

# RIGHT ARM® 3

Pan and Tilt System





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## BOX CONTENTS

1 – RightArm®	
1 – Pipe Clamp	
1 – M-16 x 30 Hex-head Bolt with 1 Flat and 1 Lock Washer	
2 – Safety Cables	
1 – User Manual	
<b>Optional Parts:</b>	See the RightArm® at <a href="http://ApolloDesign.net">ApolloDesign.net</a>



# Introduction

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Since 1992, Apollo Design Technology, Inc. has been one of the world's leading innovators, manufacturers and distributors of gobos, color filters, lights and related equipment and accessories for the lighting industry.

We are continually engineering new products to help you create and execute the designs of your dreams for theaters, bands, advertising, touring companies, television, motion pictures, museums, retail and architecture.

Apollo Design is recognized for creating innovative and award-winning products of superior quality and value. Focused on you, our goal is to ensure unparalleled support from the initial conversation to after sales service.

Our lighting experts and engineers will consult with you on ways to use our standard products or engineer custom solutions. Allow your imagination to run free. Let the Apollo Design team help you create the lighting design you only imagined.

**There is virtually no limit to what we can do together.**



Joel Nichols, Owner/CEO  
Apollo Design Technology

# Product Description

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Congratulations on the purchase of your Right Arm® pan and tilt system. With the Right Arm® it is simple to add pan and tilt capabilities to a wide variety of static lighting, video and projection devices. The patented design is cost-effective, dependable and easy to use.

Silent, accurate, user-defined movements and repositioning capabilities from the lighting console provide the reliability and flexibility needed to use one fixture for multiple applications.



# Safety Information

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**CAUTION!** This symbol designates an item that will cause damage to the Right Arm® if ignored.

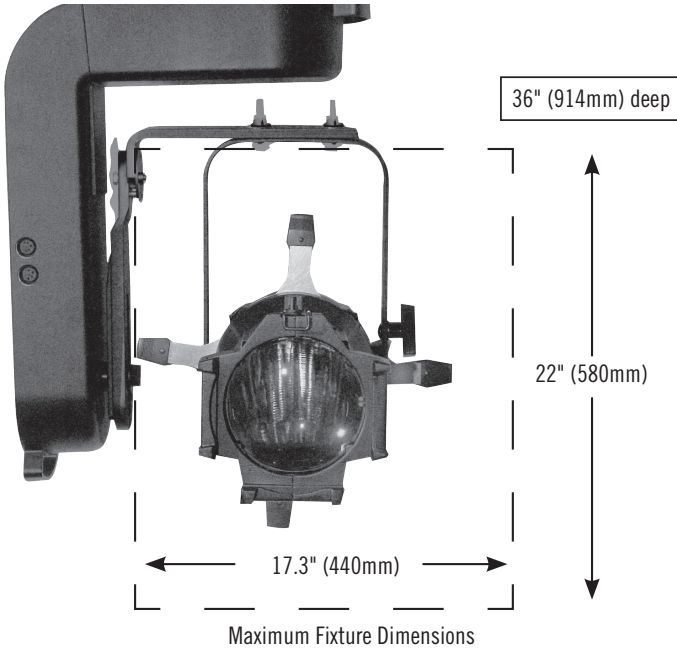


**WARNING!** This symbol designates an item that could cause injury or death if ignored.

- Be sure to read and understand all instructions in this manual.
- The Right Arm® is designed for indoor applications and should not be exposed to moisture.
- There is a risk of fire, shock or injury if the Right Arm® is not used as specified.
- Servicing the Right Arm® should be undertaken by qualified personnel only.
- The Right Arm® is not intended for residential use.
- Safety cables must be used when installing the Right Arm®. Apollo is not responsible for damage or injury resulting from improper use of safety cables.

# Compatible Fixtures

The Right Arm® can accommodate fixtures which are 17.3" W x 22" H x 36" D and do not exceed 40 lbs.



## Compatible fixtures include:

- LED Fixtures
- PAR Fixtures
- Ellipsoidal Fixtures
- Fresnel Fixtures
- Snow Machines
- Projectors
- Video Cameras



**CAUTION!** The Right Arm® is designed for use with fixtures that do not exceed 40 lbs.

# Installation

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## Install Connectors

### Install connectors as follows

Brown wire = Hot

Blue wire = Neutral

Green/Yellow wire = Ground

- Observe proper grounding on all power connectors.
- Both male connectors are used as the disconnect device and should be accessible after the installation of the Right Arm® has been completed.
- There are two cables for control and two cables for power.
- DMX control In and Pass-through use five-pin XLR connectors.



### CAUTION!

**Power to the Right Arm®** – The power cable marked “Do NOT Plug Into Dimmed Sources” is used to provide power to the Right Arm® electronics. This cable must be plugged into a non-dimmed electrical source 100-240 volts. Plugging this cable into a dimmed electrical source will void the warranty.

**Power to the Devices** – The second power cable enters the top of the unit and passes through the Right Arm® exiting at the tilt shaft. This cable is used to power devices attached to the Right Arm®. This cable has 16 gauge conductors and can be plugged into a dimmed or non-dimmed source to power fixtures up to 15 amps.

# Installation

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## Hang the Right Arm®

- Securely attach the Right Arm® with the clamp provided.
- Position the power box to fit inside of the dotted lines on the Right Arm® label.
- Position the clamp with the pipe bolt facing towards the Right Arm® rail handles.
- Hang vertically with the clamp on top or bottom.



**CAUTION!** The Right Arm® is not designed to hang horizontally.



**WARNING!** Securely tighten bolt that fastens the clamp to the Right Arm®. Use the safety cable provided to prevent the unit from falling in the event the hanging clamps or brackets fail.



# Installation

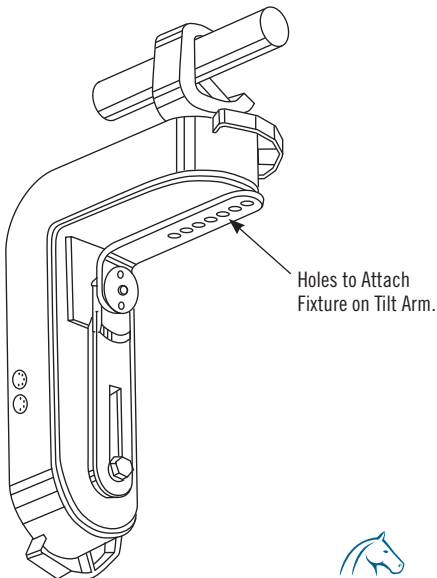
## Attach a Fixture

- Remove any clamps or other hanging brackets from the fixture being installed on the Right Arm®.
- Bolt the fixture's yoke to the top of the tilt arm. There are seven holes in the tilt arm. Use the hole that is closest to the inside corner of the Right Arm® and allows operation of all parts of the fixture. Use lock nuts or lock washers (not provided). For single hole use ½" bolt; double hole use ¾" bolt.



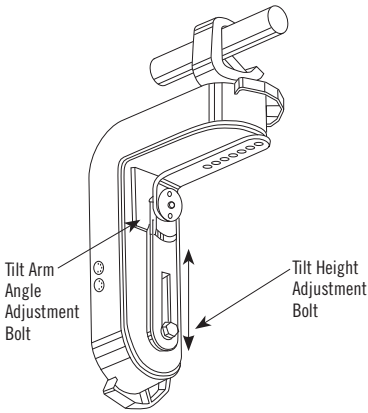
**WARNING!** Attach the safety cable.

- Connect the safety cable to the fixture according to the fixture manufacturer's instructions.
- The safety cable must pass through the hole on the tilt shaft and around the pipe or truss. When attaching the safety cable, keep in mind the range of motion necessary for the Right Arm® to operate properly and adjust the length and/or placement of the cable accordingly.
- Connect the lamp power cable to the wire that exits at the tilt shaft.
- Secure the lamp power cable so it does not interfere with the tilt motion.

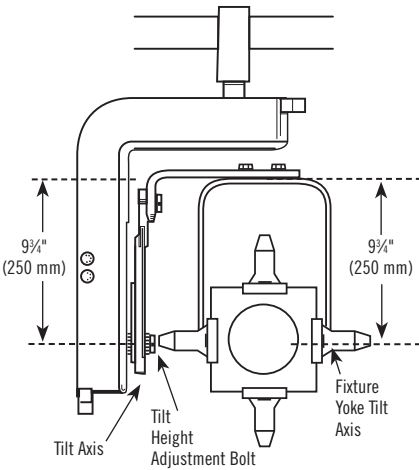


# Installation

## Balance the Fixture



The tilt arm height and angle provide two adjustment points for balance.



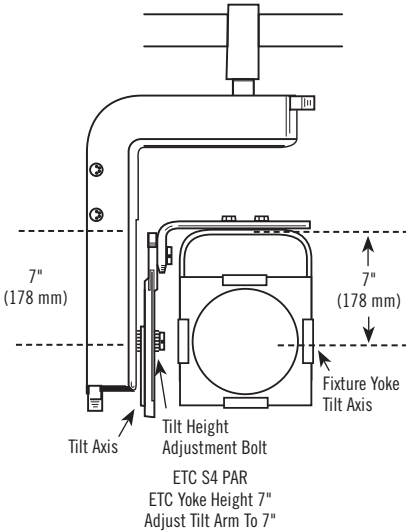
**Height** – the height is adjusted by the tilt height adjustment bolt.

Loosen the bolt to adjust for different height fixtures. The initial adjustment should be set so the tilt axis of the fixture is at the same height as the tilt bolt.

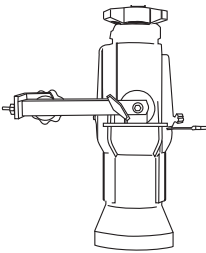
ETC Source Four Ellipsoidal  
ETC Yoke Measures 9 3/4"  
Adjust Tilt Arm to 9 3/4"

# Installation

## Balance the Fixture



With the power off, check if the height adjustment is correct. The fixture should hold its position after rotating it to point down. If the fixture holds its position proceed to the next step, if not change the height of the arm and recheck.



Rotate to face down

**Angle** – The angle should only require adjustment on a fixture that is front heavy such as a long throw ellipsoidal or a fixture with a color changer.

Rotate the tilt arm back until the fixture points straight ahead. If the fixture holds this position, the balance is correct. If not, the angle of the arm needs to be modified.

The balance should be confirmed in all positions.



**CAUTION!** Proper balancing of the Right Arm® assures accurate position during operation. Extreme fixture imbalances created by 5° or 10° lenses, will require Right Arm® accessory - RIGHTARM - 20200.



**WARNING!** The Right Arm® can tilt 270°. Attaching accessories, such as gobo rotators, color scrollers or gel frames, is the sole responsibility of the user. Use approved safety cables and mounting methods to secure these devices. Install safety cables in such a way as to not inhibit the movement of the Right Arm®.



# Data Cable

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Twisted pairs, 120W, shielded E1A485 cable (Belden 9829, 9842 or equivalent), minimum 22 AWG.

<b>Length</b>	1,000' Maximum
<b>DMX Receiving Devices per Line</b>	32 Maximum
<b>Termination</b>	120W Resistor (Last DMX device on the line.)
<b>Data In Connector</b>	XLR 5-pin Male
<b>Data Out Connector</b>	XLR 5-pin Female

# Operation

## Menu Tree v 1.8

### HOME SCREEN

- **DMX Address ###**
  - ###
- **Settings**
  - **Configuration**
    - Protocol
      - 8 bit
      - 16 bit
    - Reset Channel
      - Reset Channel
        - 】 Off
        - 】 On
      - Reset Chan Num
        - 】 ###
    - Pan Range
      - ###° (10° to 300°)
    - Tilt Range
      - ###° (10° to 270°)
    - Pan And Tilt Range Test
    - Factory Defaults
      - Confirm?
  - **Demo Mode**
    - Off
    - On
  - **Recalibrate Motors**
    - Both
    - Pan
    - Tilt



# Operation

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## Channel Assignments and Reset Channel

Protocol	DMX Channels
8 Bit	1 Pan, 2 Tilt
16 Bit	1 Pan Coarse, 2 Pan Fine
	3 Tilt Coarse, 4 Tilt Fine

### Reset Channel –

- Turn on and assign a channel.
- Both motors will recalibrate if all pan and tilt channels are at 0 and assigned reset channel is held at 100% for 3 seconds.
- Reset channel is assigned independently of the fixture address.

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## Data Pass-through

- There are two XLR 5-pin data connectors.  
Male = Data Input  
Female = Daisy chain other DMX fixtures
- The data is a straight pass-through and is not buffered or isolated.
- If the power is removed from the Right Arm®, other DMX devices will not be affected.

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## Loss of DMX

If the DMX data to the Right Arm® is lost, the unit will hold the last position. When the DMX signal is restored, normal operation will resume.

# Operation

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## DMX Output and 24vDC/Data Accessory Output

- There are two output ports on the front of the Right Arm®.
  - XLR 5-pin DMX pass-through output
  - XLR 4-pin 24vDC/DMX output to connect devices such as Smart Color Pro® scrollers and Smart Move® rotators.
- The total power available for accessories is 40 watts.



**CAUTION!** Total power usage for connected accessories must not exceed 40 watts.

- The voltage output is 24 volts DC.
- The pin Out for the XLR 4-pin port is:
  - Pin 1 = DC Common
  - Pin 2 = DMX Data
  - Pin 3 = DMX Data +
  - Pin 4 = DC 24 Volts +



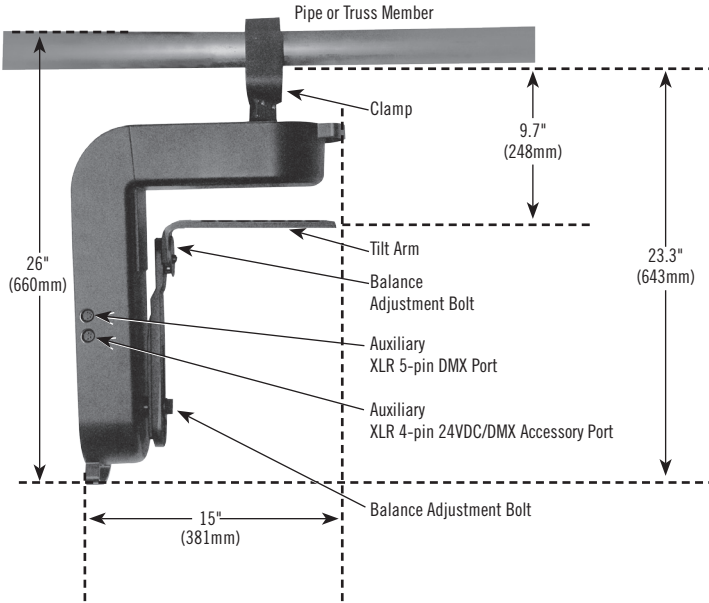
**CAUTION!** When utilizing the accessory ports be sure to route and secure cabling so the movement of the Right Arm® is not impeded.

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## Power Up

- When power is applied to the Right Arm® a calibration sequence will occur. The Right Arm® will slowly move to its calibration point.
- After calibration is completed, the Right Arm® will begin responding to DMX.
- If no DMX signal is present, the Right Arm® will move to the home position of 0% tilt and 50% pan.
- The Right Arm® will wait in this position until DMX information is received.

# Specifications



DESIGN	
<b>Fixture Compatibility</b>	Adjustable
<b>Dimensions (HxWxD)</b>	26" x 15" x 7" with Clamp (660.4mm x 381mm x 177.8mm)
<b>Height</b>	Hang Below Pipe: 23.3" (591.8 mm)
<b>Weight</b>	28 lb. (12.7kg) without Fixture
<b>Material / Color</b>	Aluminum, Black or White Textured Matte Powder Coat. Custom Colors Available.
<b>Ports</b>	XLR 5-pin Female and XLR 5-pin Male
<b>Safety Cable</b>	Yes

Continued

*Product specifications shown are subject to change without notice.*





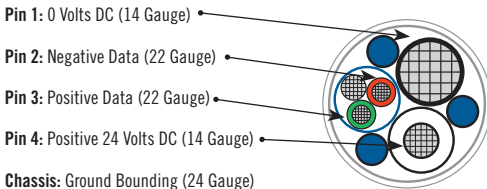
# Specifications

OPERATIONAL	
Drive System	High Torque Stepper Motors with Step Angle of 1.8°, 1/256 Microstep
Torque	Pan - 5 Foot-Pounds Average; Tilt - 10 Foot-Pounds Average
Range	Pan - 300°; Tilt - 270°; User-defined
Speed	Pan - 180° in 6 Seconds; Tilt - 180° in 6 Seconds
Fixture Capacity	40 lbs. (18.4 kg)
Input Connector	XLR 5-pin Male
Output Connector	XLR 5-pin Female
LED Indicators	Menu

POWER	
Cables	1 for Right Arm®; 1 for Fixture (connector not included)
Dimmable	No
Operating Voltage	Auto-switching 100-240 VAC, 50/60Hz
Power Requirement	0.5 Amps; 50 Watts
Fixture Power Cord	5 Amps, 250 Volts Maximum
Accessory Ports	24 Volts DC, 40 Watts Maximum

PROTOCOL	
DMX Channels Required	2, 3, 4, or 5
Protocol Requirements	DMX 512 (1990)
Start Code	(ooh)
Load	2 Fixtures per DMX Line Maximum
Length of DMX Link	1,000' Maximum Termination: 120 Resistor
Termination	120 Resistor
Data Cable	Twisted pairs, 120W, Shielded E1A485 Cable, 22 AWG Minimum
Certification	Patented, UL Listed, CE Rated, Made in the USA

*Product specifications shown are subject to change without notice.*



# Warranty

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- Items are covered for defects in materials and workmanship for one year, including repair parts and repair labor on defective item, from date of the manufacturer invoice.
- The warranty covers freight for 30 days after initial purchase.
- The manufacturer does not cover any other loss resulting from product failure.
- Products being returned for warranty repair must display the original serial number. Removal of the serial number voids the product's limited warranty.
- Despite the care taken for the compilation of this manual, Apollo Design Technology, Inc. cannot be held responsible for any damages resulting from errors that may appear in this manual. All efforts have been made to provide the most accurate, up-to-date instructions and illustrations possible.
- Gel strings are not included in this 1-year warranty.

<b>Serial Number</b>	
<b>Date Purchased</b>	
<b>Purchased From</b>	







# RIGHT ARM<sup>®</sup> 3

Pan and Tilt System



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