

## Power Lift Precision Matthews PM-30MV Installation Instructions

### Included Components

1. 12VDC Gearmotor
2. Motor plate
3. Motor switch assembly
4. Switch enclosure
5. 12VDC power supply
6. Power Cord
7. Motor coupling
8. Hook spanner wrench
9. Split-loom tubing
10. Motor enclosure (optional accessory)

### Parts Bag Contents

<u>Parts Bag Contents</u>	<u>Qty.</u>
1. 6-32x1" socket cap screw	4
2. #6 washer	4
3. M5-0.8 x 10mm socket cap screw	3
4. M4-0.7 x 10mm machine screw	2
5. M3-0.5 x 10mm socket cap screw	2
6. M5 x 50mm hex standoff	3
7. 3/8" cable clamp	1

### No-Enclosure Parts Bag

1. 6-32x3/8" pan machine screw and washer
2. Cable clip

### Enclosure Parts Bag (optional)

1. 3/8" cable clamp
2. 6-32x3/8" flat machine screw 100 degree (4)

### Motor Box

1. 12VDC Gearmotor
2. 16mm / 5/16" hub set
3. Power supply terminal block cover
4. Toggle switch legend plate

### Tools Required

1. Metric hex key wrenches: 2.5, 3, 4mm
2. Imperial hex key wrenches: 7/64, 1/8"
3. Metric wrenches: 10, 14mm
4. Imperial wrench: 7/32
5. Hook spanner wrench (supplied)
6. #2 Phillips screwdriver



Shown with optional motor enclosure

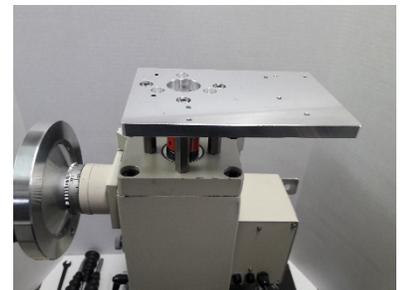
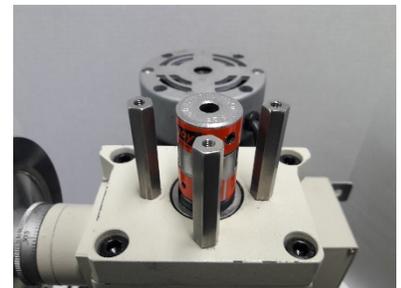
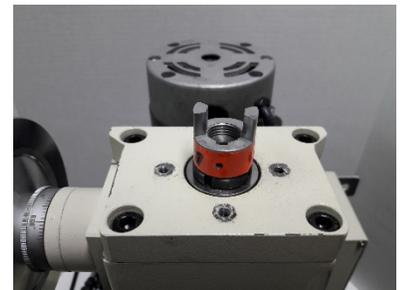
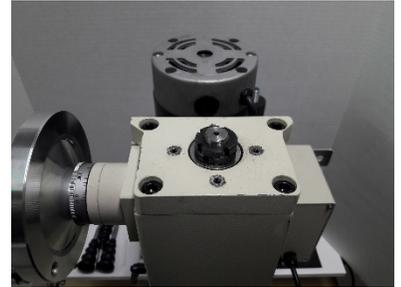
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### Preparation

The mill is shipped from the factory with a protective coating on most surfaces including the Z-axis lead screw. For best performance of the Power Lift it is recommended that the Z-axis lead screw be removed, cleaned, lubricated, and re-installed. This will contribute to the smooth and reliable operation of the Power Lift. This procedure is described at the end of this document.

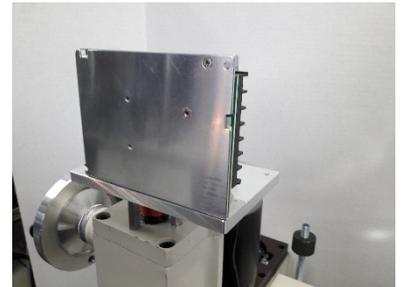
### Installation

1. Empty the parts bag, identify, and group like items together. Installation is done most conveniently from the back of the mill.
2. Remove the plastic Z-axis lead screw bearing cover from the top of the mill column.
3. Remove the top spanner nut using the supplied hook spanner wrench. Loosen the top spanner nut while holding the handle of the Z-axis hand wheel firmly.
4. The motor coupling has 3 parts: the M16-1.5 threaded lower hub, the rubber black spider which joins the two hubs, and the 5/16 top hub. Thread the lower hub down onto the Z-axis lead screw until it contacts the remaining lower spanner nut. Tighten the lower hub and remaining spanner nut together. Use the supplied hook spanner wrench to hold the spanner nut in position while using the shaft of a screwdriver between the two prongs of the hub to tighten the hub against the spanner nut.
5. Install the rubber spider and 5/16" upper hub onto the lower hub.
6. Install the hex standoffs as shown and tighten.
7. Install the motor plate using the 5mm socket cap screws. Visually center the hole in the plate with the top of the hub. Slowly tighten each screw in an alternating manner maintaining the alignment of the hole in the plate with the hub below.
8. Mount the motor onto the plate using the 4, #6-32 socket cap screws. Slowly tighten each screw in an alternating manner until the motor is secure on the plate.
9. Using the Z-axis hand wheel, align the flat on the motor shaft with the set screw on the top hub. Tighten the set screw of the top hub firmly onto the flat of the motor shaft.



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10. Mount the power supply onto the motor plate using the 3 x 10mm socket cap screws as shown. Start threading both screws before tightening.
11. Remove the front cover of the control box.
12. On the side of the control box remove the forward two socket cap screws and nuts holding the DIN Rail and circuit block inside the control box.
13. Remove the cover of the switch enclosure and mount the switch enclosure to the side of the control box using the supplied 4 x 10mm socket cap screws. Insert the rear screw through the switch enclosure, side of the control box, and DIN Rail inside the control box and secure using the hex nut removed earlier. Follow the same procedure with the front screw. Tighten both socket cap screws firmly without over-tightening.
14. Install the circuit block removed earlier on the DIN rail and re-install the front control box cover.
15. Remove the hex and round knurled nuts from the motor control switch.
16. Mount the supplied 3/8" cable clamp in the larger rear hole of the enclosure. Remove the two screws and clamping plate from the clamp assembly to be able to run the cable through this hole. Run the end of the cable with the motor and power connectors through the back of the switch enclosure.
17. Mount the motor control switch in the switch enclosure with the slot on the threaded neck of the switch facing up. Place the "UP DOWN" legend plate over the front of the toggle switch with the tab of the plate matching the slot on the switch and secure the toggle switch to the enclosure with the thin hex nut. Replace the cover on the switch enclosure.
18. Install the 2 screws and clamping plate of the 3/8" cable clamp removed earlier and secure the wire without over-tightening.
19. If the optional motor enclosure was purchased, complete this step. Otherwise go to the next step. Mount the supplied 3/8" cable clamp in the hole in the enclosure. Remove the two screws and clamping plate from the clamp assembly to be able to run the cable through this hole. Run the end of the cable with the motor and power connectors through the hole and let the enclosure hang down on the cable to allow for making connections to the power supply and motor.
20. Connect the wires with the insulated pink flag quick disconnects to the motor terminals. Connect the Blue wire to the motor terminal without the Red dot, and the other wire to the terminal with the Red dot. Use caution when making these connections as the motor terminals are fragile. Make sure the insulated pink flag quick disconnects are seated on the motor terminals.





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21. Note: when making connections to the power supply, support the back of the power supply with one hand while tightening the connections. **Obviously, when making these connections, make certain the power cord is disconnected from the wall outlet.**
22. Connect the insulated blue block fork connectors to the power supply. Connect the blue fork terminal with the red and black wire to the V- terminal of the power supply that is adjacent to the V+ terminal. Connect the blue fork terminal with the green and white wires to the V+ power supply terminal.
23. Connect the power cord to the power supply according to the following diagram:

<u>Power Cord</u>	<u>Power Supply</u>
Brown	L (Line in)
Blue	N (Neutral)
Yellow/Green	Ground

24. Test the Power Lift. Plug the power cord into the wall outlet. Operate the Power Lift using the motor control switch up and down.
25. If the motor enclosure was purchased, complete the installation of this now. Otherwise go on to the next step. Move the motor enclosure up the cable while feeding the cable through the hole in the enclosure and position the enclosure on top of the motor plate. Slide the enclosure skirt down near the bottom of the enclosure and align the mounting holes of the enclosure and skirt with the matching holes in the motor plate. Secure the enclosure and skirt to the motor plate using the supplied 6-32 flat machine screws.
26. A 5/8" wire clip, 6-32 x 3/8" machine screw and washer are included in the parts bag for use as a strain relief for the cable. Install the strain relief as shown in the picture.

### Trouble Shooting

- Motor turning unevenly. If the motor is not turning smoothly and evenly, disconnect and remove the motor from the mounting plate and check the alignment of the top of the coupling hub with the hole in the motor plate. Loosen the motor plate mounting screws and adjust accordingly, reassemble, and test.
- Motor stopping while traversing the Z-axis. Make sure the Z-axis locking screws are loose. Adjust (loosen) the Z-axis gib to allow free and controlled movement of the mill head along the Z-axis. Thoroughly clean the Z-axis ways and lead screw and lubricate with way oil.
- Motor control switch and motor direction not synchronized. Exchange the terminal connections on the motor.
- Motor turning but Z-axis not turning. Check the tightness of the set screw in the upper hub. If the set screw continues to come loose, remove the set screw, apply a drop of either Vibra-TITE VC-3 Threadmate or Loctite 262 Threadlocker, and reinstall the setscrew.

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- Note: the Z-axis hand wheel operation will be stiff due to the motor being back-driven while turning the hand wheel.

### Z Axis Cleaning Procedure

1. Disconnect power to the mill and lower the mill head to a low position.
2. **CAUTION: lock the mill head in place using the locking handles on the right side of the mill head. Failure to perform this step will cause the mill head to fall and crash into the mill table when performing the next steps.**
3. Remove the Z-axis lead screw bearing cover from the top of the mill column.
4. Remove the 4 cap screws securing the column cover.
5. Unscrew the Z-axis lead screw assembly including the column cover and place on a flat work surface.
6. Thoroughly clean the Z-axis lead screw using a solvent such as kerosene.
7. Generously lubricate the Z-axis lead screw with way oil and re-install.
8. Loosen the mill head locking screws.

