



Retail Inkjet Solutions
InkCenter™ Refill System

Technical Service Manual

December 2011

Retail Inkjet Solutions InkCenter™ Refill System Technical Service Manual

© Retail Inkjet Solutions
November, 2011

InkCenter™ Refill System
Technical Service Manual

InkCenter and the Retail Inkjet
Solutions logo are trademarks
of Retail Inkjet Solutions

Retail Inkjet Solutions
2445 Impala Drive
Carlsbad, CA 92010

Ph.:858-753-0233
fax:858-876-1561

www.retailinkjet.com

All rights reserved.
Printed in the United States of
America

Changes in equipment, software, or procedures occur periodically. Information
describing these changes will be included in future editions of the manual.

The information in this document is subject to change and does not represent a
commitment on the part of Retail Inkjet Solutions to provide additional services
or enhancements.

Other products and companies named herein may be the trademark of their
respective owners.

Retail Inkjet Solutions is not responsible for typographical errors which may
have occurred during the production of this manual. Please contact your RIS
representative for clarification of any material.

Submission of suggestions for, or corrections to this document can be sent via
regular mail at the address shown to the left, via the internet, or via direct e-mail
to your RIS representative. All suggestions are welcome and will be considered
in production of future editions.

COMPANY CONFIDENTIAL—No part of this document may
be photocopied, reproduced, or translated to another language
without the prior written consent of Retail Inkjet Solutions.
Duplication or reproduction of this material is strictly prohibited
without written consent from Retail Inkjet Solutions.

Contents

| | |
|--|-----------------|
| List of Figures | .xi |
| Preface | xxiii |
| Overview..... | xxiv |
| Retail Inkjet Solutions Contact Information..... | xxiv |
| Conventions | xxiv |
| Safety | xxiv |
| Environmental Considerations | xxiv Electrical |
| Safety | xxv Electrical |
| Disconnect..... | xxvi |
| Operational Safety..... | xxvi |
| Radio Frequency Emissions | xxvi |

1 Theory of Operations 1-1

| | |
|--|------|
| 1.1 System Overview | 1-2 |
| 1.1.1 System Components..... | 1-2 |
| 1.1.2 Inkjet Cartridge Theory..... | 1-3 |
| 1.1.3 Operational Overview | 1-4 |
| 1.2 Drill Station | 1-5 |
| 1.2.1 Overview of Drill Operation | 1-5 |
| 1.2.2 Drill Station Components..... | 1-5 |
| 1.3 Prep Station | 1-12 |
| 1.3.1 Overview of Prep Station Operation | 1-12 |
| 1.3.2 Prep Station Components | 1-12 |
| 1.4 Fill Station | 1-17 |
| 1.4.1 Overview of Fill Station Operation | 1-17 |
| 1.4.2 Fill Station Components..... | 1-18 |
| 1.5 Tester Station | 1-24 |
| 1.5.1 Overview of Tester Station Operation | 1-24 |
| 1.5.2 Tester Station Components | 1-24 |
| 1.6 Plumbing System | 1-29 |
| 1.6.1 Cleaning Fluid System | 1-29 |
| 1.6.2 Vacuum System | 1-31 |
| 1.7 Networking of the InkCenter Machines | 1-35 |

| | |
|--|------|
| 1.7.3 Troubleshooting | 1-35 |
| 1.7.4 Software Updates | 1-35 |
| 1.7.5 Communication with Operators | 1-36 |
| 1.8 System Diagrams | 1-37 |

2 Uncrating Instructions 2-1

| | |
|--|-----|
| 2.1 Installation Location Requirements Checklist | 2-2 |
| 2.2 Removing the System from the Crate | 2-3 |
| 2.2.1 Setup..... | 2-3 |
| 2.2.2 Tools Required | 2-3 |
| 2.2.3 Unpack the System..... | 2-4 |

3 Installing the System..... 3-1

| | |
|--|------|
| 3.1 System Specifications | 3-2 |
| 3.1.1 Dimensions..... | 3-2 |
| 3.1.2 Weight | 3-2 |
| 3.1.3 Input Power | 3-2 |
| 3.2 Inspecting the System | 3-3 |
| 3.3 Powering Up the System | 3-4 |
| 3.4 Setting Up the Network | 3-5 |
| 3.5 Loading Supplies | 3-6 |
| 3.5.1 Ink | 3-6 |
| 3.5.2 Waste Container Kit..... | 3-7 |
| 3.5.3 Cleaning Fluid | 3-7 |
| 3.5.4 Wipes..... | 3-8 |
| 3.5.5 Tester Paper..... | 3-8 |
| 3.5.6 Drill Bits..... | 3-8 |
| 3.5.7 Refill Adapters | 3-8 |
| 3.5.8 Test Adapters | 3-8 |
| 3.5.9 Cartridge Clips | 3-8 |
| 3.6 Initializing the System | 3-9 |
| 3.6.1 Initializing the Adapters | 3-9 |
| 3.6.2 Testing the Drill | 3-9 |
| 3.6.3 Priming the Ink Supply Lines | 3-9 |
| 3.7 Functional Testing | 3-10 |
| 3.7.1 HP 45 Fill | 3-10 |
| 3.7.2 Vacuum Chamber Color Fill..... | 3-10 |
| 3.7.3 Vacuum Chamber Black Fill..... | 3-10 |
| 3.8 Final Checks | 3-12 |

4 Troubleshooting 4-1

| | |
|---------------------------------|-----|
| 4.1 System Error Messages | 4-2 |
| 4.1.1 Pump Errors | 4-3 |
| 4.1.2 Startup Errors | 4-4 |

| | |
|---|------|
| 4.1.3 Tester Errors..... | 4-4 |
| 4.1.4 Vacuum Errors | 4-5 |
| 4.2 Prep Station Troubleshooting | 4-6 |
| 4.2.1 Adapter Not Detected at the Prep Station | 4-6 |
| 4.2.2 Cartridge Not Detected (After Prep Process Starts)..... | 4-6 |
| 4.3 Fill Station Troubleshooting | 4-7 |
| 4.3.1 Adapter Not Detected at the Fill Station..... | 4-7 |
| 4.3.2 Fill Process Does Not Start | 4-7 |
| 4.3.3 Vacuum Chamber Vacuum is Not Achieved..... | 4-7 |
| 4.3.4 Fill Process Does Not Stop | 4-7 |
| 4.3.5 Air in the Dispense Line | 4-8 |
| 4.3.6 Overflows in the Fill Chamber..... | 4-8 |
| 4.3.7 One Ink Does Not Dispense | 4-9 |
| 4.3.8 An Ink Drawer Will Not Open..... | 4-10 |
| 4.3.9 Ink Bottle Is Sucked Inward in the Ink Drawer | 4-10 |
| 4.3.10 Ink Leak | 4-10 |
| 4.3.11 Leaks at the HP45 Station | 4-11 |
| 4.3.12 Cartridge Not Detected at the HP45 Station | 4-12 |
| 4.4 Tester Station Troubleshooting | 4-13 |
| 4.4.1 Blank Test Pattern | 4-13 |
| 4.4.2 Adapter Not Detected at the Tester Station..... | 4-13 |
| 4.4.3 Cartridges for a Single Adapter Family Repeatedly Fail..... | 4-14 |
| 4.5 Plumbing System Troubleshooting | 4-15 |
| 4.5.1 Vacuum Wand Does Not Operate or Fails to Shut Off..... | 4-15 |
| 4.5.2 The Liquid Separator Will Not Drain | 4-15 |
| 4.5.3 Cleaning Fluid Leak | 4-15 |

5 Remove and Replace Procedures..... 5-1

| | |
|---|------|
| 5.1 System Cabinet Components | 5-3 |
| 5.1.1 Upper Hood..... | 5-3 |
| 5.1.1.1 Removing the Upper Hood | 5-3 |
| 5.1.1.2 Replacing the Upper Hood | 5-4 |
| 5.1.2 Drill Side Fascia | 5-5 |
| 5.1.2.1 Removing the Drill Side Fascia | 5-5 |
| 5.1.2.2 Replacing the Drill Side Fascia | 5-7 |
| 5.1.3 Rear Access Panel | 5-10 |
| 5.1.3.1 Removing the Rear Access Panel | 5-10 |
| 5.1.3.2 Replacing the Rear Access Panel | 5-10 |
| 5.1.4 Work Surface | 5-11 |
| 5.1.4.1 Removing the Work Surface | 5-11 |
| 5.1.4.2 Replacing the Work Surface | 5-12 |
| 5.1.5 Syringe Pumps Cover..... | 5-14 |
| 5.1.5.1 Removing the Syringe Pumps Cover | 5-14 |
| 5.1.5.2 Replacing the Syringe Pumps Cover | 5-15 |
| 5.1.6 Upper Hood Fan | 5-16 |
| 5.1.6.1 Removing the Upper Hood Fan | 5-16 |
| 5.1.6.2 Replacing the Upper Hood Fan | 5-18 |
| 5.1.7 Hood Fan Spring Contacts | 5-21 |

| | |
|---|------|
| 5.4.8 HP45 Station Assembly | 5-75 |
| 5.4.8.1 Removing the HP45 Station Assembly | 5-75 |
| 5.1.8 Hood Fan Power Cable | 5-24 |
| 5.1.8.1 Removing the Hood Fan Power Cable | 5-24 |
| 5.1.8.2 Replacing the Hood Fan Power Cable | 5-25 |
| 5.1.9 Electrical Tower Fan | 5-26 |
| 5.1.9.1 Removing the Electrical Tower Fan | 5-26 |
| 5.1.9.2 Replacing the Electrical Tower Fan | 5-27 |
| 5.2 Drill Station | 5-28 |
| 5.2.1 Drill Motor Assembly | 5-28 |
| 5.2.1.1 Removing the Drill Motor Assembly | 5-28 |
| 5.2.1.2 Replacing the Drill Motor Assembly | 5-29 |
| 5.2.2 Drill Press Assembly | 5-31 |
| 5.2.2.1 Removing the Drill Press Assembly | 5-31 |
| 5.2.2.2 Replacing the Drill Press Assembly | 5-33 |
| 5.3 Prep Station | 5-37 |
| 5.3.1 Fluid Sensor PC Board | 5-37 |
| 5.3.1.1 Removing the Fluid Sensor PC Board | 5-37 |
| 5.3.1.2 Replacing the Fluid Sensor PC Board | 5-39 |
| 5.3.2 Prep Station Manifold | 5-42 |
| 5.3.2.1 Removing the Prep Station Manifold | 5-42 |
| 5.3.2.2 Replacing the Prep Station Manifold | 5-44 |
| 5.3.3 Prep Station Reed Sensor | 5-46 |
| 5.3.3.1 Removing the Prep Station Reed Sensor | 5-46 |
| 5.3.3.2 Replacing the Prep Station Reed Sensor | 5-47 |
| 5.3.4 Prep Station Vacuum Filters | 5-49 |
| 5.3.4.1 Removing the Prep Station Vacuum Filters | 5-49 |
| 5.3.4.2 Replacing the Prep Station Vacuum Filters | 5-50 |
| 5.4 Fill Station | 5-52 |
| 5.4.1 Vacuum Chamber | 5-52 |
| 5.4.1.1 Removing the Vacuum Chamber | 5-52 |
| 5.4.1.2 Replacing the Vacuum Chamber | 5-55 |
| 5.4.2 Vacuum Chamber Door | 5-59 |
| 5.4.2.1 Removing the Vacuum Chamber Door | 5-59 |
| 5.4.2.2 Replacing the Vacuum Chamber Door | 5-63 |
| 5.4.3 Fill Chamber Receiver Latch | 5-66 |
| 5.4.3.1 Removing the Fill Chamber Receiver Latch | 5-66 |
| 5.4.3.2 Replacing the Fill Chamber Receiver Latch | 5-66 |
| 5.4.4 Fill Chamber Receiver Plate | 5-67 |
| 5.4.4.1 Removing the Fill Chamber Receiver Plate | 5-67 |
| 5.4.4.2 Replacing the Fill Chamber Receiver Plate | 5-68 |
| 5.4.5 Fill Chamber Seal Pad | 5-69 |
| 5.4.5.1 Removing the Fill Chamber Seal Pad | 5-69 |
| 5.4.5.2 Replacing the Fill Chamber Seal Pad | 5-70 |
| 5.4.6 Fill Chamber Seal Plate | 5-71 |
| 5.4.6.1 Removing the Fill Chamber Seal Plate | 5-71 |
| 5.4.6.2 Replacing the Fill Chamber Seal Plate | 5-72 |
| 5.4.7 Vacuum Chamber Reed Sensor | 5-72 |
| 5.4.7.1 Removing the Vacuum Chamber Reed Sensor | 5-72 |
| 5.4.7.2 Replacing the Vacuum Chamber Reed Sensor | 5-73 |

| | |
|---|-------|
| 5.4.8 HP45 Station Assembly | 5-75 |
| 5.4.8.1 Removing the HP45 Station Assembly | 5-75 |
| 5.4.8.2 Replacing the HP45 Station Assembly | 5-78 |
| 5.4.9 HP45 Station Seal | 5-80 |
| 5.4.9.1 Removing the HP45 Seal | 5-80 |
| 5.4.9.2 Replacing the HP45 Seal | 5-83 |
| 5.4.10 Fluid Distribution Valve | 5-87 |
| 5.4.10.1 Removing the Fluid Distribution Valve | 5-87 |
| 5.4.10.2 Replacing the Fluid Distribution Valve | 5-88 |
| 5.4.11 Infusion Pump Drive System Assembly | 5-90 |
| 5.4.11.1 Removing the Infusion Pump Drive System Assembly | 5-90 |
| 5.4.11.2 Replacing the Infusion Pump Drive System Assembly | 5-92 |
| 5.4.12 Fill Station Syringe | 5-95 |
| 5.4.12.1 Removing a Fill Station Syringe | 5-95 |
| 5.4.12.2 Replacing a Fill Station Syringe | 5-96 |
| 5.4.13 Vacuum Chamber Upper Hinge Arms | 5-98 |
| 5.4.13.1 Removing the Vacuum Chamber Upper Hinge Arms | 5-98 |
| 5.4.13.2 Replacing the Vacuum Chamber Upper Hinge Arms | 5-100 |
| 5.4.14 Vacuum Chamber Gasket | 5-102 |
| 5.4.14.1 Removing the Vacuum Chamber Gasket | 5-102 |
| 5.4.14.2 Replacing the Vacuum Chamber Gasket | 5-104 |
| 5.4.15 Vacuum Chamber Spring Arm Rod | 5-106 |
| 5.4.15.1 Removing the Vacuum Chamber Spring Arm Rod | 5-106 |
| 5.4.15.2 Replacing the Vacuum Chamber Spring Arm Rod | 5-109 |
| 5.4.16 Vacuum Chamber Spring Arm Tubing | 5-111 |
| 5.4.16.1 Removing the Vacuum Chamber Spring Arm Tubing | 5-111 |
| 5.4.16.2 Replacing the Vacuum Chamber Spring Arm Tubing | 5-111 |
| 5.4.17 Vacuum Chamber Spring Lever | 5-112 |
| 5.4.17.1 Removing the Vacuum Chamber Spring Lever | 5-112 |
| 5.4.17.2 Replacing the Vacuum Chamber Spring Lever | 5-112 |
| 5.4.18 Ink Drawer PC Board | 5-113 |
| 5.4.18.1 Removing the Ink Drawer PC Board | 5-113 |
| 5.4.18.2 Replacing the Ink Drawer PC Board | 5-115 |
| 5.4.19 Vacuum Chamber Injector and Door Sensors | 5-117 |
| 5.4.19.1 Removing the Vacuum Chamber Injector and Door Sensors | 5-117 |
| 5.4.19.2 Replacing the Vacuum Chamber Injector and Door Sensors | 5-119 |
| 5.4.19.3 Replacing the Injector Proximity Sensor on Newer Model Units | 5-120 |
| 5.4.20 Ink Nest Assembly | 5-122 |
| 5.4.20.1 Removing the Ink Nest Assembly | 5-122 |
| 5.4.20.2 Replacing the Ink Nest Assembly | 5-124 |
| 5.4.21 Tubing Connector Replacement | 5-127 |
| 5.5 Tester Station | 5-131 |
| 5.5.1 Tester Assembly | 5-131 |
| 5.5.1.1 Removing the Tester Assembly | 5-131 |
| 5.5.1.2 Replacing the Tester Assembly | 5-134 |
| 5.5.2 Tester Fixture Cover | 5-137 |
| 5.5.2.1 Removing the Tester Fixture Cover | 5-137 |
| 5.5.2.2 Replacing the Tester Fixture Cover | 5-138 |
| 5.5.3 Tester Interconnect PC Board | 5-139 |
| 5.5.3.1 Removing the Tester Interconnect PC Board | 5-139 |

| | |
|--|-------|
| 5.8.3.3 Replacing the New Style Vacuum Wand | 5-195 |
| 5.8.4 Level Switch/Siphon Assembly | 5-196 |
| | |
| 5.5.5 Tester Front Paper Guide | 5-144 |
| 5.5.5.1 Removing the Tester Front Paper Guide | 5-144 |
| 5.5.5.2 Replacing the Tester Front Paper Guide | 5-145 |
| 5.5.6 Tester Thru-beam Paper Sensors | 5-147 |
| 5.5.6.1 Removing the Tester Thru-beam Paper Sensors | 5-147 |
| 5.5.6.2 Replacing the Tester Thru-beam Paper Sensors | 5-148 |
| 5.5.7 Tester Scanner Cable..... | 5-149 |
| 5.5.7.1 Removing the Tester Scanner Cable | 5-149 |
| 5.5.7.2 Replacing the Tester Scanner Cable | 5-150 |
| 5.5.8 Tester Top Latch | 5-151 |
| 5.5.8.1 Removing the Tester Top Latch | 5-151 |
| 5.5.8.2 Replacing the Tester Top Latch | 5-151 |
| 5.6 Power System | 5-154 |
| 5.6.1 DC Power Supply Assembly..... | 5-154 |
| 5.6.1.1 Removing the DC Power Supply Assembly | 5-154 |
| 5.6.1.2 Replacing the DC Power Supply | 5-155 |
| 5.6.2 Power Entry Module | 5-157 |
| 5.6.2.1 Removing the Power Entry Module | 5-157 |
| 5.6.2.2 Replacing the Power Entry Module | 5-157 |
| 5.7 Computer Components | 5-159 |
| 5.7.1 Touchscreen Assembly | 5-159 |
| 5.7.1.1 Removing the Touchscreen Assembly | 5-159 |
| 5.7.1.2 Replacing the Touchscreen Assembly | 5-160 |
| 5.7.1.3 Replacing the 3G Wireless Modem | 5-163 |
| 5.7.2 AC/DC Power Distribution PC Board | 5-164 |
| 5.7.2.1 Removing the AC/DC Power Distribution PC Board | 5-164 |
| 5.7.2.2 Replacing the AC/DC Power Distribution PC Board | 5-165 |
| 5.7.3 Main I/O PC Board | 5-166 |
| 5.7.3.1 Removing the Main I/O PC Board | 5-166 |
| 5.7.3.2 Replacing the Main I/O PC Board | 5-167 |
| 5.7.4 Tester PC Board Set..... | 5-170 |
| 5.7.4.1 Removing the Tester PC Board Set | 5-170 |
| 5.7.4.2 Replacing the Tester PC Board Set | 5-172 |
| 5.7.5 Vacuum Chamber PC Board..... | 5-174 |
| 5.7.5.1 Removing the Vacuum Chamber PC Board | 5-174 |
| 5.7.5.2 Replacing the Vacuum Chamber PC Board | 5-176 |
| 5.8 Fluid System | 5-178 |
| 5.8.1 Fluid Pump..... | 5-178 |
| 5.8.1.1 Removing the Fluid Pump | 5-178 |
| 5.8.1.2 Replacing the Fluid Pump | 5-179 |
| 5.8.2 Fluid Distribution Manifold | 5-180 |
| 5.8.2.1 Removing the Fluid Distribution Manifold Assembly | 5-180 |
| 5.8.2.2 Replacing the Fluid Distribution Manifold Assembly | 5-182 |
| 5.8.3 Liquid Separator Assemby | 5-183 |
| 5.8.3.1 Removing the Liquid Separator Assemby | 5-183 |
| 5.8.3.2 Replacing the Liquid Separator Assemby | 5-188 |

| | |
|--|-------|
| 5.8.3.3 Replacing the New Style Vacuum Wand | 5-195 |
| 5.8.4 Level Switch/Siphon Assembly | 5-196 |
| 5.8.4.1 Removing the Level Switch/Siphon Assembly | 5-196 |
| 5.8.4.2 Replacing the Level Switch/Siphon Assembly | 5-198 |
| 5.9 Vacuum System | 5-201 |
| 5.9.1 Vacuum Pump..... | 5-201 |
| 5.9.1.1 Removing the Vacuum Pump | 5-201 |
| 5.9.1.2 Replacing the Vacuum Pump | 5-202 |
| 5.9.2 Waste Vacuum Manifold Assembly | 5-204 |
| 5.9.2.1 Removing the Waste Vacuum Manifold Assemby | 5-204 |
| 5.9.2.2 Replacing the Waste Vacuum Manifold Assemby | 5-206 |
| 5.9.3 Primary Vacuum Manifold Assembly | 5-209 |
| 5.9.3.1 Removing the Primary Vacuum Manifold Assembly | 5-209 |
| 5.9.3.2 Replacing the Primary Vacuum Manifold Assembly | 5-211 |
| 5.9.4 Vacuum Regulator Assembly | 5-213 |
| 5.9.4.1 Removing the Vacuum Regulator Assembly | 5-213 |
| 5.9.4.2 Replacing the Vacuum Regulator Assembly | 5-215 |
| 5.10 Technical Notes | 5-217 |
| 5.10.1 HP1 Refill Adapter Replacement/Upgrade | 5-217 |

6 Tech Pane..... 6-1

| | |
|---|------------|
| 6.1 Accessing the Tech Pane | 6-2 |
| 6.2 Tech Pane Main Screen | 6-3 |
| 6.2.1 Fluid Tank and Pump | 6-3 |
| 6.2.2 Vacuum Pump and Waste system | 6-3 |
| 6.2.3 Fill Chamber..... | 6-4 |
| 6.2.4 HP45 Station | 6-4 |
| 6.2.5 Prep Station A/B | 6-4 |
| 6.2.6 Troubleshooting with the Tech Pane Main Screen | 6-5 |
| 6.2.6.1 Sensor Indicators | 6-5 |
| 6.2.6.2 Waste Level Sensor | 6-5 |
| 6.2.6.3 Fill Chamber Vacuum Leak Check | 6-5 |
| 6.3 Tester Board Tab | 6-6 |
| 6.4 Tests Page | 6-8 |
| 6.4.1 Test Procedures | 6-9 |
| 6.4.1.1 Priming Ink Lines (Located in Maintenance Tab) | 6-9 |
| 6.4.1.2 Syringe Calibration | 6-9 |
| 6.4.1.3 Prep A/B Flow Check | 6-10 |
| 6.4.1.4 Chamber Leak | 6-11 |
| 6.4.1.5 Syringe Leak | 6-12 |
| 6.4.1.6 Syringe Digital Signals | 6-16 |
| 6.4.1.7 Sep Vacuum | 6-17 |

7 Periodic Maintenance..... 7-1

| | |
|-----------------------------------|-----|
| 7.1 Service Kit Tools | 7-2 |
| 7.2 Service Kit Spare Parts | 7-3 |
| 7.3 Total Service Call | 7-4 |

| | |
|--|------|
| 7.5.3 Lubricating the Interlock Guide Plates | 7-10 |
| 7.5.4 Cleaning the Prep Station Vacuum Lines | 7-12 |
| 7.5.5 Servicing the Vacuum Wand | 7-13 |
| 7.5.6 Cleaning the Float Sensors..... | 7-14 |
| 7.5.7 Testing the Flow at the Prep Stations..... | 7-17 |

8 Parts List 8-1

| | |
|---|---------|
| 8.1 Drill Station | 8-3 |
| 8.1.1 Drill Station Orderable Parts | 8-3 |
| 8.1.2 Drill Station Illustrations..... | 8-4 |
| 8.2 Prep Station | 8-6 |
| 8.2.1 Prep Station Orderable Parts | 8-6 |
| 8.2.2 Prep Station Illustrations | 8-6 |
| 8.3 Fill Station | 8-9 |
| 8.3.1 Fill Station Orderable Parts | 8-9 |
| 8.3.2 Fill Station Illustrations..... | 8-11 |
| 8.4 Tester Station | 8-19 |
| 8.4.1 Tester Station Orderable Parts | 8-19 |
| 8.4.2 Tester Station Illustrations | 8-20 |
| 8.5 Computer and Electrical Components | 8-24 |
| 8.5.1 Computer Components Orderable Parts..... | 8-24 |
| 8.5.2 Computer Components Illustrations | 8-24 |
| 8.5.3 Electrical Components Orderable Parts | 8-28 |
| 8.5.4 Electrical Components Illustrations | 8-29 |
| 8.5.5 Cable Assembly Orderable Parts | 8-29 |
| 8.6 Plumbing System | 8-30 |
| 8.6.1 Plumbing System Orderable Parts | 8-30 |
| 8.6.2 Plumbing System Illustrations | 8-32 |
| 8.7 System Components | 8-37 |
| 8.7.1 System Components Orderable Parts..... | 8-37 |
| 8.7.2 System Components Illustrations..... | 8-37 |
| 8.8 Labels | 8-39 |
| 8.8.1 Orderable Parts..... | 8-39 |
| 8.9 Fasteners and Tubing | 8-40 |
| 8.9.1 Orderable Parts..... | 8-40 |
| 8.10 Adapters | 8-41 |
| 8.10.1 Orderable Parts..... | 8-41 |
| Index | Index-1 |

List of Figures

| | |
|--|------|
| Figure 1.1:: Drill side fascia | 1-5 |
| Figure 1.2:: Drill press assembly | 1-6 |
| Figure 1.3:: Drill bit assembly | 1-7 |
| Figure 1.4:: Drill motor assembly | 1-8 |
| Figure 1.5:: Drill slide mount assembly..... | 1-9 |
| Figure 1.6:: Drill spring | 1-10 |
| Figure 1.7:: Drill microswitch | 1-11 |
| Figure 1.8:: Dual prep station configuration..... | 1-12 |
| Figure 1.9:: Prep station adapter housing | 1-13 |
| Figure 1.10:: Prep station manifold assembly | 1-14 |
| Figure 1.11:: Prep station vacuum tubing connected to prep station vacuum filters..... | 1-15 |
| Figure 1.12:: Prep station fluid sensor PB board | 1-15 |
| Figure 1.13:: Refill adapter | 1-17 |
| Figure 1.14:: Fill station with vacuum chamber door closed | 1-18 |
| Figure 1.15:: Fill station with vacuum chamber door opened | 1-19 |
| Figure 1.16:: Back of vacuum chamber assembly | 1-20 |
| Figure 1.17:: RFID reader..... | 1-21 |
| Figure 1.18:: Vacuum door sensor..... | 1-21 |
| Figure 1.19:: Ink infusion system | 1-22 |
| Figure 1.20:: tester station with tester cover in place | 1-24 |
| Figure 1.21:: Tester station with tester cover removed..... | 1-25 |
| Figure 1.22:: Rear inside view of tester station (NEW)..... | 1-26 |
| Figure 1.23:: Tester PC board set (OLD) | 1-27 |
| Figure 1.24:: Cable connections at the tester PC backplane board. (OLD)..... | 1-28 |
| Figure 1.25:: Cleaning fluid container located in the maintenance drawer | 1-29 |
| Figure 1.26:: Fluid pump | 1-30 |
| Figure 1.27:: Fluid distribution manifold | 1-30 |
| Figure 1.28:: Vacuum pump | 1-31 |
| Figure 1.29:: Main vacuum manifold | 1-32 |
| Figure 1.30:: Main vacuum manifold water trap | 1-32 |
| Figure 1.31:: Connectors on the top of the liquid separator | 1-33 |

| | |
|--|------|
| Figure 1.35:: DC cabling diagram | 1-38 |
| Figure 1.36:: Fluid system diagram | 1-39 |
| Figure 1.37:: Vacuum system diagram | 1-40 |
| Figure 3.1:: Installing ink supply bottles | 3-6 |
| Figure 3.2:: Stocking replacement ink supply bottles..... | 3-7 |
| Figure 5.1:: Fasteners located on the side of the upper hood..... | 5-3 |
| Figure 5.2:: Fasteners located on the top of the upper hood..... | 5-3 |
| Figure 5.3:: Fasteners located on the side of the upper hood..... | 5-4 |
| Figure 5.4:: Fasteners located on the top of the upper hood..... | 5-5 |
| Figure 5.5:: Quick release collar to remove shrouded drill bit assembly | 5-6 |
| Figure 5.6:: Drill press grip knob..... | 5-6 |
| Figure 5.7:: Drill side fascia fastener..... | 5-7 |
| Figure 5.8:: Drill side fascia mounting slots..... | 5-8 |
| Figure 5.9:: Drill press grip knob..... | 5-8 |
| Figure 5.10:: Quick release collar to remove shrouded drill bit assembly | 5-9 |
| Figure 5.11:: Drill side fascia fastener..... | 5-9 |
| Figure 5.12:: Fasteners that secure the rear access panel..... | 5-10 |
| Figure 5.13:: Fasteners that secure the rear access panel..... | 5-11 |
| Figure 5.14:: Location of work surface fasteners | 5-12 |
| Figure 5.15:: Properly routed cables and tubing from prep station B..... | 5-13 |
| Figure 5.16:: Location of work surface fasteners | 5-14 |
| Figure 5.17:: Fasteners that secure the syringe pumps cover to the work surface..... | 5-14 |
| Figure 5.18:: Positioning the syringe pumps cover | 5-15 |
| Figure 5.19:: Fasteners that secure the syringe pumps cover to the work surface..... | 5-15 |
| Figure 5.20:: Fasteners that secure the upper hood fan bracket..... | 5-16 |
| Figure 5.21:: Back of fan bracket assembly..... | 5-17 |
| Figure 5.22:: Fan cable connections | 5-17 |
| Figure 5.23:: Upper hood fan cable tie | 5-17 |
| Figure 5.24:: Fasteners securing the fan assembly to the fan bracket | 5-18 |
| Figure 5.25:: Removing the upper hood fan assembly from the fan bracket..... | 5-18 |
| Figure 5.26:: Positioning the upper hood fan assembly onto the fan bracket..... | 5-19 |
| Figure 5.27:: Fasteners securing the fan assembly to the fan bracket | 5-19 |
| Figure 5.28:: Fan cable connections | 5-20 |
| Figure 5.29:: Upper hood fan cable tie | 5-20 |
| Figure 5.30:: Fasteners that secure the upper hood fan bracket..... | 5-21 |
| Figure 5.31:: Hood fan power cable connection at the main I/O PC board..... | 5-21 |
| Figure 5.32:: Hood fan power cable connections on the spring contacts | 5-22 |
| Figure 5.33:: Fasteners that secure the spring contacts to the system frame | 5-22 |
| Figure 5.34:: Removing the spring contacts from the system frame | 5-22 |
| Figure 5.35:: Inserting the spring contacts into the system frame | 5-23 |
| Figure 5.36:: Fasteners that secure the spring contacts to the system frame | 5-23 |
| Figure 5.37:: Hood fan power cable connections on the spring contacts | 5-24 |
| Figure 5.38:: Hood fan power cable connection at the main I/O PC board..... | 5-24 |

| | |
|---|------|
| Figure 5.39:: Hood fan power cable connection at the main I/O PC board..... | 5-25 |
| Figure 5.40:: Hood fan power cable connections on the spring contacts | 5-25 |
| Figure 5.41:: Hood fan power cable connections on the spring contacts | 5-26 |
| Figure 5.42:: Hood fan power cable connection at the main I/O PC board..... | 5-26 |
| Figure 5.43:: Drill motor assembly cable ties to cut..... | 5-28 |
| Figure 5.44:: Drill motor cable connection at back of system..... | 5-29 |
| Figure 5.45:: Fasteners that secure the drill motor plate to the drill motor mount plate | 5-29 |
| Figure 5.46:: Fasteners that secure the drill motor plate to the drill motor mount plate | 5-30 |
| Figure 5.47:: Drill motor cable connection at back of system..... | 5-30 |
| Figure 5.48:: Zip ties that secure the motor cable to the top of the drill press arm | 5-31 |
| Figure 5.49:: Drill microswitch cable connection at the back of the system frame..... | 5-32 |
| Figure 5.50:: Drill press assembly ground cable connection..... | 5-32 |
| Figure 5.51:: Arrowhead release cable tie | 5-33 |
| Figure 5.52:: Fasteners that secure the drill press assembly to the system frame | 5-33 |
| Figure 5.53:: Inserting the drill press assembly into the system frame | 5-34 |
| Figure 5.54:: Fasteners that secure the drill press assembly to the system frame | 5-34 |
| Figure 5.55:: Arrowhead release cable tie | 5-35 |
| Figure 5.56:: Drill microswitch cable connection at the back of the system frame..... | 5-35 |
| Figure 5.57:: Drill press assembly ground cable connection..... | 5-36 |
| Figure 5.58:: Arrowhead release cable tie | 5-36 |
| Figure 5.59:: Fluid sensor board connections | 5-37 |
| Figure 5.60:: Fastener that secures the fluid sensor board..... | 5-38 |
| Figure 5.61:: Rotating the fluid sensor PC board on the prep station vacuum tubing..... | 5-38 |
| Figure 5.62:: Disconnecting the fluid sensor PC board from the prep station vacuum line | 5-38 |
| Figure 5.63:: Inserting the optical sensor fitting onto the prep station vacuum tubing | 5-39 |
| Figure 5.64:: Securing the fitting around the prep station vacuum tubing | 5-39 |
| Figure 5.65:: Fastener that secures the fluid sensor board..... | 5-40 |
| Figure 5.66:: Fluid sensor board connections | 5-41 |
| Figure 5.67:: Tubing connected to the prep station manifold | 5-42 |
| Figure 5.68:: Removing tubing from prep station A | 5-43 |
| Figure 5.69:: Track slide on the left side of the drawer | 5-43 |
| Figure 5.70:: Track slide on the right side of the drawer..... | 5-43 |
| Figure 5.71:: Fasteners that secure the prep stations to the system frame | 5-44 |
| Figure 5.72:: Fasteners and washers that secure the prep stations to the system frame | 5-45 |
| Figure 5.73:: Tubing connected to the prep station manifold | 5-45 |
| Figure 5.74:: Begin removing the sensor with needle nose pliers | 5-46 |
| Figure 5.75:: Removing the sensor with a 1/4" open end wrench | 5-47 |
| Figure 5.76:: Placing teflon tape on the threaded end of the sensor | 5-47 |
| Figure 5.77:: Inserting the sensor with a 1 1/14" open end wrench | 5-48 |
| Figure 5.78:: Completing installation of the sensor with needle nose pliers | 5-48 |
| Figure 5.79:: Fasteners that secure the fluid distribution manifold to the rear plumbing tower wall.... | 5-49 |
| Figure 5.80:: Fluid distribution manifold moved to outside the system | 5-49 |
| Figure 5.81:: Prep station vacuum tubing connected to prep station vacuum filters | 5-50 |
| Figure 5.82:: Prep station vacuum tubing connected to prep station vacuum filters | 5-50 |
| Figure 5.83:: Fasteners that secure the fluid distribution manifold to the rear plumbing tower wall.... | 5-51 |
| Figure 5.84:: Dispense lines connected to port C on ink valves | 5-52 |

| | |
|--|------|
| Figure 5.87:: Pulling dispense lines into the back of the system | 5-53 |
| Figure 5.88:: Unplugging the USB cable from the RFID reader board..... | 5-53 |
| Figure 5.89:: Vacuum tubing fitting on top of the vacuum chamber | 5-54 |
| Figure 5.90:: HP45 tubing connections | 5-54 |
| Figure 5.91:: Location of fasteners that secure the vacuum chamber..... | 5-55 |
| Figure 5.92:: Removing the vacuum chamber from the system | 5-55 |
| Figure 5.93:: Placing the vacuum chamber assembly into the system | 5-56 |
| Figure 5.94:: Location of fasteners that secure the vacuum chamber..... | 5-56 |
| Figure 5.95:: HP45 tubing connections | 5-57 |
| Figure 5.96:: Vacuum tubing fitting on top of the vacuum chamber | 5-57 |
| Figure 5.97:: Unplugging the USB cable from the RFID reader board..... | 5-58 |
| Figure 5.98:: Feeding the dispense lines into the front of the system | 5-58 |
| Figure 5.99:: Unplugging the main I/O PC board connection from the vacuum chamber PC board.... | 5-58 |
| Figure 5.100:: Dispense lines connected to port C on ink valves | 5-59 |
| Figure 5.101:: Vacuum chamber door kit..... | 5-60 |
| Figure 5.102:: Removing vacuum chamber door fasteners with door in open position..... | 5-61 |
| Figure 5.103:: Pushing lower hinge arms inward..... | 5-62 |
| Figure 5.104:: Vacuum door rotated to top of machine..... | 5-63 |
| Figure 5.105:: Bonded washer and plastic bushings..... | 5-64 |
| Figure 5.106:: Chamber door positioned for re-attachment..... | 5-65 |
| Figure 5.107:: Removing the fill chamber receiver latch | 5-66 |
| Figure 5.108:: Removing the fill chamber receiver latch | 5-67 |
| Figure 5.109:: Removing the seal plate | 5-67 |
| Figure 5.110:: Removing the receiver plate..... | 5-68 |
| Figure 5.111:: Securing the receiver plate | 5-68 |
| Figure 5.112:: Replacing the seal pad..... | 5-69 |
| Figure 5.113:: Removing the seal pad | 5-70 |
| Figure 5.114:: Replacing the seal pad..... | 5-71 |
| Figure 5.115:: Removing the seal plate | 5-71 |
| Figure 5.116:: Replacing the seal plate..... | 5-72 |
| Figure 5.117:: Vacuum chamber reed sensor connection on the vacuum chamber PC board..... | 5-73 |
| Figure 5.118:: Vacuum chamber reed sensor | 5-73 |
| Figure 5.119:: Vacuum chamber sensor | 5-74 |
| Figure 5.120:: Vacuum chamber reed sensor connection on the vacuum chamber PC board..... | 5-74 |
| Figure 5.121:: HP45 connections at the vacuum chamber I/O PC board | 5-75 |
| Figure 5.122:: HP45 vacuum tubing at waste vacuum manifold..... | 5-75 |
| Figure 5.123:: HP45 cleaning fluid line at the fluid distribution manifold | 5-76 |
| Figure 5.124:: HP45 ink line connected to the valve..... | 5-76 |
| Figure 5.125:: Removing the HP45 station fasteners | 5-77 |
| Figure 5.126:: HP45 connections at the vacuum chamber I/O PC board | 5-78 |
| Figure 5.127:: HP45 vacuum line at vacuum manifold | 5-78 |
| Figure 5.128:: HP45 cleaning fluid line at the water distribution manifold | 5-79 |
| Figure 5.129:: HP45 ink line connected to the valve..... | 5-79 |
| Figure 5.130:: Replacing the HP45 station fasteners..... | 5-80 |

| | |
|---|-------|
| Figure 5.131:: Removing the HP45 station fasteners | 5-81 |
| Figure 5.132:: Removing the HP45 station | 5-81 |
| Figure 5.133:: Removing the HP45 station side and back plates | 5-82 |
| Figure 5.134:: Removing the HP45 station manifold | 5-82 |
| Figure 5.135:: Removing the HP station seal | 5-83 |
| Figure 5.136:: Securing the HP45 station chamber to the station manifold | 5-84 |
| Figure 5.137:: Inserting the back plate on the HP45 station assembly | 5-85 |
| Figure 5.138:: Inserting the right side plate onto the HP45 station assembly | 5-85 |
| Figure 5.139:: Fasteners on the right side of the HP45 station assembly | 5-86 |
| Figure 5.140:: Fasteners that secure the HP45 station..... | 5-86 |
| Figure 5.141:: Dispense tubing connected to the fluid distribution valve | 5-87 |
| Figure 5.142:: Fasteners that secure the fluid distribution valve | 5-88 |
| Figure 5.143:: Slat correctly positioned on the back of the fluid distribution valve | 5-88 |
| Figure 5.144:: Fluid distribution valve | 5-89 |
| Figure 5.145:: Fasteners that secure the fluid distribution valve to the infusion pump assembly..... | 5-89 |
| Figure 5.146:: Dispense tubing connected to the fluid distribution valve | 5-90 |
| Figure 5.147:: Home position on valve and drive post..... | 5-91 |
| Figure 5.148:: Fasteners that connect each of the fluid distribution valves to the infusion pump drive system | 5-91 |
| Figure 5.149:: DB25 connection on the back of the infusion pump drive system | 5-92 |
| Figure 5.150:: Hex nuts that secure the infusion pump drive system..... | 5-92 |
| Figure 5.151:: Mounting studs for infusion pump drive system assembly..... | 5-93 |
| Figure 5.152:: Mounting holes on infusion pump drive system | 5-93 |
| Figure 5.153:: DB25 connection on the back of the infusion pump drive system | 5-94 |
| Figure 5.154:: Fasteners that connect each of the fluid distribution valves to the infusion pump drive system | 5-94 |
| Figure 5.155:: Syringe and valve removed as a unit..... | 5-95 |
| Figure 5.156:: Shoulder screws that hold the syringe plunger buttons to the drive bar | 5-96 |
| Figure 5.157:: Location of syringe mounting hole on infusion valve | 5-97 |
| Figure 5.158:: Location of fasteners that secure syringe | 5-97 |
| Figure 5.159:: Removing the fasteners from the upper hinge arms..... | 5-98 |
| Figure 5.160:: Releasing the upper hinge arms | 5-99 |
| Figure 5.161:: Hinge arms rotated up | 5-99 |
| Figure 5.162:: Extension spring fastener | 5-100 |
| Figure 5.163:: Loosening the fastener on the hex bar clamp..... | 5-100 |
| Figure 5.164:: Tightening the fastener on the hex bar clamp | 5-100 |
| Figure 5.165:: Extension spring fastener | 5-101 |
| Figure 5.166:: Hinge arms rotated up | 5-101 |
| Figure 5.167:: Inserting the upper hinge arms | 5-102 |
| Figure 5.168:: Inserting the fasteners into the upper hinge arms..... | 5-102 |
| Figure 5.169:: Location of fasteners under right side vacuum gasket flap..... | 5-103 |
| Figure 5.170:: Location of all fasteners under vacuum gasket flap..... | 5-103 |
| Figure 5.171:: Location of fasteners under right side vacuum gasket flap..... | 5-104 |
| Figure 5.172:: Location of all fasteners under vacuum gasket flap..... | 5-105 |
| Figure 5.173:: Location of new securing point on fill chamber gasket | 5-106 |
| Figure 5.174:: Removing the fasteners from the upper hinge arms..... | 5-107 |

| | |
|--|-------|
| Figure 5.176:: Hinge arms rotated up | 5-108 |
| Figure 5.177:: Extension spring fastener | 5-108 |
| Figure 5.178:: Loosening the fastener on the hex bar clamp | 5-108 |
| Figure 5.179:: Location of spring arm levers on the spring arm rod | 5-109 |
| Figure 5.180:: Location of spring arm levers on the spring arm rod | 5-109 |
| Figure 5.181:: Correct orientation of hinge arm and spring rod assembly | 5-110 |
| Figure 5.182:: Installing the vacuum chamber hinge | 5-110 |
| Figure 5.183:: Installing the vacuum chamber hinge | 5-111 |
| Figure 5.184:: Location of spring arm levers on the spring arm rod | 5-112 |
| Figure 5.185:: Location of spring arm levers on the spring arm rod | 5-113 |
| Figure 5.186:: Fasteners that secure the panel to the top of the ink drawer | 5-114 |
| Figure 5.187:: Location of the ink drawer PC board | 5-114 |
| Figure 5.188:: Ink nest connectors on the ink drawer PC board..... | 5-114 |
| Figure 5.189:: CAT5 cable connector on the ink drawer PC board..... | 5-115 |
| Figure 5.190:: Location of mounting grommets on the ink drawer PC board..... | 5-115 |
| Figure 5.191:: Location of mounting grommets on the ink drawer PC board..... | 5-116 |
| Figure 5.192:: CAT5 cable connector on the ink drawer PC board..... | 5-116 |
| Figure 5.193:: Location of the ink drawer PC board | 5-116 |
| Figure 5.194:: Ink nest connectors on the ink drawer PC board..... | 5-117 |
| Figure 5.195:: Fasteners that secure the housing to the top of the ink drawer | 5-117 |
| Figure 5.196:: Vacuum chamber sensor connections on the vacuum chamber PC board..... | 5-118 |
| Figure 5.197:: Ink sensor locations | 5-118 |
| Figure 5.198:: Vacuum chamber door sensor location | 5-119 |
| Figure 5.199:: Ink sensor locations | 5-119 |
| Figure 5.200:: Vacuum chamber door sensor location | 5-120 |
| Figure 5.201:: Vacuum chamber sensor connections on the vacuum chamber PC board..... | 5-120 |
| Figure 5.202:: Small white circle on back of sensor..... | 5-121 |
| Figure 5.203:: Light on indicating nut is properly tightened..... | 5-122 |
| Figure 5.204:: Fasteners that secure the panel to the top of the ink drawer | 5-123 |
| Figure 5.205:: Ink nest connections on the ink drawer PC board..... | 5-123 |
| Figure 5.206:: Ink nest connectors on the ink drawer PC board..... | 5-123 |
| Figure 5.207:: Ink tubing connected to the ink nest | 5-124 |
| Figure 5.208:: Location of ink nest mounting tab | 5-124 |
| Figure 5.209:: Location of ink nest mounting tab | 5-125 |
| Figure 5.210:: Ink tubing connected to the ink nest | 5-125 |
| Figure 5.211:: Ink nest connections on the ink drawer PC board..... | 5-126 |
| Figure 5.212:: Ink nest connectors on the ink drawer PC board..... | 5-126 |
| Figure 5.213:: Fasteners that secure the panel to the top of the ink drawer | 5-126 |
| Figure 5.214:: Tubing connector required parts | 5-127 |
| Figure 5.215:: First valve fitting | 5-128 |
| Figure 5.216:: Valve flanged end, washers, and o-ring | 5-128 |
| Figure 5.217:: Valve fitting pushed back..... | 5-129 |
| Figure 5.218:: Cutting tube with cutter..... | 5-129 |
| Figure 5.219:: New fitting and ferrule on tube | 5-130 |
| Figure 5.220:: Reattached tubes with new fittings and ferrules..... | 5-130 |

| | |
|--|-------|
| Figure 5.221:: Fasteners that secure the tester interconnect board | 5-131 |
| Figure 5.222:: Connections on the back of the interconnect PC board | 5-132 |
| Figure 5.223:: Tester connections on the tester backplane PC board | 5-132 |
| Figure 5.224:: *Vacuum tubing connection at the main vacuum manifold, located in the plumbing tower. 5-133 | |
| Figure 5.225:: Fasteners that secure the tester assembly to the system frame, viewed from inside the elec- trical tower | 5-133 |
| Figure 5.226:: Fasteners that secure the tester assembly to the system frame, viewed from inside the elec- trical tower | 5-134 |
| Figure 5.227:: Connections end of tester scanner cable | 5-135 |
| Figure 5.228:: Tester connections on the tester backplane PC board | 5-135 |
| Figure 5.229:: *Vacuum tubing connection at the main vacuum manifold, located in the plumbing tower. 5-136 | |
| Figure 5.230:: Connections on the back of the interconnect PC board | 5-136 |
| Figure 5.231:: Fasteners that secure the tester interconnect board | 5-137 |
| Figure 5.232:: Location of tester fixture cover | 5-138 |
| Figure 5.233:: Fasteners that secure the tester fixture cover to the back of the tester interface assembly ... 5-138 | |
| Figure 5.234:: Test fixture cover fasteners attached to the back of the tester interface assembly..... | 5-139 |
| Figure 5.235:: Fasteners that secure the tester fixture cover to the back of the tester interface assembly ... 5-139 | |
| Figure 5.236:: Fasteners that secure the tester interconnect board | 5-140 |
| Figure 5.237:: Connections on the back of the interconnect PC board | 5-140 |
| Figure 5.238:: Connections on the back of the interconnect PC board | 5-141 |
| Figure 5.239:: Fasteners that secure the tester interconnect board | 5-141 |
| Figure 5.240:: Location of tester latch assembly | 5-142 |
| Figure 5.241:: Fasteners that secure latch assembly to front of tester assembly | 5-142 |
| Figure 5.242:: Mounting pins on the back of the tester latch assembly | 5-143 |
| Figure 5.243:: Mounting and locating holes on front of the tester assembly | 5-143 |
| Figure 5.244:: Fasteners that secure latch assembly to front of tester assembly | 5-144 |
| Figure 5.245:: Fasteners that secure the front paper guide to the tester assembly..... | 5-145 |
| Figure 5.246:: Mounting holes on tester front paper guide | 5-145 |
| Figure 5.247:: Mounting holes for front paper guide on tester assembly | 5-146 |
| Figure 5.248:: Top rear tester paper guide fastener loosely installed | 5-146 |
| Figure 5.249:: Location of the thru-beam paper sensors from the back of the tester assembly | 5-147 |
| Figure 5.250:: Fasteners that secure paper sensors to the rear tester assembly wall | 5-147 |
| Figure 5.251:: Pem stud and mounting holes on rear wall of tester assembly | 5-148 |
| Figure 5.252:: Thru-beam paper sensor head | 5-148 |
| Figure 5.253:: Fastener that secures the paper sensor to the rear tester assembly wall..... | 5-149 |
| Figure 5.254:: Scanner cable connection to the tester scanner module | 5-149 |
| Figure 5.255:: Proper orientation for scanner cable..... | 5-150 |
| Figure 5.256:: Scanner cable connection to the tester scanner module | 5-150 |
| Figure 5.257:: Fastener that secures the tester top latch to the tester fixture mount..... | 5-151 |
| Figure 5.258:: Mounting holes on the bottom of the tester top latch..... | 5-152 |
| Figure 5.259:: Mounting hole and locating pins on top of test fixture mount..... | 5-152 |
| Figure 5.260:: Fastener that secures the tester top latch to the tester fixture mount..... | 5-152 |

| | |
|--|-------|
| Figure 5.261:: DC power supply connection to AC/DC power distribution PC board | 5-154 |
| Figure 5.262:: AC cable connection on top of AC/DC power supply | 5-154 |
| Figure 5.263:: Fasteners that secure the DC power supply to the system frame | 5-155 |
| Figure 5.264:: Fasteners that secure the DC power supply to the system frame | 5-156 |
| Figure 5.265:: AC cable connection on top of AC/DC power supply | 5-156 |
| Figure 5.266:: DC power supply connection to AC/DC power distribution PC board | 5-157 |
| Figure 5.267:: Cable connections on top of the touchscreen assembly | 5-159 |
| Figure 5.268:: Touchscreen assembly power cord | 5-160 |
| Figure 5.269:: Fastener that secures the touchscreen assembly | 5-160 |
| Figure 5.270:: Touchscreen monitor mounting slots on the system frame | 5-161 |
| Figure 5.271:: Cabling at the bottom of the touchscreen assembly | 5-161 |
| Figure 5.272:: Fastener that secures the touchscreen assembly | 5-162 |
| Figure 5.273:: Cable connections on top of the touchscreen assembly | 5-162 |
| Figure 5.274:: Extending Wireless Modem Antenna | 5-163 |
| Figure 5.275:: Wireless Modem Plugged in to Top Left USB Port | 5-164 |
| Figure 5.276:: Location of AC/DC power distribution PC board in the electrical tower | 5-164 |
| Figure 5.277:: Cable connectors on the AC/DC power distribution PC board | 5-165 |
| Figure 5.278:: Main I-O PC board | 5-166 |
| Figure 5.279:: Fasteners that secure the main I/O PC board | 5-167 |
| Figure 5.280:: Main I/O PC board mounting studs | 5-168 |
| Figure 5.281:: Fasteners that secure the main I/O PC board | 5-168 |
| Figure 5.282:: Cable connectors on the main I/O PC board | 5-170 |
| Figure 5.283:: Cable connections at the tester PC backplane board | 5-171 |
| Figure 5.284:: Fasteners that secure the tester board set | 5-172 |
| Figure 5.285:: Fasteners that secure the tester board set | 5-173 |
| Figure 5.286:: Cable connections at the tester PC backplane board | 5-174 |
| Figure 5.287:: Cable connections on the vacuum chamber PC board | 5-175 |
| Figure 5.288:: Fasteners that secure the vacuum chamber PC board | 5-175 |
| Figure 5.289:: Fasteners that secure the vacuum chamber PC board | 5-176 |
| Figure 5.290:: Cable connections on the vacuum chamber PC board | 5-177 |
| Figure 5.291:: Fluid pump cable at connection P4 on the AC/DC power distribution PC board | 5-178 |
| Figure 5.292:: Tubing connected to the fluid pump that runs to the fluid distribution manifold | 5-178 |
| Figure 5.293:: Fluid pump mounting springs | 5-179 |
| Figure 5.294:: Fluid pump mounting springs | 5-179 |
| Figure 5.295:: Tubing connected to the fluid pump that runs to the fluid distribution manifold | 5-180 |
| Figure 5.296:: Fluid pump cable at connection P4 on the AC/DC power distribution PC board | 5-180 |
| Figure 5.297:: Tubing connected to the fluid manifold assembly | 5-181 |
| Figure 5.298:: Fasteners that secure the fluid manifold | 5-181 |
| Figure 5.299:: Fasteners that secure the fluid manifold | 5-182 |
| Figure 5.300:: Tubing connected to the fluid manifold assembly | 5-183 |
| Figure 5.301:: Vacuum tubing connected to the top of the liquid separator assembly | 5-184 |
| Figure 5.302:: Fasteners that secure the top of the gutter | 5-184 |
| Figure 5.303:: Fastener that secures the bottom of the gutter | 5-185 |
| Figure 5.304:: Vacuum cleanup wand tubing connection to liquid separator | 5-185 |
| Figure 5.305:: Elbow connector rotated on the top of liquid separator | 5-185 |
| Figure 5.306:: Disconnecting the line connected to the bottom of the liquid separator | 5-186 |

| | |
|--|-------|
| Figure 5.307:: Liquid separator assembly cable connection on I/O PC board | 5-186 |
| Figure 5.308:: Fasteners that secure the liquid separator assembly to the system frame | 5-187 |
| Figure 5.309:: Correct alignment of connectors on top of liquid separator assembly..... | 5-188 |
| Figure 5.310:: Correct alignment within the plumbing tower | 5-188 |
| Figure 5.311:: Fasteners that secure the liquid separator assembly to the system frame | 5-189 |
| Figure 5.312:: Liquid separator assembly cable connection on I/O PC board | 5-189 |
| Figure 5.313:: Vacuum cleanup wand tubing connected to the back of the liquid separator lid..... | 5-190 |
| Figure 5.314:: Waste tank tubing connected to the bottom of the liquid separator assembly | 5-190 |
| Figure 5.315:: Tubing connected to the top of the liquid separator assembly | 5-191 |
| Figure 5.316:: Fasteners that secure the gutter to the system frame..... | 5-191 |
| Figure 5.317:: Fastener that secures the bottom of the gutter..... | 5-192 |
| Figure 5.318:: New Compression Fitting | 5-193 |
| Figure 5.319:: New Compression Fitting with Rings Properly Spaced..... | 5-194 |
| Figure 5.320:: Wand Properly Positioned in Maintenance Drawer | 5-195 |
| Figure 5.321:: New Vacuum Wand Closed Position | 5-196 |
| Figure 5.322:: New Vacuum Wand Open Position | 5-196 |
| Figure 5.323:: Fasteners that secure the top plate to the maintenance drawer | 5-197 |
| Figure 5.324:: Level switch/siphon assembly tubing and cable connections | 5-197 |
| Figure 5.325:: Removing the level switch/siphon assembly | 5-198 |
| Figure 5.326:: Removing the rubber grommet from the cleaning fluid tank..... | 5-198 |
| Figure 5.327:: Removing the rubber grommet from the level switch/siphon assembly..... | 5-199 |
| Figure 5.328:: Inserting the rubber grommet into the cleaning fluid tank..... | 5-199 |
| Figure 5.329:: Inserting the level switch/siphon assembly..... | 5-199 |
| Figure 5.330:: Level switch/siphon assembly tubing and cable connections | 5-200 |
| Figure 5.331:: Fasteners that secure the top plate to the maintenance drawer | 5-200 |
| Figure 5.332:: Vacuum pump cable at connection P6 on the AC/DC power distribution PC board .. | 5-201 |
| Figure 5.333:: Vacuum tubing connected to the vacuum pump | 5-201 |
| Figure 5.334:: Fasteners that secure the vacuum pump to the system frame | 5-202 |
| Figure 5.335:: Fasteners that secure the vacuum pump to the system frame | 5-202 |
| Figure 5.336:: Vacuum pump cable at connection P6 on the AC/DC power distribution PC board .. | 5-203 |
| Figure 5.337:: Vacuum tubing connected to the vacuum pump | 5-203 |
| Figure 5.338:: Fasteners that secure the fluid manifold..... | 5-204 |
| Figure 5.339:: Fluid distribution manifold moved outside the system frame..... | 5-204 |
| Figure 5.340:: Waste vacuum manifold tubing | 5-205 |
| Figure 5.341:: Waste vacuum manifold cable connections on the main I/O PC board | 5-205 |
| Figure 5.342:: Fasteners that secure the waste vacuum manifold | 5-206 |
| Figure 5.343:: Fasteners that secure the fluid manifold..... | 5-206 |
| Figure 5.344:: Fluid distribution manifold moved outside the system frame..... | 5-207 |
| Figure 5.345:: Fasteners that secure the waste vacuum manifold | 5-207 |
| Figure 5.346:: Waste vacuum manifold cable connections on the main I/O PC board | 5-208 |
| Figure 5.347:: Tubing connections on the waste vacuum manifold | 5-208 |
| Figure 5.348:: Vacuum manifold connections on the main I/O PC board | 5-209 |
| Figure 5.349:: Vacuum pump connector to the main vacuum manifold | 5-210 |
| Figure 5.350:: Vacuum tester connector to the main vacuum manifold..... | 5-210 |
| Figure 5.351:: Liquid separator vacuum connector | 5-210 |
| Figure 5.352:: Fasteners that secure the manifold to the system frame..... | 5-211 |

| | |
|---|------------|
| Figure 5.353:: Tubing connected to side connectors on the primary vacuum manifold..... | 5-211 |
| Figure 5.354:: Fasteners that secure the manifold to the system frame..... | 5-212 |
| Figure 5.355:: Vacuum pump connector to the primary vacuum manifold..... | 5-212 |
| Figure 5.356:: Vacuum tester connector to the primary vacuum manifold | 5-212 |
| Figure 5.357:: Liquid separator vacuum connector | 5-213 |
| Figure 5.358:: Primary vacuum manifold connectors on the main I/O PC board | 5-213 |
| Figure 5.359:: Vacuum manifold tubing connectors on the vacuum regulator assembly | 5-214 |
| Figure 5.360:: Spanner nut that secures the vacuum regulator | 5-214 |
| Figure 5.361:: Spanner nut on the vacuum regulator assembly..... | 5-215 |
| Figure 5.362:: Inserting the vacuum regulator into its mounting bracket | 5-215 |
| Figure 5.363:: Spanner nut that secures the vacuum regulator | 5-216 |
| Figure 5.364:: Vacuum manifold tubing connectors on the vacuum regulator assembly | 5-216 |
| Figure 6.1:: Tech Pane Main Screen..... | 6-3 |
| Figure 6.2:: Tester Board tab of the Tech Pane..... | 6-6 |
| Figure 6.3:: Tests Page of the Tech Pane..... | 6-8 |
| Figure 6.4:: Priming Ink Lines Test in Process | 6-9 |
| Figure 6.5:: Syringe Cal Test in Process..... | 6-10 |
| Figure 6.6:: Prep A/B Flow Check Test in Process | 6-11 |
| Figure 6.7:: Chamber Leak Test Results | 6-12 |
| Figure 6.8:: Syringe Leak Test Screen..... | 6-13 |
| Figure 6.9:: Syringe Leak Test, Fluid Dispensing to Ports..... | 6-14 |
| Figure 6.10:: Syringe Leak Test, Syringes Moved to Bottom | 6-15 |
| Figure 6.11:: Syringe Leak Test, Demonstration of Syringe Leak | 6-16 |
| Figure 6.12:: Syringe Digital Signals Test in Progress..... | 6-17 |
| Figure 6.13:: Sep Vacuum Test in Progress | 6-18 |
| Figure 7.1:: Syringe Cal Test in Process..... | 7-6 |
| Figure 7.2:: Syringe Leak Test, Fluid Dispensing to Ports..... | 7-7 |
| Figure 7.3:: Syringe Leak Test, Valves Moved to Port | 7-8 |
| Figure 7.4:: Syringe Leak Test, Syringes Moved to Bottom | 7-9 |
| Figure 7.5:: Syringe Leak Test, Demonstration of Syringe Leak | 7-10 |
| Figure 7.6:: Location of interlock guide plates | 7-11 |
| Figure 7.7:: Areas to lubricate | 7-11 |
| Figure 7.8:: Removing tubing from prep station A | 7-12 |
| Figure 7.9:: Liquid separator assembly components | 7-15 |
| Figure 7.10:: Float sensor assembly | 7-15 |
| Figure 7.11:: Cleaned components assembled..... | 7-15 |
| Figure 7.12:: New Compression Fitting | 7-16 |
| Figure 7.13:: New Compression Fitting with Rings Properly Spaced..... | 7-17 |
| Figure 7.14:: Example of good flow at a prep station | 7-18 |
| Figure 7.15:: Example of bad flow at a prep station..... | 7-19 |
| Figure 8.1:: Drill press assembly | 8-4 |
| Figure 8.2:: External drill station components..... | 8-5 |
| Figure 8.3:: Prep station assembly | 8-6 |
| Figure 8.4:: Prep station receiver plate assembly | 8-7 |
| Figure 8.5:: Prep station seal..... | 8-7 |
| Figure 8.6:: Prep station vacuum filters..... | 8-8 |

| | |
|--|------|
| Figure 8.7:: Vacuum chamber assembly..... | 8-11 |
| Figure 8.8:: Vacuum chamber door | 8-12 |
| Figure 8.9:: Vacuum chamber door hinge arm | 8-12 |
| Figure 8.10:: Location of spring arm levers on the spring arm rod | 8-13 |
| Figure 8.11:: Vacuum chamber receiver seal plate..... | 8-13 |
| Figure 8.12:: Vacuum chamber upper door arm..... | 8-14 |
| Figure 8.13:: Vacuum gasket | 8-14 |
| Figure 8.14:: HP45 station assembly | 8-15 |
| Figure 8.15:: HP45 station seal..... | 8-15 |
| Figure 8.16:: Vacuum chamber reed sensor | 8-16 |
| Figure 8.17:: RFID reader..... | 8-16 |
| Figure 8.18:: Infusion pump drive system..... | 8-17 |
| Figure 8.19:: Syringes..... | 8-17 |
| Figure 8.20:: Fluid distribution valve | 8-18 |
| Figure 8.21:: Fasteners that secure the panel to the top of the ink drawer | 8-18 |
| Figure 8.22:: Tester station assembly with tester cover removed..... | 8-20 |
| Figure 8.23:: Rear inside view of tester station assembly | 8-20 |
| Figure 8.24:: Tester top latch | 8-21 |
| Figure 8.25:: Tester cover fixture | 8-21 |
| Figure 8.26:: Location of the thru-beam paper sensors from the back of the tester assembly | 8-22 |
| Figure 8.27:: Tester interconnect board | 8-22 |
| Figure 8.28:: Front paper guide | 8-23 |
| Figure 8.29:: tester station cover and handle | 8-23 |
| Figure 8.30:: Main I-O PC board..... | 8-24 |
| Figure 8.31:: Location of AC/DC power distribution PC board in the electrical tower..... | 8-25 |
| Figure 8.32:: Ink nest connectors on the ink drawer PC board..... | 8-25 |
| Figure 8.33:: Touchscreen assembly | 8-26 |
| Figure 8.34:: Cable connections on top of the touchscreen assembly | 8-26 |
| Figure 8.35:: Cable connections on the vacuum chamber PC board | 8-27 |
| Figure 8.36:: Fluid sensor board connections | 8-27 |
| Figure 8.37:: Cable connections at the tester PC backplane board..... | 8-28 |
| Figure 8.38:: Power supply | 8-29 |
| Figure 8.39:: Liquid separator assembly..... | 8-32 |
| Figure 8.40:: Fluid distribution manifold | 8-32 |
| Figure 8.41:: Fluid pump | 8-33 |
| Figure 8.42:: Level switch/siphon assembly..... | 8-33 |
| Figure 8.43:: Level switch/siphon assembly..... | 8-33 |
| Figure 8.44:: Waste drain valve | 8-34 |
| Figure 8.45:: Vacuum pump | 8-34 |
| Figure 8.46:: Main vacuum manifold | 8-35 |
| Figure 8.47:: Vacuum regulator assembly | 8-35 |
| Figure 8.48:: Vacuum distribution manifold | 8-36 |
| Figure 8.49:: Syringe pumps cover..... | 8-37 |
| Figure 8.50:: Upper hood fan and stationary side spring contacts..... | 8-38 |
| Figure 8.51:: Upper hood fan power contacts..... | 8-38 |
| Figure 8.52:: Interlock guide plates cover | 8-39 |
