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XETRON®

MAXI-11X/DC

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DIV. OF NEUMADE PRODUCTS CORP. Ten Saddle Rd., Cedar Knolls, NJ 07927 U.S.A. Telephone (201) 267-8200

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1.0 SAFETY INSTRUCTIONS

1.1 Basics

When using your equipment, basic safety precautions should always be followed, including the following:

- Read and understand all instructions before using the equipment.
- Do not operate automation if unit has been dropped or damaged - until it has been examined by a qualified serviceman.
- Always disconnect or turn breaker off before cleaning and servicing and when not in use.
- To reduce the risk of electric shock, do not immerse the unit in water or other liquids.
- To reduce the risk of electric shock, do not disassemble this unit, have a qualified serviceman contacted when service or repair work is required. Incorrect reassembly can cause electric shock when the appliance is used subsequently.
- The use of an accessory attachment not recommended by manufacturer may cause risk of fire, electric shock or injury to persons.
- A good earth ground is always necessary to prevent electric shock.

1.2 Fuse

When replacing the fuse of this automation, use UL miniature fuse rated min. 125V, with 2A current rating.

1.3 Line Voltage

This automation must be used within an AC voltage of 100 to 120 V and frequency 50-60 Hz.

1.4 Precautions

In operating an automation system, it is important that certain good habits are developed which will insure proper operation at all times.

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1.4 Precautions (continued)

- Keep the film path of the projector and sound reproducer clean at all times. It is recommended that before the film is threaded, brush out the gate with a toothbrush, clean off the cue roller with a rag. We recommend the use of Xekote as a cleaning and lubricating agent for the cue roller, plastic rollers and film.

- The Allen cap screw in the end of the cue roller must be tight for proper cue sensitivity.

- After the film is threaded, check to be certain that the auto/masking selector, if any, is set to the proper format, as well as run or intermission selector switch.

- If foil cues are poorly applied or broken, they will not trigger the automation properly. This will cause missed changeovers, etc. Develop a habit of inspecting the foil cues whenever possible.

- If trouble develops, try to determine the exact problem before proceeding. If changeover was missed, check cues and cue roller first. If projector did not start, was mode selector set properly?

- With any automation equipment, it is very important that good splices be made and with extended run programs, these splices must be checked frequently. It is just as important to look for any type of film damage such as cracked sprocket holes or tears in the sprocket areas.

- Please do not be guilty of failing to remove your cues when breaking the show down as they can be a great problem to the next projectionist using the film. Some projection people have used a graphite base or silver type paint for the cues with little thought as to the problem of its removal. Careful inspection of each print for such cues before your first performance is very necessary.

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2.0 FEATURES

- Controls: Projector Drive Motor, Lamphouse, Picture Changeover Dowser, Exciter Lamp, Intermission Tape Deck (non-sync), Dimmer and curtain with provisions for masking.
- Included are heavy duty built-in control switches for local or manual operation of the projector motor, lamphouse, changeover, exciter lamp, masking, house lights and curtain.
- The Maxi-11X/DC will accept cues at any point during the show for a programmed intermission.
- A unique failsafe circuit assures the dowser is closed prior to lamp ignition, eliminating annoying pre-start flashes on the screen.
- Interchangeable plug-in relays, heavy duty, dust covered.
- Slide out chassis permits access to all internal hardware.
- For add-on, the Maxi-11X/DC becomes very versatile by operating on 12 VDC.
- Complete with the proven Xetron split film cue detector/failsafe device and comprehensive installation/operation manual.
- Position of switches can be observed from a distance by light color indication.
- Remote with or without alarm capabilities.
- Interlock capabilities.

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3.0 GENERAL DESCRIPTION

The Maxi-11X/DC system has been designed as a single projector automation unit. It can be used with a single 35mm projector with a film transport system, or a professional 16mm projector.

The wall mount Maxi-11X/DC is contained in a metal cabinet which measures 12" wide x 20" high x 5 1/2" deep. For the Xetron console, the Maxi-11X/DC measures 12" wide x 5 1/2" high and mounts flush with the console panel.

The Maxi-11X/DC automation system uses momentary and alternate action pushbuttons that also indicate system status and various modes of operation and circuit instructions for a complete understanding of the various functions and indications.

All control circuits are dry circuit, the Maxi-11X/DC does not provide voltage to the controlled devices, only contact closure.

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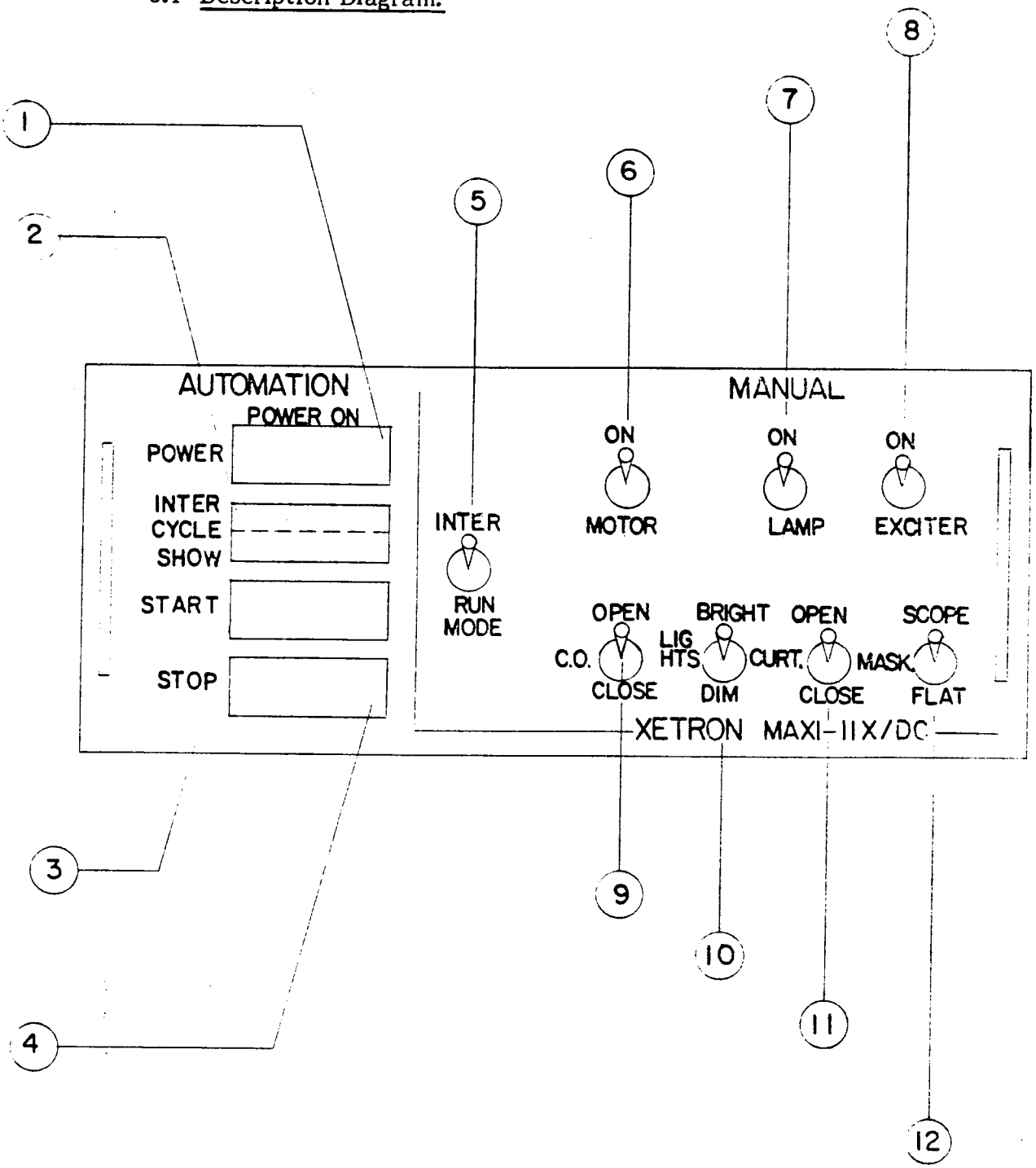
3.1 Description Diagram:



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3.2 Description

(1). The POWER pushbutton switch: Turns automation system on and off. All manual controls are active with the automation power off.

(2). INTERMISSION CYCLE SHOW pushbutton switch: Indicates the mode in which automation unit timer is on and it's used for cycling the unit timer.

(3). The START pushbutton switch: Action is started by pressing the START button and its associated indicator light (green) stays on during the operation as this light is in parallel with coil on K4.

(4). The STOP pushbutton switch:The red STOP pushbutton is the "FAILSAFE GO-NO-GO" indicator. When failsafe is down, red indicator will be on. When film is threaded and failsafe is up, red "FAILSAFE GO-NO-GO" indicator will be out, indicating safe to start show. This same logic will also be fed to the remote unit if used.

(5). The MODE toggle switch:
The normally open contacts in the "RUN" position means that with an intermission foil on the film, this cue will not be accepted and the projector will continue to operate. When the switch is turned to "INTERMISSION" position, the intermission foil completes, it closes the changeover dowser, turns "OFF" the exciter lamp and shuts down the projector and Xenon lamp.

(6).* The MOTOR toggle switch:
Provides manual control (sustained contacts) for projector drive motor.

(7).* The LAMP toggle switch:
Provides manual control (sustained contacts) for Xenon lamp.

(8).* The EXCITER toggle switch:
Provides manual control (sustained contacts) for exciter lamp.

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3.2 Description (continued)

(9). The CHANGEOVER toggle switch:
Provides manual control (momentary contacts) to "open" or "close" the changeover dowser.

(10). The LIGHTS toggle switch:
Provides manual control (momentary contacts) for dimmer and stage lights.

(11). The CURTAIN toggle switch:
Provides manual control (momentary contacts) for stage curtains.

(12). The MASKING toggle switch:
Provides manual control (momentary contacts) for either "Scope" or "Flat".

* It is very important for the sustained contact manual switches to be in the "off" position. When automation is used, switches in the "on" position bypass the automation.

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4.0 OPERATION INSTRUCTIONS

4.1 Show Make-Up

For proper screen presentation, it is recommended that black leader stock be inserted where intermissions may occur, due to the fact that time must be allowed for machine shutdown and restart. Approximately 10 feet should be used between shows where an intermission would occur. This would mean 6 seconds of dark screen if the intermission was bypassed, which is not objectionable.

Cues on film provide the following:

- Outboard--end of show sequence
- Inboard--mid reel intermission sequence if in "INTER MODE" --bypassed if in "RUN MODE"

Cue Placement

Cues shall be placed on the film, so that contact is made between the cue roller and grounding roller. Leave enough length of the foil to assure good contact.

Place the foil on the film emulsion side from the edge of the perforations out to the edge. Wrap the excess over the edge of the film.

The inboard side of the film is used to program intermissions in the middle of the program. Place cue on the film so that contact is established at the cue detector 7 seconds prior to shut down for intermission if desired.

The outboard side (soundtrack) cue is used for end of show and should be placed far enough in advance of the end to allow proper timing of curtain and lights before changeover closes. Trial and error will provide for exact placements.

Some types of foil have proven to be unsatisfactory especially where extended run programs are involved. If the metallic material starts flaking off, poor contact will result. Other tapes may not have the required flexibility and cracks or breaks will appear causing inconsistent operation. Always use Xetron Type cue tape.

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4.2 Operation

1. Thread projector with leader in aperture between 7 & 8 feet.
2. If intermission is programmed in middle of show, place mode selector switch in INTER position--machine will run to cue on inboard side and intermission sequence will take place.
   If intermission has been programmed in middle of show and is not desired, place mode selector switch in RUN position and any inboard cue will be bypassed.
3. To start show--press button on Maxi-11X/DC.
4. Sequence of operation:
   a). Show start or restart
      1. Changeover dowser will close
      2. Motor will start
      3. Lamp will ignite
      4. Tape deck will turn off
      5.* Lights will dim--Cam #3
      6.* Curtain will open--Cam #9
      7.* Changeover will open & exciter will turn on--Cam #5

      *Timing controlled by adjustable cams on timer unit.

   b). Intermission
      1. Curtain will close--at cue
      2. Lights will come on--timing controlled by adjustable--Cam #4
      3.* Changeover will close
      4.* Projector will stop
      5.* Lamp will go off
      6.* Tape deck will come on
      7.* Exciter will turn off

      *All at same time--controlled by Cam #6 (changeover close).

   c). Show End--(With mode selector switch in RUN position).
      1. Curtain will close
      2. Lights will come on--timing controlled by Cam #4
      3. Changeover will close and exciter will turn off--timing controlled by Cam #6
      4.* Projector will stop
      5.* Lamp will go off
      6.* Tape deck will start

      *All at same time when film runs out and failsafe drops.

5. If film should break during operation, show will automatically begin intermission sequence and 12 VDC alarm voltage will be available at Terminal #22 in Maxi-11X/DC for 7 seconds.
   After repairing the break, restart the show by pressing start button--show start sequence will take place.
6. At the end of the show an outboard cue will begin show end sequence.

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5.0 CIRCUIT DESCRIPTION

5.1 Show Start Sequence

In order to start the show, cycle button (2) must be illuminated in the INTER. position and STOP pushbutton light (4) must be out.

If pushbutton (2) is in the "SHOW" position, press CYCLE button (2) and wait until timer cycles to 0 (inter. position).

If STOP light in (4) is on, check failsafe to see that both arms are properly threaded.

If all is okay, press START button (3). As pushbutton (3) is pressed, one-half energizes K3 which closes changeover dowser, the other half of (3), through normally closed contacts of K9 latches K4. As K4 latches, 115 VAC is provided to timer motor and the cam begins to rotate; coil of K6 is lifted, 12 VDC is directed to latch K5, contacts break the non-sync music control circuit at terminals 28-29, 12 VDC is applied to the coil of K1, which closes and connects projector drive motor terminals 26-27 and Xenon lamp terminals 30-31. As Timer Switch #3 closes, terminals 28,40 are connected to lower dimmer, Cam Switch #2 opens and K4 drops out, timer motor continues to run through Cam Switch #1, Cam Switch #5 closes, pulsing K2. As K2 closes, changeover terminals 34-35 are connected to open changeover and pulses on K7 which latches via K3 through K6. As K7 closes terminals 32-33 are connected, turning on the exciter lamp. Cam Switch #8 closes and connects terminals 42,44 which opens the curtain. Cam Switch then closes energizing K9, which illuminates pushbutton (2) into the SHOW position. As Timer Switch #1 opens, the timer motor stops, the show is running.

5.2 Show End Sequence

With mode switch (5) in off (run) mode, outboard cue is detected (grounded) at terminal #1 which pulses and latches K8 through Timer Switch #2. K8 connects 115 VAC to the timer motor which starts to turn. As the timer rotates, Cam Switch #4 closes and connects terminals 38-39 which raises the dimmer, Cam Switch #7 opens and K9 drops out, Switch #6 then closes and pulses K3. As K3 normally closed contacts open and K7 drops out opening terminals 32-33 which turns off the exciter lamp. As K9 drops out, the pushbutton INTER. light is illuminated. As Cam Switch #2 opens, K8 drops out, the timer motor continues to run until Cam Switch #1 opens. As the film runs through the projector, failsafe arms drop causing terminal #3 to be grounded. As terminal #3 is grounded, K6 is energized which breaks the hold and drops out K5. As K6 is energized, STOP light (4) is illuminated. AS K5 drops out, 12 VDC is disconnected from the coil of K1, which drops out and disconnects terminals 26-27 and 30-31 which turns off the motor and Xenon Lamp

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5.3 Mid-Platter Intermission Sequence

It is desired to stop the show during the presentation for a scheduled intermission. An inboard cue has to be placed on the film so that it is detected by the cue detector 7 seconds prior to the scheduled intermission. Set mode Switch (5) to the ON (inter.) position. As the inboard cue is detected, terminal #2 is grounded, which goes through switch (5) and pulls in K8. The same will occur on SHOW end sequence. In addition, as K3 pulses, K6 is energized through switch (5) which drops out K5 and k1 shutts off the projector and Xenon lamp. Show is then re-started with pushbutton (3) for the balance.

5.4 Fault Shutdown - Auto Intermission Circuit

If an intermission cycle is desired in the event of a film break, terminal #16 is connected to ground (terminal #15). This provides a ground circuit through K9 during the show, if the film breaks, there is a ground on terminal #3 which pulls in K6. As K6 is pulled in, the ground from terminal #16 through K9 is connected to K8 which pulls in and provides the intermission cycle. As cam switch #7 opens, K9 drops out or terminal #16 is disconnected and K8 drops out via Cam Switch #2 and the timer will stop at 0 (inter.) position.

5.5 Alarm Output

As K6 was energized above, K5 drops out and 12 VDC was switched from K9 through K9 to terminal #22 (alarm output) if terminal #16 is connected to ground (auto intermission) 12 VDC would be available on terminal #22 until K9 drops out. If terminal #16 had not been grounded (no auto inter. circuit) 12 VDC would remain on terminal #22 until the Maxi-11X/DC was reset by grounding terminal #16 or pressing CYCLE button (2).

5.6 Remotes

Terminals are provided so that status indication and control functions can be operated from a remote location. All remote functions are low voltage. The following can be controlled from a remote location: Show start, timer cycle, outputs are provided for projector run, timer position (inter., show) and alarm output, fault (failsafe down).

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5.7 Relay Functions:

K1-Power Relay
Latches and controls power to the projector motor and Xenon lamp.

K2-Changeover Open Relay
Pulses via Cam Switch #5, opens changeover; and pulses and latches K7.

K3-Changeover Close Relay
Pulsed by one-half of PB-3 (start button) or Cam Switch #6, closes changeover; provides pulse at terminals 8-9 and drops out K7. Provides common (ground) pulse to Mode Switch S1.

K4-Start
Latched by one-half of START BUTTON PB-3, holds via Cam Switch #2, switches 115 VAC to timer motor, provides 12 VDC to K5, lifts coil of K6. Drops out when Cam Switch #2 opens.

K5-Hold relay
Latched by K4, holds throught K6, breaks non-sync control (Terminals 28-29); connects pulse from K3 to S1 and provides 12 VDC to K1.

K6-Failsafe/Stop
Energized by Stop Button PB-4 or failsafe, disconnects hold to K5, disconnects hold to K7, connects auto inter. Cycle to K8; provides 12 VDC to PB-4 (fault).

K7-Exciter Relay
Latches via K2 and is held via K3 through K6. Connects exciter lamp through terminals 32-33.

K8-Cue/Show End Relay
Latches via cue or Cycle Button PB-2 or auto inter. circuit through K6 and K9. Holds latched via Cam Switch #2; provides 115 VAC to timer motor and closes curtain.

K9-Alarm Relay
Energized by Cam Switch #7, stays energized during show, when not energized, completes circuit from PB-3 to K4 and provides 12 VDC to PB-2 and lights the INTER. light. When energized, provides 12 VDC to PB-2 SHOW light; connects auto inter. circuit from terminal 16 to K6; connects alarm output terminal #22 to hold Relay K5.

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5.8 Cam Timer

The Maxi-11X/DC utilizes an 8 switch cam timer for timing the sequence of events. The cam is driven by a 1 RPM motor and goes one-half cycle for each function. At 0 the timer is in the INTERMISSION cycle and at 50, the timer is in the SHOW cycle. Cams 1 and 2 are double cut fixed cams which sequence the timer one-half rotation. The cam is driven by a synchronous drive motor through a clutch that permits the cam to be rotated by the dial, in the direction of normal rotation. Each cam is provided with two adjustable switch actuator segments that can be adjusted independent of each other, and the main cam to provide a pulse or sustained closure of the microswitch. Each microswitch contains one set of Form C contacts and may be connected for normally open or normally closed operation.

5.9 Cam Functions

Cam Switch #1	Closes and provides 115 VAC to timer motor to complete cycle after K4 or K8 has dropped out.
Cam Switch #2	Hold for K4, K8, opens during cycle and allows K4 or K8 to drop out.
Cam Switch #3	Dimmer dim, closes during SHOW cycle to lower auditorium lights.
Cam Switch #4	Dimmer raise, closes during INTERMISSION cycle to raise auditorium lights.
Cam Switch #5	Changeover open, closes during SHOW start cycle to Pulse K2.
Cam Switch #6	Changeover close, closes during INTERMISSION cycle to Pulse K3.
Cam Switch #7	Mode, closes during SHOW start cycle and stays closed until INTERMISSION cycle and energizes K9.
Cam Switch #8	Curtain open, closes during show start cycle and opens curtain during INTERMISSION cycle.

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TERMINAL		TERMINAL	
1.	Outboard Cue Detector	23.	115 VAC Line
2.	Inboard Cue Detector	24.	115 VAC Neutral
3.	Failsafe	25.	Ground
4.	Ground	26.	Motor
5.	Remote Start Indicator	27.	Motor
6.	Remote C.O. Close	28.	Non-Sync
7.	Remote Run Indicator	29.	Non-Sync
8.	Dry Circuit Pulse	30.	Lamp
9.	Dry Circuit Pulse	31.	Lamp
10.	Hold (interlock)	32.	Exciter
11.	Start (interlock)	33.	Exciter
12.	Remote Show Indicator	34.	C.O. Feed
13.	Remote Interm. Indicator	35.	C.O. Open
14.	12 VDC	36.	C.O. Close
15.*	Ground	37.	C.O. (N.C.)
16.*	Auto Intermission (cycle)	38.	Dimmer Feed
17.	12 VDC	39.	Dimmer Bright
18.	Masking Feed	40.	Dimmer Dim
19.	Masking Scope	41.	Remote Stop Switch
20.	Masking Flat	42.	Curtain Feed
21.	Remote Stop Indicator	43.	Curtain Close
22.	12 VDC Alarm Out	44.	Curtain Open

*For Manual Intermission:

A. Remove 15,16 jumper.

B. Use A N.O. Pushbutton switch, connect one side of switch to #16, the other side to #15.

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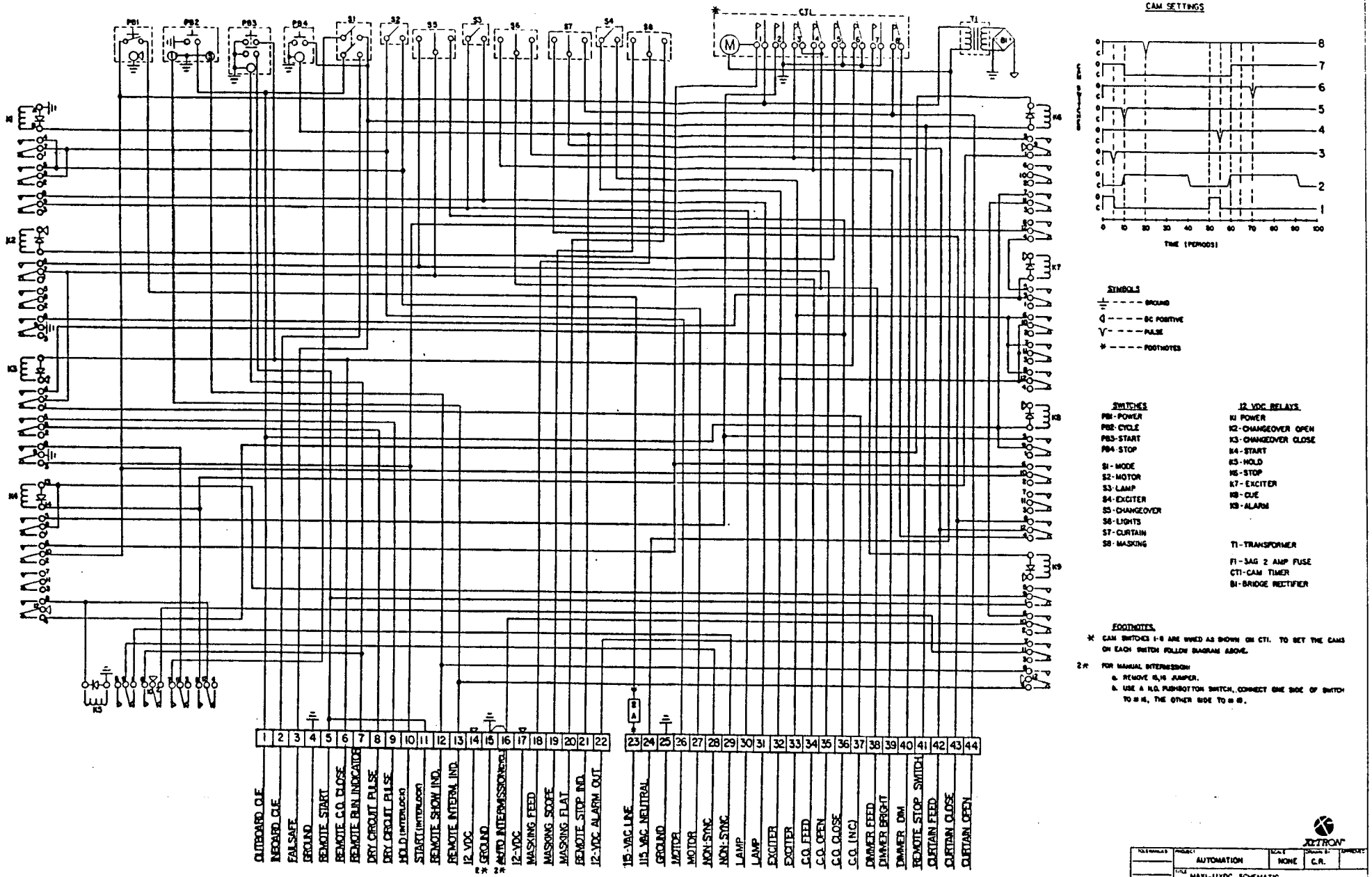
Part #	Description
XAK-003	Sheet Metal- Terminal Mtg. Panel
XAK-042	Chassis
XAK-043	Sub Chassis
XAK-041	Control Panel
XAK-052	Relay 4-PDT 12VDC Coil
XAK-051	Relay 3-PDT 12VDC Coil
XAK-071	Relay Socket 4-PDT
XAK-072	Relay Socket 3-PDT
XAK-073	Terminal Block
XAK-074	Terminal Strip
XAK-091	Timer Assembly
XAK-076	Switch-Motor, Lamp, Exciter
XAK-077	Switch-C.O., Lights,Curtain,Masking
XAK-092	Switch-Mode
XAK-078	Pushbutton Switch-Start
XAK-079	Pushbutton Switch-Stop
XAK-080	Pushbutton Switch-Power
XAK-093	Pushbutton Switch-Timer Cycle
XAK-082	Pushbutton Cap-Start (green)
XAK-083	Pushbutton Cap-Stop (red)
XAK-084	Pushbutton Cap-Mode Select (Yellow/Blue)
XAK-085	Pushbutton Cap-Power (White)
XAK-086	Power Transformer
XAK-087	Pilot Light Bulb
XAK-088	Timer Connector
XAK-094	Grommet (large)
XAK-089	Grommet (small)
XAK-090	Switch Mounting Nut
XNR-072	Bridge Rectifier


CAM SETTINGS
TIME (PERIODS)
SYMBOLS
GROUND
DC POSITIVE
PULSE
FOOTNOTES
SWITCHES
PB1-POWER
PB2-CYCLE
PB3-START
PB4-STOP
S1-MODE
S2-MOTOR
S3-LAMP
S4-EXCITER
S5-CHANGEOVER
S6-LIGHTS
S7-CURTAIN
S8-MASKING
12 VDC RELAYS
K1 POWER
K2-CHANGEOVER OPEN
K3-CHANGEOVER CLOSE
K4-START
K5-HOLD
K6-STOP
K7-EXCITER
K8-CUE
K9-ALARM
T1-TRANSFORMER
F1-3AG 2 AMP FUSE
CT1-CAM TIMER
B1-BRIDGE RECTIFIER
FOOTNOTES.
* CAM SWITCHES 1-8 ARE WIRED AS SHOWN ON CT1. TO SET THE CAMS ON EACH SWITCH FOLLOW DIAGRAM ABOVE.
2* FOR MANUAL INTERMISSION
a. REMOVE 15,16 JUMPER.
b. USE A N.O. PUSHBUTTON SWITCH, CONNECT ONE SIDE OF SWITCH TO # 15, THE OTHER SIDE TO # 16.
OUTBOARD CUE
INBOARD CUE
FAILSAFE
GROUND
REMOTE START
REMOTE C.O. CLOSE
REMOTE RUN INDICATOR
DRY CIRCUIT PULSE
DRY CIRCUIT PULSE
HOLD (INTERLOCK)
START (INTERLOCK)
REMOTE SHOW IND.
REMOTE INTERM. IND.
12 VDC
GROUND
AUTO INTERMISSION*2*
12-VDC
MASKING FEED
MASKING SCOPE
MASKING FLAT
REMOTE STOP IND.
12-VDC ALARM OUT
115-VAC LINE
115 VAC NEUTRAL
GROUND
MOTOR
MOTOR
NON-SYNC
NON-SYNC
LAMP
LAMP
EXCITER
EXCITER
C.O. FEED
C.O. OPEN
C.O. CLOSE
C.O. (N.C.)
DIMMER FEED
DIMMER BRIGHT
DIMMER DIM
REMOTE STOP SWITCH
CURTAIN FEED
CURTAIN CLOSE
CURTAIN OPEN
XTRON
AUTOMATION
NONE
C.R.
MAXI-11XDC SCHEMATIC
1-13-87
XAX-064