Klieqboards

by Originators & Manufacturers of "KLIEGLIGHTS"

for LIGHTING CONTROL

KLIEGL BROS

Catalog SB-2

Lighting Controls

CONTROL is a basic requirement in lighting installations where a considerable number and variety of units are used in combination to produce diversified lighting effects . . . as in stage productions and television broadcasts.

Adequate control demands effective utilization of the available lighting equipment in its application to the presentation's immediate requirements as well as adaptation to the necessity for frequent changes.

Conventional methods afford only a partial solution to the control problem, but the Kliegl Distribution and Control System offers the complete and ideal answer. The outgrowth of many years of experience with theatrical lighting, augmented by an intimate knowledge of television studio needs, it surmounts all difficulties with its unique functional elements and wholly flexible arrangements.

Through its instrumentations it exercises all-inclusive centralized control of both lights and circuiting in a simplified manner. It permits manipulation not only of the distribution circuits, lights, and dimmers used for dramatic light plots or other visual effects, but also provides, in some instances, for control of the general illumination of the house or auditorium and supplementary service equipment such as orchestra lights, dressing room lights, signal systems, et cetera.

Though developed primarily for television and theatrical purposes, its principles are applicable to a wide variety of other uses. The Kliegl system is the ultimate in light control . . . modern in concept, proven practical in use, a decided advancement over former methods, and unequalled in performance.

KLIEGBOARDS

Kliegboards are complete, self-contained units of various designs with switching, circuiting, connecting, dimming and associated electrical devices conforming to needs wherein variable intensity and distribution of illumination is desired.

They function as a switchboard to switch lighting loads on and off, manipulate branch circuit connections, and interconnect or disconnect dimming facilities. As a dimmer bank they also serve to control the intensity or brightness of the lights.

Types available cover a complete range from simple plug boards to intricate control arrangements, in any desired capacity, for any standard electrical supply service. They are built to meet specific requirements, and are made in small mobile units for temporary service needs as well as in larger sizes for permanent or semi-permanent installations.

They embody many service and structural features that are advantageous to the user, and permit operations to be accomplished with absolute safety, positive assurance, and utmost ease.

All are of the "dead-front" type with live electrical parts completely covered and properly grounded. Circuits are totally protected throughout by automatic switch breakers or fuses in a manner that eliminates the possibility of overloading. Every precaution has been taken to safeguard both operator and equipment. Perfectly safe for anyone to handle, *they are wholly in conformance with National Code standards and bear the label of Underwriters approval.*

Operating procedures are simple and direct . . . combine selectivity and control in a way that requires no technical knowledge. Sectionalized in design, functional elements are arranged in related groups and mounted in panel units to facilitate and simplify operations. Foolproof and free from complications, they may readily be operated by skilled or unskilled persons.

The most diversified lighting loads may be handled without difficulty — as each circuit is individually controlled and branch circuiting is adaptable so as to permit maximum utilization of the facilities of the board. Their operating efficiency is extremely high as dimmers may be loaded to their full capacity through selective switching arrangements.

Economies are gained by savings of time, labor, space and material. Maintenance costs are negligible as all deteriorating factors have been eliminated or reduced to a minimum.

Easily installed in any desired location, they are furnished completely wired with convenient provisions included for making load and service connections.

The ultimate in electrical control versatility, they offer every assurance of reliable performance and a long life of usefulness by their inbuilt qualities of excellence and fine craftsmanship.

Applications: Kliegboards are universal in their applications and may be used in countless ways for a wide variety of purposes.

Theatrical applications are their primary and normal service . . . being ideal for professional and tributary theatres where dramatics or other stage presentations are a predominant activity.

Telecasting is likewise a major field of application where visual entertainment and other program features for broadcasting are produced and televised.

Educational institutions including schools, lecture rooms, concert halls and auditoriums, are natural adaptations.

Amusement parks, dance halls, ballrooms, skating rinks, sports arenas and similar enterprises find them very serviceable.

Churches, hospitals, sanitariums, and other public or private institutions having provisions for the entertainment of its members, inmates or visitors, apply them advantageously.

For social or ceremonial events in club rooms, assembly halls, community centers and other meeting places they are likewise useful.

Where dining, dancing and entertainment are a combined attraction as in hotels, restaurants, night clubs, and ballrooms, they are used for effect lighting of orchestra platforms, floor shows and dance areas.

In public attractions where lighting is an important element, as in fairs, pageants, carnivals, exhibitions and expositions, they are readily adaptable.

For sales promotions and commercial purposes where variable controlled lighting effects are desired, as in fashion shows, exhibition booths, display rooms and the like, they serve profitably.

Certain industrial applications where circuiting control and voltage regulation are a requirement for servicing lights or processing activities, as in photographic studios, manufacturing routines, testing laboratories and other special uses, they provide time-saving and productive facilities.

Generally they are applicable wherever frequent circuit changes, dimming of lights or variable voltage controls are a problem and a simple satisfactory solution is desired.

Inquiries: Kliegboards are custom-made to serve definite needs. Your requirements will be thoughtfully studied and recommendations offered as to the type of board best suited for accomplishment of objectives; your inquiries are cordially invited.

Services: Our experienced designers will collaborate with your technicians or dramatic instructors in the development of lighting schemes and layout of Kliegboard controls to obtain best results. Advisory assistance is also available to architects and consulting engineers on technical aspects of plans for installation of the equipment.

Quotations: Price estimates are furnished upon ascertainment of essential details, such as; type of board, number and capacity of outlets to be controlled, number and grouping of dimmers desired, characteristics of electrical supply and other pertinent information.

KLIEGL BROS

UNIVERSAL ELECTRIC STAGE LIGHTING CO., INC.

Theatrical · Decorative · Spectacular · Lighting

321 West 50th Street · New York 19, N.Y.

OTHER PRODUCTS:

In addition to Kliegboards, we manufacture a complete line of lighting specialties for stage and theatre, television studios and general illumination. We are therefore prepared to furnish as a complete unit the equipment and wiring devices for an entire installation, including both the lighting elements and their controls.

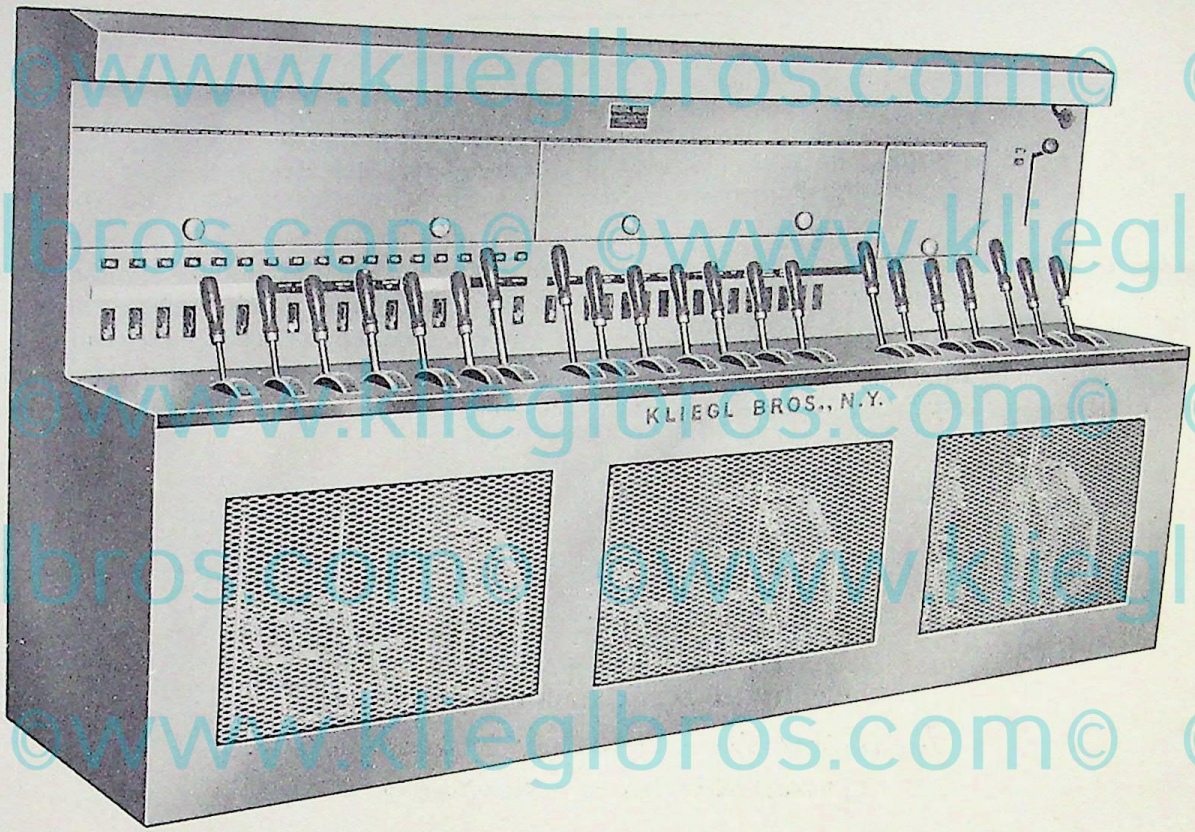
INDEX to KLIEGBOARDS

Solid-Circuit Type..KLIEGBOARDS

SOLID-CIRCUIT type Kliegboards utilize inbuilt terminal strips or other fixed wiring devices for making permanent connections to service feeders and load circuits. Though intended for use where mobility is not a factor and board remains set in location, their unity of construction does permit easy relocation if necessary.

They are dead-front boards with grounded enclosures, in a compact assembly, fully equipped with dimmers, switches and circuit protection to provide complete control of the entire lighting installation — including stage, house and constant service lights, or other diversified requirements.

Their capacities range from relatively small-sized units for simple needs to large-scale assemblies for heavy-duty intricate demands. They are completely assembled and wired, ready for main feed and circuit connections.



DESIGN A-1

Solid-Circuit Kliegboard

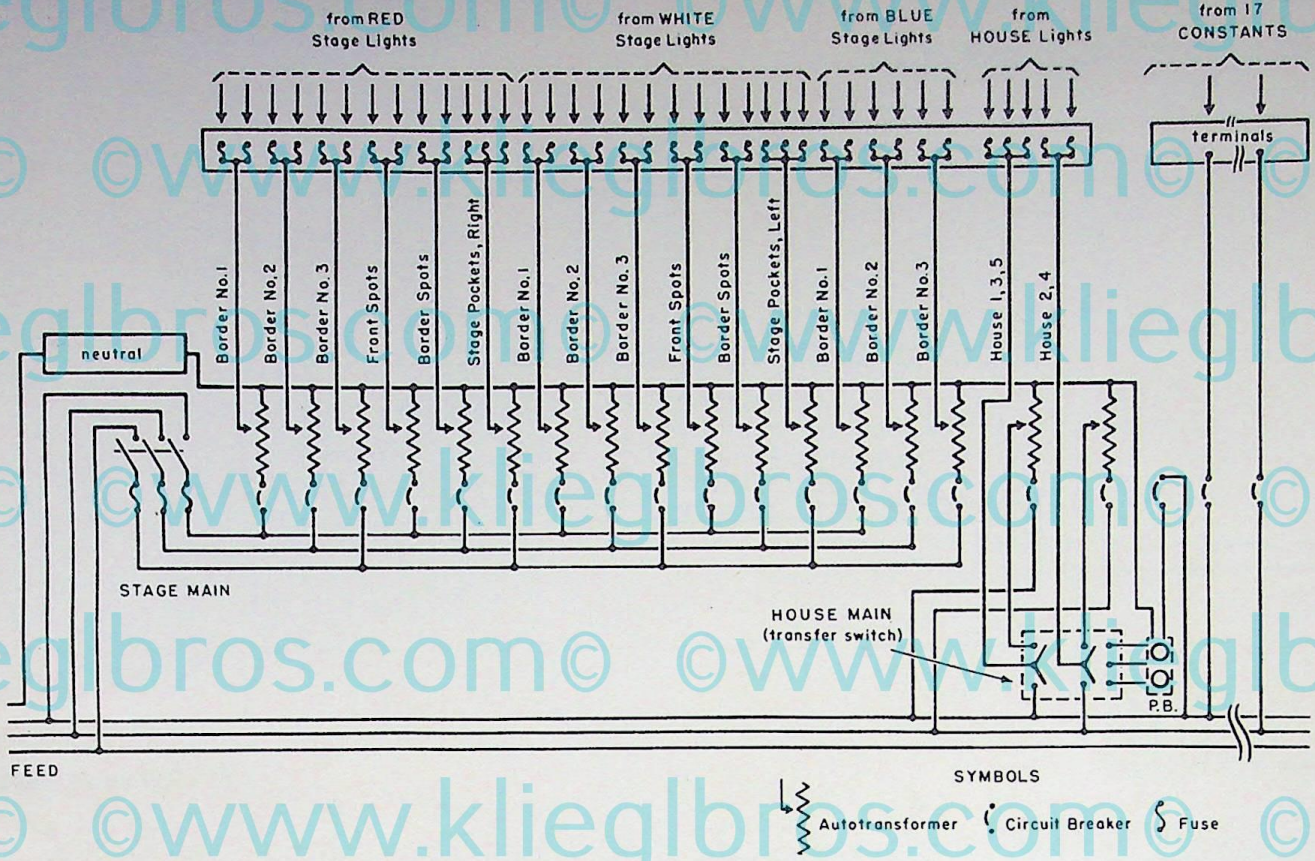
Typifying an inherently practical Kliegboard, solid-circuit type, designed to provide the maximum required controls at a minimum of cost, and easily operated by students. The Kliegboard above illustrated was built for the Livingston School, Union, N. J.

As they are designed and custom built to your specifications, there is no limit to their size and/or number and types of controls. We suggest you check your specifications with our typical plan shown on pages 5 and 6 for full details.

Size of the Livingston School board is 74" long x 75" high x 32" deep. "Approved and Listed by the Underwriters Laboratories."

WIRING DIAGRAM

Kliegboard for Livingston School



Selector Circuit Breakers are used to control two or more individual circuits (e.g., spots) fed from one dimmer where desired.

Branch Circuit Fuses are used where more than one circuit per color is required in an individual border or footlight.

SPECIFICATIONS

STAGE CONTROLS

1 100-ampere, 3-pole, stage main switch
2 5000-watt, Autotransformer dimmers
13 2000-watt, Autotransformer dimmers
3 Color-master handles
2 50-amp. circuit breaker switches, for dimmers
13 20-amp. circuit breaker switches, for dimmers
16 Pilot Lights
32 15-amp. fuses for branch circuit protection

HOUSE CONTROLS

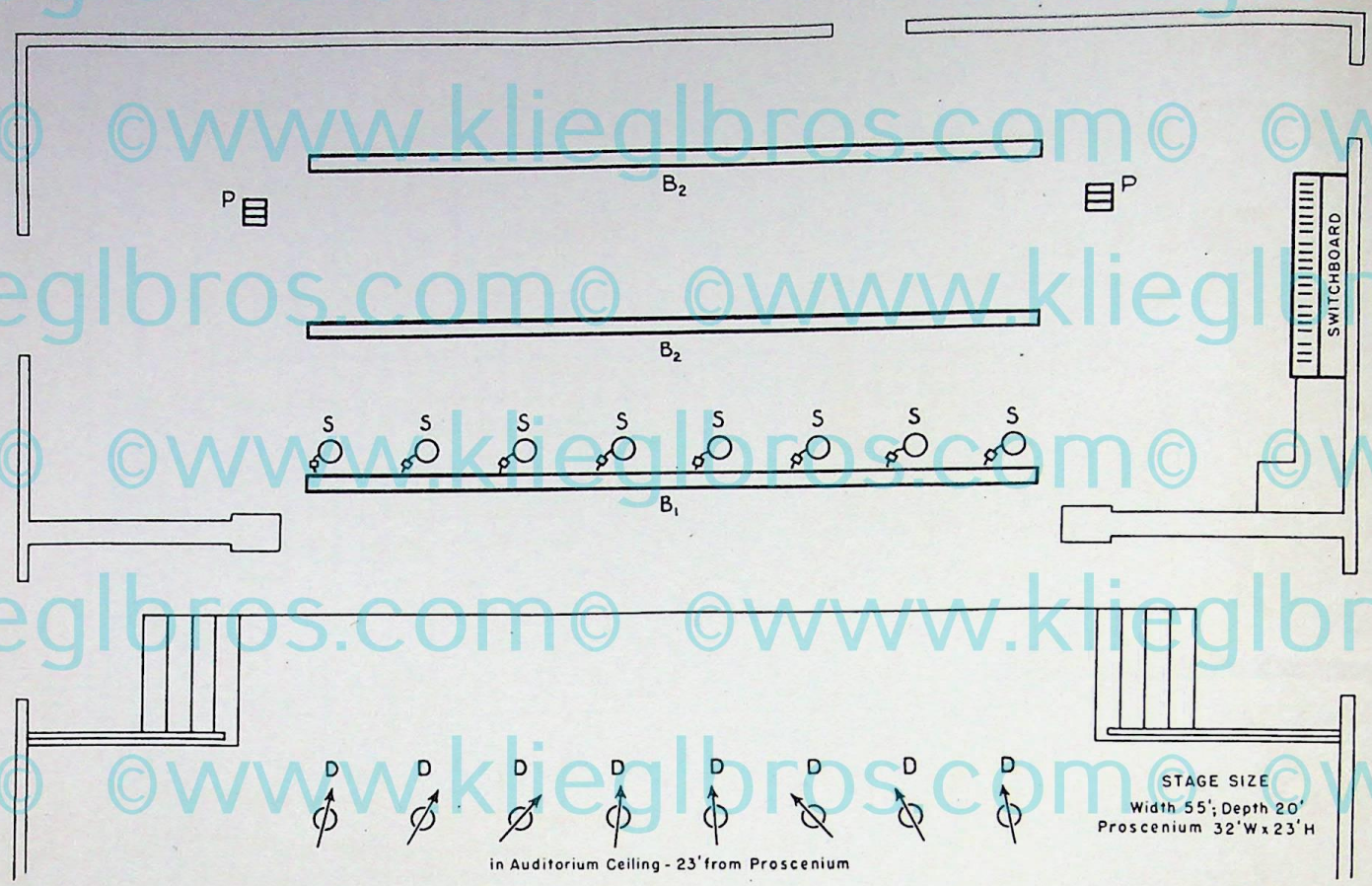
1 60-amp., 2-pole, double throw contactor transfer switch
2 5000-watt, autotransformer dimmers
1 Master handle
2 50-amp., circuit breaker switches for dimmers
2 Pilot Lights
6 15-amp. fuses for branch circuit protection

CONSTANTS

14 15-amp. circuit breaker switches
2 20-amp. circuit breaker switches
1 50-amp. circuit breaker
1 Switchboard trough light and receptacle

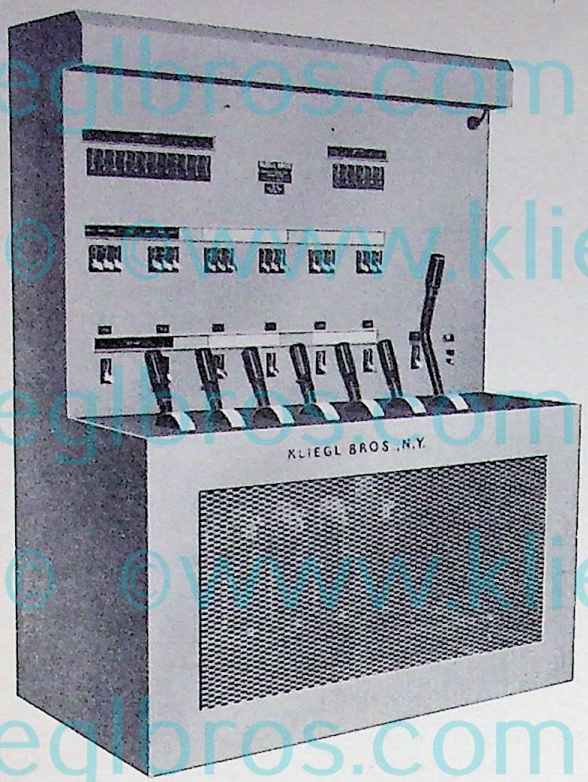
STAGE LIGHTING PLAN

For Livingston School



LIGHTING EQUIPMENT SCHEDULE

SYMBOL	ITEM	No. REQ'D
D	No. 2165, 500-watt angular downlight	10
B 1	No. 610 Borderlight; 30-ft. long; 100-watt lamps; red, white and blue color circuits, wired on six alternate circuits; eight No. 955G spot-light outlets wired on four alternate circuits	1
B 2	No. 610 Borderlight; 30-ft. long; 100-watt lamps; red, white and blue color circuits, wired on six alternate circuits	2
S	No. 43N6, 500-watt Fresnel spotlights	8
P	No. 353/955G Three-gang floor pocket with No. 955G outlets	2



DESIGN A-2

Kliegboard built for Our Lady Queen of Peace School, Maywood, N. J.

SPECIFICATIONS

STAGE CONTROLS

1 100-ampere, 3-pole, main switch
6 4000-watt autotransformer dimmers
18 Branch circuits

HOUSE CONTROLS

1 Remote main switch push button control
6 Branch circuits

CONSTANTS

10 15-ampere circuit breakers
1 Switchboard trough light and receptacle

DESIGN A-3

Kliegboard built for Ewing High School, Ewing Township, N. J.

SPECIFICATIONS

STAGE CONTROLS

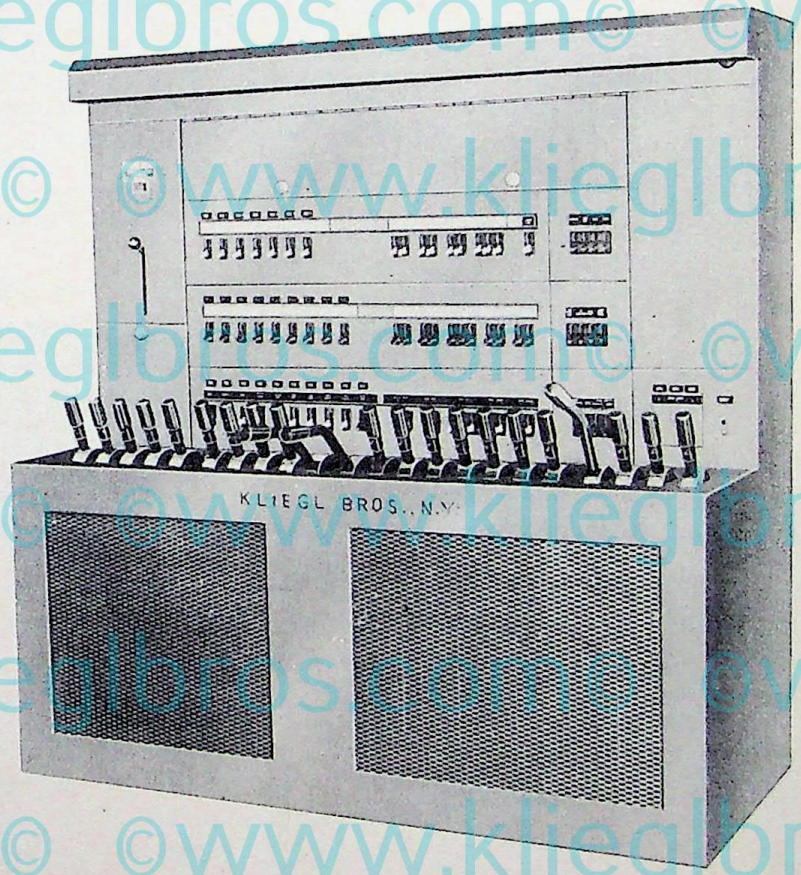
1 200-ampere, 3-pole, main switch
16 4000-watt Autotransformer dimmers
54 Branch circuits

HOUSE CONTROLS

1 60-ampere, 3-pole main switch
1 Transfer switch push button control
1 12-circuit panel

CONSTANTS

13 15-ampere circuit breakers
1 Switchboard trough light and receptacle



Rotolector* Type . . . KLIEGBOARDS

*Trade Mark; Patent Pending

ROTOLECTOR type Kliegboards employ rotary selectors for making the load circuit connections to various provided dimmer and line voltage supply sources. They are composed of a number of Rotolector units in combination with a bank of dimmers, switching facilities, service circuits and other electrical parts, conveniently arranged in a compact assembly and completely wired except for connections to service feeders and load circuits, which are made when installed to terminals provided.

Each Rotolector, with capacity of 20-amperes, services a single outgoing circuit. By means of a rotating plug this load circuit may be transferred or connected to any one of a number of supply sources. The supply sources may be either dimmer controlled or non-dim line voltage feeders as available and selected.

Numerical markings for various positions of the Rotolector correspond to similarly numbered service feeders. A pull and turn of the Rotolector knob transfers the load circuit to any desired feeder. A magnetic circuit breaker, which is a component part of the Rotolector, serves both as an automatic safeguard against overloads and as an on- and off switch for the load circuit. Thus each outgoing circuit is flexibly and safely controlled.

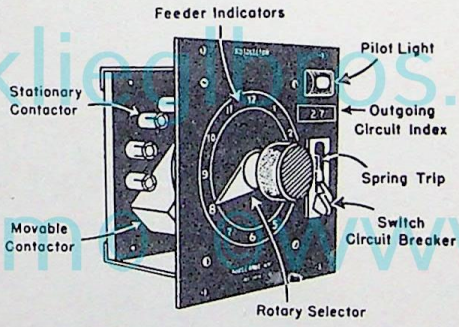
The Rotolector is so designed that no changing operations are possible under energized conditions. No arcing occurs at the contact points; therefore, no maintenance is required. A mechanical tripping device is coupled to the selector handle, so that when handle is withdrawn to change its position the device trips the circuit breaker, interrupting the load before the pin contactors are disengaged. A pilot light on each Rotolector indicates when the circuit is energized.

No fuses are required for load circuits as all circuits, including master and sub-master feeders as well as the outgoing service lines, are individually protected and controlled by silent-acting magnetic circuit breakers.

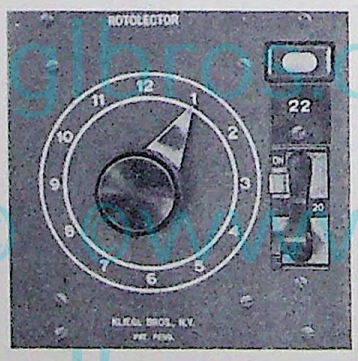
Many advantages are procured by this type of Kliegboard. Patch cords and plugs used in the patch system are eliminated. Operations are reduced to simple manipulations of the Rotolectors. Safety of personnel is assured as no "live" parts are handled or exposed. Circuits in use are clearly indicated by pilot lights. Transfer of load from one source to another can be made without going through other live circuits. A number of outlets may be grouped on the same dim or non-dim feeder circuit up to its full rated capacity. Overloading of circuits is impossible as all circuits are automatically protected by circuit breakers.

Rotolector Kliegboards are the fulfillment of all practical requirements for speedy adaptability to everchanging needs. They combine instantaneous selectivity with unrestricted flexibility, thus heighten efficiency of operations, save time and lower costs.

Custom made for particular requirements, "Underwriters Approved," Rotolector Kliegboards are subject to many modifications in equipment and arrangements to fit specific needs. They can be furnished with any desired combination of dim and non-dim control circuits, with Rotolectors having twelve, twenty or twenty-four contact points; or for higher amperage circuits. In addition to controls for stage or studio lights, they may also include controls for house and service lights, with or without dimming facilities.

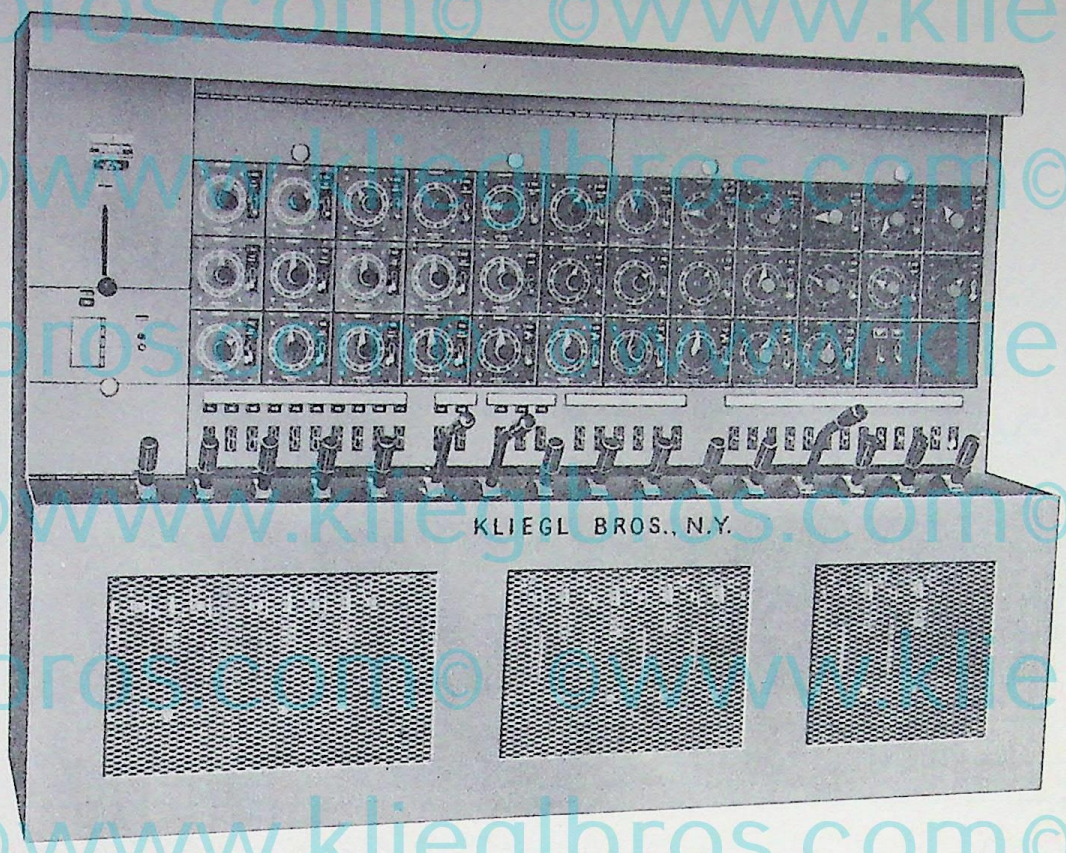


KLIEGL "ROTOLECTOR" UNIT



12-point Rotolector

24-point Rotolector



DESIGN R-1

Rotolector Kliegboard

Typifying a practical combination of Rotolector elements, associated dimming facilities and switching controls for a well-equipped stage of relatively large proportions—this Kliegboard was built for the Summit High School at Summit, N. J.

It provides for the selective servicing of both stage and house lighting circuits, and is compactly contained in a unified assembly 93″ long, 67″ high, 25½″ deep overall.

The color circuits of the foots and borders and outlets for stage spots, floods and front lights are serviced by a bank of thirty-four Rotolectors and ten dimmers. The through circuits of the house lights are serviced by three dimmers. Constant circuits provided are for outlets in orchestra pit, passageways and the like. Both stage and house main switches may be locked in open position when not in use.

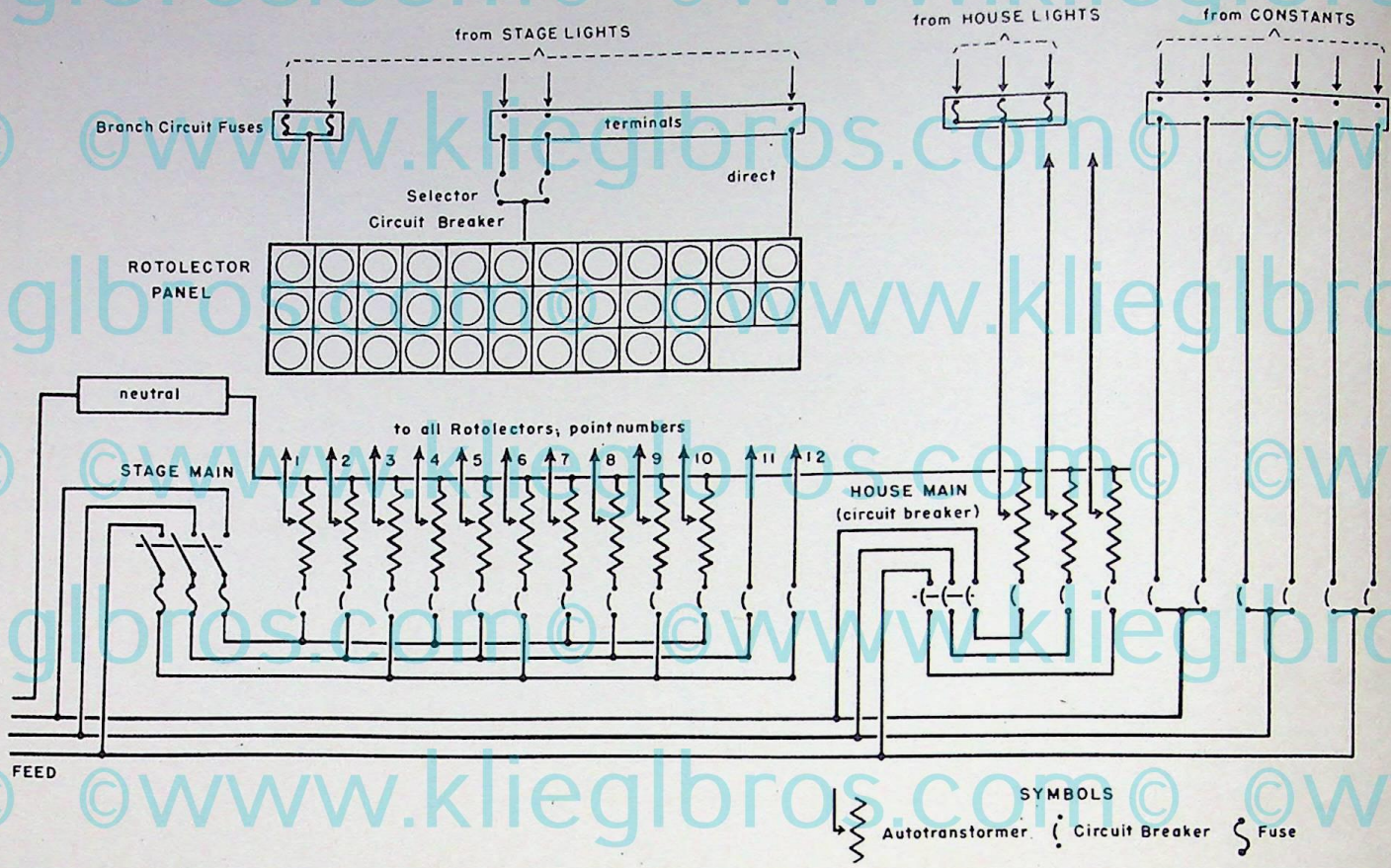
Principal functional elements are listed in accompanying specifications. Method of control is shown by wiring diagram, and light plan with coded equipment gives details of the stage lighting scheme.

The Rotolector principle provides a quick, safe and easy means of grouping certain lights together on a dimmer, thereby utilizing the full capacity of the autotransformer type dimmer, and thus grouped makes for ease in control. The inbuilt Rotolector switch provides means of controlling its circuit even though grouped with other Rotolectors on the same dimmer.

Generally it is found that fewer dimmers are required. The autotransformer dimmers may be 4000-, 5500- or 8000-watt capacity.

WIRING DIAGRAM

Kliegboard for Summit High School



Selector Circuit Breakers are used to control two or more individual circuits (e.g., spots) fed from one Rotolector where desired.

Branch Circuit Fuses are used from Rotolectors where more than one circuit per color is required in an individual border or footlight.

SPECIFICATIONS

STAGE CONTROLS

1 200-amp. 3-pole, fused stage main switch
10 4000-watt Autotransformer stage dimmers, 2 masters
2 40-amp. no-dim circuits
12 40-amp., circuit breakers for stage control circuits
34 12-point Rotolectors for stage circuits
14 15-amp., circuit breaker type selector switches
30 15-amp., stage branch circuit fuses

HOUSE CONTROLS

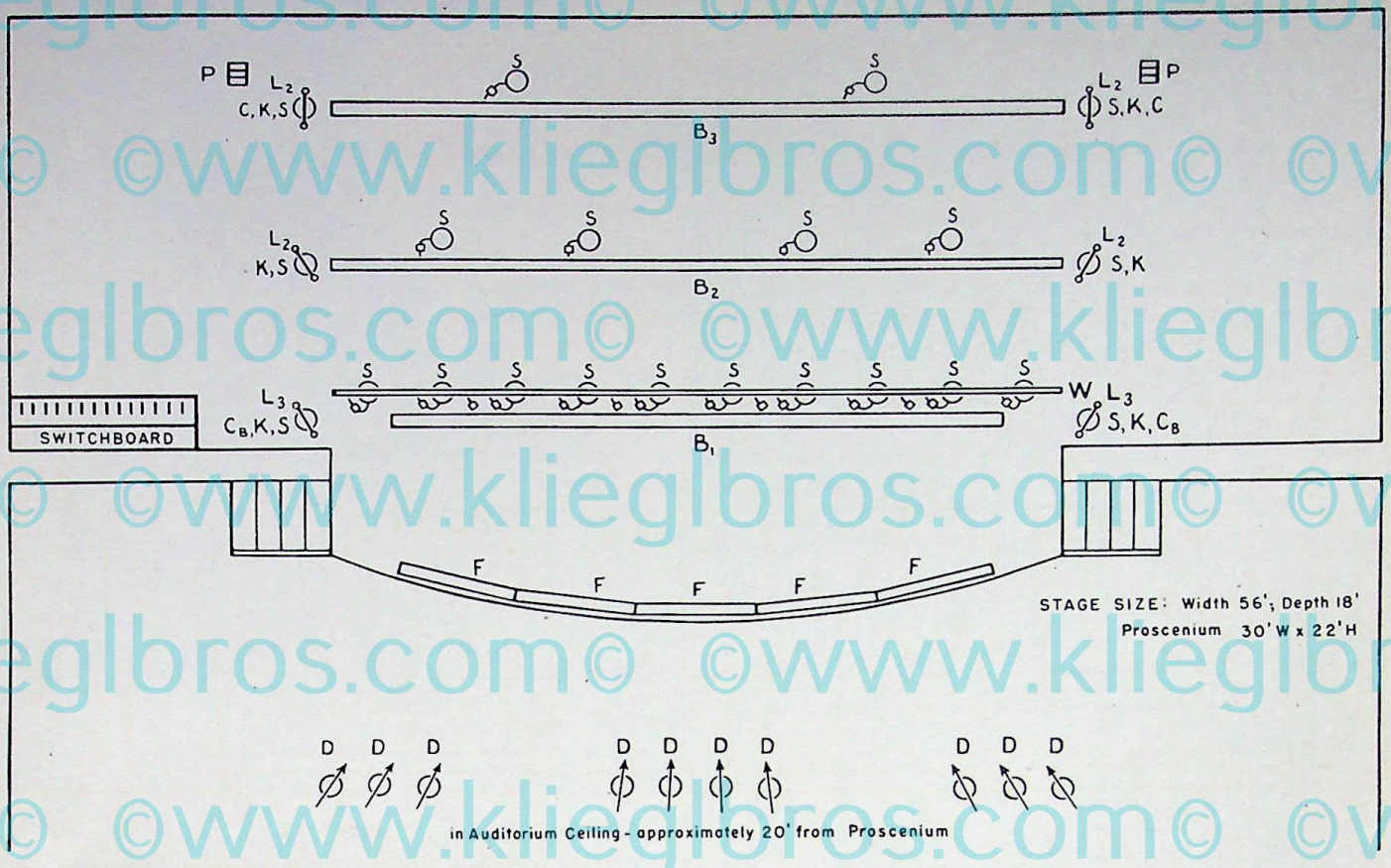
1 60-amp., 3-pole, House Main Circuit Breaker
3 4000-watt Autotransformer House dimmers
3 40-amp., circuit breakers for house control circuits
9 15-amp., house branch circuit fuses

CONSTANTS

6 15-amp., circuit breaker type switches

STAGE LIGHTING PLAN

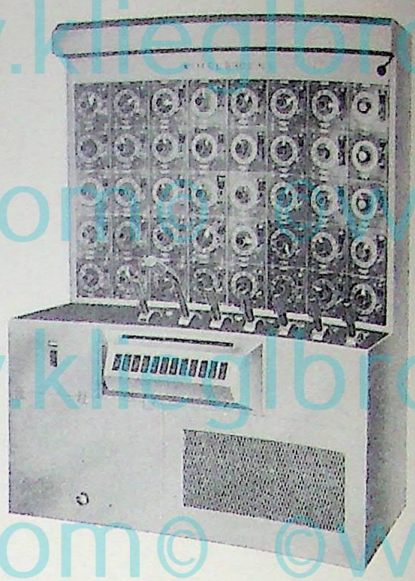
for Summit High School



LIGHTING EQUIPMENT SCHEDULE

SYMBOL	ITEM	No. REQ'D
D	No. 2165 500-watt Downlight	10
F	No. 832 Disappearing Footlights 5 ft. long; 75 watt lamps; 3 color circuits, white, red and blue	5
B 1	No. 610 Borderlight, 25 ft. long; 100-watt lamps; white, red and blue color circuits	1
B 2	No. 610 Borderlight, 30 ft. long; 100-watt lamps; white, red and blue color circuits, wired on 6 alternate circuits; 4 No. 955G spotlight outlets on circuits	1
B 3	No. 610 Borderlight, 30 ft. long; 100-watt lamps; white, red and blue color circuits, wired on 6 alternate circuits, 2 No. 955G spotlight outlets on circuits	1
S	No. 43N6 500-watt Fresnel Spotlights	16 to 22
K	No. 1365 500-watt Klieglights	2 to 6
C	No. 1155 1000-watt Scoop Floodlights	2 to 6
CB	No. 533 250-watt Floodlights	2 to 6
W	No. 619 Connector Strip; 30 ft. long with 16 No. 955G spotlight outlets wired on 8 circuits in pairs	1
L 3	No. N 6 3-step Kliegladder with 4 No. 955G spotlight outlets wired on 2 circuits from load box on ladder	2
L 2	No. N 6 2-step Kliegladder with 2 No. 955G spotlight outlets wired on 2 circuits from load box on ladder	4
P	No. 353/955G Floor Pockets with 3 No. 955G outlets wired on 3 circuits	2

DESIGN R-2



This model typifies a Rotolector Kliegboard suitable for average smaller-sized stage in schools, community centers and the like; differs from Design R-1 in location of circuit-breaker service switches, and uses fewer dimmers. Measurements overall: 54″ long, 71″ high, 28″ deep.

It is composed of a bank of forty 12-point Rotolector units in electrical association with a bank of five 4000-watt autrastat dimmers and twelve selective feeders. The dimmers are of interlocking type with individual and master control handles. A similar handle on the extreme left manipulates the main feeder switch —a 200-ampere knife blade type, concealed within the enclosure.

Pilot lights back of the dimmer handles and main switch handle indicate when these circuits are energized.

Twelve branch feeders service the board, through selector switches mounted in an inclined casing conveniently centered on front of the dimmer enclosure. They are magnetic circuit breaker type of 40-ampere capacity, for five dimmer controlled and seven non-dim line voltage branch feeders.

A breaker switch, to left of selector switch casing, controls the trough light at the top of the board, providing local illumination for operating needs.

The only fuses required are for the main feeder, 200-ampere standard knife blade type, which are enclosed in a compartment in the base of the Kliegboard. A hinged door provides easy access for their inspection or replacement.

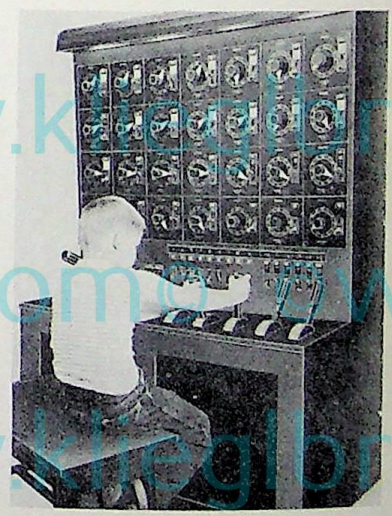
All installation wiring is connected at top of the board, where terminal strips are provided. Removable panels permit access to this section.

DESIGN R-3

This dual bank design, except for its greater capacity, is similar in its control elements and general structural features to the R-2 model previously described. The arrangement is suitable for the larger college and high-school stage, dramatic societies, community centers, etc.; with a total of seventy-two load outlets. Measurements of the Kliegboard overall: 86″ long, 74″ high, 32″ deep.

Its main feeder is subdivided into two branches for servicing the right and left side of the board. Three dimmer-like handles in center of board control the main and sub-main feeder switches, concealed within the enclosure. Each bank has thirty-six 12-point Rotolectors which may be connected to any one of twelve branch service circuits. Six of the service circuits are dimmer controlled; the others are non-dim line-voltage sources. The twenty-four service selector switches, 40-ampere magnetic breaker type, are mounted in an inclined housing centered on front of dimmer bank enclosure. A switch for the trough light and a cue-sheet clip are provided in the top center panel. Hinged door compartments for main and sub-main fuses are located in center panel and base section of the unit.

DESIGN R-4



This arrangement was designed for moderate requirements where control of stage and house lights is desired. It consists of a small Rotolector Kliegboard with through circuit additions suitable for elementary schools where the range of requirements are comparatively limited. Its safety and simplicity in operation permit its unrestricted use by students without fear of misadventures. Measurements overall: 48″ long, 65″ high, 28″ deep.

It has twenty-eight stage branch load circuits distributed by Rotolectors on five dimmer service circuits and three non-dim line voltage circuits. An additional dimmer circuit is provided for the house lights. The stage dimmers are interlocking with master control handle. House dimmer is manipulated independently.

Fifteen magnetic breaker type selector switches are provided: eight 40-ampere for stage lights; one 40-ampere for house main; and six 15-ampere for house branch circuits, work lights and board light.

DESIGN RTU-1

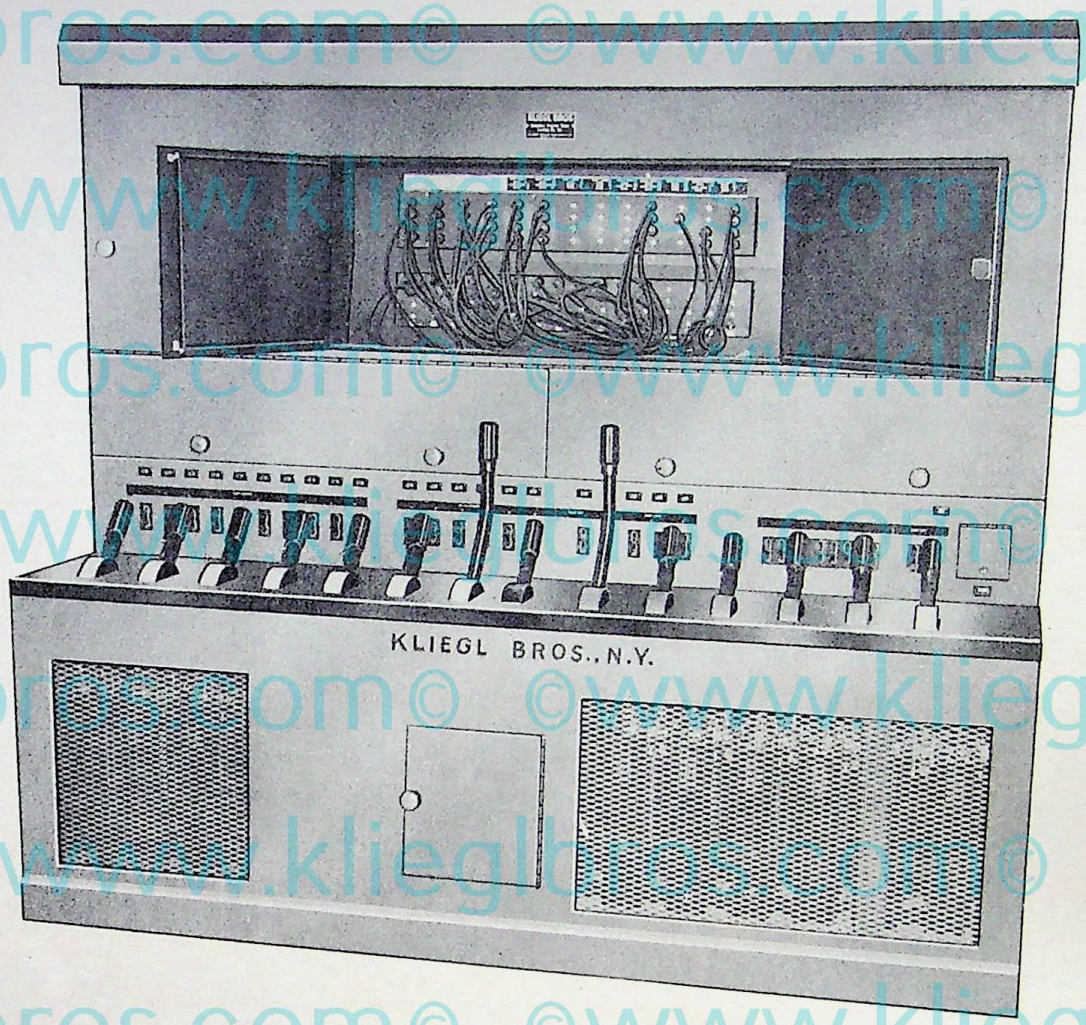
Large scale Rotolector Kliegboard arrangement, built in two companion units, suitable for exceptional demands of large television studios and professional theatres.

It has one hundred and fifty 24-point Rotolectors banked in one unit, 85″ high, 136″ long and 15″ deep. The console unit has a bank of twenty-four 4000-watt interlocking dimmers with two master handles and one main feeder switch, together with 24 circuit-breaker switches controlling the dimmer circuits, pilot lights, and ammeters, assembled in an enclosure 32″ high, 128″ long and 32″ deep.

Patch-plug Type . . . KLIEGBOARDS

PATCH-PLUG type Kliegboards utilize flexible jumpers, short lengths of flexible cable with a male and female pin connector on opposite ends, for selective distribution of circuits. By means of these jumpers any load circuit may be connected to any one of a number of control circuits with or without dimming facilities.

They are available in two different arrangements . . . one a self-contained design for moderate requirements with the patch board for jumpers embodied in the unit; the other arrangement has a separate patch board which permits provisions for a greater number of load and control circuits.



DESIGN PP-1

Patch-plug Type Kliegboard

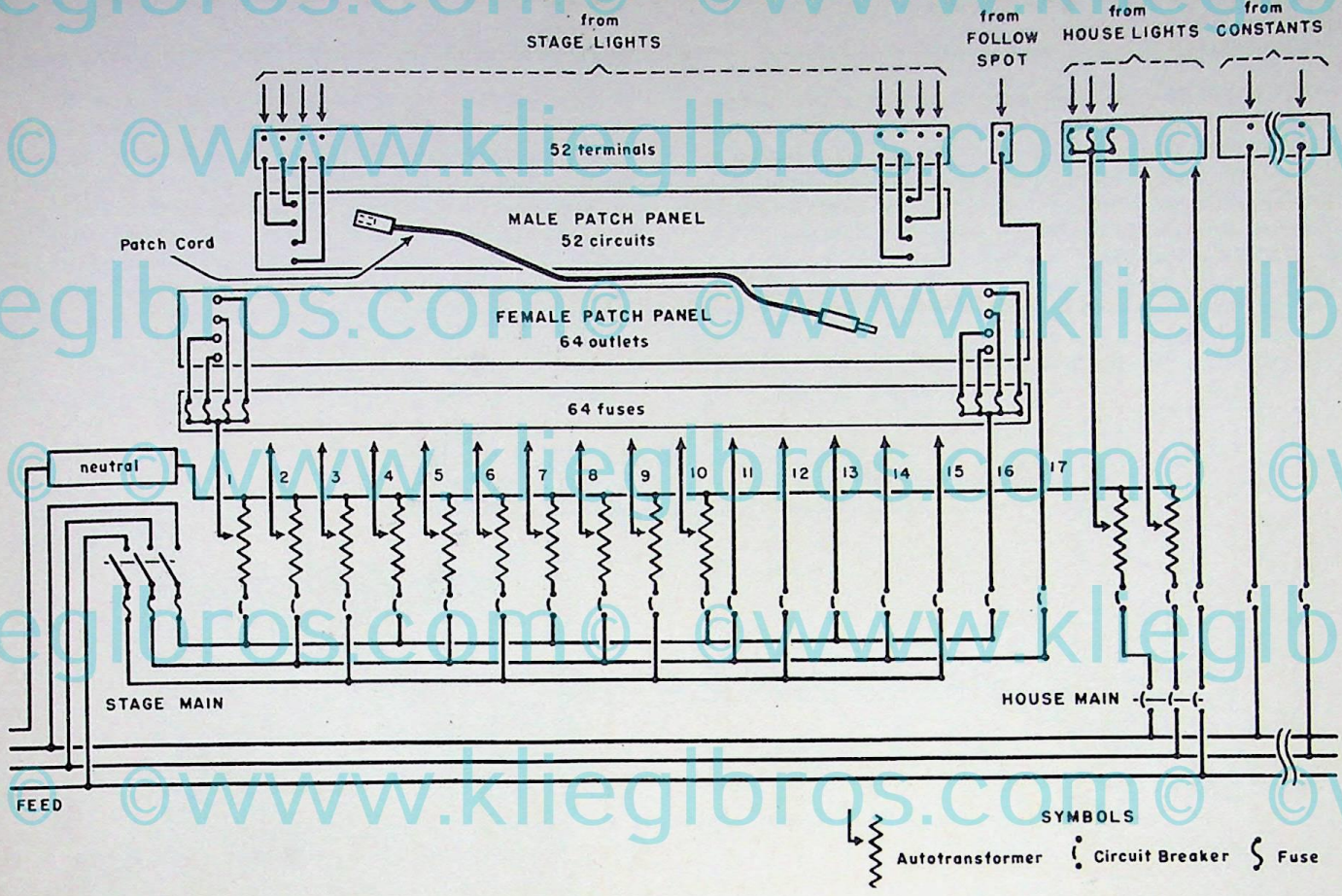
Showing a practical combination of self-contained patch-plug system, dimmer and switchboard arrangement for a moderate-sized stage. Built for St. Francis Xaviers', Newark, N. J.

It provides 10 dim and 6 non-dim feeder circuits, wired to a total of 64 fused female outlets. The 52 outgoing load circuits may, through the use of patch cords, be connected to any of the female outlets, in groups of four, thereby combining certain lights together on a dimmer for ease of control and better utilization of the dimmer capacity. Measurements overall: 78" long, 72" high, 25½" deep.

Selector circuit breaker type switches may be used instead of fuses, providing individual circuit switch control, even though grouped with other circuits on the same dimmer.

WIRING DIAGRAM

Kliegboard for St. Francis Xavier's



SPECIFICATIONS

STAGE CONTROLS

1 200-amp., 3-pole, stage main switch
10 4000-watt Autotransformer dimmers
2 Master handles
10 40-amp. circuit breakers for dimmers
7 40-amp. circuit breakers for no-dim circuits
17 Pilot lights
64 15-amp. fuses for branch circuit protection
1 Female patch panel with 64 outlets
1 Male patch panel for 52 load circuits

HOUSE CONTROLS

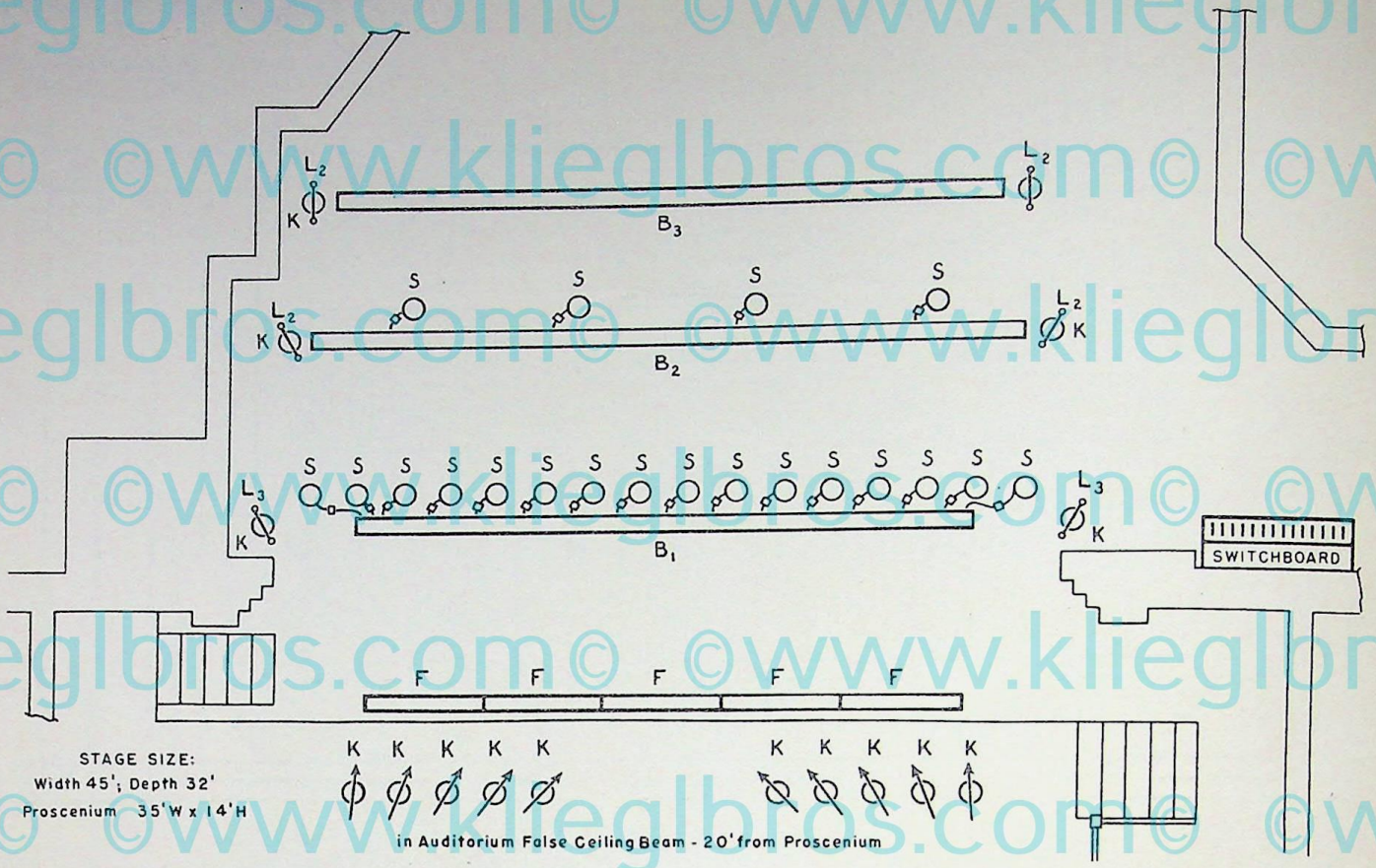
1 60-amp. 3-pole, house main circuit breaker
2 4000-watt Autotransformer dimmers on one handle
2 40-amp. circuit breakers for dimmers
1 20-amp. circuit breaker for non-dim circuit
9 15-amp. fuses for branch circuit protection

CONSTANTS

10 15-amp. circuit breakers
1 Switchboard trough light and receptacle

STAGE LIGHTING PLAN

for St. Francis Xavier's



LIGHTING EQUIPMENT SCHEDULE

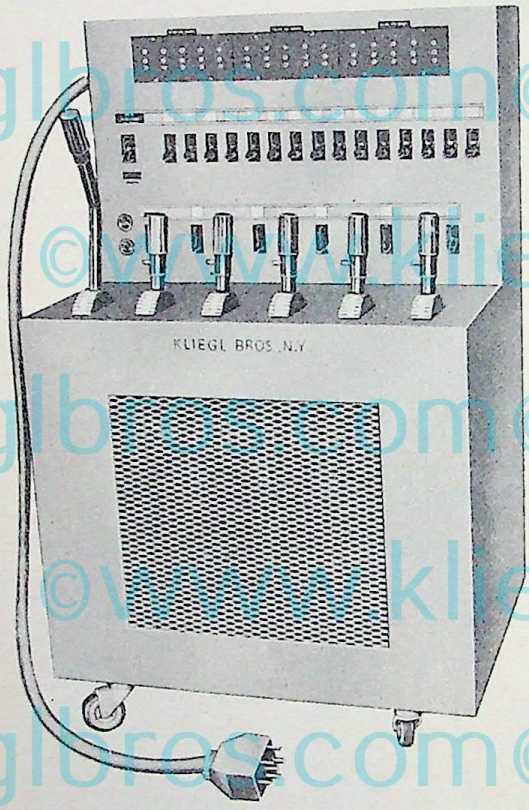
SYMBOL	ITEM	No. REQ'D.
K	No. 1365 500-watt Klieglight	10
F	No. 832 Disappearing Footlights, 5-ft. long, 75-watt lamps; red, white and blue color circuits	5
B 1	No. 610 Borderlight, 26-ft. long; 100-watt lamps; red, white and blue color circuits, wired on six alternate circuits; sixteen No. 955G spotlight outlets on eight circuits in pairs	1
B 2	No. 610 Borderlight, 30 ft. long; 100-watt lamps; red, white and blue color circuits, wired on six alternate circuits; four No. 955G spotlight outlets on two circuits	1
B 3	No. 610 Borderlight, 28-ft. long; 100-watt lamps; red, white and blue color circuits, wired on six alternate circuits	1
S	No. 43N6 500-watt Fresnel spotlights	20
L 3	No. N 6 Three-step Kliegladder with four No. 955G spotlight outlets wired on two circuits from load end box on ladder	2
L 2	No. N 6 Three-step Kliegladder with three No. 955G spotlight outlets wired on two circuits from load end box on ladder	4

Portable Type . . . KLIEGBOARDS

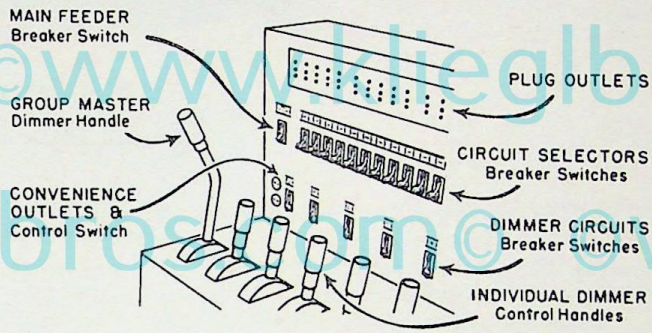
PORTABLE type Kliegboards are mobile units on roller casters . . . dimmer distribution boards that may easily be moved about to any desired location. Wholly detachable, they are provided with pin-plug receptacles for load connections and supplied with a six-foot-length flexible feeder cable wired to a heavy-duty plug for service connections. A cable clamp fastened to the enclosure eliminates the possibility of strain on terminal connections. Fully equipped with individual circuit control switches, dimming facilities and stage plug outlets, they offer the greatest possible flexibility. Load connections may readily be made or broken, and a considerable number of lighting circuits may be dimmer serviced to suit requirements.

Equipment is grounded through its service connections and absolutely safe to handle. They are made in various modified forms as may be needed, and are excellent for the "work shop" type of operations in theatres, schools, television studios and elsewhere. They are adaptable as well for professional or semi-professional requirements, and suitable for road companies to supplement permanently-installed equipment. They are also serviceable for travelling exhibits, fashion shows, banquet or ball rooms, or advertising displays.

DESIGN DP-1
Portable Kliegboard with Dimmers

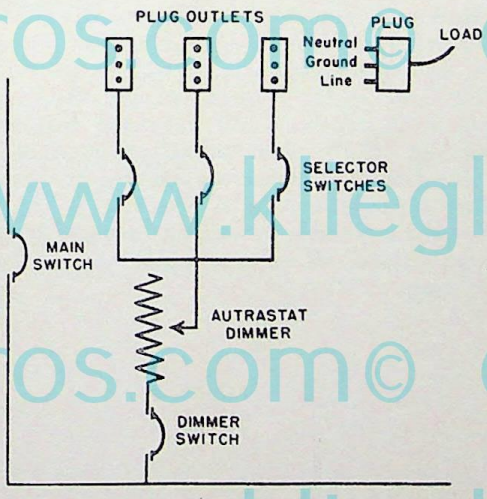


Model shown is a 60-ampere capacity portable Kliegboard for 3-phase A.C. service. It has fifteen load receptacles, at top of board, each rated for 20-amperes, accommodating a corresponding pin connector, thus providing for a number of branch circuits with dimming facilities. Two non-dim line voltage convenience outlets for attachment plugs are also provided on left side of board.



Five 4000-watt autrastat interlocking dimmers, encased in the ventilated base section, have individual and master control handles. Each dimmer services three load outlets through individual selector switches.

All switches are silent automatic circuit breaker types,

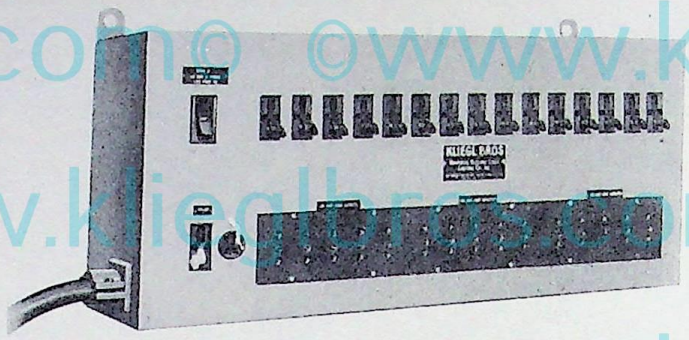


Schematic of Branch-Circuit Wiring

eliminating need for fuses. Main switch, 60-ampere 3-pole, is useful for black-outs as well as for primary service control. Dimmer switches are 40-ampere single pole, one in each of the five dimmer circuits. Selector switches are 20-ampere single pole, one in series with each of the fifteen load receptacles. A 15-ampere single pole switch controls the convenience outlets. Card holders are provided for identification of the switches and branch circuits.

A 60-ampere 4-pole-plus-ground-polarized plug is attached to the extending flexible cable for service line connections. Equipment is grounded throughout, including sheet-metal enclosure, with grounding conductor extending through service connection.

Exterior metal surfaces are finished in grey. The complete unit assembly is attractive in appearance, compact, transportable and very serviceable in design. Measurements overall: 32″ long, 52″ high, 25½″ deep.



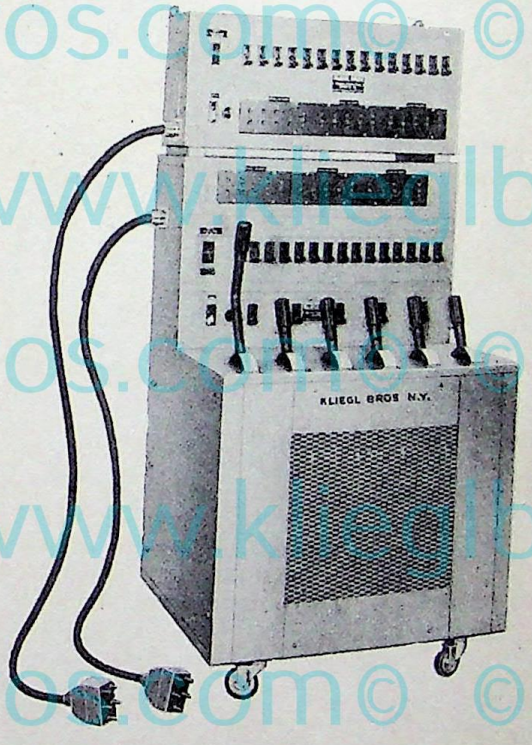
DESIGN NDP-1

Non-dim Portable Kliegboard

NON-DIM portable Kliegboards are companion units for the portable dimmer type Kliegboards previously described. They provide facilities for additional line-voltage branch-circuit distribution requirements. Normally they are set on top of the dimmer distribution board, but may also be mounted on a wall and used independently as a separate self-contained unit.

They are equipped with a main feeder switch and a number of selector switches, each controlling one branch outlet with pin-plug receptacle for load connections. They are also provided with a flexible feeder cable extension and heavy duty plug for service line connections.

Unit shown is a non-dim portable type Kliegboard with fifteen 20-ampere branch outlets and breaker type selector switches; also a convenience outlet with switch for service of a pilot light or for floor lamps and the like. Main switch is a 60-ampere 3-pole magnetic breaker type, corresponding to the total operating capacity of the board. Sheet-metal enclosure is bonded to ground. A heavy-duty 60-ampere plug is attached to the flexible cable. Ground conductor is carried through the plug to the service ground. Measurements overall: 36″ long, 15″ high, 10″ deep.



Illustrating assembled combination of Kliegboards, types DP-1 and NDP-1, with non-dim control board mounted on top of the dimmer distribution board . . . providing convenient control of both variable and constant voltage circuits.

Travelling Type . . . KLIEGBOARDS

TRAVELLING type Kliegboards are in the form of a conventional theatrical road box. They are principally of service to travelling shows and exhibitions where frequent and long-distance transportation of the equipment is an important consideration.

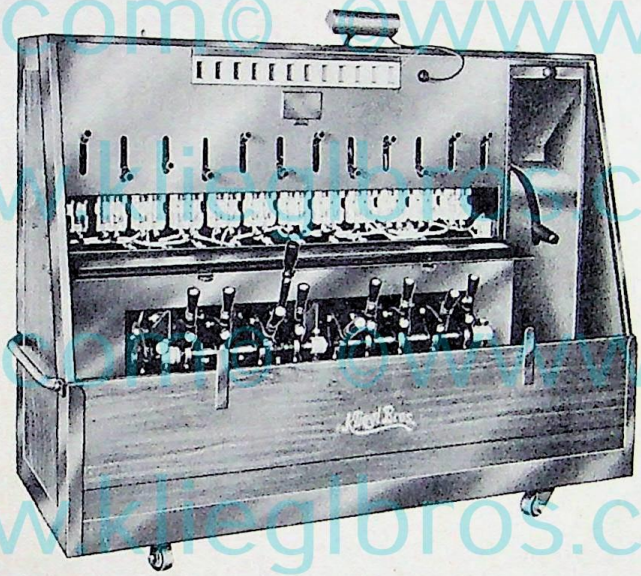
They provide in a conveniently assembled unit all the necessary control equipment for operation of footlights, borderlights, spotlights and other stage lighting devices. They are also used as an auxiliary to a permanent but inadequate stage lighting installation.

Built-in a trunk-like box, with removable front, and lined with sheet-metal, it contains all required switches, dimmers, plugging receptacles, fuses and related equipment, completely assembled and wired within the casing. The unit is mounted on roller casters for easy transport.

Flexible cables and plugs are provided for main feeder and service extensions. All "live" electrical parts are completely covered, with control handles protruding as shown. Each circuit is controlled by a switch with cutout fused to proper capacity, and with plugging pockets or pin-plug connectors as determined by the current carrying capacity of the circuit.

DESIGN RB-1

Travelling Kliegboard



Unit illustrated has a bank of ten resistance-type interlocking dimmers with master handle; fused main switch and twelve branch-feeder switches, each connected to a fused 2-wire plug outlet. Detachable light fixture provides for local illumination when board is in operation. Measurements overall: 72" long, 56" high, 30" deep.

Electronic Type*. . . KLIEGBOARDS

*Patented

ELECTRONIC type Kliegboards embody the principles of electronic circuits for control of stage lighting equipment. These designs are in the process of development and soon to be available. They incorporate the simplicity and efficiency of modern electronics in conformance with the needs of theatrical requirements.

Fundamentally, they differ from customary methods of control in that thyratron valves are used to vary the intensity of the light output instead of resistance or induction type dimmers. The electronic system permits primary control with small current values at low voltages, which effect economies in space and materials, simplify operations, and institute other benefits.

Dimming regulation is smooth from full brightness to black-outs, and operations are silent. The load is equally balanced on all phases, and the capacity range is limited only by the number of unit elements provided.

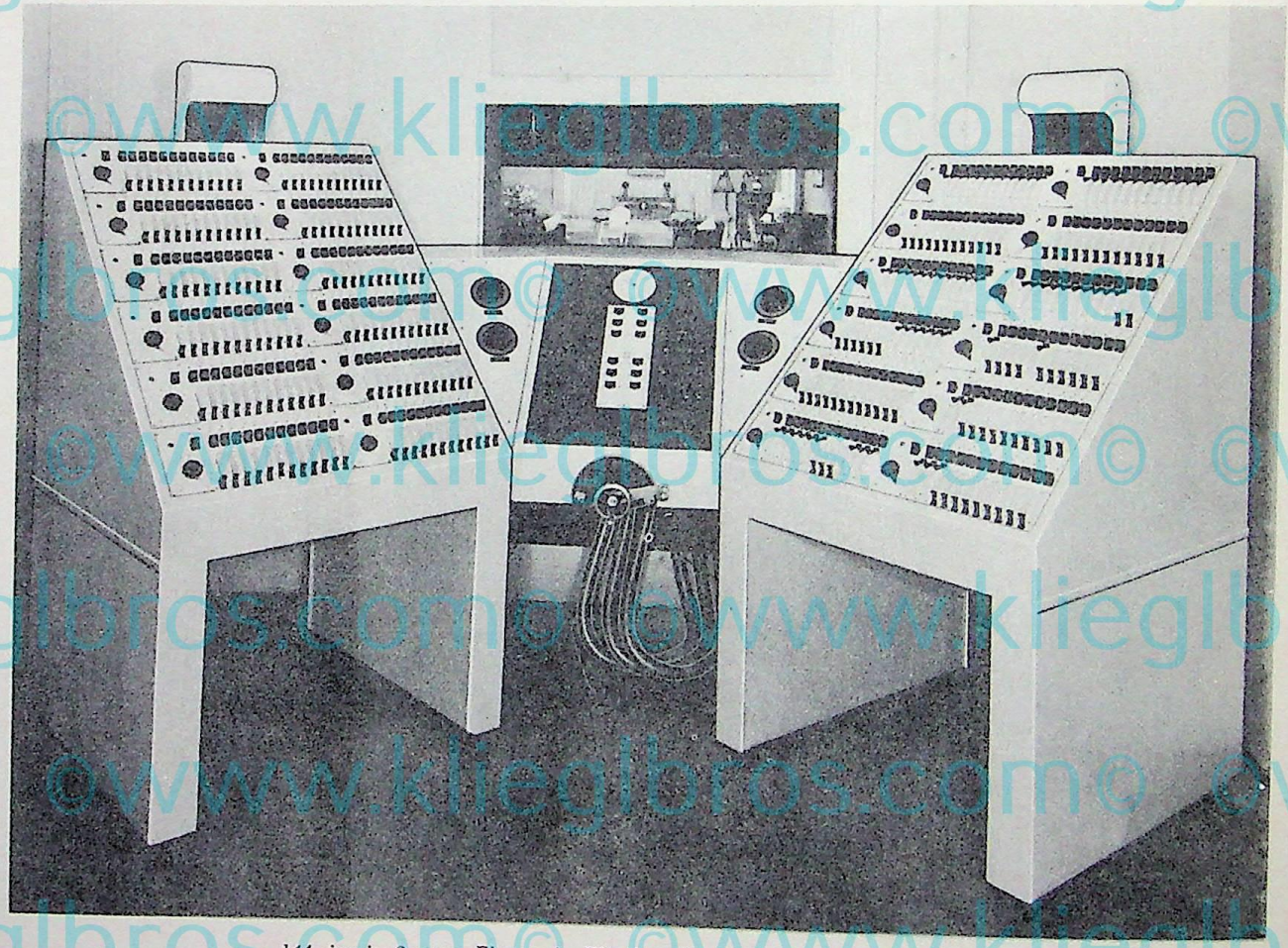
They offer maximum flexibility with the utmost ease of operation, in a compact arrangement with all controls readily accessible to the operator.

Elements may be electrically interlocked for proportionate dimming. Master and sub-master controls are furnished so that changes in lighting effects can be accomplished by a single operation. Lighting for subsequent scenes may be pre-set in advance, made ready for changeover by a transfer control when required.

All the advantages of remote control are obtained. The small space occupied by the control unit permits its installation in a position where operator may fully observe the effects created.

Since its few moving parts are practically undeteriorating, little if any maintenance is required, except for the occasional simple replacement of an electronic tube, and the tubes have a relatively long life.

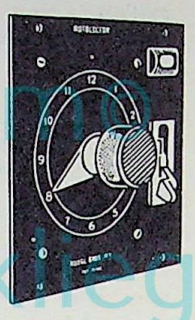
Electronic type Kliegboards provide compact, efficient, modern control facilities with all the advantages of other dimmer systems plus many exclusive features. Further details are furnished on request.



144-circuit, 2-scene Electronic Kliegboard with slow-motion change-over

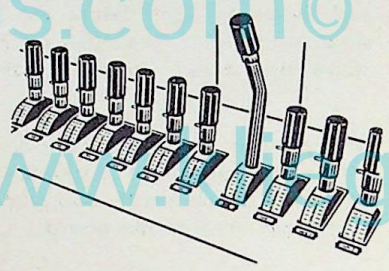
DESIGN ELEMENTS

Details are here given on the principal elements used in the design and assembly of Kliegboards. Since Kliegboards are customarily built to meet specific requirements, the elements are naturally subject to many variations. The following information is therefore intended solely as a useful cross reference when considering structural parts for functional needs.



Rotolector Units for selective servicing of a single 20-ampere outlet from a number of different supply sources, are available with 12, 20, or 24 feeder contactors, permitting a wide range of selectivity for each outlet when banked in the Kliegboard in any desired quantity corresponding to the number of outlets to be controlled. A magnetic breaker switch and pilot light are included as an integral part of the unit.

Dimmer Banks for regulating the intensity of the lighting, are customarily enclosed in the ventilated base section of the Kliegboard, are generally autotransformer type units of 4000-, 5500- or 8000-watt rated capacity. Round plate resistance type dimmers can be used if an AC service supply is not available. The dimmers are grouped in banks as required for regulating the stage and house lights; and provided with both individual and master control handles.

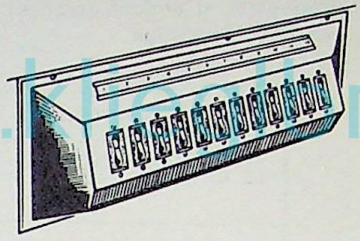


Main Feeder Switches control the power supply to all circuits serviced by the Kliegboard. Generally there are two independent main feeders, one for the stage lights, the other for the house and utility lights.

Stage Main Switch for heavy duty boards is usually a 200-ampere, three pole, fused, knife switch; protectively enclosed with control handle protruding. For boards of 60-amperes maximum rating, a magnetic circuit breaker type switch is supplied. The stage main is used for instantaneous "black-outs" of the stage as well as a main service switch, and may be locked in its "off" position when the stage is not in use.

House Main Switch is normally located at some other location remote from the board, but is conveniently controlled by a push-button or toggle switch mounted on the Kliegboard. The particular arrangements vary with different installations and requirements.

Branch Feeder Switches for controlling the distribution of power supply to various subordinate circuits, are standard magnetic circuit breaker type switches of suitable rating, which automatically disconnect the circuit in the event of an overload.

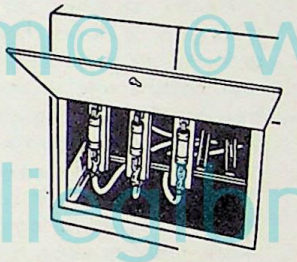


Master Switches of 40- or 60-ampere rating provide for collective control of several branch feeders as normally used for color grouping.

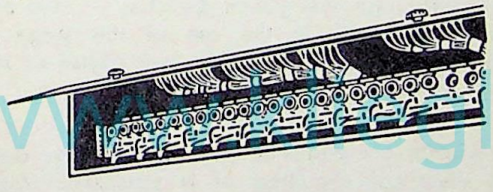
Submaster Switches of 20-ampere rating provide for separate control of each branch feeder servicing several lighting circuits.

Selector Switches provide for independent control of individual lighting circuits servicing the stage or other lighting equipment. They are standard magnetic circuit breaker type switches of 15- and 20-ampere capacity, depending on load requirements.

Main Fuses of 100- or 200-ampere rating, are regularly the standard knife-blade type, mounted in an enclosed compartment, usually in the base section of the Kliegboard with a hinged door providing easy access to the fuses for inspection or replacement.



Branch Fuses are sometimes provided as an added secondary protection for subdivided branch circuits fed from the breaker type selector switches — such as subordinate circuits of borderlights, front lights, house lights and utility lights.

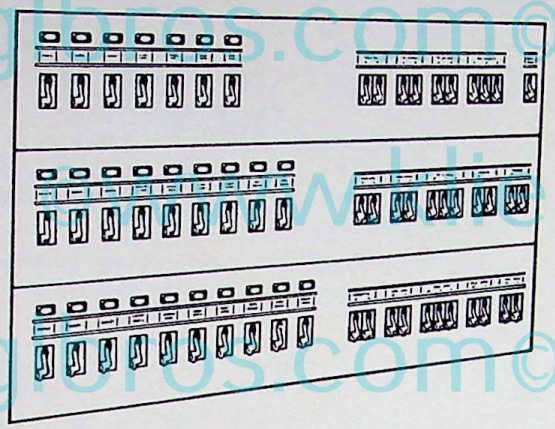


In such instances wherein fuses are used, they are of the "fustat" type, so that they can be replaced, when necessary, only with others of the same rating, thus assuring proper protection from overloading.

The assembly of fuse blocks or cut-out bases, as may be required, are mounted in a recessed compartment of the board, with a hinged door permitting immediate access to the fuses for inspection or replacement.

Terminal Strips are incorporated in Kliegboards designed for permanent installations. Normally they are located inside the enclosure at the top of the board, with neighboring portions of enclosure made removable, thus facilitating easy access to the feeder terminals when making the electrical connections for outgoing circuits.

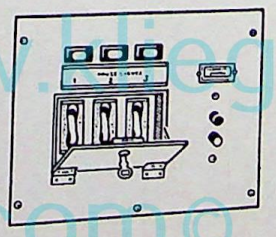
Stage Lights have various selective switching provisions for individual, group and total control of the diversified connected lighting equipment, permitting easy adaptation of the stage lighting facilities to the requirements of the production, a typical arrangement is shown in the accompanying illustration.



Master switches, of 40-ampere rated capacity, are arranged in three horizontal rows left of center, and grouped for three colors: blue, red and white—top, center and bottom row respectively. They are the primary controls for the stage lighting equipment, servicing the selector or branch-circuit switches, also providing for color group control. The arrangement includes both variable and constant voltage circuit sources; and pilot lights above the master switches, in corresponding colors of blue, red and white, indicate when the master circuits are energized.

Selector switches, right of center, are 15-ampere rated capacity, and are arranged in three horizontal rows in corresponding positions to master switches, in color groups of blue, red and white. They are supplementary or branch circuit switches providing individual control of each branch circuit fed through the master switches — thus affording additional selectivity in the use of the stage lighting equipment normally to right, left and center of stage, in addition to color selection.

House Lights are controlled in various ways depending on the electrical circuiting of a particular installation. Here shown is an example of how three circuits for the lighting of the auditorium may be handled.

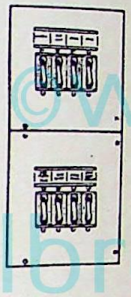


Three selector switches, 40-ampere breaker type, are recessed in a compartment with a hinged door and key lock to prevent unauthorized operation.

The house load is distributed on three dimmers with master handle for group dimming. Pilot lights indicate when circuits are energized. House dimmer circuits are connected to a transfer switch installed at another location, and house circuits are there fused.

Push-button type switch provides for emergency control of remotely located transfer switch, which by-passes the dimmers and connects house lights to an emergency feed with full brightness of illumination. Similar controls are located near front entrance and in projection room, permitting instant transfer of house lights from any one of several locations should the need arise.

Service Lights are usually controlled by 15-ampere circuit breaker switches grouped together in a panel on the board somewhat similar in arrangement to the grouping here shown.



They provide switching facilities for miscellaneous convenience outlets, utility lights, and other electrical devices, independently serviced but correlated in some manner to stage operations.

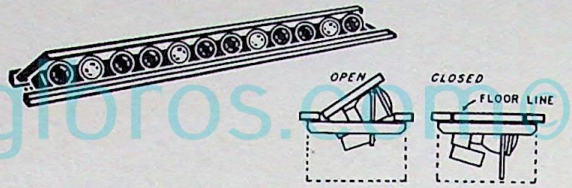
On undimmed constant voltage circuits they are fed ahead of stage main switch—such items as light fixture for the board, stage work lights, orchestra pit receptacles, stage prop areas, corridors, stairways and the like.

Board Light to provide local illumination for board operations, a trough light is affixed to the top of the board, extending its full length, and controlled by a circuit breaker switch mounted on the board.

Reserve Section for certain auxiliary equipment can be suitably provided, as required, so that these devices may later be installed by others to harmonize with the general design of the board—auxiliaries such as clock, fire alarm, telephone, pneumatic controls, signalling system, and the like.

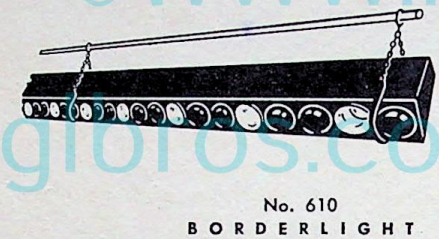
LIGHTING EQUIPMENT

Illustrating the various forms of lighting devices listed in equipment schedules under the several stage lighting plans shown in this publication. For further details on these items, refer to our catalog No. 54.



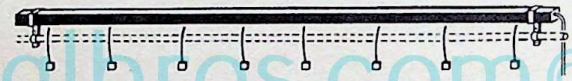
No. 832
FOOTLIGHT

No. 43N6
FRESNEL SPOTLIGHT



No. 610
BORDERLIGHT

No. 1365
KLIEGLIGHT

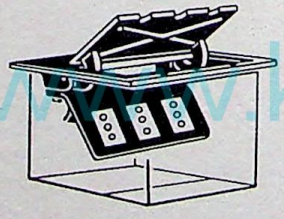


No. 619
CONNECTOR STRIP

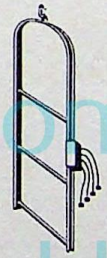
No. 1155
FLOODLIGHT

No. 2165
ANGULAR DOWNLIGHT

No. 533
FLOODLIGHT.



No. 353/955G
STAGE POCKET



No. N-6
KLIEGLADDER

STAGE LIGHTING . . . CATALOG 54

Information on the diversified types of equipment, accessories, and devices used for lighting theatrical presentations is contained in our catalog No. 54. Comprehensive in scope, sufficiently detailed, well illustrated and conveniently indexed . . . is is a valuable reference source for anyone interested in this special field of illumination. If you are without a copy, it will be forwarded to you upon request.

KLIEGL BROS

UNIVERSAL ELECTRIC STAGE LIGHTING CO., INC.

ESTABLISHED 1896

321 WEST 50th STREET

NEW YORK 19, N.Y.

ORIGINATORS and MANUFACTURERS of "KLIEGLIGHTS"