

FILM-TECH

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April 1, 1970

ZENITH X 4000 LAMPHOUSE

GENERAL DATA

The Zenith X4000 lamphouse is the result of years of experience in manufacturing Xenon lamps. This lamphouse has been designed for maximum versatility: it can be used to operate with 1600, 2500, 4000 and 6500 watt bulbs. The only changes necessary are the starter unit, the lampholder, and cooling provisions. The lamphouses which are currently being supplied, have a common type starter for 1600 and 2500 watt, and a common starter for 4000 and 6500 watt. The ammeter, hour meter, and striking pushbutton (optional auto-strike control available - A-104 B) are mounted on the operating side for easy operation. In the nose cone assembly, space is provided for a cylindrical beam spreader for 70mm projection and an optional optical diffuser (if required). The starter unit is mounted at the rear of the lamphouse.

Only when the lamphouse is used with the 6500 is a clearance hole necessary in the lamphouse table when used with other than Cinemeccanica projectors. See drawing #7007.

COOLING REQUIREMENTS

Cooling requirements of the lamphouse vary according to the bulb size.

See drawing #30101 for recommended external blowers and required duct exhaust system.

1600 and 2500 Watt Bulbs - No blowers or exhausters are supplied in this model lamphouse. An unrestricted flow of air must be readily available at the bottom of the lamphouse directly below the bulb. It may be necessary to drill several 1/2" holes in the lamphouse tables which are of the solid type.

4000 and 6500 Watt Bulbs - In the Model 4000-40B is incorporated a blower in the back of the lamphouse. In the Model 4000-65BE there is a blower in the back of the lamphouse and also an exhauster in its own special cast housing mounted on top of the main lamphouse. Each of these is driven by a single phase motor and provides an air flow around the bulb, from bottom to top, with speed and distribution as prescribed by the bulb manufacturer. The air is taken in through the slotted back cover which is lined to act also as a filter. This air filtering is very important for reflector life since it decreases the air stream abrasion effect. The filter can very easily be taken out for cleaning. With the 4000 and 6500 watt bulbs, it is very important that the position of the two cups on the bulb be as shown in the top half of Drawing 7006.

4000 and 6500 Watt Bulbs Contd.

If the bulbs are received with the cups in the reverse position, simply remove them and install them in the correct manner. If the cups are included with the bulb in a small plastic bag, install them in the proper manner on the bulb. It is not necessary to remove the plastic safety cover from the bulb to change the position of the cups. Be very sure that the smaller cup is at the bottom of the bulb, and the larger cup at the top of the bulb. The larger diameter of both cups should face downward.

WIRING

All the connections are to be made at the rear of the lamphouse, according to the diagrams included in this manual, pertaining to the particular lamphouse.

ALIGNMENT

To properly align the lamphouse it is necessary to make sure that the lens holder center, the aperture plate center, the auxiliary reflector center and the main reflector center are in a straight line. For this purpose, a dummy lens with aligning rod can be used. If you have access to the Brenkert BX 10,001 aligning kit, or the Ashcraft aligning kit, you can proceed as follows. Install the dummy barrel with the 1/2" aligning rod and disc. Use the 11mm rod with its proper disc and have a special tube machined with an 11mm I.D. and 17mm O.D. diameter, which will slide into the hole in the center of the reflector mount. By using this method you will be able to obtain perfect alignment. Of course, these aligning tools are not supplied with the lamphouse. We have also had excellent results aligning the lamphouse visually by using the dummy plug and barrel sighting through the plug to the round opening in the center of the reflector mount.

MAIN REFLECTOR MOUNTING

Mount the reflector in its holder. Swing the four movable clips (two on each side of the mount) into position and tighten with the 3mm. Allen wrench (supplied with lamphouse). Avoid finger prints on the reflector surface - use the white gloves provided for handling the reflectors which are packed with each reflector.

BULB MOUNTING

Refer to Drawing #7005 which shows how to install the four size bulbs used in the 4000 series lamphouses. Also shown are the clamps and how to run the positive cable to the starter unit and the negative to the shunt. The bulb is covered by a plastic jacket which must not be removed until the bulb mounting is completed. Before taking the jacket off, it is mandatory to wear a plastic face mask. The same protective steps must be taken every time one is exposed to a non-jacketed bulb.

Mount the bulb and make sure to leave a little vertical play to allow for thermal expansion. Be sure the positive electrode, marked with a +, is in the top position. In all 4000 series lamphouses the starter high voltage is applied to the bulb by the positive cable. For this reason it is very important to maintain a 1 - 1 1/2" clearance from the positive cable to all other metal parts of the lamphouse in order to prevent the high voltage from seeking ground during ignition. This would also include spacing from the edge of the reflector.

AUXILIARY REFLECTOR MOUNTING

We recommend that the auxiliary reflector mounting and adjustment be made after the main reflector adjustments have been completed. Please refer to the pages in this manual entitled "Adjustment of Lamphouse Equipment for Optimum Results".

MAINTENANCE

Periodically check all the electrical contacts. Clean and tighten them, if necessary. Make sure that all control screws move freely. Provide lubrication with suitable grease. (For instance, molybdenum sulphide grease or silicon). Once a week, or as conditions in the booth require, remove and clean the air filter (4000 and 6500 watt lamps only) and clean the reflectors with Isopropyl Alcohol, applied with a soft cloth. It is also recommended that all of the dust from inside the lamphouse be removed by use of a small vacuum.

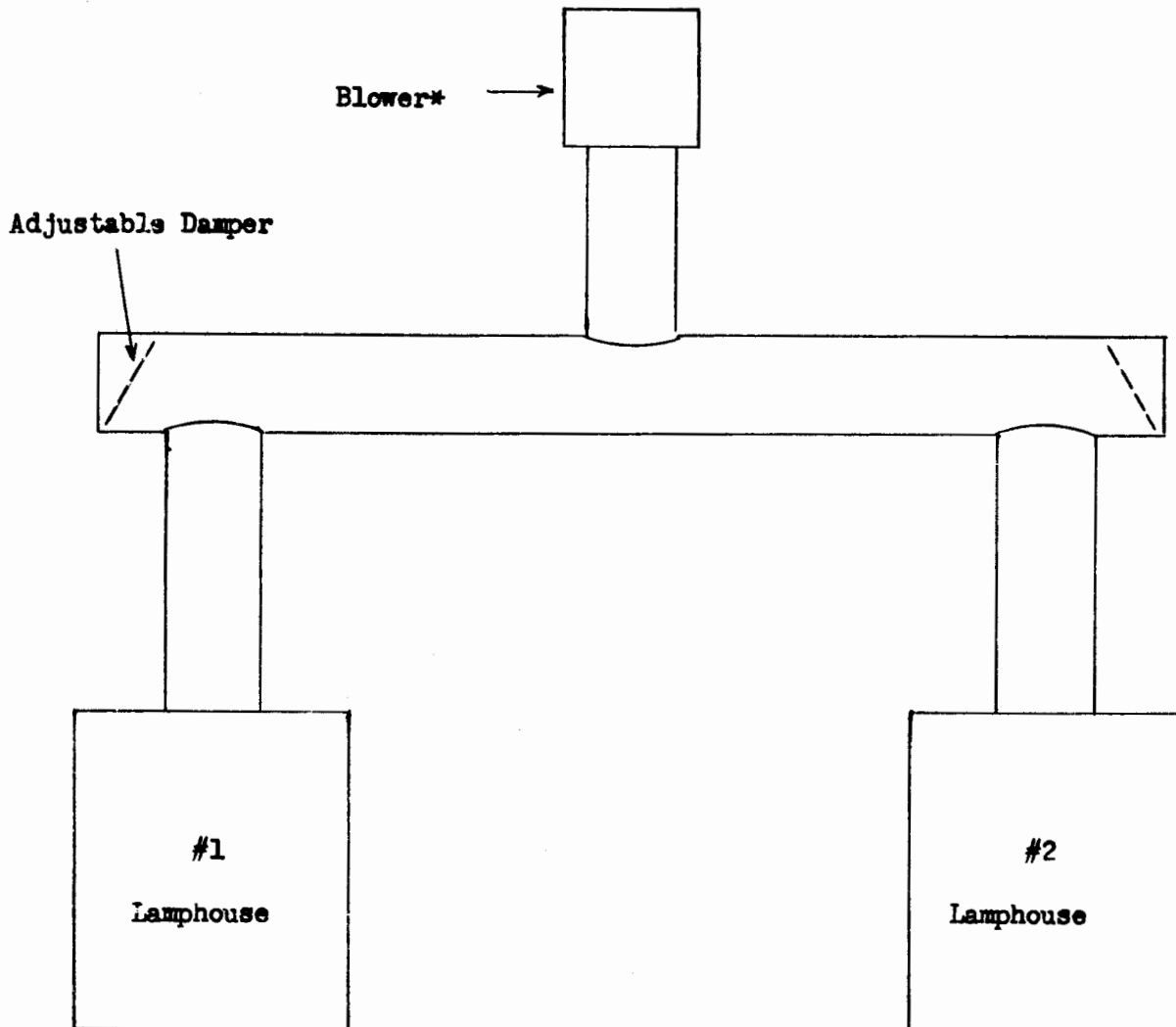
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CEDAR KNOLLS, N. J. 07927

400/4000 Lamphouse Ventilation Requirements

Dwg. #30101

Date: 8/20/69



* CFM Air Delivery - Free Air

1600/2500 Watt	1000 CFM	Grainger Blower #7C039
4000 Watt	1200 CFM	" " 7C647
6500 Watt	1500 CFM	" " 7C453

* LFM (Lineal Feet Per Minute) Air Flow requirements at base of Xenon bulb - measured with bulb and all optics installed, lamphouse doors closed (both lamphouses), and dowser open:

	<u>Minimum</u>	<u>Recommended</u>	<u>Maximum</u>
1600 Watt	200	250-300	400
2500 Watt	250	300-350	500

* Suggested meter - Alnor Velometer Jr., Electro-Tech Equipment Co., 56-02 Roosevelt Avenue, Woodside, Long Island, New York.

Observe meter (mounted in lamphouse on its side next to bulb) thru auxiliary reflector adjusting holes on operating side of lamphouse. It will be necessary to use a flashlight. If there are any questions regarding this measurement, please contact Carbons, Inc.

400 & 4000 SERIES LAMPHOUSES

ADJUSTMENT OF LAMPHOUSE EQUIPMENT FOR OPTIMUM RESULTS

The 4000 series lamphouse has been designed to accommodate either the 1600, 2500, 4000 or 6500 watt Xenon bulbs. The 400 series lamphouse will accommodate either the 1600 or 2500 watt.

<u>BULB</u>	<u>MINIMUM</u>	<u>NOMINAL</u>	<u>MAXIMUM</u>
1600	45	65	75
2500	60	83	95
4000	60	120	145
6500	80	140	165

Please follow the usual precautions of checking the polarity of the voltage being applied to the bulb, before any attempt has been made to light the bulb. It should be operated near its nominal current value for 20 minutes before any reflectors are installed.

After this has been done allow the bulb to cool completely. Using the face mask, remove the bulb, install the main reflector and replace the bulb. On the back of the 400 series lamphouse are three circular openings which are made accessible by rotating the screw head to the left of the viewing glass. On the 4000 series, it is suggested that the rear panel be removed for easiest access to the adjusting screws. On some models of the 4000 series, there may be holes in the back cover.

While the machine is running, with no projection lens, turn on the power supply, push the starter button (or the automatic device will activate) and observe the field and pattern of light projected on the screen and front part of the theatre. This, of course, will simulate the shape of the reflector and in the center will be a dark spot which is the shadow of the Xenon bulb. Adjustments should be made with the three controls on the main reflector until the brightest and clearest image of the reflector can be obtained. Now install the projection lens and project a picture onto the screen. CAUTION: Do not project for more than 10 seconds at a time with a 15 second off period or damage to the lenses may occur. You will now observe a picture which has a slight hot spot in the center with fair distribution on the edges. Proceed to adjust the reflector controls, especially the focus control, until a more even field of light is obtained. Do not be concerned at this time with the light in the four corners. Turn off the power supply and allow the Xenon bulb to thoroughly cool. Use the face mask and install the auxiliary reflector and position the reflector mount so that the center of the auxiliary reflector, as viewed from the side, is slightly above the tip of the cathode or bottom electrode in the Xenon bulb.

4000 and 6500 Watt Bulbs Contd.

If the bulbs are received with the cups in the reverse position, simply remove them and install them in the correct manner. If the cups are included with the bulb in a small plastic bag, install them in the proper manner on the bulb. It is not necessary to remove the plastic safety cover from the bulb to change the position of the cups. Be very sure that the smaller cup is at the bottom of the bulb, and the larger cup at the top of the bulb. The larger diameter of both cups should face downward.

WIRING

All the connections are to be made at the rear of the lamphouse, according to the diagrams included in this manual, pertaining to the particular lamphouse.

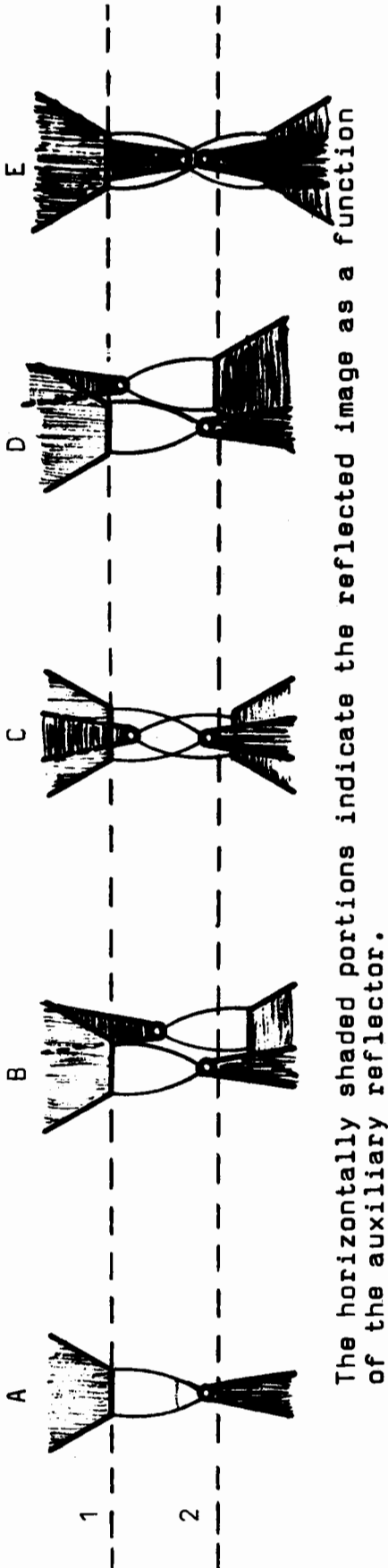
ALIGNMENT

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(3)

Now move the auxiliary focus adjustment. You should be able to observe a change in the light pattern on the screen, with increased light in the four corners. If this action cannot be obtained, then it is recommended that the ring DX2512 or B (depending upon the lamphouse being used) be loosened and the auxiliary reflector moved 1/8" forward or backward in its course of travel, and the focus adjustment be attempted once more. This should be repeated as many times as necessary until the proper light is obtained on the screen. If you cannot obtain any action from the auxiliary mirror on the screen, then you must continue to make the coarse adjustment (repositioning the auxiliary main shaft) until such an action does occur with the control rod. You may also find that after making these adjustments, it may be necessary to change very slightly the main reflector adjustment.

With optimum reflector adjustments it should be possible to observe a very good white light distribution over the entire screen surface. If a light meter is available, this condition would be indicated when the side measurements (S.M.P.T.E. method) are 70-75% of the center brightness.



The horizontally shaded portions indicate the reflected image as a function of the auxiliary reflector.

- A. This image is obtained when using only the main reflector. Please note that lines 1 and 2 indicate the relative electrode positions. These are fixed by the vertical placement of the bulb in its mount. Adjustment of the main reflector OR auxiliary reflector will not change the position of this A pattern. When the auxiliary is installed and adjusted, only the horizontally shaded portion of these drawings will move.
- B. Indicates the reflected image is low and to the right. This is corrected by moving the adjustments on the auxiliary reflector mount, which change the vertical and radius (horizontal) patterns. Adjustment of the main reflector will not change these images.
- C. This is a normal adjustment. The reflected image is symmetrical with the real image.
- D. In this case the reflected image is slightly too high and to the right.
- E. In this case the reflected image is much too low and the added heat on the cathode tip could accelerate its erosion. This is corrected by adjusting the vertical auxiliary control.

NOTE: THE ABOVE ILLUSTRATIONS APPLY TO THE 400X AND V18 LAMPHOUSE ONLY. FOR THE 4000X LAMPHOUSE, THE IMAGES ARE REVERSED AS THE ARC IMAGE IS REFLECTED OFF A MIRROR.

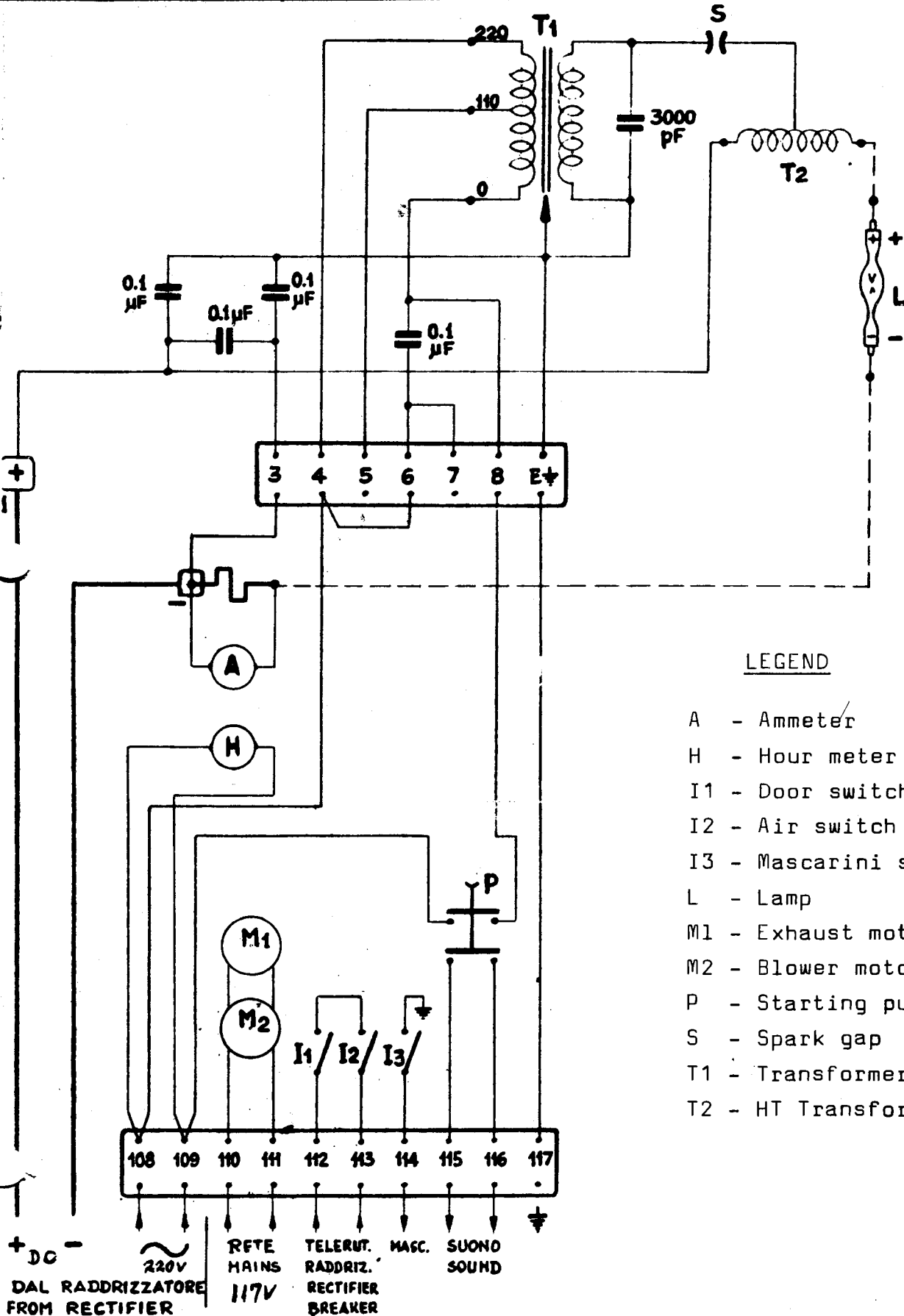
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4000 SERIES LAMPHOUSE
4000-65BE 6500 watt
4000-40B 4000 watt
WIRING DIAGRAM



Dwg.
5909



LEGEND

- A - Ammeter
- H - Hour meter
- I1 - Door switch
- I2 - Air switch
- I3 - Mascarini switch
- L - Lamp
- M1 - Exhaust motor (65 BE only)
- M2 - Blower motor
- P - Starting push button
- S - Spark gap
- T1 - Transformer
- T2 - HT Transformer

XETRON

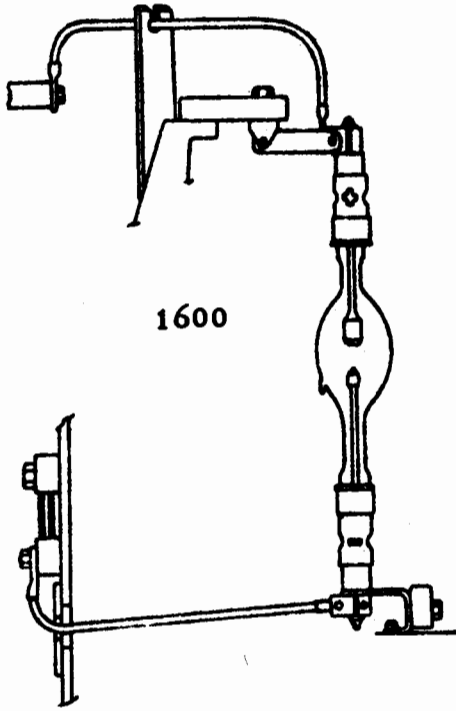
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4000 SERIES LAMPHOUSE

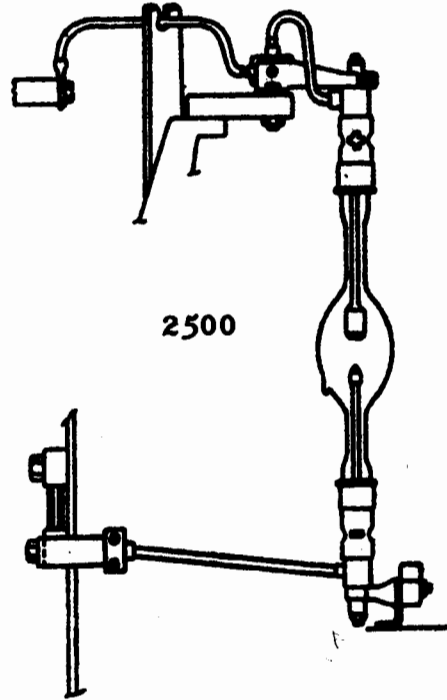
Xenon Bulb Mounting



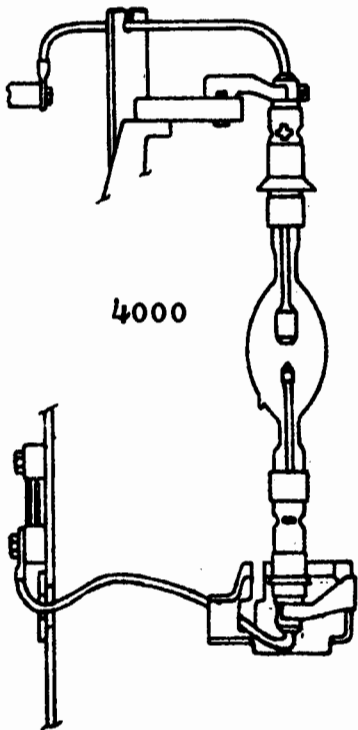
DWG
7005



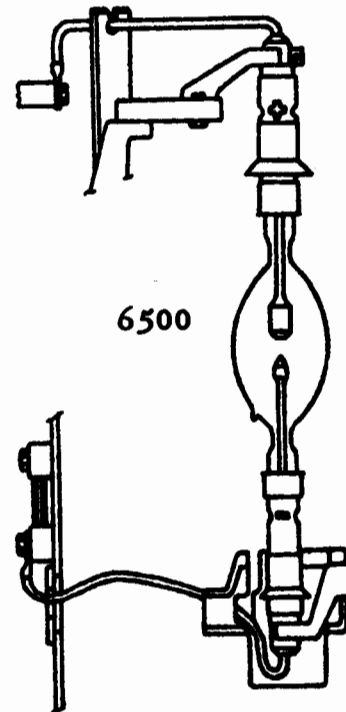
1600



2500



4000



6500

XeTRON

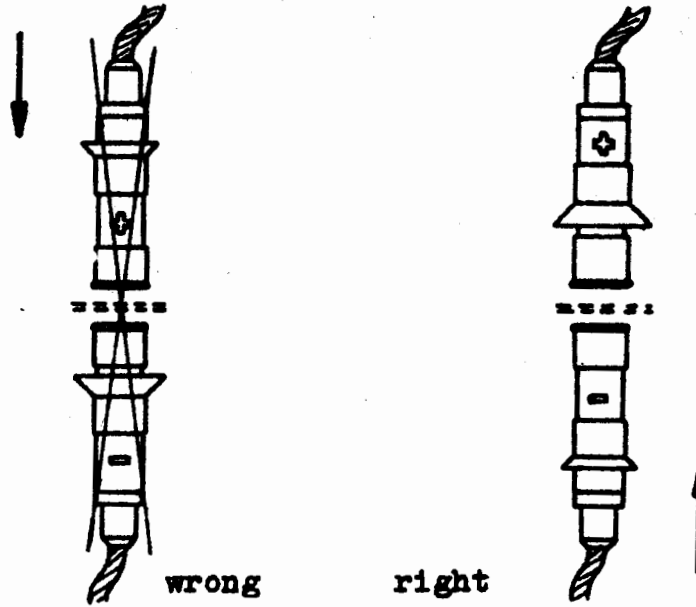
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4000 SERIES LAMPHOUSE

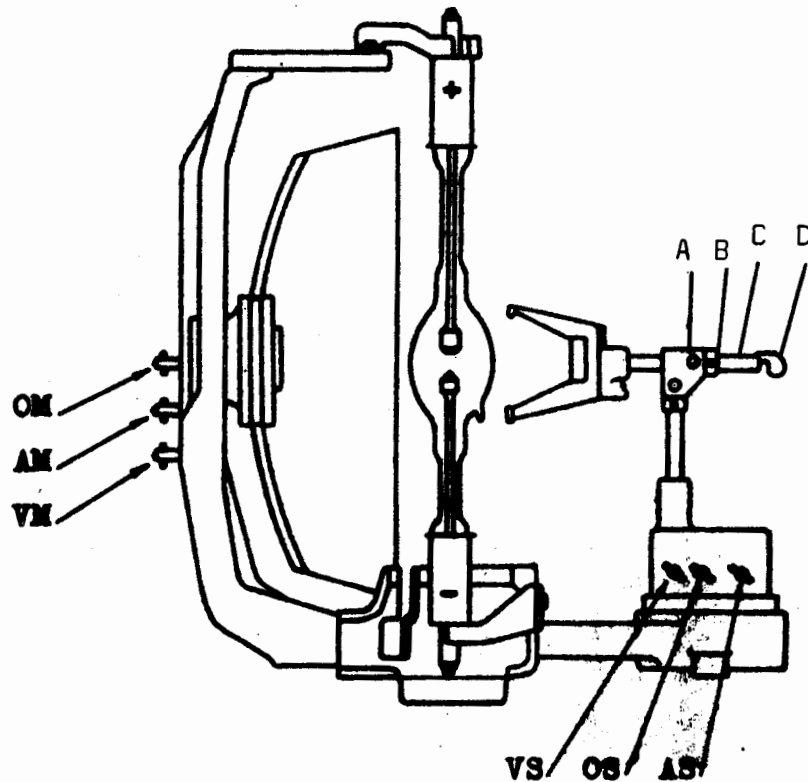
Air Cup Positioning
4000 and 6500 W Xenon Bulbs



DWG
7006



OPTICS CONTROLS



XeTRON

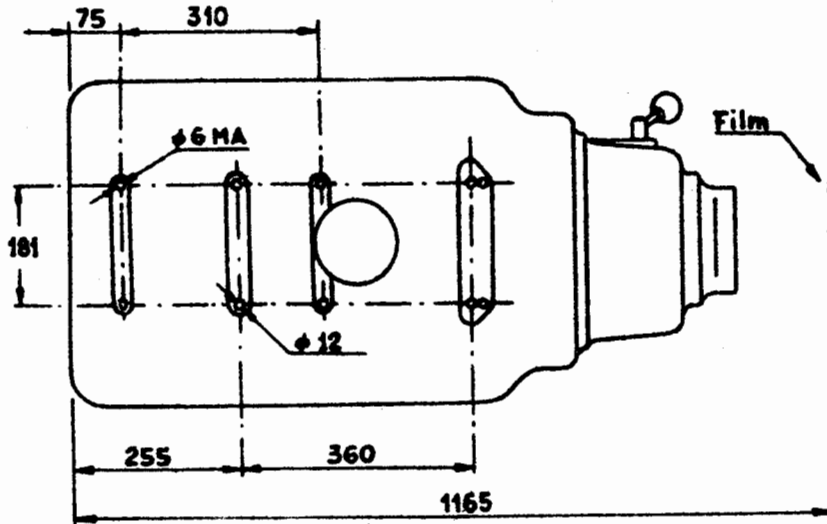
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4000 SERIES LAMPHOUSE

Dimensional outline
and mounting distances

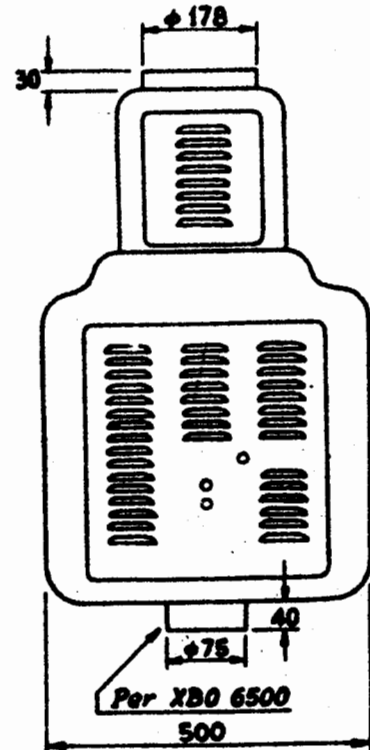
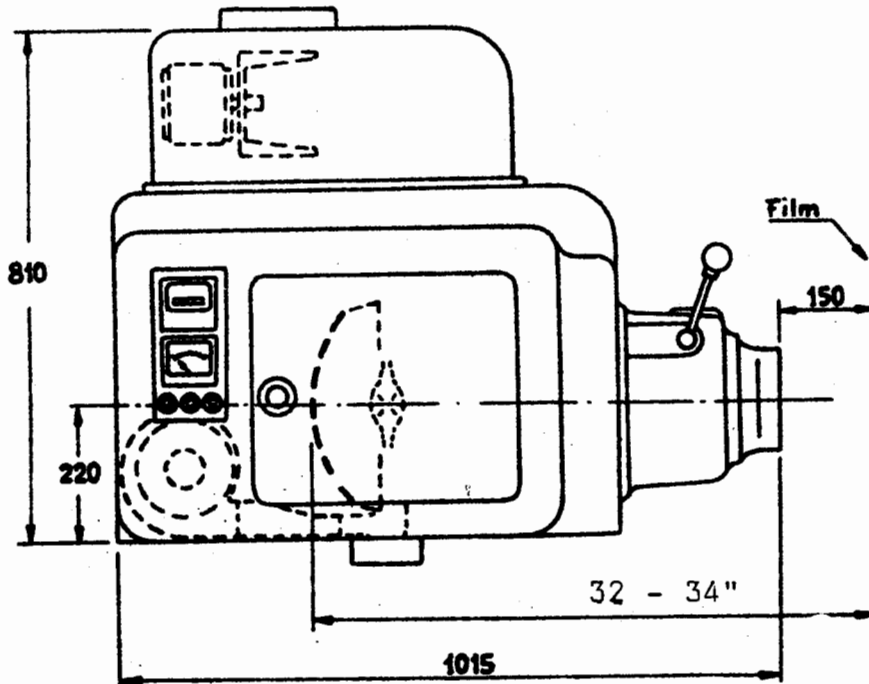
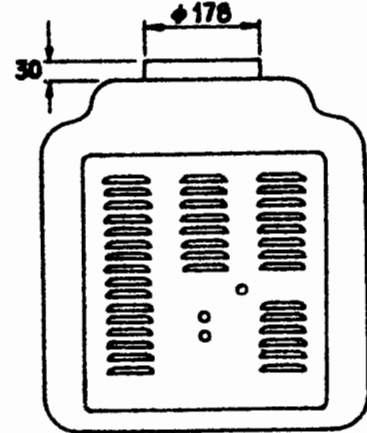
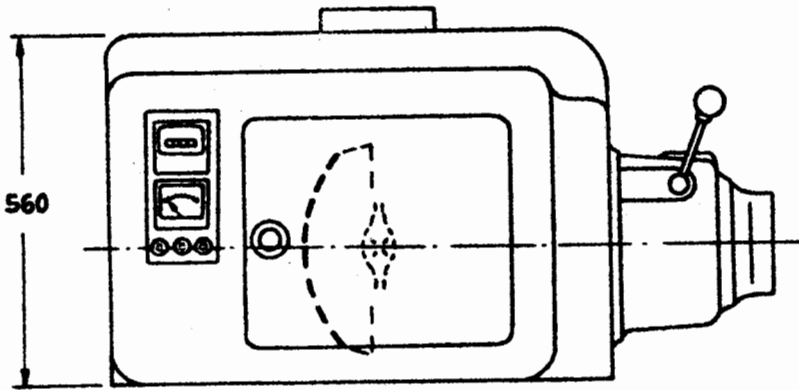


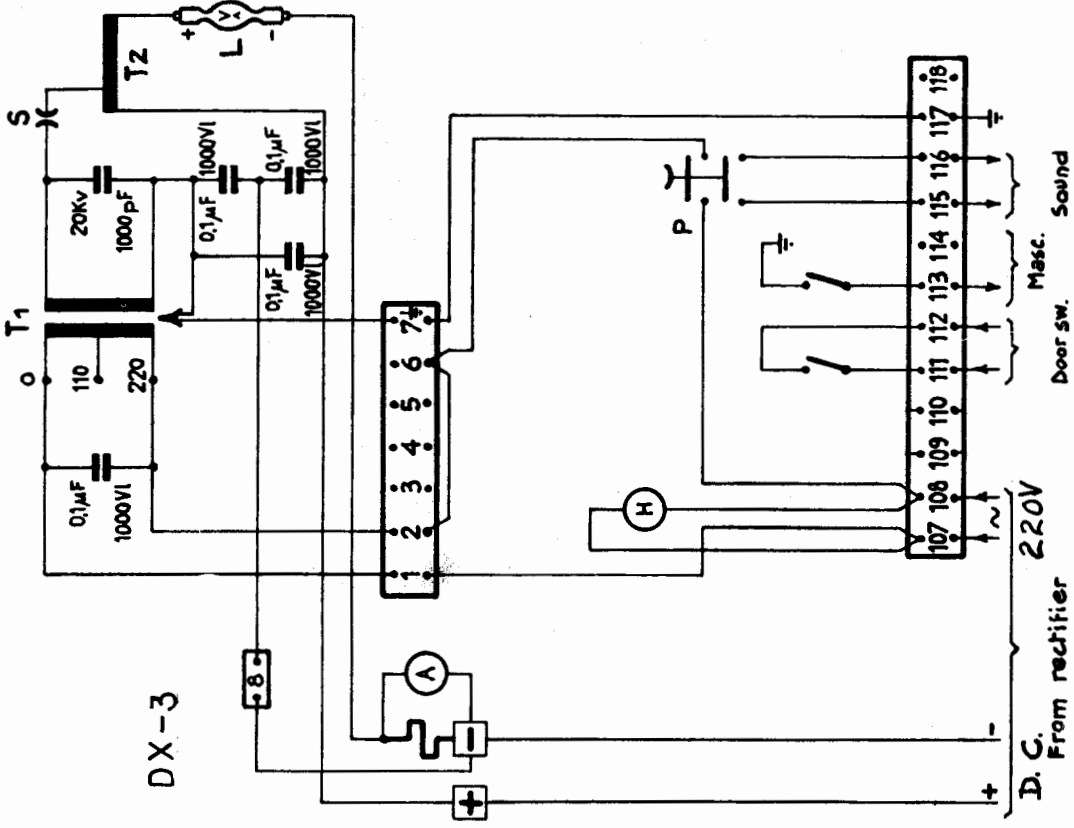
DWG
7007



NOTE:

All dimensions
in mm.
25.4mm = 1"



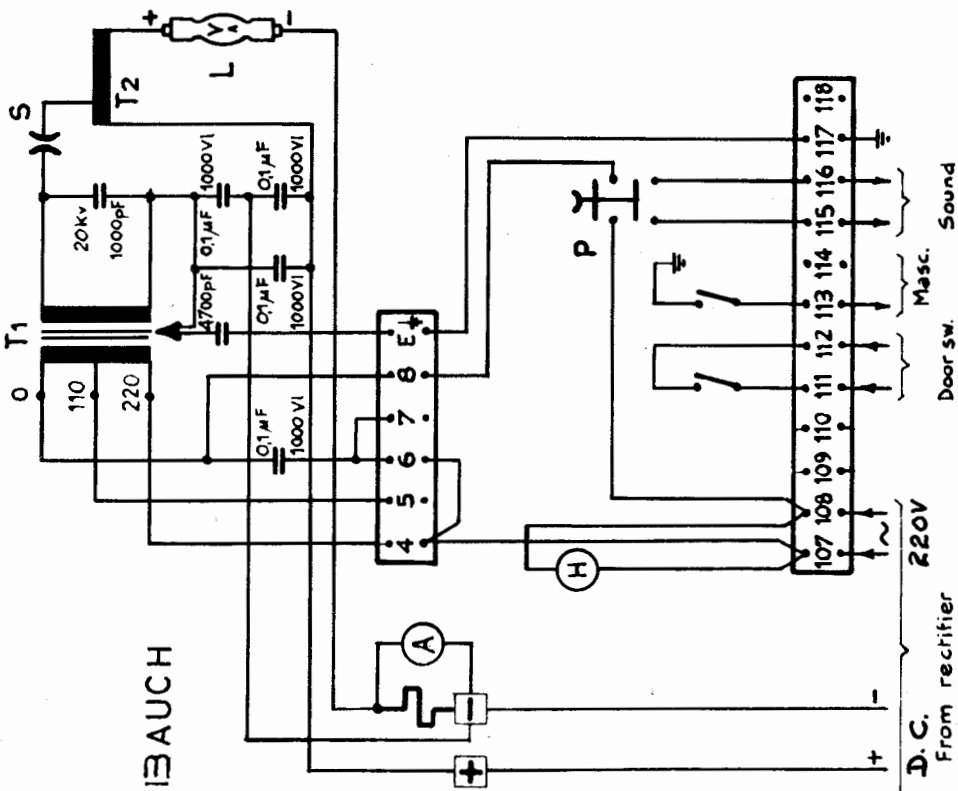


D. C. From rectifier

T₁ - Transformer
T₂ - H T Transformer
S - Spark Gap

A - Ammeter
H - Hour Meter
P - Starting Push Button

The Bauch type starter has a large, round open wound type T₂ transformer.
The DX/3 has a rectangular, round face type T₂ transformer.



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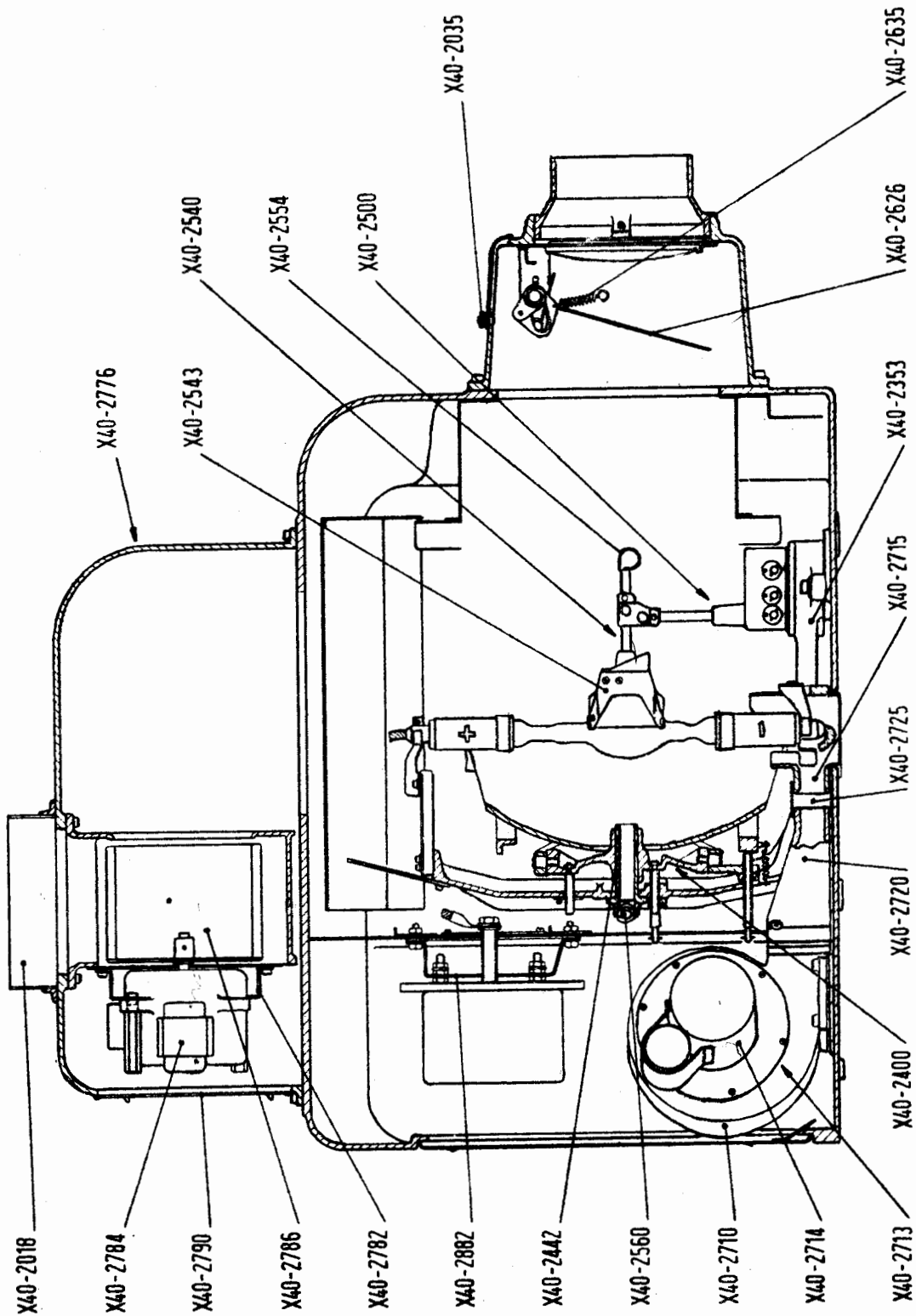
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CINEMECCANICA
4000 SERIES
PARTS

Date: 3/1/70

Drawing: 4000 - 1



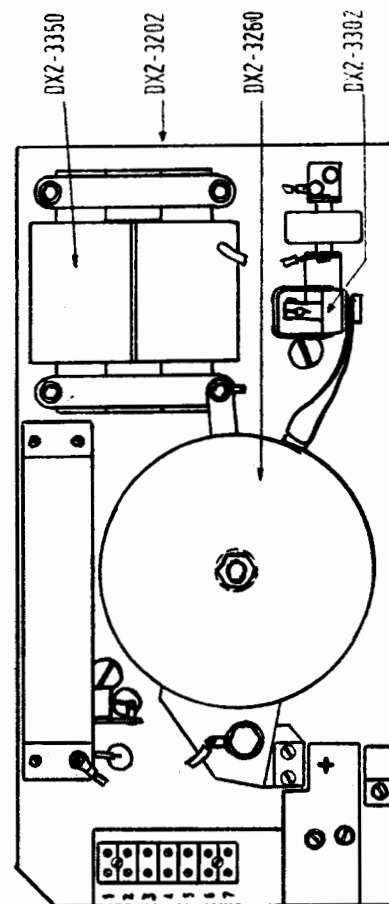
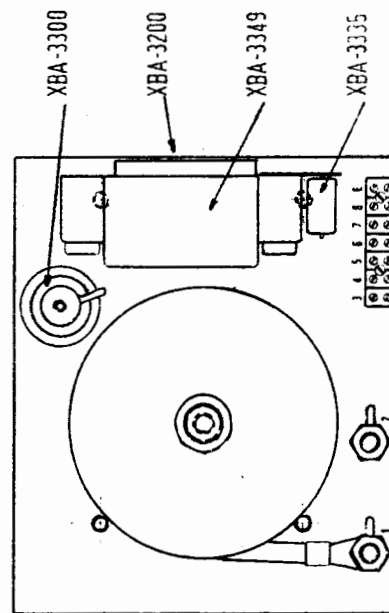
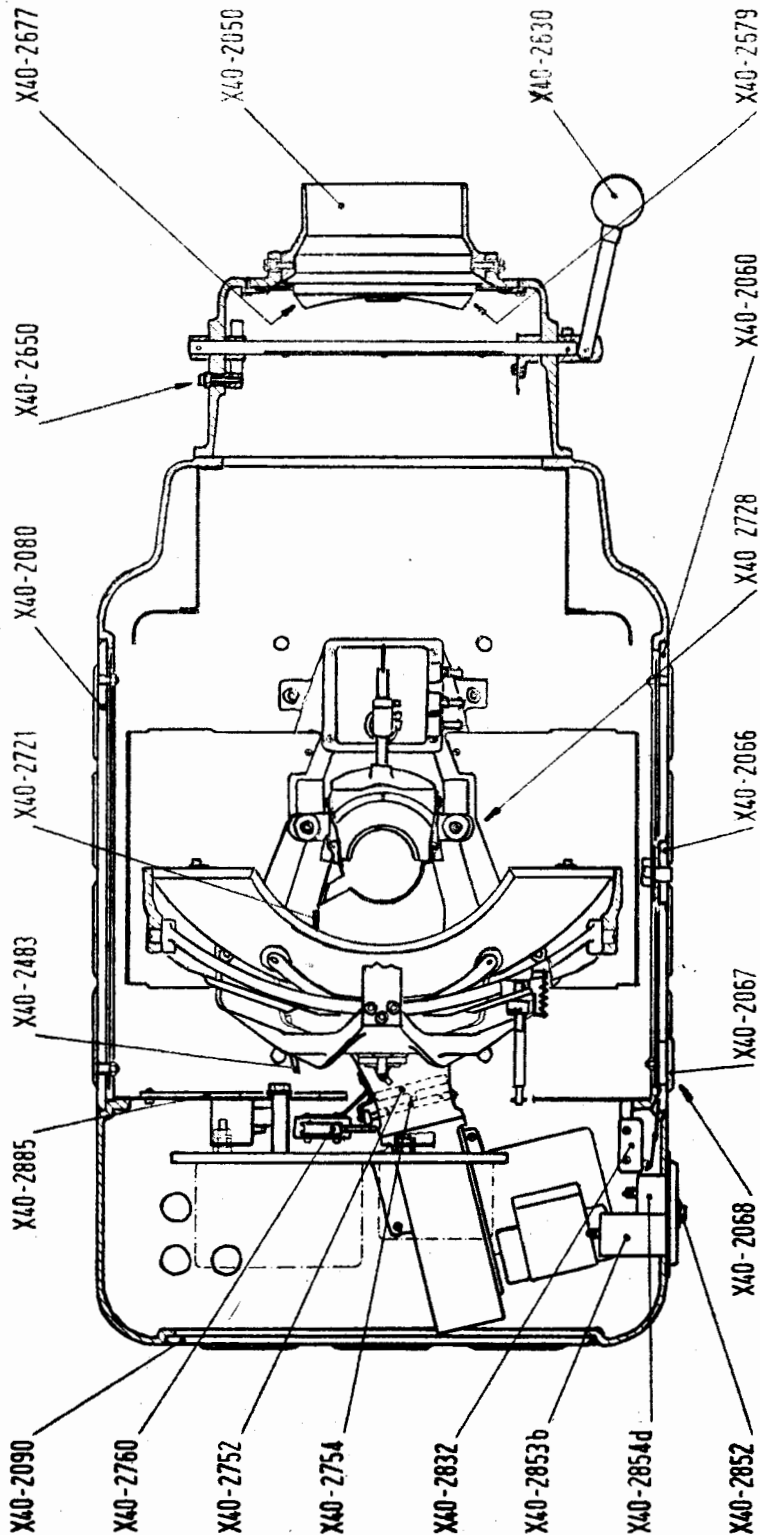
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CINEMECCANICA
4000 SERIES
PARTS

Date: 3/1/70

Drawing: 4000 - 2



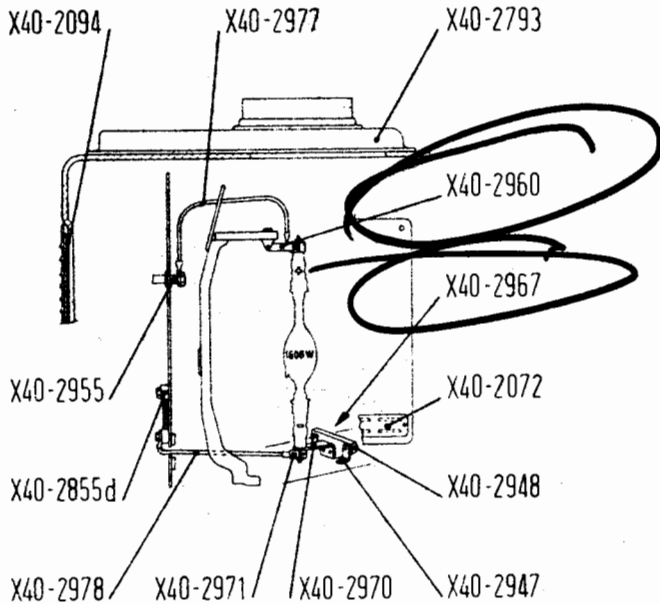
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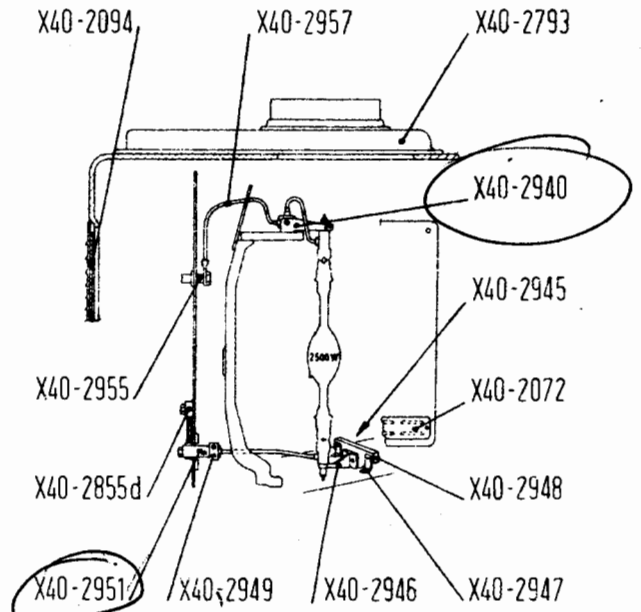
CINEMECCANICA
4000 SERIES
PARTS

Date 3/1/70

Drawing 4000 - 3

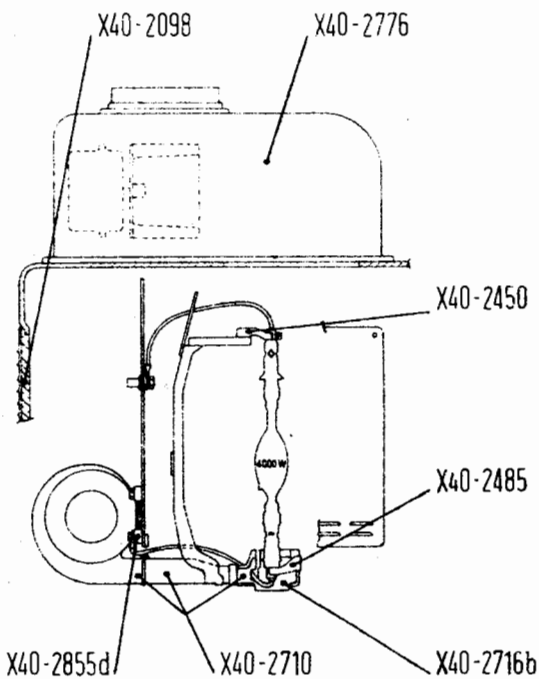


1600 W.

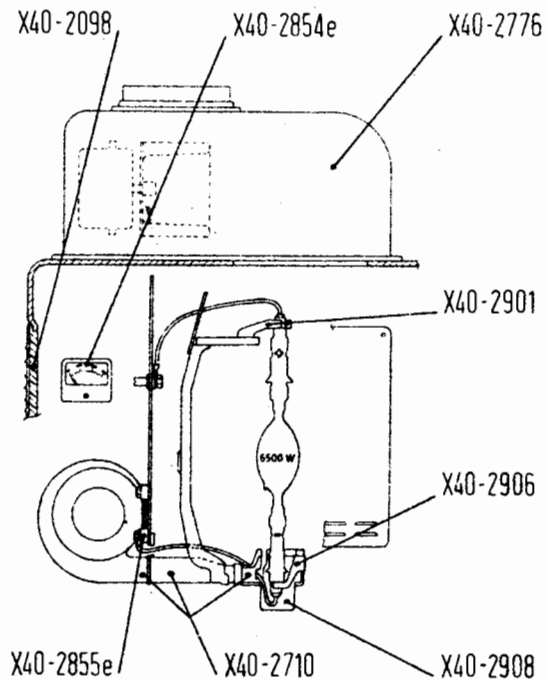


2500 W.

Sec 3



4000 W.



6500 W.

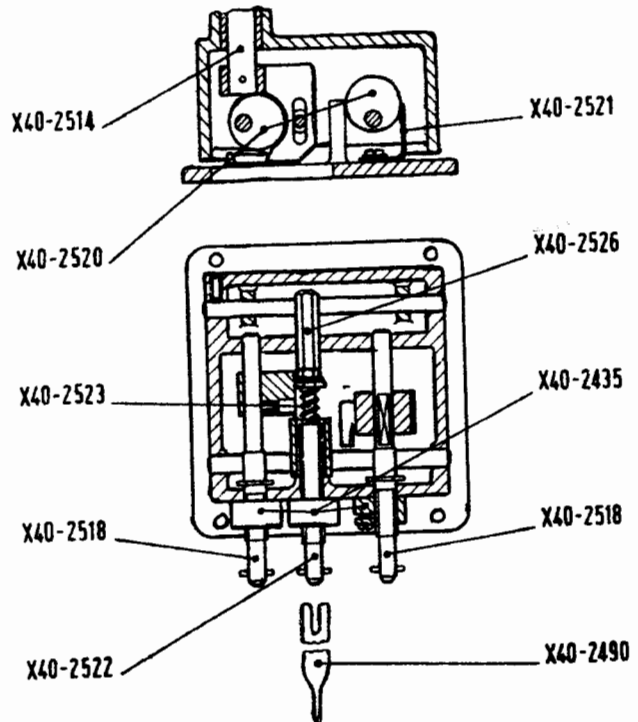
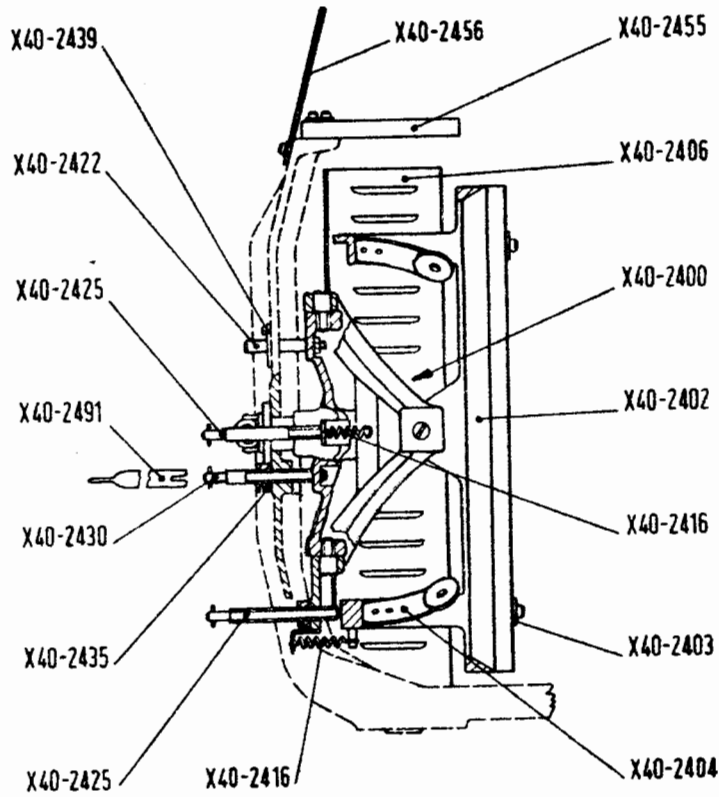
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CINEMECCANICA
4000 SERIES
PARTS

Date: 3/1/70

Drawing: 4000 - 4



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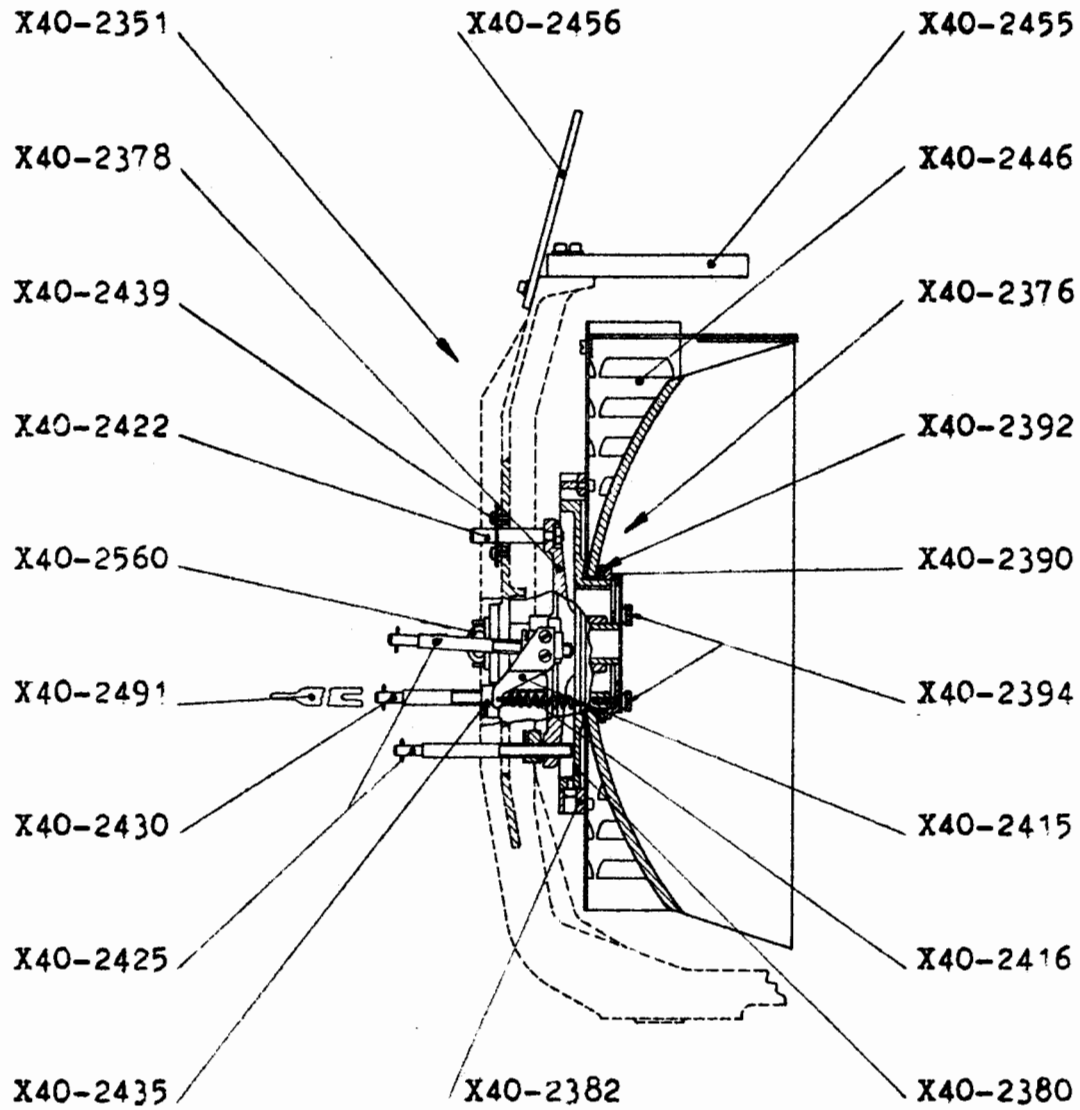
CINEMECCANICA

4000 SERIES

PARTS

3 January 1974

Dwg. #4000-5



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4000X SERIES LAMPHOUSE

SPARE PARTS

1 January 1974

Page 1

<u>LIST PRICE</u>	<u>PART#</u>	<u>DESCRIPTION</u>
10.00	X40-2018	Lamphouse Chimney
.80	X40-2035	Cover Retaining Knob
23.85	X40-2050	Cone for Victoria 8 Only
	X40-2051	Cone (Specify type)
47.65	X40-2060	Door complete (op-side)
2.95	X40-2066	Lock for Door
7.10	X40-2067	Window Frame
3.75	X40-2068	Window Glass
4.40	X40-2072	Side Door Inlet Closure Strip 1600/2500W lamps
33.90	X40-2080	Door complete (Non-op Side)
22.00	X40-2090	Rear door complete
6.10	X40-2094	Rear door inlet closure strip 1600/2500W lamps
3.70	X40-2098	Blower air filter
224.60	X40-2353	Auxiliary reflector complete assembly (state lamp)
126.00	X40-2400	400mm. mirror holder complete
29.85	X40-2402	400mm. mirror holder only
.45	X40-2403	Mirror retaining washer
3.40	X40-2404	Mirror support spring with asbestos washers
9.55	X40-2406	Heat shield (2)
13.65	X40-2416	Vertical and horizontal adjustment spring
2.25	X40-2422	Mirror stop spindle
2.60	X40-2425	Mirror adjusting spindle (vertical/horizontal)
3.70	X40-2430	Mirror shifting spindle
5.90	X40-2435	Adjusting spindle clutch
1.80	X40-2439	Mirror stop spindle spring
16.15	X40-2442	Mirror centre support
4.75	X40-2450	Positive terminal complete 4000W lamp
1.90	X40-2455	Positive terminal insulator
2.60	X40-2456	Positive lead support
2.60	X40-2483	Negative lead insulator
3.40	X40-2485	Negative terminal 4000W lamp
2.95	X40-2490	Auxiliary mirror adjusting wrench
2.95	X40-2491	Mirror adjusting wrench
126.00	X40-2500	Auxiliary mirror holder and support complete
11.05	X40-2514	Vertical control rod (aux. mount)
3.90	X40-2518	Auxiliary mirror adjusting spindle (vertical & ax)
2.60	X40-2520	Auxiliary mirror control cam
2.25	X40-2521	Spring for cam
3.90	X40-2522	Auxiliary mirror horizontal control spindle
.45	X40-2523	Auxiliary mirror spring horizontal control
2.60	X40-2526	Stop control
29.40	X40-2540	Auxiliary Mirror holder and rod complete
15.00	X40-2543	Auxiliary Mirror holder frame only
1.15	X40-2554	Spring for auxiliary mirror
10.20	X40-2560	Mirror and periscope complete
3.40	X40-2626	Dowser blade
1.90	X40-2630	Knob for dowser arm
2.60	X40-2635	Dowser blade spring
12.50	X40-2650	Mascarini
28.20	X40-2677	Beam spreader frame - 160mm.

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4000X SERIES LAMPHOUSE

SPARE PARTS

1 January 1974

Page 2

<u>LIST PRICE</u>	<u>PART#</u>	<u>DESCRIPTION</u>
28.20	X40-2679	Diffuser frame - 180mm.
	X40-2710	Lower blower motor assembly
	X40-2713	Lower blower impeller
54.50	X40-2714	Lower blower motor (state voltage and cycles)
25.65	X40-2715	Angle type air duct for lower blower motor
7.40	X40-2716B	Air duct cup 4000W lamp
18.90	X40-2720	Horizontal channel for blower motor
1.15	X40-2721	Insulation plate for horizontal channel
7.90	X40-2725	Insulation junction
6.15	X40-2727	Insulating joints
2.65	X40-2728	Insulating washers and bush for negative air duct
2.60	X40-2752	Lower blower motor safety shutter
6.90	X40-2754	Collar and spindle for safety shutter
12.30	X40-2760	Micro-switch for safety shutter
360.00	X40-2776	Upper exhaust motor assembly and casting complete
19.80	X40-2782	Exhaust motor bracket
88.50	X40-2784	Exhaust motor (state voltage and cycles)
13.65	X40-2786	Exhaust motor impeller
9.50	X40-2790	Rear cover plate for exhaust motor
64.70	X40-2793	Lamphouse top cover 1600/2500W lamps
7.65	X40-2832	Door micro-switch
12.75	X40-2852	Starter push button switch
23.90	X40-2853B	Hour meter (state voltage and cycles)
44.30	X40-2854D	Ammeter 50-150 amps 1600/2500/4000W lamps
44.30	X40-2854E	Ammeter 50-200 amps 6500W lamp
15.75	X40-2855D	Shunt 50-150 amps 1600/2500/4000W lamps
15.75	X40-2855E	Shunt 50-200 amps 6500W lamp
7.65	X40-2882	Mount. Bracket for starter unit (up to serial #465)
1.50	X40-2885	Insulator (up to serial #465)
3.75	X40-2901	Positive terminal complete 6500W lamp
3.40	X40-2906	Negative terminal 6500W lamp
8.70	X40-2908	Air duct cup 6500W lamp
17.05	X40-2940	Positive terminal complete 2500W lamp
17.05	X40-2945	Negative terminal complete 2500W lamp
3.15	X40-2946	Negative terminal 2500W lamp
2.40	X40-2947	Bracket for negative insulator 1600/2500W lamps
1.75	X40-2948	Negative insulation 1600/2500W lamps
9.50	X40-2949	Clamp for negative lead with screws 2500W lamp
4.20	X40-2951	Clamp bracket 2500W lamp
5.20	X40-2955	Positive connector for DX/2 2500W lamp
6.90	X40-2957	Positive lead (300mm.) 2500W lamp
17.05	X40-2960	Positive terminal complete 1600W lamp
17.05	X40-2967	Negative terminal complete 1600W lamp
3.15	X40-2970	Negative terminal 1600W lamp
9.50	X40-2971	Clamp for neg. lead with screws 1600W lamp
7.20	X40-2977	Positive lead (350 mm.) 1600W lamp
6.90	X40-2978	Negative lead (300 mm.) 1600W lamp

XETRONA DIVISION OF
CARBONS, INC.CEDAR KNOLLS, N. J. 07927
201 - 267 - 82004000X SERIES
LAMPHOUSE

SPARE PARTS

1 January 1974

Page 4

<u>PRICE</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
	X40-2351	Centre mount mirror holder and controls
	X40-2376	Mirror holder assembly
	X40-2378	Centre mirror mount (machined casting)
	X40-2380	Intermediate mirror mount (machined casting)
	X40-2382	External mirror mount (machined casting)
	X40-2390	Mirror clamping ring
	X40-2392	Mirror spacers (3 pieces)
	X40-2394	Mirror clamping screw
	X40-2415	Bulb bracket
	X40-2416	Spring
	X40-2422	Mirror stop pin
	X40-2425	Vertical/lateral mirror control screws
	X40-2430	Focussing control screw
	X40-2435	Vertical/lateral screws brake
	X40-2439	Stop pin spring
	X40-2446	Heat baffle (left/right)
	X40-2455	Positive terminal insulator
	X40-2456	Positive lead support
	X40-2491	Mirror adjusting tool
	X40-2560	Mirror and periscope assembly