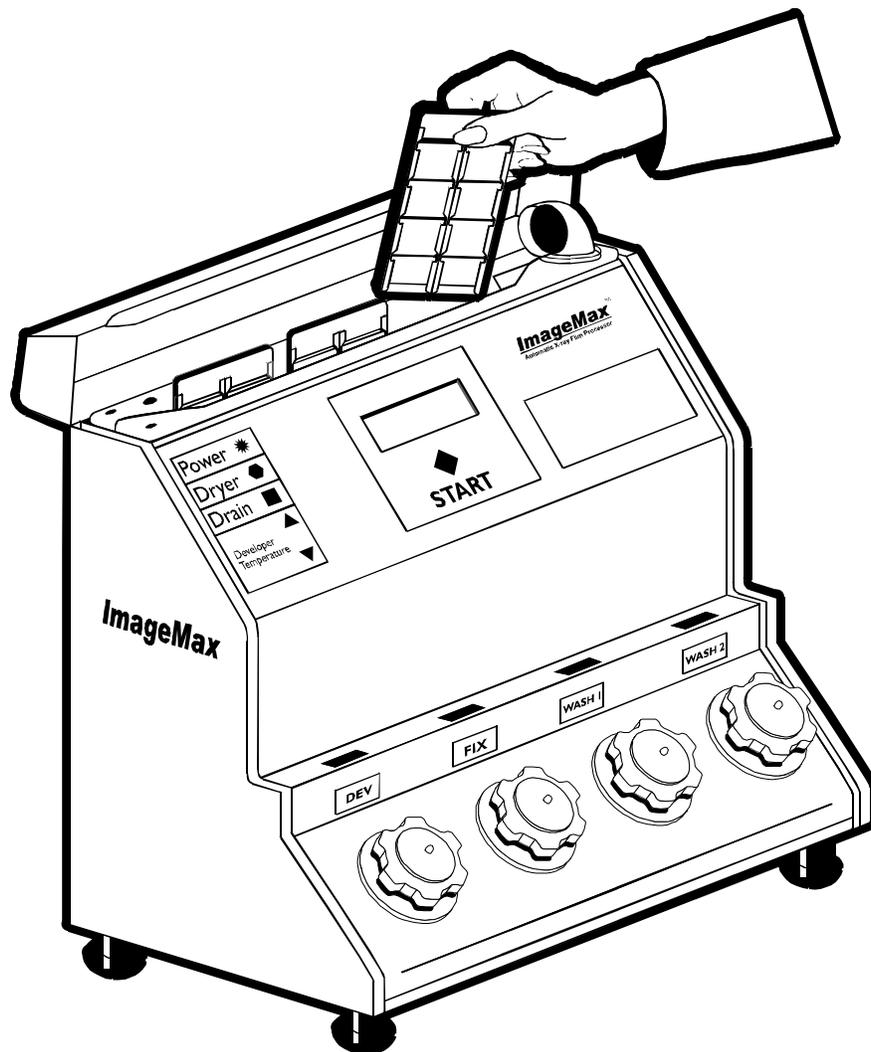


# ***ImageMax***<sup>TM</sup>

Automatic X-Ray Film Processor

## **OWNER'S MANUAL**



Designed & Manufactured by

***X-Ray Support, Inc.***

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# PROCESSOR FEATURES

Thank you for purchasing the ***ImageMax***<sup>™</sup> Automatic Film Processor!

**We sincerely appreciate your business!**

***ImageMax* solves X-Ray processing problems by moving the chemistry, not the film!**

## Features:

- ◆ **Virtually self-cleaning.** No need to take the machine apart and clean roller racks or tracks. Simply rinse out the solution holding tanks, then refill with fresh chemistry and water.
- ◆ **Correctly processes intra-oral and pan/ceph films - Automatically.** These two film types have very different types of emulsion and process very differently. The ***ImageMax*** is the first automatic processor ever to process them with the correct times.
- ◆ ***ImageMax* has the ability to both heat and cool the developer.** ***ImageMax*** is the only processor that gives you complete control over film detail and processing speed. It's unique Thermal-Electric-Chip (TEC) heating and cooling system allows you to select any developing temperature from 68 to 85 degrees. You set the temperature based on the film quality you desire, then based on the **Kodak**® time and temperature chart, ***ImageMax*** selects the timing – lower temperatures more film detail, higher temperatures faster developing.
- ◆ **No roller marks.** No rollers means no roller marks! Only the chemistry touches the film.
- ◆ **No need for cleaning films.** No rollers, no belts, no tracks to clean!
- ◆ **No wasteful replenishment.** ***ImageMax*** adjusts processing time based on the amount of film processed.
- ◆ **Little to no warm up time.** Power On. Ready to use when the developer is within 68 to 85 degrees.
- ◆ **The processor tells you when to change the water and chemistry.** No guesswork!
- ◆ **Simple and quick, electronic push button drain.** No corks to pull or unscrew, just push the drain button.
- ◆ **Separate drain for fixer.** Ready to be properly disposed of.
- ◆ **Extremely economical chemical and water usage.** Holding tanks are just 1 quart each and no replenishment!
- ◆ **Sealed solution containers.** No fumes or spills! No oxidation resulting in significantly longer chemistry life.
- ◆ **Eliminate low solution levels and ruined film.** Each tank has a fluid level sensor.
- ◆ **Reduce patient radiation.** You can now use “E” or “F” high-speed (inherently grainy) film by lowering the developer temperature and get improved results over a standard roller processor.
- ◆ **Never lose an intra-oral film again.** Easy to load film holders securely lock intra-oral films in-place.
- ◆ **Pans and Cephs load instantly.** No more slow feed! Extra-oral films fit directly into the processing tank.
- ◆ **Virtually mistake proof.** The 2 line display and simple controls make the processor very easy to use.
- ◆ **Stay informed.** The display provides a count down timer and a constant status of the processor.
- ◆ **Special endo processing.** Quick to view feature. No more sacrificing quality.
- ◆ **Automatic system shut off.** The processor shuts down if not used in 4 hours.
- ◆ **Very low maintenance.** No gears, belts, rollers, tracks, or pumps in the solutions to break. ***ImageMax*** uses air pressure and vacuum to move the solutions through our exclusive long-life pinch valve system.
- ◆ **Fully self-contained and compact.** Add our daylight loader and put it practically anywhere.
- ◆ **Built to last.** Cabinet is constructed with high-impact plastic, powder coat aluminum and stainless steel. All tanks, fluid pathways, and air system are non-corrosive and designed for years of heavy usage.

# SPECIFICATIONS

- Solution Capacity Four - 1 quart holding tanks
- Power Requirements 6 amps @ 115 VAC (50 or 60 cycle)
- Physical Dimensions: 18" wide, 12.5" deep, 19" high  
(Daylight loader adds 5.5" to height and 1.5" to width)
- Weight 26 lbs dry - 4 quarts of liquid add 8 lbs  
Separate air supply, APV, adds 4 lbs
- Room Operating Temperature No warmer than 87° Fahrenheit
- Air pump pressure & vacuum Regulated to 6 PSI & 7" Hg
- Film Handling           Intra-oral:        Sizes 0, 1, 2, 3, and 4  
                                  Extra-oral:        Pan 5 x 12 inch,  
  Pan 15 x 30 centimeter,  
  Ceph 8 x 10 inch

# IN THE BOX

Be sure you received all of these items! Please call us right away if anything is missing.

- ❑ **ImageMax™** Model 950 Automatic X-Ray Film Processor
- ❑ **ImageMax Concentrate** Chemistry – 2 sets of developer and fixer

## ACCESSORY BOX:

- ❑ **APV** - Separate air pump unit **APV = Air Pressure Vacuum**
- ❑ AC power cord
- ❑ **WaterFlo™** Additive for Wash 1 and Wash 2 holding tanks
- ❑ Film holders (each holder holds 8 films)
  - 1 size #0 (Pedo) **IMPORTANT: Do not expose Film Holders to temperatures > 175° F**
  - 3 size #2 (Std)
  - Sizes 1, 3, and 4 are also available (see order form, back of manual)
- ❑ “Black Box” intra-oral film holder light-tight staging box with flashing red LED
  - *Not included (not needed) when processor is sold with a daylight loader*
  - *Uses a 9 volt battery – included – Replace when flashing light is dim or not working*
- ❑ Intra-oral film “light-tight” staging jar
- ❑ Two drain lines:
  - Use the RED tube for the developer and water
  - Use the BLUE tube for the fixer (We recommend that you drain into a **SilverMax**)
- ❑ **ImageMax** Owner’s Manual
- ❑ **ImageMax** Quick Reference wall chart
- ❑ **ImageMax Developer Cleaner** – 1 bottle
- ❑ Long handled cleaning brush
- ❑ Intra-Oral Film Retrieval Tool
  - Tool for retrieving a lost intra-oral film in the black film processing tank. Shouldn’t ever happen, but just in case!

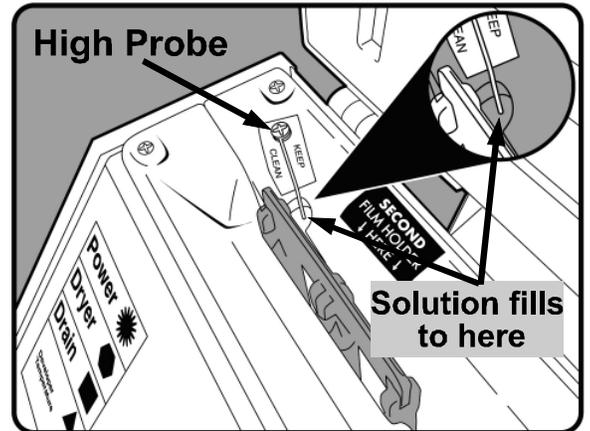
# SETTING THE PROCESSING TANK PANORAMIC FILM SIZE

The *ImageMax* can be configured to accept either size of panoramic film, 5 by 12 inch or 15 by 30 centimeter.

The pan size setting was preset at the factory per your request when you ordered the *ImageMax*. See your invoice or packing list for the setting requested.

## Verifying the Pan Setting:

Referring to the processing tank Hi Probe diagram to the right, during a process cycle, solutions fill the tank to the tip of the high probe pointed to. Insert a pan film into the black processing tank. The edge of the film should be approximately 1/8" of an inch below the solution level. See page 11 regarding how to insert pano/ceph film.



## Changing the panoramic film setting:

1. Disconnect the AC power plug.
2. Remove the 5 back panel screws (pointed at in the diagram to the right) using a #2 Phillips screw driver. Remove the back panel.
3. On the black tank, locate the 2 vertical sets of "film selector" screws (bottom figure). The red screw is the long screw (3/4" long). It determines the pan film size configuration.

- Red screws in top position = 5 x 12 inch pan film.
- Red screws in bottom position = 15 x 30 centimeter pan film.

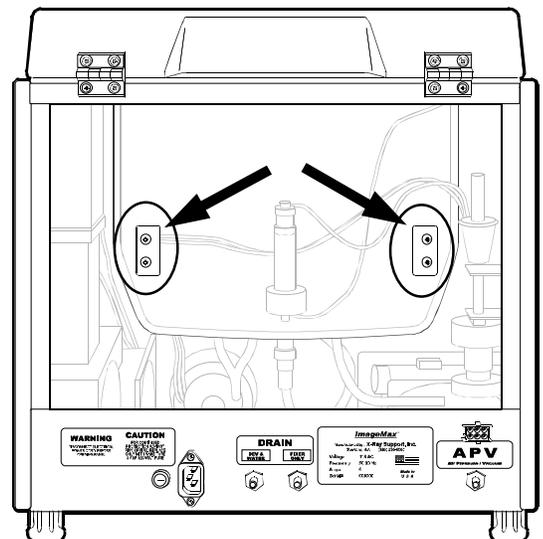
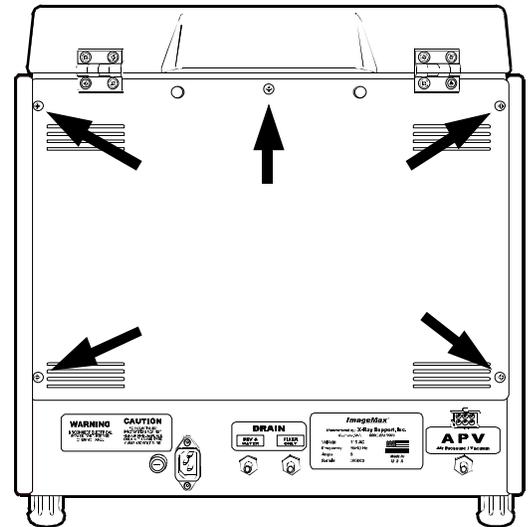
The short, non-red screw (3/8" long) is a filler screw.

4. Remove the four selector screws, then reinsert the screws for your pan size.

**IMPORTANT: Do not over tighten screws.**

5. Test fit a pan film to make sure the screws are set properly. The edge of the film should be just under the liquid line (the tip of the stainless steel high probe on the left side of the film processing tank indicates where the liquid level is).
6. Replace the back panel / lid assembly with the 5 screws. Put all screws in loosely, open and close the lid to make sure it "seats" correctly, then tighten the screws.

**IMPORTANT: Do not over tighten screws.**



# SETUP

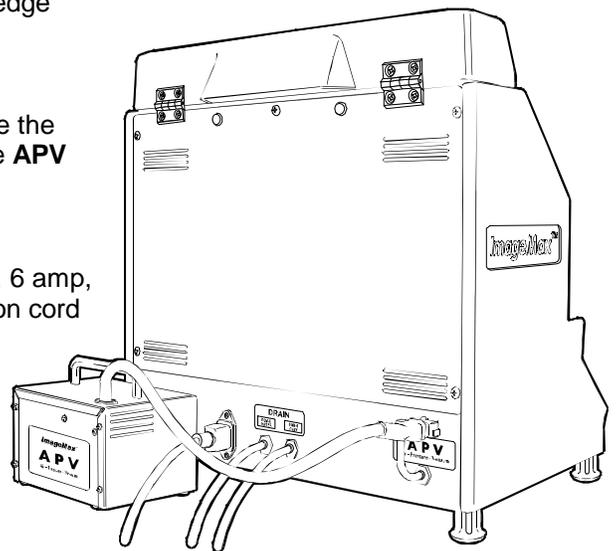
## **IMPORTANT: Check The Darkroom**

**Eliminate ALL light.** Turn off all lights, including your safelight. Then with your eyes open, stay in the darkroom for at least 3 minutes and look for any light. Move around and check different angles. Even the smallest amount of light will cause light fog – especially pan/ceph film.

1. The processor location must:
  - a) be at least 18" wide, 15" deep, and 24" high.
  - b) be level. Correct minor leveling problems by lifting one side of the processor up and adjusting the cabinet legs by turning them – adjust no more than ¼ inch. Use shims if the surface is significantly out of level.
  - c) allow all 4 rubber feet of the processor to equally support the processor.
  - d) be able to hold about 40 pounds (processor plus APV actually weighs 31 pounds plus 8 pounds of liquid).

**NOTE:** It is best to locate the processor forward near the front edge of the counter in order to allow easy filling of the solution holding tanks.

2. Find the **APV** (separate air pump) in your accessory box. Locate the connectors on the back of the **ImageMax** labeled **APV**. Push the **APV** electrical plug and air line into/onto the **ImageMax** connectors.
3. Plug the AC power cord into the processor, then into a grounded, 6 amp, 110 volt AC, 3-prong outlet (GFCI recommended). If an extension cord is necessary, be sure that it has at least a 10 amp rating. Position the power cord so that it will not be tripped over, pulled, or contact any hot surfaces.
4. Push the drain tubes onto the **ImageMax** fittings located on the back of the processor.
  - > The RED labeled tube is for developer and water.
  - > The BLUE labeled tube is for the fixer.
5. Route the other end of the drain tubes into a sink, waste container, or install into a plastic drain pipe (see the diagram bottom right and the tip below). We recommend using our **SilverMax** for the fixer drain.



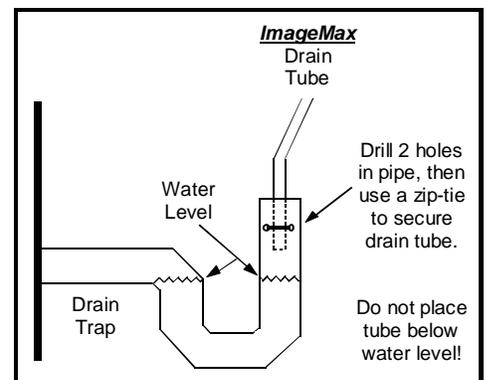
**IMPORTANT:** Check your local state and county regulation regarding proper disposal of processed chemicals.

**IMPORTANT:** Be careful not to “kink” the vinyl tubes against the back wall.

**NOTE:** Because **ImageMax** uses air pressure to push the solutions out, the pressurized drain will create a small “kick” at the end when the holding tanks are drained. Be sure to secure the ends of the drain tubes.

**TIP:** Use a tie-wrap through two small holes in a drain pipe (diagram to the right), or drill a 3/8” hole in the drain pipe (for the 3/8” OD vinyl tubing), then push the drain tube through that hole.

**IMPORTANT:** Do not extend drain tubes into standing water. Air pressure is used to push solutions out of the processor holding tanks and will cause excessive bubbling.



# PROCESSING TIME & TEMPERATURE

The *ImageMax* gives you the choice between developing speed and film detail. With its exclusive Thermal-Electric-Chip (TEC) heating and cooling system, *ImageMax* can not only heat the developer, but cool it as well. Warmer developer temperatures allow faster processing. But because heat enlarges film grain size, the image will appear to be more “grainy”. Cooler developer temperatures provide more film detail, but take a bit more time. Your choice.

## Choosing a developer temperature

Experiment with different developer temperatures starting with 83°. This temperature provides high quality film and fast processing. As time permits, drop the temperature to 80°, then note the film detail difference. This drop in temperature will take an additional 1-1/2 minutes for intra-orals, and 2-1/2 minutes more for extra-orals. If you like the detail at 80°, try even lower temperatures. However, don't process any cooler than you can see a difference in film detail.

**NOTE:** Use 84°-85° only for Endo processing. We do not recommend these temperatures for normal processing. See the section on “Endo Processing” for more details.

**IMPORTANT:** Warm room temperatures will interfere with the processor's ability to cool the chemistry. The darkroom can be no warmer than 85°.

Below is a time-temperature chart showing how *ImageMax* exactly follows Kodak® film processing guidelines:

		INTRA – ORALS			EXTRA-ORALS (PAN / CEPH)		
		Kodak®	<i>ImageMax</i> Processing		Kodak®	<i>ImageMax</i> Processing	
Developer Temp	Film Detail	Time In Developer Solution	Time in Developer Solution	Total Processing Time *	Time In Developer Solution	Time in Developer Solution	Total Processing Time *
68°	Most	5 Min	5 Min	11:00	7 Min	7 Min	13:10
72°		4 Min	4 Min	9:00	7 Min	7 Min	12:50
80°	Better	2-1/2 Min	2-1/2 Min	7:30	4 Min	4 Min	9:50
83°	Good	65 Sec	65 Sec	6:00	70 Sec	70 Sec	6:40
<p><i>ImageMax</i> is the ONLY automatic processor to exactly follow Kodak's® entire time and temperature film processing chart.</p> <p>Total <i>ImageMax</i> processing time described above is based on chemistry count = zero (C: 0)</p>							

**NOTE:** As the chemistry gets older, *ImageMax* automatically compensates by slightly extending the length of developing and fixing time. For example, when the chemistry count (C: on the display) is 200, *ImageMax* will add approximately 20% more time to the developer and fixer time. This unique automatic time-shift-adjustment feature provides consistently high quality film throughout the use of the same batch of chemistry, and avoids the need for costly and wasteful replenishment.

**NOTE:** As you change the target temperature on the *ImageMax* control panel, notice that the times displayed for both “I:” (intra-oral) “P:” (pan/ceph) change on the display. This time also takes into account the current chemistry usage time offset, “C:” (chemistry count).

# RUNNING ImageMax FOR THE FIRST TIME

## Follow these steps:

1. Follow the installation instructions on page 7.
2. The processor should be plugged into a 110 volt AC outlet and \* POWER OFF \* on the display.
3. Push the POWER button on the main control panel.  
The display will momentarily indicate the software version, then display the following message:

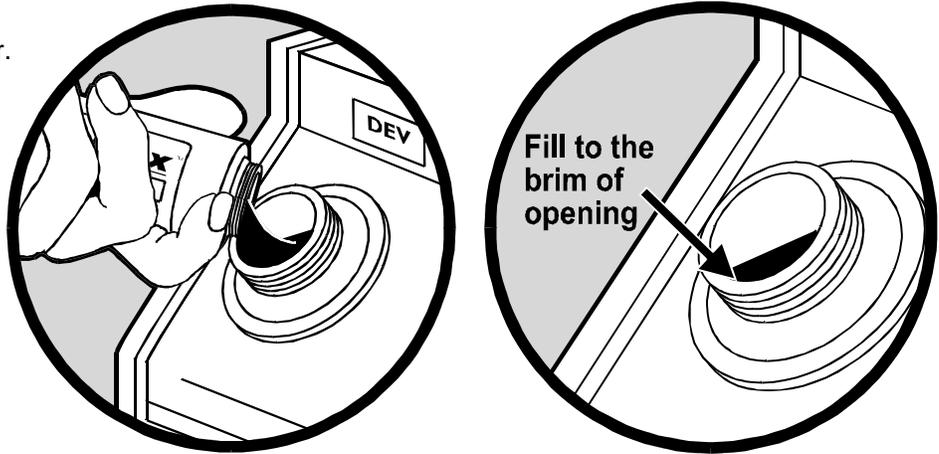
FILL TANK: DF12 indicating that all 4 holding tanks are empty.

**NOTE:** DF12 is an indicator for each tank; Developer, Fixer, Wash 1, and Wash 2.

4. Remove the developer holding tank cap. Leave the other 3 caps on to prevent cross contamination.

5. Pour in developer and water.

**IMPORTANT:** Fill the holding tank completely to the brim.



6. Replace the developer cap.

**NOTE:** Caps have an o-ring seal and require just 1-½ turns. No need to fully tighten the caps.

7. Repeat steps 4 thru 6 for Fixer, Wash 1, and Wash 2.

**RECOMMENDED:** Before adding water to Wash 1 and Wash 2, add **WaterFlo**.  
Your films will look and dry even better.

**NOTE:** Tap water is usually okay. However, if your water quality is not good, use purified.

8. Once all tanks are full, press START. If all tanks were filled properly, the processor will test the air system. The air pump will start, pressurize the system, hold for 2 seconds, then depressurize (vacuum). This verifies that all caps are installed properly, and the air system is functioning.

**NOTE:** If a cap was not on properly, the display will read: Low Air Pressure.

# RUNNING ImageMax FOR THE FIRST TIME

(Continued)

9. When the system pressure test is successful, the top line of the display will indicate one of the following:
- a.) Heating DEV... if the developer is colder than 66 degrees.
  - b.) Cooling DEV... if the developer is hotter than 87 degrees (cooling fan will be running).
  - c.) LID OPEN if the processing tank lid is open.
  - d.) OK if the developer temperature is within the dental temperature range of 68° to 85°, but not yet your target developer temperature. Okay to put films in and process.
  - e.) READY if the developer is currently at your set developer temperature.
- The bottom line of the display will display the current developer temperature on the left and your target (set) developer temperature on the right.

– example: 74°->83° – read as, the developer is currently at 74° degrees and heating to 83°.

10. Insert an empty film holder into the far right position (note tank labeling for the 3 film holder positions).
11. Close the lid. When the display reads either “OK” or “READY”, press START.

**NOTE:** To verify processor operation and understand how the ImageMax works, open the film tank lid and watch as the developer rises up to fill the film processing tank.

12. When the developer has filled the processing tank and the pump has turned off, push the POWER button.

**NOTE:** This is a good time to verify that the processor is level. With the lid open and developer solution full in the processing tank, sight across the tank. If the processor is not level, note which end has to be adjusted. Make the adjustment later after the processor has completed all 4 solutions by lifting up the processor and turning the feet under the processor.

13. Push the POWER button again. The display will read “Cycle Not Done, Press START”.

**NOTE:** This “Power off mid-cycle” technique is not the normal way you will operate the processor, it is simply a diagnostic mode that removes the processing hold times and provides a quicker test.

14. Press START. The processor will now pull the developer back into the developer holding tank. Next, watch to see that fixer, wash 1, and wash 2 rise and fall.

15. Upon completing the test cycle, the display will now read:

Line #1 W: 1 Indicating that the water has rinsed one batch of films.

Line #2 C: 5 Indicating that an intra-oral film batch has been processed.

**NOTE:** Each intra-oral batch adds 5 to the “C:” count. A pan or cephalometric cycle adds 10. For more information about these counts, please see the section on changing solutions.

16. Your new **ImageMax** film processor is now ready to process patient films.

# PROCESSING X-RAY FILM

The **ImageMax** automatically detects what kind of film is being processed, intra-oral or extra-oral (pan / ceph), then it adjusts the timing accordingly for proper development according to Kodak™ film charts. See the section on processing time & temperature for more details.

## Follow these steps:

1. Set the target temperature using the up & down arrows on the control panel. The ImageMax will allow film to be processed when the developer temperature is within the dental range of 68° to 83°.

**NOTE:** See the section on processing time and temperature, page 8, for tips on how to set the temperature.

2. Insert a pan film directly into the processing tank (no film holder necessary) with the long dimension of the film horizontal across the tank. A ceph film inserts centered with the 10" dimension across the tank.



Extra-Orals



**Intra-oral** films insert first into a film holder, as shown below, then the film holder into the processing tank.



**TIP:** To load film, place the film holder lower tab (magnet) into one of the 4 slots over the holding tanks as shown. Then, load intra-oral films into the film holder with a light touch. Load the bottom first, then work up to the top.

**PRACTICE:** Use sample films and lights on before working with exposed film in the darkroom or daylight loader.

**IMPORTANT:** Be aware of the labels on the black tank indicating the film holder positions. If you're processing just one holder, insert it into the far right position. If you have two holders to process, insert them on both ends. For three holders, fill each of the 3 processing tank slots. This positioning is for film drying purposes and intra-oral film sensing (the far right position is where the sensor is).

# PROCESSING X-RAY FILM

(continued)

3. Close the lid to the processing tank once the films are loaded.

**NOTE:** Once the processing lid is closed, it is now safe to turn on the darkroom lights or open the door. **However**, it is still best to keep the room lighting low until the film has seen the fixer – watch the display. When the fixer has reached the film, it is now completely light safe – you can even open the tank lid.

4. When the display reads either “OK” or “READY”, push the START button on the control panel.

5. Each solution will rise, hold, then fall. Check the display for processing status.

6. When the film is ready, the processor will display FILM READY! and a 3-beep tone will sound. The 3-beep, film ready tone will repeat every 3 minutes until the processing tank lid is opened.

**TIP:** See the operating tips section on how to improve processor throughput and speed.

The display water count “**W:**” will have added 1, and the chemistry count “**C:**” will have added either 5 for an intra-oral film batch or 10 for an extra-oral (pan / ceph) film processed. For more information on these counts, please see the section on changing solutions and also in the technical details for information on how the **ImageMax** maintains image quality through the use of time offsets.

**TIP:** Routinely check the wash & chemistry count information displayed on the LCD panel. See the section on changing solutions for details on when to replace the chemistry and how to interpret the counts.

7. Open the film processing tank lid, LID OPEN to get your film.

8. The processor is now ready for more film.

**TIP:** In a hurry and need your films quickly? You can interrupt the dry cycle Drying Film.. by simply opening up the processing tank lid. Then, easily restart the dry cycle by closing the film processing tank lid and pushing the DRYER button.

# PROCESSING COPY FILM

Copy film will develop the same as regular extra-oral film (pans & cephs) using the same time and temperature chart.

The **ImageMax** is designed to accept film 8" by 10" ceph, and either 5" x 12" inch or 15 x 30 centimeter panoramic-size depending on the tank setting (see page 6).

**IMPORTANT:** Be sure to use the same size copy film as your panoramic X-Ray machine uses.

**RECOMMENDATION:** Do not cut your pan or ceph copy sheets when you need to copy a small number of intra-orals. The film will not be properly supported when inserted into the processing tank. Instead, buy #2 copy film. This intra-oral sized copy film is easy to use, and also less expensive than a full sheet of copy film. In addition, you won't have to spend time cutting the film, and you'll avoid finger prints.

However, if you still would like to cut the copy film, you can hang the film in the processing tank using a paper binder clip shown below available from most office supply stores. This also works well for 5" x 7" TMG film.



Paper Binder Clip – Medium 1-1/4" wide

Shown approximate size.

Using the binder clip shown above, attach it to the middle of your film, then place the copy film into the **ImageMax** processing tank directly in the center. The clip will be supported by the side walls of the black processing tank.

**NOTE:** These binder clips are not corrosion resistant and may rust. Since they're not expensive, we recommend that you replace them often.

**TIP:** To produce a darker copy, use a shorter light exposure time.  
For lighter copies, use longer times. See the film box for more details.

# ENDO PROCESSING

## “Quick View”

The *ImageMax* allows a variation to the usual automatic endo processing. Because the film does not move, the film is always accessible. So, instead of having to wait until the film completely fixes, washes and dries, the processor allows you to take the film holder out as soon as the fixer has “cleared” the image. When you take the film holder out of the processor, the *ImageMax* will go into a “pause” mode. Keep in mind that fixer has two functions; first to “clear” the image, and second to “harden” (archive). It takes twice as long to harden as it took to clear. All other automatic processors at endo speed miss this important “hardening” step. After you have your reading, return the film to the processor. *ImageMax* will finish fixing, washing, and drying the film.

The warmer the developer, the faster the *ImageMax* will develop the film. Set the developer temperature to 83°-85°.

**NOTE:** 85° will increase the time in the developer solution to just 10 seconds. However, don't process normal film at temperatures above 83°. The film quality will be “grainy” when the developer temperature is above 83°.

### Follow these steps:

1. Place the film to be processed in a film holder.
2. Place the film holder in the far right position of the processing tank.
3. Close the processing tank lid and push START.
4. Developer will rise then hold for the developer temperature amount of time, then fall (listen for suction noise).
5. Then, fixer will rise and hold. Check the display: 

PROCESS: FIX
--------------

.
6. When you hear the air pump turn off, the fixer will have filled the film processing tank. The film is now light safe. Open the lid and check the film by lifting the film holder up. If the film has not fully “cleared”, put the film holder back into the tank for a few seconds, then lift and check again.
7. When you're satisfied that the film has fully “cleared”, put a paper towel under the film holder and fully remove it from the processing tank and take to the doctor for review.

**NOTE:** The display will now read “PAUSE, Replace Holder”. The processor is waiting for the film holder to return to the processing tank to complete the hardening portion of the fixer cycle.

**TIP:** If possible, review the film right next to the processor. It can then be quickly inserted back into the processor so that the processor is not delayed and fixer doesn't have a chance to dry on the film holder.

8. Re-insert the film holder back into the processing tank in the far right position and close the lid. The processor will automatically resume when the film holder returns.

**TIP:** If you don't want the processor to delay, insert a “dummy – no film” film holder in the far right position to finish the cycle. The processor needs to rinse out the fixer in the tank with water. Leave the lid open so that the dryer doesn't start at the end of the cycle.

**IMPORTANT:** If the film holder that was removed from the processor for review by the doctor is not reinserted back into the processor, it must be rinsed off before using again!

# CHANGING THE WATER

After every process cycle, the processor will add one to the water count, “W:”. When “W: 10” thru “W:20”, the “W: ##” will flash as a warning that the water needs to be changed soon.

At “W: 21” the processor will display Drain Water REQD requiring that both water tank be drained.

**RECOMMENDED:** Drain the water every day. You'll find it's quick and simple to do. Make it part of your office shut-down and startup procedures – drain at night, refill in the morning. Clean water will produce better film quality and extend the life of the chemistry.

## Follow these steps to drain the water:

1. Press the DRAIN button twice to select DRAIN Water ONLY
2. Press the START button. The system will drain the Wash 1 and Wash 2 tanks, then display: FILL TANK: 12. Read as “Fill Wash Tanks 1 & 2”.
3. Remove the Wash 1 cap.

**IMPORTANT:** If there is sediment on the bottom of a holding tank, fill with hot water, use the brush to agitate the bottom of the tank, replace the cap, then drain again.

4. Add 3-6 drops of **WaterFlo**.
5. Refill with tap or purified water.

**NOTE:** Tap water is usually good enough.

**TIP:** Mix one cap full (roughly a tablespoon) of bleach into a gallon of water. Use this water for filling the two water tanks.

**NOTE:** Fill the holding tanks all the way to the brim  
- one more drop spills out the front.

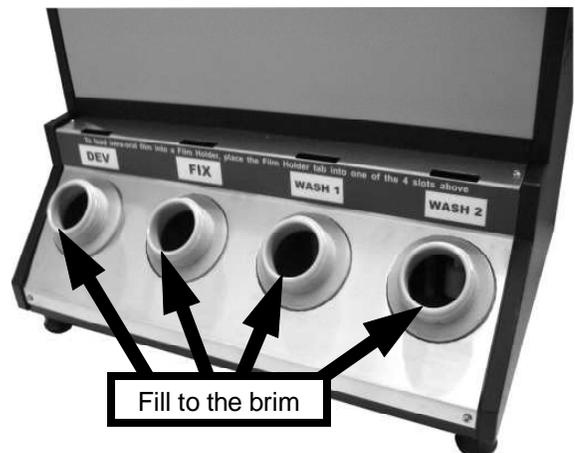
6. Replace the cap.

**NOTE:** Caps have an o-ring seal and require just 1-½ turns. There is no need to fully tighten!

7. Repeat steps 3 thru 6 for Wash 2.
8. Press START to test the system.

**NOTE:** W: 0 is reset to zero, but the chemistry count did not reset.

**IMPORTANT:** The individual tank drain options, 3 thru 6 **do not reset** the counts.



# CHANGING THE CHEMISTRY

When processing intra-oral film, **ImageMax** will add 5 to the "C:" displayed on the screen. When a pan or cephalometric is processed, 10 is added to "C:" When the display reads C: 250, we recommend changing the chemistry. However, 250 is simply an estimate. Many factors effect the longevity of chemistry. Your specific usage of the may allow the chemistry to last even longer. Through the first few batches of chemistry, watch the film quality. When you see a drop in film quality, note the number, then change the chemistry. You should see that the "C:" number is about the same each time you see the drop in film quality. Use that number to predict when to change chemistry.

**RECOMMENDATIONS:** To avoid a poorly developed X-Ray, on the last day of the work week, drain the chemistry (regardless of the count). Then, refill on the first day of the following week.

For limited users, leave chemistry in the processor no longer than 3 weeks.

**NOT RECOMMEND:** Gallon sized chemistry. **ImageMax** is a quart sized processor. A gallon jug will likely oxidize before you've had a chance to use the entire gallon.

## Follow these steps to drain, then refill all four holding tanks:

1. Press the DRAIN button once to select Drain ALL Tanks, then press START.

The system will drain all 4 tanks, then display: FILL TANK: DF12.

**NOTE:** **DF12** indicates which tanks need to be filled: **D**eveloper, **F**ixer, **W**ash **1**, and **W**ash **2**.

2. Remove the cap of the developer holding tank ONLY and look inside. Pour hot tap water into the holding tank about  $\frac{3}{4}$  full. Gently stir up the sediment in the tank with the brush that shipped with the processor. Replace the cap, push the DRAIN button 3 times Drain Dev, push START. Repeat if necessary.

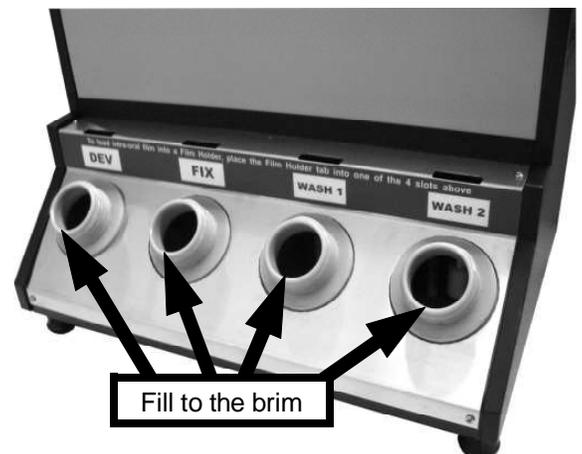
**IMPORTANT:** Each holding tank **MUST BE CLEAN** before refilling! **Do not "dry mop" the holding tanks with a paper towel or gauze. Fill with warm water, agitate, then drain! Rinse the inside of the cap before replacing.**

3. Pour in the developer solution. Fill right to the brim.
4. Replace the cap. Caps have an o-ring seal and require just 1- $\frac{1}{2}$  turns - No need to fully tighten!
5. Repeat steps 3 thru 6 for Fixer, Wash 1, and Wash 2.

**TIP:** Add 3-6 drops of **WaterFlo** to both Wash 1 and 2 prior to filling the tank with water. This allows the **WaterFlo** to mix with the water.

6. When all 4 holding tanks are filled and caps on, push START. **ImageMax** is ready to go!

Note that on the display, "C:" (Chemistry count) and "W:" (Water count) have reset to zero.



**IMPORTANT:** Fill holding tanks to the brim, however **NEVER tip the processor back to add more solutions!**

**IMPORTANT:** When changing chemistry, always change the Developer, Fixer, **AND** the both waters.

# MAINTENANCE

## Replenishment

Between **complete** chemistry changes, if the processor displays a Fill Tank message for any of the 4 holding tanks, simply **add water** to replenish, “top off”, the holding tanks.

**IMPORTANT:** Do not add more developer and/or fixer until it is time to **completely** drain and refill the processor.

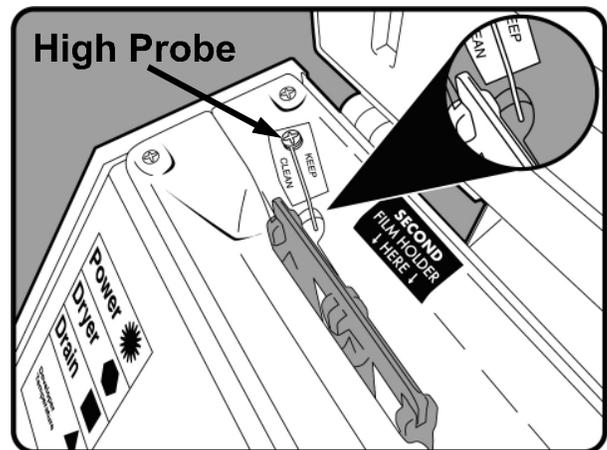
**ImageMax** does not require daily replenishment. It utilizes a time shift adjustment method. The on-board computer constantly monitors the amount of film being processed, and gradually lengthens the time to compensate for weakening chemistry. A pan/ceph film offsets the time by 1.0% (adds 10 on the “C:” display). An intra-oral film batch offsets the time by 0.5% (adds 5 on the “C:” display). On just 1 quart of developer and 1 quart of fixer, you can expect to process about 25 pan/cephs or 50 batches of intra-oral film.

**NOTE:** At 83° each intra-oral batch adds roughly ½ second, and each pan adds about 2 seconds. When the count gets to 250, an intra-oral will take an additional 29 seconds to process and a pan, 32 seconds.

At 68° each intra-oral batch adds roughly 2 seconds, and each pan adds about 7 seconds. When the count gets to 250, an intra-oral will take an additional 1:28 and a pan will take 2:04 more.

## High Level Probe

The liquid fills to the tip of this probe. The plastic around where the high probe mounts **must be clean** (white label). Clean the tip of the probe. Be sure the probe does not touch the back wall of the processing tank, a film holder inserted into the far left position, and it doesn't touch the bolt located directly below the tip of the probe.



## Tank and Inner Lid

Using a damp sponge or paper towel, regularly clean the surface of the tank and inner lid.

## Complete Internal System Cleaning

**Reason #1:** If you suspect the developer has been contaminated by fixer.  
(Symptoms: dark films, developer smells of ammonia)

**Reason #2:** If you plan to leave the processor unused for an extended period of time (2 or more weeks).

**Follow these steps:**

1. Push the DRAIN button one time for Drain ALL Tanks, then push START.
2. Follow the steps on the preceding page for changing the chemistry, but instead of filling with chemistry, fill with luke warm water.
3. Push a standard clean damp sponge (approx. 3" x 5" x ½") down into the black film processing tank, then move it up and down with a hemostat. Clean all 3 processing tank film holder positions in this way.
4. Run a process cycle. **TIP:** Use the “quick finish” mode, page 20, to run the cycle faster.
5. Push the DRAIN button one time for Drain ALL Tanks, then push START.

# OPERATING TIPS

## Improving Processor Efficiency – Busy Office

The *ImageMax* uses a batching method of processing film rather than a continuous feed (roller processor) technique. This batching approach gives the *ImageMax* many advantages, but the tradeoff is the following scenario: John has four films running through the processor. Sue comes in two minutes later and sees that the machine is busy for another four minutes. What we have found is that Sue actually didn't need her films immediately, she just didn't want her work flow interrupted!

Here are some ways to solve the situation:

1. **Use the intra-oral film, light-tight, film-holder staging box with flashing red LED.** When Sue comes into the darkroom to develop her films and sees the processor is busy with John's films, she simply loads her films into a film holder, places the film holder into the staging box, and puts on the lid. The red light begins to flash indicating that there is a film holder ready to be processed as soon as the processor is available. Sue returns to her work. When John returns to get his films, he will see the red light flashing on the staging box. He simply inserts Sue's film holder into the processor and pushes START. When Sue returns, she picks up her fully processed films. With this technique, the processor stays busy.
2. **Use the intra-oral film, light-tight staging jar.** When a double film pack, full mouth set is to be processed, the *ImageMax* can handle one complete set, but not the second set at the same time. So to handle this situation, as you're removing the film from the packet, put the first film of the double film pack into the film holder and the second film in the black jar. When done, cap the jar and put a note on the top of the jar indicating the owner of the duplicate set of film. Since that second set of film is usually not time critical, develop that set when the processor is not busy.
3. **Staff coordination.** If you have a situation where three members of your staff have 4 bitewings each at the same time, work together to batch all of the bitewings through in the same cycle. For example: Sue would go into the darkroom, load her film holder and place it in the black box. John then comes in and does the same. Mary comes in, loads her 4 films into a third film holder, and places it into the processor. She then takes Sue's and John's film holders out of the black box, loads them into the processor's 2<sup>nd</sup> and 3<sup>rd</sup> positions, and pushes START, which runs the whole batch of films.
4. **Take film out while in the dry mode.** Instead of waiting until the very end of the drying cycle, film can be removed early and allowed to air dry. This allows the next batch of intra-oral films to be inserted up to 3 minutes sooner. The films will "air" dry within just a few minutes.

**TIP:** Films will dry even faster if you gently "pop" the wet film holder in your hand to dislodge water droplets.

**IMPORTANT:** Do not insert a pan or cephalometric film into a wet processing tank. Doing so *may* put marks on the film. However, you can dry the top of the tank and especially the two upper film "bumps" between the three film holder positions.

5. **Set the developer temperature to 83 degrees.** The difference in processing time between 83° and 68° is about 4 minutes for intra-orals and 6 minutes pan/ceph film.
6. **Put pan film in the processor before intra-orals.** If you have a pan and intra-orals to take on the same patient, take the pan first. As the patient is transitioning to the chair for the intra-orals, go to the darkroom and start the pan processing. Now, go back to the patient and begin taking the intra-orals. By the time those images are taken and you return to the darkroom, you'll find that the pan is done and the processor is now ready to accept the intra-orals.

# OPERATING TIPS

(Continued)

## Drying Film – Multiple Film Holders

Roller-based film processors literally squeeze out water droplets as the films pass through the rollers which helps dry the film. However, the rollers also permanently press artifacts into the film. **ImageMax** does not touch the film - no chance of marks on the film! It instead relies only on hot air to dry the film. We've optimized the **ImageMax** dry time to completely dry a pan, a ceph, or intra-oral films in the far right film holder position. However, in certain high humidity conditions, when all 3 film holder positions are filled, the films may not fully dry in the middle and left film holder positions. Solution: After drying is complete and the display indicates film are ready, **remove** the far right film holder. Then, lift up and check the **middle** film holder. Are the films dry? If not, move the middle holder to the far right position. Close the lid, then push the Dryer button to restart the film dryer. Now, begin to mount the films from the film holder you just removed. When done, interrupt the dry cycle by opening the processing tank lid. Even though the dry cycle has only run for a few more seconds, you should find that the films in the other film holders are now dry.

**RECOMMDED:** Add 3-6 drops of **WaterFlo** before filling both water tanks.

## Using “E” and “F” speed Intra-Oral Film

We recommend using “D” speed film. It provides the greatest level of detail available. However, **ImageMax** will process “E” and “F” speed film with vastly improved detail over standard roller processors. These films have larger crystals in the film emulsion to allow fast exposure characteristics. Warmer developer temperatures will enlarge the already large grain size. So, to produce the maximum image detail with these high speed films, the temperature of the developer needs to be cooler. For these film speeds, we recommend a developer temperature of 80° or less.

## Getting the Best Possible Film Quality

1. Change the water in both holding tanks daily. Make it part of your shut down procedure at night and your start up procedure in the morning.
2. Check the level of all solution holding tanks daily. Be sure they are completely filled to the cap opening brim.
3. Change the chemistry weekly. Even though we recommend about “C: 250” to change the chemistry, if the number reaches approximately C:150 in a week’s time, we recommend that you change the chemistry. Also, a routine of draining the machine at the end of the week, then refilling the first day of the week works well and produces better film. For less than \$6.50 per week for chemistry, it’s just not worth a bad film!

**NOTE:** A weekly change of chemistry with the ImageMax would equal 1 gallon of each solution per month (1 quart each week) compared to most roller based processors at over 3 gallons of each solution every month – that’s a 2/3 savings in chemistry!

4. Use our **ImageMax Concentrated Chemistry**. This chemistry is specifically formulated for the ImageMax.
5. Use **WaterFlo** in the Wash 1 and Wash 2 holding tanks. It’s designed to eliminate water spots on the film and significantly improves film drying.
6. Be sure all 4 solution holding tanks are clean (no sediment) before adding fresh chemistry and water.
7. Use either Kodak, Fuji, or our **ImageMax** film. We sell film at huge savings. **ImageMax** was designed using the Kodak time/temperature chart. We have found many other brands do not process like Kodak.
8. Keep your chemistry and film stock fresh. Rotate your stock. Check expiration dates.
9. To keep the holding tanks cleaner, put in one cap full of bleach (approx. 1 tablespoon) into an empty gallon jug then fill with water. Use this chlorinated water to fill the processor. You can also use this chlorinated water to mix with our concentrate chemistry.

# STERILIZATION TIPS

## Intra-Oral Film

To eliminate the possibility of film holder contamination, before loading film holders, we suggest the following technique:

1. Without touching the film itself, eject the film into a cup as shown below:



2. Remove your gloves.
3. Place the films from the cup into your hand.
4. Load the film into the film holders.

## Film Holders

If you do need to disinfect your film holders, we recommend spray disinfectants.

**IMPORTANT:** Film holders are plastic and will be permanently damaged if autoclaved or subjected to temperatures above 175° F.

# SYSTEM OPERATION

## Pressure Test - “Checking System...”

When the *ImageMax* Power button is pushed and all the solution holding tanks are full, the system will do a pressure and vacuum test. It first runs the air pump to build 6 pounds of pressure. If it does not reach 6 PSI within 10 seconds, then the processor display will read **Low Air Pressure**. If 6 PSI was reached, then the processor will check for leaks by turning the pump off for 1-2 seconds to see if it can maintain pressure. If the pressure drops more than about 1 pound, then again, the **Low Air Pressure** message appears. If it holds for that 1 second, then the pump turns on again and the vacuum valve energizes for 3 seconds releasing the pressure. If the pressure was not released and pressure remains in the system, then **ERR 5 – See Manual** error message is displayed indicating that the vacuum valve has failed. Through this test, the *ImageMax* verifies that the air pump, both air valves, plumbing (liquid and air), all internal seals, all four solution holding tanks, and the caps are all functioning and installed correctly.

See the Troubleshooting and System Errors section if you have any problems.

## Suction Sound

One of the *ImageMax* sounds you will become familiar with is the suction sound you will hear every time solution is pulled out of the processing tank and back into the holding tank. These sounds are the guarantee that the processor is properly moving the solutions.

## Developer Heating and Cooling System

*ImageMax* uses a unique Thermal Electric Cooler (TEC) system to heat or cool the developer depending on what temperature you have set on the control panel. When the TEC is cooling the developer, heat is literally being “pumped” away. The small fan that you hear is taking that heat away. When the TEC is heating the developer, or it has reached the set temperature, the fan is off.

## “Quick Finish” Mode

This mode of operation is reached when the processor is running during a normal processing cycle, then either the Power button is pushed or the 110 volt AC power line is interrupted. When AC power is restored and the power button is pushed to turn the processor back on, the LCD screen will read **Cycle Not Done**, **Push Start**. Upon pushing Start, the processor will resume from the holding tank that it was processing, however the developer and fixer hold times are set to zero.

**NOTE:** This mode is great for testing that the processor is functioning correctly without having to wait for normal developer and fixer processing hold times.

# VERIFYING PROCESSOR OPERATION

When trying to identify a film quality problem, it's always best to first start by verifying that the processor is working properly. Use this section as a step by step guide to verify that the ***ImageMax*** is working properly.

## 1. Developer Temperature

With the processor powered up and the display reading, "LID OPEN", "OKAY", or "READY", take the cap off of the developer holding tank. With a digital thermometer (available from stores that carry kitchen supplies for about \$10), stir the developer for 15 seconds, then read the external thermometer. Compare it to the ***ImageMax*** display (left number). Okay if the temperature is within 2 degrees.

## 2. Intra-Oral Film Holder Sensor

Verify that the sensor is working by putting a film holder in the far right tank position. Be sure the film holder label is up and the magnet is down as you insert it into the tank. Close the film processing tank lid, then push DRYER. The time displayed should start counting down from 2:45. Panoramic / ceph films start from 3:00. Open the lid to cancel the dry mode.

## 3. Drain ALL Tanks and Refill with Fresh Chemistry and Water

If the chemistry count is greater than 100 (C:100+), drain and refill. Carefully follow directions on pages 16 and 17.

**IMPORTANT:** Be sure to thoroughly rinse out the developer holding tank before refilling with fresh chemistry. Fill each holding tank right to the brim.

## 4. Run a Processing Cycle

1. Set the developer temperature to 83°.
2. Open the processing tank lid and insert a film holder (no film) into the far right position.
3. Close the lid. When the display reads "READY", push START.
4. Immediately open the tank lid and watch the developer rise. Once full, make sure the developer holds in the processing tank for 65 seconds.
5. The fixer should then rise and hold for 53 seconds.
6. Each water should rise, hold for a couple of seconds, then fall.
7. Close the tank lid as Wash 2 is exiting the black processing tank. The dryer will now run for 2:30.

**NOTE:** Hold times will slightly increase as the C: (chemistry count) gets higher. For example at C:100, the processor will add 10% or 6.5 seconds making the developer hold time 72 seconds. For fixer, at C:100, the processor will add 5.3 seconds making the total hold time 58 seconds.

## 5. Check Troubleshooting and System Error Codes

The next 7 pages cover many possible problems, causes, and solutions. Please call us if you need help.

# TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
Processor is totally inactive. The LCD does not display the message <b>* POWER OFF *</b> when initially plugged in.	<ul style="list-style-type: none"> <li>a) Line cord is not plugged into the wall outlet.</li> <li>b) No power is being supplied to the 110 volt AC outlet.</li> <li>c) The plug is switched and is off.</li> <li>d) Blown fuse.</li> </ul>	<ul style="list-style-type: none"> <li>a) Plug line cord into the processor and the 115V outlet.</li> <li>b) Try another outlet. Check the power cord. Reset GFCI.</li> <li>c) Use another outlet.</li> <li>d) Replace with an 8 amp fuse.</li> </ul>
The LCD Screen displays bars.	<ul style="list-style-type: none"> <li>a) On-board computer needs to be reset.</li> </ul>	<ul style="list-style-type: none"> <li>a) Disconnect the AC Power cord. Wait 1-5 minutes, then reconnect power plug</li> </ul>
Films are not fully drying.  (See the section on OPERATING TIPS, DRYING FILMS for more information)	<ul style="list-style-type: none"> <li>a) Not using <b>WaterFlo</b></li> <li>b) The darkroom has high humidity.</li> <li>c) At least one film holder is not in the far right position.</li> </ul>	<ul style="list-style-type: none"> <li>a) Add 3 drops of <b>WaterFlo</b> to the Wash 1 and Wash 2 tanks.</li> <li>b) Improve air circulation to the dark room.</li> <li>c) Place the film holder in the far right position</li> </ul>
<b>FILL TANK: DF12</b>	All four tanks are empty or not full up to the brim of the tank opening.	Fill each solution holding tank with the appropriate solution. Fill to brim. Stop just before it runs out the tank opening.
<b>FILL TANK: D</b>  <b>FILL TANK: F</b>  <b>FILL TANK: 1</b>  <b>FILL TANK: 2</b>	<ul style="list-style-type: none"> <li>a) Solution is low or empty.</li> <li>b) A float hanging from the top of a holding tank is not moving freely. Open the holding tank cap and look inside.</li> </ul>	<ul style="list-style-type: none"> <li>a) Fill the tank with more water. <b>Fill right to the brim – one more drop spills out.</b></li> <li>b) Manually move the float with your finger - it should float to the top of the shaft. If it continues, use a brush to gently clean shaft. Use chlorinated water.</li> </ul>
The Fill Tank message occurs often.	The tanks are not initially being filled high enough.	Fill holding tanks all the way to the <b>brim</b> – stop just before it runs out.
The wash count “ <b>W:</b> ” did not reset to zero after changing the water.	Wash tanks were drained using the individual water drain options rather than the 2 <sup>nd</sup> drain option for draining both wash 1 and wash 2.	Use the second drain option: <b>Drain Water ONLY</b> 2 drain button pushes, then START
The chemistry count “ <b>C:</b> ” did not reset to zero after changing the solutions.	Tanks were drained using the individual tank drain options.  <b>The individual drain options, options 3-6, do not reset the “W:” or “C:” counts.</b>  <b>See page 31, “Quick Reference”, “Button Functions”, “DRAIN”.</b>	Use drain option: <b>Drain ALL Tanks</b> <b>TIP:</b> To reset C: without having to physically drain the processor, remove <b>both</b> wash tank caps, push the drain button once (Drain ALL Tanks), push START. The processor won't be able to build pressure and won't actually drain, but it will force the “ <b>C:</b> ” and “ <b>W:</b> ” to reset. When the pumps stops, replace the caps, push START.
Solution holding tanks are not fully draining.	<ul style="list-style-type: none"> <li>a) All caps are not on.</li> <li>b) Vinyl drain lines kinked - processor too close to back wall</li> <li>c) Something floating in holding tank clogging the pickup tube.</li> </ul>	<ul style="list-style-type: none"> <li>a) <b>All caps</b> must be on for the processor to move solutions.</li> <li>b) Move processor away from the back wall.</li> <li>c) Remove the debris from the holding tank.</li> </ul>

# TROUBLESHOOTING

(Continued)

PROBLEM	POSSIBLE CAUSE	SOLUTION
Processing time is too long.	<ul style="list-style-type: none"> <li>a) Developer temperature low. See page 8.</li> <li>b) The chemistry count "C:" is high. See page 16.</li> </ul>	<ul style="list-style-type: none"> <li>a) Raise the developer temperature</li> <li>b) Reset by using the first Drain option, "Drain ALL Tanks"</li> </ul>
Display Message: <span style="border: 1px solid black; padding: 2px;">Low Air Pressure</span>	Some or all of the caps are not on, or they are loose.	Install <u>all 4 caps</u> . Caps have an o-ring and seal with just 1-1/2 turns. No need to fully tighten.
During mid-cycle the processor turns off and the display reads: <span style="border: 1px solid black; padding: 2px;">** POWER OFF **</span> .	There was a momentary 110 volt AC power drop off in your building.	Install a battery backup - UPS (Uninterrupted Power Supply). Available from most office supply stores. When you power back on, the display will read <span style="border: 1px solid black; padding: 2px;">CYCLE NOT DONE</span> <span style="border: 1px solid black; padding: 2px;">Press START</span> to continue.
Film has water spots.	<ul style="list-style-type: none"> <li>a) Hard water</li> <li>b) Holding tanks not filled to brim.</li> </ul>	<ul style="list-style-type: none"> <li>a) Use more <b>WaterFlo</b> with your tap water. Not solved, try using purified water and <b>WaterFlo</b>.</li> <li>b) Fill tanks to the cap opening brim - one more drop overfills!</li> </ul>
Black spots on film	Static electricity	Ground yourself before handling film. Work with film <b>slowly</b> . Do not "slide" film out of packet or screen. Pull packet away or fully open screen to remove film.
<b>ALL</b> Films are too dark – both pans/cephs and intra-orals.	<ul style="list-style-type: none"> <li>a) Sediment was not cleaned from the bottom of the solution holding tanks before refilling with fresh chemistry.</li> <li>b) Chemistry count "C:" wasn't reset when solutions drained.</li> <li>c) Developer is contaminated (ammonia smell). Earlier a film holder was removed with fixer on it (Endo) and not washed off.</li> <li>d) Film is defective or got too hot while stored or shipped.</li> <li>e) Dark room has a light leak. Pan and ceph films will be darker than intra-orals.</li> <li>f) Safelight has cracks allowing white light to escape.</li> <li>g) The light over the daylight loader is too bright.</li> <li>h) After the <b>ImageMax</b> lid is closed and the lights are turned on, the over head light is too bright.</li> <li>i) Old chemistry. Check expiration date.</li> </ul>	<ul style="list-style-type: none"> <li>a) See the Maintenance section on how to clean the sediment.</li> <li>b) Use drain option #1, "Drain ALL tanks".</li> <li>c) See the Maintenance section and Complete internal system cleaning.</li> <li>d) Try a film out of a different package.</li> <li>e) Turn all lights off in the darkroom. Wait 2 minutes. If you see any light, seal the leak.</li> <li>f) Turn the safelight off, process a film. If okay, replace the lens.</li> <li>g) Turn off the light. Move the processor to a lower light area.</li> <li>h) Even after the lid is closed, all automatic film processors require subdued lighting. Lower the light intensity over the processor.</li> <li>i) Use <b>ImageMax</b> concentrate chemistry – <b>guaranteed fresh!</b></li> </ul>

# TROUBLESHOOTING

(Continued)

PROBLEM	POSSIBLE CAUSE	SOLUTION
<p>Pan films too dark, but intra-orals are okay.</p> <p><b>NOTE:</b> Pan and cephalometric films are much more light sensitive than intra-orals film. We recommend total darkness when processing pans and cephs.</p>	<ul style="list-style-type: none"> <li>a) Small darkroom light leak.</li> <li>b) Safelight too close to film, or it has a crack in the lens allowing light to escape.</li> <li>c) Daylight loader light leak.</li> <li>d) The light over the daylight loader is too bright.</li> <li>e) Too much radiation.</li> <li>f) Wrong screen/film combination.</li> <li>g) Not using Kodak or Fuji film.</li> <li>h) Old film - perhaps it got too hot.</li> </ul>	<ul style="list-style-type: none"> <li>a) Turn off lights. Wait 2 minutes. Check for light. Seal if found.</li> <li>b) Move or aim it away. Get a new lens. Use our <b>SafeStik</b>.</li> <li>c) Use a flashlight from the outside while looking on the inside to identify. Seal if found.</li> <li>d) Turn off the light. Move the processor to a lower light area. Call XRS for a solid cover over the view window.</li> <li>e) Turn radiation down.</li> <li>f) Correct combination.</li> <li>g) Use either Kodak or Fuji extra-oral film. Many other brands do not process at lower temps according to the Kodak time and temperature chart. Try raising the temperature to 83.</li> <li>h) Try a new box of film.</li> </ul>
<p>Intra-orals too dark, but pans okay.</p>	<ul style="list-style-type: none"> <li>a) Too much radiation for type of film being used.</li> <li>b) Film is being affected by scatter radiation.</li> <li>c) Film holder not in far right position.</li> <li>d) Film holder upside down.</li> <li>e) The <b>ImageMax</b> temperature probe is not working properly</li> </ul>	<ul style="list-style-type: none"> <li>a) Reduce radiation – check film box.</li> <li>b) Move all exposed film at least 10 feet away from tube head or put the film in a lead lined box.</li> <li>c) First film holder must be in far right position otherwise processor thinks cycle is pan.</li> <li>d) Be sure film holder label is up and magnet is down.</li> <li>e) Check the developer temperature with an external thermometer. Stir for 30 seconds. If it reports a different temperature than the <b>ImageMax</b> display, call XRS tech support.</li> </ul>
<p>The first few intra-oral films loaded into a film holder are dark, while the last ones loaded are okay.</p>	<p>Darkroom, daylight loader has a small light leak or safelight problem.</p>	<p>Check and solve light leaks. Turn your safelight off, fix it, or buy a <b>SafeStik</b> from us.</p>
<p>Lost an intra-oral film in the processing tank</p>	<ul style="list-style-type: none"> <li>a) Wrong film holder size.</li> <li>b) Fingers are touching films as the Film Holder is inserted into the processing tank.</li> </ul>	<ul style="list-style-type: none"> <li>a) Verify film size and Film Holder.</li> <li>b) Touch only the top of the Film Holder (Size # - - label).</li> </ul> <p>To retrieve a lost film, use the “Intraoral Film Retrieval Tool” (included with the processor. Also available to order).</p> <p>Run the dryer first. Pull off tape. Use a flashlight to find the film. Then use tool to stick to film.</p>

# TROUBLESHOOTING

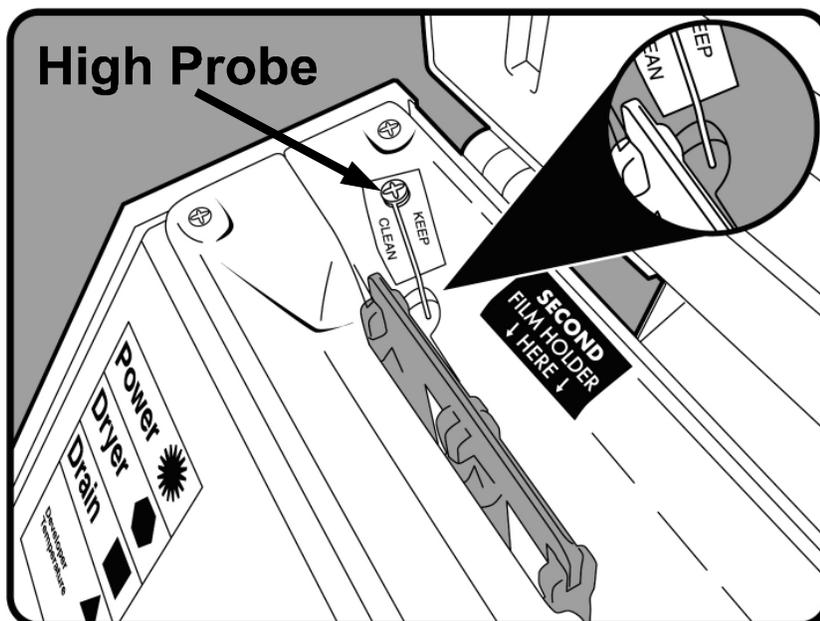
(Continued)

PROBLEM	POSSIBLE CAUSE	SOLUTION
<p>Films are too light</p>	<ul style="list-style-type: none"> <li>a) Chemistry is old.</li> <li>b) Not enough exposure.</li> <li>c) Wrong film.</li> <li>d) The <b>ImageMax</b> temperature probe is not working properly.</li> </ul>	<ul style="list-style-type: none"> <li>a) Change the chemistry. - Use <b>ImageMax</b> Concentrate Chemistry for best results. <b>Our chemistry is dated and guaranteed to be fresh!</b></li> <li>b) Increase the radiation</li> <li>c) Check film box. For extra-orals, check your film - screen combination.</li> <li>d) Check the developer temperature with an external thermometer. Stir for 20-30 seconds. If it reports a different temperature than the <b>ImageMax</b> display, call us.</li> </ul>
<p>Chemistry is not lasting as long as expected.</p> <p>* See Changing Chemistry, pg 16 and maintenance on pg 17.</p>	<ul style="list-style-type: none"> <li>a) Chemistry has not been changed for more than 3 weeks yet C: is still low.</li> <li>b) Sediment is not being cleaned out of the developer tank before new developer is poured in.</li> <li>c) Improper chemistry.</li> <li>d) A film holder has fixer on it. (See Endo processing section for possible handling errors) Developer has an ammonia smell.</li> <li>e) Processor is not level.</li> <li>f) Processor is not properly pulling the solutions from the tank. - No "suction" sound.</li> </ul>	<ul style="list-style-type: none"> <li>a) Select <b>Drain ALL Tanks</b> and change the chemistry. We recommend once / week.</li> <li>b) See the section on MAINTENANCE for details.</li> <li>c) For best results, use <b>ImageMax</b> concentrate chemistry.</li> <li>d) Select <b>Drain ALL Tanks</b>, fill with lukewarm water, run a normal processor cycle, drain again, and refill with fresh solutions.</li> <li>e) Level the processor by running a test cycle. Open the film tank lid after you press Start, then sight across the processing tank when it is full of liquid. Adjust the cabinet legs if necessary.</li> <li>f) See the SYSTEM OPERATION chapter on the "suction" sound.</li> </ul>
<p>Brown / metallic Sheen on film</p>	<ul style="list-style-type: none"> <li>a) Sediment in the developer tank from last batch of chemistry was not rinsed out thoroughly.</li> <li>b) Chemistry is worn out.</li> </ul>	<ul style="list-style-type: none"> <li>a) Be sure to rinse out the developer tank after draining. Follow chemistry change procedures carefully – page 16, especially step 3.</li> <li>b) Change chemistry. Be sure to thoroughly clean the holding tanks <b>before</b> refilling with fresh chemistry.</li> </ul>

# TROUBLESHOOTING

(Continued)

PROBLEM	POSSIBLE CAUSE	SOLUTION
Lost an intra-oral film in the black processing tank.	Fingers accidentally touched the film in the film holder as the film holder was being loaded or unloaded.  Note: Only touch the top rail of the film holder.	Push Dryer. Allow the dryer to run the full 3 minutes. Then use the “intra-oral film retrieval tool” provided with your accessories. Remove one of the double faced tape on one end of the tool. Reach down with the tool to get the film.
Brown, algae-like sediment in the water tanks.	Using non-chlorinated water.	In an empty gallon jug, put one cap full (approx. 1 table spoon) of bleach (like Clorox®), then fill with water. Use this water for filling Wash 1 and Wash 2.
Films do not appear to be properly processed, and the processor does not report any error messages.	Check the stainless steel high probe on the black tank, left side top of tank. The black plastic around the probe may be wet or dirty (may be hard to see), or the probe itself may be pushed back against the plastic wall of the tank.  <b>See the picture below.</b>	a) Be sure the probe tip is centered in the formed well. Insert a film holder. Make sure it doesn't touch anything. Bend it if necessary. b) Using alcohol and a paper towel, clean under and all around where the high probe mounts to the black tank. Check the level of the processor by opening the tank lid during a fix or wash cycle. Site across the tank. Adjust the rubber feet to level if necessary.



**IMPORTANT:** Keep the area around the high probe clean and the high probe centered in the well that's formed into the black plastic tank.

**DO NOT remove or turn the screw that holds the High Probe!**

# SYSTEM ERRORS

Error Number	Error Meaning	Possible Causes	Action
1	When the processing tank was filling, it didn't sense the processing tank low probe within 6 seconds.	<ul style="list-style-type: none"> <li>a) Using purified water that has little or no electrical conductivity.</li> <li>b) Something is obstructing the probe from making contact with the liquid.</li> <li>c) Low probe (white wire) or common wire (black wire) is loose or not making a good electrical connection.</li> </ul>	<ul style="list-style-type: none"> <li>a) Add 6 drops of <b>WaterFlo</b> to the solution holding tank or drain the tank and use chlorinated water.</li> <li>b) Remove the back panel, then locate the low probe in a socket at the bottom of the tank – it will have a white wire attached. Lift the probe up and out of the socket. Clean it.</li> <li>c) Check that the white wire is securely attached to the top of the low probe. Also check black wire attached to processing tank directly under the socket for the low probe. Remove and clean.</li> </ul>
2	The black film processing tank did not drain fast enough.	<ul style="list-style-type: none"> <li>a) All 4 tank caps not on.</li> <li>b) Debris in film processing tank.</li> <li>c) Pinch valve did not open fully.</li> </ul>	<ul style="list-style-type: none"> <li>a) Check caps.</li> <li>b) Open film processing tank lid. Using a flashlight, look to bottom. Clear debris.</li> <li>c) Push START one more time. If problem persists call for service.</li> </ul>
3	The processing tank didn't fill and reach the high probe fast enough.	<ul style="list-style-type: none"> <li>a) All 4 tank holding caps not on or loose.</li> <li>b) Something floating in a solution holding tank.</li> <li>c) Pinch valve didn't open fully or tube is not opening.</li> </ul>	<ul style="list-style-type: none"> <li>a) Check caps.</li> <li>b) Check holding tank for debris.</li> <li>c) Push Start one more time. If problem persists call for service.</li> </ul>
4	The pinch valve tried to open 3 times, but failed to open.	<ul style="list-style-type: none"> <li>a) All 4 caps not on.</li> <li>b) Something has clogged the pickup tube in a holding tank.</li> </ul>	<ul style="list-style-type: none"> <li>a) Check caps</li> <li>b) Check the holding tanks. Clear any debris.</li> </ul>
5 (occurs during power up)	The liquid / air check valve has prevented liquid from getting to the air pump.	<ul style="list-style-type: none"> <li>a) Somehow liquid has been forced up into the air system.</li> </ul> <p>Check ALL holding tank liquid levels often.</p>	<ul style="list-style-type: none"> <li>a) To clear, power off. Remove the Wash 1 holding tank cap. Power On. After air pump runs for 10 seconds, display will read, "Low Pressure". Replace the holding tank cap. Select drain option, Drain Wash 1 then push START. After complete, check each holding tank. Refill or top off with water. Push START to test air system. If okay, run a no-film test cycle. See page 22.</li> <li>b) Remove back panel and tank. Check connections.</li> </ul>
7 (occurs during a process cycle)	Vacuum solenoid valve has failed to open during the power up pressure test	<ul style="list-style-type: none"> <li>b) Circuit board plug or pins are loose</li> </ul>	

# SYSTEM ERRORS

(Continued)

Error Number	Error Meaning	Possible Causes	Action
6	The temperature probe could not be read.	The temperature probe circuit board plug or pins are loose.	Remove back panel and tank. Check the plug. Top plug (blue wires) Call for service.
8	The processor was trying to cool the developer solution (temperature > 87°) for more than 10 minutes.	<p>a) Darkroom too hot.</p> <p>b) The developer tank was filled with water that was too warm.</p> <p>c) Cooling fan air flow blocked or restricted.</p> <p>d) The developer TEC (Thermal-Electric-Chip) cooling fan not working.</p>	<p>a) Room no warmer than 87° F.</p> <p>b) Power off then on. Add an ice cube and wait for developer to cool. Watch every few minutes to make sure cooling is occurring.</p> <p>c) Clear obstruction. Air flows under processor left side, ½ way back.</p> <p>d) If, while in a cooling mode, there is no air flow under processor left side ½ way back, call for service.</p>
9	The black film processing tank is reporting that it has liquid in it when the system expects it to be dry (no standing liquid – droplets okay).	<p>a) During a process cycle, the POWER button was pushed or there was a power outage. Then after POWER on, Display:  <u>Cycle not done</u>  <u>Press START</u>, a button was pushed, other than START.</p> <p>b) High probe needs to be cleaned and/or repositioned.</p> <p>c) Using a flashlight, look down into the film processing tank. If there is no standing liquid (droplets okay), then the low probe is reporting a faulty signal.</p>	<p>a) To clear: select drain option, <u>Drain Wash 1</u>. This option will first drain holding tank Wash 1. Then it will pull the liquid from the black processing tank and put it into the Wash 1 holding tank. Finally, it will push that liquid out of Wash 1 and down the drain. Refill all holding tanks with water. Run a test cycle. If okay, then drain &amp; refill with new chemistry.</p> <p>b) See page 17. Once cleaned and/or repositioned, power off then back on.</p> <p>c) Remove back panel. Locate the low probe in the middle-bottom of the black tank. Probe has one white wire. Lift the probe up and out of the socket. Clean and dry. Look down into the black socket. Clear any debris. Blow air if necessary.</p>

If you can't solve the problem, take no further action. **Please have the following information when you call:**

1. Serial number. (Located back of processor. Also on the front above the developer holding tank)
2. System error number.
3. Holding tank being accessed.
4. Circumstances that led to the problem.

**IMPORTANT:** It will greatly help our ability to quickly solve the problem if you call us when you're standing right by the processor.

# ORDER FORM

## X-Ray Support, Inc.

**FAX: (509) 242-1012**  
**CALL: (888) 230-9500**

QTY	ITEM	PRICE
	Chemistry - <b>ImageMax Concentrate</b> - Standard Case - 8 Dev + 8 Fixer (\$3.25 / mixed qt)	\$ 52
	Chemistry - <b>ImageMax Concentrate</b> - Small Case - 3 Dev + 3 Fixer (\$3.67 / mixed qt)	22
	<b>WaterFlo</b> - Water additive - Improves film drying - Helps create crystal clear images!	7
	<b>Cleaner</b> for the <b>ImageMax</b> developer holding tank - Simple and quick to use - Case of 4	32
	<b>SilverMax</b> Fixer recovery system - Filters for 6 months - EPA approved - Shipping included!	72
	<b>SafeStik</b> Safelight - 5 LED's spaced over 18" - No Shadowing - Portable - Highly Recommended!	85
	<b>Staticide</b> - Anti-static spray for intensifying screens	7
	<b>Daylight Loader</b> - Eliminate the need for a darkroom	295
	Film Holder for Size # 0 (pedo)	12
	Film Holder for Size # 1	12
	Film Holder for Size # 2 (std adult) <b>SPECIAL</b> Buy 3 film holders, get the 4th one <b>FREE!</b>	12
	Film Holder for Size # 3	12
	Film Holder for Size # 4 (occlusal)	12
	<b>Film Holder Tray</b> - Neatly organizes 10 film holders <b>New!</b>	19
	<b>APV Extension Cable</b> - 3'	34
	<b>Staging Box</b> with flashing light for 3 film holders	67
	<b>Staging Jar</b> for intra-oral films	4

FILM - Guaranteed to be as good or better than Kodak, but at a HUGE savings!		
Intra-Oral - D Speed - Size #0 - Single Packets - 100 / box	Compare to Kodak Polysoft Ultra-speed	27
Intra-Oral - D Speed - Size #2 - Single Packets - 150 / box		32
Intra-Oral - D Speed - Size #2 - Double Packets - 130 / box	Compare to Kodak Polysoft Insight	46
Intra-Oral - F Speed - Size #0 - Single Packets - 100 / box		30
Intra-Oral - F Speed - Size #2 - Single Packets - 150 / box		36
Intra-Oral - F Speed - Size #2 - Double Packets - 130 / box		51
5 x 12 inch - Green - 50 / box	<b>Entire order ships FREE!</b> when film total > \$200 Limit 3 standard cases of chemistry Offer good only in continental US	29
5 x 12 inch - Green - 100 / box Fuji		43
5 x 12 inch - Blue - 50 / box		29
5 x 12 inch - Blue - 100 / box Fuji		43
5 x 12 inch - Duplicating - 50 / box		36
5 x 12 inch - Duplicating - 100 / box Fuji		63
15 x 30 cm - Green - 50 / box		31
15 x 30 cm - Green - 100 / box Fuji		53
15 x 30 cm - Blue - 50 / box		31
15 x 30 cm - Blue - 100 / box Fuji		53
15 x 30 cm - Duplicating - 50 / box	<b>5% OFF your 1st Film Order!</b>	43
15 x 30 cm - Duplicating - 100 / box Fuji		72
8 x 10 inch - Green - 100 / box Fuji		47
8 x 10 inch - Blue - 100 / box Fuji	<b>New 23% Lower Prices!</b>	47
8 x 10 inch - Duplicating - 100 / box Fuji		86

(Prices subject to change without notice. Effective: 9-01-2009)

Sales tax added to Washington state orders. Prices do not include shipping. All orders shipped UPS ground.

<b>Doctor's Name</b>	<b>Phone #</b>
	<b>Fax #</b>
<b>Payment:</b>	
<input type="checkbox"/> Charge my credit card on file ending with _____ Expiration Date ____ / ____	
<input type="checkbox"/> Send me an invoice. I'll pay by check.	

# ImageMax<sup>TM</sup>

## Quick Reference

### BUTTON FUNCTIONS

#### POWER

- ◆ Push **POWER** to turn the processor on or off.
- ◆ The processor will automatically turn off in approximately 3 hours if not used.

#### DRYER

- ◆ Insert a pan, ceph, or 1 to 3 intra-oral film holders into the film processing tank.
- ◆ Close the film processing tank lid.
- ◆ Push **DRYER** to turn on the dryer.
- ◆ To cancel dryer, open the film processing tank lid.

#### DRAIN

- ◆ Push to select one of six drain options by repeatedly pushing **DRAIN**, then, push **START** to begin.
- #1 **“Drain ALL Tanks”** drains all 4 solution tanks, then resets both C: & W: counts on the display to zero.
- #2 **“Drain Water ONLY”** drains both water tanks, then resets only the W: count on the display to zero.
- #3-6 The next four options drain each tank individually.  
\* **Options 3-6 DO NOT reset the W: & C: counts.**

#### Developer Temperature

- ◆ Push the up ▲ and down ▼ buttons to adjust the target developer temperature between 68° to 85°.
- ◆ The warmer the developer temperature, the faster the processing will be. Cooler developer temperatures allow more image detail to surface.
- ◆ We recommend you start with 83°. Then, try cooler temperatures, which provide more film detail but longer processing times, as your time and schedule permits.

#### START

- ◆ Close the film processing tank lid.
- ◆ Push **START** to begin a processing cycle.
- ◆ Ready to process film when the developer temperature is between 68° and 85°.

### PROCESSING FILMS

1. Open the film processing tank lid.
2. Insert a pan, a ceph, or 1 to 3 film holders.  
\* **First film holder MUST be in the far right position.**
3. Close the lid and press **START**.

### CHANGING WATER

When the wash water count reaches **“W: 10”**, the number will flash indicating that it's time to change the water. At **“W: 20”**, the **ImageMax<sup>TM</sup>** will require you to drain both water tanks. Select drain option, **“Drain Water ONLY”**

**Tip:** Change the water daily. Doing so extends chemistry life and produces better film quality.

1. Push **DRAIN** button twice, **“Drain Water ONLY”**.
2. Push **START**. The processor will drain the tanks, then display: **“Fill Tank: 12”**.  
(Note: **12** means Wash **1**, Wash **2**)
3. Fill holding tanks to the cap opening brim with water.  
**NOTE:** Add 3-6 drops of **WaterFlo<sup>TM</sup>** before filling.
4. Press **START** to test the system.
5. Ready to go.

### CHANGING CHEMISTRY

Change the chemistry at approximately **“C: 250”**. Select drain option, **“Drain ALL Tanks”** to drain all 4 tanks and reset the chemistry and water counts (**C: & W:**).

**TIP:** If approx. C: 150 at end of 1 week, change the chemistry. We recommend changing chemistry weekly. This creates an easy schedule. Keeps machine cleaner. Reduces processing time. Produces sharper images.  
That's just \$6 / week if using **ImageMax** chemistry!

1. Push **DRAIN** button once, **“Drain ALL Tanks”**.
2. Push **START**. The processor will drain the tanks, then display: **“Fill Tank: DF12”**.  
(Note: **DF12** means **D**eveloper, **F**ixer, Wash **1**, Wash **2**)
3. Work with one solution holding tank at a time.  
**IMPORTANT:** Fill holding tank with warm water, stir, then drain again before refilling.
4. Fill each tank right to the cap opening brim with the appropriate solution. Stop just before it runs out.
5. Replace the cap. Repeat steps 3-5 until all tanks full.  
**NOTE:** Add 3-6 drops of **WaterFlo<sup>TM</sup>** to both water tanks before adding water to thoroughly mix.
6. Press **START** to test the system.
7. Ready to go.

## **X-Ray Support, Inc.**

3020 N. Sullivan Rd., Suite D  
Spokane, WA 99216

Toll Free: (888) 230-9500

Local: (509) 242-1011

Fax: (509) 242-1012

Web: [www.ImageMax.us](http://www.ImageMax.us)