Excitron MRT6" to 24" Rotary Table/Gearbox Assembly Instructions 11/27/2017

These instructions are for assembling the Excitron motor/controller/gearbox/worm gear to the rotary table base unit. They apply for any MRT6 to 24" ***heavy duty*** rotary tables. Excitron ships these in 2 boxes to protect the precision parts, and assembly of the lock handles and the motor/gearbox is required. MRT12 HV table base and table top may ship in 2 separate boxes, and all other parts in a 3rd box. If your table top was shipped separated from the base, see the instructions below.

Installing 2 table lock handles. You do not have to install the locking handles.—they are optional and usually not supplied. On the bottom side of the Table Base there are two large flat blade screw heads that run about 270° total. Center these in their rotational range. Note: do no push in these "screws" into the table; they slide in easily and if you push them into the table you must separate table base and top to recover the part. Stick a screwdriver into the table lock handle hole to align the lock, and then install the handle. Observe proper table lock function (¼ turn lock) then install the two set screws in the small holes on bottom of table. Usually you do not lock the table top because the motor and gears will automatically prevent the table top from back driving. The only reason to lock the table top (of course while the motor is not driving) is to have absolute rigidity while machining.

Grease Notes. Never add oil, oil ruins the grease, requiring the complete disassembly of the table base and top to clean out the oil. Your table base is pre-packed with Sinopec NLGI-2 Moly-Lithium high pressure grease (Amazon). You may use Harbor Freight Sta-lube CRC SL3330 grease #40712-0VGA. If assembled, everything is fully lubricated and you do not need to add grease. You may not see grease covering the sight window, this is normal.

Assembling the Table Base and Table Top.
These notes are only if your Table Top is shipped disassembled from the Table Base. Grease table top spindle, worm gear teeth, and sliding surfaces of the table top before installation. Pack extra grease into the table base through the large collar hole. The Table Base has a grease zerk for packing grease.
Included in your parts are three rings and three short flat blade screws. Install the table top into the table base very carefully avoiding misalignment and jamming the table top spindle in the table base. Put the grease ring on first (grease groove toward table base, keyway engaged on table top spindle), then thread on wider lock ring all the way down until it locks the table spindle. Back it out 1/8 turn until table top moves freely again. Install the outer lock ring at least ½ turn loose from inner lock ring. Install the three screws tightly to jam the lock rings together.

Installing the Worm Gear Assembly into the Table Base. See 10 second youtube video at Excitron_MRT10-86-156_drive_insertion, ctrl-click to open hyperlink. This shows the entire procedure. The worm gear assembly may already be inserted and adjusted into your table base. If not, remove the plug from the rotary table large opening. Insert the motor/worm gear assembly into the large round opening. The motor/controller can be mounted onto the gearbox, or not, your choice. Some moly-grease will extrude, wipe off excess and save in a container. Rotate slightly so that the worm gear is fully inserted into the Table Base. When inserted fully, the gear box steel round collar touches the table base round opening. While adjusting the worm gear mesh (below), keep the gear assembly fully inserted into the table base while tightening the small locking lever arm or hex screw.

Engage the worm gear (pinion) assembly into the large table gear (the large gear is machined in the Table Top and you cannot see it directly) by rotating the motor/gear subassembly. Rotate the gear assembly **CCW for MRT6 and MRT8** tables. Rotate the gear assembly **CW for MRT10, MRT12, and larger** tables. Check the nickel plate near the top of the round opening; this plate is correct.

6" and 8" MRT

10" and larger MRT

Simultaneously wiggle the Table Top until no perceptible table movement/backlash occurs. Lock the motor/gear subassembly with the short lever arm or screw on top. This firmly secures the worm gear assembly from moving. If the gears are too tight, the motor will not be able to rotate it. If too loose you will have excess backlash, best is ~.001"

backlash. You may need to repeat this gear mesh adjustment after running with the motor by typing 'G' or pushing J1 or any other Joystick switch, noting worm gear engagement. —the gears may be too tight and the motor stalls, or it is too loose with too much backlash.

Assembly of Motor/Controller to the gearbox and worm gear drive parts. See youtube video at **Excitron rotary table motor gear adjustment.** Your Excitron motor/controller may be disassembled from the drive box. If so, you can install it to the gear box before or after you install the worm gear drive into the large table base hole. Best is to install the worm gear drive without the motor so you can better feel the gear play. You can remove the motor mounting hardware and rotate the stepper motor to any of 4 quadrants. Adjust the gear backlash of the motor pinion to the 81 tooth gear by slightly moving the motor and tightening the 4 motor mounting screws.
Important—the M5 x 14mm hex screws and washers go near the worm gear center. If longer screws are used, or you forget the washer, the screw may ruin the 81 tooth aluminum gear inside the bear box. Tighten these 2 screws with half-torque.

Ideal backlash is about .002"—you can feel .002" by rotating the worm gear. Rotate a full revolution of the worm gear to make sure the gears never bind or are too loose. We manufacture the gear mesh to within .001".

Connecting Cables and running. We ship the power supply with the matching 4-pin housing for the 4-pin gold header on the Controller. Plug this 4-pin housing and turn on the power supply. Never plug/unplug the power 4 pin housing with power ON. Move the Joystick for instant running without a computer. See details in Excitron_X86_Series.pdf and Excitron_SW1-2.pdf, available on the product page and in **Documentation** link.

Adjusting Worm Gear mesh. You are now going to rotate the stepper motor a few times to check the worm gear engagement. If you have too much play, then loosen the locking lever arm, and rotate the motor/worm gear subassembly **CCW for 6" & 8" tables, or CCW for 10" & 12" tables**. If you have too much engagement and the motor does not turn, or seems to turn hard, then you should rotate the motor/worm gear subassembly very slightly the opposite direction.

To free wheel the table top, you can unlock and turn the eccentric steel body CCW, which disengages the motor/worm gear subassembly. If you disengage the worm teeth, then you will need to re-adjust the worm gear meshing.

General Notes. Never apply large forces to the stepper motor, and do not support any part of the rotary table using the motor. Consider that the stepper motor is a precision and delicate instrument. Keep coolant and liquids from splashing onto any electronics. Use the enclosed neoprene rubber sheet for covering and add RTV if you like for sealing. You may cover the entire motor/controller/power supply because it does not generate excessive heat. Consider a little air flow if you run at high torque and continuously for over 10 minutes. Most customers run with T=060 to 090; the motor is strong.

Small MRTs have the motor/gearbox above and/or below the table. So you may need spacer plates, depending on your application. Make your own, or order from Excitron. For machining operations, the motor/gearbox normally hangs over the mill table.

The motor-to-power supply wires must be short (2" to 8") to minimize current and voltage spikes. Mount the power supply on the side of the motor, or on an adjacent surface. The enclosed cable clamps are for your wire management. Never tug on any wires or connector. The Input signal cables should not be longer than 5 feet, shorter is best because any wire acts like an antenna picking up noise.

Your precision rotary table is designed to last for tens of years, thank you.

The Excitron Engineering Design Team