

CHAPTER 3

SYSTEM START UP/SHUTDOWN

3.1 START UP

The following procedure is necessary to start up the R2E3 System. After successful completion of the system start up, one of the four modes of operation may be entered to begin machine operation.

3.1.1 Prestart Considerations

Before attempting to start the machine, make a careful check of the following conditions.

1. Level of lubricating oil - refill if low.
2. Position of X, Y, & Z axes with respect to fixtures or other parts left on the table.
3. Air pressure level - adjust to nominal 80 psi.

3.1.2 System Start Up Procedure

Power On

To power up the system move the MAIN DISCONNECT switch to the ON position. This switch is located on the upper right corner of the Power Equipment Enclosure.

Initial Condition

There will be a system self diagnostic test, as the following message is displayed:

```

-----
|
| -|-|-|-|-|-|-|-|-|-|-|-|-|-|-|-|-|-|-|-|-|-|
| W A I T
|
-----

```

During this period all LEDs are illuminated as part of an extensive internal diagnostic check. When the system successfully passes the test, the message ENABLE AXIS DRIVES will be displayed and the red LED in AXIS DRIVE ENABLE will go on.

NOTE

There may be an error message in the upper left hand corner of the LCD. This will alert the operator of any problem in the system.

When AXIS DRIVE ENABLE is pressed, the LCD screen will exhibit the following:

```

-----
| M O V   Z X Y   H O M E           > E X E C |
| -|-|-|-|-|-|-|-|-|-|-|-|-|-|-|-|-|-|-|-|-|
|
-----

```

EXECUTE will initiate a machine homing sequence:

1. Quill moves up to Home position.
2. The X and Y axes will move to the Home positions in sequence.

The AXIS DRIVE ENABLE green LED will indicate power has been applied to the axis drives. The LED in SET UP will show the machine is in the Set Up mode.

At the conclusion of this sequence, the display will show:

```

-----
| B O S S   8   I |
| -|-|-|-|-|-|-|-|-|-|-|-|-|-|-|-|-|-|-|-|-|-|-|
| ( C ) 1 9 8 3   T E X T R O N   I N C . |
-----

```

If the system detects a dead battery, BAT will be displayed on the bottom left of the LCD. If other system faults are detected they will be displayed as error codes on the lower portion of the LCD and will only be displayed after the system has been homed.

NOTE

If a CRC prom error is found during the selftests, the system will display the error message, CRC and will not continue with the power up sequence.

Axis Limit Check

If an axis limit has been exceeded or EMERGENCY STOP is active, the red LED will go on in the AXIS DRIVE ENABLE. When the AXIS DRIVE ENABLE is pressed the internal logic will check the status of axis limit switches, located in the X and Y axes, and the quill (Z), and the screen will show:

```

-----
| >   E N A B L E   A X I S   D R I V E S |
| -|-|-|-|-|-|-|-|-|-|-|-|-|-|-|-|-|-|-|-|-|-|-|
| A X I S   L I M I T |
-----

```

The red AXIS DRIVE ENABLE LED indicates that power to the axis drive has been disabled. Pressing the AXIS DRIVE ENABLE key will automatically set the system in the Jog submode. The following will appear:

NOTE

The operator must determine which axis is on a limit. /

```

-----
| J O G           X |
| -|-|-|-|-|-|-|-|-|-|-|-|-|-|-|-|-|-|-|-|-|-|-|
| A X I S   L I M I T |
-----

```


9. G75 - Multiquadrant Input
10. G90 - Absolute Programming
11. DNC - OFF

3.2.2 Self Test Diagnostic Description

During execution of programs, the following checks are made for error conditions:

- o Part program data input
- o Cutter Compensation calculations
- o Illegal interpolation command
- o Communications fault check
- o System fault check
- o Front Panel fault check
- o Auxiliary function controller fault check
- o Axis drive fault check
- o Tool table or part program memory fault check
- o Axis overtravel

These checks are not apparent to the operator unless an error code is displayed on the LCD during the wait message.

3.2.3 Self Test Error Messages

Errors which are found by software checking are displayed on the screen as a 4 character Hex code. A listing of the error messages and a detailed explanation of the relationship of the Hex code to the specific error messages is discussed in Appendix A.

3.3 NORMAL SHUTDOWN PROCEDURES

To shutdown overnight, or for an extended period of time, use the following procedure:

- o Select Block mode or wait for a tool change block.
- o Turn spindle OFF.
- o Switch machine Main Disconnect to OFF.

3.4 EMERGENCY STOP

This should be used only when safety is threatened. When activated, it deenergizes the spindle motor and the axes drives. Program execution is terminated and the system reverts to system start up when power is restored to spindle and axes drives.

NOTE

The part program and TLO/DIA data are not lost, but axis position is lost. It will be necessary to reestablish axis positions after an EMERGENCY STOP, see section 4.2.

3.5 POWER FAILURE

Loss of power to the machine for more than 1/60 of a second (1 cycle) will cause system shutdown. Return of power will require system start up procedures as with EMERGENCY STOP.

3.6 RESET

There are two different operations involved with the following:

- RESET PROGRAM key
- RESET Pushbutton switch

3.6.1 RESET PROGRAM Key

This key causes many internal operations to be performed:

1. Initialize the program registers.
2. Places the line pointer at the top of the text.
3. Displays first 20 characters of first line in the text.
4. Displays current operational mode:

Either BOSS 4-7
Or BOSS 8 I
and DNC LINK ON or OFF

Pressing RESET PROGRAM during execution of part program blocks will have no effect.

3.6.2 RESET Pushbutton Switch

Pressing this pushbutton places the R2E3 in a startup condition. The startup procedure should be followed. Refer to Section 3.1.2.