

# MARINE SIGNAL LAMPS

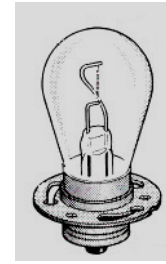
**Cosema Marine Signal Lamps** are manufactured to a very precise specification that ensures an operating life of 1000 hours (per filament). This long life is achieved by using Krypton as the filling gas that optimises filament operation at 2700°k. Nominal operation is 6 or 12 volts; deviation from specified voltage will affect lumen output and life expectancy as specified overleaf.

**Lamp filaments** are coiled to reduce the cooling effect of convection currents in the gas filling thereby maintaining optimum filament temperature. Certain filaments feature double coiling (coiled coil) which results in increased surface area giving higher light output without increasing the filament temperature. This enables range to be increased without enlarging battery size or necessitating increased service visits.

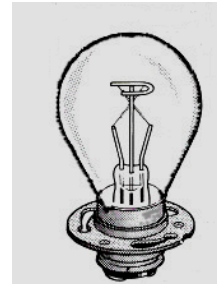
**Single filament lamps and halogen lamps** may be used on all Cosema lampchanger units and those of most other International manufacturers as their base fitting is the accepted standard recognised for navigational aid lanterns. Long term extended service periods are achieved with automatic lampchangers.

**Double filament lamps** are also offered by Cosema for those less demanding installations which are more regularly visited and easily serviced and for which clients do not require the security of four or six available lamps.

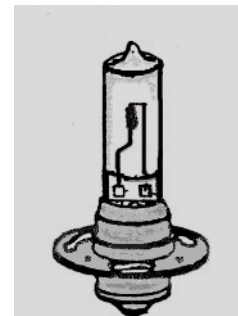
**Pre-focus lamps** are single or double contact to BS5101 Part. 1 1975 (IEC1. 1-1-1969). The P30s cap having three unequally spaced locating slots and holes ensures that the lamp is always secure in its holder with the filament correctly aligned relative to the lens. Lanterns can therefore be easily re-lamped with confidence.



Single filament lamp



Double filament lamp



Halogen lamp

| Single Filament Lamp |       |          |      |
|----------------------|-------|----------|------|
| Volts                | Amper | Filament | Bulb |
| 6V                   | 0.25  | C8       | S8   |
| 6V                   | 0.46  | C8       | S8   |
| 6V                   | 0.70  | C8       | S8   |
| 6V                   | 0.92  | C8       | S8   |
| 12V                  | 0.25  | C8       | S8   |
| 12V                  | 0.50  | CC8      | S8   |
| 12V                  | 0.55  | C8       | S8   |
| 12V                  | 0.77  | C8       | S8   |
| 12V                  | 1.00  | CC8      | S11  |
| 12V                  | 1.15  | C8       | S8   |
| 12V                  | 2.00  | CC8      | S11  |
| 12V                  | 2.03  | C8       | S8   |
| 12V                  | 3.00  | CC8      | S11  |
| 12V                  | 3.05  | C8       | S11  |
| 12V                  | 5.00  | CC8      | S11  |

| Double Filament Lamp |       |          |      |
|----------------------|-------|----------|------|
| Volts                | Amper | Filament | Bulb |
| 6V                   | 0.25  | C8       | S11  |
| 12V                  | 0.25  | C8       | S11  |
| 12V                  | 0.55  | C8       | S11  |

| Halogen Lamp |       |          |       |
|--------------|-------|----------|-------|
| Volts        | Watts | Filament | Lumen |
| 12V          | 10    | C8       | 150   |
| 12V          | 20    | C8       | 400   |
| 12V          | 35    | C8       | 800   |
| 12V          | 50    | C8       | 1200  |
| 12V          | 75    | C8       | 1600  |
| 12V          | 100   | C8       | 2500  |



## INTENSITY / RANGE TABLE FOR DARKNESS



| Intensity<br>in<br>candelas | T - Factor |      | Intensity<br>in<br>candelas | T - Factor |      |
|-----------------------------|------------|------|-----------------------------|------------|------|
|                             | 0.74       | 0.85 |                             | 0.74       | 0.85 |
| 1                           | 1.0        | 1.1  | 450                         | 7.9        | 10.6 |
| 2                           | 1.4        | 1.5  | 500                         | 8.1        | 11.0 |
| 3                           | 1.6        | 1.8  | 550                         | 8.2        | 11.3 |
| 4                           | 1.8        | 2.1  | 600                         | 8.4        | 11.6 |
| 5                           | 2.0        | 2.3  | 650                         | 8.6        | 11.8 |
| 6                           | 2.2        | 2.4  | 700                         | 8.7        | 12.0 |
| 7                           | 2.3        | 2.6  | 800                         | 8.9        | 12.4 |
| 8                           | 2.4        | 2.7  | 900                         | 9.2        | 12.8 |
| 9                           | 2.5        | 2.9  | 1000                        | 9.4        | 13.2 |
| 10                          | 2.6        | 3.0  | 1100                        | 9.6        | 13.5 |
| 11                          | 2.6        | 3.1  | 1200                        | 9.8        | 13.8 |
| 12                          | 2.7        | 3.2  | 1300                        | 9.9        | 14.1 |
| 13                          | 2.8        | 3.3  | 1400                        | 10.1       | 14.3 |
| 14                          | 2.9        | 3.4  | 1500                        | 10.2       | 14.5 |
| 15                          | 3.0        | 3.5  | 1600                        | 10.3       | 14.7 |
| 16                          | 3.1        | 3.6  | 1700                        | 10.5       | 15.0 |
| 17                          | 3.2        | 3.7  | 1800                        | 10.6       | 15.2 |
| 18                          | 3.2        | 3.8  | 1900                        | 10.7       | 15.3 |
| 19                          | 3.3        | 3.9  | 2000                        | 10.8       | 15.5 |
| 20                          | 3.3        | 4.0  | 2200                        | 11.0       | 15.8 |
| 25                          | 3.6        | 4.3  | 2400                        | 11.2       | 16.1 |
| 30                          | 3.8        | 4.6  | 2700                        | 11.4       | 16.5 |
| 35                          | 4.0        | 4.8  | 3000                        | 11.7       | 16.9 |
| 40                          | 4.1        | 5.1  | 3500                        | 12.0       | 17.5 |
| 45                          | 4.3        | 5.3  | 4000                        | 12.2       | 17.9 |
| 50                          | 4.4        | 5.5  | 5000                        | 12.7       | 18.8 |
| 55                          | 4.6        | 5.7  | 6000                        | 13.1       | 19.5 |
| 60                          | 4.7        | 5.8  | 7000                        | 13.5       | 20.0 |
| 65                          | 4.8        | 6.0  | 8000                        | 13.8       | 20.5 |
| 70                          | 4.9        | 6.1  | 9000                        | 14.1       | 21.0 |
| 75                          | 5.0        | 6.2  | 10000                       | 14.3       | 21.4 |
| 80                          | 5.1        | 6.4  | 15000                       | 15.2       | 23.0 |
| 85                          | 5.2        | 6.5  | 20000                       | 15.9       | 24.1 |
| 90                          | 5.3        | 6.7  | 30000                       | 16.8       | 25.8 |
| 95                          | 5.4        | 6.8  | 40000                       | 17.5       | 27.0 |
| 100                         | 5.4        | 6.9  | 50000                       | 18.1       | 28.0 |
| 110                         | 5.5        | 7.1  | 70000                       | 18.9       | 29.4 |
| 120                         | 5.6        | 7.2  | 100000                      | 19.8       | 31.0 |
| 130                         | 5.8        | 7.4  | 150000                      | 20.8       | 32.8 |
| 140                         | 5.9        | 7.6  | 200000                      | 21.5       | 34.1 |
| 150                         | 6.0        | 7.8  | 300000                      | 22.6       | 35.9 |
| 160                         | 6.1        | 8.0  | 400000                      | 23.3       | 37.2 |
| 170                         | 6.2        | 8.1  | 500000                      | 23.9       | 38.3 |
| 180                         | 6.3        | 8.3  | 700000                      | 24.8       | 39.9 |
| 190                         | 6.4        | 8.4  | 1000000                     | 25.7       | 41.5 |
| 200                         | 6.5        | 8.5  | 1500000                     | 26.8       | 43.5 |
| 220                         | 6.7        | 8.8  | 2000000                     | 27.6       | 44.9 |
| 240                         | 6.8        | 9.0  | 3000000                     | 28.6       | 46.8 |
| 270                         | 7.0        | 9.3  | 4000000                     | 29.4       | 48.2 |
| 300                         | 7.2        | 9.6  | 5000000                     | 30.0       | 49.4 |
| 330                         | 7.3        | 9.8  | 7000000                     | 31.0       | 51.0 |
| 360                         | 7.5        | 10.0 | 10000000                    | 31.9       | 52.8 |
| 400                         | 7.7        | 10.4 |                             |            |      |

Note: These range figures assume an eye illumination of 0.2 microlux and that the light source is free from interference by background lighting.

## FILAMENT LIFE

The life of a filament is a compromise between long life and high light intensity. A voltage higher than the designed voltage for the filament gives increased light intensity but short filament life.

| % Volts    | % Candle power | % Life     |
|------------|----------------|------------|
| 90         | 70             | 400        |
| 91         | 73             | 340        |
| 92         | 75             | 300        |
| 93         | 78             | 260        |
| 94         | 81             | 220        |
| 95         | 84             | 200        |
| 96         | 88             | 170        |
| 97         | 91             | 150        |
| 98         | 94             | 130        |
| 99         | 97             | 110        |
|            |                |            |
| <b>100</b> | <b>100</b>     | <b>100</b> |
|            |                |            |
| 101        | 103            | 88         |
| 102        | 106            | 77         |
| 103        | 110            | 68         |
| 104        | 114            | 60         |
| 105        | 118            | 53         |
| 106        | 122            | 47         |
| 107        | 125            | 41         |
| 108        | 129            | 36         |
| 109        | 133            | 32         |
| 110        | 137            | 29         |

### Calculation Filament Service Period

The service period of a filament can be calculated according to the following formula:

$$L = \frac{1000 \times T}{S \times 14}$$

L = service period in days

T = total period of light character in seconds

S = sum of all the flash lengths in that period

14 = mean annual operating time per day in hours  
(14 hours is a common value)