Technical Manual

MAINTENANCE INSTRUCTIONS FOR

AUTO/STROBONAR 882

Honeywell PHOTOGRAPHIC PRODUCTS DIVISION
P. O. BOX 1010 • LITTLETON, COLORADO • 80120

H73003315-001

Technical Manual

SEPTEMBER 1972

MAINTENANCE INSTRUCTIONS FOR

AUTO/STROBONAR 882

Honeywell PHOTOGRAPHIC PRODUCTS DIVISION
P. O. BOX 1010 • LITTLETON, COLORADO • 80120

H73003315-001A 3C SEPTEMBER 1972 Printed in USA

SECTION 1

INTRODUCTION

SECTION 2

PRINCIPLES OF OPERATION

SECTION 3

CHECKOUT AND TROUBLESHOOTING

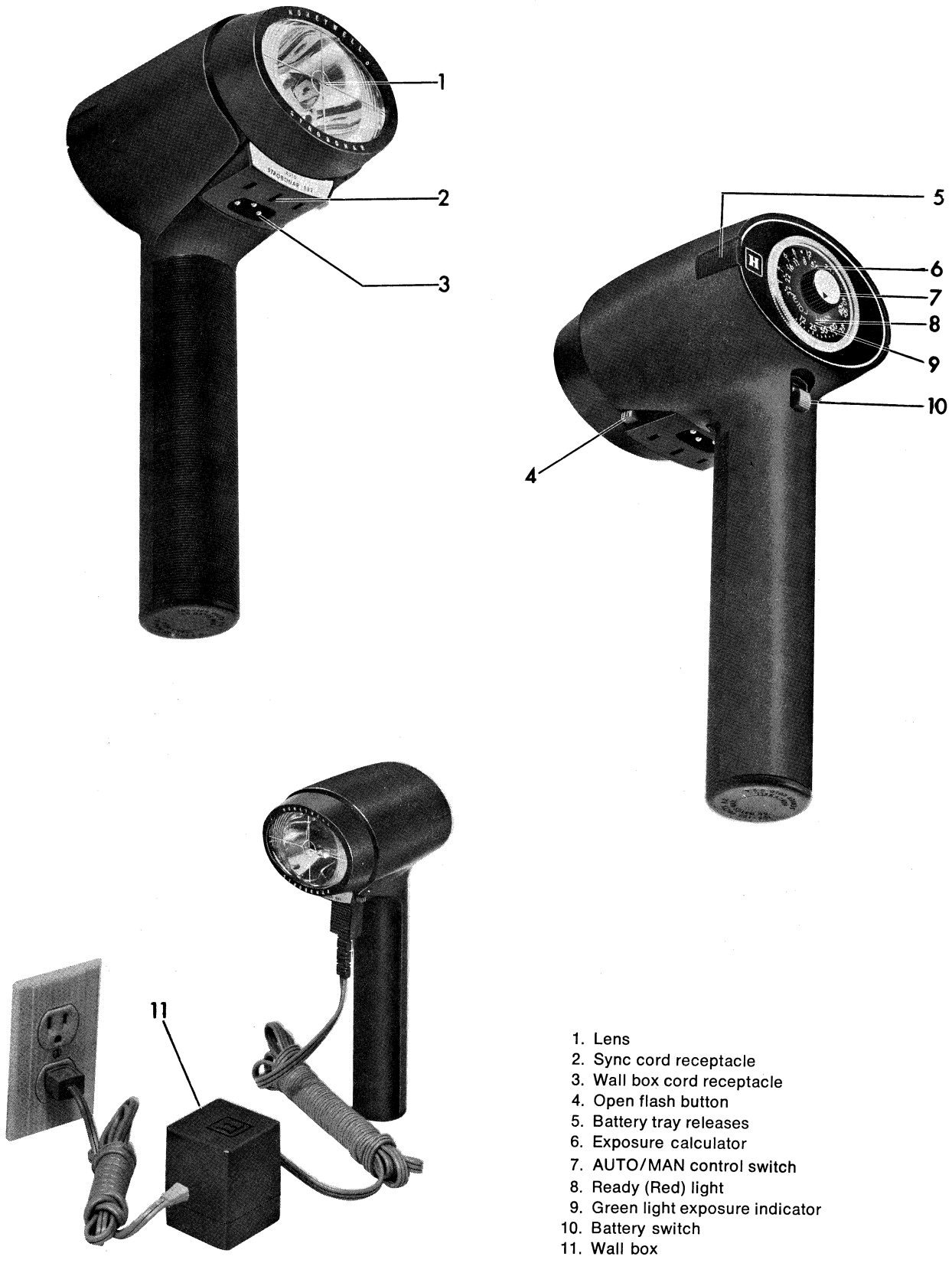
SECTION 4

MAINTENANCE

SECTION 5

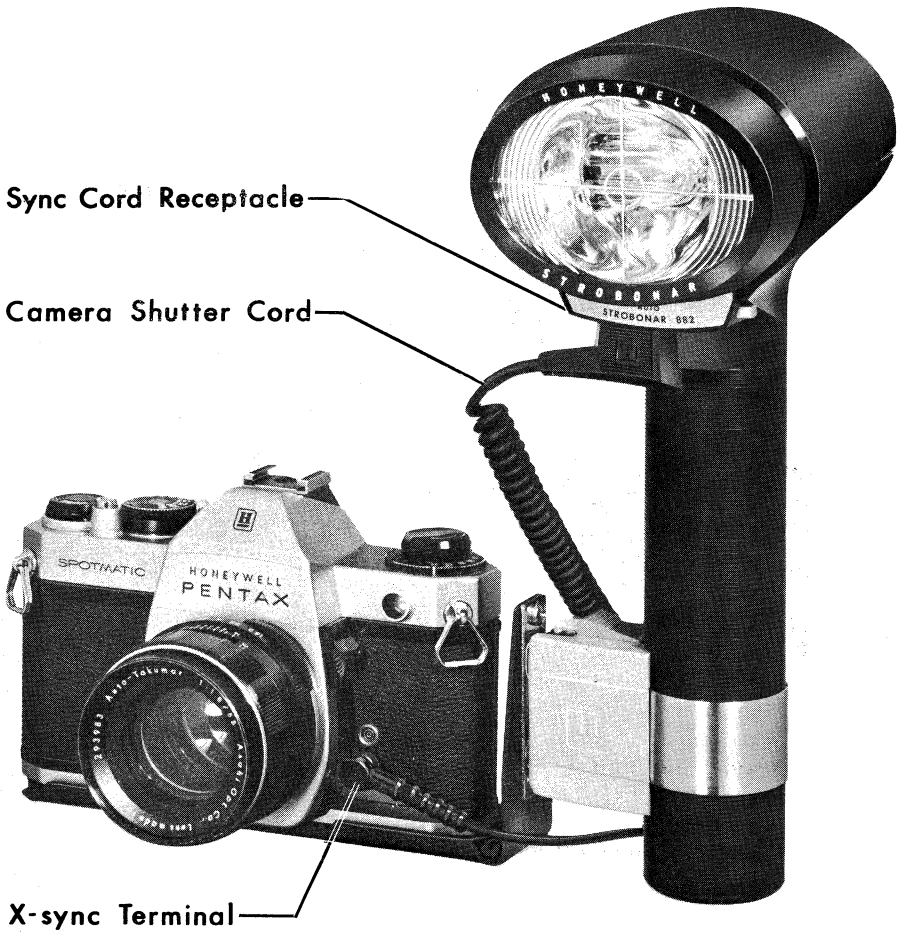
PARTS LIST AND DIAGRAMS

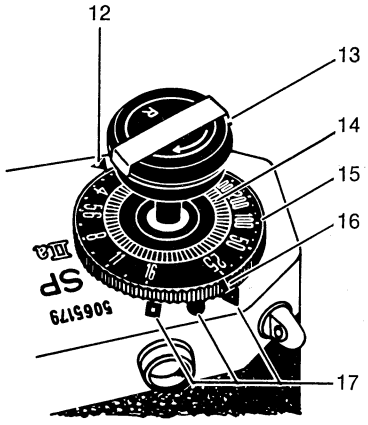
LIST OF ILLUSTRATIONS



1. Lens
2. Sync cord receptacle
3. Wall box cord receptacle
4. Open flash button
5. Battery tray releases
6. Exposure calculator
7. AUTO/MAN control switch
8. Ready (Red) light
9. Green light exposure indicator
10. Battery switch
11. Wall box

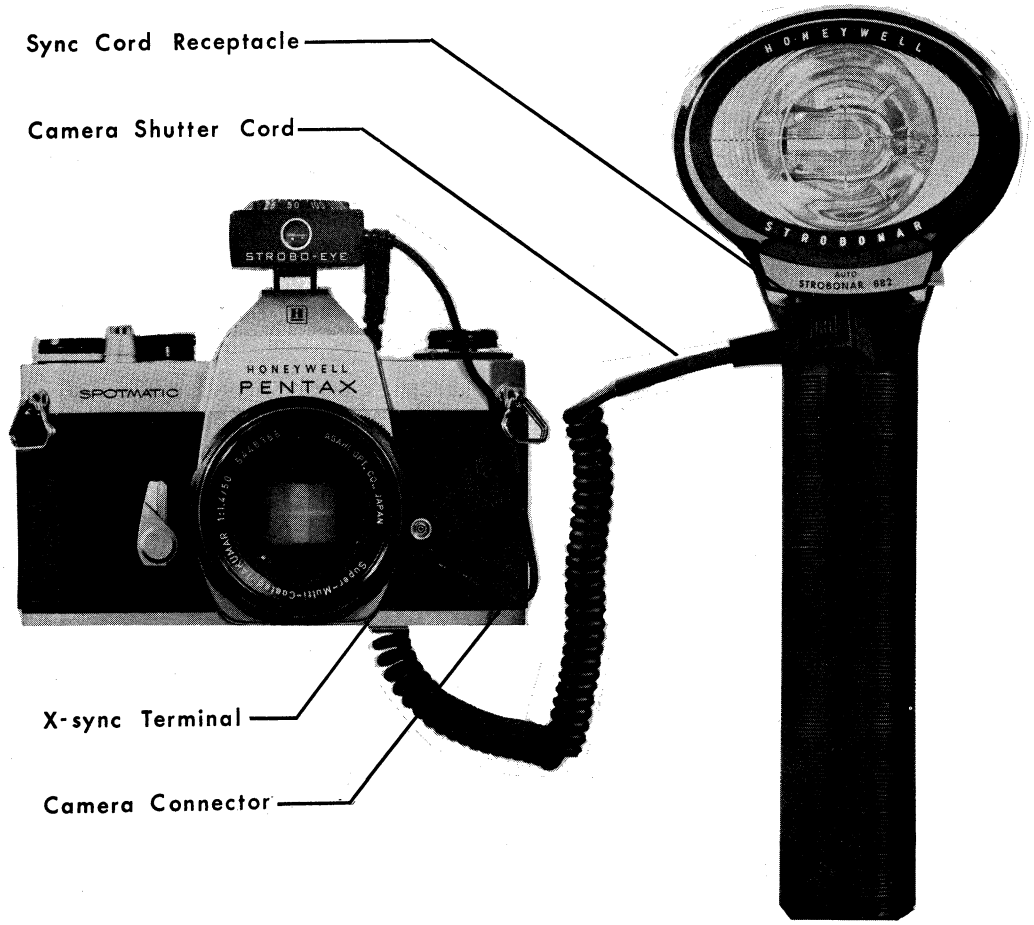
Figure 1-1. Remote Auto/Strobonar 882

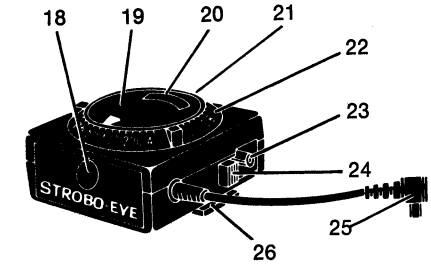


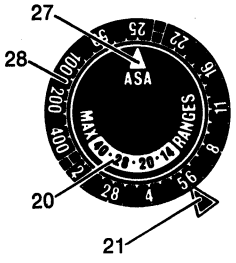


12. F/stop index
13. Film rewind knob
14. Inner dial
15. Outer dial
16. ASA index
17. Range indexes

Figure 1-2. Pentax Spotmatic IIa Camera and Remote Auto/Strobonar 882







18. Sensor
19. Film speed indicator button
20. Maximum ranges scale
21. F/stop index
22. F/stop dial
23. Flash unit sync cord receptacle
24. Flash unit connector lock
25. Camera connector
26. Mounting foot
27. ASA index
28. ASA scale (blue)

Figure 1-3. Strobo-Eye Remote Sensor Accessory And Remote Auto/Strobonar 882

SECTION 1

INTRODUCTION

1-1. SCOPE OF MANUAL.

This manual provides maintenance instructions for the Honeywell Remote Auto/Strobonar 882, Strobo-Eye Remote Sensor Accessory and the electronic circuits associated with automatic flash operation in the Pentax Spotmatic IIa Camera. It includes information on operational checkout, principles of operation, troubleshooting, disassembly, repair, component replacement, recommended equipment and list of replaceable parts.

1-2. UNIT DESCRIPTION.

The Auto/Strobonar/Strobo-Eye system consists of three major assemblies; Auto/Strobonar 882, wall box, and Strobo-Eye (either Remote Sensor Accessory or Spotmatic IIa Camera. The Strobonar provides a source of repeating photo flash light and can operate as an automatic flash when connected to either of the Strobo-Eye units.

1-3. AUTO/STROBONAR 882.

The Auto/Strobonar is powered by either battery or AC. Battery power is supplied by a high voltage battery located in a separate case. AC power is supplied by the wall box.

On the back of the Strobonar are mounted an exposure calculator, an AUTO/MAN control switch, a ready (red) light, an exposure (green) indicator, and the battery switch. The sync cord receptacle and wall box cord receptacle are located under the flash head. An open flash button on the side of the flash head provides a means of open flashing or test flashing the unit.

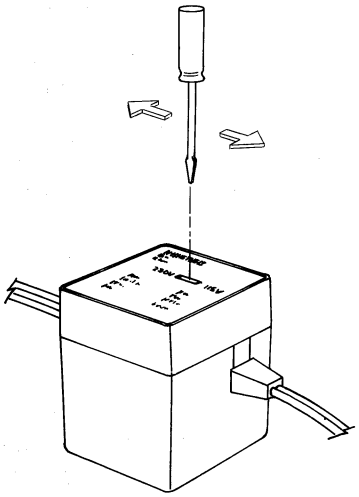
1-4. WALL BOX (SEE FIGURE 1-1).

The wall box allows the unit to operate on AC power. Two styles of wall boxes have been designed for use with the Auto/Strobonar 882; single voltage and multi-voltage.

The single voltage wall box provides 105-129 VAC, 50-60 Hz power while the multi-voltage wall box provides either 105-129 VAC, 50-60 Hz or 208-258 VAC, 50-60 Hz power depending upon the position of the selector switch on the base of the wall box.

CAUTION

You must select the proper input voltage by positioning the switch, located on the bottom of the charger, to the correct position. Operating the charger with the voltage selector switch set to the wrong position will damage the charger.



The power cord connects the wall box to AC line power and the charge cord connects the wall box to the Strobonar for AC operation.

1-5. STROBO-EYE REMOTE SENSOR ACCESSORY (SEE FIGURE 1-3.)

Remote Sensor Accessory automatically controls exposure from the position of the sensor. The sensor measures the light reflected from the subject and supplies a signal to the Strobonar to activate the automatic (quench) circuit.

The Remote Sensor Accessory may be mounted on the camera accessory shoe or mounted off camera with the use of an extension cord. The flash unit sync cord receptacle and the camera connector are located on the side of the Accessory.

Exposure scales and dials are mo u nted on the top of the unit to permit selection of four f/stops or ranges depending upon the film speed selected. The sensor is located on the front surface of the unit.

1-6. SPOTMATIC IIa CAMERA (SEE FIGURE 1-2).

Spotmatic IIa Camera automatic quench circuitry automatically controls exposure from the position of the sensor on the front of the camera. The sensor measures the light reflected from the subject and supplies a signal to the Strobonar to activate the automatic (quench) circuit.

The X-sync terminal on the front of the camera provides a means of connecting the camera to the Auto/Strobonar.

Exposure scales and dials are mounted on top of the camera to permit selection of three f/stops or ranges depending upon the film speed selected.

1-7. SPECIFICATIONS.

1-8. AUTO/STROBONAR 882.

a. Power Source

Battery .....510 volt, dry battery (Eveready 497 or equivalent).
AC .....105 to 129 VAC, 50-60 Hz.
.....208 to 258 VAC, 50-60 Hz.

b. Storage Capacitor Forming .....
1 hour at or near full power anode voltage.

c. Equivalent Battery Source .....
490 ± 5 VDC and an impedance of less than 1000 ohms.

d. Number of flashes ....1000 average with fresh battery.

e. Guide Number

Automatic ..... Not applicable.

Manual .....80 for ASA 25 film.

f. Automatic Range with Strobo-Eye .....
1.5 feet to 40 feet.

g. Flash Duration

Automatic .....about 1/50,000 to 1/500 second.
Manual .....about 1/500 second.

h. Recycle Time

Battery .....4 seconds maximum for the first 30% of the battery life.

.....6 seconds maximum between 30 and 60% of the battery life.

AC .....10 seconds maximum to 365 volts anode (half power) at 120 VAC input. The ready light may not light.

i. Angle of Illumination.

Horizontal.....50° ± 2°.

Vertical .....40° ± 2°.

j. Color Temperature ....Approximately noon daylight.

k. Full Power Center Axis Light Output .....
114 lumen-seconds per square foot when measured at 4 feet.

l. Auto-Quench Light Output ....
4.5 to 4.8 lumen-seconds per square foot when measured at 4 feet. F/stop set at f/2.0.

m. Shutter Synchronization

Between the lens Shutter .....
X-sync all speeds.

Focal Plane Shutter.....
X-sync - usually 1/60 second.

n. Battery Switch .....2-position, ON-OFF switch.

o. Open Flash Button.....Open flash or test flash.

p. Automatic Control

AUTO .....Turns quench circuit on.

MAN .....Turns quench circuit off.

q. Ready (Red) Light ....Neon full-light indicator, battery and AC operation.

r. Green Light.....Proper automatic exposure indicator.

s. Weight.....16 ounces without battery.

t. Size .....4.2" deep x 3.5" wide x 9.3" high.

1-9. STROBO-EYE REMOTE SENSOR ACCESSORY.

a. Mount .....Standard universal shoe mount.

b. Connector .....Locking tip connector or standard PC connector.

c. Max Ranges Scale .....Selection of four ranges.

d. ASA Scale .....Select ASA number of film.

e. F/Stop Scale .....Selection of four f/stop settings for each film speed.

f. Sensor Angle .....12 degrees.

1-10. STROBO-EYE (SPOTMATIC IIa CAMERA).

a. Quench Circuitry .....Built in camera body.

b. Connection .....Standard connection from Strobonar to X-sync terminal on camera body.

c. Range Indexes .....Selection of three ranges.

d. ASA Scale .....Select ASA number of film.

e. F/Stop Scale .....Selection of three f/stop settings for each film speed.

f. Sensor Angle .....12 degrees.

1-11. COMPONENT REFERENCE DESIGNATIONS.

To avoid component reference designator duplication, each unit in the system, such as the Strobonar, wall box, etc., has been assigned a prefix number. A prefix has therefore been added to each reference designator as shown below.

UNIT	PREFIX	EXAMPLE
Auto/Strobonar 882	No Prefix	CR1
SCR Test Circuit	#1 Prefix	1CR1
Wall Box (Single Voltage)	#2 Prefix	2CR1
Strobo-Eye Remote Sensor Accessory	#3 Prefix	3CR1
Strobo-Eye (Spotmatic IIa Camera)	#4 Prefix	4CR1
Strobo-Eye Test Circuit	#5 Prefix	5CR1
Wall Box (Multi-Voltage)	#6 Prefix	6CR1

SECTION 2

PRINCIPLES OF OPERATION

2-1. GENERAL.

Auto Strobonar 772 provides a source for repeating photoflash light. When coupled with the Honeywell Strobo-Eye Remote Sensor Accessory or the Pentax Spotmatic IIa Camera, it operates as an automatic electronic flash unit.

The main xenon flashtube and main flashtube trigger circuit are located in the Strobonar. The quench or dump tube (a xenon flashtube with much lower impedance than the main flashtube) and associated trigger circuit are also located in the Strobonar. Circuits for measuring the light level reflected from the subject and for generating a light control signal are located in the Strobo-Eye Remote Sensor Accessory or the Strobo-Eye portion of the Spotmatic IIa Camera.

The Strobonar is powered by a high voltage battery located in a separate pack. The wall transformer box provides AC operation only.

2-2. CIRCUIT DESCRIPTION (SEE FIGURE 5-14).

The circuit description is keyed to the system schematic, Figure 5-14. The system schematic shows the wall box and the Strobo-Eye Remote Sensor Accessory connected to the Strobonar. The Strobo-Eye portion of the Spotmatic IIa is shown not connected at bottom left of Figure 5-14. A description of the various circuits follow.

2-3. BATTERY OPERATION.

With the battery pack connected to the unit and S1 in the ON position, storage capacitor C3 is charged through R17, CR10, and S1 to the battery voltage. When the voltage across C3 reaches 435 to 495 volts, the voltage across C15 reaches the firing voltage of VR1, the half-energy level indicator. With 435 volts (or more) on C3, the unit will flash when triggered. R17 increases the impedance of the source so the source will not sustain the arc in the main flash tube FT1 after the unit is flashed.

2-4. AC OPERATION.

The wall boxes serve as power supplies to operate the Auto/Strobonar on AC. There are two versions of the wall boxes. The single voltage wall box operates on 105 to 129 VAC only. The multivoltage wall box operates on either 105 to 129 VAC, 50-60 Hz or 208 to 258 VAC, 50-60 Hz. Both wall boxes supply 300 to 365 Volts RMS (425 to 516 peak) to the Auto/Strobonar for AC operation. Connection of the Auto/Strobonar is made through a 3-wire power cord to a plug-in receptacle located under the flash head on the Strobonar.

Both AC circuits are identical except for the voltage selector switch (6S1) and the input transformers (2T1 and 6T1) in the wall boxes. To avoid component reference designator duplication, the single voltage wall box circuit has been assigned a prefix number of 2 and the multivoltage circuit a prefix number of 6. For convenience, only the multivoltage circuit is explained.

The wall box circuit contains the input selector switch 6S1, transformer 6T1, and diodes 6CR1, 6CR2, 6CR3, and 6CR4. The voltage selector switch 6S1 selects the input line voltage available. Transformer 6T1 is wound so the source impedance is the same in either switch position and to insure that the voltage across the secondary is the same with either high or low line input.

The wall box circuit provides full wave operation. When pin B of transformer 6T1 is positive (+) in respect to pin A, current flows through diode 6CR1, battery switch S1, isolation diode CR10, resistor R17, storage capacitor C3, and diode 6CR4 to pin A of 6T1. This current charges storage capacitor C3 toward anode voltage.

On the next half cycle of AC input, pin A of 6T1 is positive in respect to pin B. Current now flows through diode 6CR3, S1, CR10, R17, C3, and 6CR2 to pin B of 6T1. Thus the storage capacitor C3 is charged on both half cycles of AC. Although only one cycle of AC operation has been explained, it takes several cycles of AC for storage capacitor C3 to charge to anode voltage. When capacitor C3 is charged to anode voltage, the neon ready light VR1 lights and the Auto/Strobonar is ready to flash on AC.

Diode CR10 isolates the power input prongs of the wall box receptacle in the bottom of the flash head to prevent shock.

2-5. MAIN FLASHTUBE TRIGGER CIRCUIT (SEE FIGURE5-14).

The trigger circuit provides a high-voltage pulse to the exterior of the flashtube. This pulse ionizes the xenon gas in the tube, provided a discharge path through the tube for the energy stored in capacitor C3.

Transformer T3 is the flashtube trigger coil which ignites the flashtube by impressing a few thousand volts to the exterior of the flashtube. Assume that Q3 is shorted initially, collector and emitter at the same voltage, resistors R10 and R11 then act as a voltage divider which produces about 200 volts at the anode of SCR3 if the flashtube anode voltage is about 500 volts DC. Trigger capacitor C6 will charge through the primary of T3 and R10 to the anode voltage of SCR3. Transistor Q3 is turned on by the base current path through CR8, CR5, R18 and R14. The voltage at the signal line (junction of CR5 and CR6) is about 1.8 volts which is necessary to keep Q3 on. SCR3 cannot turn on when Q3 is on because its gate is shorted to ground by Q3.

The main flashtube is triggered by either closing the Open Flash switch S3 or closing the camera shutter contacts at J1. Closing either contacts cause the voltage at the anode of CR6 to drop to about 1.2 VDC, which removes the base current drive from Q3 and Q3 turns off. With Q3 off, current flows from SCR3 anode to gate through R11 and SCR3 turns on. This provides the discharge path for C6. Capacitor C6 then discharges through the primary of T3 and SCR3 producing the high voltage pulse that fires flashtube FT1. Capacitor C7 is a noise filter.

If the AUTO/MAN switch S2 is closed, the voltage at the anode of CR6 will be .6 volts when Open Flash switch S3 or camera shutter contacts are closed.

When the main flashtube fires, the signal line (junction of CR5 and CR6) will go negative as a result of the discharge of C8 and C9. The signal line was at 1.8 volts positive until J1 is shorted with the shutter contact closure or when S3 is closed. So the signal line will drop from three diode drops to two diode drops or to about 1.2 volts positive until SCR3 fires as a result of turning off Q3. In manual operation, AUTO/MAN switch S2 open, the signal

line will continue to go negative until it gets to 24 volts and zener CR5 fires and holds it at 24 volts. It will stay at a negative 24 volts because C8 and C9 will continue discharging into the signal line as long as the voltage across C3 falls as the flashtube is firing. After the flash is completed, signal line will return to 1.8 volts as C3 is charged for the next flash.

Capacitor C11 and R20 decouple open flash switch S3. If S3 is closed and held closed, Q3 will turn off; SCR3 will turn on; and the flash will take place as previously discussed. After the flash is completed and anode voltage again appears on C3, current will flow through R14, R18, CR6 (if S2 is open), C11 and CR7 to charge C11 up to about a volt so Q3 can turn back on even though S3 is held closed.

If C11 was shorted and S3 was held closed, Q3 would stay off after the initial flash. Therefore, the Strobonar would continue to self-flash because SCR3 would act like a relaxation oscillator.

2-6. AUTOMATIC (SEE FIGURE 5-14).

Since the Strobo-Eye Remote Sensor Accessory and Spotmatic IIa circuits are functionally identical, only the Accessory circuit will be discussed. Note by looking at Figure 5-14 that some of the Spotmatic IIa metering circuit is on the Strobo-Eye circuit board. The metering circuit functions independent of the Strobo-Eye.

With the Strobo-Eye attached, the automatic circuit regulates exposure at distances of 1.5 to 40 feet depending upon the aperture setting in front of the Strobo-Eye sensor. Exposure is controlled by the position of the Strobonar in respect to the subject.

The Strobo-Eye uses a photosensitive SCR (3LASCR1) as a transducer to detect the light reflected from the subject and to convert the light to electrical energy. The Strobo-Eye automatic circuit then integrates (sums) this electrical analog of reflected light. When the integrated electrical analog reaches a predetermined level, a light control signal is generated and applied to the Strobonar at J1. This signal triggers the xenon-filled quench tube FT2. The quench tube is connected across flashtube FT1. When both tubes are ionized, FT2 has less than 1/10 of the impedance of FT1, thus shorting FT1 and quenching the light to control exposure automatically.

With AUTO/MAN switch S2 closed and Strobo-Eye connected at J2, closing the camera shutter contacts will drop the signal line from about 1.8 volts to the diode drop across 3CR1 which is about .6 volt. This turns off Q3 in the Strobonar and fires the main flashtube FT1 as discussed previously. Note that until the main flashtube is fired, there is no voltage on the Strobo-Eye circuit and 3LASCR1 cannot conduct for there is no voltage produced as a result of ambient light. This is because the signal line is at 1.8 volts and diode 3CR2 is therefore back-biased. So the integrating or summing circuit, composed of 3C3 and 3R1 is at 0 volts until the main flashtube fires and powers the Strobo-Eye.

When the main flashtube fires, the signal line will go negative as a result of the discharge of C8 and C9 as the flashtube anode voltage falls. This forward biases 3CR2 and current will flow in the Strobo-Eye circuit as the signal line goes negative. The signal line continues to negative until zener 3CR3 fires. Thus, 3Q1 is forward biases and turns on. The signal line at this point will be a constant -16 VDC, plus the two diode drops of 3CR2 and base-emitter junction of 3Q1 or to about 17.2 volts negative.

Note that diodes CR5 and CR4 in the Strobonar do not turn on because the signal line is held at a negative 17.2 VDC and it would have to go to a negative 24 VDC for CR5 to fire.

When 3Q1 turns on, the reference voltage established by the charge on 3C4 and controlled by the reference voltage adjust pot 3R3, is at the cathode of 3LASCR1. Now as the light reflected from the subject falls on 3LASCR1 current flows in the anode gate portion to charge 3C3 through 3R1. Resistor 3R1 is an anticipation resistor and the voltage across it is directly proportional to the light intensity and the voltage across 3C3 is proportional to the integral of the light intensity. So as the light continues to fall on 3LASCR1, the gate will continue to rise as 3C3 charges until a point is reached where the gate voltage exceeds the reference voltage at the cathode of 3LASCR1. At this point, 3LASCR1 turns on and the 12 to 15 VDC that was across it will be applied directly to the signal line as a positive going automatic control signal. This signal is used to fire the quench tube FT2.

The quench tube trigger circuit in the Strobonar, consisting of SCR4, C12 and T2, and associated circuitry, functions identically to the main flashtube trigger circuit.

The positive going leading edge of the automatic control signal is coupled through C13 to the gate of SCR4. SCR4 then turns on, providing a discharge path for trigger capacitor C12. Capacitor C12 discharges to the primary of T2, providing a high energy ringing pulse to fire FT2. Firing FT2 turns off the main flashtube and rapidly discharges the energy stored in capacitor C3.

Capacitor 3C1 and 3C2 are noise filters. Capacitor 3C4 couples the control signal to the signal line when 3LASCR1 turns on.

2-7. GREEN LIGHT.

When SCR3 fires, a negative going voltage spike is produced across SCR3 and coupled to the anode of SCR2 through C17 to turn off the green light VR2.

When SCR4 turns on as a result of an automatic control signal (whether or not FT2 fired), a negative signal will be applied to the cathode of SCR2 through capacitor C5. SCR2 gate will be clamped to ground potential through R25 so when the gate voltage exceeds the cathode voltage, current will flow through the gate-cathode circuit, turning on SCR2 and VR2. SCR2 cathode will be forward biased, causing diode CR14 to conduct.

A separate power supply powers the green light VR3 when the anode voltage across C3 falls to 30 to 50 VDC when the main flashtube or quench tube is fired. The length of time of this decay is approximately 3 to 4 seconds. The power supply consists of CR12, R23, R24, VR3 and C14.

When the anode voltage is high, current flows to charge C14 and ionize VR3. The path for current flow is through CR12, C14, R24, and VR3. When the voltage across VR3 goes to 270 volts, VR3 ionizes and its voltage will drop to about 190 volts. Capacitor C14 charges to about 220 volts.

When the flashtube fires, the anode voltage collapses and C14 powers the green light VR2 by discharging through R7, VR2, SCR2 (turned on by the auto quench signal from SCR4) and R27 until the anode voltage of C3 has recovered.

Resistor R7 is a current limiting resistor for C14 and VR3-R24 act as a voltage regulator to charge C14 at a faster rate.

SECTION 3

CHECKOUT AND TROUBLESHOOTING

3-1. GENERAL.

To checkout or troubleshoot the Strobonar/Strobo-Eye flash system, first determine which unit is at fault or malfunctioning. Substitute the suspected faulty Strobonar with another known to be operating properly. If the system is still malfunctioning, substitute the Strobo-Eye (either Remote Sensor Accessory or Spotmatic IIa Camera) with a unit known to be operating properly.

If it is necessary to replace any components in the automatic circuit while servicing the Strobonar or Strobo-Eye units (either Remote Sensor Accessory or Spotmatic IIa Camera) it will be necessary to calibrate the Strobo-Eye circuit.

When checking out the Strobonar, insure that all electrical connections are good; that the storage capacitor has been formed; and that the battery is fresh before checking or adjusting the Remote Auto/Strobonar. The storage capacitor is automatically formed by flashing the unit a few times, allowing a minute or so between flashes.

WARNING

When repairing the unit, discharge the storage capacitor through a 100 ohm, 2 watt resistor to insure that the unit is safe to work on.

3-2. OPERATIONAL CHECKOUT

3-3. TEST EQUIPMENT.

The following test equipment is required for operational check of the units.

Volt-Ohm Meter - Triplett Model 630-NA or equivalent.
DC Power Supply - Variable to 500 VDC.
Isolation Transformer - Triad Type N-53M or equivalent.

Light Meter - Honeywell TE 611, EG&G Model 580-11, or equivalent.
Quench Calibrator - Honeywell TE 534, used only to calibrate the quench circuit.
Strobo-Eye Test Circuit (See Figures 3-3, 3-4).

3-4. STORAGE CAPACITOR C3 FORMING.

Before performing any operational checkout, form the storage capacitor C3 for at least one hour at 435 to 495 VDC. Flash the unit a few times to accelerate forming.

3-5. STORAGE CAPACITOR C3 LEAKAGE CHECK.

Disconnect one end of capacitor C3 from the circuit. Discharge the capacitor through a 100 ohm, 2 watt resistor. Using a d-c power supply, form the capacitor for one hour at 435 to 495 volts with a 1K ohm, 1% resistor in series with the capacitor. With 490 volts across C3, connect a voltmeter in parallel with the 1K ohm resistor. Measure the leakage current of C3 by reading the voltage across the 1K ohm resistor. If the leakage current exceeds 4.9 ma (4.9 volts across the 1K ohm resistor), replace C3.

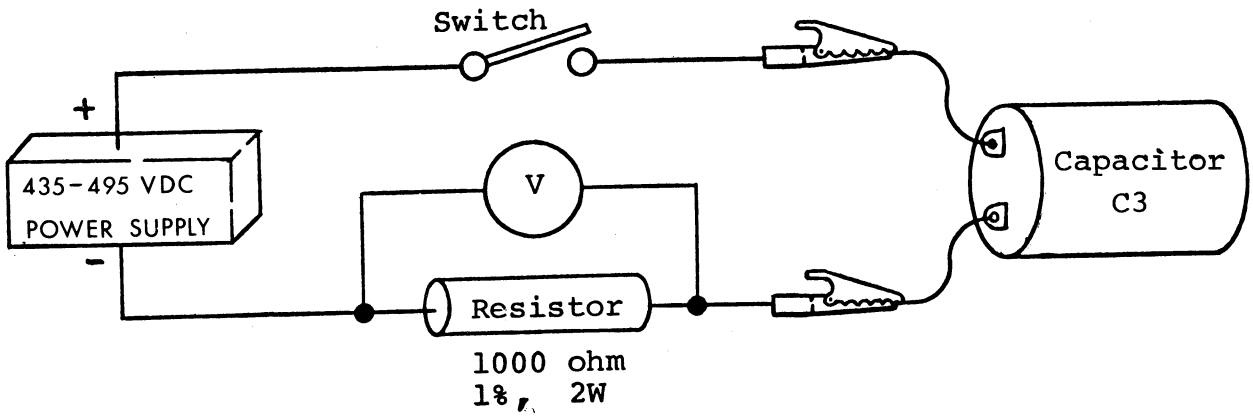


Figure 3-1. Storage Capacitor Leakage Test

3-6. ANODE VOLTAGE CHECK.

Insure that the storage capacitor C3 is formed and that the battery is fresh before checking the anode voltage.

Remove the storage tray as shown in Figure 5-1, page 5-3. Connect an equivalent battery source (490 ± 5VDC) to the battery contacts. Set the Battery switch on the back of the Strobonar to ON. Connect voltmeter as shown in Figure 5-2.

Wait until the neon ready (Red) light lights and then flash the unit several times while observing the readings on the meter. Adjust potentiometer R6 between the limits of 360 to 370 volts.

3-7. FULL POWER LIGHT OUTPUT CHECK.

Check that the full power center light output is a minimum of 1824 Beam Candle Power Seconds (114 Lumen Seconds Per Square Foot when measured with the Strobonar four feet from the diffusing lens of the light meter) with 485 volts at C3 anode.

3-8. AUTO QUENCH LIGHT OUTPUT CHECK.

Position the Strobonar and Strobo-Eye four feet from the center of an 18 percent reflectance neutral gray target which has a minimum diameter of five feet. The diffusing lens of the light meter must be at the center of the target. Activate the quench circuit by setting the AUTO/MAN switch to AUTO.

Set the Strobo-Eye and camera lens to f/2.0. Flash the Strobonar and measure its light output. The light output should be between 4.5 and 4.8 lumen seconds per square foot.

3-9. RECYCLE TIME.

3-10. BATTERY OPERATION.

With the unit operating on the first 30% of the high voltage battery, the unit should recycle to the neon indicator voltage within 4 seconds after flashing.

3-11. AC OPERATION.

With the unit operating with the wall box connected, the unit should recycle within 10 seconds at 120 VAC nominal input. The ready (Red) lamp may not light.

3-12. TROUBLESHOOTING.

For assistance in troubleshooting the Auto/Strobonar, Strobo-Eye Remote Sensor Accessory and Spotmatic IIa Camera refer to the circuit description in Section 2, the troubleshooting data charts in Section 3-22 and to the schematic in Section 5.

NOTES

Observe polarity (indicated by green dot) when replacing VR1 in the Strobonar.

3-13. TECHNIQUES.

The first step in troubleshooting a defective Strobonar/Strobo-Eye flash system is to determine which unit is at fault. Replace the Strobonar with another known to be operating properly. If the system is still malfunctioning, replace the Strobo-Eye (either Remote Sensor Accessory or Spotmatic IIa Camera) with a unit known to be operating properly.

Look for obvious things: broken wires, broken or discolored components, or evidence of physical damage. Faults such as arcing and burned-out resistors or transformers can often be detected by sight, smell, or sound. Most faults can be located by voltage, current and resistance measurements. Check electrical connections at connectors.

Isolate the section of the circuit responsible for the fault. An operational check will demonstrate what the circuit is doing or what it is NOT doing. Observe the actions of switches and indicators to isolate the fault.

Having isolated the defective section of the circuit, isolate the component responsible for the malfunction. Consider which components, if faulty, could cause the voltages or currents to be as you find them. Refer to the schematic diagrams located in Section 5.

3-14. COMPONENT CHECKS.

No attempt is made in the troubleshooting data to describe how to test or check a particular part. The method of checking and testing is left to the technician. However, the technician is reminded of the following points:

a. Turn off power and discharge C3 before making resistance measurements.

b. Set ohmmeter to the lowest range when checking continuity.

c. Set ohmmeter to the highest range when checking high resistance.

d. Capacitors which are shorted can be found by resistance measurements.

e. Check the large electrolytic capacitor (C3) for leakage current. The leakage current must not exceed 4.9 ma with 490 VDC applied across the capacitor. Form capacitor before performing leakage test.

f. A capacitor which is suspected of being open can be checked by substituting a good capacitor and seeing if this makes the unit operational.

3-15. PRECAUTIONS.

Follow the listed precautions while troubleshooting the Strobonar.

a. Do not connect an oscilloscope or meter across R5, R6 or VR1 when checking or setting cutoff voltage.

b. Use extreme caution to avoid shorting components when making voltage measurements on the circuit board.

c. If the high voltage battery is of questionable condition or if excessive d-c testing is required, substitute an equivalent power supply (490 VDC ± 5 VDC).

d. Use an isolation transformer when operating the unit on AC.

3-16. SCR TEST CIRCUIT.

To check out the SCR, remove it from the circuit and either substitute a good SCR or set up the test circuit as shown in Figure 3-2. Select the proper meter (1M1 or 1M2)

by determining the range of the SCR to be tested. Position switch 1S3 to select the proper meter.

Insert the suspected SCR in the test circuit, close switch 1S2 and adjust potentiometer 1R3 for 0 current on the meter. With switch 1S2 closed, hold switch 1S1 closed and adjust potentiometer 1R3 until the meter reverses and moves in a negative direction. The readings on the SCR's should be as follows:

SCR2 - .1 - 10 ua maximum
SCR3 - 200 ua maximum
SCR4 - 20 ua maximum

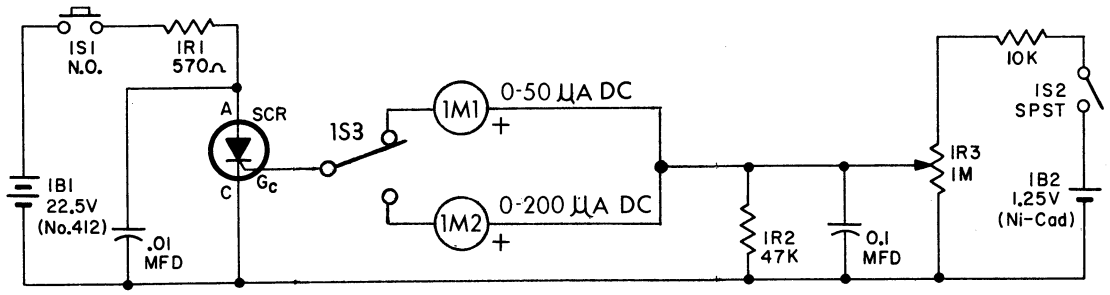


Figure 3-2. SCR Test Circuit

3-17. SEMICONDUCTOR CHECK

An ohmmeter will detect catastrophic defects in the transistors or diodes. First determine the polarity of the ohmmeter with a volt-meter or diode. In each pair of resistance readings the high resistance reading should be at least 10 times the low resistance reading. Use the same ohmmeter range for both readings in each pair.

3-18. PNP TRANSISTOR

1. Base to emitter, positive lead to base - high resistance.

   Base to emitter, positive lead to emitter - low resistance.

2. Base to collector, positive lead to base - high resistance.

   Base to collector, positive lead to collector - low resistance.

3. Collector to emitter, base shorted to emitter, either polarity - high resistance.

3-19. NPN TRANSISTOR

1. Base to emitter, positive lead to base - low resistance.

   Base to emitter, positive lead to emitter - high resistance.

2. Base to collector, positive lead to base - low resistance.

   Base to collector, positive lead to collector - high resistance.

3. Collector to emitter, base shorted to emitter, either polarity - high resistance.

3-20. DIODE

1. Resistance across a good diode with the positive lead to the anode is low.

2. Resistance across a good diode with the positive lead to the cathode is high.

3-21. LASCR.

1. Gate to cathode, positive lead to gate - low resistance.

   Gate to cathode, positive lead to cathode - high resistance.

2. Anode to cathode, positive lead to anode with gate shorted to cathode and the component shielded from light - high resistance.

   Anode to cathode, positive lead to cathode with gate shorted to cathode and the component shielded from light - high resistance.

3-22. TROUBLESHOOTING DATA.

TROUBLE: NO AC OPERATION		
ACTION	INDICATION	REMARKS
a. Substitute the wall box for one known to be operating properly	AC operation.	Go to step b.
	No AC operation.	Go to step d.
b. Check 2T1 for 300-365 VRMS between pins A and B with 129 VAC input.	Good	Go to step c.
	Bad	Replace 2T1.
c. Check 2CR1	Good	Check all connections.
	Bad	Replace 2CR1
d. Check CR10	Good	Go to step e.
	Bad	Replace CR10.
e. Check R17	Good	Go to step f.
	Bad	Replace R17.
f. Check C3	Good	Check all connections.
	Bad	Replace C3.

TROUBLE: OPERATES IN POWER MODE ONLY.

ACTION	INDICATION	REMARKS
a. Check for defective R5, R15, VR1 or C15	Good	Go to step b.
	Bad	Replace defective components.
b. Check for R6 out of adjustment.	Good	Check storage capacitor for leakage as described in para. 3-5.
	Bad	Adjust R6 as described in para. 3-6.

TROUBLE: NO FLASH - BATTERY OR AC.

ACTION	INDICATION	REMARKS
a. Check for 370 to 495 at anode of FT1 with battery switch set to ON.	Good	Go to step b.
	Bad	Go to step g.
b. Short anode of CR5 or 6 to ground.	No flash	Go to step c.
	Flash	Check CR6, 3CR1 or 4CR3 and associated circuitry and replace or repair defect.
c. Measure 1.2 to 2 VDC at CR5 anode.	1 to 2 VDC	Go to step d.
	Above 2 VDC	Go to step h.
	Below 1 VDC	Check CR4, SCR4 and C12 for short. Check R14 and R18 for open. Replace defective component.
d. Measure 100 VDC or greater between SCR3 anode and cathode.	100 VDC or greater.	Go to step e.
	Below 100 VDC	Check SCR3, CR3 and C6 for short. Replace defective component.

Continued . . .

TROUBLE: NO FLASH - BATTERY OR AC (Continued)

ACTION	INDICATION	REMARKS
e. Momentarily short SCR3 anode to cathode.	FT1 flashes	Go to step f.
	No flash but contacts spark.	Check FT1, T3 and FT1 trigger lead connections. Replace or repair defect.
	No spark.	Check C6 and T3 for open and replace defective component.
f. Check SCR3.	Good	Go to step j.
	Bad	Replace SCR3.
g. Check C3.	Good	Go to step h.
	Bad	Replace C3.
h. Check CR5 for open.	Good	Go to step i.
	Bad	Replace CR5.
i. Check CR8	Good	Go to step j.
	Bad	Replace CR8
j. Check Q3.	Good	Check C7.
	Bad	Replace Q3.

TROUBLE: NO QUENCH.

ACTION	INDICATION	REMARKS
a. Substitute the Strobo-Eye with one known to be good, making sure all connections are good.	No quench.	Go to step b.
	Quench	Go to para. 3-25 for Strobo-Eye testing
b. Short SCR4 anode to cathode.	FT2 flashes	Go to step c.
	No flash.	Go to step e.
c. Check SCR4.	Good	Go to step d.
	Bad	Replace SCR4
d. Check S2.	Good	Check C13, C10 and R19 and associated circuitry
	Bad	Repair S2
e. Check C12.	Good	Go to step f.
	Bad	Replace C12.
f. Check T2.	Good	Check FT2 and associated connections. Replace or repair defective component.
	Bad	Replace T2.

TROUBLE: UNIT QUENCHES - NO GREEN LIGHT		
ACTION	INDICATION	REMARKS
a. Check VR2.	Good	Go to step b.
	Bad	Replace VR2.
b. Check C5.	Good	Go to step c.
	Bad	Replace C5.
c. Check R25.	Good	Go to step d.
	Bad	Replace R25
d. Check CR14.	Good	Check SCR2.
	Bad	Replace CR14.

TROUBLE: UNIT QUENCHES - GREEN LIGHT LIGHTS, THEN EXTINGUISHES		
ACTION	INDICATION	REMARKS
a. Check for 220 volts across C14.	Good	Go to step c.
	Bad	Go to step b.
b. Check CR12, R24, and VR3.	Good	Check C14.
	Bad	Replace defective component.
c. Check R7 and R27.	Good	Check SCR2.
	Bad	Replace defective component.

TROUBLE: INTERMITTENT SELF FLASH.

ACTION	INDICATION	REMARKS
a. Check Q3.	Good	Go to step b.
	Bad	Replace Q3.
b. Check CR8.	Good	Go to step c.
	Bad	Replace CR8.
c. Check CR4.	Good	Go to step d.
	Bad	Replace CR4.
d. Check CR5.	Good	Go to step e.
	Bad	Replace CR5.
e. Check SCR4.	Good	Go to step f.
	Bad	Replace SCR4.
f. Check C12.	Good	Go to step g.
	Bad	Replace C12.
g. Check R18.	Good	Go to step h.
	Bad	Replace R18.
h. Check R14.	Good	Check circuit board for open. Repair defect.
	Bad	Replace R14.

3-23. STROBO-EYE TROUBLESHOOTING.

3-24. GENERAL.

Perform the following troubleshooting procedures after isolating trouble to the Strobo-Eye Remote Sensor Accessory or to the Spotmatic IIa Camera. The Strobo-Eye automatic quench circuit (either in the Accessory or Camera) receives operating power only while the main flashtube FT1 is on. Since the flashtube is on for a very short time (about 1/500 second or shorter) dynamic testing is possible only if you have test equipment that can remember the measurement such as a storage oscilloscope or photographs of the actual waveforms from a regular scope.

If you don't have this equipment, you can troubleshoot the Strobo-Eye automatic circuit by testing each component until you discover the fault or you can use the Honeywell Strobo-Eye Tester.

3-25. TESTER.

The tester was designed for quick and easy checkout of the Strobo-Eye automatic circuit. The internal power supply provides a constant current to act as a reference when checking the circuit. Three resistance circuits, selected by the rotary switch 5S2, provide three different readings on the meters. The measurements should be taken with the Strobo-Eye sensor covered and uncovered.

A PC cord from 5J1 connects the Strobo-Eye to the tester with meter VM_1 indicating the voltage reading between the signal line and ground.

The single lead probe from jack 5J2 is used to sense the voltage on the center tap of the potentiometer in the Strobo-Eye circuit. Meter VM_2 displays the voltage reading between the signal line and the potentiometer.

If an erroneous reading is suspected, push switch 5S3 to reset the meters.

NOTES

The numerical readings on the meters and in Tables 3-1 and 3-2 are reference numbers only. Actual voltage values are approximately one-half of the reference numbers listed.

Disregard the word "MICROAMPERES" listed on the meters. The meters actually record voltage measurements.

3-26. REMOTE SENSOR ACCESSORY TROUBLESHOOTING.

If you are troubleshooting the Accessory, remove the accessory foot to gain access to reference adjust potentiometer 3R3. Refer to para. 4-5 and Figure 5-10 for disassembly instructions. Set the potentiometer 3R3 to the center of the adjustment range.

Set the ON-OFF switch 5S1 on the tester to the ON position. Connect the PC cord from jack 5J1 on the tester to the flash sync cord receptacle on the Accessory. Voltage measurements will be indicated on meter VM_1.

Touching the single lead probe from 5J2 on the tester to the center tap of 3R3 as shown in Figure 3-3 will provide voltage measurements on meter VM_2.

Perform checkout per Table 3-1, covering and uncovering the sensor as instructed and selecting the three positions by use of the rotary switch 5S2. If an erroneous reading is suspected, push switch 5S3 to reset the meters.

Compare the readings on the meters with the readings listed in Table 3-1. The voltages listed in Table 3-1 are approximate readings only and are intended to provide the technician with a reference to check his unit.

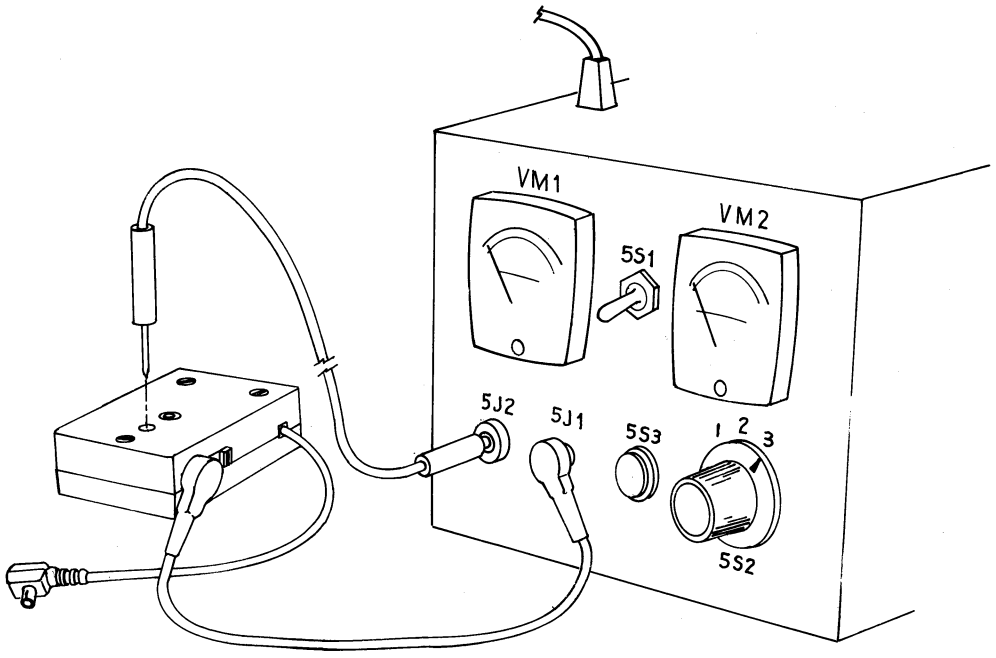


Figure 3-3. Remote Sensor Accessory Test Layout

SENSOR	SWITCH POS.1		SWITCH POS.2		SWITCH POS.3		REMARKS
	VM_1	VM_2	VM_1	VM_2	VM_1	VM_2	
Covered	10-11	9-10	28-33	7-10	29-33	7-10	Normal
Uncovered	10-11	9-10	28-33	28-33	29-33	28-32	Normal
Covered	6.0	1.0	33.0	6.0	33.0	6.0	3Q1 emitter to collector short or 3R3 open. Replace 3Q1 or 3R3.
Uncovered	3.0	1.5	12.0	10.0	22.0	20.0	
Covered	11.0	10.0	33.0	32.0	33.0	32.0	3Q1 emitter to base short or low gain. 3Q1 collector open. 3LASCR1 cathode to anode short. 3LASCR1 gate to anode short. Check and replace 3Q1 and 3LASCR1.
Uncovered	11.0	10.0	33.0	32.0	33.0	32.0	
Covered	2.0	0.2	2.5	0.2	2.5	0.2	Check for 3CR3 zener shorted. Replace 3CR3.
Uncovered	2.0	0.2	2.5	0.4	2.5	0.4	
Covered	11.0	10.0	50.0	46.0	50.0	46.0	Check for 3CR3 open. Check for 3Q1 emitter open. Check for 3Q1 base open. Replace either 3CR3 or 3Q1.
Uncovered	11.0	10.0	50.0	46.0	50.0	46.0	
Covered	5.0	0.0	3.0	0.0	3.0	0.0	Check 3C2 for short.
Uncovered	2.0	0.0	3.0	0.0	3.0	0.0	
Covered	11.0	10.0	33.0	7.0	33.0	7.0	3LASCR1 cathode to gate short. 3CR1 gate to signal line short. Replace either 3LASCR1 or 3CR1.
Uncovered	11.0	10.0	33.0	7.0	33.0	7.0	

Table 3-1. Accessory Test Voltage Measurements.

3-27. SPOTMATIC IIa CAMERA TROUBLESHOOTING.

If you are troubleshooting the camera, remove the Rewind Assembly to gain access to the reference adjust potentiometer 4R3. Refer to para. 4-6 and Figure 5-12 for disassembly instructions. Set the potentiometer 4R3 to the center of the adjustment range.

Set the ON-OFF switch 5S1 on the tester to the ON position. Connect the PC cord from jack 5J1 to the X-sync terminal on the front of the camera. Voltage measurements will be indicated on meter VM_1.

Touching the single lead probe from 5J2 on the tester to the center tap of 4R3 as shown in Figure 3-4 will provide voltage measurements on meter VM_2.

Perform the checkout per Table 3-2, covering and uncovering the sensor as instructed and selecting the three positions by use of the rotary switch 5S2. If an erroneous reading in suspected, push switch 5S3 to reset the meters.

Compare the readings on the meters with the readings listed in Table 3-2. The voltages listed in Table 3-2 are approximate readings only and are intended to provide the technician with a reference to check his unit.

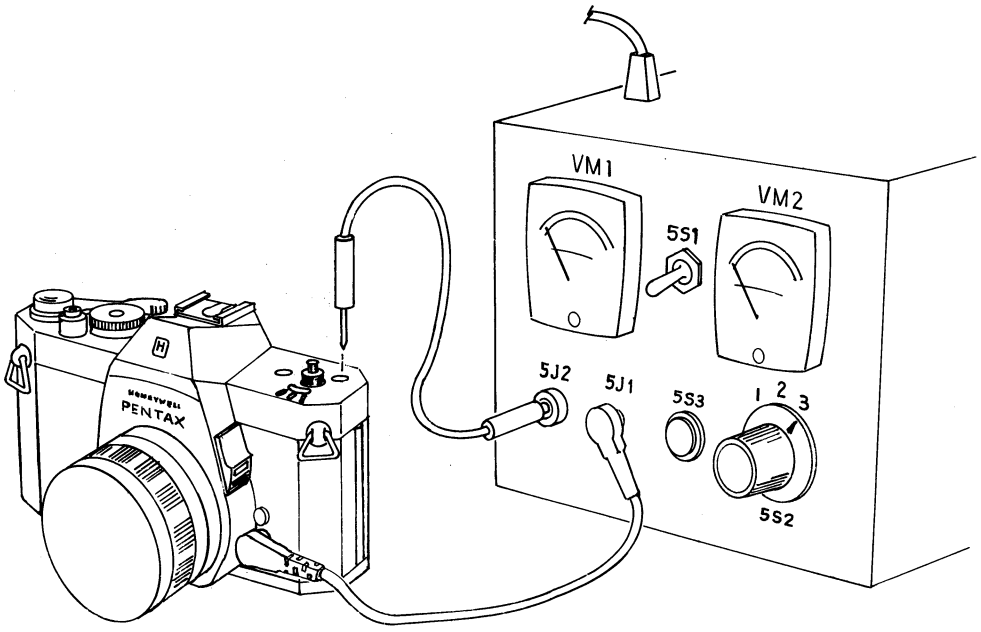


Figure 3-4. Spotmatic IIa Test Layout

SENSOR	SWITCH POS.1		SWITCH POS.2		SWITCH POS.3		REMARKS
	VM_1	VM_2	VM_1	VM_2	VM_1	VM_2	
Covered	9-11	5-9	29-33	5-9	29-33	5-9	Normal
Uncovered	9-11	5-9	29-33	29-33	29-33	29-33	Normal
Covered	6.0	1.0	33.0	6.0	33.0	6.0	4Q1 emitter to collector short or 4R3 open. Replace 4Q1 or 4R3.
Uncovered	3.0	1.5	12.0	10.0	22.0	20.0	
Covered	11.0	10.0	33.0	32.0	33.0	32.0	4Q1 emitter to base short or low gain. 4Q1 collector open. 4LASCR1 cathode to anode short. 4LASCR1 gate to anode short. Check and replace 4Q1 or 4LASCR1.
Uncovered	11.0	10.0	33.0	32.0	33.0	32.0	
Covered	2.0	0.2	2.5	0.2	2.5	0.2	Check for 4CR2 zener short. Replace 4CR2.
Uncovered	2.0	0.2	2.5	0.4	2.5	0.4	
Covered	11.0	10.0	50.0	46.0	50.0	46.0	Check for 4CR2 zener open. Check for 4Q1 emitter open. Check for 4Q1 base open. Replace either 4CR2 or 4Q1
Uncovered	11.0	10.0	50.0	46.0	50.0	46.0	
Covered	5.0	0.0	3.0	0.0	3.0	0.0	Check 4C4 for short.
Uncovered	2.0	0.0	3.0	0.0	3.0	0.0	
Covered	11.0	10.0	33.0	7.0	33.0	7.0	4LASCR1 cathode to gate short. 4CR3 gate to signal line short. Replace either 4LASCR1 or 4CR3.
Uncovered	11.0	10.0	33.0	7.0	33.0	7.0	

Table 3-2. Spotmatic IIa Test Voltage Measurements

SECTION 4

MAINTENANCE

4-1. GENERAL.

This section contains procedures for disassembly, cleaning electrical component removal, reassembly and component checks of the Remote Auto/Strobonar 882, the Strobo-Eye Remote Sensor Accessory and the quench circuitry in the Honeywell Spotmatic IIa camera.

Disassemble the units to the extent necessary for operational checkout, troubleshooting and repair. Reassembly is the reverse of disassembly. Special reassembly instructions are included where required.

4-2. TOOLS.

No special tools are required for maintenance of the Strobonar. Ordinary and Phillips screwdrivers, diagonal cutters, long-nose pliers a soldering iron and other common hand tools are adequate to perform all necessary repair and replacement.

A small tip low wattage soldering iron is required when repairing the Strobo-Eye units and special spanner wrenches are required for disassembling the Spotmatic IIa Camera.

4-3. DISASSEMBLY.

4-4. AUTO/STROBONAR 882 (SEE FIGURE 5-1).

WARNING

When operating or checking the Strobonar circuit, it is necessary to form the storage capacitor at full power anode voltage for at least one hour. Extreme caution MUST be exercised since a serious shock hazard exists if the terminals of capacitor C3 are touched.

NOTE

When disassembling or repairing the unit, discharge the storage capacitor through a 100 ohm, 2 watt resistor to insure that the unit is safe to work on.

a. Squeeze the two battery tray release buttons (1, Figure 5-1) and withdraw the battery tray.

b. Remove the two screws (2, Figure 5-1) that hold the chassis assembly to the housing, and pull the chassis assembly out the front of the housing.

c. To remove the nose ring assembly from the chassis assembly, remove the three screws (3, Figure 5-1) that hold the nose ring assembly to the chassis. Separate the nose ring from the chassis.

d. Continue disassembly as required. See Figures 5-3, 5-4 and 5-5.

4-5. STROBO-EYE (REMOTE SENSOR ACCESSORY - SEE FIGURES 5-10 and 5-11)

a. Remove the nameplate (1).

b. Remove the flat head screw (2), attaching the foot (3) to the bottom case (5). Remove the foot.

c. Remove the three Phillips Head screws (4) securing the bottom case to the top case assembly (9). Separate the two cases.

d. Remove the lens (7) to avoid misplacing it.

e. Lift out the circuit board assembly if necessary to repair.

NOTE

If any parts in the top cover assembly need to be repaired or replaced, the whole top cover assembly must be replaced.

4-6. STROBO-EYE (PORTION OF SPOTMATIC IIa CAMERA) (SEE FIGURES 5-12 and 5-13).

The disassembly procedure outlined in this section is intended to enable the technician to disassemble the Spotmatic IIa camera to provide access to the quench circuit. It is recommended that all parts removed from a particular camera be replaced in that same camera, and not interchanged with another.

4-7. FILM COUNTER/WIND LEVER ASSEMBLY (SEE FIGURE 5-12).

a. Loosen three set screws on Counter Dial Cover Ring and remove the Ring.

NOTE

When reassembling, insure that the red arrow on the Ring points to the minus (-) 2 position on the Counter Dial.

b. Remove the Counter Dial Retainer Screw (left-hand thread) and the Counter Dial.

NOTE

When reassembling, insure that the Counter Dial is not replaced 180° out of position.

c. Remove the Rapid Lever Shaft Nut (left-hand thread) using spanner wrench, Honeywell No. 231K-C75-1-A. Remove Counter Dial Housing.

d. Remove the three Rapid Wind Lever Retainer Screws.

e. Rotate the Rapid Wind Lever Retainer Spring in either direction to loosen and remove using spanner wrench, Honeywell No. 231K-CO6-A.

NOTE

When reassembling, insure that the Spring is replaced right side up.

f. Remove the Rapid Wind Lever

g. Remove the Rapid Wind Lever Collar.

4-8. ASA/SHUTTER SPEED DIAL ASSEMBLY (SEE FIGURE 5-12).

a. Remove the Speed Dial Retainer Screw. Use spanner wrench, Honeywell No. 231K-E91-A.

b. Remove the Speed Dial and Exposure Index Dial.

c. Loosen the three Phillips Head set screws on the side of the Speed Dial Knob and remove the Speed Dial Knob Spring and Knob.

NOTE

When reassembling, insure that the slot in the Knob is fitted over the positioning tab and that the Spring is replaced right side down. Insure that the tab on the Exposure Index Dial is positioned in the slot in the Knob and that the Speed Dial is not replaced 180° out of position.

4-9. REWIND ASSEMBLY (SEE FIGURE 5-12).

a. Open the back of the camera and insert a screwdriver or similar object into the fork on the Rewind Shaft. Hold the shaft while unscrewing the Rewind Knob.

b. Remove the Rewind Knob Shaft Nut. Use spanner wrench.

c. Remove the ASA-F/STOP DIAL.

NOTE

Exercise caution to avoid losing the Indent Ball located on the underside of the ASA-F/Stop Dial.

When reassembling, insure that the Indent Ball is properly positioned when replacing the Dial.

d. Remove the flat washer spacer(s) if any are required.

NOTE

If the Rewind Shaft is inadvertently depressed into the camera body and cannot be retrieved, the Top Cover must be removed to gain access to the Back Cover Key. Slide the Key upward to open the camera and reposition the Rewind Shaft.

4-10. TOP COVER (SEE FIGURE 5-12).

a. Remove the Knob and Dial Assemblies as described in para. 4-7, 4-8, and 4-9.

b. Remove the Phillips head screw on the top of the cover near the Wind Lever.

c. Remove the two screws on the back of the cover, one on each side of the viewfinder.

d. Remove the camera lens to gain access to the Top Cover Retainer Screw. Loosen the screw. Do not remove.

NOTE

Two screws are located in the same immediate area. The screw to be loosened is larger and is closer to the front of the camera than the other.

e. Remove the Top Cover. Tilt forward slightly when the cover is removed.

NOTE

The Shutter Button Shaft is not permanently affixed to the Top Cover, but held in place by lubricant. Insure that the Shaft is not misplaced while disassembling or in handling.

4-11. SPOTMATIC IIa CIRCUIT BOARD (SEE FIGURE 4-1 and 5-13).

If it is determined from the Strobo-Eye Troubleshooting procedures in para. 3-24, 3-25, and 3-27 that

repair or replacement of the Spotmatic IIa circuit board is required, it will be necessary to remove the circuit board to repair most problems.

Potentiometers 4R2 and 4R3 may be adjusted simply by removing the Rewind Assembly as described in para. 4-9 and shown in Figure 5-12. The Top Cover need not be removed to adjust the potentiometers.

Transistor 4Q1 and diode 4CR1 may be replaced without removing the circuit board from the camera. Remove the two screws (1 and 2, Figure 4-1) securing the board to the camera and lift the board slightly to gain access to the two components. The board will still be attached to the camera by the two additional screws (3 and 4, Figure 4-1) in the bracket. Use caution when lifting to avoid damaging the board.

To remove the board from the camera, it is necessary to remove the two Prism Retainer Springs, the Prism Retainer Plate, and the black rubber Prism Protector. Refer to Figure 5-12.

NOTE

Examine the position of the Prism Retainer Springs and replace where they were originally secured to the camera body.

Remove the two screws (1 and 2, Figure 4-1) securing the board to the camera body and the two screws (3 and 4, Figure 4-1) securing the bracket to the camera body. Lift the board free. Remove wire leads as necessary. Repair or replace components as necessary.

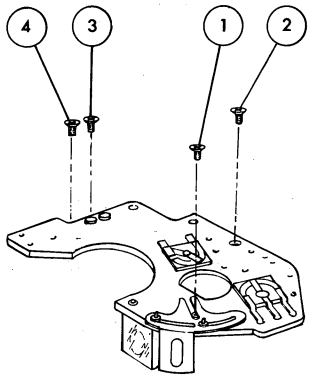


Figure 4-1. Spotmatic IIa Circuit Board

4-12. REFLECTOR AND FLASHTUBE.

4-13. REFLECTOR DISASSEMBLY (SEE FIGURE 5-3).

CAUTION

Handle the reflector and flashtube assembly gently to avoid damaging the electrode seals on the ends of the flashtube. Refer to paragraph 4-15.

To remove the reflector and flashtube assembly (16, 19), snap the reflector (16) out of the reflector housing (18).

To remove the flashtube (19), press on the clip on the end of the flashtube and withdraw the flashtube and clip from the reflector.

4-14. FLASHTUBE REPLACEMENT.

4-15. POSITIONING.

Flashtube removal and replacement should be accomplished with extreme caution to avoid cracking the seals around the metal electrodes. The points where the electrodes enter the glass envelope are the most sensitive areas of the flashtube. Bending or cutting the electrodes will cause excessive strain between the glass and the electrodes. The flashtube should be positioned to "float" when mounted in the reflector with the leads exerting minimum pressure on the flashtube.

The reflector and flashtube assembly should be handled gently and properly positioned in the Strobonar. Any contact with other components should be avoided to prevent damaging or shorting the metal electrodes.

4-16. POLARITY (SEE FIGURE 4-2).

The polarity of the flashtube must be checked when replacing the tube. The positive high voltage lead must be connected to the anode. The cathode, identified by the large diameter electrode inside of the envelope, must be connected to the negative lead. The trigger band is located at the cathode end of the tube.

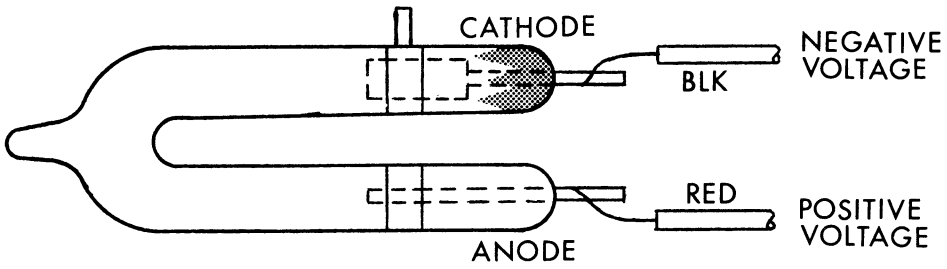


Figure 4-2. Flashtube Polarity.

CAUTION

Reversing the polarity of the flashtube may result in a failure of flash or may produce low light output. Continued use will permanently damage the flashtube.

4-17. SOLDERING.

Soldering the high voltage leads on the flashtube may be done with any high quality Sn 63 solder with a resin core flux. Caution should be taken to avoid exerting any pressure on the metal electrode leads when soldering.

4-18. CLEANING

4-19. MECHANICAL AND ELECTRICAL COMPONENTS.

Wipe the large surfaces with a clean, dry, lint-free cloth. Use low pressure compressed air to blow dust from hard-to-reach areas. When using compressed air, always direct the first blast of air at the floor to remove moisture from the air line.

4-20. STROBONAR REFLECTOR AND LENS.

Disassemble the Strobonar as described in paragraph 4-4 and remove the reflector. Immerse the reflector or lens in warm, soapy water and wipe it gently with a clean piece of cotton. Rinse in cold water and BLOT dry (do not wipe) with a clean, dry piece of lint-free cloth or tissue. Do not allow the surface to air dry; air drying allows water marks to form. Remove lint with a lens brush.

4-21. ELECTRICAL COMPONENT REPLACEMENT.

When removing or replacing electrical components, observe the following precautions:

a. When applying heat, use a heat sink to avoid component and circuit board damage from heat conduction of component leads.

b. Apply heat sparingly to the component lead to be removed and lift the lead clear of the junction.

c. Use heat sinks and apply heat springly when installing new components.

d. Component placement and lead dressing of new components should be the same as for the original.

SECTION 5

PARTS LISTS AND DIAGRAMS

5-1. GENERAL.

This section includes a listing of all replaceable parts, exploded views of all assemblies and schematics for the Remote Auto/Strobonar 882 and the Strobo-Eye units (Remote Sensor Accessory and Spotmatic IIa Camera). The following explains the column headings as used in the parts lists:

INDEX REF - Lists the reference (or call-out) number of each part as shown in the illustrations.

SCHEM REF - Lists the schematic reference designator of electrical parts.

HONEYWELL PART NO. - Lists the number by which an item may be ordered.

DESCRIPTION - Lists the part name and specifications required for identification.

QTY/UNIT - Lists the total quantity of each item used in the unit or assembly.

5-2. SCHEMATIC REFERENCE PREFIXES.

Prefix numbers have been added to the schematic reference designators to avoid designator duplication. Each unit in the Strobonar/Strobo-Eye system has been assigned a prefix number as shown in the chart.

UNIT	PREFIX	EXAMPLE
Auto/Strobonar 882	No prefix	CR1
Wall Box (Single Voltage)	#2 prefix	2CR1
Strobo-Eye Remote Sensor Accessory	#3 prefix	3CR1
Strobo-Eye (Spotmatic IIa Camera	#4 prefix	4CR1
Strobo-Eye Test Circuit	#5 prefix	5CR1
Wall Box (Multi-Voltage)	#6 prefix	6CR1

5-3. ORDERING INFORMATION.

When ordering spare or replacement parts, specify the unit model number, item description, Honeywell part number and quantity required.

Order parts from:

Honeywell
Photographic Products Division
P. O. Box 1010
Littleton, Colorado 80120

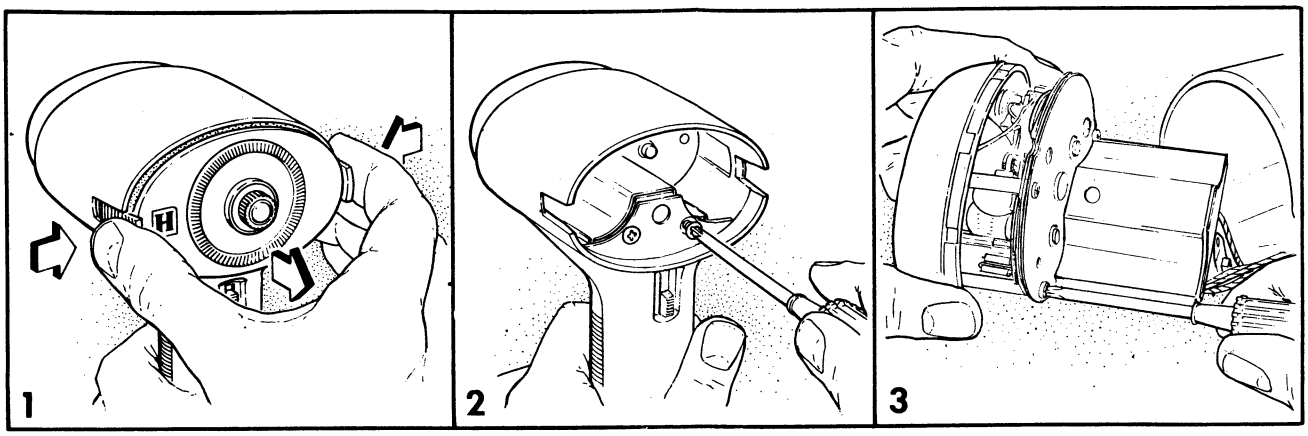


Figure 5-1. Disassembly Procedure

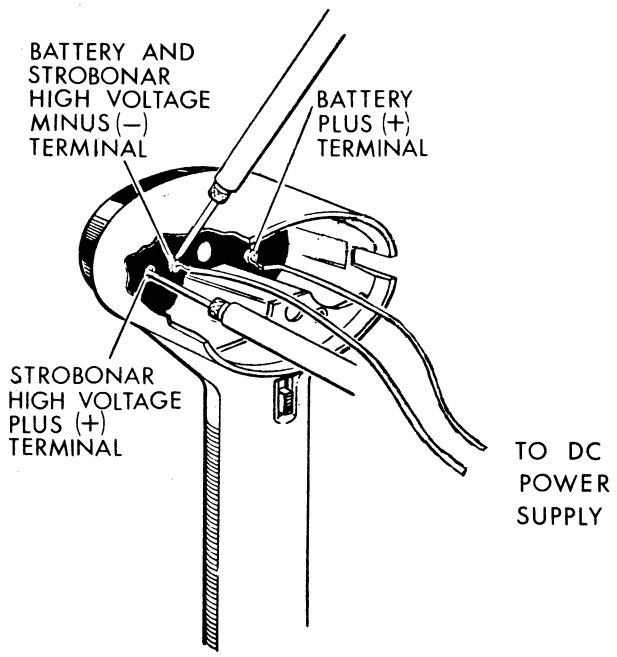


Figure 5-2. Anode Voltage Checks

REF INDEX	REF SCHEM.	HONEYWELL PART NO.	DESCRIPTION	QTY.
		Not Supplied	Strobonar Assembly	1
1		H73000012 005	Storage Tray Assembly (See Fig. 5-5)	1
2		H16761246 023	Screw, Flat Hd.	2
3		H16759761 003	Housing	1
4		H16761246 003	Screw, Flat Hd.	1
5		H73000042 026	Screw, Fil. Hd.	3
6		H16755813 002	Switch	1
7		H16765888 002	Chassis	1
8		H73003677 003	Circuit Board #2 Assy. (See Fig. 5-4)	1
9		H73002676 003	Circuit Board #1 Assy. (See Fig. 5-3)	1
10		H73000595 006	Sleeving	1
11		H73000806 001	Insulator	2
12		H73001002 004	Quench Tube and Flash Tube Final Assy.	1
13		H73000076 002	Reflector	1
14		H73000678 004	Lens	1
15		H16766498 001	Housing, Reflector	1
16		H73000595 003	Sleeving	2
17		H16754482 002	Terminal, Crimp	2
18		H73002821 002	Decal, Receptacle	1
19		H73002678 004	Receptacle Assy.	1
20		H16766626 002	Handle Cover	1
21	C3	H73000024 001	Capacitor	1
22		H16766627 001	Bushing, Handle	1
23		H73001039 001	Cap and Housing Assy.	1

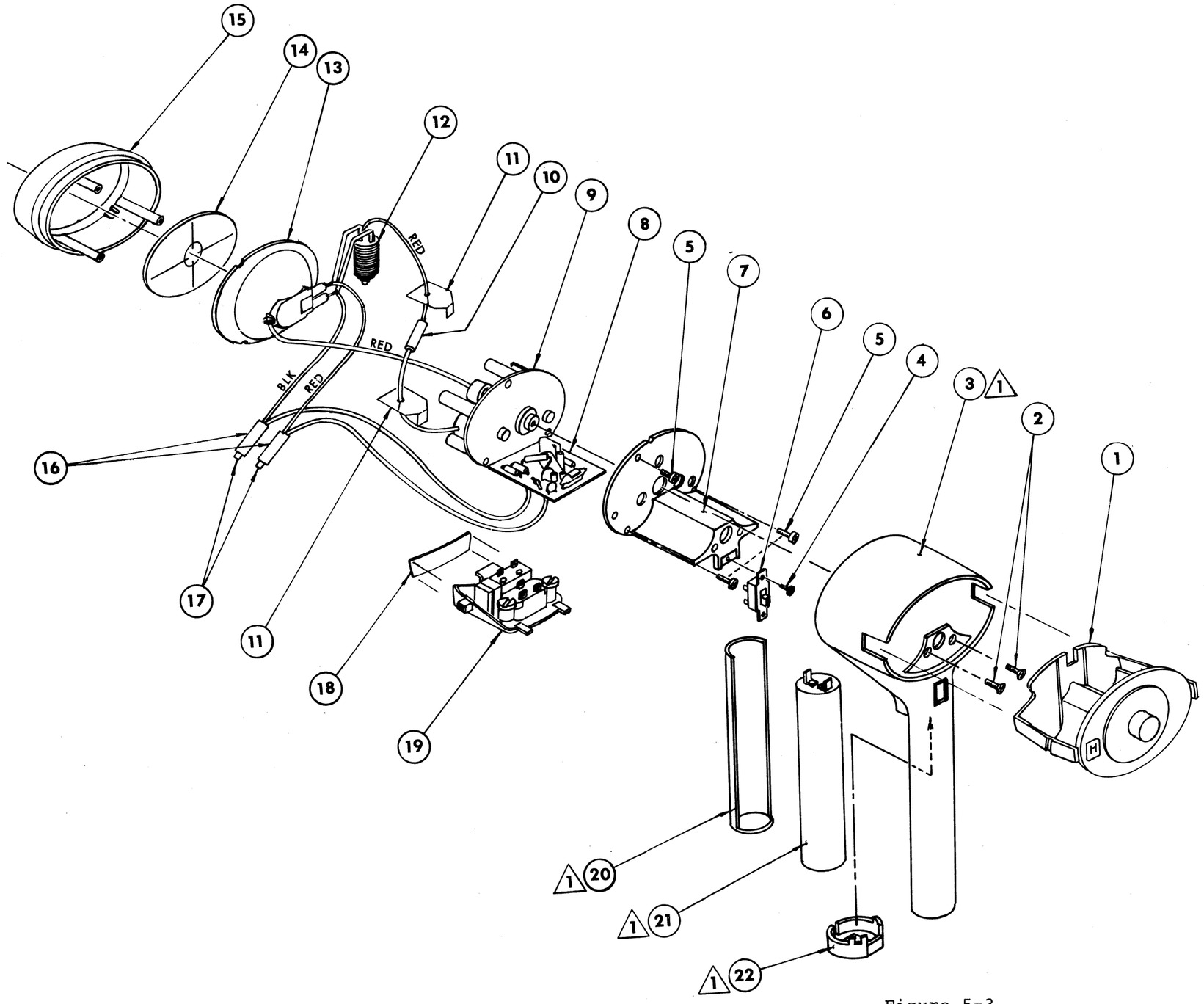


Figure 5-3.
Exploded View -
Auto/Strobonar 882

REF INDEX	REF SCHEM	HONEYWELL PART NO.	DESCRIPTION	QTY.
		H73002676 001	Circuit Board No. 1. Assy.	1
1		H73002533 002	Circuit Board	1
2	R6	H16762587 113	Resistor, Variable, 1M, 1/10W	1
3	R5	H16758183 873	Resistor, 2.2M, 1/2W, 10%	1
4		H16767142 001	Coupling, Bushing	1
5	C8	H16762474 128	Capacitor, .0033 mfd,500V	1
6		H16117595 001	Wire, #22	1
7	R10	H16758183 875	Resistor,3.3M,1/2W,10%	1
8	CR3	H73001970 003	Diode, 200V	1
9	C6	H16760006 001	Capacitor,.15 mfd,250V	1
10		H73003211 001	O Ring	2
11	R11	H16758183 873	Resistor,2.2M,1/2W,10%	1
12	R9	H16758183 812	Resistor, 22ohm,1/2W,10%	1
13	C7	H16750036 028	Capacitor,.002 mfd, 1KV	1
14	T3	H73000577 005	Transformer	1
15	SCR3	H73002511 013	SCR, 200V	1
16	R22	H16758183 494	Resistor, 5.1 ohm, 1/2W	1
17	C12	H16760006 001	Capacitor, .15 mfd, 250V	1
18	R19	H16758183 549	Resistor, 1K, 1/2W,5%	1
19	Q3	H16759913 002	Transistor	1
20	T2	H73000577 005	Transformer	1
21	C10	H73001150 015	Capacitor, 100pf, 500V	1
22	SCR4	H73002511 014	SCR, 200V	1
23	R14	H16758183 626	Resistor, 1.5M, 1/2W,5%	
24	C13	H16762474 128	Capacitor, .0033 mfd, 1KV	1
25	CR4	H73001970 001	Diode, 50V	1
26	C9	H73001150 032	Capacitor, .01 mfd, 500V	1
27	CR10	H73001970 005	Diode, 600V	1
28	R17	H73000683 073	Resistor, 100 ohm, 1.5W 10%	1
29	R18	H16758183 622	Resistor, 1M, 1/2W, 5%	1
30	R13	H16758183 844	Resistor, 10K,1/2W,10%	1
31	CR8	H73001970 001	Diode, 50V	1

REF		HONEYWELL PART NO.	DESCRIPTION	QTY.
INDEX	SCHEM			
32	CR5	H73002602 003	Diode, Zener, 24V	1
33		H16750979 008	Sleeving, 3/8 Lg	1
34	R12	H16758183 580	Resistor, 18K,1/2W, 5%	1
35		H73001644 001	Rotor, Switch	1
36		H73001645 001	Contact	2

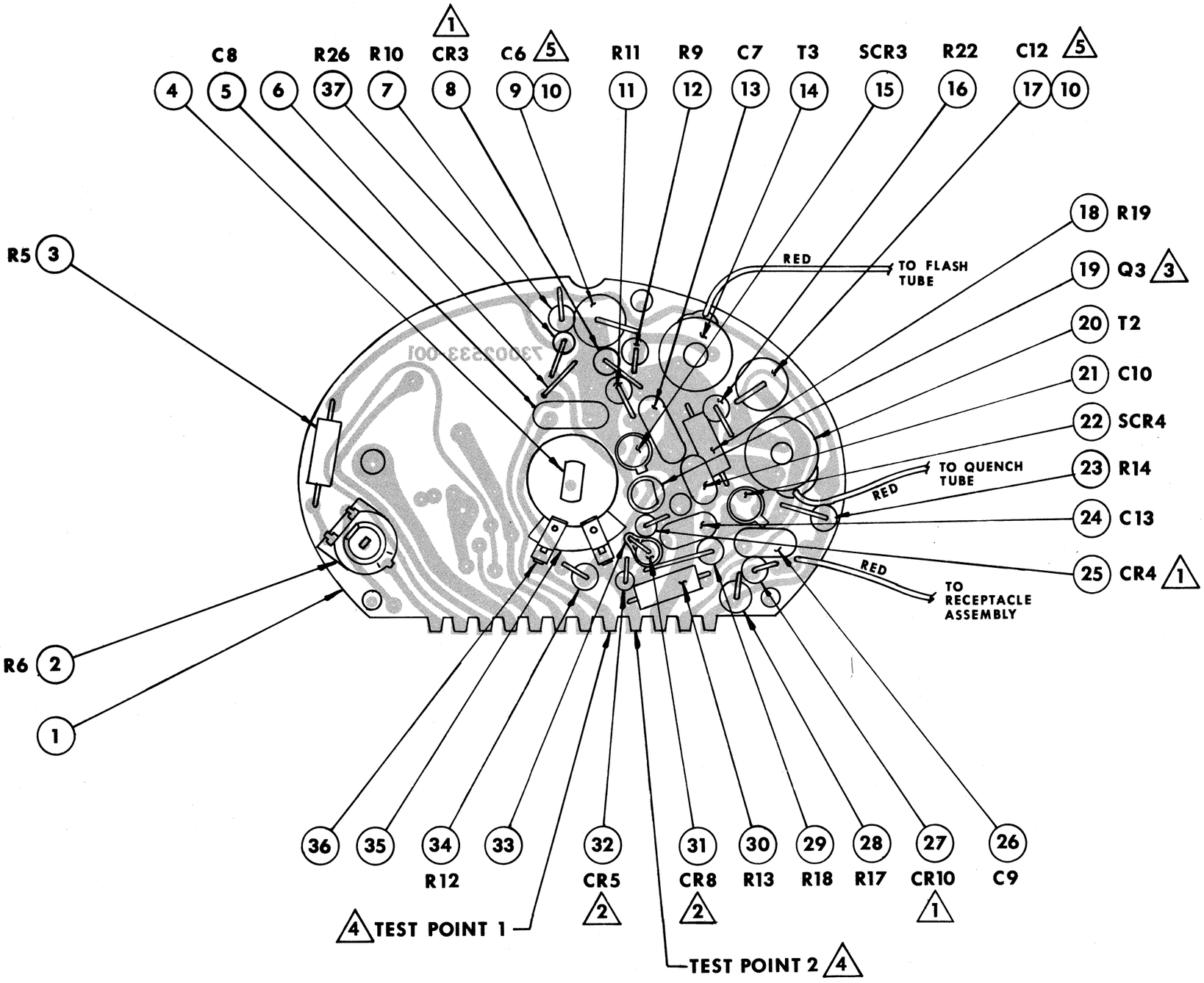


Figure 5-4.
Circuit Board No. 1 Assembly
5-7/5-8

REF INDEX	REF SCHEM.	HONEYWELL PART NO.	DESCRIPTION	QTY.
		H73002677 002	Circuit Board No. 2 Assembly	1
1		H73002534 003	Circuit Board	1
2	C16	H73001150 017	Capacitor, 200 pf, 500V	1
3	CR12	H73001970 004	Diode, 400V	1
4	R23	H16759940 305	Resistor, 220K,1/4W,5%	1
5	SCR2	H73002511 019	SCR,270V	1
6	CR16	H73003184 101	Diode, 50V	1
7	CR7	H73001937 001	Diode, 50V Ge	1
8	R20	H16759940 121	Resistor,1.0M,1/4W,10%	1
9	C11	H73003202 013	Capacitor, 1 mfd, 35-40V	1
10		H16750977 438	Sleeving, Red, No. 22	2
11	CR6	H73001937 001	Diode, 50V, Ge	1
12	C17	H73001150 022	Capacitor, 470 pf, 500V	1
13	C5	H73001150 022	Capacitor, 470 pf, 500V	1
14	R15	H16758183 869	Resistor, 1M, 1/2W,10%	1
15		H16117595 001	Wire, 22 Ga.	1
16	C15	H16767039 001	Capacitor, 0.33 mfd, 90V	1
17	VR3	H73001811 001	Neon, 260 V	1
18	R25	H16759940 285	Resistor, 33K, 1/4W, 5%	1
19	CR14	H73003184 104	Diode, 400V	1
20	R24	H16759940 290	Resistor, 51K, 1/4W,5%	1
21	R7	H16758183 863	Resistor, 330K, 1/2W, 10%	1
22		H16766821 001	Retainer, Dual	1
23	VR1	H73003022 003	Neon	1
24	VR2	H73002865 001	Neon, Green	1
25		H73003153 001	Insulator	1
26	C14	H73002825 002	Capacitor, 10 mfd, 250V	1

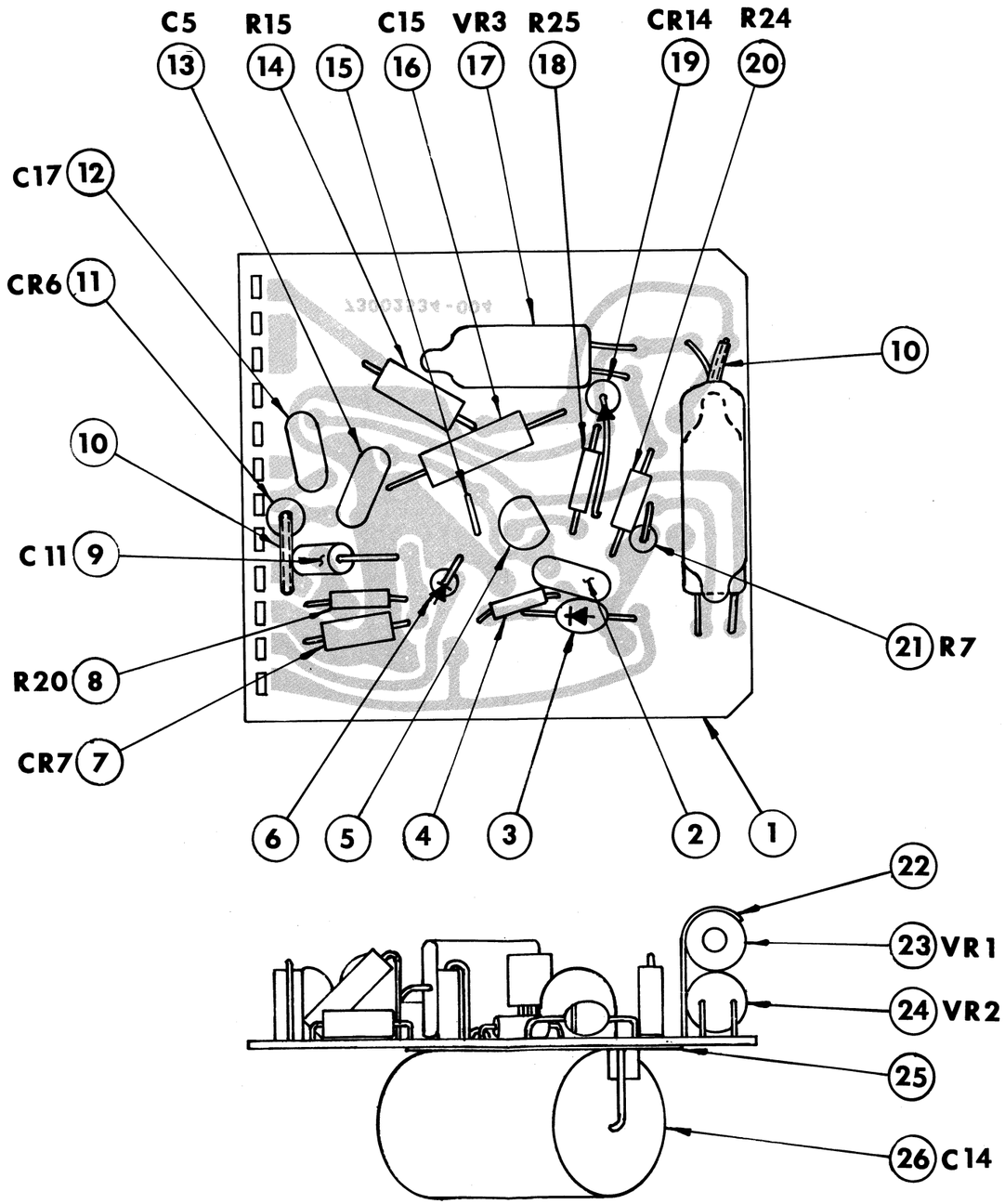


Figure 5-5.
Circuit Board No. 2 Assembly

REF		HONEYWELL		
INDEX	SCHEM.	PART NO.	DESCRIPTION	QTY
		H73000012 005	Storage Tray Assembly	1
1		H73000427 005	E-Ring	1
2		H16759851 001	Spring	1
3		H16766615 001	Snap Ring	1
4		H16738656 001	Detent Spring	1
5		H73000008 001	Knob Decal	1
6		H73000004 001	Shaft	1
7		H16759994 003	Exposure Dial	1

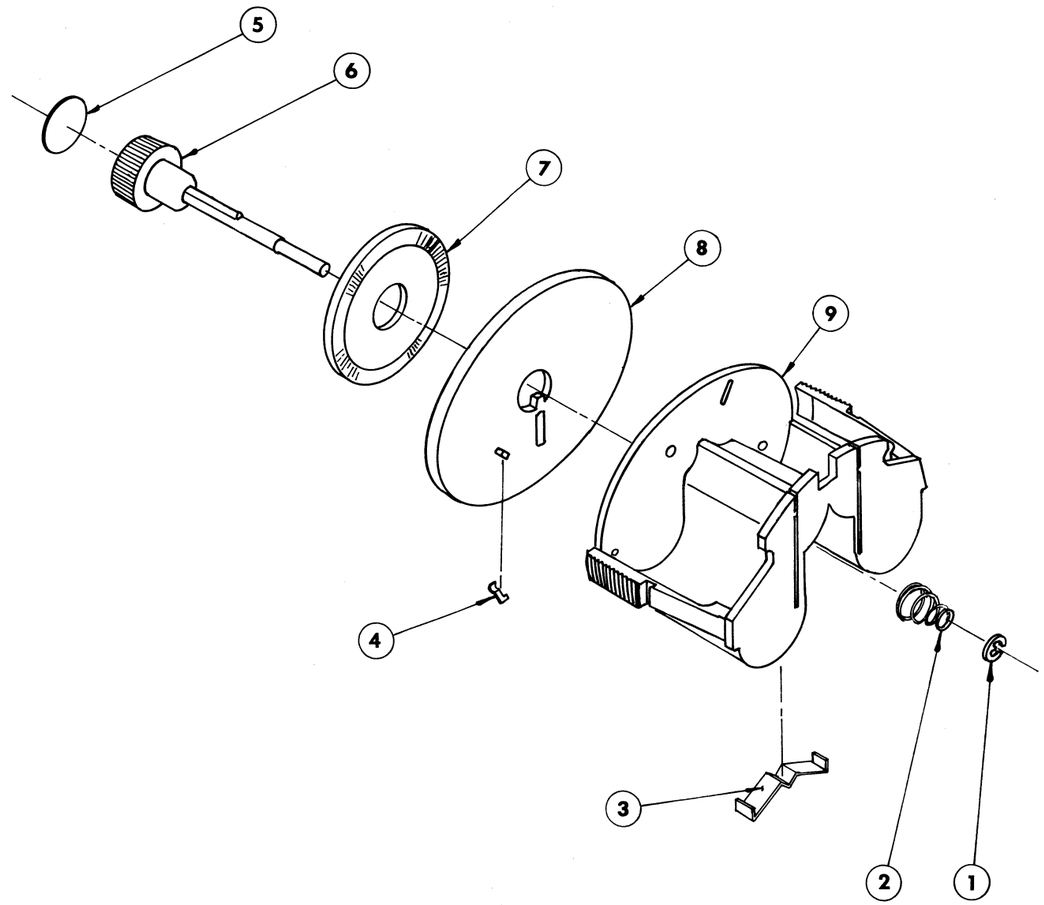


Figure 5-6.
Storage Tray Assembly

REF INDEX	REF SCHEM	HONEYWELL PART NO.	DESCRIPTION	QTY
		H73002680 002	Wall Box Assembly, Single Voltage	1
1		H73001173 001	Cover	1
2		H16766484 005	Cable Assembly	1
3		H73001167 004	Base	1
4		H16756377 024	Screw	2
5		H73001140 001	AC Power Cord	1
6		H73002831 004	Decal	1
7		H73002727 002	Circuit Board Assembly	1
8		H73000009 001	Circuit Board	1
9	2CR1	H73001970 005	Diode, 600V	1
10	2CR3	H73001970 005	Diode, 600V	1
11		H73000595 004	Sleeving	1
12	2CR2	H73001970 005	Diode, 600V	1
13	2T1	H73001732 001	Transformer	1
14	2CR4	H73001970 005	Diode, 600V	1

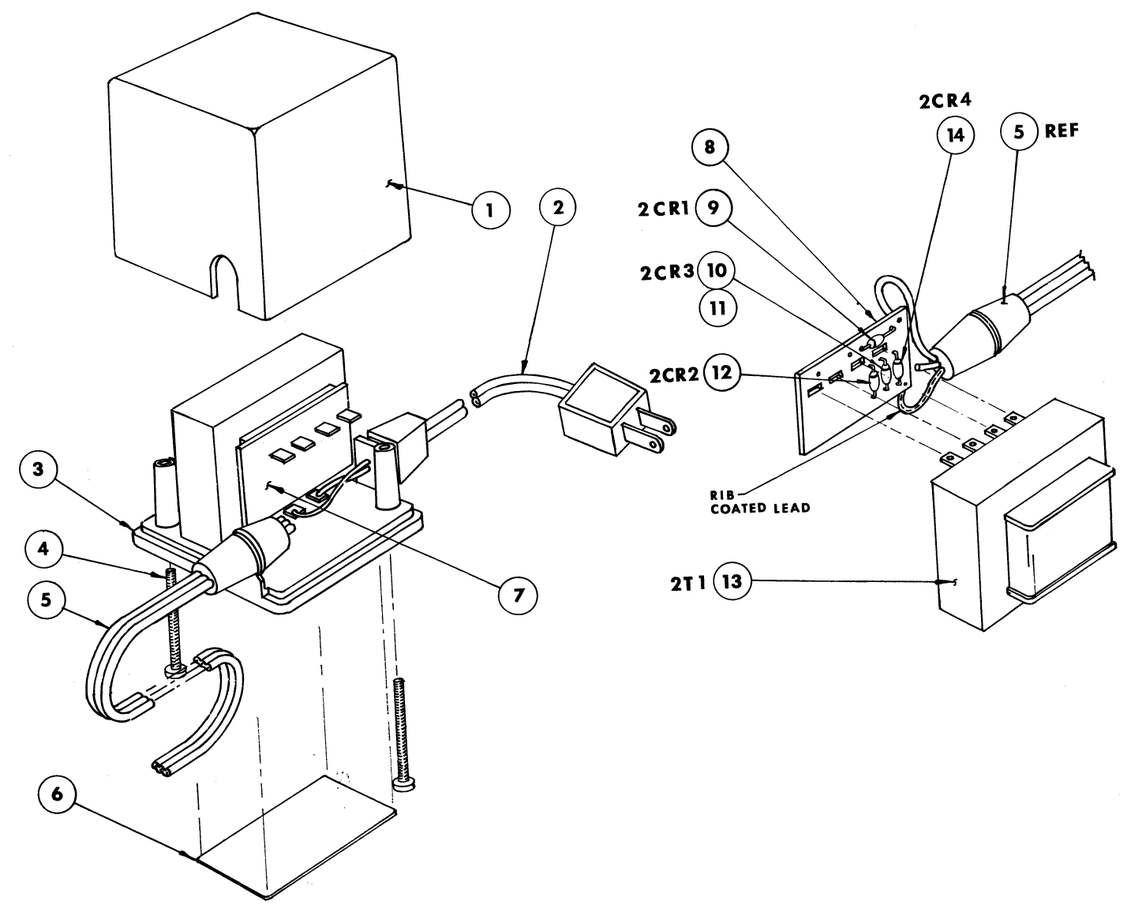


Figure 5-7.
Wall Box Assembly -
Single Voltage

REF INDEX	REF SCHEM	HONEYWELL PART NO.	DESCRIPTION	QTY
		H73003067 001	Wall Box Assy, Multivoltage	1
1		H73003084 001	Decal	1
2		H16756377 023	Screw	2
3		H73002930 001	Base	1
4		H16766484 005	Cord, Charge	1
5		H73003066 001	Circuit Board Assy. (See Fig. 5-8)	1
6		H73001140 001	Cord, Power	1
7		H73001173 001	Cover	1

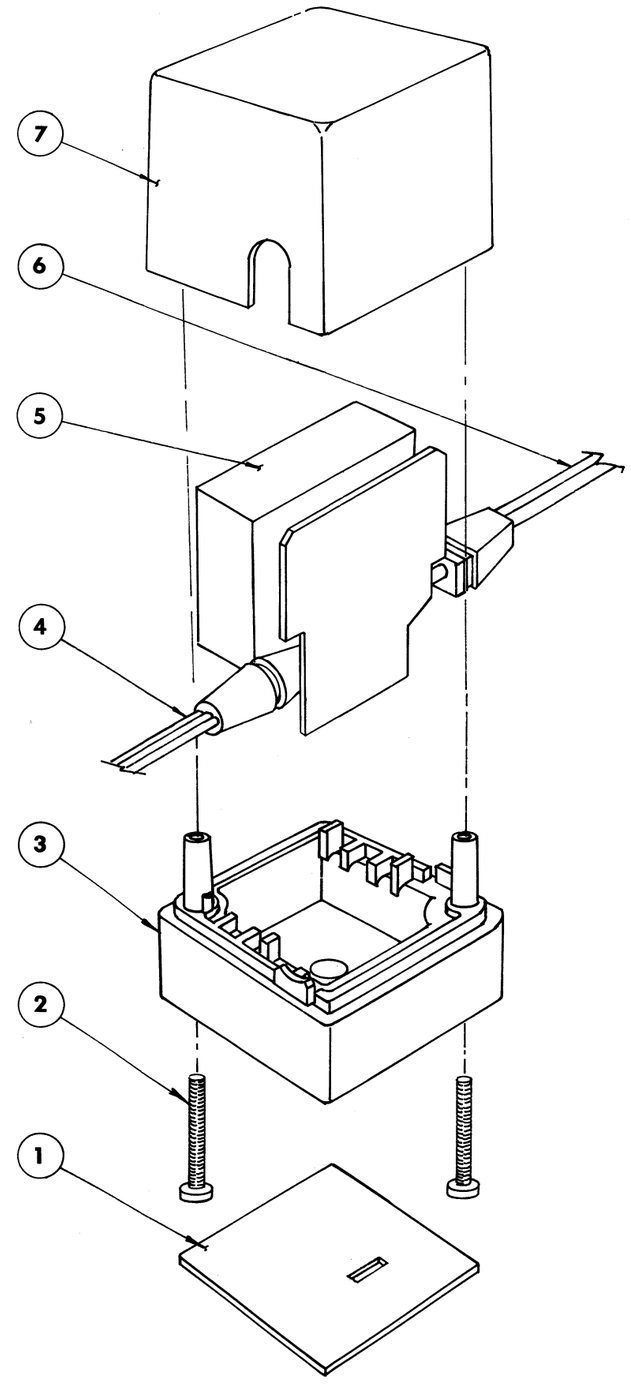


Figure 5-8.
Wall Box Assembly -
Multi-Voltage

REF INDEX	REF SCHEM	HONEYWELL PART NO.	DESCRIPTION	QTY
		H73003066 001	Circuit Board Assembly, Multi Voltage Wall Box	1
1		H73003065 001	Circuit Board	1
2	6S1	H73002937 001	Switch	1
3	6CR2	H73001970 005	Diode, 600V	1
4	6T1	H73003208 001	Transformer	1
5	6CR1	H73001970 005	Diode, 600V	1
6	6CR4	H73001970 005	Diode, 600V	1
7	6CR3	H73001970 005	Diode, 600V	1

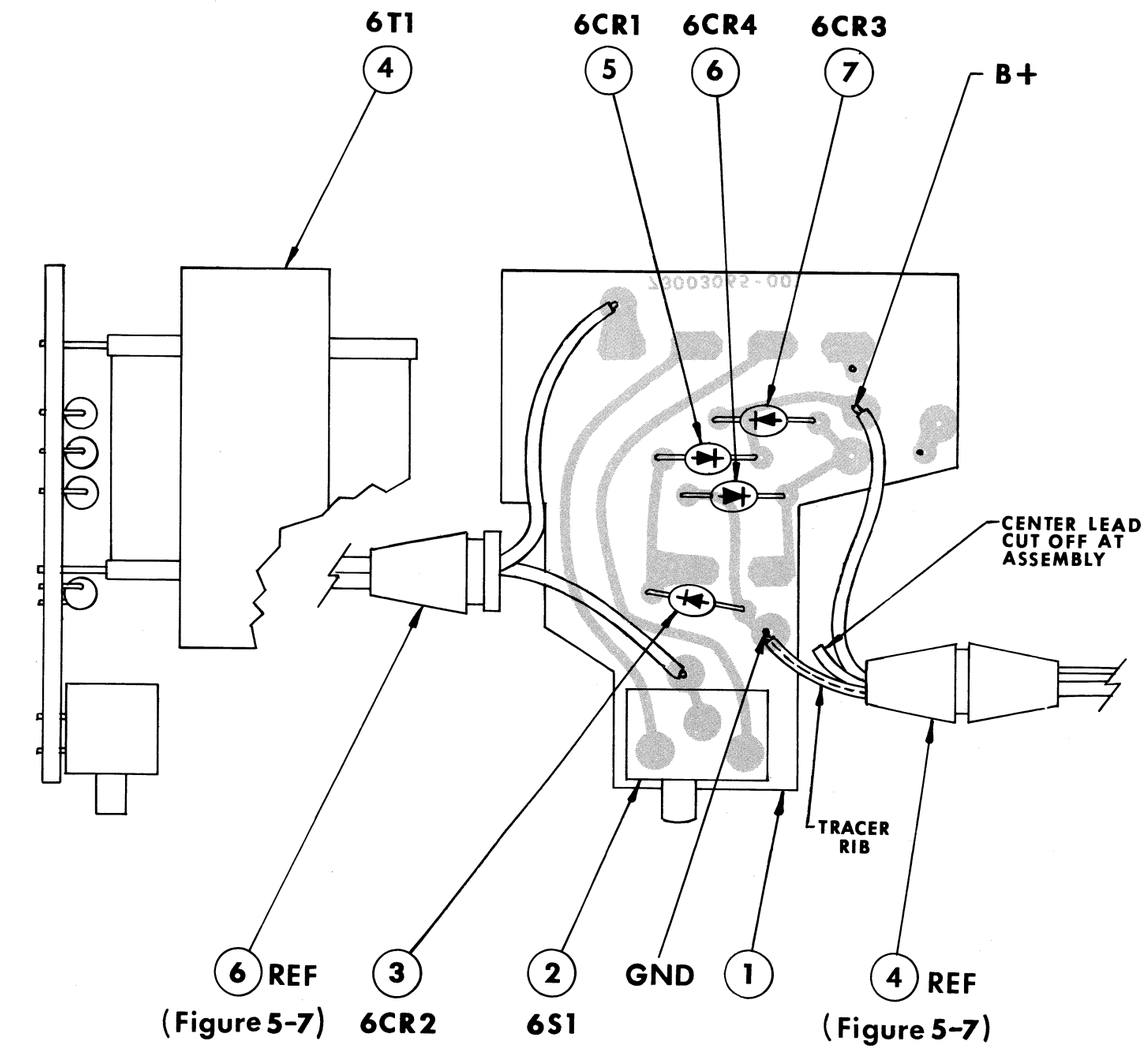


Figure 5-9.
Circuit Board Assembly
Multi-Voltage Wall Box

REF INDEX	REF SCHEM	HONEYWELL PART NO	DESCRIPTION	QTY
		H73002799 001	Strobo-Eye Remote Sensor Accessory Assembly	1
1		H73002809 001	Nameplate	1
2		H73002841 206	Screw, Flat Head	1
3		H73002756 001	Foot	1
4		H73002640 008	Screw, Self-Tapping, 2-56	3
5		H73002741 001	Case, Bottom	1
6		H73002824 003	Insert, Threaded	1
7		H73002182 001	Lens	1
8		H73002740 001	Circuit Board Assy. (See Figure 5-10)	1
9			Top Case Assy.	1
10		H73002788 001*	Aperture	1
11		H73002780 001*	Holder, Aperture	1
12		H73002781 001*	Button, Indicator	1
13		H73002407 002*	Washer, Wave	1
14		H73002816 001*	Decal, Range	1
15		H73002745 001*	Dial	1
16		H73002742 001*	Case, Top	1

* Parts not supplied for Service purposes.

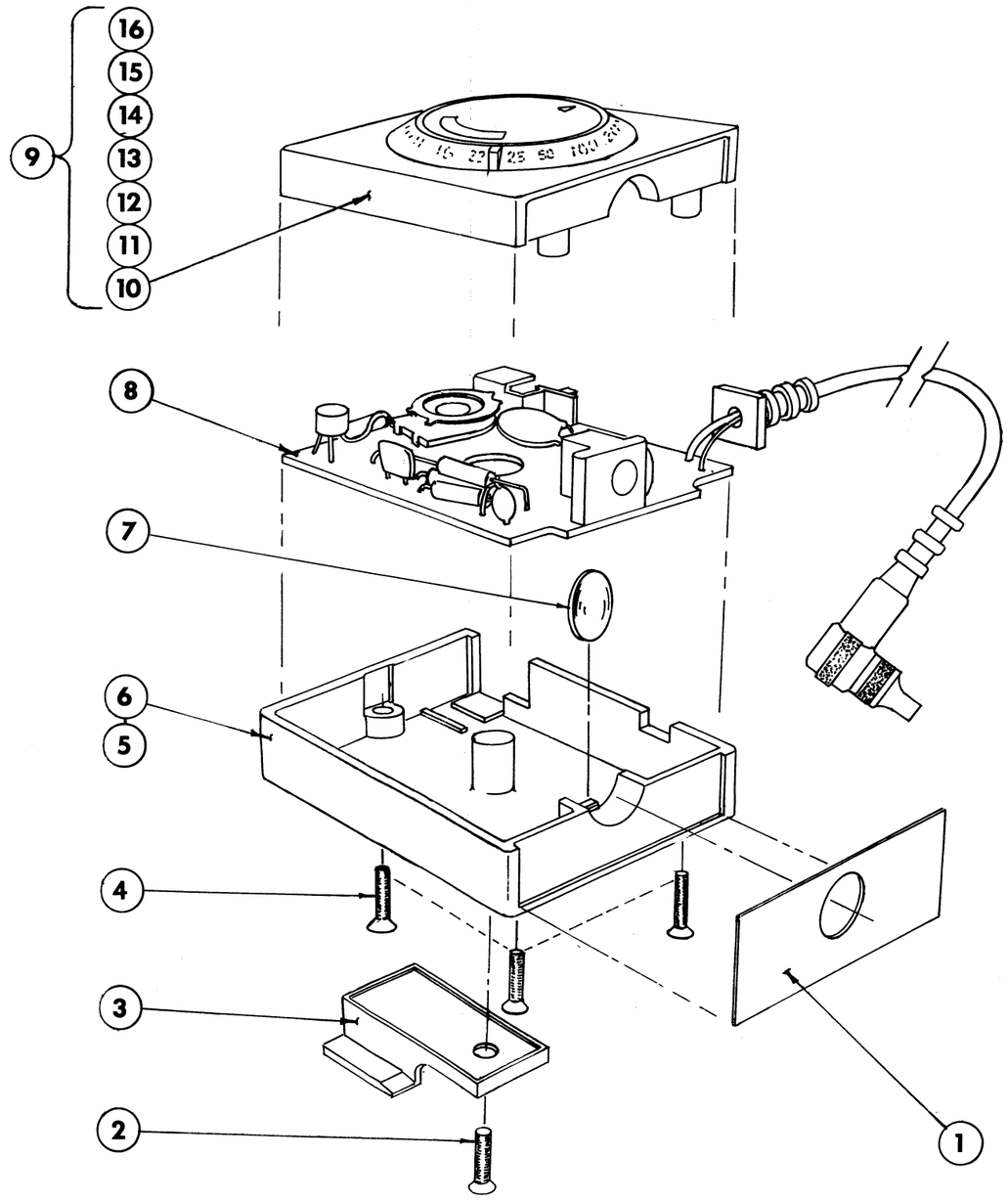


Figure 5-10.
Exploded View - Strobo-Eye
(Remote Sensor Accessory)

REF INDEX	REF SCHEM	HONEYWELL PART NO.	DESCRIPTION	QTY
		H73002740 001	Circuit Board Assembly - Remote Sensor Accessory	1
1		H73002736 001	Circuit Board	1
2	3R3	H16762587 114	Resistor, Var., 15K	1
3		H73002802 001	PC Module Assembly	1
4	3C1		Capacitor	1
5	3CR1	H73001970 005	Diode, 600V	1
6		H73002826 002	Cord, PC	1
7	3C2	H73002426 001	Capacitor, 100 pf	1
8	3C3	H73002426 002	Capacitor, .001 mfd	1
9		H16750978 038	Tubing, Teflon, 1/4 Lg.	1
10	3LASCR1		LASCR kit	1
11		H73002186 001	Lens	1
12		H73002778 001	Lens, IR Filter	1
13	3CR2	H73001970 005	Diode, 600V	1
14	3CR3	H73002602 002	Diode, Zener, 16V	1
15	3R4	H16759940 089	Resistor, 47K, 10%,1/4W	1
16	3R1		Resistor	1
17	3R2	H16759940 280	Resistor, 20K, 5%,1/4W	1
18	3C4	H73002426 006	Capacitor, .0015 mfd	1
19	3Q1	H16759913 003	Transistor, NPN	1

NOTES:

The following components make up the 3LASCR1 kit, Honeywell Part No. 73003287-001.

If 3LASCR1 is		Resistor 3R1 must be		Capacitor 3C1 must be:	
H73000533-013	50-90	H16759940-279	18K ohm	H73002426-002	.001 mfd
H73000533-014	70-120	H16759940-279	18K ohm	H73002426-002	.001 mfd
H73000533-008	95-175	H16759940-279	18K ohm	H73002426-015	680 pf

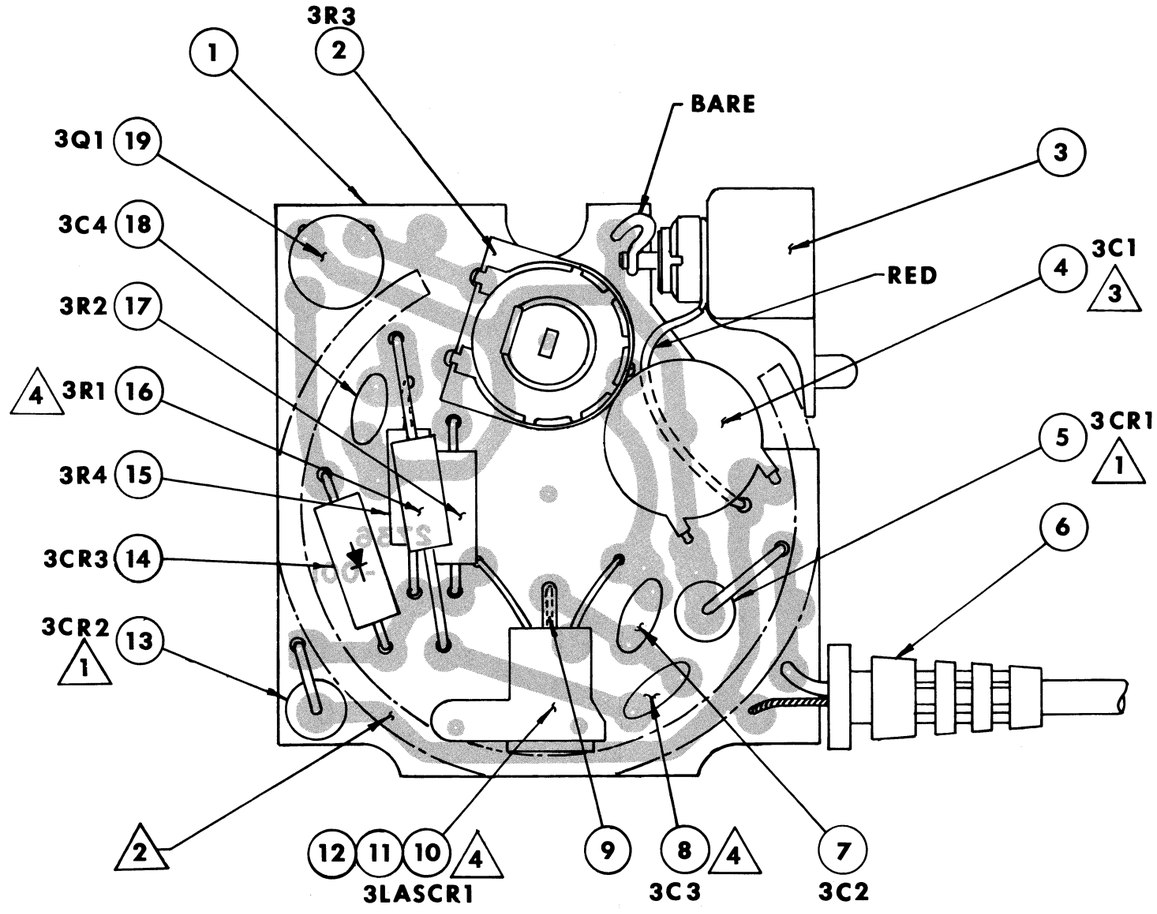


Figure 5-11.
Circuit Board -
Remote Sensor Accessory

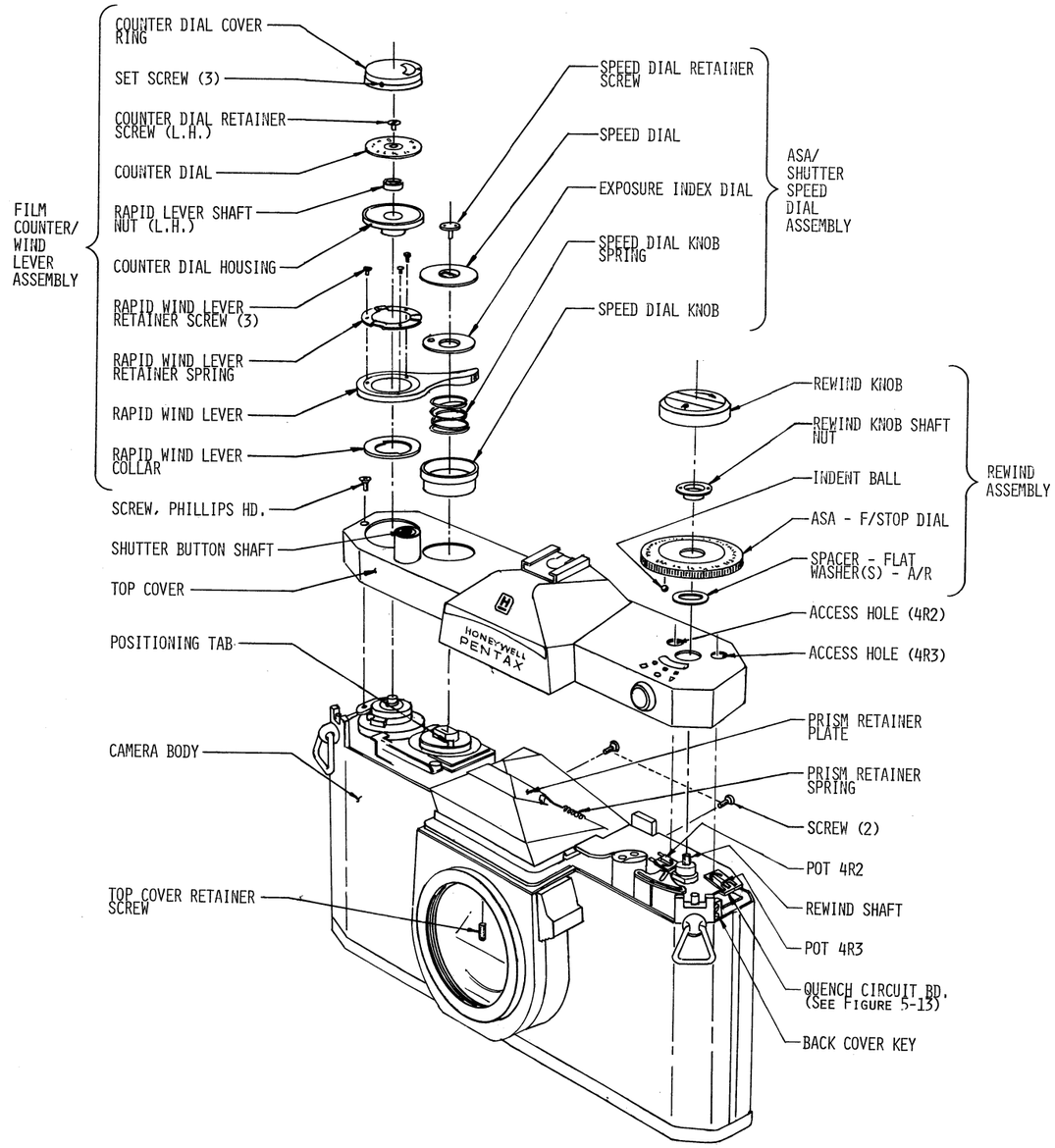


Figure 5-12.
Exploded View - Strobo-Eye
(Spotmatic IIa Camera)

REF INDEX	REF SCHEM	HONEYWELL PART NO.	DESCRIPTION	QTY
		H73002428 001	Circuit Board Assembly, Spotmatic IIa Camera	1
1		H73002308 00	Circuit Board	1
2	4Q1	H16759913 003	Transistor, NPN	1
3	4CR2	H73002602 002	Diode, Zener, 16V	1
4	4C4	H73002426 001	Capacitor, 100 pf	1
5	4R3	H73002424 108	Resistor, Variable, 15K	1
6	4R2	H73003235 003	Resistor, Variable, 100K	1
7		H73003235 004	C-Clip	2
8		H73002721 002	Standoff	2
9		H73003235 005	Plate, Diaphragm	1
10	4R4	H16759940 280	Resistor, 20K, 1/4W,5%	1
11	4R5	H16759940 089	Resistor, 47K, 1/4W,10%	1
12	4C2	H73002426 006	Capacitor, .0015 mfd, 50V	1
13	4CR1	H73001970 005	Diode, 600V	1
14	4C3	H73001150 024	Capacitor, 680 pfd	1
15		H73003235 002	Rivet	2
16		H73003235 001	Bracket	1
17	4CR3	H73001970 005	Diode, 600V	1
18		H16750978 038	Sleeving, Teflon	3
19	4LASCR1		LASCR Kit	1
20		H73002186 001	Lens	1
21		H73002778 001	Lens, IR Filter	1
22	4R6	H16759940 025	Resistor, 100 ohm, 1/4W,.10%	1
23	4R1		Resistor	1
24	4C1		Capacitor	1

NOTES:

Transistor 4Q1 not to extend higher than .250 above board surface.

Capacitor 4C4 not to extend higher than .300 above board surface.

The following components make up the 4LASCR1 Kit, Honeywell part no. H73003130-001.

If 4LASCR1 is	Resistor 4R1 must be:	Capacitor 4C1 must be:
H73000533-014 70-120	H16759940-279 18K ohm	H73002426-002 .001 mfd
H73000533-008 95-175	H16759940-275 12K ohm	H73002426-002 .001 mfd

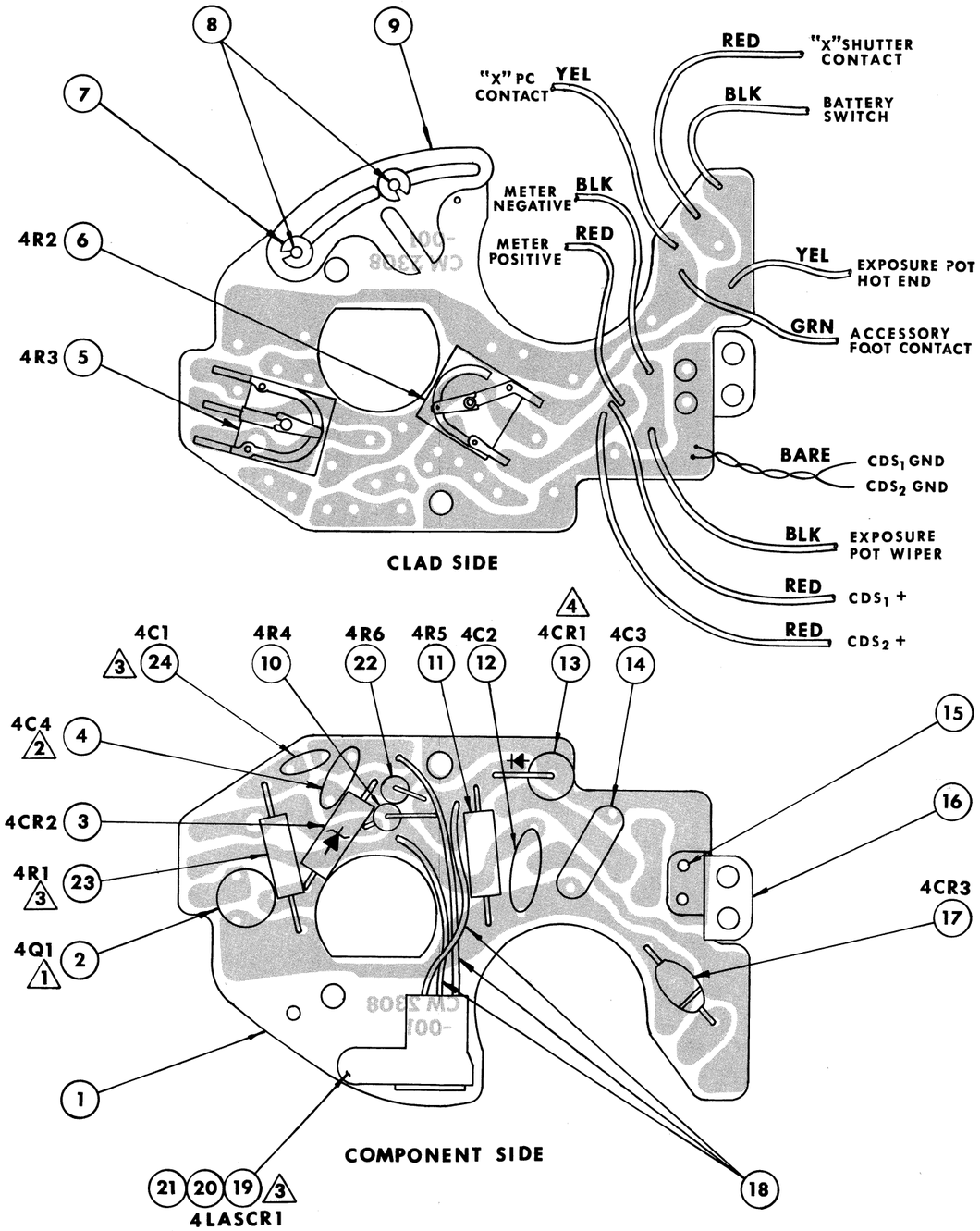


Figure 5-13.
Circuit Board -
Spotmatic IIa Camera

NOTES: AUTO/STROBONAR 882

1. All resistance values in ohms.
2. All capacitance values in microfarads.

NOTES: SPOTMATIC IIa CAMERA

1. All resistance values in ohms.
2. All capacitance values in microfarads.
   Resister 4R1 and capacitor 4C1 values depend upon 4LASCR1.
   Refer to the parts list on page 5-25/5-26.

NOTES: STROBO-EYE REMOTE SENSOR ACCESSORY

1. All resistance values in ohms.
2. All capacitance values in microfarads.
3. Resistor 3R1 and capacitor 3C1 values depend upon 3LASCR1.
   Refer to the parts list on page 5-21/5-22.

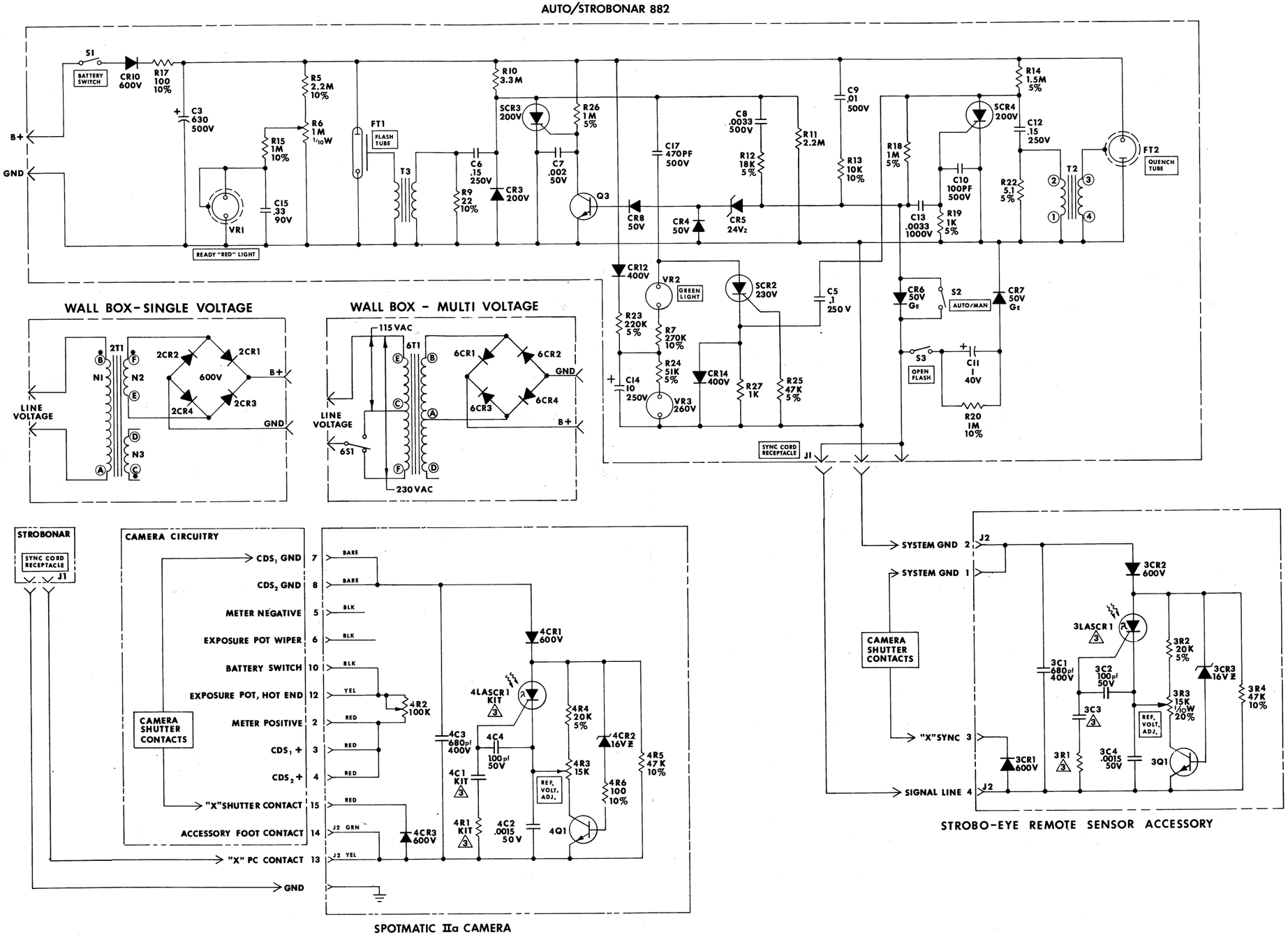


Figure 5-14.
Schematic Diagram -
Auto/Strobonar 882 -
Strobo-Eye System