STEVE BECK
ARLINGTON HEIGHTS, ILLINOIS

1968

INTEGRATED STROBE SYSTEM

THE INTEGRATED STROBE IS A DEVICE WHICH CAN OPERATE A XENON FLASHTUBE AT A PERIODIC RATE OR, WHEN CONNECTED TO AN 8 Ω SIGNAL SOURCE, OPERATE THE TUBE TO THE "BEAT" OF THE MUSIC. THE PRINCIPLES OF OPERATION AND SCHEMATIC ARE INCLUDED IN AN ADDITIONAL FOLDER.

(A) OPERATION WITH A MUSIC-COMBO.

IT IS ADVISABLE TO OBTAIN THE MUSIC SIGNAL FOR TRIGGERING THE STROBE BEFORE THE AMPLIFIER STAGE SO THAT CHANGES THE PERFORMER MAY MAKE IN THE VOLUME LEVEL OF THE AMPLIFIER WILL NOT EFFECT THE STROBE TRIGGERING LEVEL. SIGNAL PICKUP FROM INSTRUMENTS MAY BE MADE VIA A "T" CONNECTER ON THE INPUT OF THE AMPLIFIER. SIGNAL CAN BE BROUGHT TO THE STROBE TRIGGERING SELECTOR THROUGH SHIELDED CABLE OF A MAXIMUM LENGTH OF 30' SO AS TO MINIMIZE LOSS. PERCUSSION SIGNALS MAY BE OBTAINED BY PLACING MICROPHONES DIRECTLY AT THE TRAP-SET AND THEN PASSING THE SIGNAL THROUGH A LOW- OR BAND-PASS FILTER TO ELIMINATE THE CYMBALS AND BACKROUND NOISE AND PASS ONLY THE ESSENTIAL IN-FORMATION OF THE BASS DRUM OR TOM-TOM SIGNAL. (SEE DIAGRAM 1.)

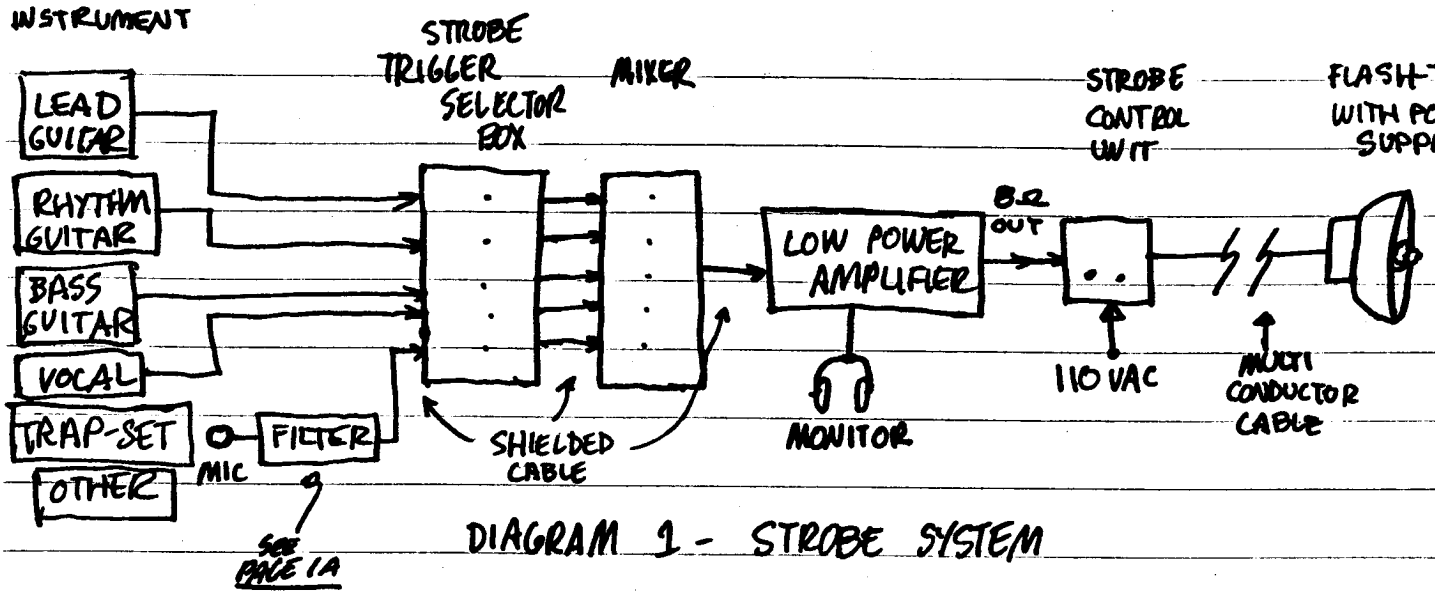


DIAGRAM 1 - STROBE SYSTEM

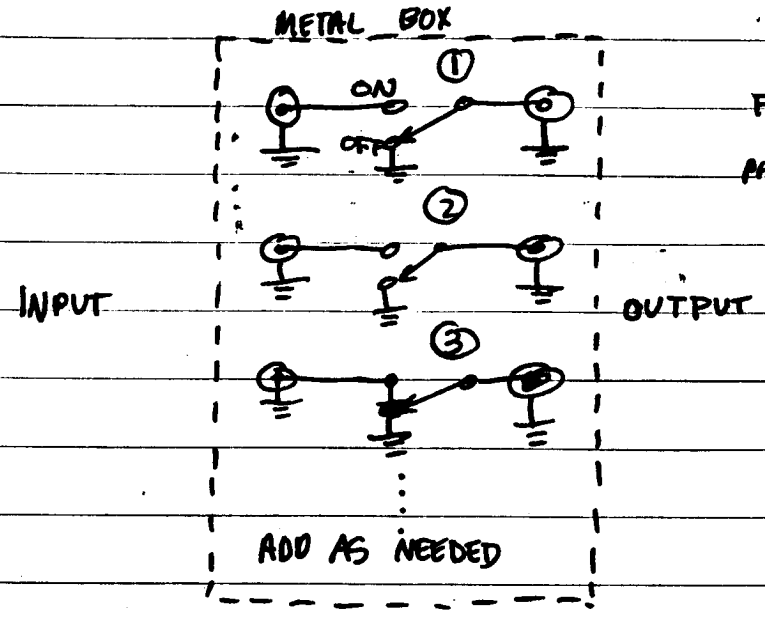
(B) TRIGGER SELECTION BOX

IT WILL BE NECESSARY TO BE ABLE TO ISOLATE THE INSTRUMENTAL SIGNALS SO THAT THE STROBE CONTROL UNIT WILL HAVE SIGNALS CONTAWING ONLY ESSENTIAL WFORMATION ABOUT THE "BEAT" AND ALSO SO THAT THE STROBE MAY BE USED IN OTHER CAPACITIES, i.e. FOLLOW A GUITAR LEAD. THE TRIGGER SELECTOR BOX IS QUITE SIMPLE, CONSISTING ONLY OF SWITCHES TO CONNECT THE MIXER INPUTS TO EITHER MUSICAL SIGNALS OR GROUND. (See Diagram 2.)

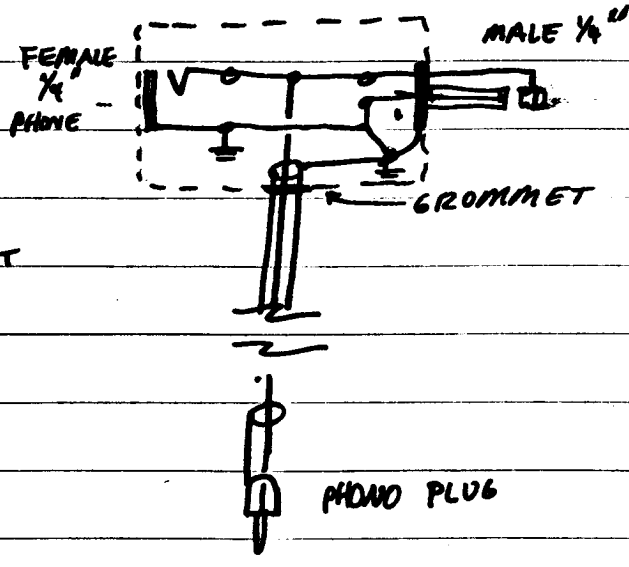
(C) MIXER

THE MIXER IS NECESSARY TO PROVIDE OPTIMUM SENSITIVITY OF THE STROBE CONTROL UNIT AND TO ACCOMODATE DIFFERENCES IN SIGNAL LEVELS BETWEEN INSTRUMENTS. THE LOW POWER AMPLIFIER GAIN CONTROL AND THE STROBE UNIT CONTROL ADJUST THRESHOLD LEVEL WHILE THE MIXER PLACES THE INDIVIDUAL SIGNALS AT THE PROPER or DESIRED LEVEL TO THE THRESHOLD.

STROBE TRIGGER SELECTOR



"T" BOX CONNECTOR



ALL PLUGS ARE RCA-TYPE PHONO JACKS

ALL SWITCHES ARE MINIATURE SPDT

(D) LOW-POWER AMPLIFIER

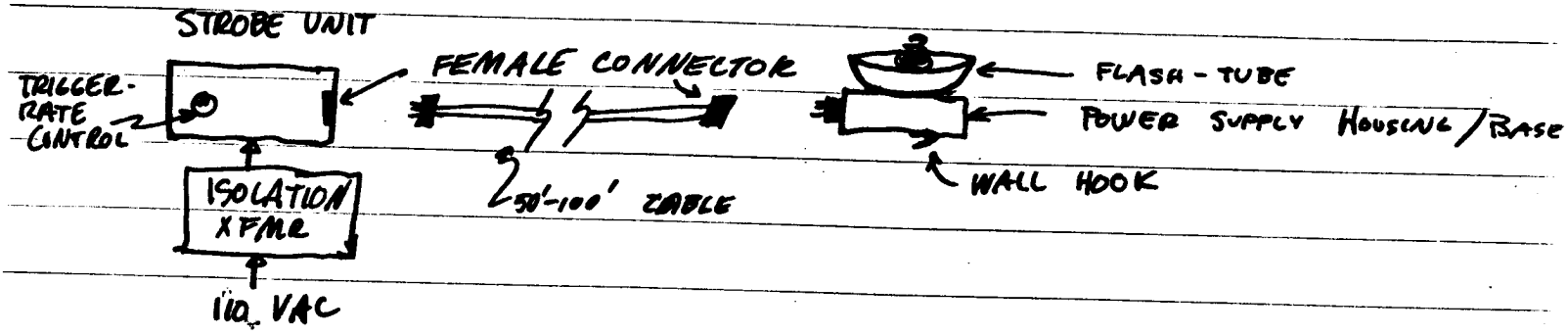
THE STROBE CONTROL UNIT REQUIRES ABOUT 1 WATT OF POWER FROM AN 8 Ω SOURCE IN ORDER TO TRIGGER CONSISTENTLY. SINCE ONE SIDE OF THE STROBE IS CONNECTED DIRECTLY TO ONE SIDE OF THE LINE IT IS ALSO A GOOD SAFETY PRECAUTION TO ISOLATE THE STROBE FROM THE INSTRUMENTS THRU THE OUTPUT TRANSFORMER OF THE AMP. IF NO OUTPUT TRANSFORMER IS USED AS IN THE CASE OF A SOLID STATE AMPLIFIER AN ISOLATION TRANSFORMER BETWEEN THE STROBE AND THE AMP OR THE STROBE AND THE LINE SHOULD BE USED. (MORE ON THIS TOPIC IN THE NEXT SECTION.

AS MENTIONED IN SECTION (C) THE AMPLIFIER VOLUME CONTROL CAN BE USED IN CONJUNCTION WITH THE STROBE TRIGGER/RATE CONTROL AS A FLASH THRESHOLD ADJUSTMENT. MIXER LEVELS ON INDIVIDUAL INSTRUMENTS CAN BE ADJUSTED WITH THE AMP-GAIN FIXED TO TRIGGER THE STROBE AT AN AVERAGE PLAYING LEVEL. DURING THE PERFORMANCE THE STROBE OPERATOR CAN ADJUST THE GAIN & TRIGGER CONTROLS FOR THE DESIRED EFFECT.

(E) STROBE CONTROL UNIT AND FLASHER.

SINCE THE STROBE UNIT IS A LINE OPERATED DEVICE IT WOULD BE WISE TO PLACE AN ISOLATION TRANSFORMER BETWEEN THE STROBE & THE LINE VOLTAGE. THE FLASH TUBE AND ITS ASSOCIATED POWER CIRCUITS WILL BE LOCATER REMOTELY AT 50'- 100' FROM THE UNIT CONTROL BOX. BOTH THE 500-700 VDC SUPPLY AND THE 1500 VDC FLYBACK TRIGGER SUPPLY WILL BE LOCATED AT THE TUBE MAKING IT NECESSARY ONLY TO BRING 110 VAC AND THE TRIGGER PULSES TO THE REMOTE LAMP UNIT. IN ORDER TO PREVENT UNWANTED TRIGGERING OF THE FLASH TUBE BY STRAY SIGNALS, THE LEAD CARRYING THE TRIGGER PULSE SHOULD BE SHIELDED. THE REMAINING TWO POWER LEADS SHOULD BE NO SMALLER THAN

#18. A CONDUCTOR CAN BE MADE BY TAPING MICROPHONE CABLE TO LINE CORD. THE FLASH TUBE WILL BE BASED IN A SMALL METAL BOX WHICH HOUSES THE TUBE POWER SUPPLIES AND WHICH SERVES AS A MOUNTING FOR THE MALE POWER/SIGNAL CABLE. SEE DIAGRAM:



NOTES:

(1) AS RIDICULOUS AS IT MAY BE THIS SIGN MUST BE POSTED AT THE ENTERENCE OF A ROOM WHERE THE STROBE IS BEING USED:

CAUTION

INTENSE WHITE LIGHT - AVOID LOOKING DIRECTLY AT THE LAMP. STROBE EFFECTS MAY INDUCE EPILEPTIC FITS.

Components:

Resistors:

2-27K
2-180
2-220
2-10K
22K
100
2-100K/2W + ✓
2-120K/2W + ✓

Potentiometers

2-50K
100

Capacitors

.02
2-.047/600V
2-.2
2-5/15V
2-100/150V
2-80/150V 1 ✓
4-40/450V 2 ✓
2-12/600V 2 ✓

Switches

2-SPST Toggle
2-SPDT Toggle
1-DPDS Toggle
1-8P3T Rotary
4-NO SPST Pushbutton

Solid State

10-1N3196 Silicon
2-1N34
2-2N4910 sym UNIJUNCTION 2 ✓ ✓
2-2N3528 SCR

6.3

Connectors

2- phone jacks
2- 3 cond jacks
4- 3 cond plugs
2- 3 cond sockets
AC line cord

Physical

Vector board 1 *
Hardware
Screws
Nuts
Spacers
Hooks
Wire
Flea Clips
Cabinet

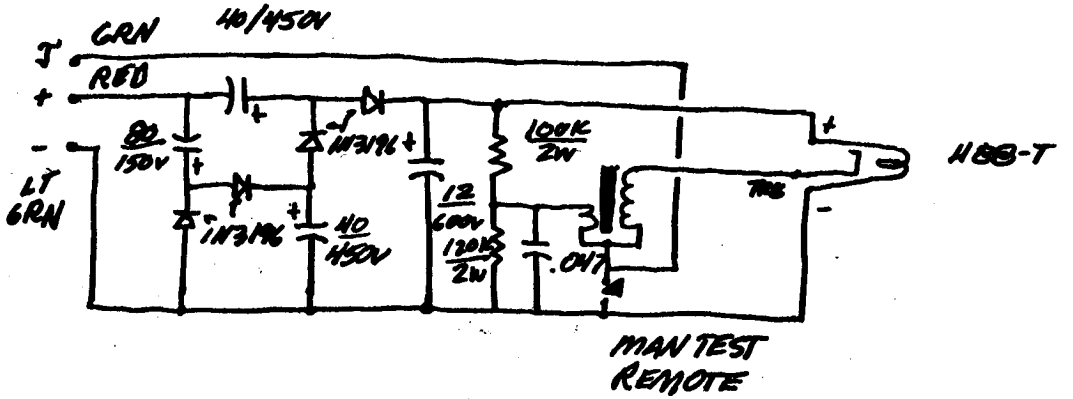
Special

2-8415 Stancor Power x fmrs ✓
2-H8BT flash tube

Tools

Soldering Iron tips & elements.
Flea clips

UNIJUNCTION ✓
8734 CABLE ✓



CONNECTORS: A

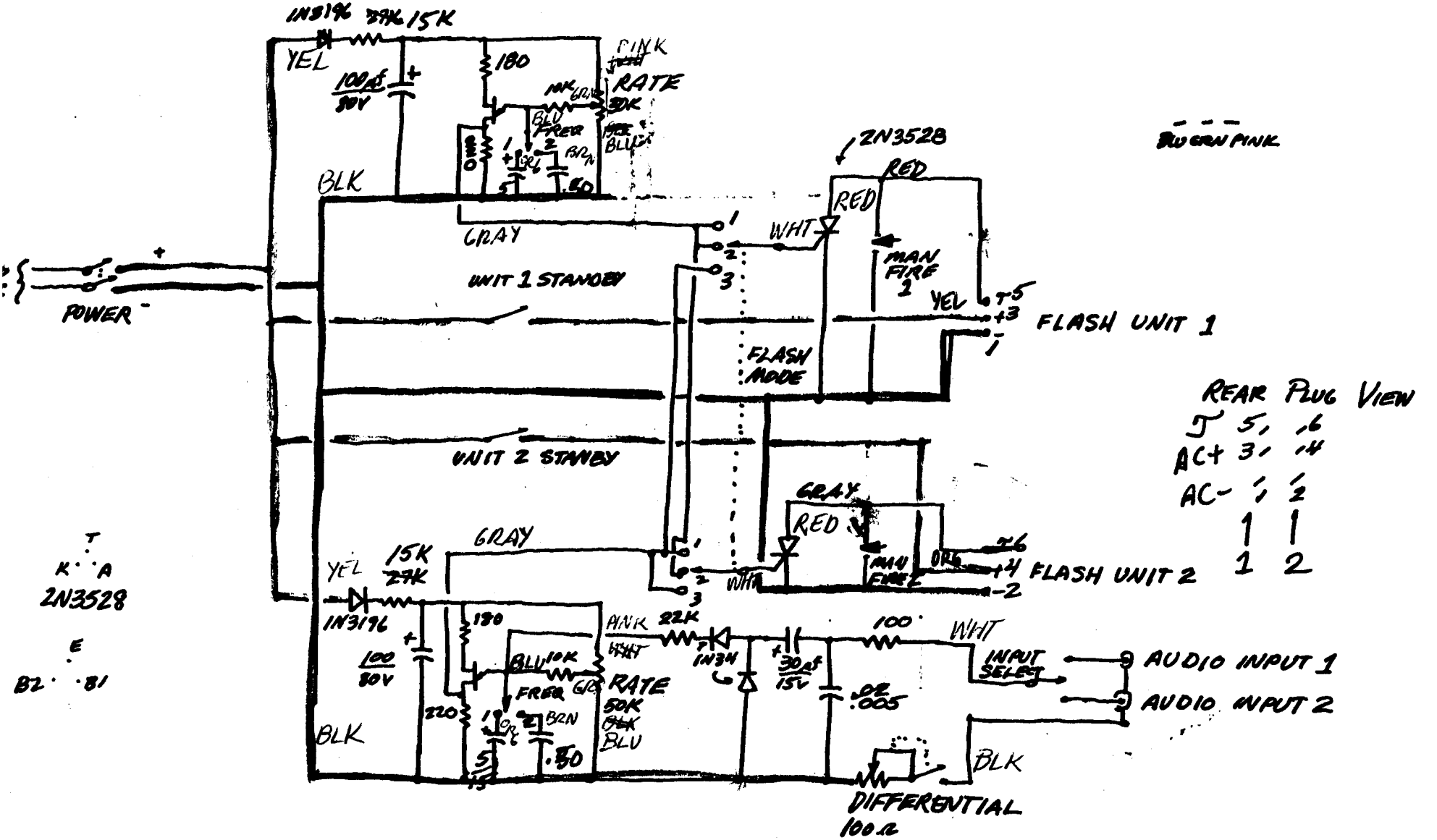
UNIT 1: . TRIGGER

AC+ . . AC-
E D

UNIT 2 1 1 TRIGGER
2 AC+
3 AC-

FLASH UNITS 1 & 2

STROBE SYSTEM for "KALEIDESCOPE" 11-9-68
STEVE BECK 10-24-68
ARLINGTON HEIGHTS, ILLINOIS
DWG. 3



FLASH MODE : 1 MUTUALLY EXCLUSIVE FLASHING
2 FLASH WITH GEN. 1
3 FLASH WITH GEN. 2 (INTEGRATOR)

FREQUENCY : 1 LOW (1/3 HZ - 10 HZ)
2 HIGH (5 HZ - 20 HZ)

CONTROL SCHEMATIC

STROBE SYSTEM for "KALEIDESCOPE" 11-9-68
STEVE BECK 10-24-68
ARLINGTON HEIGHTS, ILL
DWG. 2

STROBE LIGHTING SYSTEM TO BE USED AT KALEIDESCOPE ENVIRONMENT NOVEMBER 9-10 1968 UNIVERSITY OF ILLINOIS URBANA

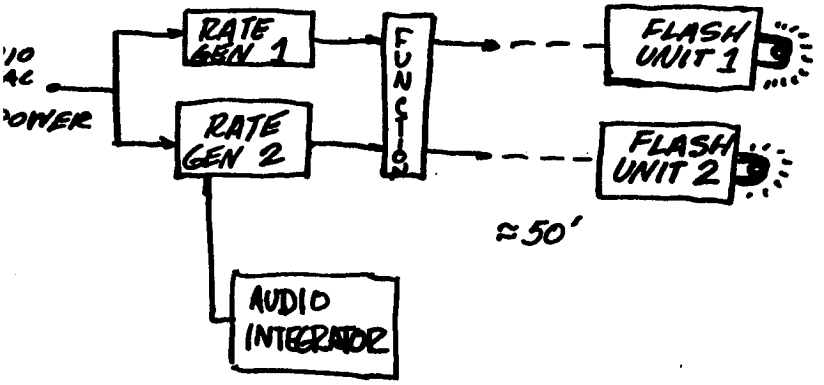


FIG. 1 - BLOCK DIAGRAM

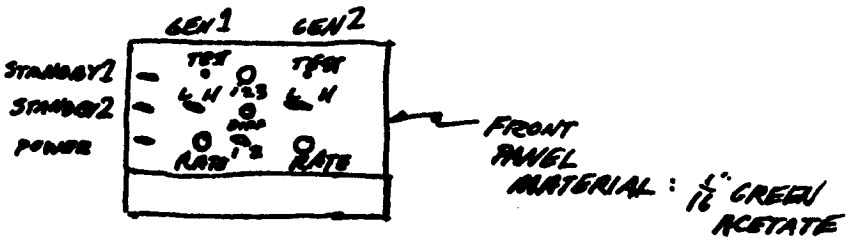
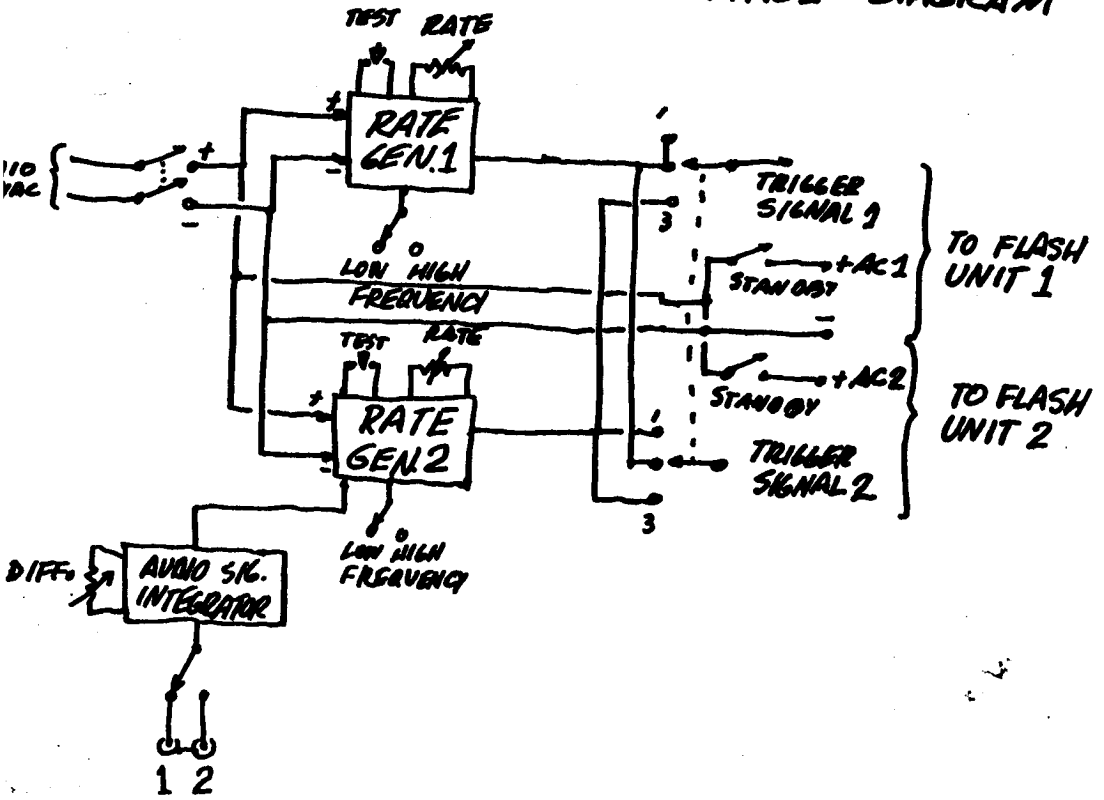


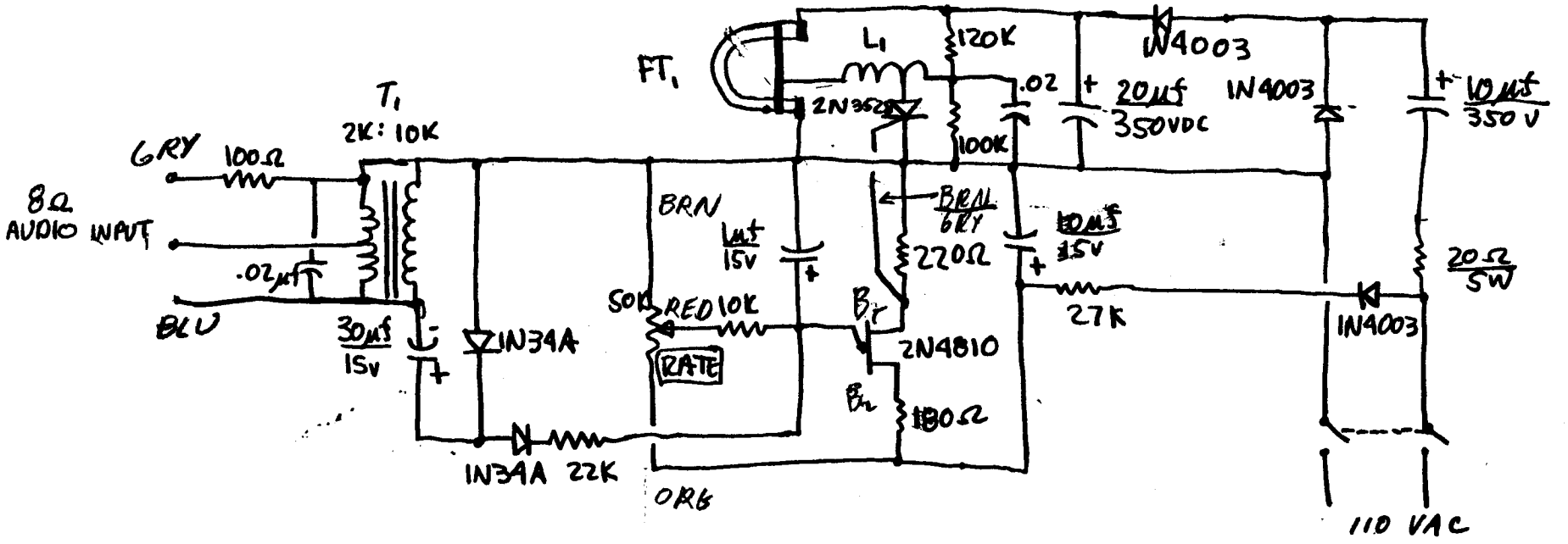
FIG 3. PANEL LAYOUT

FIG. 2 - FUNCTIONAL CONTROL DIAGRAM



STROBE SYSTEM for "KALEIDESCOPE" 11-9-68
STEVE BECK 10-24-68
ARLINGTON HEIGHTS, ILL
DWG 1.

PSYCHEDELIC STROBE LAMP



RESISTORS

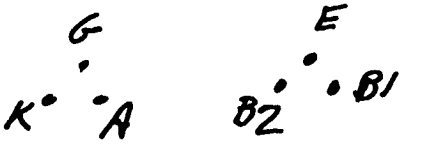
- 100Ω
- 180Ω
- 220Ω
- 10K
- 22K
- 27K
- 100K
- 120K
- 20Ω/5W
- 50K POT. ✓

CAPACITORS

- 2- .02µf DISCS ✓
- 1µf 15VDC ✓
- 10µf 150VDC ✓
- 10µf 15 VDC ✓
- 20µf 350VDC ✓
- 30µf 15 VDC ✓

SOLID STATE

- 2- 1N34A
- 3- 1N4003
- 1- 2N3528 SCR
- 1- 2N4810 UJT



INDUCTORS

- T_1 2K CT : 10K INTERSTAGE
- 4 AMGLO ST-25

TUBE

FT_1 AMGLO U-35-T XENON FLASH TUBE

MISC

BOARD, WIRE, SWITCH, CABINENT, CONNECTOR

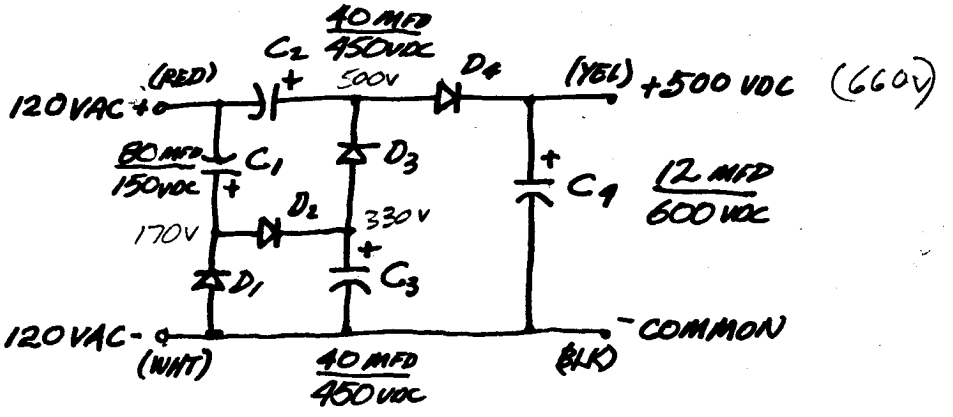
CAUTION

PROLONGED USE IN DARKENED ROOMS MAY INDUCE HALLUCINATIONS OR TRIGGER UNDESIRED SIDE EFFECTS. LAMP SHOULD NOT BE USED IN THE PRESENCE OF ANYONE SUBJECT TO EPILEPSY.

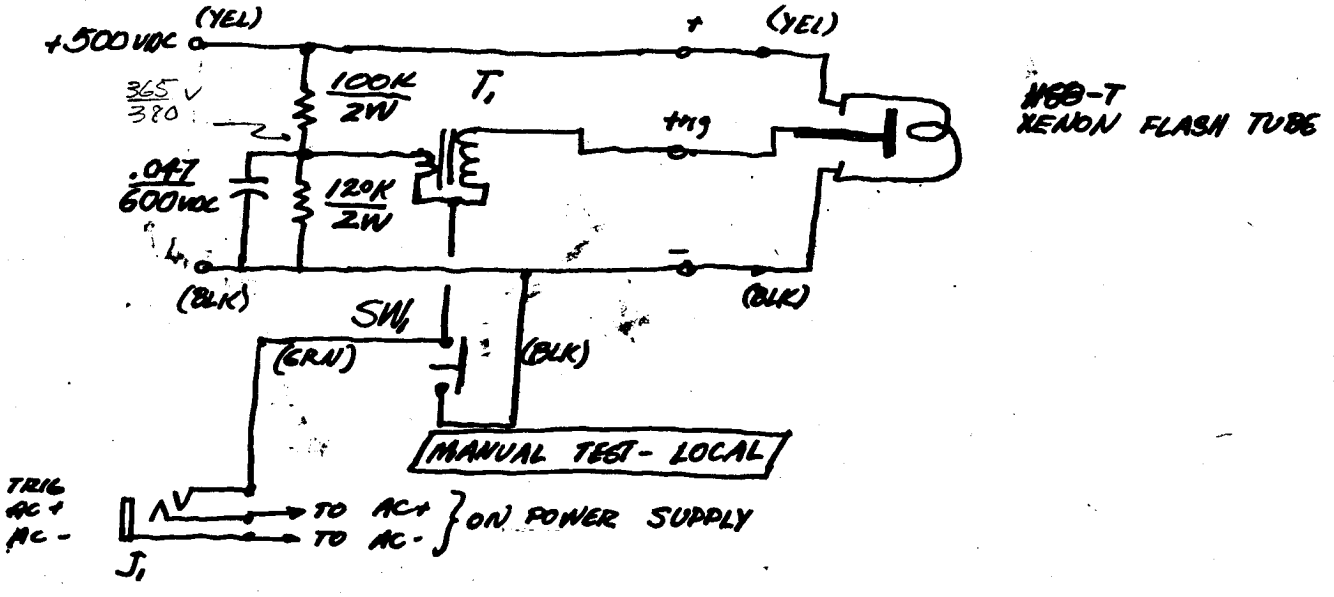
STEVE BECK
APRIL 6, 1968

STROBE FLASH UNIT for use in conjunction with SEQUENTIAL STROBE LIGHT SYSTEM

(1) POWER SUPPLY



(2) FLYBACK CIRCUIT



NOTES:

(1) COLORS INDICATE INTERCONNECTING WIRE CODES.

(2) POWER & TRIGGERING CONNECTIONS TO CONTROL UNIT ARE MADE THROUGH J_1 VIA A 3-CONDUCTOR PHONE JACK & THREE CONDUCTOR CABLE, NOT TO EXCEED 100' IN LENGTH.

COMPONENTS:

$D_1 - D_4$ IN4006 SILICON DIODES

C_1 - 80 mfd / 150 VDC
C_2 - 40 mfd / 450 VDC
C_3 - 40 mfd / 450 VDC
C_4 - 12 mfd / 600 VDC

T_1 - 6.3VAC / 110 VAC .6 A FILAMENT XFMR

SW_1 - NORMALLY OPEN MINIATURE PUSH BUTTON SWITCH

J_1 - 3 CONDUCTOR PHONE JACK

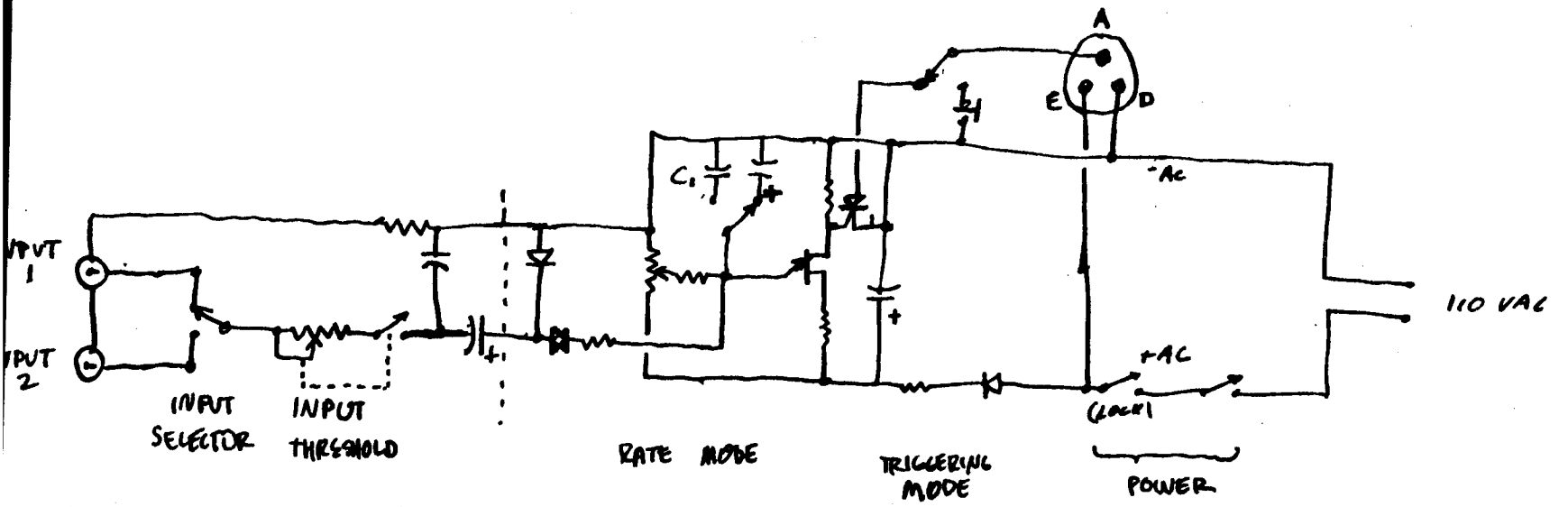
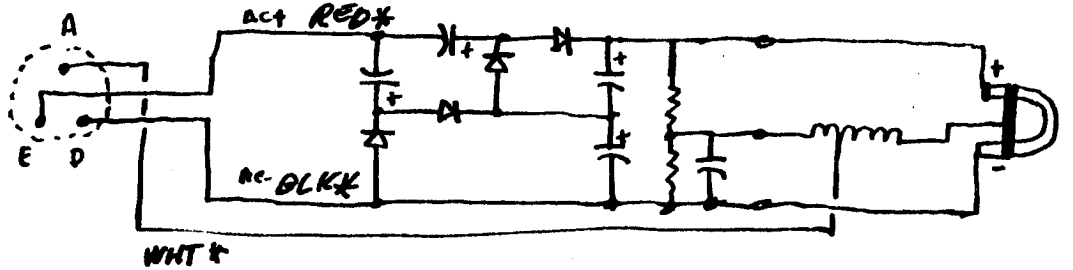


FIGURE 1. STROBE CONTROL UNIT



* IN CABLE

FIGURE 2. FLASH TUBE UNIT

INTEGRATED STROBE UNIT
STEPHEN C. BECK
APRIL 1968