

Work Holding

Chapter 5

OBJECTIVE

Perform all necessary steps to set-up parts in chuck, collet or fixture while ensuring operator safety.

INTRODUCTION

In any operation you must determine the correct chuck type in relationship to the material and process you are performing. After making these decisions, you are ready to prepare the machine to hold your work piece.

SYSTEM PRESSURE

After you have decided what the correct system pressure needs to be for your application, you are ready to check, and/or adjust, the current setting. The gauge is located as follows:

1. On the "LR" machines, the pressure gauge can be viewed through the sheet metal at the left front of the machine
2. On most other machines, the pressure gauge is located on top of the hydraulic tank at the rear of the machine. Position the selector knob under the gauge to CHUCK, then press the selector knob to activate the gauge.

Use the *Okuma Operations & Maintenance Manual* to identify the procedure for attaining the **correct** pressure level.

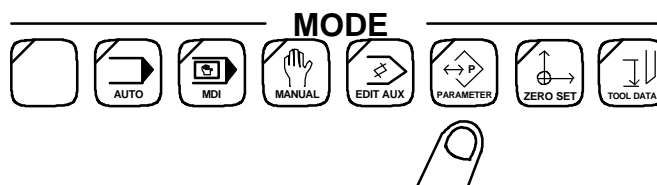
USING THE G50 COMMAND

This is a good time to verify that the G50 command (Maximum Spindle RPM) that you are planning to use is within the **safe** limit for your work holding device.

OD / ID CHUCKING

Now you need to determine if you will be chucking on the inside diameter of the part or on the outside diameter. After you make this determination, continue as follows:

1. If you have a key switch marked CHUCK OD/ID on the Operation Panel, use the proper key to select the setting you require. If your machine does have a key switch, disregard steps 2 through 6.
2. If the machine does **not** have a key switch marked CHUCK OD/ID you must set a parameter. On the Operation Panel, select the PARAMETER mode of operation.



The PARAMETER SET screen will be displayed.

PARAMETER SET

Page 1
BC=19

* CHUCK/TAILSTOCK *

Unit 1in

CHUCK HOLD CHG. 0
0:O-DIA./1:I-DIA
CHUCK/C.WORK CHG. 0
0:CHUCK/1:C.WORK

- BARRIER DATA -

JAW SIZE L1 = 0.0000
D1 = 0.0000
JAW POSI. CX = 0.0000
CZ = 0.0000
CENTER L2 = 0.0000
D2 = 0.0000
D3 = 0.0000
WR = 0.0000

Diagram labels: OD, ID, L1, D1, CX/2, CZ, WR, FACE, L2, D3, D2

Buttons: SET, ADD, CAL, ITEM ↑, ITEM ↓

Function keys: F1, F2, F3, F4, F5, F6, F7, F8

- Now select function key [F7] (ITEM down) or [F6] (ITEM up) until the screen shown above is displayed.

- Use the CURSOR ARROW keys to move the cursor over the data position for CHUCK HOLD CHG.



Notice that selecting a zero (0) sets OD chucking while selecting a one (1) sets ID chucking.



- Select function key [F7] (SET).
- Make the selection required for your current operation followed by the WRITE key.

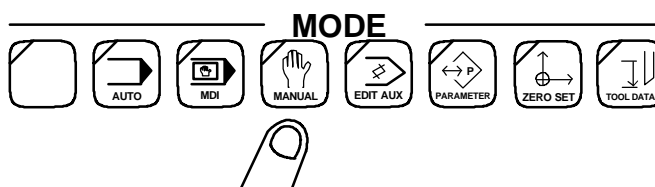
At this point you have finished the selection of OD or ID chucking.

Notice that under CHUCK HOLD CHG. you have a similar setting for CHUCK only and C.WORK or center work when activating the tailstock is necessary.

TESTING

To ensure that the material is being held properly, make the following checks:

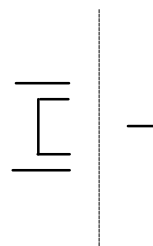
1. On the Operation Panel select the MANUAL mode of operation.



2. Ensure that the work holding device is un-clamped by activating the CLAMP/UNCLAMP foot switch.
3. With the work holding device UN-CLAMPED, insert the stock to be machined. Activate the CLAMP/UNCLAMPED foot switch to **securely** hold the stock.
4. Visually check to ensure that the material is securely held.

KITAGAWA CHUCKS --

Many of the Okuma lathes sold by Joachim Machinery Co., Inc. come standard with a Kitagawa chuck. If you have one of these, there is a visual gauge between the chuck body and number 1 master jaw. When you have clamped a part, the single line on the master jaw should



be aligned between the inner markings on the chuck body. This ensures that the chuck jaws have attained the correct amount of travel. If this does **not** happen, correct the positioning of the chuck jaws.

CLAMPED/UNCLAMPED SENSORS --

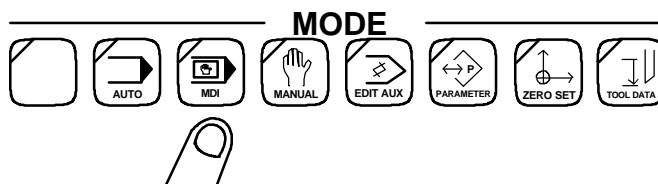
Notice that in the upper right hand corner of the Operation Panel there are two lights labeled CLAMPED and UNCLAMPED. These lights are displaying the information that is being sent to the control; you will not be able to start the spindle if the control thinks you are in an unclamped condition. If these lights do **not** represent the actions of your chuck, the sensors **must** be adjusted. If you remove the cover from the left side of the machine you will see these sensors mounted to an extension of the actuator. When a sensor is active, a light can be seen on the sensor.

The upper (or rear) sensor indicates a clamped condition in the OD mode (unclamped in the ID mode). You must adjust the clamped sensor with your blank stock secured in the chuck; adjust the unclamped sensors with the stock removed and the chuck unclamped. Ensure that the correct panel and sensor lights are on when your machine is in the clamped or unclamped mode.

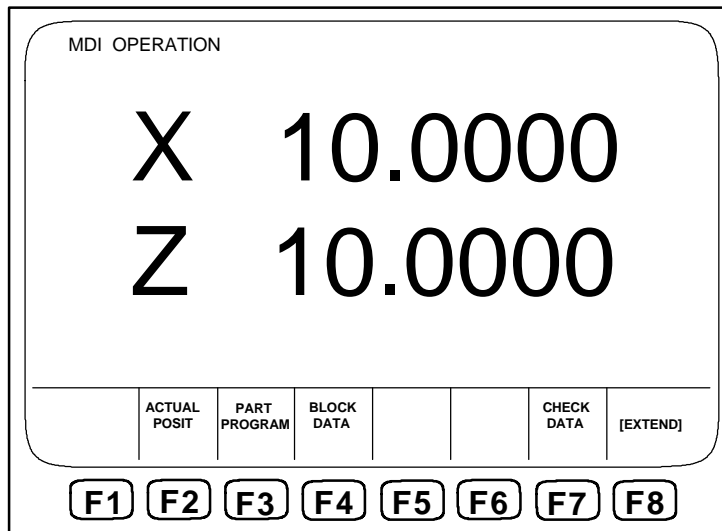
MANUAL SPINDLE OPERATION

To finish testing the work holding device you need to run the spindle. The following procedure explains how to operate the spindle when you are **not** in the AUTO mode of operation.

1. On the Operation Panel, select the MDI mode of operation.

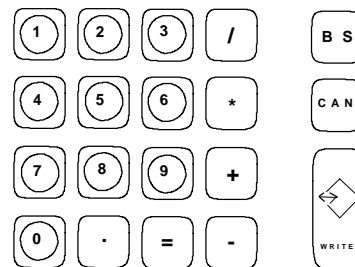


Note that the MDI OPERATION screen has been displayed.

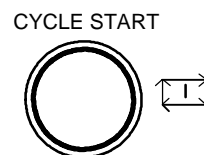


It is not particularly important if this is the page you see. Pressing the PAGE key will change the view and you should become familiar with all the choices.

2. On some older Okuma lathes it may be necessary to next press function key [F1] (DATA INPUT).
3. To establish the correct gear range, use the Alpha Extended and keypads to enter M41.
4. To establish the desired spindle speed, use the Alpha and Extended keypads to enter S200.
5. Press the WRITE key to enter the data (M41S200) into the Okuma memory.



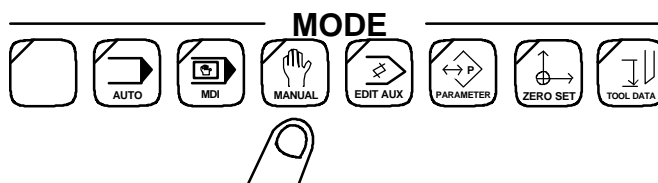
6. Press the CYCLE START push button.



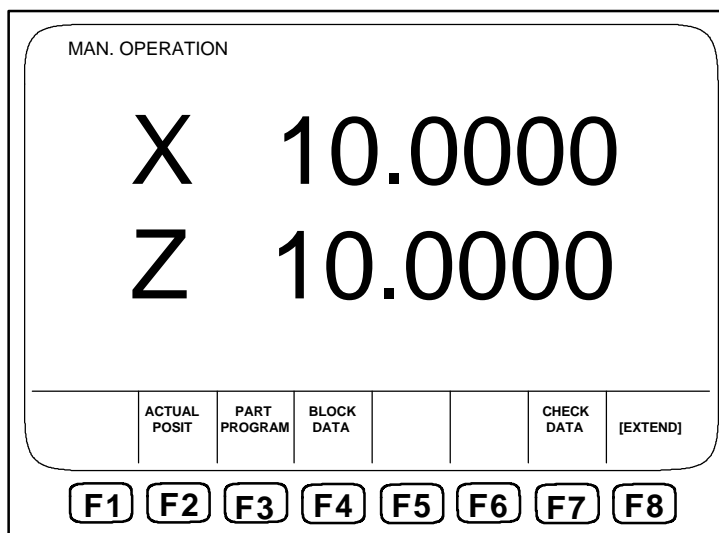
The RUN and S.T.M. Status Lights will flash but the spindle will not start rotating because the ON command (M3 or M4) was not entered.

EXERCISE EXTREME CAUTION DURING THE FOLLOWING STEPS!!

7. On the Operation Panel, select the MANUAL mode of operation.

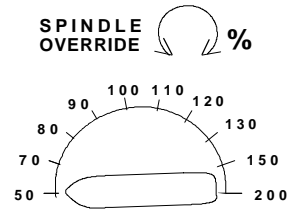


Note that the MANUAL OPERATION screen has been displayed.

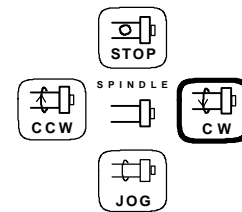


It is not particularly important if this is the page you see.

8. On the Operation Panel, rotate the SPINDLE OVERRIDE dial **fully counterclockwise!** This sets your spindle RPM at the lowest percentage of the RPM entered during step 4.



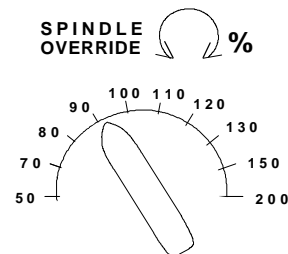
9. Now you will be able to start the spindle by selecting the CW key on the Operation Panel.



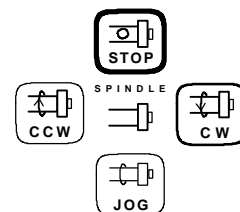
If the spindle does **not** engage, check the following:

- A. Is the MACHINE LOCK key active?
- B. Is the CLAMP INDICATOR lit?
- C. If your machine is using the tailstock, the quill **must** be extended for the spindle to start.

10. The SPINDLE OVERRIDE dial can now be used to **carefully** ramp up the speed of your spindle to assist you in determining if the work holding device is functioning properly. You will only be able to attain a maximum speed of 400 RPM; 200% of the 200 RPM entered for step 4.



11. To stop the spindle, select the STOP key on the Operation Panel.



If you need to test the operation at a higher speed, return to step 4 and enter a larger spindle speed value; repeat the remainder of the steps.

**INCREASE THE SPEED IN
INCREMENTS THAT REFLECT SOUND,
SAFE JUDGMENT FOR THE
CURRENT WORK HOLDING
SITUATION!**