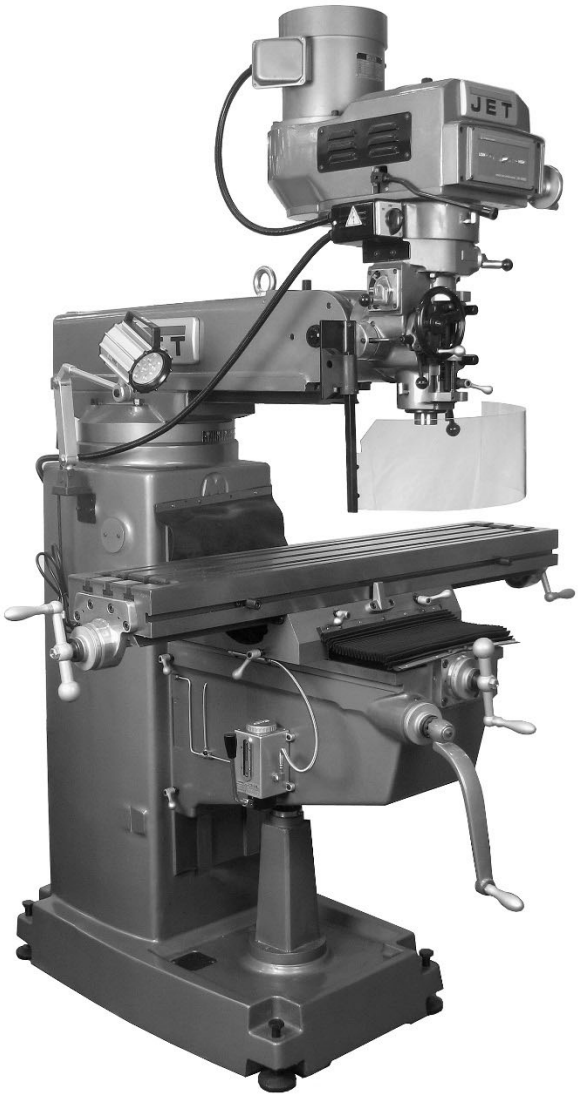
Operating Instructions and Parts Manual
Variable Speed Turret Mill
Model JTM-1050VS2



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1.0 IMPORTANT SAFETY INSTRUCTIONS

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 machine 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 milling machines, do not use until proper training and knowledge have been obtained.
5. Do not use this milling machine 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 machine. 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. Non-slip footwear or anti-skid floor strips are recommended. Do not wear gloves.
8. Wear ear protectors (plugs or muffs) during extended periods of operation.
9. Do not operate this machine while tired or under the influence of drugs, alcohol or any medication.
10. Make certain the switch is in the OFF position before connecting the machine to the power supply.
11. Make certain the machine is properly grounded.
12. Make all machine adjustments or maintenance with the machine unplugged from the power source.
13. 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.
14. 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.
15. Keep hands away from all moving parts (belts, cutters, gears, etc.)
16. 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.
17. Provide for adequate space surrounding work area and non-glare, overhead lighting.
18. Keep the floor around the machine clean and free of scrap material, oil and grease.
19. Some coolants used for machining contain chemicals that may be hazardous to your health if not use properly. Read and understand all user information listed on the coolant container and protect yourself accordingly.
20. Keep visitors a safe distance from the work area. Keep children away.
21. Make your workshop child proof with padlocks, master switches or by removing starter keys.
22. Give your work undivided attention. Looking around, carrying on a conversation and “horse-play” are careless acts that can result in serious injury.
23. Maintain a balanced stance at all times so that you do not fall into the blade or other moving parts. Do not overreach or use excessive force to perform any machine operation.
24. 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.
25. Use recommended accessories; improper accessories may be hazardous.
26. 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.
27. Turn off the machine before cleaning. Use a brush to remove chips or debris — do not use bare hands.

28. Do not stand on the machine. Serious injury could occur if the machine tips over.
29. Never leave the machine running unattended. Turn the power off and do not leave the machine until it comes to a complete stop.
30. Remove loose items and unnecessary work pieces from the area before starting the machine.
31. Don't use in dangerous environment. Don't use power tools in damp or wet location, or expose them to rain. Keep work area well lighted.
32. 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:** 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 phthalates which are known to the State of California to cause birth defects or other reproductive harm. For more information go to http://www.p65warnings.ca.gov.

⚠ **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.

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, or possibly even fatal, injury.

2.0 **Table of contents**

Section **Page**

3.0 About this manual

This manual is provided by JET covering the safe operation and maintenance procedures for a JET Model JTM-1050VS2 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 set forth in this document.

This manual is intended to familiarize you with the technical aspects of this milling machine. It is not, nor was it intended to be, a training manual. Do not operate this machine until appropriate training and knowledge have been acquired.

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.

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.

Register your product using the mail-in card provided, or register online:
http://www.jettools.com/us/en/service-and-support/product-registration/

4.0 Specifications

Table 1

Model number		**JTM-1050VS2**
Stock number		**691050**
Motor and Electricals		
Motor type		Totally enclosed, fan cooled
Horsepower		3 HP (2.25 kW)
Motor phase		3 PH
Motor voltage		230/460V (prewired 230V)
Cycle		60 Hz
Listed FLA (full load amps)		8.2 / 4.1 A
Motor speed		1720 RPM
Power transfer		Belt and gear
On/off switch		Rotary, reversible
LED lamp		110V, separate power cord
Sound emission [1]	Without load	75 dB, at 3 ft. from machine
	With load	80-85 dB, at 3 ft. from machine
Head and spindle		
Spindle taper		R8
Diameter of quill		3-3/8 in. (85.72 mm)
Number of spindle speeds		Variable within specified ranges
Range of spindle speeds		60-500, 500-4200 RPM
Downfeeds per revolution of spindle		0.0015, 0.003, 0.008 in/rev. (0.038, 0.076, 0.203 mm/rev.)
Spindle travel		5 in. (127 mm)
Head movement – left and right		90 deg.
Head movement – fore and aft		45 deg.

[1] The specified values are emission levels and are not necessarily to be seen as safe operating levels. As workplace conditions vary, this information is intended to allow the user to make a better estimation of the hazards and risks involved only.

Head and spindle (cont.)		
Distance spindle nose to table	Maximum	20 in. (500 mm)
	Minimum	3.26 in. (83 mm)
Distance spindle center to column	Maximum	26-3/4 in. (681 mm) – ram flush at turret platform edge 27 in. (686 mm) – ram beyond turret platform edge
	Minimum	6.3 in. (160 mm) – ram flush at turret platform edge 2.75 in. (70 mm) – ram beyond turret platform edge
Collet capacity		1/8 to 5/8 in.
Ram travel, maximum		17.3 in. (440 mm) – ram flush at turret platform edge 21 in. (535 mm) – ram beyond turret platform edge
Micrometer adjusting nut travel		0.025 in. (0.635 mm) per one rotation
Table and column		
Table size		10 x 50 in. (254 x 1270 mm)
Longitudinal table travel, maximum		29-7/8 (760 mm), 34-1/4 in. (870 mm) over saddle
Cross table travel, maximum		14-3/4 in. (375 mm)
Number of T-slots		3
T-slot width		5/8 in. (16 mm)
T-slot centers		2-1/2 in. (64 mm)
Table load, maximum		840 lbs. (381 kg)
Knee travel, maximum		16-1/8 in. (412 mm)
Column width		12 in. (300 mm)
Saddle width		20 in. (510 mm)
Dimensions		
Overall dimensions, assembled, LxWxH		63 x 63 x 90 in. (1600 x 1600 x 2270 mm)
Weights		
Net weight		2466 lbs. (1119 kg)
Shipping weight		2598 lbs. (1178 kg)

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.

5.0 **JTM-1050VS2 Machine dimensions**

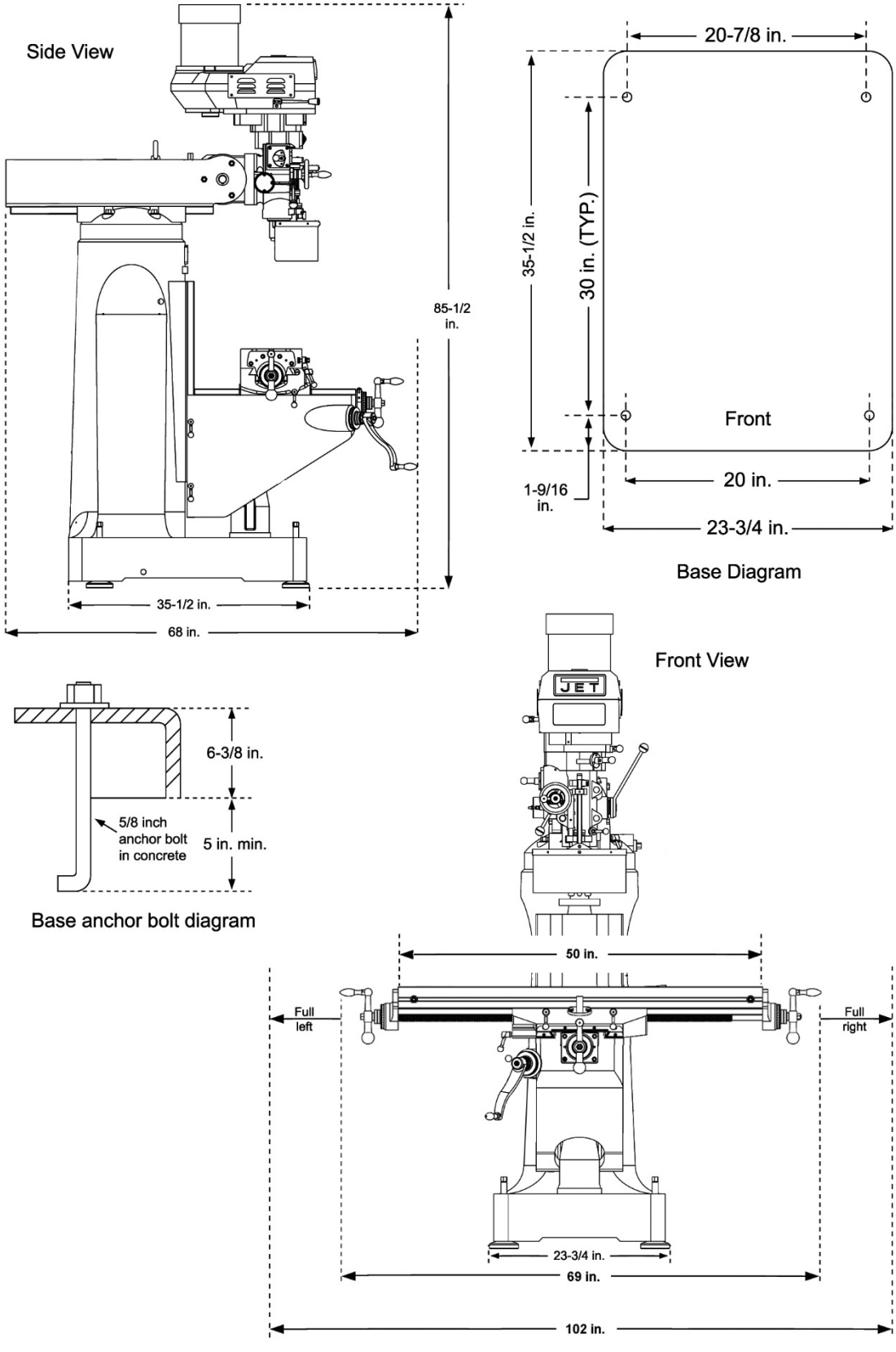


Figure 5-1: machine dimensions

6.0 **JTM-1050VS2 Features**

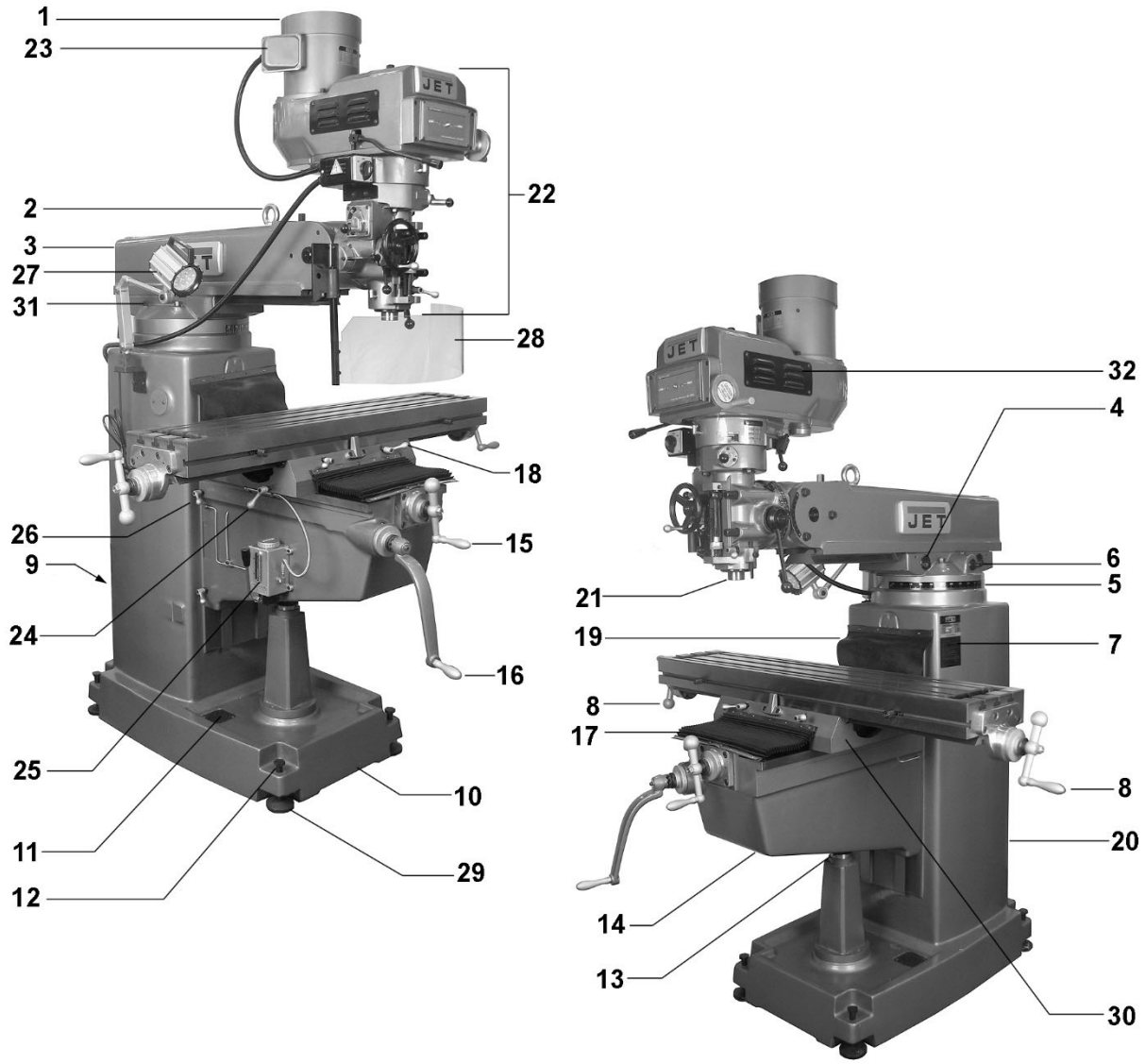


Figure 6-1: Features

1. 5HP Motor
2. Lifting ring
3. Ram
4. Ram lock bolt (x2)
5. Turret scale
6. Ram pinion
7. Machine I.D./Warning Label
8. Table longitudinal crank handle (x2)
9. Power connection box
10. Base
11. Strainer (x2) – *for use with optional flood coolant systems*
12. Leveling screw (x4)
13. Elevating leadscrew
14. Knee
15. Crossfeed handle
16. Knee crank handle
17. Pleated way cover
18. Table locking handle (x2)
19. Flat way cover
20. Column
21. Spindle, R8 taper
22. Head assembly *(see sect. 9.2 for explanation of controls)*
23. Motor junction box
24. Saddle locking handle
25. One-shot lube system
26. Knee locking handle (x2)
27. LED Work Lamp
28. Spindle Guard
29. Leveling pad (x4)
30. Saddle
31. Turret lock bolt (x4)
32. Belt access cover (x2)

⚠WARNING **Read and understand entire contents of this manual before attempting set-up or operation. Failure to comply may cause serious injury.**

7.0 Set-up and assembly

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 Turret Mill is assembled and running properly.

Compare 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. (Check machine first in case parts have been preinstalled.)

If your mill is supplied with an optional Table Powerfeed and/or DRO (digital read-out), be sure to consult the separate instruction materials that accompany them.

7.1 Contents of shipping container

Figure 7-1: contents

1 Turret Mill (not shown)
1 Spindle Guard (not shown)
1 Flat Way Cover
1 Pleated Way Cover
1 Draw Bar
3 Table Adjustment Handles
1 Tool Box, containing:
  4 Leveling pads
  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 Oil Can *
  1 Elevating Crank Handle
  1 Handwheel
  1 Coarse Feed Handle
  1 Lifting ring
  1 Operator's Manual
  1 Product Registration Card

* parts with asterisk are also included in tool box service kit JTM1050VS2-TB.

7.2 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 layout diagram in Figure 5-1.

The diagram shows maximum dimensions of the Mill with table and ram fully extended to maximum travel. When spotting the machine, leave room not only for the machine itself, but also clearance for the operator, for servicing the machine, and for any unusual size of workpiece that might extend off the machine's table.

7.3 Lifting the mill

Finish removing the sides of the crate. Remove any accessory items from machine table and shipping pallet. Leave mill bolted to pallet until ready to move to its final location.

The preferred method for lifting is with a hook through the lifting ring screwed into the tapped hole atop the ram:

1. Install provided lifting ring into tapped hole atop ram. (**Note**: If your mill came with a top-mounted DRO, remove DRO from hole to install lifting ring. Reinstall DRO after machine has been positioned.)
2. Check lifting ring on ram to be **certain it is tight**.
3. Check tightness of lock hex nuts on ram (A, Figure 7-2) to be **certain ram is tightly locked.**
4. Remove fasteners holding mill to pallet.

An alternative method for lifting the mill is with a sling. See Figure 7-2 for proper position of sling under ram. Note position of ram and that table has been moved against column. Tighten ram locking nuts (A, Figure 7-2) before lifting.

5. Center an overhead crane or other suitable overhead lifting device and sling arrangement over the lifting ring.

   IMPORTANT: This machine weighs nearly 2500 pounds. Be certain lifting arrangement is new or in excellent condition and has a safety factor that will account for age, difficulties in lifting, etc.

When lifting using the ring, the machine may tend to tip forward. If you wish, you can minimize this tipping by rigging a support sling over the front of the machine. Be careful when doing this, to prevent the sling from damaging any components on the front of the machine. Be sure to steady the mill to prevent it from spinning.

6. Lift machine off pallet no higher than necessary to clear the hold-down hardware, then slide pallet out of the way. Do NOT get hands or feet underneath machine when removing pallet.
7. Put machine base over the hold-down system where the machine will be spotted.
8. When the mill is over its anchors, level the mill using shims under the corners needing them. The machinist's level used for leveling should be placed on the table. The table is the reference surface for both side-to-side and fore-and-aft leveling. Be certain you get it level in BOTH directions.

⚠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 table ways.

9. When the machine is level, secure base to anchoring system.

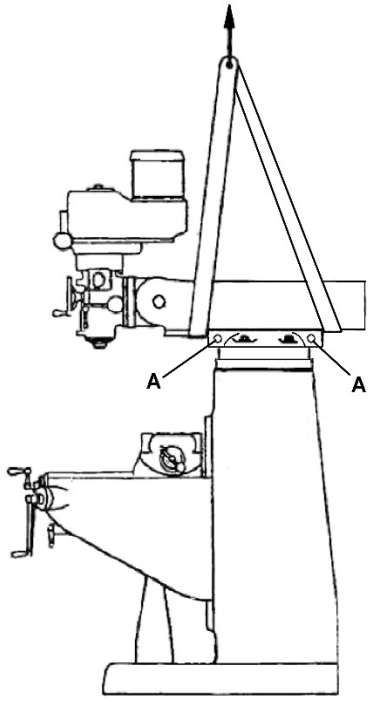


Figure 7-2: alternate lift - sling location

7.4 Completing assembly

⚠CAUTION Before attempting to raise mill head, familiarize yourself with instructions in *sect. 10.6*, for procedures to safely raise and set up the mill head.

1. Loosen the four hexagonal nuts (see A, Figure 10-4) about one-quarter (1/4) turn each counter-clockwise, just enough to allow rotation of the head.
2. Apply upward pressure on motor by hand to relieve pressure on worm mechanism, while using supplied wrench to turn worm shaft (B, Figure 10-4). Raise head to upright position.
3. Tighten nuts (A, Figure 10-4); not torqued at this time, just snug. *Before operating mill, follow procedures in sect. 10.6 to verify angle settings and properly tighten the four nuts.*
4. Using mineral spirits or other cleaning solvent, clean all of the rust proofing from where it may have been applied. This is important; moving the table or any other components before removing the 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, 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, skip the instructions related to those particular steps. Otherwise, perform them in the order listed. Refer to Figures 6-1 and 9-1 to help locate items.

7. Install handles on the table longitudinal and cross-feed cranks. Use a wrench on the flats to tighten them.
8. Remove any rust proofing from drawbar (O, Figure 9-1) and its washer, and place drawbar with washer installed into spindle center through top of machine.
9. Slide fine feed handwheel (J, Figure 9-1) over handwheel hub and push it back until its roll pin engages hole in the hub and handwheel is flush with hub surface.
10. Place coarse feed handle (F, Figure 9-1) on feed shaft and tap it lightly until its roll pin engages a hole in the hub. Tighten set screw to secure handle.

11. Unwrap and clean elevating (knee) crank and install it on its shaft. Secure it with washer and socket cap screw preinstalled on shaft.
12. Install rubber way covers at front and behind table.

7.5 **Lubrication**

⚠CAUTION Do not operate Mill before fully lubricating it. Failure to comply may cause damage to the machine.

Before operating mill, refer to *sect. 11.2* for lubricating instructions.

8.0 **Electrical Connections**

⚠WARNING Electrical connections must be made by a qualified electrician. This machine must be properly grounded in accordance with the National Electrical Code and local codes and ordinances, to help prevent electrical shock and possible fatal injury.

The JTM-1050VS2 Mill is rated at 230/460V, 3-phase and comes from the factory prewired at 230V. Confirm power at the site matches power requirements of the Mill before connecting to power source. The power source should be dedicated to the Mill.

Remove junction box cover, and run main power cable through box and attach the ground, followed by power leads. Replace junction box cover.

Check for proper spindle rotation *in the high speed range*. The spindle should rotate clockwise when viewed from top of machine. If spindle rotates counterclockwise, disconnect from power source, and switch any two of the three power leads.

8.1 **Voltage conversion**

To change to 460V operation, remove junction box cover on the motor, and change the wires according to diagram found on inside of junction box cover. A similar wiring diagram is found at the back of this manual. *If discrepancies arise, diagram on machine takes precedence.*

8.2 **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 Table 2 is recommended.

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

Table 2

9.0 **Operation**

9.1 **Precautions**

- Do not attempt to change spindle RPM while motor is stopped. Only change spindle speeds while motor is running.
- Verify that spindle brake is released before starting motor.
- Rotate spindle by hand to facilitate meshing of clutch and gears.
- Do **not** use quill automatic feed at spindle speeds above 3000 RPM.
- It is recommended that the auto feed worm gear be disengaged whenever auto feed is not required. This will avoid unnecessary wear on the worm gear.
- Maximum auto feed loading is a 3/8” (9.5mm) diameter bit for drilling in mild steel. Use manual feed for bits larger than 3/8".
- Overload clutch is factory set to hold up to 200 lbs. down feed pressure on the quill (accommodates drills up to 3/8"). Do **not** attempt to adjust clutch pressure.

9.2 **Operating controls**

Refer to Figure 9-1.

A. **Variable speed control** (A, Figure 9-1) – Turn handwheel to adjust spindle speed.

⚠CAUTION **Change spindle speed only when motor is running. Failure to comply may result in damage to drive mechanism.**

B. **Variable speed dial indicator** (B) – Indicates selected speed in high or low range.

C. **Spindle brake** (C) – Move in either direction to stop spindle *after power has been turned off.*

D. **Speed range lever** (D) – Push handle inward and move to desired position. Upper position is high speed. Middle position is neutral. Low position is low speed (back gear engagement). A label is affixed near the lever for reference.

⚠CAUTION **Do not move Speed Range Lever (D) while motor is running. Turn off machine and rotate spindle by hand to facilitate changing lever positions.**

E. **Auto feed engagement lever** (E) – To engage auto feed, stop spindle, then pull knob outward and move lever to opposite hole. Engage pin in hole. A label is affixed near the lever for reference.

⚠CAUTION **Auto feed may be engaged when spindle is rotating, however, it must be engaged gently to avoid damage to worm gear.**

- **Do not use auto feed at spindle speeds above 3000 R.P.M.**
- **It is recommended that auto feed lever be disengaged when not in use. This avoids unnecessary wear on worm gear.**
- **Maximum auto feed loading is a 3/8" (9.5mm) diameter bit for drilling in steel. Use manual feed for bits larger than 3/8".**

F. **Coarse feed handle** (F) – Used for non-precision drilling operations and for moving quill to a specific depth. Rotate counter-clockwise to lower spindle. A return spring will retract spindle automatically once handle is released.

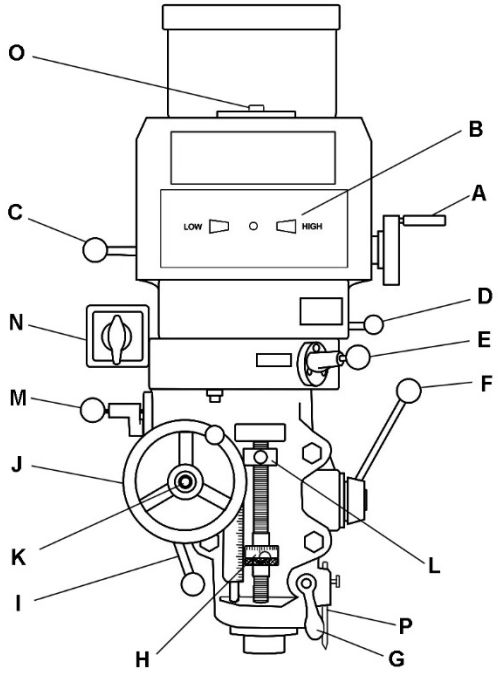


Figure 9-1: Controls

G. **Quill lock** (G) – Rotate handle clockwise to lock quill in desired position; counter-clockwise to release.

H. **Micrometer adjusting nut** (H) – Used for setting spindle depth, according to adjoining scale. Press button to rapidly slide nut for general positioning. Release button and rotate nut for fine adjustment. **Note:** One complete rotation of micrometer adjusting nut equals 0.025" (0.635mm) of spindle travel.

I. **Feed trip control lever** (I) – Engages overload clutch on pinion shaft when lever is positioned to the left. Stays engaged until quill stop comes into contact with micrometer adjusting nut (forcing feed control lever to drop out automatically), or until lever is released manually by moving lever to the right.

J. **Manual fine feed handwheel** (J) – Feed direction control knob (K) must be in neutral position. The feed control lever (I) must be engaged. **Note**: Manual feed handwheel may be removed when not in use.

K. **Feed direction control** (K) – located in center of manual feed handwheel. Position of knob depends upon direction of spindle rotation. If boring with right hand cutting tools, pull feed knob towards operator until clutch becomes engaged. Neutral position is between forward and reverse position.

(Refer to Figure 10-3 and accompanying text for further detail.) If control does not engage easily, move handwheel (J) back and forth to aid engagement.

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

L. **Quill stop** (L) – Used to disengage automatic feed in either direction as well as the setting point for working to a given depth.

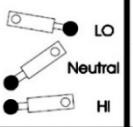
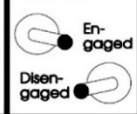
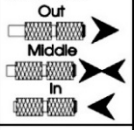
M. **Quill feed speed selector** (M) – Pull knob out and locate handle over choice of three feed speeds (0.0015", 0.003", and 0.006") per spindle revolution. Allow pin to drop into detent. The selector engages more easily when spindle is rotating.

N. **On/Off/Reverse switch** (N) – Turns spindle on and off, and changes rotation direction of spindle.

O. **Drawbar** (O) – Used to secure tool holder in the taper. Use the spindle brake (C) while tightening drawbar.

P. **Indicator rod** (P) – Can be used to attach and adjust height of a dial indicator if spindle is not available for this (i.e. tool already mounted).

9.3 Control positions for milling and drilling operations

Control / Action	High/low lever	Quill feed lever	Feed trip cam lever	Quill feed select lever	Feed direction control	Motor switch*
						
High spindle speeds						**REV**
Low spindle speeds						**FWD**
High spindle speeds with automatic downfeed				Select feed rate		**REV**
Low spindle speeds with automatic downfeed				Select feed rate		**FWD**
High spindle speeds with automatic upfeed				Select feed rate		**REV**
Low spindle speeds with automatic upfeed				Select feed rate		**FWD**
Lever feed						
Fine feed using handwheel						
Free-turning spindle for positioning or working with tooling						

Speeds at Specific Control Settings

Hi/low speed control lever	Range of speeds using control wheel
	**60 - 500 RPM**
	**500 - 4,200 RPM**

* Motor switch position is for right-hand tooling (tooling which requires clockwise rotation of the spindle.) If you are using left-hand tooling, simply change the motor switch to the opposite setting.

Table 3

10.0 Adjustments

10.1 Drawbar operation - changing tooling

1. Apply spindle brake and loosen draw bar two or three turns (counterclockwise) with the provided wrench placed over the draw bar hex (Figure 10-1).

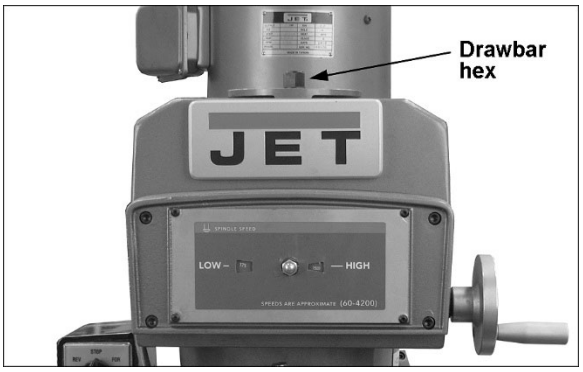


Figure 10-1: Draw bar

2. Tap the top of draw bar with a soft-faced hammer to loosen collet from taper.
3. Remove tool from collet.
4. Insert new tool into collet.
5. Tighten draw bar firmly using provided wrench with spindle brake applied. The tool is now ready for use.

10.2 Clamping workpiece to table

The worktable has 5/8-inch T-slots for clamping workpiece to table.

1. Set switch to OFF position.
2. Place work piece on table.
3. Clamp workpiece using T-slot clamps, studs, and step blocks as required. See Figure 10-2.

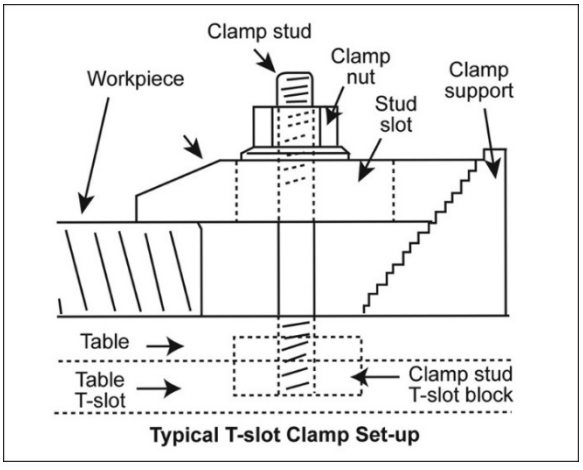


Figure 10-2: Work piece clamping

10.3 Changing speed range

To change from high to low speed range, push in lever (D, Figure 9-1) and rotate it almost 180 degrees. Lever will stay in position once pressure is released.

⚠CAUTION Do not change gears while spindle is running. Rotate spindle by hand to ensure clutch is engaged prior to turning on. Do not turn on machine unless spindle can be moved freely.

10.4 Manual feed

10.4.1 Manual fine feed (handwheel)

Refer to Figure 10-3.

1. Disengage auto feed by pulling out knob (E, Figure 8) and moving lever to left hole.
2. Position feed reversing knob (K) to center, or neutral, position.
3. Engage feed trip lever (I) by pulling it away from head assembly.
4. The quill can now be moved up or down by turning handwheel (J). Quill will retract when stop nut is reached.

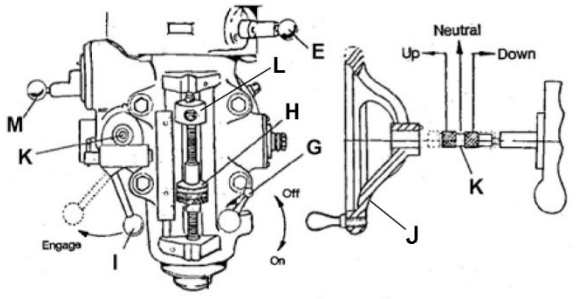


Figure 10-3: Manual feed controls

10.4.2 Manual coarse feed (handle)

Refer to Figure 10-3.

1. Disengage auto feed by pulling out knob (E, Figure 10-3) and moving lever to left hole.
2. Position feed reversing knob (K) to center, or neutral, position.
3. Disengage feed trip lever (I) by pushing towards head assembly.
4. Use coarse feed handle (see F, Figure 9-1) to move spindle.

10.4.3 Depth stop for manual feed

Refer to Figures 9-1 and 10-3.

1. Lower quill to required depth.
2. Tighten quill lock (G).
3. Move micrometer nut (H) against quill stop (L).
4. Loosen quill lock (G).

5. Use coarse or fine manual downfeed.

Note: A test cut is recommended to verify that depth of cut is correct before engaging actual workpiece.

10.5 Automatic feed

Refer to Figure 10-3.

1. Ensure quill lock (G, Figure 10-3) is loosened by rotating counterclockwise.
2. Set micrometer nut (H) to desired depth.
3. Engage auto feed lever (E) by pulling out knob and moving lever to the right hole.
4. Select feed direction by setting feed direction knob (K) position per Table 4.

Spindle dir.	Feed dir.	Knob position
CW	Down	In
	Up	Out
CCW	Down	Out
	Up	In

Table 4

5. Select feed rate from feed selector knob (M). It is easier to change feed rate while spindle is turning.
6. Engage feed trip lever (I) by pulling it away from head assembly.

⚠CAUTION Stop motor to engage automatic feed. Auto feed may be engaged when spindle is rotating, however, it must be engaged *gently* to avoid damage to worm gear.

- **Do not use power feed at speeds above 3000 R.P.M.**
- **It is recommended that auto feed lever (E) be disengaged when not in use.**
- **Maximum loading is a 3/8" (9.5mm) diameter bit for drilling in steel. Use manual feed for bits larger than 3/8".**

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

10.5.1 Depth stop for auto feed

Refer to Figures 9-1 and 10-3.

1. Lower quill to required depth.
2. Tighten quill lock (G, Figure 8).
3. Move micrometer nut (H) against quill stop (L).
4. Loosen quill lock (G), and engage auto feed lever (E).
5. Choose downfeed rate (M).
6. Engage feed reversing knob (K). See Table 4.
7. Engage feed trip lever (I).

Note: A test cut is recommended to verify that depth of cut is correct before engaging actual workpiece.

10.6 Mill head – left/right rotation

⚠WARNING Make sure machine base is secured to floor before repositioning mill head. 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 hexagonal nuts (A, Figure 10-4) that secure mill head to ram adapter. One-quarter (1/4) turn should be sufficient to allow the head to move.

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

2. Turn worm shaft (B, Figure 10-4) to rotate head left or right as required. Use scale on ram adapter to set desired 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 axis. Please note that table is fitted to be slightly higher in front, usually about 0.0005".

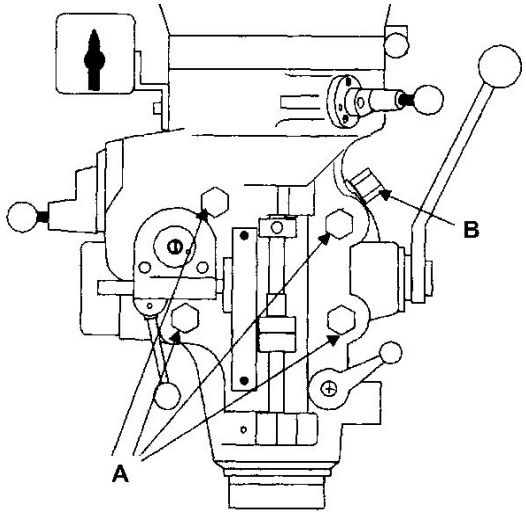


Figure 10-4: Mill head movement - rotation

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

3. Tighten the four hexagonal nuts (A). 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 and secure using draw bar (see Figure 10-5).

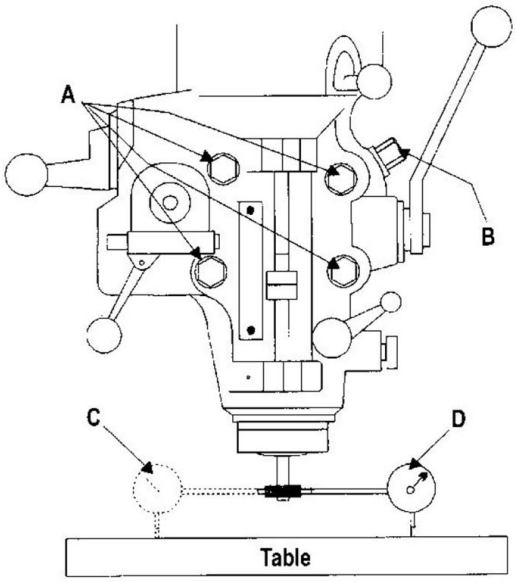


Figure 10-5: Test perpendicularity

6. Put spindle drive in neutral (D, Figure 9-1).
7. Set dial indicator plunger on worktable. Zero the 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 (A) and reposition mill head.
10. Recheck perpendicularity using dial indicator. Repeat procedure above 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 face of ram adapter.

11. Tighten the four hex nuts (A). 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 a final torque of 50 foot-pounds.

10.7 Mill head – front/back tilt

Setting the angle:

1. Loosen three ram adapter locking bolts (E_1, Figure 10-6). There is no need to loosen the bolts more than one-half (1/2) turn to allow tilting.

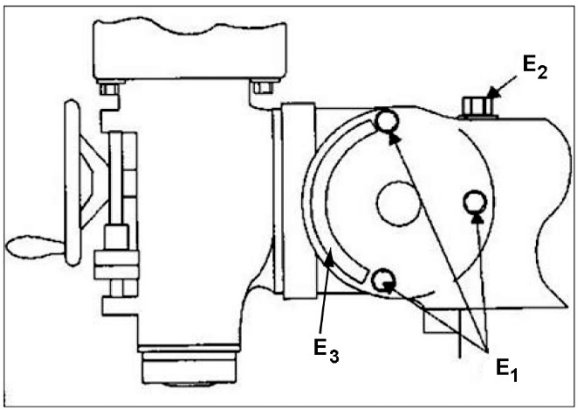


Figure 10-6: Mill head movement – tilting

2. Support mill head with your free hand. Press upward on spindle when tilting.
3. Turn ram adapter worm nut (E_2, Figure 11) to tilt head forward and backward. Use scale on ram adapter (E_3) to locate desired angle.

Returning to upright position:

1. When returning mill head to full upright position, support head by upward pressure on spindle as you turn worm nut.
2. Check to make sure mill head is perpendicular to worktable.
3. Set up a dial indicator in a collet and secure using draw bar (see Figure 10-5).
4. Put spindle drive in neutral.
5. Set dial indicator plunger on worktable. Zero the indicator.
6. Rotate spindle 180 degrees. (When rotating, raise dial indicator plunger by hand to prevent it from dropping into the table T-slots).
7. Read dial indicator. The indicator should read zero. If not, loosen locking bolts (E_1, Figure 11) and reposition mill head.
8. Recheck perpendicularity using dial indicator. Repeat procedure above until dial indicator reads zero in both positions.
9. When indicator reads zero, tighten locking bolts (E_1, Figure 10-6).

10.8 Ram movement

10.8.1 Ram position fore and aft

Refer to Figure 10-7.

1. Loosen hex nuts (G, Figure 10-7) located on the eccentric locking cylinders.
2. Turn ram pinion (H) with 19mm wrench to slide ram forward or back.
3. When desired position is reached, tighten hex nuts (G) securely.

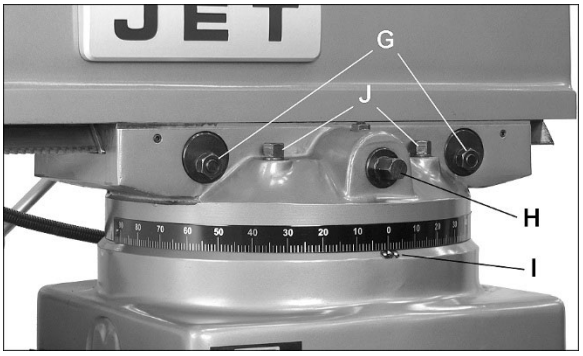


Figure 10-7: Ram positioning

10.8.2 **Rotating ram on turret**

Refer to Figure 10-7.

⚠WARNING Make sure machine base is secured to floor before repositioning ram. 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 (J, Figure 12). One-half (1/2) turn should be sufficient to allow turret movement.
2. Swing ram until spindle is in desired position. **Note:** Use gentle hand pressure to avoid rapid movement. Use scale (I) on turret for degree measurement.
3. Securely sighten four turret lock bolts (J).

10.9 **Table and Knee Movement**

Refer to Figure 10-8.

X-Axis:
A – Longitudinal handles
A_1 – Longitudinal table locks
A_2 – Longitudinal table stops (can be repositioned)

Y-Axis:
B – Cross Feed Handle
B_1 – Cross Feed Table Lock

Z-Axis:
C – Knee Crank Handle (push in to engage clutch mechanism, then turn)
C_1 – Knee Locks

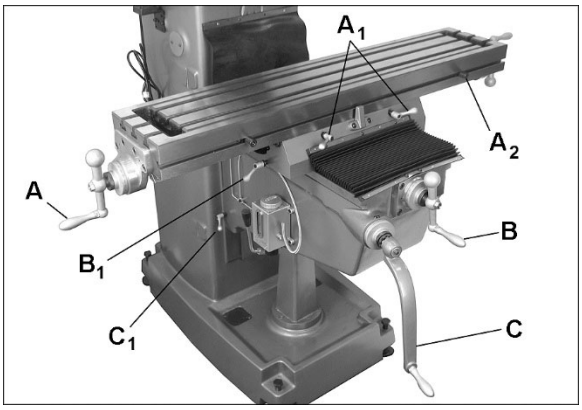


Figure 10-8: Table movement

10.10 **Feed Trip Adjustment**

Refer to Figure 10-9.

1. Loosen lock nut (A, Figure 10-9).
2. Engage trip handle (C) by pulling it away from head assembly.
3. Adjust micro nut (E) against quill stop (B).
4. Slowly turn adjusting screw (D) until lever (C) trips.
5. Tighten lock nut (A).

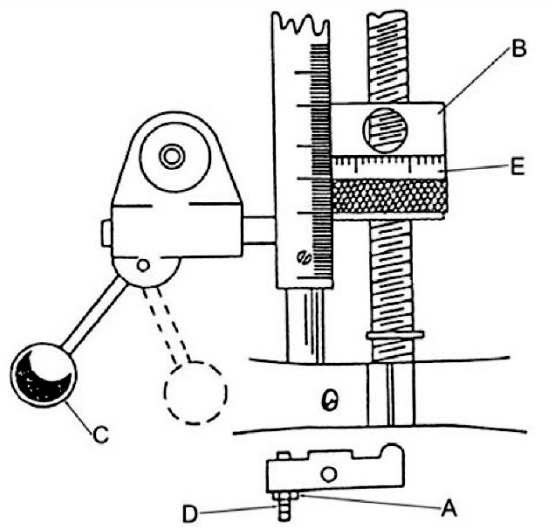


Figure 10-9: Feed trip adjustment

11.0 User-maintenance

⚠WARNING Always disconnect machine from power source before doing maintenance. If you do not have knowledge or training to complete the maintenance, have an authorized JET service center maintain your mill. Failure to comply may cause serious bodily injury.

11.1 General maintenance

- During operation, occasionally vacuum and brush chips and debris from machine.
- Periodically operate knee and table lead screws through full range of movement to evenly distribute lubricant (particularly when applied using the “one-shot” system).
- Periodically apply light machine oil to work table and other exposed metal surfaces to prevent rust or corrosion.
- Periodically remove side panels to check pulleys and belts for unusual wear or grooving. Operators should vary speed occasionally to prevent groove formation on pulley surfaces.
- When using a coolant pump, periodically clean the sump in the machine base to extend pump life and promote efficient cutting. Change coolant regularly at intervals recommended by coolant supplier.

11.2 Lubrication

⚠CAUTION Do not operate mill before fully lubricating it. Failure to comply may cause damage to machine.

Refer to Figures 11-1, 11-2 for lubrication areas:

Key	Description	Recommended Lubricant	Action
A	Grease fitting (back gear)	Mobilith AW1, or equivalent	Service weekly when operating in back gear mode.
B	Oil cup (clutch bearings)	Mobil DTE Oil Light, or equivalent	Service daily.
C	Oil cup (spindle bearings)	Mobil DTE Oil Light, or equivalent	Service daily.
D	Auto lube system (table and knee ways & leadscrews)	Mobil Vactra Oil #2,or equivalent	Pump handle once for every hour of operation. Check oil daily; add if required.
E	Grease fitting (knee leadscrew)	Mobilith AW2, or equivalent	Service once each week.

Table 5

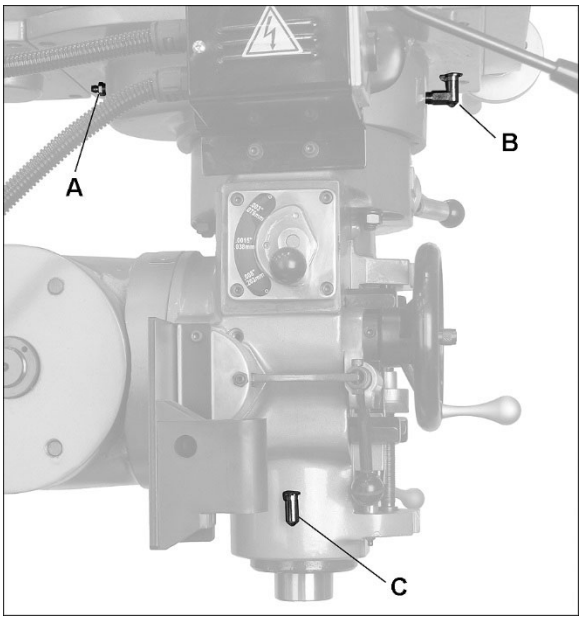


Figure 11-1: Lubrication points

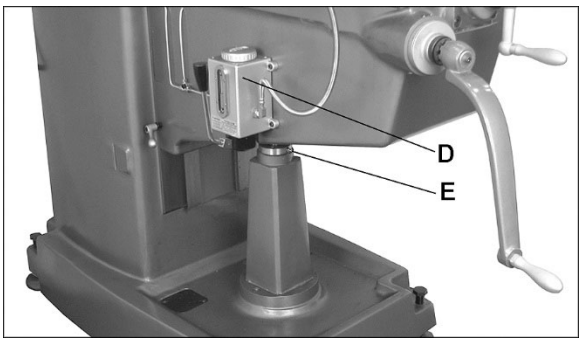


Figure 11-2: Lubrication points

11.3 Gib adjustments

Refer to Figure 11-3.

The table, saddle, knee and ram 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 table, saddle and knee gibs, always start with knee first; adjust saddle second, and adjust table last.

11.3.1 Knee gibs

Adjust gibs located between knee and column by turning two adjustment screws beneath the wipers (A, Figure 11-3). Use a dial indicator to measure amount of movement in knee. Adjust gib until indicator reading is within 0.003”.

11.3.2 Saddle gib

Adjust gib located between saddle and knee by turning two adjustment screws (B, Figure 11-3) at front and back of saddle. Use dial indicator to measure amount of movement in saddle. Adjust gib until indicator reading is within 0.003”.

11.3.3 **Table gib**

Adjust gib between table and saddle by turning two adjustment screws (C, Figure 11-3) at left and right of saddle. Use dial indicator to measure amount of movement in table. Adjust gib until indicator reading is within 0.003”.

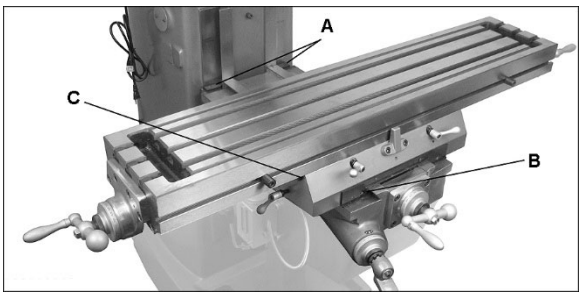


Figure 11-3: Gib locations

11.3.4 **Ram gib**

Adjust ram gib (E, Figure 11-4) by turning the two set screws (F).

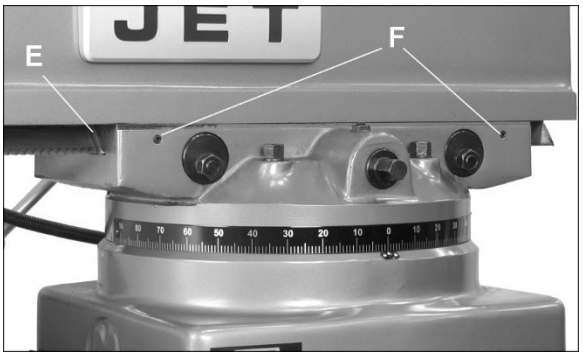


Figure 11-4: Ram gib location

11.4 **Leadscrew backlash adjustment**

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

11.4.1 **Cross feed backlash**

Refer to Figure 11-9.

1. Use cross feed crank to move table to extreme rear of its travel (toward column).
2. Remove pleated way cover.
3. Open chip guards *(#51-53, sect. 13.3.1)* 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.

11.4.2 **Longitudinal backlash**

Refer to Figure 11-9.

1. Only one of the longitudinal leadscrew 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.

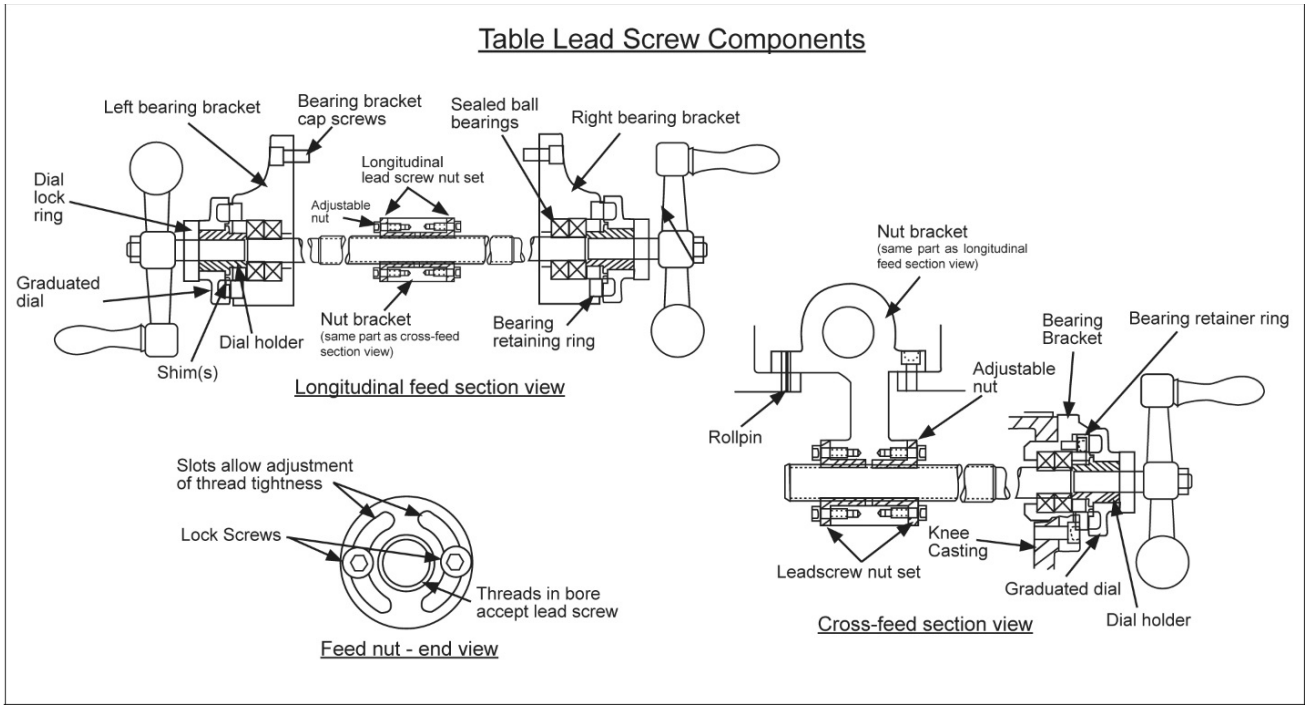


Figure 11-9: Leadscrew backlash adjustment

12.0 **Recommended speed for mill and drill operations**

Mill cutting speed recommended (mm/min) V=DN/1000

V cutting speed (mm/min)		
Material	*Heavy cutting*	*Processing cutting*
Cast iron	30-40	45-90
Malleable iron	37-45	45-90
Steel (soft)	60-90	75-105
Steel (medium)	454-67	52-75
Steel (hard)	24-37	55-75
Cast steel	24-30	55-75
Aluminum	240-300	300-360
Brass	105-180	150-300
Bronze	52-75	75-90
Magnesium alloy	240-300	300-600
Zinc alloy	120-240	210-450
Drill speed (RPM) recommended:		
5mm hole	1000-1500	
10mm hole	500-800	
13mm	300-500	
20mm	150-300	

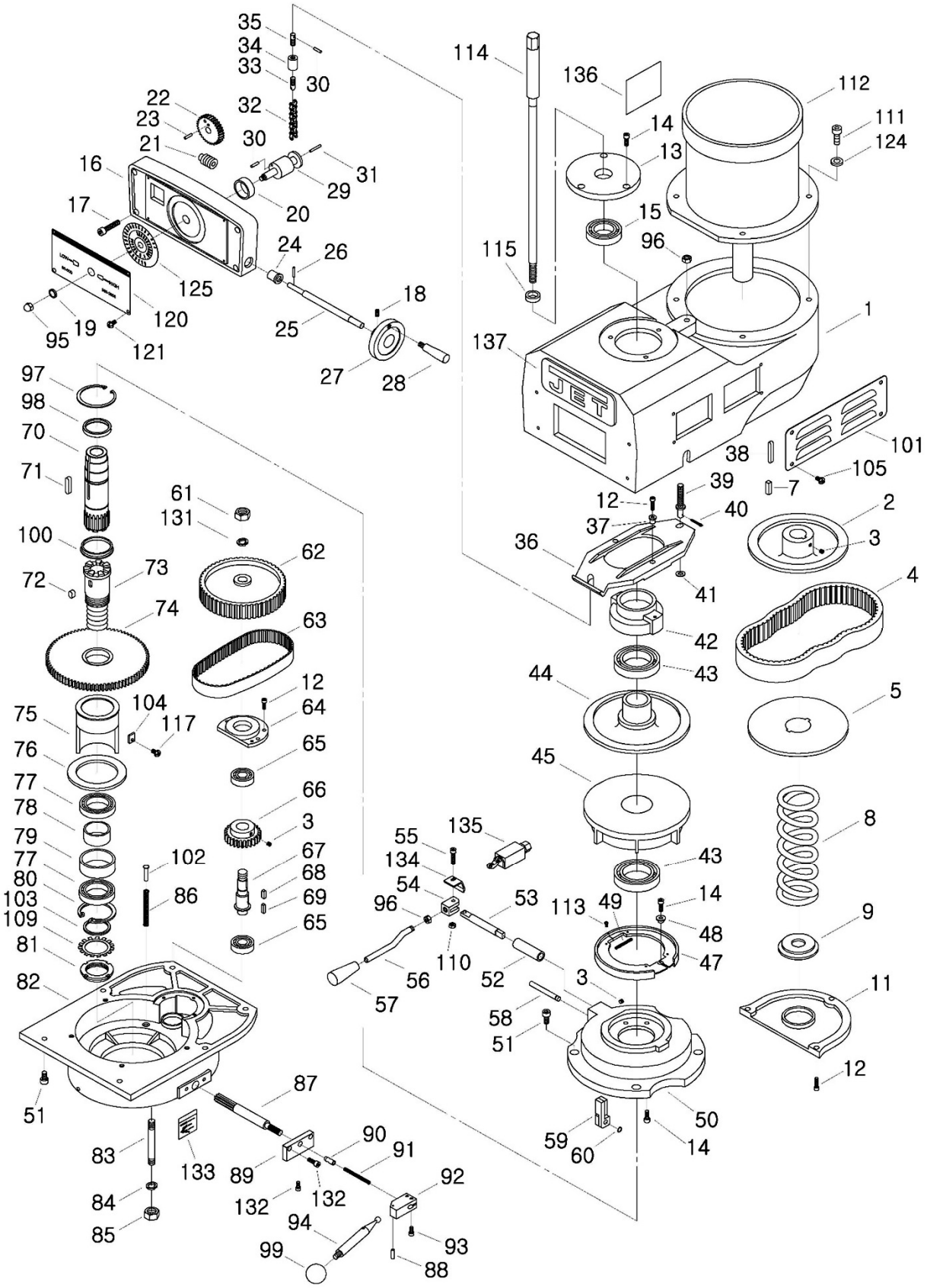
Table 6

13.0 **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.

13.1.1 **JTM-1050VS2 Upper Head Assembly – Exploded View**



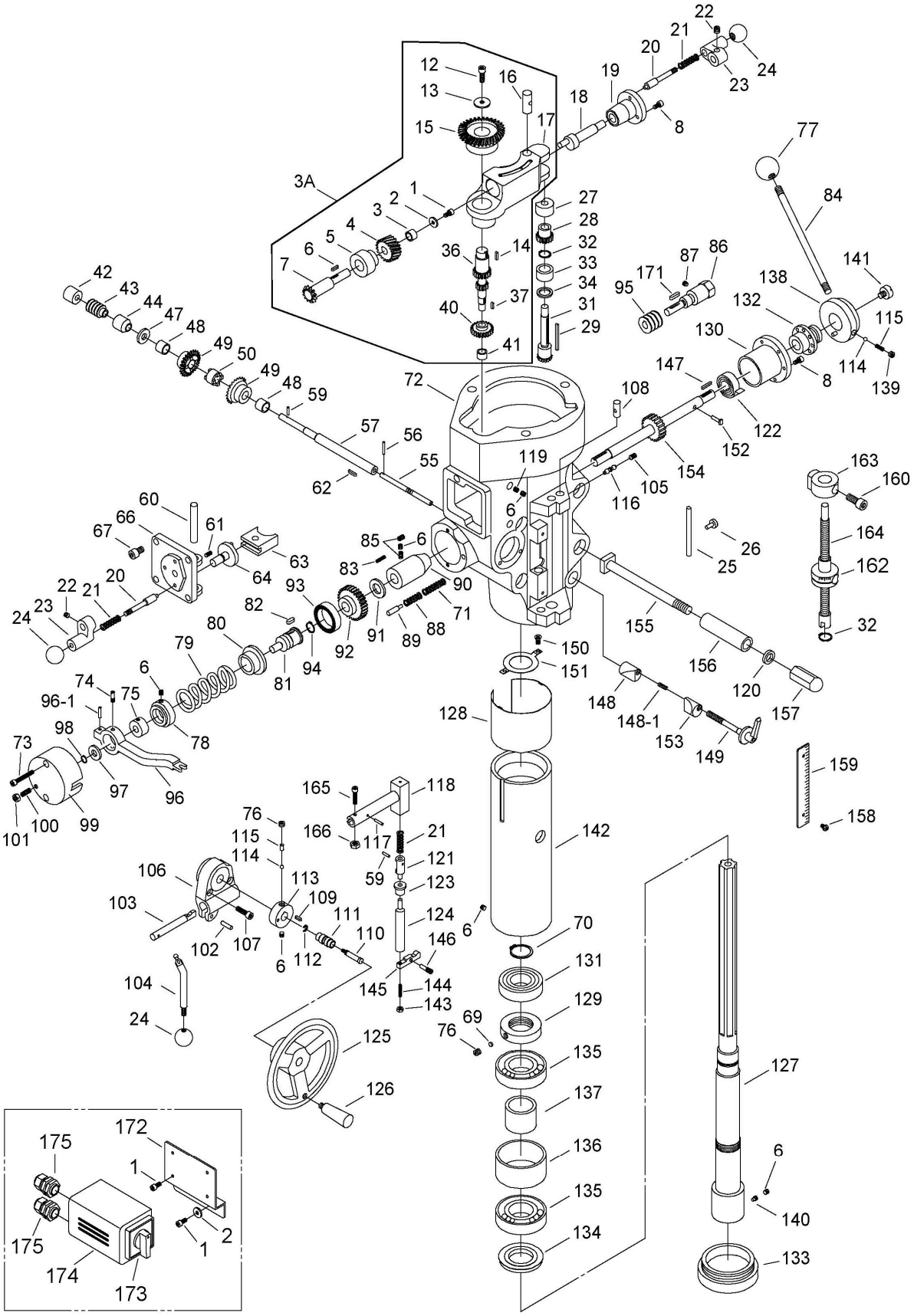
13.1.2 **JTM-1050VS2 Upper Head Assembly – Parts List**

Index No	Part No	Description	Size	Qty
1	JTM949EVS-A77	Upper Guard		1
2	JTM1254RVS-A02	Motor Disc – Upper		1
3	TS-1523011	Socket Set Screw	M6x6L	3
4	JTM1254RVS-A04	Belt	3828 -875L	1
5	JTM1254RVS-A05	Motor Disc – Lower		1
7	6295247	Key	7x7x25L mm	1
8	JTM1254RVS-A08	Spring		1
9	JTM1254RVS-A09	Washer		1
11	JTM949EVS-A69	Motor Pulley Cover		1
12	TS-1504041	Hex Socket Cap Screw	M8x20L	10
13	JTM1254RVS-A13	Upper Cover		1
14	TS-1502041	Hex Socket Cap Screw	M5x16L	10
15	BB-6009ZZ	Ball Bearing	6009ZZ	1
16	JTM1254RVS-A16	Dial Housing		1
17	TS-1503071	Hex Socket Cap Screw	M6x30L	4
18	TS-1523051	Socket Set Screw	M6x16L	2
19	JTM1254RVS-A19	Bushing		1
20	JTM1254RVS-A20	Spacer		1
21	JTM1254RVS-A21	Worm Gear Shaft		1
22	JTM1254RVS-A22	Worm Gear		1
23	5301041	Spring Pin	5x10L mm	2
24	JTM1254VS-A24	Bushing		2
25	JTM1254VS-A25	Shaft		1
26	5302611	Spring Pin	3x12L mm	1
27	JTM1254RVS-A27	Handwheel		1
	JTM1254RVS-A27A	Handwheel Assembly (includes #18,27,28)		1
28	JTM1254RVS-A28	Handle		1
29	JTM1254RVS-A29	Chain axle		1
30	5509313	Spring Pin	4x16L mm	2
31	GA7X-865	Spring Pin	3x25L mm	1
32	JTM1254RVS-A32	Chain		1
33	JTM1254RVS-A33	Screw		1
34	JTM1254RVS-A34	Spacer		1
35	JTM1254RVS-A35	Pin		1
36	JTM1254RVS-A36	Adjustable Plate		1
37	JTM1254RVS-A37	Shift Sleeve		2
38	6294761	Key	6x6x45L mm	1
39	JTM1254RVS-A39	Bottom Pin		1
40	5307431	Spring Pin	3/32"x3/4"	1
41	TS-1550061	Flat Washer	Ø8 mm	1
42	JTM1254RVS-A42	Bearing Housing		1
43	BB-6010ZZ	Ball Bearing	6010ZZ	2
44	JTM1254RVS-A44	Spindle Disc – Upper		1
45	JTM1254RVS-A45	Spindle Disc – Lower		1
47	JTM949EVS-A48	Brake Shoe		1
48	JTM949EVS-A58	Lock Collar		1
49	JTM949EVS-A62	Brake Spring		2
50	JTM949EVS-A43	Brake Base		1
51	TS-1504041	Hex Socket Cap Screw	M8x20L	10
52	JTM949EVS-A53	Brake Sleeve		1
53	JTM949EVS-A54	Spindle Brake Shaft		1
54	JTM949EVS-A56	Spindle Brake Lever Pivot		1
55	TS-1503071	Hex Socket Cap Screw	M6x30L	1
56	JTM949EVS-A63	Spindle Brake Lever		1
57	JTM949EVS-A50	Brake Lock Knob	3/8"	1
58	JTM949EVS-A49	Brake Shaft		1
59	JTM949EVS-A47	Brake Finger Stud (set of 2)		1
60	JTM949EVS-A46	Retaining Ring	STW8	1
61	TS-0581072	Hex Nut	5/8-18UNF	1
62	JTM949EVS-A34	Timing Pulley		1

Index No	Part No	Description	Size	Qty
63	JTM949EVS-A32	Timing Belt	225L100	1
64	JTM949EVS-A19	Ball Bearing Bracket		1
65	BB-6203ZZ	Ball Bearing	6203ZZ	2
66	JTM949EVS-A18	Gear		1
67	JTM949EVS-A16	Gear Shaft		1
68	KF2R5515	Double Round Key	5x5x15L mm	1
69	KF2R5518	Double Round Key	5x5x18L mm	1
70	JTM949EVS-A41	Input Clutch		1
71	5307741	Key	8x7x24L mm	1
72	KF2R8712	Key	8x7x12L mm	1
73	JTM949EVS-A38	Output Clutch		1
74	JTM949EVS-A33	Gear		1
75	JTM949EVS-A31	Bearing Sleeve		1
76	JTM949EVS-A30	Washer		1
77	BB-6908ZZ	Ball Bearing	6908ZZ	2
78	JTM949EVS-A29	Gear Bearing Spacer (Small)		1
79	JTM949EVS-A28	Gear Bearing Spacer (Large)		1
79A	JTM949EVS-A28A	Gear Bearing Spacer Assembly (#78,79)		1
80	RTW62	Retaining Ring	RTW62	1
81	AN08	Bearing Nut	AN08	1
82	JTM949EVS-A01	Upper Pulley Housing		1
83	JTM949EVS-A88	Stud	7/16"x4"	3
84	TS-0720101	Spring Washer	7/16"	3
85	TS-0561041	Hex Nut	7/16"-14	3
86	JTM949EVS-A21	Pressure Spring		3
87	JTM949EVS-A03	Bull Gear Shifter Pinion Shaft		1
88	B-56	Spring Pin	3x20L mm	1
89	JTM949EVS-A04	Hi-Lo Detent Plate		1
90	JTM949EVS-A05	Sleeve		1
91	JTM949EVS-A06	Spring		1
92	JTM949EVS-A08	Hi-Lo Pinion Block		1
93	TS-1502031	Hex Socket Cap Screw	M5x12L	2
94	JTM949EVS-A09	Hi-Lo Shift Handle		1
95	F004478	Cap Nut	5/16”-18UNC	1
96	TS-0570031	Hex Nut	3/8”-16UNC	2
97	F006094	C-Retaining Ring, Int	RTW80	1
98	JTM949EVS-A59	Collar		1
99	BH1/4	Black Plastic Ball	1/4"	1
100	JTM949EVS-A39	Clutch Collar		1
101	JTM949EVS-A75	Side Belt Housing Cover		2
102	JTM949EVS-A22	Spring Shaft		3
103	JTM949EVS-A25	Spacer		1
104	JTM1254RVS-A104	Nut		1
105	F009884	Socket Head Button Screw	M5x8L	8
109	AW08	Bearing Washer	AW08	1
110	TS-1540041	Hex Nut	M6	1
111	TS-0209061	Hex Socket Cap Screw	3/8”-16x1-1/4L	4
112	JTM1050VS2-A112	Motor	3HP 230/ 460V 4P 3Ph	1
	JTM1050VS2-A112-1	Motor Fan (not shown)		1
	JTM1050VS2-A112-2	Motor Fan Cover (not shown)		1
	JTM1050VS2-A112-3	Junction Box Cover (not shown)		1
113	JTM949EVS-A51	Pan Head Screw	1/8"x1/4"	4
114	JTM949EVS-A87	Draw Bar	7/16"	1
115	JTM949EVS-A86	Spacer		1
117	F000233	Phillips Pan Hd Machine Screw	#10-24x1/2"L	1
120	JTM1050VS2-A120	Speed Plate	60-4200 RPM	1
121	TS-2244202	Socket Head Button Screw	M4x20L	4
124	TS-1550071	Flat Washer	M10	4
125	JTM1050VS2-A125	Speed Dial	60-4200 RPM	1
131	TS-0720131	Spring Washer	5/8"	1
132	TS-1502041	Hex Socket Cap Screw	M5x16L	3
133	JTM1050VS2-A133	Speed Range Label	60-4200 RPM	1

Index No	Part No	Description	Size	Qty
134	JTM949EVS-A91	Push Plate		1
135	JTM949EVS-A92	Limit Switch		1
136	JTM1050VS2-A136	Motor Label		1
137	JET-165	JET Logo	165 x 68 mm	1

13.2.1 **JTM-1050VS2 Lower Head Assembly – Exploded View**



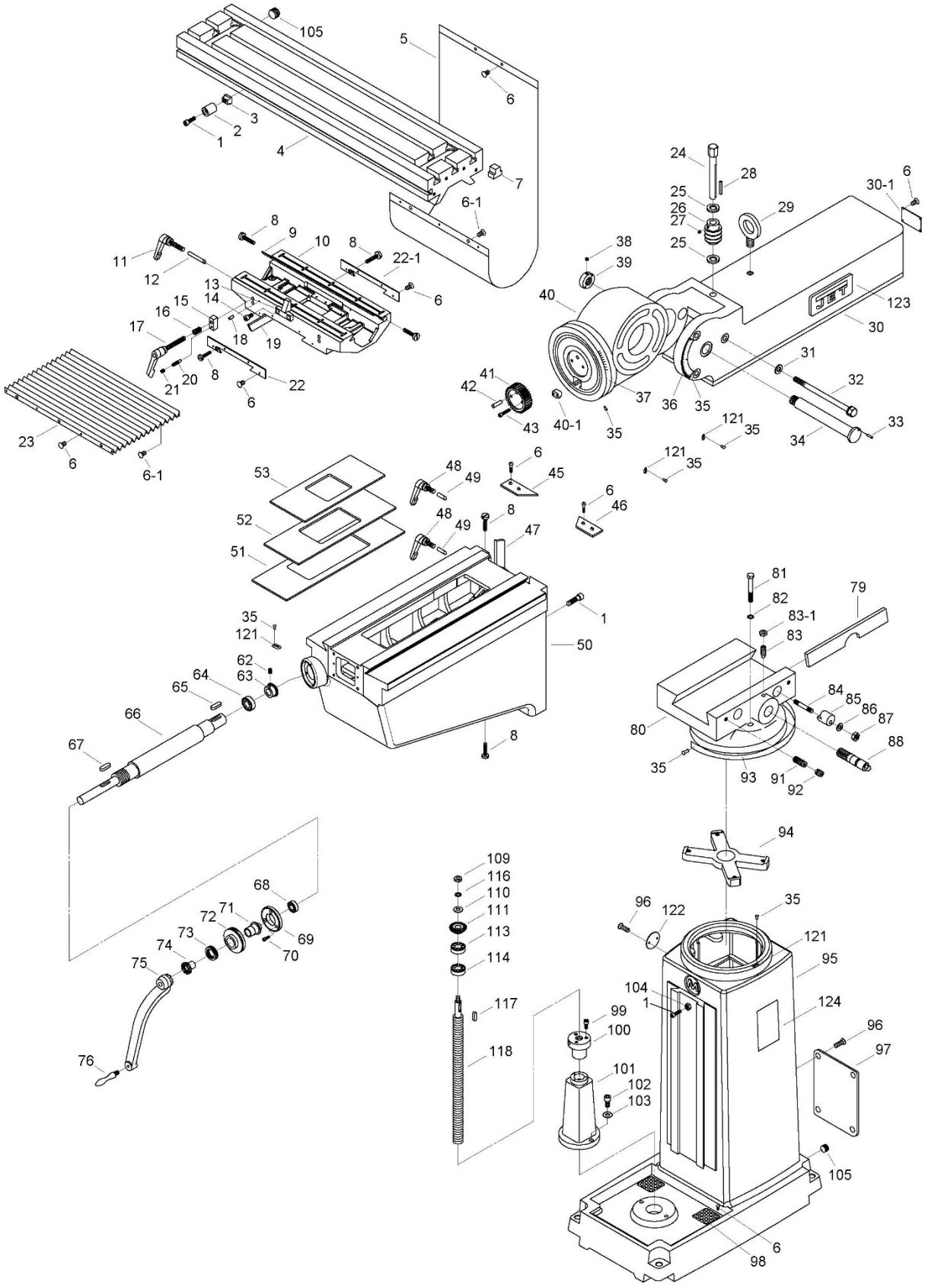
13.2.2 **JTM-1050VS2 Lower Head Assembly – Parts List**

Index No	Part No	Description	Size	Qty
1	TS-1503031	Hex Socket Cap Screw	M6x12L	1
2	TS-1550041	Flat Washer	Ø6xØ16x2t	1
3	JTM949EVS-B07	Worm Gear Spacer		1
3A	JTM949EVS-B03A	Feed Gear Assembly (includes #1-7,12-17,36-37and 40-41)		1
4	JTM949EVS-B08	Feed Drive Worm Gear		1
5	JTM949EVS-B05	Worm Cradle Bushing		1
6	KF2R3312	Key	3x3x12L	1
7	JTM949EVS-B06	Feed Gear Shaft		1
8	TS-1502031	Hex Socket Cap Screw	M5x12	6
12	TS-1503041	Hex Socket Cap Screw	M6x16L	1
13	JTM949EVS-B13	Flat Washer	Ø6	1
14	KF2R5508	Key	5x5x8L	1
15	JTM949EVS-B15	Feed Reverse Bevel Gear		1
16	JTM949EVS-B16	Feed Engage Pin		1
17	JTM949EVS-B17	Worm Gear Cradle		1
18	JTM949EVS-B18	Cam Rod		1
19	JTM949EVS-B19	Shift Sleeve		1
20	JTM949EVS-B20	Lock Rod		2
21	JTM949EVS-B21	Spring		3
22	5302731	Socket Set Screw	M8x6L	2
23	JTM949EVS-B23	Crank		2
24	BH1/4	Black Plastic Ball	1/4"	3
25	JTM949EVS-B25	Indicator Rod		1
26	JTM949EVS-B26	Indicator Rod Screw		1
27	JTM949EVS-B27	Upper Bushing		1
28	JTM949EVS-B28	Cluster Gear		1
29	KF2R3345	Key	3x3x45L mm	1
31	JTM949EVS-B31	Bevel Gear Shaft		1
32	STW16	Retaining Ring	STW16	2
33	JTM949EVS-B33	Bevel Gear Bushing		1
34	JTM949EVS-B34	Spacer		1
36	JTM949EVS-B36	Feed Drive Gear		1
36A	JTM949EVS-B36A	Feed Drive Gear Assembly (#36,37)		1
37	KF2R3308	Key	3x3x8L mm	1
40	JTM949EVS-B40	Feed Drive Gear		1
41	BB-BA78Z	Needle Bearing	BA78Z	1
42	JTM949EVS-B42	Bushing		1
43	JTM949EVS-B43	Worm		1
44	JTM949EVS-B44	Feed Worm Shaft Bushing		1
47	JTM949EVS-B47	Bevel Gear Thrust Spacer		1
48	JTM949EVS-B48	Bushing		2
49	JTM949EVS-B49	Feed Reverse Bevel Gear		2
50	JTM949EVS-B50	Feed Reverse Clutch		1
55	JTM949EVS-B55	Reverse Clutch Rod		1
56	TS-209203	Spring Pin	Ø3x20L mm	1
57	JTM949EVS-B57	Feed Worm Shaft		1
59	5302611	Spring Pin	3x12 mm	2
60	JTM949EVS-B60	Feed Shift Rod		1
61	TS-1522031	Socket Set Screw	M5x10	1
62	KF2R3315	Key	3x3x15 mm	1
63	JTM949EVS-B63	Feed Gear Shift Fork		1
64	JTM949EVS-B64	Cluster Gear Shift Crank		1
66	JTM949EVS-B66	Cluster Gear Cover		1
67	TS-1502031	Hex Socket Cap Screw	M5x12L	4
69	JTM949EVS-B69	Lock Block		1
70	2210-266	Retaining Ring	STW30	1
71	JTM949EVS-B71	Spring	10x20L mm	1
72	JTM949EVS-B72	Quill Housing	85mm	1
73	TS-1502081	Hex Socket Cap Screw	M5x35L	2
74	JTM949EVS-B74	Clutch Ring Pin		2

Index No	Part No	Description	Size	Qty
75	JTM949EVS-B75	Clutch Ring		1
76	5302731	Socket Set Screw	M8x6L	2
77	JTM949EVS-B77	Handle		1
78	JTM949EVS-B78	Overload Clutch Lockout		1
79	JTM949EVS-B79	Safety Clutch Spring		1
80	JTM949EVS-B80	Overload Clutch		1
80A	JTM949EVS-B80A	Overload Clutch Assembly (#78,80,81)		1
81	JTM949EVS-B81	Overload Clutch Sleeve		1
82	KF2R5516	Key	5x5x16L	1
83	TS-1532052	Pan Head Machine Screw	M4x16L	3
84	JTM949EVS-B84	Handle		1
85	TS-1523031	Socket Set Screw	M6x10L	2
86	JTM949EVS-B86	Worm Shaft		1
87	TS-1523011	Set Screw	M6X6L	1
88	JTM949EVS-B88	Spring		1
89	JTM949EVS-B89	Spring Plunger		1
90	JTM949EVS-B90	Pinion Shaft		1
91	JTM949EVS-B91	Spacer		1
92	JTM949EVS-B92	Overload Clutch Worm Gear		1
93	JTM949EVS-B93	Overload Clutch Ring		1
94	STW22	Retaining Ring	STW22	1
95	JTM949EVS-B95	Worm Gear		1
96	JTM949EVS-B96	Trip Lever		1
96-1	GA7X-122	Spring Pin	Ø5x20L mm	1
97	JTM949EVS-B97	Washer		1
98	STW10	Retaining Ring	STW10	1
99	JTM949EVS-B99	Clutch Arm Cover		1
100	TS-1523051	Socket Set Screw	M6x16L	1
101	TS-2311061	Hex Nut	M6	1
102	5625391	Spring Pin	Ø5x16L mm	1
103	JTM949EVS-B103	Cam Rod		1
104	JTM949EVS-B104	Trip Handle		1
105	5302731	Socket Set Screw	M8x6L	1
106	JTM949EVS-B106	Feed Trip Bracket		1
107	TS-1503051	Hex Socket Cap Screw	M6x20L	2
108	JTM949EVS-B108	Plunger		1
109	KF2R3312	Key	3x3x12L	1
110	JTM949EVS-B110	Feed Reverse Stud Bolt		1
110A	JTM949EVS-B110A	Feed Reverse Stud Assembly (#110,111,112)		1
111	JTM949EVS-B111	Feed Reverse Stud		1
112	ETW6	Retaining Ring	ETW6	1
113	JTM949EVS-B113	Handwheel Clutch		1
114	SB-3/16	Steel Ball	3/16"	2
115	JTM949EVS-B115	Spring		2
116	JTM949EVS-B116	Lever		1
117	JTM949EVS-B117	Spring Pin	Ø3X16L mm	1
118	JTM949EVS-B118	Cam Rod Sleeve Assembly		1
119	TS-1523011	Socket Set Screw	M6x6L	2
120	JTM949EVS-B120	Flat Washer	M13	4
121	JTM949EVS-B121	Trip Plunger		1
122	JTM949EVS-B122	Adjustable Spring		1
123	JTM949EVS-B123	Bushing		1
124	JTM949EVS-B124	Feed Trip Plunger		1
125	JTM949EVS-B125	Handwheel		1
125A	JTM949EVS-B125A	Handwheel Assembly (#125,126)		1
126	JTM949EVS-B126	Handle		1
127	JTM949EVS-B127	Spindle	R8	1
128	JTM949EVS-B128	Quill Skirt		1
129	JTM949EVS-B129	Lock Nut	M35	1
130	JTM949EVS-B130	Spring Cover		1
131	BB-6206ZZ	Ball Bearing	6206ZZ	1
132	JTM949EVS-B132	Hub Sleeve		1

Index No	Part No	Description	Size	Qty
133	JTM949EVS-B133	Nose Piece		1
134	JTM949EVS-B134	Spindle Shield		1
135	BB-7207C	Ball Bearing	7207C	2
136	JTM949EVS-B136	Bearing Spacer (large)		1
136A	JTM949EVS-B136A	Bearing Spacer Assembly (#136,137)		1
137	JTM949EVS-B137	Bearing Spacer (small)		1
138	JTM949EVS-B138	Hub		1
139	TS-0270011	Socket Set Screw	5/16"-18x1/4"	1
140	TS-1523011	Socket Set Screw	M6x6	1
141	JTM949EVS-B141	Pinion Shaft Hub		1
142	JTM949EVS-B142	Quill		1
143	TS-1540021	Hex Nut	M4	1
144	TS-1521071	Socket Set Screw	M4x20L	1
145	JTM949EVS-B145	Feed Trip Lever		1
146	JTM949EVS-B146	Trip Lever Pin		1
147	KF2R5525	Key	5x5x25L	1
148	JTM949EVS-B148	Quill Lock Sleeve		1
148-1	JTM949EVS-B148-1	Spring		1
149	JTM949EVS-B149	Lock Handle	M8x80L	1
150	TS-1533032	Pan Head Screw	M5x10L	2
151	JTM949EVS-B151	Washer		1
152	JTM949EVS-B152	T-type Pin		1
153	JTM949EVS-B153	Quill Lock Sleeve		1
154	JTM949EVS-B154	Quill Pinion Shaft		1
154A	JTM949EVS-B154A	Quill Pinion Shaft Assembly (#152,154)		1
155	JTM949EVS-B155	T-Bolt Assembly		4
156	JTM949EVS-B156	Spacer		4
157	JTM949EVS-B157	Lock Nut		4
158	TS-2171012	Pan Head Screw	M4x6L	2
159	JTM949EVS-B159	Micrometer Scale		1
160	TS-0209032	Hex Socket Cap Screw	3/8"-24UNFx3/4"	1
162	JTM949EVS-B162	Micrometer Nut		1
163	JTM949EVS-B163	Quill Stop Knob		1
164	JTM949EVS-B164	Quill Micro-Screw		1
165	TS-1502051	Hex Socket Cap Screw	M5x20L	1
166	TS-1540031	Hex Nut	M5	1
171	KF2R4418	Key	4x4x18L mm	1
172	JTM1050VS2-B172	Bracket		1
173	JTM1050VS2-B173	Reversible Switch		1
174	JTM1050VS2-B174	Switch Housing		1
175	JTM1050VS2-B175	Cable Gland	PG-13.5	2

13.3.1 **JTM-1050VS2 Column and Base Assembly – Exploded View**

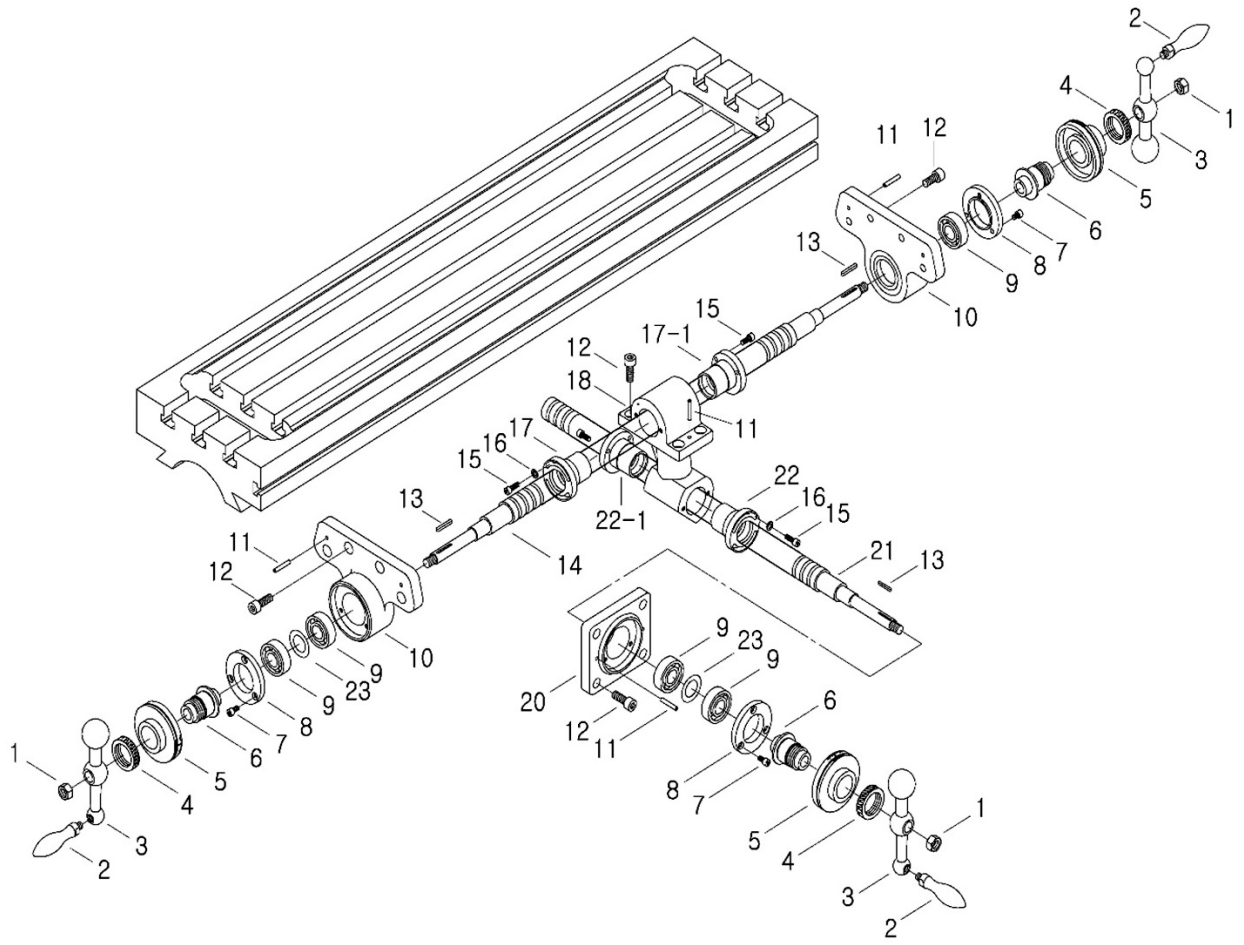


13.3.2 **JTM-1050VS2 Column and Base Assembly – Parts List**

Index No	Part No	Description	Size	Qty
1	TS-2249252	Socket Head Button Screw	M10x25L	4
2	JTM949EVS-C31	Bushing		2
3	JTM949EVS-C30	Nut		2
4	JTM1050EVS2-C04	Table	10"x50"	1
5	JTM1050EVS2-C05	Flat Way Cover		1
6	TS-2245102	Socket Head Button Screw	M5x10L	24
6-1	TS-2245162	Socket Head Button Screw	M5x16L	4
7	JTM1050EVS2-C07	T Rubber	16x32mm	6
8	JTM949EVS-C34	Adjust Screw	M8x37L	6
9	JTM1050EVS2-C09	Table Gib		1
10	JTM1050EVS2-C10	Saddle		1
11	JTM1050EVS2-11	Handle	M12x50L	1
12	JTM1050EVS2-C12	Lock Pin		1
13	JTM1050EVS2-C13	Limiter		1
14	TS-1504041	Hex Socket Cap Screw	M8x20L	2
15	JTM1050EVS2-C15	Locker		2
16	JTM1050EVS2-16	Spring		2
17	JTM1050EVS2-17	Handle	M12x103L	2
18	JTM1050EVS2-18	Pin		2
19	JTM1050EVS2-19	Saddle Knee Gib		1
20	JTM1050EVS2-20	Lock Screw		2
21	TS-1524031	Socket Set Screw	M8x12L	2
22	JTM1050EVS2-22	Front Wiper		1
22-1	JTM1050EVS2-22-1	Rear Wiper		1
23	JTM1050EVS2-23	Pleated Way Cover		1
24	JTM1050EVS2-24	Shaft		1
25	JTM1050EVS2-25	Washer		2
26	JTM949EVS-C07	Worm	Ø44.4x17.4x50.7L	1
27	TS-1523021	Socket Set Screw	M6x8L	1
28	KEY5550	Key	5x5x50L mm	1
29	JTM1050EVS2-C29A	Lifting Ring	M20	1
30	JTM1050EVS2-30	Ram		1
30-1	JTM1050EVS2-30-1	Plate		1
31	JTM1050EVS2-30-1	Plate		1
32	JTM1050EVS2-32	Adapter Locking Bolt	M14x203L	3
33	6293347	Spring Pin	Ø3x16L mm	1
34	JTM1050EVS2-34	Adapter Shaft	Ø30x200L mm	1
35	RN2L6	Rivet	Ø2x6L mm	12
36	JTM949EVS-C12	Angle Scale		1
37	JTM949EVS-C06	Adapter Scale		1
38	TS-1521031	Set Screw	M4x8L	1
39	JTM1050EVS2-39	Lock Nut	Ø45x13L	1
40	JTM1050EVS2-C40	Ram Adapter	Ø30 mm	1
40-1	JTM949EVS-C03-1	Lock Stud		1
41	JTM949EVS-C02	Worm Gear		1
42	AB1012W-A83	Spring Pin	Ø6x30L mm	1
43	TS-1504061	Hex Socket Cap Screw	M8x30L	2
45	JTM1050EVS2-45	Knee Wiper (Left)		1
46	JTM1050EVS2-46	Knee Wiper (Right)		1
47	JTM1050EVS2-47	Gib		1
48	JTM949EVS-C21	Lock Handle Assembly	M12x25L	5
49	JTM1050EVS2-49	Lock Pin	Ø10*37L*50° mm	2
50	JTM1050EVS2-50	Knee		1
51	JTM949EVS-C48	Chip Guard (Bottom)	580MM L	1
52	JTM949EVS-C49	Chip Guard (Middle)	470MM L	1
53	JTM949EVS-C41	Chip Guard (Top)	360MM L	1
62	TS-1523021	Socket Set Screw	M6x8L	2
63	JTM949EVS-C74	Bevel Gear	18T	1
64	BB-6004ZZ	Bearing	6004ZZ	1
65	KF2R4418	Key	4x4x18L mm	1
66	JTM1050EVS2-66	Elevating Shaft		1
67	KF2R4418	Key	4x4x18L mm	1

Index No	Part No	Description	Size	Qty
68	BB-6204ZZ	Bearing	6204ZZ	1
69	JTM949EVS-C68	Housing	DISTANCE 62	1
70	TS-1503041	Hex Socket Cap Screw	M6x16L	3
71	JTM949EVS-C67	Dial Holder	51L	1
72	JTM949EVS-C66	Dial (Inch)	100/0.001"	1
73	JTM949EVS-C65	Dial Lock Nut		1
74	JTM949EVS-C64	Clutch Insert	4mm, 9T	1
75	JTM1050EVS2-75	Elevating Crank		1
76	JTM949EVS-C62	Handle		1
79	JTM1050EVS2-79	Turret Gib		1
80	JTM1050EVS2-80	Turret		1
81	SNH12L150	Hex Cap Screw	M12x150L	4
82	TS-2361121	Spring Washer	Ø13 mm	4
83	TS-2279301	Socket Set Screw	M10x30L	1
83-1	TS-1540071	Hex Nut	M10	1
84	JTM1050EVS2-84	Locking Bolt	M14x110	2
85	JTM1050EVS2-85	Table Lock Piece		2
86	TS-155009	Flat Washer	Ø14 mm	2
87	TS-154009	Hex Nut	M14	2
88	JTM1050EVS2-88	Ram Pinion	M2.54-13T	1
91	JTM1050EVS2-91	Locking Screw	M8x30L	2
92	TS-1524011	Socket Set Screw	M8x8L	2
93	JTM949EVS-C81	Turret Scale		1
94	JTM949EVS-C27	Spider		1
95	JTM949EVS-C28	Column		1
96	TS-2246122	Socket Head Button Screw	M6x12L	6
97	JTM949EVS-C86	Cover		1
98	JTM949EVS-C87	Strainer Net		2
99	TS-1503041	Hex Socket Cap Screw	M6x16L	3
100	JTM949EVS-C53	Lead Screw Nut	Ø32 x 5 TPI	1
101	JTM949EVS-C52	Brass Nut		1
102	TS-1505051	Hex Socket Cap Screw	M10x35L	2
103	TS-2361101	Lock Washer	M10	2
104	TS-1540071	Hex Nut	M10	1
105	SH(PT)1/2B	Oil Plug	1/2"PT	3
109	TS-0561052	Hex Nut	1/2"-20UNF	1
110	TS-155009	Washer	Ø13xØ32x5t mm	1
111	JTM949EVS-C58	Bevel Gear	36T	1
113	BB-6205ZZ	Bearing	6205ZZ	1
114	BB-51305	Thrust Bearing	51305	1
116	TS-0720111	Spring Washer	Ø13 mm	1
117	KF2R5520	Key	5x5x20L mm	1
118	JTM949EVS-C61	Lead Screw (Inch)	Ø32x5TPI (570L)	1
121	JTM1254VS-C91	Pointer		2
122	JTM949EVS-C84	Side Cover		1
123	JET-254	JET Logo	254x105 mm	2
124	LM000357	ID/Warning Label		1
	JTM1050VS2-TB	Tool Box Kit Complete (not shown)		1

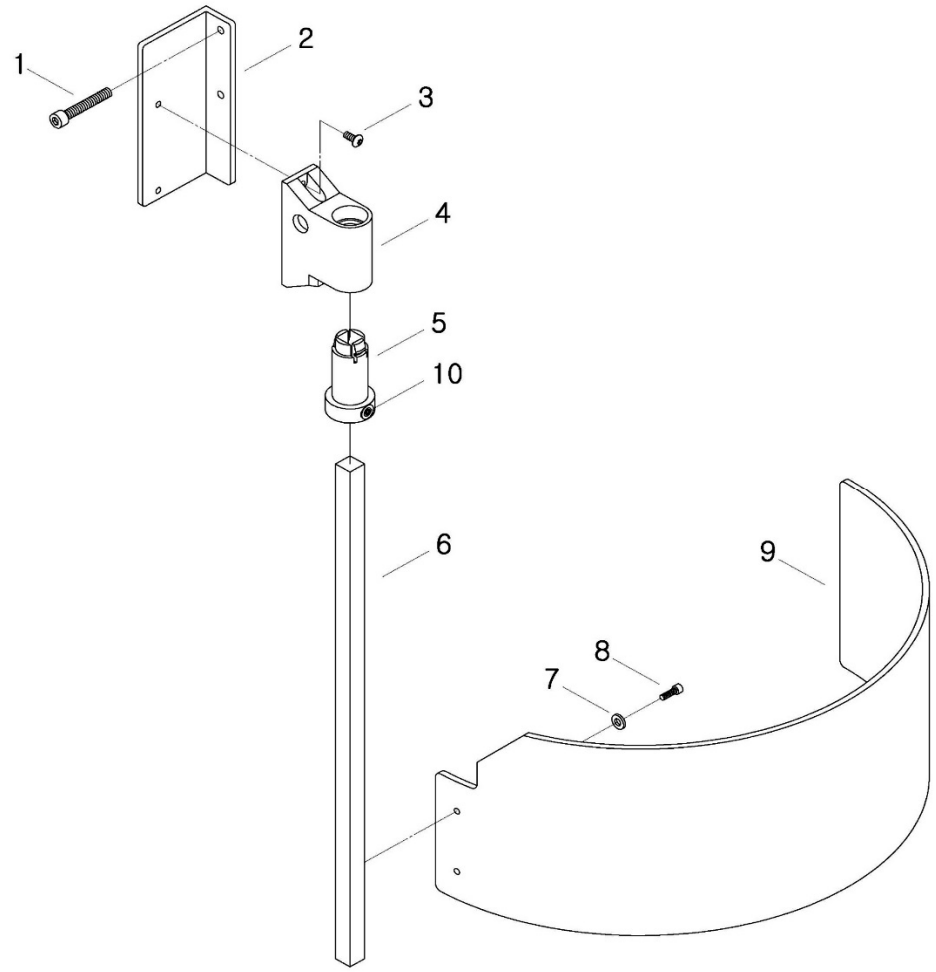
13.4.1 **JTM-1050VS2 Table Leadscrew Assembly – Exploded View**



13.4.2 **JTM-1050VS2 Table Leadscrew Assembly – Parts List**

Index No	Part No	Description	Size	Qty
1	TS-0561052	Hex Nut	1/2"-20UNF	3
2	JTM949EVS-D02	Handle	3/8"	3
3	JTM949EVS-D03	Ball Crank		3
4	JTM949EVS-D04	Dial Nut		3
5	JTM949EVS-D05	Dial (Inch)	200/0.001"	3
6	JTM949EVS-D06	Dial Holder		3
7	TS-1503031	Hex Socket Cap Screw	M6x12	9
8	JTM1050VS2-D08	Cover		3
9	BB-6204ZZ	Ball Bearing	6204ZZ	5
10	JTM1050VS2-D10	Bearing Bracket	PCD Ø60	2
11	5311251	Spring Pin	Ø5x30 mm	6
12	TS-1505031	Hex Socket Cap Screw	M10x25	16
13	KF2R3325	Key	3x3x25 mm	3
14	JTM1050EVS2-D14	Longitudinal Feed Screw	Ø32 x 5tpi (1531L)	1
15	TS-1503041	Hex Socket Cap Screw	M6x16	10
16	TS-1550041	Flat Washer	M6	4
17	JTM949EVS-D17	Longitudinal Feed Adjustment Nut (inch)	Ø32 x 5 TPI	1
17-1	JTM949EVS-D17-1	Feed Screw Nut (inch)	Ø32 x 5 TPI	1
18	JTM1050EVS2-D18	Feed Nut Bracket		1
20	JTM1050VS2-D20	Cross Feed Bearing Bracket	PCD Ø60	1
21	JTM1050EVS2-D21	Cross Feed Screw	Ø32 x 5 TPI (720L)	1
22	JTM949EVS-D22	Cross Feed Adjustment Nut (inch)	Ø32 x 5 tpi	1
22-1	JTM949EVS-D22-1	Cross Feed Nut (inch)	Ø32 x 5 tpi	1
23	JTM949EVS-D23	Adjusting Washer	Ø45xØ34x0.075t mm	2

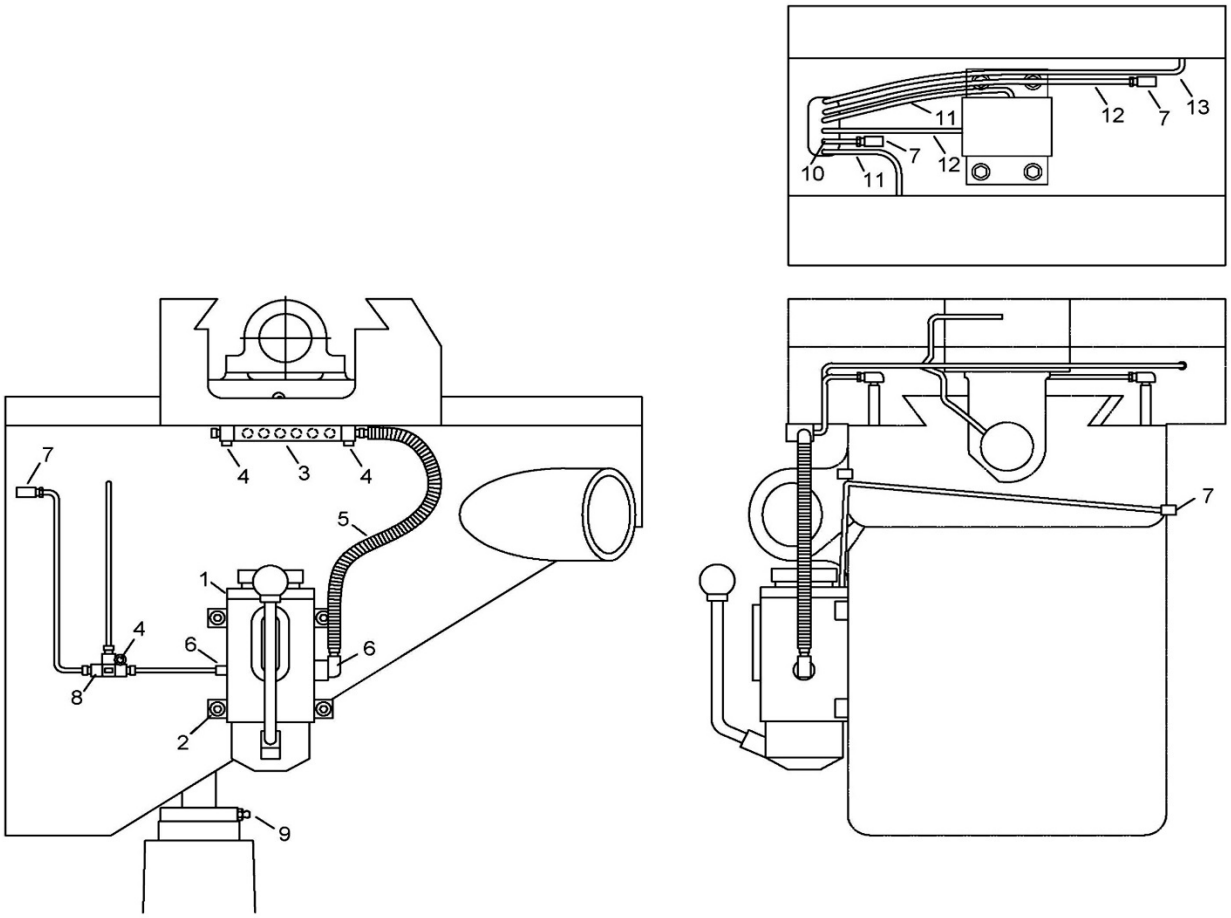
13.5.1 **JTM-1050VS2 Spindle Guard Assembly – Exploded View**



13.5.2 **JTM-1050VS2 Spindle Guard Assembly – Parts List**

Index No	Part No	Description	Size	Qty
	JTM949EVS-SGA	Spindle Guard Assembly (#1 thru 10)		1
1	TS-1502101	Hex Socket Cap Screw	M5x45L	2
2	JTM949EVS-H02	Support Plate		1
3	TS-2245102	Socket Head Button Screw	M5x10L	2
4	JTM949EVS-H04	Bushing Bracket		1
	JTM949EVS-H04A	Bushing Bracket Assembly (includes #4,5,10)		1
5	JTM949EVS-H05	Bushing		1
6	JTM949EVS-H06	Support Rod		1
7	TS-1550031	Flat Washer	Ø5 mm	2
8	TS-1502031	Hex Socket Cap Screw	M5x12L	2
9	JTM949EVS-H09	Spindle Guard		1
10	TS-1522021	Socket Set Screw	M5x8L	1

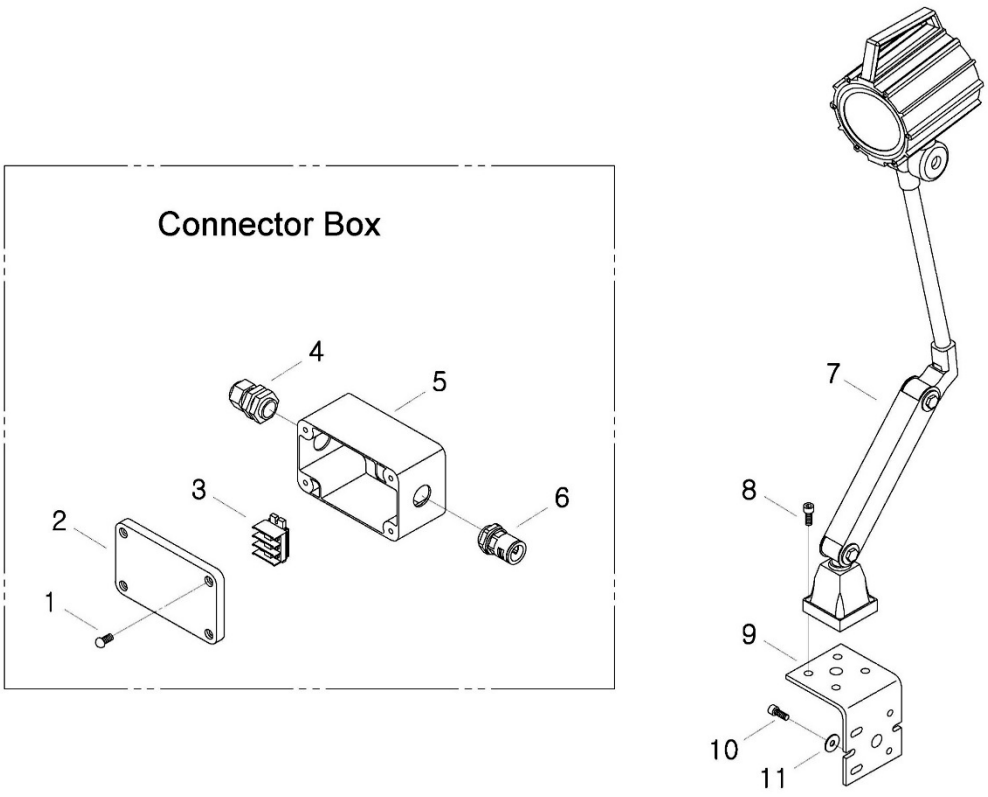
13.6.1 **JTM-1050VS2 One-Shot Lubrication System – Exploded View**



13.6.2 **JTM-1050VS2 One-Shot Lubrication System – Parts List**

Index No	Part No	Description	Size	Qty
1	LT-8	Manual Oiler		1
2	TS-1503061	Hex Socket Cap Screw	M6x25L	4
3	JTM949EVS-J09	Distributor	Ø4mm, 8 holes	1
4	TS-1502061	Hex Socket Cap Screw	M5x25L	3
5	JTM1050VS2-05	Flexible Steel Tube	Ø4-500MM	1
6	PH-1-1/PB-4	Check Joint	1/8PT	2
7	JTM949EVS-J04	Elbow Adapter	1/8PT	4
8	PKD-4	T-Joint	Ø4mm, 3 holes	1
9	JTM1050VS2-09	Grease Nipple	1/8PT	1
10	AP-180	Aluminum Pipe	Ø4x180L mm	1
11	AP-290	Aluminum Pipe	Ø4x290L mm	2
12	AP-380	Aluminum Pipe	Ø4x380L mm	2
13	AP-480	Aluminum Pipe	Ø4x480L mm	1

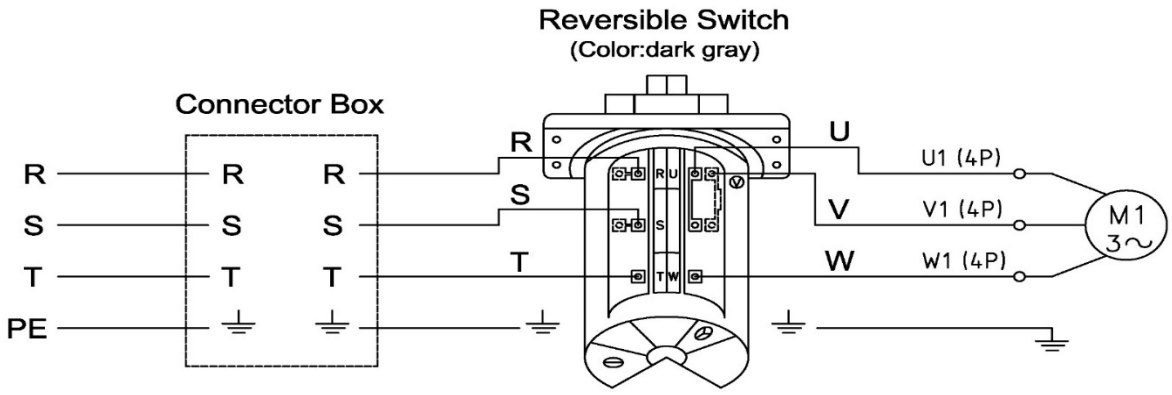
13.6.1 **JTM-1050VS2 Work Lamp & Connector Box – Exploded View**

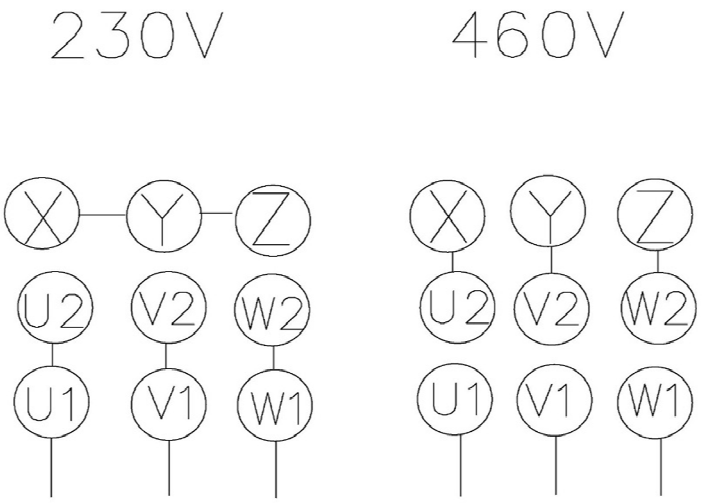


13.6.2 **JTM-1050VS2 Work Lamp & Connector Box – Parts List**

Index No	Part No	Description	Size	Qty
1	JTM1050VS2-G01	Pan Head Screw	M4x16L	4
2	JTM1050VS2-G02	Plastic Connector Box Cover		1
3	JTM1050VS2-G03	Terminal Block		1
4	JTM1050VS2-G04	Cable Gland	M20S	1
5	JTM1050VS2-G05	Plastic Connector Box		1
6	JTM1050VS2-G06	Nylon Flexible Conduit Connector	FB-03BF	1
7	JTM1050VS2-G07	LED Lamp	110V LED	1
8	TS-1502041	Hex Socket Cap Screw	M5x16	4
9	JTM949EVS-G15	Work Light Bracket		1
10	TS-1503041	Hex Socket Cap Screw	M6x16	2
11	TS-1550041	Flat Washer	Ø6 mm	2

14.0 **Electrical connections for JTM-1050VS2**





15.0 **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 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.

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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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