

BPI Advanced Computer Gradient IV™

For use only by qualified personnel in a laboratory environment.

Due to high operating temperature, access should be restricted.

Specifications

The BPI Advanced Computer Gradient IV™ uses microprocessor technology to make precision lens coloring easy. The operator can select from seven programs to create gradient and solid lenses as well as special effects. The gradient is controlled by the computer to create consistent results like never before possible.

The Computer Gradient IV™ also provides the fastest method available anywhere for producing solid tints. The constant motion of the lens in the dye solution helps keep pigments and/or coating solutions in suspension.

HEIGHT	WIDTH	LENGTH	VOLTAGE	WEIGHT	FUSE	AMPERAGE
5 in. (Head)	5.25 in. (Head)	7.5 in. (Head)	115 or 220 v.	7 lbs	1 amp/250v.	1 amp
12.7 cm. (Head)	13.33 cm (Head)	19 cm (Head)		3.175 kg		
THE SET-UP KIT INCLUDES THE FOLLOWING PRODUCTS:						
<ul style="list-style-type: none">• One nylon swivel• Two thumbscrews• Instruction manual• One gradient pole			<ul style="list-style-type: none">• One BPI Lens Holder II™• One L-rod• One gradient tip• One extension arm			

Unpacking

When unpacking your gradient system, please check to ensure that no concealed damage occurred in transit. If such is noted, save the shipping carton and immediately notify the shipping company's damage control inspector in your area so a claim may be processed. Failure to do this may void any future claim and replacement. Also, call BPI Customer Service so arrangements for a replacement may be made.

Setting Up

Fit the 16" stand (pole) into the gradient opening on the top of the unit. A mounting flange is provided in cases where there is no gradient opening on the dye system. (Most BPI systems of recent manufacture have a gradient opening). Use the flange to mount the gradient either directly onto the work counter or onto a piece of plywood or similar material which can then be slid underneath the dye system. The weight of the dye system will hold the gradient in place. It is important in all cases that the dye system be LEVEL.

Bolt the lower arm of the scissors to the top of the pole; fasten the other arm to the underside of the gradient head. Slide the L-rod through the swivel which is attached to the arm extending from the gradient head. The bottom of the L-rod forms a right angle to hold the Lens Holder II in place. The thumbscrew tightens the swivel to secure the L-rod. Be careful not to over-tighten or you may strip the threads of the swivel.

The computer cable runs from the gradient head and plugs into the control box. It should plug in easily when correctly aligned.

At the back of the control box are a fuse holder (with a 2 amp fuse) and the ON/OFF switch. The electrical cord that runs from the back of the control box can be plugged into the receptacle at the back of your BPI lens coloring system or into any standard 115 volt outlet.

Using The Gradient

On turn-on, the gradient executes a 6 second test program to check display, and the gradient head. The microcomputer is programmed by turning and pressing the "Adjust" control knob to produce the desired results. The functions of program, time, and size can be entered in any order. Turn the "Adjust" knob until the "-" cursor is next to "Depth Adjust"

Press the "Adjust" knob in and the line cursor becomes a block, indicating that changes may be made to this function. Turn the "Adjust" knob to adjust the starting position of the lens holder so that the bottom edge of the lens is near the surface of the dye. We recommend that you first adjust the L-rod to get the lens into approximate position and then use the depth adjust to make fine adjustments in height. The gradient arm should be started about 1" from the top of its slot to leave room for its motion.

Due to evaporation, the dye level will change somewhat from one operation to another, so it will probably be necessary to make occasional adjustments in the starting height of the arm. It is advisable to add water to the dye from time to time to bring the level back up to a convenient height for the gradient.

Press the "Adjust" knob in to return to the "-" cursor and turn the knob to move to TIME. TIME is programmed by pressing the "Adjust" knob in to again get the block cursor. Turn the knob to raise or lower time value in minutes. Press knob and move to seconds. The time is the time you want to spend making gradient-tinted lenses. When you move to TIME, the currently selected time will be displayed. You may then change it by entering a new time (up to 99 minutes and 59 seconds) or keep it by moving to other functions.

Move to SIZE. SIZE is programmed by turning the knob to increase or decrease the vertical size in millimeters to match the gradient size desired on the lens to be tinted. Lenses from 10 to 80 mm. in vertical dimension can be accommodated.

Move to PROG. The PROGRAM is selected turning the knob to the desired program number (0 through 6). Each program produces a gradient with a characteristic density curve, differing from one to the next in the degree of contrast between the bottom and the top of the lens. The minimum times mentioned are for 50 mm lenses.

Each program has a certain minimum time associated with it, which is proportional to the size of the lens. If you program a time less than this, the computer will execute the selected program exactly once at the fastest possible speed.

Since it takes longer to dip a large lens than a small one, you will notice that some programs which run properly at one time setting will refuse to run when the lens size is increased. The minimum time for a program depends on the size of the lens. All of the minimum times stated in this manual have been calculated for a lens of 50 mm.
$$\text{New Time} = (\text{Standard Time}) \times (\text{New Size}) / (50)$$

Countdown

You may, if you measure the execution time of the program, find that it runs a bit longer than the time you have entered. This is because the computer's time estimate is based only on the active part of the program, not on the time spent moving the lens into or out of the solution. The Advanced Computer Gradient IV™ displays how much time remains in the cycle. After moving to START push the knob, the display will show total execution time and proceed to count down.

NOTE: The execution time displayed for a given program may not be exactly the requested time, as the internal computer calculates the cycle execution time based upon all of the parameters entered.

The START function causes the computer to begin its calculations and initiate execution of the selected program. While the program is running, the time countdown on the front panel will be out to let you know that it is working, even if you cannot see any motion.

Programs

Program 0: Solid. In this program, the operator enters the amount of time for the lens to be immersed in the dye. The computer dips the lens into the solution at high speed and then agitates it up and down by a few millimeters so that the fluid touching the lens is always at full strength. This is the fastest procedure available for dyeing a lens a solid color. There is no minimum cycle time, since the lens bobs up and down until the requested time expires.

Program 1: Parabolic. This program produces a lens in which the characteristic time-distance curve is parabolic. In general, a parabolic program cycle produces a higher contrast gradient than a linear cycle, but not so much as the cubic cycle described below. Minimum execution time for this program is about 48 seconds. Since programs 1, 2, 3, 5 and 6 only do one dip during the cycle (to avoid lines), long times over small sizes lead to very slow motion, watch the manual adjust knob to see that the head is really moving.

Program 2: Parabolic - Lower Light. This program has the same general features as number 1 but differs in that the lens dips more quickly at the end of the cycle, thus producing a smoother fade between the clear and colored part of the lens.

Program 3: Cubic. This program produces gradients whose time-distance curves are cubic in shape. It produces the most clearly visible gradients of any in this series and creates a subjective impression that the "turning point" between dark and light is nearer the dark side of the lens. In order to achieve the characteristic gradient, the motor will come to a complete stop from time to time. This is a normal part of the procedure. Minimum execution time for this program is about 2 minutes, 45 seconds.

Program 4: 4-Stroke. This program emulates a conventional 4-stroke (cam type) gradient. It has certain special features that make the appearance of a line (such as occurs in cam type gradients) less noticeable.

Program 5: Similar to programs 1 and 3 but suitable for longer timed gradients. Program starts more quickly and stops more gradually. It produces a uniformly dark top with less gradient at the bottom. There is a fast dip at the end to minimize line formation.

Program 6: Similar to program 5 but less aggressive.



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