

Zero Setting

Chapter 8

OBJECTIVE

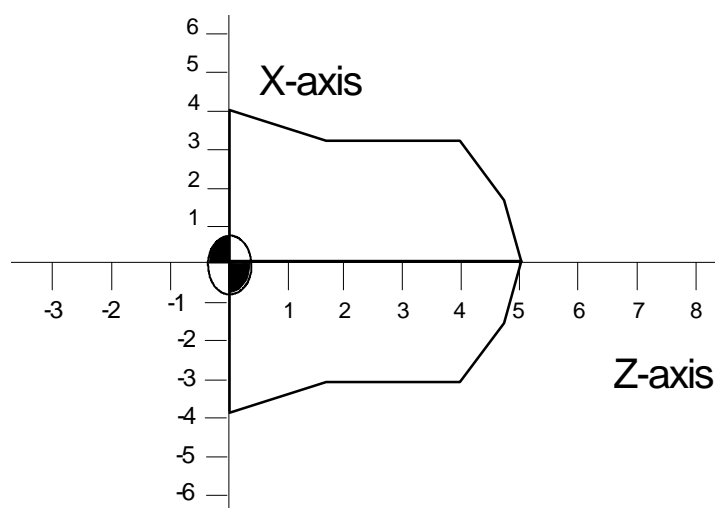
Reference the program to the machine coordinates by establishing the program zero for both axes and set Tool Data for your zero tool.

INTRODUCTION

It is extremely important to set the zero point for your Okuma lathe. It is from this zero point (or Program Zero) that the exact location of the part on the number line will be established. If you do not correctly establish this point it is quite possible that a wreck will occur.

Figure 8-1 shows where the part will be referenced to the number line if you follow these procedures.

FIGURE 8-1



Under normal operating conditions it will only be necessary to reset the Z-axis Program Zero from one part to the next **if** the chuck, chuck jaws or the actual location where you want Z zero to be has changed. If you find that the initial settings of the X-axis program zero are incorrect, it will be due to an encoder replacement or a machine wreck and alignments need to be performed before resetting.

In the first example we are going to place Z zero at the rear of the part (or the face of the jaws). This is probably the ideal location because from one job to the next (without jaw changes) there is no need to redo Z zero.

You **must** identify **one** tool that will be the master zero tool and **NEVER** remove it from the turret. Remember that all other tool offsets will be *how much different they are than this master zero tool*. If you remove the master zero tool from the turret this relationship is destroyed and it will be necessary to reset the zero tool and **all** other tools as well.

It is recommended that the zero tool be an 80 degree OD roughing tool placed in turret position 1. The reason for selecting this type of tool is that it is so generic there are very few times when you would not need it anyway. Additionally, the way an 80 degree insert fits into the holder is such that removing and replacing the insert will not significantly alter program zero settings.

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Use the information in Chapter 7 for the recommended procedures to move the X and Z-axes when touching tools to a part.

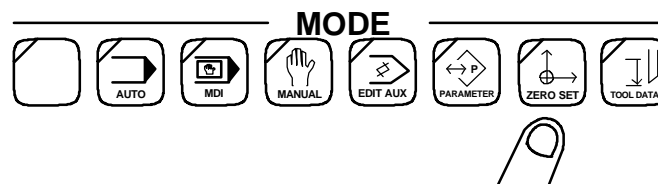
X-AXIS ZERO SET

Follow the instructions on pages 5-5 through 5-9 to start the spindle.

1. On a 4-axis machine select the correct "A" or "B" Turret Control key.
2. If you do not have a "true" diameter for the part, go to the Manual mode of operation and make a skim cut.
3. While still in the Manual mode of operation, just touch the tool to the diameter of the part. Don't forget that you **must** use the Pulse Handle Controls when touching a tool to a part.
4. After you have touched the part, move the turret off of the part by selecting the Z control Switch and rotating the Pulse Handle in the positive direction.
5. Now stop the spindle by using the Spindle Manual Control STOP key.

DO NOT MOVE THE TURRET AT THIS TIME!!!

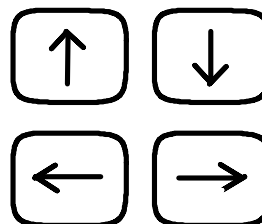
6. Measure the diameter of your part and record the size. **WRITE IT DOWN!** Don't count on your memory for this critical information.
7. On the Operation Panel, select the Zero Set mode of operation.



The ZERO SET screen will be displayed.

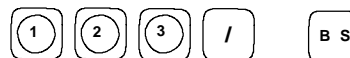
ZERO SET		N 0	
Page 1	UNIT 1in		
BC=18	* ZERO POINT *		
ZERO OFFSET	T	X	Z
ZERO SHIFT	A	346.1457	0.0000
SET	ADD	CAL	
F1	F2	F3	F4
F5	F6	F7	F8

8. Use the Cursor Position keys to locate the cursor over the ZERO OFFSET data for the X-axis as shown below.

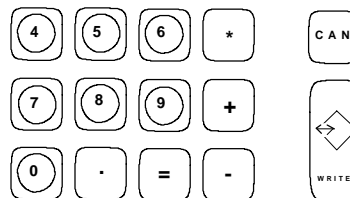


ZERO SET		N 0	
Page 1	UNIT 1in		
BC=18	* ZERO POINT *		
ZERO OFFSET	T	X	Z
ZERO SHIFT	A	0.0000	289.7764
SET	ADD	CAL	
F1	F2	F3	F4
F5	F6	F7	F8

9. Press the function key [F3] (CAL).



10. At the Extended Keypad, enter the value that you recorded in step 6 for the X-axis diameter.



11. Press the WRITE key.



The value under the cursor will automatically change. **DO NOT EXPECT TO SEE THE SAME VALUE YOU ENTERED IN STEP 10.** These numbers are used by the OSP to make internal calculations and will be unique.

12. Return to the Operation Panel and select the Manual mode of operation.

Check the CRT readout in ACTUAL POSITION. The value here for the X-axis **SHOULD** be the same as entered for step 10.

Z-AXIS ZERO SET

Follow the instructions on pages 5-5 through 5-9 to start the spindle.

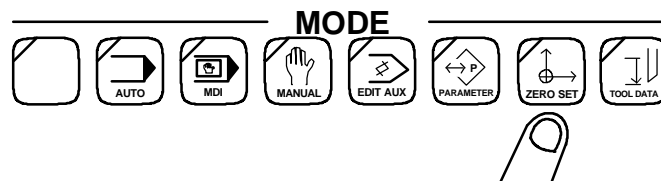
1. On a 4-axis machine select the correct "A" or "B" Turret Control key.
2. If you do not have a "true" face for the part, go to the Manual mode of operation and make a skim cut.

For this procedure to work best you should face both ends of the stock.

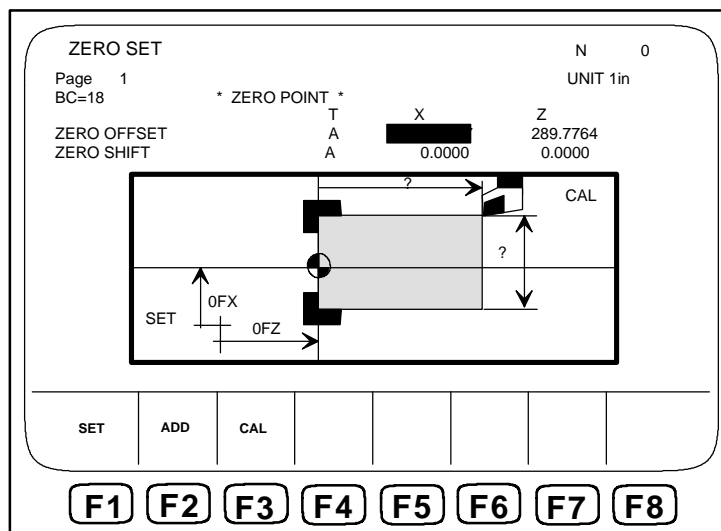
3. While still in the Manual mode of operation, just touch the tool to the face of the part. Don't forget that you **must** use the Pulse Handle Controls when touching a tool to a part.
4. After you have touched the part, move the turret off of the part by selecting the X control Switch and rotating the Pulse Handle in the positive direction.
5. Now stop the spindle by using the Spindle Manual Control STOP key.

DO NOT MOVE THE TURRET AT THIS TIME!!!

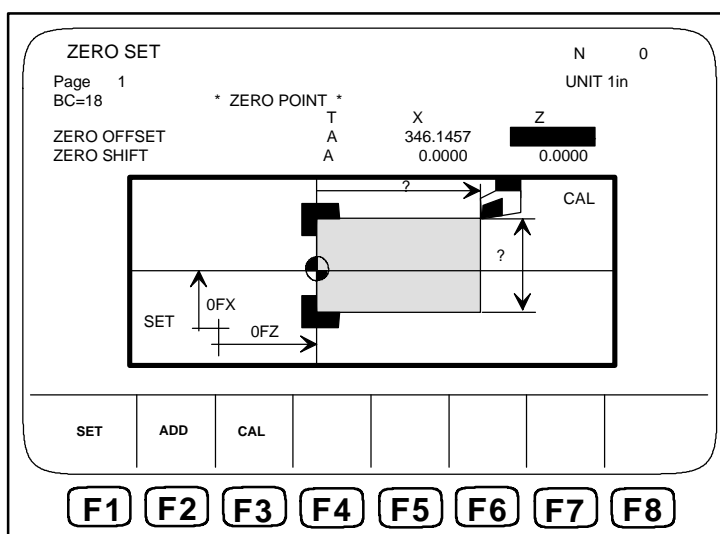
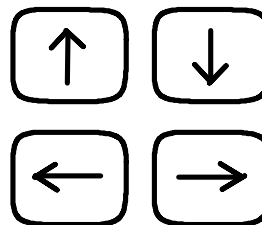
6. Measure the length of your part and record the size. **WRITE IT DOWN!** Don't count on your memory for this critical information.
7. On the Operation Panel, select the Zero Set mode of operation.



The ZERO SET screen will be displayed.

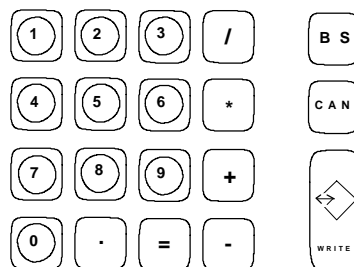


8. Use the Cursor Position keys to locate the cursor over the ZERO OFFSET data for the Z-axis as shown below.



9. Press the function key [F3] (CAL).

10. At the Extended Keypad, enter the value that you recorded in step 6 for the Z-axis length.



11. Press the WRITE key.

The value under the cursor will automatically change. **DO NOT EXPECT TO SEE THE SAME VALUE YOU ENTERED IN STEP 10.** These numbers are used by the OSP to make calculations and will be unique.

12. Return to the Operation Panel and select the Manual mode of operation,

Check the CRT readout in ACTUAL POSITION. The value here for the Z-axis **SHOULD** be the same as entered for step 10.

Z-AXIS ZERO ON THE PART FACE

The previous example for Z-axis Zero Set would have worked if you wanted the program zero at the rear of the part. These steps explain how to place the Program Zero on the part face as shown on the following page in figure 8-2.

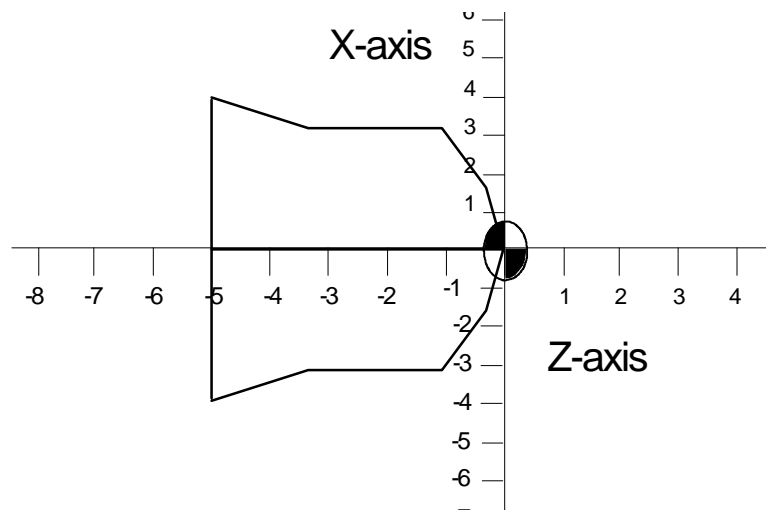


FIGURE 8-2

Follow the instructions on pages 5-5 through 5-9 to start the spindle.

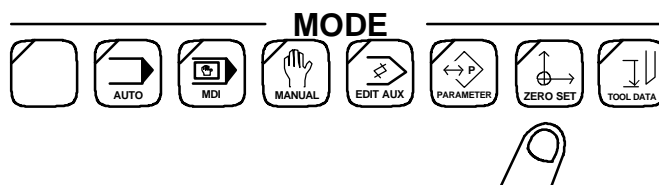
1. On a 4-axis machine select the correct "A" or "B" Turret Control key.
2. If you do not have a "true" face for the part, go to the Manual mode and make a skim cut.

For this procedure to work best you should face both ends of the stock.

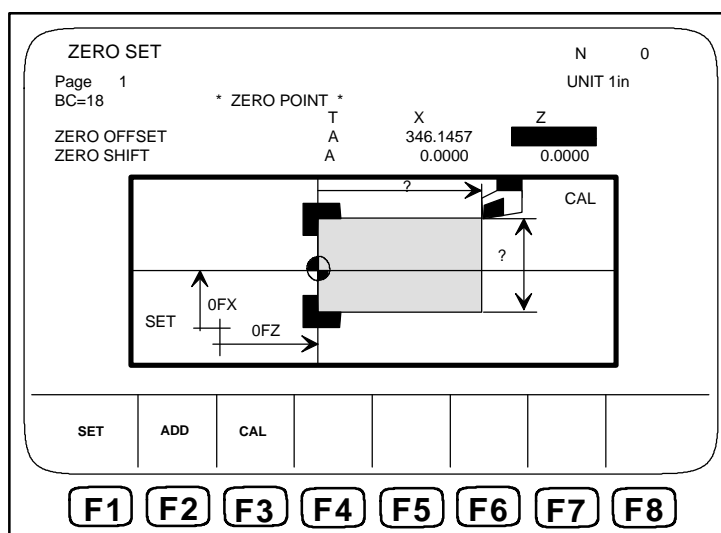
3. While still in the Manual mode of operation, just touch the tool to the face of the part. Don't forget that you **must** use the Pulse Handle Controls when touching a tool to a part.
4. After you have touched the part, move the turret off of the part by selecting the X control Switch and rotating the Pulse Handle in the positive direction.
5. Now stop the spindle by using the Spindle Manual Control STOP key.

DO NOT MOVE THE TURRET AT THIS TIME!!!

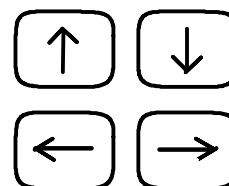
- On the Operation Panel, select the Zero Set mode of operation.

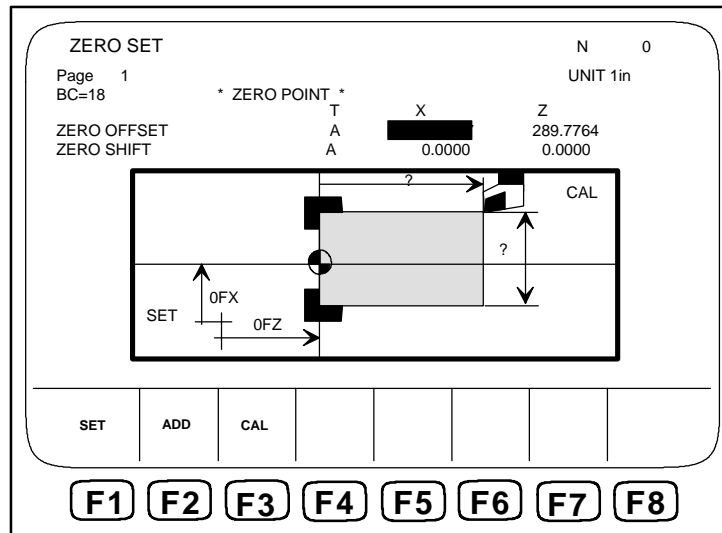


The ZERO SET screen will be displayed.



- Use the Cursor Position keys to locate the cursor over the ZERO OFFSET data for the Z-axis as shown on the next page.

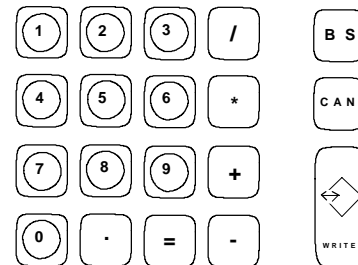




8. Press the function key [F3] (CAL).

9. At the Extended Keypad, enter zero.

10. Press the WRITE key.



The value under the cursor will automatically change. **DO NOT EXPECT TO SEE THE SAME VALUE YOU ENTERED IN STEP 9.** These numbers are used by the OSP to make calculations and will be unique.

11. Return to the Operation Panel and select the Manual mode of operation,

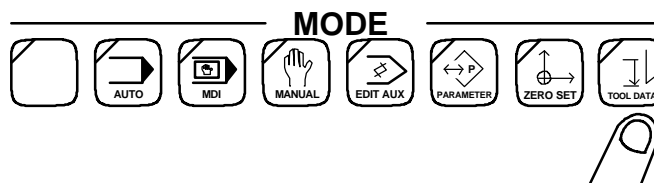
Check the CRT readout in ACTUAL POSITION. The value here for the Z-axis **SHOULD** be the same as you entered for step 9.

SETTING TOOL DATA FOR THE ZERO TOOL

Now that you have calculated the Program Zero for both the X and Z-axis, you **must** input the correct information as a tool offset.

When you replace an insert it will **not** be necessary to redo the Zero Set.

1. Move the turret back to the tool index position.
2. On the Operation Panel, select the Tool Data mode of operation.

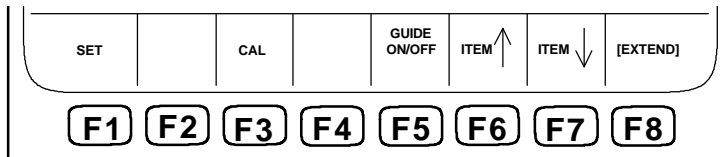


TOOL DATA SET

PAGE 1	A turret	* TOOL OFFSET *		* NOSE-R CONP *		Unit 1in
BC = 34		XA	ZA	XA	ZA	
NO. T						P
1 A	0.0000	0.0000	0.0000	0.0000	0.0000	0
2 A	0.0000	0.0000	0.0000	0.0000	0.0000	0
3 A	0.0000	0.0000	0.0000	0.0000	0.0000	0
4 A	0.0000	0.0000	0.0000	0.0000	0.0000	0
5 A	0.0000	0.0000	0.0000	0.0000	0.0000	0
6 A	0.0000	0.0000	0.0000	0.0000	0.0000	0
7 A	0.0000	0.0000	0.0000	0.0000	0.0000	0
8 A	0.0000	0.0000	0.0000	0.0000	0.0000	0
9 A	0.0000	0.0000	0.0000	0.0000	0.0000	0
10 A	0.0000	0.0000	0.0000	0.0000	0.0000	0
11 A	0.0000	0.0000	0.0000	0.0000	0.0000	0
12 A	0.0000	0.0000	0.0000	0.0000	0.0000	0
LAST DATA	*	0.0000	X = 6.2984	Z = 10.8473	TOOL	T 1

The TOOL DATA screen will be displayed.

3. Use the Cursor Arrow keys to locate the cursor on the X-axis TOOL OFFSET position number that **MATCHES** the tool turret position where the master zero tool has been installed.
4. Select function key [F8] (EXTEND) as many times



as necessary until the guide across the bottom of the CRT matches the one shown below.

5. Select function key [F1] (SET).
6. At the Extended Keypad enter the value zero (0).
7. Press the WRITE key.
8. To set the zero tool value for the Z-axis offset, Use the Cursor Arrow keys to locate the cursor on the Z-axis TOOL OFFSET position number that **MATCHES** the tool turret position where the master zero tool has been installed.
9. Repeat steps 4 through 7 to set the Z-axis Tool Data for the master zero tool.