



| | |
|-----------------|-----------------|
| Model No.: | Stock No.: |
| Serial No.: | |
| Purchased From: | |
| Date Purchased: | Date Installed: |

Operating Instructions and Parts Manual

Step Pulley Turret Mill

Model JTM-1, JTM-2



Model JTM-1 shown

WALTER MEIER (Manufacturing) Inc.

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1.0 Warranty and service

Walter Meier (Manufacturing) Inc., warrants every product it sells. If one of our tools needs service or repair, one of our Authorized Service Centers located throughout the United States can give you quick service. In most cases, any of these Walter Meier Authorized Service Centers can authorize warranty repair, assist you in obtaining parts, or perform routine maintenance and major repair on your JET® tools. For the name of an Authorized Service Center in your area call 1-800-274-6848.

MORE INFORMATION

Walter Meier is consistently adding new products to the line. For complete, up-to-date product information, check with your local Walter Meier distributor, or visit jettools.com.

WARRANTY

JET products carry a limited warranty which varies in duration based upon the product (MW = Metalworking, WW = Woodworking).

| | | | | | | | | | | | |
|--|------------------------------|---|------------------------------|---|------------------------------|-------------------|------------------------------|---|---|-------------------------------------|--|
| 90 DAY WARRANTY | 1 YEAR WARRANTY | Body Repair Kits Bottle Jacks Cable Pullers Cold Saws Hoists-Air Hoists-Electric Metal forming Mill/Drills Milling Machines MW Bandsaws MW Drill Presses MW Finishing Equipment MW Lathes MW Precision Vises | 2 YEAR WARRANTY | Palet Trucks Rigging Equip. Service Jacks Stackers Surface Grinders Tapping Trolleys-Air Trolleys-Electric Web Slings Winches-Electric | 3 YEAR WARRANTY | WW Benchtop Tools | 5 YEAR WARRANTY | Beam Clamps Chain Hoist- Manual Lever Hoists Pullers-JCH Models Scissor Lift Tables Screw Jacks Trolleys-Geared Trolleys-Plain Winches-Manual WW Air Filtration WW Bandsaws WW Buffers | WW Drill Presses WW Dust Collectors WW Dust Filters WW Dust Fittings WW Jointers WW Lathes WW Planers WW Sanders WW Shapers WW Tablesaws | LIFE LIFETIME WARRANTY | Fastening Tools Mechanics Hand Tools Striking Tools Vises (no -precision) Clamps |
| Warranty reverts to 1 Year Warranty if woodworking (WW) products listed above are used for industrial or educational purposes. | | | | | | | | | | | |

WHAT IS COVERED?

This warranty covers any defects in workmanship or materials subject to the exceptions stated below. Cutting tools, abrasives and other consumables are excluded from warranty coverage.

WHO IS COVERED?

This warranty covers only the initial purchaser of the product.

WHAT IS THE PERIOD OF COVERAGE?

The general JET warranty lasts for the time period specified in the product literature of each product.

WHAT IS NOT COVERED?

Five Year Warranties do not cover woodworking (WW) products used for commercial, industrial or educational purposes. Woodworking products with Five Year Warranties that are used for commercial, industrial or education purposes revert to a One Year Warranty. This warranty does not cover defects due directly or indirectly to misuse, abuse, negligence or accidents, normal wear-and-tear, improper repair or alterations, or lack of maintenance.

HOW TO GET SERVICE

The product or part must be returned for examination, postage prepaid, to a location designated by us. For the name of the location nearest you, please call 1-800-274-6848.

You must provide proof of initial purchase date and an explanation of the complaint must accompany the merchandise. If our inspection discloses a defect, we will repair or replace the product, or refund the purchase price, at our option. We will return the repaired product or replacement at our expense unless it is determined by us that there is no defect, or that the defect resulted from causes not within the scope of our warranty in which case we will, at your direction, dispose of or return the product. In the event you choose to have the product returned, you will be responsible for the shipping and handling costs of the return.

HOW STATE LAW APPLIES

This warranty gives you specific legal rights; you may also have other rights which vary from state to state.

LIMITATIONS ON THIS WARRANTY

WALTER MEIER (MANUFACTURING) INC., LIMITS ALL IMPLIED WARRANTIES TO THE PERIOD OF THE LIMITED WARRANTY FOR EACH PRODUCT. EXCEPT AS STATED HEREIN, ANY IMPLIED WARRANTIES OR MERCHANTABILITY AND FITNESS ARE EXCLUDED. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG THE IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU.

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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, Walter Meier (Manufacturing) Inc., 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. Some dust created by power sanding, sawing, grinding, drilling and other construction activities contain chemicals known to cause cancer, 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 face or dust masks that are specifically designed to filter out microscopic particles.

12. Do not operate this machine while tired or under the influence of drugs, alcohol or any medication.
13. Make certain the switch is in the OFF position before connecting the machine to the power supply.
14. Make certain the machine is properly grounded.
15. Make all machine adjustments or maintenance with the machine unplugged from the power source.
16. Workpiece must be attached or clamped to the table. Never hold a workpiece with your hand.
17. Use correct spindle speed and table feed for the particular job.
18. Do not start machine with cutter in contact with workpiece.
19. Disengage power feed when not in use.
20. 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.
21. 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.
22. 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.
23. Provide for adequate space surrounding work area and non-glare, overhead lighting.
24. Keep the floor around the machine clean and free of scrap material, oil and grease.
25. Keep visitors a safe distance from the work area. Keep children away.
26. Make your workshop child proof with padlocks, master switches or by removing starter keys.
27. Give your work undivided attention. Looking around, carrying on a conversation and "horse-play" are careless acts that can result in serious injury.

28. 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.
29. 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.
30. Use recommended accessories; improper accessories may be hazardous.
31. 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.
32. Turn off the machine before cleaning. Use a brush or compressed air to remove chips or debris — do not use your hands.
33. Do not stand on the machine. Serious injury could occur if the machine tips over.
34. Never leave the machine running unattended. Turn the power off and do not leave the machine until it comes to a complete stop.
35. Remove loose items and unnecessary work pieces from the area before starting the machine.
36. 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.
37. 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.

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 Walter Meier (Manufacturing) Inc. 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 years of trouble-free 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 Walter Meier. Walter Meier can also be reached at our web site: www.waltermeier.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

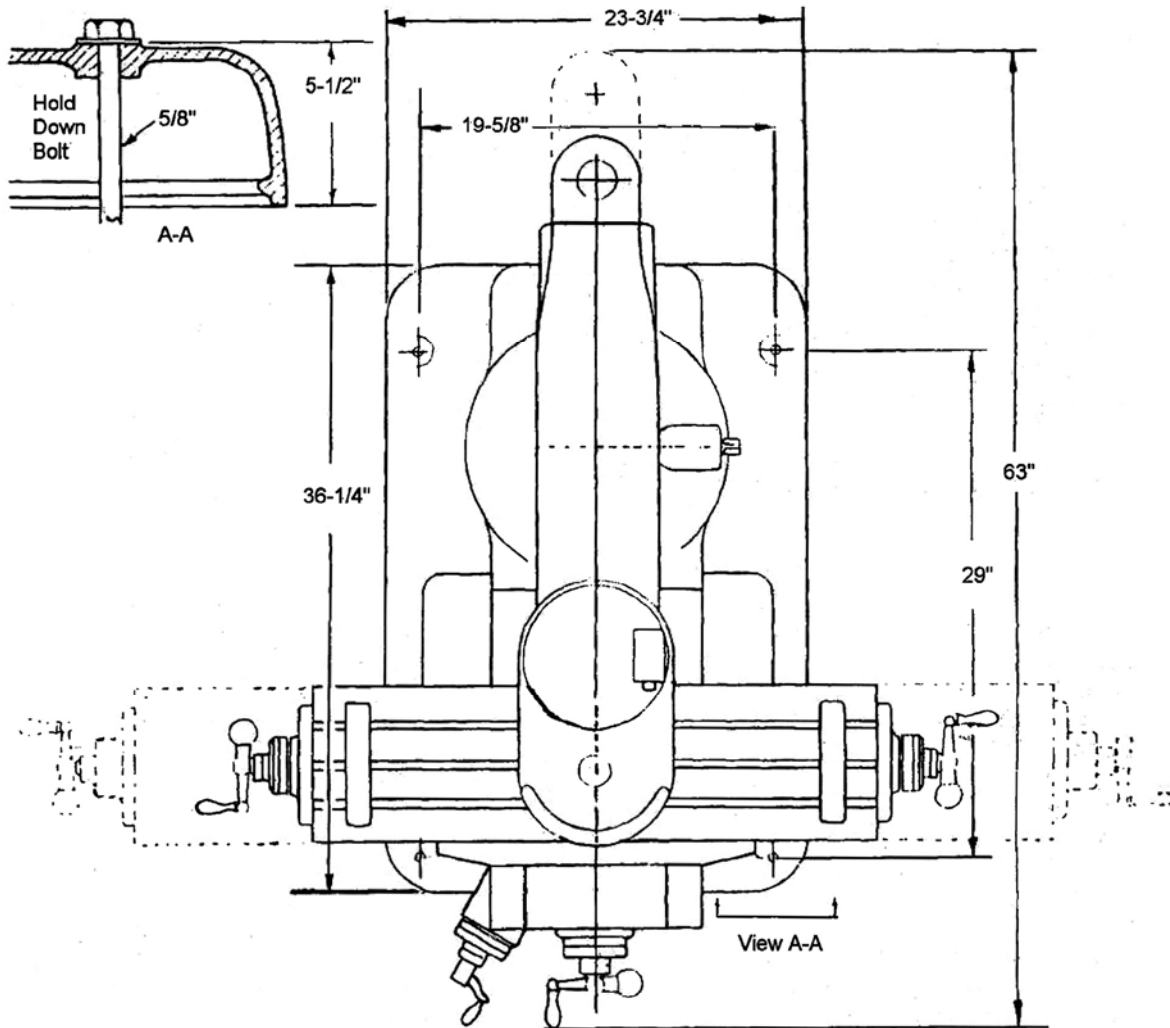


Figure 1

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, Walter Meier (Manufacturing) Inc., 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

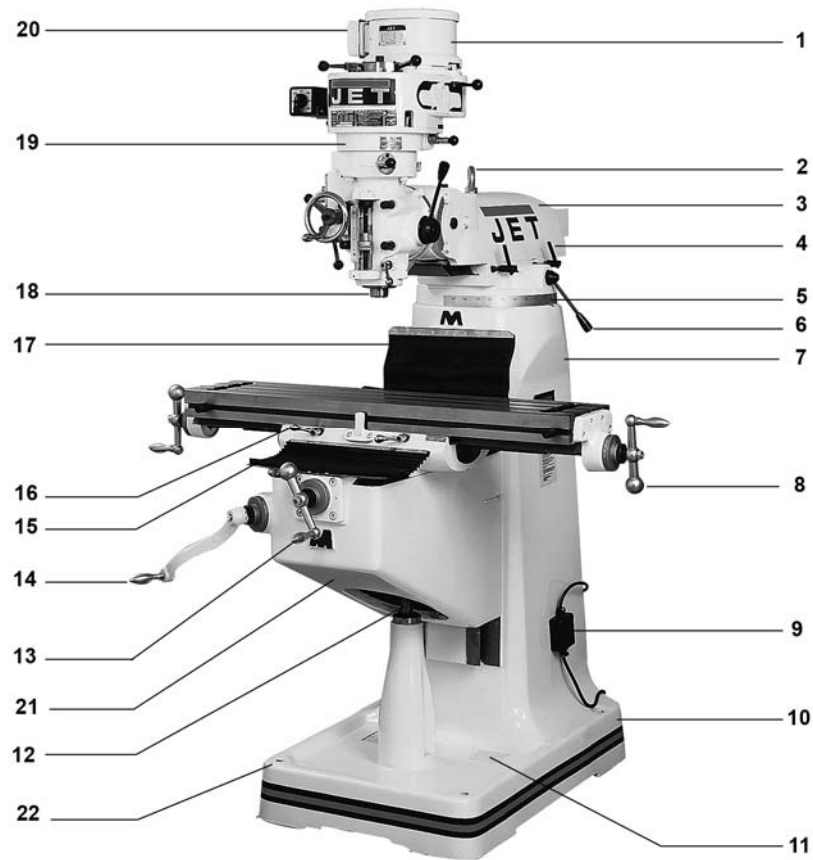
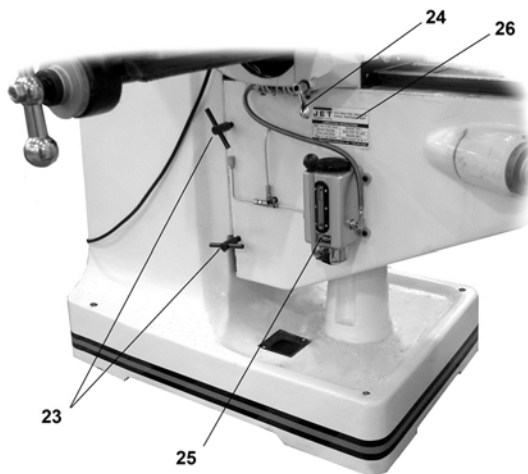


Figure 2: Features and Terminology (JTM-1 shown)



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. Knee crank handle
14. Crossfeed 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.

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.

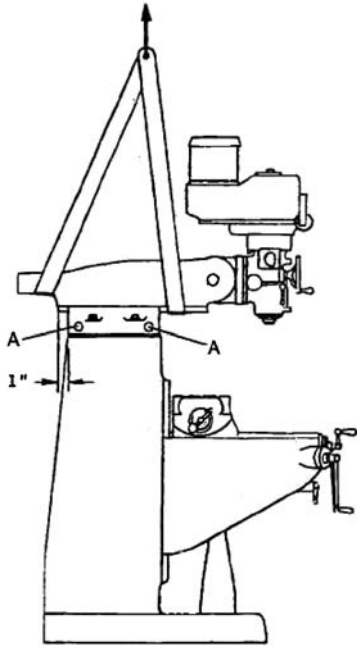


Figure 4: sling location

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:

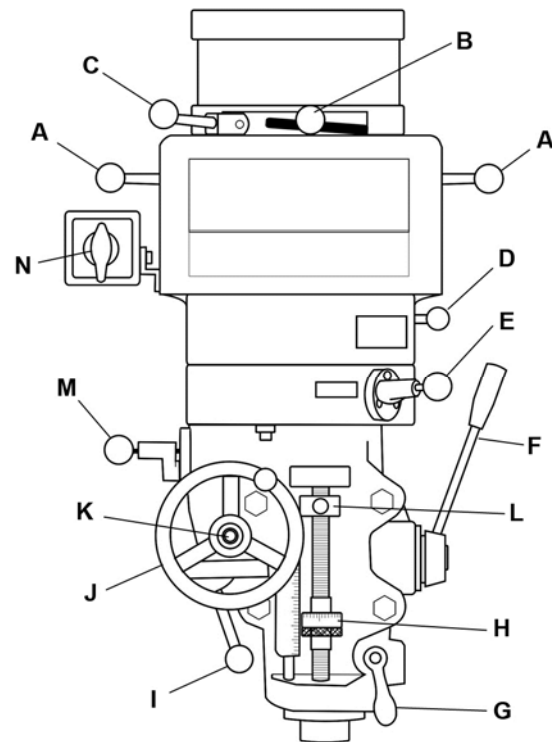


Figure 5: controls

- 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.

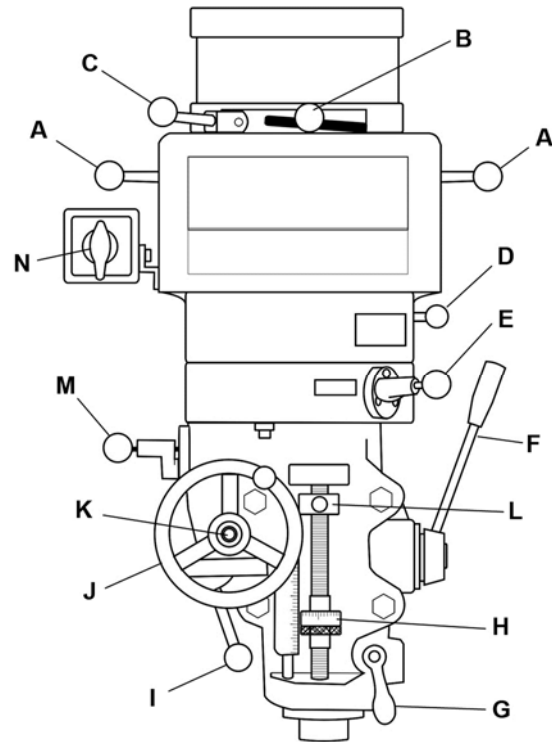


Figure 5 (repeated)

- 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).

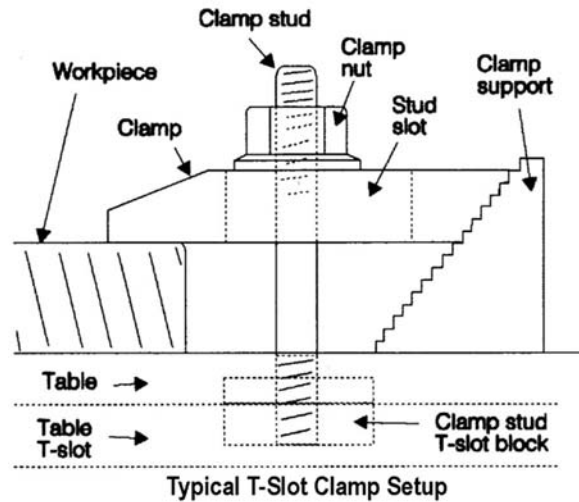


Figure 6

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.

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

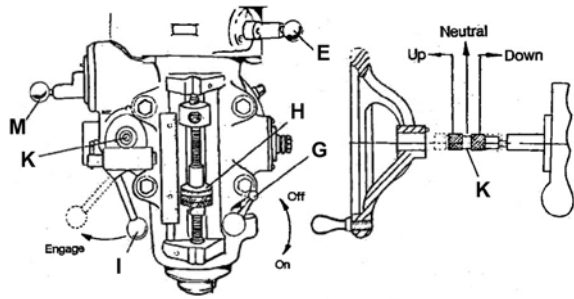


Figure 7

11.5 Setting up for automatic feed

Refer to Figure 8:

- Ensure quill lock (G, Figure 8) is loosened by rotating counterclockwise.
- Set micrometer dial (H) to desired depth.
- Engage auto quill feed lever (D) by pulling out lock knob and moving lever to left hole.
- Select feed rate (M).
- Select feed direction (K).
- 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.

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

- Set Feed Rate Lever (M) to the feed rate required for the tooling and material used.
- Place Quill Feed Engagement Lever (E) in the Engaged position.
- 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

- 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.

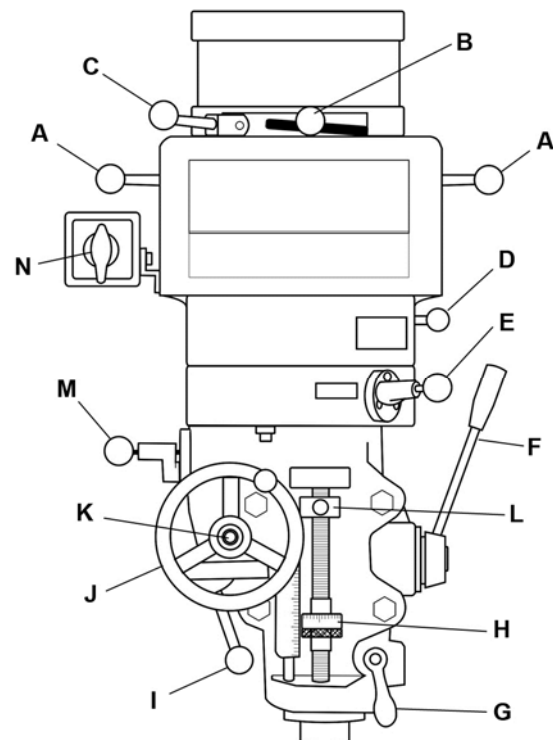


Figure 8

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 collect 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.

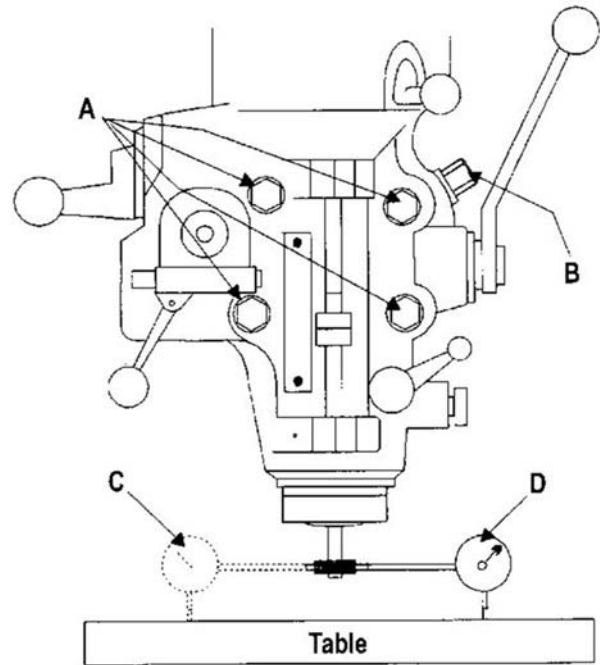


Figure 9

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.

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:

- 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.

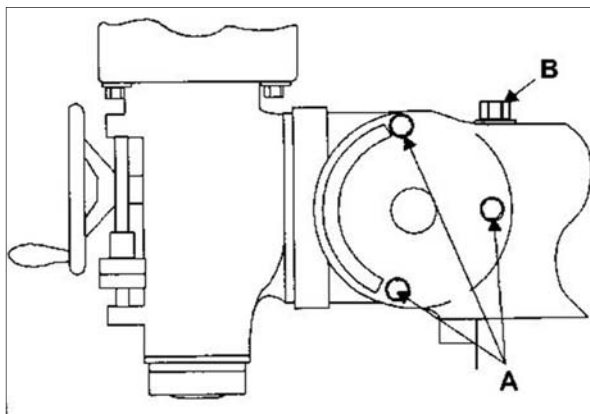


Figure 10: Head movement

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

- 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:

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

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

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

- Place spindle drive in neutral.

- Set dial indicator plunger on worktable. Zero indicator.

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

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

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

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

12.3 Positioning ram

12.3.1 Sliding ram fore and aft

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

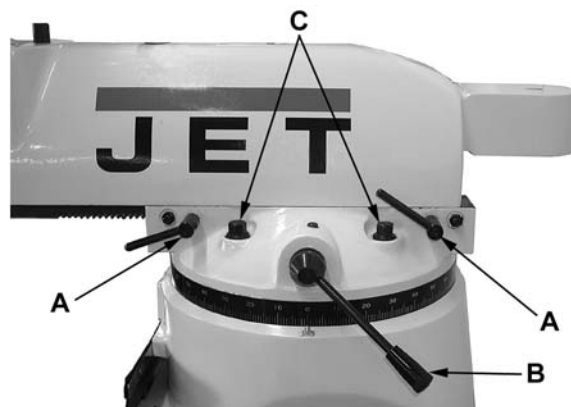


Figure 11: Ram positioning

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

- 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.

- 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.

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

- 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:

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

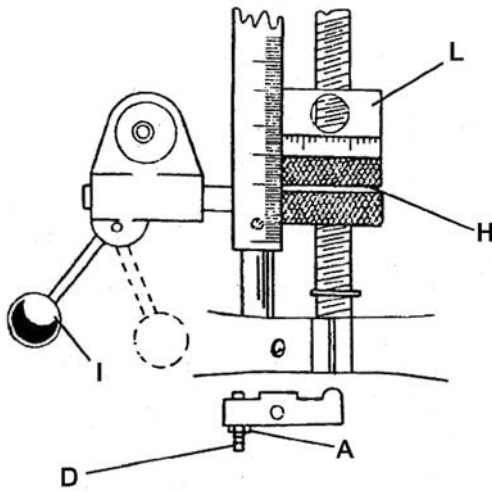


Figure 12: Feed trip adjustment

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.

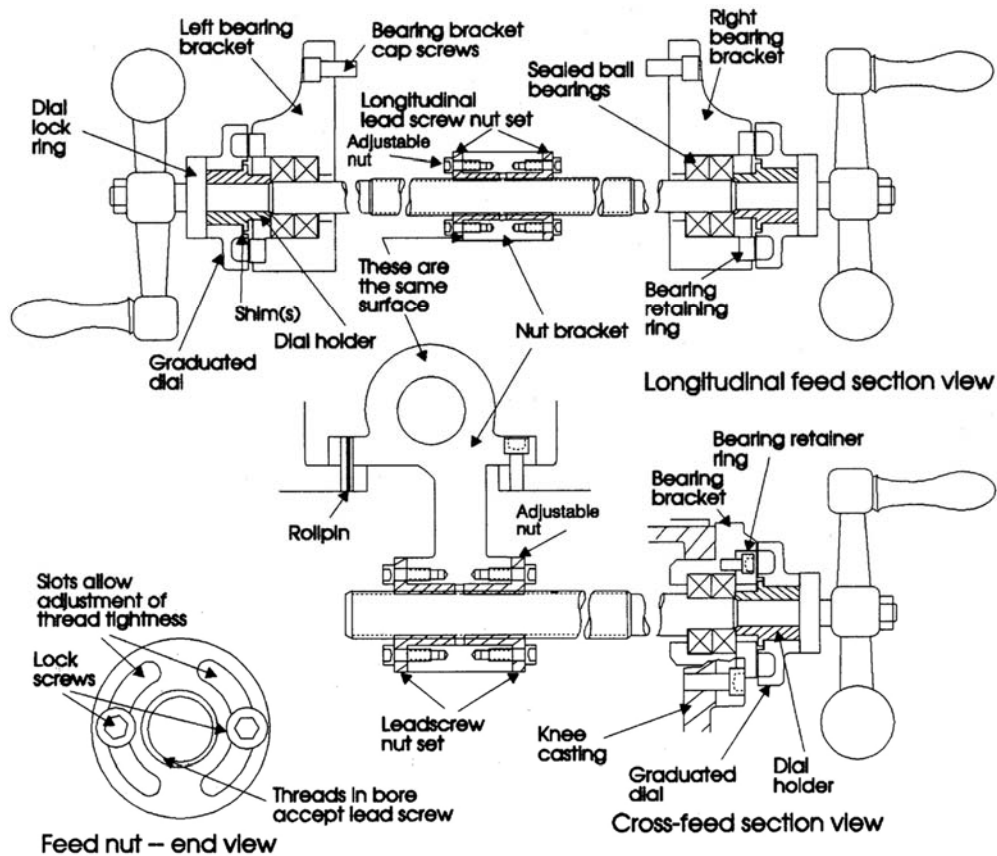


Table Lead Screw Components

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

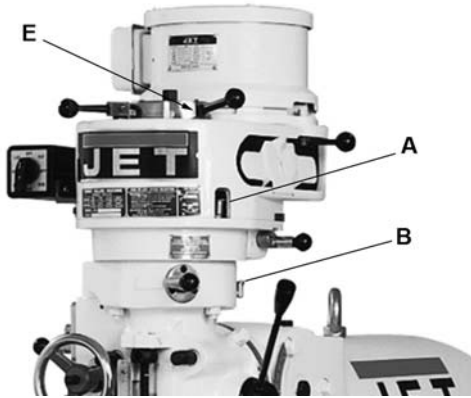


Figure 15



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

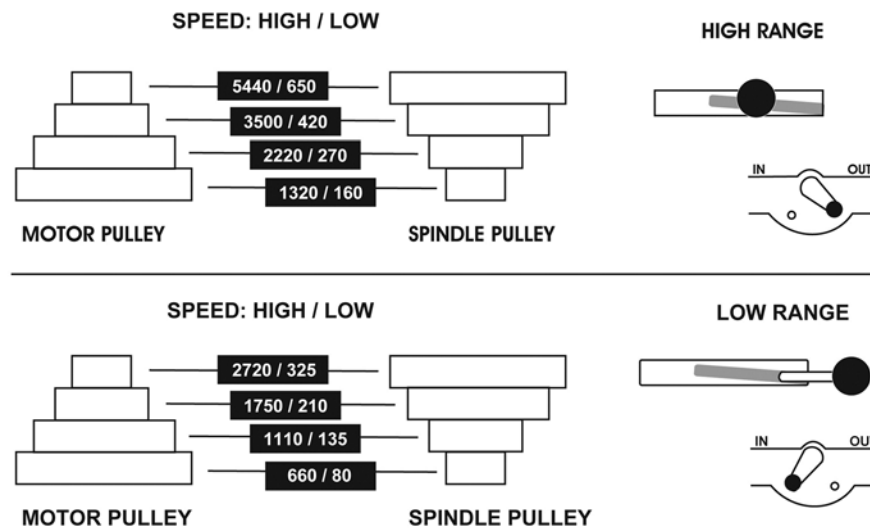
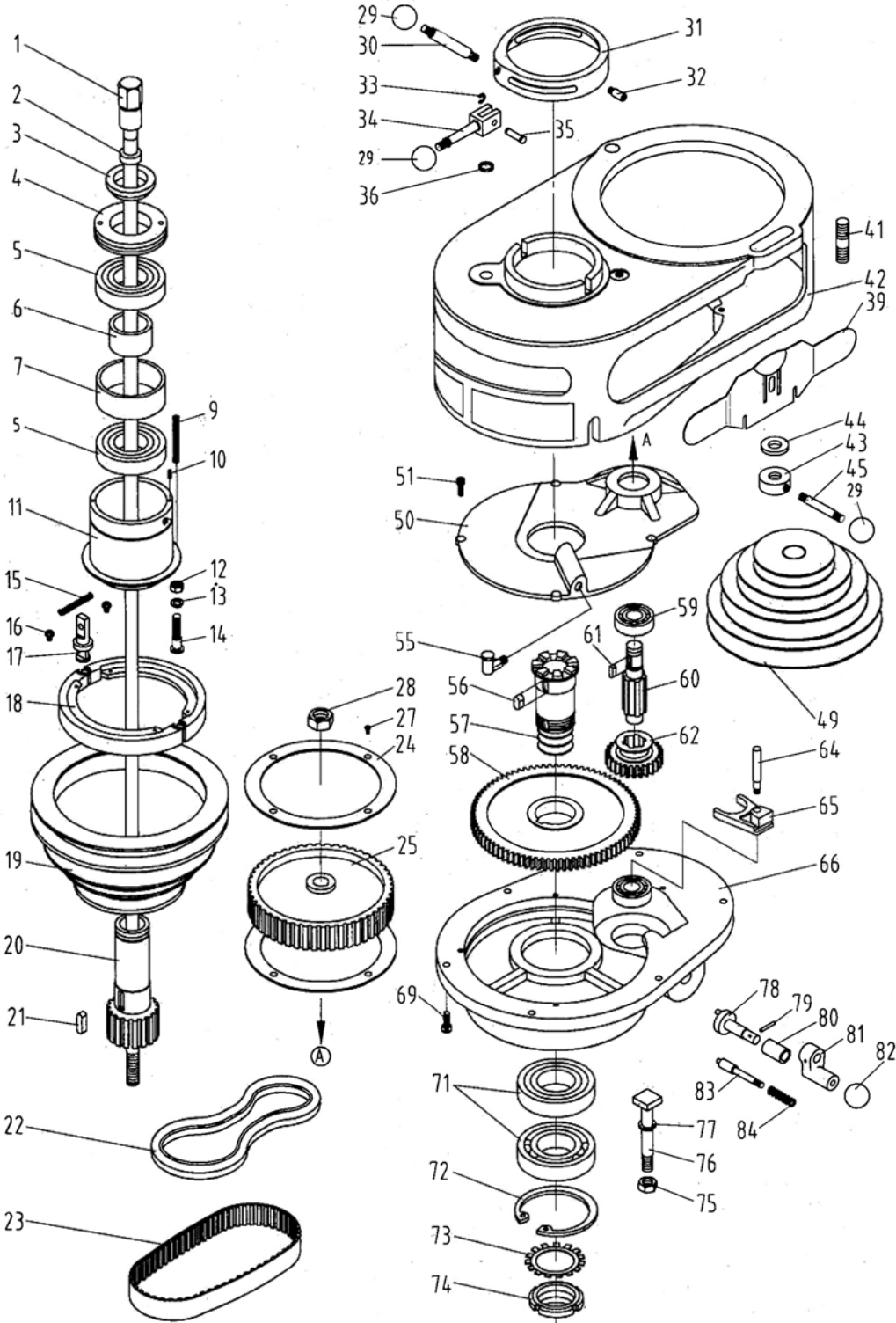


Figure 15: Belt position

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 (see our website for business hours, www.waltermeier.com). Having the Model Number and Serial Number of your machine available when you call will allow us to serve you quickly and accurately.

15.1.1 Upper Head Assembly – Exploded View

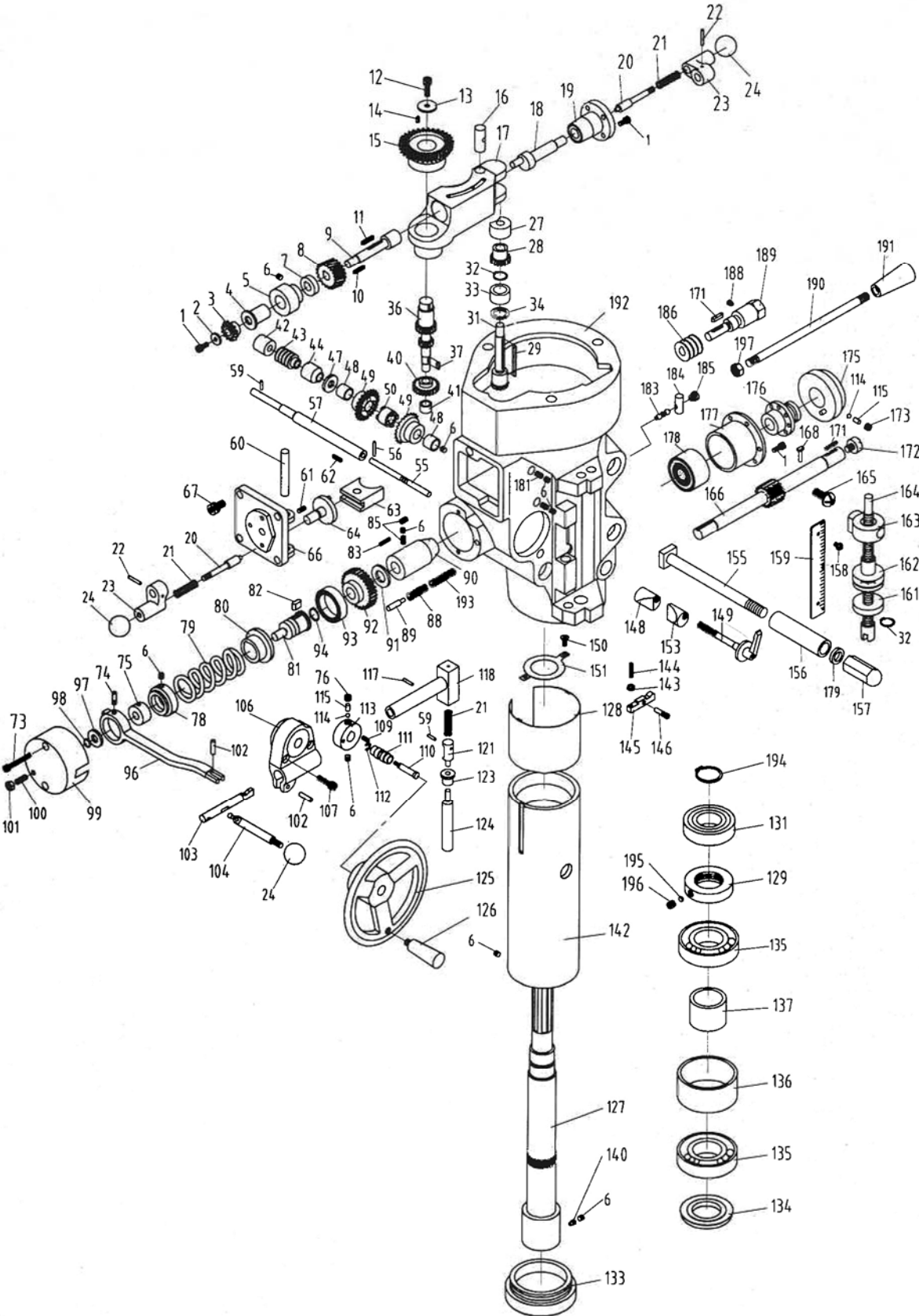


15.1.2 Upper Head Assembly – Parts List

| 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 | JTM1-039 | Belt Guard Assembly | | 2 |
| 41 | LA-012 | Motor Mount Studs | | 2 |
| 42 | LA-015 | 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-013 | 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-014 | 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



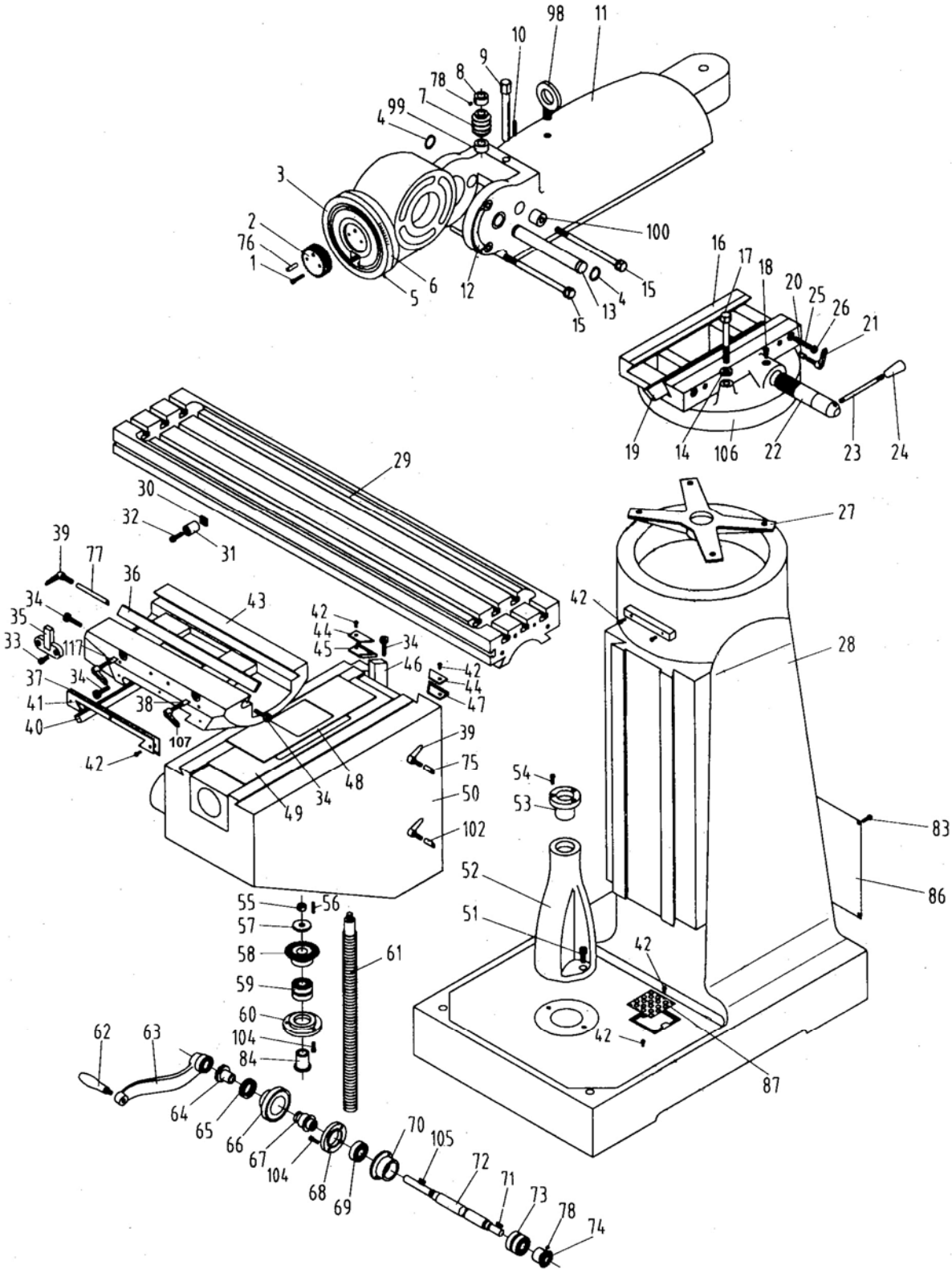
15.2.2 Head Assembly – Parts List

| 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 | | 1 |
| 126 | LA-125 | Handle | | 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 | | 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 |
| 157 | LA-040 | Lock Nut | | 4 |
| 158 | HA-158 | Screw | M4x5 | 2 |
| 159 | LA-118 | Micrometer Scale | | 1 |

| Index No | Part No | Description | Size | Qty |
|----------|------------|---|-----------------|-----|
| 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 | | 2 |
| 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-016 | 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 |

15.3.1 Base Assembly – Exploded View

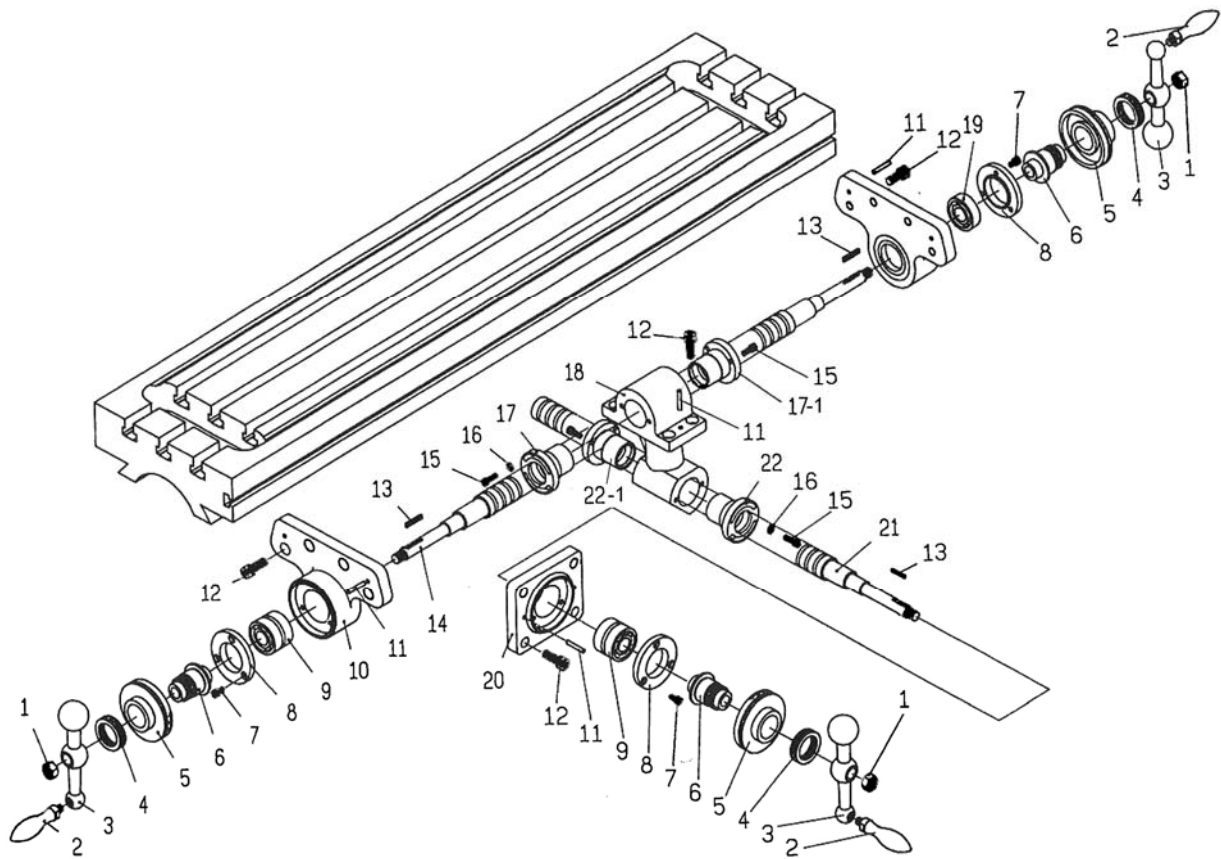


15.3.2 Base Assembly – Parts List

| Index No | Part No | Description | Size | Qty |
|----------|------------|--|------------|-----|
| 1 | LB-001 | Hex Socket Cap Screw | M6 x30 | 2 |
| 2 | LB-023 | Gear | | 1 |
| 3 | LB-020 | 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-026 | 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-000 | Column (serial # 1999/4/29 and lower) | | 1 |
| | MB-000A | Column (serial # 1999/4/30 and higher) | | 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-000 | 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-000 | Knee | | 1 |
| 51 | TS-1505031 | Hex Socket Cap Screw | M10 x 25 | 2 |
| 52 | MK-012 | 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 | | 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-00B | Turret Scale | | 1 |
| 107 | LS-006B | Saddle Ratcheting Lever | | 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. |

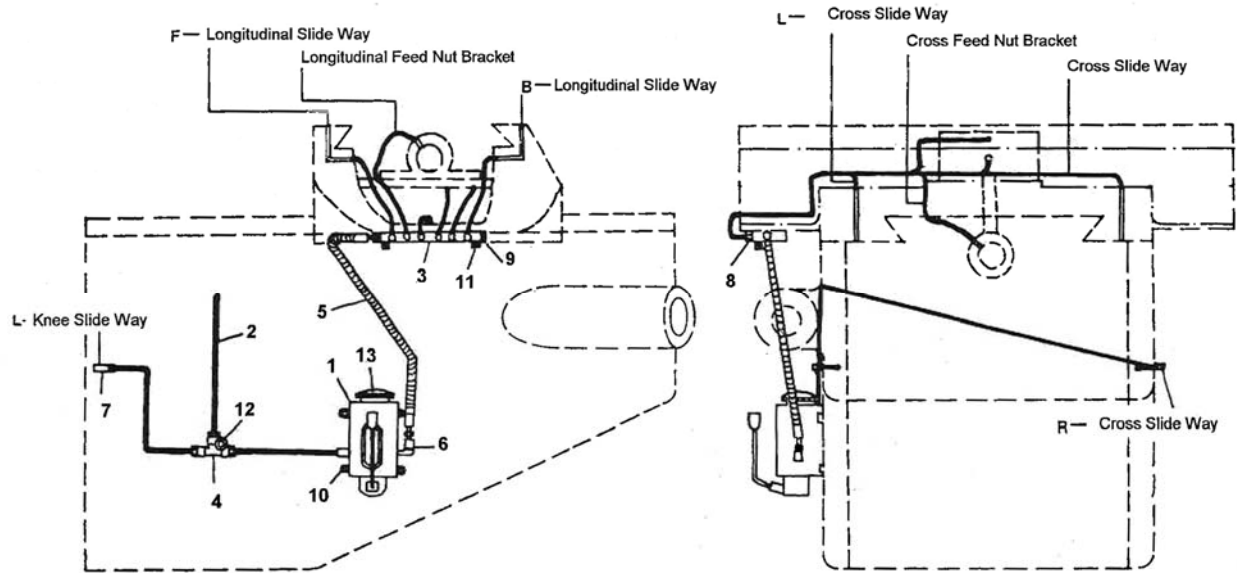
15.4.1 Table Leadscrew Assembly – Exploded View



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 |
| 3 | LT-010B | 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

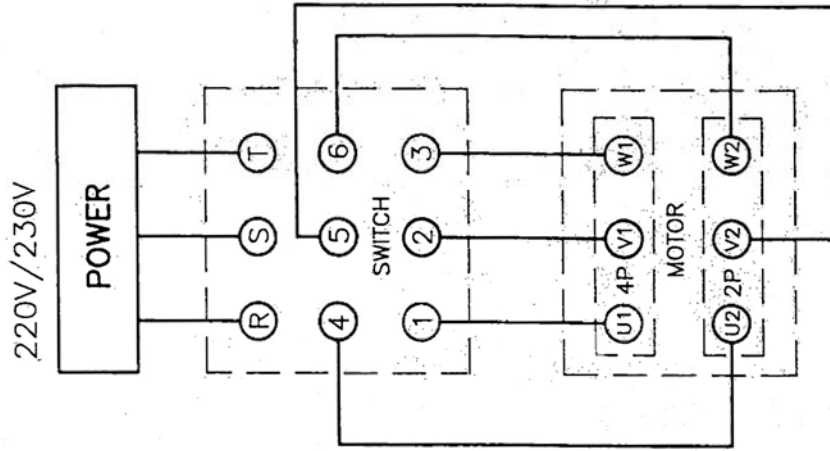


15.5.2 One-Shot Lubrication System – Parts List

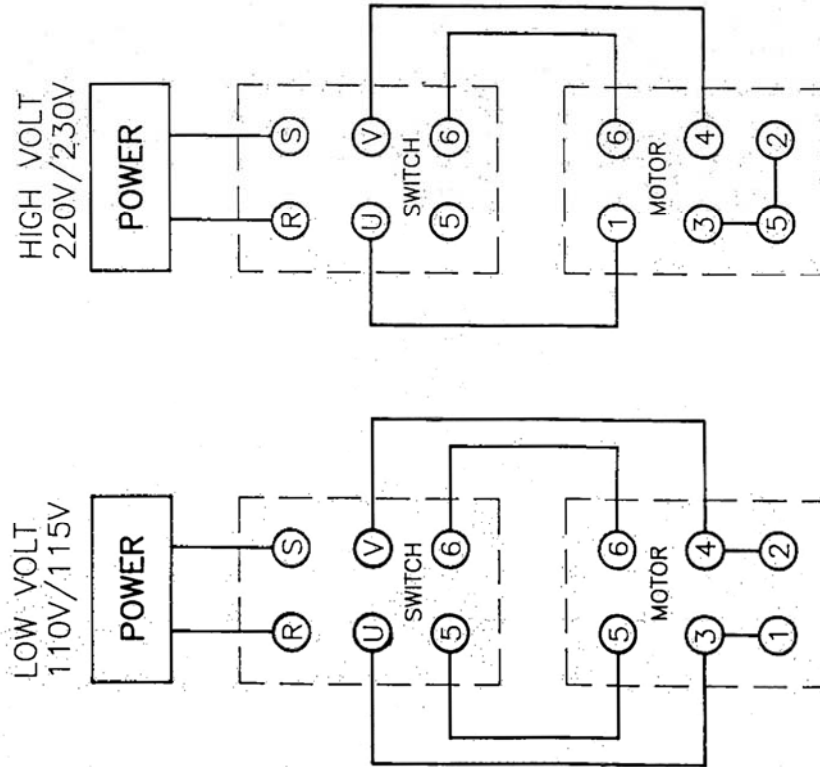
| Index No | Part No | Description | Size | Qty |
|----------|-----------------|--|---------|-----|
| | LT-8-A | Hand Oiler Assembly (includes #1,1A,4,5,9) | | 1 |
| 1 | LT-8 | Hand Oiler | | 1 |
| 1A | LT-8-SG | Hand Oiler Sight Glass (with gasket) | | 1 |
| 2 | ALMP-04 | Aluminum Pipe | 3.5M | 1 |
| | 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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