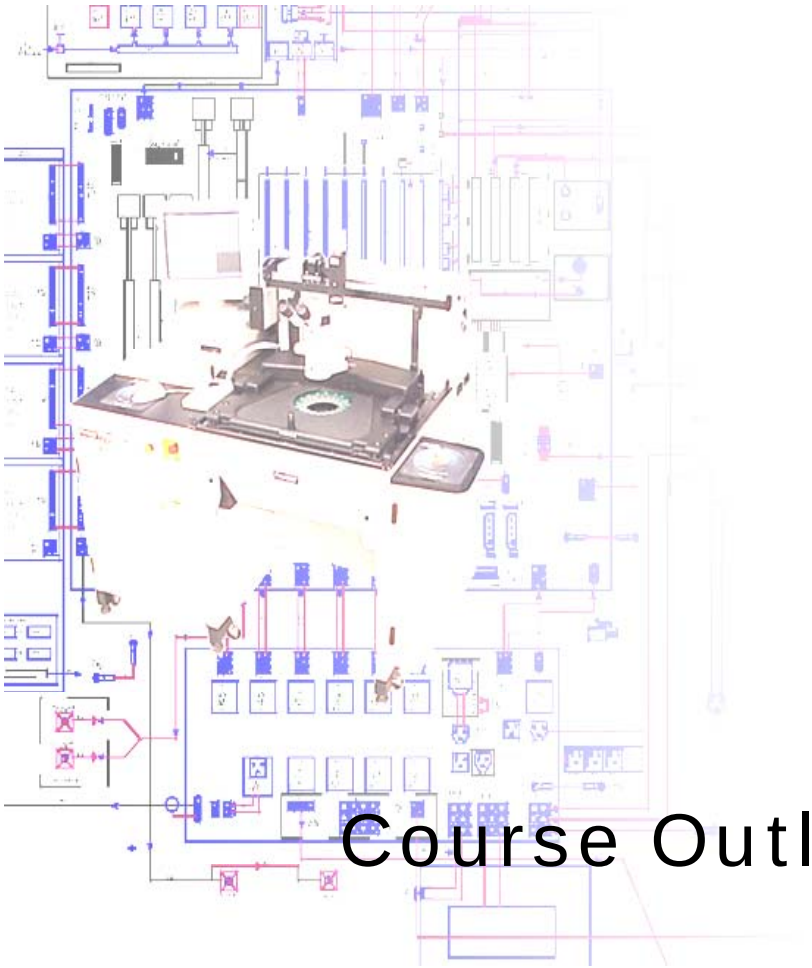
Advanced Maintenance Workshop



Course Outline

LIMITED WARRANTY

Integrated Technology Corporation warrants its products against defects in materials and workmanship for a period of one year from the date of shipment.
Integrated Technology Corporation will, at its option, repair or replace products, which prove to be defective during the warranty period provided they are returned to Integrated Technology Corporation, and provided proper preventive maintenance and use procedures as listed in the manual were followed. Repairs caused by misuse of the product are not covered by this warranty.

NO OTHER WARRANTIES ARE EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.
INTEGRATED TECHNOLOGY CORPORATION IS NOT LIABLE FOR CONSEQUENTIAL DAMAGES.
Permission must be obtained directly from factory for warranty repair returns. No liability will be accepted if returned without such permission.
Warranty repair is at the Integrated Technology Corporation selected site and at the Integrated Technology Corporation option.

SOFTWARE DISCLAIMER

This software and the Reference Manual are distributed and licensed 'as is' without a guarantee or representation of the correctness, accuracy, reliability, currentness or otherwise. This program is not warranted to meet your requirements or that the operation of the program will be uninterrupted or error free.
The entire risk of results, quality and performance is assumed by the registered owner of record. If defective, the registered owner of record assumes the entire cost of damages, business interruptions, loss of profits, and loss of information.
Integrated Technology Corporation, dealers, distributors, and agents of this software shall not be responsible or liable for any losses arising from the use, misuse, or inability of this product to perform any given function. Information in the operator's manual is subject to change with out notice and does not represent a commitment by Integrated Technology Corporation.

COPYRIGHT NOTICE

TRADEMARKS

PROBILT is a trademark of Integrated Technology Corporation.
Patents: 5,657,394 6,118,894
IBM, PC/AT are registered trademarks of International Business Machines Corporation.
EXCEL and Windows NT are registered trademarks of Microsoft Corporation.
BLOB is a registered trademark of Volant Systems, Inc.
Jaz is a registered trademark of Iomega Corporation.

Probilt Advanced Maintenance Workshop Scheduling

Session	Description	Course Time
1. Introduction and overview	Participants review safety features and considerations, overview course, and tour the machine	2 hours
2. Review and Introduction to Course Material	Overview course material, discuss calibration theory and practices, discuss Probilt diagnostics, and discuss general troubleshooting techniques	2 hours
3. System Power	Discuss system power theory and troubleshooting	4 hours
4. System Backplane	Discuss system backplane theory and troubleshooting	4 hours
5. Motion General	Discuss system motion control and troubleshooting	4 hours
6. Motion Z-Stage	Discuss system motion in the z-axis, and precision z-limit board	4 hours
7. Multiplexer System	Discuss measurement system theory and troubleshooting	4 hours
8. HPCA and Elevator	Discuss HPCA and elevator theory and troubleshooting	4 hours
9. Video and Vacuum	Discuss video and vacuum theory and troubleshooting	4 hours
10. Final Overview	Discuss extended bus features, chuck removal and replacement, optics and camera system, pc troubleshooting, PM, and student evaluations.	4 hours

The Advanced Maintenance Workshop for the PROBILT is a 4 ½ day course, consisting of ten sessions. Optimum number of students per session is three (3).

Each student is expected to meet defined prerequisite skills in order to optimize the learning process during the workshop. The purpose of the prerequisite skills is to place all students on "common ground."

Prerequisite skills for the Advanced Maintenance Workshop are:

- Must have taken the Operations Workshop
- A demonstrated ability to use a computer
- A demonstrated ability to navigate through Windows™
- A demonstrated ability to operate the PROBILT
- Basic mechanical and electrical troubleshooting skills
- Basic mechanical and electrical repair
- Basic knowledge of Probe Card usage

If a student can not meet all of the prerequisites stated above, the length of the course may need to be extended to bring all students to an equal starting point.

Requirements for Workshops at Customer's Site

The Advanced Maintenance Workshop will not be offered at the customer site due the fact that a machine will be disassembled and reassembled during the five day training workshop.

Learning Objectives

At the beginning of each session, the learning objectives for the session will be explained. Each student will be expected to demonstrate competency in performing the tasks associated with each of the learning objectives.

Evaluation

Each student will be evaluated on a strength-based scale against the objectives for each module. The data collected will be provided to the student for personal records, the students supervisor, and to Integrated Technology Corporation to aid in continuous improvement of the Instructional Workshop.

Certification

A Certificate of Training will be presented to each student completing the Advanced Maintenance Workshop. If arranged, Integrated Technology Corporation will assist in helping the customer develop a certification course to be administered by the customer.

Probilt Advanced Maintenance Workshop Scheduling

Course Descriptions and Learning Objectives

General Information

This session will cover reading and understanding the startup diagnostics screen. The functions under each of the operation menus will also be covered.

Upon completion of this session, the student will be able to:

- *Describe the purpose of startup diagnostics*
- *Explain all safety requirements*
- *Describe the purpose of each diagnostic menu*
- *Explain the criteria for a successful calibration*

Introduction to Course Material, Calibration, and Troubleshooting

This module will detail how the PROBILT is calibrated to test Probe Cards, Troubleshooting and safety guidelines.

Upon completion of this module, the student will be able to:

- *Demonstrate how to calibrate the PROBILT for testing*
- *Locate and define all areas to be calibrated*
- *Define when calibration should take place*
- Understand the safety guidelines for calibrating, troubleshooting, and repair

Block Diagrams and Service Manual

This session will review reading and understanding block diagrams as well as understanding the service manuals. Components of the machine and their functions will also be covered.

Upon completion of this session, the student will be able to:

- *Locate sections in the manuals*
- *Locate subassemblies of the machine*
- *Describe each subassembly, its purpose, and use*

Description and Operation of Diagnostic Programs

This session will explain the available diagnostic programs and how to use them.

Upon completion of this session, the student will be able to:

- *Start and use each diagnostic program*
- *Use the information from each diagnostic program to troubleshoot the machine*

System Power

This session will review reading and understanding block diagrams as well as understanding the service manuals. Components of the power system and their functions will also be covered.

Upon completion of this session, the student will be able to:

- *Locate sections in the manuals*
- *Locate subassemblies of the machine*
- *Describe each subassembly, its purpose, and use*
- *Describe power system theory, and distribution*
- *Describe EMO theory*
- *Troubleshoot and repair power supply problems.*

System Backplane

This session will explain the system backplane, indicators and switches.

Upon completion of this session, the student will be able to:

- *Describe all components of the system backplane*
- *Describe all printed circuit boards that plug into the backplane*
- *Describe the function and use of all indicators and switches on the backplane*

Motion (General)

In this session students will be introduced to the motion system.

Upon completion of this session, the student will be able to:

- *Describe the motion control system*
- *Describe the 4-axis controller*
- *Understand the Mechanics of stage movement*
- *Understand the deck I/O pcb*
- *Understand Probilt safety inhibits*
- *Troubleshoot and repair motion control problems*

Motion (Z-Stage)

This session will be a continuation of the previous session and will also cover z-stage movement and the precision z-limit board.

Upon completion of this session, the student will be able to:

- *Describe z-stage monitoring*
- *Describe z-limit board theory and application*
- *Understand z-limit definitions and error messages*
- *Describe the wedge design and the z-stuck error*
- *Describe troubleshooting techniques and tips*
- *Troubleshoot and repair motion control problems*

Multiplexer System

This session will explain the mux system in detail and discuss troubleshooting techniques.

Upon completion of this session, the student will be able to:

- *Have an understanding of the multiplexing system*
- *Describe the PMU setup, jumpers, and NVRAM*
- *Describe mux system tests*
- *Describe troubleshooting techniques and tips*
- *Troubleshoot and repair mux problems*

HPCA and Elevator

In this session students will be introduced to the HPCA and lift systems

Upon completion of this session, the student will be able to:

- *Describe the HPCA system*
- *Describe the elevator lift mechanism*
- *Understand the light curtain*
- *Describe troubleshooting techniques and tips*
- *Troubleshoot and repair elevator problems*

Video and Vacuum

In this session students will be introduced to the video and vacuum systems.

Upon completion of this session, the student will be able to:

- *Describe the video and vacuum systems*
- *Describe the camera setup, light source, and focus motor*
- *Describe troubleshooting techniques and tips*
- *Troubleshoot and repair elevator problems*

Practical Experience and Test

This session will be a continuation of previous sessions and will also cover routine/preventative maintenance procedures.

Upon completion of this session, the student will be able to:

- *Perform preventative and routine maintenance*
- *Locate and define all areas that require routine maintenance*
- *Define the routine maintenance schedule*
- *Perform complete calibration*
- *Troubleshoot and repair common problems*
- *Run test probe card and export data*

Final Overview

This session will be a review of the extended bus system to include input/output, lighting, optics, and pc troubleshooting

Upon completion of this session, the student will be able to:

- *Describe the Input/Output ports section of the diagnostics software*
- *Describe lighting control*
- *Describe chuck removal and replacement*
- *Describe the optics and camera system*
- *Understand PC troubleshooting*
- *Perform Preventative Maintenance*
- *Final student evaluations*

Course Outline

Advanced Maintenance Workshop

I. Introduction

A. Background

1. Students
2. ITC Instructor

B. Expectations

1. Students
2. ITC Instructor

C. Ground Rules

1. Stick to assigned start times and return from break times
2. Minimize interruptions
3. Pagers on vibrate
4. Ask questions at any time
5. Have fun during the process
6. Tour of ITC

D. Student Skill Assessment

1. Verbal
2. Hands On (Calibrate Machine)

E. Safety Presentation

1. S2
2. Electrical
3. Static

II. Review and Introduction to Course Material

A. Course Material

1. Manuals
2. Training Aids
3. Schematics

B. Calibration

1. Calibration Database
2. Review steps
3. XY map

C. Parts Overview

1. Tour of Machine

III. Description and Operation of Diagnostic Programs

A. PMU

1. NVRAM Settings
2. Jumpers
3. Gram Force
4. Encoders
5. Chuck Kelvin Point
6. MUX Tests
    a) Reset
    b) Resistance
    c) Leakage
7. Predefined Tests
    a) Components
8. Init Mux

B. Stage

1. Properties
2. Home All Status
3. Jumpers
4. Predefined Tests
    a) Home All Axis
5. Manual Test Mode

C. AuxIO

D. Ext Bus

1. Input Ports
2. Output Ports
3. Z Limit Board
    a) NV RAM
    b) Z Limit Board
    c) Z Stuck
    d) Download
    e) Predefined Tests
    f) Horizontal Encoder
4. Hot Chuck
5. Relay Boards
6. Hot Chuck
7. Relay Boards

E. Misc.

1. Lower Camera
2. Motherboard
    a) Mother Board ID
    b) Testing
    c) Result Viewing
3. System Integrity

IV. System Power

A. Power Supply System

1. Utility Plug
2. Input/Output Relays
3. 24volt Control Circuitry
4. Line Conditioner
5. Ham Modules
6. DC/DC Power Supplies
7. Ring Lamp
8. Cableing
9. **Light Curtain**

B. EMO Theory

1. EPO vs. EMO
2. Power Lockout
3. Remote Alarm
4. Power on/off Delay Switch

V. System Backplane

A. Overview

1. Location and function of all PCB's
2. Important indicators and switches

VI. Motion Control

A. Overview

1. 4-Axis Controller
2. Mechanics of movement
3. Position monitoring
4. Home-All Routine

5. Deck I/O Interface
6. Safety Inhibits

B. Diagnostics

VII. Motion Control Z-Stage

A. Overview

1. Z-stage monitoring
2. Precision z-limit board
3. Different z-limit definitions and error messages
4. Wedge design and z-stuck conditions

B. Diagnostics

VIII. Multiplexer System

A. Overview

1. PMU Setup
2. Mux Testing
3. Gram Force Measurement
4. Troubleshooting

B. Diagnostics

IX. HPCA and Elevator Systems

A. HPCA

1. Export
2. 3 Sigma / 6 Sigma / P/T

B. Diagnostics

X. Video and Vacuum

A. Video

1. Mechanics of lower camera
2. Light source
3. Video boards
4. Focus Motor
5. Upper camera
6. Ring Lamp

B. Vacuum

1. Solenoids
2. Aux I/O
3. Vacuum control and settings
4. Troubleshooting

XI. Evaluations

A. Student Competency

1. Verbal/Written
2. Hands On

B. Workshop Effectiveness