

DIMENSION

Quick-Start User Guide

Warnings, Cautions and Notes as used in this Guide

Warning

Warning notices are used in this publication to emphasize that hazardous voltages, temperatures, or other conditions that could cause personal injury exist in the equipment or may be associated with its use. In situations where inattention or misuse could cause either personal injury or serious damage to the equipment, a Warning notice is used.

Caution

Caution notices are used where equipment might be damaged if proper operating instructions are not observed.

Note

Notes call attention to information that is especially significant to proper Understanding and operation of the equipment.

This document is based on information available at the time of its publication. While efforts have been made to be accurate, the information contained herein does not purport to cover all details of the hardware or software, nor to provide for every possible contingency in connection with installation, operation or maintenance.

Safety Reminders

- DO NOT operate this equipment until you have read and understood this manual. If operating for the first time, ask your supervisor or a qualified operator for assistance.
- Plug the power supply into a grounded receptacle ONLY. Do not cut off the grounding prong or use any power cord or adapter without a grounding prong.
- Always assume the power is ON. Do not attempt any maintenance until you have verified that the power is OFF by unplugging the power supply from the tracer.
- Never turn the machine on while someone is performing maintenance or repair.
- Keep your hair, hands, and clothing clear of the machine while it is in operation.

THINK SAFETY FIRST – ALWAYS PRACTICE SAFE WORK HABITS.

Chapter 1 – Getting Started

Why This Guide?

The Dimension tracer is shipped in an almost ready-to-go condition when it reaches your facility. This quick-start guide will allow you to put the Dimension into service as quickly as possible. We will cover the following topics

- Unpacking the Dimension and identifying the features of the tracer and its accessories.
- Applying power and turning on the unit.
- Using the touch-panel display and examining some of the operator screens.
- Mounting frames.
- Mounting lenses and patterns.
- Calibrating the Dimension
- Connecting the Dimension to your lab's computer system.

The Dimension has many features and settings allowing you to optimize it for your specific lab environment. It also has extensive diagnostic capabilities and adjustments to fine-tune the tracer's operation. This guide does not describe all these features or adjustments. Once you have become familiar with the tracer's operation as described in this guide and want more information, call Technical Support for assistance.

What's That Called?

Even before unpacking the Dimension and setting it up, take a look at the 3 figures on the following pages to learn what the user-accessible components and features of the Dimension are called. Figure 1.1 shows items visible from the front of the unit. Figure 1.2 shows the connector bulkhead on the back of the unit. Figure 1.3 shows the accessories that ship with the Dimension. We'll be using the names shown in these figures throughout this guide.

Unpacking the Dimension

The Dimension is shipped in molded foam blocks within a cardboard carton. An accessory kit is shipped in a corrugated cardboard insert. The carton and the interior packing pieces should be retained in the event the unit must be shipped again. Place the carton on its side on a work surface. Open the top of the carton and carefully pull the tracer, foam blocks/insert from the carton and place them on the work surface. Pull foam blocks free from the tracer mechanism. Inspect the carton and all foam blocks to be sure none of the accessories shipped with the Dimension remain unpacked. You should have the following items (as shown in Figures 1.1 and 1.3):

- Dimension tracer mechanism
- Accessory kit containing the following items:
 - Lens/pattern holder, with oval calibration opening
 - Calibration lens and 2 metal calibration patterns (round and oval)
 - Frame calibration plate with large and small round openings
 - Lens mounting block (LMB) and magnetic pattern retainer
 - Serial cable, replacement fuses, shipping screws, hex wrench, stylus shipping retainer
 - Quick-Start User Guide (this document)

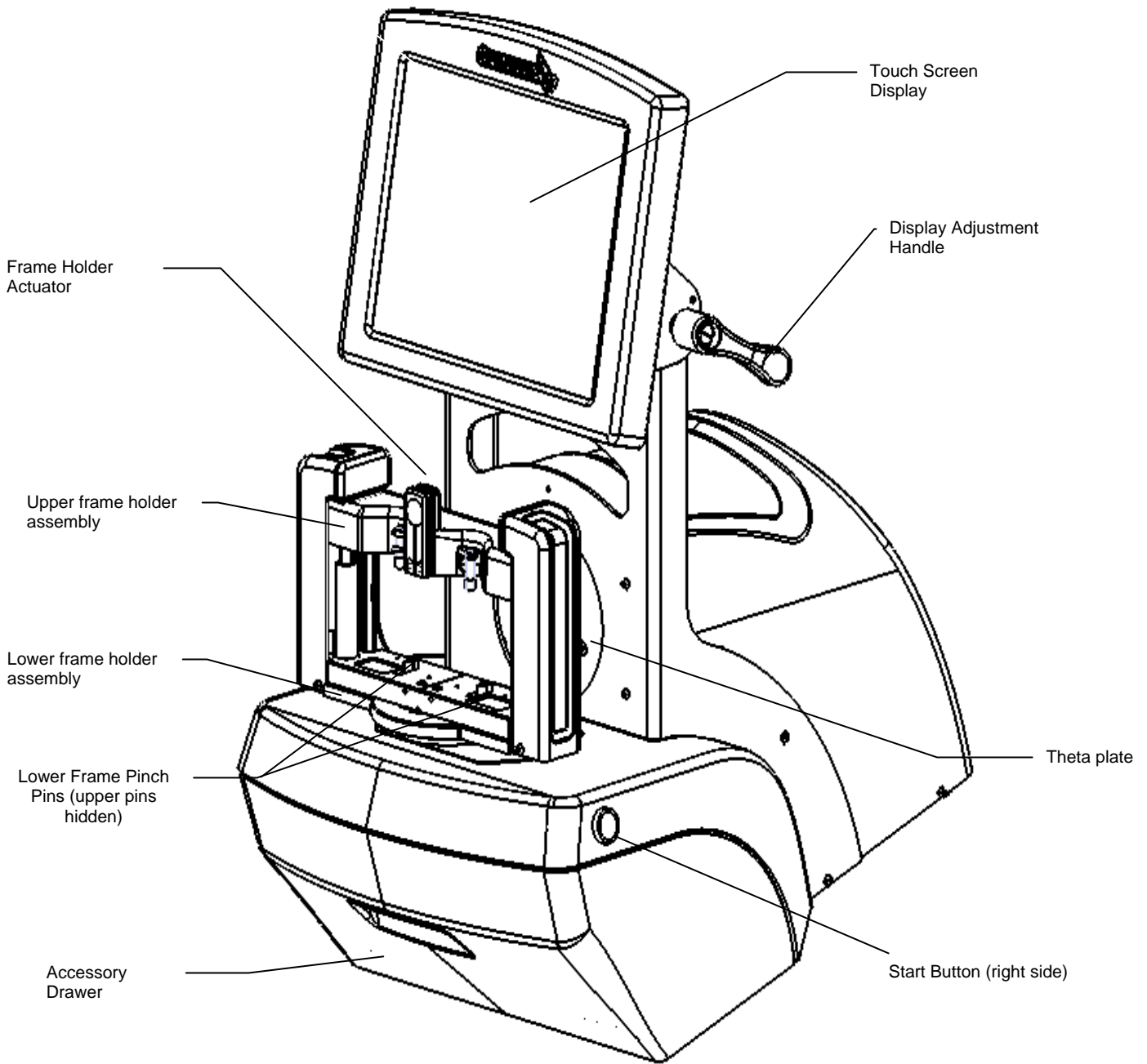


Figure 1.1: Dimension User Items – Front View

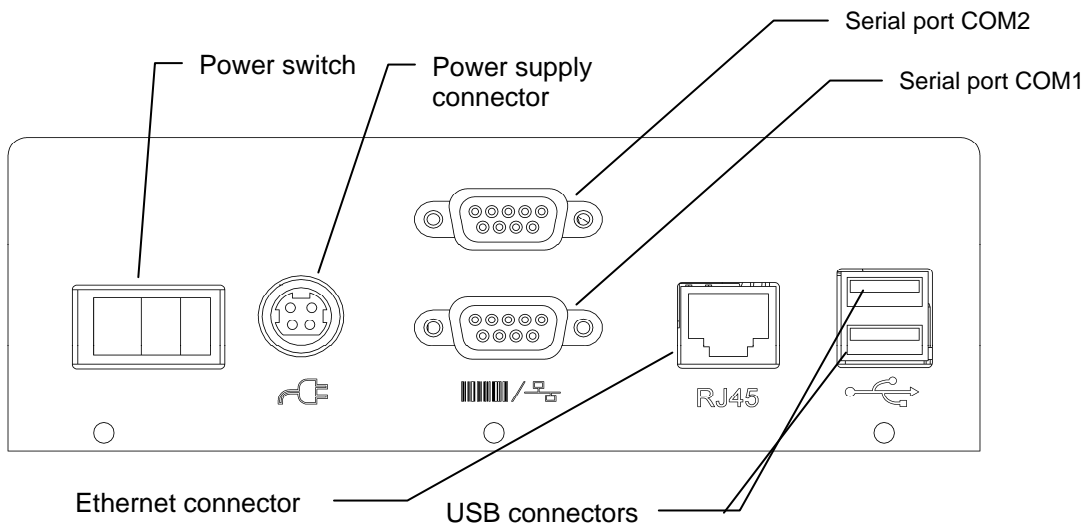


Figure 1.2: Dimension Rear Connector Bulkhead

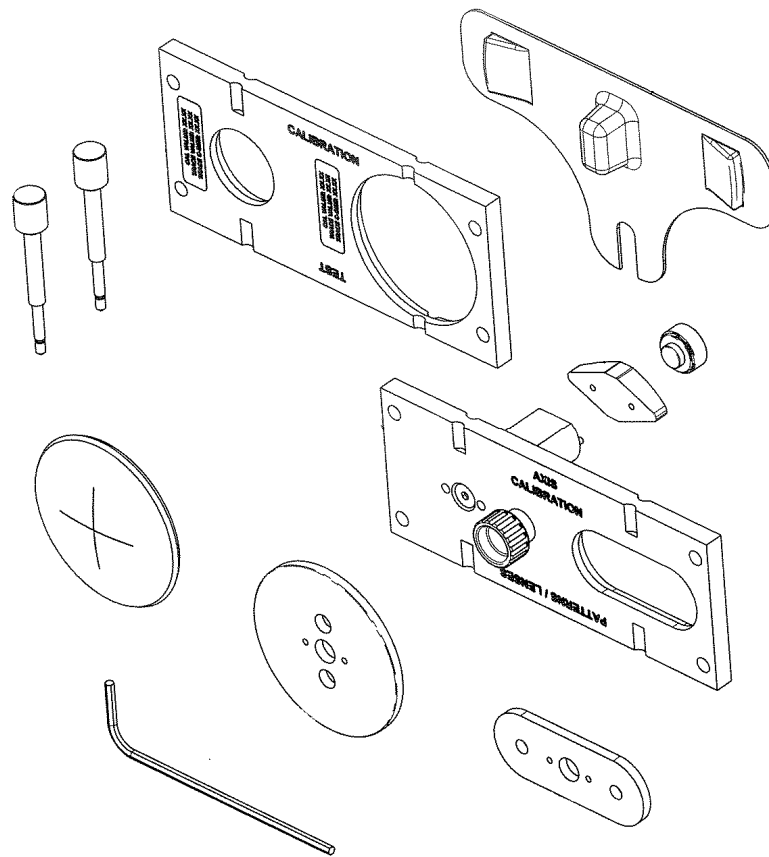


Figure 1.3: Dimension Accessory Items

Removing Shipping Restraints

The Dimension is shipped with the moving parts secured to minimize the potential for damage during transport.

Removing the Shipping Retaining Screws

The Dimension is shipped with two knurled brass thumb screws installed to prevent movement of the mechanism during shipping. The tracing mechanism is secured by a screw at the bottom of the slot in the round theta plate. The frame holder is secured by a screw at the left side of the lower frame holder assembly. Both these screws, shown in Figures 1.4 should be removed and stowed in the accessory drawer. After the screws have been removed, move the trace table to one side and remove the clear plastic guard over the stylus tip by squeezing it gently and pulling outward.

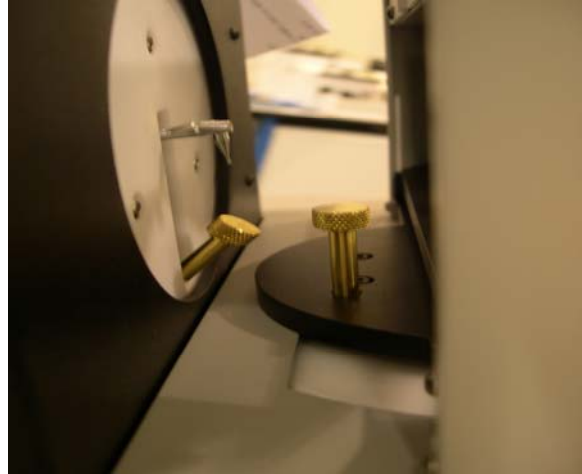


Figure 1.4: Brass retaining screws

Removing Other Shipping Restraints

Shipping items to be removed are identified by yellow tags.

1. Using office shears or cutting pliers, remove and discard all the tape and tie-down straps.
2. Remove the clear plastic stylus shipping cover and stow it in the accessory drawer.
3. Remove foam blocks between the upper and lower frame holder assemblies

Caution

The brass thumb screws, stylus cover and foam blocks must be re-installed whenever the Dimension is to be shipped. Failure to do so can result in serious damage to the mechanism and may void the warranty.

Powering on the Dimension

1. Make sure that the Dimension power switch is in the OFF position – the right side of the switch with the **0** symbol should be depressed.
2. Plug one end of the AC power cord into the power supply module.
3. Plug the other end of the AC power cord into a grounded outlet.
4. Plug the power supply module into the power socket on the rear connector bulkhead shown in Figure 1.2. The flat side of the connector should face upwards.

Warning

Use only a grounded outlet. Do not defeat the grounding by cutting off the grounding prong on the power cord, or by using a non-grounding adapter.

Note

The power supply module is designed to work both with 115 VAC (60Hz) and with 230 VAC (50Hz). A separate power cord is available for each application.

5. Press the left side of the power switch with the symbol **I** to apply power to the Dimension. Within 8-10 seconds the display should become active and the mechanism should move to locate its home position.

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Chapter 2 – Basic Operation

The Touch-Screen Display and Job Screen

The touch screen display is your primary means of entering data into the Dimension and viewing machine status and trace results. When the Dimension is first turned on, the Job Screen will be displayed. See Figure 2.1 below.

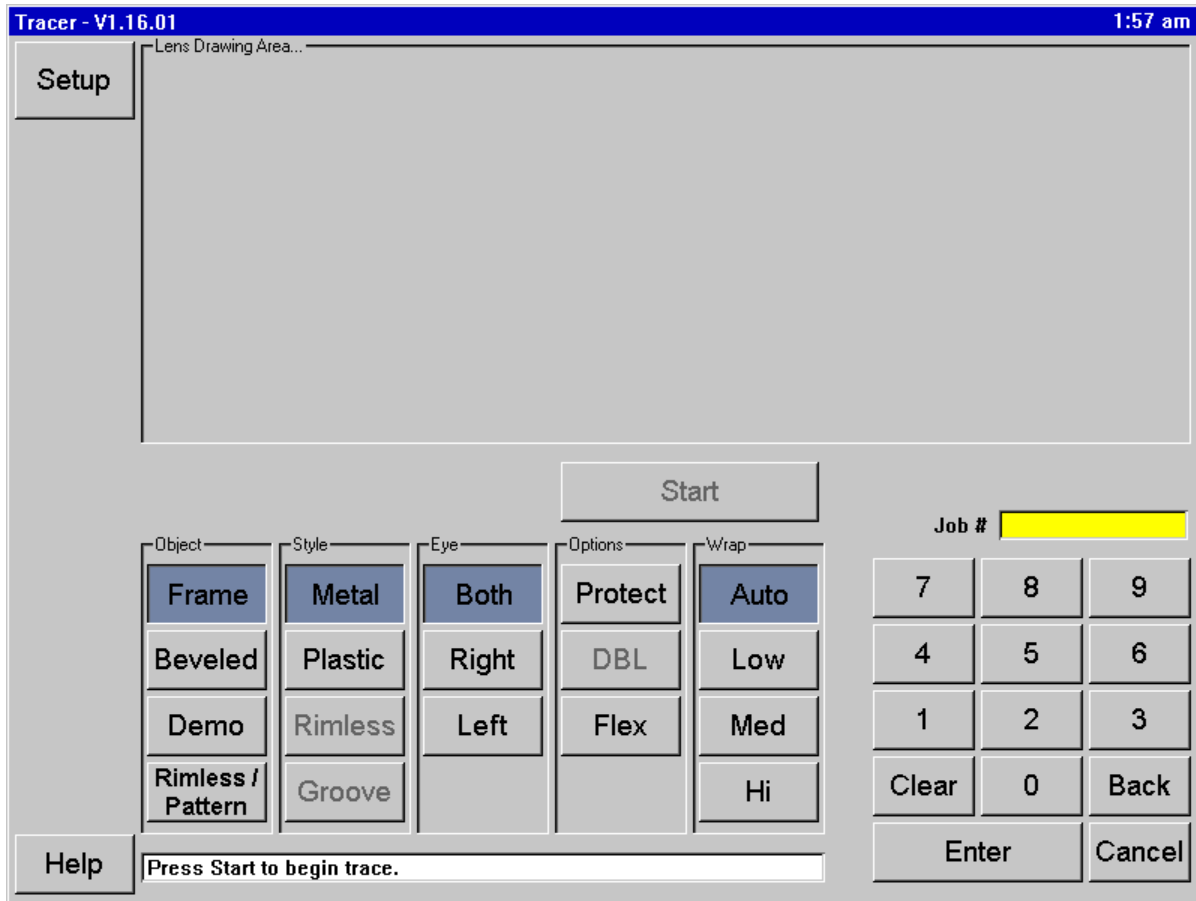


Figure 2.1: Job Screen

Job Screen Functions

The functional areas of the Job Screen are identified in Figure 2.1. The functions are summarized below:

- **Screen Navigation Buttons:** The buttons in this vertical array allow the user to select various screens for display. From the Job Screen, the only other accessible screen is the Setup Screen.
- **Lens Drawing Area:** Following a trace, a full-size scaled drawing of the trace appears in this area, along with key dimensions (A size, B size C size, DBL, FCRV, wrap angle)
- **Trace Start/Stop Button:** After all options for the trace have been entered, this button becomes active and will start the trace (or stop it during the trace). Pressing *Enter* twice will also start the trace, as will pressing either of the two mechanical push buttons at the side of the Dimension.
- **Job Number Field:** This field displays the job number, which may be entered using the keypad, or via a USB barcode reader (optional).
- **Data Entry Keypad:** Enter data, such as job number or a calibration value. The *Enter* key causes data to be accepted by the Dimension. *Clear* erases any entries in the field. *Back* removes the most recent digit. *Cancel* is used when editing data to end the editing process. When entering data in some screen *other than* the Job Screen, the data will not be saved until you return to the Job Screen.
- **Wrap Compensation:** The Dimension can automatically detect and compensate for different degrees of frame wrap. If you know the approximate wrap of a frame, you may select *Low*, *Med* or *Hi* before the trace begins. Otherwise, select *Auto*.
- **Options:** *Protect* prevents a stored trace from being overwritten. *Flex* lightens the stylus force when tracing very flexible frames, or frames with long A and short B dimensions. *DBL* is used in one-side frame traces. After tracing the specified side, a small fraction of the other side is traced – just enough to determine the DBL.
- **Eye:** Allows you to specify which side(s) will be traced.
- **Style:** Indicates the type of frame the finished lens will be mounted in.
- **Object:** Selects what sort of object that will be traced.

Making selections and entering data

To select a button, lightly tap the screen image of the button with your finger tip (but not your finger nail). There is no need to press long or hard. The image on the screen will change to suggest that the button has been depressed. You may also use a pencil eraser, or purchase a stylus at an office-supply store. When an option has been selected, its key will be displayed in a darkened color. When a button is not active, it is displayed in a “dimmed” state. The Start key remains dimmed until a job number has been entered and all required trace options have been selected.

Caution

Turn the Dimension off before cleaning the screen. Do not use a sharp object (pencil or pen point, paper clip, etc.) on the touch screen. The touch-sensitive coating can be scratched or torn. If the screen becomes soiled, use a micro fiber cloth such as is used to clean eye glasses. A soft cloth slightly dampened with clear water may be used for hard to remove spots.

The Setup Screen

The Setup Screen is accessed by pressing the Setup button on the Job Screen. The Setup Screen allows you to tailor the Dimension to your preferences and the requirements at your facility. Figure 2.2 shows the Setup Screen, whose functions are described below the figure.

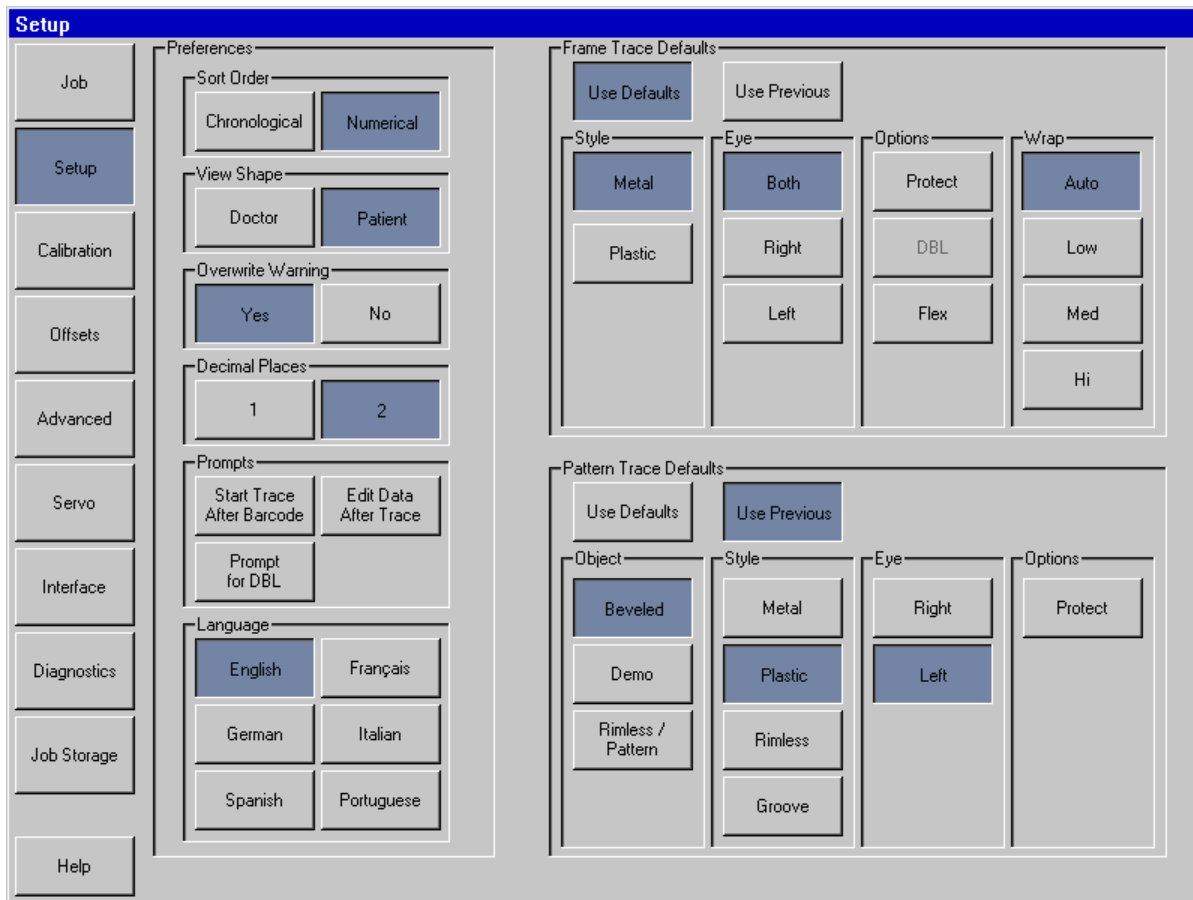


Figure 2.2: Setup Screen

Setup Screen functions

- **Screen Navigation Buttons:** The buttons in this vertical array allow the user to select various screens for display.
- **Display Preferences:** Specify preferences for viewing stored jobs.
 - **Sort Order:** Jobs may be displayed either in the order they were traced (chronological) or in sequence of their job numbers (numerical).
 - **View Shape:** Display traced shapes either from the patient’s or the doctor’s viewpoint.
 - **Overwrite Warning:** Issue a warning to the operator before overwriting a non-protected stored job with a new job having the same number.
 - **Decimal Places:** Display numbers with either 1 or 2 digits to the right of the decimal point.
 - **Prompts:** Selections include immediately beginning trace after entry of barcode, displaying the screen to edit data following a trace, and prompting to enter a DBL after a one-sided trace.
 - **Language:** Select the language of the Dimension screens and messages.
- **Frame Trace Defaults:** Select the default Style, Eye, Options and Wrap. Tap the *Use Defaults* button for the Job Screen to display these default values at the start of each frame trace job. Press *Use Previous* for the Job Screen to re-display the settings from the previous frame trace job.
- **Pattern Trace Defaults:** Select the default Trace Object, Style, Eye, and Options. Tap the *Use Defaults* button for the Job Screen to display these default values at the start of each pattern/lens trace job. Press *Use Previous* for the Job Screen to re-display the settings from the previous pattern/lens trace job.

Other Screens

The left margin of the Setup Screen provides the means for accessing other screens used occasionally in Dimension operations or maintenance. The purpose of these screens is summarized below. They are described in detail in the following chapters.

Calibration Screen

This screen provides the facilities for calibrating the tracer.

Offsets Screen

Following a trace, it may be desired that offsets be applied to slightly alter the size and contour of the traced shape. Any such offsets specified on this screen are applied automatically to *all traces* of the specified type. Offsets for a specific trace may be applied using the trace editing features.

Advanced Screen

This screen provides a variety of miscellaneous features, including password administration, updating Dimension software, managing setup data and log files, setting the wrap angles at which the frame holder tilts, and configuring calibration verification.

Servo Screen

This screen provides the means to adjust the Dimension motor speeds, forces, response characteristics, and limits of motion.

Note

You should not change the values shown on the Servo Screen except under the guidance of trained personnel. If these numbers are not set properly, the tracer's operation can be seriously impaired, or even disabled.

Interface Screen

This screen is used to configure the serial ports and Ethernet for communication with devices and host computer systems.

Diagnostics Screen

This screen allows each of the motors in the Dimension to be jogged and their position registers to be read. Ability of the serial ports to read and write characters may be verified, as may the proper operation of several sensors used in the Dimension.

Job Storage Screen

This screen is used to view and edit jobs immediately after they are traced, or jobs retrieved from the Dimension job storage. After editing, a job may be saved with the original job number (thus overwriting the original job data), or saved with a new new job number (allowing both the original data and new data to be maintained), or sent to a host computer.

Chapter 3 – Mounting Trace Objects

This chapter describes how to mount frames, patterns and lenses for tracing. Refer back to Figure 1.1 and note the locations of the upper and lower frame holder assemblies, the upper and lower pinch pins, and the frame holder actuator. Refer to Figure 1.3 to identify accessory items. In some of the following pictures, parts of the Dimension case have been removed for greater visibility.

Mounting the Frame Calibration Plate

1. Squeeze and hold the frame holder actuator and place calibration plate between the lower pinch pins. Lower the upper frame holder assembly so that the the calibration plate is between the upper pinch pins.
2. Release the frame holder actuator.

Mounting Frames

1. With one hand, squeeze and hold the frame holder actuator. This will cause both the upper and lower pinch pins to spread.
2. Hold the frame to be mounted by the temples, as shown below in Figure 3.1a. Place the lower eye wire of the frame between the lower pinch pins.
3. Gently lower the upper frame holder assembly until the upper eye wires are between the upper pinch pins. Do not lower the frame holder assembly so far as to compress the frame.
4. Release the frame holder actuator. Figure 3.1b shows the mounted frame.

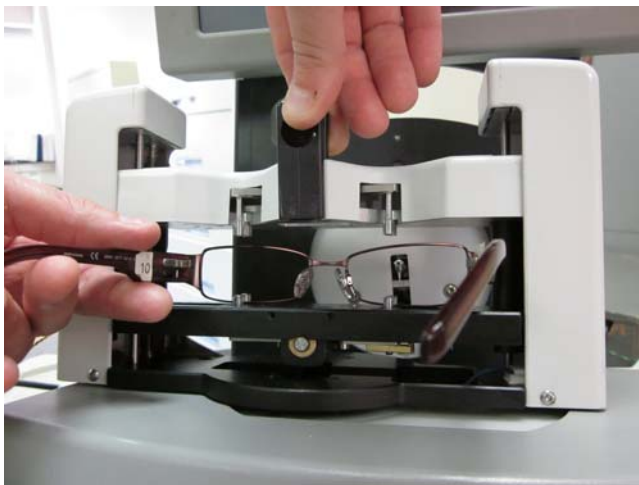


Figure 3.1a: Loading a frame.

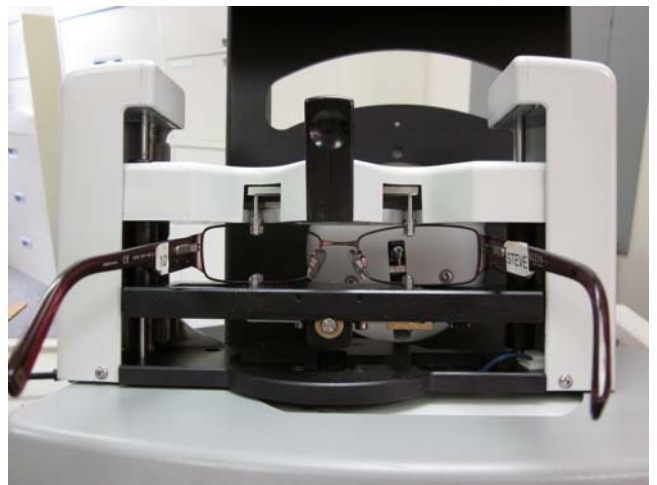


Figure 3.1b: Frame loaded and ready to trace.

Mounting Lenses

1. Affix a LEAP pad to the LMB and carefully affix the lens to the LEAP pad.
2. Attach the LMB to Lens/Pattern holder via the registration pins.
3. Select the desired trace object on the Job Screen.
4. Squeeze and hold the frame holder actuator and place lens/pattern holder between the lower pinch pins. Lower the upper frame holder assembly so that the lens/pattern holder is between the upper pinch pins.
5. Release the frame holder actuator. See Figure 3.2 below.

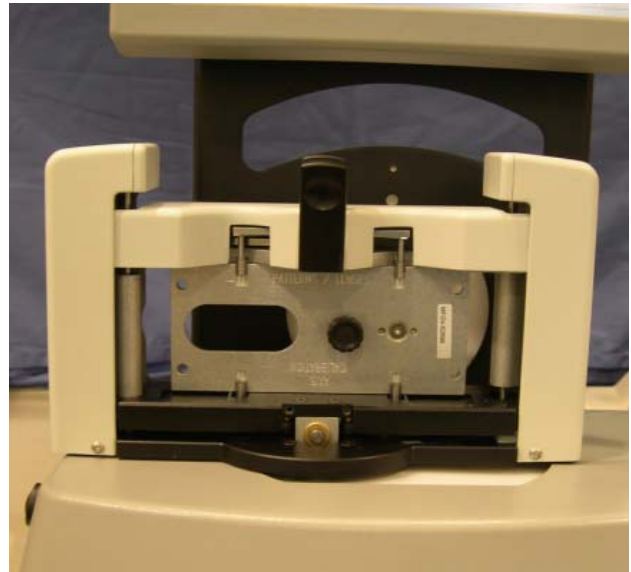
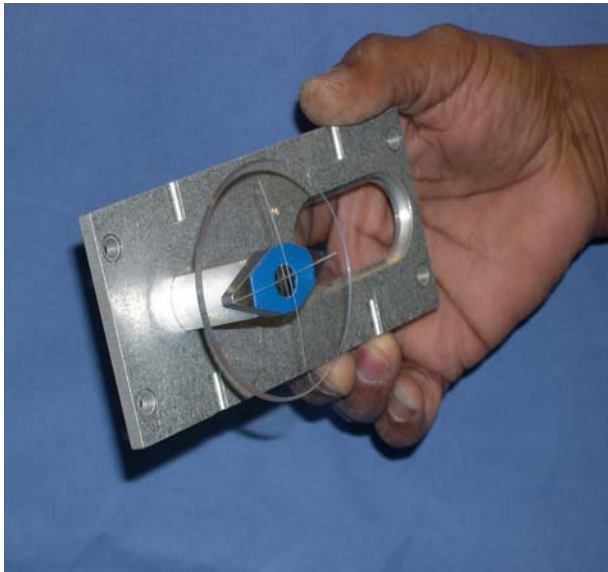


Figure 3.2: Lens mounted on Lens/Pattern holder and then mounted in tracer.

Mounting Patterns

1. Attach the pattern to the Lens/Pattern holder via the registration pins. Secure the pattern with the pattern retainer. See Figure 3.3 to the right.
2. Select the desired trace object on the Job Screen
3. Squeeze and hold the frame holder actuator and place lens/pattern holder between the lower pinch pins. Lower the upper frame holder assembly so that the lens/pattern holder is between the upper pinch pins.
4. Release the frame holder actuator.

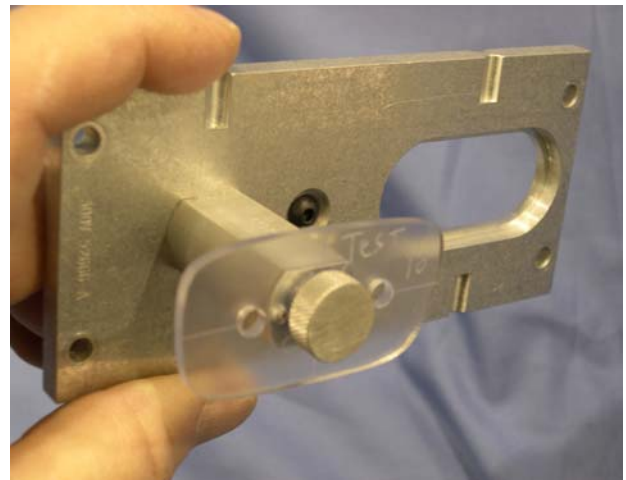


Figure 3.3: Pattern mounted on Lens/Pattern holder.

Chapter 4 – Calibration

The Calibration Screen

Access the Calibration Screen from the Setup Screen. Figure 4.1 below shows the Calibration Screen.

The Calibration Screen is divided into several sections:

- Job:** Theta Counts: 61514 (Calibrate)
- Setup:** Frame Bevel Position (L, R): 52.92, 53.00 (Calibrate)
- Calibration:** Size Offset (R, Z): -382, -49 (Calibrate)
- Offsets:** Extend Stylus Radius: 1.65
- Advanced:** Axis Offset (L, R): +1.62, +1.53 (Calibrate)
- Pattern / Lens Calibration:** Pattern Bevel Position: 19.75 (Calibrate); Pattern Size: +0.45 (Calibrate); Lens Size: +0.32 (Calibrate); Axis Offset: +1.62 (Calibrate)
- Calibration Hardware:** Large Diameter: 54.84; Small Diameter: 29.86; Lens Diameter: 58.00
- Frame Table Limits:** Find Limits, Test, Left Rotated: 0, Left Linear: 36527, Right Linear: 133393, Right Rotated: 169175
- Retrace Bevel Adj.:** 0.7 (Verify Calibration)
- Navigation:** 7, 8, 9, 4, 5, 6, 1, 2, 3, Clear, 0, +/-, Enter, Cancel

Figure 4.1: Calibration Screen

Preparing to Calibrate

1. Locate the frame calibration plate, the calibration patterns and the calibration lens. Each of these should be marked with size information. When instructed to enter a size value on a calibration plate, be sure to enter the value marked “CAL VALUE.”
2. Enter the large hole and small diameters of the calibration plate, and the diameter of the calibration lens in the upper right area of the Calibration Screen.
3. In the upper-left area, press the top **Calibrate** button to set the Theta Counts.

Frame Calibration

Calibrating Frame Bevel Position

This calibration allows the stylus to extend so that it engages the bevel groove in a frame. The amount of extension is set separately for each eye. Press the **Calibrate** button and follow the screen instructions.

Calibrating Frame Size Offset (R,Z)

This calibration assures that the Dimension traces the size of frames accurately. Press the **Calibrate** button and follow the screen instructions. The Dimension will perform a clockwise trace of the large and small circles in this calibration step.

Calibrating Frame Axis Offset

This calibration assures that frames are traced on axis. Press the **Calibrate** button and follow the screen instructions.

Pattern / Lens Calibration

Calibrating Bevel Position

This calibration allows the stylus to extend so that it correctly engages a lens/pattern. Press the **Calibrate** button and follow the screen instructions.

Calibrating Pattern Size

This calibration assures that the traced sizes of patterns and rimless lenses are correct. Press the **Calibrate** button and follow the screen instructions.

Calibrating Lens Size

This calibration assures that the traced size of beveled lenses is correct. Press the **Calibrate** button and follow the screen instructions

Calibrating Pattern Axis Offset

This calibration assures that the traced axis of lenses and patterns is correct. Press the **Calibrate** button and follow the screen instructions

Offsets

In labs with multiple tracers and edgers (particularly if they are also of multiple brands), even after calibrating each device, some size adjustments may need to be made. The Dimension allows offsets to be specified for the DBL, A-size, B-size, and C-size of metal frames, plastic frames, patterns/rimless lenses,

and beveled lenses. These adjustments are automatically made following every trace of the specified trace objects.

Note that specifying an A-size or B-size offset will usually affect the C-size also. If an A-size or B-size offset is specified as well as a C-size offset, the A and B offsets are applied first, and then the C-size offset.

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Chapter 5 – Communications Setup

The Dimension communicates with host computers and other devices using the industry standard Data Communications Standard (DCS) of the Vision Council (formerly Vision Council of America, VCA). We call this simply “DCS communications.” (Earlier versions of this standard were called “OMA communications.”) We assume that the user is generally familiar with DCS communications, and with the ideas of a DCS Host and DCS Device.

The Dimension can communicate via two serial ports (called COM1 and COM2), and via Ethernet. It can also accept barcode job number information via one of its two USB ports.

Communications configuration is accessed on the Interface Screen from the Setup Screen.

Dimension as a DCS Device

The Dimension is most-commonly configured as a DCS Device. As such, it acquires trace point information from a frame, lens or pattern and sends this data to a DCS Host. Figure 5.1 at right shows port COM1 configured as a DCS Device. The connection must be *Host* and the Baud Rate is normally 19,200. The Options may be selected based on procedures in your lab. *Initialize* is recommended. TRCFMT of at least 2 is also recommended. Only one of the ports may be configured as a DCS Device at a time. If *Send 1 Eye as Right* is selected, a single-eye trace of either side will always be sent as right-side data. Most hosts are set up for 400 points of trace data.

Connect To	Baud Rate	Options	Data Points
Host	9600	Initialize	800
Device(s)	19200	Send Z Data	400
	38400	TRCFMT: 4	512
None	57600	Send 1 Eye as RIGHT	

Figure 5.1: Dimension COM1 configured as a DCS Device.

Dimension as a DCS Host

The Dimension may be configured as a DCS Host. As such, it acquires trace point information and stores this data for future retrieval when requested by a device (such as an edger or a finish blocker.) Figure 5.2 shows port COM2 configured as a DCS Host. The connection must be *Device(s)* and the Baud Rate should be 19,200. The Options may be selected based on procedures in your lab. *Initialize* is recommended. TRCFMT of at least 2 is also recommended. If *Send 1 Eye as Right* is selected, a single-eye trace of either side will always be sent as right-side data. Most devices are set up to process 400 points of trace data.

Connect To	Baud Rate	Options	Data Points
Host	9600	Initialize	800
Device(s)	19200	Send Z Data	400
	38400	TRCFMT: 4	512
None	57600	Send 1 Eye as RIGHT	

Figure 5.2: Dimension COM2 as DCS Host.

Entering the Dimension Serial Number

The Interface Screen also has a button for entering the Dimension's serial number. This may be found on the name plate on the back of the unit. The serial number is included in some DCS messages. Enter only the numeric digits of the serial number.

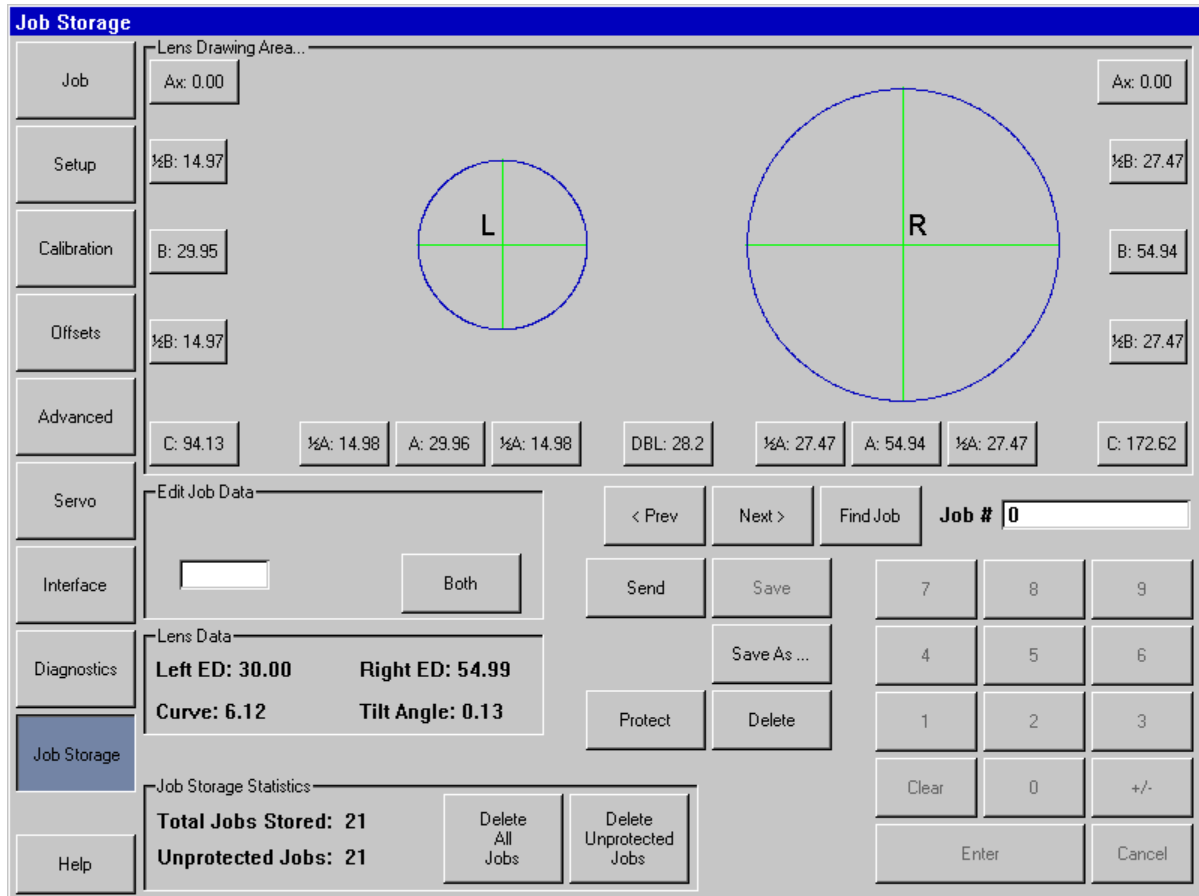
Dimension Communications Options Not Enabled In some Early Versions

Some versions of the Dimension tracer placed in service prior to the formal release of the product do not have all communication options enabled. Here are the restrictions placed on some early product versions.

1. Ethernet support may not be available in all lab network configurations.

Chapter 6 – Job Storage Screen

The Job Storage Screen allows you to scroll through the jobs in the Dimension's internal storage, find a specific stored job, edit trace data, and administer options for storing jobs. Jobs are stored on a Flash Disk which can accommodate thousands of jobs.



For each side, the following items may be edited:

- A-size
- A-size left side or right side of shape only
- B-size
- B-size top side or bottom side of shape only
- C-size
- Axis (A positive adjustment causes either eye's shape to rotate clockwise.)

The DBL may also be edited. Note that adjusting either half-A or half-B sizes will move the geometric center of the shape.

Use the **Prev**, **Next**, and **Find Job** keys to select the job to display. Use **Save As** to save a job with a new job number, and **Save** to overwrite an existing job. Use **Delete** to remove a job from the job store, and **Protect** to guard against accidentally overwriting or deleting a job. Use **Send** to send job data to an attached host. (The Dimension must be configured as a DCS Device for this function to be active.)

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Chapter 7 – *Advanced Setup Screen*

The items configured via the Advanced Setup Screen generally are set when the Dimension is first installed and seldom require subsequent changes.

Password Administration

The Dimension ships with a default password 082379. Press the **Change** button to change the password. If you have forgotten the password, phone Tech Support and provide the **Password Code** shown. Note: this code changes each time the Advanced Screen is displayed. The Tech Support operator will provide you with a single-use temporary password which will allow you to change the password.

Protected Screens

Select any screens which you want access to be password protected.

Save/Restore Functions

The Dimension uses a USB “thumb drive” as a removable storage medium. Copy the new software from your computer to the thumb drive, insert the drive into one of the Dimension’s USB sockets, and press the **Update Software** button to upgrade the software. Once you have configured the Dimension to

your satisfaction, it is a good idea to save the setup values to the thumb drive. Insert the drive and press **Export Setup** to copy the setup values to the thumb drive. We also recommend exporting setup prior to updating the software. You may use the **Import Setup** button to retrieve setup values that were previously exported.

Use the **Export Jobs** and **Import Jobs** buttons to copy job data from the Dimension's internal job store to the thumb drive, or from the drive to the internal store. You can use this method to move jobs from one Dimension to another if required.

Click the **Export Log** button to copy all of the Dimension's internal log files to the thumb drive. These files record errors that the Dimension has detected, and also the most recent session on each of the serial communications ports and Ethernet connections. You may be requested to email the log files to service personnel for problem diagnosis.

Calibration Verification

The Dimension may be configured to verify that it is in calibration. You may set the Dimension to perform this verification either whenever the unit powers on, or after a certain number of counts. (If you select **Counts**, the verification will occur after performing the specified number of jobs *and* then remaining idle for the number of minutes entered in **Timeout**.) You may select which calibration objects are verified. (Usually frame size and axis are sufficient.) The Dimension will verify that the selected calibration object(s) is/are within a specified tolerance. The tolerance may be set according to lab preferences; we recommend a C-size tolerance of 0.15 mm and axis tolerance of 0.5 degrees.

Note

Be sure to use the same calibration objects during verification that were used to actually calibrate the tracer.

Wrap Thresholds

The wrap thresholds indicate the number of degrees the frame holder will rotate for each selection of wrap angle. The frame holder will remain rotated to this angle unless the Dimension measures a different wrap angle. The difference must exceed the **Tolerance** value for an adjustment to occur.

Screen Saver Timeout and Date/Time

The **Screen Saver Timeout** is the number of minutes the Dimension must remain inactive before the screen saver appears. If this value is set to 0, the screen saver function is disabled. The calendar/clock may also be set by pressing the **Set Date/Time** button. The date and time are battery-backed and do not normally need to be adjusted once set.

View Data Logs

Use these buttons to view the selected log file.

Appendix – Servo Screen

The values on the Servo Screen should not be changed except under the guidance of service personnel. This screen is used to adjust the stylus speed and forces during tracing of various objects, and allows other facets of the Dimension motion control to be adjusted. It also allows settings to be tested before they are saved.

The screenshot shows the 'Servo Parameters' screen with a sidebar on the left containing menu items: Job, Setup, Calibration, Offsets, Advanced, Servo (highlighted), Interface, Diagnostics, Job Storage, and Help.

Frame Bias Values

	Speed	R	Min R	Z	
Standard		725		0	Test
Metal Frame	18.0	2575		900	Test
Plastic Frame	18.0	2500		1100	Test
Metal Wrap	18.0	2600		1250	Test
Plastic Wrap	18.0	2600		1350	Test
Metal Flex	14.0	2275	1650	1000	Test
Plastic Flex	14.0	2375	1600	1000	Test
Bevel	12.0	2825		600	Test
Demo	12.0	2600		2200	Test
Rmls/Patt	12.0	2950		2400	Test

Servo Parameters

	Theta	R	Z	Shift
KP	20	50	50	18
KI	50	75	75	0
KD	50	75	75	75
IL	130	150	50	0

Servo Screen Password

Password Code: 946209

Buttons: Change, Enabled

Motor Backlash

Z In	R Up	Theta	Shift
20	0	0	0
Z Out	R Down		
0	0		

Buttons: Calibrate (4)

Allowed Radius Error: 20

Max. Shift Velocity: 60

Keypad: 7, 8, 9, 4, 5, 6, 1, 2, 3, Clear, 0, Back, Enter, Cancel

Frame Bias Values

- **Speed** Sets the linear speed of the stylus tip in mm/sec.
- **R** Sets the radial force – outward for frames, inward for patterns and lenses. The scale for the R bias approximately linear from 0 to 5000.
- **Min R** The Flex setting may reduce the R bias force to this value during the trace.
- **Z** Sets the stylus force parallel to the trace axis.

Servo Parameters

The four axes of motion (Theta, R, Z, and Shift) use “PID Control.” (PID indicates that the control strategy uses equations which include *proportional*, *integral* and *derivative* terms.) The values in the Servo Parameters section show the relative weights given to each of these terms in solving the equations.

Motor Backlash

The mechanism in the Dimension includes several gear and belt drives, each of which needs the correct amount of “play” so as to allow ease of motion while maintaining accuracy. The Motor Backlash calibration allows the “play” to be measured so that it can be compensated for.

Allowed Radius Error

The Dimension trace starts and ends at the same place along the circumference of the trace object, but the measured radii at the start and stop locations may differ slightly. This value sets a threshold on how much difference is permitted before declaring a trace error.

Max Shift Velocity

The Max Shift Velocity limits the speed of the trace table lateral shift and rotation movement.

Dimension Tracer

Technical Specifications

External Power Supply

Input: 100 – 240 V \sim 47-63 Hz 1.9A
Output: +3.3V \equiv 7A
-12V \equiv 0.8A
+12V \equiv 3A
65W Max

Dimension Tracer Power Requirements

Input +3.3V \equiv 2.0A
+12V \equiv 3.0A

Temperature

Operating 60°F – 90°F (15.5°C – 32.2°C)
Storage 20°F – 110°F (-6.7°C – 43.3°C)

Relative Humidity 50% - 90% (non condensing)

Altitude -300 ft – 6000 ft (-91.4m – 1828.8m)

Pollution Degree 2

Weight 19.9 lb (9.0 kg)

Height 21.6" (550 mm)

Width 11.7" (297 mm)

Depth 17.4" (441 mm)

Manufacturer National Optronics
Charlottesville, Virginia USA