

FOLLOW SPOTLIGHT INSTRUCTION MANUAL

SUPER TROUPER II

24000-07 (2 kW) • 24000-08 (1, 1.6 kW) • Rev. February 2014



a division of Ballantyne of Omaha, Inc.

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PREFACE

THE STRONG SUPER TROUPER II SYSTEM consists of a direct current xenon lamphouse and an advanced-design lens mechanism constructed and aligned on a common base rail. Operator controls are easily accessible from either side of the unit. The spotlight head includes a six-color, self-canceling color boomerang, and mounts to a collapsible base stand and yoke assembly. A switching type, solid-state xenon power supply with a keyed quick-disconnect lamphouse cable receptacle completes the follow spotlight system.

ONLY THE SPECIAL POWER SUPPLIES manufactured by Strong International can be used with the xenon spotlight. Current level adjustments (DC output to the xenon bulb) are made at the power supply by means of two output potentiometers. For detailed information regarding installation and operation of the xenon power supply, see the instruction manual furnished separately.

THE XENON LAMPHOUSE utilizes a deep ellipse dichroic metal reflector designed to operate in a fixed position with a horizontally mounted xenon bulb as the light source. The DC Pulse Igniter requires no AC control circuit. A coated glass heat filter is located at the front opening of the lamphouse to reduce the radiant heat at the optical system and color boomerang.

THE LAMPHOUSE INSTRUMENT PANEL is equipped with a DC ammeter and running time meter. The ammeter continuously displays the operating DC current, and pressing the VOLTS/AMP rocker switch will momentarily indicate the DC voltage at the arc. The hour meter records the operating hours of the xenon bulb. The bulb is ignited and extinguished through use of the LAMP rocker switch mounted on the instrument panel.

ONLY XENON BULBS designed for horizontal operation should be used in this spotlight. The presently approved ratings for bulbs used in this spotlight are 1000, 1600, and 2000 watt, type "HS." See the listing in this manual for the approved types and necessary adapters.

ADJUSTMENT CONTROLS for positioning the xenon bulb inside the elliptical reflector are located above the instrument panel at the rear of the lamphouse. The adjustments control the horizontal, vertical, and focal position of the bulb.

THE LAMP BLOWERS, internally wired in the lamp, operate on 115 V.AC and are required to keep the seals on the bulb at a safe operating temperature. These blowers will operate continuously until power is turned off at the main line switch to the xenon power supply. Operation of the blowers to cool the bulb after a performance will not be recorded by the hour meter. The Super Trouper II lamphouse, *when using a factory-approved, ozone-free xenon bulb*, requires no external exhaust system.

AN ARC STABILIZATION MAGNET, as required by bulb manufacturers for the operation of 2000 watt bulbs, is mounted to the base of the lamphouse below the reflector. The magnet may be left in place for operation of 1000 and 1600 watt bulbs. The SOUTH pole of this permanent magnet is dabbed with paint, and must be pointed toward the left (off-operator) side of the lamphouse.

PREFACE (continued)

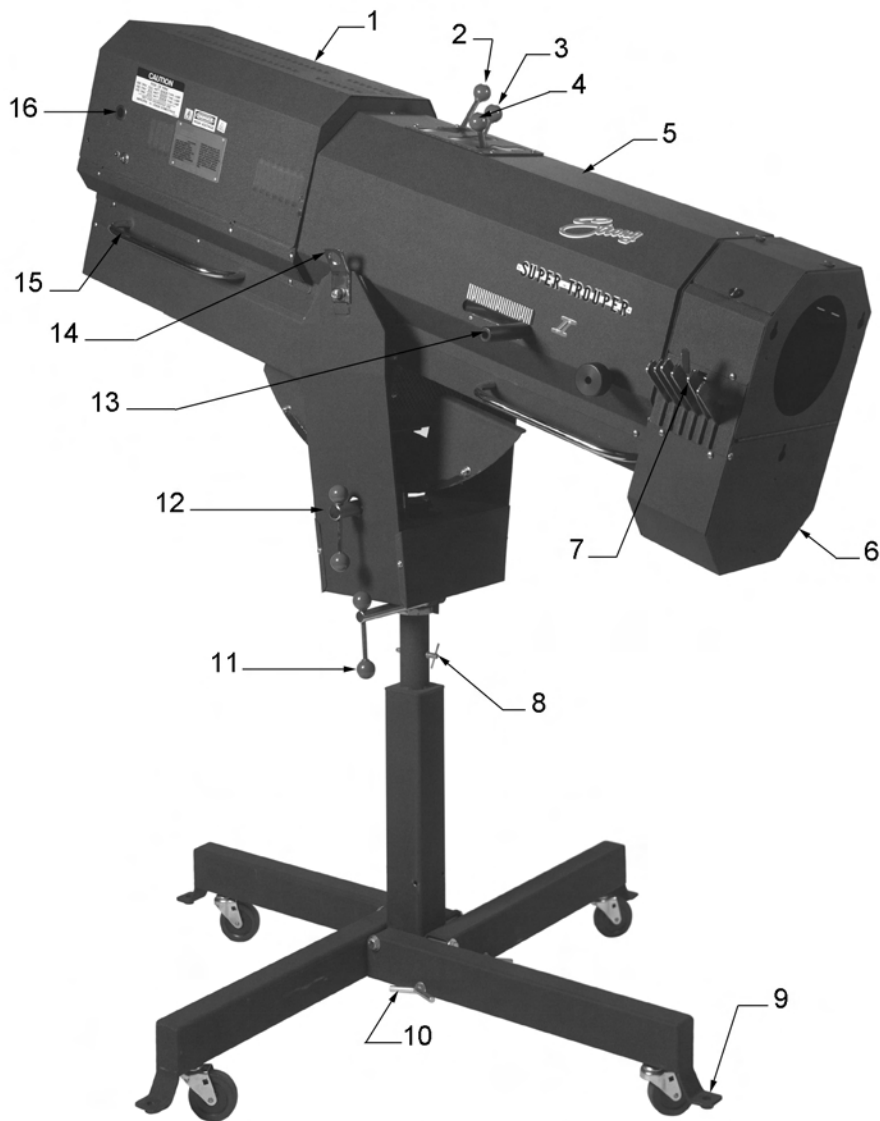
THE LAMPHOUSE is supplied with a 13 foot (4 meter) cable assembly containing the two DC leads, the ground wire, and all AC control leads. The cable assembly is terminated with (2) multiple pin, keyed MS connectors which mate to receptacles on the lamphouse and xenon power supply cabinet. The AC hook-up to the xenon power supply is detailed in the power supply manual; AC connectors must comply with all local electrical codes.

THE OPTICAL SYSTEM incorporates a newly-designed lens mechanism. Spotlight operators familiar with earlier type Strong spotlights are urged to study the section following in this manual entitled OPERATION OF THE OPTICAL SYSTEM and to practice the operation of the Super Trouper II prior their first performance. The spot size control (“trombone”) handle is drawn *back* to “spot” and pushed *forward* to “flood,” which is the reverse of earlier type Strong optical systems. The spot edge is focused by rotating the focus knobs located behind the boomerang on the left and right sides of the optical system.

FADE-OUT, CHOPPER, AND IRIS CONTROLS are positioned in the same configuration as earlier Strong spotlights. All optical system controls are accessible for right- or left-hand operation. The color boomerang is easily reversed to position the color arms on either side. Operation of the self-canceling boomerang remains unchanged, and standard Strong nine-inch gel frames are used.

WHEN TRANSPORTING the spotlight, it is recommended that the xenon bulb be removed and placed in its original shipping carton with the cover on the bulb to insure against breakage. The bulb, after cooling to room temperature, may remain mounted in the lamphouse if moving the spotlight from one position to another within the arena or auditorium. Reasonable care should be exercised; breakage caused by handling is *not* covered by the xenon bulb warranty.

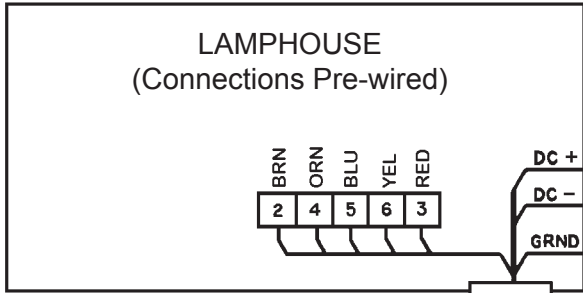
IF AT ANY TIME you have a suggestion, or desire aid in securing anticipated results, please feel free to write directly to STRONG ENTERTAINMENT LIGHTING, 4350 McKinley Street, Omaha, Nebraska 68112, or visit our website at www.strong-lighting.com.



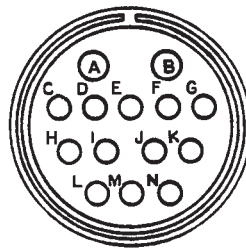
- | | |
|------------------------------------|---|
| 1. Cover, Lamphouse Compartment | 9. Mounting Bracket, Leveling Foot |
| 2. Fade-Out Control Lever | 10. "T" Bolt, Folding Leg |
| 3. Masking Blade Control Lever | 11. Horizontal Swing Friction Adjust |
| 4. Iris Control Lever | 12. Horizontal Tilt Friction Adjust |
| 5. Cover, Optical System | 13. Spot Size Control (Trombone) Handle |
| 6. Disc Housing, Color Boomerang | 14. Lifting Strap |
| 7. Color Selector Lever, Boomerang | 15. Hand Rail |
| 8. Height Adjusting Pin | 16. Arc Viewing Port |

LAMPHOUSE - POWER SUPPLY

Interconnection Diagram



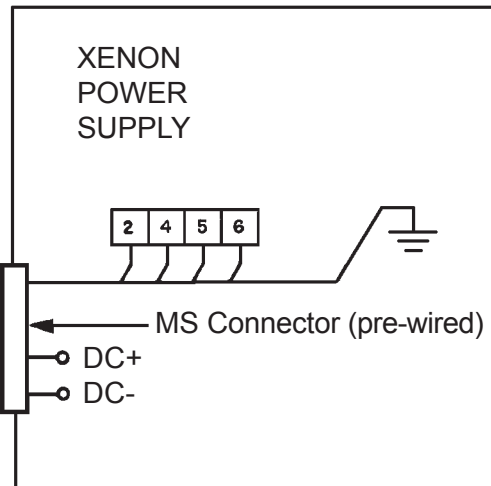
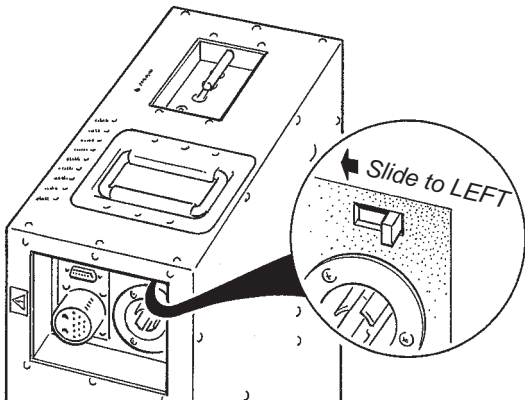
MS CONNECTOR	
Pin	Wire No.
A	DC-
B	DC+
C	2
D	3
E	4
F	5
G	6
M	Grnd



SYSTEM **MUST** BE GROUNDED
All wiring must conform to local codes;
shield lamphouse cable in conduit if
required.

Lamphouse
Cable Assembly

Check Slide Switch (below) on Power
Supply for correct "SPOT" position.



INSTALLATION AND SETTING UP SPOTLIGHT

THE SUPER TROUPER II is shipped in sections which must be assembled. Lifting straps mounted to the yoke pivot studs (see Figure 6, Item 2) are designed to bear the weight of the spotlight and base. This permits assembling the spotlight on the floor and later hoisting it to an overhead spotlight position.

THE FOLDING BASE ASSEMBLY is shipped collapsed, and requires only folding the base legs down and pinning the legs using the four T-bolts (Figure 6, Item 17) supplied. Screw the four leveling feet and locknuts (Figure 6, Item 15) into the brackets at the end of each leg.

WHEN INSTALLED in a permanent location, the leveling feet and casters must be removed, and the holes in the base leg brackets used for hardware (user-supplied lag screws or bolts) to secure the base to the floor or platform. If it is desired to have the unit portable, when operating, the four leveling feet *must* be adjusted down until the entire weight of the spotlight has been shifted from the casters to the leveling feet.

THE INNER TUBE below the support yoke is drilled with three holes to permit adjusting the height of the spotlight. The three holes are on four-inch centers and will allow an optical height of approximately 53 inches, 57 inches, and 61 inches above floor level to the optical center of the lamphouse and lens system. Insert the height location pin through the hole in the outer tube of the base column and one of the holes in the inner tube. The leveling feet may be adjusted through an additional two-inch range.

THE HORIZONTAL PAN and vertical tilt locking knobs are on the right hand (from rear) side of the yoke assembly. The yoke saddle is marked to indicate FRONT. Tighten both of these locking devices securely before attempting to place the spotlight head (lamphouse and lens system) on the support yoke.

PLACE THE LAMPHOUSE and lens system on the yoke assembly, with the normal operator's side of the lamphouse (with arc viewing port) to the *right* side of the yoke saddle, the same as the yoke locking controls. Line up the four mounting holes in the bottom plate of the support brace with the four slotted holes in the saddle of the yoke assembly. Secure using the four 5-16/18 wing head screws and flatwashers. After mounting the color boomerang (see below), loosen the tilt lock and test the spotlight balance at the desired projection angle. Loosen the (4) wing head screws and slide the spotlight head forward and back in the slotted holes in the yoke saddle to achieve optimum balance before finally securing the wing head screws.

MOUNT THE COLOR BOOMERANG to the front of the optical system with the color arms facing the desired operating side. Remove the (3) screws from the mounting studs on the front of the optical system housing. Align the three holes in the boomerang housing to the three mounting studs; open the hinged front cover to access the mounting holes and secure the boomerang to the studs using the (3) screws.

ATTACH THE LAMPHOUSE CABLE CONNECTORS to the mating receptacles on the lamphouse and power supply. The lamphouse and power supply connectors are keyed for correct pin alignment; make certain pins are seated before tightening the locking ring. DO NOT energize the xenon power supply before the xenon bulb is correctly installed into the lamphouse.

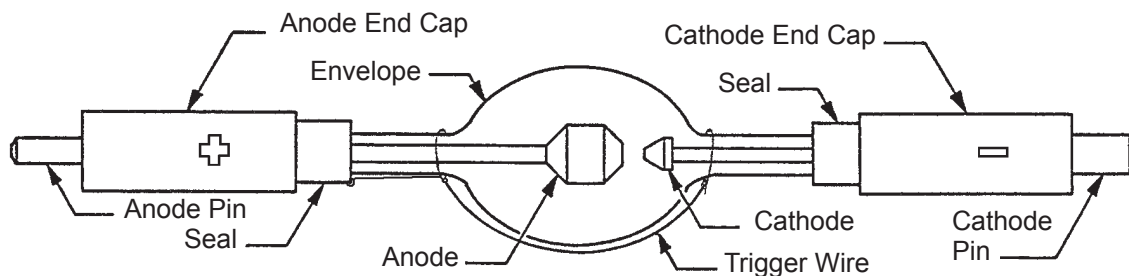
THE SUPER TROUPER II is wired for operation with the "compact" model Strong xenon power supply Equipment Type 62000xx. If installing the Super Trouper II with an older model or type Strong xenon power supply, a ground wire must be connected to the power supply's MS connector Pin M. Operation of the Super Trouper II with a xenon power supply other than a Strong 62- series will void UL compliance.

SAFETY PROCEDURES

THE XENON BULB is highly pressurized. When ignited, the normal operating temperature of the bulb increases the pressure to a level at which the bulb may explode if not handled in strict accordance to the manufacturer's operating instructions. The bulb is stable at room temperature, but may still explode if dropped or otherwise mishandled.

REFER ALL BULB REPLACEMENT and service to QUALIFIED PERSONNEL with adequate protective clothing (face shield, clean cotton gloves, welder's jacket). For routine lamphouse service, observe the following rules:

1. Allow the bulb to cool to room temperature before opening the lamphouse. Put on protective clothing described above.
2. De-energize the xenon power supply at the AC source before opening the lamphouse compartment.
3. When possible, encase the bulb in its protective cover when cleaning or servicing the lamphouse interior. The bulb, when outside the lamphouse, must be encased in the cover.
4. Clean the bulb after it has cooled to room temperature. Do not touch the quartz envelope of the bulb; fingerprints will burn in and create hot spots which may shorten bulb life. If fingermarks are made, they should be carefully removed with methyl alcohol and cotton prior to bulb operation.
5. Never view an ignited bulb directly. **BLINDNESS OR PERMANENT EYE DAMAGE MAY BE INCURRED.**
6. Use only xenon bulbs designated as OZONE FREE. When possible, vent the lamphouse exhaust to outside atmosphere.
7. Maintain the lamphouse blowers in good operating condition. Keep the blower inlets clean for unrestricted air flow.
8. To insure maximum bulb life, operate the lamphouse blowers for *at least* ten minutes after extinguishing the bulb.
9. If returning a bulb for warranty adjustment, pack it in its original shipping container. Complete and return all required warranty information.
10. Dispose of expired bulbs that are beyond warranty in the following manner: Wrap the bulb tightly in several layers of canvas or heavy cloth. Place it on a hard surface and shatter the envelope with a sharp hammer blow. **DO NOT** place an unshattered bulb in an ordinary refuse container.
11. **DO NOT PERMIT UNAUTHORIZED PERSONNEL TO PERFORM OR ATTEMPT ANY PHASE OF XENON BULB HANDLING OR SERVICE.**



BULB INSTALLATION

CAUTION: OBSERVE ALL SAFETY PROCEDURES. Put on protective face mask. Wear clean cotton gloves to prevent marking the quartz envelope of the bulb with fingerprints. Turn the circuit breaker on the side of the xenon power supply cabinet OFF.

DISMOUNT THE LAMPHOUSE ACCESS COVER by removing the two phillips head screws and lockwashers; (1) at the rear bulkhead and (1) at the front bulkhead. Open the key lock after first removing the hex head security screw. *Do not misplace the security screw.*

THE SUPER TROUPER II SYSTEM is shipped from the factory with a compatible xenon power supply. The desired bulb wattage and desired input voltage of the spotlight system shipped is specified by the customer when placing the original equipment order. Three wattages are available: 1000, 1600, or 2000 watt. The 115 V.AC xenon power supply (62-80114 or 6200084) is capable of operating 1000 and 1600 watt bulbs throughout their specified current ranges, and the 220 V.AC supply (62-80106, 62-80113, 6200002, 6200014) operates all three available wattages. Bulbs approved by Strong Entertainment Lighting for use in the Super Troupier II include:

<u>Wattage</u>	<u>OSRAM Part No.</u>	<u>LTG. TECH. INT'L. Part No.</u>	<u>CHRISTIE Part No.</u>	<u>Nominal Current</u>	<u>DO NOT EXCEED</u>
1000	XBO1000W/HS OFR	LTIX-1000W-HS	CSX10S	50 A.	55 A
1600	XBO1600W/HS OFR	LTIX-1600W-HS	CSX16S	65 A.	75 A.
2000	XBO2000W/HS OFR	LTIX-2000W-HS	CSX20SC	75 A.	85 A.

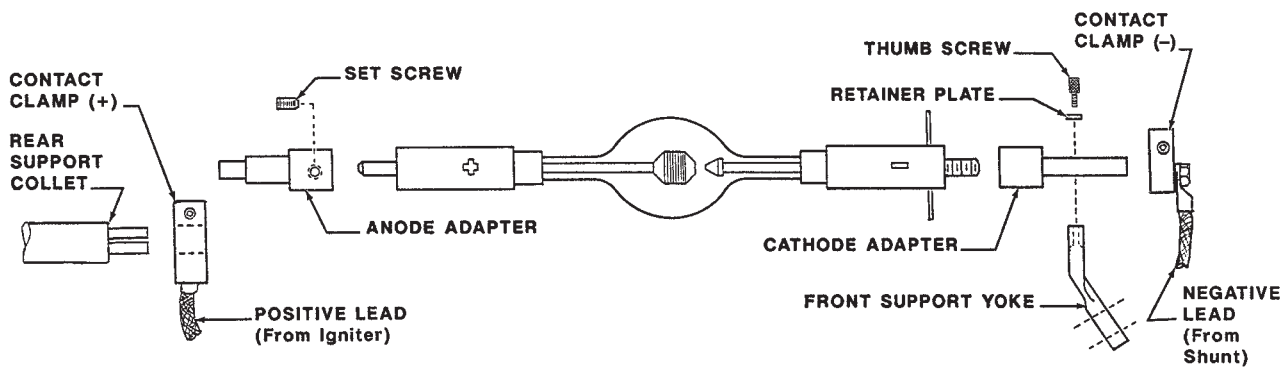
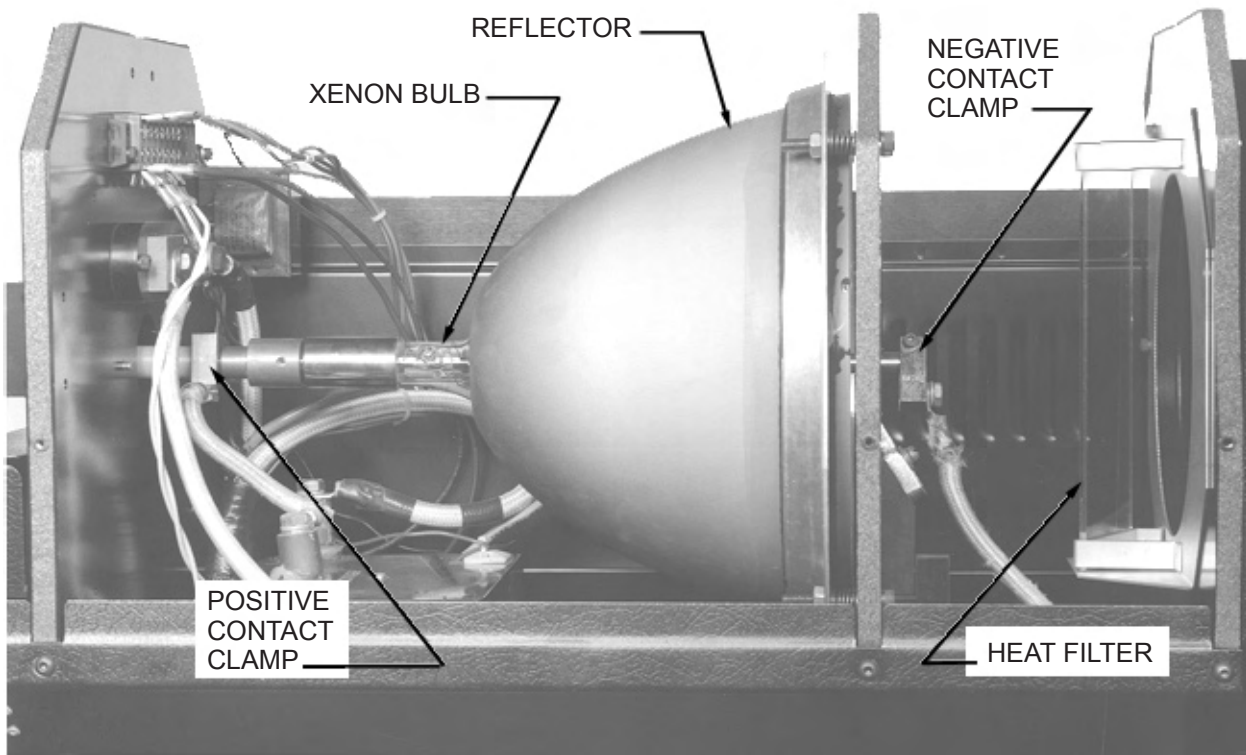
THE ABOVE XENON BULBS are designated OZONE FREE, and replacement bulbs other than the above must be certified by their manufacturer as being 100% interchangeable. The warranty on the xenon bulb supplied is administered by the bulb manufacturer and is separate from the spotlight warranty issued by Strong. Retain the warranty documentation packed with the xenon bulb.

WHEN ORDERED for 1000 or 1600 watt operation, the adapters required to install these smaller bulbs in the Super Troupier II lamphouse are supplied in the accessory kit. The front bulb support in the 1000 and 1600 watt lamphouses is a cast yoke (65117000) which holds the stem of the cathode adapter. A retainer plate (65151000) and two thumb screws (65152000) clamp the stem of the cathode adapter into the yoke.

THE 2000 WATT type "HS" bulb mounts into the lamphouse without adapters. The front bulb support for the 2000 watt bulb (83747000) is a cushioned ring which encircles the cathode (-) end cap of the bulb. The negative contact (24269000) clamps either on the end of the 1000/1600 watt cathode adapter (as shown on following page) or mounts directly to the .312" (8mm) cathode pin of the 2 kW "HS" bulb. A trigger wire, encircling the bulb envelope and attached to the end cap (as illustrated on the facing page), must be present.

IF IT IS DECIDED subsequent to the initial installation to change bulb wattages, it is necessary to verify that the original xenon power supply will operate the replacement bulb throughout its range. The 115 volt power supply is *not* recommended for use with a 2000 watt bulb, and should be replaced with a 220 volt, Type 6200091 unit. Make certain that the correct front bulb support is installed; 65117000 Yoke for 1000 and 1600 watt, or 83747000 Ring Support for 2000 watt. The rear bulb support collet (24266000) accommodates either the anode pin of the 2000 watt "HS" bulb or the stem of the anode adapter.

XENON BULB INSTALLATION



NO ADAPTERS REQUIRED FOR 2000 WATT TYPE "HS" BULB

See Parts List, Figure 2 for 2000 watt bulb mounting illustration

1000, 1600 Watt Bulb Installation

ASSEMBLE THE REQUIRED ADAPTERS to the 1000 or 1600 watt bulb as illustrated prior to inserting the bulb into the lamphouse. Be very careful **not** to apply any mechanical strain to the quartz envelope when installing adapters. Note the (2) different anode adapters; the *longer* anode adapter (24271000) is for the 1000 watt Hanovia XH1000HS bulb *only*.

SCREW THE CHROMED, THREADED CATHODE ADAPTER (24270000) onto the bulb stud so it seats firmly against the shoulder of the cathode (-) end cap. Slip the correct brass anode adapter with set screw over the stud of the positive end cap in contact with the shoulder of the anode (+) end cap. Tighten all threaded fasteners securely to insure firm mechanical fit and good electrical conduction.

LOOSEN THE THUMB SCREWS on the top of the front bulb support yoke and swing the retainer plate clear of the yoke. Slide the contact clamp of the igniter lead over the brass socket of the rear bulb support collet.

REMOVE THE PLASTIC PROTECTIVE COVER from the bulb after putting on the face shield. *DO NOT* touch the clear quartz envelope of the bulb with bare fingers. Natural skin oils will rapidly burn into the quartz and shorten bulb life. The xenon bulb warranty does *not* cover damage of this nature. If the quartz is accidentally fingerprinted, thoroughly remove the fingerprints with isopropyl alcohol before igniting the bulb.

INSERT THE BULB into the lamphouse, between the reflector support and the front of the lamphouse. Pass the anode (+) end of the bulb into the reflector and through the center hole of the reflector. Take care **not** to touch or scratch the surface of the reflector.

INSERT THE ANODE ADAPTER STEM into the rear support collet. The stem must be inserted as far into the socket as possible to insure good conduction and to permit full focus travel of the bulb. Place the cathode adapter stem into the bulb support yoke, pivot the retaining plate to its closed position, and tighten both thumb screws. Using a 9/64" allen wrench, firmly tighten the socket head clamping screw in the positive (+) contact to insure a good electrical contact.

INSTALL THE NEGATIVE (-) LEAD CONTACT CLAMP over the end of the cathode adapter. Slide the contact up to seat its shoulder firmly against the tip of the cathode adapter. Dress the negative lead directly in front of the bulb support yoke to minimize the shadow. Tighten the socket head clamping screw securely using a 9/64" allen wrench.

2000 Watt Bulb Installation

REMOVE THE PLASTIC PROTECTIVE COVER from the xenon bulb only if necessary. Slide the contact clamp of the igniter lead over the brass socket of the rear bulb support collet. If the bulb is supplied by the manufacturer with an anode lead attached, cut off or otherwise remove the factory-installed anode lead. Remove any fingerprints from the bulb envelope with alcohol.

INSERT THE 2000 WATT BULB into the lamphouse, passing the anode (+) end through the hole in the reflector. Handle the bulb by the metal end caps *only*. Pass the anode pin as far as possible to the rear of the lamphouse to allow clearance between the cathode (-) pin and the front bulb support. Take care **not** to touch or scratch the surface of the reflector; do not touch the quartz envelope of the bulb. Slide the cathode (-) end cap through the spring-cushioned ring of the bulb shock mount.

2000 Watt Bulb Installation (continued)

NOTE THE TWO NOTCHES at the center hole of the reflector. These notches allow additional clearance between the grounded reflector and the energized bulb trigger wire. Rotate the bulb to align the trigger wire with one of these two notches to prevent the trigger wire from arcing to the grounded reflector.

INSERT THE ANODE (+) PIN of the bulb into the rear support collet. The pin must be inserted as far into the socket as possible to insure good conduction and permit full focus travel of the bulb. Make certain the bulb's trigger wire is aligned to the center of either reflector notch, and firmly tighten the socket head clamping screw. Slide the negative contact clamp over the cathode (-) pin and dress the negative lead directly in front of the front bulb support to minimize the shadow. Securely tighten the negative clamp.

AN ALTERNATE METHOD of installing the 2000 watt bulb is to dismount the shock mount ring and cushion spring from the front bulb support assembly by removing the socket head screw. Slide the ring over the cathode (-) end cap of the bulb, and install the bulb by inserting the anode (+) end cap through the reflector center hole and seating the anode pin into the rear support collet. Re-mount the ring to the base bracket of the front bulb support using the socket head screw. Secure the anode (+) clamping screw; install and tighten the cathode (-) contact clamp.

THE SOCKET HEAD SCREW which mounts the bulb support ring to its support bracket must be tightened securely enough to *clamp* the upright bulb support ring in a vertical (90°) position and prevent its tilting forward or back as the bulb is focused. The end cap of the bulb should touch only the coils of the shock mount spring to allow the bulb to slide forward and back with a minimum of friction and *no stress* on the envelope.

All Bulb Wattages

INSERT THE STRIP HEAT FILTER into the bracket in front of the xenon bulb. This filter is a narrow glass strip that covers only the center portion of the beam. One surface of the glass is coated, and marked "XX" and/or imprinted "This Surface Toward Bulb." The coated glass surface **must** face the bulb or damaging radiant heat energy will be transmitted to the optical system. DO NOT operate the spotlight with the glass strip heat filter missing or reversed.

CHECK THE ARC STABILIZATION MAGNET mounted to an "L" bracket below the reflector. The SOUTH pole of the magnet is marked with paint, and should be pointed toward the off-operator side of the lamphouse (*left* side, as viewed from rear). If the magnet is reversed, the arc will burn *high* on the face of the anode electrode, creating severe light flicker and causing ignition problems. This magnet is *required* for 2000 watt operation, and is in no way detrimental to the operation of 1000 and 1600 watt bulbs.

REMOVE THE PLASTIC COVER from the xenon bulb. *Do not* ignite the lamp with the cover on the bulb. Retain the plastic cover and store in a secure location at or near the spotlight.

REPLACE THE LAMPHOUSE COVER. Replace and tighten all (3) phillips head retaining screws and washers. Secure the key lock and install the security screw. The lamphouse cover must be correctly installed and secured to close the cover interlock switches and enable bulb ignition and operation.

IT IS RECOMMENDED to establish a routine for periodically checking all electrical connections for tightness, particularly those at the bulb. A loose connection in the DC circuit may cause overheating of contacts and leads, and may damage or destroy the bulb. The xenon bulb warranty does *not* allow credit for heat-related damage of this nature.

BULB ALIGNMENT & LAMPHOUSE OPERATION

PRIOR TO OPERATING THE SPOTLIGHT, verify the following conditions:

- ✓ The plastic protective cover has been removed from the xenon bulb.
- ✓ The strip heat filter is installed with the **coated** surface *facing the bulb*.
- ✓ The lamphouse access cover is in place and secured using both phillips head screws; key lock secured and hex head security screw installed.

SEE THE PRECEDING “BULB INSTALLATION” SECTION for instructions detailing the above. Failure to remove the plastic bulb cover will damage or destroy the xenon bulb. A missing or reversed heat filter will allow radiant heat damage to the optical mechanism and lens system. The lamphouse cover must be installed correctly and secured to actuate all interlock switches and permit lamp ignition.

ENERGIZE THE XENON POWER SUPPLY by switching the circuit breaker on the side panel ON. The VIN light adjacent to the circuit breaker will glow, indicating that the power supply is ready for operation. The lamphouse blowers will start and initiate bulb cooling. The lamp blowers will operate continuously until the xenon power supply is de-energized.

PLACE THE **LAMP SWITCH** in the ON position and the bulb will ignite. Allow a few minutes for the current to stabilize, and read the lamphouse ammeter. The bulb must be operated within the current range specified by the bulb manufacturer. The ranges for the xenon bulb used are as follow:

<u>Wattage</u>	<u>Nominal Current</u>	<u>DO NOT EXCEED</u>
1000	50 A.	55 A.
1600	65 A.	75 A.
2000	75 A.	85 A.

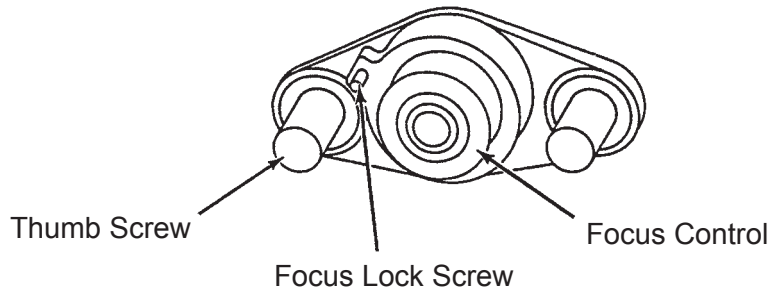
ADJUST THE XENON POWER SUPPLY as instructed in the power supply manual for the correct operating current. A new xenon bulb is normally operated at “nominal” current. After prolonged use, the light output will decrease because of the quartz envelope darkening, a result of normal bulb aging. At this time, the current output setting may periodically be increased to compensate for bulb aging, but **do not**, at any time, exceed the maximum current level specified.

DISMOUNT THE COVER PLATE located above the lamphouse instrument panel by removing the three black phillips head screws and finish washers. This exposes the control mechanism for adjusting the position of the xenon bulb.

THE CENTER SECTION of the control is a threaded member that focuses the bulb in relation to the reflector. Turning this adjustment moves the bulb on the horizontal plane, into or out of the reflector. Rotating this section *clockwise* moves the bulb *away from* the reflector. The small knurled screw to the upper left of this section can be tightened to lock the focusing mechanism in place after the bulb alignment procedure has been completed.

THE TWO LARGE THUMB SCREWS to the left and right of the focusing control secure the horizontal and vertical position of the bulb. These two large thumb screws are spring-loaded to provide a degree of friction against the cast section of the control mechanism.

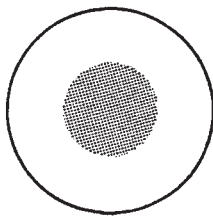
BULB ADJUSTMENT CONTROLS



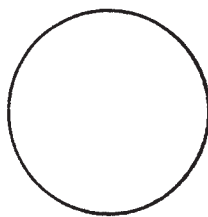
THE FOLLOWING METHOD is recommended to position the xenon bulb inside the reflector in order to project the best light to the stage.

SLIDE THE SPOT SIZE CONTROL HANDLE (“trombone”) *back* to its stop at the the rearmost position to project the smallest spot possible. Place the iris, choppers, and dimming controls in their full *open* positions. Project the spot to a wall or similar flat perpendicular surface opposite the spotlight.

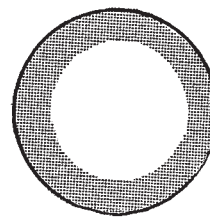
TURN THE CENTER “FOCUS CONTROL” section of the bulb adjustment control, as illustrated above, fully clockwise until a small dark spot is projected on the wall (Spot “A”). At this point, the bulb is defocused at its extreme forward position. Then rotate the focus control counterclockwise until a center “hot” spot is defined (Spot “C”).



Spot “A”



Spot “B”



Spot “C”

LOOSEN THE TWO THUMB SCREWS to the left and right of the focus control just enough to permit manual motion of complete control assembly. Move the control assembly around the two thumb screws and observe the movement of the brighter “hot” area within the projected spot.

MOVE THE CONTROL ASSEMBLY around the thumb screws until the brightest portion of the “hot” area is at, or slightly above, the center of the projected spot. If needed, the front bulb support is mounted on slotted holes and may also be adjusted to achieve the desired spot image. It may be necessary to again rotate the bulb focus control to clearly define and identify the “hot” spot. Positioning the brightest light *above* the center of the spot highlights the head and shoulders of a live performer. This effect is particularly desirable for television and video taping.

AFTER THE “HOT” SPOT is correctly positioned, tighten the two thumb screws to lock this adjustment in place. To verify that the bulb is at the optical centerline, turn the focus control clockwise to again project Spot “A.” The dark spot should remain centered in the spot projection as shown.

ROTATE THE BULB FOCUS CONTROL (center section) to obtain the brightest light with even, flat light distribution (Spot “B”). To sharpen the edge of the spot, rotate the spot fine focus control (large knurled knob) located immediately behind the color boomerang.

A SECOND METHOD of aligning the xenon bulb is to project the spot to the stage, and using the bulb adjustment controls, obtain a “hot” spot in the projected spot. Center this “hot” spot in the projected spot by moving the entire control section around the two thumb screws. Once the “hot” spot is centered, or slightly above center in the projected spot, lock the adjustment control in position with the two thumb screws and rotate the focus control (center section) to obtain a bright spot with an even distribution of light. To sharpen the edge of the spot, rotate the knurled focus control knob located on either side of the lens mechanism.

THIS BULB POSITIONING ADJUSTMENT should not be disturbed until the xenon bulb is either rotated or replaced. At this time it will be necessary to repeat the above bulb alignment procedure.

REPLACE THE REAR COVER PLATE over the bulb adjustment control mechanism. Secure in place with the (3) phillips head screws and finish washers.

BECAUSE OF MANUFACTURING TOLERANCES and normal bulb aging, it may be necessary to operate one lamp at slightly higher or lower current than others to obtain equal light balance between two or more spotlights. These current adjustments are made at the xenon power supply.

TO EXTINGUISH THE ARC, place the LAMP switch in the OFF position. The blowers in the lamphouse will continue running until the xenon power supply is de-energized. Allow the blowers to operate and cool the bulb for *at least* ten minutes after extinguishing. This measure is required to comply with the bulb manufacturer’s warranty conditions.

TO PROLONG BULB LIFE, and to encourage rapid bulb starts, it is recommended to douse out using the choppers or the fade-out blades rather than extinguishing the bulb during “dark” periods between cues. Multiple ignition pulses and “warm” re-starts consume more power and cause more bulb electrode wear than sustained operation. While repeated ignitions are frequently unavoidable, and within design parameters, a (20) minute delay between ignitions is desirable.

COMPLY WITH THE BULB MANUFACTURER’S INSTRUCTIONS regarding rotation of the xenon bulb at specified intervals. To rotate the bulb, loosen both the positive and negative clamps. Grasping the metal end caps, rotate the bulb 180° and align the trigger wire to the opposite reflector notch. Securely re-tighten both clamps. Adjust the xenon power supply to increase the DC current to a setting at or just below the maximum level specified for the bulb. Project a white spot to check for an even field; correct the bulb positioning as required. Operate the xenon bulb at this higher current level for one or two performances, and then return the power supply setting to its previous level. This temporary operation of the xenon bulb at high current following bulb rotation will restore the cathode tip and enhance ignition at the new arc position.

RETURN BULBS upon which a warranty claim is being made to the theatre equipment dealer through whom the unit was purchased. Pack the bulb in its original shipping carton with the protective cover over the bulb. Complete and enclose all warranty forms supplied by the bulb manufacturer. Warranty credit will *not* be allowed if the bulb failure is related to mishandling, incorrect installation, faulty supporting equipment, or abuse.

HANDLING THE SPOTLIGHT

THE SUPER TROUPER II can be operated from either side. Generally, the best position for the operator to stand is near the center of the spotlight, on the right hand side. The angle of tilt and the size or location of the porthole may alter the position for the most convenient operation. Each operator will, after a few minutes of operation, generally develop his or her own system and position for operating the unit.

POSITION THE COLOR BOOMERANG with the color arms facing the desired operating side. The boomerang housing can be reversed by removing the three mounting screws, removing and reversing the boomerang, and re-mount using the (3) mounting holes on the opposite side of the housing. It is advisable to check the sequence of color filters and to place the more dense colors (red, green) in the front positions of the boomerang (furthest away from the arc). See the following OPERATION OF THE COLOR BOOMERANG section for detailed instructions.

THE HORIZONTAL PAN and vertical tilt tension adjustment levers are located on the yoke assembly. Each can be separately set to give the desired degree of friction on spotlight swing, from complete release to total lock-down, to suit the spotlight's application and the individual operator.

THE LENS SYSTEM "ZOOM" BRAKE, which controls the degree of force required to slide the spot size control handle ("trombone"), is located on the outrider of the movable projection lens carriage. Alternately tightening or loosening the nylon brake tension screw will increase or decrease the force required to operate the spot size control handle. Requirements may vary, and the braking can be adjusted to both accommodate the angle of tilt and to suit the individual operator. See the following OPERATION OF OPTICAL SYSTEM section for details regarding accessing and setting the friction brake.

OPERATION OF OPTICAL SYSTEM

THE IRIS CONTROL is the front lever which projects through the slots on the top of the optical system housing. When this lever is to the left (as viewed from the rear of the unit), the largest aperture is provided. Smaller apertures are obtained as the lever is moved to the right.

THE SPOT SIZE CONTROL HANDLES (“Trombone”) are located on the right and left sides of the optical system just above the base rail. A variation of spot sizes from full flood to small spot can be obtained by moving the spot size control handle from one extreme to the other. Beam intensity is increased by this optical system when reducing from flood to spot, and maximum intensity is reached when the trombone handle is in the extreme rear position.

THE MAXIMUM FLOOD SPOT is obtained with the iris control lever to the left (away from the normal operating side) for the largest aperture and with the trombone handle moved as far forward as possible.

SMALLER SIZED SPOTS are projected as the trombone handle is pulled back. Most of the spot sizes needed will be produced with the iris in its maximum open position. A “diffused” spot (reduced intensity with a soft edge) is projected by moving the trombone handle forward toward “flood” while closing the iris control.

TO ADJUST the degree of force required to slide the spot size control handle, the nylon brake screw in the outrider of the projection lens carriage must be loosened or tightened. The lens mechanism housing (see Figure 3, Item 27) must be dismantled to perform this adjustment.

TIGHTEN THE YOKE TILT LOCK and dismount the color boomerang. Remove the (2) spot size control handles and the (2) focus knobs. These items are mounted using socket head screws which can be removed using a 3/16" allen wrench. Unscrew the (3) plastic knobs from the optical system control levers. Remove the (6) phillips head screws retaining the lens mechanism housing. Lift the housing from the spotlight, slightly spreading the bottom of the cover to clear the protruding shafts.

THE FRICTION BRAKE is a hex head nylon screw (see Figure 3, Item 4) which bears against the slide rod. Tightening the screw applies tension and loosening the screw relieves tension. A spotlight operated at an extreme down angle will require more brake tension than one operated at a more level angle. Furthermore, the preferred degree of tension may vary between individual operators. Secure the lock nut after setting the desired brake tension; re-install the lens mechanism housing and the color boomerang.

THE EDGE OF THE PROJECTED SPOT is focused by rotating the focus control knob. This focus control alters the relative distance between the lenses to adjust the optical system for differing lengths of throw. The degree of torque required to rotate the focus control is adjustable by tightening or loosening the friction screws (Figure 4, Item 17) on the off-operator side of the focus mechanism. When making a focus adjustment, observe the spot and rotate the focus knob until the sharpest edge on the projected spot is obtained.

FOR A “HEAD” SPOT, or any spot smaller than can be obtained with the trombone handle in its extreme rear position, shift the iris control lever to the right (toward operating side) for a smaller aperture. The iris control lever should always be returned to its extreme left (open) position before the spot size control (trombone) handle is again moved forward to obtain larger spots.

THE MASKING SHUTTER (chopper) lever is the middle lever projecting through the top of the optical system housing. The masking shutter blades are operated by this lever to shape the projected spot to a rectangle, strip spot, or dousing out to full cutoff. The disengaged (full open) position of the masking shutter lever is to the extreme right (viewed from rear). Varying degrees of masking to complete cutoff are obtained by moving the lever to the left.

THE ANGLE of the masking shutter blades closure is adjustable and can be set to compensate for an offset horizontal projection angle, for example, if the spotlight is positioned to the left or right of center stage. An unbalanced condition will exist while adjusting the blades; lock down the spotlight tilt clamp before preceding.

REMOVE THE COLOR BOOMERANG and lens mechanism housing as instructed on the preceding page. Loosen the slotted head screws holding each of the masking shutter blades enough to allow adjustments. Ignite the bulb and project a spot. Adjust the angle of the *bottom* blade by tapping it with a screwdriver so its projected edge lies parallel to the footlights. Tighten the screw. Operate the masking shutter lever to close the blades. Adjust the upper blade to close against the bottom blade, and tighten the screw.

THE FADE-OUT MECHANISM AND DOUSER CONTROL is the rear lever projecting through the top of the optical system cover. This lever controls the intensity of light from complete fade-out (douse) when the lever is to the left, to full intensity when the lever is to the right.

ROTATING THE LARGE KNURLED KNOBS located on the sides of the optical system immediately behind the boomerang adjusts the fine focus of the lenses and sharpens the edge of the spot. It may be necessary to re-focus the edge of the spot after zooming from flood to small spot, and from spot to flood.

OPERATION OF COLOR BOOMERANG

THE COLOR BOOMERANG is equipped with six two-part filter holders (51928000 gel frame with slide channel and 51376000 cover plate). Six sheets of assorted color gels are included in the spotlight accessory kit. Additional colors and filter holders can be supplied by your Strong International Dealer. Specify ROSCOLUX® or equivalent *high temperature* gels.

TO OPERATE INDIVIDUAL COLOR FILTERS, lower the desired filter selector lever. A rocker catch located in the color disc housing holds the filter in position. To release a color, push the filter release arm in or engage another color, thus releasing the previous color automatically.

TO REPLACE FILTER HOLDERS, open the front cover of the color disc housing by removing the thumb screw on the top of the housing. The upper portion of the housing is hinged to allow access to the color holders. Slide the filter holders up and off the color arms. Replace gel frames as required and secure the front cover of the disc housing cover when finished.

NOTE: WHEN PLACING COLOR FILTERS in the boomerang, the **less** dense colors (pink, amber) should be placed in the holders toward the *rear* of the boomerang (toward the arc), and those of **greater** density (red, green) should be placed in the holders toward the *front* of the boomerang (away from the arc). Remember to reverse the gel sequence if reversing the boomerang for left/right operation.

COLOR TEMPERATURE CORRECTION FILTERS, required for use with television and videotape, can be installed in place of one or more colors. They are available from theatrical supply dealers.

MAINTENANCE

THE SUPER TROUPER II SPOTLIGHT SYSTEM requires very little maintenance to keep it in good working order. Routine cleaning is generally sufficient.

THE REFLECTOR and the heat filter should be cleaned periodically with a clean, soft, lint free cloth to remove any dust from the coated surfaces. If excessively soiled, use a commercial liquid glass cleaner (i.e. Windex®). **Do not** use Bon Ami® or other abrasive cleaners.

THE XENON BULB should be checked occasionally for presence of any foreign material on the envelope. Any dirt or other foreign material will rapidly burn into the quartz material and possibly shorten bulb life. Use isopropyl alcohol and a clean, lint-free cotton cloth to remove dirt, fingermarks, and other contaminants. **CAUTION:** Observe all safety procedures when working around the exposed bulb.

CHECK ALL ELECTRICAL TERMINATIONS periodically for tightness. Note especially the xenon bulb connections and other leads in the DC circuit. All connections to the MS receptacle on the xenon power supply are accessible below the small panel adjacent to the receptacle.

THE INSIDE OF THE LAMPHOUSE COMPARTMENT and the lamphouse cover louvers should be cleaned periodically, depending on the dust conditions at each installation. The blower air inlets in the bottom panel may require cleaning to remove dust build-up which accumulates over a period of time. If dust build-up impedes the blower impellers, or if obstructed air flow allows the squirrelcage blower motor to overheat, a thermal switch in the blower motor will shut down the blower. If the squirrelcage blower shuts down repeatedly, it is necessary to dismount it from the spotlight base rail for a thorough cleaning. Vacuum or blow out the (2) impellers and lubricate the blower motor in the marked oil holes. The six-inch box fan at the rear of the lamphouse requires no lubrication.

THE OPTICAL SYSTEM LENSES must be kept clean to prevent any light reduction in the projected spot. To gain access to the lenses, tighten the horizontal pan and vertical tilt locking clamps, and remove the color boomerang and optical system housing.

CLEAN THE OPTICAL SYSTEM LENSES using lint-free lens tissues with any cleaner approved for use on coated projection lenses. If the projection lens assembly is removed from its barrel for cleaning, replace the lens with the arrow (engraved on the lens barrel) pointing toward the iris.

WHEN TRANSPORTING the spotlight from one venue to another, it is recommended that the xenon bulb be removed and placed in its original shipping carton with the cover on to insure against breakage. If the spotlight is moved from one position to another within the same venue, the unit may be transported with the bulb installed, assuming reasonable care is exercised. *DO NOT* move the spotlight until the bulb has cooled to room temperature.

TROUBLESHOOTING

NORMAL OPERATION

WHEN THE SAFETY SWITCH in the main AC supply line to the xenon power supply is in the ON position, and the 30 ampere circuit breaker on the switching power supply is ON, the green VIN (“voltage input”) light on the xenon power supply will glow. The blowers in both the lamphouse and the xenon power supply will start. The PWR and AIR indicator lights on the spotlight lamphouse control panel will glow.

OPERATION OF THE LAMPHOUSE BLOWERS will maintain normal temperature in the lamphouse. If the lamphouse top cover is correctly installed and locked, the (4) cover interlock switch closures will complete the control circuit to the LAMP switch, and the lamphouse PANELS light will glow.

WHEN THE “LAMP” SWITCH is placed in the ON position, the 115 V.AC control circuit (wires 5 & 6) in the lamphouse will energize the power supply circuitry providing DC current to the igniter and bulb. The green GO indicator light on the xenon power supply will glow, as will the LAMP light on the lamphouse control panel. The power supply will then deliver high open circuit (approximately 180-200 V.DC “no load”) voltage to the lamphouse. This high DC voltage will actuate the DC Pulse Igniter.

THERE WILL BE a distinctly audible high voltage arc “ping” at the igniter spark gap and across the bulb electrodes. The bulb should ignite immediately after one or two of these high RF voltage pulses. Once bulb ignition is sustained, the lamp current will adjust to the output setting of the xenon power supply. The DC voltage will fall to the xenon bulb’s sustaining voltage level (30 V.DC or less), and the DC Pulse Igniter will cease generating the RF pulse.

MULTIPLE IGNITION PULSES prior to bulb ignition usually indicate a low DC output setting. Adjust lamphouse DC current according to the INSTALLATION - OPERATION section of the Xenon Power Supply manual to the correct level specified by the bulb manufacturer. Operating a xenon bulb *below* its rated current will *not* prolong bulb life; sustained operation below rated current will cause ignition problems as the bulb ages. A “warm” or aged xenon bulb might require multiple strikes. A short delay between ignition pulses is normal. The capacitors in the xenon power supply must re-charge between each high voltage “no load” discharge.

THE DC PULSE IGNITER will remain out of circuit while the xenon bulb is operating normally. No further ignition pulses will be generated until the xenon power supply again delivers open circuit DC voltage in excess of 140 V.DC.

ELAPSED HOURS will begin counting up when the xenon bulb sustains ignition. A faulty hour meter will not prevent bulb ignition. Record the meter reading when first using a new bulb; the hour meter is not resettable, so accurate figures should be used when entering bulb hours to maintain a permanent record of the spotlight system performance.

TROUBLE CHART

IN THE EVENT of an ignition failure, check first the status of the four indicator lights mounted to the lamphouse control panel.

INDICATOR LIGHT FUNCTIONS:

- “PWR”** When lit, AC power is supplied to the lamphouse, and the lamphouse blowers will operate.
- “LAMP”** This indicator lights only when the control circuit is complete, meaning all access covers are closed and locked, and the bulb seal blowers are operating and supplying adequate air flow across the xenon bulb. This light also indicates that the xenon power supply is energized and DC current is applied to the xenon bulb.
- “AIR”** This L.E.D. lights concurrently with the “PWR” indicator.
- “PANELS”** The (3) magnetic cover interlock switches, two at the lower lamphouse side cover panels and one at the top cover, plus the pushbutton switch at the door lock, must be closed to actuate this light. The security screw securing the key lock must be installed to insure switch closure.

THE “PWR,” “AIR,” and “COVERS” indicators on the control panel must all be lighted to indicate that conditions are correct for ignition of the xenon bulb. The MAIN LINE circuit breaker must be in the ON position. The “LAMP” indicator lights only when the circuit for bulb ignition is complete.

BEFORE PRECEDING with the following Trouble Chart, check first that the green VIN indicator light on the xenon power supply is glowing, showing that AC power is present. The PWR and AIR indicators on the lamphouse control panel should also be lighted, showing correct continuity through the lamphouse/power supply interconnect cable.

ALLOW THE XENON BULB to thoroughly cool to room temperature before opening the lamphouse enclosure, and allow capacitors to drain stored energy. The lamphouse control circuit operates on 120 V.AC; *exercise extreme caution when taking voltage measurements in a power ON condition.* Measure xenon power supply voltages at the MS connector; there are no test points on primary or secondary PC board sections.

THE DC PULSE IGNITER includes a redesigned spark gap which permits a degree of adjustment. Remove the igniter case cover and drain the igniter capacitors by using the blade of an insulated handle screwdriver to short across the two spark gap screws before performing any adjustments inside the igniter case.

EXCHANGE OF COMPONENTS (i.e. bulbs, igniters, power supplies) between similar Strong Super Trouper II's to aid in diagnosis of a problem is encouraged. This will not lead to equipment damage, and will not void equipment warranty.

TROUBLE CHART (continued)

Bulb Fails To Ignite

1. No DC current. Switch xenon power supply breaker ON.
2. DC output level too low. Increase power supply output to rated bulb current.
3. Low DC no load voltage from xenon power supply. Check no load voltage by pressing VOLTS/AMPS switch at ignition cycle. Repair or replace power supply if no load voltage is lower than 140 V.DC.
4. Defective xenon bulb. Check for damaged or scorched electrodes, discolored quartz envelope or end caps. Replace if defective.
5. Loose or faulty terminal connection. Visually inspect connections, particularly in AC circuit (5 & 6) and all DC connections.
6. Ignition pulse arcing to ground. Dress all igniter and bulb leads one-half inch (13mm) or more away from grounded metal lamphouse components.
7. Inadequate AC supply line. Brown-out protection circuit in switching power supply disables operation if line voltage falls below 100 V.AC (120 volt models) or below 195 V.AC (220 volt models). Phase loss (220 volt models) will also disable power supply operation. Check AC voltage at power supply terminals L1 & L3 (see Xenon Power Supply manual, INSTALLATION section).
8. Faulty igniter. Arc at spark gap should be audible, and arc across bulb electrodes should be visible through arc viewing port. Repair or replace as required.
9. Arc gap spacing in igniter is incorrect. If arc is audible inside igniter case but is not seen across bulb electrodes, widen the gap between the two screws. If no arc is audible or observed, shorten the gap.
NOTE: Discharge igniter capacitors as directed on preceding page before adjusting.

Bulb Fails To Ignite and Power Supply Circuit Breaker Trips

1. Slide switch on power supply (near MS receptacle) in incorrect SPOT/CONS position. Place in SPOT (left) setting.

Bulb Goes Out During Operation

1. Blocked bulb seal blower intake or defective blower motor. Clean or replace.
2. Overheated thermal switch in xenon power supply. Switch opens at 190° Fahrenheit (88° Celsius). Check for unobstructed air flow through power supply; loose DC connection(s).
3. Squirrelcage blower motor overheated, internal thermal switch open. Allow to cool; clean as required.
4. Faulty xenon bulb. Check for sagging or damaged electrodes, darkened envelope, instability in operating voltage or current. Replace if defective.
5. Drop in AC supply voltage or AC phase loss. See Item 7 in section above.

Excessive Light Flicker

1. Defective xenon bulb. Check for cracked and/or sagging electrode.
2. Arc stabilization magnet missing or reversed. Replace or correct; NORTH pole directed toward right (operator's) side.
3. Excessive ripple in power supply DC output. **Consult factory.**

TROUBLE CHART (continued)

Reduced Light Output

1. Normal bulb aging. Increase current output at xenon power supply. **Do not exceed** maximum current rating specified by bulb manufacturer.
2. Defective bulb. Check for discoloration or premature darkening of envelope.
3. Bulb defocused or misaligned. Repeat bulb positioning adjustments.
4. Soiled optics. Clean reflector, bulb, heat filter and lenses as outlined in MAINTENANCE section.

Excessive Heat (Gels Burning)

1. Xenon bulb misfocused. Focus bulb for even field at small spot (trombone handle *back*) with iris **fully open**; do not “hot spot.”
2. Glass strip heat filter missing or reversed. Filter **must** be installed, with *coated* surface *facing* bulb.
3. Dichroic coating on reflector or heat filter peeled. Replace as required.

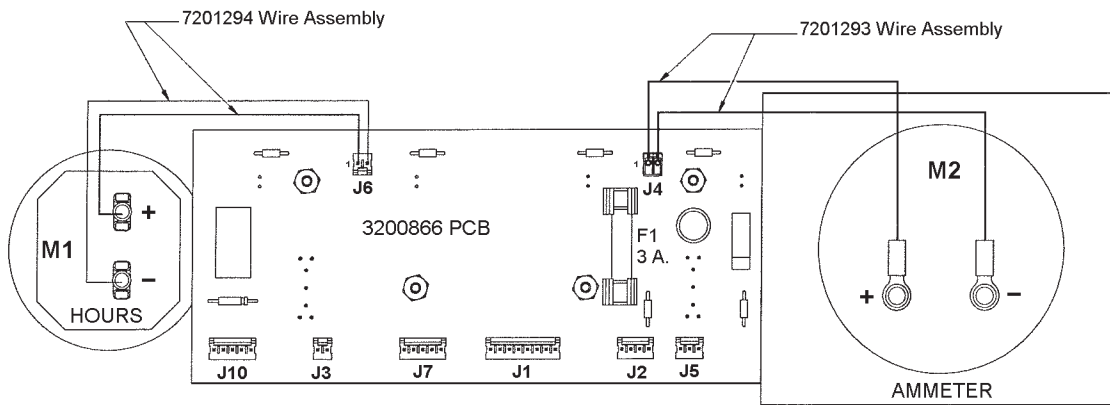
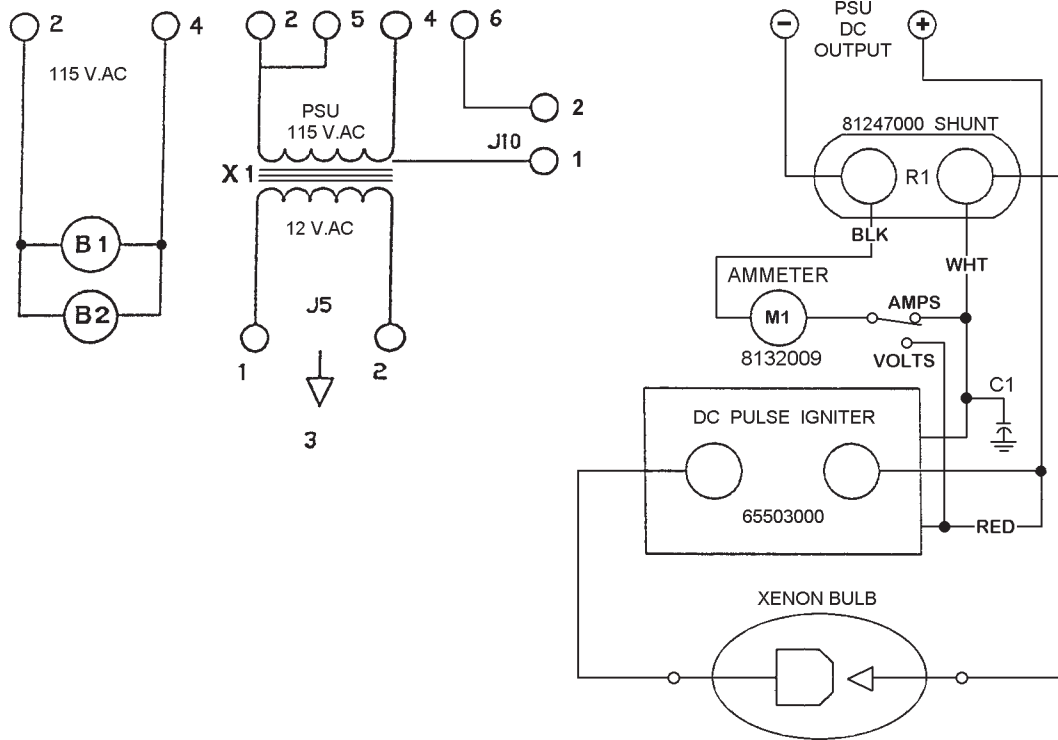
Noise in Theater Sound System During Bulb Ignition or Operation

1. Defective lamphouse RF suppression capacitor. Check with capacitor tester. Replace as required.
2. Spotlight, xenon power supply, or sound system not correctly grounded. Connect to adequate earth ground.

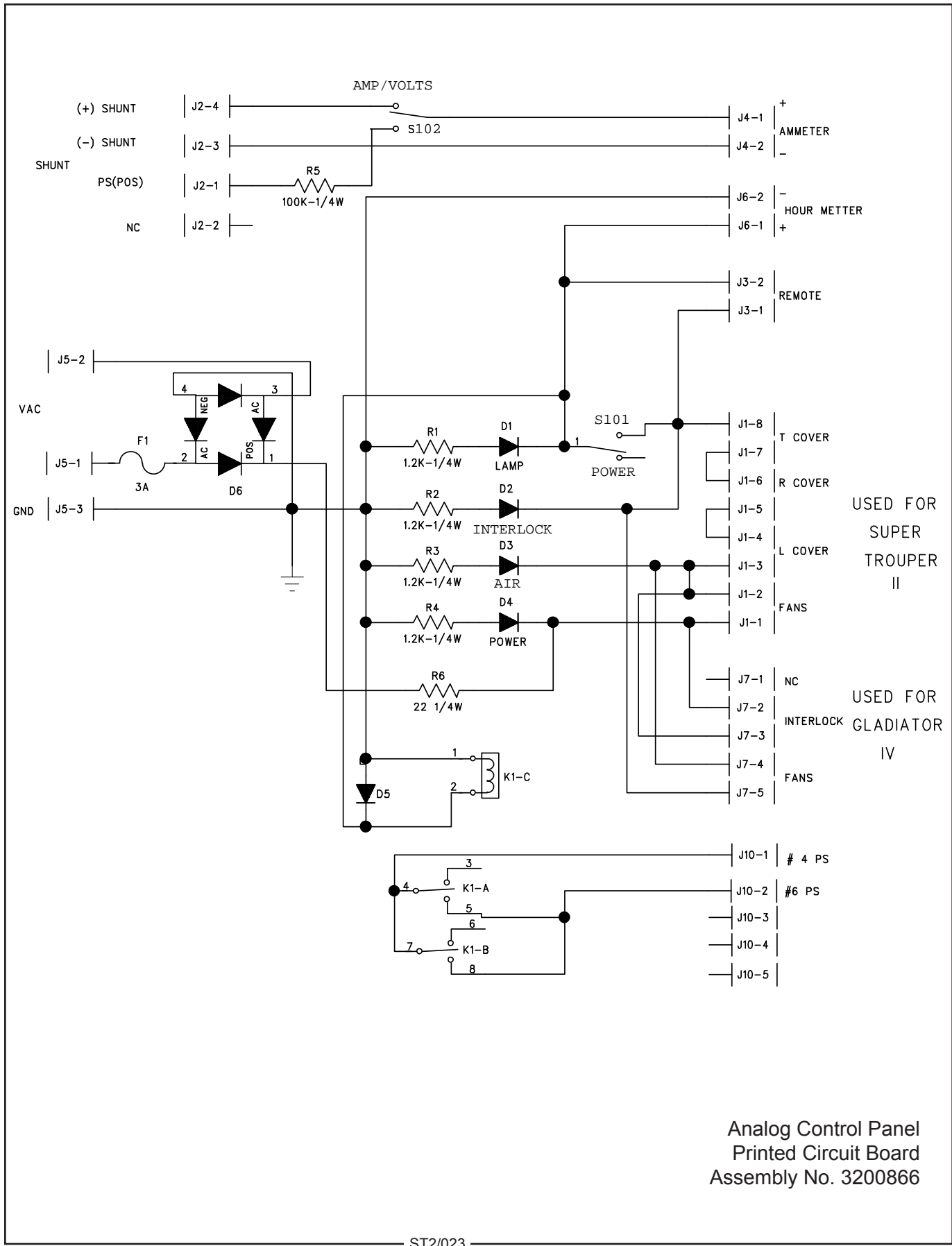
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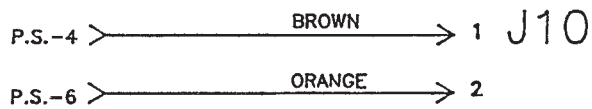
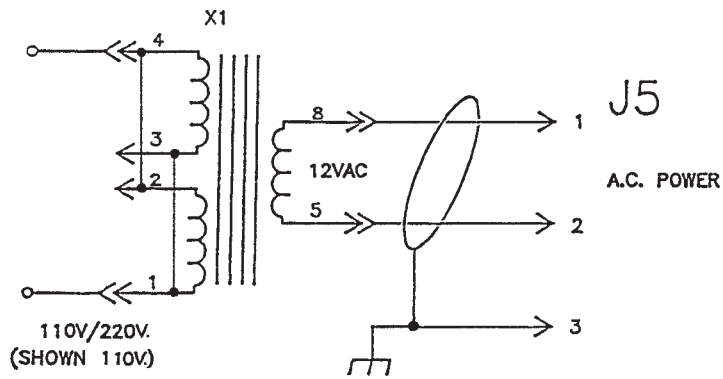
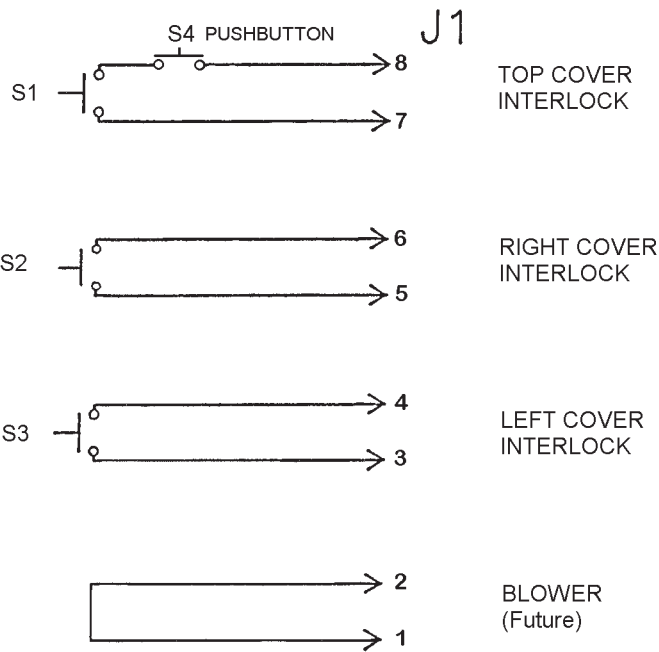
The Strong switching-type Xenon Power Supply employs solid state circuitry requiring sophisticated diagnostic equipment not generally available to field service personnel. If an operational problem in the TROUBLE CHART section is traced to this unit, contact an authorized Strong Entertainment Lighting dealer for further information.

Super Trouper II Lamphouse



Xenon Bulb Ignition
& Monitor Circuit





Super Trouper II
Control Circuit

PARTS LIST
Wiring Diagrams

<u>Ref.</u>	<u>Part No.</u>	<u>Description</u>
B1	23939000	Blower, Dual Squirrelcage; 115 V.AC, 50/60 Hz.
B2	25011000	Blower, 6" Box Fan, Modified; 115 V.AC, 50/60 Hz.
C1	80177000	RF Suppression Capacitor, 2 x 1.0 μ f, 600 WVDC
F1	2121017	Fuse, 3 A. Std. (on 3200866 PC Board)
J1	3113231	Connector, (8) Position
J2	3113221	Connector, (4) Position
J5	3113214	Connector, (3) Position
J10	3113011	Connector, (5) Position
-	3140018	Pin
M1	7132005	Hour Meter, 10-80 V.DC
M2	8132009	Ammeter, 1-200 A. 50 mV.
PCB	3200866	Printed Circuit Board Assembly, Control Panel
R1	81247000	Shunt, 200 Ampere, 50 mV.
S1	2198544	Reed Switch, Lamphouse Top Cover Interlock
S2	2198544	Reed Switch, Lower Right Lamphouse Cover Interlock
S3	2198544	Reed Switch, Lower Left Lamphouse Cover Interlock
-	2198545	Magnetic Actuator, Reed Switch (3 req'd.)
S4	39260000	Cam Lock Interlock Switch, Pushbutton
-	7201309	Hex Head Actuator Screw (for 39260000)
X1	24356000	Stepdown Transformer, Wired Assembly
-	65503000	DC Pulse Igniter Assembly
-	25023000	Lamphouse/Power Supply Interconnect Cable Assembly (includes 88318000 MS Connectors & 62153000 Clamps)

SUPER TROUPER II Parts List

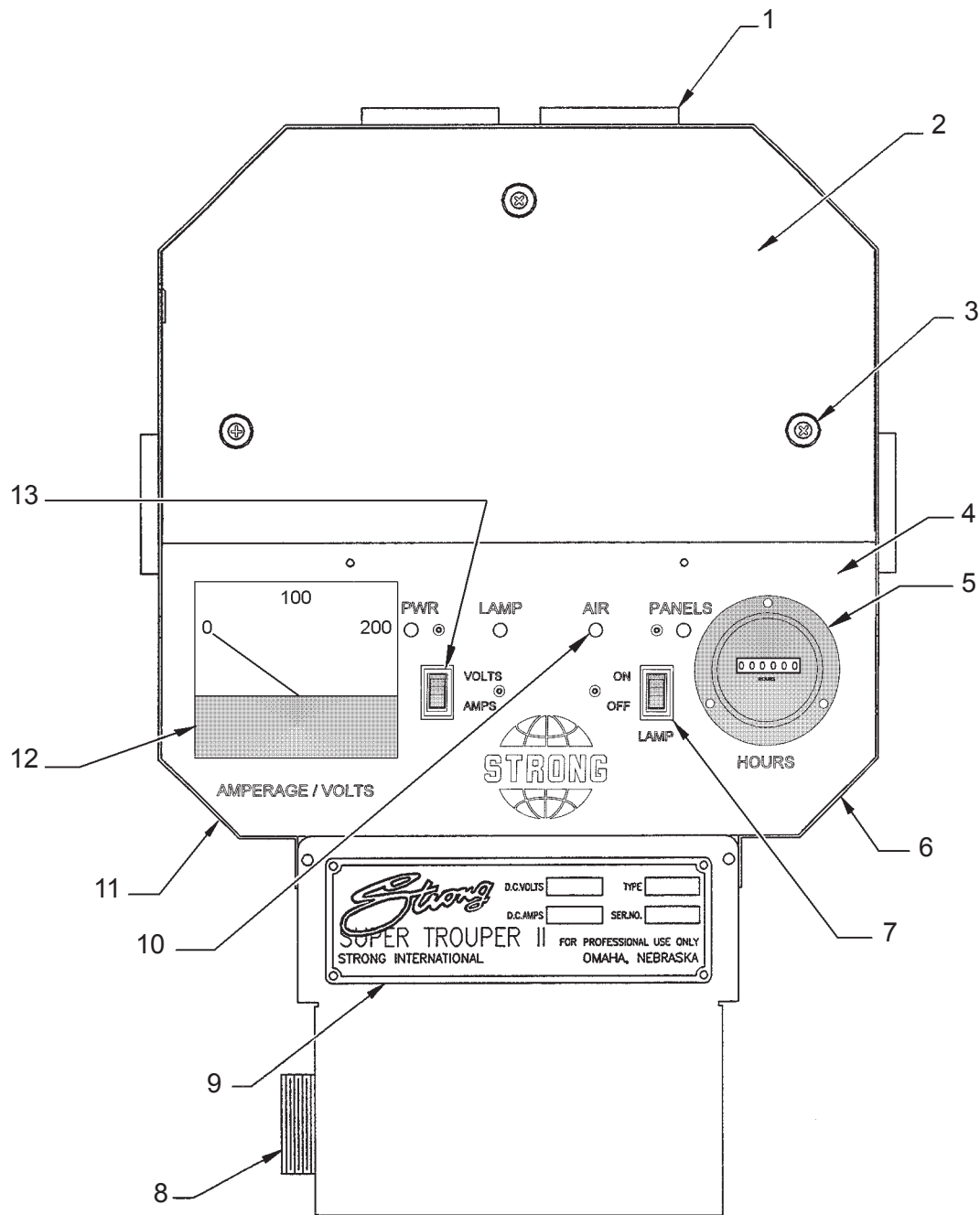


FIGURE 1

PARTS LIST

Figure 1

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
1	24021000	Access Door & Top Cover, Welded Assembly
-	48930000	Arc Viewing Port
-	4100501	Screw, 10-32 x 1/2" Phillips Truss Head (3 req'd.)
-	4107101	Finish Washer, #10
-	71284000	Cam Lock & Keys
-	7201309	Security Screw, Hex Head
2	24150000	Cover Plate, Bulb Adjust Mechanism
3	4100501	Screw, 10-32 x 1/2" Phillips Truss Head
-	4107101	Finish Washer, #10
4	7201289	Instrument Panel Assembly, Analog
-	7201283	Instrument Panel Plate, Formed & Welded (less components)
5	7132005	Hour Meter (M1), 10-80 V.DC (incl. with 7201289)
-	7201308	Spacer Ring, Hour Meter (2 req'd.)
6	24029000	Lamphouse Base Panel, Lower Right
-	4100501	Screw, 10-32 x 1/2" Phillips Truss Head
7	8161028	Rocker Switch, "LAMP" (S101 on 3200866)
-	5161015	Switch Bezel
8	25024000	MS Connector, Wired Assembly
-	88319000	MS Connector, (14) Pin Female
9	24160000	Name & Data Plate
10	8130030	Lens, Green Plastic (L.E.D. incl. with 3200866), 4 req'd.
11	24025000	Lamphouse Base Panel, Lower Left
-	4100501	Screw, 10-32 x 1/2" Phillips Truss Head
12	8132009	Ammeter (M2), 0-200 A. 50 mV. (incl. with 7201289)
13	23868000	Rocker Switch, "VOLTS/AMPS" (S102 on 3200866)

NOT SHOWN

-	3200866	Control Panel PC Board Assembly (with Items 7 & 12 and L.E.D.'s)
-	7198017	Mounting Standoff, PC Board (4 req'd.)
-	4048005	Hexnut, 4-40 Nylon (4 req'd.)
-	4040251	Standoff Mounting Screw, 4-40 x 1/4" Button Head (4 req'd.)
-	25023000	Lamphouse/Power Supply Interconnect Cable Assembly (includes MS Connectors 88318000 & Cable Clamps 62153000)

65827000 Bulb Adjustment Assembly (see Figure 2, Item 29)

37985000	Thumb Screw (2 req'd.)
15010000	Compression Spring (2 req'd.)
65116000	Casting, Adjustment Mechanism
65150000	Fender Washer (2 req'd.)
65153000	Focus Lockscrew
65154000	Nylon Locking Ball
65959000	Focus Screw & Bearing Assembly
2148027*	Snap Ring, Collet Retaining
24266000*	Bulb Support Collet

* order separately; not included with 65827000 Assembly.

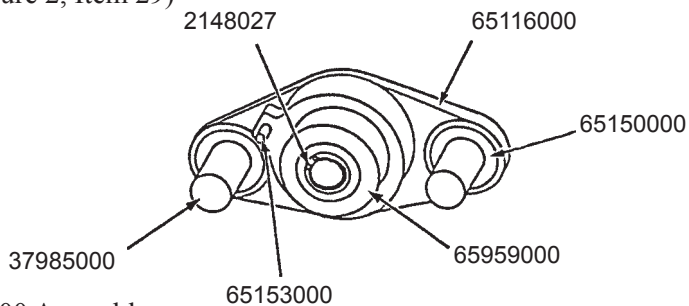
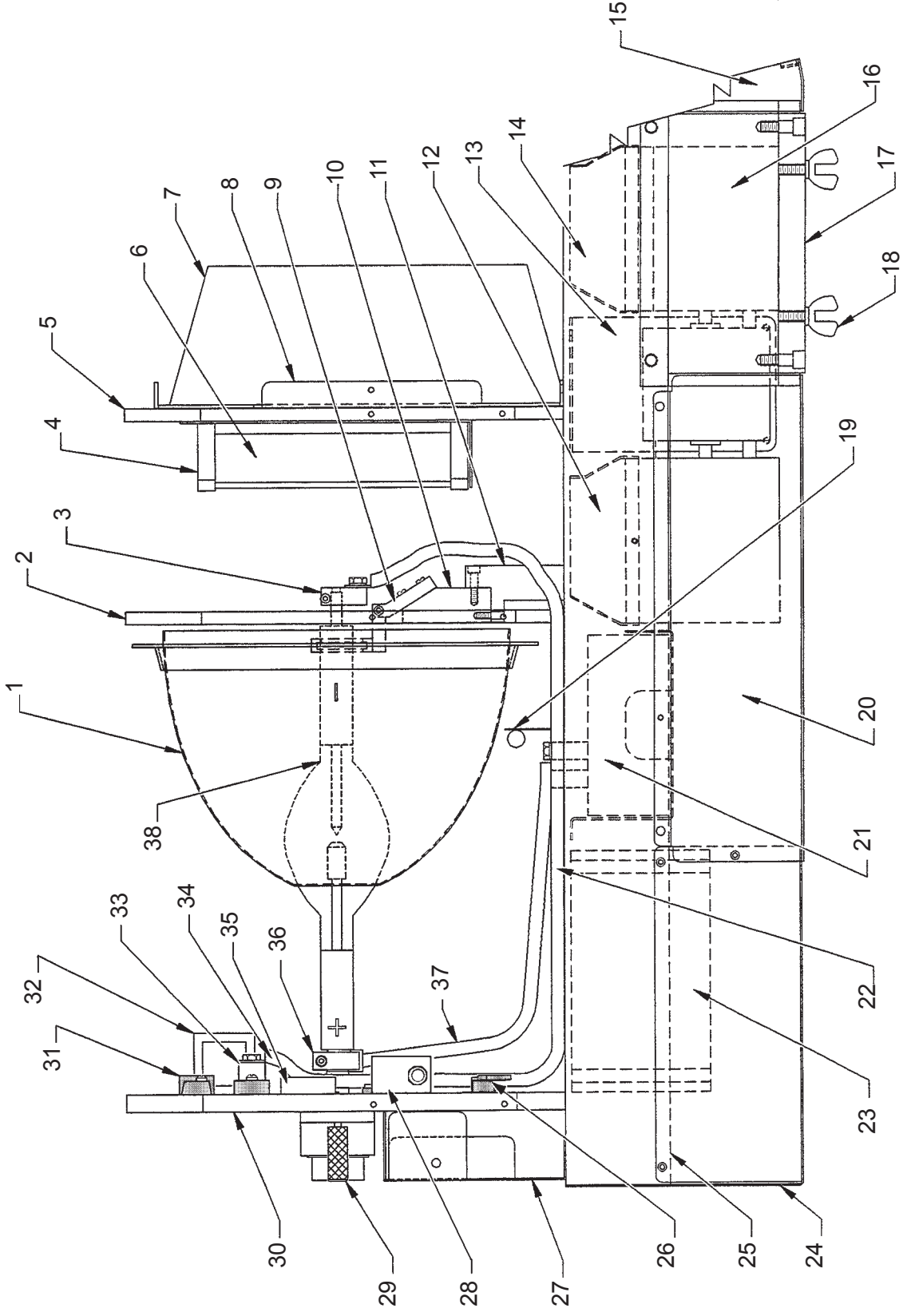


FIGURE 2



PARTS LIST

Figure 2

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
1	24317000	Reflector, Dichroic Coated, 10" Diameter
-	4251250	Screw, 1/4-20 x 1-1/4" Socket Head (4 req'd.)
-	5158025	Compression Spring (4 req'd.)
-	4258001	Lock Nut, 1/4-20 Hex (4 req'd.)
2	24073000	Bulkhead, Reflector Support
-	T1050000	Foam Tape, 1/8" x 3/8"
3	39191000	Negative Contact Clamp, Bright Chrome
-	4080870	Clamping Screw, 8-32 x 7/8" Socket Head
-	24327000	Negative Lead, Clamp to Shunt (see Item 22)
-	4250373	Screw, 1/4-20 x 3/8" Hex Head
4	24366000	Heat Filter Mounting Bracket, Welded Assembly
5	24072000	Bulkhead, Lamphouse Front
-	T1050000	Foam Tape, 1/8" x 3/8"
6	65122A00	Heat Filter, Coated Glass
7	24337000	Lamphouse Nose Cone (Light Shield)
8	24071000	Bracket, Lens Housing Mount
9	83747000	Front Bulb Support Assembly, 2 kW (as shown)
-	83364000	Mounting Bracket
-	4110501	Mounting Screw, 10-24 x 1/2" Truss Head (2 req'd.)
-	83748000	Ring Assembly, Shock Mount
-	4100620	Clamping Screw, 10-32 x 5/8" Socket Head
-	83410000	Coil Spring, Shock Mount Ring
9*	65117000	Front Bulb Support Yoke (not shown), 1 - 1.6 kW
-	65151000	Yoke Retainer Plate, 1 - 1.6 kW Bulb Adapter
-	65152A00	Thumb Screw, Retainer Plate (2 req'd.)
-	4110501	Mounting Screw, 10-24 x 1/2" Truss Head (2 req'd.)
10	24040000	Front Bulb Support Mount
-	4100620	Screw, 10-32 x 5/8" Socket Head (2 req'd.)
11	24039000	Insulator Post, Front Bulb Support
	24444000	Front lamp support replaces parts 10 and 11 as one piece
12	24003000	Air Duct (same as Item 14)
13	24077000	Spacer, Saddle Mount (not shown; Early Models, 2 req'd.)
-	4372503	Mounting Screw, 3/8-16 x 2-1/2" Socket Head (Early Models; 4 req'd.)
14	24003000	Air Duct (same as Item 12)
15	24008000	Front Bottom Cover, Welded Assembly (early models)
16	24368000	Blower Assembly, Dual Squirrelcage (incl. Items 12, 14)
-	23939000	Blower (B1), 115 V.AC, 50/60 Hz.
-	24367000	"L" Bracket, Blower Mount
-	4100621	Mounting Screw, 10-32 x 5/8" Pan Head
-	4198041	Rubber Grommet, Blower Shock Mount (replacement)
-	4108007	Hex Nut, 10-32
17	25223000	Mounting Brace, Bottom Plate (Side Plates: 25229000 & 25230000)
18	4310753	Wing-Head Screw, 5/16-18 (4 req'd.)

* See XENON BULB INSTALLATION illustration for depiction of 1 kW & 1.6 kW bulb mounting.

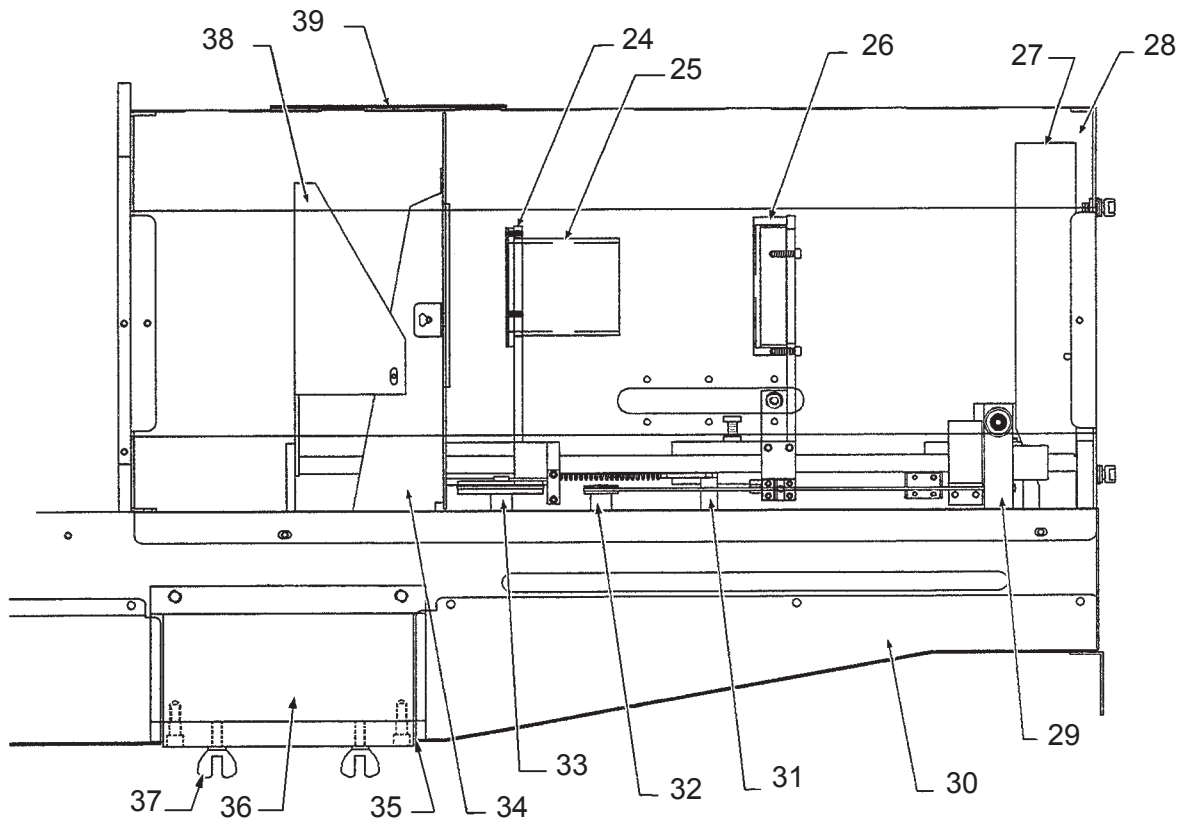
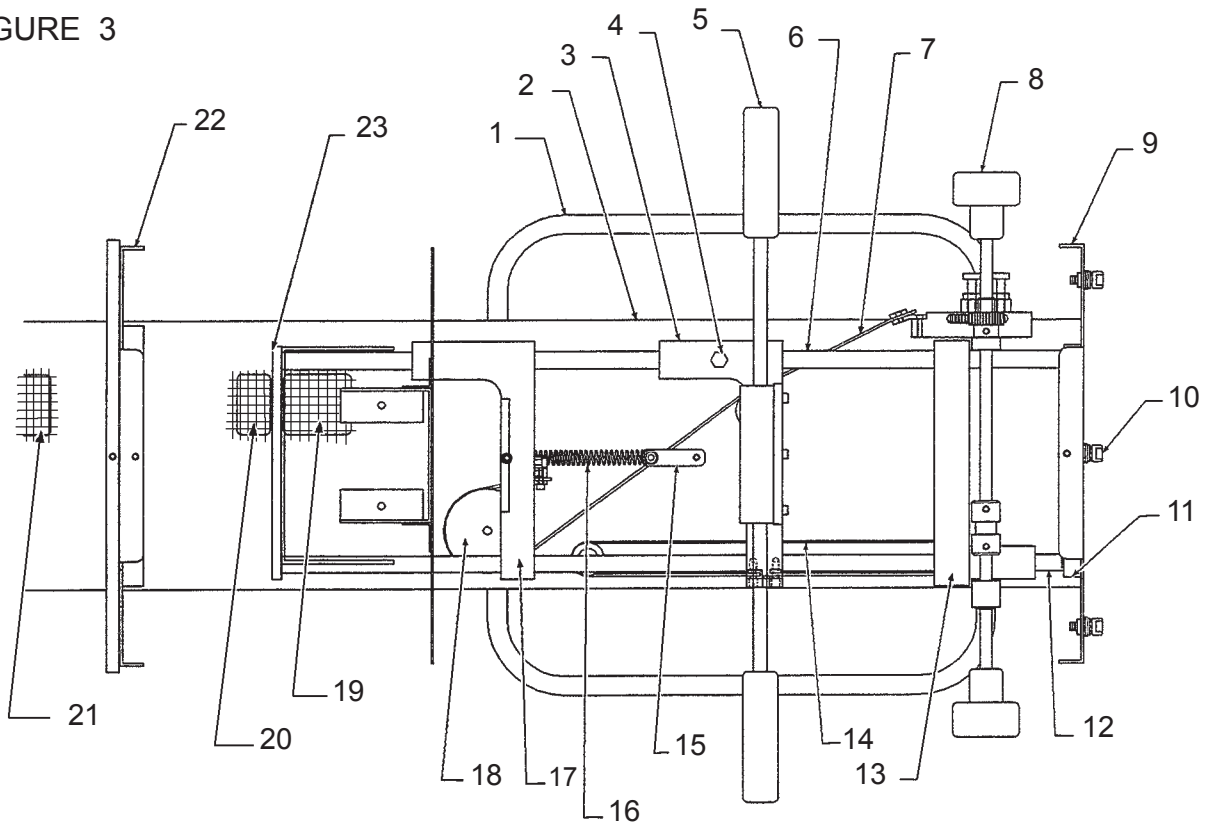
FIGURE 2 Parts List (continued)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
19	39215000	Permanent Magnet (Install with <i>painted</i> end toward <i>off-operator</i> side)
-	65409000	“L” Bracket, Magnet Mount
-	1110004	Magnet Clamp
20	24364000	Bottom Cover, Center (Igniter Access)
21	65503000	DC Pulse Igniter Assembly
-	24360000	Mounting Bracket, Igniter
-	24361000	Nylon Insulator, Igniter Post (2 req’d.)
22	24327000	Negative Lead, Shunt to Cathode Contact Clamp
23	25011000	Blower (B2), 6" Box Fan, Modified; 115 V.AC, 50/60 Hz.
24	24338000	Rear Bottom Cover, Welded Assembly
-	83131000	Blower Inlet Grille
25	25051000	Channel, Base Rail
26	2198544	Cover Interlock Switch (S2; S1 & S3 not shown)
-	24135000	Switch Mounting Bracket
-	2198545	Magnetic Switch Actuator (not shown, 3 req’d.)
-	24134000	Actuator Mounting Bracket (not shown, 3 req’d.)
27	7201089	Instrument Panel (see Figure 1, Item 4)
28	7200931	Switch Mounting Bracket
-	4100500	Mounting Screw, 10-32 x 1/2" Socket Head (2 req’d.)
-	39260000	Interlock Switch (S4), Pushbutton
29	65827000	Bulb Adjustment Mechanism (see Figure 1 “Detail” for Components)
-	24266000	Bulb Support Collet (Nylon Rod & Brass Socket Pinned Assembly)
30	24074000	Bulkhead, Lamphouse Rear
31	2162012	Barrier Strip, (10) Terminal
-	4080750	Mounting Screw, 8-32 x 3/4" Socket Head (2 req’d.)
32	24356000	Transformer (X1)
-	4080502	Mounting Screw, 8-32 x 1/2" Socket Head (2 req’d.)
33	81247000	Shunt (R1), 200 Amp. 50 mV.
-	4250755	Mounting Screw, 10-32 x 3/4" Socket Head (2 req’d.)
34	24327000	Negative Lead, Shunt to Cathode Contact Clamp (same as Item 22)
35	80177000	RF Suppression Capacitor, 2 x 1.0 μ f, 600 WVDC
-	4080502	Mounting Screw, 8-32 x 1/2" Socket Head (2 req’d.)
36	65343000	Positive Contact Clamp, Brass
-	4080870	Clamping Screw, 8-32 x 7/8" Socket Head
-	4250373	Screw, 1/4-20 x 3/8" Hex Head
37	24326000	Positive Lead, Clamp to Igniter Post
38	- - -	Xenon Bulb (by customer; Figure 2 depicts typical 2 kW “HS”)
-	24270000	Cathode (-) Adapter, Threaded 5/16-18 for 1 - 1.6 kW Bulbs *
-	24300000	Anode (+) Adapter for 1 kW LTI, Osram & ORC and <i>All</i> 1.6 kW *
-	4100180	Set Screw, Anode Adapter; 10-32 x 3/16" *

No Adapters Required for 2000 Watt Type “HS” Bulbs

* See XENON BULB INSTALLATION illustration for depiction of 1 kW & 1.6 kW bulb adapters.

FIGURE 3



PARTS LIST

Figure 3

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
1	25221000	Hand Rail, Chromed (4 req'd.)
-	4310752	Screw, 5/16-18 x 3/4" Hex Head
-	4317000	Lockwasher, 5/16" Split Ring
2	25051000	Base Channel
3	25081000	Negative Lens Carriage Assembly (incl. Items 4 & 5)
-	25089000	Small Pulley, Focus Control
4	4251001	Nylon Screw, Friction Brake; 1/4-20 x 1" Hex Head
-	4258015	Locknut, Friction Brake Screw; 1/4-20 Nylon
5	25063000	Handle, Spot Size Control (2 req'd.)
-	25053000	Shaft, Spot Size Control Handle
-	4251002	Handle Mounting Screw, 1/4-20 x 1" Socket Head
6	23987000	Slide Rod (same as Item 12)
7	2171187	Braided Wire Rope, Focus Control (Order 22 in.)
8	25064000	Knurled Knob, Spot Focus Control
-	25079000	Spot Focus Mechanism (incl. Item 8); See Figure 4
9	24071000	Front Mounting Bracket, Lens Mechanism Housing
10	7156004	Mounting Stud, Color Boomerang (3 req'd.)
-	4250503	Boomerang Mounting Screw, 1/4-20 x 1/2" Hex Head
11	24042000	Slide Rod End Rail, Front
12	23987000	Slide Rod (same as Item 6)
13	25078000	Counterweight Assembly
14	2171187	Braided Wire Rope, Lens Movement (Order 34 in.)
15	25074000	Spring Retaining Plate
-	25075000	Post, Spring Retaining Plate (Item 31)
16	25084000	Expansion Spring
-	25076000	Spring Bushing, Grooved (mounts to Item 17)
17	25080000	Projection Lens Carriage
18	25088000	Large Pulley, Focus Control
19	25245000	Blower Outlet Grille, 2-1/4" x 2-1/2"
20	25246000	Blower Outlet Grille, 1-1/4" x 2-9/16"
21	25134000	Blower Outlet Grille, 3-3/4" x 2-1/4"
22	24071000	Rear Mounting Bracket, Lens Mechanism Housing
23	24041000	Slide Rod End Rail, Rear
24	25080000	Projection Lens Carriage
25	83144000	Projection Lens Barrel
-	24288000	Projection Lens, Compound; 1.5" F.L.
-	24323000	Lens Stop Ring, Rear
-	4080502	Ring Mounting Screw, 8-32 x 1/2" Socket Head (3 req'd.)
-	83155000	Spring Clip, Lens Retaining; Front

FIGURE 3 Parts List (continued)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
26	24095000	Mounting Ring, Negative Lens
-	24161000	Negative Lens, 3.5" Diameter Pyrex <i>(NOTE: Install 24161000 Lens with FLAT Surface facing Front Lens Assembly.)</i>
-	24094000	Lens Seal, Neoprene
-	4080502	Screw, 8-32 x 1/2" Socket Head
27	25090000	Front Lens Assembly (see Figure 4, 25090000 Assembly)
-	4250755	Mounting Screw (Ring Casting to Base Channel), 1/4-20 x 3/4"
28	7200895	Lens Mechanism Housing, Right Side
28	7200896	Lens Mechanism Housing, Left Side
-	4100501	Mounting Screw, 10-32 x 1/2" Phillips Truss Head
-	4107102	Finish Washer, #10 Black
-	23059A00	STRONG Insignia
-	51459000	SUPER TROUPER Insignia
-	45237000	Insignia, Roman Numeral "II"
29	25079000	Spot Focus Mechanism (see Figure 4)
30	24008000	Bottom Cover, Welded Assembly (early models)
31	25075000	Post, Spring Retainer (ref. Item 15)
-	4080502	Screw, Post Mounting; 8-32 x 1/2" Socket Head
-	4151371	Screw, Plate Mounting; 8-32 x 1/2" Button Head
32	24035000	Spacer, Small Pulley
-	4080502	Mounting Screw, Spacer
-	25062000	Pulley
-	5220506	Shoulder Screw, Pulley Axle
33	24035000	Spacer, Large Pulley
-	4080502	Mounting Screw, Spacer
-	25088000	Pulley (ref. Item 18)
-	51160000	Screw, Pulley Axle
34	24076000	Aperture Bracket (see Figure 5A for Iris detail)
-	25059000	Light Shield Plate
-	24309000	Light Shield Mounting Bracket (not shown, 2 req'd.)
35	25247000	Blower Grille
36	25229000	Right Brace, Side Plate
-	25230000	Left Brace, Side Plate (not shown)
-	25223000	Bottom Plate, Mounting Brace (see Figure 2, Item 17)
37	4310753	Wing-Head Screw, 5/16-18 (4 req'd.)
38	48877000	Fade-Out Bracket (see Figure 5, Item 31)
39	24037000	Slotted Cover Plate, Optical System Controls (2 req'd.)
-	24093000	Light Baffle, Rubber
-	4100501	Mounting Screw, 10-32 x 1/2" Phillips Truss Head

PARTS LIST

Figure 4

25090000 FRONT LENS ASSEMBLY (ref. Figure 3, Item 26)

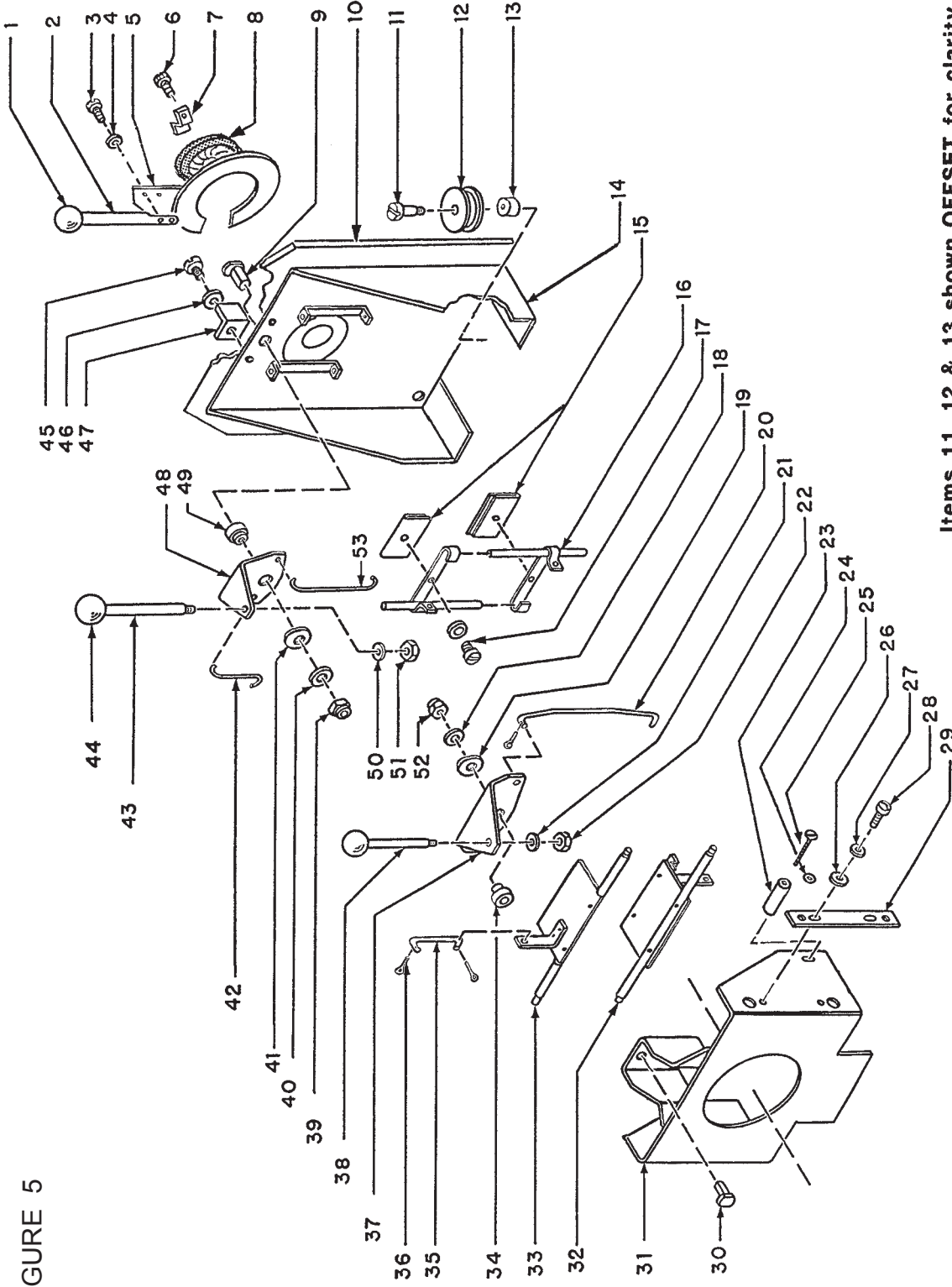
<u>Item</u>	<u>Part No.</u>	<u>Description</u>
1	4080375	Screw, 8-32 x 3/8" Pan Head (3 req'd.)
2	4087101	Flatwasher, #8 (3 req'd.)
3	25037000	Coated Lens, 8" Diameter, 30" F.L.*
4	24234000	Lens Gasket (2 req'd.)
5	25087000	Casting, Large Lens Ring
6	25037000	Coated Lens, 8" Diameter, 30" F.L.*
7	24233000	Lens Ring (2 req'd.)
8	4250755	Mounting Screw, 1/4-20 x 3/4" Socket Head (2 req'd.)

* Install 8 inch Lenses with *FLAT* Surfaces facing Lamphouse.

25079000 SPOT FINE FOCUS ASSEMBLY (ref. Figure 3, Item 28)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
9	25067000	Clamp, Focus Cable
-	4080374	Screw, 8-32 x 3/8" Socket Head
10	25091000	Rack Gear
11	25064000	Knurled Knob, Spot Focus Control (2 req'd.)
12	25083000	Bronze Bearing
13	4251002	Knob Mounting Screw, 1/4-20 x 1" Socket Head
14	25072000	Slide, Rack Gear Mount
15	25066000	Bracket, Cable Clamp
-	4060502	Screw, 6-32 x 1/2" Socket Head
16	25071000	Mounting Bracket, Focus Mechanism
17	4250507	Friction Screw, 1/4-20 x 1/2" Nylon Hex Head
-	4258015	Locknut, 1/4-20 Nylon
18	5220506	Pulley Axle
19	25062000	Pulley
20	25070000	Mounting Bracket, Focus Mechanism
21	25055000	Focus Shaft, Short
22	25083000	Bronze Bearing
23	25082000	Flex Coupler, Focus Shaft
24	25054000	Focus Shaft, Long
25	24062000	Spur Gear
26	2148011	Snap Ring, External
27	2148011	Snap Ring, External

FIGURE 5



Items 11, 12 & 13 shown OFFSET for clarity.

PARTS LIST

Figure 5

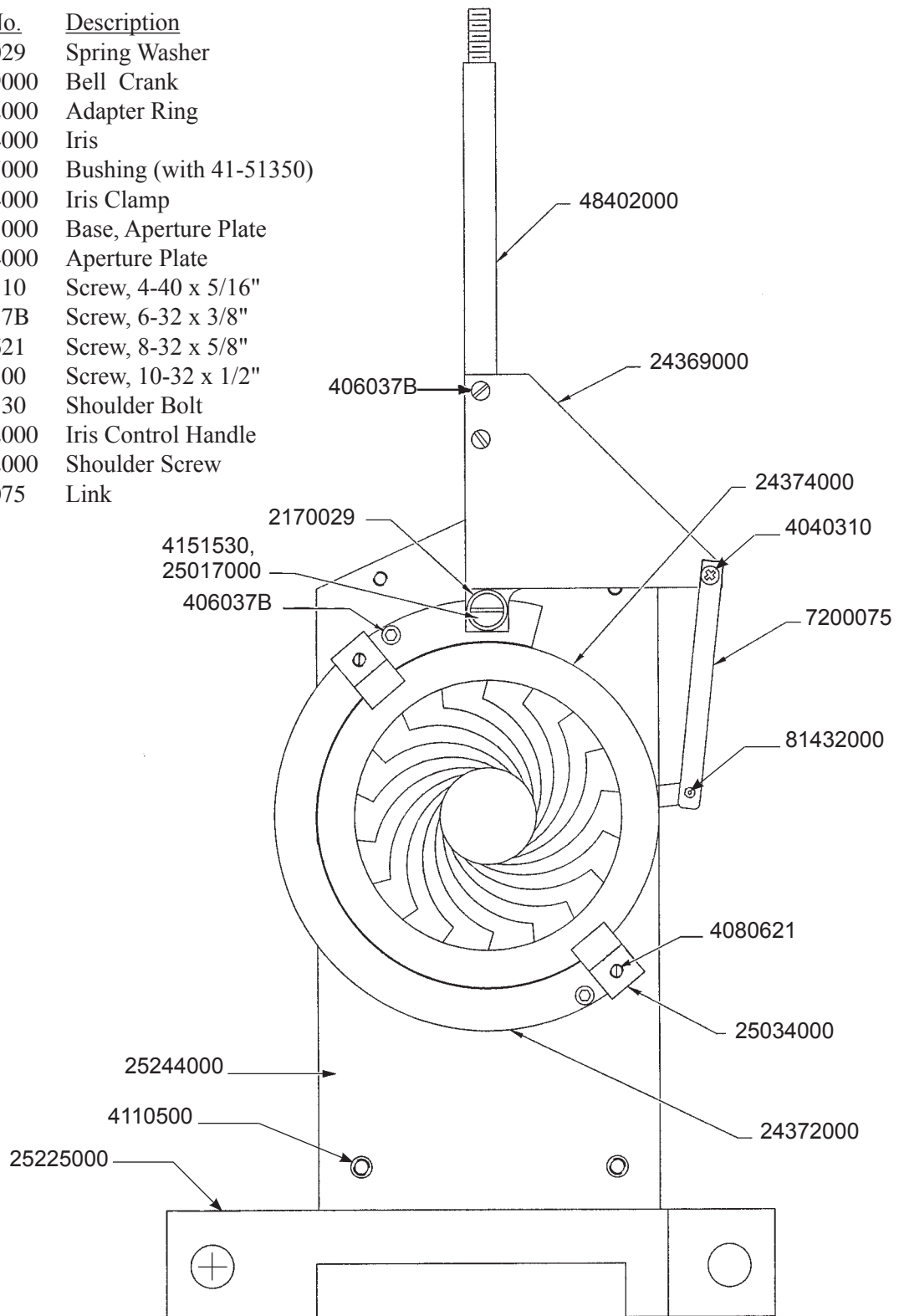
<u>Item</u>	<u>Part No.</u>	<u>Description</u>
1	10048A00	Knob, Red Plastic
2	48402000	Shaft, Iris Control Lever
3	4060310	Screw, 6-32 x 5/16" Fillister Head
4	4067001	Lockwasher, #6 Shakeproof
5	24369000	Bell Crank
-	4151530	Shoulder Screw, Bell Crank Pivot
-	25017000	Bushing, Shoulder Screw
-	24371000	Linkage Arm, Bell Crank to Iris
6	4080623	Screw, 8-32 x 5/8" Socket Head
7	25034000	Iris Clamp (2 req'd.)
8	24374000	Iris, 101mm (4") Diameter
-	24372000	Iris Back Plate, Split Ring
		<i>See Figure 5A for Iris Front View</i>
9	51226000	Pivot Stud
10	24059000	Light Shield, Aperture Bracket
-	24309000	Light Shield Mounting Bracket (not shown, 2 req'd.)
11	5151048	Pulley Stud
12	18106000	Rear Pulley (see Figure 3, Item 26)
13	24034000	Stand-Off Spacer, Pulley
-	4080502	Mounting Screw, Pulley Spacer
		<i>(Items 11, 12, 13 mount IN FRONT of Item 14 Aperture Bracket)</i>
14	24076000	Aperture Bracket, Welded Assembly (as shown; see Figure 5A)
15	47191000	Chopper Blade (Upper & Lower)
16	47982000	Slide Assembly, Lower Chopper Blade
-	47983000	Slide Assembly, Upper Chopper Blade
17	4080375	Screw, 8-32 x 3/16" Pan Head
-	4087001	Lockwasher, #8 Shakeproof
18	4257102	Flatwasher, 1/4" SAE
19	4507106	Friction Washer, Brass
20	51602000	Pull Rod, Long
21	4257000	Lockwasher, 1/4" Split Ring
22	4258001	Hex Nut, 1/4-20
23	51517000	Spacer (2 req'd.)
24	4107101	Flatwasher, #10
25	4101500	Screw, 10-32 x 1-1/2" Pan Head
26	4107100	Flatwasher, #10, .036" Thick Brass
27	4107001	Lockwasher, #10 Shakeproof
28	4100250	Screw, 10-32 x 1/4" Pan Head
29	51443000	Pivot Shaft Retainer Plate
30	1640-9 (ref.)	Pivot Stud, Fade-Out Control (welded to Item 31; Order 48877000)
31	48877000	Fade-Out Bracket, Welded Assembly
-	4080754	Stop Screw, Fade-Out Blade; 8-32 x 3/4"
-	4088001	Lock Nut, Stop Screw; 8-32 Hex

FIGURE 5 Parts List (continued)

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
32	48878000	Lower Fade-Out Blade
33	48879000	Upper Fade-Out Blade
34	51153000	Spacer Bushing
35	51515000	Pull Rod, Upper Fade-Out Blade
36	00919000	Cotter Pin, 1/16" x 1/2"
37	51520000	Bracket, Fade-Out Control Lever
38	51452000	Handle, Fade-Out Control Lever
-	10048A00	Knob, Red Plastic
39	4318004	Hex Nut, 5/16-18 FlexLoc
40	4257102	Flatwasher, 1/4" SAE
41	4507106	Friction Washer, Brass
42	51498000	Chopper Pull Rod, Short
43	51155000	Handle, Chopper Control Lever
44	10048A00	Knob, Plastic
45	4080250	Screw, 8-32 x 1/4" Pan Head
46	4087004	Lockwasher, #8 Shakeproof
47	47170000	Iris Stop Bracket (2 req'd.)
48	48406000	Bracket, Chopper Control Lever
49	51153000	Spacer Bushing
50	4257000	Lockwasher, 1/4" Split Ring
51	4258001	Hex Nut, 1/4-20
52	4318004	Hex Nut, 5/16-18 FlexLoc
53	51497000	Chopper Pull Rod, Long

FIGURE 5A

Part No.	Description
2170029	Spring Washer
24369000	Bell Crank
24372000	Adapter Ring
24374000	Iris
25017000	Bushing (with 41-51350)
25034000	Iris Clamp
25225000	Base, Aperture Plate
25244000	Aperture Plate
4040310	Screw, 4-40 x 5/16"
406037B	Screw, 6-32 x 3/8"
4080621	Screw, 8-32 x 5/8"
4100500	Screw, 10-32 x 1/2"
4151530	Shoulder Bolt
48402000	Iris Control Handle
81432000	Shoulder Screw
7200075	Link

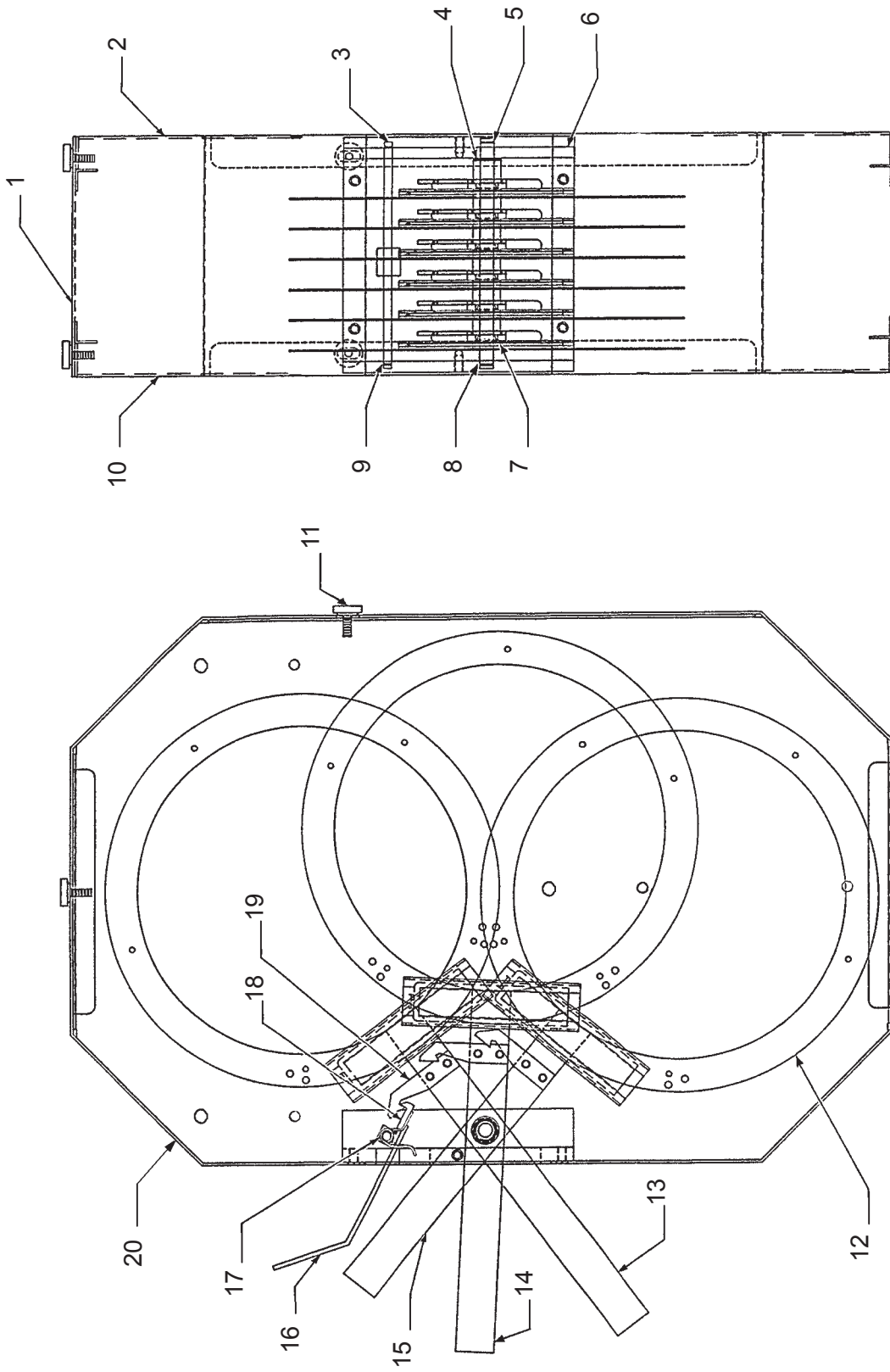


PARTS LIST

Figure 6

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
1	49120000	Tilt Axis Bolt
-	4378002	Hex Nut, 3/8-16
2	49943000	Lifting Strap (2 req'd.)
3	83743000	Yoke, Welded Assembly
4	25236000	Saddle & Quadrant, Welded Assembly
5	83341000	Cable Clamp
-	4250623	Mounting Screw, 1/4-20 x 5/8" Hex Head
6	65431000	Upper Retaining Collar, Inner Tube
7	4250623	Screw, 1/4-20 x 5/8" Hex Head
-	4257102	Washer, 1/4" SAE
8	49291000	Pan Swivel Stop
9	83357000	Yoke Cover Plate (2 req'd.)
10	83386000	Thrust Bearing
-	83388000	Bearing Race
11	65824000	Inner Tube, Welded Assembly
12	83742000	Base Support Column, Welded Assembly
13	4377103	Flatwasher, 3/8" SAE (4 req'd.)
14	49208000	Caster (4 req'd.)
15	49226000	Leveling Foot (4 req'd.)
-	4508001	Lock Nut, 1/2-13 Hex (4 req'd.)
16	83744000	Base Leg, Welded Assembly (4 req'd.)
-	83293000	Socket (for Item 16 Caster, 4 req'd.)
17	83745000	Leg T-Bolt, Welded Assembly (4 req'd.)
18	4433000	Screw, 7/16-14 x 3" Hex Head
-	4377103	Flatwasher, 7/16"
-	4438002	FlexLoc Nut, 7/16-14 Hex
19	48395000	Height Adjusting Pin, 3/8" Diameter
20	83381000	Swivel Clamp Collar
21	49290000	Clamping Shaft, Pan Tension
-	49114000	Handle Shaft, Clamping Shaft
22	10048A00	Knob, Red Plastic (3 req'd.)
23	49130000	Handle Shaft, Quadrant Clamp
24	49129000	Quadrant Clamping Shaft
25	49124000	Clamp Bushing
26	49125000	Compression Spring, Quadrant Clamp
27	25131000	Nylon Washer (2 req'd.)
28	7201021	Clamping Plate
-	18765000	Floor Stand Assembly, Collapsible (Items 12 - 18)

FIGURE 7



ST2/042

7201220 Safety Cable & 3198643 Carabiner Clip *not shown*

2412400 COLOR BOOMERANG ASSEMBLY

PARTS LIST

Figure 7

<u>Item</u>	<u>Part No.</u>	<u>Description</u>
1	24141000	Outer Panel, Welded Assembly
2	24130000	Front Panel, Welded Assembly
3	51526000	Rocker Catch Pivot Shaft
4	51398000	Spacer Washer (6 req'd.)
5	51527000	Pivot Shaft, Color Frames
6	24113000	Mounting Frame, Color Discs
7	51399000	Spacer
8	91199000	Snap Ring, Truarc #5133-31 (2 req'd.)
9	45209000	Snap Ring, Truarc #5144-18S (2 req'd.)
10	24131000	Rear Panel, Welded Assembly
11	31875000	Thumb Screw (4 req'd.)
12	51928000	Color Frame & Slide Channel, Welded Assembly (6 req'd.)
-	51376000*	Cover Plate for 51928000 (not shown; 6 req'd.)
-	1456000*	Brass Fastener, Cover Plate to Color Frame (not shown)
13	24123000	Color Disc Arm (8-3/4"), Welded Assembly (2 req'd.)
14	24122000	Color Disc Arm (8-1/4"), Welded Assembly (2 req'd.)
15	24121000	Color Disc Arm (7-3/4"), Welded Assembly (2 req'd.)
16	24117000	Color Arm Release Lever
17	24140000	Torsion Spring (2 req'd.)
18	24116000	Rocker Catch, Color Arm
-	51505000	Rubber Pad, Rocker Catch
19	51396000	Catch Hook, Color Arm (6 req'd.)
-	4080377	Hook Mounting Screw, 8-32 x 3/8" (2 per Hook req'd.)
-	4087004	Lockwasher, #8 (2 per Hook req'd.)
20	25159000	Side Panel, Welded Assembly

* 51376000 & 01456000 not included with 24124000; *order separately.*

Spotlight Accessory Kit Includes:

47215000	Color Gel, Light Red (RoscoLux #26)
47216000	Color Gel, Primary Blue (RoscoLux #80)
47217000	Color Gel, Sky Blue (RoscoLux #68)
47218000	Color Gel, Daylight Blue (RoscoLux #65)
47219000	Color Gel, Flesh Pink (RoscoLux #34)
47220000	Color Gel, Golden Amber (RoscoLux #21)

Theatrical Supply Dealers generally stock a complete selection of color media and color temperature correction filters. Specify ROSCOLUX® or equivalent *high temperature* gels.

