

Film-Tech

The information contained in this Adobe Acrobat pdf file is provided at your own risk and good judgment.

These manuals are designed to facilitate the exchange of information related to cinema projection and film handling, with no warranties nor obligations from the authors, for qualified field service engineers.

If you are not a qualified technician, please make no adjustments to anything you may read about in these Adobe manual downloads

www.film-tech.com

INSTALLATION INSTRUCTIONS
OPERATING MANUAL
and PARTS LIST

Ashcraft

CORE-LITE

**MOTION PICTURE
PROJECTION LAMP
AND RECTIFIER**

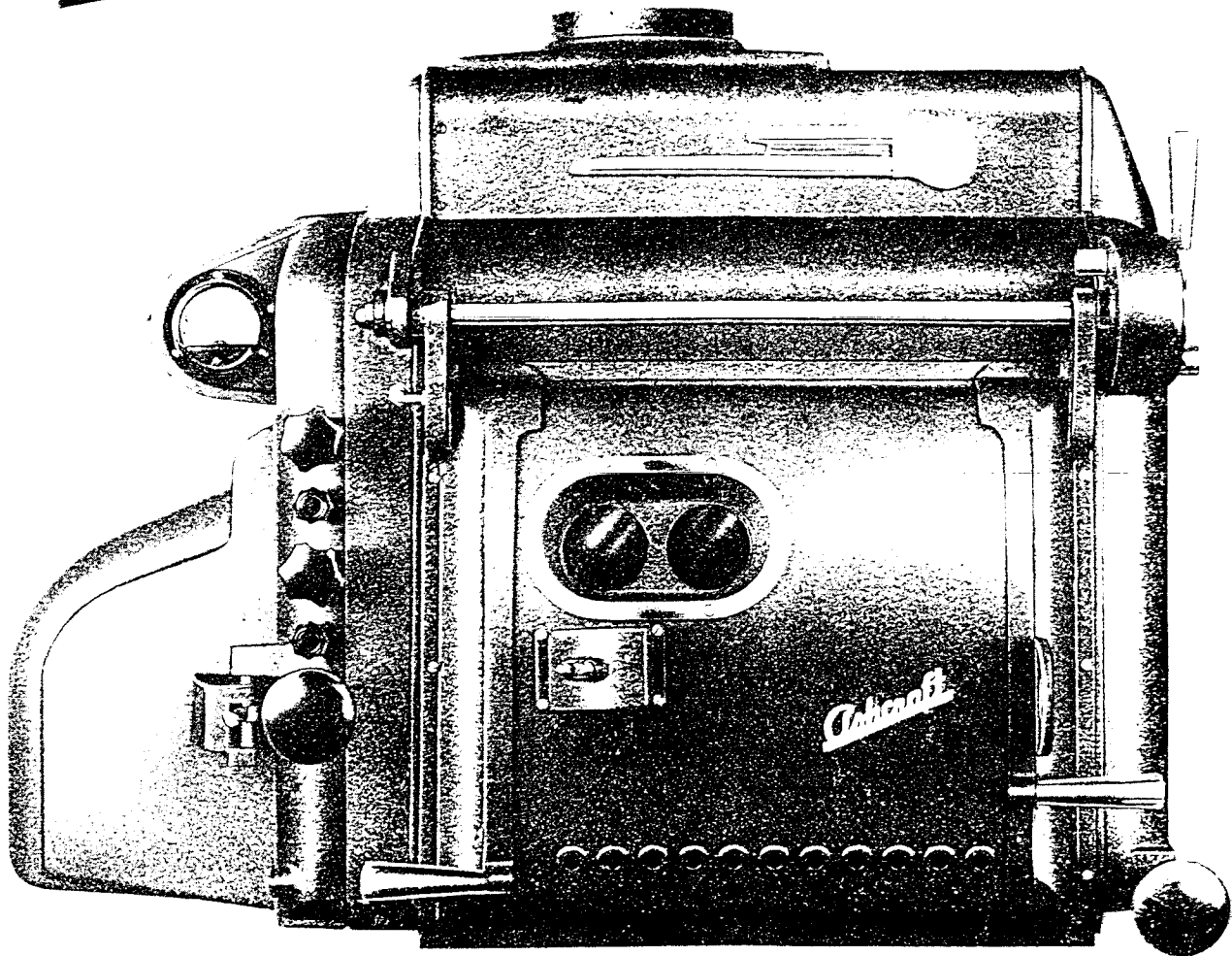
Manufacturers of the finest in arc-light projection equipment

C. S. ASHCRAFT MANUFACTURING COMPANY, INC.

36-32 THIRTY-EIGHTH STREET

LONG ISLAND CITY, N. Y.

THE
Ashcraft



CORE-LITE

MADE IN U.S.A.

PATENT PENDING

TRADE MARK

PROJECTION LAMP

INDEX

	Page
YOUR NEW ASHCRAFT CORE-LITE PROJECTION LAMP	4
UNPACKING	5
INSTALLATION OF THE A.C. BLOWER	5
PLACING THE REFLECTOR IN THE LAMPHOUSE	6
OPTICAL ALIGNMENT	7
CONNECTING ELECTRICAL WIRES	9
RECOMMENDED EXHAUST SYSTEM	9
INSTALLATION AND MAINTENANCE OF THE A.C. WATER RECIRCULATOR	11
CARBON SIZE - ARC CURRENT - VOLTAGE - CARBON CONSUMPTION	13
DETERMINING AND ADJUSTING THE CONTACT PRESSURE	14
INSERTING THE POSITIVE CARBON	14
INSERTING THE NEGATIVE CARBON	15
CONTROLS OF CORE-LITE LAMP	15
POWER SOURCES - RECTIFIERS, GENERATORS, ETC.	17
CORE-LITE ARC AND RELATIVE CARBON POSITIONS	20
THE ARCSCOPE AND SCREEN	22
HOW TO STRIKE THE ARC	22
ADJUSTING THE ARC FEED MECHANISM FOR CONSTANT REGULATION	22
HOW TO OBTAIN THE MAXIMUM SCREEN LIGHT AND DISTRIBUTION	23
MAINTENANCE OF THE CORE-LITE ARC LAMP	24
LUBRICATION	27
PART DIAGRAMS AND NUMBERS	28-42
.	43

YOUR NEW ASHCRAFT CORE-LITE PROJECTION LAMP

The optical system of the Core-Lite 35 mm projection lamp is entirely different from any mirror-type lamp heretofore designed. In the Core-Lite lamp we do not focus the image of the carbon crater on the film. Instead, the film intercepts the light cone much closer to the mirror (6-1/2 inches when an 11 mm positive carbon is used) than has been the previous practice. At this position, instead of the aperture spot being "fixed," it is possible to vary the aperture spot diameter over a wide range.

The Core-Lite motion picture projection lamp and system produces on the theatre screen amazing results as shown in the arc amperage, distribution, lumen and burning rate chart on page 13, Fig. 3.

The Core-Lite lamphouse is designed especially to utilize a very short working distance of 29-1/2 inches using an 11 mm high intensity carbon and a 16" silver reflector in such a manner that the extremely brilliant and whiter light from the cerium core only of the carbon is projected to the screen.

To accomplish this we have discovered a method which magnifies both the shell light and the core light to such an extent that the magnification of the very small cerium core light is, in itself, of sufficient size to adequately cover the aperture area and the undesirable red light from the shell is entirely outside the aperture area, thus preventing it from reaching the screen.

In addition to the above accomplishment we have completely changed the shape of the cone of light from the mirror to the projection lens you are now using so that all the rays of white core light projected by the mirror enters the lens and reaches the screen, thus the screen is evenly covered with this brilliant white core light.

The 11 mm x 17-1/2 inch positive carbon is used throughout the current range of the lamp -- 75 to 110 amperes. The negative, 5/16" x 9" copper coated is used up to 95 amperes, 11/32" x 9" copper coated, from 95 to 110 amperes. The positive carbon should have a smooth finish to maintain perfect electrical contact in the silver water-cooled positive jaws, and the cerium core section round because the success of the Core-Lite is in the high magnification of the positive carbon core light. Both positive and negative carbons should be tested by the carbon manufacturer for uniformity of resistance and quality. Your supply dealers will recommend the proper carbons to be used with the Core-Lite arc lamp.

Every Core-Lite mirror is factory tested for quality before the trade-mark CORE-LITE is stamped on the back. Within our current range of 75 to 95 amperes, silver reflectors are recommended -- there should be no need for cold reflectors, and front-surface coated reflectors are not recommended. If the lamp is to be operated within the range of 95 to 110 amperes, your theatre supply dealer should be consulted on the use of reflectors.

The CORE-LITE arc lamp has been manufactured and assembled with precision and utmost care. It has been thoroughly tested and is ready to be put into operation immediately after installation. Quite likely only a few adjustments to the arc control and arcscope will be necessary.

A good installation depends to a great extent on your basic knowledge of the arc lamp. On the following pages you will find simple step-by-step instructions regarding unpacking and installing the Core-Lite arc lamp. You can avoid duplication of effort and attain a perfect installation if you will read this manual and familiarize yourself with the steps and procedures before unpacking and starting the installation.

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 of top of case including those at joints of cross bracing. Remove top.
4. Remove nails which hold all the cross bracing securing the lamp to inside of case.
5. Remove the four (4) square-head nuts from the bolts which secure the two braces at the bottom of the lamp to the packing case. Two nuts will be found at the rear of the lamp and two at the front.
6. Lift lamphouse from packing case, using chrome plated lamphouse door tubes as lifting handles.
7. Carefully tilt the lamphouse over so that it rests on its left side (or burner mechanism side), 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. Where Simplex XL Projectors are used, remove the metal plate cover at the left front of the lamphouse. The opening is to permit the shutter housing to fit into the lamphouse front. On most other projectors removal of this plate is not necessary.
9. Set lamphouse on projector pedestal. Using the four 1 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.
10. Some pedestal bases may require longer lamphouse mounting bolts.

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

INSTALLATION OF THE A.C. BLOWER

You are now ready to install the 115 volt A.C. Blower which has been wired to the side of the lamphouse in a shipping position. Read carefully the following instructions.

1. Remove the four (4) screws holding the Terminal Cover CN-4042 in position and remove cover. This cover is located on the left-hand side of the lamp.

2. Remove the two (2) wing nuts located beneath the lamp on the operating side, and lift out the air deflector duct located on the inside bottom of the lamphouse. NOTE: Do not remove the air deflector duct unless absolutely necessary — read further instructions.

The air deflector duct of the reflector ring on the lamphouse base is the air deflector tray. Fasten the air deflector tray by unscrewing the wing screw.

4. Remove the three (3) locknuts, lockwashers, etc., from the screws located on the left-hand side of the lamphouse directly beneath the water-hose connections on the bottom of the lamp. BE CAREFUL NOT TO PUSH THE THREE SCREWS OUT OF THEIR RESPECTIVE HOLES.

5. With the air intake of the blower facing towards the front of the lamp, line up the three mounting holes on the blower flange with the three screws protruding from the lamphouse base. CAREFULLY place the blower onto the screws, avoid pushing the screws back into the lamphouse. After positioning, twist the blower slightly either left or right in order to lock the screws. Place lockwashers, locknut, etc., onto screws beneath the blower flange and tighten securely.

An alternate method used only when encountering difficulty with the mounting and screws is to remove the small blower duct inside the lamp. This, however, is not recommended as it is difficult to replace the duct to its original position. To remove the duct, remove the one (1) small screw from the duct inside the lamp and then the two (2) additional screws located on the outside of the lamphouse near the water-hose connections. After mounting the blower as described in previous paragraph replace duct and screw into its original position.

NOTE: Be sure duct is seated flush onto lamphouse base and at the correct angle.

6. DO NOT replace air deflector tray or large blower duct at this time.

PLACING THE REFLECTOR IN THE LAMPHOUSE

1. 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).

2. Remove only the clip and screw located on the reflector ring casting support bracket in the lower part of the lamp on the operating side.

3. Open rear door wide, operating Negative Manual Control Knob CN-4424, PULL BACK Negative Jaws CN-4312 full extent.

4. Before inserting reflector inspect the three (3) flat Reflector Springs CN-4453AS. They should be in direct line with the webs of the ring as shown in Fig. 17. They may have moved in shipping. If not in correct position, line up and tighten screws.

5. 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.

6. Be sure the reflector does not touch the negative carbon guide, at least 3/16 inch clearance should be minimum. The reflector should have slight clearance all around inside the support brackets. Push reflector up, down, and sideways to determine this.

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

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 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.

Where Simplex XL projectors are used the opening in the left front of the lamp which was exposed upon removal of the cover plate, (Simplex XL only) will permit the shutter guard to fit into the lamphouse front.

On almost all projectors the operating distance of 29-1/2 inches is attained when the lamphouse is placed as close to the projector shutter guard as possible without actually touching it. In some installations where 25 inch upper magazines or penthouse magnetic soundheads are used, there may be some interference. In case of such interferences, it may 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 magazines and the upper portion of the projector casting.

Due to the non-standard design of the Motiograph projector, it is not advised by us to be used with the CORE-LITE lamp, since the design of the projector prohibits obtaining the working distance of 29-1/2".

Now 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.

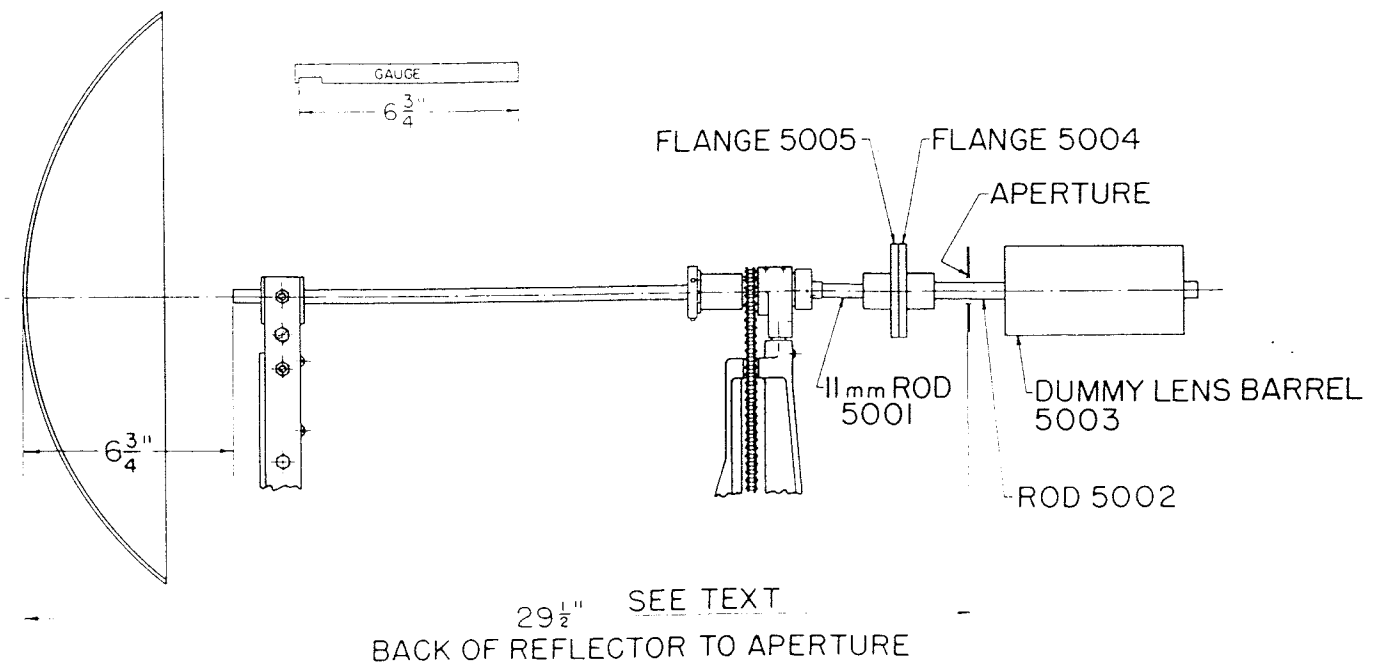


FIG. 1

Fig. 1 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. 1 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 from our factory.

Raise all shutters out of way for insertion of rods. Insert the 11mm rod 5001 through the carbon tube in the lamphouse back, through the positive carbon contacts and the rotating collet.

NOTE: In some cases where rod 5001 is constructed in such a manner that it has an adaptor on the end to fit flange 5005 it will be necessary to pass the rod through from the front of the lamp, by first passing through the lens holder and projector, into the rotating collet and then the carbon contacts.

The dummy lens 5003 is clamped into the projection lens holder. Place the 1/2" rod 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 11mm 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.

Each CORE-LITE lamp is tested under actual operating conditions at our factory. The prescribed working distance of 29-1/2" 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 arc-image co-ordinating 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).

Unless some part has shifted in transit there is no reason why the lamp should not be put into operation with only a minimum of adjustment to the controls, arcscope and arc-imager, depending on the amperage at which the arc lamp will be burned.

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

CONNECTING ELECTRICAL WIRES

The 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 reflector blower, 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 into 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 and CS-9 flexible cables are to be placed beneath the two cable clamps located near the plate marked "Neg. Feed Increase", there is also one additional cable clamp beneath the lamp to accommodate the CS-9 blower cable.

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

Wiring diagrams of the CORE-LITE lamp and the CORE-LITE S-1212 Selenium Rectifier are shown in Figs. 6 and 7 of the manual. CORE-LITE lamp wiring diagrams are also located inside the terminal cover CN-4042 and fuse box cover CS-12.

RECOMMENDED EXHAUST SYSTEM

An Exhaust system should be provided for the CORE-LITE Lamp which will remove not less than 600 L.F.P.M. of air from each arc lamp and at an exhaust speed not to exceed that which will actually disturb the tail flame. The preferred method for the installation and use of an arc lamp exhaust system is shown in Fig. 2, Page 10.

The anti draft hood shown at the junction of the lamphouse has proved to be an excellent device. The importance of continuous, unimpeded air flow cannot be stressed too strongly. The safety of the reflector depends on a continuous flow of air over its front and back surfaces to equalize the temperature and minimize the glass strains created by the radiated heat from the arc.

OPERATION OF THE LAMP BLOWER SYSTEM

The continuously operating 115 Volt A.C. reflector blower of the lamp forces an even flow of air through the duct system covering the lamphouse base, over the air deflector tray, and then upwards over the reflector surface. Some of this air is also forced to the rear of the reflector. Another feature of the CORE-LITE ventilation is the vent opening at the base of the rear door and vent hole in the lamphouse back directly to the top rear of the reflector ring.

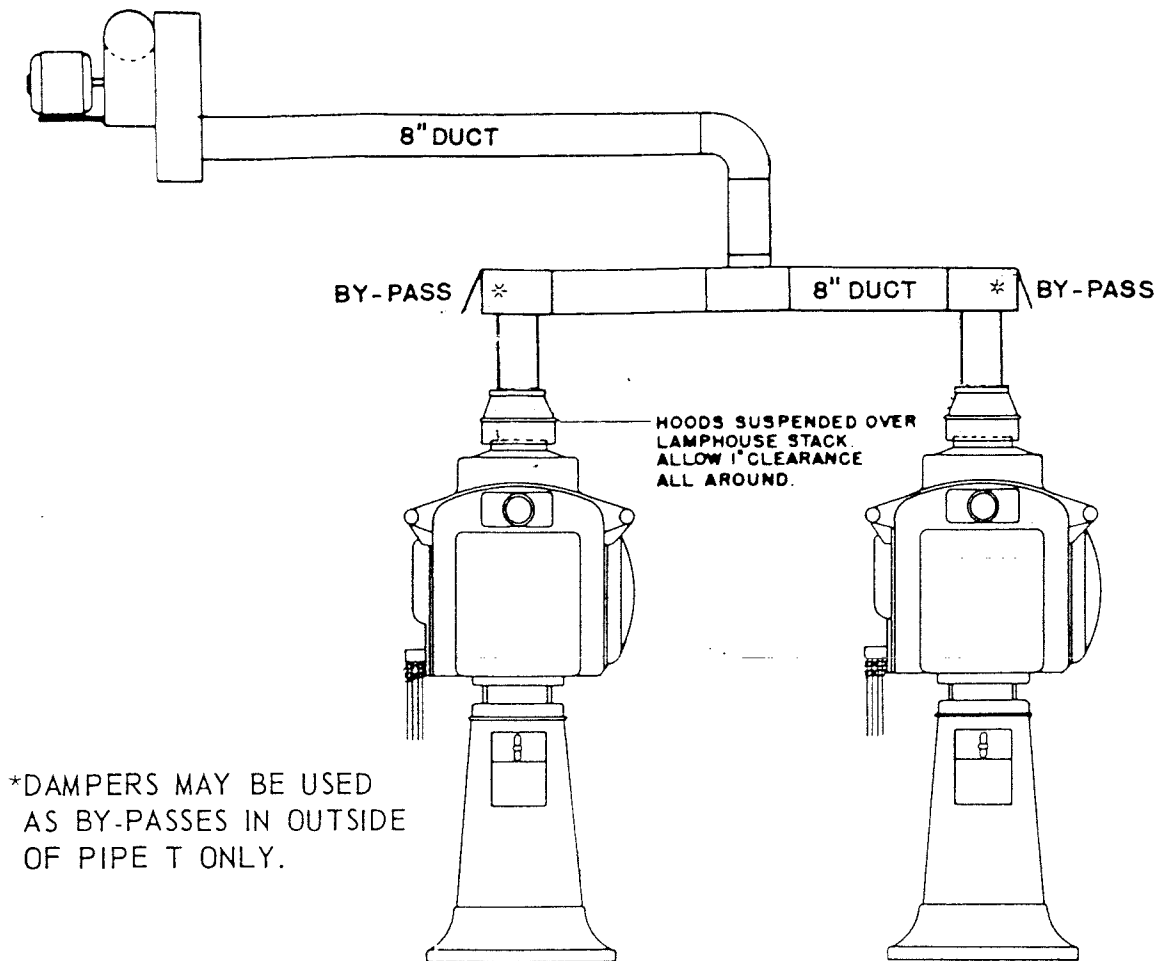


FIG. 2

Through these vents the booth exhaust system draws air in, and out through the lamphouse top, at the same time removing the hot air from behind the rear of the reflector. Both combined ventilation features not only cool the lamp but also the reflector - insuring longer reflector life.

NOTE: The flow of air from the A.C. blower is predetermined and is set at the factory and should not be changed.

CORRECT EXHAUST

To determine the proper flow of air being exhausted from the lamphouse by your booth exhaust system, a simple inexpensive instrument known as a Velometer, which measures air flow in linear feet per minute should be used.

The draft or exhaust from the lamp is to be measured at the opening at the end of the stack tube located inside the lamphouse. The air flow at this point should be measured with the Velometer and as aforementioned, should read no less than 600 L.F.P.M. If this reading cannot be obtained or after the arc has been struck the exhaust speed is too great, that it disturbs the tail flame, then the necessary adjustments must be made on the by-passes of the booth exhaust system.

INSTALLATION AND MAINTENANCE OF THE A.C. WATER RECIRCULATOR

ELECTRICAL

The water recirculator is designed for continuous operation throughout the complete theatre operating period. 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 are supplied with the CORE-LITE lamp. These can be found inside the corrugated container packed inside every lamp. The couplings on the hoses are to be connected securely to the CN-4122 unions on the water terminal block located on the distribution panel on the left side of the lamp.

When the recirculator is used for the arc lamp only, the hose attached to the "IN" union on the water terminal block CN-4123 of the distribution panel is to be connected to the outlet connector R-32 on the recirculator

Packed with every water recirculator is one (1) #1805 coupling and one (1) can of DuPont rust inhibitor. The 1805 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.

When the recirculator is to be used in conjunction with a projector with a water-cooled aperture the water connections must be made in the following manner:

One end of the 6' hose is to be connected to the outlet connector R-32 on the recirculator and the other end connected to the "IN" connector CN-4122 on the water terminal block CN-4123.

A short hose is then connected from the remaining connector CN-4122 to the input of the water cooled aperture, the remaining 6' hose is connected to the outlet of the aperture to the union R-16 on the return flow indicator on the recirculator.

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.

CAUTION

Under no circumstances connect metal tubing to the lamphouse water system. The CN-4123 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.

The terminal cover CN-4042 removed for installation of the A.C. blower may now be replaced and secured by the four (4) mounting screws.

FILLING THE TANK

The recirculator tank holds approximately nine gallons — distilled water is preferred. If tap water is used the DuPont rust inhibitor (supplied with recirculator) should be used to neutralize acids and alkalis in the water. Fill tank to within 1-1/2" from the top of tank — Do not allow water level to drop lower than 2" from top of tank.

MAINTENANCE

1. Keep tank filled with water to at least 1-1/2" from top.
2. Periodically drain tank, clean, and replenish with distilled water, or fresh tap water and DuPont rust inhibitor.
3. DO NOT INVERT recirculator pump when removing from water tank.
4. If alkali or sediment is found on the recirculator pump or on tank during periodical inspection, it should be cleaned off. Doing so will ensure trouble-free operation of the recirculator. Failure to clean unit will result in sediment and alkali entering the water system, eventually restricting the flow of water, which may result in damage to the positive contacts, and also require a costly cleaning operation to the water system.
5. The A.C. motor is ball-bearing type and should require no maintenance. However, over periods of long shutdown, severe cold weather, and possible sediment from the water reaching the bearings, the lubricant in the sealed bearings may congeal, reducing the speed of the motor. A few drops of oil at the point where the motor shafts protrude from the motor both top and bottom will correct this.

The Ashcraft water recirculator is made from the best materials obtainable. All aluminum parts are anodized with sealing on the anodizing of the castings, other mechanical parts are of stainless steel and brass.

With reasonable care this unit will give a long and dependable service.

CARBON SIZE – ARC CURRENT – VOLTAGE – CARBON CONSUMPTION

The CORE-LITE projection arc lamp is designed to use only one size positive carbon, the 11mm X 17-1/2" high intensity projector carbon, combined with the 5/16" X 9" copper-coated negative carbon up to 95 amperes, and 11/32" X 9" copper-coated negative from 95 to 110 amperes.

One of the outstanding features of the CORE-LITE is that it uses these trims throughout the current range of 75 to 110 amperes with a D.C. arc voltage range of 45 to 52.

Another outstanding feature is its economy of operation. Depending upon the type of arc lamp which the CORE-LITE replaces, savings of 30% in the cost of carbons can be expected. Up to 50% in savings is not unusual in theatres which previously used arc lamps burning 9 and 10mm high intensity reflector type lamps operating at 85-105 amperes.

Fig. 3 below is a table showing results of actual tests to determine typical savings in the cost of carbons.

ASHCRAFT CORE-LITE ARC LAMP				
LENS: 3½"EF f/1.9				
ARC AMPERAGE	RELATIVE LIGHT	PERCENT DISTRIBUTION	LIGHT LUMENS	POS. CONSUMPTION INCHES PER.HR.
75	252	80-82	15,699	6.
80	276	80-82	17,195	6.5
85	300	80-82	18,690	7.25
90	334	80-82	20,809	8.5
95	366	80-82	22,801	10.0
100	390	80-82	24,297	11.625
105	420	81	26,200	12.937
110	432	80	27,000	14.25

FIG. 3

DETERMINING AND ADJUSTING THE CONTACT PRESSURE

When the CORE-LITE lamp leaves our factory the positive contact assembly has been thoroughly tested, expertly adjusted.

The correct pressure of the contacts CN-4101 and CN-4102 on the carbon is important. The best method of determining the ideal pressure is to insert a short length (approximately 4") of 11mm 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 CN-4102 an adjusting screw CN-4115 is located for varying the contact pressure, a locknut CN-4103N locks the adjusting screw in position. Before any attempt is made to adjust the contact pressure be sure the hexagon swivel nut CN-4109 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 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 CN-4107. After the proper contact pressure has been adjusted lock the adjusting screw nut CN-4103N so that the adjusting screw cannot turn.

INSERTING THE POSITIVE CARBON

Insert the positive carbon through the 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.

Place the positive carbon 6-3/4" from the rear surface of the reflector. You will find a gauge shipped with every CORE-LITE reflector which is the exact distance, to be used for the setting of the positive carbon. The small tip of the gauge is to be inserted into the center hole of the reflector. The tip of the gauge should then be held against the rear surface of the reflector. Holding gauge parallel with base of lamp, bring the positive carbon in contact with the extreme end of the gauge. A plastic-handled Allen wrench is provided for insertion into the collet set screw CN-4212 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.

NOTE: On occasions it will be found that the collet locking set-screw CN-4212, 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 CN-4212 a hole located in the collet collar CN-4211. 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 "A" Fig. 9) 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 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 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 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. 15.

MOTOR FEED CONTROLS

There are two positive feed control knobs CN-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 rheo-

stats 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 operation 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 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. 13 and 22 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 CORE-LITE S/1212 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 has all of the distinctive and exclusive characteristics which are found only in Ashcraft Rectifiers.

It is unequaled as a source of D.C. power for requirements of the CORE-LITE lamp. This rectifier has 30 possible adjustments for voltage and amperage. Such a wide range of flexibility is ideal for CORE-LITE operation because the CORE-LITE Arc Lamp responds instantly to slight increases or decreases of amperage.

The Ashcraft High Reactance rectifiers are designed for use with the Ashcraft CORE-LITE, Super Cinex and Cinex projection lamps which are of the lower carbon angle type, requiring less arc voltage and less arc amperage to produce comparable screen illumination than the high carbon angle type.

A rectifier, to operate in accordance with the 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 does.

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 CORE-LITE 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/1212 rectifier carry an unconditional guarantee for 3 years.

INSTALLATION AND ADJUSTING OF S/1212 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, humid or poorly ventilated locations.

For information on the complete wiring of S/1212 rectifier refer to Fig. 6 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 to 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 to 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

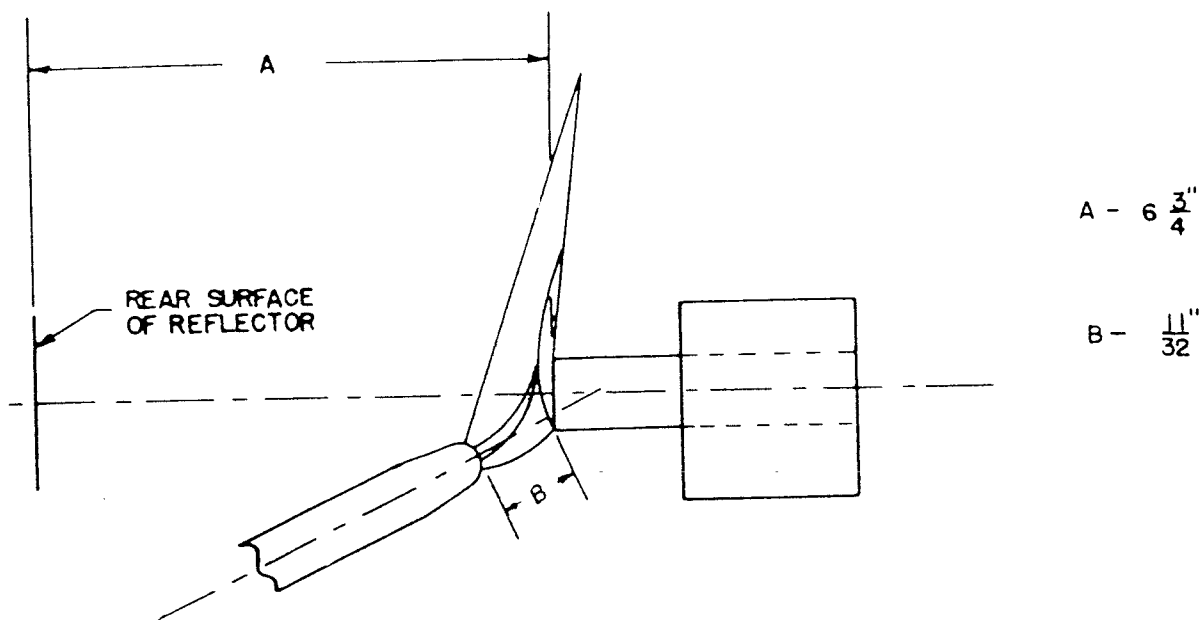
CORE-LITE Selenium Rectifiers are always recommended over all other types of current converters where 3-phase is available. In some areas single phase or 2-phase power is available which means the use of motor generator sets. Such installations will require suitable rheostats which are available through your supply dealer. The current range of the CORE-LITE Arc Lamp is 75 to 110 amperes. The arc voltage is between 45 and 52 volts. A voltage drop of not less than 17 volts (20 volts is preferred) from the generator line voltage to the arc voltage. Rheostats should have knife switches for paralleling coils for changing current and should be in multiples to change current in three ampere steps.

Do not attempt to use present rheostats unless they meet the current and voltage specifications required for CORE-LITE operation.

CORE-LITE ARC AND RELATIVE CARBON POSITIONS

The illustration below (Fig. 4) shows the appearance of the 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 $\frac{3}{16}$ " 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 $\frac{3}{32}$ of an inch from the bottom.



OPTIMUM RELATIVE CARBON POSITIONS

FIG. 4

CORRECT CARBON POSITIONING

Illustrated below (Fig. 5) are the correct and incorrect methods of carbon positioning to obtain the maximum light, arc stability and optimum burning conditions.

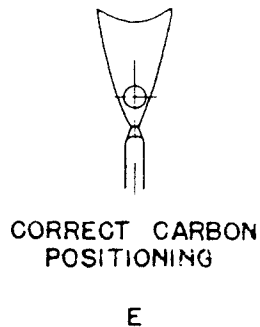
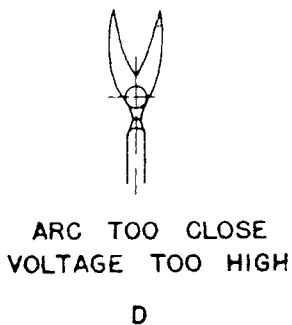
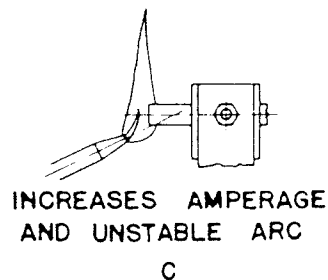
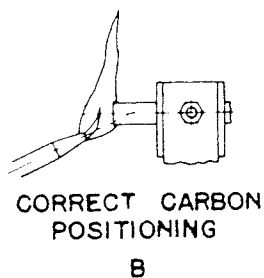
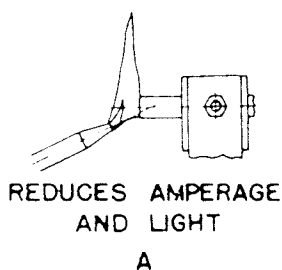
A) shows the tip of the negative carbon too high with a loss of light and unstable arc.

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. 5

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 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 arcscope screen. Consult "Maximum Screen Light and Distribution" before making adjustments.

HOW TO STRIKE THE ARC

Striking is always accomplished by moving the negative carbon into contact with the positive carbon. This should be done rapidly — withdrawing the negative to its position on the arcscope screen immediately. 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 flames 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 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 air deflector tray and secure with thumb screw. Replace blower duct in position and secure with the two thumb nuts.

The CORE-LITE Arc Lamp when properly installed and in perfect optical alignment in accordance with our recommendations, is capable of delivering more light per watt of current consumed than any other arc lamp.

The 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 CORE-LITE magnifies the core of an 11mm positive carbon up to ten times, 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.

The CORE-LITE Arc Lamp, unlike any other arc lamp, is not limited by the speed (F no. of your lens) as associated with all other arc lamps.

HOW TO OBTAIN THE MAXIMUM SCREEN LIGHT AND DISTRIBUTION

As we have mentioned before, the 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" 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.

Use the gauge setting the position of the arcing end of the positive carbon 6-3/4 inches from the rear surface of the reflector.

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.

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. By moving the image alternately slightly ahead of and back of the line, the point of maximum screen illumination will be determined. Then, reset the arcscope to correspond with the new arc setting.

THE MAINTENANCE OF THE CORE-LITE ARC LAMP

Read carefully these instructions for the maintenance of your 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 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 the silver contacts CN-4101 and CN-4102 should be made. The opening of these contacts is so simple that only a few seconds are necessary for inspection. The hexagon swivel nut CN-4109 is to be removed and laid in the ash tray so it will not be misplaced. The movable contact CN-4102 and contact pressure arm CN-4106 can now be lifted off the stud onto which the swivel nut screws.

If the contacts are blackened they 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 CN-4106 on to stud CN-4110 and position the contact arm on to the adjusting screw CN-4108. Screw on the CN-4109 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 14.

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.

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 carriages 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. 8 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 on the worm gear. To adjust tension on the square drive shaft slip clutch assembly Fig. 9 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 CN-4212 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 flat 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. 11 of the positive rotating and carbon carriage shows the method of carbon rotation by means of chain CN-4209. The rotating square shaft CN-4014 has mounted upon it and insulated from it, driving sprocket CN-4224. Chain CN-4209 encircles this driving sprocket and rotating head sprocket CN-4210. 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 CN-4209. 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:

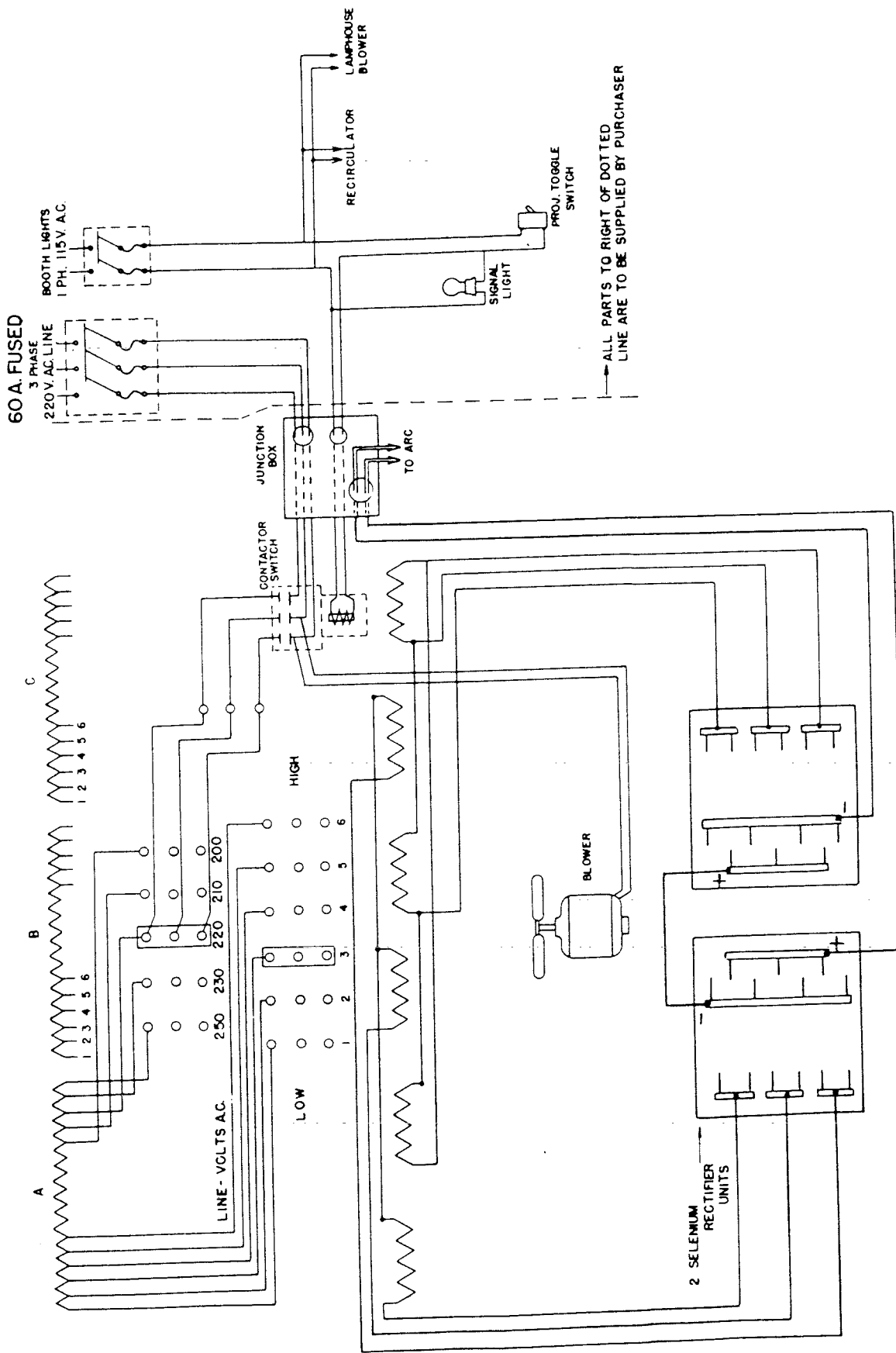
Negative Carbon Clamps (Joint)	CN4312	SAE 20 Oil
Negative Clamp Locking Cam	CN4311	Vaseline or Lubriplate #110
Main Drive Worm Gear	CN4051	Vaseline or Lubriplate #110
Worm Gear	CN4046	Vaseline or Lubriplate #110
Worm Gear	CN4054	No Lubrication*
Insulated Sprocket Groove	CN4224	Vaseline or Lubriplate #110
Upper Negative Slide Rod	CN4302	Graphite Lubricant
Rotating Head	CN4215	Graphite Lubricant
Lower Positive Slide Rod	CN4012	No Lubricant (Keep clean)
Square Rotating Shaft	CN4014	Graphite Lubricant & wipe clean
Square Shaft Rotating Gears	CN4026	No Lubrication*
	CN4024	No Lubrication
Idler Sprocket Assembly	CN4225	No Lubrication
All Sprockets (Idler)	CN4006	No Lubrication
	CN4313	No Lubrication
Negative Motor Bearings	MC-10	SAE 20 Oil
Negative Clutch	CN4333	SAE 20 Oil
	CN4337	SAE 20 Oil
Negative Clutch Roller Pad	CN4337	Vaseline or Lubriplate #110
Positive Rotating Chain	CN4209	Graphite Lubricant & wipe clean
Positive Drive Chain	CN4002	Graphite Lubricant & wipe clean
Negative Chain	CN4315	Graphite Lubricant & wipe clean
Negative Eccentric Rod at point where Negative Frame touches	CN4440	SAE 20 Oil
Dowser Swivel Stud	SD-9	Graphite Lubricant
Dowser Shaft (by Dowser Handle CS30)	CS28C	SAE 20 Oil
Dowser Ext. Shaft (by Dowser Toggle CS25)	CS26	SAE 20 Oil
A.C. Blower Motor		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 clutch causing gear #CN4054 to slip between plates #CN4023 which might result in non-feeding of the positive carbon. This also applies to Square Shaft Rotating Gears #CN4026 and #CN4024.

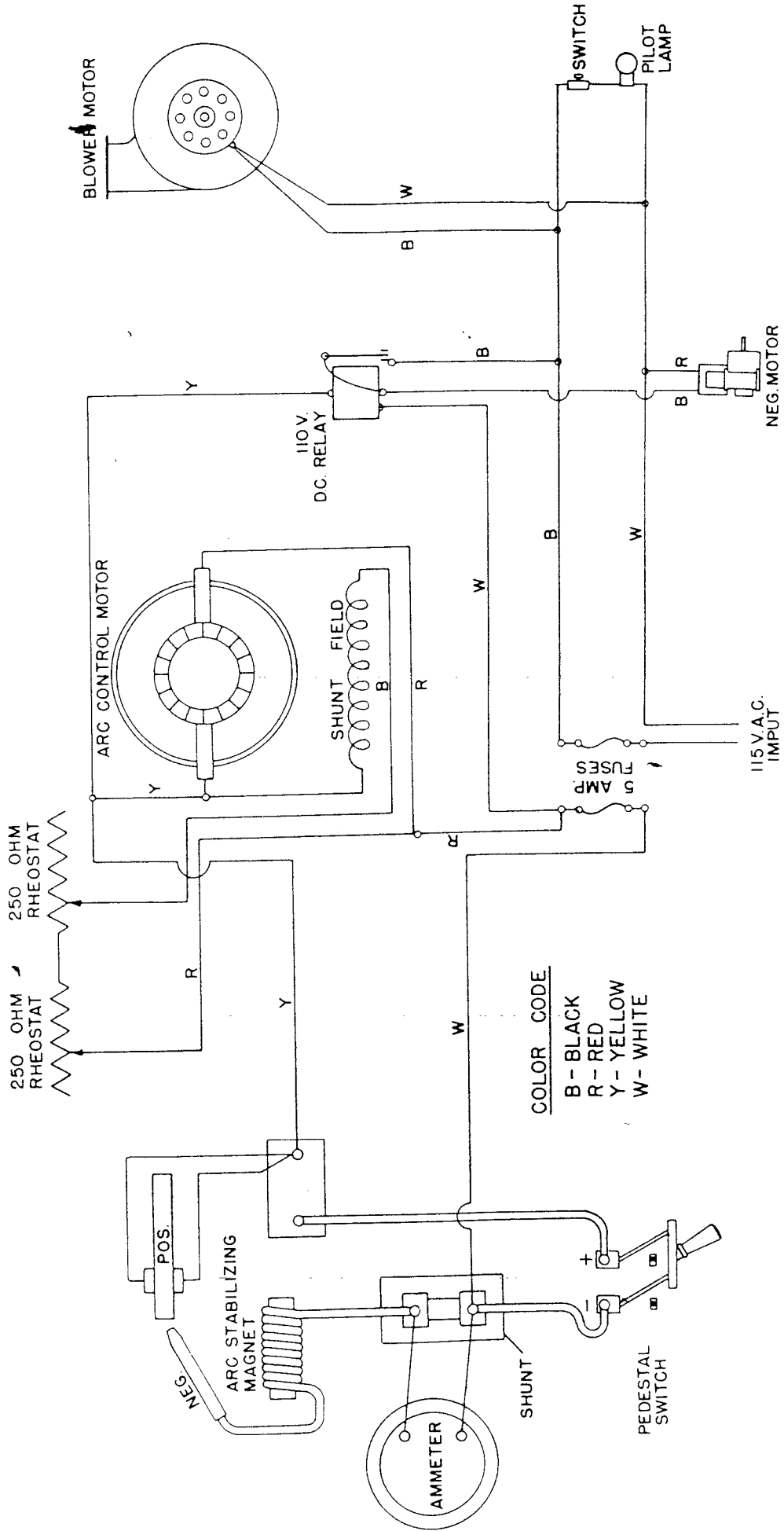
If any lubricant is found on these clutches, the entire clutch assembly should be thoroughly cleaned in carbon tetrachloride.

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

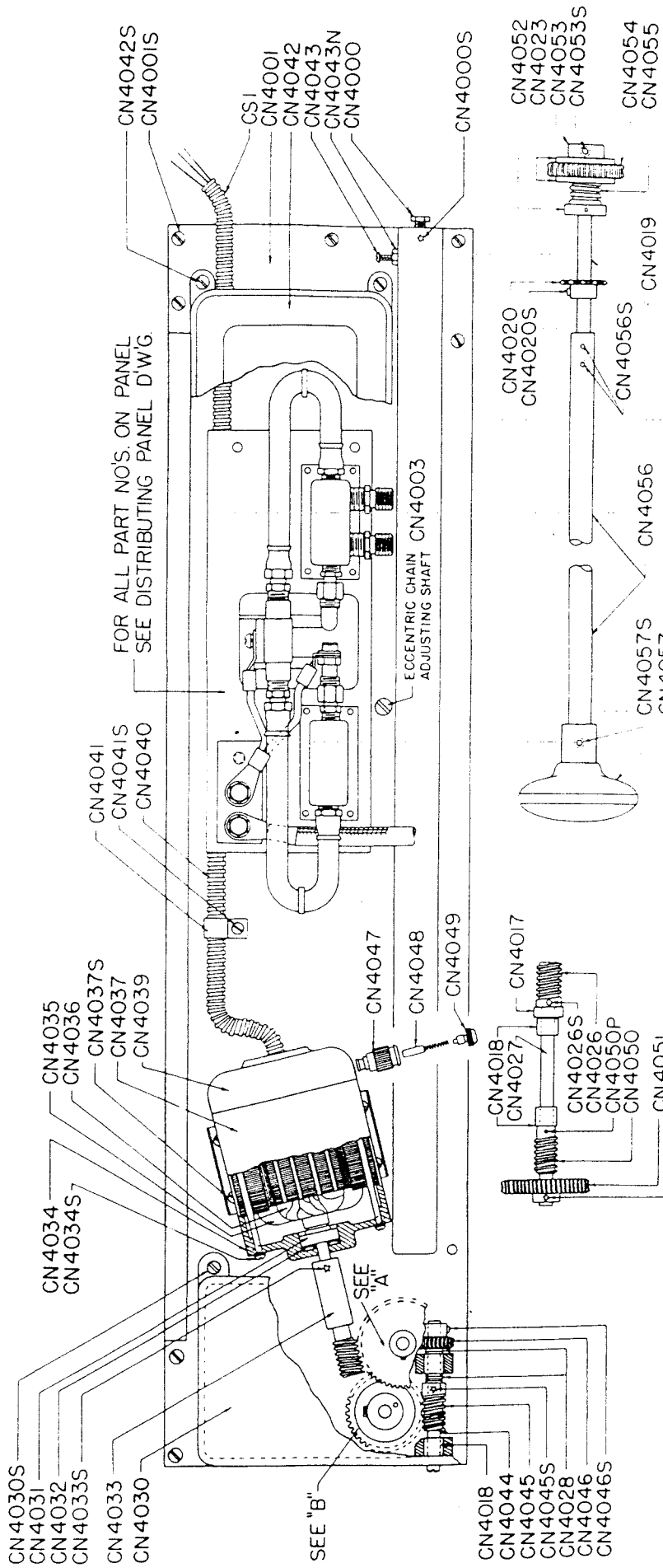
While we do not recommend regular lubrication of the positive drive chain, carbon rotating chain and negative chain it is sometimes necessary. If the carbon rotating chain becomes stiff or rusty, its operation can be improved by applying a few drops of graphite lubricant and wiping the residue off.



ASHCRAFT S-1212 H.R. 12 PHASE RECTIFIER
WIRING DIAGRAM
FIG. 6



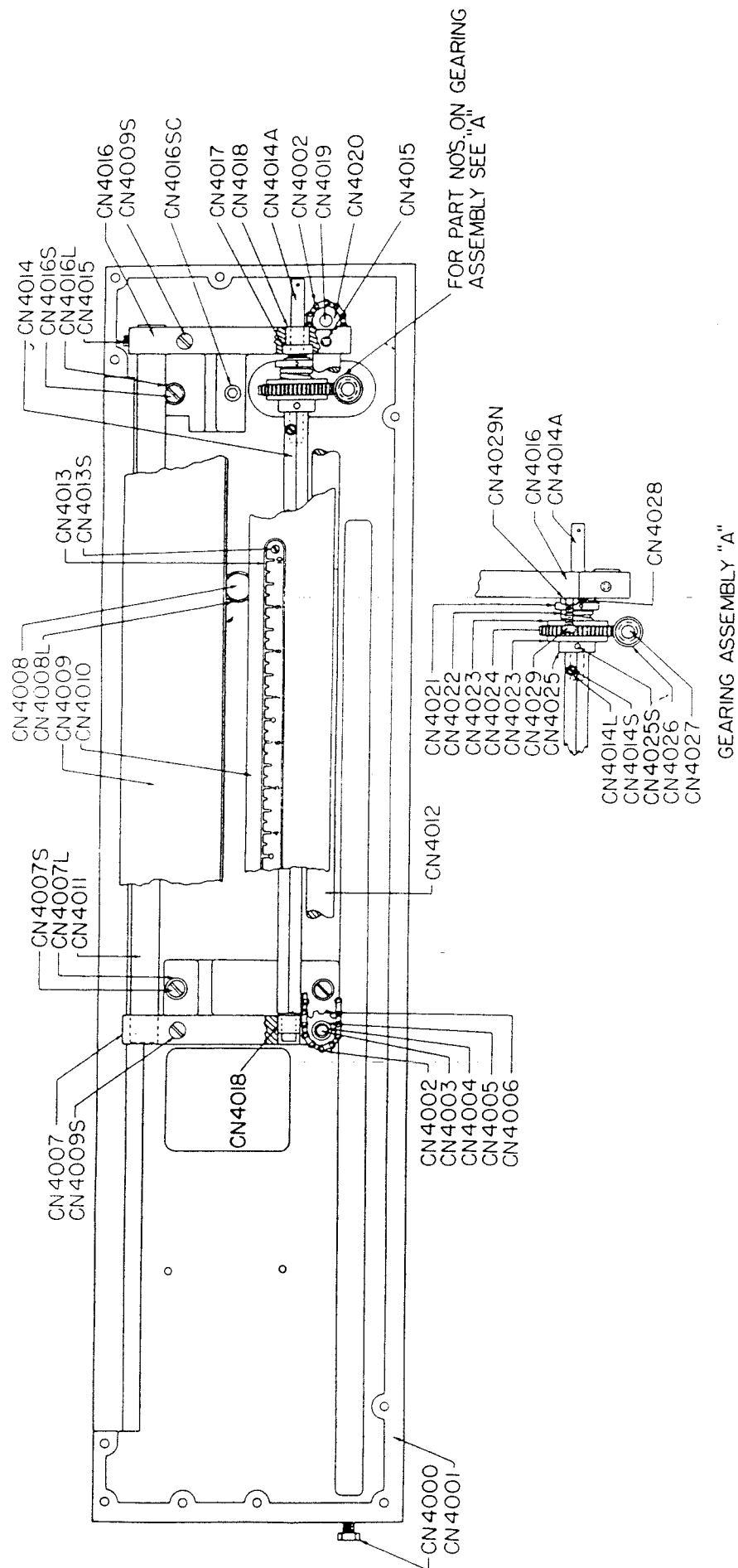
CORE-LITE CN 110 WIRING DIAGRAM
 FIG. 7



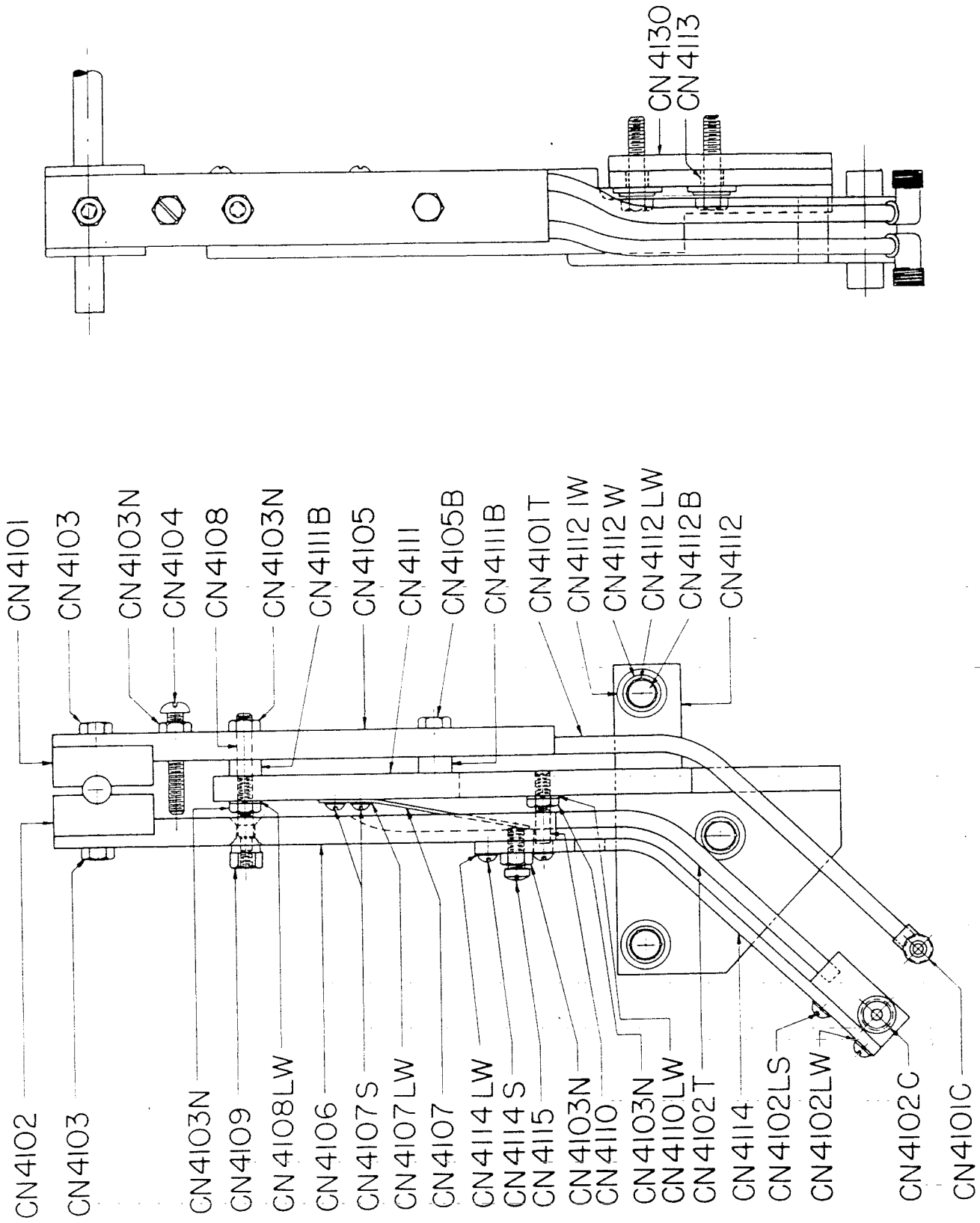
SIDE VIEW "B"
 C/W POSITIVE CONTROL SHAFT

SIDE VIEW "A"

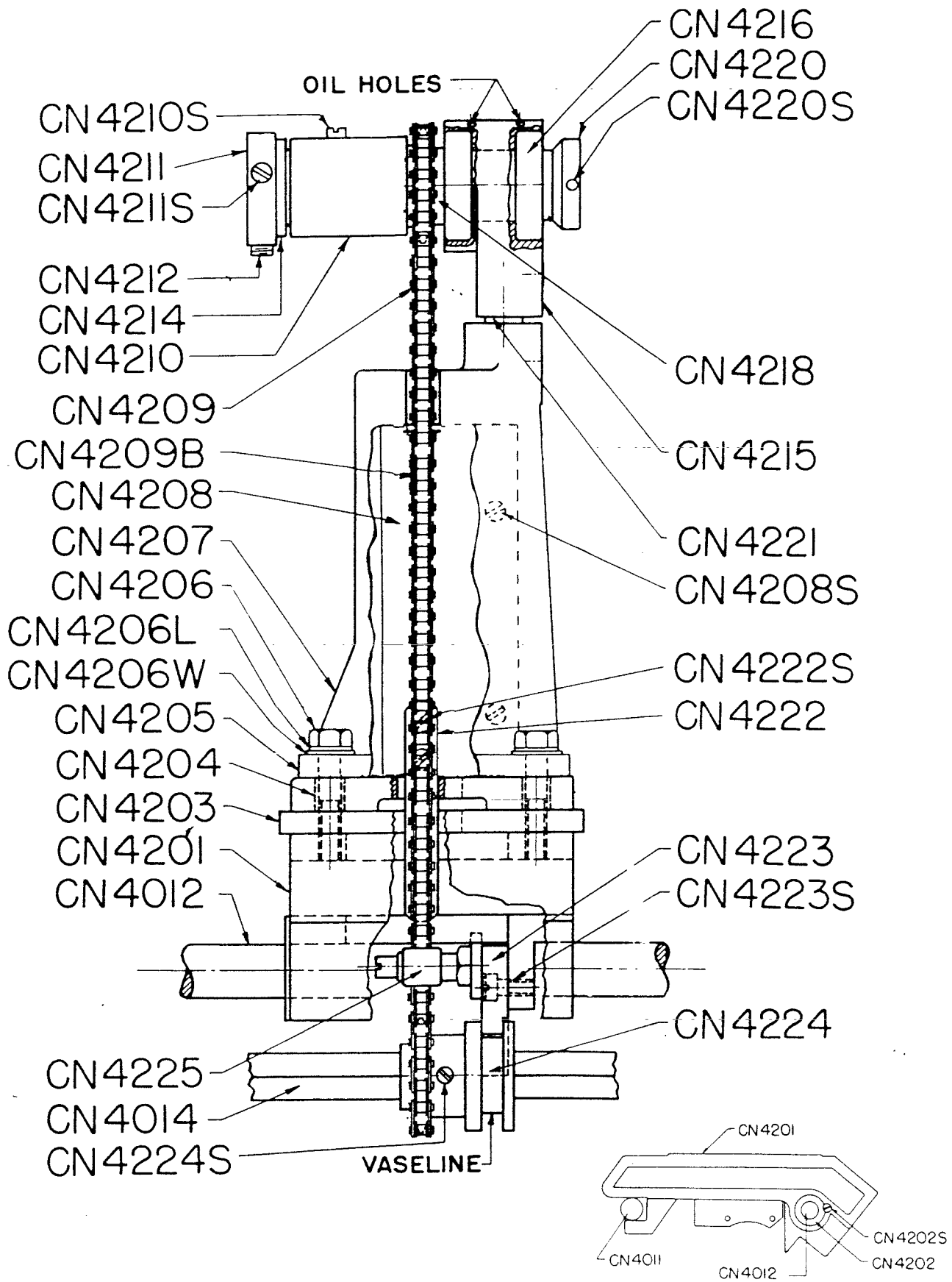
OUTSIDE ELEMENT BASE
 FIG. 8



INSIDE ELEMENT BASE
FIG. 9

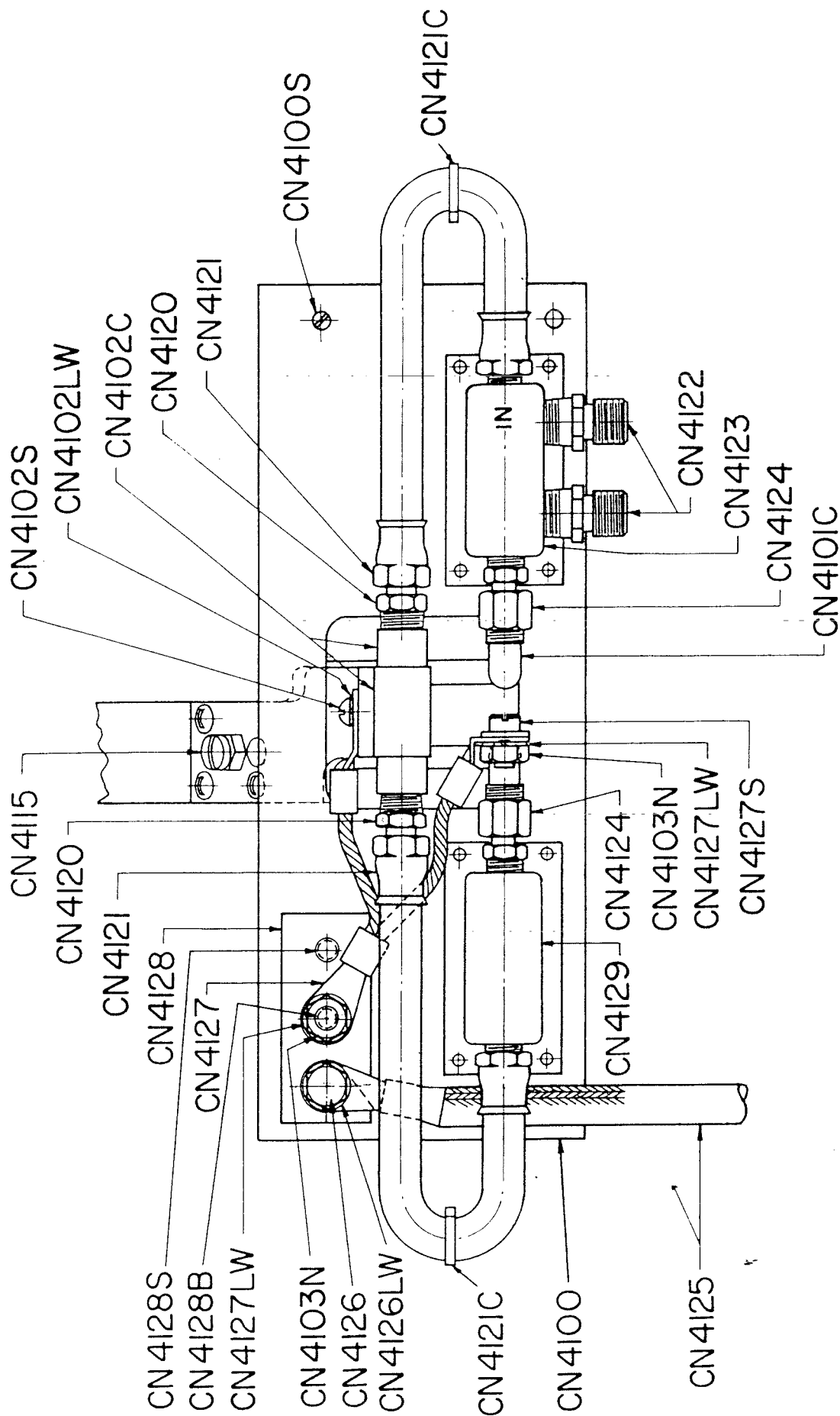


POSITIVE CONTACT ASSEMBLY
 FIG.10

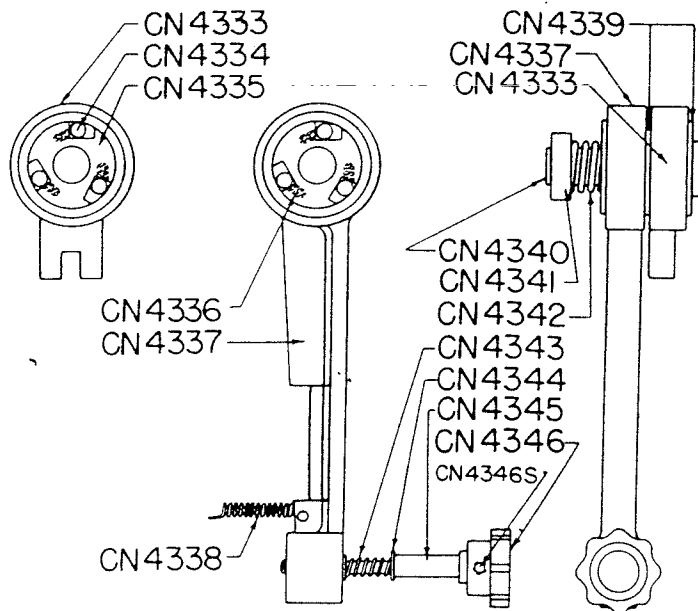


SIDE VIEW OF POSITIVE CARRIAGE

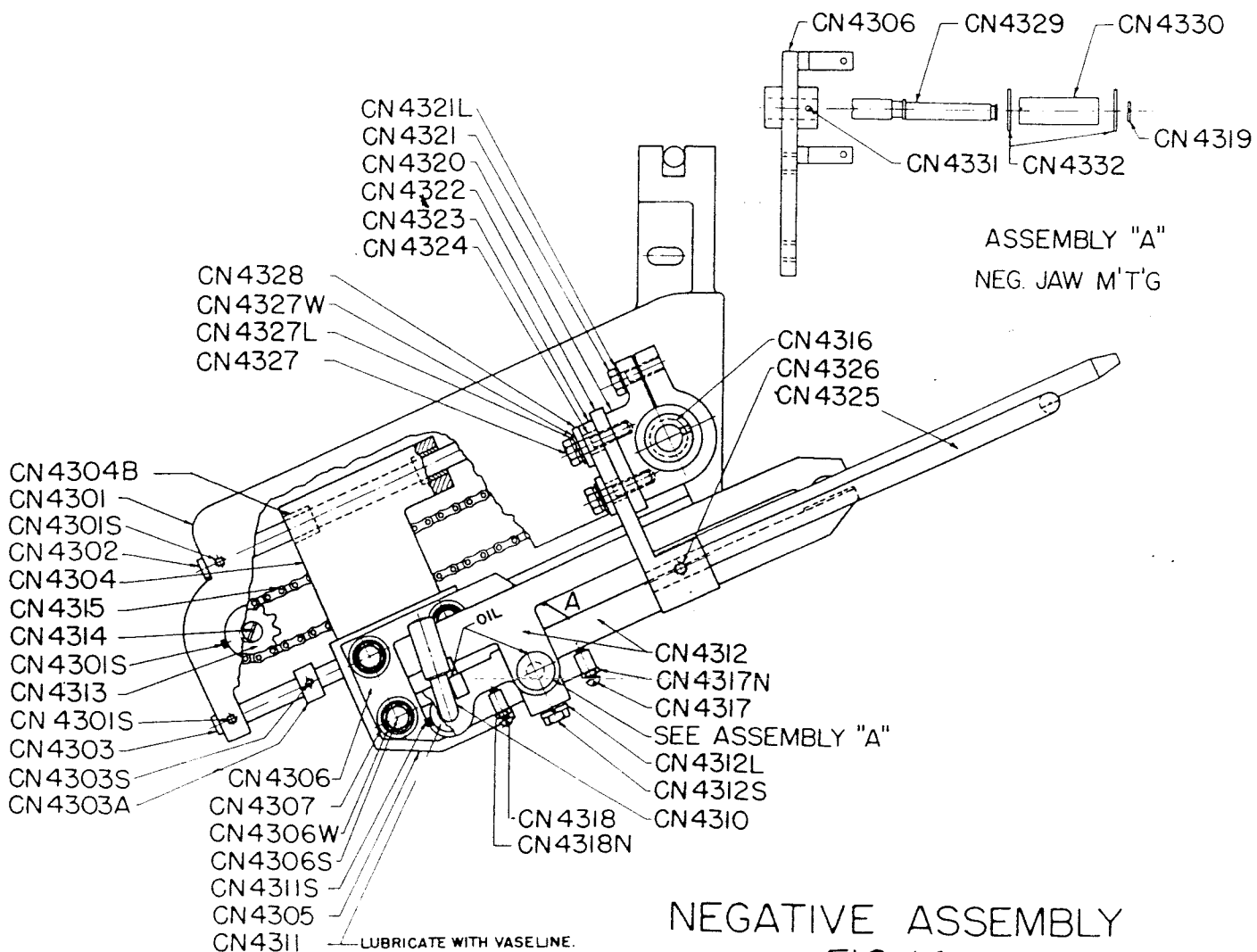
POSITIVE ROTATING & CARRIAGE ASSEMBLY
FIG. II



DISTRIBUTION PANEL
FIG.12



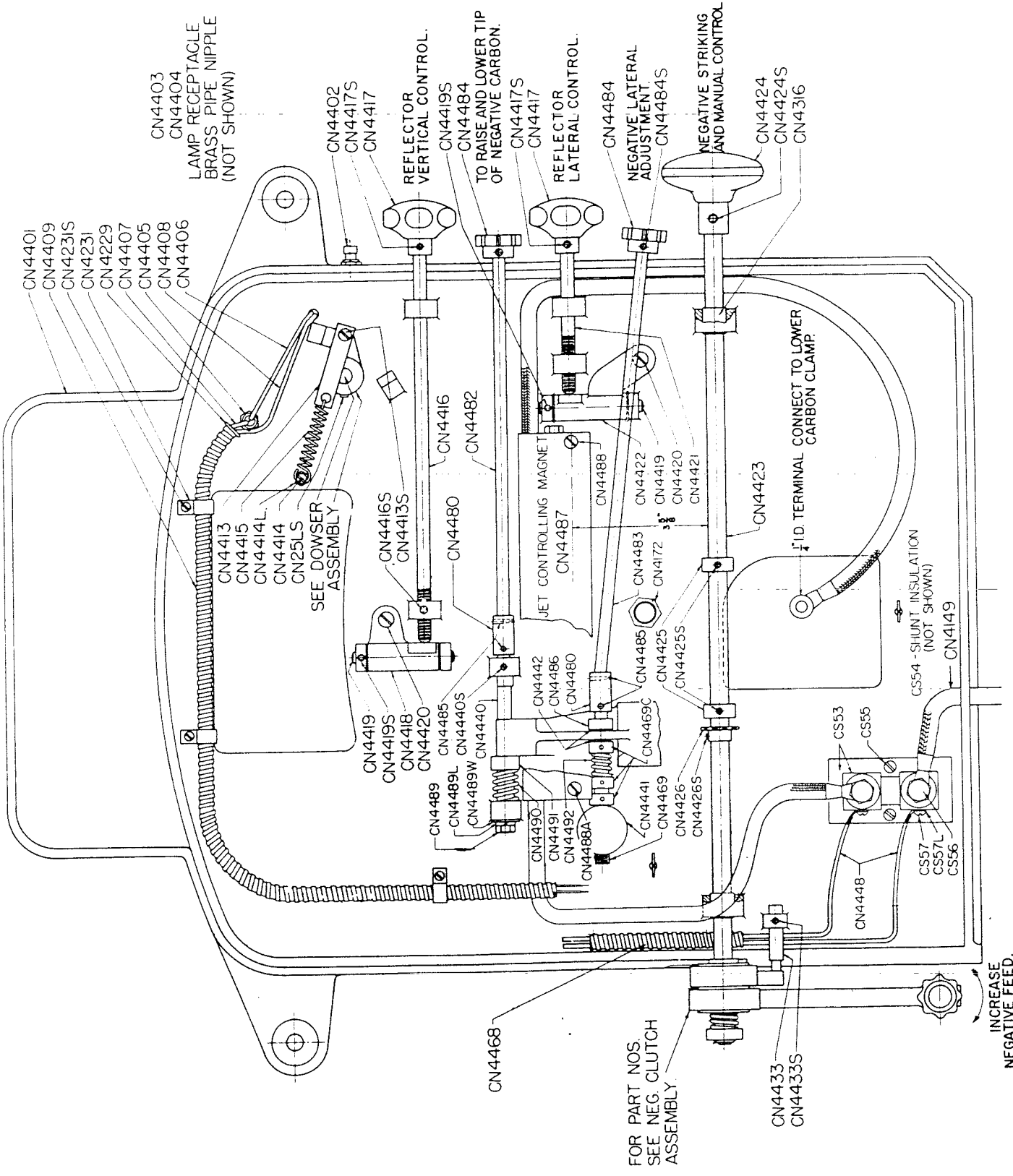
NEGATIVE CLUTCH ASSEMBLY
FIG.13



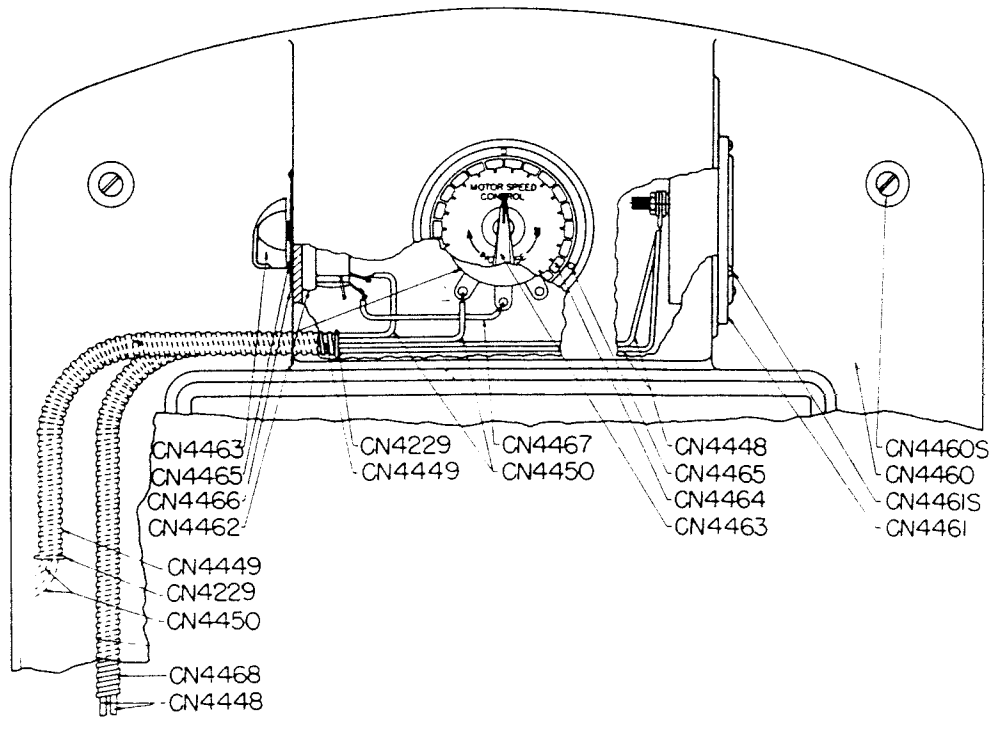
ASSEMBLY "A"
NEG. JAW M'T'G

NEGATIVE ASSEMBLY
FIG.14

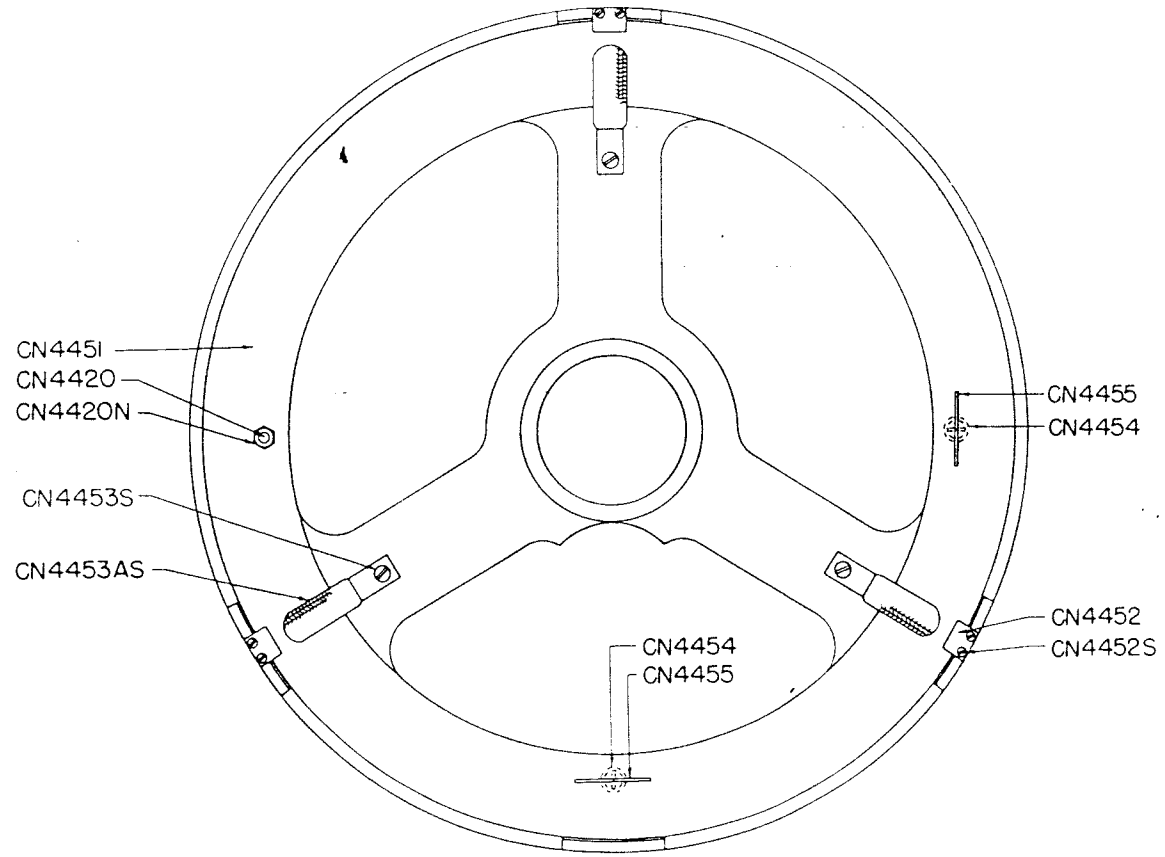
LUBRICATE WITH VASELINE.



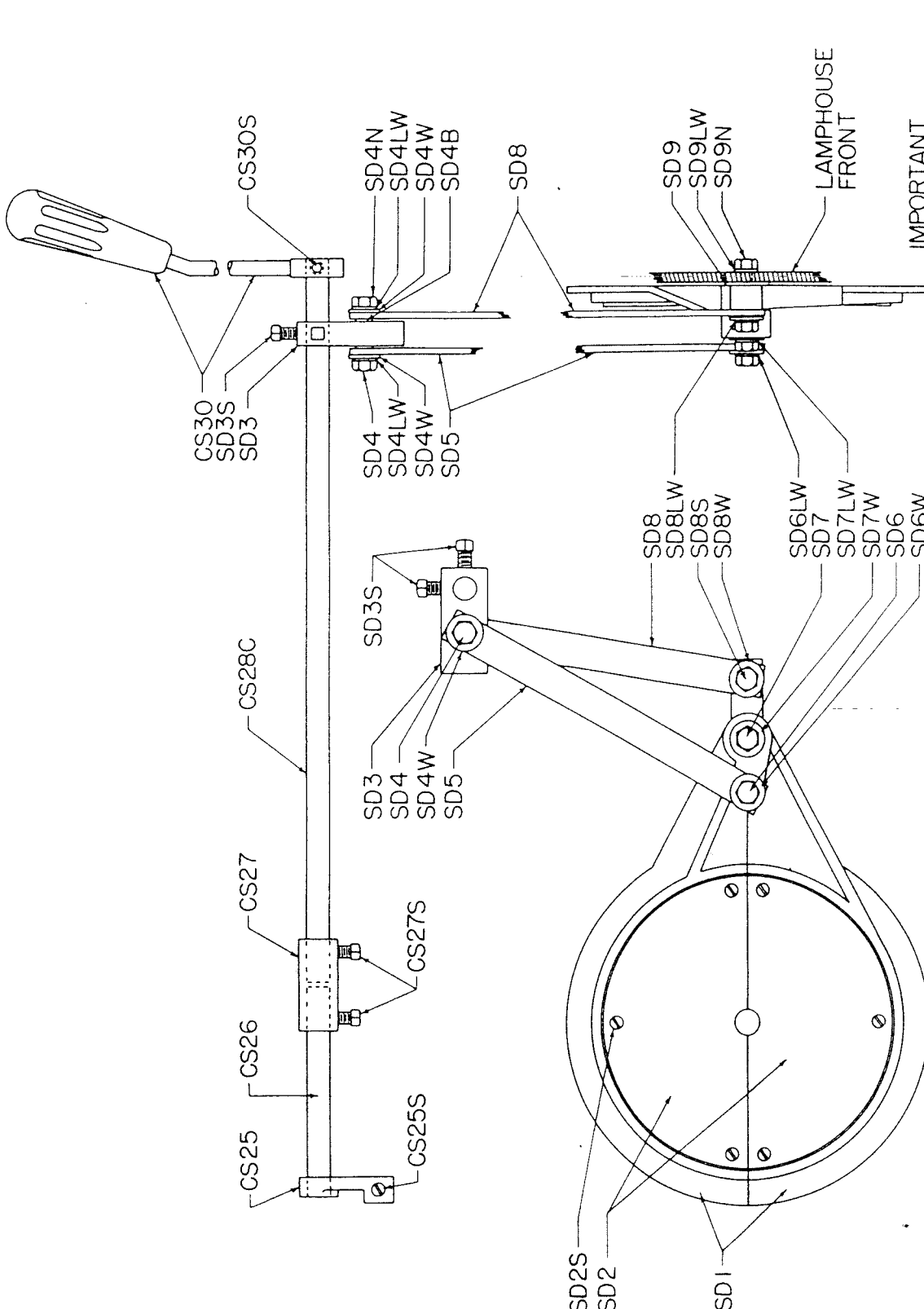
LAMPHOUSE BACK
FIG. 15



REAR COVER
FIG. 16

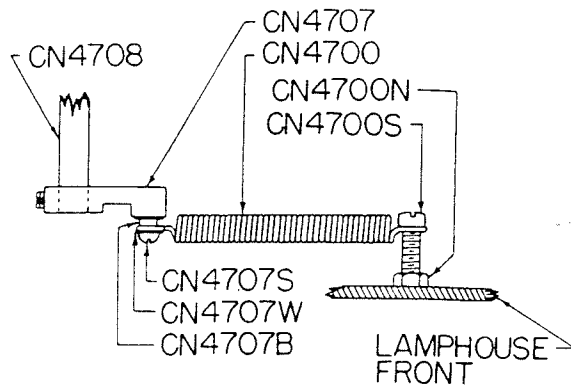


16" REFLECTOR RING ASSEMBLY
FIG. 17

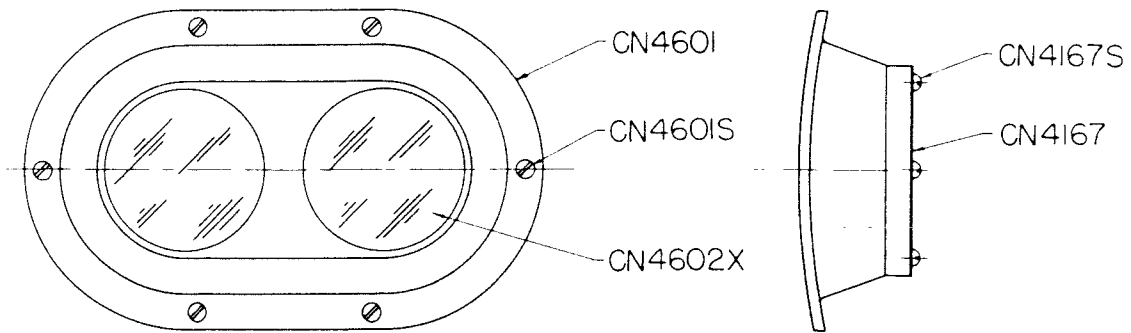


IMPORTANT
 SPECIFY LAMP TYPE
 NUMBER WHEN
 ORDERING PARTS.

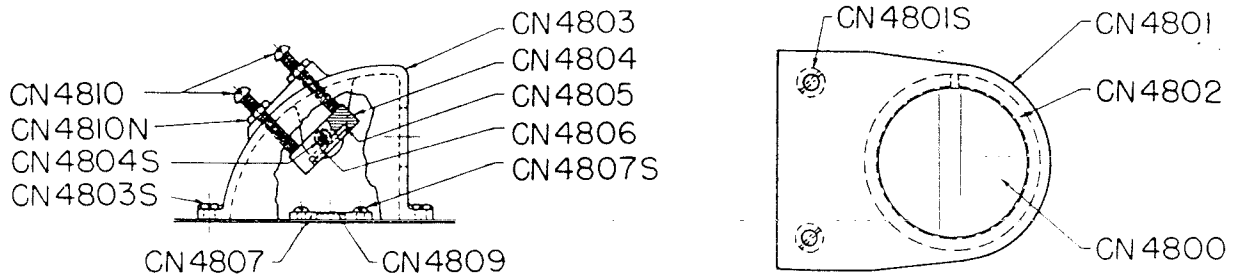
DOWSER ASSEMBLY
 FIG. 18



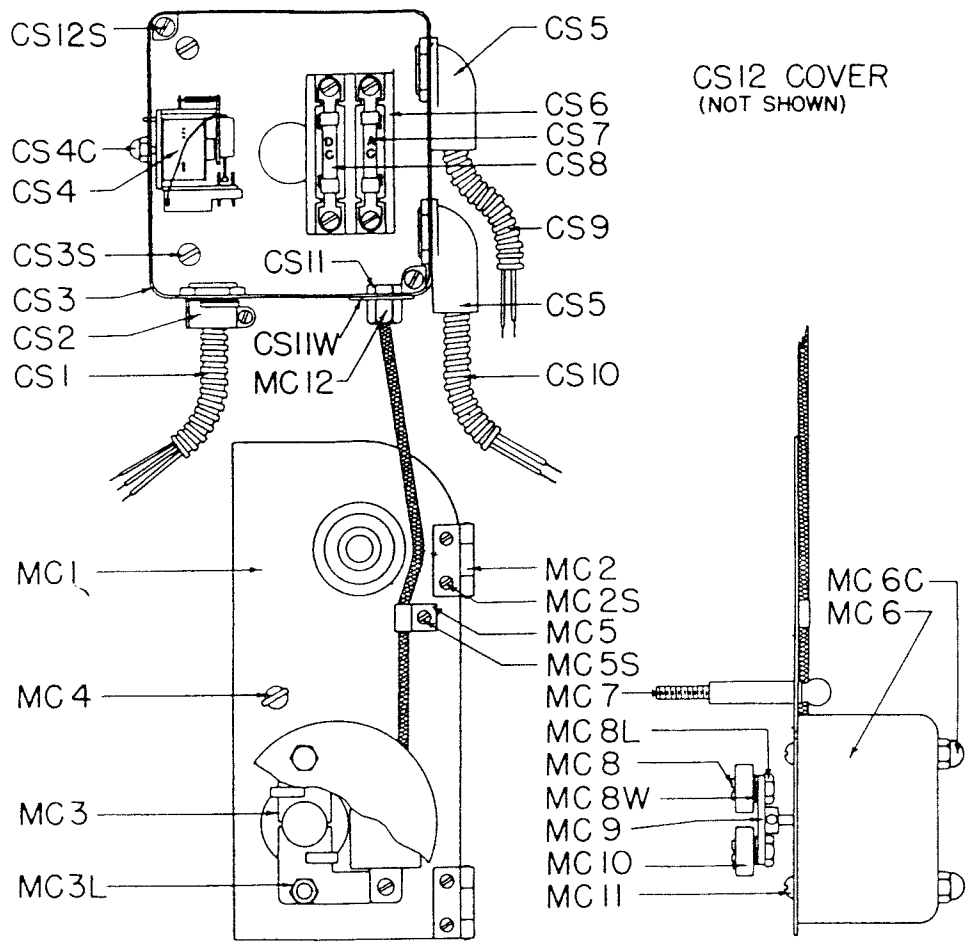
DOOR SPRING ASSEMBLY
FIG. 19



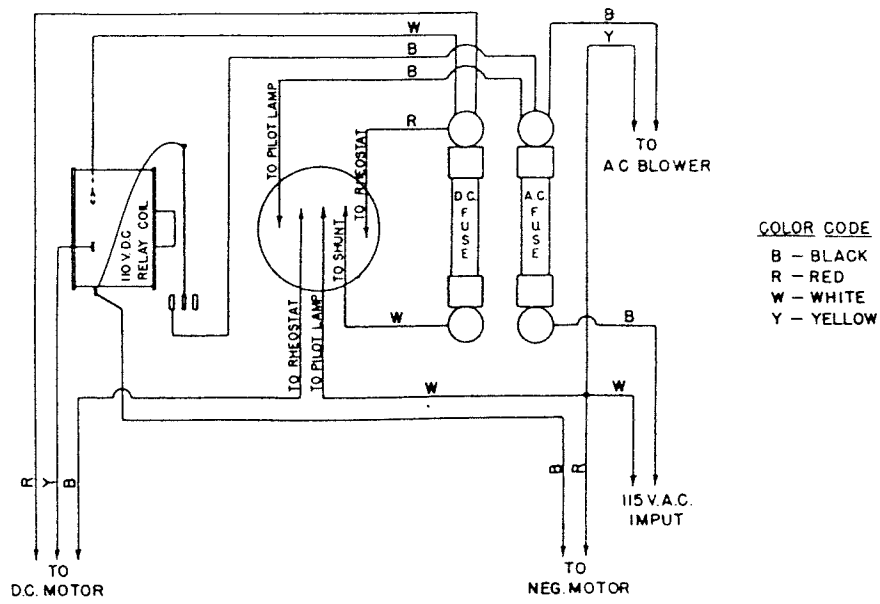
PORT FRAME ASSEMBLY
FIG. 20



ARCScope & ARCScope SCREEN
FIG. 21



D.C. RELAY, FUSE BOX & SYNCHRONIC
 NEGATIVE MOTOR CONTROL
 FIG. 22



RELAY & FUSE BOX WIRING DIAGRAM
 FIG. 23

ASHCRAFT A.C. WATER RECIRCULATOR

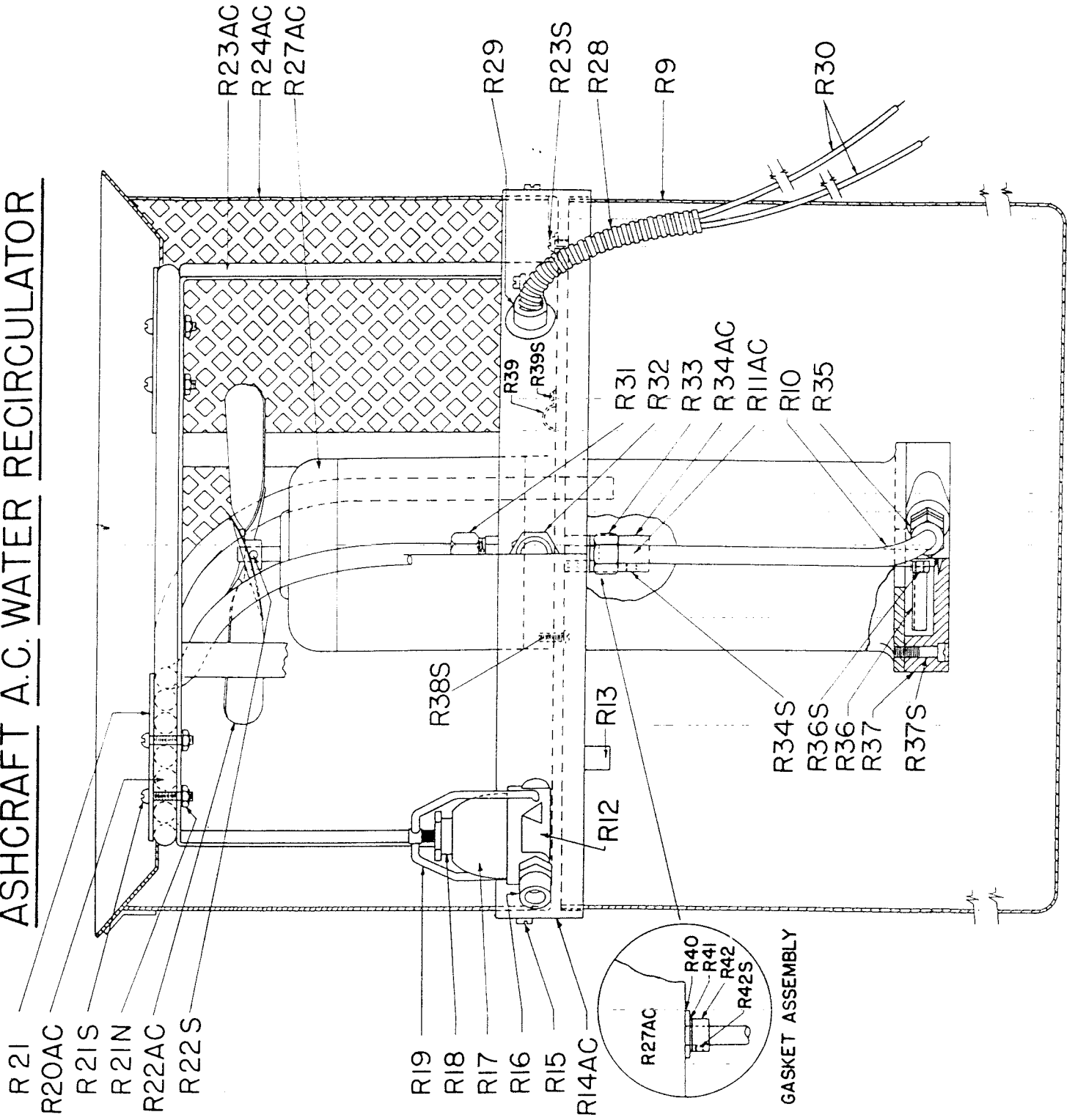
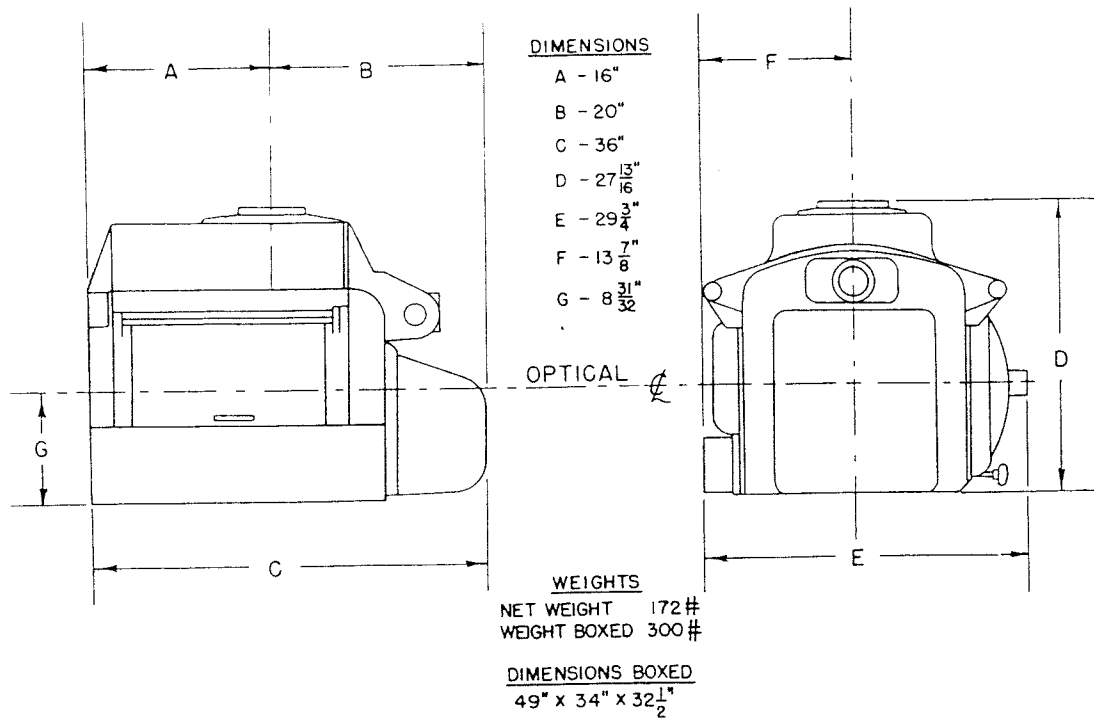
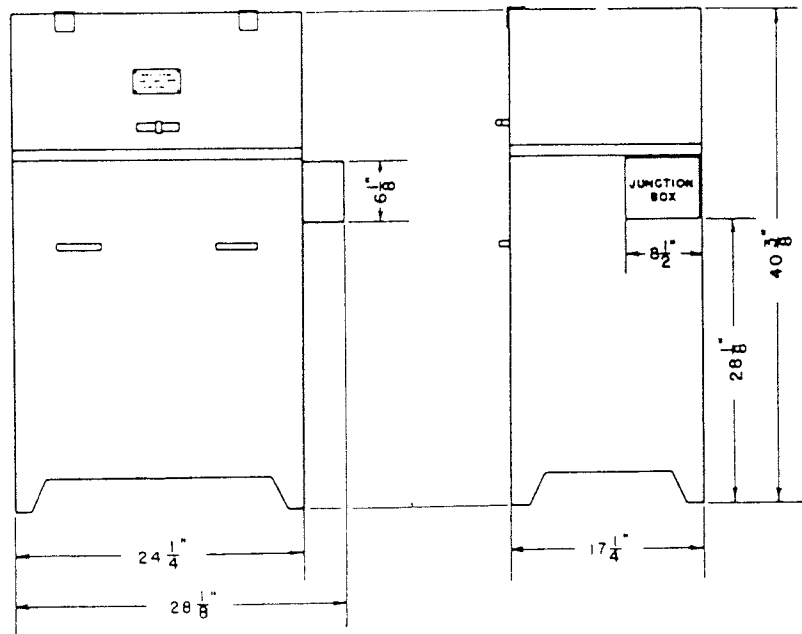


FIG. 24



CORE-LITE PROJECTION ARC LAMP
WEIGHTS & DIMENSIONS
FIG.25



DIMENSIONS OF ASHCRAFT S-1212 SELENIUM RECTIFIER
FIG.26

PARTS LIST

<u>No.</u>	<u>Description</u>	<u>No.</u>	<u>Description</u>
OUTSIDE ELEMENT BASE Fig. 8		OUTSIDE ELEMENT BASE (Cont'd)	
CS 1	Flex. Cable c/w Leads	CN 4057	Positive Control Knob
CN 4000	Clutch Stop Screw	CN 4057S	Set Screw
CN 4000S	Set Screw	INSIDE ELEMENT BASE Fig. 9	
CN 4001	Element Base Casting	CN 4000	Clutch Stop Screw
CN 4001S	Element Base Screws	CN 4001	Element Base Casting
CN 4003	Positive Eccentric Chain Adj. Shaft	CN 4002	Positive Chain
CN 4017	Thrust Bearing	CN 4003	Positive Eccentric Chain Adj. Shaft
CN 4018	Roller Bearing	CN 4004	Sprocket Retaining Ring
CN 4019	Positive Control Shaft Ext.	CN 4005	Needle Bearing
CN 4020	Sprocket	CN 4006	Rear Sprocket & Bearing
CN 4020S	Set Screw	CN 4007	Element Base Rear Bracket
CN 4023	Slip Clutch Plates	CN 4007S	Element Bracket Screw
CN 4026	Rotation Worm	CN 4007L	Lockwasher
CN 4026S	Set Screw	CN 4008	Motor Base Cap Screw
CN 4027	Main Drive Shaft	CN 4008L	Lockwasher
CN 4028	Thrust Bearing Spacers	CN 4009	Upper Chain Cover
CN 4030	Gear Cover	CN 4009S	Chain Cover Screws
CN 4030S	Gear Cover Screws	CN 4010	Lower Chain Cover
CN 4031	Motor Ball Bearing	CN 4011	Positive Slide Rod
CN 4032	Ball Bearing Spring Washer	CN 4012	Positive Slide Rod
CN 4033	Motor Worm	CN 4013	Scale
CN 4033S	Set Screw	CN 4013S	Scale Screws
CN 4034	Motor End Bell (Shaft End)	CN 4014	Square Drive Shaft
CN 4034S	End Bell Screws	CN 4014S	Screw
CN 4035	Motor Field Coil	CN 4014A	Square Drive Shaft Extension
CN 4036	Motor Armature ✓	CN 4014L	Lockwasher
CN 4037	Arc Control Motor	CN 4015	Set Screw
CN 4037S	Motor Screws	CN 4016	Element Base Front Bracket
CN 4039	Motor End Bell (Comm. End)	CN 4016S	Bracket Screw
CN 4040	Motor Bx Cable	CN 4016L	Lockwasher
CN 4041	Flexible Tubing Clamp	CN 4016SC	Capscrew
CN 4041S	Clamp Screw	CN 4017	Thrust Bearing
CN 4042	Terminal Cover	CN 4018	Roller Bearing
CN 4042S	Terminal Cover Screws	CN 4019	Positive Control Shaft Ext.
CN 4043	Clutch Spring Screw	CN 4020	Sprocket
CN 4043N	Locknut	CN 4021	Slip Clutch Nut
CN 4044	Horizontal Drive Shaft	CN 4022	Slip Clutch Spring
CN 4045	Worm	CN 4023	Slip Clutch Plates
CN 4045S	Set Screw	CN 4024	36T Fibre Worm Gear
CN 4046	Worm Gear 20T	CN 4025	Worm Gear Spindle
CN 4046S	Set Screw	CN 4025S	Set Screw
CN 4047	Brush Holder	CN 4026	Rotation Worm
CN 4048	Motor Brush & Spring	CN 4027	Main Drive Shaft
CN 4049	Motor Brush Cap	CN 4028	Thrust Bearing Spacers
CN 4050	Drive Worm	CN 4029	Stop Screw
CN 4050P	Pin	CN 4029N	Locknut
CN 4051	Main Drive Worm Gear	POSITIVE CONTACT ASSEMBLY Fig. 10	
CN 4051S	Set Screw	CN 4101	Stationary Contact
CN 4052	Slip Clutch Nut	CN 4101C	Stationary Contact Conn. } Unit
CN 4053	Slip Clutch Spindle	CN 4101T	Stationary Contact Tubing }
CN 4053S	Set Screw		
CN 4054	Positive Drive Worm Gear		
CN 4055	Slip Clutch Spring		
CN 4056	Positive Control Shaft		
CN 4056 S	Set Screw		

No. Description
 POSITIVE CONTACT ASSEMBLY
 (Cont'd)

CN 4102	Pressure Contact	} Unit
CN 4102C	Pressure Contact Conn.	
CN 4102T	Pressure Contact Tubing	
CN 4102LW	Lockwasher	
CN 4102LS	Flexible Connection Screw	
CN 4103	Screw	
CN 4103N	Locknuts	
CN 4104	Limit Screw	
CN 4105	Stationary Contact Arm	
CN 4105B	Screw	
CN 4106	Pressure Contact Arms	
CN 4107	Spring	
CN 4107S	Spring Screws	
CN 4107LW	Lockwasher	
CN 4108	Pressure Contact Mtg. Stud	
CN 4108LW	Spring Washer	
CN 4109	Swivel Nut	
CN 4110	Guide Stud	
CN 4110LW	Lockwasher	
CN 4111	Positive Standard	
CN 4111B	Spacing Block	
CN 4112	Standard Base	
CN 4112B	Standard Base Bolts	
CN 4112W	Plain Washer	
CN 4112IW	Insulating Washers	
CN 4112LW	Lockwashers	
CN 4113	Insulating Bushing	
CN 4114	Extension Arm	
CN 4114S	Screws	
CN 4114LW	Lockwasher	
CN 4115	Spring Adjusting Screw	
CN 4130	Contact Head Insulating Plate	

POSITIVE ROTATING AND CARRIAGE ASSEMBLY
 Fig. 11

CN 4011	Positive Slide Rod
CN 4012	Positive Slide Rod
CN 4014	Square Drive Shaft
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	Lackwasher
CN 4206W	Plain Washer
CN 4207	Positive Standard
CN 4208	Chain Plate
CN 4208S	Chain Plate Screw
CN 4209	Positive Rotating Chain
CN 4209B	Connecting Chain Link, etc.
CN 4210	Rotary Sleeve & Sprocket
CN 4210S	Pin Screw
CN 4211	Collet Collar
CN 4211S	Collet Collar Screws
CN 4212	Collet Collar Set Screw
CN 4214	Collet
CN 4215	Rotating Head Housing
CN 4216	Ball Bearing

No. Description
 POSITIVE ROTATING AND CARRIAGE ASSEMBLY
 (Cont'd)

CN 4218	Spacer
CN 4220	Sleeve Collar
CN 4220S	Set Screw
CN 4221	Positive Head Stud
CN 4222	Chain Compensating Spring
CN 4222S	Spring Screw
CN 4223	Transverse Insulating Plate
CN 4223S	Screw
CN 4224	Insulated Sprocket
CN 4224S	Screw
CN 4225	Chain Roller Assembly

DISTRIBUTION PANEL
 Fig. 12

CN 4100	Panel Mounting Base
CN 4100S	Mounting Screw
CN 4101C	Stationary Contact Conn.
CN 4102C	Pressure Contact Conn.
CN 4102S	Pigtail Terminal Screw
CN 4102LW	Lockwasher
CN 4103N	Locknuts
CN 4115	Spring Adjusting Screw
CN 4120	Connector (Part of CN 4121)
CN 4121	Flexible Water Tube
CN 4121C	Flexible Water Tube Clip
CN 4122	Connectors
CN 4123	Water Terminal Block (Main)
CN 4124	Coupling
CN 4125	Positive Arc Cable
CN 4126	Arc Cable Cap Screw
CN 4126LW	Lockwasher
CN 4127	Pigtail Terminal
CN 4127S	Terminal Screw
CN 4127LW	Lockwasher
CN 4128	Distribution Buss Bar
CN 4128B	Buss Bar Bolt
CN 4128S	Buss Bar Screw
CN 4129	Water Terminal Block (Sec.)

NEGATIVE CLUTCH ASSEMBLY
 Fig. 13

CN 4333	Negative Lock. Clutch Housing
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

<u>No.</u>	<u>Description</u>
NEGATIVE ASSEMBLY Fig. 14	
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

LAMPHOUSE BACK
Fig. 15

CS 53	Meter Shunt Complete
CS 54	Shunt Insulator
CS 55	Shunt Mounting Screw
CS 56	Cap Screw
CS 57	Screw
CS 57L	Lockwashers
CN 25LS	Toggle Set Screw
CN 4149	Negative Lead
CN 4172	Carbon Entrance Tube & Nut

<u>No.</u>	<u>Description</u>
LAMPHOUSE BACK (Cont'd)	
CN 4229	Anti-Short Bushing
CN 4231	Flex. Tube Clamp
CN 4231S	Clamp Screw
CN 4316	1/2" Roller Bearing
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 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 4487	Jet Control Magnet
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

No.	Description
REAR COVER Fig. 16	
CN 4229	Anti-short Bushing
CN 4448	Shunt to Ammeter Wires
CN 4449	Rheo. Wire Flex. Tube
CN 4450	Rheostat Wire
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)

16" REFLECTOR RING ASSEMBLY
Fig. 17.

CN 4420	Reflector Link Screw
CN 4420N	Locknut
CN 4451	Reflector Ring 16"
CN 4452	Clip
CN 4452S	Screw
CN 4453S	Spring Screws
CN 4453AS	Flat Ref. Spring c/w asbestos
CN 4454	Reflector Control Springs
CN 4455	Cotter Pins for Ref. Spring

DOWSER ASSEMBLY
Fig. 18

SD 1	Split Dowser Blades (Set)
SD 2	Dowser Transite (Set)
SD 2S	Screw
SD 3	Dowser Swivel Block
SD 3S	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
CS 25	Dowser Toggle
CN 25LS	Toggle Set Screw
CS 25S	Screw
CS 26	Dowser Ext. Shaft
CS 27	Dowser Coupling

No.	Description
DOWSER ASSEMBLY (Cont'd)	
CS 27S	Set Screw
CS 28C	Dowser Shaft
CS 30	Dowser Handle & Extension
CS 30S	Set Screw

DOOR SPRING ASSEMBLY
Fig. 19

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

PORT FRAME ASSEMBLY
Fig. 20

CN 4167	Port Frame Screen
CN 4167S	Screen Screw
CN 4601	Port Frame
CN 4601S	Port Frame Mounting Screws
CN 4602X	Anti-Ultra Violet Port Glass

ARCSCOPE & ARCSCOPE SCREEN
Fig. 21

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
CN 4807	Lens Holder Plate
CN 4807S	Lens Mounting Screw
CN 4809	Arcscope Lens
CN 4810	Arcscope Mirror Adj. Screws
CN 4810N	Locknut

D.C. RELAY, FUSE BOX & SYNCHRONIC
NEGATIVE MOTOR CONTROL
Fig. 22

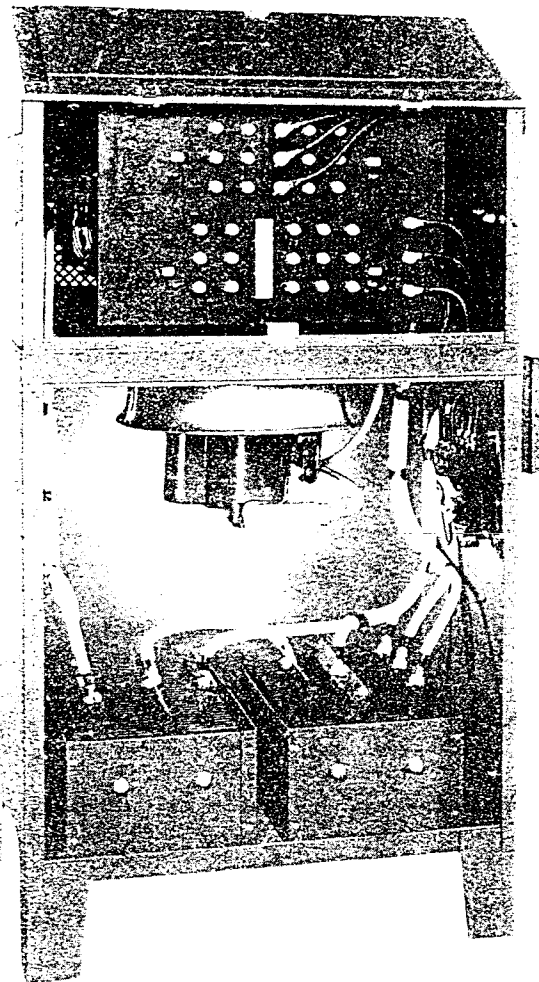
MC 1	Negative Motor Control Panel
MC 2	Hinge
MC 2S	Hinge Screw
MC 3	Negative Motor c/w Leads and Cable
MC 3L	Locknut
MC 4	Thumb Screw
MC 5	Cable Clip
MC 5S	Cable Clip Screw
MC 6	Motor Cover
MC 6C	Capnut
MC 7	Panel Locking Stud
MC 8	Roller Bearing Screw

<u>No.</u>	<u>Description</u>
D.C. RELAY, FUSE BOX & SYNCHRONIC NEGATIVE MOTOR CONTROL (Cont'd)	
MC 8L	Locknut
MC 8W	Washer
MC 9	Roller Bearing Block
MC 10	Roller Bearing
MC 11	Motor Mounting Screw
MC 12	Cable Nut
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
CS 7	A.C. Fuse
CS 8	D.C. Fuse
CS 9	Flex. Cable (Less Leads)
CS 10	Flex. Cable c/w Leads
CS 11	Connector
CS 11W	Washer
CS 12	Box Cover
CS 12S	Cover Screws

ASHCRAFT A.C. WATER RECIRCULATOR
Fig. 24

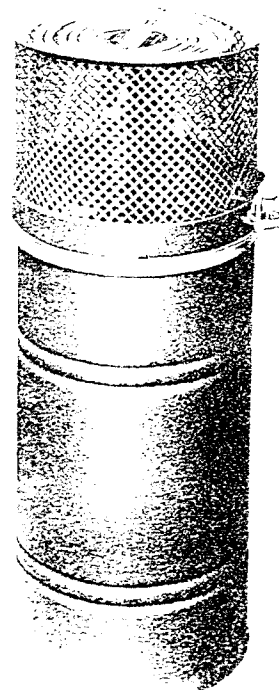
R 9	Tank
R 10	Tubing
R 11AC	Impellor Shaft
R 12	Filter Bowl Casting
R 13	Nipple
R 14AC	Pump Casting
R 15	Cage Screws

<u>No.</u>	<u>Description</u>
ASHCRAFT A.C. WATER RECIRCULATOR (Cont'd)	
R 16	Coupling ✓
R 17	Bowl ✓
R 17A	Gasket
R 18	Clamp
R 19	Clamp Frame
R 20AC	Coating 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



ASHCRAFT
S-1212
12 PHASE RECTIFIER

ASHCRAFT
A.C. WATER
RECIRCULATOR



Ashcraft