Instructor Guide

English

Lotem 400 Maintenance Course

652-00013A

www.creo.com

Lotem 400 Maintenance Course

Instructor Guide

creo™

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RE37,376	5,283,140	5,517,359	5,699,740	5,969,872	6,134,393	6,283,589
4,456,924	5,291,273	5,519,852	5,708,736	5,973,801	6,136,509	6,295,076
4,500,919	5,323,248	5,526,143	5,713,287	5,986,819	6,137,580	6,299,572
4,558,302	5,325,217	5,532,728	5,742,743	5,995,475	6,147,789	6,318,266
4,743,091	5,339,176	5,561,691	5,764,374	5,996,499	6,158,345	6,340,817
4,992,864	5,343,059	5,568,595	5,764,381	5,998,067	6,159,659	6,352,816
5,049,901	5,355,446	5,576,754	5,771,794	6,003,442	6,164,637	6,353,216
5,079,721	5,359,451	5,579,115	5,785,309	6,014,471	6,180,325	6,366,339
5,081,617	5,359,458	5,592,309	5,802,034	6,016,752	6,181,362	6,371,026
5,103,407	5,367,360	5,594,556	5,813,346	6,031,932	6,181,439	6,377,739
5,111,308	5,384,648	5,600,448	5,818,498	6,043,865	6,186,068	6,387,597
5,113,249	5,384,899	5,608,822	5,854,883	6,060,208	6,189,452	6,396,422
5,122,871	5,412,491	5,615,282	5,861,904	6,063,528	6,191,882	6,396,618
5,124,547	5,412,737	5,625,766	5,861,992	6,063,546	6,204,874	6,407,849
5,132,723	5,420,702	5,636,330	5,875,288	6,072,518	6,208,369	6,414,755
5,150,225	5,420,722	5,649,220	5,894,342	6,090,529	6,214,276	6,422,801
5,153,769	5,459,505	5,650,076	5,900,981	6,096,461	6,217,965	6,435,091
5,155,782	5,473,733	5,652,804	5,934,196	6,098,544	6,252,522	
5,157,516	5,481,379	5,680,129	5,942,137	6,107,011	6,260,482	
5,208,818	5,488,906	5,691,823	5,946,426	6,112,663	6,266,080	
5,208,888	5,497,252	5,691,828	5,947,028	6,115,056	6,266,134	
5,247,174	5,508,828	5,696,393	5,958,647	6,121,996	6,267,054	
5,249,067	5,509,561	5,699,174	5,966,504	6,130,702	6,268,948	

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Lotem 400 Maintenance Course Introduction

Course Description

Course name:	Lotem 400 Maintenance Course
Course Description:	Internal course aimed at Creo personnel who are involved in supporting the Lotem 400 platesetter
Target Audience:	The following Creo personnel can benefit from attending this course: • CTP Product Support Managers from distribution units all over the world (DU PSM) • CTP Product support specialists from distribution units all over the world (DU PSS) • Field Service Engineers and Field Specialists • Application Engineers & Specialists • CTP Production team leaders and PD workers • CTP Trainers
Duration:	5 days
Prerequisites:	• Lotem 800 Engineer course • Field support knowledge in Lotem 800 platesetters
Personal Equipment:	Each participant must bring his/her own personal laptop, as well as the TechPlanet CD-ROM

Using this Guide

What is the Purpose of this Guide?

This guide teaches, in detail, the Lotem 400 with MCU, as well as the differences between the Lotem 400 and the Lotem 800. It describes the information needed to plan and teach a five-day classroom course for the Lotem 400 and Lotem 400 with MCU.

Who is this Guide For?

This guide is for instructors and Creo personnel involved in teaching and supporting the Lotem 400 with MCU platesetter. The guide information depth is aimed at service engineer's daily tasks. However, this guide also includes background technology information for better understanding the scope of this guide. This guide takes into account a prerequisite knowledge of the Lotem 800 at a level of service engineering.

How does this Guide Work?

This guide has been created to introduce and facilitate new and experienced instructors to this training. For new instructors, the binder contains detailed information regarding the setup of the class, organization of information, the flow of content, steps to introduce hands-on experience, and resource information. As instructors become more familiar with the training, they may prefer to the outline of the course and less to the modules themselves.

Participants primarily use this guide, to follow the course lectures and demos as the course progresses. Once the course is over, this guide can serve as a reference book containing all the information the course has covered.

Course Outline

Day 1

11:00 – 12:30, 13:30 – 17:30

Module	Outline
Module 0 15 minutes	**Introduction** ▸ Training center orientation ▸ Course overview
Module 1 45 minutes	**Product Overview** ▸ Models and configurations
1 hour	**Lunch**
Module 2 3 hours	**Installation** ▸ Installation and calibration procedures ▸ Practice
Module 3 1 hour	**Differences between Lotem 800 & 400** ▸ Loading/Unloading System ▸ Drum System ▸ Electronic System ▸ Practice
Daily wrap-up 15 minutes	**Q & A**

Day 2

08:30 – 12:30, 13:30 – 17:30

Module	Outline
Module 4 2 hours 30 minutes	**Plate Loading and Unloading System** ▸ Theory of Load/Unload System ▸ Disassemble & Reassemble Load/Unload System
Module 4 1 hour 30 minutes	**Plate to Drum Parallelism** ▸ Theory ▸ Plate Loading Motor Adjustment ▸ Plate Attachment to Head Pins ▸ Adjustment of Plate Registration Pins
1 hour	**Lunch**
Module 4 1 hour	**Plate Length Detector** ▸ Adjustment theory ▸ Practice
Module 5 45 minutes	**Edge Detection** ▸ Theory ▸▸ Preview procedure in ver. 130.04 ▸▸ Differences in ver 1.60 ▸ Tips ▸▸ Strip Laser Power ▸▸ Plate type and ablation ▸▸ How to clean the lens ▸▸ Focus for expose vs. Focus for edge detection
Module 5 2 hours, 15 minutes	**Edge Detection** ▸ Practice Focus Test ▸ Practice Edge Detection Procedure
Daily wrap-up 15 minutes	**Q & A**

Day 3

08:30 – 12:30, 13:30 – 17:30

Module	Outline
Module 6 2 hours	**Options and New features in ver. 1.6** ▸ Practice Loading ver 1.6 ▸ Practice improved edge detection (for customer & engineer) ▸ Plate length measurement and calibration
Module 7 2 hours	**Multi-Cassette Unit** ▸ Differences from 800 MCU ▸ Cassette trays ▸ Pneumatic system ▸ Venturi vacuum generator ▸ XY transportation system ▸ Loading/unloading system ▸ Plate Centering System ▸ Punch System ▸ Interlocks ▸ “Small MCU” vs standard
1 hour	**Lunch**
Module 8 30 minutes 2 hours	**Multi-Cassette Unit Upgrade** ▸ Review Hardware Installation (Upgrade) ▸ Practice MCU upgrade (Installation)
Module 8 2 hours	**Multi-Cassette Unit Upgrade** ▸ Overview of procedure ▸ Practice MCU Software Upgrade ▸ Test the Upgrade
Daily wrap-up 15 minutes	**Q & A**

Day 4

08:30 – 12:30, 13:30 – 17:30

Module	Outline
Module 9 1 hour	**Field Change Orders (FCOs)** ▸ Overview of all recent FCOs that have been issued
As needed	**Refine difficult procedures**
Module 10 1 hour, 30 minutes	**Lotem 400 PS/M**
1 hour	**Lunch**
Module 11 4 hours	**Troubleshooting Exercises**

Day 5

08:30 – 12:30, 13:30 – 15:00

Module	Outline
Module 11 4 hours	**Troubleshooting Exercises**
1 hour	**Lunch**
Module 11 1 hour	**Troubleshooting Exercises**
Program wrap-up 30 minutes	**Q & A**

Classroom Set-up Requirements

Required Equipment

Equipment	Quantity	Actual Quantity[a]
Lotem 400 with MCU and PC Controller connected	1 per 2-3 participants	
Brisque (version 3 or 4)	1 per 2-3 participants	
Overhead projector or LCD adapter for Mac or LCD adapter for SVGA	1	
White board or flipchart	1	
PC for the instructor station with link to TechPlanet or TechPlanet CD	1	
Personal laptops of the participants		
Course CD	1 per participant	
Plates (0.15 mm or 0.3 mm)		

a. according to final number of participants

References

Topic	Part No	Language
Lotem 400 Installation Guide	399Z1N017A	English
Plate Exposing with the Lotem 400VA	399Z1P515A	Multi language
Plate Conveyor for Lotem 400	399Z1N326B	English
Lotem 400 / Lotem 400 Quantum Upgrading to Automatic Loader	399Z1P516A	English
Lotem 400 Family Safety Precautions for User	399Z1M621B	Multi language

Course Preparation Request Form

Please fill out this form when planning the course and send it to the training facilitator.

1. General Information

Course Name: _____

PSM: _____

Contact Phone #: _____

Course Date: _____

2. Instructor Workstation _____Mac _____PC _____None

- Hardware Requirements (if unknown please put U/K)

CPU: _____

Memory: _____

Network: _____

O/S: _____

Dongle: _____

- Software Requirements (if unknown please put U/K)

WinZip *(installed)* _____

MS Office 2K *(installed)* _____

Acrobat *(installed)* _____

IE5 *(installed)* _____

_____ _____

_____ _____

3. Student Workstations _____Mac _____PC _____None

- Hardware Requirements (if unknown please put U/K)

CPU: _____

Memory: _____

Network: _____

O/S: _____

Dongle: _____

- Software Requirements (if unknown please put U/K)

WinZip *(installed)* _____

MS Office 2K *(installed)* _____

Acrobat *(installed)* _____

_____ _____

_____ _____

4. Media Equipment

- ❑ InFocus projector
- ❑ Copy white board
- ❑ Video camera
- ❑ Flipchart
- ❑ CD-ROMs (Names)
- ❑ Overhead
- ❑ TV / VCR
- ❑ Modem / Phone line

_____

_____

- ❑ Text Books (Names and part numbers)

_____

_____

5. Comments

_____

_____

_____

_____

Course Overview

Introduction to the Lotem 400 Maintenance Course

This module introduces the Lotem 400 Maintenance course.

Preparation

- The Training Guides and CDs should already be distributed to the course participants.
- The classroom should be setup according to the table on page xv of Module i.
- Verify that all the required materials are on site or in the classroom according to the table on page xv of Module i.

Estimated Time

15 minutes

Instructor's Notes: Lecture

Use the PowerPoint slides to give an overview of what the Lotem 400 course entails.

Course Objectives

At the end of this course you will be able to: **[1-1]**

- Install a Lotem 400
- Upgrade a Lotem 400 to Lotem 400 with MCU
- Remove, replace, and realign the manual loading system
- Describe the differences between the Lotem 800 and the Lotem 400
- Perform necessary procedures and adjustments
- Set up edge detection and calibration

Course Topics

- **Lotem 400 Overview:** **[1-2]**
  - ❒ Lotem 400 assemblies and characteristics
  - ❒ Lotem 400 safety guidelines
  - ❒ Lotem 400 connection to the front-end workflow
  - ❒ Site preparation prior to the Lotem 400 installation

- **Installation:**
  - ❒ Lotem 400 hardware installation
  - ❒ Configuration of customer settings
  - ❒ Configuration of data settings
  - ❒ Lotem 400 calibration
  - ❒ Software kit installation

- **Differences Between Lotem 400 & 800:**
  - ❒ Loading/Unloading System
  - ❒ Drum System
  - ❒ Electronic System

- **Plate to Drum Parallelism:**
  - ❒ Components that work together to ensure that an image is exposed parallel to the edge of the plate
  - ❒ Plate loading motor adjustment
  - ❒ Plate loading/unloading system
  - ❒ Plate length detector calibration
  - ❒ Attachment of the plate to the head pins
  - ❒ Parallelism measurement
  - ❒ Adjustment of plate attachment pins

- **Edge detection:**
  - ❒ Theory of edge detection
  - ❒ Clean the lens
  - ❒ Focus test
  - ❒ Edge detection procedure

- **New Features in Version 1.60:**
  - ❒ Lotem 400 software version 1.60
  - ❒ Improved plate edge detection and calibration
  - ❒ Improved plate length measurement and calibration
  - ❒ New features list

- **Lotem 400 with MCU Overview:**
  - ❒ Characteristics of the Lotem 400 with MCU
  - ❒ Differences between the Lotem 400 with MCU and the Lotem 800
  - ❒ Pneumatic system
  - ❒ Venturi vacuum generator
  - ❒ XY transportation system
    - -The loading bar
    - -The paper disposal bin
    - -The plate centering system
    - -The punch system
  - ❒ Interlocks
  - ❒ New design for small plates

- **MCU Upgrade - Software & Hardware:**
  - ❒ MCU hardware upgrade
  - ❒ MCU software upgrade
  - ❒ Parameters
  - ❒ Calibration & Tests
    - - Paper/metal detector adjustment
    - - Centering system adjustment
    - - Punch installation

- **Field Change Orders (FCOs):**
  - ❒ FCO list and description
  - ❒ Perform the FCOs

- **Lotem 400 PS/M:**
  - Principles behind the Lotem PS/M
  - Differences between the Lotem 400 and the Lotem 400 PS/M
  - Basic configuration of Lotem PS/M
  - Lotem 400 PS/M end-user workflow
  - PS/M user interface
  - PS/M installation

- **Troubleshooting:**
  - Troubleshoot the Lotem 400
  - Apply problem-solving skills to troubleshooting

Learning Resources

[1-3]

Documentation:

- Lotem 400 Installation Guide
- Plate Exposing with the Lotem 400VA
- Plate Conveyor for Lotem 400
- Lotem 400 / Lotem 400 Quantum Upgrading to Automatic Loader
- Lotem 400 Family Safety Precautions for User

Other:

- TechPlanet

Reference:

Learning Resources:

http://techplanet.creo.com/output/computer_to_plate/lotem400/nav/400/index.htm

Instructor's Notes: Lecture

- Introduce participants to the new structure of TechPlanet for the Lotem 400:
  - The content categories
  - The different subjects
  - Recent FCOs
- Present the contact list for the Lotem 400 product specialists and explain the different roles

Prerequisites

- Laptop Computer with space for: **[1-4]**
  - ❒ TechPlanet on a CD or via intranet
  - ❒ Lotem 400 Application
  - ❒ Training Program
- Knowledge:
  - ❒ Basic Brisque Operator Training
  - ❒ Lotem 800 Maintenance Course

Reference:

Prerequisites:

http://techplanet.creo.com/output/computer_to_plate/lotem800/nav/index.htm

Lotem 800/Brisque Knowledge:

http://techplanet.creo.com/output/computer_to_plate/lotem800/content/train/overview.htm

Instructor's Notes: Discussion & Participant Evaluation

Ask and make sure that the students have some basic knowledge and experience on the Lotem 800 and summarize the answers on the flipchart:

- Parts & assemblies
- Safety guidelines
- Installation requirements
- Operations
- Main troubleshooting subjects

Ask and make sure that the students have some basic knowledge and experience on the Brisque/Workflow with the Lotem 800 and summarize the answers on the flipchart:

- The different Brisque options available with the Lotem 800
- Expose, Storage and Job Handling parameters
- Quick Re-expose

Module Recap

In this module you have reviewed: **[1-5]**

- The course objectives
- The subjects taught during the course
- The available learning resources
- The prerequisites for the course

Lotem 400 Overview

Introduction

This module provides a technical overview of the Lotem 400 system for internal engineer training. It introduces the network connections and data flow between the Lotem 400, the PC Controller, and the front-end workflow of the Lotem 400. This module will provide you with an overview of the Lotem 400 within the Lotem family and will enable you to prepare for the installation of the machine.

Preparation

Make sure that the Lotem 400, the PC Controller workstation, and the Brisque are installed in the classroom and functioning properly.

Estimated Time

45 minutes

References

- TechPlanet:
  http://techplanet.creo.com/output/computer_to_plate/lotem400/nav/400/index.htm

  Note: The Lotem 400 information on the TechPlanet is constantly updated. Therefore, it is necessary to check the date of the document, the procedure, or the Field Change Order (FCO).

- The Enterprise SIP site:
  Includes up-to-date product specifications and marketing information such as benefits and features of the Lotem 400 with MCU.
  Use the same Username, Password and Domain as for accessing the Intranet.

Objectives

At the end of this module you will be able to: **[2-1]**

- Identify the Lotem 400 characteristics
- Apply the Lotem 400 safety guidelines
- Identify the main assemblies
- Describe typical site configurations

The Lotem Family

The table below shows the position of the Lotem 400 within the Lotem Family. **[2-2]**

Platesetter	A4 Pages on a Plate
Lotem XL	32
Lotem 800 Quantum	8
Lotem 800 VL & VL^2	8
Lotem 800 Spectrum	8
Lotem 800 Quantum Spectrum	8
Lotem 800F	8
Lotem 800S	8
Lotem 800 Flexo	8
Lotem 400 (24 diodes)	4
Lotem 400S (12 diodes)	4
Lotem 400 PS/M	4
Lotem 400 Quantum	4
Lotem 400 with MCU/SCU	4
Lotem 400 Flexo	4
Lotem 400 Ready for MCU	4

The Lotem 400 thermal imaging platesetter can process plate sizes from 381 x 318 millimeter (15 x 12.5 inch) up to 750 x 622 millimeter (29.5 x 24.4 inch). **[2-3]**

New Product Names

In order to align the names and model numbers of our output devices, several name changes have been recently implemented.The following table lists the new and former product names: **[2-4]**

Former Name	Current Name
Lotem 400V	Lotem 400
Lotem 400VA	Lotem 400 w/ MCU
Lotem 400V PS/M	Lotem 400 w/ PS/M

Lotem 400 Front-end Connectivity

The Lotem 400 front-end connectivity options are: **[2-5]**

- Brisque hardware platforms
  - Tiger II (not including Lotem 400 Quantum)
  - F50
  - Hammerhead (since early 2002)
- Brisque software versions
  - Impose version 3
  - Impose version 4
- Prinergy 2.0.x (EP) - Lotem 400 Quantum (pending)
- PS/M

The Lotem 400 supports many file formats, such as Postscript, EPSF, PDF, TIFF to CT/LW files.

Reference:

Lotem 400 in Lotem Family:

http://techplanet.creo.com/output/computer_to_plate/lotem400/nav/400/index.htm

Instructor's Notes: Interactive Discussion

- Ask participants to describe their experiences with the Lotem 800, and note the main points on the flipchart:
  - the types of devices
  - experience with customer training on the Lotem 800
  - experience with servicing the Lotem 800
- Ask participants to describe:
  - the sites they have serviced
  - the main characteristics of each site
  - the platesetter configuration

Note the main characteristics of the sites together with the platesetter configurations.

Lotem 400 Characteristics

[2-6]

Plate size	**Older model Lotem 400:** 381 x 318 mm – 750 x 622 mm, 750 x 606 mm (maximum exposed area) **Newer Lotem 400:** 228 x 318 mm 750 x 622 mm
Plate type	IR sensitive aluminum plates
Plate thickness	0.15 – 0.3 mm (Lotem 400 was built with 0.15 mm plates in mind)
Throughput	16 plates per hour at resolution 100
Laser diodes	24 Laser Diodes (Lotem 400) 12 Laser (Lotem 400S)
Power line	Voltage range of: 200-240 VAC, 1 PH, 5 KVA power consumption, 50-60 Hz
Cont. variable res.	60 – 140 dot/mm, different files res. have to be set to a single resolution before exposure
Footprint	1.28 m^2 without MCU **[2-7]**
Screening	Turbo Screening Processor at 300 line screen
Front end	Brisque Tiger II (no rotation board). New machines will come with the Hammerhead
Plate-gripping device	Protection against plate fly-off
Plates & cassettes	One tray, three cassettes in MCU system, 50 plates in the cassette
Interleaf paper handling	Only for MCU system
Punch	Image to edge option with up to six units or more of punches **only** for the MCU version
Environment	**Noise**: 70 dB **Lighting**: Some plates, such as Kodak IDTP, are sensitive to UV light. When such plates are used or when the machine is directly connected to the plate stacker, you need an appropriate safe light. **Temperature**: 20-25°C (68-76°F) **Humidity**: 55% +/- 5%

Note: These specifications are correct as of September 1st, 2002, and are subject to change. Check with the **online** TechPlanet for the latest specifications.

Safety Guidelines

Instructor's Notes: Interactive Discussion

Note: If the Lotem 400 course follows directly after the Lotem 800 course, there is no need to revise these guidelines.

- Ask participants to describe the potential hazards when the doors of the machine are opened
- Explain how the protective interlock system works
- Explain why the laser safety guidelines are important and the consequences if the guidelines are not respected:
  - Describe the eye damage that can be caused by the high power of the laser (0.5 W x 24)
  - Describe other possible injuries, i.e. hair or cloth caught in the machine
- Point out some warning labels on the device
- Explain the mechanical safety guidelines
- Mention an example of drum and plate-handling precaution

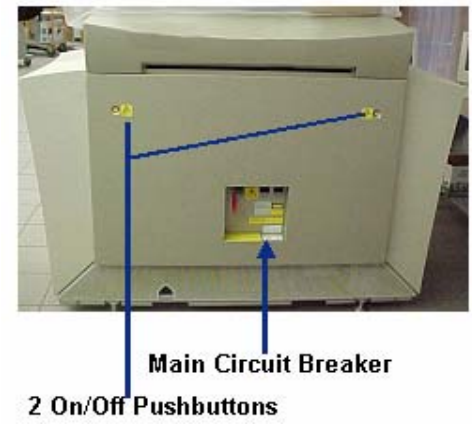
Follow the laser safety guidelines for: **[2-8]**

- Laser radiation
- Laser enclosures
- Optical fibers
- Warning labels
- Interlocks
- Exposure

Follow the mechanical safety guidelines:

- **Drum Safety Precaution** – Since the drum rotates at approximately 1,000 revolutions per minute, a dislodged object inside the platesetter can cause both internal and external damage. The Interlock activates when the Upper Door is open: the drum is disconnected from its power source and cannot rotate.
- **Plate-Handling Precaution** – Gloves should be worn when handling plates
- Follow the safety guidelines for **electrical hazards** and **electrical connections**

- **Emergency buttons** **[2-9]**



a. The **main power switches** on the distribution unit can be switched off after a fly-off or in case of fire.

b. Two **yellow On/Off Push buttons** on the rear side of the platesetter can be pressed to immediately stop the platesetter operation. This action stops any exposure immediately and cuts power to the drum. The drum will spin down as a function of inertia.

c. On the wall, the **power supply outlet** can be found and switched off during an emergency (if the power supply is accessible).

d. If the **PC Controller GUI** is accessible on the PC Controller workstation, click the **Stop** icon to stop all the operations.

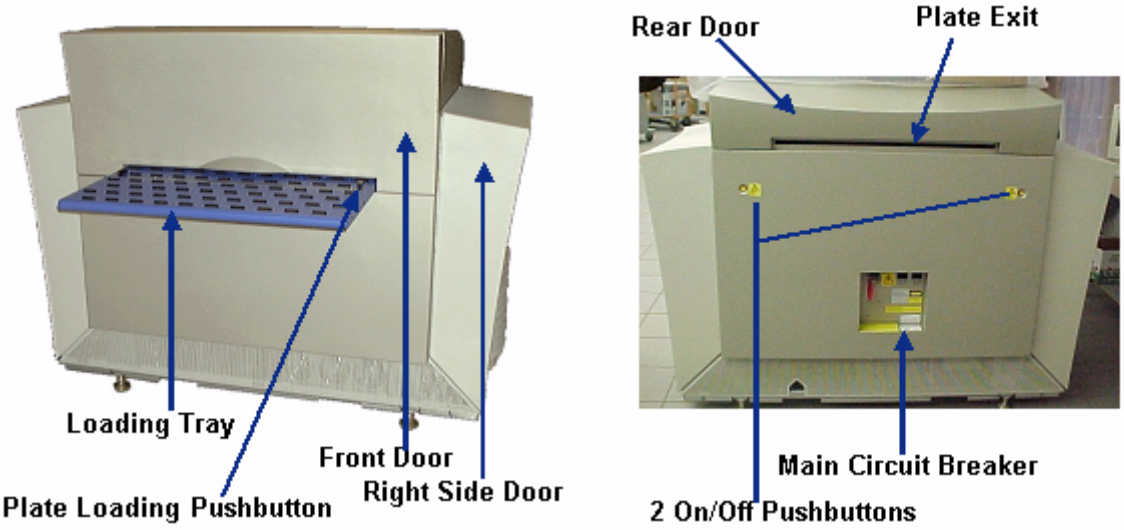


Reference:
Lotem 400 Family Safety Precautions for User – 399Z1M621B

Safety Guidelines:
http://techplanet.creo.com/output/computer_to_plate/lotem400/nav/400/safety.htm

Lotem 400 Overview

[2-10]



Reference:

Platesetter Assemblies:

http://techplanet.creo.com/output/computer_to_plate/lotem400/nav/400/dwgs-photos.htm

Instructor's Notes: Demonstration

- Demo the Lotem:
  - Show the participants how to open the doors (see *How to manually open the doors of the Lotem 400* on page 17). You may want to give the participants a chance to open the doors themselves.
  - Point out the main assemblies (see *Main Assemblies* on page 18)
  - Introduce the participants to the general functions of the assemblies
  - Ask the participants to compare the structure of the Lotem 400 assemblies with the Lotem 800 assemblies they know
- The demo should be a general overview, not in too much detail, as these topics will be covered later in the training.

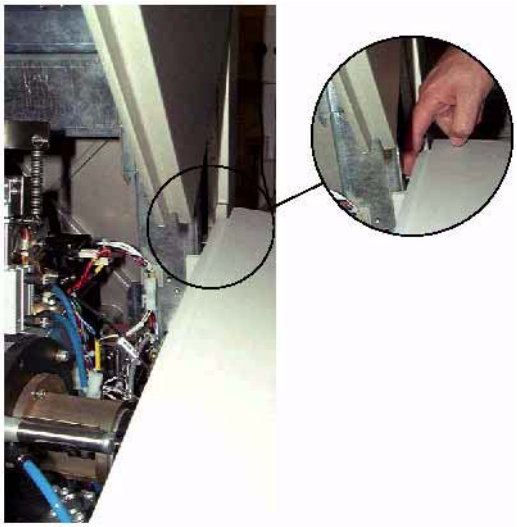
How to manually open the doors of the Lotem 400

The upper door is opened first, then the side doors and finally the front door. **[2-11]**

1. To open the **upper door**:
   Insert an Allen key (5/32 inch) into the two holes of the upper rear cover. Make sure to insert it at least 6 cm (2.5 inch). This releases the pins of the door locking mechanism.



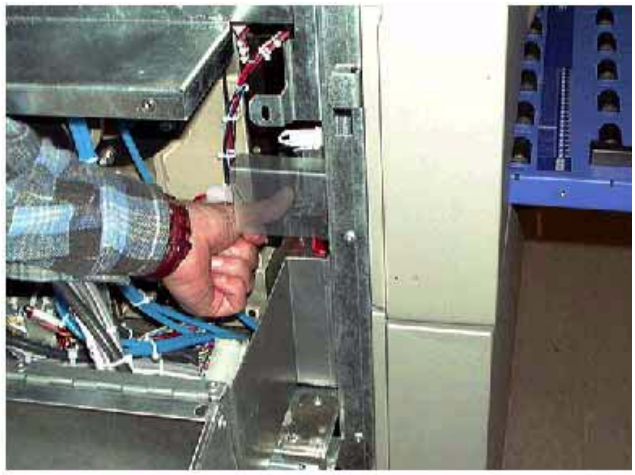
[2-12]



2. To open the **side doors**:
   Press the spring latch for each door. The latch is located on the side door toward the front of the platesetter.

3. When the upper and side doors are open, perform the following to **open front door**:

   On left and right sides of front door, push the hook upward - perform this twice (that is, in two stages) for each side.
   You can then fully open the front door. The photograph shows the location of the hook used to open the front door.



[2-13]

Main Assemblies

[2-14]

Highlights of the main assemblies of the Lotem 400:

- **Loading System**
  - Manual loading system

  See *Manual Load/Unload Procedure* on page 41.

- **Laser Box (L-Box)**
  - Edge detection board
  - Edge detection connector
  - Same L-Box as the Lotem 800, just a different part number

  See *Laser Box* on page 51.

- **Electronic Box (E-Box)**
  - Same as Lotem 800
  - One local 3 board

  See *Power Supply* on page 54.

- **Pneumatic Manifold**
  - Controls air flow to the load/unload actuators, drum rollers and the unload arm
- **Dry Vacuum Pump**
  - Single phase (not 3 phase)

  See *Drum Vacuum Pump* on page 48.

- **Unloading System**
  - Unload tray arm:
    There is an additional air pressure tube for the unload arm. When there is air pressure, the arm is raised. The arm presses the plate down onto the roller for smooth unloading due to a command which will move the piston. However, when there is no air pressure, the arm will also go down.

  See *Pneumatic Manifold* on page 43.

Typical Customer Site Configuration

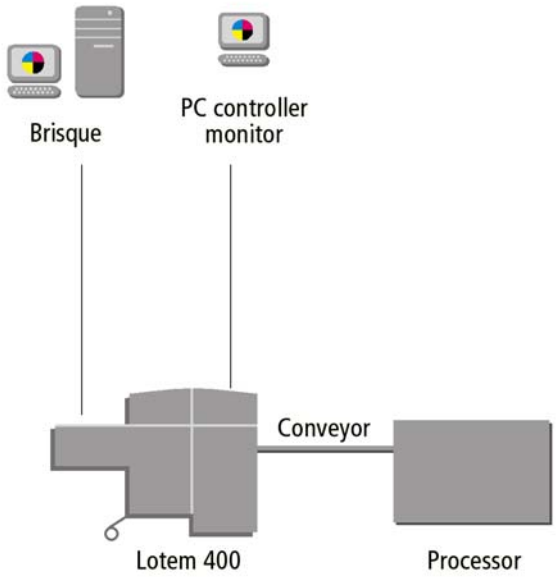
Instructor's Notes: Lecture

It would be good to show a physical setup of the system. Lacking one, you should draw a diagram.

The customer's site:

- Platesetter
- PC Controller Monitor
- Brisque Workstation (CTP Front End; UNIX system)
- Local Area Network (10B/T) or the point to point cross cable between the platesetter and the Brisque
- TSP connection
- MCU upgrade device
- Pre-Heat oven (with Kodak Configuration), the processor and conveyor option

[2-15]



Device to Front-end Connection

Instructor's Notes: Lecture

Use the PowerPoint to illustrate the two configurations. Discuss with the participants the advantages and disadvantages of the different configurations. Write any conclusions on the flipchart.

Note: This material is a revision of what was learnt in the Lotem 800 course. If the participants have not just completed the 800 course, tell them that they can review the material in the Remote Support Tools Self Study Guide, which can be found in the Lotem 800 Training section of TechPlanet.

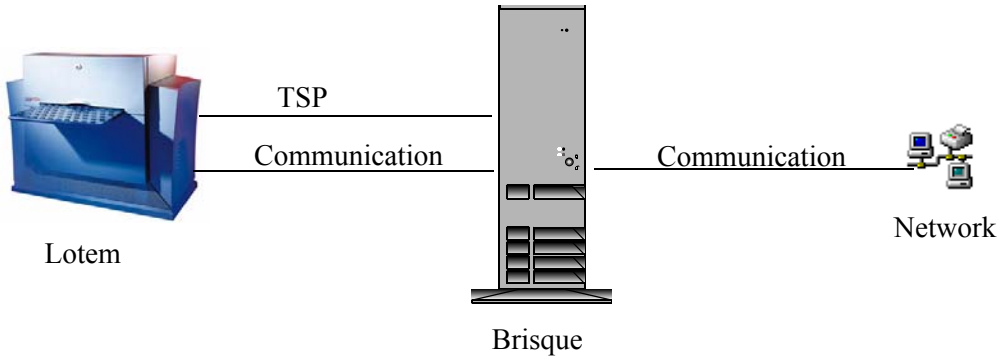
There are two ways to set up the Brisque-Lotem configuration: **Point-to-point** or **Network**.

[2-16]

Point-to-Point Configuration

Typical of North American configurations, the Lotem 400 is connected directly to the Brisque in two ways: using a 10BaseT local area network connection and a TSP cable. The network connection is used to pass setup and control information from the Lotem to the Brisque and the TSP cable delivers screened RIP data to the Lotem L-box.

The Brisque is connected to the network. In this configuration, the only device on the Network to see the Lotem is the Brisque. The advantage of the point-to-point configuration is that if the network is down, the Lotem can continue operation.

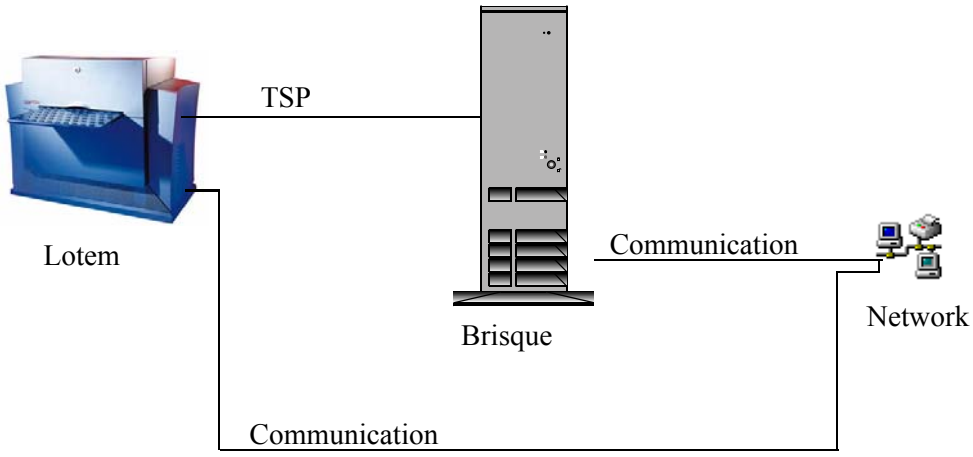


Point-to-point configuration

[2-17]

Network Configuration

In Europe, the most typical connection is the network connection. Here, the Lotem and Brisque are connected with a TSP connection, but the Lotem is directly connected to the network. All communication between the Brisque and the Lotem is through the network.



Network configuration

Module Recap

By the end of this module you should be able to: **[2-18]**

- Identify the Lotem 400 characteristics
- Apply the Lotem 400 safety guidelines
- Identify the main assemblies
- Describe typical site configurations

Installation

Introduction

This module will provide you with the recommended procedures for installing the hardware, configuring the customer and data settings, and calibrating the Lotem 400.

Estimated Time

3 hours

References

Site Preparation:
Lotem 400V Site Preparation Guidelines, Part #399Z1M151A
http://techplanet.creo.com/output/computer_to_plate/lotem400/content/doc/400_siteprep_FEB13.pdf

Lotem 400 Spare Parts list:
http://techplanet.creo.com/output/computer_to_plate/lotem400/content/parts/400/spare.htm

Pre-Installation Checklist:
http://techplanet.creo.com/output/computer_to_plate/lotem400/content/siteprep/site2.htm

Installation manual for the Lotem 400:
http://techplanet.creo.com/output/computer_to_plate/lotem400/content/doc/400_installation.pdf

Full installation instructions on TechPlanet:
http://techplanet.creo.com/output/computer_to_plate/lotem400/nav/400/install.htm

Objectives

At the end of this module you will be able to: **[3-1]**

- Prepare the site prior to the Lotem 400 installation
- Install the Lotem 400 hardware
- Configure the customer settings
- Configure the data settings
- Calibrate the Lotem 400
- Install the software kit

Site Preparation

Instructor's Notes: Lecture

Use the PowerPoint slides to discuss with the participants how to prepare the site for installation.

- The power connection to the Lotem 400 is one phase with a heavy voltage of 220 V. **[3-2]**

  Note: Remember that the power connection in the Lotem 800 is three phase: 110 V with a three phase Transformer.

  Note: In countries where power supplies are 60 Hz (North America and Japan) and the line voltage is less than 216 VAC, a transformer is needed to raise the voltage from 208 V to 240 V. This enables the Becker Pump (drum vacuum pump) to work efficiently.

- The air supply required for a Lotem 400 is **3 liters per second (lps)**.

  Note: For an MCU configuration, the air supply will be **7 liter/sec** plus additional flow of **24 liter /sec** for a duration of 10 seconds every 3 minutes.

  [3-3]

- In work mode, processed plates are ejected from the back of the machine. Install a conveyor, a stacker, or even a table at the back of the machine, so that the plates are ejected onto that surface. As a result, plates will not be damaged and the plate operator can easily collect them.
- After exposure, some plates have to be stored in yellow light. This depends on the type of plate used. The plates cannot be reprocessed.
- Prior to the site preparation, the customer should be informed that he has to take into account the possible area for an upgrade of the Lotem 400, meaning extra space for an MCU. The space will then be approximately twice the area for a Lotem 400.
- A telephone line on the site is essential for the Response Center support. The telephone may also be used by the engineers to use the remote support tools to inspect the condition of the machine before they arrive on site. This may save time as the field engineer can consider the problem during travel time and possibly order parts in advance.

  Note: A second telephone line in the room with the platesetter would be useful so that an operator from the Response Center can connect and still talk with the operator on site.

Instructor's Notes: Discussion

- Ask participants to report on their experience with
  - ❒ site preparation
  - ❒ environmental conditions
  - ❒ problems encountered

  Discuss why they think these problems occur and what solutions were adopted. Note the information on the flipchart.
- Ask participants to share tips about site preparation gathered from their field experience. Note the tips on the flipchart and evaluate them.

Reference:

Site Preparation:

Lotem 400V Site Preparation Guidelines, #399Z1M151A

http://techplanet.creo.com/output/computer_to_plate/lotem400/nav/400/install.htm

http://techplanet.creo.com/output/computer_to_plate/lotem400/content/doc/400_siteprep_FEB13.pdf

Lotem 400 Spare Parts list:

http://techplanet.creo.com/output/computer_to_plate/lotem400/content/parts/400/spare.htm

Site Preparation Checklist

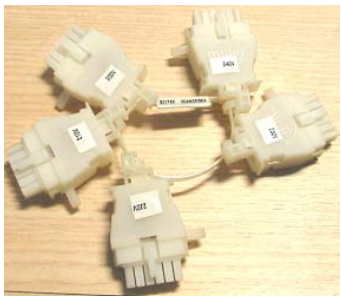
Prior to installation, the engineer should check the site together with the customer. The following site preparation checklist gives you an overview of the main items to be checked:

Requirement Item	Done?
Adequate space according to customer configuration	
Access to and operation of the platesetter	
Fork lift to lift the packaging and platesetter	
Electrical requirements	
Voltage settings	
Wall connectors for power cable	
Power line disturbances	
Grounding	
Cable routing provisions, according to distances between equipment at site	
Environmental conditions	
Cleanliness	
Static electricity	
Humidity	
Air conditioning	
Yellow safe light (for Kodak green plate requiring preheating)	
Thermometers and humidity meters/recorders - recommended	
Air compressor	
Cables for communication network	
Telephone line	
Operational processor/chemicals	
Plates	
Storage space for plates	
Densitometer for plates/press sheet	

Hardware Installation

The following steps are involved in the installation of the hardware: **[3-4]**

1. Unpack the platesetter.
2. Open the doors and remove the panels.
3. Adjust the height:
   The platesetter must be located on a uniform horizontal plane at all four corners with all four wheels raised above the floor. The platesetter is adjusted for the smooth loading of the plate.
4. Remove the shipping safeguards:
   The platesetter is shipped with several safeguards that prevent excessive movement of internal parts during transport. These safeguards must be removed.
5. Load the tray assembly.
6. Connect the main power cable.
7. Insert the appropriate power selector key according to the line voltage. See *Hands-on Activity: Power Selector Key* on page 53.



8. Data connectivity: **[3-5]**
   The Lotem 400 platesetter and Brisque are connected with a TSP data cable. The cable connects the TSP board on the Brisque to the data connector on the Laser box of the platesetter.
9. Air compressor connection.
10. Connect the PC Controller Monitor & Electronic Box.
11. Connect the Plate Conveyor.
12. Install the skirts:
    The platesetter is shipped without its skirts. When height adjustment is completed and all the cables are in place, install the four skirts, one on each side.

Reference:

All the above steps can be found in chapters 12 through 22 of the Lotem 400 Installation Guide on TechPlanet:

http://techplanet.creo.com/output/computer_to_plate/lotem400/content/installation/400/chap12.htm

Customer Configuration Setting

[3-6]

Before the Lotem 400 can operate properly, it is important that the machine will reset correctly **before** a plate is loaded. An important installation process is to verify that the tail grippers and weight balances are correctly positioned according to the plate size. This verification can be performed only after the plates that the customer will be using are defined.

Use the Installation Guide (Chapter 3, “Customer Configuration Setting”) to complete this configuration.

Reference:

Chapter 3, “Customer Configuration Setting”, Lotem 400V Installation Guide

http://techplanet.creo.com/output/computer_to_plate/lotem400/content/installation/400/chap24.htm

Data Configuration Setting

[3-7]

Note: Install the platesetter on the PC controller **before** installing the platesetter on the Brisque. Verify that both Brisque and platesetter are powered off.

The Lotem 400 to Brisque connectivity consists of a data cable located inside the Brisque, and a TCP/IP link for communication between the platesetter and Brisque.The data configuration of the Lotem 400 with the Brisque requires the following steps:

[3-8]

- TCP/IP Connectivity
  There are two alternatives for setting up the TCP/IP connectivity. Select and setup the alternative suitable for the client’s needs and then verify the TCP/IP connection.

[3-9]

a. TCP/IP connectivity via the network
   This setup is usually used in Europe: Connect both the Brisque and platesetter to the site network infrastructure. See *Network Configuration* on page 21.

[3-10]

b. TCP/IP connectivity via point-to-point link
   This setup is usually used in North America: Connect the Brisque directly to the PC controller using the special network cross cable supplied with the platesetter. See *Point-to-Point Configuration* on page 20.

- **Brisque 3.0**: Define IP address of PC controller on Brisque SciSMIT.

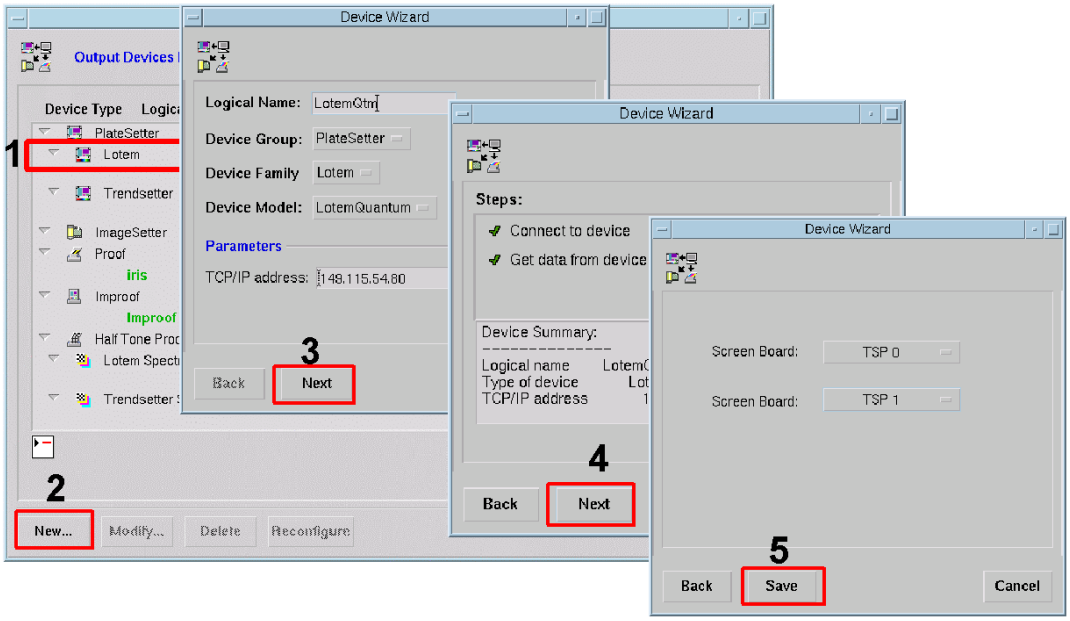
[3-11]

Brisque 4.0: The IP address is defined in the New Device dialog as follows:

1. From the Brisque Launch Pad, click the **Devices** icon, and from the Setup panel that appears, select **Devices**. The Output Device Handling window appears.
2. In the Device Area, expand the device types.
3. Under the **Platesetter Device Type**, select **Lotem**.
4. Click **New**.
5. In the **Logical Name** box, type `pl_2`.
6. In the **Device Group** box, select **PlateSetter**.
7. In the **Device Family** box, select **Lotem**.
8. In the **Device Model** box, select **Lotem**.
9. In the **TCP/IP address** box, type the Lotem IP address.

   Note: To find out the IP address of the Lotem platesetter, on the Lotem PC Controller workstation, from the **Start** menu, select **Run**. On the Run dialog box, in the **Open** box, type `winipcfg`. Click **OK**. The IP Address of the Lotem device appears.

10. Click **Next**.
11. In the next New Device Wizard dialog box, click **Save**.



- Verify connection between Brisque and platesetter

Reference:
http://techplanet.creo.com/output/computer_to_plate/lotem400/content/installation/400/chap25.htm

Instructor's Notes: Discussion

Ask the class to compare the Lotem 400 hardware and GUI with that of the Lotem 800. List the points on the flipchart, and discuss the similarities and differences.

Lotem 400 Calibration

The calibration procedure of the optic system of the Lotem 400 is performed by the service engineer at the customer site, after the platesetter installation. The following tests are involved in the calibration process:

- **Focus Test** - to find the focus stepper motor value that brings the beams' focus to coincide with the plate surface. **[3-12]**

  Reference:
  http://techplanet.creo.com/output/computer_to_plate/lotem400/content/installation/400/chap28.htm

- **Elevation Test -** to find the optimal elevation angle of the optical head. **[3-13]**

  Note: This test is rarely done. It is only performed in a case of specific banding where the problem has not been solved by other calibrations.

  Reference:
  http://techplanet.creo.com/output/computer_to_plate/lotem400/content/installation/400/chap29.htm

- **Intensity Test -** to find the required laser intensity for optimal exposure at a resolution of 100 dpm. **[3-14]**

  Reference:
  http://techplanet.creo.com/output/computer_to_plate/lotem400/content/installation/400/chap30.htm

- **Resolution Test -** to calibrate the optical head so that the distance between two adjacent laser dots will correspond with the file resolution. **[3-15]**

  Reference:
  http://techplanet.creo.com/output/computer_to_plate/lotem400/content/installation/400/chap31.htm

- **Delay Test -** to calibrate the Delay parameter used by the Data Distribution Board (DDB) so that the exposed horizontal lines are perfectly straight. **[3-16]**

  Reference:
  http://techplanet.creo.com/output/computer_to_plate/lotem400/content/installation/400/chap32.htm

Hands-on Activity: Install the Lotem 400

Using the Installation Checklist and the description of the procedures on TechPlanet, install the Lotem 400. **[3-17]**

Installation Checklist

Installation Item	Done
Site Preparation	
Floor space	
Electrical requirements	
Environmental conditions	
Air supply	
Network / modem requirements	
Hardware installation	
Check for damage	
Unpack and position platesetter	
Voltage setting	
Remove shipping guards	
Height adjustment of platesetter	
Plate conveyor assembly and connection	
Processor positioning	
Power and air compressor connection	
Operation monitor connection and cable setup	
Power up	
Network setup / time setting	
Software check and start up	
Brisque unpacking and setup	
Brisque connection (TCP/IP address, fibers)	
Brisque configuration	
Customer configuration setting	
Set press formats	

Installation Item	Done
Set plate size	
Lotem check	
Drum motion	
Interlocks system	
Laser status	
Full load / unload cycle	
Exposure tests	
Calibration tests - only if necessary	
Processor check	
Check file position on height axis (edge detection)	
Excurve calibration	
ATP of customer formats	
Perform a customer job	
Calibration	
Press runs	
Tone reproduction buildup	
Training	
Hardware training	
Brisque functionality training	
Workflow setup	

Instructor's Notes: Debriefing

Discuss the installation with the participants, listing any problems or recommendations on the flipchart.

Software Kit

Hands-on Activity: Install the Software Kit

Using the Software Installation Kit, install the software. **[3-18]**

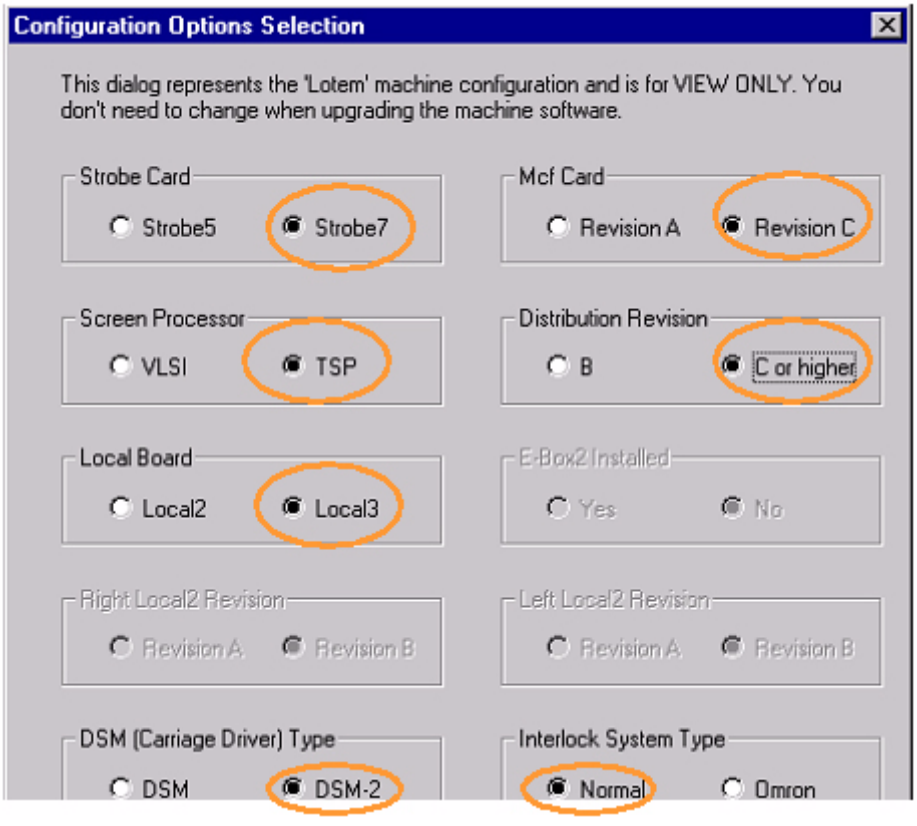
Note: Restore the registry from the supplied floppy disk.

The Lotem 400 software Installation Kit includes:

- A software START-UP diskette
- An operating system CD (Windows)
- An application software CD (PC Controller)
- A software Installation Procedure (PDF)

[3-19]

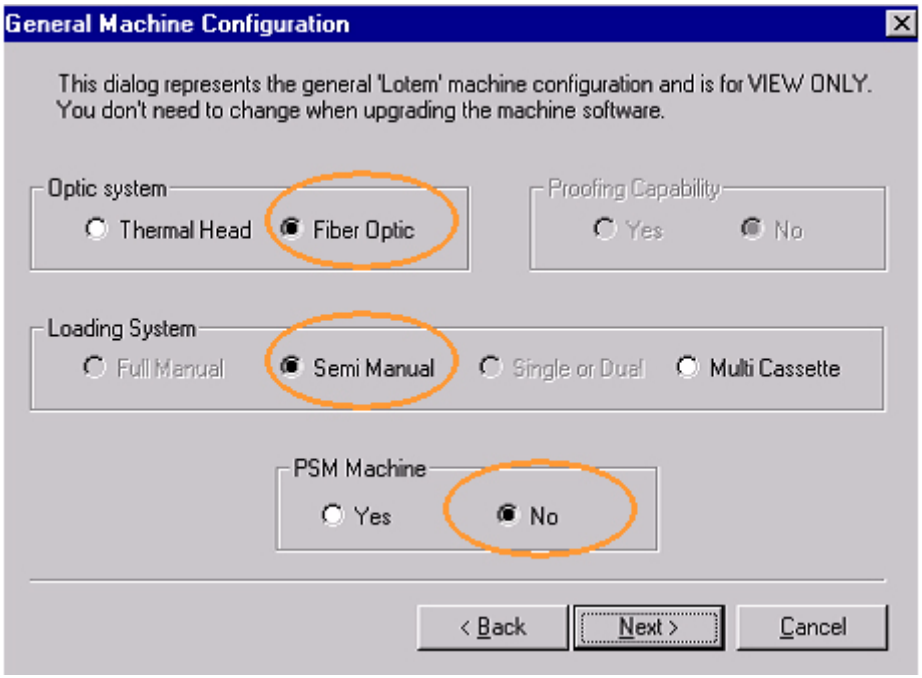
When you install the Lotem 400 software the Configurations Options Selection window will appear, select the following options according to the Lotem settings:



1. From the **Strobe Card** option, select **Strobe7**.
2. From the **Mcf Card** option, select **Revision C**.

3. From the **Screen Processor** option, select **TSP**.
4. From the **Distribution Revision** option, select **C** or higher.
5. From the **Local Board** option select **Local3**.
6. From the **DSM (Carriage Driver) Type** option, select **DSM-2**.
7. From the **Interlock System Type** option, select **Normal**.
8. Click **Next**. The General Machine Configuration window appears. Select the following:

[3-20]



9. From the **Optic system** option, select **Fiber Optic**.
10. From the **Loading System** option, select **Semi Manual**.
11. From the **PSM Machine** option, select **No**.

Note: The settings listed are typical Lotem 400 settings, though these may vary according to the different components installed on the platesetter.

Reference:

Software Kit:

http://techplanet.creo.com/output/computer_to_plate/lotem400/content/installation/400/chap39.htm

Module Recap

By the end of this module you should be able to: **[3-21]**

- Prepare the site prior to the Lotem 400 installation
- Install the Lotem 400 hardware
- Configure the customer settings
- Configure the data settings
- Calibrate the Lotem 400 using the following tests:
  - Focus Test
  - Elevation Test
  - Intensity Test
  - Resolution Test
  - Delay Test
- Install the Software Kit

Differences Between Lotem 400 & Lotem 800

Introduction

This module examines the differences between the Lotem 400 and the Lotem 800.

The Lotem 800 was created in February 1998. The Lotem 400 was created a year and a half later to meet the press needs of customers. In order to give proper on-site support to customers and to efficiently repair the Lotem 400, participants must learn the differences between the two devices.

Estimated Time

1 hour

Objectives

At the end of this module, you will be able to describe the major differences between the Lotem 400 and the Lotem 800 in the following systems: **[4-1]**

- Loading/Unloading System
- Drum System
- Electronic System

Loading/Unloading System

Instructor's Notes: Stimulate Curiosity

Begin this module with the hands-on activity, allowing the participants to discover the stages of loading and unloading themselves and to start being curious as to how the process works.

Hands-on Activity: Loading Plates

1. Use the GUI to complete the following: **[4-2]**
   a. Define a new plate
   b. Load a plate
   c. Find all the objects in the GUI related to Edge Detection
   d. Identify the stages of loading/unloading in the Lotem 400. Compare these stages with the stages involved in loading/unloading in the Lotem 800.
2. Experiment with the following plate-loading activities, and write down your observations for discussion later:
   a. Place the plate on the loading tray so that it is off-center. What happens?
   b. Place the plate to the left of the tray, and load. What happens?
   c. Place the plate to the right of the tray, and load. What happens?
   d. Load the plate, but do not push it right up toward the drum. What happens?
3. Repeat step 2 with various-sized plates, including a small plate.

Instructor's Notes: Discussion

After the participants have finished experimenting with the plate-loading, ask why the plate should be centered on the tray for loading.

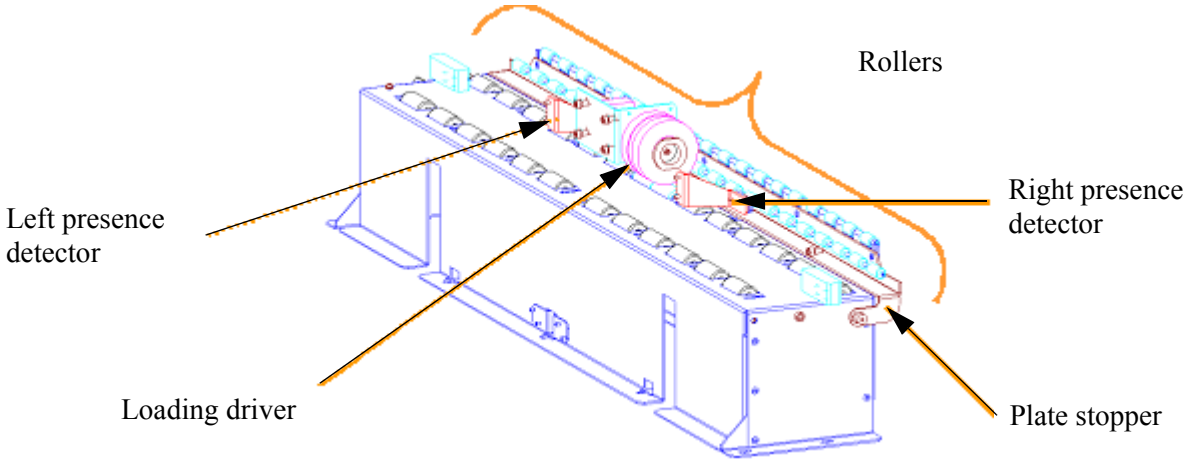
Explain that the manual loading system is designed to be symmetric. The grippers are positioned based on symmetry and on the assumption that the plate will be centered. There are two sensors that detect the plate: the left and right presence detectors. When a plate is loaded off-center, if both sensors are on the plate, then the load will proceed. If one sensor is not on the plate, the load will not proceed.

Demonstration

Demonstrate to the participants the process of loading and unloading a plate manually. Discuss the various problems described and their solution.

Loading System

The loading system consists of a motor (loading driver), the plate stopper door, and a left and a right presence detector. **[4-3]**



Note: To make sure that the plate is properly centered, the right & left presence detectors have to be set to ON.

Manual Load/Unload Procedure

In the **Lotem 800**, all loading is automatic from a cassette unit. In the **Lotem 400**, loading is manual unless an MCU is installed. **[4-4]**

Manual Plate Loading

- Punching of the plate is performed offline
- Position the plate centered on the loading tray
- The platesetter loads the plate onto the drum



As with the Lotem 800, manual plate loading is performed with the emulsion of the plate downwards.

[4-5]

Problem: Scratches on plate

Some plates, especially Fuji plates, are sensitive to marks and scratches. The plastic rollers on the loading tray can leave a slight pressure mark on the plate.

Solution: Soft Rollers

To solve this problem, soft roller kits for the manual loading tray may be required to prevent the scratching of plates. See the FCO for where all the rollers go. You usually need to replace the rollers under the loading motor.

Reference:
http://techplanet.creo.com/output/computer_to_plate/lotem800/content/tech_notes/memos/curing_scratching.htm

Manual Plate Release

1. Click the **Open Rear Door** icon in the PC controller.
2. At the platesetter rear side, rotate the drum forward towards the platesetter front. Rotate the drum until the detached edge of the plate is visible. Make sure the edge is not held by the head grippers.
3. Hold both sides of the plate and pull the plate.
4. Close the rear door.
5. Click the **Hardware** icon in the PC controller, open the loading system directory and double-click on **Loading System.**
6. In the loading system window, click **Restart Plate State** and confirm plate status "**Unload = No plate**".
7. Close the hardware and loading system windows.
8. Perform Reset.

Use caution when a plate is stuck in the platesetter:

- Remove everything that might get caught in the revolving drum or other moving parts.
- Switch off the main power at the rear of the platesetter.

Note: Wear gloves and release the entire plate.
Do not re-use the plate. Dispose of it properly.

Instructor's Notes: Interactive Demonstration

From this point on for the rest of the module, demonstrate the components of the Lotem 400. For each component, ask the participants how it differs from the Lotem 800. Build up a comparison table comparing the two Lotems. Try and aim towards the table used as the *Module Recap* on page 55.

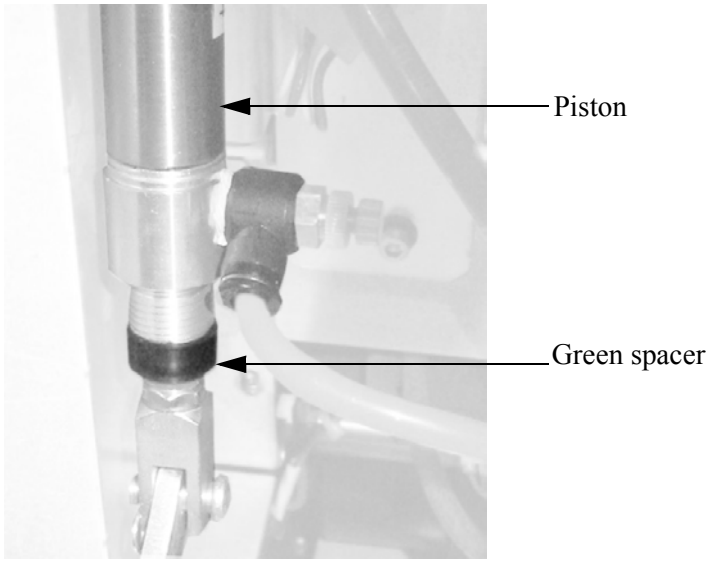
Pneumatic Manifold

The pneumatic manifold on the Lotem 400 is smaller than the manifold in the Lotem 800 since it does not relate to the loading system. A separate manifold is located in the MCU to control cassette air pressure when the MCU is attached. **[4-6]**

Unload Tray Arm

Sometimes, when the plate leaves the drum, the plate is too far away from the optical detector for it to sense that the plate has unloaded. The unload tray arm pushes the plate down, guiding it onto the unload tray. Sometimes, it pushes the plate down too hard causing damage to the plate. To prevent this damage, a green rubber spacer has also been added to the piston shaft, preventing the arm from going down too far. **[4-7]**

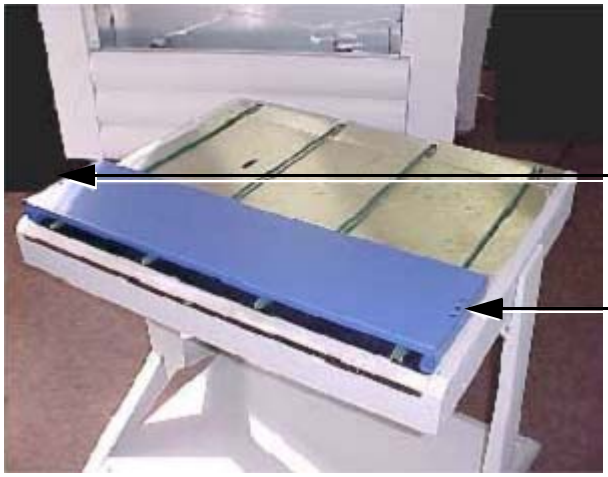
On the other hand, some plates may not be pushed close enough to the detector when the green washer is in place. In such cases you may need to remove the green washer.



Conveyor Cover Assembling

The **Lotem 400** can be connected to one of two conveyor types: a Round Belt Conveyor or a Flat Belt Conveyor. A detector is activated when a plate is loaded on the conveyor. However, when no plate is present, ambient light, reflecting off the conveyor, acts as a plate and activates the detector. To solve this problem, a cover is installed on the conveyor, preventing ambient light from activating the detector. **[4-8]**

No cover is needed in the **Lotem 800**.



Reference:

Further information on conveyor:

http://techplanet.creo.com/output/computer_to_plate/lotem400/content/installation/400/chap22.htm

Details on assembling the Conveyor Cover:

http://techplanet.creo.com/output/computer_to_plate/lotem400/content/fcos/fco510F28117.htm

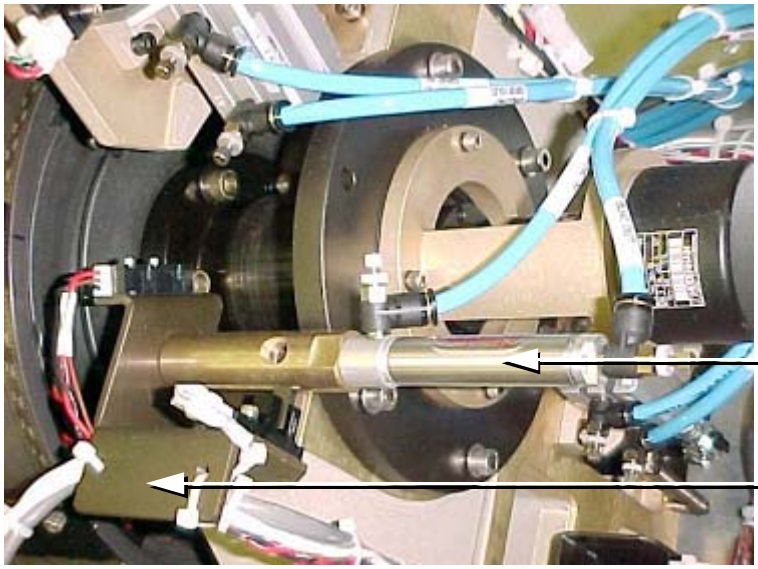
Drum System

[4-9]

Drum

In the **Lotem 400** the drum can reach a maximum of 1200 RPM (rotations per minute). In the **Lotem 800** the drum has a maximum of 900 RPM.

[4-10]



The balance weights are positioned by pneumatic pistons.

Note: Sometimes, a drum balance weight is moved (usually after installation). The system cannot fix this itself. The engineer should in this case manually move the weights until they are balanced. You cannot move one balance weight without the other. Move both balance weights to the stopper pin.

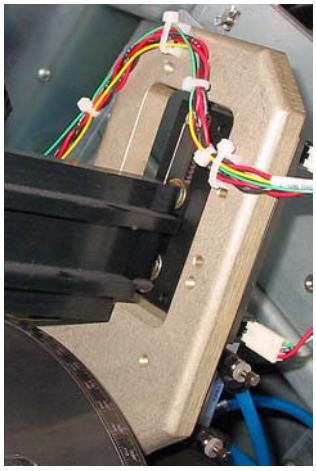
Vacuum holes, tail gripper channels, motor, encoder, balance weights, fly off switches, head/tail grippers, load/unload gripper actuator and load/unload rollers are similar to the Lotem 800.

Gripper Actuators

[4-11]



Actuator channel - left



Actuator channel - right

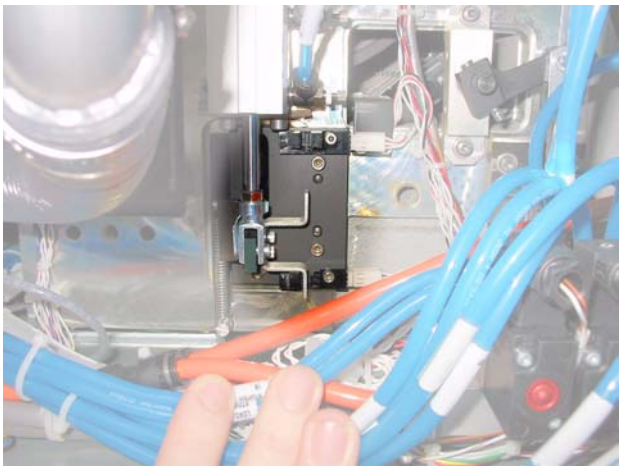
The design of the gripper actuators in the Lotem 400 is different from the Lotem 800. Pistons directly push the actuator bar downwards.

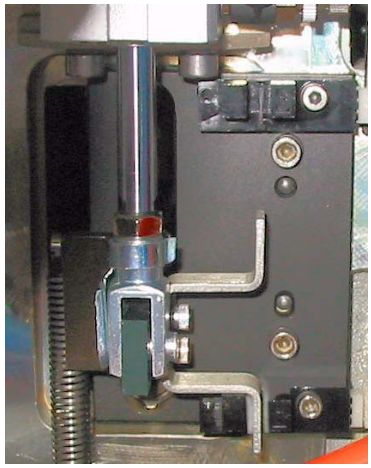
Each piston has its own restrictor so that you can adjust the speed of the actuator going up or down. The gripper actuators have home and end positions on each side (left and right).

Note: This design is supposed to be better, but there is more to go wrong.

Gripper Detector Flags

In the **Lotem 400** there are four sensors instead of the two on one side in the **Lotem 800**. **[4-12]**



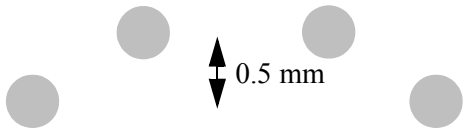


Note: Detector and flag may become misaligned.

Registration Pins on the Drum

[4-13]

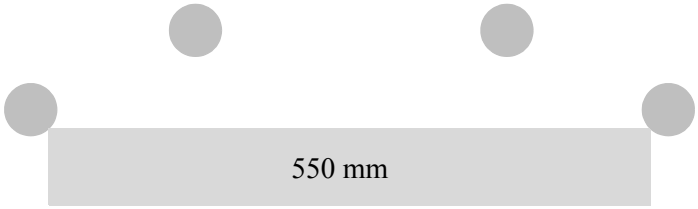
In the **Lotem 800**, the registration pins are built into the spoilers. In the **Lotem 400**, the registration pins stand alone and are designed differently.



Replacing Spoilers

If the spoilers need replacing, load a plate. The plate may be either small or large, depending on the pin to be changed. Verify that the plate touches two pins. Use the plate as a jig. Remove one spoiler at a time and position the new spoiler so that the pins touch the plate. Switch the spoilers so that the pins become asymmetric.

Using a 550 millimeter wide plate, the edges fall very close to the outer pins. They may not touch the bottom of the outer pins, but go to the inner pins:



Edges fall very close to the outer pins

In such cases, switch the spoilers, changing the position of the outer pins:



Switch the spoilers

Drum Vacuum Pump

[4-14]

In a Lotem 400 the vacuum pump is located in the platesetter. In a Lotem 400 with MCU an x-y vacuum generator is located in the MCU.

- Dry vacuum pump
- One phase
- Preventive maintenance:
  - ❒ Replace filter once every six months
  - ❒ Measure the vanes for excessive wear
- Additional transformer for CSA (or different vacuum pump)



In the **Lotem 400,** the drum vacuum pump works only with air and does not contain any oil or liquid. Because the vacuum pump is dry, it is louder than in the **Lotem 800**, where the pump works with fluid.

The **Lotem 400** has a 1 Phase entrance to the vacuum pump. The **Lotem 800** has a 3 phase entrance to the vacuum pump.

Note: Turning the drum vacuum motor on and off more than 10 times per hour is not recommended.

Vacuum Adjustment

The knob on the pump enables you to adjust the vacuum on the drum. All the way open is normal. Sometimes the vacuum is too much for the plate, and the vacuum may be reduced.

Note: In the new software, you can turn off the vacuum during unload.

Instructor's Notes: Interactive Discussion

Get the engineers to check the vacuum on the pump and find its value.
Discuss how this differs from the Lotem 800.

Reference:

Hose replacement:
http://techplanet.creo.com/output/computer_to_plate/lotem400/content/fcos/fco510F28032.htm

Procedure for replacing the Vacuum Pump filter once every six months:
http://techplanet.creo.com/output/computer_to_plate/lotem400/content/maint/premaint.htm#VacuumPump

Sealing off Vacuum Grooves

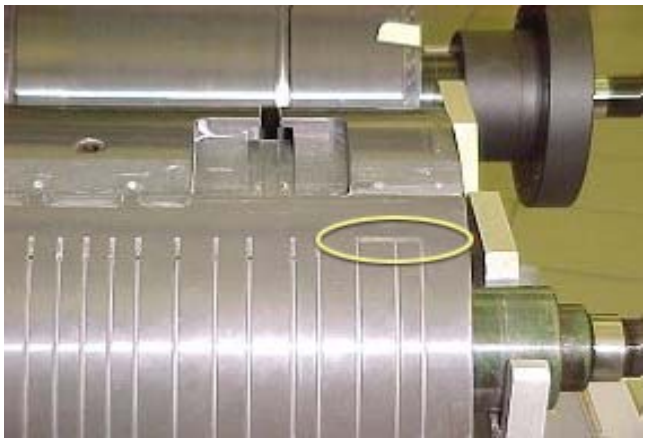
The horizontal grooves in the drum close to the head spoilers may cause large plates (larger than 680 millimeters) to get stuck on the drum. To prevent this, the grooves were lowered on newer models of the Lotem 400. If the plate gets stuck on the drum in older models, the following procedure should be performed. **[4-15]**

Recommended Procedure

The horizontal grooves on the drum should be sealed with epoxy glue.

To seal the horizontal grooves

1. Spread a small amount of epoxy glue evenly in the horizontal grooves on the left and right sides of the drum, as shown below.



2. Clean any excess glue from around the groove, so that the surface is completely smooth.

   Note: Excess glue around the groove can cause problems upon exposure.

3. After the glue has completely dried, test plate attachment to drum pins by loading a plate.
4. Readjust the loading parameters if required.

Note: On newer models, the groove position has been changed, so this procedure becomes unnecessary.

Reference:

Sealing Horizontal Grooves in Drum:

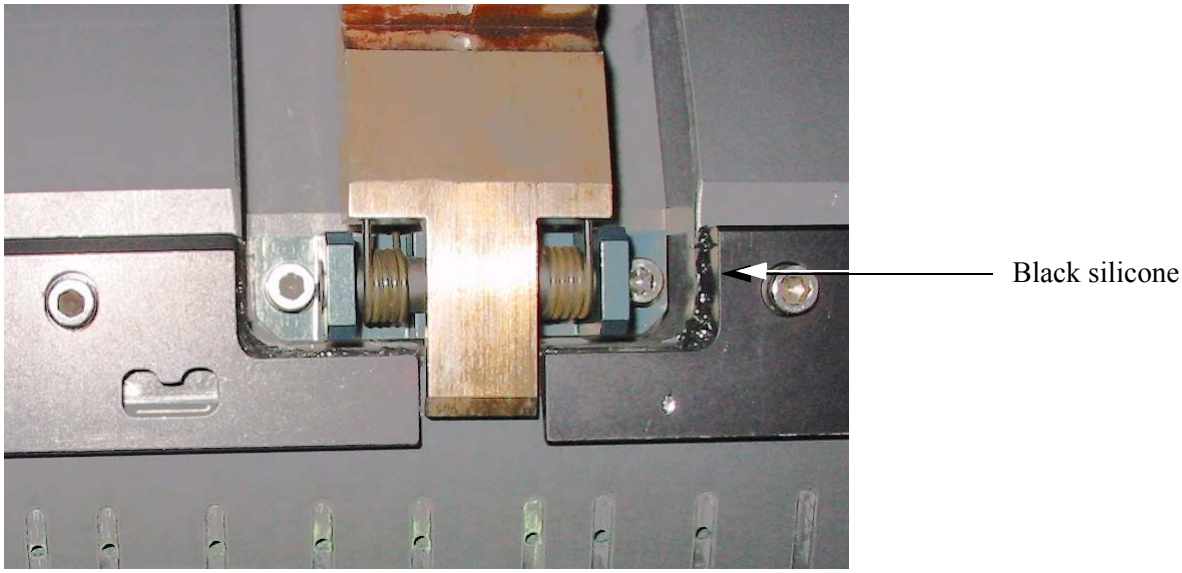
http://techplanet.creo.com/output/computer_to_plate/lotem400/content/fcos/fco28845.htm

Black Silicone in Spoilers

[4-16]

As the drum spins, a cushion of air can build up under the spoiler and plate in areas near the grippers. This may result in poor attachment of the plate to the drum along the gripper edge, which in turn, causes the image to be out of focus in these areas.

To prevent this from happening, engineers should add silicone to the spoiler.



Electronic System

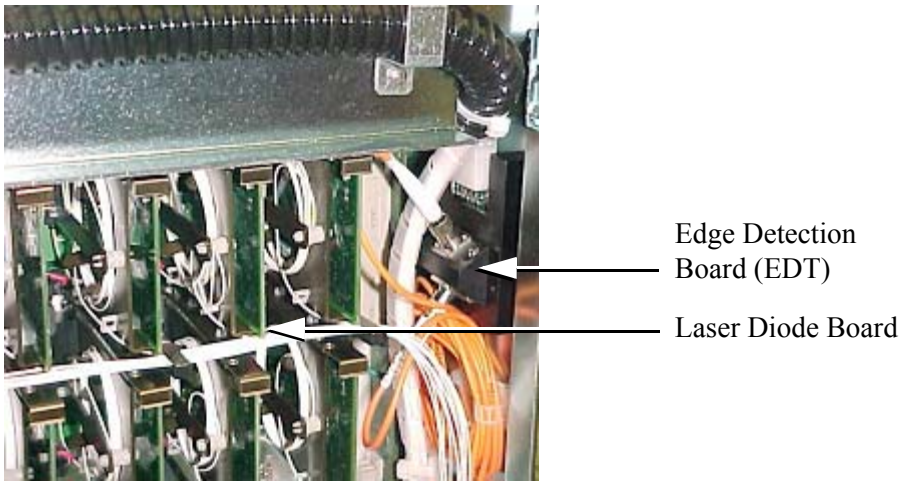
Laser Box

Unlike in the **Lotem 800,** where image positioning is referenced from the plate center, in the **Lotem 400** Family, referencing is from the plate edge. The Edge Detection (EDT) board informs the Multiple Control Function (MCF) when and where the edge is detected. The EDT board is located in the Laser Box (L-Box) next to the Laser Diode Drivers (LDDs).

[4-17]

Detail	Lotem 400	Lotem 800
Image positioning reference	From plate edge	From plate center
Edge Detection Board	☑ In the L-box	☒
Laser Diode boards	24	24 (Lotem 800 S) 48 (Lotem 800 F)

[4-18]



The EDT board is located in the L-Box next to the Laser Diode Drivers.

Note: The Edge Detection board will be covered in detail later in this training package. See *Edge Detection* on page 69.

Power Supply

There are three power supplies in the L-Box: **[4-19]**

- +/- 12 V/300 W (for TEC)
- - 5 V/300 W is supplied to the diodes (minimum is 300 W)
- + 5.2 V/150 W (logic)

Instructor's Notes: Activity

Ask participants to open the L-Box and locate the LDDs, the DDB-1, the TECs and the power supply cables.

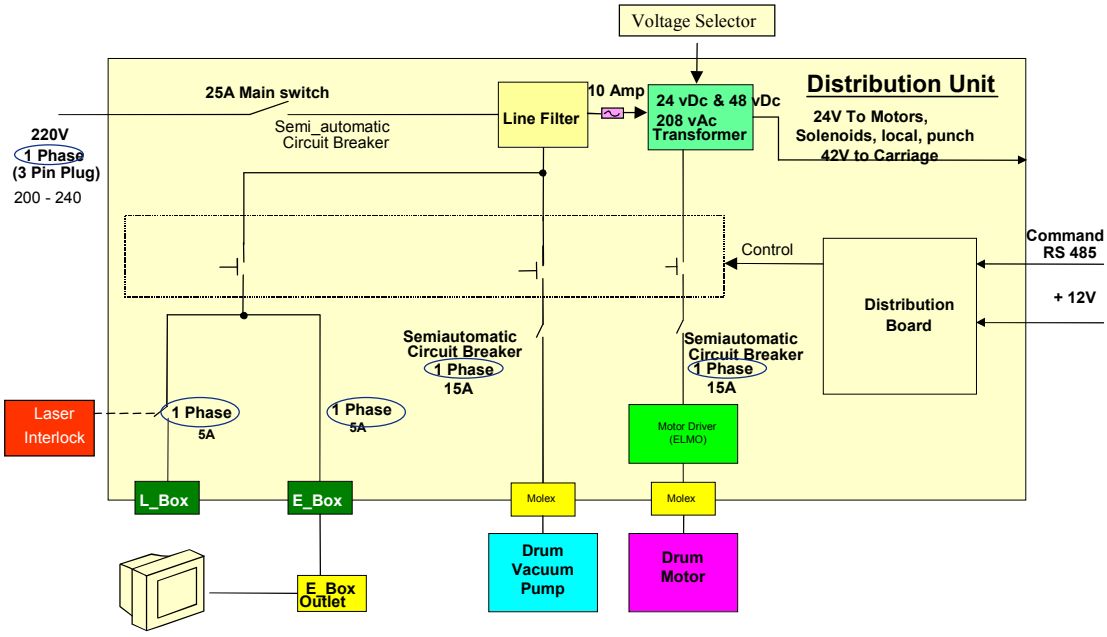
Distribution Box

There are two different versions of Distribution boxes (D-boxes): Version A and Version C. **[4-20]**

In Version A, sharp movements of the drum during plate loading and unloading activated the vibration detectors. This caused an error which automatically shut down the platesetter. This problem was solved in Version C when the vibration detectors are activated only over 200 RPM.

Note: The vibration sensors are no longer on the bottom of the Optomech. They are now between the frame and the Optomech, so they are easier to get to.

[4-21]



Distribution Unit

From the Transformer in the D-Box, 24 V is distributed to the motors, solenoids, the punches and the local 2 or local 3. The carriage unit receives 42 V from the transformer. **[4-22]**

The MCF-board in the E-Box controls the drum movement via the drum driver (Elmo) in the D-box. The CTP-board gives commands to the drum vacuum pump and to the drum motor. **[4-23]**

In the D-Box, there are two relays that work with the interlocks: **[4-24]**

- One relay is integrated in the CTP-board responsible for the 24 V interlock
- The other relay is in the Laser Interlock System, responsible for the laser interlocks (220 V to L-box)

[4-25]

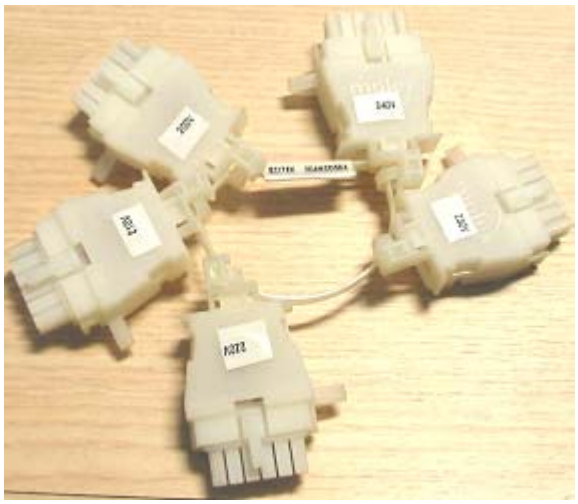
The D-box of the **Lotem 400** has a 1 Phase entrance with three pin plugs. The D-box in the **Lotem 800** has a 3 Phase entrance with five pin plugs.

Instructor's Notes: Interactive Discussion

- Ask participants to list the differences between the Lotem 400 D-board and the Lotem 800 D-board
- Discuss the differences between the Lotem 800 and Lotem 400 interlock board

Hands-on Activity: Power Selector Key

Unlike the **Lotem 800**, where a transformer may be necessary, the **Lotem 400** has no need for a transformer, regardless of the source voltage. The Lotem 400 has a set of keys, of which the one closest to the source voltage at the site will be used. **[4-26]**

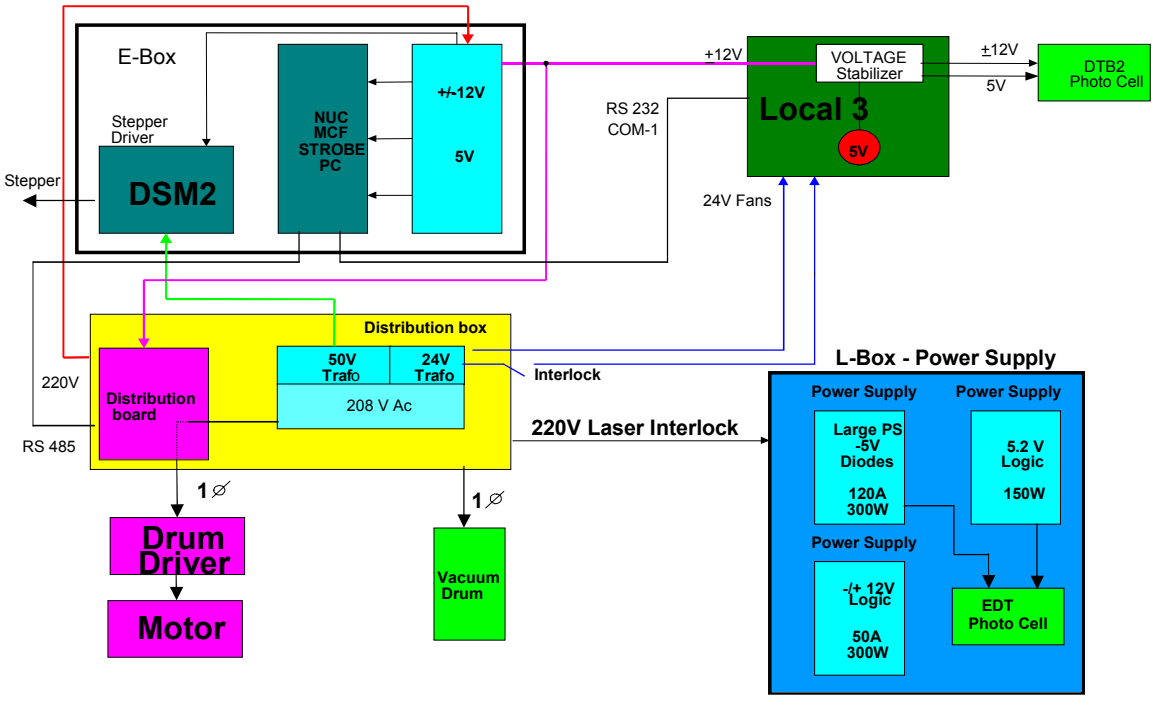


1. Use the voltage meter to measure the voltage at the customer site.
2. Choose the plug type that has the closest voltage to the one in the customer site.
3. Install the jumpers according to the power in the wall.
4. Plug in the plug.
5. Power on the platesetter.

Power Supply

The Electronic Box (E-Box) of the **Lotem 400** has the same design as the E-Box of the **Lotem 800**. **[4-27]**

The Stepper Driver of the **Lotem 400** drives the optic the same way as the **Lotem 800**.
The **Lotem 400** and the **Lotem 800** have the same Optical Head.



The **Lotem 400** has a Local 3 with one board that contains a Voltage Stabilizer of 5 V that is supplied to the DTB. The MCU has an additional Local 3 board.

The **Lotem 800** has two Local 3 boards.

Module Recap

In this module, you have learnt the major differences between the **Lotem 400** and the **Lotem 800**. The summary below highlights the differences: **[4-28]**

	Lotem 400	Lotem 800
Image Positioning Reference	From the plate edge	From the plate center
Plate Loading	Manual or automatic (with MCU)	Automatic
Conveyor Cover	Necessary to prevent ambient light reflecting on the detector	Not necessary
L-Box	• 24 laser diodes • Edge Detection Board	• 24 or 48 laser diodes, depending on the speed of the platesetter • No Edge Detection Board
D-Box	1 Phase entrance with 3 pin plugs	3 Phase entrance with 5 pin plugs
Power Selector Key	No need for a transformer, regardless of source voltage	In Europe, transformer necessary, adapted according to source voltage
Power Supply	• One Local 3 with one board that contains a Voltage Stabilizer of 5 V that is supplied to the DTB. • MCU has an additional Local 3 board	Two Local 3 boards
Drum Vacuum Pump	• Noisy - pump is dry • 1 Phase entrance	• Less noisy - pump works with fluid • 3 Phase entrance
Maximum Drum Speed	1200 RPM (rotations per minute)	900 RPM

Plate to Drum Parallelism

Introduction

The image exposed on a plate must be parallel to the edge of the plate. In this module you will learn how to ensure that the image will be exposed parallel to the edge of the plate.

Estimated Time

5 hours

Objectives

At the end of this module you will be able to: **[5-1]**

- Recognize the components that work together to ensure that an image is exposed parallel to the edge of the plate
- Disassemble and assemble the plate loading/unloading system
- Adjust the plate loading motor pressure
- Check the attachment of the plate to the head pins
- Measure parallelism
- Adjust the plate registration pins
- Calibrate the plate length detector

Overview

The image exposed on a plate must be parallel to the edge of the plate. When the image does not get exposed parallel to the edge, there may be problems with the following components: **[5-2]**

- The plate loading motor
- The plate attachment to the head pins
- The adjustment of the registration pins
- The calibration of the plate length detector

During this module participants will learn how to adjust and calibrate these components correctly, and to measure parallelism. These problems are among the most frequently encountered by field engineers with the Lotem 400.

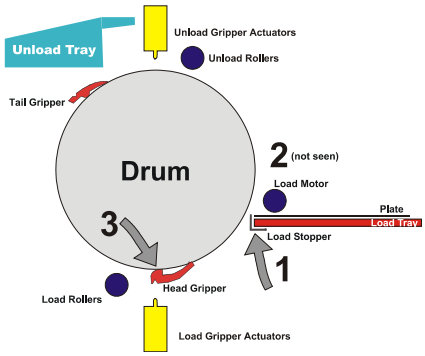
Loading/Unloading Sequence

It is important to fully understand the sequences of loading and unloading plates. **[5-3]**

Instructor's Notes: Interactive Lecture

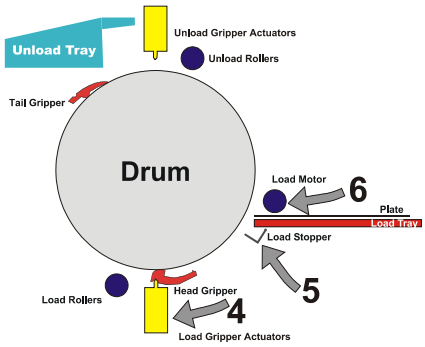
Explain the sequences step-by-step using the PowerPoint slides. Then ask the participants to load and unload a plate, taking note of the explicit sequence of events. You may recommend that they load the plate using the "Ask before do" option, and follow the sequence of events.

Loading Sequence [5-4] - [5-22]



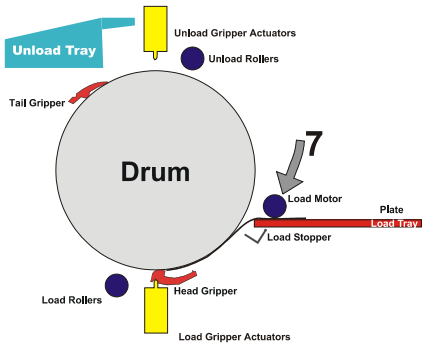
Prepare to load [5-4]

1. Close load stopper
2. Read left and right presence detectors on load tray
   - Left & right detectors see if the plate is more or less even
   - Right detector also measures plate length (around drum)
3. Move drum so head grippers are opposite load gripper actuator



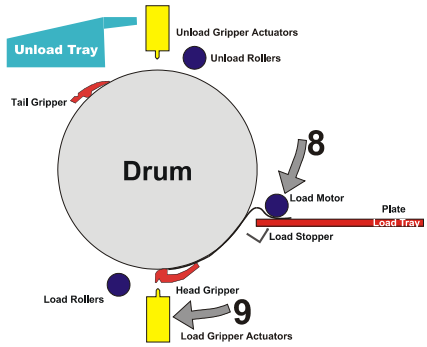
Open grippers and stopper

4. Open head grippers
5. Open load stopper
6. Reset load motor
   - There is no home position, so at this stage it sets itself to home position



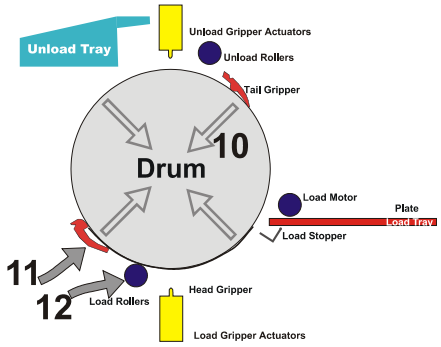
Move plate to head gripper

7. Rotate load motor (PlateMotorPosToDrum mm value, this value will be approximately 3 millimeters more than the actual plate length)
   - To reach registration pins - almost touching, but not hitting them
   - Now have position on motor
   - Count starts from existing position in Step 7



Force plate to head gripper

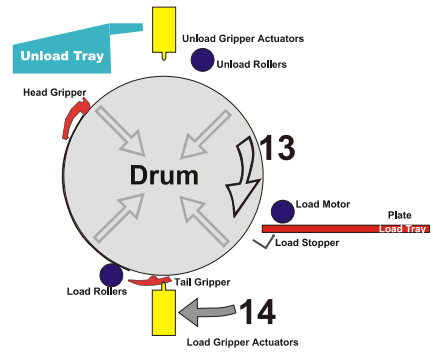
8. Rotate load motor to “Extra position” forces plate into gripper
   - Very low speed
   - Lots of torque
   - Extra movement is limited by time, about 2 to 3 seconds
   - To set “extra” - set at 0, load a plate, measure how far it is from pins
9. Release load gripper actuator, gripper closes



Vacuum on and move drum

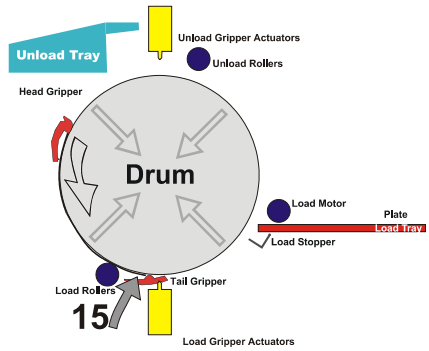
10Drum vacuum on

11. Rotate drum to load roller position
12. Load roller on



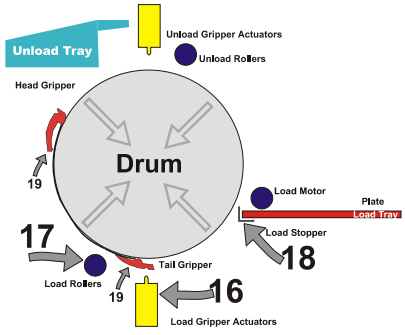
Check plate length & open tail grippers

13. Rotate drum until tail gripper is opposite load actuator. Check plate length against plate definition using the right presence detector.
14. Engage load actuator, open tail grippers



Prepare to attach tail grippers

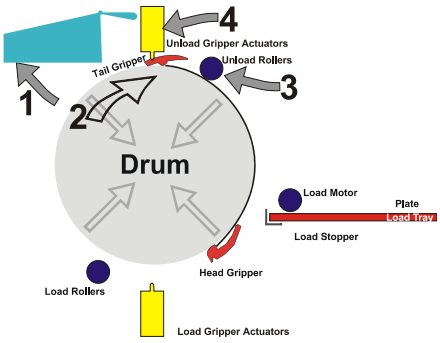
15. Rotate drum in reverse until tail grippers are positioned over tail edge of plate



Conclude loading sequence

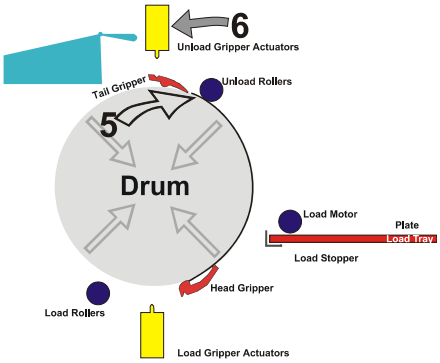
16. Disengage load actuator tail gripper closes on plate
17. Disengage load rollers
18. Close load stopper
19. Check gripper positions

Unloading Sequence [5-23] - [5-46]



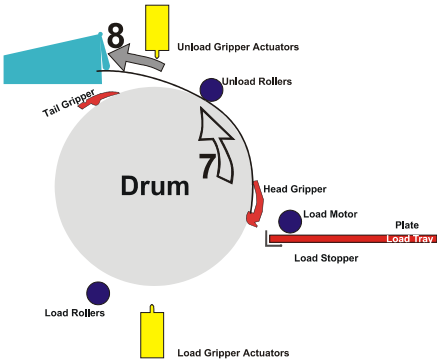
Open tail grippers

1. Verify there is no plate on conveyor or unload tray
2. Rotate drum to position tail gripper under unload actuator
3. Engage unload roller
4. Engage unload gripper actuator
   Open tail gripper



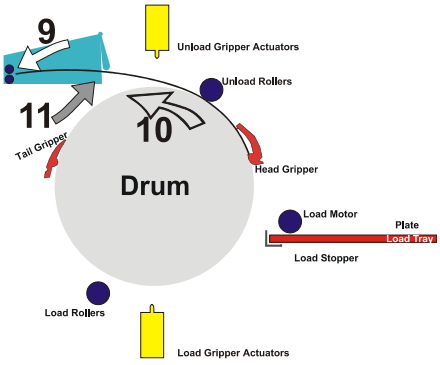
Release plate from tail grippers

5. Rotate drum to clear plate from tail grippers
6. Retract unload gripper actuators
   Tail gripper closes
   - Vacuum turns off now for 0.15 millimeter plates
   - Left on for thicker plates



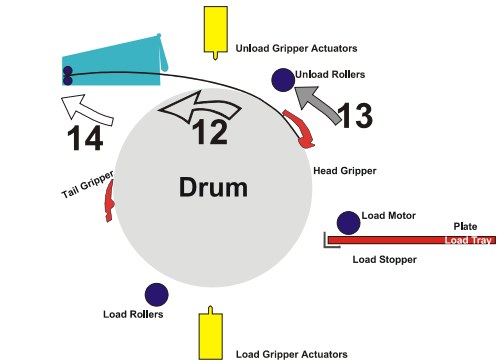
Move plate to tray

7. Reverse rotate drum to position where plate enters unload tray
8. Engage unload tray arm



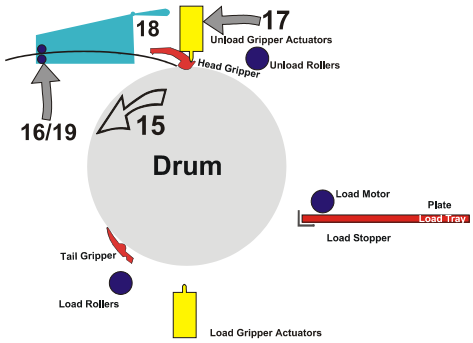
Engage tray rollers

9. Switch on unload tray rollers
10. Rotate drum relative –40
11. Verify “Out of Drum” detector is on



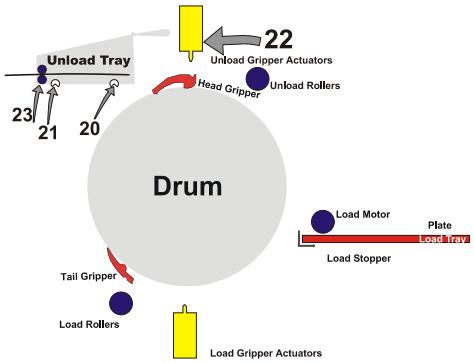
Release unload rollers

12. Rotate drum to unload roller position
13. Retract unload rollers
14. Engage unload conveyor



Release plate from head grippers

15. Rotate drum until head gripper is under unload gripper actuator
16. Switch off unload tray rollers
17. Engage unload actuator
    Head grippers open
18. Retract unload tray arm
19. Switch on unload tray rollers



Remove plate from unload tray

20. Verify
    Plate out of drum= false after 3 seconds
21. Verify
    Plate out of machine = true after 3 seconds
22. Retract unload actuator
    Head grippers close
23. Switch off unload tray rollers
    Plate out of machine = false
    Plate on conveyer = true

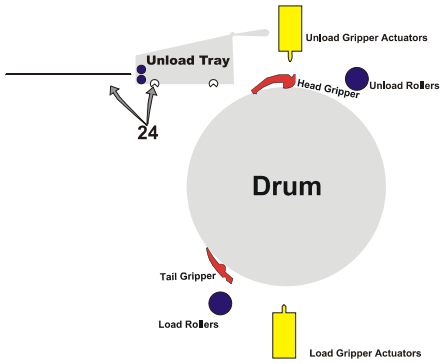


Plate out of unload tray

24. Verify
    Plate out of machine = false
    Plate on conveyor = true

Plate Loading and Unloading System Practice

[5-47]

Hands-on Activity: Disassemble and Reassemble Load/Unload System

Use the procedures described in TechPlanet to disassemble and reassemble the Load/Unload System.

Reference:

http://techplanet.creo.com/output/computer_to_plate/lotem400/content/assem/loading_system.htm

http://techplanet.creo.com/output/computer_to_plate/lotem400/content/assem/unloading_system.htm

Instructor's Notes: Debriefing

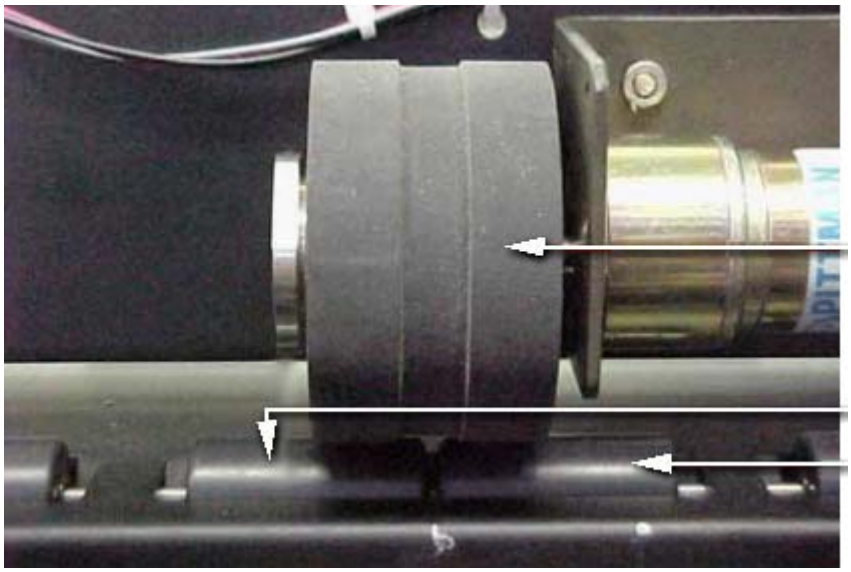
Discuss with the participants any problems that were encountered during the activity. Discuss any solutions that were found.

Plate Loading Motor Adjustment

The pressure on the plate loading motor wheel should be adjusted in the following cases: **[5-48]**

- Wheel marks appear during expose on a thin plate because the pressure on the wheel is too high
- Registration problems occur because the plate is not correctly positioned on the drum pins
- The plates may be dented or misregistration may occur because there is excessive pressure on the plate motor wheel and the plates do not load properly

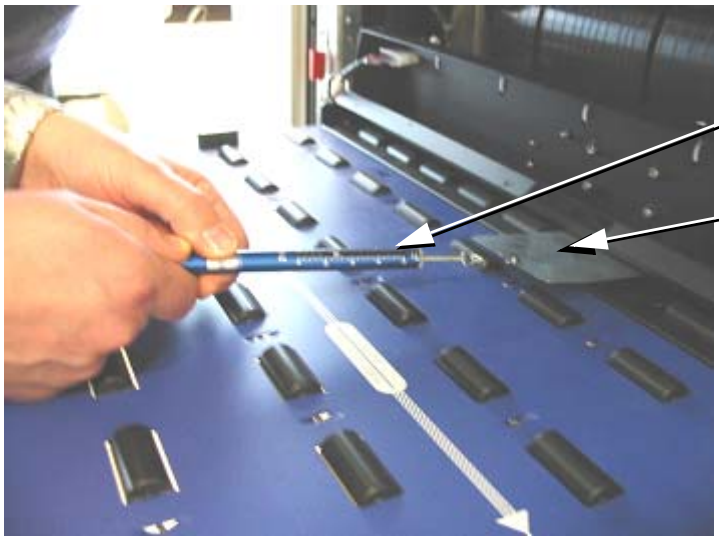
[5-49]



When adjusting the Plate Motor Wheel, make sure that the plate enters the drum squarely and that the emulsion is not scratched by the roller motor. The adjustment is most critical for 0.15 millimeter plates.

The pressure should be steady on both sides of the loading motor wheel.

[5-50]



Hands-on Activity: Adjust Loading Motor Wheel

[5-51]

If the loading motor wheel requires adjustment, then follow the procedure on TechPlanet for the adjustment.

Reference:

http://techplanet.creo.com/output/computer_to_plate/lotem400/content/procedures/AdjustingPlateLoadingMotor.htm

Plate Attachment to Head Pins

To obtain good registration, all loaded plates should touch the two pins in the head gripper spoilers. **[5-52]**

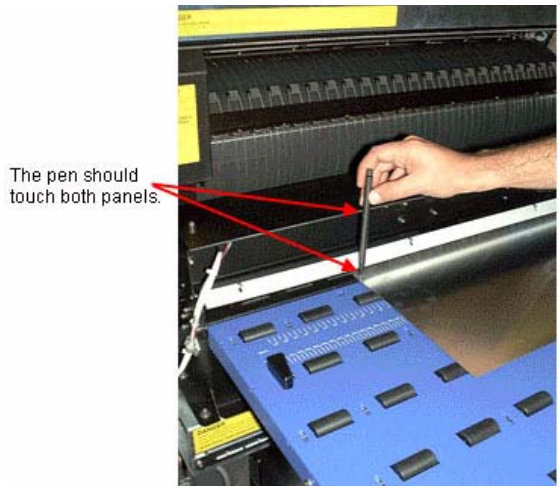
The sequence for loading a plate to the drum is performed in two steps:

1. **Move the plate forward until it almost touches the pins in head gripper spoilers:**
   a. Drum moves to a loading position (Parameter name - *Load Head Gripper Location* ~(-204)).
   b. The actuators open the head grippers.
   c. The loading stopper door opens.
   d. The loading motor moves the plate forward 3 millimeters away from the pins (Parameter name - *Load Plate to Drum Position* ~104).
2. **Press the plate against the pins in the spoilers:**
   a. The loading motor moves the plate forward (with different torque for each plate thickness).
   b. After 1.6 seconds, the head grippers are released and the plate is grasped by the head grippers.
   c. During the 1.6 seconds, the plate should reach the two pins and press against them, but without making any marks on the plate edges.

Note: The plates must be pushed firmly against the registration pins, but not so strongly as to dent the plates.

Hands-on Activity: Check Contact with Registration Points

To check that plates of various sizes properly contact the registration points, there is a procedure to perform whereby two lines are drawn on the plate, and the lines are checked for being parallel. **[5-53]**



Before you can perform this procedure, however, you should have performed two other procedures:

1. Loading motor adjustment on the thinnest plate (0.15 millimeters)
2. Gripper calibration

Follow the procedure on TechPlanet to ensure that plates of different sizes properly contact the registration points.

Note: Keep all the windows open during the entire procedure.

Reference:

http://techplanet.creo.com/output/computer_to_plate/lotem400/content/procedures/attach.htm

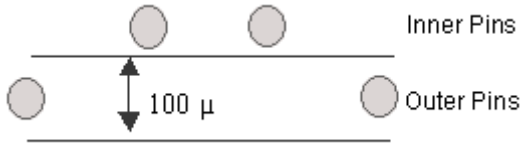
Adjusting Plate Registration Pins

The image exposed on a plate must be parallel to the edge of the plate. If the plate registration pins are not parallel, they cause the plate to skew, resulting in an image that is not parallel to the edge of the plate. This procedure describes how to adjust the plate registration pins to ensure that the plate is parallel to the pins. **[5-54]**

Pin Registration System

Four registration pins are installed on the drum and located along two different lines. **[5-55]**

- The two inner pins are used for small plates, while the two outer pins are used for larger plates.
- The inner pins are positioned closer to the drums than the outer pins so that only two pins will make contact with a plate. Only the outer pins contact larger plates.



Pin registration system

The image exposed on a plate must be parallel to the edge of the plate. If the plate registration pins are not parallel, they cause the plate to skew, resulting in an image that is not parallel to the edge of the plate.

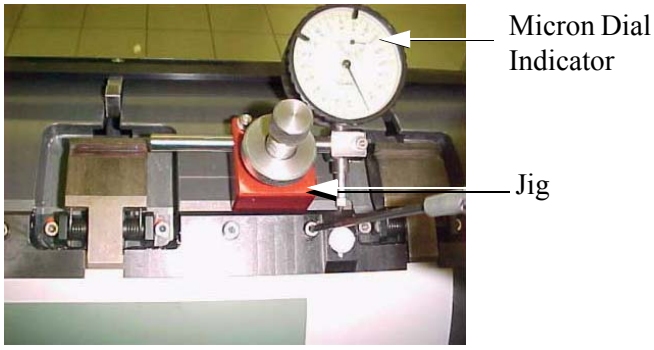
Hands-on Activity: Measure Parallelism

The procedure for the adjustment of the plate registration pins need only be performed if the plate is not parallel to the pins. This procedure explains how to check for parallelism. **[5-56]**

Note: The measurements and adjustments are made to either the two inner pins or the two outer pins. The inner pins are higher than the two outer pins.

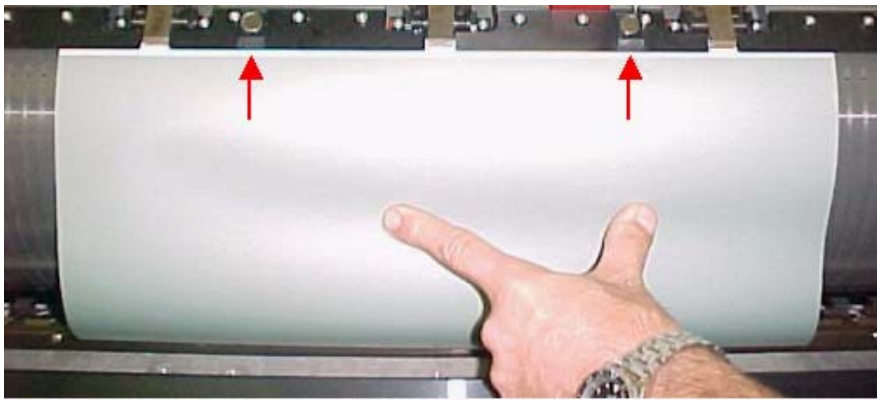
Required Tools

- Drum Pin Registration Fix Assembly Jig, PN 291A9B155
- Micron Dial Indicator



Procedure

1. Expose a strip along the drum, at a distance of 20 millimeters from the edge of the plate.
2. Process the plate.
3. Measure the distance between the image and the edge of the plate where the pins touch the plate. If the difference between the two measurements is greater than ±20 microns, perform the adjustment procedure (reference below).



Measuring points

Hands-on Activity: Adjust Plate Registration Pins

Consult the plate attachment procedure in the TechPlanet, and adjust the plate registration pins to ensure that the plate is parallel to the pins. **[5-57]**

Note: This is a rare procedure to perform.

Reference:

http://techplanet.creo.com/output/computer_to_plate/lotem400/content/procedures/adjustingplate.htm

Plate Length Detector

Make sure that the Lotem 400 recognizes the exact plate length around the cylinder. **[5-58]**

The right side detector detects the start of the plate and the drum encoder measures the plate length. The registry definition has an error margin of up to 3 millimeters.

Hands-on Activity: Adjust Plate Length Detector

Use the procedure described in TechPlanet to adjust the plate length detector. **[5-59]**

Reference:

Plate Length Detector procedure:

http://techplanet.creo.com/output/computer_to_plate/lotem400/content/procedures/platedetect.htm

Module Recap

At the completion of this module you should be able to: **[5-60]**

- Recognize the components that work together to ensure that an image is exposed parallel to the edge of the plate
- Disassemble and assemble the plate loading/unloading system
- Adjust the plate loading motor pressure
- Check the attachment of the plate to the head pins
- Measure parallelism
- Adjust the plate registration pins
- Calibrate the plate length detector

Edge Detection

Introduction

Since image positioning in the Lotem 400 is referenced from the edge of the plate, it is most important that the plate edge can be accurately detected. This module will describe the edge detection process.

Estimated Time

3 hours

References

Edge Detection for Version 1.30.04 and below:

http://techplanet.creo.com/output/computer_to_plate/lotem400/content/procedures/edgedetectionv13004below.htm

Objectives

At the end of this module you will be able to: **[6-1]**

- Explain the theory of edge detection
- Clean the lens
- Perform the focus test
- Perform the edge detection procedure

Overview

Instructor's Notes: Lecture

Use the PowerPoint slides to give a lecture about the theory of edge detection. The main hands-on activities will be at the end of the module, when participants will perform the edge detection procedures.

In the **Lotem 800**, an image is positioned in reference to the center of the plate. Different plate sizes can easily be centered. However, in the **Lotem 400** and Lotem 400 with MCU, the image is positioned in reference to the edge of the plate. It is therefore essential to detect the edge of the plate so that the image will be correctly positioned on the plate. **[6-2]**

There are two main reasons for redefining edge detection: **[6-3]**

1. Location of spoilers may differ from one machine to another.
2. The power needed for edge detection may change with different emulsions.

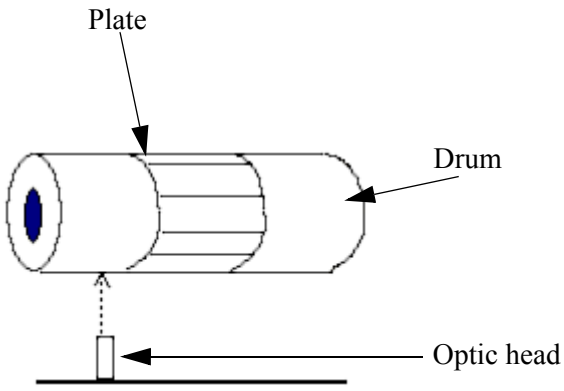
There are several methods for detecting the edge of a plate. The procedure described below is recommended.

Edge Detection Theory

[6-4]

Description

Accurate image positioning on the plate is based on edge detection. Edge detection (EDT) is based on the laser reflection difference between the plate and the bare drum.



[6-5]

Each time an exposure sequence begins, a single laser diode is turned on (usually diode 0) emitting a beam onto the drum. Reflection from that beam is detected by an extra optical fiber adjacent to fiber # 0 in the V groove. The intensity of this reflection is converted to a measurable voltage by the Slave Sproc in the MCF board.

Drum Reflection

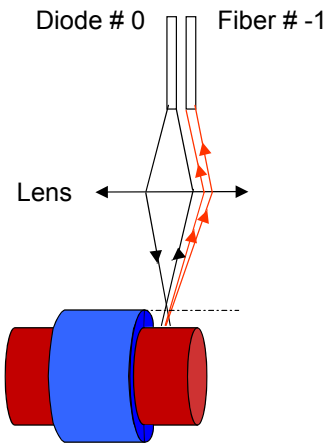
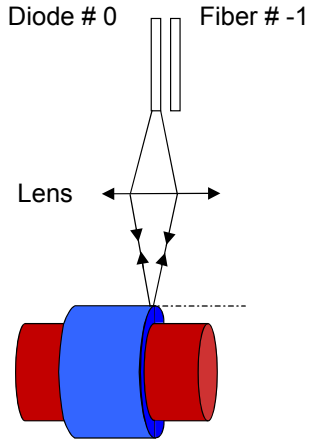


Plate Reflection



[6-6]

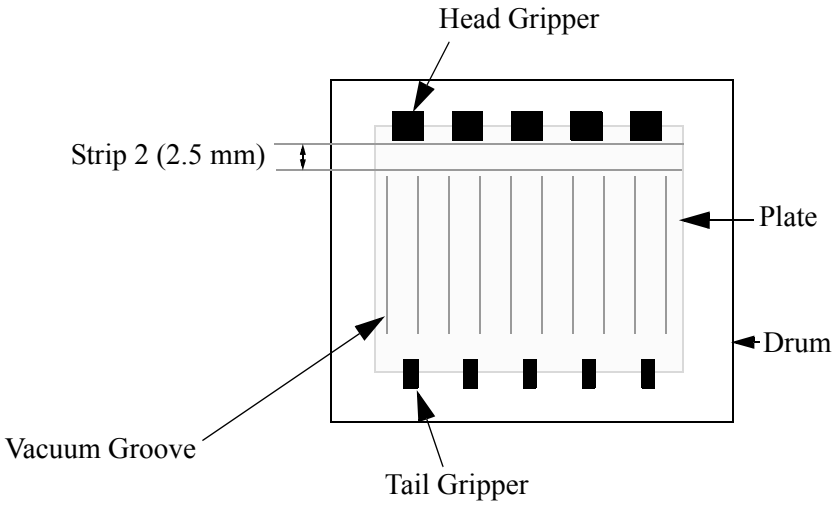
When the beam hits the **drum** instead of the plate, the beam is out of focus producing some reflection. This reflection translates to about half a volt in the MCF.

When the beam is in focus on a **plate**, there is no reflection, which translates to a voltage of 0 in the MCF.

Once the carriage starts moving away from its home position, the voltage will be about half a volt until the laser beam hits the plate at which time the voltage changes to 0. The edge of the plate is recognized. So, as the optic head travels across the drum, the plate edge is detected when the reflection changes.

[6-7]

Edge detection must take place within a narrow window around the drum direction between the end of the head grippers and the beginning of the vacuum grooves. That is because reflection from the grippers or vacuum grooves may be similar to the plate. This window is referred to as **Strip 2.**



There are two stages to the edge detection procedure:

1. Define the upper and lower limits for strip 2.
2. Define the minimum laser power needed for edge detection.

The procedure to define minimum laser power starting with version 1.60 has been automated and simplified. It allows customers to perform their own edge detection calibration. A description of this procedure may be found in the Version 1.60 release notes (See *Improved Plate Edge Detection and Calibration* on page 80).

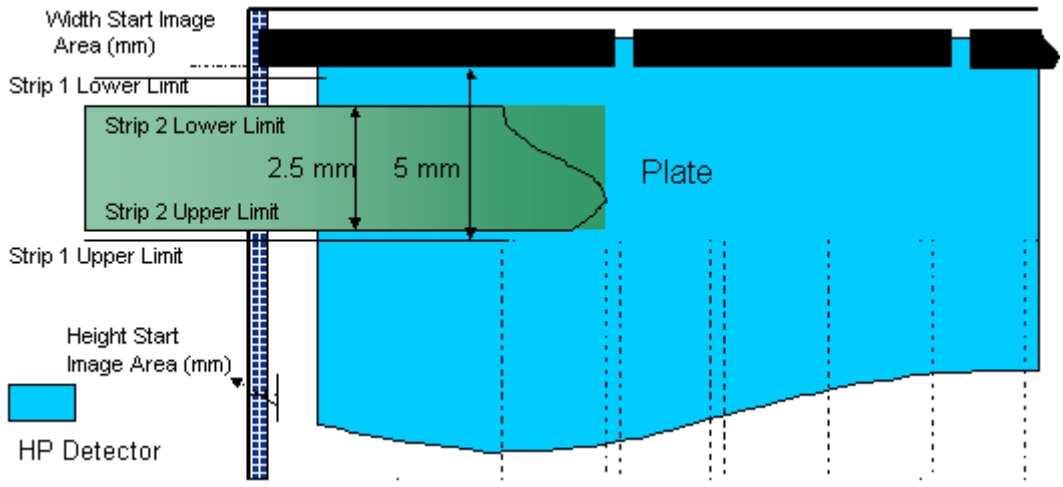
Note: Only version 1.60 supports the Single Cassette Unit (SCU).

The following procedure should be used with all previous versions:

The calibration procedure for edge detection results in three parameters to be modified by the field service engineer: **[6-8]**

1. Laser Power (mw) - Power required from the single laser beam during edge detection
2. Strip 2 Lower Limit Value (mm)
3. Strip 2 Upper Limit Value (mm)

   These values are the beginning and end locations around the drum where edge detection may take place. The difference between these two values should be 2.5 millimeters.



Edge Detection Procedure

The optics must be in correct focus for the plate thickness in use before starting the edge detection procedure. To ensure a proper detection of the reflection, make sure the lens is clean. Then perform a focus test. **[6-9]**

Hands-on Activity: Clean the Lens

[6-10]

The frequency of cleaning the lens is dependent on the machine use and the plate type. (Kodak plate users should perform this procedure more frequently).

Reference:

http://techplanet.creo.com/output/computer_to_plate/lotem400/content/maint/premaint.htm#LensProtector

Hands-on Activity: Perform Focus Test

The **Focus** test finds the focus stepper motor value that brings the beams' focus to coincide with the plate surface. The focus stepper motor value depends on the type of plate, so this test should be repeated for different plate types. **[6-11]**

Make a note of the correct focus value for this plate.

Note: It is best to perform the focus test on a small plate so that the grooves can be seen later during the procedure.

Reference:

http://techplanet.creo.com/output/computer_to_plate/lotem400/content/installation/400/chap28.htm

Tips for Edge Detection

Instructor's Notes: Lecture

Since the edge detection procedure is central to the accurate performance of the Lotem 400, it is essential that the engineer knows as many hints and tips as possible. Go through these tips before the participants perform the edge detection procedure.

[6-12]

1. The focus needed for thin plates (0.1 and 0.15 millimeter) should be **100 units less** than the measured focus because at actual focus it is difficult for the machine to detect the difference between plate and drum.
2. Laser power: **Increase** the power to get a stable data reading from the **drum** (close to 0.5) and **decrease** the power to get a stable data reading from the **plate** (close to 0).
   Find the first laser power that gives a stable reading.
3. If you lower the power too much, the reading will not be stable.
   If you raise the power too much, there is more reflection from the plate.
4. **If you cannot get good readings**: **[6-13]**
   Clean the tip of the orange fiber. It may be dirty.
5. **If you cannot get any reading at all**:
   Check the MCF board connection.
6. **If the MCF board connection is OK, but there is still no reading**:
   Diode 23 reads the data results. If there is no reading, close Diode 0 in the L-Box. Select Diode 23 in the Edge Detection System. Test to see whether you get any reading.
7. **If you are detecting the edge of a small plate (330 x 492 millimeter) with version 1.5.07 or 1.5.08**: **[6-14]**
   Problem: Sometimes the edge of the plate lies in the middle of the grippers, causing hot spots.
   Solution: Move the plate to the side by 30 millimeters.

Hands-on Activity: Edge Detection

Use the procedure described on TechPlanet to find the edge of the plate. **[6-15]**

Reference:

http://techplanet.creo.com/output/computer_to_plate/lotem400/content/procedures/edgedetectionv13004below.htm

Module Recap

At the completion of this module you should be able to: **[6-16]**

- Explain the theory of edge detection
- Clean the lens
- Perform the focus test
- Perform the edge detection procedure

New Features in Version 1.60

Introduction

This module aims to make you familiar with the changes and additions that have been made to the Lotem 400 since version 1.30.04 (including patch 2.)

Estimated Time

2 hours

Required Resources

Software with version 1.60

References

Release notes:

http://techplanet.creo.com/output/computer_to_plate/lotem400/content/doc/Release%20Notes%20Lotem%20400_1.50.08_OCT7.pdf

Objectives

At the end of this module you will be familiar with: **[7-1]**

- Loading the Lotem 400 software version 1.60
- The improved plate edge detection and calibration
- The improved plate length measurement and calibration
- A list of new features available

Loading Version 1.60

Instructor's Notes: Discussion

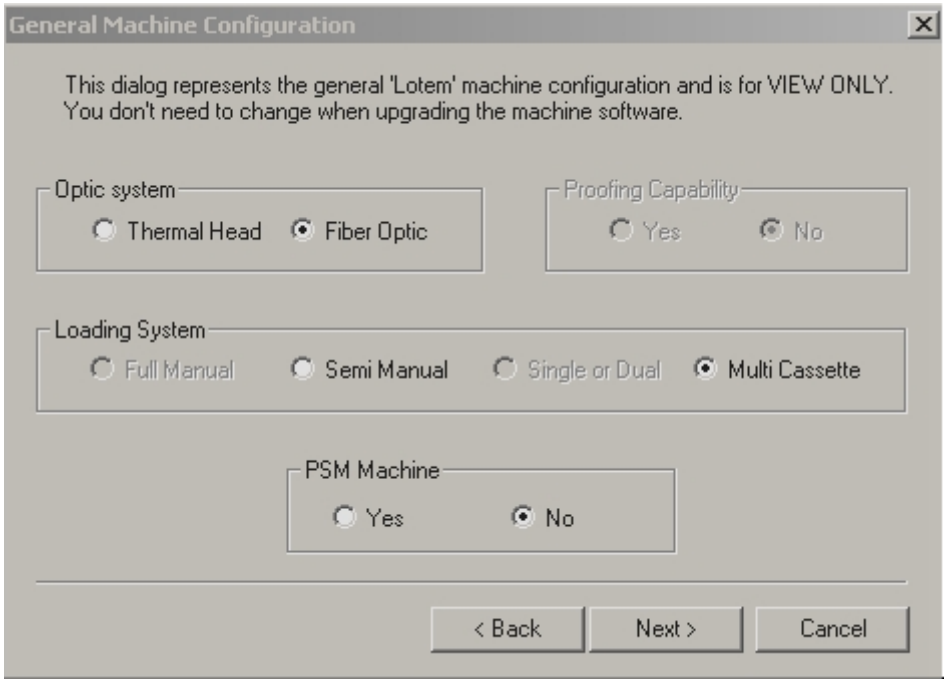
Having the performed the edge detection procedure with multiple windows, the participants will now install version 1.60, and can see for themselves the improved functionality and usability. After installing the new version, let the participants perform edge detection again, and discuss the improvements. Discuss the implications for the customer and the engineer.

Note: When loading software version 1.60 on the Lotem 400 with MCU, verify that New Short Pins Assembly is installed (if not, perform FCO # 510F28818 or 507A4E235).

Hands-on Activity: Install Version 1.60

The Lotem Install Setup Wizard guides you through the setup process. **[7-2]**

Following are new windows in the setup procedure of version 1.60



As with any wizard, the next few screens depend on the choices you make in this dialog.

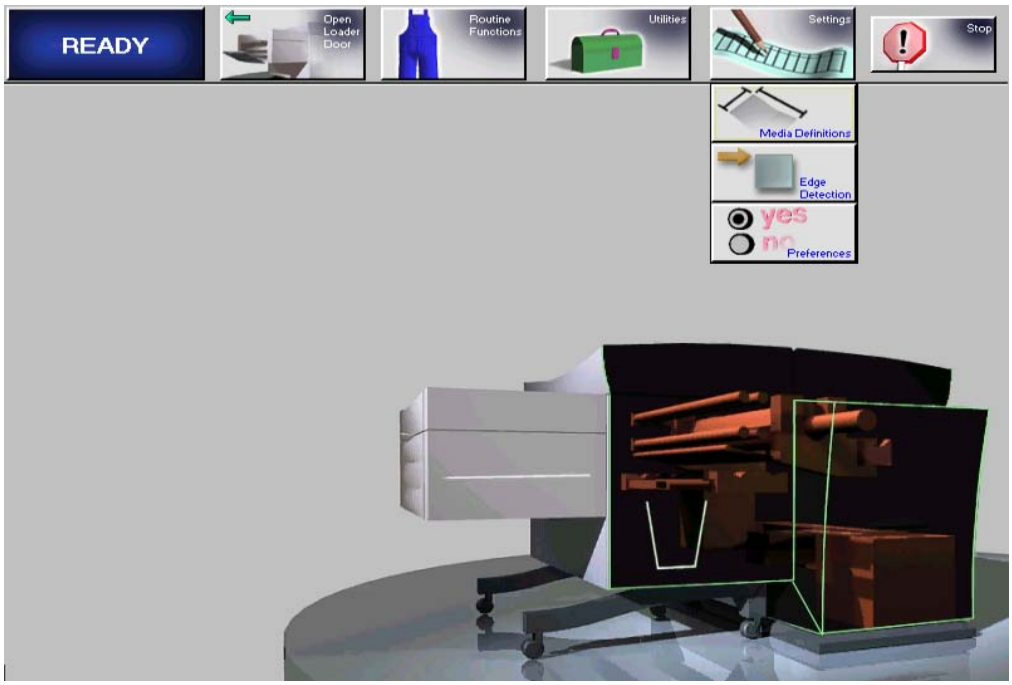
Reference:

Release Notes:
http://techplanet.creo.com/output/computer_to_plate/lotem400/content/doc/Release%20Notes%20Lotem%20400_1.50.08_OCT7.pdf

Improved Plate Edge Detection and Calibration

The main feature in **version 1.60** is the improvement in the **Edge Detection Process** for both the customer and the engineer. **[7-3]**

Edge Detection for the Customer



[7-4]

On the GUI, an **Edge Detection icon** will activate the Edge Detection process for the customer. This process requires the loading of a plate. From that point on, the process continues automatically. The drum will spin, the focus value will be changed according to the plate thickness and the vacuum will turn on.

According to the plate size, the edge detection process will start checking for the plate location.

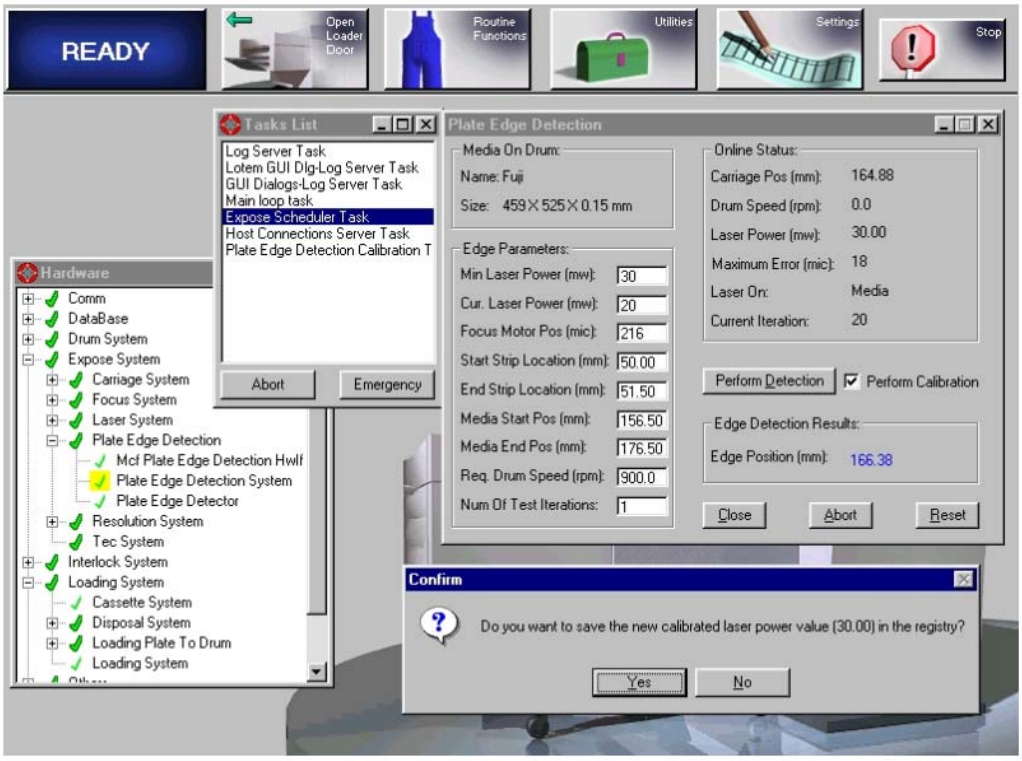
- After plate detection, a sequence of 20 tests will run to ensure that the plate edge detection is working properly. The system verifies the stability of the detection procedure and then confirms the parameters.
  - ❒ If no error is detected during this stage, a message will appear on the screen and ask for the customer's approval for the new laser power value.
  - ❒ If the readings are not stable, then the system increases the laser power in small steps to find better results, and then saves the new laser power reading.
- If the edge detection fails to find the plate, the system will abort and ask the customer to check for hardware related problems (or call service).

If the customer accepts the laser power recommendation, the answer **YES** will update the tables in the registry automatically.

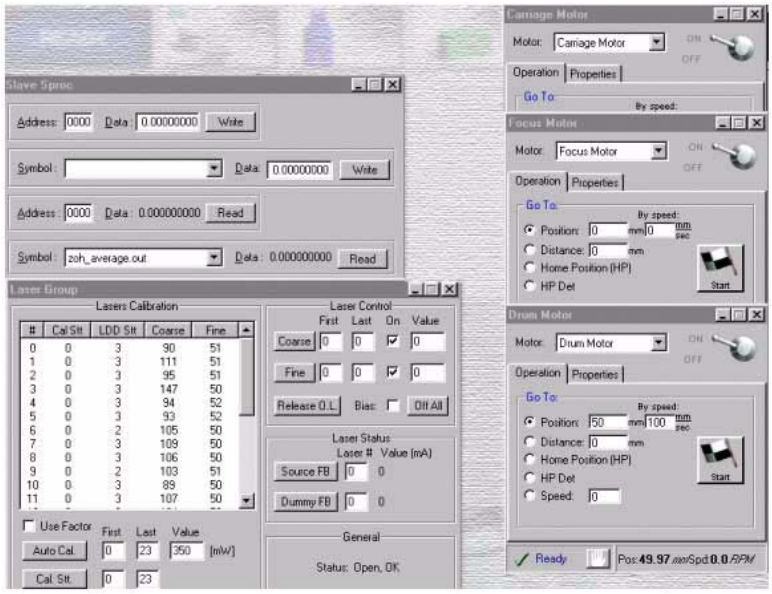
No engineer involvement is needed during this process, which is an advantage for the customer.

Edge Calibration for the Engineer

[7-5]



Version 1.6 - One dialog



Multiple windows of the old version

[7-6]

[7-7]

The advantage of the new edge detection testing and calibration is that by having all the parameters in one dialog box, there is no need to open multiple dialog boxes (vacuum, drum, focus, carriage, laser group, slave sproc.)

[7-8]

Another improvement in the new version is that the software automatically increments the MW power by 10 until the edge is within the threshold for ***n*** iterations.

[7-9]

Note: The new edge detection procedure only changes the laser power when there is inconsistency between iterations. It does not change the power upon failure.

In edge detection dialog box, you can see the following information:

- Plate size
- Carriage location
- Drum speed
- Strip 2 parameter
- Laser power
- Maximum error
- Focus position

You can choose from one of two processes in the dialog: **[7-10]**

Perform Detection - During this process, the edge detection will check whether there is a plate, and will try to locate the plate. If a plate is not found, an error message will appear indicating that edge detection has failed. This process repeats as many times as indicated in the **Num Of Test Iterations** box.

Perform Calibration - During this process a calibration of edge detection will take place while laser power is being changed automatically in order to detect the plate. This process will be published on TechPlanet.

The advantage of this dialog box is that you can choose any parameter you need in order to have the system working properly.

Note: If you change any parameter other than laser power manually, be sure to **update the registry**.

Other improvements in the process are:

- There is no need to switch off to the vacuum pump at the end of the test.
- The default drum speed for the test is 900 RPM. If a different speed is required, you can define it.
- The laser power changes and is updated automatically.

Other New Features

Instructor's Notes: Lecture

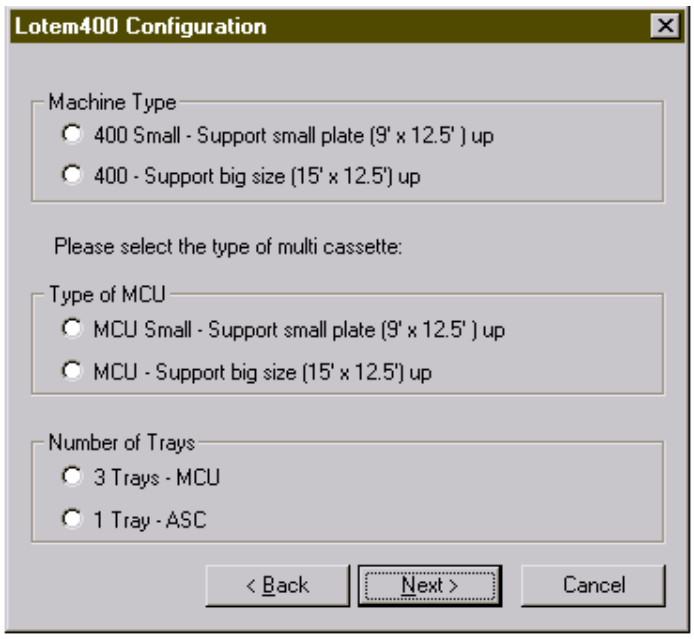
Use the PowerPoint slides to guide you through the highlights of the new version's features. You may want the participants to find the features in the software as you explain them.

[7-11]

Improved Plate Length Measurement and Calibration

Cassette and Plate Related

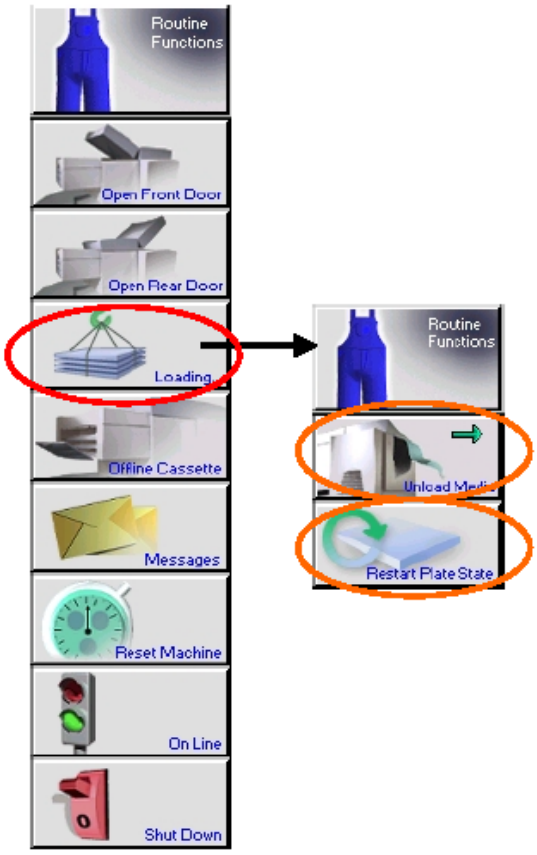
- The new version supports Automatic Single Cassette (ASC)
- There is a choice between a 1 tray MCU and a 3 tray MCU
- Supports small plates – 9 x 12.5 inch (228 x 318 millimeter)
- There is an emergency stop for drum runaway



Loading/Expose Related

- The Media Definition Dialog has been improved: **[7-12]**
  - A **Modify** button has been added that enables the modification of attributes of an existing media
  - A **New** button clears all media attributes and forces the user to set all the attributes for the new defining media
  - An Advanced Media Dialog has been added. The range of attributes available for media used in Lotem machines was expanded. As a result, the media data base files have undergone a change and several advanced media attributes were added to each media file.
- The centering task has been improved:
  - Wait distance for full size plate
  - Stop task available in case of wrong length reading
  - Retry in case of fail (maximum of 3 times)
- Several improvements have been made in order to reduce the likelihood of reaching the dew point of the L-Box cold plate.

PC Controller/GUI Related





[7-13]

New icons have been added to the User Interface:

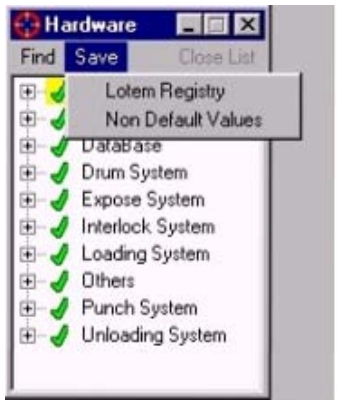
- Unload Media
- Restart Plate State
- Edge Detection Calibration

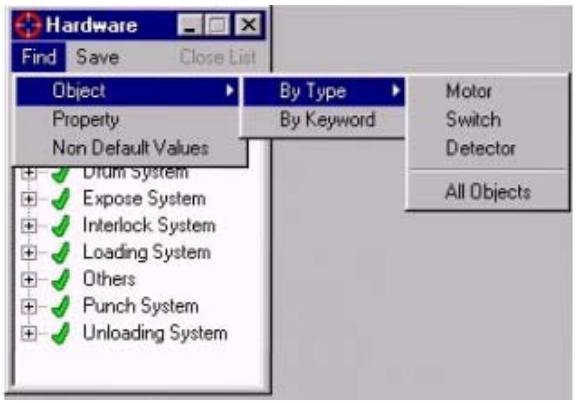
Hardware Tree

[7-14]

In the Hardware Tree the following improvements have been made:

- If at least one object is in a state of error, the dialog will make this object visible upon opening
- **Find** and **Save** for easy Registry access and handling





History

The history facilities have been improved. Users can analyze the history from various aspects by clicking on **Open error history file**, **Open Startup log file**, and **Browse for log file**. **[7-15]**



Module Recap

At the completion of this module you should be familiar with: **[7-16]**

- Loading the Lotem 400 software version 1.60
- The improved plate edge detection and calibration
- The improved plate length measurement and calibration
- A list of new features available

Multi-Cassette Unit

Introduction

This module will familiarize the participants with the components and specifications of the Lotem 400 with Multi-Cassette Unit (MCU). The participant will learn about the main loading assemblies and about possible punch conflicts.

Estimated Time

2 hours

Objectives

At the end of this module you will be able to: **[8-1]**

- Recognize the characteristics of the Lotem 400 with MCU
- Explain the differences between the MCU of the Lotem 400 and the Lotem 800
- Describe the following MCU components:
  - Cassette trays
  - Pneumatic system
  - Venturi vacuum generator
  - Loading/unloading system
  - Interlocks
- Explain changes in the new design for small plates

The Multi-Cassette Unit (MCU)

Instructor's Notes: Guided Tour

Give the participants a guided tour of the MCU before they install it. Use the PowerPoint slides together with a demonstration of the MCU to describe the various components and functionality of the MCU.

The Lotem 400 with MCU is a Lotem 400 platesetter with an automatic loader. You can load different sized plates (a size in each tray) and have the platesetter run automatically. It has an automatic punch system capability (there is no need for a spiral punch). It does not support a Flexo device. **[8-2]**



The Multi-Cassette Unit

Key Specifications

[8-3]

The MCU is an integral part of the Lotem 400:

- Size: 52.7 x 69.3 x 36.2 inch (1.34 x 1.76 x 0.92 m)
- Weight: 650 kg
- Three cassette trays
- Interleaf paper handling

Cassette Tray Capacity

[8-4]

Plate thickness	Capacity
0.15 mm	100
0.2 mm	70
0.3 mm	50

Differences between the Lotem 400 with MCU and the Lotem 800

[8-5]

Lotem 400 with MCU	Lotem 800
Has an automatic punch system capability - no spiral punch	Spiral punch
Mechanical centering linked to punch position	Mechanical centering and imaging position linked to punch position
Edge detection for image positioning	Plate centering for image positioning
Once installed, the cassette unit is fixed and cannot be removed	The cassette unit can be removed
3 static cassettes which are all available all the time	5 dynamic cassettes, of which only one is available for loading
Faster loading cycles	Two and a half minutes between each loading cycle

For Your Information: Notes about the Lotem 400 with MCU

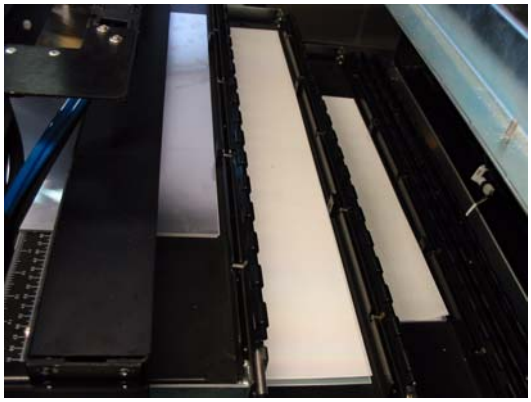
1. All electricity and air pressure comes from the Lotem 400. **[8-6]**
2. Since more airflow is required for the MCU than for the manual Lotem 400, the customer must supply the correct compressor. (The vacuum generator requires a lot of air.)
3. The MCU is wider than the Lotem 400. The customer cannot reduce the size of the MCU footprint for installation.
4. Every Lotem in the field can be upgraded. Some Lotems are shipped “Ready for MCU”. Older machines may require extra wiring. The MCU is shipped with all the parts which may be needed for compatibility with older machines. **[8-7]**
5. All machines are compatible - all combinations are possible. However, if the machine is not built for small plates, the MCU for small plates can not be supported.

6. The only compatibility problem is the Omron interlocks. The customer may need to purchase an interlock kit for compatibility. The customer can mix an Omron Lotem 400 with an older non-Omron MCU.
7. Wheels for the MCU come in a separate box. The MCU can be lifted with a forklift and the wheels attached. It is important to check that a forklift is available before an installation.
8. The left and right “Light Guards” are optional without the MCU. When installing the MCU, they must be removed. **[8-8]**
9. There are two different-sized registration pins. The older version was thicker than the newer version.
10. On older machines, a separate harness was needed to activate the rear door. Newer machines come with the harness already installed.
11. The MCU automatic loader tends to scratch plates less than the manual loader. However, if scratches on the plates are found, the rollers on the MCU may be replaced by soft rollers.

MCU Components

Cassette Trays

[8-9]



The MCU unit contains three cassette trays:

- The lowest tray has a sliding centering system, and is always defined as tray #1.
- The other trays do not have a centering system. They are centered according to the ruler in the cassette and then locked in place.
- The three cassette trays are staggered on the loading side of the MCU

[8-10]



Tips for using the cassette trays:

- Since the lowest tray has a **sliding centering system** which is very easy to adjust for different sizes, it is the best tray for varying plate sizes
- The lower cassette trays take less time to load, so put the most frequently used plates in the lower trays

[8-11]

- When adding more plates of the same size to a tray, keep one of the side pins in place while loosening the other. This makes sure that the new stack of plates will be in the same place.
- Identify the cassette sensors on each cassette. The loading system cannot run if a cassette is out of place.

[8-12]

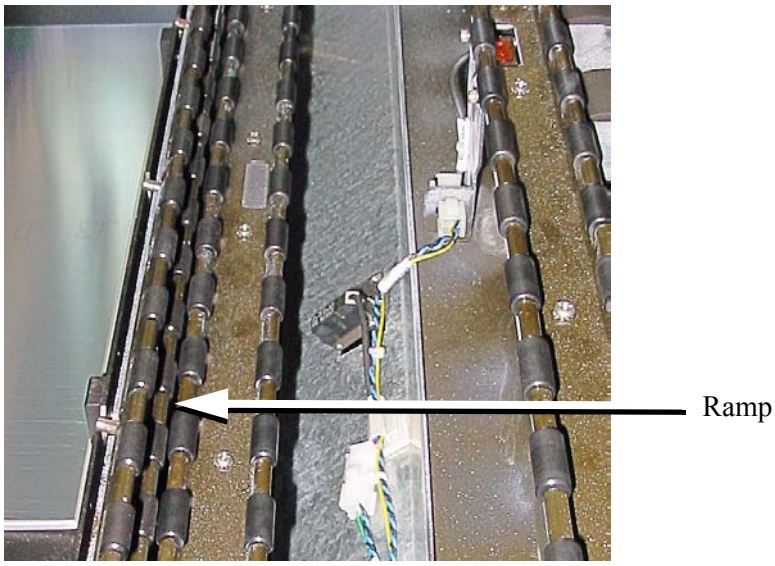


XY system and the cassettes:

- Each cassette has a different X and Y initial pick up position for the XY bar
- To trigger the tweezers, a metal plate is fixed on the XY bar so that the bar does not need to go to the home position right at the front each time to push down the tweezers (like on the Lotem 800). This saves time, since the XY on the Lotem 400 MCU has to move much further than that of the Lotem 800.

Ramp and plate support

[8-13]



The ramp elevates according to the height of the cassette tray being used

Instructor's Notes: Demonstration

1. Show the participants how to open the side doors of the MCU.
2. Point out that the side doors have sensors for the paper disposal system and are not part of the machine interlock loop.
3. Point out the new protection device for the ramp sensor.

Service Area Tips

- The MCU contains the second Local 3 board.
- Accessibility to the service area is from below. Access to the Local 3 board is from above.
- Access to the vacuum generator is difficult. The lower plate can be removed, and you can work from underneath the machine.

[8-14]



The "Solo" Cable

The Local 3 board of the MCU must communicate with the CPU in the Lotem 400. The MCU is shipped with this cable. One connector of the "Solo" cable must be connected to the MCU's Local 3 motherboard and the other to COM2 of the Lotem CPU.

Note: The COM2 adapter for the CPU is only needed for older machines with a very old E-Box.

Pneumatic System

[8-15]

The pneumatic system in the MCU controls cassette air. There is an additional valve in the MCU pneumatic manifold that controls air flow to the Venturi vacuum generator.

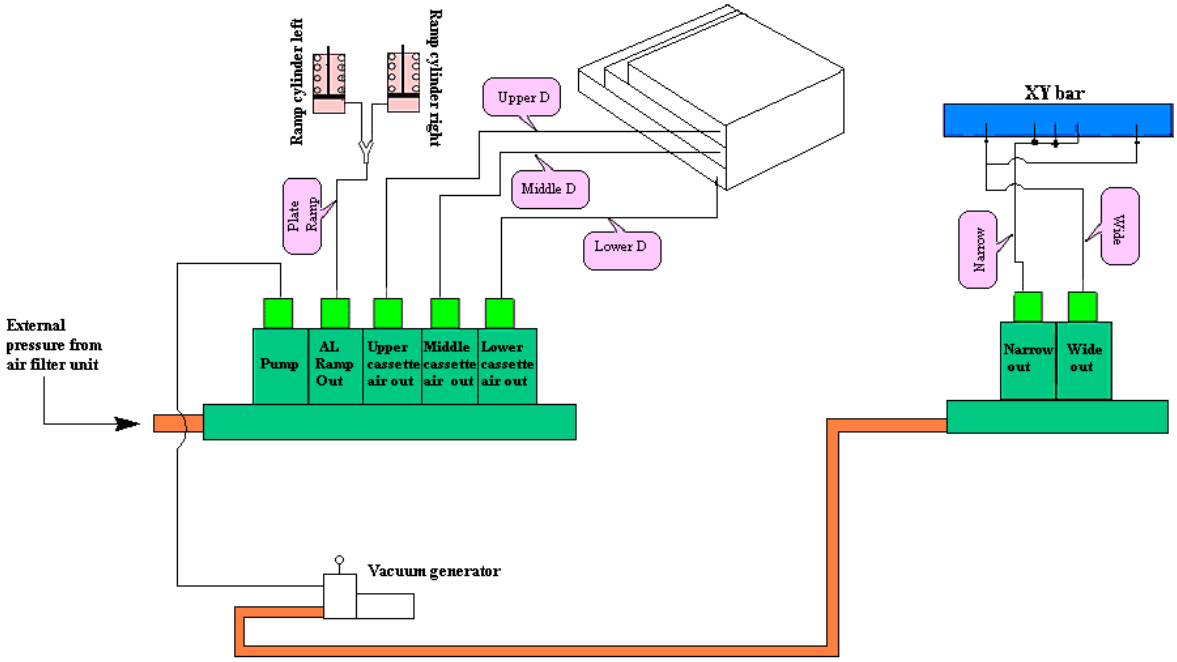
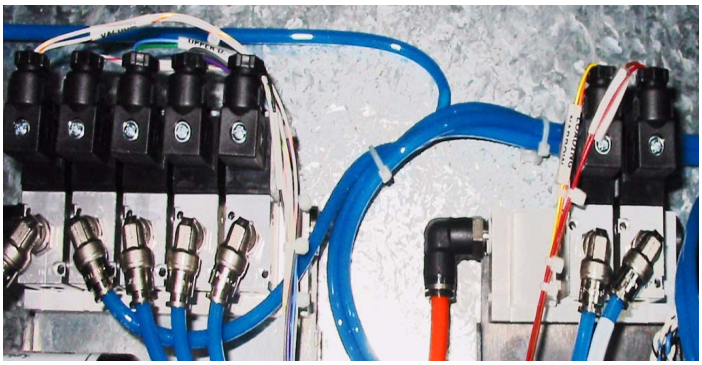


Diagram of the pneumatic system: Lotem 400 MCU

[8-16]



Manifold

[8-17]

Tip: The air nozzles in the cassette are connected **directly** to the external air supply. If the air quality is not good, there will be streaks on the plate from either the dirt or oil. If these marks appear, then close the valves and check exposure. If the marks do not appear on the exposed plate, then ask the customer to install a better filter on the air compressor.

Note: The same problem may occur in the Lotem 800, however Lotem 400s tend to be located in smaller shops with unsophisticated air supplies.

Venturi vacuum generator

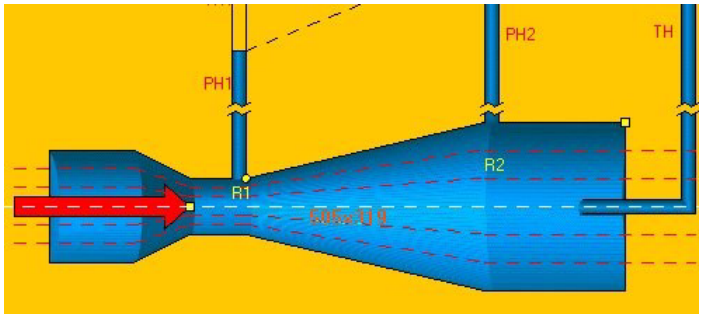
[8-18]

Instructor's Notes: Demonstration

- Explain the Venturi principle.
- Disassemble the Venturi vacuum generator and show the components and how they work.

The Venturi Principle

Giovanni Battista Venturi (1746 - 1822) was an Italian physicist. His research concentrated on the flow of fluids. He is remembered for his discovery of the Venturi effect, the decrease in the pressure of a fluid in a pipe where the diameter has been reduced by a gradual taper. The effect has many applications, such as in a carburetor and fluid-flow measuring instruments.



Venturi principle

The Venturi meter has a narrow tube running from top to bottom, with a small opening at the top. When air is forced over the top of the instrument a vacuum is created in the tube. The stronger the air flow, the greater the suction.

[8-19]

The Venturi vacuum generator



There are three stages in the vacuum generator. Between each stage there is a gasket. A valve switches the Venturi on and off. There are no moving parts in the Venturi vacuum generator, so there are very few problems with the mechanism.

Venturi vacuum generator



Vacuum generator components

[8-20]

The optimal working pressure for the Venturi unit is 6 atmospheres (atm). More than 6 atmospheres will not create more vacuum. However, the Venturi vacuum generator does need a minimum pressure. The compressor **must** be suitable.

Note: Eventually, the Lotem 800 will use the same Venturi system, replacing the XY vacuum pump.

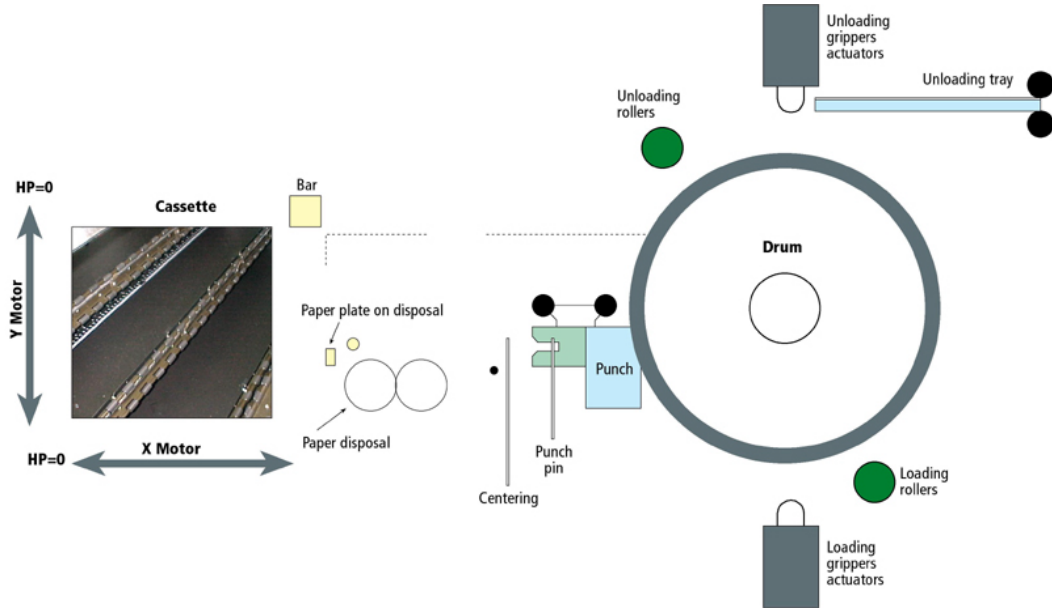
[8-21]

Possible Problem	Suggested Solution
On the vacuum gauge there should be a reading of 600 - 700 millibars or 6-7 atmospheres of vacuum. Sometimes the vacuum reading is too low. **Note:** The gauges found on the earliest machines had no way of measuring the amount of vacuum.	Disassemble the unit and clean it from the inside
The gasket leaks	Replace the gasket
The air is not clean and clogs the vacuum	Clean out the vacuum
The muffler attachment to the vacuum generator may become noisy after extended use	Replace the muffler
Since many Lotem 400 customers are small businesses, they may not have a strong enough and large enough compressor	The customer must have a good compressor for the Venturi generator to run properly

Loading/Unloading System

The plate load and unload stages in the Lotem 400 with MCU are:

1. From cassette to punch entry **[8-22]**
2. From punch entry to the drum entry **[8-23]**
3. From the drum entry to the drum stage **[8-24]**
4. The disposal stage - where slip sheet papers are removed **[8-25]**
5. Unloading stage **[8-26]**



Loading/Unloading System

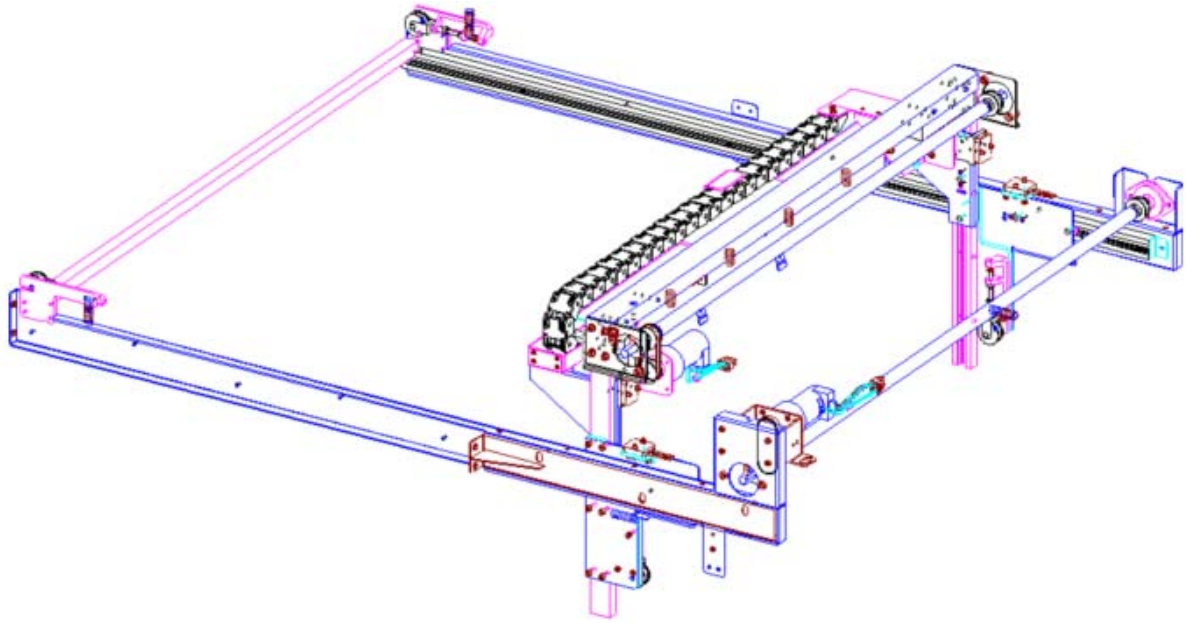
[8-27]

Loading Thin Plates (0.15 millimeter)

There are no special attachments for the 0.15 millimeter plates (as are needed on the Lotem 800). There are changes in the loading sequence script for handling thin plates. Movements may be very slow with thin plates so as to maintain stability.

The XY Transportation System

The XY system is identical to the Lotem 800, only the size is different. **[8-28]**



XY Transportation System

There are differences in the loading script as compared with the Lotem 800:

1. The X to drum range is much larger. **[8-29]**
2. X movements are in reverse to the Lotem 800. Home position is **away** from the drum.
3. There are 3 locations for X and Y at every point along the way. The location depends on which tray is activated.

Common problems and solutions with the XY Transportation System

[8-30]

Problem	Suggested Solution
1. On older machines, the X belt on the XY system may come loose. The problem was in the belt locker. The depth of the locker teeth did not match the depth of the teeth in the belt.	You may have to file down the teeth in the locker so that there is more pressure on the belt (or order a new locker). Note that the Y belt is continuous, and is not subject to coming loose at the ends.
2. If you are replacing the belt, reduce the pressure using the screw, and take off the belt. The problem is how to get the belt parallel again.	To get the belt parallel again, move the bar fast so that the belt jumps a notch. Use the central bar as a reference. Once the belt has jumped a notch and is parallel, move the bar slowly so that it does not jump again.
3. Bearing rollers may fail on the X bar. This condition occurred in the past when the Y position was too high before X travelled toward the drum. The raised Y bar would crash against the steel frame and cause problems.	To replace the bearings, you must disassemble the entire X unit. With the current software version there is a software protection to prevent this from happening: the X bar moves only when the Y bar is low.

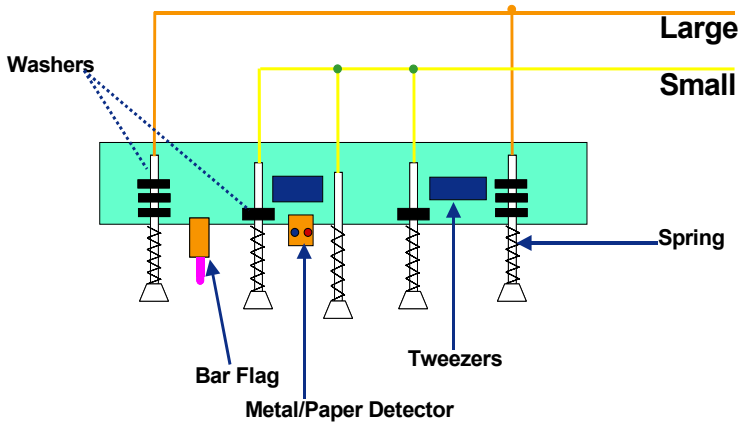
Note: On the Lotem 400 MCU, the plate waits **after** the punch for the mounted plate ahead of it to unload. On the Lotem 800, the plate waits **before** the punch when there is a mounted plate ahead of it.

The Loading Bar Components

The loading bar is comprised of the following components: **[8-31]**

- Bar flag
- Paper/plate detector
- Tweezers
- Suction cup system

Bar Flag



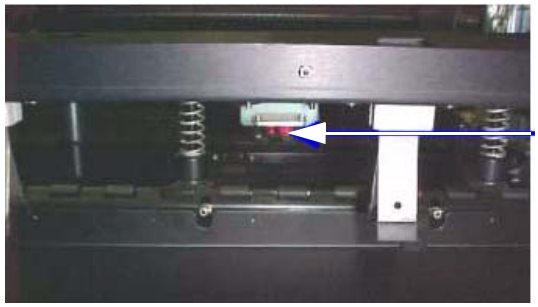
[8-32]

The bar flag has two functions:

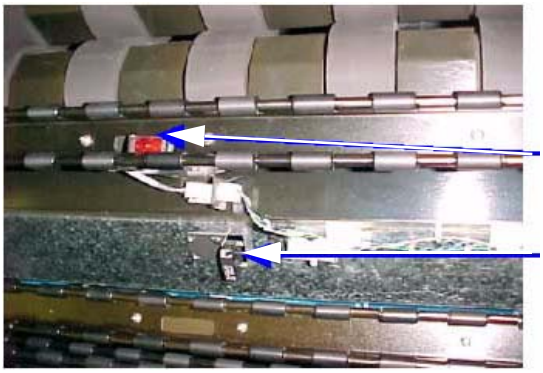
1. Verifies whether the loading bar has reached a plate or a slip sheet so that the proper functions are activated (tweezers or suction cups.)
2. When a plate is loaded, the bar flag is ON until the plate is released. If the bar flag should turn OFF an error will be generated.

Paper/Plate Detector

[8-33]



Paper/plate detector



Paper/plate on disposal detector

Paper bin detector

Tweezers

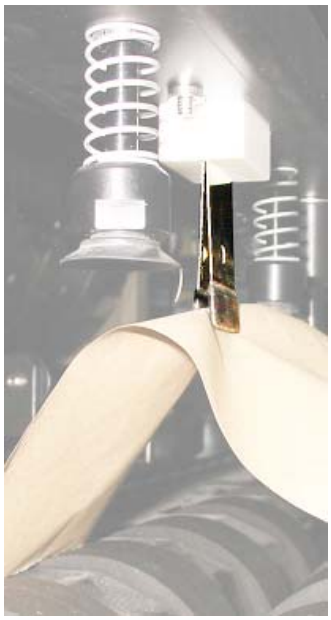
[8-34]

The tweezers pick up the paper interleaf between the plates.

Each time the XY bar moves to the cassette, it is pushed up against the support bar pushing down the tweezers to a full open position.

As the Y bar moves down onto the paper surface, the rubber tips of the tweezers' ends grab the paper.

The tweezers close, grabbing the paper as the Y bar ascends and carries the paper to the disposal unit.



Note: The original design had to trigger the tweezers next to the drum. This required extra movement and cost time. The new design triggers tweezers in a mounting bar above the XY bar. The XY bar comes to the cassette to pick up the paper.

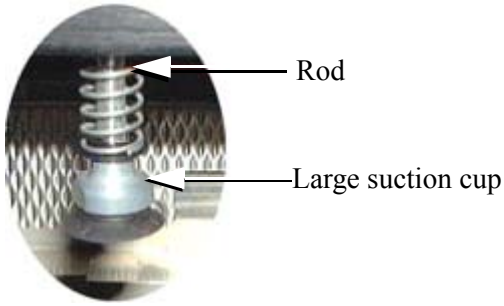
There is a parameter in the registry which tells the system where the tweezers are to be triggered.

Suction Cup System

[8-35]

The Lotem 400 with MCU has a vacuum suction cup system. Five suction cups hold the plate. Each suction cup has a different number of washers so that when the plate is transported, the edges do not curve down.





The Lotem 400 MCU has five suction cups: **[8-36]**

- The three innermost suction cups use the **small** air valve.
- The two outermost suction cups use the **large** air valve.

In the newer design for small plates, there are six suction cups (See *New MCU Design for Small Plates* on page 109.)

Note: The Lotem 800 has seven suction cups on its loading bar.

Paper Disposal System

[8-37]

Disposal Rollers

Paper disposal rollers are turned on during the paper disposal stage. When loading a plate, the rollers are also turned on in case a slip sheet was carried forward with the plate. Since the slip sheet will be dragging along below the plate, it will be caught in the disposal rollers and separated from the plate.

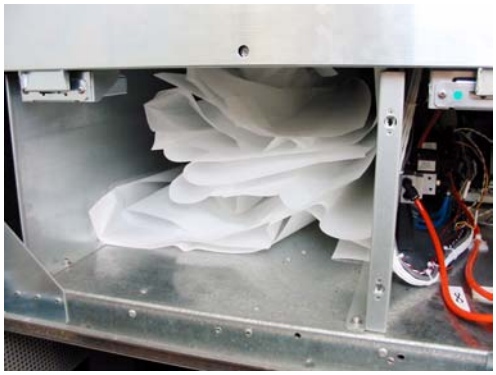
A **problem may occur with small plates** where the back edge of the plate may sit directly over the disposal rollers while the front edge contacts the short pins. In this case, the back edge of the plate may be caught by the disposal rollers, pulling the plate out of the centering system, and into the disposal bin.

Solution: The parameter (minimum plate width to stop paper disposal) will keep the disposal rollers turned off if the plate width is less than or equal to this parameter. You may change this parameter if you experience this problem.

The Paper Disposal Bin

When there are 30 interleaves in the bin the PC Controller will give a warning message: “Empty the bin”. The machine will stop when the paper counter reaches 50. The bin must be cleared in order to continue.

[8-38]



Safety Guidelines

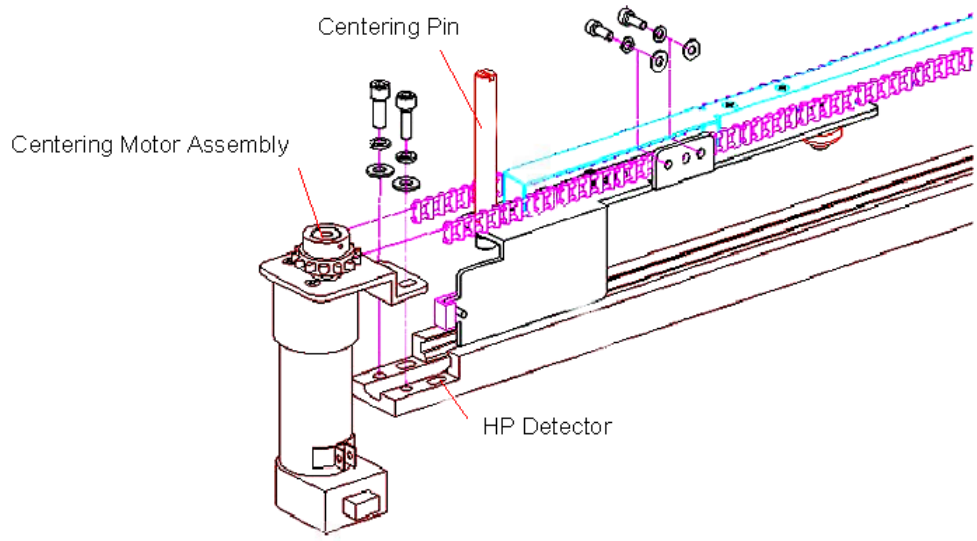


[8-39]

Paper bin disposal interlocks are mechanical and active during the paper disposal sequence. The interlocks ensure that hands are not inserted into the disposal unit motor. Users can open the paper disposal doors when exposing, but NOT during the loading process. Customers can remove papers from the disposal bin by opening the disposal bin door - they do not need to open the door to the disposal unit engine.

The Plate Centering System

[8-40]



- The plate centering system should be centered in relation to the drum
- The plates in the cassette should be centered as well

[8-41]



The lowest tray in the MCU (tray #1) has a sliding plate centering unit; the other two trays do not.

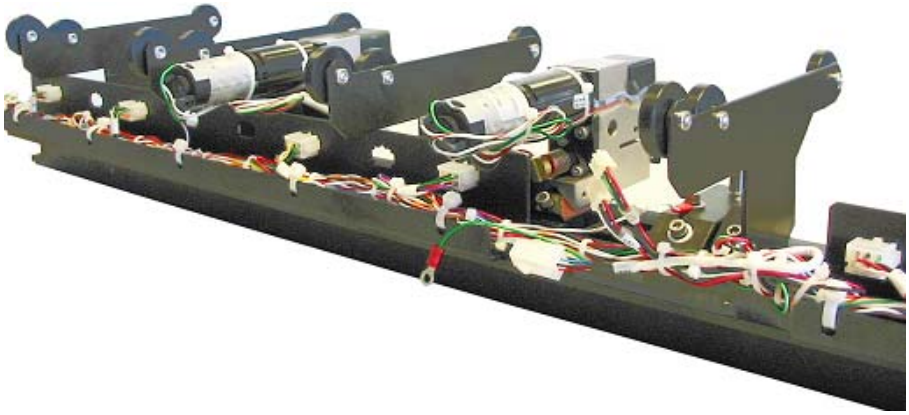
The Punch System

[8-42]

The Lotem 400 Automatic Loader is capable of having up to 6 punches. These punches are independent units. The punches are supplied separately and need to be assembled and installed instead of the loading system. They are installed into the side of the Lotem 400, not into the MCU, so that accuracy is ensured relative to the Lotem. This helps with alignment issues.

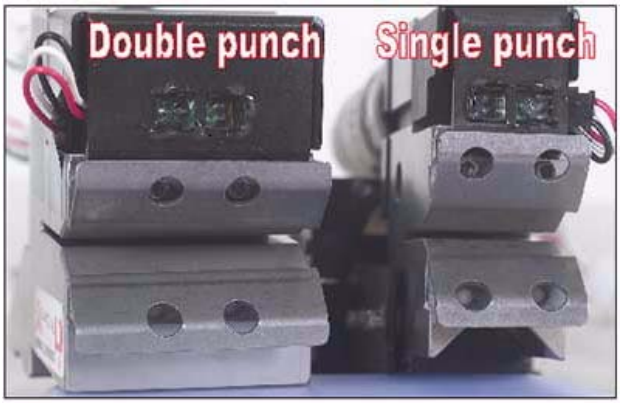
Install the punches **before** attaching the MCU.

Note: In a Lotem 800 with MCU, the punch beam is already integrated in the platesetters prior to the installation stage.



The punch beam has to be assembled in the platesetter during the installation

[8-43]



A front guard on each punch is needed to guide 0.15 millimeter plates into the punch.

Punch Conflicts

1. Between two punches **[8-44]**

Any two punches can be placed a minimum of 30 millimeters from each other. Punch locations for different presses may overlap or conflict. Punch conflicts are usually resolved prior to installation during the punch planning stage. Custom-made double or triple punches may be required to solve the conflict.

2. Between punch and registration pin **[8-45]**

A problem arises when the punch is directly under the registration pin. **Be sure to have the punch turned on when testing image alignment.** To solve the problem, switch the registration pins.



MCU: Punch and spoiler position conflict

[8-46]

Image to punch misalignment

One disadvantage of edge detection may occur when plate sizes vary slightly from one plate to another in the same specified plate size. Accuracy of the image to the punch system will suffer. Operators should check for consistency of plate sizes from batch to batch before using the plates. If there is no alternative to unequal plate sizes, you may have to turn the punch system off and rely on an off-line punch system based on plate center.

Note: This is an example of the theoretical advantage of the spiral punch in the Lotem 800 where punches are positioned to center.

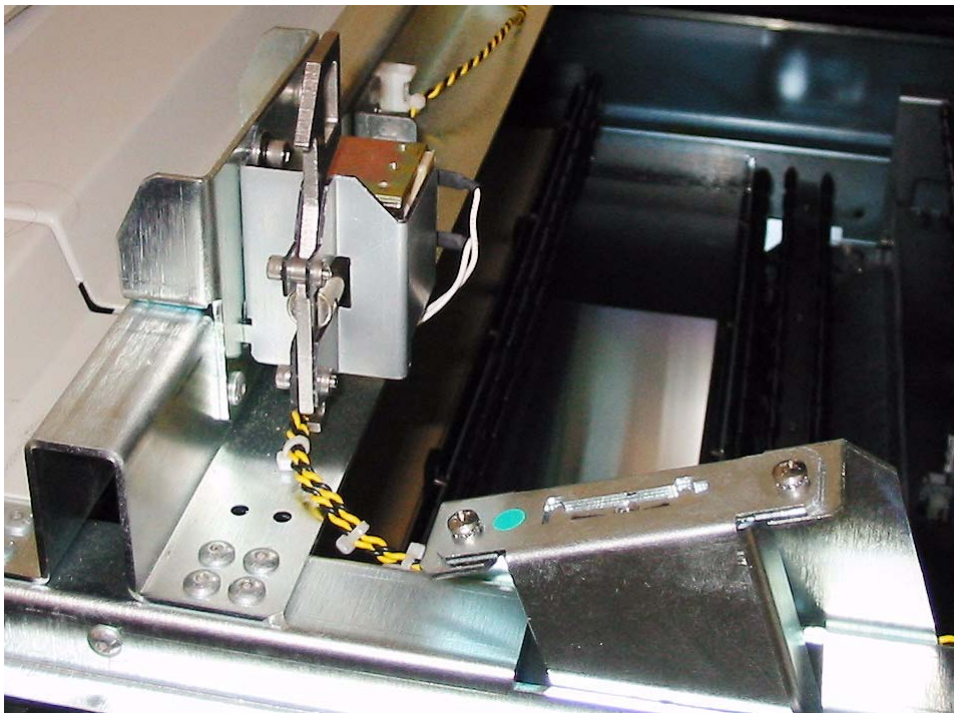
References:

Head spoilers:
http://techplanet.creo.com/output/computer_to_plate/lotem400/content/notes/new_spoilers.htm

Troubleshooting:
http://techplanet.creo.com/output/computer_to_plate/lotem400/nav/400/troubles.htm

Interlocks

[8-47]



Door interlock design for the Lotem 400

The design of the interlocks in the Lotem 400 is different to the design of the Lotem 800. It is a simpler design, though more difficult to manually open when the door is closed.

There are no interlocks on the top front covers of the MCU. You can expose with these covers off. There is no real danger.

New MCU Design for Small Plates

The Lotem 400 Small supports a wider range of plate sizes, sizes ranging from 9 x 12.5 inch up to 24.5 x 29.5 inch (228 x 318 millimeter to 622 x 750 millimeter). **[8-48]**



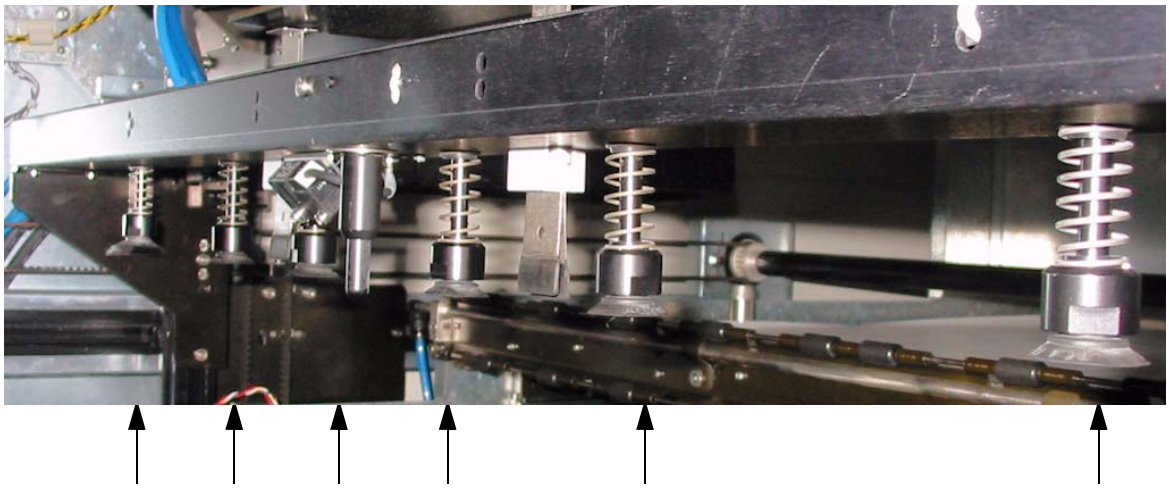
Small plates in the MCU

[8-49]

- The centering system in the cassette can move further to the center to support smaller plate sizes
- The pneumatic system has six nozzles instead of five
- Six suction cups on the loading bar
- Changed the tweezers width and location on loading bar
- Bar flag moved to the center
- New plate centering system (to support smaller plate sizes)
- The short pins base have been modified to prevent small plates from getting stuck on the base edge
- There are fewer rollers in the ramp
- The optical detector used on the ramp has been replaced by a magnetic detector

Six suction cups

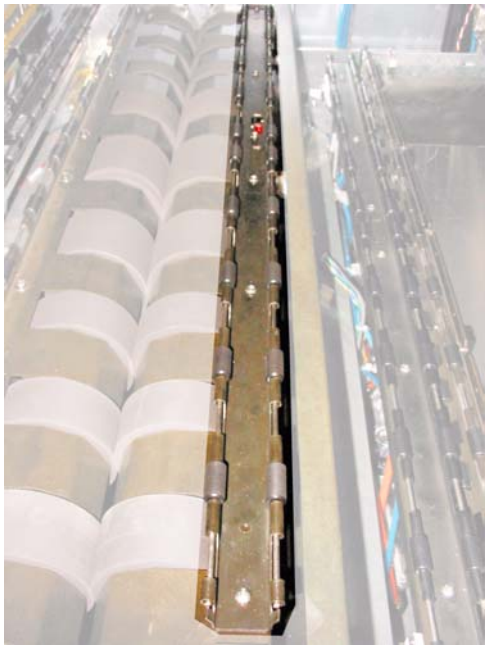
[8-50]



Six suction cups for small plates

Ramp Rollers

[8-51]

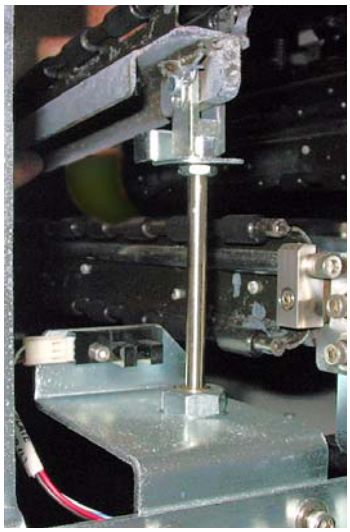


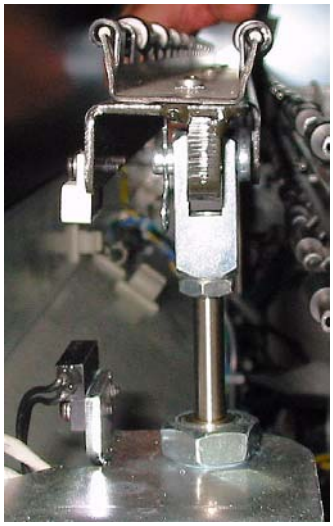


In the new design, there are fewer rollers on the ramp

Detectors

[8-52]





Optical detector (left) and newer magnetic detector (right)

Reference:

http://techplanet.creo.com/output/computer_to_plate/lotem400/content/notes/small.htm

Module Recap

At the completion of this module you should be able to: **[8-53]**

- Recognize the characteristics of the Lotem 400 with MCU
- Explain the differences between the MCU of the Lotem 400 and the Lotem 800
- Describe the following MCU components:
  - Cassette trays
  - Pneumatic system
  - Venturi vacuum generator
  - Loading/unloading system
  - Interlocks
- Explain changes in the new design for small plates

MCU Upgrade & Calibration

Introduction

This module will guide the participants through an upgrade of the software and hardware of the Lotem 400 to a Lotem 400 with an MCU. Participants with then calibrate the upgraded unit.

Estimated Time

5 hours

References

Lotem 400 to Lotem 400 with MCU Upgrade Prerequisites:
http://techplanet.creo.com/output/computer_to_plate/lotem400/content/installation/400mcu/overview.htm

Lotem 400V/Lotem 400 Quantum: Upgrading to Automatic Loader
http://techplanet.creo.com/output/computer_to_plate/lotem400/content/doc/400VA_UpgradeJULY.pdf

Software Update procedure:
http://techplanet.creo.com/output/computer_to_plate/lotem400/content/installation/400mcu/upd_software.htm

Hardware Upgrade Procedure:
http://techplanet.creo.com/output/computer_to_plate/lotem400/content/installation/400mcu/upgrading.htm

Loading and exposing plates:
http://techplanet.creo.com/output/computer_to_plate/lotem400/content/doc/PltExpVA_Feb4.pdf

Handouts

Lotem 400V / Lotem 400 Quantum: Upgrading to Automatic Loader (Part #: 399Z1P516A)

Objectives

At the end of this module you will be able to: **[9-1]**

- Upgrade the MCU hardware
- Install the MCU software upgrade
- Calibrate and test the MCU upgrade:
  - ❒ Load from all three cassettes
  - ❒ Adjust paper/metal detector
  - ❒ Adjust centering system
- Install Punches

Hardware Installation

Recommended Upgrade Procedure

Instructor's Notes: Introductory Lecture

Give a brief overview of the upgrade procedure, then let the participants perform the upgrade process independently.

The following stages are recommended for the MCU upgrade: **[9-2]**

1. Software backup
2. Prepare for hardware upgrade
3. Upgrade the hardware
4. Test the hardware upgrade
5. Upgrade software for Automatic Loader
6. Upgrade software for Punch System

[9-3]

Hands-on Activity: Software Backup

The automatic loader is supported by version 1.20.15 and up. Make sure that you are updating the software to the latest available version. Before you start installing the hardware, please take the following backup precautions:

1. Save the registry file on a floppy diskette. The saved registry file is applicable only for the Lotem 400 platesetter.
2. Save the database folder on a floppy diskette.
3. Write down the IP address of the PC controller.
4. Install the newest software version on the Lotem 400.
5. Under Loading System, select **Manual.**
6. Verify that the new software works correctly. That is, check the laser calibration, edge detection, and plate load and unload.
7. Save the registry file on a floppy diskette - this will be valid for the new version only.

Once you have completed the above procedure, you are ready to proceed to the hardware update.

Reference:

http://techplanet.creo.com/output/computer_to_plate/lotem400/content/installation/400mcu/upd_software.htm

Hands-on Activity: Preparation for Hardware Upgrade

Before upgrading the cassette unit make sure: **[9-4]**

1. The platesetter is switched off
2. The platesetter is disconnected from the main power supply
3. The air supply is shut down
4. Remove non-MCU components:
   a. Unplug the pushbutton harness from the support brackets
   b. Remove the loading tray
   c. Remove the front door
   d. Remove the plate driver assembly
   e. Remove the front cover

Reference:

Hardware upgrade preparation:
http://techplanet.creo.com/output/computer_to_plate/lotem400/content/installation/400mcu/preparing400v.htm

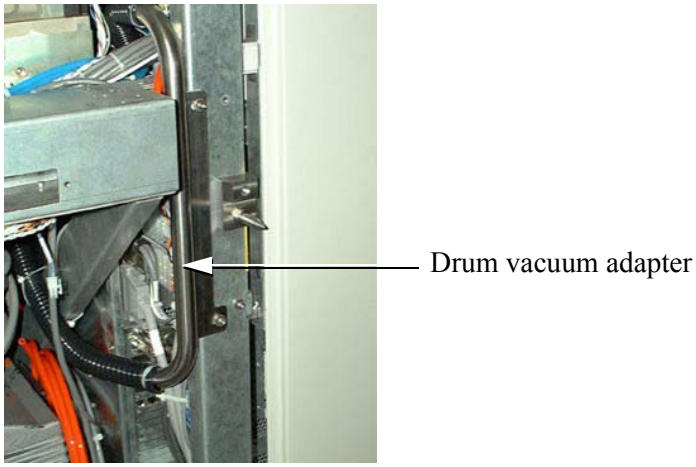
Hands-on Activity: Hardware Upgrade

[9-5]

Instructor's Notes: Reminder

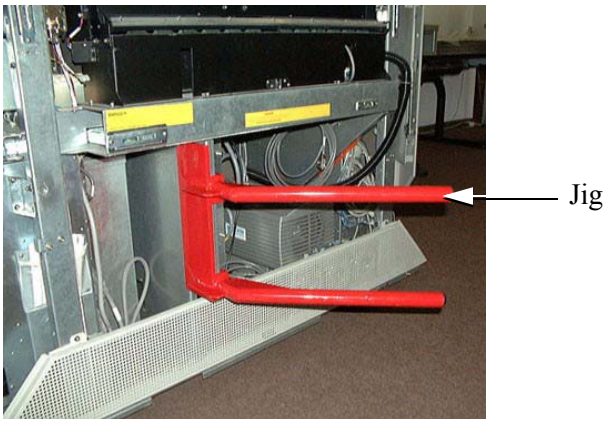
Make sure you explain about old machines and old frames in steps 2 and 4 below.

1. Assemble the location (locking) pin **[9-6]**
2. Update the harness (old machine only)



3. Replace the drum vacuum adapter

4. Bend the platesetter frame (only for old frames) **[9-7]**



5. Assemble the punch and the centering system

Note: The centering motor home position detector cable is very short. You should connect it only **after** attaching the MCU to the Lotem.

6. Install and adjust the punch head **[9-8]**

Note: Be careful to correctly align the brackets with the chassis.



Left punch bar mounting bracket



Right punch bar mounting bracket

7. Level the MCU **[9-9]**

8. Install the air pressure pipe (Y adapter)



9. Connect the loader to the platesetter

10. Update the software for the active loader and the punch system

Note: When upgrading the hardware, make sure that the top of the MCU (rear side of MCU) and the Lotem 400 (front side) are level.

Reference:

Hardware Upgrade Procedure:
http://techplanet.creo.com/output/computer_to_plate/lotem400/content/installation/400mcu/upgrading.htm



Lotem 400 with MCU

Hands-on Activity: Hardware Upgrade Testing

Perform the following tests: **[9-10]**

- Centering test
- Customer plate testing
- Plate loading on drum
- Check and operate all the customized punch motors and punch
- File exposure and registration

Once you have completed the testing, attach translated labels to the platesetter according to the customer's language.

Reference:

Testing the hardware upgrade:
http://techplanet.creo.com/output/computer_to_plate/lotem400/content/installation/400mcu/tests.htm

The Software Upgrade Procedure

Hands-on Activity: Updating Software for Automatic Loader

When the hardware installation is finished and the automatic loader is properly connected to the Lotem, continue with the software update. **[9-11]**

1. Reinstall the new software
2. Under Loading system, select **Multi Cassette**
3. Run the application
4. Update the registry with the new parameters supplied with the automatic loader
5. Restart the application
6. Verify that the new software functions properly by performing a laser calibration and verifying that the plate definition is loaded correctly
7. Save the registry file on floppy diskette
8. Update the database/plate according to the customer needs
9. Save the database folder

Instructor's Notes: Discussion

Before the participants install the software, point out the items below that will help them in various situations they may come across in the field.

For Your Information:

1. When loading the software, the software asks "Are interlocks normal or Omron?" When there are **different interlocks** on the Lotem and on the MCU, answer the question according to which interlock is on the Lotem, not the MCU. **[9-12]**
2. Version 1.30.04 - MCU: You need a patch which will change the number of parameters.
3. After installing software, all the laser interlocks may report as open, even though all the doors are closed. It may be that all the covers were not replaced.
4. Change the active state of the paper detector in the paper disposal system. This fixes a likely error message.

Reference:

http://techplanet.creo.com/output/computer_to_plate/lotem400/content/installation/400mcu/appendix.htm

Hands-on Activity: Updating the Software for the Punch System

1. From the Main screen, under Utilities menu, select **Hardware** then select **Other** **[9-13]**
2. Right click **Lotem 400**
3. Select **IO objects**
4. Select the specific **Punch Motor** and **Punch Detector** according to the Molex number it is connected to on the punch system
5. In each **Punch Motor** and **Punch Detector**, change the **Open** status from 0 to 1
6. Restart the Lotem application
7. Configure the punch motors according to the customers needs

Reference:

http://techplanet.creo.com/output/computer_to_plate/lotem400/content/installation/400mcu/upgrading.htm

[9-14]

Note: Some sites turn off the edge-detection after an MCU upgrade. Without edge detection, image positioning is accurate to about 0.5 millimeter. This may be good enough for some customers, but if **accurate** registration is critical, keep the edge-detection on. Centering may not be accurate enough if you change the plate size.

Instructor's Notes: Demonstration

1. Demonstrate how to set up each cassette.
2. Show the loading procedure.
3. Point out the ramp that elevates to the chosen cassette.
4. Ask participants to do the hands-on activity below, and then discuss the observed differences with the class.

Hands-on Activity: Compare Loading with Varying Plate Thicknesses

[9-15]

Turn on the "Ask before do" option, and examine the differences in movements between 0.3 millimeter and 0.15 millimeter plates.

Calibration and Testing: Loading from all three cassettes

Instructor's Notes: Reminder

If this Lotem 400 course follows directly after the Lotem 800 course, participants do not need to repeat these adjustment activities. They would have practiced them in the previous course.

Hands-on Activity: Adjust Paper/Metal Detector

This procedure is similar to the paper/metal detector adjustment of the Lotem 800. Use the TechPlanet description to adjust the paper/metal detector in the Lotem 400 with MCU. **[9-16]**

Reference:

http://techplanet.creo.com/output/computer_to_plate/lotem800/content/proc/pmdetectoradjustment.htm

Hands-on Activity: Adjust Plate Centering System

This procedure is similar to the plate centering adjustment of the Lotem 800. Use the TechPlanet description to adjust the plate centering system in the Lotem 400 with MCU. **[9-17]**

Reference:

http://techplanet.creo.com/output/computer_to_plate/lotem800/content/proc/platecenteringadjustment.htm

Hands-on Activity: Install Punches

This procedure is similar to the punch installation procedure of the Lotem 800. Use the TechPlanet description to install the punches in the Lotem 400 with MCU. **[9-18]**

Reference:

http://techplanet.creo.com/output/computer_to_plate/lotem800/content/assem/puncinst.htm

Customer Review

Upon completion of an installation at a site, make sure you explain to the customer how to: **[9-19]**

- Load plates on all the trays
- Remove plates from the XY system
- Remove papers from the paper disposal bin
- Initiate the XY System

Module Recap

By the completion of this module you should be able to: **[9-20]**

- Upgrade the MCU hardware
- Install the MCU software upgrade
- Calibrate and test the MCU upgrade:
  - Load from all three cassettes
  - Adjust paper/metal detector
  - Adjust centering system
- Install punches

Lotem 400 PS/M (Overview)

Introduction

This module is a very short introduction to the Lotem 400 PS/M version, giving the participant a brief overview of the version, should it be encountered in the field.

Estimated Time

1 hour 30 minutes

References

http://techplanet.creo.com/output/computer_to_plate/lotem400/content/doc/Lotem400_PSM_Inst.pdf

Installation Guide:
http://techplanet.creo.com/output/computer_to_plate/lotem400/content/doc/PSM_IG_June26.pdf

Lotem 400 PS/M Installation Guide, Part # 399Z1P592A

Lotem 400w/ PS/M Courseware for Engineers (in ppt format):
http://techplanet.creo.com/output/computer_to_plate/lotem400/content/doc/400PSM_EngTrainingCourse.ppt

Objectives

At the end of this module you will be able to: **[10-1]**

- Explain the principles behind the Lotem PS/M
- Recognize the differences between the Lotem 400 and the Lotem 400 PS/M
- Use the PS/M user interface
- Describe the basic configuration
- Describe basic Lotem 400 PS/M end-user workflow and expose methods
- Install the Lotem PS/M
- Set up remote support for the PS/M

Instructor's Notes: Lecture and Demonstration

Use the PowerPoint slides to discuss the overview, architecture, and configuration of the Lotem PS/M.

Since this course is not a PS/M training course, have a PS/M E-Box on hand. It will be useful show the hardware, as well later in the module, to power it up and see the GUI of the Lotem PS/M.

Overview of Lotem 400 PS/M

[10-2]

- Entry-level CTP system
  - The expose engine is inside the Lotem
  - Normally, "expose engine" is basic Brisque functionality
- Like a CTP "printer" on the network
  - Anyone can send a file to the "printer" and expose a plate
  - No need for a front-end: there is no Brisque
  - Similar in concept to the Dolev PS/M
- PS/M 7.0 software can run on any Macintosh **[10-3]**
  - Can later be upgraded to a regular Lotem 400 by the customer purchasing a Brisque and changing the E-Box
  - Macintosh is not physically connected to the Lotem
- Both the Macintosh and Lotem are connected to the network **[10-4]**
  - Macintosh prepares files for the Lotem 400: RIP and FAF files are sent via network from Macintosh to Lotem
  - Any application that can output to Scitex CT/LW can send data to the PS/M
  - Once the files are copied to the Lotem they can be exposed
  - Lotem 400 will only start exposing once the whole file is on the Lotem
  - If the network is slow, you won't get the throughput you expected

Note: A separate 3-day training course is provided for the Lotem PS/M. Most of the course is software workflow. The first day is hardware, which is covered in this course.

Differences between the Lotem 400 and the Lotem 400 PS/M

[10-5]

Additional Lotem Expose Hardware

The Lotem PS/M has an E-Box based on the Lotem 400 E-Box, but it has a more powerful CPU and much larger on-line storage than the standard E-Box working with the Brisque.

The following list shows the E-Box enhancements for the Lotem PS/M:

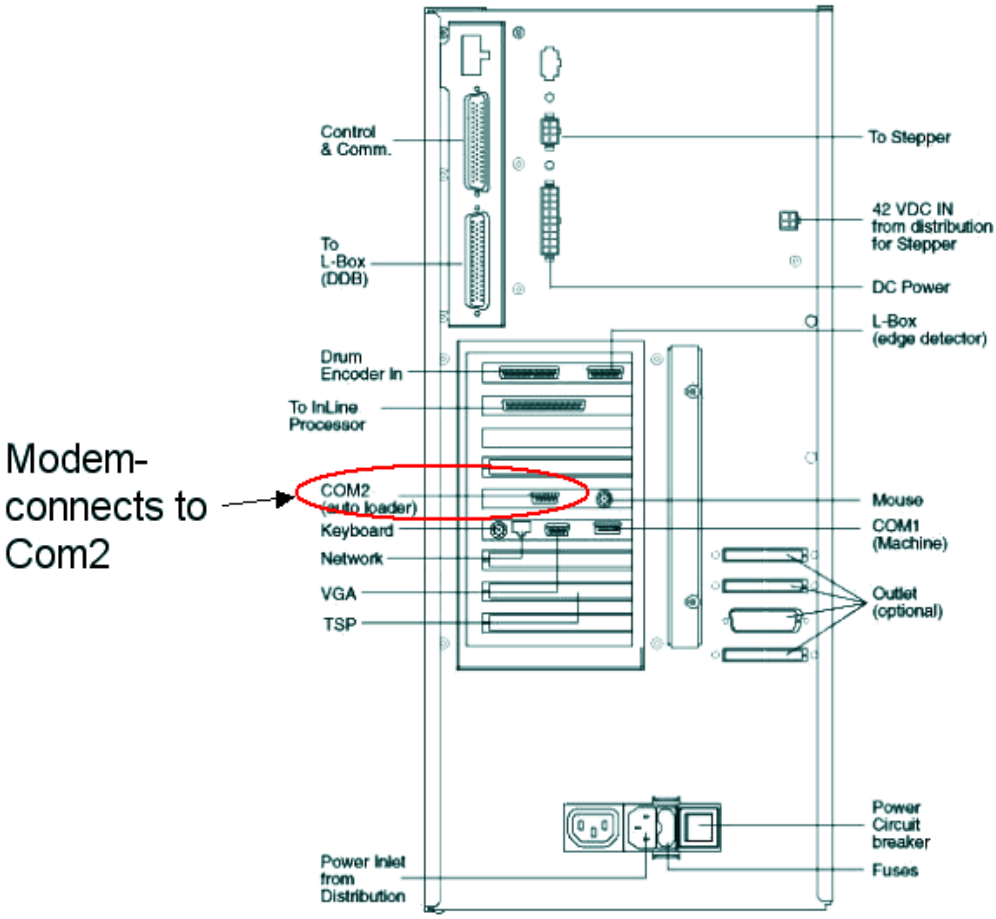
1. Motherboard with 2 PCI slots **[10-6]**
2. AMD K6-3/450 MHz (Pentium 3 CPU)
3. 256 MB memory
4. SCSI disk 18 GB - used as data volume. Customers send files to this disk. You can have up to 4 SCSI disks.
5. External modem - for remote support
6. 17 inch monitor - need a large screen to handle two GUIs: Lotem and Expose.
7. Existing Lotem boards
   - ❒ Strobe
   - ❒ NUC
   - ❒ MCF
   - ❒ DSM
   - ❒ TSP - manages the screening. Uses one of the PCI slots.
8. Data cable from the TSP board is connected to the L-Box.
9. Lotem has its own network connection. It is connected to the network via 100BaseT. The CPU supports it own on-board SCSI controller.

Note: To convert the PS/M to a normal Lotem 400 you replace the E-Box.

Lotem Expose Architecture - Hardware

[10-7]

COM2 is used for a modem. On the normal Lotem 400, COM2 is used for the MCU. You have to physically turn off the IO Objects COM2, otherwise the modem will not work.



Network/Modem Requirements

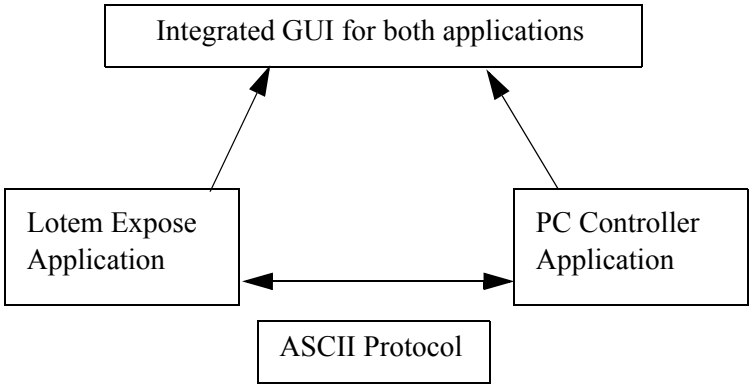
[10-8]

Differences are in Network/Modem Requirements:

1. One network RJ-45 (twisted-pair) socket near the Lotem.
   For improved system productivity, it must be 100BaseT.
2. A direct dedicated telephone line for remote support via modem (modem is supplied).

Lotem Expose Architecture - Software

The application software (GUI) for the Lotem 400 Controller is the same as the regular Lotem 400. In addition to the regular application, a separate application, the "Lotem Expose" runs. It acts as a queue manager with some other capabilities. **[10-9]**



[10-10]

The Lotem Expose is shipped on a separate CD. The Lotem Controller is found on the same CD as for the regular Lotem 400. The Lotem Expose software is loaded onto the hard disk, and the two applications run together. They appear as a single GUI, but actually, they are two separate applications. Messages that are transferred between the two applications are in ASCII: Text-based protocol.

[10-11]

To run both applications, a Windows NT server is required. The Lotem PS/M requires faster CPU and more memory. A special image disk is required.

Instructor's Notes: Demonstration

Power up the PS/M E-Box (external to the existing Lotem 400 E-Box) and project the controller screen for the class to see the workflow. The E-Box will not be hooked up to the Lotem.

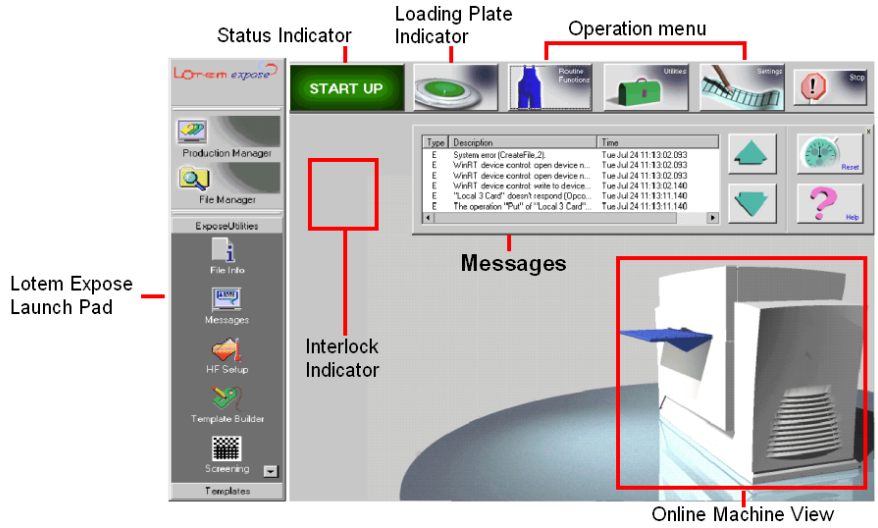
The GUI will show many errors since you do not do a full installation in this training program.

1. Open the Lotem 400 application.
2. Demonstrate the network and remote tools in the bottom right hand corner of the screen.
3. Show the configuration in the DOS window:
   Start ⇨ Programs ⇨ Lotem Expose ⇨ Config
4. Open the Lotem Expose application:
   Start ⇨ Programs ⇨ Lotem Expose ⇨ Launch Pad

Note: Lotem Expose takes priority over Lotem Software.

PC Controller GUI

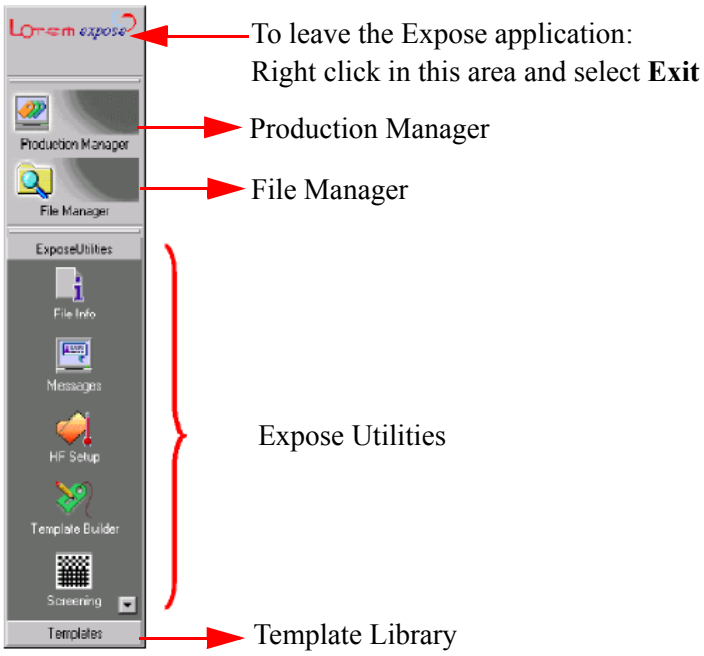
The regular Lotem GUI is shifted to the right, and the Lotem Expose panel is added to the left. **[10-12]**



PC Controller GUI for Lotem 400 PS/M

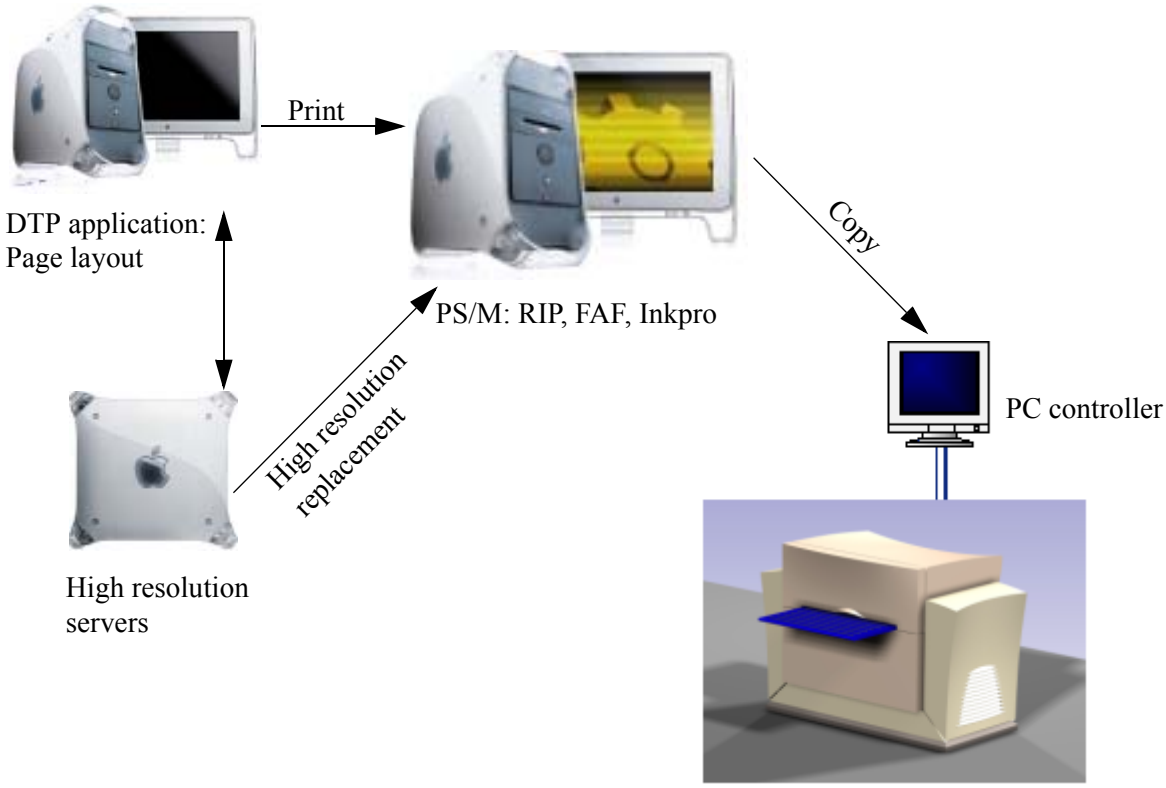
Lotem Expose GUI

[10-13]



Basic 400 PS/M Configuration

- Lotem 400 platesetter connects to the Macintosh via the network **[10-14]**
- Jobs to be exposed by the Lotem Expose application are first RIPed by the PS/M application which resides on a Macintosh
- The RIPed data is then sent via the network to the PC controller in the Lotem 400 platesetter
- The job is exposed via TSP on the plate



The basic configuration is as follows:

[10-15]

1. The Job layout is designed on the Macintosh using a DTP application, and then saved as a PS or PDF file.
2. The PS/M application opens the PS/PDF file.
3. The PS/M application RIPs the file and creates a Creo Job. Optional - use of FAF and InkPro.

[10-16]

4. A Hot Folder is defined by the Lotem Expose application and shared by the PC MacLan. The Hot Folder is then published on the network and viewed by the Macintosh (as a remote Hot Folder).

5. The entire DataVolumes folder of the Lotem, or selected directories, can be shared. The Job is copied into the remote Hot Folder.
6. The Job in the Hot Folder automatically enters the Online queue of the Production Manager, waiting to be exposed. Alternatively, if the Job is copied into the NewJobs folder, it automatically enters the New Jobs queue of the Production Manager. The new job indicator will flash until the Job is submitted to the Online queue.

Expose Methods

[10-17]

There are three methods by which Jobs are sent to expose:

1. The Job is automatically copied by the PS/M application into a **Hot Folder** that has an attached template. The template defines the expose settings. Contains all the plate information.
2. Jobs are copied by the PS/M application into the **NewJobs folder**. Jobs in this folder automatically enter the New Jobs queue of the Production Manager. The NewJobs Folder contains no plate data. It is only done at exposure.
3. Jobs that are ready for expose already exist in the PC Controller. You can access the Job via the **File Manager**, and then drag and drop it onto a template and define its expose settings.

[10-18]

Workflow Type	Workflow
A	RIP ⇨ FAF ⇨Copy to NewJobs Folder
B	RIP ⇨ FAF ⇨ Copy ⇨ Hot Folder (recommended)
C	PS/M Hot Folder ⇨ RIP ⇨ FAF
D	RIP ⇨ FAF ⇨ Preview ⇨ Manual Copy

Note: You do not need a dedicated Macintosh to send a file to a Lotem PS/M. Communication between the Macintosh and the Lotem is via PC-MacLan, software that provides communication using a Local Area Network.

Reference:

http://techplanet.creo.com/output/computer_to_plate/lotem400/content/doc/400PSMWorkflowInAction.pps

Installation of the Lotem 400 PS/M

Instructor's Notes: Lecture

Since this course is a PS/M overview, participants will not have to complete the installation at this stage. They need an overview of what may be expected of them, should they need to install the Lotem 400 PS/M.

[10-19]

Installation of the Lotem PS/M takes longer than the regular Lotem 400. A cold start installation includes the Windows NT Operating System (Operation System CD), PC controller (Application System CD), PC MacLan and Lotem Expose software (Lotem Expose CD). After you perform a Cold Start, check the TSP and configuration. You will perform upgrade installations periodically, whenever there is a new version of the software.

Before upgrading your software, you must first remove the existing software version. You can then install the new version and restore your original configuration.You must check that the TSP is correct and then you can do the configuration.

Reference:

http://techplanet.creo.com/output/computer_to_plate/lotem400/content/doc/PSM_IG_June26.pdf

[10-20]

Steps for installation:

1. Save the registry file
2. Save database folder
3. Save parameters
4. Write down the PC Controller IP Address
5. Load Lotem 400 PS/M Operating System
6. Load Lotem 400V PS/M Application & Diagnostics S/W
7. Install PC MACLAN
8. Change AppleTalk settings
    a. Turning the PC MACLAN startup screen on or off
    b. Changing your AppleTalk zone
    c. Creating a shared folder
    d. Changing access privileges
    e. Unsharing a folder
9. Set up the Network Macs
10. Install Lotem Expose software

When installing 1.30.06, you must also install:

1. PS/M Patch - shifts Lotem GUI to the right to add in the Lotem Expose panel on the left.
2. Patch 2

Remote Support

Instructor's Notes: Interactive Lecture

Participants should be able to activate the remote support and show the customer how to activate it, so this should be a hands-on activity, if possible.

Lotem 400V PS/M enables the customer to receive support remotely. Because PS/M is NT-based, remote support is through the Remote Access Service (RAS). **[10-21]**

Reference:

"Activating Remote Support" (Chapter 5) in the PS/M Installation Guide
http://techplanet.creo.com/output/computer_to_plate/lotem400/content/doc/PSM_IG_June26.pdf

Note: Once the modem is on COM 2, switch off COM 2 on the Lotem.

Important: Remember to show the customer how to use the Remote Support:

In order to receive remote support, the customer must activate RAS, VNC and NetMeeting. To prepare the customer for remote support, you must ensure the customer has a modem and telephone line.

The following steps are required for enabling a remote support session:

1. Connect the telephone line to the modem, and make sure the modem is turned on
2. Activate the RAS
3. Activate the VNC
4. Activate Intimating
5. Enable remote diagnostics

After completing the Remote Support session, the following steps are required:

1. Disable RAS
2. Disable VNC
3. Disable NetMeeting
4. Disable the diagnostics
5. Turn off the modem

Module Recap

At the completion of this module you should be able to: **[10-22]**

- Explain the principles behind the Lotem PS/M
- Recognize the differences between the Lotem 400 and the Lotem 400 PS/M
- Use the PS/M user interface
- Describe the basic configuration
- Describe basic Lotem 400 PS/M end-user workflow and expose methods
- Install the Lotem PS/M
- Set up remote support for the PS/M

Field Change Orders (FCOs)

Introduction

This module provides a summary of all the Field Change Orders (FCOs) that have been issued for the Lotem 400 and the Lotem 400 with MCU. This summary will provide the field engineer with an overview of problems that have arisen and how they have been solved. This list of FCOs was compiled in November 2002 and is expected to be updated periodically.

Estimated Time

1 hour

References

List of Lotem 400 FCOs:

http://techplanet.creo.com/output/computer_to_plate/lotem400/nav/400/fcos.htm

Objectives

At the end of this module you will be able to: **[11-1]**

- Recognize FCOs that have been issued
- Perform the FCOs

Lotem 400 FCOs

Instructor's Notes: Interactive Demonstration

It is important that engineers are familiar with all the FCOs that have been issued for the Lotem 400. Use the PowerPoint slides to explain the FCOs, while getting the participants to locate the parts described in the FCO on the machine. For each FCO explain the problem and how the FCO fixes it.

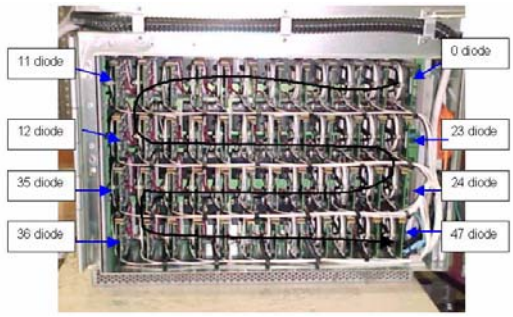
Reiterate that the FCOs are constantly being updated, and that engineers must frequently consult TechPlanet.

Important: It is recommended that you constantly consult TechPlanet for the latest FCOs.

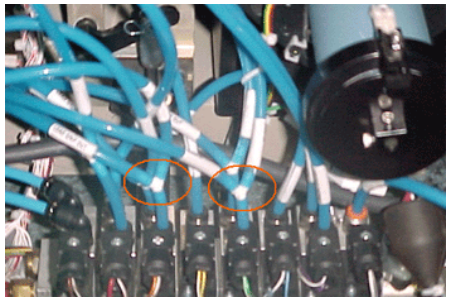
Boards & Power System

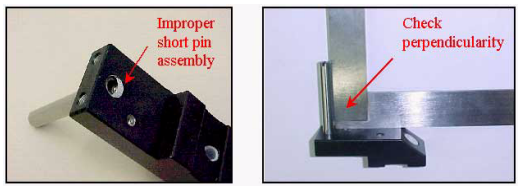
[11-2]

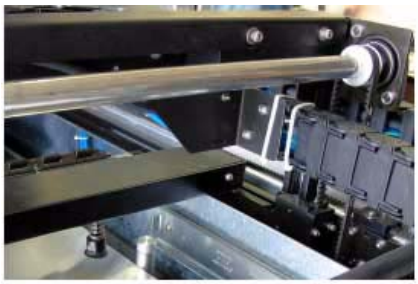
FCO	Component/ Activity	Date	Type	Description
28355	CTP power distribution board, replace	02 Feb 02	Next Failure	Replace old CTP power distribution board in stock with new CTP power distribution board Comp level P. Comp level of CTP board was changed, so catalog number was changed to make it compatible with comp level.
27647	Local 3 box, replace	05 Aug 01	Next Failure	Replace old Local 3 box with newly designed box. To prevent damage to electrical shorts on Local board and Local 3 pins. 

FCO	Component/ Activity	Date	Type	Description
28158	MCF board, replace	19 Feb 02	Next Failure	Replace the old MCF board in stock with the new MCF board Comp level P. Reduces occurrence of drum run-away. MCF board Comp level has changed, so catalog number must be updated accordingly. **[11-3]**
27936 /A	Mother and daughter boards, replace	28 Feb 02	**ASAP**	Replace mother and daughter boards by removing and installing all diode brackets including their LDD boards and diodes. Safeguards against condensation to prevent shorts within the L-Box. **[11-4]** 
28335	NUC board, replace	12 Feb 02	Next Failure	Replace old NUC in stock with new NUC board Comp level P. **[11-5]** Comp level of NUC board changed, so catalog number must be updated accordingly.

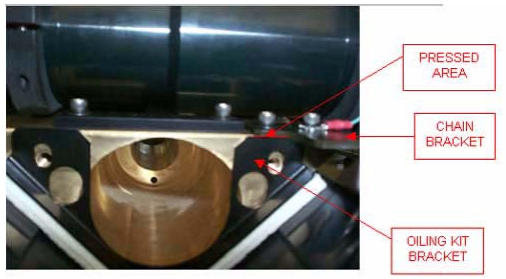
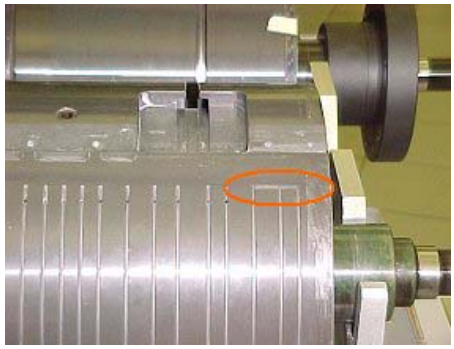
Loading/Unloading System

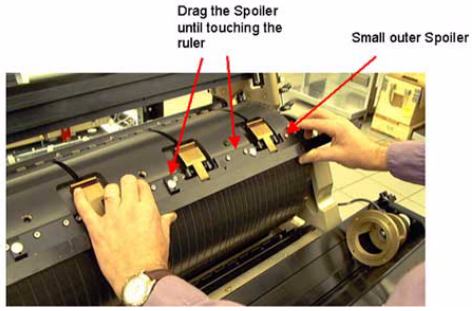
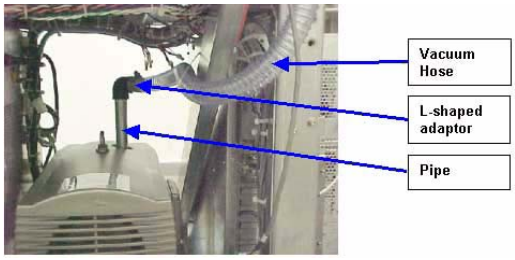
FCO	Component/ Activity	Date	Type	Description
29088	Air pipe, Y connectors, install	01 Sep 02	Next Failure	Air pipes do not connect tightly to the Y connector. Remove the Y connector and install revised Y connector. **[11-6]** 
27958	Back panel, apply safety sticker	04 Feb 02	Next Failure	Glue safety sticker with diagram on back panel to show specific location of preload. **[11-7]** 

FCO	Component/ Activity	Date	Type	Description
28117	Conveyor cover, install	06 Nov 01	Next Failure	Install cover on conveyor. Prevents ambient light from activating detector when no plate is present on conveyor. **[11-8]** 
27730	Light bracket, remove	15 May 01	Next Failure	Remove left light bracket. Prevents Y chain from hitting left bracket near drum when XY bar moves toward drum. **[11-9]** 
27928	Short pins, replace	07 Feb 02	Next Failure	Replace old short pins with newly designed short pins. Solves intermittent misregistration problems resulting from improper short pin assembly. **[11-10]** 

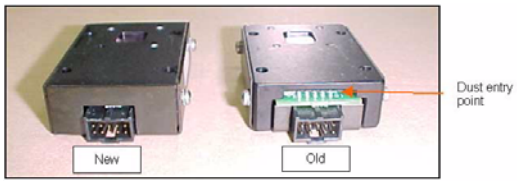
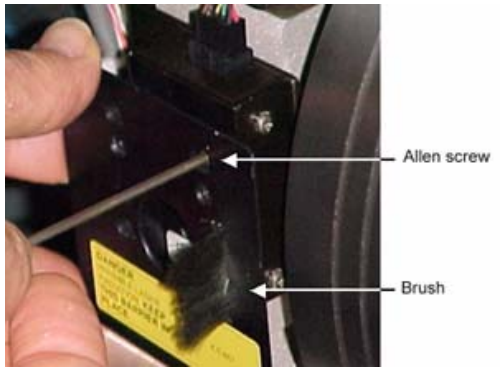
FCO	Component/ Activity	Date	Type	Description
27946	X and Y loading system shafts, replace	16 Apr 02	**ASAP**	Replace aluminum X and Y loading system shafts with stronger stainless steel shafts. Prevents movement errors, slippage or breakage in support bearings caused by bowing of aluminum shaft under tension. **[11-11]** 

Drum System and Carriage

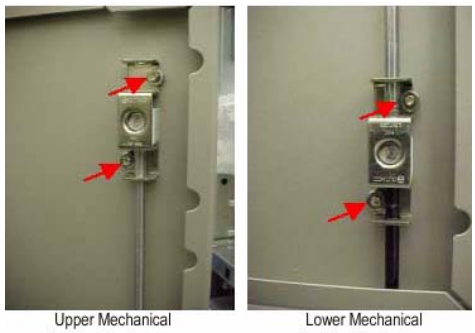
FCO	Component/ Activity	Date	Type	Description
27384	Carriage HP detector, replace	07 Jan 01	**ASAP**	Replace old bracket on HP detector side with new one. Prevents unwanted lines on image due to friction between carriage and V groove as a result of chain base bracket pressing on oiling kit bracket. **[11-12]** 
28845	Drum grooves, horizontal, seal with epoxy glue	27 May 02	Next Failure	Seal horizontal grooves on drum with epoxy glue. The horizontal grooves in the drum close to the head spoilers cause large plates to get stuck on the drum. **[11-13]** 

FCO	Component/ Activity	Date	Type	Description
26192	Head spoilers, replace	13 May 01	**ASAP**	Replace all six head spoilers from 8 mm to 12 mm pins. Solves registration problems for plates wider than 550 mm. **[11-14]** 
28032	Vacuum system, replace hose, pump nipple, swivel hose interface and vacuum hose adapter	04 Nov 01	Next Failure	Replace vacuum hose, vacuum pump nipple, swivel hose interface and vacuum hose adapter. Increases reliability with new improved vacuum hose. **[11-15]** 

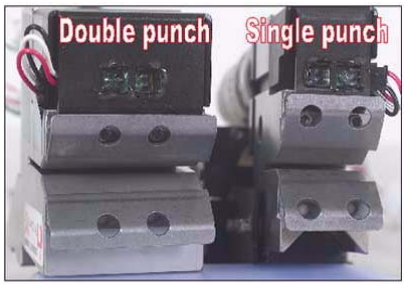
Optical System

FCO	Component/ Activity	Date	Type	Description
28131	Light detector, sealed, install	29 May 02	Next Failure	Replace unsealed light detector with sealed one. The unsealed light detector enabled dust to enter, despite periodic cleaning. The dust covering the optic lens and the electrical board shortened the field life of the light detector.  **[11-16]**
28944	Light detector with lens brush, install	01 Sep 02	Next Failure	Install a small lens cleaning brush to the light detector hood. When high-ablation plates are regularly used, plate ablation accumulates on the optic head lens protector and on the light detector lens. This accumulation causes a decline in image quality, puts a strain on the laser diodes, and can cause diode failure. **[11-17]** 

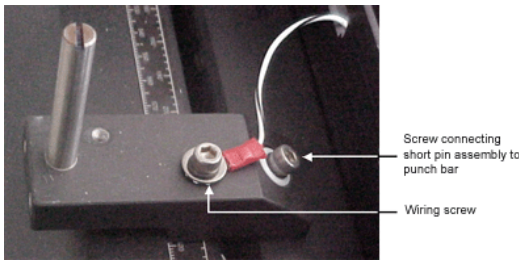
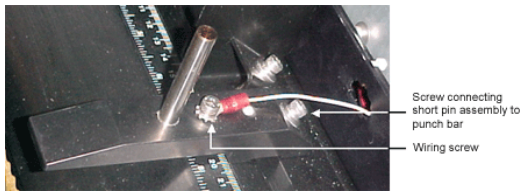
Interlock System

FCO	Component/ Activity	Date	Type	Description
28257	Door lock tongue, top door, replace	13 Feb 02	Next Failure	Replace old lock tongue on top door with new lock tongue. Prevents Lotem 400 top door from getting stuck by replacing the lock tongue for door with a redesigned one. **[11-18]**  Figure 1 – Old Lock Tongue: Left and Right  Figure 2 – New Lock Tongue: Left and Right
28270	Door, side, mechanical mechanism, replace	04 Feb 02	Next Failure	Replace mechanical mechanism with new, magnetic one. Makes it easier to open Lotem 400 side door. **[11-19]**  Upper Mechanical Locking Mechanism Lower Mechanical Locking Mechanism

Punch System

FCO	Component/ Activity	Date	Type	Description
27453	Punch detector, secure	11 Feb 01	**ASAP**	Secure board and detector base to detector cover with epoxy glue, and attach plate guides to punches. Improves punch system reliability. **[11-20]** 

MCU

FCO	Component/ Activity	Date	Type	Description
28818	Short pins, replace	01 Sep 02	Next Failure	Replace short pin assembly with updated version to prevent small plates from becoming stuck. **[11-21]**  Old assembly  Updated assembly

Note: Remember to consult TechPlanet for the FCO archive and for the latest FCOs that have been issued:

http://techplanet.creo.com/output/computer_to_plate/lotem400/nav/400/fcos.htm **[11-22]**

Module Recap

At the completion of this module you should be able to: **[11-23]**

- Recognize FCOs that have been issued
- Perform the FCO

Troubleshooting

Introduction

This module enables the participants to solve problems experienced with the Lotem 400 out in the field. The participant gains valuable hands-on experience, with guidance from the instructor. This module provides the participant with problem-solving skills.

Estimated Time

Approximately a day and a half

References

http://techplanet.creo.com/output/computer_to_plate/lotem400/content/troubles/webhelp/troubleshooting_user.htm

http://techplanet.creo.com/output/computer_to_plate/lotem800/nav/troubles02.htm

Objectives

At the end of this module you will be able to: **[12-1]**

- Troubleshoot the Lotem 400
- Apply problem-solving skills to troubleshooting

Lotem 400 Troubleshooting

The Lotem 400 Troubleshooting Help system describes troubleshooting procedures. Each procedure describes the general problem that has occurred and then lists the possible causes and solutions to fix the problem. The information may be accessed either via Content or an Index.

Reference:

http://techplanet.creo.com/output/computer_to_plate/lotem400/content/troubles/webhelp/troubleshooting_user.htm

Instructor's Notes: Discussion

Before starting with the troubleshooting exercises:

- Discuss the recommended steps in the troubleshooting model
- Try to encourage the participants to share their strategies and experiences with customers
- List all relevant ideas on the flipchart
- Summarize the discussion with the main steps that need to be taken in the troubleshooting model

Instructor's Notes: Hands-on Troubleshooting

Sabotage the Lotem 400 in one of the ways listed in the table below, and get the participants to solve the problem.

For **each round** of "sabotage", try the following process:

1. Explain the problem that "the customer" has described, and ask the participants to present ideas as to the source of the problem and how to go about solving it.
2. List all the suggestions on the flipchart, to be used later for the discussion.
3. Participants go to their machines to solve the problem.
4. After the problem has been solved for each group, gather the participants for discussion.
5. Examine the initial list on the flipchart and discuss the actual solution compared with what had been suggested previously.
6. Discuss the results with the class.

Throughout the period of troubleshooting, try and reach a recommended "Troubleshooting Procedure" based on the experience gathered in the class. List the stages on the flipchart.

System	Sabotage	Result
Software & Settings	1. Change BIOS setting - IRQs to be different than default so that CPU COM will not work	Application may not start or comes up with many errors
	2. Remove Database folder to backup folder	Application may not start or no media/ exposure setting will be available
	3. Close I/O object of important motor (focus, res or drum)	Startup error or when exposure is sent application will crash
	4. Corrupt database - replace media name with illegal characters	GUI will crash
Loading system	1. Reduce Loading motor torque to very low numbers for 0.3 mm (10) so that loading pressure is not enough to push into head gripper	Loading may fail
	2. Disconnect the stopper bar HP sensor or cross the air tubes coming out of the control valve so it won't open during loading	Plate loading cycle will fail
	3. Close the air restrictor of the upper loading gripper system so that one side will not move into the EP/HP	Load cycle will fail
	4. Disconnect Ramp HP sensor or swap air tubes for activation	Ramp will not go up
	5. Reduce Y in drum to be very small (plate will hit drum too high)	Plate will not go into grippers
	6. Disconnect vacuum generator air tube	Not enough vacuum will be generated so plate will not be held to the suction cups
	7. Change centering motor wait distance to be very big (MCU)	The loading sequence will fail as the motor will try to move to a position greater than its home position. The motor will get stuck and wait there for a time out.

System	Sabotage	Result
Edge detection	1. Change the focus value for certain plate	Edge detection will fail as can't get good reading
	2. Disable the edge detection (under Exposure) so that exposure will start based on plate's expected location	Image will not be centered on the plate
	3. Set the threshold (under Edge system) to be very high so drum may be seen as plate	Edge will start in wrong location
	4. Disconnect the cable going from L-Box to MCF so no reading will be passed	Edge detection will fail
	5. Change relative move to be -1 for 0.15 mm plate (under Expose)	Edge detection will fail
Unload	1. Cover /disconnect the unload sensor on tray	Plate unload will fail with error
	2. Increase unload motor first speed (under loading system/unload plate) to be very low (5)	Plate will not be pulled fast enough, drum may not reach unload gripper location
General	1. Close vacuum pump knob all the way	Bad attachment - out of focus areas
	2. Swap Com1 and Com 2 cables	Wrong local will get command - errors during startup
	3. Disconnect the laser connector on the unload tray	Constant interlock A/B channel open
	4. Change active state of plate detection sensor on tray	Plate presence will not be found

Troubleshooting Model

[12-2]

Troubleshooting is a four-step process designed to assist field engineers. By following this simple model you will be able to more quickly resolve problems in the field.

Step 1: Analyze the problem

[12-3]

The first step in analyzing the problem is to get the customer's description of the problem. The engineer should question the customer and listen closely to the responses.

1. **Review the generic questions with the customer:**
   a. When was the last time the machine worked properly?
   b. What was done since then? For example:
      - Was the machine moved?
      - Was the machine cleaned?
      - Was a new batch or type of plates used?
   c. Was an error message displayed on screen? If yes, what did it say (include numbers, if any).
   d. What is the software version?
   (In the PC Controller, select **Utilities**> **Machine Info**. The software version is displayed.)
   e. Does the problem happen all the time (with all plates), or just some of the time? For example:
      - With a particular plate brand, type and/or size?
      - Only when a few plates are left in the cassette?
   f. Does the problem seem to be a random occurrence?
   g. What are the temperature and humidity levels in the plate storage room? For example:
      - Do they adhere to the plate manufacture's guidelines? If not: In what ways?
      - Does the temperature fluctuate radically?

   Reference:

   http://techplanet.creo.com/output/computer_to_plate/lotem800/content/troubles/gen_ts_questions.htm

2. **Look for the documentation of this problem in TechPlanet on the Troubleshooting pages**.

   Reference:

   http://techplanet.creo.com/output/computer_to_plate/lotem400/nav/400/troubles.htm

Step 2: Isolate the problem

[12-4]

Isolating the problem is a process of elimination, in which the engineer determines which parts of the machine are in good working order.

- Review any samples/examples of the problem
- Evaluate the current system setup and condition against the standard system specifications
- Look for recent changes in the system that might have directly or indirectly created the problem
- Does the problem appear to be:
  - ❒ Product related
  - ❒ Use related
  - ❒ Tied to an outside problem
- Check the current results against control (benchmark), and see how close you can come to matching the standard
- The "divide-and-conquer" method systematically "cuts the problem in half" by strategically checking at various points in the system
- If all else fails, ask yourself "What would I do if I wanted to make the machine do the task that is currently not working?" **[12-5]**

Step 3: Fix the problem

[12-6]

- Fixing the problem simply consists of taking the steps needed to repair the cause of the problem
- Once you have identified the possible problem, begin adjusting or changing ONE element at a time
- Make sure that the fix is adequate to make a second service call unnecessary

Step 4: Verify the fix

[12-7]

This step is critical to successful customer service. It is crucial that we check back with the customer.

- Make sure there are not two separate problems that need to be fixed
- **Before disconnecting the remote service call or leaving the customer's site, be sure to complete the following:**

  a. Have the customer expose several plates of different sizes (at least three), and verify that the problem is resolved.

  Note: This is a very important cost-saving step that can prevent additional service calls to take care of the same problem.

  b. Verify whether the customer is responsible for performing **preventive maintenance** procedures on the machine, or Creo is responsible.

  If the customer is responsible:
  Verify that preventive maintenance is being performed properly and regularly. Remind the customer of the importance of performing the preventive maintenance procedures properly and regularly, and provide instructions, as required.

  If Creo is responsible:
  Verify the service record. If preventive maintenance is either due or overdue:

  - Perform preventive maintenance procedures, as required, or
  - Schedule a field service call, or
  - Alert the service department so that they can contact the customer and schedule the service call

  Note: Inform the customer as to the action taken

.

Reference:

http://techplanet.creo.com/output/computer_to_plate/lotem800/content/troubles/before_you_finish.htm

Hands-on Activity: Troubleshooting Exercises

Use the troubleshooting model described above to fix the "sabotaged" machine in the classroom. **[12-8]**

Module Recap

At the completion of this module you should be able to: **[12-9]**

- Troubleshoot the Lotem 400
- Apply problem-solving skills to troubleshooting

Appendices

The drawings associated with all these parts can be found on TechPlanet.

Lotem 400 Wiring

1. Main Harness 504N2D203 (Slides 1 to 9)
   http://techplanet.creo.com/output/computer_to_plate/lotem400/content/train/wiring/sld001.htm
2. Local-3 Harness 504N2D204 (Slides 10 to 16)
   http://techplanet.creo.com/output/computer_to_plate/lotem400/content/train/wiring/sld010.htm
3. Laser and Motor Interlock
   http://techplanet.creo.com/output/computer_to_plate/lotem400/content/train/wiring/sld017.htm
4. Loading Switch on Tray
   http://techplanet.creo.com/output/computer_to_plate/lotem400/content/train/wiring/sld018.htm
5. Load Harness
   http://techplanet.creo.com/output/computer_to_plate/lotem400/content/train/wiring/sld019.htm
6. Interlock Adapter on Tray 504L2D415
   http://techplanet.creo.com/output/computer_to_plate/lotem400/content/train/wiring/sld020.htm
7. Fan Harness
   http://techplanet.creo.com/output/computer_to_plate/lotem400/content/train/wiring/sld021.htm

8. Unload Detector Cable
   http://techplanet.creo.com/output/computer_to_plate/lotem400/content/train/wiring/sld022.htm
9. Adapter for Local-2 (Slides 23 to 28)
   http://techplanet.creo.com/output/computer_to_plate/lotem400/content/train/wiring/sld023.htm
10. Focus and Resolution
    http://techplanet.creo.com/output/computer_to_plate/lotem400/content/train/wiring/sld029.htm
11. Conveyor Adapter (Slides 30 to 31)
    http://techplanet.creo.com/output/computer_to_plate/lotem400/content/train/wiring/sld030.htm

Instructor Course Evaluation

Date: _____

Location: _____

Number of participants in the course ____ On-Site / Classroom training
(circle the correct one)

Names of trainees:

Name_____ Customer/Site_____

Name_____ Customer/Site_____

Name_____ Customer/Site_____

Name_____ Customer/Site_____

Name_____ Customer/Site_____

Name_____ Customer/Site_____

Name_____ Customer/Site_____

Name_____ Customer/Site_____

Training highlights:

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Subjects taught during the course (mark the appropriate check boxes):

☐	Course Overview	☐	New Features in Version 1.60
☐	Lotem 400 Overview	☐	Multi-Cassette Unit
☐	Installation	☐	MCU Upgrade & Calibration
☐	Differences Between Lotem 400 & 800	☐	Lotem 400 PS/M (Overview)
☐	Plate to Drum Parallelism	☐	FCOs
☐	Edge Detection	☐	Troubleshooting

Summary, comments and suggestions:

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