

Power Lift Little Machine Shop 5500/5550 Installation Instructions

Included Components

1. Motor plate
2. Switch assembly
3. 12VDC power supply
4. Power Cord
5. Enclosure

Motor Box

1. 12VDC Gearmotor
2. Bearing cup (not pictured)
3. Power supply terminal block cover
4. Toggle switch legend plate
5. Parts bag



Parts Bag

1. Extension shaft
2. Shaft coupling (2)
3. Hex standoff, M5-.8 x 10mm (2)
4. Socket cap screw, 6-32 x 1" (4)
5. Washer, #6 (4)
6. Socket cap screw, M5-.8 x 8mm (2)
7. Pan machine screw, 4-40 x 1/4" (2)
8. Strain relief
9. Flat machine screw, 6-32 x 1/4", 100-degree (4)
10. Socket cap screw, 6-32 x 3/8" (2)

Use

- Attach to motor shaft with coupling
- Attach to motor shafts
- Motor plate support
- Attach motor to motor plate
- 6-32 x 1" socket cap screw (4)
- Attach motor plate to standoffs
- Attach power supply to motor plate
- Install in large hole of enclosure
- Attach motor enclosure to motor plate
- Attach bearing cup to enclosure

Tools Required

1. Metric hex key wrenches: 4mm, bevel gear set screw
2. Imperial hex key wrenches: 3/32, 7/64
3. Metric wrenches: 8, 14mm
4. Imperial wrench: 7/32
5. Phillips screwdrivers: long-shaft #1, #2

Installation

1. Unplug the mill.
2. Thoroughly clean all protectant from the mill dovetail column and lubricate well with a quality way oil such as Mobile Vactra # 2.
3. Loosen the headstock Z-axis lock screw. Loosen the Z-Axis gib screw in the back left corner of the mill head. The mill head should move up and down freely without any binding.
4. When installation of the Power Lift is complete, adjust the Z-axis gib screw to the point where it will be snug but still allow free movement of the Power Lift.



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5. Refer to the mill owner's manual. Remove the Z-Axis hand wheel assembly from the mill.
 6. Remove the bevel (miter) gear at the end of the Z-Axis hand wheel assembly by removing the spring pin with a punch, and loosening the set screw.
 7. Empty the Power Lift parts bag, identify, and group like items together. Installation is done most conveniently facing the side of the mill.
 8. Thread the supplied 10-32 socket set screws (4) into both of the supplied shaft couplings just far enough to not interfere with sliding the shafts into the couplings. Align these set screws with the flats on the shafts when assembling the following parts. Place the supplied D-shaft into the supplied shaft coupling 1/2" and tighten the set screw. Slide the bevel gear removed earlier onto the other end of the D-shaft leaving about 1/8" from the end and tighten the set screw. Slide the other end of the shaft coupling onto the motor shaft that is on the opposite side of the gearbox from the motor and tighten the set screw.
 9. Slide the other shaft coupling onto the unthreaded end of the Z-axis hand wheel shaft removed earlier and tighten the set screw. Slide the other end of this coupling onto the motor shaft on the motor side of the gearbox and tighten the set screw.
 10. Thread the 2 supplied standoffs into the left 2 holes where the Z-axis shaft support was removed earlier and tighten.
 11. Mount the power supply to the motor plate using the supplied 4-40 x 1/4" machine screws.
 12. Mount the motor plate with the 2 counter bored holes facing outward to the standoffs using the supplied M5 socket cap screws.
- Note, it may be necessary to remove the mill column back cover to observe the proper engagement of the bevel gear now installed on the motor shaft and the bevel gear on top of the Z-axis lead screw.
13. This part takes a fine touch. Feed the D-shaft with the bevel gear now attached through the Z-axis hole in the mills' column and feel for the gears to mesh. Slightly rotate the motor back and forth to feel the gears mesh. Mount the motor onto the plate using the 4, #6-32 socket cap screws and washers. Slowly tighten each screw in an alternating manner until the motor is secure on the plate.
 14. Unthread and remove the hex and ring nuts from the toggle switch. Insert the toggle switch from the inside through the corner hole of the enclosure with the small indent on the thread facing up. Slide the UP DOWN legend plate with the tab fitting into the small indent on the thread facing up. Thread either the hex or ring nut onto the switch and gently tighten.
 15. Mount the supplied 3/8" cable clamp in the large hole of the enclosure. Remove the two screws and clamping plate from the clamp assembly and run the power cable through this hole. Let the enclosure hang down on the power cord.



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16. Connect the wires with the insulated pink flag quick disconnects to the motor terminals. Connect the Blue wire to the motor terminal with the Red dot, and the Brown wire to the other terminal. 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.
17. 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.**
18. 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.
19. 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

20. Slide the enclosure up the power cord, over the Z-axis shaft, and onto the motor plate. Secure the enclosure to the motor plate using the top, bottom and front mounting holes with the supplied 6-32 x 1/4" flat machine screws. Replace the screws and clamping plate of the cable clamp and gently tighten the screws securing the power cord.
21. Fasten the bearing cup over the Z-axis shaft, with the witness mark facing forward, and onto the side of the enclosure with the supplied 6-32 x 3/8" socket cap screws.
22. Remove one of the bearings from Z-axis shaft support removed earlier and slide the bearing over the end of the Z-axis shaft and into the bearing cup. The bearing has a close fit with the shaft and will need to be worked into place.
23. Install the Z-axis shaft key, removed earlier, in the shaft slot and slide the hand wheel, washer and lock nut onto the shaft. Do not over-tighten the lock nut because over-tightening will lock the shaft from rotating.
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. Congratulations, installation of the Power Lift is complete!

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Trouble Shooting

- Excessive movement of the enclosure while operating the power Lift. Remove the lock nut, washer, hand wheel, and key. Operate the Power Lift and observe the end of the shaft. If the run out is excessive, the shaft is either not mounted securely in the coupling, and/or the shaft is not straight. Remove the shaft from the coupling and set down the length of the shaft to see if it is bent. Lay the shaft on a flat surface and roll it to see if it is bent. If bent, try to straighten the shaft in a vice. If the shaft is bent and cannot be repaired, a replacement shaft may be purchased from Little Machine Shop, #5751.
- 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 screws in both couplings. 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.
- Note: the Z-axis hand wheel operation will be stiff due to the motor being back-driven while turning the hand wheel.

