



# Operating Instructions and Parts Manual Step Pulley Turret Mill

Model JTM-1, JTM-2



*Model JTM-1 shown*

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# 1.0 Warranty and Service

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

## Warranty Period

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

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

## Who is Covered

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

## What is Covered

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

## Warranty Limitations

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

## How to Get Technical Support

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

## More Information

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

## How State Law Applies

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

## Limitations on This Warranty

JET LIMITS ALL IMPLIED WARRANTIES TO THE PERIOD OF THE LIMITED WARRANTY FOR EACH PRODUCT. EXCEPT AS STATED HEREIN, ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE EXCLUDED. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU. JET SHALL IN NO EVENT BE LIABLE FOR DEATH, INJURIES TO PERSONS OR PROPERTY, OR FOR INCIDENTAL, CONTINGENT, SPECIAL, OR CONSEQUENTIAL DAMAGES ARISING FROM THE USE OF OUR PRODUCTS. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.

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

## Product Listing with Warranty Period

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

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

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### 3.0 Safety warnings

1. Read and understand the entire owner's manual before attempting assembly or operation.
2. Read and understand the warnings posted on the machine and in this manual. Failure to comply with all of these warnings may cause serious injury.
3. Replace the warning labels if they become obscured or removed.
4. This turret mill is designed and intended for use by properly trained and experienced personnel only. If you are not familiar with the proper and safe operation of a turret mill, do not use until proper training and knowledge have been obtained.
5. Do not use this turret mill for other than its intended use. If used for other purposes, JET, disclaims any real or implied warranty and holds itself harmless from any injury that may result from that use.
6. Always wear approved safety glasses/face shields while using this mill. Everyday eyeglasses only have impact resistant lenses; they are not safety glasses.
7. Before operating this machine, remove tie, rings, watches and other jewelry, and roll sleeves up past the elbows. Remove all loose clothing and confine long hair.
8. Non-slip safety footwear and anti-skid floor strips are recommended. Do not wear gloves.
9. Never place hands near or around a revolving tool or part.
10. Wear ear protectors (plugs or muffs) during extended periods of operation.
11. Do not operate this machine while tired or under the influence of drugs, alcohol or any medication.
12. Make certain the switch is in the OFF position before connecting the machine to the power supply.
13. Make certain the machine is properly grounded.
14. Make all machine adjustments or maintenance with the machine unplugged from the power source.
15. Workpiece must be attached or clamped to the table. Never hold a workpiece with your hand.
16. Use correct spindle speed and table feed for the particular job.
17. Do not start machine with cutter in contact with workpiece.
18. Disengage power feed when not in use.
19. Remove adjusting keys and wrenches. Form a habit of checking to see that keys and adjusting wrenches are removed from the machine before turning it on.
20. Keep safety 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 after completion of maintenance.
21. Check damaged parts. Before further use of the machine, a guard or other part that is damaged should be carefully checked to determine that it will operate properly and perform its intended function. Check for alignment of moving parts, binding of moving parts, breakage of parts, mounting and any other conditions that may affect its operation. A guard or other part that is damaged should be properly repaired or replaced.
22. Provide for adequate space surrounding work area and non-glare, overhead lighting.
23. Keep the floor around the machine clean and free of scrap material, oil and grease.
24. Keep visitors a safe distance from the work area. Keep children away.
25. Make your workshop child proof with padlocks, master switches or by removing starter keys.
26. Give your work undivided attention. Looking around, carrying on a conversation and "horse-play" are careless acts that can result in serious injury.
27. Maintain a balanced stance at all times so that you do not fall into the cutter or other moving parts. Do not overreach or use excessive force to perform any machine operation.
28. Use the right tool at the correct speed and feed rate. Rotate spindle clockwise for right-hand tools, counterclockwise for left-hand tools. Do not force a tool or attachment to do a job for which it was not designed. The right tool will do the job better and more safely.
29. Use recommended accessories; improper accessories may be hazardous.
30. Frequently clean this machine. Maintain tools with care. Keep cutters sharp and clean for the best and safest performance. Follow instructions for lubricating and changing accessories.

31. Turn off the machine before cleaning. Use a brush or compressed air to remove chips or debris — do not use your hands.
32. Do not stand on the machine. Serious injury could occur if the machine tips over.
33. Never leave the machine running unattended. Turn the power off and do not leave the machine until it comes to a complete stop.
34. Remove loose items and unnecessary work pieces from the area before starting the machine.
35. Don't use in dangerous environment. Don't use this machine in damp or wet locations, or expose it to rain. Keep work area well lighted.
36. Some coolants used for machining contain chemicals that may be hazardous to your health if not used properly. Read and understand all user information listed on the coolant container and protect yourself accordingly.

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

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

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

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

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

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

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

## 4.0 About this manual

This manual is provided by JET covering the safe operation and maintenance procedures for a JET Model JTM-1 and JTM-2 Turret Mill. This manual contains instructions on installation, safety precautions, general operating procedures, maintenance instructions and parts breakdown. Your machine has been designed and constructed to provide consistent, long-term operation if used in accordance with the instructions as set forth in this document.

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

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

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

## 5.0 JTM-1, JTM-2 installation layout

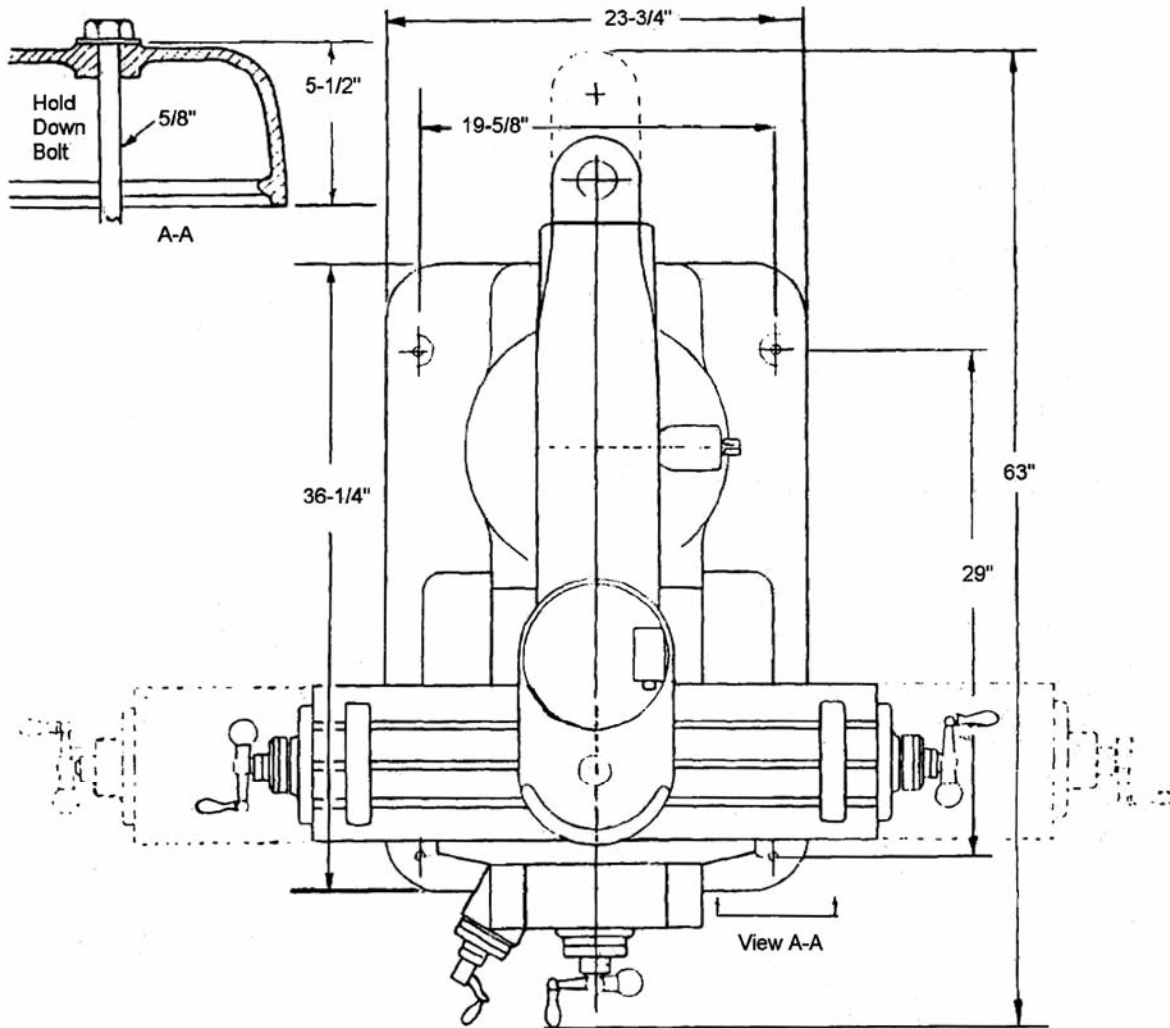


Figure 1

## 6.0 Specifications

Model Number.....	JTM-1 .....	JTM-2 .....
Stock Number .....	690082 .....	690089 .....

### Motor and Electricals:

Motor type .....	induction .....	TEFC induction, capacitor start .....
Horsepower.....	2 (1.5kW) .....	2 (1.5kW) .....
Phase.....	3 .....	single .....
Voltage.....	230V only .....	115/230V (prewired 230V) .....
Cycle.....	60Hz .....	60Hz .....
Listed FLA (full load amps) .....	6.5/5.6 .....	28/14 .....
Start Capacitor .....	-- .....	500MFD 125VAC .....
Power Transfer.....	belt .....	belt .....
Motor Speed.....	3450/1720 RPM .....	1720 RPM .....
Sound Emission (tested at 3 ft. from machine):		
Without load .....	75 dB .....	75 dB .....
With load.....	80-85 dB .....	80-85 dB .....

### Head and Spindle:

Spindle Taper.....	R-8 .....	R-8 .....
Spindle bearings .....	class 7 .....	class 7 .....
Quill Diameter .....	3-3/8" .....	3-3/8" .....
Number of Spindle Speeds .....	16 .....	8 .....
Range of Spindle Speeds:		
Low (RPM).....	80,135,210,325,660,1110,1750,2720 .....	80,135,210,325 .....
High (RPM) .....	160, 270, 420, 650, 1320, 2220, 3500, 5440 .....	660,1110,1750,2720 .....
Downfeed Distance per Revolution of Spindle .....	0.0015", 0.003", 0.006" .....	0.0015", 0.003", 0.006" .....
Spindle Travel .....	5" .....	5" .....
Head Movement.....	90° L and R, 45° F and B .....	90° L and R, 45° F and B .....
Maximum Distance Spindle to Table.....	17-1/2" .....	17-1/2" .....
Maximum Distance Spindle to Column .....	19" .....	19" .....
Minimum Distance Spindle to Column .....	4-1/2" .....	4-1/2" .....
Collet Capacity.....	1/8" – 7/8" .....	1/8" – 7/8" .....
Ram Travel .....	13-3/8" .....	13-3/8" .....
Ram Rotation .....	90° L and R .....	90° L and R .....

### Table:

Table Size .....	9"x42" .....	9"x42" .....
Longitudinal Table Travel.....	23-7/8" .....	23-7/8" .....
Table Cross Travel.....	12-1/2" .....	12-1/2" .....
T-Slots, Number.....	3 .....	3 .....
T-Slots, Size.....	.5/8" .....	.5/8" .....
T-Slots, Spacing.....	2-1/2" .....	2-1/2" .....
Maximum Table Load.....	550 lb .....	550 lb .....
Knee Travel.....	14-1/2" .....	14-1/2" .....

### Dimensions:

Overall Dimensions, assembled.....	57"W x 64"D x 82"H .....	57"W x 64"D x 82"H .....
Shipping Dimensions .....	67"W x 56"D x 66"H .....	67"W x 56"D x 66"H .....

### Weights:

Net Weight (approx.).....	2056 lb .....	2056 lb .....
Shipping Weight (approx).....	2200 lb .....	2200 lb .....

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

## 7.0 JTM-1/JTM-2 Features and Terminology

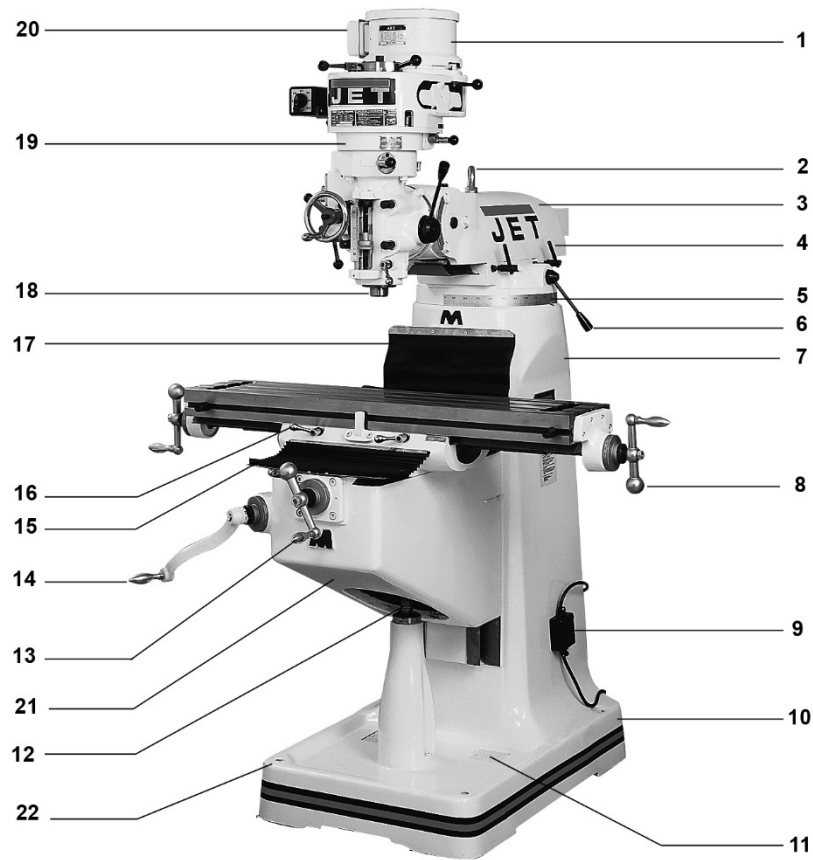
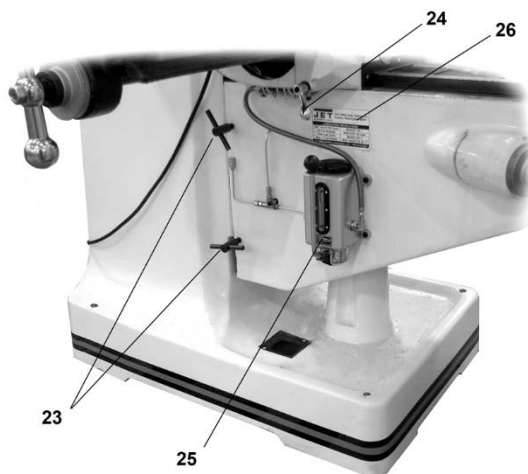


Figure 2: Features and Terminology (JTM-1 shown)



1. Motor
2. Lifting ring
3. Ram
4. Ram locking handle (x2)
5. Turret scale
6. Ram movement lever
7. Column

8. Table longitudinal crank handle (x2)
9. Power connection box
10. Base
11. Filter screen (x2) (for use with optional flood coolant systems)
12. Elevating leadscrew
13. Crossfeed handle
14. Knee crank handle
15. Pleated way cover
16. Table locking handle (x2)
17. Flat way cover
18. Spindle
19. Head Assembly (see section 10.0 for explanation of controls)
20. Motor junction box
21. Knee
22. Holes for mounting bolts (x4)
23. Knee locking handle (x2)
24. Saddle locking handle
25. One-shot lube system
26. Lubrication chart



## 8.0 Setup and Assembly

### 8.1 Unpacking

Open shipping container and check for shipping damage. Report any damage immediately to your distributor and shipping agent. Do not discard any shipping material until the Turret Mill is assembled and running properly.

Compare the contents of your container with the following parts list to make sure all parts are intact. Missing parts, if any, should be reported to your distributor. Read the instruction manual thoroughly for assembly, maintenance and safety instructions.

### 8.2 Contents of shipping container

*Note: Some parts may be pre-installed on the mill.*

- 1 Turret Mill (not shown)
- 1 Flat Way Cover
- 1 Pleated Way Cover
- 1 Draw Bar
- 3 Table Adjustment Handles
- 2 Belt Guards
- 1 Tool Box, containing (*Figure 3*):
  - 1 Hex Key Set (1.5-10mm) \*
  - 1 17/19mm Box Wrench \*
  - 1 Cross Point Screw Driver #2 \*
  - 1 Flat Blade Screw Driver #2 \*
  - 1 Plastic Oil Bottle \*
  - 1 Elevating Crank Handle
  - 1 Handwheel
  - 1 Coarse Feed Handle
  - 1 Can White Touch Up Paint
  - 1 Hoisting Ring
  - 1 Operator's Manual (not shown)
  - 1 Warranty Card (not shown)

*\* parts with an asterisk are also included in the tool box service kit, p/n JTM4VS-TB.*



*Figure 3: shipping contents*

**NOTE:** If your mill is supplied with an optional Table Powerfeed and/or Digital Readout, be sure to consult the separate instruction materials that accompany them.

### 8.3 Site preparation

The mill must be placed on an even surface and bolted to the floor. Anchor bolts of sufficient size and length must be fastened to the floor according to the mill's footprint. See the site installation diagram in Figure 1.

### 8.4 Lifting the mill

Finish removing the sides of the crate. Leave mill bolted to pallet until ready to move to its final location.

The preferred method for lifting mill is with a hook through the hoisting ring screwed into the tapped hole atop the ram. Steady mill to prevent it from spinning. (**Note:** If your mill came with a top-mounted DRO, remove DRO from the hole to install the hoisting ring. Reinstall DRO after machine has been positioned.)

An alternative method for lifting mill is with a sling. Follow diagram in Figure 1 for proper position of sling under ram. Note position of ram and that table has been moved against column. Tighten ram locking bolts (A, Figure 4) before lifting.

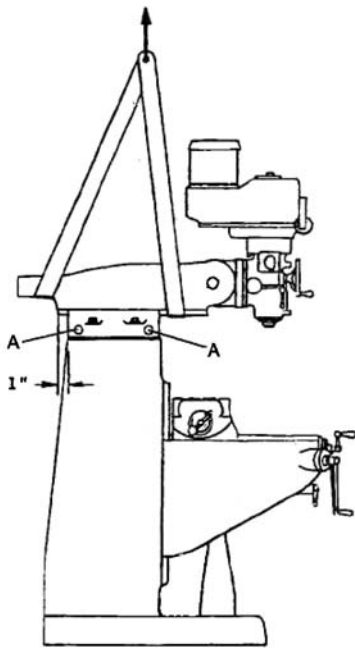


Figure 4: sling location

Carefully lift mill and move to a position over the anchor bolts. Lower mill over anchor bolts and check for level, with a machinist's level placed on the table. Mill must be level back to front and side to side. Shim if necessary, but remember that mill must be supported equally at all four corners. Check for level before tightening anchor bolt nuts, and check again after tightening them.

It is advisable when placing the mill on a concrete floor to use grout (thin mortar) to correct any unevenness in the concrete and provide a solid foundation at all points.

**CAUTION** Mill must be supported equally under all four corners. Failure to comply may cause the column to twist and put a bind in the ways.

### 8.5 Completing assembly

**CAUTION** Before attempting to raise mill head, familiarize yourself with instructions in section 12.1, for procedures to safely raise and set up the mill head.

1. Loosen four hexagonal nuts (see A, Figure 9) about 1/4 turn each counterclockwise, just enough to allow rotation of head.
2. Apply upward pressure on motor by hand to relieve pressure on worm mechanism, and use supplied wrench to turn worm nut and raise head to upright position.
3. Slightly tighten nuts (A, Figure 9); not torqued, just snug. *Before operating mill, follow procedures in section 12.1 to verify angle settings and properly tighten the four nuts.*
4. Use mineral spirits, kerosene or other cleaning solvent, to remove all rust-proofing from where it may have been applied. This is important; moving the table or any other components before removing rust proofing will only put rust proofing where you don't want it. (Do not use gasoline, paint thinner, or lacquer thinner; these will damage painted surfaces.)
5. Lubricate exposed ways (see sect. 13.0), then move each unit (table and ram) to the opposite limit stop, and clean and lubricate the newly exposed ways. Loosen bolts to unlock ram and move it forward and backward to the full length in order to clean and lubricate.
6. Cover all machined surfaces with a film of light machine tool oil to inhibit rust.

Some of the following steps may have already been performed on the machine. If so, ignore the instructions related to those particular steps. Otherwise, perform them in the order listed. Refer to Figures 2 and 5 to help locate items.

7. Install the table traverse and cross-feed handles on their respective shafts. Tighten each handle using a wrench on the flats.
8. Remove any rust proofing from drawbar. Install drawbar with its washer into spindle center through top of head assembly. When installing tool into spindle, lock spindle and tighten drawbar using provided wrench.
9. Slide the fine feed handwheel over the hub and push it back until its roll pin engages hole in hub, and handwheel is flush with hub surface.

10. Place coarse feed handle on feed shaft, aligning roll pin with a hole. Tap handle lightly until it is flush against hub surface.
11. Unwrap and clean elevating (knee) crank and install it on its shaft.
12. Install rubber way covers at front and behind table.
13. Install belt guards.

## 8.6 Lubrication

**CAUTION** Do not operate this milling machine before fully lubricating it. Failure to comply may damage machine.

Familiarize yourself with all lubricating points in section 13.0, and fully lubricate this machine before operating it.

## 9.0 Electrical connections

**WARNING** All electrical connections must be made by a qualified electrician in compliance with all relevant codes. This machine must be properly grounded. Failure to comply may result in serious injury.

Confirm that power at the site matches power requirements of the mill before connecting to power source.

The JTM-1 turret mill is rated at 2HP, 3PH, 230V only.

The JTM-2 turret mill is rated at 2HP, 1PH, 115/230V and comes from the factory **prewired at 230V**.

To convert from 230V to 115V operation (JTM-2 only):

1. Open junction box on motor and change the wires according to diagram found on inside of cover.
2. Open Fwd/Rev switch box and change connections according to diagram.

Similar diagrams are found in section 16.0 of this manual. *Note: If discrepancies arise, diagrams on machine take precedence.*

It is recommended that the JTM-1 be connected to a dedicated 10 amp circuit with a circuit breaker or time-delay fuse. Connect the JTM-2, using **230 volt power**, to a dedicated 40 amp circuit with circuit breaker or time-delay fuse, and the JTM-2 with **115 volt power**, to a dedicated 30 amp circuit with circuit breaker or time-delay fuse. **Local codes take precedence over recommendations.**

## 9.1 Wire Sizes

**CAUTION** For circuits which are far away from the electrical service box, the wire size must be increased in order to deliver ample voltage to the motor. To minimize power losses and to prevent motor overheating and burnout, the use of wire sizes for branch circuits or electrical extension cords according to the following table is recommended:

Conductor Length	AWG Number	
	230/460 Volt Lines	120 Volt Lines
0 – 50 Ft.	No. 14	No. 14
50 – 100 Ft.	No. 14	No. 12
Over 100 Ft.	No. 12	No. 8

Table 1

## 10.0 Controls

Refer to Figure 5:

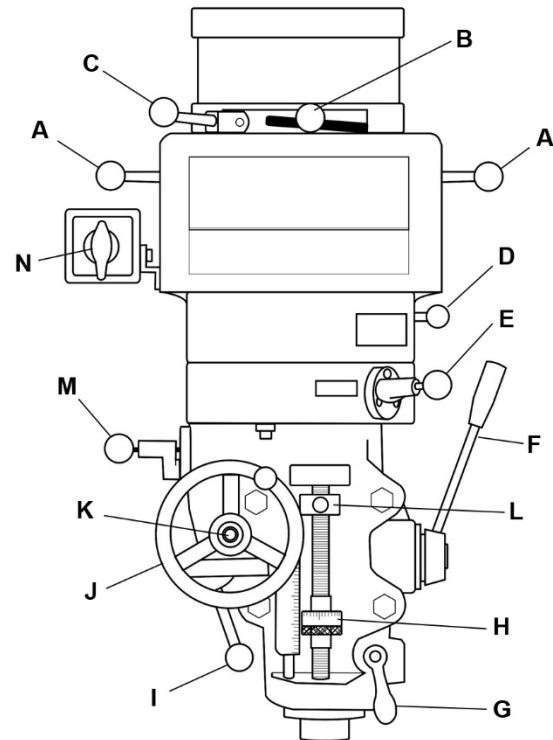


Figure 5: controls

- A. **Motor Lock (Belt Tension) Levers (A, Figure 5)** – Slide levers to loosen motor mounting; shift motor to release tension on belts and reposition belts for different speed range.

**WARNING** Disconnect mill from power source before changing belt position. Reinstall belt guards before operating mill.

- B. **Speed Range Selector (B)** – Mill is in high speed range when selector is in front position

(facing operator). Push selector to the side to shift into low speed range. Rotate spindle to assist engagement, by either turning spindle nose by hand or turning drawbar knob with a wrench, provided drawbar is pulled up tightly.

**CAUTION** Change speed range only when motor is NOT running.

- C. **Spindle Brake** (C, Figure 5) – Move in either direction to prevent spindle from turning.
- D. **Back Gear Control Lever** (D, Figure 5) – Pull out knob and rotate lever in to position. “IN” position engages back gear for low speed. “OUT” position disengages back gear for high speed. (Used in conjunction with Speed Range Selector B.) Middle position is neutral and allows free spindle rotation for such things as setup work.

**CAUTION** Shift back gear control lever only when motor is NOT running. Rotate spindle by hand to facilitate lever engagement.

- E. **Power Feed Transmission Engagement Lever** (E, Figure 5) – When lever is in right hole, power feed worm gear is disengaged. To engage power feed, pull knob out and move lever to left hole. Engage pin in hole.

**CAUTION** Power feed may be engaged when spindle is rotating; however, it must be engaged gently to avoid damage to worm gear. It may be disengaged any time. Do not use power feed at speeds above 2700 RPM. It is recommended that power feed worm gear be disengaged whenever power feed is not required; this avoids unnecessary wear on the worm gear.

- F. **Coarse Feed Handle** (F, Figure 5) – Used for manual operations. Rotate counterclockwise to lower spindle. Return spring will automatically retract spindle once handle is released. Handle can be removed when not in use.
- G. **Quill Lock** (G, Figure 5) – Rotate handle clockwise to lock quill in position; counterclockwise to release.
- H. **Micrometer Adjusting Nut** (H, Figure 5) – For setting specific spindle depth. Each graduation on the nut represents 0.001” of depth, and corresponds to the adjacent scale.
- I. **Feed Trip Lever** (I, Figure 5) – Engages overload clutch on pinion shaft when positioned to the left. Stays engaged until quill stop comes into contact with micrometer adjusting nut (forcing feed trip lever to drop out automatically), or until lever is released manually by pushing it to the right. **IMPORTANT:** Overload clutch is factory-set to

hold up to 200 lb. downfeed pressure on the quill (accommodates drills up to 3/8”). Do not attempt to adjust clutch pressure.

- J. **Manual Fine Feed Handwheel** (J, Figure 5) – Feed reversing knob (K, Figure 5) must be in neutral position. The feed trip lever (I, Figure 5) must be engaged. Note: Manual feed handwheel may be removed when not in use.
- K. **Feed Reversing Knob** (K, Figure 5) – located in center of manual feed handwheel. Position of knob depends upon direction of spindle rotation. If boring with right hand cutting tools, pull knob towards operator until clutch engages. Neutral position is between forward and reverse positions (see Figure 7).

**CAUTION** It is recommended that feed reversing knob be left in neutral position when not in use.

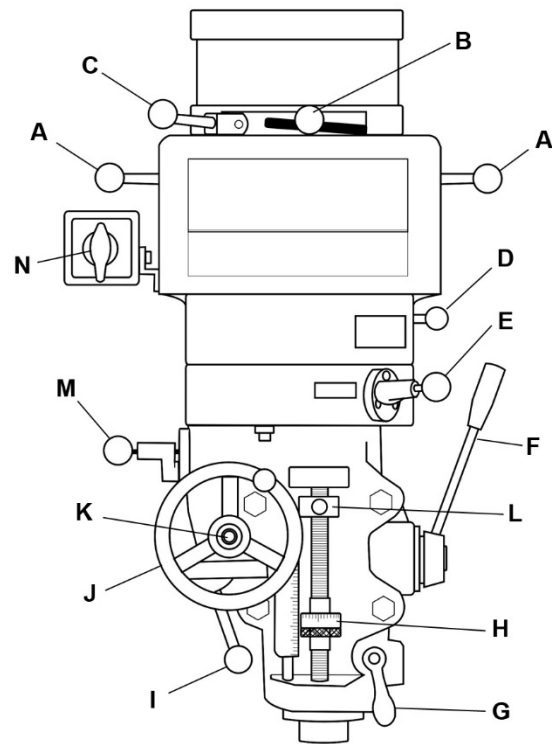


Figure 5 (repeated)

- L. **Quill Stop** (L, Figure 5) – Disengages automatic feed in either direction, as well as the setting point for working to a given depth during manual feeds.
- M. **Quill Feed Rate Selector** (M, Figure 5) – Pull knob out and locate handle over choice of three feed rates: 0.0015”, 0.003”, 0.006” downfeeds per revolution of spindle. Feed is more readily engaged when spindle is turning.
- N. **Reversing Switch** (N, Figure 5) – Turns spindle on and off, and changes rotation direction.

## 11.0 Operations

### 11.1 Operating precautions

**CAUTION** Observe the following instructions before using this mill.

1. Verify that spindle brake is released before starting motor.
2. Rotate spindle by hand to facilitate meshing of clutch and gears.
3. Do **not** use quill power feed at speeds above 2700 RPM.
4. It is recommended that power feed worm gear be disengaged whenever power feed is not required. This will avoid unnecessary wear on worm gear.
5. The power feed can be used for drills up to 3/8" diameter (in mild steel). Use manual feed for drills larger than 3/8".
6. Overload clutch is factory-set to hold up to 200 lb. downfeed pressure on the quill (accommodates drills up to 3/8"). Do **not** attempt to adjust clutch pressure.
7. If using longitudinal table travel only, clamp saddle and knee in place using the locking handles; this will add rigidity and provide for heavier cuts with minimal vibration. If not using longitudinal travel, keep table locking handles tightened.
8. On heavy milling work, keep head as close to column as possible to obtain maximum rigidity. Always tighten ram locking handles securely.
9. Do not engage back gear ("IN" position of D, Figure 5) while leaving speed range selector (B, Figure 5) in high position (facing operator). This may cause gearing system to bind up.

### 11.2 Clamping workpiece to table

1. The worktable has 5/8-inch T-slots for clamping work piece to table.
2. Set switch to OFF position.
3. Place work piece on table.
4. Clamp work piece using T-slot clamps, studs, and step blocks as required (Figure 6).

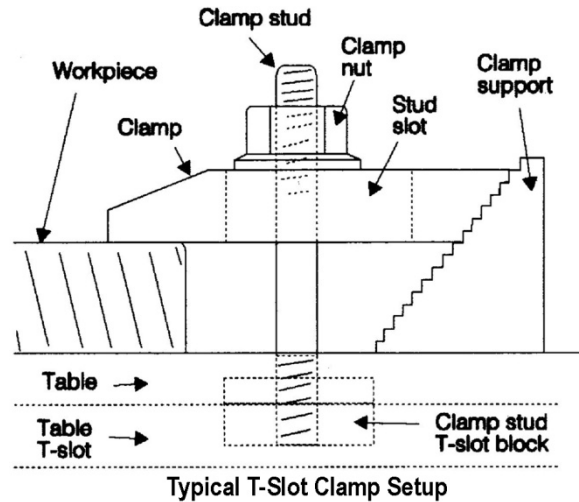


Figure 6

### 11.3 Changing speed range

**CAUTION** Rotate spindle by hand to ensure clutch is engaged prior to turning on machine. Do not turn on machine unless spindle can be moved freely.

Move belt to desired set of pulleys for specific speeds. Speed range is then set to High or Low, as follows (refer to Figure 5):

#### High speed range

1. Move speed range selector (B, Figure 5) to front position.
2. Keep back gear control lever (D, Figure 5) at "IN" position.
3. Move spindle pulley by hand until you feel it mesh with clutch (spindle pulley can no longer be moved).
4. Move back gear control lever (D) to "OUT" position.

#### Low speed range

1. Move speed range selector (B, Figure 5) to side position.
2. Move back gear control lever (D) to "IN" position, while rotating spindle to help engage.

The above procedures are also shown on a plate on front of mill head.

See Figure 15 for speeds of each belt position within each range.

### 11.4 Setting up for fine hand feed

Refer to Figure 7:

1. Disengage automatic feed by pulling out knob (E, Figure 7) and moving lever to the right hole.

2. Position feed reversing knob (K) in the center at neutral position.
3. Engage feed trip lever (I) by pulling away from head assembly.

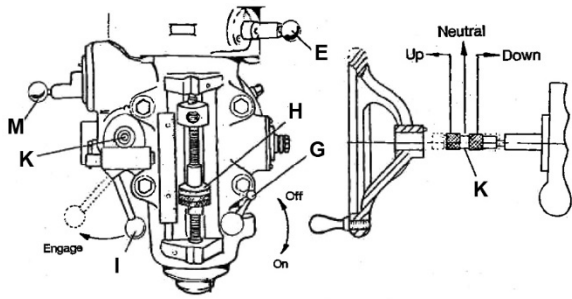


Figure 7

### 11.5 Setting up for automatic feed

Refer to Figure 8:

1. Ensure quill lock (G, Figure 8) is loosened by rotating counterclockwise.
2. Set micrometer dial (H) to desired depth.
3. Engage auto quill feed lever (D) by pulling out lock knob and moving lever to left hole.
4. Select feed rate (M).
5. Select feed direction (K).
6. Engage feed trip lever (I) by pulling away from head assembly.

### 11.6 Power feed operation

Establish the point at which the quill will reset during power feed operations, as follows.

Refer to Figure 8:

**WARNING** Verify that manual fine feed handwheel (J, Figure 8) has been removed for power feeding. Failure to comply may cause injury.

1. Loosen knurled lock nut on micrometer nut (H).
2. Use Coarse Feed Handle (F) to advance quill to the point where the feed should stop.
3. Engage Feed Trip Lever (I) by pulling it away from head assembly.
4. Adjust Micrometer Adjusting Nut (H) against Quill Stop (L).
5. Continue turning Micrometer Adjusting Nut (H) until Feed Trip Lever (I) trips.
6. Tighten Locknut (H).
7. Disengage Quill Lock (G) by rotating counterclockwise.
8. Start spindle by turning switch (N).

9. Set Feed Rate Lever (M) to the feed rate required for the tooling and material used.
10. Place Quill Feed Engagement Lever (E) in the Engaged position.
11. Select feed direction by setting the Feed Direction Knob (K) position per Table 2:

Spindle Dir.	Feed Dir.	Knob Pos.
CW	Down	In
	Up	Out
CCW	Down	Out
	Up	In

Table 2

37. Engage Feed Trip Cam Lever (I) by pulling away from head assembly.

**Note:** Due to variables in tool diameter, coatings, coolant, and materials, no specific spindle speed or feed rate recommendations are provided. Use general shop manuals that have data applicable to the milling and drilling operations being performed; or contact the supplier of the tooling, coolant, and material for specific recommendations.

**IMPORTANT:** The power feed can be used for drills up to 3/8" in diameter (mild steel). Use manual feed for drills larger than 3/8".

**CAUTION** The overload clutch is factory set to hold up to 200 lb. downfeed pressure on the quill (accommodates drills up to 3/8"). Do not attempt to adjust clutch pressure.

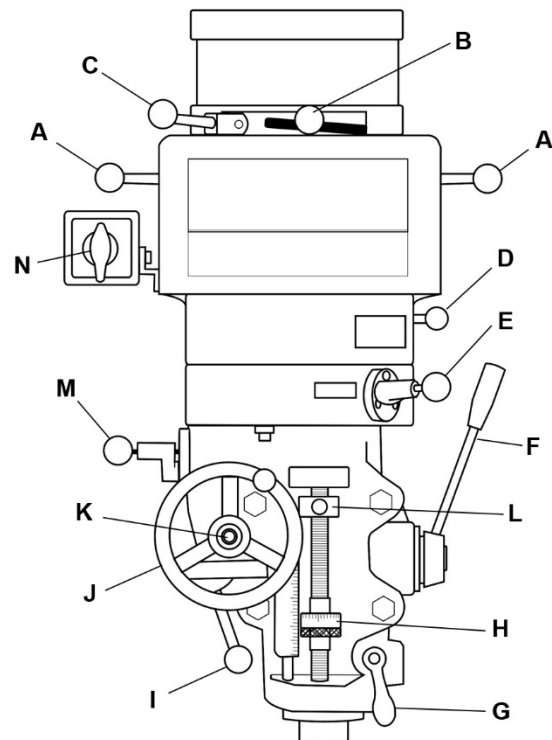


Figure 8

## 11.7 Draw bar operation; changing tooling

The drawbar has 7/16"-20 right hand threads and should be tightened with normal pressure using provided wrench. To remove a tool:

1. Lock spindle by turning spindle brake (C, Figure 8) left or right.
2. Use provided wrench to loosen draw bar two or three turns (counterclockwise).
3. If collet does not open immediately, tap the top of draw bar with a soft-faced hammer to loosen collet from taper.
4. Remove tool from collet.
5. Insert new tool into collet.
6. Tighten draw bar firmly using provided wrench. The tool is now ready for use.
7. Release spindle brake.

## 12.0 Adjustments

### 12.1 Head movement: left and right

**WARNING** Make sure machine base is secured to floor before repositioning mill head. The center of gravity can shift enough to cause machine to tip over, resulting in serious injury to operator and damage to machine.

1. Loosen four large hex nuts (A, Figure 9) that secure mill head to ram adapter. One-quarter (1/4) turn should be sufficient to allow head to move.

**NOTE:** For angles greater than 10 degrees, use your free hand to support mill head, relieving weight off the brass worm gears. Doing so will lengthen life of worm gears.

2. Turn worm nut (B, Figure 9) to tilt head left or right as required. Use scale on ram adapter to establish angle.

**Note:** The scales on ram adapter and for head rotation are guides only. Close tolerance work will require use of a dial indicator to make sure head is 90° to table in X and Y axes. Please note the table is fitted to be slightly higher in front, usually about 0.0005".

**CAUTION** Be sure to apply torque in two steps using a crossing pattern. Failure to do so could distort the face of the ram adapter.

3. Tighten the four hex nuts. Tighten in two steps using a calibrated torque wrench. Use a crossing pattern to tighten the nuts. Tighten initially to 25 foot-pounds.

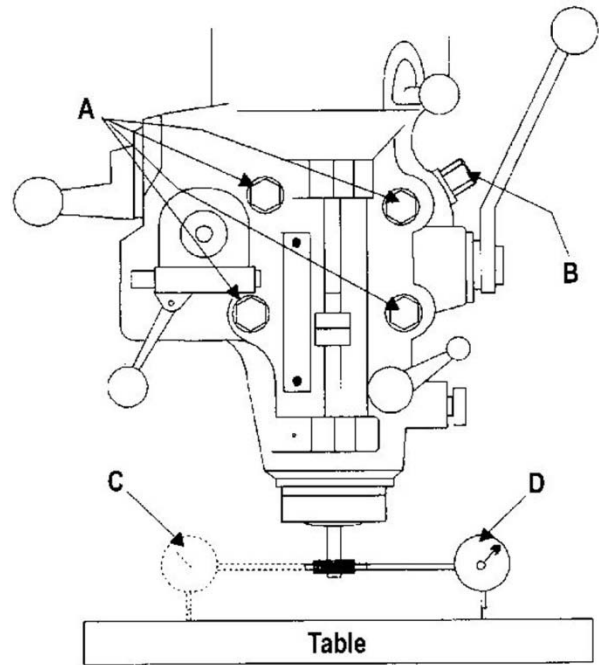


Figure 9

4. Before applying final torque, check to make sure mill head is perpendicular to worktable.
5. Set up a dial indicator in a collet (see Figure 9) and secure using draw bar.
6. Put spindle drive in neutral.
7. Set the dial indicator plunger on the worktable. Zero indicator.
8. Rotate spindle 180 degrees (when rotating, raise dial indicator plunger by hand to prevent it from dropping into table T-slots).
9. Read dial indicator – it should read zero. If not, loosen the four hex nuts and reposition mill head.
10. Recheck perpendicularity using dial indicator. Repeat the above procedure until dial indicator reads zero in both positions.

**CAUTION** Be sure to apply torque in two steps using a crossing pattern. Failure to do so could distort the face of the ram adapter.

11. Tighten the four hex nuts. Tighten in two steps using a calibrated torque wrench. Use a crossing pattern to tighten the nuts. Tighten initially to 25 foot-pounds, then tighten to final torque of 50 foot-pounds. NOTE: Do not overtighten, as it may cause binding of quill.

## 12.2 Head movement: Fore and aft

### 1. Setting the angle:

- a. Loosen the three ram adapter locking bolts (A, Figure 10). It is unnecessary to loosen the bolts more than one-half (1/2) turn to allow tilting.

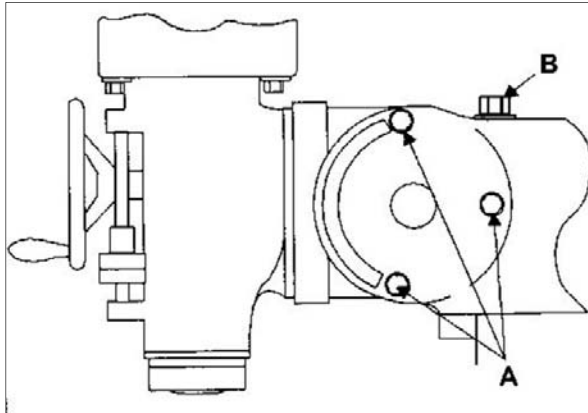


Figure 10: Head movement

- b. Support mill head with your free hand. Press upward on spindle when changing the angle.

- c. Turn ram adapter worm nut (B, Figure 10) to tilt head forward and backward. Use scale on ram adapter to establish desired angle.

### 2. Returning to upright position:

- a. When returning mill head to full upright position, be sure to support head by upward pressure on spindle as you turn worm nut.

- b. Check to make sure mill head is perpendicular to worktable.

- c. Set up a dial indicator in a collet and secure using draw bar (refer to Figure 9).

- d. Place spindle drive in neutral.

- e. Set dial indicator plunger on worktable. Zero indicator.

- f. Rotate spindle 180 degrees (when rotating, raise dial indicator plunger by hand to prevent it from dropping into table T-slots).

- g. Read dial indicator – it should read zero. If not, loosen the four hex nuts and reposition mill head.

- h. Recheck perpendicularity using dial indicator. Repeat above procedure until dial indicator reads zero in both positions.

- i. When indicator reads zero, tighten ram adapter locking bolts (A, Figure 10).

## 12.3 Positioning ram

### 12.3.1 Sliding ram fore and aft

1. Loosen two bolts (A, Figure 11) that lock ram to its ways.

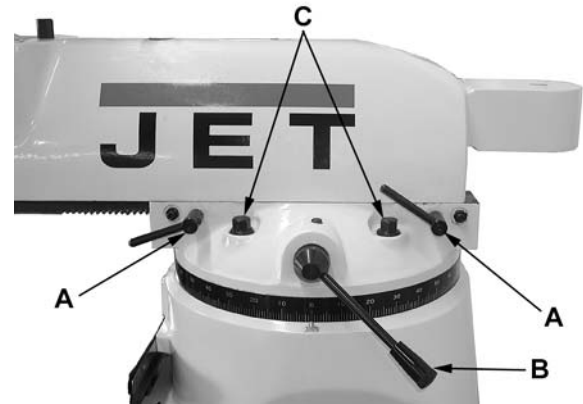


Figure 11: Ram positioning

2. Turn lever (B, Figure 11) to move ram on its ways.

3. When desired position is reached, lock bolts (A, Figure 11) securely.

### 12.3.2 Rotating ram on its turret

**WARNING** Make sure machine base is secured to floor before repositioning ram. The center of gravity can shift enough to cause machine to tip over, resulting in serious injury to operator and damage to machine.

1. Loosen four turret lock bolts (C, Figure 11). One-half (1/2) turn should be sufficient to allow turret to move.

**Note:** Use gentle hand pressure to avoid rapid movement.

2. Turn ram until spindle is in desired position. Use scale on turret to establish turn degree.

3. Tighten four turret lock bolts (C, Figure 12).

## 12.4 Feed trip adjustment

If feed trip mechanism does not disengage properly when micrometer nuts contact quill stop, adjust as follows.

Refer to Figure 12:

1. Loosen locknut (A, Figure 12).
2. Engage trip lever (I) by pulling away from head assembly.
3. Adjust micrometer nuts (H) against quill stop (L).
4. Slowly turn adjusting screw (B) with provided hex key until lever (I) trips.
5. Tighten locknut (A).



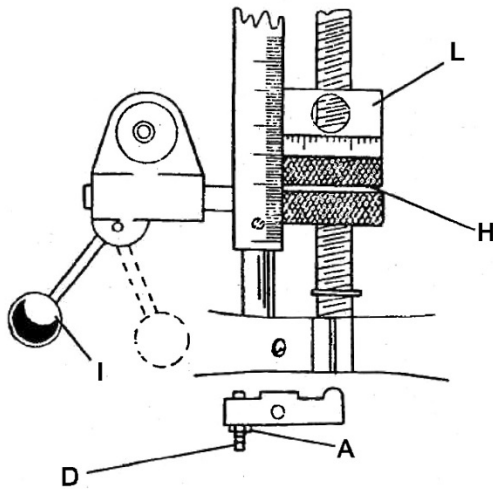


Figure 12: Feed trip adjustment

## 12.5 Gib adjustment

The table, saddle and knee are equipped with adjustable gibs. The gibs may require adjustment if unusual vibration is noted when locking mechanisms are off, or if you experience unusual vibration when spindle speed, tooth pitch or depth of cut do not account for the vibration.

NOTE: When adjusting gibs, always start with the knee first; adjust the saddle second, and adjust the table last.

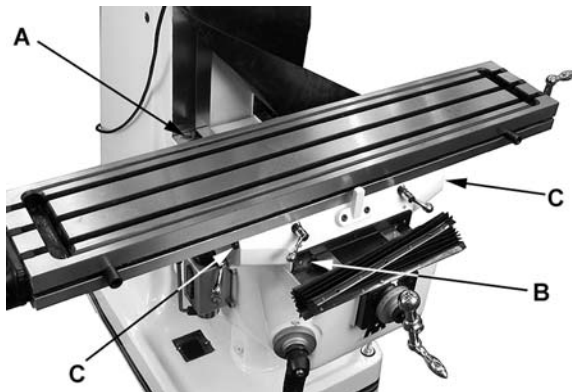


Figure 13: Gib locations

### 12.5.1 Knee gib

Loosen the two knee locking handles. The knee gib adjustment screw (A, Figure 13) is located under the chip wiper at rear of knee where it contacts the column. Remove way cover and wiper to expose gib adjustment screw. Tighten screw until slight drag is felt when turning knee crank.

### 12.5.2 Saddle gib

Loosen saddle locking handle. The saddle gib adjustment screw is on the left front of saddle (B, Figure 13). Tighten screw until slight drag is felt when turning cross-feed crank.

### 12.5.3 Table gib

Loosen table locking handles. The table gib adjustment screw (C, Figure 13) is on the left-hand side, beneath table. Tighten screw until slight drag is felt when turning longitudinal table cranks.

## 12.6 Table lead screw backlash adjustment

Refer to Figure 14.

The milling machine table is moved by a lead screw and nut for each machine axis. For proper operation, there must be clearance between lead screw and nut, which results in backlash. A second feed screw nut is provided to eliminate most of the backlash. The following procedures provide instructions for obtaining acceptable backlash.

### 12.6.1 Cross feed backlash adjustment

Refer to Figure 14:

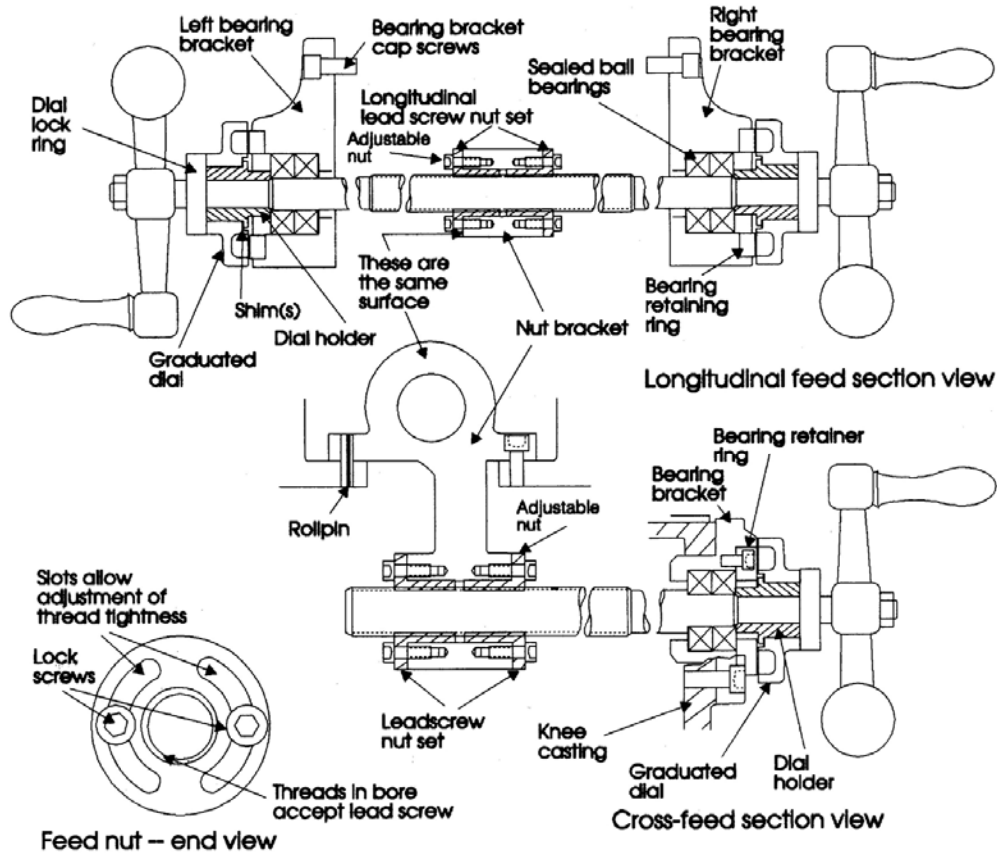
1. Use cross feed crank to move table to extreme rear of its travel (toward column).
2. Remove pleated way cover.
3. Open the two chip guards (#48/49, sect. 15.3.1) enough to expose cross feed adjustment nut (the nut toward rear of feed nut bracket is not adjustable; only front nut is adjustable).
4. Loosen the two nut locking screws.
5. Turn nut slightly to tighten it against opposing nut.
6. Tighten the two nut locking screws.
7. Using cross-feed crank, move table to middle position.
8. Set up a dial indicator to check cross feed backlash. Gently move cross feed crank back and forth while watching dial indicator. Backlash should be between 0.003 inch and 0.005 inch.
9. If necessary, repeat the above steps to set backlash.
10. Install pleated way cover.

### 12.6.2 Longitudinal backlash adjustment

Refer to Figure 14:

1. Only one of the longitudinal lead screw nuts can be adjusted; the other nut is fixed. The left hand nut is typically adjustable. This can be determined by looking at nut from underside of table.
2. Loosen the two nut locking screws.
3. Turn the nut slightly to tighten it against the opposing nut.

4. Tighten the two nut locking screws.
5. Using one of the longitudinal table cranks, move table to middle position.
6. Set up a dial indicator to check longitudinal backlash. Gently move crank back and forth while watching dial indicator. The backlash should be between 0.003 inch and 0.005 inch.
7. If necessary, repeat the above steps to set backlash.



### Table Lead Screw Components

Figure 14: Lead screw backlash adjustment

## 13.0 Maintenance

**⚠WARNING** Before any intervention on machine, disconnect it from electrical supply by pulling out plug or switching off main switch! Failure to comply may cause serious injury.

### 13.1 Lubrication

The milling machine is equipped with a “one-shot” lubrication system. The system lubricates the lead screws and ways. Oil cups provide lubrication for spindle bearings and back gear mechanism. Refer to Table 3 and Figures 15/16 for lubrication requirements and access points.

Key	Description	Action	Recommended Lubricant
A	Spindle bearings (oil cup)	Fill daily.	Mobil DTE Oil Light, or equivalent 10W machine oil
B	Gear case (oil cup)	Fill daily.	Mobilith AW1, or equivalent NLGI-1 grease
C	Knee and table slide ways, leadscrew (one-shot lube system)	Check oil daily – add if required. Pull lube handle every hour during operations.	Mobil Vactra Oil #2, or equivalent lubricant designed for slideways
D	Knee elevating screw (grease fitting)	Service weekly with lube gun.	Mobilith AW2, or equivalent NLGI-2 grease
	Table surface, and other exposed metal surfaces.	Wipe down after use. Light coat of oil for rust protection.	Mobil DTE Oil Light, or equivalent
E	Speed range selector	Oil cam ring slot weekly.	Mobil DTE Oil Light, or equivalent

Table 3: Lubrication Points

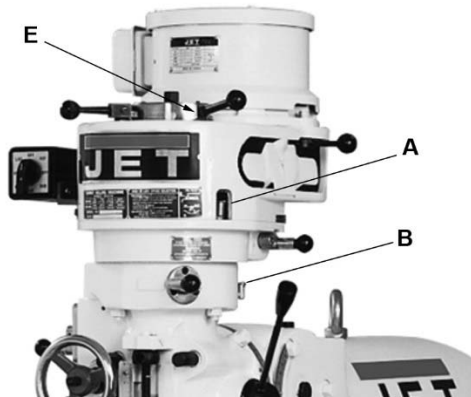


Figure 15

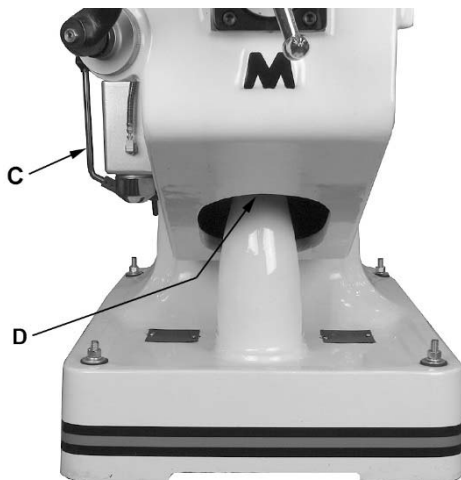


Figure 16

### 13.2 Periodic Maintenance Activities

During operation, periodically vacuum and brush chips and debris from machine.

Operate knee and table lead screws through full range of movement to evenly distribute lubricant (particularly when applied using the “one-shot” system).

Apply light machine oil to work table and other exposed metal surfaces to prevent rust or corrosion.

Remove belt guards to check pulleys and belts for unusual wear or grooving. *NOTE: Operators should vary speed occasionally to prevent formation of grooves on pulley surfaces.*

## 14.0 Belt position – speed ranges

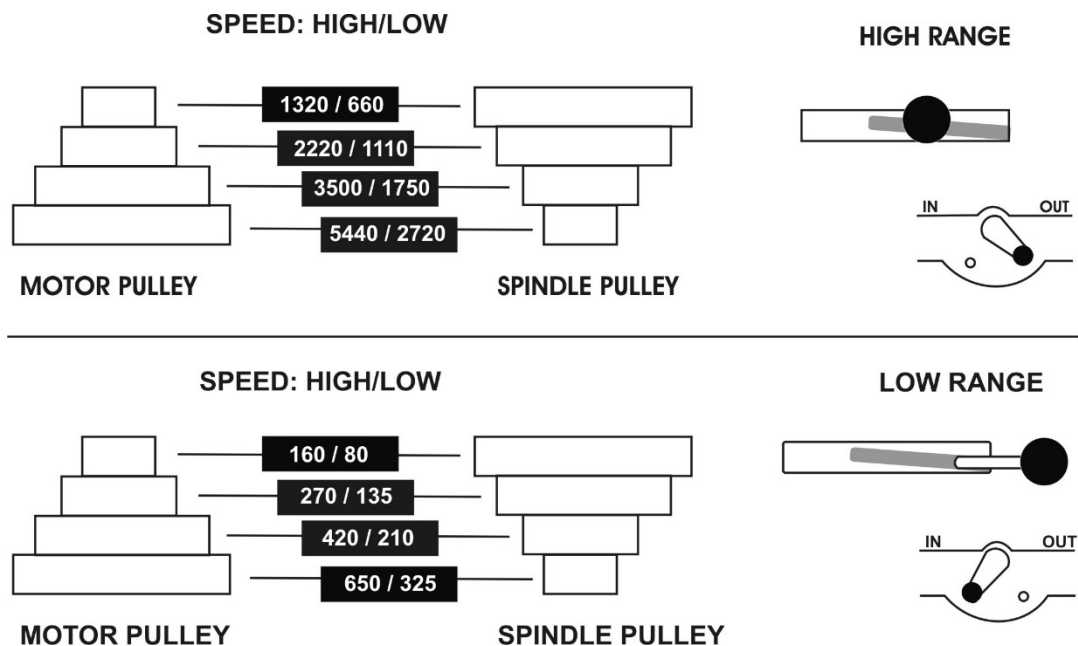


Figure 15: Belt position

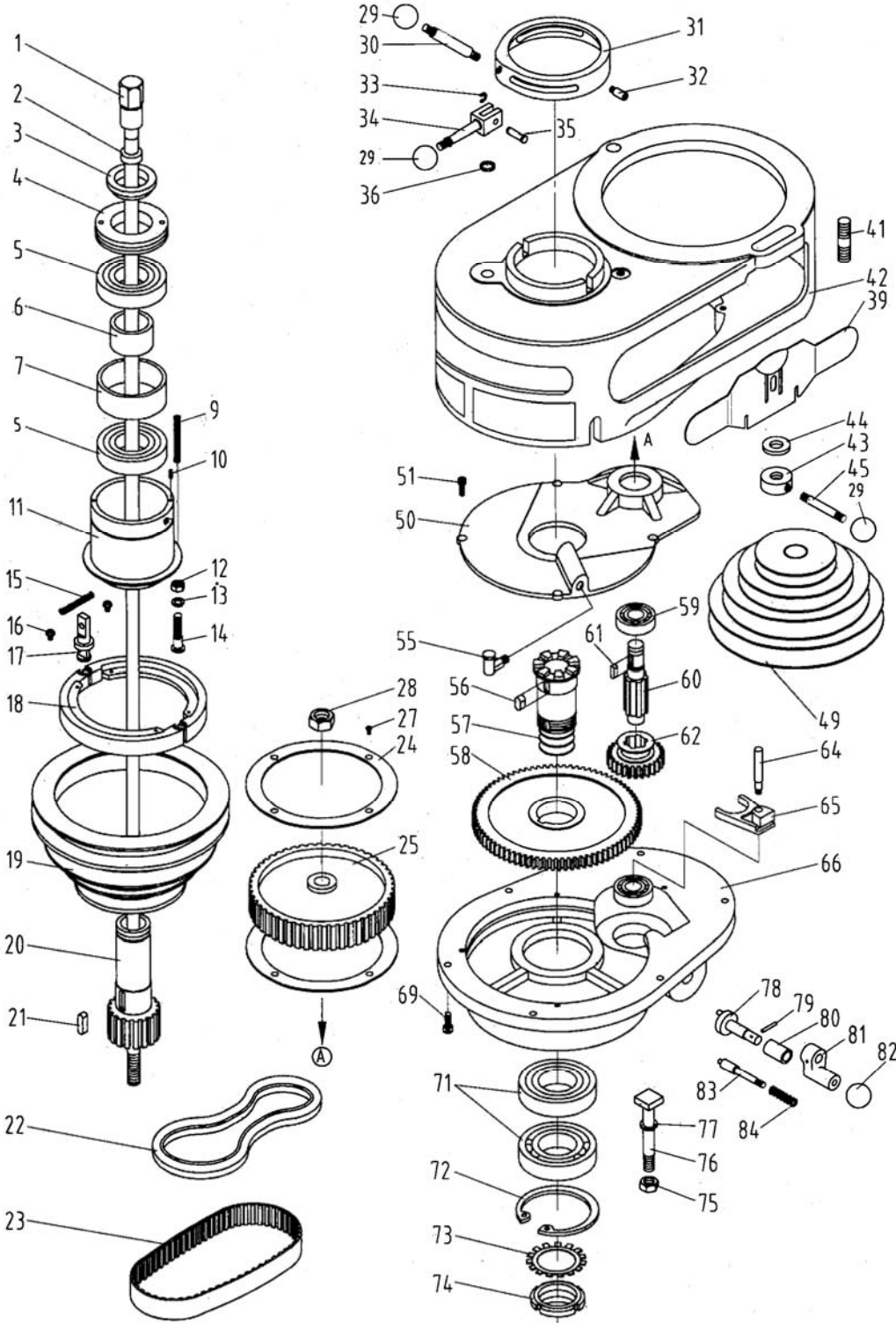
## 15.0 Replacement Parts

Replacement parts are listed on the following pages. To order parts or reach our service department, call 1-800-274-6848 Monday through Friday, 8:00 a.m. to 5:00 p.m. CST. Having the Model Number and Serial Number of your machine available when you call will allow us to serve you quickly and accurately.

Non-proprietary parts, such as fasteners, can be found at local hardware stores, or may be ordered from JET.

Some parts are shown for reference only, and may not be available individually.

### 15.1.1 Upper Head Assembly – Exploded View

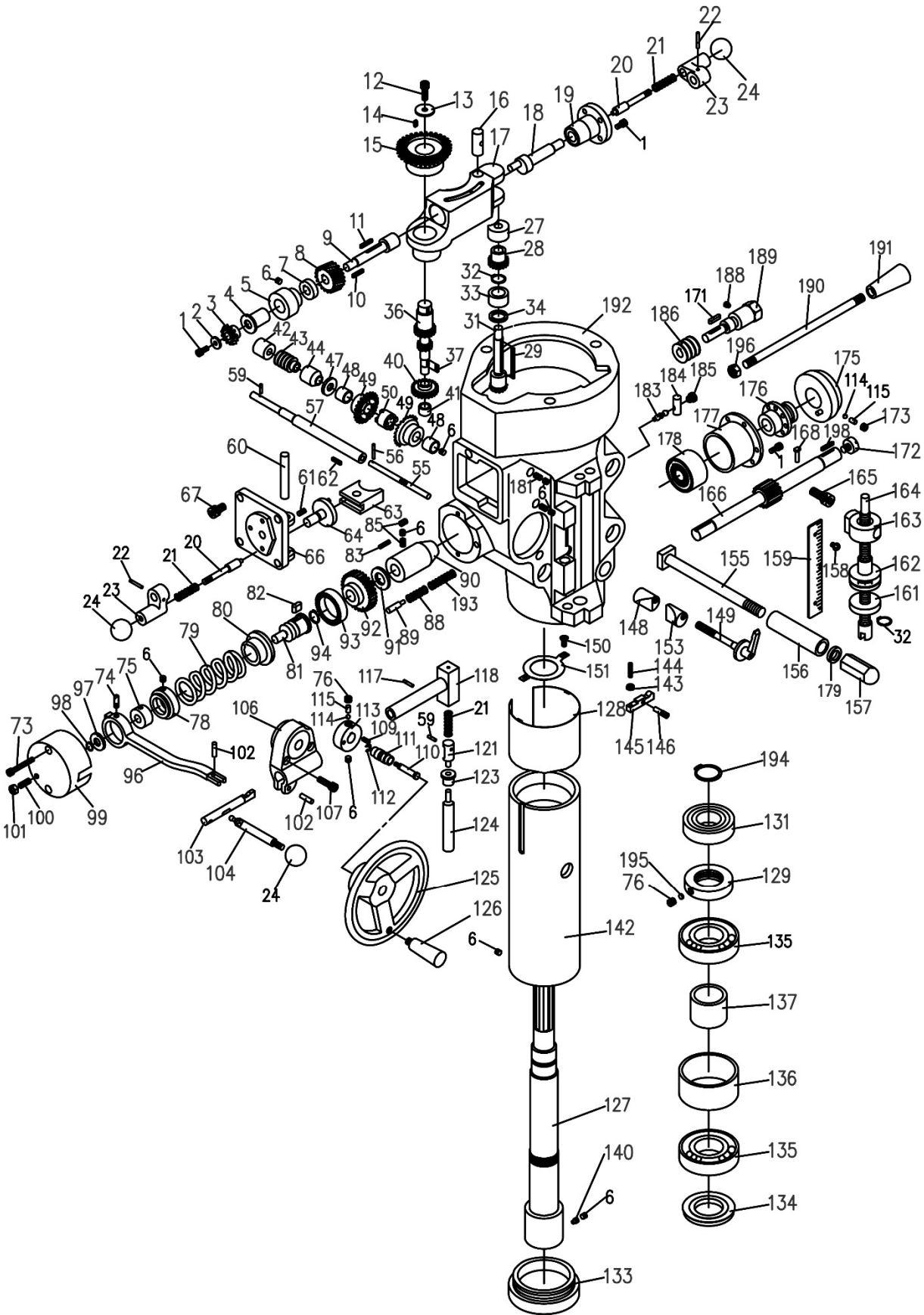


## 15.1.2 Upper Head Assembly – Parts List

Index No	Part No	Description	Size	Qty
1	LA-072	Draw Bar	R8	1
2	JTM4VS-A002B	Draw Bar Washer		1
3	LA-071	Upper Bearing Lock Nut		1
4	LA-070	Bearing Sleeve Lock Nut		1
5	BB-6207ZZ	Ball Bearing	6207-ZZ	2
6	LA-068	Upper Bearing Spacer (small)		1
7	LA-069	Upper Bearing Spacer (large)		1
9	LA-169	Compression Spring		4
10	TS-1520041	Set Screw	M3x10	4
11	LA-066	Spindle Pulley Bearing Sleeve		1
12	TS-0571021	Hex Jam Nut	5/16"	1
13	TS-0720081	Lock Washer	5/16"	1
14	LA-034	Brake Ring Screw		1
15	LA-036	Spring		2
16	BUTW31612	Screw	3/16"x1/2"	4
17	LA-037	Brake Lock Stud		1
18	LA-035	Brake Assembly		1
19	LA-065	Spindle Pulley (four-step)		1
20	LA-064	Spindle Pulley Hub		1
21	JTM1-021	Key	6x6x25mm	1
22	VB-A33	V-belt	A33	1
23	VB225L100	Timing Belt	225L	1
24	LA-027	Timing Belt Flange		2
25	LA-028	Timing Belt Pulley		1
27	JTM1-C27	Flat Head Screw		8
28	TS-0571072	Hex Jam Nut	5/8"-18NF	1
29	LA-006	Plastic Ball		3
30	LA-074	Spindle Clutch Lever		1
31	LA-073	Cam Ring		1
32	JTM1-032	Cam Ring Pin		2
33	JTM1-C33	E-Ring		1
34	LA-039	Brake Lock Handle		1
35	LA-038	Brake Lock Pin		1
36	TS-0680061	Washer	1/2"	1
37	JTM1-037	Spindle Speed Plate (JTM-1)		1
	JTM1-037A	Spindle Speed Plate (JTM-2)		1
39	JTM1-039A	Belt Guard		2
41	LA-012	Motor Mount Studs		2
42	LA-015G	Belt Housing		1
43	LA-007	Motor Lock Nut		2
44	LA-008	Washer		1
45	LA-009	Motor Lock Nut Handle		4
49	LA-011	Motor Pulley (four-step)		1
50	LA-013G	Gear Housing Cover		1
51	JTM1-C51	Hex Socket Cap Screw	M5x14	4
55	JTM1-055	Oil Cup		1
56	JTM1-C56	Key		1
57	LA-062	Spindle Gear Hub		1
58	LA-061	Spindle Bull Gear Assembly		1
59	BB-6203ZZ	Ball Bearing		1
60	LA-026	Shaft		1
61	JTM1-061	Key	5x5x15mm	1
62	LA-025	Gear		1
63	BB-6203ZZ	Ball Bearing		1
64	LA-032	Dowel Pin		1
65	LA-031	Back Gear Shifter Fork		1
66	LA-014G	Gear Housing		1
69	TS-1503041	Hex Socket Cap Screw	M6x16	6
71	BB-6208ZZ	Ball Bearing		2
72	JTM1-C72	Snap Ring		1

Index No	Part No	Description	Size	Qty
73	JTM1-C73	Lock Washer		1
74	LA-059	Bearing Lock Nut		1
75	JTM1-C75	Hardened Nut	7/16"	1
76	LA-045	T-Bolt		3
77	JTM1-C77	Bolt Washer		3
78	LA-001	Shift Crank		1
79	JTM-C79	Spring Pin		1
80	LA-044	Back Gear Shift Bushing		1
81	LA-003	Shaft Crank Handle		1
82	LA-006	Plastic Ball		1
83	LA-004	Gearshift Plunger		1
84	LA-005	Compression Spring		1
	JTM1-M2	Motor (not shown)	2HP 3PH 220V	1
	JTM1-598	Fwd/Rev Switch (not shown)	for 3PH, 2/4P	1
	JTM1-598A	Switch Speed Plate (not shown)		1
	JTM1-598B	Switch Knob (not shown)		1
	JTM1-598C	Switch Bracket (not shown)		1
	JTM1-598D	Metal Switch Box (not shown)		1
	JTM2-M1	Motor (not shown)	2HP 1PH 115/230V	1
	JTM2-SC	Start Capacitor	500MFD, 125AC	1
	JTM2-598CP	Switch Assembly CP (not shown)		1
	JTM2-599	Fwd/Rev Switch (not shown)	for 1PH	1
	JTM2-599A	Switch Plate (not shown)		1
	JTM2-599B	Switch Plate Mounting Screw (not shown)		1
	JTM2-599C	Motor – Switch Wiring Harness (not shown)		1
	BD1325R-X02	Centrifugal Switch (not shown)		1

15.2.1 Head Assembly – Exploded View





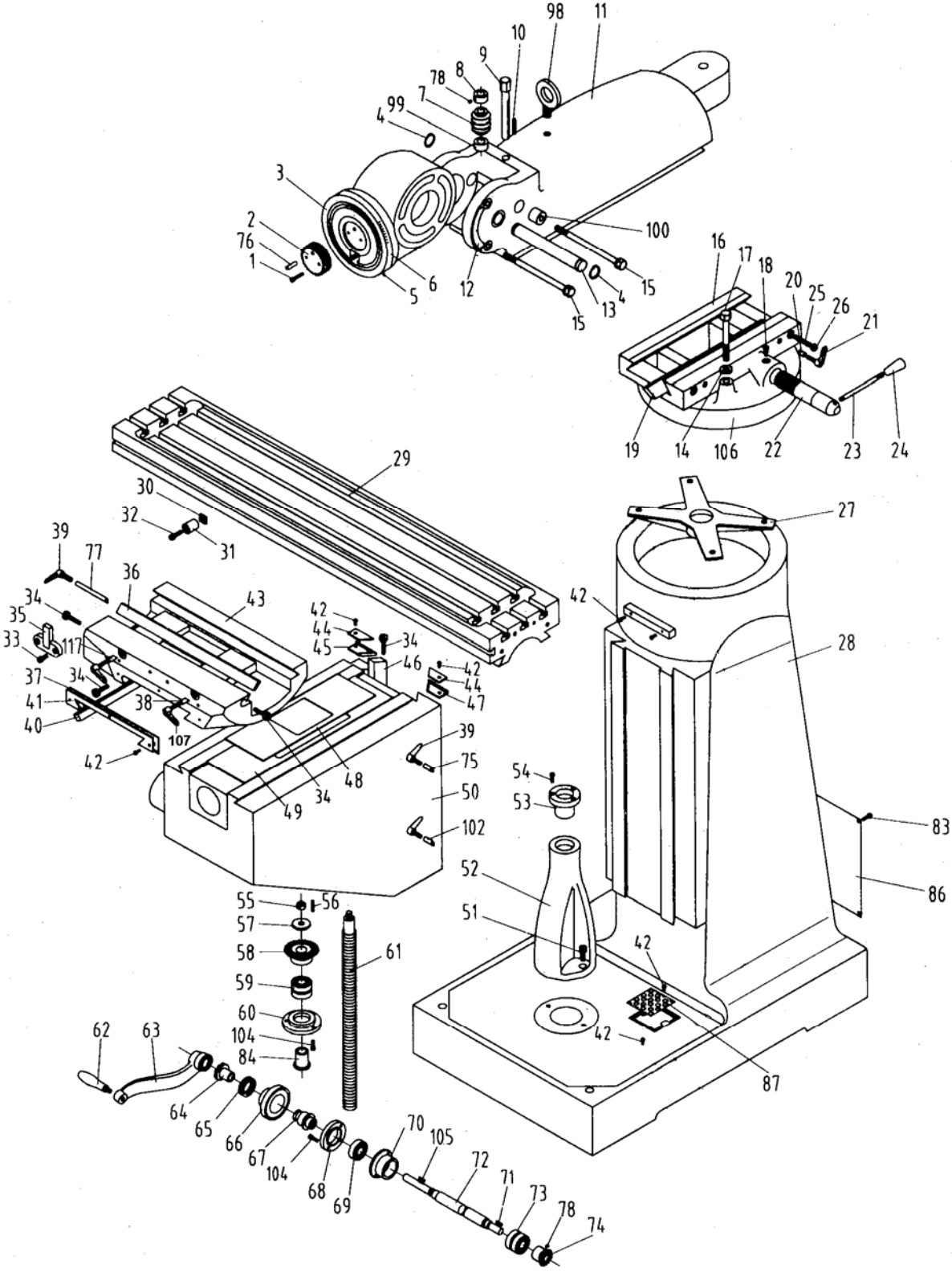
## 15.2.2 Head Assembly – Parts List

Index No	Part No	Description	Size	Qty
	LA-166A	Worm Gear Cradle Assembly (includes #1-17,36,37,40)		1
1	TS-1533042	Screw	M5x10	6
2	HA-002	Bevel Pinion Washer		1
3	HA-003	Feed Gear		1
4	LA-161	Shaft Sleeve		1
5	LA-162	Worm Cradle Bushing		1
6	TS-1523011	Set Screw	M6x6	9
7	LA-163	Worm Gear Spacer		1
8	LA-164	Feed Drive Worm Gear		1
9	LA-165	Worm Gear Shaft		1
10	HA-010	Worm Shaft Key	3x3x8mm	1
11	HA-011	Key	3x3x20mm	1
12	HA-012	Lock Nut	M6x16	1
13	HA-013	Washer		1
14	HA-014	Cluster Gear key	3x3x8.5	1
15	LA-154	Feed Reverse Bevel Gear		1
16	LA-167	Feed Engage Pin		1
17	LA-166	Worm Gear Cradle		1
18	LA-033	Worm Gear Throw-out		1
19	LA-002	Shift Sleeve		1
20	LA-004	Plunger		2
21	LA-005	Spring		3
22	HA-022	Spring Pin	3x22mm	2
23	LA-003	Cam Rod		2
24	LA-006	Plastic Ball		3
27	LA-147	Upper Bushing		1
28	LA-144	Cluster Gear Assembly		1
29	HA-029	Cluster Gear Key	3x3x45mm	1
31	LA-143	Cluster Gear Shaft		1
32	HA-032	Snap Ring		2
33	LA-142	Bevel Gear Bushing		1
34	LA-141	Thrust Spacer		1
36	LA-156	Feed Drive Gear		1
37	HA-037	Key	3x3x10mm	1
40	LA-157	Feed Drive Gear		1
41	HA-041	Needle Bearing		1
42	LA-168	Bushing		1
43	LA-139	Worm		1
44	LA-138	Feed Worm Shaft Bushing		1
47	LA-137	Bevel Gear Thrust Spacer		1
48	LA-134	Bushing		2
49	LA-135	Feed Reverse Bevel Gear		2
50	LA-136	Feed Reverse Clutch		1
55	LA-132	Reverse Clutch Rod		1
56	HA-056	Spring Pin	3x20mm	1
57	LA-133	Feed Worm Shaft		1
59	HA-059	Spring Pin	3x12mm	2
60	LA-150	Feed Shift Rod		1
61	TS-1522031	Set Screw	M5x10	1
62	HA-062	Key	3x3x15mm	1
63	LA-149	Feed Gear Shift Fork		1
64	LA-151	Cluster Gear Shift Crank		1
66	LA-148	Cluster Gear Cover		1
67	TS-1504011	Hex Socket Cap Screw	M8x10	4
73	TS-1502081	Hex Socket Cap Screw	M5x35	2
74	LA-081	Clutch Ring Pin		2
75	LA-080	Clutch Ring		1
76	TS-1524011	Set Screw	M8x8	1
78	LA-082	Overload Clutch Lookout		1
79	LA-083	Safety Clutch Spring		1

Index No	Part No	Description	Size	Qty
80	LA-084	Overload Clutch		1
81	LA-085	Overload Clutch Sleeve		1
82	LA-090	Key		1
83	TS-1532052	Pan Head Machine Screw	M4x16	3
85	TS-1523031	Set Screw	M6x10	2
88	LA-169	Spring		1
89	LA-089	Spring Plunger		1
90	LA-123	Pinion Shaft Bushing		1
91	LA-122	Spacer		1
92	LA-087	Overload Clutch Worm Gear (Brass)		1
93	LA-086	Overload Clutch Ring		1
94	HA-094	Snap Ring		1
96	LA-079	Trip Lever		1
97	LA-078	Washer		1
98	HA-098	Snap Ring		1
99	LA-076	Clutch Arm Cover		1
100	TS-1523051	Set Screw	M6x10	1
101	HA-101	Lock Nut		1
102	LA-077	Pin		3
103	LA-091	Cam Rod		1
104	LA-100	Trip Handle		1
106	LA-092	Feed trip Bracket		1
107	TS-1503051	Hex Socket Cap Screw	M6x20	2
109	HA-109	Key	3x3x10mm	1
110	LA-130	Feed Reverse Knob Stud		1
111	LA-131	Reverse Knob		1
112	HA-112	Snap Ring		1
113	LA-129	Handwheel Clutch		1
114	SB-3/16	Steel Ball	3/16"	2
115	HA-115	Spring		2
117	HA-117	Spring Pin		1
118	LA-093	Cam Rod Sleeve Assembly		1
121	LA-095	Trip Plunger		1
123	LA-121A	Bushing		1
124	LA-097	Feed Trip Plunger		1
125	LA-126	Handwheel (chrome)		1
	LA-126-BR	Handwheel (brushed finish)		1
126	LA-125	Handle (chrome)		1
	LA-125-BR	Handle (brushed finish)		1
127	LA-050A	Spindle		1
128	LA-060	Quill Skirt		1
129	LA-048	Lock Nut		1
131	BB-6206ZZ	Ball Bearing	6206-ZZ	1
133	LA-051	Nose Piece		1
134	LA-052	Spindle Shield		1
135	BB-7207C	Ball Bearing		2
136	LA-054	Bearing Spacer (large)		1
137	LA-053	Bearing Spacer (small)		1
140	LA-172	Set Screw		1
142	LA-058	Quill		1
143	TS-154021	Hex Nut	M4	1
144	TS-1521071	Set Screw	M4x20	1
145	LA-098	Feed Trip Lever		1
146	LA-099	Trip Lever Pin		1
148	LA-111	Quill Lock Sleeve		1
149	LA-109	Lock Handle (chrome)		1
	LA-109-BR	Lock Handle (brushed finish)		1
150	HA-150	Screw	M5x10	2
151	LA-057	Felt Washer		1
153	LA-110	Quill Lock Sleeve		1
155	LA-043	T-Bolt Assembly		4
156	LA-046	Spacer		4

Index No	Part No	Description	Size	Qty
157	LA-040	Lock Nut		4
158	HA-158	Screw	M4x5	2
159	LA-118	Micrometer Scale		1
161	LA-115	Quill Micro-Stop Nut		1
162	LA-116	Micrometer Nut		1
163	LA-117	Quill Stop Knob		1
164	LA-112	Quill Micro-Screw		1
165	LA-165A	Screw	3/8-24UNF x 3/4	1
166	LA-101	Quill Pinion Shaft		1
168	LA-101A	Pin		1
171	HA-171	Key	4x4x18 mm	1
172	LA-107	Pinion Shaft Hub		1
173	TS-0270021	Set Screw	5/16"x1/4"	1
175	LA-106	Hub		1
176	LA-104	Hub Sleeve		1
	LA-102/3	Clock Spring Assembly (includes #177,178)		1
177	LA-103	Spring Cover		1
178	LA-102	Clock Spring		1
179	TS-0680061	Washer	1/2"	1
181	TS-1523011	Set Screw	M6x6	2
183	LA-113	Lever		1
184	LA-114	Plunger		1
185	LA-124	Screw		1
186	LA-018	Worm Gear		1
188	LA-173	Set Screw		1
189	LA-019	Worm Shaft		1
190	LA-105	Handle		1
191	LB-017	Plastic Ball		1
192	LA-016G	Quill Housing		1
193	HA-193	Spring	10x20mm	1
194	RINS30	Snap Ring		1
195	BH1291	Lock Washer		1
196	TS-1524011	Set Screw	M8x8	1
197	TS-0561031	Hex Nut	3/8"	1
198	KF2R3320	Key	3x3x20mm	1

15.3.1 Base Assembly – Exploded View

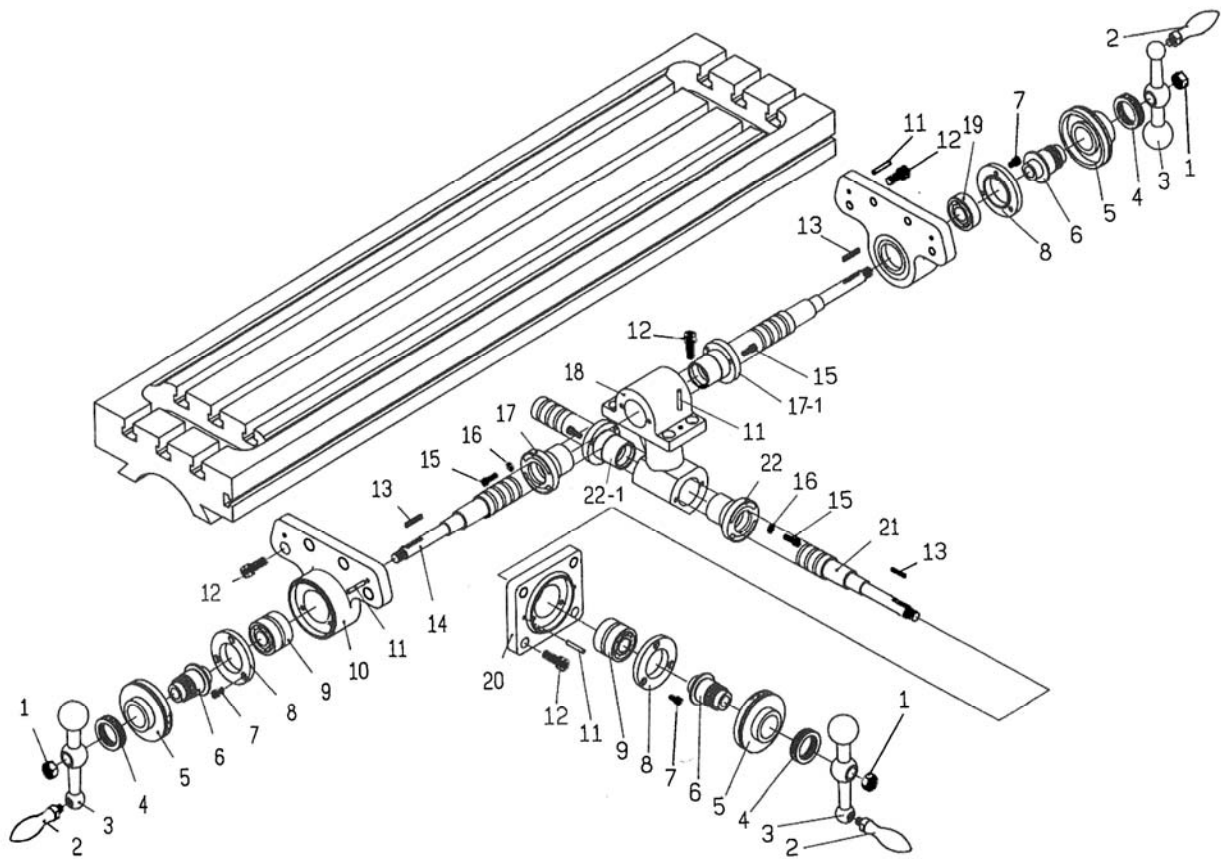


### 15.3.2 Base Assembly – Parts List

Index No	Part No	Description	Size	Qty
1	LB-001	Hex Socket Cap Screw	M6 x30	2
2	LB-023	Gear		1
3	LB-020G	Ram Adapter		1
4	LB-004	Snap Ring	S-28	2
5	LB-005	Rivet		15
6	LB-027	Adapter Scale		1
7	LB-035	Worm		1
8	LB-036	Worm Thrust Washer		1
9	LB-034	Shaft		1
10	LB-100	Key	5 x 5 x 40	1
11	MB-026G	Ram		1
12	LB-032	Angle Plate		1
13	LB-028	Adapter Pivot Stud		1
14	LB-031	Washer		4
15	LB-030	Adapter Locking Bolt		3
16	MB-009	Turret		1
17	LB-030	Lock Bolt		4
18	LB-041	Ram Pinion Screw		1
19	LB-011	Ram/Turret Gib		1
20	LS-005E	Lock Plunger		2
21	LB-014	Ram Lock Bolt Handle		2
22	LB-015	Ram Pinion		1
23	LB-016	Handle		1
24	LB-017	Black Plastic Ball		1
25	TS-0211131	Set Screw	3/8 x 2	2
26	TS-0561031	Hex Nut	3/8	2
27	MB-008	Spider		1
28	MB-000AG	Column		1
29	JTM1-330A	Table		1
30	LT-027	Stop Nut		2
31	LT-028	Table Stop		2
32	TS-1504071	Hex Socket Cap Screw	M8 x 35	2
33	TS-1504031	Hex Socket Cap Screw	M8 x 16	2
34	LK-002	Gib Adjusting Screw		6
35	LS-003	Table Stop Bracket		1
36	LS-008	Saddle/Table Gib		1
37	LS-013	Felt Wiper		2
38	LS-005B	Table Lock Plunger	16mm	2
39	LS-011	Saddle Lock Handle		5
40	LS-001	Saddle/Knee Gib		1
41	LS-014	Wiper Plate		2
42	LS-042	Screw		16
43	MS-000G	Saddle		1
44	LS-017A	Wiper Felt		2
45	LS-016A	Felt (left)		1
46	LK-001	Knee/Column Gib		1
47	LS-016	Knee/Wiper Felt (right)		1
48	LK-007	Upper Chip Guard		1
49	LK-006	Lower Chip Guard		1
50	MK-000G	Knee		1
51	TS-1505031	Hex Socket Cap Screw	M10 x 25	2
52	MK-012G	Elevating Screw Housing		1
53	MK-014	Elevating Screw Nut		1
54	TS-1503041	Hex Socket Cap Screw	M6 x 16	8
55	TS-0561052	Hex Nut	1/2-20UNF	1
56	LK-058	Key	4 x 4 x 30	1
57	LK-022	Washer		1
58	MK-021	Bevel Gear		1
59	BB-6306ZZ	Ball Bearing		2

Index No	Part No	Description	Size	Qty
60	MK-019	Bearing Retainer Ring		1
61	MK-016	Elevating Screw		1
62	LK-037	Handle (chrome)		1
	LK-037-BR	Handle (brushed finish)		1
63	LK-036	Elevating Crank		1
64	LK-035	Clutch Insert		1
65	LK-034	Dial Lock Nut		1
66	LK-033	Dial		1
67	LK-032	Dial Holder		1
68	LK-030	Bearing Retainer Ring		1
69	BB-6204ZZ	Ball Bearing		1
70	LK-029	Bearing Cap		1
71	LK-075	Key	4 x 4 x 18	2
72	MK-028	Elevating Shaft		1
73	BB-6204ZZ	Ball Bearing		2
74	MK-024	Bevel Pinion		1
75	LK-003	Plunger		1
76	LK-081	Spring Pin	8 x 30	1
77	LS-010	Saddle Lock Plunger		1
83	MB-090	Screw	1/4 x 3/8	4
84	MK-038	Bushing		1
86	MB-004	Cover		1
87	MB-041	Strainer Screen		2
98	RIBW34	Hoisting Ring		1
99	LB-036	Worm Thrust Washer		1
100	LB-033	Thrust Washer		1
102	LK-003	Lock Plunger		1
104	TS-1503051	Hex Socket Cap Screw	M6 x 20	6
105	KEY3320	Key	3x3x20mm	1
106	MB-00BG	Turret Scale		1
107	LS-006B	Saddle Ratcheting Lever (chrome)		3
	LS-006B-BR	Saddle Ratcheting Lever (brushed finish)		3
117	LS-005A	Table Lock Plunger – L		3
	JTM1-WCF	Flat Way Cover (not shown)		1
	JTM1-WCA	Pleated Way Cover (not shown)		1
	JTM4VS-TB	Tool Box Kit Complete (not shown)		1
	STRIPE-1-3/4	JET Stripe	1-3/4"W	per ft.

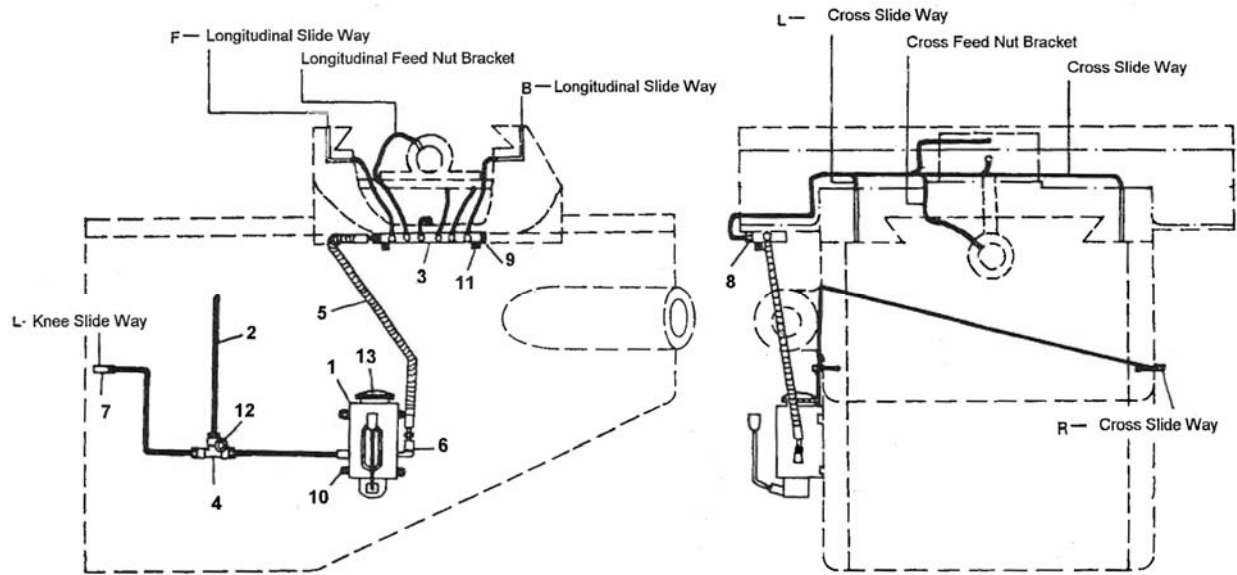
### 15.4.1 Table Leadscrew Assembly – Exploded View



### 15.4.2 Table Leadscrew Assembly – Parts List

Index No	Part No	Description	Size	Qty
1	TS-0571052	Jam Nut	1/2-20UNF	3
2	LT-010C	Handle		3
	LT-010C-CHR	Chrome Surface Handle		3
3	LT-010B	Ball Crank		3
	LT-010B-CHR	Chrome Surface Ball Crank		3
4	LT-009	Dial Lock Nut		3
5	LT-008	Dial		3
6	LT-007	Dial Holder		3
7	TS-1503021	Hex Socket Cap Screw	M6 x 12	3
8	LT-005	Bearing Retainer Ring		3
9	BB-6204ZZ	Ball Bearing		3
10	LT-002	Bearing Bracket		2
11	LS-009	Spring Pin	5 x 30	8
12	TS-1505031	Hex Socket Cap Screw	M10 x 25	16
13	BD920-A04	Key	3 x 3 x 25	3
14	MT-015B	Longitudinal Feed Screw		1
15	TS-1503041	Hex Socket Cap Screw	M6 x 16	10
16	TS-1550051	Washer	M7	4
17	MT-019B	Feed Screw Nut Set (includes #17-1)		1
18	MT-017	Feed Nut Bracket		2
19	BB-6204ZZ	Ball Bearing		1
20	MT-025	Cross Feed Bearing Bracket		1
21	MT-024	Cross Feed Screw		1
22	MT-022	Cross Feed Nut Set (includes #22-1)		2

### 15.5.1 One-Shot Lubrication System – Exploded View



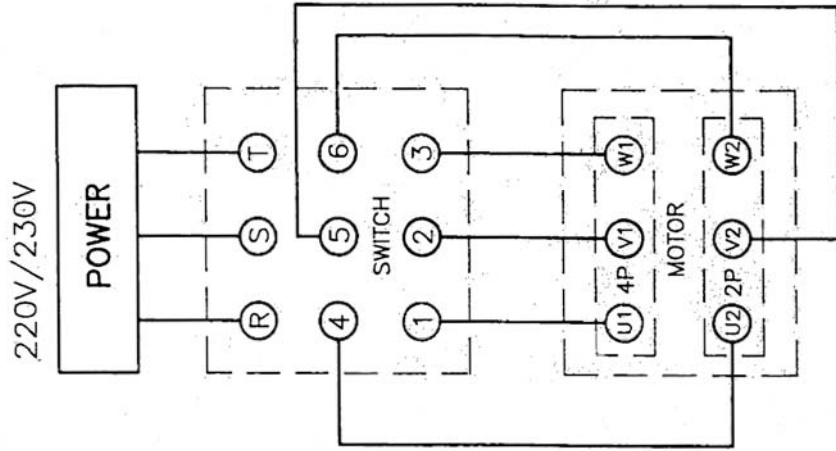
### 15.5.2 One-Shot Lubrication System – Parts List

Index No	Part No	Description	Size	Qty
.....	LT-8-A	Hand Oiler Assembly (includes #1,1A,4,5,9)		1
1	LT-8	Hand Oiler		1
1A	LT-8-SG	Hand Oiler Sight Glass (with gasket)		1
2	ALMP-04	Aluminum Pipe	3.5M	1
.....	ALMP-04-VS	Oil Line Set w/ Fittings		1
3	DB-4	Oil Regulating Distributor		1
4	PKD-4	T-Joint		1
5	FHC-404	Flexible Steel Tube		1
6	PH-1-1/PB-4	Check Joint		2
7	PH-4	Elbow Joint		2
8	PA-4/PB-4	Straight Joint		14
9	PG-004	Union		1
10	JTM4VS-BUTW1458	Screw		4
11	TS-1503061	Hex Socket Cap Screw	M6 x 25	2
12	TS-1502061	Hex Socket Cap Screw	M5 x 25	1
13	LT-8-C	Oil Cap		1

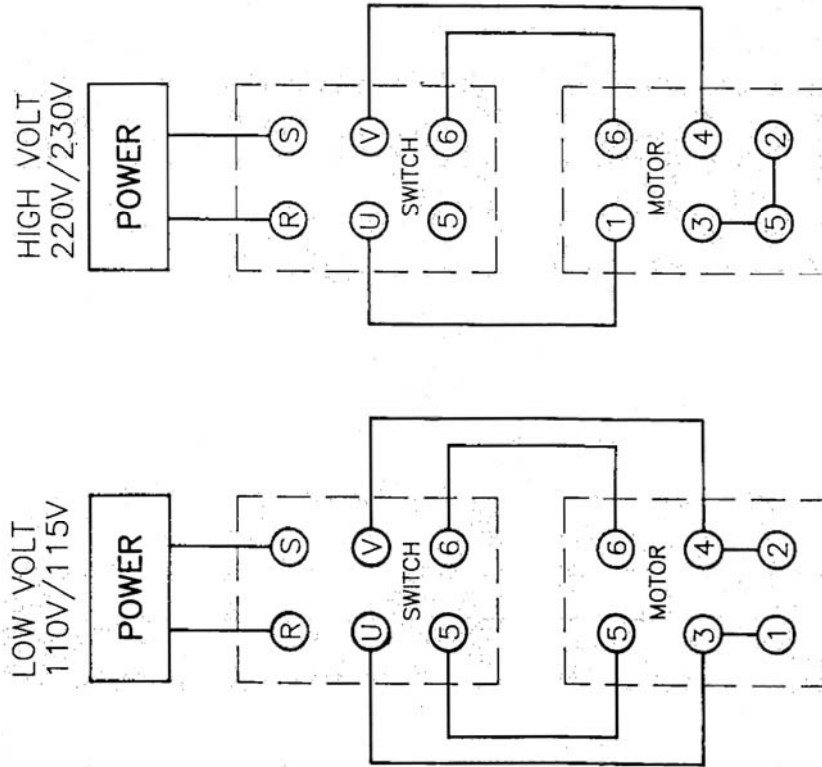


# 16.0 Electrical Connections

Model No.: JTM-1  
3-PHASE 2/4POLES WIRING DIAGRAM



Model No.: JTM-2  
1-PHASE WIRING DIAGRAM



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