



EASITURN

CNC LATHE

*START- UP AND PROGRAMMING
PROCEDURES*

DENFORD EASITURN

START UP PROCEDURE

1. Power up the machine via the isolator switches.
2. Press the GREEN ON BUTTON.
3. Put the machine in MANUAL MODE, then set the key operation to MANUAL MODE on the joy stick control box.
4. Ensure that the Tailstock is positioned as far to the RH end of the machine as possible then Press the ZERO BUTTON - this drives the machine carriage to its limits and to tool reference points.
5. Press the F (function) KEY, press ACCEPT followed by C (S.I. Units), then ACCEPT.
6. Press E to enter this information into the control, then ACCEPT.
7. Switch on the spindle (GREEN BUTTON) and adjust to the required spindle speed in rev/min.
8. Finally press R (run) followed by ACCEPT.

To stabilise the RPM reading on the LED display - PRESS O

Switch off the spindle speed at this point before proceeding

TOOL SETING MODE (Through JOY STICK MODE)

1. Press T (tool) followed by ACCEPT, then press S (set) followed by ACCEPT.
2. Press 1 (tool number) followed by ACCEPT.
3. The RED LIGHT should now be on at the JOY STICK hand mode control.
4. Place the workpiece in the chuck and clamp. Place the tool in the toolpost and set to the correct centre height.
5. Switch on the spindle to run in a CCW. direction - towards the operator.
6. Using the JOY STICK control drive the saddle towards the chuck (Z-) direction.

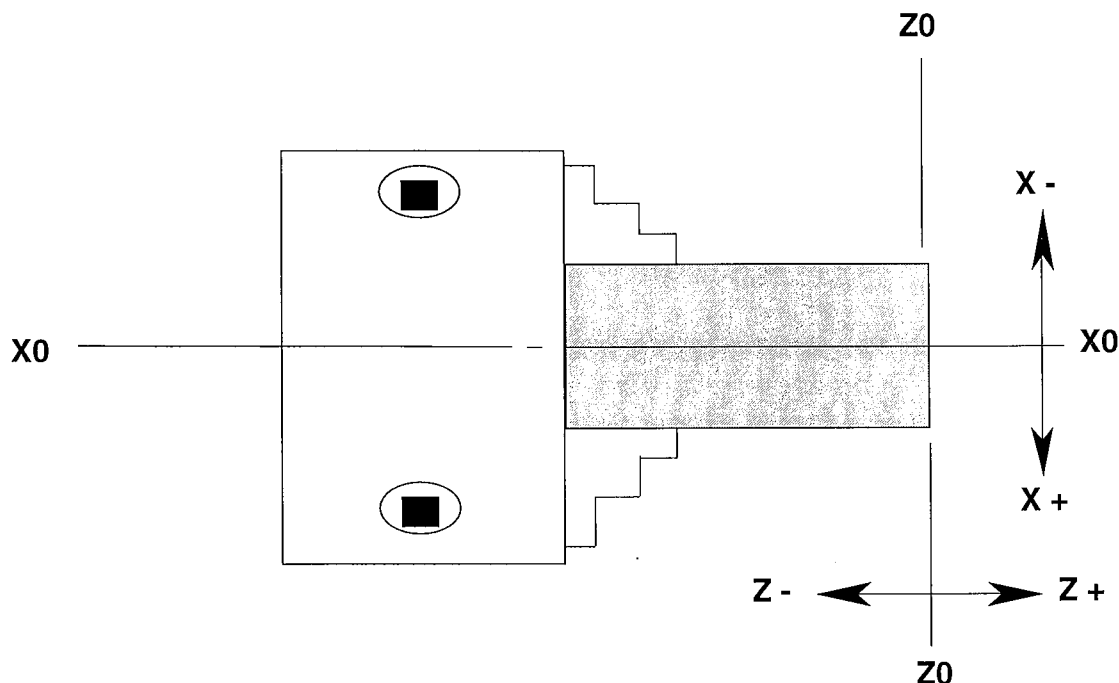
7. Using the JOY STICK control take a light cut off the end of the bar (X-) direction. Proceed slowly and carefully when cutting until you are familiar with the controls.
8. Press the START BUTTON (on joy stick control panel) this changes Z to 0.
9. Enter dia. via the MDI control - DO NOT PRESS ACCEPT. Using the joy stick again drive the tool to touch on the outside diameter.
10. Again using the joy stick, drive the tool away from the workpiece in the Z+ direction to clear the end of the workpiece.
11. Press E (enter), followed by ACCEPT. The display will now show the radius value for the diameter just turned.
12. The joy stick is now cancelled and the RED LIGHT is OFF. The control is now ready for program entry.

FEED RATES

$$F100 = 100\% (1500\text{mm} / \text{min})$$

$$\text{Example :- } F6 = \frac{6 \times 1500}{100} = 90 \text{ mm} / \text{min}.$$

AXIS DESIGNATIONS



EDITING

To add a BLOCK in the EDIT MODE follow the procedure below:-

Press ADD ACCEPT

Then key in the information i.e. X10 ACCEPT F10 ACCEPT E

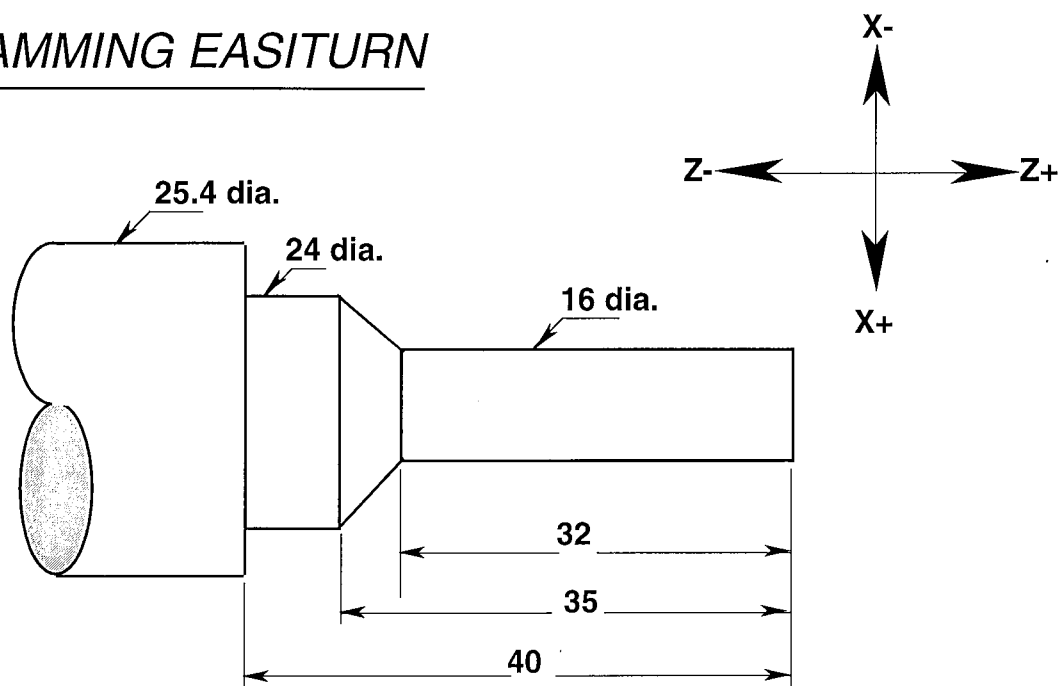
To alter information in a BLOCK:-

Press A ACCEPT

This does not alter information which has not been keyed in, in the same block.

PROGRAMMING EASITURN

PROGRAM 1



ENTERING PROGRAM

L ACCEPT ACCEPT

F C ACCEPT

(metric units - mms)

F A ACCEPT

(absolute programming)

So far no blocks have been used, the above are simply instructions to the machine.

B1 T 1 ACCEPT E (T 1 is tool N0. 1, E denotes end of block)

B2 X 12 ACCEPT Z 3 ACCEPT F100 ACCEPT E (the tool moves to 12mm from centre of workpiece and 3mm from end face) - NOTE:- All dimensions are positive(+) so no sign is necessary).

B3 Z -40 ACCEPT F 8 ACCEPT E (Tool moves to - 40mm from end of bar at a feed rate of 8% of 1500mm/min. (120mm /min) at a dia of 24mm.

B4 X 12.5 ACCEPT E (Tool moves away from workpiece 0.5mm to clear 24mm dia.).

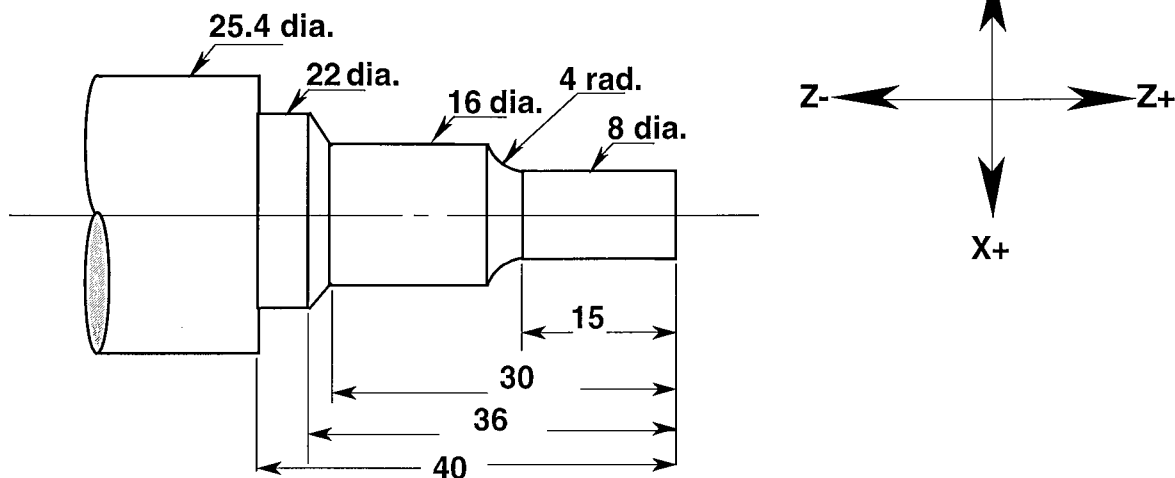
B5 Z 3 ACCEPT F100 ACCEPT E (Tool moves to 3mm from end of bar at a feed rate of 1500mm / min.).

- B6 X 9 ACCEPT E (Position tool to turn 18mm dia)
- B7 Z -32 ACCEPT F6 ACCEPT E (Turns 18mm dia. x 32mm long - roughing cut).
- B8 X A S ACCEPT E (Clears tool)
- B9 Z 3 ACCEPT E (Returns tool to 3mm from end of workpiece)
- B10 X 8 ACCEPT E (Tool positioned to turn 16mm dia.)
- B11 Z-32 ACCEPT F8 ACCEPT (Turns 16mm dia x32mm long)
- B12 X12 ACCEPT Z-35 ACCEPT F4 ACCEPT E (Turns taper)
- B13 Z 3 ACCEPT F100 ACCEPT E (Tool returns to 3mm from workpiece end at rapid traverse)
- L ACCEPT
- E ACCEPT (Program loaded and accepted.)

Program Check

Program goes to block 1. Check each block, if correct readout ACCEPT. Check blocks through to end of program ACCEPT after each one.

PROGRAM 2



L ACCEPT ACCEPT

F C ACCEPT (metric)

F A ACCEPT (absolute)

B1 T 1 ACCEPT E (tool number)

B2 X12 ACCEPT Z3 ACCEPT F 100 ACCEPT E (Tool moves to 24mm dia and 3mm away from the end of the workpiece.)

B3 Z-40 ACCEPT F8 ACCEPT E (turns 24 dia. x 40mm long)

B4 X 12.5 ACCEPT F100 ACCEPT E (tool moves to 25 dia. to clear)

B5 Z3 ACCEPT F100 ACCEPT E (Tool moves 3mm clear of end of workpiece)

B6 X9 ACCEPT E (Tool moves to 18mm dia)

B7 Z-30 ACCEPT F6 ACCEPT E (Turns 18mm dia. x 30mm long)

B8 X 9.5 ACCEPT E (Tool moves to 19mm dia. to clear)

B9 Z3 ACCEPT F100 ACCEPT E (Tool moves 3mm clear of end of workpiece)

B10 X5 ACCEPT E (Tool moves to 10 mm dia.)

B11 Z-15 ACCEPT F8 ACCEPT E (Turns 10mm. dia. x 15mm. long)

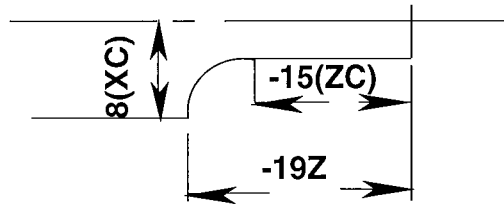
B12 X5.5 ACCEPT F100 ACCEPT E (Tool moves to 11dia. to clear)

B13 Z3 ACCEPT E (Tool moves 3mm. clear of end of workpiece)

B14 X4 ACCEPT E (Tool moves to 8mm dia.)

B15 Z-15 ACCEPT F6 ACCEPT E (Turns 8mm dia. x 15mm long)

B16 X8 ACCEPT Z-19 ACCEPT F4 ACCEPT CA ACCEPT (displayXC) 8 ACCEPT (now displayZC) -15 ACCEPT E (turns 4mm rad. in anti- clockwise mode)



B17 X8 ACCEPT E (Tool moves to 16mm dia.)

B18 Z-30 ACCEPT F6 ACCEPT E (Turns 16mm dia. x 30mm long)

B19 X11 ACCEPT Z-36 ACCEPT F4 ACCEPT E (Turns taper)

B20 X11 ACCEPT E (Tool moves to 22mm dia.)

B21 Z-40 ACCEPT E (Turns 22mm dia. x 4mm long)

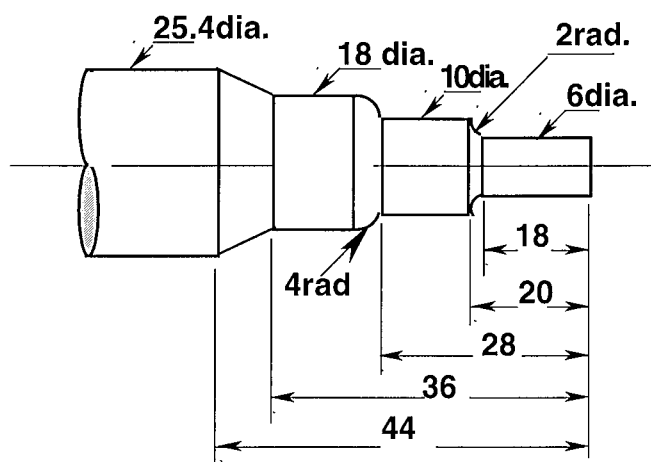
B22 X11.5 ACCEPT E (Tool moves to 23mm dia. to clear)

B23 Z3 ACCEPT F100 ACCEPT E (Tool moves 3mm clear of end of workpiece)

L ACCEPT

E ACCEPT

PROGRAM 3



LOAD ACCEPT ACCEPT

F C ACCEPT

F A ACCEPT

B1 T1 ACCEPT E (Tool No.)

B2 X9.5 ACCEPT Z3 ACCEPT F100 ACCEPT E (Tool moves to 19 dia)

B3 Z-36 ACCEPT F10 ACCEPT E (Turns 19 dia x 36 long)

B4 X10 ACCEPT F100 ACCEPT E (Tool moves to 20 dia. to clear)

B5 Z3 ACCEPT F100 ACCEPT E (tool clears end of workpiece)

B6 X5.5 ACCEPT F100 ACCEPT E (tool moves to 11mm dia.)

B7 Z-28 ACCEPT F10 ACCEPT E (Turns 11mm dia x 28 mm long)

B8 X6.5 ACCEPT E (tool moves to 13mm dia.)

B9 Z3 ACCEPT F100 ACCEPT E (tool clears end of workpiece)

B10 X3.5 ACCEPT F100 ACCEPT E (tool moves to 7mm dia.)

B11 Z-18 ACCEPT F10 ACCEPT E (Turns 7mm dia x 18mm long)

B12 X3.6 ACCEPT F100 ACCEPT E (tool moves to 7.2mm dia.to clear)

B13 Z3 ACCEPT E (tool clears end of workpiece)

B14 X3 ACCEPT F10 ACCEPT E (tool moves to 6mm dia)

B15 Z-18 ACCEPT F10 ACCEPT E (Turns 6mm dia. x18mm long)

B16 X5 ACCEPT Z-20 ACCEPT F4 ACCEPT CA ACCEPT (XC displays) 5 ACCEPT (ZC displays) -18 ACCEPT E (turns 2mm rad.)

B17 Z-28 ACCEPT F10 ACCEPT E (Turns 10mm dia x8mm long)

B18 X9 ACCEPT Z-32 ACCEPT F4 ACCEPT CC ACCEPT 5 ACCEPT Z-32 ACCEPT E
(Circular interpolation)

B19 Z-36 ACCEPT F10 ACCEPT E (Turns 18mm dia x4mm long)

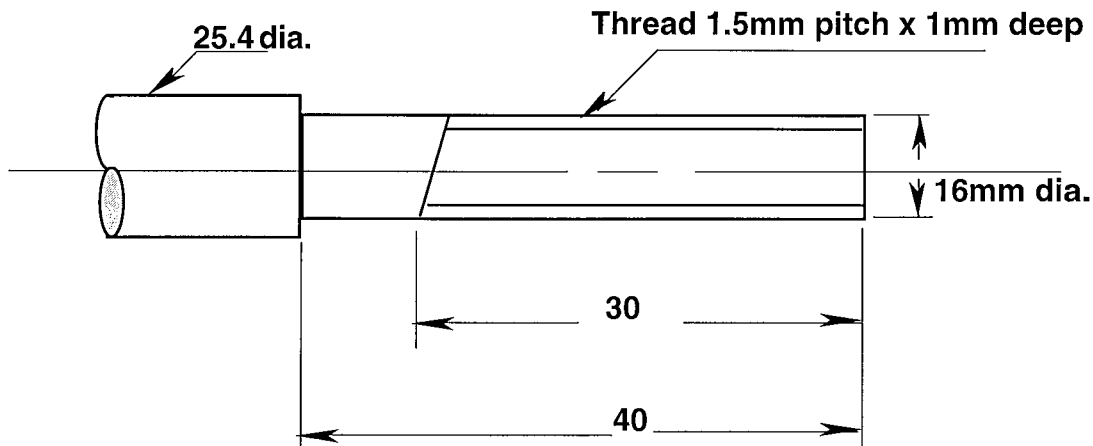
B20 X12.7 ACCEPT Z-44 ACCEPT F10 ACCEPT E (Turns taper)

B21 Z3 ACCEPT F100 ACCEPT E (Tool clears end of workpiece)

L ACCEPT

E ACCEPT

PROGRAM 4



LOAD ACCEPT ACCEPT

F C ACCEPT

F A ACCEPT

B1 T1 ACCEPT E (Tool No.)

B2 X10 ACCEPT Z 3 ACCEPT F100 ACCEPT E (Tool goes to 20mm dia.)

B3 Z-40 ACCEPT F10 ACCEPT E (Turns 20mm dia. x 40mm long)

B4 Z3 ACCEPT F100 ACCEPT E (Tool clears end of workpiece)

B5 X8 ACCEPT F100 ACCEPT E (Tool moves to 16mm dia.)

B6 Z-40 ACCEPT F10 ACCEPT E (Turns 16mm x 40mm long)

B7 X25 ACCEPT F15 ACCEPT E (Tool moves to 50mm dia. to clear)

B8 Z25 ACCEPT F100 ACCEPT E (Tool moves to Z25 to clear)

B9 T2 ACCEPT E (Tool change for screwcutting)

B10 X8 ACCEPT Z1 ACCEPT F100 ACCEPT E (Tool moves to 16mm dia)

B11 S ACCEPT DIA. 16 ACCEPT

PITCH 1.5 ACCEPT

(Screwcutting Data)

DEPTH

1 ACCEPT

CUTS

20 ACCEPT

LENGTH

-30 ACCEPT

START

0 ACCEPT

E

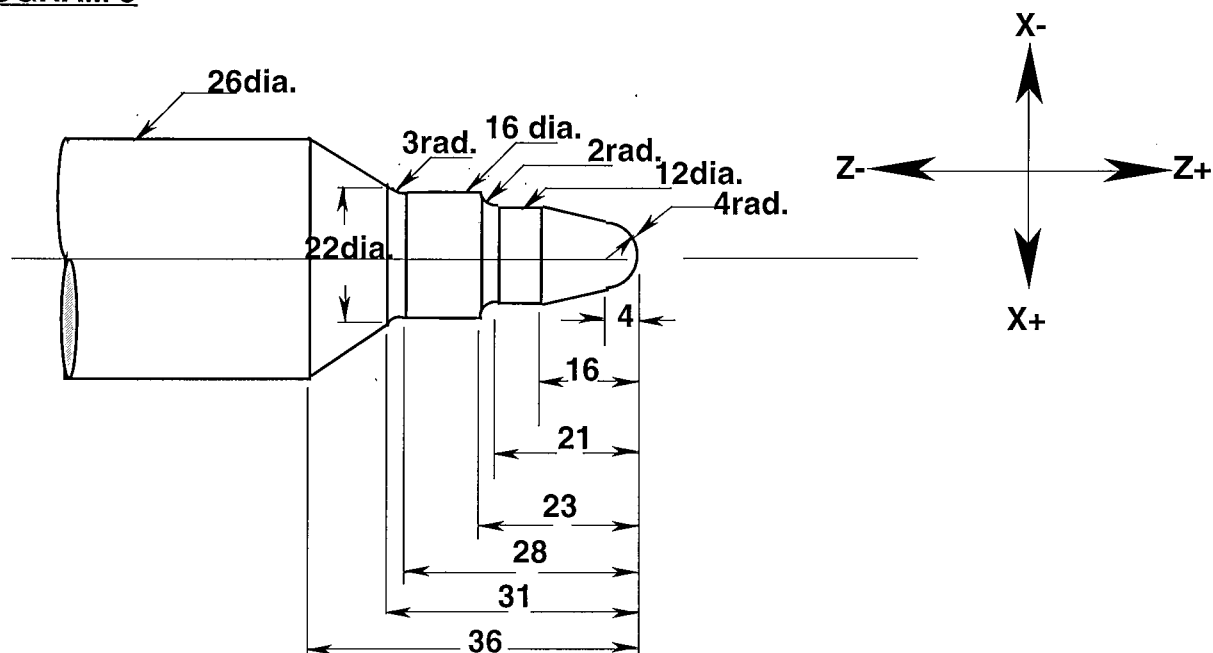
B12 X25 ACCEPT Z50 ACCEPT F100 ACCEPT E (Tool moves to clear)

L ACCEPT

E ACCEPT

NOTE : Spindle speed approx 200 r.p.m.

PROGRAM 5



LOAD ACCEPT ACCEPT

F C ACCEPT

F A ACCEPT

B1 T 1 ACCEPT E (tool No.)

B2 X11 ACCEPT Z3 ACCEPT F100 ACCEPT E (Tool moves to 22dia.)

B3 Z-31 ACCEPT F10 ACCEPT E (Turns 22 dia. x 31mm long)

B4 Z3 ACCEPT F100 ACCEPT E (Tool clears end of workpiece)

B5 X8.5 ACCEPT F100 ACCEPT E (Tool moves to 17mm dia.)

B6 Z-28 ACCEPT F10 ACCEPT E (Turns 17mm dia x 28 mm long)

B7 Z3 ACCEPT F100 ACCEPT E (Tool clears end of workpiece)

B8 X6.5 ACCEPT F100 ACCEPT E (Tool moves to 13mm dia.)

B9 Z-21 ACCEPT F10 ACCEPT E (Turns 13mm dia. x 21mm long)

B10 Z3 ACCEPT F100 ACCEPT E (Tool clears end of workpiece)

B11 X4.5 ACCEPT F100 ACCEPT E (Tool moves to 9mm dia.)

- B12 Z-4 ACCEPT F10 ACCEPT E (Turns 9mm dia. x 4mm long)
- B13 Z3 ACCEPT F100 ACCEPT E (Tool clears end of workpiece)
- B14 X0 ACCEPT Z0 ACCEPT F100 ACCEPT E (Tool moves to zero positions)
- B15 X4 ACCEPT Z-4 ACCEPT Z-4 ACCEPT C C ACCEPT (XC displayed) 0 ACCEPT (ZC displayed) -4 ACCEPT E (Turns 4mm rad. C-Clockwise)
- B16 X6 ACCEPT Z-16 ACCEPT F10 ACCEPT E (Turns taper)
- B17 Z-21 ACCEPT F10 ACCEPT E (Turns 12 dia. x 5mm long))
- B18 X8 ACCEPT Z-23 ACCEPT F4 ACCEPT CA ACCEPT (XC displayed) 8 ACCEPT (ZC displayed) -21 ACCEPT E (Turns 2mm rad.)
- B19 Z-28 ACCEPT F10 ACCEPT E (Turns 16mm x 5mm long)
- B20 X11 ACCEPT Z-31 ACCEPT F4 ACCEPT CA ACCEPT (XC displayed) 11 ACCEPT (ZC displayed) -28 ACCEPT E (Turns 3mm rad.)
- B21 X13 ACCEPT Z-36 ACCEPT F10 ACCEPT E (Turns taper)
- B22 Z3 ACCEPT F100 ACCEPT E (Tool clears end of workpiece)
- LOAD ACCEPT
- E ACCEPT

