

# KE1000/KE2000/JX-100/ JX200/FX-1/FX-2 Series Training Courses

# JUKI

## JUKISmart Solutions



## Service and Calibrations Course

Due to the strong mechanical similarities between all of the KE2000/JX-100 and FX2 Series machines, this course will cover all models at the same time since the hardware and software is almost identical. Time spent on each machine will be determined by the mix of machines represented by customers in the individual courses. We will attempt to have at least a KE2050, KE2060 and FX1 in each class, but this can not be guaranteed for every class.

### Who Should Attend:

Personnel responsible for maintenance and operations of the KE1000/KE2000/JX-100/JX-200/FX-1/FX-2 Series machines.

### Length:

4 days

### Prerequisites:

Successful completion of the KE1000/KE2000/JX-100/JX-200/FX-1/FX-2 Series Programming and Operations Course. Knowledge of basic SMT concepts and components.

### Course Description:

This course is designed to provide maintenance technicians with maintenance, calibration, troubleshooting and repair skills. It includes classroom and hands on maintenance and troubleshooting of machines.

### Course Agenda:

1. Course Agenda
2. Introduction to JUKI Automation Systems Service
  - 2.1. Help Numbers
  - 2.2. Ordering Parts
3. Machine Documentation
  - 3.1. Maintenance Manual(s)
  - 3.2. Parts List
  - 3.3. Technical Bulletins
4. Machine Overview
  - 4.1. XY Axis
    - 4.1.1. Super H-Drive
  - 4.2. Assembly Heads
  - 4.3. Conveyor System
  - 4.4. Feeders
  - 4.5. Laser Align Basics
    - 4.5.1. How It Works
    - 4.5.2. New MCM board

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### 4.5.3. LNC60

4.6. Positioning Unit Components

4.7. Control Unit – Board Functions and Layout

4.8. Power Supply Layout

5. Re-Installation/Setup

5.1. Re-leveling

6. Software Overview (Menus)

6.1. User Level Access and Passwords

6.2. Brief overview to ensure familiarity with newer functions.

**Note:** That this is NOT an operations course.

7. Setup Data

7.1. Machine Setup

7.1.1. Nozzle Allocation

7.1.2. Head Vacuum with No Nozzle

7.1.3. Device Enable

7.1.4. Bad Mark Threshold Adjustment

7.1.5. I/O Manual Control

7.1.6. Head

7.1.7. Conveyor

7.1.8. MTC

7.1.9. Vision

7.1.10. Others

7.2. Warm Up

8. Programming Overview – again note that this will be brief as students are expected to already be familiar with machine programming.

8.1. Go over some program troubleshooting tips in the following areas

8.1.1. PWB Data (Layout Offsets, Matrix Type PWBs, BOC Mark Teaching)

8.1.2. Placement Data (Rotation, Local BOC Marks, Optimized Order View)

8.1.3. Component Data (Nozzle Selection, Laser Height, Laser Algorithm, Expansion Information)

8.1.4. Pick Data (Alternate Feeders, Z Height, List View)

8.1.5. Vision Data for the KE2060 Only (BGA Programming, Vision Control Data, Light Control Data, Vision Inspection Tool)

9. Production Overview

9.1. Parts Number Setup

9.2. Single Cycle

9.3. Dry Run

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- 9.4. Trial Run
- 9.5. Management Information
- 10. AC Servo Drivers
  - 10.1. 4 Axis controller
  - 10.2. Z/Theta drivers
- 11. Routine Maintenance
  - 11.1. Lower Shaft Removal, Cleaning and Lubrication
  - 11.2. Nozzle Cleaning
  - 11.3. Lasers
    - 11.3.1. Checking the Lasers Using Manual Control
    - 11.3.2. Cleaning the Lasers
  - 11.4. Air Path
    - 11.4.1. Watching for and Removing Water Build Up
  - 11.5. Cleaning the Vacuum Venturies
  - 11.6. Lubrication points and frequency
- 12. MS Parameters
  - 12.1. Overview (What They Are, How to Get to Them, Precautions)
  - 12.2. Jigs Used
  - 12.3. Demonstration of all MS Parameters Calibrations
  - 12.4. Hands on Practice of MS Parameters Calibrations
- 13. Self-Calibrations
  - 13.1. Differences between these and MS Parameters
  - 13.2. Vacuum Sensor Calibration
  - 13.3. Frequency
- 14. Software Installation/Upgrading (MMI/F, I/O, VCS, Base Feeder, MTC)
  - 14.1. Where Production Files Are Stored
  - 14.2. Backing Up Important Data (\*.MDB and \*.DAT files)
- 15. Troubleshooting
  - 15.1. Saving image of vision failures
  - 15.2. Using the Runtime Log
  - 15.3. Copying/printing/saving errors on the screen
- 16. Question and Answer Session

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