

Procedure for Adjustment between automatic tool changer (ATC) & spindle center

Please have at least two persons to do this procedure!

One person to do mechanical work.

Second person to watch the position of the spindle.

Note: Before adjusting distance between spindle center and ATC, please make sure ATC is already in correct location! (You may skid this!)

1. Put power onto control. Power on the switch!
2. Initiate servo on command and "home" the machine.
3. Move X & Y axes to center position. Then move Z axis to -5 ^{mm} position.
4. Install the tool holder onto spindle.
5. Press "servo off" key, then check to see if spindle is rotating freely?
6. Climb up to the ATC's motor position. Look for a motor with a sign-- "brake releasing point" on it. (there are Chinese characters on it too!) On the lower right hand side of the sign, there is a handle, move it clockwise or to the left. Then take & put a ratchet wrench with a socket 12mm on the top of the motor shaft! Next turn the motor shaft clockwise until "tool arm" is close to the spindle. The second person should be watching the position of the spindle while the first person is carefully cranking the tool changer arm closer to the spindle.
7. When the tool arm is close to the spindle (w/tool holder), please check the followings,
 - a. One spindle key is aligned with the alignment bracket on the center of the tool arm arc.
 - b. The round concave ring on the tool holder is at the same high as the half convex ring on the tool arm.

At this point, you will see item "b." is off, i.e., the tool holder height and tool arm height is different. Then take an Allen wrench 8mm to the top of the Z axis. Attach it to the end of the ball screw and turn it to move the spindle up and down. You should stop turning, when item "b." is at the same height, i.e., the round concave ring on the tool holder will match onto the half convex ring on the tool arm. You must match the two parts very closely. This is how ATC grab and change the tool holder.

8. When the height of tool holder and tool arm is at correct position, you may turn the ratchet wrench on the motor top to engage the tool arm onto the spindle. At this point, you should be able to move the tool holder a little bit, i.e., left to right movement (See diagram Point B and C). This shows the engagement is correct and spindle is at the correct height. Record down the Z axis position value and exit to the software option menu. Also you need to

return tool arm to the original position manually, i.e., parallel to the Y axis travel. When tool arm is at correct position, there is a LED light, which lights up inside the brown acrylic cover (looks like small amber dots, barely noticeable). Please make sure this happens.

9. At software option, go to #2 setup utility. Select MC _____ & go to MC1130 (Console should read: "user definable Variable #1130"). Use "find" at bottom to search the constant. Press password; Z48 to enter the Z axis value and save it. Note: Z axis value is negative!!!

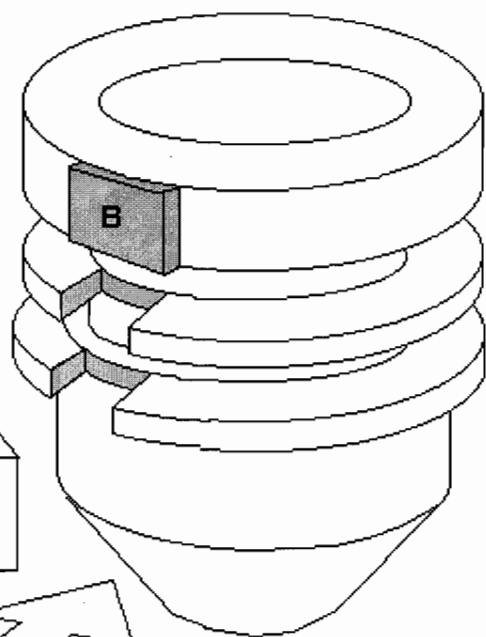
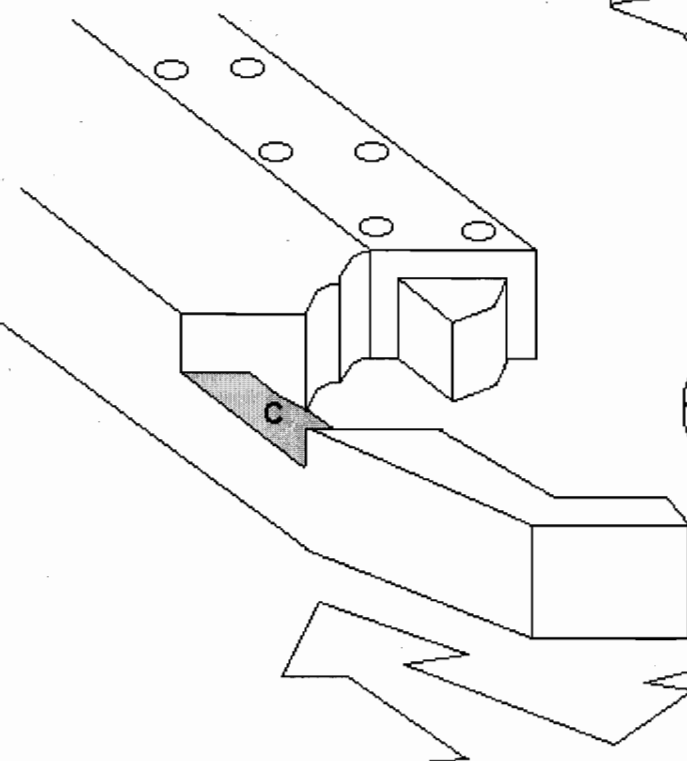
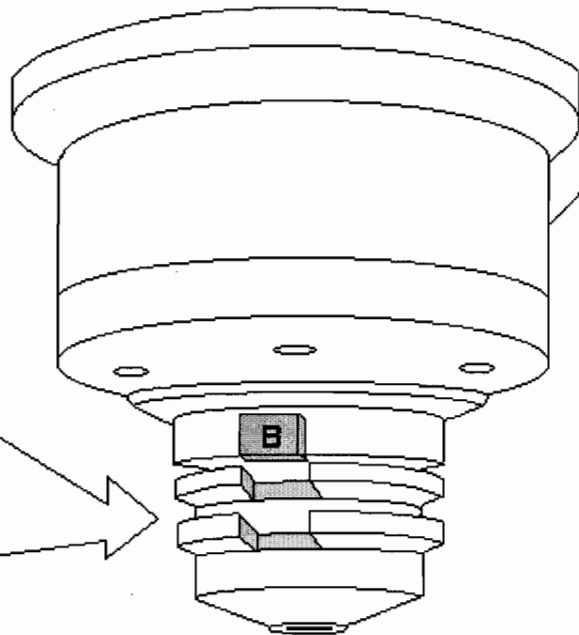
Using control to test ATC function

1. Please make sure power phase is correct, i.e., the rotation of the tool magazine is clockwise when pushing CW button (on control panel).
2. When testing the ATC for the first time, please do not install a tool holder onto the spindle. This is a precaution for tool crashing!!!
3. Step by step motion testing (you are at control software mode).
 - a. Enter Z axis value to move spindle into tool change position. This value is the same as MC1130.
 - b. Enter M61, then press servo start (green button). (tool arm is lowered)
 - c. Enter M19, then press servo start. (spindle position is set)
 - d. Press ARM S.D. button on the control panel. (tool arm will rotate)
 - e. Enter M63, press servo start. (tool arm will engage tool holder on the spindle, and pull it down.
 - f. Press ARM S.D. button. (tool arm will rotate again)
 - g. Enter M64, press servo start. (tool arm will install tool holder onto the spindle)
 - h. Press ARM S.D. (tool arm will rotate again)
 - i. Enter M62, press servo start. (tool arm will return to original position) Note: To do the manual sequence again, please reset servo motor again, i.e., press servo off then on again.
 - j. To test ATC function in automatic sequence, enter M6T1, then press servo start. Before testing in automatic sequence you must do the step by step testing first. This is to make sure spindle is in correct position when changing tool.

Tool Changer Arm



A: The Two Points Must Match In Perfectly, When In Right Position Spindle Will Move Slightly Back and Forward.



Note: Position Point B in perfect conjunction with Point C. When Point B and Point C in properly engaged tightly, you can slightly shift the tool left to right by applying a little force. Make certain that Point A (in the above diagram) is fitted perfectly. Point A must be perfectly fitted in order to prevent any tool changer damage. If you have any question please contact ACER.