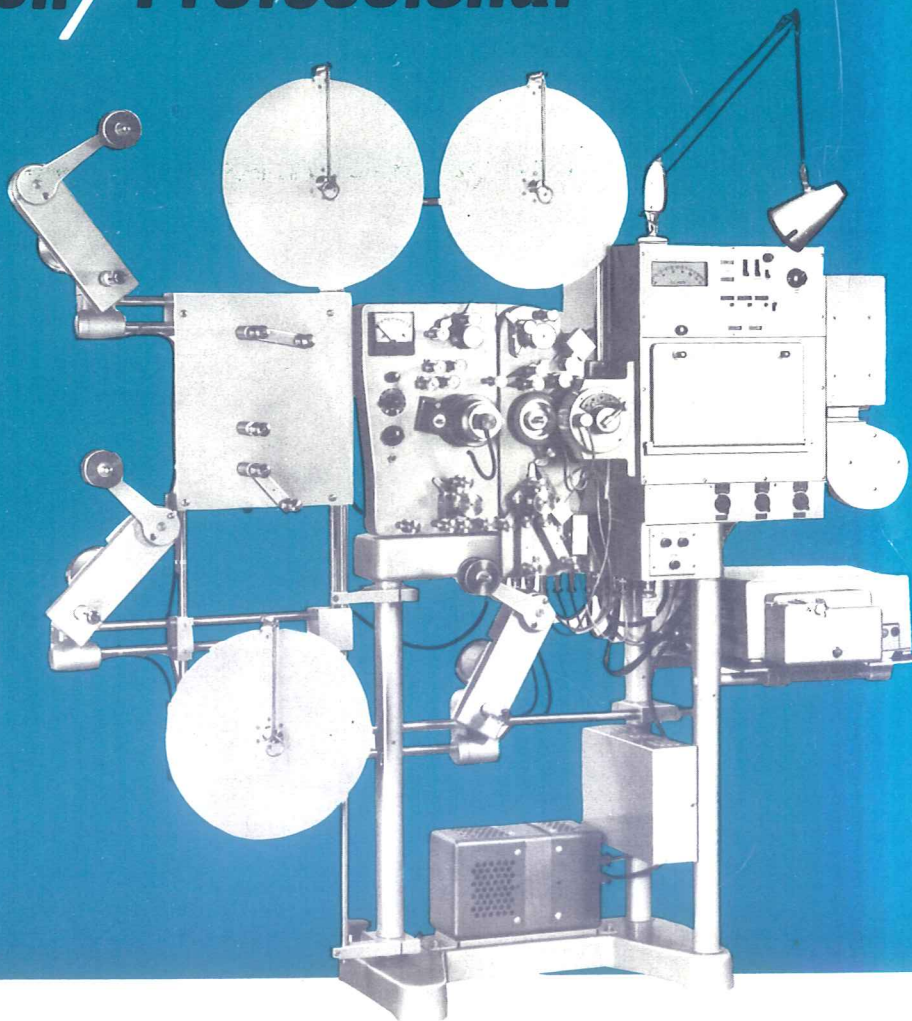


Bell & Howell / Professional

ADDITIVE COLOR PRINTING SYSTEM



Designed around the revolutionary "light valve"—an electro-mechanical light control, program decoding and memory storage unit of remarkable precision and accuracy—the Additive Color Printing System as used on the new Model C Printer provides speed, quality and flexibility never before possible in laboratory film printing. Now available for any width of film up to 70mm, the Model C offers the following design-tested features:

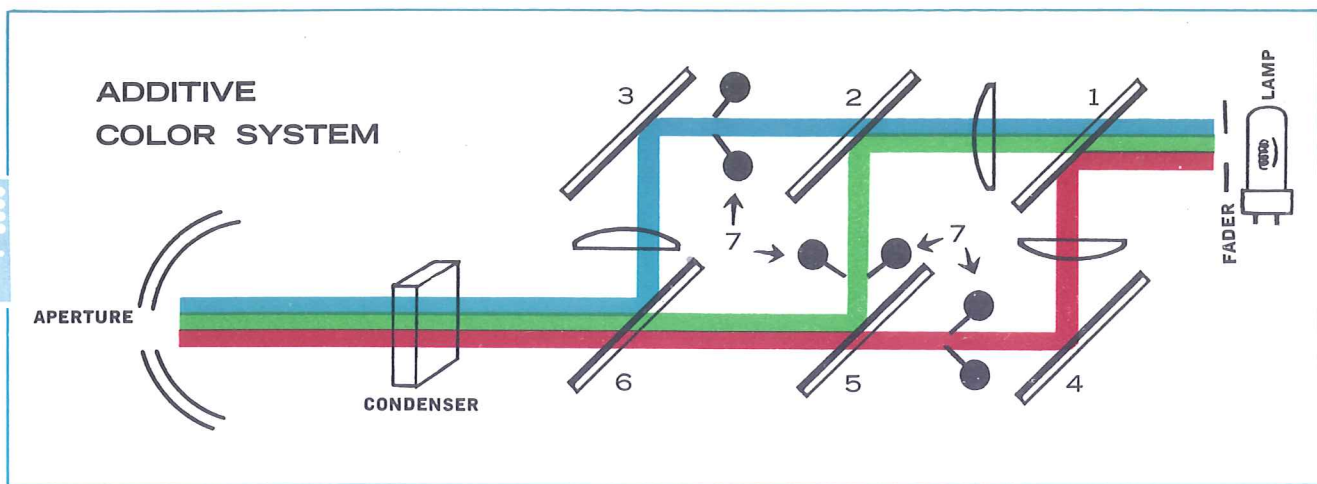
- Completely automatic tape-controlled operation, utilizing laboratory-proven additive light control principle.
- Speeds up to 180 feet per minute, with ultra rapid light changes controlled either by film notches or by the new R-F patch cue system as desired.
- New "zero close" feature for completely blocking the light between scenes in each color channel when printing from A and B rolls.
- Tape-controlled integral fader providing six fade lengths varying from 16 to 96 frames.
- Tight-wind take-up design with automatic torque control to insure proper film wind throughout entire reel of film.

Bell & Howell / Professional

Bell & Howell Company
7100 McCormick Road
Chicago, Ill. 60645 U.S.A.

Bell & Howell Canada Ltd.
88 Industry Street
Toronto 15, Ontario, Canada

Bell & Howell Ltd. (International)
Great West House • Great West Road
Brentford, Middlesex, England



| DICHROIC MIRROR | REFLECTS | TRANSMITS |
|-----------------|---|-----------------------|
| No. 1 | RED | GREEN and BLUE |
| No. 2 | RED and GREEN (Since red has already been removed from this beam, it reflects green only.) | BLUE |
| No. 3 | BLUE only, further reducing band width. | Unusable wave lengths |

| DICHROIC MIRROR | REFLECTS | TRANSMITS |
|-----------------|--------------------------------|-----------------------|
| No. 4 | RED only, reducing band width. | Unusable wave lengths |
| No. 5 | GREEN | RED |
| No. 6 | BLUE | RED and GREEN |

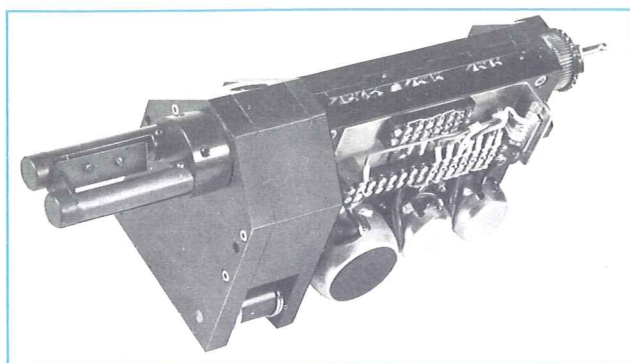
No. 7 LIGHT VALVES

The Bell & Howell Model "C" Additive Color Printer permits you to deliver prints with a color accuracy and fidelity never before attainable at high speed. Color stability and control are obtained through the use of dichroic mirrors which separate a single 1,000 watt light source of the new proximity reflector type into three primary color beams. The efficient and extremely stable dichroic mirror system filters and refines the three color beams into narrow band wavelengths specifically selected in the red, green and blue portions of the spectrum for the greatest printing efficiency on

photographic color emulsions. The refining process eliminates the unusable wavelengths while retaining the pure colors, thus accounting for its extreme efficiency. Dichroic mirrors are *not* subject to the deterioration from age and heat common to gelatin filters.

The printing lamp socket is adjustable in three planes to provide even illumination at the printing aperture and has been factory-set to insure optimum light conditions. Thus the blower-cooled printing lamp, with its proximity reflector and pin-type base, normally requires little re-alignment after lamp replacement.

LIGHT VALVE

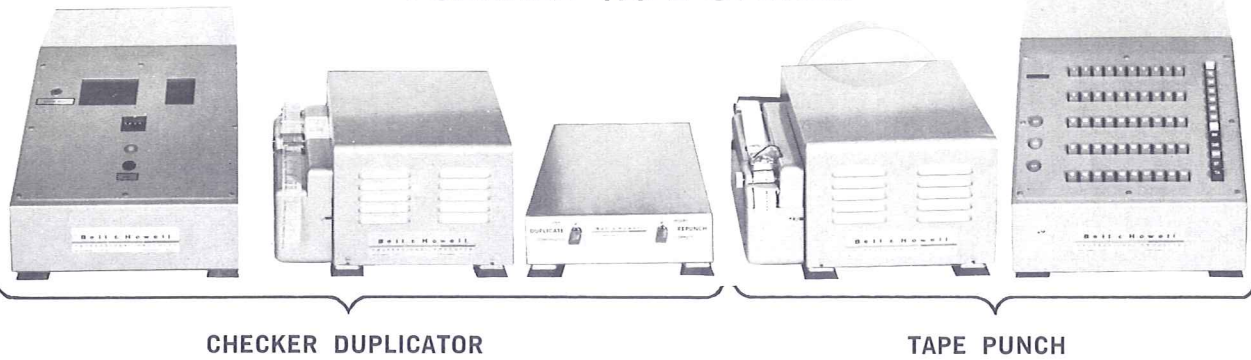


Each fundamental light beam is independently attenuated by a Bell & Howell "light valve", an easily replaceable and interchangeable module. For scene-to-scene correction, each primary color beam can be

modulated through 50 steps of .025 log E by an automatic tape reader. An additional 23 steps of .025 log E are available manually in each color beam to allow for necessary "trim" or emulsion correction.

While one scene is being run, the reader establishes the next setting "in memory". On cue, the new color values are "dumped" into action within 5 to 8 milliseconds. A complete color change at 180 feet per minute takes less than a quarter inch of film. This high speed scene change capability, wide range of available color values, and the ease of punched tape programming make exact scene-to-scene color corrections practical for high speed printing operations. This multiplicity of color values allows the film editor sufficient flexibility to include mis-matched scenes previously considered unusable.

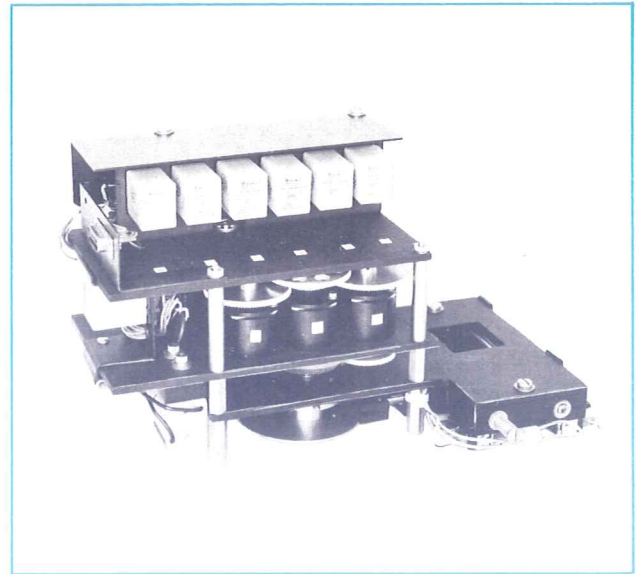
PUNCHED TAPE SYSTEM



The high-speed scene-to-scene color compensation is controlled by a perforated tape system. The pre-selected color timing information is easily and quickly programmed on standard computer tape. This tape controls the scene-to-scene color balance as well as a choice of six fade lengths of 16-24-32-48-64-96 frames, plus a zero close for extended scene printing. As one scene is being printed, the color values for the next scene are in the memory unit awaiting the next cue. Light changes may be controlled by a standard film notch, or the new transistorized R-F patch cue system.

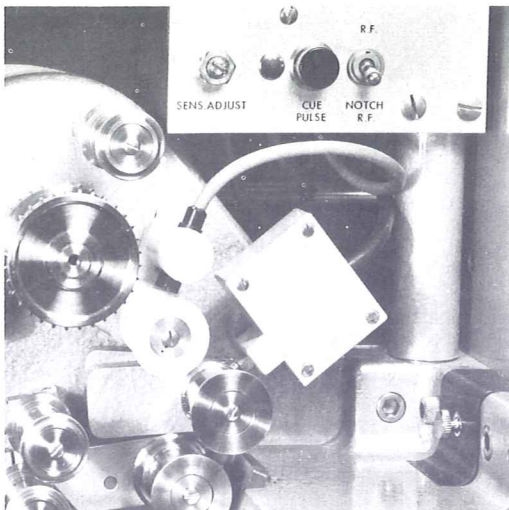
Since the Additive Color Printer requires perforated tape for automatic operation, at least one program perforator or tape punch is required for each laboratory installation. The Design 6170-D Program Tape Punch consists of a keyboard unit and a perforator unit with interconnecting cable. The keyboard unit includes three colored indicator lights (red, green and blue), an automatic scene counter and 63 push buttons for color control, zero close, the six fade lengths, zero fade, black and white mode, correction, start, tape advance and end. The 6170-D automatically indicates the sequence of color information being coded in each scene and provides spacing in the program tape to separate light change information, and to serve as a self-correcting step for an out-of-cycle condition.

The 6173-D, checker duplicator unit, verifies the program and allows for last minute corrections or additions in the control tapes.



FADER

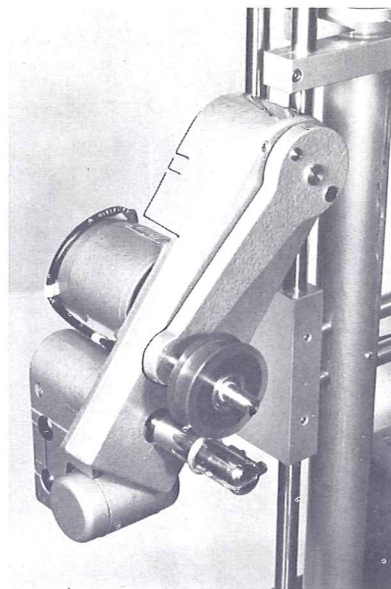
The fader assembly is mounted within the light control housing and will provide fade lengths of 16, 24, 32, 48, 64 and 96 frames. The fader is positively driven from the film transport so that fades will begin at the scene change and will always be of the chosen length regardless of printer operating speed. The particular length of fade for any given scene is selected by punching the appropriate code into the control tape during the perforating operation. This tape is fed into the reader which functions as the "command post" for automatic printing. From information coded on the perforated tape, the reader directs the proper intensity and color setting into each light valve memory unit, actuates the selected fade length and stands by to await the cue signal to "execute command".



RF CUE

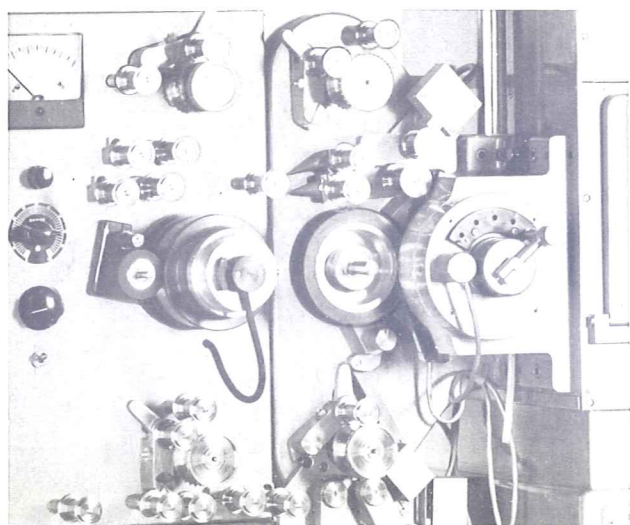
The R-F (radio-frequency) patch cueing kit consists of a transistorized amplifier, a special roller and probe mount assembly, and a probe capable of sensing (without touching) metallic dots passing beneath it at extremely high speeds.

Highly polished film transport rollers are mounted on permanently-lubricated ball bearings for smoothest possible film advance. A neoprene roller gate maintains constant pressure against the back of the positive film to assure intimate contact at the film aperture. A jet of compressed air, directed against the aperture from within, further assists in maintaining film contact and also serves to keep the aperture free of dust and lint. Edge printing on 16mm has been provided by cutting away the printing sprocket between the teeth, and the edge printing light intensity is controlled separately from the printing lamp. On 35mm models, edge printing facilities are at both edges of the film to permit heads or tails printing. The film transport housing is of die-cast aluminum. New tension rollers below the take-up sprocket incorporate a negative break switch to stop the printer in case of film breakage.



TAKE-UP ASSEMBLY

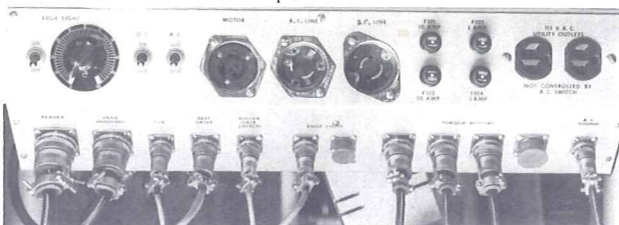
All models now have 2,400 foot film capacity. The feed assembly accepts standard raw stock cores, and a friction brake acts on the film roll to insure even unwinding from full roll to empty core. The "tight-wind" design of the take-up assembly incorporates an automatic torque control feature—a guide roller and rheostat combination which continuously regulates the torque of the take-up motor to insure proper film wind throughout the entire reel of film.



FILM TRANSPORT

The 16mm, 35/32mm and 35mm printers are designed for installation of sound printing attachments. These "soundheads" provide for the printing of a combined picture and sound record in a single pass. The soundhead will be installed at the time of manufacture with no additional charge for installation.

All controls, indicators and plug-in disconnects are clearly identified and readily accessible. Electrical connections to the printer, including those for R-F cue kit and soundhead installation, are provided at the rear control panel. Here also are located the main AC-DC switches and non-switch AC convenience outlets for accessories and test equipment. Push button switches at the front console switch panel are used to start and stop the printer. The remaining controls and indicators are mounted on the vane housing, included are the fader mode signal lights, high-low lamp range switch, speed indicator lights, and a DC voltmeter with illuminated dial. The intensity of the dial illumination can be varied to suit the operator.



REAR CONTROL PANEL

Bell & Howell / Professional

Bell & Howell Company
7100 McCormick Road
Chicago, Ill. 60645 U.S.A.

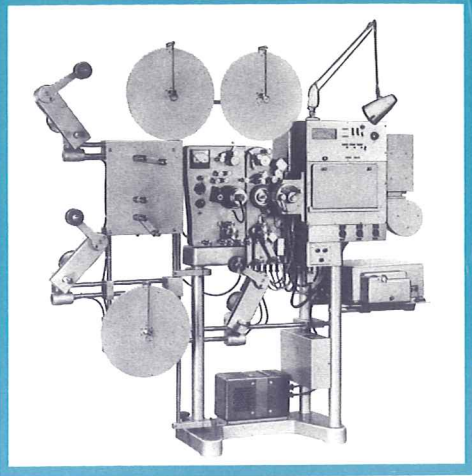
Bell & Howell Canada Ltd.
88 Industry Street
Toronto 15, Ontario, Canada

Bell & Howell Ltd. (International)
Great West House • Great West Road
Brentford, Middlesex, England

ADDITIVE COLOR PRINTERS

models "C" and "MB"

SPECIFICATIONS



GENERAL

- FILM SIZES.....16mm, 35mm, 35/32mm, 65/70mm, 70mm Type I and Type II, other sizes on request.
- FILM CAPACITY.....2400 feet.
Take-up torque controlled on minimum size of 3" core.
- SPEED.....180 f.p.m. and 60 f.p.m.
- AUTOMATIC TAPE CONTROL.....8 hole special binary code system.
- EDGE LITE.....Edge printing on sprocket side for 16mm—both sides for 35mm.
- APERTURES.....As to ASA/PH22 standards.
- LAMP CONTROLS.....Rheostats for "coarse" and "fine" control.
- LAMP VOLTMETER.....60 to 120 volts D.C. Dial illuminated by electro-luminescence. Brightness of dial controlled by rheostat.
- COUNTERS.....Four digit resettable footage counter.
Four digit resettable fade counter.
Four digit resettable cue counter.
Six digit non-resettable hour meter, counting printer operation hours.

PRODUCTION CAPABILITIES

- PRINTING SPEED.....180 f.p.m. and 60 f.p.m.
- LIGHT MODULATION.....By means of tape controlled "light valves," one in each color beam (red, green, blue) in conjunction with dichroic mirror system.*
- LIGHT VALUES.....50 Tape Controlled values in increments of 0.025 log E ($\pm \frac{1}{2}$ step), equal to 1.225 log E in each color; plus 24 manual trim settings, in steps of 0.025 log E ($\pm \frac{1}{2}$ step), equal to 0.575 log E—total range 1.80 log E. "Zero close" feature for completely blocking the light between scenes in each color channel when printing from A and B rolls.
- MINIMUM SCENE LENGTHS.....Shortest scene length between light changes:
16mm film at 180 f.p.m.: 44 frames
16mm film at 60 f.p.m.: 15 frames
35mm film at 180 f.p.m.: 18 frames
35mm film at 60 f.p.m.: 6 frames
- FADE AND DISSOLVE MECHANISM.....6 tape controlled fader speeds: 16—24—32—48—64—96 frames.
Indicator lights: "open" and "closed" show condition of fader aperture.

CUE SYSTEM

- NOTCH TYPE.....Notch type cueing system supplied as standard. It utilizes the conventional B&H notch on the edge of the negative.
- RADIO FREQUENCY TYPE.....Radio Frequency type which eliminates notching negatives is available as an accessory item. Plug-in connections provided for on all printers.

CONTROL SYSTEM

- AUTOMATIC TAPE-CONTROLLED OPERATION
- | | |
|------------|------------------------------|
| a. start | d. zero close |
| b. stop | e. color correction* |
| c. fades** | f. intensity of illumination |

ACCESSORIES

- SOUND PRINTING HEAD.....Provides for single pass printing of picture and sound from separate negatives. May be ordered with printer or as field installation kit.
- 1000-WATT RECTIFIER, 60 CYCLE.....Furnishes D.C. voltage controlled, for printing lamp (50 cycle available).
- FADER.....Six-speed Fader (also used in conversion of Model "MB" to Model "C").
- LIGHT VALVE.....Light Valve, 73 Positions with Zero Close. Two required for conversion of Model "MB" to Model "C".
- DICHROIC MIRROR & LENS KIT.....Required for conversion of Model "MB" to Model "C".
- CHECKER-DUPLICATOR.....Verifies, duplicates and converts punched tapes.

REQUIREMENTS

- POWER REQUIREMENTS.....105 to 125 volts A.C. single phase 60 cps. 120 volts D.C., 9 amps (for printing lamp)
Nominal output tolerance: $\pm 1\%$.
Ripple voltage: Maximum 1%.
- PRINTING LAMP.....1000 watts, 115-120 volts, D.C.—25 hours—Type CTS (1200 watts, 115-120 volts, D.C.—10 hours—Type CYS, optional).
- AIR.....Air required for film contact and aperture—20—25 psi, pre-filtered pressure controlled.
- DIMENSIONS.....Without Sound Head
70" H x 60" W x 28" D, Approx. Wt. 475#
With Sound Head
70" H x 78" W x 28" D, Approx. Wt. 600#

*Model "MB" utilizes single light valve and reflective mirror system.
**Optional on Model "MB" at extra cost.

BELL & HOWELL
PROFESSIONAL PRODUCTS

DOMESTIC

BELL & HOWELL/PROFESSIONAL
7100 McCORMICK ROAD
CHICAGO, ILL. 60645 U.S.A.

CANADA

BELL & HOWELL CANADA LTD.
88 INDUSTRY STREET
TORONTO 15, ONTARIO, CANADA

INTERNATIONAL

BELL & HOWELL, LTD.
GREAT WEST HOUSE • GREAT WEST ROAD
BRENTFORD, MIDDLESEX, ENGLAND

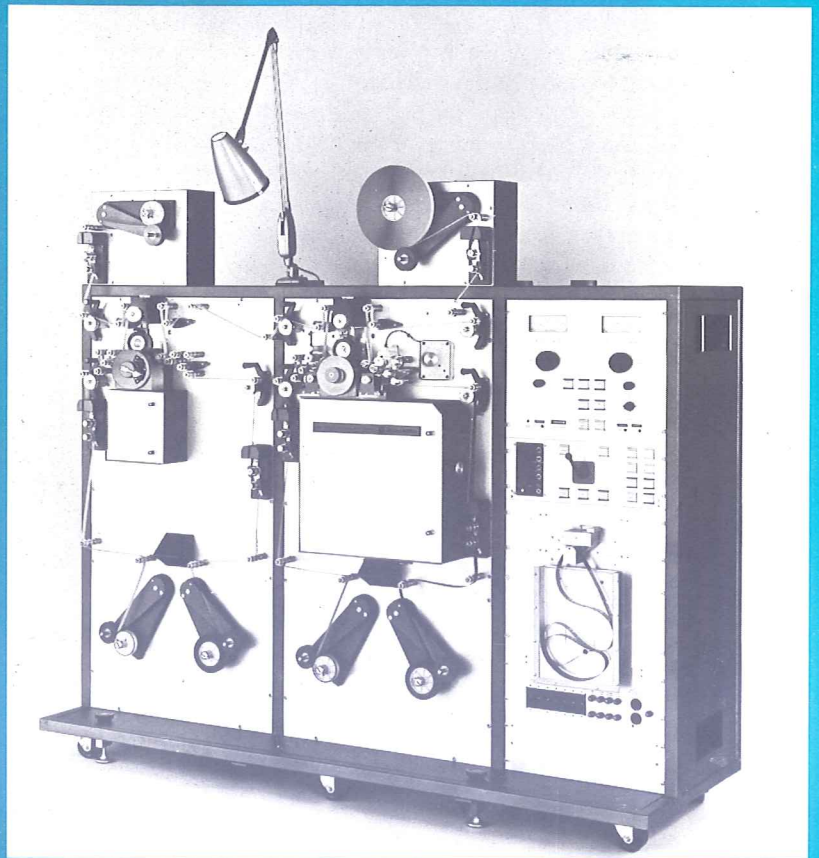
CENTRAL—SOUTH AMERICA

BELL & HOWELL/INTERNATIONAL
7100 McCORMICK ROAD
CHICAGO, ILLINOIS 60645 U.S.A.

Bell & Howell/Professional

ADDITIVE COLOR PANEL PRINTERS

FOR CONTINUOUS
HIGH SPEED PRINTING
OF PICTURE & SOUND



Designed around the revolutionary "light valve" — an electro-mechanical light control, program decoding and memory storage unit of remarkable precision and accuracy—the Additive Color Panel Printers provide speed, quality and flexibility never before possible in laboratory film printing. Now available for 16mm, 35mm and 35/32mm, the Panel Printers offer the following design-tested features:

- Completely automatic tape-controlled operation, utilizing laboratory-proven additive light control principle.
- Speeds of 240 feet per minute, with ultra rapid light changes and fades controlled by film notches or by the R-F patch cue system (optional).
- Forward and reverse printing feature eliminates negative rewinding.
- New "zero close" feature for completely blocking the light between scenes in each color channel when printing from A and B rolls.
- Solid state logic reader featuring relay contact switching prior to current application.
- Tape-controlled integral fader providing six fade lengths varying from 16 to 96 frames (optional).
- Automatic Air-Vacuum film squeegees at each feed, take-up and raw stock roll.
- Tight-wind take-up design with automatic torque control to insure proper film wind throughout entire reel of film.

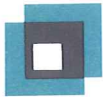
 **BELL & HOWELL**
PROFESSIONAL PRODUCTS

DOMESTIC
BELL & HOWELL/PROFESSIONAL
7100 McCORMICK ROAD
CHICAGO, ILL. 60645 U.S.A.

CANADA
BELL & HOWELL CANADA LTD.
88 INDUSTRY STREET
TORONTO 15, ONTARIO, CANADA

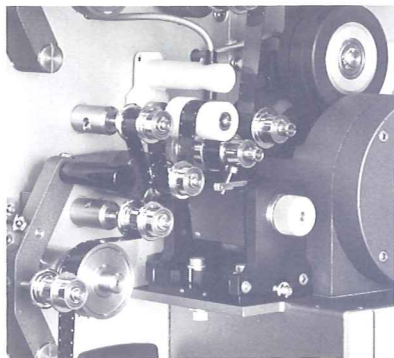
INTERNATIONAL
BELL & HOWELL, LTD.
GREAT WEST HOUSE • GREAT WEST ROAD
BRENTFORD, MIDDLESEX, ENGLAND

CENTRAL—SOUTH AMERICA
BELL & HOWELL / INTERNATIONAL
7100 McCORMICK ROAD
CHICAGO, ILLINOIS 60645 U.S.A.



The Panel Printer provides for printing picture and sound in one pass through the machine, in both forward and reverse directions. Negative rewinding is eliminated by the forward and reverse printing feature.

Highly polished film transport rollers are mounted on permanently-lubricated ball bearings for smoothest possible film advance. The film tension rollers automatically assume the proper position for threading or for running in either direction. A neoprene roller gate maintains constant pressure against the back of the positive film to assure intimate contact at the film aperture. A jet of compressed air, directed against the aperture from within, further assists in maintaining film contact and also serves to keep the aperture free of dust and lint.



R-F and Notch Cue

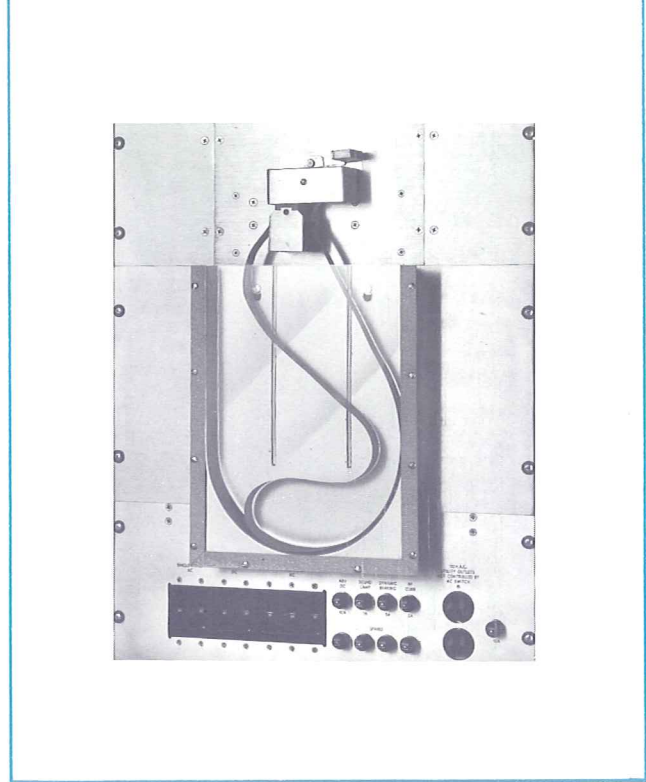


Cue Control

Radio frequency as well as notch cuing systems are provided for. Dual units are furnished to accomplish sensing of cues, one set for forward printing and one for reverse.

All models have 3,000 foot film capacity. The feed assembly accepts standard raw stock cores, 3 inch diameter and a controlled drag acts on the film roll to insure even unwinding from full roll to empty core. The "tight-wind" design of the take-up assembly incorporates an automatic torque control feature—a guide roller and rheostat combination which continuously regulates the torque of the take-up motor to insure proper film wind throughout the entire reel of film.

Edge printing on 16mm and 35/32mm has been provided by cutting away the printing sprocket between the teeth, and the edge printing light intensity is controlled separately from the printing lamp. On 35mm models, edge printing facilities are at both edges of the film to permit heads or tails printing.



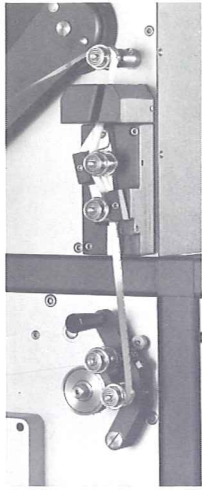
**High Speed Reader
Head and Tap Chute**

The Panel Printers use Standard "C" Tape Code, Tape Punch and Tape Checker-Duplicator as successfully used in "C" Printers. The tape consists of a forward section and a reverse section which are commonly spliced into a loop. A safety circuit is provided to prevent printing with the wrong section in the reader.

Equipped with a high speed reader, the Panel Printer is capable of making scene changes within 18 frames on 16mm film and 8 frames on 35mm film printing at 240 feet per minute.

The information read from the tape is stored in memory on computer-type logic boards containing magnetic latching relays. An important feature of the reader logic circuitry is that no current passes through the memory relay contacts at the time of switching. Only after the memory has been set up is current passed through the contacts. This "dry switching" is an important factor in the reliability of the reader system. The logic boards control a bank of power transistors which perform the actual switching of the power.

The tape reader uses plug in logic boards. Each board has been designed to perform certain logic functions. Should a certain function of the unit be suspected of being defective, the board containing that function is merely replaced.



**Air-Vacuum Cleaner
and Film
Break Switch**

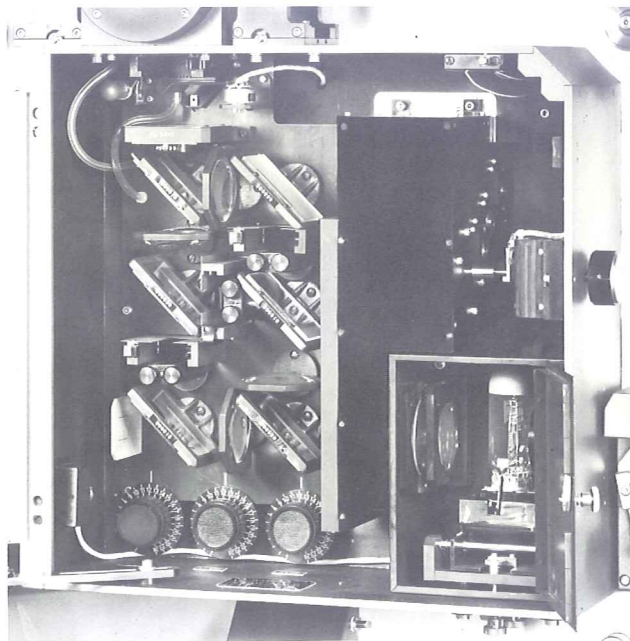
Air-vacuum film squeegees to clean the film, and break switches to shut off the machine in the event of film breakage, are located at both feed and take-up sides of the raw-stock and both negatives. Only the squeegee on the feed side and all break switches are operational during printing.

Negative cleaning off the machine is reduced as much as 80% by the air-vacuum film squeegees.

The air supply source (not furnished) is filtered and separately regulated for all three air systems. A filtered and regulated vacuum supply is included.

The light source is an adaptation of the highly efficient Model "C" printer. Redesigned to operate in a vertical position, it incorporates the identical optical and electromechanical components.

Manual trim knobs are located inside the vane house. Illumination for these knobs is provided when the vane house door is open, which when opened cuts off the printing lamp.



Vane Housing

The fader, an optional accessory, is mounted inside the vane house and will provide fade lengths of 16, 24, 32, 48, 64 and 96 frames. The fader is positively driven from the main gear housing so that fades will begin at the scene change and will always be of the chosen length regardless of printing speed. The particular length of fade for any given scene is selected by punching the appropriate code into the control tape. When this coded information reaches the reader it is translated into signals to various solenoid clutch pawls within the fader. The clutches which are not positively locked by solenoid pawls then drive the fader at the chosen speed.

Standby voltage is provided to the picture printing lamp to increase lamp life. The lamp voltage drops to 30 volts when the film transport is stopped, and rises to full pre-set voltage when film transport starts. A momentary contact button is provided for pre-setting lamp voltage. The lamp does not go out unless the lamp switch is turned off or unless the vane house door is opened. The vane house door switch can be conveniently overridden to provide standby voltage, with the door open.

A douser is provided for each printing lamp. This mechanism shuts off the light ahead of the aperture whenever the film is not being driven.

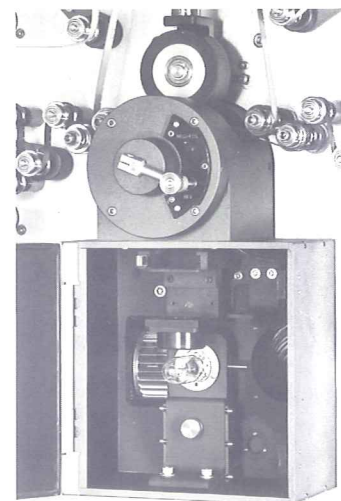
Two filter holders, for 2" x 2" x 5mm filters, are provided in each color beam, the white beam and the sound printing beam.

A slow start circuit is automatically applied to prevent film breakage. The machine will reach full speed in 5 feet and, via dynamic braking, will stop in 6 feet.

An inching knob is provided which can be manually connected to the film drive. When the inching knob is in use, half power is applied to the take up motors to provide constant film take-up, thereby preventing spilled film.

The sound printing optical system requires minimum adjustment from bulb to bulb. The picture lamp adjustment controls are arranged to be operated and locked with the lamp house door closed.

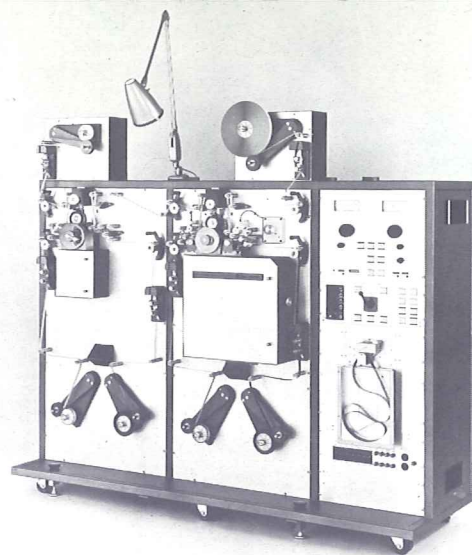
Sound Head



ADDITIVE COLOR PANEL PRINTERS

FOR CONTINUOUS PRINTING
OF PICTURE & SOUND

Designs 6122P... 16 mm
6222P... 35 mm
6322P... 35/32 mm



SPECIFICATIONS

GENERAL

| | |
|------------------------|---|
| FILM SIZES | 16mm-35mm-35/32mm Other formats on request. |
| FILM CAPACITY | 3000 feet Take-up torque controlled for 3" minimum core size. |
| AUTOMATIC TAPE CONTROL | 8 hole special binary code system. |
| SPEED | 240 fpm and 60 fpm (+ 0 - 5%) forward and reverse. |
| EDGE LIGHT | Edge number printing on sprocket side for 16mm on both sides for 35mm and 35/32mm. |
| APERTURES | As to ASA/PH 22 standards. |
| LAMP CONTROLS | Rheostat for "coarse" and "fine" control on both picture and sound lamps. |
| LAMP VOLT METERS | Picture—60 to 120 volts D.C. Sound—6 to 10 volts D.C. |
| LAMPS | Picture—1200 watts (DBH). Sound—75 watts. |
| COUNTERS | 1 footage counter, 4 digits, resettable. 1 cue counter, 4 digits, resettable. 1 fade counter, resettable, 4 digits. 1 counter for total running hours, non- resettable, 6 digits. 2 lamp hour meters, resettable, 4 digits. |
| FILM CLEANERS | Automatic Vacuum & air pressure |

CUE SYSTEM

| | |
|------------------------------------|---|
| NOTCH TYPE | Notch type cueing system supplied as standard, utilizing the conventional B&H notch on the edge of the negative. |
| RADIO FREQUENCY TYPE (optional) | R.F. Cuer eliminating notching of nega- tives. Both systems require notching or patches on both sides of the nega- tive due to the forward and reverse operation. |

CONTROL SYSTEM

| | |
|--|---|
| AUTOMATIC TAPE CONTROLLED OPERATION | a. Start and Stop b. Color Correction c. Intensity of Exposure d. Fade and Dissolve e. Zero Close The tapes are compatible with tapes from other B&H additive printers, ex- cept that forward and reverse tapes are required. |
|--|---|

PRODUCTION CAPABILITIES

| | |
|--|--|
| LIGHT MODULATION | By means of tape controlled "light valves" one in each color beam (red, green, blue) in conjunction with di- chroic mirror system. |
| LIGHT VALVES | 50 tape controlled valves in incre- ments of 0.025 log E equal to 1.225 log E in each color; plus 24 manual trim settings, in steps of 0.025 log E equal to 0.575 log E. Total range 1.80 log E ($\pm \frac{1}{2}$ step). "Zero Close" fea- ture for completely blocking the light between scenes in each color channel when printing from A and B rolls. |
| MINIMUM SCENE LENGTH | Shortest scene length between light changes: 16mm film at 240 f.p.m.: 18 frames. 35mm film at 240 f.p.m.: 8 frames. |
| FADE AND DISSOLVE MECHANISM (optional) | 6 tape controlled fade lengths: 16-24- 32-48-64-96 frames. Indicator lights "open" and "closed" show conditions of fader aperture. |

ACCESSORIES

| | |
|------------|--|
| (optional) | R. F. Cuer Fader Rectifier for picture lamp D.C. |
|------------|--|

REQUIREMENTS

| | |
|--------------------|---|
| POWER REQUIREMENTS | 208 to 220 volts A.C., 3 phase, 60 cps, 500 v.a. 105 to 120 volts A.C. single phase, 60 cps. 2000 V.A. 120 volts D.C. 9 amps (for printing lamp). Nominal output tolerance $\pm 1\%$. Ripple Voltage: Max. 1% |
| PRINTING LAMP | 1200 watts, 115 volts D.C. |
| AIR | Air required for film contact at aper- ture—loop setters—air vacuum film cleaners. 25 cu. ft./min. at 45 psi, pre-filtered, pressure controlled. |
| VACUUM | Pump supplied with printer |
| DIMENSIONS | 72" H x 82" W x 28" D. Approximate wt. 1200# |

 **BELL & HOWELL**
PROFESSIONAL PRODUCTS

DOMESTIC
BELL & HOWELL/PROFESSIONAL
7100 McCORMICK ROAD
CHICAGO, ILL. 60645 U.S.A.

CANADA
BELL & HOWELL CANADA LTD.
88 INDUSTRY STREET
TORONTO 15, ONTARIO, CANADA

INTERNATIONAL
BELL & HOWELL, LTD.
GREAT WEST HOUSE • GREAT WEST ROAD
BRENTFORD, MIDDLESEX, ENGLAND

CENTRAL—SOUTH AMERICA
BELL & HOWELL/INTERNATIONAL
7100 McCORMICK ROAD
CHICAGO, ILLINOIS 60645 U.S.A.

ASA apertures are provided in all cases. The 16mm sound-head provides selection of either a negative-positive film aperture or a reversal film aperture.

The 35/32mm printer is provided with "Inner," "Twin" and "Outer" apertures on both picture and soundheads. A safety circuit is provided to prevent operation of the printer when dissimilar picture and sound apertures are selected. The 35/32mm soundhead apertures are negative-positive film apertures.

The 35/32mm Panel Printer will operate in three modes:

1. "Twin" aperture—forward and reverse printing.
2. "Inner" aperture—forward printing and "Outer" aperture—reverse printing.
3. "Inner" aperture—forward and reverse printing.

All separate sound printing safeties can be disabled with a single control to allow picture only printing.

All controls and indicators are internally illuminated.

A dim/bright switch for the illumination intensity of indicators is provided. The dim setting can be individually varied to suit the laboratory.

A "lamp out" indicator is provided for both sound and picture lamps (prevents printer operation).

Indicators are provided to call attention to film breaks or open gates (prevents printer operation).

Indicators are provided for each of the three input power lines.

Counters are provided for:

Fades—resettable

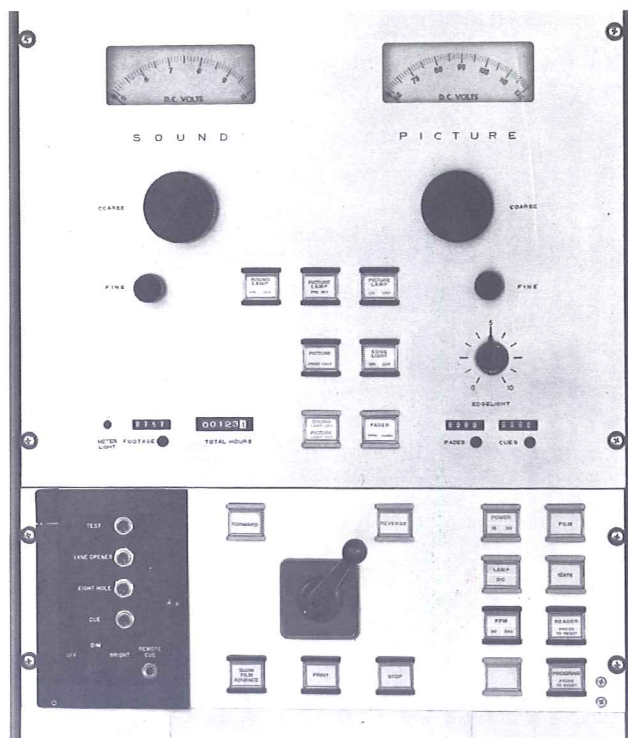
Cues—resettable

Footage—resettable

Total Hours—non resettable

Lamp Hours—resettable—one for picture and one for sound

All electronic modules are rack mounted and all except the power supply are front removable for ease of service.



Control Panel

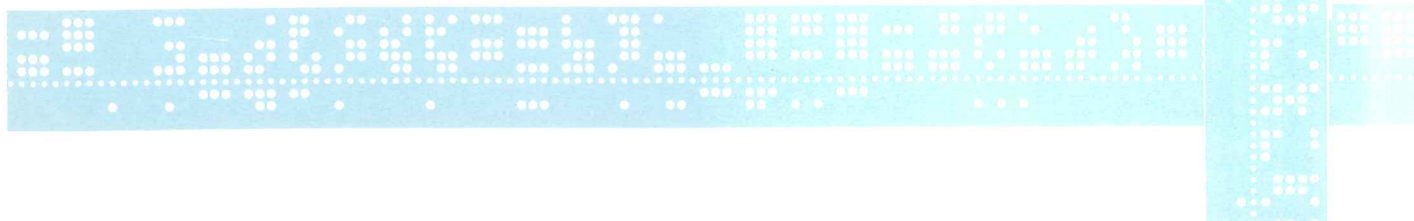
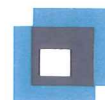
All controls and settings for forward and reverse running are switched with a single lever.

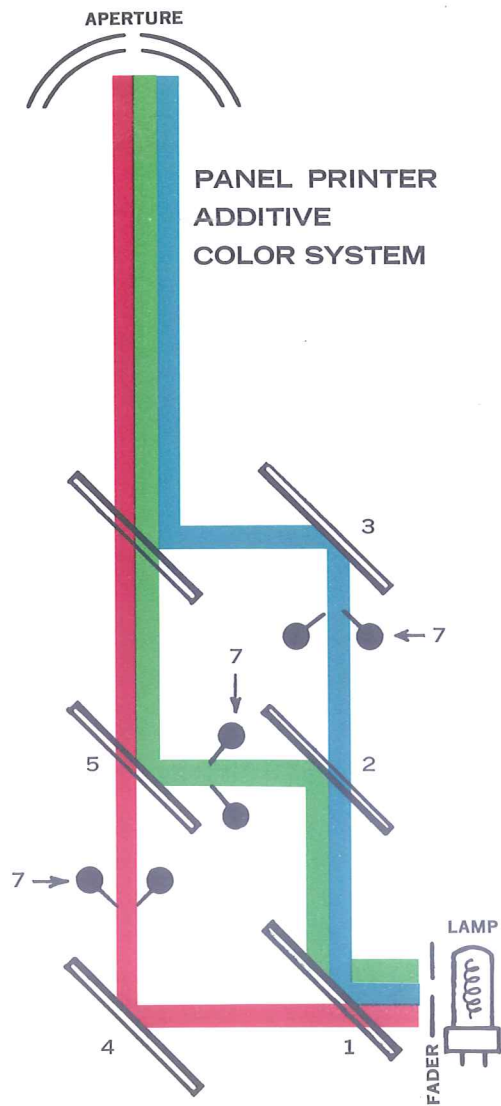
A "slow-film advance" will run the printer long enough to clear the printer of stock following completion of a run.

Individually switched safe lamps are provided for the negative feed and take up roll areas.

In a separate closed area on the control panel these controls are provided:

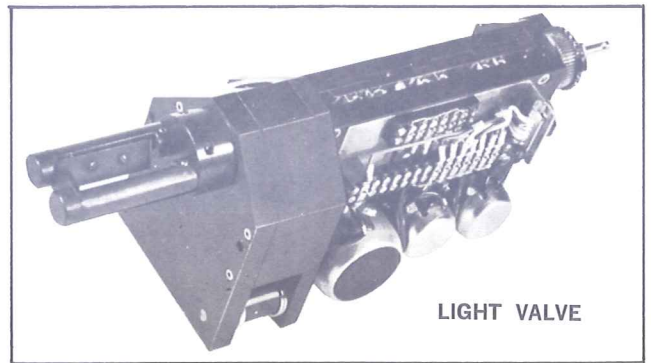
1. A "Test" button which will operate the printer, overriding all safeties.
2. A "Vane Open" button which will open all light valves to light 50 plus trim setting. This button will operate only when the printer is stopped.
3. An "Eight Hole" button which will restart the printer when it has been stopped in the middle of a tape, or to commence operation in mid-reel.
4. A manual "Cue" button and a jack for insertion of the remote manual cue button which is supplied with each machine.
5. The off/dim/bright indicator illumination switch.





The Bell & Howell Additive Color Panel Printer permits you to deliver prints with a color accuracy and fidelity never before attainable at high speed. Color stability and control are obtained through the use of dichroic mirrors which separate a single 1,200 watt light source into three primary color beams. The efficient and extremely stable dichroic mirror system filters and refines the three color beams into narrow band wavelengths specifically selected in the red, green and blue portions of the spectrum for the greatest printing efficiency on photographic color emulsions. The refining process eliminates the unusable wavelengths while retaining the pure colors, thus accounting for its extreme efficiency. Dichroic mirrors are *not* subject to the deterioration from age and heat common to gelatin filters.

The printing lamp socket is adjustable in three planes, plus rotation, to provide even illumination at the printing aperture and has been factory-set to insure optimum light conditions. Thus the blower-cooled printing lamp, with its pin-type base, normally requires little re-alignment after lamp replacement.



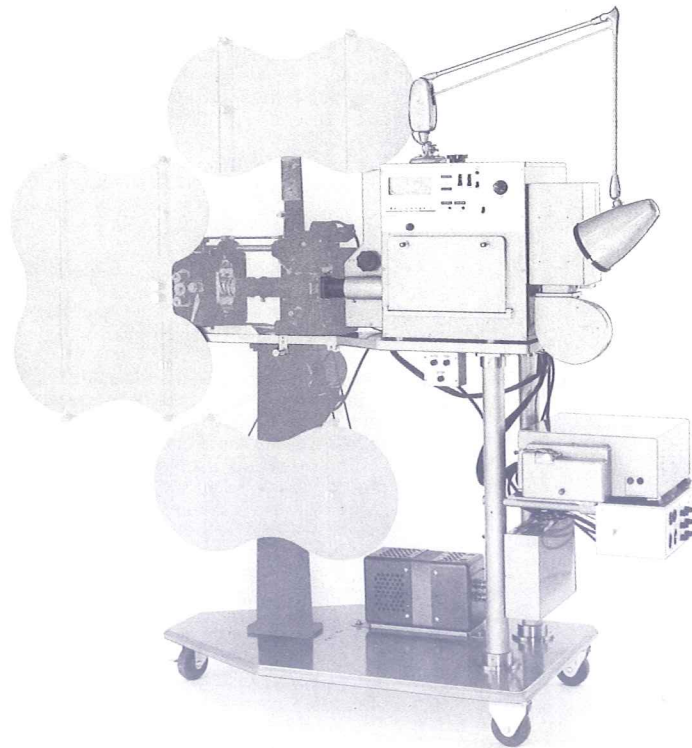
| DICHROIC MIRROR | REFLECTS | TRANSMITS |
|-----------------|---|-----------------------|
| No. 1 | GREEN and BLUE | RED |
| No. 2 | RED and GREEN (Since red has already been removed from this beam, it reflects green only.) | BLUE |
| No. 3 | Blue only, further reducing band width. | Unusable wave lengths |
| No. 4 | RED only, reducing band width. | Unusable wave lengths |
| No. 5 | GREEN | RED |
| No. 6 | BLUE | RED and GREEN |
| No. 7 | LIGHT VALVES | |

Each fundamental light beam is independently attenuated by a Bell & Howell "light valve", an easily replaceable and interchangeable module. For scene-to-scene correction, each primary color beam can be modulated through 50 steps of .025 log E by an automatic tape reader. An additional 23 steps of .025 log E are available manually in each color beam to allow for necessary "trim" or emulsion correction.

On cue, the preset color values are placed into action within 5 to 8 milliseconds, and immediately the reader establishes the next color values into the preset or "memory" situation. A complete color change at 180 feet per minute takes less than a quarter inch of film. This high speed scene change capability, wide range of available color values, and the ease of punched tape programming make exact scene-to-scene color corrections practical for high speed printing operations. This multiplicity of color values allows the film editor sufficient flexibility to include mis-matched scenes previously considered unusable.

ADDITIVE COLOR LIGHT SOURCE FOR Depue Printers

Automated Light
and Fade
Control on a
Step Printer



Automation made famous on the Model "C" can now be adapted to all models of the Depue Printers.

GENERAL DESCRIPTION:

The additive color light source as supplied by Bell & Howell Co. for adaptation to the Depue printers is in the Design 6006 series. All of the Depue printer functions remain intact except that the lamphouse and the electrical controls are removed. The Bell & Howell light source and automatic features are then installed on a special mount fabricated in a way that permits installation on any model of the Depue. The customer has the option of Bell & Howell factory installation or a kit, containing all necessary parts, for installation in the laboratory.

Mechanical operations and film threading for the Depue side of the printer remain unchanged. All starting, stopping, light changes and fades are controlled by the Bell & Howell program tape when operating in the automatic mode. The printer can also be operated in the test mode for maintenance checks. A "VANE OPEN" capability is provided for use in the test mode to open the light valves allowing light to reach the film plane without use of the program tape.

For automatic operation, the program tape must be prepared, prior to printing, from timing data applicable to the negative. This is

easily accomplished on the Bell & Howell standard Program Tape Punch that is used for tape preparation on Model C Printers. Numerical timing data is automatically encoded into the program tape by merely selecting the corresponding number on the keyboard of the Program Tape Punch. The encoded tape is then placed into the printer "Reader" where each cue from the negative advances the program tape over the information required for one scene change. As one scene is being printed, information necessary for the next scene has already been read from the tape and held in memory. Upon cue for the next scene change, the information being held in memory is immediately transferred from memory into functions to control the three light beams or the fader. This cycle is repeated for each cue that exists on the negative. Consequently, the length of the program tape may vary from approximately one foot, containing 3 or 4 scenes, to perhaps six feet if hundreds of scene changes are required.

Most of the components used in the light source are interchangeable with components used on the Model C or MB Printers. This reduces spare parts inventory to a minimum. Modular construction makes it easy to service the light source.

Bell & Howell / Professional

Bell & Howell Company
7100 McCormick Road
Chicago, Ill. 60645 U.S.A.

Bell & Howell Canada Ltd.
88 Industry Street
Toronto 15, Ontario, Canada

Bell & Howell Ltd. (International)
Great West House • Great West Road
Brentford, Middlesex, England

DATA:

| | |
|------------------------------|---|
| FILM SIZES | Reduction from 35mm negative to 16mm positive. Contact prints from 35mm negative to 35mm positive. Contact prints from 16mm negative to 16mm positive. |
| FILM CAPACITY | As specified for the different Models of the Depue Printers. |
| CONTROL | A standard Bell & Howell program tape using 8 holes of special binary code is pre-punched to provide automatic operation. |
| PROGRAM TAPE | System uses the same program tape and code used with the Model C. The code in the tape provides the following automatic functions: Start-Stop-Fades-Zero Close-Color Correction-Intensity of Illumination. |
| PRINTING LAMP | A 1,000 watt lamp is controlled by a "COURSE" and a "FINE" rheostat. A 60 to 120 volts D.C. meter with illuminated dial monitors setting. |
| COUNTERS | Lamp hours are counted on a 5 digit resettable counter. Fades and cues are counted separately on two 4 digit resettable counters. |
| COLOR CHANGES | A dichroic mirror system separates white light into red, green and blue beams. A standard "LIGHT VALVE" in each of the three color beams modulates the amount of each color to effect a color change at the film plane. |
| LIGHT VALVES | 50 tape controlled values in increments of 0.025 log E ($\pm \frac{1}{2}$ step), equals 1.225 log E in each color. An additional 24 manual trim settings, in steps of 0.025 log E ($\pm \frac{1}{2}$ step), equals 0.575 log E. The total range is 1.80 log E. "ZERO CLOSE" feature for completely blocking the light, on a frame line, between scenes in each color beam when printing from A and B rolls. |
| FADES & DISSOLVES | A dissolving shutter mechanism provides six tape controlled fade lengths of 16-24-32-48-64-96 frames. Available as an accessory. |
| NOTCH TYPE CUE | Notch type cuing system is supplied as standard on the Depue Printer. It utilizes the conventional B & H notch on the edge of the 35mm negative. |
| R.F. TYPE CUE | Radio Frequency (R.F.) cuing eliminates notching the negative. Available as an accessory. |
| DOUSER | Douser mechanism functions to prevent light from escaping in the darkroom when the printer is stopped. |
| SAFE LIGHT | Capable of reaching all areas of the operator side and supporting itself where placed. |
| MINIMUM SCENE LENGTHS | Shortest scene between light or color changes is 6 frames on 35mm operating at 45 FPM. |
| ILLUMINATION | Printing on Intermediate (7253) or Inter-negative (7270) and all color films with higher sensitivity is possible. |
| UNIFORMITY OF FIELD | On Color Positive Film (7385) the uniformity of the 16mm field is within .1 density and can vary with the type of copying lens used. |



Bell & Howell / Professional

REQUIREMENTS:

POWER

105 to 125 volts A.C., single phase, 60 cycle (50 cycle on request). Light Source and Depue Printer require approx. 12 amps. 120 volts D.C., 9 amps (for printing lamp).

Nominal output tolerance: $\pm 1\%$. Ripple voltage: 1% maximum.

PRINTING LAMP

1,000 watts, 115-120 volts, 25 hours type CTS (2 furnished). Optional: 1200 watts, 115-120 volts, D.C. - 10 hours - type CYS.

PROGRAM TAPE PUNCH

Des. 6170-D. (When punch is already present for Model C, additional punch is not necessary). See accessories.

DIMENSIONS

Overall size when mounted on Depue Model 3-K Printer, 6'6" X 6'2" H. X 2'4" D.

WEIGHT

Light Source on Depue Printer—575 lbs. Light source only—403 lbs.

ACCESSORIES:

RECTIFIER

1,000 watt, 60 cycle. Furnishes controlled D.C. voltage for printing lamp (50 cycle available).

FADER

Dissolving shutter type fader provides six fade lengths.

PROGRAM TAPE PUNCH

Consists of keyboard and punch assembly for encoding program tape.

CHECKER-DPLICATOR

Verifies, duplicates, corrects punched program tapes.

CONTINUOUS CONTACT MOTION PICTURE FILM PRINTERS

General Specifications

PANEL PRINTERS

| DESIGN CODE | MODEL CODE |
|--------------|--|
| 6122 16MM | "P" Automatic Additive Color Panel, High Speed Reader |
| 6222 35MM | |
| 6322 35/32MM | "PT" Additive Color Panel, Manual Trim |

STANDARD PRINTERS

| DESIGN CODE | MODEL CODE |
|-----------------|---|
| 6100 16MM | "CH" Automatic Additive Color, High Speed Reader |
| 6200 35MM | "C" Automatic Additive Color, Standard Speed Reader |
| 6232 35/32MM | |
| 6400 16/S8MM-2R | "CT" Additive Color, Manual Trim |
| 6600 35/S8MM-5R | "MB" Automatic Density Correcting, Standard Speed Reader |
| | "BT" Density Correcting, Single Manual Trim |

See Price List For Full Description Of Individual Models and Available Accessories

PROFESSIONAL EQUIPMENT DIVISION

7100 McCORMICK ROAD, CHICAGO, ILL. 60645 U.S.A.



CANADA

BELL & HOWELL CANADA LTD.
125 NORFINCH DRIVE
DOWNSVIEW, ONTARIO, CANADA

INTERNATIONAL

BELL & HOWELL, LTD.
GREAT WEST HOUSE, GREAT WEST ROAD
BRENTFORD, MIDDLESEX, ENGLAND

CENTRAL—SOUTH AMERICA

BELL & HOWELL/INTERNATIONAL
7100 McCORMICK ROAD
CHICAGO, ILLINOIS 60645 U.S.A

GENERAL SPECIFICATIONS

| DESIGN | Film Size | Sound Head | Printer Speed | Film Travel Direction | Film Capacity | Tape Reader | Fader | Air /Vac Cleaners |
|---------------|------------------|-------------------|----------------------|------------------------------|----------------------|--------------------|--------------|--------------------------|
| 6122P | 16MM | Yes | 240/60FPM | Fwd./Rev. | 3000 Ft. | Hi Speed | Optional | Yes |
| PT | " | " | " | " | " | None | No | " |
| 6222P | 35MM | Yes | 240/60FPM | Fwd./Rev. | 3000 Ft. | Hi Speed | Optional | Yes |
| PT | " | " | " | " | " | None | No | " |
| 6322P | 35/32MM | Yes | 240/60FPM | Fwd./Rev. | 3000 Ft. | Hi Speed | Optional | Yes |
| PT | " | " | " | " | " | None | No | " |
| 6100CH | 16MM | Optional | 180/60FPM | Forward | 2400 Ft. | Hi Speed | Yes | Optional |
| C | " | " | " | " | " | Std. | Yes | " |
| CT | " | " | " | " | " | None | No | " |
| MB | " | " | " | " | " | Std. | Optional | " |
| BT | " | " | " | " | " | None | No | " |
| 6200CH | 35MM | Optional | 180/60FPM | Forward | 2400 Ft. | Hi Speed | Yes | Optional |
| C | " | " | " | " | " | Std. | Yes | " |
| CT | " | " | " | " | " | None | No | " |
| MB | " | " | " | " | " | Std. | Optional | " |
| BT | " | " | " | " | " | None | No | " |
| 6232CH | 35/32MM | Optional | 180/60FPM | Forward | 2400 Ft. | Hi Speed | Yes | Optional |
| C | " | " | " | " | " | Std. | Yes | " |
| CT | " | " | " | " | " | None | No | " |
| MB | " | " | " | " | " | Std. | Optional | " |
| BT | " | " | " | " | " | None | No | " |
| 6400CH | 16/Super 8 | Optional | 200/67FPM | Forward | 2400 Ft. | Hi Speed | No | Optional |
| CT | " | " | " | " | " | None | No | " |
| BT | " | " | " | " | " | None | No | " |
| 6600CH | 35/Super 8 | No | 200/67FPM | Forward | 2400 Ft. | Hi Speed | No | Optional |
| CT | " | No | " | " | " | None | No | " |
| BT | " | No | " | " | " | None | No | " |

GENERAL SPECIFICATIONS

PRO

| | CUE SYSTEM | | Edge Lights | Apertures USASI /PH22 | Lamp Voltmeter 60 to 120 VDC | Lamp Wattage | AUTOMATIC COUNTERS | | | | | Quantity of Light Valves | Light Modulation |
|--|------------|----------|-------------|---|------------------------------|--------------|--------------------|------|-----|--------------------|-----------------|--------------------------|------------------|
| | Notch | R.F. | | | | | Footage | Fade | Cue | Printer Hour Meter | Lamp Hour Meter | | |
| | Yes | Optional | 1 side | Single: Picture Only | Yes | 1200 | Yes | Yes | Yes | Yes | Yes | 3 | Auto |
| | No | No | " | | " | " | " | No | No | " | " | 3 | Manual |
| | Yes | Optional | 2 sides | Single: Picture Only | Yes | 1200 | Yes | Yes | Yes | Yes | Yes | 3 | Auto |
| | No | No | " | | " | " | " | No | No | " | " | 3 | Manual |
| | Yes | Optional | 2 sides | Three way: Picture-Heads, Picture Tails, Twin Picture. | Yes | 1200 | Yes | Yes | Yes | Yes | Yes | 3 | Auto |
| | No | No | " | | " | " | " | No | No | " | " | 3 | Manual |
| | Yes | Optional | 1 side | Single: Picture Only (Furnished when sound head is factory installed) Four way: Picture Only, Sound Reversal, Sound Pos., Composite (Furnished when printer is purchased less sound head) | Yes | 1000 | Yes | Yes | Yes | Yes | No | 3 | Auto |
| | Yes | " | " | | " | " | " | Yes | Yes | " | " | 3 | Auto |
| | No | No | " | | " | " | " | No | No | " | " | 3 | Manual |
| | Yes | Optional | " | | " | " | " | Yes | Yes | " | " | 1 | Auto |
| | No | No | " | | " | " | " | No | No | " | " | 1 | Manual |
| | Yes | Optional | 2 sides | Five way: Picture-Heads, Picture-Tails, Sound-Heads, Sound-Tails, Composite. | Yes | 1000 | Yes | Yes | Yes | Yes | No | 3 | Auto |
| | Yes | " | " | | " | " | " | Yes | Yes | " | " | 3 | Auto |
| | No | No | " | | " | " | " | No | No | " | " | 3 | Manual |
| | Yes | Optional | " | | " | " | " | Yes | Yes | " | " | 1 | Auto |
| | No | No | " | | " | " | " | No | No | " | " | 1 | Manual |
| | Yes | Optional | 2 sides | Two way: Picture-Single, Picture-Twin. | Yes | 1000 | Yes | Yes | Yes | Yes | No | 3 | Auto |
| | Yes | " | " | | " | " | " | Yes | Yes | " | " | 3 | Auto |
| | No | No | " | | " | " | " | No | No | " | " | 3 | Manual |
| | Yes | Optional | " | | " | " | " | Yes | Yes | " | " | 1 | Auto |
| | No | No | " | | " | " | " | No | No | " | " | 1 | Manual |
| | No | Yes | None | Three way: Single 1-3/1-4, Twin 1-4, Twin 1-3 | Yes | 1000 | Yes | Yes | Yes | Yes | No | 3 | Auto |
| | No | No | " | | " | " | " | No | No | " | " | 3 | Manual |
| | No | No | " | | " | " | " | No | No | " | " | 1 | Manual |
| | No | Yes | None | Two way: 4 Row Picture, 4 Row Sound | Yes | 1000 | Yes | Yes | Yes | Yes | No | 3 | Auto |
| | No | No | " | | " | " | " | No | No | " | " | 3 | Manual |
| | No | No | " | | " | " | " | No | No | " | " | 1 | Manual |

| DUCTION CAPABILITIES | | | | | CONTROL SYSTEM | | | | | | DESIGN |
|----------------------|--------------------------------|---------|--------|------------------------|--------------------------------------|------|-------|------------|------------------|---------------------|---------------|
| Light Values | MINIMUM SCENE LENGTH IN FRAMES | | | Fade Lengths in Frames | AUTOMATIC TAPE CONTROLLED OPERATIONS | | | | | | |
| | 240 FPM | 180 FPM | 60 FPM | | Start | Stop | Fades | Zero Close | Color Correction | Intensity of Illum. | |
| 73 | 18 | — | 8 | 16 to 96 | Yes | Yes | Yes | Yes | Yes | Yes | 6122P |
| 52 | — | — | — | — | No | No | No | No | No | No | PT |
| 73 | 8 | — | 3 | 16 to 96 | Yes | Yes | Yes | Yes | Yes | Yes | 6222P |
| 52 | — | — | — | — | No | No | No | No | No | No | PT |
| 73 | 18 | — | 8 | 16 to 96 | Yes | Yes | Yes | Yes | Yes | Yes | 6322P |
| 52 | — | — | — | — | No | No | No | No | No | No | PT |
| 73 | — | 15 | 8 | 16 to 96 | Yes | Yes | Yes | Yes | Yes | Yes | 6100CH |
| 73 | — | 44 | 15 | 16 to 96 | Yes | Yes | Yes | Yes | Yes | Yes | C |
| 52 | — | — | — | — | No | No | No | No | No | No | CT |
| 73 | — | 44 | 15 | 16 to 96 | Yes | Yes | No | Yes | No | Yes | MB |
| 52 | — | — | — | — | No | No | No | No | No | No | BT |
| 73 | — | 8 | 3 | 16 to 96 | Yes | Yes | Yes | Yes | Yes | Yes | 6200CH |
| 73 | — | 18 | 6 | 16 to 96 | Yes | Yes | Yes | Yes | Yes | Yes | C |
| 52 | — | — | — | — | No | No | No | No | No | No | CT |
| 73 | — | 18 | 6 | 16 to 96 | Yes | Yes | No | Yes | No | Yes | MB |
| 52 | — | — | — | — | No | No | No | No | No | No | BT |
| 73 | — | 15 | 8 | 16 to 96 | Yes | Yes | Yes | Yes | Yes | Yes | 6232CH |
| 73 | — | 44 | 15 | 16 to 96 | Yes | Yes | Yes | Yes | Yes | Yes | C |
| 52 | — | — | — | — | No | No | No | No | No | No | CT |
| 73 | — | 44 | 15 | 16 to 96 | Yes | Yes | No | Yes | No | Yes | MB |
| 52 | — | — | — | — | No | No | No | No | No | No | BT |
| 73 | — | 30* | 12* | — | Yes | Yes | Yes | Yes | Yes | Yes | 6400CH |
| 52 | — | — | — | — | No | No | No | No | No | No | CT |
| 52 | — | — | — | — | No | No | No | No | No | No | BT |
| 73 | — | 30* | 12* | — | Yes | Yes | Yes | Yes | Yes | Yes | 6600CH |
| 52 | — | — | — | — | No | No | No | No | No | No | CT |
| 52 | — | — | — | — | No | No | No | No | No | No | BT |

*Super 8 printers operate at 200 FPM and 67 FPM.

CUE SYSTEMS

- Notch The notch type Cue System utilizes the standard B & H notch on the edge of the negative.
- Radio Frequency (R.F.) The radio frequency Cue System eliminates the need for notching negatives. An electronic probe senses a metallic patch applied at the edge of the film.

OPTIONAL ACCESSORIES

- Sound Printing Head Provides for single pass printing of picture and sound from separate negatives. May be ordered with printer or as field installation kit.
- 1000 Watt Rectifier/60 Cycle Furnishes controlled D.C. voltage, for printing lamp (50 cycle available). Required where controlled D.C. current is not available in laboratory.
- Fader Six-speed Fader (also used in conversion of Model "MB" to Model "C").
- Light Valve Light Valve, 73 Positions with Zero Close. Two required for conversion of Model "MB" to Model "C".
- Dichroic Mirror & Lens Kit Required for conversion of Model "MB" to Model "C", plus two light valves, a fader and fader drive.
- Checker-Duplicator Verifies, duplicates and/or corrects punched tapes.
- Air Vacuum Film Cleaner Provides an efficient method of maintaining film cleanliness while printing. Available as double head model for picture negative & raw stock and triple head model for picture negative, raw stock & sound track negative. May be ordered with printer or as kit for field installation. (Air-Vacuum Pump optional)

REQUIREMENTS

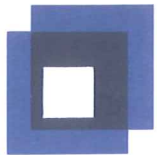
Model CH-C-CT-MB-BT

- Power Requirements 105 to 125 volts A.C. single phase 60 cps.
120 volts D.C., 9 amps. (for printing lamp)
Nominal output tolerance: $\pm 1\%$.
Ripple voltage: Maximum 1%.
- Printing Lamp Type CTS:
1000 watts, 115-120 volts, D.C.—25 hours
Type CYS (optional)
1200 watts, 115-120 volts, D.C.—10 hours
- Air Air required for film contact at aperture,
pre-filtered pressure controlled.
- Dimensions Without Sound Head:
70" H x 60" W x 28" D. Approx. wt. 475 lbs.
With Sound Head:
70" H x 78" W x 28" D. Approx. wt. 600 lbs.

Model P-PT

- Power Requirements 208 to 220 volts A.C., 3 phase, 60 cps, 500 v.a.
105 to 120 volts A.C. single phase, 60 cps, 2400 v.a.
120 volts D.C., 9 amps (for printing lamp).
Nominal output tolerance $\pm 1\%$.
Ripple Voltage: Max. 1%.
- Printing Lamp 1200 watts, 115 volts D.C. Type DBH.
- Air Air required for film contact at aperture . . . loop setters . . .
air vacuum film cleaners, pre-filtered, pressure controlled.
- Vacuum Pump supplied with printer.
- Dimensions 72" H x 82" W x 28" D.
Approximate wt. 1200 lbs.

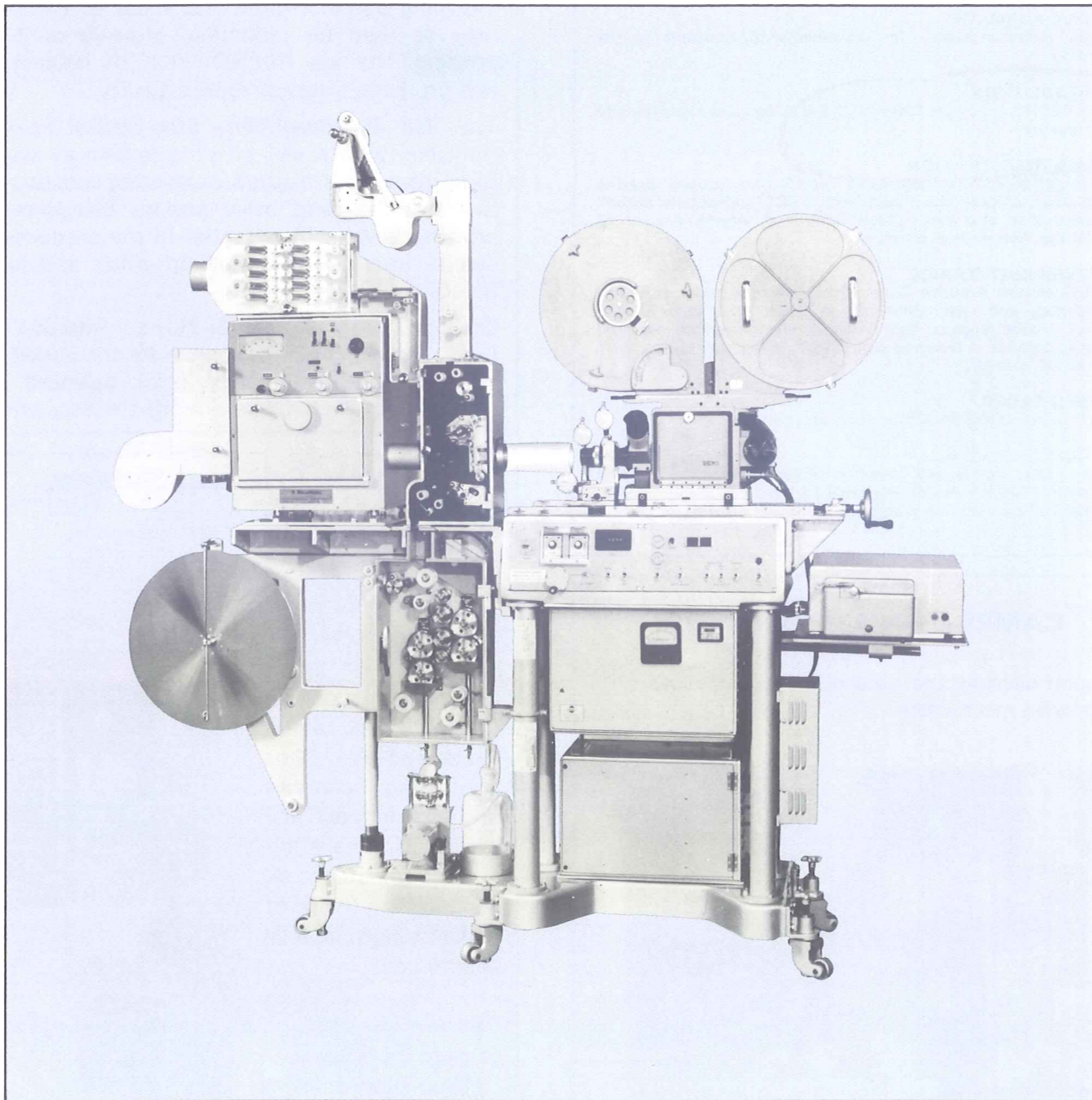
PROFESSIONAL EQUIPMENT DIVISION



BELL & HOWELL

Rocky

**BELL & HOWELL/SEIKI
HIGH SPEED STEP-OPTICAL MOTION PICTURE PRINTER**



INCLUDES ALL OF THESE FEATURES AS STANDARD EQUIPMENT

**High Speed—40 FPS
Wet Printing System
Multiple Format Capability
New High Resolution Lens**

**Pilot Pin Registration
Automatic Additive Color
Six Speed Fader
Daylight Operation**

A FULLY FEATURED LABORATORY PRINTER AT A NOMINAL PRICE

STANDARD FEATURES

HIGH SPEED

Operates at speeds up to 40 frames per second—4 times faster release printing than most step-optical printers.

WET PRINTING

Wet printing system conceals scratches and surface imperfections. Produces cleaner prints.

MULTIPLE FORMATS

Easily interchangeable film movements for multiple format printing.

HIGH RESOLUTION

New REPRO NIKKOR 100mm f/2.8 lens provides exceptionally high quality.

PILOT PIN REGISTRATION

Pin registration film movements for all film formats. Built-in film advance (pull down) cams with $\pm.007''$ adjustment accommodate long and short pitch films and varying degrees of shrinkage. Assures rock steady prints.

ADDITIVE LIGHT SOURCE

Bell & Howell Additive Color Light Source — color accuracy, uniformity and repeatability. High speed color change capability — wide range of light values — scene-to-scene color and density balance — punched tape programming, compatible with Model "C" printer.

SIX SPEED FADER

6 speed fader provides A-B printing capability.

DAYLIGHT OPERATION

Light tight camera and rawstock magazine improve operator efficiency. Split rawstock magazine for feed or take-up permits removal of exposed film without unthreading camera.

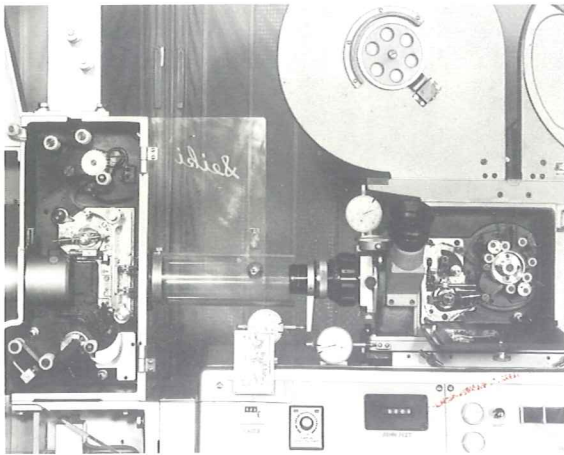
The Bell & Howell/Seiki Step-Optical Printer operates at variable speeds up to 40 frames per second, as much as four times faster than conventional step-optical printers. It features pin registration film movements in both the camera and projector, producing rock-steady prints. The film movements are easily interchanged allowing printing in all formats including 35mm, 16mm and super 8. The printer may be used for reduction, blow-up or 1 to 1 printing. The new REPRO-NIKKOR 100mm f/2.8 lens produces prints of superb quality.

The Bell & Howell/Seiki Step-Optical Printer is furnished with a wet printing system as standard equipment. This method of printing conceals negative scratches and other surface blemishes. Wet printing is virtually essential in the production of quality intermediates, blow-up prints, and super 8 reduction prints.

Equipped with the Bell & Howell Additive Color Light Source, the printer provides the added capability of producing fully color balanced intermediates for economical one light release printing.

CAMERA AND PROJECTOR

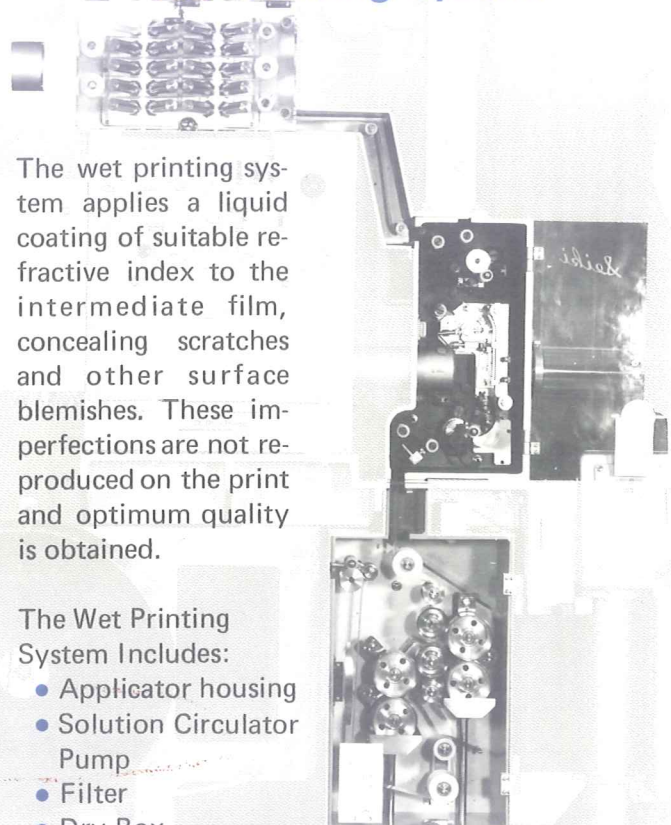
Precision bearings are used in the camera and projector drive mechanism.



CONVENIENT OPERATOR CONTROLS

All printer operator controls are located on the front panel for convenient and efficient operation.

Wet Printing System



The wet printing system applies a liquid coating of suitable refractive index to the intermediate film, concealing scratches and other surface blemishes. These imperfections are not reproduced on the print and optimum quality is obtained.

The Wet Printing System Includes:

- Applicator housing
- Solution Circulator Pump
- Filter
- Dry Box
- Blower and Motor
- Duct Hose

BELL & HOWELL/SEIKI

HIGH SPEED STEP-OPTICAL MOTION PICTURE PRINTER

MODEL 6080

LIGHT SOURCE OPTIONS

The printer is available with a choice of three light sources.

Automatic Additive-Series CF—The combination of the Bell & Howell Automatic Additive Color Light Source and the Seiki Printer provides the maximum laboratory control and outstanding picture quality. Automatic density and color balance are controlled by a preprogrammed, 8 channel, punched tape over a range of four f/stops in each primary color, compatible with the Model "C" Printer. Manual trim control over a range of two f/stops is available to compensate for emulsion and process variables. The level and uniformity of illumination and color balance is sufficient to produce high quality intermediates using all standard film emulsions.

Manual Additive-Series CT—A complete additive light source including a dichroic mirror system and adjustable light valves provides print color balance and density control over a range of four f/stops in each color beam for "one light" printing.

Subtractive-Series A—A Band Pocket Filter Pack is used for print color balance and density control.

STANDARD COMPONENTS SUPPLIED WITH THE STEP-OPTICAL PRINTER

- Seiki projector and camera with replaceable film transport mechanism and sprocket assemblies.
- One film transport mechanism and matching sprocket assemblies each - Camera and Projector.
- Projector wet printing system.
- Camera viewer with image reticle.
- 100mm REPRO-NIKKOR f/2.8 copy lens.
- 3000 ft. projector film feed and take-up.
- Separate feed and take-up camera film magazines.
- Projector footage counter.
- Fade Counter
- Frame/Second Counter
- Hour Meter
- Three precision ($\pm .0004''$) dial indicators for camera and printing lens positioning, plus (.001'') lens focusing ring.
- Notch Cuing system furnished as standard equipment.
- R.F. Cuing system available as accessory.

GENERAL SPECIFICATIONS

MECHANICAL

Film Transport System: Reciprocating registration pin film transport mechanism maintains steadiness within .0002''. Film transport, aperture plate and sprocket assembly easily interchanged for multiple format printing.

Speed Range: Printer operates at speeds of 8 to 40 frames per second.

Minimum Scene Length Between Light Changes: 14 frames at 40 frames per second; 9 frames at 24 frames per second.

Fader: Full 135° shutter—provides 16, 24, 32, 48, 64 and 96 frame length fades and dissolves.

Automatic Control: Programmed tape.

Manual Control: Fade knob and position indicator at operator's position.

Film Capacity:

Projector: 3000' core wound negative
Optional 3000' Bi-Pack provision available
Camera: 2000' 16mm split magazine separated into two sections for rawstock and print take-up. 35mm double compartment or split 1000' magazine supplied with 35mm camera.

Cuers: Notch type standard. Includes adjustable timer for R.F. Cuing together with Notch/R.F. selector switch located on main control panel. R.F. Cue optional accessory.

Printer Drive: Variable speed drive motor. Camera and projector held in Sync through timing belts. Camera can be disconnected permitting film advance on projector only.

Camera Features: Camera mounted on precision dovetail ways. Positive and negative 16mm apertures supplied with 16mm camera. Unused aperture stored in camera door. Provision for air at aperture.

Counters: Projector footage counter—standard. Camera footage counter optional.

Safety Switches: Two film break switches on projector—one film break switch on camera.

OPTICAL

Printing Lens: 100mm f/2.8 REPRO-NIKKOR—standard for all formats.

Condenser: 35mm projector system furnished as standard, 16mm system furnished with 16mm projector.

Resolution: 100 L/mm minimum when printing 35/16 or 16/s8 (EK7302 type emulsion

when processed in accordance with manufacturers recommendation).

Illumination Uniformity: In all printing formats, .05 Log E throughout entire camera aperture.

Illumination Intensity: Printing on intermediate (7253) or internegative (7271) and all color films with higher sensitivity is possible in conjunction with compatible printing speed.

Viewer: Positive reflex viewer contains reticle for image focus and placement. Printer cannot be started with viewer in position.

Filter Holders: Two 2'' square filter holders in each color beam; one 2'' square filter holder in main beam inside lamp house.

Wet Printing System: Standard on all models.

ELECTRICAL

Printer operates on 220 Volts A.C., 3 phase current, 50 or 60 Hz, 30 Amps.

DIMENSIONS

87'' High x 84'' Wide x 27'' Deep

SHIPPING WEIGHT

1500 Lbs. Approximate.

BELL & HOWELL/SEIKI STEP-OPTICAL MOTION PICTURE PRINTER

STANDARD MODELS

| MODEL | FILM FORMAT | | LIGHT SOURCE | LIGHT VALVES | LIGHT CONTROL | | COLOR & DENSITY BALANCE | FADER | READER | MAGAZINE |
|----------------------|-------------|--------|--------------------|--------------|------------------------|------------------------|--------------------------|-----------|----------------|---|
| | Projector | Camera | | | Automatic | Manual | | | | |
| 6080CF (1) | 35mm | 16mm | Automatic Additive | 3 | 50 Steps .025 Log E | 24 Steps .025 Log E | Automatic Scene to Scene | Automatic | Standard Speed | 2-2000 Capacity 16mm Half Magazines for Camera Feed and/or Take-up |
| 6080CT (2) | 35mm | 16mm | Manual Additive | 3 | — | 52 Steps .025 Log E | Manual one Light | Manual | — | |
| 6080A | 35mm | 16mm | Subtractive | — | — | — | Filter Pack Magazine | Manual | — | |

(1) Zero close feature for completely blocking the light between scenes in each color channel when printing from A and B rolls.

(2) Step 1 in the manual valve is equivalent to step 2 plus trim 20 in the automatic light valve and step 52 is equivalent to step 50 plus trim 24 in the automatic light valve.

Any one set of projector and camera formats listed below may be substituted for the standard 35mm projector and 16mm camera formats at the time of original order. Raw stock magazines and condenser optics for alternate printing formats may also be substituted. Total printer prices may vary slightly, depending upon format selection. Please contact your Bell & Howell representative for assistance in selecting the combination of film formats and accessories best suited to your laboratory operation.

CAMERA AND PROJECTOR FILM TRANSPORT MECHANISM AND SPROCKET ASSEMBLY SELECTION GUIDE

| CAMERA | | | PROJECTOR | | |
|-------------------|---------------------|-------------------|---|---------------------|-------------------|
| Film Format | Transport Mechanism | Sprocket Assembly | Film Format | Transport Mechanism | Sprocket Assembly |
| 35mm | 036750 | 036760 | 35mm | 036757 | 036767 |
| 35/32 | 036751 | 036761 | 16mm | 036758 | 036768 |
| 35/16 - 3R | 036752 | 036762 | Super 16 | 036759 | 036769 |
| 35/s8 - 5R | 036753 | 036763 | All Camera and Projector Film Transport Mechanisms include appropriate apertures. | | |
| 16mm | 036754 | 036764 | | | |
| 16/s8 (1-3 & 1-4) | 036755 | 036765 | | | |
| 16/8 (1-4) | 036756 | 036766 | | | |

ACCESSORIES

| Part Number | Component | Description | Part Number | Component | Description |
|---------------|----------------------------|---|---------------|---------------------|---|
| 036770 | 35mm Magazine | Double Compartment 1000 Ft. Capacity for Take-up | 036776 | 35mm Gear Assembly | Magnetic Footage Counter Projector Side |
| 036771 | Magazine Adapter | Includes Take-up Motor Assembly | 036777 | 16mm Gear Assembly | Magnetic Footage Counter Camera Side |
| 036772 | 16mm Magazine | Half Type; 1200 Ft. Capacity; For Feed and Take-up | 036734 | Condenser Lens | Lens and Barrel for 35mm Projector |
| 036773 | 16mm Magazine | Half Type; 2000 Ft. Capacity; with Indicator. For Feed Only | 036778 | Condenser Lens | Lens and Barrel for 16mm Projector |
| 036774 | 35mm Feed and Take-up Reel | For Superimposure; 3000 Ft. Capacity Tight Wind. | 036779 | Lens Mount Assembly | Dial Indicator Without Lens |
| 036775 | 16mm Feed and Take-up | Core-Reel and Film Guide Bar Assembly for Projector | | | |

WARRANTY

Bell & Howell warranties all printers to be free from defects in materials or workmanship for one year following date of shipment. This warranty is valid only when recommended preventive maintenance programs are followed.

SERVICE

A team of service engineers is available to service the printer systems on site or at the Bell & Howell factory. In addition, a preventive maintenance program tailored to meet the user's requirements is available. Quotations for these services will be forwarded upon request.

PROFESSIONAL EQUIPMENT DIVISION



7100 McCORMICK ROAD, CHICAGO, ILL. 60645 (312) 262-1600

U.S.A./CANADA
BELL & HOWELL COMPANY
7100 McCORMICK ROAD
CHICAGO, ILLINOIS 60645 U.S.A.
(312) 262-1600

INTERNATIONAL
BELL & HOWELL, LTD.
ALPERTON HOUSE, BRIDGEWATER RD.
WEMBLEY, MIDDLESEX, ENGLAND
01-902-8812

CENTRAL-SOUTH AMERICA
BELL & HOWELL INTERNATIONAL
7100 McCORMICK ROAD
CHICAGO, ILLINOIS 60645 U.S.A.
(312) 262-1600

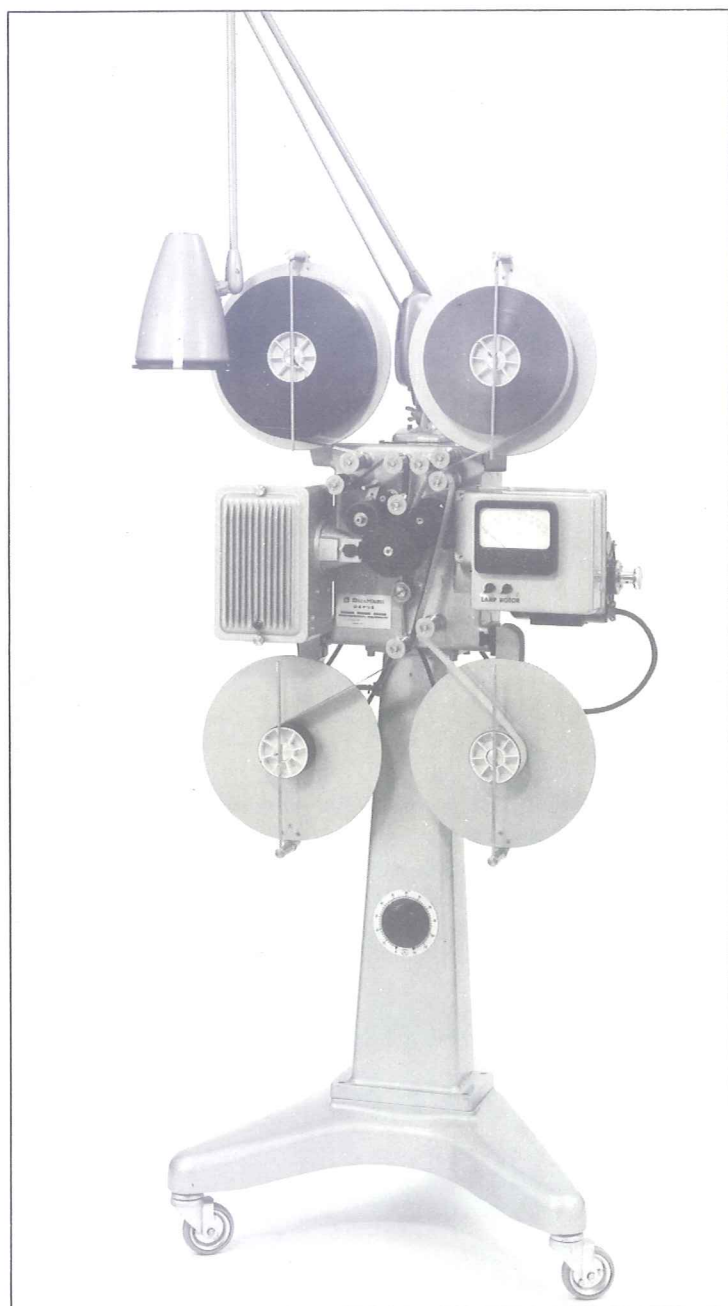


MICROFILM DUPLICATOR

THE BELL & HOWELL MICROFILM DUPLICATOR IS A HIGH SPEED, SPROCKETLESS, CONTINUOUS CONTACT PRINTER FOR HIGH QUALITY DUPLICATION OF SILVER HALIDE 35mm AND 16mm PERFORATED OR UN-PERFORATED BLACK-AND-WHITE MICROFILM.

FEATURING:

- Choice of two models operating at 95 or 190 feet per minute.
- Film capacity of 1200 feet on standard film cores or 100 feet on film reels.
- Helical gear drive and synchronous motor assure steady, quiet operation.
- A unique system of tension and compensating rollers provide smooth film transport, minimizing image weave and scratches, prolonging the life of the negative.
- The film transport system and take-up mechanism can be readily changed by laboratory personnel to accommodate either 35mm or 16mm film.
- High-intensity illumination system with built-in variable transformer control provides adequate light output for all standard black-and-white silver microfilm emulsions.
- Accessory Light Control Board and Notch Cued Kit provide up to 75 automatic light changes for uniform density prints from negatives of varying density.
- Extremely light weight and compact in size, the printer can be readily moved within the laboratory on its swivel caster base.



MICROFILM DUPLICATOR

**MODEL 6760AR — STANDARD SPEED
OPERATES AT 95 FEET PER MINUTE**

**MODEL 6760AS — HIGH SPEED
OPERATES AT 190 FEET PER MINUTE**

PERFORMANCE SPECIFICATIONS

CAPACITY: 1200 feet Silver Halide film

SPEED: Model 6760AR-95 Ft. Per Min. (80 Ft. Per Min. on 50 HZ Model)
Model 6760AS-190 Ft. Per Min. (160 Ft. Per Min. on 50 HZ Model)

UNIFORMITY: Density across a frame will not vary more than .10 using Eastman Kodak black and white microfilm No. 5464.

RESOLUTION: Will not vary more than 10% of the original per generation.

APERTURE: .09 H x 35mm W. on Model 6760AR
.312 H x 35mm W. on Model 6760AS

LAMP: 150 watt CAR Projection Lamp.

LAMP CONTROLS: Built-in variable transformer to control voltage from 0-115 VAC.

LAMP VOLTMETER: 60-120VAC voltmeter graduated in 1 volt steps.

POWER REQUIREMENTS: 105 to 125 volts AC, 60HZ
15 Amps (50HZ model available).

DIMENSIONS: 64" height x 38½" Wide.

WEIGHT: 105 pounds.

MICROFILM DUPLICATOR ACCESSORIES

034856 *Light Control Board*—for uniform density prints from varying density negatives; up to 75 light changes automatically controlled from timing notches on negative.

036557 *Bell & Howell/Sargent-Welch Solid State Densitometer*—for all emulsions plus diazo films.

036356 *Notch Cuer Kit*—for use with Light Control Board.

036351 *Film Reel Adaptor Shafts*—allow use of 100 ft. film reels as well as standard film cores.

036533 *Bell & Howell/Sargent-Welch Vacuum Tube Densitometer*—for black & white motion picture & microfilm—neg/pos/rev. emulsions.

WARRANTY

Bell & Howell warranties all equipment for one year following shipment to be free of defects in materials or workmanship under normal use providing equipment is operated properly and acceptable preventive maintenance procedures are followed.

SERVICE

Factory trained field service engineers are available to repair systems under warranty or to assist in the installation, preventive maintenance or service of the equipment. Quotations for these services will be forwarded upon request.

PROFESSIONAL EQUIPMENT DIVISION

 **BELL & HOWELL**

7100 McCORMICK ROAD, CHICAGO, ILL. 60645
(312) 262-1600

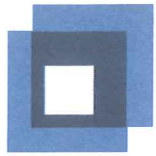
U.S.A.
BELL & HOWELL
BUSINESS EQUIPMENT GROUP
6800 McCORMICK ROAD
CHICAGO, ILLINOIS 60645
(312) 675-7600

CANADA
BELL & HOWELL
BUSINESS EQUIPMENT GROUP
45 JUTLAND ROAD
TORONTO, ONTARIO, CANADA
(416) 259-4641

EUROPE/AFRICA/INDIA
BELL & HOWELL, LTD.
ALPERTON HOUSE
BRIDGEWATER ROAD
WEMBLEY, MIDDLESEX, ENGLAND
01-902-8812

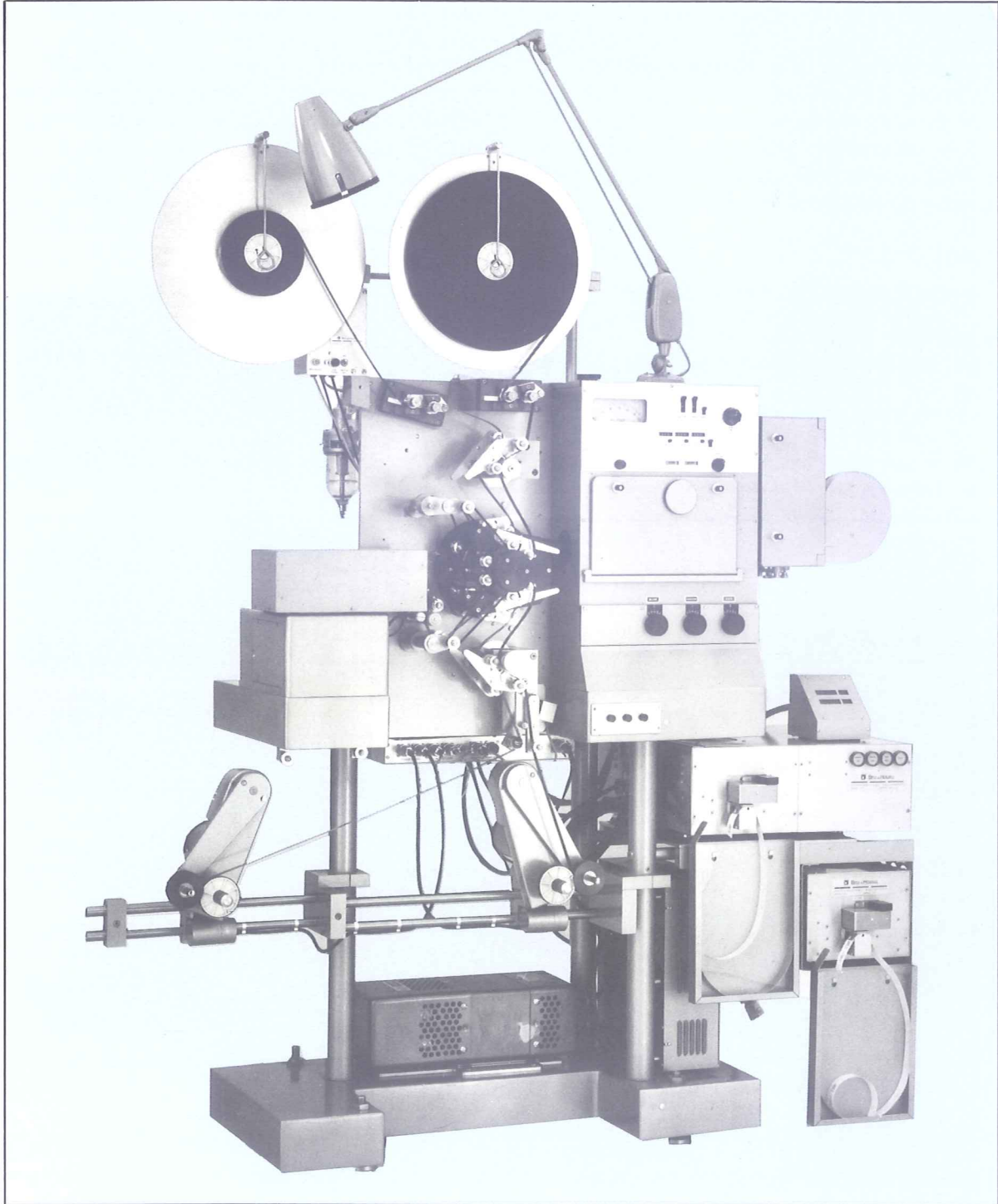
LATIN AMERICA/ASIA/PACIFIC
BELL & HOWELL
BUSINESS EQUIPMENT GROUP
6800 McCORMICK ROAD
CHICAGO, ILLINOIS 60645
(312) 675-7800

PROFESSIONAL EQUIPMENT DIVISION



BELL & HOWELL

CONTINUOUS OPTICAL REDUCTION PRINTER



16mm to Super 8mm High Speed Reduction

CONTINUOUS OPTICAL REDUCTION PRINTER

MODELS 6128 & 6118

The BELL & HOWELL SERIES OF CONTINUOUS OPTICAL REDUCTION PRINTERS produces high quality color balanced super 8 prints in either 1-3 or 1-4 formats directly from 16mm masters, employing the Bell & Howell Additive Color Light Source System.

The two model series, 6128 (1-3) and 6118 (1-4), offer high-speed printing of 200 and 400 feet per minute respectively on the 16mm negative side, resulting in an effective output of 222 feet per minute of super 8 prints when slit. Printer operation is fully automatic with the Bell & Howell program tape system that controls stop/start, light changes, color balance and fade functions.

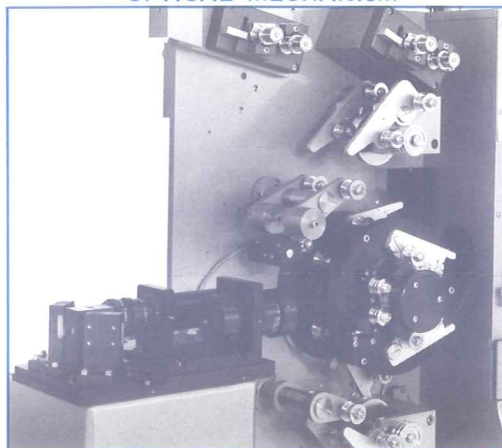
FEATURING:

- Simultaneous dual row (1-3 format or single row 1-4 format 2 passes) super 8 printing from single 16mm master with optimum print sharpness
- One-piece film transport sprocket for optimum print steadiness
- Automatic Additive Color Light Source System for high-speed color changes
- High-speed program tape system for automatic operation
- Threading from operator side for convenience and improved efficiency
- New Tungsten-Halogen 1200 watt printing lamp, assuring stability and lamp life
- R-F cuing or frame count cuing system available as accessories
- Air/vacuum squeegee for longer negative life between cleaning is available as an accessory

OPERATION:

The 16mm master and 2-rank super 8 rawstock travel on a one-unit main drive sprocket system. The two individual sprockets are machined together for precise registration resulting in optimum print steadiness. The light output of the additive color light source passes through the 16mm master film. A precision optical system reduces and transmits the image to the s8 rawstock. The optical system is precisely factory aligned using sophisticated optical techniques to exactly match the optical system to the printing sprocket achieving optimum print sharpness. The location of the master film makes it possible to use a continuous loop master for increased economy in release printing.

OPTICAL MECHANISM



OPTIONS . . . to permit maximum printer efficiency

TAPE PUNCH SYSTEM

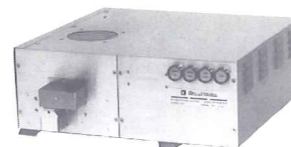
The tape punch produces coded tape containing density, color balance, zero cut, and fade information for automatic printer operation. Pushbuttons control start, tape advance, and program end.



The checker unit quickly verifies a coded tape. The reader can be connected to the tape perforator to produce duplicate tapes, to permit correction of errors in the original, or to insert additional information.

TAPE READER

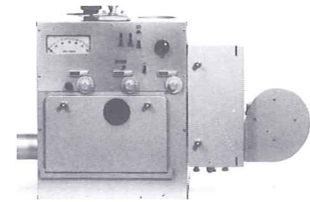
The high speed reader allows scene-to-scene light changes of 18 frames at 200 frames per minute. The standard speed reader permits minimum scene changes of 49 frames at 200 frames per minute. The reader initiates properly timed signals to select illumination intensity and color balance changes of each color light beam, and proper fade lengths by reading the perforated tape.



BELL & HOWELL ADDITIVE LIGHT SOURCE SYSTEM

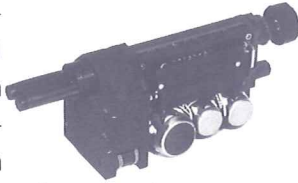
LIGHT SOURCE

The Bell & Howell Additive Color Light Source System permits high speed film printing with color accuracy and repeatability. Color stability is obtained through the use of dichroic mirrors which separate a single 1200 watt Tungsten-Halogen light source into 3 additive primary colors (red, green and blue), and the proven Bell & Howell Light Valve.



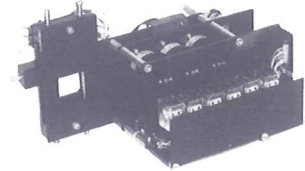
LIGHT VALVE

The light valve is an electro-mechanical light control placed in the path of each color beam. Each valve controls the intensity of light in each color beam as it passes through the valve. For scene-to-scene balance, each primary color beam can be modulated through 50 steps of .025 log E. An additional 24 steps of .025 log E are available manually in each color beam to allow for necessary "trim" and emulsion balance.



FADER ASSEMBLY

The fader assembly is mounted in the vanehouse and provides fade lengths of 16, 24, 32, 48, 64 and 96 frames. The fader is driven from the film transport so that fades are positively coupled to the scene change and will always be of the chosen length regardless of printer operating speed.



GENERAL SPECIFICATIONS

MECHANICAL

Film Size:

Master: 16mm, single or double perforation, .2994 pitch.
Rawstock: 16mm, 2-rank super 8 (1-3 or 1-4 formats) .1667 pitch.

Film Capacity:

16mm Master: 3,000 feet; *super 8 Rawstock:* 3,000 feet. Printer stops automatically at end of 16mm master. Ratio of use: 3,000 feet 16mm to 1,700 feet s8.

Speed:

| <i>Super 8</i> | <i>16mm Master</i> |
|----------------|----------------------|
| 37 & 111 FPM | 67 & 200 FPM (6128) |
| 74 & 222 FPM | 134 & 400 FPM (6118) |

Steadiness:

Total measured unsteadiness will not exceed that of the particular negative by more than .0005" in either the vertical or horizontal direction.

Counters:

Separate four-digit resettable footage counter on both 16mm and super 8mm film paths. Four-digit resettable cue counter. Six-digit non-resettable hour meter counts printer operation hours.

Minimum Scene Length: (Shortest scene between changes)

CH Series: (6128)—18 frames @ 200 FPM; 6 frames @ 67 FPM.

C Series: (6128)—49 frames @ 200 FPM; 17 frames @ 67 FPM.

CH Series: (6118)—36 frames @ 400 FPM; 12 frames @ 133 FPM.

Cuing System:

Notch type cuing system supplied as standard. Utilizes the conventional Bell & Howell notch on the edge of the negative.

RF type—available as an option (uses metallic cue patches)

Frame Count Cuer (optional)—Automatic cuing of reader without notching or applying metallic patches.

OPTICAL

Uniformity:

Illumination across the frame will not vary more than .05 log E.

Resolution:

Resolution will be a minimum of 70 lines/mm at the edges, corners, and center of film (using 7381 film).

Illumination:

Printing on internegative (7271) and all color films with higher sensitivity is possible.

Lamp:

Tungsten-Halogen Printing Lamp; 1200 watts, 120 volts AC-DC

ELECTRICAL

Lamp Controls:

Rheostats for "coarse" and "fine" lamp adjustment. 60 to 120 volts DC voltmeter with dial illuminated by electroluminescence. Dial brightness controlled by rheostat.

Requirements:

208 to 220 volts AC, 3 phase, 60 Hz, 300 watts and 105 to 125 volts AC, single phase 60 Hz, 1500 watts.

AIR & VACUUM

Air Requirements:

2½ PSI is required for film contact at the aperture

Air & Vacuum Squeegee System Requirements:

When vacuum squeegee accessory is ordered, 4 CFM @ 2" Hg vacuum is required; air requirement is 4 CFM @ 2 PSI.

DIMENSIONS

79"H x 66"W x 28"D on swivel caster base with floor locking device.

WEIGHT

800 lbs.

CONTINUOUS OPTICAL REDUCTION PRINTER

16mm to super 8mm

| MODEL | FILM FORMAT | | LIGHT VALVES | LIGHT CONTROL | | COLOR & DENSITY BALANCE | READER |
|---------------------|-------------|----|---------------------------------|--|---|--|--------------------|
| | 1-3 | 14 | | AUTOMATIC | MANUAL | | |
| 6128CH ¹ | X | | Three Automatic Tape Controlled | 50 steps .025 Log E (±½ step) equals 1.225 Log E in each color | 24 steps .025 Log E (±½ step) equals .875 Log E in each color | Automatic scene to scene color & density balance | High Speed |
| 6118CH ¹ | | X | | | | | |
| 6128C ¹ | X | | | | | Automatic scene to scene density balance | Standard Speed |
| 6118C ¹ | | X | | | | | |
| 6128MB | X | | One Automatic Tape Controlled | 52 steps .025 Log E (±½ step) equals 1.30 Log E in each color | Manual color & density balance | Manual density balance | No reader required |
| 6118MB | | X | | | | | |
| 6128CT ² | X | | Three Manual | | | | |
| 6118CT ² | | X | One Manual | | | | |

¹ Zero close feature for completely blocking the light between scenes in each color channel when printing from A and B rolls.

² Step 1 in the manual valve is equivalent to step 20 plus trim 24 in the automatic light valve and step 52 is equivalent to step 50 plus trim 24 in the automatic light valve.

OPTIONAL ACCESSORIES

| PART NO. | ACCESSORY | DESCRIPTION |
|--------------------------|-------------------------|---|
| 6160A 60Hz 6166B 50Hz | 1200 W Rectifier | Furnishes DC voltage control for printing lamp |
| 036555 | Frame Count Cuer | For automatic cuing of the reader without notching or applying metallic patches to film |
| 6395DE | RF Cuer | Eliminates notching of valuable originals |
| 6170D | Program Tape Punch | Produces coded tape |
| 6173D | Checker Duplicator | Verifies coded tape and permits correction of errors in the original |
| 030818 | Fader | 6 speed fader for accurate fade lengths |
| * | Air/Vacuum Film Cleaner | Efficiently cleans negative and rawstock while printing |

*Consult the Model "C" Parts Catalog for a full listing of accessories (883029)

WARRANTY

Bell & Howell warranties all printers to be free from defects in materials or workmanship for one year following date of shipment. This warranty is valid only when recommended preventive maintenance programs are followed.

PROFESSIONAL EQUIPMENT DIVISION

 **BELL & HOWELL**

7100 McCORMICK ROAD, CHICAGO, ILL. 60645
(312) 262-1600

CANADA

BELL & HOWELL CANADA, LTD.
125 NORFINCH DRIVE
DOWNSVIEW, ONTARIO, CANADA

INTERNATIONAL

BELL & HOWELL, LTD
ALPERTON HOUSE, BRIDGEWATER RD.
WEMBLEY, MIDDLESEX, ENGLAND

SERVICE

A team of service engineers is available to service the printer systems on site or at the Bell & Howell factory. In addition, a preventive maintenance program tailored to meet the user's requirements is available. Quotations for these services will be forwarded upon request.

CENTRAL-SOUTH AMERICA

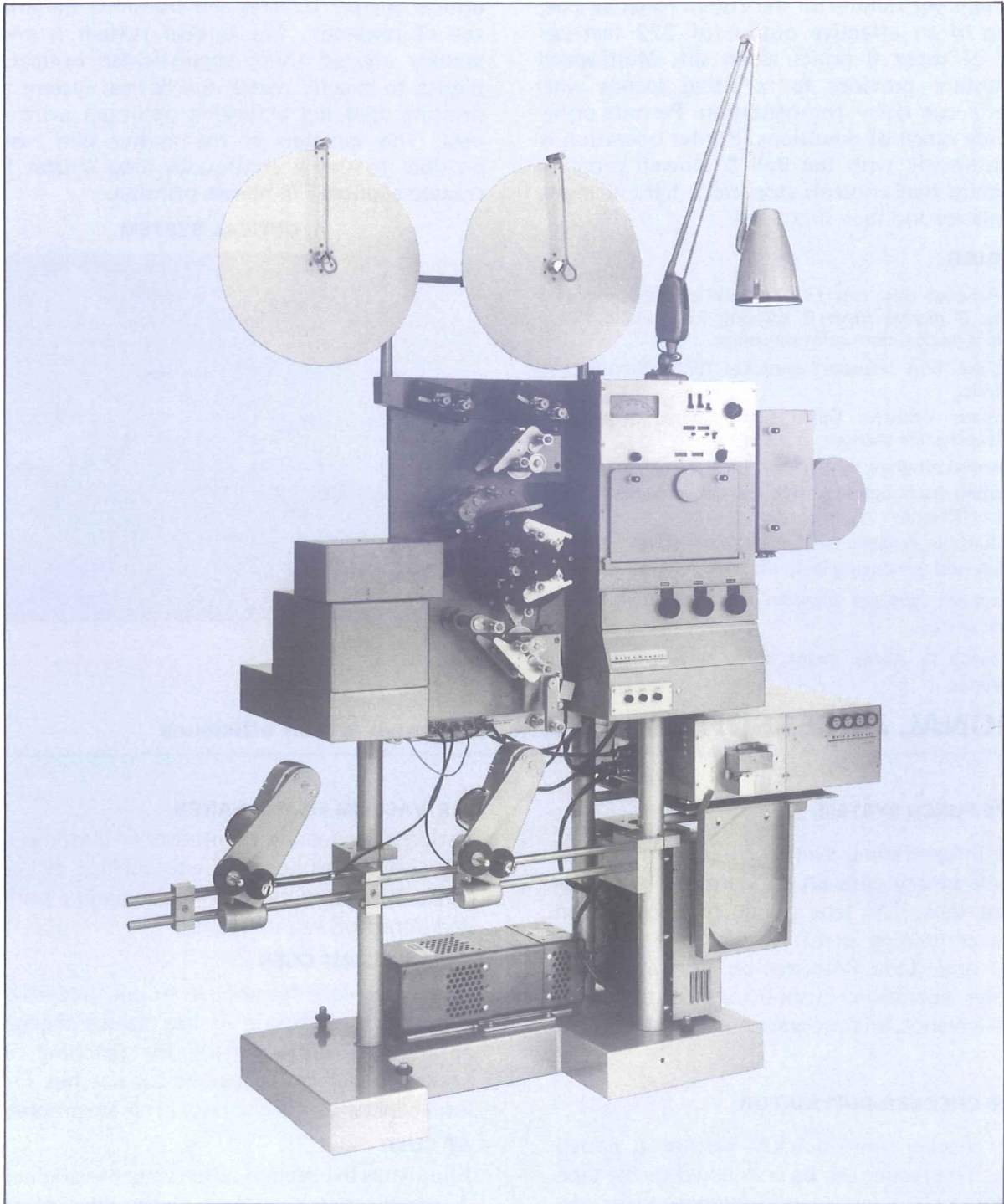
BELL & HOWELL INTERNATIONAL
7100 McCORMICK ROAD
CHICAGO, ILLINOIS 60645 U.S.A.

PROFESSIONAL EQUIPMENT DIVISION



BELL & HOWELL

CONTINUOUS OPTICAL REDUCTION PRINTER



**16mm to Super 8mm High Speed Reduction
BELL & HOWELL AUTOMATIC ADDITIVE COLOR SYSTEM**

CONTINUOUS OPTICAL REDUCTION PRINTER

MODELS 6128 & 6118

The BELL & HOWELL SERIES OF CONTINUOUS OPTICAL REDUCTION PRINTERS produces high quality color balanced super 8 prints in either 1-3 or 1-4 formats directly from 16mm masters, employing the Bell & Howell Additive Color Light Source System.

The model, 6128 offers a maximum printing speed of 200 feet per minute on the 16mm negative side, resulting in an effective output of 222 feet per minute of super 8 prints when slit. Multi-speed drive system provides for printing speeds with automatic cue delay compensation. Permits printing a wide range of emulsions. Printer operation is fully automatic with the Bell & Howell program tape system that controls stop/start, light changes, color balance and fade functions.

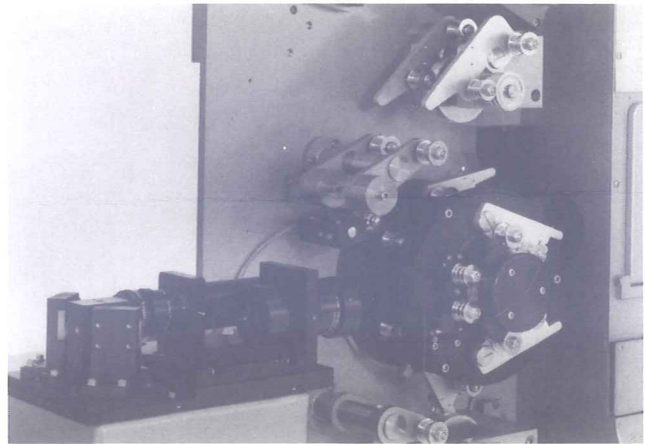
FEATURING:

- Simultaneous dual row (1-3 format) or single row (1-4 format, 2 passes) super 8 printing from single 16mm master with optimum print sharpness.
- One-piece film transport sprocket for optimum print steadiness
- Automatic Additive Color Light Source System for high-speed color changes
- High-speed program tape system for automatic operation
- Threading from operator side for convenience and improved efficiency
- New tungsten-halogen 1200 watt printing lamp, assuring stability and prolonging lamp life.
- Air/vacuum squeegee provides longer negative life and cleaner prints.
- R-F cuing or frame count cuing system available as accessories.

OPERATION:

The 16mm master and dual row super 8 rawstock travel on a one-unit main drive sprocket system. The two sprockets are machined together for precise registration resulting in optimum print steadiness. The light output of the additive color light source passes through the 16mm master film; a precision optical system reduces and transmits the image to the s8 rawstock. The optical system is precisely factory aligned using sophisticated optical techniques to exactly match the optical system to the printing sprocket achieving optimum print sharpness. The location of the master film makes it possible to use a continuous loop master for increased economy in release printing.

OPTICAL SYSTEM



OPTIONAL ACCESSORIES . . . to permit maximum printer efficiency

TAPE PUNCH SYSTEM

The programming system utilizes a modified 8 hole binary code on standard one inch wide paper tape. The tape punch produces coded tape containing density, color balance, zero cut, and fade information for automatic printer operation. Pushbuttons control start, tape advance, and program end.

TAPE CHECKER-DPLICATOR

The checker unit quickly verifies a coded tape. The reader can be connected to the tape perforator to produce duplicate tapes, to permit correction of errors in the original, or to insert additional information.

AIR/VACUUM FILM CLEANER

Reduces frequency of ultrasonic cleaning of negative. Helps to eliminate surface dirt on films. Results in cleaner higher quality prints and improved sound quality.

FRAME COUNT CUER

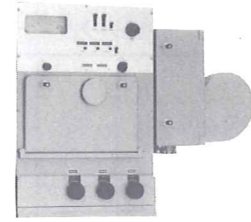
Eliminates need for notches or cue patches on film. Color and fade programs may be changed at anytime without need for patching old notches or relocating metallic cue patches. Provides constant surveillance of program progress.

RF CUER

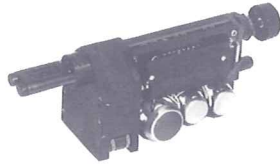
Eliminates the need to notch valuable originals. A metallic patch applied to the edge of the film provides the cue. Patches may be repositioned or removed.

BELL & HOWELL ADDITIVE LIGHT SOURCE SYSTEM

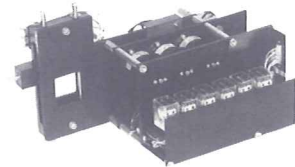
The Bell & Howell Additive Color Light Source System permits high speed film printing with color accuracy and repeatability. Color stability is obtained through the use of dichroic mirrors which separate the light from a single 1200 watt tungsten-halogen light source into 3 additive primary colors (red, green and blue), and the proven Bell & Howell Light Valve.



The light valve is an electro-mechanical light control device placed in the path of each color beam. Each valve controls the intensity of light in each color beam as it passes through the valve. For scene-to-scene balance, each primary color beam can be modulated through 50 steps of .025 log E. An additional 24 steps of .025 log E are available manually in each color beam to allow for necessary "trim" and emulsion balance.



The optional fader assembly is mounted in the vanehouse and provides fade lengths of 16, 24, 32, 48, 64 and 96 frames. The fader is driven from the film transport so that fades are positively coupled to the scene change and will always be of the chosen length regardless of printer operating speed.



GENERAL SPECIFICATIONS

MECHANICAL

Film Size:

Master: 16mm, single or double perforation, .2994 pitch.
Rawstock: 16mm, 2-rank super 8 (1-3 or 1-4 formats) .1667 pitch.

Film Capacity:

16mm Master: 3,000 feet; **super 8 Rawstock:** 3,000 feet.
Printer stops automatically at end of 16mm master. Ratio of use: 3,000 feet 16mm to 1,700 feet s8.

Speed: Model 6128

| Super 8 | 16mm Master | Super 8 | 16mm Master |
|------------|-------------|------------|-------------|
| 14 Ft/Min | 25 Ft/Min | 111 Ft/Min | 200 Ft/Min |
| 28 Ft/Min | 50 Ft/Min | 222 Ft/Min | 400 Ft/Min |
| 55 Ft/Min | 100 Ft/Min | | |
| 111 Ft/Min | 200 Ft/Min | | |

Model 6118

Steadiness:

Total measured unsteadiness will not exceed that of the particular negative by more than .0007" in either the vertical or horizontal direction.

Fader:

Optional accessory. Six Fade Lengths — 16, 24, 32, 48, 64 and 96 Frames \pm 5%.

Counters:

Separate four-digit resettable footage counter on both 16mm and super 8mm film paths. Four-digit resettable cue counter. Six-digit non-resettable hour meter counts printer operation hours.

Minimum Scene Length: (Shortest scene between changes)

- 3 Frames @ 25 Ft/Min — 16 mm Master
- 5 Frames @ 50 Ft/Min — 16mm Master
- 9 Frames @ 100 Ft/Min — 16mm Master
- 18 Frames @ 200 Ft/Min — 16mm Master
- 36 Frames @ 400 Ft/Min — 16mm Master

Cuing System:

Notch type cuing system supplied as standard. Utilizes the conventional Bell & Howell notch on the edge of the negative.

RF type—available as an option (uses metallic cue patches)
Frame Count Cuer (optional)—Automatic cuing of reader without notching or applying metallic patches.

OPTICAL

Uniformity:

Illumination across the frame will not vary more than .05 log E.

Resolution:

Resolution will be a minimum of 70 lines/mm at the edges, corners, and center of film (using EK7381 film) when printing from SMPTE registration test film.

Illumination:

Printing on EK 7271 film and films of higher sensitivity is possible using the printer's multiple speed capability.

Lamp:

Tungsten-halogen Printing Lamp; 1200 watts, B&H Part No. 312748.

ELECTRICAL

Lamp-Controls:

Rheostats for "coarse" and "fine" lamp adjustment. 60 to 120 volts DC voltmeter with dial illuminated by electroluminescence. Dial brightness controlled by rheostat.

POWER REQUIREMENTS:

Printer — 2000 watts, 115 volts (\pm 5%) 60 HZ single phase.

Printing Lamp — 1200 watts, 120 volts DC (\pm 5% with 1% Regulation). Ripple voltage 1% Max. Design 6160 rectifier recommended.

NOTE: 50 HZ models require above power. Step down transformer required if for 220 volt operation. (B & H part No. 311551 recommended.)

AIR & VACUUM

Air Requirements:

2½ PSI is required for film contact at the aperture.

Air/Vacuum Film Cleaner Requirements:

4 CFM @ 2" Hg vacuum is required, air requirement is 4 CFM @ 2 PSI. Order Air/Vacuum Pump #036722.

DIMENSIONS

79"H x 66"W x 28"D on swivel caster base with floor locking device.

SHIPPING WEIGHT:

1250 lbs. approx.

CONTINUOUS OPTICAL REDUCTION PRINTER

16mm to super 8mm

| MODEL | FILM FORMAT | | LIGHT VALVES | LIGHT CONTROL | | COLOR & DENSITY BALANCE | READER | CUING SYSTEM |
|---------------------|-------------|-----|---------------------------------|--|--|--|--------------------|--|
| | 1-3 | 1-4 | | AUTOMATIC | MANUAL | | | |
| 6128CH ¹ | X | | Three Automatic Tape Controlled | 50 steps .025 Log E (±½ step) equals 1.225 Log E in each color | 24 steps .025 Log E (±½ step) equals .575 Log E in each color | Automatic scene to scene color & density control | High Speed | Notch supplied as standard (RF or Frame Count Cuer available as an option) |
| 6118CH ¹ | | X | | | | | | |
| 6128BH | X | | One Automatic Tape Controlled | | | Automatic density control | | |
| 6118BH | | X | | | | | | |
| 6128CT ² | X | | Three Manual | | 52 steps .025 Log E (±½ step) equals 1.275 Log E in each color | Manual one light color and density control | No reader required | No cuing required |
| 6118CT ² | | X | | | | | | |
| 6128BT ² | X | | One Manual | | | Manual one light density control | | |
| 6118BT ² | | X | | | | | | |

¹ Zero close feature for completely blocking the light between scenes in each color channel when printing from A and B rolls.

² Step 1 in the manual valve is equivalent to step 2 plus trim 20 in the automatic light valve and step 52 is equivalent to step 50 plus trim 24 in the automatic light valve.

OPTIONAL ACCESSORIES

| PART NO. | ACCESSORY | DESCRIPTION |
|--------------------------|---------------------|---|
| 6160A 60Hz 6160B 50Hz | 1200 W Rectifier | Furnishes controlled DC voltage for printing lamp |
| 036731 | Frame Count Cuer | For automatic cuing of the reader without notching or applying metallic patches to film |
| 036556 | FCC/Digital Display | Indicates progress of Frame Count Cue program in feet and frames |
| 6395DE | RF Cuer | Eliminates notching of valuable originals |
| 6170E | Program Tape Punch | Produces coded tape |
| 6173D | Checker Duplicator | Verifies coded tape and permits correction of errors in the original |
| 036541 | Fader & Drive Ass'y | 6 speed fader for accurate fade lengths |
| 034002 | Spare Light Valve | 50 automatic steps of .025 Log E (Replacement spare) |

WARRANTY

Bell & Howell warranties all printers to be free from defects in materials or workmanship for one year following date of shipment. This warranty is valid only when equipment is used in accordance with Bell & Howell operating instructions and recommended preventive maintenance programs are followed.

SERVICE

A team of service engineers is available to service the printer systems on site or at the Bell & Howell factory. In addition, a preventive maintenance program tailored to meet the user's requirements is available. Quotations for these services will be forwarded upon request.

PROFESSIONAL EQUIPMENT DIVISION

FORM 883046 REV 7/73

BELL & HOWELL

7100 McCORMICK ROAD, CHICAGO, ILL. 60645 (312) 262-1600

U.S.A./Canada

BELL & HOWELL PROFESSIONAL
7100 McCORMICK ROAD
CHICAGO, ILLINOIS 60645 U.S.A.
(312) 262-1600

International

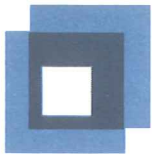
BELL & HOWELL, LTD.
ALPERTON HOUSE, BRIDGEWATER RD.
WEMBLEY, MIDDLESEX, ENGLAND
01-902-8812

Central-South America

BELL & HOWELL INTERNATIONAL
7100 McCORMICK ROAD
CHICAGO, ILLINOIS 60645 U.S.A.
(312) 262-1600

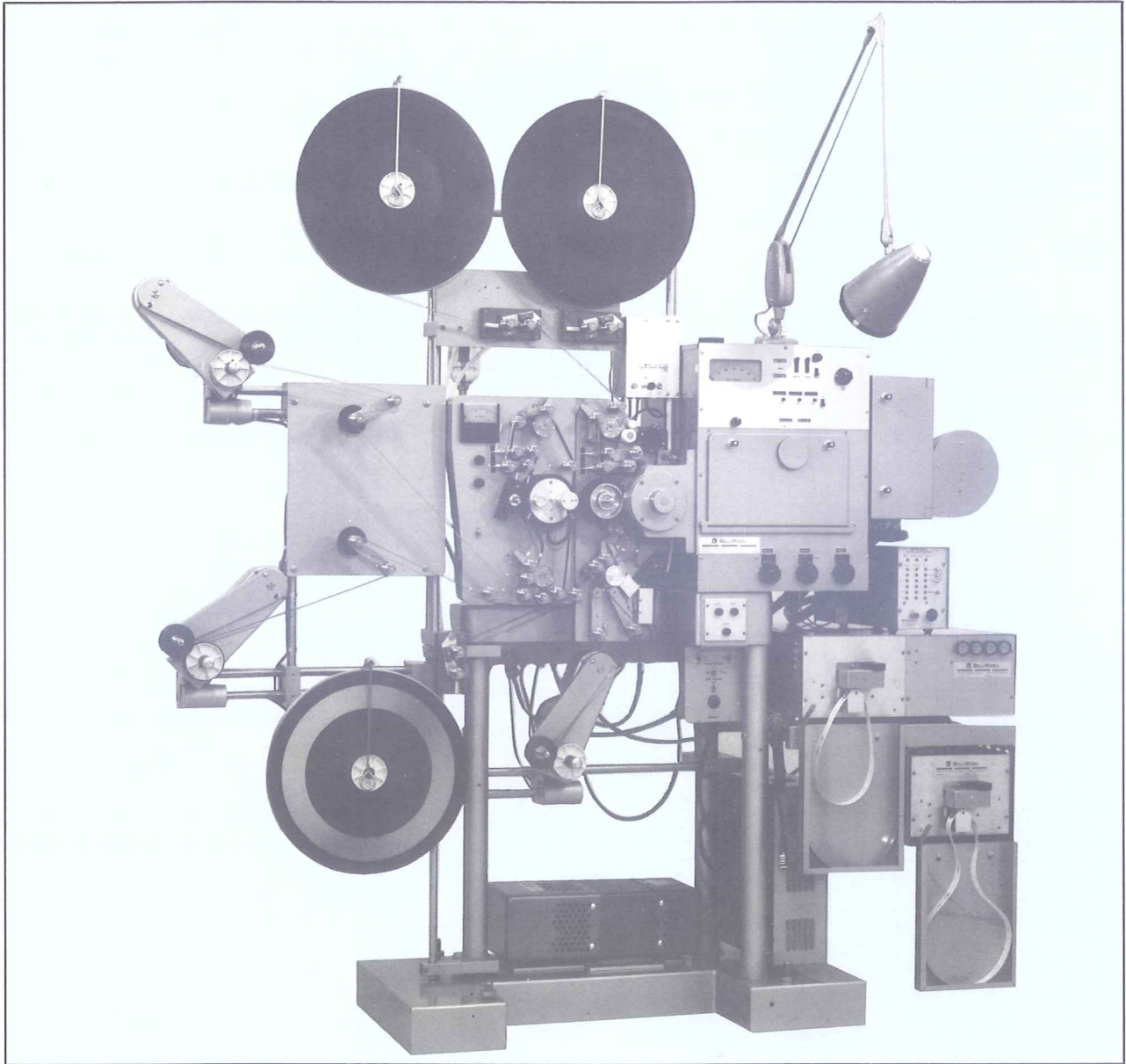
 and BELL & HOWELL are trademarks of the Bell & Howell Company

PROFESSIONAL EQUIPMENT DIVISION



BELL & HOWELL

ADDITIVE COLOR CONTINUOUS CONTACT FILM PRINTER



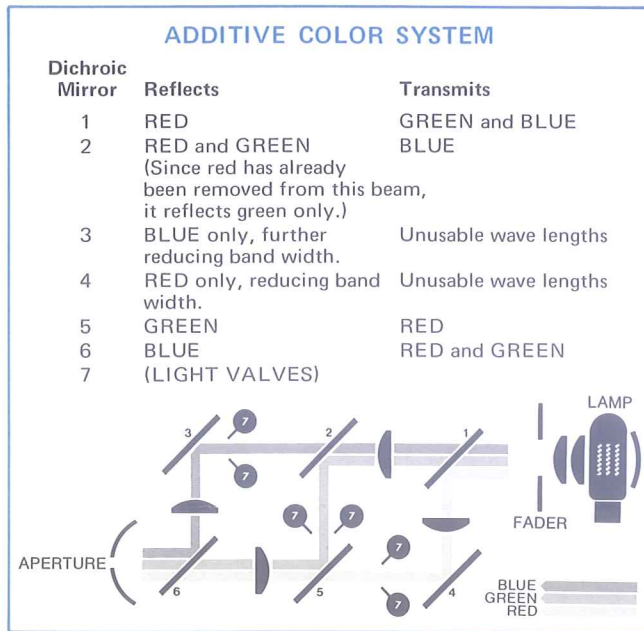
Model "C" Printer

16mm / 35mm / 35/32mm / 16/s8mm-2R / 35/s8mm-5R

CONTINUOUS CONTACT FILM PRINTER

The Bell & Howell Continuous Contact Film Printer is available in models to print s8, 16, 35, 35/32 and 65&70mm motion picture films. Operating at 180 feet per minute with a film capacity of 3,000 feet, and coupled with the Bell & Howell Automatic Additive Color Light Source System, it offers high speed, high quality reproduction for laboratory film printing.

The design of the printer provides flexibility by offering the addition of accessories and options permitting the user to meet his specific needs.



FEATURING:

- Proven Bell & Howell Automatic Additive Color Light Source is available for series "C" and "CH"
- Optimum print quality and steadiness assured through the use of precision components
- Exclusive Bell & Howell six speed fader for precise dissolves and fade lengths
- 1200W Tungsten Halogen Printing Lamp assures illumination stability and twice the life of conventional tungsten lamps
- Standard notch cuing system or optional RF or Frame Count Cuer.
- Smooth Film Advance: Highly polished film transport rollers and precision sprockets mounted on permanently-lubricated ball bearings
- Intimate Contact at Film Aperture: Neoprene roller gate maintains constant pressure against the back of the positive film
- Dust and Lint-free Aperture: Compressed air jet against the aperture further assists in maintaining film contact and film cleanliness
- 16mm Edge Printing: Edge printing light intensity is controlled separately
- 35mm Edge Printing: Edge printing on both edges of film to permit heads or tails printing
- Film Break Switch: Printer stops in case of negative breakage
- Sound Printing Accessory: 16/s8, 16, 35/32 and 35mm printers may be provided with "soundheads" for combined picture and optical sound printing in a single pass
- 3,000' Rawstock Film Capacity: 35mm and 35/32mm printer feed assembly accepts standard rawstock cores
- Automatic Torque Take-up Control: A guide roller and rheostat combination continuously regulates the take-up motor's torque assuring proper film wind through the entire film reel

OPTIONS . . . to permit maximum printer efficiency

TAPE PUNCH SYSTEM

The tape punch produces coded tape containing density, color balance, zero cut, and fade information for automatic printer operation. Pushbuttons control start, tape advance, and program end.



PUNCH TAPE CHECKER-DUPLICATOR

The checker unit quickly verifies a coded tape. The reader can be connected to the tape perforator to produce duplicate tapes, to permit correction of errors in the original, or to insert additional information.

TAPE READER

The high speed reader allows scene-to-scene light changes of 15 frames on 16mm and 6 frames on 35mm at 180 frames per minute.

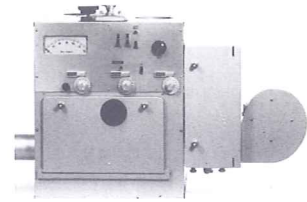


The standard speed reader permits minimum scene changes of 44 frames on 16mm and 17 frames on 35mm at 180 frames per minute. The reader initiates properly timed signals to select illumination intensity and color balance changes of each color light beam, and proper fade lengths by reading the perforated tape.

BELL & HOWELL ADDITIVE LIGHT SOURCE SYSTEM

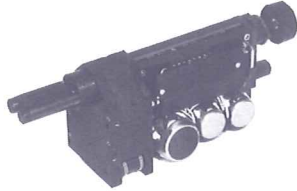
LIGHT SOURCE

The Bell & Howell Additive Color Light Source System permits high speed film printing with color accuracy and repeatability. Color stability is obtained through the use of dichroic mirrors which separate a single 1200 watt Tungsten-Halogen light source into 3 additive primary colors (red, green and blue), and the proven Bell & Howell Light Valve.



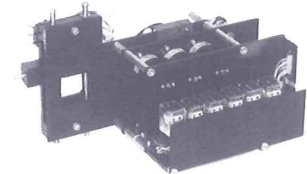
LIGHT VALVE

The light valve is an electro-mechanical light control placed in the path of each color beam. Each valve controls the intensity of light in each color beam as it passes through the valve. For scene-to-scene balance, each primary color beam can be modulated through 50 steps of .025 log E. An additional 24 steps of .025 log E are available manually in each color beam to allow for necessary "trim" and emulsion balance.



FADER ASSEMBLY

The fader assembly is mounted in the vanehouse and provides fade lengths of 16, 24, 32, 48, 64 and 96 frames. The fader is driven from the film transport so that fades are positively coupled to the scene change and will always be of the chosen length regardless of printer operating speed.



GENERAL SPECIFICATIONS

MECHANICAL

Film Size: 16mm, 35mm, 35/32mm, 16/s8mm-2R, & 35/s8mm-5R

Film Capacity: Feed flanges and takeups can accommodate 3000 feet of film

Speed: A two-speed belt drive is provided for printing speeds of: 60 or 180 FPM for 16, 35, 35/32 & 70mm models
67 or 200 FPM for 16/s8-2R & 35/s8-5R

Steadiness: Will not exceed the negative used by more than .0005" in either the vertical or horizontal direction

Aperture: ANSI/PH22 standards

Counters: Separate, four-digit, resettable footage and cue counters. Five-digit, non-resettable hour meter for printer operation time

Minimum Scene Length:

| | | |
|--------------------|-------------------|-------------|
| <i>"CH" Series</i> | <i>"C" Series</i> | } @ 180 FPM |
| 30 frames—s8mm | 44 frames—16mm | |
| 15 frames—16mm | 17 frames—35mm | |
| 6 frames—35mm | | |

Cuing System:

Notch Type: Standard on all models—uses conventional Bell & Howell notches

RF Type: Available as an option, eliminates notching valuable originals

Frame Count Cuing: (optional) Automatically cues the reader without notching or applying metallic patches to the film

OPTICAL

Uniformity: Illumination across the frame will not vary more than .02 log E

Resolution: Resolution will be a minimum of 50 lines/mm at the edges, corners, and center of film (using film type 5302/7302)

Illumination: Printing on film type 7271 or 5253 and all films with high sensitivity is possible

Lamp: Tungsten-Halogen printing lamp; 1200 watts, 120 volts AC/DC or 220V

ELECTRICAL

Lamp Controls: Rheostats for "coarse" and "fine" lamp adjustment. 60 to 120 volts DC voltmeter with dial illuminated by electro-luminescence. Dial brightness controlled by rheostat

AIR & VACUUM

Air Requirements: 2½ PSI is required for film contact at the aperture

Air & Vacuum Squeegee System Requirements: When vacuum squeegee accessory is ordered, 4 CFM @ 2" Hg vacuum is required; air requirement is 4 CFM @ 2 PSI

DIMENSIONS

Without Sound Head: 70"H x 60"W x 28"D

With Sound Head: 70"H x 78"W x 28"D

SHIPPING WEIGHT:

Without Sound Head: 475 lbs.

With Sound Head: 600 lbs.

ADDITIVE COLOR CONTINUOUS CONTACT PRINTER

MODEL SELECTION

| MODEL | FILM FORMAT | APERTURES ANSI/PH22 | OPTIONAL ACCESSORIES | | |
|-------|-------------|--|----------------------|--|---|
| | | | Component | Part No. | Description |
| 6100 | 16 mm | <i>Single:</i> Pict. only (when sound hd. fact. instal.) <i>Four Way:</i> Pict. only, sound rev., sound pos. comp. (Furnished when printer purchased less sound head.) | Sound-heads | 6101CS 16 6202CS 35 6303CS 35/32 6401CS 16/s8-2R 6601CS 35/s8-5R | The sound heads permit printing of both picture and sound in a single pass |
| 6200 | 35mm | <i>Five Way:</i> Picture Heads, Picture Tails, Sound Heads, Sound Tails, Composite | 1200 W Rectifier | 6160A 60Hz 6160B 50Hz | For printing where regulated DC is not available |
| 6232 | 35/32mm | <i>Two Way:</i> Picture Single, Picture Twin | Frame count over | 036555 | For automatic cuing of the reader without notching or applying metallic patches to film |
| 6400* | 16/s8mm-2R | <i>Three Way:</i> Single 1-3/1-4, Twin 1-4, Twin 1-3 | RF Cue | 6395DJ 16 6395DD 35 6395DL 35/32 6395DE 16/s8 | Eliminates notching valuable originals, consists of a transistorized amplifier, R.F. probe and cable probe holder and non-metallic roller |
| 6600* | 35/s8mm-5R | <i>Two Way:</i> 4 row picture, 4 row sound | Air Vacuum Cleaner | * | Efficiently cleans neg. & rawstock while printing |

65/70mm models will be quoted upon request.

*Consult the Model "C" Parts Catalog for a full listing of accessories (883029).

Note: When ordering select the combination of models & series; for example:

6600CF

*Not available in the "C" Series

LIGHT SOURCE OPTIONS

| SERIES | COLOR & DENSITY BALANCE | LIGHT VALVES | LIGHT CONTROL | | FADER | READER | CUING SYSTEM |
|------------------------------------|--------------------------|-------------------------------|--|---|--------------|--------------|--|
| | | | Automatic | Manual | | | |
| CH ⁽¹⁾ | Automatic Scene to Scene | (3) Automatic tape Controlled | 50 steps .025 Log E (±½ step) equals 1.225 Log E in each color | 24 steps .025 Log E (±½ step) equals .875 Log E in each color | Six Speed | High Speed | NOTCH (RF or Frame Count Cuer available as an option) |
| C | | | | | Six Speed | Std. Speed | |
| CT ⁽²⁾ MB | Density Correcting | (1) Automatic | | | Optional | Std. Speed | |
| MB ⁽²⁾ CT | Manual Scene to Scene | (3) Manual | --- | 52 steps .025 Log E (±½ step) equals 1.30 Log E in each color | Not required | Not required | Not required |
| BT | Density Correcting | (1) Manual | ---- | | | | |

(1) Zero close feature for completely blocking the light between scenes in each color channel when printing from A and B rolls.

(2) Step 1 in the manual valve is equivalent to step 20 plus trim 24 in the automatic light valve and step 52 is equivalent to step 50 plus trim 24 in the automatic light valve.

WARRANTY

Bell & Howell warranties all printers to be free from defects in materials or workmanship for one year following date of shipment. This warranty is valid only when recommended preventive maintenance programs are followed.

SERVICE

A team of service engineers is available to service the printer systems on site or at the Bell & Howell factory. In addition, a preventive maintenance program tailored to meet the user's requirements is available. Quotations for these services will be forwarded upon request.



7100 McCORMICK ROAD, CHICAGO, ILL. 60645
(312) 262-1600

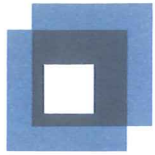
CANADA
BELL & HOWELL CANADA, LTD.
125 NORFINCH DRIVE
DOWNSVIEW, ONTARIO, CANADA

INTERNATIONAL
BELL & HOWELL, LTD
ALPERTON HOUSE, BRIDGEWATER RD.
WEMBLEY, MIDDLESEX, ENGLAND

CENTRAL-SOUTH AMERICA
BELL & HOWELL INTERNATIONAL
7100 McCORMICK ROAD
CHICAGO, ILLINOIS 60645 U.S.A.

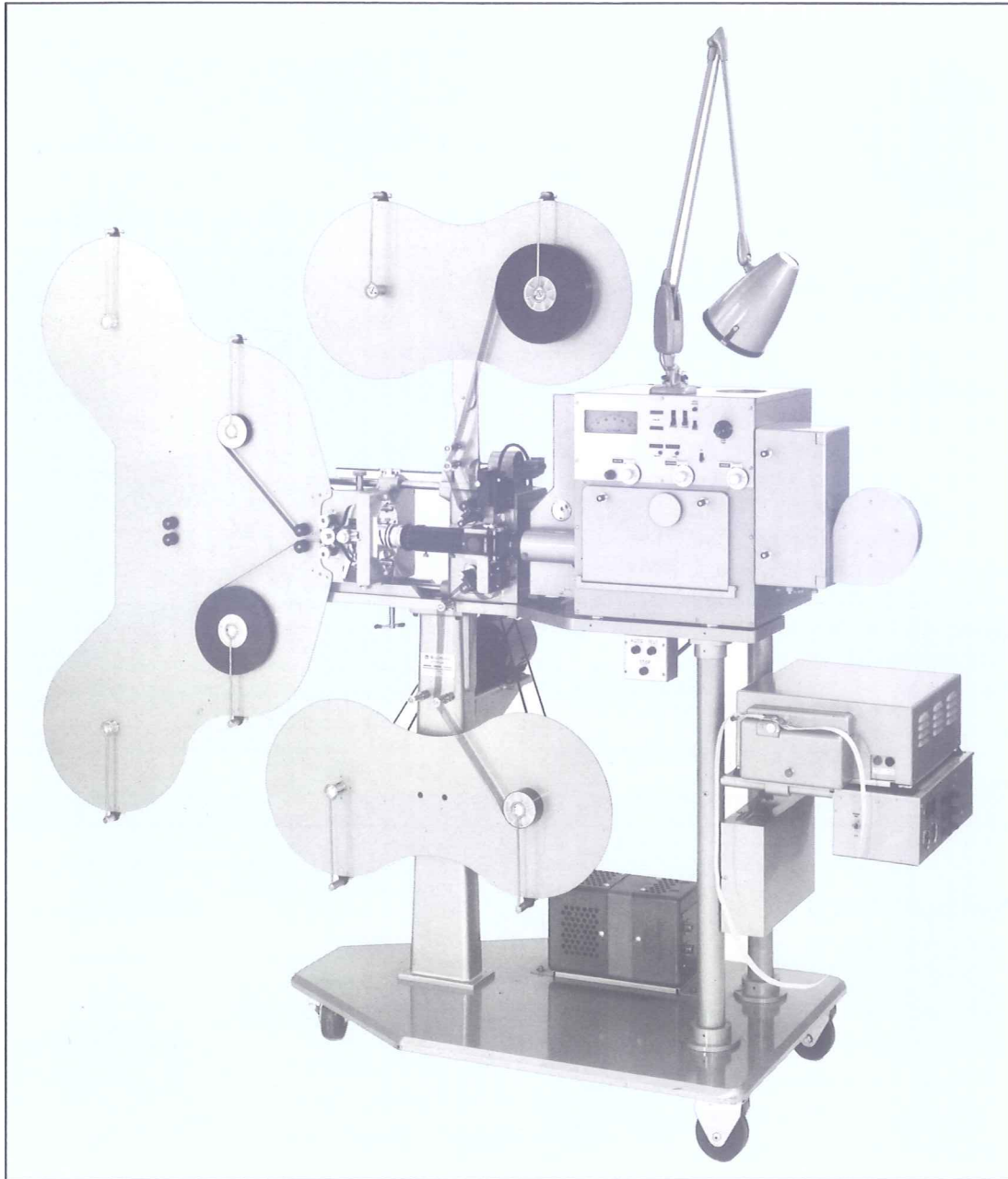
FORM #883019

PROFESSIONAL EQUIPMENT DIVISION



BELL & HOWELL

BELL & HOWELL/DEPUE STEP OPTICAL AND CONTACT REDUCTION PRINTER



- 35mm to 16mm REDUCTION PRINTING
- 35mm & 16mm CONTACT PRINTING
- 16mm to s8, 1-3 or 1-4

Bell & Howell/DePue STEP OPTICAL AND CONTACT REDUCTION PRINTER

MODEL SELECTION

| MODEL | FILM FORMAT (mm) | | COPY LENS |
|-------|------------------|----------------------------|--------------------------|
| | OPTICAL PRINTING | CONTACT PRINTING | |
| 6616 | 16 to 16 | ---- | 103mm f/2.8 Ektar |
| 6618 | 16 to s8 (1-4) | ---- | 88mm f/3.8 Ektar |
| 6628 | 16 to s8 (1-3) | ---- | B & H Multi-Rank optics |
| 6716 | 35 to 16 | 35 to 35 16 to 16 | 3 in. f/2.0 Super Baltar |
| 6712 | 35 to 35/32 | 35/32 to 35/32 35 to 35 | 3 in. f/2.0 Super Baltar |

Note: When ordering, select the combination of Model & Series (for example: 6618CT)

OPTIONAL ACCESSORIES

| PART NO. | ACCESSORY | DESCRIPTION |
|--------------------------|-------------------------|--|
| 6170D | Program Tape Punch | Prepares program tape for automatic operation |
| 6173D | Checker Duplicator | Verifies coded tape |
| | Air Vacuum Film Cleaner | Efficiently cleans neg. & rawstock while printing |
| 6160A 60Hz 6160B 50Hz | 1200 W Rectifier | For regulated DC |
| 030818 | Fader | Six speeds: 16, 24, 32, 48, 64 & 96 frames |
| | RF Cuer | Eliminates notching of originals (uses metallic patch) |

LIGHT SOURCE OPTIONS

| SERIES | COLOR & DENSITY BALANCE | LIGHT VALVES | LIGHT CONTROL | | READER | CUING SYSTEM | FADER |
|-----------------|--|-----------------------------------|--|---|--------------------|--|-----------|
| | | | AUTOMATIC | MANUAL | | | |
| CF ¹ | Automatic scene to scene color & density balance | Three Automatic (tape controlled) | 50 steps .025 Log E (±½ step) equals 1.225 Log E | 24 steps .025 Log E (±½ step) equals .575 Log E | Standard Speed | Notch Standard (RF Cuer available as an accessory) | Six Speed |
| C ¹ | | | | | | | ---- |
| BF | Automatic scene to scene density control | One Automatic (tape controlled) | | | | | Six Speed |
| B | | | | | | | ---- |
| CT ² | Manual density control | Three Manual | ---- | 52 steps .025 Log E (±½ step) equals 1.30 Log E | No reader required | No cuing required | ---- |
| A | Filter Pack | ---- | ---- | ---- | | | |

¹ A zero close feature is provided for complete light blockage in each color beam when printing from A and B rolls.

² Step 1 in the manual valve is equivalent to step 20 trim 2 in the Automatic Light Valve and step 52 is equivalent to step 50, trim 24 in the Automatic Light Valve.

AUTOMATIC LIGHT CONTROL BOARDS

| PART NO. | VOLTAGE CHANGES | Used in conjunction with the Series A, the Automatic Light Control Board changes printer light intensity by the actuation of the built-in notch sensor. The sensor triggers a change to the next pre-selected lamp voltage on the control board. |
|----------|--------------------------|--|
| 034856 | 75 voltage changes/scene | |

WARRANTY

Bell & Howell warranties all printers to be free from defects in materials or workmanship for one year following date of shipment. This warranty is valid only when recommended preventive maintenance programs are followed.

PROFESSIONAL EQUIPMENT DIVISION



7100 McCORMICK ROAD, CHICAGO, ILL. 60645
(312) 262-1600

CANADA

BELL & HOWELL CANADA, LTD.
125 NORFINCH DRIVE
DOWNSVIEW, ONTARIO, CANADA

INTERNATIONAL

BELL & HOWELL, LTD
ALPERTON HOUSE, BRIDGEWATER RD.
WEMBLEY, MIDDLESEX, ENGLAND

CENTRAL-SOUTH AMERICA

BELL & HOWELL INTERNATIONAL
7100 McCORMICK ROAD
CHICAGO, ILLINOIS 60645 U.S.A.

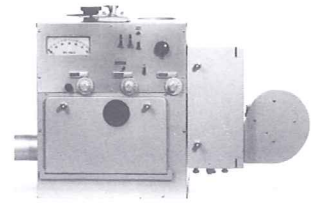
SERVICE

A team of service engineers is available to service the printer systems on site or at the Bell & Howell factory. In addition, a preventive maintenance program tailored to meet the user's requirements is available. Quotations for these services will be forwarded upon request.

STEP OPTICAL CONTACT PRINTER

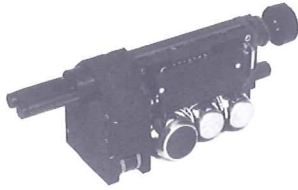
LIGHT SOURCE

The Bell & Howell Additive Color Light Source System permits high speed film printing with color accuracy and repeatability. Color stability is obtained through the use of dichroic mirrors which separate a single 1200 watt Tungsten-Halogen light source into 3 additive primary colors (red, green and blue), and the proven Bell & Howell Light Valve.



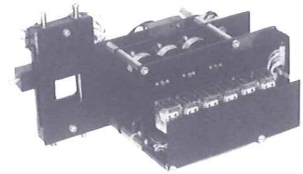
LIGHT VALVE

The light valve is an electro-mechanical light control placed in the path of each color beam. Each valve controls the intensity of light in each color beam as it passes through the valve. For scene-to-scene balance, each primary color beam can be modulated through 50 steps of .025 log E. An additional 24 steps of .025 log E are available manually in each color beam to allow for necessary "trim" and emulsion balance.



FADER ASSEMBLY

The fader assembly is mounted in the vanehouse and provides fade lengths of 16, 24, 32, 48, 64 and 96 frames. The fader is driven from the film transport so that fades are positively coupled to the scene change and will always be of the chosen length regardless of printer operating speed.



GENERAL SPECIFICATIONS

MECHANICAL

Film Size: See Model Selection Chart

Film Capacity:

Feed flanges and takeups can handle 2,400 feet of film.

Speed:

720 frames per minute: 45 feet per minute with 35mm; 18 feet per minute with 16mm; 10 feet per minute with 8mm.

Steadiness:

Total measured unsteadiness will not exceed that of the particular negative used by more than .0005" in either the vertical or horizontal direction.

Aperture:

ANSI/PH22 Standards

Counters:

Separate four-digit resettable footage and cue counters. Five-digit non-resettable hour meter for printer operation time.

Minimum Scene Length:

Shortest scene length between light changes is 5 frames. Shortest scene length between lap dissolves or fades is the dissolve or fade length plus 10 frames.

Cuing System:

Notch type cuing system supplied as standard. Utilizes the conventional Bell & Howell notch on the edge of the master. *RF type*—available as an option (uses metallic patches).

OPTICAL

Uniformity:

Illumination across the frame will not vary more than .05 log E.

Resolution:

Resolution will be a minimum of 70 lines/mm at the edges, corners, and center of film (using film 5302/7302).

Illumination:

Printing on intermediate (7253) or internegative (7271) and all color films with higher sensitivity is possible.

Lens: See Model Selection Chart

Lamp:

Tungsten-Halogen Printing Lamp, 1200 watts, 120 volts AC-DC (applies to Series CF, C, CT, B, and BF); 500 watts for Series A.

ELECTRICAL

Lamp Controls:

Rheostats for "coarse" and "fine" lamp adjustment. 60 to 120 volts DC voltmeter with dial illuminated by electroluminescence. Dial brightness controlled by rheostat.

Requirements:

105 to 125 volts AC, single phase, 60 Hz, 1500 watts. For DC printing lamp operation, 120 volts DC, 9 amps nominal output.

AIR & VACUUM

Air & Vacuum Squeegee System Requirement:

When vacuum squeegee accessory is ordered, 4 CFM @ 2" Hg vacuum is required, air requirement is 4 CFM @ 2 PSI

DIMENSIONS

87"L x 30"D x 74"H on swivel caster base

WEIGHT

575 lbs.