Lab #1

Power Up and Jog the Robot in JOINT

Assignment: The student will:

- **Power up the robot**
- **Recover from system faults**
- **Jog the robot in JOINT mode**
- **Power down the robot**

Step: **1** Power up the robot using Procedure 5-1 Turning On the Robot, and remove all servo faults

or

Select T1, T2, or AUTO mode as required.

2 Follow Procedure 5-8 Jogging the Robot so the tool touches an object or to a position having specific joint angles.

Move the robot to another object. Rotate 50 degrees from the first object. Check the angle change using the POSN hardkey.

3 Vary the speed of the robot using the jog speed keys.

4 Exercise the joints of the robot to see the restrictive work envelope. Stay at least a foot away from the floor. Press the POSN hardkey to see the joint angles. Note the limits of movement on each axis in both directions in the table that follows.

5 Cause the following faults to occur and the recover from each: Teach PendantE-stop, Operator Panel E-stop, Deadman Switch Released

6 Power down the robot using Procedure 5-3 Turning Off the Robot.

Completed: ☐

Instructor: _____

Viewing the Version Identification

Student Name: _____

Assignment: The student will:

- **Determine the software version installed**
- **Determine the software options installed**

Condition: A FANUC robot and controller loaded with HandlingTool application software. **The students will complete this task as a team.**

Step:

1 Follow Procedure 5-10 Displaying the Version Identification Status.

2 What software version is installed? _____

3 What is the serial number? _____

4 What is the Boot Monitor Version? _____

5 In what way will this help the customer and the Hot Line help desk?

_____

Completed: ☐

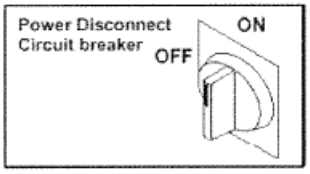
Instructor: _____

Procedure 5-1 Turning On the Robot

Condition

- All personnel and unnecessary equipment are out of the workcell.

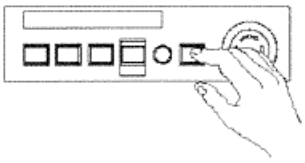
Step



1 Visually inspect the robot, controller, workcell, and the surrounding area. During the inspection make sure all safeguards are in place and the work envelope is clear of personnel.

2 Turn the power disconnect circuit breaker on the operator panel to ON. **This completes turning on the robot for R-30iA controller.**

> **⚠ WARNING**
> **DO NOT turn on the robot if you discover any problems or potential hazards. Report them immediately. Turning on a robot that does not pass inspection could result in serious injury.**



3 **For R-J3*i*B and earlier controllers,** press the ON/OFF button on the operator panel.

- **On the operator panel**, the ON button will be illuminated, indicating robot power is on.
- **On the teach pendant screen**, you will see a screen similar to the following.

Procedure 5-2 Cycling Controller Power (Controller R-30iA only)

Condition

- The teach pendant is enabled.
- You are not using an external robot connection. This is only available on the teach pendant.
- The controller is currently in a Cold start state.

Step

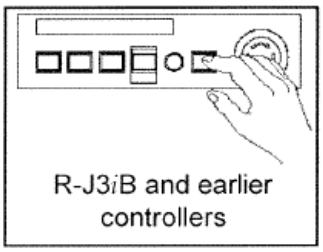
1. Press FCTN.
2. Select CYCLE POWER.
3. Press ENTER. You will see a screen similar to the following.

```
This will cycle power.
Are you sure?
    [NO]       YES
```

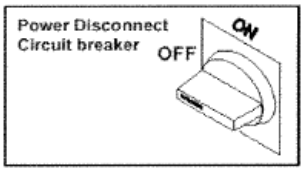
4. Use the teach pendant arrow keys to select YES, and press ENTER.

Procedure 5-3 Turning Off the Robot

Step



R-J3*i*B and earlier controllers



1. If a program is running or if the robot is moving, press the HOLD key on the teach pendant.
2. Perform any shutdown procedures specific to your installation. **For R-30iA controllers, move to step 4.**
3. **For R-J3*i*B and earlier controllers,** press the ON/OFF button on the operator panel.
4. Turn the disconnect circuit breaker to OFF when performing maintenance on the robot or controller.

⚠ WARNING

Lethal voltage is present in the controller WHENEVER IT IS CONNECTED to a power source. Be extremely careful to avoid electrical shock.

Turning the disconnect or circuit breaker to the OFF position removes power from the output side of the device only. High voltage is always present at the input side whenever the controller is connected to a power source.

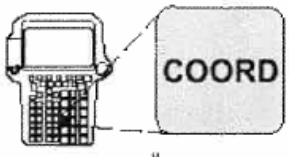
Procedure 5-8 Jogging the Robot and Other Axes

Condition

- All personnel and unnecessary equipment are out of the workcell.
- All EMERGENCY STOP faults have been cleared.
- All other faults have been cleared and the fault light is not illuminated.
- The MODE SELECT switch is in the T1 or T2 position.

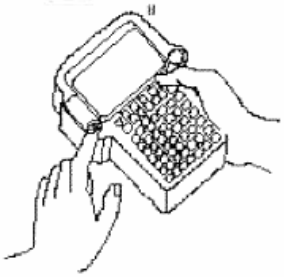
> **WARNING**
> **Make certain that all safety requirements for your workplace have been followed; otherwise, you could injure personnel or damage equipment.**

Step



1 Select a coordinate system by pressing the COORD key on the teach pendant until the coordinate system you want is displayed in the upper right hand corner of the teach pendant screen, and on the teach pendant LEDs. You will see a screen similar to the following.

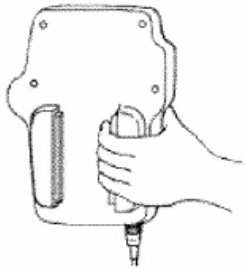
```
PROGRAM NAME                          S   TOOL 10%
```



NOTE: The jog speed value will automatically be set to 10%, when the teach pendant is turned on, or when the controller is first powered up.

2 Turn the teach pendant ON/OFF switch to the ON position.

3 Hold the teach pendant and continuously press the DEADMAN switch on the back of the teach pendant.



NOTE: If you compress the DEADMAN switch fully, robot motion will not be allowed and an error occurs. This is the same as when the DEADMAN switch is released. To clear the error, press the DEADMAN switch in the center position and press RESET.

NOTE: If you release the DEADMAN switch while the teach pendant is ON, an error will occur. To clear the error, continuously press the DEADMAN switch and then press the RESET key on the teach pendant.

Procedure 5-10 Displaying the Version Identification Status

Step

1. Press MENU.
2. Select **Status**.
3. Press F1, [TYPE].
4. Select Version ID.
5. Press the key that corresponds to the version ID status screen you want to display:

   - To display software version information, press F2, SOFTWARE. You will see a screen similar to the following.

```
STATUS Version ID
     SOFTWARE:                ID:  1/11
1:  application-Tool (TM)     Vx.xx
2:  S/W Serial No.            xxxx
3:  Controller ID             F00000
4:  Default Personality
5:  Robot Model               xx-xxx-xx-xx
6:  Servo Code                xxxxx
7:  Cart. Mot. Parameter      xxxx
8:  Joint Mot. Parameter      xxxx
9:  Software Edition No.      Vx.xx
10: Boot MONITOR              Vx.xx
```

NOTE: Line 5 in the screen above will only be visible if you are using PaintTool.

   - To display a list of the software features and options that are loaded, press F3, CONFIG.

```
STATUS Version ID
     SOFTWARE:                ORD NO:  1/128
1:  application-Tool (TM)     XXXX
2:  English Dictionary        XXXX
3:  Kernel Software           XXXX
4:  Analog I/O                XXXX
5:  Arc EQ Program Select     XXXX
6:  Arc Softpart              XXXX
7:  Background Edition        XXXX
8:  Basic Software            XXXX
9:  Controller Backup         XXXX
10: Cycle Time Priority       XXXX
```

NOTE: The information displayed here could be different at your site.

Jog the robot in WORLD mode

Student Name:_____

Assignment: The student will:

- **Learn and practice jogging the robot in World mode**
- **Familiarize with some of the Teach Pendant keys and functions normally used while jogging the robot.**

Condition: A FANUC robot and controller loaded with HandlingTool application software. A table or cardboard box in the robot's work envelope.

Step:

1. Set the robot to jog in WORLD mode by hitting the [COORD] key until WORLD appears on the Teach Pendant screen.
2. What is the currently jogging method? _____
3. What is the currently selected jog/override speed? _____
4. What is the fastest speed available? _____
5. What is the slowest? _____
6. What increments does the speed change when the [+%] key is pressed by itself?

   _____
7. In what increments does the speed change when the [+%] key is pressed with the [SHIFT] key?

   _____
8. Practice jogging in the WORLD frame with the pointer perpendicular to each side of the box to ensure you can successfully move the TCP along the X, Y and Z planes as well as rotate about the X,Y and Z axes.

Completed: ☐

Instructor: _____

Alternating Between QUICK/FULL MENU

Student Name: _____

Assignment: The student will:

- **Power up the robot**
- **View both quick and full menus**
- **Observe the change in the soft keys**
- **Power down the robot**

Condition: A FANUC robot and controller loaded with HandlingTool application software. **The students will complete this task as a team.**

Step:

1 Power up the robot using Procedure 5-1 Turning On the Robot

2 Follow the example on Section 4.3.9

3 Take note to what the top of the pop up menu screen says

4 Press the FCTN key then select 0 for Next on the Teach Pendant

5 Select Quick/Full Menu

6 Press MENU key to view the different menu.

7 To return back to Full Menu repeat steps 4 through 6.

Completed: ☐

Instructor: _____

Teach Pendant Screen

The teach pendant screen displays the HandlingTool software menus. All functions can be performed by making selections from the HandlingTool menus.

4.3.9 Quick/Full Menus

You can alternate between display of the quick and full menus using the QUICK/FULL menus selection on the FCTN menu. The FCTN menu is displayed by pressing the FCTN key. When QUICK menus are active, the available editing functions are limited.

The full menus are a complete list of all HandlingTool menus. The QUICK menus are a partial list of specific menus.

The HandlingTool full menus are shown in Figure 4-8. The HandlingTool quick menus are shown in Figure 4-9

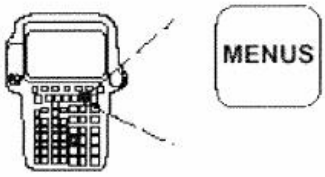


Figure 4-8 HandlingTool Full Menus (pages 1 and 2)

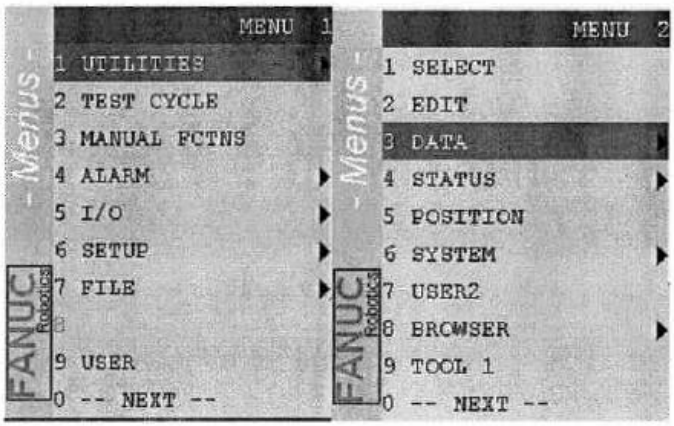
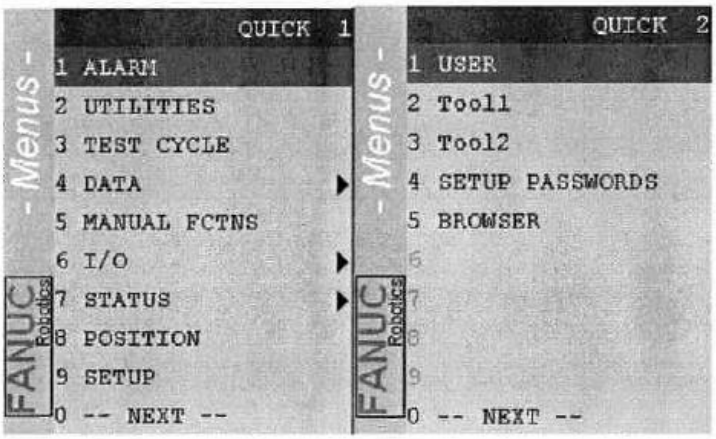
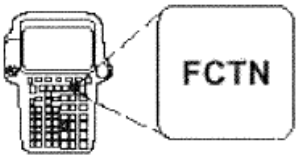


Figure 4-9 Quick Menus (pages 1 and 2)






```
      FUNCTIONS
1  ABORT (ALL)
2  Disable FWD/BWD
3  CHANGE GROUP*
4  TOGGLE SUB GROUP*
5  TOGGLE COORD JOG**
6  TOGGLE WRIST JOG
7  RELEASE WAIT
8  TOGGLE REMOTE TCP***
9  CHANGE RTCP FRAME***
0  ---NEXT---
```

```
      FUNCTIONS
1  QUICK/FULL MENU
2  SAVE
3  PRINT SCREEN
4  PRINT
5
6  UNSIM ALL I/O
7
8  CYCLE POWER (R-30iA ONLY)
9
0  ---NEXT---
```

* Available with multiple groups
** Available when the coordinated motion option is loaded
*** Available when the Remote TCP option is loaded

Table 4-7 FCTN Menu Items

Menu Item	Description
ABORT (ALL)	Aborts any paused or running program.
Disable FWD/BWD	Disables the ability to execute program instructions using SHIFT FWD and SHIFT BWD.
CHANGE GROUP	Changes the current group. Available only if multiple groups are used.
TOGGLE SUB GROUP	Changes the group of axes used for jogging between the first six axes and any extended axes. Available only if extended axes are installed.
TOGGLE COORD JOG	This item turns on or off whether the robot jogs coordinated pairs using the coordinated motion option
TOGGLE WRIST JOG	Turns on or off whether the robot jogs with the wrist joint motion option
RELEASE WAIT	Overrides a pause in a running program in which the robot is waiting for I/O conditions to be satisfied
TOGGLE REMOTE TCP	Changes between remote TCP jogging and standard jogging, if remote TCP is enabled
CHANGE RTCP	Changes the selected remote TC P frame for jogging, if remote TCP is enabled
QUICK/FULL MENU	Changes between quick and full menu structures
SAVE	Saves variables and other data to the default device
PRINT SCREEN	Prints the current screen to a serial printer or, if a PC is connected to the P3 port, to a file called TPSCRN.LS
PRINT	This item is not used

DEADMAN Switch

The DEADMAN switch is used as an enabling device. When the teach pendant is enabled, this switch allows robot motion only while the DEADMAN switch is gripped. If you release this switch, the robot stops immediately. See Figure 4-11.

Figure 4-11 DEADMAN Switch