OPERATOR'S MANUAL
AQUABLAST Pioneer
Automatic Washout

MBA

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NEVER ALLOW TO FREEZE

AquaBlast Pioneer Installation Information

This machine has been factory tested and all efforts have been made to remove testing water prior to machine shipment. Never install or store machine in any location subject to freezing temperatures. No chemicals have been used to prevent water freezing that might affect film washouts.

- Locate the water inlet "on-off" valve located on the right side of the cabinet. Install a water line fitting for your water source line taking care to always use two wrenches, one to hold the valve and one to tighten the fitting … use Teflon tape to seal. DO NOT ATTACH THE WATER SUPPLY HOSE AT THIS TIME…. THE WATER FLOW TEST IS FIRST!

- The Pioneer Washout machine has a wastewater drain located on one side of the lower pan. After installation of the drain fitting, make sure the sealing washer was installed on the inside of the pan..

- Install desired fittings to allow attachment of the drain hose used to remove the washout water from inside the Pioneer cabinet.

  NOTE:

  Use a small space under the non-drain side of the unit to raise and tilt the cabinet in the direction of the drain outlet. This will help remove almost all water from the cabinet during machine use. You can also tilt the unit higher to remove all the water from the unit when no longer being used.

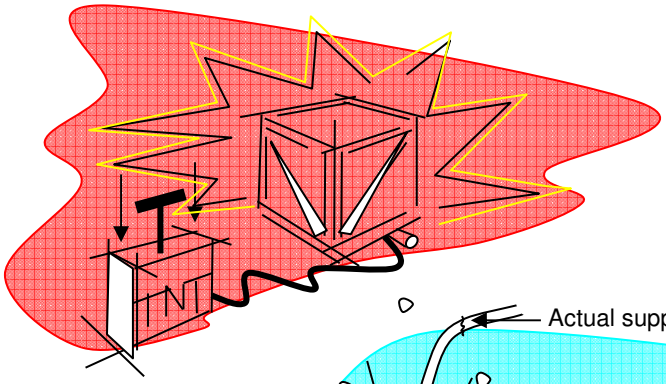
- At this time you want to perform the simple water supply flow test **"Know the water supply flow volume".** This is a simple test and must be performed before attachment of the water supply hose to the unit. The hose ID and length can be different sizes but the supply hose must flow more than the machine usage of 1 gallon per minute. If your test shows any volume above 1 gallon per minute the units will still only use 1 gpm during the washout cycle…the machine does not use a storage tank for machine operation and water flow stops when the water inlet valve is closed…

- Last is the addition of the supplied rotation drive batteries. This unit uses a low voltage DC battery operated gear-motor rotation drive for safe portable machine operation. The two D-cell batteries will supply rotation for many hours of D/C battery operated washouts. Depending on the battery type used the rotation time can be 24-36 hours. Make sure to install the batteries as directed by the diagram on the battery cover.

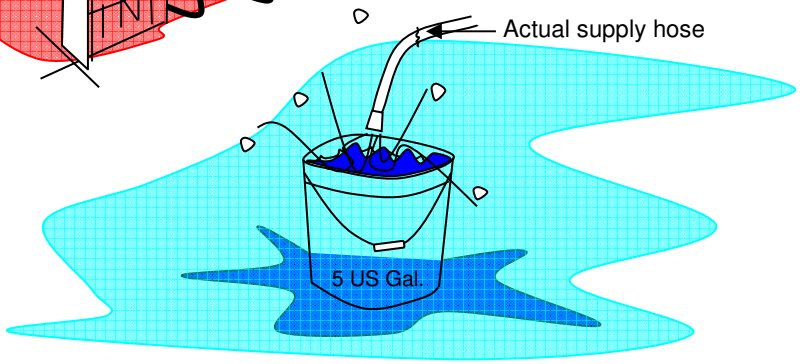
- This unit also includes a battery operated count down timer. The Pioneer is not AC electrical but DC battery operated. Use the countdown timer to set the washout cycle time. This unit relies on the operator being in the same area as the washout unit. Use the count down timer to know when the washout cycle time must be stopped.

SETTING UP THE AQUABLAST PIONEER WASHOUT MACHINE

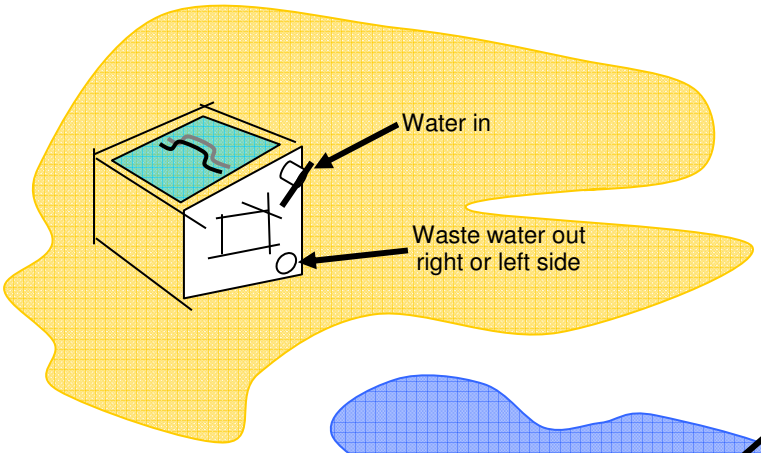
1= Remove machine from shipping packaging



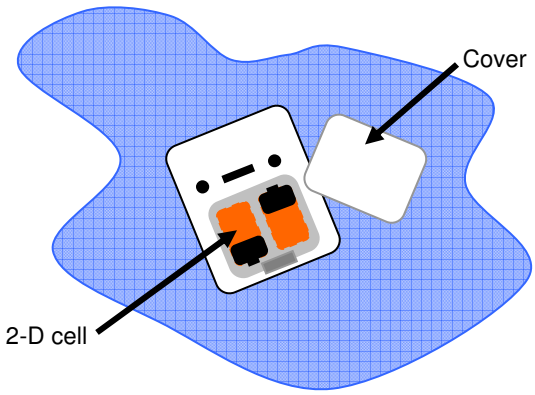
2= Check the water flow rate at the machine using actual supply hose at the installation location



3= Connect washout drain and water supply using flexible drain section and hose



4= Install the batteries in the DC rotation drive gear-motor



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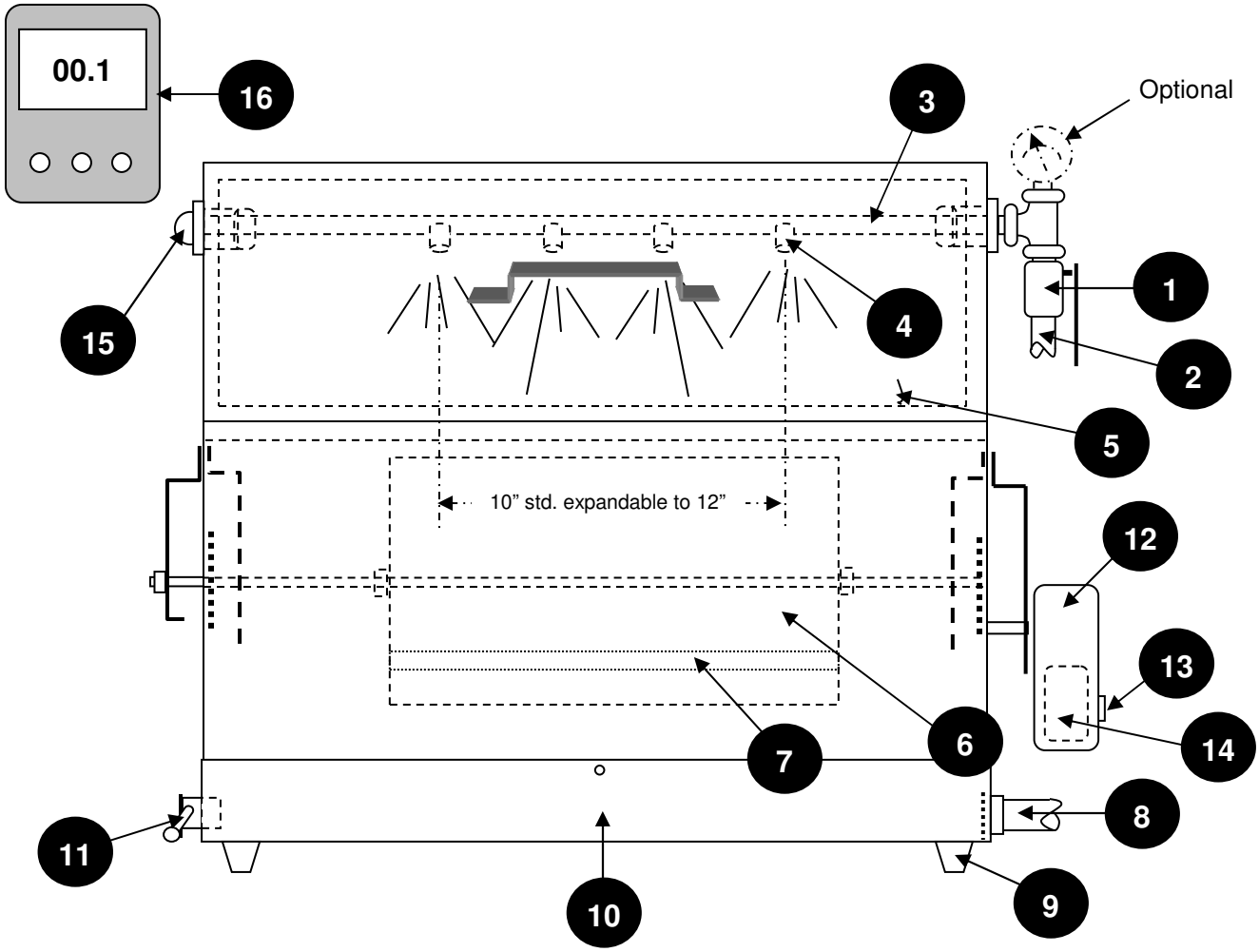
MACHINE CONTROL DIAGRAM



KEY

1. Manual On-Off water valve
2. Water inlet supply hose, not included
3. Water manifold, adjustable
4. Smart-Flow water jet with filter
5. Removable view panel
6. Powered drum
7. Magnetic strip
8. Drain outlet right or left location, standard right side
9. Rubber counter protector legs
10. Removable water tray
11. Optional drain location left side, expandable plug
12. DC drive motor, 2-D cell batteries, not included
13. Rotation drive On-Off switch
14. 2 each D-cell batteries
15. Manifold cap
16. Count-down timer, battery operated

This is a low voltage DC battery operated machine. Batteries are not included to allow customer battery choice type including rechargeable

SET-UP MANUAL & OPERATION GUIDE

AquaBlast Pioneer Semi-Automatic Washout Machine

Important Issues

The AquaBlast Pioneer washout machine is a low maintenance unit designed for semi-automatic film washout using a very low-flow water usage. It has been designed for small shop applications when production washout is not required. The unit can be used for any daily production but washout time is slower than the AquaBlast Elite and Pro model. There are a few important issues which you should know and understand: The unit is a low water usage design using smart-flow water jets. Operation is not the same as other machines, the AquaBlast Pioneer does not use a onboard water storage tank that loses heat or humidity and only uses water during the actual washout cycle. The new AquaBlast Pioneer address the water recycle question by using only one gallon of water per minute during the wahsout process. The unit also uses safe (positive) DC battery rotation drive for hours of run time using two each D-cell batteries. While battery life will vary with type used this drive will supply 24-36 hours of run time.

- **WATER REQUIREMENTS:** The new Pioneer offeres the user the lowest cost of operation and faster washout times using smart-flow design. The Pioneer does not use an open to atmosphere water storage buffer tank or an on board water storage tank because of the extream low water usage design. This type of construction eliminates possible tank overflows, loss of humidity and or valve failures that can result in a flooded mess not to mention the high hot water demand and cost. The low flow design allows operation of the unit to stop at any time and continue hours later with no loss of tank temperature or water volume. This permits intermitent and constant film washout with minimum water usage keeping the washout times constant. Another plus with the Patent Pending system is the elimination of AC electrical power supply or high volumes of water usage on units using water rotation. The simple 2 D-cell batteries last for 24-36 hours and allow the use of rechargable types.

  The AquaBlast Pioneer operates with a customer supplied total water loss system. This is a requirement to eliminate contamination maintenance and maintain consistant washout cycle times. Only very limited usage units permit use of any % of recycled water.

  The exact water supply required for the AquaBlast Pioneer, measured in gallons flow per minute, is about 1 gallon. See and refer to Duty Cycle Chart located on page twelve for total cycles per hour vs. washout time. Water flowing into the unit during machine cycle is regulated by water flowing out the manifold during washout. The Pioneer extream ultra-low-flow manifold requires only 1 gallon of water per minute… The unit can never flow more than cycle jet demand, supplying large volumes of water is not required and this eliminates a water storage buffer tank and high water usage…more will be listed about water usage later.

  It is advised the heated water supply source, customer supplied hot water tank or generator, be set at a lower temperature to maximize total capacity by reducing recovery time if cold and hot water is not blended at the machine water inlet. Call and discuss the blended water supply option, hot and cold water blending valve, or the On-Demand hot water supply that works with the new AquaBlast Pioneer low-flow design. The AquaBlast Pioneer does not lose water temperature when standing idle like other units in the marketplace.

  KNOW THE WATER SUPPLY FLOW VOLUME AND PRESSURE: The standard AquaBlast Pioneer with expream low flow manifold requires a water supply flow of only one (1) gallon per minute. Because this is an advanced design the volume of water you supply into the unit is very low but important.

  Always remove any aeroators from the water supply source when using a standard sink faucet.

  Units can operate for production washouts production but it is important to know the low flow Pioneer unit is built for applications when water supply flow is very limited and high production

is not required. The AquaBlast Pioneer has a longer cycle time for film washout but allows the operator to contine with other tasks during film washout. Supplying more water flow does not mean the unit will flow more water…the most the Pioneer model will use is 1 gallons per minute even if the supply measures 10 gallons per minute unless the supply pressure is high. Always check the supply before making any final supply line connections making sure the supply meets or exceeds the machine manifold requirements listed above. Always remove any aeroators before supply hose connection.

- After the water inlet hose has been installed open the on-off cycle valve #1 and make sure the water supply is correctly installed. Knowing the water supply flow in gallons per minute is a simple and quick test. Factory testing water has been removed for the unit… if the first cycle does not spray water turn the power off and check the water supply line making sure it is open.
- **WASHOUT CHAMBER:** This chamber has been constructed to prevent water escape using the removable viewable cover. You may leave the cover open if the unit is not be used to help keep the inside dry.
- **POWER REQUIREMENTS:** The Pioneer does not use AC power for machine operation. Two D-cell batteries are required to operate the rotation drive gearmotor assembly. While any D-cell will work you can also use rechargable and or long lasting types.
- **CYCLE DRAIN REQUIREMENTS:** Because this unit only uses the water once the cycle drain capacity must be large enough to handle the standard water flow during machine washout cycle. Factory drain is located on the right side of the Pioneer. Water being discharged is located low on the side of the unit for maximum gravity drop into any counter sink.
- **WATER IN CONNECTION:** This unit has a set-up similar to any home opeated washing machine but only one supply hose. Water into the unit is under pressure and requires a customer inlet shut off valve on any heated water supply, this is on the cold water inlet side of the hot water supply tank and not the outlet of the hot water supply. You are required to connect a pressurized hot water line to the Pioneer from a customer supplied hot water source. Because the supply hose is pressurized the hose used for machine connection must be quality high pressure type hose rated for hot water supply. Media Blast recommends stainless braided hose for the machine inlet supply with a 1/2" ID but this ID is not required, knowing the supply flow explained later will determine if any special hose ID size is required …. The customer supplied water supply already includes a water inlet shut-off valve that can be used to shut down the supply.. The unit uses standard 1/2" NPT threads to supply water into the main water inlet located at the side of the unit. Many different types of hoses are available at any local hardware store.
- **DUTY CYCLE:** The machine Duty Cycle Chart (DCC) is based on washout times including 30 seconds for load and unload.. After the washout time has been established the Duty Cycle Chart will let you see the production capabilities of the unit listed in washout cycles per hour. The standard model is listed and a load and unload time of 30 seconds has been added to each washout event to creat the cycles per hour. Only the washout time required affects the total cycles per hour. The exact washout time needed will be established by first running a sample part and knowing the washout time required, this allows you to see the hourly cycle rate of the unit using the Duty Cycle Chart and washout time. If the cycle time is longer you can use simple math to interpulate.

NOTE: It is important to know the water supply volume and pressure before connection to the AquaBlast Pioneer Washout Machine. Take time to accuratly measure the supply flow volume amount before making the final water supply inlet hose connection, this flow rate must be known and slightly higher than the manifold usage required, 1 gpm…the Pioneer model uses the expreme low flow manifold design… all water flow is measured in gallons per minute. Using a watch with second hand sweep, flow water into a known water container size for one minute using the location for placement of the new Pioneer machine and the supply hose used to connect to the new AquaBlast Pioneer unit. Make sure the container has adaquate capacity to hold at least 5 measured gallons. If the water exceeds 1 gallon in one minute or less you have all the water required for operation of the

AquaBlast Pioneer. Depending on the results there is no need to continue with the test if you exceed 1 gallon per minute flow in less than sixty seconds. It is not necessary for you to run the test for one full minute. If the supply hose used exceeds the required flow rate a 1/2" ID hose is not required. ..you can use the optional outlet to test your inlet line pressure, 40 psi and above is recommended.

☻ **TESTING THE CYCLE VALVE:** After testing supply line for water flow the water inlet hose can be attached to the water inlet On-Off valve #(1). Slowely open the customer supplied safety shut off valve. Making sure the top cover is in place slower open the On-Off cycle valve #1. This simple test assumes the drain hose has been installed properly and working. You can install a pressure gauge or boiler type pressure tempreature above the water inlet Tee is you want to know the cycle temperature and pressure.

- **REVIEW THE ENTIRE OPERATIONAL GUIDE PRIOR TO MACHINE OPERATION.** Most problems associated with the machine can be identified by simply reading this manual or consulting the Troubleshooting Guide. If your problem cannot be found in the Troubleshooting Guide, please give us a call. Nearly all equipment malfunction issues can be resolved over the telephone. Almost all problems can be eliminated by reading the manual first!
- **CUSTOMER SUPPLIED HOT WATER REQUIREMENTS:** The most common hot water supply uses a standard water heater type tank. The machine duty cycles will determine the water heater tank size needed to supply heated water to the system. Using the machine Duty Cycle Chart helps to properly size the system when knowing the number of cycles you require for daily or hourly operation. If the water tank is undersized for the duty cycle the washout cycle time may increase.
  - The AquaBlast Pioneer model was designed for smaller shops requiring automatic intermintent film washout. The Pioneer model will washout any number of washout per day but the washout time is longer than the Elite and Pro models. Knowing the washout time and the true water usage, 1 gallon per minute, allow you to calculate heated water usage. If the machine is being cycled 6 times a day with each washout time equal to 4 minutes this equals 24 minutes of washout time using 1 gallon per minute. The total heated water supply required would be 24 gallons if the supply is set for temperature needed. Blending hot and cold will naturally use less heated water.

SET-UP SHEET AquaBlast Pioneer Washout Machine

The information that follows will be used to get your new AquaBlast Pioneer machine set-up and operational in the shortest period of time. Use this sheet for the initial machine set-up and operation. You may refer to this sheet at any time, for more detailed operational instructions and machine maintenance refer to the main operational manual or the Important Issues above.

Remove machine from the shipping box	+	Check the water flow rate at the machine using supply hose at the location for 1 gpm or more, remove fixture aerator	+	Connect washout drain and water supply using flexible drain section and hose	+	Install 2 each D-cell batteries in the rotation drive..install battery in the count down timer according to manufactures instructions	+	Remove cover, install film using magnetic strips, close cover, set count-down time, open water on-off valve and start timer

FIRST

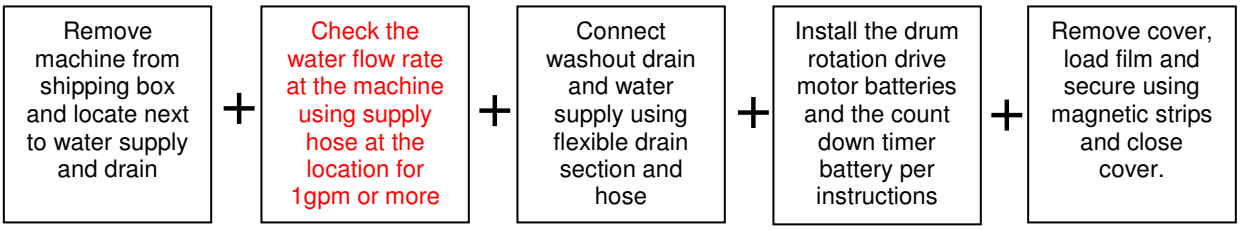
- Remove the machine from the shipping box. The Pioneer weight is 30 pounds; make sure you have adequate lifting abilities before removing from the shipping box. The unit includes rubber legs to protect the counter surface.
- Install the machine allowing adequate clearance for machine view panel removal.
- Remove any items from inside that might have been shipped inside the cabinet, this may include the manual, installation hoses and installation fittings and clamps when shipped with the unit.

- The water inlet valve is located low on the right side of the unit; see Machine Control Diagram (MCD) for location. Before final connection of the water inlet line check the supply flow in gallons per minute using the information above in the WATER CONNECTION SECTION. The water inlet capacity is based on customer flow capacity; see Important Issues above for more information about flow requirements and model selection. The customer supply flow capacity must meet the Pioneer model manifold design. It is advised that you install a master water inlet valve on your hot water inlet supply to allow shut off if you have a hose failure on the supply line, this valve is standard with hot water tank installations. Set the incoming water supply temperature at 90-120 degrees ferinheight, 95 degress is a good place to start with no water blending. Ask for details about cold water blending to reduce cost of heated water supply. Use quality high-pressure hot water hose rated for both hot water and water line pressure…. Because the unit is portable never connect any lines, water in or waste out, using rigid supply line or ridge final drain connection.
- Make sure the drain is installed and secure. The unit must include a section of flexible drain hose for final connection to the discharge drain. Never connect using rigid drain discharge line; the discharge of water on commercial property is normally not permitted. Check local codes for restrictions.
  Standard drain location is right side of the unit, make sure to inspect and clean the bottom pan of any debris. This can reduce the cabinet flow rate and cause leakage.

The machine is now almost operational with the exception of the installation of the batteries. Make sure water on-off valve is closed.

- The standard electrical for the Pioneer model washout machine is low voltage DC battery operated.

NOTE:
Open the unit when not being used to keep the washout chamber dry. Never leave the magnets on the drum when not being used; magnets will pick up small iron particles that rust the drum surface…the drum is magnetic and pitting will cause resting of the drum.



OPERATION

- Remove cover from the cabinet
- Load the film onto the drum surface using magnetic strips to hold the film in place
- Set the count-down timer to the film washout cycle time
- Make sure the cover is installed on the cabinet
- Open the on-off water cycle valve and start the count down timer
- When the cycle timer has timed out close the on-off valve, remove the cover and remove the magnetic strips. Remove the film and dry using your normal method for drying
    - Water tension will help hold the film in place, make sure to remove any trapped air bubbles. After placement of the film on the drum remove two of the strip magnets from the washout tray at the front of the machine. Place one each magnetic holding strip over the top and bottom edges of the film to protect the edges of the film from the water blast. You can use film edge to edge using one magnet to hold the edges of two films.
- Remove the part holding magnets by lifting the magnet edge on the film surface first then lift the entire magnet from the drum and enclosure. This will prevent lifting of the film when the magnet is removed. Store the part holding magnets on any surface but the drum itself. **Never leave the magnets on the washout drum**, small pieces of magnetic material can rust the drum surface when trapping moisture between the magnet and the drum surface.
- Duty cycle has been determined by washout time plus 30 seconds load and unload time. The Duty Cycle Chart (DCC) has been calculated using the washout time period plus load and unload time. Low flow and High Flow manifolds will have different washout times; the Duty Cycle Chart (DCC) will show the maximum cycles per hour solely based on cycle washout time required. See the Duty Cycle Chart (DCC) for more information. Longer washout times will reduce total hourly cycles on any unit.
- Know the water supply volume meets the minimum flow before you connect the water supply line or start to process film washouts. The manifold can only flow water during film washout and only flow manifold usage measured in gallons per minute.
- Make sure to place the film between the centerlines of the right and left fanjets, never use the area outside the centerline of the last jet on each side of the zone for film washout... Jets overlap stops at the last jet on each side…film will be washed out past this area but film washout occurs at a slower rate than jets with overlapping jets on each sides. The Pioneer has an active washout zone of 10 inches. The drum washout area size is 12 inches allowing an expansion of the washout zone if needed at any future date. This requires a manifold change with special fan jet spacing and one more fanjet. It will be necessary to order this special manifold to accommodate the location of the drum and the placement of the fanjets over the drum washout area. This will permit the washout of wider stock but slightly reduce pressure that may slightly increase washout times and demand for water flow into the unit. The drum has been oversized to allow for future film width expansion. Additional jets will affect machine water usage; ask for details before changing the manifold jet number or size.
- Never cycle the unit with the cover removed
- If the machine is not going to be used, close the water valve and open the cover, this will allow the inside of the cabinet to dry

Below is a general Duty Cycle Sheet for the AquaBlast Pioneer washout machine…The maximum cycles per hour is based on the film washout time and the estimated load and unloads time of 30 seconds. Using the sum of these two figures allows the hourly cycles of the equipment to be listed. You can use this chart for both extreme low flow and the standard manifold models, if the washout time is 60 seconds you can load, washout, unload and load 40 cycles per hour and not worry about ever running out of water.

Machine Cycles Per Hour

Maximum cycles per hour based on 30 second film unload and load time

DUTY CYCLE CHART cycles per hour based on washout cycle times listed					
51	45	40	36	32	30
Washout Time 40 sec.	50 sec.	60 sec.	70 sec.	80 sec.	90 sec.
All cycles per hour based on film washout time plus 30 second load and unload time					

Maximum cycles per hour based on 30 second film unload and load time

DUTY CYCLE CHART cycles per hour based on washout cycle times listed					
27	25	24	23	20	17
Washout Time 100 sec.	110 sec.	120 sec.	130sec.	150 sec.	180sec.
All cycles per hour based on film washout time plus 30 second load and unload time					

SERVICE & MAINTENANCE

MINIMUM RECOMMENDED MAINTENANCE SCHEDULE FOR YOUR MACHINE
(replacement schedule can vary depending on equipment usage and other factors)

MAINTENANCE PROCEDURE	EVERY 4 HRS	DAILY	WEEKLY	MONTHLY	SEMI-ANNUAL	ANNUALLY
Inspect Water Jet for proper spray pattern		X				
Inspect Hoses for leaks		X				
Inspect Drain Outlet for leaks		X				
Visually inspect drain pan and clean	X					
Remove magnets from drum	X					
Replace manifold jets						X
Inspect washout lid seal				X		
Visual inspection		X				

TABLE 3: MINIMUM RECOMMENDED MAINTENANCE SCHEDULE

INSPECTING THE FAN JETS: Fan jets should be inspected on a daily basis. Use an undeveloped piece of film the same width as the washout zone and cycle the washout. Look for any areas of the film not being completely removed at the same rate. When a bad pattern is noticed remove the jet and look for any obstruction in the nozzle. The Pioneer model uses internal filter screens on the fan jets.. Many different optional nozzle patterns and materials are available for the Pioneer model. Do not drill….dig….scratch or mutilate any jet during the cleaning process. These are small high-pressure low flow nozzles and they can be damaged when not properly cleaned.

WARNING: The Pioneer uses smart flow fan jets. Operation using a worn out set of fan jets may flow more water and affect cleaning time.

It is advised that fanjets be replaced in sets and not random replacement. This maintains the fan jet washout consistency and washout pressure consistency needed to maintain maximum film washout consistency. If no increase or decrease in the washout time is noticed the jets are normally OK ….continued usage of worn out jets may increase machine demand for water. Remember this unit is a low flow design and the jets determine the water usage. Worn out jets require more heated water supply and normally the cost of jet replacement will be saved in heated water cost savings and usage.

IF FAN JET PLUGGING EXISTS, INSTALL A HOME WATER FILTER: Installing an optional water filter will eliminate solids found in some water supplies. If nozzles are being fouled install any type of under the sink water filter heat and volume rated… used to remove debris found in drinking water supply.

WASHOUT COVER SEAL: The washout cover includes a removable seal used to keep the system neat and clean. The pressurized enclosed system is the cleanest design you can purchase today. This seal may wear out or become damaged during high machine duty cycle. Replacement is quick and simple and if the seal gets damaged or torn, simply replace to keep the machine operation looking neat and clean. This type of seal uses surface tension against the top panel to keep the unit neat and clean.

CHANGING THE JET MANIFOLD DIRECTION: The Pioneer includes an adjustable fan jet washout direction that can be easily changed but factory set for the best performance. The manifold is held in position using two squeeze fittings. Loosen the two fitting caps to move the angle of the jet against the drum surface. After adjustment make sure to again tighten the squeeze fitting caps or leakage may occur... It is important to have the jets overlapping without conflicting patterns. Always make sure the jets are slightly angled in the manifold, the pattern is visible through the optional observation window if the option has been added to the unit. The fan pattern of each jet should reach centerline of the jet next to it. Test, observe and change using an undeveloped piece of film material the same width as the washout zone.

The factory setting can be affected by a change in customer supplied water pressure, not all locations are the same…it is advised that 40 psi be the lowest pressure used. Always test any supply pressure using an undeveloped film sheet the width of the washout zone.

SETTING THE COUNTDOWN TIMER: Follow the instruction supplied with the timer for installation of the battery and or operation of the timer. This timer should be used to count down timer. Set the cycle time and when the timer indicates zero the washout cycle must be manually stopped using the on-off water cycle valve #1.

MAGNET STORAGE: The magnets can be stored anywhere **but the drum surface**. Never store the magnet on the drum…moisture can be trapped between the two surfaces and small magnetic particles will attach to the magnets rusting the drum surface. No service or maintenance for magnet storage is required. When not in use always close the main water supply valve and remove the top loading cover. This will allow the unit to dry out inside and eliminate possible bad water smell.

TROUBLESHOOTING YOUR PIONEER WASHOUT UNIT

PROBLEM	SOLUTION
Inconsistent film washout	❖ Bad film development, consult Ikonics for reasons why ❖ Low water supply ❖ Bad fan jet pattern...remove and clean fan jets.. ❖ Bad fan jet angle, check using undeveloped full width film and short cycle time… ❖ Placement of film beyond the right and left fan jet centerline…reposition film location during washout.. ❖ Incorrect fan jet distance, make sure the fan jets overlap centerline of fan jet on either side. Use the adjustable height to change overlap setting...use the fan jet angle for fine settings… ❖ Check fan jet manifold angles making sure the visual appearance during operation looks the same…adjust as required. ❖ Short cycling the washout; add time to the washout timer... ❖ Water temperature variation, check temperature using gauge installed at the main water inlets. This requires installation of a Tee at the water inlet valve.

PARTS LIST

HARDWARE	QTY	PART NUMBER
Safety window	1 each	115-06-100
Window seal	1 each	100-11-040
Washout lid handle	1 each	115-06-101
12” magnet strips HD	3 each	100-11-611
Drum 8”x 12” wide	1 each	115-06-102
DC Gear motor	1 each	115-06-103
Drain cabinet fitting with seal	1 each	115-06-108
Optional drain location plug, expandable	1 each	115-06-104
Cabinet legs, rubber	4 each	109-08-004
Stainless drum shaft	1 each	115-06-105
WASHOUT		
Manifold, 10” washout zone x 24”	1 each	115-06-106
Washout fan jet	4 each	115-06-109
On-Off water valve	1 each	100-26-098
DC ELECTRICAL		
Gear-motor drive DC	1 each	115-06-103
Countdown timer, DC	1 each	115-06-107

WARRANTY

Media Blast & Abrasives, Inc., hereinafter known as " Seller" , warrants the equipment and products sold hereunder against defects in material and workmanship for a period of one year from the date of shipment to buyer.

Equipment, products or parts manufactured by others but furnished by seller will be repaired or replaced only to the extent of the original manufacturer' s warranty (except motors).

The following conditions apply to limitations:

1. High wear parts are not covered, these parts include window, fan jets and lid seal.

2. Warranty does not apply to misuse of the machine to include improper abrasive type use and or abrasive mesh size used in the equipment. Water conditions may require the installation of a viable water filter.

3. The machine warranty is not transferable and only applies to the original buyer.

4. Replacement warranty parts will be sent at no charge to the buyer for warranty replacement. The cost of labor is not covered under the machine warranty unless preformed at the seller's facility.

5. A Returned Goods Authorization (RGA) form must be obtained before the product is returned to seller for warranty repair. Without an RGA number the product will not be accepted.

6. Seller's entire liability, whether under warranty, contract, negligence, or otherwise, shall be limited to repair or replacement, F.O.B. Seller's place of business, of the original equipment found to be defective within the warranty period.

MBA **Media Blast & Abrasive Inc.**