

# Film-Tech

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# RSTR-2000

Reverse Soundtrack Reader

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# INSTRUCTION MANUAL

· **B A · C P** ·

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**Manufactured by USL, Inc./Ultra\*Stereo Labs for Bay Area Cinema Products**

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# Table of Contents

<b>Topic</b>	<b>Page</b>
Installation Overview .....	4
Power Wiring .....	4
Audio Wiring .....	4
Installation .....	5
Simplex 5-Star and SH-1000 .....	5
Mounting the Reader .....	6
Initial Mechanical Alignment .....	7
Optical Alignment.....	7
Service .....	10
Trouble Shooting .....	10
Exploded Views of RSTR-2000 .....	11

Please record the following information for your records:	
Model: _____	Serial Number: _____
Date of Purchase: _____	Purchased from: _____

# Installation Overview

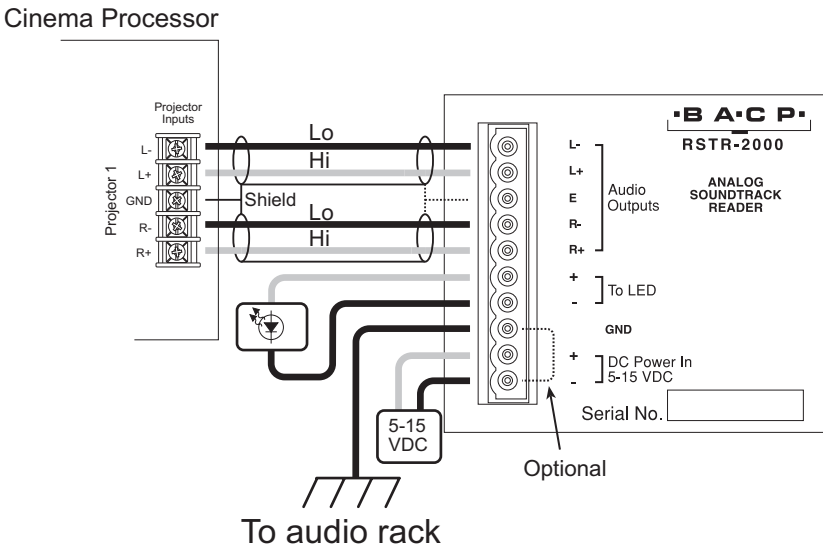
## Power Wiring

The BACP Reader features an on-board power supply and needs only 5 to 15 Volts DC from an external power module (provided) or some other source of DC power. It may be necessary to link the - or + power supply input terminal to the reader's chassis ground to eliminate hum.

## Audio Wiring

Two audio pairs and a shield wire are required from the reader audio output terminals to the cinema processor input. Belden 8451 or 8723 cable work very well. A separate ground wire from the reader chassis ground to the cinema processor chassis ground is a good precaution.

All audio and power connections are terminated at a Phoenix style connector that plugs into a matching socket on the reader.



(Fig. 1) Signal and Power Wiring

# Installation

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## Simplex 5-Star and SH-1000

Remove the existing exciter lamp mounting hardware, solar cell pickup and the sound lens mounting bracket. The sheet metal light shield attached to the lens block can be discarded.

The lateral guide roller, flanges and bearings should be refurbished as needed.

**Hint:** Mark the lateral guide knurled adjustment nut with a marker pen before disassembly so the lateral guide can be returned to its original position.

Mount the LED bracket exactly as you would a solar cell bracket. The bracket should be pushed forward toward the film plane as closely as possible without it rubbing against the sound drum or film. Route the attached wiring over to what was previously the exciter compartment. This can be through the gear/belt side of the soundhead or on the threading side over the sound drum and behind the lateral guide roller assembly.

If you choose to route the LED wiring through the threading side, install the enclosed clips to the top base plate screw to keep this wiring clear of the lateral guide assembly.

Connect red and black wire from the LED to the Phoenix connector LED + and - terminals respectively.

Connect audio output wiring as shown to the cinema processor optical input (Fig. 1).

Connect DC power to the power input terminals.

## Mounting the Reader

The BACP Reader fits into the lens block in place of the existing lens (Fig. 2). Plug the Phoenix style connector into the reader socket. Confirm the connections correspond to the wiring label on the reader body.

Bolt the lens block/reader assembly into the soundhead. Use the remaining wiring clip on one of the top attaching screws if you've routed the LED wiring on the threading side of the soundhead.



(Fig. 2) RSTR-2000 Mounted in Focus Block

## Initial Mechanical Alignment

Turn on power to the reader. The reader's imaging LED and voltage indicator LEDs should all light.

Thread and run Dolby tone test film to make the initial mechanical alignment of the LED assembly to the reader lens. There should be a glow from the green signal-presence LEDs. Loosen the LED bracket base plate mounting screws slightly and twist the LED bracket up and down for maximum brightness on the signal-presence LEDs. Tighten the mounting screws.

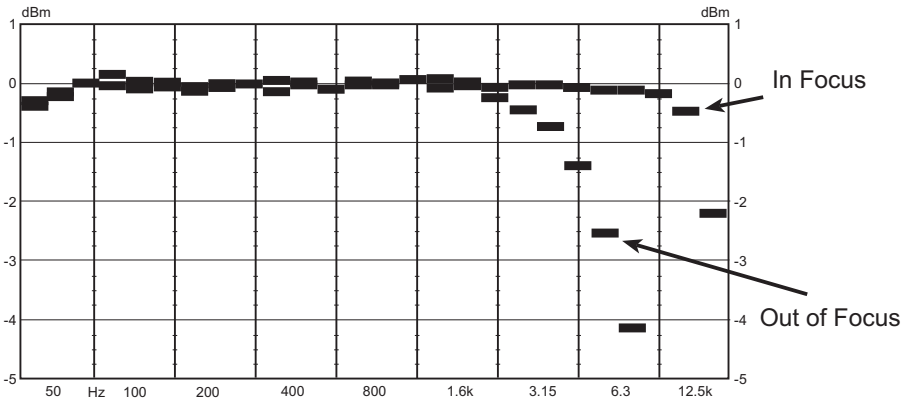
## Optical Alignment

You'll need a scope and RTA hooked to the cinema processor's optical preamplifier left and right test points.

Set cinema processor preamplifier gain controls at maximum and "slit loss" controls at minimum.

Run Dolby tone loop to check that signal is present at the cinema processors left and right output test points as well as your test equipment.

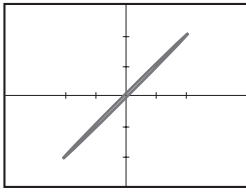
Run pink noise loop and adjust focus by sliding reader in and out for best high frequency response (typically flat to 12kHz). (Fig. 3)



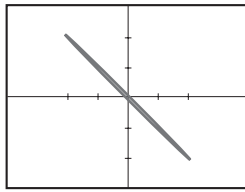
(Fig. 3) Real Time Analyzer Graph



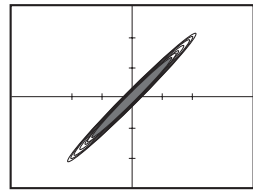
Rotate reader body for best azimuth. The scope trace should lean to the right and be as narrow as possible as shown in the following illustrations (Fig. 4, 5, 6). If the trace leans to the left the polarity of one of the channels is inverted.



(Fig. 4) Correct Azimuth



(Fig. 5) Out of Phase

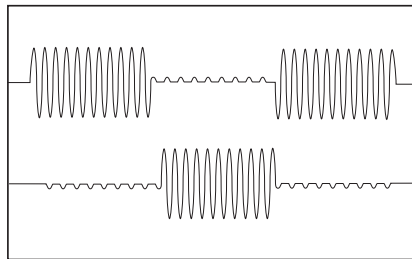


(Fig. 6) In Phase, Out of Azimuth

Tighten the lens collar.

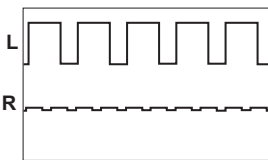
Continue running pink noise loop and set left and right slit loss controls for flat frequency response (typically 16kHz) on the RTA. Confirm left and right channel wiring by covering the outer soundtrack with a business card. The cinema processor right channel should drop in level. If the left drops instead, the audio output wiring is transposed.

Thread and run Cat. No. 97 tone burst test film. Adjust the film lateral position with the projector's lateral guide assembly\* for minimum and equal crosstalk (Fig. 7) on your scope.

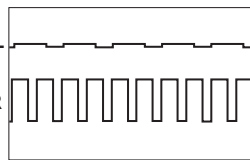


(Fig. 7) Crosstalk - Minimum and Equal

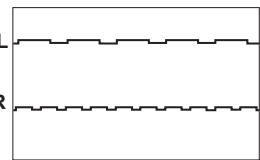
Run SMPTE Buzz Track. The low and high frequency tones should be equal (Fig. 8, 9, 10). Adjust film lateral position as needed. You may need to go back and recheck crosstalk to obtain a satisfactory compromise.



(Fig. 8) Incorrect Alignment



(Fig. 9) Incorrect Alignment



(Fig. 10) Correct Alignment

**\* Note:**

We recommend using the projector's lateral guide roller in preference to the reader's lateral adjustment mechanism as this control is intended primarily for use with projectors with non-adjustable film paths, i.e., Christie, Cinemecanica, etc.

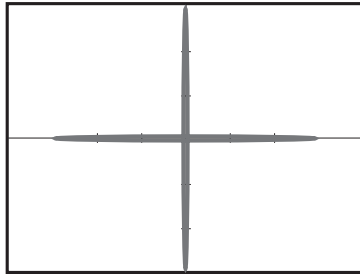
The reader's lateral adjustment mechanism can be centered using the access hole on the front cover. Turn the set screw clockwise until it stops, then turn it counterclockwise 1 1/2 turns.

**Hint:**

You can combine both aforementioned procedures by making a loop of Dolby Cat. No. 97 and SMPTE Buzz Track spliced end to end. This technique allows the simultaneous optimization of both test films without rethreading the test loops.

**Set optimum LED to lens alignment with Dolby Cat. No. 97.**

Set the scope to X/Y. You should observe a cross on the screen (Fig. 11). Loosen LED base plate mounting screws and twist bracket to obtain maximum size cross. The four sides to the cross should be straight and equal in size with no bends.



(Fig. 11) Dolby Cat. No. 97

Tighten LED bracket screws.

**Optional Illustration of correct uniformity**

You can measure illumination uniformity across the entire soundtrack by running Dolby Cat. No. 566 test film with an RTA as a measurement tool. The RTA will display six vertical bars from left to right. The left bar corresponds to the inner edge of the film, the next one is left inner, etc. The bars represent the amount of light reaching the film. The height of one bar relative to the others is a measurement of illumination uniformity. The bars should measure within 1 dB of one another.

Thread and run Dolby tone loop. Set Dolby level on the cinema processor gain controls.

Alignment is complete.

# Service

This issue is simplified by a removable electronic circuit module (Fig. 12) and LED bracket. Either can be replaced at any time whether the unit is powered or not. We do strongly recommend that at the least you mute the cinema processor to prevent speaker damage. Operating level should be reset if the LED is changed as individual LEDs vary in brightness and absolute position.



(Fig. 12) Electronic Circuit Module (RSLH-2)

# Troubleshooting

## No Audio

Check power indicator lights and reader LED.

Check signal presence LEDs with film running.

## Operating level too low at cinema processor

Reset operating level

Realign LED for maximum output

Locate and remove gain jumper on soundtrack reader for increased output

## Hum in Audio

Hum only when film is run

Hum when reader is powered down

Hum with the LED uncovered

Hum with the LED covered

Hum with the LED covered and lens uncovered

Hum with lens covered

Hum constant

DTS time code?

Check house dimmers as a source of hum

Check for ground loops

Check external power source

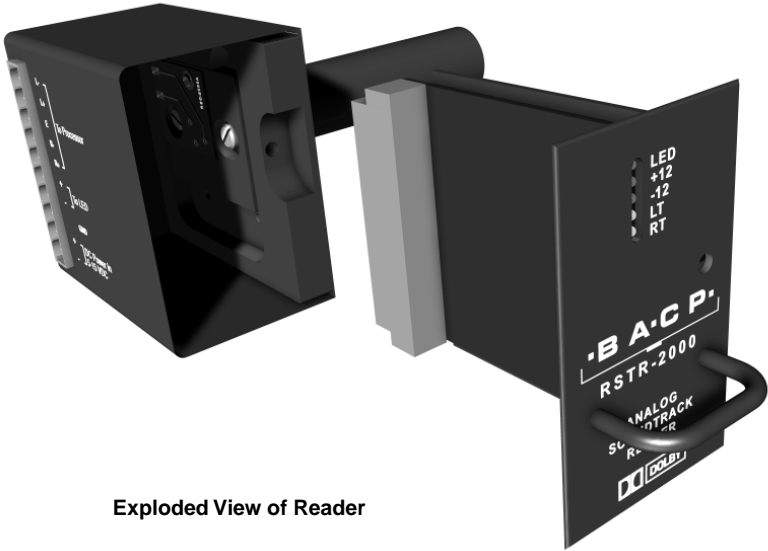
Check for stray light into reader lens

Check for stray light by covering lens

Check external power source

Add link from external power source to chassis ground

The troubleshooting section is intended to help localize operational problems that may occur. Please contact BACP at 925-372-7603 Fax 925-372-7658 or by e-mail at bacp2000@aol.com for further assistance.



Exploded View of Reader



Exploded View of LED

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