# Table of Contents

**Sales & Support** ................................................................. 3

**Introduction** ................................................................. 4

The Vision Platform .......................................................... 4
Features ................................................................................. 5
Accessory Options ............................................................. 6
Definitions .............................................................................. 7

**Installation** .................................................................. 8

Environment ......................................................................... 8
Unpacking & Inspection ...................................................... 8
Location ................................................................................. 10
Electrical Connections ....................................................... 11
Initial Start Up ....................................................................... 13
Communication Connections .............................................. 13
Leveling ................................................................................. 14
Bath & Heater Circulator Connections .............................. 14

**Software Operation** ....................................................... 21

Learning the Interface ......................................................... 21
Introduction to the Main Screen ........................................... 22
Manual Control–Motor ......................................................... 23
Manual Control–Temperature ............................................. 23
Test Time ................................................................................. 24

**Priming the Heater Circulator System** ............................ 15
**Vessels** ............................................................................. 15
**Filling the Water Bath** ..................................................... 16
**Spindle Shafts, Paddles, & Basket Shafts** ....................... 16
**Vessel Covers** .................................................................. 17
**Motor Inspection** ............................................................ 18
**Heater Circulator Inspection** ............................................ 18
**Printer Configuration & Inspection** ................................. 19
**Diagnostics** ..................................................................... 20
# Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto-Mag Manual Controls &amp; Digital Temperature Probes</td>
<td>25</td>
</tr>
<tr>
<td>System Options</td>
<td>25</td>
</tr>
<tr>
<td>Starting a Test</td>
<td>31</td>
</tr>
<tr>
<td><strong>Maintenance</strong></td>
<td>33</td>
</tr>
<tr>
<td>Prior to Each Test</td>
<td>33</td>
</tr>
<tr>
<td>Monthly</td>
<td>34</td>
</tr>
<tr>
<td>Bi-Annually</td>
<td>35</td>
</tr>
<tr>
<td>Annually</td>
<td>36</td>
</tr>
<tr>
<td><strong>Appendix A—Specifications</strong></td>
<td>37</td>
</tr>
<tr>
<td>Elite 8</td>
<td>37</td>
</tr>
<tr>
<td>Classic 6</td>
<td>37</td>
</tr>
<tr>
<td>Vision Heater Circulator</td>
<td>38</td>
</tr>
<tr>
<td>Main Drive Units</td>
<td>38</td>
</tr>
<tr>
<td>General</td>
<td>39</td>
</tr>
<tr>
<td>Environmental</td>
<td>39</td>
</tr>
<tr>
<td>Drive Head Outlets</td>
<td>40</td>
</tr>
<tr>
<td>Heater Circulator Outlets</td>
<td>41</td>
</tr>
<tr>
<td>Symbols</td>
<td>42</td>
</tr>
<tr>
<td><strong>Appendix B—Starting a Staggered Test</strong></td>
<td>43</td>
</tr>
<tr>
<td><strong>Appendix C—Starting a Simultaneous Test</strong></td>
<td>46</td>
</tr>
<tr>
<td><strong>Appendix D—Error Codes</strong></td>
<td>49</td>
</tr>
<tr>
<td><strong>Appendix E—Trouble Shooting</strong></td>
<td>53</td>
</tr>
<tr>
<td>General</td>
<td>53</td>
</tr>
<tr>
<td>Temperature</td>
<td>55</td>
</tr>
<tr>
<td>Auto-Mag</td>
<td>56</td>
</tr>
<tr>
<td>Motor &amp; Speed</td>
<td>56</td>
</tr>
</tbody>
</table>
Congratulations on the purchase of your Vision Dissolution Tester. We know you will enjoy the Hanson Vision experience, but we also understand that from time-to-time you may have a question or technical issue requiring our assistance. Please feel free to contact us at any time. We’re happy to help!

**ONLINE** hansonresearch.com

**EMAIL** techsupport@hansonresearch.com

**PHONE** 800.821.8165 or 818.882.7266

**FAX** 818.882.9470

**CORPORATE HEADQUARTERS**

Hanson Research Corporation
9810 Variel Avenue
Chatsworth, CA 91311 USA
The Vision Platform

Hanson has traditionally offered one dissolution tester with each product platform. With Vision, we are now offering two distinct choices. The Classic 6 is a rugged 6-vessel workhorse, ideal for manual test routines, space-limited labs and budget-minded programs. The Elite 8 is an 8-vessel performance machine, built for automation and extended applications. Both units include PC and web-ready communications and can be serviced by autosamplers with fixed vessel-mount cannulas. The Elite 8 offers an automatic magazine (Auto-Mag) option for inserting and withdrawing sample probes and digital temperature probes into the dissolution media.

*Patents pending.*
Introduction

Features

<table>
<thead>
<tr>
<th>CLASSIC 6™ (6-Vessel)</th>
<th>ELITE 8™ (8-Vessel)</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ Fixed drive head</td>
<td>✓ Fixed drive head</td>
</tr>
<tr>
<td>✓ 6-Position vessel plate</td>
<td>6-Position vessel plate (use 6, 7, or 8 vessels)</td>
</tr>
<tr>
<td>✓ 6 Operating spindles with spindle shafts</td>
<td>✓ 8 Operating spindles with spindle shafts (use 6, 7, or 8)</td>
</tr>
<tr>
<td>✓ Compact footprint (2 across &amp; 3 deep)</td>
<td>✓ Standard footprint (4 across &amp; 2 deep)</td>
</tr>
<tr>
<td>✓ ✓ Easi-Lift™ moveable drive head</td>
<td>✓ ✓ Automation-ready (with optional Auto-Mag™)</td>
</tr>
<tr>
<td>✓ ✓ CSA/CE/RoHS/WEEE compliant</td>
<td>✓ ✓ CSA/CE/RoHS/WEEE compliant</td>
</tr>
<tr>
<td>✓ ✓ ISO 9001 quality certified</td>
<td>✓ ✓ ISO 9001 quality certified</td>
</tr>
<tr>
<td>✓ ✓ Precision control for speed 25–250 rpm, temperature 30–50 ºC</td>
<td>✓ ✓ Precision control for speed 25–250 rpm, temperature 30–50 ºC</td>
</tr>
<tr>
<td>✓ ✓ Elegant, ergonomic design with workhorse performance</td>
<td>✓ ✓ Elegant, ergonomic design with workhorse performance</td>
</tr>
<tr>
<td>✓ ✓ Highest quality components and engineering</td>
<td>✓ ✓ Highest quality components and engineering</td>
</tr>
<tr>
<td>✓ ✓ Minimal user adjustments—easy set up and go</td>
<td>✓ ✓ Minimal user adjustments—easy set up and go</td>
</tr>
<tr>
<td>✓ ✓ Independent Vision® heater circulator system</td>
<td>✓ ✓ Independent Vision® heater circulator system</td>
</tr>
<tr>
<td>✓ ✓ Rugged molded waterbath with fast heat-up</td>
<td>✓ ✓ Rugged molded waterbath with fast heat-up</td>
</tr>
<tr>
<td>✓ ✓ Digital temperature probe (1) for use in bath and vessels</td>
<td>✓ ✓ Digital temperature probe (1) for use in bath and vessels</td>
</tr>
<tr>
<td>✓ ✓ Intuitive touch screen menu</td>
<td>✓ ✓ Intuitive touch screen menu</td>
</tr>
<tr>
<td>✓ ✓ Speed, temperature, timer, and printer functions</td>
<td>✓ ✓ Speed, temperature, timer, and printer functions</td>
</tr>
<tr>
<td>✓ ✓ Message light indicator</td>
<td>✓ ✓ Message light indicator</td>
</tr>
<tr>
<td>✓ ✓ PC &amp; web-ready communications (RS232, USB &amp; TCP/IP)</td>
<td>✓ ✓ PC &amp; web-ready communications (RS232, USB &amp; TCP/IP)</td>
</tr>
<tr>
<td>✓ ✓ Auxiliary communications port for future use</td>
<td>✓ ✓ Auxiliary communications port for future use</td>
</tr>
</tbody>
</table>

Vision Elite 8
Accessory Options

<table>
<thead>
<tr>
<th>CLASSIC 6™ (6-Vessel)</th>
<th>ELITE 8™ (8-Vessel)</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

- Easi-Lock™ USP 1-L precision vessels
- Newly designed hinged vessel covers
- Detachable USP paddles and baskets with spin-shafts
- Pill droppers (special vessel covers for manual or Auto-Mag™ use)
- Fixed vessel-mount sample probes with cartridge filters
- Wide choice of filters (for vessel-mount probes and Auto-Probes)
- Printer with non-thermal paper
- Apparatus 5 paddle over disk
- Apparatus 6 rotating cylinder
- Small volume (150 mL) using “mini-paddle”
- Ointment cell
- Precision calibration tools
- Hanson Q-Pak™ functional validation guideline (USP or ASTM)
- HRCare™ IQOQPQ validation and support program
- Media-prep and deaeration with Hanson Media-Mate Plus™
- Super Siphon easy waterbath draining device
- Auto-Mag™ (for Auto-Probe & DTP insertion and removal)
- Auto-Probe™ sample probes w/tubing harness (choice of 6 or 8)
- Digital Temperature Probe (DTP) in each vessel (choice of 6 or 8)
- 2- Liter “high stand” and 2-L vessels (Auto-Mag™ not available)
Introduction

Definitions

Vision
The family of products launched by Hanson Research in 2008 to provide a holistic dissolution testing platform for the pharmaceutical industry. All Vision products are designed with the highest standards of quality and technology, and are also earth friendly.

Classic 6
A rugged compact six position dissolution test station with a unique two across, three deep design. The workhorse unit, ideal for manual test routines, space-limited laboratories, and budget-minded programs.

Elite 8
An eight position high-performance machine, built for automation and extended applications. This unit is a complete re-design of the popular SR8-PlusTM.

Easi-Lock
The precision dissolution vessel that is composed of the precision vessel itself and a precision system that positions and holds the vessel in a reproducible, centered position.

Auto-Mag
An automated mechanism that can be installed on the Vision Elite 8 dissolution test station to automate raising and lowering of the sample probes and Digital Temperature Probes.

Auto-Probe
Sampling probes that are automated via the Auto-Mag.

ADD
The Automated Dosage Delivery system. This system can be fully automated with the Auto-Mag or semi-automated.

Fixed Probe
A stationary vessel mount sampling probe mounted to the vessel cover for connection to an automated sampler.
Environment

The location of any Vision Dissolution Tester should meet the following environmental requirements:

- area free of significant vibration from external sources such as centrifuges or production equipment
- water source and drain located nearby for filling, draining, and cleaning the bath
- 2 electrical outlets per tester

NOTE
See APPENDIX A for specific electrical requirements.

Unpacking & Inspection

The shipping boxes for the Vision units are specifically designed to provide maximum shipping protection and to facilitate unpacking. The Vision spare parts
installation kits and accessories are packed in individual custom-fit enclosures and then placed into crate-size boxes.

the following procedure is recommended for unpacking and inspecting a vision dissolution tester.

1. move shipping box(es) close to final location of tester.
2. cut and remove any straps from box(es).
3. remove staples from each side of the bottom of the box(es).
4. lift the box off the bottom tray of the box and over the tester and accessories boxes inside.
5. remove the accessories box(es).
6. check the quantity of items received against the packing slip to be sure that the entire shipment has been unpacked.
7. inspect the instrument and accessories for any damage from shipping.
8. save packing materials and box(es) for future use if possible.

NOTE

if there is shipping damage, take photos, save packaging, and inform the carrier immediately. hanson insures all shipments through the carrier but is not responsible for shipping damage.
Location

1. Lift the tester from the box onto its final location.

2. Remove the locking bolt using the allen wrench found in the accessory box.

3. Cut the strap while holding the drive head.

It is recommended that the Elite 8 be placed in the desired location, but rotated 90° from the desired position to allow access to the locking bolt. Remove these 2 bolts and save.

The Vision Elite 8 drive head is kept in place by a locking pin mechanism. The release lever is located underneath the left side of the drive head. The operator must simply pull the release lever toward the front of the unit and then move the drive head. It is not necessary to keep pressure on the release lever when moving the drive head, as it will lock into place once it is moved into the proper position. The drive head can be

**NOTE**

Do not lift the dissolution tester by the drive head. Doing so may cause the unit to lose the precision alignment performed at the factory or result in more serious damage.

The tester should be lifted by 2 people on either side of the instrument, grasping it by the frame supports located underneath the vessel plate while supporting the mast with the other hand.
Installation

placed in an upper position for cleaning and preparation of a test, or in the lower position while running a test. These positions are not adjustable.

Test the drive head by moving it up and down and making sure the motion is smooth. Once drive head operation on the Vision Elite 8 has been confirmed, the unit can be rotated into the desired position.

Electrical Connections

Confirm the Vision dissolution bath and accessories have their power switches in the OFF position before beginning this section.

Connect the Vision power supply to the port labeled “Power” on the connection panel on the rear of the unit. Do not power on the unit at this time. Connect the other end of the power supply to a grounded wall outlet.

Place the Heater Circulator to the rear and right of the Vision dissolution bath. Connect the heater power cord to the Heater Circulator but leave the unit in the OFF position at this time. Connect the other end of the heater power cord to a grounded wall outlet.

If a printer has been purchased with the system, position the printer in the desired location, and confirm the power switch for the printer is in OFF position. Plug the power cord for the printer into a grounded wall outlet.
Installation

Diagram showing the components and connections for the Vision Dissolution Testers:
- Bath
- Temp Probe
- Tester
- Power Supply (Desk Top)
- Printer
- Power Cord to Heater Circulator
- Power Cord to Power Supply
- Power Cord to Printer
- Power Cord to Bath
Initial Start Up

With all electrical and communication connections made, turn on the power switch to the Vision unit located on the right side of the drive head. The display will come on and the INITIALIZATION screen followed by the MAIN screen will appear. See the adjacent figures for examples of these screens. Do not turn on the Vision Heater at this time.

Communication Connections

Connect an RS232 cable from port labeled “Temp Control” on the Heater Circulator to the port labeled “Temp Control” on the connection panel located on the rear of the Vision dissolution bath.

Connect the Vision Temperature Probe to the Temperature Probe connector located on the connection panel on the rear of the unit.

The Vision dissolution baths also have the capability to communicate with other instruments and computers via RS232, USB, and LAN ports. Refer to instructions and operation manuals for the other devices to facilitate communication connections and settings with those devices.

If a serial printer will be installed on the unit, connect an RS232 cable to the underside of the printer, and connect the other end to the port marked Serial Printer located on the connection panel on the rear of the unit.
Installation

If a USB printer will be installed on the unit, connect a USB cable to the printer and then connect the other end of the USB cable to the port marked USB located on the connection panel on the rear of the unit.

Leveling

To level the Vision dissolution unit, adjust the feet until the vessel plate is level within 2°. To do this use the enclosed wrench to lower or rise the feet located on the bottom of the Vision dissolution unit frame. The Vision Classic 6 has 4 feet—2 in the front and 2 near the back of the instrument. The Vision Elite 8 has 5 feet—2 in the front, 2 toward the back, and 1 foot located under the mast.

Bath & Heater Circulator Connections

1. Connect the hose from the fitting on the bottom of the bath to the side port of the heater circulator

2. Connect the hose from the fitting on the side of the bath to the front port of the heater circulator

3. Squeeze hose clamps to secure the hoses to the ports
Installation

Priming the Heater Circulator System

1. Fill bath with water a little over the top of the fitting on the side of the bath and check for leaks
2. Completely fill syringe with bath water
3. Insert the tube from the end of the syringe into the bath fitting that is mounted to the bottom of the bath
4. With the pump running, dispense the syringe volume
5. Repeat until bath water is circulating
6. Check for leaks

Vessels

The Vision Elite 8 can accommodate up to 8 Easi-Lock Vessels and the Vision Classic 6 can accommodate up to 6. The Easi-Lock vessels are installed by placing the vessel over the desired position and aligning the locator pins with the locator slots while lowering the vessel into position. Once in position the vessel must be rotated clockwise to lock it in place.

To remove a vessel, grasp the vessel rim and rotate counter-clockwise with a slight lifting motion. When the locator pins reach the locator slots, lift the vessel straight up to remove it.
Filling the Water Bath

To fill the bath, remove a vessel or a hole cover so that water can be added to the bath. Keep in mind the amount of volume displaced by the missing vessel, as well as the water within the water bath will expand when heated. The recommended level is 1 cm below the lip of the water bath with all the vessels installed.

The temperature probe for the Vision dissolution bath should be placed into the water bath at this time.

Spindle Shafts, Paddles, & Basket Shafts

The spindle shaft is factory-adjusted to provide the correct height for baskets and paddles. The precision design of the Easi-Lock Vessels, the shaft components, and the test unit itself are intended to reduce user adjustments and settings. It should not be necessary to adjust the position of the spindle shafts to obtain the proper height spacing between the bottom of the apparatus and the vessel. If adjustment is needed refer to the Trouble Shooting Appendix of this user guide.

To install the paddle or basket shafts begin by making sure the drive head on the Vision Elite 8 is in the highest position—the Vision Classic 6 drive head cannot be adjusted. After inspecting the spindle shafts for damage, slide them through the spindles in vessel positions which will be used. For the shafts to be properly engaged, the notch for the shaft should be at the same level of the notch on the spindle.
Inspect the threads on the paddle or basket shaft to ensure that they are free of debris and are not damaged. Slide the paddle or basket shaft into the spindle shaft and turn the paddle or basket shaft counter-clockwise until it is secure while keeping the spindle shaft motionless.

The direction of rotation with the motor running helps to ensure the paddle or basket shaft will remain secure during testing.

To remove the paddle or basket shaft hold the spindle shaft motionless while turning the paddle or basket shaft clockwise to loosen. Pull the paddle or basket shaft out of the spindle shaft.

Vessel Covers

To install the hinged vessel covers, first fold the cover so that a space can be created for spindle shaft to slide through. If an Auto-Mag is installed align the cover so that the smaller holes located along the centerline of the cover will line up with the sample and vessel temperature probes. Slide the cover so that the spindle shaft is located in the center hole and gently unfold the cover. The cover should rest on the vessel rim such that the notches fit around the raised keys of the vessel rim.

For ADD Vessel Covers, the cover should be lifted straight up but still unfolded and installed around the spindle shaft. With the cover raised, the operator should then ensure the door that holds the sample is closed. Once the door has been closed the vessel cover should be gently lowered back to the vessel rim.
Installation

Motor Inspection

To inspect motor operation use the screen controls to set the motor to 50 rpm. To do this, touch the speed section of the display. Select the 50 RPM preset button located on the left of the motor speed selection screen. Observe the spindles and make sure they spin to approximately 50 rpm. Touch the speed section of the display once again to bring up the motor speed selection screen, and touch the “0” followed by the “OK” buttons to set the motor speed back to 0 rpm.

Heater Circulator Inspection

To inspect the Heater Circulator function use the screen controls to set the temperature to 32 °C. To do this, touch the temperature section of the display. Touch the 32 preset button located on the left of the temperature selection screen. The pump should turn ON and over the course of a few minutes the temperature of the bath should begin to rise. The Vision dissolution bath should attain a temperature of approximately 32 °C in less than 15 minutes. Once this temperature is reached touch the temperature display section of the display and touch the “0” followed by the “OK” buttons to turn OFF the heater circulator. After approximately 10 seconds the pump should turn off.
Printer Configuration & Inspection

To inspect the printer, first ensure the Vision unit is properly configured to recognize it. Begin this process by touching the “screens” button located in the upper left of the main screen. If the unit has Digital Temperature Probes installed and configured, the first screen that appears will control the Auto-Mag movement as well as display the Digital Temperature Probe readings for the vessels. Touch the screens button again, which is still located in the upper left corner. For units without Digital Temperature Probes, the first OPTION screen will appear.

Touch the SCREENS button a second time so that the “Options” icon is displayed. Touch the icon to bring up the SYSTEM OPTIONS menu.

From the OPTIONS screen make sure that the “Printer” option is set to “ENABLED”. Confirm the connection is set to RS232 for Serial Printers, or USB for USB printers. If this information is not known, it can be determined by the printer documentation, or by supplying Hanson Technical Support with the model number.

Once the printer has been properly configured touch the printer button located in the “TEST” box. If the printer does not respond re-check the printer options and connections. If the problem continues and the options are properly configured and the connections are correct, consult the Trouble Shooting Appendix of this user guide.
Diagnostics

Once the proper operation of the components has been confirmed the diagnostics should be run. To run the diagnostics start from the MAIN screen and select the “screens” button located in the top left corner. On the first options the diagnostics icon should be second from the left with “DIAGNOSTICS” printed underneath it. Select this icon and the diagnostics process will begin.

The diagnostics process is completely automated and takes approximately 1 minute to run. Do not attempt to interfere with the instrument during this process.

If any part of the diagnostics fails consult the Trouble Shooting Appendix of this user guide for the appropriate action.
Software Operation

Learning the Interface

Vision dissolution software was designed from the ground up to be intuitive and easy to use. In most cases to get to a screen or change a setting the operator needs only to touch the section of the screen where that information is displayed in order to change it.

There are a number of common buttons which will appear on many of the screens. The functions of those buttons are listed below.

Numeric Buttons: Number buttons are often displayed as a means of input. Like any buttons on the Vision touch display simply touch the buttons with a fingertip to enter the numbers.

“←” button: Used as a backspace button in order to correct mistaken entries.

“Esc” button: Used to cancel an action. For example if 25 rpm was about to be entered to into the manual motor control, but the operator decided not to enter
it, the Esc button could be pressed to return to the MAIN screen without any changes to the current motor speed.

“OK” button: Used to confirm changes in screens, or acknowledge settings. The “OK” button functions much the same as an enter button on a computer.

“Screens” button: Used to flip between available screens on the Vision dissolution unit. The screens available are the MAIN screen, the DIGITAL TEMPERATURE PROBE screen (if digital temperature probes are installed), and the two system OPTIONS screens.

“PRINT” button: Used to print the status of the instrument or other information relevant to the currently displayed screen.

Introduction to the Main Screen

The MAIN screen allows access to:

- manual motor controls
- manual temperature controls
- setting the test time
- starting tests

The status and any error codes of the bath are listed to the bottom-left. The date

NOTE

See Appendix E for a list of Error Codes and their meanings.
is located in the bottom center of the screen, and the time located along the bottom right of the screen. Along the left side are the SCREENS, PRINT, and START test buttons.

Manual Control–Motor

Manual control of the motor is done using the SPEED CONTROL screen. To get to this screen touch the speed display section on the MAIN screen of the Vision tester. Along the left side of the SPEED CONTROL screen are the presets for 50 rpm, 75 rpm, and 100 rpm. To set the unit to another speed, use the number buttons to the right side of the screen. For example to set the motor speed to 150 rpm you would touch the “1” button followed by the “5” button followed by the “0” button followed by the “OK” button.

To cancel setting a speed touch the “Esc” button and the motor will continue to operate at the previous set point.

To stop the motor set the speed to “0”.

Manual Control–Temperature

Manual control of the temperature is done using the TEMPERATURE CONTROL screen. To get to this screen touch the temperature display section on the MAIN screen of the Vision tester. Along the left side of the TEMPERATURE CONTROL SCREEN are the presets for 32 °C and 37 °C. In
Software Operation

the upper left corner is the “PUMP” button which toggles the Heater Circulator pump on or off. To set the unit to another temperature use the number buttons located on the right side of the screen. For example to set the temperature to 40 °C touch the “4” button followed by the “0” button followed by the “OK” button.

The pump will automatically shut off if the Heater Circulator is unable to communicate with the Vision tester. When the temperature is set to 0, the heater circulator will stop heating and the pump will shut down approximately 10 seconds later. The “PUMP” button will not function if a temperature is set as stopping the pump while heating could potentially harm the heater circulator.

Test Time

To modify the test time touch the TIME section of the screen. This screen allows the user to set the total test time in hours and minutes by using the number buttons located on the right side of the screen. To enter a test time of 14 hours the user would hit the “1” button, followed by the “4” button, followed by the “:” button, then followed by the “0” button, followed by the “0” button and finally the “OK” button.

The “Print Freq” button located on the left hand side of the screen allows the user to modify the frequency with which the printer will print the bath status (speed and temperature) in hours and minutes. Entry of amount of time for the print frequency is identical to the test length.
Auto-Mag Manual Controls & Digital Temperature Probes

The system options, Auto-Mag controls, and Digital Temperature Probe readout are reached by touching the system OPTIONS button located in the upper left corner of the MAIN screen. This screen only appears if the Digital Temperature Probes are installed and the system options are set to a value other than 0.

The up and down arrow buttons on the left side of the screen with the word “MAG” between them are the manual controls for the Auto-Mag. The down arrow lowers the Auto-Mag, and the up arrow will raise them.

To the right of the Auto-Mag controls is the display for the Digital Temperature Probes which read the temperature of the vessels. Touching the PRINT button located on the left side of the screen will print these temperatures.

Touching the SCREENS button in the upper left corner will bring you to the system options for the unit.

System Options

To reach the system options from the MAIN screen touch the SCREENS button located in the upper left corner of the screen. If the Digital Temperature Probe display and Auto-Mag controls screen is visible touch the button again.
From the Systems Options menu the print button can be touched which will provide a complete list of the current configuration options the unit has selected. This report will include model and serial numbers, firmware versions, the instrument ID, printer configuration, TCP/IP parameters, Auto-Mag configuration, the Instrument date and time, and calibration parameters.

The first of two screens of system options lists:

Info: The info screen displays the current firmware used by each of the tester’s microprocessors. The firmware versions may be required when troubleshooting problems on the instrument. In addition, by touching the firmware tab located at the top center of the screen, the user is able to view the instrument serial numbers. To exit this screen touch the “OK” button located in the bottom right corner of the screen.

Diagnostics: The diagnostics are a short series of tests to determine if the unit is in working order. If there are problems with communication or the software, it is recommended to run the diagnostics in order to determine where the problem may be located. The test is completely automated once initiated and takes approximately 1 minute to run.

Set Screen: The set screen button allows for adjustment of the screen to allow for better viewing and running the touch screen calibration. The contrast option is located in the upper left marked by a half white / half black circle. Use the plus (+) and minus (-) buttons immediately to the right to adjust the contrast. The brightness is located on the lower left and marked by a circle surrounded with
short lines. Again use the plus (+) and minus (-) buttons adjacent to the icon to adjust the brightness of the screen. The calibrate button is located on the right side of the screen. Once the button is touched it will begin the calibration procedure for the touch screen. This procedure requires the user to follow the onscreen instructions. Using a stylus is highly recommended for this procedure, due to the precision required for the calibration. A stylus is not required for general use of the instrument.

Time/Date: This screen allows for setting the time and date on the tester. The first of the two screens allow for setting the time for the unit. The time format is in 24 hour. To enter the time begin by entering the hours using the number buttons located to the right of the screen. The hours should be followed by pressing the “:” button and then enter the minutes. For example to enter the time of 2:17pm you would begin by touching the “1” button followed by the “4” button, followed by the “:” button, followed by the “1” button, followed by the “7” button and then “OK” to confirm the time.

The calendar button is for setting the date on the tester. It is located in the left; touch this button to move to the Date screen. The date is entered in a DD-MM-YYYY format using the number buttons and “-“ button located to the right side of the screen. To enter a date of May 13th 2008 you would touch the following buttons: the “1” button followed by the “3” button, followed by the “-“ button. Then the “0” button followed by the “5” button, followed by the “-“ button again. Lastly the “2” button followed by the “00” button located in the bottom left, followed by the “8” button and then the “OK” button located toward the center.
To return to the clock configuration touch the clock button located on the left side of the screen.

The second set of options available by touching the options button once again from the first options screen is the following:

Calibration: The calibration screen allows for manual control of the Auto-Mag via the up and down arrow buttons located above and below the “MAG” as well as the Temperature probe offset for all of the bath’s temperature probes. Use the plus and minus buttons located above and below the “PROBE:” to cycle through the available temperature probes. External refers to the loose temperature probe typically placed into the water bath, BTC refers to the temperature probe located within the Heater Circulator, Probes 1 through 8 are the digital temperature probes if installed. Once the probe is selected use “EDIT” button to enter a corrected temperature for the probe. The corrected temperature is entered using the number buttons on the right side of the screen and touching the “OK” button to accept the changes.

The “CAL MAG” button located near the top center of the screen provides the user with a way to adjust key elements of the way the Auto-Mag functions which includes setting the distance for using the A.D.D. system and home position. Normally no adjustment is necessary as the Auto-Mag positions are set at the factory.

On the MAG CALIBRATION screen there are 3 buttons:

The “Set ADD” button sets the current position to the default height for the
Automatic Dosage Delivery (ADD) pill droppers.

The “Jog Amt” moves the Auto-Mag the distance specified immediately to the right of the button.

The “Home” button returns the Auto-Mag to the home position.

To exit the calibration screen touch the “OK” button located in the bottom right corner.

Comm. (Communications): The communications options are used in order to configure the unit for connection to a local area network (LAN) via the tester’s Ethernet port. The first screen that appears after touching the Comm. Icon is the configuration screen for the IP address of the tester. Enter the IP address by using the number buttons and “.” on the right side of the screen. The “SUBNET-MASK” button brings up the subnet-mask screen to enter the subnet mask information in the same manner. The “GATE-WAY” button will bring up the gateway screen where that information can be entered.

Instr. ID (Instrument ID): The instrument ID screen allows the user to set the internal identification for the instrument which will appear when viewing the instrument online, or on printed test results. Lower case letters and numbers are available in addition to the default screen with capital letters via buttons on the left. To enter the instrument ID use the numeric buttons to the right to enter the letters and numbers needed. For letters, touch the button of the letter until it appears. For example to enter an instrument ID of Bath A1, touch the following buttons: Begin by hitting the “ABC” button twice to enter a B. Use the “a-z” button
located on the left to switch to lower case letters. Touch the “abc” button once to enter an a, followed by the “stu” button twice to enter a t, followed by the “ghi” button twice to enter an h. Touch the right arrow button located on the right side of the screen to add a space to the instrument ID. Use the “A-Z” button to switch back to the capital letters and touch the “ABC” button once to enter an A. Touch the “0-9” button to bring up the numeric buttons and touch the “1” button to enter a 1 followed by the “OK” button to accept the instrument ID. If symbols are required the symbol button is located on the bottom right and has the icon “-+#”

Options: The Options icon brings up the system options screen which allows for configuration of the Printer and Auto-Mag if installed.

The first tab of the Options screen provides the printer configuration menu. This tab allows for printer configuration. The Device section determines whether or not a printer is installed. If a printer is installed set this option to “ENABLED”, if no printer is installed it should be set to “DISABLED.” The Connection determines the way the Vision dissolution bath will attempt to communicate with the printer. If the printer is a serial printer select “RS-232”, if the printer is a USB printer select the “USB” option. The test section allows for a short test to prove the printer is functioning properly. To run the test, touch the printer button located within the Test box.

The second tab viewed by hitting the “AUTO-MAG” near the top center of the screen provides options for the Auto-Mag as well as the vessel temperature probes. The first section is the “TEMP PROBES” which allows the user to set the number of digital temperature probes installed on the Auto-Mag. The options are 0, 6, 7, and 8.
MAG TRAVEL allows the user to adjust the distance the Auto-Mag travels for sampling. When hitting the MAG TRAVEL section of the options screen, a new screen will appear with a numeric buttons to the right. Use the numeric buttons to enter the travel distance. The PS1 key located in the upper left will return the Auto-Mag travel distance to the factory default value.

ADD Enabled allows the user to enable the system to recognize the A.D.D. system which will drop the tablets at the beginning of a test.

Starting a Test

For a full description of test setup see Appendix B and Appendix C, which detail all steps involved in setting up a test. This section is written to focus only on the software steps necessary for starting a dissolution test.

To begin set the temperature such that once stabilized, the vessels will be at the proper temperature for the test. It has been noted that to reach 37.0 °C in the vessels, the Vision dissolution baths should be set to approximately 37.1 °C. To set the temperature, from the main screen touch the displayed temperature near the center of the screen. This will bring up the manual temperature control. Set the temperature using the numeric buttons and touch the “OK” button.

To set the motor speed, use the MANUAL MOTOR SPEED screen accessed by touching the displayed MOTOR SPEED on the MAIN screen. Enter the desired motor speed using the numeric buttons and touch the “OK” button. The motor should begin to spin. Enter the manual controls for the motor speed again and
touch the “OK” button without entering any speed. This will store the speed set point for the test.

To set the test length touch the test length section of the MAIN screen. Enter the test length in hours and minutes using the number pad and “:” button located on the right side of the screen. If a printer is installed the operator may use the “PRINT FREQ” button located in the upper left of the screen to enter the printer frequency screen. From this screen the print frequency may be set in hours and minutes using the number buttons located on the right side of the screen. Complete the operation by touching the “OK” button.

Once the temperature has stabilized touch the “START” button located in the bottom left corner of the display and the test will start.

If the test must be paused or stopped, touch the “STOP” button which replaces the “START” button on the MAIN screen to bring up the STOP menu screen. Three options will be available which are:

The STOP button: End’s the dissolution test

The CONTINUE button: Resumes the test. If this is selected without touching the STOP or PAUSE buttons the test will continue uninterrupted.

The PAUSE button: Pauses the test so that the operator can perform operations such as media change.
Maintenance

Prior to Each Test

Test Auto-Mag travel:

1. Touch the SYSTEM OPTIONS button to display the Auto-Mag and digital temperature probe screen.

2. Touch the DOWN ARROW button to lower the Auto-Mag into the sampling position.

3. Visually inspect the sample probes to ensure they are at the correct height inside the vessel. If any adjustments need to be made they should be done from the OPTIONS screen for the Auto-Mag which can be reached from the SECOND SYSTEM OPTIONS screen.

TIP
If an Auto-Mag is installed on your Elite 8, the travel distance should be tested prior to each test to ensure sampling will occur at the correct point inside the vessel.
Vessels, paddles, or baskets & shafts should be cleaned and inspected after each test. Hanson recommends the following:

- Use only water for cleaning. (If detergents are necessary, it is best to keep them mild to prevent damaging the 316 stainless steel or Teflon that the paddles, baskets, and basket shafts are made out of.)

- Wash by hand, not by dishwasher. (Hand washing is preferable to prevent damage to the shafts, baskets, and vessels. Dishwashers have the possibility to cause nicks, scrapes, and other damage that hand washing should not.)

- Inspect all threads for damage and/or corrosion whenever removed. (Shafts where the threads are damaged, or are showing signs of corrosion should be replaced.)

**Monthly**

Replace the bath water if necessary.

1. Use the Super Siphon to drain the bath.
2. Wipe the bath clean using a damp cloth or paper towel.
3. Refill the bath with clean water having a resistance not less than 1MΩ.
Bi-Annually

Inspect drive belt:

1. Remove spindle shafts.
2. Remove pop-off cover.
3. Inspect drive belt for any damage or degradation.
4. Replace drive belt if damage is found.

To replace the drive belt use a 5/32 in. socket head wrench to loosen—but not remove—the two screws holding the idler plate (or front center idler plate on the Vision Elite 8). Loosen the tension on the belt by moving the idler plate, then remove and discard the old belt. Thread the replacement belt around the spindles in the same manner as the previous belt and adjust the idler plate so that the tension between Spindles 4 and 5 allow the belt to move between 6-10 mm.

Run the motor at 50 rpm to ensure proper operation, then replace the drive head cover (snap in place) and spindle shafts.

NOTE

The drive belt connects all spindles to the motor and is held at proper tension with idlers. Idlers are located near the center of the Classic 6 drive head and at the front- and back-centers of the Elite 8 drive head.
Annually

Inspect and replace the spindle o-rings if needed. Hanson’s O-Ring Tool Kit is required for this procedure.

To inspect the o-rings insert the spindle shafts into the spindles, and raise them such that the end of the bottom of the spindle shaft is flush with the end cap. If the o-rings are functioning properly, each of the spindle shafts should remain at the same height without operator assistance. If any of the spindle shafts slip down, the o-rings for that spindle are failing. If any spindle shows signs of failing o-rings it is strongly recommended that all the o-rings in the unit be replaced. A small amount of silicon may be used to ease removal of tight o-rings.

Begin by removing the spindle shafts and drive head cover from the Vision unit. Using the O-Ring Tool Kit, remove the top o-rings within the spindle by using the hook tools. To remove the lower o-rings insert the key into the hole located on the end cap of the spindle while simultaneously using the hook tool to remove the o-ring. Discard any o-rings that were removed.

To replace the o-rings, use the o-ring tools with the short shaft to maneuver the replacement o-rings back into position. Test the new o-rings by performing the steps for the inspection once again. If the o-rings are seated properly, the resistance while inserting the spindles shafts should be consistent.
### Elite 8

<table>
<thead>
<tr>
<th>Weight:</th>
<th>Main unit, dry: 63.5 kg (140 lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Main unit, bath and vessels filled with water: 90.8 kg (200 lbs.)</td>
</tr>
<tr>
<td>Size:</td>
<td>Height: 87.6 cm (34.5 in.)</td>
</tr>
<tr>
<td></td>
<td>Width: 67.3 cm (26.5 in.)</td>
</tr>
<tr>
<td></td>
<td>Depth: 58.5 cm (23.0 in.)</td>
</tr>
<tr>
<td>Bath Capacity:</td>
<td>With 8 vessels: 19 liters (5 gallons)</td>
</tr>
</tbody>
</table>

### Classic 6

<table>
<thead>
<tr>
<th>Weight:</th>
<th>Main unit, dry: 29.5 kg (65 lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Main unit, bath and vessels filled with water: 49 kg (108 lbs.)</td>
</tr>
<tr>
<td>Size:</td>
<td>Height: 67.3 cm (26.5 in.)</td>
</tr>
<tr>
<td></td>
<td>Width: 39.4 cm (15.5 in.)</td>
</tr>
<tr>
<td></td>
<td>Depth: 58.4 cm (23.0 in.)</td>
</tr>
<tr>
<td>Bath Capacity:</td>
<td>With 6 vessels: 13.3 liters (3.5 gallons)</td>
</tr>
</tbody>
</table>
# Appendix A–Specifications

## Vision Heater Circulator

<table>
<thead>
<tr>
<th>Weight:</th>
<th>4.1 kg (9 lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size:</td>
<td></td>
</tr>
<tr>
<td>Height:</td>
<td>22.9 cm (9.0 in.)</td>
</tr>
<tr>
<td>Width:</td>
<td>24.1 cm (9.5 in.)</td>
</tr>
<tr>
<td>Depth:</td>
<td>16.5 cm (6.5 in.)</td>
</tr>
<tr>
<td>Power:</td>
<td></td>
</tr>
<tr>
<td>Voltage:</td>
<td>100–230V ± 10%</td>
</tr>
<tr>
<td>Frequency:</td>
<td>50/60 Hz</td>
</tr>
<tr>
<td>Current:</td>
<td>700–1200 W</td>
</tr>
</tbody>
</table>

## Main Drive Units

<table>
<thead>
<tr>
<th>Power (Elite 8 and Classic 6 Main Drive Units):</th>
<th>Voltage: 100–230V ± 10%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency: 50/60 Hz</td>
</tr>
<tr>
<td></td>
<td>Output: 24 vdc 2.5 A</td>
</tr>
<tr>
<td></td>
<td>Output Power: 60 W max</td>
</tr>
</tbody>
</table>

Vision Dissolution Testers use a desktop-type power supply (Hanson p/n 91-110-030 which is available for re-order). The power supply is used as a disconnect device. Do not block/obstruct this area of the equipment so that it is difficult for disconnection. Power must be off and power supply removed before servicing this equipment.
## Appendix A–Specifications

### General

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambient Temperature Range:</td>
<td>&gt; 5°C below operating temperature</td>
</tr>
<tr>
<td>Humidity:</td>
<td>&lt; 85%</td>
</tr>
<tr>
<td>Spindle Speed:</td>
<td>Range: 25 to 250 RPM</td>
</tr>
<tr>
<td></td>
<td>Accuracy: ±1 RPM</td>
</tr>
<tr>
<td></td>
<td>Displayed Resolution: 0.1 RPM</td>
</tr>
<tr>
<td>Vessel Temperature:</td>
<td>Programmable Temperature Range: 30.0 to 50.0°C</td>
</tr>
<tr>
<td></td>
<td>Accuracy: ±0.5°C</td>
</tr>
<tr>
<td></td>
<td>Control: ±0.1°C</td>
</tr>
<tr>
<td>Digital Temperature Probes (all probes):</td>
<td>Range: 10 to 60°C</td>
</tr>
<tr>
<td></td>
<td>Accuracy: ±0.1°C from 30–55°C</td>
</tr>
<tr>
<td></td>
<td>Displayed Resolution: 0.01°C</td>
</tr>
<tr>
<td></td>
<td>Minimum Submersion Depth: 25 mm</td>
</tr>
<tr>
<td></td>
<td>Response Time: &lt; 45 seconds (normally 30 sec.)</td>
</tr>
</tbody>
</table>

### Environmental

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installation</td>
<td>Category II</td>
</tr>
<tr>
<td>Pollution</td>
<td>Degree 2</td>
</tr>
</tbody>
</table>
## Drive Head Outlets

<table>
<thead>
<tr>
<th>Outlet</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temp Probe:</td>
<td>The temperature probe is plugged into this connection.</td>
</tr>
<tr>
<td>Aux 1:</td>
<td>This interfaces with Hanson Vision Accessories.</td>
</tr>
<tr>
<td>LAN:</td>
<td>This connects the tester to a Local Area Network.</td>
</tr>
<tr>
<td>USB:</td>
<td>This allows connection to a PC.</td>
</tr>
<tr>
<td>RS-232:</td>
<td>This is for RS-232 connections to other equipment, such as the Hanson AutoPlus.</td>
</tr>
<tr>
<td>Serial Printer:</td>
<td>This connects to a serial printer (optional).</td>
</tr>
<tr>
<td>Temp Control:</td>
<td>This connects the tester to the Vision Heater.</td>
</tr>
<tr>
<td>24V:</td>
<td>This is the power connection.</td>
</tr>
</tbody>
</table>
# Heater Circulator Outlets

<table>
<thead>
<tr>
<th>Outlet</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LAN:</td>
<td>This connects the Vision Heater to a Local Area Network.</td>
</tr>
<tr>
<td>USB:</td>
<td>This allows connection to a PC.</td>
</tr>
<tr>
<td>Temp Control:</td>
<td>This connects the Vision Heater to the Vision dissolution tester.</td>
</tr>
<tr>
<td>AC Input:</td>
<td>This is the power connection, which can be connected to either a 115V or 230V outlet.</td>
</tr>
</tbody>
</table>
## Symbols

<table>
<thead>
<tr>
<th></th>
<th>Caution, risk of danger.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Caution, risk of electric shock.</td>
</tr>
<tr>
<td></td>
<td>Alternating current.</td>
</tr>
<tr>
<td></td>
<td>Direct current.</td>
</tr>
</tbody>
</table>
Appendix B—Starting a Staggered Test

The intent of this Appendix is to provide new users with a basic process to begin a staggered dissolution test.

1. Confirm the vessels, paddles, or baskets & basket shafts are clean and in good condition. If so install them into their designated positions.

2. Touch the temperature portion of the MAIN screen to bring up the manual temperature controls. Enter the desired set point using the numeric buttons and the “OK” button. It is recommended that the set point be 0.10 °C higher than the desired temperature of the media in the vessels.

3. Touch the speed portion of the MAIN screen to bring up the manual speed controls. Enter the desired test speed using the numeric buttons and the “OK” button. This will store the speed setting for the test.

TIP

If after starting a test a spindle shaft is only partially engaged to the spindle and not down all the way, quickly use two hands on either side of the spindle clamp and spin it in a clockwise direction while simultaneously lifting up a small amount to free the keys. Lower the spindle shaft again trying to time the motion such that the keys do not partially engage.
Appendix B—Starting a Staggered Test

4. Touch the timer portion of the MAIN screen. Enter the Test Length in hours and minutes, as well as the Print Interval in hours and minutes using the numeric buttons and the “OK” button.

   a. It is necessary to manually add the time for a staggered test to the total test length for the Vision dissolution units. The additional time must be added on to the end of the test and rounded up to the next whole minute.

   i. Example 1: A Classic 6 with a stagger extension of 30 seconds between vessels would add an additional 2 minutes and 30 seconds to the test. This would require the total test length to be extended by 3 minutes.

   ii. Example 2: An Elite 8 with a stagger extension of 15 seconds between vessels would add an additional 1 minute and 45 seconds to the test. This would require the total test length to be extended by 2 minutes.

5. Confirm the heights of all the paddles or baskets from the vessel bottom using a height gauge. Once checked raise the spindle shafts up so that the vessels can be filled with media.

6. Fill the vessels with media and cover so that the temperature can stabilize.

   a. PADDLES: For tests using paddles, the paddles should be lowered into the bath at this time to equilibrate with the media. However they should be positioned such that they are approximately 1 cm higher than the testing position.
Appendix B—Starting a Staggered Test

b. BASKETS: For tests using baskets, the baskets should remain suspended above the vessel covers at this time.

7. Once the temperature as stabilized:

a. PADDLES: Lower the paddle in Position 1 all the way down. Drop the tablet, then touch the “START” button in the lower left corner of the MAIN screen to begin the test. Wait the specified interval then grasp the spindle clamp of Paddle 2 to hold the paddle stationary and drop the tablet. When the tablet hits the bottom of the vessel push the spindle shaft down into the drive position so that the spindle clamp notch engages the spindle properly. Repeat for each remaining vessel.

b. BASKETS: Place a tablet into each basket. Remove the vessel covers on all the vessels and lower the first basket into the drive position so that the spindle clamp notch properly engages the spindle. Touch the “START” button located in the lower left corner of the MAIN screen to start the test, and place the vessel cover over Vessel 1. Wait the specified interval, then lower the spindle shaft for Position 2 into the media and re-cover the vessel taking care to ensure the spindle shaft engages properly. Repeat for each remaining vessel.
Appendix C—Starting a Simultaneous Test

The intent of this Appendix is to provide new users with a basic process to begin a simultaneous start dissolution test.

1. Confirm the vessels, paddles, or baskets & basket shafts are clean and in good condition. If so install them into their designated positions.

2. Touch the temperature portion of the MAIN screen to bring up the manual temperature controls. Enter the desired set point using the numeric buttons and the “OK” button. It is recommended that the set point be 0.10 °C higher than the desired temperature of the media in the vessels.

3. Touch the speed portion of the MAIN screen to bring up the manual speed controls. Enter the desired test speed using the numeric buttons and the “OK” button. This will store the speed setting for the test.

TIP

If after starting a test a spindle shaft is only partially engaged to the spindle and not down all the way, quickly use two hands on either side of the spindle clamp and spin it in a clockwise direction while simultaneously lifting up a small amount to free the keys. Lower the spindle shaft again trying to time the motion such that the keys do not partially engage.
4. Touch the timer portion of the MAIN screen. Enter the Test Length in hours and minutes, as well as the Print Interval in hours and minutes using the numeric buttons and the “OK” button.

5. Confirm the heights of all the paddles or baskets from the vessel bottom using a height gauge. Once checked raise the spindle shafts up so that the vessels can be filled with media.

6. Fill the vessels with media and cover so that the temperature can stabilize.
   a. PADDLES: For tests using paddles, the paddles should be lowered into the bath at this time to equilibrate with the media and confirmed to be in the drive position with the spindle clamp key properly engaged with the spindle.
   b. BASKETS: For tests using baskets, the baskets should remain suspended above the vessel covers at this time.

7. Once the temperature as stabilized
   a. PADDLES: Rapidly drop a tablet into each vessel, then touch the “START” button in the lower left corner of the MAIN screen to begin the test.
   b. BASKETS:
      i. Lowering the Spindle Shafts: After removing the covers, quickly lower each spindle shaft into the drive position, then touch the “START” button in the lower left corner of the MAIN screen to begin the test.
Appendix C—Starting a Simultaneous Test

ii. Lowering the Drive Head (Elite 8 Only): Make sure the drive head is in the upper position and lower all the spindle shafts into the drive position so the spindle clamp key is properly engaged to the spindle. Remove all the covers from the vessels. Next release the locking pin using the lever located underneath the left side of the Elite 8 drive head and move the drive head down into the drive position. Touch the “START” button to begin the test then replace the vessel covers.
## Appendix D—Error Codes

<table>
<thead>
<tr>
<th>Error Code</th>
<th>Meaning</th>
<th>Possible Causes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature Control Offline</td>
<td>There is no communication between the dissolution tester and the heater circulator.</td>
<td>The heater circulator is turned off or unplugged.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The communication cable between the dissolution tester and heater circulator is disconnected.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Component failure on either the dissolution tester main board or the heater circulator main board. Contact Hanson Technical Support.</td>
</tr>
<tr>
<td>Temp Control Probe1 Error</td>
<td>There is a communication problem with the temperature probe that maintains waterbath temperature located inside the heater circulator.</td>
<td>The temperature probe located inside the heater circulator is damaged or disconnected. Contact Hanson Technical Support.</td>
</tr>
<tr>
<td>Temp Control Probe2 Error</td>
<td>There is a communication problem with the temperature probe that protects the heater from overheating within the heater circulator.</td>
<td>Probe2 is damaged or disconnected. Switch power OFF to the heater circulator using the power switch on the back of the heater circulator housing and contact Hanson Technical Support.</td>
</tr>
<tr>
<td>Temp Control Pump/Flow Error</td>
<td>There is a problem with the pump located inside the heater circulator.</td>
<td>Pump has failed or is disconnected. Contact Hanson Technical Support.</td>
</tr>
<tr>
<td>Temp Control Overtemp Shutdown</td>
<td>The heater has overheated and the heater circulator has shut down in order to protect itself from damage.</td>
<td>Pump flow is insufficient for proper heating; Contact Hanson Technical Support.</td>
</tr>
</tbody>
</table>
### Appendix D–Error Codes

<table>
<thead>
<tr>
<th>Error Code</th>
<th>Description</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Probe2 is not reading accurately. Contact Hanson Technical Support.</td>
<td>Shut down heater circulator by turning OFF the power switch located on the back of the unit for no less than 5 minutes. Turn ON and repeat setting the temperature. If problem continues, contact Hanson Technical Support.</td>
<td></td>
</tr>
<tr>
<td><strong>Temp Control Heater Failure</strong></td>
<td>The heater is not coming on properly.</td>
<td>Heater coil has failed. Contact Hanson Technical Support.</td>
</tr>
<tr>
<td></td>
<td>Shut down Heater Circulator by turning OFF the power switch located on the back of the unit for no less than 5 minutes. Turn ON and repeat setting the temperature. If problem continues, contact Hanson Technical Support. Motor has failed, and should be replaced. Contact Hanson Technical Support.</td>
<td></td>
</tr>
<tr>
<td><strong>Temp control CPU Error</strong></td>
<td>The board controlling the heater circulator has failed.</td>
<td>Heater circulator control board has failed. Contact Hanson Technical Support.</td>
</tr>
<tr>
<td><strong>Temp Control Error Message #XX</strong></td>
<td>Contact Hanson Technical Support, and have error number ready.</td>
<td></td>
</tr>
<tr>
<td><strong>Drive Motor Feedback Error</strong></td>
<td>The motor is unable to determine what speed it is spinning.</td>
<td>Internal component failure in motor, motor must be replaced. Contact Hanson Technical Support.</td>
</tr>
<tr>
<td><strong>Drive Motor Error</strong></td>
<td>There is a non-specific Motor Error resulting in it being unable to reach a speed setpoint.</td>
<td>Motor is failing and must be replaced. Contact Hanson Technical Support.</td>
</tr>
<tr>
<td></td>
<td>Something has jammed motor. Remove spindles and drive head cover, and inspect belts and motor for any obstructions.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Communication connection between motor and main board has failed. Contact Hanson Technical Support.</td>
<td></td>
</tr>
</tbody>
</table>
### Appendix D–Error Codes

<table>
<thead>
<tr>
<th>Error Code</th>
<th>Description</th>
<th>Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Magazine Position Error</strong></td>
<td>The Auto-Mag is unable to determine its position.</td>
<td>Momentary loss of power may have removed instrument memory of probe position. Use Options menu to reset probes to factory defaults and home probes.</td>
</tr>
<tr>
<td><strong>Magazine Motor Error</strong></td>
<td>The Auto-Mag motor is not functioning properly.</td>
<td>Auto-Mag Motor has failed. Contact Hanson Technical Support.</td>
</tr>
<tr>
<td><strong>Vision Tester Error Message #XX</strong></td>
<td>Contact Hanson Technical support, and have error number ready</td>
<td></td>
</tr>
<tr>
<td><strong>Temperature Probe Error</strong></td>
<td>Temperature probe is not communicating with dissolution tester.</td>
<td>Temperature probe is disconnected.</td>
</tr>
<tr>
<td><strong>Vessel Temp Probe Config Error</strong></td>
<td>The configuration of the digital temperature probes in the Vision software does not match the hardware that is installed.</td>
<td>Check system options to confirm that unit is set to read the same number of probes that are installed on the unit.</td>
</tr>
<tr>
<td><strong>Printer Offline</strong></td>
<td>The Vision unit is unable to communicate with the Printer.</td>
<td>Printer is switched off or unplugged.</td>
</tr>
</tbody>
</table>

Printer has error. Check to make sure select button is illuminated and not blinking.

Printer communication cable is disconnected from main unit.

Printer is configured when none is installed.
Appendix D–Error Codes

<table>
<thead>
<tr>
<th>Error Code</th>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Printer Out of Paper</td>
<td>The printer is out of paper.</td>
<td>Printer is out of paper.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Paper roll is misaligned. Button located in paper area is not depressed.</td>
</tr>
<tr>
<td>Printer Configuration Error</td>
<td>The printer is improperly configured.</td>
<td>Printer configuration options located in systems options are incorrectly set.</td>
</tr>
</tbody>
</table>
## Appendix E—Trouble Shooting

### General

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible Causes</th>
<th>Recommended Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>This display is dark.</td>
<td>The system power switch is turned off, or the system is unplugged.</td>
<td>Contact Hanson Technical Support.</td>
</tr>
<tr>
<td></td>
<td>There is a problem with either the display or main board.</td>
<td>Contact Hanson Technical Support.</td>
</tr>
<tr>
<td>Excessive vibration in system.</td>
<td>Belts are damaged, too tight, or too loose.</td>
<td>Replace and/or adjust the belt according to the maintenance procedure in this user guide.</td>
</tr>
<tr>
<td></td>
<td>New external vibration source has appeared.</td>
<td>Inspect area surrounding dissolution bath to determine source.</td>
</tr>
<tr>
<td>Diagnostics failure for microprocessor or clock.</td>
<td>Component failure.</td>
<td>Contact Hanson Technical Support.</td>
</tr>
<tr>
<td>Diagnostics failure for printer.</td>
<td>Printer may not be properly connected.</td>
<td>Confirm the printer connections referring to the Installation section of this user guide.</td>
</tr>
<tr>
<td></td>
<td>Printer may be offline or have malfunction.</td>
<td>Confirm the ribbon is properly placed and sufficient paper is available for printing. Confirm there is power to the printer and it is turned on. Confirm the &quot;SEL&quot; light is illuminated and not off or blinking.</td>
</tr>
<tr>
<td></td>
<td>Printer may not be properly configured.</td>
<td>Under the printer options, confirm the printer is configured properly.</td>
</tr>
<tr>
<td></td>
<td>Printer is damaged.</td>
<td>Contact Hanson Technical Support.</td>
</tr>
<tr>
<td>Issue</td>
<td>Possible Cause</td>
<td>Solution</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Air bubbles are entering through water bath side mounted liquid connection.</td>
<td>Stop the pump and re-prime according to the procedure in the Installation section of this user guide.</td>
<td>Check connections for any possible leaks, retighten hose clamps if necessary. Pump may have internal air leak. Contact Hanson Technical Support.</td>
</tr>
<tr>
<td>Paddle or basket height not correct.</td>
<td>Pump may have internal air leak.</td>
<td>Contact Hanson Technical Support.</td>
</tr>
<tr>
<td></td>
<td>Paddle or basket height not correct.</td>
<td>Confirms spindle clamp and spindle are properly engaged.</td>
</tr>
<tr>
<td></td>
<td>Paddle or basket height not correct.</td>
<td>Confirms paddle or basket shaft is properly tightened in spindle shaft.</td>
</tr>
<tr>
<td></td>
<td>Perform the height adjustment procedure listed below:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. Install either the paddle or basket shaft with basket into the spindle shaft.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Place a height gauge in the bottom of the vessel of the affected position.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Gently lower the paddle or basket so it rests on top of the height gauge.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Using a hex head wrench, loosen the bolt on the spindle shaft clamp.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5. Adjust the spindle clamp so that it is properly engaged to the spindle. Make sure that the paddle or basket is still resting on top of the height gauge.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6. Tighten the spindle clamp using the same hex head wrench.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7. Confirm the height of any apparatus used in that spindle position. Confirm height requirements contact Hanson Technical Support.</td>
<td></td>
</tr>
</tbody>
</table>
## Temperature

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible Causes</th>
<th>Recommended Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bath will not heat up and the pump seems to be running.</td>
<td>Confirm pump flow by placing the temperature probe in front of the side mounted liquid connection on the water bath. Make sure that flow is noticeable. If it is not see the following problem for trouble shooting.</td>
<td>Contact Hanson Technical Support.</td>
</tr>
<tr>
<td></td>
<td>Confirm the Vision temperature probe is inserted properly into the water bath and properly connected to the connection panel on the Vision dissolution bath.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Confirm the temperature set point is not set to 0.0 °C on the MAIN screen.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>If the previous steps have not shown the problem, the heater element may have failed.</td>
<td></td>
</tr>
<tr>
<td>Bath will not heat up and pump does not seem to be running.</td>
<td>Confirm the heater circulator power connection is correct and the heater circulator is turned on.</td>
<td>Contact Hanson Technical Support.</td>
</tr>
<tr>
<td></td>
<td>Confirm that the temperature set point is not set to 0.0 °C.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Confirm that the communication connection between the heater circulator and dissolution bath connection panel is correct.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>If the previous steps have not shown the problem, the pump may have failed.</td>
<td></td>
</tr>
<tr>
<td>Heater circulator heats the bath, but shuts down before bath reaches temperature set point.</td>
<td>Component failure.</td>
<td>Contact Hanson Technical Support.</td>
</tr>
</tbody>
</table>
# Appendix E – Trouble Shooting

## Auto-Mag

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible Causes</th>
<th>Recommended Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto-Mag is not moving, or not moving the correct distance.</td>
<td></td>
<td>Confirm Auto-Mag distance is set properly in the SYSTEM OPTIONS.</td>
</tr>
<tr>
<td></td>
<td>Component failure.</td>
<td>Contact Hanson Technical Support.</td>
</tr>
</tbody>
</table>

## Motor & Speed

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible Causes</th>
<th>Recommended Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor does not start when attempting to start a test.</td>
<td></td>
<td>Confirm motor speed was set. Refer to “Software Operation – Starting a Test” section of this user guide.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Confirm motor is operational using manual controls. If motor is non-responsive, refer to the next problem in this section.</td>
</tr>
<tr>
<td>Spindles do not rotate when commands are issued to the motor.</td>
<td></td>
<td>Remove the Spindle Shafts and drive head cover, and confirm the belt is undamaged and properly tensioned. For belt replacement, refer to the Maintenance section of this user guide.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Confirm that when a command is sent from the touch screen the motor is rotating. If it is not, the motor needs to be replaced. Contact Hanson Technical Support.</td>
</tr>
</tbody>
</table>