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# INSTRUCTION MANUAL

## XENOGRAPHIC XL

### Xenon Slide Projection System

500 & 750 Watt

Issue 10-93



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## PREFACE

THE XENOGRAPHIC XL SYSTEM is a professional high intensity 35mm slide projector using a xenon lamphouse as a light source. High light output from the xenon lamphouse permits use in areas with relatively high ambient lighting and/or extremely long throws. Special optics allows the maximum amount of usable white light through the gate, while filtering out a high percentage of the invisible infrared element which can damage film. The 5400° (Kelvin) color temperature closely resembles daylight for realistic color reproduction.

A KODAK EKTAGRAPHIC SLIDE PROJECTOR is optically aligned to the lamphouse and clamped in place onto a projector base. The projector base and the lamphouse base are cast as a single unit to maintain the optical center. Built-in blowers cool the xenon bulb seals and create a forced-air exhaust draft. A third blower augments the cooling of the Kodak gate fan.

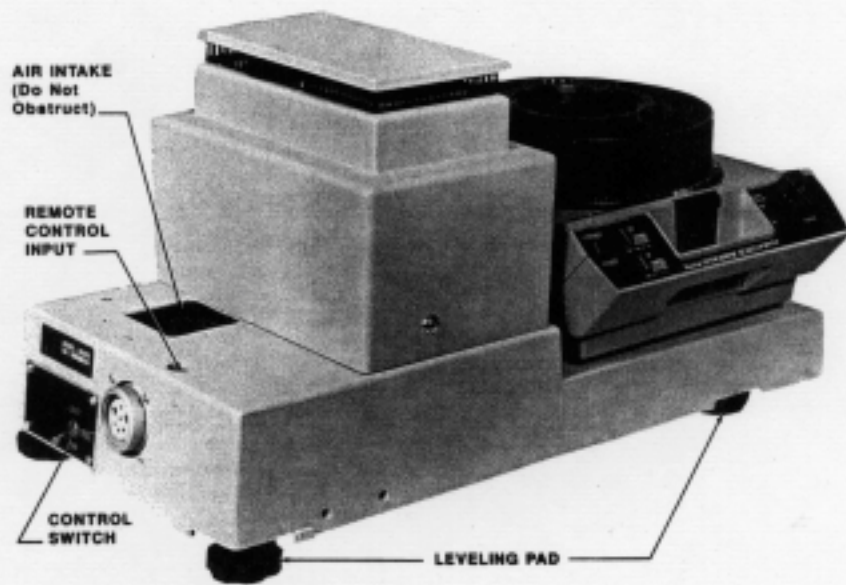
THE XENON BULB is factory aligned and potted into an electroformed elliptical reflector to form an easily installed Lamp Module. The bulb is classified as "Ozone Free," and requires no special exhaust ducting. Replacement Lamp Modules are available from Strong International Dealers, and are warranted for 400 hours or one (1) year, whichever occurs first. A safety interlock switch prevents bulb ignition if the lamphouse cover is removed.

EACH SYSTEM includes a lightweight, solid-state switching type Xenon Power Supply. This unit, when energized from a single AC receptacle and connected to the Xenographic, supplies all power requirements of the system. Check the equipment Data Plates on each unit before connecting or operating the system.

THE OPTIONAL ECLIPSER ASSEMBLY utilizes an electro-mechanical light valve for multi-media fade/dissolve capability. It is designed to interface any standard programmer, without modification, by using standard Kodak Ektagraphic connectors. Eclipser shutter sync control allows tailoring the xenon dissolve to approximate the Ektagraphic II or Ektagraphic III flash rates.

A SEPARATE INSTRUCTION MANUAL for the Kodak Ektagraphic III Model AM Slide Projector is included with the system. It is recommended that users familiarize themselves with the many features of the slide projector. The hand-held Remote Focus & Forward/Reverse Slide Advance is a standard accessory included with the system; other optional accessories are available from Kodak and Strong International Dealers.

PROJECTION LENSES for all applications are available through your authorized Strong International Dealer.



## RECEIVING AND INSTALLATION

INSPECT THE COMPLETE SHIPMENT (the xenon power supply is packed in a second carton) and report any damage to the freight carrier *immediately*. It is the responsibility of the consignee, not the shipper, to press damage claims.

OPEN THE CARTONS and unpack the Xenographic System. Locate and identify the individual components of the system:

- BOX 1:
- Xenographic Assembly (Lamphouse and Slide Projector)
  - Xenon Bulb Module
  - Slide Carousel
  - Remote Control (Kodak)
  - Bulb Module Seating Tool (Part No. 1123852)
- BOX 2:
- Xenon Power Supply

THE FOLLOWING HAND TOOLS, not supplied by Strong International, are required to facilitate the installation:

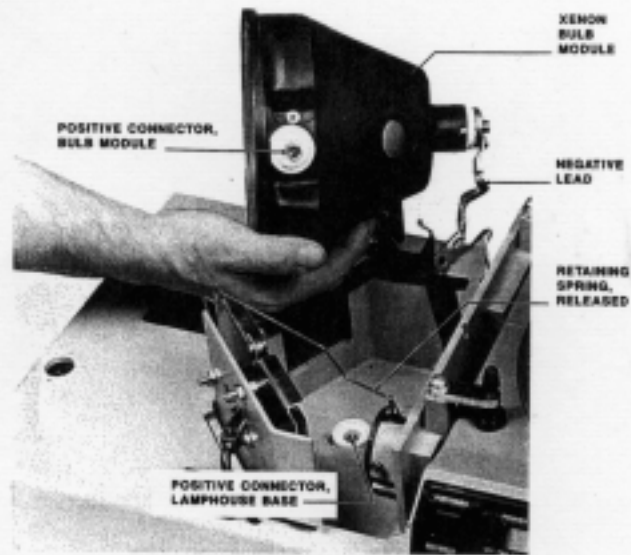
- Medium (#2) Phillips Screwdriver
- Medium (6") Adjustable "Crescent" Wrench

CONNECT THE AC POWER CORD of the Ektagraphic projector to the receptacle on the front of the Xenographic base casting. Surplus cord may be stored in the cavity in the base of the Ektagraphic.

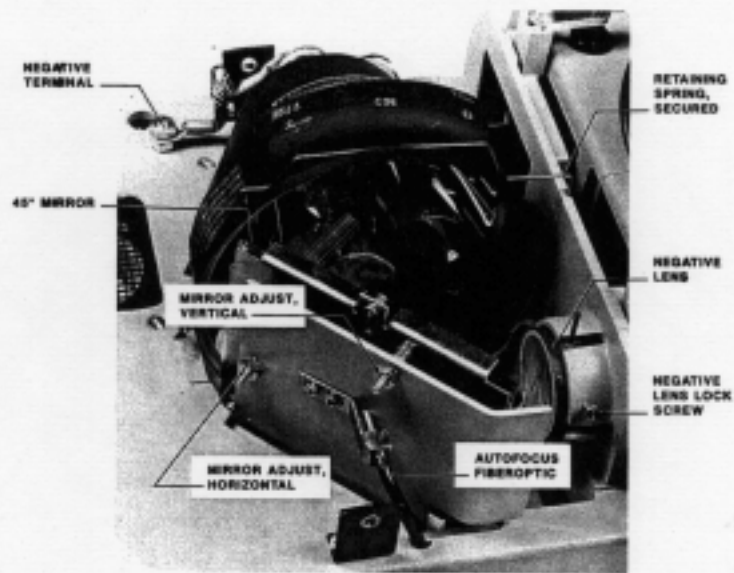
REMOVE THE TWO PHILLIPS HEAD SCREWS located on the left and right sides of the lamphouse cover. Lift off the cover, and unplug the molex connectors. Set the cover assembly aside. Unpack the bulb module from its shipping container.

### CAUTION

*Exercise extreme care when handling the bulb module.* The xenon bulb encapsulated in the module is highly pressurized and can rupture if dropped or otherwise mishandled. Do not touch the outer glass cover of the bulb module with bare hands. Fingermarks from normal skin oils can burn permanently into the glass surface when the lamp is operating.



See MAINTENANCE Section for Alignment Instructions.



## **RECEIVING AND INSTALLATION** (continued)

THE XENOGRAPHIC SYSTEM is supplied for either 500 or 750 watt operation. The xenon bulb module, and its electrical connectors, differ between the two systems. If it is decided subsequent to the initial installation to change wattages, consult the factory

DISMOUNT the protective cover from the large end of the bulb module. Inspect the cover glass for fingermarks or loose packing material. Clean the cover glass as required using a commercial ammonia glass cleaner and a clean cloth or lint-free disposable wipe. The cover glass must be dry and free of residue before installation.

PRESS THE POSITIVE CONNECTOR of the bulb module into the mating brass receptacle on the lamphouse base. Press down firmly to establish good electrical contact. Secure the module in place using the spring clip over the large end of the module. Connect the negative bulb lead from the end of the module to the terminal post and securely tighten the hex nut.

REPLACE THE LAMPHOUSE COVER. When re-connecting the molex connectors, note that they are keyed and connect only when correctly aligned. Replace and secure the cover retaining screws.

UNPACK THE XENON POWER SUPPLY and place near the Xenographic. Plug the MS connector of the lamphouse interconnect cable into the mating receptacle mounted to the top of the power supply cabinet. Carefully align the pins before tightening the locking ring. Store surplus cable in an out-of-the-way location (i.e. away from aisles or walkways).

THE SLIDE CAROUSEL supplied with the Xenographic accommodates (80) 2 x 2 inch 35mm. slides. Use of the (140) slide capacity carousel offered by Kodak is not recommended with the Xenographic System. Acceptable slide formats include 126 (26.5 x 26.5mm), 135 (22.9 x 34.2mm), and 30.7 x 30.7mm. DO NOT load slide mounts using metal inserts. Make certain all slides are in good condition; repair or replace damaged slides.

BEFORE LOADING SLIDES, check the metal slide retainer for correct position and lock in place with the latch. The formed end of the latch must be engaged in (2) small latch notches. Rotate the retainer to properly engage. See the Kodak Ektagraphic manual for detailed instructions.

AS THE CAROUSEL ROTATES, the number of the slide being projected will be opposite the gate index on the projector. Remove the lock ring by turning it counterclockwise and lifting it off the tray. Arrange the desired sequence of the slides and load consecutively in the numbered tray slots.

## RECEIVING AND INSTALLATION (continued)

FOR NORMAL PROJECTION, hold the slide so it is correct for normal viewing. Turn it upside down and reverse it. Place it in slot " 1 " with the direct-viewing side facing slot "2." Place the second slide into slot "2" facing slot " 3. " Continue loading in this manner. NOTE.- with bordered, trademark cardboard slides, the numbered side is usually the direct-viewing side.

AFTER THE TRAY is loaded, replace the lock ring, turn it toward the LOCK position (clockwise). When the detent engages, the ring is locked.

INSTALL THE CAROUSEL TRAY on the projector. Insert it into its recess on the top of the projector and align the slide-identification number "0" (zero) at the FILM INDEX. Lower the tray and seat it firmly within the slide tray guide ring. If the tray and projector components do not mesh properly, recheck the metal slide retainer.

TO INSTALL THE PROJECTION LENS, raise the focus knob upward and guide the lens into the lens barrel. Insert the lens far enough to allow the gear rack on the side of the lens to engage the gear on the focus shaft. Release the focus knob; it can now be turned to move the lens in or out for focusing.

THE KODAK REMOTE CONTROL PLUG connects to a mating receptacle located at the top rear of the lamphouse. The plug and receptacle must be oriented correctly to permit connection.

NOTE: The WHITE dot on the plug of the remote control assembly indicates a five-conductor cable. On other Kodak remote controls, a YELLOW dot denotes a three-conductor cable and a RED dot indicates a four-conductor cable. These remotes will mechanically plug into the Xenographic, but will not function.

THE XENON POWER SUPPLY includes an AC power cord with a molded three-prong plug. *Because of high RF voltages impressed during the xenon bulb ignition cycle, the Xenographic system must be grounded.* DO NOT use three-to-two prong plug adapters to connect to an ungrounded receptacle. If using an extension cord, the cord must be a three-conductor type rated for at least (20) amperes. Route power cords away from aisles and walkways.

AN INDEPENDENTLY-FUSED CIRCUIT supplying a minimum of fifteen amperes at 115 VAC, or ten amperes at 220 VAC (see equipment Data Plate) should be used for each Xenographic, particularly in a multi-media presentation using two or more Xenographic systems. Additional equipment on the same line could overload the circuit and cause a shutdown, interrupting the presentation.



## RECEIVING AND INSTALLATION (continued)

CONNECT THE POWER SUPPLY CORD to an acceptable three-pin grounded outlet. Turn the POWER switch to its ON position. An indicator light on the power switch will glow. The ammeter, located on the top of the power supply cabinet, will not register until the xenon bulb is operating. Likewise, the elapsed time meter will not run until bulb ignition.

PLACE THE TOGGLE SWITCH on the rear of the Xenographic in the center FAN position. The lamphouse and slide projector blowers will run. Make certain the switch on the Ektagraphic control panel is in the ON position.

MOVE THE TOGGLE SWITCH to the upper LAMP position, and the xenon bulb will ignite. Allow a minute or two for the lamp current to stabilize, and check the reading displayed on the ammeter. A new bulb should be operated at its rated "nominal" current level. As the bulb ages, its light output will decrease. At this time, the power supply output can be increased to restore the light intensity.

BECAUSE OF MANUFACTURING TOLERANCES between xenon bulbs, one Xenographic system of a multiple-unit installation might operate at slightly higher or lower current than the other to equalize light output. Increasing or decreasing lamp power to one or more units is the simplest way to balance light output when multiple units are used.

DO NOT, *at any time, exceed the maximum current allowed for the xenon bulb.* The xenon power supply furnished with the Xenographic system is capable of *overdriving* the xenon bulb. Carefully monitor the output setting of the xenon power supply, and re-check the current output if interchanging power supplies between similar units.

<u>Wattage</u>	<u>Nominal Current</u>	<u>DO NOT EXCEED</u>
500	28 A.	32 A.
750	34 A.	38 A.

THE XENON BULB MODULE is warranted for one year or 400 hours, whichever occurs first. It is recommended to replace the module at the end of its warranty period. Upon expiration of the xenon bulb module, *do not dispose of the unit by placing in an ordinary refuse container* An expired xenon bulb may retain a high degree of internal pressure, and remains subject to rupture if mishandled. The expired bulb module may be returned to an authorized Strong International Dealer for safe disposal.

## OPERATION

A SAFETY INTERLOCK SWITCH will open and prevent operation of the xenon bulb module if the lamphouse cover is removed. *The xenon bulb generates a highly intense light which will cause permanent eye damage if viewed directly* DO NOT jumper or otherwise bypass this safety switch.

CONNECT THE XENON POWER SUPPLY to a proper AC receptacle as described in the preceding INSTALLATION section. A double-pole switch on the power supply turns the unit ON and OFF. An indicator light on the switch glows when power is applied to the "line" side of the contactor and to the lamphouse control circuit, and denotes that the power supply is ready for operation.

THE LAMPHOUSE POWER SWITCH is a three-position toggle located on the rear of the Xenographic base. The bottom OFF position disables the ignition circuit and the cooling fans. The center FAN position energizes the cooling fans required for bulb ignition and operation. This FAN position should be used after bulb operation; forced-air cooling of the bulb after operation greatly increases the bulb life. LAMP position enables bulb ignition, and continues the operation of the cooling fans. Unlike incandescent light sources, the xenon lamp requires no warm-up period prior to screening.

CHECK THE AMMETER after bulb ignition and adjust as required for correct DC output (28-32 A. for 500 watt; 34-38 A. for 750 watt).

A SLIDING CONTROL SWITCH is located on the control panel of the Ektagraphic projector. It is recommended to leave this switch in the ON position at all times, and to control power function by means of the Xenographic switch. If the Ektagraphic projector is *not* interconnected and switched ON, a lamphouse interlock switch will prevent bulb ignition.

ALIGN THE PROJECTED IMAGE on the screen using the four leveling feet on the base of the Xenographic. DO NOT adjust the leveling feet of the Ektagraphic projector; changing this setting will alter the factory's optical alignment.

THIS SECTION includes only a brief overview of the operation of the Kodak Ektagraphic Slide Projector. For detailed information, refer to the Kodak Ektagraphic Instruction Manual shipped with the Xenographic system.

TWO PUSHBUTTONS on all Ektagraphic control panels regulate the Forward and Reverse motion of the slide tray. This function is paralleled by the "FORWARD" and "REVERSE" buttons on the remote control.

## OPERATION (continued)

PRESSING THE "FORWARD" button will rotate the slide tray in a counterclockwise direction and advance from slide "1" to "2" to "3" and so on. Pressing the "REVERSE" button rotates the tray clockwise, from "3" to "2" to "1." Momentarily depressing the button moves (1) slide; holding the button down will project slides sequentially.

SOME MODELS of the Ektagraphic projector used with the Xenographic system include "SELECT" and "AUTOFOCUS" functions. See the separate Kodak Ektagraphic instruction manual supplied with the unit for details regarding these options.

WHEN THE "SELECT" BUTTON is depressed and held down, the slide tray can be manually rotated to select any slide for projection. Rotate the slide tray until the number of the desired slide is opposite the gate index on the projector. Release the SELECT button, and the desired slide will be projected. This control may also be used for showing and retrieving a single slide without using a slide tray, and for rotating the slide tray to align the "0" (zero) slot to the gate index and remove the slide tray from the projector.

ROTATE THE FOCUS CONTROL KNOB to position the lens to project the sharpest image. If using the Autofocus feature, it is necessary to manually focus only the first slide. Autofocus switches ON and OFF at the Ektagraphic control panel.

IF A DAMAGED SLIDE catches in the projector gate, it is necessary to remove the slide tray without first advancing the tray to zero. Retract the tray latch by turning the coin-slotted "tray removal screw" on the top of the Ektagraphic projector in either direction to the limit of its travel. While holding the screw in the release position, lift the tray off the projector. With the locking ring in place, turn the tray over. Rotate the slide retainer until the latch engages the notches in the plate. Turn the tray rightside up, and remove the lock ring. Remove and repair the damaged slide.

THE LOCKING RING may be removed and set aside to allow slides to be inserted and removed for editing. The ring must be replaced before the tray is removed from the projector. Single slides can be inserted and released without a tray by use of the "SELECT" button.

AT THE CONCLUSION of the slide presentation, extinguish the *xenon* bulb by placing the toggle switch to the center FAN position. Allow the blowers to cool the bulb module and the slide projector for at least ten minutes before moving the toggle switch to OFF.

## MAINTENANCE

THE XENOGRAPHIC SYSTEM requires very little maintenance to keep it in good working order. *Cleanliness is* the most important element.

### CAUTION

Disconnect all AC power to the Xenographic system before cleaning or servicing either unit of the system. Allow the lamphouse to cool to room temperature. DO NOT allow untrained or unauthorized personnel to handle or otherwise service the xenon lamp module.

INSPECT AIR INTAKES and outlets and clean as required. Check blowers for normal operation; replace if motor is running slow and not moving enough air. Maintain unobstructed air flow and free air exchange. All blower motors are permanently lubricated and require no oiling.

AT LEAST twice yearly, remove the lamphouse cover and clean the lamphouse optics, including the glass cover of the bulb module, the 450 mirror, and the negative lens. Do not touch the cover glass of the bulb module with bare fingers. Use an ammonia-base glass cleaner and a clean cloth or lint-free disposable wipe. The "dot" on the negative lens ring adjacent to the handling stud is generally installed toward the bulb module, but may be reversed.

INSPECT THE XENON BULB by viewing through the bulb module cover glass. A slight blackening of the envelope of the bulb is normal as the bulb ages. It is recommended to replace the bulb module at the expiration of the warranty (400 hours). Excessive blackening of the envelope which might occur after this period may inhibit cooling and cause bulb failure.

REPLACE THE BULB MODULE before its warranty expiration if the bulb envelope turns bluish or milky, or if either electrode develops cracks. Contact a Strong International Dealer for warranty return information. DO NOT return a defective bulb module to Strong without first securing a Return Authorization.

BEFORE REPLACING and securing the lamphouse cover, check all electrical connections for tightness. Loose connections, particularly in the DC bulb circuit, can overheat and damage lamphouse components. If a loose connection is detected, carefully clean the mating components before retightening to remove oxidation.

## MAINTENANCE (continued)

### Replacement of Bulb Module

1. Dismount the lamphouse cover by removing the two (2) cover retaining screws. Unplug the molex connector and set the cover aside.
2. Remove the rear (negative) bulb lead from the terminal post.
3. Release the retaining spring from the top of the bulb module.
4. Using the module seating tool supplied with the accessory kit (Part No. 1123852), pry the lamp module upward to disengage the positive connection.
5. If returning a bulb module for warranty adjustment, complete all required warranty forms, and pack with the module in its original shipping container.
6. Unpack the replacement lamp module. Remove the protective plastic cover. Inspect the cover glass for fingerprints and clean as required.
7. Press the bulb module positive connector into its mating receptacle in the lamphouse base. Secure in place using the *retaining spring*.
8. Connect the rear bulb lead to the terminal post and tighten securely.
9. Apply pressure to the lower lip of the bulb module using the module seating tool to completely seat the bulb module.
10. Replace the lamphouse cover. Connect the molex plugs, install the cover, and secure using the (2) retaining screws.
11. Restore power and ignite the lamphouse. Check the ammeter; set the power output to the lower level required for a new bulb.

The Xenographic lamphouse is factory adjusted for optimum light output.

Manufacturing tolerances between lamp modules, and excessive shock or vibration during shipment may create a need for slight optical adjustment. Project a white light (no slide) to the screen. The bright area should be centered on the screen. If misaligned, perform the following adjustments.

*NOTE: It will be necessary to replace the lamphouse cover between each adjustment to observe its effect.*

1. If the bright area is off center toward the bottom of the screen, check the seating of the lamp module (Step 9 above).
2. If the bright area remains off-center, adjust the angle of the 450 mirror. Two self-locking hex nuts on the mirror mounting bracket are alternately loosened or tightened to shift the position of the mirror. The uppermost nut adjusts the vertical position of the mirror (clockwise, RIGHT; counterclockwise, LEFT). The rearmost nut adjusts the horizontal (clockwise, DOWN; counterclockwise, UP).
3. Light intensity and uniformity ("field") is adjusted by moving the negative lens in and out. The negative lens is mounted to the center bulkhead casting between the 450 mirror and the projector. A center-mounted stud permits moving the lens when the knurled head screw securing the lens ring is loosened. The balance between high light intensity and uniformity of light distribution depends greatly on the age of the xenon bulb.

## **MAINTENANCE** (continued)

4. Moving the negative lens toward the 45° mirror will spread the light. When the light is evenly distributed over the screen, the center screen brightness will decrease, reducing overall lumen output. A new bulb operating at nominal current should project a flat field with acceptable brightness.
5. Moving the negative lens toward the projector will increase center screen brightness, but will cause reduced light in the corners. This will tend to increase total light output, and is desirable after a bulb has aged and its light output has decreased. This decrease of center screen intensity is a normal condition of bulb aging.

### **CAUTION**

**DO NOT *OVERCOMPENSATE* for any loss of center screen intensity!** The intense *xenon light* source is capable of damaging slides and/or the slide projector if incorrectly adjusted. Test the new negative lens setting by projecting an old slide for several minutes. If the old slide bleaches or burns, adjust the negative lens *back* toward the 45° mirror before valuable slides are damaged.

## TROUBLESHOOTING

**CAUTION:** The control circuit of the Xenographic system operates on 115 V.AC. *Exercise extreme caution when taking readings inside the lamphouse enclosure. Do not open the lamphouse enclosure until the bulb module has cooled to room temperature and the power supply and igniter capacitors have drained for (20) minutes.*

### NORMAL OPERATION:

The igniter operates from the high DC no load voltage provided by the xenon power supply. When the interlock and air flow switches are closed, and the LAMP ON closure is completed, the control circuit supplies power to the circuit which closes the contacts of the power supply contactor. A high DC voltage charge (120 - 140 V.DC) is then supplied to the lamphouse. This charge enables the igniter to generate the high voltage RF pulse to bridge the arc gap between the bulb electrodes.

There will be a distinct buzzing sound at the moment the bulb ignites. This is caused by the spark gap in the igniter, and the high voltage arc between the bulb electrodes.

When the bulb ignites, the DC voltage drops to the normal bulb operating range. The igniter will then remain out of the circuit until another high no load voltage pulse is generated by the xenon power supply.

The 115 V.AC control circuit is routed through the xenon power supply. A two (2) ampere circuit breaker in the power supply protects the circuit in the event of a component malfunction. The circuit breaker is located adjacent to the main POWER switch on the power supply cabinet; press to reset.

### TROUBLESHOOTING:

If the xenon bulb does not ignite, observe the following operational sequences for assistance in locating and isolating the trouble area.

The blowers in the lamphouse and slide projector should operate. If this does not occur, the trouble is in either the blower(s), a loose connection, or a broken AC lead.

With the toggle switch in the LAMP position, a distinct high voltage arc ping at the igniter spark gap should be heard, and a flash from the xenon bulb should be visible, as DC voltage is applied to the bulb electrodes.

## **TROUBLESHOOTING** (continued)

If the high voltage ping or the bulb flash is not apparent, check the DC "No Load" voltage between the lamphouse and power supply. If the correct voltage for the power supply being used is not indicated on the meter, the problem is in the lamphouse/power supply interconnecting cable, or in the power supply. See the troubleshooting guide for the xenon power supply.

If the high voltage arc is audible at the lamphouse, and the bulb does not flash, replace the bulb module and attempt ignition with the new bulb.

Using the new bulb module, if the high voltage arc is audible at the lamphouse, the flash of the bulb is visible, and ignition is not sustained, the problem is in the xenon power supply.

If the high voltage arc is not audible, and the flash of the bulb is not seen, the trouble is in the lamphouse igniter.

### NOTICE

The Strong DC Pulse Igniter is a sealed assembly and contains *no user serviceable components*. The Strong Switching Xenon Power Supply employs solid state circuitry requiring sophisticated diagnostic equipment not generally available to field service personnel. If an ignition problem in the following TROUBLE CHART section is traced to either of these units, contact a Strong International Dealer for further information.

### *EXERCISE CAUTION AROUND ENERGIZED CIRCUITS.*

*Bulb fails to ignite.*

1. AC power not on to lamphouse. If indicator light at xenon power supply does not glow, check power source. If 115 V.AC is not measured at blower terminals, check lamphouse/power supply interconnections.
2. Faulty "OFF-FAN-LAMP" switch. Check for voltage at switch; check for loose wiring. Replace if defective.
3. Two ampere control circuit breaker tripped. Press to reset.
4. Bulb module connector loose. Dismount bulb module and inspect connector; thoroughly clean if oxidized.
5. Bulb module expired or faulty. Replace if defective.
6. No DC output from xenon power supply. See power supply Troubleshooting section following.



## **TROUBLESHOOTING** (continued)

*Bulb fails to ignite; ping audible, bulb flash visible.*

1. Inadequate DC output from *xenon power* supply. Set power supply output to correct range required for bulb wattage.
2. Faulty or expired *xenon bulb* module. Replace as required.

*Bulb fails to ignite; ping audible, no bulb flash.*

1. Faulty *xenon bulb*. Check for cracked electrodes or darkened envelope. Replace if defective. If new bulb fails to ignite, replace igniter.
2. Ignition pulse shorting to ground. Inspect DC leads for burned *insulation*; dress leads away from grounded metal lamphouse components.

*No high voltage ping audible; switch set to LAMP position.*

1. Loss of AC control voltage. Check xenon power supply for tripped circuit breaker or open thermal switch (fan not operating; air flow obstructed).
2. Little or no "No Load" voltage. Measure DC open circuit voltage.
3. Faulty igniter. Check for adequate DC "No Load." Replace igniter if DC 0 no load" is adequate and new (or known good) bulb module fails to ignite.

*Bulb goes out during operation.*

1. Xenon power supply overheated; thermal switch open. Check power supply blower; air inlets and outlets unobstructed.
2. Defective or expired bulb module. Replace as required.

*Power supply does not energize when actuated.*

1. Circuit breaker open or defective POWER switch. Check for 115 V.AC at each station; replace defective component.
2. Loose solder joint in MS connector; broken pin in MS connector. Inspect and repair as required.

**ALSO SEE POWER SUPPLY TROUBLESHOOTING**

*Excessive light flicker.*

1. Faulty or aged xenon bulb. Check for cracked or sagging electrodes; replace if defective.
2. Excessive ripple in DC output. Check power supply.
3. Slide holder worn or loose. Repair or replace slide.
4. Projector gate worn. SEE EKTAGRAPHIC MANUAL.

## TROUBLESHOOTING (continued)

### *Reduced light output.*

1. Normal bulb aging. Increase output current. **DO NOT EXCEED MAXIMUM CURRENT SPECIFIED** (32 A. for 500 W. or 38 A. for 750 W.).
2. Soiled cover glass over bulb or soiled negative lens. Clean using commercial glass cleaner. **USE NO ABRASIVES.**
3. Soiled projection lens. Clean as required.

### *Extremely long duration between ignition pulses.*

1. Low DC "No Load" from xenon power supply. Check "No Load" voltage; see power supply instructions.
2. Defective spark gap. A "Ping" sound is normal; excessive "Hissing" is abnormal. Replace igniter if defective.

## XENON POWER SUPPLY TROUBLESHOOTING Equipment Type 92-70005

### *No DC output voltage.*

1. Make certain P1 and P2 have appropriate AC voltage. Place jumper on P3 for 100-120 V.AC; on P4 for 200-240 V.AC.
2. Check for 280-350 V.DC at positive and negative outputs of D1 rectifier. If not measured, check for defective D1 diode or faulty solder joint in filter section.
3. Check for fluctuating DC output (approximately 25-40 V.DC) from TP $\emptyset$  to TP1. Turn potentiometer R28 and external adjust R1 clockwise to see if voltage stabilizes. If voltage stabilizes at greater than 32 V.DC, check DC "no load." If still 0 (zero) V.DC, continue checking, but look for "stable" rather than "fluctuating" DC voltage.
4. Measure fluctuating (or stable) DC voltage from TP $\emptyset$  to TP2. If not 25-40 V.DC, check for faulty connection at thermal switch, defective thermal switch, or defective zener diode D8.
5. Voltage at TP $\emptyset$  to TP3 should be 0-18 V.DC. If not, check for defective Q2, Q3, Q4, or Q17 transistor.
6. Measure DC voltage at pin 16 of IC1. If voltage at pin 16 is greater than .5 V.DC, replace Q5 or IC1. If voltage is fluctuating in sync with TP3 DC voltage, go to next step.
7. Measure voltage from pin 15 to pin 13 of IC1; should be 0 (zero) V.DC. If 1 V.DC or higher, replace IC1. If problem persists, replace R22. If unchanged, continue checking.

## **TROUBLESHOOTING** (continued)

### *No DC output voltage (con't.)*

- S. Pins 11 and 14 of IC1 should have a 15 volt, 35 kHz. square wave with a 50% duty cycle. If voltage is continual (not pulsing), go to next step. If pulsing, check for short circuits in D12 and D13. Check transistors Q7-10 for heat; replace transistors if overheating has occurred.
9. Check voltage at R40 and R41. Should be a 15 volt, 35 kHz. square wave, pulsing or continual. If continual, check R40-43 resistance. If not 10 Ohms, replace.
10. Measure zener diodes D2-7. Replace if defective.
11. Measure FET's by diode. Check from center leg to source (right leg). Should have a diode on Q12 and Q14. If not, replace all for FET'S.

If the above steps fail to solve the problem, a more thorough diagnostic check can be made by first removing the output DC leads, and then applying 32 V.DC to TP1 and TP $\emptyset$ . After doing so, repeat the above procedures. If this fails to solve the problem, please consult an authorized Strong International Dealer or the factory for further instructions.

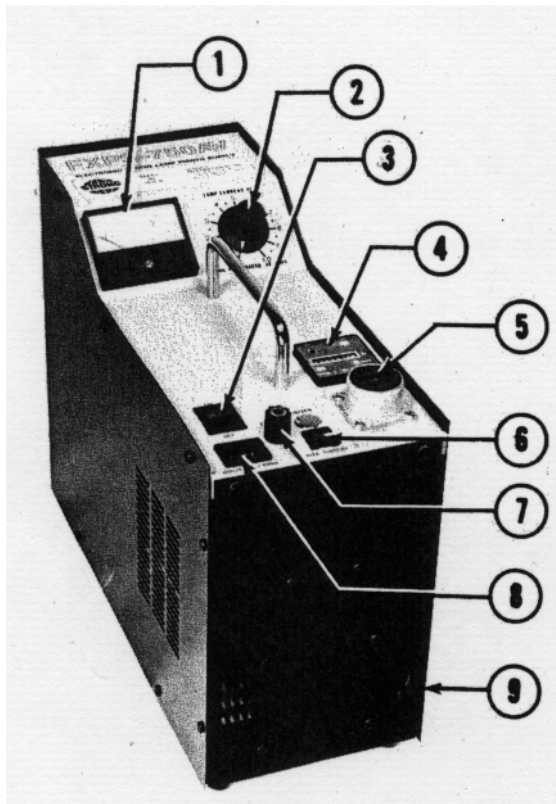
## XENON POWER SUPPLY

Type 92-70005

THE XENON POWER SUPPLY furnished with the Xenographic System operates from a 115 V.AC, 15 ampere single phase line. An export model, rated at 220 V.AC single phase input is also available. *Check the equipment data plate before connecting to AC source.* Both units are rated for continuous duty, and operate from 50 or 60 Hertz service.

DC OUTPUT to the xenon bulb is derived from a solid-state switching circuit. This circuit is protected by a 15 ampere fuse accessible on the control panel. The 115 V.AC control circuit to the Xenographic lamphouse is channeled through the power supply, allowing the system to operate from a single AC source. Components of the control circuit are protected by a 2 ampere circuit breaker mounted to the power supply control panel.

THE DC CURRENT and the AC control voltage connect to the Xenographic through a keyed MS connector. Alignment of the key prevents incorrect interconnection of the lamphouse to the power supply.



Item	Part No.	Description
1	2476-0625	Ammeter, 0-60 A.
2	81-28001	Knob, DC Output Adjustment
-	92-70029	Current Control Potentiometer, Wired Assembly
3	81-61001	Lighted Switch, Power ON-OFF
4	2480-0064	Elapsed Time Meter, 60 Hertz
5	81-13001	MS Receptacle, (9) Pin Female
-	41-51041	Screw, 6-32 x 3/8"
-	41-35005	Hexnut, 6-32
6	2155-0023	Circuit Breaker, 2 Ampere
7	81-21002	Fuse Holder
-	81-21001	Fuse, 15 Ampere
8	81-40002	AC Receptacle
-	88253000	AC Power Cord & Plug (not shown)

## XENON POWER SUPPLY (continued)

Item	Part No.	Description
9	82-40036	Cabinet, Xenon Power Supply
-	4806-0030	Plastic Foot (4 req'd.)
-	82-40032	Top Panel (less components)
-	81-28002	Handle, Top Panel
-	92-70007	Top Panel Assembly (including Items I - 8)

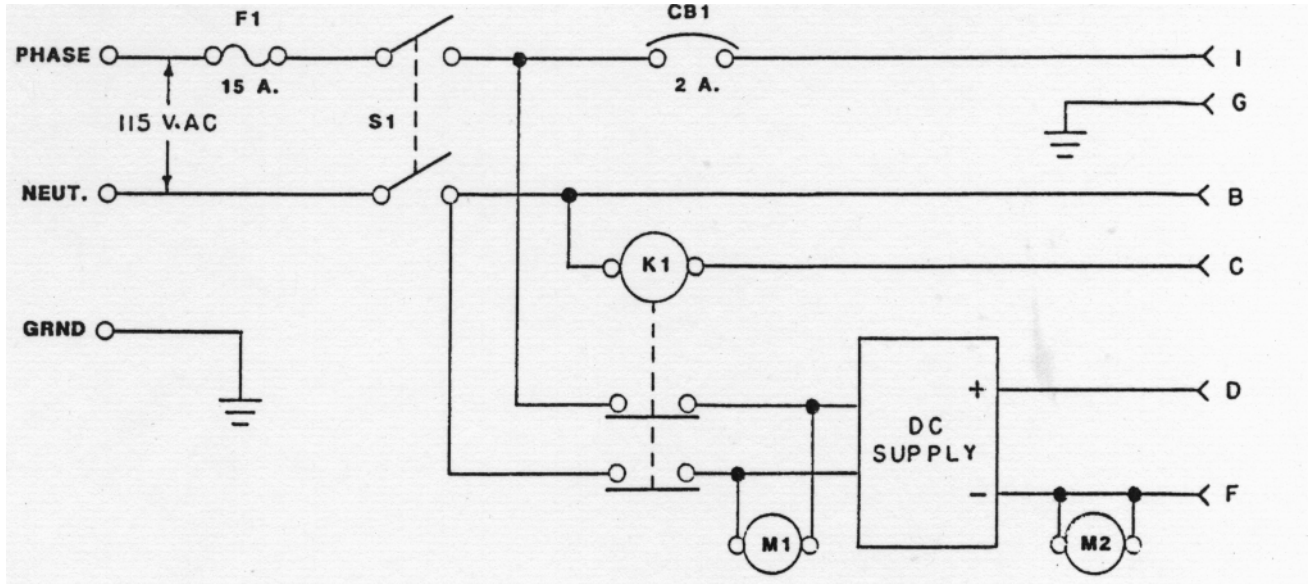
### Not Shown

2503-2086	Contactor, 115 V.AC, 50/60 Hertz
61-98002	Blower, 115 V.AC, 50/60 Hertz
62-87001	Chassis Wired Assembly, Switching Circuit (115 V.AC)
78125000	Stepdown Transformer, Control Circuit (Req'd. for 220 Volt Models ONLY)

NOTE: The Switching Circuit Chassis is generally *not user serviceable*. Refer service and repair to an authorized Strong International Dealer.

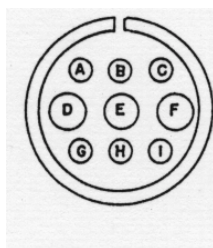
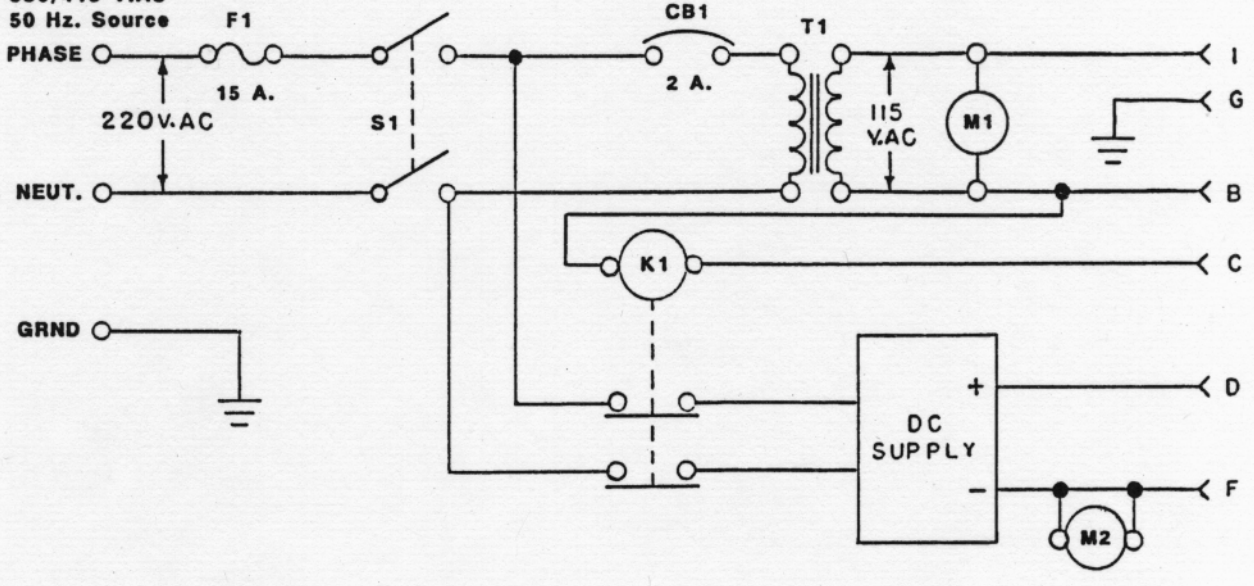
DOMESTIC (U.S.A.)  
ions

XENOGRAPHIC 500, 750  
System Interconnections



**EXPORT**

380/415 V.AC  
50 Hz. Source



**US CONNECTOR**

Pin Function

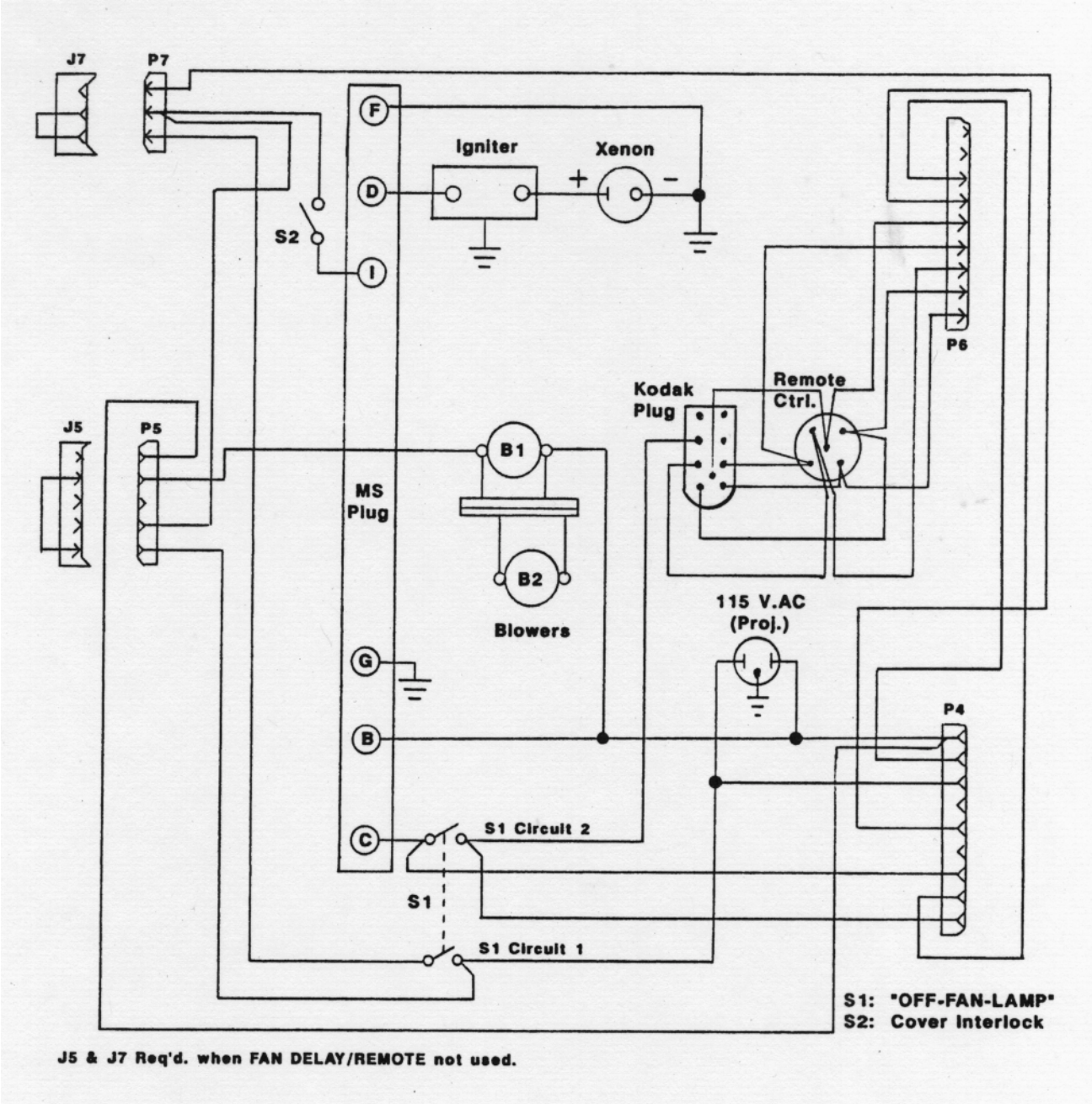
- A (no connection)
- B AC Neutral to Lamphouse
- C AC Phase Return from Lamphouse
- D + DC to Lamphouse
- E (no connection)
- F - DC to Lamphouse
- G Ground

Ref.

Desig.

- C81 Circuit Breaker, Lamphouse Control
- F1 Fuse, 15 Amp. Standard
- K1 Control Relay, Switching Circuit
- M1 Elapsed Time Meter
- M2 Ammeter
- S1 POWER Switch, Double Pole, Lighted
- T1 Stepdown Transformer, Lamphouse Control

# XENOGRAPHIC LAMPHOUSE Wiring Diagram



FAN DELAY/REMOTE  
1237864-1 (Optional)

**2767-1210 Switch, "REMOTE-LOCAL"**

**J6**

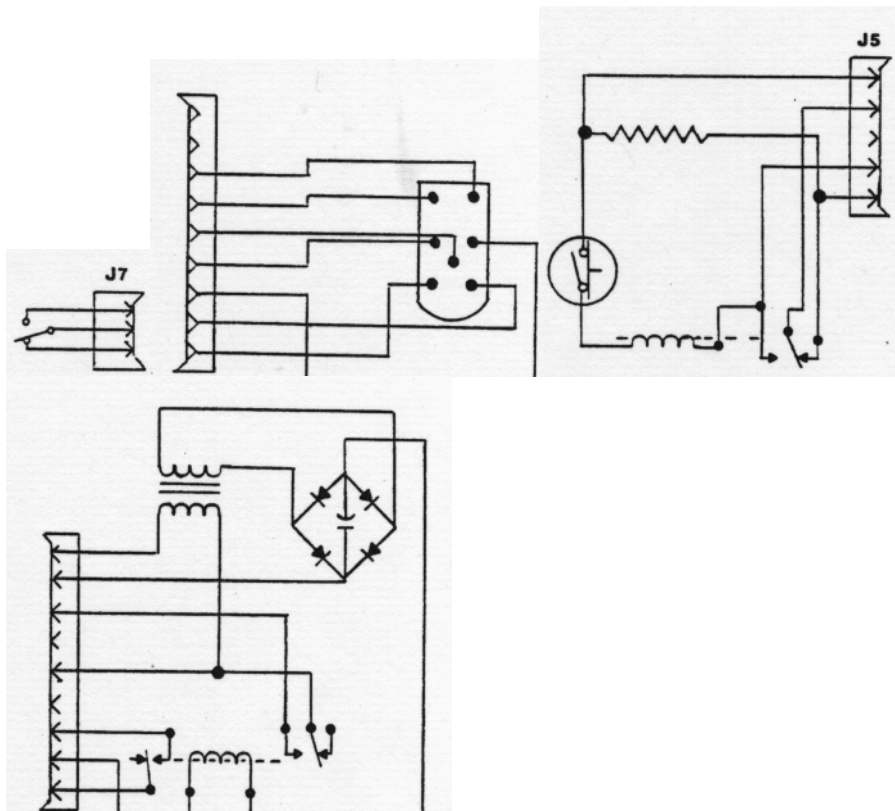
**2501-3081 Relay, 115 V.AC**

**81-46001 Resistor. 750 Ohm, 50 W.**

**81-98003 Thermal Switch, n/c @ 115° F.**

**J4**

**3122-0240 Transformer 115-24 V. 100 mA. 2767-4060 Bridge Rectifier, 6 A. 2501-3382 Relay, 28V.**



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FAN DELAY & REMOTE CONTROL OPTION  
Part No. 1237864-1

THE OPTIONAL Fan Delay & Remote Control feature may be ordered with new equipment and factory-installed, or may be added to Xenographic units already in use. The "Fan Delay" feature allows automatic operation of the lamphouse blowers for the recommended forced-air cooling cycle following operation of the xenon bulb. A thermal switch in the delay circuit permits the blowers to operate until the sensor detects temperatures below 155° Fahrenheit. The "Remote Control" feature allows running low voltage switching control of the Xenographic to a position away from the unit, i.e. a speaker's podium.

WHEN SUPPLIED as an add-on option for an existing unit, the Fan Delay/Remote Control consists of a replacement switch plate (Figure 6, Item 1) and a control box assembly which mounts below the Xenographic base casting (Figure 6, Item 6). The replacement switch plate includes the REMOTE-LOCAL switch and a socket for the remote control cable.

THE FAN DELAY CIRCUIT allows approximately (5) minutes of bulb cooling after the lamphouse has been shut off. This cooling cycle will occur from shut-down at either the LOCAL or REMOTE location.

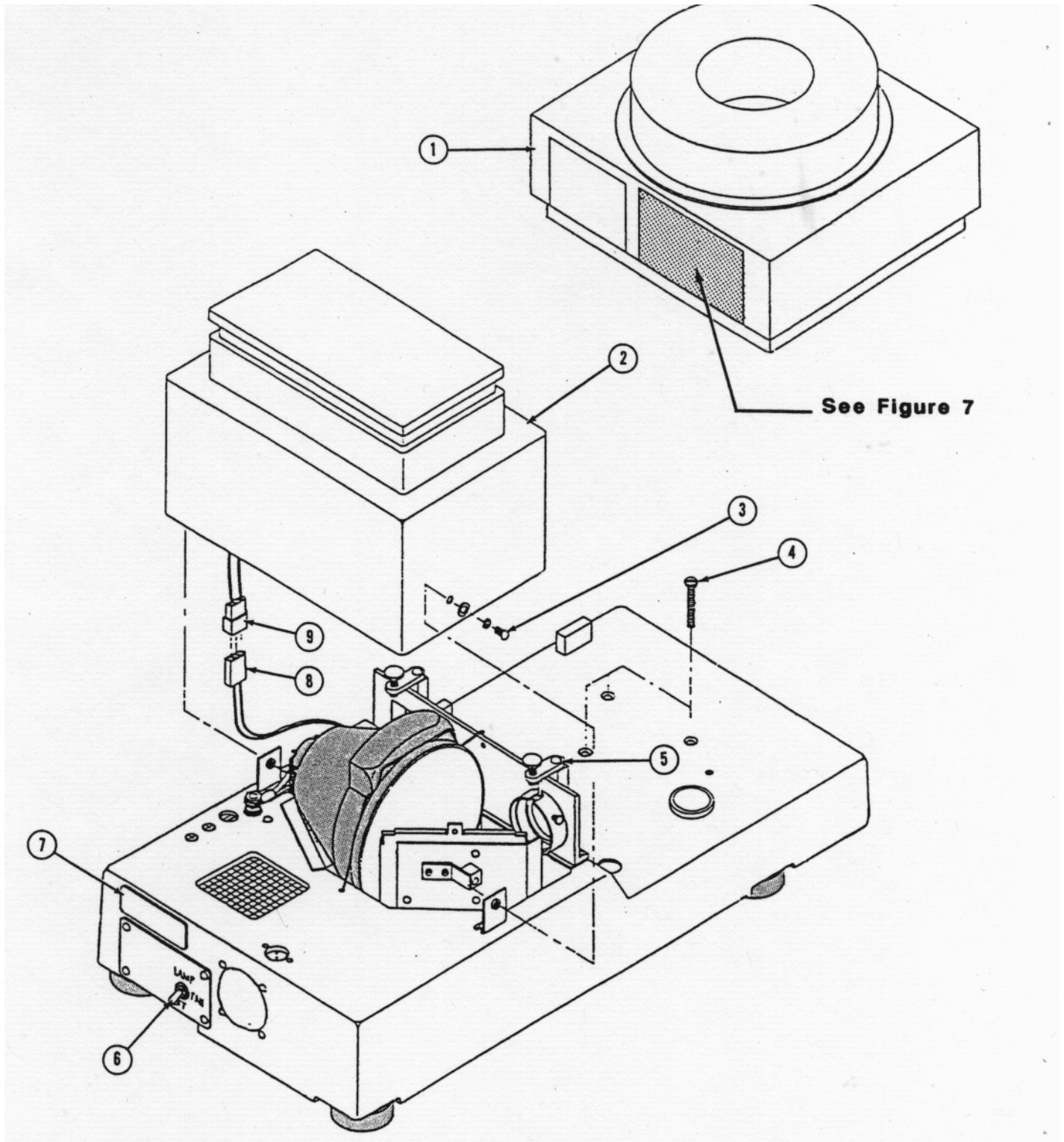
THE "MODE" SWITCH must be in the REMOTE position for remote operation of the lamphouse. A sustained contact closure is necessary across pins 6 and 7 of the nine-pin plug. Pins 1 through 5 are paralleled with the original Kodak Remote Plug. Pins 8 and 9 are not used.

LEAVING THE "MODE" SWITCH in the LOCAL position limits operation of the Xenographic to the standard OFF-FAN-LAMP switch at the rear of the lamphouse base casting.

KODAK INTERFACE CABLE

P1 Black	P5 Yellow
P2 Green	P6 Blue
P3 White	P7 Red
P4 Brown	P8,9 not used

FIGURE 1

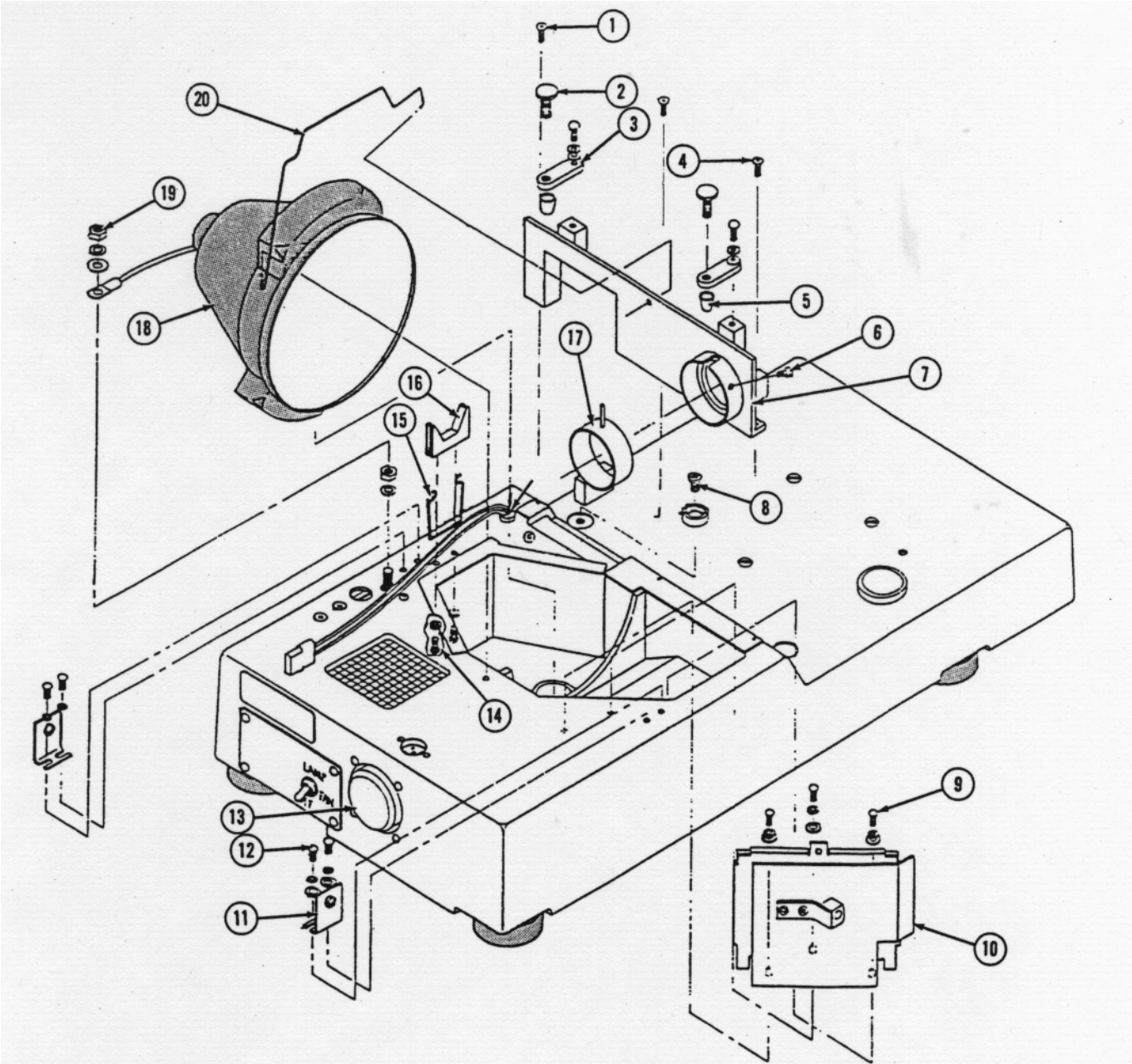


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PARTS LIST  
Figure 1

Item	Part No.	Description
1	----	Kodak Ektagraphic Projector (See Separate Manual)
-	1238508	Condenser Lens Ass'y. replaces Kodak Lamp Module (see Figure 7)
2	1153410-3	Lamphouse Cover Assembly
3	41-51097	Cover Retaining Screw, 10-32 x 3/8"
	41-70014	Lockwasher, #10
-	41-70003	Flat Washer, #10
4	91-51001	Blower Mounting Screw, 8-32 x 2-1/4" Flat Head
5	1228350-1	Clamp Plate, Projector Hold-Down
-	41-51354	Plate Retaining Screw, 6-32 x 3/8" Flat Head
	4910-0040	Thumbscrew Cap
-	41-51223	Socket Head Cap Screw, 1/4-20 x 1"
6	2957-1210	Toggle Switch, "OFF-FAN-LAMP"
7	1132340-1	Data Plate

FIGURE 2



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PARTS LIST  
Figure 2

Item	Part No.	Description
1	41-51354	Casting Retaining Screw, 6-32 x 3/8"
2	4910-0040	Thumbscrew Cap
-	41-51223	Socket Head Cap Screw, 1/4-20 x 1"
3	1228350-1	Clamp Plate, Projector Hold-Down
4	41-51354	Clamp Plate Retaining Screw, 6-32 x 3/8"
5	4856-0007	Rubber Boot, Projector Hold-Down
6	5601-2049	Thumbscrew
7	1141870-1	Negative Lens Mounting Casting
8	41-51018	Screw, 4-40 x 1/4"
9	41-51354	Mirror Bracket Retaining Screw, 6-32 x 3/8"
-	41-70012	Lockwasher, #6
-	41-70001	Flat Washer, *6
10	1248682-1	Mirror & Bracket Assembly (See Figure 3)
11	1117686-1	Top Cover Retaining Bracket
12	41-51041	Bracket Retaining Screw, 6-32 x 3/8" Pan Head
-	41-70012	Lockwasher, *6
-	41-70001	Flat Washer, #6
13	---	See Figure 4, Items 2 - 5
14	41-51041	(Below Casting) Screw, 6-32 x 3/8" Pan Head
-	41-70012	Lockwasher, #6
15	1222540-1	Spring Clip, Bulb Module Cathode
16	1131949-1	Cathode "V" Block
17	1122722-1	Negative Lens
18	0500-6050	Bulb Module, 500 Watt *
18	0500-6081	Bulb Module, 750 Watt **
19	41-35016	Hex Nut, 1/4-20
-	41-70015	Lockwasher, 1/4"
-	41-70004	Flat Washer, 1/4"
20	1232493-1	Hold-Down Spring, Bulb Module

\* Not interchangeable with 750 Watt

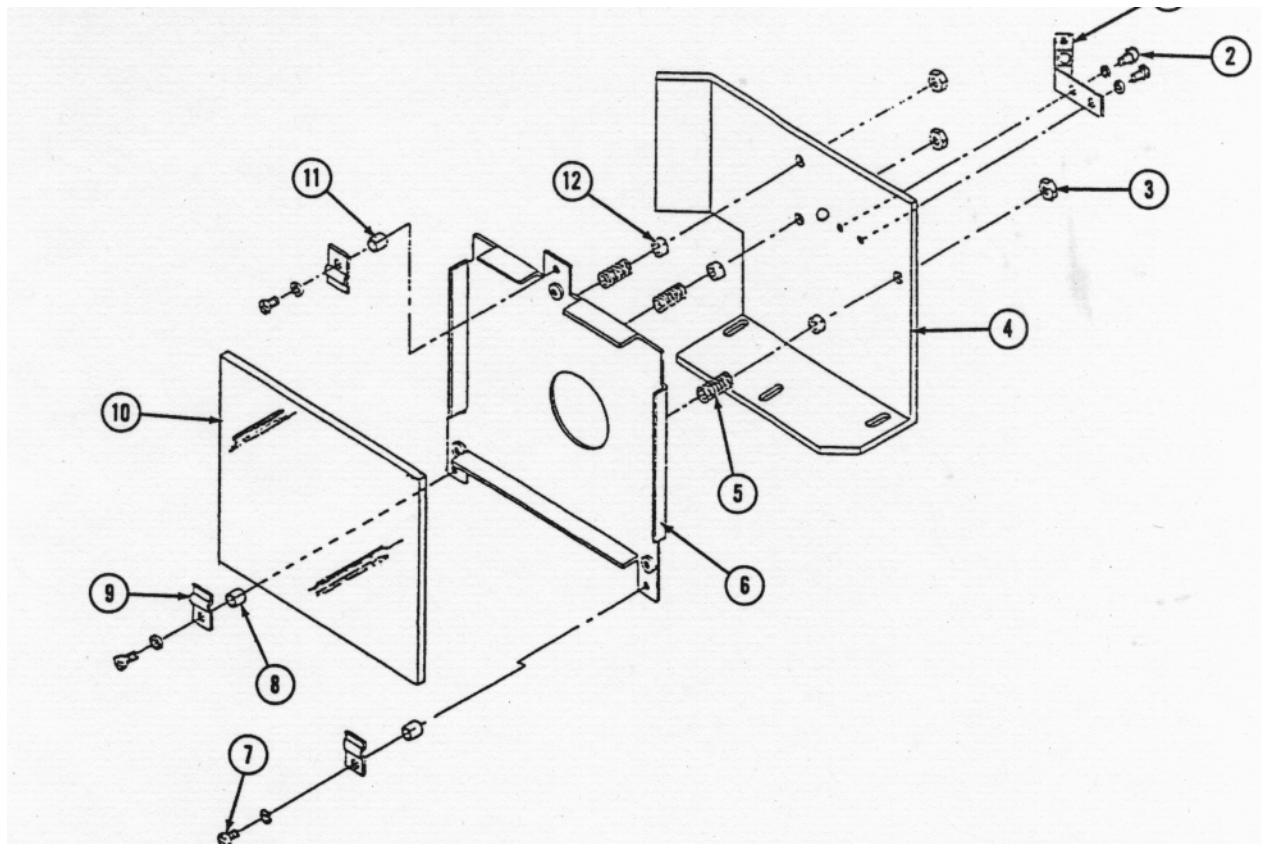
\*\* Not interchangeable with 500 Watt

# 1248682-1 MIRROR ASSEMBLY, 45°

**FIGURE 3**

**PARTS LIST**

Item	Part No.	Description
1	1228465-1	Fiberoptic Bracket (AutoFocus ONLY)
2	41-51020	Bracket Mounting Screw, 4-40 x 3/8"
-	41-70011	Lockwasher, #4
3	41-35039	Self-Locking Hex Nut, 10-32
4	1230853-1	Mirror Mounting Bracket
5	5851-0330	Compression Spring
6	1238476-1	Mirror Retaining Plate
7	41-51020	Clip Mounting Screw, 4-40 x 3/8"
-	41-70011	Lockwasher, #4
8	5827-1800	Spacer
9	1112865-1	Mirror Clip
10	1131855-1	Mirror, Dichroic Coated
11	5827-1800	Spacer
12	5836-0043	Spacer

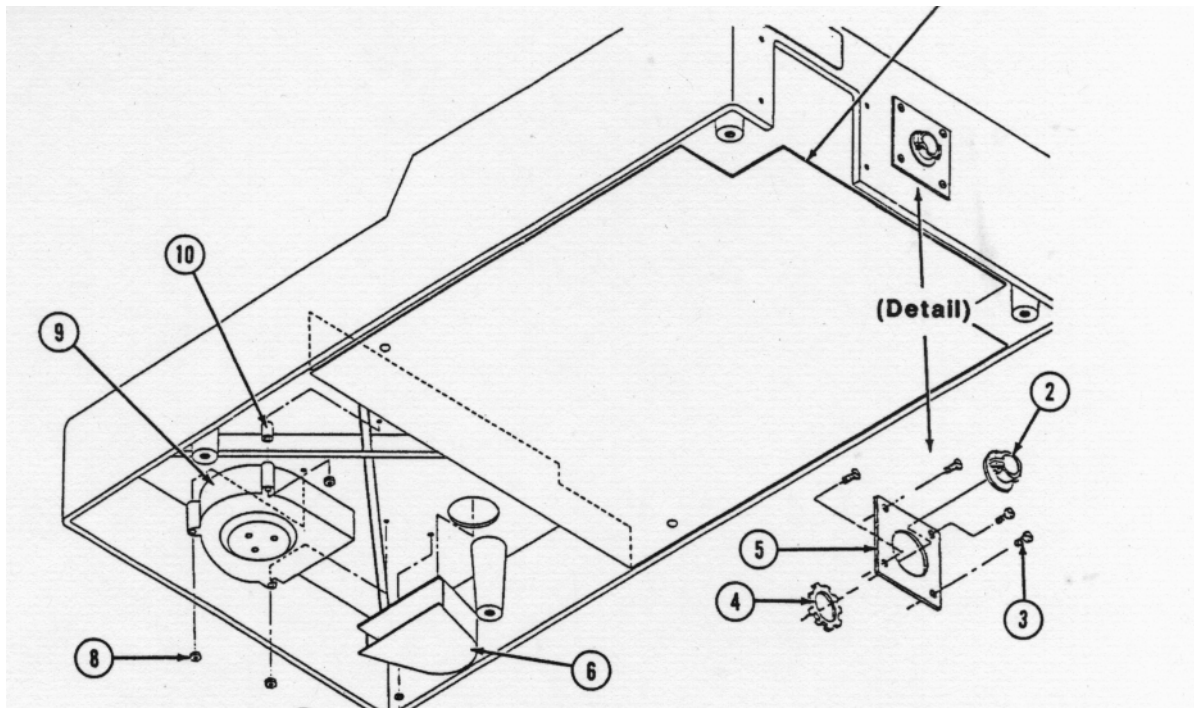


# BOTTOM VIEW, XENOGRAPHIC

## FIGURE 4

### PARTS LIST

Item	Part No.	Description
1	1230852-1	Bottom Cover Plate
2	41-13005	Strain Relief Clamp (with Item 4)
3	41-51050	Plate Mounting Screw, 6-32 x 5/8"
4	41-13005	Nut, Strain Relief Clamp (with Item 2)
5	82-40068	Strain Relief Mounting Plate
6	1238603-1	Air Plenum
7	41-51035	Screw, 6-32 x 1/4"
-	41-70012	Lockwasher, #6
8	41-35008	Hex Nut, 8-32
9	4036-0006	Blower, 115 V.AC, 50/60 Hz.
10	5836-0041	Spacer



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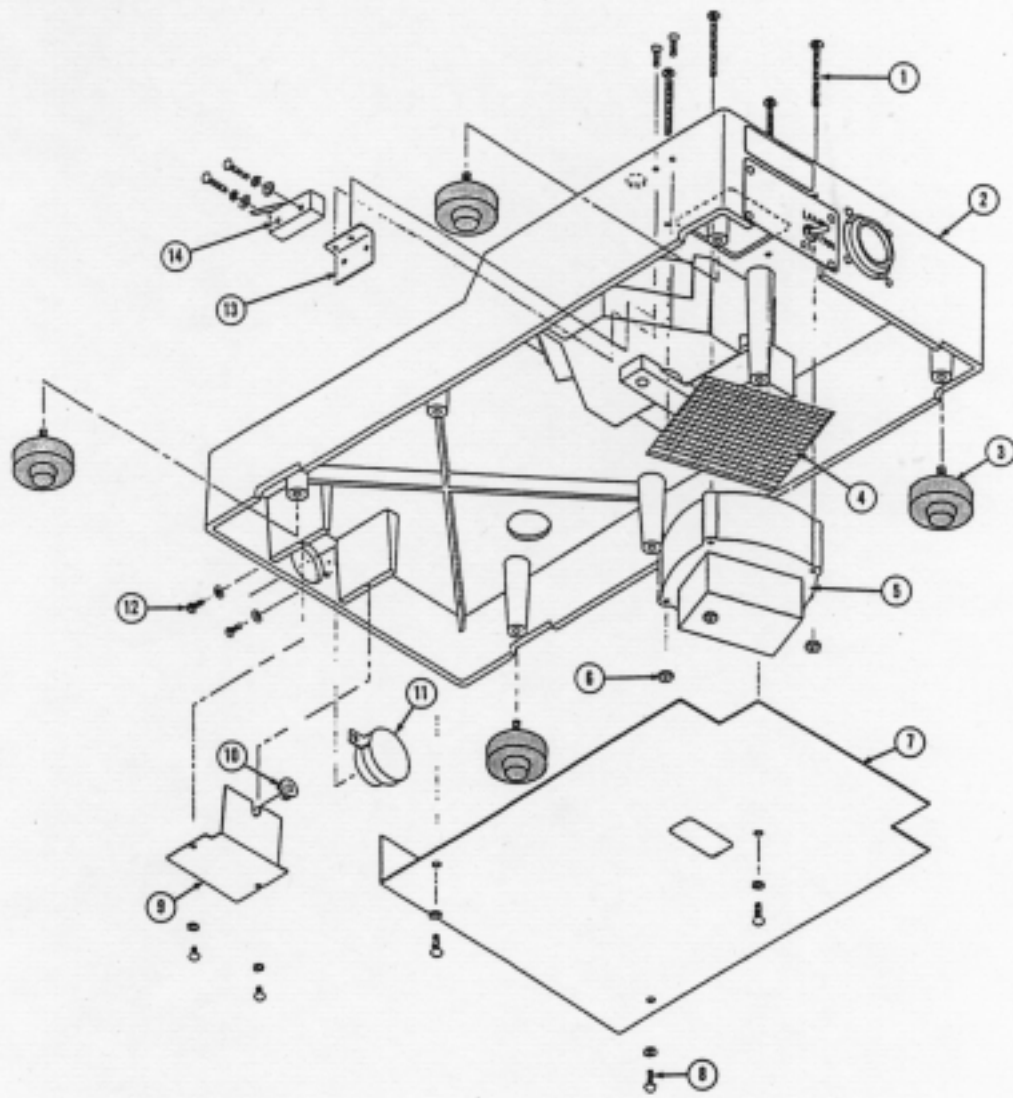


FIGURE 5

22 22



PARTS LIST

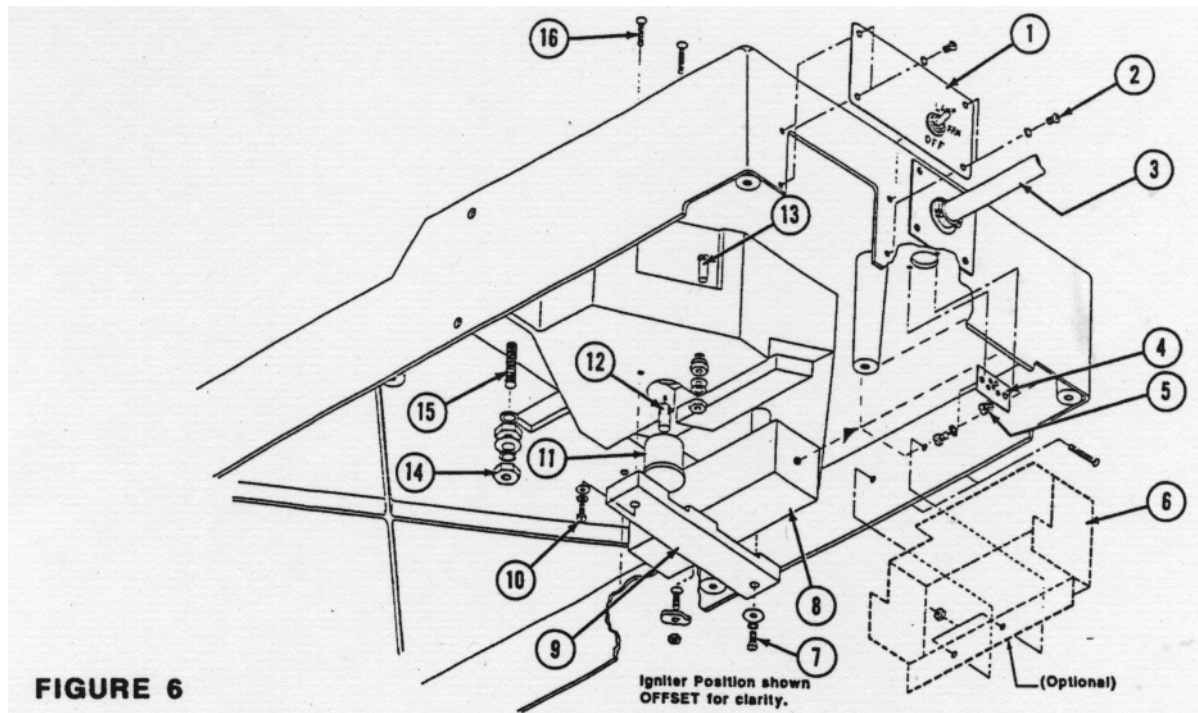
Figure 5

Item	Part No.	Description
1	91-51001	Screw, 8-32 x 2-1/4*
2	1250789-1	Main Frame Casting
3	1221954-1	Leveling Foot
4	1221457-1	Blower Inlet Grille
5	4026-0820	Blower, 115 V.AC, 50/60 Hz.
6	41-35008	Hex Nut, B-32
7	1230852-1	Bottom Cover Plate
8	41-51097	Cover Plate Retaining Screw, 10-32 x 3/8"
-	41-70014	Lockwasher, #10
9	82-40069	Receptacle Cover Bracket
-	41-51035	Bracket Mounting Screw, 6-32 x 1/4"
-	41-70012	Lockwasher, #6
10	5225-2324	Grommet
11	2286-0042	Receptacle, 115 V.AC Grounded
12	41-51041	Receptacle Mounting Screw, 6-32 x 3/8"
-	41-70012	Lockwasher, #6
13	82-40037	Switch Mounting Bracket
14	2951-1211	Cover Interlock Switch
-	41-51456	Switch Mounting Screw, 6-32 x 7/8"
-	41-70012	Lockwasher, #6
-	41-70001	Flat Washer, #6

# FIGURE 6

## PARTS LIST

Item	Part No.	Description
1	1227859-1	Switch Plate
2	41-51050	Plate Mounting Screw, 6-32 x 5/8"
3	92-70008	Lamphouse/Power Supply Interconnect Cable
-	81-13002	MS Connector, (9) Pin (included with Item 3)
4	1241970-1	Remote Interconnect Wire Harness
5	41-51041	Mounting Screw, 6-32 x 3/8"
-	41-70012	Lockwasher, #6
6	1237864-1	Fan Delay/Remote Ass'y. (OPTIONAL)
7	41-51081	Mounting Screw, 8-32 x 1"
-	41-70013	Lockwasher, #8
-	41-70002	Flat Washer, #8
8	62-85027	DC Pulse Igniter Assembly
9	1220851-1	Retaining Bracket
10	41-51074	Bracket Mounting Screw, 8-32 x 5/8"
-	41-70013	Lockwasher, #8
-	41-70002	Flat Washer, #8
11	1121761-1	Insulator
-	RU004000	Igniter Lead Insulator Sleeve (6")



PARTS LIST, Figure 6 (continued)

12	1121762-1	Positive Connector, 500 Watt *
12	1221442-1	Positive Connector, 750 Watt **
13	00241000	Screw, 8-32 x 3/4" Flat Head
-	41-35008	Hex Nut, 8-32
14	41-35016	Hex Nut, 1/4-20 (early models)
-	41-70015	Lockwasher, 1/4"
	41-70004	Flat Washer, 1/4"
	00547000	Negative Terminal Screw, 1/4-20 x 1-1/4"
16	41-51074	Screw, 8-32 x 5/8" Pan Head

\* Not interchangeable with 750 Watt

\*\* Not interchangeable with 500 Watt