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INSTALLATION INSTRUCTIONS
OPERATING MANUAL
and PARTS LIST

Ashcraft

SUPER

CORE-LITE®

MOTION PICTURE PROJECTION LAMP AND RECTIFIER

Manufacturers of the finest in arc-light projection equipment

C. S. ASHCRAFT MANUFACTURING COMPANY, INC.
36-32 THIRTY-EIGHTH STREET LONG ISLAND CITY, N. Y.

U.S. PAT. NO. 3,308,715 FOREIGN PATS. PENDING

INDEX

ASHCRAFT SUPER CORE--LITE
(Patent Approved)

35/70 MM

PROJECTION ARC LAMP

IMPORTANT!!!

Before starting the installation of SUPER CORE-LITE Arc Lamps, read this instruction manual carefully. A good installation with perfect screen lighting depends upon your knowledge of the optical and mechanical characteristics of this arc lamp.

The SUPER CORE-LITE uses a standard 13.6mm x 18" high intensity positive and 7/16" x 9" SPECIAL copper coated negative carbons throughout the entire current range of 135 to 165 amperes. The working distance is 29-1/2" to 29-3/4" from the rear surface of either our own Front Surface Coated Cold Reflector or optional B. & L. Balcold Reflector to the film aperture. NO CHANGE in reflectors or this working distance is necessary--regardless of the projection process (35mm or 70mm) used.

Make sure the arc lamp independent exhaust system is of adequate capacity and of the basic design recommended by this manufacturer. Refer NOW to the section in the manual covering "Lamphouse Ventilation and Projection Booth Exhaust System Recommendations" and drawings of the arc lamp independent exhaust system.

The Ashcraft 18 inch Front Surface Coated Cold Reflector in the Super Core-Lite operating at an exclusive 29-1/2" optical working distance projects an extremely large diameter, low angle cone of light on to the aperture film plane. At this point of interception of the light beam, only the pure white light from the magnified positive carbon core enters the aperture. The harmful yellow, brown and red rays of the shell of the positive carbon are dissipated on to the water-cooled projector aperture plate preventing them from entering the lens and reaching the screen. Light vignetting losses in the projection lens are reduced or elimimated and quality of projection is improved due to the fact that the light and heat from the highly magnified core of the positive carbon is more evenly distributed over the entire film surface.

Every SUPER CORE-LITE Arc Lamp is precision made and assembled with expert care. It is thoroughly tested under actual operating conditions and with a few simple adjustments to the arc scope and arc feeding controls to meet local electrical conditions, the lamp is ready for operation.

INSTALLATION OF THE SUPER CORE-LITE ON VARIOUS PROJECTOR MECHANISMS

The Super Core-lite is a new and modern arc lamp. Its system of optics is new and superior and the lamp will function at peak efficiency when installed for use with a modern projector mechanism which has been cleared to pass the high speed light beam of the Super Core-lite. Modifications of some projector mechanisms are necessary and some mechanisms require no modification. Always specify on your order the make and model of projector on which the Super Core-lite will be installed.

These are our recommendations for the installation of Super Core-lite arc lamps for use with various projector mechanisms:

CENTURY MODELS

No modifications necessary but use of water cooled film traps is recommended. Some earlier models require removal of light cone or funnel to attain proper working distance and rear shutter housing must be opened to permit passage of full light beam through shutter to the film.

NORELCO 35/70mm

No modifications necessary on new models. Special mechanism rear plate cover without light cone or funnel for older model mechanisms will be provided if specified when lamps are ordered. Special lamphouse sub-base castings are necessary on some older models and will be supplied by the factory at additional cost.

SIMPLEX XL and SIMPLEX 35/70mm

No modifications in mechanism necessary but use of water cooled plates is recommended. Remove temporary sheet metal panel on left front of the lamphouse and this will permit mechanism revolving shutter casting to fit into the lamphouse slot to attain the proper working distance of 29-1/2" - 29-3/4". Special shutter casting slots are provided in the lamphouse at the factory if your order specifies "For use with Simplex 35/70 projectors."

CINEMECCANICA V-8

A slight modification in the mounting of the door of the exciter lamp housing assembly of the sound head is necessary and this modification can be made by the Cinemecannica dealer if he is told that the projector will be used with Super Core-lite arc lamp. The working distance will be 29-3/4" to 30".

BAUER U-2 35/70

Basic design of projector prohibits a working distance of less than 30", which slightly reduces the white light distribution. This slight reduction in white light distribution still places the Super Core-lite in a preferred position to any other arc lamp for use with the Bauer U-2 projector.

BRENKERT BX-100 or BX-80

The Super Core-lite may be used with this projector if water cooled film traps are installed and if the rear shutter housing casting is removed to permit passage of the full light beam through the shutters to the film. Working distance must not be less than 30-1/4" to prevent a new full length 18" positive carbon from interfering with the operation of the projector shutter. White light distribution possibilities will be reduced as a result of this extended working distance. However, screen results are still far superior than when these projectors are used with any other arc lamp.

SIMPLEX REGULAR REAR SHUTTER: SUPER SIMPLEX: or E-7

The Super Core-lite is not recommended for use with these projector mechanisms because the cooling plates or film traps are not water cooled and the mechanisms are not cleared for the passage of the full high speed light beam of the Super Core-lite.

MOTIOGRAPH - ALL MODELS

Barrell type rear shutter interferes with obtaining proper working distance and will not permit passage of the high speed light beam. Under no circumstances should such an installation be attempted.

* * * * * *

NOTE

In some installations where large upper magazines or penthouse magnetic soundheads are used, there may be some interference preventing the obtaining of the correct working distance. In case of such interferences, it will be necessary to tilt forward the magazine, using diagonal wedges. Some installations require only a slight change and this can be accomplished by placing washers between the magazine and the upper portion of the projector casting.

UNPACKING

1) Shipping case should be placed with side marked "THIS SIDE UP" facing upwards.
2) Remove steel strapping from around case.
3) Remove all nails from around edges on top of case including those at joints or cross bracing. Remove top.
4) Remove nails which hold all the cross bracing securing the lamp to inside of case.
5) Remove the five (5) square-head nuts from the bolts which secure the three braces at the bottom of the lamp to the packing case. Two nuts will be found at the rear of the lamp, two at the front, and one on the side.
6) Lift lamphouse from packing case, using chrome plated lamphouse door tubes as lifting handles.
   A brace from the packing case should next be placed at right angle to the lamp on the burner mechanism side at the approximate center of the lamp.
7) Carefully tilt the lamphouse over so that it rests on its left side (or burner mechanism side), be careful not to damage the negative control assembly, remove the four (4) hex-head bolts and washers, holding wood base rails to base of lamp. Do not discard these bolts and washers, they are to be used for securing the lamphouse to pedestal.
8) Open lamphouse rear door and remove carton containing accessories for the installation and operation of the lamp. This carton contains three hoses c/w couplings (two 6' long and one 4' long), oil, collet wrench, and a set of hexagon wrenches. Also locate the manila envelope packed with every pair of lamps. This contains the manual and positive carbon positioning focus gauges for use with Balcold reflectors. If your lamp is equipped with front surface coated reflector the positive carbon focus gauges will be found packed in the reflector cartons.
9) Where Simplex XL 35 or 35/70 Projectors are used, remove the metal plate cover at the left front of the lamphouse. This opening is to permit the shutter housing to fit into the lamphouse front. On most other projectors removal of this plate is not necessary.
10) Set lamphouse on projector pedestal. Using four 3/4 inch long hex-head bolts and washers (see Item #7) fasten the lamphouse to pedestal. Do not tighten bolts securely until lamp has been optically aligned. Some pedestal bases may require longer lamphouse mounting bolts.

CAUTION: Do not use bolts of such length that they protrude through the lamphouse base rails and into the sheet metal lamphouse base. This could seriously damage the lamphouse base and the Blower duct system.

PLACING THE REFLECTOR IN THE LAMPHOUSE

After setting lamphouse on projector pedestal, the next procedure is the placing of the reflector into the lamphouse prior to the optical alignment. The following steps should be taken in this operation:

1) Remove the large duct (sub base) covering the lamphouse base by removing the wing nuts under the base and lifting out of the lamphouse.

2) Remove the reflector air directional chute and ash tray located on the lamphouse base directly in front of the reflector ring by unscrewing the wing screw.

3) It is not necessary to remove all of the clips and screws from the reflector ring casting support brackets, of which there are three (3).

4) Remove only the clip (CS 8452) and two screws (CS 8452S), located on the reflector ring casting support bracket in the lower part of the lamp on the operating side.

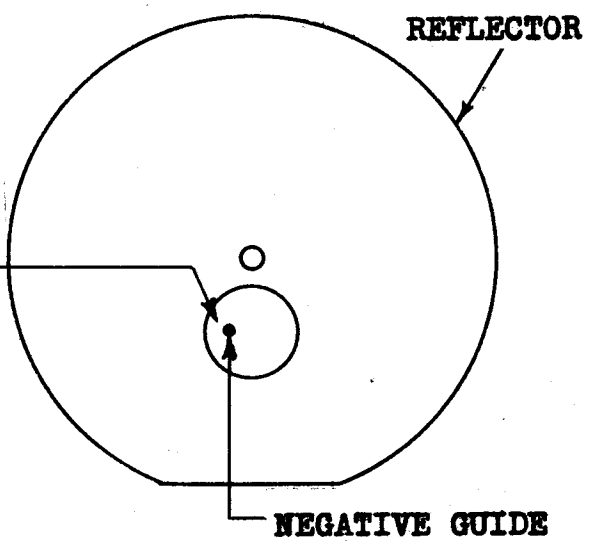
5) Open lamphouse rear door wide, operating the Negative Manual Control Knob CN-4424, PULL BACK Negative Jaws CN-4312 their full extent.

6) Before inserting reflector inspect the three (3) flat Reflector Springs CS-8453AS. They should be in direct line with the webs of the ring as shown in Fig.16 . They may have moved in shipping. If not in their correct position, line up as described and tighten screws.

7) When placing the reflector in the lamphouse reflector ring, tilt the top forward towards lamphouse front with the cut-off section parallel with the lamphouse base. Carefully insert the reflector so that the negative carbon guide enters the large hole in the reflector. DO NOT strike the reflector against the negative carbon guide or the positive contacts. Insert the reflector behind the left-hand reflector ring clip and then behind the top clip. Push in the right hand side of reflector, hold in position and replace the clip and screw.

8) Be sure the reflector does not touch the negative carbon guide, at least 1/8" - 3/16" clearance should be minimum. See Fig. 1 . This can be obtained by rotating the reflector right or left until clearance is obtained. The reflector should have slight clearance all around inside the support brackets. Push reflector up, down, and sideways to determine this. Also the three springs CS 8453-AS should not clamp the reflector against the clips. The springs should only press the reflector lightly against the clips. This may be determined by pressing on the reflector at the clip position. When inserting or removing the positive carbon never allow it to come into contact with the reflector.

The lamp is now ready to be optically aligned with the projector.



When installing reflector in holder rotate reflector right or left to obtain 3/16" minimum clearance between reflector hole and the negative guide.

When placing reflector in holder the sub base and reflector air directional chute must be removed. When replacing air directional chute make certain it is placed in front of the reflector.

FIG. 1

OPTICAL ALIGNMENT

Proper optical alignment of the lamp with the center of the aperture (Picture frame) and optical axis of the lens is of utmost importance in order that the maximum light and distribution is obtained on the screen.

The lamp should be moved as far forward toward the projector mechanism as possible. The working distance, measured from the rear surface through the reflector center hole to the aperture plate is to be 29-1/2 to 29-3/4 inches. When this distance is obtained tighten the four (4) mounting bolts on base of lamp. This secures the lamphouse to the pedestal at the correct working distance.

Now that the prescribed working distance is obtained and the lamp secured, remove the reflector to prevent possible damage while aligning the arc lamp with the projector. Do not replace reflector until after the correct arc current has been obtained for a stable arc.

Fig. 2 shows the only precise method of obtaining the proper alignment (do not use a string for this purpose). The line-up tools shown in Fig.2 are manufactured by the C. S. Ashcraft Mfg. Co., Inc. Your National or Lorraine Carbon representatives have these for your use, or they can be purchased from your theatre supply dealer.

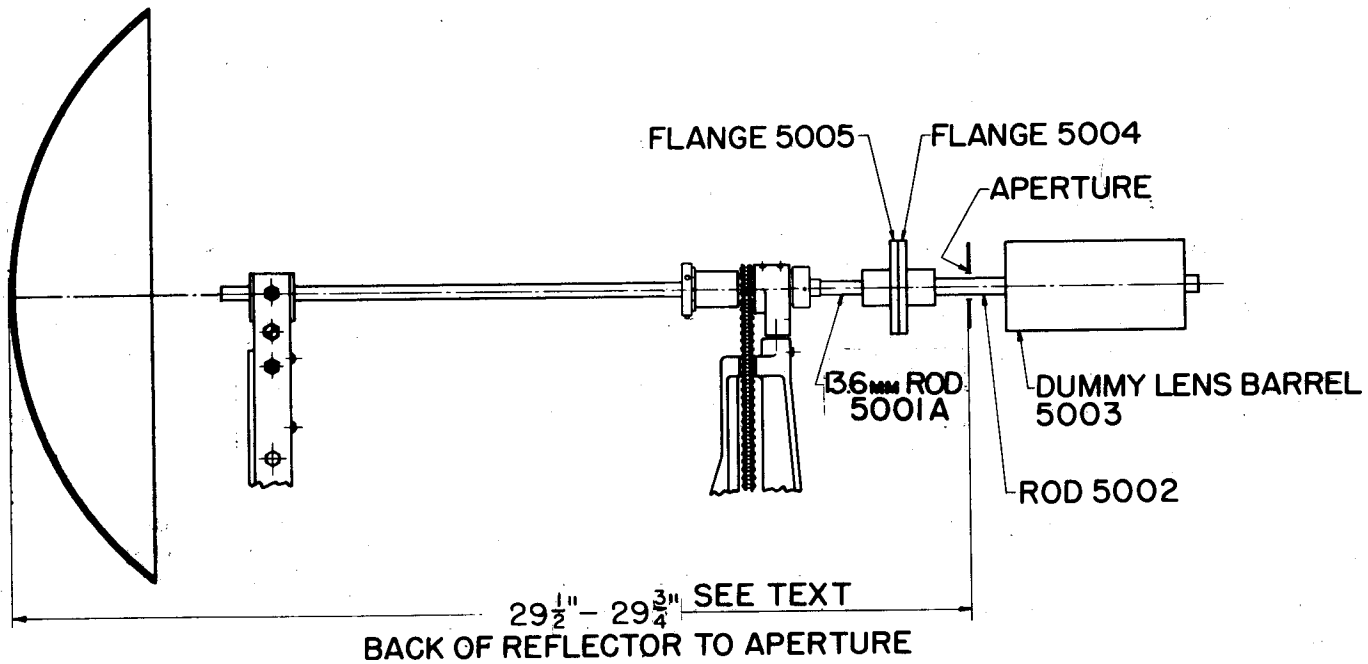


FIG. 2

Raise all shutters out of way for insertion of rods. Insert the 13.6mm rod 5001A through the carbon tube in the lamphouse back, through the positive carbon contacts and the rotating collet.

The dummy lens 5003 is clamped into the projection lens holder. Place the 1/2" rod 5002 through the hole which is in the exact center of the dummy lens, push the 1/2" rod through the projector and into the lamphouse. Now place flange 5004 on the end of rod 5002. Place flange 5005 on the end of the 13.6 mm rod just to the rear of the rotating head.

When the two flanges are brought into contact, not only should they be even all around their periphery, but the two flat surfaces should be parallel. If they are not, adjustments are necessary through vertical and lateral adjustments of the lamphouse bedplate which is a part of the projector base.

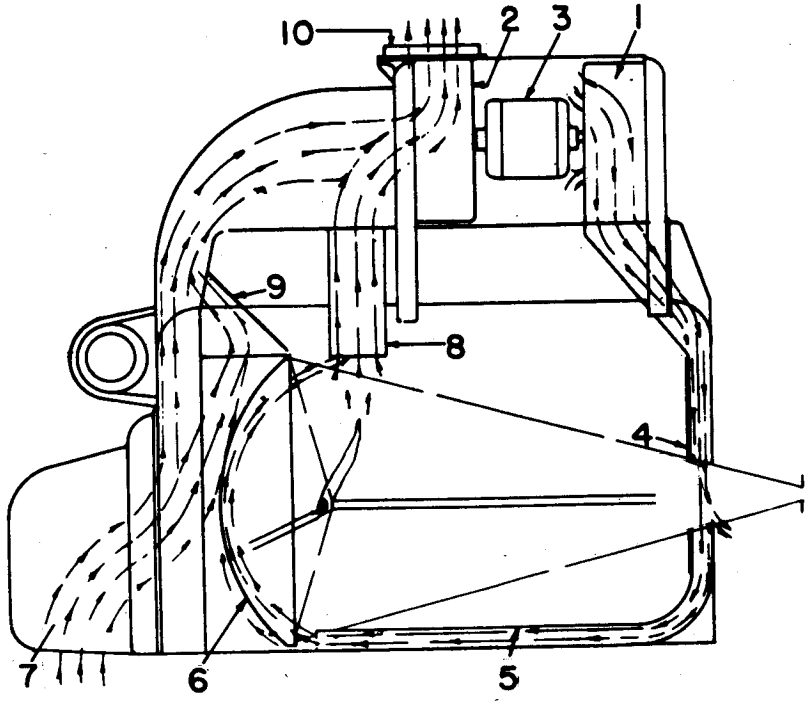
In some instances the projector vertical and lateral adjustments are not sufficient to enable perfect alignment. To offset this condition it will be necessary to loosen the lamphouse mounting bolts without altering the working distance, and place shims over the bolts between the lamphouse and projector base at the necessary points, retighten mounting bolts and then align the lamp using the projector base adjusting screws.

Each Super Core-lite lamp is tested under actual operating conditions at our factory. The prescribed working distance of 29-1/2" - 29-3/4" is used with a standard projection lens. The maximum light is obtained with the highest percentage of white light distribution, then the arcscope is adjusted with the lines on the arcscope screen. (The arcscope screen is mounted inside the arcscope screen holder CN-4801. When shipped with the lamp the holder is placed in an upright position for shipping purposes only. Change the position of the holder so that the arc-image lines appear vertical).

Make sure no changes are made unless you are sure such changes are justified and necessary.

LAMPHOUSE VENTILATION AND PROJECTION BOOTH EXHAUST SYSTEM RECOMMENDATIONS

Fig. 3 shows the forced cold air injection and hot air exhaust system built into the Super Core-lite lamphouse. The purpose of this system is for heat reduction within the lamphouse, protection of the glass reflector and mainly to exhaust heat rapidly from the lamp to the booth exhaust system.



AIR CIRCULATING SYSTEM

FIG. 3

This illustration shows the air flow throughout the lamphouse. The continuously operating A C. Blower motor 3 drives injection blower 1 and exhaust blower 2. Air enters blower 1 as shown by arrows, is forced downward through the front ducts 4 through the lamphouse base duct 5 and then over the surfaces of the reflector 6. Exhaust blower 2 draws the heat and smoke from the arc out exhaust tube 8, at the same time it also draws cool air through the opening in the rear door 7, passing it over the back of the reflector and mechanism located on the lamphouse back, then through duct 9 and into the large mixing duct and finally expelling the air out stack 10 into the booth exhaust system. This very complete and efficient air circulator system of the lamphouse, however, can be severely impaired unless the proper duct and blower system is installed in the projection room. Under no circumstances should any attempt be made to operate the lamps without a separate booth exhaust blower in operation.

Fig.4 shows several recommended methods of booth exhaust systems for the Super Core-lite projection lamps, and the following are our specifications and additional recommendations to insure a very efficient lamphouse and booth exhaust ventilating system.

1) Each lamphouse blower expells approximately 220 C.F.M. into the recommended 8" vertical exhaust pipe.

2) A blower large enough to supply a minimum of 250 C.F.M. at each lamp exhaust outlet should be selected.

3) If a low booth ceiling reduces the recommended straight run of the exhaust from the lamphouse, the C.F.M. rating per lamp should be raised to 300 C.F.M. to eliminate any back pressure.

4) It should be noted that the C.F.M. ratings are for lamps only, length of exhaust system run, bends, and other restrictions should be taken into consideration when selecting the correct size exhaust blower.

5) We recommend an exhaust blower larger than the minimum requirements. The correct draft may then be adjusted to each lamp by the use of by-passes.

6) Sliding by-passes are recommended, however dampers may be used on the extreme ends of the exhaust system to admit air and reduce the draft if necessary.

7) Under no circumstances should dampers or other obstructions be placed in the path of exhausted air from the lamphouse in order to reduce the draft.

8) Normally a 750 C.F.M. exhaust blower will be sufficient for Drive-In theatres operating two lamps with a short exhaust run. A 1000 C.F.M. exhaust blower is recommended for indoor theatres operating two lamps with a long exhaust run.

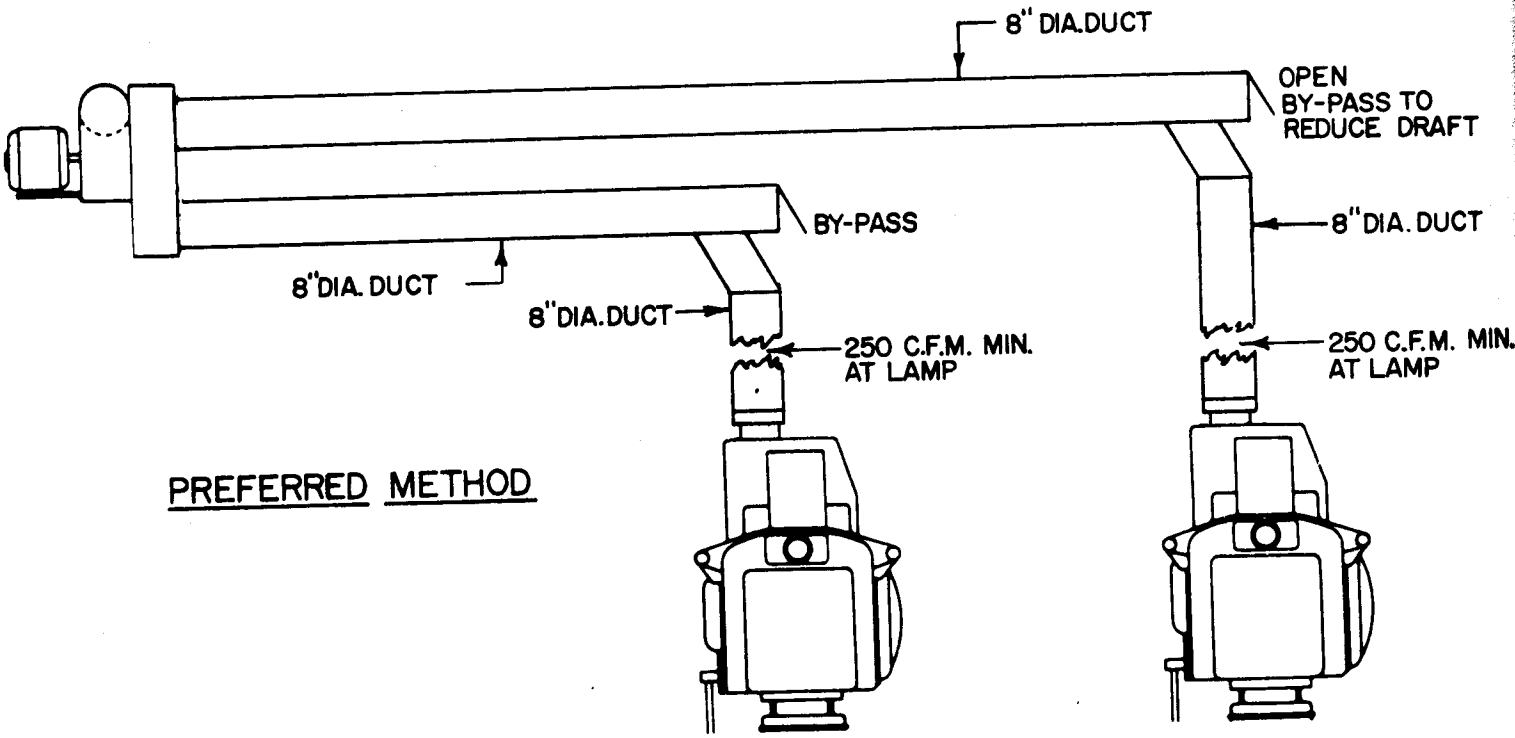
9) The booth exhaust blower should be used for the arc lamps only, not to ventilate other requirements.

10) Lamphouse rear door should remain closed during operation of the lamp.

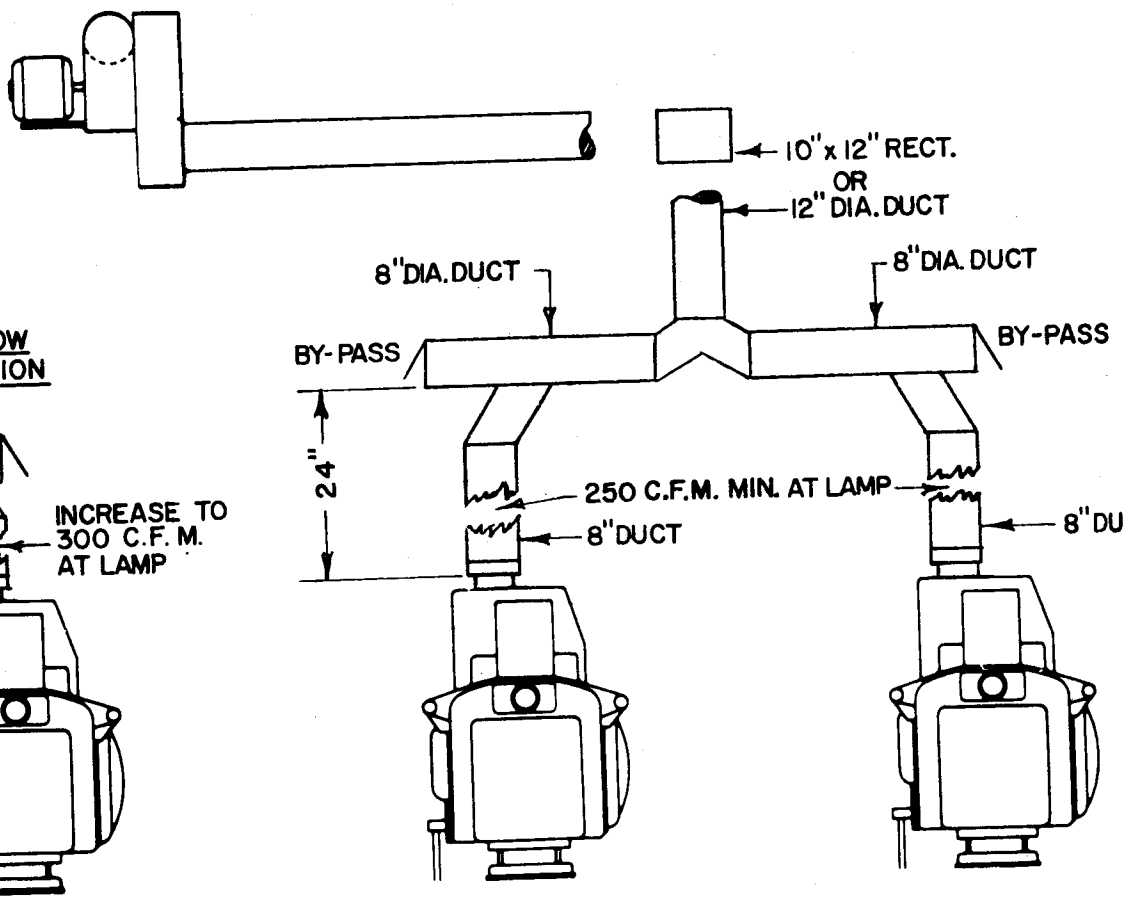
11) It is suggested that after the end of each reel the arc lamp doors remain closed and the projector be threaded for the next reel before trimming the arc lamp. This will allow the exhaust system to draw the hot air from inside the lamphouse and gradually cool the reflector. Thermal shock from cold air drafts is then eliminated.

The above is especially suggested in projection booths that are air conditioned or where the projection booth doors are left open at night allowing cold air to enter booth.

RECOMMENDED PROJECTION BOOTH EXHAUST SYSTEMS
SUPER CORE-LITE & SUPER CINEX PROJECTION LAMPS



PREFERRED METHOD



SATISFACTORY METHOD

RECOMMENDATIONS FOR LOW CEILING BOOTH VENTILATION

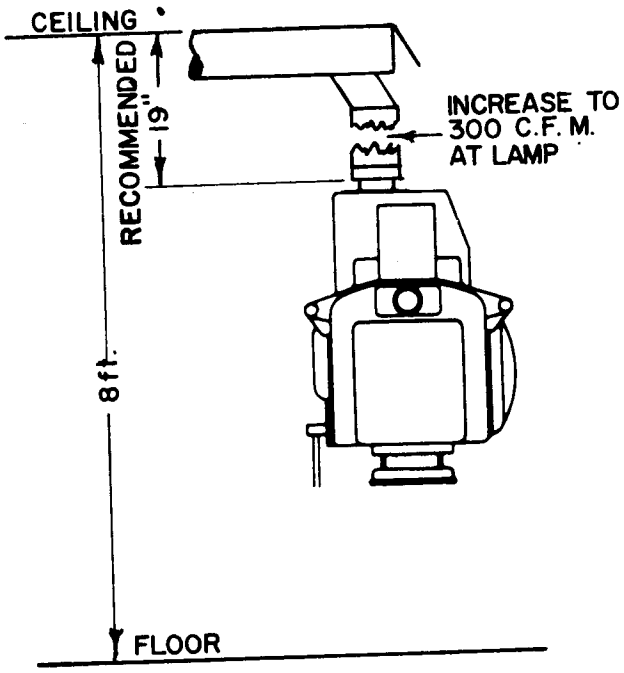


FIG. 4

SUBJECT: Probable causes of cracked reflectors with reference to exhaust systems.

1) Insufficient exhaust draft - exhaust blower too small - use of dampers instead of by-passes.

2) Excessive exhaust draft resulting in breakage of lamphouse port glass and instability of arc.

3) Improper positioning of reflector in the holder, allowing the negative carbon guide to touch the reflector.

4) In Drive-in theatre installations where extreme changes in humidity and temperature occur between shutting down and opening of operations dails, a portable 150 watt lamp should be placed inside the lamphouse to maintain warm and dry air within the lamphouse when not in operation.

CONNECTING ELECTRICAL WIRES

The Super Core-lite Arc Lamp has been assembled at the factory with all electrical connections having been made.

The arc lamp asbestos-covered leads are firmly attached, the positive to the terminal panel, negative to the shunt. The positive and negative leads should be attached in proper polarity with the D. C. power supply.

It is recommended that the 115 Volt A.C. supply for the operation of the lamphouse blower and ventilating system, pilot lamp, and negative feed control motor and also the 115 Volt A.C. water recirculator be connected into a circuit which will permit them to run continuously.

The flexible conduit CS-10 contains two wires for the A.C. input to the electrical units of the lamp. It is recommended that these wires be connected in solidly to the 115 volt A.C. supply. An alternative is that an armoured twist lock-cap be attached to these wires and flexible conduit and inserted in a corresponding receptacle. The twist lock will prevent accidental disconnecting of the circuit. These methods of wiring also apply to the A. C. Water Recirculator.

After completing the wiring of the 115 Volt A.C. circuit, the CS-10 flexible cable is to be placed beneath the two cable clamps located near the plate marked "Neg. Feed Increase".

Special safeguards should be provided to eliminate any possibility of the arc being struck without the water recirculator and lamphouse blower in operation. Any failure of these two units will endanger the reflector and positive contact jaws.

Wiring diagrams of the Super Core-lite lamp and the Ashcraft S/1712R Selenium Rectifier are shown in Fig. 9 and 10 of the manual. Super Core-lite lamp wiring diagrams are also located inside the terminal cover CN-4042 and fuse box cover CS-12.

CONNECTION OF WATER SUPPLY

We highly recommend the use of the Ashcraft A.C. Water Recirculator for supplying water to the arc lamp for cooling of the positive contacts. The Ashcraft water recirculator is designed for continuous operation throughout the complete theatre operation period, and if used, the 115 Volt A.C. line connection to the recirculator motor must be wired as per instructions covered under "Connecting Electrical Wires", and we must stress that a special safeguard be provided to eliminate any possibility of the arc lamp being operated without the water recirculator in operation. Any failure of the recirculator will endanger the positive water-cooled contacts.

WATER CONNECTIONS

Two (2) 6 ft. hoses complete with couplings on one end of each hose, one (1) 4 ft. hose complete with a coupling on each end are supplied with each Super Core-lite lamp.

When the Water Recirculator is used for the arc lamp only, the couplings on the 6 ft. hoses are to be connected securely to the SC-122 unions on the SC-123 water terminal block located on the distribution panel on the left side of the lamp. The hose attached to the "IN" union on the water terminal block SC-123 is to be connected to the outlet connector R-32 on the recirculator.

Packed with every water recirculator is one (1) #1805 coupling. This coupling is to be attached to the other hose of the lamp and then connected securely to the R-16 union on the return flow indicator assembly of the recirculator. Reference should be made to the water recirculator manual for additional information on its installation, operation and maintenance.

CAUTION

Under no circumstances connect metal tubing to the lamphouse water system. The SC-123 water terminal block is energized, being of positive polarity. A metal tubing connected to this block will cause a short circuit to ground which will damage the lamp.

CONNECTING A WATER COOLED APERTURE IN THE WATER SYSTEM

While the Ashcraft Water Recirculator is capable of supplying water to both lamp and water cooled aperture it is of utmost importance that the water-cooled apertures be correctly designed.

No water-cooled apertures should be connected in series with the lamp which will reduce the water flow beyond a safe minimum. Apertures which cause extreme resistance to the water flow in the contacts may result in damage to the contacts particularly if there is sediment or alkali in the water.

When installing the recirculator in conjunction with arc lamp and a projector with a water-cooled aperture the water connections must be made in the following manner.

One end of the 6 ft. hose is to be connected to the outlet connector R-32 on the recirculator and the other end connected to the "IN" connector SC-122 on the water terminal block SC-123. Next, one end of the 4 ft. hose c/w couplings (packed with lamp) is connected to the remaining SC-122 connector and the other end connected to the input of the water-cooled aperture. The remaining 6 ft. hose is connected to the outlet of the aperture to the union R-16 on the return flow indicator on the recirculator.

The terminal cover CN-4042 which had to be removed for the installation of the water connections may now be replaced and secured by the four (4) mounting screws.

And now - most important! Use only distilled water in the recirculator. Fill the tank within 1-1/2 inches of the top and check the water level periodically. Do not over-fill. City or tap water may be used in short emergencies but its chemical content will eventually constrict the metal tubing and orifices in the silver contacts.

CARBON SIZE - ARC CURRENT - CARBON CONSUMPTION

CARBONS:

Both the National Carbon Company and the Lorraine Carbon Company make the proper carbon for use in the Super Core-lite lamp - use no other than those recommended.

The National Carbons should be:

Positive 13.6 x 18"	L-0112
Negative 7/16 x 9"	L-1132 Special

The Lorraine Carbons should be:

Positive 13.6 x 18"	552-09
Negative 7/16 x 9"	559-C Special

Do not use heavy duty negative carbons or types other than those recommended.

ARC CURRENT - CARBON CONSUMPTION

The Super Core-lite lamp has a recommended arc current range of from 130 to 165 amperes. The current to be used will, of course, be determined by light intensity required, the efficiency of the lenses - the reflectivity of the screen and the light transmission of the projector shutter.

Operating with an Ashcraft S/1712/R Rectifier, the standard 13.6 mm x 18" positive carbon, economically priced will project approximately

5 reels at 130 - 140 amperes
3-4 reels at 150 - 155 amperes
2-3 reels at 160 - 165 amperes

Positive carbon consumption at 130-165 amperes is approximately 8 to 20 inches per hour.

DETERMINING AND ADJUSTING THE CONTACT PRESSURE

When the Super Core-lite lamp leaves our factory the positive contact assembly has been thoroughly tested and expertly adjusted.

The correct pressure of the contacts SC-101 and SC-102 on the carbon is important. The best method of determining the ideal pressure is to insert a short length (approximately 4") of 13.6 mm carbon through the contacts and revolving the carbon with the fingers. There should be no looseness or extreme pressure, the carbon should rotate easily but the pressure should be firm. Extreme pressure is unnecessary and may be injurious to the rotating mechanism over a long period of operation. The diameter of carbons vary approximately 1/64". Therefore, allowance must be made for this variation.

On the movable contact SC-102 an adjusting screw SC-115 is located for varying the contact pressure, a locknut SC-103N locks the adjusting screw in position. Before any attempt is made to adjust the contact pressure be sure the knurled swivel nut SC-109 is tight - this nut is the only part that holds the entire movable contact arm in position. It should always be screwed securely in position with finger pressure, never use a wrench or pliers for tightening.

To adjust the contact pressure, loosen the locknut and turn the screw clockwise to increase the pressure. The screw presses against the pressure spring SC-107. After the proper contact pressure has been adjusted lock the adjusting screw nut SC-103N so that the adjusting screw cannot turn.

INSERTING THE POSITIVE CARBON

Insert the positive carbon through the carbon entrance tube in the lamphouse back, through the contacts and into the rotating collet. The rear end of the positive carbon will pass through the transite dowser plates which have been designed for this purpose.

As mentioned previously in the "Unpacking" instructions item 8, positive carbon positioning gauges are shipped with every Super Core-lite using Balcold reflectors and if front surface reflectors are to be used the gauges are packed with the reflectors. For instructions on the positioning of the positive carbon and the use of respective gauges consult instructions under "Super Core-lite arc and relative carbon positions".

A plastic-handled Allen wrench is provided for insertion into the collet set screw SC-8122XS for locking the carbon in the rotating collet. Extreme pressure is not necessary for locking the carbon. Moderate pressure brings all three prongs of the collet into contact with the carbon, holding it securely.

On occasions when operating the arc lamp it will be found that the collet locking set screw SC-8122XS, due to the collet rotation, has stopped in a position which makes it slightly difficult to lock and unlock the collet. To overcome this, you will find directly opposite the set screw a hole located in the collet collar. The Allen wrench may be inserted into this hole and, using the wrench, pull the collet around until the collet locking set screw is in a more convenient position. No harm can come to the burner mechanism as the design of the slip clutch assembly (see gearing assembly Fig. "A") compensates for this operation.

INSERTING THE NEGATIVE CARBON

Release locking handle CN-4310 by rotating counterclockwise.

Place the carbon in the front of the jaws. Pressing on the rear of the jaws will open the front ends. After the carbon is in position, move the locking handle clockwise as far as possible to its stop. Never leave the handle in any other position as it may alter the position of the arcing end relative to the positive crater and may affect the correct burning of the arc.

The negative carbon jaws should clamp the carbon tightly. If at any time they do not, the pressure can be increased by placing a 3/8" diameter rod crosswise of the jaws at the position marked "A" and pressing the jaws together at the forward end. The jaws are made of bronze so they will not break. Do not push down on the jaws but squeeze them together, otherwise the mounting casting may be damaged.

The negative carbon must not be loose in the negative guide CN-4325 "V" groove but pressed firmly down into the groove otherwise the position of the negative carbon relative to the positive carbon crater may vary, requiring frequent readjustment of the negative carbon position.

If the pressure of the negative carbon in the groove is insufficient it may be adjusted by loosening screw CN-4317 located on the negative carbon carriage and tightening screw CN-4318. When making adjustments a negative carbon should be clamped securely in the negative jaws, the negative jaws then drawn back using the negative manual control until the tip of the negative carbon is directly behind the "V" groove of the negative guide. Correct adjustment and pressure is obtained when on feeding the negative forward the tip of the carbon lightly strikes the base of the "V" groove, rises slightly and then slides into the groove. Both adjusting screws are secured by locknuts which should be tightened after adjustment.

The Super Core-lite, like all Ashcraft arc lamps, uses a 25 degree lower angle negative carbon position, which requires less arc voltage than lamps with a 45 degree or higher angle. This lower angle negative carbon positioning makes possible a more brilliant arc due to the flattening effect on the positive carbon tail flame.

CONTROLS OF SUPER CORE-LITE LAMP

Before operating the lamp it is suggested that the operator familiarize himself with the controls.

There are nine control knobs on the Super Core-lite lamp for adjusting the carbon position, mirror, and rate of feeding of the carbons. Six of these control knobs and description of their use are shown in the "Lamphouse back" Fig.19.

MOTOR FEED CONTROLS

There are two positive feed control knobs CS-4463 located at the rear top of the lamphouse, one on the back and one on the left side of the case. These knobs regulate rheostats in the motor field circuit. The two rheostats are in series, therefore, both increase the motor speed when turned clockwise. It is suggested that the knob on the back be set in the center position of the scale when first operating the lamp and the knob on the left side set on "low". After the lamp is placed in operating and it is determined that an increase or decrease in motor speed (or positive feed) is required, adjustments should be made on the rear control. If even greater speed is required then make adjustments accordingly on the left control. When both knobs are on fully open position the maximum motor speed is obtained.

NEGATIVE CONTROLS

Two unique and scientific features, and they are exclusive with the Super Core-lite arc lamp and all other arc lamps manufactured by Ashcraft, are the design of the negative carbon carriage and secondly the negative motor feed control.

Two control knobs CN-4484 on the exterior of the lamp allow for two adjustments of the negative - one horizontally and one vertically, permitting instantaneous adjustment of the negative for correct carbon positioning.

The negative carbon may be adjusted to the approximate center horizontally of the positive carbon by viewing the relative position through the carbon entrance tube CN-4172 from the rear of lamp. Before placing the lamp in operation, this adjustment and the vertical negative position should be checked after cratering of the positive carbon.

In Figs. 17 and 20 are shown the negative motor control and negative clutch assemblies. The negative feed control motor is operated on a completely separate 115 volt A.C. circuit which is actuated and put automatically into operation when the D.C. power is switched on to operate the lamp. The A.C. motor rotating one R.P.M. revolves two roller bearings which come into contact with the pad on the negative clutch housing CN-4337 moving the clutch arm which in turn feeds the negative carriage forward. Adjustments for the forward rate of speed of the negative carbon are controlled by the adjusting knob CN-4346.

POWER SOURCES - RECTIFIERS, GENERATORS, ETC.

THE ASHCRAFT S/1712R 12 PHASE SELENIUM RECTIFIER

This is the most efficient and dependable source of D.C. power ever designed for a motion picture arc lamp. It is unequalled as a source of D.C. power for the requirements of the Super Core-lite lamp which is of the lower carbon angle type, requiring less arc voltage and less arc amperage to produce comparable screen illumination than the high negative carbon angle type.

A rectifier to operate in accordance with the Super Core-lite arc, must have certain characteristics which will produce a perfect low voltage arc. When the carbons in any arc lamp are brought into contact upon striking the arc, there is always the danger of the arc flame shooting forward into the mirror causing sooting and mirror breakage and damage to the carbon crater. The higher the arc voltage the greater the danger.

Taking all the above conditions into consideration, it is logical to presume that the rectifier should be designed so that when the arc is struck, no flame shoots forward toward the mirror and no damage is done to the carbon crater. This is exactly what the Ashcraft High Reactance multiphase rectifier accomplishes.

Our High Reactance Multiphase system insures the user against all light flicker due to current unbalance.

TRANSFORMER

The transformer was designed by our company and is constructed entirely in our factory.

The entire transformer is wound with heat-resistant glass covered wire and all insulation is impregnated glass. This unit is practically indestructible - unaffected by heat, moisture or age.

The panel board has 5 sets of taps for various line voltages from 200-250 volts and 6 sets of current adjusting taps for each line voltage - giving 30 possible voltage and arc current adjustments.

THE BLOWER FAN

The blower fan has been used in products manufactured by our company for over 25 years without one case of failure. This fan motor is totally enclosed - full ball bearing and never needs oiling or other attention. Its function is to draw cold air in, at the lower section of the case, passing it over the plates of the rectifying units, then blowing a powerful blast over the transformer coils.

THE CONTACTOR STARTING SWITCH

This unit is the best obtainable. The magnetic actuating coil can be supplied either for 115 volts or 220 volts and is remote controlled by a toggle switch on the projector pedestal. The main contacts which connect the rectifier to the 3 phase line are enclosed and do not require attention.

THE RECTIFYING UNITS

The Tri-Amp rectifier unit is the only selenium rectifier of its type manufactured in the United States. It exhibits the typical advantage of selenium rectifiers; namely, high overload capacity. The rectification barrier, however, is a natural P. N. junction and does not use any artificial barrier layer material. Hence, this rectifier does not exhibit other selenium rectifier's tendency to deteriorate or age.

To insure continuous performance, each rectifier is given a special finish, using multiple coats of a chlorinated rubber base paint. This same finish is normally used in unusually severe industrial applications and is also used on all the most critical military components, for high reliability under the adverse conditions encountered throughout the world.

The rectifier is engineered and matched to take advantage of the especially designed polyphase transformer, giving the lowest actual and theoretical ripple and striking currents.

In our opinion these Selenium rectifiers which are subjected to very low voltage, as is the case with the S/1712R Rectifier, is by far the best method of rectification and are not subject to damage by high "inverse peak voltages" as in the case with the Silicon Diode type. The rectifying units of the S/1712R rectifier carry an unconditional guarantee for 3 years.

INSTALLATION AND ADJUSTING OF S/1712R SELENIUM RECTIFIER

INSTALLATION

The rectifier should be placed in a ventilated location. The fan is connected to the "Hot" side of the contact or relay for continuous operation, for extra ventilation in case rectifiers are located in hot, humit or poorly ventilated locations.

For information on the complete wiring of S/1712R rectifier refer to Fig. 9 and also to the wiring diagram located inside the top door of the rectifier.

ADJUSTING THE D.C. OUTPUT

Under normal circumstances, the top A.C. line adjusting strap may be used as a coarse adjustment and the lower D.C. output adjusting strap as a fine adjustment. In this case moving either strap to the right increases or the left decreases the D.C. output.

FOR EXAMPLE:-

With a 220 A.C. line input voltage, set the top strap in the center position. The bottom strap is then used for the fine adjustment. If a high or lower current is desired that is not available in the six terminal range, the top strap may be moved to the right to increase or the left to decrease the D.C. output. Fine adjustments can then be made with the bottom strap.

MAINTENANCE

The only maintenance required is to occasionally remove the front lower panel, and check all A.C. and D.C. connections to see that they are secure, and dirt or dust that might interfere with the ventilation should be removed at this time. The two adjusting straps should always be tightened securely after making necessary adjustments.

CAUTION

DO NOT OPERATE RECTIFIER WITH THE FRONT PANEL REMOVED.

GENERATORS - BALLAST RHEOSTATS

Ashcraft S/1712R Selenium Rectifiers are naturally always recommended over all other types of current coverters where 3 phase is available. In some areas single phase or 2 phase power is available which means the use of motor generator sets. Such installations will require suitable current regulating ballast resistors which meet the specific requirement of the Super Core-lite lamp. These are available through your supply dealer.

The information to be supplied to the resistor manufacturer is as follows:

3 point Ballast Resistors
Specify Generator or Line Voltage
Striking Current 90 Amperes
Minimum Arc Current 130 amperes, 48 volts
Maximum Arc Current 180 amperes, 70 volts
Normal Working Range

150 amperes, 56 volts
165 amperes, 64 volts

Rheostat must be supplied with at least 4 current adjusting switches.

SUPER CORE-LITE ARC AND RELATIVE CARBON POSITIONS

The illustration (Fig. 5) shows the appearance of the Super Core-lite arc in correct operation. The combined flames rise vertically. The blue jet or tongue emerging from the tip of the negative carbon sweeps up past the mouth of the positive crater, not directed into the crater. This tongue should be located about 3/16" in front of the positive carbon end. If the tip of the negative carbon is too low, not only will the jet become too close to the crater but the negative flame will envelope the crater end, causing excessive current to flow in the arc. The negative flame should not underlap the positive crater.

If the tip of the negative carbon is too high there will be an upward bow in the negative flame creating an unstable arc and a decrease in screen light. As illustrated the center line of the negative carbon should intercept the crater face approximately 3/32 of an inch from the bottom.

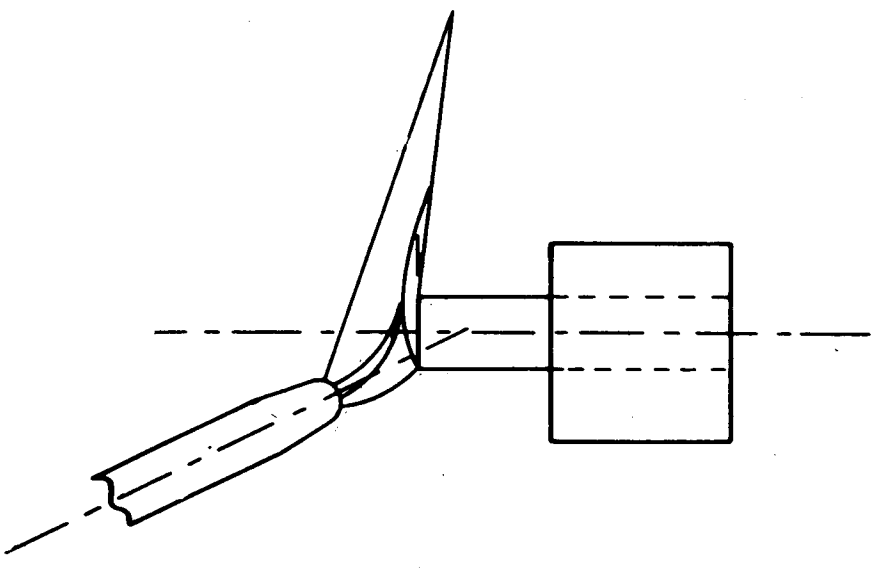


FIG. 5

As previously mentioned the Ashcraft Super Core-lite lamp can be operated with either an 18" Balcold or 18" Front Surface Coated reflector. The 35 and 70 mm. focus gauges necessary for obtaining the correct positive carbon positions are slightly different for each type of reflector.

Fig. 6 illustrates the relative carbon positions to be used for the front surface coated reflector and Balcold reflector. It must be noted that the correct focus or distance from the positive carbon face to the reflector is measured from the front of the reflector when a front surface coated (FSC) reflector is used, and from the rear surface of the reflector when the Balcold reflector is used. Regardless of which reflector is used the correct working distance from the aperture to the reflector is always 29-1/2" - 29-3/4" measured from the rear surface of the reflector.

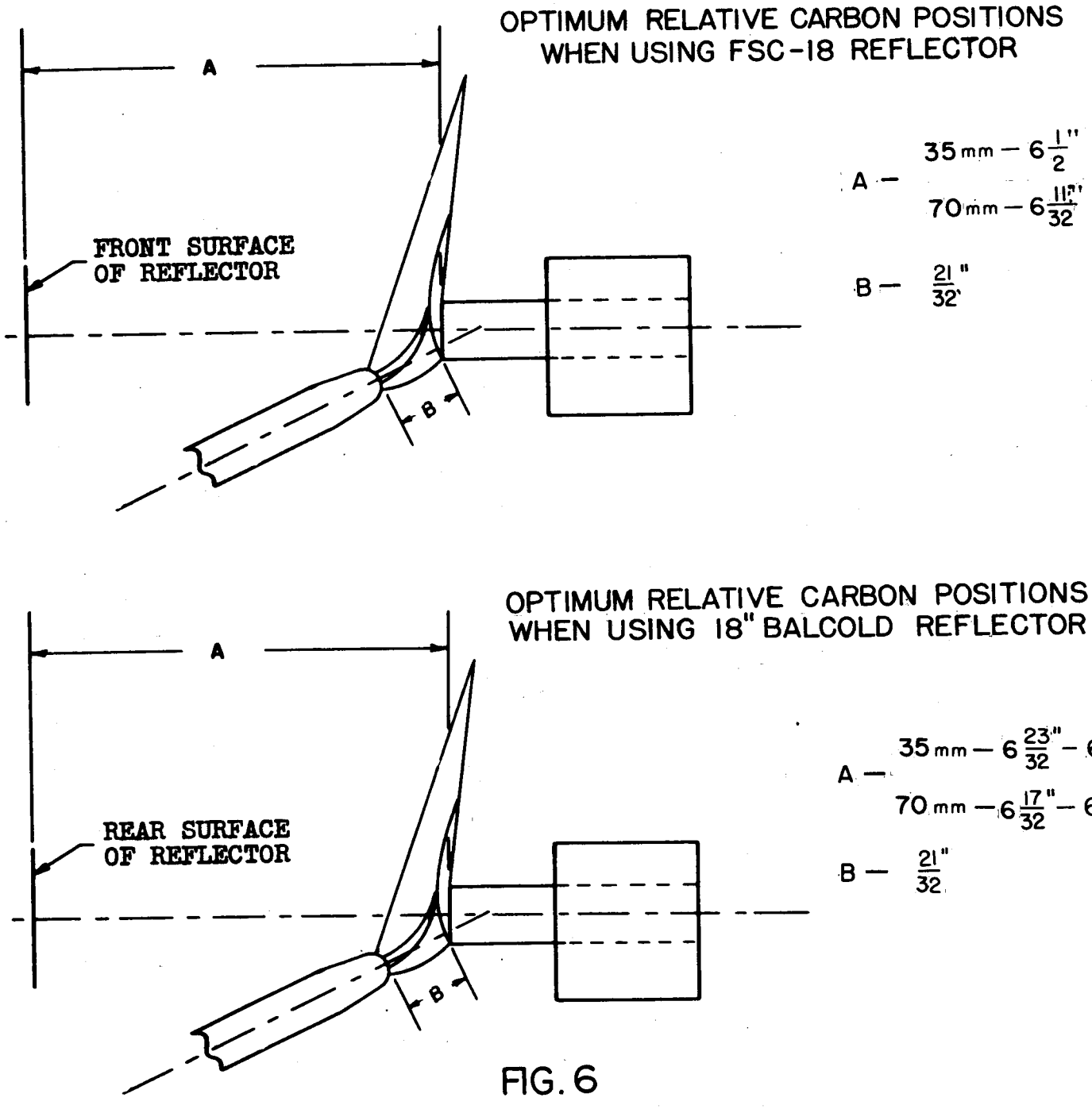


FIG. 6

CORRECT CARBON POSITIONING

Illustrated below (Fig. 7) are the correct and incorrect methods of carbon positioning to obtain the maximum light, arc stability and optimum burning conditions.

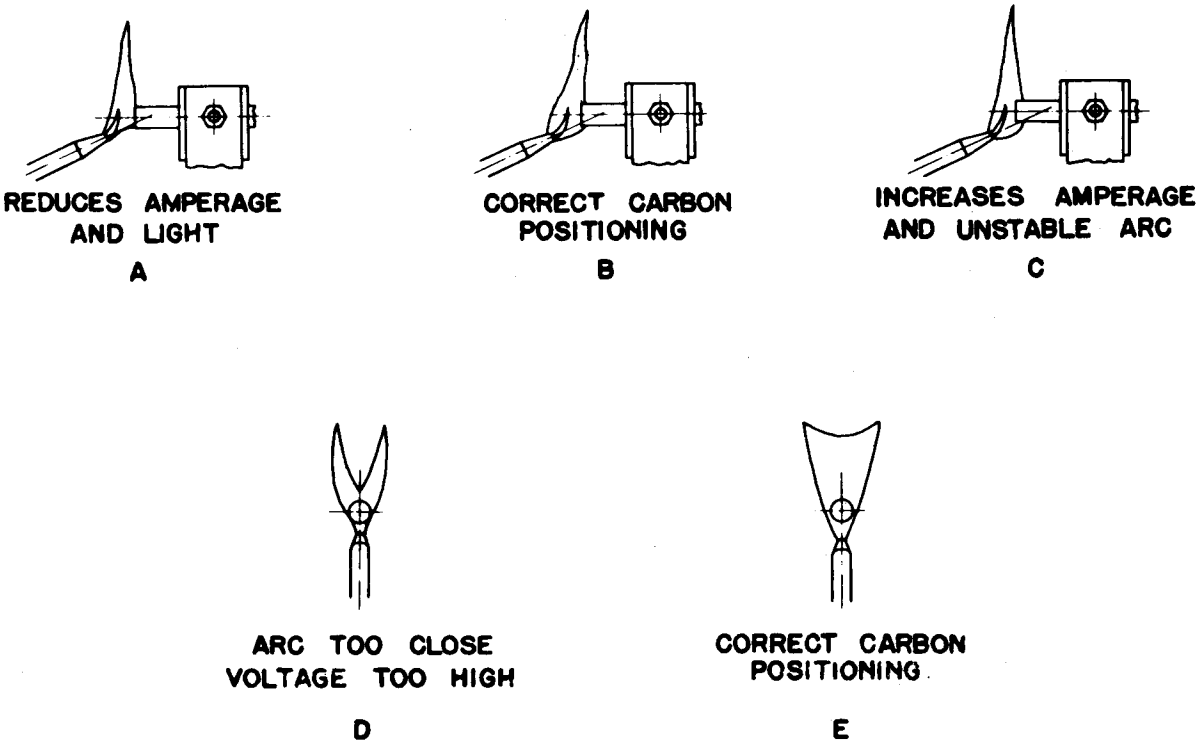
A) Shows the tip of the negative carbon too high with a loss of light and unstable arc.

B) Is the correct method. A slight underburning of the negative flame on the positive carbon.

C) Excessive underburning causing an excessive arc current without corresponding light increase.

D) Results of too short arc gap - a splitting of the positive flame.

E) Correct. Negative flame flattens the positive flame over the crater face creating maximum illumination.



CARBON ALIGNMENT

FIG. 7

THE ARCSCOPE AND SCREEN

When the lamp is tested at our factory the arcscope (see optical alignment for mounting) is adjusted to reflect the image of the arc on the proper lines of the arc-image screen, but this position may require slight variation when finally adjusting the lamp to obtain the maximum light and distribution. This adjustment is made by changing the angle of the reflecting mirror in the arcscope case. Movement of the two screws CN-4810 accomplishes the change of angle. By loosening the locknuts the screws can be turned. Loosening one screw and tightening the other swivels the mirror about its axis, thereby changing the position of the reflected image on the arc-scope screen. Consult "Maximum Screen Light and Distribution" before making adjustments.

HOW TO STRIKE THE ARC

When striking the arc for the first time it is advisable to remove the reflector in the lamp until the correct arc operating conditions are attained. It is suggested that the rectifiers or the rheostats be set on low tap and then raised to normal current rather than imposing an accidentally excessive current upon the lamp.

Striking is always accomplished by moving the negative carbon into contact with the positive carbon. This should be done rapidly - withdrawing the negative immediately - then set the positive and negative in their correct positions in accordance with the arcscope screen. Never leave the negative carbon close to the positive crater after contact has been made.

After the arc has been established there may be a slight momentary misalignment of the flame but if the proper alignment of the carbon has previously been made, do not readjust the position of the negative carbon relative to the positive until the arc has been burning for at least one minute. The flames usually readjust themselves automatically during that period. If unnecessary readjustment is made immediately upon striking the arc then another unnecessary adjustment will have to be made which results in continual unnecessary adjusting.

ADJUSTING THE ARC FEED MECHANISM FOR CONSTANT REGULATION

A satisfactory balance between the relative feeding of both positive and negative carbons can easily be made whereby the image position of both carbons on the arcscope screen will remain constant during periods of operation without frequent adjustment by the projectionist. After the required arc current has been selected the regulating rheostat control should be advanced to the position where the image will remain exactly on the arcscope register line when the negative image is held constant on its register line. During this procedure regulate the negative position manually if necessary. After the forward feed of the positive has been set then determine if the negative feed control is correct. The position of the negative carbon will now determine the accuracy of the positive carbon position. If the negative is fed forward too fast tending to shorten the arc gap, the arc current will increase burning the positive back of the line. It is very simple and most important that the negative carbon tip position remain constant. Modern carbons burn at a very constant rate, particularly so in the case of the carbon used in the Super Core-lite lamp.

Once the correct feeding ratio of the two carbons has been established the accuracy of feeding will be exceedingly accurate, requiring no manual adjustments by the projectionist.

After obtaining the arc current at which you wish to operate the lamp, insert the reflector into the ring, replace the reflector air directional chute and secure with thumb screw.

IMPORTANT

Do not change the location of the air directional chute - make only the necessary adjustments so that the chute clears the front surface of the reflector 1/8 to 3/16" (see fig. 8). It is also important that the position of the indoor theatre ashtray not be changed. If it is moved forward this will reduce the air flow to the reflector. Replace large blower duct (sub base) in correct position and secure with the two thumb nuts.

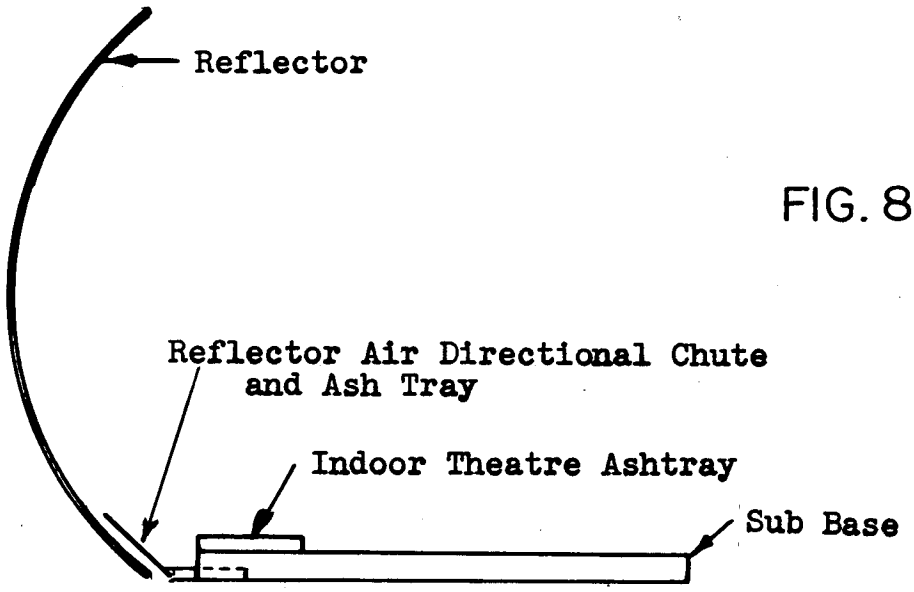


FIG. 8

HOW TO OBTAIN THE MAXIMUM SCREEN LIGHT AND DISTRIBUTION

As we have mentioned before, the Super Core-lite lamp has been assembled and actually tested under conditions expected to prevail in a theatre. Some changes in the position of the positive carbon may be necessary, depending upon the current at which the lamp is operated. To obtain the maximum light and highest percentage of distribution the following should have been accomplished:

1) The correct distance of 29-1/2 - 29-3/4" from reflector to aperture.

2) Exact alignment of lamp optical center and projector aperture and lens.

3) Clearance of all obstructions in the light beam between lamphouse and aperture.

4) Correct burning condition of the arc.

If the projection is for 35 mm film using an FSC - 18 reflector, use the gauge setting the position of the arcing end of the positive carbon 6-1/2" from the front surface of the reflector, for 70 mm projection use the 6-11/32" gauge.

Burn in the crater. Again check with the gauge. Immediately upon striking the arc, observe whether the arc image of the crater end coincides with the crater position line on the arcscope screen. If not, make the necessary change. Start the projector, without film, and observe the light on the screen. Slight adjustments of the reflector may be necessary for equal distribution of light on the screen. This is accomplished vertically and laterally by means of the reflector control knobs CN-4417.

Your Super Core-lite delivers a cone of light to the aperture plate and not a pin point of light in which the rays in the light beam cross in the aperture plate. Therefore, you will not see a small spot with clearly defined edges on the projector cooling plate.

The Super Core-lite magnifies the core of a 13.6 mm positive carbon putting all of the useful white light of the core on the film, and into your lens, permitting the shell or rim light of the carbon to be outside of the film area in the projector.

Light transmission through the projector and exposure of the film to the maximum useful light (limited only by material composition and emulsion density of the film) of the Super Core-lite requires reasonable and practical judgement to insure an excellent installation. Excessive "cheating" with projector shutter blades is not the answer to good quality projection and not necessary with the Super Core-lite with its high volume white light output. "Hot-spot" or excessive center screen lighting means an ill-lighted picture and is easily avoided by making proper and simple optical, electrical, and mechanical adjustments as prescribed in this book.

A final check should now be made to determine the exact optimum position of the crater of the positive carbon relative to the reflector as indicated on the arcscope screen. During this procedure the length of the arc gap must remain constant, if the image on the positive carbon is moved slightly ahead of the register line on the arcscope screen the image of the negative should be retracted an equal distance.

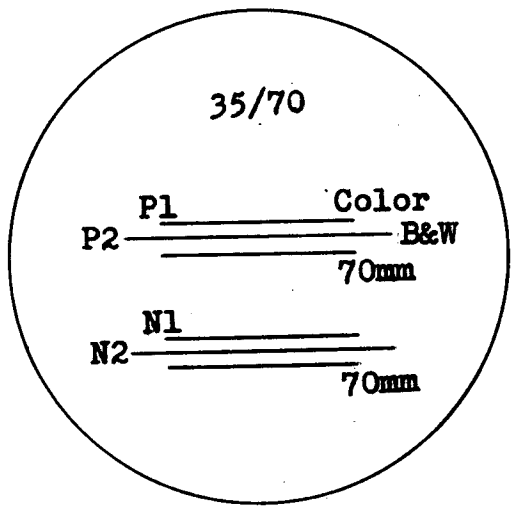
Ashcraft Super Core-lite lamps may be easily adjusted to any degree of desired screen light and screen light distribution. Moving the positive carbon slightly behind the arc screen carbon line will move the positive carbon away from the reflector increasing center screen light but reducing screen light distribution. Moving the positive carbon slightly ahead of the arc screen carbon line will move the positive carbon towards the reflector and provide a very flat field. This latter adjustment is preferable for Indoor theatres where focus and depth of field is of prime consideration. The latter adjustment distributes light and heat uniformly over the film surface resulting in improved Focus, Definition and Resolution of the projected picture. After the desired light is obtained on the screen, reset the arcscope to correspond with the arc setting.

Illustrated below is the arcscope image screen of the Super Core-Lite arc lamp. The positive and negative lines shown on the screen have been carefully calibrated for the positioning of the carbons to obtain the best screen light and distribution for both 35mm color, black and white and 70mm operation.

For 35mm Color Film
Position the image of the positive carbon crater on line P1 (color) and the tip of the negative carbon image on line N1.

For 35mm Black and White Film
Position the image of the positive carbon crater on line P2 (B&W) and the tip of the negative carbon image on line N2.

For 70mm Film
Position the image of the positive carbon crater on the 70mm positive line and the tip of the nagative carbon image on the 70mm negative line.



THE MAINTENANCE OF THE SUPER CORE-LITE ARC LAMP

Read the following instructions carefully for the maintenance of your Super Core-lite Arc Lamp and it will function flawlessly and give you years of perfect operation with a minimum of expense for repair parts. No other arc lamp made is so scientific in basic design for the utilization of high intensity carbons as a light source with a minimum of moving parts.

The Super Core-lite has by far the least number of gears, shafts and moving parts which can mean years of uninterrupted service and at a minimum cost in upkeep.

TO INSPECT AND CLEAN THE POSITIVE CONTACTS

Daily inspection of and cleaning and polishing the silver contacts SC-101 and SC-102 should be done. The opening of these contacts is so simple that only a few seconds are necessary for inspection. The knurled swivel nut SC-109 is to be removed and laid in the ash tray so it will not be misplaced. The movable contact SC-102 and contact pressure arm SC-106 can now be lifted off the stud onto which the swivel nut screws.

The contacts should be cleaned with powdered Bon Ami on a wet cloth-never use anything else, by no means a wire brush. Your contacts when properly cared for should become highly polished. The black deposit in the contacts is not from burning of the contact but either carbon dust or some excretion from the carbon itself-probably the binder in the carbon. This binder is soluble in water, therefore, the combination of the water on the cloth will dissolve the black and the Bon Ami, which is a very mild abrasive, polish the silver surface.

NOTE: When replacing movable contact set the groove on the contact pressure arm SC-106 on to stud SC-110 and position the contact arm on to the adjusting screw SC-108. Screw on the SC-109 nut so that the taper edge fits into recess of the contact pressure arm. Check tension of positive carbon as outlined in "Determining and Adjusting the Contact Pressure", page

Your silver contacts should last for years - they are intensely water-cooled and substantially made. However, the contact can be damaged and even ruined accidentally, usually through carelessness, by running the negative carbon into the contacts, running out of carbon so that the arc melts the silver, or operating without water flowing through the contacts while the arc is burning.

Remember, these positive carbon contacts are .999 (fine) pure silver and must be adequately cooled by water at all times.

MOTOR BRUSHES

The arc control motor brushes are of a special grade made for this particular type of D.C. motor. Substitution of other types of brushes is not advised as serious trouble might be encountered, such as rapid wear of the commutator, poor commutation, and short brush life.

Motor brushes should be inspected at least every two weeks in order to avoid the contact of the brush spring and commutator usually resulting in a damaged commutator or ruined armature.

We advise the theatre to carry at least two pair of motor brushes CN-4048 on hand for replacement purposes.

CLUTCHES - LOCATION AND ADJUSTMENT

Both positive and negative carbon drives are provided with slip clutches consisting of driving members clamped between hardened and ground steel plates held under tension by heavy steel springs and adjusting nuts.

The purpose of these clutches is twofold: first to allow the control shaft to be turned while the driving members are engaged with the driving mechanism for manual adjustment of the carbon carriage and secondly to provide a safety slip when the carriages reach the end of their travel.

The nuts which hold the spring on the clutch spindles may be turned to increase or decrease the plate tension; clockwise motion will increase the clutch tension. Excessive tension will make the controls operate stiffly. Too little tension may result in slippage and non-feeding. A happy medium will allow ease of control and positive feeding action.

The following method is used for adjusting tension of the positive clutch assembly Fig.11 Side View "B". The slip clutch nut CN-4052 has four (4) holes equally spaced around its perimeter. By inserting the end of the 1/8" across flats Allen Wrench (supplied with lamp) into one of the holes, enables the wrench to be used as a lever for turning the clutch nut for adjusting the tension of the worm gear. To adjust tension on the square drive shaft slip clutch assembly Fig.12 Gear assembly "A". Remove chain covers CN-4009 and CN-4010 - this will expose the assembly. Place the plastic-handled collet wrench into set screw SC 8122XS on the collet, using the wrench as a lever rotate collet assembly until the small hole on the slip clutch nut CN-4021 is exposed. Then insert the end of the 3/32" across flats Allen Wrench into this hole. Hold wrench and nut stationary and rotate collet assembly clockwise to increase tension on slip clutch gear - counter-clockwise to decrease tension.

Replace chain covers after adjusting.

NOTE: The plates CN-4203 of the positive clutch and the gear CN-4054 pressed between the plates must not be oiled or any lubricant accidentally deposited on them. They must run dry. The same applies to the square drive shaft slip clutch gear CN-4024 and CN-4023 plates.

The negative slip clutch plates CN-4339 are to be lubricated with very light machine oil (intermittent oil is satisfactory). Oil holes in the clutch housings CN-4333 and CN-4337 are for this purpose.

POSITIVE CARBON ROTATING CHAIN

The illustration Fig.14 of the positive rotating and carbon carriage shows the method of carbon rotation by means of chain SC-8171. The rotating square shaft CN-4014 has mounted upon it and insulated from it, driving sprocket CN-4224. Chain SC-8171 encircles this driving sprocket and rotating head sprocket SC-8119. This chain is made continuous by joining with connecting link, plate and spring which is removable. Chain roller assembly CN-4225 keeps the chain which is of positive polarity in a vertical position and clear of any grounded parts.

Transverse insulated plate CN-4223 is fastened to the carbon carriage assembly and engages the groove in the insulated sprocket CN-4224 so that any motion, forward or backward, of the carriage also moves the sprocket. This insulated plate CN-4223 is secured to the carriage by mounting screws CN-4223S.

Compensating spring CN-4222 maintains the correct tension of the driving chain SC-8171. Since the compensating spring is always in contact with and pressing on the moving chain it may be subject to wear. The spring should be inspected occasionally and replaced when necessary. Its removal and replacement is easily accomplished by removing screws CN-4208S, lifting out chain plate CN-4208 containing the compensating spring, removing the two retaining screws CN-4222S and replacing spring.

LUBRICATION

Although all rotating shafts, throughout the entire lamp, are mounted on roller or ball bearings which need no lubrication, there are some parts which must be lubricated occasionally and some which should run dry as follows:

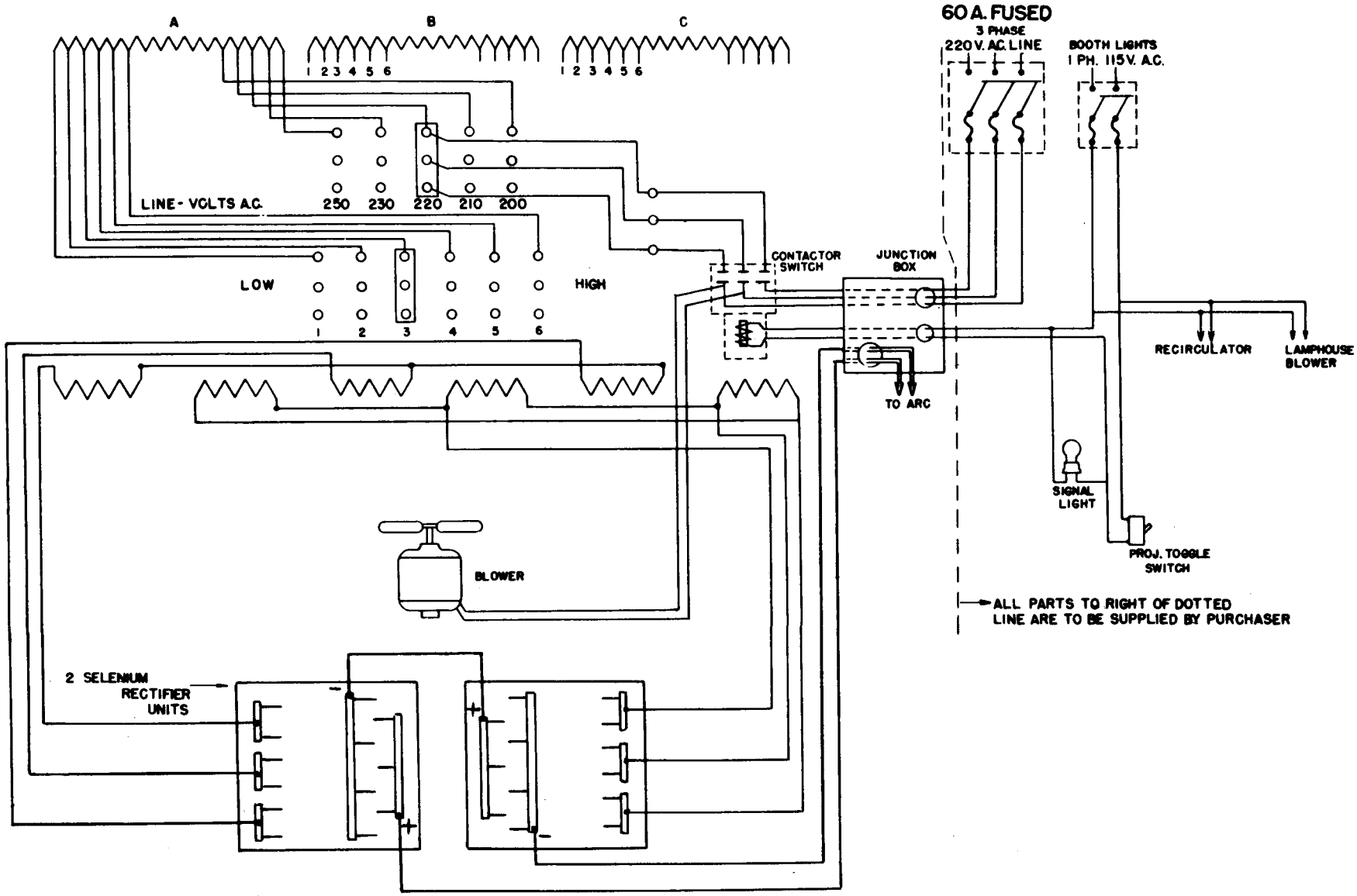
Negative Carbon Clamps (Joint)	CN 4312	SAE 20 Oil
Negative Clamp Locking Cam	CN 4311	Vaseline or Lubriplate #110
Main Drive Worm Gear	CN 4051	Vaseline or Lubriplate #110
Worm Gear	CN 4046	Vaseline or Lubriplate #110
Worm Gear	CN 4054	No Lubrication*
Insulated Sprocket Groove	CN 4224	Vaseline or Lubriplate #110
Upper Negative Slide Rod	CN 4302	Graphite Lubricant
Rotating Head	SC 8117	Graphite Lubricant
Lower Positive Slide Rod	CN 4012	No Lubricant (keep clean)
Square Rotating Shaft	CN 4014	Graphite Lubricant & wipe clean
Square Shaft Rotating Gears	CN 4026 CN 4024	No Lubrication*
Idler Sprocket Assembly	CN 4225	No Lubrication
All Sprockets (Idler)	CS 4006 CN 4313	No Lubrication
Negative Motor Bearings	MC-10	SAE 20 Oil
Negative Clutch	CN 4333 CN 4337	SAE 20 Oil
Negative Clutch Roller Pad	CN 4337	Vaseline or Lubriplate #110
Positive Rotating Chain	SC-8171	Graphite Lubricant & wipe clean
Positive Drive Chain	CS 4002	Graphite Lubricant & wipe clean
Negative Chain	CN 4315	Graphite Lubricant & wipe clean
Negative Eccentric Rod at point where Negative Frame Touches	CN 4440	SAE 20 Oil
Dowser Swivel Stud	SD-9	Graphite Lubricant
Dowser Shaft (by Dowser Handle CS30)	CS 28C	SAE 20 Oil
Dowser Ext. Shaft (by Dowser Toggle CS25)	CS 26	SAE 20 Oil

*This gear rotates very slowly with little load. If lubricated there is the danger of oil or grease running into the positive slip slutch causing Gear # CN 4054 to slip between plates # CN 4023 which might result in non-feeding of the positive carbon. This also applies to Square Shaft Rotating Gears # CN 4026 and # CN 4024.

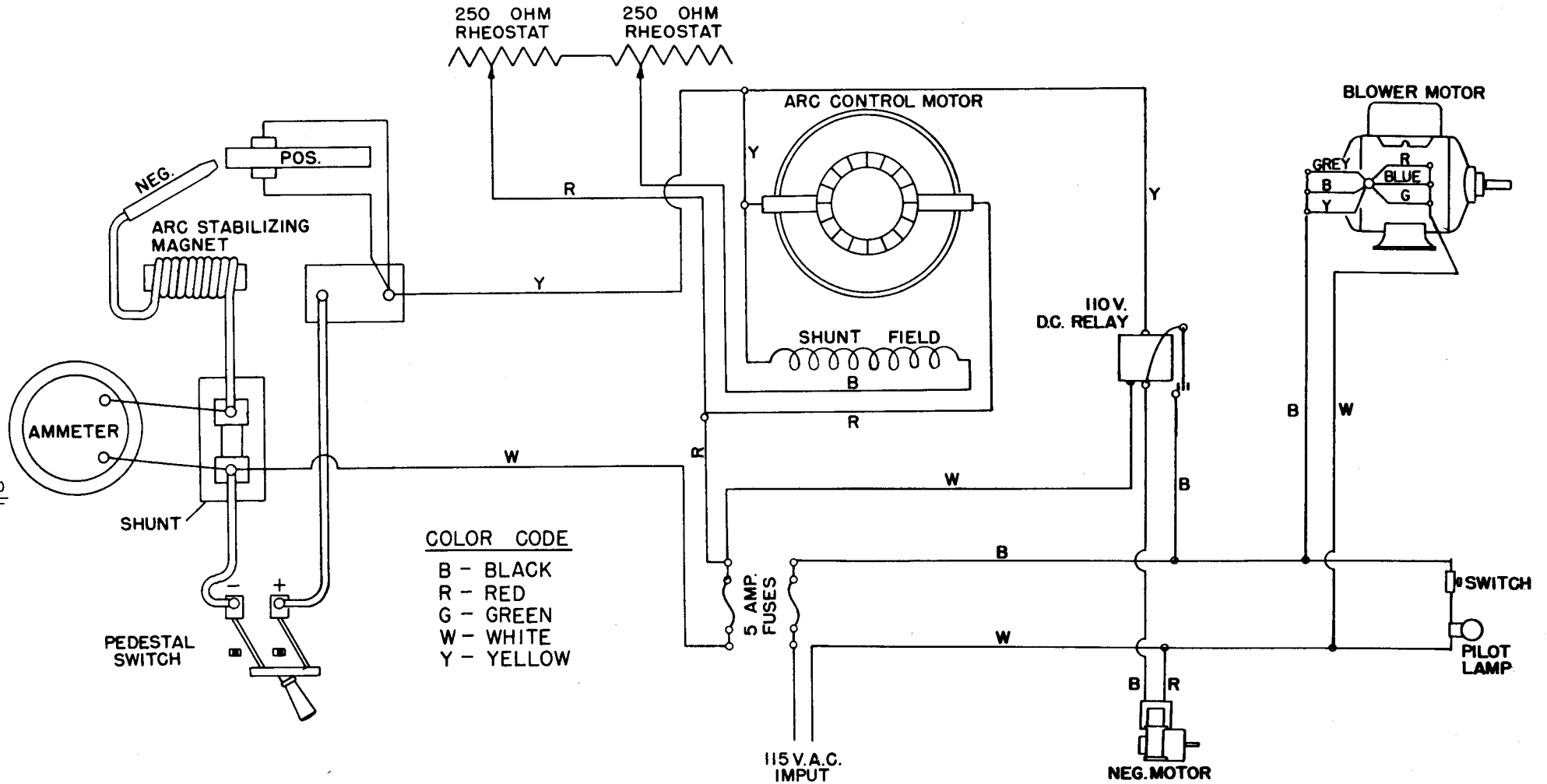
If any lubricant is found on these clutches, the entire Clutch assembly should be thoroughly cleaned in carbon tetrachloride.

Graphite lubricant should be used very sparingly, any excess should be wiped off.

While we do not recommend regular lubricant of the positive drive chain, carbon rotating chain and negative chain, it is sometimes necessary. If the carbon rotating chain becomes stiff or rusty, its operation can be improved by applying a few drops of graphite lubricant and wiping the residue off.

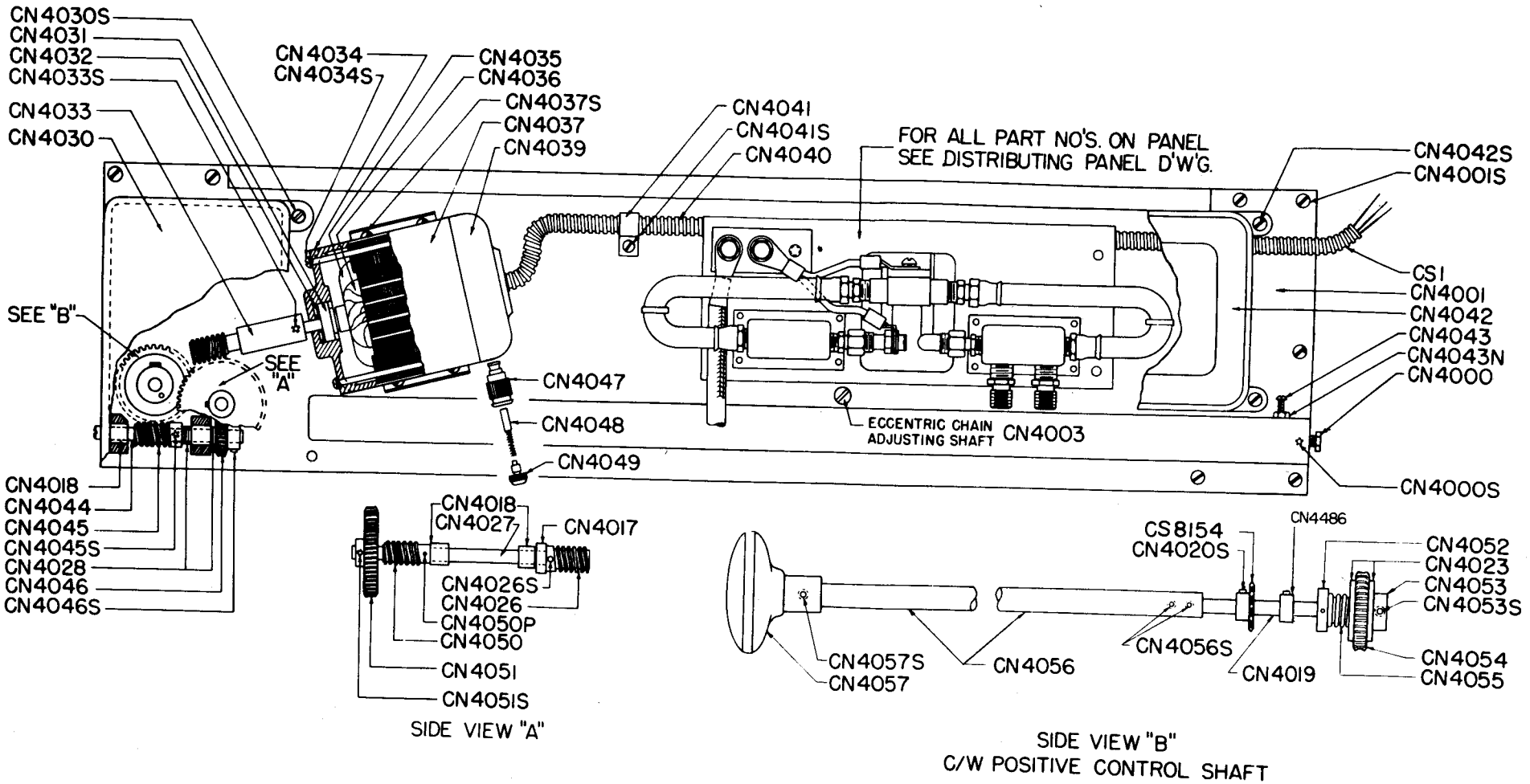


ASHCRAFT S-1712R H.R. 12 PHASE RECTIFIER
WIRING DIAGRAM
FIG. 9

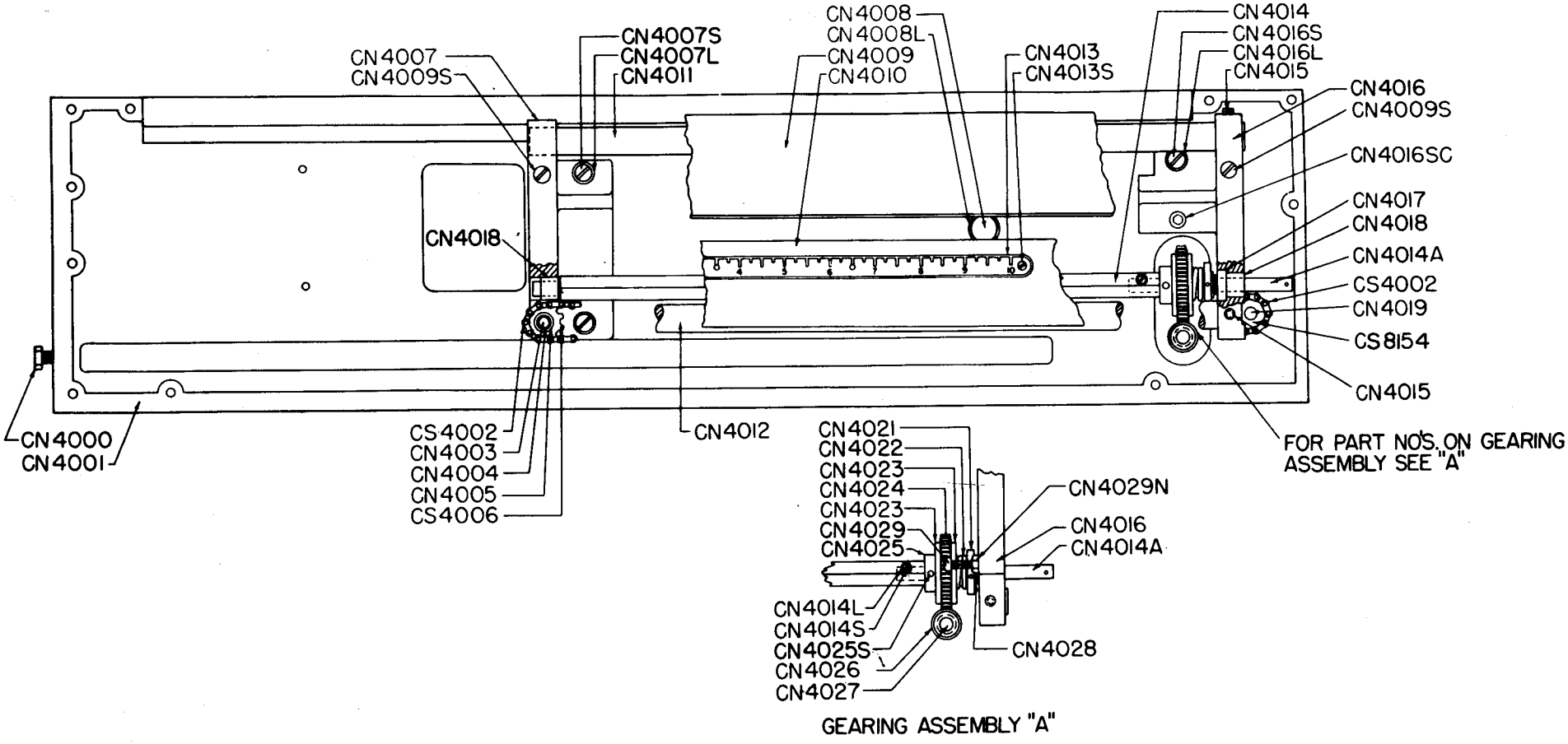


SUPER CORE-LITE WIRING DIAGRAM

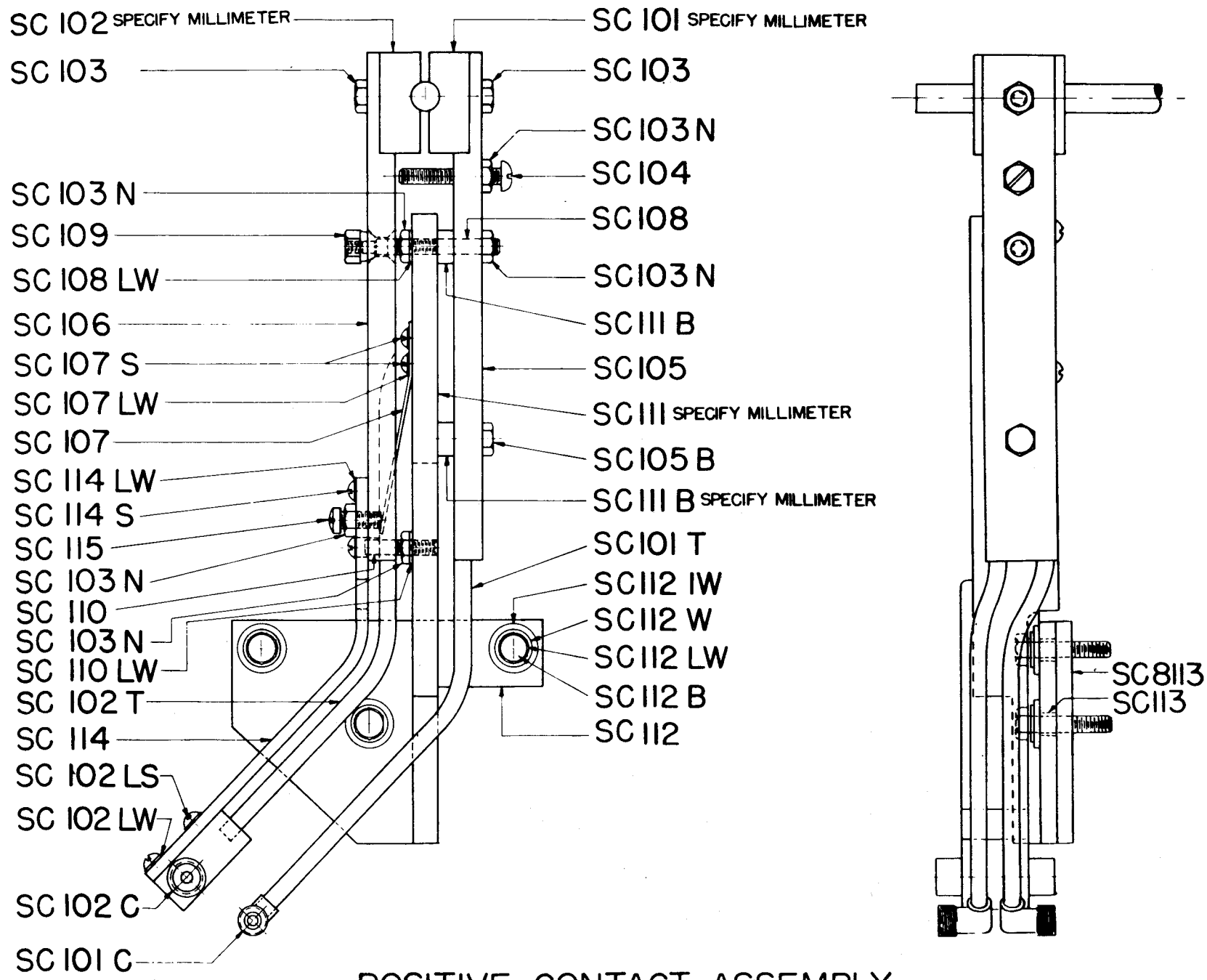
FIG. 10



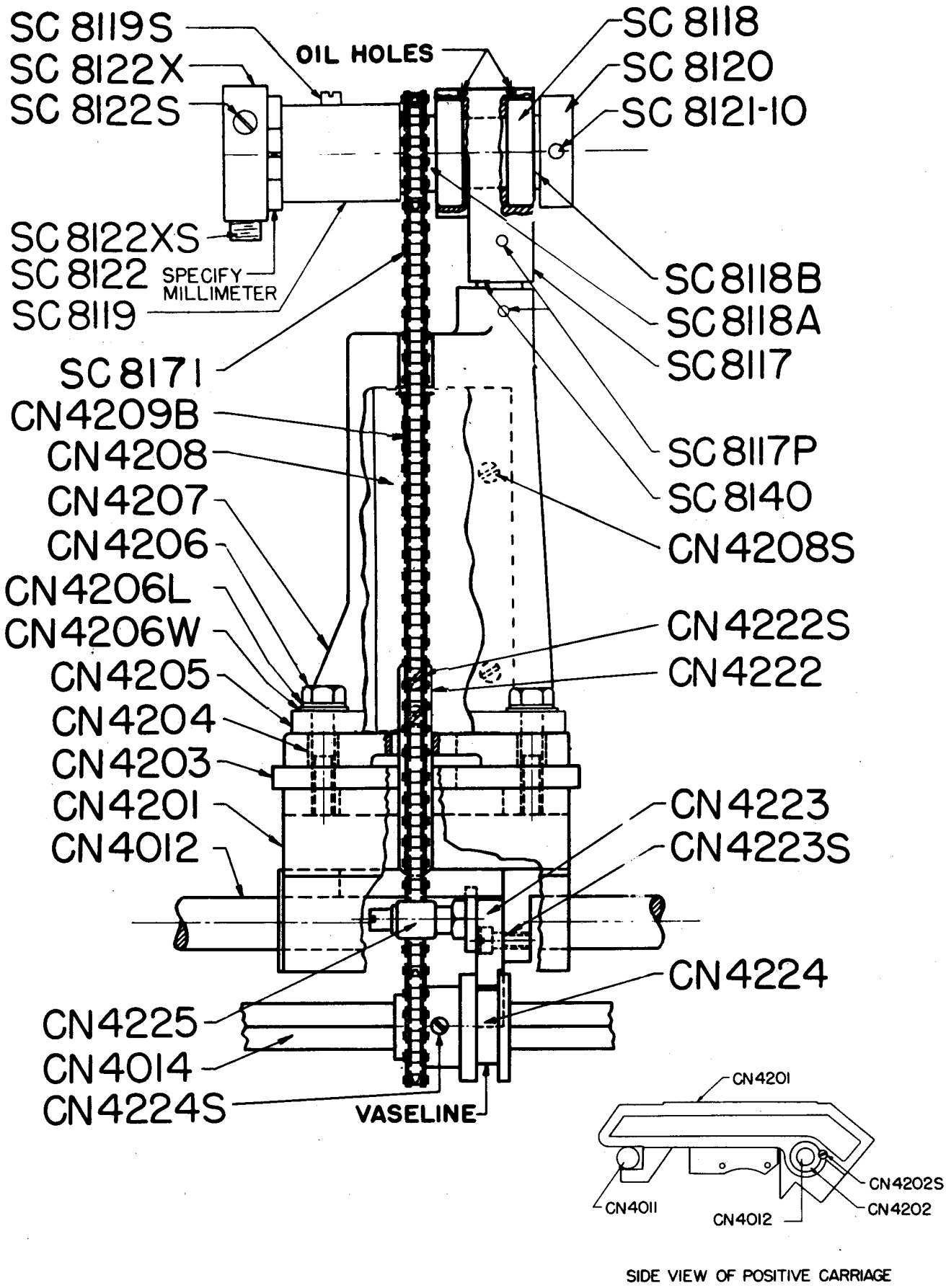
OUTSIDE ELEMENT BASE
FIG.11



INSIDE ELEMENT BASE
FIG. 12

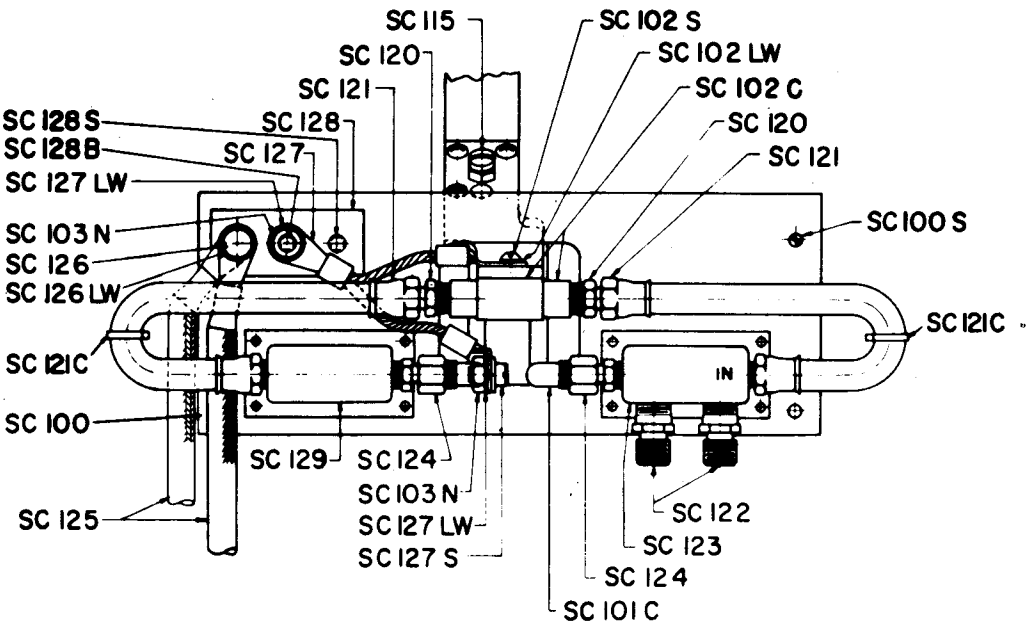


POSITIVE CONTACT ASSEMBLY
FIG. 13

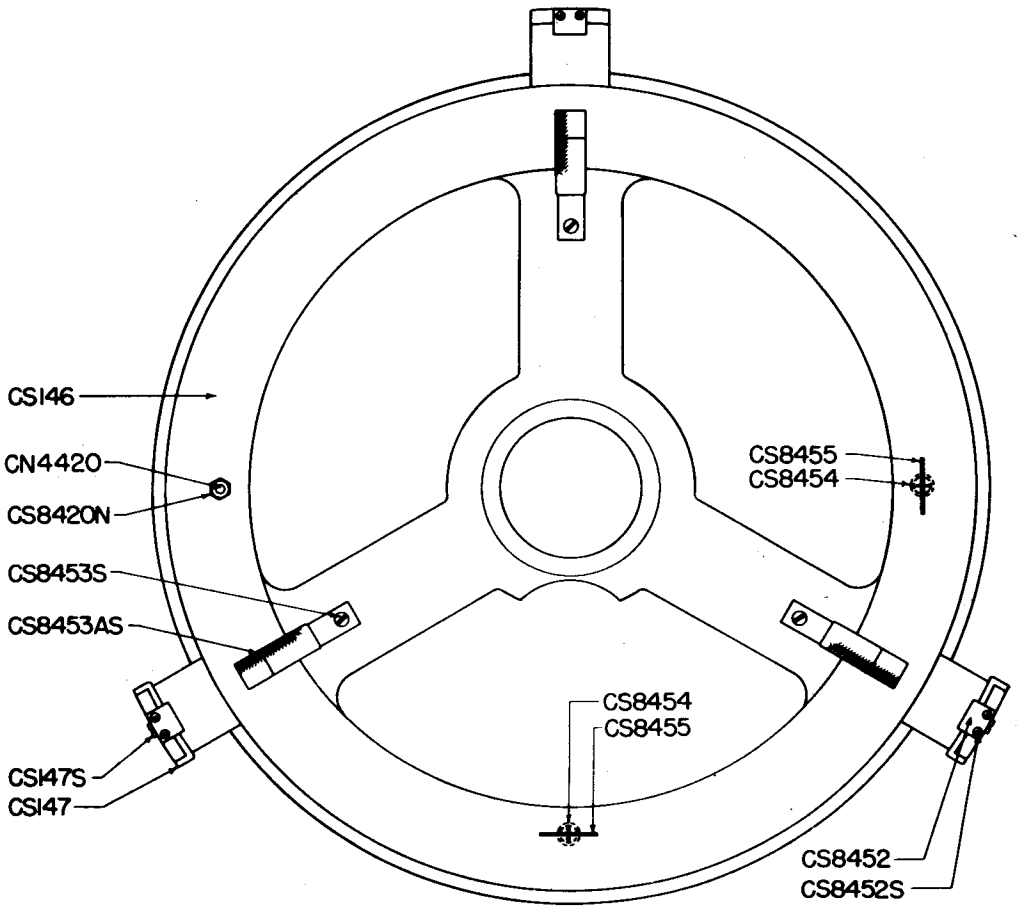


POSITIVE ROTATING & CARRIAGE ASSEMBLY

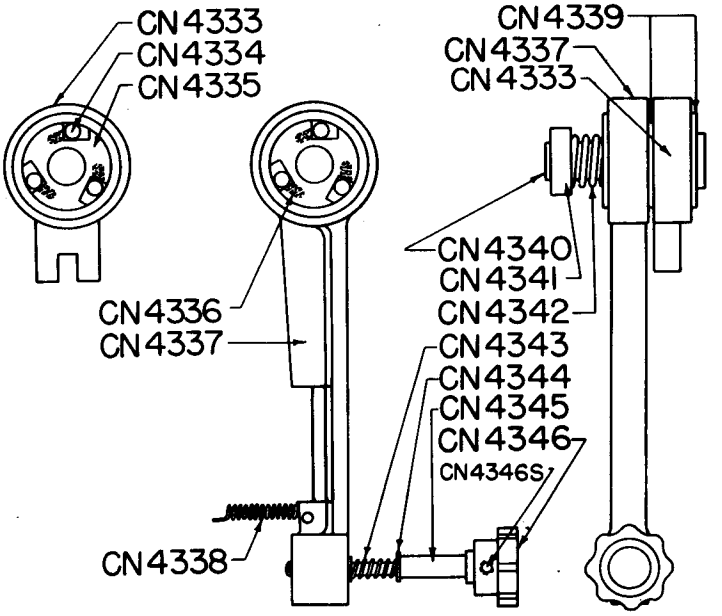
FIG. 14



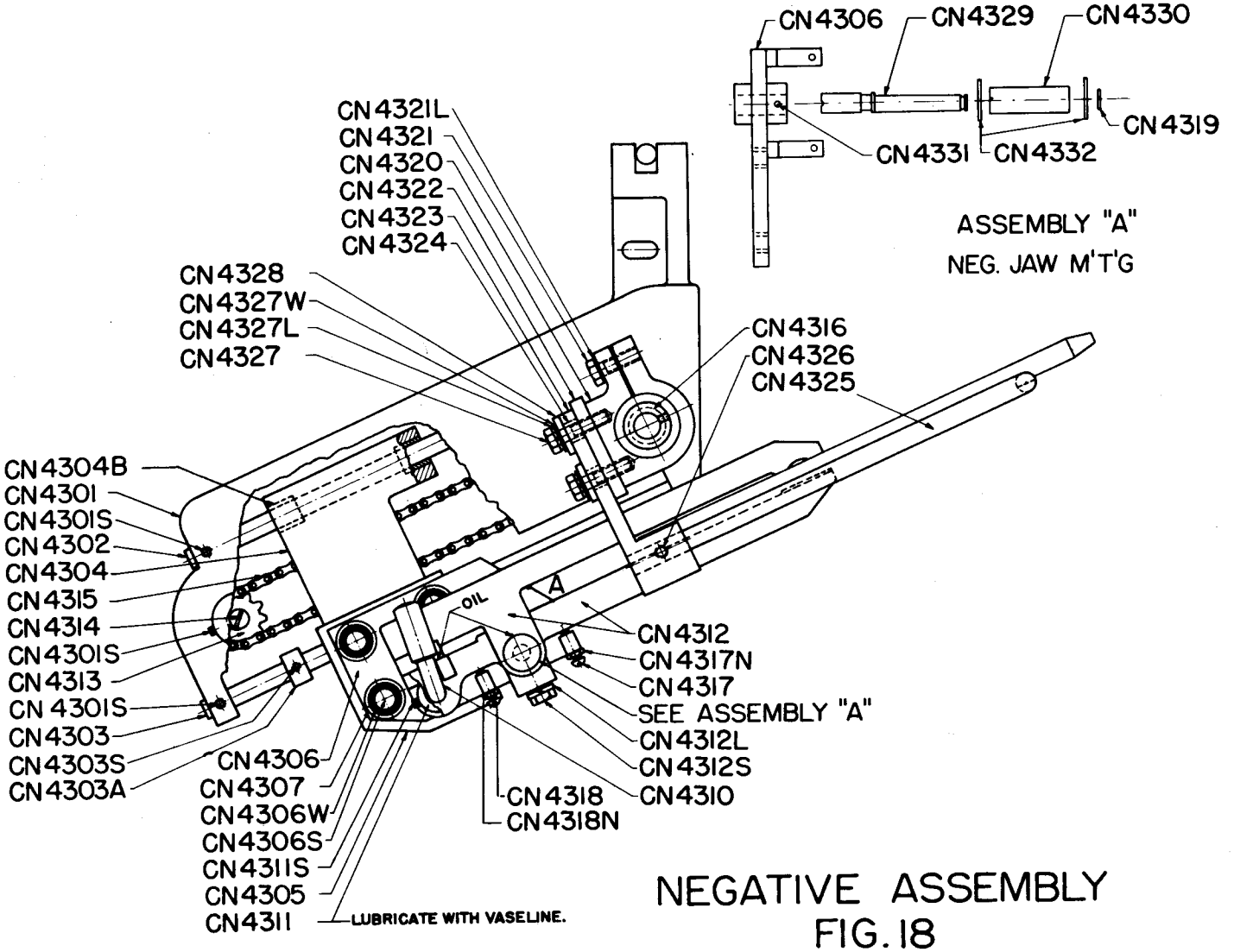
DISTRIBUTION PANEL
FIG. 15



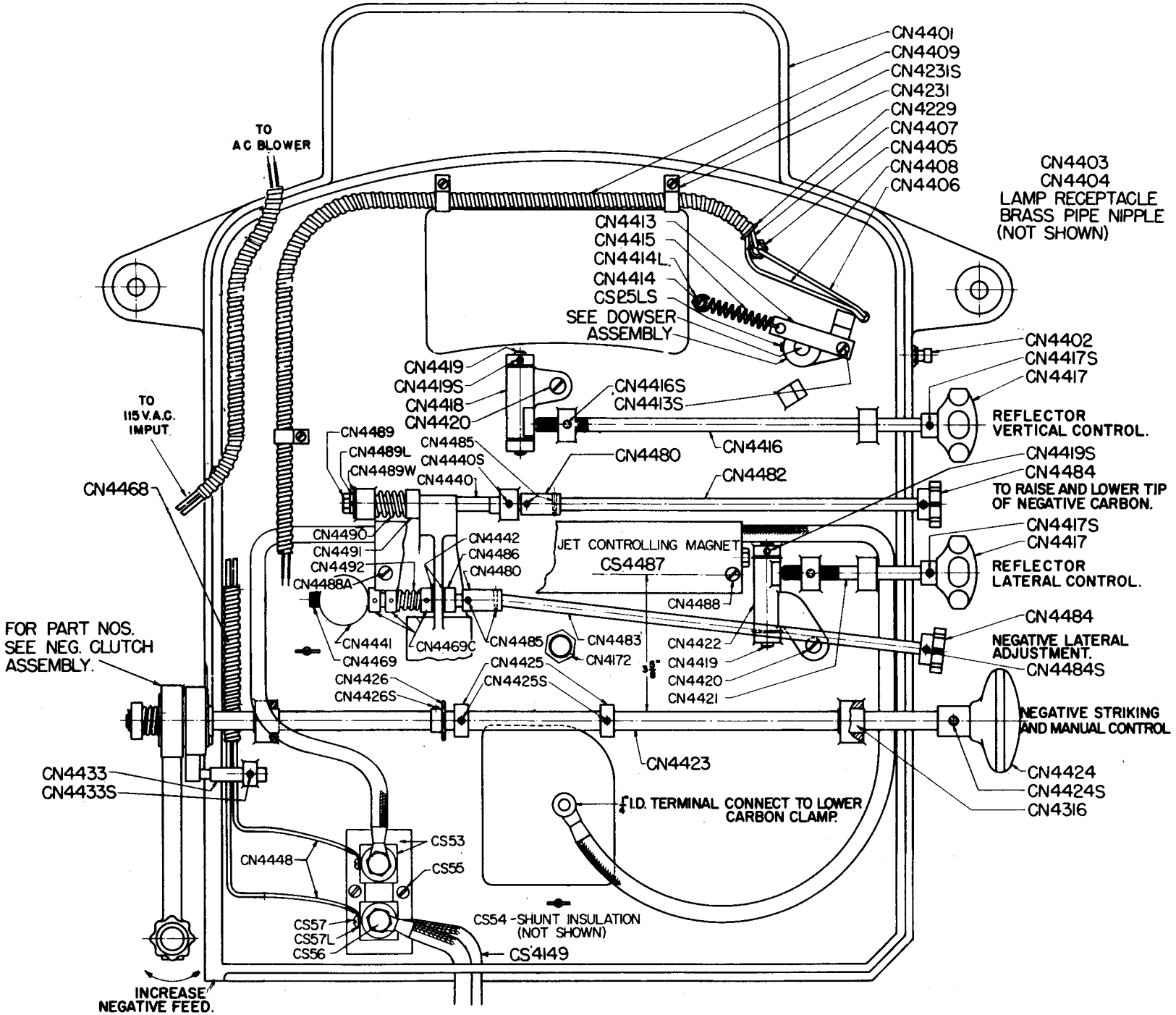
18" REFLECTOR RING ASSEMBLY
FIG. 16



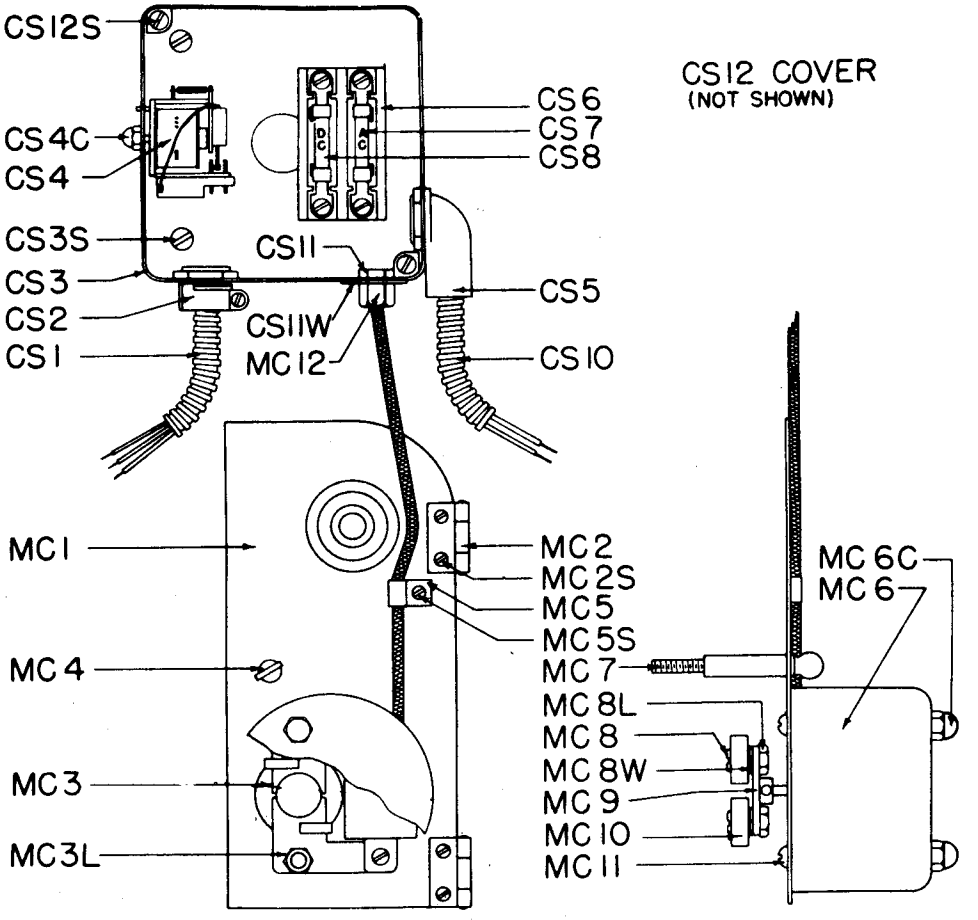
NEGATIVE CLUTCH ASSEMBLY
FIG. 17



NEGATIVE ASSEMBLY
FIG. 18

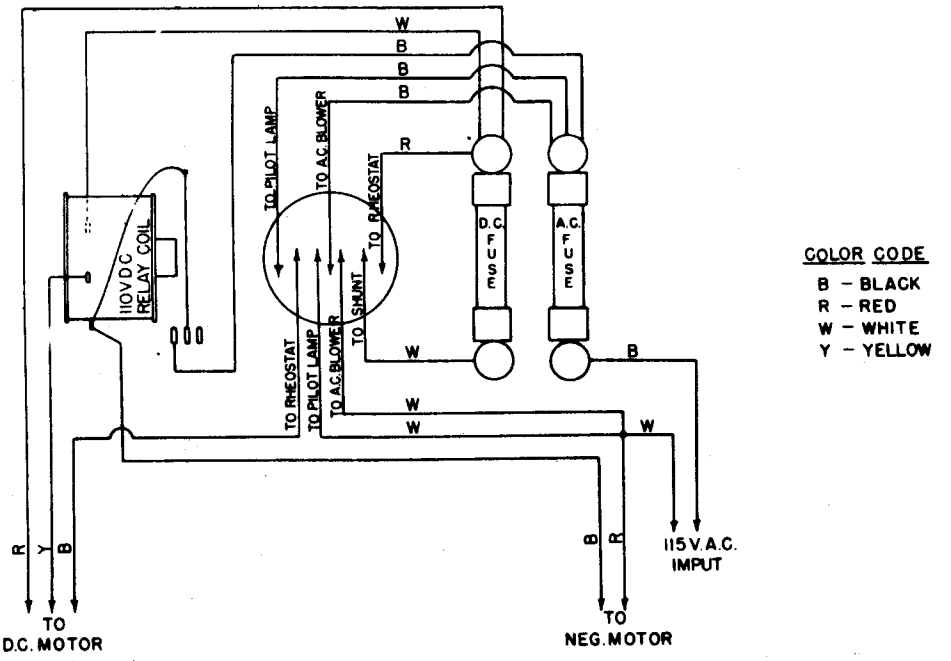


LAMPHOUSE BACK
FIG. 19



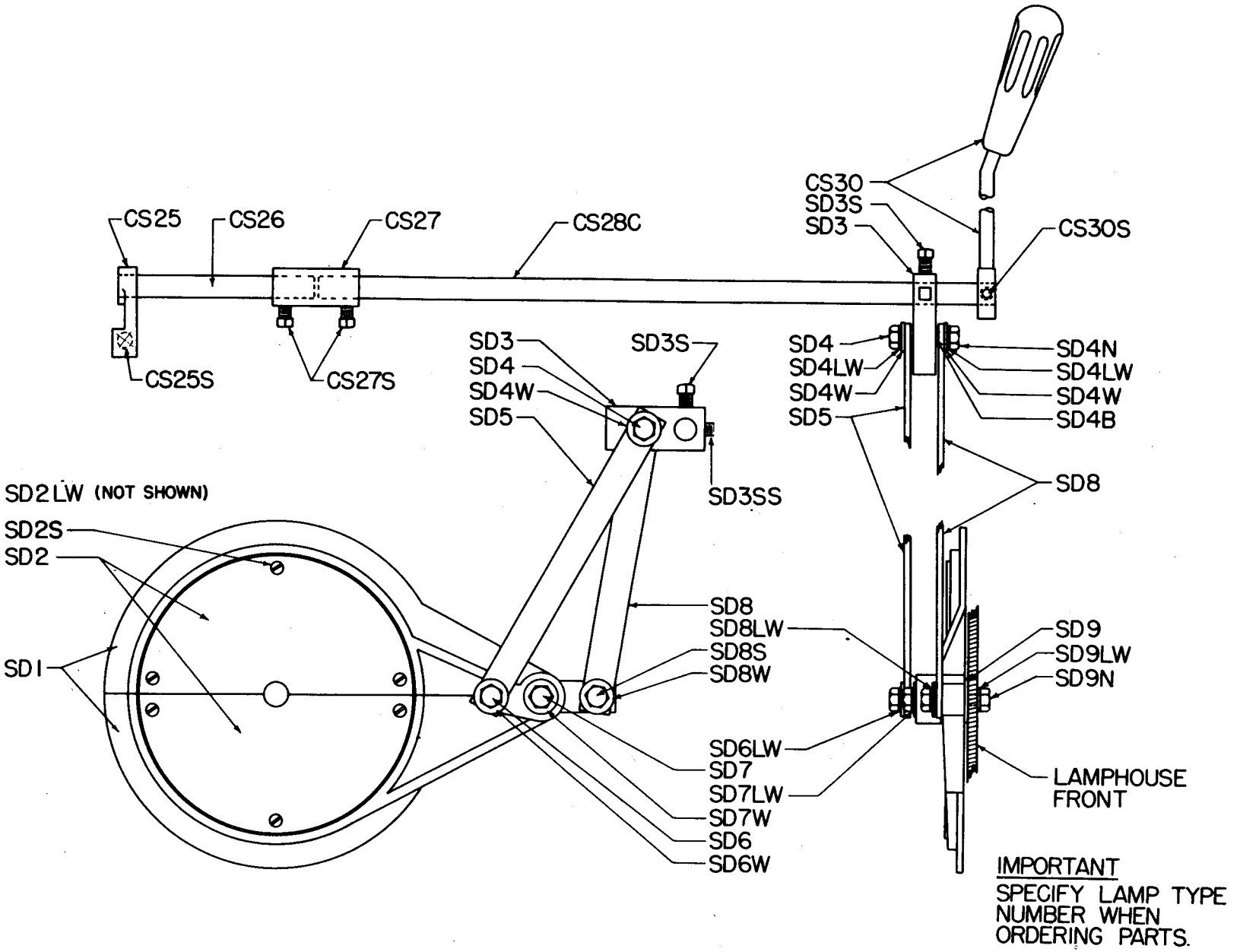
D.C. RELAY, FUSE BOX & SYNCHRONIC NEGATIVE MOTOR CONTROL

FIG. 20

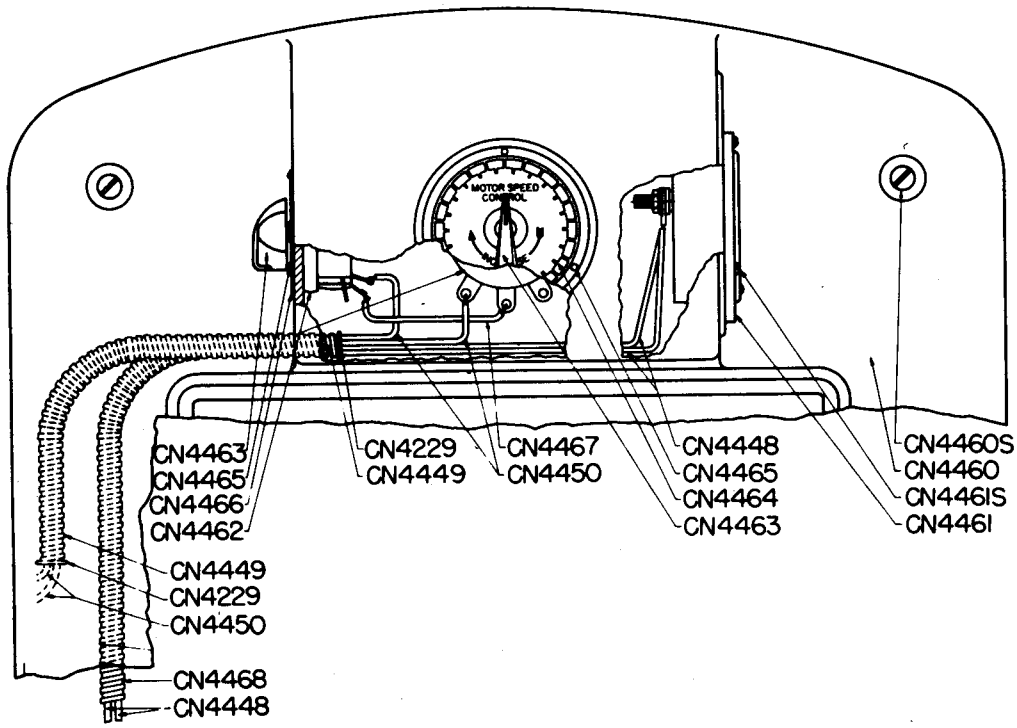


RELAY & FUSE BOX WIRING DIAGRAM

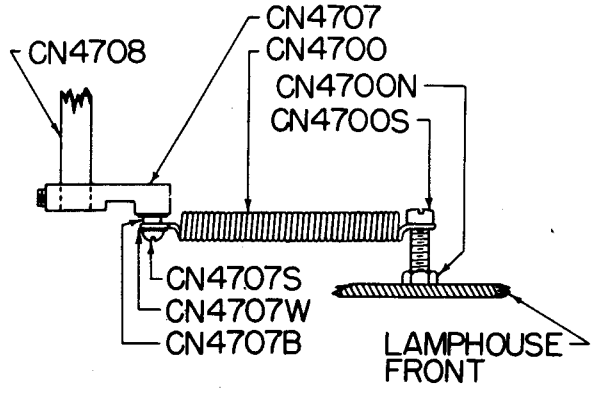
FIG. 21



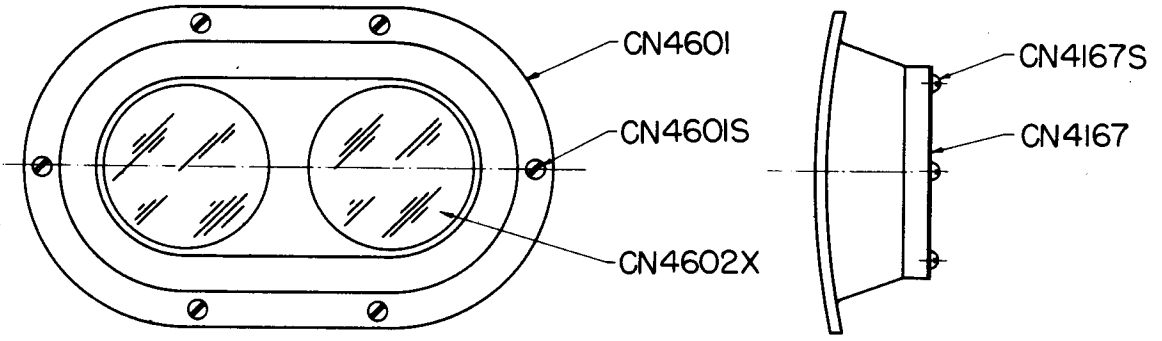
DOWSER ASSEMBLY
FIG.22



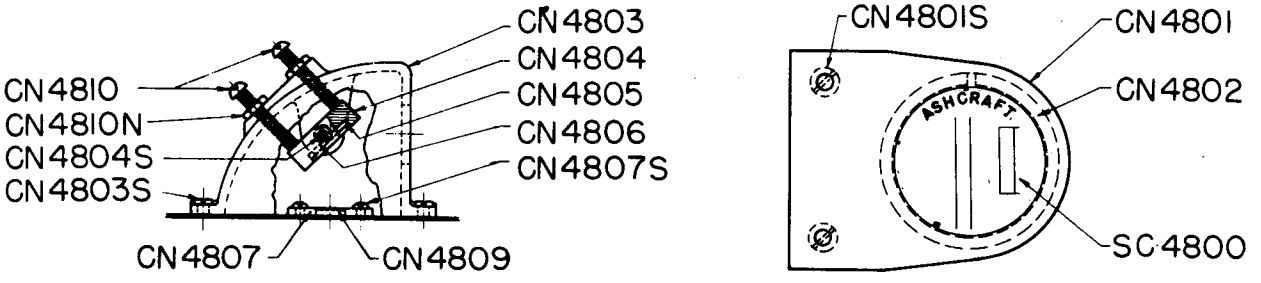
REAR COVER
FIG. 23



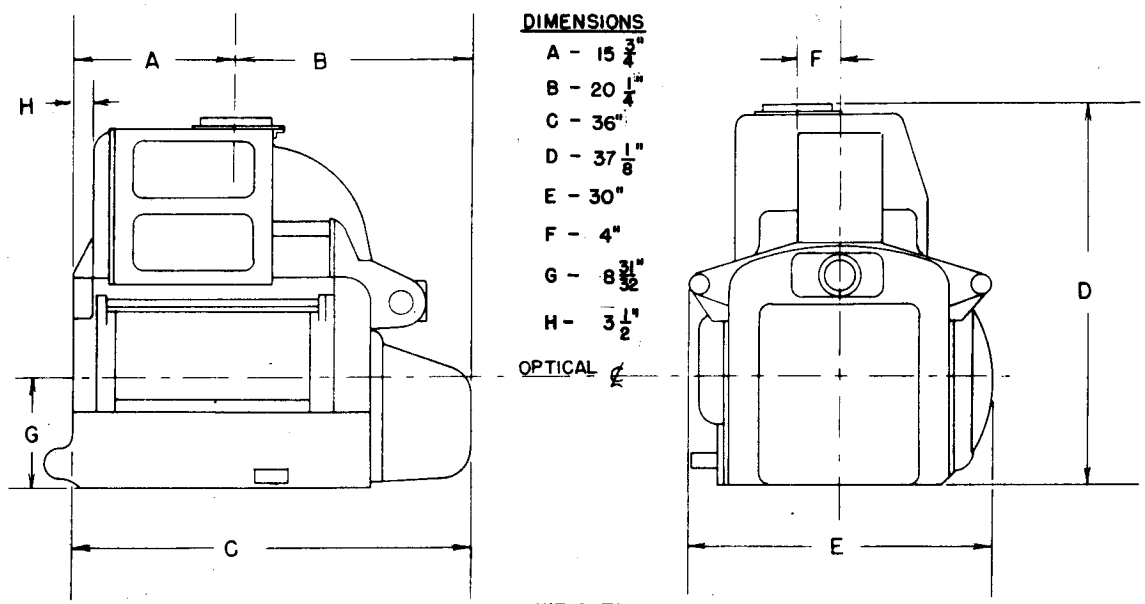
DOOR SPRING ASSEMBLY
FIG. 24



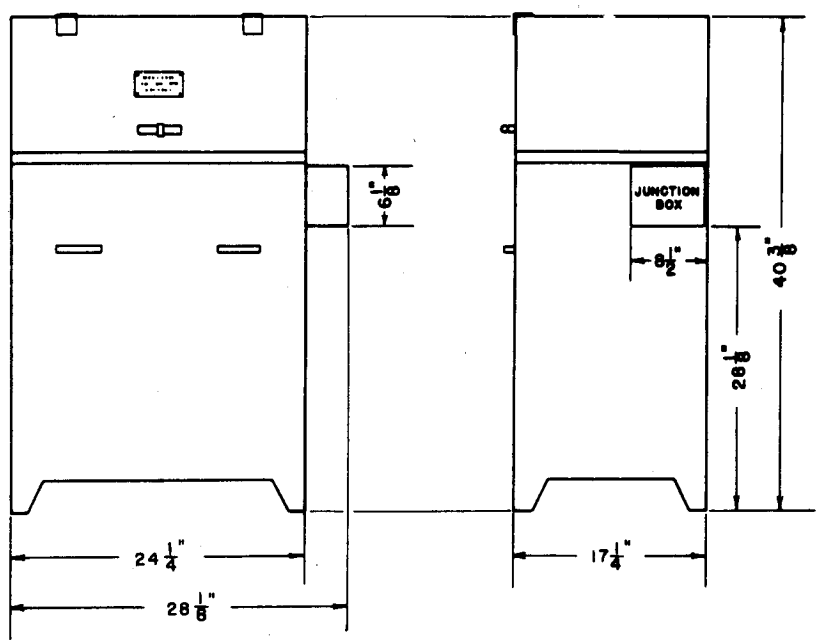
PORT FRAME ASSEMBLY
FIG.25



ARCSCOPE & ARCSCOPE SCREEN
FIG.26



SUPER CORE-LITE PROJECTION ARC LAMP
WEIGHTS & DIMENSIONS
FIG. 27



DIMENSIONS OF ASHCRAFT S-1712R SELENIUM RECTIFIER
FIG. 28

PARTS LIST

No.	Description
SC 100	Panel Mtg. Base
SC 100S	Mounting Screw
SC 100B	Panel Mtg. Base Insulator (N.S.)
SC 101	Stationary Contact (Spec. MM size)
SC 101C	Stationary Contact Conn.
SC 101T	Stationary Contact Tubing
SC 102	Pressure Contact (Spec. MM size)
SC 102C	Pressure Contact Conn.
SC 102T	Pressure Contact Tubing
SC 102S	Pigtail Terminal Screw
SC 102LW	Lockwasher
SC 102LS	Flexible Connector Screw
SC 103	Screw
SC 103N	Locknuts
SC 104	Limit Screw
SC 105	Stationary Contact Arm
SC 105B	Screw
SC 106	Pressure Contact Arm
SC 107	Spring
SC 107S	Spring Screws
SC 107LW	Lockwasher
SC 108	Pressure Contact Mtg. Stud
SC 108LW	Spring Washer
SC 109	Swivel Nut
SC 110	Guide Stud
SC 110LW	Lockwasher
SC 111	Positive Standard (Spec. MM size)
SC 111B	Spacing Block (Spec. MM size)
SC 112	Standard Base
SC 112B	Standard Base Bolts
SC 112W	Plain Washer
SC 112IW	Insulating Washers
SC 112LW	Lockwashers
SC 113	Insulating Bushing
SC 114	Extension Arm
SC 114S	Screws
SC 114LW	Lockwasher
SC 115	Spring Adj. Screw
SC 120	Connector (Part of SC 121)
SC 121	Flex. Water Tubing
SC 121C	Flex. Water Tube Clip
SC 122	Connectors
SC 123	Water Terminal Block (Main)
SC 124	Coupling
SC 125	Positive Arc Cable
SC 126	Arc Cable Cap Screw
SC 126LW	Lockwasher
SC 127	Pigtail Terminal
SC 127S	Terminal Screw
SC 127LW	Lockwasher

No.	Description
SC 128	Distribution Buss Bar
SC 128B	Buss Bar Bolt
SC 128S	Buss Bar Screw
SC 129	Water Terminal Block (Sec.)
SC 8113	Contact Head Ins. Plate
SC 8117	Rotating Head Housing
SC 8117P	Taper Pin
SC 8118	Ball Bearing
SC 8118A	Spacer
SC 8118B	Spacer
SC 8119	Rotary Sleeve & Sprocket
SC 8119S	Pin Screw
SC 8120	Sleeve Collar
SC 8121-10	Set Screw
SC 8122	Collet (Spec. MM size)
SC 8122S	Collet Collar Screws
SC 8122X	Collet Collar
SC 8122XS	Collet Collar Set Screw
SC 8140	Positive Head Stud
SC 8171	Positive Rotating Chain
SD 1	Split Dowser Blades (Set)
SD 2	Dowser Transite (Set)
SD 2S	Screw
SD 2LW	Lockwasher (not shown)
SD 3	Dowser Swivel Block
SD 3S	Set Screw
SD 3SS	Set Screw
SD 4	Screw
SD 4W	Washer
SD 4LW	Lockwasher
SD 4N	Locknut
SD 4B	Bushing
SD 5	Dowser Strap
SD 6	Screw
SD 6W	Washer
SD 6LW	Lockwasher
SD 7	Screw
SD 7W	Washer
SD 7LW	Lockwasher
SD 8	Dowser Strap
SD 8S	Screw
SD 8W	Washer
SD 8LW	Lockwasher
SD 9	Dowser Swivel Stud
SD 9N	Locknut
SD 9LW	Lockwasher

No.	Description
CN 4000	Clutch Stop Screw
CN 4000S	Set Screw
CN 4001	Element Base Casting
CN 4001S	Element Base Screws
CN 4003	Positive Eccentric Chain Adj. Shaft
CN 4004	Sprocket Retaining Ring
CN 4005	Needle Bearing
CN 4007	Element Base Rear Bracket
CN 4007S	Element Bracket Screw
CN 4007L	Lockwasher
CN 4008	Motor Base Cap Screw
CN 4008L	Lockwasher
CN 4009	Upper Chain Cover
CN 4009S	Chain Cover Screws
CN 4010	Lower Chain Cover
CN 4011	Positive Slide Rod
CN 4012	Positive Slide Rod
CN 4013	Scale
CN 4013S	Scale Screws
CN 4014	Square Drive Shaft
CN 4014S	Screw
CN 4014A	Square Drive Shaft Extension
CN 4014L	Lockwasher
CN 4015	Set Screw
CN 4016	Element Base Front Bracket
CN 4016S	Bracket Screw
CN 4016L	Lockwasher
CN 4016SC	Capscrew
CN 4017	Thrust Bearing
CN 4018	Roller Bearing
CN 4019	Positive Control Shaft Ext.
CN 4020S	Set Screw
CN 4021	Slip Clutch Nut
CN 4022	Slip Clutch Spring
CN 4023	Slip Clutch Plates
CN 4024	36T Fibre Worm Gear
CN 4025	Worm Gear Spindle
CN 4025S	Set Screw
CN 4026	Rotation Worm
CN 4026S	Set Screw
CN 4027	Main Drive Shaft
CN 4028	Thrust Bearing Spacers
CN 4029	Stop Screw
CN 4029N	Locknut
CN 4030	Gear Cover
CN 4030S	Gear Cover Screws
CN 4031	Motor Ball Bearing
CN 4032	Ball Bearing Spring Washer
CN 4033	Motor Worm
CN 4033S	Set Screw
CN 4034	Motor End Bell (Shaft End)
CN 4034S	End Bell Screws

No.	Description
CN 4035	Motor Field Coil
CN 4036	Motor Armature
CN 4037	Arc Control Motor
CN 4037S	Motor Screws
CN 4039	Motor End Bell (Comm. End)
CN 4040	Motor Bx Cable
CN 4041	Flexible Tubing Clamp
CN 4041S	Clamp Screw
CN 4042	Terminal Cover
CN 4042S	Terminal Cover Screws
CN 4043	Clutch Spring Screw
CN 4043N	Locknut
CN 4044	Horizontal Drive Shaft
CN 4045	Worm
CN 4045S	Set Screw
CN 4046	Worm Gear 20T
CN 4046S	Set Screw
CN 4047	Brush Holder
CN 4048	Motor Brush & Spring
CN 4049	Motor Brush Cap
CN 4050	Drive Worm
CN 4050P	Pin
CN 4051	Main Drive Worm Gear
CN 4051S	Set Screw
CN 4052	Slip Clutch Nut
CN 4053	Slip Clutch Spindle
CN 4053S	Set Screw
CN 4054	Positive Drive Worm Gear
CN 4055	Slip Clutch Spring
CN 4056	Positive Control Shaft
CN 4056S	Set Screw
CN 4057	Positive Control Knob
CN 4057S	Set Screw
CN 4167	Port Frame Screen
CN 4167S	Screen Screw
CN 4172	Carbon Entrance Tube & Nut
CN 4201	Positive Carriage
CN 4202	Positive Carriage Bearing
CN 4202S	Bearing Screw
CN 4203	Insulating Plate
CN 4204	Insulating Bushing
CN 4205	Insulating Plate
CN 4206	Cap Screw
CN 4206L	Lockwasher
CN 4206W	Plain Washer
CN 4207	Positive Standard
CN 4208	Chain Plate
CN 4208S	Chain Plate Screw
CN 4209B	Connecting Chain Link, etc.
CN 4222	Chain Compensating Spring
CN 4222S	Spring Screw

No.	Description
CN 4223	Transverse Insulating Plate
CN 4223S	Screw
CN 4224	Insulated Sprocket
CN 4224S	Screw
CN 4225	Chain Roller Assembly
CN 4229	Anti-short Bushing
CN 4231	Flex. Tube Clamp
CN 4231S	Clamp Screw
CN 4301	Negative Frame
CN 4301S	Set Screw
CN 4302	Upper Slide Rod
CN 4303	Lower Slide Rod
CN 4303A	Limit Collar
CN 4303S	Screw
CN 4304	Negative Slide (Carriage)
CN 4304B	Negative Slide Bearing
CN 4305	Insulating Plate
CN 4306	Jaw Mounting Casting
CN 4306S	Cap Screw
CN 4306W	Plain Washer
CN 4307	Insulating Washer
CN 4310	Locking Handle
CN 4311	Jaw Locking Cam
CN 4311S	Set Screw
CN 4312	Negative Jaws-Pair
CN 4312L	Lockwasher
CN 4312S	Terminal Cap Screw
CN 4313	Rear Sprocket & Roller Bearing
CN 4314	Rear Sprocket Eccentric Shaft
CN 4315	Negative Chain
CN 4316	1/2" Roller Bearing
CN 4317	Jaw Limit Screw
CN 4317N	Locknut
CN 4318	Jaw Limit Screw
CN 4318N	Locknut
CN 4319	Eccentric Shaft Retaining Ring
CN 4320	Negative Guide Base
CN 4321	Clamping Cap Screw
CN 4321L	Lockwasher
CN 4322	Guide Base Insulating Plate
CN 4323	Negative Guide Bracket
CN 4324	Insulating Bushing
CN 4325	Negative Guide
CN 4326	Set Screw
CN 4327	Guide Base Cap Screws
CN 4327L	Lockwashers
CN 4327W	Plain Washer
CN 4328	Insulating Washer
CN 4329	Jaw Eccentric Shaft
CN 4330	Jaw Shaft Bushing
CN 4331	Set Screw
CN 4332	Washer
CN 4333	Negative Lock. Clutch Housing

No.	Description
CN 4334	Clutch Roller
CN 4335	Clutch Core
CN 4336	Clutch Roller Spring
CN 4337	Negative Clutch Housing
CN 4338	Return Spring
CN 4339	Slip Clutch Washer
CN 4340	Clutch Spindle
CN 4341	Slip Clutch Nut
CN 4342	Slip Clutch Spring
CN 4343	Spring
CN 4344	Washer
CN 4345	Negative Speed Control Stud
CN 4346	Knob
CN 4346S	Set Screw
CN 4401	Lamphouse Back Casting
CN 4402	Door Switch
CN 4403	Lamp Receptacle
CN 4404	Brass Pipe Nipple
CN 4405	Locknut
CN 4406	Lead (Lamp to Door Switch)
CN 4407	Lead (Lamp to Line)
CN 4408	Lead (Switch to Line)
CN 4409	Flexible Metal Tube
CN 4413	Spring Link
CN 4413S	Spring Link Screw
CN 4414	Spring Stud
CN 4414L	Locknut
CN 4415	Dowser Spring
CN 4416	Reflector Vert. Control Shaft
CN 4416S	Set Screw
CN 4417	Control Knob
CN 4417S	Set Screw
CN 4418	Reflector Swivel Casting (Vert.)
CN 4419	Swivel Shaft
CN 4419S	Set Screw
CN 4420	Reflector Link Screw
CN 4421	Reflector Lateral Control Shaft
CN 4422	Reflector Swivel Casting
CN 4423	Neg. Mtg. & Control Shaft
CN 4424	Negative Manual Control Knob
CN 4424S	Set Screw
CN 4425	Neg. Assy. Limit Collars
CN 4425S	Set Screw
CN 4426	Negative Drive Sprocket
CN 4426S	Set Screw
CN 4433	Locking Clutch Stop Pin
CN 4433S	Set Screw
CN 4440	Veg. Vert. Adj. Shaft
CN 4440S	Set Screw
CN 4441	Post
CN 4442	Washer
CN 4448	Shunt to Ammeter Wires
CN 4449	Rheo. Wire Flex. Tube
CN 4450	Rheostat Wire

No.	Description
CN 4460	Rear Cover Casting
CN 4460S	Rear Cover Mtg. Screws
CN 4461	Ammeter
CN 4461S	Ammeter Screws
CN 4462	Rheostats
CN 4463	Rheostat Knob
CN 4464	Rheostat Dial Rear
CN 4465	Pin
CN 4466	Dial (Side)
CN 4467	Rheostat Series Wire
CN 4468	Flex. Metal Tube (Shunt to Meter)
CN 4469	Negative Lateral Adj. Screw
CN 4469C	Collar
CN 4480	Universal Coupling
CN 4482	Negative Vert. Ext. Rod
CN 4483	Negative Lateral Ext. Rod
CN 4484	Control Knob
CN 4484S	Set Screw
CN 4485	Coupling Taper Pins
CN 4486	Collar
CN 4488	Magnet Mounting Bolt
CN 4488A	Magnet Mounting Bolt
CN 4489	Capscrew
CN 4489L	Lockwasher
CN 4489W	Washer
CN 4490	Drag Spring
CN 4491	Collar
CN 4492	Spring
CN 4601	Port Frame
CN 4601S	Port Frame Mounting Screws
CN 4602X	Anti-Ultra Violet Port Glass
CN 4700	Door Spring
CN 4700S	Door Spring Stud
CN 4700N	Locknut
CN 4707	Door Toggle
CN 4707S	Door Toggle Screw
CN 4707W	Washer
CN 4707B	Bushing
CN 4708	Side Door Rod
CN 4800	Arcscope Screen
CN 4801	Arcscope Screen Frame
CN 4801S	Mounting Screws
CN 4802	Screen Retaining Ring
CN 4803	Arcscope Housing
CN 4803S	Mounting Screws
CN 4804	Mirror Holder
CN 4804S	Screws
CN 4805	Mirror Retaining Ring
CN 4806	Arcscope Mirror

No.	Description
CN 4807	Lens Holder Plate
CN 4807S	Lens Mounting Screw
CN 4809	Arcscope Lens
CN 4810	Arcscope Mirror Adj. Screws
CN 4810N	Locknut
CS 1	Flex. Cable c/w Leads
CS 2	Connector
CS 3	Fuse & Relay Box
CS 3S	Screw
CS 4	D.C. Relay
CS 4C	Capnut
CS 5	Connector
CS 6	Fuse Block
CS 6S	Fuse Block Screws (not shown)
CS 7	A.C. Fuse
CS 8	D.C. Fuse
CS 10	Flex. Cable c/w Leads
CS 11	Connector
CS 11W	Washer
CS 12	Box Cover
CS 12S	Cover Screws
CS 25	Dowser Toggle
CS 25LS	Toggle Set Screw
CS 25S	Screw
CS 26	Dowser Ext. Shaft
CS 27	Dowser Coupling
CS 27S	Set Screw
CS 28C	Dowser Shaft
CS 30	Dowser Handle & Extension
CS 30S	Set Screw
CS 53	Meter Shunt Complete
CS 54	Shunt Insulator
CS 55	Shunt Mounting Screw
CS 56	Cap Screw
CS 57	Screw
CS 57L	Lockwashers
CS 146	18" Reflector Ring Casting
CS 147	Insulated Ref. Ring Bracket
CS 147S	Screw
CS 4002	Positive Chain
CS 4006	Rear Sprocket and Bearing
CS 4149	Negative Lead
CS 4487	Jet Control Magnet
CS 8154	Sprocket 12T
CS 8420N	Locknut
CS 8452	Clip
CS 8452S	Screw
CS 8453S	Spring Screws
CS 8453AS	Flat Ref. Spring c/w Asbestos
CS 8454	Reflector Control Springs
CS 8455	Cotter Pins for Ref. Spring

No.	Description
MC 1	Negative Motor Control Panel
MC 2	Hinge
MC 2S	Hinge Screw
MC 3	Negative Motor c/w Leads and Cable
MC 3L	Locknut
MC 4	Thumb Screw
MC 5	Cable Clip
MC 5S	Cable Clip Screw
MC 6	Motor Cover
MC 6C	Capnut
MC 7	Panel Locking Stud
MC 8	Roller Bearing Screw
MC 8L	Locknut
MC 8W	Washer
MC 9	Roller Bearing Block
MC 10	Roller Bearing
MC 11	Motor Mounting Screw
MC 12	Cable Nut

CONNECTION OF WATER SUPPLY

We highly recommend the use of the Ashcraft A.C. Water Recirculator for supplying water to the arc lamp for cooling of the positive contacts. The Ashcraft water recirculator is designed for continuous operation throughout the complete theatre operation period, and if used, the 115 Volt A.C. line connection to the recirculator motor must be wired as per instructions covered under "Connecting Electrical Wires", and we must stress that a special safeguard be provided to eliminate any possibility of the arc lamp being operated without the water recirculator in operation. Any failure of the recirculator will endanger the positive water-cooled contacts.

WATER CONNECTIONS

Two (2) 6 ft. hoses complete with couplings on one end of each hose, one (1) 4 ft. hose complete with a coupling on each end are supplied with each Super Core-lite lamp.

When the Water Recirculator is used for the arc lamp only, the couplings on the 6 ft. hoses are to be connected securely to the SC-122 unions on the SC-123 water terminal block located on the distribution panel on the left side of the lamp. The hose attached to the "IN" union on the water terminal block SC-123 is to be connected to the outlet connector R-32 on the recirculator.

Packed with every water recirculator is one (1) #1805 coupling. This coupling is to be attached to the other hose of the lamp and then connected securely to the R-16 union on the return flow indicator assembly of the recirculator. Reference should be made to the water recirculator manual for additional information on its installation, operation and maintenance.

CAUTION

Under no circumstances connect metal tubing to the lamphouse water system. The SC-123 water terminal block is energized, being of positive polarity. A metal tubing connected to this block will cause a short circuit to ground which will damage the lamp.

CONNECTING A WATER COOLED APERTURE IN THE WATER SYSTEM

While the Ashcraft Water Recirculator is capable of supplying water to both lamp and water cooled aperture it is of utmost importance that the water-cooled apertures be correctly designed.

No water-cooled apertures should be connected in series with the lamp which will reduce the water flow beyond a safe minimum. Apertures which cause extreme resistance to the water flow in the contacts may result in damage to the contacts particularly if there is sediment or alkali in the water.

When installing the recirculator in conjunction with arc lamp and a projector with a water-cooled aperture the water connections must be made in the following manner.

One end of the 6 ft. hose is to be connected to the outlet connector R-32 on the recirculator and the other end connected to the "IN" connector SC-122 on the water terminal block SC-123. Next, one end of the 4 ft. hose c/w couplings (packed with lamp) is connected to the remaining SC-122 connector and the other end connected to the input of the water-cooled aperture. The remaining 6 ft. hose is connected to the outlet of the aperture to the union R-16 on the return flow indicator on the recirculator.

The terminal cover CN-4042 which had to be removed for the installation of the water connections may now be replaced and secured by the four (4) mounting screws.

And now - most important! Use only distilled water in the recirculator. Fill the tank within 1-1/2 inches of the top and check the water level periodically. Do not over-fill. City or tap water may be used in short emergencies but its chemical content will eventually constrict the metal tubing and orifices in the silver contacts.

ASHCRAFT A.C. WATER RECIRCULATOR

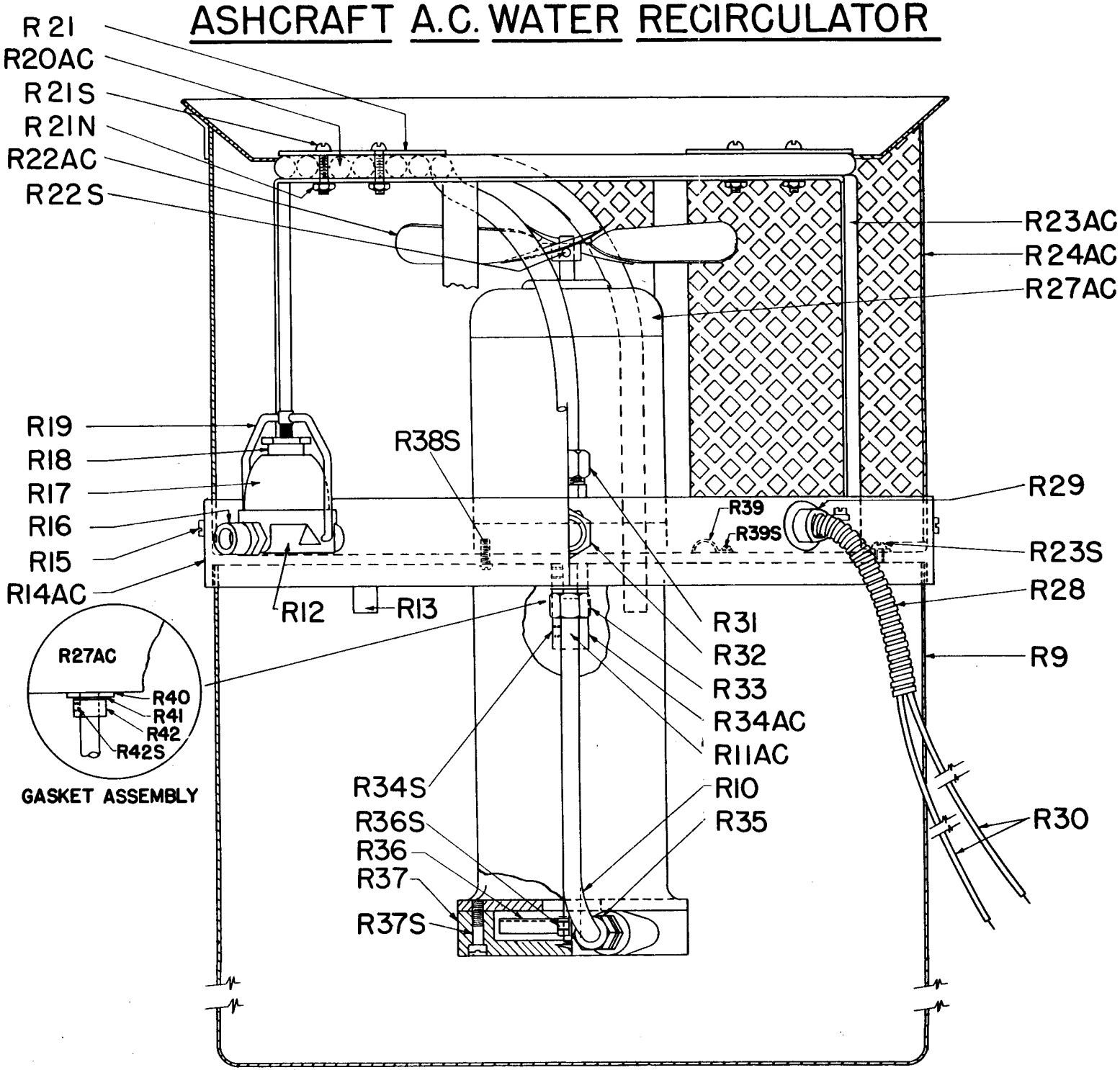


FIG. 24

ASHCRAFT A.C. WATER RECIRCULATOR
Fig. 24

R	9	Tank
R	10	Tubing
R	11AC	Impellor Shaft
R	12	Filter Bowl Casting
R	13	Nipple
R	14AC	Pump Casting
R	15	Cage Screws
R	16	Coupling
R	17	Bowl
R	17A	Gasket
R	18	Clamp
R	19	Clamp Frame
R	20AC	Cooling Coil
R	21	Coil Clamp
R	21S	Coil Screws
R	21N	Locknuts
R	22AC	Fan
R	22S	Fan Set Screw
R	23AC	Coil Support
R	23S	Coil Support Screws
R	24AC	Cage
R	27AC	Motor
R	28	Motor Lead Tubing
R	29	Bx Connector
R	30	Motor Leads
R	31	Coil Tubing Connector
R	32	Outlet Connector
R	33	Tubing Connector
R	34AC	Coupling
R	34S	Coupling Set Screws
R	35	Connector
R	36	Impellor
R	36S	Impellor Set Screw
R	37	Pump Cap
R	37S	Pump Cap Screws
R	38S	Motor Mtg. Screws
R	39	Cable Clip
R	39S	Cable Clip Screws
R	40	Gasket
R	41	Washer
R	42	Collar
R	42S	Collar Set Screw
R	43	A.C. Motor Bearing