



The Service Group

Subject: Shoda M81, M82, M83 Training.

When the machine is in Independent (IND by M81) mode the X-axis table is commanded by X-axis codes and the U-axis table is commanded by U-axis codes, like X10.0 and U5.0. The tables operate independently.

When the machine is in Slave (SLV by M82) mode the U-axis is commanded by X-axis codes. So if your program has X10.0 the U-axis will move to that position. Also giving U-axis commands will cause an Alarm on the Fanuc.

When the machine is in Synchronous (SYC by M83) mode then when a program has X-axis codes both the X-axis and the U-axis move together. Also giving U-axis commands will cause an Alarm on the Fanuc.

Using an M83 is an easy way to make the programs smaller because the U-axis is commanded with X-axis codes as long as you are cutting the same parts on both tables. See the example below:

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O2000
N3 (STATION #0 = .312 ROUTER)
N4 (STATION #2 = .171 RIVET-DRILL)
N5 (STATION #8 = .128 DRILL)
N6 (STATION #11 = .250 DRILL)
N7 G20 G90
N8 G54 G28 X0 Y0
N9 M81
N10 /M82                ← With Block Skip switch ON everything after the / is ignored
N11 /G52 Y104.313      ← With Block Skip switch ON everything after the / is ignored
N12 G61
...
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At line N9 the machine is commanded by X-axis and U-axis commands because of the M81.

At line N10 if the Block Skip switch is up (ON) it bypasses this line and keeps the machine in M81 mode. If the Block Skip switch is down (OFF) then the machine is switched into M82 mode and the U-axis is commanded by X-axis commands.

Line N11 works with line N10. If the Block Skip switch is up (ON) the M82 is bypassed. If the Block Skip switch is down (OFF) then the machine has been switched into M82 mode by line N10 and line N11 adds 104.313 to all of the Y-axis commands to offset the Y-axis so that the Y-axis moves over far enough automatically so that the motor are working over the U-axis table. Later in the program this offset is removed before the Y-axis is sent home with a G52 Y0 command. Once everything is at home you will usually find an M81 on the line just before the M30 command in a program.