

## 1. INTRODUCTION

Signal lamp is a special type of tungsten filament incandescent lamp having short and straight filament. The cap and holder of lamp are so designed that filament is always at the focal point of the lens system of the signal.

## 2. TYPE OF SIGNAL LAMPS

As per specification No. IRS:S57/2005 (Rev. 4)

### 2.1 Two pole two pin signal lamps

S N	Type	Volt- age	Watt- age	Rated Life (hours)	Application
1	SL 5	12 V	4 W	1000	Repeaters and indicators , Multi lamp route indicators with parallel connections
2	SL 13	6 V	12 W	1000	Multi lamps route indicators with series connections.
3	SL 16	12 V	12 W	1000	Search light signal

### 2.2 Two pole Three pin signal lamps

S N	Type	Main Filament	Aux. Filament	Specific life (hours)	Application
		Rating	Rating		
1	SL 17	12 V16 W	16 V12 W	1000	Junction type route indicators where series circuit is use.
2	SL 18	12V24 W	---	1000	OFF aspect of

					multi unit colour light signal
3	SL 21	12 V24 W	16 V12 W	1000	ON aspect of colour light signal
3	SL 21	12 V24 W	16 V12 W	1000	ON aspect of colour light signal
4	SL 33	110V25W	---	1000	Junction type route indicator and shunt signal.

### 2.3 Triple pole double filament signal lamp:

S N	Type of lamp	Main filament	Auxiliary filament	Specific life (Hours)	Application
		Rating	Rating		
1	SL 35 A (Filaments horizontal & parallel)	12V 24 W	12V24 W	1000	Colour Light Signals
2	SL 35 B (Filaments same as that of 35 A )	12 V33 W	12 V33 W	1000	Colour Light Signals
3	SL35 BL	12 V33W	12 V33 W	10,000	Colour Light Signals

### 3.Maintenance of Electric Signal lamp.

#### 3.1Pre testing.

Signal lamps must be tested as per latest recommendation of Maintenance Study Group, or as per latest instructions from Zonal

Railways before they are installed on signal. A record of testing of lamps should be maintained as per table given below:

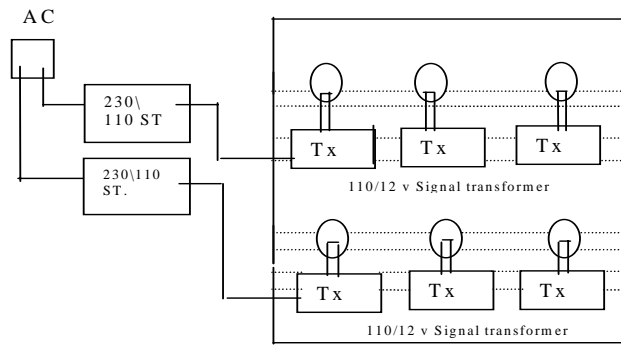
Table for Bulb testing:

Sr. No.	Type of Bulb	Firm's Name	Lot no.	Manu. Date	Date of testing		Total no. of bulb for testing	Bulb fused during testing
					Start	Finish		
1	2	3	4	5	6	7	8	9

The following points shall be followed during testing:

- (a). Lamps shall be operated with the vertical position cap up.
- (b). Testing voltage should be 10.5 V on lamp terminal
- (c). Separate signal transformer should be used for each lamp.
- (d). Single filament and double filament lamp shall be tested separately.
- (e). Testing of triple pole lamp should be done at 10.5 V for 3 hours for each filament as per recommendation of 2<sup>nd</sup> MSG, para 5.1 (iii).
- (f). Lamps other than triple pole can also be tested in the same manner or as per latest instructions from Zonal Railways.

Testing arrangement shall be performed as under:



**Fig.No. 1:Testing arrangement of Signal lamps**

*Note: Total number of signal lamps for testing shall not be more than the capacity of main transformer. (230/110 V)*

**3.2Records of Signal lamp failure:**

Signal lamp failure should be maintained as under given in table:

S N	Type of Signal lamp and make	Lot no.	Lamp testing date	Voltage on lamp holder terminals	Lamp replacement date
1	2	3	4	5	6

### 3.3 Replacement Schedule

- a) Single filament lamp : 80 days or as per instruction given by Zonal Railway.
- b) Double filament lamp : 30 days or as per instruction given by Zonal Railway.
- (c) Triple pole double filament Lamp :
  - (i) Normal aspect lamp should be replaced after 60 days.
  - (ii) Other than normal aspect lamp should be replaced after fusing of first filament.

### 3.4 General

- 1. Care must be exercised when replacing lamp to see that the pins in the base are turned to the end of the slot.
- 2. Applied voltage may not be more than 90% of the rated voltage of the lamps. For 12 V signal lamp it should not be more than 10.8 V
- 3. Lamps should be stored in suitable container provided with thermo-coal packing on the inner surface.

## 4. Trouble Shooting

### 4.1 For Single filament and double filament Signal lamp

Sr	Trouble	Remedy
<b>I.</b>	<b>Signal controlling Relays are in pickup condition</b>	
1.	Supply is available on lamp holder terminals but lamp is not lit up.	Spring contact of lamp holder is loose and contact is not making properly same replace.

2.	Spring contact of signal lamp holder are correct and in proper tension.	Signal lamp is fused same replace with similar lamp.
<b>II. Signal lamp frequently fails.</b>		
1.	Voltage on signal lamp is more than prescribed voltage.	Adjust voltage up to 10.8 volts.
2.	Rainwater is falling in signal unit.	Fix proper gasket of signal unit cover.
<b>III Signal is giving intermittent failure.</b>		
1.	Cap of signal lamp is loose.	Replace signal lamp.
2.	Signal lamp in the base is not turned to the end of the slot of bulb holder.	Insert lamp properly.
3.	Soldering of the bulb is defective or not in uniform.	Replace signal lamp.
4.	Spring contact of signal lamp holder giving intermittent break due to loose tension.	Make proper tension and adjust.

#### 4.2 For SL 35 (A &B) Signal lamp

<b>IV Both filament lit up</b>		
1	MECR relay defective or contact of relay is dray solder	Replace MECR relay or attend soldering.
<b>V Bulb fused by one or both filaments but buzzer not ringing &amp; indication not lit at cabin.</b>		
1	DC Voltage fuse blown off	Replace fuse.
2	DC Voltage supply not going out	Check 8-way strip

	from 8-way strip	
3	MECR back contact defective or dry solder.	Replace MECR relay or re-solder back contact.
4	Buzzer become defective and indication lamp fused	Replace buzzer and indication lamp.
<b>VI Main filament of signal lamp is OK but auxiliary filament lit up.</b>		
1	Wire on H-type transformer is loose due to vibration	Tighten wire terminal of H type transformer.
2	Rectifier of equipment is defective.	Replace rectifier.

## **5. DO'S AND DONT'S**

### **5.1 Do's**

1. Lamps must be replaced with similar lamps.
2. Lamps shall be replaced immediately after main filament of signal lamp becomes fused.
3. A record shall be maintained for replacement of signal lamps
4. Voltage must be checked on every visit on signal transformer (Input and Output voltage) and on the signal lamp holder terminal.
5. Nut of lamp holder must be proper tight, and chuck nut and washers are provided.

6. In case of SL35A and SL35B signal lamps 2<sup>nd</sup> filament shall be checked by opening the supply of 1<sup>st</sup> filament and indication at cabin or station where provided shall be verified.
7. Nut and bolt of MECR unit H-type transformer and common pole plate shall be checked may be loose by the vibration and see that MECR relay is working properly.
8. Before replacing of SL 35 (A &B) signal lamp, common pole plate shall be made press by hand then bulb should be removed from signal lamp holder, it may be possible that bulb may be free from its cap.
9. Nut and bolt of bracket fixed with signal unit also of the signal lamp holder fixed on bracket are not loose.
10. See contact spring of lamp holder is proper in tension and contact is making properly and not are rusty.

## **5.2 Dont's**

1. Do not remove the lamp for cleaning of signal lenses.
2. Do not apply voltage more then 90% of the rated voltage, of signal lamp. And shall not be more than 10.8 V.
3. Do not use any lamp with out being tested.
4. Do not store lamps in signal unit or cable termination box.
5. Do not carry lamps in the toolbox.
6. Do not use discoloured, unshaped filament and loose cap lamps.
7. Do not use any screwdriver or pliers for making tension of bulb holder spring while lamp lit, it may be a cause of short circuit of supply.

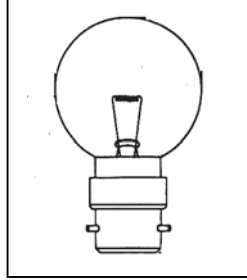




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# SIGNAL LAMP AND ACCESSORIES



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