VM25L

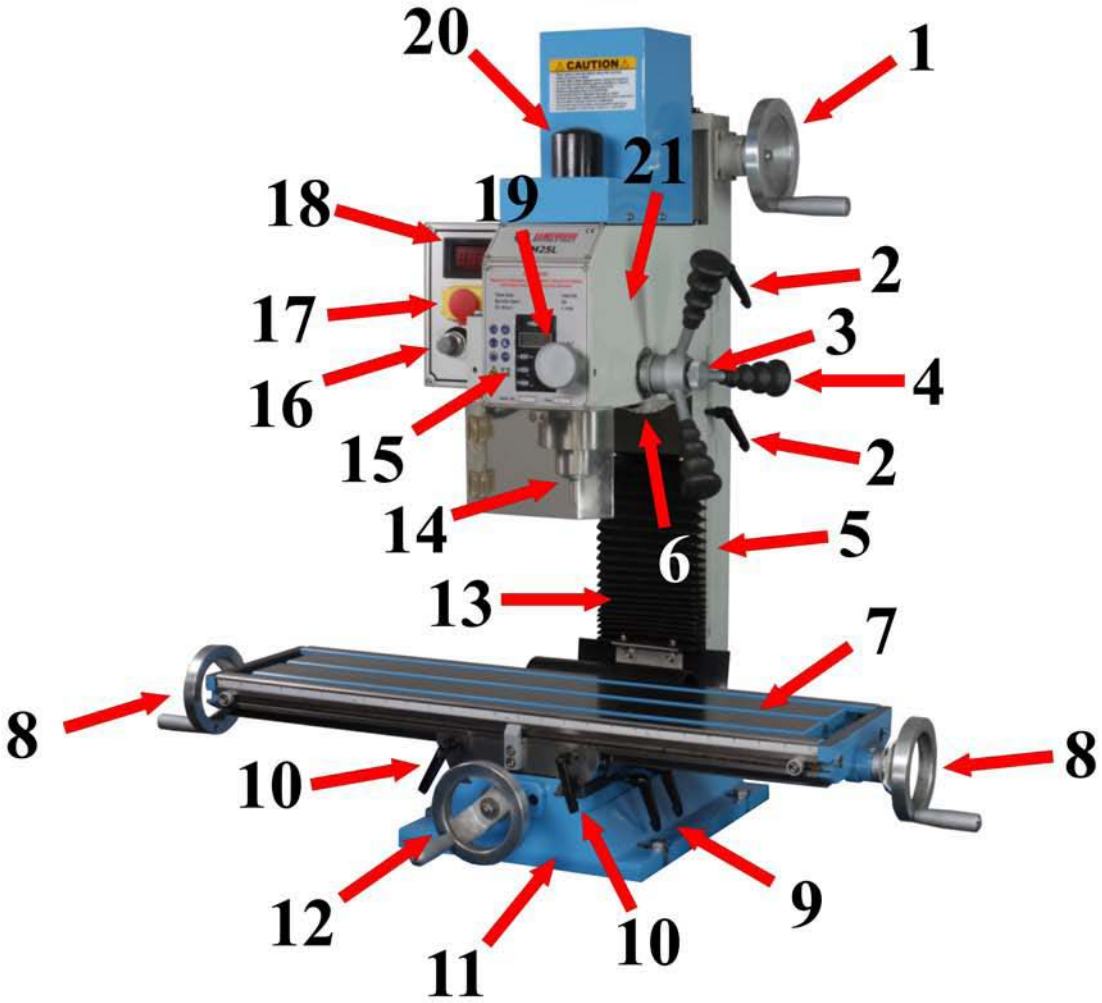
Milling Machine

OPERATOR'S MANUAL

FOR YOUR OWN SAFETY, PLEASE READ
THE ENTIRE MANUAL BEFORE USING THIS MACHINE

12/21/17

Part Identification



The following is a list of controls and components on the mill. Please take the time to become familiar with each item and its location. These terms will be used throughout the manual and knowing them is essential to understanding the instructions and terminology used in this manual.

1. Z Axis (Vertical) Handwheel
2. Column (Z Axis) Locks
3. Quill Fine Feed Engagement Knob
4. Spindle Downfeed Levers
5. Column
6. Head Tilt Indicator
7. Worktable
8. X Axis (Longitudinal) Handwheels (2)
9. Y Axis (Traverse) Locks (2)
10. X Axis (Longitudinal) Locks (2)
11. Base
12. Y Axis (Traverse) Handwheel
13. Column Shroud
14. Quill
15. Quill Depth Indicator
16. Speed Control Knob
17. Emergency Stop Switch
18. LED Digital Speed Indicator
19. Fine Feed Rotary Knob
20. Drawbar Cover
21. Head

VM25L Mill Parameters

Product Dimensions:

Mill Weight	240 lbs
Shipping (Boxed) Weight	296 lbs
Overall Width x Depth x Height (Including Handles)	37.5” x 22.25” x 30.75”
Footprint Width x Depth	10.75” x 13.25”

Shipping Dimensions:

Type	Wood Crate
Length x Width x Height	28” x 30” x 37”

Electrical:

Minimum Circuit Type	15 amp (110v)
Switch	Forward/Reverse

Motor Specifications:

Type	IP44, Class F, Brushless DC (BLDC)
Horsepower	1.5
Watts	1100
Amps	12 amp (110v)
Fuse	8 amp (110v)
Speed	0-2,250 rpm
Speeds	Variable
Power Transfer	Belt Drive
Bearings	Shielded and Permanently Lubricated

Travel Specifications:

Longitudinal (X Axis) Travel	19.5"
Cross Feed (Y Axis) Travel	6.7"
Column (Z Axis) Travel	11.75"
Spindle (U Axis) Travel	2.1"
Maximum Drilling Capacity	1"
Maximum Spindle to Table Distance	6.7"
End Mill Capacity	0.63"
Face Mill Capacity	2.5"

Misc Info:

Table Size	27.5" x 7.1"
T-Slot Size	12mm
Number of T-Slots	3
Spindle Taper	R8
Head Tilt	+/-90 Degrees

⚠ WARNING!

This manual provides critical safety instructions on the proper setup, operation, maintenance, and service of this machine/tool. Save this document, refer to it often, and use it to instruct other operators.

Failure to read, understand and follow the instructions in this manual may result in fire or serious personal injury—including amputation, electrocution, or death.

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

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

⚠ WARNING!

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

- **Lead from lead-based paints.**
- **Crystalline silica from bricks, cement and other masonry products.**
- **Arsenic and chromium from chemically-treated lumber.**

Your risk from these exposures 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 those dust masks that are specially designed to filter out microscopic particles.

Table of Contents


CAUTION
VM25L

SECTION 1: SAFETY

WARNING: READ AND UNDERSTAND THE ENTIRE INSTRUCTION MANUAL BEFORE ATTEMPTING SET-UP OR USE OF THIS MILL. FAILURE TO FOLLOW THESE INSTRUCTIONS CAN RESULT IN SERIOUS PERSONAL INJURY AND/OR DEATH.

Safety Instructions

1. 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 use of mill/drills, do not use this machine until proper training and knowledge has been obtained.

2. This manual is intended to familiarize you with the technical aspects of this mill. It is not, nor was it ever intended to be, a training manual.

3. Thoroughly read the instruction manual before operating your milling machine. Learn the applications, limitations and potential hazards of this machine. Keep the manual in a safe and convenient place for future reference.

4. Keep guards in place. Safety guards must be kept in place and in working order.

5. Do not force tools. Always use tools at a rate for which they were designed. The machine will do a safer and better job at the rate for which it was designed.

6. Use the correct tool. Do not force a tool or attachment to do a job for which it was not designed.

7. Keep work area clean and well lighted. Clutter and inadequate lighting invite potential hazards.

8. Ground all tools. If a machine is equipped with a three-prong plug, it must be plugged into a three-hole grounded electrical receptacle or grounded extension cord. If using an adapter to aid in accommodating a two-hole receptacle, ground using a screw to a known ground.

9. Wear eye protection at all times. Use safety glasses with side shields or safety goggles that meet the appropriate standards of the American National Standards Institute (ANSI).

10. Avoid dangerous environments. Do not operate this machine in a wet or open flame environment. Airborne dust particles constitute an explosion and fire hazard.

11. Ensure all guards are securely in place and in working condition before each session.

12. Reduce the risk of unintentional starting. Make sure switches are in the *OFF* position before connecting power to the machine. **Ensure the rpm speed selector is in the "0" or most counter-clockwise position before applying power to the machine.**

13. Keep work area clean, free of clutter, grease, etc.

14. Keep children and visitors away. Visitors must be kept at a safe distance while operating the unit.

15. Childproof your workshop with padlocks, master switches or by removing starter keys.

16. Always stop and disconnect the machine from power before cleaning, adjusting or servicing your mill.

17. Wear proper apparel. Never wear loose clothing, neck ties, gloves or jewelry. Secure long hair away from moving parts.

18. Remove adjusting keys, rags, and tools.

Before turning the machine on, make it a habit to check that all adjusting keys and wrenches have been removed before applying power to the machine.

19. Avoid using an extension cord. But if you must use one, examine it beforehand to ensure it is in good condition. Immediately replace a damaged extension cord. Always use an extension cord that uses a ground pin and connected ground wire. Use an extension cord that meets the amp rating on the motor nameplate. If the motor is dual voltage, be sure to use the amp rating for the voltage you will be using. If you use an extension cord with an undersized gauge or one that is too long, excessive heat will be generated within the circuit, increasing the chance of a fire or damage to the circuit.

20. Keep proper footing and balance at all times.

21. The use of mobile bases is not recommended. It is best to bolt your machine securely to the workshop floor.

22. Never leave the machine unattended. Wait until it comes to a complete stop before leaving the area. Never leave the mill unattended when it is running or power is still connected.

23. Perform machine maintenance and care. Always follow lubrication and accessory attachment instructions in the manual.

24. If at any time you are experiencing difficulties performing the intended operation, stop the machine! Contact technical support or consult a qualified expert as to how the operation should be safely performed.

25. Habits—good and bad—are hard to break. Develop good habits in your shop and safety will become second-nature to you.

26. Metal shavings, cutting fluids and associated fumes may be hazardous and cause an allergic reaction in people and/or animals. Familiarize yourself with the inherent risks involved with metal work and take appropriate precautions to protect yourself and others.

- WARNINGS -

Before running your mill for the first time, perform the spindle break-in procedure on page 13.

Make sure to oil your mill once a day before turning it on. Refer to the lubrication instructions on page 17 for more details on which type of oil to use, how much to use, and where to put it. Use of compressed air for cleaning purposes should be avoided as it can unintentionally blow swarf and other fine contaminants into the dovetails.

When changing collets, do not loosen the drawbar more than 3 turns before tapping the top of the drawbar to loosen it. When installing a new collet, do not overtighten the drawbar. See page 13.

Please ensure the appropriate axis locks are loosened before attempting to move an axis either manually or with power feed. Not loosening the lock handle(s), will most likely cause damage to the mill and/or power feed.

We STRONGLY RECOMMEND that you get formal training BEFORE you operate your mill. DRO PROS will not be held liable for accidents caused by lack of training or education.

Please check our website for the latest version of your manual.

SECTION 2: POWER

Circuit Requirements

This machine is prewired to operate on a 110 volt power supply circuit that has a verified ground and meets the following requirements:

Voltage.....110 Volts
Motor..... Brushless
Wattage ..... 1.1 KW
Fuse..... 110V/8 Amp
Frequency.....60 Hz
Phase..... Single Phase
Supply Circuit.....15 Amps

Before installing the machine, consider the availability and proximity of the required power supply circuit. If an existing circuit does not meet the requirements for this machine, a new circuit must be installed. To minimize the risk of electrocution, fire, or equipment damage, installation work and electrical wiring must be done by a qualified electrician in accordance with all applicable codes and standards.

Full-Load Current Rating

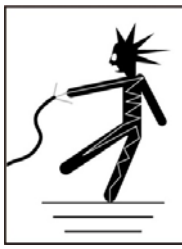
The full-load current rating is the amperage a machine draws at 100% of the rated output power. On machines with multiple motors, this is the amperage drawn by the largest motor or sum of all motors and electrical devices that might operate at one time during normal operations.

Current Rating 12 Amps

The full-load current is not the maximum amount of amps that the machine could draw. If the machine is overloaded, it can draw additional amps beyond the full-load rating.

If the machine is overloaded for a sufficient length of time, damage, overheating, or fire may result—especially if connected to an undersized circuit. To reduce the risk of these hazards, avoid overloading the machine during operation and make sure it is connected to a power supply circuit that meets the requirements in the following sections.

A power supply circuit includes all electrical equipment between the breaker box or fuse panel in the building and the machine. The power supply circuit used for this machine must be sized to safely handle the full-load current drawn from the machine for an extended period of time. (If this machine is connected to a circuit protected by fuses, use a time delay fuse marked D.)



⚠WARNING
Electrocution, fire, or equipment damage may occur if machine is not correctly grounded and connected to the power supply.

⚠CAUTION
For your own safety and protection of property, consult a qualified electrician if you are unsure about wiring practices or electrical codes in your area.

Note: The circuit requirements listed in this manual apply to a dedicated circuit. This machine should not be connected to a shared circuit where other machines might be running at the same time. Always consult a qualified electrician to ensure that the circuit is properly sized for safe operation.

Grounding & Plug Requirements

This machine MUST be grounded. In the event of certain malfunctions or breakdowns, grounding reduces the risk of electric shock by providing a path of least resistance for electric current.

This machine is equipped with a power cord that has an equipment-grounding wire and a grounding matching receptacle (outlet) that is properly installed and grounded in accordance with local codes and ordinances.

Improper connection of the equipment-grounding

wire can result in a risk of electric shock. The wire with green (or green-yellow) insulation is the equipment-grounding wire. If repair or replacement of the power cord or plug is necessary, do not connect the equipment-grounding wire to a live (current carrying) terminal. Check with a qualified electrician or service personnel if you do not understand these grounding requirements, or if you are in doubt about whether the tool is properly grounded. If you ever notice that a cord or plug is damaged or worn, disconnect it from power, and immediately replace it with a new one.

Extension Cords

We do not recommend using an extension cord with this machine. If you must use an extension cord, only use it if absolutely necessary and only on a temporary basis.

Extension cords cause voltage drops, which may damage electrical components and shorten motor life. Voltage drops increase as the extension cord size gets longer and the gauge size gets smaller (higher gauge numbers indicate smaller sizes). Any extension cord used with this machine must contain a ground wire, match the required plug and receptacle, and meet the following requirements:

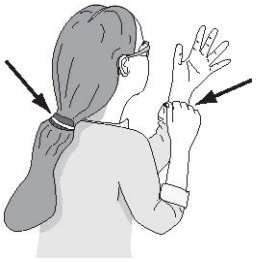
Voltage.....110 Volts
Minimum Gauge Size.....12 AWG
Maximum Length..... 50 Feet

Safety

Before installing or using this machine, consider the fact that this machine presents serious injury hazards to untrained users. Read through this entire manual to become familiar with the controls and operations before starting the machine!

Wear safety glasses during the entire set up process!

The VM25L is a heavy machine. DO NOT over-exert yourself while unpacking or moving your machine - get assistance.



Loose hair and clothing could get caught in machinery and cause serious personal injury. Keep loose clothing and long hair away from moving machinery.

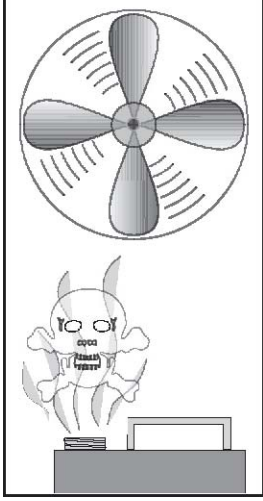
Damage to your eyes, lungs, and ears could result from using this machine without proper protective gear. Always wear safety glasses, a respirator, and hearing protection when operating this machine.

SECTION 3: SETUP

Items Needed for Set Up

The following items are needed to complete the set up process, but are not included with your machine:

Description	Qty
Precision Level	1
Safety Glasses (per person)	1
Solvent	1
Shop Rags	1
Metal Shim Stock	1
Brass Hammer	1



⚠CAUTION

Many of the solvents commonly used to clean machinery can be toxic when inhaled or ingested. Lack of ventilation while using these solvents could cause serious personal health risks or fire. Take precautions from this hazard by only using cleaning solvents in a well ventilated area.

Inventory

The following accessories are included:

Toolbox	1
Oiling Bottle w/ nozzle	1
Phillips Screwdriver	1
Flat Blade Screwdriver	1
M10 Bolts	2
M10 Washers	2
M10 Nuts	2
R8-JT33 Arbor	1
17/19 Open Ended Wrench	1
Extra Fuse	1
3-16mm JT33 Drill Chuck & Key	1
6 Piece Allen Wrench Key Set	1

Damage

The VM25L was inspected and carefully crated before it left our warehouse. If you discover the machine is damaged after you have signed for delivery, please immediately call Customer Service at (707) 452-8434 for advice. Save the containers and all packing materials for possible inspection by the carrier or its agent. Otherwise, filing a freight claim can be difficult. When you are completely satisfied with the condition of your shipment, you should inventory the contents.

In the event that any nonproprietary parts are missing (e.g. a nut or a washer), we would be glad to replace them, or for the sake of expediency, replacements can be obtained at your local hardware store.

The unpainted surfaces are coated with a waxy oil to protect them from corrosion during shipment. We recommend removing this protective coating using a citrus-based degreaser. To clean thoroughly, some parts may need to be removed. For optimum performance from your machine, make sure you

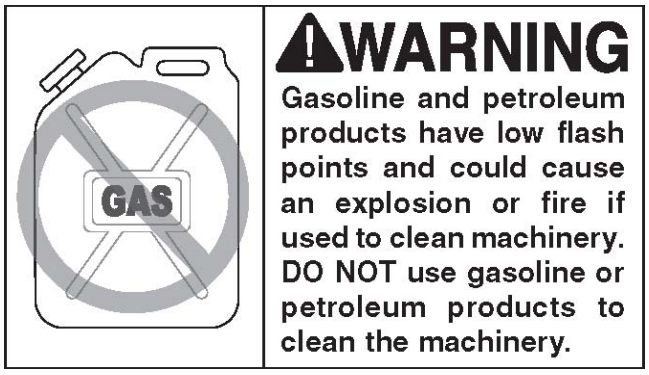
clean all moving parts or sliding contact surfaces that are coated. Do not use paint thinner, solvents, gasoline or lacquer thinner as these will damage painted surfaces. Avoid chlorine-based solvents, such as acetone or brake parts cleaner, as they may damage painted surfaces should they come in contact. Always follow the manufacturer's instructions when using any type of cleaning product.

Mounting to a workbench

The VM25L should be bolted to a workbench to provide maximum rigidity and safety. Consider existing and anticipated needs, size of the material to be processed through the mill, and space for auxiliary stands, work tables or other machinery when establishing a location for your new machine. To mount the mill to the workbench:

1. Finish removing the wooden crate from around the machine.
2. Unbolt the mill from the shipping crate bottom.
3. Choose a location for the mill that is dry, has good lighting, and has enough room to be able to service the machine on all four sides.
4. With adequate lifting equipment, slowly raise the mill off the shipping crate bottom. Make sure the mill is balanced before moving to a sturdy workbench or stand.
5. The mill's location must be absolutely flat and level. Place a precision level on the mill and shim the machine until it is level side-to-side and front-to-back.
6. Bolt the mill to the stand (if used). If securing to a work bench, through bolt for best performance.
7. Clean all rust protected surfaces using a mild commercial solvent, kerosene or diesel fuel.

Do not use paint thinner, gasoline or lacquer thinner as these will damage painted surfaces.
Lightly coat all cleaned surfaces with 20W machine oil.



SECTION 4: OPERATIONS

Break-In Procedure

It is essential to closely follow the proper break-in procedures to ensure trouble free performance. Complete this process once you have familiarized yourself with all instructions in this manual. The VM25L may have shipped with the drill chuck installed in the spindle. If this is the case, go ahead and remove the chuck and arbor at this time.(see "Drill Chuck Removal", below).

CAUTION: If you suspect the mill is not working correctly, shut it OFF and correct the problem before proceeding further.

1. Ensure the RPM dial is at the lowest possible position (speed knob fully counter-clockwise).
2. Connect power to the mill.
3. Turn the direction switch to "F".
4. Press the green ON button. The LCD speed display should light up in red.
5. Rotate RPM speed dial until spindle speed reaches 200 RPM and run the mill for a minimum of 3 minutes.
6. Without stopping the mill, increase spindle speed to 1,100 rpm for 3 minutes.
7. Without stopping the mill, increase spindle speed to 2,100 rpm for 3 minutes.
8. Reduce RPM to zero and then press the red "Stop" button.
9. Set the direction switch to "R".
10. Press the green ON button. The LCD speed display should light up in red.
11. Rotate RPM dial until spindle speed reaches 200 RPM and run the mill for a minimum of 3 minutes.
12. Without stopping the mill, increase spindle speed to 1,100 rpm for 3 minutes.
13. Without stopping the mill, increase spindle speed to 2,100 rpm for 3 minutes.
14. Reduce the RPM to zero, then press the red "Stop" button.
15. Turn the direction switch to "0".

Failure to follow start up and spindle break-in procedures will likely cause rapid deterioration of the spindle and other related parts.

Tool Removal

Step 1: **DISCONNECT POWER FROM THE MACHINE.**

Loosening the Drawbar

Step 2: Remove the drawbar cover. Pulling upwards while slightly rocking it back and forth should help remove it more easily.
Step 3: Using the 8mm wrench, loosen the drawbar but DO NOT remove it:

DO NOT completely unscrew the drawbar before striking it with the hammer. You will damage the threads on the drawbar and the arbor if you unscrew it more than two to three turns.

Step 3: Strike the top of the drawbar. An insulated dead blow or rubber mallet is recommended in order not to damage the drawbar. It should not be necessary to forcefully strike the drawbar. Normally, a quick "tap" is all that should be needed:

Step 4: Protect the table surface with a piece of cardboard or wood. Place one hand under the chuck and finish loosening the drawbar on top by hand until the chuck falls out of the spindle.

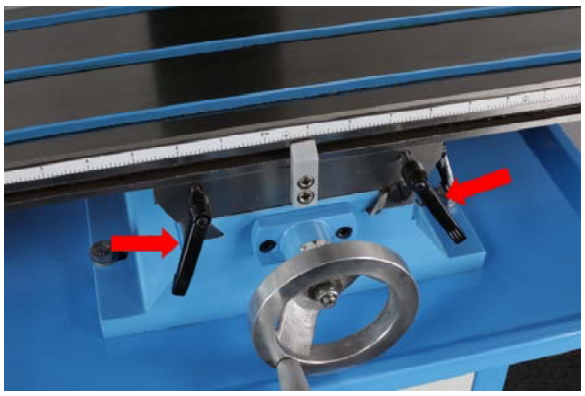
Inserting a Tool

Step 1: **DISCONNECT POWER FROM THE MACHINE.**
Step 2: Remove the drawbar cover.
Step 3: Protect the table surface with a piece of cardboard or hold the cutter or tool with a shop towel to prevent it from falling out of the collet.
Step 4: Carefully clean the surface of the collet and spindle taper. Ensure that it is free of debris, oil and grease of any kind.
Step 5: Insert the cutting tool into the collet by pushing the collet up into the spindle taper. Slide it up until it makes contact with the threads at the end of the drawbar. Using your fingers, thread the drawbar into the collet, until the collet draws up into the spindle taper.
Step 6: While supporting the tool in the collet with one hand, tighten the drawbar with the 17mm wrench in your opposite hand. Note: Do not overtighten the drawbar. Overtightening makes collet removal difficult and causes damage to the drawbar threads, collet, and the spindle taper. Keep in mind the taper keeps the collet and tool in place. The drawbar simply aids in seating the taper.

Table Travel

The table can be moved in the X and Y axis directions. The longitudinal feed (X axis) is moved by a handwheel at either end of the table. The handwheel will move the table in both directions side-to-side. One complete revolution of the handwheel moves the longitudinal feed 0.100".

There is also a scale on the front of the table for use when a tight tolerance is not required. The longitudinal feed can be locked in position by two adjustable arms located on the front of the table:



X Axis Table Locks

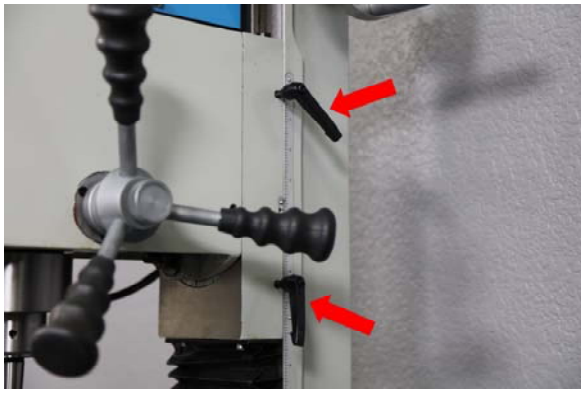
Cross Feed (Y axis). The cross feed is moved with the handwheel at the front of the table base. One complete revolution of the handwheel moves the cross slide 0.100". The cross feed can be locked into position by a table lock located on the right side of the cross slide underneath the table:

Y Axis Table Locks

Headstock Movement

Vertical movement is controlled by a Z axis handwheel near the top of the column:

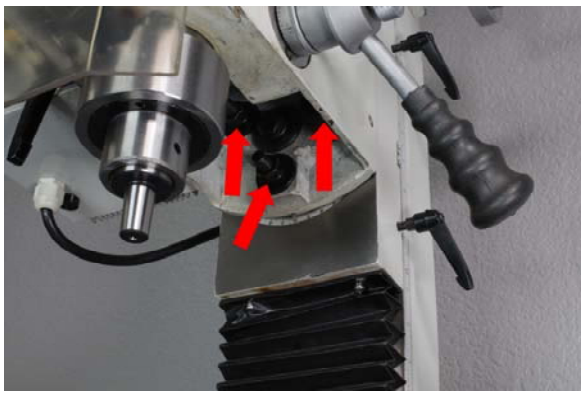
The headstock can be locked in position by the two adjustable lock levers on the right side of the column:



Column Lock Levers

Headstock Rotation

The headstock can be tilted 90 degrees either direction. clockwise and up to 90 degrees counter-clockwise. Loosening the three locknuts underneath the head enables the head to be tilted as needed:



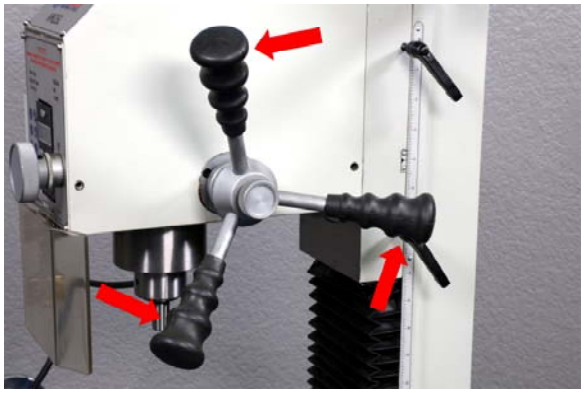
Head Tilt Unlock Bolts

CAUTION: Make sure to support the head as the nuts are loosened, to prevent the headstock from unexpectedly rotating.

An indicator strip is installed on the rotating rings of the headstock tilt mechanism, underneath the head, indicating degrees of tilt.

Quill Movement

The VM25L quill can be extended using two different methods. The quickest (and coarsest) is to extend or retract the quill via any of the three down



feed levers on the right side of the headstock:

Headstock Downfeed Levers

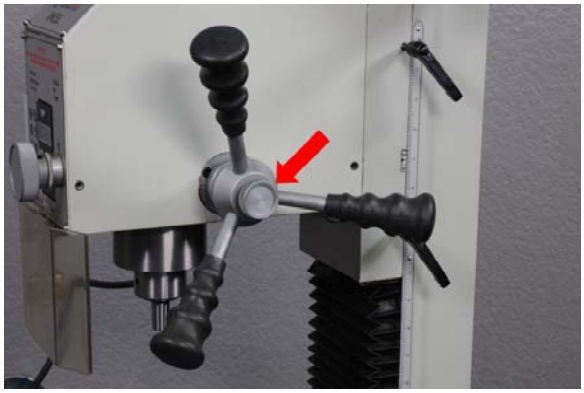
A return spring retracts the quill when the handles are released. Before operating the quill feed levers make sure both the quill lock is released, and the fine feed engagement knob is disengaged. The quill lock is on the left side of the head, forward of the directional switch. The fine feed engagement knob is described in the next section.

Fine Feed Rotary Knob

Alternatively, the quill can be extended or retracted in very fine increments via the fine feed rotary knob positioned on the front panel of the headstock:

Fine Feed Rotary Knob

To engage the fine feed dial, it is first necessary to lock the fine feed engagement knob. It is located in the center of the down feed lever hub, on the right side of the head. Tightening the knob clockwise engages the fine feed downfeed knob. Remember to disengage the feed before attempting to use the downfeed handles.



Fine Feed Engagement Knob

Spindle Digital Readout

An integrated LED digital caliper automatically displays total spindle extension, regardless of whether it was obtained via the quill feed levers or the fine feed rotary knob:

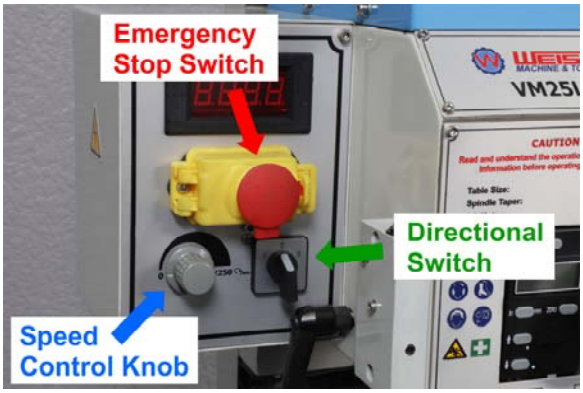
Spindle Digital Readout

Note: For maximum rigidity and accuracy when milling, keep the spindle retracted and locked inside the head as far as possible.

Motor Control Panel

It is vital that you become familiar with the power controls before operating the VM25L. Three separate switches control the power on the mill/drill.

CAUTION: Before connecting the machine to power, make sure to turn the speed control knob fully counter clockwise to zero. Also make sure the directional switch is set to the neutral position. This is to prevent any unintended rotation of the spindle as power is applied.



Motor Control Panel

Directional Switch: A three position switch located on the front control panel controls the spindle direction. Always make sure this switch is in the neutral position BEFORE connecting power to the mill. **Forward or reverse must be selected by this switch BEFORE the green ON switch is activated, or the mill will not run.**

Emergency STOP/ ON/OFF Switch: Provides an emergency stop function and magnetically protects the machine and electrical components. Pressing inwards on the outside cover activates the emergency red stop button. To reset, squeeze the vertical tabs together, which allows the cover to "pop" open. Press the green "ON" button to turn the machine on. The red LED rpm panel should immediately light up.

Speed Control Knob: Turn clockwise to increase spindle speed, counter-clockwise to decrease spindle speed. Always make sure to start the machine with the knob set to the fully counter-clockwise position, or zero.

Shutdown

It is important to completely shut the power OFF when the mill is not in use. Never leave the machine unattended while it is running. To completely shut the system power OFF:

Turn the Speed Control Knob counter clockwise to the OFF position. Turn the Directional Switch to the neutral position. Press the EMERGENCY STOP Button until the housing latches closed. At this point the LED panel should extinguish.

SECTION 5: MAINTENANCE

Lubrication

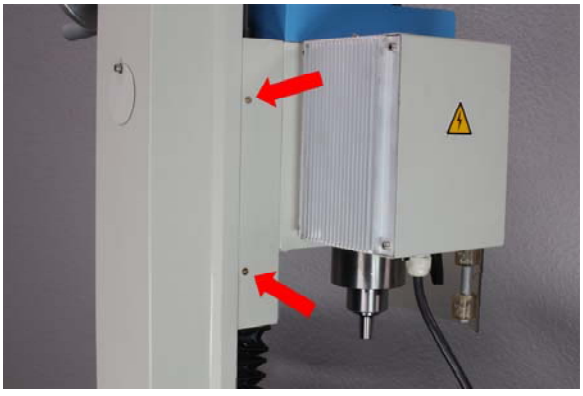
Regular lubrication will ensure your mill performs at its highest potential. For optimum performance from your machine, follow this maintenance schedule and refer to any specific instructions given in this section.

Daily Checks:
Place two to three drops of Vactra #2 Way Oil directly on the ways of the cross slide and saddle. Lubricate the slideway oiling ports as well. An oil bottle has been provided for this purpose. Lubricate the leadscrew with Mobil DTE 24 Light / ISO 32 oil.

At the end of every day, make sure the machine is completely powered down and removed from power. Clean up any excess cutting fluids and remove any excess chips. Make sure all unpainted surfaces are clean and protected with oil. Inspect to make sure there are no worn or damaged wires.

Unpainted Cast Iron
Protect the unpainted cast iron surfaces on the table by removing vises and fixtures daily and by wiping the table clean after every use - this ensures moisture does not remain on bare metal surfaces.

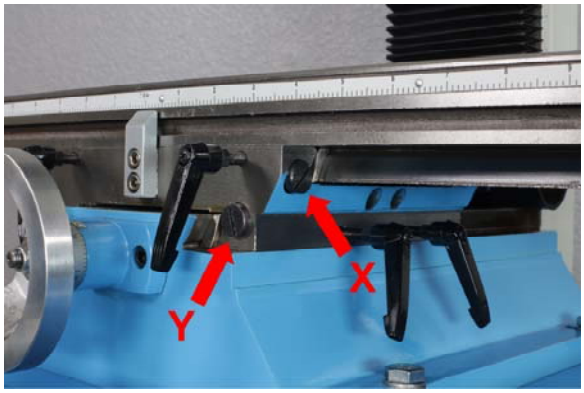
Oil fittings are located along the column. These should be lubricated daily with several drops of oil.



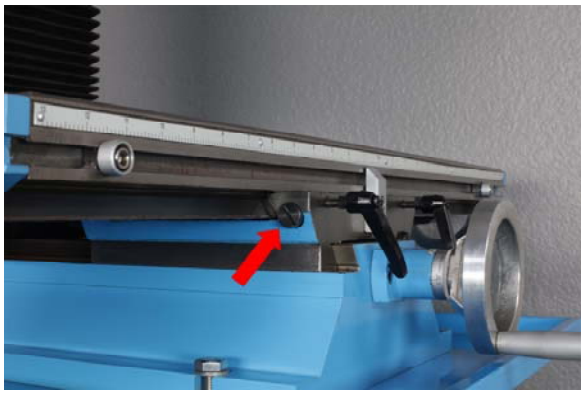
Gib Adjustment

At least monthly, ensure the gibs are adjusted properly. The function of the gibs is to take out play in the table and column without causing the slides to bind. The gibs are pre-adjusted at the factory and should not need further adjustment until many hours of machine use. If the movement seems too tight, make sure the slideway locks are fully released. After a period of time, movement of the table over the ways will cause normal wear.

The X and Y axis gib adjustment screws are located on the right side of the machine, just underneath the table, towards the front:



Left side of the X axis gib adjustment screw:



Back side of the Y axis gib adjustment screw:

The vertical (Z Axis) gib adjustment tension screw is located on the top right side of the machine, between the head and the column. It's just above the top Z axis locking lever.

To adjust the gibs:
Loosen the opposite, small end of the gib screw you wish to adjust. Tighten the larger gib adjustment tension screw as necessary. Move the table using the handwheel and check the tension. Loosen or tighten the gib adjustment tension screw as needed. Finish by tightening the smaller, opposite screw.

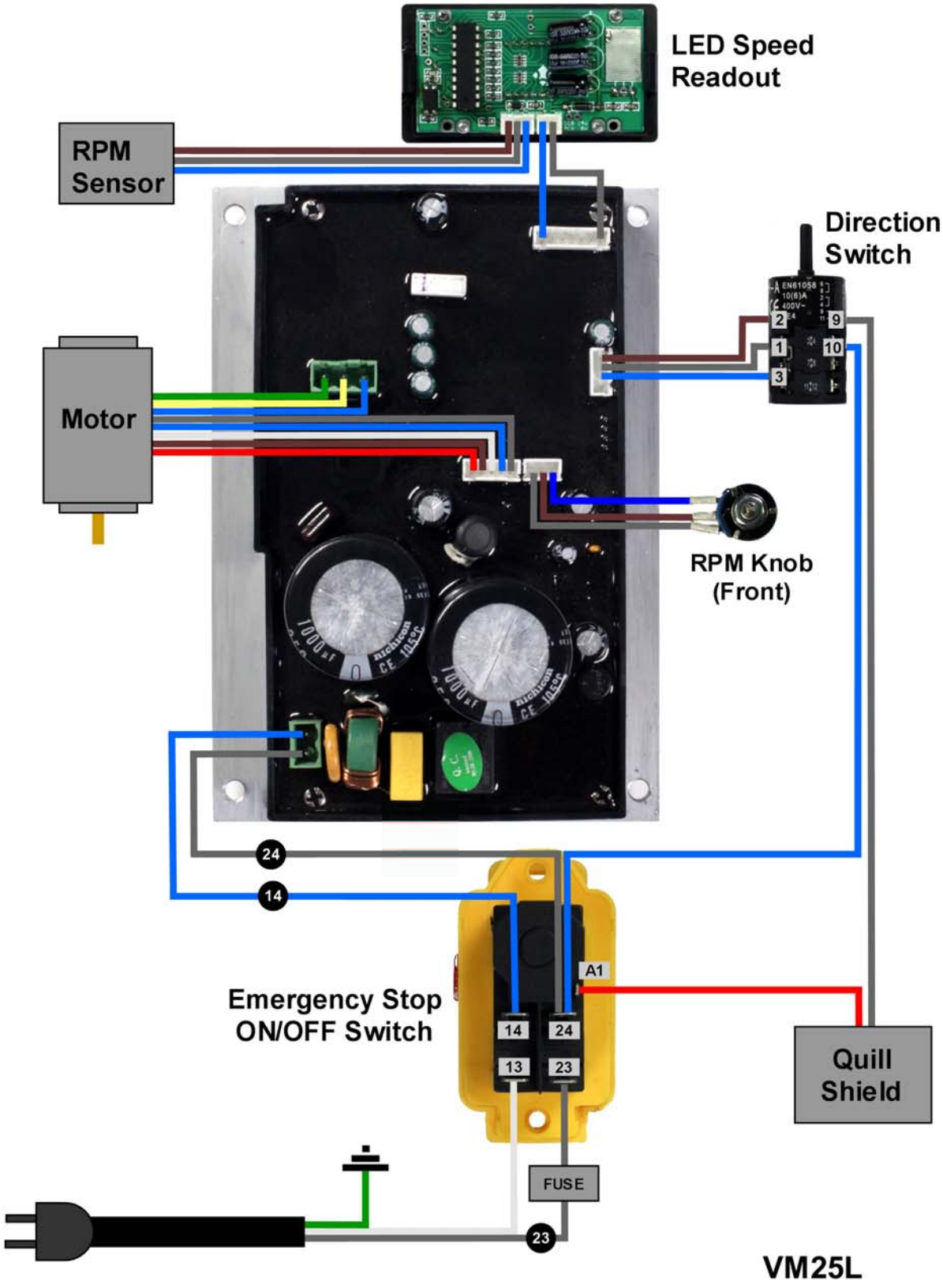
Replacing the Fuse:

Located on the underside of the control panel, behind the power cord, is a fuse receptacle. The fuse rating is 8 amps. To replace a fuse:

FIRST DISCONNECT POWER FROM THE MACHINE.

Remove and replace the fuse from the fuse receptacle:

VM25L Wiring Diagram



VM25L Exploded Parts Diagram A

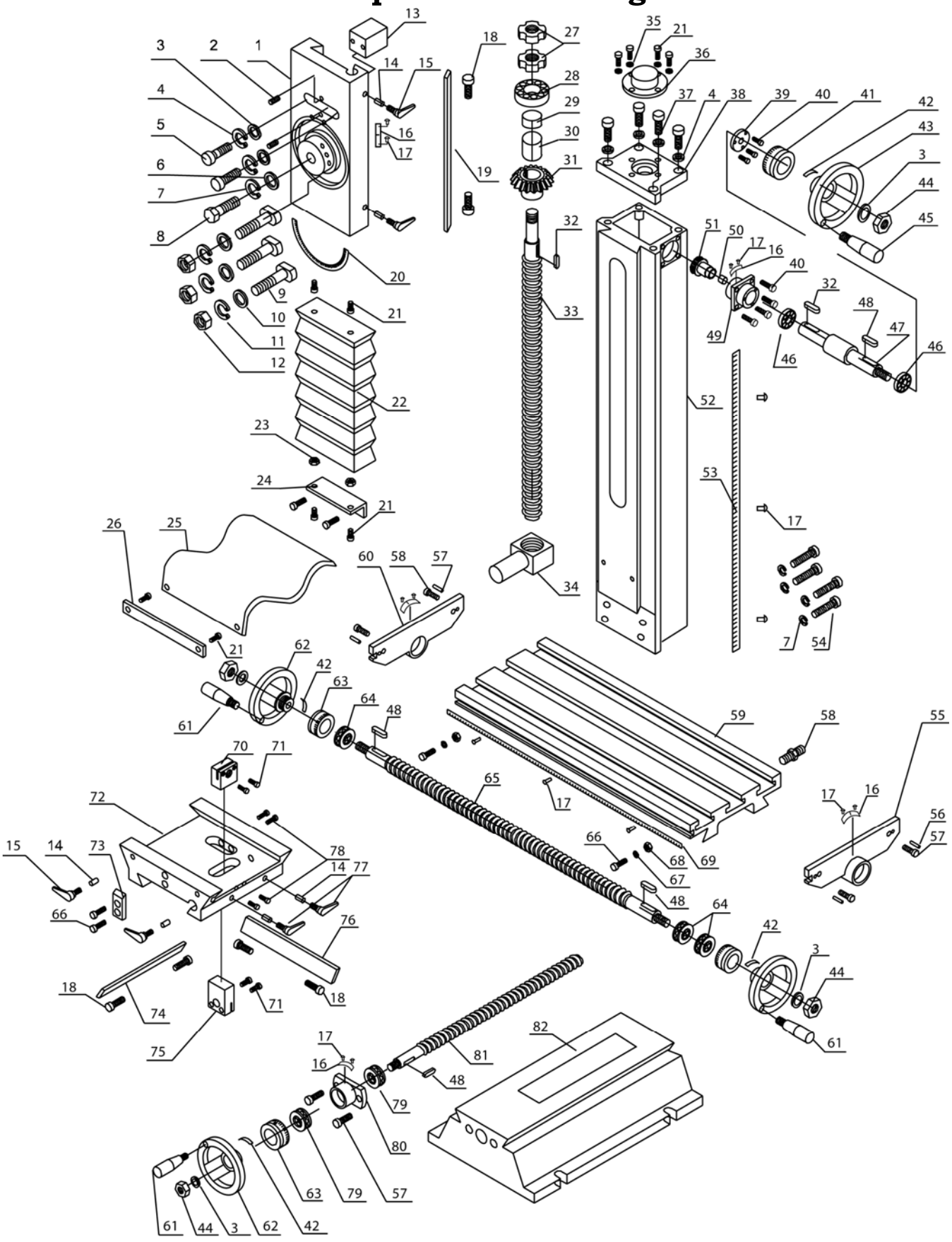


Diagram Number	Description	Specification	Quantity	Part Number
1	Vertical Slide		1	30212201
2	Screw	M6x16	2	50618864A
3	Washer	Ø8	6	50637908
4	Spring Washer	Ø8	6	50637808
5	Hex Head Cap Screw	M8x25	2	50619073
6	Washer	Ø12	1	30213202
7	Spring Washer	Ø12	5	50637812
8	Screw	M12x40	1	50612864
9	T-Bolt	M10x60	3	50611333
10	Washer	Ø10	3	30213203
11	Spring Washer	Ø10	3	50637810
12	Nut	M10	3	50630210
13	Block		1	30212204
14	Brass Pin	Ø5x10	6	30212206
15	Locking Lever	M6x16	4	50661063
16	Position Label		5	3L922001
17	Rivet	2x3	16	50626720
18	Gib Screw		6	30212207
19	Gib		1	30212208
20	Label - Angle		1	30212903
21	Hex Head Cap Screw	M5x10	12	50619051B
22	Dust Cover	120x400mm	1	30212209
23	Nut	M5	2	50634805
24	Bracket		1	30212210
25	Dust Cover		1	30212211
26	Connect Plate		1	30212212
27	Nut	M6x1.5	2	50632916
28	Bearing	51203	1	50451203
29	Brass spacer bushing		1	30213213
30	Steel spacer bushing		1	30213215
31	Gear	26T	1	30213215

Diagram Number	Description	Specification	Quantity	Part Number
32	Key	A4x16	2	50644023
33	Vertical Lead Screw		1	30212216
34	Nut		1	30212217
35	Washer	Ø5	4	50637905B
36	Cover		1	30213218
37	Hex Head Cap Screw	M8x20	4	50619072
38	Bracket		1	30212219
39	Flange		1	30213220
40	Hex Head Cap Screw	M5x12	7	50619052
41	Dial		1	30213221
42	Spring Piece		4	50674004
43	Handwheel		1	30213222
44	Locking Nut	M8	4	50631708
45	Handle	M10x80	1	30213223
46	Bearing	6001/2RZ	2	50406001
47	Shaft		1	30212224
48	Key	4x10	4	50644020
49	Bearing Housing		1	30212226
50	Bushing	Ø14 #45 Steel	1	30212226
51	Gear	26T	1	30213227
52	Column		1	30212228
53	Label		1	30212904
54	Hex Head Cap Screw	M12x90	4	50619098A
55	Right Bracket		1	30212301
56	Pin	A6x16	4	50642300
57	Hex Head Cap Screw	M6x14	6	50619061
58	Pipe Fittings		1	30212302
59	Working Table	WMD20V	1	30212303
	Working Table (L)	WMD20LV	1	30212303L
60	Left Bracket		1	30212304

Diagram Number	Description	Specification	Quantity	Part Number
61	Handle	M8x63	3	30212305
62	Handwheel		3	30212306
63	Dial		3	30212307
64	Bearing	51200	3	50451200
65	Longitudinal Leadscrew	WMD20V	1	30212308
	Longitudinal Leadscrew (L)	WMD20LV	1	30212308L
66	Hex Head Cap Screw	M6x10	4	50619058B
67	Bush	Ø15 #45 Steel	2	30212309
68	Nut		2	30212310
69	Scale		1	30212905
70	Longitudinal Nut		1	30212311
71	Adjustable Screw	M4x14	4	50619044
72	Cross Slide		1	30212312
73	Position Block		1	30212313
74	Cross Gib		1	30212314
75	Cross Nut		1	30212315
76	Longitudinal Gib		1	30212316
77	Locking Lever	M6x25	2	50661065
78	Hex Head Cap Screw	M6x25	4	50619064
79	Bearing	51100	2	50451100
80	Bearing Housing		1	30212317
81	Cross Leadscrew		1	30212318
82	Base		1	30212319

VM25L Exploded Parts Diagram B

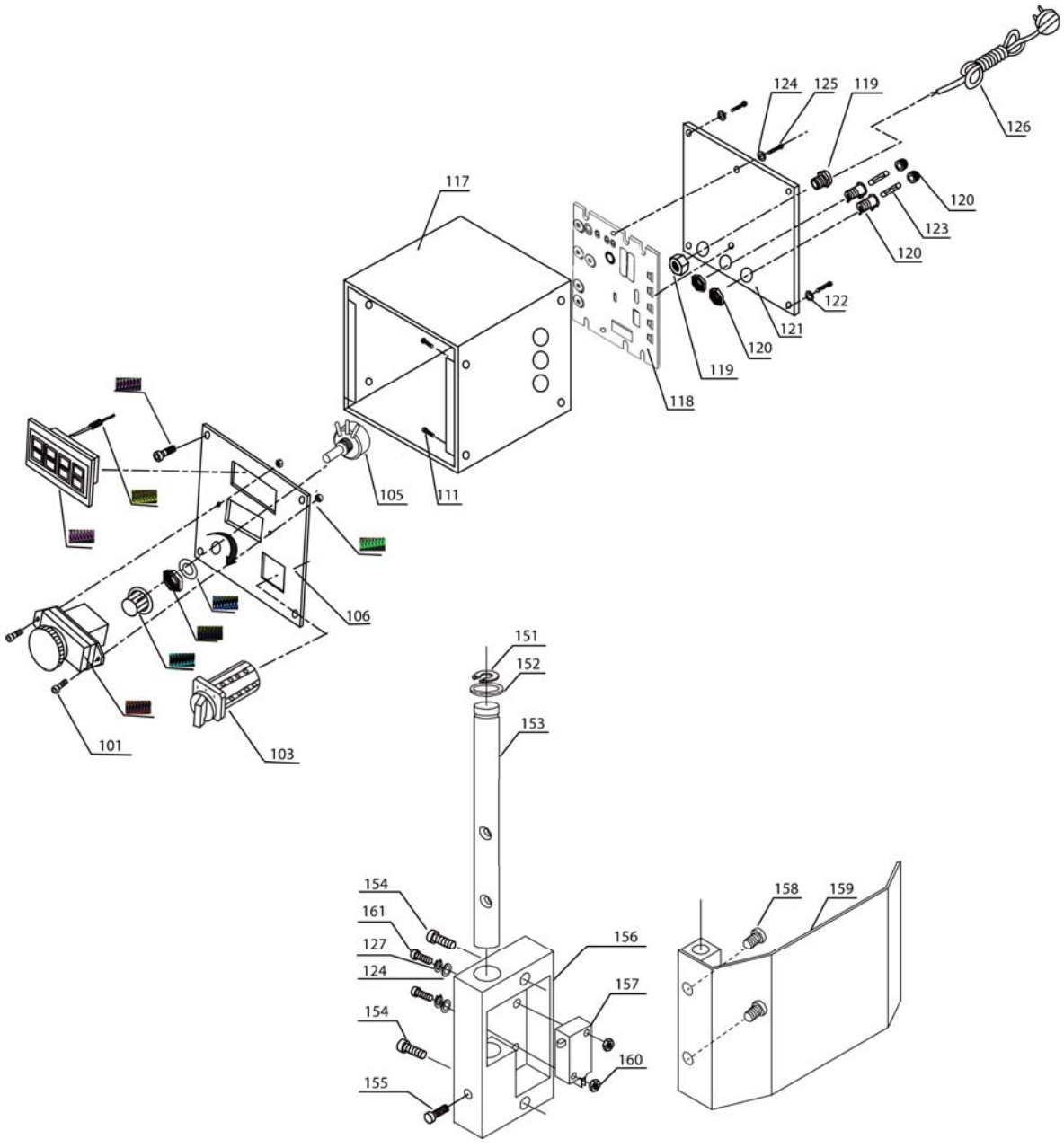


Diagram Number	Description	Specification	Qty	Part Number
101	Hex Head Cap Screw	M4x10	2	50619042b
102	Magnetic Switch	KJD17GF 220V/50Hz	1	38055083
103	F/R Switch	ZH-DC-3-06 240~400V	1	38062053
104	Timing Knob		1	51820901
105	Potentiometer	WX14-12 4k7	1	51820047
106	Electrical Plate		1	30212910
107	Nut	M4	2	50630204b
108	Speed Display		1	38150001
109	Cable		1	38141002
110	Hex Head Cap Screw	M4x6	8	50619040b
111	Hex Head Cap Screw	M5x8	4	50619050b
117	Electrical Box		1	30212950
118	Speed Control Board		1	38080002
119	Strain Relief		1	38109101
120	Fuse Holder		2	38131520
121	Cover		1	30212951
122	Washer	Ø4	4	50637904b
123	Fuse	10 Amp	2	38130020
124	Washer	Ø3	6	50637903b
125	Hex Head Cap Screw	M3x8	2	50619032b
126	Plug		1	38100131
127	Spring Washer	3	2	50637803b
151	Snap Ring	Ø12	1	50640810
152	Washer	Ø12	1	50637712
153	Rod		1	30213960
154	Hex Head Cap Screw	M5x16	2	50619053b
155	Set Screw	M5x10	1	50618852a
156	Bracket		1	30213961
157	Micro Switch		1	38060101
158	Screw	M4x10	2	50615253
159	Protective Cover		1	30213962
160	Nut	M3	6	50630203b
161	Hex Head Cap Screw	M3x18	6	50619036b

VM25L Exploded Parts Diagram C

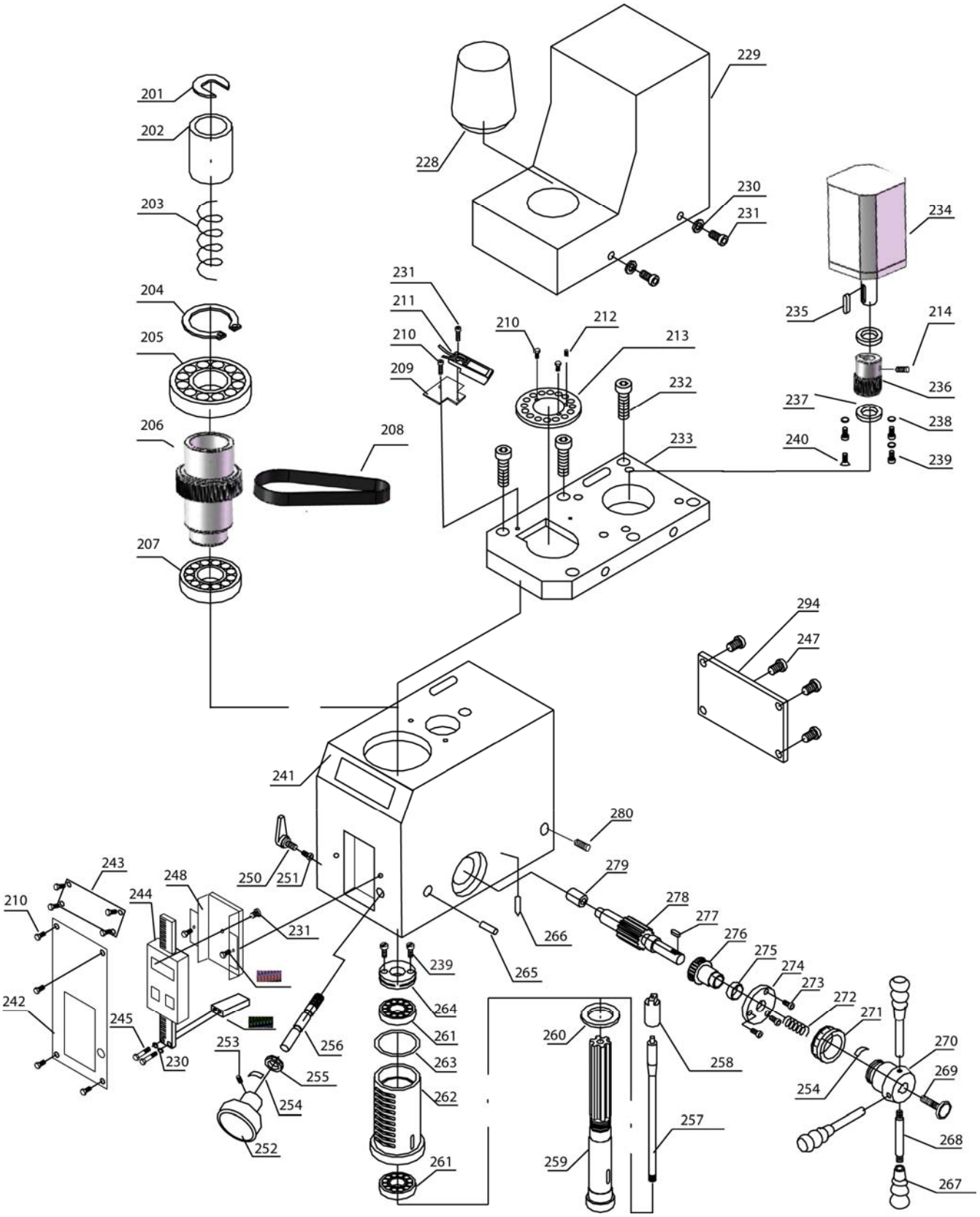


Diagram Number	Description	Specification	Quantity	Part Number
201	Position Washer		1	30212101
202	Bushing	Ø35 #45 Steel	1	30212102
203	Spring	2.5xØ28x100	1	50670125
204	Snap Ring	Ø45	1	50640834
205	Bearing	6209-2RZ/Z2	1	50406209
206	Pulley		1	30212203
207	Bearing	6007/2RZ	1	50406007
208	Belt	3M-339	1	50668603
209	Bracket		1	30212204
210	Hex Head Cap Screw	M3x6	11	50611903b
211	Sensor		1	51809011
212	Magnetic Cylinder		1	30212205
213	Ring		1	30212108
214	Set Screw	M5x8	1	50618752a
228	Drawbar Cover		1	30213110
229	Motor Cover		1	30212111
230	Washer	Ø4	8	50635804
231	Hex Head Cap Screw	M4x8	7	50619041b
232	Hex Head Cap Screw	M6x16	6	50619062
233	Motor Plate		1	30212112
234	Motor	94BL-7550S	1	38014431
235	Key	4x16	1	50644023
236	Pulley		1	30212112
237	Snap Ring	Ø10	1	50640808
238	Washer	Ø5	4	50637905
239	Hex Head Cap Screw	M5x12	5	50619052
240	Screw	M5x10	1	50615262
241	Mill Head		1	30212114

Diagram Number	Description	Specification	Qty	Part Number
242	Label		1	39212100
243	Label		1	39212000
244	Digital Scale		1	23070100
245	Hex Head Cap Screw	M4x50	2	50619049B
246	Base		1	30212115
247	Screw	M4x8	8	50615251
248	Bracket		1	30213116
249	Plate		1	30212117
250	Locking Lever	M8x20	1	50661066
251	Brass Pin		1	30212118
252	Knob		1	30212119
253	Set Screw	M5x6	1	50618850A
254	Spring Piece		2	50674004
255	Dial		1	30212120
256	Worm Shaft		1	30212121
257	Drawbar	M10	1	30212005
258	Retainer Cap		1	30212122
259	Spindle		1	30212123
260	Ring		1	30212124
261	Bearing	32005	2	50432005
262	Sleeve		1	30212125
263	Rubber Ring	58x2.65	1	50650138
264	Adjustable Nut		1	30212126
265	Pin	A6x35	1	50642306
266	Pin	2x10	1	30213127
267	Handle		3	30213128
268	Handle Lever		3	30213129
2659	Locking Knob	M8	1	30213130
270	Base		1	30212131
271	Dial		1	30212132

Diagram Number	Description	Specification	Qty	Part Number
272	Spring	1.2x Ø11x30	1	50670112
273	Hex Head Cap Screw	M4x10	3	50619042B
274	Flange		1	30212133
275	Washer	Ø25	1	30212134
276	Worm Gear	25T	1	30212135
277	Key	4x12	1	50644021
278	Gear Shaft		1	30212136
279	Block		1	30212137
280	Screw	M6x16		50618864A
281	H/L Speed Indication Label		1	30213901
282	Set Screw	M8x8	1	50618670
283	Spring	0.8xØ5x25	1	50670080
284	Ball	Ø6.5	2	50650325
285	Knob		1	30212138
286	Set Screw	M5x10	2	50618852A
287	Rivet	2x3	4	50626720
288	H/L Speed Label		1	30213902
289	Flange		1	30212139
290	Fork Shaft		1	30212140
291	Set Screw	M5x8	1	50618851A
292	Fork Arm		1	30212141
293	Fork		1	30212142
294	Plate for Head		1	30212146

Troubleshooting

Review the troubleshooting and procedures in this section to fix your machine if a problem develops. If you need replacement parts or you are unsure of your repair skills, then feel free to call and speak to one of our technicians at (707) 452-8434.

Symptom	Possible Cause	Possible Solution
Motor will not start.	1. E-Stop button is pressed. 2. Open circuit in motor or loose connections. 3. Blown system fuse.	1. Twist E-Stop until it "pops" out. 2. Inspect all lead connections on motor for loose or open connections. 3. Replace fuse.
Motor will not start; fuses or circuit breakers blow.	1. Short circuit in line cord or plug.	1. Repair or replace cord or plug for damaged insulation and shorted wires.
Motor shuts off unexpectedly.	1. Motor is overloaded due to high feed rate. 2. Thermal protection unit is overheated.	1. Reduce feed rate and amount of material removed. 2. Wait for system to cool down.
Motor overheats.	1. Motor overloaded. 2. Air circulation through the motor restricted.	1. Reduce load on motor. 2. Clean out motor to provide normal air circulation.
Motor stalls (resulting in blown fuses or tripped circuit).	1. Short circuit in motor or loose connections. 2. Low voltage. 3. Incorrect fuses or circuit breakers in power line. 4. Motor overloaded.	1. Repair or replace connections on motor for loose or shorted terminals or worn insulation. 2. Correct the low voltage conditions. 3. Install correct fuses or circuit breakers. 4. Reduce load on motor.
Poor surface finishes.	1. Feed rate too fast. 2. Dull cutter. 3. Lock not tightened down. 4. Gibs loose.	1. Slow feed rate. 2. Always use newly sharpened cutters. 3. Tighten column and table locks when possible to maintain rigidity. 4. Adjust gibs.
Vibration when running or cutting.	1. Loose table. 2. Loose gibs. 3. Feed rate too high.	1. Tighten table locks. 2. Adjust gibs. 3. Slow feed rate or adjust RPM.
Difficulty removing collet from spindle.	1. Debris in spindle taper or collet taper or both. 2. Head not locked in position.	1. Keep all taper surfaces spotlessly clean. 2. Lock head in place on column.

VM25L

1. Visual Inspection	OK	4. Electrical Inspection	OK
a. Correct label	☐	a. CE electrical units	☐
b. Painting damage	☐	b. Function of source switch	☐
c. Corrosion damage	☐	c. High/low speed switch	☐
d. Screw tightened	☐	d. Emergency stop button	☐
2. Mechanical Inspection	**OK**	e. Function of power lighting	☐
a. Spindle up and down	☐	f. Function of forward button	☐
b. Spindle fine down feed	☐	g. Function of reverse button	☐
c. Mill head up and down	☐	h. Function of stop button	☐
d. Table move left and right	☐	i. Function of elevating switch	☐
e. Clearance of longitudinal leadscrew	☐	j. Function of tapping switch	☐
f. Saddle move front and back	☐	k. Function of safety cover	☐
g. Clearance of cross leadscrew	☐	l. Function of power feed	☐
h. Locks for spindle,table ,mill heac	☐	m.Function of motors	☐
g. Correct dials	☐	n. Function of SINO DOR	☐
3. Active Inspection	**OK**	**5. Final Inspection**	**OK**
a. Function of mill head	☐	a. Correct accessories	☐
b. Function of selecting speed levers	☐	b. Correct documents	☐
c. Running test	☐	c. Machine cleanness	☐
d. Noise test	☐	d. Credibility antirust	☐
e. Leaky test	☐	e. Correct mark	☐
Remark:			

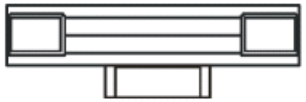
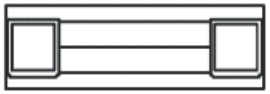
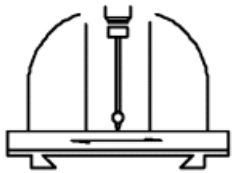
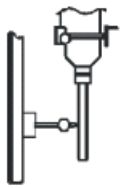
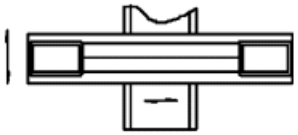
WEISS MACHINE & TOOLS

Test Record

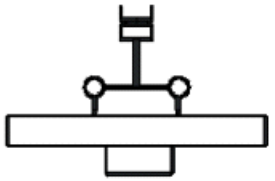
VM25L

Serial No.	
Date	
Inspector	

VM25L

NO.	INSPECTION ITEM	DIAGRAM	TOLERANCE(mm)	
			PERMISSIBLE	ACTUAL
1	Flatness of table		0.04/500	
2	Parallelism of T slot to table movement		0.05/500	
3	Parallelism of table to table movement a in longitudinal b in cross		a 0.025/200 b 0.025/200	
4	Runout of spindle hole a at spindle nose b 300 distance		a 0.01 b 0.02/150	
5	Squareness of table longitudinal and cross movement		0.025/200	

VM25L

NO.	INSPECTION ITEM	DIAGRAM	TOLERANCE(mm)	
			PERMISSIBLE	ACTUAL
6	Squareness of spindle axis to table a right & left b forward & backward		a 0.05/200 b 0.05/200	