

# Alternate 5-Axis Centerline Procedure

## Hurco Trunion Machines

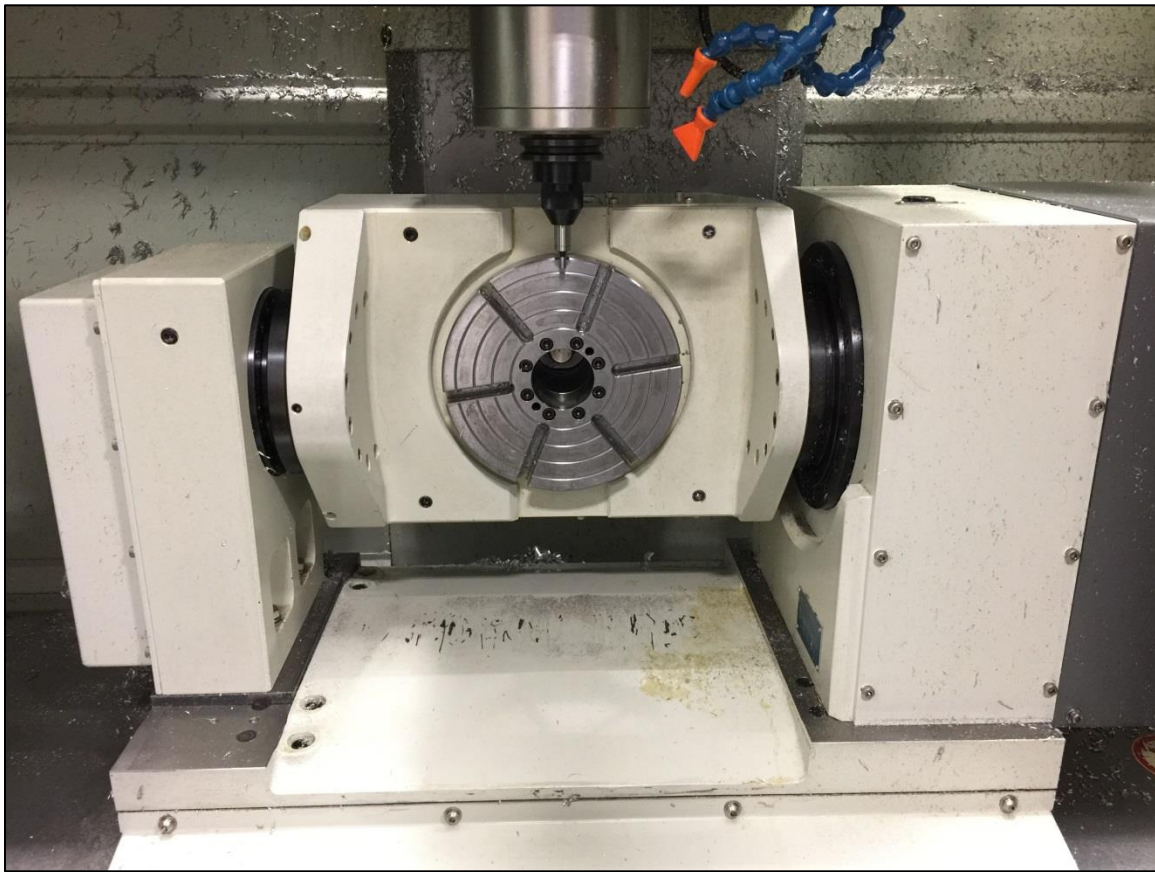
### **STEP ONE: - Finding the C-axis Centerline**

- Run an indicator across the top of the C-axis table surface, to insure that the A-axis is flat.
- Place an indicator and magnetic base on the machine table and indicate the inside of the spindle nose by rotating the C-axis (see image below). This will allow you to find the true X and Y centerlines of rotation for the C-axis table – write these values down because they will be entered into the centerline parameter screens later. **Note:** indicating the center hole in the table will get you close, but it is not sufficient for an accurate centerline measurement.
- Once you have determined this location, press the STORE MACHINE POSITION button to set your part set-up for this new location - so the “**part**” display on the DRO will display 0.000 for both the X and Y-axes – this part set-up will be used for the next step.



### **STEP TWO: - Determining the Y-Axis Offset Distance**

- Position the X and Y-axes at the new **part zero** location (X0.0000” Y0.0000”) found in step one above, and swing the A-axis to 90° degrees.
- Using an edge-finder, locate the face of the table (see image below) – don’t forget to accommodate for the diameter of the edge finder. We want the center of the spindle located directly over the table face.
- Write down the current Y-axis value displayed in the “**part**” display on the DRO (after the tip of the edgefinder has been accounted for). This value will be used to calculate the A-axis centerline value later.
  - **Example:** -.004”



### **STEP THREE: - Finding the A-axis Centerline**

- Write down the “PART KINEMATICS Z REFERENCE” value located on the main ROTARY AXES PARAMETERS screen (see image below). This should be the value measured at the initial installation of the machine, and represents the distance from the spindle gage-line to the surface of the table at a position of A0°.
  - To locate this parameter: press AUXILARY, UTILITY SCREEN, USER PREFERENCES, MORE >, ROTARY AXES PARAMETERS

- Using the distance measured with the edfinder in STEP TWO above (the Y-axis offset distance) add or subtract that distance to the value located in the previous step above (PART KINEMATICS Z REFERENCE value) as indicated below.
  - If the Y-axis offset distance from STEP TWO above is a positive value, then you will add it (making the result a smaller negative number).
  - If the Y-axis offset distance from STEP TWO above is a negative number, then you will subtract it (making the result a larger negative number).
  - **Example:** ( -23.9851 - .004 = -23.9891 )
- The result of the mathematical equation is the **ROTARY CENTERLINE Z** value for the A-axis.
- The **ROTARY CENTERLINE Y** value will be the same as the C-axis value from STEP ONE above (found when indicating the inside of the spindle nose).

| ROTARY AXES PARAMETERS      |                                       | A AXIS                 |
|-----------------------------|---------------------------------------|------------------------|
| GENERAL                     |                                       | F1                     |
| PART KINEMATICS Z REFERENCE | <input type="text" value="-23.9851"/> | B AXIS                 |
| ROTARY AXIS ISO STANDARD    | <input type="text" value="YES"/>      | F2                     |
| TILT AXIS PREFERENCE        | <input type="text" value="NEGATIVE"/> | C AXIS                 |
|                             |                                       | F3                     |
|                             |                                       | F4                     |
|                             |                                       | F5                     |
|                             |                                       | F6                     |
|                             |                                       | STORE MACHINE POSITION |
|                             |                                       | F7                     |
|                             |                                       | EXIT                   |
|                             |                                       | F8                     |

**STEP FOUR:**

- Compare the values obtained in the steps above with the current machine centerline values for the A-axis and C-axis.
  - Press the AUXILIARY button on the control panel
  - Select the UTILITY SCREEN softkey on the popup menu
  - Select the USER PREFERENCES softkey on the screen

- Select the MORE> softkey on the screen
- Select the ROTARY AXES PARAMETERS softkey on the screen
- Select the softkey for the correct A or C axis menus

| ROTARY AXES PARAMETERS           |          |
|----------------------------------|----------|
| <b>A AXIS</b>                    | F1       |
| B AXIS                           | F2       |
| C AXIS                           | F3       |
| ROTARY CENTERLINE Y              | 9.9905   |
| ROTARY CENTERLINE Z              | -23.9891 |
| AUTOMATIC CENTERLINE CALCULATION | YES ▾    |
| MACHINE COORDINATE RELATIVE      | YES ▾    |
|                                  | F4       |
|                                  | F5       |
|                                  | F6       |
| STORE MACHINE POSITION           | F7       |
| EXIT                             | F8       |

ROTARY AXES PARAMETERS

C AXIS

ROTARY CENTERLINE X  
ROTARY CENTERLINE Y  
AUTOMATIC CENTERLINE CALCULATION  
MACHINE COORDINATE RELATIVE

14.9641

9.9905

YES ▾

YES ▾

A AXIS

F1

B AXIS

F2

C AXIS

F3

F4

F5

F6

STORE MACHINE  
POSITION

F7

EXIT

F8