Film-Tech

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FILM NOTES FOR THE

REEL PEOPLE

A TECHNICAL SERVICE FOR FILMHANDLERS FROM EASTMAN KODAK COMPANY

FILM NOTES FOR THE REEL PEOPLE

H-50-20

A TECHNICAL SERVICE FOR FILMHANDLERS FROM EASTMAN KODAK COMPANY

SUMMER 1987

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INTRODUCTION

It is a banner year for the Eastman Kodak Company as we celebrate 60 years in Hollywood *and* 10 years of *Film Notes for the Reel People.*

As you will notice, we have given our publication a new look to keep abreast of our ever-changing industry.

Each quarter, we will bring you an exclusive interview with a major pace-setter in the motion picture business.

Our *Projection Practices* feature will continue our *Film Notes* tradition of bringing you up-to-the-minute information for enhancing projection.

Editor's Mailbox is now a regular column and we encourage your questions and comments.

And finally, don't be left out! From time to time, it becomes essential to update our mailing list. Please take a moment to complete and mail the attached postcard so that you may continue your subscription.

We hope you find our *new look* as dynamic as we do!

The Editors

EDITOR'S MAILBOX

In inaugurating our "new look" of "Film Notes for Reel People" at the beginning of our tenth year, we would like to introduce the regular feature "Editor's Mailbox." One of the primary goals of our publication is to facilitate a free exchange of ideas and information on exhibition-related topics. Toward that end, we invite your letters. Please submit to: Eastman Kodak Company, P. O. Box 454, Rochester, NY 14650. Although personal replies are not possible, we will feature the most provocative correspondence in this column.

"Our engineering department disagrees with several of the items mentioned in 'The Light Source' section of H-50-17. Numerical designations on the packing of Xenon theatre bulbs reflect the wattage of the bulb, and in no way indicate the minimum hours of adequate use. Common practice of theatres is to replace the bulb after it exceeds 25% of its warranteed life; many bulb users replace at expiration of warranty.

"Bulb flicker caused by a defective diode is not the result of a diode being 'broken.' 'Broken' implies a mechanical flaw in the diode, whereas diodes generally fail because of either short circuiting or opening. These conditions are revealed only through the use of an ohmmeter, and cannot be detected visually.

"As manufacturers of both projection and lighting systems, it is our desire to disseminate the most accurate information possible to our customers and end users. *Reel People* has been one such source, and we hope you will accept our criticism as constructive."

J. R. Feehrmeyer, Strong International

"Regarding a recent issue of 'Reel People' which mentioned that 'silver screens may be viewed only from a limited seating area, unless the screen is properly curved': The actual facts are that the center of the screen limits the seating area and the curve of the screen limits the use of the light reflected from the sides...Almost everybody will have difficulties looking at the side of the screen, regardless of where they're sitting, if the screen is flat. Unfortunately, much of the information published regarding screens is generalized for laboratory tests, and does not relate to their applications in theatres."

Another issue:

"The general problem with 'hot spots' in the industry is due to high gain screens (anything over 1.3), with short focal length lenses, when the screen is mounted flat. In that situation, there are no adjustments to the mirror or to the lamphouse, or in the reduction of the wattage to the bulbs, that will help the overall situation. It may get rid of the 'hot spot', but in doing so, the illumination to the sides of the picture will be substantially reduced below standards. With the short focal length lens, coupled with a high gain screen installed flat, the only adjustment possible for overall good operations is to replace the screen with a matte screen."

Glenn Berggren, Optical Radiation

"There is no relation to the bulb size designation (usually wattage) to that of its "life" (as implied in H-50-17). In fact, the higher wattage, the less expected service hours."

C. J. Kroll, Commonwealth Theatres

"We began using the lint-free gloves that Kodak recommends when handling film since our group attended one of your "It's Your Image" seminars at NATO of Wisconsin. Initially, the managers didn't take to the idea, feeling that it was a hassle for them to keep pulling the gloves on and off before threading and while trying to perform their duties on the floor. Then they began to notice the reduction of dirt on the film, especially at the heads and tails.

"The lint-free gloves have contributed to a cleaner presentation. The clarity is particularly noticed with the larger screen images.

"After the discussion at the seminar, I took a tour of a lab and saw first-hand the care taken with the film. It seemed a natural procedure to continue that care at the theatre level. I have become so sensitive to dirt on the image that I find it very offensive—particularly in light of the fact that it can be prevented so easily and inexpensively."

Greg Ehlenbach, Hartford Theatres

Photo by Ralph Nelson, Jr.

GEORGE LUCAS

Q: Skywalker Ranch is a beautiful place. You must be very happy with it?

A: Thank you, it is a great place to work. I devoted many years to the completion of the Ranch, and now that we are settled and it is nearing completion I can concentrate on making movies again.

Q: Your Theatre Operations Division was busy this past year. Can you tell me a little bit about the Division?

A: We officially announced the formation of our Theatre Operations Division last year, but to of the programs involved, TAP and THX, have been around for about four years. The division was created to bring our programs dedicated to improved film presentation under one roof.

Q: One of these programs is the Theatre Alignment Program, correct? What is TAP and how did it come to be?

A: As a producer, I am concerned about how my films play to the public. I want the audience to see and hear what I created as it was intended to be experienced. TAP was designed as a quality-control service to ensure the proper technical presentation of *Return Of The Jedi,* but we quickly expanded beyond our own films because other producers and directors saw the value of the program. It is only natural that a director wants his or her film to play correctly.

Q: How does TAP improve a film's presentation?

A: Film is a very technical art medium. TAP endeavors to eliminate the variables that can detract from the

technical presentation of a film. It's a pragmatic approach.

TAP follows a film through every step of the manufacturing process and then goes on to monitor its exhibition in the theatre.

Q: This must take a great deal of organization since a film passes through so many hands before it is released.

A: Yes, but that is another aim of TAP—it is an educational program for the industry. There have traditionally been three phases of production: preproduction, production and post production. There is actually a fourth phase: exhibition. TAP is trying to develop better ways of communicating the needs of all the facets of the industry. We see a continuum between production and exhibition that has not often been recognized.

Q: What do you see in the future for TAP?

A: Until recently, TAP has concentrated on the quality-control of 70 mm film releases, but the majority of films currently released are 35 mm. The program has expanded into the quality-control of the 35 mm format to see what can be done to improve presentation on a more widespread basis.

Q: Will they continue their work with 70 mm releases?

A: They're still working with 70 mm movies, and continue to examine the factors contributing to film damage and poor presentation.

Q: There are thousands of 35 mm theatres in the United States. This is a very large undertaking. What do you plan to do with the information you acquire?

A: Yes, it is an ambitious project. Lots of information is coming in, but TAP is prepared for it. The TAP database allows us to analyze the information we gather and make some sense out of it. We attempt to identify problem areas and then see what steps can be taken to improve the situation. For example, we sometimes find film damage that has a mechanical source. We then work with the equipment manufacturer to identify the trouble and suggest possible solutions. When one improves upon a small problem on a large scale, the benefits are astounding.

Q: The THX Sound System is the other program in your Theatre Operations Division. It has really gained popularity over the years. Can you tell me what it is and why you think it has received more recognition than most sound systems?

A: Well, THX is a sound system designed for the reproduction of motion picture soundtracks. That's what it is. I suspect that its popularity lies with the audience. People today are very conscience of sound quality. THX brought sound that surpasses home stereo systems to the movie theatres, and people noticed the difference. I understand the THX logo trailers get applauded all over the country. This is one indication of the audience's appreciation for good sound.

"...the theatre industry needs a renaissance right now. For years we, as an industry, have taken so much and given back so little. So now seems to be a good time to act."

Q: Digital sound is the current talk of the industry. Do you think that it has applications in the movie theatre?

A: Certainly. But I believe that it will first be introduced in specialty formats. The *Captain EO* project is a good example. It utilizes digital technology, but it is shown only in specially-designed pavilions at Disney. It will take awhile before digital recordings and reproduction systems reach the public theatres.

Q: When do you think the technology will be practical for commercial theatres?

A: I don't know. It has some practical obstacles to overcome.

Q: Was the THX System designed to handle digital sound?

A: Of course. It was in mind from the beginning. The advantage of digital sound is its very wide frequency response and very big dynamic range. Only well-designed theatres can benefit from these increased capabilities. THX Sound System theatres are probably the most digital-ready theatres because they are designed to meet sound environment standards capable of the digital medium.

Q: Do you think video and direct satellite transmission will greatly impact motion picture theatre presentation?

A: I cannot say. The technology is here and growing. It depends largely on what the public wants.

Q: What do you think they want?

A: People want to experience something bigger than life at the movies. They want to escape their own lives for a few hours and live in a fantasy world. They have to see and hear something that they cannot get in their own homes. Going to the movies has to be fun and different...but not too different. Nobody wants a theatre that resembles the *Star Wars* bar in their neighborhood.

We are beginning to see a return of attention to the patron and presentation quality. Elegant and technically advanced theatres that are giving the people what they want—magic. These theatres don't seem to have any trouble drawing people, and probably will not as long as they continue to maintain their high standards.

Q: It sounds very impressive. Can I ask you why you are involved in these efforts to improve film presentation?

A: The truth of it is that the theatre industry needs a renaissance right now. For years we, as an industry, have taken so much and given back so little. So now seems to be a good time to act. Many people know it is needed and somebody has to take the lead. I want to set a positive example for the industry for its own good. I care and I am doing my part.

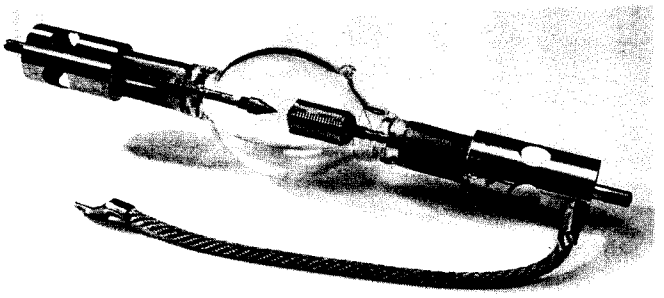
■ ■ ■

GETTING THE MOST FROM YOUR XENON BULB

by Russell Liddle, Chief Engineer, OSRAM Corporation

Since the introduction of Xenon bulbs into the motion picture industry, there has been a trend toward more automation in the projection booth. In addition, there has been a growing consensus of feelings regarding the equipment: if it works, don't touch it. This seems to be especially true with Xenon bulbs. Many managers, operators and even service personnel believe that after a Xenon bulb is installed, nothing more needs to be done until it fails.

While it is often possible, even with this type of neglect, to obtain some light on the screen for a certain period of time, you are not getting the most from your Xenon system. Here are six

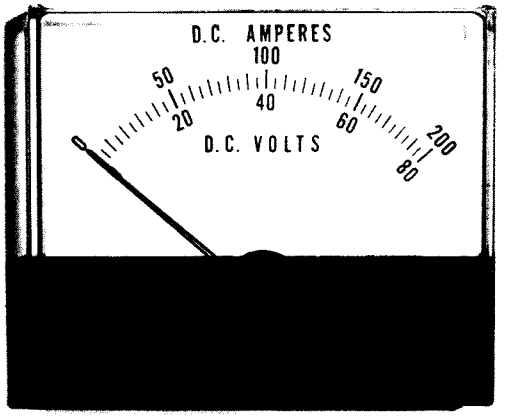


recommendations that, if followed, could not only significantly improve the performance of your lamphouse system, but often also increase the useful life of the Xenon bulbs you use.

1. Always operate Xenon bulbs close to their published rated current.

All Xenon bulbs darken during their operating life because of the unavoidable depositing of evaporated electrode on the bulb wall. This blackening blocks some of the light created by the bulb, reducing the light on the screen. In order to compensate for the light loss, the operating current to the bulb can be increased to generate more light. The range through which the current can be adjusted is usually limited and operation out of this range will shorten bulb life and can even be dangerous.

Operating a Xenon bulb below its allowable current range can cause ignition difficulties and arc instabilities. This is especially true with horizontal bulbs. Operation at currents in excess of allowable limits can cause premature electrode wear, early bulb darkening, bulb seal failures, and can increase the possibility of explosion.



Lamphouse ammeters are notoriously inaccurate and should be calibrated at least once a year. Calibrate the meter immediately if you are experiencing repeated bulb failures.

A properly-designed Xenon system has the bulb wattage specified such that when the bulb is new, it can be operated at about 85% of its rated current and provide proper illumination. When the bulb ages and darkens, the current can be increased to maintain the proper light level until it reaches the maximum allowable current for that bulb type.

If at this current the bulb does not provide enough light, it should be replaced. Operating a Xenon bulb in this manner will generally result in the longest useful life possible.

2. Horizontal operating Xenon bulbs should be rotated 180° at half their rated life.

They should be rotated more often, if possible, especially if the projection angle is extremely severe. There are two main reasons for rotating the bulbs. One is that when the bulb operates horizontally, the arc does not burn off the center of the tip of the electrodes, but

usually above the center. Over a period of time, this can cause uneven wear on the electrodes, resulting in arc instability (flickering) and possible ignition difficulties.

The other reason for rotating is related to the blackening of the bulb. In a horizontal bulb, the area to blacken first is directly above the electrode. This blackening, concentrated in one area, interferes with the flatness of the light on the screen. In addition, the blackened area causes localized envelope heating, accelerating bulb wall deterioration and increasing explosion possibilities.

Upon rotation, there may be some short-term difficulties which will clear up after a few hours of operation. Subtle arc instability (flickering) is one of these difficulties. These problems are very infrequent and the advantages of rotation far outweigh the remote possibilities of these short-term problems.

3. Proper arc stabilization should always be used with bulbs that require it.

As mentioned above, when Xenon bulbs are operated horizontally there is a natural tendency for the arc to burn off the upper part of the electrodes. Some Xenon bulb models have a special electrode design so that it will perform satisfactorily throughout its life. (Rotation, of course, is still necessary.) But, there are some horizontally operating bulbs that require a magnet to be installed in the lamphouse to keep the arc in the center of the electrodes. If the lamphouse is designed to operate more than one type of bulb, check the bulb instructions carefully to determine if magnetic stabilization is required.

When required, the magnetic stabilization must be used in order to retain the warranty on the bulb. Ideally, the magnet should be adjustable to provide the different magnetic strengths required at different times in the bulb's life, and at different operating currents. It is also advantageous to have an arc viewing window on the lamphouse, so you can visually see if the *arc is being properly stabilized.*

Improper arc stabilization can cause bulb ignition difficulties, arc instability and increased explosion possibilities. If the magnet is put in backwards, instead of holding the arc down it pushes the arc up, causing extreme starting problems. Using magnetic stabilization with bulbs that do not require it can also decrease their useful life.

4. Lamphouse bulb connections should be inspected periodically.

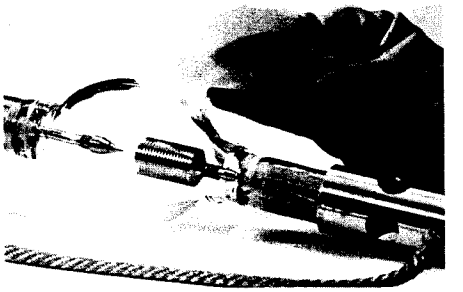
Xenon bulbs typically operate at high temperatures and high currents. These conditions put severe strains on electrical connections, especially if they are made directly to the bulb. The heating and cooling of the bulb can cause some bulb connections to loosen, or build up a layer of oxidation, resulting in a bad electrical connection. Such a bad connection can cause the already hot bulb to heat up further, often leading to bulb failure. When this happens, not only is the bulb destroyed, but also the connector. If not replaced, the connector can destroy another bulb, usually in a very short period of time. Poor electrical connections are one of the most common causes of premature bulb failure and are not covered by Xenon bulb warranties.

If it is at all possible, you should always use Xenon bulbs that already have cables on them. In using a cabled lamp, your lamphouse connection is made at a location away from the bulb and the heat that the bulb radiates. Therefore, your electrical connection is more reliable. If you must use a bulb without a cable, you should periodically check to make sure your bulb connector is tight.

5. The Xenon bulb should be cleaned on a regular basis.

Just like the other optical components in the projection system, the Xenon bulb gets dirty and dusty. As with dust and dirt on other components, this condition can substantially reduce the light on the screen. A heavy build-up will not only reduce the light output, but also *increase the bulb explosion possibilities. The* contamination can, over a period of time, burn itself into the bulb wall and cause envelope deterioration. In some projection booths, airborne oil contamination from popcorn machines and other equipment can find its way onto the bulb. This type of oily contaminant is more difficult to remove. Projection booths that had previously employed carbon arc equipment can pose a more severe problem. In many cases, the ventilation system was not properly cleaned during conversion, and over a period of time the carbon dust becomes airborne and builds up deposits on the bulb.

Most bulb contamination can be eliminated by wiping it with a dust free cloth. If there



appears to be an oil film on the bulb, denatured alcohol should be used for cleaning. Care should be taken not to get fingerprints on the bulb during its cleaning.

6. Investigate all premature bulb failures.

If you are using a good quality Xenon bulb, you should consistently be obtaining at least warranty life. Repeated bulb failures are not normal and indicate there is something wrong with the equipment or its operation.

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After each premature failure, the equipment should be checked completely. There have been occasions where theatres have experienced more than three bulb failures before they have their equipment checked. Many times, it was found that the second and third failures could have been easily avoided.

Finally, use a good bulb, follow the recommendations here and you will get the most from your Xenon system. ■

WARNING: XENON BULBS CONTAIN VERY HIGH PRESSURE AND CAN EXPLODE VIOLENTLY IN SHARP QUARTZ SHARDS.

FOR SAFETY—USE A FULL-FACE SHIELD, HEAVY GLOVES, AND BE SURE THAT FACE AND NECK AREAS ARE FULLY COVERED. AVOID DIRECT SKIN CONTACT AT ALL TIMES.

Figure 1

Figure 2

Figure 3

Xenon Current Measurement Suggestions.

Xenon bulbs are designed to operate on direct current (DC), usually supplied by a rectifier power supply. The bulb is ignited by a very high voltage pulse of short duration, provided by the ignitor circuit. While operating, the DC voltage across the bulb is only about 20 to 40 volts, depending upon the bulb wattage.

For maximum bulb life and minimum flicker, a well filtered and regulated power supply designed for xenon bulbs should be used. Modern xenon power supplies can provide regulated DC with less than 1% current ripple. Some xenon bulb manufacturers specify a maximum allowable current ripple to maintain the bulb warranty.

To measure current ripple, use the type of AC ammeter that clamps around a power line, and measures the AC current flow by magnetic induction. Measure the AC current flowing in the heavy gauge wire carrying the DC current to the bulb from the power supply. For example, if you measure 1 amp of AC current in a wire carrying 100 amps of DC, you have 1% current ripple. Excessive current ripple may be caused by several factors, including unbalanced input voltage to the rectifier (especially 3-phase systems), mismatched or defective diodes, or deterioration of filter capacitors or other electronic components. Excessive current ripple will cause flicker in the light output and/or pitting of the internal bulb electrodes.

OPENING THE PACKAGE

1. Check to be sure there were no damages incurred during shipping. Claims have to be filed immediately.
2. Verify that you have the right bulb size. Size and model number are stamped on the metal fittings at the cathode (negative) end of the bulb. (See Figure 1)
3. Verify that the cable configuration is correct for your lamp housing.
4. Don't discard the packaging. You'll need it if you have to return the bulb for a warranty claim.
5. If you're not installing the bulb right away—and the bulb is rated 2000 watts or more—store it in a vertical position—anode (plus) side up. (See Figure 2)

INSTALLING THE BULB

1. Before installation, note the elapsed hours from your lamphouse meter on the warranty form packed with the bulb. This protects you in case you have to return the bulb for a warranty claim.
2. For safety reasons, don't remove the bulb's plastic cover until electrical connections are made.
3. Wear protective goggles and leather gloves when installing or handling the bulb. (See Figure 3)
4. When electrical connections are complete, and you're ready to remove the plastic cover and turn the lamp on, check to be sure the bulb is free of mechanical stress. (Rigid mounting will cause early mechanical failure.)
5. Avoid looking directly at the burning arc when it is operating.
6. Before closing the lamphouse, make sure you have established the proper clearance between the lamp leads and all the metal parts of the lamphouse.
7. For maximum light output, check the alignment of the newly installed bulb.

OPERATING THE BULB

1. The bulb should always be operated within the specifications listed in our catalog. Instructions are packaged with each bulb.
2. Periodically inspect all cable connections to insure tight and secure fittings. Clean/replace fittings when corrosion sets in.
3. Periodically clean debris from exhaust duct and stack to insure proper ventilation.
4. Horizontal bulbs should be rotated at least halfway through their stated (warranty) life to ensure even distribution of the tungsten as it deposits on the quartz bulb wall and to protect the anode against uneven wear. (This is required for warranty credit.)

DISCARDING THE BULB

1. Wearing goggles and leather gloves, remove the bulb from the housing and wrap it in a heavy cloth.
2. Break the wrapped bulb by standing on a wooden board. This will safeguard you and anyone who comes in contact with the used bulb.

MAINTENANCE HINTS

1. Fingerprints left by accidental touching must be removed because they will weaken the quartz. To remove prints, use alcohol, distilled water, and cotton or tissue.
2. Besides cleaning away debris at the cable connections, exhaust duct and stack, and other areas, keep all the optical components in the projection system clean. This leads to a better image.
3. The OSRAM bulb can be cleaned by wiping it with a dust-free cloth.
4. After switching off the bulb, keep the blower in the lamphouse operating for at least five minutes. The blower will dissipate the accumulated heat and prevent damage and weakening of the lamp.

Chart courtesy of OSRAM

Because your local equipment dealer is as close as your telephone, we would like to provide the following Theatre Equipment Association (TEA) dealer list. As many of you know, these highly qualified suppliers stand prepared to react quickly in time of need and to answer your equipment questions when you are in a quandary.

Abbott Theatre Equipment Co., Inc.
430 Country Club Dr.
Bensenville, IL 60106
(312) 860-2121 • Harold Abbott

American Theatre Supply Co.
529 S. Tryon St.
Charlotte, NC 28202
(704) 333-5076 • Panny Cobb

Arizona Theatre Equipment Co., Inc.
P.O. Box 20522
1410 E. Washington St.
Phoenix, AZ 85034
(602) 254-0215 • Bruce Wicks

Audio Service Company, Inc.
P.O. Box 50
42 Miller Building
Yakima, WA 98907
(509) 248-7041 • Earl B. Barden

Jon Bajon Inc.
2611 N. Dumont St.
Baton Rouge, LA 70824
(504) 257-9944 • Jon Bajon

Boston Light and Sound, Inc.
124 Brighton Avenue
Boston, MA 02134
(617) 787-3131 • C. Chapin Cutler

Capital City Supply Co. Inc.
P.O. Box 19937
Atlanta, GA 30325
(404) 792-8424 • Don Howell

CLC Theatre Products
455 Miller Ave Unit 7
Scarborough, ONT M1B-2K4
John J. Kilcullen

Charlotte Theatre Supply Co. Inc.
P.O. Box 33773
Charlotte, NC 28233
(704) 333-9651 • Larry Phillips

Cine-Way Service Co.
5230 North Clark
Chicago, IL 60640
(312) 271-2289 • George Fukumizu

Cinetronix
11303 Hessler Dr.
Cleveland, OH 44106
(216) 791-2515 • Bob Sheppard

Claco Equipment & Service
1212 South State
Salt Lake City, UT 84111
(801) 355-1250 • Dennis Lunt

Concession Wholesale Supply, Inc.
1947 N.W. Kearney
Portland, OR 97209
(503) 226-2735 • Scott R. Hicks

Crest Sales of Texas
1900 So. Central Expressway
Dallas, TX 75215-1309
(214) 421-5692 • Ed Cernosek

Florida Theatre Equip. & Supply Co., Inc.
1966 NE 149 St.
N. Miami, FL 33181
(305) 944-4470 • M.P. Taubman

General American Theatre Supply
1506 N.E. Couch
Portland, OR 97232
(503) 231-7673 • Steve Duffey

General Sound
191 Attwell Drive
Rexdale, Ontario,
Canada M9W 5Z2
(416) 675-7133 • James Zagol
5887 Monkland Ave.
Montreal, Quebec,
Canada H4A 1G6
(514) 489-8461 • Gerry Nadeau

Alan Gordon Enterprises, Inc.
1430 Cahuenga Blvd.
Hollywood, CA 90028
(213) 466-3561 • Ted Lane

Hadden Theatre Supply
10314 Bluegrass Pkwy
Louisville, KY 40299
(502) 499-0050 • Louis Bornwasser

Harrah's Theatre Service and Supply, Inc.
25613 Dollar
Unit #1
Hayward, CA 94544
(415) 881-4989 • J.L. Harrah
624B So. San Fernando
Burbank, California 91502
(818) 842-5111 • Sam Aspaas

Harry Melcher Enterprises
3615 W. Fond du Lac Ave.
Mil., Wisconsin 53216
(414) 442-5020 • Dick Melcher

Hayes Equipment & Supply Co. Inc.
P.O. Box 29
Syracuse, N.Y. 13211
(315) 432-8183 • Jack Hayes

Hollywood Theatre Equipment, Inc.
1908 Tigertail Blvd.
Dania, FL 33004
(305) 920-2832 • Don Gallagher

Joe Hornstein, Inc.
341 West 44th Street
New York, NY 10036
(212) 246-6285 • Lee Hornstein

Independent Theatre Supply Ltd.
10561 111 St.
Edmonton, Alberta, Canada T5H 3E8
(403) 426-2977 • Tom Hutchinson

International Cinema
6750 NE 4th Ct
Miami, FL 33133
(305) 756-0699 • Steven Krams

King Cinema Services Ltd.
P.O. Box 3438 Station D
Edmonton, Alberta T5L 4J3
(403) 455-1622 • Terry Yushchyshyn

Modern Sales & Service
2200 Young Street
Dallas, TX 75201
(214) 747-3191 • Martin A. Woods

Mts Northwest Sound Inc.
7667 Cahill Road
Minneapolis, MN 55435
(612) 829-0161 • Phil Rafnson

Mid-Continent Theatre Supply
1804 Wyandotte
Kansas City, MO 64108
(816) 221-0480 • W.R. Davis

Moore Theatre Equipment Co.
P.O. Box 782
Charleston, WV 25323
(304) 344-4413 • Donald Moore

National Cinema Supply Corp.
51 Sugar Hollow Rd.
Danbury, CT 06810
(203) 748-3889 • Dan Miller

North Bay Pacific Theatre Equip. & Supply Company
150 Golden Gate Ave.
San Francisco, CA 94102
Dave Sechrist

Oklahoma Theatre Supply Company
628 W. Sheridan Ave.
Oklahoma City, OK 73102
(405) 236-8691 • J. Eldon Peek

Perdue Motion Picture Equipment, Inc.
2315 Williamson Rd.
Roanoke, VA 24012
(703) 366-0295 • Roscoe E. Perdue

Ringold Cinema Equip. Co.
4547 Green Park Rd.
St. Louis, MO 63123
(314) 487-3283 • John Mattler

Ringold Thea. Eq. Co.
6504 28th Street SE
Grand Rapids, MI 49506
(616) 957-2684 • Paul J. Voudouris
4547 Green Park Rd.
St. Louis, MO 63123
(314) 487-3283

Roy Smith Company of Jacksonville
Box 2646
Jacksonville, FL 32203
(904) 353-9140 • Roy L. Smith

Slipper Theatre Supply, Inc.
1502 Davenport
Omaha, NE 68102
(402) 341-5715 • Gary Peterson

Southwestern Theatre Eq. Co.
500-C No. Shepherd Dr.
Houston, TX 77007
(713) 861-3344 • Bob Mortensen

Standard Theatre Supply Co.
P.O. Box 16186
125 Higgins St.
Greensboro, NC 27416-0186
(919) 272-6165 • Jim Bellows

Tankersley Enterprises
P.O. Box 36009
Denver, CO 80236
(303) 762-8100 • Bob Tankersley

Texas Theatre Supply
915 S. Alamo St.
San Antonio, TX 78205
(512) 222-1002 • E.G. Olivarri, Jr.

Theatre Equipment & Service Co.
100 Lighthill St.
Pittsburgh, PA 15233
(412) 322-4600 • Jonathan Showe

Theatre Service & Supply
623 Shady Retreat Road
Doylestown, PA 18901
Walt Streupes

Western Theatrical Equipment Co.
876 Harrison St.
San Francisco, CA 94107
(415) 546-1123 • James Barry

Wil-Kin
800 Lambert Dr. NE
Atlanta, GA 30324
(404) 876-0347 • Bill Edmondson

Wilmo Corporation
3322 M Street, N.W.
Washington, D.C. 20007
(202) 337-6680 • Willis Warren

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MOTION PICTURE AND
AUDIOVISUAL PRODUCTS DIVISION
EASTMAN KODAK COMPANY
343 STATE STREET, ROCHESTER, NY 14650

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