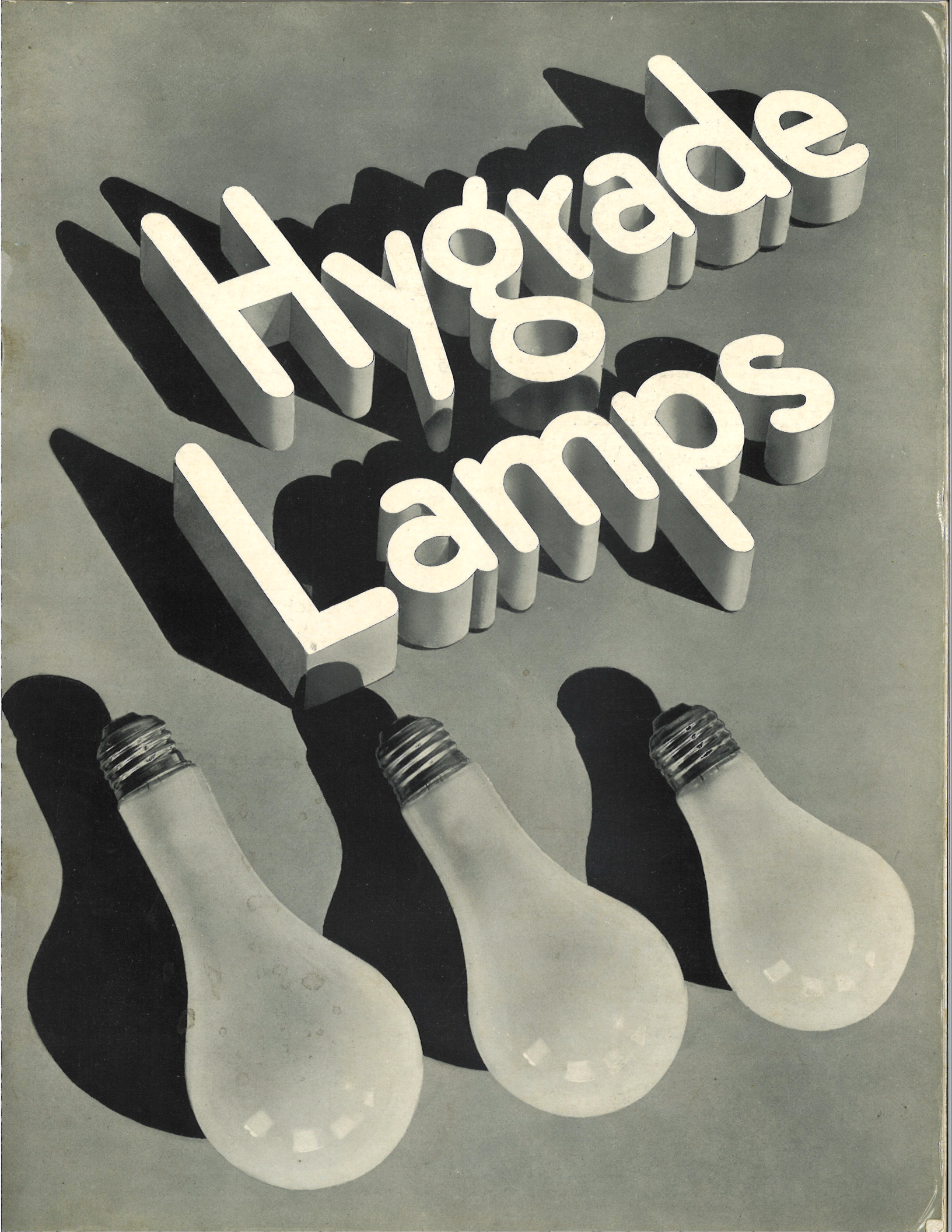
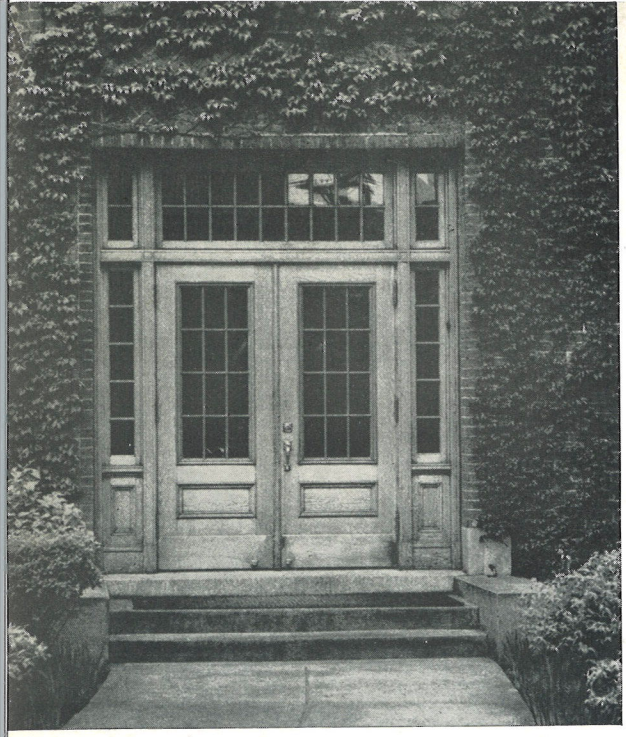
Hygrade Lamps





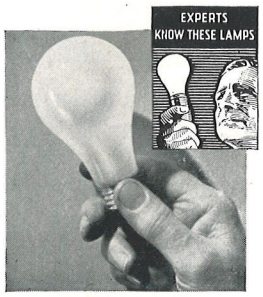
Employees Entrance,
Hygrade Sylvania Corporation, Salem, Mass.

Why it is Important to know something about the MANUFACTURER of the incandescent lamps you buy

The quality of an incandescent lamp cannot be judged by looking at the lamp or by rough and ready methods of testing. On the contrary, laboratory testing, involving the use of delicate machinery, is the only certain method of determining actual quality.

Your most sure guarantee, therefore, that the incandescent lamps you buy will give you Maximum Light for every dollar spent for electric current, lies in the experience and integrity of the manufacturer . . . in his knowledge of lamp making . . . in the number and ability of his engineers . . . and in the thoroughness and accuracy of his checks and quality inspections.

Catalog of



Hygrade Lamps

REG. U.S. PAT. OFF.

Hygrade

This trademark, in red, on every carton, is your warranty that the lamps in the carton will give MAXIMUM LIGHT for every dollar spent for electric current.

Hygrade Lamp Division

Hygrade Sylvania
CORPORATION
SALEM MASS

FOR OVER 30 YEARS MANUFACTURERS OF QUALITY LAMP BULBS
MAKERS OF SYLVANIA SET-TESTED RADIO TUBES

FACTORIES: SALEM, MASS. · EMPORIUM, PA.
ST. MARYS, PA. · CLIFTON, NEW JERSEY

September 1, 1936

11-1-36-5000 L.P.C.

Prices subject to change without notice.

HOW TO ORDER HYGRADE LAMPS

All orders for Hygrade Lamps should give the following information:

1. QUANTITY. Number of lamps desired.
The consumer will avoid delay and obtain a better discount by ordering standard package quantities. Hygrade Lamps are regularly stocked in standard package quantities only, as listed in this schedule. However, lamps of various wattages, voltages and finishes may be combined in one standard package, if the standard package quantity of all is the same. Such assortments take the regular standard package discount.

2. WATTS. Size of lamps in watts.
This applies to all except series lamps, whose sizes are specified in lumens.

3. VOLTS. Be sure to specify exact voltage recommended by your power company.
For series lamps give amperes instead of volts.

4. BULB. Give both type and size of bulb, as A-19, G-25, PS-35, etc.
The letter indicates the shape of the bulb and the figure its diameter in eighths of an inch. Example: A-19 indicates a Standard Line Bulb, inside frosted unless otherwise specified, 19 one-eighths or 2⅜ inches in diameter. G means globular or round; T, Tubular; P and PS, pear shaped and F, flame shape.

5. BASE. Medium Screw, Mogul Screw, Candelabra Screw, Intermediate Screw, etc.

6. SPECIAL FEATURE. (A) Finish: Inside frosted, clear, white bowl, daylight, color, etc. (B) Service: spotlight, country home lighting, locomotive headlight, etc., (C) filament construction.

Special Lamps

In addition to the lamps listed in this schedule Hygrade Sylvania Corporation manufactures many hundred special lamps, prices for which will be given on request.

A lamp is considered special if any change in construction from the standard form listed is required: such as shape of bulb, style of base, filament construction, spray coating, wattage, voltage, amperes, etc.

As special lamps may not be produced in exact quantity, we reserve the right to fill any orders for special lamps 10 per cent over or under; except that orders for any number up to and including 20 will not have more than 2 lamps over or under. Such orders are not subject to cancellation or return.

Regular and Special Voltages

Hygrade Lamps of 110, 115 and 120 volts are regularly carried in stock. Hygrade Lamps of 125 and 130 volts are not stocked in all types and sizes, but take the same list price as 110, 115 and 120 volt lamps.

In the high volt range, standard voltages are 220, 230, 240, 250 and 260. Other high voltages are not stocked and may carry higher list prices.

Prices of other voltage lamps will be given on application.

Etching

The list additional charge for standard customer etching is $0.003 per lamp for lamps ordered at one time for delivery when available, plus a net additional charge of $1.50 per order. Lamps of different sizes and types may be combined in a single order.

Standard size etching allows for not more than 31 letters and spaces in a circle around the regular Hygrade trademark.

Specifications for size and style of lettering sent on request.

Orders for etched lamps are special and cannot be cancelled. We reserve the right to ship either 5% short or in excess of quantity stated. On orders for forty (40) lamps or less, not more than two (2) lamps short or in excess will be furnished.

Hygrade Standard

INSIDE FROSTED

Lamps

FOR GENERAL LIGHTING SERVICE. The standard Hygrade lamps listed on this and the next page are designed to produce maximum light at the lowest possible operating cost. 65 per cent of the lighting of homes, stores, offices, schools, factories and buildings can be served by them.

POSITION OF BURNING. The 15 and 25 watt sizes, which are vacuum lamps, burn equally well in any position. In the larger sizes, which are gas filled, light maintenance is best when the lamps are burned base up.

BURNING OUT OF DOORS. The 40, 60, 75, 100 and 150 watt sizes are gas filled and therefore, because of the temperature at which they operate should be shielded from rain and snow when burned out of doors.

For Vibration Service and Rough Service Lamps see page 7.

15 watts 25 watts 40 watts
60 watts 75 watts
100 watts 150 watts

110, 115 and 120 volt lamps

The same list prices apply to 125 and 130 volt lamps, which are made to order only. Other voltages take a higher price.

GENERAL CHARACTERISTICS				LIST PRICE	LIFE AND LUMENS		DIMENSIONS		STANDARD PACKAGE		
WATTS	BULB	FINISH	BASE		AVERAGE LABORATORY LIFE (HOURS)	APPROX. LUMENS	MAXIMUM OVERALL LENGTH (INCHES)	AVERAGE LIGHT CENTER LENGTH (INCHES)	STANDARD PACKAGE QUANTITY	DIMENSIONS (INCHES)	GROSS WEIGHT (POUNDS)
15	**A-17**	Inside frosted	Med.	**$0.15**	1000	140	3 5/8	2 3/8	120	23 7/8x14x8 3/4	11
25	**A-19**	Inside frosted	Med.	**.15**	1000	258	3 15/16	2 1/2	120	26x15 3/8x10 1/8	12.5
40	**A-19**	Inside frosted	Med.	**.15**	1000	440	4 1/4	2 7/8	120	26x15 3/8x10 1/8	13
60	**A-21**	Inside frosted	Med.	**.15**	1000	762	4 15/16	3 3/8	120	28 1/4x16 1/2x11 1/4	15.5
75	**A-21**	Inside frosted	Med.	**.20**	750	1065	5 5/16	3 7/8	60	17 1/8x11 1/8x12 1/2	8.5
100	**A-23**	Inside frosted	Med.	**.20**	750	1530	6 1/16	4 3/8	60	18 1/4x15x13 1/2	10
150	**A-25**	Inside frosted	Med.	**.25**	750	2535	6 15/16	5 1/4	60	23x19 3/4x15 3/4	13.5
220, 230, 240, 250 and 260 volt lamps											
25	**A-19**	Inside frosted	Med.	**.26**	1000	213	3 15/16	2 1/2	120	26x15 3/8x10 1/8	12.5
50	**A-21**	Inside frosted	Med.	**.26**	1000	475	4 7/16	2 7/8	120	28 1/4x16 1/2x11 1/4	15
100	**A-23**	Inside frosted	Med.	**.38**	1000	1100	6 1/16	4 3/8	60	18 1/4x15x13 1/2	10

For mine lighting the 50 watt lamp is supplied in 275 and 300 volts at a list price of 40 cents.

300 watts, white bowl
1,000 watts, clear

150 watts, clear
200 watts, inside frosted

Hygrade Larger wattage Lamps

MOST LIGHT FOR YOUR MONEY. Large wattage Hygrade lamps, like the standard inside frosted lamps on the previous page, are designed to give the most economical light for the current consumed in the lighting of mills, factories, offices, stores, sports areas, etc. Except where lamps for special service are required, these lamps will give maximum value for the money expended.

POSITION OF BURNING. Clear or inside frosted lamps burn in any position, but maintain their light output best when burned vertically base up.

White Bowl Lamps should be burned base up only. (See page 22.)

BURNING OUT OF DOORS. If burned out of doors, all the lamps on this page, which are gas-filled, should be shielded from rain or snow.

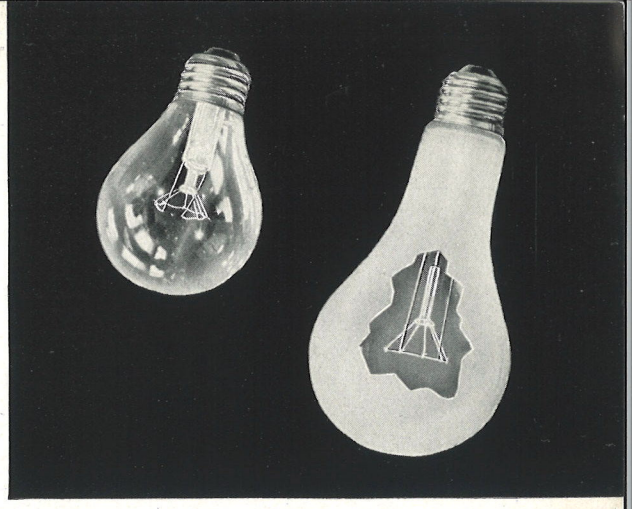
FOR SPORTS LIGHTING. When 1000 and 1500 watt lamps are used for lighting baseball, football and other athletic fields it will be advisable to burn the lamps approximately 10 per cent over voltage such as 110 volt lamps on a 120 volt circuit. While this practice will reduce the life of the lamp to about 300 hours there will be a gain of 35 per cent in light with only a 16 per cent increase in wattage. This permits lower equipment investment and makes for high operating efficiency for sports lighting installation when lamps are burned only 100 to 200 hours a season.

110, 115 and 120 volt lamps

The same list prices apply to 125 and 130 volt lamps, which are made to order only. Other voltages take a higher price.

GENERAL CHARACTERISTICS			LIST PRICE			LIFE AND LUMENS		DIMENSIONS		STANDARD PACKAGES		
WATTS	BULB	BASE	CLEAR	INSIDE WHITE BOWL	INSIDE FROSTED	AVERAGE LABORATORY LIFE (HOURS)	APPROX. LUMENS	MAXIMUM OVERALL LENGTH (INCHES)	AVERAGE LIGHT CENTER LENGTH (INCHES)	STANDARD PACKAGE QUANTITY	DIMENSIONS (INCHES)	GROSS WEIGHT (POUNDS)
150	**A-25**	Med.	**$0.25**	**$0.30**	.....	750	2535	6 5/16	5 1/4	60	23x19 3/4x15 3/4	13.5
200	**PS-30**	Med.	**.45**	**.50**	**$0.50**	1000	3400	8 1/8	6	24	23 5/8x15 7/8x9 3/4	7.5
300	**PS-35**	Mog.	**.75**	**.80**	**.80**	1000	5520	9 7/16	7	24	21 3/8x17x21 3/8	14
500	**PS-40**	Mog.	**1.40**	**1.50**	**1.50**	1000	9800	9 13/16	7	12	23 1/2x18 1/2x10 7/8	8.5
750	**PS-52**	Mog.	**3.75**	**3.95**	**3.95**	1000	14550	13 1/8	9 1/2	6	24 1/8x17 3/8x18 3/8	13
1000	**PS-52**	Mog.	**4.00**	**4.20**	**4.25**	1000	20700	13 1/8	9 1/2	6	24 1/8x17 3/8x18 3/8	13
1500	**PS-52**	Mog.	**5.75**	**5.95**	**6.05**	1000	33000	13 1/8	9 1/2	6	24 1/8x17 3/8x18 3/8	13
220, 230, 240, 250 and 260 volt lamps												
150	**PS-25**	Med.	**$0.65**	**$0.70**	**$0.70**	1000	1980	6 5/16	5 1/4	60	23x19 3/4x15 3/4	13.5
200	**PS-30**	Med.	**.85**	**.90**	**.90**	1000	2920	8 1/8	6	24	23 5/8x15 7/8x9 3/4	7.5
300	**PS-35**	Mog.	**1.25**	**1.35**	**1.35**	1000	4560	9 7/16	7	24	21 3/8x17x21 3/8	14
500	**PS-40**	Mog.	**2.15**	**2.30**	**2.30**	1000	8350	9 13/16	7	12	23 1/2x18 1/2x10 7/8	8.5
750	**PS-52**	Mog.	**4.25**	**4.50**	.....	1000	13125	13 1/8	9 1/2	6	24 1/8x17 3/8x18 3/8	13
1000	**PS-52**	Mog.	**4.75**	**5.00**	.....	1000	19000	13 1/8	9 1/2	6	24 1/8x17 3/8x18 3/8	13
1500	**PS-52**	Mog.	**7.25**	.....	.....	.....	.....	.....	.....	....	.....	.....

Hygrade Vibration Service Lamps



50 Watt Vibration Service 100 Watt Vibration Service Showing Construction

VIBRATION SERVICE — (formerly called Mill Type) constructed particularly for industrial service where there is jar or vibration, particularly from high speed machinery.

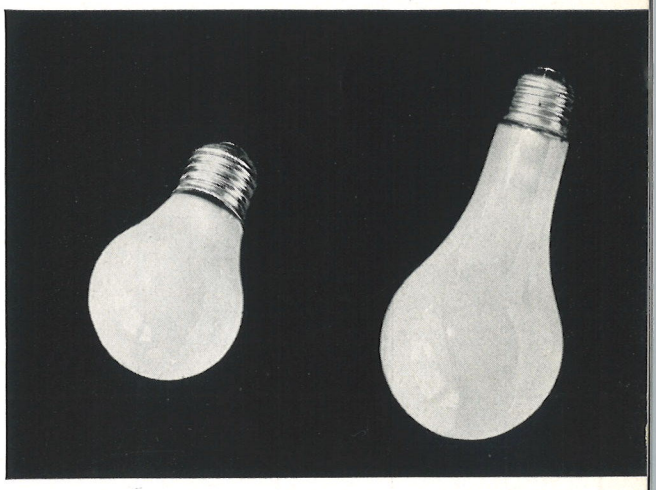
POSITION OF BURNING. Filament wire of special character, known as sag wire, is used in these lamps to improve their vibration strength. Because of this fact they should not be burned within 45 degrees of base horizontal.

110, 115 and 120 volt lamps

The same list prices apply to 125 and 130 volt lamps, which are made to order only. Other voltages take a higher price.

GENERAL CHARACTERISTICS				LIST PRICE		LIFE AND LUMENS		DIMENSIONS		STANDARD PACKAGES		
WATTS	BULB	BASE	TYPE OF LAMP	CLEAR	INSIDE FROSTED	AVERAGE LABORATORY LIFE (HOURS)	APPROX. LUMENS (INSIDE FROSTED)	MAXIMUM OVERALL LENGTH (INCHES)	AVERAGE LIGHT CENTER LENGTH (INCHES)	STANDARD PACKAGE QUANTITY	DIMENSIONS (INCHES)	GROSS WEIGHT (POUNDS)
50	P-19	Med.	Vibration Service	$0.25	$0.30	1000	545	3 15/16	2 1/2	120	26x15 3/8x10 1/8	12.5
100	A-23	Med.	Vibration Service	.55	.50	1000	1400	6 1/16	4 3/8	60	18 1/4x15x13 1/2	10

Hygrade Rough Service Lamps



50 Watt Rough Service 100 Watt Rough Service

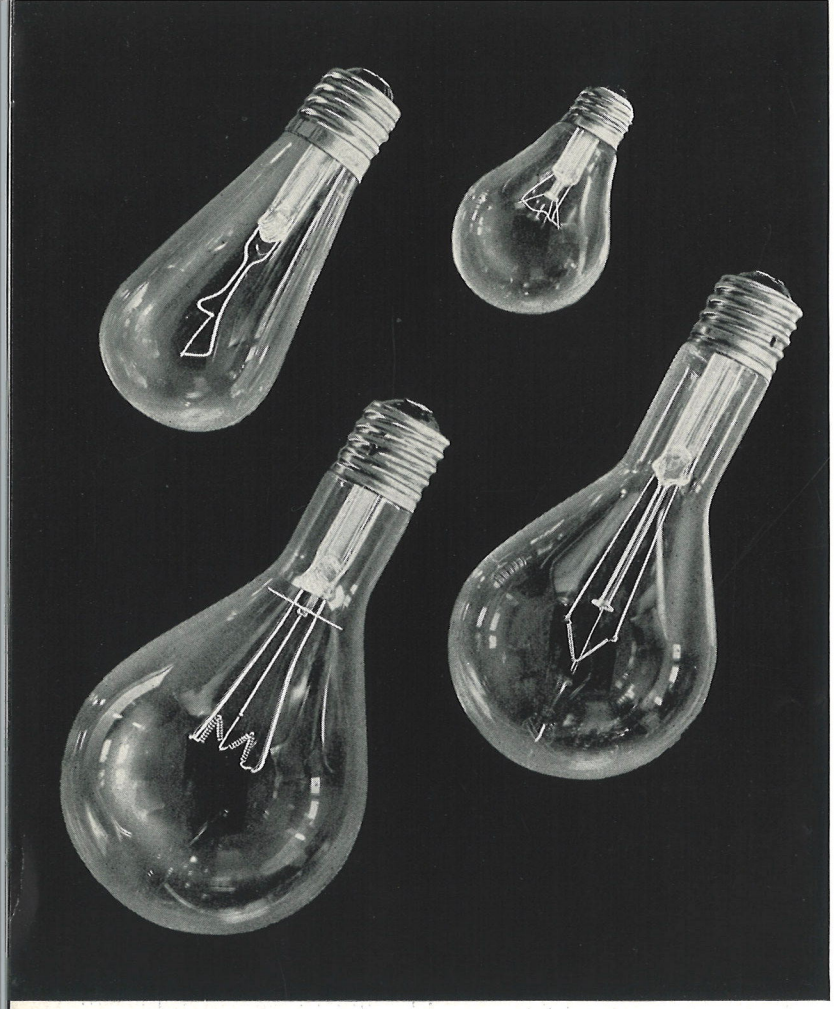
ROUGH SERVICE. For use on extension cords in machine shops, shipyards, garages, dredges, steam shovels and derricks, and in similar places where incandescent lamp bulbs receive rough handling and abuse.

110, 115 and 120 volt lamps

The same list prices apply to 125 and 130 volt lamps, which are made to order only. Other voltages take a higher price.

GENERAL CHARACTERISTICS				LIST PRICE		LIFE AND LUMENS		DIMENSIONS		STANDARD PACKAGES		
WATTS	BULB	BASE	TYPE OF LAMP	CLEAR	INSIDE FROSTED	AVERAGE LABORATORY LIFE (HOURS)	APPROX. LUMENS (INSIDE FROSTED)	MAXIMUM OVERALL LENGTH (INCHES)	AVERAGE LIGHT CENTER LENGTH (INCHES)	STANDARD PACKAGE QUANTITY	DIMENSIONS (INCHES)	GROSS WEIGHT (POUNDS)
50	A-19	Med.	Rough Service	.....	$0.34	1000	450	3 15/16	2 1/2	120	26x15 3/8x10 1/8	12.5
100	A-23	Med.	Rough Service	.....	.55	1000	1150	6 1/16	4 3/8	60	18 1/4x15x13 1/2	10

Standard Hygrade Lamps, shown on page 5, which are lower in price, give more economical operation under normal conditions.



S-24½ bulb
PS-40 bulb

Traffic Signal
PS-35 bulb

Hygrade Street Series Lamps

FOR USE IN SERIES BURNING STREET LIGHTING CIRCUITS.

These lamps are made specially for street series burning with attention to a multitude of details which make them unusually efficient and economical.

POSITION OF BURNING. The smaller sizes are designed to burn in any position. They give their best light output, however, when burned base up.

In the 15 and 20 ampere sizes, lamps are built specifically for base up or base down burning. When built for base down burning (*) they have a light center length of 6¼ inches.

LIFE. While laboratory rating is 2,000 hours, actual life, under the severities of street lighting service averages 1,500 hours.

GENERAL CHARACTERISTICS				LIST PRICE	LIFE	WATTS and VOLTS		DIMENSIONS		STANDARD PACKAGES		
RATED INITIAL LUMENS	BULB	AMPERES	BASE		AVERAGE LAB'T'R'Y LIFE (HOURS)	AVERAGE VOLTS	AVERAGE WATTS	MAXIMUM OVERALL LENGTH (INCHES)	AVERAGE LIGHT CENTER LENGTH (INCHES)	STANDARD PACKAGE QUANTITY	DIMENSIONS (INCHES)	GROSS WEIGHT (POUNDS)
600	**S-24½**	6.6	Mog.	**$0.55**	2000	6.7	44.0	7⅛	5⅜	60	19⅞x16⅝x15⅝	17
800	**S-24½**	6.6	Mog.	**.55**	2000	8.4	55.0	7⅛	5⅜	60	19⅞x16⅝x15⅝	17
1,000	**S-24½**	6.6	Mog.	**.50**	2000	9.7	63.7	7⅛	5⅜	60	19⅞x16⅝x15⅝	17
2,500	**PS-35**	6.6	Mog.	**1.00**	2000	22.0	145.3	9 7/16	7	24	21⅜x17x21⅜	14
4,000	**PS-35**	6.6	Mog.	**1.20**	2000	33.1	218.6	9 7/16	7	24	21⅜x17x21⅜	14
4,000	**PS-35**	15	Mog.	**1.20**	2000	14.0	210.5	9 7/16	7*	24	21⅜x17x21⅜	14
6,000	**PS-40**	6.6	Mog.	**1.60**	2000	51.9	342.9	9 13/16	7	12	23½x18½x10⅞	8.5
6,000	**PS-40**	20	Mog.	**1.60**	2000	14.9	298.5	9 13/16	7*	12	23½x18½x10⅞	8.5
10,000	**PS-40**	20	Mog.	**2.00**	2000	25.0	500.0	9 13/16	7*	12	23½x18½x10⅞	8.5
15,000	**PS-40**	20	Mog.	**2.75**	2000	37.3	746.3	9 13/16	7*	12	23½x18½x10⅞	8.5
25,000	**PS-52**	20	Mog.	**5.00**	2000	60.7	1213.6	13⅛	9½	6	24⅛x17⅜x18⅜	13

Traffic Signal Lamps

110, 115 and 120 volts

GENERAL CHARACTERISTICS				LIST PRICE	LIFE AND LUMENS		DIMENSIONS		STANDARD PACKAGES		
WATTS	BULB	FINISH	BASE		AVERAGE LABORATORY LIFE (HOURS)	APPROX. LUMENS	MAXIMUM OVERALL LENGTH (INCHES)	AVERAGE LIGHT CENTER LENGTH (INCHES)	STANDARD PACKAGE QUANTITY	DIMENSIONS (INCHES)	GROSS WEIGHT (POUNDS)
60	**A-21 clear**	Clear	Med.	**$0.30**	2000	654	4 7/16	2 7/16	120	28¼x16½x11¼	**15.5**

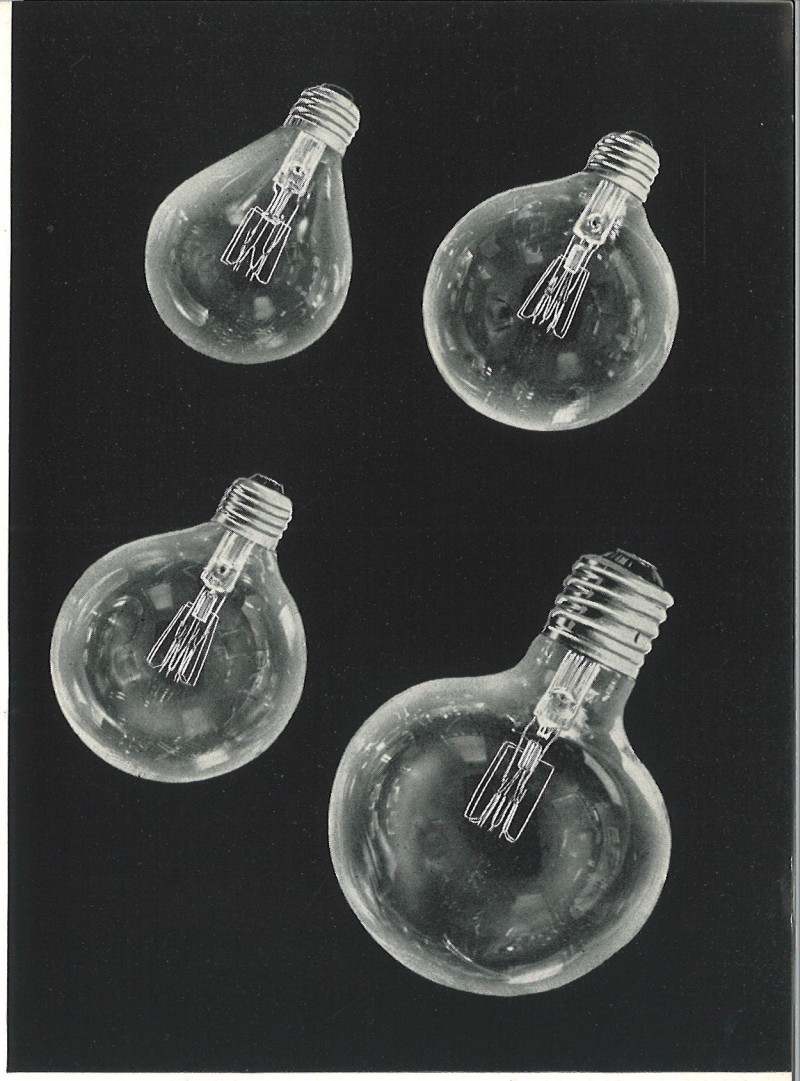
Hygrade Spotlight and Floodlight Lamps

Lamps for Spotlighting and Floodlighting service are designed with highly concentrated light sources which can be focussed accurately in reflecting equipment. This concentration, plus the use of efficient reflectors and lenses, makes possible narrow beams of high intensity light which can be closely controlled.

Lamps for Floodlighting service are often burned for long periods of time in comparatively inaccessible locations. Consequently it is economically desirable that they should have a comparatively long life. They are, therefore, designed for 800 hours average laboratory life.

On the other hand, lamps for Spotlighting service are employed largely in theatres and similar locations where a maximum intensity of light is demanded for very short intervals of time. Spotlight lamps, therefore, are designed for higher efficiency than Floodlight lamps and for 200 hours average laboratory life.

POSITION OF BURNING. It is important to note that the 100 to 500 watt lamps can be burned in any position except within 45° of vertical base up. The 1,000 watt lamps can be burned in any position from vertical base down to horizontal. The construction does not make it practical to burn in any other position.



P-25 Spotlight
G-30 Floodlight

G-30 Spotlight
G-40 Floodlight

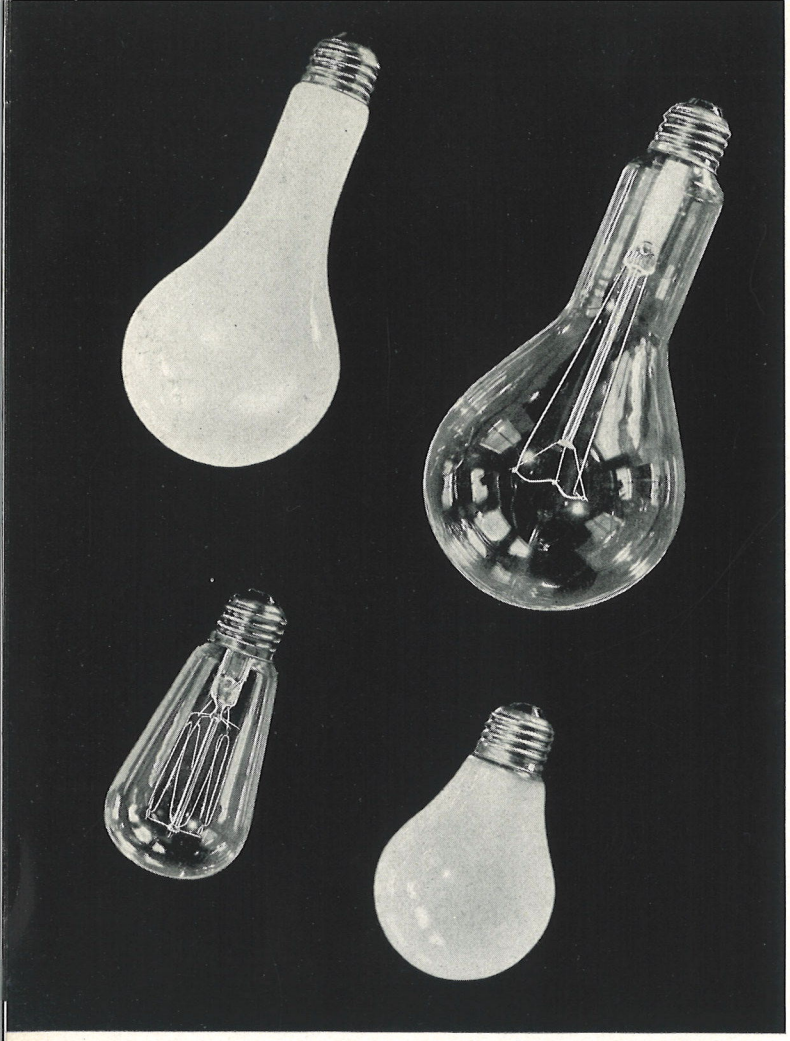
In floodlighting, where it is not desired to control the beam of light closely, the large wattage lamps shown on page 6, in the proper fixtures, will many times be found more desirable than floodlighting lamps.

Orders should specify **"Floodlight Service"** or **"Spotlight Service."**

110, 115 and 120 volt lamps

The same list prices apply to 125 and 130 volt lamps, which are made to order only. Other voltages take a higher price.

GENERAL CHARACTERISTICS				LIST PRICE	LIFE AND LUMENS		DIMENSIONS		STANDARD PACKAGES		
WATTS	BULB	BASE	TYPE OF LAMP		AVERAGE LABORATORY LIFE (HOURS)	APPROX. LUMENS	MAXIMUM OVERALL LENGTH (INCHES)	AVERAGE LIGHT CENTER LENGTH (INCHES)	STANDARD PACKAGE QUANTITY	DIMENSIONS (INCHES)	GROSS WEIGHT (POUNDS)
100	**P-25**	Med.	Spotlight—clear	**$0.85**	200	1360	4 3/4	3	60	20 3/8x16 7/8x11 1/4	10.5
250	**G-30**	Med.	Spotlight—clear	**1.50**	200	4425	5 1/8	3	24	20x15 7/8x16 1/2	9.5
250	**G-30**	Med.	Floodlight—clear	**1.50**	800	3700	5 1/8	3	24	20x15 7/8x16 1/2	9.5
400	**G-30**	Med.	Spotlight—clear	**2.65**	200	7840	5 1/8	3	24	20x15 7/8x16 1/2	9.5
500	**G-40**	Mog.	Floodlight—clear	**2.90**	800	8350	7 1/16	4 1/4	12	19 1/2x14 1/8x25 5/8	12
1000	**G-40**	Mog.	Floodlight—clear	**6.25**	800	18700	8	5 1/4	12	19 1/2x14 1/8x25 5/8	12.5
1000	**G-40**	Mog.	Prefocus Spotlight—clear	**6.65**	200	22000	8 7/16	3 15/16	12	19 1/2x14 1/8x25 5/8	**11.5**
1000	**G-40**	Mog.	Spotlight—clear	**6.25**	200	22000	7 1/16	4 1/4	12	19 1/2x14 1/8x25 5/8	12
1000	**G-40**	Mog.	Spotlight—clear	**6.25**	200	22000	8	5 1/4	12	19 1/2x14 1/8x25 5/8	12.5



101 Watt A-23 Inside Frosted
23 Watt S-17

201 Watt PS-30
36 Watt A-21

Hygrade Street Railway Lamps

SERIES SERVICE. All Hygrade Street Railway Lamps are designed for use in series on 525, 550, 575, 600, 625 or 650 volts.

The 36 and 56 watt street railway lamps may be called the general service lamps of the street railway industry, because they are the two types which are most common in subway, elevated and street railway service. They are designed for use either in cars or in stations and shops.

CUT OUT LAMPS. Cut Out Street Railway lamps are gas filled and consequently more efficient than the more generally used 36 watt lamps. They are designed with a short, rugged coil filament which resists the jars and vibration incident to railway service. Their name comes from the fact that they are provided with an automatic short-circuiting device designed to re-close the circuit after filament failure.

ARC RESISTING. The arc resisting lamps contain a material which tends to prevent arcing when the filament burns out. They are Gas filled and therefore more efficient than vacuum lamps.

POSITION OF BURNING. The 36 and 56 watt lamps give best service when burned vertically base up. They should not be burned horizontally.

105, 110, 115, 120, 125 and 130 volt lamps

GENERAL CHARACTERISTICS					LIST PRICE	LIFE AND LUMENS		DIMENSIONS		STANDARD PACKAGES		
NOMINAL WATTS	AMPERES	BULB	BASE	TYPE		AVERAGE LABORATORY LIFE (HOURS)	* APPROX. LUMENS	MAXIMUM OVERALL LENGTH (INCHES)	AVERAGE LIGHT CENTER LENGTH (INCHES)	STANDARD PACKAGE QUANTITY	DIMENSIONS (INCHES)	GROSS WEIGHT (POUNDS)
23	0.214	**S-17**	Med.	Clear	**$0.25**	1500	219	4 5/8	.....	120	22 3/4 x 14 x 11	13
23	0.214	**A-19**	Med.	Clear headlight	**.60**	1000	197	3 15/16	2 3/16	120	26 x 15 3/8 x 10 1/8	12.5
36	0.342	**A-21**	Med.	Inside frosted	**.17**	1500	374	4 7/16	2 7/8	120	28 1/4 x 16 1/2 x 11 1/4	15
36	0.342	**A-19**	Med.	Clear headlight	**.60**	1000	338	3 15/16	2 3/16	120	26 x 15 3/8 x 10 1/8	12.5
56	0.519	**A-21**	Med.	Inside frosted	**.24**	1500	609	4 7/16	2 7/8	120	28 1/4 x 16 1/2 x 11 1/4	15
56	0.519	**P-25**	Med.	Clear headlight	**.85**	1000	531	4 3/4	2 1/16	60	20 3/8 x 16 7/8 x 11 1/4	10.5
94	0.863	**P-25**	Med.	Clear headlight	**1.10**	1000	933	4 3/4	2 1/16	60	20 3/8 x 16 7/8 x 11 1/4	10.5
101	.....	**A-23**	Med.	Inside frosted arc-resisting	**.50**	1500	1100	6 1/16	4 3/8	60	18 1/4 x 15 x 13 1/2	10
201	.....	**PS-30**	Med.	Clear arc-resisting	**.95**	1000	2900	8 1/8	6	24	23 5/8 x 15 7/8 x 9 3/4	7.5
301	.....	**PS-35**	Mog.	Clear arc-resisting	**1.55**	1000	4830	9 7/16	7	24	21 3/8 x 17 x 21 3/8	14
VOLTS	**CUTOUT LAMPS**											
30	1.0	**A-19**	Med.	Inside frosted	**.30**	1500	360	3 15/16	2 1/2	120	26 x 15 3/8 x 10 1/8	**12.5**
30	1.6	**A-21**	Med.	Inside frosted	**.35**	1500	648	4 7/16	2 7/8	120	28 1/4 x 16 1/2 x 11 1/4	**15**

* Lumens listed are for 115 volt lamps. Lumens of other voltages are in proportion to the volts.

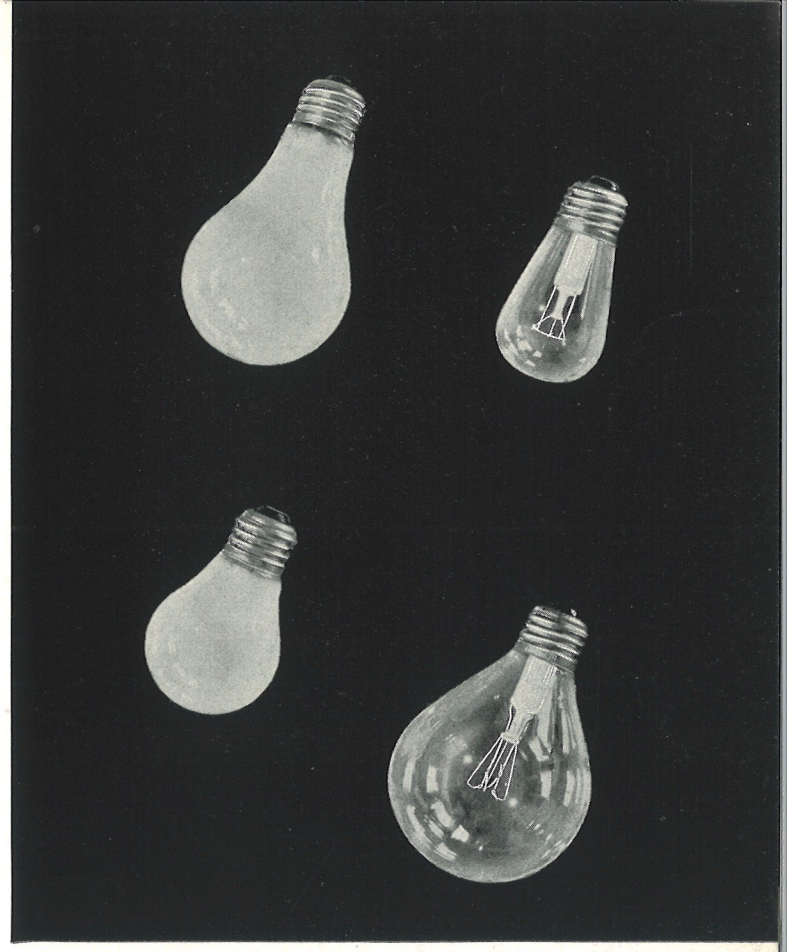
Hygrade Train and Locomotive Lamps

TRAIN LIGHTING. These low voltage lamps are made with short, rugged coil filaments. They are more efficient than general service lamps and at the same time are so strong and sturdy that they stand up in difficult railroad service.

VOLTAGE CONTROL. Voltage should be adjusted to maintain rated lamp voltage at the socket. If 32 volts cannot be obtained at the socket 28-32 volt Country Home Lighting Lamps, operated at 30 volts, should be used.

LOCOMOTIVE HEADLIGHT. These lamps have a highly concentrated filament that produces a far reaching intense beam when accurately focussed in a good reflector. They should be protected from excessive vibration and care should be taken to prevent water from striking the bulb when it is hot.

LOCOMOTIVE CAB LIGHTING. These lamps, which are of rugged construction, should be used for all locomotive lighting purposes except headlighting. Orders should specify "Locomotive Cab Lighting."



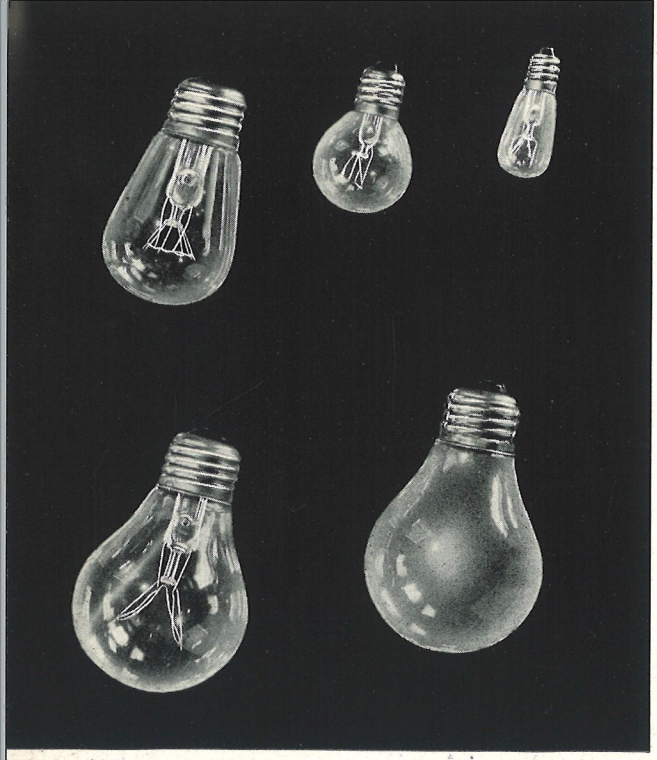
A-21 Train Lighting
A-17 Train Lighting

S-14 Cab Lighting
P-25 Headlight

TRAIN LIGHTING LAMPS 32 and 64 volts

GENERAL CHARACTERISTICS				LIST PRICE	LIFE AND LUMENS		DIMENSIONS		STANDARD PACKAGES		
WATTS	BULB	BASE	FINISH		AVERAGE LABORATORY LIFE HOURS	APPROX. LUMENS	MAXIMUM OVERALL LENGTH (INCHES)	AVERAGE LIGHT CENTER LENGTH (INCHES)	STANDARD PACKAGE QUANTITY	DIMENSIONS (INCHES)	GROSS WEIGHT (POUNDS)
15	**A-17**	Med.	Inside frosted	**$0.23**	1000	*162	3 5/8	2 3/8	120	23 7/8 x 14 x 8 3/4	11
25	**A-19**	Med.	Inside frosted	**.23**	1000	*323	3 15/16	2 1/2	120	26 x 15 3/8 x 10 1/8	12.5
50	**A-21**	Med.	Inside frosted	**.25**	1000	*780	4 15/16	3 3/8	120	28 1/4 x 16 1/2 x 11 1/4	15.5
100	**A-23**	Med.	Inside frosted	**.38**	1000	*1720	6 1/16	4 3/8	60	18 1/4 x 15 x 13 1/2	10
LOCOMOTIVE HEADLIGHT LAMPS 32 volts											
100	**P-25**	Med.	Clear	**1.00**	500	1520	4 3/4	3	60	20 3/8 x 16 7/8 x 11 1/4	10.5
250	**P-25**	Med.	Clear	**1.50**	500	4375	4 3/4	3	60	20 3/8 x 16 7/8 x 11 1/4	10:5
LOCOMOTIVE CAB LIGHTING LAMPS 34 volts											
15	**S-14**	Med.	Clear	**.22**	1000	141	**3 1/2**	**2 1/2**	120	20 1/8 x 11 7/8 x 8 5/8	10

*32 volt only



10 watts S-14 A-19 daylight 10 watts S-11 A-19 colored 6 watts S-6

Hygrade Sign and Decorative Lamps

For use everywhere color effects are desired, but particularly useful out of doors, because the coloring matter is on the inside of the bulb.

LIGHT OUTPUT. Approximate lumens are given for clear or inside frosted bulbs only.

110, 115 and 120 volt lamps

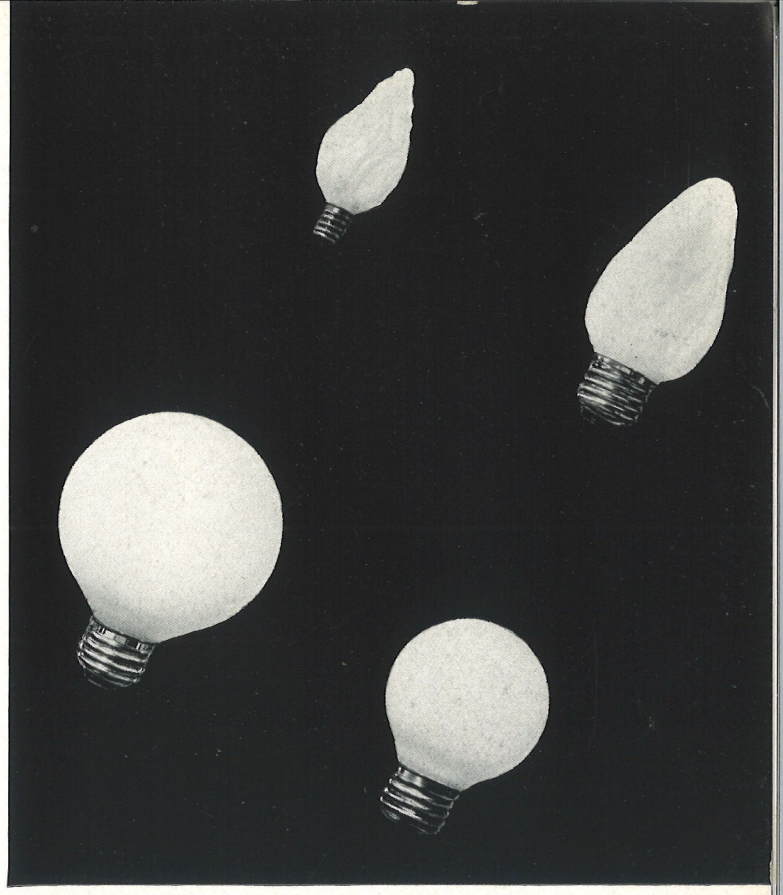
The same list prices apply to 125 and 130 volt lamps, which are made to order only. Other voltages take a higher price.

GENERAL CHARACTERISTICS				LIST PRICE			LIFE AND LUMENS		DIMENSIONS		STANDARD PACKAGES		
WATTS	BULB	BASE	FINISH	CLEAR	INSIDE FROSTED	INSIDE COLORED	AVERAGE LABORATORY LIFE (HOURS)	APPROX. LUMENS CLEAR	MAXIMUM OVERALL LENGTH (INCHES)	AVERAGE LIGHT CENTER LENGTH (INCHES)	STANDARD PACKAGE QUANTITY	DIMENSIONS (INCHES)	GROSS WEIGHT (POUNDS)
6	**S-6**	Cand	Clear	**$0.20**	.....	.....	1500	38	1 7/8	.....	120	18 1/4 x 8 7/8 x 6 1/8	3
6	**S-14**	Med.	Clear, inside frosted, red, blue, green, yellow, amber-orange, old rose and white.	**.15**	**$0.15**	**$0.20**	1500	38	3 1/2	2 1/2	120	20 1/8 x 11 7/8 x 8 5/8	10
10	**S-11**	Inter.	Clear, red, blue, green, yellow, amber-orange, flametint and white.	**.20**	.....	**.20**	1500	76	2 5/16	1 5/8	120	17 x 6 7/8 x 8 7/8	4.5
10	**S-14**	Med.	Inside frosted, red, blue, green, yellow, amber-orange, old rose, white and clear.	**.15**	**.15**	**.20**	1500	78	3 1/2	2 1/2	120	20 1/8 x 11 7/8 x 8 5/8	10
25	**A-19**	Med.	Inside frosted, red, blue, green, yellow, amber-orange, flametint, ivory and old rose.	.....	**.15**	**.20**	1000	.....	3 15/16	2 1/2	120	26 x 15 3/8 x 10 1/8	12.5
Daylight Sign Lamps													
10	**S-14**	Med.	Clear Daylight.		**$0.30**		1500	.....	3 1/2	2 1/2	120	20 1/8 x 11 7/8 x 8 5/8	10
15	**S-14**	Med.	Clear Daylight.		**.34**		1500	.....	3 1/2	2 1/2	120	20 1/8 x 11 7/8 x 8 5/8	10
25	**A-19**	Med.	Clear Daylight.		**.30**		1000	.....	3 15/16	2 1/2	120	26 x 15 3/8 x 10 1/8	**12.5**
50	**A-19**	Med.	Clear Daylight.		**.35**		1000	.....	3 15/16	2 1/2	120	26 x 15 3/8 x 10 1/8	**12.5**

Hygrade Flame-shaped and Round Bulb Lamps

FOR DECORATIVE AND ORNAMENTAL USE. These lamps are made for the interior decorative and ornamental lighting of fine homes, offices, etc. and are sprayed on the outside of the bulb to produce a soft, velvety appearance.

LIGHT OUTPUT. The density of the colored coating varies, so that it is impossible to give the exact light output.

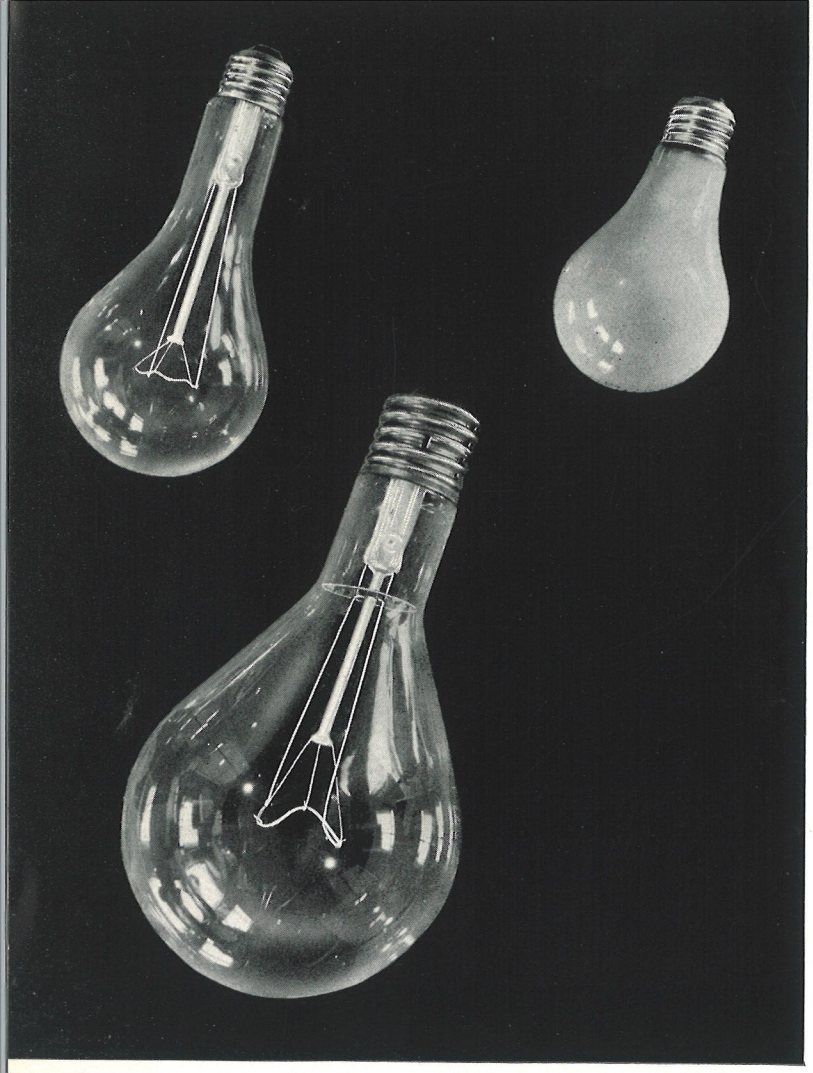


15 watts F-10 25 watts F-15
40 watts G-25 25 watts G-18½

110, 115 and 120 volt lamps

The same list prices apply to 125 and 130 volt lamps, which are made to order only. Other voltages take a higher price.

GENERAL CHARACTERISTICS				LIST PRICE			LIFE AND LUMENS		DIMENSIONS		STANDARD PACKAGES		
WATTS	BULB	BASE		WHITE	IVORY	FLAME TINT	AVERAGE LABORATORY LIFE (HOURS)	APPROX. LUMENS	MAXIMUM OVERALL LENGTH (INCHES)	AVERAGE LIGHT CENTER LENGTH (INCHES)	STANDARD PACKAGE QUANTITY	DIMENSIONS (INCHES)	GROSS WEIGHT (POUNDS)
15	F-10	Cand.		$0.35	$0.35	$0.35	750	.....	3 1/16	.....	60	9 5/8 x 7 7/8 x 8 5/8	3
25	F-15	Med.		.20	.20	.20	750	.....	4 1/2	.....	120	24 1/8 x 15 1/2 x 14 1/8	15
25	G-18½	Med.		.30	.30	.30	750	.....	3 9/16	.....	120	26 x 15 3/8 x 10 1/8	11.5
25	G-25	Med.		.35	.35	.35	750	.....	4 7/16	.....	60	20 3/8 x 16 7/8 x 11 1/4	9
40	G-25	Med.		.35	.35	.35	750	.....	4 7/16	.....	60	20 3/8 x 16 7/8 x 11 1/4	9



PS-25 clear daylight A-21 inside frosted daylight
PS-40 clear daylight

Hygrade Daylight Lamps

These lamps are especially useful in store windows, department stores, business offices, printing offices or wherever color is a factor and in inspection and assembling operations to produce a daylight effect.

The bulbs of Hygrade Daylight Lamps are constructed of blue glass, which provides a whiter light than the clear glass of ordinary lamps, and thus causes colors to have somewhat the same values as in daylight.

LIGHT OUTPUT. The light output is 35% less than that of clear lamps, so that to secure the same amount of light, the next size larger lamp should be used.

110, 115 and 120 volt lamps

The same list prices apply to 125 and 130 volt lamps, which are made to order only. Other voltages take a higher price.

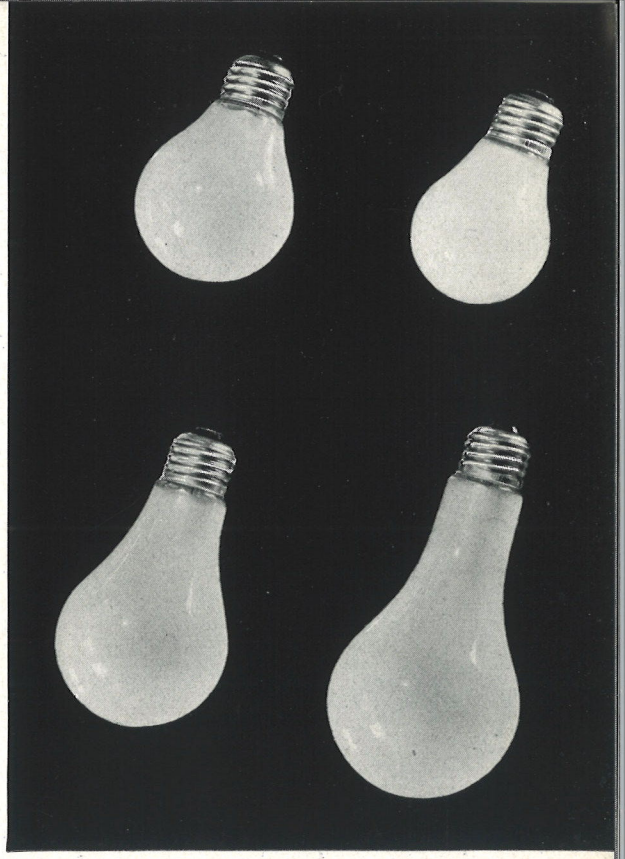
GENERAL CHARACTERISTICS			LIST PRICE		LIFE AND LUMENS		DIMENSIONS		STANDARD PACKAGES		
WATTS	BULB	BASE	CLEAR DAYLIGHT	INSIDE FROSTED DAYLIGHT	AVERAGE LABORATORY LIFE (HOURS)	APPROX. LUMENS	MAXIMUM OVERALL LENGTH (INCHES)	AVERAGE LIGHT CENTER LENGTH (INCHES)	STANDARD PACKAGE QUANTITY	DIMENSIONS (INCHES)	GROSS WEIGHT (POUNDS)
60	**A-21**	Med.	.....	**$0.30**	1000	495	$4\frac{15}{16}$	$3\frac{3}{8}$	120	$28\frac{1}{4}$x$16\frac{1}{2}$x$11\frac{1}{4}$	15.5
100	**A-23**	Med.	.....	**.35**	750	988	$6\frac{7}{16}$	$4\frac{3}{8}$	60	$18\frac{1}{4}$x15x$13\frac{1}{2}$	10
150	**A-25**	Med.	**$0.50**	**.55**	750	1650	$6\frac{15}{16}$	$5\frac{1}{4}$	60	23x$19\frac{3}{4}$x$15\frac{3}{4}$	13.5
200	**PS-30**	Med.	**.80**	**.85**	1000	2210	$8\frac{1}{8}$	6	24	$23\frac{5}{8}$x$15\frac{7}{8}$x$9\frac{3}{4}$	7.5
300	**PS-35**	Mog.	**1.20**	**1.30**	1000	3590	$9\frac{7}{16}$	7	24	$21\frac{3}{8}$x17x$21\frac{3}{8}$	14
500	**PS-40**	Mog.	**2.15**	**2.30**	1000	6370	$9\frac{13}{16}$	7	12	$23\frac{1}{2}$x$18\frac{1}{2}$x$10\frac{7}{8}$	8.5

Hygrade Country Home Lamps

For use with battery-generator sets

28-32 VOLT LAMPS. Hygrade Country Home Lamps are designed for burning on a circuit averaging between 28 and 32 volts.

SIX AND TWELVE VOLT LAMPS. Six and twelve volt lamps are designed for burning in the newer less expensive battery-generator sets produced primarily for camps, boats and small farms.



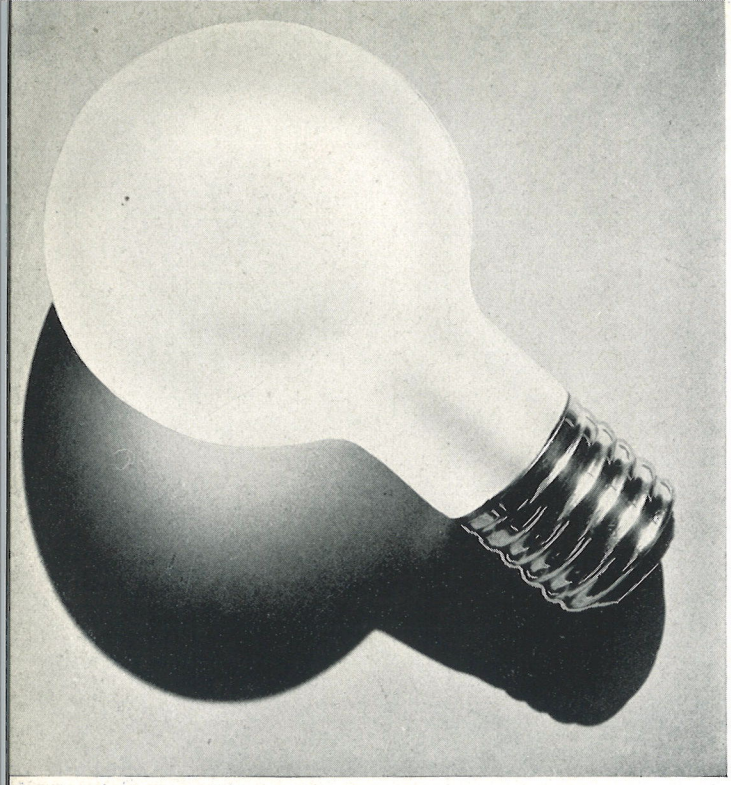
25 watts 15 watts
50 watts 100 watts

28-32 volt lamps

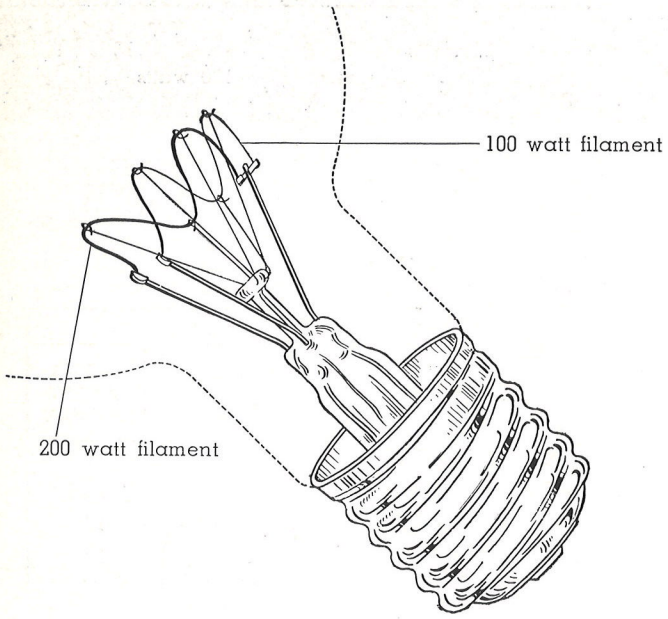
GENERAL CHARACTERISTICS				LIST PRICE	LIFE AND LUMENS		DIMENSIONS		STANDARD PACKAGES		
WATTS	BULB	FINISH	BASE		AVERAGE LABORATORY LIFE (HOURS)	APPROX. LUMENS	AVERAGE OVERALL LENGTH (INCHES)	LIGHT CENTER LENGTH (INCHES)	STANDARD PACKAGE QUANTITY	DIMENSIONS (INCHES)	GROSS WEIGHT (POUNDS)
15	**A-17**	Inside frosted	Med.	**$0.23**	1000	162	3 5/8	2 3/8	120	23 7/8 x 14 x 8 3/4	11
25	**A-19**	Inside frosted	Med.	**.23**	1000	323	3 15/16	2 1/2	120	26 x 15 3/8 x 10 1/8	12.5
50	**A-21**	Inside frosted	Med.	**.25**	1000	780	4 15/16	3 3/8	120	28 1/4 x 16 1/2 x 11 1/4	15.5
100	**A-23**	Inside frosted	Med.	**.38**	1000	1720	6 1/16	4 3/8	60	18 1/4 x 15 x 13 1/2	10

6 and 12 volt lamps

GENERAL CHARACTERISTICS				LIST PRICE	LIFE AND LUMENS		DIMENSIONS		STANDARD PACKAGES		
WATTS	VOLTS	BULB	BASE	INSIDE FROSTED	AVERAGE LABORATORY LIFE (HOURS)	APPROX. LUMENS	MAXIMUM OVERALL LENGTH (INCHES)	AVERAGE LIGHT CENTER LENGTH (INCHES)	STANDARD PACKAGE QUANTITY	DIMENSIONS (INCHES)	GROSS WEIGHT (POUNDS)
15	6	**A-17**	Med.	**$0.30**	1000	188	3 5/8	2 3/8	120	23 7/8 x 14 x 8 3/4	11
15	12	**A-17**	Med.	**.30**	1000	180	3 5/8	2 3/8	120	23 7/8 x 14 x 8 3/4	11
25	6	**A-19**	Med.	**.30**	1000	338	3 15/16	2 1/2	120	26 x 15 3/8 x 10 1/8	12.5
25	12	**A-19**	Med.	**.30**	1000	325	3 15/16	2 1/2	120	26 x 15 3/8 x 10 1/8	12.5
50	6	**A-21**	Med.	**.40**	1000	800	4 15/16	3 3/8	120	28 1/4 x 16 1/2 x 11 1/4	15.5
50	12	**A-21**	Med.	**.40**	1000	775	4 15/16	3 3/8	120	28 1/4 x 16 1/2 x 11 1/4	15.5



G-30 100, 200, 300 Watts



Hygrade 3-Light Lamps

TWO FILAMENTS INSTEAD OF ONE. Incandescent lamps built with two filaments instead of one. Either filament may be burned singly or both may be burned together. As the filaments are of different wattages, the result is a bulb which provides three levels of illumination—low, medium and high. In other words, one bulb takes the place of two.

WHERE USED. Primarily in the new floor and table lamps (commonly called IES lamps) developed by the Illuminating Engineering Society especially for these lamps.

SPECIAL SOCKETS NECESSARY. These lamps cannot be used in ordinary sockets, but require special sockets and special wiring.

POSITION OF BURNING. 50-100-150, any; 100-200-300, base down.

110, 115 and 120 volt lamps

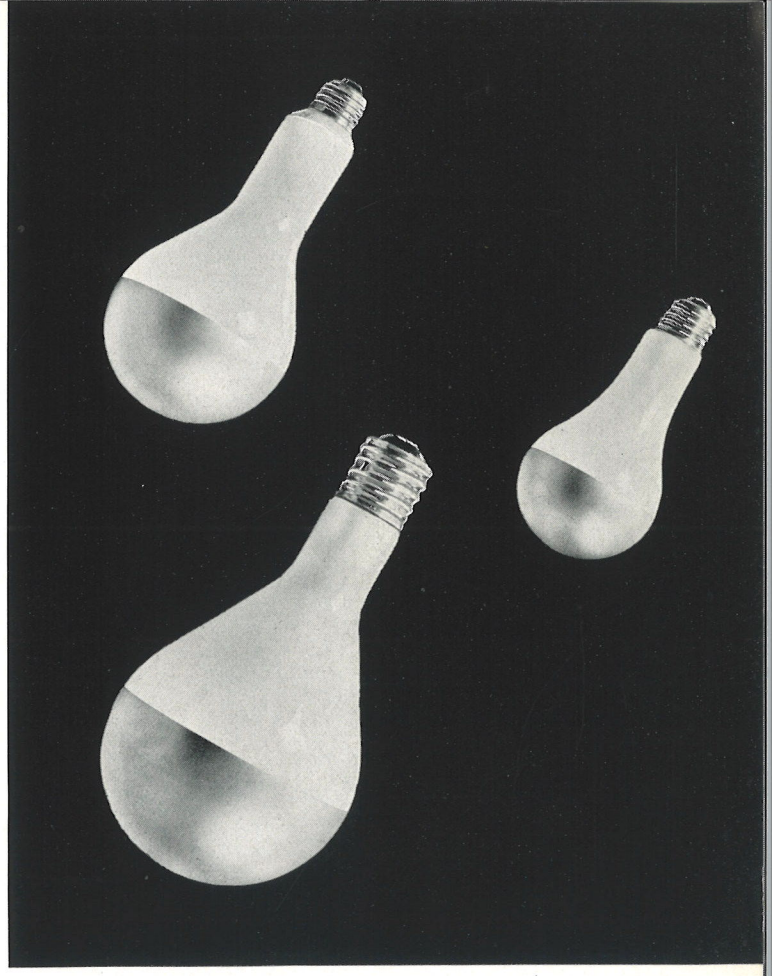
GENERAL CHARACTERISTICS				LIST PRICE	LIFE AND LUMENS		DIMENSIONS		STANDARD PACKAGES		
WATTS	BULB	BASE	FINISH		AVERAGE LABORATORY LIFE (HOURS)	APPROX. LUMENS	MAXIMUM OVERALL LENGTH (INCHES)	AVERAGE LIGHT CENTER LENGTH (INCHES)	STANDARD PACKAGE QUANTITY	DIMENSIONS (INCHES)	GROSS WEIGHT (POUNDS)
50-100-150	**PS-25**	3-contact Mogul	Inside frosted	**$0.60**	1000	50w 515 100w 1400 150w 1915	6 13/16	5	60	23x19 3/4x15 3/4	19
100-200-300	**G-30**	3-contact Mogul	Inside frosted	**.80**	1000	100w 1310 200w 3360 300w 4670	6 3/4	3 3/4	24	23 5/8x15 7/8x9 3/4	9

Hygrade Silvered Bowl Lamps

STANDARD LAMPS WITH A MIRROR COATING. Hygrade Silvered Bowl Lamps are Standard Hygrade Lamps with a mirror coating of silver on the bowl. This silver will not dull, tarnish or deteriorate during the life of the lamp, nor will it shorten lamp life.

Higher levels of illumination are in greater and greater demand. One of the best methods of securing these higher levels has been through the means of full indirect illumination. Silvered bowl lamps provide one efficient method of such full indirect illumination. The silver bowl becomes an indirect lighting reflector, independent of the fixture.

Since the silver reflecting surface cannot be affected by dust and deterioration these lamps in many cases restore the original efficiency of indirect fixtures whose reflecting surface has been impaired by wear or infrequent cleaning. They are especially valuable, therefore, in hard-to-get-at fixtures.

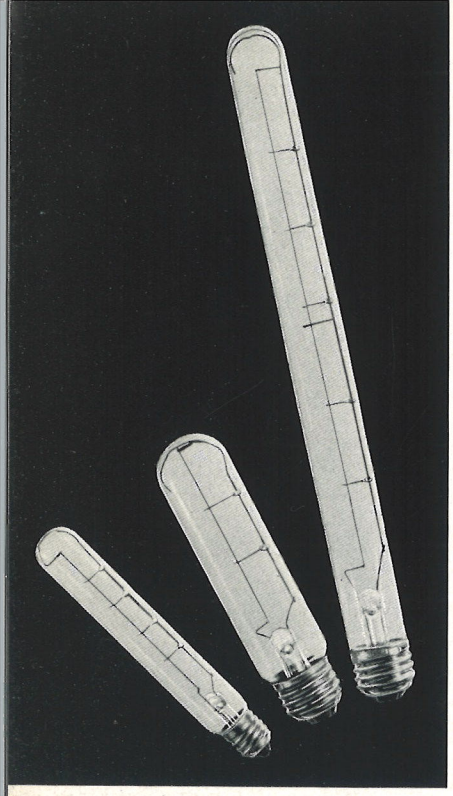


150 Watts
300 Watts

75 Watts

110, 115 and 120 volts

GENERAL CHARACTERISTICS				LIST PRICE	LIFE AND LUMENS		DIMENSIONS		STANDARD PACKAGES		
WATTS	BULB	BASE	FINISH		AVERAGE LABORATORY LIFE HOURS	APPROX. LUMENS	MAXIMUM OVERALL LENGTH (INCHES)	AVERAGE LIGHT CENTER LENGTH (INCHES)	STANDARD PACKAGE QUANTITY	DIMENSIONS (INCHES)	GROSS WEIGHT (POUNDS)
60	**A-21**	Med.	Inside frosted Silvered bowl	**$0.45**	1000	.....	4 15/16	3 3/8	120	28 1/4 x 16 1/2 x 11 1/4	15.5
75	**A-21**	Med.	Inside frosted Silvered bowl	**.60**	750	.....	5 5/16	3 7/8	60	17 1/8 x 11 1/8 x 12 1/2	8.5
100	**A-23**	Med.	Inside frosted Silvered bowl	**.60**	750	.....	6 1/16	4 3/8	60	18 1/4 x 15 x 13 1/2	10
150	**A-25**	Med.	Inside frosted Silvered bowl	**.70**	750	.....	6 15/16	5 1/4	60	23 x 19 3/4 x 15 3/4	13.5
200	**PS-30**	Med.	Inside frosted Silvered bowl	**.95**	1000	.....	8 1/8	6	24	23 5/8 x 15 7/8 x 9 3/4	7.5
300	**PS-35**	Mog.	Inside frosted Silvered bowl	**1.45**	1000	.....	9 7/16	7	24	21 3/8 x 17 x 21 3/8	14.
500	**PS-40**	Mog.	Inside frosted Silvered bowl	**2.25**	1000	.....	9 13/16	7	12	23 1/2 x 18 1/2 x 10 7/8	8.5



T-8

T-10

T-6½

Hygrade Tubular Lamps

Tubular Lamps are in demand for lighting show cases and for use in small trough reflectors.

Tubular Lamps

110, 115 and 120 volts

GENERAL CHARACTERISTICS			LIST PRICE		LIFE AND LUMENS		DIMENSIONS		STANDARD PACKAGES		
WATTS	BULB	BASE	CLEAR	OUTSIDE FROSTED	AVERAGE LABORATORY LIFE HOURS)	APPROX. LUMENS CLEAR	MAXIMUM OVERALL LENGTH (INCHES)	AVERAGE LIGHT CENTER LENGTH (INCHES)	STANDARD PACKAGE QUANTITY	DIMENSIONS (INCHES)	GROSS WEIGHT (POUNDS)
25	**T-10**	Med.	**$0.35**	**$0.40**	1000	243	5⅝	.....	60	13x11¼x16⅜	8.5
40	**T-8**	Med.	**.90**	**.95**	1000	400	11⅞	.....	24	12½x10x18	7
25	**T-6½**	Inter.	**.45**	**.50**	1000	238	5½	.....	60	13½x9½x10	5

Hygrade Natural Colored Lamps

These lamps are regularly furnished in clear colored glass without inside frosting. A further additional charge is made for inside frosting. The demand for lamps in natural colored glass is largely confined to the four bulbs listed. **NATURAL COLORED LAMPS ARE MADE TO ORDER ONLY.**

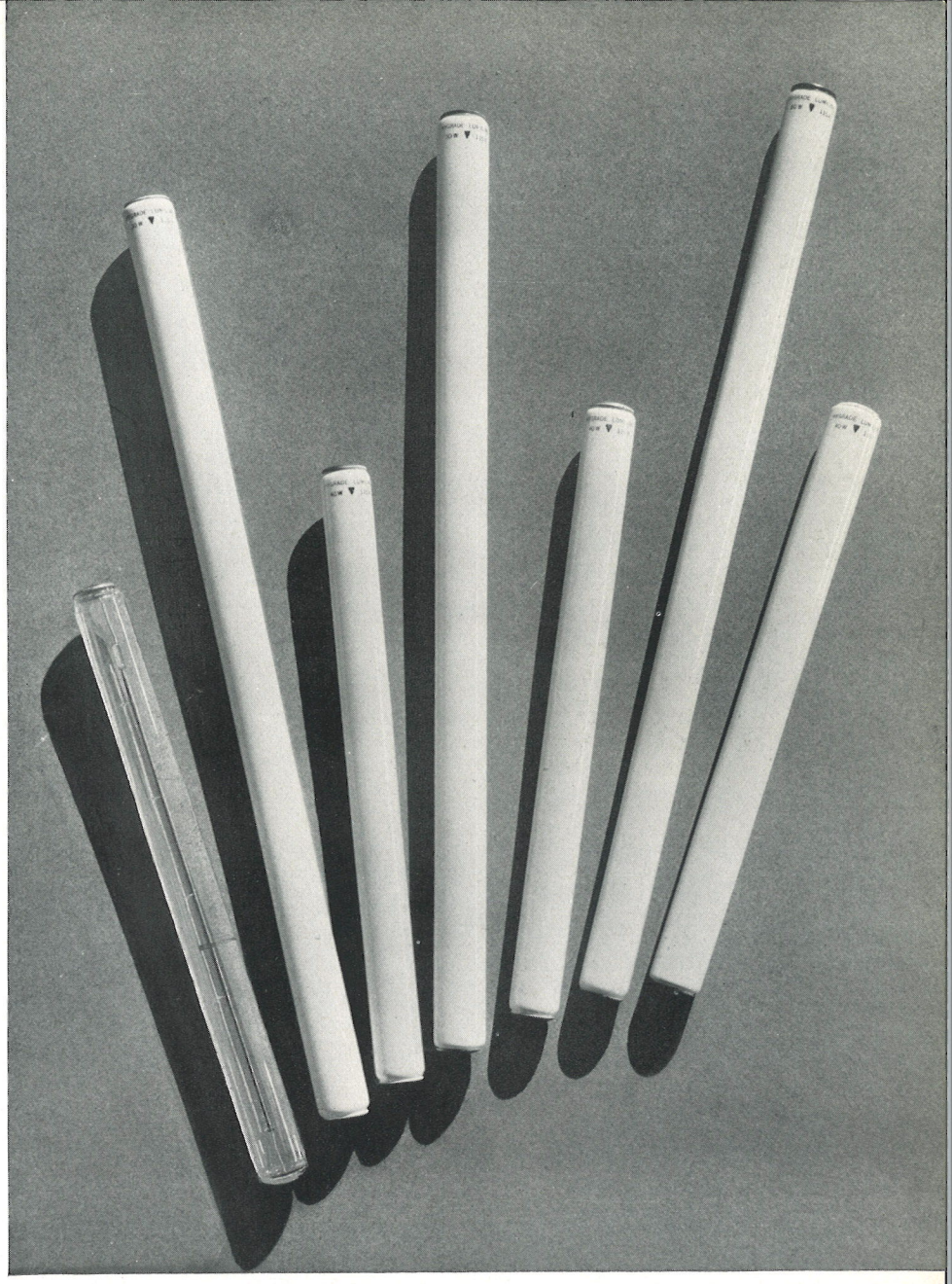
110, 115 and 120 volt lamps

GENERAL CHARACTERISTICS			LIST PRICE		DIMENSIONS		STANDARD PACKAGE		
WATTS	BULB	BASE	AMBER, BLUE AND GREEN	RUBY	MAXIMUM OVERALL LENGTH INCHES	AVERAGE LIGHT CENTER LENGTH (Inches)	STANDARD PACKAGE QUANTITY	DIMENSIONS	GROSS WEIGHT (POUNDS)
10	**S-14**	Med.	**$0.40**	**$0.50**	3½	2½	120	20⅛x11⅞x8⅝	10
25	**A-19**	Med.	**.40**	**.50**	$3\frac{15}{16}$	2½	120	26 x15⅜x10⅛	12.5
40	**A-21**	Med.	**.40**	**.50**	$4\frac{7}{16}$	2⅞	120	28¼x16½x11¼	15
60	**A-21**	Med.	**.45**	**.55**	$4\frac{15}{16}$	3⅜	120	28¼x16½x11¼	15.5

Regular natural ruby and natural amber lamps are a light shade. Lamps in dark ruby and dark amber, for photographic work, will be furnished at the same price, if specified as photographic lamps. The blue glass does not include daylight blue or photographic blue.

WARNING. Because of the high temperature at which it operates the 60 watt natural colored lamp is not to be burned in an enclosing globe.

Hygrade Lumiline Lamps



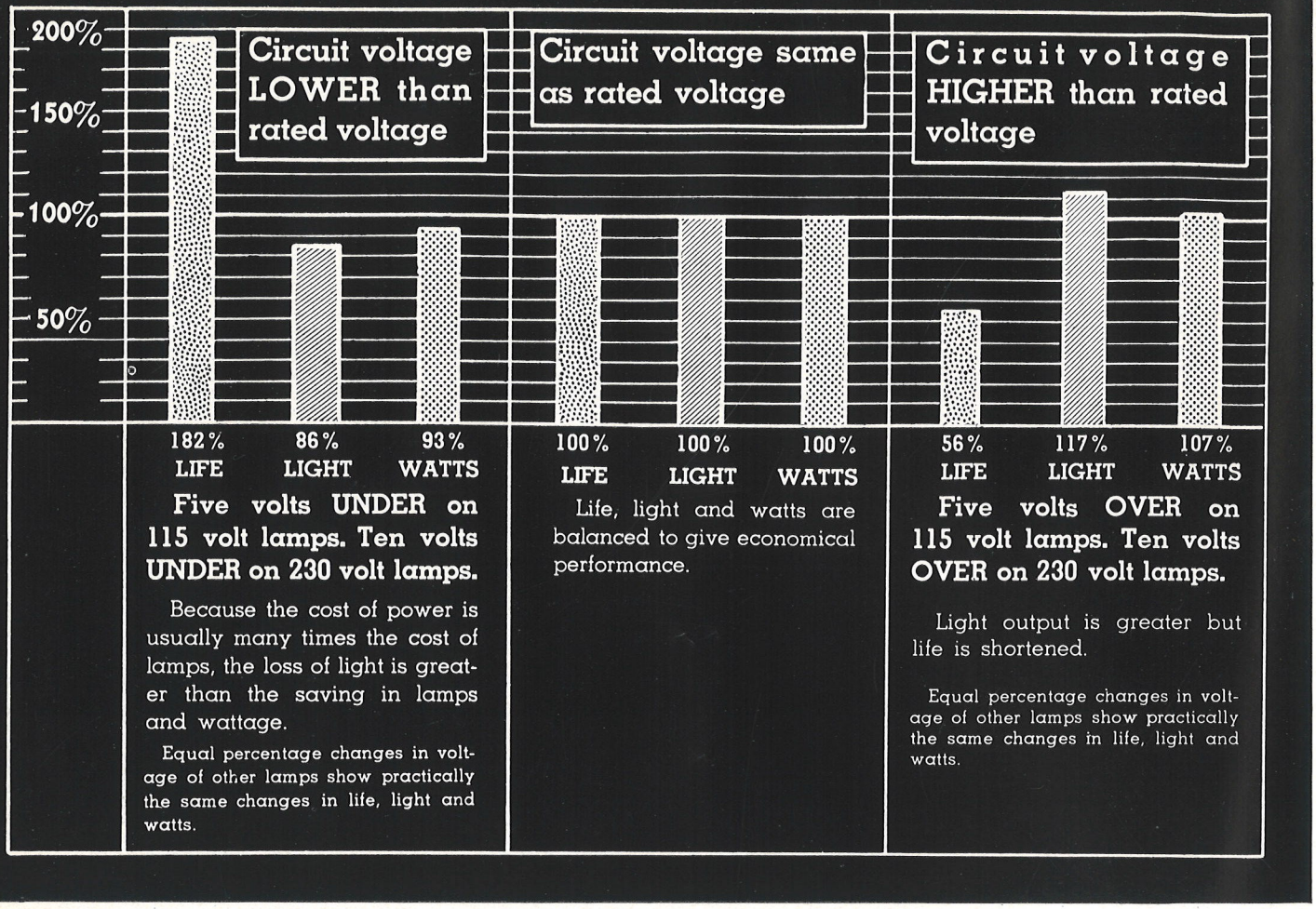
A new development in lamp design. In effect tubes of light, Hygrade Lumiline Lamps have discarded the standard screw base for a contact disc which fits a thin special socket at either end.

WHERE USED. These lamps may be used either exposed or in a variety of newly designed reflectors. They have a wide application to modern decorative lighting, particularly where light is wanted for decoration as well as illumination. They have been found particularly desirable for lighting paintings and mirrors, niches, for decorative ornaments on walls, pillars and counters, and for cove lighting, especially in specialty shops, restaurants, theatres, lobbies, etc.

Lumiline Lamps

110, 115 and 120 volts

GENERAL CHARACTERISTICS				LIST PRICE		LIFE AND LUMENS		Dimensions	STANDARD PACKAGES		
WATTS	BULB	BASE	FINISH	CLEAR	OUTSIDE WHITE AND COLORED	AVERAGE LABORATORY LIFE HOURS	APPROX. LUMENS	MAXIMUM OVERALL LENGTH (INCHES)	STANDARD PACKAGE QUANTITY	DIMENSIONS (INCHES)	GROSS WEIGHT (POUNDS)
30	**T-8**	Disc	Clear, White, Straw, Orange, Moonlight blue, Emerald, Surprise pink	**$0.95**	**$1.05**	1500	234	17¾	24	19½x14⅛x25⅝	19
40	**T-8**	Disc	Clear, White, Straw, Orange, Moonlight blue, Emerald, Surprise pink	**.85**	**.95**	1500	332	11¾	24	12½x10x18	7.5
60	**T-8**	Disc	Clear, White, Straw, Orange, Moonlight blue, Emerald, Surprise pink	**.95**	**1.05**	1500	528	17¾	24	19½x14⅛x25⅝	19



Five volts UNDER on 115 volt lamps. Ten volts UNDER on 230 volt lamps.

Because the cost of power is usually many times the cost of lamps, the loss of light is greater than the saving in lamps and wattage.

Equal percentage changes in voltage of other lamps show practically the same changes in life, light and watts.

Life, light and watts are balanced to give economical performance.

Five volts OVER on 115 volt lamps. Ten volts OVER on 230 volt lamps.

Light output is greater but life is shortened.

Equal percentage changes in voltage of other lamps show practically the same changes in life, light and watts.

The Effect of Voltage Variation

on LIFE, LIGHT OUTPUT AND WATTS of Incandescent Lamps

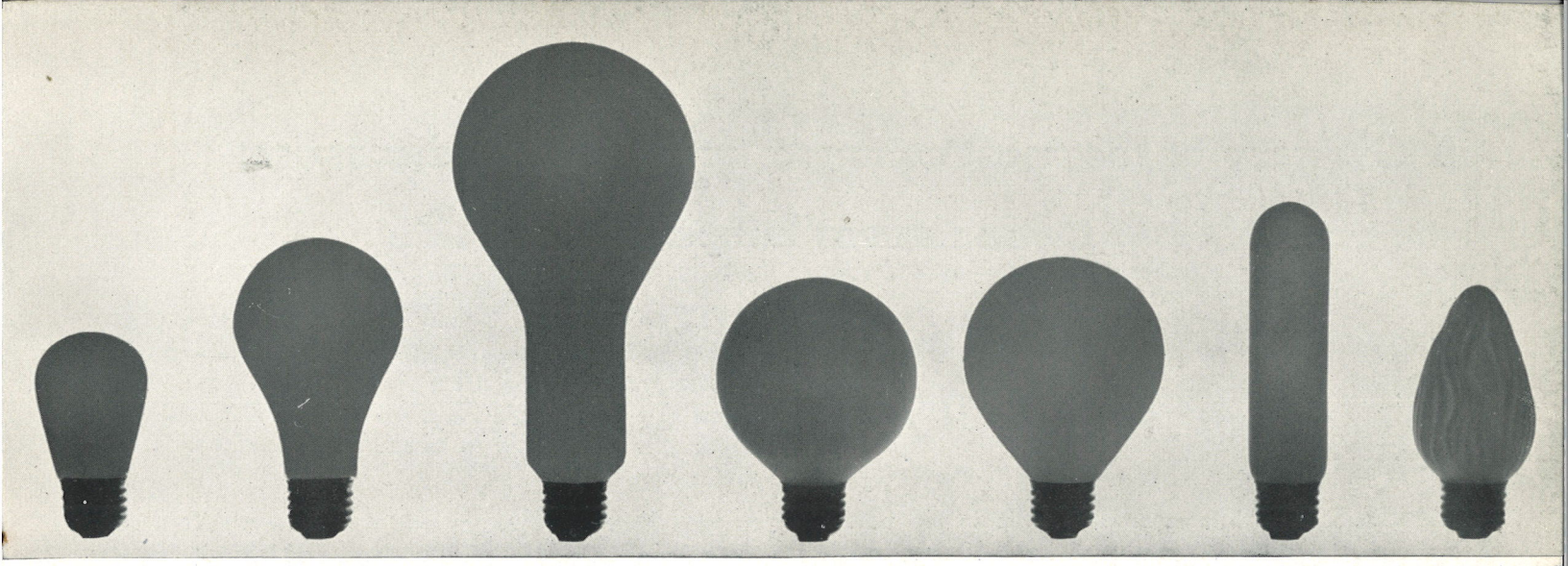
The above chart shows the effect on life, light output and watts when lamps are burned at rated volts and when burned five volts over or under rated volts for 110 to 125 volt lamps, or ten volts under or over rated volts for 220 to 250 volt lamps.

Modern tungsten filament lamps are rated to give the best balance of light output and wattage consumption against length of life for average service conditions—and a lamp will give its rated life, light output and watts only when it is operated at the voltage etched on the bulb.

When the circuit voltage is lower than the rated lamp voltage, the light output and watts are decreased, although the life is considerably lengthened.

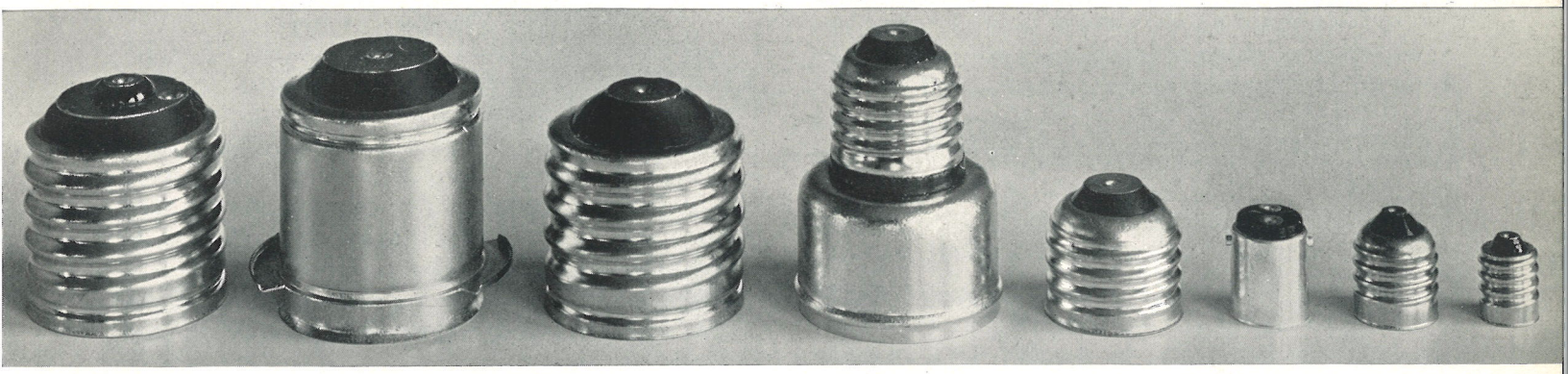
When the circuit voltage is higher, the light output and watts are increased, but the life is much shorter.

Lamp users should be sure that the rated voltage on their lamps is within 3 volts of the socket voltage for 110-125 volt lamps, and within 6 volts of the socket voltage for 220-250 volt lamps.



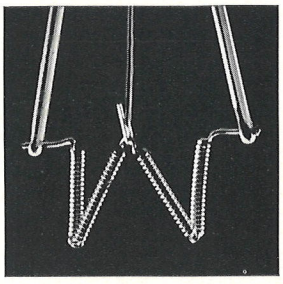
S A PS G P T F

Bulb Designations

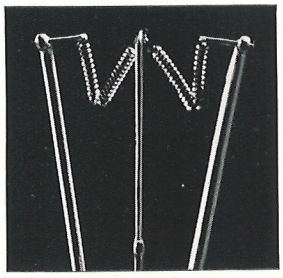


3-CONTACT MOGUL | MOGUL PREFOCUS | MOGUL | MEDIUM SKIRTED | MEDIUM | BAYONET CANDELABRA DOUBLE CONTACT | INTER-MEDIATE | CAN-DEL-ABRA

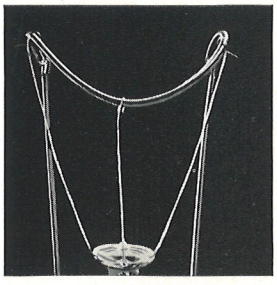
Base Designations



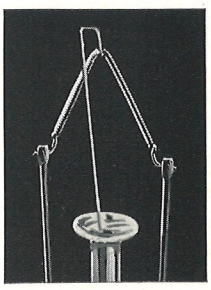
C-7 Base up



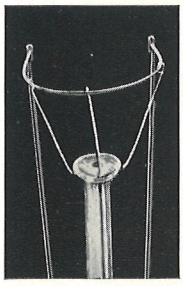
C-7 Base down



C-7A Any

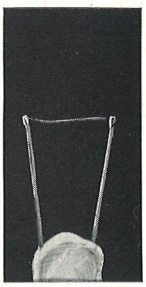


C-2 Any

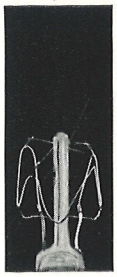


C-9 Any

C-8 Any

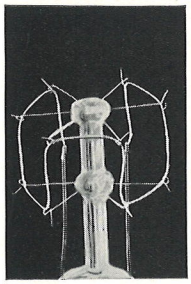


C-6 Any

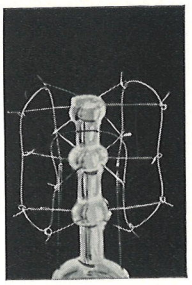


C-1 Any

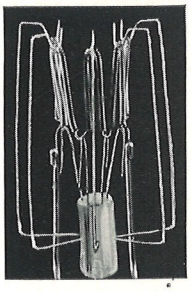
C-5 Any



C-17 Any



C-22 Any



C-5 Base down

Filament Forms and Position of Burning

A Glossary of the most common terms used in discussing incandescent lamps.

Initial Characteristics

LUMEN. The unit of measure of the light emitted from any light source. Lamps are designed or rated for initial lumen output.

CANDLE. The International Candle is the unit of luminous intensity. A source of light of one candle power will emit approximately 12.5 lumens.

WATT. The unit of measure of power, used to designate the amount of power which a lamp consumes. Should not be confused with light output because lamps of different types, although of the same wattage, may produce different quantities of light.

RATED INITIAL LUMENS PER WATT. Lamps are rated in lumens of light output per watt of power input. Thus a 25 watt A-19 standard Inside Frosted lamp is rated at 10.3 lumens per watt initially.

The 100 watt A-23 standard Inside Frosted lamp is rated at 15.3 lumens per watt initially.

VOLTAGE. The "pressure" of electricity delivered to the lamp. Lamps are designed or "rated" to operate on a certain designated voltage, which is marked on the bulb. Voltage is extremely important as any variation between the voltage of the lamps and the voltage of the circuit will change materially the life and the light output of the lamp.

There are two common classes of voltage service termed "regular" and "high". "Regular" volt service is much more common in the United States. HYGRADE Lamps are stocked in 110, 115 and 120 volts in the regular voltage range and 220, 230, 240, 250 and 260 volts in the high voltage range. Other voltages are supplied on order.

In addition to "regular" and "high" volt lamps there are also the so-called "low" volt lamps, 28 to 32, 64, etc.

Lamp Performance

LUMENS PER WATT AT 70% OF RATED LIFE. A lamp nominally drops in light output and efficiency during life. Lumens per watt at 70% of the rated life of the lamp supplies a measure of the way the lamp maintains its ratio of light (lumens) output to power (watts) input.

AVERAGE LIFE. Nothing is, perhaps, more misunderstood than lamp life. When we say that an incandescent lamp has a life of 1000 hours, we do not mean that each single lamp will burn 1000 hours, because it is impossible to manufacture lamps of such uniformity.

A 1000 hour life lamp is one that is constructed to burn an average life of 1000 hours. Perhaps no single lamp in a group will burn exactly 1000 hours. Some will burn much longer and some a shorter period. But the **average** will be at least 1000 hours.

Lamp Designations

ETCHING. The marking used on lamp bulbs to show the trade mark of the manufacturer and the rated wattage and voltage of the lamp. This etching is commonly fired into the outside surface of the glass, but progressive manufacturers are now etching their larger lamps on the inner surface of the bulb, and the practice is extending to some smaller sizes. Special wording may be added to the etching at the request of the customer, such marking being known as "customer etching".

CLEAR. A lamp bulb constructed of Clear Glass.

INSIDE FROSTED. A lamp having a bulb with its inner surface frosted by acid treatment. Inside Frosting gives a better diffusion of light and reduces glare. The absorption or loss of light due to such frosted bulbs averages only one percent.

INSIDE COLORED OR TINTED. Translucent Coloring on the inside of the bulb, leaving the outside smooth glass.

OUTSIDE COLORED. A translucent colored coating sprayed on the outside surface of the bulb.

NATURAL COLORED. Bulbs in which the color is incorporated in the glass itself, thus producing transparent colored bulbs.

WHITE BOWL. A white coating, which in HYGRADE Lamps is on the inside of the bulb, extending to the maximum diameter of the bulb, but leaving the neck and the balance of the bulb clear. White bowl lamps minimize glare when lamps are used for direct lighting in open type equipment. The white coating absorbes only about 3 per cent of the light, which is a negligible factor compared to the improvement in the quality of illumination.

DAYLIGHT. A lamp bulb constructed of light blue glass which gives a "white" light somewhat approximating daylight. Under this white light, colors appear more nearly in their true values than under the light of Inside Frosted or Clear bulbs. Daylight lamps give approximately 35% less light than Clear or Inside Frosted Lamps of the same wattage.

B OR C. The letter B designates the lamp as Vacuum, while C indicates that it is Gas Filled. In the common types, lamps of 25 watt and smaller sizes are Vacuum, while the 40 watt and larger are Gas Filled.

FILAMENT. The wire which produces the light. Generally in coils, this wire is made from tungsten. Its preparation and coiling is one of the most delicate operations in lamp manufacture. The slightest defect in the filament seriously affects the quality of the lamp.

BULB DESIGNATION. All incandescent lamp bulbs are given a letter and a number. The letters A-G-P-PS etc. indicate the shape of the glass bulb, while the figures 17, 19, etc. show the maximum diameter of the bulb in eighths of an inch. See "How to Order HYGRADE Lamps" for more detailed information.

BASE. The metal cap at the end of the lamp, by means of which the lamp is fastened in the socket. See illustration of bases.

TYPE A. The trade designation of the Inside Frosted line of lamps commonly used for household and other general lighting.

MILL TYPE—(VIBRATION SERVICE). The old common designation for a lamp designed to withstand vibration. Much more rugged but not as efficient as Type A lamps of equal wattage. The designation Mill Type is being changed to Vibration Service, as being a much more correct definition.

ROUGH SERVICE. A rugged lamp, designed particularly to withstand knocks and blows. Should not be confused with Mill Type or Vibration Service lamps which stand up under vibration. Rough Service Lamps are generally used on extension cords. They are not recommended for general use because of their higher cost and lower efficiency than common types.

FLOODLIGHT. A lamp having its filament concentrated in a small space so that this light source may be accurately focused in relation to reflector and lens of a luminaire designed for floodlight service.

SPOTLIGHT. A lamp having its filament concentrated similar to that of a Floodlight, but designed to operate at a higher efficiency, to provide very high intensity lighting. In general Spotlight Lamps have only one-quarter the life of Floodlight Lamps.

COUNTRY HOME LAMPS. Lamps built especially for use on battery-generator sets.

Terms employed in Lamp Usage

ECONOMY OF OPERATION. The light received per dollar of total operating cost.
An incandescent lamp cannot be judged wholly by the length of time it burns, by the amount of current it consumes, or by the light it produces, for any one of these three factors may be exaggerated to produce an uneconomical lamp.
The incandescent lamp having maximum economy of operation is a carefully calculated balance between wattage, light output and life, designed to give maximum light for the lowest possible cost of current, lamps, and other operating costs of light.

FOOT CANDLE. The unit of illumination, used in specifying lighting requirements. For example, a bare standard 25 watt lamp will provide approximately 25 foot candles on a newspaper one foot away from the bulb, or one foot candle on a paper five feet away.

VIBRATION. Motion of relatively high frequency and low amplitude, such as that caused by motors, line shafting, or machinery.

LUMINAIRE. A lighting fixture or complete unit:—the combination of light source with its direct appurtenances, such as globe, reflector, refractor, housing and support.

POSITION OF BURNING. The position in which a lamp bulb is suspended during operation. This is usually designated as "base up", "base horizontal", etc.

EXTENSION CORD. Commonly used to mean the ordinary hand cord with wire-guarded lamp, such as used in garages, etc.

FEDERAL SPECIFICATION. The specification established by the Federal Specifications Board at Washington, to which lamps purchased by the Government must conform. These specifications have become the standard by which the quality of incandescent lamps is judged.
That HYGRADE Lamps conform to the Federal Specifications is proven by the fact that HYGRADE Lamps have been purchased by the United States Government for 13 consecutive years.

Recommended Intensities of Illumination

IN FOOT CANDLES

Industrial Interiors

Aisles, Stairways, Passageways 2

Assembling
- Rough 10
- Medium 20
- Fine 50-100
- Extra Fine ..... 100 or more

Automobile Manufacturing
- Assembly Line 50-100
- Frame Assembly 15
- Body Manufacturing—
  - Assembly 20
  - Finishing and Inspecting ..... 100 or more

Bakeries 20

Book Binding
- Folding, Assembling, Pasting, etc 10
- Cutting, Punching and Stitching 20
- Embossing 20

Breweries
- Brew House 5
- Boiling, Keg Washing and Filling 10
- Bottling 15

Candy Making 20

Canning and Preserving 20

Chemical Works
- Hand Furnaces, Boiling Tanks, Stationary Driers, Stationary or Gravity Crystallizers 5
- Mechanical Furnace, Generator and Stills, Mechanical Driers, Evaporators, Filtration, Mechanical Crystallizing, Bleaching 10
- Tanks for Cooking, Extractors, Percolators, Nitrators, Electrolytic Cells 15

Clay Products and Cements
- Grinding, Filter Presses, Kiln Rooms 5
- Molding, Pressing, Cleaning and Trimming 10
- Enameling 15
- Color and Glazing 20

Cloth Products
- Cutting, Inspecting, Sewing—
  - Light Goods 20
  - Dark Goods ..... 100 or more
- Pressing, Cloth Treating (Oil Cloth, etc.)—
  - Light Goods 10
  - Dark Goods 20

Coal Breaking, Washing and Screening 5

Construction
- Indoor General 10

Dairy Products 20

Elevator—Freight and Passenger 10

Engraving ..... 100 or more

Forge Shops and Welding 10

Foundries
- Charging Floor, Tumbling, Cleaning, Pouring and Shaking Out 5
- Rough Molding and Core Making 10
- Fine Molding and Core Making 20

Garage—Automobiles
- Storage—Dead 2
  - Live 10
- Repair Department and Washing 30-50

Glass Works
- Mix and Furnace Rooms, Pressing and Lehr, Glass Blowing Machines 10
- Grinding, Cutting Glass to Size, Silvering 20
- Fine Grinding, Polishing, Beveling, Etching and Decorating 30-50
- Inspection 50-100

Glove Manufacturing
- Light Goods—
  - Cutting, Pressing, Knitting, Sorting 10
  - Stitching, Trimming and Inspecting 20
- Dark Goods—
  - Cutting, Pressing, Knitting, Sorting 20
  - Stitching, Trimming and Inspecting ..... 100 or more

Hangars – Aeroplane
- Storage – Live 10
- Repair Department 30-50

Hat Manufacturing
- Dyeing, Stiffening, Braiding, Cleaning and Refining—
  - Light 10
  - Dark 20
- Forming, Sizing, Pouncing, Flanging, Finishing, Ironing—
  - Light 15
  - Dark 30
- Sewing—
  - Light 20
  - Dark ..... 100 or more

Ice Making
- Engine and Compressor Room 10

Inspecting
- Rough 10
- Medium 20
- Fine 50-100
- Extra Fine ..... 100 or more

Jewelry and Watch Manufacturing ..... 100 or more

Laundries and Dry Cleaning 20

Leather Manufacturing
- Vats 5
- Cleaning, Tanning and Stretching 10
- Cutting, Fleshing and Stuffing 15
- Finishing and Scarfing 20

Leather Working
- Pressing, Winding and Glazing—
  - Light 10
  - Dark 20
- Grading, Matching, Cutting, Scarfing, Sewing—
  - Light 20
  - Dark ..... 100 or more

Locker Rooms 5

Machine Shops
- Rough Bench and Machine Work 10
- Medium Bench and Machine Work, Ordinary Automatic Machines, Rough Grinding, Medium Buffing and Polishing 20
- Fine Bench and Machine Work, Fine Automatic Machines, Medium Grinding, Fine Buffing and Polishing 50-100
- Extra Fine Bench and Machine Work, Grinding (Fine Work) ..... 100 or more

Meat Packing
- Slaughtering 10
- Cleaning, Cutting, Cooking, Grinding, Canning, Packing 20

Milling—Grain Foods
- Cleaning, Grinding and Rolling 10
- Baking or Roasting 20
- Flour Grading 30

Offices
- Private and General—
  - Close Work 20
  - No Close Work 10
  - Drafting Room 30

Packing and Boxing 10

Paint Manufacturing 10

Paint Shops
- Dipping, Spraying, Firing, Rubbing, Ordinary Hand Painting and Finishing 20
- Fine Hand Painting and Finishing 50-100
- Extra Fine Hand Painting, and Finishing (Automobile Bodies, Piano Cases, etc.) ... 100 or more

Paper Box Manufacturing
- Light 10
- Dark 20
- Storage of Stock 5

Paper Manufacturing
- Beaters, Grinding, Calendering 10
- Finishing, Cutting, and Trimming 20

Plating 10

Polishing and Burnishing 15

Power Plants, Engine Rooms – Boilers –
- Boilers, Coal and Ash Handling, Storage Battery Rooms 5
- Auxiliary Equipment, Oil Switches and Transformers 10
- Switchboard, Engines, Generators, Blowers, Compressors 15

Printing Industries
- Matrixing and Casting 10
- Miscellaneous Machines 15
- Presses and Electrotyping 20
- Lithographing 50-100
- Linotype, Monotype, Typesetting, Imposing Stone, Engraving 50-100
- Proof Reading ..... 100 or more

Receiving and Shipping 10

Rubber Manufacturing
- Calenders, Compounding Mills, Fabric Preparation, Stock Cutting, Tubing Machines, Solid Tire Operations, Mechanical Goods, Building, Vulcanizing 10
- Bead Building, Pneumatic Tire Building and Finishing, Inner Tube Operation, Mechanical Goods Trimming, Treading 20

Sheet Metal Works
- Miscellaneous Machines, Ordinary Bench Work 15
- Punches, Presses, Shears, Stamps, Welders, Spinning, Medium Bench Work 20
- Tin Plate Inspection 30-50

Shoe Manufacturing
- Hand Turning, Miscellaneous Bench and Machine Work 10
- Inspecting and Sorting Raw Material, Cutting and Stitching
  - Light 20
  - Dark ..... 100 or more
- Lasting and Welting 20

Soap Manufacturing
- Kettle Houses, Cutting, Soap Chip and Powder 10
- Stamping, Wrapping and Packing, Filling and Packing Soap Powder 20

Steel and Iron Mills, Bar, Sheet and Wire Products
- Soaking Pits and Reheating Furnaces 5
- Charging and Casting Floors 10
- Muck and Heavy Rolling, Shearing (rough by gauge) Pickling and Cleaning 10
- Plate Inspection, Chipping 30-50
- Automatic Machines, Red, Light and Cold Rolling, Wire Drawing, Shearing, (fine by line) 15

Stone Crushing and Screening
- Belt Conveyor Tubes, Main Line Shafting Spaces, Chute Rooms, Inside of Bins 5
- Primary Breaker Room, Auxiliary Breakers under Bins 5
- Screen Rooms 10

Storage Battery Manufacturing
- Molding of Grids 10

Store and Stock Rooms
- Rough bulky material 2
- Medium or fine material requiring care 10

Structural Steel Fabrication 10

Sugar Grading 30

Testing
- Rough 10
- Fine 20
- Extra Fine Instruments, Scales, etc ..... 100 or more

Textile Mills
- (Cotton)—
  - Opening and Lapping, Carding, Drawing Roving, Dyeing 10
  - Spooling, Spinning, Drawing-in, Warping, Weaving, Quilling, Inspecting, Knitting, Slashing (over beam end) 20
- (Silk)—
  - Winding, Throwing, Dyeing 15
  - Quilling, Warping, Weaving and Finishing—
    - Light Goods 15
    - Dark Goods 30
- (Woolen)—
  - Carding, Picking, Washing and Combing 10
  - Twisting and Dyeing 10
  - Drawing-in, Warping—
    - Light Goods 15
    - Dark Goods 30
  - Weaving—
    - Light Goods 15
    - Dark Goods 30
  - Knitting Machines 20

Tobacco Products
- Drying, Stripping, General 10
- Grading and Sorting ..... 100 or more

Toilet and Wash Rooms 5

Upholstering
- Automobile, Coach and Furniture 20

Warehouse 5

Woodworking
- Rough Sawing and Bench Work 10
- Sizing, Planing, Rough Sanding, Medium Machine and Bench Work, Gluing, Veneering, Cooperage 20
- Fine Bench and Machine Work, Fine Sanding and Finishing 30

Streets and Thoroughfares

	Lamp Lumens per Linear Foot of Street
Business District	
White Way—Large City	500–2000
Small City	200–500
Park Boulevards	50–200
Thoroughfares and Wholesale Districts	
Vehicular Tunnels	50–200
Residence Streets	20–50
Outlying Districts and Alleys	5–10
Highways	20–50

Recommendations marked **30-50, 50-100, 100 or more** indicate that expert study of lighting conditions should be made.

Recommended Intensities of Illumination

IN FOOT CANDLES

Commercial Interiors

Armories
- Drill Sheds 10
- Exhibition Halls 10

Art Galleries
- General 5
- On Paintings 50-100

Auditoriums 5

Automobile Show Rooms 20

Banks
- Lobby 10
- Cages 50-100
- Offices 20

Barber Shops and Beauty Parlors 20

Churches
- Auditorium 5
- Sunday School Room 10
- Pulpit or Rostrum 15

Club and Lodge Rooms
- Lounge and Reading Room ... 30-50
- Auditorium 5

Court Rooms 10

Dance Halls 5

Drafting Rooms 30

Fire Engine Houses
- When Alarm is turned in 10
- At Other Times 2

Garages – Automobiles
- Storage—Dead 2
- Live 10
- Repair and Washing Dept. 30-50

Hangars
- Aeroplane 10
- Repair Department 30-50

Hospitals
- Lobby and Reception Room 5
- Corridors 2
- Wards (with local illumination) 30-50
- Private Rooms 10
- Operating Table ..... 100 or more
- Operating Room 20
- Laboratories 20

Hotels
- Lobby 10
- Dining Room 5
- Kitchen 10
- Bed Rooms 10
- Corridors 2
- Writing Room 30-50

Library
- Reading Rooms 30-50
- Stack Room 10

Moving Picture Theatres
- During Intermission 5
- During Pictures 0.1

Museums
- General 10
- Special Exhibits 50-100

Night Clubs and Bars 5

Office Buildings
- Private and General Offices—
  - Close Work 20
  - No Close Work 10
- File Room 10
- Vault 10
- Reception Room 5
- Corridors 5

Post Office
- Lobby 10
- Sorting, Mailing, etc. 20
- Storage 10
- Private and General Offices 20
- File Room and Vault 10
- Corridors and Stairways 2

Professional Offices
- Waiting Room 10
- Consultation Rooms 20
- Operating Offices 20
- Dental Chairs 30-50

Restaurants, Lunch Rooms and Cafeterias
- Dining Area 10
- Food Display 30-50

Schools
- Auditorium 10
- Class Rooms, Library and Office 20
- Corridors and Stairways 5
- Drawing 30-50
- Laboratories 15
- Manual Training 20
- Sewing Rooms 50-100
- Sight-Saving Class 30-50
- Study Room – Desks and Blackboards 20

Service Space
- Corridors 5
- Elevators, freight and passenger 10
- Halls and Stairways 5
- Lobby 10
- Storage 5
- Toilets and Washrooms 5

Show Cases 50-100

Show Windows
- Large Cities—
  - Brightly Lighted District 200
  - Secondary Business Locations 100
  - Neighborhood Stores 50
- Medium Cities—
  - Brightly Lighted District 100
- Neighborhood Stores 50
  - Small Cities and Towns 50
- Lighting to Reduce Daylight Window Reflections 200-1000

Special Displays–Inside Store
- Light Colored 30-50
- Medium Colored 50-100
- Dark Colored 100

Stores—Department and Specialty
- Large Cities
  - Brightly Lighted Districts 20
  - Secondary Business Locations 20
- Neighborhood Stores 15
- Medium Cities
  - Brightly Lighted Districts 20
  - Neighborhood Stores 15
- Small Cities and Towns 15

Telephone Exchanges
- Operating Rooms 10
- Terminal Rooms 15
- Cable Vaults 5

Theatres
- Auditorium 5
- Foyer 10
- Lobby 15

Transportation
- Cars—
  - Baggage, Day Coach, Dining, Pullman 10
- Mail—
  - Bag Racks 20
  - Letter Cases 20
  - Storage 5
- Street Railway and Subway 10
- Depot
  - Waiting Room 10
- Ticket Offices
  - General 10
  - Ticket Rack and Counter ... 50-100
- Rest Room, Smoking Room 10
- Baggage Checking Office 15
- Storage 5
- Concourse 5
- Train Platform 2

Recommendations marked **30-50, 50-100, 100 or more** indicate that expert study of lighting conditions should be made.

Outdoor Lighting

Automobile Parking Spaces 1

Bulletin and Poster Boards
- Bright Surroundings—
  - Light Surface 50
  - Dark Surface 100
- Dark Surroundings—
  - Light Surface 20
  - Dark Surface 50

Building
- Construction Work 5
- Excavation 2

Building Exteriors and Monuments—Floodlighted
- Bright Surroundings—
  - Light Surface 10
  - Dark Surface 20
- Dark Surroundings—
  - Light Surface 5
  - Dark Surface 10

Church Windows (Art Glass) 20-200

Circus
- Seats 2
- Arena 10
- Special Attractions 50-100

Coal Yards (Protective) 2

Dredging 2

Drill Fields 5

Flags—Floodlighted 30-50

Gasoline Filling Stations
- At Pumps 20
- Yard and Driveways 5

Loading Docks 5

Lumber Yards 1

Motordromes
- Seating 2
- Track 20

Monuments (See Building Exteriors)

Piers
- Freight 5
- Passenger 5

Prison Yards 5

Protective Industrial 2

Quarries 2

Railroad Yards
- Receiving 0.1
- Classification 0.2

Signs—Painted (See Poster Boards)

Ship Yard Construction 5

Storage Yards 1

Light Absorption of Colors

The color of walls and ceilings has a direct influence on the usable light delivered. The darker colors absorb more light and so require more lamp wattage to provide satisfactory illumination.

Light tinted ceilings and walls, therefore, not only contribute to the cheerfulness of the surroundings but also save money in current consumption.

Below is a table giving the light absorption of various colors.

Light absorbed by opaque materials having normally flat colored surfaces

White, White Ivory	20%
Ivory	29%
Primrose Yellow	22%
Gray (depending on tints)	30–80%
Buff	36%
Pink	46%
Azure Blue	60%
Sky Blue	63%
Tan	65%
Olive Green	79%
Forest Green	80%
Cardinal Red	80%
Brown	81%
Dark Green	95%
Dark Blue	96%
Black	99%

Light absorbed by transparent or translucent colored materials (Glass) approx. .025" thick

Inside Frost	1½–2% more than clear
Daylight Blue	30–45%
Daylight Blue sign lamps	45–65%
Light Amber	60%
Dark Amber	87%
Dense Green	95–99%
Dense Blue	99%

Recreational Lighting

Baseball
- Seats 2
- Infield 50
- Outfield 30
- Soft Ball 30-50

Basket Ball 20

Bathing Beaches 1

Billiards 30-50

Bowling 30-50

Boxing
- Seats 2
- Ring
  - Amateur 100
  - Professional 200
  - Championship 500

Clock Golf 10

Croquet 5

Football
- Seats 2
- Field
  - Practice 10
  - Games 20

Gymnasiums
- Main Exercising Floor 15
- Shower Rooms 10
- Locker Rooms 5
- Fencing, Boxing, Wrestling 20

Handball 30

Horseshoe Pitching 10

Ice Hockey 10

Playgrounds 5

Polo 5

Racquet 30

Roque 5

Skating Rink
- Indoor 10
- Outdoor 5

Squash 30

Swimming Pools 10

Table Tennis - Ping Pong 30

Target Shooting (on target) 30

Tennis ..... 20 - 50

Toboggan Slides 2

Trap Shooting (on bird at trap) 20

Volley Ball 15

Complete Index with Commercial Ratings of HYGRADE LAMPS

HYGRADE LAMPS FOR 110, 115 and 120-Volt Circuits

WATTS	BULB	LIST PRICE	STD. PKG. QTY.	B (VACUUM) OR C (GAS FILLED)	APPROX. VALUE RATED INITIAL LUMS.	RATED INITIAL LUMS. PER WATT	LUMENS PER WATT AT 70% OF RATED LIFE	RATED AVER. LAB. LIFE (Hours)	BASE	MAX. OVERALL LENGTH, (Inches)	AVER. LIGHT CENTER LENGTH (Inches)	FILAMENT CONSTRUCTION	POSITION OF BURNING
6	S-6 clear	$0.20	120	B	38	6.3	....	1500	Cand.	1 7/8	.....	C-7A	Any
6	S-14 clear	.15	120	B	38	6.4	....	1500	Med.	3 1/2	2 1/2	C-9	Any
6	S-14 colored†	.20	120	B	.....	.....	....	1500	Med.	3 1/2	.....	C-9	Any
6	S-14 inside frosted	.15	120	B	38	6.3	....	1500	Med.	3 1/2	2 1/2	C-9	Any
10	S-11§	.20	120	B	76	7.6	....	1500	Inter.	2 5/16	1 5/8	C-7A	Any
10	S-14 clear	.15	120	B	78	£7.8	£7.3	1500	Med.	3 1/2	2 1/2	C-9	Any
10	S-14 colored†	.20	120	B	.....	.....	....	1500	Med.	3 1/2	.....	C-9	Any
10	S-14 inside frosted	.15	120	B	77	£7.7	£7.2	1500	Med.	3 1/2	2 1/2	C-9	Any
10	S-14 nat. col. Z	.40	120	B	.....	.....	....	1500	Med.	3 1/2	.....	C-9	Any
10	S-14 nat. col. Q	.50	120	B	.....	.....	....	1500	Med.	3 1/2	.....	C-9	Any
15	A-17 inside frosted	.15	120	B	140	£9.3	£8.3	1000	Med.	3 5/8	2 3/8	C-7A	Any
15	F-10 F.T., white, ivory	.35	60	B	.....	.....	....	750	Cand.	3 1/16	.....	C-7A	Any
25	A-19 inside frosted	.15	120	B	258	£10.3	£8.9	1000	Med.	3 1/8	2 1/2	C-7A	Any
25	A-19 colored‡	.20	120	B	.....	.....	....	1000	Med.	3 1/8	.....	C-7A	Any
25	A-19 day. clear	.30	120	B	.....	.....	....	1000	Med.	3 1/8	2 1/2	C-7A	Any
25	A-19 nat. col. Z	.40	120	B	.....	.....	....	1000	Med.	3 1/8	.....	C-7A	Any
25	A-19 nat. col. Q	.50	120	B	.....	.....	....	1000	Med.	3 1/8	.....	C-7A	Any
25	G-18 1/2 white F.T. ivory	.30	120	B	.....	.....	....	750	Med.	3 9/16	.....	C-7A	Any
25	G-25 white F.T. ivory	.35	60	B	.....	.....	....	750	Med.	4 7/16	.....	C-7A	Any
25	F-15 F.T., white, ivory	.20	120	B	.....	.....	....	750	Med.	4 1/2	.....	C-7A	Any
25	T-6 1/2 clear	.45	60	B	238	9.5	....	1000	Inter.	5 1/2	.....	C-8	Any
25	T-6 1/2 frosted	.50	60	B	.....	.....	....	1000	Inter.	5 1/2	.....	C-8	Any
25	T-10 clear	.35	60	B	243	£9.7	£8.2	1000	Med.	5 5/8	.....	S-1	Any
25	T-10 frosted	.40	60	B	.....	.....	....	1000	Med.	5 5/8	.....	C-8	Any
30	T-8 clear Lumiline	.95	24	B	234	7.8	....	1500	Disc.	17 3/4	.....	C-8	Any
30	T-8 col. || Lumiline	1.05	24	B	.....	....	....	1500	Disc.	17 3/4	.....	C-8	Any
40	A-19 inside frosted	.15	120	C	440	¶11.0	¶9.9	1000	Med.	4 1/4	2 7/8	C-9	φ Any
40	A-21 nat. col. Z	.40	120	B	.....	.....	....	1000	Med.	4 7/16	.....	C-7A	Any
40	A-21 nat. col. Q	.50	120	B	.....	.....	....	1000	Med.	4 7/16	.....	C-7A	Any
40	G-25 white, F.T. ivory	.35	60	B	.....	.....	....	750	Med.	4 7/16	.....	C-7A	Any
40	T-8 cl.	.90	24	B	400	10.0	8.4	1000	Med.	11 7/8	.....	C-8	Any
40	T-8 frosted	.95	24	B	.....	.....	.....	1000	Med.	11 7/8	.....	C-8	Any
40	T-8 clear Lumiline	.85	24	B	332	8.3	....	1500	Disc.	11 3/4	.....	C-8	Any
40	T-8 col. || Lumiline	.95	24	B	.....	.....	.....	1500	Disc.	11 3/4	.....	C-8	Any
50	A-19 Rough Service I.F.	.34	120	B	450	£9.0	£7.5	1000	Med.	3 1/8	2 1/2	C-22	Any
50	A-19 day. clear	.35	120	B	.....	.....	....	1000	Med.	3 1/8	2 1/2	C-7A	Any
50	P-19 vibration clear	.25	120	B	545	£10.9	£8.2	1000	Med.	3 1/8	2 1/2	C-9	Any but Horiz.
50	P-19 vibration I.F.	.30	120	B	545	£10.9	£8.2	1000	Med.	3 1/8	2 1/2	C-9	Any but Horiz.
60	A-21 inside frosted	.15	120	C	762	¶12.7	¶11.7	1000	Med.	4 1/8	3 3/8	C-9	φ Any
60	A-21 day. I.F.	.30	120	C	*495	.....	....	1000	Med.	4 1/8	3 3/8	C-9	φ Any
♁60	A-21 I.F. silv. bowl	.45	120	C	.....	.....	....	1000	Med.	4 1/8	3 3/8	C-9	Base up
60	A-21 clear Traf. Signal	.30	120	C	654	10.9	.....	2000	Med.	4 7/16	2 7/16	C-9	Base down or Horiz.
×60	A-21 nat. col. Z	.45	120	C	.....	.....	....	1000	Med.	4 1/8	.....	C-9	Any
×60	A-21 nat. col. Q	.55	120	C	.....	....	....	1000	Med.	4 1/8		C-9	Any
60	T-8 clear Lumiline	.95	24	B	528	8.8	....	1500	Disc.	17 3/4	.....	C-8	Any
60	T-8 col. || Lumiline	1.05	24	B	.....	.....	....	1500	Disc.	17 3/4	.....	C-8	Any
75	A-21 I.F.	.20	60	C	1065	¶14.2	¶12.6	750	Med.	5 5/16	3 7/8	C-9	φ Any
♁75	A-21 I.F. silv. bowl	.60	60	C	.....	...	....	750	Med.	5 5/16	3 7/8	C-9	Base up
100	A-23 inside frosted	.20	60	C	1530	¶15.3	¶13.7	750	Med.	6 1/16	4 3/8	C-9	φ Any
100	A-23 day. I.F.	.35	60	C	*988	.....	....	750	Med.	6 1/16	4 3/8	C-9	φ Any
100	A-23 Vibration I.F.	.50	60	C	1400	14.0	....	1000	Med.	6 1/16	4 3/8	C-9	Any but Horiz.
100	A-23 Vibration cl.	.55	60	C	1400	14.0	....	1000	Med.	6 1/16	4 3/8	C-9	Any but Horiz.
♁100	A-23 I.F. silv. bowl	.60	60	C	.....	.....	....	750	Med.	6 1/16	4 3/8	C-9	Base up
100	A-23 I.F. Rough Serv.	.55	60	C	1150	11.5	10.0	1000	Med.	6 1/16	4 3/8	C-17	Any

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Complete Index with Commercial Ratings, continued

HYGRADE LAMPS FOR 110, 115 and 120 Volt Circuits

WATTS	BULB	LIST PRICE	STD. PKG. QUAN.	B (VACUUM) OR C (GAS FILLED)	APPROX. VALUE RATED INITIAL LUMENS	RATED INITIAL LUMENS PER WATT	LUMENS PER WATT AT 70% OF RATED LIFE	RATED AVER. LAB. LIFE (hours)	BASE	MAX. OVERALL LENGTH (Inches)	AVER. LIGHT CENTER LENGTH (Inches)	FILAMENT CONSTRUCTION	POSITION OF BURNING
150	A-25 I.F.	.25	60	C	2535	¶16.9	....	750	Med.	6 15/16	5 1/4	C-9	ϕ Any
150	A-25 day. clear	.50	60	C	*1650	....	....	750	Med.	6 15/16	5 1/4	C-9	ϕ Any
150	A-25 day. I.F.	.55	60	C	*1650	....	....	750	Med.	6 15/16	5 1/4	C-9	ϕ Any
150	A-25 clear	.25	60	C	2535	¶16.9	¶15.0	750	Med.	6 15/16	5 1/4	C-9	ϕAny
150	A-25 W.B.	.30	60	C	*2460	.....	....	750	Med.	6 15/16	5 1/4	C-9	Base up
♁150	A-25 I.F. silv. bowl	.70	60	C	.....	.....	....	750	Med.	6 15/16	5 1/4	C-9	Base up
50 100 150	PS-25 I.F. 3-light	.60	60	C	515 1400 1915	10.3 14.0 12.8	....	1000	Three Contact Mogul	6 13/16	5	2C-9	Any
200	PS-30 clear	.45	24	C	3400	¶17.0	¶14.8	1000	Med.	8 1/8	6	C-9	ϕ Any
200	PS-30 inside frosted	.50	24	C	3400	¶17.0	....	1000	Med.	8 1/8	6	C-9	ϕ Any
200	PS-30 W.B.	.50	24	C	*3300	.....	....	1000	Med.	8 1/8	6	C-9	Base up
200	PS-30 day. clear	.80	24	C	*2210	.....	....	1000	Med.	8 1/8	6	C-9	ϕ Any
200	PS-30 day. I.F.	.85	24	C	*2210	.....	....	1000	Med.	8 1/8	6	C-9	ϕ Any
♁200	PS-30 I.F. silv. bowl	.95	24	C	.....	.....	....	1000	Med.	8 1/8	6	C-9	Base up
300	PS-35 clear	.75	24	C	5520	18.4	¶15.8	1000	Mog.	9 7/16	7	C-7A	ϕ Any
300	PS-35 inside frosted	.80	24	C	5520	18.4	....	1000	Mog	9 7/16	7	C-7A	ϕ Any
300	PS-35 W.B.	.80	24	C	*5350	.....	....	1000	Mog.	9 7/16	7	C-7A	Base up
100 200 300	G-30 I.F. 3-Light	.80	24	C	1310 3360 4670	13.1 16.8 15.5	....	1000	Three Contact Mogul	6 3/4	3 3/4	2 C-7A	Base down
300	PS-35 day. clear	1.20	24	C	*3590	.....	....	1000	Mog.	9 7/16	7	C-7A	ϕ Any
300	PS-35 day. I.F.	1.30	24	C	*3590	.....	....	1000	Mog.	9 7/16	7	C-7A	ϕ Any
♁300	PS-35 I.F. silv. bowl	1.45	24	C	.....	.....	....	1000	Mog.	9 7/16	7	C-7A	Base up
500	PS-40 clear	1.40	12	C	9800	19.6	¶16.4	1000	Mog.	9 13/16	7	C-7A	ϕ Any
500	PS-40 I.F.	1.50	12	C	9800	19.6	....	1000	Mog.	9 13/16	7	C-7A	ϕ Any
500	PS-40 W.B.	1.50	12	C	*9510	.....	....	1000	Mog.	9 13/16	7	C-7A	Base up
500	PS-40 day. clear	2.15	12	C	*6370	.....	....	1000	Mog.	9 13/16	7	C-7A	ϕ Any
500	PS-40 day. I.F.	2.30	12	C	*6370	.....	....	1000	Mog.	9 13/16	7	C-7A	ϕ Any
♁500	PS-40 I.F. silv. bowl	2.25	12	C	.....	.....	....	1000	Mog.	9 13/16	7	C-7A	Base up
750	PS-52 clear	3.75	6	C	14550	19.4	17.4	1000	Mog.	13 1/8	9 1/2	C-7A	ϕ Any
750	PS-52 W.B.	3.95	6	C	*14100	.....	....	1000	Mog.	13 1/8	9 1/2	C-7A	Base up
750	PS-52 inside frosted	3.95	6	C	14550	19.4	....	1000	Mog.	13 1/8	9 1/2	C-7A	ϕ Any
1000	PS-52 clear	4.00	6	C	20700	20.7	17.2	1000	Mog.	13 1/8	9 1/2	C-7A	ϕ Any
1000	PS-52 W.B.	4.20	6	C	*20080	.....	....	1000	Mog.	13 1/8	9 1/2	C-7A	Base up
1000	PS-52 inside frosted	4.25	6	C	20700	20.7	....	1000	Mog.	13 1/8	9 1/2	C-7A	ϕ Any
1500	PS-52 clear	5.75	6	C	33000	22.0	15.3	1000	Mog.	13 1/8	9 1/2	C-7A	ϕ Any
1500	PS-52 W.B.	5.95	6	C	*32000	.....	....	1000	Mog.	13 1/8	9 1/2	C-7A	Base up
1500	PS-52 inside frosted	6.05	6	C	33000	22.0	....	1000	Mog.	13 1/8	9 1/2	C-7A	ϕ Any

HYGRADE LAMPS FOR TRAIN AND LOCOMOTIVE SERVICE

WATTS	VOLTS	BULB	LIST PRICE	STD. PKG. QTY.	B (VACUUM) OR C (GAS FILLED)	APPROX. VALUE RATED INITIAL LUMS.	RATED INITIAL LUMS. PER WATT	LUMENS PER WATT AT 70% OF RATED LIFE	RATED AVER. LAB. LIFE (hours)	BASE	MAX. OVERALL LENGTH, (Inches)	AVER. LIGHT CENTER LENGTH, (Inches)	FILAMENT CONSTRUCTION	POSITION OF BURNING
15	32	A-17 I.F.	.23	120	C	162	10.8	9.9	1000	Med.	3 5/8	2 3/8	C-9	ϕ Any
15	34	S-14 clear, cab	.22	120	B	141	9.4	....	1000	Med.	3 1/2	2 1/2	C-9	Any
15	64	A-17 I.F.	.23	120	B	143	9.5	....	1000	Med.	3 5/8	2 3/8	C-9	Any
25	32	A-19 I.F.	.23	120	C	323	12.9	12.0	1000	Med.	3 15/16	2 1/2	C-9	ϕ Any
25	64	A-19 I.F.	.23	120	C	265	10.6	....	1000	Med.	3 15/16	2 1/2	C-9	ϕ Any
50	32	A-21 I.F.	.25	120	C	780	15.6	14.3	1000	Med.	4 15/16	3 3/8	C-9	ϕ Any
50	64	A-21 I.F.	.25	120	C	635	12.7	....	1000	Med.	4 15/16	3 3/8	C-9	ϕ Any
100	32	A-23 I.F.	.38	60	C	1720	17.2	16.3	1000	Med.	6 1/16	4 3/8	C-9	ϕ Any
100	32	P-25 clear, Hdlt.	1.00	60	C	1520	15.2	....	500	Med.	4 3/4	3	C-5	○
100	64	A-23 I.F.	.38	60	C	1500	15.0	....	1000	Med.	6 1/16	4 3/8	C-9	ϕ Any
250	32	P-25 clear, Hdlt.	1.50	60	C	4375	17.5	....	500	Med.	4 3/4	3	C-5A	○

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Complete Index with Commercial Ratings, continued

HYGRADE LAMPS FOR STREET RAILWAY SERVICE

WATTS	VOLTS	BULB	LIST PRICE	STD. PKG. QTY.	B (VACUUM) OR C (GAS FILLED)	APPROX. VALUE RATED INITIAL LUMS.	RATED INITIAL LUMS. PER WATT	MEAN LUMS. % OF AVER. INITIAL LUMS.	RATED AVER. LAB. LIFE (Hours)	AMPERES	BASE	MAX. OVERALL LENGTH, (Inches)	AVER. LIGHT CENTER LENGTH (Inches)	FIL. CONST	POSITION OF BURNING
Amperes															
1.0	30	**A-19 I.F.**	**$0.30**	120	C	360	12.0	....	1500	.....	Med.	$3\frac{15}{16}$	$2\frac{1}{2}$	C-9	ϕ Any
1.6	30	**A-21 I.F.**	**.35**	120	C	648	13.5	....	1500	.....	Med.	$4\frac{7}{16}$	$2\frac{7}{8}$	C-9	ϕ Any
Watts															
✪23	105, 110, 115, 120, 125, 130	**S-17 clear**	**.25**	120	B	♀219	8.9	....	1500	0.214	Med.	$4\frac{5}{8}$	.....	S-1	Any
✪23		**A-19 clear H**	**.60**	120	B	♀197	8.0	....	1000	0.214	Med.	$3\frac{15}{16}$	$2\frac{3}{16}$	C-5	Any
✪36		**A-19 clear H**	**.60**	120	B	♀338	8.6	....	1000	0.342	Med.	$3\frac{15}{16}$	$2\frac{3}{16}$	C-5	Any
✪36		**A-21 I.F.**	**.17**	120	B	♀374	9.5	....	1500	0.342	Med.	$4\frac{7}{16}$	$2\frac{7}{8}$	C-9	⊥ Any
✪56		**A-21 I.F.**	**.24**	120	B	♀609	10.2	....	1500	0.519	Med.	$4\frac{7}{16}$	$2\frac{7}{8}$	C-9	⊥ Any
✪56		**P-25 clear H..**	**.85**	60	B	♀531	8.9	....	1000	0.519	Med.	$4\frac{3}{4}$	$2\frac{1}{16}$	C-5	Any
✪94		**P-25 clear H..**	**1.10**	60	B	♀933	9.4	....	1000	0.863	Med.	$4\frac{3}{4}$	$2\frac{1}{16}$	C-5	Any
101		**A-23 I.F.**	**.50**	60	C	1100	11.0	....	1500	.....	Med.	$6\frac{1}{16}$	$4\frac{3}{8}$	C-9	ϕ Any
201		**PS-30 clear** ..	**.95**	24	C	2900	14.5	....	1000	.....	Med.	$8\frac{1}{8}$	6	C-9	ϕ Any
301		**PS-35 clear** ..	**1.55**	24	C	4830	16.1	....	1000	.....	Mog.	$9\frac{7}{16}$	7	C-7A	ϕ Any

HYGRADE LAMPS FOR STREET SERIES SERVICE

All street series lamps are gas-filled, with mogul bases and clear bulbs. All standard street series lamps have an average rated laboratory life of 2000 hours; because of the severity of street lighting service, the average service life of street series lamps even under good operating conditions, is of the order of 25% less than the average laboratory life.

AMPERES	RATED INITIAL LUMENS	BULB	LIST PRICE	STD. PKG. QTY.	AVER. VOLTS	AVER. WATTS	RATED INITIAL LUMS. PER WATT	% LUMENS AT 70% OF RATED LIFE	FILA-MENT. CONST.	MAX. OVERALL LENGTH, (Inches)	POSITION OF BURNING AND AVERAGE LIGHT CENTER LENGTH, (Inches)
6.6	600	**S-24½**	**$0.55**	60	6.7	**44.1**	13.6	100	C-8	$7\frac{1}{8}$	ϕ Any, $5\frac{3}{8}$
6.6	800	**S-24½**	**.55**	60	8.4	**55.2**	14.5	100	C-8	$7\frac{1}{8}$	ϕ Any, $5\frac{3}{8}$
6.6	1000	**S-24½**	**.50**	60	9.7	**63.7**	15.7	100	C-8	$7\frac{1}{8}$	ϕ Any, $5\frac{3}{8}$
6.6	2500	**PS-35**	**1.00**	24	22.0	**145.3**	17.2	100	C-2	$9\frac{7}{16}$	ϕ Any, 7
6.6	4000	**PS-35**	**1.20**	24	33.1	**218.6**	18.3	98	C-2	$9\frac{7}{16}$	ϕ Any, 7
15	4000	**PS-35**	**1.20**	24	14.0	**210.5**	19.0	95	C-2	$9\frac{7}{16}$	Base up, 7 Base down, $6\frac{1}{4}$
6.6	6000	**PS-40**	**1.60**	12	51.9	**342.9**	17.5	95	C-2	$9\frac{13}{16}$	ϕ Any, 7
20	6000	**PS-40**	**1.60**	12	14.9	**298.5**	20.1	92	C-2	$9\frac{13}{16}$	Base up, 7 Base down, $6\frac{1}{4}$
20	10000	**PS-40**	**2.00**	12	25.0	**500.0**	20.0	90	C-7	$9\frac{13}{16}$	Base up, 7 Base down, $6\frac{1}{4}$
20	15000	**PS-40**	**2.75**	12	37.3	**746.3**	20.1	85	C-7	$9\frac{13}{16}$	Base up, 7 Base down, $6\frac{1}{4}$
20	25000	**PS-52**	**5.00**	6	60.7	**1213.6**	20.6	80	C-7	$13\frac{1}{8}$	Base up, $9\frac{1}{2}$

HYGRADE LAMPS FOR SPOTLIGHT AND FLOODLIGHT SERVICE—110, 115, and 120 Volts

WATTS	VOLTS	BULB	LIST PRICE	STD. PKG. QTY.	B (VACUUM) OR C (GAS FILLED)	RATED INITIAL LUMS.	RATED INITIAL LUMS. PER WATT	RATED AVER. LAB. LIFE (Hours)	BASE	MAX. Over-all Lght. (Ins.)	AVER. LIGHT CENTER LENGTH, (Inches)	LIGHT SOURCE DIMENSIONS IN M. M. WIDTH	LIGHT SOURCE DIMENSIONS IN M. M. HEIGHT	FIL. CONST.	POSITION OF BURNING
100	115	**P-25 clear Spot** ..	**$0.85**	60	C	1360	13.6	200	Med.	$4\frac{3}{4}$	3	8	7	C-5	Any except within 45 degrees of vertically base up
250	115	**G-30 clear Spot** ..	**1.50**	24	C	4425	17.7	200	Med.	$5\frac{1}{8}$	3	10	8	C-5	
250	115	**G-30 clear Flood**	**1.50**	24	C	3700	14.8	800	Med.	$5\frac{1}{8}$	3	12	9	C-5	
400	115	**G-30 clear Spot** ..	**2.65**	24	C	7840	19.6	200	Med.	$5\frac{1}{8}$	3	11	9	C-5	
500	115	**G-40 clear Flood**	**2.90**	12	C	8350	16.7	800	Mog.	$7\frac{1}{16}$	$4\frac{1}{4}$	13	10	C-5	
1000	115	**G-40 clear Spot** ..	**6.65**	12	C	22000	22.0	200	Mg. Pf.	$8\frac{7}{16}$	«$3\frac{15}{16}$	14	13	C-5	Any position from vertical base down to horizontal
1000	115	**G-40 clear Spot** ..	**6.25**	12	C	22000	22.0	200	Mog.	$7\frac{1}{16}$	$4\frac{1}{4}$	14	13	C-5	
1000	115	**G-40 clear Spot** ..	**6.25**	12	C	22000	22.0	200	Mog.	8	$5\frac{1}{4}$	14	13	C-5	
1000	115	**G-40 clear Flood**	**6.25**	12	C	18700	18.7	800	Mog.	8	$5\frac{1}{4}$	16	15	C-5	

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Complete Index with Commercial Ratings, continued

HYGRADE LAMPS FOR HIGH VOLTAGE SERVICE—220, 230, 240, 250, and 260 Volts

WATTS	VOLTS	BULB	LIST PRICE	STD. PKG. QUAN.	B (VACUUM) OR C (GAS FILLED)	APPROX. VALUE RATED INITIAL LUMENS	RATED INITIAL LUMENS PER WATT	LUMENS PER WATT AT 70% OF RATED LIFE	RATED AVER. LAB. LIFE (hours)	BASE	MAX. OVERALL LENGTH (Inches)	AVER. LIGHT CENTER LENGTH (Inches)	FILAMENT CONSTRUCTION	POSITION OF BURNING
25	230	**A-19 I.F.**	**$0.26**	120	B	213	♭8.5	♭8.0	1000	Med.	3 15/16	2½	C-17	Any
50	230	**A-21 I.F.**	**.26**	120	B	475	♭9.5	♭8.1	1000	Med.	4 7/16	2⅞	C-17	Any
50	275	**A-21 Mine I.F.**	**.40**	120	B	435	8.7	....	1000	Med.	4 7/16	2⅞	C-17	Any
50	300	**A-21 Mine I.F.**	**.40**	120	B	435	8.7	....	1000	Med.	4 7/16	2⅞	C-17	Any
100	230	**A-23 I.F.**	**.38**	60	C	1100	♯11.8	♯11.3	1000	Med.	6 1/16	4⅜	C-9	ϕ Any
150	230	**PS-25 clear**	**.65**	60	C	1940	12.9	....	1000	Med.	6 15/16	5¼	C-9	ϕ Any
150	230	**PS-25 I.F.**	**.70**	60	C	1940	.....	....	1000	Med.	6 15/16	5¼	C-9	ϕ Any
150	230	**PS-25 white bowl**	**.70**	60	C	*1880	.....	....	1000	Med.	6 15/16	5¼	C-9	Base up
200	230	**PS-30 clear**	**.85**	24	C	2920	♯14.6	♯12.9	1000	Med.	8⅛	6	C-9	ϕ Any
200	230	**PS-30 I.F.**	**.90**	24	C	2920	♯14.6	....	1000	Med.	8⅛	6	C-9	ϕ Any
200	230	**PS-30 W.B.**	**.90**	24	C	*2830	.....	....	1000	Med.	8⅛	6	C-9	Base up
300	230	**PS-35 clear**	**1.25**	24	C	4560	♯15.2	♯13.4	1000	Mog.	9 7/16	7	C-7A	ϕ Any
300	230	**PS-35 I.F.**	**1.35**	24	C	4560	♯15.2	....	1000	Mog.	9 7/16	7	C-7A	ϕ Any
300	230	**PS-35 W.B.**	**1.35**	24	C	*4420	....	....	1000	Mog.	9 7/16	7	C-7A	Base up
500	230	**PS-40 clear**	**2.15**	12	C	8350	16.7	♯14.8	1000	Mog.	9 13/16	7	C-7A	ϕ Any
500	230	**PS-40 I.F.**	**2.30**	12	C	8350	16.7	....	1000	Mog.	9 13/16	7	C-7A	ϕ Any
500	230	**PS-40 white bowl**	**2.30**	12	C	*8100	.....	....	1000	Mog.	9 13/16	7	C-7A	Base up
750	230	**PS-52 clear**	**4.25**	6	C	13125	17.5	15.5	1000	Mog.	13⅛	9½	C-7A	ϕ Any
750	230	**PS-52 white bowl**	**4.50**	6	C	*12700	.....	....	1000	Mog.	13⅛	9½	C-7A	Base up
1000	230	**PS-52 clear**	**4.75**	6	C	19000	19.0	16.2	1000	Mog.	13⅛	9½	C-7A	ϕ Any
1000	230	**PS-52 white bowl**	**5.00**	6	C	*18400	.....	....	1000	Mog.	13⅛	9½	C-7A	Base up

HYGRADE LAMPS FOR COUNTRY HOME SERVICE—28-32 Volts

15	28-32	**A-17 I.F.**	**.23**	120	C	162	10.8	....	1000	Med.	3⅝	2⅜	C-9	ϕ Any
25	28-32	**A-19 I.F.**	**.23**	120	C	323	12.9	....	1000	Med.	3 15/16	2½	C-9	ϕ Any
50	28-32	**A-21 I.F.**	**.25**	120	C	780	15.6	....	1000	Med.	4 15/16	3⅜	C-9	ϕ Any
100	28-32	**A-23 I.F.**	**.38**	60	C	1720	17.2	....	1000	Med.	6 1/16	4⅜	C-9	ϕ Any

HYGRADE LAMPS FOR 6 and 12 Volt Service

15	6	**A-17 I.F.**	**$0.30**	120	C	.....	.....	....	1000	Med.	3⅝	2⅜	C-6	Any
15	12	**A-17 I.F.**	**.30**	120	C	.....	.....	....	1000	Med.	3⅝	2⅜	C-6	Any
25	6	**A-19 I.F.**	**.30**	120	C	.....	.....	....	1000	Med.	3 15/16	2½	C-6	Any
25	12	**A-19 I.F.**	**.30**	120	C	.....	.....	....	1000	Med.	3 15/16	2½	C-6	Any
50	6	**A-21 I.F.**	**.40**	120	C	.....	.....	....	1000	Med.	4 15/16	3⅜	C-6	Any
50	12	**A-21 I.F.**	**.40**	120	C	.....	.....	..	1000	Med	4 15/16	3⅜	C-6	Any

FOOTNOTES

Z Natural colored in amber, blue and green. Amber regularly furnished in light shade. Dark shade amber (used in photographic work) can be furnished at same price. Blue shade does not include daylight blue or photographic blue.

Q Natural colored ruby regularly furnished in light shade. Dark shade ruby (used in photographic work) can be furnished at same price.

δ Silvered bowl lamps should be used only in porcelain sockets and in fixtures so designed that the temperatures of the lamp and fixtures do not exceed limits for satisfactory operation.

x Not to be burned in enclosing globe.

« The light center length of this lamp is the distance from center of light source to top of base fin.

♭ Lumens per watt listed are for 220 and 230-volt lamps only. For 240, 250 and 260-volt lamps subtract 0.10.

♯ Lumens per watt listed are for 220 and 230-volt lamps only. For 240, 250 and 260-volt lamps subtract 0.30.

♀ The lumens given cover only lamps of 115 volts. The lumens for other lamps are in proportion to the volts.

✪ Nominal watts. The actual watts are determined by multiplying the volts by the amperes (the amperes are the same for all voltages).

⊥ This lamp, if burned horizontally, will not give as good service as when burned in a vertical position.

○ Can be burned in any position except within 45 degrees of vertically base up.

* Approximate value.

§ Clear or inside colored in red, blue, green, yellow, amber-orange, flametint and white.

† Inside colored in red, blue, green, yellow, amber-orange and old rose.

‡ Inside colored in red, blue, green, yellow, amber-orange, flametint, ivory and old rose.

‖ Outside colored white, straw, orange, moonlight blue, emerald and surprise pink.

£ Lumens per watt listed are for 115-volt lamps only. For 110-volt lamps add 0.05; for 120-volt lamps subtract 0.05.

¶ Lumens per watt listed are for 115-volt lamps only. For 110-volt lamp add 0.15; for 120-volt lamps subtract 0.15.

ϕ Will operate in any position, but lumen maintenance is best when burned vertically base up and lumens per watt values at 70% of rated life apply to this burning position only.

ABBREVIATIONS Spot. spotlight Day. daylight. Traf. traffic signal. F.T. flametint. W.B. white bowl. I.F. inside frosted. Col. colored. Cl. clear. Flood. floodlight. H. headlight.

At your service . . . the experience of 35 years

The manufacturer of HYGRADE Lamps—Hygrade Sylvania Corporation—is a combination of two long-established concerns which had been making good incandescent lamps and good radio tubes for years. HYGRADE Lamps have been made for 35 years. The experience gained during this time is of value to you as the purchaser, because it represents 35 years of learning, experimenting and manufacturing.

The result has been a steady and persistent growth.

Quality and Sound Management

There are two basic reasons for this growth. First, insistence on quality above every other consideration—second, sound management. The corporation has never hesitated to add to its staff experts in particular fields in engineering, manufacturing, finance and selling; it has always installed the latest machinery and scrapped old-style machinery, even if there were years of life in it, to ensure the highest quality and to give purchasers of HYGRADE Lamps promptly the benefit of all improvements.

Engineering and Searching Inspection

Hygrade Sylvania Corporation has recognized the importance of engineering, research and supervision and the vital necessity of searching and rigid quality inspection. It has manned engineering and quality departments with an unusually large number of graduate engineers and has backed up their recommendations and decisions.

It has installed a very complete system of quality checks, not only by the Quality Department, but also by direct engineering cooperation and supervision in each manufacturing department.

As a final service the Customers Checking Department, which views the product from the customer's point of view, takes cases at random from stock and reinspects their contents.

Accurate Manufacturing

It has employed a high type of workers, well paid and working in pleasant surroundings, and has acted on the assumption that however well a lamp might perform in the laboratory, the test comes in the every day production in the factory, and that here the greatest skill, diligence and watchfulness must be maintained.

HYGRADE LAMP DIVISION

Hygrade Sylvania CORPORATION

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