

Lathe Operation Panels

Chapter 2

OBJECTIVE

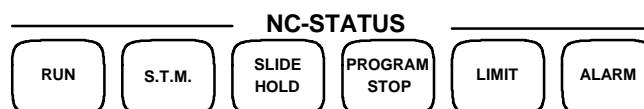
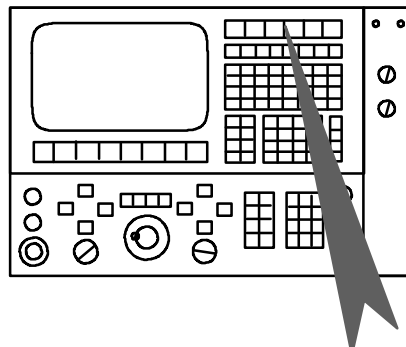
Identify the specific function of all indicators and switches on the Operation Panel of the OSP5000 series control.

NC OPERATION PANEL

Introduction

Control types that fall into the OSP5000 Lathe series are the OSP5000L, OSP5000L-G, OSP500L and the OSP5020L. All drawings and references in this manual are in relationship to the OSP5020L. Depending on the age of your machine, the actual location and type of switch may vary. However, the functions remain the same.

NC Status Lights

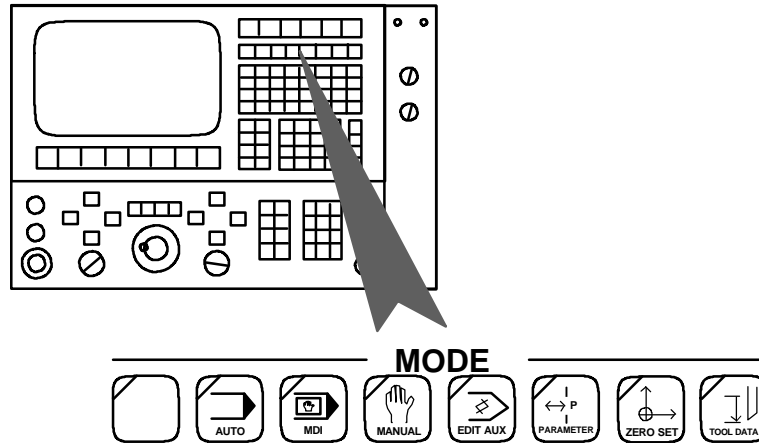


1. RUN -- This indicating lamp goes ON when the machine is normally running in the auto or MDI modes.
2. S.T.M. -- This indicating lamp goes ON when a command such as spindle speed change, tool change and M-code functions are executed. This does not include commands for axis motion.
3. SLIDE HOLD -- This indicating lamp goes ON when the associated SLIDE HOLD button on the machine Operation Panel is pressed.
4. PROGRAM STOP -- This indicating lamp goes ON during the execution of the program stop (M00) or optional stop (M01) function in the AUTO mode of operation. The indicating lamp will also flicker during the execution of the dwell (G04) function.
5. LIMIT -- This indicating lamp goes ON when either the X and /or Z-axis reaches the preset variable soft limit position.

When the LIMIT indicating lamp starts to flicker the spindle has reached the highest or lowest speed. The highest speed is set in the program by the G50 command.

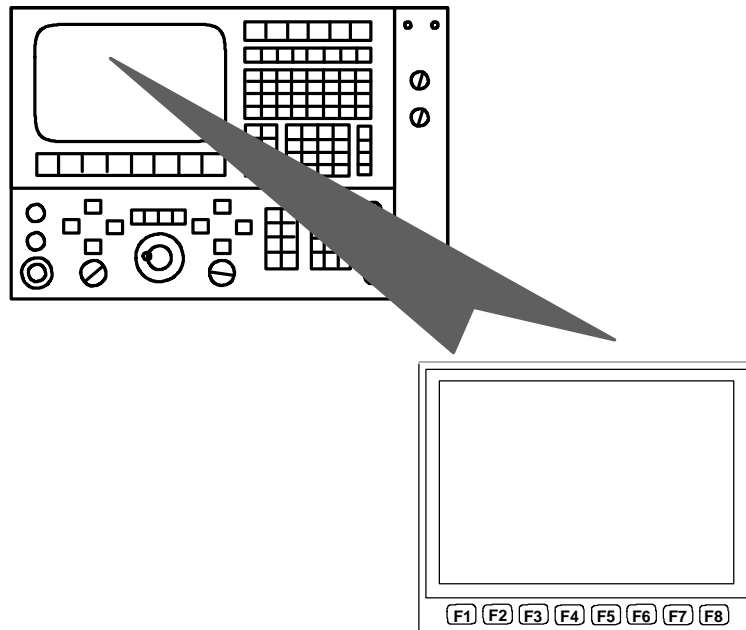
6. ALARM -- This indicating lamp goes ON when an erroneous machine operation is encountered, the wrong part program data is read, or when the computer fails to function normally.

Mode Select Keys



1. **AUTO** -- Press this key to operate the machine in the automatic mode of operation; the machine uses the selected part program.
2. **MDI (Manual Data Input)** -- Press this key to operate the machine with commands entered through the keypad.
3. **MANUAL** -- Press this key to operate the machine manually. Virtually all the controls included in the lower portion of the Operation Panel are for manual (or machine) functions.
4. **EDIT AUX.** -- Press this key to edit part programs. Operations performed while in this mode of operation are copy, rename, edit etc...
5. **PARAMETERS** -- Press this key when setting, modifying, or checking the machine parameters.
6. **ZERO SET** -- Press this key when setting or modifying the reference point of the machine in relationship to the program zero.
7. **TOOL DATA** -- Press this key when setting, modifying, or checking Tool Offset data and Tool Nose Radius compensation values.

CRT and F Keys

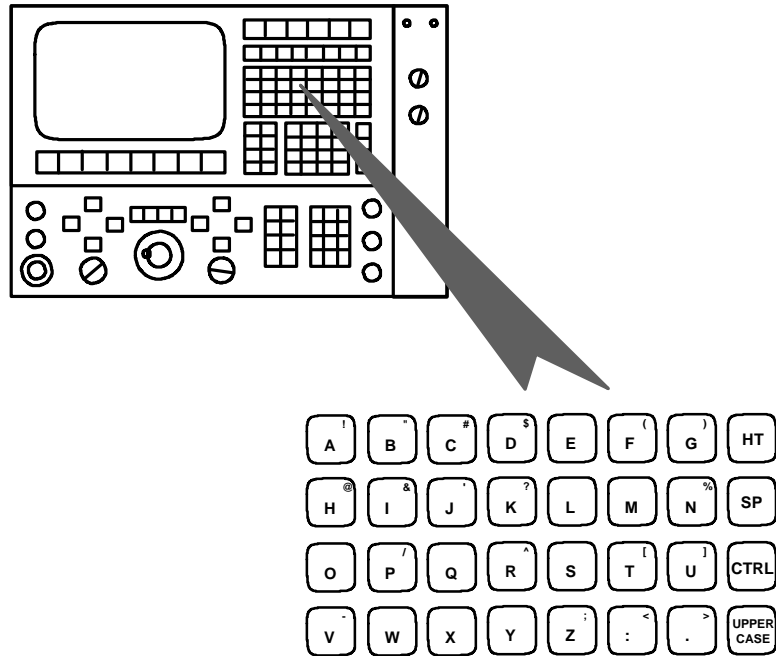


1. CRT -- The CRT can display the actual position of the axes, part programs, reference zero coordinates, tool offset values, parameter data, alarms, etc...
2. FUNCTION KEYS -- The CRT provides guides that correspond to the function keys.

The operator can select the operation displayed in the guide by pressing the function key directly under that guide description.

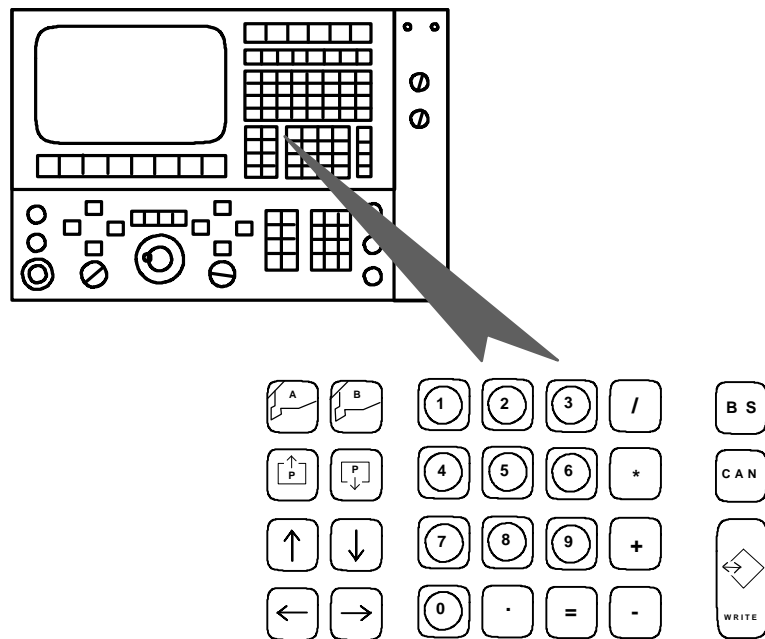
When you select a function key, the guides on the CRT may change to offer different choices. For this reason you should *read* the guides before making a selection.

Alpha Keypad



- Selecting any of these keys (including the : and ,) will enter that specific character on the screen.

Extended Keypad



1. **NUMBER KEYS** -- Selecting any of these keys (including /, *, +, ., = and -) will enter that specific number on the screen.
2. **BS** -- When you are inputting data, selecting the **Back Space** key will move the cursor one space backward. Each time the BS key is selected, the previous character will be erased.

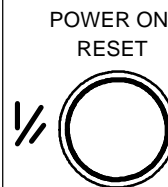
Additionally, the BS key is used to page through a **DIRECTORY** listing when there are more program names than can be displayed on a single screen.

3. **CAN** -- Selecting the **CAN**cel key will erase the entire line of input data.
4. **WRITE** -- Selecting this key will enter the alpha and/or numerical data that has been previously entered (and is currently displayed on the CRT) into the OSP memory.
5. **A and B TURRET** -- Selecting one of these keys will cause the OSP to display data for that specific turret. These keys are effective in the **AUTO**, **MANUAL**, **TOOL DATA**, **PARAMETER** and **ZERO SET** modes of operation.
6. **PAGE** -- In some cases, there is more information for a particular section than can be displayed on the CRT. Selecting one of the **PAGE** keys (forward or reverse) will change the display to show the additional information.
7. **CURSOR ARROWS** -- Selecting one of these keys will cause the cursor on the display to move in the direction of the arrow. When cursor movement in a particular direction can not be attained the cursor will simply not be allowed to move.

MACHINE OPERATION PANEL

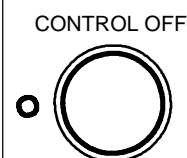
Control ON or Reset

- Press this button to turn ON the power to the OSP as well as the servo system after the main breaker on the side of the electrical cabinet has been activated. This button will also reset the selected part program.



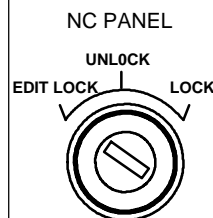
Control OFF

- Pressing this button will turn OFF power to the OSP as well as the servo systems.



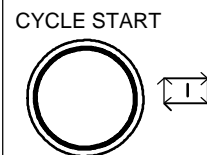
NC Panel

- Unlock** -- All controls for the NC and Machine Operation Panel are enabled
- Edit Lock** -- EDIT AUX. and PARAMETER keys on the NC Operation Panel are disabled.
- Lock** -- All controls on the NC Operation Panel are disabled.



Cycle Start

- During the AUTO mode of operation, selection of the CYCLE START button enacts computer control of the machine. When in the MDI mode of operation, selecting CYCLE START enacts machine operation of the specific data entered from the keypads.



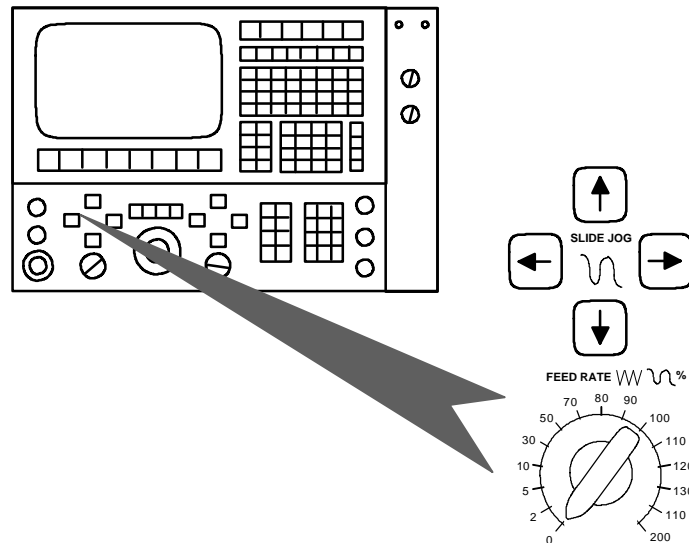
Slide Hold

- Selecting this button stops the axis movements, **NOT** the spindle rotation. To resume axis movement select the CYCLE START button.

Emergency Stop

- Pressing this button disables the servo system.

Use the emergency stop button when any erroneous machine operation occurs!!!

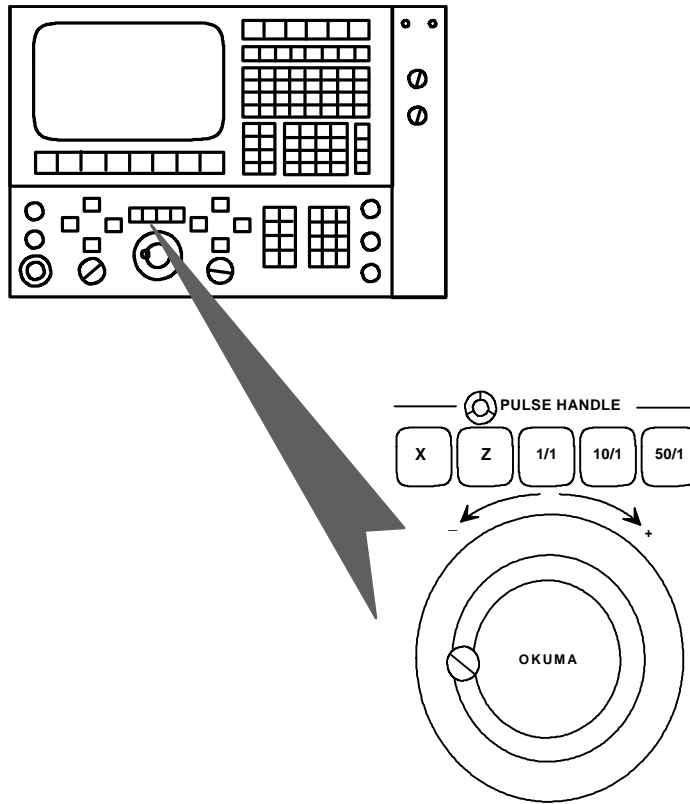


Slide Jog Controls

1. SLIDE JOG ARROWS -- Selection of these keys moves the turret in the direction of the arrow when in the Manual mode of operation, e.g., the UP arrow moves the A turret X positive while the same arrow moves the B turret X negative. These keys are only active while the key is being pressed.

2. FEED RATE -- This Override dial is used to select a percentage of the feed rate commanded. The override dial is effective in both the MANUAL and AUTO modes of operation. During the AUTO mode of operation **this control has no effect on the G00 command unless the SINGLE BLOCK flat panel key has been selected.**

Pulse Handle Controls

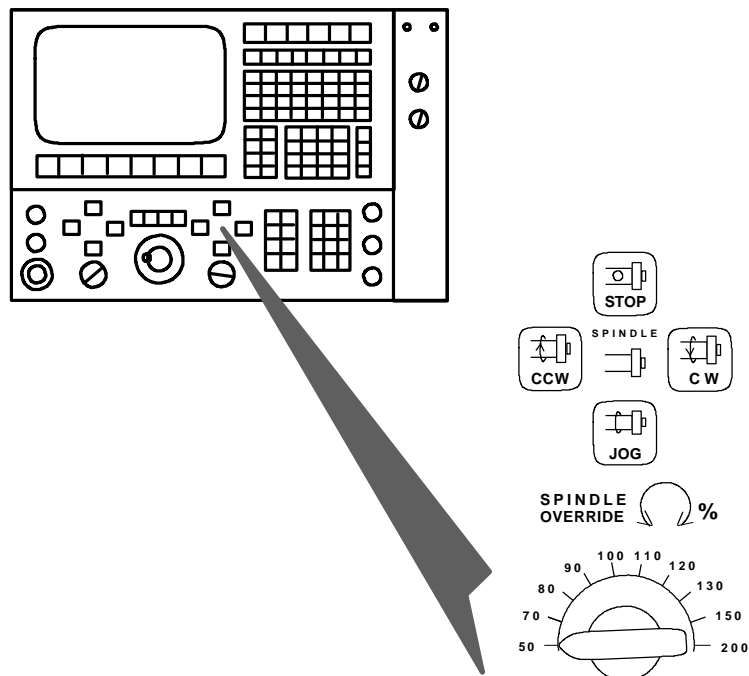


1. PULSE HANDLE -- Using the PULSE HANDLE allows the axes to be fed in the same manner as a manual machine. The axis and feed rate are determined by the CONTROL SWITCHES.

2. **CONTROL SWITCHES** -- The first two switches select which axis will be controlled by the PULSE HANDLE. The remaining three switches are used to select the axis feed amount per graduation (or "click"). These selections are:

1/1 = .0001 of an inch per graduation.
10/1 = .001 of an inch per graduation.
50/1 = .005 of an inch per graduation.

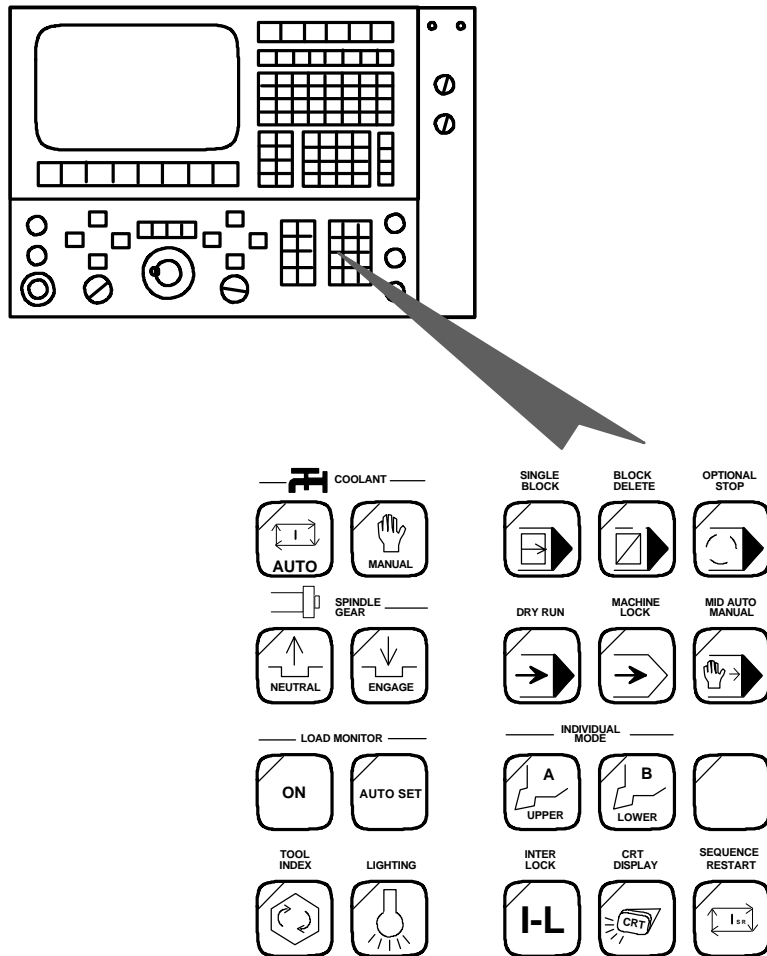
Spindle Manual Controls



1. **SPINDLE -- STOP/CCW/CW/JOG** -- Selecting one of these switches causes the spindle to operate according to the switch designations. The JOG switch is only active while the key is being pressed.
2. **SPINDLE OVERRIDE** -- This override dial is used to select a percentage of the spindle speed commanded. The override dial is effective in both the MANUAL and AUTO modes of operation.

Flat Keys

Some flat keys have a lamp that can actually be viewed in the upper left corner of the key. When you select one of these keys, the lamp will come ON to indicate the particular function is now active.



1. **COOLANT** -- The coolant keys are used to control the coolant supply:

AUTO and **MANUAL OFF** -- Coolant is not supplied irrespective of the mode of operation that is selected.

MANUAL ON -- Coolant is supplied in any mode of operation.

AUTO ON -- Coolant ON and OFF condition are controlled by the M08 and M09 during the AUTO mode of operation.

2. **SPINDLE GEAR** -- Spindle gear range is selected by pressing these keys in the MANUAL mode of operation (this will only apply on those machines that have a neutral position).

NEUTRAL -- Selecting this key disengages the spindle gear box. The chuck can then be rotated by hand.

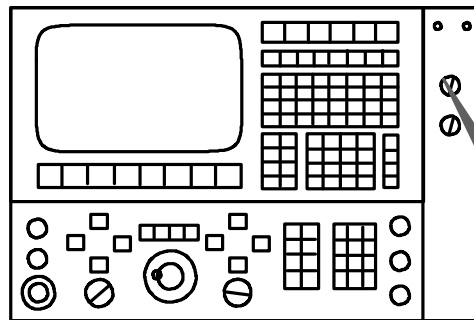
ENGAGE -- Selecting this key engages the gear range previously set by an M41, M42, M43 or M44 in a program

3. **LOAD MONITOR (optional)** -- These keys are used to monitor the cutting load of the feed axis or the spindle. The ON key is used to activate the load monitoring function when the proper code words are used in the program. The AUTO SET key is used to set or calibrate the cutting tool limits automatically.
4. **TOOL INDEX** -- If you are in the MANUAL mode of operation, on a "soft limit" and have selected the desired turret by using the A or B TURRET key on the extended keypad, pressing the TOOL INDEX key enables the turret to rotate.
5. **LIGHTING** -- This key is used to turn the work lamp ON and OFF.
6. **SINGLE BLOCK** -- Selecting this key allows the program to be run one block at a time during the AUTO mode of operation.
7. **BLOCK DELETE** -- When this key is ON, any blocks preceded by a backslash (/) will be ignored during the AUTO mode of operation.

8. OPTIONAL STOP -- When this key is ON, and the OSP reads an M01 command, the machine will stop just as if an M00 had been commanded.
9. DRY RUN -- With this key active (press the DRY RUN and INTER LOCK keys simultaneously), the cutting feed rate commands will be executed using a fixed feed rate set by parameters. **THIS FUNCTION SHOULD ONLY BE USED WHEN MACHINE LOCK IS ACTIVE!!!**
10. MACHINE LOCK -- Press the INTER LOCK and MACHINE LOCK key at the same time to activate this function. When in MACHINE LOCK, all commands in the part program will be executed **without machine movement**.
11. MID AUTO MANUAL -- Select this key as part of the procedure to interrupt the AUTO mode of operation to perform manual tasks.
12. INDIVIDUAL MODE -- Press the INTER LOCK and desired UPPER or LOWER turret key simultaneously to activate this function. Individual turret operation of a program may be executed for **either** the A or B turret on a 4-axis machine independent of the synchronization commands.
13. INTER LOCK -- This key is a safety feature. To enable or disable DRY RUN, MACHINE LOCK or INDIVIDUAL MODE functions, this key must also be selected.
14. CRT DISPLAY -- This key can be used to turn the CRT ON and OFF. This will **not** have an effect of the operation of the machine.
15. SEQUENCE RESTART -- Select this key as part of the procedure to restart a program in the AUTO mode of operation.

OPTION PANEL

The switches in this section will vary depending on the type of options actually installed on your machine. Following is a listing of those options that are standard on most machines.



1. CHUCK CLAMP/UNCLAMP INDICATORS -- These two indicators display the status of the chuck. The spindle will **not** rotate unless the CLAMP indicator is lit.
2. DOOR INTERLOCK -- When this switch is OFF, the machine door can be left open during AUTO operations.

THE MACHINE SHOULD NEVER BE OPERATED WITH THE DOOR OPEN!!!

3. CHUCK HYD/AIR -- With the CHUCK switch in the HYD position, the control receives chuck clamped confirmation from a sensor mounted on the actuator. With the switch in the AIR position, the control receives chuck clamped confirmation from an internal timer.

