APM-HDC-4000

Optical Fiber Polishing Machine

User's Guide
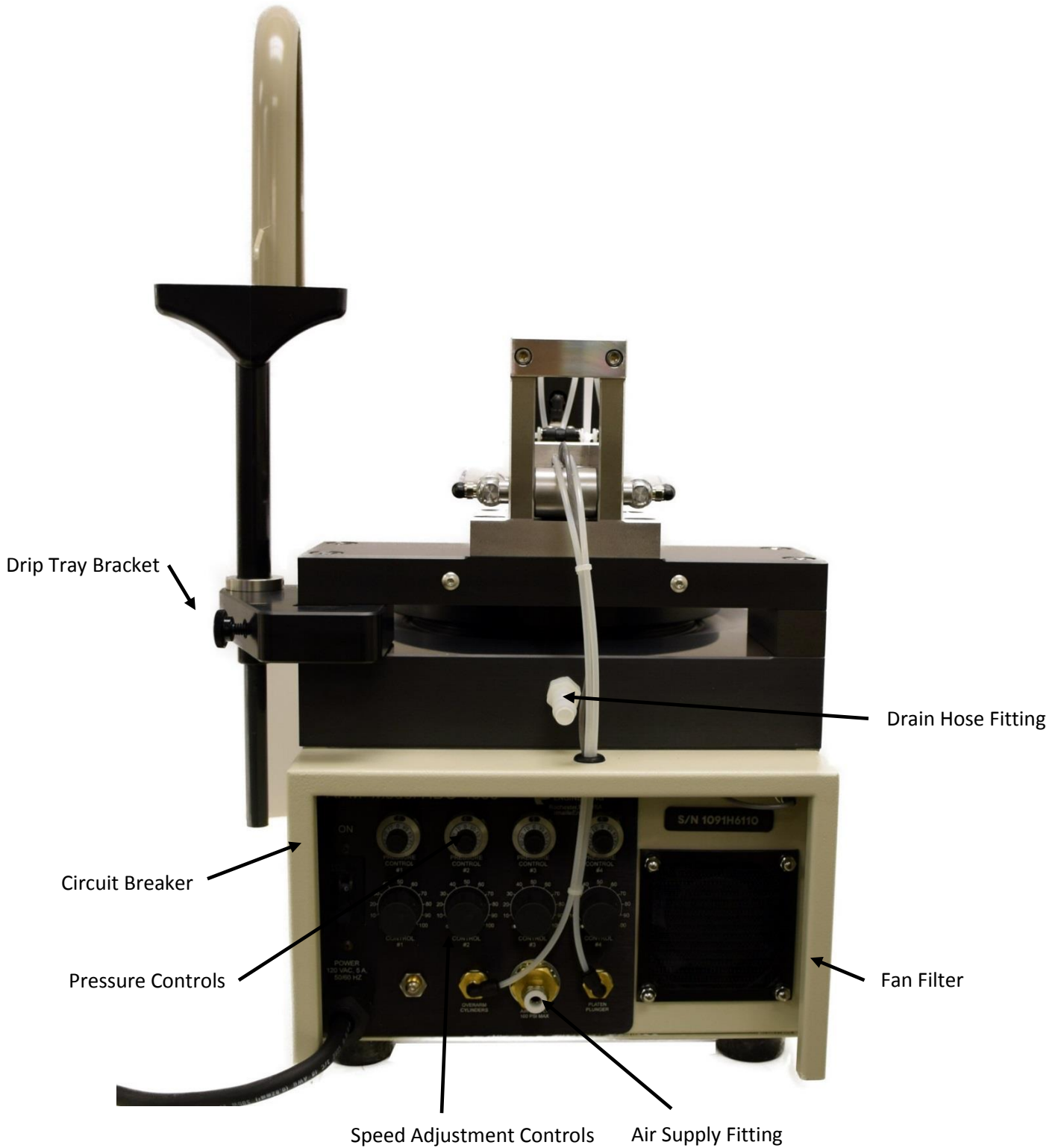
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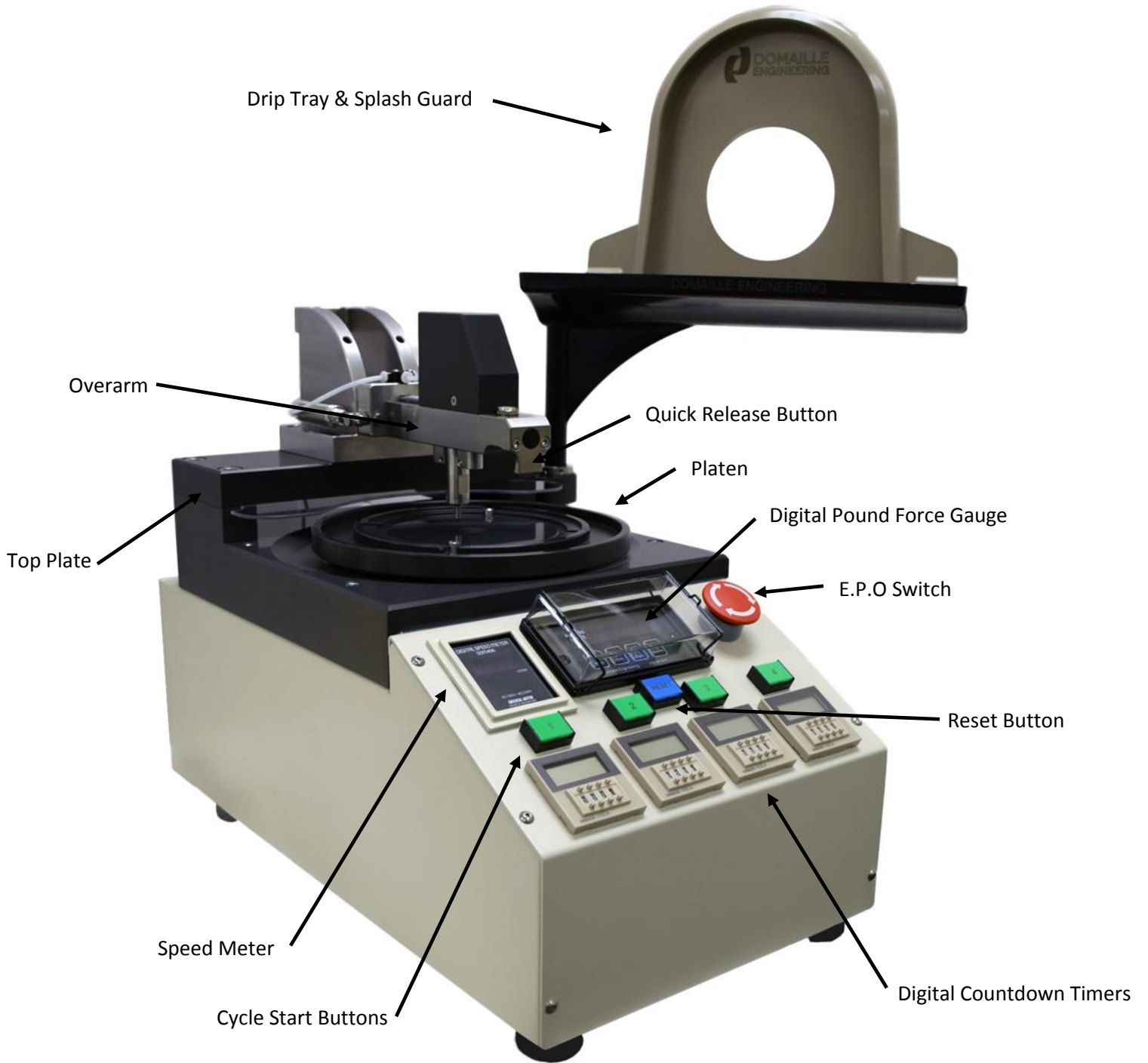
Machine Diagram (Back Side):

Drip Tray Bracket

Drain Hose Fitting

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S/N 1091H6110

Speed Adjustment Controls

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Unpacking & Setup

NOTE: Due to the weight of the APM- HDC-4000, it is recommended that two people lift it from the shipping case.

- Remove all loose components from machine area in shipping case.
- Remove the plastic bag from around the Overarm to provide access to the Overarm.
- Use the Overarm as a lifting handle by grabbing as close to the Overarm pivot as possible.
- Lift the machine straight up while firmly holding the case down on the outside edges. If the machine is lifted at an angle, it will cause binding in the case.
- Gently place the machine on a suitable work surface.
- Remove the rest of the plastic bag and the power cord protection package.
- Inspect the machine for any damage that may have occurred in shipping.
- Remove blue Koby Air Filter from the shipping case.
- Remove black cap from air supply fitting on back of machine and connect plastic airline provided. Fasten securely. Connect other end of airline to black capped end of Koby Air Filter.
- Using the proper air supply fittings, connect the red capped end of the Koby Air Filter into your compressed air system. The inlet of the Koby Air Filter is ¼" pipe thread. The compressed air requirements are: 80-100 pounds per square inch, clean, dry, oil-free air.
- Remove Optional Cable Management bracket located inside compartment of shipping case. Loosen the two screws on back of machine with provided 1/8" Allen wrench. Slide bracket onto screws with angled edge of bracket arms facing machine. Tighten screws to secure in place.
- The Drip Tray Bracket can be installed either on the right or left side of machine, based upon operator's preference.
- Remove front top plate screw on preferred side, with provided 3/8" Allen wrench, by turning counter clockwise. Insert Drip Tray Bracket spacer into empty top plate screw hole. Place bracket over spacer with flat side up, as shown below. Insert top plate screw and tighten securely.
- Remove Drip Tray from shipping case lid and slide Drip Tray into bracket.

Drip Tray Bracket
Top Plate
Drip Tray Bracket Spacer
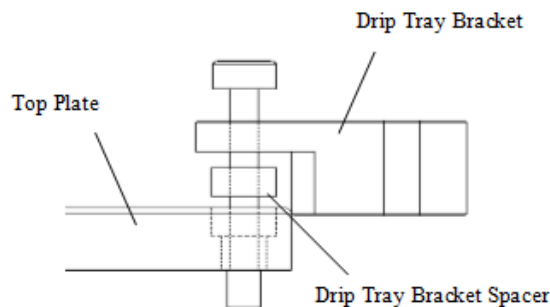
- Connect Drain Hose provided to Drain Hose fitting on back of machine.
- Timer covers are included to protect the timer mechanisms from dirt and dust particles. Two sets have been provided. The pliable covers allow for easy timing adjustments. The hard covers are used when operators will not be needing to access the timers.

- **In order to raise & lower the Overarm, it is necessary to release the Overarm Locking Mechanism. This is accomplished by pressing the Overarm Quick-Release Button located at the front of the Overarm and lifting the Overarm. Releasing the Quick-Release Button will allow the Overarm to lock in one of three fixed positions.**
Remove foam placed under the Overarm shaft by raising the Overarm to the vertical position and locking in place.

Precautions

For safe, effective operation of the APM HDC-4000 Polishing Machine, please observe the following:

- Keep hands, jewelry, hair and loose clothing away from the rotating platen while the machine is in operation.
- Keep all surfaces of the machine clean at all times. Confine water/slurry to platen area.
- **WARNING: Do not use an air hose on or around the platen. This forces water and contaminants into the wear surfaces and mechanical drive unit, potentially causing machine failure. Damage caused by air hose use is not covered under warranty.**
- Do not attempt to repair or service inside the APM HDC-4000. Contact Domaille Engineering, LLC if service is required.
- **Due to the weight of the APM, it is recommended that two people move or lift the machine.**

Machine Operation

- Plug the power cord into a properly grounded outlet—120VAC, 50/60 Hz. You MUST push the reset button on the front of the plug to supply power to the machine. When voltage exceeds 120VAC, a transformer is required and can be obtained from Domaille Engineering, LLC.
- Switch the circuit breaker located in the rear of the machine to the "ON" position.
- Turn the red Emergency Power Off (EPO) button, located on the front control panel, in the direction of the arrows (clockwise). This will release the button and the fan will start.
- Set the four digital timers on the front panel to zero.
- The control knobs that adjust both the platen speed and pressure are located on the back of the machine.   Turn the four Speed Control knobs to zero.
- **WARNING: If the Speed Control knobs have not been set to zero, the platen may move during pressure set up process.**
- Verify that the Digital Pound Force gauge has a setting ranging from .00 to .03. If the gauge reading is outside of this range, the gauge will need to be reset.   To reset the gauge, clear area under Overarm shaft and move Overarm to the horizontal position. Remove plastic cover over the Digital Pound Force gauge, and press the down arrow at gauge base until "tArE" appears on panel. Gauge should display .00. Replace plastic cover.
- Raise the Overarm to the vertical position and lock in place.

Setting Platen Pressure, Speed and Time:

- The pressure, speed and time for all steps in your polishing process need to be set at this point. Pressure limits will be set first for each step in the process, followed by speed for each step, then time.

- Remove Pressure Setting block from plastic bag. Place block, recessed pocket face down, directly under Overarm shaft while lowering the Overarm to the horizontal position**. The Overarm must be locked in the horizontal position whenever adjusting platen pressure.**
- **WARNING: If the Speed Control knobs have not been set to zero, the platen may move with the setting block in place causing damage.**
- **Pressure Setting:** To set up cycle #1, press and release the green #1 Cycle Start button located on the front control panel. Set platen pressure by turning Pressure Control #1, on back of machine, to the desired force. The Digital Pound Force gauge, on front control panel, indicates the platen pressure. Turning the Pressure Control knob clockwise will increase the force. Once desired pressure is reached, press the reset button.
- Continue setting pressure for remaining cycles by pressing green Cycle Start button for corresponding cycle and repeating Pressure setting step.
- Lift Overarm to remove setting block and return Overarm to horizontal position.
- **Speed Setting:** After setting block is removed, press Cycle Start button #1 on front of machine. Set platen speed by turning Speed Control for cycle #1 on back of machine to the desired speed indicated on the Speed Meter on front of machine. Once desired speed is reached, press the reset button.
- Continue setting speed for remaining cycles by pressing the Cycle Start button for the corresponding cycle and repeating Speed setting step.
- **Time Setting:** Set the time of cycle #1 to the desired run time using the Digital Countdown timer on the front of the machine. Seven different time unit options are available:

Unit	Description
0.1s	1/10 of a second
s	Second
0.1m	1/10 of a minute
m	Minute
0.1h	1/10 of an hour
h	Hour
10h	10 Hour

- Continue setting time for remaining cycles.

Polishing Fixture Installation

- **This process should not be performed when cycle is running.**
- To install a polishing fixture on the Overarm shaft, raise and lock the Overarm in the vertical position.
- Ensure Overarm shaft and fixture bore are clean before proceeding. With Fixture Retaining screw facing upward, place fixture on the shaft and slide it up onto the keys. Tighten Fixture Retaining screw. The screw allows fixture to slide on shaft without falling off.
- Lower and lock the Overarm in horizontal position by placing your right index finger under the curve at the front of the Overarm and your right thumb on the Quick Release button. Push the

fixture up against the Overarm with your left hand as you lower the Overarm using your left index finger to support the Fixture Retaining screw. Release button and slowly lower fixture onto platen. This technique should be used whenever moving the Overarm with a fixture in place to protect both the fixture and the platen.

- Drape cables extending from fixture over Cable Management bracket.

Polishing Pad & Film

- Abrasive polishing films must be placed on rubber pads, glass or ceramic plates.
- To install a pad or plate, raise Overarm and place polishing pad or plate on the platen. Place the appropriate polishing film on the pad following manufacturer recommendations regarding adhesive backing.
- Lower arm to the horizontal position using the technique detailed under Fixture Installation.

Operation

- Once cycles are set, polishing fixture has been installed, and pads and polishing film are in place, polishing sequence can begin.

Machine Maintenance

- Gentle handling of the polishing fixtures and machine is critical to maintain polishing accuracy. If the platen or polishing fixture are damaged in any way, contact Domaille Engineering, LLC for repair.

### Daily or more often as required:

Disconnect from power source before servicing platen.

- The polishing fixtures are made of stainless steel. It is recommended that all traces of water and slurry be removed after each use.
- Clean top of platen, Overarm top plate, Overarm rest pad and bottom of Overarm. **The accuracy of this machine is dependent on keeping these areas clean.** Clean all residue, water and slurry from entire top of machine and from front control panel. Do not contaminate timers and switches on control panel. Timer covers are included which will minimize this risk.
- **WARNING: Do not use an air hose on or around the platen. This forces water and contaminants into the wear surfaces and mechanical drive unit, potentially causing machine failure. Damage caused by air hose use is not covered under warranty.**
- Inspect Fan Filter on back of machine. Clean by vacuuming or remove and clean with compressed air using OSHA approved air nozzle.

Platen:

- The platen should be removed and greased at least once a month. If the machine is heavily used, more frequent greasing is required.
- Do not use any tools (pry bars, screwdrivers, etc.) to remove platen as the platen and plastic wear ring under the platen may be damaged.
- After the platen is removed, clean all of the old grease and contamination from the bottom of the platen and from the plastic wear ring. Clean with alcohol and lint-free tissue or cloth so that surfaces are perfectly clean.

- Do not put grease on the platen bearings. They are pre-lubricated and sealed, therefore lubrication is not required.
- Wipe any grit off the o-rings and apply a drop of light oil on each o-ring. This helps protect and lubricate the o-rings, making it easier to replace the platen.
- Fill holes in wear ring with grease. Put a small bead of grease on wear ring, between holes. Use Super Lube from Synco Chemical Corporation, www.super-lube.com.
- Reinstall platen by lining up the eccentric arms to point in the same direction as below. By moving to eye level with the platen area of machine, place platen on top of pins in eccentric arms.

Eccentric Arm
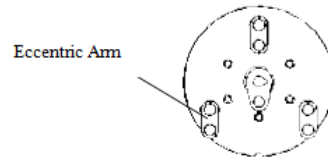
- Line up pins with holes in bearings in bottom of platen. When pins are lined up, platen will slide on pins about 1/2 way. Push straight down to seat platen on wear ring. Verify that platen is level before operating. When fitted properly, no light will be visible between platen and wear ring.

Lock Pins:

- Using light machine oil, clean and lubricate lock pins located on both sides of the Overarm by placing a drop in each slot as shown below.

Lock Pin
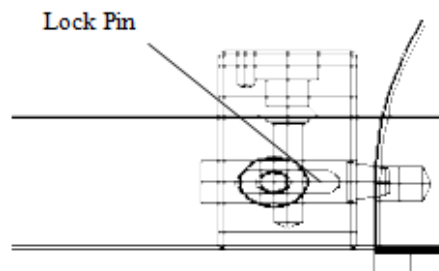
Sealed Screws:

- **Do not remove sealed screws. There are no user serviceable parts inside the case. Evidence of tampering will void product warranty.**

Product Specifications

Machine Height:	17.25"
Machine Width:	10.5"
Overall Width (including drip tray):	14.0"
Machine Depth:	20.0"
Machine Weight:	70 lbs.
Shipping Weight:	90 lbs.
Power Requirements:	5 amps; 120VAC; 50/60 Hz.
Air Requirements:	80-100 psi clean, dry air
Speed Range	20-210 rpm
Pressure Range	0-10 lbs. force

The APM HDC-4000 operates between air temperatures of 41º F and 104º F (5ºC and 40ºC) and at a maximum altitude of 6000 feet (1828M) above sea level.

Noise emitted by the APM HDC-4000 is less than 70.0dBA.

If power converters are needed, contact Domaille Engineering, LLC.

Service & Support

Domaille Engineering, LLC is a micro-precision manufacturer distinguished by the accuracy of our products and services. One of our critical goals is to provide excellent customer service. Please contact us for service, support or input on how we can improve our service to you.

Limited Warranty

Domaille Engineering, LLC ("Domaille") products are warranted by Domaille to be free from defects in workmanship and materials for a period of one-year from the original purchase date. This warranty covers defects in materials or workmanship only and does not include damage due to abuse, misuse, problems with electrical power, problems with compressed air supply, servicing not authorized by Domaille, failure to properly care for and maintain the products, or normal wear and tear. In addition, use of parts, components, or accessories not supplied or approved by Domaille will void this warranty.

Domaille's sole liability arising from any use of its products and this warranty is limited to repair or, at Domaille's sole discretion, replacement of defective products or defective component parts thereof. To request warranty service, you must contact Domaille at 7100 Dresser Dr. N.E., Rochester, MN 55906, USA. If warranty service is required, Domaille will issue a Return Material Authorization Number (RMA#). You must ship the products back to Domaille in their original or equivalent packaging, pre-pay shipping charges, and insure the shipment or accept the risk of loss or damage during shipment. Along with your RMA # include your name, telephone number, return address, proof of original purchase date, and a description of the claimed defect. If shipping the APM HDC-4000 for warranty repair, back up process data to the memory card, referring to User's Guide for process transfer instructions. Remove and retain memory card, as Domaille will not accept liability for lost data. If the defect is covered by this limited warranty, Domaille will repair or replace (at its option) the product or the defective component part(s) and ship them freight prepaid to an address in the continental U.S. Shipments to locations outside of the U.S. that are not the original shipped to location will be made freight collect or will be shipped to the original shipped to location, at the discretion of Domaille.

NO WARRANTY OTHER THAN THE ABOVE LIMITED WARRANTY IS MADE, EITHER EXPRESS OR IMPLIED. ALL EXPRESS AND IMPLIED WARRANTIES FOR THE PRODUCT, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO THE ONE YEAR LIMITED WARRANTY PERIOD. DOMAILLE SHALL HAVE NO LIABILITY FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES RELATING TO ITS PRODUCTS.

SOME STATES (OR JURISDICTIONS) DO NOT ALLOW LIMITATIONS ON THE DURATION OF IMPLIED WARRANTIES, OR EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES FOR CERTAIN PURCHASERS, SO THE ABOVE LIMITATIONS OR EXCLUSIONS MAY NOT APPLY TO YOU. THIS LIMITED WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE (OR JURISDICTION TO JURISDICTION).

Domaille Engineering, LLC
7100 Dresser Drive NE
Rochester, MN 55906
(507) 281-0275
www.DomailleEngineering.com

Product Summary

Domaille Engineering's mission is to provide our customer with the highest quality solution through the innovative use of technology that allows our customers to gain a competitive edge. Our core competencies in engineering and precision manufacturing provide OEM's and fiber optic customers effective and cost efficient solutions.

From our world renowned APM-HDC-5300 polishing machine to our patented MT EZ AbraSave® fixtures, Domaille Engineering equipment provides the highest yields and throughput in the fiber optic industry.

The Domaille APM-HDC-5300 interface allows user to program a soft ramp of pressure and speed. This feature along with accurate force, speed, and time enables customers to consistently meet the most demanding fiber optic polishing specifications.

Our patented AbraSave® fixture line utilizes Unique Path Technology which reduces polishing time and polishing film costs. The AbraSave® technology delivers the greatest consistent fiber protrusion for the best polishing results in the fiber optic industry.

The OptiSaber™ laser cleaver family is a Domaille solution addressing process variation associated with cracking, which is typical of mechanical cleaving process. Our OS7000M patent pending MT adapter allows users to cleave both UPC and APC ferrules with a few simple adjustments. The OptiSaber™ OS7000S single fiber laser cleaver has several different single fiber adapters to choose from depending on connector type.

Domaille Engineering proudly offers our OptiSpec® product line of fiber optic microscopes. Our OptiSpec® microscope line offers customers high quality production fiber optic inspection capabilities for both production and laboratory settings.

View all of our products, including the Universal Cure Oven and Air Cleanse System, at w**ww.DomailleEngineering.com.**