User Profile: Chuck Farmer

Successfully Using A JOBO Processor With Pyro Developer For *Stunning* Results!

Some years ago several friends whom I respect greatly were doing their best to get me to experiment with PYRO (Pyrogallol). I am what is known as a dinosaur or perhaps better stated, one who resists modern machines and products that are labeled to be the 'latest and greatest'. I couldn't understand why I should change from my old standby D-76 that I had used for years with good results. After hounding my friends with many questions and finding that Pyro was discovered long before I was born, I thought it might be worth a try.

I took off for the hills with my trusty 5x7" and a few sheets of film which would be processed in PMK PYRO, formulated by Gordon Hutchings who wrote "The Book Of Pyro" (must reading).

An evening session in the darkroom made me understand what the rage of Pyro was all about. I found detail in the negatives, local contrast, and highlight separation that I had never seen before with other developers. Needless to say, I decided to stick with it and develop a system to make it work for me. My major problem was spending all night in the darkroom processing in a tray and getting little done. Due to the nature of Pyro, I felt most comfortable doing one negative at a time, hence slowing the process greatly. I needed a faster system. Oh My! Another new machine to deal with, a JOBO CPP-2. OH... NO!!!!

I want to tell you that I am in no way, nor do I profess to be, a technician. I simply take photos and make prints. I leave the technical part to others who do it well and are kind enough to give us their results. True, we all need enough knowledge to make the system work for our needs.

Pyro comes in many formulas. I prefer the PMK because it is an "A and B" liquid and very easy to mix. It is known as a hardening, staining, and non-silver migrating developer. As the developer works on the emulsion it hardens, which reduces silver migration, making an extremely sharp image. The stain of Pyro gives the negative about 60% of its density. Stain can be removed or added, which we will discuss later. The developer must be kept moving during the complete time period of development to insure exact results.

I must tell you that developing one negative at a time in a tray did not give me the results I get with my Jobo CPP-2. I often found uneven staining and developer swirl caused by not moving the developer enough. The Jobo also allows me to control time and temperature with ease.

Now let's develop some film!

Whether you have a new or used Jobo system, all bottles, drums, lift, and etc. must be flushed with filtered or distilled water to insure all contaminants are removed.

I set my temperature control to 70 degrees. All solutions are mixed in distilled water and placed in the Jobo to bring to proper temperature except for the Pyro. I put two bottles of plain distilled water in position which I will use just before I am ready to add the Pyro. Now, everything in place, turn the light out and load the film into the clean dry drum, put the drum lid on and turn on the light. Attach the drum to the unit, turn the rotation motor on and check for even movement. Use a rotation speed slightly higher than F. Rotating too fast may cause the film to overlap, rotating too

slowly can cause strain on the motor because we will use maximum solution quantities recommended for the drum.

Use two pre-soakings of three minutes each. You will note particularly with Ilford films that the presoak water comes out of the unit very blue in color. This is caused by the removal of the protective emulsion and antihalation coatings. The construction of the drum causes the presoak to work not only on the surface but also the back side of the film. This is very important with Pyro because the staining must coat both surfaces of the film. Towards the end of the presoak, mix the "A and then the B" Pyro solutions in the recommended amount of water. CAUTION: Pyro is (TOXIC), use rubber gloves during handling and if the solutions are pre-mixed from the powder kits, use a mask. The solutions are well mixed when it turns orange and begins oxidizing immediately with a life cycle of about twenty minutes.

Add the Pyro to the drum as soon as the presoak cycle is done. Because of the long wetting, the Pyro will attack the film surface evenly. As the film develops, it also hardens rapidly in the first few minutes and slows in the latter stage. If the electricity goes off, remove the tank from the unit and roll it in the sink to continue the process, otherwise the film is lost.

My development time is about fourteen minutes for 8x10" Ilford HP5+ at 70 degrees. Pyro may be warmed in the Jobo for faster development times with no degradation in quality. I prefer longer development times so the negative doesn't harden so fast as to cause problems. Because of the extended time and oxidation rate, I dump and replace the developer with a fresh batch exactly half way through the cycle saving the last batch in a bottle for re-staining later.

At the end of the development cycle, add a stop bath of water with just a pinch of acid, dump and add (non-hardening) fix for the manufacturer's recommended time. Remember, the negative has already been hardened. After the fix, dump the saved Pyro developer back into the drum for two minutes or so. Even though the developer is completely oxidized, it will re-stain the film in proportion to what the fix removed. I like a fairly heavy stain because it will mask any sign of grain even in a very large print. Stain can be add by lengthening the re-staining time or be removed to taste by a soaking in hypo clearing agent. Remove the film from the drum and use a tray so you can observe the step.

After the end of the re-staining process, dump and add filtered or distilled water immediately. Dump and add fresh water every minute for the first six minutes or so. The Pyro negatives continue to stain during this process. If it is not done, the film will stain unevenly. I continue this wash cycle for twenty minutes in the Jobo processor because I know the drum action will be the best wash. The wash could be done in a film washer or tank. Make sure that the negatives are separated with fresh water moving over all surfaces for twenty minutes.

Now, take the drum from the processor and remove the drum lid with the Jobo foot pump. DO NOT try to remove the lid by blowing air into it with your mouth or you may find yourself on the way to the dentist looking for new teeth. Carefully remove the film from the drum; I use a surgeon's clamp to grab an edge and pull out, then place each negative in a tray of Photoflo mixture and hang to dry. Never use Photoflo in the Jobo.

If this is your first experience using Pyro you will be very surprised. The negatives look unlike any you have ever seen; very thin, yellow-green in color, and they seem to glow when wet. You will think the negatives will not print. Pop one into your enlarger and project an image, you won't believe your eyes! Make a print and you will jump up and down with joy.

Well! Geee Whiz! Looks like this new Jobo Rotary Processor wasn't that difficult to figure out and now I get perfect Pyro negatives... right ?

Charles P. Farmer, Co-owner of "THE F STOPS HERE" - *Large Format Camera Store and Photographic Gallery, Fine Art Photographer, SANTA BARBARA, California.*

NOTE: *A soon-to-be-released portfolio of ten 8x10" contact prints, mounted and overmatted on 16x20" museum board and handsome presentation case limited to fifteen editions is available through "The F Stops Here Gallery" (805)898-8800.*

Feature Article: The Multitronic

Successor To The JOBOTronic 2000 And Lots More!!

By Paul Rowe, Technical Service Manager

A typical phone question over the last year has been "Do you know where I can get a JoboTronic 2000? Don't you have just one left ?" The design of the JoboTronic 2000 had been with us for a long time. While the machine had a number of ardent fans (I know photographers who own two and three of them just to be sure they are never without it), it couldn't go on forever. Actually, one of our suppliers precipitated the demise--he discontinued some of the components and we couldn't find substitutes that would work. Anyway, this is a case where the new product can quickly make you forget the old one.

The functions of the new MultiTronic are so numerous that the only thing that really does it justice is the instruction manual, but I don't want to be like some writers and make their article a rehash of the manual. Let's just talk about what it is and what it will do. The MultiTronic is a microprocessor controlled measuring instrument to help you determine correct exposure time and the brightness range of a negative. It also it works as an exposure time switch to control your enlarger for accurate and repeatable exposure times.

Lastly, it will serve as a programmable process timer to give accurate timing to the processing of both film and papers.

The unit operates on standard household current, 110-120 V/60 Hz., and has a power consumption of 5.5 Watts. The switching capacity is 460 Watts which will give you a clue about using it with your enlarger. Under 460 Watts and you have no problem. The measuring range is from .005 to 100.0 Lux. Now .005 Lux is DIM, and the sensitivity range is broad). Exposure time range is from 0.1 to 999.0 seconds. There are some other figures we can copy, but let's cover them when we come to the applicable steps.

The probe of the MultiTronic can be used as a point or spot probe, or to take reflective readings from a point by the lens, or as an integral reader of the entire diffused negative. The first two programs have these features available. First making a perfect print by trial and error allows you to establish a program for that paper. After that, unknown negatives can be read and exposure time determined providing you are using the same paper and reading method as was used when you programmed. Once the exposure time for the unknown negative is determined you shut off the enlarger light, place your paper in the easel, and press the expose button to complete the exposure.

The third program limits you to using the probe for spot readings, but adds the ability to take readings at the shadow and highlight areas. The unit will determine a paper grade for use with that negative.

Programs four and five allow the use of the spot probe for multi-point measurements up to a total of 9 readings. The readings are averaged, and the timer display will be the final exposure time as calculated by the unit.

There is a dial on the MultiTronic which affects all of the above programs, and allows you to make manual plus or minus adjustments to any exposure time in one-sixth (1/6) stop increments over a range of 1-1/6 stops.

The sixth program allows the measurement of the Log Density range of a negative. We have several customers who are using this feature for some of their zone system work and report good results. At Jobo, we have run some tests, but there is more work to be done before we are willing to say an unqualified yes to the use of this program as a reference densitometer.

The seventh program allows for the manual setting of an exposure time - it serves as a digital enlarger timer.

Programs eight, nine, and ten are the process timers. Each program allows for the timing of up to nine different process steps. The range for each of these steps is from 0.00 seconds to 59.50 (59 minutes 50 seconds). The timer counts down visually during the process step, and will count up with an audible warning if the time is exceeded. Each step may be activated with either the press of the Start Key, or by the use of a sound activated switch. The sensitivity of this switch can be adjusted, and any loud noise, voice, or the clap of the hands can start the timing sequence. Once a timing step has been activated, the sound switch is no longer operable until that step is completed.

Another feature worthy of mention is of particular interest to those of you who like to use a safelight for their darkroom work. The MultiTronic can be calibrated to your darkroom and the lights you use during printing and processing. In this way you can compensate so that your safelight will not affect the readings of the unit.

Do you use variable contrast Black & White paper ? It is suggested that you do all of your calibrating and exposure measurement using the Multigrade 2 filter. This will allow work in the range of 0 to 3-1/2 without any compensation for the filter.

I found that the MultiTronic is a joy to use. I have had a unit in the darkroom since it first came into the U.S. about October, 1992. It is so similar to the JoboTronic that the transition is easy. I was soon able to start using the multi-point readings and the paper gradation with confidence. Personally, I find its paper grade selection a trifle contrasty for my taste by about a half grade, but this is highly subjective, and every user would have to decide for themselves.

As you can see, the MultiTronic is a lot more than the JoboTronic 2000 ever was. It is part #6220, and the suggested retail price is $495.00. If you are interested in more information, let us know and we will send a copy of the instruction book for you to check out.

Article II: Reels, Reels, & More Reels

More than you ever wanted to know about reels !!

We often get calls asking about a reel to do some size of film, and at first are surprised that this isn't common knowledge. Then we start to remember all of the changes and new items that have been introduced since the last JORP (*Journal Of Rotary Processing*) was published in the late fall of 1988, and it is a wonder there aren't more questions. Some of the information is hard to find, and some even the dealers don't really know about, so let us take some space and time to cover all of the available film processing reels that JOBO has available...

Plastic Roll Film Reels

#1501- 1500 Series Tanks

White plastic, about 3-1/8" dia. Holds 1 roll 135-36, or expands to take 2 rolls #120, or 1 roll of #220. The little red clip is used to separate the two rolls of #120, but is left out of the spiral when loading 135 or 220.

#1502 - 1500 Series Tanks

White plastic, about 3-1/8" dia. Fixed width (not expandable), to process #110 size (16mm) film. With the use of the red clip this reel will handle 2 rolls of 110 film, or approx. 5 feet of 16mm film.

#2502 - 2500 Series Tanks

Black plastic, about 5¼" dia. This reel has the same capacities as the #1501 above, but in addition it can be expanded to an intermediate position to take #127 Film (46mm). Two rolls with the use of the red clip.

#2517 - 2500 Series Tanks

Clear or black plastic, about 5¼" dia. This reel is of fixed width for **70mm** film. It will contain about five feet per load, and provides a way to process short lengths of 70mm.

Plastic Sheet Film Reels

#2509-N - 2500 Series Tanks

Clear and black plastic, about 5¼" dia. Holds 6 sheets 4x5". This reel was redesigned about 2 years ago, so that it now holds 6 sheets with no problem, and also uses 2 plates or end-caps that fit over the two entrances for film. These plates keep the film from backing out of the reel during processing, and also change the flow of chemical through the reel. This results in more even processing. The reel can also be collapsed to hold six sheets of 9x12 cm film, and end plates are furnished for this size as well. Further collapse of the reel allows six sheets of 6x9 cm film to be loaded. No end caps are necessary due to the small size of the 6x9.

#2514 - 2500 Series Tanks

Clear and black plastic, about 5¼" dia. Fixed width, for Polaroid 4x5" sheet film. Six sheets per reel.

#2518 - 2500 Series Tanks

Clear and black plastic, about 5¼" dia. Fixed width, to hold 6 sheets **2¼ x 3¼"** film. There are still some people making this format, like Kodak in both B&W and Color Negative, and there are a few of us who own the cameras that take it.

Long Roll Film Systems

There is a whole series of loaders and reels, with tanks, that will fit the larger manual processors (CPA/CPP-2 with Lift) and the larger automatic processors (ATL-2/2+, ATL-3). The tanks are 24" in circumference, and are part of the Jobo 3000 series. The reels load from the inside to the out, and it is not possible to load them without an accessory loader base. The following is a listing of the tank and reel numbers, and the description of the film they will hold.

Tank # Reel # Description

#3031, #3071, 8 meter / 8mm

#3032, #3072, 8 meter / 16mm

#3033, #3073, 8 meter / 35mm

#3038, #3078, 8 meter / 46mm

#3039, #3079, 5 meter / 60mm

#3034, #3074, 8 meter / 60mm

#3035, #3075, 5 meter / 70mm

The greatest demand are for the outfits to do 5 meters of 70mm film and 8 meters of 35mm film. The 5 meter capacity allows the reel to take the 15 foot load from the 70mm cassette as used by Linhof, Hasselblad, and others. The 8 meter length (about 26 feet) lets you process at least part of a long roll 35mm back. We know that this isn't a full 35mm long roll load, but it is all that we can fit in the processor.

This listing is only intended as an overview. If you have need or want to get more information on these or perhaps other (longer) roll film equipment, contact your dealer, or call us directly at Jobo.

Stainless Steel Film Reels

Yes, perish the thought, the bastion of PLASTIC has compromised itself with big steel (gasp!). Ever since we started selling in the U.S., it was apparent that there was a group of potential Jobo users that were firmly committed to using Stainless Steel reels, and our plastic reel stood in the way.

In early 1989 we made available a system which utilizes the Jobo 1500 Series Tanks. The center core and funnel of the normal 1500 Series are replaced by a stainless steel center core and a plugged funnel which holds the top of the steel center core when the tank is assembled. Both the 35mm and 120 film reels which are utilized have a standard configuration at the center of the reel which allows the steel center core to position and hold the reel in place within the tank.

This means that not all stainless steel reels will work!!!

Reels that fit the steel center core must be utilized. Also, because of the size of steel reels they do not replace the plastic reels in the 1500 Series on a one-to-one basis. The following chart will be helpful for those who want to consider the change. Be aware, that these reels cannot be used with an ATL-1000 processor - it requires the 2500 system tanks.

Part #1555 is 35mm Steel Reel, Part #1557 is 120 size Steel Reel.

Tank #, Centercore*Part #, Qty 35mm, Qty 120

1520, 1561, 1, 1

1540, 1562, 4, 2

1520 + 1530, 1563, 5, 3,

1520 + 2x 1530, 1564, 8, 5

*Note: The plugged-lid funnel that's required for the stainless steel center core is included.

If you already have the 1500 Series, as many do, then you will need the proper reels, and the center core for the tank combination of your choice. The set-up works great, and let me assure you that the Stainless Steel Reels are the best you will ever see. They are truly heavy duty, and beautifully manufactured in England.

New Paper Drum

One of our dedicated users, who happens to produce lots of 11x14 prints, pointed out that the only way we could do **two** 11x14's was in the #3063 drum for 20x24's. That required much more chemistry than was needed for the 11x14's, just because the drum is so big.

Now there is a new drum, the **#3062** , which holds two 11x14 prints, and uses 1/3 less chemistry (200 ml, actually) to cover the prints. Available now from your dealer.

This covers all of the options which Jobo offers for doing film on reels (and a new paper drum). You'll find another article reviewing the Expert and 3000 Series drums used for doing sheet film in this issue, too.

Article III: Experts (Drums) Revisited

By Paul Rowe, Technical Services Manager

The Jobo "Expert" Sheet Film Drum made its first appearance in the fall of 1988, and most Jobo owners have heard about the system or already use it. Still, there are enough questions that it is worth reviewing the assortment of drums and their performance.

The Expert Drum looks like a revolver chamber, with individual cylinders to receive the film, which is loaded with the emulsion in--away from the walls of the cylinder. The lid of the Expert forms a common chamber over all of the cylinders, so that chemical introduced into the drum can flow

freely into each of the cylinders as the drum rotates on the processor. It should be noted that the lid of the Expert Drum is a Cog Lid, and it will only fit on the larger manual processors with a JoboLift, or on the larger AutoLabs. The Expert Drums will not fit the CPE-2 or CPE-2+ processor, nor will they fit the ATL-1000.

We at Jobo, and many long term users of Jobo equipment, will tell you that the Expert presents the finest sheet film processing we have ever been able to offer. In a nutshell, the Reel system 2509-N offers excellent, even development, and the Expert is even a little better. The decision on which system to choose rests with the volume you need to process. The Expert is limited to the figures above--ten sheets of 4x5" is the maximum. With the 2509-N reel you can process 3 reels (18 sheets) with the CPA/CPP-2 or the ATL-2+, and with the ATL-3 you can even process 4 reels (a maximum of 24 sheets).

Since I have used both systems and all of the above drums, I'll make a few personal observations. The ability to commit my sheet film to an individual cylinder where it is not close to anything else that may in some way scratch or affect it compensates me for the lesser number of sheets I can run per batch. For this reason I particularly like the 3006. The 3010, holding 10 sheets, is composed of 5 cylinders and you load 2 sheets of 4x5" per cylinder. There are divider bars in each cylinder to separate the two sheets of film. This works fine, but more care must be taken in loading and unloading. I should also point out that a drum like the 3005 works equally well for doing multiple 8x10" prints.

Expert Drum capacities are:
Expert Drum #3004, 4 sheets 8½x12"
Expert Drum #3005, 5 sheets 8x10"
Expert Drum #3006, 6 sheets 4x5" / 5x7"
Expert Drum #3010, 10 sheets 4x5"

Unlike the rest of our drums and tanks, the Expert Drums have a varying solution requirement. That is, you change the amount of chemical used based on the number of sheets of film being processed. For instance, with 4x5" black and white film, we recommend you use 50 ml of solution for each sheet being processed. If you're processing 6 sheets you will need 300 ml. But we also have a minimum level requirement, even if you are processing just one sheet of film. The 3006 and 3010 drums, for instance, must have 210 ml of solution moving around within the drum to get the proper developing action.

Another difference from our other drums is the method for opening them. With the 1500, 2500 and 2800 systems, you have a handy red lock ring to loosen and remove the lid. But with the 3000 system, we use a press-fit lid. Once attached, it is a challenge to remove by hand, so we introduced the #3360 Foot Pump. This handy device pumps up the air pressure within the drum and literally pops the lid off the drum. In fact, the larger the drum, the more likely the lid is to be launched, so keep your hands firmly on the lid while pumping with your foot, so the lid won't get away from you. Please do NOT use compressed air to open these drums, as the pressure may get too high and damage the interior of the drum.

If you haven't yet seen an Expert, just drop us a line, or call, and we will send you a copy of the instruction sheet.

Article IV: Push Processing

From ***Mastering Black-And-White Photography*** by Bernhard J. Suess.

Many photographers find that working with available light is preferable to using a flash or adding light. You can work quicker, don't have to set up extra lights or a flash, needn't wait for the flash to recycle, and are less obtrusive and distracting to the subject. People look more natural when they're photographed in available light.

Shooting without a flash also gives less of a "spotlight" effect. In other words, you'll see the subject in its surroundings instead of against a darkened background. Those surroundings give the viewer a sense of what is happening in the photo. The natural light will also cause you to shoot at a wider aperture, thereby blurring the background. This immediately directs the viewer to the subject and avoids visual confusion.

Shooting under low light levels, without a flash, usually means you'll have to push the film. Push processing does not work well with conventional film developers. Excellent results can be obtained with Edwal FG7, especially when used with sodium sulfite. Edwal recommends shooting with film speed set a stop faster than usual. I have found that I get excellent results shooting with HP5 Plus rated at an EI of 640.

Although not precisely correct, sodium sulfite is often referred to simply as "sulfite". It's a practice I'll follow here.

When I develop the film, I use FG7 diluted one part of developer with fifteen parts of a 9% sodium sulfite solution. In other words, to obtain 16 ounces of working developer, mix 1 ounce of FG7 concentrate with 15 ounces of sulfite solution. Mixing the 9% sulfite solution is easy. Measure one ounce by volume (45 grams by weight) of sodium sulfite and dissolve it in about 12 ounces of water at room temperature. As the sulfite dissolves, the temperature of the water will rise slightly. Use cool water to bring the volume of the sulfite solution up to 15 ounces. Add one ounce of FG7 concentrate and the developer is ready for use. Note that Edwal recommends using the developer at 70°F, not 68°F.

My developing time with FG7 and sulfite is five minutes at 70°F. Edwal recommends six minutes for this combination. My time may be less because I use a JOBO CPP-2 processor, which agitates the film constantly. The negatives print easily and are full-toned. In most cases, little dodging or burning is necessary.

The sulfite solution does several things for the negative. Sodium sulfite in this concentration acts as a silver solvent, meaning that as the film is being processed, the sulfite solution dissolves some of the reduced silver. This minimizes the grain which is usually much larger (and more apparent on prints) when film is pushed. The sulfite also acts as an activator, so the developer works faster than it would without sulfite. In fact, Edwal's recommended times for FG7 without sulfite are twice as long. If you want to cut back your developing time to reduce contrast, you may want to use the developer mixed without sulfite. Although possibly a little grainier, the results are otherwise similar.

The HP5 Plus and FG7 combination is the one I use whenever I must shoot under low light levels. The results are exceptional, and do not look "pushed." I'd recommend trying it if you need to shoot in available light.

Sometimes, the light levels are so low that pushing the film one stop is not enough. Kodak's T-MAX 3200 is ideal for this type of situation. It's grainy but allows you to shoot unobtrusively. Using the T-MAX developer you can even push it to EI 6400 and beyond.

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Tips & Techniques: Kens Korner

3000 Series (Very) Large Format Sheet Film Drums

By Ken Owen, Customer Service Manager

Once in a while, a photographer gets an urge to shoot some really large format images, to get that "perfect shot, completely without grain." For most of us, that aspiration would be satisfied with a 4x5" , or certainly an 8x10" camera. But recently, there seems to be an interest in *really* large image photography, such as 11x14" or 16x20" films, and even some "new" panoramic formats of 7x17" or 12x20". The first question we usually get from customers with these formats is can I process this film in a print drum?

While Expert Film Drums can be used for paper, paper drums really cannot be used for film. The reason is simple: With paper, we are only concerned about processing the emulsion on the front side of the material. But with film, there is usually a second emulsion coated on the "back" side of the film: The anti-halation layer. Its purpose is to prevent ghost images within the camera, which would be caused by light passing through the film, bouncing off the metal plate behind the film, and passing through to the emulsion a second time. This anti-halation layer must be cleared off during the process. In print drums, the film's back side would be in contact with the various ribs of the drum, creating an undesirable striped effect. It can be cleaned off manually, but that is an awkward step that can be avoided with the right equipment.

Expert drums accomplish it by the unique design of the smaller tubes within the larger drum. But for these very large formats there are no Expert Drums. So we have designed large format film drums. The key to the design is a flexible plastic film holder which rolls up to fit in the drum, and supports the film away from the inside wall of the drum to allow chemistry to flow evenly on both sides of the material. Each format holder is hand-made to match the format needed. Then 3000 series drums are built to match the format holder as closely as possible to help economize on the chemistry needed for processing. The final result is a matched drum and format holder to process the large film sizes.

Our #3027 Drum is for 1 sheet of 11x14 inch film. The #3028 is for 16x20 inch film. And then we have custom sizes. We have made format holders and drums to handle 7x17 and 12x20, and very recently we made a 14x14 inch format holder for use by a planetarium.

As with all 3000 series drums, these cannot be used with the CPE-2 ,CPE-2 Plus or the ATL-1000 processors. The machines are too small for these large drums. And they are a bit on the expensive side. But if you are interested, in these very large formats, and you need a drum to process the material, Jobo can build a drum for your format. As we have said before, you can process just about any film or paper in a Jobo Processor!