Film-Tech

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INSTRUCTION MANUAL

SPA-5A AUTOMATION

Issue 2-87

STRONG
INTERNATIONAL

CONTENTS

THE STRONG SPA-5A AUTOMATION SYSTEM utilizes solid state timing circuits to control virtually any function in the modern projection booth. The basic system controls the following functions:

a) Projector - On/Off
b) Lamphouse - On/Off
c) Changeover - Open/Close
d) Non-Sync Sound - On/Off
e) Exciter Lamp - On/Off
f) House Light Control - Bright/Dim

THE SYSTEM includes an intermission stop programmable feature which allows the user to program a stop during a long or double feature presentation. Another standard feature of the SPA-5A is built-in monophonic to stereo latching type switching logic, which is programmable on the automation control panel. The basic system is supplied with a failsafe switch with film split detection and a double cue sensor.

THE BASIC SYSTEM also incorporates three additional functions as standard features:

a) Automatic house lights UP in the event of a film break
b) Show status indication and automatic return to status after repair of a break
c) Logic circuit to defeat film break alarm during a normal system shutdown

THE SPA-5A is expandable either at the factory or in the field to accommodate desired presentation formats. The following options can be incorporated in the SPA-5A regardless of the system configuration (wall or console mounted).

SD-2 Dimmer (optional)

This unit provides two complete 2000 watt circuits for control of both house and stage lights. The control module and manual controls for the solid state dimmer are mounted in the SPA-5A, and the power modules may be located near the booth power distribution panel to minimize high voltage wiring. The SD-2 includes built-in logic to allow for a half level on the house lights during previews and credits. The dimmer circuits can be expanded in increments of 2000 watts by installing additional SPM power modules.

SD-1 Dimmer (optional)

This unit provides one 2000 watt circuit for control of house lights. The control module and manual controls mount in the SPA-5A, and the power module may be located near the booth power distribution panel to minimize high voltage wiring. The SD-1 also includes half level logic for the house lights during previews and credits. The dimmer is expandable in increments of 2000 watts by installing additional SPM power modules.

Interlock Module (optional)

The interlock module permits interlocking two or more machines for syncronous operation. This module plugs directly into the SPA-5A card rack in those machines where interlocking is desired. One module is required for each interlocked machine, and three additional wires must be interconnected between interlocked machines. The SYNC switch on the systems control panel must be programmed on those systems requiring syncronous operation.

NOTE: The interlock module socket (803) must have either an interlock module or a jumper card installed for correct automation operation.

Interlocked machines **must** be equipped with synchronous drive motors.

Format Module (optional)

This module provides automatic switching logic for lens changers (or turrets) and masking motors for changing screen formats (flat/scope). A unique feature of this module is that it returns the lens and masking to the "show start" position at the end of a feature when FORMAT CHANGE is programmed. The time allocated for a format change is programmable on the 841 circuit board. Format change occurs after the system senses the first outboard cue if FORMAT CHANGE is programmed on the system control panel.
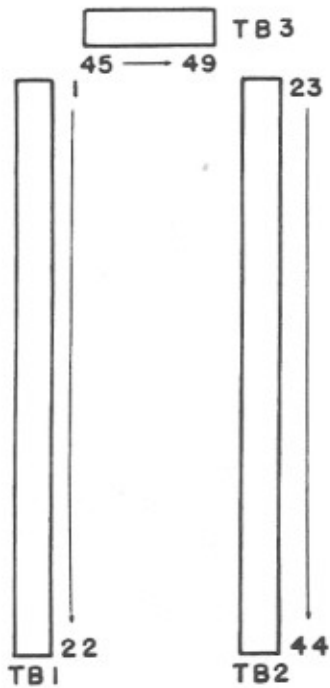
Curtain Module (optional)

This module is used in the SPA-5A automation to control the automatic opening and closing of the curtains. It also includes a "curtain call" feature which highlights the main feature by closing the curtains at the end of the previews (sensing an outboard cue) and then re-opening them for the main feature. The "curtain call" feature will activate only if so programmed on the system control panel.

Deluxe Stereo Module (optional)

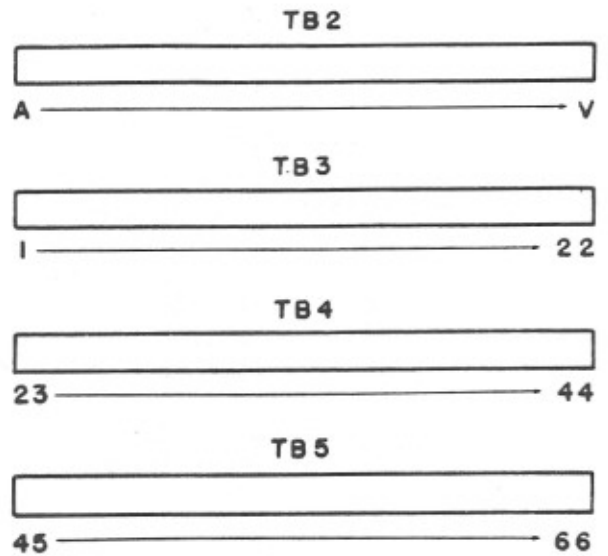The Deluxe Stereo Module is used with those stereo systems which require pulsed type logic for switching, such as the Dolby CP-55 or CP-200. This module works in conjunction with the built-in SPA-5A switching logic, but provides pulsed type logic to the stereo processor. Stereo switching must be programmed on the automation control panel for switching to stereo upon sensing the first outboard cue.

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SPA-5A TERMINAL BOARD LOCATIONS

TB3
45 → 49

I

22
TB1

23

44
TB2

Wall Mount

TB2
A → V

TB3
I → 22

TB4
23 → 44

TB5
45 → 66

VIP

A

V
TB2

I

22
TB3

23

44
TB4

45

66
TB5

Highlight
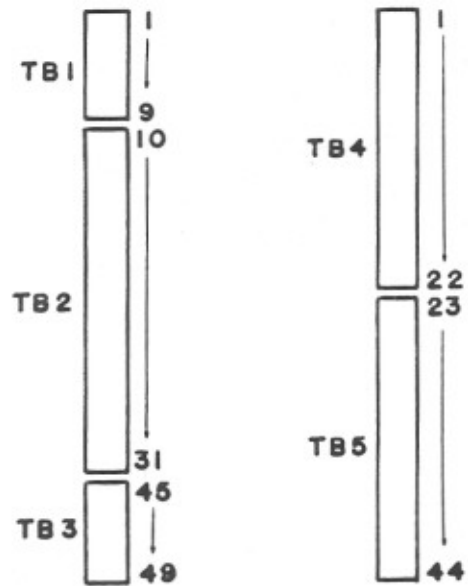
TB1
I
9

TB2
10
31

TB3
45 → 49

TB4
I
22

TB5
23
44
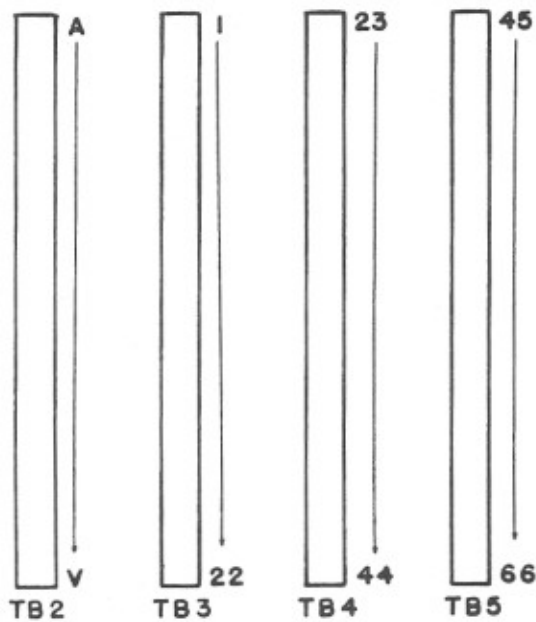
Super Highlight

INSTALLATION

WHEN THE SPA-5A is ordered in the VIP, Highlight, or Super Highlight console, it is delivered factory installed in the unit. Wiring instructions pertinent to the particular systems are included in the Wiring Instruction and Schematic sections of this manual.

The cabinet of the wall mount version of the SPA-5A is designed to be user installed at the particular installation site. It must be securely mounted to the wall at the desired location with user supplied 1/4" lag screws. The location of the wall mount cabinet should be on the operating side of the projector and close to the port for viewing purposes. It is recommended to remove the required electrical knock-outs from the cabinet prior to mounting.

IMPORTANT NOTE

Prior to installing any model SPA-5A, carefully check the following:

1) Remove all circuit boards and inspect to ascertain that all relays are firmly in place. Re-install the circuit boards, seating them firmly into their sockets.

2) Check all relays on the main frame to ascertain that they are firmly seated.

3) Check all Molex plugs on the main frame to ascertain that they are firmly in place.

4) Read the SPA-5A Instruction Manual!

ELECTRICAL CONNECTIONS

TB No.	Connection	TB No.	Connection
1	115 V.AC Phase	28	Failsafe Switch, Nor. Open
2	115 V.AC Neutral	29	Failsafe Switch, Nor. Close
3-7	Dimmer (see "Dimmer")	30	Inboard Cue
8	Zipper Douser, CLOSE	31	Outboard Cue
9	Zipper Douser, Common	32	DM Module
10	Zipper Douser, OPEN	33	DM Module
11	Ballantyne 3017A Douser	34	Remote (+24 V.DC)
12	Ballantyne 3017A Douser	35	Remote (-24 V.DC)
13	Non-Sync Sound, Dry	36	Remote, RUN Light
14	Non-Sync Sound, OFF	37	Remote, STOP Light
15	Non-Sync Sound, ON	38	Remote, Alarm Signal
16	Exciter Switch, Dry	39	Remote, STOP Switch
17	Exciter Switch, ON	40	Remote, START Switch
18	Lamp Switch, Common	41	Remote, Alarm Cancel
19	Lamp Switch, ON	42	Interlock, ALL STOP
20	Projector Switch, 115 V.AC	43	Interlock, ALL START
21	Projector Switch, ON	44	Interlock, P.S. Tie
22	Curtain Switch, CLOSE	45	Stereo Switching, Dry
23	Curtain Switch, Dry	46	Switching, Stereo
24	Curtain Switch, OPEN	47	Switching, Mono
25	Spare (+24 V.DC)	48	Pulse, Dry
26	Spare (-24 V.DC)	49	Pulse, Non-Sync
27	Failsafe Switch, +24 V.	50	Spare

AC POWER CONNECTIONS

THE SPA-5A requires 115 V.AC, single phase, 60 Hertz, 5 Ampere service to operate. This service is factory pre-wired and breaker protected when the SPA-5A is delivered installed in a VIP, Highlight, or Super Highlight console. Wall mounted versions of the SPA-5A require this service run by the installing electrician. As with any type of electrical equipment, a good earth ground should be run to the SPA-5A and connected to the chassis.

If the SPA-5A is used in conjunction with Strong's "SD" series dimmer system, the 115 V.AC feed to the automation must be on the same electrical phase as the lighting circuit or circuits to be controlled.

AUTOMATION LOGIC for the SPA-5A is powered by 24 V.DC, which is derived from the internal power supply.

FORMAT MODULE CONNECTIONS
(Requires Optional Format Module)

The SPA-5A is designed to incorporate an optional Format Module to automate switching operations of lens turrets and masking controls. This function is programmed at the main automation control panel. The system is designed to return the turret and masking to the starting position at the conclusion of each presentation.

Connections to the Format Module are made directly to the module itself, which is mounted to the SPA-5A main frame. For turrets requiring only a switch closure to change direction, only two wires to the turret side of the Format Module on the common and scope terminals, and a jumper between the flat and scope terminals, is required.

Manual override switches for the masking portion of the Format Module are provided should the turret and masking fail to synchronize. The masking motor control connections are self explanatory, and are labeled FLAT, SCOPE, and COMMON.

The length of time allocated for a format change is controlled by a potentiometer on the 841 circuit board. Turning the potentiometer CLOCKWISE increases the amount of time allocated, and turning it COUNTERCLOCKWISE decreases the amount of time. The picture changeover closes during the format change, and reopens upon completion of this timing function.

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While the SPA-5A is designed specifically for use with Strong's "SD" series dimmers, it can also accommodate dimmers manufactured by other suppliers. The pulse duration for dimmer operation is approximately one second; therefore, if using a dimmer requiring a longer pulse, the installation may require a latching relay or a pulse elongation timing circuit. The SPA-5A uses one common leg to control both HOUSE and STAGE lighting control circuitry.

Strong SD-1 Dimmer Connections:

        Term. 4 - to Power Module (-)
        Term. 5 - to Power Module (+)

Strong SD-2 Dimmer Connections:

        Term. 4 - to HOUSE Power Module (-)
        Term. 5 - to HOUSE Power Module (+)
        Term. 6 - to STAGE Power Module (-)
        Term. 7 - to STAGE Power Module (+)

Other Manufacturer's Dimmer Connections:

        Term. 3 - to Dimmer Switch "House Lights Down"
        Term. 4 - to Dimmer Switch Common
        Term. 5 - to Dimmer Switch "Stage Lights Up"
        Term. 6 - to Dimmer Switch "Stage Lights Down"
        Term. 7 - to Dimmer Switch "House Lights Up"

PICTURE CHANGEOVER CONNECTIONS

The SPA-5A incorporates both 115 V.AC pulse and dry contact latching type picture changeover logic. The pulse type logic is used for Simplex, Century, and Christie projectors, while Ballantyne and Norelco projectors utilize latching type logic. Changeover logic must be specified at the time of the original equipment order.

Pulse Type ("Zipper") Changeover Connections:

        SPA-5A Term. 8 - C/O Close (Brown)
        SPA-5A Term. 9 - C/O Neutral (White)
        SPA-5A Term.10 - C/O Open (Black)

Picture Changeover Connections (con't)

Latching Type Changeover Connections:

        SPA-5A Term. 11 - Switch "Common"
        SPA-5A Term. 12 - Switch "Open"

NON-SYNC SOUND SWITCHING CONNECTIONS

The SPA-5A contains switching to automatically switch the non-sync (intermission) music system on and off. This is accomplished by a set of dry contacts on the exciter lamp relay in the automation. The wiring of the automation is such that the non-sync terminals are closed when the exciter lamp is OFF and open when the exciter lamp is ON. The system provides both the "Normally Open" and "Normally Closed" contacts of this circuit which can be used for various sound system requirements. See "Special Sound System Connection" section.

Non-Sync Switching Connections:

        SPA-5A Term. 13 - Non-Sync Switch Common
        SPA-5A Term. 14 - Non-Sync Switch OFF
        SPA-5A Term. 15 - Non-Sync Switch ON

EXCITER SUPPLY SWITCHING CONNECTIONS

The SPA-5A includes circuitry to automatically switch the exciter lamp power supply on and off. This is accomplished by means of the exciter relay which contains a set of dry contacts used for the switching. While the relay contacts conduct sufficient current to permit switching the AC feed to the exciter lamp power supply, it is more advisable to switch the positive (+) DC output of the supply to the exciter lamp. The exciter relay coil is energized when the DOUSER OPEN signal is detected, and is de-energized when the DOUSER CLOSE signal is detected at the end of the presentation.

Exciter Switching Connections:

> SPA-5A Term. 16 - Positive (+) from Exciter Power Supply
> SPA-5A Term. 17 - Positive (+) Exciter Lamp Terminal

LAMPHOUSE CONNECTIONS

The SPA-5A supplies a set of dry contacts for use with the lamphouse automatic ignition circuit. These relay contacts close when the START switch is acutated, and remain closed until one of the following occurs:

a) The failsafe drops out at the completion of the presentation
b) The system senses an inboard cue and INTERMISSION STOP is programmed
c) The failsafe drops out because of a film break or split

Lamphouse Connections:

> SPA-5A Term. 18 - Auto Ignite Switch Common
> SPA-5A Term. 19 - Auto Ignite Switch "Normally Open"

PROJECTOR MOTOR CONNECTIONS

The SPA-5A provides a set of dry contacts to automate projector operation. The contacts close when the START switch is actuated, and remain closed until one of the following occurs:

a) The failsafe drops out at the end of the presentation
b) The system senses an inboard cue and INTERMISSION STOP is programmed
c) The failsafe drops out because of a film break or split

Projector Motor Connections:

> SPA-5A Term. 20 - Projector Motor Circuit Breaker
> SPA-5A Term. 21 - Projector Motor, AC Phase ("Hot")

CURTAIN CONTROL CONNECTIONS
(Requires Optional 804 CM Module)

The SPA-5A is designed to automate control of curtains with the addition of the optional 804 Curtain Module to the system. The 804 module supplies a timed CLOSE and OPEN pulse for curtain operation and also incorporates a "Curtain Call" feature used to highlight the opening of the main feature. This function must be so programmed at the main control panel of the SPA-5A. When "Curtain Call" is programmed, the curtain will close when the automation senses the first outboard cue, and then re-open when the timing circuit on the 804 module times out.

The curtains open when the show first goes on screen, approximately seven seconds after the START switch is actuated. They will close and re-open if the "Curtain Call" feature is programmed. The curtain will begin closing when the automation senses an inboard (end of show) cue. The timing of the "D" side of the 301 module can be adjusted to close the curtains simultaneously with the douser, thus avoiding a white screen.

Curtain Control Connections:

    SPA-5A Term. 22 - Curtain Motor Switch CLOSE
    SPA-5A Term. 23 - Curtain Motor Switch Common
    SPA-5A Term. 24 - Curtain Motor Switch OPEN

FAILSAFE/CUE DETECTOR CONNECTIONS

The Failsafe/Cue Detector assembly mounts below the soundhead, and is required to sense film runout, breaks and splits, and cueing tapes.

Failsafe/Cue Detector Connections:

    SPA-5A Term. 27 - Failsafe/C.D. Common (White)
    SPA-5A Term. 28 - Failsafe/C.D. Norm. Closed (Black)
    SPA-5A Term. 29 - Failsafe/C.D. Norm. Open (Red)
    SPA-5A Term. 30 - Failsafe/C.D. Inboard (Blue)
    SPA-5A Term. 31 - Failsafe/C.D. Outboard (Orange)

SPAR REMOTE CONNECTIONS

The SPA-5A automation may be used with the optional Strong SPAR Remote Status System to indicate the operational status of the individual booths. While the SPAR Remote is designed to provide only indicated status of the system, the SPA-5A is wired to permit remote START and STOP functions if so desired. Field wiring of the standard Strong SPAR requires five wires per booth. If remote START and STOP capability is desired, an additional three wires are required.

Remote Status Connection:

```
SPA-5A Term. 35 - SPAR Negative
SPA-5A Term. 36 - SPAR START L.E.D.
SPA-5A Term. 37 - SPAR STOP L.E.D.
SPA-5A Term. 38 - SPAR Alarm L.E.D.
SPA-5A Term. 41 - SPAR Alarm Cancel Switch
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For Remote START and STOP

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SPA-5A Term. 34 - SPAR Positive
SPA-5A Term. 39 - SPAR STOP Switch
SPA-5A Term. 40 - SPAR START Switch
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PROJECTION INTERLOCK SYSTEM CONNECTIONS
(Requires Optional 803 IM Module)

The SPA-5A is designed to allow operation of several machines projecting the same print in different auditoriums. To utilize this feature, each system that is to be interlocked must contain an optional 803 IM Interlock Module. If this feature is not used at the time of the initial installation, it is still advisable to run an additional three wires between machines in the event the interlock feature is added in the future.

Interlock Connections:

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SPA-5A Term. 42 - Interconnect between all Interlocked Units
SPA-5A Term. 43 - Interconnect between all Interlocked Units
SPA-5A Term. 44 - Interconnect between all Interlocked Units
```

Note: Interlocked units will operate independently unless the INTERLOCK feature is programmed at each main control panel of the interlocked units.

STEREO SWITCHING CONNECTIONS
(Latching Type)

The standard SPA-5A automation incorporates a set of dry contacts to automatically switch from monophonic to stereo if so programmed on the main control panel. This change will occur when the automation senses the first outboard cue. At the end of the presentation, the automation automatically returns the system to monophonic.

The latched stereo switching circuitry is designed for use with EPRAD, Kintech, Smart, and Ultra stereo sound processors. With slight modifications, it can also be used with Dolby CP-50 and CP-100 systems. It is recommended to consult the installation instructions supplied with the individual sound processor for the correct connections to the SPA-5A. Refer also to the "Special Stereo Connections" section of this manual.

Stereo Switching Connections, Latched:

    SPA-5A Term. 45 - Switch Common
    SPA-5A Term. 46 - Switch STEREO
    SPA-5A Term. 47 - Switch MONO

STEREO SWITCHING CONNECTIONS
(Pulse Type - Requires Optional DSM Module)

The SPA-5A is designed to incorporate an optional stereo switching module which provides pulsed type switching logic to the stereo processor. This type of logic is required for operation of the Dolby CP-55 and CP-200 processors. Switching is accomplished as with the latching type circuit, only the closure is limited to one second.

Stereo Switching Connections, Pulsed:

    SPA-5A Term. 45 - Switch Common
    SPA-5A Term. 49 - Switch NON-SYNC, Pulse
    SPA-5A Term. 46 - Switch STEREO, Pulse
    SPA-5A Term. 47 - Switch MONO, Pulse

DESCRIPTION OF SYSTEM CONTROLS

THE SPA-5A incorporates several control switches, both standard and optional, depending on the configuration ordered. These controls are used for Program Selection, Automatic Operation, Manual Operation, and Program Status Indication.

POWER: Illuminated when energized; provides AC power to system. Light indicates DC power.

START: Illuminated when film is correctly threaded through failsafe switch. Pressing initiates the automation sequence.

STOP: Illuminated when failsafe switch arms are down; pressing stops automation sequence.

F.S. DEFEAT: Illuminated when energized. To be used **only** for testing purposes; when used, the film break detection circuit is defeated and the projector and lamphouse will **not** shut down in the event of a film break.

PREVIEW: Illuminated between show start and sensing first outboard cue.

FEATURE: Illuminated after sensing first outboard cue and prior to sensing second outboard cue (Main Feature).

CREDITS: Illuminated after sensing second outboard cue and prior to sensing inboard cue.

NOTE: Pressing the illuminated switch after repairing a film break will restore the automation sequence to the mode it was in prior to the break.

MANUAL CONTROL SWITCHES

THE SPA-5A CONTROL PANEL includes a set of manual operation switches which override the automation in the event of an automation failure, or for use for special screening, testing, or machine maintenance (running sound loops, bulb alignment, etc.).

PROJ.: Provides manual operation of projector motor when pressed. Press again to reset (turn off motor).

LAMP: Provides manual ignition of lamphouse. Press to reset (extinguish lamphouse). NOTE: This switch is panel mounted on wall mount units only. For manual lamphouse operation with Highlight or VIP consoles, use the lamphouse MODE switch (MAN.) and LAMP switch (ON-OFF).

EXC.: Provides manual operation of exciter lamp. Press to reset (extinguish lamp).

C.O. OPEN: Provides manual opening of picture changeover douser.

C.O. CLOSE: Provides manual closing of picture changeover douser.

NOTE: When used with "Zipper" type changeovers (Simplex, Century, Christie), DO NOT depress switch for more than (1) second.

I.B. CUE: Provides a manual inboard cue.

O.B. CUE: Provides a manual outboard cue.

FULL DIM: Provides manual operation of lights to full dim.

FULL BRIGHT: Provides manual operation of lights to full bright.

PROGRAM SWITCH SETTINGS

NON-ROUTINE OPERATIONS required for individual operations or presentation must be programmed into the automation system at the control panel prior to the opening of the presentation.

INTER. STOP: Illuminated when energized; extinguishes lamphouse and stops projector after end of show times out.

STEREO: Illuminated when energized; provides mono to stereo switching on first outboard cue. <u>NOTE:</u> Latching type logic is standard. An optional DSM module is required for pulse type logic.

CURTAIN CALL: Illuminated when energized; closes and re-opens curtains on first outboard cue. <u>NOTE:</u> Optional CM module required.

FORMAT CHANGE: Illuminated when energized; changes lens turret and masking on first outboard cue. <u>NOTE:</u> Optional FM module required.

SPECIAL MANUAL SWITCHES

FLAT: Provides manual operation of masking motor to FLAT position. Requires optional FM module.

SCOPE: Provides manual operation of masking motor to SCOPE position. Requires optional FM module.

CURTAIN OPEN: Provides manual operation of curtain motor to OPEN position. Requires optional CM module.

CURTAIN CLOSE: Provides manual operation of curtain motor to CLOSE position. Requires optional CM module.

HALF DIM: Provides manual control of Strong "SD" series dimmer to half level in DOWN position. "SD" series dimmer required.

HALF BRIGHT: Provides manual control of Strong "SD" series dimmer to half level in UP position. "SD" series dimmer required.

AUTOMATION CUEING

THE AUTOMATION is cued by means of foil tape applied to the film to initiate a desired program change sequence. The length of the tape should be approximately six inches in length, and the tape must be free of oil and other contaminates. The basic SPA-5A is designed to respond to both inboard (non-soundtrack edge of film) and outboard (soundtrack edge of film) cues. The results of the system's sensing the cue varies with system options and whether or not they are programmed at the system control panel.

THE FOLLOWING ACTIONS will occur when the individual cues are sensed:

First Outboard Cue

a) Curtains will close if "Curtain Call" is programmed (CM module required)
b) Lights will switch to FULL DIM (with "SD" series dimmer)
c) Format will change if "Format Change" is programmed (FM module required)
d) Stereo system will switch if "Stereo" is programmed
e) Curtains will re-open if "Curtain Call" is programmed (CM module required)

Second Outboard Cue

a) Lights will switch to half level (with "SD" series dimmer)

Inboard Cue

a) Initiates automation "End of Show" timing circuit
b) Curtains begin closing (CM module required)
c) Lights come FULL UP
d) When timer times out, the following occurs:
   - Picture changeover closes
   - Stereo switches to non-sync
   - Format returns to START position if "Format Change" programmed

Film Run-Out

a) Projector motor stops
b) Lamphouse extinguishes

NOTES:

a) If "Intermission Stop" is programmed, projector and lamphouse shut off by automation timer.
b) See "Interlock Operation" section for special inboard cue function.

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INTERLOCK (SYNCHRONOUS) OPERATION

THE SPA-5A AUTOMATION SYSTEM is designed for multiple system inter-locking, meaning a pre-determined number of machines can run the same print simul-taneously, provided that each machine contains the IM Interlock Module, and is equipped with a synchronous drive motor. With the IM module installed and intercon-nected, the interlocked machines will operate in a synchronous mode by pressing the SYNC switch at each unit. This mode is indicated by an illuminated SYNC switch.

THE INTERLOCK WIRING is unique in that only three wires are required between interlocked units. It is advisable to install these wires in new installations whether or not interlocking is anticipated. As auditorium seating requirements change for film booking minimums, seating capacities can be increased by adding only IM modules and wall rollers.

Interlock Operation Sequence

a) Splice sufficient leader onto the head of the feature to allow threading all of those machines to be interlocked.

b) Place an inboard cue on the leader **behind** the failsafe on the starting (No. 1) machine.

c) Energize the SYNC switch on those units to be operated synchronously

d) Press the START switch on the first (No. 1) machine.
- All machines will start
- "Show Start" timer on No. 1 machine starts

e) When subsequent machines sense the inboard cue (Step b), their individual "Show Start" timers will start.

f) All other cues are defined in "Automation Cueing Procedures" section.

SPA-5A PROGRAM LOGIC FLOW CHARTS

Chart | Configuration

1   Basic Unit
       - Less "SD" Dimmer
       - Less Options

2   Basic Unit
       - Less "SD" Dimmer
       - With CM Curtain Module

3   Basic Unit
       - Less "SD" Dimmer
       - With FM Format Module

4   Basic Unit
       - With SD-1 Dimmer
       - Less Options

5   Basic Unit
       - With SD-1 Dimmer
       - With CM Curtain Module

6   Basic Unit
       - With SD-1 Dimmer
       - With FM Format Module

7   Basic Unit
       - With SD-2 Dimmer
       - Less Options

8   Basic Unit
       - With SD-2 Dimmer
       - With CM Curtain Module

9   Basic Unit
       - With SD-2 Dimmer
       - With FM Format Module

NOTE: Regardless of system configuration, "Start of Show" and "End of Show" timers are adjustable on the 301 circuit board. Factory timing is a nominal (7) seconds.

Configuration:

- SPA-5A without "SD" series dimmer
- No options
- No "Intermission Stop" programmed

1. Press START Switch
   a) Projector ON
   b) Lamphouse IGNITE
   c) Lights DIM
   d) "Start of Show" Timer ON

2. After (7) Seconds
   a) Picture Changeover OPEN
   b) Exciter Lamp ON
   c) Non-Sync Sound OFF
   d) "Start of Show" Timer OFF

3. Outboard Cue
   a) Switch to STEREO (if programmed)

4. Inboard Cue
   a) Lights UP
   b) "End of Show" Timer ON

5. After (7) Seconds
   a) Picture Changeover CLOSE
   b) Exciter Lamp OFF
   c) Non-Sync Sound ON
   d) "End of Show" Timer OFF

6. Film Run-Out
   a) Lamphouse OFF
   b) Projector OFF

Configuration

- SPA-5A without "SD" series dimmer
- No options
- "Intermission Stop" programmed

1. Press START Switch
   a) Projector ON
   b) Lamphouse IGNITE
   c) Lights DIM
   d) "Start of Show" Timer ON

2. After (7) Seconds
   a) Picture Changeover OPEN
   b) Exciter Lamp ON
   c) Non-Sync Sound OFF
   d) "Start of Show" Timer OFF

3. Outboard Cue
   a) Switch to STEREO (if programmed)

4. Inboard Cue
   a) Lights UP
   b) "End of Show" Timer ON

5. After (7) Seconds
   a) Picture Changeover CLOSE
   b) Exciter Lamp OFF
   c) Non-Sync Sound ON
   d) "End of Show" Timer OFF
   e) Lamphouse OFF
   f) Projector OFF

To resume performance, press START switch.

Configuration:

- SPA-5A without "SD" series dimmer
- With CM Curtain Module
- No "Intermission Stop" programmed

1. Press START Switch
   a) Projector ON
   b) Lamphouse IGNITE
   c) Lights DIM
   d) "Start of Show" Timer ON

2. After (7) Seconds
   a) Picture Changeover OPEN
   b) Exciter Lamp ON
   c) Non-Sync Sound OFF
   d) "Start of Show" Timer OFF
   e) Initiate Curtains OPEN

3. Outboard Cue
   a) Curtains CLOSE (if "Curtain Call" programmed)
   b) Switches to STEREO if programmed *
   c) Curtains Re-Open (if "Curtain Call" programmed)

4. Inboard Cue
   a) Lights UP
   b) "End of Show" Timer ON
   c) Initiate Curtains CLOSE

5. After (7) Seconds
   a) Picture Changeover CLOSE
   b) Exciter Lamp OFF
   c) Non-Sync Sound ON
   d) "End of Show" Timer OFF

6. Film Run-Out
   a) Lamphouse OFF
   b) Projector OFF

* Switches to STEREO and Curtain Re-Opens after timing function on 804 circuit board times out.

LOGIC CHART No. 2A

Configuration:

- SPA-5A without "SD" series dimmer
- With CM Curtain Module
- "Intermission Stop" programmed

1. Press START Switch
    a) Projector ON
    b) Lamphouse IGNITE
    c) Lights DIM
    d) "Start of Show" Timer ON

2. After (7) Seconds
    a) Picture Changeover OPEN
    b) Exciter Lamp ON
    c) Non-Sync Sound OFF
    d) "Start of Show" Timer OFF
    e) Initiate Curtains OPEN

3. Outboard Cue
    a) Curtains CLOSE (if "Curtain Call" programmed)
    b) Switches to STEREO if programmed *
    c) Curtains RE-OPEN (if "Curtain Call" programmed)

4. Inboard Cue
    a) Lights UP
    b) "End of Show" Timer ON
    c) Initiate Curtains CLOSE

5. After (7) Seconds
    a) Picture Changeover CLOSE
    b) Exciter Lamp OFF
    c) Non-Sync Sound ON
    d) "End of Show" Timer OFF
    e) Lamphouse OFF
    f) Projector OFF

   * Switches to STEREO and Curtains Re-Open after timing function on 804 circuit board times out.

LOGIC CHART No. 3

Configuration:

- SPA-5A without "SD" series dimmer
- With FM Format Module
- No "Intermission Stop" programmed

1. Press START Switch
    a) Projector ON
    b) Lamphouse IGNITE
    c) Lights DIM
    d) "Start of Show" Timer ON

2. After (7) Seconds
    a) Picture Changeover OPEN
    b) Exciter Lamp ON
    c) Non-Sync Sound OFF
    d) "Start of Show" Timer OFF

3. Outboard Cue
    a) Lens Turret & Masking Change (if programmed)
    b) "End of Show" Timer ON

4. Inboard Cue
    a) Lights UP
    b) "End of Show" Timer OFF

5. After (7) Seconds
    a) Picture Changeover CLOSE
    b) Exciter Lamp OFF
    c) Non-Sync Sound ON
    d) "End of Show" Timer OFF
    e) Lens Turret & Masking Change to START position (if programmed)

6. Film Run-Out
    a) Lamphouse OFF
    b) Projector OFF

LOGIC CHART No. 3A

Configuration:

- SPA-5A without "SD" series dimmer
- With FM Format Module
- "Intermission Stop" programmed

1. Press START Switch
    a) Projector ON
    b) Lamphouse IGNITE
    c) Lights DIM
    d) "Start of Show" Timer ON

2. After (7) Seconds
    a) Picture Changeover OPEN
    b) Exciter Lamp ON
    c) Non-Sync Sound OFF
    d) "Start of Show" Timer OFF

3. Outboard Cue
    a) Lens Turret & Masking Change (if programmed)
    b) Switches to STEREO (if programmed)

4. Inboard Cue
    a) Lights UP
    b) "End of Show" Timer ON

5. After (7) Seconds
    a) Picture Changeover CLOSE
    b) Exciter Lamp OFF
    c) Non-Sync Sound ON
    d) "End of Show" Timer OFF
    e) Lamphouse OFF
    f) Projector OFF
    g) Lens Turret & Masking Return to START Position (if programmed)

Configuration:

- SPA-5A with SD-1 dimmer
- No options
- No "Intermission Stop" programmed

1. Press START Switch
   a) Projector ON
   b) Lamphouse IGNITE
   c) Lights HALF LEVEL
   d) "Start of Show" Timer ON

2. After (7) Seconds
   a) Picture Changeover OPEN
   b) Exciter Lamp ON
   c) Non-Sync Sound OFF
   d) "Start of Show" Timer OFF

3. First Outboard Cue
   a) Switch to STEREO (if programmed)
   b) Lights DIM

4. Second Outboard Cue
   a) Lights HALF LEVEL

5. Inboard Cue
   a) Lights BRIGHT
   b) "End of Show" Timer ON

6. After (7) Seconds
   a) Picture Changeover CLOSE
   b) Exciter Lamp OFF
   c) Non-Sync Sound ON
   d) "End of Show" Timer OFF

7. Film Run-Out
   a) Lamphouse OFF
   b) Projector OFF

Configuration:

- SPA-5A with SD-1 dimmer
- No options
- "Intermission Stop" programmed

1. Press START Switch
    a) Projector ON
    b) Lamphouse IGNITE
    c) Lights HALF LEVEL
    d) "Start of Show" Timer ON

2. After (7) Seconds
    a) Picture Changeover OPEN
    b) Exciter Lamp ON
    c) Non-Sync Sound OFF
    d) "Start of Show" Timer OFF

3. First Outboard Cue
    a) Switch to STEREO (if programmed)
    b) Lights DIM

4. Second Outboard Cue
    a) Lights HALF LEVEL

5. Inboard Cue
    a) Lights BRIGHT
    b) "End of Show" Timer ON

6. After (7) Seconds
    a) Picture Changeover CLOSE
    b) Exciter Lamp OFF
    c) Non-Sync Sound ON
    d) "End of Show" Timer OFF
    e) Lamphouse OFF
    f) Projector OFF

Configuration:

- SPA-5A with SD-1 dimmer
- With CM Curtain Module
- No "Intermission Stop" programmed

1. Press START Switch
   a) Projector ON
   b) Lamphouse IGNITE
   c) Lights HALF LEVEL
   d) "Start of Show" Timer ON

2. After (7) Seconds
   a) Picture Changeover OPEN
   b) Exciter Lamp ON
   c) Non-Sync Sound OFF
   d) "Start of Show" Timer OFF
   e) Initiate Curtains OPEN

3. First Outboard Cue
   a) Curtains CLOSE (if "Curtain Call" programmed)
   b) Switch to STEREO (if programmed & after 804 circuit board times out)
   c) Lights DIM
   d) Curtains RE-OPEN (if "Curtain Call" programmed)

4. Second Outboard Cue
   a) Lights HALF LEVEL

5. Inboard Cue
   a) Lights BRIGHT
   b) "End of Show" Timer ON
   c) Initiate Curtains CLOSE

6. After (7) Seconds
   a) Picture Changeover CLOSE
   b) Exciter Lamp OFF
   c) Non-Sync Sound ON
   d) "End of Show" Timer OFF

7. Film Run-Out
   a) Lamphouse OFF
   b) Projector OFF

Configuration:

- SPA-5A with SD-1 dimmer
- With CM Curtain Module
- "Intermission Stop" programmed

1. Press START Switch
   a) Projector ON
   b) Lamphouse IGNITE
   c) Lights HALF LEVEL
   d) "Start of Show" Timer ON

2. After (7) Seconds
   a) Picture Changeover OPEN
   b) Exciter Lamp ON
   c) Non-Sync Sound OFF
   d) "Start of Show" Timer OFF
   e) Initiate Curtains OPEN

3. First Outboard Cue
   a) Curtains CLOSE (if "Curtain Call" programmed)
   b) Switch to STEREO (if programmed & after 804 circuit board times out)
   c) Lights DIM
   e) Curtains RE-OPEN (if "Curtain Call" programmed

4. Second Outboard Cue
   a) Lights HALF LEVEL

5. Inboard Cue
   a) Lights BRIGHT
   b) "End of Show" Timer ON
   c) Initiate Curtains CLOSE

6. After (7) Seconds
   a) Picture Changeover CLOSE
   b) Exciter Lamp OFF
   c) Non-Sync Sound ON
   d) "End of Show" Timer OFF
   e) Lamphouse OFF
   f) Projector OFF

Configuration:

- SPA-5A with SD-1 dimmer
- With FM Format Module
- No "Intermission Stop" programmed

1. Press START Switch
   a) Projector ON
   b) Lamphouse IGNITE
   c) Lights HALF LEVEL
   d) "Start of Show" Timer ON

2. After (7) Seconds
   a) Picture Changeover OPEN
   b) Exciter Lamp ON
   c) Non-Sync Sound OFF
   d) "Start of Show" Timer OFF

3. First Outboard Cue
   a) Lens Turret & Masking CHANGE (if programmed)
   b) Switch to STEREO (if programmed)
   c) Lights DIM

4. Second Outboard Cue
   a) Lights HALF LEVEL

5. Inboard Cue
   a) Lights BRIGHT
   b) "End of Show" Timer ON

6. After (7) Seconds
   a) Picture Changeover CLOSE
   b) Exciter Lamp OFF
   c) Non-Sync Sound ON
   d) "End of Show" Timer OFF
   e) Lens Turret & Masking Return to START Position (if programmed)

7. Film Run-Out
   a) Lamphouse OFF
   b) Projector OFF

Configuration:

- SPA-5A with SD-1 dimmer
- With FM Format Module
- "Intermission Stop" programmed

1. Press START Switch
   a) Projector ON
   b) Lamphouse IGNITE
   c) Lights HALF LEVEL
   d) "Start of Show" Timer ON

2. After (7) Seconds
   a) Picture Changeover OPEN
   b) Exciter Lamp ON
   c) Non-Sync Sound OFF
   d) "Start of Show" Timer OFF

3. First Outboard Cue
   a) Lens Turret & Masking CHANGE (if programmed)
   b) Switch to STEREO (if programmed)
   c) Lights DIM

4. Second Outboard Cue
   a) Lights HALF LEVEL

5. Inboard Cue
   a) Lights BRIGHT
   b) "End of Show" Timer ON

6. After (7) Seconds
   a) Picture Changeover CLOSE
   b) Exciter Lamp OFF
   c) Non-Sync Sound ON
   d) "End of Show" Timer OFF
   e) Lamphouse OFF
   f) Projector OFF
   g) Lens Turret & Masking CHANGE to Start Position (if programmed)

Configuration:

- SPA-5A with SD-2 dimmer
- No options
- No "Intermission Stop" programmed

1. Press START Switch
   a) Projector ON
   b) Lamphouse IGNITE
   c) Lights: Stage DIM, House HALF LEVEL
   d) "Start of Show" Timer ON

2. After (7) Seconds
   a) Picture Changeover OPEN
   b) Exciter Lamp ON
   c) Non-Sync Sound OFF
   d) "Start of Show" Timer OFF

3. First Outboard Cue
   a) Switch to STEREO (if programmed)
   b) Lights: House DIM

4. Second Outboard Cue
   a) Lights: House HALF LEVEL

5. Inboard Cue
   a) Lights: House BRIGHT, Stage BRIGHT
   b) "End of Show" Timer ON

6. After (7) Seconds
   a) Picture Changeover CLOSE
   b) Exciter Lamp OFF
   c) Non-Sync Sound ON
   d) "End of Show" Timer OFF

7. Film Run-Out
   a) Lamphouse OFF
   b) Projector OFF

LOGIC CHART No. 7A

Configuration:

- SPA-5A with SD-2 dimmer
- No options
- "Intermission Stop" programmed

1. Press START Switch
   a) Projector ON
   b) Lamphouse IGNITE
   c) Lights: Stage DIM, House HALF LEVEL
   d) "Start of Show" Timer ON

2. After (7) Seconds
   a) Picture Changeover OPEN
   b) Exciter Lamp ON
   c) Non-Sync Sound OFF
   d) "Start of Show" Timer OFF

3. First Outboard Cue
   a) Switch to STEREO (if programmed)
   b) Lights: House DIM

4. Second Outboard Cue
   a) Lights: House HALF LEVEL

5. Inboard Cue
   a) Lights: House BRIGHT, Stage BRIGHT
   b) "End of Show" Timer ON

6. After (7) Seconds
   a) Picture Changeover CLOSE
   b) Exciter Lamp OFF
   c) Non-Sync Sound ON
   d) "End of Show" Timer OFF
   e) Lamphouse OFF
   f) Projector OFF

Configuration:

- SPA-5A with SD-2 dimmer
- With CM Curtain Module
- No "Intermission Stop" programmed

1. Press START Switch
   a) Projector ON
   b) Lamphouse IGNITE
   c) Lights: Stage DIM, House HALF LEVEL
   d) "Start of Show" Timer ON

2. After (7) Seconds
   a) Picture Changeover OPEN
   b) Exciter Lamp ON
   c) Non-Sync Sound OFF
   d) "Start of Show" Timer OFF
   e) Initiate Curtains OPEN

3. First Outboard Cue
   a) Curtains CLOSE (if "Curtain Call" programmed)
   b) Switch to STEREO (if programmed & after 804 circuit board times out)
   c) Lights: House DIM
   d) Curtains RE-OPEN (if "Curtain Call" programmed)

4. Second Outboard Cue
   a) Lights: House HALF LEVEL

5. Inboard Cue
   a) Lights: House BRIGHT, Stage BRIGHT
   b) "End of Show" Timer ON
   c) Initiate Curtains CLOSE

6. After (7) Seconds
   a) Picture Changeover CLOSE
   b) Exciter Lamp OFF
   c) Non-Sync Sound ON
   d) "End of Show" Timer OFF

7. Film Run-Out
   a) Lamphouse OFF
   b) Projector OFF

Configuration:

- SPA-5A with SD-2 dimmer
- With CM Curtain Module
- "Intermission Stop" programmed

1. Press START Switch
   a) Projector ON
   b) Lamphouse IGNITE
   c) Lights: Stage DIM, House HALF LEVEL
   d) "Start of Show" Timer ON

2. After (7) Seconds
   a) Picture Changeover OPEN
   b) Exciter Lamp ON
   c) Non-Sync OFF
   d) "Start of Show" Timer OFF
   e) Initiate Curtains OPEN

3. First Outboard Cue
   a) Curtains CLOSE (if "Curtain Call" programmed)
   b) Switch to STEREO (if programmed & after 804 circuit board times out)
   c) Lights: House DIM
   d) Curtains RE-OPEN (if "Curtain Call" programmed)

4. Second Outboard Cue
   a) Lights: House HALF LEVEL

5. Inboard Cue
   a) Lights: House BRIGHT, Stage BRIGHT
   b) "End of Show" Timer ON
   c) Initiate Curtains CLOSE

6. After (7) Seconds
   a) Picture Changeover CLOSE
   b) Exciter Lamp OFF
   c) Non-Sync Sound ON
   d) "End of Show" Timer OFF
   e) Lamphouse OFF
   f) Projector OFF

Configuration:

- SPA-5A with SD-2 dimmer
- With FM Format Module
- No "Intermission Stop" programmed

1. Press START Switch
   a) Projector ON
   b) Lamphouse IGNITE
   c) Lights: Stage DIM, House HALF LEVEL
   d) "Start of Show" Timer ON

2. After (7) Seconds
   a) Picture Changeover OPEN
   b) Exciter Lamp ON
   c) Non-Sync Sound OFF
   d) "Start of Show" Timer OFF

3. First Outboard Cue
   a) Lens Turret & Masking CHANGE (if programmed)
   b) Switch to STEREO (if programmed)
   c) Lights: House DIM

4. Second Outboard Cue
   a) Lights: House HALF LEVEL

5. Inboard Cue
   a) Lights: House BRIGHT, Stage BRIGHT
   b) "End of Show" Timer ON

6. After (7) Seconds
   a) Picture Changeover CLOSE
   b) Exciter Lamp OFF
   c) Non-Sync Sound ON
   d) "End of Show" Timer OFF
   e) Lens Turret & Masking return to start position (if programmed)

7. Film Run-Out
   a) Lamphouse OFF
   b) Projector OFF

Configuration:

- SPA-5A with SD-2 dimmer
- With FM Format Module
- "Intermission Stop" programmed

1. Press START Switch
    a) Projector ON
    b) Lamphouse IGNITE
    c) Lights: Stage DIM, House HALF LEVEL
    d) "Start of Show" Timer ON

2. After (7) Seconds
    a) Picture Changeover OPEN
    b) Exciter Lamp ON
    c) Non-Sync Sound OFF
    d) "Start of Show" Timer OFF

3. First Outboard Cue
    a) Lens Turret & Masking CHANGE (if programmed)
    b) Switch to STEREO (if programmed)
    c) Lights: House DIM

4. Second Outboard Cue
    a) Lights: House HALF LEVEL

5. Inboard Cue
    a) Lights: House BRIGHT, Stage BRIGHT
    b) "End of Show" Timer ON

6. After (7) Seconds
    a) Picture Changeover CLOSE
    b) Exciter Lamp OFF
    c) Non-Sync Sound ON
    d) "End of Show" Timer OFF
    e) Lamphouse OFF
    f) Projector OFF
    g) Lens Turret & Masking return to start position (if programmed)

Timer Board 301

The 301 circuit board is standard on all SPA-5A automation units. This circuit board contains two adjustable timing circuits; one to control show start, and one to control show closing. These timers are adjustable from 2 seconds to 15 seconds, and both are factory pre-set to approximately 7 seconds.

Start of Show Timer "A"

This timer is located on the left hand side of the 301 circuit board, component side, as viewed with the circuit tracks pointing down. This timer is used to time the delay between pressing the START switch and actuating the sound/picture changeover projecting the presentation on screen. Turning this potentiometer clockwise lengthens the delay.

End of Show Timer "D"

This timer is located on the right hand side of the 301 circuit board, component side, as viewed with the circuit tracks pointed down. This timer is used to set the delay from sensing the "End of Show" inboard cue until the sound/picture change-over, removing the picture from the screen and switching the non-sync sound on. Turning this potentiometer clockwise lengthens the delay.
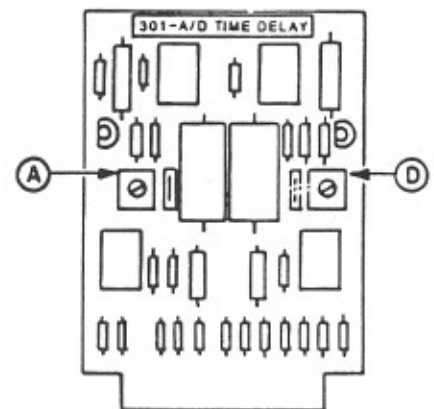
804 Curtain Module Timer (Optional CM Module Required)

The optional 804 Curtain Module contains one timer circuit. This circuit is used for the "Curtain Call" feature and other subsequent program features required after the first outboard cue is detected, such ass STEREO CHANGE or FORMAT CHANGE. When "Curtain Call" is programmed, all additional programmed functions will not occur until the timer on the 804 board times out. This time is adjustable (two to thirty seconds), and a L.E.D. indicator on the board lights when the timer is on. This timer allows the curtains to fully close when "Curtain Call" is programmed, and after the timer times out, any sub-sequent functions will execute and the curtains will re-open. Turning this potentiometer clockwise increases the length of time required for full curtain closure.

NOTE: ADC Curtain Controllers require two seconds after stopping before they can move the curtains again. Allow for this additional time when setting the 804 timer.
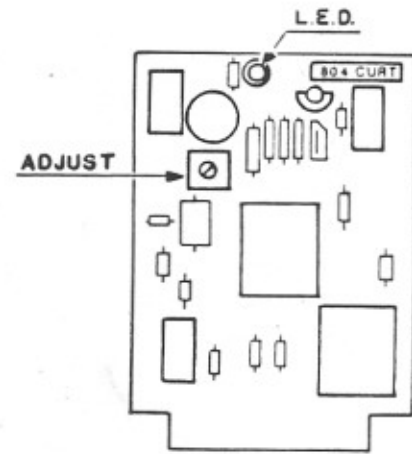
841 Outboard Logic Timer

This circuit board contains one timer which is used in conjunction with the optional FM Format Module. The purpose of this timer is to set the length of time required to complete a lens/aperture change before the picture changeover re-opens. The picture changeover closes at the start of a format change, and re-opens when the timer on this board times out. Turning this potentiometer clockwise in-creases the length of time the changeover remains closed during the format change.

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Kintech Stereo System Connections

The SPA-5A is designed to switch both the Kintech 700 and 2010 series sound systems without additional stereo system modules. Please refer to the appropriate Kintech series manual for proper connections to the Kintech unit, should they change subsequent to the publication of this manual.

KT-700 Series Sound System Connections

SPA-5A	Kintech
Term. 13	TB7 Term. 6 "Ground"
Term. 14	TB7 Term. 3 "Proj. #1"
Term. 15	TB7 Term. 2 "Non-Sync"
Term. 45	TB1 Term. 1
Term. 47	TB1 Term. 2

KT-2010 Series Sound System Connections

SPA-5A	Kintech
Term. 13	Term. 11
Term. 10	Term. 10
Term. 46	Term. 9
Term. 47	Term. 8

Dolby CP-55 and CP-200 Connections

The optional DSM Module must be used with the SPA-5A to correctly switch the Dolby CP-55 and CP-200 stereo processors. The DSM Module provides the pulsed type logic required by these processors for proper switching.

CP-55 Sound System Connections

SPA-5A	CP-55
Term. 48	TB2 Term. 11
Term. 49	TB2 Term. 2
Term. 46	TB2 Term. 6
Term. 47	TB2 Term. 8

Special Adaptation Section (con't)

CP-200 Sound System Connections

SPA-5A	CP-200
Term. 48	BS21 Term. 11
Term. 49	BS21 Term. 10
Term. 46	BS21 Term. 8
Term. 47	BS21 Term. 7

(See CP-200 Connection Drawing for "Go Input" circuit.)

NOTES:

1. "Stereo" Format assumes Dolby "04" format selection, Optical Stereo with Surround.
2. Assumes SPA-5A equipped with optional DSM Module for pulse-type sound switching.
3. All pulses are momentary "dry" contacts.
4. CP-55 requires Cat. No. 321 Automation Interface Board supplied by Dolby Labs.
5. CP-200 modification is user supplied to apply simultaneous pulse to format selected and the "Go Input". IN4004 diodes are sufficient.
6. Processor should be locked to "Projector 1" input (refer to Dolby manual).

Using the SPA-5A with a Motorized Dimmer

The SPA-5A can be used with a motorized (Luxtrol) type dimmer. To accomplish this requires the addition of a latching type relay which can be obtained from Strong; or if the auditorium does not include curtains, the motorized dimmer can be controlled by means of an optional CM Curtain Module. Auditorium configuration determines the method used.

Using the SPA-5A with Proximity Cue Detector

The SPA-5A can be used with proximity cue detectors in place of the standard cue detector supplied if desired. Strong manufactures an economical circuit to permit such use. This circuit may be specified at the time of the original equipment order, or may be added at a later date. Strong must be provided with a Specification Data Sheet on the proximity detector to be used at the time of ordering to insure proper operation of the automation system with that detector.
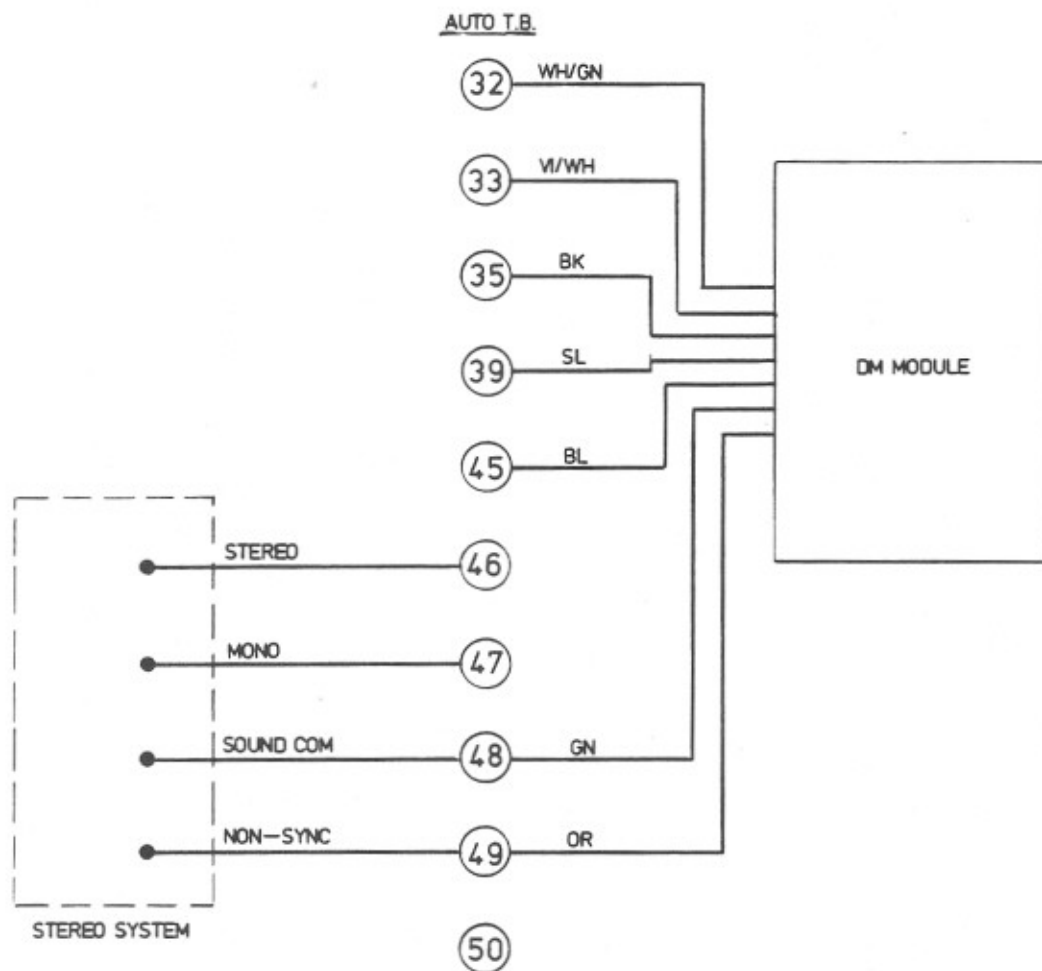
DM MODULE
INSTALLATION
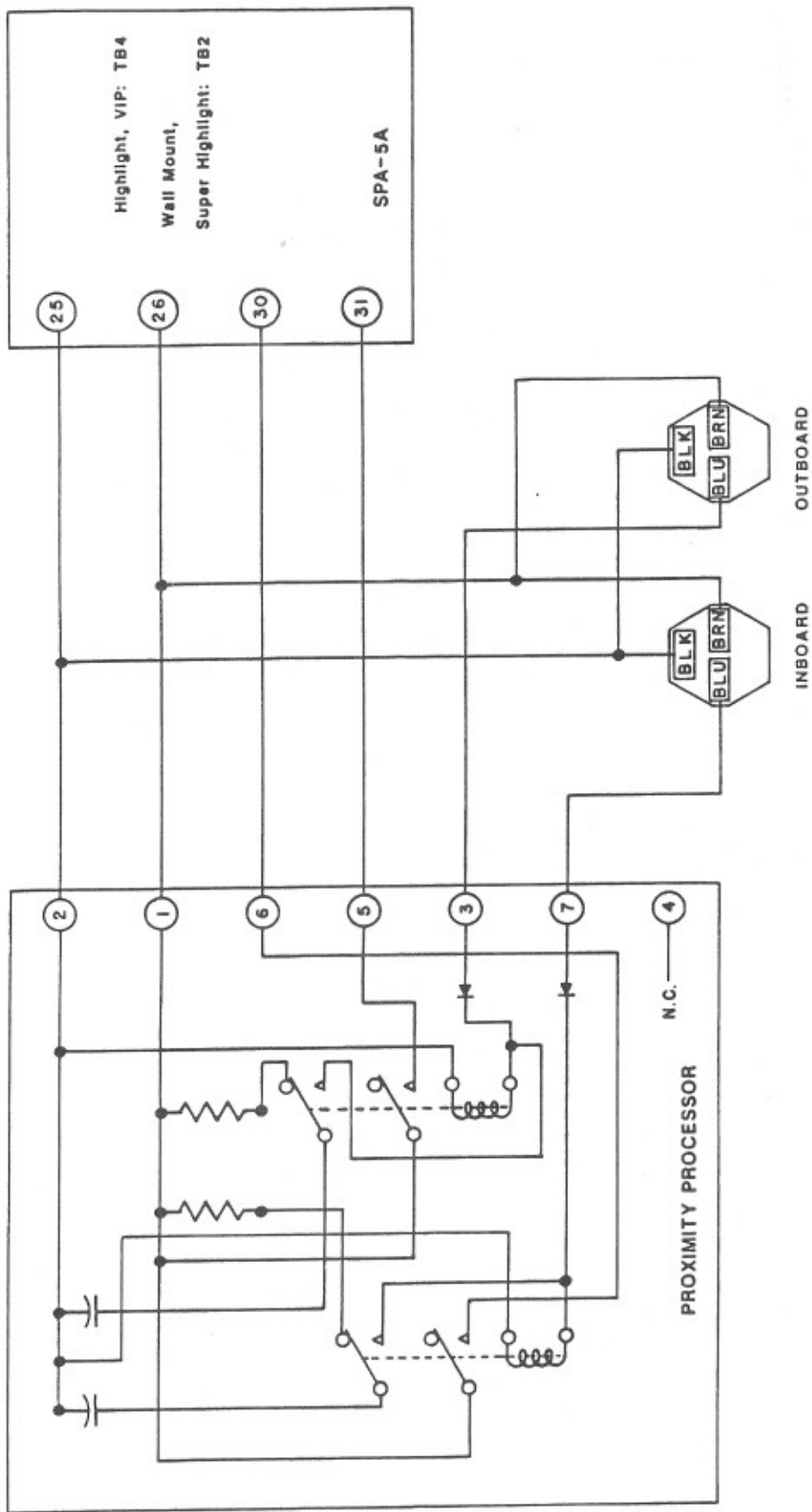
SPA-5A With Proximity Cue Detector

Motorized Dimmer Control with Latching Relay

INSTALL JUMPER

RELAY

| 1 | | A |
| 7 | 4 | 8 | B |

SW

UP   DOWN

SPA-5A

1
2 Wall Mount - TB1
3 Highlight, VIP - TB2
   Super Highlight - TB3
4
5 △ DOWN △
6 △ UP △

MANUAL
CONTROL
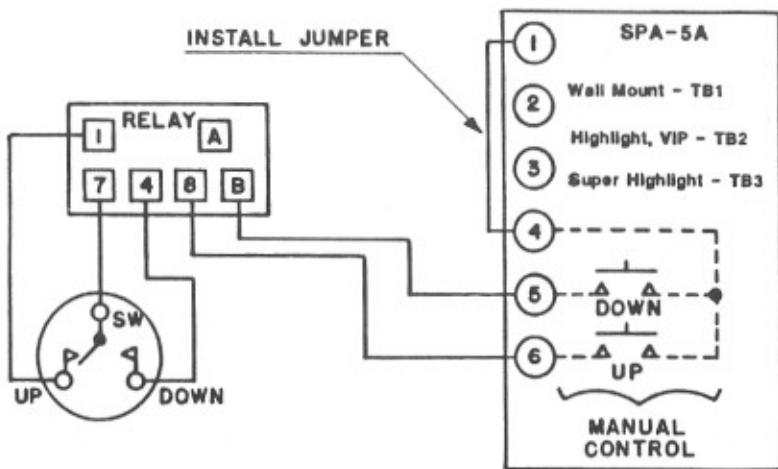
4	1							A	7
5	2								8
6	3							B	9

RELAY CONFIGURATION

Motorized Dimmer Control with CM Module

UP

SW

DOWN

SPA-5A

22
23 Wall Mount: TB1 & 2
    Highlight, VIP: TB3 & 4
24 Super Highlight: TB2

REQ'D FOR "LIGHTS UP"
AT FILM BREAK

IN4004

30
38
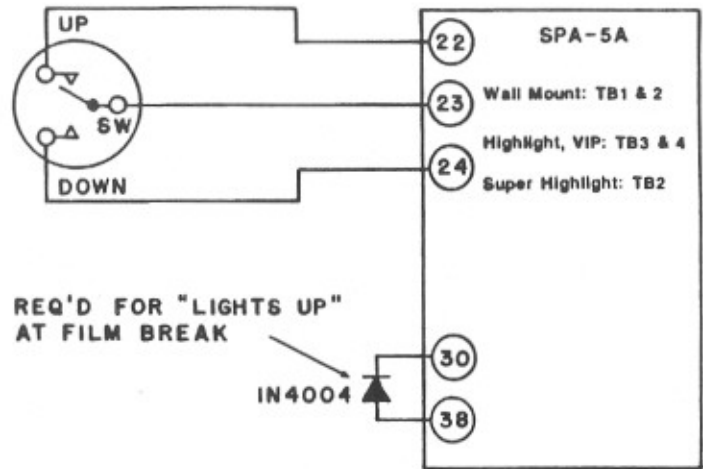
NOTE: This method cannot be used with systems using the SPAR Remote.

Requires optional CM Curtain Module for LIGHTS instead of CURTAINS.

Sequence: C/O douser OPEN - Lights DIM

Inboard Cue - Lights UP

SPA-5A WIRING DIAGRAMS

Drawing No.	Description
1	AC Input, Wall Mount
1A	AC Input, Highlight, VIP
1B	AC Input, Super Highlight
2	SD-2 Dimmer Circuit
3	SD-1 Dimmer Circuit
4	Other Manufacturer's Dimmer Circuit
5	Picture Changeover, 115 V.AC Pulse
6	Picture Changeover, Sustained Dry Contact
7	Non-Sync Sound Control Circuit
8	Exciter Lamp Control Circuit
9	Lamphouse Control Circuit
10	Projector Motor Control Circuit (Wall Mount)
10A	Projector Motor Control Circuit (Highlight, VIP)
10B	Projector Motor Control Circuit (Super Highlight)
11	Curtain Control Circuit (CM Module req'd.)
12	Failsafe/Cue Detector Circuit
13	Remote/Status Control Circuit (SPAR req'd.)
14	Interlock Operation (IM Module req'd.)
15	Stereo Switching, Latched
16	Stereo Switching, Pulsed (DSM Module req'd.)
17	Lens Turret & Masking Control Circuit (FM Module req'd.), Wall Mount
18	Lens Turret & Masking Control Circuit (FM Module req'd.), Highlight, Super Highlight, VIP

MAIN A.C. PANEL

USER INSTALLED

5

115 VAC HOT

①

NEU   NEUTRAL

②

(P-6) 2   1

PS-150
POWER MOD.

⑪

⑫

②   ①

2   1 (P-4)

3 (P-2)

(+) —

POWER

2

(P-2)

5   1

SPA-5(A) AUTOMATION

SPA—5(A)
AC POWER INPUT CIRCUIT
WALL MOUNT VERSION
DWG# SPA—5(A)—1

MAIN AC PANEL

20

WALL MOUNT TB#1
HIGHLIGHT/VIP TB#3
SUPER HIGHLIGHT TB#2

LOAD

LINE

HOUSE LIGHTS

(—)   4

(+)   5

(NEU)

SD—1 POWER MODULE
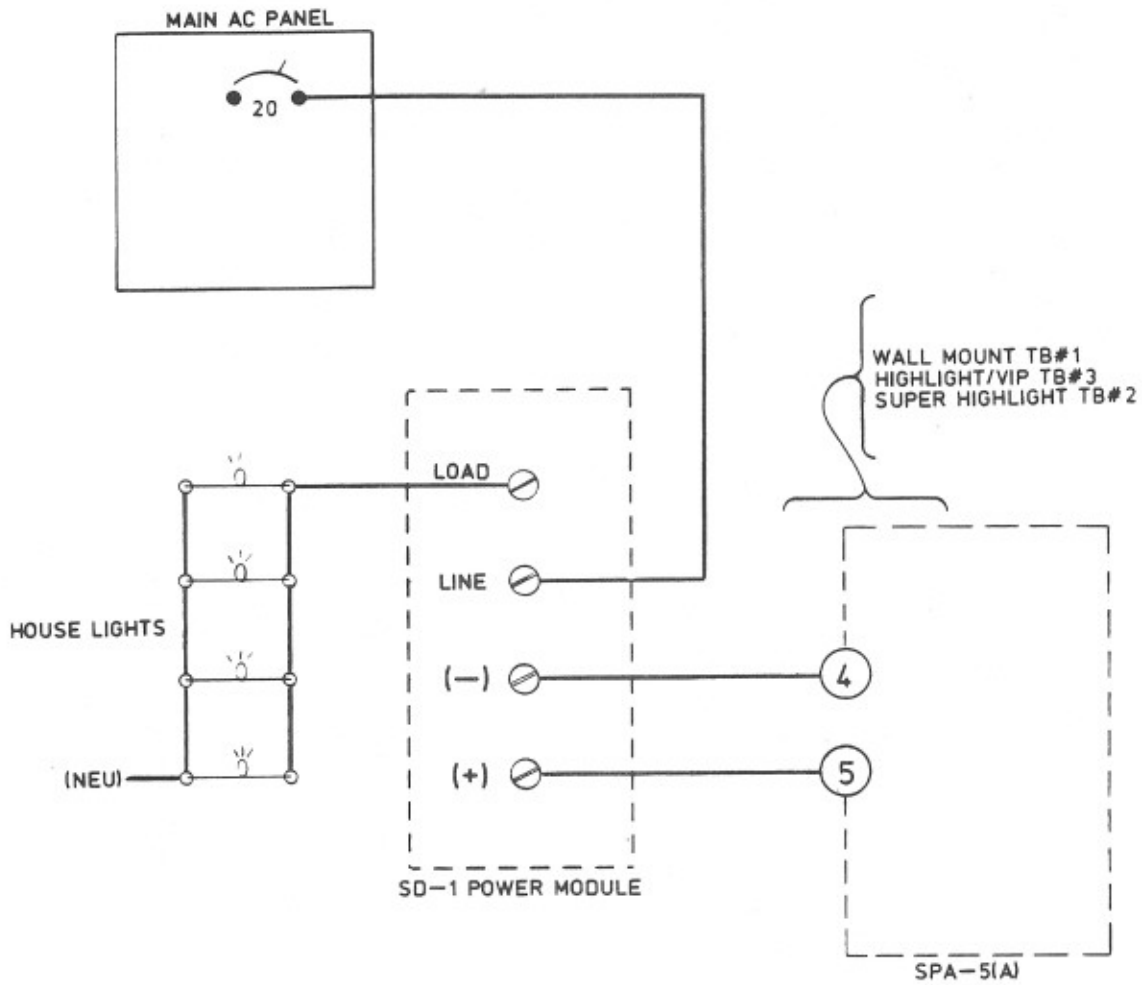
SPA—5(A)

*NOTE:
REQUIRES OPTIONAL
SD—1 DIMMER

SPA—5(A)
SD—1 DIMMER CIRCUIT *
WALL MOUNT/HIGHLIGHT/VIP/SUPER HIGHLIGHT
DWG# SPA—5(A)—3

WALL MOUNT TB#1
HIGHLIGHT/VIP TB#3
SUPER HIGHLIGHT TB#2

SWITCH

DOWN

UP

AUTO CONTROL

HOUSE DIMMER (NON"SD")

DOWN

UP

STAGE DIMMER (NON"SD")

UP

DOWN

MANUAL OVERRIDE
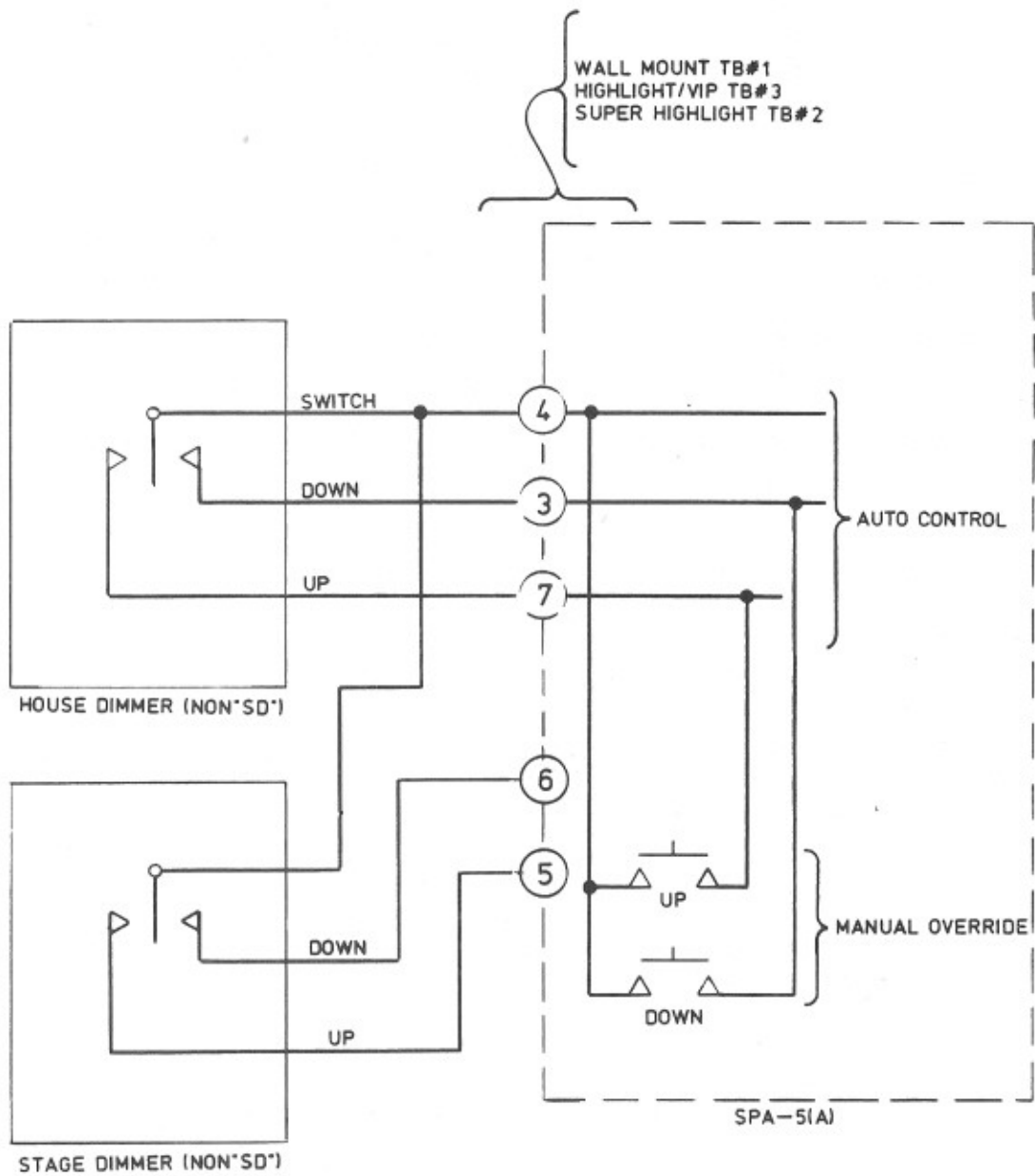
SPA—5(A)

SPA—5(A)
NON STRONG DIMMER CIRCUIT
WALL MOUNT/HIGHLIGHT/VIP/SUPER HIGHLIGHT VERSION
DWG# SPA—5(A)— 4

WALL MOUNT TB#1
HIGHLIGHT/VIP TB#3
SUPER HIGHLIGHT TB#2

CLOSE

(8)

(9) —— NEU

PF
(AUTO)

OPEN

(10)

PO
(AUTO)

"ZIPPER" CHANGEOVER

115
(HOT)

13   14   15   (P-2)

C.O. OPEN   C.O. CLOSE

MANUAL OVERRIDE
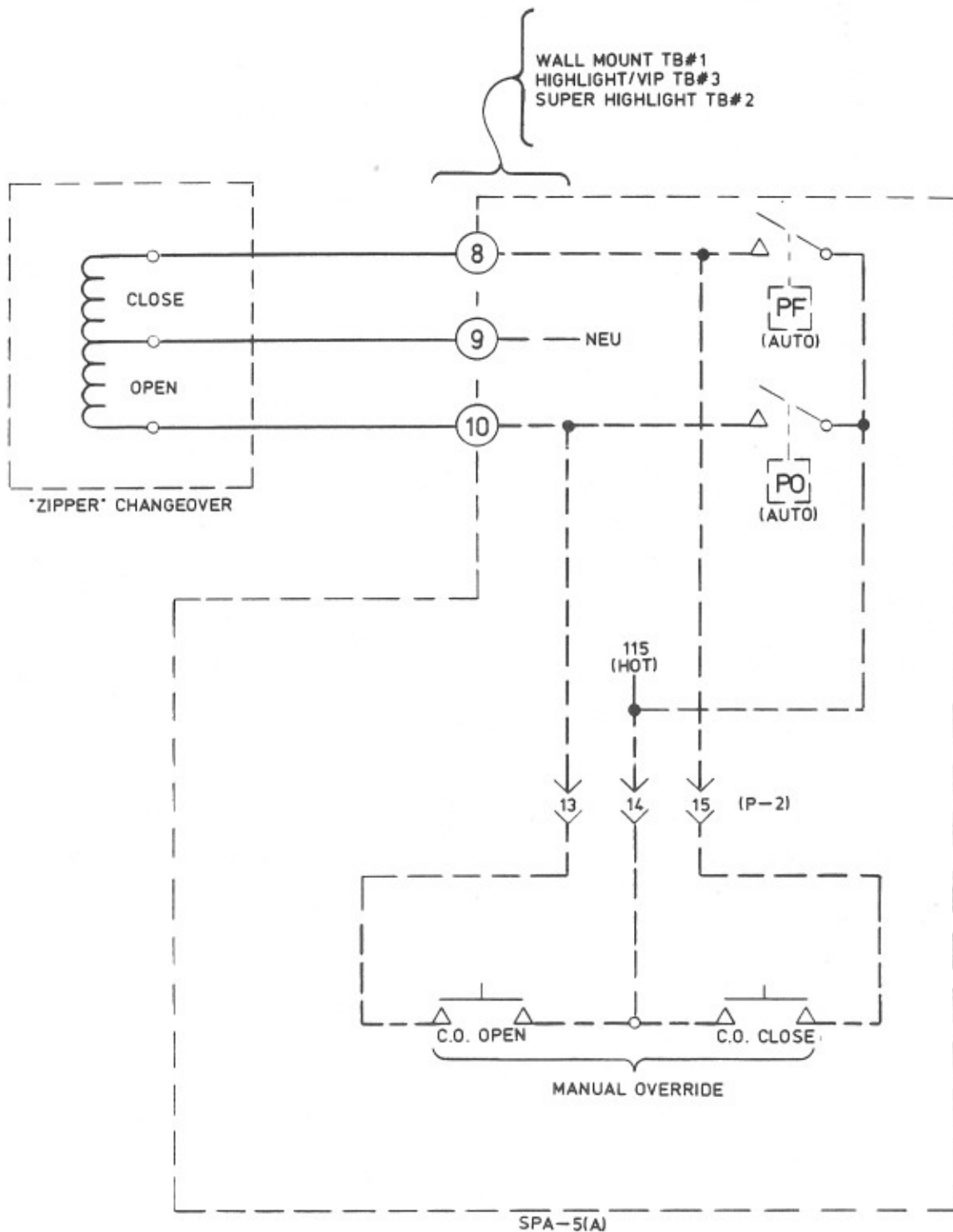
SPA-5(A)

SPA-5(A)
"ZIPPER" CHANGEOVER CIRCUIT
WALL MOUNT/HIGHLIGHT/VIP/SUPER HIGHLIGHT VERSION
DWG# SPA-5(A)-5

WALL MOUNT TB#1
HIGHLIGHT/VIP TB#3
SUPER HIGHLIGHT TB#2

⑦

⑧

3017A
CHANGEOVER
SUPPLY

⑪

⑫

[K]

SPA—5(A)

CIRCUIT SCHEMATIC

⑪

⑫

(1)○
(7)△   (5)○

(3)○
(9)△   ○(6)

$\boxed{K}$ = 115 VAC LATCH TYPE RELAY

(NEU)   (A)   (B)
        [K]   (8)

PO

(115 VAC HOT)

PF

MANUAL OVERRIDE

CLOSE   OPEN
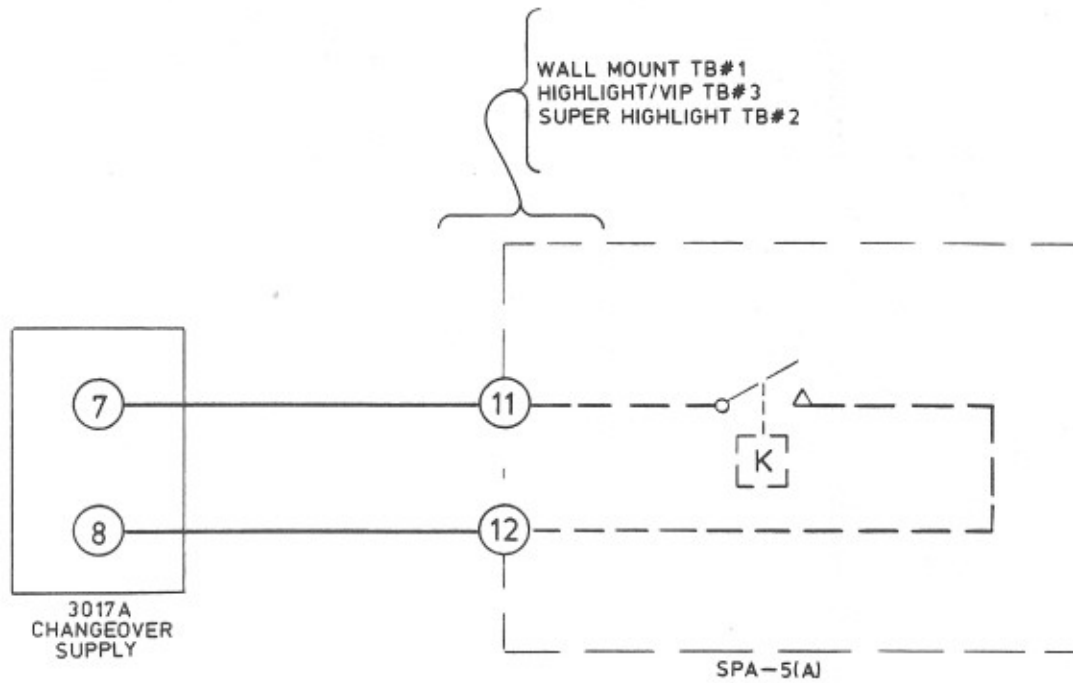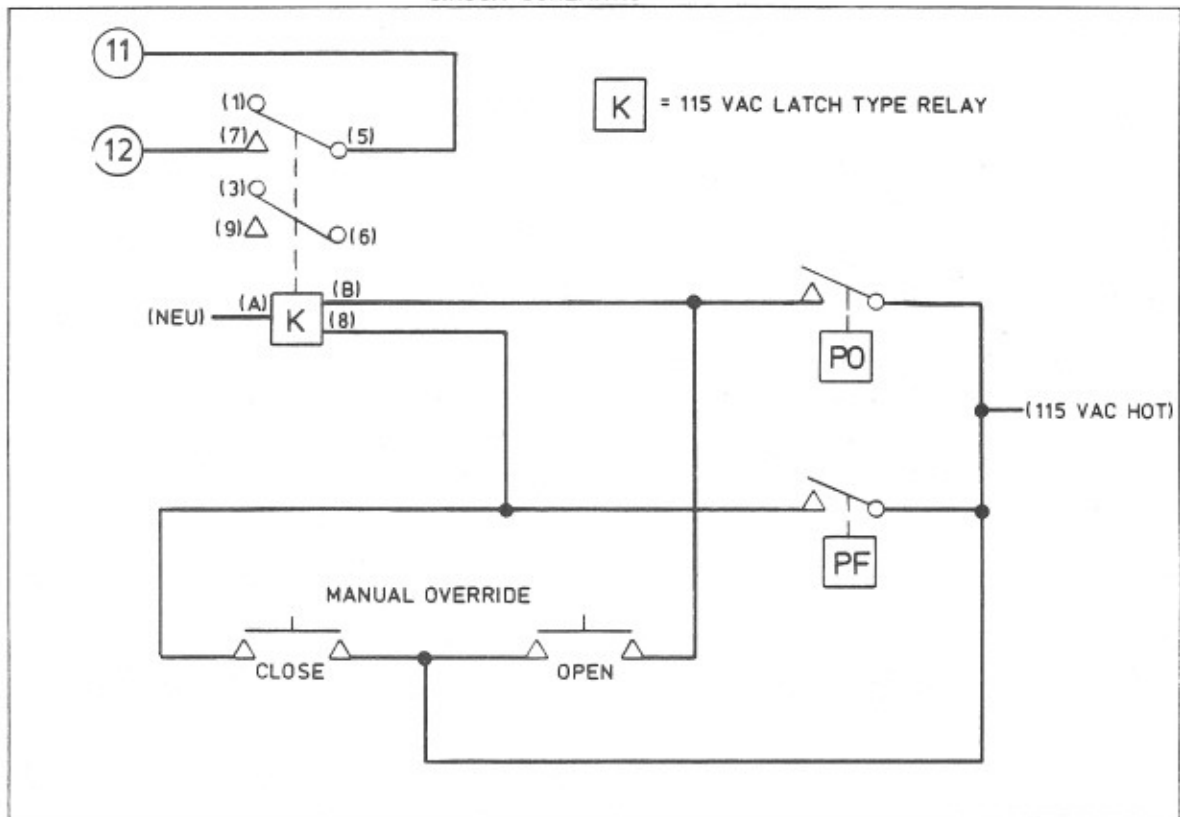
SPA—5(A)
BALLANTYNE CHANGEOVER CIRCUIT
WALL MOUNT/HIGHLIGHT/VIP/SUPER HIGHLIGHT VERSION
DWG# SPA—5(A)—6

WALL MOUNT TB#1
HIGHLIGHT TB#3
SUPER HIGHLIGHT TB#2

(SW)

(OFF)

(ON)

13

14

15

NON—SYNC MUSIC

SOUND SYSTEM

SPA—5(A)

CIRCUIT SCHEMATIC

NON SYNC
SOUND

13

14   (1)

15   (7)△   (4)

EXCITER LAMP

16

17   (8)△   (5)

(2)

(3)   (9) (+)

(6)△

EXC
MANUAL OVERRIDE

(B) EX (A)

PF   (—)

△

SPA—5(A)

NON—SYNC SOUND CIRCUIT

WALL MOUNT/HIGHLIGHT/VIP/SUPER HIGHLIGHT

DWG# SPA—5(A)—7

WALL MOUNT TB#1
HIGHLIGHT/VIP TB#3
SUPER HIGHLIGHT TB#2

SEE DWG #
SPA—5(A)—7

EXCITER POWER
SUPPLY

EXC LAMP

SOUNDHEAD

EXC
MANUAL OVERRIDE

SPA—5(A)

NOTE: FOR CIRCUIT SCHEMATIC SEE NON—SYNC
SOUND CIRCUIT DRAWING #SPA—5(A)—7

SPA—5(A)
EXCITER LAMP CONTROL CIRCUIT
WALL MOUNT/HIGHLIGHT/VIP/SUPER HIGHLIGHT VERSION
DWG# SPA—5(A)—8

WALL MOUNT TB#1
HIGHLIGHT/VIP TB#3
SUPER HIGHLIGHT TB#2

(SW) 18

(ON) 19

LAMPHOUSE CONSOLE

SPA—5(A)

CIRCUIT SCHEMATIC

LAMP
18
(1) (4)
19 (7)
LAMP*

PROJECTOR
20
(2) (5)
21 (8)
PROJ.

(+) (3)
(9) (6)

(—) (A) ML (B)
START (+)

*LAMP SWITCH ONLY ON WALL MOUNT VERSION
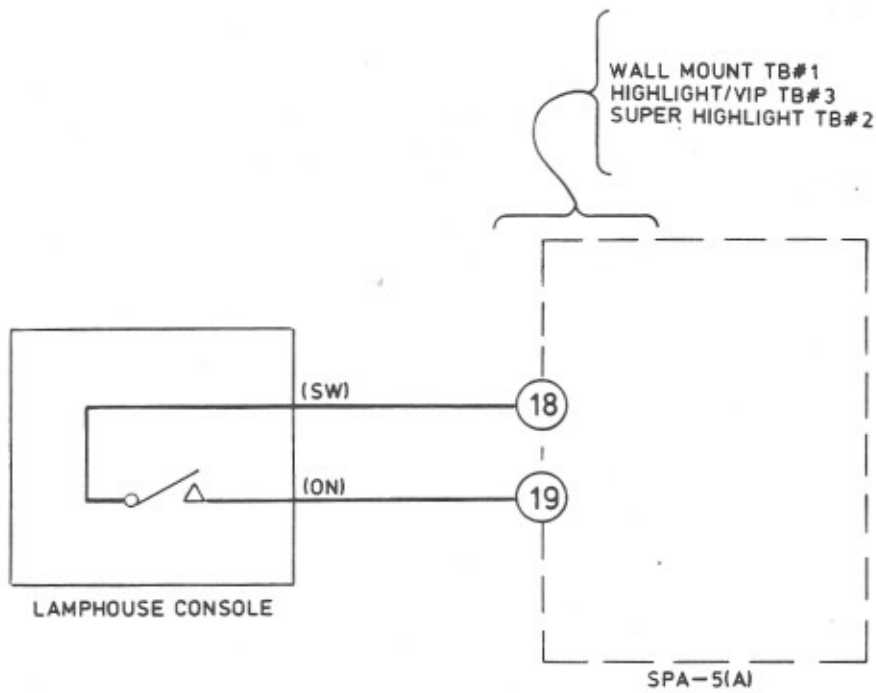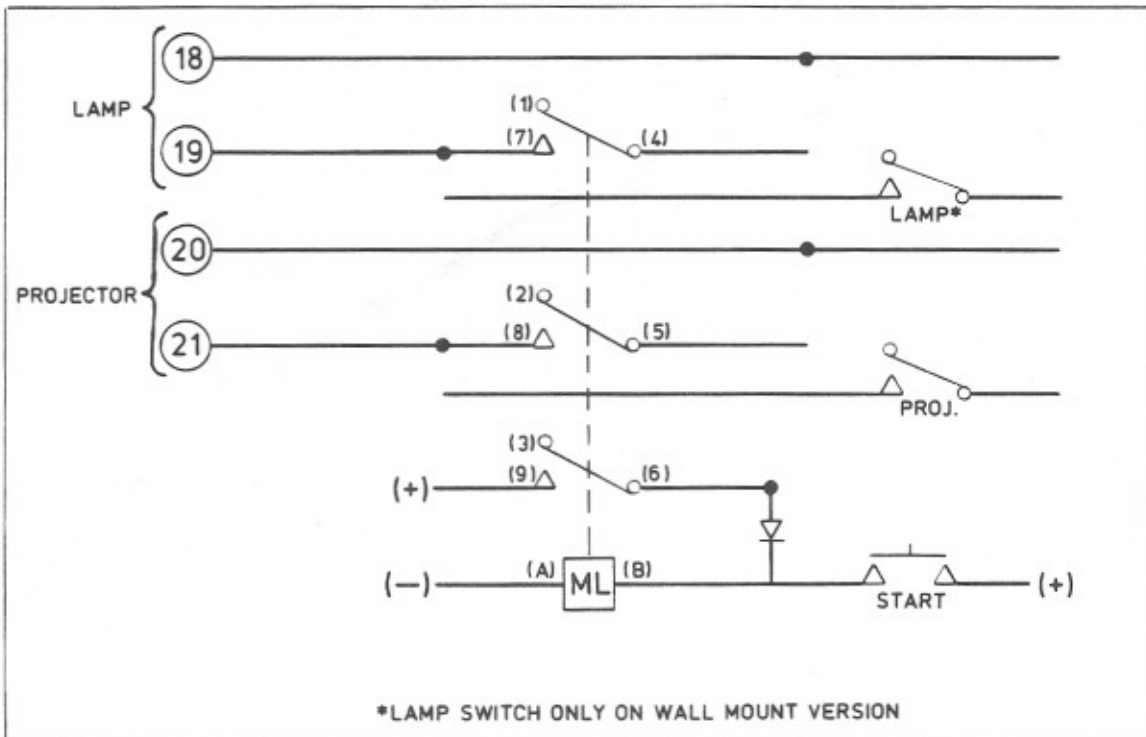
SPA—5(A)
LAMPHOUSE CONTROL CIRCUIT
WALL MOUNT/HIGHLIGHT/VIP/SUPER HIGHLIGHT VERSION
DWG# SPA—5(A)—9
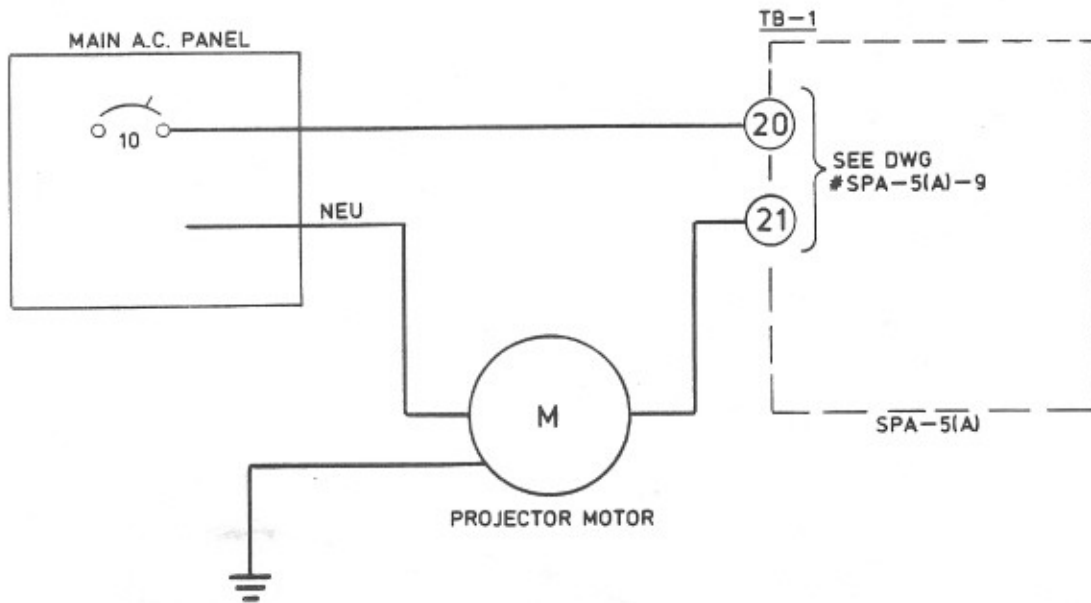
MAIN A.C. PANEL

TB—1

⟲ 10 ⟲ ──────────────────────── ⑳

NEU

SEE DWG
#SPA—5(A)—9

㉑

M

SPA—5(A)

PROJECTOR MOTOR

NOTE: FOR CIRCUIT SCHEMATIC SEE LAMPHOUSE
CONTROL CIRCUIT DRAWING #SPA—5(A)—9.

SPA—5(A)
PROJECTOR CONTROL CIRCUIT
WALL MOUNT VERSION
DWG# SPA—5(A)—10

TB-1   TB-2   TB-3

SEE CONSOLE
CONNECTIONS

(○)——— 10 ———(G)————————(20)
                                        SEE DWG
                                        #SPA-5(A)-9
(○)——— NEU ———(H)   (21)

                                        SPA-5(A)

                    (M)

                PROJECTOR MOTOR
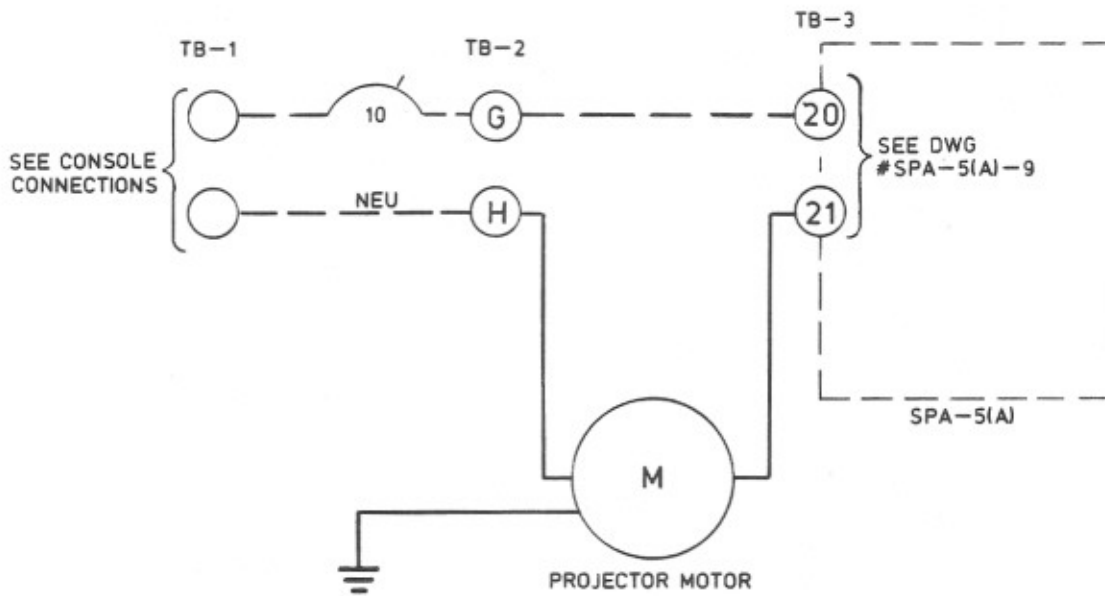
NOTES: ——————————— = FACTORY PREWIRED.
       FOR CIRCUIT SCHEMATIC SEE LAMPHOUSE CONTROL
       CIRCUIT DRAWING #SPA-5(A)-9.

SPA-5(A)
PROJECTOR CONTROL CIRCUIT
HIGHLIGHT/VIP VERSION
DWG# SPA-5(A)-10A

TB-1

OPTIONAL MAIN
C PWR CONTACTOR

TB-2

(3) ---- △ △ ---- 10 ---- (20)

SEE DWG#
SPA-5(A)-9

(4)

(21)

SEE CONSOLE
CONNECTIONS

(5)   GND   HOT

M

(6)   NEU

PROJECTOR MOTOR
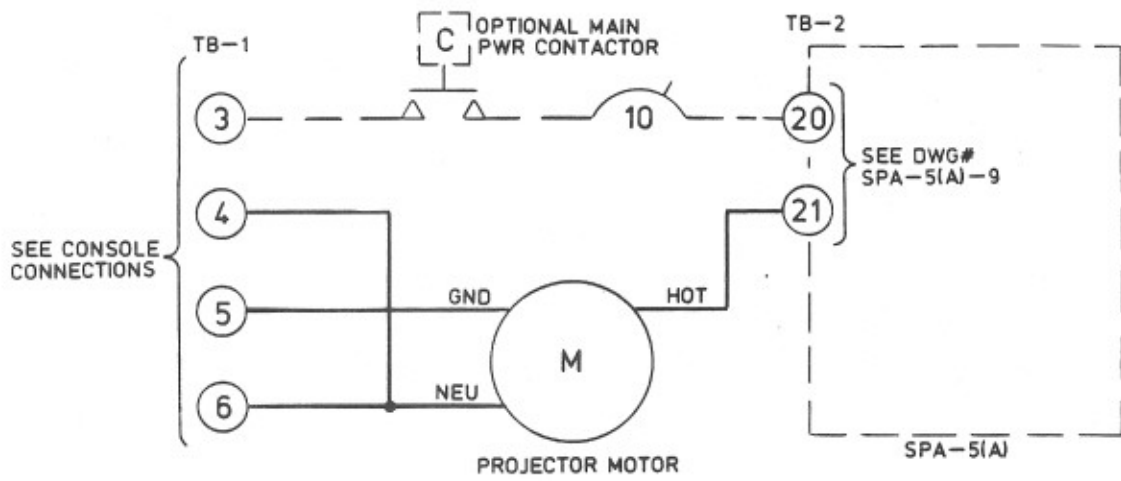
SPA-5(A)

NOTES: ------ = FACTORY WIRED.
FOR CIRCUIT SCHEMATIC SEE LAMPHOUSE CONTROL
CIRCUIT DRAWING # SPA-5(A)-9.

SPA-5(A)
PROJECTOR CONTROL CIRCUIT
SUPER HIGHLIGHT VERSION
DWG# SPA-5(A)-10B

WALL MOUNT TB#1/#2
HIGHLIGHT/VIP TB#3/#4
SUPER HIGHLIGHT TB#2

CLOSE ————————————————— (22)

SW ——————————————————— (23)

OPEN ————————————————— (24)

CURTAIN MOTOR CONTROL

SPA—5(A)

*NOTE: REQUIRES OPTIONAL 804 CURTAIN MODULE.

CIRCUIT SCHEMATIC

(22) —— >22> ———————————————— (5)

CURTAIN
CONTROL   (23) —— >23> ———————————————— (6)   804 CURTAIN
MODULE

(24) —— >24> ———————————————— (7)

(P—6)

6   5   4   (P—2)

CURT. OPEN   CURT. CLOSE
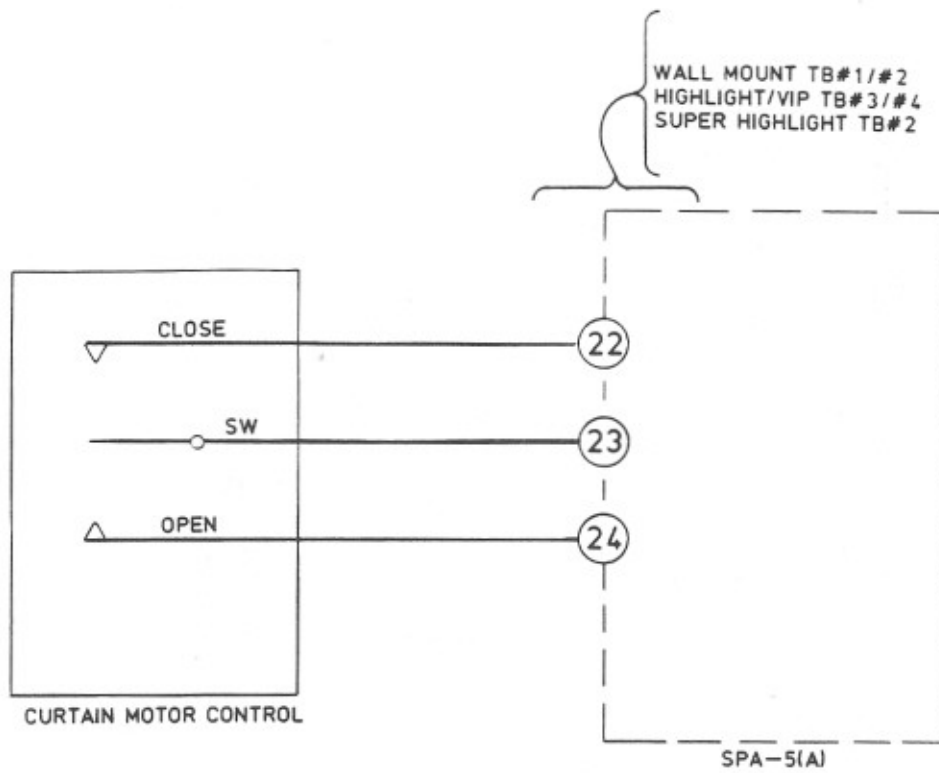
MANUAL OVERRIDE
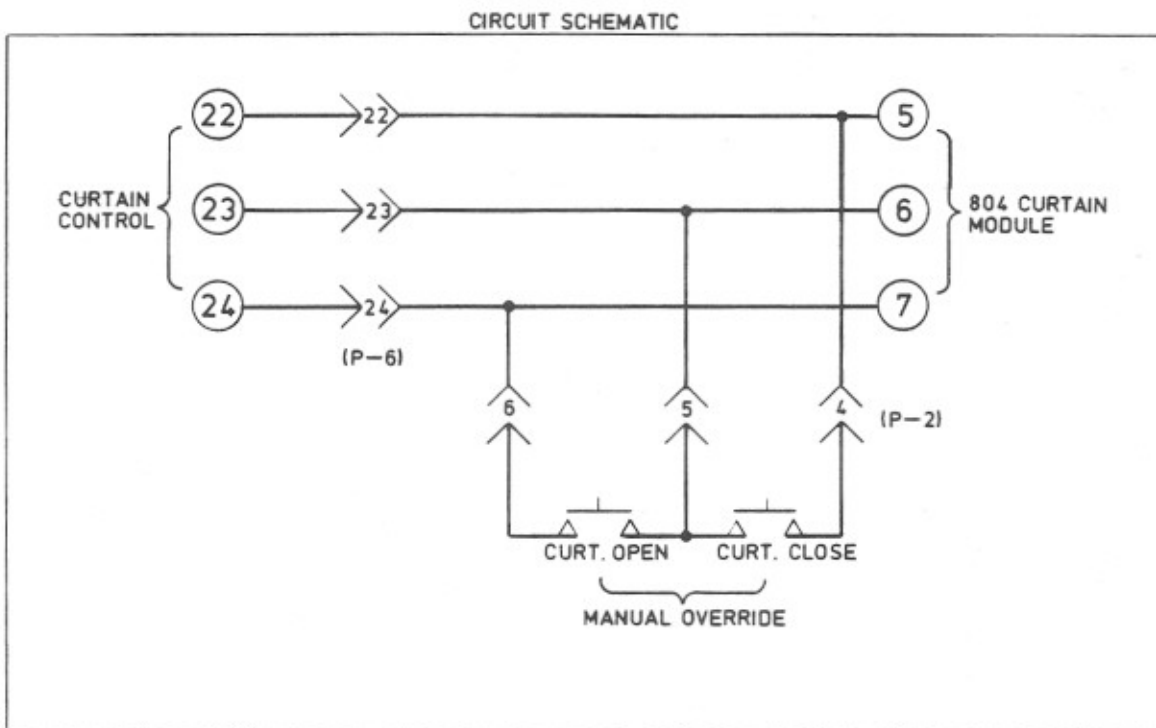
SPA—5(A)
CURTAIN CONTROL CIRCUIT*
WALL MOUNT/HIGHLIGHT/VIP/SUPER HIGHLIGHT VERSION
DWG# SPA—5(A)—11

WH — (27) → 3 >
BK — (28) → 4 >
RD — (29) → 5 >

INBD
BL — (30) → 6 >
GND
OR — (31) → 7 >
OTBD
(P-5)

FAILSAFE/CUE DETECTOR ASSY.

SPA-5(A)

MANUAL OVERRIDE CIRCUIT SCHEMATIC

(P-4)

< 19 <

< 7 <   OB CUE

< 6 <   IB CUE

< 3 <

< 2 <   FS DEFEAT

< 1 <
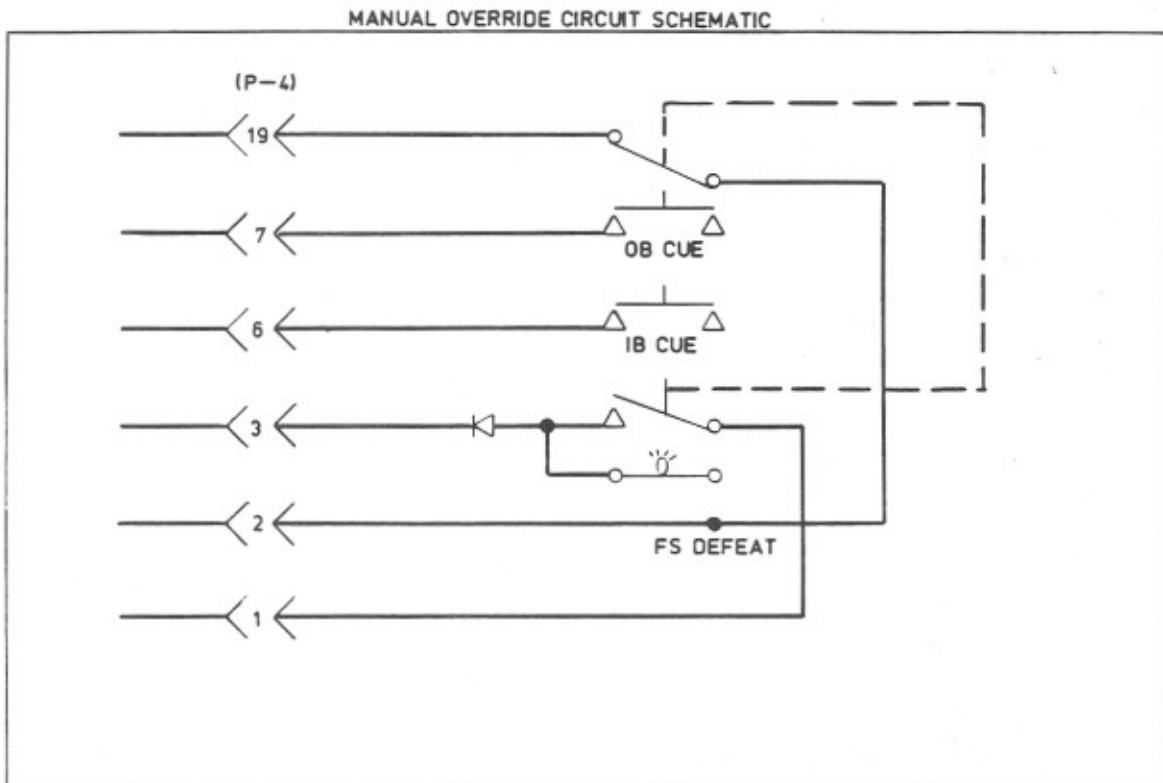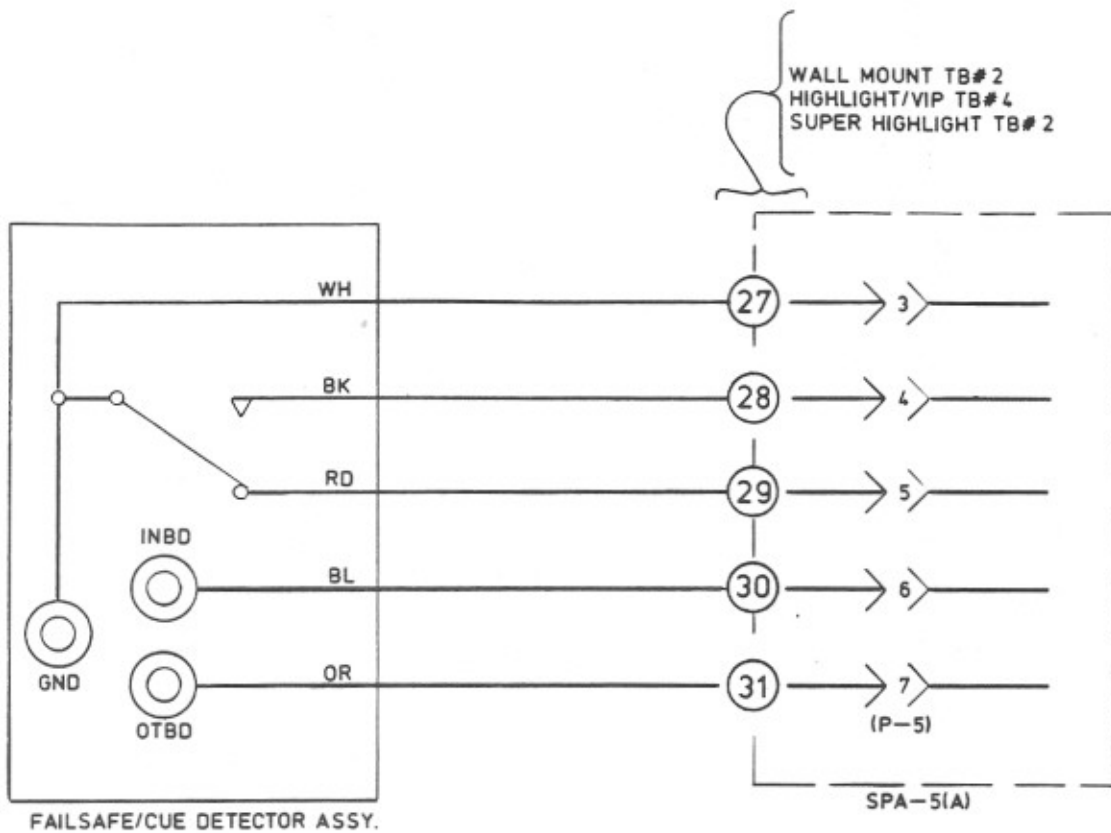
SPA-5(A)

FAILSAFE/CUE DETECTOR CIRCUIT

WALL MOUNT/HIGHLIGHT/VIP/SUPER HIGHLIGHT VERSION

DWG# SPA-5(A)-12

FIELD
CONNECTIONS

WALL MOUNT TB#2
HIGHLIGHT/VIP TB#4
SUPER HIGHLIGHT TB#2

34 → 10 >

1   35 → 11 >

RUN G 2   36 → 12 >

STOP R 3   37 → 13 >

ALARM Y 4   38 → 14 >

ALARM

39 → 15 >

40 → 16 >

CANCEL 5   41 → 17 >

SPA—5(A)

STOP

START

SPAR REMOTE
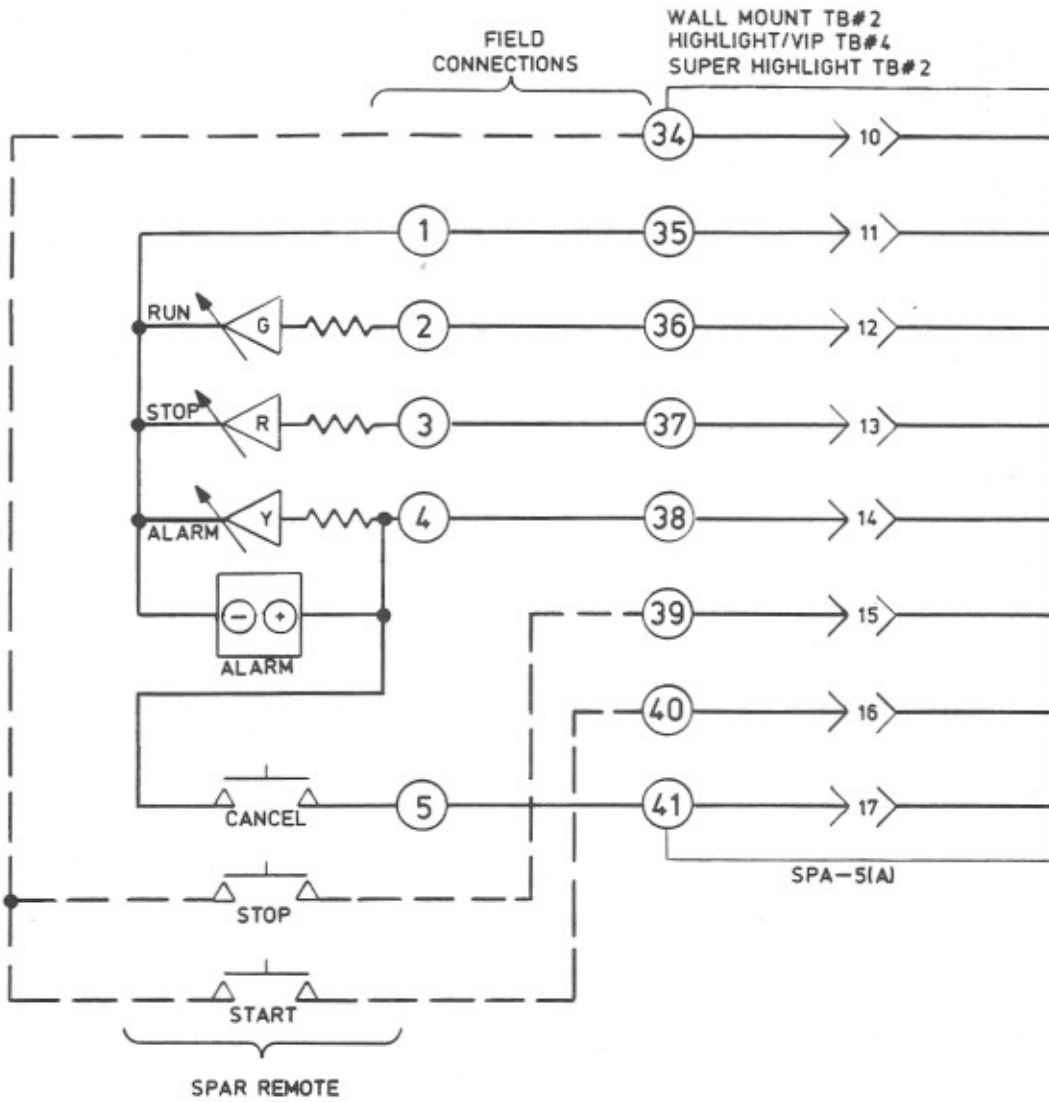
NOTE: —————— DEPICTS WIRING FOR OPTIONAL
START AND STOP SWITCHES.

SPA—5(A)
REMOTE STATUS/CONTROL CIRCUIT
WALL MOUNT/HIGHLIGHT/VIP/SUPER HIGHLIGHT VERSION
DWG# SPA—5(A)—13

```
      ┌──────────────┐                    ┌──────────────┐
      │ <18< ──(42)──┼────────────(42)──> 18> │
      │              │                    │              │
      │ <19< ──(43)──┼────────────(43)──> 19> │
      │              │                    │              │
      │ <20< ──(44)──┼────────────(44)──> 20> │
      │    (P-5)     │                    │    (P-5)     │
      └──────────────┘                    └──────────────┘
   SPA-5(A) SYSTEM 1                    SPA-5(A) SYSTEM 2
```
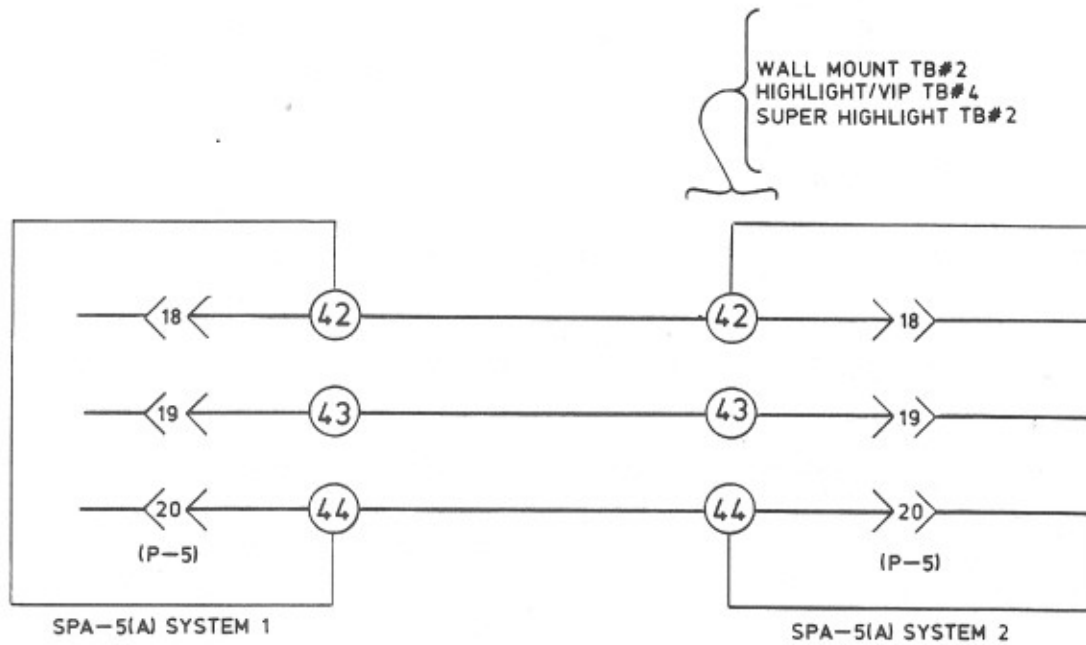
NOTES: REQUIRES OPTIONAL 803 INTERLOCK MODULE IN EACH
       SYSTEM BEING USED IN INTERLOCK MODE.

[SYNC] MUST BE DEPRESSED ON THOSE MACHINES THAT
          ARE TO BE OPERATED IN INTERLOCK.

SPA-5(A)
INTERLOCK OPERATION CIRCUIT
WALL MOUNT/HIGHLIGHT/VIP/SUPER HIGHLIGHT VERSION
DWG# SPA-5(A)-14

COM   45   > 34 >

STEREO   46   > 35 >

MONO   47   > 36 >

                 (P—6)

STEREO SYSTEM   SPA—5(A)
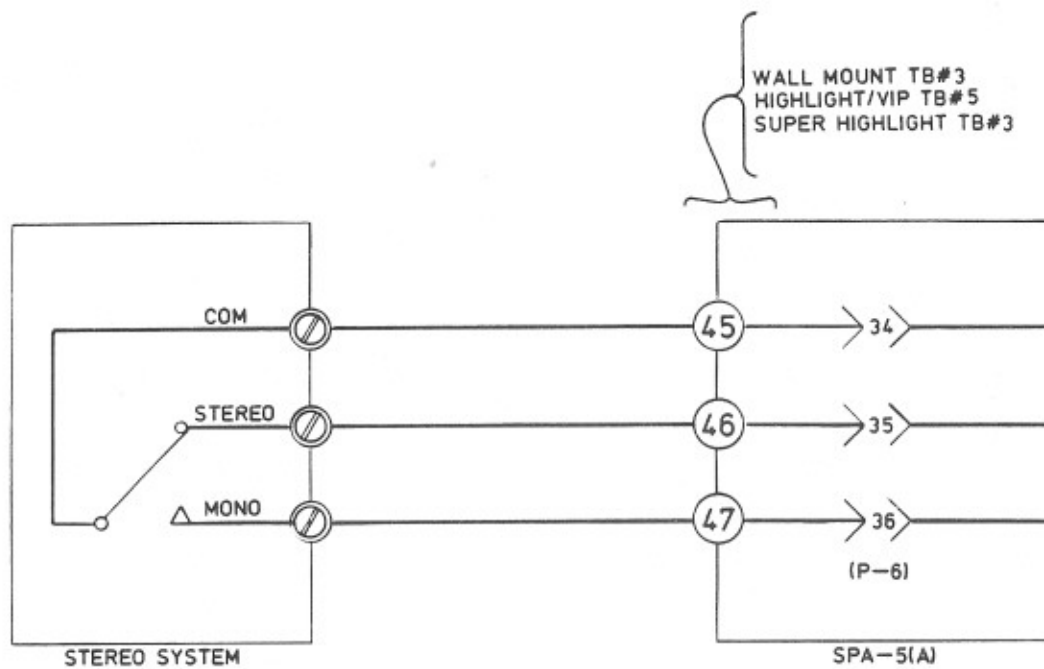
NOTE: PROVIDES "LATCH TYPE" STEREO SWITCHING LOGIC
       FROM AUTOMATION.

STEREO   WHEN ENERGIZED PROVIDES AUTOMATIC SWITCHING "LATCH TYPE"
         FROM MONO TO STEREO WHEN AUTOMATION SENSES FIRST
         OUTBOARD CUE.

SPA—5(A)
STEREO SWITCHING (LATCH TYPE) CIRCUIT
WALL MOUNT/HIGHLIGHT/VIP/SUPER HIGHLIGHT VERSION
DWG# SPA—5(A)—15

WALL MOUNT TB#3
HIGHLIGHT/VIP TB#5
SUPER HIGHLIGHT TB#3

COM — 48

STEREO — 46

MONO — 47

NON—SYNC — 49

STEREO SYSTEM
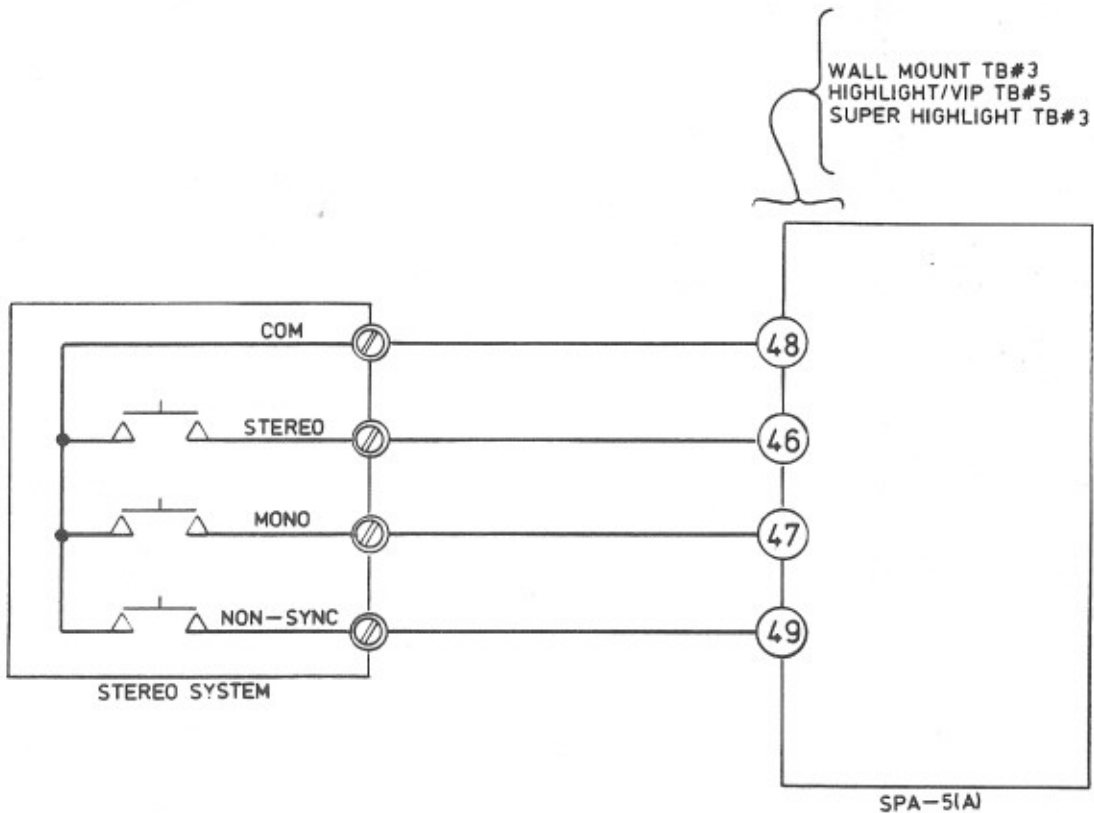
SPA—5(A)

NOTE: PROVIDES "PULSE TYPE" STEREO SWITCHING LOGIC FROM AUTOMATION.

REQUIRES OPTIONAL DSM STEREO MODULE.
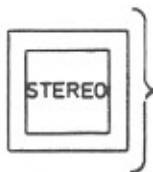
STEREO — WHEN ENERGIZED PROVIDES AUTOMATION SWITCHING
"PULSED TYPE" FROM MONO TO STEREO WHEN AUTOMATION
SENSES OUTBOARD CUE.

SPA—5(A)
STEREO SWITCHING (PULSED TYPE) CIRCUIT
WALL MOUNT/HIGHLIGHT/VIP/SUPER HIGHLIGHT VERSION
DWG #SPA—5(A)—16

FIELD WIRING

FLAT ⊘ ————————— △1 ⊘ FLAT ⎫
COM ⊘ ————————— △1 ⊘ COM ⎬ TURRET
SCOPE ⊘ ————————— △1 ⊘ SCOPE ⎭

TURRET CONTROL

△2

⊘ FLAT ⎫
⊘ COM ⎬ MASKING
⊘ SCOPE ⎭

FLAT ⊘
COM ⊘
SCOPE ⊘

MASKING CONTROL

SPA—5(A) FORMAT MODULE

△ △   △ △
FLAT   SCOPE

MANUAL SWITCHES
LOCATED ON SPA—5(A)
AUTOMATION CONTROL PANEL
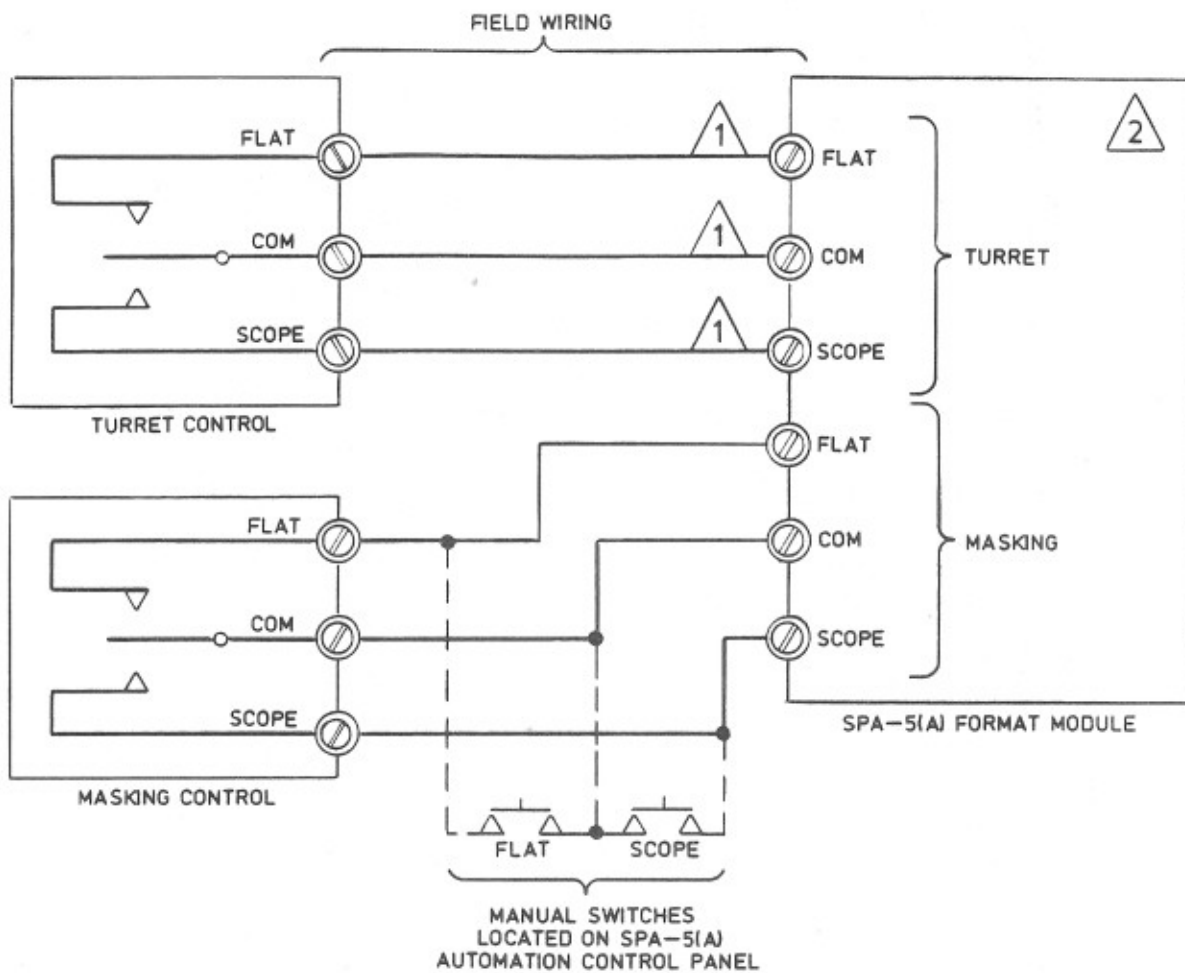
NOTES: △1   IF TURRET ONLY REQUIRES A PULSE FOR CHANGE FROM FLAT TO
SCOPE OR VISA VERSA AND HAS NO LOCATION MEMORY JUMPER
FLAT TO SCOPE AND RUN ONLY TWO WIRES TO CONTROL.

TO TURRET {

⊘ FLAT ⎫
⊘ COM ⎬ FORMAT
⊘ SCOPE ⎭ MODULE

△2   REQUIRES OPTIONAL FORMAT MODULE.

————— FACTORY WIRED.

SPA—5(A)
TURRET AND MASKING CONTROL CIRCUIT
WALL MOUNT VERSION
DWG# SPA—5(A)—17

FACTORY WIRED

TB#5 ON HIGHLIGHT/VIP
TB#1 TERM # IS THRU
#20 ON SUPER HIGHLIGHT

△1   △2

(51) 15   FLAT

(52) 16   COM   TURRET

(53) 17   SCOPE

FLAT   COM   SCOPE

18   (54)   FLAT

19   (55)   COM

20   (56)   SCOPE

TURRET CONTROL

SPA-5(A) FORMAT MODULE

FLAT   COM   SCOPE

MASKING CONTROL

FLAT   SCOPE

MANUAL CONTROLS
LOCATED ON SPA-5(A)
AUTOMATION CONTROL PANEL
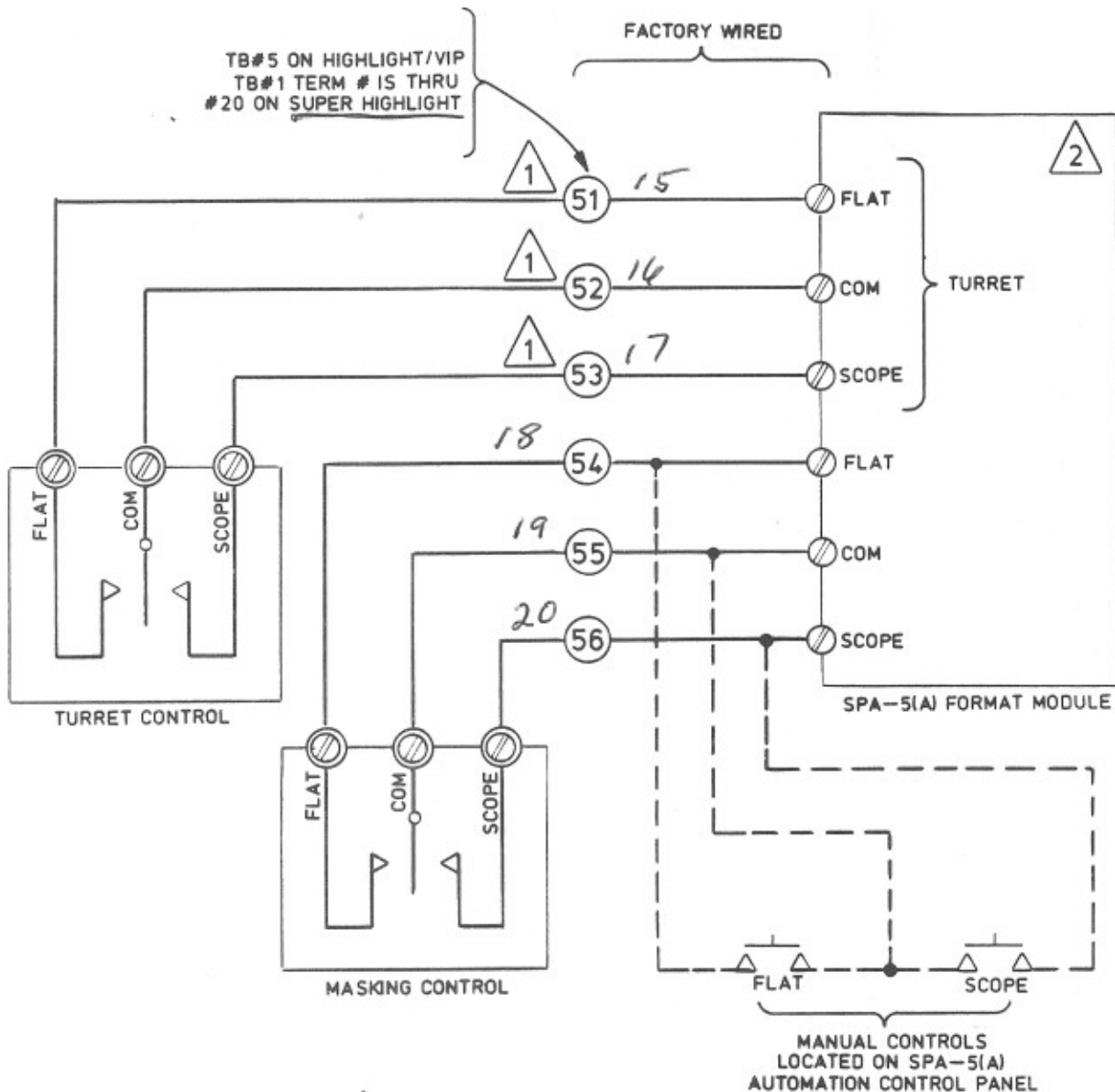
NOTES:

△1   SEE DWG# SPA-5(A)-17 FOR SPECIAL NOTES.

△2   REQUIRES OPTIONAL FORMAT MODULE

----- FACTORY WIRED.

SPA-5(A)
TURRET AND MASKING CONTROL CIRCUIT
HIGHLIGHT/VIP/SUPER HIGHLIGHT VERSION
DWG# SPA-5(A)-18

CONSOLE

EXTERNAL CONNECTIONS

71450

PHASE — 1 — X
PHASE — 2 — Y
PHASE — 3 — Z
NEUTRAL — 4
GRND — 5

L1
L2
L3
RECTIFIER
KM

} TO XENON POWER SUPPLY CONTACTOR

6
7
8
9

FROM TRANS C.B. — 10
FROM MASKING C.B. — 11
FROM CURTAIN C.B. — 12
FROM LAMP C.B. — 13
FROM MASTER C.B. — 14

15
16
17
18
19
20
21
22
23
24
25
26
27

FROM SPA—5 FORMAT MODULE

FROM SOUND CB1 — 28
FROM SOUND CB2 — 29
30
31

TB—1

5A MASTER → TB1—14
CONV. OUTLET
15A TRANS. → TB1—10
15A LAMP → TB1—13
10A PROJ. → TB2—20
5A AUTO. → TB2—1
20A SOUND → TB1—28
20A SOUND → TB1—29
20A MASK → TB1—11
20A CURTAIN → TB1—12

115 VAC HOT TO PLATTER
115 VAC HOT TO MASKING MTR.
115 VAC HOT TO CURTAIN MTR.
115 VAC HOT TO EXHAUST BLOWER
115 VAC HOT TO OPTIONAL CONT.
TURRET CONTROL FLAT
TURRET CONTROL SW. LEG.
TURRET CONTROL SCOPE
MASKING MOTOR CLOSE
MASKING MOTOR SW. LEG.
MASKING MOTOR OPEN

RECEPTICLES LOCATED IN SOUND COMPARTMENT

HIGHLIGHT CONSOLE — INSTALLATION DIAGRAM

(BASIC UNIT W/PWR DIST. OPTION A)

DRAWING NO. 71450

UNLESS OTHERWISE SPECIFIED	SYMBOLS			
TOLERANCES	FLATNESS	MATERIAL	DESCRIPTION	DRAWING NO. 71450
DECIMALS ±.005	PARALLELISM			
FRACTIONAL ±1/64	PERPENDICULARITY			
ANGLES ±2°	SYMMETRY	FINISH	SCALE: / DRAWN BY / CHECKED BY / PROJECT NO.	CODE NO.
BREAK SHARP EDGES .010 MAX X 45°	REF. ANSI Y 14.5 1973			
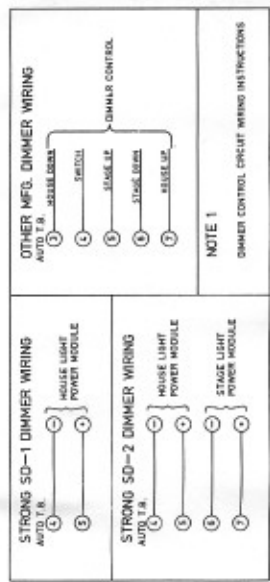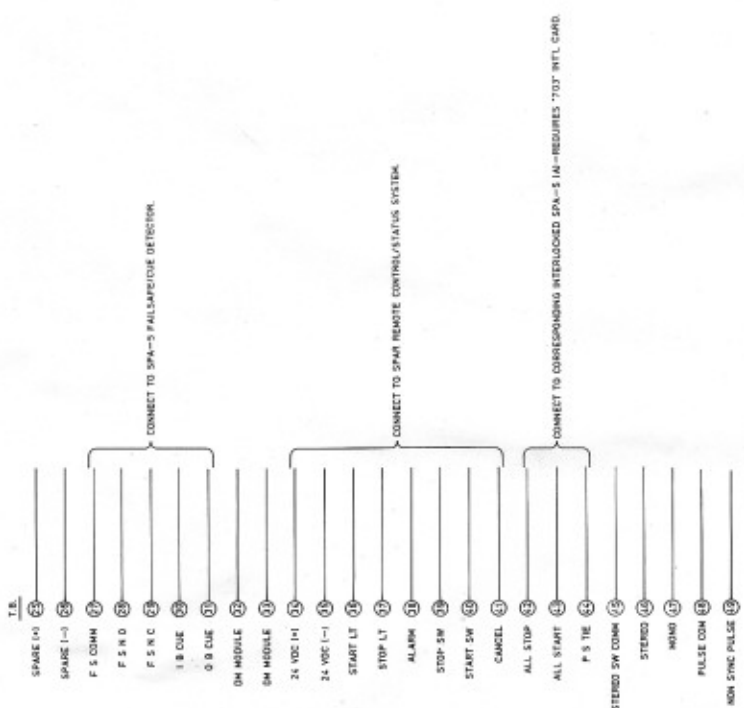
SPA-5 IAI AUTOMATION FIELD WIRING

T.B.
1 — 115 VAC HOT — CONNECT TO 115 VAC CIRCUIT WITH 5 AMP CIRCUIT PROTECTION.
2 — 115 VAC COM
3 — DIMMER CONT
4 — DIMMER CONT
5 — DIMMER CONT — NOTE 1
6 — DIMMER CONT
7 — DIMMER CONT
8 — DOWSER CLOSE
9 — DOWSER OPEN — CONNECT TO PROJECTOR ZIPPER DOWSER—PULSE LOGIC.
10 — DOWSER (2017A) — CONNECT TO BALLANTYNE 2017A CHANGE OVER SUPPLY—LATCH LOGIC.
11 — DOWSER (2917A)
12 — NON SYNC "SW" — CONNECT TO SOUND SYSTEM—17 TO 15-NON SYNC ON/13—TO 14-NON SYNC OFF.
13 — NON SYNC "OFF"
14 — NON SYNC "ON"
15 — EXCITER "SW" — CONNECT TO EXCITER LAMP POWER SUPPLY POSITIVE OUTPUT.
16 — EXCITER "ON" — CONNECT TO EXCITER LAMP POSITIVE.
17 — LAMP "SW" — CONNECT TO LAMP AUTOMATION CIRCUIT.
18 — LAMP "ON"
19 — PROJ "SW" — CONNECT TO PROJECTOR MOTOR 115 VAC HOT INPUT CIRCUIT.
20 — PROJ "ON" — CONNECT TO PROJECTOR MOTOR.
21 — CURTAIN "CLOSE" — CONNECT TO CURTAIN MOTOR CONTROL MOTOR—REQUIRES "80C" CURTAIN MODULE.
22 — CURTAIN "SW"
23 — CURTAIN "OPEN"

T.B.
25 — SPARE (+)
26 — SPARE (−)
27 — F S COMM
28 — F S N D — CONNECT TO SPA-5 FAIL SAFE/CUE DETECTOR.
29 — F S N C
30 — I B CUE
31 — Q B CUE
32 — DM MODULE
33 — DM MODULE
34 — 24 VDC (+)
35 — 24 VDC (−)
36 — START LT
37 — STOP LT
38 — ALARM — CONNECT TO SPAR REMOTE CONTROL/STATUS SYSTEM.
39 — STOP SW
40 — START SW
41 — CANCEL
42 — ALL STOP
43 — ALL START — CONNECT TO CORRESPONDING INTERLOCKED SPA-5 IAI—REQUIRES "703" INTL CARD.
44 — F S TIE
45 — STEREO SW COMM
46 — STEREO
47 — MONO
48 — PULSE COM
49 — NON SYNC PULSE

STRONG SD-1 DIMMER WIRING
AUTO T.B.
4 — HOUSE LIGHT POWER MODULE
5

STRONG SD-2 DIMMER WIRING
AUTO T.B.
4 — HOUSE LIGHT POWER MODULE
5
6 — STAGE LIGHT POWER MODULE
7

OTHER MFG. DIMMER WIRING
AUTO T.B.
3 — HOUSE DOWN
4 — SWITCH — STAGE UP — DIMMER CONTROL
6 — STAGE DOWN
7 — HOUSE UP

NOTE 1
DIMMER CONTROL CIRCUIT WIRING INSTRUCTIONS

DRAWING NO. 5950

* SET TIME FOR TURRET SWING *

15

HU   K4
HD   K5
OBL K3
D1-D13
C1
C2   D2
R2
R3
R4
K2   Q1   Y   K1

R1 - 100~5W
R2 - 22k 1/2W
R3 - 330~ 1/2W
R4 - 47~ 1/2W
P1 - 500~
C1 - 470/50
C2 - 22/35
Q1 - 2N2647
Q2 - GEC106F2
D1-D13 - 1N4007
K1-K5 - HB2DC24

FOIL SIDE

RAVEN 841

K2   K1
HD
HU   OBL

RAVEN LABS, Inc.

841 - OBL/HSE LGTS		
DATE 12-22-87	DRAWN BY ED	DWG. NO. 841