H-01b: Program Boring Mill (Fanuc)

SAFETY FIRST

- ☐ Follow all Caterpillar facility safety standards when performing this task.

EQUIPMENT

- ☐ CNC horizontal boring mill

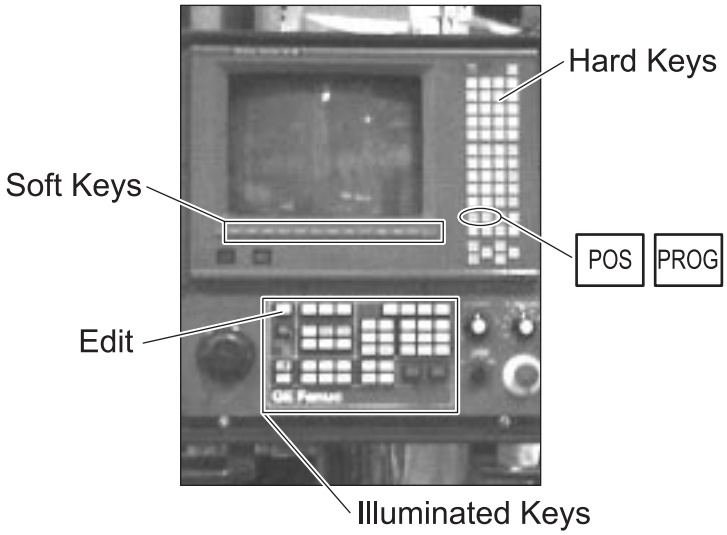
RESOURCES

- ☐ CNC boring mill manual
- ☐ Part print
- ☐ Process Sheet
- ☐ Prepared operating program
- ☐ Pro E

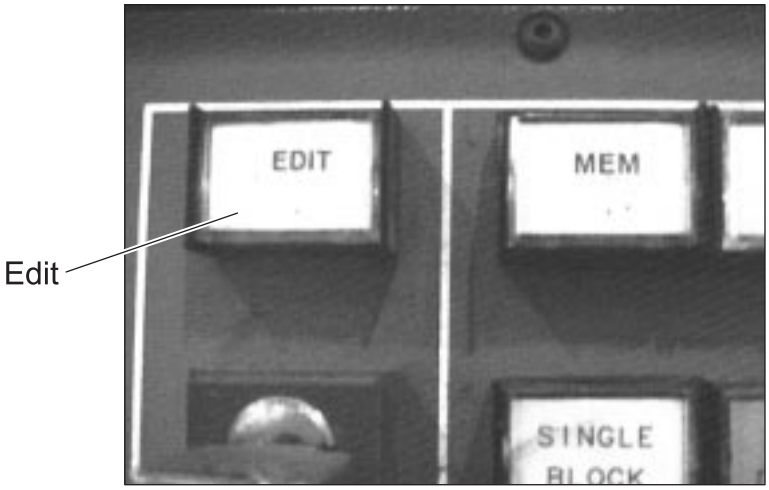
Program Boring Mill (Fanuc)

1. Prepare the program.

☐ Review the figure below for locations of programming keys.



☐ Press EDIT. See the figure below.



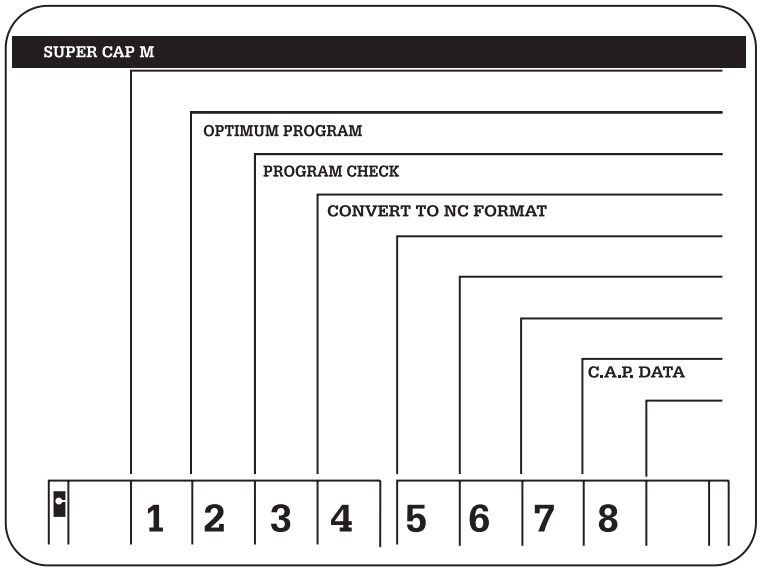
Note: There is a difference between POS hard key and PROG hard key. You need to be in PROGRAM to find C.A.P.

- ☐ With the Conversational Automatic Programming (C.A.P.) interface powered, open a new program number.
- ☐ Select C.A.P. to bring up the Super C.A.P. menu screen.

2. Check the tooling.

- ☐ Select the C.A.P. DATA to make sure the tooling you will be using is listed in the C.A.P. database (soft key).
- ☐ Select DIVIDE TOLDIR to divide the types of tooling into categories (drills, reamers, taps, milling cutters, etc.), and list the available tools in their categories.
- ☐ Pick the numbers of the proper size tool you will need to do your job from the menu. Do this for each tool needed.
- ☐ Press OFFSET SETTING twice to get tool dimensions – lengths and radii. Ensure that the actual tool dimensions correspond to the listed dimensions (hard keys). See the figure below.

- ☐ Press PROG.
- ☐ Press the left arrow “soft key” until you are back to the C.A.P. screen. See the figure below.



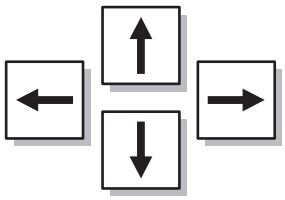
C.A.P. Screen

3. Enter a program number and title.

- ☐ Select Category 1 to access the PROGRAM MAKE OR EDIT function.
- ☐ Choose an unused number for the program to be written. (You may need to page up or page down to see the available numbers)
- ☐ Enter the program number, and press INPUT.

4. Enter Initial Settings.

- ☐ Enter Material.
- ☐ Press COOLANT OFF “soft key”.
- ☐ Enter Z Safety limits with “soft keys” (These are determined by you. Ask for assistance.)
- ☐ Press INPUT.
- ☐ Enter Work Coordinates (work reference point distances from machine zero).
- ☐ Arrow over then select inch or metric measurements with the arrow “hard keys”. See the figure below.



- ☐ Choose the Work Shape (rectangular parallel, cylinder, etc.)
- ☐ Enter the material Y and Z coordinates (This is used for solid graphing). Enter 0 INPUT, for Y enter 0, INPUT, for Z enter 0, INPUT.
- ☐ Enter the work dimensions (information for rough size of piece found on print).
- ☐ Press INPUT END, “soft key”.

5. Specify the machining process for the workpiece.

- ☐ Select the type of machining process from the screen with the “soft keys”.
- ☐ Enter data information on the screen, press INPUT after each entry.
- ☐ Press “soft key” TOOLINFORM.
- ☐ Enter the tool identification number (if necessary, go to DIVIDE TOLDIR to look up the appropriate drill, tap, or other tool).

- ☐ Enter tool move parameters (spindle speed, feed rate, depth) for each tool. Feed rate is in inches per minute - example: 1.5; R point is the difference between the end of the tool and datam point.
- ☐ Press INPUT END.

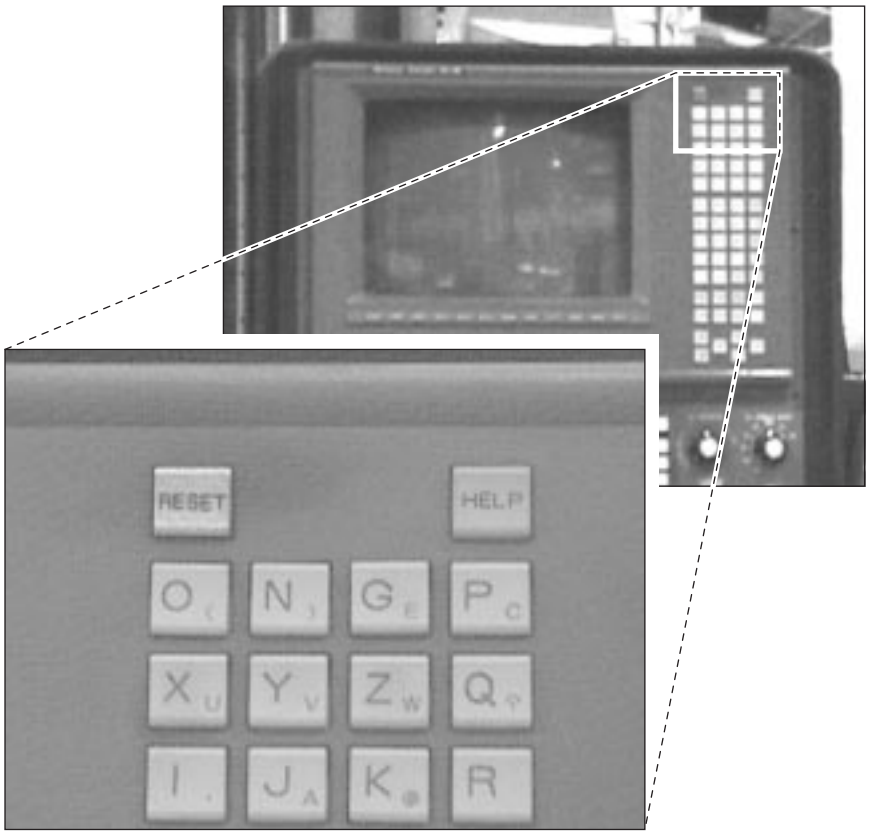
6. Specify the hole locations.

- ☐ Choose hole location type (example: bolt circle) with the “soft keys”.
- ☐ Enter the work process with “soft keys” and information data from the job print process.
- ☐ Press CHECK, “soft key”, to see pattern.
- ☐ Press RETURN “soft key”.
- ☐ Press PROCESS END.

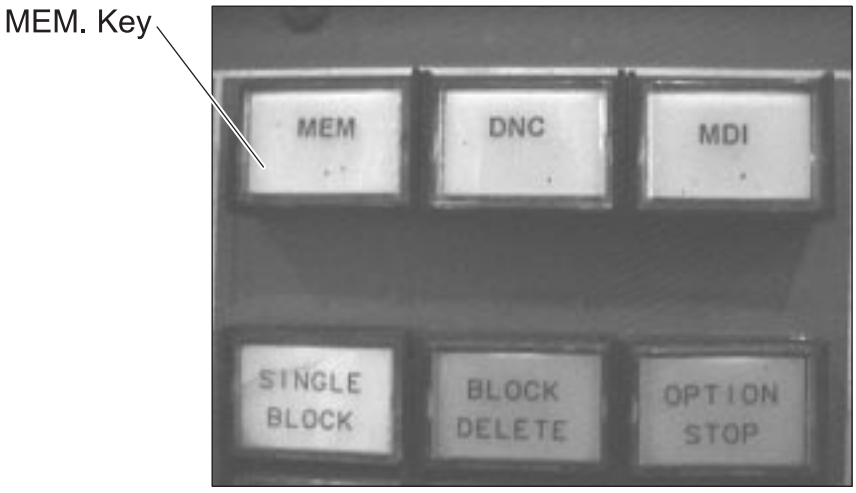
7. Specify other machining operations (example: mill pocket, slot, contour, etc.) including the work coordinates and tool paths, spindle speeds and feed rates, and tool numbers. Repeat steps 5 and 6 for each operation.

8. When all machining operations are specified, press INPUT END, PROCESS END, and INSERT PROGRAM END (for tool number use 64).

9. Check the program.



- ☐ Press the red RESET button.
- ☐ Press the illuminated hard key MEM to back up to the SUPER C.A.P. menu. See the figure below.



- ☐ Push PROGRAM CHECK, ERASE, SCALING OFF, and DRAW START (soft keys), to see the program run on the screen.
- ☐ Arrow out (with left “soft key”) until you get to ACTUAL POSITION SCREEN.

10. Ready to run in MEM.