



# Operating Instructions and Parts Manual Electronic Variable Speed Turret Mill

Models: JTM-949EVS/230, JTM-949EVS4  
JTM-1050EVS2, JTM-1050EVS4



JTM-949EVS/230 shown

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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. Replace warning labels if they become obscured or removed.
3. 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.
4. Do not use this turret mill for other than its intended use. If used for other purposes, JET disclaims any real or implied warranty and holds itself harmless from any injury that may result from that use.
5. Always wear approved safety glasses/face shields while using this turret mill. Everyday eyeglasses only have impact resistant lenses; they are not safety glasses.
6. Before operating this turret mill, remove tie, rings, watches and other jewelry, and roll sleeves up past the elbows. Do not wear loose clothing. Confine long hair. Non-slip footwear or anti-skid floor strips are recommended. Do not wear gloves.
7. Wear ear protectors (plugs or muffs) during extended periods of operation.
8. Do not operate this machine while tired or under the influence of drugs, alcohol or any medication.
9. Make certain the switch is in the OFF position before connecting the machine to the power supply.
10. Make certain the machine is properly grounded.
11. Make all machine adjustments or maintenance with the machine unplugged from the power source.
12. 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.
13. 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.
14. 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.
15. Do not use power tools in damp/wet locations or other dangerous environments.
16. Do not expose them to rain. Provide for adequate space surrounding work area and non-glare, overhead lighting.
17. Keep the floor around the machine clean and free of scrap material, oil and grease.
18. Keep visitors a safe distance from the work area. Keep children away. Workshop should be child proof with padlocks, master switches or by removing starter keys.
19. Give your work undivided attention. Looking around, carrying on a conversation and "horse-play" are careless acts that can result in serious injury.
20. Maintain a balanced stance at all times so that you do not fall against cutters or other moving parts. Do not overreach or use excessive force to perform any machine operation.
21. Use the right tool at the correct speed and feed rate. 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.
22. Use recommended accessories; improper accessories may be hazardous.
23. Maintain tools with care. Keep cutters sharp and clean for the best and safest performance. Follow instructions for lubricating and changing accessories.
24. Turn off the machine before cleaning. Use a brush or compressed air to remove chips or debris — do not use your hands.
25. Do not stand on the machine. Serious injury could occur if the machine tips over.
26. Never leave the machine running unattended. Turn the power off and do not leave the machine until it comes to a complete stop.
27. Remove loose items and unnecessary work pieces from the area before starting the machine.

28. Clamp workpiece or brace against column to prevent rotation. For safety and use of both hands, use clamps or a vise to hold work.
29. Use recommended speed for cutter/drill accessory and workpiece material.
30. Direction of feed – feed work into a blade or cutter against the direction of rotation of the blade or cutter only.
31. Installation work and electrical wiring must be done by a qualified electrician in accordance with all applicable codes and standards.

**⚠ 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.

**⚠ 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.

**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 even fatal, injury.

## 4.0 About this manual

This manual is provided by JET, covering the safe operation and maintenance procedures for JET Model JTM-949EVS series and JTM-1050EVS series Turret Mills. This manual contains instructions on installation, safety precautions, general operating procedures, maintenance instructions and parts breakdown. Your machine has been designed and constructed to provide consistent, long-term operation if used in accordance with the instructions as set forth in this document.

If there are questions or comments, please contact your local supplier or JET.

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 Specifications

Table 1

Model number	JTM-949EVS/230	JTM-949EVS4	JTM-1050EVS2/230	JTM-1050EVS4
Stock number	691500	690701	691600	690801
<b>Motor and Electricals</b>				
Motor type	TEFC			
Horsepower	3 HP (2.24 kW)			
Phase	3			
Voltage	230	460	230	460
Cycle	60 Hz			
Listed FLA (full load amps)	8 A	4 A	8 A	4 A
Motor speed	1720 RPM			
Power transfer	Pulley/gears			
Sound emission <sup>1</sup>	Without load	72 dB (at 3.28 ft. from machine)		
	With load	80 dB (at 3.28 ft. from machine)		
<b>Head and Spindle</b>				
Spindle taper	R8			
Diameter of quill	3.375 in. (85.75 mm)			
Number of spindle speeds	variable			
Range of spindle speeds	60-500 / 500-4500 RPM			
Downfeeds per revolution of spindle	0.0015, 0.003, 0.006 in			
Spindle travel	5 in. (127 mm)			
Head movement, left and right	90 deg.			
Head movement, fore and aft	45 deg.			
Spindle nose to table, Maximum distance	20-3/4 in. (530 mm)			
Spindle center to column, Maximum distance	18-1/8 in. (460 mm)		26-3/4 in. (681 mm)	
Spindle center to column Minimum distance	5.2 in. (132 mm)		5.9 in. (150 mm)	
Collet capacity	1/8 to 7/8 in.			
Ram travel, maximum	8-1/8 in. (206 mm)		17-3/8 in. (440 mm)	
<b>Table and Knee</b>				
Table size	9 x 49 in. (229 x 1245 mm)		10 x 50 in. (250 x 1270 mm)	
Longitudinal table travel, max.	30-3/4 in. (784 mm)		29-7/8 in. (760 mm)	
Table cross travel, max.	12 in. (305 mm)		14-3/4 in. (375 mm)	
Number of T-slots	3			
T-slot size (width x depth)	5/8 x 3/4 in. (15.9 x 19 mm)			
T-slot centers	2-1/2 in. (63.5 mm)			
Table load, max.	660 lbs. (300 kg)		840 lbs. (380 kg)	
Knee travel, max.	15-3/4 in. (402 mm)		16-1/8 in. (412 mm)	
<b>Misc. Dimensions</b>				
Saddle width	20 in. (510 mm)			
Column width	11-3/8 in. (290 mm)			
Overall dimensions, assembled	65-3/4 W x 63 D x 85-3/4 H in. (1670 x 1600 x 2178 mm)			
<b>Weights</b>				
Net weight, approx.	2420 lb. (1100 kg)		2486 lb. (1130 kg)	
Shipping weight, approx.	2552 lb. (1160 kg)		2618 lb. (1190 kg)	

<sup>1</sup> 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.

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.

## 5.1 Machine dimensions – JTM-949EVS and JTM-1050EVS series

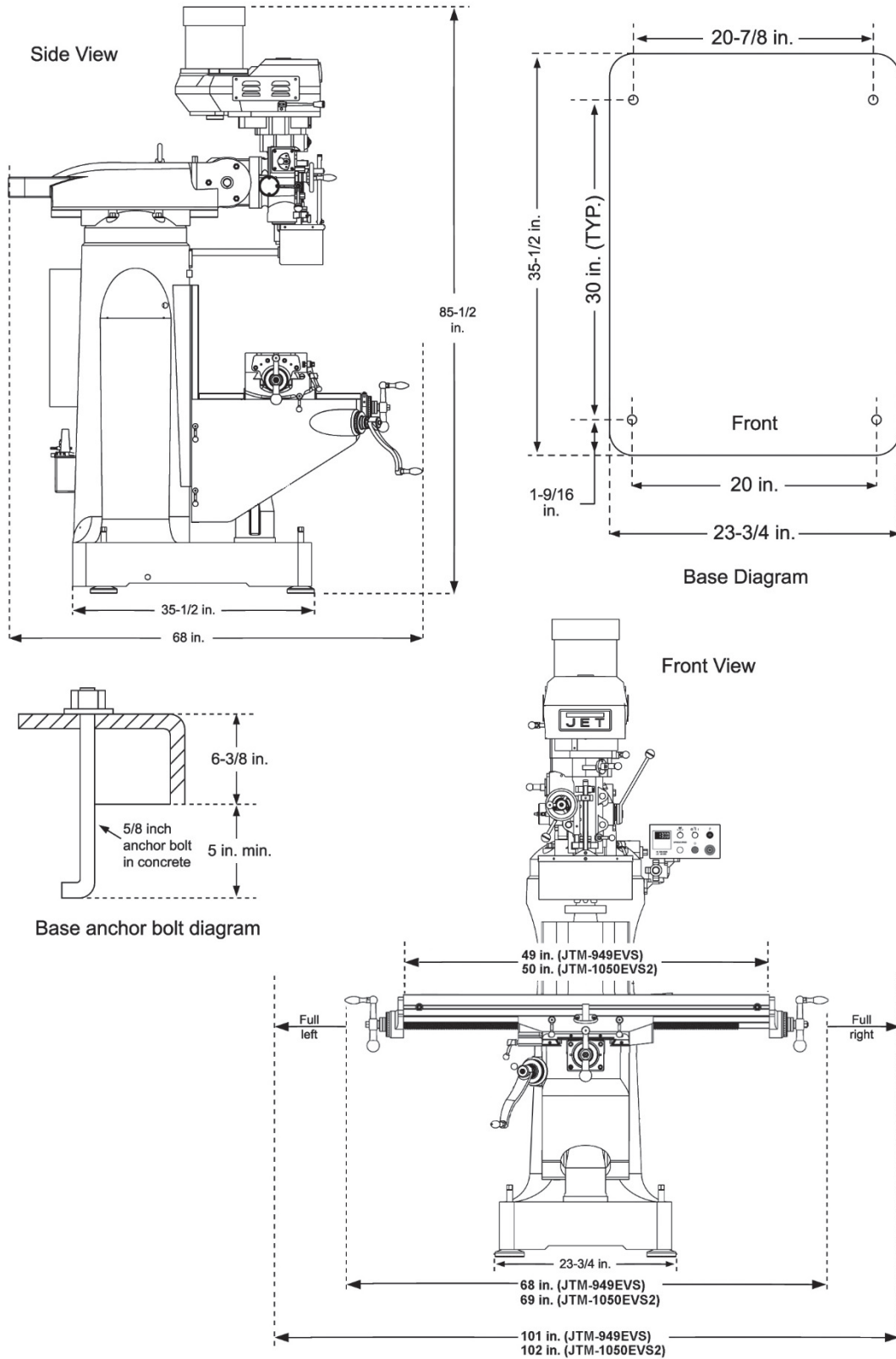


Figure 1: Installation Diagram (JTM-949EVS/230 shown)

## 5.2 Overview and terminology – JTM-949EVS and JTM-1050EVS series

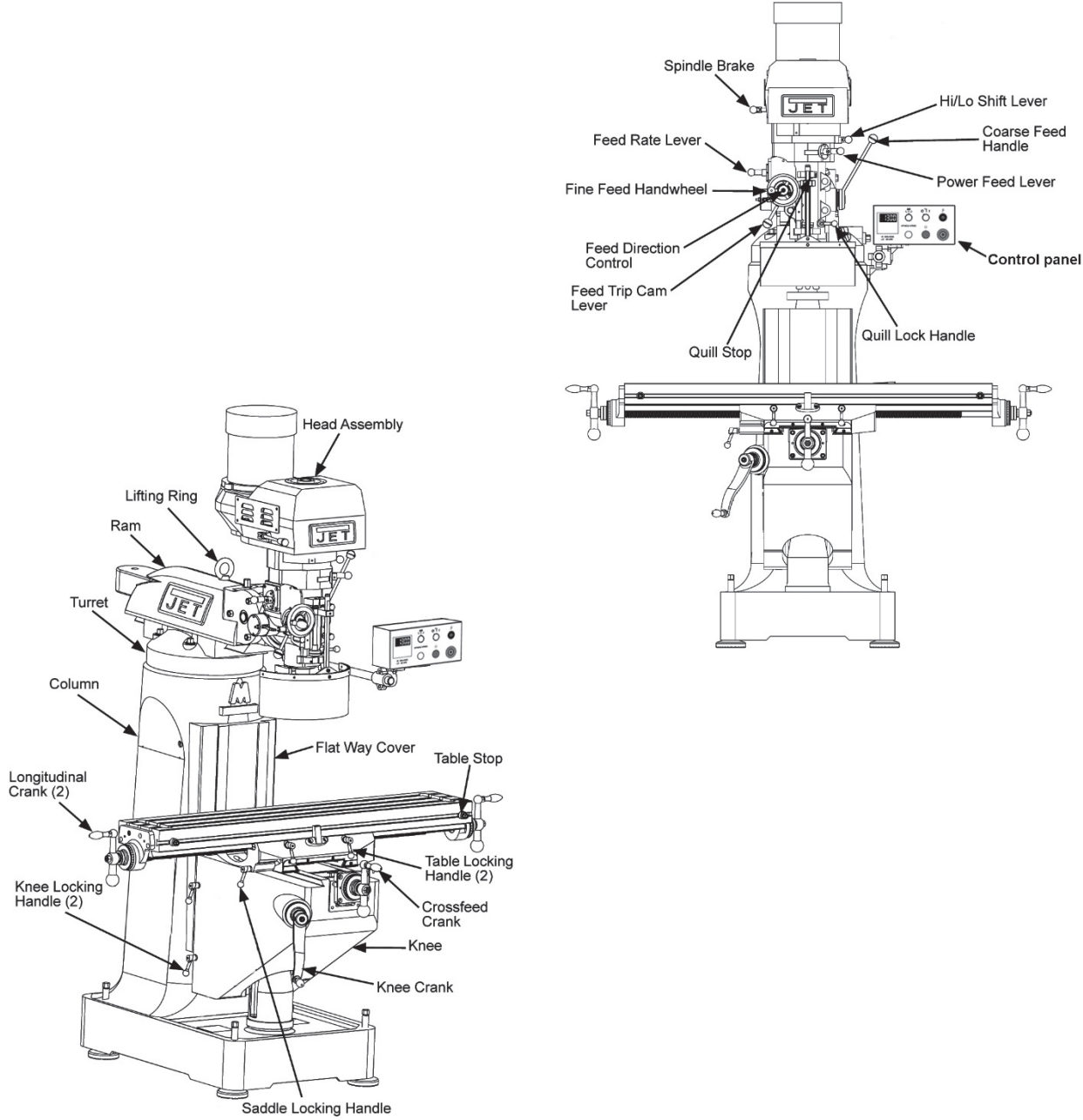


Figure 2: Overview (JTM-949EVS/230 shown)



## **WARNING**

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

## 6.0 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 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.

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

### 6.1 Contents of shipping container

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



Figure 1: contents

- 1 Turret Mill (not shown)
- 1 Chip tray (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 Electric box key
- 1 Operator's Manual
- 1 Product Registration Card

\* parts with asterisk are also included in tool box service kit JTM949EVS-TB or JTM1050EVS2-TB.

### 6.2 Preparing the mill for service

1. Remove any crating which may be covering the machine on the pallet.
2. Remove accessory items from the pallet or machine table. Compare items with *section 6.1*.
3. 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.) Check lifting ring to be **certain it is tight**.
4. Check the tightness of the lock handles on the ram (see Figure 21) to be **certain the ram is locked tight**.
5. Remove the nuts and/or bolts, which secure the machine to the pallet.
6. Center an overhead crane or other suitable overhead lifting device and sling arrangement over the lifting ring.  
**Note:** This machine weighs over 2200 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 will tip forward. If you wish, you can minimize this tipping by rigging a support sling over front of machine. Be careful when doing this, to prevent sling from damaging any components on front of machine. Be sure to steady mill to prevent it from spinning.
7. Lift machine off pallet no higher than necessary to clear the hold-down hardware, then pull the pallet out of the way. Do NOT get hands or feet underneath machine when removing pallet!
8. Put machine base over the hold-down system where the machine will be spotted. Anchor bolts of sufficient size and length must be fastened to the floor according to footprint of mill. See Figure 1.

**Note:** The accompanying diagrams show you the maximum dimensions of the machines with the table, ram, etc., fully extended in all possible directions.

When spotting the machine be certain to leave room not only for the machine itself, but also for operator clearance and clearance for workers servicing the machine, and any unusual sizes of workpieces that might extend off the machine's table.

- When the machine is over its anchors, level the machine 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.

- When machine is level, secure base to the anchor system.

**IMPORTANT:** Before attempting to raise mill head, refer to *section 10.1* for procedures to safely raise and set up the mill head.

- Loosen the four hex head nuts (see A, Figure 18) about 1/4 turn each (counterclockwise), just enough to allow rotation of head.
- While assisting the worm mechanism by putting upward pressure on the motor by hand, use the supplied wrench to turn worm nut and raise head to upright position.
- Tighten the head bolts slightly — not torqued — just snug.
- 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.

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 Figure 3 to help locate items.

- Install the table longitudinal and cross-feed cranks on their respective shafts using the nuts on the shafts to secure the cranks.
- Remove any rust proofing from the drawbar and its spacer, and put drawbar with spacer installed into spindle center through top of machine.
- Slide the fine feed handwheel over the handwheel hub and push it back until its roll pin engages the hole in the hub and the wheel is flush with the hub surface.
- Put the coarse feed handle on the feed shaft and tap it lightly until its roll pin engages a hole in the hub and it is flush against the hub surface.

- Unwrap and clean the knee crank and install it on its shaft.
- Install the rubber way covers at front and behind the table.

## 7.0 Electrical connections

**WARNING** All electrical connections must be made by a qualified electrician! Failure to comply may cause serious injury!

### 7.1 General electrical cautions

This machine must be grounded in accordance with the National Electrical Code and local codes and ordinances. This work should be done by a qualified electrician. The machine must be grounded to protect the user from electrical shock.

### 7.2 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 the following table is recommended:

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

Table 2

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

The JTM-949EVS/230 and JTM-1050EVS2 have been pre-wired for **230 volt operation only**. The JTM-949EVS4 and JTM-1050EVS4 have been pre-wired for **460 volt operation only**.

Before connecting to power source, make sure that switch is in OFF position.

The mill must be properly grounded.

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

## 8.0 Lubrication

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

Refer to *section 11.0* and make sure the machine has been fully lubricated before operating.

## 9.0 Operating instructions

### 9.1 Operating controls

The milling machine is equipped with an automatic lubrication system. Ensure that reservoir has the proper amount of lubricant. The system reservoir is located at rear of machine.

The position of the mill head can be set up to accommodate the workpiece being machined. The mill head can be set up for angles to left or right and for fore and aft angles. The mill head can also be rotated on its turret. The ram can be moved back and forth to reach workpiece locations at fore and aft extremes of worktable travel. Refer to *section 10.0*.

### 9.2 Control panel

The control panel is located on the arm at right side of machine. See Figure 4 for functions.

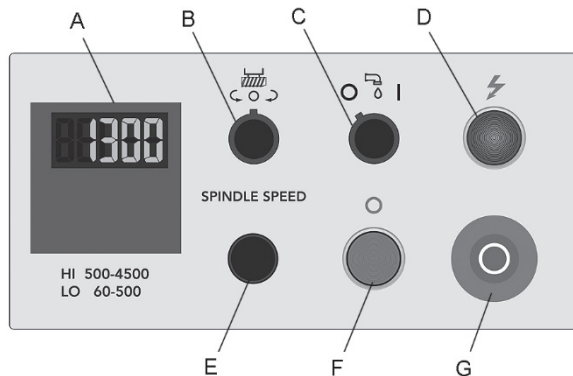


Figure 4

A – RPM digital readout.

B – **Motor direction switch:** Has two positions: FWD (forward) and REV (reverse). Setting the switch to FWD will provide clockwise spindle rotation. Use FWD for normal, right-hand tooling.

FWD (clockwise) operation occurs only when gearbox is in low speed position. When gearbox is in high-speed position, the motor switch must be in the REV position to provide right-hand or clockwise rotation. Refer to Table 3 for required switch positions.

The motor switch controls a three-phase motor. The motor can be switched from FWD to REV and back with the motor running, and will reverse direction when the switch setting is changed. At higher speeds, this may put strain on the timing belt but there will be no damage to the motor or gear mechanism.

C – **Coolant switch:** installed for optional coolant pump. The wiring must be connected to U2, V2 and W2 in the terminal strip.

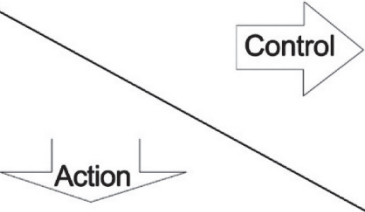
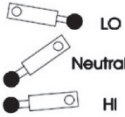
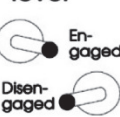

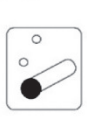
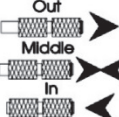

























D – **Power lamp:** indicates electrical power is flowing to machine.

E – **Speed dial:** Sets spindle speed.



F – **Spindle switch:** Engages spindle rotation.

G – **Emergency stop switch:** Shuts down all controls on machine. Rotate switch clockwise to disengage and restart machine.

### 9.3 Control positions for milling and drilling operations

	<b>High/low lever</b> 	<b>Quill feed lever</b> 	<b>Feed trip cam lever</b> 	<b>Quill feed select lever</b> 	<b>Feed direction control</b> 	<b>Motor switch*</b> 
High spindle speeds						<b>REV</b>
Low spindle speeds						<b>FWD</b>
High spindle speeds with automatic downfeed				Select feed rate		<b>REV</b>
Low spindle speeds with automatic downfeed				Select feed rate		<b>FWD</b>
High spindle speeds with automatic upfeed				Select feed rate		<b>REV</b>
Low spindle speeds with automatic upfeed				Select feed rate		<b>FWD</b>
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 - 4,500 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

## 9.4 Electronic variable speed

The dial on the EVS control panel controls the main motor speed. Motor RPM is displayed on the LED screen.

## 9.5 Spindle brake

The spindle brake lever is located on upper left side of mill head (Figure 5). Pull lever downward to apply brake. The spindle brake lever is used only after motor switch has been set to OFF. The spindle will not stop with motor running.

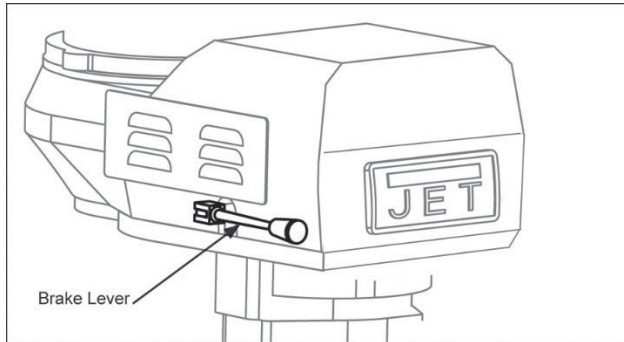


Figure 5

## 9.6 High-neutral-low shift lever

The mill head can be driven directly (High Speed) or through the back gear (Low Speed) in the mill head. The selection is made by changing the position of shift lever.

The *shift lever* is located at lower right side of mill head (Figure 6). The lever position closest to operator is *High* setting. The lever position away from operator is *Low* setting. The middle position is *Neutral* setting.

**CAUTION** Do not shift the High-Low Gear Lever while the motor is running. Rotate the spindle by hand to facilitate changing lever positions.

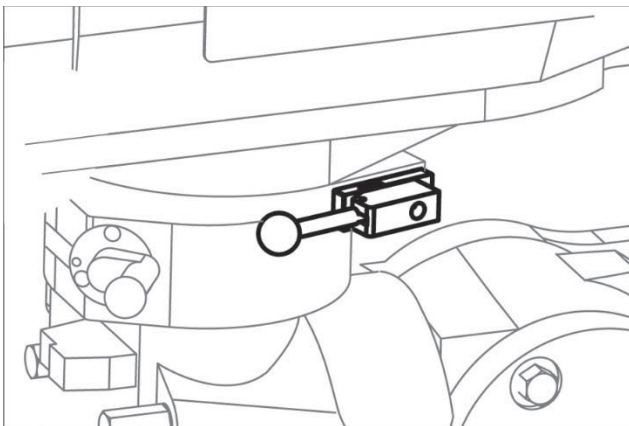


Figure 6

## 9.7 Quill power feed lever

**CAUTION** Do not use power feed at speeds above 3000 R.P.M.

**CAUTION** It is recommended to disengage the power feed worm gear whenever power feed is not required. This avoids unnecessary wear on worm gear.

**CAUTION** Do not move Quill Power Feed Lever unless motor is at a complete stop. When changing lever position, do it gently. If gear does not engage, jog the motor and allow it to stop before attempting to change.

The quill power feed lever is located on right side of mill head (Figure 9). It is used to engage and disengage the quill power feed mechanism.

The power feed is engaged by pulling out the knob and rotating handle to a new locked position. When engaged, the power feed mechanism will drive spindle upward or downward. The power feed mechanism will not drive spindle when handle is in disengaged position.

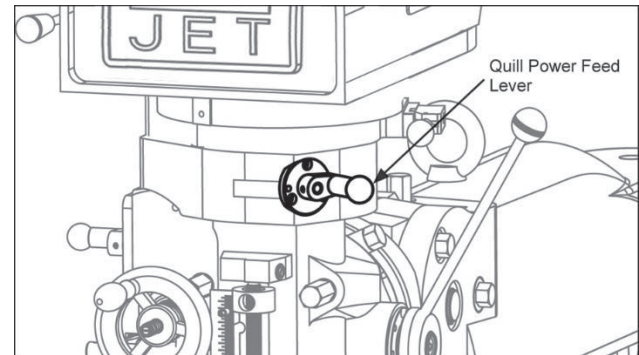


Figure 7

## 9.8 Feed rate lever

The *Feed Rate Lever* (Figure 8) is used to set the per-revolution rate of the power feed mechanism. Three feed rates are available: 0.0015-inch, 0.003-inch, and 0.006-inch per revolution. The positions are shown on an indicator plate under the feed rate lever.

The rate is selected by pulling out knob on feed rate lever and moving handle to the detent of desired feed rate.

**Note:** The knob is spring loaded – pull out to rotate to new position.

Unlike other controls on the machine, the lever shifts into engagement more easily with the motor running, and the quill feed lever engaged.

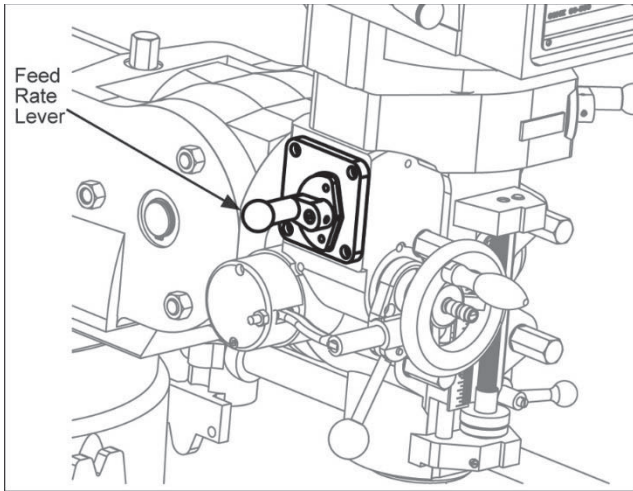


Figure 8

### 9.9 Feed trip cam lever

The *Feed Trip Cam Lever* (A, Figure 9) is located on left side of head behind the *Manual Fine Feed Handwheel* (B, Figure 9). It engages the overload clutch on the pinion shaft when positioned to the left. The *Feed Trip Cam Lever* stays engaged until *Quill Stop* (C, Figure 12) comes in contact with *Micrometer Adjusting Nut* (A, Figure 12) forcing it to drop out automatically, or until it is released manually by engaging the lever to the right.

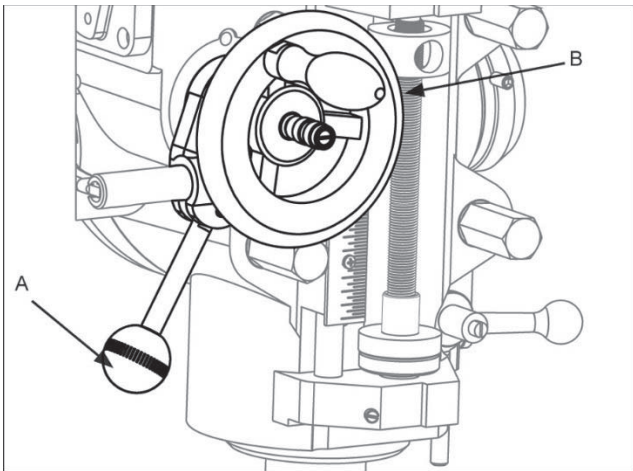


Figure 9

### 9.10 Feed direction control

The *Feed Direction Control* (B, Figure 10) determines whether the power feed will move up, down, or not move at all. The position of knob depends upon direction of spindle rotation (see the *Motor Switch* section). Position of the control may be changed with the system stopped or running. If the control does not engage easily, move fine feed handwheel (A, Figure 10) back and forth to aid engagement.

If spindle is rotating clockwise, *in* is downfeed; *out* is upfeed. If spindle rotation is counterclockwise, *out* is downfeed; *in* is upfeed. Neutral position is between *in* and *out* position.

**CAUTION** It is recommended that Feed Direction Knob be left in neutral position when not in use.

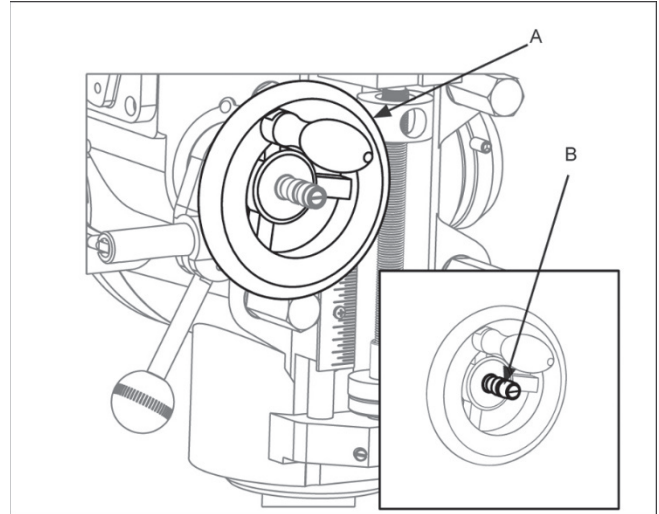


Figure 10

### 9.11 Coarse feed handle

The *Coarse Feed Handle* (A, Figure 11) is located on right side of head. The *Coarse Feed Handle* is used for non-precision drilling operations and for moving quill to a specific depth. A return spring will retract spindle automatically once handle is released.

### 9.12 Quill lock handle

The *Quill Lock Handle* (B, Figure 11) is located on right side of head. Rotate handle clockwise to lock quill in desired position. Rotate handle counter-clockwise to release.

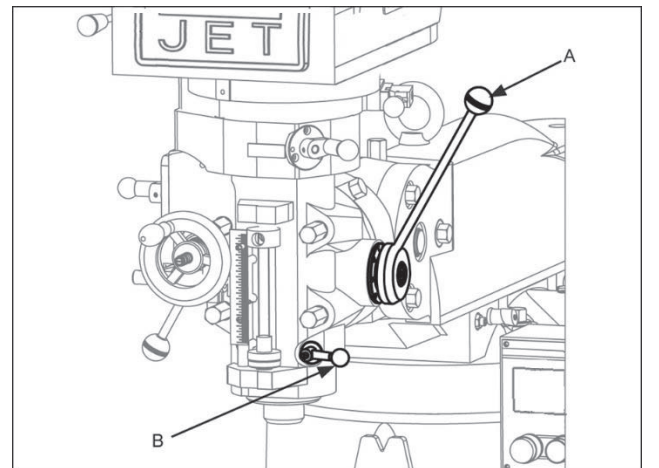


Figure 11

### 9.13 Micrometer adjusting nut

The *Micrometer Adjusting Nut* (A, Figure 12) is located on front of head. Use for setting specific spindle depth. Secure with *lock nut* (B, Figure 12).

## 9.14 Fine feed handwheel

When the controls are set for the *Fine feed using Handwheel* position (see Table 3), the *Fine Feed Handwheel* (A, Figure 10) can be used for manual fine feed control in either upward or downward direction of the quill.

**WARNING** Remove Manual Fine Feed Handwheel when not in use. Failure to comply may cause serious injury.

## 9.15 Depth scale and stop

Referring to Figure 14:

The *Depth Scale and Stop* are used in drilling operations to set the depth of the drilled hole. The depth scale is located on front of mill head. The scale consists of a *Micrometer Adjusting Nut* (A), *Lock Nut* (B), *Quill Stop* (C), *Quill Stop Screw* (D), and *Scale* (E).

The *Micrometer Adjusting Nut* is set to the desired dimension and locked in place using the *Lock Nut*. The quill stop provides a positive stop for quill travel.

The graduations on the micrometer nut are in 0.001-inch increments. Adjustment of quill travel is made by rotating micrometer nut.

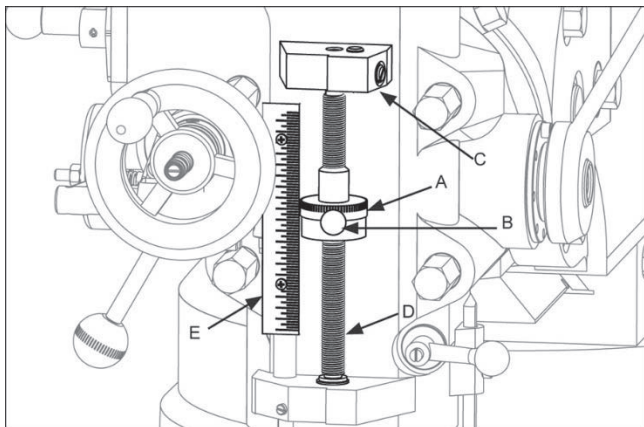


Figure 12

## 9.16 Power feed operation

The *Feed Trip Adjustment* sets the point at which the quill will reset during *Power Feed*.

Refer to Figure 13.

**WARNING** Be sure that the Manual Fine Feed Handwheel is removed. Failure to comply may cause serious injury.

1. Move adjuster nut to allow for ample spindle travel.
2. With the *Quill Feed Handle* (J), advance the quill to the point where the feed should stop.
3. Engage the *Feed Trip Cam Lever* (D) by pulling away from head assembly.
4. Adjust *Micrometer Adjusting Nut* (H) against *Quill Stop* (G).
5. Continue turning the *Micrometer Adjusting Nut* (H) until the *Feed Trip Cam Lever* (D) trips.

6. Tighten the *Locknut* (I).
7. Ensure *Quill Lock* (K) is disengaged by rotating counter-clockwise.
8. Start spindle (see Table 3):
9. Select feed rate at the control panel.
10. Set *Feed Rate Lever* (B) to feed rate required for the tooling and material.
11. Place *Quill Feed Engagement Lever* (F) in the *Engaged* position.
12. Select feed direction by setting *Feed Direction Knob* (C) position per Table 4:

Spindle Direction	Feed Direction	Knob Position
CW	Down	In
	Up	Out
CCW	Down	Out
	Up	In

Table 4

13. Engage *Feed Trip Cam Lever* (D) 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 lbs. downfeed pressure on the quill (accommodates drills up to 3/8"). Do not attempt to adjust clutch pressure.

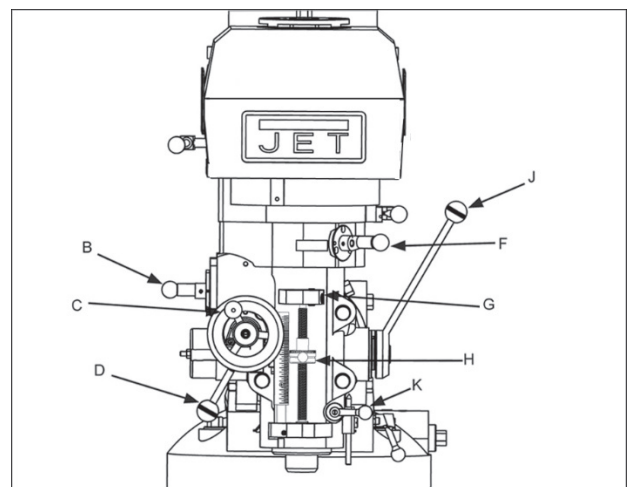


Figure 13

## 9.17 Draw bar operation – changing tooling

- Using the provided wrench, loosen draw bar two or three turns (turn counterclockwise) using draw bar hex (Figure 14).

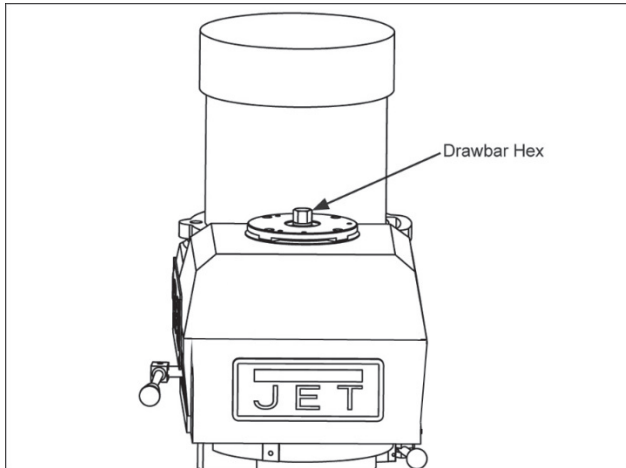


Figure 14

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

## 9.18 Clamping workpiece to table

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

- Set motor switch to STOP position.
- Place workpiece on table.
- Clamp workpiece using T-slot clamps, studs, and step blocks as required (Figure 15).

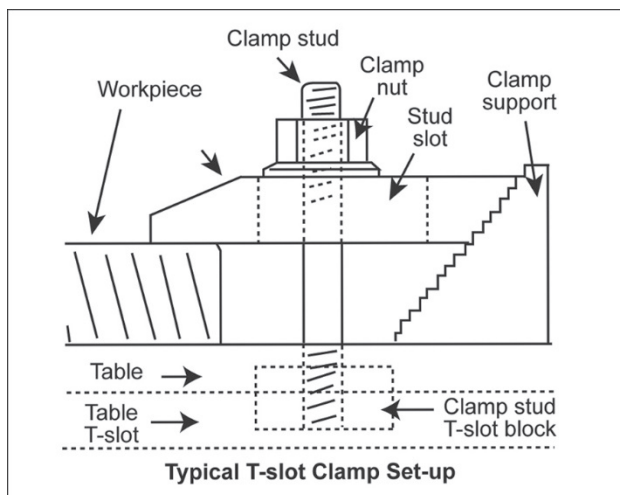


Figure 15

## 10.0 Adjustments

### 10.1 Mill head – left/right adjustment

**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.

- Loosen four large hex nuts that secure the mill head to the ram adapter (refer to Figure 16). 1/4 turn should be sufficient to allow head to move.

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

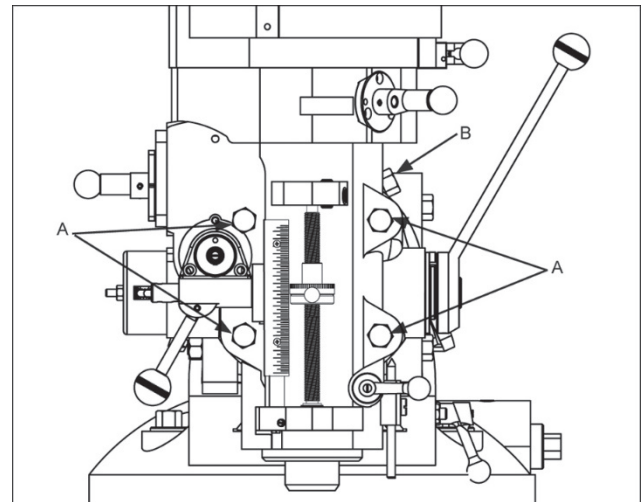


Figure 16

- Turn worm nut (B, Figure 18) to tilt head left or right as required. Use scale on ram adapter to set desired angle.
- Note:** The scales on the 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 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.

- 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.
- Before applying final torque, check to make sure mill head is perpendicular to work table.
- Set up a dial indicator in a collet and secure using the draw bar (refer to Figure 18).
- Put spindle drive in neutral.



8. Set the dial indicator plunger on the work table. Zero the indicator.
9. Rotate spindle 180 degrees (when rotating, raise dial indicator plunger by hand to prevent it from dropping into table T-slots).
10. Read dial indicator. The indicator should read zero. If not, loosen the four hex nuts and reposition the mill head.
11. Recheck perpendicularity using the dial indicator. Repeat the 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 the face of the ram adapter.

12. 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 a final torque of 50 foot-pounds.

## 10.2 Mill head – fore/aft adjustment

1. Setting the angle:
  - a. Loosen the three ram adapter clamp bolts on the ram (A, Figure 17). There is no need to loosen the bolts more than 1/2 turn to allow tilting.

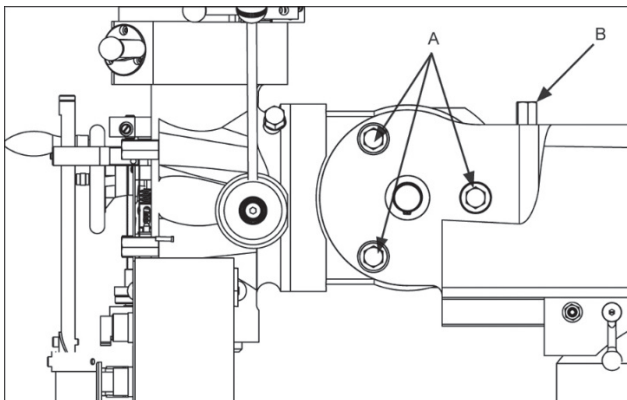


Figure 17

- b. Support mill head with your free hand. Press upward on spindle when changing the angle.
  - c. Turn ram adapter worm nut (B, Figure 21) to tilt head forward and backward. Use scale on ram adapter to locate desired angle.
2. Returning to upright position:
  - a. When returning mill head to its full upright position, be sure to support head by upward pressure on the spindle as you turn the worm nut.
  - b. Check to make sure mill head is perpendicular to work table.
  - c. Set up a dial indicator in a collet and secure using the draw bar (refer to Figure 18).

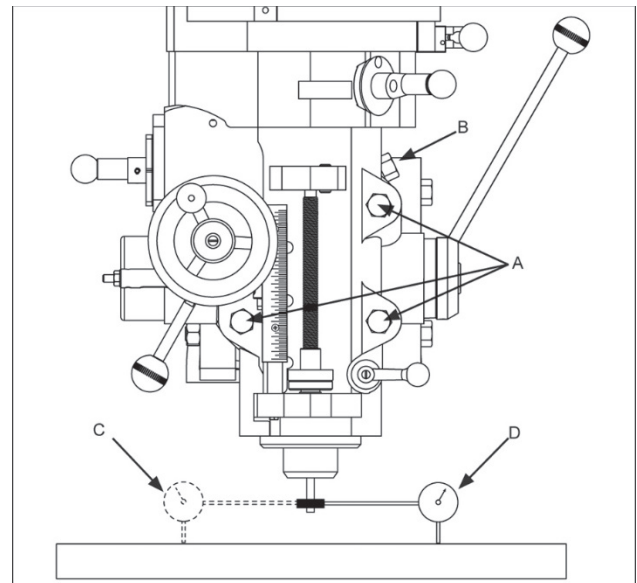


Figure 18

- d. Put the spindle drive in neutral.
- e. Set the dial indicator plunger on the worktable. Zero the indicator.
- f. Rotate spindle 180 degrees (when rotating, raise dial indicator plunger by hand to prevent it from dropping into table T-slots).
- g. Read dial indicator. The indicator should read zero. If not, loosen the four hex nuts and reposition the mill head.
- h. Recheck perpendicularity using dial indicator. Repeat the procedure above until dial indicator reads zero in both positions.
- i. When indicator reads zero, tighten ram adapter clamp bolts.

## 10.3 Positioning ram

### 10.3.1 Positioning ram fore and aft

1. Loosen two handles (A, Figure 19) that lock the ram to its ways. [Hex nuts on JTM-1050EVS models.]

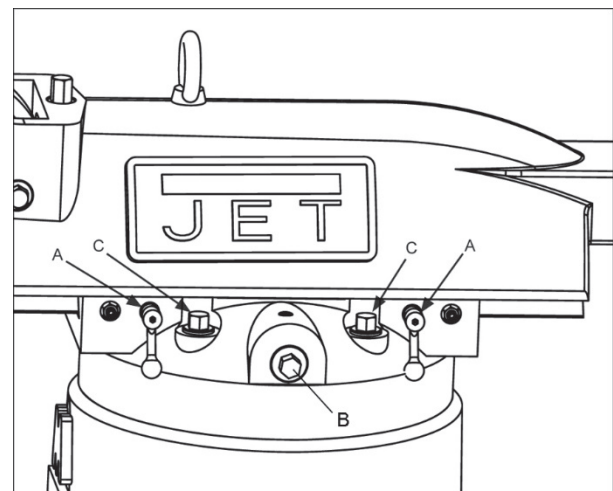


Figure 19 (JTM-949EVS/230 shown)

- Turn ram pinion (B, Figure 19) with a wrench to slide ram on its ways.
- When desired position is reached, tighten handles (A, Figure 19)[or hex nuts] securely.

### 10.3.2 Positioning ram on 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 19) that clamp the ram to the top of the base. 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 for degree measurement.
- Tighten four turret lock bolts (C, Figure 19). 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.

## 10.4 Gib adjustment

The table, saddle and knee are equipped with adjustable gibs. The gibs may require adjustment if unusual vibration is noted when the 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 knee first; adjust saddle second, and adjust table last.

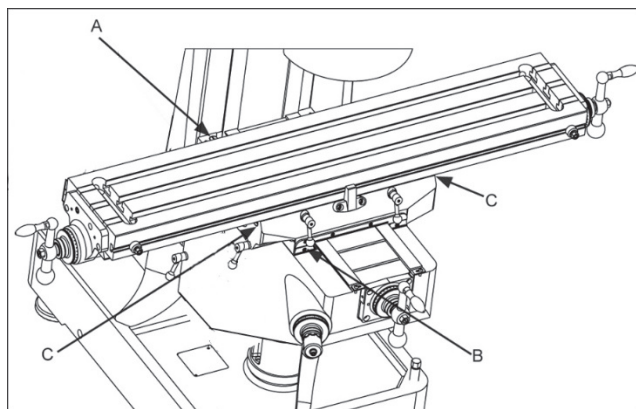


Figure 20

### 10.4.1 Knee gib adjustment

The knee gib adjustment screw (A, Figure 20) 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 a slight drag is felt when turning knee crank.

### 10.4.2 Saddle gib adjustment

The saddle gib adjustment screw is on left front of saddle (B, Figure 20). Tighten screw until a slight drag is felt when turning cross-feed crank.

### 10.4.3 Table gib adjustment

The table gib adjustment screw (C, Figure 20) is on left-hand side, beneath table. Tighten screw until a slight drag is felt when turning longitudinal table cranks.

## 10.5 Power feed trip lever mechanism

Refer to Figure 21.

The power feed trip lever mechanism will require adjustment if worn or whenever any trip lever mechanism components are replaced.

- Loosen feed trip adjusting screw lock nut.
- Loosen adjusting screw until it is loose in the lever and no longer contacts bottom of feed trip plunger.
- Using the coarse feed handle, move quill to bottom of its travel so that quill stop contacts micrometer nut. Hold the quill on the stop.
- Pull feed handle out to engage power feed system.
- Turn feed trip adjusting screw until power feed disengages.
- Tighten feed trip adjusting screw.
- Release quill stop so you can engage power feed mechanism using power feed trip lever.
- Using the coarse feed handle, pull quill stop back into firm contact with micrometer nut.

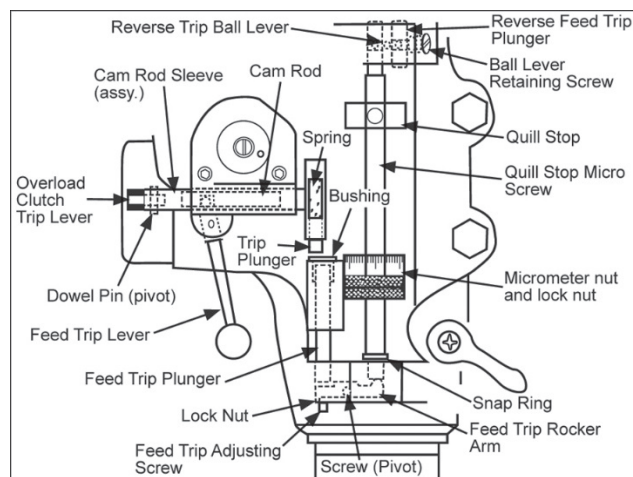


Figure 21

**Note:** The power feed should disengage when the quill stop pushes on the micrometer nut. If it does not disengage, repeat the adjustment steps above.

- Engage power feed and move quill stop to top of its travel. Make sure that reverse trip mechanism also disengages power feed. If it does not, readjust the mechanism until positive disengagement occurs when quill is at top of its stroke.

10. Check for correct operation using the coarse feed handle. If operating correctly, start drive motor and engage power feed mechanism. Verify that power feed lever correctly engages and disengages when driven by drive motor.

## 10.6 Table lead screw backlash adjustment

Refer to Figure 22.

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 lead screw nut is provided to eliminate most of the backlash. The following procedures provide instructions for obtaining acceptable backlash.

### 10.6.1 Cross feed backlash adjustment

1. Use cross feed crank to move table to extreme rear of its travel.
2. Remove pleated way cover.
3. Open the two chip guards enough to expose cross-feed adjustment nut (the nut that is toward the rear of the nut bracket is not adjustable – only the 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 the 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 steps above to set backlash.
10. Install pleated way cover.

### 10.6.2 Longitudinal backlash adjustment

Refer to Figure 22.

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 nut slightly to tighten it against opposing nut.
4. Tighten the two nut locking screws.
5. Using the longitudinal table crank, 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.

If necessary, repeat the steps above to set backlash.

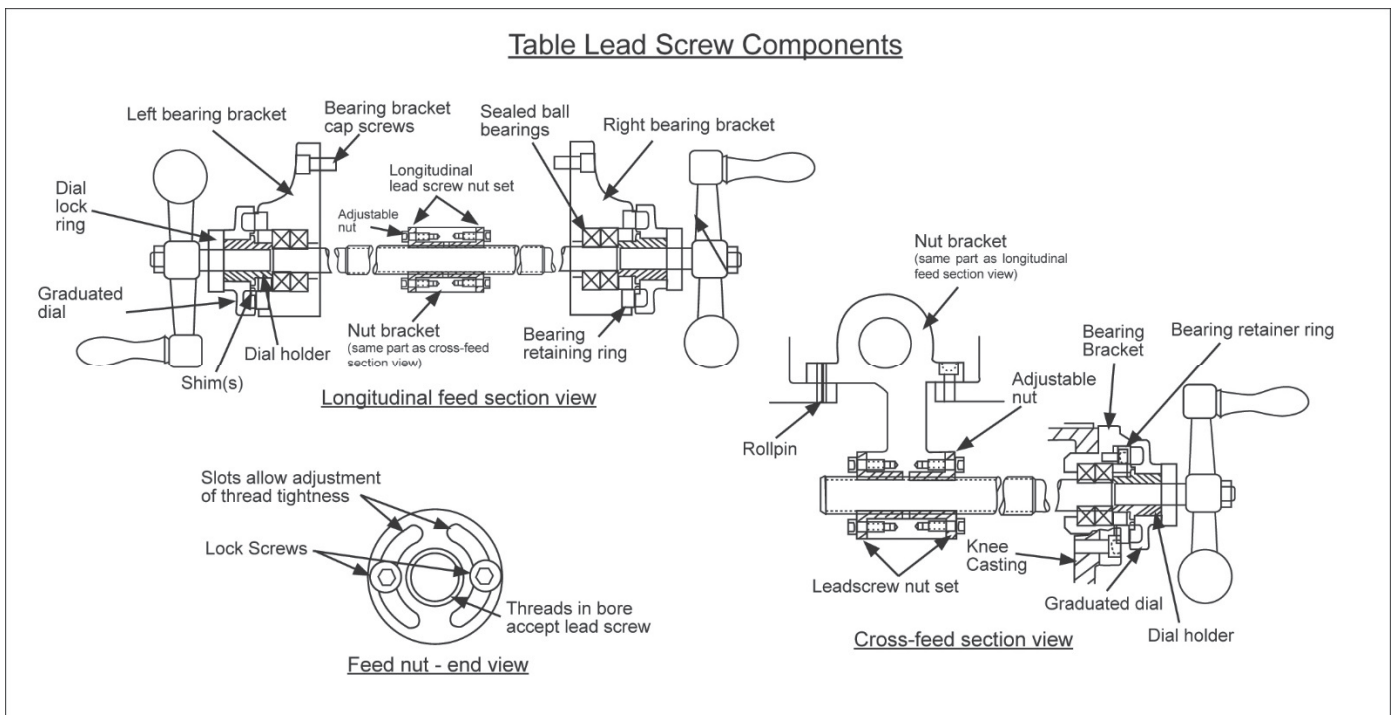


Figure 22

# 11.0 Maintenance

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

## 11.1 Lubrication

The milling machine is equipped with an automatic lubrication system. The system lubricates the lead screws and ways. An oil cup and grease nipple on the mill head provide lubrication for the spindle bearings and back gear mechanism. Refer to Figures 23 and 24 for lubrication requirements and access points.

Key	Description	Recommended Lubricant	Action
A	Spindle bearing oil cup	Mobil DTE Oil Light, or equivalent	Service daily.
B	Automatic lube system	Mobil Vactra Oil #2, or equivalent	Check oil daily – add if required.
C	Knee leadscrew grease nipple	Mobilith AW2, or equivalent	Service once each week.
D	Back gear grease nipple	Mobilith AW1, or equivalent	Service weekly when operating in back gear mode.

Table 5: Lubrication Points

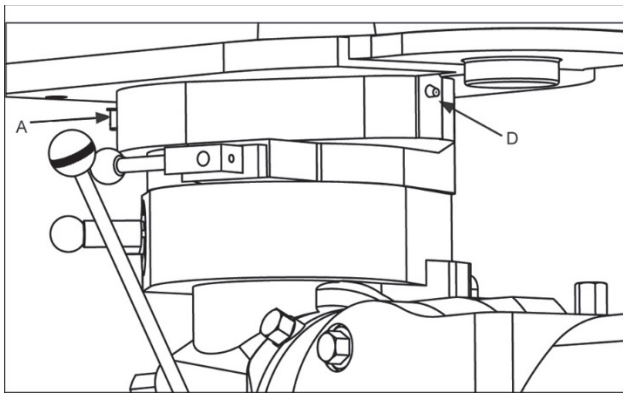


Figure 23

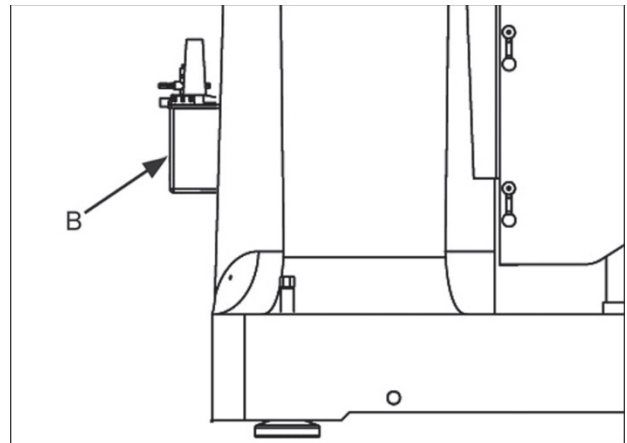


Figure 25

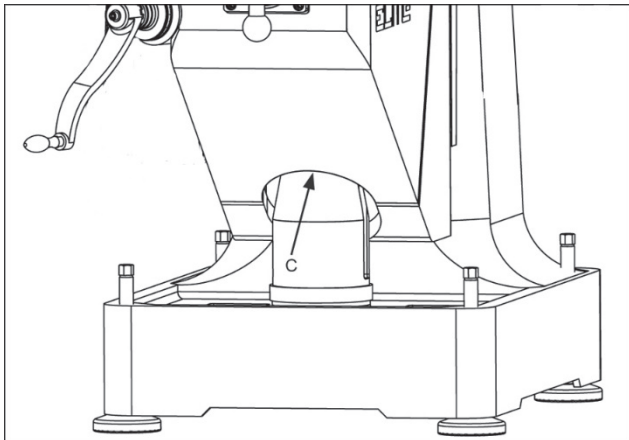


Figure 24

## 11.2 Periodic maintenance requirements

During operation, periodically 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 vent panels to check pulleys and belts for unusual wear or grooving. *NOTE: Operators should vary speed occasionally to prevent formation of grooves on pulley surfaces.*

## 12.0 Recommended speed for mill and drill operations

Mill cutting speed recommended (mm/min)

$$V = DN/1000$$

<b>V cutting speed (mm/min)</b>		
<i>Material</i>	<i>Heavy cutting</i>	<i>Processing cutting</i>
Cast iron	30-40	45-90
Malleable iron	37-45	45-90
Steel (soft)	60-90	75-105
Steel (medium)	45-67	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
<b>Drill speed (RPM) recommended</b>		
5mm hole	1000-1500	
10mm hole	500-800	
13mm	300-500	
20mm	150-300	

Table 6

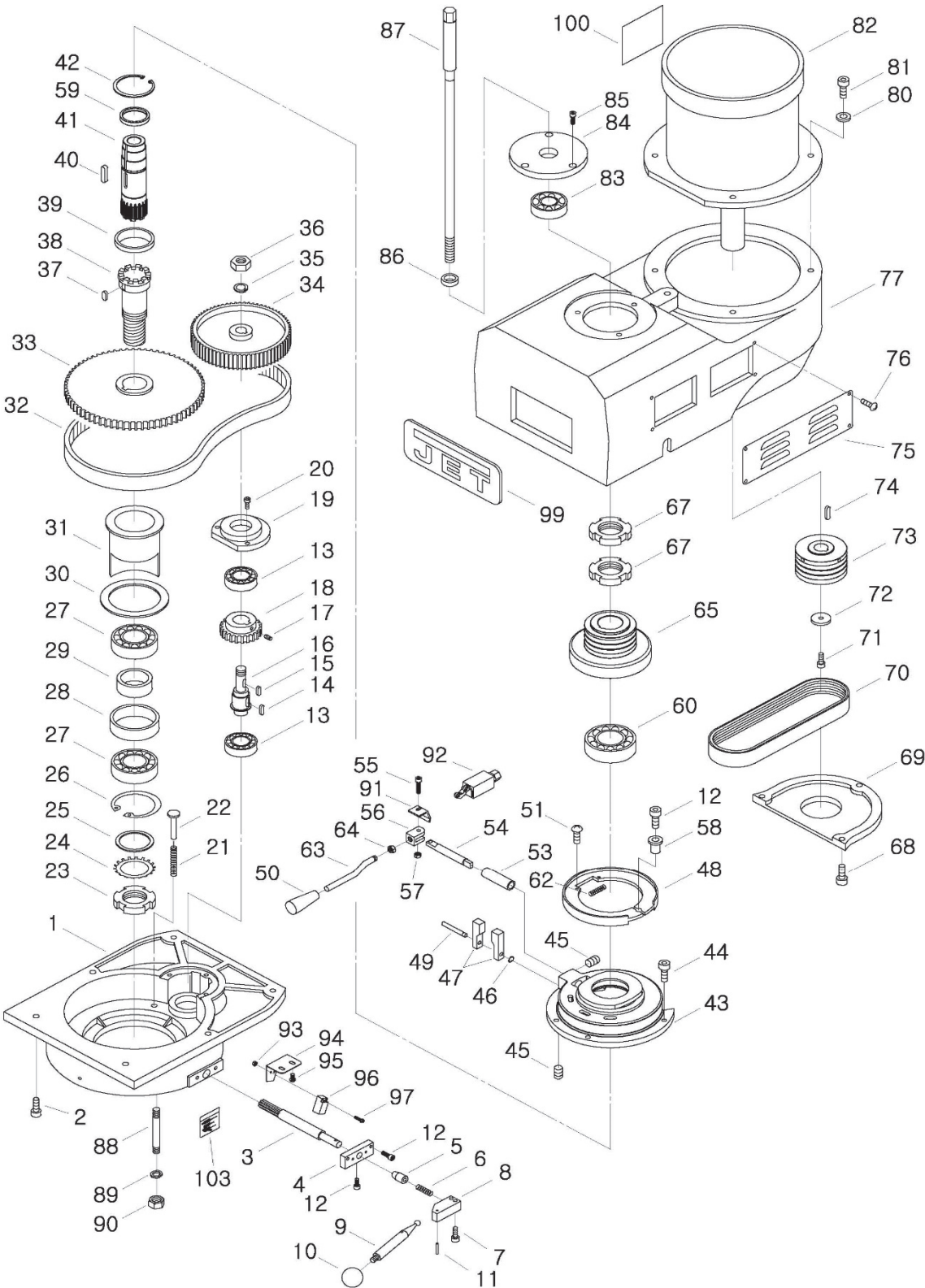
## 13.0 Replacement parts

Replacement parts are listed on the following pages. 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.

Refer carefully to the section headings to verify that the parts list is for your specific model.

13.1.1 JTM-949EVS/JTM-1050EVS Upper Head Assembly – Exploded View



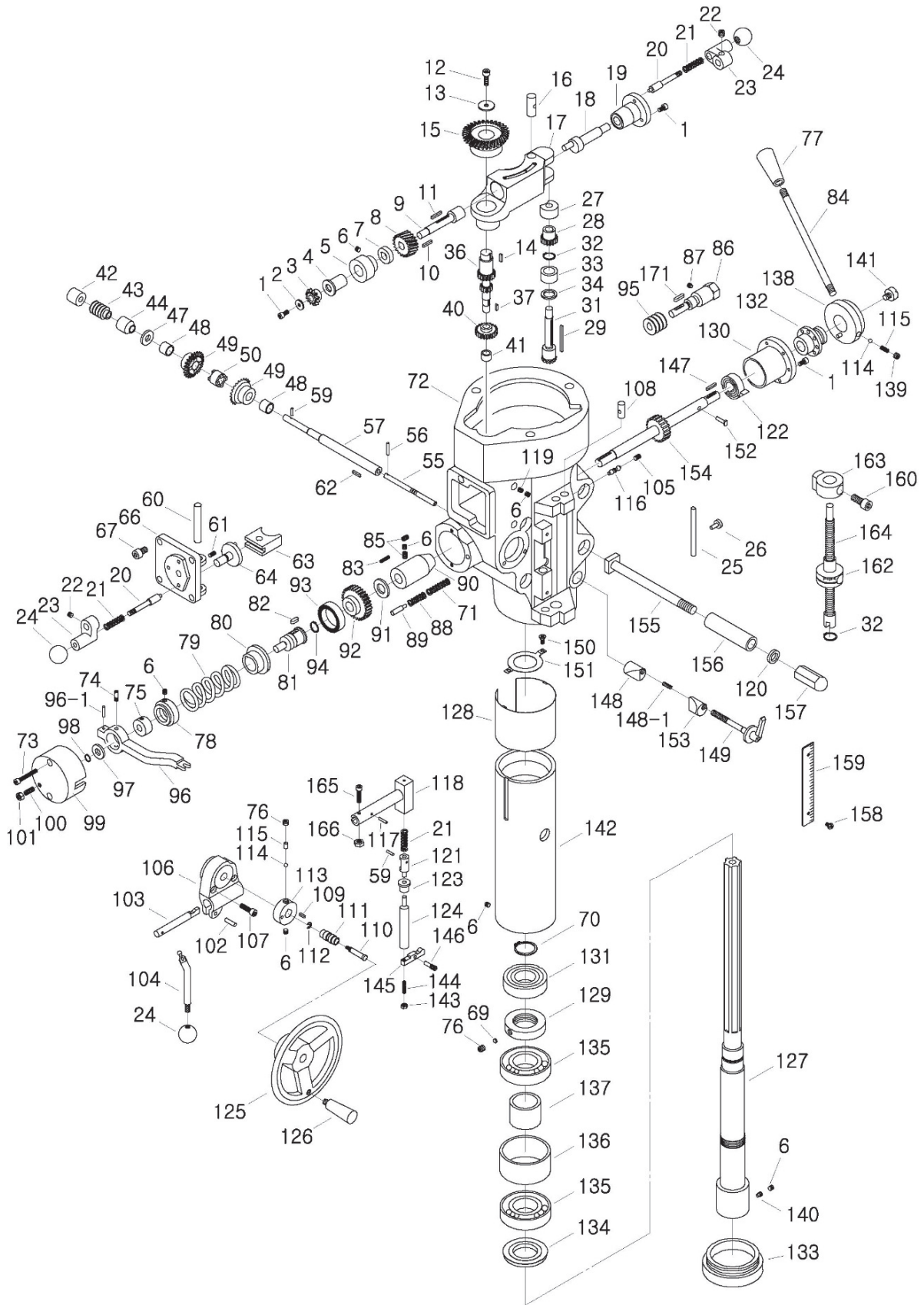
### 13.1.2 JTM-949EVS/JTM-1050EVS Upper Head Assembly – Parts List

Index No	Part No	Description	Size	Qty
1	JTM949EVS-A01	Upper Pulley Housing		1
2	TS-1504041	Hex Socket Cap Screw	M8x20	4
3	JTM949EVS-A03	Bull Gear Shifter Pinion Shaft		1
4	JTM949EVS-A04	Hi-Lo Detent Plate		1
5	JTM949EVS-A05	Sleeve		1
6	JTM949EVS-A06	Spring		1
7	TS-1502031	Hex Socket Cap Screw	M5x12	2
8	JTM949EVS-A08	Hi-Lo Pinion Block		1
9	JTM949EVS-A09	Hi-Lo Shift Handle		1
10	BH1/4	Black Plastic Ball	1/4"	1
11	B-56	Spring Pin	3x20	1
12	TS-1502041	Hex Socket Cap Screw	M5x16	3
13	BB-6203ZZ	Ball Bearing	6203ZZ	2
14	KF2R5518	Key	5x5x18	1
15	KF2R5515	Key	5x5x15	1
16	JTM949EVS-A16	Gear Shaft		1
17	TS-1523011	Set Screw	M6x6	4
18	JTM949EVS-A18	Gear		4
19	JTM949EVS-A19	Ball Bearing Bracket		1
20	TS-1504041	Hex Socket Cap Screw	M8x20	3
21	JTM949EVS-A21	Pressure Spring		3
22	JTM949EVS-A22	Spring Shaft		3
23	AN08	Bearing Nut	AN08	1
24	AW08	Bearing Washer	AW08	1
25	JTM949EVS-A25	Spacer		1
26	RTW62	Retaining Ring	RTW62	1
27	BB-6908ZZ	Ball Bearing	6908ZZ	2
28	JTM949EVS-A28	Gear Bearing Spacer (Large)		1
28A	JTM949EVS-A28A	Gear Bearing Spacer Assembly (#28,29)		
29	JTM949EVS-A29	Gear Bearing Spacer (Small)		1
30	JTM949EVS-A30	Washer		1
31	JTM949EVS-A31	Bearing Sleeve		1
32	JTM949EVS-A32	Timing Belt	225L100	1
33	JTM949EVS-A33	Gear		1
34	JTM949EVS-A34	Timing Pulley		1
35	TS-0720131	Spring Washer	5/8"	1
36	NH(T)5/8-18UNF	Hex Nut	5/8"-18UNF	1
37	KF2R8712	Key	8x7x12	1
38	JTM949EVS-A38	Output Clutch		1
39	JTM949EVS-A39	Clutch Collar		1
40	JTM949EVS-A40	Key	7x7x40	1
41	JTM949EVS-A41	Input Clutch		1
42	RTW80	Retaining Ring	RTW80	1
43	JTM949EVS-A43	Brake Base (RE: JTM949EVS-A104)		1
44	TS-1504041	Hex Socket Cap Screw	M8x20	4
45	TS-1523011	Set Screw	M6x6	4
46	JTM949EVS-A46	Retaining Ring	STW8	1
47	JTM949EVS-A47	Brake Finger Stud (set of 2)		1
48	JTM949EVS-A48	Brake Shoe		1
49	JTM949EVS-A49	Brake Shaft		1
50	JTM949EVS-A50	Brake Lock Knob	3/8"	1
51	JTM949EVS-A51	Pan Head Screw	1/8"x1/4"	4
53	JTM949EVS-A53	Brake Sleeve		1
54	JTM949EVS-A54	Spindle Brake Shaft		1
55	TS-1503071	Hex Socket Cap Screw	M6x30	1
56	JTM949EVS-A56	Spindle Brake Lever Pivot		1
57	TS-1540041	Hex Nut	M6	1
58	JTM949EVS-A58	Lock Collar		1
59	JTM949EVS-A59	Collar		1
60	BB-6010ZZ	Ball Bearing	6010ZZ	1

Index No	Part No	Description	Size	Qty
61	JTM949EVS-A61	Bracket (RE: JTM949EVS-A104)		1
62	JTM949EVS-A62	Brake Spring		1
63	JTM949EVS-A63	Spindle Brake Lever		1
64	TS-0570031	Hex Nut	3/8"	1
65	JTM949EVS-A65	Pulley		1
67	AN10	Bearing Nut		2
68	TS-1504041	Hex Socket Cap Screw	M8x20	3
69	JTM949EVS-A69	Motor Pulley Cover		1
70	JTM949EVS-A70	Belt	3-11M-850	1
71	TS-1504051	Hex Socket Cap Screw	M8x25L	1
72	JTM949EVS-A72	Washer	Ø9x Ø40x6t	1
73	JTM949EVS-A73	Motor Pulley		1
74	JTM949EVS-A74	Key		1
75	JTM949EVS-A75	Side Belt Housing Cover		2
76	F009884	Socket Head Button Screw	M5 x 8L	8
77	JTM949EVS-A77	Upper Guard		1
80	TS-1550071	Flat Washer	Ø10	4
81	TS-1505031	Hex Socket Cap Screw	M10x25	4
82	JTM949EVS-A82	Motor	2.2kw, 3HP/3Ph	1
	JTM949EVS-A82-1	Motor Fan (not shown)		1
	JTM949EVS-A82-2	Motor Fan Cover (not shown)		1
	JTM949EVS-A82-3	Junction Box Cover (not shown)		1
83	BB-6009ZZ	Ball Bearing	6009ZZ	1
84	JTM949EVS-A84	Upper Cover		1
85	TS-1503041	Hex Socket Cap Screw	M6x16	3
86	JTM949EVS-A86	Spacer		1
87	JTM949EVS-A87	Draw Bar	7/16"	1
87A	JTM949EVS-A87A	Draw Bar Assembly (#86,87)		1
88	JTM949EVS-A88	Stud	7/16"x4"	3
89	TS-0720101	Spring Washer	7/16"	3
90	TS-0561041	Hex Nut	7/16"	3
91	JTM949EVS-A91	Push Plate		1
92	JTM949EVS-A92	Limit Switch		1
93	TS-1540011	Hex Nut	M3	2
94	JTM949EVS-A94	Sensor Bracket		1
95	TS-2246102	Socket Head Button Screw	M6x10	2
96	JTM949EVS-A96	Sensor		1
97	ZX-S36	Pan Head Screw	M3x20	2
99	JET-203	JET Logo	203x84 mm	1
100	LM000001	Motor Label		1
101	JTM949EVS-A101	Cable (Control Panel to Elec Box) – not shown		1
102	JTM949EVS-A102	Cable (Motor to Elec Box) – not shown		1
103	LM000005	Speed Range Label – not shown		1
	JTM949EVS-A104	Brake Base Assembly (includes #43, 61)		1



### 13.2.1 JTM-949EVS/JTM-1050EVS Lower Head Assembly – Exploded View



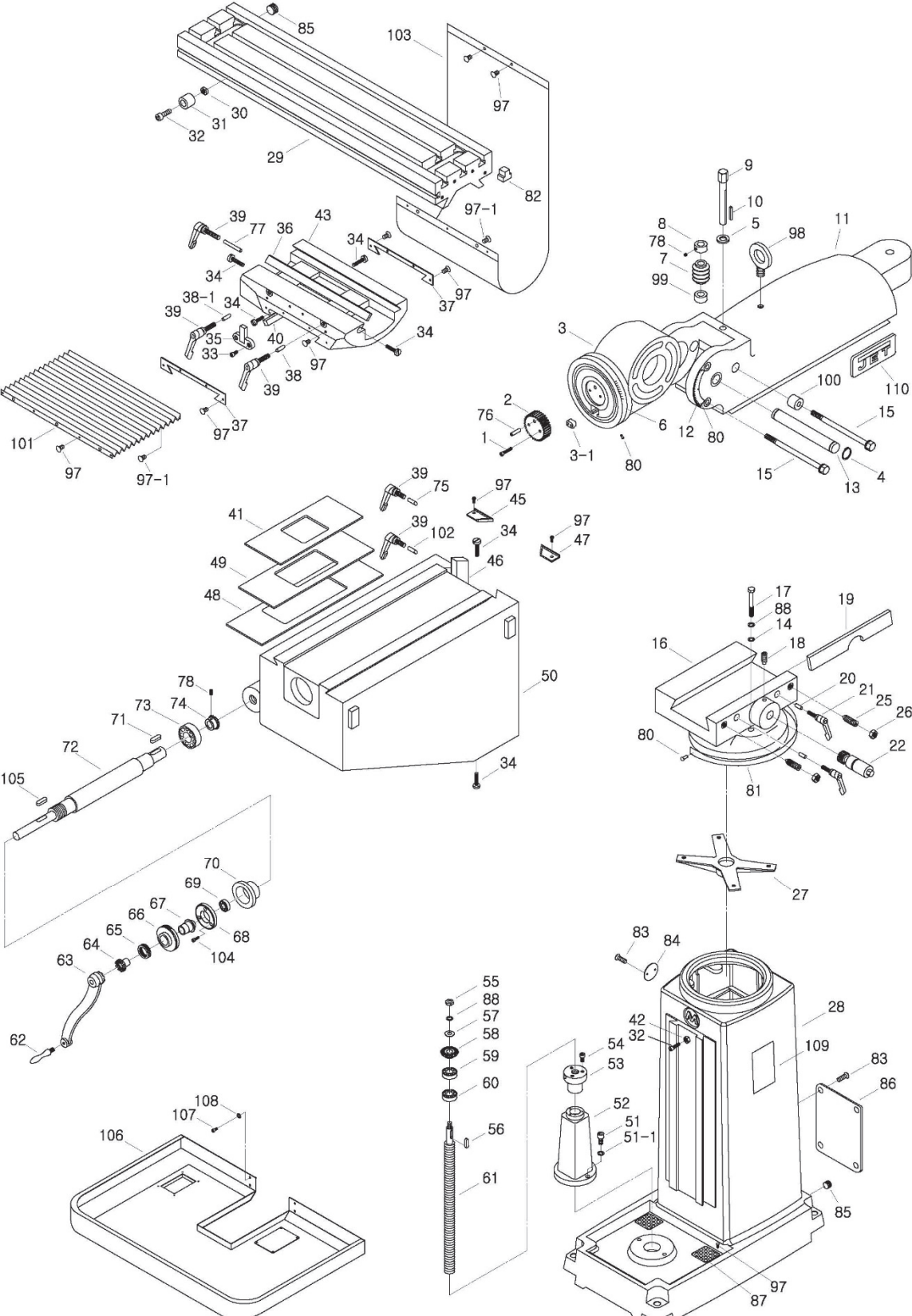
### 13.2.2 JTM-949EVS/JTM-1050EVS Lower Head Assembly – Parts List

Index No	Part No	Description	Size	Qty
1	TS-1502031	Hex Socket Cap Screw	M5x12	6
2	JTM949EVS-B02	Flat Washer	Ø5	1
3	JTM949EVS-B03	Feed Gear		1
4	JTM949EVS-B04	Shaft Sleeve		1
5	JTM949EVS-B05	Worm Cradle Bushing		1
6	TS-1523011	Socket Set Screw	M6x6	8
7	JTM949EVS-B07	Worm Gear Spacer		1
8	JTM949EVS-B08	Feed Drive Worm Gear		1
9	JTM949EVS-B09	Worm Gear Shaft		1
10	JTM949EVS-B10	Worm Shaft Key	3x3x8	1
11	KF2R3320	Key	3x3x20	1
12	TS-1503041	Hex Socket Cap Screw	M6x16	1
13	JTM949EVS-B13	Flat Washer	Ø6	1
14	KF2R5508	Key	5x5x8	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	M8x6	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	KF2R4445	Key	4x4x45	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	KF2R5512	Key	5x5x12	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	3x20	1
57	JTM949EVS-B57	Feed Worm Shaft		1
59	5302611	Spring Pin	3x12	2
60	JTM949EVS-B60	Feed Shift Rod		1
61	TS-1522031	Socket Set Screw	M5x10	1
62	KF2R3315	Key	3x3x15	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-1502021	Hex Socket Cap Screw	M5x10	4
69	JTM949EVS-B69	Lock Block		1
70	2210-266	Retaining Ring	STW30	1
71	JTM949EVS-B71	Spring	10x20	1
72	JTM949EVS-B72	Quill Housing	105mm	1

Index No	Part No	Description	Size	Qty
73	TS-1502081	Hex Socket Cap Screw	M5x35	2
74	JTM949EVS-B74	Clutch Ring Pin		2
75	JTM949EVS-B75	Clutch Ring		1
76	5302731	Socket Set Screw	M8x6	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)		
81	JTM949EVS-B81	Overload Clutch Sleeve		1
82	KF2R5516	Key	5x5x16	1
83	TS-1532052	Pan Head Machine Screw	M4x16	3
85	TS-1523031	Socket Set Screw	M6x10	2
86	JTM949EVS-B86	Worm Shaft		1
87	TS-1523011	Set Screw	M6x6	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	Ø5x20	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	M6x16	1
101	TS-2311061	Hex Nut	M6	1
102	5625391	Spring Pin	Ø5x16	1
103	JTM949EVS-B103	Cam Rod		1
104	JTM949EVS-B104	Trip Handle		1
105	5302731	Socket Set Screw	M8x6	1
106	JTM949EVS-B106	Feed Trip Bracket		1
107	TS-1503051	Hex Socket Cap Screw	M6x20	2
108	JTM949EVS-B108	Plunger		1
109	KF2R3312	Key	3x3x12	1
110	JTM949EVS-B110	Feed Reverse Stud Bolt		1
110A	JTM949EVS-B110A	Feed Reverse Stud Assembly (#110,111,112)		
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	Ø3x16	1
118	JTM949EVS-B118	Cam Rod Sleeve Assembly		1
119	TS-1523011	Socket Set Screw	M6x6	2
120	JTM949EVS-B120	Flat Washer	Ø13	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)		
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

Index No	Part No	Description	Size	Qty
131	BB-6206ZZ	Ball Bearing	6206ZZ	1
132	JTM949EVS-B132	Hub Sleeve		1
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)		
137	JTM949EVS-B137	Bearing Spacer (small)		1
138	JTM949EVS-B138	Hub		1
139	TS-0270011	Socket Set Screw	5/16"x1/4"	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	M4x20	1
145	JTM949EVS-B145	Feed Trip Lever		1
146	JTM949EVS-B146	Trip Lever Pin		1
147	KF2R5525	Key	5x5x25	1
148	JTM949EVS-B148	Quill Lock Sleeve		1
148-1	JTM949EVS-B148-1	Spring		1
149	JTM949EVS-B149	Lock Handle		1
150	TS-1533032	Pan Head Screw	M5x10	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)		
155	JTM949EVS-B155	T-Bolt Assembly		4
156	JTM949EVS-B156	Spacer		4
157	JTM949EVS-B157	Lock Nut		4
158	TS-2171012	Pan Head Screw	M4x6	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	M5x20	1
166	TS-1540031	Hex Nut	M5	1
171	KF2R4418	Key	4x4x18	1

### 13.3.1 JTM-949EVS Base Machine – Exploded View

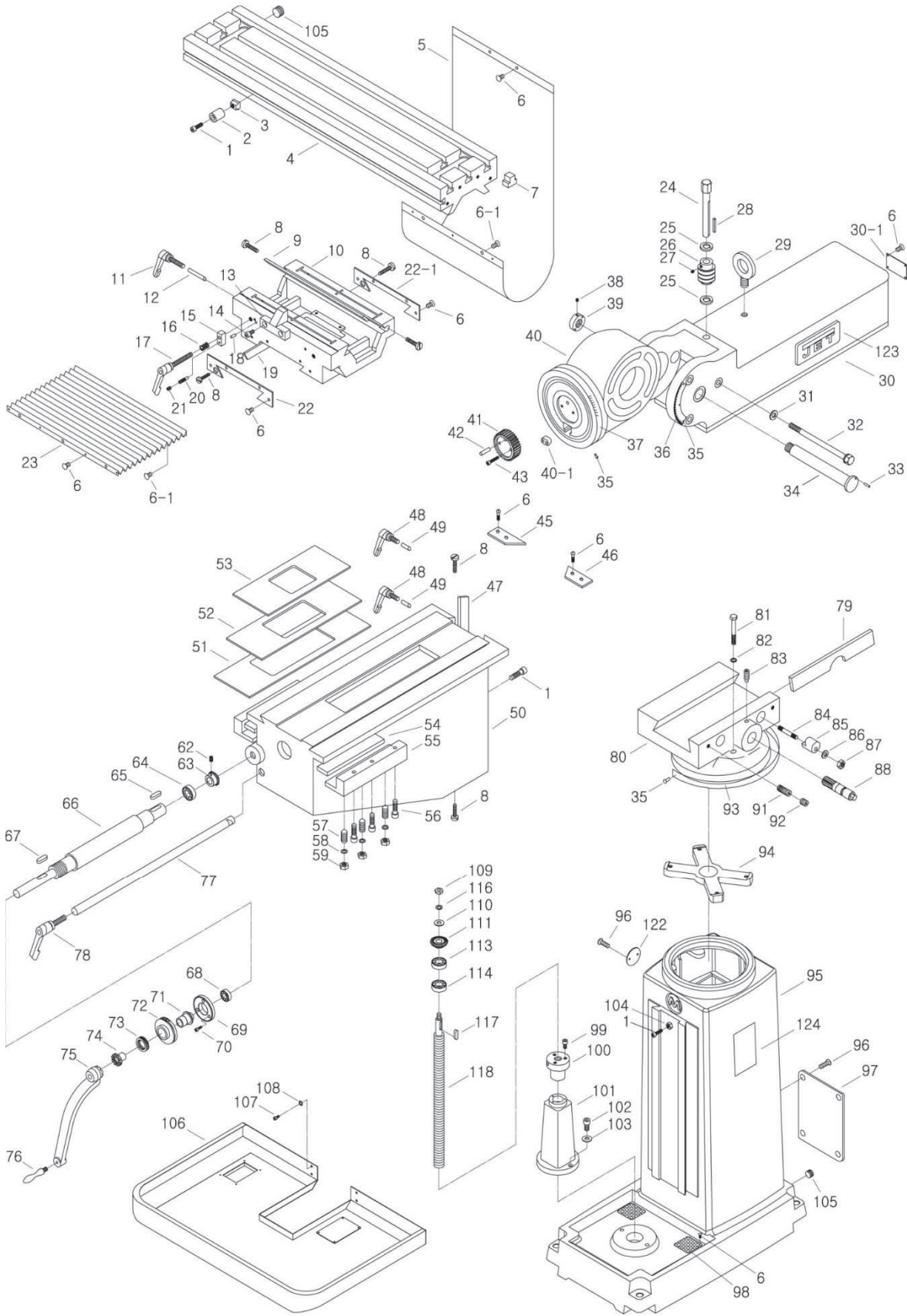


### 13.3.2 JTM-949EVS Base Machine – Parts List

Index No	Part No	Description	Size	Qty
1	TS-1504061	Hex Socket Cap Screw	M8x30L	2
2	JTM949EVS-C02	Worm		1
3	JTM949EVS-C03	Ram Adapter		1
3-1	JTM949EVS-C03-1	Lock Stud		1
4	STW28	Retaining Ring	STW28	2
5	JTM949EVS-C05	Washer		1
6	JTM949EVS-C06	Adapter Scale		1
7	JTM949EVS-C07	Worm		1
8	JTM949EVS-C08	Worm Thrust Washer		1
9	JTM949EVS-C09	Shaft		1
10	KF2R5540	Key	5x5x40L	1
11	JTM949EVS-C11	Ram		1
12	JTM949EVS-C12	Angle Scale		1
13	JTM949EVS-C13	Adapter Shaft		1
14	WP13	Washer	Ø13	4
15	JTM949EVS-C15	Adapter Locking Bolt	M12x205L	3
16	JTM949EVS-C16	Turret		1
17	SNH12L165	Hex Cap Screw	M12x165L	4
18	JWS35X-222	Socket Set Screw	M8x30L	1
19	JTM949EVS-C19	Turret Gib		1
20	JTM949EVS-C20	Ram Lock Plunger	10x30L	2
21	JTM949EVS-C21	Handle	M12x25L	2
22	JTM949EVS-C22	Ram Pinion		1
25	JTM1055-B13	Socket Set Screw	M10x60L	2
26	TS-2311101	Hex Nut	M10	2
27	JTM949EVS-C27	Spider		1
28	JTM949EVS-C28	Column		1
29	JTM949EVS-C29	Table (Inch)	9"x49"	1
30	JTM949EVS-C30	Nut		2
31	JTM949EVS-C31	Bushing		2
32	TS-1505041	Hex Socket Cap Screw	M10x30L	3
33	TS-1505021	Hex Socket Cap Screw	M10x20L	2
34	JTM949EVS-C34	Gib Adjusting Screw	M8x37L	6
35	JTM949EVS-C35	Stop Block		1
36	JTM949EVS-C36	Table Gib		1
37	JTM949EVS-C37	Wiper		2
38	JTM949EVS-C38	Table Lock Plunger	16mm	1
38-1	JTM949EVS-C38-1	Table Lock Plunger	13mm	1
39	JTM949EVS-C39	Handle	M12x25L	5
40	JTM949EVS-C40	Saddle Gib		1
41	JTM949EVS-C41	Chip Guard (Top)	360mm L	1
42	TS-2311101	Hex Nut	M10	1
43	JTM949EVS-C43	Saddle		1
44	JTM949EVS-C44	Washer		1
45	JTM949EVS-C45	Knee Wiper (left)		1
46	JTM949EVS-C46	Knee Gib		1
47	JTM949EVS-C47	Knee Wiper (right)		1
48	JTM949EVS-C48	Chip Guard (Bottom)	580mm L	1
49	JTM949EVS-C49	Chip Guard (Middle)	470mm L	1
50	JTM949EVS-C50	Knee		1
51	TS-1505051	Hex Socket Cap Screw	M10x35L	2
51-1	TS-2361101	Lock Washer	M10	2
52	JTM949EVS-C52	Elevating Screw Housing		1
53	JTM949EVS-C53	Elevating Nut (Inch)	Ø32 x 5 TPI	1
54	TS-1503041	Hex Socket Cap Screw	M6x16L	3
55	TS-0561052	Hex Nut	1/2-20UNF	1
56	KF2R5525	Key	5x5x25L	1
57	TS-0680061	Washer	Ø13	1
58	JTM949EVS-C58	Bevel Gear	36T	1
59	BB-6205ZZ	Ball Bearing	6205ZZ	2

Index No	Part No	Description	Size	Qty
60	BTH51305	Thrust Bearing	51305	1
61	JTM949EVS-C61	Lead Screw (Inch)	Ø32 x 5 tpi (545)	1
62	JTM949EVS-C62	Handle		1
63	JTM949EVS-C63	Elevating Crank		1
64	JTM949EVS-C64	Clutch Insert		1
65	JTM949EVS-C65	Dial Lock Nut		1
66	JTM949EVS-C66	Dial (Inch)	100/0.001"	1
67	JTM949EVS-C67	Dial Holder		1
68	JTM949EVS-C68	Bearing Housing		1
69	BB-6204ZZ	Ball Bearing	6204ZZ	1
70	JTM949EVS-C70	Bearing Seat		1
71	KF2R4418	Key	4x4x18L	1
72	JTM949EVS-C72	Elevating Shaft	480L	1
73	BB-6204ZZ	Ball Bearing	6204ZZ	1
74	JTM949EVS-C74	Bevel Gear	18T	1
75	JTM949EVS-C75	Knee Lock Plunger	35L	1
76	AP2-16	Spring Pin	Ø6x25L	1
77	JTM949EVS-C77	Saddle Lock Plunger	140mm	1
78	TS-1523021	Socket Set Screw	M6x8L	2
80	RN2L6	Rivet	Ø2x6L	12
81	JTM949EVS-C81	Turret Scale		1
82	JTM949EVS-C82	T-Rubber	16x32mm	6
83	TS-2246122	Socket Head Button Screw	M6x12L	6
84	JTM949EVS-C84	Side Cover		1
85	SH(PT)1/2B	Oil Plug	1/2"PT	3
86	JTM949EVS-C86	Cover		1
87	JTM949EVS-C87	Strainer Net		2
88	TS-2361121	Spring Washer	Ø12	5
97	TS-2245102	Socket Head Button Screw	M5x10L	22
98	JTM949EVS-C98	Lifting Ring	3/4"	1
99	JTM949EVS-C99	Worm Thrust Washer		1
100	JTM949EVS-C100	Collar		1
101	JTM949EVS-C101	Pleated Way Cover		1
102	JTM949EVS-C102	Knee Lock Plunger	32 mm	1
103	JTM949EVS-C103	Flat Way Cover		1
104	TS-1503051	Hex Socket Cap Screw	M6x20L	6
105	KF2R3320	Key	3x3x20	1
106	JTM949EVS-C106	Chip Pan		1
107	TS-1503031	Hex Socket Cap Screw	M6x12L	4
108	TS-1550041	Flat Washer	M6	2
109	LM000002	ID/Warning Label (JTM-949EVS/230)		1
110	JET-254	JET Logo	254x105 mm	2
	JTM9494EVS-TB	Tool Box Kit Complete (not shown)		

### 13.4.1 JTM-1050EVS Base Machine – Exploded View



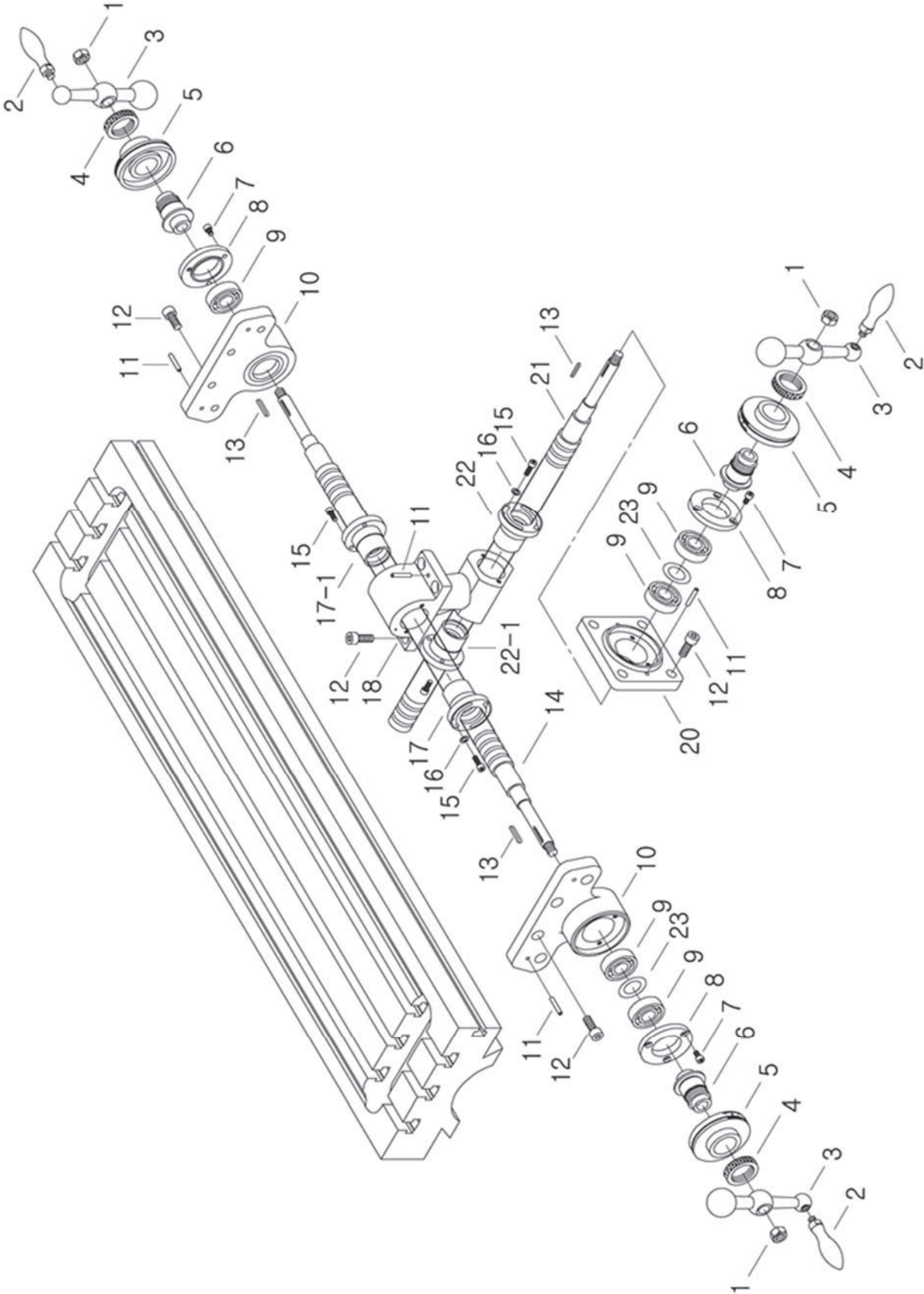


### 13.4.2 JTM-1050EVS Base Machine – Parts List

Index No	Part No	Description	Size	Qty
1	TS-2249252	Socket Head Button Screw	M10x25	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	10x115L	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		1
27	TS-1523021	Socket Set Screw	M6x8L	1
28	KF2R5549	Key	5x5x49L	1
29	JTM1050EVS2-C29	Lifting Ring	M30	1
	JTM1050EVS2-C29A	Lifting Ring (serial no. 1603010 and higher)	M20	1
30	JTM1050EVS2-30	Ram		1
30-1	JTM1050EVS2-30-1	Plate		1
31	JTM1050EVS2-31	Washer	Ø12	3
32	JTM1050EVS2-32	Adapter Locking Bolt		3
33	6293347	Spring Pin	Ø3x16L	1
34	JTM1050EVS2-34	Adapter Shaft		1
35	RN2L6	Rivet	Ø2x6L	12
36	JTM949EVS-C12	Angle Scale		1
37	JTM949EVS-C06	Adapter Scale		1
38	TS-1521021	Set Screw	M4x6L	1
39	JTM1050EVS2-39	Lock Nut		1
40	JTM1050EVS2-C40	Ram Adapter		1
40-1	JTM1050EVS2-C40-1	Lock Stud		1
41	JTM949EVS-C02	Worm Gear		1
42	AB1012W-A83	Spring Pin	Ø6x30L	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-C48	Lock Handle Assembly	M12x25L	2
49	JTM1050EVS2-49	Lock Pin	10x35L	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
54	JTM1050EVS2-54	Gib		2
55	JTM1050EVS2-55	Gib Holder		2
56	TS-1504111	Hex Socket Cap Screw	M8x55L	6
57	JTM1050EVS2-57	Set Screw	M10x30L	6
58	TS-2361101	Spring Washer	M10	6
59	TS-2311101	Hex Nut	M10	6
60	JTM1050EVS2-60	Wiper (R)		2

Index No	Part No	Description	Size	Qty
61	JTM1050EVS2-61	Wiper (L)		2
62	TS-1523021	Set Screw	M6x8L	2
63	JTM949EVS-C74	Bevel Gear	18T	1
64	BB-6004ZZ	Bearing	6004ZZ	1
65	KF2R5520	Key	5x5x20L	1
66	JTM1050EVS2-66	Elevating Shaft		1
67	KF2R4420	Key	4x4x20L	1
68	BB-6204ZZ	Bearing	6204ZZ	1
69	JTM949EVS-C68	Housing		1
70	TS-1503041	Hex Socket Cap Screw	M6x16L	3
71	JTM949EVS-C67	Dial Holder		1
72	JTM949EVS-C66	Dial (Inch)	100/0.001"	1
73	JTM949EVS-C65	Dial Lock Nut		1
74	JTM949EVS-C64	Clutch Insert		1
75	JTM1050EVS2-75	Elevating Crank		1
76	JTM949EVS-C62	Handle		1
77	JTM1050EVS2-77	Lock Shaft		1
78	JTM1050EVS2-78	Handle		1
79	JTM1050EVS2-79	Turret Gib		1
80	JTM1050EVS2-80	Turret		1
81	SNH12L165	Hex Cap Screw	M12x165L	4
82	TS-2361121	Spring Washer	Ø12	4
83	TS-1525041	Socket Set Screw	M10x20L	1
84	JTM1050EVS2-84	Locking Bolt		2
85	JTM1050EVS2-85	Table Lock Piece		2
86	TS-155009	Flat Washer	M14	2
87	TS-154009	Hex Nut	M14	2
88	JTM1050EVS2-88	Ram Pinion		1
91	JTM1050EVS2-91	Locker Screw		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-1503031	Socket Head Button Screw	M6x12L	4
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
106	JTM949EVS-C106	Chip Pan		1
107	TS-1503031	Hex Socket Cap Screw	M6x12L	2
108	TS-1550041	Flat Washer	M6	2
109	TS-0561052	Hex Nut	1/2-20UNF	1
110	TS-2361121	Spring Washer	Ø12	1
111	JTM949EVS-C58	Bevel Gear	36T	1
112	JTM949EVS-C44	Washer		1
113	BB-6205ZZ	Bearing	6205ZZ	1
114	BTH51305	Thrust bearing	51305	1
115	TS-1503051	Hex Socket Cap Screw	M6x20L	3
116	TS-0720111	Spring Washer	Ø13	1
117	KF2R5525	Key	5x5x25L	1
118	JTM949EVS-C61	Lead Screw (Inch)	Ø32 x 5 tpi	1
122	JTM949EVS-C84	Side Cover		1
123	JET-254	JET Logo	254x105 mm	2
124	LM000003	ID/Warning Label (JTM-1050EVS2)		1
	JTM1050EVS2-TB	Tool Box Kit Complete (not shown)		

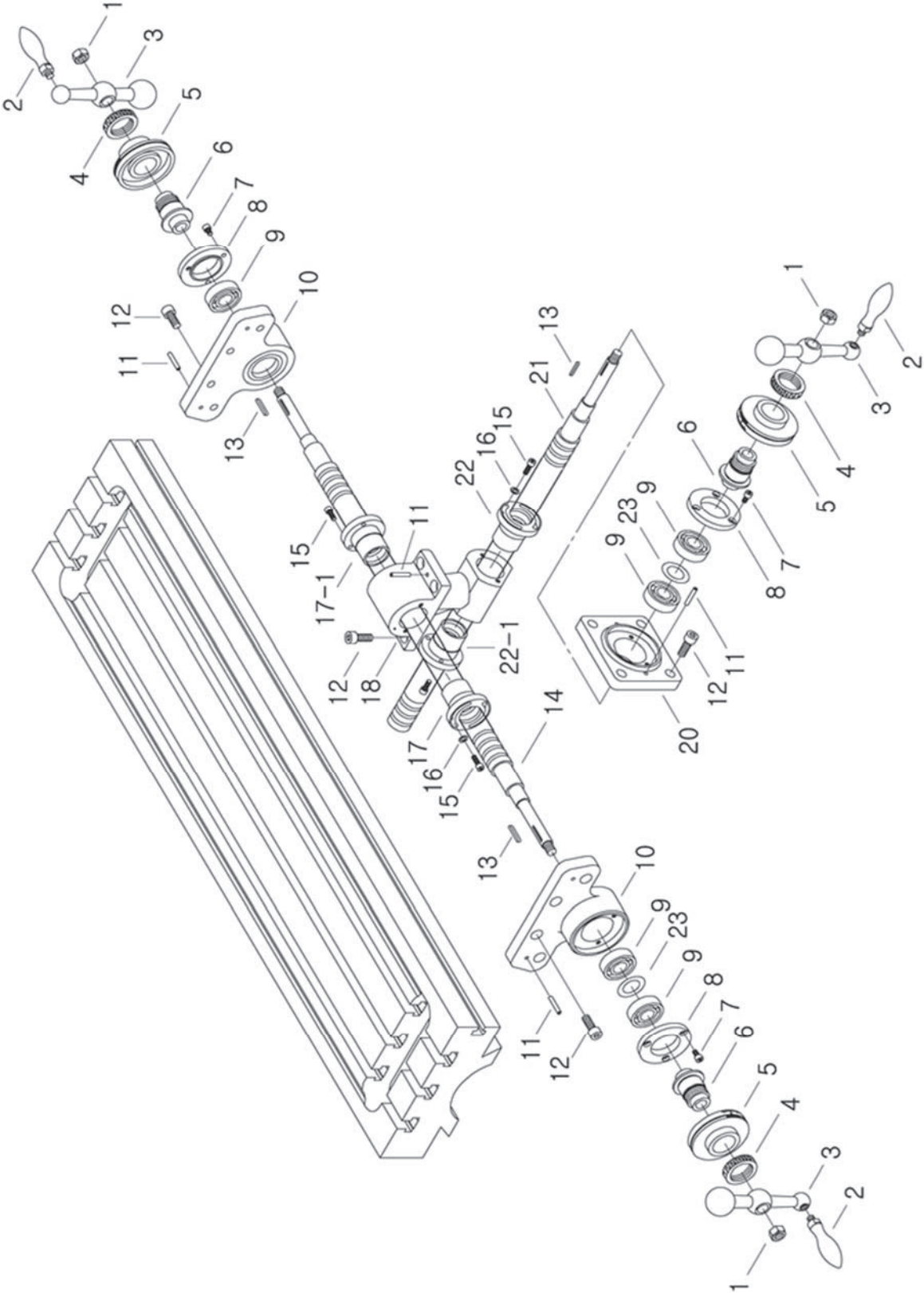
13.5.1 JTM-949EVS Table Assembly – Exploded View



### 13.5.2 JTM-949EVS Table 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	JTM949EVS-D08	Cover		3
9	BB-6204	Ball Bearing	6204ZZ	5
10	JTM949EVS-D10	Bearing Bracket		2
11	5311251	Spring Pin	Ø5x30	6
12	TS-1505011	Hex Socket Cap Screw	M10x16	16
13	KF2R3325	Key	3x3x25	3
14	JTM949EVS-D14	Longitudinal Feed Screw	Ø32 x 5 TPI (1505)	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	Longitudinal Feed Nut (inch)	Ø32 x 5 TPI	1
18	JTM949EVS-D18	Feed Nut Bracket		1
20	JTM949EVS-D20	Cross Feed Bearing Bracket		1
21	JTM949EVS-D21	Cross Feed Screw	Ø32 x 5 TPI (591)	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	Ø45xØ34x0.15t	2

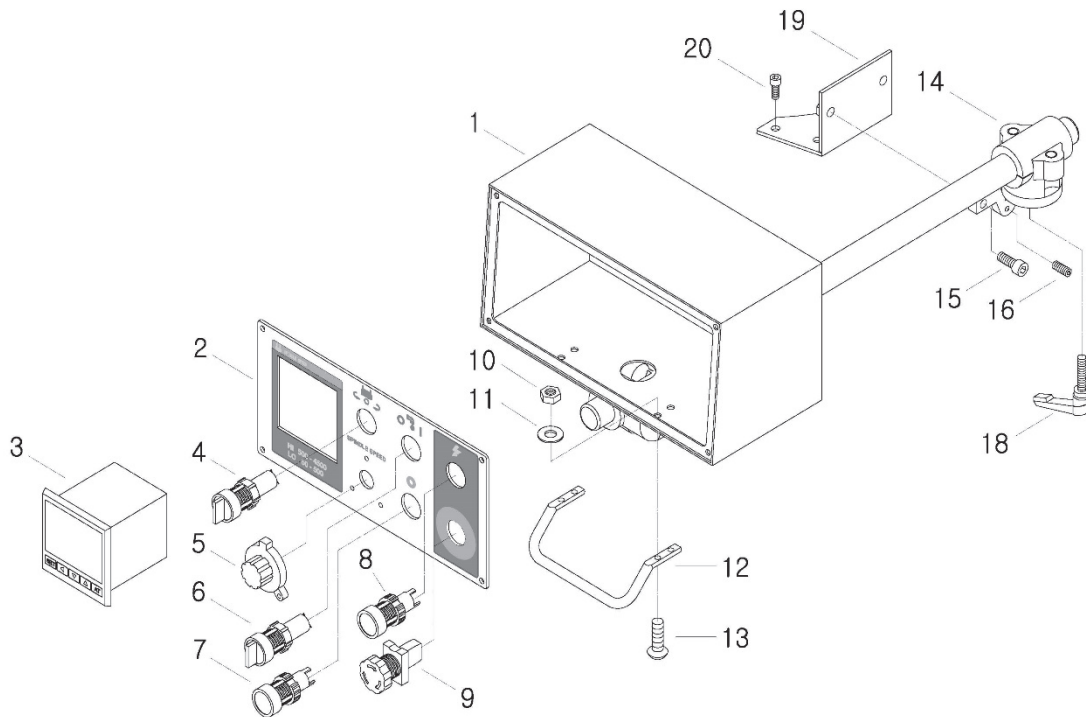
13.6.1 JTM-1050EVS Table Assembly – Exploded View



### 13.6.2 JTM-1050EVS Table 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	JTM949EVS-D08	Cover		3
9	BB-6204	Ball Bearing	6204ZZ	5
10	JTM949EVS-D10	Bearing Bracket		2
11	5311251	Spring Pin	Ø5x30	6
12	TS-1505031	Hex Socket Cap Screw	M10x25	16
13	KF2R3325	Key	3x3x25	3
14	JTM1050EVS2-D14	Longitudinal Feed Screw	Ø32 x 5 TPI	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	JTM949EVS-D18	Feed Nut Bracket		1
20	JTM949EVS-D20	Cross Feed Bearing Bracket		1
21	JTM1050EVS2-D21	Cross Feed Screw	Ø32 x 5 TPI	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	Ø45xØ34x0.15t	2

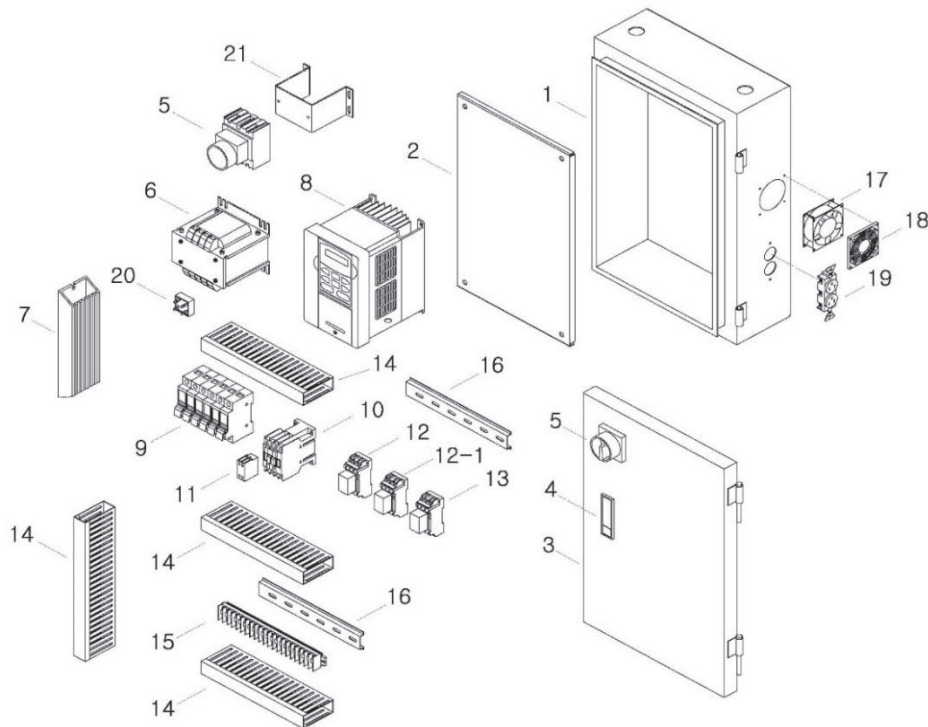
### 13.7.1 JTM-949EVS/JTM-1050EVS Control Panel Assembly – Exploded View



### 13.7.2 JTM-949EVS/JTM-1050EVS Control Panel Assembly – Parts List

Index No	Part No	Description	Size	Qty
	JTM949EVS-CBA	Control Box Assembly (includes #1~9 and 21)		1
1	JTM949EVS-E01	Control Box		1
2	LM000004	Control Panel		1
3	JTM949EVS-E03	Display		1
4	JTM949EVS-E04	F/R Select Switch		1
5	JTM949EVS-E05	Speed Adjuster		1
6	JTM949EVS-E06	Coolant Pump Switch		1
7	JTM949EVS-E07	Spindle Stop Button		1
8	JTM949EVS-E08	Power Start Button		1
9	JTM949EVS-E09	Emergency Switch		1
10	TS-1540031	Hex Nut	M5	4
11	TS-1550031	Flat Washer	Ø5	4
12	JTM949EVS-E12	Handle		1
13	TS-2245162	Socket Head Button Screw	M5x16	4
14	JTM949EVS-E14	Support Rod Unit		1
15	TS-1504051	Hex Socket Cap Screw	M8X25	2
16	TS-1523031	Socket Set Screw	M6x10	3
17	TS-1550071	Flat Washer	Ø10	1
18	JTM949EVS-E18	Lock Handle	M12x35	1
19	JTM949EVS-E19	Bracket		1
20	TS-1523051	Hex Socket Cap Screw	M6x16L	3
21	JTM949EVS-A101	Cable (Control Panel to Elec Box) – not shown		1

### 13.8.1 JTM-949EVS/JTM-1050EVS Electrical Box – Exploded View



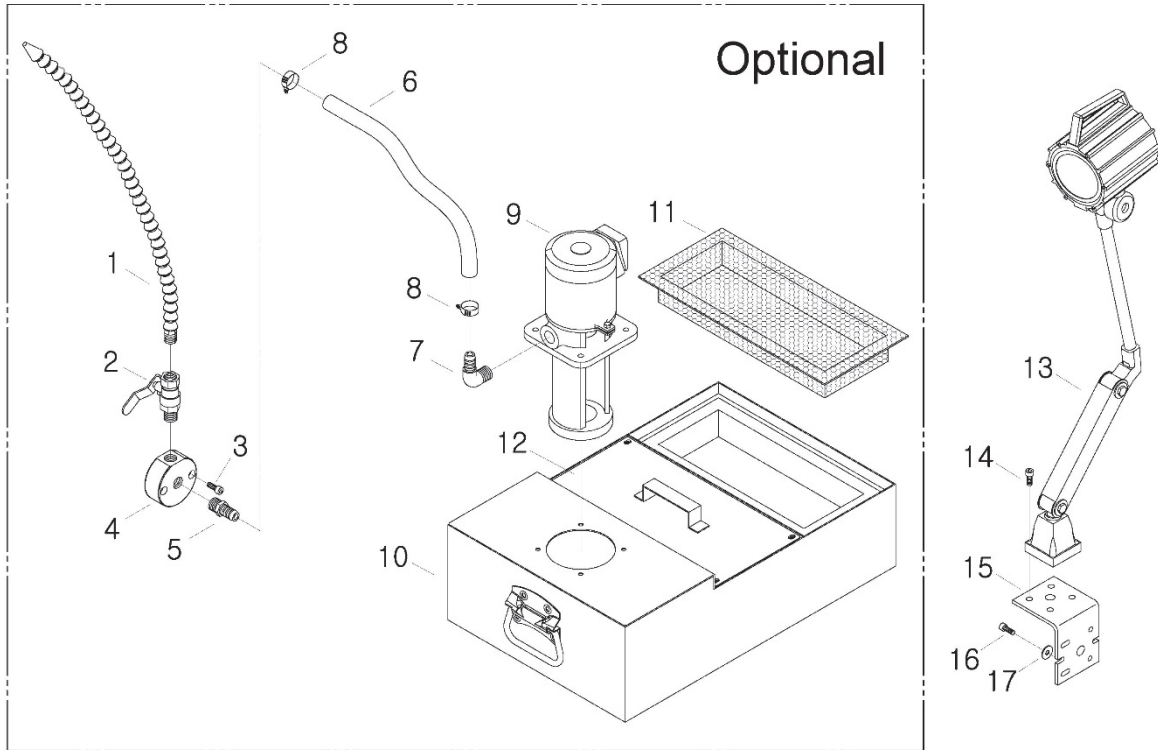
### 13.8.2 JTM-949EVS/JTM-1050EVS Electrical Box – Parts List

Index No	Part No	Description	Size	Qty
1	JTM949EVS-F01	Electrical Cabinet (RE: JTM949EVS-F21)		1
2	JTM949EVS-F02	Electrical Plate (RE: JTM949EVS-F21)		1
3	JTM949EVS-F03	Electrical Cabinet Door (RE: JTM949EVS-F21)		1
	JTM949EVS-EBC	Electrical Box Compound (includes #1-3)		1
4	JTM949EVS-F04	Door Latch		1
5	JTM949EVS-F05	Door Switch		1
6	JTM949EVS-F06	Transformer	400VA	1
7	JTM949EVS-F07	Resistor	300W, 100 Ω	1
8	JTM949EVS-F08	Inverter	VFD-B 022B21A	1
	JTM949EVS4-F08	Inverter	VFD022B43B	1
9	JTM949EVS-F09	Fuse Base		6
	JTM949EVS-F20A	Fuse (TC)	25A	3
	JTM949EVS4-F12A	Fuse (TC)	12A	3
	JTM949EVS-F2A	Fuse (220V)	2A	1
	JTM949EVS-F5A	Fuse (110V)	5A	1
	JTM949EVS-F5A	Fuse (24V)	5A	1
10	JTM949EVS-F10	Magnetic Contactor	TECO/CU-18	1
11	JTM949EVS-F11	Auxiliary Contactor	TECO/CUA-2	1
12	JTM949EVS-F12	Relay for Pump RMI A4524VAC	24VAC	1
12-1	JTM949EVS-F12-1	Relay For Power RM1A2024VAC		1
13	JTM949EVS-F13	Relay	24VDC	2
14	JTM949EVS-F14	Wire Casing		4
15	JTM949EVS-F15	Terminal Block		1
16	JTM949EVS-F16	Aluminum Rail		2
17	JTM949EVS-F17	Fan (RE: JTM949EVS-F22)		1
18	JTM949EVS-F18	Fan Cover (RE: JTM949EVS-F22)		1
19	JTM949EVS-F19	Electric Receptacle		1
20	JTM949EVS-F20	Rectifier		1
21	JTM949EVS-F21	Switch Bracket		1
	JTM949EVS-F22	Fan Assembly (#17,18)		1



### 13.9.1 JTM-949EVS/JTM-1050EVS Coolant Pump (Optional) – Exploded View

### 13.10.1 JTM-949EVS/JTM-1050EVS Work Lamp – Exploded View



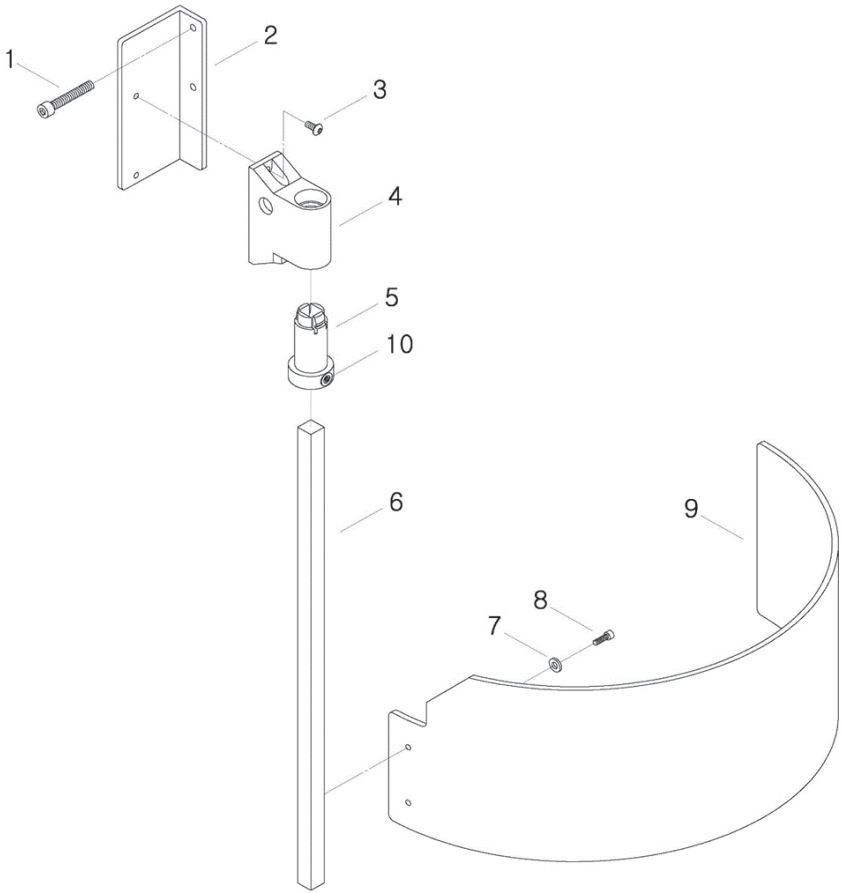
### 13.9.2 JTM-949EVS/JTM-1050EVS Coolant Pump (Optional) – Parts List

Index No	Part No	Description	Size	Qty
.....	660125	Coolant Pump Kit (includes #1 thru 12)	.....	.....
1	JTM949EVS-G01	Plastic Nozzle	.....	1
2	JTM949EVS-G02	Valve	PT 3/8" x 1/2"	1
3	TS-1503091	Hex Socket Cap Screw	M6 x 40	2
4	JTM949EVS-G04	Block	.....	1
5	JTM949EVS-G05	Hose Fitting	PT 3/8" x 1/2"	1
6	JTM949EVS-G06	Hose	1/2"	1
7	JTM949EVS-G07	Hose Fitting	PT 3/8" x 1/2" (90°)	1
8	JTM949EVS-G08	Hose Clamp	5/6" (11 ~ 20)	2
9	JTM949EVS-G09	Coolant Pump	1/8HP	1
10	JTM949EVS-G10	External Coolant Tank	.....	1
11	JTM949EVS-G11	Strainer	.....	1
12	JTM949EVS-G12	Cover with handle	.....	1

### 13.10.2 JTM-949EVS/JTM-1050EVS Work Lamp – Parts List

13	JTM949EVS-G13	Work Lamp	24V / LED	1
14	TS-1502041	Hex Socket Cap Screw	M5X16	4
15	JTM949EVS-G15	Work Light Bracket	.....	1
16	TS-1503041	Hex Socket Cap Screw	M6X16	6
17	TS-1550041	Flat Washer	M6	6
18	JTM949EVS-G18	LED Bulb (not shown)	24V	1

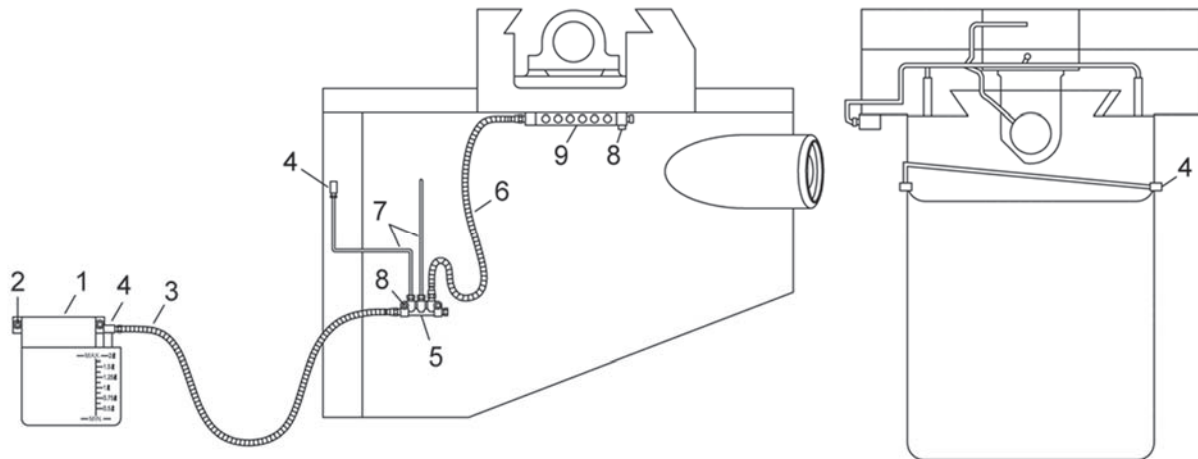
**13.11.1 JTM-949EVS/JTM-1050EVS Spindle Guard Assembly – Exploded View**



**13.11.2 JTM-949EVS/JTM-1050EVS Spindle Guard Assembly – Parts List**

Index No	Part No	Description	Size	Qty
	JTM949EVS-SGA	Spindle Guard Assembly (#1 thru 9)		
1	TS-1502101	Hex Socket Cap Screw	M5x45	2
2	JTM949EVS-H02	Support Plate		1
3	TS-2245102	Socket Head Button Screw	M5x10	2
4	JTM949EVS-H04	Bushing Bracket (Re: JTM949EVS-H04A)		1
	JTM949EVS-H04A	Bushing Bracket Assembly (includes #4,5)		1
5	JTM949EVS-H05	Bushing		1
6	JTM949EVS-H06	Support Rod		1
7	TS-1550031	Washer	Ø5	2
8	TS-1502031	Hex Socket Cap Screw	M5x12	2
9	JTM949EVS-H09	Spindle Guard		1
10	TS-1522021	Socket Set Screw	M5x8	1

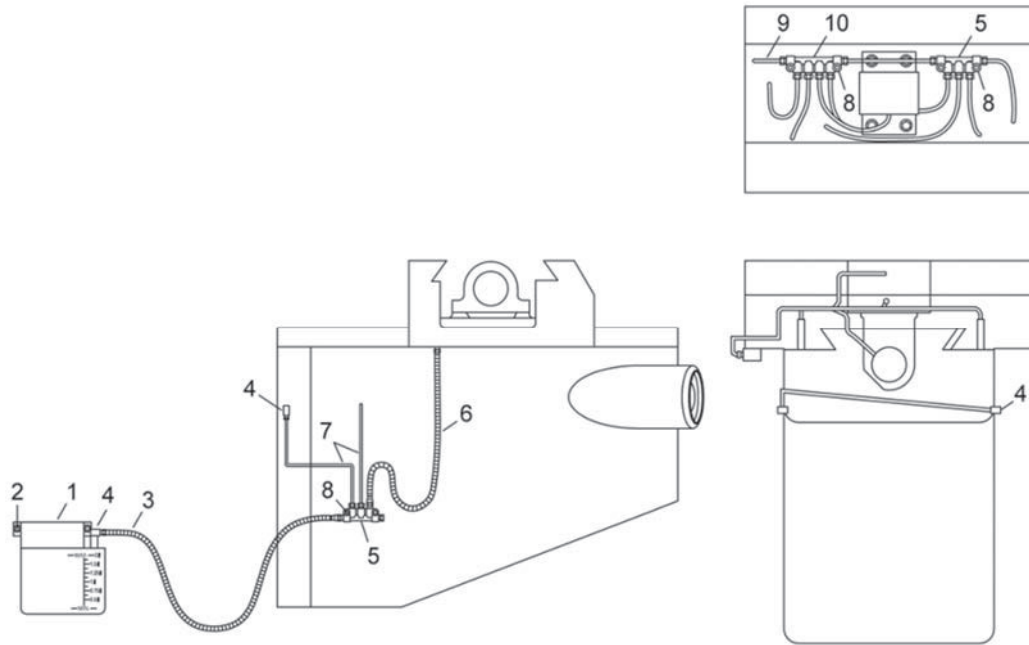
### 13.12.1 JTM-949EVS Lubrication System – Exploded View



### 13.12.2 JTM-949EVS Lubrication System – Parts List

Index No	Part No	Description	Size	Qty
1	JTM949EVS-J01	Automatic Oiler	2L, 0~180min	1
2	TS-1503061	Hex Socket Cap Screw	M6x25L	2
3	JTM949EVS-J03	Flexible Steel Tube	Ø4	1
4	JTM949EVS-J04	Elbow Adaptor	Ø4	3
5	JTM949EVS-J05	Oil Distributor	Ø4, 4 holes	2
6	JTM949EVS-J06	Flexible Steel Tube		1
7	JTM949EVS-J07	Aluminum Pipe	Ø4	2
8	TS-1502061	Hex Socket Cap Screw	M5x25L	4
9	JTM949EVS-J09	Oil Distributor	Ø4, 8 holes	1
	JTM949EVS-J05A	Oil Distributor Kit (incl. #3,5,6,9)		

### 13.13.1 JTM-1050EVS Lubrication System Assembly – Exploded View



### 13.13.2 JTM-1050EVS Lubrication System Assembly – Parts List

Index No	Part No	Description	Size	Qty
1	JTM949EVS-J01	Automatic Oiler	2L, 0~180min	1
2	TS-1503061	Hex Socket Cap Screw	M6x25L	2
3	JTM949EVS-J03	Flexible Steel Tube	Ø4	1
4	JTM949EVS-J04	Elbow Adaptor	Ø4	3
5	JTM949EVS-J05	Oil Distributor	Ø4, 4 holes	2
6	JTM949EVS-J06	Flexible Steel Tube		1
7	JTM949EVS-J07	Aluminum Pipe	Ø4	2
8	TS-1502061	Hex Socket Cap Screw	M5x25L	6
9	JTM1050EVS2-J09	Plastic Tube	Ø4	10
10	JTM1050EVS2-J10	Oil Distributor	Ø4, 6 holes	1
	JTM1050EVS2-J10A	Oil Distributor Kit (incl. #3,5,6,10)		

# 14.0 Electrical Connections

## 14.1 JTM-949EVS/230 and JTM-1050EVS2 (230V ONLY)

