

# **AR500™ Exterior Wash Luminaire**

## **UL/cUL LISTED and CE Marked for Wet Locations**

### **Owners Manual**

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#### **Reporting Errors and Recommending Improvements**

You can improve this manual. If you find any mistakes or if you know of a way to improve procedures, please let us know. Send your letter to:

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Revision D	12 January 2000

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## Patent and Trademark Notice

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U.S. Patents No. 5,728,994; 5,367,444; 5,186,536; 5,073,847; 4,779,176; 4,602,321; 4,392,187;

U.S. Design Patents No. D 350,408;

Australia Patents No. 683,695; 667,109; 649,264; 646,588; 586,095; 576,400; 546,433;

Australia Designs Reg. No. 128,796; 128,795;

Canada Patents No. 2,070,670; 2,050,375; 1,270,675; 1,259,058; 1,181,795;

Canada Design Patent No. 81,234; 81,233; 76,046;

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France Designs Reg. No. 370297 - 3703003;

German Patents No (DBP) 96314122.0; 69208615.3; 69121029; 3768727; 3279888; 3274291;

German Design Reg. No. M9402951.2;

Hong Kong Patents No. 965/1990; 285/1987;

Japan Patents No. 2,059,669; 2,055,324; 1,889,481; 1,770,241; 1,723,825; 1,683,007; 1,533,011;

Japan Design Reg. No. 1,002,123; 985,985;

Korea Patent No. 76,310; 42,639

Korea Designs Reg. No. 209,896; 209,895;

Mexico Patent No. 180,148;

Singapore Patents No. 663/90; 134/87;

Spain Patents No. 2.031.748; 2.020.960; 548.328;

Spain Design Reg. No. 137.502; 137.501; 133.573;

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## Chapter 1. Introduction

This chapter describes the scope and maintenance concept, as well as recommended safety practices and manual organization.

## 1.1 Scope

This is an owners manual for the **IRIDEON® AR500™** exterior wash luminaire. The information in this manual requires some basic knowledge of optics, electronics, and electrical repair. This manual is divided into nine major topics: Introduction, Description, Installation, Test, Troubleshooting, Maintenance, Optional Accessories, Replacement Parts/Wiring Diagrams, and Software License/Limited Warranty.

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## 1.2 Maintenance Concept

Luminaire installation, power connections, or internal electrical component repair should be performed by an electrical contractor only. Maintenance, such as changing a lamp or linear actuator, may be performed by in-house maintenance personnel. Please read each procedure section thoroughly before performing any necessary maintenance.

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## 1.3 Recommended Safety Practices

- Extreme caution must be taken when working with any electrical device.
- Never perform internal maintenance or external cable repair when power is supplied to luminaire.
- Do not expose internal components to moisture, dust, or dirt.
- Do not drop, drag, or hammer on any part of the luminaire.
- Do not touch lamp, reflector, or dichroic filters with uncovered fingers.
- The head assembly is very heavy; loosen with caution.
- Do not mount stanchion assembly up-side down. The stanchion contains a very heavy ballast assembly that would slide out when stanchion cap is removed.
- **Electronic Theatre Controls, Inc.** is not liable for any personal injury or equipment damage that may occur when performing luminaire maintenance.

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**WARNING:** This appliance must be earthed. Flammable objects must be kept a minimum of 13'-2" (4.0 m) from lens.

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**CAUTION:** Be careful when loosening 1/4 inch Allen screw, 3/4 inch bolt and 1 1/4 inch nut installed in tilt tube clamp and remote mounting foot. This unit is very heavy and could rotate quickly once it is loosened.

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## 1.4 Manual Organization

This manual contains all relevant information pertaining to the installation, testing, troubleshooting, and maintenance of the **AR500** standard and remote luminaire versions. In the Installation chapter, the “Luminaire Installation Procedure” section contains complete installation instructions for both standard and remote luminaire versions.

Reference dimensions and measurements are given in English and metric.

It is important to note that this manual incorporates distinct type styles to differentiate between various types of text. These styles are defined as follows:

<b>Boldface</b>	Trademarked product.	Example: <b>AR500™</b> luminaire
<u>Underline</u>	References to other chapters or sections in this manual	Example: See <u>Wiring to Stanchion</u> .
<b>WARNING:</b>	Indicates incorrect procedure may cause bodily harm.	
<b>CAUTION:</b>	Indicates incorrect procedure may cause equipment damage.	
<b>Note:</b>	Indicates particular items of interest.	

## 1.5 Technical Assistance

The **AR500** luminaire is a low - maintenance luminaire, but in the event of malfunction, troubleshooting and repair procedures have been included. For further assistance or questions regarding the **AR500** luminaire, please contact the Electronic Theatre Controls Technical Support staff in Middleton, Wisconsin U.S.A. at 608-831-4116 or toll-free at 800-688-4116. You may also Email ETC at [Service@etconnect.com](mailto:Service@etconnect.com).

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## Chapter 2. Description

This chapter describes basic features, capabilities, and configurations for the **AR500** luminaire.

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## 2.1 Basic Features and Capabilities

The IRIDEON® AR500™ exterior wash luminaire is a specialized outdoor floodlight that features a patented, computer-controlled, dichroic color-changing assembly and optional diffuser or douser mechanism. The luminaire is designed for use in wet locations, with national and international safety listings.

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### 2.1.1 Color

The radial color changer has permanent dichroic filters to produce smooth color crossfades through the entire color spectrum. A dichroic filter is a rotating piece of coated glass that allows only a limited spectrum of light to pass through. Using three sets of dichroic filters, blue, amber, and magenta, the entire visible color spectrum can be projected.

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### 2.1.2 Diffuser/Douser

Beam control is available via either a diffuser or douser mechanism. The diffuser mechanism provides precise and dynamic control of beam distribution. The douser mechanism provides full-field dimming of beam intensity.

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### 2.1.3 Controllers

The AR500 luminaire may be controlled by two types of control systems: the IRIDEON® Composer™ control system and standard DMX-512 control systems. The Composer control system may be supported by only a PC; a PC and Master Control Processor; or a PC, Master Control Processor and Remote stations. DMX 512 only control may be obtained using a DMX Interpreter and a programmable lighting controller. The following sections describe each configuration.

In a DMX 512 system, each exterior luminaire requires four DMX 512 channels. Three channels are used to control the three color filter assemblies and another channel controls either a diffuser or a douser.

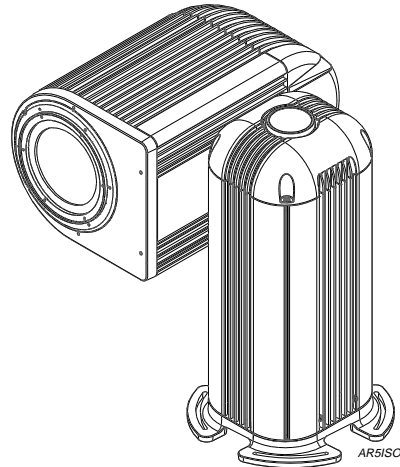
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**Note:** The DMX Interpreter is only required if the AR500 luminaires contain a Composer control circuit board on the electronics plate. Refer to section 2.2.2.2. Electronics Plate for electronics plate version identification.

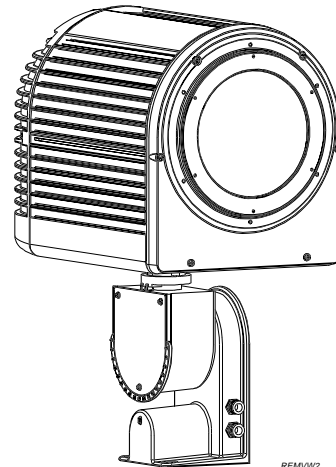
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### 2.1.4 Luminaire Versions

The **AR500** luminaire is available in two versions: the **Standard Version** and the **Remote Ballast Version**. The Standard Version consists of a head enclosure, which houses the floodlight, mounted directly to a stanchion. The Remote Ballast Version features a head enclosure equipped with a mounting foot, which allows the floodlight to be placed independent of its stanchion.



Standard Version



Remote Version (Head Only)

### 2.1.5 Technical Specifications

UL, cUL LISTED and CE Marked for Wet locations

**Enclosure:** Non-corrosive aluminum, natural convection-cooled enclosure, listed for wet locations, with a surface mount stanchion.

**Lamp Type:** Philips MSD700: 700-watt short-arc metal halide lamp. 3000 hour rated life; 75 CRI, 5900°K color temperature.

**Ballast Assembly:** Custom magnetic ballast with worldwide voltage options. Mounted with control and ignitor in stanchion, prewired with 10 feet (3m) of outdoor rated AC flexible cord and 10 feet (3m) of low capacitance data cable. Remote Ballast option is available.

**Color Change: Dichro\*Tune™:** radial color changer with independent blue, amber and magenta time variable color control.

**Light Distribution:** One of five lenses provide beam spreads from 9° to 62°.

**Beam Control:** Time variable dynamic diffusion mechanism or full-field dousing mechanism.

**Control: Composer** control system or minimum of four DMX512 channels per luminaire are required.

Channel	Filters & Diffuser/Douser
1	Blue Filters
2	Amber Filters
3	Magenta Filters
4	Diffuser/Douser Panels

**Fixed Focus Range:** Focus is manually adjustable through:  
348° vertical and 45° horizontal (standard mount); or  
180° vertical and 360° horizontal (remote head).

**Total Luminaire Weight:** Approximately 144 lbs (65 kg) or less, based on configuration. Stanchion weighs 82 pounds (37.19 Kg ) or less, depending on voltage configuration; head enclosure weighs 62 pounds (28.12Kg).

## 2.2 Configurations

### 2.2.1 Optical

Optional lenses provide a wide range of beam spreads from 9° to 68°. The following table lists characteristics of each available lens (clear, light stipple, 8-row Lenticular, 10-row Lenticular, 12-row Lenticular).

Source: MSD 700 Lamp

Optical Lens	Diffusion	Candela (cd)	Beam Angle (50% Intensity)	Beam Diameter Tn <sup>1</sup>	Field Angle (10% Intensity)	Field Diameter Tn <sup>1</sup>
Clear (Very Narrow Spot)	Zero	1,300,000	4 x 4	.07	9 x 9	.16
	Full	110,000	14 x 14	.25	30 x 30	.54
Light Stipple (Narrow Spot)	Zero	650,000	6 x 6	.10	12 x 12	.21
	Full	95,000	15 x 15	.26	31 x 31	.56
8-Row Lenticular (Narrow Flood)	Zero	160,000	21 x 8	.38/.14	28 x 16	.50/.28
	Full	65,000	22 x 15	.38/.27	38 x 31	.69/.56
10-Row Lenticular (Medium Flood)	Zero	125,000	19 x 11	.34/.19	30 x 19	.54/.34
	Full	60,000	21 x 15	.37/.27	39 x 32	.71/.58
12-Row Lenticular (Wide Flood)	Zero	42,000	45 x 16	.82/.28	59 x 26	1.13/.46
	Full	30,000	41 x 19	.75/.33	62 x 36	1.2/.64

<sup>1</sup> Multiply Distance by Tn to determine coverage.

To calculate illuminance at a specific distance (D);  $I = \frac{cd}{D^2} (\cos \varnothing)$ , where  
cd=Candela.

## 2.2.2 Electrical

The **AR500** luminaire is available in different voltage and control configurations. Voltage configurations are obtained by configuring the ballast plate with the appropriate circuit breaker and transformer (in some cases no transformer is required). The luminaire control configurations are determined by the control circuit board on the electronics plate. The following sections describe each configuration.

### 2.2.2.1 Ballast Plate

The **AR500** luminaire is available in several voltage configurations to accommodate specific power requirements. These configurations are as follows: 100VAC, 120VAC, 200VAC, 208VAC, 220VAC, 230VAC, 240VAC, and 277VAC. To determine Ballast Assembly, Transformer, and Circuit Breaker part numbers for your particular voltage configuration, refer to chart below:

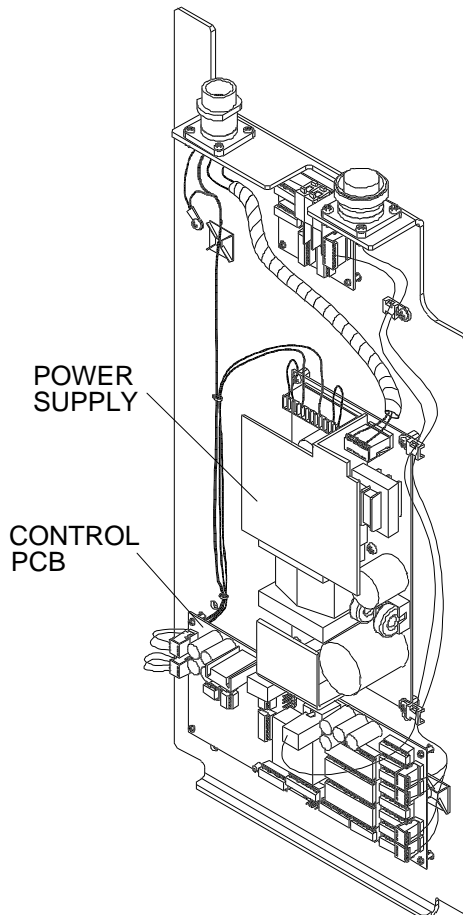
Your Voltage Configuration	Ballast Assembly Part Number		Transformer Part Number	Circuit Breaker Part Number
	Standard Version	Remote-Ballast Version		
100VAC, 50Hz	7091B2001	7091B2009	L192	CB237
120VAC, 60Hz	7091B2002	7091B2010	L189	CB235
200VAC, 50Hz	7091B2007	7091B2015	L193	CB236
208VAC, 60Hz	7091B2003	7091B2011	L193	CB234
220VAC, 50Hz	7091B2006	7091B2014	N/A	CB233
220-240VAC, 60Hz	7091B2008	7091B2016	N/A	CB234
220-230VAC, 50Hz	7091B2006	7091B2014	N/A	CB234
240VAC, 50Hz	7091B2004	7091B2012	N/A	CB234
277VAC, 60Hz	7091B2005	7091B2013	L193	CB234



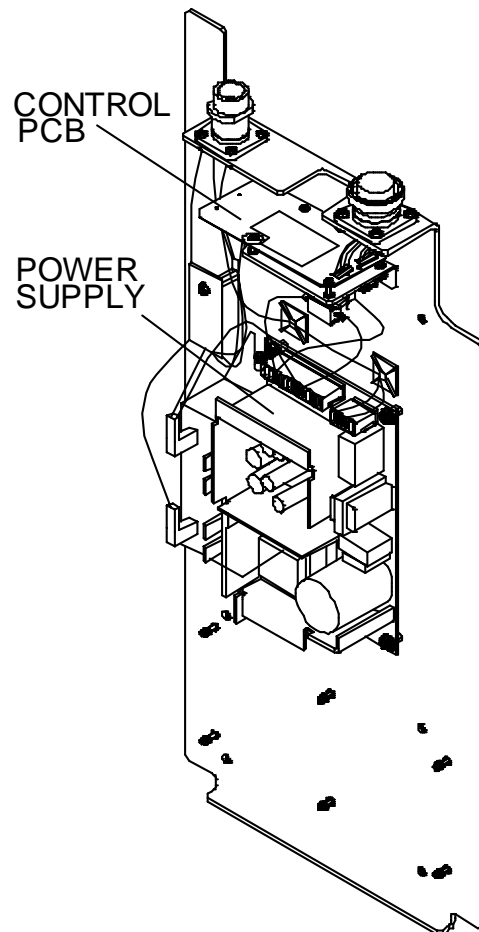
### 2.2.2.2 Electronics Plate

The **AR500** luminaire may be controlled with a DMX console or the **Composer™** lighting control system. Currently, there are two types of electronics plates; the original design (DMX only) and the **Composer** controller version. The **Composer** controller version will accept Composer and DMX signal (with a DMX Interpreter). The electronics plate contains the signal control printed circuit board (PCB) and a DC power supply.

Control System	Electronics Plate Part Number
DMX Only	7091A2013
<b>Composer</b> and DMX	7091A2019



**DMX Only Electronics Plate**



**Composer Controller Electronics Plate**

## 2.2.3 Control Systems

The **Composer** control system may be supported by only a PC; a PC and Master Control Processor; or a PC, Master Control Processor and Remote stations. DMX-512 control may be obtained using a DMX Interpreter and a programmable lighting controllers. The following sections describe each configuration.

**Note:** The DMX Interpreter is only required if the **AR500** luminaires contain a **Composer** control circuit board on the electronics plate. Refer to section 2.2.2.2. Electronics Plate for electronics plate version identification.

### 2.2.3.1 PC Only Control System

In the PC only control system, 31 **IRIDEON** luminaires can be supported on a single data run with single zone control utilizing the **IRIDEON** data protocol for luminaire operation. RS232 to RS485 data conversion is required for the PC to connect directly to the luminaires. This may be accomplished by either an RS485 communications card added to the PC or an RS232 to RS485 conversion module.

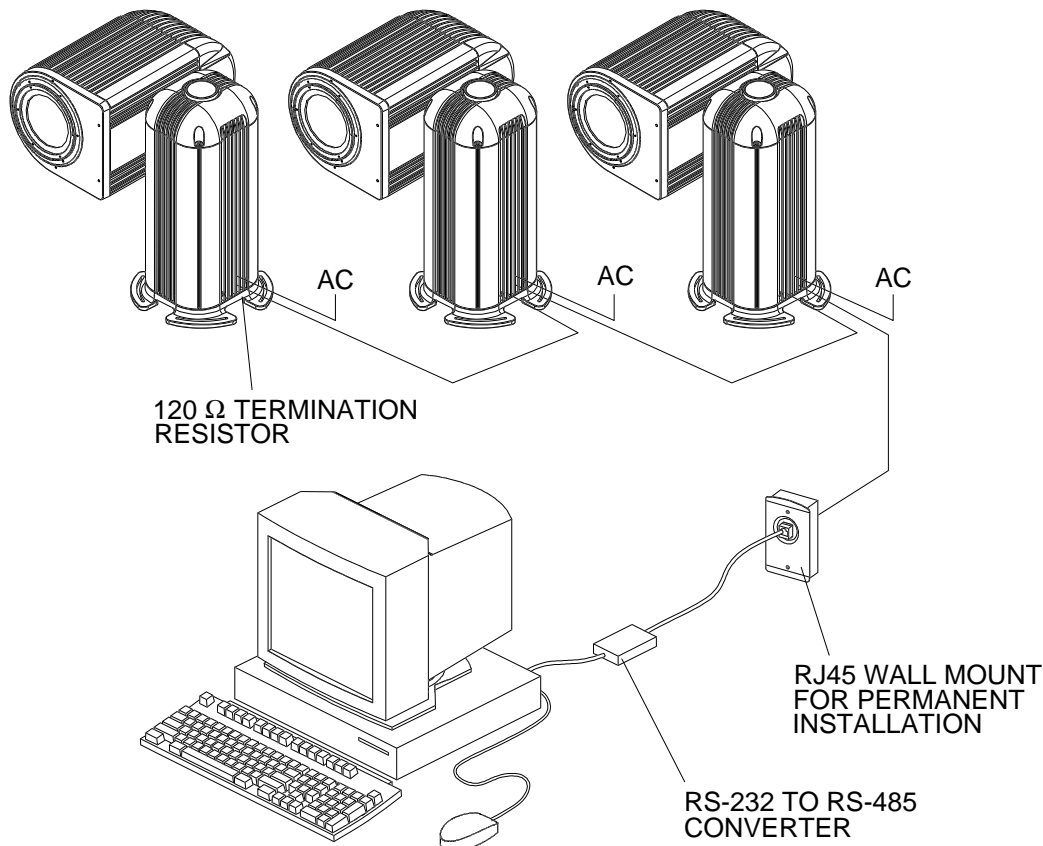


Figure 2-1. PC Only Control System

### 2.2.3.2 MCP Control System

A control system featuring a Master Control Processor (MCP) is able to support 31 **IRIDEON** luminaires on 2 data runs for a total of 62 luminaires utilizing the **IRIDEON** data protocol for luminaire operation. Optional remote stations provide the added flexibility of global and zone specific recall buttons, dual button entry stations, and eight event closure/join stations. You may have a total of 31 stations.

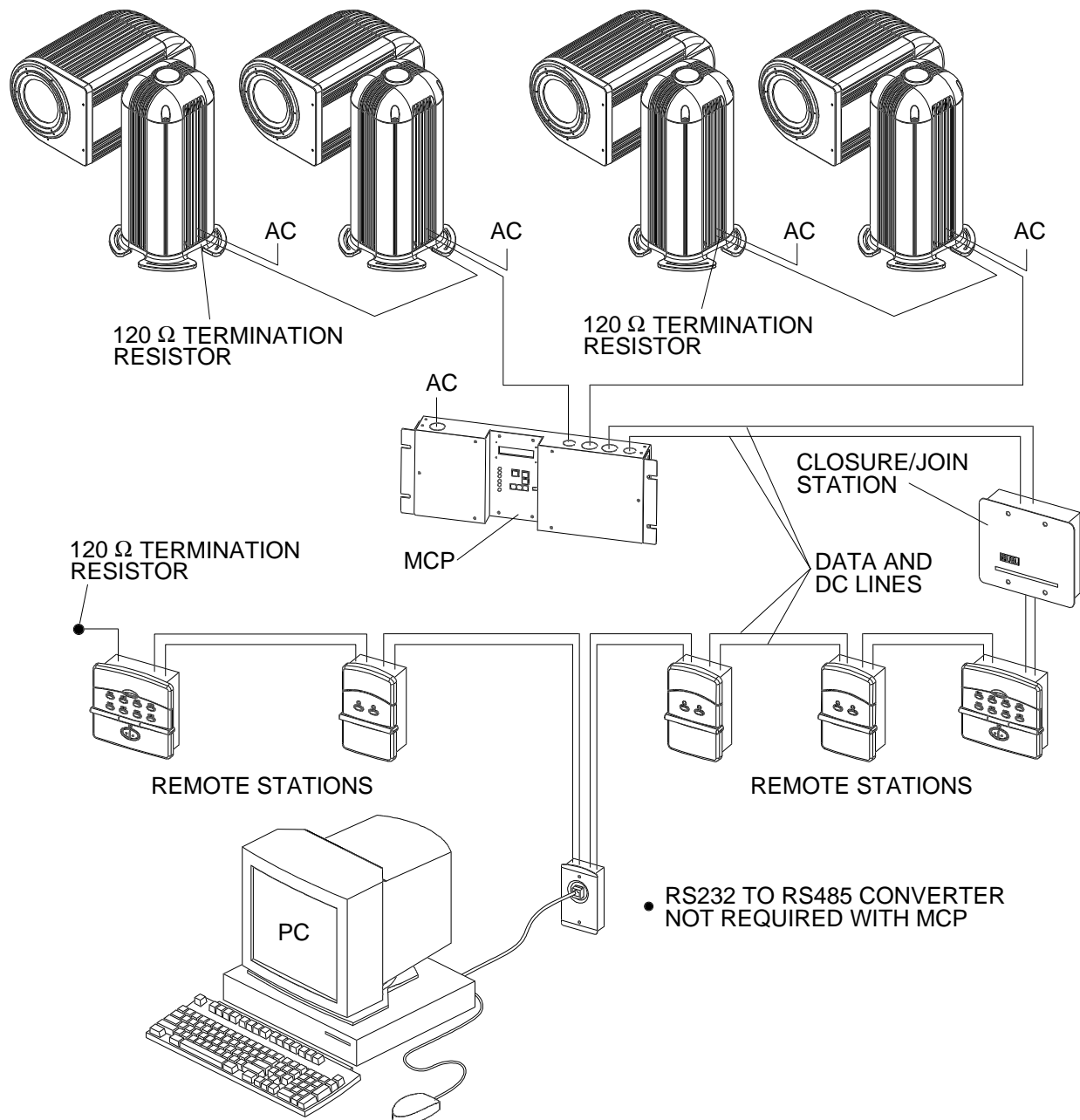
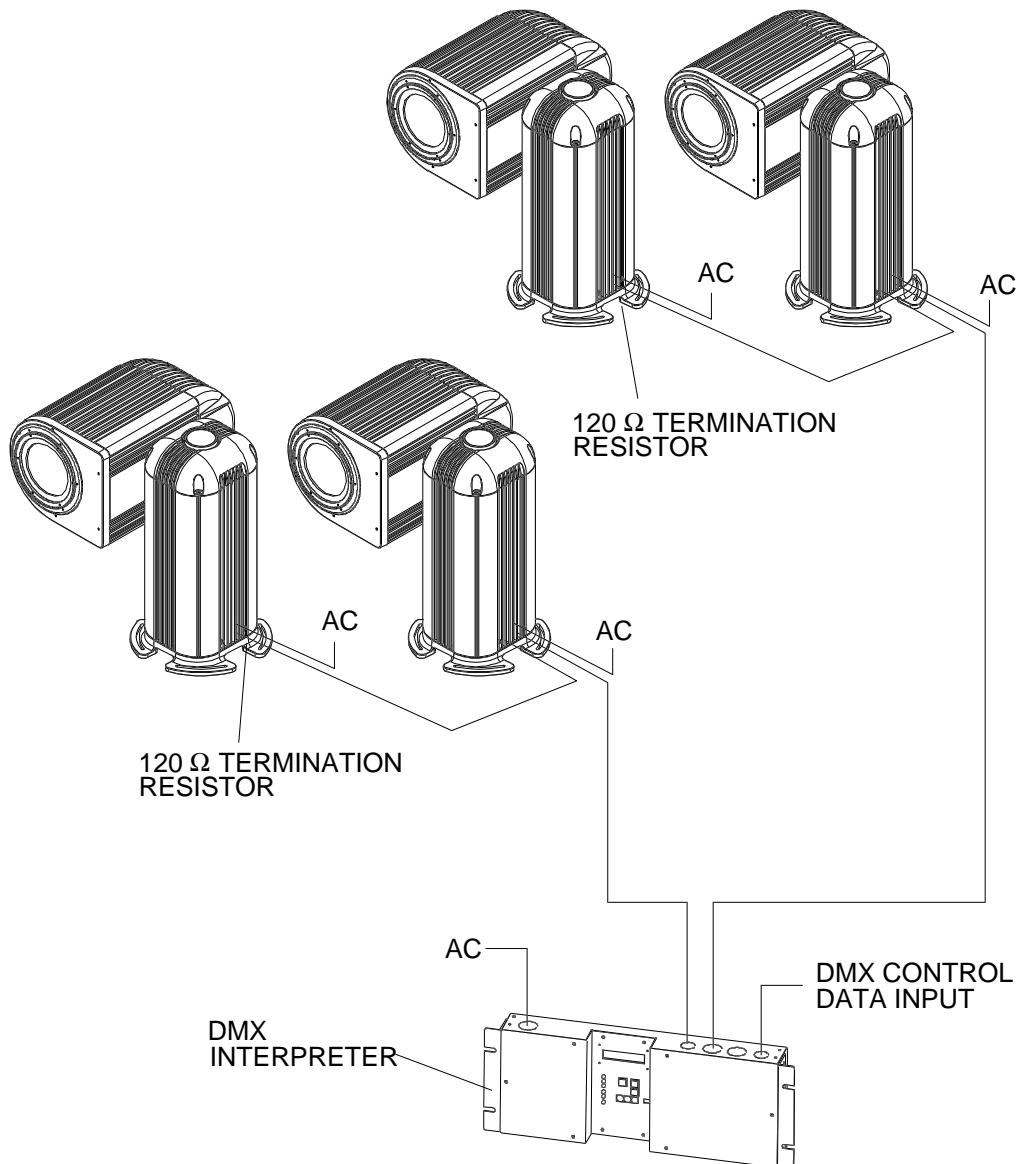


Figure 2-2. MCP with Optional Remote Station Control System

### 2.2.3.3 DMX Interpreter Control System

The DMX Interpreter receives DMX 512 data and converts the data to the **IRIDEON** data protocol for each luminaire operation. Up to 31 **IRIDEON** luminaires are supported on each of two data runs for a total of 62 luminaires.

**Note:** The DMX Interpreter is only required if the **AR500** luminaires contain a **Composer** control circuit board on the electronics plate. Refer to section 2.2.2.2. Electronics Plate for electronics plate version identification.



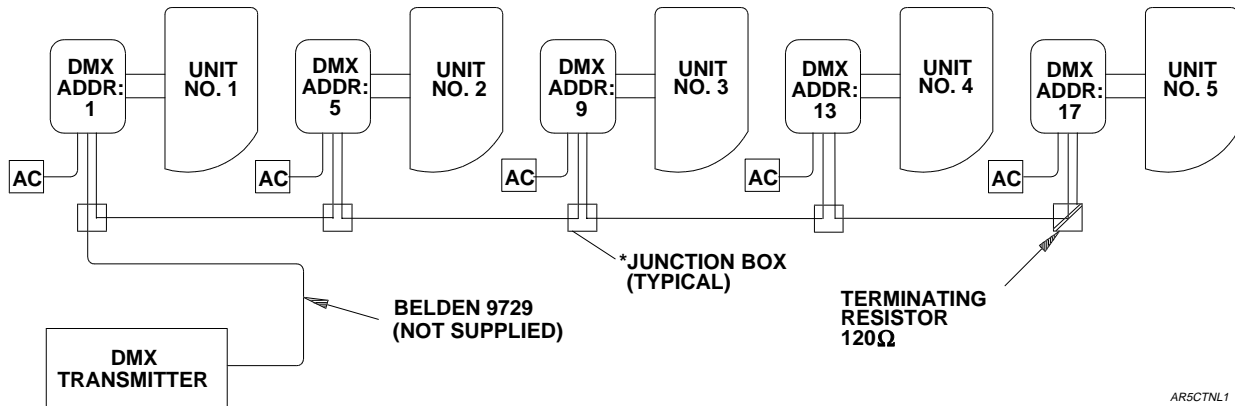
**Figure 2-3. DMX Interpreter Control System**

### 2.2.3.4 DMX 512 Control System (DMX only Control Card)

Early versions of the **AR500** luminaire contain control cards that only work with DMX 512. These luminaires use a standard DMX transmitter/console for operation. DMX only installations may use a single or multiple data runs.

#### Single Data Run

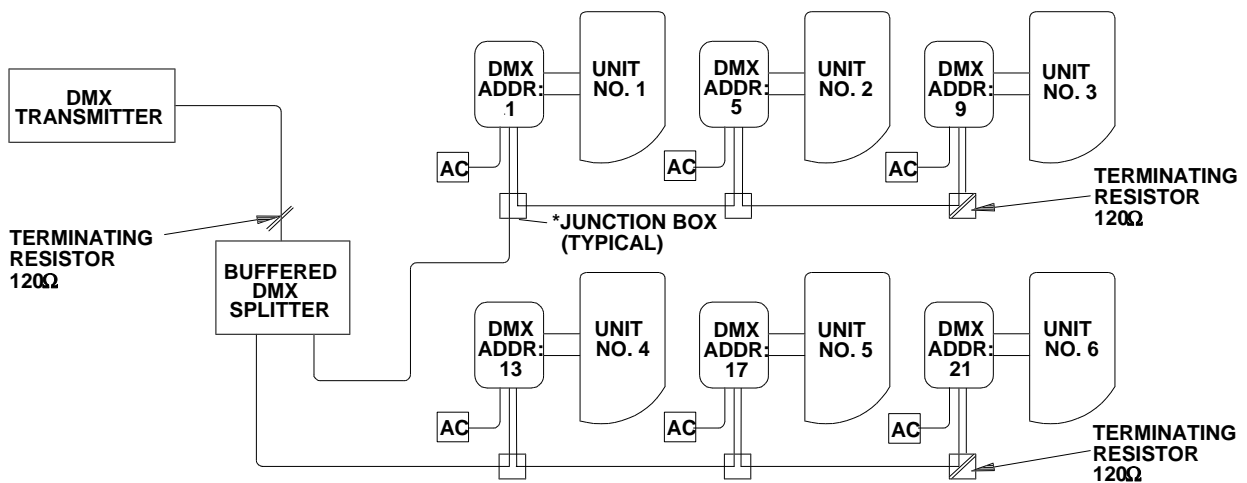
The following illustration displays a five units layout with a single data run. Notice the 120Ω resistor at the end of the data line.



AR5CTNL1

#### Multiple Data Run

The following illustration displays a six - unit layout with a buffered DMX splitter. Notice the three 120Ω termination resistors.

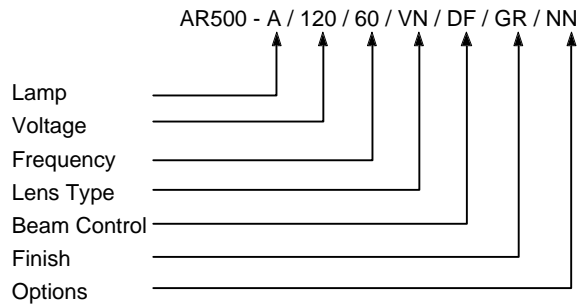


AR5CTNL2

## 2.2.4 Unit Configuration

The AR500 luminaire is factory configurable for many applications. When ordering a new luminaire the configurations are determined by the catalog number. This number is as follows:

### Example:



### Description:

**Lamp:** A = MSD 700

**Voltage:** 100 = 100VAC      220 = 220VAC  
 120 = 120VAC      230 = 230VAC  
 200 = 200VAC      240 = 240VAC  
 208 = 208VAC      277 = 277VAC

**Frequency:** 50 = 50 Hz  
 60 = 60 Hz

**Lens Type:** VN = Very Narrow (Kit)  
 NS = Narrow Spot (Installed)  
 NF = Narrow Flood (Kit)  
 MF = Medium Flood (Kit)  
 WF = Wide Flood (Kit)

**Beam Control:** DF = Diffuser  
 DS = Douser  
 NN = None

**Finish:** GR = Gray (Standard)

For other finishes, consult factory.

**Options:** NN = None  
 RS = Remote Ballast 50' (15m) Cables  
 RL = Remote Ballast 100' (30m) Cables  
 CE = European Configuration  
 TH = Tamper-resistant Hardware

**Accessories:** Tophats  
 Glareshields  
 Rock Guards

## Chapter 3. Installation

This chapter describes the installation requirements and site preparations, as well as luminaire installation, fixture address, and power-up procedures for the **AR500** luminaire.

---

## 3.1 Installation Requirements

Each **AR500** Exterior Wash luminaire is shipped in two cartons, with the stanchion in one carton and the head assembly in another carton. Ensure one stanchion and one head assembly is available for each luminaire to be installed. Lamps, manuals, and accessories are packed in a third carton.

Included in each shipment is an installation tool kit. Check the tool kit for the following items:

- 1-15/16 inch open-ended wrench

- 3/16 inch T-handle Allen wrench

- 120Ω termination resistor

- Depinning tool

Some additional tools will also be necessary in order to complete the installation. Obtain the following items:

- #2 Phillips screwdriver

- #2 Straight slot screwdriver

- 9/16 inch (or 15mm) Socket

- 5/32 inch Allen Wrench

The installation site must provide an adequate mounting platform, sufficient clearance for focus adjustment of the head assembly and stanchion, sufficient access for relamping and other servicing, and provisions for power and data cabling.

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## 3.2 Site Preparations

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**Note:** The installation contractor is responsible for compliance with local electrical codes.

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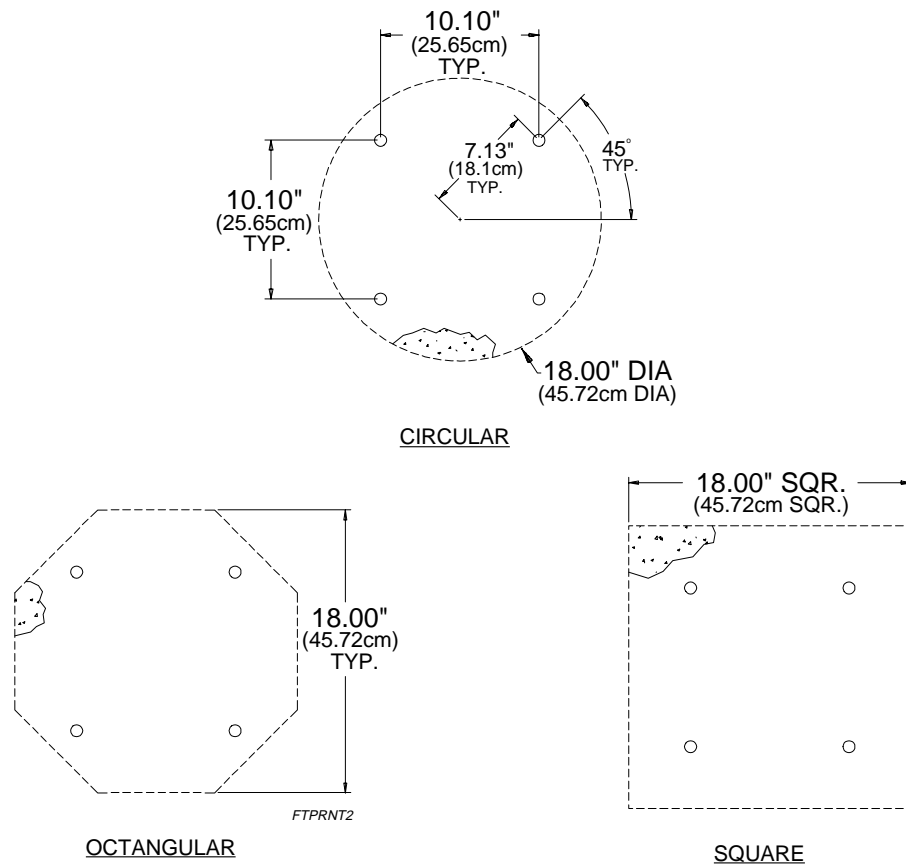
The luminaire stanchion is provided with 10 feet (3 m) data cable and 10 feet (3 m) power cable for external termination. To ensure proper operation, the installation site should be equipped with waterproof junction boxes for data and power cable termination. Data and AC power for each luminaire should be terminated in separate junction boxes, unless a single barriered junction box is installed. Terminal strips, not wire nuts, must be used to terminate wiring.



### 3.2.1 Mounting Platform for Stanchion Assembly

The stanchion mounting platform must have a diameter (or distance across flat sides) of at least 18 inches (45.00cm). The luminaire's mounting plate includes mounting holes sized to provide clearance for four sets of 3/8-18 (M10) (preferably stainless steel). The hole pattern for the mounting plate is a square that is 10.10 inch (25.65cm) on a side [or 10-7/64 inches (5.65cm)square].

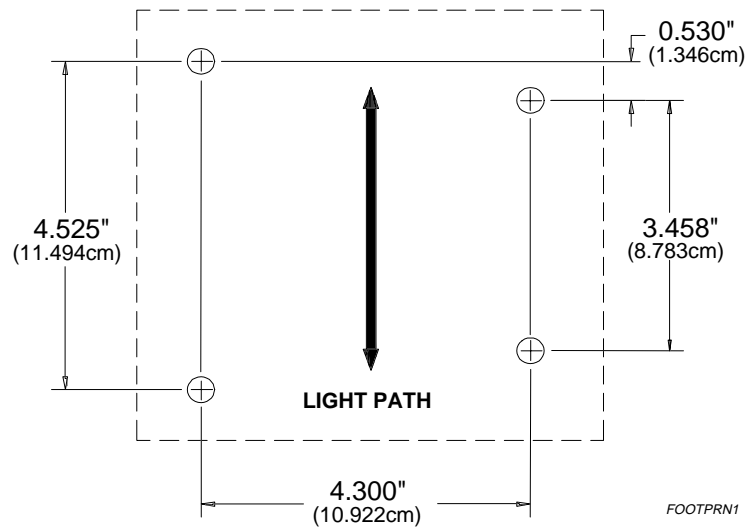
**Note:** Be sure to use four sets of 3/8 inch (M10) hardware when installing unit.



### 3.2.2 Mounting Platform for Remote Head Assembly

The remote head mounting assembly requires a flat surface about 6-1/2 inches (16.51cm) square. The mounting plate includes holes sized to provide clearance for four sets of 3/8-18 (M10) studs (preferably stainless steel). The hole pattern is shown below.

**Note:** Be sure to use four sets of 3/8 inch (M10) hardware when installing unit.



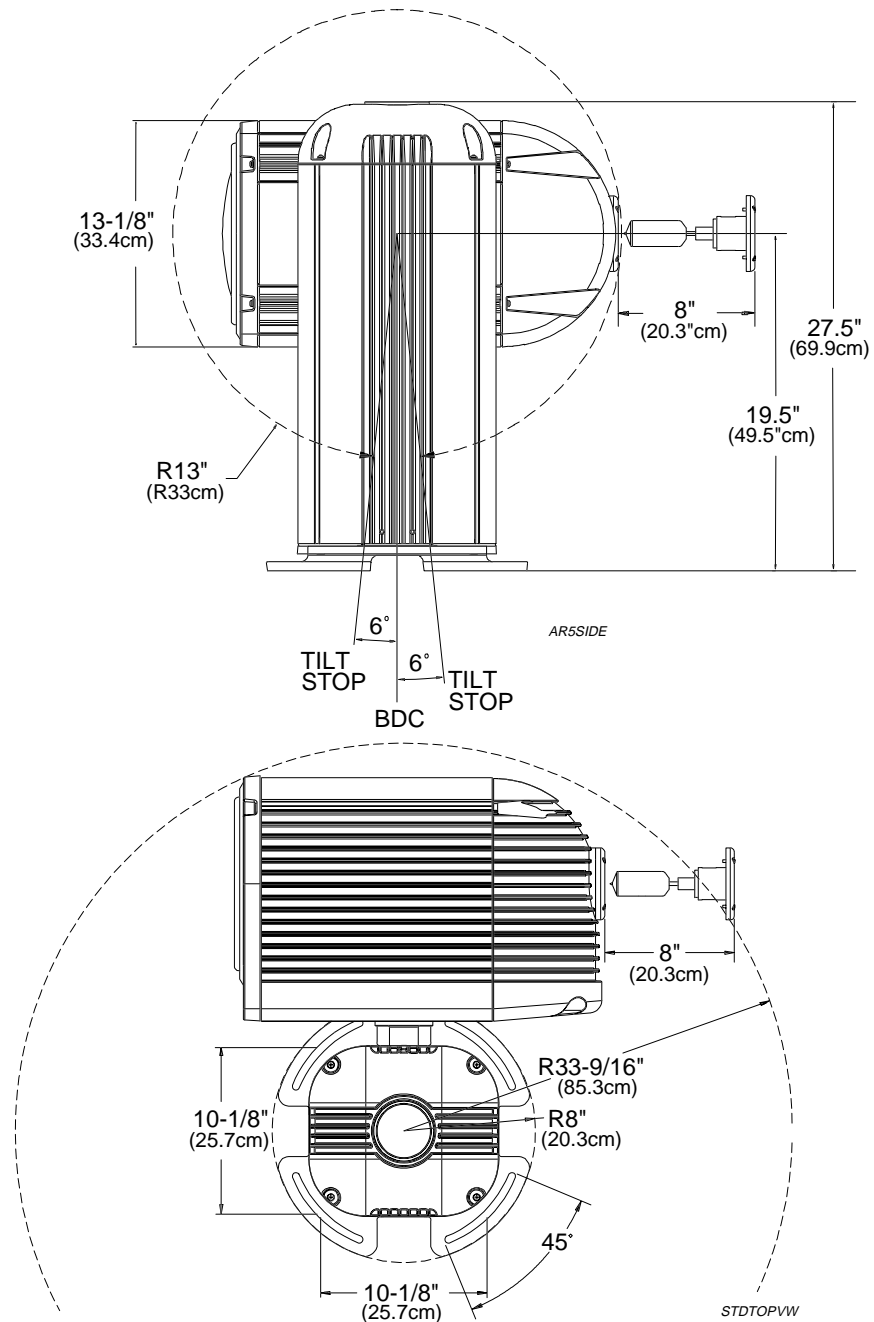
As shown, the head assembly can be installed so that the light is generally directed either forward or rearward of the bolt pattern.

The head assembly can either be installed on a flat horizontal surface or a flat vertical surface as long as the requirements detailed above can be met.

### 3.2.3 Clearance and Access for Standard Version

As shown, the head assembly can be rotated to any orientation thru 348° and requires 13 inch (33 cm) radius clearance around the vertical tilt axis. The stanchion assembly can be rotated 14° and requires 33-9/16 inches (85.3 cm) radius clearance around the horizontal pan axis.

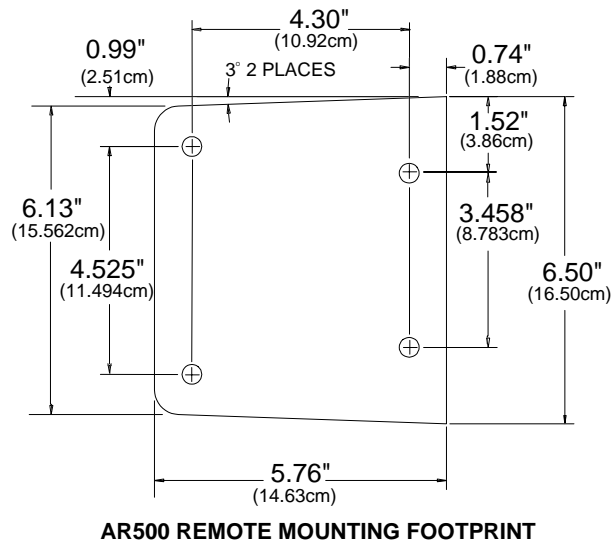
**WARNING:** This appliance must be Earthed. Flammable objects must be kept a minimum of 13'-2" (4.0 m) from lens.



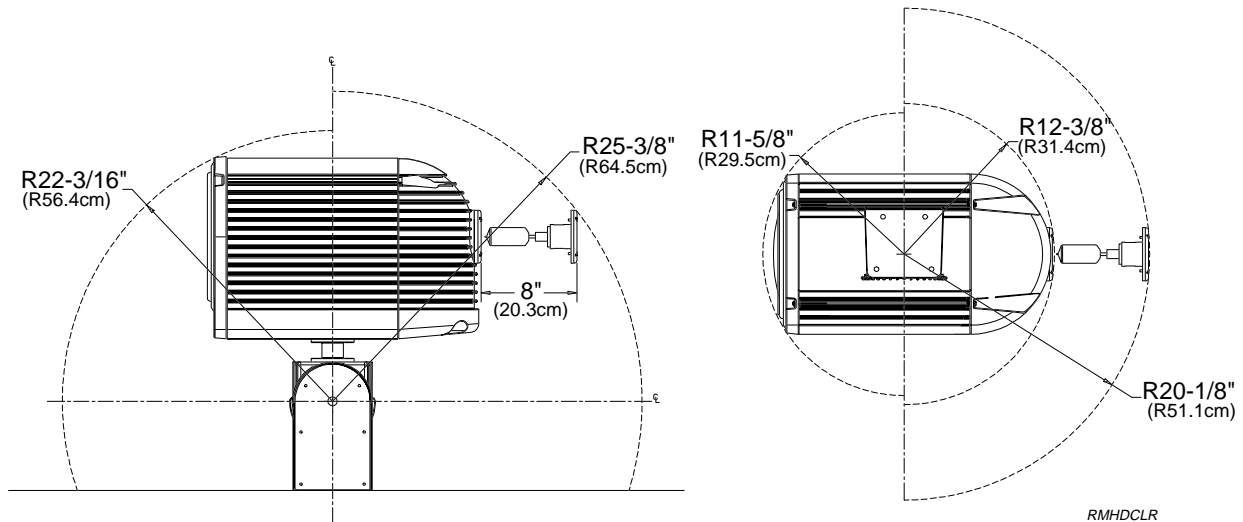
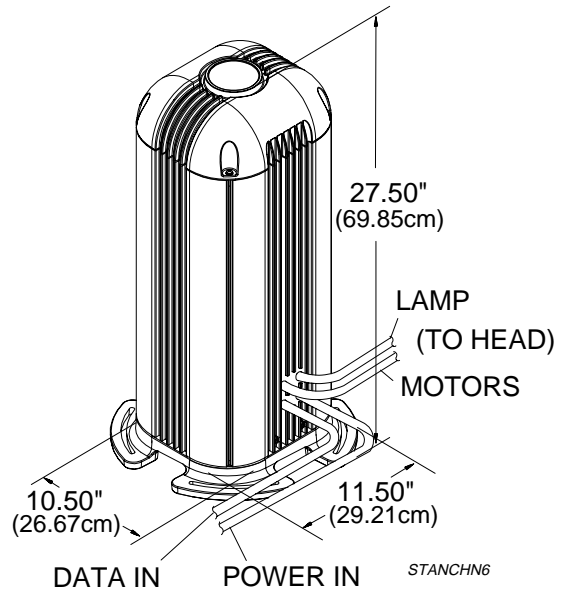
### 3.2.4 Clearance and Access for Remote Version

As shown, the bolt pattern for the remote mounting foot is not square and the stanchion requires an 8 inch (20.32cm) radius clearance all around, with access to cable entrance/exit.

**WARNING:** This appliance must be Earthed. Flammable objects must be kept a minimum of 13'-2" (4.0 m) from lens.



FOOTPRINT

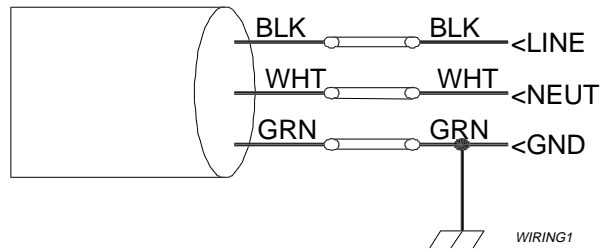


### 3.2.5 Input Power and Control Cabling

Each **AR500** luminaire requires 1000 watts of power at the specified voltage and frequency. The luminaire is provided with 10 feet (3 m) of unterminated power cable type SJOW-A 16-3 (1.5mm<sup>2</sup>). Power wiring is to be connected as follows:

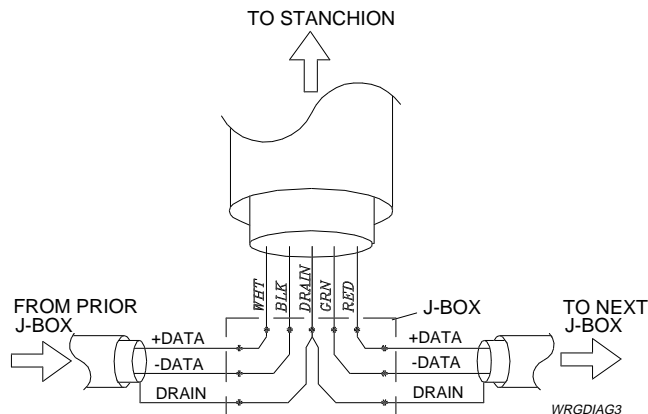
Wire	Connection
Black *(Brown)	AC Line
White *(Blue)	AC Neutral
Green *(Green/Yellow)	Ground

\* - European Model



The control data for the **AR500** luminaire is connected with two shielded twisted-pairs provided in the data cable. For data In and Through configuration, connect data wiring as follows:

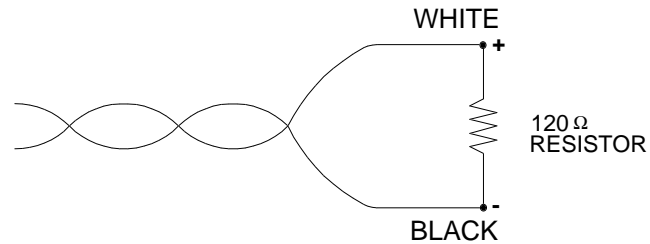
Wire	Connection
White/Red	Positive Data
Black	Negative Data
Drain	Ground



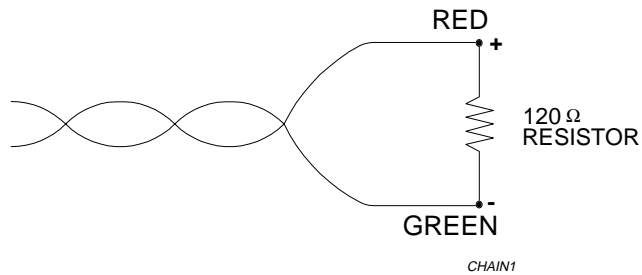
ETC, Inc requires Belden 9729 cable for control signal distribution to the luminaire.

### 3.2.5.1 Data Wire Termination

If the data cable is installed in a daisy-chain (feed-through) configuration, install a  $120\Omega$  termination resistor (provided) at the end-of-line between positive (white or red) data line and negative (black or green) data line. If a MCP, DMX Interpreter, or data splitter is installed, the last luminaire on each data run, as well as the transmitter to splitter data run, must be terminated. [See diagram in [2.2.3.4 DMX-512 Control System \(DMX only Control Card\)](#)]



-OR-



### 3.2.6 Cable Specifications

#### AC POWER INPUT (to stanchion)

Wire Gauge: 16 AWG 3-conductor \*( $1.5\text{mm}^2 \times 3\text{-conductor}$ )

Rating: 300V / 13 Amps

O.D.: 0.345 inches(8.77cm) \*[0.433inches(11mm)]

#### DATA INPUT (to stanchion)

Wire Gauge: 22 AWG 2-shielded-pair w/ drain wire

Shield (inner): Aluminum/mylar

Shield (outer): Tinned copper braid

Rating: 300V

O.D.: 0.280 inches(7.11cm)

\* European model.

## 3.3 Luminaire Installation Procedure

The following chapter describes unpacking shipping cartons, installing, preparing, and wiring the stanchion and head unit for both standard and remote luminaires. This section also covers lamp installation and focus procedures.

### 3.3.1 Standard Version

#### Unpack Shipping Cartons

**Note:** Stanchion weighs 82 pounds (37.19Kg) or less, depending on voltage configuration; head enclosure weighs 62 pounds (28.12Kg) for a total weight of 144 pounds (65.31Kg). The luminaire requires two people for installation.

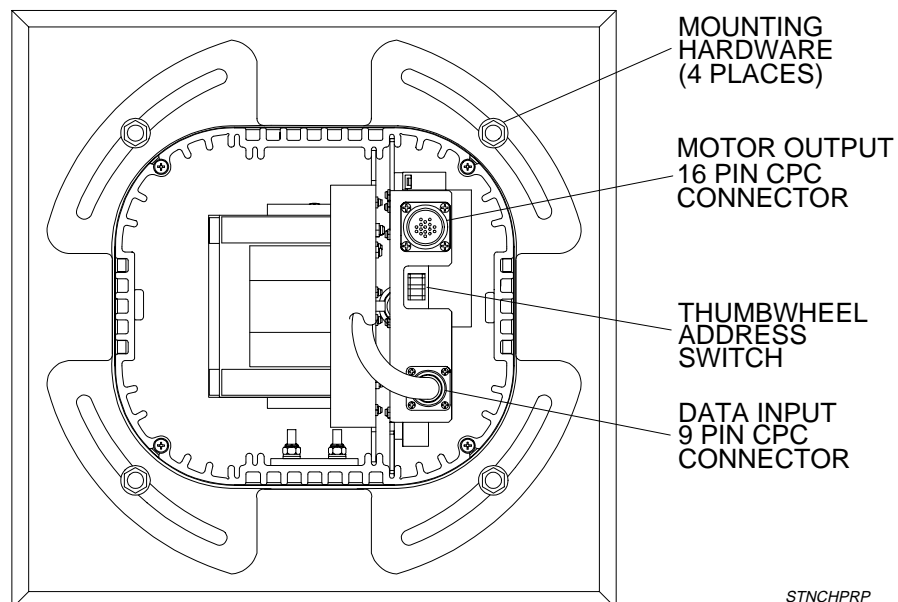
1. Remove stanchion and head assembly from cartons.
2. Locate tool kit (provided).

#### Install Stanchion

3. Set stanchion on mounting pad in required orientation. Loosely secure stanchion to pad using 3/8 inch (M10) hardware (not provided). Typically, this requires four flat washers, four lock washers, and four hex nuts.

#### Prepare Stanchion

4. Remove stanchion cap.
5. Set thumbwheel to address desired on switch board located at top of electronics plate (detailed in [3.4 Fixture Address](#)).

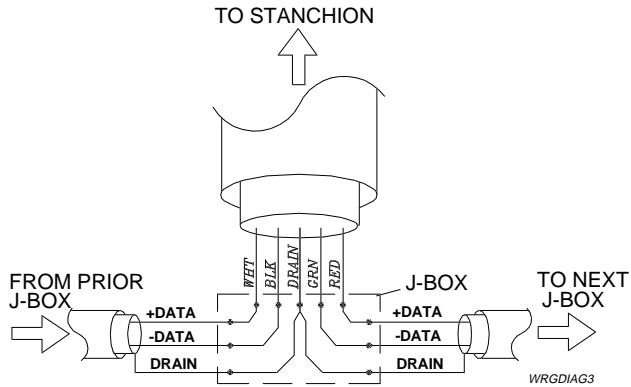


**Wiring to Stanchion**

6. Strip both data cable and power cable to expose conductors. Install 120Ω termination resistor (provided) at end-of-line between positive(white or red) data line and negative(black or green) data line. If data splitter is installed, the last luminaire on each data run, as well as the transmitter to splitter data run, must be terminated. (See diagram in 3.2.5 Input Power and Control Cabling.) Connect as follows:

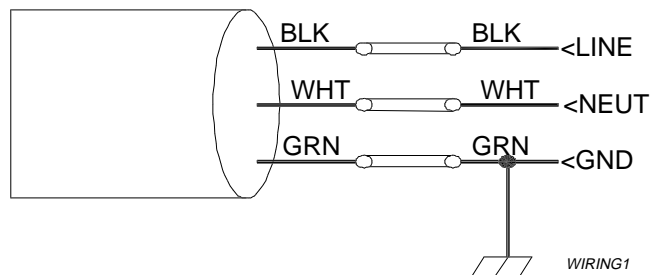
a. DATA Wires:

Wire	Connection
White/Red	Data +
Black	Data -
Drain	Ground



b. POWER wires:

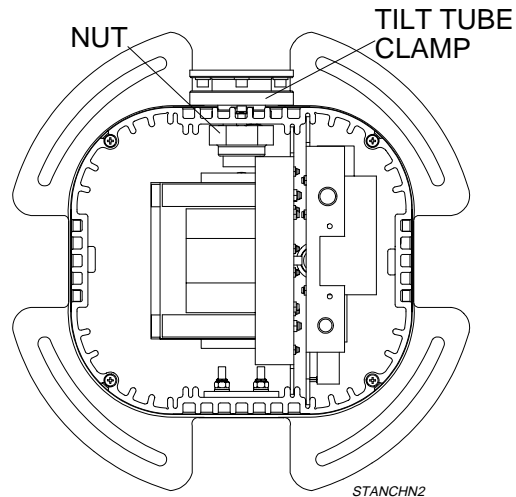
Wire	Connection
Black *(Brown)	AC Line
White *(Blue)	AC Neutral
Green *(Green/Yellow)	Ground



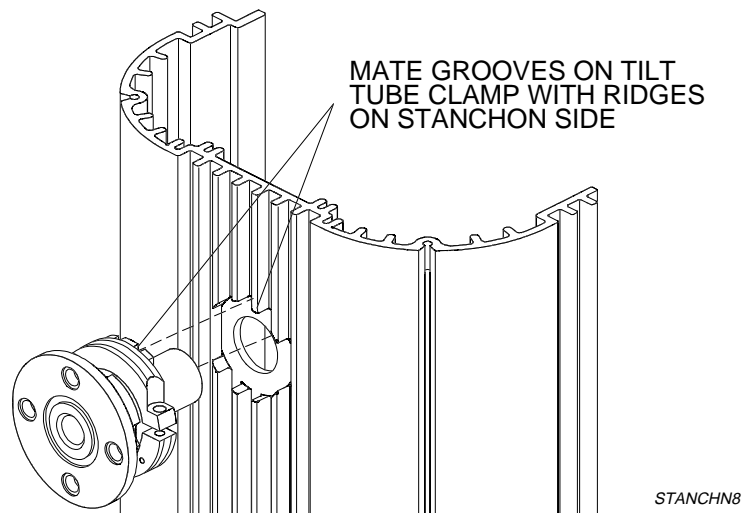


## Install Head Enclosure

7. Connect head enclosure to stanchion as follows:
  - a. Remove nut, spring washer, and flat washer from the head enclosure tilt tube and from cables. Ensure black o-ring stays in tilt tube groove.
  - b. Dress cables through hole in stanchion.
  - c. Position grooves in tilt tube clamp so that they face upwards (head enclosure can later be rotated to face desired direction) and put head enclosure tilt tube through hole in stanchion.

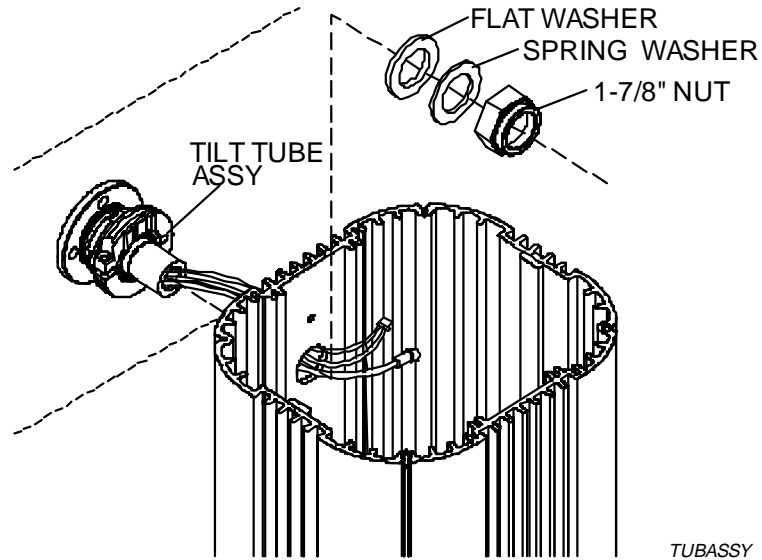


The grooves in the tilt tube clamp should fit over the two corresponding ridges running vertically on side of stanchion. Ensure black o-ring remains in groove of tilt tube.



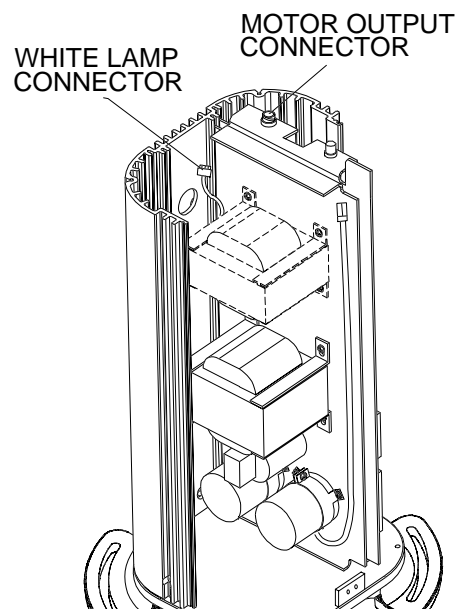
- d. Place flat washer over cables and onto threaded part of tilt tube. Repeat for spring washer.
- e. Dress nut over cables and thread onto tilt tube as shown.

- f. Using 1-15/16 inch open-ended wrench (provided), tighten 1-7/8 inch nut only until snug. The head should rotate when moved by both hands, yet hold itself in place when left alone. There should be no gap between tilt tube and stanchion side.



### Finish Preparing Stanchion

8. Connect head enclosure cables to stanchion.
  - a. Plug in white lamp connector to ballast output connector.
  - b. Plug in 16-pin CPC connector (black) to electronics plate motor output connector.



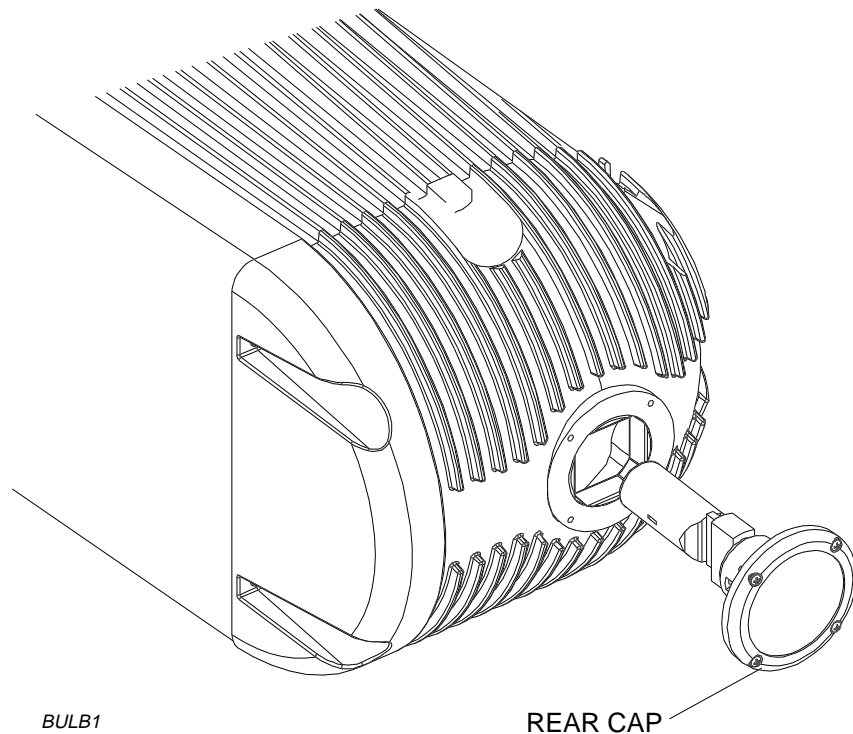
- c. Reinstall stanchion cap. Tighten screws in a diagonal cross pattern only until snug. Then tighten screws in same pattern until tight. Be sure gasket forms proper seal when replacing cap.

### Preliminary Focus Adjustment

9. Using 3/16 inch T-handle Allen wrench (provided), loosen Allen head screw on tilt tube clamp as needed.
10. Rotate head assembly to approximate desired angle.
11. Tighten Allen head screw on tilt tube clamp as needed to hold luminaire in place.

### Install Lamp

12. Remove rear cap. Be sure O-ring remains in groove of rear cap.
13. Install lamp in lamp socket. Do not touch the quartz bulb with bare fingers. If touched, clean quartz bulb with alcohol.
14. Reinstall rear cap on head enclosure, assuring O-ring is still in-place. Tighten screws in a diagonal cross pattern only until snug. Then tighten screws in same pattern until tight insuring a proper seal.



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### 3.3.2 Remote Version

#### Unpack Shipping Cartons

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**Note:** Stanchion weighs 90 pounds(40.82Kg) or less, depending on voltage configuration; head enclosure weighs 72 pounds(32.65Kg). Two people are required to install luminaire.

---

1. Remove stanchion and head assembly from cartons.
2. Locate tool kit (provided).

#### Install Stanchion

3. Set stanchion on mounting pad in required orientation. Secure stanchion to pad using 3/8 inch(M10) hardware. Typically, this requires four flat washers, four lock washers, and four hex nuts.

#### Prepare Stanchion

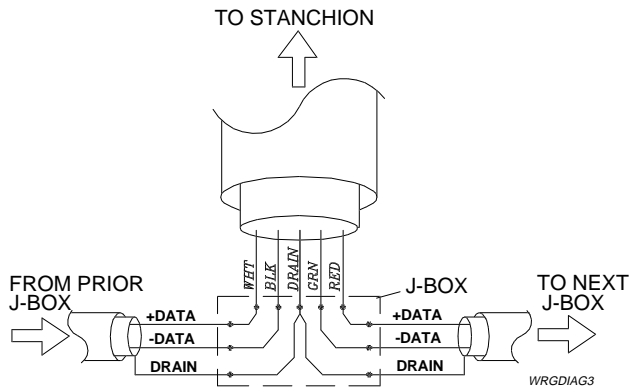
4. Remove stanchion cap.
5. Set thumbwheel to address desired on switch board located at top of electronics plate (detailed in [3.4 Fixture Address](#)).
6. Reinstall stanchion cap. Tighten screws in a diagonal cross pattern only until snug. Then tighten screws in same pattern until tight. Be sure gasket forms proper seal when replacing cap.

**Wiring to Stanchion**

7. Strip both data cable and power cable in order to expose conductors.  
Connect as follows:

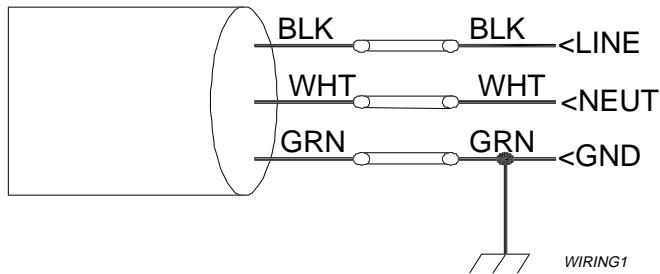
a. DATA Wires:

Wire	Connection
White/Red	Data +
Black	Data -
Drain	Ground



b. POWER wires:

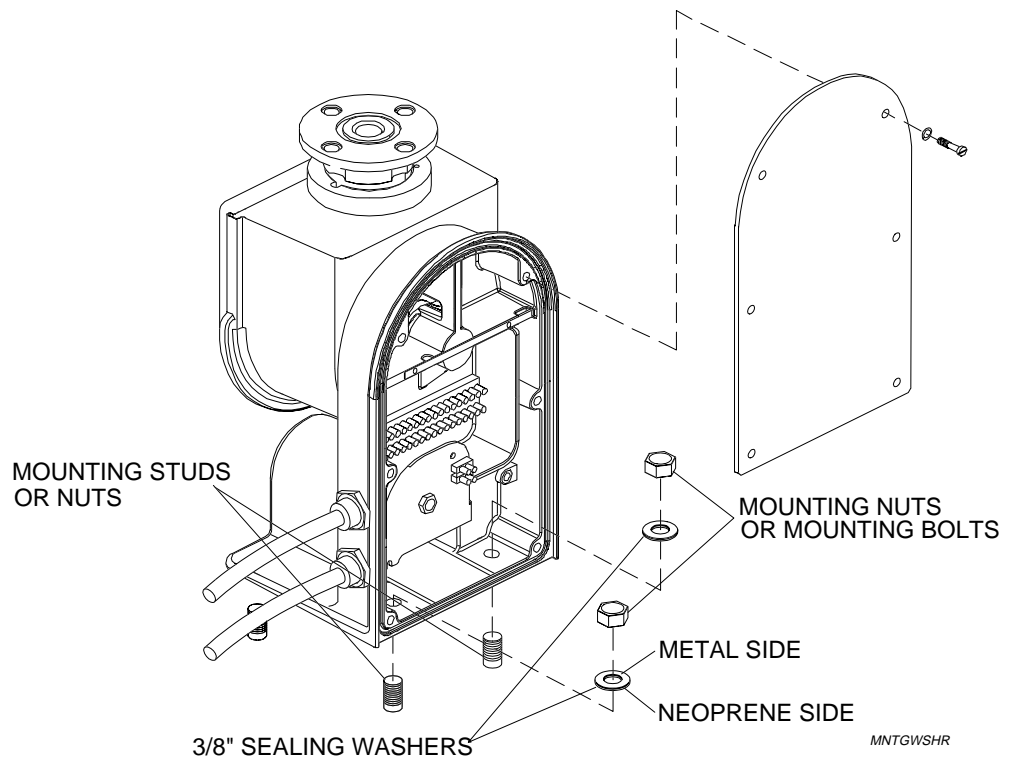
Wire	Connection
Black *(Brown)	AC Line
White *(Blue)	AC Neutral
Green *(Green/Yellow)	Ground



8. Install 120Ω termination resistor (provided) at end-of-line between positive (white or red) data line and negative (black) data line. If data splitter is installed, the last luminaire on each data run, as well as the transmitter to splitter data run, must be terminated. (See diagram in [3.2.5 Input Power and Control Cabling](#)).
9. Route output wiring to location of head enclosure, according to local code requirements.

### Install Head Enclosure

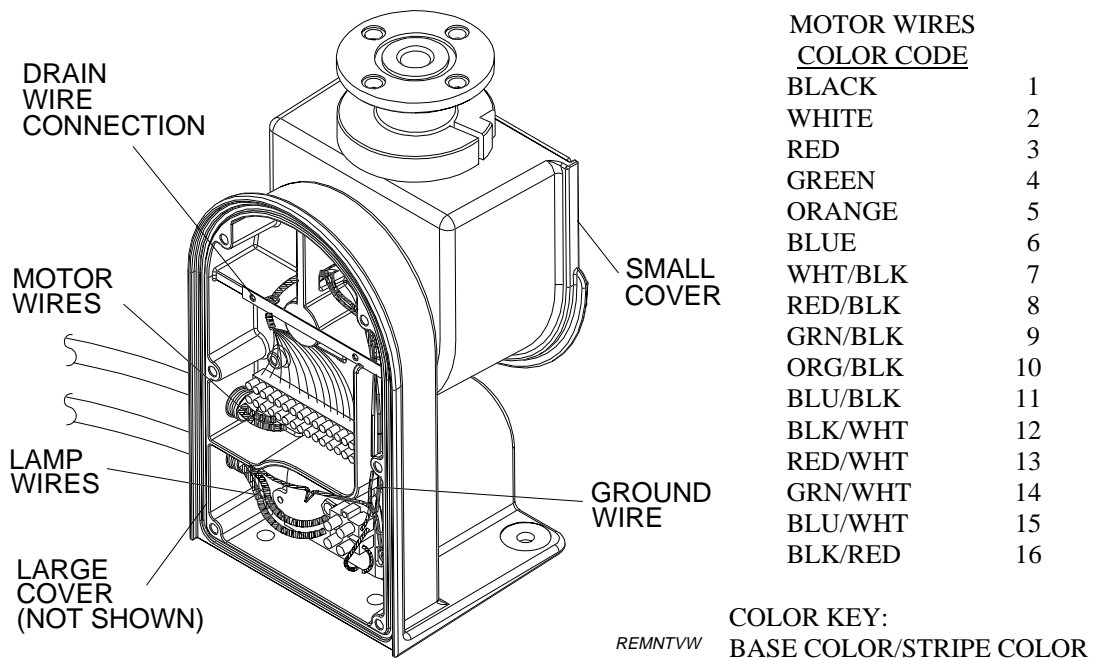
10. Using screwdriver, remove large cover (six screws) from remote mounting assembly.
11. Set head on mounting pad in required orientation.
12. Secure head to pad using 3/8 inch hardware (not provided) and two 3/8 inch sealing washers (provided on interior holes only). Tighten hardware securely to insure a proper seal.



## Input Wiring to Head

**Note:** If necessary, loosen terminal strip to install wiring and replace when all wires are terminated.

13. Connect wiring as shown:
  - a. Feed lamp cable (14 AWG, 3-conductor cable) through the lower cable entrance, strip insulation 1/4 inch(6.35mm), and connect to the two-position terminal strip (connect black wires to black wires and white wires to white wires).
  - b. Secure ground wire under brass washer using green ground screw and secure inside mounting foot.
  - c. Feed motor cable (22 AWG, 16-conductor) through the upper cable entrance. Strip shield back four inches, and strip each wire 1/4 inch(6.35mm). Connect wires to a 16-position terminal strip in the mounting foot. Observe color code (printed sticker inside remote head mounting foot).
  - d. Tighten cable entrance clamps securely.
14. Reinstall large cover on remote mounting assembly. Tighten securely to insure a proper seal.



## Preliminary Focus Adjustment

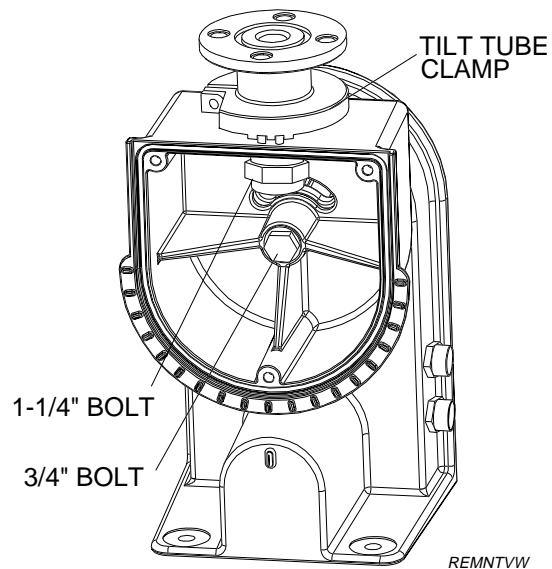
15. Adjust focus:

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**CAUTION:** Be careful when loosening 3/16 inch Allen screw, 1-1/4 inch nut and 3/4 inch bolt (Steps 15.a. and 15.c.). This unit is heavy and could rotate quickly once it is loosened.

---

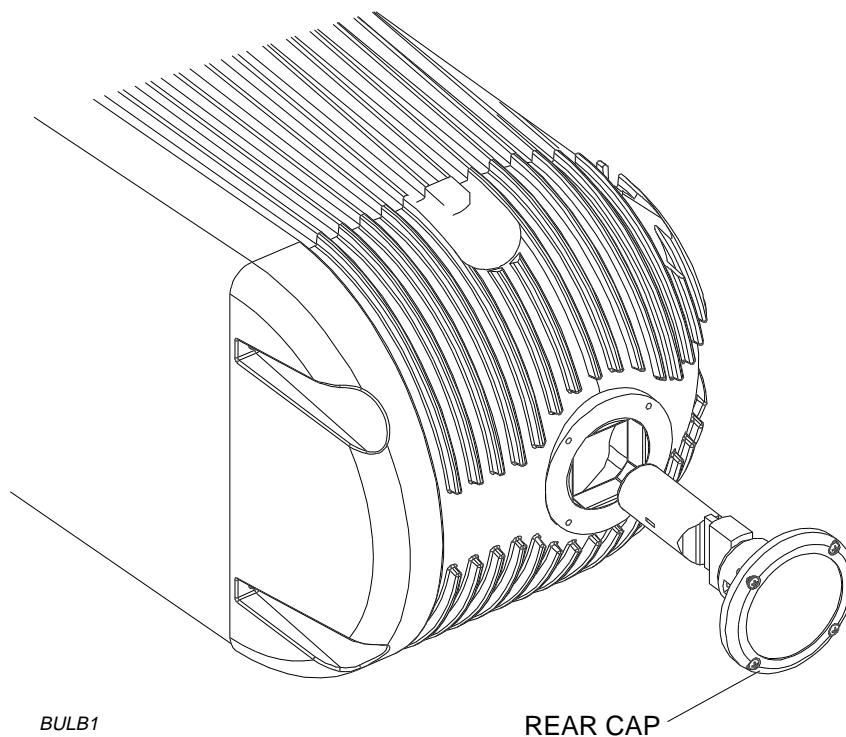
- a. Using 3/16 inch T-handle Allen wrench (provided), loosen Allen head screw on tilt tube clamp slightly if needed.
- b. Using screwdriver, remove three screws and small cover plate.
- c. Using 3/4 inch (or 19mm) socket, loosen bolt securing top remote head mounting assembly to bottom remote head mounting assembly.
- d. Rotate head assembly to desired angle and pivot remote mount assembly to desired angle.
- e. Tighten bolt and Allen head screw securely.
- f. Replace cover plate and tighten securely to insure a proper seal.





### Install Lamp

16. Remove rear cap. Be sure O-ring remains in groove of rear cap.
17. Install lamp in lamp socket. Do not touch the quartz bulb with bare fingers. If touched, clean quartz bulb with alcohol.
18. Reinstall rear cap on head enclosure, assuring O-ring is still in-place. Tighten screws in a diagonal cross pattern until snug, then tighten securely. Do not over tighten.



### 3.4 DMX Fixture Address

Each **AR500** luminaire requires four channels of data per unit to control the position of the color filters and diffuser/douser. The control sequence is as follows:

Channel	Filters & Diffuser/Douser
1	Blue Filters
2	Amber Filters
3	Magenta Filters
4	Diffuser/Douser Panels

In a simple DMX case, only **AR500** luminaires are on a distribution network and the first luminaire is set for channel 1. Thumbwheel addresses for 30 **AR500** luminaires in such a case are given below:

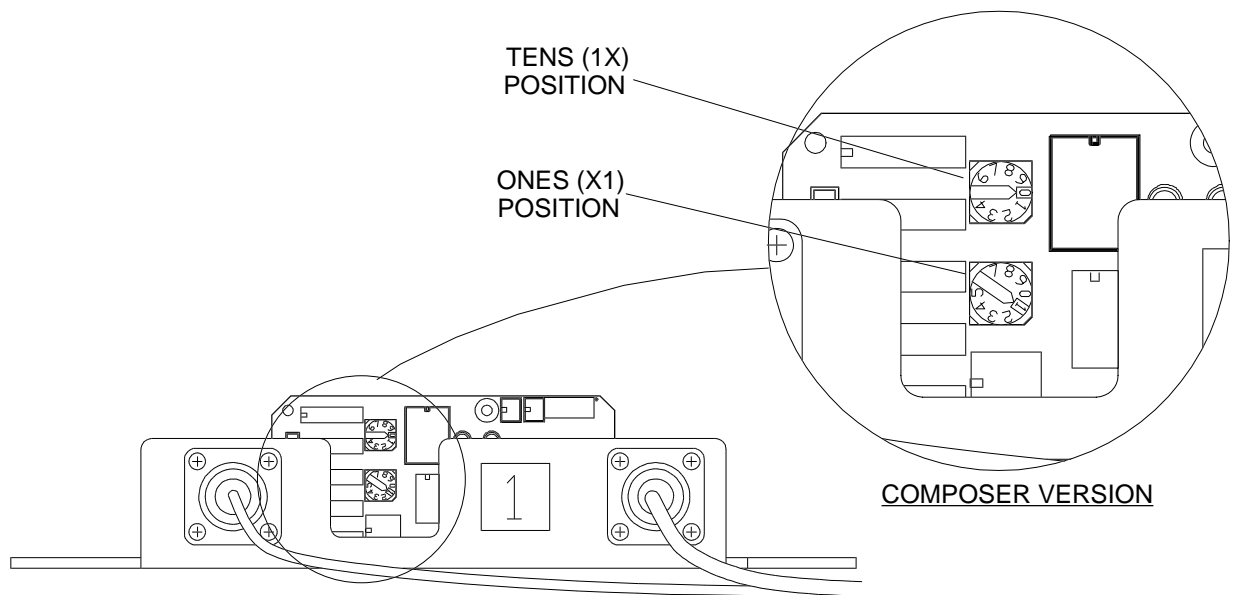
Luminaire	Thumbwheel Address	Luminaire	Thumbwheel Address	Luminaire	Thumbwheel Address
1	1	11	41	21	81
2	5	12	45	22	85
3	9	13	49	23	89
4	13	14	53	24	93
5	17	15	57	25	97
6	21	16	61	26	101
7	25	17	65	27	105
8	29	18	69	28	109
9	33	19	73	29	113
10	37	20	77	30	117

### 3.4.1 *Composer*<sup>™</sup> Controller Version

On the **Composer** controller luminaire versions, the luminaire address is set by two rotary switches located on the control card on the electronics plate (see illustration below). The switch on top is the ten's position and the switch below is the one's position (For example, in the illustration below a setting of 1 would require the switch on top to be set to "0" and the switch on the bottom to be set to "1".) Each luminaire in a system must be set to the appropriate address in order to receive the proper data that controls that individual luminaire. Luminaire address selection typically results from the overall plans of the lighting designer. Specific addresses for each fixture should be furnished by the designer.

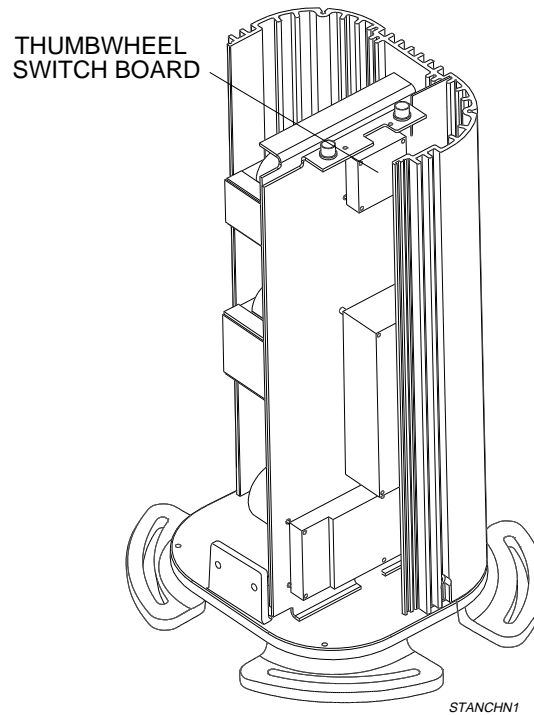
Fixture address "00" (that is, both rotary switches set to "0") is the luminaire's self test address. Internal commands direct the luminaire to perform a predetermined self test routine when switches are set in this position and power is applied. No external data commands are required for this test.

**Note:** After the self test has been performed, return address switches to their designated fixture address or command data will not be recognized by the luminaire.



### 3.4.2 Standard Version DMX Starting Address

The luminaire DMX starting address is set by a thumbwheel switch on the electronics plate in the stanchion. The next three channels will also be received. Each luminaire in a system must be set to the appropriate address in order to receive the four channels of data to control each luminaire.



---

## 3.5 Power-Up and Final Focus

1. Apply power to start lamp. The automatic calibration process will drive all filters to an open position. The luminaire will then remain on a solid white beam (unless control signal is present). Allow seven minutes for lamp to warm-up to full output.
2. Focus luminaire as follows:  
**on Standard version,**
  - a. Tilt head assembly to adjust for elevation.
  - b. Turn stanchion to adjust for azimuth.
  - c. Tighten Allen head screw in tilt tube clamp until secure.
  - d. Power unit off.
  - e. Remove stanchion cap.
  - f. Tighten 1-1/4 inch nut securely. Tilt tube clamp should hold head in place while tightening.
  - g. Replace stanchion cap (ensure gasket forms good seal).
  - h. Tighten nuts or bolts on stanchion securely.
  - i. Turn unit on.

**on Remote version,**

---

**CAUTION:** Be careful when loosening 3/16 inch Allen screw, 1 1/4 inch nut and 3/4 inch bolt. This unit is heavy and could rotate quickly once it is loosened.

---

- a. Loosen locking bolt and tilt tube clamp as required. (Detailed previously in Preliminary Focus Adjustment.)
- b. Turn head assembly to adjust for vertical and horizontal aim.
- c. Tighten 3/4 inch bolt and tilt tube clamp screw securely.
- d. Power unit off.
- e. Tighten 1-1/4 inch locking nut securely using wrench. Tilt tube clamp should hold head in place while tightening.
- f. Reinstall small cover and secure with captive screws. Tighten securely to insure a proper seal.
- g. Power unit on.

3. Adjust front lens as follows:
  - a. Loosen screws securing the lens clamping ring. Loosen in diagonal cross pattern until you can rotate lens and rotate to desired position.
  - b. Tighten screws in diagonal cross pattern.
  - c. Clean lens with alcohol and a lint free cloth.
4. Turn on DMX control unit. Test each channel to see if DMX and luminaire are working properly.

## Chapter 4. Tests

The following chapter describes self test procedures for luminaires. Self tests are performed by setting the address switches on the electronics plates. Currently, there are two versions of electronics plates; a DMX only version and a **Composer** controller version. Procedures for both versions are explained in this chapter.

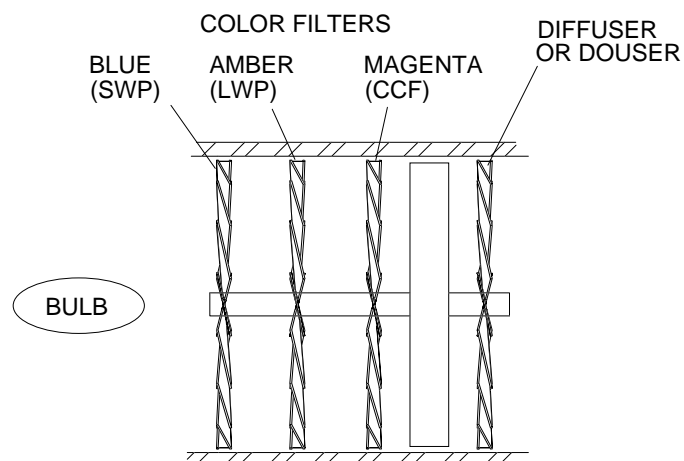
## 4.1 Luminaire Self Test

The **AR500** luminaire has embedded test routines which allow you to control the unit using the thumbwheel switch on the electronics plate. Use this feature to test and troubleshoot the unit without DMX or **Composer** control data present. The settings are given below.

### 4.1.1 DMX Only Version

To start the tests, change thumbwheel address as required. Abort tests by moving address out of 900 range.

Test	Thumbwheel Address	Description of Routine
All Open	900	All panels open, static.
Blue Closed	910	Blue panels only closed, static.
Amber Closed	920	Amber panels only closed, static.
Magenta Closed	930	Magenta panels only closed, static.
Diffuser/Douser Closed	940	Diffuser/Douser panels only closed, static.
Blue Cycle	950	Blue panels only cycling. All other panels open.
Amber Cycle	960	Amber panels only cycling. All other panels open.
Magenta Cycle	970	Magenta panels only cycling. All other panels open.
Diffuser/Douser Cycle	980	Diffuser/Douser panels only cycling. All other panels open.
All Cycle	990	Sequential cycling of individual panels with an open state before the next panel closes.

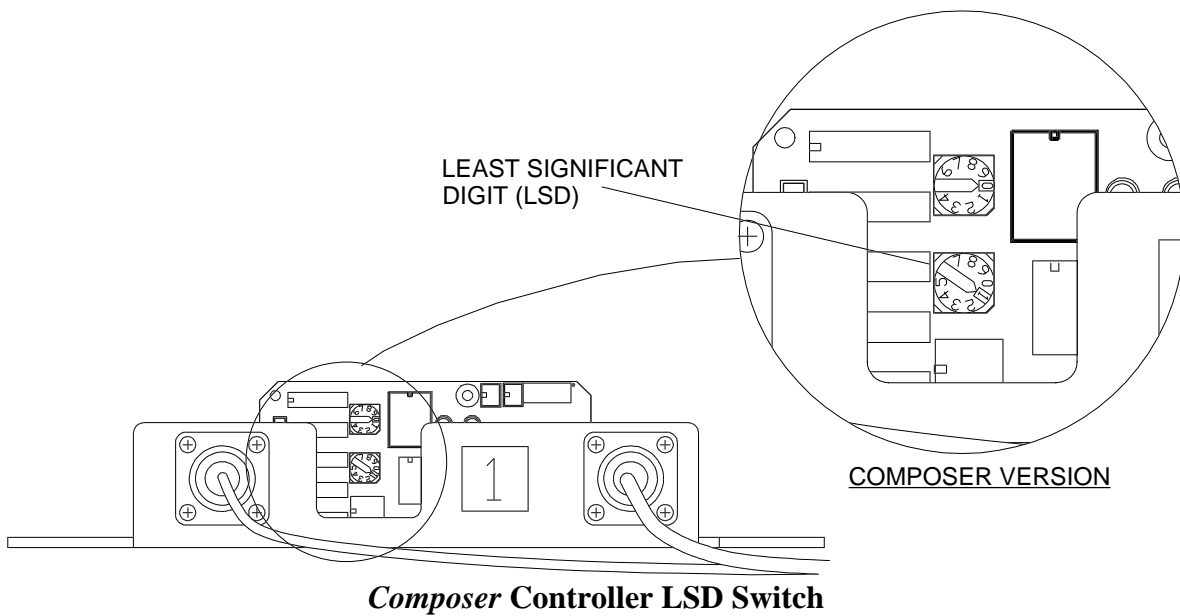




### 4.1.2 *Composer Controller Version*

Fixture address “00” (that is, both rotary switches set to “0”) is the luminaire’s self test address. Internal commands direct the luminaire to perform a predetermined self test routine when switches are set in this position and power is applied. No external data commands are required for this test.

In self test mode, the Least Significant Digit (**LSD**) or X 1 position of the rotary switches selects the mechanism to be tested. The following illustration identifies the **LSD**.



**To perform a self test:**

- Step 1. Power-up unit with rotary switches set to “00”. Within five seconds the Green LED will begin to blink at a rate of on for two seconds and off for two seconds.
- Step 2. Wait for approximately ten seconds. Within ten seconds the Green LED will begin to flash at a rate of two flashes per second. At this point the luminaire will begin self test, as detailed in the table below, for the MSD “0” (X 10 position) and LSD “0” (X 1 position) condition. Once self test has begun, the MSD and LSD switches may be moved to other positions to test for proper operation of desired mechanisms..

LSD Setting (X 1)	Test Description
0	Cycles each mechanism (blue, amber, magenta, diffuser/douser) back and forth one at a time. Then cycles all mechanisms at once.
1	Cycles blue filter mechanism open and closed.
2	Cycles amber filter mechanism open and closed.
3	Cycles magenta filter mechanism open and closed.
4	Cycles diffuser/douser filter mechanism open and closed.
5	Cycles each mechanism (blue, amber, magenta, then diffuser/douser) open and closed.
6	Cycles all mechanisms at once.
7	Closes the blue mechanism and opens all others.
8	Closes the amber mechanism and opens all others.
9	Closes the magenta mechanism and opens all others.

When all desired tests have completed perform Step 3.

- Step 3. Return switches to the “00” address. Wait for slow flash of Green LED to indicate luminaire has returned to normal operation. When LED begins to flash at the slower speed, return address switches to original fixture address within ten seconds. Failure to begin setting address switches within ten seconds will return luminaire to test mode.

---

**Note:** To exit self test mode, address switches must be moved to some test position other than “00” and then returned to “00”. If test is performed only at “00” LED will not resume slow flash to allow exit from testing.

---

## 4.2 DMX 512 Controller Color Test

When testing a luminaire color from a remote DMX 512 console use the following table of channel percentages to create colors. Adjust color channel percentages according to the chart to create the desired color.

Color	Blue Filter (%)	Amber Filter (%)	Magenta Filter (%)
Primary Red	0	100	100
Primary Yellow	0	75	0
Primary Blue	100	0	60
Primary Violet	50	0	0
Dark Amber	0	100	62
Light Bastard Amber	0	44	56
Gold	0	60	60
Straw	0	65	48
Dark Green	100	60	0
Sea Green	80	45	0
Turquoise	100	32	0
Medium Blue	100	0	55
Steel Blue	55	0	0
Flesh Pink	46	52	0
Light Lavender	55	0	40
Violet	58	0	39
Primary Orange	0	65	70
Primary Green	100	65	0
Primary Indigo	100	0	100
Light Red	100	0	80
Bastard Amber	0	50	56
Salmon	0	47	60
Yellow	0	60	0
Lemon	0	65	0
Medium Green	90	49	0
Pale Green	77	51	0
Teal	100	40	0
Light Blue	60	0	0
Pink	0	25	58
Indigo	0	39	100
Lavender	10	0	0
Magenta	0	0	100

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## Chapter 5. Trouble Shooting

This chapter describes various methods of trouble shooting the **AR500** luminaire. If problems are encountered during operation of the **AR500** luminaire, please refer to this section for possible remedies. If the problem cannot be solved, please contact ETC Technical Support staff in Middleton, WI USA at 608-831-4116 or toll-free at 800-688-4116. You may also Email ETC at [Service@etcconnect.com](mailto:Service@etcconnect.com).

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**WARNING:** High voltage is present inside luminaire. Avoid contact with high voltage.

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**CAUTION:** Maintenance procedures should be performed by qualified personnel.

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## 5.1 Problem: Lamp Does Not Light or is Dim

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### 5.1.1 Test Lamp and Power

1. Make sure good lamp is installed (refer to [6.1.1 Replacing the Lamp](#)).
  - a. Try testing fixture with a spare lamp before continuing with troubleshooting. (The lamp may have failed even though it may not show any signs of damage).
  - b. Replace reflector if damaged (refer to [6.1.3 Replacing the Reflector](#)).
2. Check incoming AC power.
  - a. Remove stanchion cap and unplug AC connector at top of ballast plate.
  - b. Check for proper input AC across pins on female connector. (Proper input AC dependent on configuration). If AC is present at external connection, but not at fixture, replace DMX/AC Input Cable Assembly (refer to [6.2.20 Replacing the DMX/AC Input Cable Assembly](#)).
3. Inspect the lamp wires (standard version).
  - a. Remove stanchion cap.
  - b. With AC power off, disconnect the lamp wires from ballast plate to the head enclosure by separating white lamp connector. The contacts should be clean and uncorroded.
  - c. Test cable continuity with an ohm-meter from the ballast-end connector to the lamp socket. If the continuity test fails, replace the lamp wires (refer to [6.2.6 Replacing the Lamp Wire Assembly - Standard Version](#)).
4. Inspect the lamp wires (remote version).
  - a. Remove small cover from remote mounting assembly.
  - b. With AC power off, disconnect the lamp wires from ballast plate to the head enclosure by separating white lamp connector. The contacts should be clean and uncorroded.
  - c. Test cable continuity with an ohm-meter from the ballast-end connector to the lamp socket. If the continuity test fails, replace the lamp wires (refer to [6.2.7 Replacing the Lamp Wire Assembly - Remote Ballast Version](#)).

5. Test the ballast AC.
  - a. With AC power off, remove ballast plate from stanchion (refer to [6.1.6 Replacing the Ballast Assembly](#)). If ballast has been powered up recently, then allow it to rest for 5 minutes before continuing.
  - b. Reconnect AC and reapply power.
  - c. Measure the AC voltage across the two outer pins of ignitor on standard version, or across the wires to the head enclosure on remote ballast version. The voltage should be approximately 230VAC. If voltage is slightly low, it may be possible to raise it by retapping the inductor. Otherwise, go to [5.1.2 Test Ballast](#).
6. Test ignitor AC voltage.
  - a. Measure the AC voltage across outer terminals of ignitor. If voltage is below 230VAC at ignitor, but correct at ballast (remote version), replace the AC Output Cable Assembly (refer to [6.2.21 Replacing AC Output Cable](#)). If voltage is correct but lamp still does not light, replace ignitor (refer to [6.2.15 Replacing the Ignitor - Standard Version](#) or [6.2.16 Replacing the Ignitor - Remote Ballast Version](#)).

---

### 5.1.2 Test Ballast

The following tests are made with the ballast plate removed from the stanchion (refer to [6.1.6 Replacing the Ballast Assembly](#)). In most cases the test requires that the ballast be powered up. A properly working ballast, if disconnected from the lamp, will trip the circuit breaker and shut itself off within a few minutes. For this reason, the powered-up tests should be made immediately after supplying AC to the ballast. If the circuit breaker does throw, disconnect the AC and wait 5 minutes for the circuit breaker to reset before continuing.

1. Test the circuit breaker.
  - a. Measure AC voltage between the transformer side of the breaker and ground. If the correct AC input voltage is not present, disconnect the power, wait 5 minutes, then reconnect and measure again. If there is still no AC voltage, then replace the circuit breaker (refer to [6.2.13 Replacing the Circuit Breaker](#)).

2. Test the capacitors.
  - a. Disconnect AC input power and remove leads to one of the capacitors, making note of lead locations for reconnection.
  - b. To neutralize the capacitor, briefly short across the two terminals of the capacitor with an insulated-handle screwdriver.
  - c. With an ohm-meter in DC ohms mode, measure resistance across the terminals. The reading should steadily rise in value. If it does not, replace capacitor (refer to [6.2.14 Replacing a Capacitor](#)).
  - d. Test both capacitors and reconnect after testing.
3. Test the transformer.
  - a. With the correct AC input voltage present, measure AC output of transformer by measuring across the capacitors. The correct AC output should be 230V. If the voltage is incorrect, make sure correct input tap has been selected for the input AC in use. Otherwise, replace transformer (refer to [6.2.18 Replacing the Transformer](#)).
4. Test the inductor (standard version).
  - a. After powering-up ballast, measure AC voltage across two outer terminals of ignitor (this is the inductor output). The voltage is typically 230VAC. Some adjustment of this voltage can be obtained by selecting a different inductor or transformer tap. Otherwise, replace inductor (refer to [6.2.15 Replacing the Inductor](#)).
5. Test the inductor (remote version).
  - a. After powering-up ballast, measure across the output wires to head enclosure. The voltage is typically 230VAC. Some adjustment of this voltage can be obtained by selecting a different inductor or transformer tap. Otherwise, replace inductor (refer to [6.2.16 Replacing the Inductor](#)).



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## 5.2 Problem: Fixture Does Not Change Color

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### 5.2.1 DMX Only Version

1. Using self test mode (Chapter 4), test each color and dimmer/diffuser motor. If only a particular panel set is not moving go to section [5.3 Problem: Some Color Panels Not Moving](#).
2. Determine if light is calibrating properly.
  - a. Cycle power to fixture. All color and dimmer/diffuser panels should close and then open. If all panels move, go to [5.4 Problem: Fixture Does Not Respond to Control Data](#).
3. Test 24V power supply.
  - a. Remove electronics plate from stanchion (refer to [6.1.7 Replacing the Electronics Plate Assembly](#)).
  - b. At electronics plate, connect external 9-position and 16-position connectors and supply power to luminaire.
  - c. Measure AC voltage across white and black wires on orange MTA receptacle connected to 24V power supply, verifying that correct input power is present. If so, then measure DC volts across red and green wires on large red MTA receptacle. There should be 24V DC present. Examine green LED on power supply. It should be lit solid when the supply is powered-up. If the LED is flashing, then disconnect red MTA receptacle connected to lamp control PCB and remeasure DC volts across red and green pins. Compare your results with the following descriptions, based on LED status:
    - i. Always off - replace 24V power supply (refer to [6.2.30 Replacing the Power Supply](#)).
    - ii. Always on - if output is below 24V DC, replace 24V power supply (refer to [6.2.30 Replacing the Power Supply](#)).
    - iii. Flashing only when connected to lamp control PCB - replace lamp control PCB (refer to [6.2.28 Replacing the Lamp Control PCB](#)). If output is below 24V DC when disconnected from lamp control, replace 24V power supply also (refer to [6.2.30 Replacing the Power Supply](#)).
    - iv. Always flashing - replace 24V power supply (refer to [6.2.30 Replacing the Power Supply](#)).

4. Test Lamp Control PCB.
  - a. Red LED on LCB should be flashing. If it does not flash, replace lamp control PCB (refer to [6.2.28 Replacing Lamp Control PCB](#)). Check for 5V DC across pins 17 and 4 of U9. If 5V not present, replace lamp control PCB (refer to [6.2.28 Replacing Lamp Control PCB](#)).

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## 5.2.2 *Composer Version*

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**Note:** When a luminaire loses control data for five minutes, it will initiate a user specified “Emergency Preset”. Refer to [the \*\*Composer\*\* Controller Operators Manual](#) for details.

---

1. Using self test mode (Chapter 4), test each color and dimmer/diffuser motor. If only a particular panel set is not moving go to section [5.3 Problem: Some Color Panels Not Moving](#).
2. Determine if light is calibrating properly.
  - a. Use self test mode (Chapter 4) to close all color and dimmer/diffuser panels. Then, remove power from luminaire.
  - b. Set luminaire to its appropriate address.
  - c. Cycle power to luminaire. All color and dimmer/diffuser panels should travel from their current positions to full open.
3. Test incoming power.
  - a. Remove electronics plate from stanchion (Refer to [6.1.7 Replacing the Electronics Plate Assembly](#)).
  - b. Connect external 9-position and 16-position connectors and supply power to luminaire.
  - c. At 24V power supply 5-position connector on electronics plate, pins 3 (white wire) and 5 (black wire), check for appropriate voltage. See [Figure 5.2 - AC/Data Input Cable \(\*\*Composer\*\* Version\)](#). If voltage is not present see [6.2.35 Replacing AC/Data Input Cable Assembly](#).

4. Test 24V power supply.
  - a. With power on, amber LED on power supply should illuminate.
  - b. Check 5A slow-blow fuse on electronics plate.
  - c. At red 13-position connector on power supply, using a voltage meter, measure pins 1 and 2 for 5V and pin 9 for 24V.
  - d. At control PCB 4-position connector, measure pin 4 (orange wire) for 5V and pin 2 (red wire) for 24V. If voltage is present at power supply, but not at control PCB, see 6.2.36 Replacing DC Power Supply to Control PCB Cable Assembly.
5. Test lamp control CPU.
  - a. Perform self test described in Chapter 4. Observe green LED during self test.
  - b. If no change during self test and green LED is off, refer to 6.2.33 Replacing Control PCB on electronics plate.
  - c. If no change during self test and green LED is flashing, refer to 6.2.34 Replacing Low Voltage Power Supply on electronics plate.

---

## 5.3 Problem: Some Color Panels Not Moving

1. Test lamp control PCB motor drivers.
  - a. Note which panels move during calibration and which do not. The panel sets are numbered 1 through 4, starting from the set closest to lamp.
  - b. Remove power from the electronics plate by disconnecting 9-pin CPC connector.
  - c. At lamp control PCB, move a motor connector for a known "good" color panel set to the location of questionable set. Reapply power. If "good" set does not move after moving connector, replace lamp control PCB (refer to [6.2.28 Replacing Lamp Control PCB](#)).
  - d. Return connectors to normal positions.
2. Inspect Drive Shaft Assemblies.
  - a. Remove front head enclosure cover.
  - b. Inspect drive shafts and drive shaft links connecting motors to color mechanism assembly.
  - c. Reconnect any disconnected links (refer to [6.1.5 Replacing the Linear Actuator Motor Assembly](#)) and replace any damaged drive shaft assemblies (refer to [6.2.8 Replacing the Motor Drive Shaft Assembly](#)).
3. Test color changer.
  - a. Disconnect drive shaft assemblies from color mechanism drive rings.
  - b. Move each drive ring by hand through total range of motion. No more than 2 pounds (4.4 Kg) of force should be required to move each ring. If more force is required, or if any filters are broken or detached from individual carriers, replace color mechanism assembly (refer to [6.1.4 Replacing the Color Mechanism](#)).
4. Test the color motors.
  - a. With drive shaft assemblies still disconnected, cycle power to fixture. All motors should drive their shafts. If motor drives shaft only when disconnected from color mechanism, then replace color mechanism assembly (refer to [6.1.4 Replacing the Color Mechanism](#)). If a motor does not drive under any condition, then move its connection on yoke termination PCB to connection of a known "good" motor. Cycle power to fixture. If motor still does not

drive, replace linear actuator motor (refer to [6.2.9 Replacing a Linear Actuator Motor](#)).

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## 5.4 Problem: Fixture Does Not Respond to Control Data

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**Note:** On the **AR500** luminaire, control data could consist of **Composer** or DMX protocol. Refer to section [2.2.2.2 Electronics Plate](#) for control card/electronics plate identification.

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### 5.4.1 DMX Control

Assuming fixture calibrates but does not respond to console control data:

1. Check incoming data signal.
  - a. If a DMX diagnostic device is available, test incoming DMX signal at junction box.

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**Note:** A DMX diagnostic device could be another luminaire or a standard diagnostic indicator.

---

- b. At AC/DMX input cable connector pins 2 and 3, check/test incoming data signal.
    - c. If DMX is present at junction box, but not in luminaire, replace DMX/AC input cable assembly (refer to [6.2.20 Replacing the DMX/AC Input Cable Assembly](#)).

---

**Note:** The following tests assume that a valid DMX signal is present. The red LED on the lamp control PCB flashes more rapidly when DMX is present.

---

2. Test lamp control PCB.
          - a. Check the four green 1/16 amp fuses with an ohm-meter and replace if necessary (refer to [6.2.31 Replacing Lamp Control PCB 1/16A, 125V, Pico II Fuse](#)).
          - b. Retest PCB. If there is still no response, replace lamp control PCB (refer to [6.2.28 Replacing the Lamp Control PCB](#)).
        3. Test DMX address switch assembly and cable.

- a. Test again, using thumbwheel address 990. If fixture still does not respond, replace address switch PCB assembly (refer to [6.2.25 Replacing the Address Switch PCB](#)).
- b. Set thumbwheel address to 990. This should run color changer test routine. If fixture does not respond, replace address switch cable (refer to [6.2.24 Replacing the Address Switch Cable](#)).

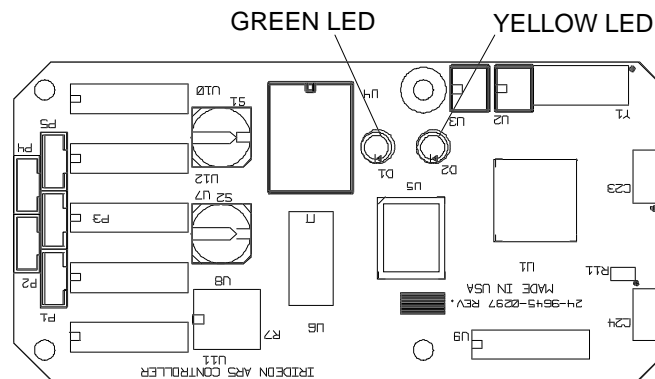
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### 5.4.2 **Composer Control**

If the luminaire will not respond to control data:

1. Observe LED's control PCB on electronics plate. See Figure [5.1 - Composer Control PCB](#).
  - a. If yellow LED is not on,
    - i. Disconnect power and remove electronics plate.
    - ii. Check 5A slow-blow fuse on electronics plate. Replace fuse if needed. See Figure [5.4 - Electronics Plate Assembly \(Composer Version\)](#).
    - iii. With electronics plate removed from stanchion, connect input and output connectors.
    - iv. Apply power to electronics plate.
    - v. At red 13-position connector on power supply, using a voltage meter, measure pins 1 and 2 for 5V and pin 9 for 24V. If voltages are not present or are incorrect refer to [6.2.34 Replacing Low Voltage Power Supply](#) on electronics plate.
  - b. If yellow LED is on,
    - i. Perform luminaire self test described in Chapter 4. Observe green LED during self test.
    - ii. If no change during self test and green LED is off, refer to [6.2.33 Replacing Control PCB](#) on electronics plate.
    - iii. If no change during self test and green LED is flashing, the low voltage power supply is operational.
    - iv. If luminaire responds to self test, readdress and go to step 2 (below).
2. Check control data with system test mode.
  - a. Set control system to test mode.
  - b. If luminaire responds to system test mode, problem is within luminaire addressing or **Composer** programming.
  - c. If luminaire does not respond to system test mode, check data voltage.

- i. At junction box, measure DC voltage between data(+) and ground, and between data(-) and ground. Voltage should be between 1.5 and 2.5 volts DC.
    - ii. If no voltage is present, go to step 3 (below).
  3. Perform impedance test on data line.
    - a. Remove power from system.
    - b. Disconnect data cable from control system.
    - c. At data(+) and data(-) cables, use ohm-meter to measure impedance of data cable. Resistance should be between 100 to 150 ohms.
    - d. If resistance is not within tolerance, ensure termination resistor is installed.
    - e. If resistor is installed, look for an open circuit within the junction boxes.
  4. Check incoming data signal.
    - a. If data is present at junction box (step 2.c.i.), but not in luminaire check continuity of control data cable wires with MCP or DMX-I connected. Connector position 2 corresponds with black wire and position 3 corresponds with white/red wire. If cable is bad refer to [6.2.20 Replacing the DMX/AC Input Cable Assembly](#).
    - b. Disconnect power from luminaire and remove electronics plate.
    - c. At 9-position connector on plate and 3-position JST connector on controller PCB, check continuity of data cable. Connector position 2 corresponds with black wire and connector position 3 corresponds with white wire. See [Figure 5.2 - AC/Data Input Cable \(Composer Version\)](#).



**Figure 5.1 - Composer Control PCB**

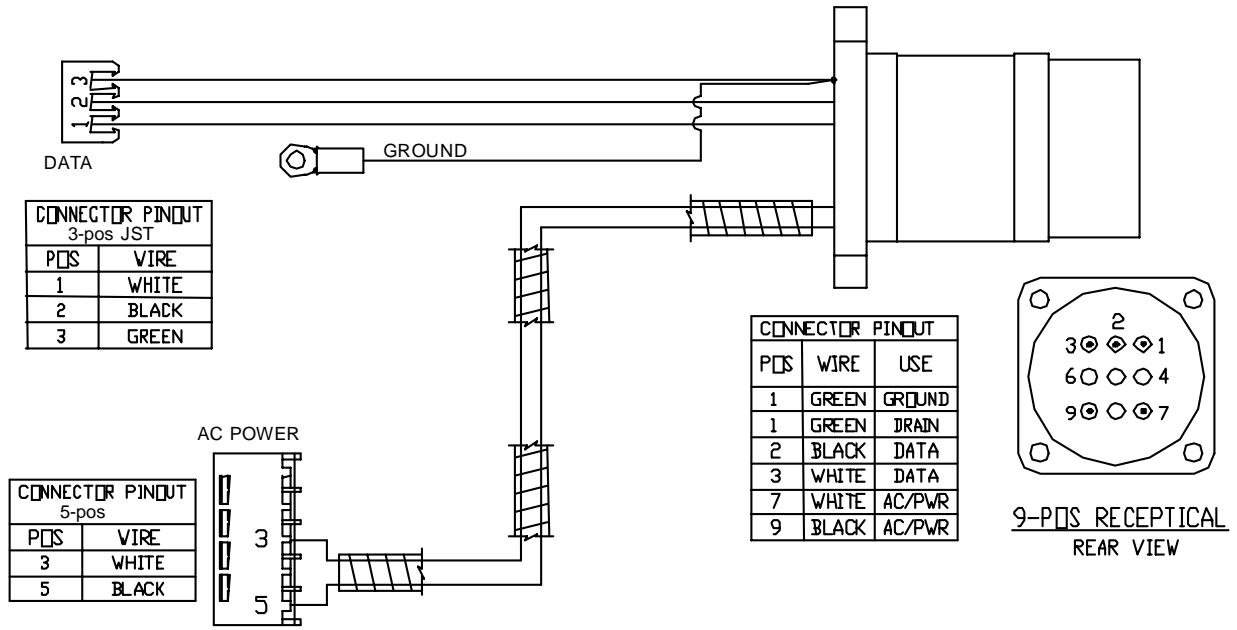


Figure 5.2 - AC/Data Input Cable (Composer Version)

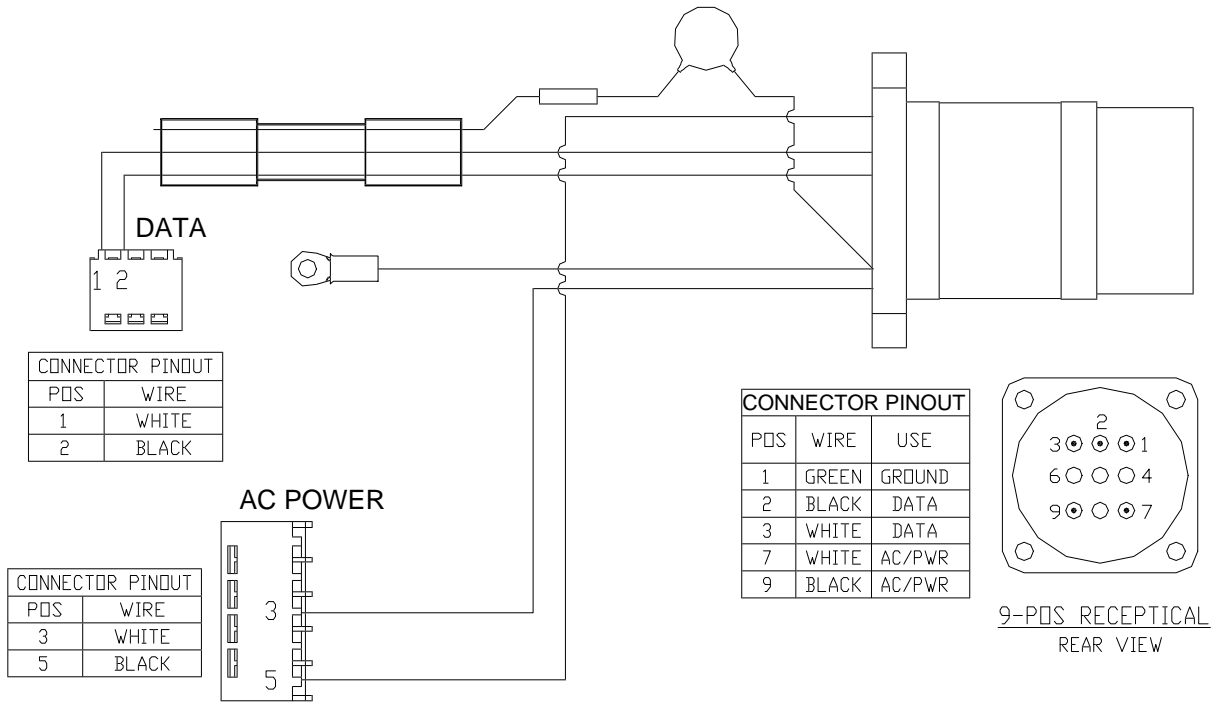
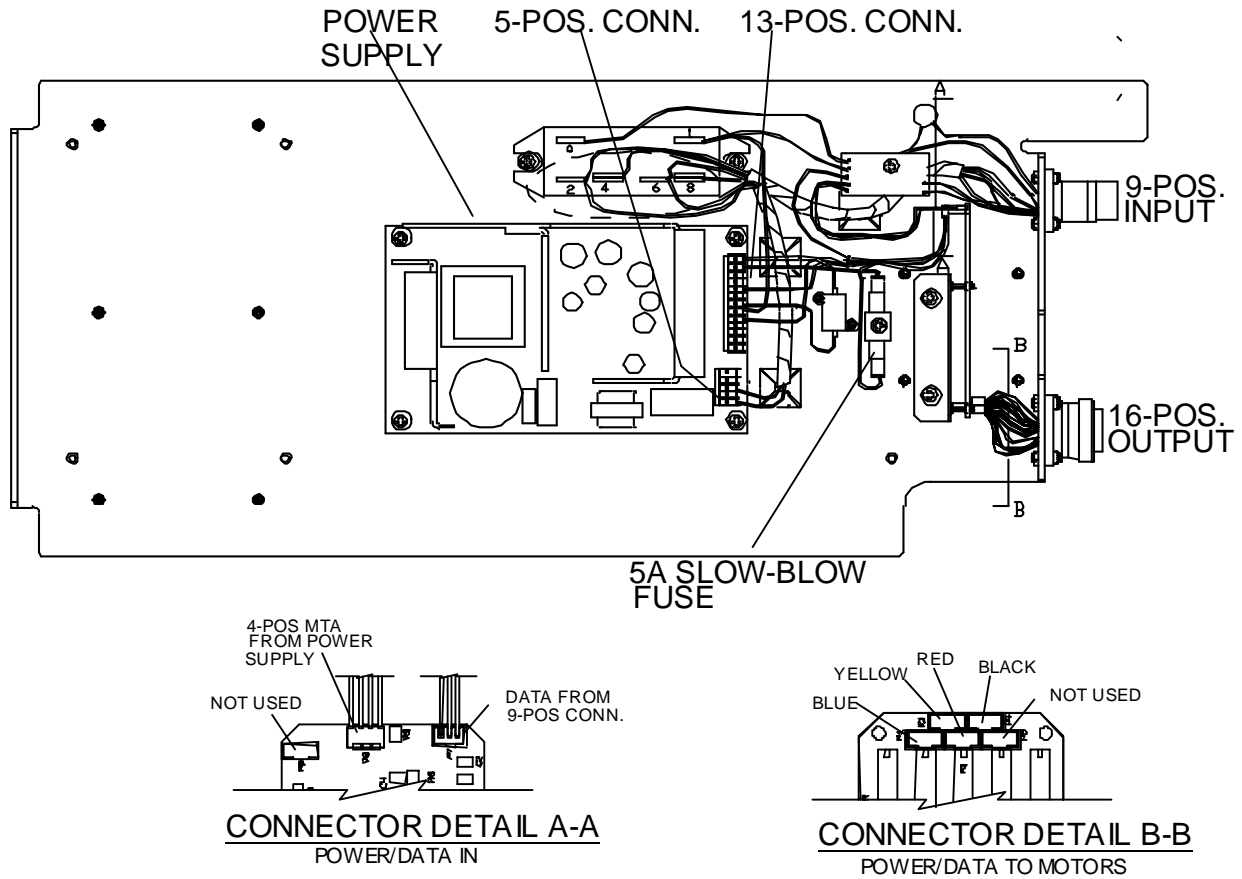
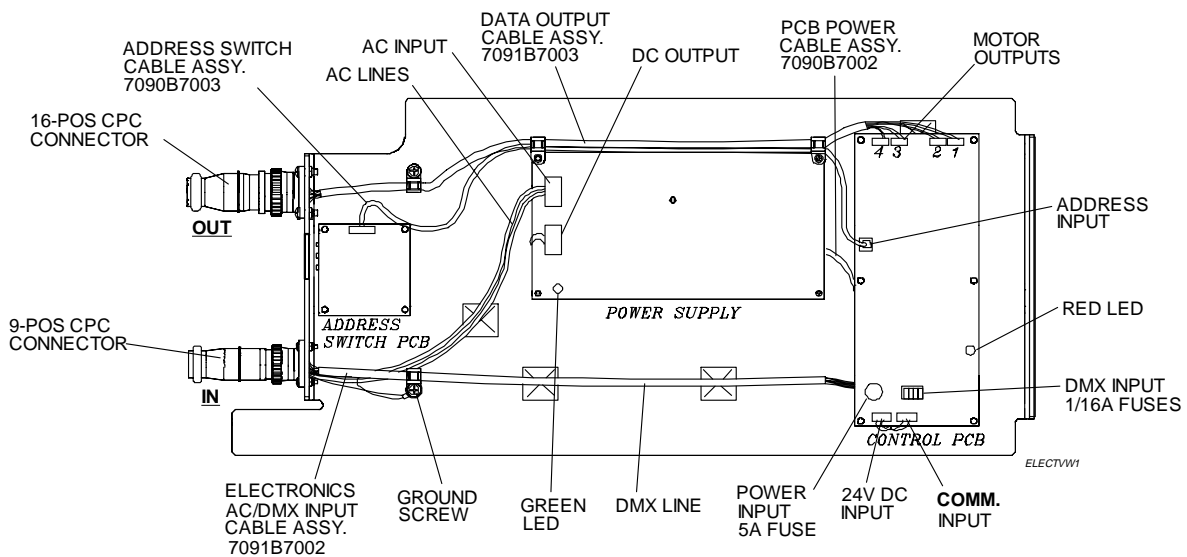


Figure 5.3 - AC/DMX Input Cable Assembly (DMX Only Version)





**Figure 5.4 - Electronics Plate Assembly (Composer Version)**



**Figure 5.5 - Electronics Plate Assembly (DMX Only Version)**

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## Chapter 6. Maintenance

This maintenance section is divided into two sections. The first section, Basic Maintenance, covers easily replaced major assemblies. The second section, Comprehensive Maintenance, details in-depth component and subassembly replacement and repair. Please read each procedure thoroughly before performing maintenance.

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**Warning:** High Voltage is present. Maintenance should be performed by a qualified service technician.

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## 6.1 Basic Maintenance

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**WARNING:** Disconnect power from unit before performing maintenance or repair procedures

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### 6.1.1 Replacing the Lamp

1. Using #2 Phillips screwdriver, loosen four captive screws and remove head enclosure rear cap ([Figure 6.1](#)). (Be sure O-ring remains in groove of rear cap).

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**WARNING:** Bulb can be very hot! Be careful not to touch hot bulb. Allow bulb to cool 15-30 minutes before removing.

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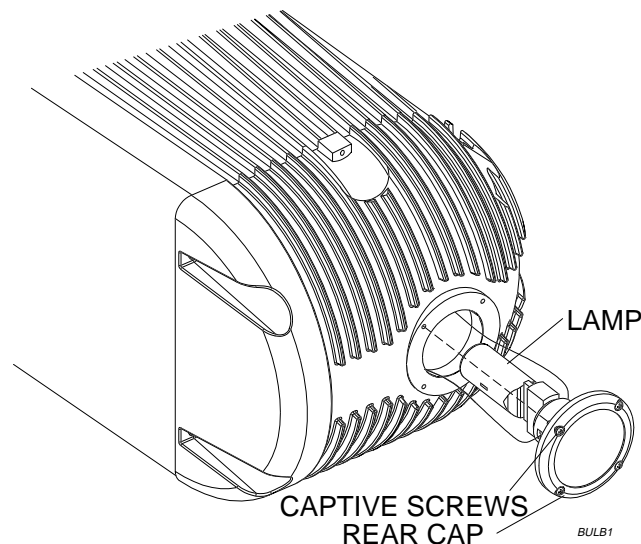
2. Remove old lamp from lamp socket and replace with new lamp. Do not touch quartz lamp with bare fingers. (If touched, clean lamp with alcohol).

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**Note:** Rear cap screw holes allow cap to be installed in one orientation only.

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3. Reinstall rear cap, being careful not to damage lamp when passing thru reflector opening inside head enclosure. Tighten screws in an offsetting pattern to insure a proper seal.



**Figure 6.1 - Replacing the Lamp**

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## 6.1.2 Replacing the Lens

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**WARNING:** Disconnect power from unit before performing maintenance or repair procedures

**WARNING:** Working on luminaire with the lamp lit and the lens removed may result in ultraviolet burning.

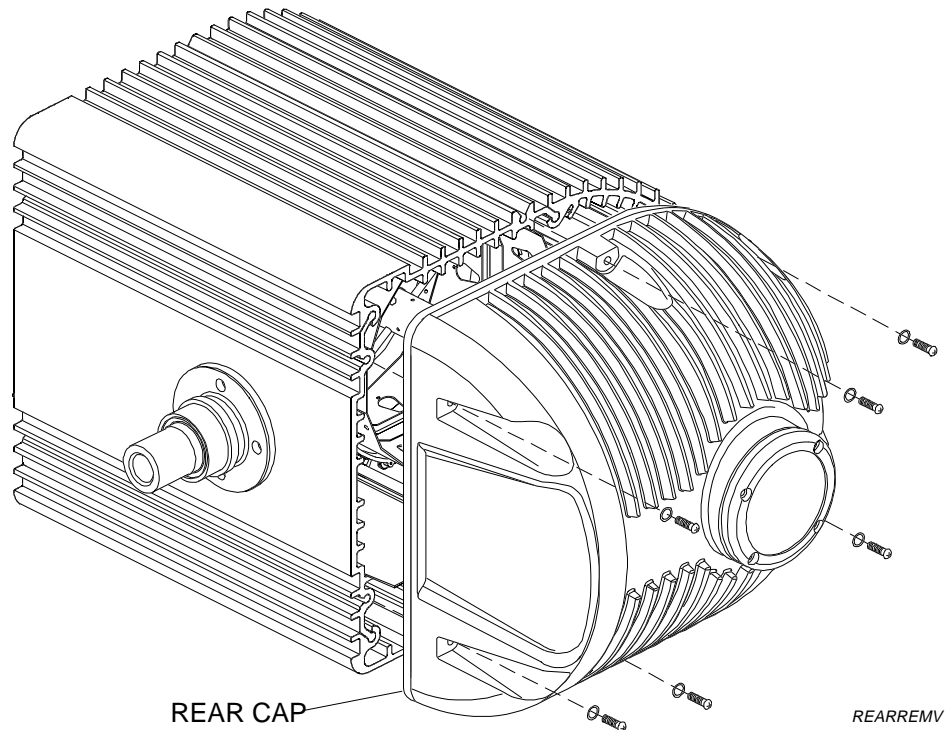
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1. Using a flat screwdriver, loosen captive screws securing lens clamping ring to head enclosure front cover ([Figure 6.2](#)). Gradually loosen in diagonal cross pattern to prevent damage to lens clamping ring.
2. Remove lens clamping ring and lens.
3. Remove gasket from old lens.
4. Place gasket around new lens so that gasket tapers toward concave side of lens.
5. Reinstall lens (convex side out) and clamping ring. Tighten screws in a diagonal cross pattern until snug. Then follow same pattern until tight.



loose, lamp wires will not allow rear cover to separate completely from head enclosure, but will allow enough room to replace reflector. Be careful not to strain lamp wires excessively).



**Figure 6.3 - Removing the Rear Cover.**

3. Using 5/32 Allen Wrench, gradually loosen three reflector mounting clips in a circular pattern. Loosen until clips will pivot off reflector lip without completely detaching (Figure 6.4).
4. Remove old reflector and three silicone pads.
5. Place three silicone pads on three tabs located on back of new reflector. The taper of the pads should correspond to the taper of the tabs on the reflector.
6. Place new reflector on mounting plate and pivot clips over lip of reflector.
7. Center reflector hole around lamp and gradually tighten clips in circular pattern until reflector is secure.
8. Reinstall head enclosure rear cover. (Be sure gasket forms proper seal between mating parts).

**Note:** Do not touch reflector. If you touch the reflector, clean with alcohol and lint free cloth.

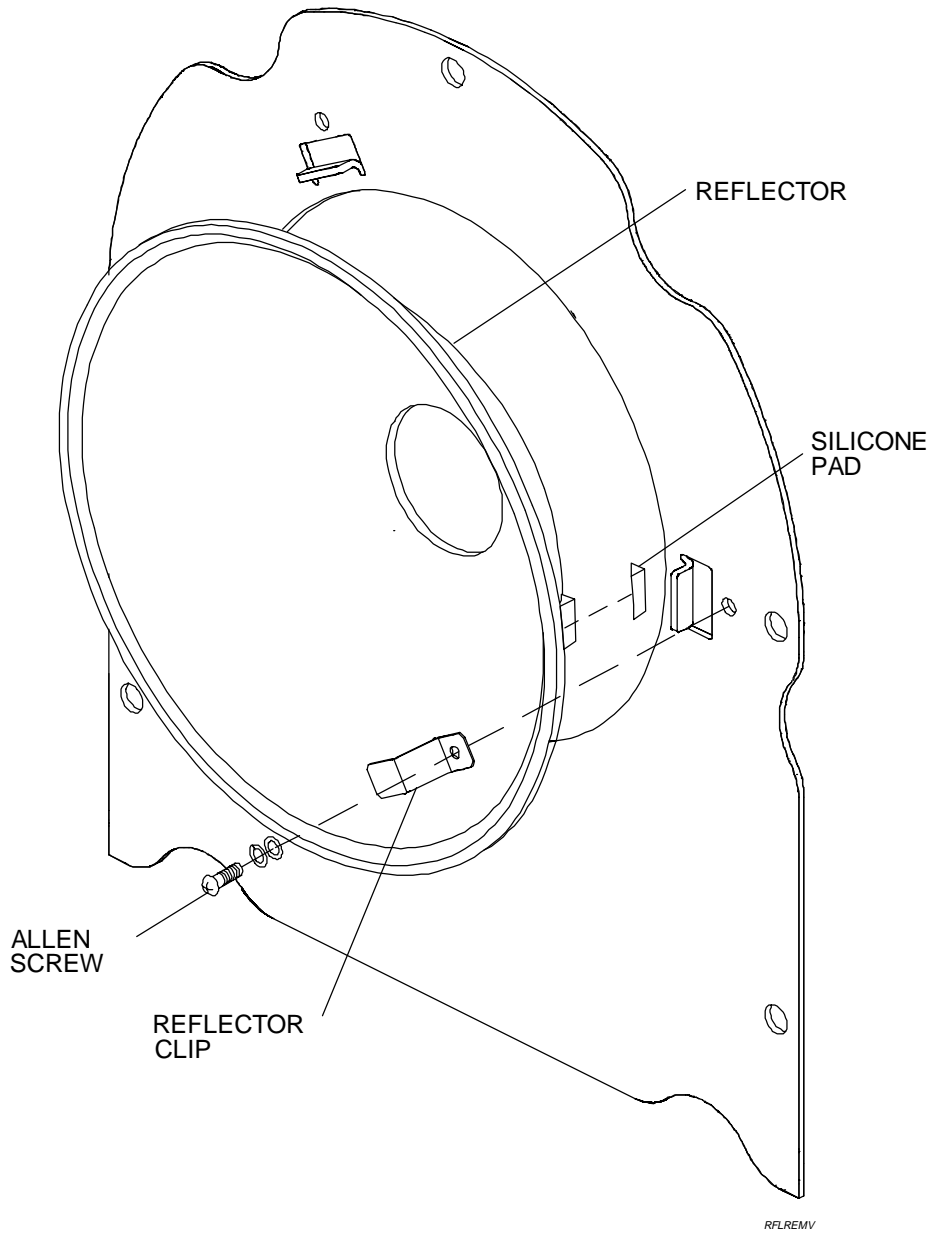


Figure 6.4 - Replacing the Reflector.

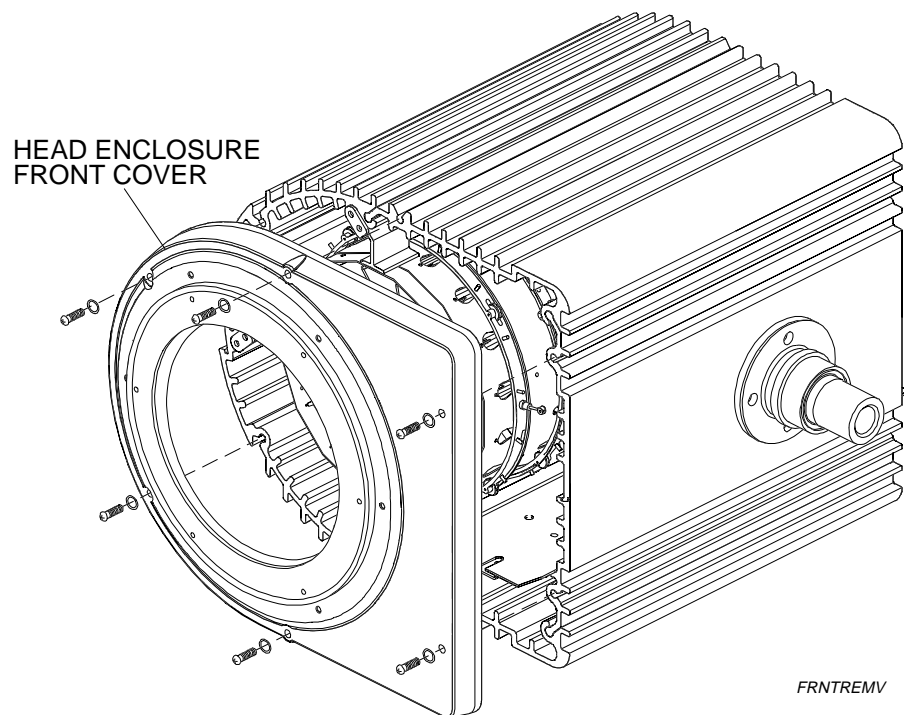


## 6.1.4 Replacing the Color Mechanism

**WARNING:** Disconnect power from unit before performing maintenance or repair procedures

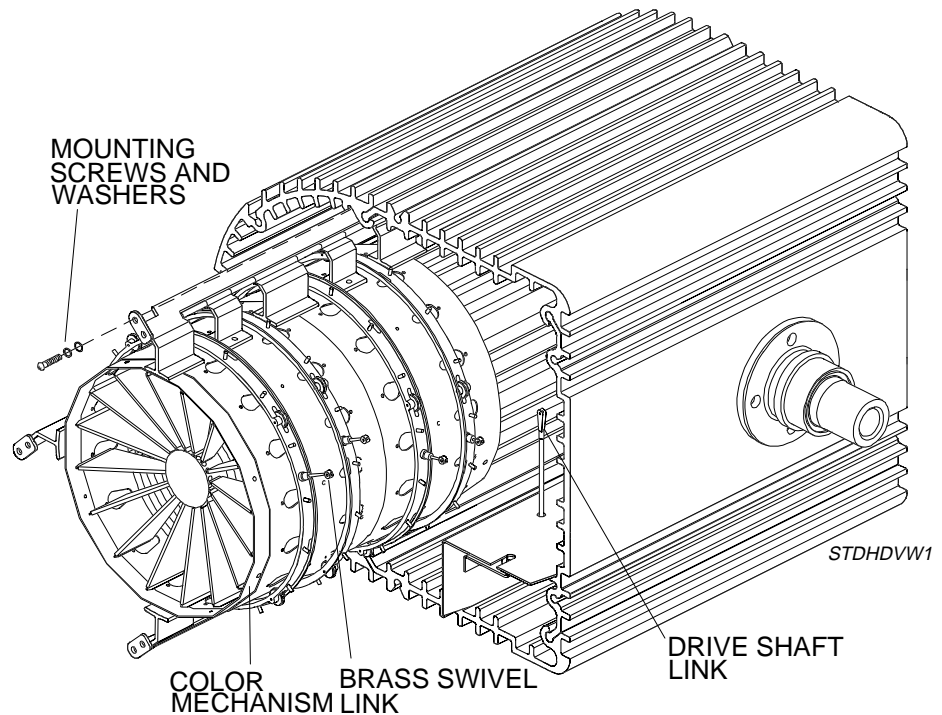
### Removal

1. Using 5/32 Allen Wrench, loosen six outer screws and remove head enclosure front cover (Figure 6.5).



**Figure 6.5 - Removing the Front Cover**

2. Disconnect motor drive shafts from color mechanism drive rings as follows:
  - a. Using fingers or flat blade stubby screwdriver, spread tabs of drive shaft link and remove from brass swivel link.
  - b. Using fingers, thread drive shafts into linear actuator motors so that shafts move away from color mechanism as far as possible.
3. Locate three screws securing color mechanism mounting brackets to walls of head enclosure (Figure 6.6). (Each mounting bracket contains two screws, but it is only necessary to remove the one entering wall of head enclosure). Using #2 Phillips screwdriver, remove three screws and lock washers.
4. Being careful not to damage drive shafts, slide the color mechanism out front of head enclosure.



**Figure 6.6 - Replacing the Color Mechanism.**

### Reinstall

1. Being careful not to damage drive shafts, slide the color mechanism into grooves at front of head enclosure.
2. Reconnect motor drive shafts to color mechanism drive rings as follows:
  - a. Using fingers, thread drive shafts back toward color mechanism until shaft links are near brass swivel link.
  - b. Using a flat blade stubby screwdriver, spread tabs of drive shaft link and connect to brass swivel link. The holes in the shaft link should fit around knobs of brass swivel link.
3. Align holes in color mechanism mounting bracket with corresponding holes in wall of head enclosure. Using screwdriver, reinstall three screws and washers, and tighten securely.
4. Make sure second screw on each mounting bracket is tight.
5. Reinstall head enclosure front cover. (Be sure gasket forms proper seal between mating parts).

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## 6.1.5 Replacing the Linear Actuator Motor Assembly

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**WARNING:** Disconnect power from unit before performing maintenance or repair procedures

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### Removal

1. Using 5/32 Allen Wrench, loosen six outer screws and washers, and remove head enclosure front cover. (See [Figure 6.5](#)).
2. Disconnect motor drive shafts from color mechanism drive rings as follows (see [Figure 6.7](#)):
  - a. Using fingers or flat blade stubby screwdriver, spread tabs of drive shaft link and remove from brass swivel link.
  - b. Using fingers, thread drive shafts into linear actuator motors so that shafts move away from head enclosure as far as possible.
3. Disconnect motor drive cable 16-pin connector from yoke termination PCB (located at front of enclosure) by spreading tabs.
4. Locate three screws securing motor assembly mounting plate to head enclosure. Using #2 screwdriver, remove three screws and lock washers, and cable clamp. (Note position of cable clamp for reinstallation).
5. Being careful not to damage drive shafts, slide the linear actuator motor assembly out front of head enclosure.

### Reinstall

1. Slide new actuator assembly into front of head enclosure, being careful not to damage drive shafts.
2. Reconnect motor drive shafts to color mechanism drive rings as follows:
  - a. Using fingers, thread drive shafts back toward color mechanism until shaft links are near brass swivel link.
  - b. Using a flat blade stubby screwdriver, spread tabs of drive shaft link and connect to brass swivel link. The holes in the shaft link should fit around knobs of brass swivel link.
3. Reconnect motor drive cable 16-pin connector to yoke termination PCB.
4. Using screwdriver, reinstall cable clamp, screws, and washers securing motor assembly mounting plate.
5. Reinstall head enclosure front cover. (Be sure gasket forms proper seal between mating parts).

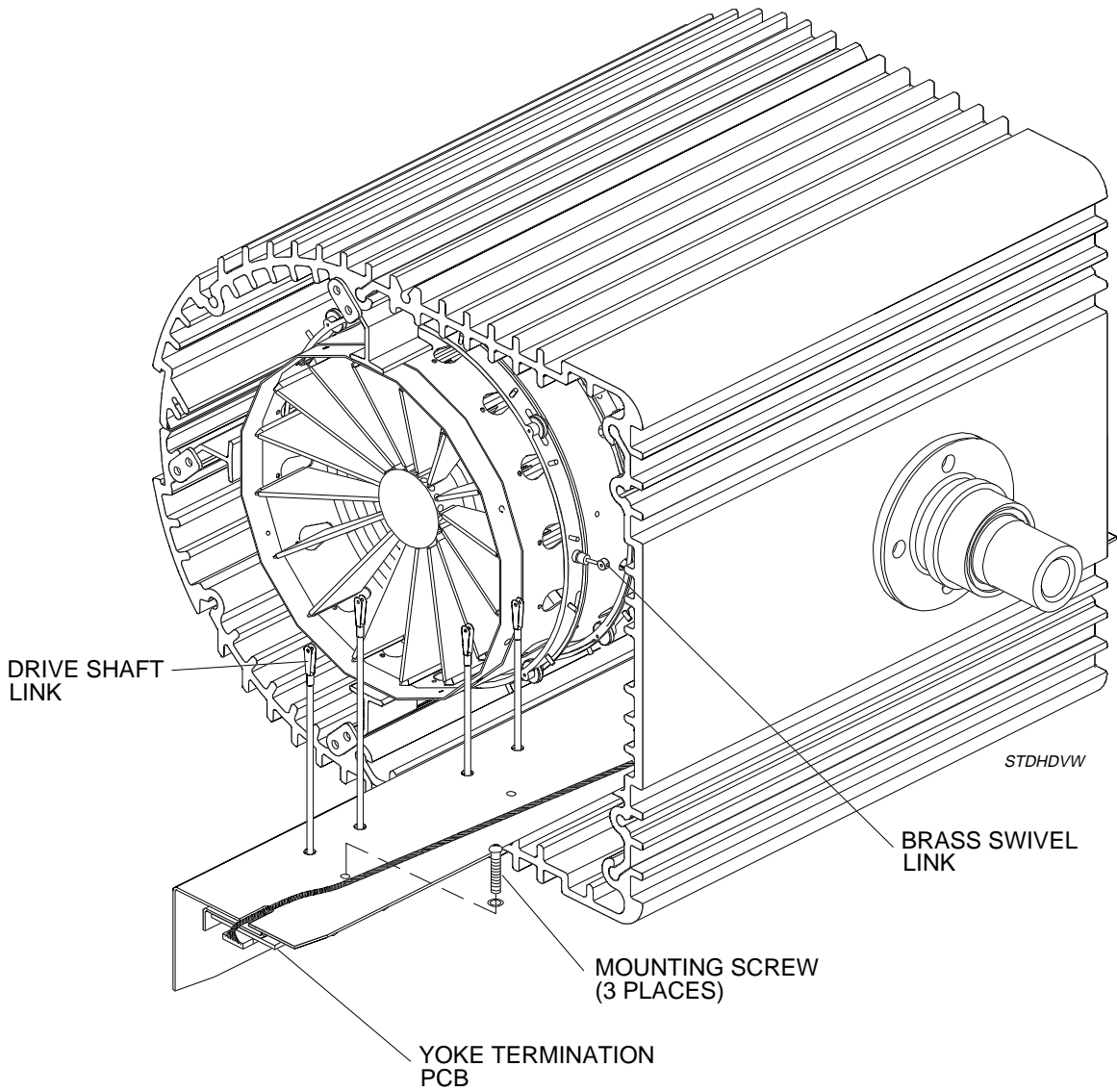


Figure 6.7 - Replacing Linear Actuator Motor Assembly.

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## 6.1.6 Replacing the Ballast Assembly

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**WARNING:** Disconnect power from unit before performing maintenance or repair procedures

---

---

1. Using 5/32 Allen Wrench, loosen four screws and remove stanchion cap. (It may be necessary to break gasket seal with flat screwdriver).
2. Disconnect white AC connector and lamp connector at top of ballast assembly.
3. Disconnect 9-pin CPC and 16-pin CPC connectors from top of electronics assembly. Move wiring away from ballast assembly to provide necessary clearance for removal.
4. Lift ballast assembly vertically from the stanchion until free of guide grooves ([Figure 6.8](#)).

---

**Note:** Ballast is heavy, use caution.

---

5. Replace ballast assembly, being careful not to pinch wiring when sliding into stanchion.
6. Reconnect all connectors and reinstall stanchion cap. (Be sure gasket forms proper seal between mating parts).

---

## 6.1.7 Replacing the Electronics Plate Assembly

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**WARNING:** Disconnect power from unit before performing maintenance or repair procedures

---

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1. Using 5/32 Allen Wrench, loosen four screws and remove stanchion cap. (It may be necessary to break gasket seal with flat screwdriver).
2. Disconnect 9-pin CPC and 16-pin CPC connectors from top of electronics plate assembly.
3. Lift electronics plate assembly vertically from the stanchion until free of guide grooves ([Figure 6.8](#)).
4. Replace electronics plate assembly.
5. Reconnect CPC connectors and reinstall stanchion cap. (Be sure gasket forms proper seal between mating parts).

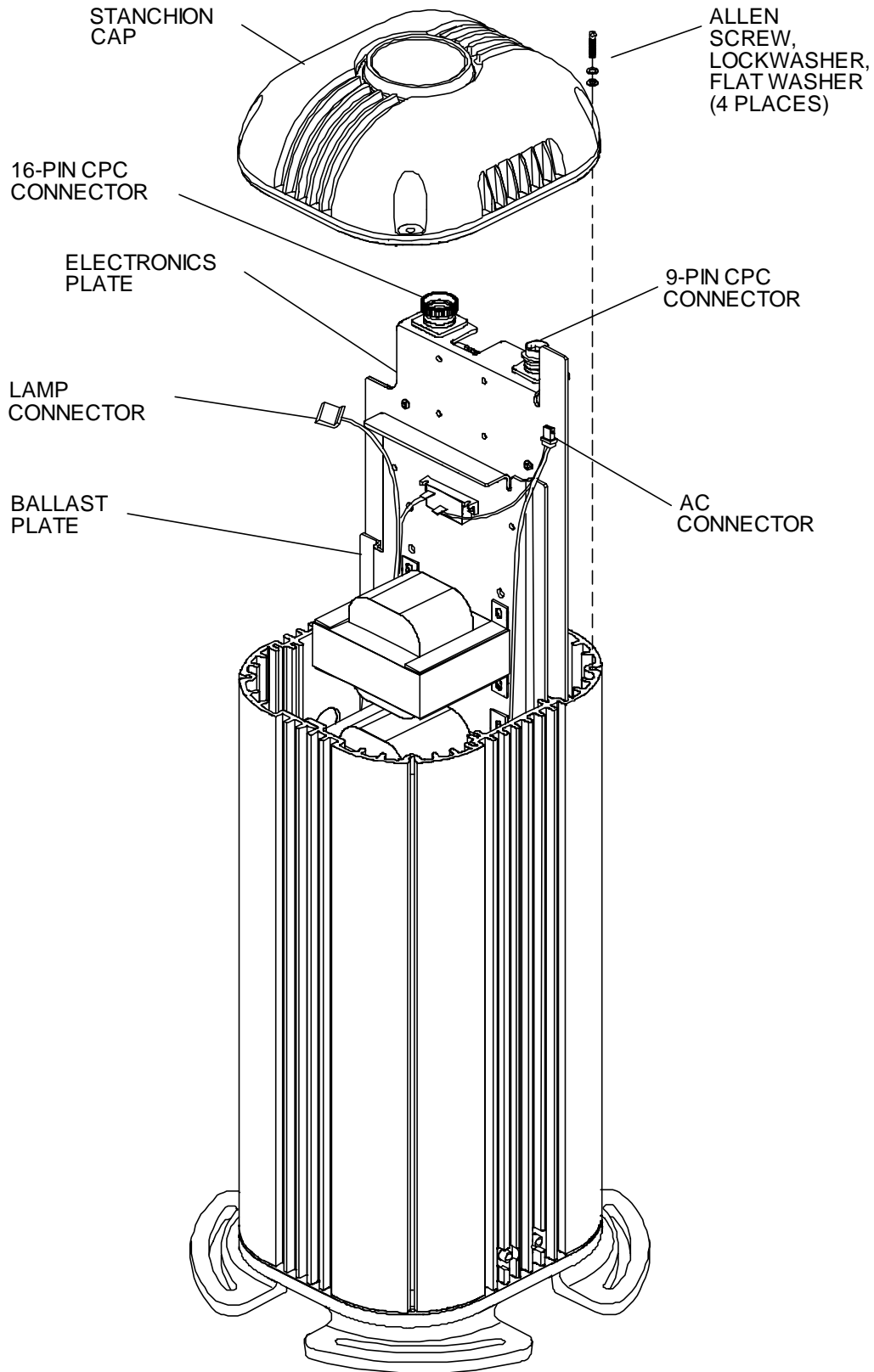
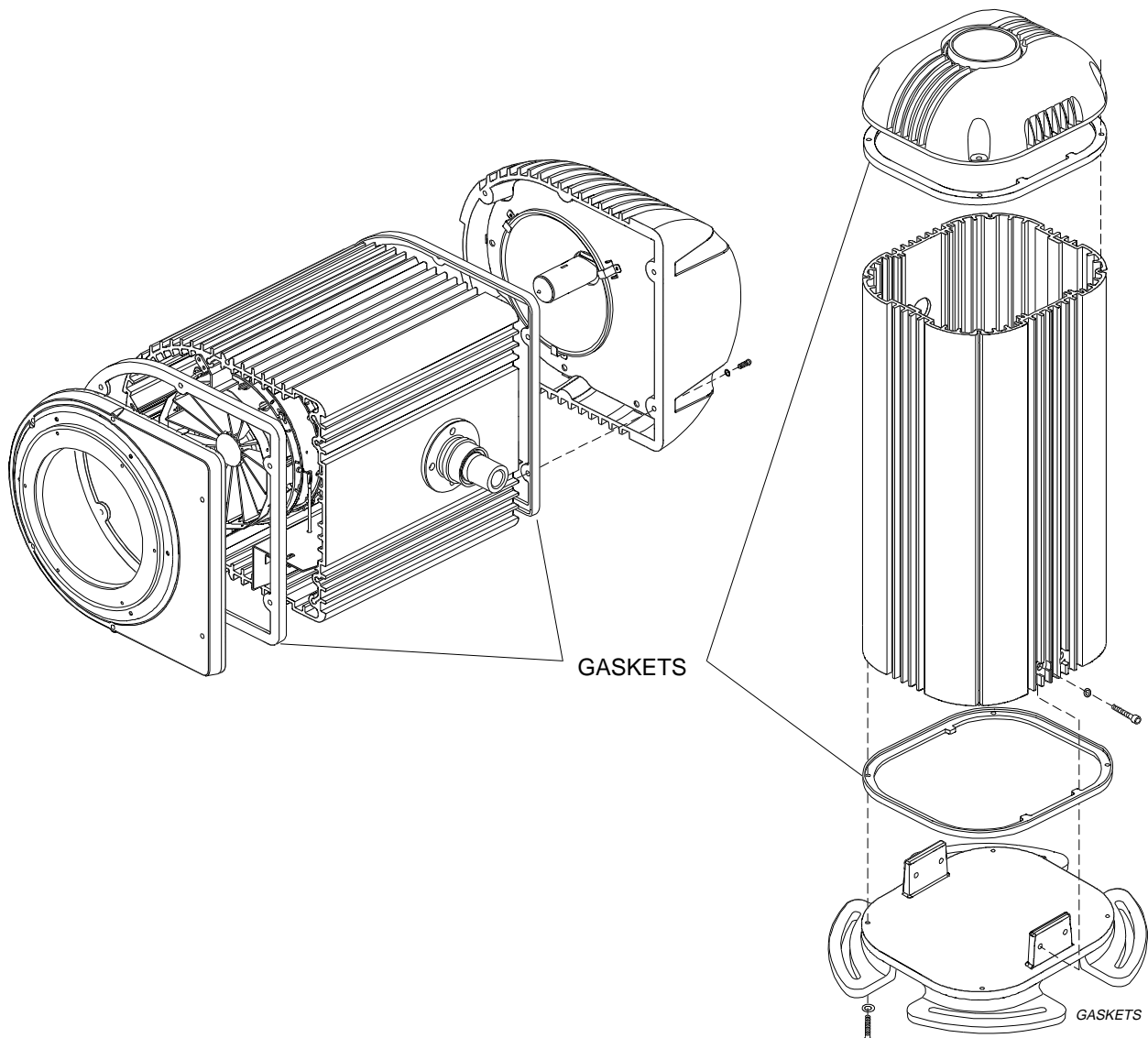


Figure 6.8 -Removing the Electronics Plate and Ballast Plate.

## 6.1.8 Replacing a Gasket

This procedure applies to replacement of gaskets at the top or bottom of the stanchion, and to replacement of gaskets at the front or rear of the head enclosure.

1. Remove old gasket ([Figure 6.9](#)).
2. Make sure surface for reapplication is clean and dry.
3. Install new gasket with raised features toward enclosure sides. Ensure gaskets are sitting flat.
4. Install covers. Refer to previous sections for complete instructions.



**Figure 6.9 - Gasket Replacement.**

---

## 6.1.9 Cleaning Lens, Reflector, and Filters

The following procedures describe the process required to clean the lens, reflector, and color filters.

### Lens

1. Remove lens (see [6.1.2 Replacing the Lens](#)).
2. Using clean lint-free cotton cloth and common glass cleaner (such as Windex® or alcohol), clean the inside and outside of lens thoroughly.
3. Install lens.

### Reflector

1. Remove rear cover (see [6.1.3 Replacing the reflector](#)). Be careful not to damage lamp wires.
2. Using clean cloth and a common glass cleaner (such as Windex® or alcohol), clean the reflector. Do not touch lamp with bare fingers. If lamp is touched, clean lamp thoroughly with glass cleaner.
3. Install rear cover. Be careful not to damage lamp wires.

### Filters

1. Remove color mechanism (see [6.1.4 Replacing Color Mechanism](#)).
2. Using screwdriver, remove screws securing three mounting brackets to color mechanism. Observe proper orientation of brackets.
3. At seam of two color bulkhead halves, remove three screws and separate two halves.

---

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**WARNING:** Be very careful when cleaning filters. The filter edges are very sharp and will cut fingers.

---

---

4. Using common glass cleaner and clean lint-free cotton cloth, clean each filter individually. Be careful not to touch filter with bare fingers. Finger prints will damage color filters.
5. Reassemble luminaire.



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## 6.2 Comprehensive Maintenance and Repair

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**WARNING:** Disconnect power from unit before performing repair procedures.

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**CAUTION:** Maintenance procedures should be performed by qualified personnel.

---

---

**Note:** When replacing covers after performing maintenance, be sure gaskets form proper seal between mating parts.

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### 6.2.1 Replacing the Motor Drive Cable Assembly (Standard Version)

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**Note:** Refer to [8.2.1 Stanchion Wiring](#) and [8.2.3 Head Enclosure Wiring](#).

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---

**WARNING:** Disconnect power from unit before performing maintenance or repair procedures

---

1. Using 5/32 Allen Wrench, loosen four screws and remove stanchion cap (Figure 6.8).
2. Disconnect motor drive cable (16-Pin CPC) connector and white (Series 30) lamp wire connector inside stanchion.
3. Using pin extractor tool, unpin 16-pin CPC connector at exposed end of motor drive cable.
4. Using wire cutter, cut lamp wires flush with connector on side which passes through tilt tube.
5. Using 5/32 Allen Wrench, loosen six outer screws and remove head enclosure front cover (Figure 3.5).
6. Disconnect motor drive cable 16-pin connector from yoke termination PCB by spreading tabs.
7. Using #2 Phillips screwdriver, remove screw securing cable clamp to motor assembly plate and remove cable clamp.
8. Pull lamp wires through tilt tube.
9. Pull motor cable through tilt tube and out through front of head enclosure.

10. Unpin 16-pin CPC connector on new motor drive cable, feed thru tilt tube, and repin on other side (refer to pin assignment in [Table 6.1](#)). Attach to mating connector on electronics assembly.
11. Feed lamp wires thru tilt tube. Strip ends and attach new Series 30 contacts using solder. Insert into outer positions of connector housing (a “click” should be heard when contact is fully inserted). Attach to mating connector on ballast assembly.
12. Replace stanchion cap.
13. Attach 16-pin connector to yoke termination PCB inside head enclosure. Attach cable clamp to motor drive cable and reattach to motor assembly plate.
14. Replace head enclosure front cover.

PIN 1	=	BLK
PIN 2	=	WHT
PIN 3	=	RED
PIN 4	=	GRN
PIN 5	=	ORN
PIN 6	=	BLU
PIN 7	=	WHT/BLK STRIPE
PIN 8	=	RED/BLK STRIPE
PIN 9	=	GRN/BLK STRIPE
PIN 10	=	ORN/BLK STRIPE
PIN 11	=	BLU/BLK STRIPE
PIN 12	=	BLK/WHT STRIPE
PIN 13	=	RED/WHT STRIPE
PIN 14	=	GRN/WHT STRIPE
PIN 15	=	BLU/WHT STRIPE
PIN 16	=	BLK/RED STRIPE

**Table 6.1 - 16-Pin Connector Color Code**

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## 6.2.2 Replacing the Motor Drive Cable Assembly (Remote Ballast Version)

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**Note:** Refer to [8.2.2 Alternate Wiring For Remote Ballast Version](#).

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**WARNING:** Disconnect power from unit before performing maintenance or repair procedures

---

---

1. Using #2 flat screwdriver, remove large cover and small cover from remote mounting assembly, gradually loosening screws in a cross-diagonal pattern to avoid damage to captive screws.
2. Disconnect motor drive cable from 16-position termination block.
3. Using 5/32 Allen Wrench, loosen six outer screws and remove head enclosure front cover ([Figure 6.5](#)).
4. Disconnect motor drive cable 16-pin connector from yoke termination PCB by spreading tabs.
5. Remove screw attaching cable/cable clamp to head enclosure.
6. Pull cable thru tilt tube and out thru front of head enclosure.
7. Feed new motor drive cable thru tilt tube and remote mounting assembly. Connect to termination block in remote mounting assembly. Connect to yoke termination PCB.
8. Replace head enclosure front cover. Replace covers for remote mount.

---

## 6.2.3 Replacing a Series 30 Connector

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**WARNING:** Disconnect power from unit before performing maintenance or repair procedures

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A Series 30 connector is used inside the stanchion of the Standard Version to connect lamp wires. A Series 30 connector is located inside the small section of remote mounting foot on the Remote Ballast Version. Replace connector as follows:

1. Disconnect mating Series 30 connectors.
2. Using wire cutter, cut lamp wires flush with damaged connector.

3. Strip ends of both wires about 1/4 inch (64mm) and attach new Series 30 contacts with solder.
4. Insert contacts into outer positions of new connector housing (a “click” should be heard when contact is fully inserted).
5. Attach to mating connector.

---

## 6.2.4 Replacing a Color Filter

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**Note:** It is important not to touch filter with bare fingers. If touched, clean filter with alcohol.

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---

**WARNING:** Disconnect power from unit before performing maintenance or repair procedures

---

1. Remove color mechanism from head enclosure (refer to [6.1.4 Replacing the Color Mechanism](#)). Separate two halves of color mechanism if necessary, see below.
2. Using #1 flat screwdriver, carefully remove white rubber fitting of damaged filter from filter carrier. Filter will pull free of center hub.
3. Insert pin of new filter into appropriate hole in center hub. Turn filter so that tab on white rubber fitting will fit under lip of filter carrier. (Note orientation of other filters).
4. Using screwdriver, gently push white rubber tab under lip of carrier.

To access amber and magenta filters, separate two halves of color mechanism as follows:

1. Remove color mechanism from head enclosure (refer to [6.1.4 Replacing the Color Mechanism](#)).
2. Using 7/64 inch Allen wrench, remove four hex screws from each of three rails and remove rails.
3. Locate seam in middle of color mechanism (this is where the two halves connect). Using scribe or screwdriver, etch a small mark across seam so that halves can be easily aligned after repair procedure.
4. Locate four 6-32 Phillips screws positioned symmetrically around center of color mechanism just under seam. Using #1 Phillips screwdriver, remove four screws.
5. Carefully separate two halves of color mechanism by gradually pulling apart in a circular pattern.

To reconnect two halves of color mechanism:

6. Line up etched mark made across seam of two halves.
7. Carefully push top half onto bottom half until screw holes match.

8. Replace four screws.
9. Return color mechanism to head enclosure (refer to [6.1.4 Replacing the Color Mechanism](#)).

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## 6.2.5 Replacing the Lamp Socket (See Figure 6.10)

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**WARNING:** Disconnect power from unit before performing maintenance or repair procedures

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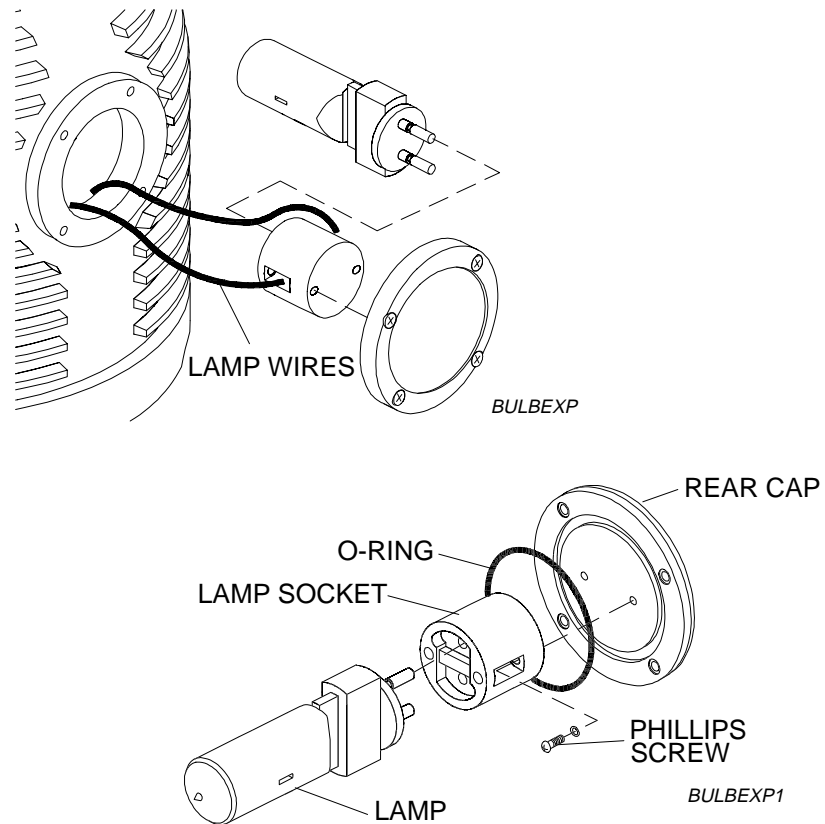
1. Using #2 Phillips screwdriver, loosen four captive screws and remove head enclosure rear cap.
2. Remove lamp from existing lamp socket. (refer to [6.1.1 Replacing the Lamp](#)).

---

**Note:** Do not touch lamp. If you touch the lamp clean with alcohol and a lint free cloth.

---

3. Using 5/64 inch Allen wrench, loosen two screws securing each lamp wire in place at opposite sides of lamp socket. (Lamp wires are attached to a spring which will pull them inside head enclosure once loosened from socket. Hold lamp wires when removing to prevent this from happening). Remove lamp wires.
4. Using #2 Phillips screwdriver, remove two screws at base of lamp socket and detach socket from rear cap.
5. Install new lamp socket on rear cap, positioning in identical orientation.
6. Reattach lamp wires, reinstall lamp, and reinstall rear cap.



**Figure 6.10 - Lamp Socket Removal**

## 6.2.6 Replacing the Lamp Wire Assembly (Standard Version)

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**WARNING:** Disconnect power from unit before performing maintenance or repair procedures

---

1. Using 5/32 Allen Wrench, loosen four screws and remove stanchion cap.
2. Disconnect white lamp connector from ballast.
3. Using wire cutter, cut lamp wires flush with connector on side which passes thru tilt tube.
3. Remove lamp from socket (refer to [6.1.1 Replacing the Lamp and Figure 6.10](#)).

---

**Note:** Do not touch lamp. If you touch the lamp, clean with alcohol and a lint free cloth.

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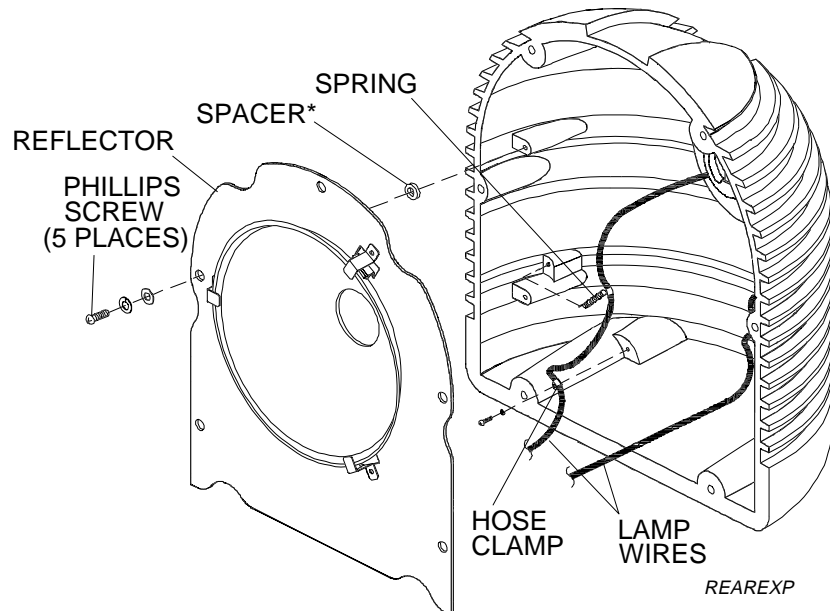
5. Making sure rear cap is in place, remove head enclosure rear casting by removing six screws.
6. Feed lamp wires thru tilt tube and pull completely out of head enclosure.

---

**Note:** Some units contain one or more spacers between reflector mounting plate and rear head enclosure. Be sure to keep all spacers for reinstallation.

---

7. Using #2 Phillips screwdriver, loosen five screws and remove reflector mounting plate (Figure 6.11). Be sure to keep all spacers for reinstallation.
8. Locate two white hose clamps securing lamp wires inside rear casting and remove using screwdriver.
9. Remove spring from each lamp wire, detaching at silver hose clamp position.
10. Using 5/64 inch Allen wrench, loosen two screws securing each lamp wire in place at opposite sides of lamp socket and remove wires.
11. Install new lamp wires in socket and attach spring to silver hose clamp on each wire.
12. Install white hose clamp on each lamp wire 15 inches (38.1cm) from base of lamp socket.
13. Reinstall lamp in socket and carefully set reflector mounting plate in place (be sure to replace all spacers removed in Step 7.). Locate lamp in center of reflector hole (this is important for maximum beam effect) and secure reflector mounting plate in place with five screws.
14. Route wires thru head enclosure and out tilt tube (wires should protrude from tilt tube about 5 inches or 12.7cm) and reattach rear casting.



\* Spacer will not be present in all units.

**Figure 6.11 - Lamp Wire Replacement**

15. Strip back lamp wires and attach Series 30 contacts using solder.



16. Install white Series 30 lamp connector at end of lamp wires:  
insert soldered contacts in two outer positions of connector; contacts click when fully inserted.
17. Reconnect lamp connector to ballast and replace stanchion cap.

---

## 6.2.7 Replacing the Lamp Wire Assembly (Remote Ballast Version)

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**WARNING:** Disconnect power from unit before performing maintenance or repair procedures

---

---

1. Using #2 flat screwdriver, remove small cover from remote mounting assembly, gradually loosening screws in a cross-diagonal pattern to avoid damage to captive screws.
2. Using wire cutter, remove ty-wrap from white lamp connectors and disconnect.
3. Using wire cutter, cut lamp wires flush with connector on side which passes thru tilt tube.
4. Remove lamp from socket (refer to [6.1.1 Replacing the Lamp and Figure 6.10](#)).
5. Making sure rear cap is in place, remove head enclosure rear casting by removing six screws.
6. Feed lamp wires thru tilt tube and pull completely out of head enclosure.
7. Using #2 Phillips screwdriver, loosen five screws and remove reflector mounting plate ([Figure 6.11](#)). Be sure to keep all washers for reinstallation.

---

**Note:** Some units contain one or more spacers between reflector mounting plate and rear head enclosure. Be sure to keep all spacers for reinstallation.

---

8. Locate two white hose clamps securing lamp wires inside rear casting and remove using screwdriver.
9. Remove spring from each lamp wire, detaching at silver hose clamp position.
10. Using 5/64 inch Allen wrench, loosen two screws securing each lamp wire in place at opposite sides of lamp socket and remove wires.
11. Install new lamp wires in socket and attach spring to silver hose clamp on each wire.
12. Install white hose clamp on each lamp wire 15 inches (38.1cm) from base of lamp socket.
13. Route wires thru head enclosure and out tilt tube into remote mounting assembly and reattach rear casting.

14. Strip back lamp wires and attach Series 30 contacts using solder.
15. Install white lamp connector at end of lamp wires by inserting soldered contacts in two outer positions of connector. (A “click” should be heard when contacts are fully inserted).
16. Reconnect white lamp connectors, replace ty-wrap, and reinstall small cover on remote mounting assembly.

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## 6.2.8 Replacing the Motor Drive Shaft Assembly

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**Note:** Motor Drive Shaft Assembly consists of one threaded drive shaft and attached drive shaft link.

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**WARNING:** Disconnect power from unit before performing maintenance or repair procedures

---

---

1. Using 5/32 Allen Wench, loosen six outer screws and remove head enclosure front cover ([Figure 6.5](#)).
2. Using fingers or flat blade stubby screwdriver, spread tabs of damaged drive shaft link and remove from brass swivel link.
3. Rotate drive ring away from shaft if possible.
4. Using fingers, thread damaged motor drive shaft out of linear actuator motor ([Figure 6.12](#)).
5. Apply liberal amount of thermal lubricating grease (we recommend VERSILUBE Silicone Lubricating Grease) to threads of new drive shaft assembly.
6. Thread new drive shaft assembly into actuator motor.
7. Connect drive shaft link to brass swivel link.
8. Replace head enclosure front cover.

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## 6.2.9 Replacing a Linear Actuator Motor

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**WARNING:** Disconnect power from unit before performing maintenance or repair procedures

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1. Remove linear actuator motor assembly from head enclosure. (refer to [6.1.5 Replacing the Linear Actuator Motor Assembly](#)).

2. Using wire cutter, carefully remove ty-wraps binding wires of four motors together.
3. Disconnect green MTA receptacle (of the motor to be changed) from the yoke termination board.
4. Using 3/32 inch Allen wrench, remove the two hex head screws, lock washers, and flat washers securing motor to mounting plate (Figure 6.12 & 6.13).
5. Remove black heat sink from old motor and mount identically on new motor.
6. Install new motor using hex head screws, lock washers, and flat washers. Reconnect MTA receptacle and replace ty-wraps. Reinstall linear actuator assembly inside head enclosure.

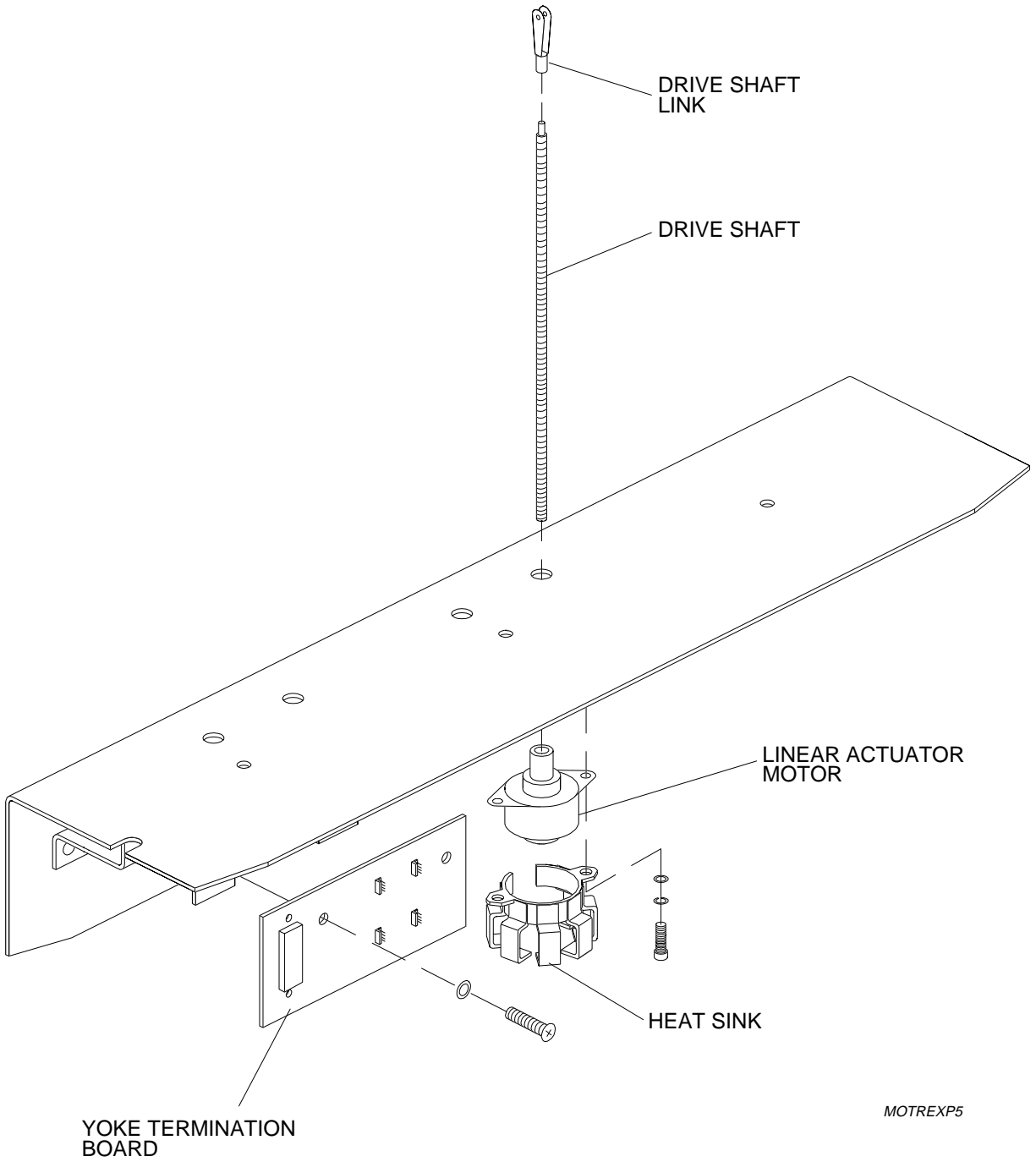
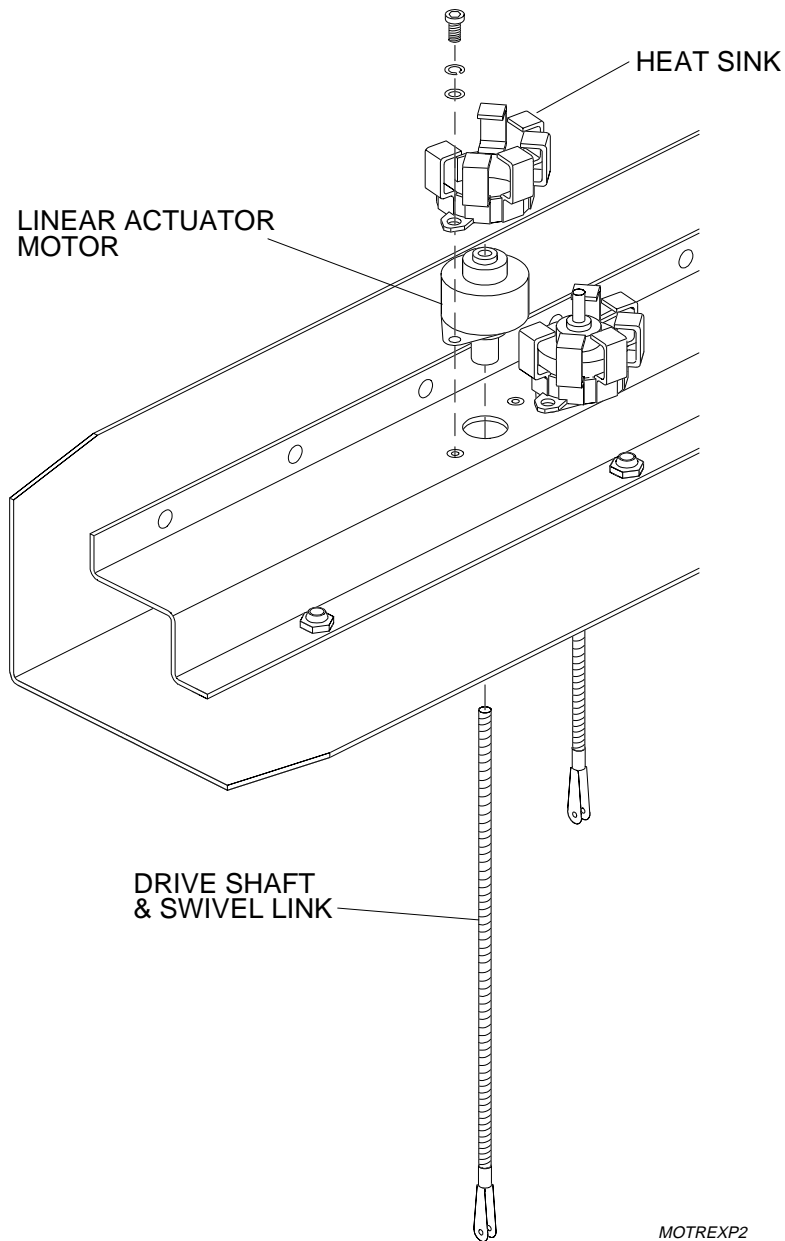


Figure 6.12 - Swivel Link and Actuator Motor.



**Figure 6.13 - Linear Actuator Motor Removal.**

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### 6.2.10 Replacing the Motor Drive Swivel Link

If a motor drive swivel link is lost during maintenance of the color mechanism or linear actuator assembly, replace swivel link as follows:

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**Note:** Swivel link threads onto the drive ring of color mechanism.

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**WARNING:** Disconnect power from unit before performing maintenance or repair procedures

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1. Thread new swivel link onto drive ring until even with other swivel links.
2. Reconnect to drive shaft link.

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### 6.2.11 Replacing the Yoke Termination PCB

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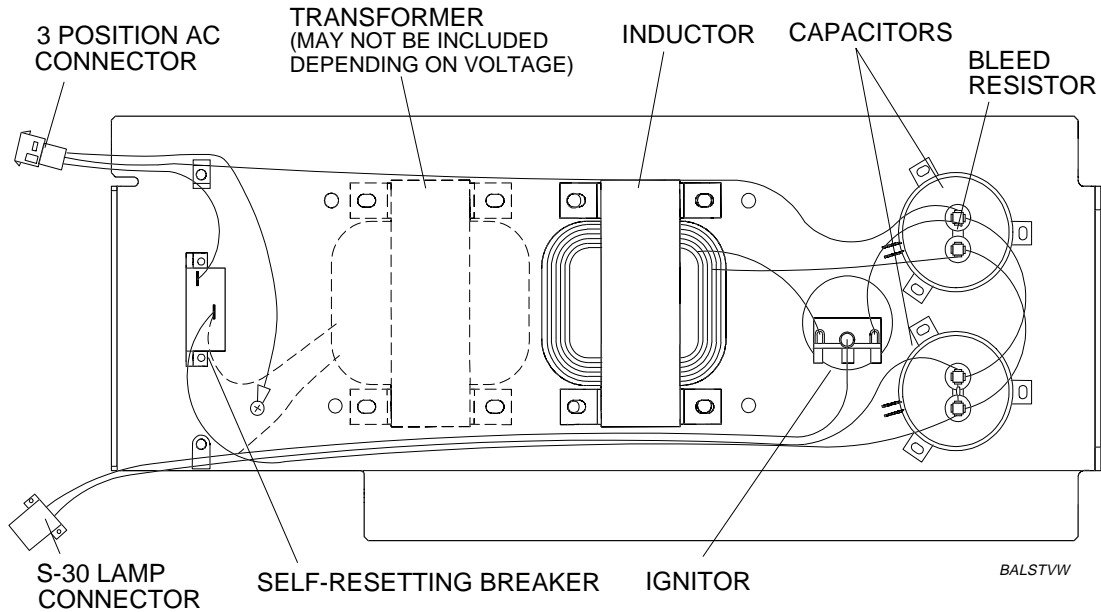
**WARNING:** Disconnect power from unit before performing maintenance or repair procedures

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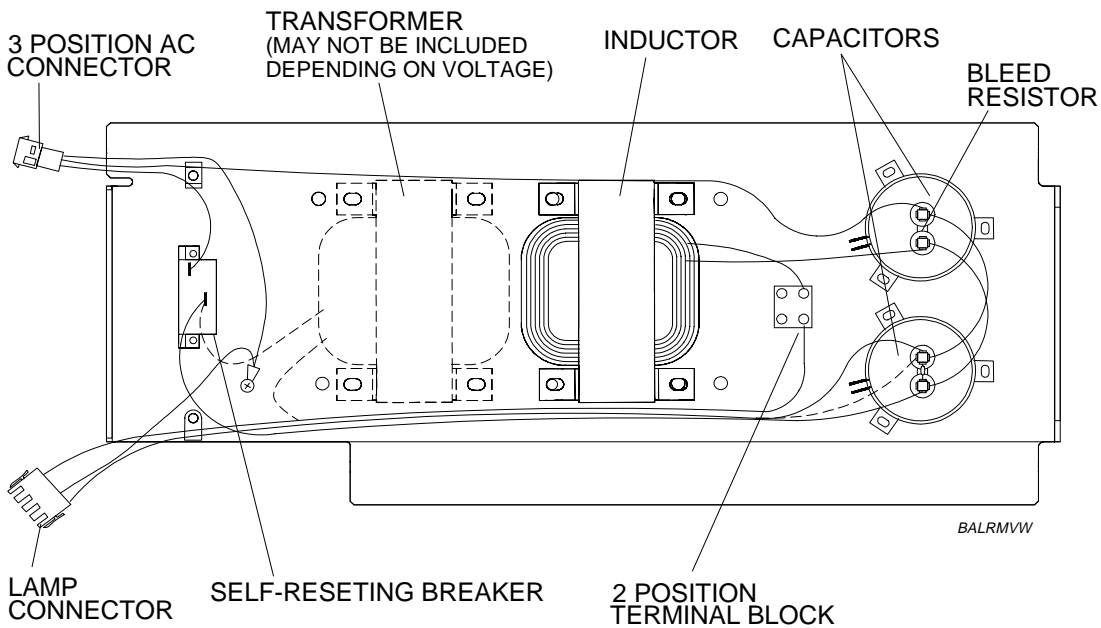
1. Using 5/32 Allen Wrench, remove head enclosure front cover (see [Figure 6.5](#)).
2. Remove linear actuator assembly from head enclosure (refer to [6.1.5 Replacing the Linear Actuator Motor Assembly](#)).
3. Disconnect four green MTA receptacles (make note of proper locations).
4. Using #2 Phillips screwdriver, remove two screws and flat washer securing yoke termination PCB to linear actuator mounting plate ([Figure 6.12](#)).
5. Replace yoke termination PCB. Reconnect four green receptacles.
6. Reinstall linear actuator assembly inside head enclosure.

### 6.2.12 Ballast Assembly Figures

For instructions detailing the removal of ballast assembly from stanchion, refer to [6.1.6 Replacing the Ballast Assembly](#). Refer to the following three drawings for procedures 6.2.13 through 6.2.19.



**Figure 6.14 - Ballast (Standard Version)**



**Figure 6.15 - Ballast (Remote Version)**

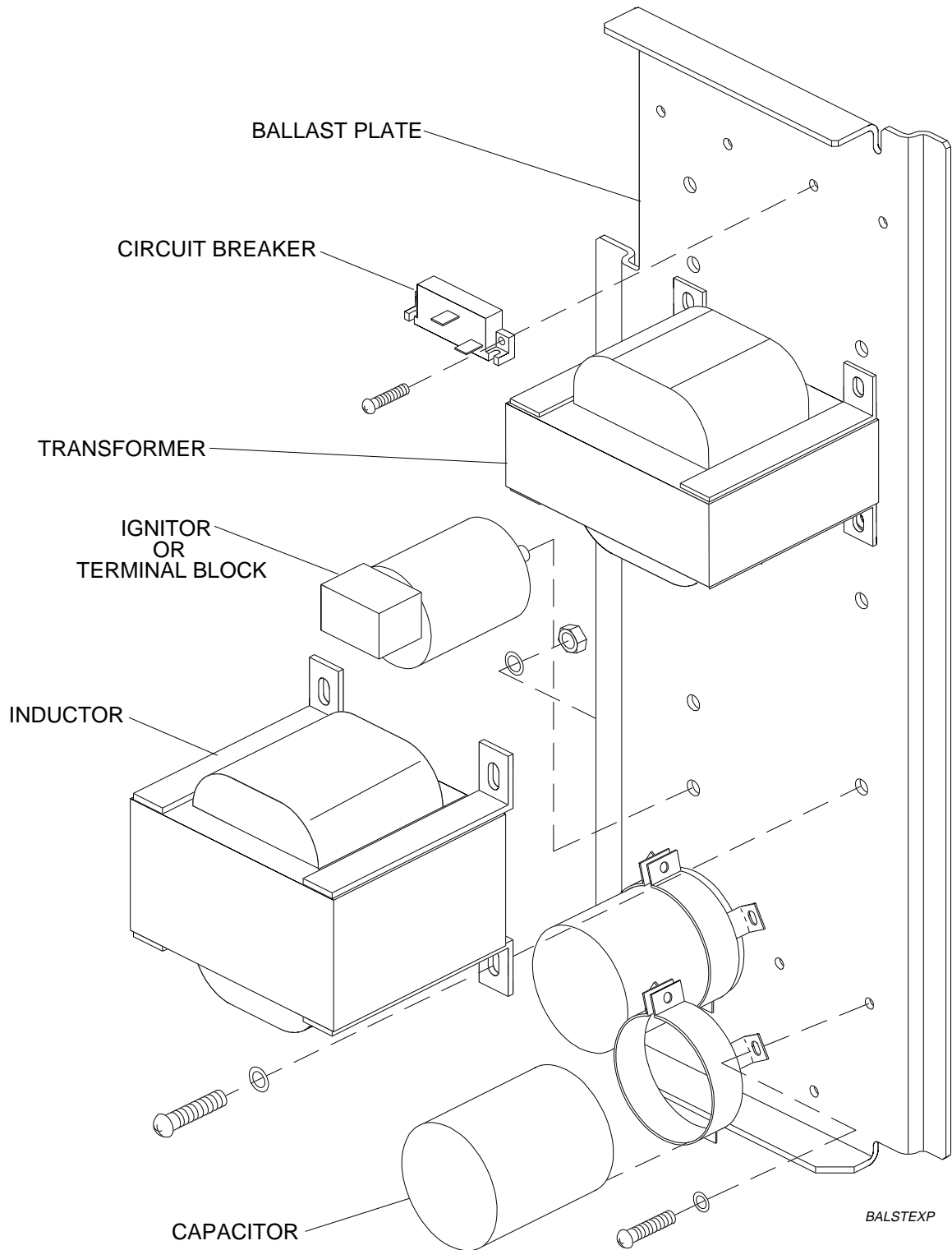


Figure 6.16 - Ballast Assembly.



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### 6.2.13 Replacing the Circuit Breaker

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**WARNING:** Disconnect power from unit before performing maintenance or repair procedures

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1. Remove ballast assembly from stanchion.
2. Disconnect the two spade connectors attached to circuit breaker, noting their position for reconnection.
3. Using #1 Phillips screwdriver, remove the two screws securing breaker to ballast plate.
4. Replace circuit breaker. Reattach to ballast plate and reconnect spade connectors.

---

### 6.2.14 Replacing a Capacitor

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**WARNING:** Disconnect power from unit before performing maintenance or repair procedures

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1. Remove ballast assembly from stanchion.
2. Using wire cutter, remove ty-wrap around base of capacitor.
3. Remove all spade connectors attached to top of capacitor, noting their positions for reconnection.
4. Using a #2 flat screwdriver, loosen clamp holding capacitor until capacitor can be removed.
5. Replace capacitor. Retighten clamp and reconnect spade connectors in proper locations. Replace ty-wrap.
6. Ensure that the appropriate capacitor contains a bleed resistor across terminals (Figure [6.14](#) and [6.15](#)).  
If not, call ETC Technical Support at (800-688-4116).

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### 6.2.15 Replacing the Ignitor (Standard Version)

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**WARNING:** Disconnect power from unit before performing maintenance or repair procedures

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1. Remove ballast assembly from stanchion.
2. Using wire cutter, remove ty-wrap around base of ignitor.
3. Using #1 flat screwdriver, remove wires from terminals at top of ignitor, noting their positions for reconnection. (Also note orientation of ignitor itself).
4. Locate 1/2 inch (13mm) nut on under side of ballast plate securing ignitor. Using 1/2 inch (13mm) nutdriver or socket, remove nut and lock washer.
5. Replace ignitor, securing with nut and lock washer, being careful not to overtighten. Reconnect wires, making sure good contact is made in the ignitor terminals. Replace ty-wrap.

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### 6.2.16 Replacing the Ignitor (Remote Ballast Version)

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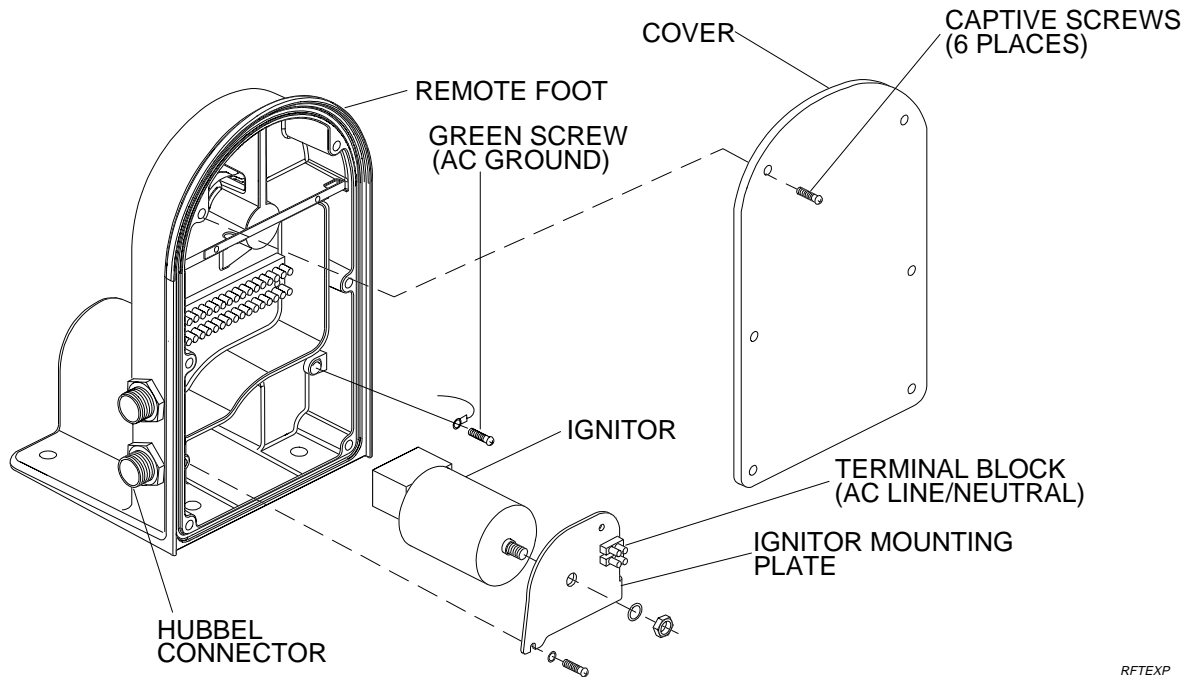
**WARNING:** Disconnect power from unit before performing maintenance or repair procedures

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1. Using #2 flat screwdriver, remove large cover from remote mounting assembly, gradually loosening screws in a cross-diagonal pattern to avoid damage to captive screws ([Figure 6.17](#)).
2. Disconnect AC Ground from green screw, AC Line (black), and AC Neutral (white) from terminal block (only disconnect incoming wires - i.e. those which enter thru Hubbell connector).
3. Using #2 Phillips screwdriver, remove screws securing ignitor mounting plate to inside of remote mounting assembly.
4. Using #1 flat screwdriver, remove only the wires connected to terminals at top of ignitor, noting their positions for reconnection.
5. Using 1/2 inch (13mm) nutdriver or socket, remove nut, lock washer, and flat washer securing ignitor to ignitor mounting plate.
6. Using wire cutter, cut ty-wrap and remove.

7. Replace ignitor, securing with nut, lock washer, and flat washer, being careful not to overtighten. Reconnect ignitor wires, making sure good contact is made in the ignitor terminals.
8. Reinstall ignitor mounting plate to inside of remote mounting assembly. Reconnect AC Ground and AC Line/Neutral and replace cover.



**Figure 6.17 - Remote Foot Ignitor.**

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## 6.2.17 Replacing the Inductor

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**WARNING:** Disconnect power from unit before performing maintenance or repair procedures

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1. Remove ballast assembly from stanchion.
2. Using wire cutter, remove all ty-wraps around base of inductor. Remove all ty-wraps binding inductor wires to other components, noting their locations.
3. Disconnect inductor wire connected to capacitor, noting its positions for reconnection.
4. Using #1 flat screwdriver, remove inductor wire from ignitor terminal (standard version) or from terminal block (remote version), noting its position for reconnection.
5. Using #2 Phillips screwdriver, remove four screws securing inductor to ballast plate.
6. Replace inductor, securing with four screws. Reattach wiring and replace ty-wraps.

---

## 6.2.18 Replacing the Transformer

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**WARNING:** Disconnect power from unit before performing maintenance or repair procedures

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1. Remove ballast assembly from stanchion.
2. Using wire cutter, remove ty-wraps binding transformer wires, noting their positions for reconnection.
3. Disconnect wire connected to circuit breaker.
4. Disconnect transformer wires connected to capacitors (one white and one black), noting their positions.
5. Using #2 Phillips screwdriver, remove four screws securing transformer to ballast plate.
6. Replace transformer, securing with four screws. Reattach wiring and replace ty-wraps.

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## 6.2.19 Replacing the Ballast Plate

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**WARNING:** Disconnect power from unit before performing maintenance or repair procedures

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1. Remove ballast assembly from stanchion.
2. Remove all components from ballast plate.
3. Replace plate. Reattach components.

---

**Note:** See Section 8.2.1 – Stanchion Wiring

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## 6.2.20 Replacing the AC/DMX Input Cable Assembly

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**WARNING:** Disconnect power from unit before performing maintenance or repair procedures

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1. Disconnect wiring (control cable and AC cable) from junction box. Cut off all connectors, terminal lugs, etc.
2. Remove stanchion cap.
3. Remove ballast and electronics plate assemblies from stanchion (refer to [6.1.6 Replacing the Ballast Assembly](#) and [6.1.7 Replacing the Electronics Plate Assembly](#)).
4. Using #2 Phillips screwdriver, remove screw(s) securing green (or green/yellow in European version) ground conductor to stanchion wall.
5. Using wire cutter, remove ty-wraps securing cable assembly to stanchion wall.
6. Locate two Hubbell cord connectors securing cabling to lower stanchion enclosure (bottom two connectors in the case of remote ballast version). Using fingers or channel locks, unscrew compression nuts of both Hubbell connectors. Remove nut, bushing, and slip-on-ring from cabling.
7. Feed cabling thru Hubbell connector outlets and thru body of stanchion.
8. Replace cable assembly. Reconnect ground conductor, replace ty-wraps, and retighten Hubbell connectors.
9. Reinstall stanchion cap.
10. Connect cables to junction box. (Refer to Chapter [3.0 Installation](#) for detailed procedure).

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### 6.2.21 Replacing AC Output Cable (Remote Version Only)

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**WARNING:** Disconnect power from unit before performing maintenance or repair procedures

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1. Remove stanchion cap.
2. Remove ballast and electronics plate assemblies from stanchion (refer to [6.1.6 Replacing the Ballast Assembly](#) and [6.1.7 Replacing the Electronics Plate Assembly](#)).
3. Using wire cutter, remove ty-wraps securing cable to stanchion wall.
4. Using pin extractor, remove three pins from 4-position brown plug at top of stanchion, noting their positions.
5. Locate Hubbell cord connector securing cable to lower stanchion enclosure. Using fingers or channel locks, unscrew compression nut of Hubbell connector. Pull cable out of stanchion and remove nut, bushing, and slip-on-ring.
6. Using #2 flat screwdriver, remove large cover from remote mounting assembly, gradually loosening screws in a cross-diagonal pattern to avoid damage to captive screws.
7. Using #2 Phillips screwdriver, remove green ground conductor from green ground screw.
8. Using #1 flat screwdriver, remove black and white conductors from 2-position termination block.
9. Locate Hubbell cord connector securing cable to remote mounting assembly. Using fingers or channel locks, unscrew compression nut of Hubbell connector. Pull cable out of remote mounting assembly and remove nut, bushing, and slip-on-ring.
10. Replace cable assembly. Insert pins into 4-position brown plug, reconnect conductors, replace ty-wraps, and retighten Hubbell connectors.
11. Reinstall all covers.

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### 6.2.22 Replacing Data Output Cable to Head (Remote Version Only)

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**WARNING:** Disconnect power from unit before performing maintenance or repair procedures

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1. Remove stanchion cap.
2. Remove ballast and electronics plate assemblies from stanchion (refer to [6.1.6 Replacing the Ballast Assembly](#) and [6.1.7 Replacing the Electronics Plate Assembly](#)).
3. Using wire cutter, remove ty-wraps securing cable to stanchion wall.
4. Locate black 16-pin CPC connector and cut from end of cable.
5. Locate Hubbell cord connector securing cable to lower stanchion enclosure. Using fingers or channel locks, unscrew compression nut of Hubbell connector. Pull cable out of stanchion.
6. Using #2 flat screwdriver, remove large cover from remote mounting assembly, gradually loosening screws in a cross-diagonal pattern to avoid damage to captive screws.
7. Using #1 flat screwdriver, remove wiring from 16-position termination block.
8. Locate Hubbell cord connector securing cable to remote mounting assembly. Using fingers or channel locks, unscrew compression nut of Hubbell connector. Pull cable out of remote mounting assembly.
9. Replace cable assembly. Install black 16-pin CPC to pinned end of cable using pin assignment in [Table 1.1](#) (refer to [6.2.1 Replacing the Motor Drive Cable Assembly - Standard Version](#)). Install wires into terminal strip in remote mount using affixed label as a guide. (Terminal strip can be removed from remote mount to facilitate easier wire attachment if necessary).
10. Replace ty-wraps, retighten Hubbell connectors, install ballast and electronics plate, and reattach all connections.
11. Reinstall all covers.

---

### **6.2.23 Electronics Plate Assembly Figures (DMX only version)**

For instructions detailing the removal of electronics plate assembly from stanchion, refer to [6.1.7 Replacing the Electronics Plate Assembly](#). Refer to Figures 6.18 and 6.19 for procedures 6.2.24 through 6.2.30.

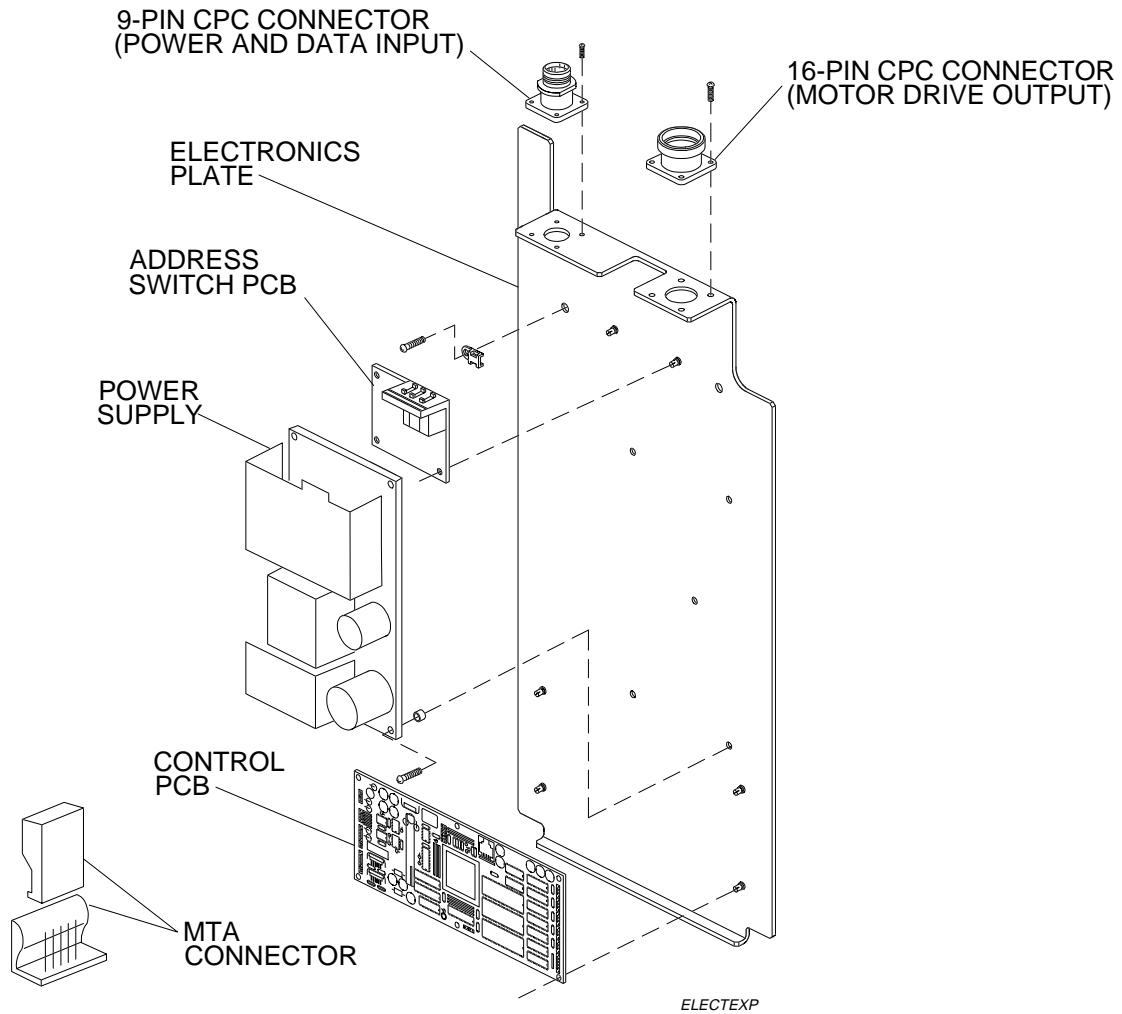


Figure 6.18 - Electronics Plate Assembly

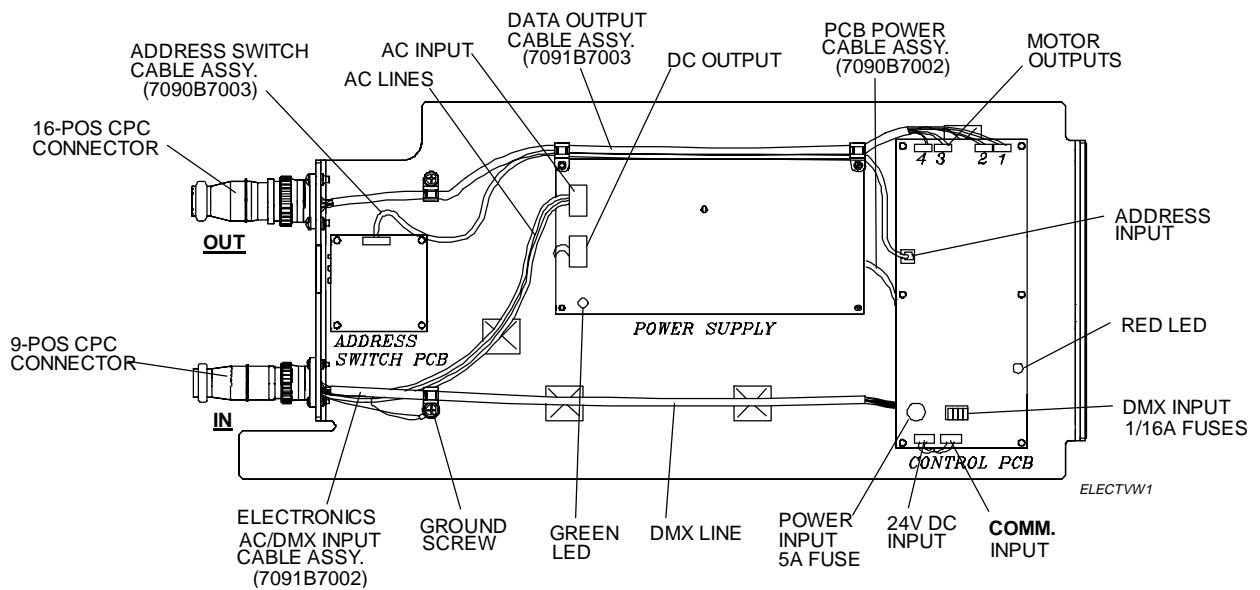


Figure 6.19 Electronics Plate Wiring (DMX only version)



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### 6.2.24 Replacing the Address Switch Cable

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**WARNING:** Disconnect power from unit before performing maintenance or repair procedures

---

---

1. Remove electronics plate assembly from stanchion.
2. Using wire cutter, remove ty-wraps binding address switch cable to motor drive cable, noting their positions.
3. Disconnect white MTA receptacle from address switch PCB and address input connector from lamp control PCB.
4. Replace address switch cable. Replace ty-wraps.

---

### 6.2.25 Replacing the Address Switch PCB

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**WARNING:** Disconnect power from unit before performing maintenance or repair procedures

---

---

1. Remove electronics plate assembly from stanchion.
2. Disconnect white MTA receptacle from address switch PCB.
3. Using fingers, remove PCB from four pins on electronics plate (PCB corners will snap free of pins).
4. Replace PCB and reconnect MTA receptacle.

---

### 6.2.26 Replacing the Data Output Cable in Stanchion Assembly

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---

**WARNING:** Disconnect power from unit before performing maintenance or repair procedures

---

---

1. Remove electronics plate assembly from stanchion.
2. Using wire cutter, remove ty-wraps binding cable to plate.
3. Disconnect motor output connectors.
4. Remove four screws holding black 16-pin CPC connector and pull cable out through hole.
5. Install new cable assembly, replacing all tie-wraps, connectors and screws.

---

### 6.2.27 Replacing the Electronics AC/DMX Input Cable Assembly

---

---

**WARNING:** Disconnect power from unit before performing maintenance or repair procedures

---

---

1. Remove electronics plate assembly from stanchion.
2. AC input cable:
  - a. Using wire cutter, remove ty-wraps binding black and white AC lines to plate or other cables.
  - b. Disconnect orange AC input connector from power supply.
  - c. Using pin extractor, eject pin 7 (white AC) and pin 9 (black AC) from black 9-pin CPC connector and remove AC portion of cable assembly.
3. DMX/ground cable:
  - a. Using wire cutter, remove ty-wraps binding DMX/ground cables
  - b. Lift lamp control PCB free from stud on corner nearest 24VDC input.
  - c. Disconnect 24VDC input connector and remove cable from under lamp control PCB.
  - d. Remove screw attaching ground wire to electronics plate.
  - e. Remove screws attaching black 9-pin CPC connector to electronics plate and pull cable assembly through hole.
4. Install new cable, reattach connectors, tie-wraps, ground screw and pins 7 and 9 of AC line.

---

### 6.2.28 Replacing the Lamp Control PCB

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---

**WARNING:** Disconnect power from unit before performing maintenance or repair procedures

---

---

1. Remove electronics plate assembly from stanchion.
2. Disconnect motor output, DMX input, 24VDC input, and address input connectors from lamp control PCB.
3. Using fingers, remove PCB from six pins on electronics plate (PCB will snap free of pins).
4. Replace PCB and attach connectors.

---

### 6.2.29 Replacing the PCB Power Connection Cable

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---

**WARNING:** Disconnect power from unit before performing maintenance or repair procedures

---

---

1. Remove electronics plate assembly from stanchion.
2. Locate screw nearest to green LED on power supply. Using #2 Phillips screwdriver, remove screw. This will allow corner of power supply to lift slightly. Repeat for corresponding corner near lamp control PCB.
3. Disconnect red DC output connector from the power supply. Slide cable under power supply and out through corners.
4. Disconnect red 24V DC input connector on lamp control PCB.
5. Locate corner of lamp control PCB nearest DC input connector. Using fingers, snap corner free of pin.
6. Slide cable out through corner.
7. Replace cable. Attach connectors and resecure power supply and lamp control PCB.

---

### 6.2.30 Replacing the Power Supply

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**WARNING:** Disconnect power from unit before performing maintenance or repair procedures

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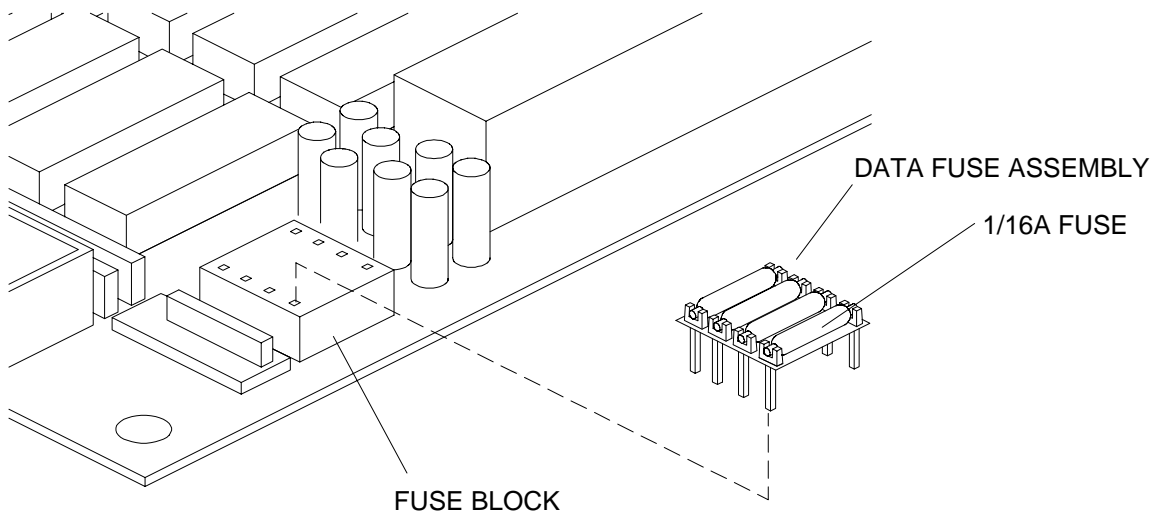
1. Remove electronics plate assembly from stanchion.
2. Disconnect red DC output and orange AC input connectors from the power supply.
3. Using a #2 Phillips screwdriver, remove five screws securing power supply to the electronics plate.
4. Replace power supply. Secure with screws and attach connectors.

### 6.2.31 Replacing Lamp Control PCB 1/16A, 125V, Pico II Fuse

**WARNING:** Disconnect power from unit before performing maintenance or repair procedures

To remove and replace 1/16A 125V PICO II Fuses, do the following:

1. Remove electronics plate from stanchion.
2. At lamp control PCB, carefully pull up and out the Data Fuse Assembly from fuse Block (Figure 6.20).



**Figure 6.20 Upgrade CPU PCB 1/16A Fuse**

3. Carefully slide new Data Fuse Assembly into fuse block.
4. Replace electronics plate.

### 6.2.32 Electronics Plate Assembly Figures (Composer Controller Version)

**WARNING:** Disconnect power from unit before performing maintenance or repair procedures

For instructions detailing the removal of electronics plate assembly from stanchion, refer to [6.1.7 Replacing the Electronics Plate Assembly](#). Refer to Figures 6.21 and 6.22 for procedures 6.2.33 through 6.2.37.

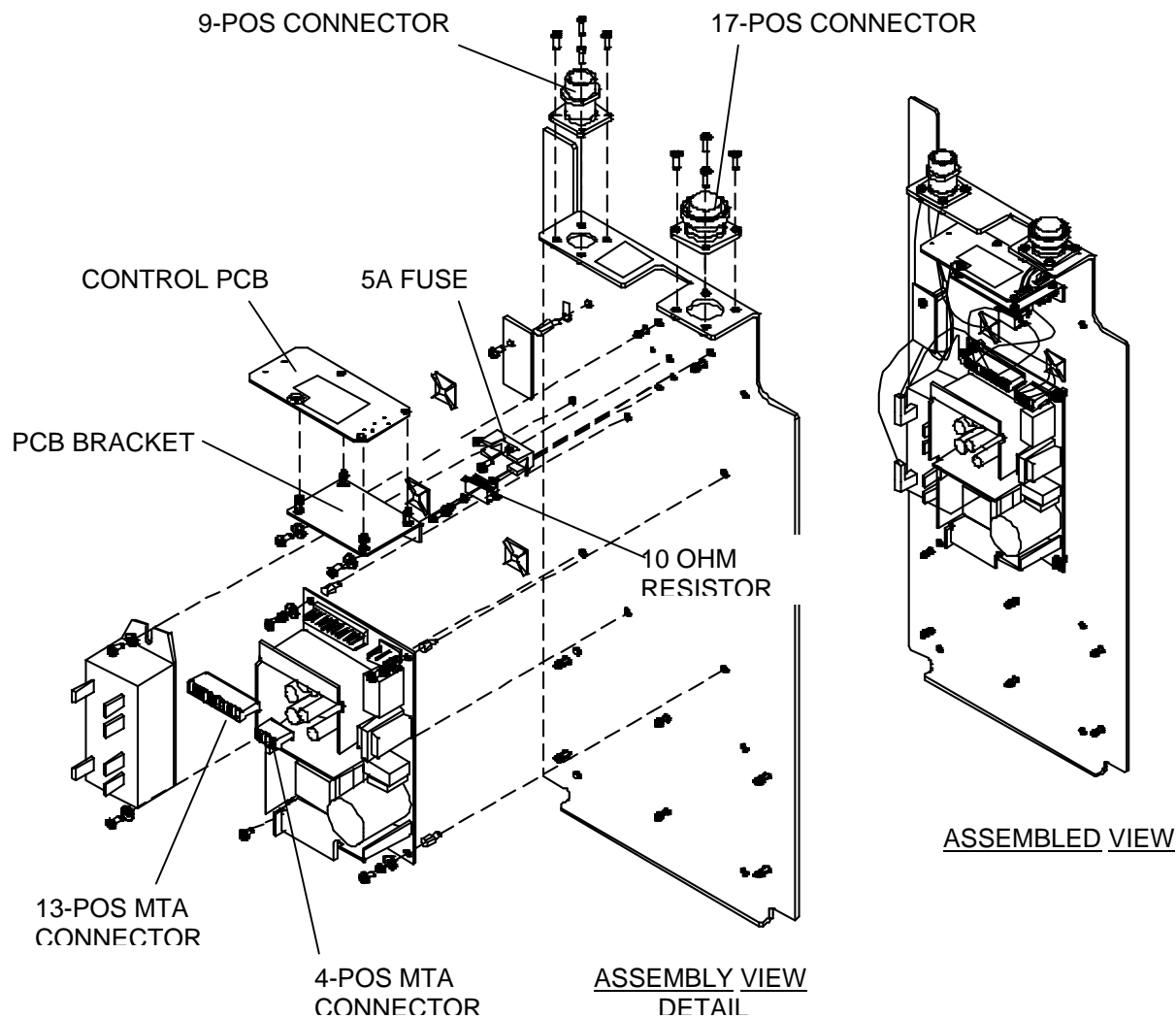
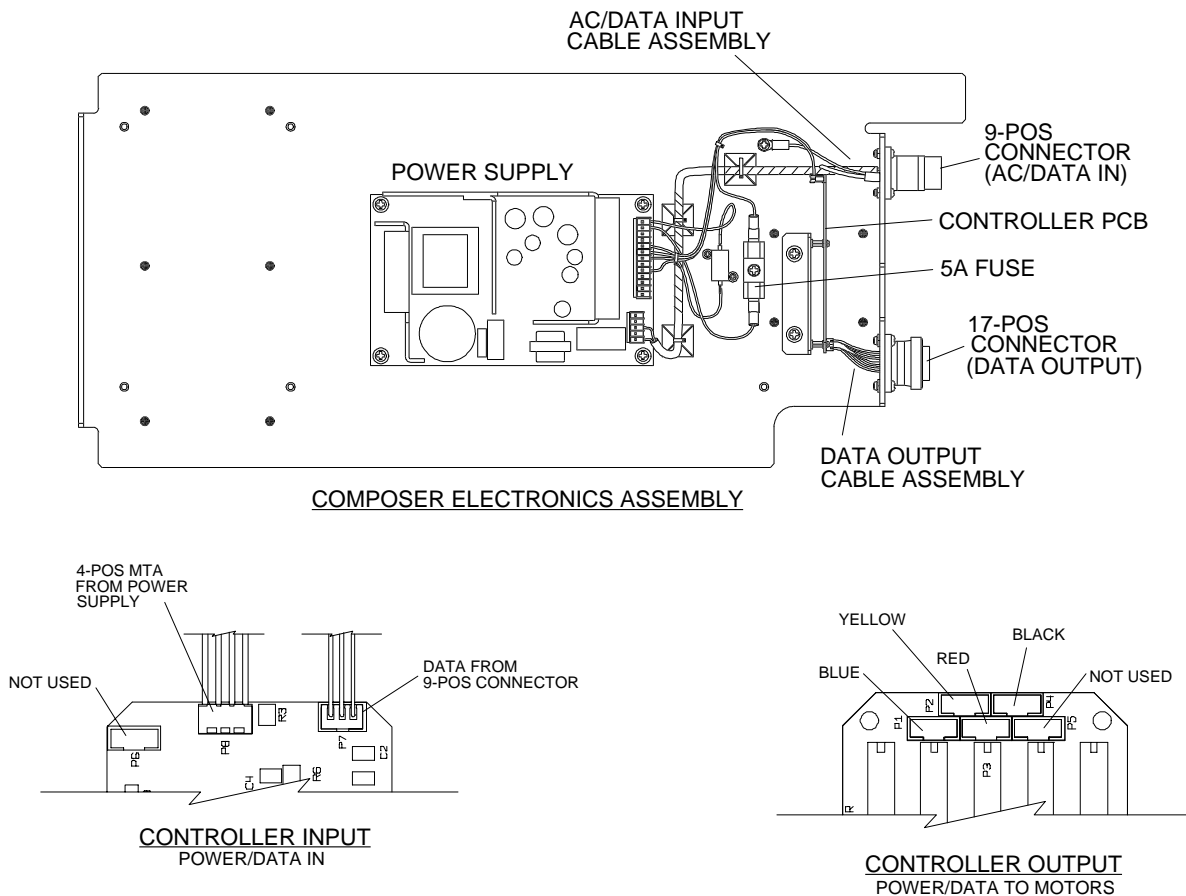


Figure 6.21 *Composer Controller Electronics Plate*



**Figure 6.22** *Composer* Electronics Plate Cable Connections

### 6.2.33 Replacing *Composer* Controller PCB

**WARNING:** Disconnect power from unit before performing maintenance or repair procedures

Use the following procedures to replace the *Composer* Controller PCB.

1. Remove power from unit.
2. Remove electronics plate from stanchion.
3. At control PCB on electronics plate, disconnect four JST motor wire connectors.
4. Disconnect 3-position data and 4-position AC MTA connectors.
5. Carefully lift up on control PCB to remove from bracket.
6. Install new control PCB using Steps 1 through 5 in reverse.

---

### 6.2.34 Replacing *Composer* Controller Low Voltage Power Supply

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**WARNING:** Disconnect power from unit before performing maintenance or repair procedures

---

Use the following procedures to replace the *Composer* Controller low voltage power supply.

1. Remove power from luminaire.
2. Remove electronics plate from stanchion.
3. At power supply on electronics plate, disconnect one 13-position and one 5-position MTA connectors.
4. Using screwdriver, remove four screws and washers securing power supply to electronics plate.
5. Install new power supply using Steps 1 through 4 in reverse.

---

### 6.2.35 Replacing AC/Data Input Cable Assembly

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**WARNING:** Disconnect power from unit before performing maintenance or repair procedures

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Use the following procedures to replace the AC/data output cable assembly.

1. Remove power from luminaire.
2. Remove electronics plate from stanchion.
3. Using wire cutters, cut and remove three cable ties securing cable assembly to electronics plate.
5. Disconnect 3-position JST connector from control PCB.
6. Disconnect 5-position MTA connector from power supply.
7. Using a screwdriver, remove screw securing ground lug from electronics plate.
8. Using screwdriver, remove four screws securing cable connector housing to electronics plate. Remove cable assembly.
9. Install new cable assembly using Steps 1 through 8 in reverse.

---

### 6.2.36 Replacing DC Power Supply to Control PCB Cable Assembly

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**WARNING:** Disconnect power from unit before performing maintenance or repair procedures

---

1. Remove power from luminaire.
2. Remove electronics plate from stanchion.
3. At low voltage power supply, disconnect 13-position MTA connector from power supply.
5. At 5A fuse block, disconnect wire terminals.
6. Using a screwdriver, remove screws securing 10 OHM resistor to electronics plate.
7. Disconnect 4-position MTA connector from control PCB. Remove cable assembly.
8. Install new cable assembly using Steps 1 through 7 in reverse.

---

### 6.2.37 Replacing Data Output From Controller Cable Assembly

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**WARNING:** Disconnect power from unit before performing maintenance or repair procedures

---

Use the following procedures to replace the Data output from controller cable assembly.

1. Remove power from luminaire.
2. Remove electronics plate from stanchion.
3. At control PCB, disconnect four 4-position JST connectors.
4. Using screwdriver, remove four screws securing 17-position connector housing to electronics plate. Remove cable assembly.
5. Install new cable assembly using Steps 1 through 4 in reverse.

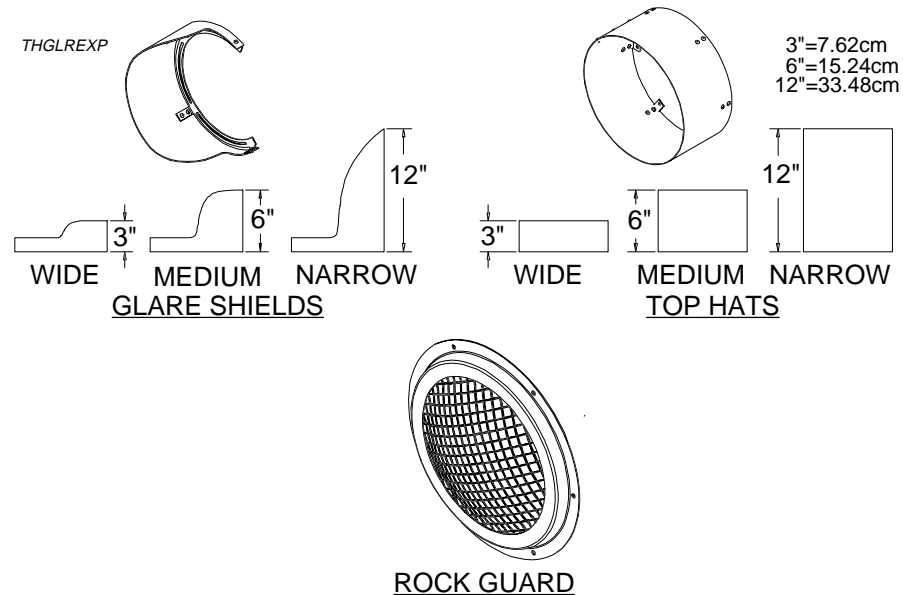


## Chapter 7. Optional Accessories

This chapter describes information and installation procedures for **AR500** luminaire optional accessories.

## 7.1 Top Hats, Glare Shields and Rock Guard

The top hats are available in three different sizes; narrow, medium, and wide and the glare shields are designed to shield the lens. In addition to top hats and glare shields there is an optional rock guard to protect the lens.



Before these new accessories may be installed, the head assembly front casting may need to be changed. There are two different castings; the original casting uses #8 screws for the accessory ring mounts and the current casting uses #10 screws (refer to the Procedure section for #8 and #10 screw dimensions). In addition to the screw size change the screw pattern radius has increased from 5.38 inches to 5.54 inches.

### 7.1.1 Parts

The following is a list of part numbers for the available top hats, glare shields, and rock guard and the appropriate installation hardware.

7091A3062	1 EA.	HEAD ENCLOSURE, FRONT, PRODUCTION
HW4137	6 EA.	WASHER, SPLIT LOCK, #10 SS
HW4141	6 EA.	WASHER, FLAT, #10 SS
HW4121	6 EA.	SCREW, 10-32X1/2"PPSS
7091A2067	1 EA.	GLARE SHIELD, NARROW BEAM, ASSEMBLY
7091A2042	1 EA.	GLARE SHIELD, MEDIUM BEAM, ASSEMBLY
7091A2043	1 EA.	GLARE SHIELD, WIDE BEAM, ASSEMBLY
7091A2068	1 EA.	TOP HAT, NARROW BEAM, ASSEMBLY
7091A2069	1 EA.	TOP HAT, MEDIUM BEAM, ASSEMBLY
7091A2070	1 EA.	TOP HAT, WIDE BEAM, ASSEMBLY
7091A2044	1 EA.	ROCK GUARD, AR500 ASSEMBLY

---

## 7.1.2 Tools

Obtain the following tools to perform the procedures listed in 7.2.3.

Screwdriver, #2 Phillips

Screwdriver, #2 Slot

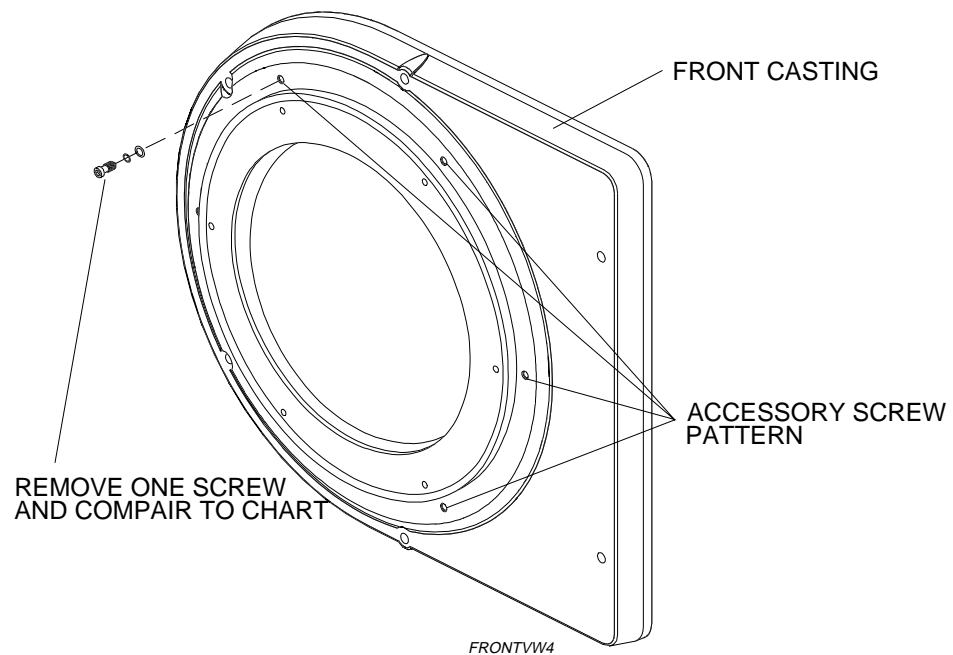
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## 7.1.3 Procedure

### Changing Front Casting

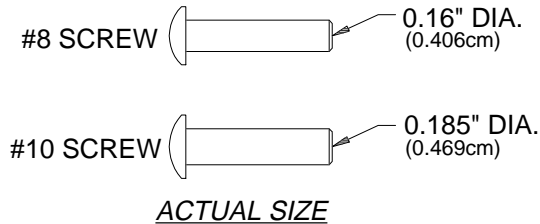
As mentioned in the Introduction, the front head assembly casting may need to be changed before installing the new accessories. Perform the following procedure to determine which casting you have.

1. Remove power from luminaire.
2. At head assembly front casting, remove one of six screws from the accessory screw pattern (Figure 7.10).



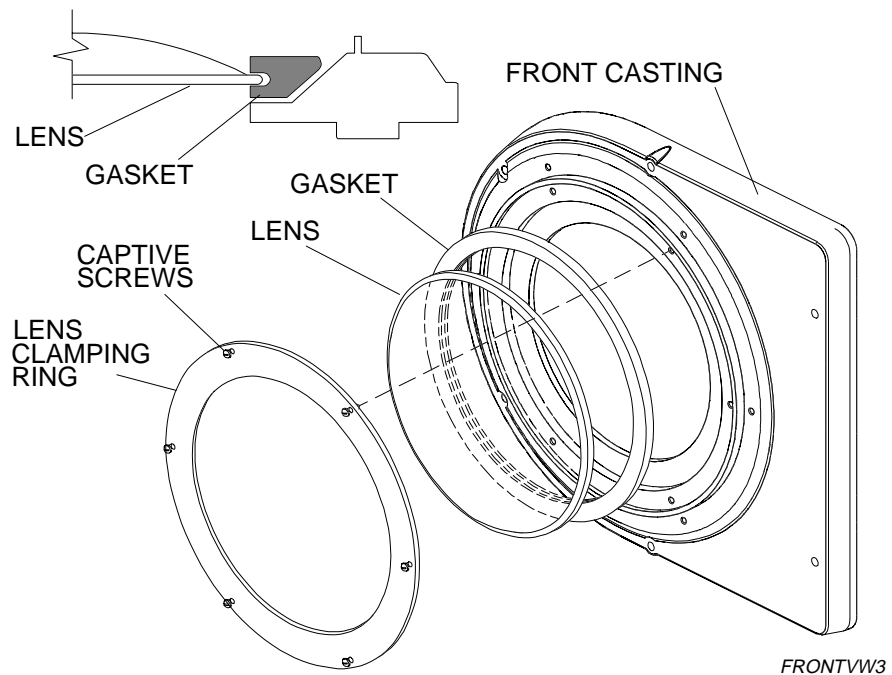
**Figure 7.10 - Accessory Screw Removal**

3. Compare removed screw to screws in [Figure 7.11](#).
  - a. If screw is a #8, the front casting must be changed. Go to Step 4.
  - b. If screw is a #10, the casting is correct, no need to change casting.



**Figure 7.11 - #8 & #10 Screw Sizes**

4. To change front casting, remove six 10-32X1-3/4"PPSS screws #10 flat washers and #10 split lock washers securing front casting to head assembly. Remove front casting.
5. Install new front casting and secure with six 10-32X1-3/4"PPSS screws, #10 flat washers, and #10 split lock washers.
6. At old front casting, loosen six 8-32x11/16"PPSS captive screws securing lens assembly to casting. Remove lens assembly ([Figure 7.12](#)).
7. At newly installed front casting, install and secure lens assembly with six 8-32x11/16"PPSS captive screws.

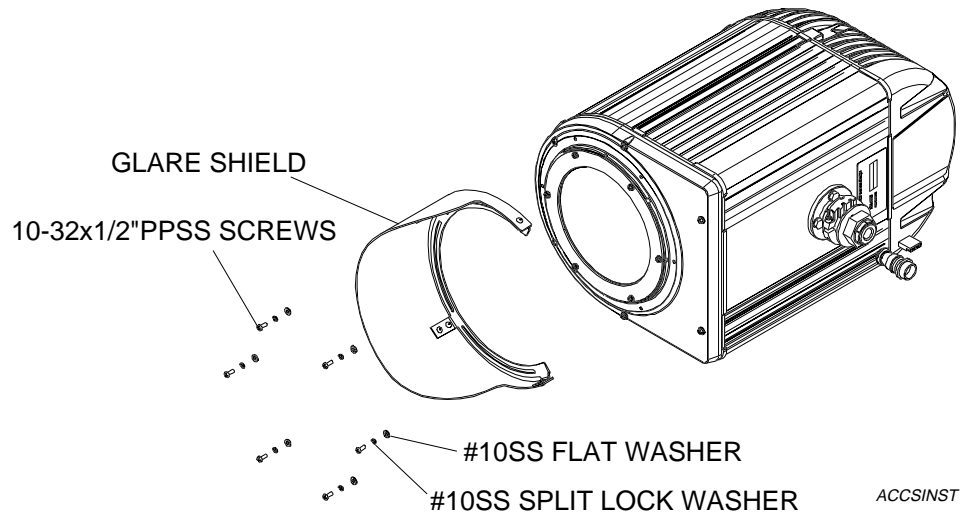


**Figure 7.12 - Lens Assembly Removal and Installation**

### Installing Glare Shield

There are three different types of glare shields which all mount the same. Once installed, the glare shields may be rotated around the lens.

1. At front casting accessory screw pattern, remove six 10-32x1/2"PPSS screws, #10SS split lock washers, and #10SS flat washers (Figure 7.13).
2. Position glare shield on front casting and secure with six 10-32x1/2"PPSS screws, #10SS split lock washers, and #10SS flat washers.

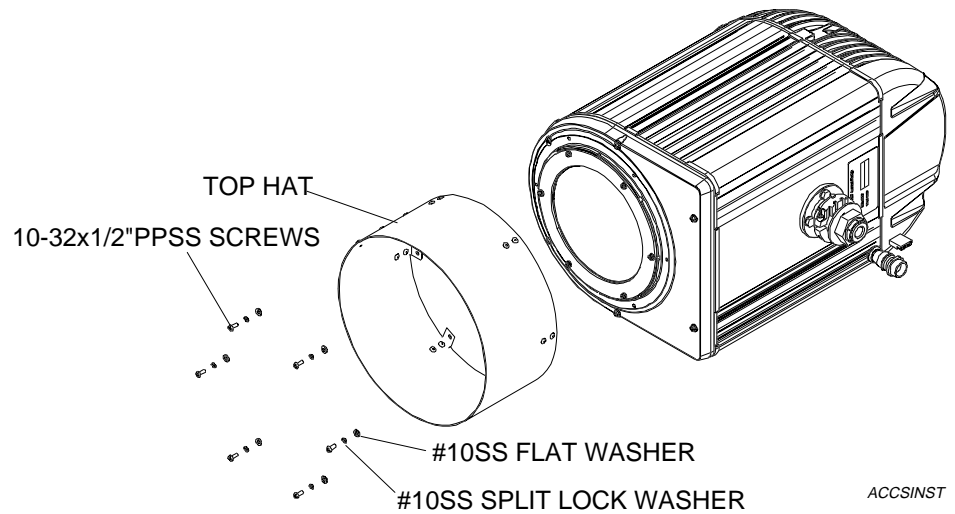


**Figure 7.13 - Glare Shield Installation**

### Installing Top Hats

There are three different types of top hats which all mount the same.

1. At front casting accessory screw pattern, remove six 10-32x1/2"PPSS screws, #10SS split lock washers, and #10SS flat washers (Figure 7.14).
2. Position top hat on front casting and secure with six 10-32x1/2"PPSS screws, #10SS split lock washers, and #10SS flat washers.



**Figure 7.14 - Top Hat Installation**

### Installing Rock Guard

1. At front casting accessory screw pattern, remove six 10-32x1/2"PPSS screws, #10SS split lock washers, and #10SS flat washers (Figure 7.15).
2. Position rock guard on front casting and secure with six 10-32x1/2"PPSS screws, #10SS split lock washers, and #10SS flat washers.

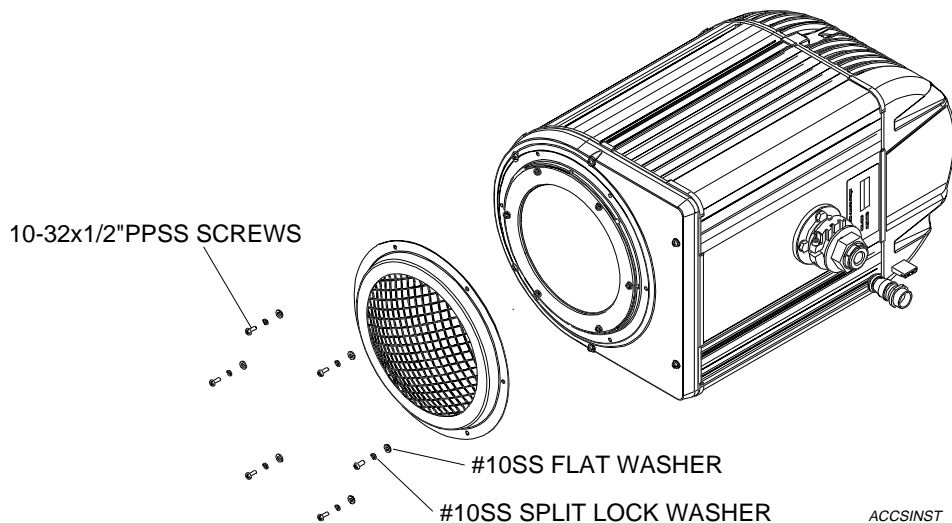


Figure 7.15 - Rock Guard Installation

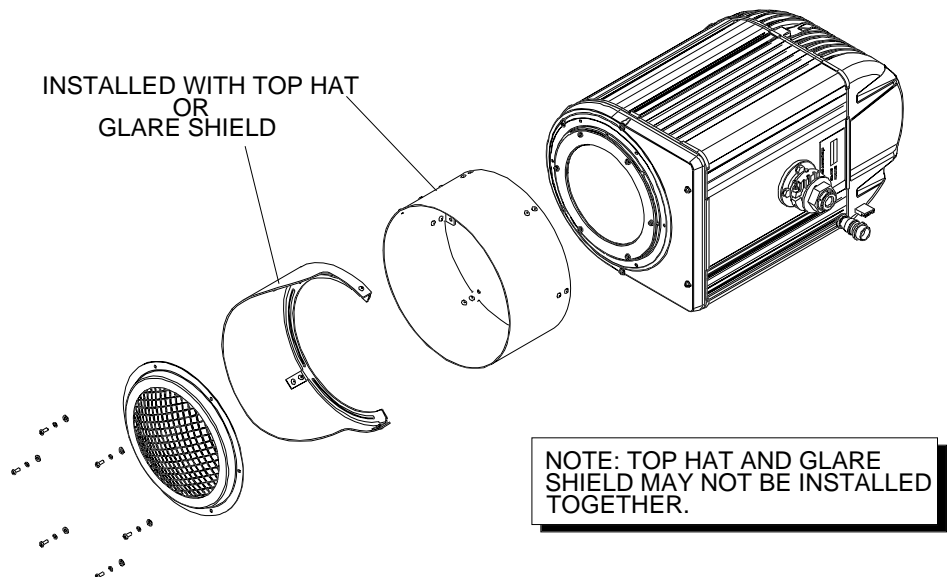


Figure 7.16 - Top Hat/Glare Shield Installed with Rock Guard

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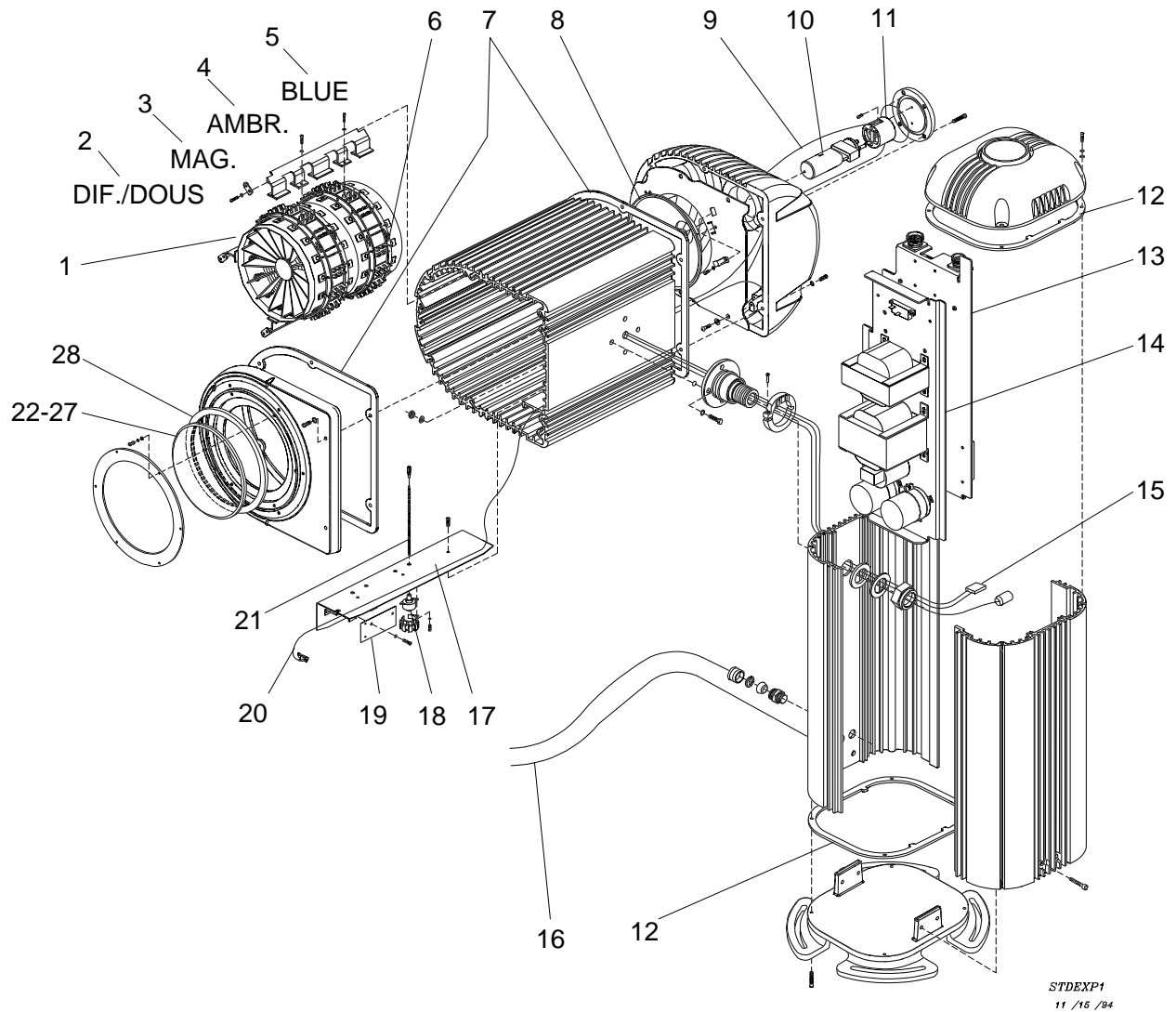
## Chapter 8. Replacement Parts and Wiring Diagrams

This chapter contains illustrations, descriptions and part numbers for various replacement parts for the **AR500** luminaire. This chapter also includes the necessary wiring diagrams for the **AR500** luminaire.

## 8.1 Replacement Parts

The following section illustrates the available replacement parts for the AR500 luminaire.

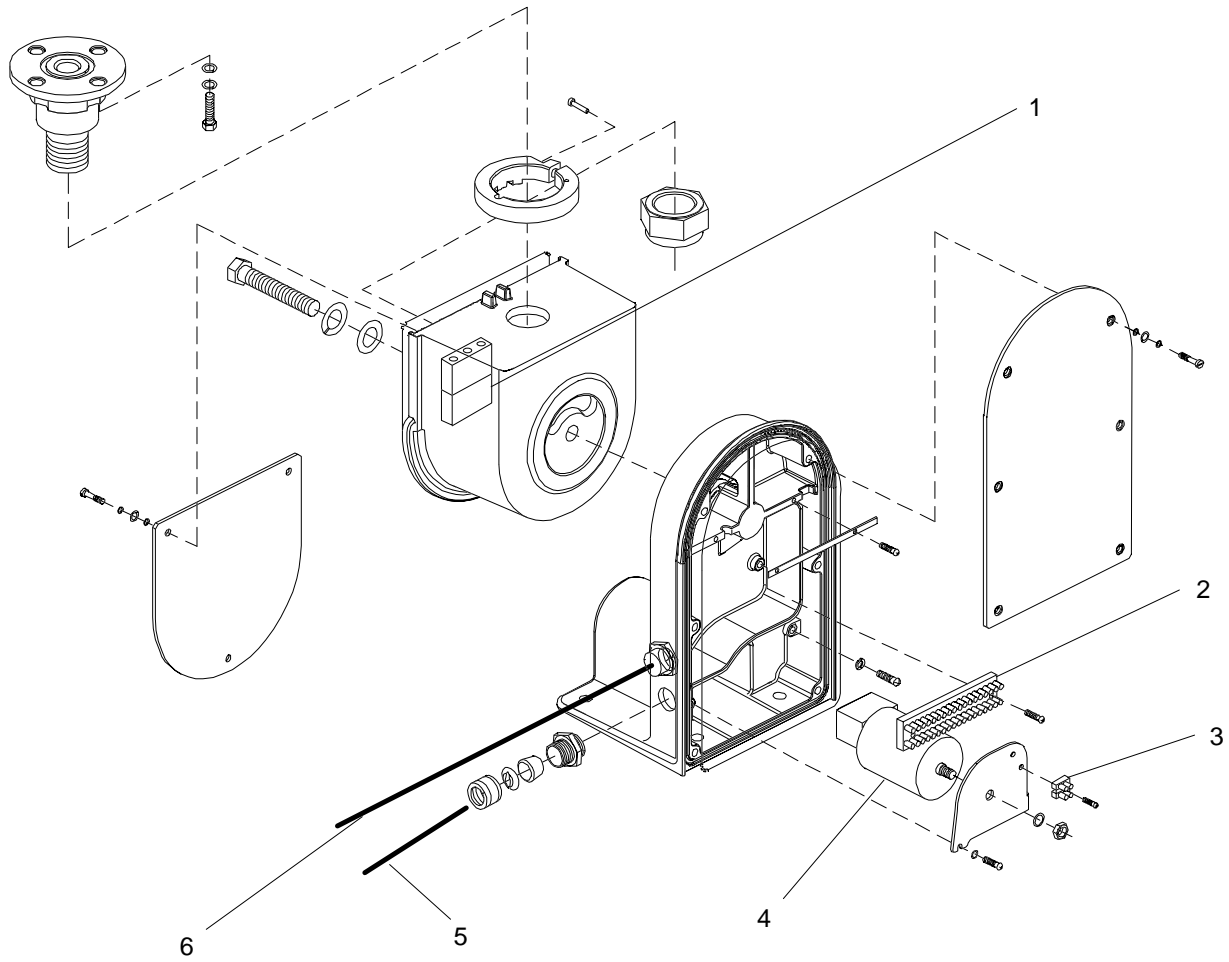
### 8.1.1 Exploded View (Head & Stanchion)



### 8.1.1 Exploded View (Head & Stanchion) Cont'd.

	Replacement Part	ETC Part Number
1	Color Mechanism Assembly, w/Diffuser Color Mechanism Assembly, w/Douser	7091A2004-1 7090A2004-2
2	Filter Assembly Kit, Diffuser	7090A2022
2	Filter Assembly Kit, Douser	7091A2040
3	Filter Assembly Kit, Magenta	7090A2021
4	Filter Assembly Kit, Amber	7090A2020
5	Filter Assembly Kit, Blue	7090A2019
6	Swivel Link, Drive Shaft	7090A3009
7	Gasket, Head	7091A4088
8	Reflector Kit	7091A2071
9	Lamp Wire Assembly	7091B7026
10	Lamp, MSD 700W	RT144
11	Lamp Socket	RT145
12	Gasket, Stanchion	7091A4089
13	Electronics Plate Assembly <i>(see Section 9 for exploded view)</i>	7091A2013 (DMX Only Vers.) 7091A2019 ( <b>Composer</b> Vers.)
14	Ballast Assembly <i>(see Section 8 for exploded view)</i>	see Section 8.1.3 for Part #
15	Connector Kit, Series 30	7091B7005
16	Cable Assembly, Unit DMX/AC Input	7091B7001 (U.S. Version) 7091B7006 (Euro.Version)
17	Actuator Assembly Kit, Linear <i>(contains plate, motors, heatsinks, drive shaft, and yoke termination board assy)</i>	7091A2010
18	Motor, Linear Actuator (w/MTA)	B203
19	Yoke Termination PCB Assembly	7091B5003
20	Cable Assembly, Motor Drive	7091B7003
21	Drive Shaft Assembly	7091A2040
22	Lens, Clear (Very Narrow)	OP2001
23	Lens, Light Stipple (Narrow)	OP2002
24	Lens, 8-Row Lenticular (Narrow Flood)	OP2003
25	Lens, 10-Row Lenticular (Medium Flood)	OP2004
26	Lens, 12-Row Lenticular (Wide Flood)	OP2005
27	Lens, Buxom (Very Wide Flood)	OP2006
28	Gasket, Lens	7091A2037

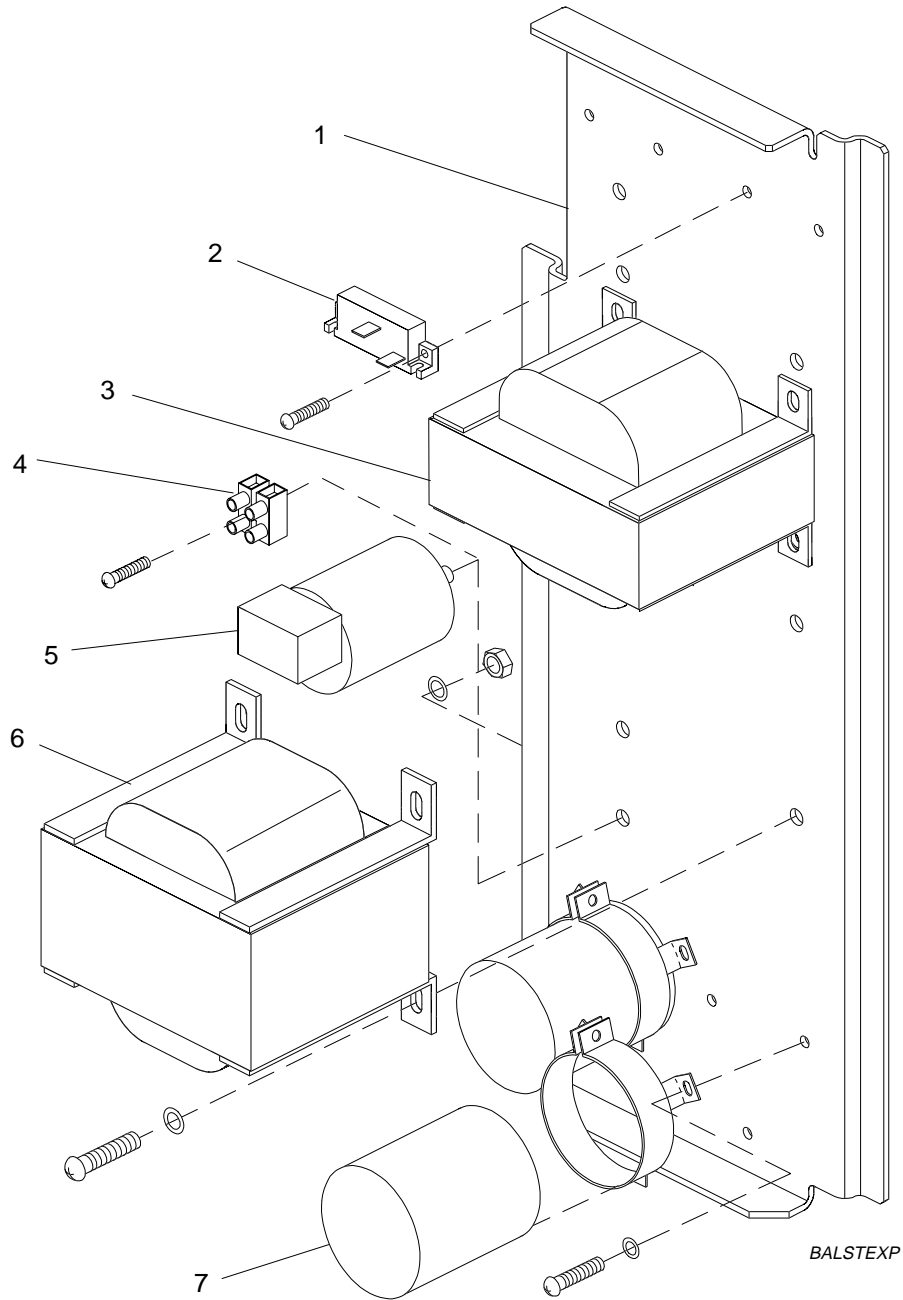
### 8.1.2 Exploded View (Remote Mounting Foot)



### 8.1.2 Exploded View (Remote Mounting Foot) Cont'd.

	<b>Replacement Part</b>	<b>ETC Part Number</b>
1	Connector Kit, Series 30	7091B7005
2	Terminal Strip, 16-Pole Contact <i>(Remote Ballast Version Only)</i>	J3320
3	Terminal Strip, 300V 20 Amp 2-Position <i>(Remote Ballast Version Only)</i>	J3321
4	Ignitor <i>(located on Ballast assembly for Standard Version)</i>	L191
5	Cable Assembly, AC Output <i>(Remote Ballast Version Only)</i> - Specify length with part number.	7090B7001-1 (55ft. 16.76m) 7090B7001-2 (105ft. - 32m)
6	Cable Assembly, Data Output to Head <i>(Remote Ballast Version Only)</i> - Specify length with part number.	7090B7004-1 (55ft., 16.7m) 7090B7004-2 (105ft., 32m)

### 8.1.3 Exploded View (Ballast Assembly)

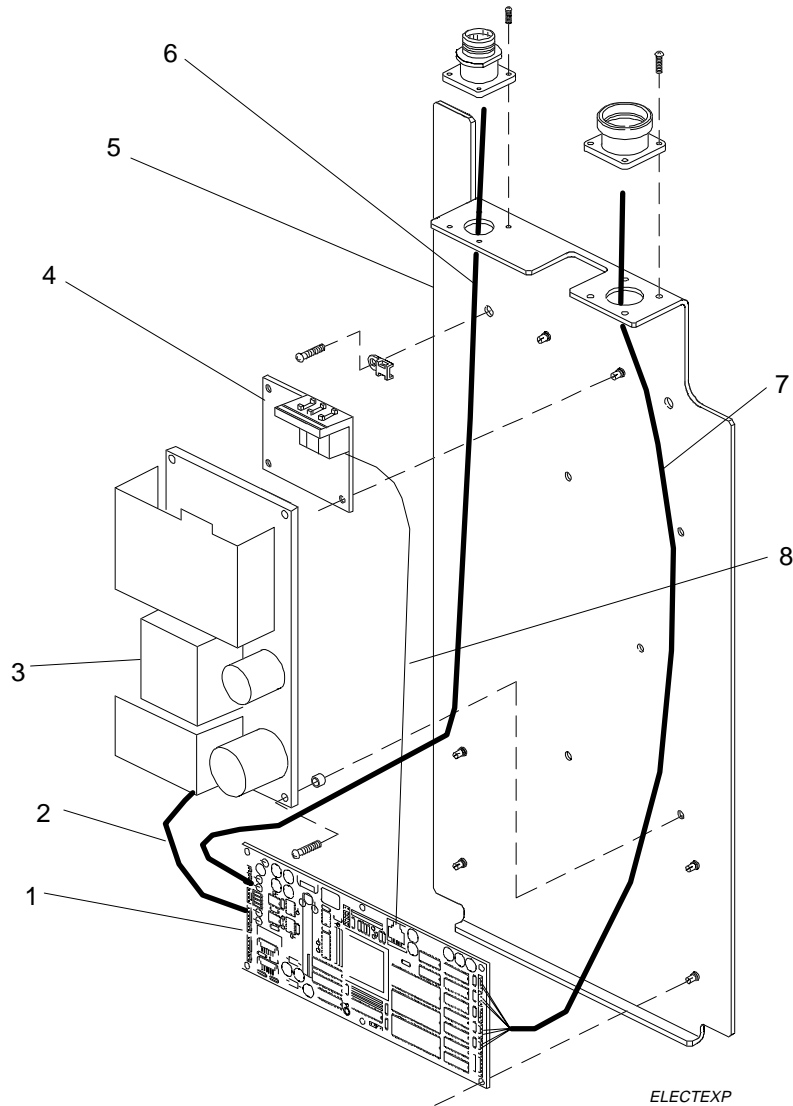


### 8.1.3 Exploded View (Ballast Assembly) Cont'd.

	<b>Replacement Part</b>	<b>ETC Part Number</b>
	Ballast Assembly	see chart below for Part #
1	-Plate, Ballast	7091A3045
2	-Circuit Breaker	see chart below for Part #
3	-Transformer	see chart below for Part #
4	-Terminal Strip, 300V 20 Amp 2 Position <i>(located in Ignitor location on Remote Ballast Version only)</i>	J3321
5	-Ignitor <i>(located in remote mounting assembly for Remote Ballast Version ONLY)</i>	L191
6	-Inductor	L190
7	-Capacitor (2 required)	C338

<b>Your Voltage Configuration</b>	<b>Ballast Assembly Part Number</b>		<b>Transformer Part Number</b>	<b>Circuit Breaker Part Number</b>
	<b>Standard Version</b>	<b>Remote Version</b>		
100VAC, 50Hz	7091B2001	7091B2009	L192	CB237
120VAC, 60Hz	7091B2002	7091B2010	L189	CB235
200VAC, 50Hz	7091B2007	7091B2015	L193	CB236
208VAC, 60Hz	7091B2003	7091B2011	L193	CB234
220VAC, 50Hz	7091B2006	7091B2014	N/A	CB233
220VAC, 60Hz	7091B2008	7091B2016	N/A	CB234
230VAC, 50Hz	7091B2006	7091B2014	N/A	CB234
240VAC, 50Hz	7091B2004	7091B2012	N/A	CB234
277VAC, 60Hz	7091B2005	7091B2013	L193	CB234

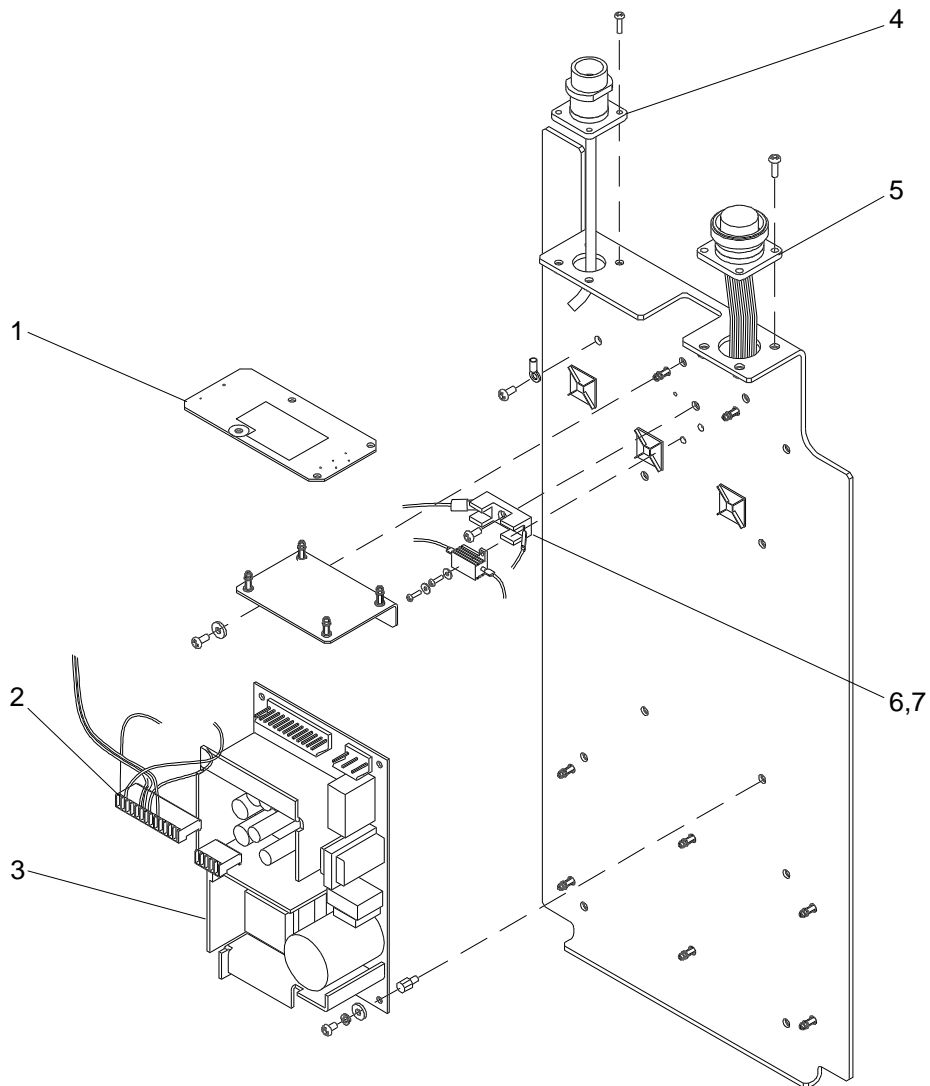
### 8.1.4 Exploded View (Electronics Plate Assembly, DMX Only)



	<b>Replacement Part</b>	<b>ETC Part Number</b>
	Electronics Plate Assembly	7091A2013
1	-Lamp Control PCB Assembly	7091B5002
	-1/16A, 125V, Pico II Fuse Assembly	F170
2	-PCB Power Connection Cable	7090B7002
3	-Power Supply, 24V DC 100W	PS141
4	-Address Switch PCB Assembly	7091B5001
5	-Plate, Electronics	7091A3046
6	-Cable Assembly, Electronics AC/DMX Input	7091B7002
7	-Cable Assembly, Data Output in Stanchion	7091B7003
8	-Address Switch Cable	7090B7003



### 8.1.5 Exploded View (Electronics Plate Assembly, Composer Control)

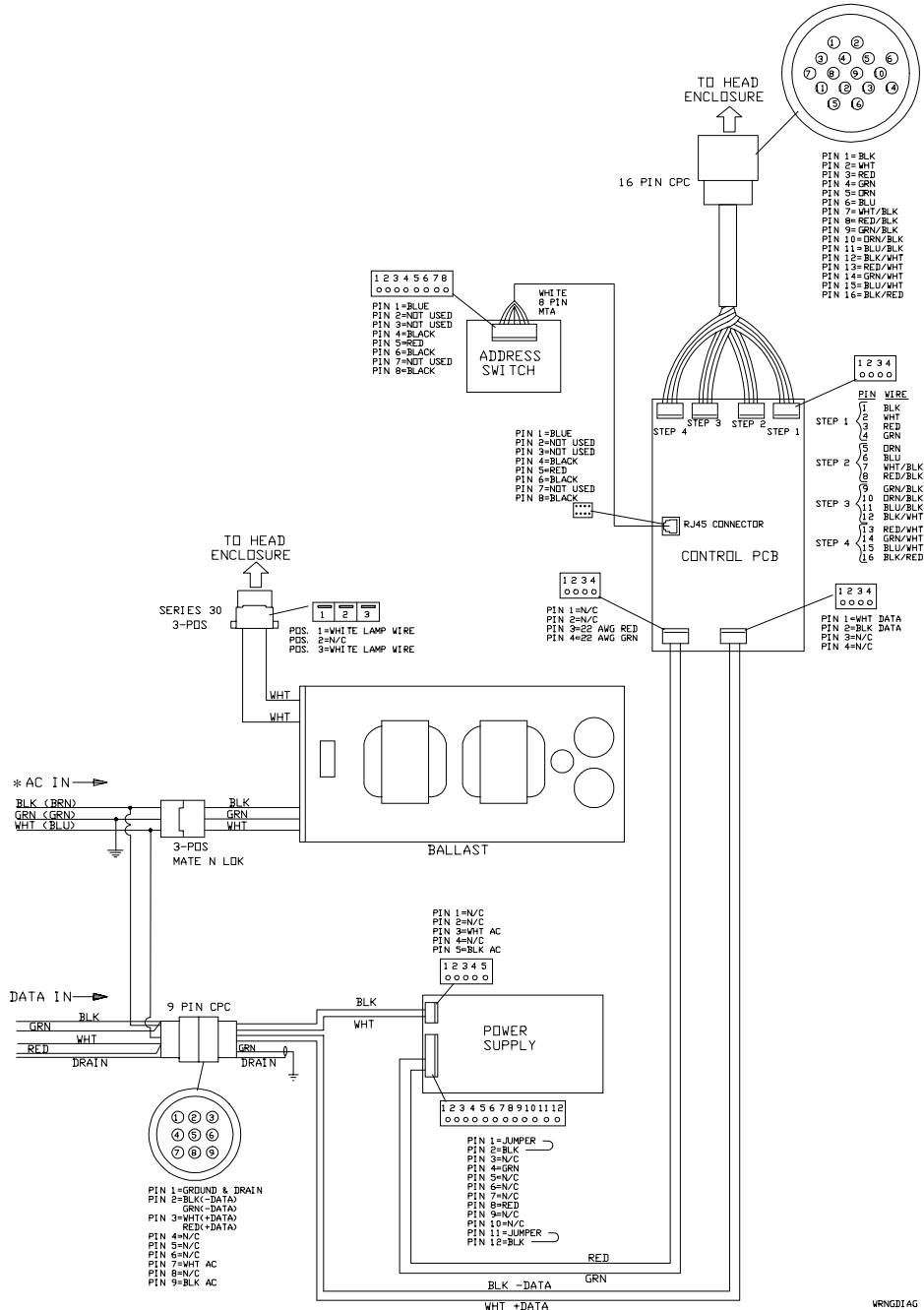


	<b>Replacement Part</b>	<b>ETC Part Number</b>
	Electronics Plate Assembly	7091A2019
1	AR5 Controller PCB, AR500 Version	7091B5004
2	DC From Power Supply to PCB Cable Assy.	7091B7011
3	Power Supply, 80W,+5+24+15-15VDC	PS144
4	Electronics AC/Data In Cable Assembly	7091B7012
5	Data Out Cable Assembly	7091B7013
6	1/4", 40° 1 Pole Quick Conn. Fuseblock	F179
7	5Amp Fuse	F168

## 8.2 Wiring Diagrams

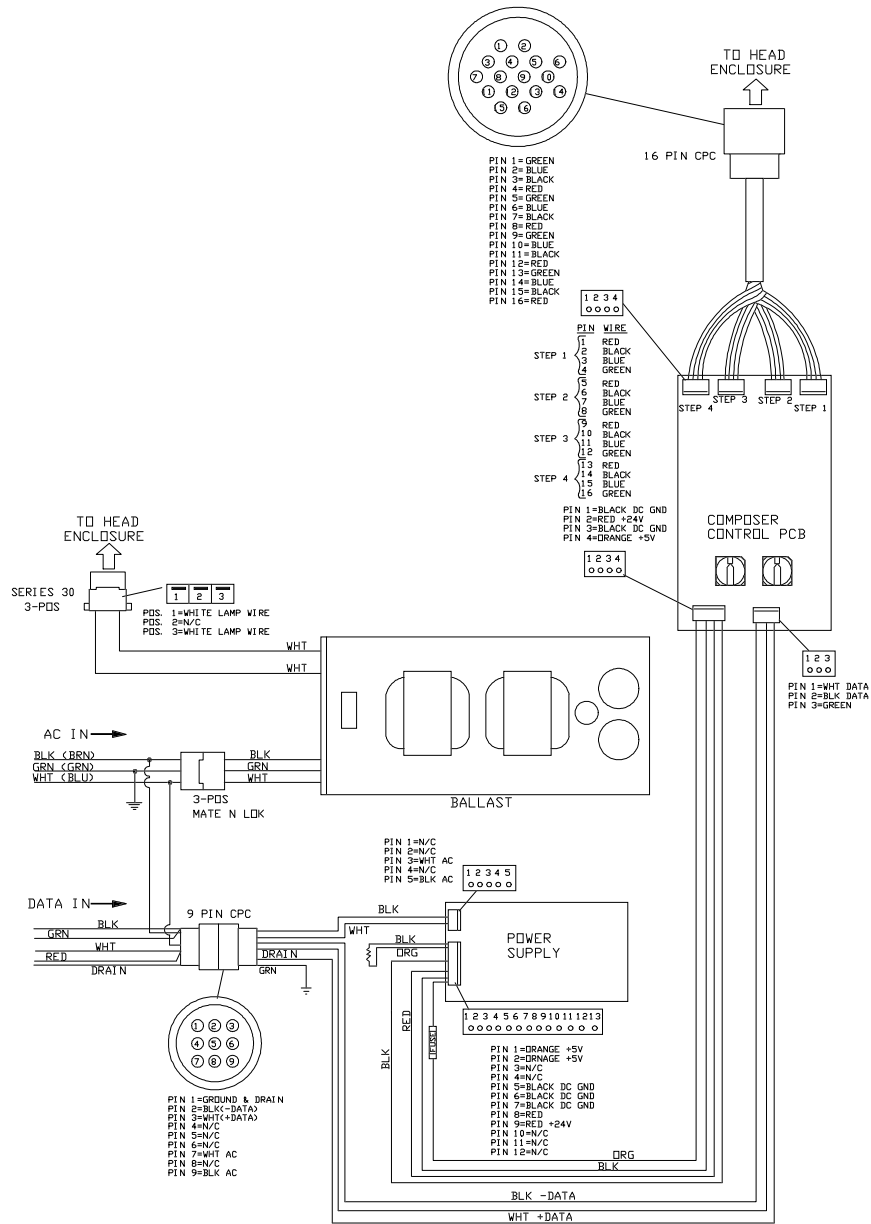
The following illustrations display wiring colors and connector pin locations for the remote and standard stanchion and head assemblies.

### 8.2.1 Stanchion Wiring (DMX Only Controller)

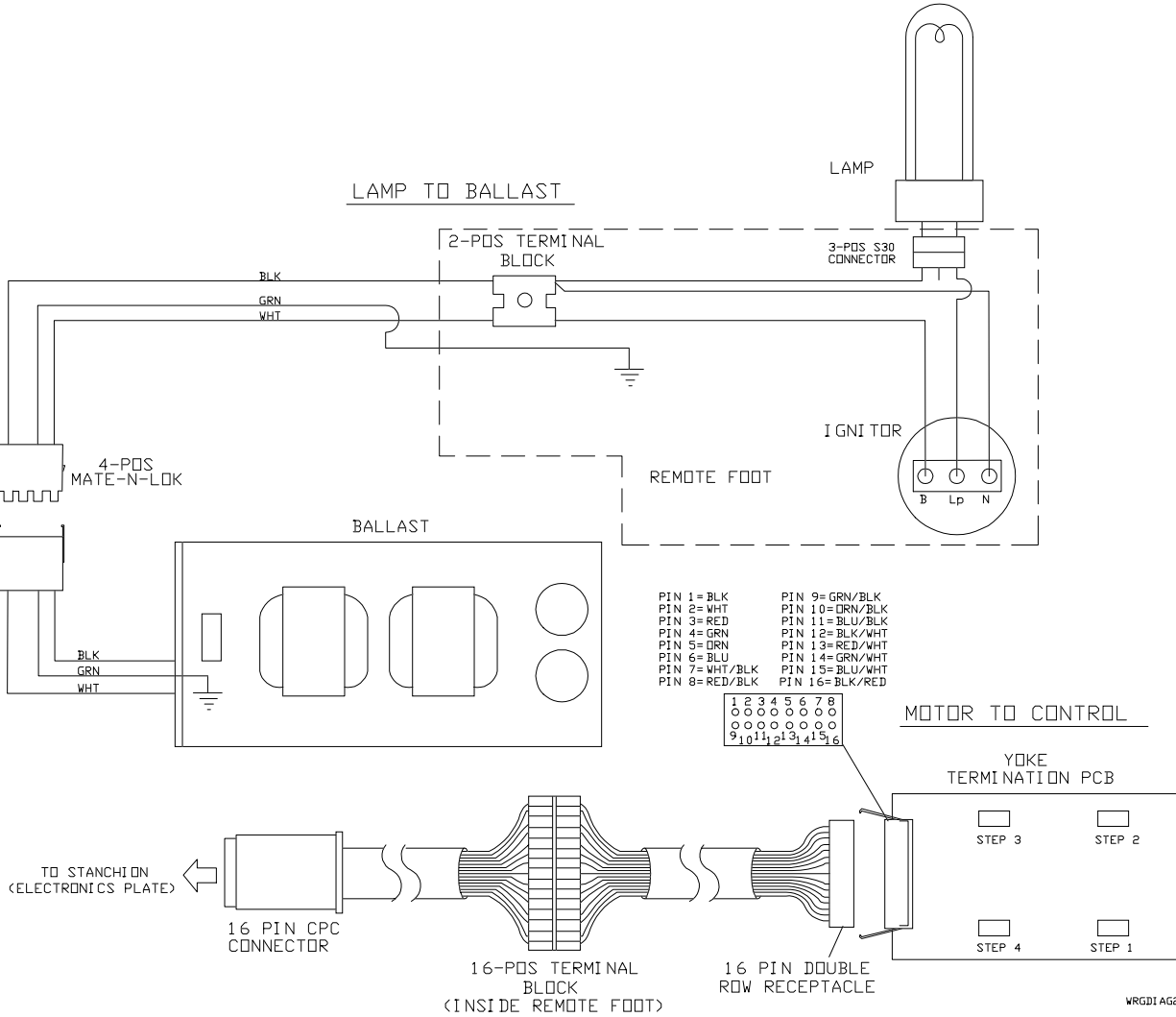


\* EUROPEAN COLOR CODE IN PARENTHESES

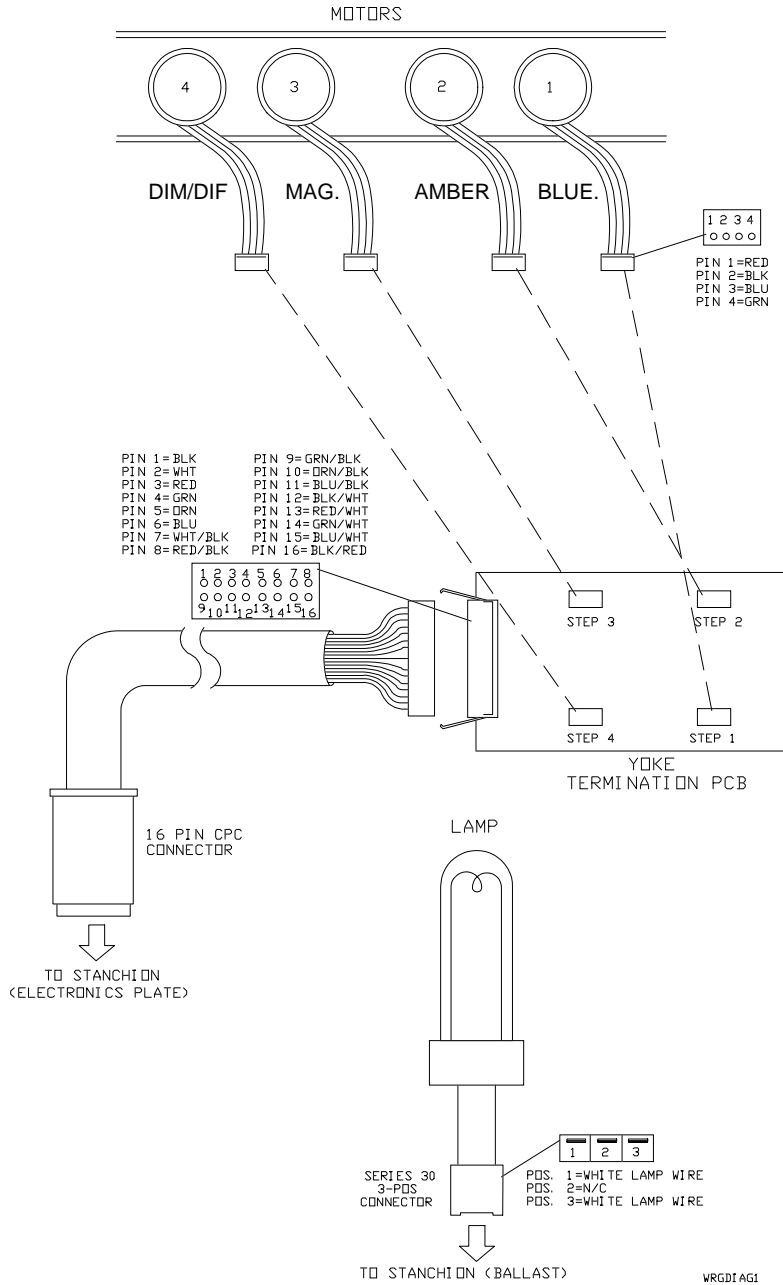
### 8.2.2 Stanchion Wiring (Composer Controller)



### 8.2.3 Alternate Wiring for Remote Ballast Version



### 8.2.4 Head Enclosure Wiring



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## **Chapter 9. Limited Warranty / Software License**

This chapter describes the Electronic Theatre Controls, Inc. limited warranty and software license.

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## 9.1 Limited Warranty

Electronic Theatre Controls, Inc. warrants to Purchaser that for a period of (12) months from date of installation, but not more than (18) months from date of shipment, the Products shall be free from defects in materials and workmanship under normal use and service. Warranty is limited to (60) days from shipment for sample Products or Products used for rental. ETC, Inc.'s sole responsibility under this warranty shall be to repair or replace, at ETC, Inc.'s option, any nonconsumable part which is defective, malfunctions, or otherwise fails to perform its intended function, when used in a manner consistent with its intended function, provided that customer obtains return authorization in advance from ETC, Inc. and ships prepaid any part of the products to be repaired or replaced under the Limited Warranty to ETC, Inc. or, at ETC, Inc.'s option, to its authorized repair center, within the Limited Warranty period. ETC, Inc. shall not assume any responsibility for any labor expended or materials used to repair any equipment without ETC, Inc.'s prior written authorization. ETC, Inc.'s sole obligations and Purchaser's sole remedy for any Product that is defective, malfunctions, or otherwise fails to perform its intended function when used in a manner consistent with its intended function pursuant to the Limited Warranty is repair and/or replacement of the Product. ETC, Inc. is not responsible for damage to its products through improper installation, maintenance, use, or attempts to operate product above its rated capacity or voltage, intentionally or otherwise, or for unauthorized repairs.



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## 9.2 Software License

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