

INSTALLATION PROCEDURES
FOR
TODD-AO
PROJECTION
SYSTEM

Foreword

The general procedure which follows is based primarily on the requirements in a theatre which will continue to operate during at least a portion of the TODD-AO installation, shutting down only during the final days of conversion. However, most of the recommendations can be advantageously applied to a shut-down house.

Before an installation is started, it is essential that all required material and services be on hand or on order with a guarantee of availability when needed. This cannot be overstressed, since in the past some openings have been jeopardized because the theatre failed to provide the required necessities.

Do not attempt to unpack or install the TODD-AO equipment until any required booth reconstruction work is completed and the booth cleaned. Expensive damage can be caused to the projector equipment if the above is not adhered to.

In addition to the TODD-AO supplied equipment, the following pages will serve as a check list of the major items that will be required. This list may vary slightly dependent on local conditions, but is essentially correct.

Continued -

Be sure your material requirements are under control, use check list as guide.

Be sure you have arranged for:

Installation Supervision

Projectionists

Electricians

Plumbers

Carpenters

Masons

Tinsmiths

Stage-hands

Laborers

BE SYSTEMATIC AND THOROUGH. It will save money during the installation and prevent costly last minute emergencies.

The TODD-AO equipment properly installed and used can be expected to fill your projection requirements for many years. Wise planning and purchasing can effect considerable savings but do not economize falsely by diverting from specifications.

Ordered
Date

From

On
Hand

Preamplifiers)
Switching panels) Omit if TODD-AO
Power Supplies) Special Theatre Sound
Volume Controls) Unit is Purchased
Equalizing panels)
6 Power Amplifiers
5 Stage Speaker Systems
 Surround Speakers
 " " Enclosures
 " " 70V Transformers
2 AM 197 Simplex Optical C.O. Cabinets**
2 E 18 Altec-Lansing Power Units**
Installation Supervision
2 S.P. Momentary Contact Foot Switches)
1 Potter-Brumfield, Latching Relay) or
 Type LK 17A - 115V AC and Coils)
2 D.P.D.T. Wall Switches
2 Arc Lamps (equipped with F-2.0 Hy-Speed
 condensers, Condenser chests and dowers
 if Peerless, Mod 15 Hy-Candescent)
13.6 Hytex Pos. Carbons) If Hy-Candescent Lamps
1/2" H.D. Crotip Neg. ") are used
2 Arc Rectifiers 180. A) " " " " ***
 65-70 V
Arc-Lamp Line Up Tools
4/o Asbestos cable for Arc Lamps
Lamphouse exhaust fan - 400 C.F.P.M. minimum
 for Hy-Candescent
Port Hole Shutter Frames
 " " Glass
 " " Glass Brackets
Lamp exhaust Stacks
 " " Fan
Tinsmith's Services
Mason's Services (Porthole or booth changes)
Carpenters Services (Porthole or booth changes)
Booth Floor Covering)
 " Acoustic Treatment) as required
 " Painting)
Automatic Pressure Regulating Valve #S1
Water Pressure Gauge
Plumbers Services
Electrical Conduit, Troughs, wires, switches,
 panels
Electricians Services
Screen Frame
Screen
Masking Materials
Curtain Track)
Curtain) as required
Curtain Control)
Stagehands and erection supervision/labor for
 screen frame, masking etc.

- *When TODD-AO Unit is used.
- **Total required capacity 8 Amperes/9 Volts
- ***Motor generator or city DC service of adequate capacity can be used,
by adding 2-Line Ballasts - 2 Knife switches.

SOUND EQUIPMENT

The sound installation will be the responsibility of a duly hired organization other than TODD-AO. However, experience to-date has shown that much of the sound installation can be performed without interfering with regular performances.

TODD-AO has the right to approve the sound results in the theatre and will advise the sound installation engineers in any way possible. A copy of the sound specifications is appended hereto. When the TODD-AO Special Sound Unit is supplied, a complete set of drawings, including external booth wiring is shipped with the equipment. If another sound control system is used it will be the responsibility of the supplier to provide all necessary drawings and technical data.

If booth space is limited, and the present sound system location must be utilized for the TODD-AO System, it is suggested that the existing equipment be jury-rigged in another location to clear the required area. This will allow for:

- Location of Racks
- Installing Troughs and Conduits
- Mounting Front Wall Controls
- Mounting 70 V Distribution Transformer Box
- Pulling required wires in Booth
- Partial Connections
- Mounting and Wiring to Surround Speakers
- Running back stage conduit and wires

Consult with your sound installation engineer.

PORT HOLES

Projection and observation ports should be enlarged and/or relocated to agree with the TODD-AO drawing. Particular attention must be paid to the specified splay angles. Port shutters and frames should be installed and one of the recommended types of port glass installed with the top of the projection glasses tilted back toward the projector as specified on the TODD-AO drawing. REMEMBER TO ALLOW FOR CLEANING CONVENIENCE ON ALL GLASSES. Glass must be set in sponge rubber, etc., so that there are no air leaks...spaces between frames and walls should be caulked or plastered. The machines run at high speed and move much more film than a 35mm projector **with** a resultant higher noise level.

All port work should be done before the new projectors are unpacked and moved into the booth in order to avoid costly damage to the equipment.

Generally speaking, the size and location of the TODD-AO ports will allow their use with existing 35mm equipment. However, this can quickly be determined by referring to the TODD-AO drawing and laying out, on the wall, the new locations with an accurate rule and chalk.

ELECTRICAL REQUIREMENTS

PROJECTORS - LAMPS

Drawing MB 100-B (included herewith) provides the essential electrical requirements of the TODD-AO projectors. By referring to the TODD-AO drawing for your theatre and MB 100-B, the required location for each projector of the 12" x 12" floor opening can be determined.

It is highly desirable that this opening be made before the TODD-AO equipment is unpacked and placed in order that a maximum of electrical work be performed prior to theatre shut-down.

Where old fashioned 3 point pedestals are in use, or where center to center spacing of present pedestals is other than the specified 60", cutting these holes and starting the electrical work can be accomplished quite readily. In other cases, existing openings might be enlarged or modified to accommodate the specified conduits; or the existing bases temporarily might be shifted while the required work is performed.

In addition, the new arc lamp power supplies might be located, control switches installed, conduit provided and wires pulled. Resorting to temporary re-location of existing power supplies may be required.

In most cases foot switch operated picture change overs will be preferred by projectionists. MB 100-B and the accompanying TODD-AO sketch "2 Machine Foot Operated Changeover Circuit" provides all the necessary data. Where hand-operated changeover switches are preferred omit the 6" x 6" box on front wall (MB-100B) and the foot switches and P-B relay shown in the check list. Figure 18A, page 20 of the Cat. 3070 Instruction Manual shows the necessary circuitry for hand switch changeovers. NOTE THAT IN THIS CIRCUIT THE 90 VOLT SEIENIUM RECTIFIER IN THE #2 BASE IS NOT CONNECTED, leads #51-52 are taped to be used in an emergency sound.

PLUMBING REQUIREMENTS

Reference to that section of the TODD-AO drawing for the theatre showing projector placement and to the drawing MB 100-B will allow the plumber to run the cold water supply and drain lines.

The fitting on the TODD-AO base have a $\frac{1}{4}$ " NPT thread. A $\frac{3}{8}$ " copper tube cold water feed line terminating in a shutoff valve at the "A" locations (Dwg. MB 100-B) and $\frac{1}{2}$ " copper tubes for drain at each "B" location will allow coupling to the bases after installation. Supply line for both machines can be common as well as the drain line, but in the supply line there must be placed a master shut-off valve, an automatic pressure regulating valve and a pressure gauge, all located in the booth. The required operating pressure is 35 lbs. + 5 lbs.

A safety water flow switch is built into the base of the TODD-AO projector to aid in guarding against striking an arc without water flowing.

After the bases are in place, the plumber will be required to supply copper tubing and fittings to connect the bases to his lines and the lamp house cooler to the base.

STAGE

A careful review of the screen portions of the TODD-AO drawing for your theatre will reveal if any changes are required and indicate what can be done before shut-down.

One time consuming element is the removal of any unuseable front row seats. From the TODD-AO drawing locate the sag or base of the screen curve, relative to some existing structural reference point such as the footlights, (asbestos) curtain line or rearwall. Measure from that point to the approximate minimum viewing distance point specified on the drawing, and remove any seats forward of that minimum viewing point, if you intend removing these seats. Then recarpet, etc., as desired.

The drawing will indicate if there are structural changes required, such as plaster column or organ grille removals. Attempt to perform this work during off-show hours, its cheaper than doing it at night on a rush basis and with over-time. In most recent installations little or no structural changes have been necessary.

If the TODD-AO screen locations indicate that the existing stage must be extended to hold the speakers, arrange for material and labor. Remember that the center of the high frequency speaker must be located $1/2$ to $2/3$ up on the height of the picture. This means that if your screen is 20' high, and the lacing and frame consume 1 foot, then the center of the high frequency horn must be between 11' and 15' above stage floor. Measure from the bottom of the low frequency baffle to the center of the high frequency horn, and determine the height of the 5 platforms that you will require to raise the horns to the proper height. Have them built, considering any variances for speakers that might not set over the existing stage floor.

REMEMBER, the ideal speaker location is for one in the center of the picture, one at each extreme left and right end and the other two equally centered between the aforementioned three, with all speakers placed close to the screen. A drawing covering these details is included in this manual.

OVERTIME is expensive, save money by preparing in advance.

The screen frame is usually erected under the supervision of the supplier, but always by the stage hands. Items generally required are ladders, mobile scaffolds and hoisting equipment. The need for minor tools, ropes, fasteners, etc., are generally anticipated. Other than removal of existing structures, little can be done preparatory to closing, in the actual erection of frame.

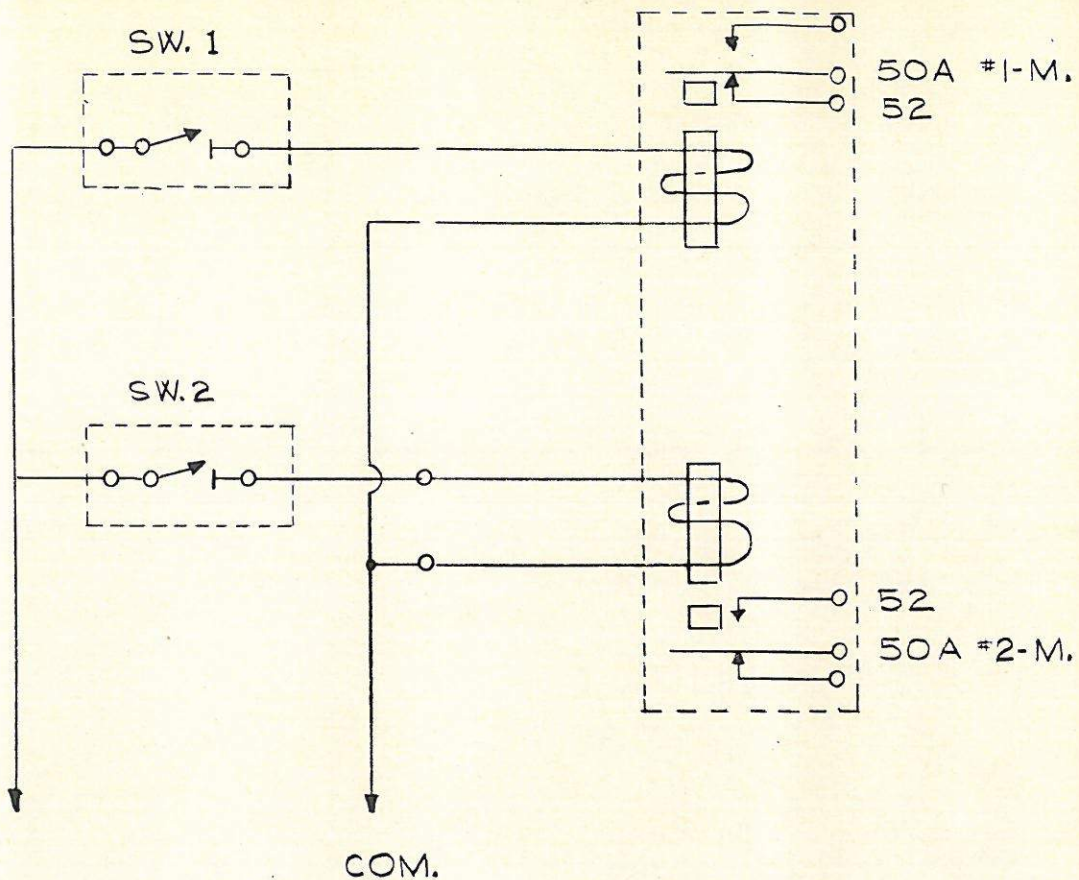
However, local situations might make it possible to install the curtain track, the curtain and possibly the control equipment, before the actual erection of the screen frame. Naturally, curtain and curtain control equipment, if desired, is up to the exhibitor. Of course, where the latter includes facilities for holding the track early erection is precluded.

A final stage item that can be provided for, and possibly installed prior to shutdown, is back-stage draping. The entire area behind the TODD-AO screen - speaker location must be draped with discarded curtains, (soft material) ozite or other absorbent acoustic material. Again, by referring to the TODD-AO drawing, a "line" that this material should follow can be determined. If an area 5 feet deep behind the screen curve is located, the absorbent material can be hung from that location.

THE TODD-AO CORPORATION

70mm Composite Film Sound
Specifications

1. The frequency response as measured on theatre equipment...
 - 50 - 8,000 cycles flat within plus or minus $1\frac{1}{2}$ db.
 - 40 -12,000 cycles flat within plus or minus 3 db.
2. Cross talk between channel...minus 40 db. at 1,000 cycles.
3. Signal to noise...minus 55 db.
4. Wow and/or flutter not to exceed C.2 of one per cent in a band width between 2- 200 cycles.
5. Preamplifier distortion not to exceed one per cent when operated at a level of 12 db. above the level from magnetic film recorded at three per cent distortion.
6. Power amplifier distortion not to exceed two per cent at rated output of the amplifier between 50 and 12,000 cycles.
7. Speakers and power amplifiers should be of such power rating that any single track can properly fill the auditoriums' acoustical needs. The speakers shall not be of the acoustical lens type.



AC 115 V.

MATERIAL...

- SW. 1)
- SW. 2) S. P. Momentary-Contact Foot Switches.
- REL. 1 Latching relay IK Series - Type IK 17A
115 V. A.C. Coils
Potter-Brumfield Princeton, Ind.

Note-Terminals 50A & 52 will be found on lower (8) terminal strip in Upper bases of each projector. 50A is lower left, 52 is lower right.

See F.E.I. #9-Iss. 2
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TODD-AO CORP.-N.Y.

2 MACHINE
FOOT OPERATED
CHANGEOVER CIRCUIT.

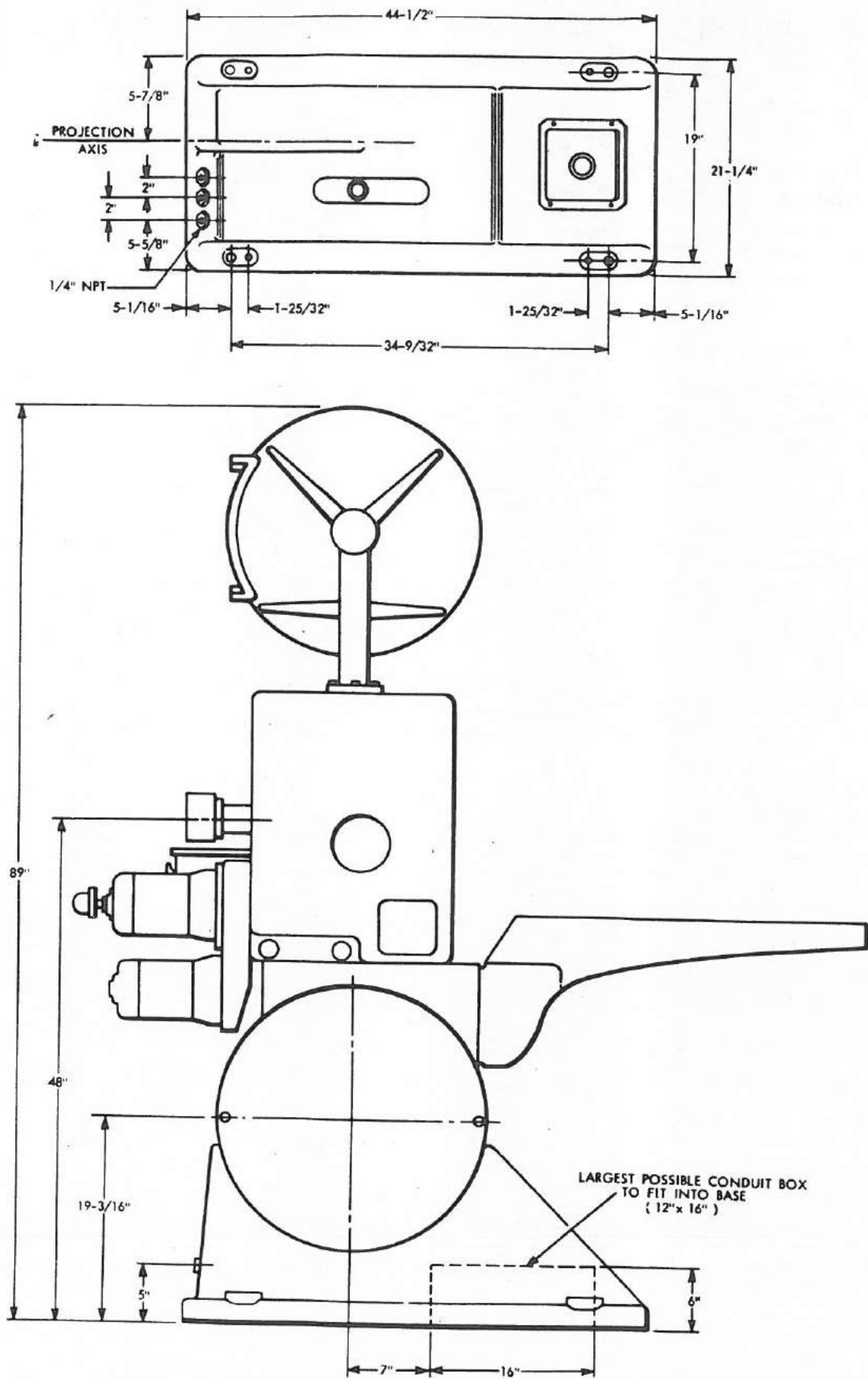


Figure 8. Installation Diagram, Elevation and Plan View Showing Location of Plumbing and A-C and D-C Power Supplies.