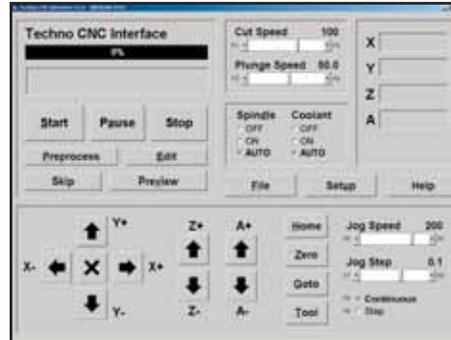


INSTALLATION & SETUP TABLE OF CONTENTS

- i.** Minimum System Requirements
- I.** Servo Controller Card
- II.** Riser Card
- III.** Techno CNC Interface
- IV.** Touchpad
- V.** Start Stop Box
- VI.** Machine Identifications
- VII.** How To Use the Vacuum Table
- VIII.** Scale Factor Setup



APPENDICIES

- A.** Techno Electronics
- B.** Colleting Guidelines
- C.** Machine Maintenance

ADDITIONAL DOCUMENTATION

Can be found in the "More Manuals" folder on your TECHNO CD-ROM.

CUSTOMER SUPPORT WEBSITE

<http://support.technocnc.com/>

Visit this site for software updates and the Tech-Support Wizard. This Wizard is password protected for our customers.

Username: technocnc

Password: multiaxis



READ THROUGH THE SETUP GUIDE BEFORE RUNNING THE MACHINE.



HAVE A LICENSED ELECTRICIAN PERFORM ALL ELECTRICAL CONNECTIONS BASED ON YOUR LOCAL CODES

IMPORTANT: KEEP YOUR TECHNO CD-ROM. IT CONTAINS ADDITIONAL DOCUMENTATION

i. Minimum System Requirements

- Windows 98, ME, 2000 or XP
- Pentium 3 or Celeron 600 Mhz processor
- 1 available PCI slot

WARNING: Power to the PC MUST be OFF during installation.

I. INSTALL SERVO CONTROLLER CARD

Note: Make sure to install the Servo Controller and Riser Card before the software.

1. Turn off and unplug power to your computer. Remove the cover.
2. Remove the Controller Card from its protective packaging and locate a vacant PCI slot. Remove slot cover.



Warning: Ground yourself during installation.

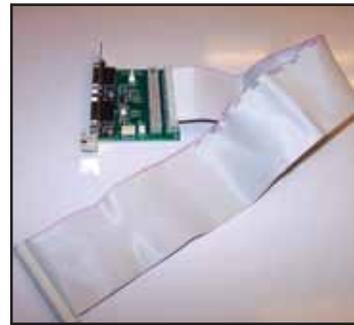
Note: The Controller Card connectors mate with the PC Mother Board connectors in only one way.

3. Gently but firmly insert the Controller Card into the vacant PCI slot. Secure with screw (if applicable).

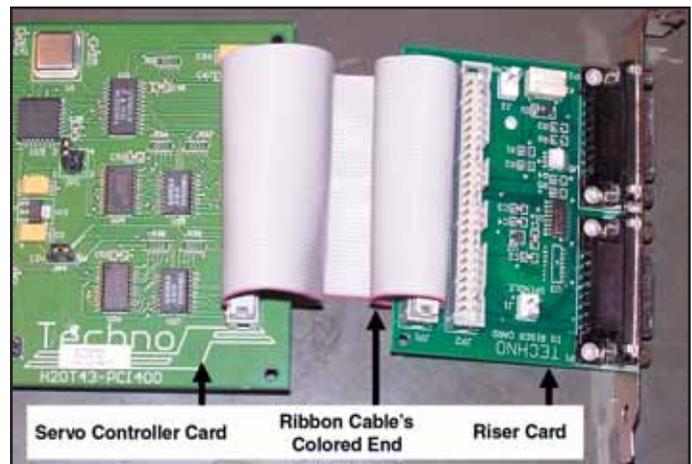
II. INSTALL THE TECHNO RISER CARD

The Riser Card connects to the Controller Card with a Ribbon Cable.

1. Locate an open slot in your PC and secure the Riser Card (no PCI / Motherboard connections required).
2. Using the Ribbon Cable, connect the Riser Card to the mating connector on the Controller Card.

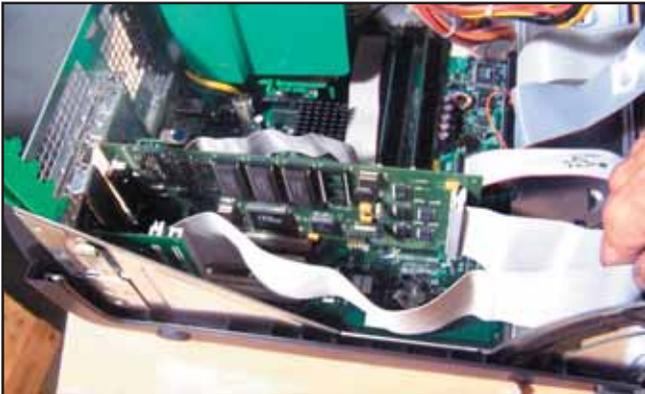


Note: The ribbon cable's colored end **MUST** be attached to the Pin 1 connector on each card (see picture below). On the Servo Controller Card, Pin 1 is the end closest to the Techno logo; and on the Riser Card, it is the end closest to where it says "TECHNO IO RISER CARD." Both Pin 1 card connectors also have an indented arrow.



This picture shows a flat, table layout of the connection between the Servo Controller Card and the Riser Card. The installation and connection inside your PC looks different.

Upon installation, the cards in your PC may look more like this:



Note: By default on any machine, the Touchpad is connected to the Touchpad Connector on the board inside of the RG+ Servo Box 3.

6. Replace computer cover, connect cable between Servo Controller Box and Controller Card. Turn computer on.

III. INSTALL TECHNO CNC INTERFACE

When you reconnect power, turn your computer on and when Windows starts up it will detect "new hardware."

1. Follow the Window's prompts. When asked to "search" for a suitable driver, insert the Techno CD.
2. When asked for "optional search locations" choose your computer's CD drive.
3. Click on **Setup Techno CNC Interface**.

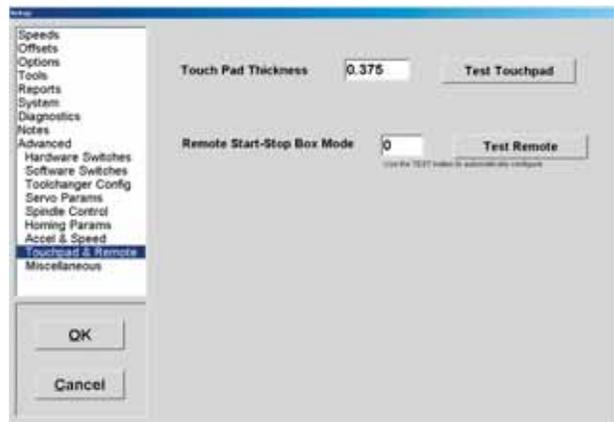
Note: Keep the Techno CD in a safe place. It contains additional documentation (PDF Files).



IV. TOUCHPAD INTERFACE SETTINGS

The settings for the Touchpad need to be tested and/or configured in the Techno CNC Interface prior to using the machine.

1. Start **Techno CNC Interface**. From the main page, click the **Setup** Button.
2. Go to **Setup/Advanced/Touchpad & Remote**.
3. Click **Test Touchpad**.



This message should appear:





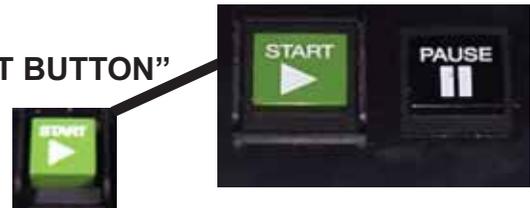
The following screen should appear:



- A. If the "test passed" screen appears, click **OK**, the test has indicated that the touchpad is functioning properly. Click **OK** in **Setup** to exit.
- B. If the test failed (nothing happened), you need to click where indicated "click here". The "test cancelled" screen should appear. Click **OK** in the "test cancelled" screen.

Press the **Start** button on your remote START/STOP BOX.

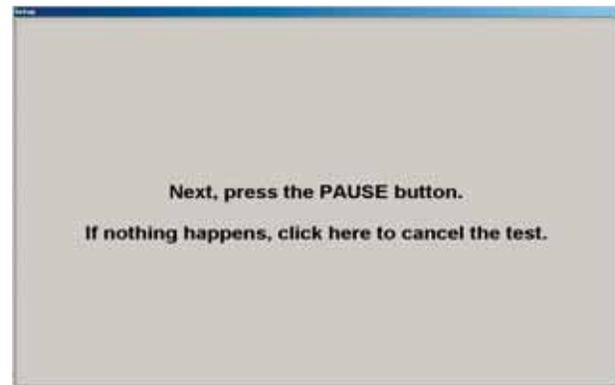
"START BUTTON"



REPEAT THE TEST AGAIN. IF IT FAILS:

- 1) Turn the power off.
- 2) Check the connections.
- 3) Call Techno for assistance.

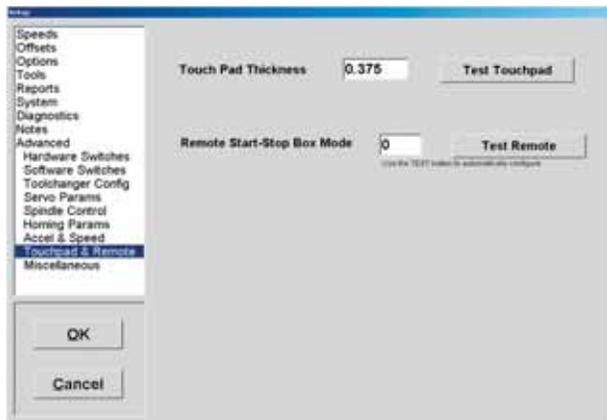
The screen should change to this:
Press the **Pause** button on your remote.



V. START/STOP BOX INTERFACE SETTINGS

The settings for the Start/Stop Box need to be entered and/or configured in the Techno CNC Interface prior to using the machine.

1. Start **Techno CNC Interface**.
2. Go to **Setup/Advanced/Touchpad & Remote**.



If the test passes, you should get the following message:



If it does not pass:

REPEAT THE TEST AGAIN. IF IT FAILS:

- 1) Turn the power off.
- 2) Check the connections.
- 3) Call Techno for assistance.

3. Click **Test Remote**.

VI. MACHINE IDENTIFICATIONS

Start-Stop Box



The green button is the START button, hit this button to reset the machine after having hit the black PAUSE button. The Pause button temporarily stops the machine.

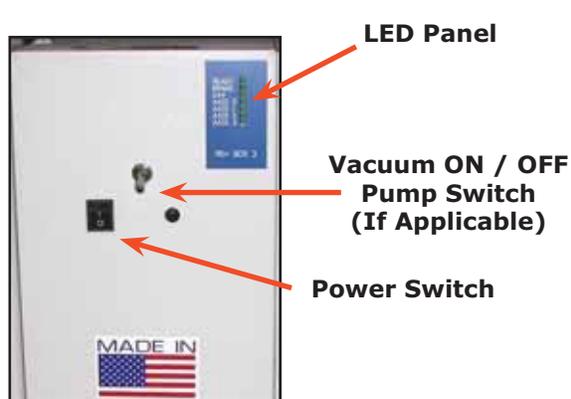
PUSH THE EMERGENCY STOP (E-STOP) BUTTON WHENEVER YOU NEED TO STOP THE MACHINE IMMEDIATELY. To reset, twist e-stop button clockwise. The machine will not work if the e-stop is still pushed in.

The top four highlighted squares (numbered 0 through 3) are the four motor connections located within RG+ Servo Box 3. Motor 0 is the Y-axis (closest to the ground), Motor 1 is the X-axis, Motor 2 is the Z-axis with the highest altitude, and Motor 3 is the A-axis.

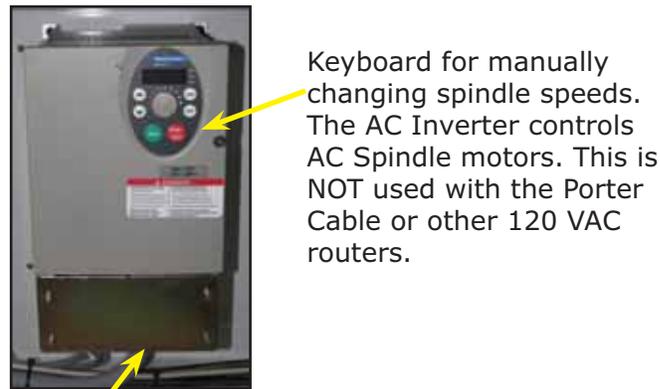
Four Encoder connectors, Encoder 0 (Y-axis) to Encoder 3 (A-axis) shown here in order from top to bottom.

The AUX I/O Connector can be used for several purposes including a toolchanger controller, Inverter and relay box connections.

RG+ Servo Box 3 Front Panel

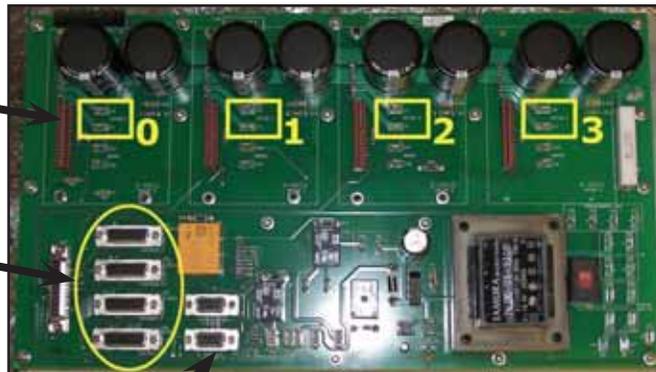


View of Inverter for AC Spindle Motor



This view shows the incoming (220 or 440VAC) power line that you are responsible for having a licenced electrician connect to the AC Inverter. Make sure you replace the cover after connecting the line. (See the Inverter Manual for wiring instructions).

RG+ Servo Box 3 Internal Motherboard



VII. HOW TO USE THE VACUUM TABLE

RG Series w/Vacuum Table, Vacuum Pump/Blower (if equipped)

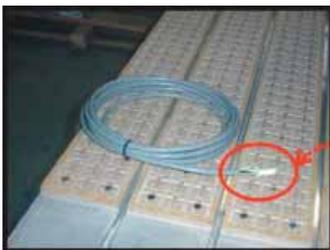


Side Panel Access



You will need to remove the machine's side panel in order to access and connect the vacuum hose to the manifold fitting (and also if you need to access the servo power box, the vacuum signal connector, etc.)

Picture 3

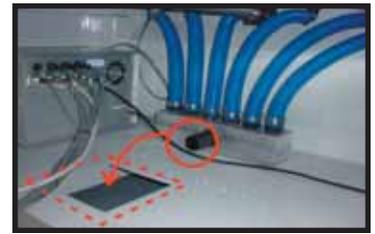


Picture 4



The machine end of the the vacuum signal connector originates behind the front control panel of the RG+ Servo Box 3. This wire needs to be connected to the motor starter's vacuum mating connector. You will need to connect the AC power (220 or 440VAC) to L1, L2, and L3, as specified on the unit here to the Motor Starter connected to its vacuum mating connector.

Vacuum Hose Fittings



Connect one end of the vacuum hose to the manifold fitting inside the machine housing. Then, snake the hose out through the square opening on the base of the machine and connect other end of the vacuum hose to the Vacuum Pump/Blower filter (shown above, left).

Vacuum Pump/Blower Cable, Motor, Starter Box & Connector

If a Vacuum Pump/Blower was part of your order, you will have a Motor Starter that looks like the box in Picture 4.

NOTE: The cover was removed from Motor Starter. You should not need to wire the Vacuum Pump/Blower Motor, it has been wired and tested at the factory. (The motor starter in Picture 4 will be shipped closed).

Power Disconnect Switch

(not included with Purchase)



It is strongly recommended that all 220 and 440VAC connections be connected through a power disconnect switch (example seen at left) for use with either CNC Router spindle and/or vacuum pump setup. This switch is required for safety and to meet National Electrical Codes. A licensed electrician should perform this installation.



WARNING: Direction of Rotation is critical. Briefly start motion and check rotation (arrow on casing). Exchange phases if rotation is incorrect. IF YOU RUN THE PUMP CONTINUOUSLY IN THE WRONG DIRECTION THE VANES WILL BE DAMAGED.

VII. HOW TO USE THE VACUUM TABLE

Vacuum Hold-Down - 1



The Techno Vacuum Table is very effective in “holding down” parts to be routed. For this method to work and work well, simple procedures need to be followed. First, you need to define the area where your workpiece will be positioned on the vacuum table. Second, using the red rubber plugs, you need to plug-up and close-off all of the area *outside* your defined work area. Fill in ALL the vacuum grid holes outside your defined work area with the plugs and leave the holes within your work area open. Next, use the black foam rubber gasketing to section/wall-off your work area. The idea is to create an area of concentrated vacuum, which will generate the greatest amount of vacuum “hold-down.”

Important Gasketing Installation Notes:

- 1) DO NOT STRETCH the gasket material while inserting it into the gasket slots. This will produce tears in the gasket material which causes leaks leading to the loss of vacuum and unsecure pieces flying off of the vacuum table.
- 2) When joining two separate pieces of gasket material, make sure to push them together so the two pieces form a tight seal.

Vacuum Hold-Down - 2



After you have defined your workpiece area and closed off all the vacuum outside of that area, there is another option to greater your vacuum: the vacuum control valves. Each valve controls the flow of vacuum to two rows of extrusions. Turn ON (valve vertical) the valves that pertain to your work area and turn OFF (valve horizontal) the ones outside of that area. This will concentrate all the vacuum “hold-down” capacity to your defined work area.

NOTE: You do not need to plug vacuum holes in a section that has the valve turned OFF.



TO REORDER VACUUM SUPPLIES:	
Call Techno Today at: 516-328-3970	
ITEM	PART NUMBER
Rubber Plugs	H91X30-PL006-001
Foam Rubber Gasketing	HX4892-W0002



WARNING: Proper care should be taken to make sure that objects held down with the vacuum table are secure. There is a danger that objects held down with the vacuum can become loose and could be thrown by the action of the cutting tool. Proper safety precautions against flying debris must be taken. Safety glasses must be worn when the vacuum table is being used.

Tool Stand Locations (if equipped)

To set your tool stand positions in the Techno GCODE Software, look for the *CNC Servo GCODE Manual* on your Techno CD-ROM. Chapter Three in that manual will show you how to perform this important task (**III. Learn Tool Stand Locations Tutorial**).

Scale Factor Interface Setup

VIII. SCALE FACTOR SETUP:

STEP 1: Start Techno CNC Interface.

STEP 2: From the Main Menu click on the Setup button. See **SCREEN CAPTURE 1**.

STEP 3: Click on System in the Setup screen's menu list. See **SCREEN CAPTURE 2**.

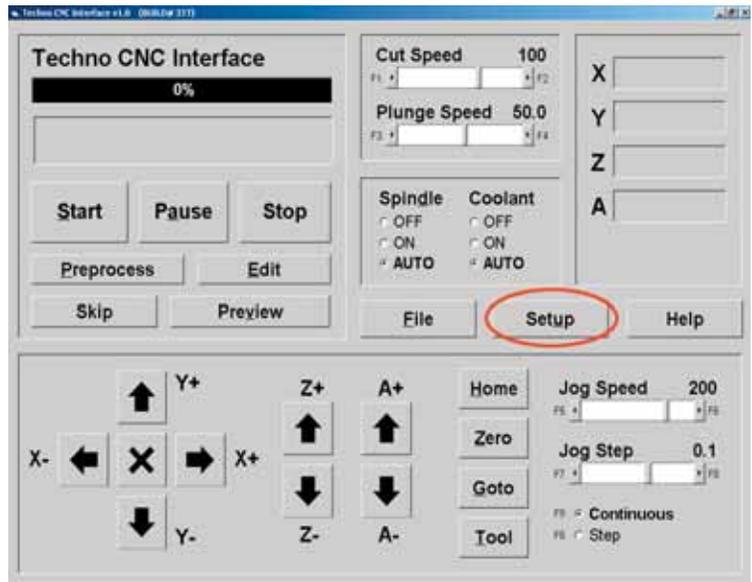
NOTE 1: The Setup/System screen will appear.

STEP 4: Input the numbers printed on the Scale Factor Sticker located on the front leg of the machine.

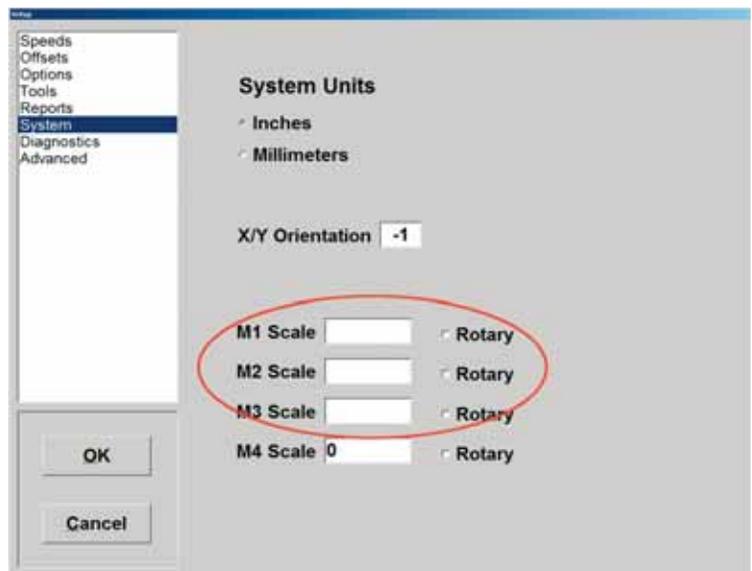
NOTE 2: See the circled section in **SCREEN CAPTURE 2**. Make sure to type the numbers exactly how they appear on the sticker including any negative values (i.e. -20320).

STEP 5: Click the OK button in the Setup/System screen to save the changes made.

SCREEN CAPTURE 1



SCREEN CAPTURE 2



IF THE VALUES ARE NOT WRITTEN ON THE FRONT LEG OF YOUR TECHNO CNC ROUTER THEN THE INTERFACE DEFAULT VALUES SHOULD APPLY.

APPENDIX A

CONTROL BOXES

LP (LC) ELECTRONICS



LP (or "LC") Electronics are standard on the Servo Lathes (Metal & Wood), Servo DaVinci's and the standard LC Machines (**NOT THE SPEED UPGRADE LC's!**) They can also be used on Gantry III Tabletop Series machines and as a stand alone product.

MP ELECTRONICS



MP Electronics are sometimes referred to as **Servo Box 2** (H26T56-SRVBOX2).

HP ELECTRONICS



HP Electronics are sometimes referred to as **Servo Box 3 or RG+ Servo Box 3** (H26T56-SRVBOX3HR).

CNC CONTROL TOWER

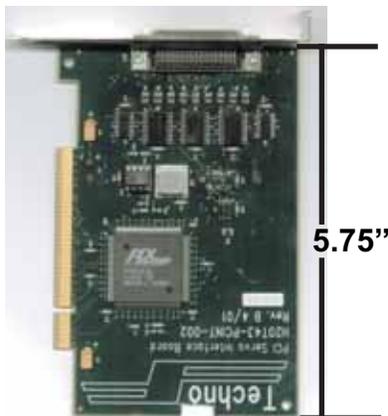


The HP Electronics Box components are located within the Techno CNC Control Tower, which comes standard with a Premium Class machine and as an upgrade for the RG Series machines.

NOTE: THE MP ELECTRONICS MAY SHIP WITH GANTRY III SYSTEMS, CHECK ROUTER SPEC. SHEET FOR DETAILS.

PCI CARDS

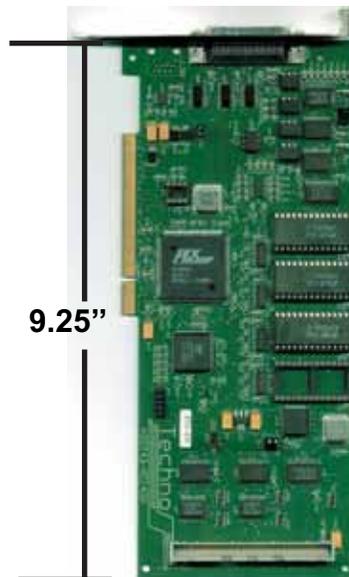
PCI Interface Card



This card works with:

- LP(LC) Electronics
- CNC Lathes
- Servo DaVinci
- Gantry III Machines

The PCI Controller Card



This card works with:

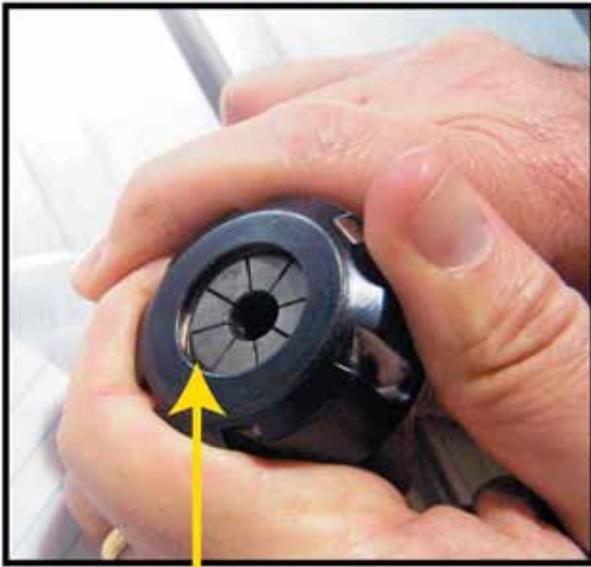
- MP Electronics
- HP Electronics: RG+ Servo Box 3
- Premium Class Electronics
- LC Speed Upgrades
- RG Machines
- Some Gantry III Machines

WARNING: Make sure to match the correct PCI Card with the corresponding Techno Electronics. Mixing the Interface Card with the MP/HP Electronics, or using the Controller Card with the LP Electronics may cause damage to the Electronics, the PCI Card and your computer.

APPENDIX B

COLLETING GUIDELINES

WRONG!



This picture shows an improper assembly. Notice the gap and angle of the collet in relation to the nut. The collet is not flush to the end of the collet nut. Correct this assembly before using.

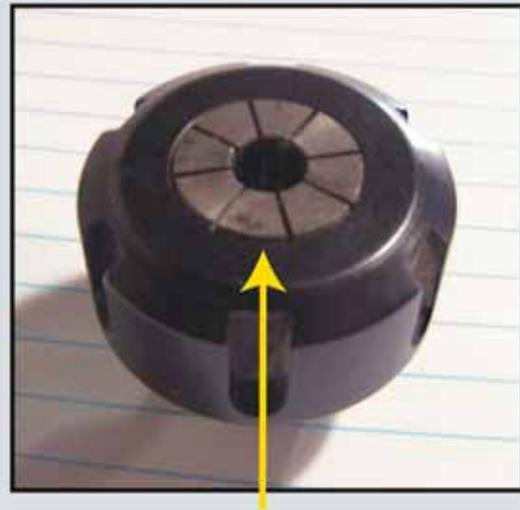
DO NOT PUSH THE COLLET INTO THE SPINDLE AT ANY TIME!

Only the proper assembly should be screwed onto the spindle.



THE SPINDLE WILL BE DAMAGED IF UNBALANCED EQUIPMENT IS USED!

RIGHT!



The picture above is how your collet nut assembly should look: the end of the collet is flush with the bottom surface of the collet nut. You will hear and feel a "SNAP" as the collet properly goes into the collet nut. Once it is assembled, then "SCREW" the nut onto the threaded spindle end.

FOR TOOLCHANGE AND FIXED COLLET SPINDLES:

ONLY USE TOOLHOLDERS, COLLET NUTS AND TOOLS THAT ARE BALANCED TO MEET OR EXCEED THE MAX RATED SPEED OF THE SPINDLE.



APPENDIX C

LUBRICATION SPECS FOR LC/LCP/LCX/RG SERIES MACHINES

<u>AVAILABLE ACCESSORIES</u>		
TECHNO ISEL LUBE KIT	PART NO.: H90Z00-LUBEKIT3	PRICE: \$75.00
THK LUBE KIT	PART NO.: H90Z00-LUBEKIT4	PRICE: \$105.00

Y-Axis (Long Axis) – THK Products

Grease: Lithium-based grease (JIS NO. 2) or Urea-based Grease (JIS No. 2), such as AFB Grease (THK), Albania Grease No. 2 (Showa Shell), Daphne Eponex Grease No. 2 (Idemitsu Kosan) or equivalent.

Oil: Sliding surface oil or turbine oil (ISOVG32-68), such as Super Multi 32 to 68 (Idemitsu Kosan), Vactra No. 2S (Mobile), DT Oil (Mobile), Tonner Oil (Showa Shell or equivalent).

TABLE 1

THK			
	BALLSCREW	RAIL	CARRIAGE
GREASE	√	√	√
OIL	√	√	

Note: On some items you can use either the grease or oil.

X and Z-Axes – ISEL Products

Grease: Alvania-1, -2, -3 (Shell) for light, med. and heavy-duty apps, respectively.

Oil: Renolin CLP 100 (Part No. 299020).

TABLE 2

ISEL			
	BALLSCREW	RAIL	CARRIAGE
GREASE	√		√
OIL		√	√

Note: On some items you can use either the grease or oil.

APPENDIX C (cont.)

LC/LCP/LCX/RG SERIES LUBRICATION MAINTENANCE

For regular work loads, machine maintenance is required at least once a month. The machine should also be lubricated once it is received.

Warning: Before inserting any object into the machine, press the E-stop button.

Notes: Do not use WD-40 or silicon spray on the machine. It may damage the drive components of the machine.

Use the Grease and Oil Recommendations listed on the previous page, paying close attention to what grease and/or oil must be used! The grease/oil for the Y-axis is different from the X and Z-axes.

LONG AXIS (Y)

THK Ball Screw:

1. Clean the ball screw with a dry rag removing old grease and debris that may have collected.
2. Apply grease (see TABLE 1) on the ball screw and run the machine back and forth several times to spread the grease out.

By applying the grease and running the axis back and forth, small particles that may have collected in the ball nut may be flushed out. It is recommended to repeat Steps 1 and 2 again.



THK Carriages and Rails:

THK specifications indicate that a small amount of grease needs to be applied to the rails after 4 months of use. The picture below indicates the location of a grease fitting. Note there are 4 bearing carriages total. (2 on the left and 2 right sides of the machine).



GANTRY (X AND Z AXES)

Ball Screw and Rails:

1. Remove black end caps at the top and bottom of Z Axis and both ends of (X Axis) Gantry. (There are 4 spots per axis.)

Gantry

Z Axis



2. Jog the axis to end of travel or until lube point is visible. Using the a grease gun, insert a small amount of grease (see TABLE 2). This lube point greases both the bearing and ball screw simultaneously.
3. Run the machine back and forth 1/2 dozen times.

If you can not reach the lube points then you can apply grease and oil (see TABLE 2) through the nylon wipes.

- 1B. Apply oil to an acid brush. Spread apart the rubber guards and brush oil onto the rails. When applying oil to the rail behind the ball screw, it may be necessary to bend the acid brush to reach the rails.
- 2B. Apply grease to a second acid brush or your finger and apply grease to the ball screw.

