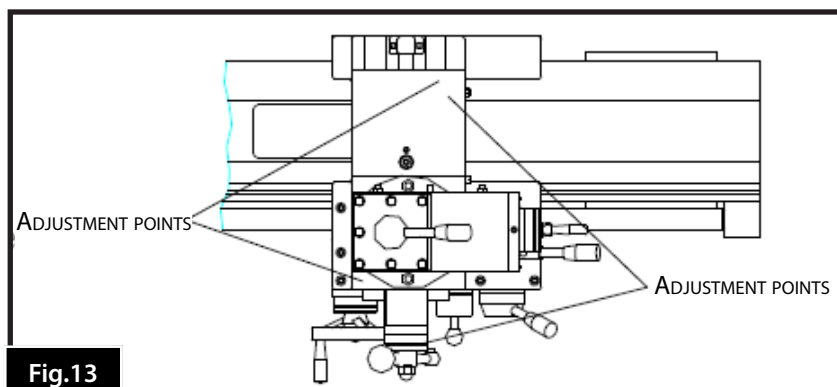


Fig.13



# HAFCO METALMASTER

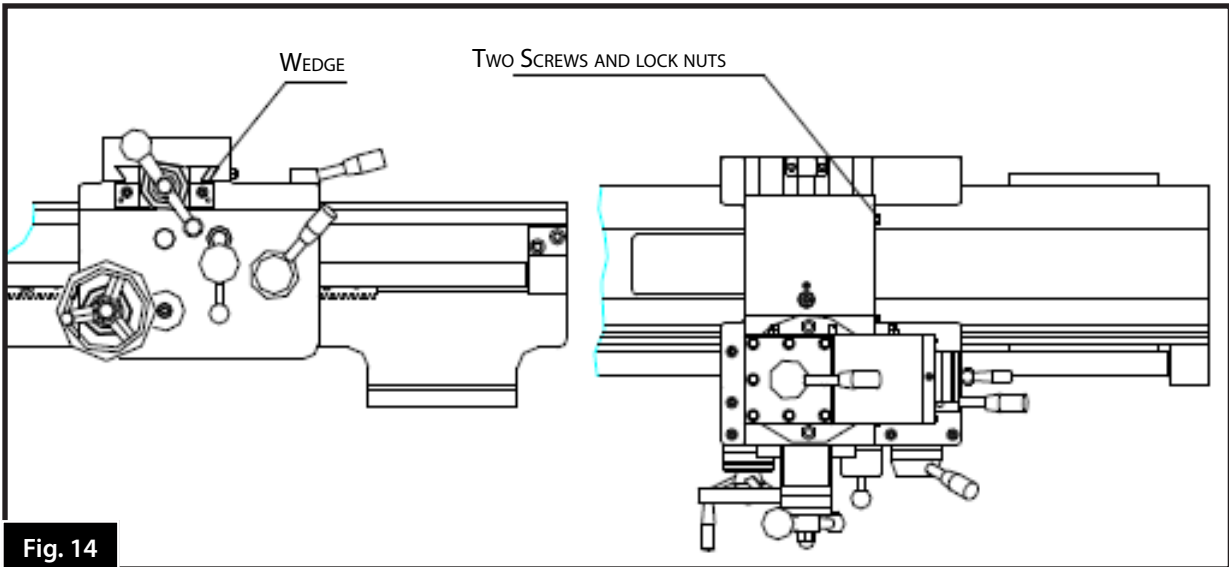


Fig. 14

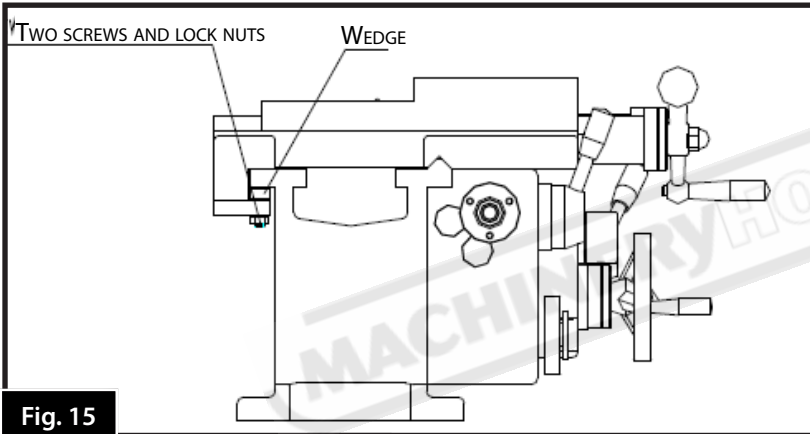


Fig. 15

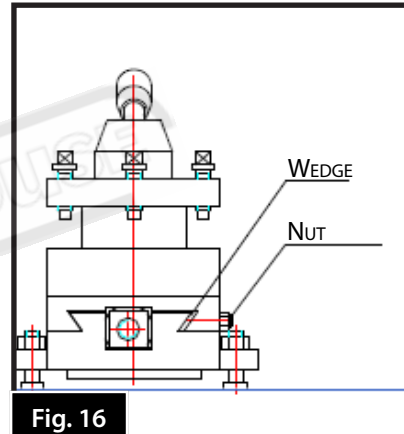


Fig. 16

### E.2.3 The Adjustment Of The Locking Handles Of The Tailstock

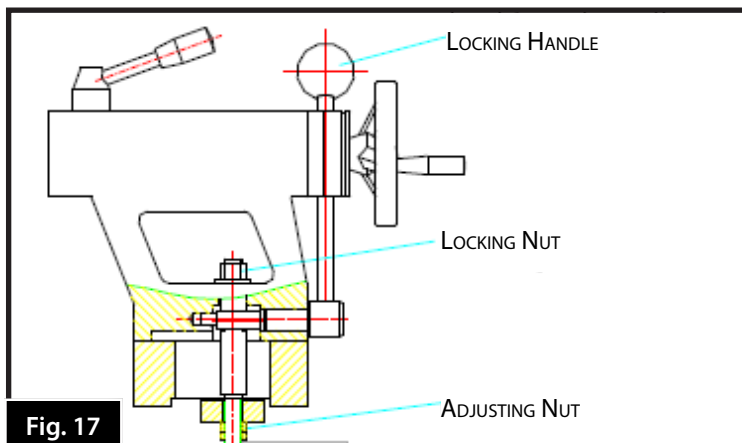


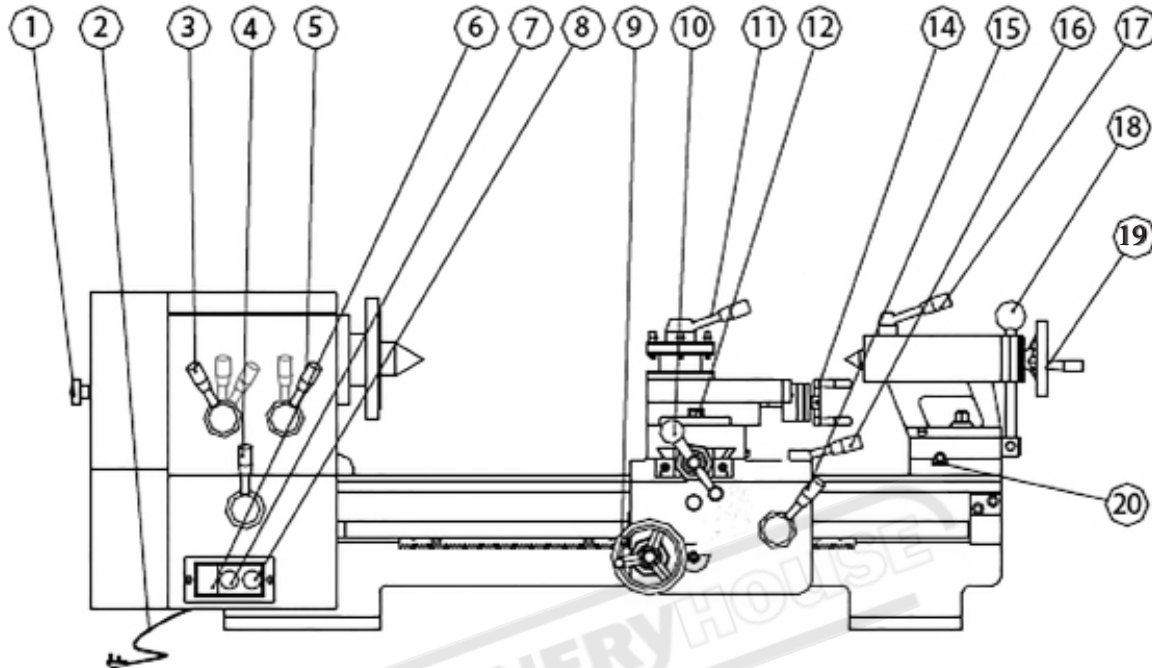
Fig. 17

The locking of the tailstock can be achieved by either the locking nut or locking handle. Adjusting the stroke of locking handle can be achieved by adjustment of the nuts. (Fig. 17)

# HAFCO METALMASTER

## F. OPERATION

After assembling the machine, remove the anti-corrosion coating on the slideway, carriage, toolpost, tailstock and change gears with a clean cloth and kerosene. Once the machine is clean lubricate the machine as per instructions.



### F.1 ILLUSTRATION OF THE OPERATION PARTS

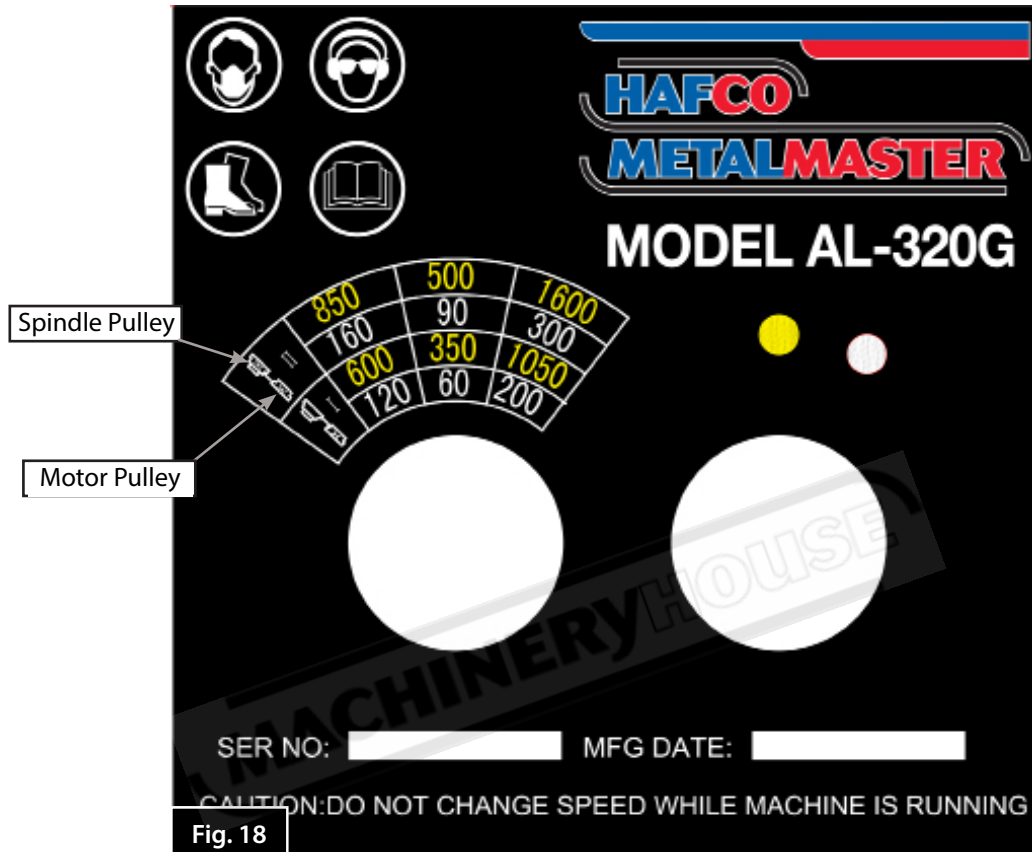
1. Socket head cap screw: to open or close the cover of the gear change box
2. Plug: the power lead and plug of the machine
3. Shifting handle: has three positions to adjust the speed.
4. For/Rev handle: has three positions which changes the direction of the tooling travel. The middle position is neutral.
5. Shifting handle: Has two positions to adjust the speed.
6. Forward/reverse switch: to control the rotation directions of the motor and spindle. It can be operated only after the motor is stopped.
7. Start button: to start the motor
8. Stop button: to stop the motor
9. Longitudinal hand wheel: to operate the apron longitudinal movement
10. Cross hand wheel: to move the cross slide and toolpost.
11. Toolpost handle for loosening or locking the toolpost
12. Nuts: to fix the top slide to the cross slide. This can allow rotation on the topslide.
14. Toolpost hand wheel: to move the topslide and toolpost forward or backward
15. Handle: to control the half-nut for threading
16. Handle: to control the longitudinal and cross auto feeding which has three positions.
18. Lever: to lock the tailstock. The tailstock can be removed or moved freely after loosening.
17. Tailstock Sleeve lock lever. Locks the sleeve in place after moving
19. Tailstock hand wheel: moves the sleeve after the lock lever is loosened.
20. Screw: to adjust the centering position of the tailstock, with the main spindle. Can be adjusted for taper turning

# HAFCO METALMASTER

## F.2 SPEED CHANGING OF THE MAIN SPINDLE

The speed change of the main spindle can be achieved by operating the two speed change handles on the headstock.

The speed chart shows the belt positions that are needed to select the high or low range of speeds. (Fig. 18)



## F.3 THREADING

SEE D.2.2

## G. LUBRICATION

To keep the machine in good order and prolong the life of the machine, it must be lubricated with SAE 20 mechanical oil as per the lubrication instruction below.

Splash lubrication is used inside the headstock and cup-filling lubrication for other points.

To change the headstock oil, remove the oil and clean the inside of the headstock with a clean cloth. Then fill with clean lubricating oil.

After the machining operation is finished, the surfaces of the slideways must be cleaned and the swarf removed. The slides should then be covered with oil.

- Recommend to use Grease #3 as listed in table of lubrication positions (Fig. 19)
- Recommend to use Oil #20 as listed in the table of lubrication positions (Fig. 19)
- Regularly, the lubricated parts should be cleaned and the oil in the feeding box should be changed and refilled to the center line of the oil window.

# HAFCO METALMASTER

## Lubrication Points

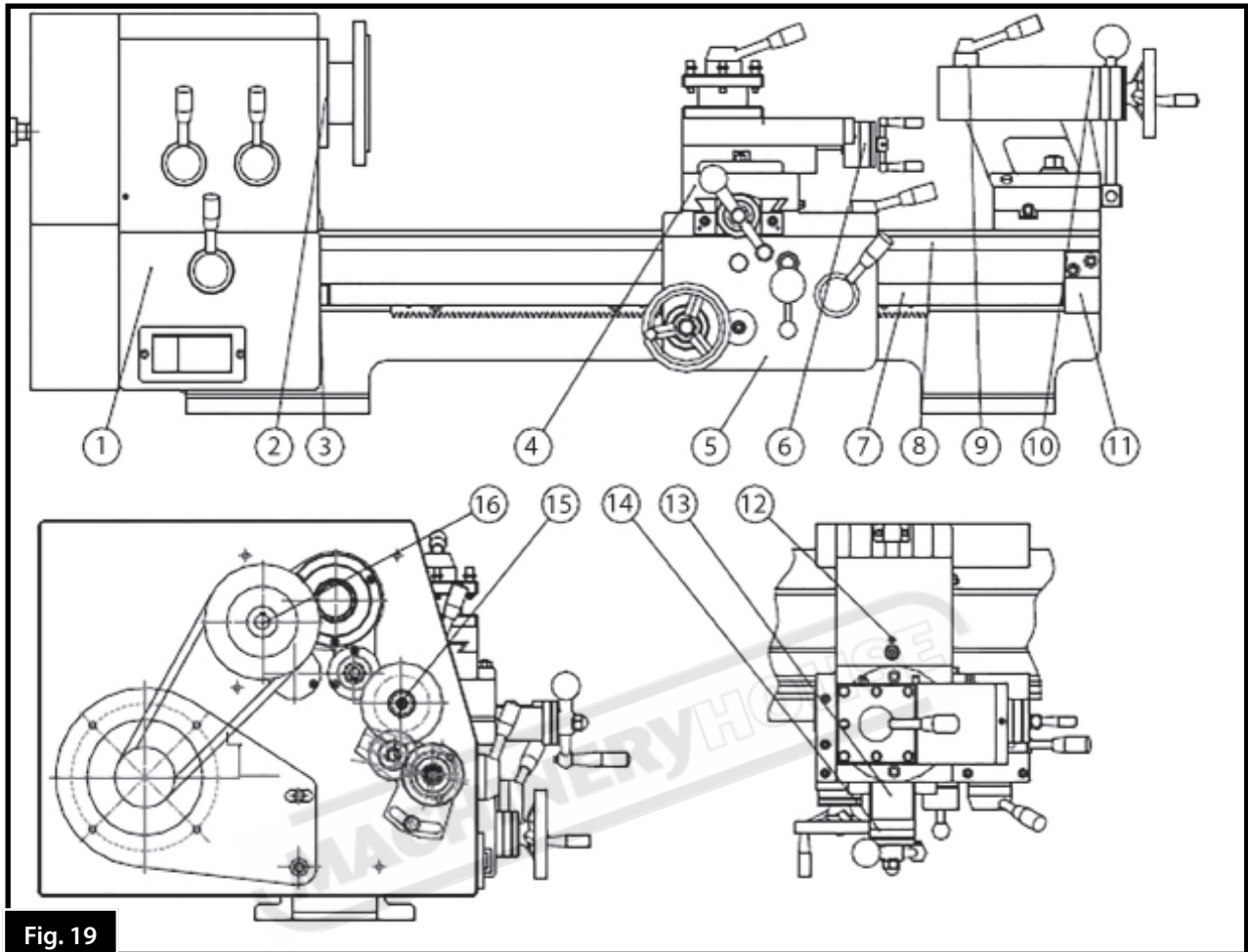


Fig. 19

### Table Of Lubrication Points

No.	Lubrication position	Part	Lub. method	Lub. Oil	Lub. period
1	Gears, bushes	Left pack	Gun oiling	Oil	Once per year
2	Spindle bearings	Headstock	Greasing	Grease	Once per year
3	Bearings	Left pack	greasing	Grease	Once per year
4	Slideway, leadscrew	Apron	Gun oiling	Oil	Twice per day
5	Gears, racks	Apron	Greasing	Grease	Once per month
6	Toolpost screw, guide surface	Carriage	Gun oiling	Oil	Twice per day
7	Longitudinal leadscrew	Leadscrew	Gun oiling	Oil	Twice per day
8	Lathe bed guide	Bed	Gun oiling	Oil	Twice per day
9	Tailstock sleeve	Tailstock	Gun oiling	Oil	Twice per day
10	Bearing bush	Tailstock	Gun oiling	Oil	Twice per day
11	Bearing pedestal	Bed	Gun oiling	Oil	Twice per day
12	Cross nut, leadscrew	Cross slide	Gun oiling	Oil	Twice per day
13	Bearing bush	Cross slide	Gun oiling	Oil	Twice per day
14	Bearings	Leadscrew	Greasing	Grease	6 times per year
15	Change gears shaft	Driven box	Gun oiling	Oil	Twice per day
16	Bearings	Input pulley	Greasing	Grease	6 times per year

# HAFCO METALMASTER

## H. WIRING DIAGRAM

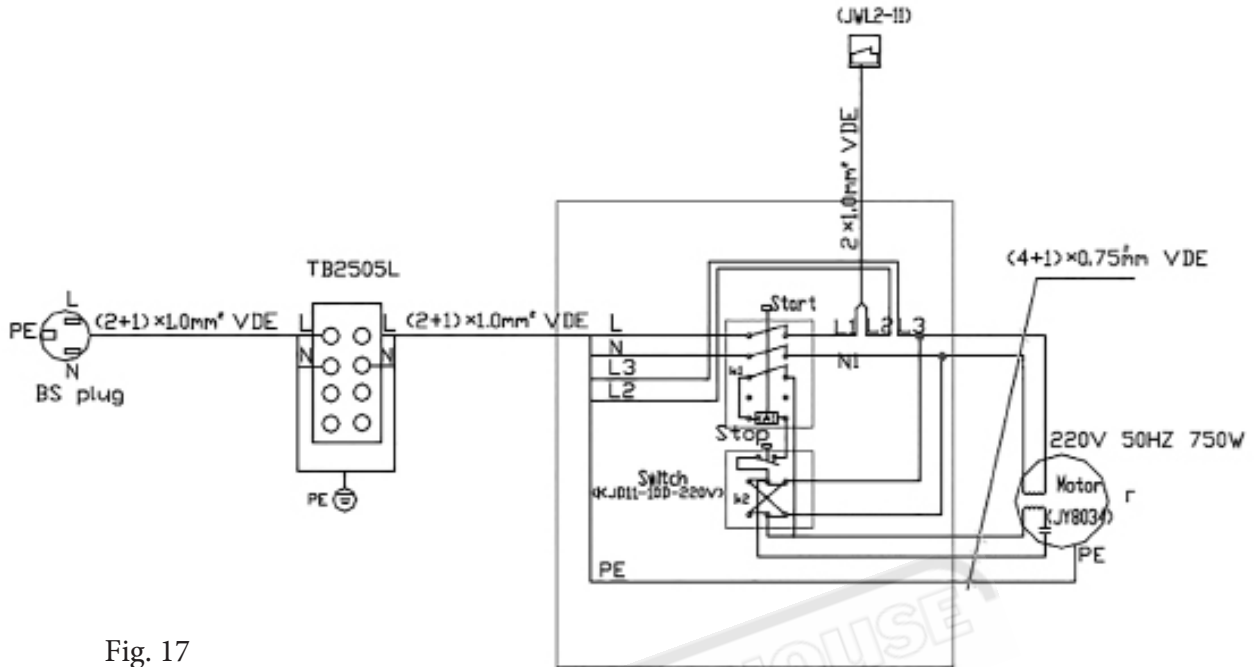


Fig. 17

The maintenance of the electrical parts, and wiring must be made by a qualified electrician.

Wiring Colour Code.

Yellow/Green wire --- Grounding

Blue wire --- Neutral

Brown --- Live

### Cautions:

If the motor does not work while the power voltage is on, first check the cut-out units.

E.G. check if the micro switch has been closed properly inside the change gear box.

# SPARE PARTS SECTION

The following section covers the spare parts diagrams and lists that were current at the time this manual was originally printed. Due to continuous improvements of the machine, changes may be made at any time without notification.

## HOW TO ORDER SPARE PARTS

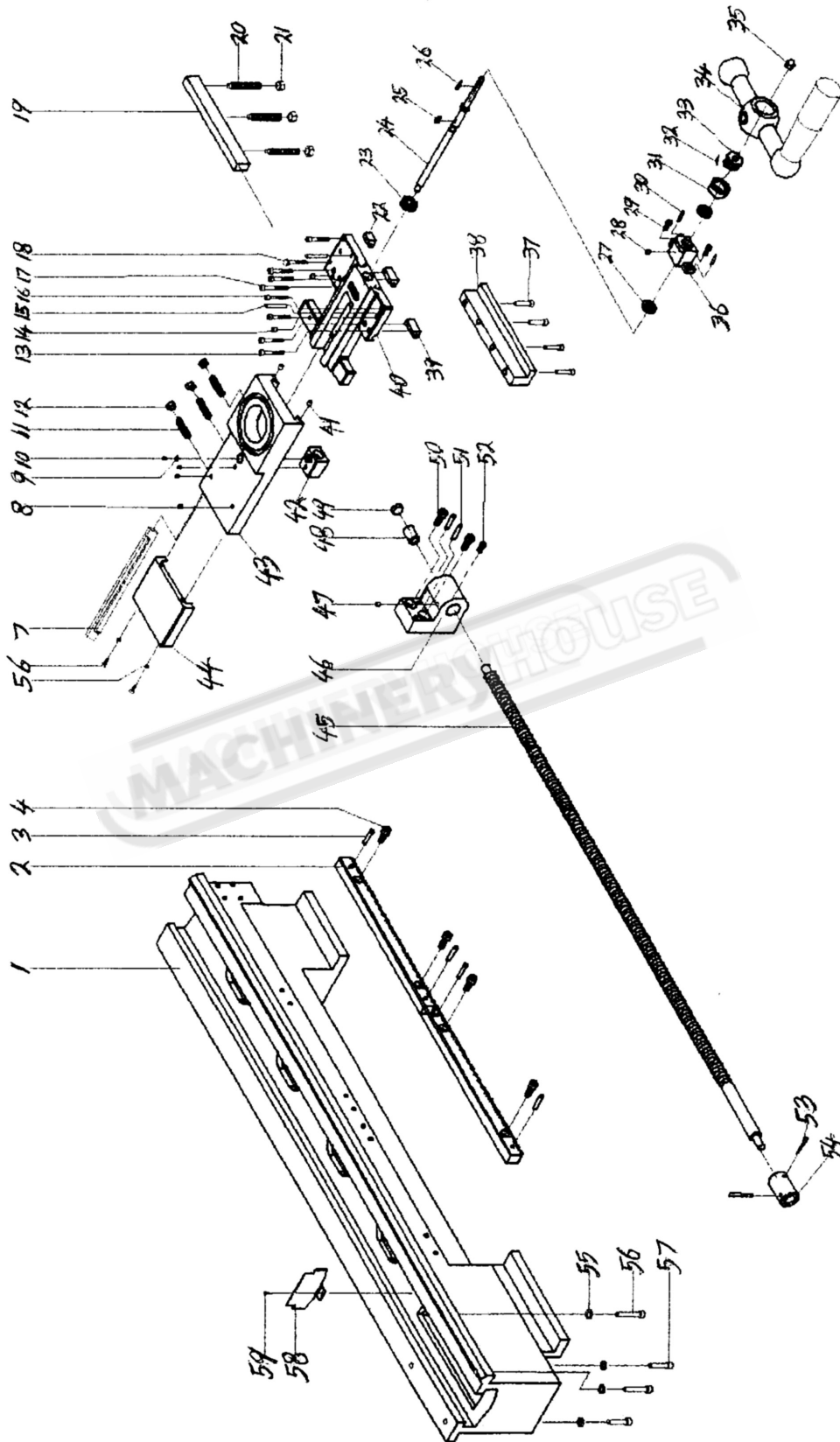
1. Have your machines **Model Number, Serial Number & Date of Manufacture** on hand, these can be found on the specification plate mounted on the machine
2. A scanned copy of your parts list/diagram with required spare part/s identified
3. Go to [www.machineryhouse.com.au/contactus](http://www.machineryhouse.com.au/contactus) and fill out the enquiry form attaching a copy of scanned parts list.

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## AL-320 BED PARTS



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## AL-320 BED PARTS LIST

No.	Part No.	Description
1	CQ9332-01-001	Bed
2	CQ9332-01-003	Racks
3	6x18 GB117-86	Taper pin
4	M8x16 GB70-85	Hexagon socket cap head screws
5	5 GB97. 2-8.5	Washer
6	M5x10 GB65-85	Screw
7	CQ9332-01-005	Chuck
8	6 GB1155-79	Oil cup
9	CQ9332-05-015	Washer
10	M5x12 GB68-85	Screw
11	M6x25 GB75-85	Screw
12	M6 GB6170-86	Hexagon nuts
13	M6x35 GB70-85	Hexagon socket cap head screws
14	8 GB1155-79	Oil cup
15	6x40 GB117-86	Taper pin
16	M6x30 GB70-85	Hexagon socket cap head screws
17	M6x45 GB70-85	Hexagon socket cap head screws
18	M6x40 GB5782-86	Hexagon head bolts
19	CQ9332-01-008	Chuck
20	M8x20 GB79-85	Hexagon socket set screws with dog point
21	M8 GB6170-86	Hexagon nuts
22	CQ9332-05-027	Chain up block
23	CQ9332-05-006	Gear
24	CQ9332-05-004	Cross feed screw rod
25	5x16 GB1096-79	Plain parallel key
26	4x18 GB1096-79	Plain parallel key
27	8201 GB301-84	Rolling bearing
28	6 GB1155-79	Oil cup
29	M6x16 GB70-85	Hexagon socket cap head screws
30	5x20 GB117-86	Taper pin
31	CQ9332-05-024	Dial
32	A T300-03-139	Spring lamination
33	A T300-03-138	Dial sleeve
34	12x40 GB4141.9-84	Handles with sleeve
35	M1 GB923-88	Nut
36	CQ9332-05-008	Cross feed screw seat
37	M8x40 GB70-85	Hexagon socket cap head screws
38	CQ9332-01-007	Behind board
39	CQ9332-5-005	Forward board
40	CQ9332-05-002	Carriage
41	6 GB1155-79	Oil cup



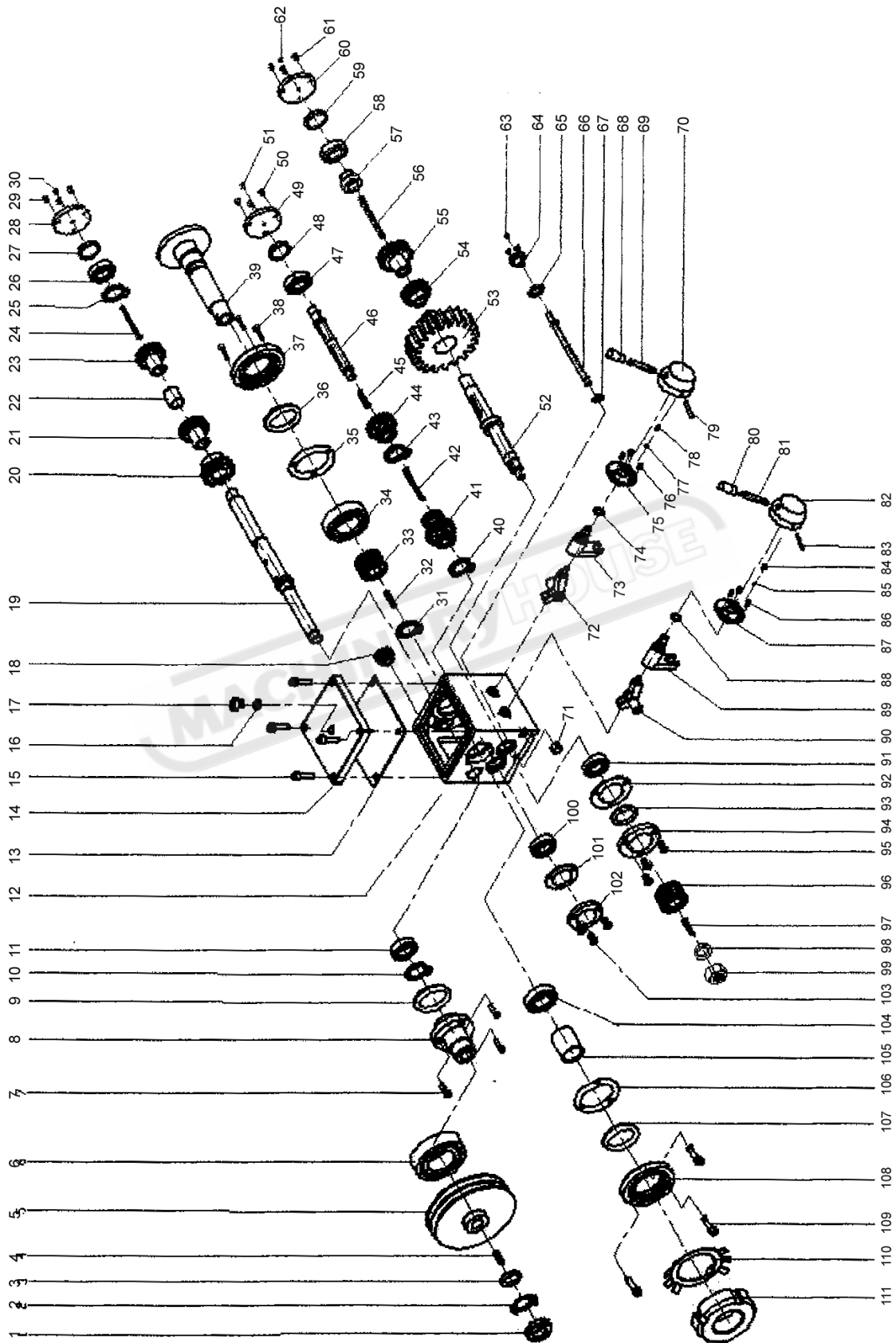
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## AL-320 BED PARTS LIST Cont.

No.	Part No.	Description
42	CQ9332-01-009	Cross nut
43	CQ9332-01-004	Middle carriage
44	CQ9332-00-006	Shield
45	CQ9332-01-002	Longitudinal feed screw
46	CQ9332-01-006	Right pedestal
47	6 GB1155-79	Oil cup
48	CQ9332-01-010	Sleeve
49	CQ9332-02-011	Spigots
50	M8x25 GB70-85	Hexagon socket cap head screws
51	5x30 GB117-86	Taper pin
52	M5x8 GB71-86	Slotted set screws with cone point
53	4x25 GB117-86	Taper pin
54	AT520-03-014	Coupling sleeve
55	10 GB93-87	Washer
56	M10x40 GB70-86	Hexagon socket cap head screws
57	M10x35 GB70-85	Hexagon socket cap head screws
58	CQ9332-00-016	Shield
59	M5x10 GB70-85	Hexagon socket cap head screws

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## AL-320 HEADSTOCK PARTS



# HAFCO METALMASTER

## AL-320 HEADSTOCK PARTS LIST

No.	Part No.	Description
1	M161.5 GB812-88	Spanner nut
2	16 GB858-88	Lock washer for circular nut
3	16 GB97.2-85	Plain washers
4	5x16 GB1096-79	Plain parallel key
5	CQ9332A-02-016	Spindle pulley
6	60206 GB298-89	Taper roller bearing
7	M5x12 GB70-85	Hexagon socket head screw
8	CQ9332-02-017	Pulley seat
9	16 JB/GQ0324-89	Felt collar
10	16 GB894.1-86	Circlips for shaft-type A
11	203 GB276-89	Single-row ball bearing
12	CQ9332-02-001	Lathe head
13	CQ9332-02-002	Pressurize Washer
14	CQ9332-02-003	Transmission cover
15	M8x30 GB70-85	Hexagon socket head screw
16	30x20x2 AT300-04-141	Rubber ring
17	M20x1.5 Q/ZB220-77	Oil port plug
18	Mt 6x1.5 GB1160.2-89	Oil level indicator
19	CQ9332-02-024	Spindle shaft
20	CQ9332-02-019	Gear
21	CQ9332-02-021	Gear
22	CQ9332-02-047	Sleeve spacer
23	CQ9332-02-022	Gear
24	5x70 GB1096-79	Plain parallel key
25	18 GB894.1-86	Circlips for shaft-type A
26	203 GB276-89	Single-row ball bearing
27	CQ9332-02-046	Bearing sleeve
28	CQ9332-02-026	Right sleeve
29	M5x12 GB819-85	Screw
30	M6x8 GB78-85	Screw
31	55 GB894.1-86	External snap ring
32	12x18 GB1567-79	Thin flat key
33	CQ9332-02-007	Gear
34	D2007I 12 GB297-84	Taper roller Bearing
35	CQ9332-02-006	Pressurize washer
36	68 JB/GQ0324-89	Felt collar
37	AT400-04-123	Mainshaft bearing oil seal
38	M5 x20 GB70-85	Hexagon socket head screw
39	CQ9332-02-004	Lathe spindle
40	20 GB894.1-86	External snap ring
41	CQ9332-02-023	Gear

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## AL-320 HEADSTOCK PARTS LIST Cont.

No.	Part No.	Description
42	5x60 GB1096-79	Plain parallel key
43	20 GB894.1-86	External snap ring
44	CQ9332-02-025 5x40	Gear
45	GB1096-79	Plain parallel key
46	CQ9332-02-028	Middle shaft
47	203 GB276-89	Single-row ball bearing
48	CQ9332-02-046	Bearing sleeve
49	CQ9332-02-026	Right sleeve
50	M5x12 GB819-85	Screw
51	M6x8 GB78-85	Screw
52	CQ9332-02-011	Output shaft
53	CQ9332-02-010	Gear
54	CQ9332-02-009	Gear
55	CQ9332-02-008	Gear
56	5x60 GB1096-79	Plain parallel key
57	CQ9332-02-030	Sleeve spacer
58	203 GB276-89	Single-row ball bearing
59	CQ9332-02-046	Bearing sleeve
60	CQ9332-02-026	Right sleeve
61	M5x12 GB819-85	Screw
62	M6x8 GB78-85	Screw
63	M5x12 GB819-85	Screw
64	CQ9332-02-039	Sprue
65	CQ9332-02-040	Pressurize washer
66	CQ9332-02-037	Shifting fork shaft
67	12 GB894.1-86	External snap ring
68	BM8x40 G84141.14-84	Knob
69	BM8x63 GB4141.15-84	Handle lever
70	12x50 GB4141.19-84	Handle seat
71	CQ9332-02-038	Spigots
72	CQ9332-02-033	Right shifting fork
73	CQ9332-02-034	Right shifting fork shaft
74	16x2.4 GB1235-76	O- seal ring
75	AT400-04-127	Localing sleeve
76	M5x 12 GB819-85	Screw
77	6.5 GB308-84	Steel ball
78	0.8x5x25 GB2089-80	Spring
79	5x50 GB117-86	Pin
80	BM8x40 GB4141.14-84	Knob
81	BM8x63 GB4141.15-84	Handle lever
82	12x50 GB4141.19-84	Handle seat

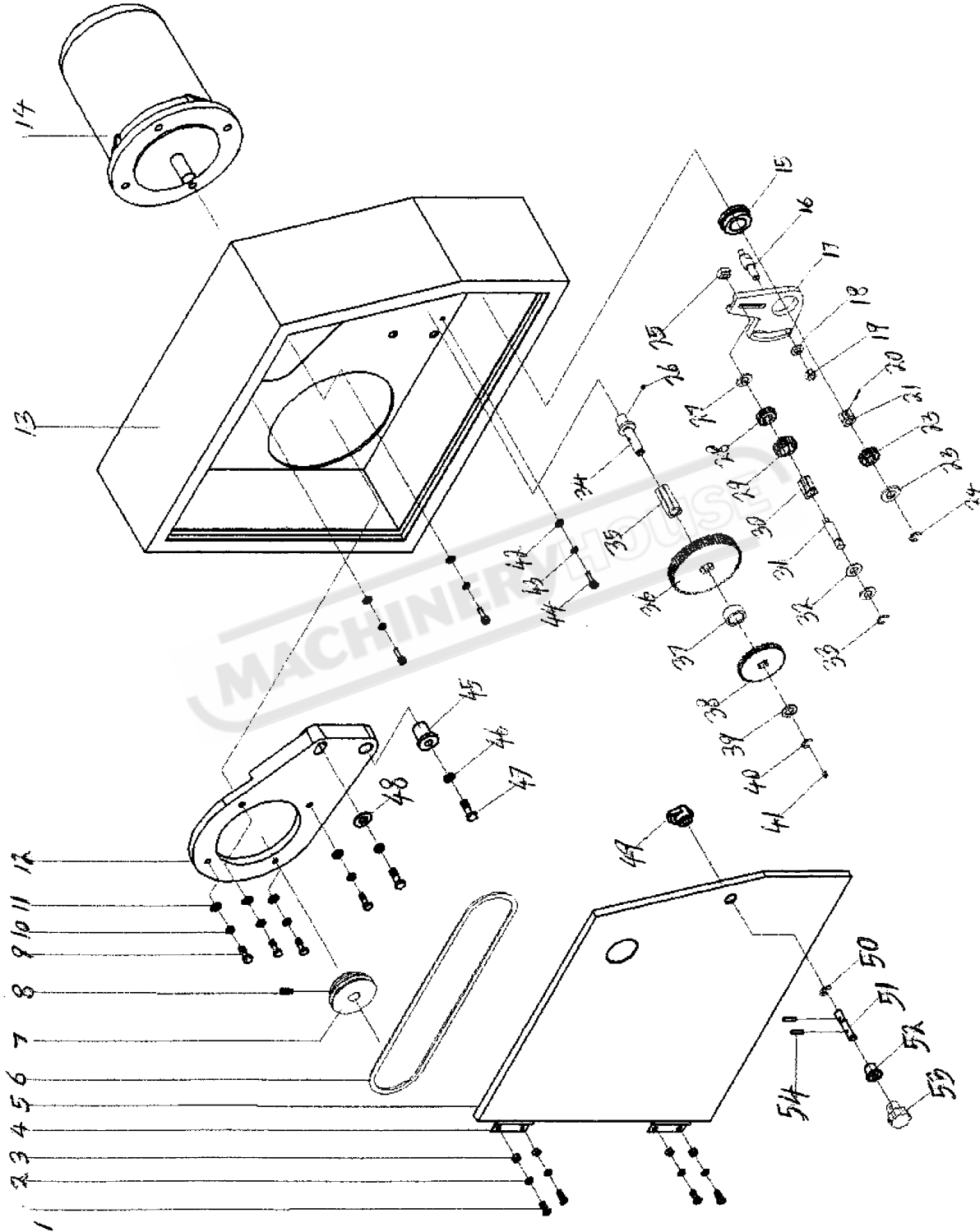
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## AL-320 HEADSTOCK PARTS LIST Cont.

No.	Part No.	Description
83	5x50 GB117-86	Pin
84	0.8x5x25 GB2089 -80	Spring
85	6 .5 GB308 -84	Steel ball
86	M5x12 GB819- 85	Screw
87	AT400-04-127	Locating sleeve
88	16x2.4 GB1235-76	O-seal ring
89	CQ9332-02-035	Left shifting fork shaft
90	CQ9332-02-036	Left shifting fork
91	203 GB276 -89	Single-row ball bearing
92	CQ9332-02-015	Pressurize washer
93	16 JB/GQ0324-89	Felt collar
94	CQ9332-02-014	Left sleeve
95	M5x12 GB819-85	Screw
96	CQ933-02-013	Gear
97	4x10 GB1096-79	Plain parallel key
98	10 GB93-87	Spring washer
99	M10 GB6170-86	Hexagon nut
100	203 GB276-89	Single -row ball bearing
101	CQ9332-02-015	Pressurize washer
102	CQ9332-02-048	Sleeve
103	M5x12 GB819-85	Screw
104	200 7 1 IO GB297-84	Taper roller bearing
105	CQ9332-02-044	Spring washer
106	CQ9332-02-043	Pressurize washer
107	50 JB/GQ0324-89	Felt collar
108	AT400-04-118	End cap
109	M5x320 GB70-85	Hexagon socket head screw
110	50 GB858-88	Lock washer for circular nut
111	M50 GB812-88	Spanner nut

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## AL-320 BACK GEARS PARTS



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## AL-320 BACK GEARS PARTS LIST

No.	Part No.	Description
1	M4x10 GB65-85	Slotted cheesehead screws
2	4 GB93-87	Spring washers
3	M4 GB6170-86	Hexagon nuts
4		Butt hinge
5	CQ9332-06-002	Door
6	710 GB1171-7-1	V-belt type 710
7	CQ9332-00-002A	Motor pulley
8	M6x8 GB75-85	Screws
9	M8x25 GB5782-86	Hexagon head bolts
10	8 GB93-87	Spring washers
11	8 GB97.2-85	Washer
12	CQ9332-00-001	Motor mount plate
13	CQ9332-06-001	Compound box
14	JY8034(7500W)	220V Motor ,50 HZ
15	CQ9332-04-017	Sleeve
16	AT400-03-146	Stationary shaft
17	AT400-03-144	Change gear plate
18	10 GB97.2-85	Washer
19	M10 GB6170-86	Hexagon nut
20	3x18 GB119-86	Parallel key
21	AT400-03-141	Spline housing
22	CQ9332-00-015	Change gear
23	12 GB97.2-85	Washer
24	9 GB896-86	"E" rings
25	AT400-03-143	T-nut
26	M5x6 GB73-85	Flat-point screw
27	12 GB97.2-85	Washer
28	CQ9332-00-015	Change gear
29	CQ9332-00-015	Change gear
30	AT400-03-145	Spline housing
31	AT400-03-142	Small shaft
32	12 GB97.2-85	Washer
33	9 GB896-86	"E" rings
34	AT400-04-108	Small shaft
35	AT400-04-112	Spline housing
36	AT400A-04-109	Big gear wheel
37	AT400-04-110	Sleeves
38	CQ9332-00-015	Change gear
39	12 GB97.2-85	Washer
40	9 GB896-86	"E" rings
41	6 GB1155-79	Oil cup

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## AL-320 BACK GEARS LIST Cont.

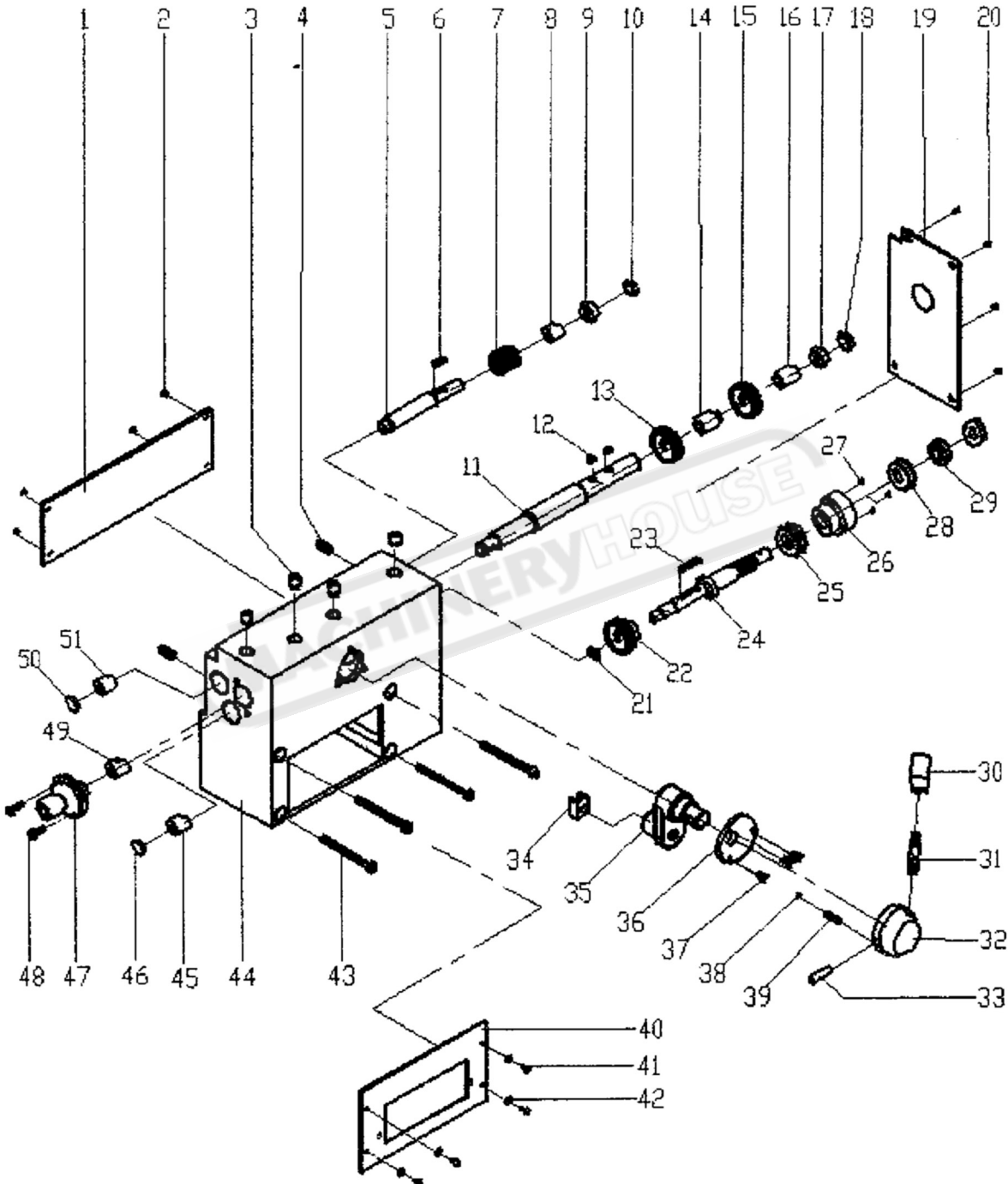
No.	Part No.	Description	
42	6 GB97.2-85	Washer	
43	6 GB93-87	Spring washers	
44	M6x16 GB70-85	Hexagon socket head screw	
45	CQ9332-00-007	Sleeves	
46	10 GB93-87	Spring washers	
47	M10x45 GB5782-86	Hexagon head bolts	
48	10 GB96-85	Washer	
49	AT300-05-108	Door-knob	
50	6 GB896-86	"E" rings	
51	AT300-05-110	Shaft	
52	AT300-05-111	Stationary sleeve	
53	8x32 GB4141.29-84	Star-grip knob	
54	3x18 GB117-86	Taper pins	

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## AL-320 GEARBOX PARTS



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## AL-320 FEED BOX PARTS LIST

No.	Part No.	Description
1	CQ9332-04-002	Transmission cover
2	M5x8 GB68-85	Screws
3	8 GB1155-79	Oil cup
4	M5x6 GB71-85	Set screws with cone point
5	CQ9332-04-004	Shaft
6	5x16 GB1096-79	Plain parallel key
7	CQ9332-04-005	Gear
8	CQ9332-04-007	Sieve spacer
9	CQ9332-04-006	Sleeves
10	CQ9332-04-012	Spigots
11	CQ9332-04-010	Shaft
12	5x8 GB1096-79	Plain parallel key
13	CQ9332-04-008	Gear
14	CQ9332-04-009	Sieve spacer
15	CQ9332-04-008	Gear
16	CQ9332-04-007	Sieve spacer
17	CQ9332-04-019	Sleeves
18	CQ9332-04-012	Spigots
19	CQ9332-04-015	Transmission cover
20	M4x8 GB65-85	Screws
21	16 GB894.1-86	Extrenal snap ring
22	CQ9332-04-014	Gear
23	5x32 GB1096-79	Plain parallel key
24	CQ9332-04-013	Shaft
25	8102 GB301-64	Bearing
26	AT520-03-109	Bearing sleeve
27	M5x16 GB818-85	Screws
28	8102 GB301-64	Bearing
29	M14x1.5 GB812-88	Round nut
30	BM8x40 GB4141.14-84	Knob
31	BM8x40 GB4141.15-84	Handle lever
32	12x50 GB4141.19-84	Handle seat
33	5x50 GB117-86	Taper pin
34	AT520-03-117	Shifting yoke
35	CQ9332-04-003	Shifting fork plate
36	AT300-03-134	Locating plate
37	M5x10 GB68-85	Slotted countersunk-head screws
38	6.5 GB308-84	Steel ball
39	0.8x5x25 GB2089-84	Spring
40	CQ9332-00-003	Switch board
41	M4x8 GB818-85	Cross recessed pan head screws

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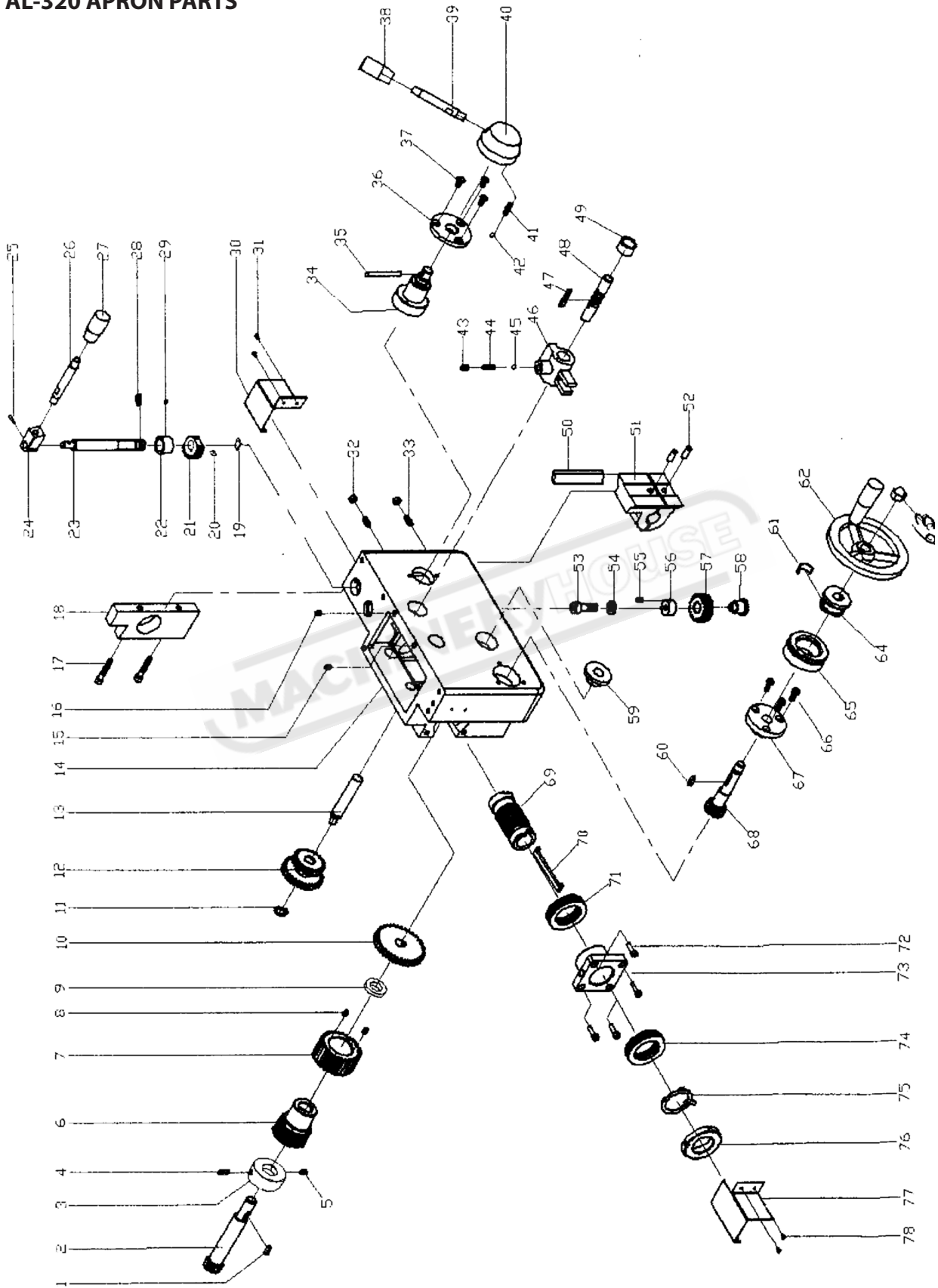
## AL-320 FEED BOX PARTS LIST Cont.

No.	Part No.	Description	
42	4 GB97. 1-85	Washer	
43	M8x100 GB70-85	Hexagon socket head screw	
44	CQ9332-04-001	Left trestle	
45	CQ9332-04-018	Sieves	
46	CQ9332-04-012	Spigots	
47	CQ9332-04-019	Sieves	
48	CQ9332-04-011	Pedestal	
49	M5x12 GB70-85	Hexagon socket head screw	
50	CQ9332-04-012	Spigots	
51	CQ9332-04-006	Sieves	

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## AL-320 APRON PARTS



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## AL-320 APRON PARTS LIST

No.	Part No.	Description
1	6x12 GB1096-79	Plain parallel key
2	AT400A-03-203	Gear shaft
3	AT400A-03-206	Sleeve
4	M6x12 GB75-85	Screws
5	M6x12 GB71-85	Set screws with cone point
6	AT400A-03-205	Worm gear
7	CQ9332-05-010	Gear
8	M5x8 GB71-85	Set screws with cone point
9	AT400A-03-207	Spring washer
10	AT400A-03-241	Big gear
11	20 GB894.1-86	External snap ring
12	CQ9332-05-007	Slippage gear
13	CQ9332-05-009	Slippage shaft
14	CQ9332-05-001	Apron body
15	M5x16 GB71-85	Set screws with cone point
16	M6x20 GB71-85	Set screws with cone point
17	M5x35 GB70-85	Hexagon socket head screw
18	CQ9332-05-025	Apron body right cover
19	12 GB894.1-86	Extennal snap ring
20	4x8 GB1096-79	Plain parallel key
21	CQ9332-05-029	Gear
22	CQ9332-05-014	Sleeve
23	CQ9332-05-013	Axis
24	AT520A-03-213	Square handle seat
25	2x20 GB117-86	Taper pins
26	BM8x50 GB4141.15-84	Handle lever
27	BM8x40 GB4141.14-84	Handle sleeve 8-plastic
28	M5 x16 GB75-85	Screws
29	M5x8 GB71-85	Set screws with cone point
30	CQ9332-00-106	Right rod baseboard
31	M5x8 GB71-85	Screws
32	M5 GB6170-86	Hexagon nut
33	M5x25 GB75-85	Screws
34	AT400A-03-212	Shaft
35	5x50 08117-86	Taper pins
36	AT400A-03-221	Sleeve
37	M4x12 GB68-85	Screw
38	BM8x40 GB4141.14-84	Handle sleeve B-plastic
39	BM8x40 GB4141.15-84	Handle lever
40	12x50 GB4141.19-84	Handle seat
41	0.8x5x25 GB2089-80	Spring

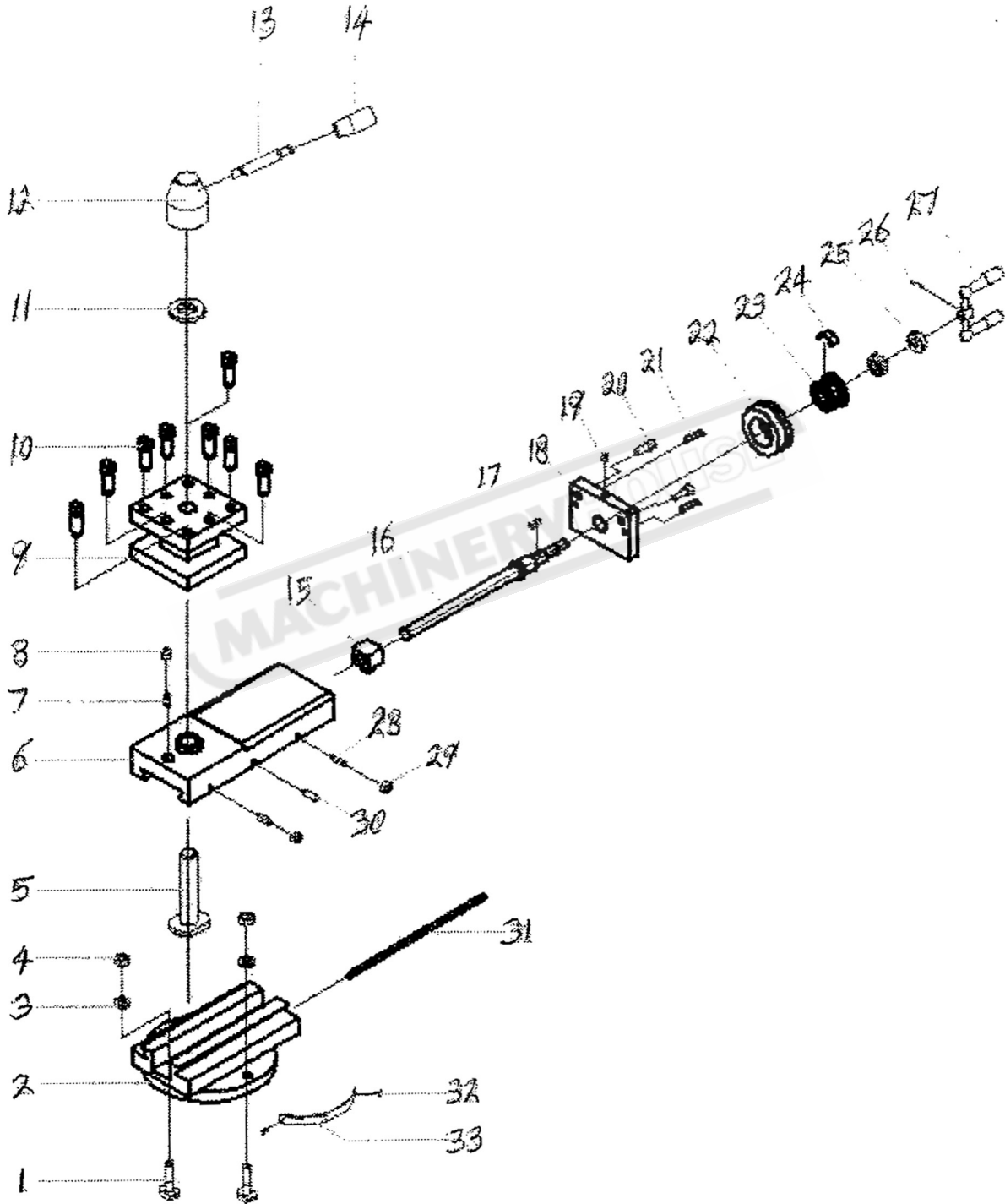
# HAFCO METALMASTER

## AL-320 APRON PARTS LIST

No.	Part No.	Description
42	6.5 GB308-84	Steel ball
43	M6x8 GB73-85	Flat-point set screw
44	0.6x5x15 GB2089-80	Spring
45	5 GB308-84	Steel ball
46	AT400A-03-216	Shifting fork
47	5x40 GB1096-79	Plain parallel key
48	CQ9332-05-020	Shifting fork shaft
49	CQ9332-05-021	Sleeve
50	AT400-03-127	Chuck
51	AT400-03-125	Screw nut
52	6x8 GB119-86	Column pins
53	M6x25 GB70-85	Hexagon socket head screw
54	6 GB93-87	Spring washer
55	M4x8 GB71-85	Set screws with cone point
56	CQ9332-05-015	Sleeve
57	CQ9332-05-017	Middle gear
58	CQ9332-05-016	Shaft
59	AT400-03-132	Bearing sleeve
60	4x28 GB1096-79	Plain parallel key
61	AT300-03-139	Spring lamination (Leaf spring)
62	B12x125 GB4141.22-84	Hand wheel
63	M10 GB923-88	Domed cap nuts
64	AT300-03-138	Sleeve
65	CQ9332-05-012	Dial
66	M4x12 GB65-85	Screw
67	AT400A-03-227	Flange sleeve
68	CQ9332-05-011	Gear shaft
69	CQ9332-05-022	Worm shaft
70	4x28 JB/GQ0217-89	Plain parallel key
71	8106 GB301-84	Thrust ball bearing
72	M5x16 GB70-85	Hexagon socket head screw
73	CQ9332-05-023	Worm shaft
74	8106 GB301-84	Thrust ball bearing
75	30 GB858-88	Lock washer
76	M30x 1.5 GB812-88	Round nut
77	CQ9332-00-105	Left rod baseboard
78	M5x8 GB71-85	Screws

# HAFCO METALMASTER

## AL-320 COMPOUND SLIDE PARTS



# HAFCO METALMASTER

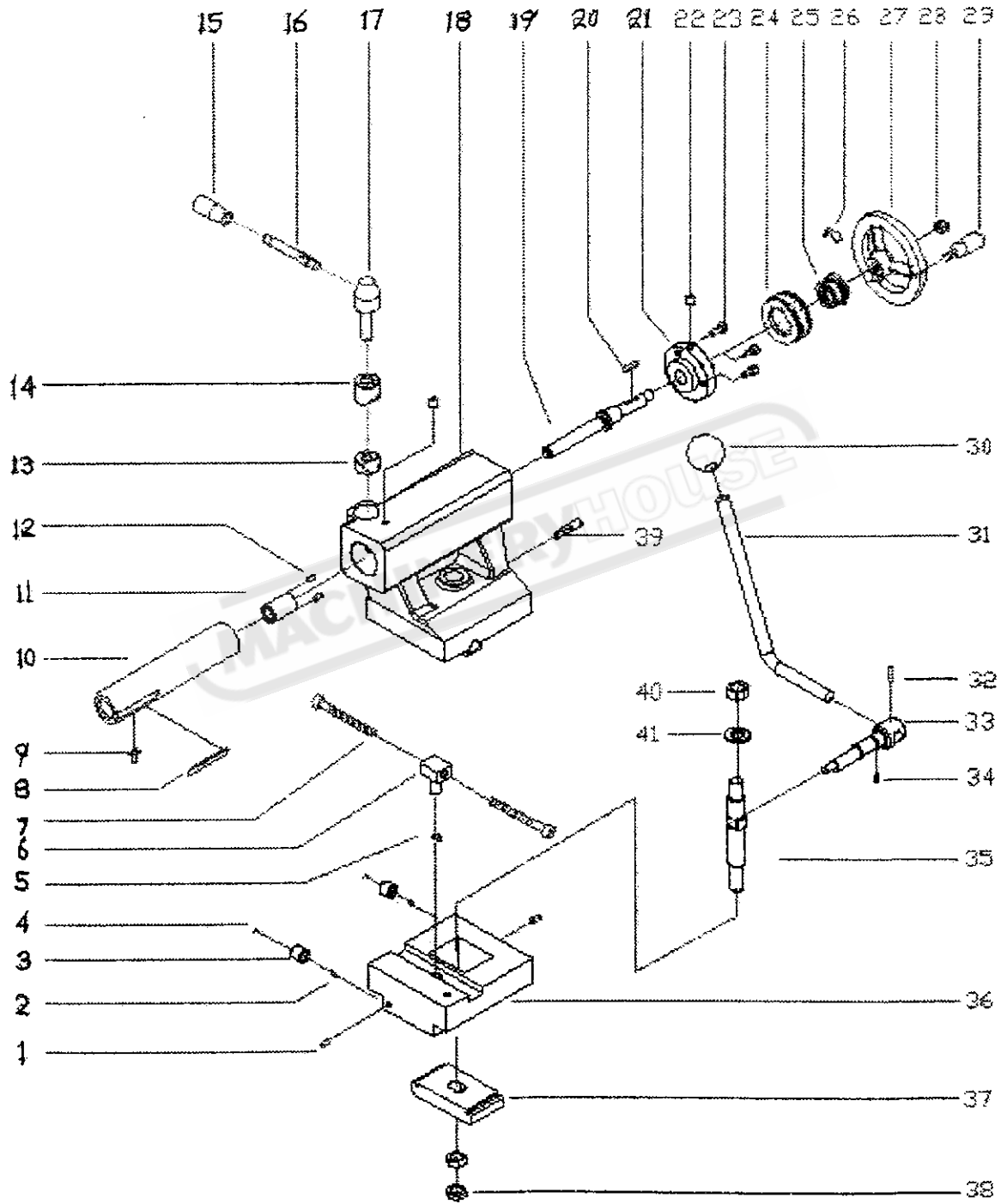
## AL-320 COMPOUND SLIDE PARTS LIST

No.	Part No.	Description
1	CQ9332-08-002	Bolts for T-Slot
2	CQ9332-08-004	Small carriage
3	8 GB97.2-85	Plain washers
4	M8 GB6170-86	Hexagon nuts
5	CQ9332-08-008	Bolts for T-Slot
6	CQ9332-08-008	Tollpost seats
7	0.5x5x15 GB2089-80	Spring
8	CQ9332-08-009	Locating sleeve
9	CQ9332-08-012	Toolpost
10	M10x30 GB83-88	Screws
11	CQ9332-08-010A	Plain washers
12	CQ9332-08-010	Handle seats
13	BM8x40 GB4141.15-84	Handle lever
14	BM8x40 GB4141.14-84	Long sleeve knobs
15	CQ9332-08-006	Nut
16	CQ9332-08-005	Lead screw
17	4x12 GB1096-79	Plain parallel key
18	CQ9332-08-013	Hanger
19	6 GB1155-79	Oil cup
20	M6x15 GB70-85	Hexagon socket cap head screws
21	4x20 GB117-86	Straight pin
22	AT300-03-101	Dial
23	AT300-03-138	Sleeve
24	AT300-03-139	Spring lamination
25	M10x1 GB812-88	Spanner nut
26	3x16 GB117-86	Taper pins
27	8x25 GB4141.10-84	Bi-Lever balanced handles
28	M6x25 GB75-85	Screws
29	M6 GB6170-86	Hexagon nuts
30	M6x20 GB75-85	Screws
31	CQ9332-08-007	Spindle screw
32	2x5 GB827-86	Rivets for graduated plate
33	CQ9332-08-016	Graduated plate



# HAFCO METALMASTER

## AL-320 TAILSTOCK PARTS



# HAFCO METALMASTER

## AL-320 TAILSTOCK PARTS LIST

No.	Part No.	Description
1	M5x8 GB71-85	Set screws with cone point
2	GB2089-80 1.4x7x30	Spring
3	CQ9332-03-008	Oil drain plug
4	GB308-77	Steel ball
5	GB894.1-86 12 CQ9332-	Circlips for shaft
6	03-009	Tailstock nuts
7	M8x40 GB70-85	Hexagon socket head screw
8	AT400-02-108	Graduated scale
9	AT300-02-114	I-key
10	CQ9332-03-003	Tailstock center sleeve
11	AT400-02-120	Tailstock nuts
12	M5x10 GB71-8 5	Set screws with cone point
13	AT400-02-107	Locking nuts
14	AT400-02-110	Locking sleeve
15	BM8x40 GB4141.14-84	Long sleeve knob
16	BM8x40 GB4141.15-84	Handle lever
17	AT280-2-001	Handle seat
18	CQ9332-03-001	Tailstock
19	AT400-02-113	Tailstock screw stem
20	4x28 GB1096-79 CQ9332-	Plain parallel key
21	03-011	Sleeve
22	6 GB1155-79	Oil cup
23	M5x12 GB70-85	Hexagon socket head screw
24	AT400-02-11 4	Dial
25	AT300-03-138	Sleeve
26	AT300-03-139	Spring lamination
27	BM12x125 GB4141.22-8	Hand wheel
28	M10 GB923-88	Domed cap nuts
29	M6x50 GB4141.5-84	Handles with sleeve
30	M10x32 GB4141.11-84	Handle ball
31	CQ9332-03-007	Handle lever
32	5x26 GB117-86	Taper pins
33	CQ9332-03-010	Shaft
34	M5x12 GB75-85	Slotted set screws with long dog point
35	CQ9332-03-006	Pull pole set
36	CQ9332-03-002	Tailstock carriage
37	CQ9332-03-004	Chuck
38	M12 x1.5 GB6172-86	Hexagon thin nuts
39	CQ9332-03-012	Pin
40	M12 GB6170-86	Hexagon thin nuts
41	12 GB97.2-85	Plain washers



# WARNING

## General Machinery Safety Instructions

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Machinery House  
requires you to read this entire Manual before using this machine.

- 1. Read the entire Manual before starting machinery.** Machinery may cause serious injury if not correctly used.
- 2. Always use correct hearing protection when operating machinery.** Machinery noise may cause permanent hearing damage.
- 3. Machinery must never be used when tired, or under the influence of drugs or alcohol.** When running machinery you must be alert at all times.
- 4. Wear correct Clothing.** At all times remove all loose clothing, necklaces, rings, jewelry, etc. Long hair must be contained in a hair net. Non-slip protective footwear must be worn.
- 5. Always wear correct respirators around fumes or dust when operating machinery.** Machinery fumes & dust can cause serious respiratory illness. Dust extractors must be used where applicable.
- 6. Always wear correct safety glasses.** When machining you must use the correct eye protection to prevent injuring your eyes.
- 7. Keep work clean and make sure you have good lighting.** Cluttered and dark shadows may cause accidents.
- 8. Personnel must be properly trained or well supervised when operating machinery.** Make sure you have clear and safe understanding of the machine you are operating.
- 9. Keep children and visitors away.** Make sure children and visitors are at a safe distance for you work area.
- 10. Keep your workshop childproof.** Use padlocks, Turn off master power switches and remove start switch keys.
- 11. Never leave machine unattended.** Turn power off and wait till machine has come to a complete stop before leaving the machine unattended.
- 12. Make a safe working environment.** Do not use machine in a damp, wet area, or where flammable or noxious fumes may exist.
- 13. Disconnect main power before service machine.** Make sure power switch is in the off position before re-connecting.
- 14. Use correct amperage extension cords.** Undersized extension cords overheat and lose power. Replace extension cords if they become damaged.
- 15. Keep machine well maintained.** Keep blades sharp and clean for best and safest performance. Follow instructions when lubricating and changing accessories.
- 16. Keep machine well guarded.** Make sure guards on machine are in place and are all working correctly.
- 17. Do not overreach.** Keep proper footing and balance at all times.
- 18. Secure workpiece.** Use clamps or a vice to hold the workpiece where practical. Keeping the workpiece secure will free up your hand to operate the machine and will protect hand from injury.
- 19. Check machine over before operating.** Check machine for damaged parts, loose bolts, Keys and wrenches left on machine and any other conditions that may effect the machines operation. Repair and replace damaged parts.
- 20. Use recommended accessories.** Refer to instruction manual or ask correct service officer when using accessories. The use of improper accessories may cause the risk of injury.
- 21. Do not force machinery.** Work at the speed and capacity at which the machine or accessory was designed.
- 22. Use correct lifting practice.** Always use the correct lifting methods when using machinery. Incorrect lifting methods can cause serious injury.
- 23. Lock mobile bases.** Make sure any mobile bases are locked before using machine.
- 24. Allergic reactions.** Certain metal shavings and cutting fluids may cause an allergic reaction in people and animals, especially when cutting as the fumes can be inhaled. Make sure you know what type of metal and cutting fluid you will be exposed to and how to avoid contamination.
- 25. Call for help.** If at any time you experience difficulties, stop the machine and call you nearest branch service department for help.



## Metal Lathe Safety Instructions

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Machinery House  
requires you to read this entire Manual before using this machine.

- 1. Maintenance.** Make sure the lathe is turned off and disconnect from the main power supply and make sure all moving parts have come to a complete stop before any inspection, adjustment or maintenance is carried out.
- 2. Lathe Condition.** Lathe must be maintained for a proper working condition. Never operate a lathe that has damaged or worn parts. Scheduled routine maintenance should be performed on a scheduled basis.
- 3. Leaving a Lathe Unattended.** Always shut the lathe off and make sure all moving parts have come to a complete stop before leaving the lathe. An unsupervised running lathe can cause serious injury.
- 4. Avoiding Entanglement.** Remove loose clothing, belts, or jewelry items. Tie up long hair and use the correct hair nets to avoid any entanglement with moving parts.
- 5. Chuck key safety.** Never let go of a chuck key while still in the chuck to prevent leaving the chuck key in the chuck. Chuck keys left in the chuck can cause serious injury.
- 6. Changing Chucks.** When changing large heavy chucks they become awkward to hold. Always get assistance when installing large chucks. Use a board or piece of plywood across the bedway when any install or removal of chucks to avoid any possible finger pinching between a loose chuck and edge of a bedway.
- 7. Tooling selection.** Always use the correct cutting tool for the job you are turning. Make sure it is sharp and held firmly in the tool post. Adjust the toolpost to provide proper support for the tool you will be using.
- 8. Mounting the workpiece.** Make sure the workpiece is properly mounted and secure before turning on the lathe. A loose workpiece can be thrown across the room and cause serious injury to you or a bystander.
- 9. Workpiece clearance.** Rotate the workpiece by hand to check for clearance with the tool post, compound slide and carriage before turning the lathe on.
- 10. Changing speeds and Reversing.** Turn the lathe off and make sure the lathe has come to a complete stop before changing speeds or reversing the spindle. Do not slow or stop the lathe chuck by using your hand.
- 11. Speed selection.** Select the appropriate speed for the type of work, material, and tool bit. Allow the lathe to reach full speed before beginning a cut.
- 12. Clearing chips.** Always use a brush to clear chips. Never clear chips when the lathe is running.
- 13. Power outage.** In the event of a power failure during use of the lathe, turn off all switches to avoid possible sudden start up once power is restored.
- 14. Clean work area.** Keep the area around the lathe clean from oil, tools and chips.
- 15. Call for help.** If at any time you experience difficulties, stop the machine and call your nearest branch service department for help.

## PLANT SAFETY PROGRAM

### **NEW MACHINERY HAZARD IDENTIFICATION, ASSESSMENT & CONTROL**

#### **Metal Lathe**

Developed in Co-operation Between A.W.I.S.A and Australia Chamber of Manufactures  
This program is based upon the Safe Work Australia, Code of Practice - Managing Risks of Plant in the Workplace ( WHSA 2011 No10 )

Item No.	Hazard Identification	Hazard Assessment	Risk Control Strategies <small>(Recommended for Purchase / Buyer / User)</small>
A	ENTANGLEMENT	HIGH	Eliminate, avoid loose clothing / Long hair etc.
C	CUTTING, STABBING, PUNCTURING	MEDIUM	Isolate power to machine prior to any checks or maintenance. Do not open or clean inside until the machine has completely stopped.
D	SHEARING	MEDIUM	Make sure all guards are secured shut when machine is on. Isolate power to machine prior to any checks or maintenance.
F	STRIKING	MEDIUM	Ensure workpiece is secured in chuck and tooling is locked tight in toolpost. Always wear safety glasses. Do not leave chuck key in chuck. Remove all loose objects around moving parts.
H	ELECTRICAL	MEDIUM	All electrical enclosures should only be opened with a tool that is not to be kept with the machine. Machine should be installed & checked by a Licensed Electrician.
N	HIGH - TEMPERATURE	LOW	Wear appropriate protective clothing to prevent hot swarf.
O	OTHER HAZARDS, NOISE.	LOW	Wear hearing protection as required.

Plant Safety Program to be read in conjunction with manufactures instructions



[www.machineryhouse.com.au](http://www.machineryhouse.com.au)



[www.machineryhouse.co.nz](http://www.machineryhouse.co.nz)

Authorised and signed by:  
Safety officer:



Manager:



Revised Date: 12th March 2012