



**BESA LIGHTING**

## 12V MONORAIL SYSTEM INSTALLATION GUIDE

### IMPORTANT SAFETY INSTRUCTIONS:

- A) Read all instructions.
- B) Do not conceal or extend exposed conductors through a building wall.
- C) For use in dry locations, do not install this system in damp or wet locations (such as bathrooms).
- D) For low voltage exposed insulated conductor systems required by 30.1(c), do not install any part of this system less than 7 feet (2.2m) above the floor.
- E) To reduce the risk of fire and burns, do not install this lighting system where the exposed bare conductors can be shorted or contact any conductive materials.
- F) To reduce the risk of fire and overheating, make sure all connections are tight.
- G) Do not install any luminaire closer than 6 inches (15.25 cm) from any curtain, or similar combustable materials.
- H) Turn off electrical power before modifying the lighting system in any way.

### SAVE THESE INSTRUCTIONS

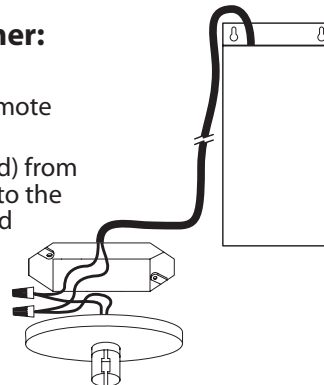
6695 Taylor Rd. Blacklick, OH 43004 [www.besalighting.com](http://www.besalighting.com)

Monorail Installation, Rev. 8 12-21

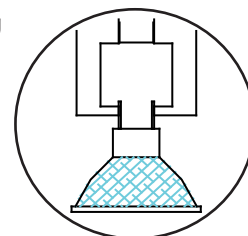
## 1 Transformer Installation

### For Remote Transformer: (R12-RM300 or R12-RM600)

- A) Determine accessible Remote Transformer location.
- B) Extend wire (not provided) from the Remote Transformer to the J-Box for the Remote Feed Canopy (R12-REMFC).
- C) Install the Remote Feed Canopy to the J-Box.



**IMPORTANT:** After installing transformer canopy, verify operation with 12V lamp. If lamp fails to illuminate, the transformer may be defective and require replacement.

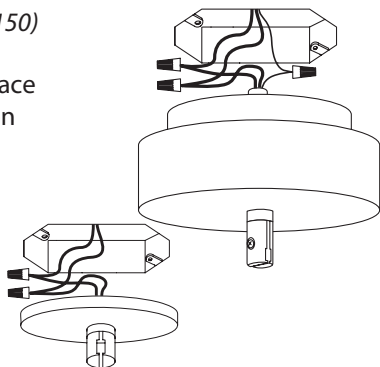


## 2 Transformer Installation

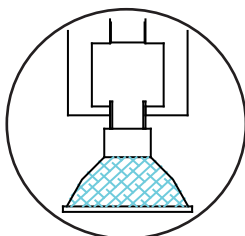
### For Surface Transformer :

(R12-SM300 or R12-SA150)

- A) Determine the Surface Transformer location
- B) Install the Surface Transformer to the J-Box.



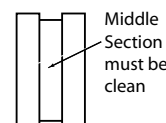
**IMPORTANT:** After installing transformer canopy, verify operation with 12V lamp. If lamp fails to illuminate, the transformer may be defective and require replacement.



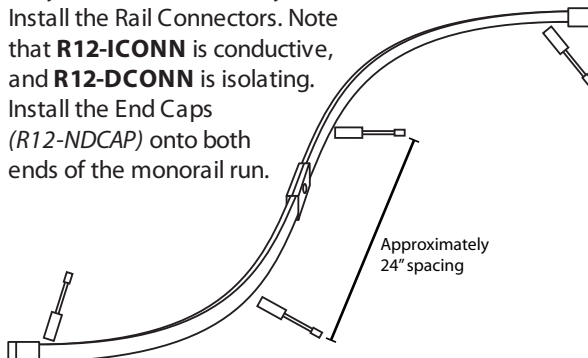
## 3 Lay Out the Rail Sections

- A) Position the rail sections on floor and determine the layout design.
- B) If necessary, field cut and hand bend the rail to the desired length and shape.

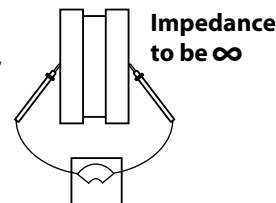
**IMPORTANT:** After field-cutting, clean middle section to eliminate all metal fragments. Do not use the Rail Connectors on the field-cut of the rail, only use with the factory cut side.



- C) Install the Rail Connectors. Note that R12-ICONN is conductive, and R12-DCONN is isolating.
- D) Install the End Caps (R12-NDCAP) onto both ends of the monorail run.

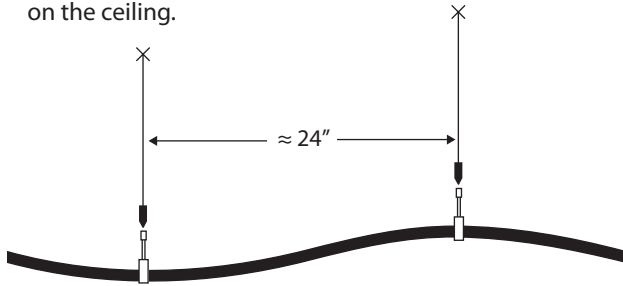


- E) With Rail Sections assembled, test for shorts by applying a multimeter to both sides of rail.

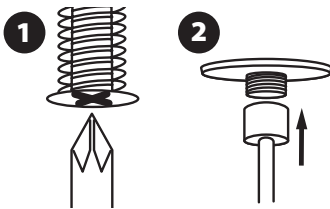


## 4 Install Monorail Standoffs

- A) With the rail layed out on floor, estimate the Standoff locations based on 24" spacing.
- B) Using a plumbline, mark the Support locations on the ceiling.

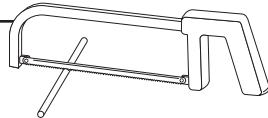


- C) Install the Supports onto the ceiling, then thread on Standoffs.



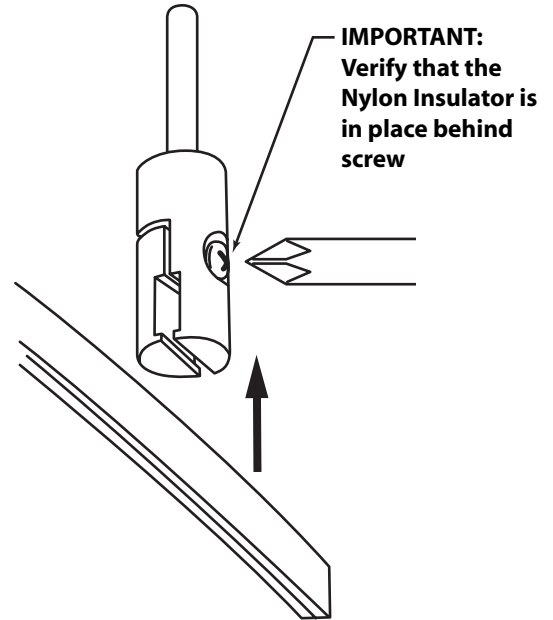
### NOTE:

If necessary, cut the Support (R12-STAN1 or R12-STAN2) posts to the desired length.



## 5 Install the Rail

Raise the rail and secure to the Supports and the Transformer Feed.

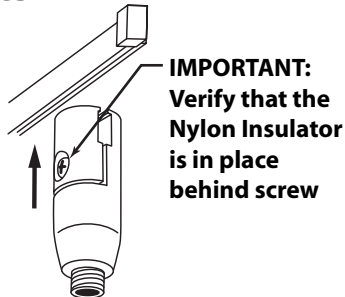


### HINT:

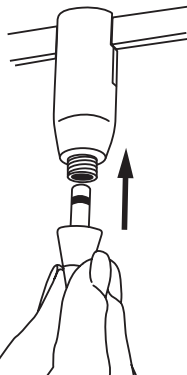
For long runs, it is easiest to install the rail sections first, then install the rail connectors.

## 6 Install the Rail Adapters and Elements

- A) Secure the Rail Adapters to rail in the desired location for Pendants or Spotlight Elements.

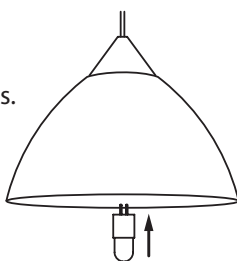


- B) For Pendant Elements, shorten if necessary and install the Quick Connect Jack.



- C) Install the Elements onto the Rail Adapters by threading on the Quick Connect jack.

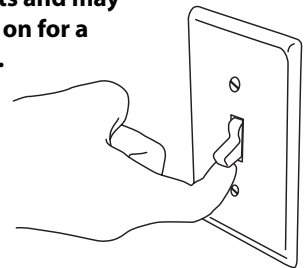
- D) Install the appropriate lamps into the Elements.



## 7 Turn the System On

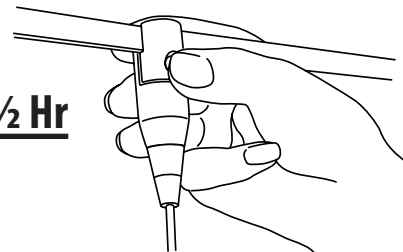
### IMPORTANT:

If system does not turn on, shut off power and refer to the Monorail Troubleshooting Guide. Most likely a rail short exists and may damage transformer if left on for a prolonged amount of time.



After the first half hour, switch off and check all connections for excessive heat. Loose connections must be tightened to prevent overheating, which can damage the system. Do not overtighten.

1/2 Hr



# TROUBLESHOOTING GUIDE

## 12V Monorail System



BESA LIGHTING

6695 Taylor Rd. Blacklick, OH 43004  
www.besalighting.com

Monorail Troubleshooting, Rev.6 11-10

### SAVE THESE INSTRUCTIONS

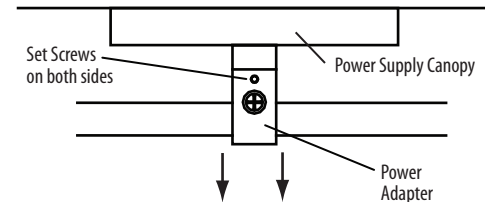
#### A) Problem: The system does not turn on

**Switch off power immediately and turn off power at main circuit breaker. Leaving power on during a short may harm the transformer.**

1. **Confirm that total load does not exceed the maximum output of the Power Supply which is 300 watts (or 150 watts when using the R12-SA150 Power Supply), then check for a short circuit condition at the Rail.**

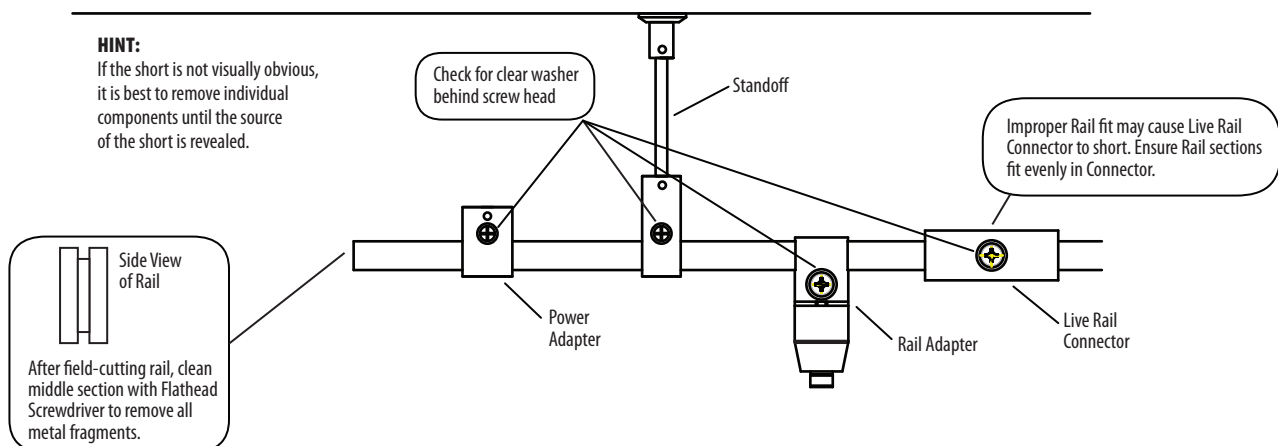
**NOTE:** You will need a continuity tester or multi-meter to check for shorts.

- i. Loosen the Set Screws on the Power Adapter, and disconnect the Power Adapter completely from the Power Supply Canopy.
- ii. Check for continuity by placing a probe on each monorail conductor. **If the tester does NOT light**, proceed to Step 3 on next page.
- iii. **If the tester lights**, remove any Quick Connect Pendants or Fixtures by unthreading the Quick Connects from the Quick Connect Adapters. The Quick Connect Adapters must remain on the Rail.
- iv. Check for continuity by placing a probe on each monorail conductor. **If the tester does NOT light**, proceed to Step 2 below.
- v. **If the tester lights**, it is indicating a short circuit which is unintended. The most common reason for a Rail short is a missing washer behind the screw heads on the Standoffs or the Rail Adapters. Some additional reasons are shown in the diagram below. Contact your local Besa Distributor or Besa Customer Service if any replacement parts are needed.



#### HINT:

If the short is not visually obvious, it is best to remove individual components until the source of the short is revealed.

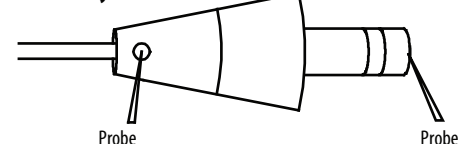


2. **It is possible that a short or open circuit exists at the Quick Connect Jack.**

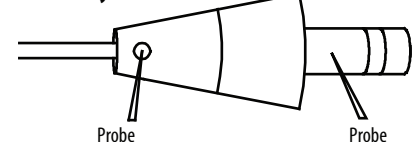
**NOTE:** You will need a continuity tester or multi-meter to check the Quick Connect Jack.

- i. Remove the lamp. Place a probe on the base of the collar and the other on the end of the Quick Connect Jack, per Continuity Test #1. **If the tester lights**, it is indicating a short circuit, refer to the **Quick Connect Repair** section on next page. **If the tester does NOT light**, move to the next step to check for an open circuit.
- ii. Reinstall lamp and perform the same continuity test as above. **If the tester lights**, then the Quick Connect Jack has been installed properly and you can proceed to Step 3 on next page. **If the tester does NOT light**, move to the next step to check for an open circuit.
- iii. Perform an additional continuity test with the probes shown in Continuity Test #2. **If the tester does NOT light**, the Quick Connect Jack part is defective and needs to be replaced. **If the tester does light**, refer to the **Quick Connect Repair** section on next page.

#### Continuity Test #1



#### Continuity Test #2



**For Replacement Parts, Contact your local Besa Distributor or Besa Customer Service.**

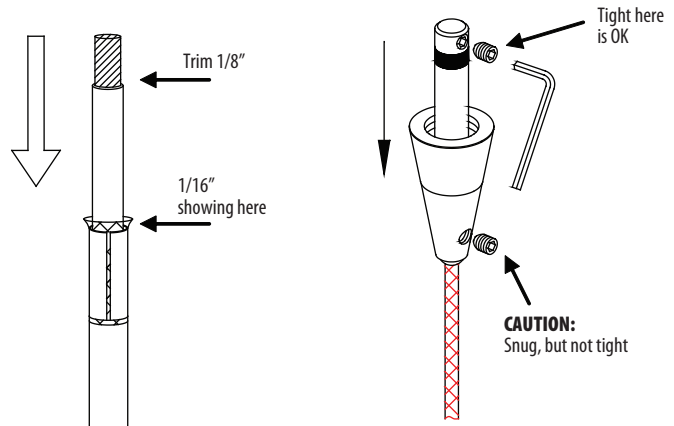
**Besa Customer Service**

Email: [support@besalighting.com](mailto:support@besalighting.com) Phone: 1-866-917-8760

## Quick Connect Repair

Remove the Quick Connect Jack from the cord and follow the troubleshooting directions below:

1. Verify that 1/8" of insulation has been trimmed from the inner wire.
2. Verify that approx. 1/16" of braided wire protrudes from the top of the collar.
3. The distance from the bottom of the collar to the top of the inner wire should be 1 3/4".
4. Reinstall the Quick Connect part, verifying that the 1/8" of bare conductor has been extended into the top part. The top set screw must make contact with the bare conductor.
5. Perform continuity check before mounting. If an open or short still exists, then a complete Quick Connect reinstall is recommended. Cut the cord below the collar and follow the instructions provided with the pendant.



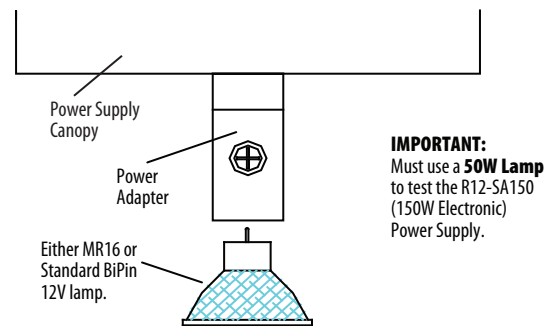
### 3. Confirm that the Power Supply is operating properly. For a magnetic Power Supply, simply use a multi-meter to confirm 12V output. For an electronic Power Supply, see below.

**NOTE:** Verify that the Power Supply Circuit Breaker is reset before testing operation.

- i. Our electronic Power Supply output (R12-SA150) is high frequency and cannot be seen by most multi-meters. A simple lamp test can verify the status of the Power Supply.

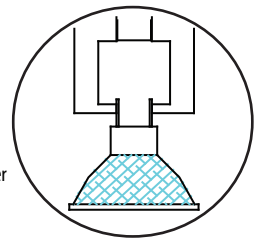
**CAUTION: Have a qualified person perform this operation. Do NOT hold Lamp with bare hand as Lamp heats quickly and may cause injury. Hold the Lamp carefully using pliers or insulated gloves.**

- ii. Remove Rail from Power Adapter coming from the Power Supply, then restore power to the Power Supply.
- iii. Hold a 12volt lamp and raise it to the Power Supply. Touch the pins of the lamp to the inner edges of each half of the Adapter. **Do this only for 1 to 2 seconds! A lit lamp indicates a good Power Supply.** Contact your local Besa Distributor or Besa Customer Service if a replacement Power Supply is needed.
- iv. Turn off power and reinstall Monorail to the Power Adapter.



**IMPORTANT:** Must use a **50W Lamp** to test the R12-SA150 (150W Electronic) Power Supply.

**IMPORTANT:** Lamp will **NOT** light when contacting bottom or outside of the adapter halves. Only the inner edges of the adapter halves will light the lamp.



### B) Problem: Sections of the system (not the fixtures) feel hot to the touch.

1. Heat is an indication of a poor electrical connection. The high current in low voltage systems requires intimate contact between conducting parts. If only a partial connection is present the system may still operate but the current flow through the small contact area will heat up.  
**CORRECTIVE ACTION:** Make sure connections involve firm metal to metal contact, firmly tighten the screws on rail adapters, quick connects and fixture adapters. Operate system for 20 to 30 minutes and re-check the hot spot. If not corrected replacement of the part is warranted.

### C) Problem: Lights burn out quickly, or burn very brightly.

1. Bad socket connection.  
**CORRECTIVE ACTION:** Inspect Lamp Pins and Socket Contacts for evidence of discoloration. Pendant Lead replacement is necessary if the Socket Contacts are discolored.
2. Finger oils on quartz lamps.  
**CORRECTIVE ACTION:** Wipe the glass with a clean soft cloth on all lamps after installation.

### D) Problem: System comes on but lights flicker or are dim.

1. Insufficient minimum load..... (Electronic transformers only)  
**CORRECTIVE ACTION:** Increase lamp load to above the minimum (see transformer instruction sheet).
2. Wrong lamps installed; 24 volt lamps operating from a 12 volt power supply.  
**CORRECTIVE ACTION:** Re-lamp with 12 volt lamps.
3. If lamps become dim or flicker after operating normally over for a period of time. This is a sign of deteriorating 12volt connections due to the high current.  
**CORRECTIVE ACTION:** Re check all secondary connections, paying close attention to any discoloration, oxidation or hot spots and tightening loose connections. Pendant Lead replacement is necessary if the Socket Contacts are discolored.

### E) Problem: The circuit breaker on the main panel trips on initial power up.

1. There may be a short on the 120-volt side of the transformer.  
**CORRECTIVE ACTION:** Check all connections and repair if needed, then confirm operation.