YK200

USER MANUAL

020-100629-02

CHRISTIE®

YK200

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020-100629-02

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This Class A digital apparatus complies with Canadian ICES-003.
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The product is designed and manufactured with high-quality materials and components that can be recycled and reused. This symbol  **means that electrical and electronic equipment, at their end-of-life, should be disposed of separately from regular waste. Please dispose of the product appropriately and according to local regulations. In the European Union, there are separate collection systems for used electrical and electronic products. Please help us to conserve the environment we live in!**

Canadian manufacturing facility is ISO 9001 and 14001 certified.

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For complete information about Christie's limited warranty, please contact your Christie dealer. In addition to the other limitations that may be specified in Christie's limited warranty, the warranty does not cover:

a. **Damage occurring during shipment, in either direction.**
b. **Projector lamps (See Christie's separate lamp program policy).**
c. **Damage caused by use of a projector lamp beyond the recommended lamp life, or use of a lamp supplied by a supplier other than Christie.**
d. **Problems caused by combination of the product with non-Christie equipment, such as distribution systems, cameras, video tape recorders, etc., or use of the product with any non-Christie interface device.**
e. **Damage caused by misuse, improper power source, accident, fire, flood, lightening, earthquake or other natural disaster.**
f. **Damage caused by improper installation/alignment, or by product modification, if by other than a Christie authorized repair service provider.**
g. **For LCD projectors, the warranty period specified applies only where the LCD projector is in "normal use." "Normal use" means the LCD projector is not used more than 8 hours a day, 5 days a week. For any LCD projector where "normal use" is exceeded, warranty coverage under this warranty terminates after 6000 hours of operation.**
h. **Failure due to normal wear and tear.**

PREVENTATIVE MAINTENANCE

Preventative maintenance is an important part of the continued and proper operation of your product. Please see the Maintenance section for specific maintenance items as they relate to your product. Failure to perform maintenance as required, and in accordance with the maintenance schedule specified by Christie, will void the warranty.

China RoHS Compliance Information

关于中国 《电子信息产品污染控制管理办法》的说明

- Environmentally Friendly Use Period

环保使用期限

The year number in the centre of the label indicates the Environmentally Friendly Use Period, which is required to mark on the electronic information product sold in China according to the China RoHS regulations.

本标志中表示的年数是根据 《电子信息产品污染控制管理办法》（2006 年 2 月 28 日）以及 《电子信息产品污染控制标识要求》（2006 年 11 月 6 日）制定的、适用于在中华人民共和国境内销售的电子信息产品的环保使用期限。

- Material Concentration Values Table

有毒有害物质含量表

Part Name	部件名称	**Material Concentration** **(** 有毒有害物质或元素 **)**					
		铅 （**Pb**）	汞 （**Hg**）	镉 （**Cd**）	六价铬 **(Cr 6+)**	多溴联苯 （**PBB**）	多溴二联苯醚 （**PBDE**）
Power supply	电源	X	O	O	O	O	O
Harness/cable	连接电线 / 缆	X	O	O	O	O	O
Motor	马达	X	O	O	O	O	O
PCB	电路板	X	O	O	O	O	O
Mechanical components*	机械附件	X	O	O	O	O	O

Note:

O : indicates that the concentration value of the particular hazardous substance contained in all the homogeneous materials for this part, according to EIP-A, EIP-B, EIP-C, is below the stipulated levels in China SJ/T11363-2006.

表示该有毒有害物质在该部件所有均质材料中的含量均在 SJ/T11363-2006 规定的限量要求以下。

X: indicates that the concentration value of the particular hazardous substance contained in all the homogeneous materials for this part, according to EIP-A, EIP-B, EIP-C, may be above the stipulated levels in China SJ/T11363-2006.

表示该有毒有害物质至少在该部件的某一均质材料中的含量可能超出 SJ/T11363-2006 规定的限量要求。

* This part uses metallic alloys, which may contain Lead. 因该部件使用金属合金材料，故可能含有铅。

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1 Introduction

The Christie Nitro YK200 is an automated yoke designed exclusively for technicians with expertise in DMX technology and high power automated projectors.

You must read this document in its entirety to ensure the Christie Nitro YK200 is installed and operated correctly. Failure to follow the instructions in this manual could result in personal injury or damage to the projector or the Christie Nitro YK200.

This product is also designed for temporary outdoor use, but must remain dry under all circumstances.

Servicing of this product may only be performed by Christie accredited service technicians.

1.1 Labels and Marking

Observe and follow any warnings and instructions marked on the Christie Nitro YK200 and throughout this manual:

⚠ DANGER Danger symbols indicate a hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING Warning symbols indicate a hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION Caution symbols indicate a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE! *Addresses practices not related to personal injury.*

1.2 Typographical Notations

The following notations are used throughout this manual:

- Keypad commands and computer keystrokes appear in bold small caps, such as POWER, INPUT, ENTER etc.
- References to specific areas of the document appear italicized and underlined. When viewed online the text appears in blue indicating a direct link to that section. For example, Section 1 Introduction.
- References to other documents appear italicized and bold, such as ***User Manual***.
- References to software menus and available options appear bold, such as **Main** menu, **Preferences**.
- User input or messages that appear on screen, in status display units or other control modules appear in `Courier` font. For example. `“No Signal Present”, Login: christiedigital.`
- Error codes, LED status appear in bold, e.g. LP, A1 etc.
- Operational states of modules appear capitalized, such as power ON/OFF.

1.3 General Features

The Christie Nitro YK200 is controlled by a DMX interface and offers these automated functions:

- 600° pan powered by DC servo motor – 16 bits,
- 270° tilt powered by DC servo motor – 16 bits,
- Focus powered by DC servo motors – 8 bits
- Zoom powered by DC servo motors – 8 bits

1.4 Input Rating

Table 1.1 Operating Power

Zone	Voltage	Connection	Operating Current
EUROPE	230VAC 50HZ	32A SINGLE-PHASE + EARTH GROUND (YOKE ONLY)	1 A
USA	208VAC 60HZ	30A DUAL-PHASE + EARTH GROUND (YOKE ONLY)	1.8 A
ALL	200-240 VAC 50/60HZ	YOKE + PROJECTOR	23 A

1.5 Safety Warnings

⚠ WARNING All servicing must be performed by CHRISTIE accredited service technicians. Use replacement parts that are manufacturer-approved only. Use of any other part other than the ones specified by the manufacturer can result in fire, electric shock or risk of personal injury and irreparable equipment damage.

⚠ WARNING For protection from electric shock, the YK200 must be grounded (earthed) to protect against electrical shock and the AC power distribution circuit must be equipped with a fuse or circuit breaker and ground-fault (earth-fault) protection.

⚠ WARNING Disconnect the YK200 from AC power before removing any cover or part – including fuses – and when not in use (See Figure 1-1 and Figure 1-2). Covers shall only be removed by CHRISTIE accredited service technicians.

⚠ WARNING Isolate the YK200 from power immediately if any power connector, power cable, seal, cover or other component is damaged, defective, deformed, wet or showing signs of overheating. Do not reconnect power until repairs have been completed and unit is completely dry.

⚠ WARNING Do not expose the YK200 to rain or moisture.

This symbol appears in this manual for procedures where a Pinching or Crushing hazard between chain and sprocket exists. Keep hands clear when unit is powered. Disconnect power before servicing.

This symbol appears in this manual for procedures where a Pinching or Crushing hazard between rotating and stationary surfaces exists. Keep hands clear when unit is powered. Disconnect power before servicing or apply rotation locks.

Figure 1-1 Power Cable Connector - Slide Metal Release Tab and Unlock

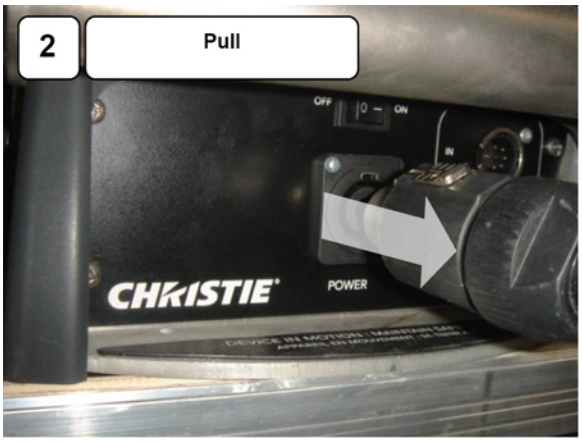


Figure 1-2 Power Cable Connector - Remove

1.5.1 Fuse Replacement

⚠ WARNING Disconnect the YK200 from power before replacing a fuse. Replace fuses with ones of the same type and rating. Never bypass or bridge a fuse. Covers shall only be removed by CHRISTIE accredited service technicians.

The YK200 head box is protected by one fuse located next to the power switch. Use the correct replacement fuse for the zone in which it operates:

- T750mA for 200-240V

There are also 2 fuses inside one of the legs of the base:

- T1.6A (250V) located on the power supply board (Conquer Electronics Co., Ltd # UTE1.60)
- T6.3A time delay (250V) located in an inline fuse holder (Schurter AG # 0034.3125)

1.6 Pre-operational Checklist

Before you operate the Christie Nitro YK200, check these items:

- Verify that the power cable connector is locked to the yoke base.
- Verify that the green LED is flashing on the control panel. This indicates that the yoke is receiving a DMX signal.
- Verify that the connection between the projector and the yoke is correct.
- Verify that the yoke and projector lens will not collide with other objects.
- Verify that the pan and tilt functions on the yoke are unlocked. See *4.1.2 Locking System, on page 4-1*.
- Verify that the Nitro Rigging Clamps are installed securely. See *4.3 Truss Mounting, on page 4-10*.
- Verify that the Quick Lock is locked and secured. See *Quick Lock System, on page 3-6*.

- Verify that the screws on the dual bracket are tight after balancing the projector.
- Verify that the lens is properly mounted and locked after replacing zoom and focus motors.
- Verify that the yoke is properly grounded.
- Verify that the AC power complies with the local building and electrical codes and has both overload and ground-fault (earth-fault) protection.
- Verify that all power distribution equipment and cables are in good condition and rated for the requirements of the connected devices.
- Verify that the DMX distribution has XLR 5 pin connectors. See *Figure 4-17 DMX In and Thru XLR Connectors, on page 4-8*.

2 Overview

2.1 YK200 Dual Arm Yoke

The YK200 is comprised of the following main components (**Figure 2-1**):

- The dual arm (1)
- The base, referred to as TopBox or Tripod (2)
- Handles (3)
- Quick Locks (4)

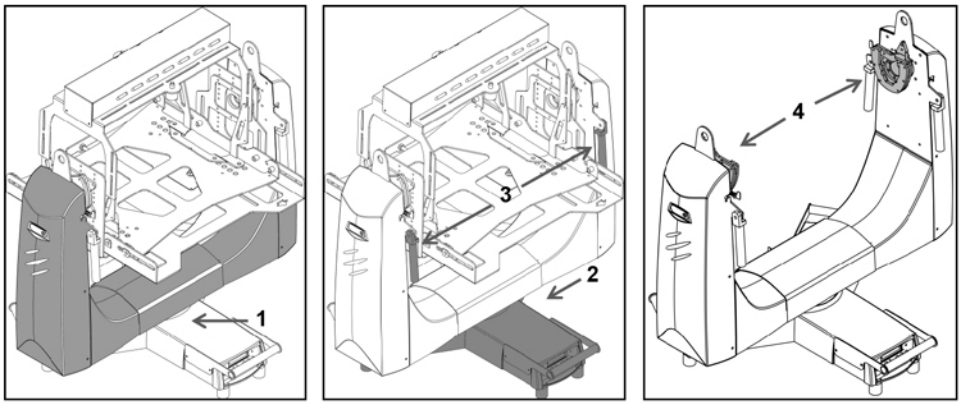


Figure 2-1 YK200 Components

2.1.1 YK200 Bracket

The YK200 bracket assembly contains these components (**Figure 2-2**):

- The platform (1), which accepts adaptor plates that are unique to each projector series.
- A head box (2), which provides a location for projector connections.

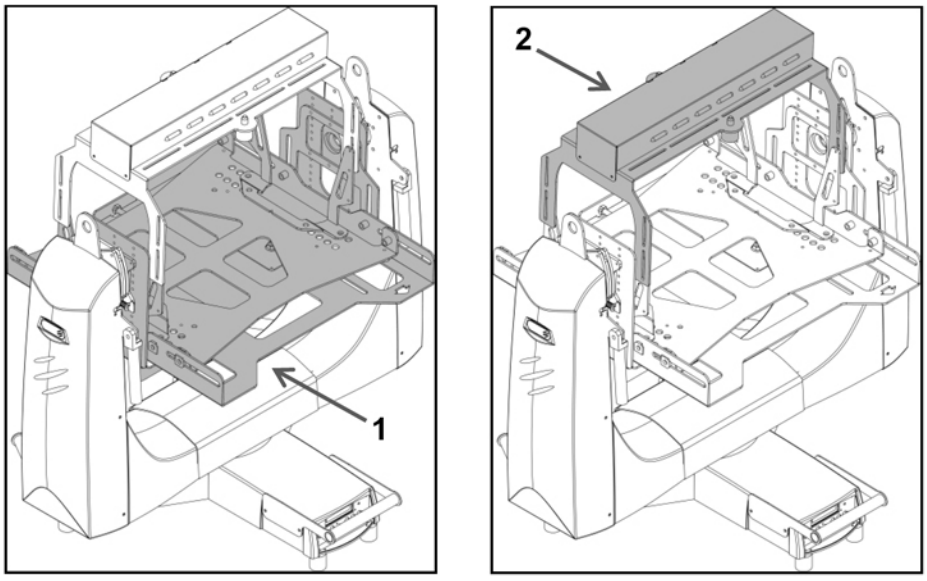


Figure 2-2 Bracket Platform and Head Box

2.1.2 YK200 Dual Arm

The YK200 dual arm contains these components:

- Sub connection panel
- Pan and tilt motors
- Tilt Sensor
- Pan axis
- Pan and tilt chain stretchers

Removing the Yoke Arm Covers

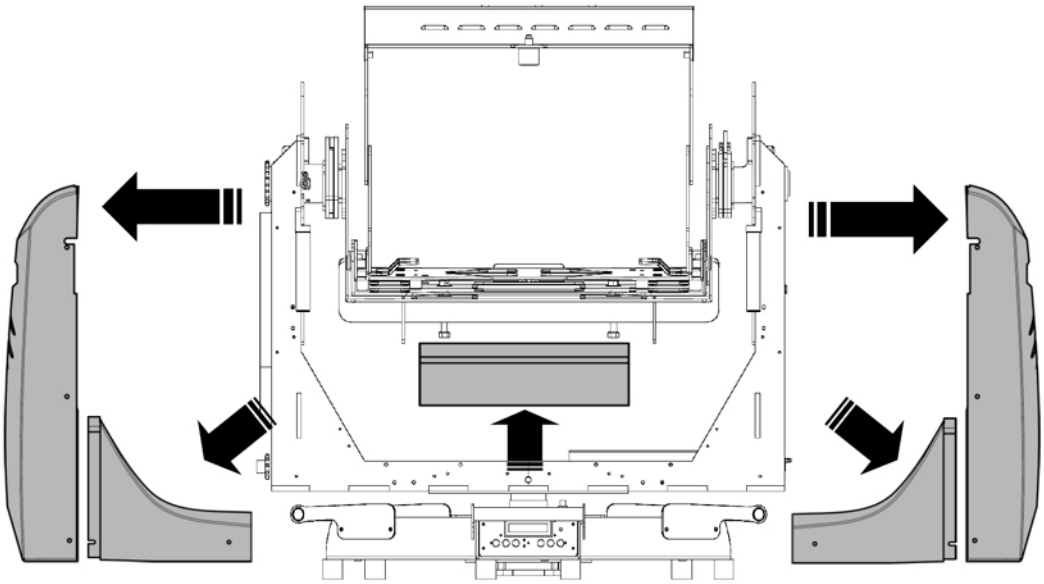


Figure 2-3 YK200 Dual Arm

⚠ WARNING All servicing must be performed by CHRISTIE accredited service technicians. Use replacement parts that are manufacturer-approved only. Use of any other part other than the ones specified by the manufacturer can result in fire, electric shock or risk of personal injury and irreparable equipment damage.

1. Remove 6 screws from the vertical covers on both ends of the arm as shown in **Figure 2-4**. This provides access to the components in **Figure 2-5**.

⚠ CAUTION The covers should always be in place and secured before switching projector power to ON.

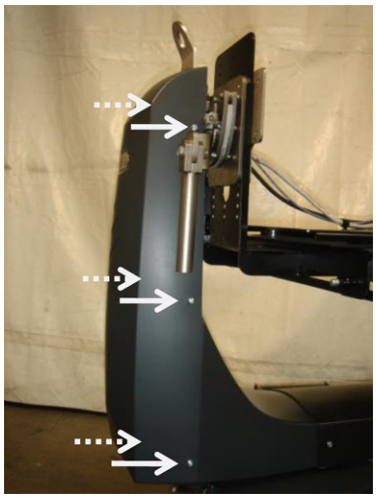


Figure 2-4 Vertical Cover Removal

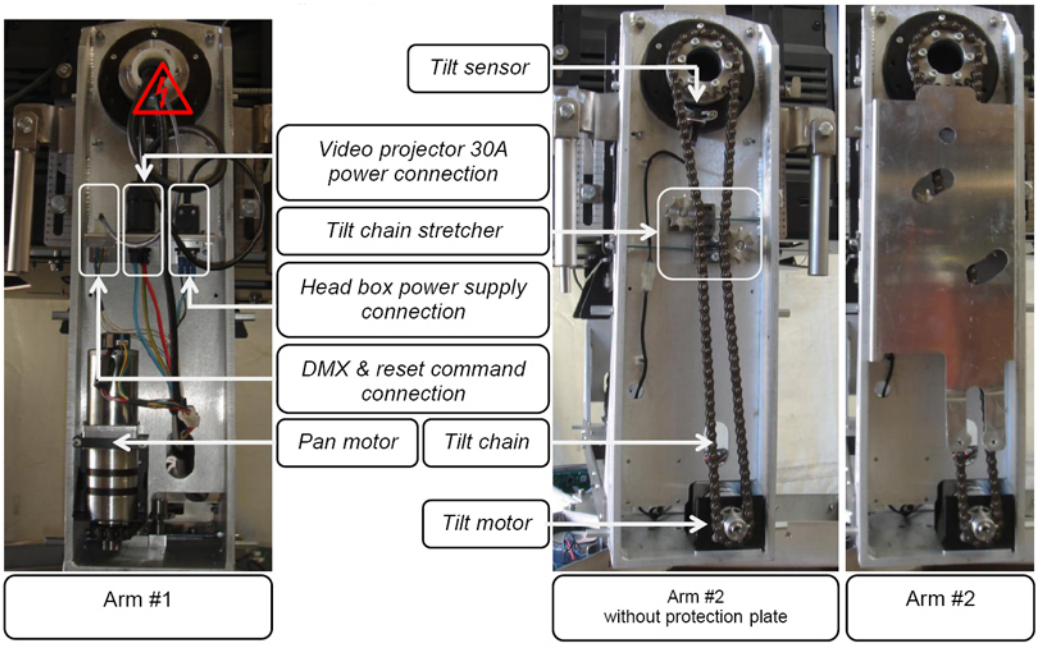


Figure 2-5 Vertical Components

2. Remove screws from the 3 horizontal covers shown in **Figure 2-3** to access the components in **Figure 2-6**.

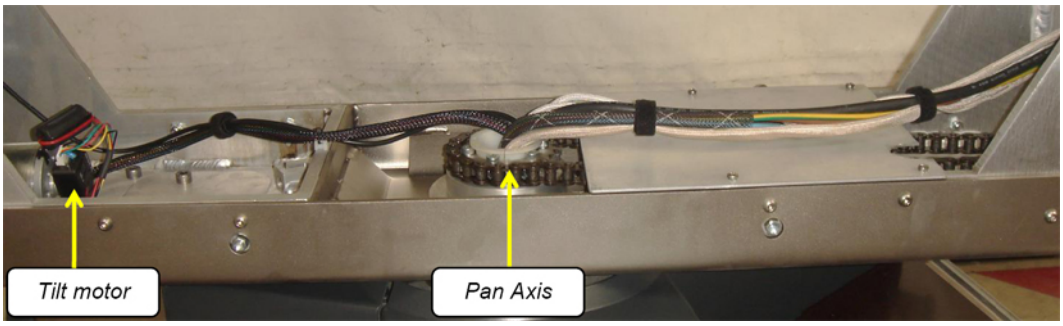


Figure 2-6 Horizontal Components

2.1.3 YK200 Base

The YK200 base is also called **Top Box** or **Tripod**. The base (**Figure 2-7**) contains these components, each protected by an ABS cover and fitted with one handle:

- Display Module and Motherboard
- Power and DMX Connectors
- Video Connectors

⚠ CAUTION The covers should always be in place and secured before switching projector power to ON.

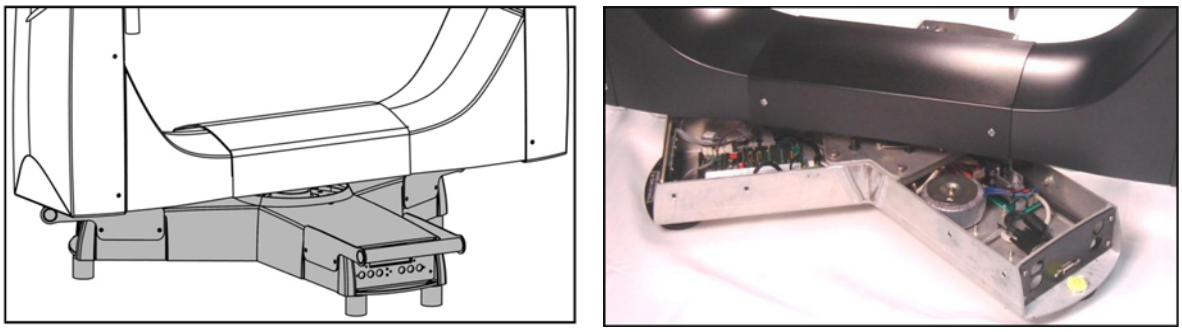


Figure 2-7 YK200 Base with and without Covers

⚠ WARNING All servicing must be performed by CHRISTIE accredited service technicians. Use replacement parts that are manufacturer-approved only. Use of any other part other than the ones specified by the manufacturer can result in fire, electric shock or risk of personal injury and irreparable equipment damage.

Removing the Base Covers

To remove the base covers (**Figure 2-8**):

1. Remove the 4 screws (2 on each side) securing the handle to the base frame.
2. Lift the handle from the base cover.
3. Lift the cover from the base frame.

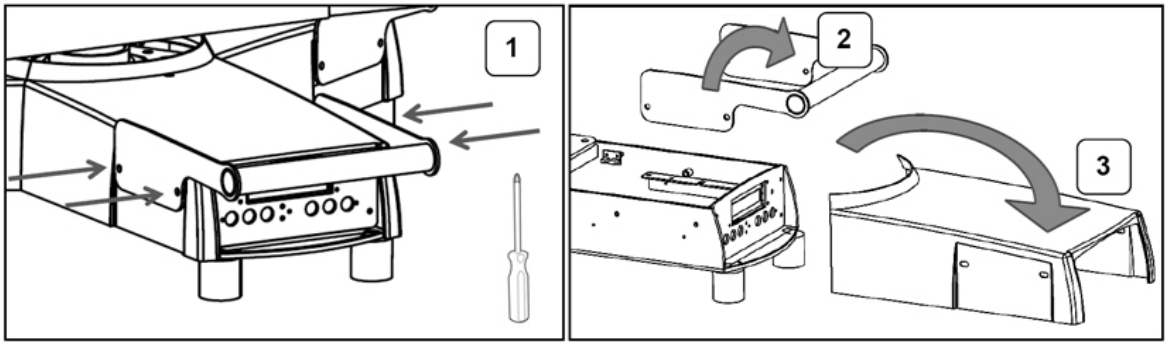


Figure 2-8 Remove Base Handle and Cover

Leg # 1: Display Module and Motherboard

From this panel, you have access to all the projector functions. This part also contains the Motherboard.

Figure 2-9 LCD Display

Figure 2-10 Motherboard CPU - Top View

⚠ CAUTION Disconnect the YK200 Yoke from AC power before removing any cover or part, including fuses – and when not in use. Covers shall only be removed by CHRISTIE accredited service technicians.

Motherboard (CPU) Features

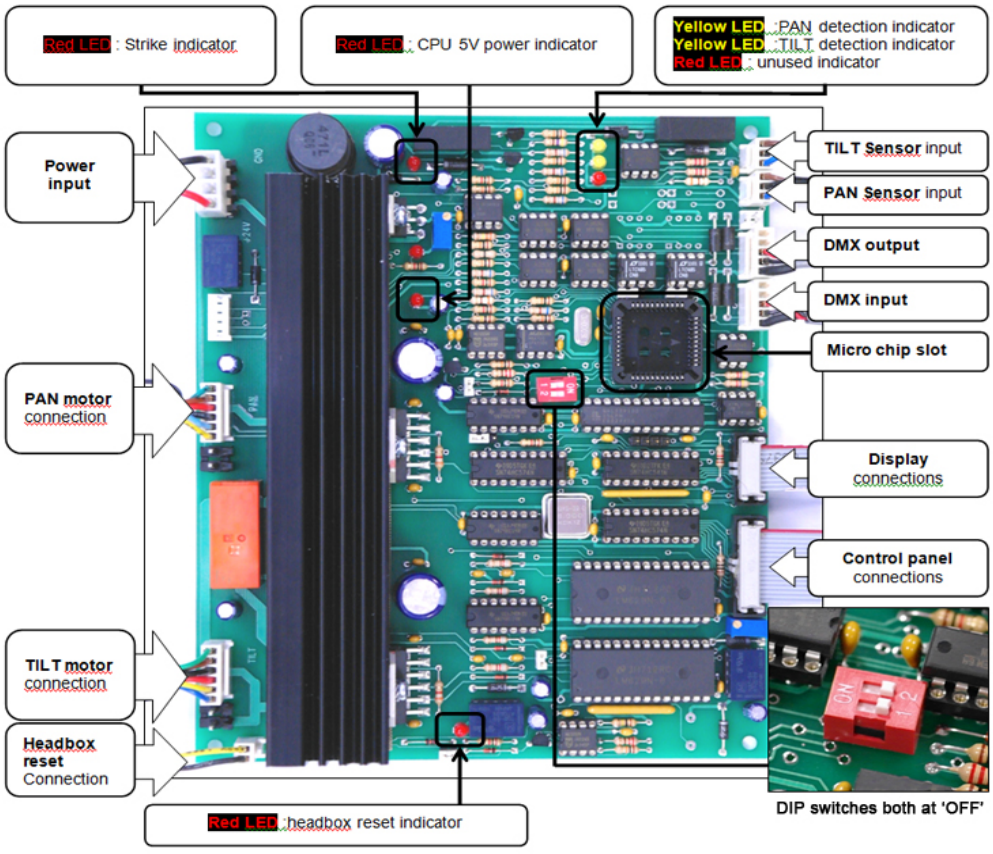


Figure 2-11 Motherboard Features

NOTE: *The DIP switches in Figure 2-11 do not affect projector operation.*

Leg # 2 Power-DMX Panel

The Power-DMX panel includes these components (**Figure 2-12**):

- Power switch
- PowerCon connector
- DMX in and out

This Leg also houses a transformer (arrow in **Figure 2-13**) that powers the Motherboard (CPU) as well as Pan and Tilt yoke motors.

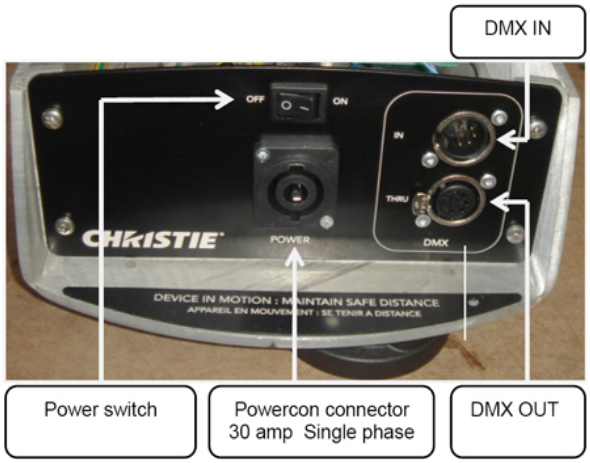


Figure 2-12 Power-DMX Panel

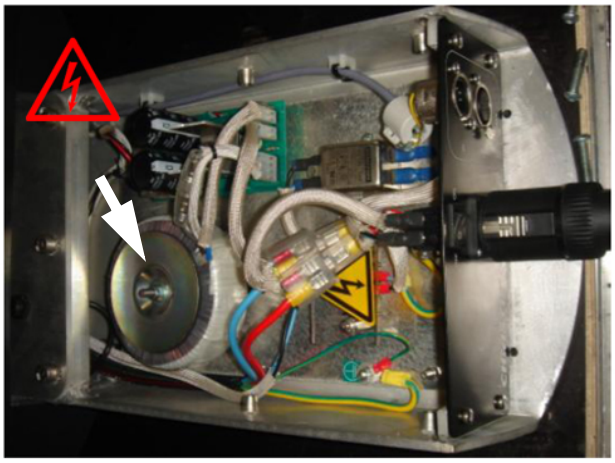


Figure 2-13 Leg #2 Top View

⚠ CAUTION Disconnect the YK200 Yoke from AC power before removing any cover or part including fuses – and when not in use. Covers shall only be removed by CHRISTIE accredited service technicians.

Table 2.1 Fuse Values

Description	Voltage Range		Fuse protection
Power Supply Transformer (150 VA)	Primary	208-230 V	T1.6A (250V) - Use only Conquer Electronics Co., Ltd # UTE1.60)
	Secondary	22 V	T6.3A (250V) - Use only Schurter AG # 0034.3125

Leg # 3 Input Panel

This panel includes these ports (**Figure 2-14**):

- 1 - Ethernet Input
- 2 - DVI-I type input

Figure 2-14 Input Panel

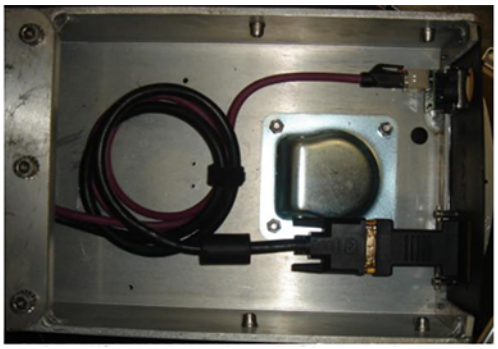


Figure 2-15 Leg#3 Top View

2.2 YK200-Compatible Projectors

2.2.1 Christie Roadster Series

The Christie Roadster Series video projector can be mounted to the YK200 with a special bracket. A minor modification is required to interface with the YK200, but all other Roadster features and functions are unchanged. Refer to the Roadster Series manuals for more information.

Figure 2-16 Roadster Series Front View

Figure 2-17 Roadster Series Connection Panel

Modifications required

Zoom and focus motors on the Roadster lens must be replaced with YK200 motors. You use the DMX protocol to control these motors.

2.3 Head Kits

Projectors are mounted to the yoke using a Head Kit comprised of:

- The YK200 bracket (**Figure 2-18**) and
- Adaptor plates specific to the projector series. (**Figure 2-19**)

The bracket has a **Quick Lock (**see *page 3-6*)**,** allowing simplified installation and removal.

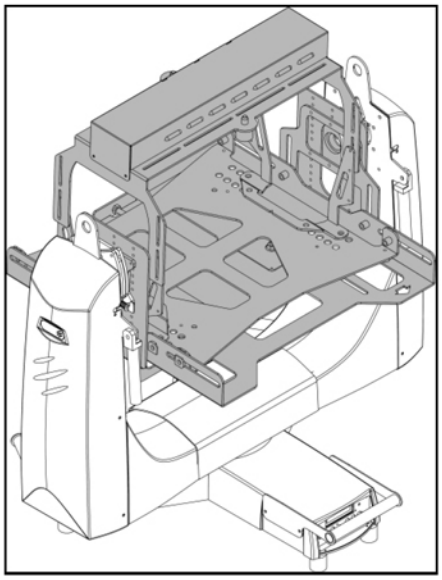


Figure 2-18 YK200 Bracket

One type of Heads Kit is available for the YK200:

- Roadster Series adaptor plates. (**Figure 2-19**)

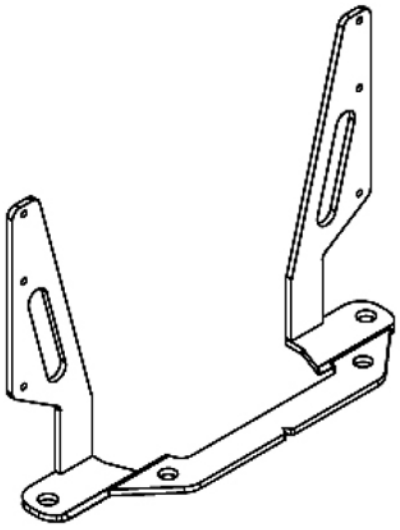


Figure 2-19 Roadster Head Kit Adaptor Plates

Figure 2-20 YK200 with Roadster

A typical projector configuration using the YK200 is shown in **Figure 2-20**.

2.4 Rigging Accessories & Features

2.4.1 The Nitro Rigging Clamp

The Nitro Rigging Clamp (P/N 131-109101-xx) is an optional accessory that provides a means for attaching the YK200 to a truss.

The Nitro Rigging Clamp (**Figure 2-21**) is designed to allow the YK200 base to be mounted either on the top or the bottom of a truss (**Figure 2-22**). Its adjustable clamps permit the Nitro Rigging Clamp to accommodate trusses of different widths.

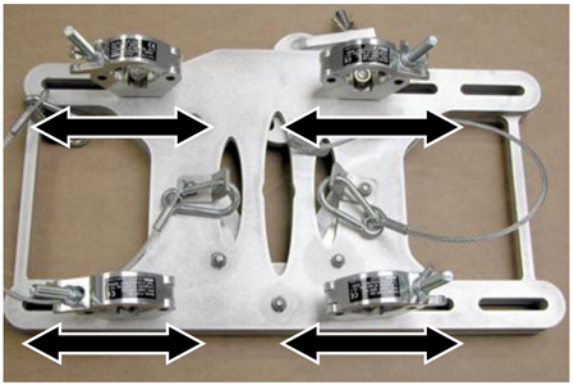


Figure 2-21 Nitro Rigging Clamp with its 4 adjustable clamps

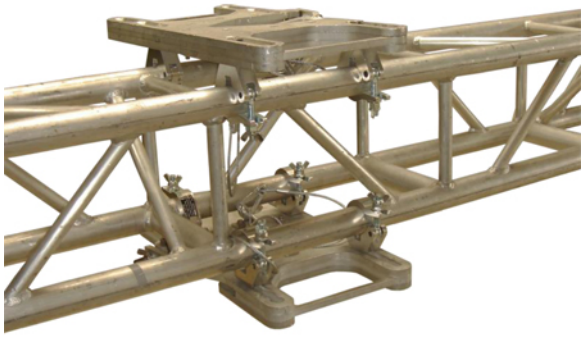


Figure 2-22 Nitro Rigging Clamp mounted on top and bottom of truss

One triangular plate (**Figure 2-23**) is directly fitted on the Pan axis, under the YK200 Tripod. This plate is designed to engage with the Nitro Rigging Clamp hook. One removable safety ring is also integrated with the bottom of the base to allow the projector to be secured with a safety cable (**Figure 2-24**).

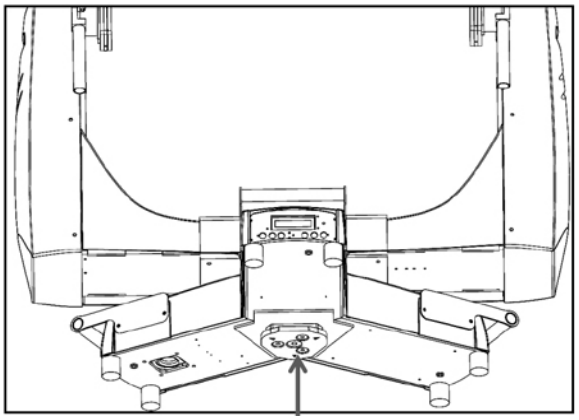


Figure 2-23 Triangular Plate

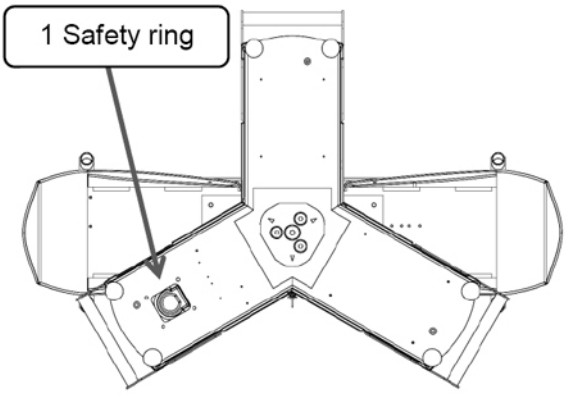


Figure 2-24 Base Safety Ring

2.4.2 Lifting Features

An inbox lifting ring is fitted on top of each arm. It allows the YK200 to be lifted for easy maintenance or for an installation away from its flight case.

⚠ WARNING **Lifting of the YK200 must only be performed by a trained professional.**

⚠ WARNING **The YK200 tilts slightly when extracted from its flight case.**

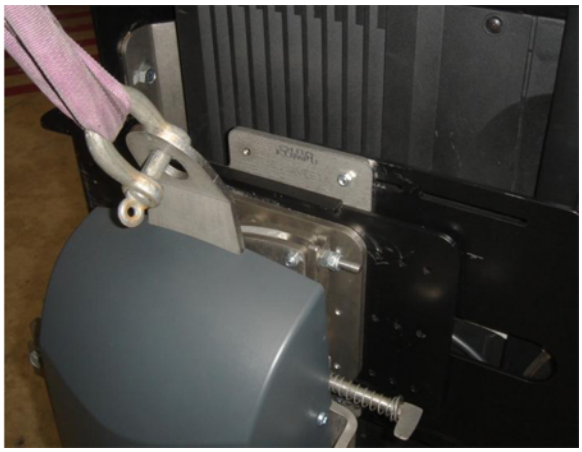


Figure 2-25 Lifting Ring

Figure 2-26 Lifting Ring suspending YK200

Weights

Verify your lifting equipment has an adequate weight rating to lift the yoke:

- YK200 and Roadster Series w/o lens: 200 kg (441 lbs)

3 Projector Installation

3.1 Roadster Series Lens Motor Replacement

To implement lens zoom and focus control from the DMX console, it will be necessary to replace the Roadster lens motors.

⚠ CAUTION Do not touch or remove any parts except those that are documented in the procedure. Malfunctions, electrical shock, fire hazard or other accidents may result.

NOTICE! *When moving or setting up a projector, ensure the lens cap is in place to prevent damage to the lens surface. Do not subject the lens to force and do not lift the projector by the lens. The actions can result in damage to the lens, cabinet or mechanical components.*

3.1.1 Lens Removal

1. Install the front lens cap. (**Figure 3-1**)
2. Press the lens button. (**Figure 3-1**)
3. Rotate the lens counter-clockwise until the tabs are free of the retaining ring (**Figure 3-2 A**). Pull lens out (**Figure 3-2 B**). Lens connectors will disconnect when the lens is pulled straight out.

NOTICE! *The connector slide assembly allows the connector to move as the lens is rotated.*

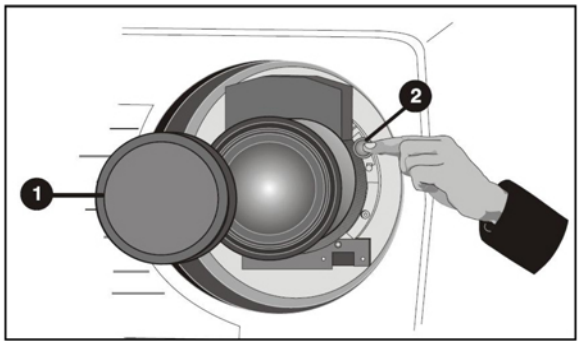


Figure 3-1 Lens Cap Placement

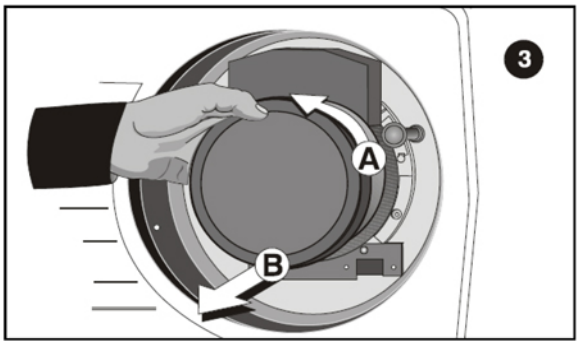


Figure 3-2 Lens Removal

3.1.2 Lens Motor Set Replacement

NOTICE! *All original screws must be set aside for re-use.*

1. Remove lens motor cover by removing screws shown in **Figure 3-3**.

2. Remove the motor set from the lens by removing the screws in **Figure 3-4**.

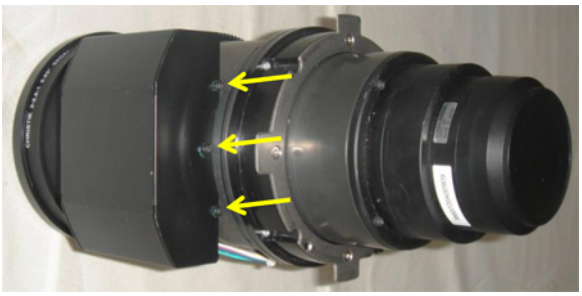


Figure 3-3 Motor Cover Removal

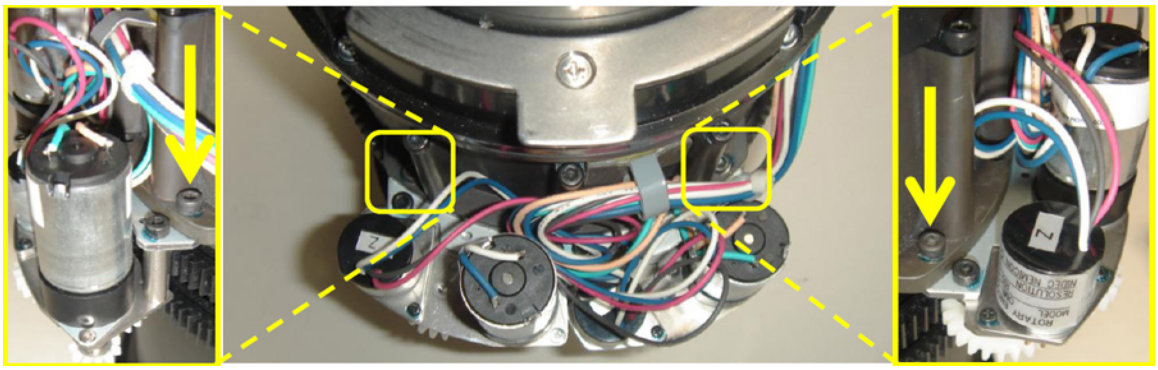


Figure 3-4 Motor Set Removal

3. Remove the connector bracket. (**Figure 3-5**)

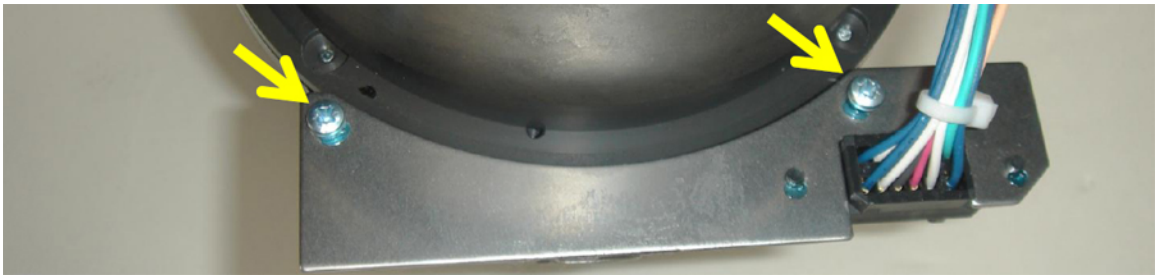


Figure 3-5 Connector Removal

4. Open the replacement motor set. (**Figure 3-7**)

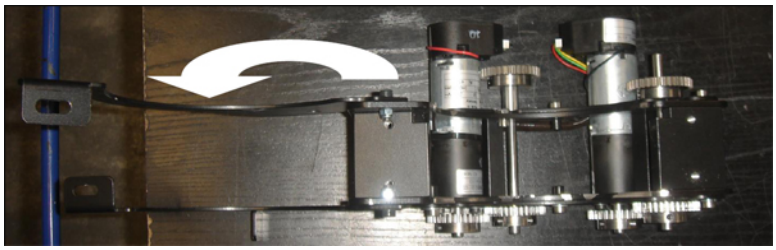


Figure 3-7 Open Replacement Motor Set

Figure 3-6 Replacement Motor Set

5. Loosen the screws at the locations shown in **Figure 3-8** to unlock the motor position adjustments.

Figure 3-8 Unlock Motor Adjustments

6. Place the lens in the motor set in the orientation shown in **Figure 3-9**.

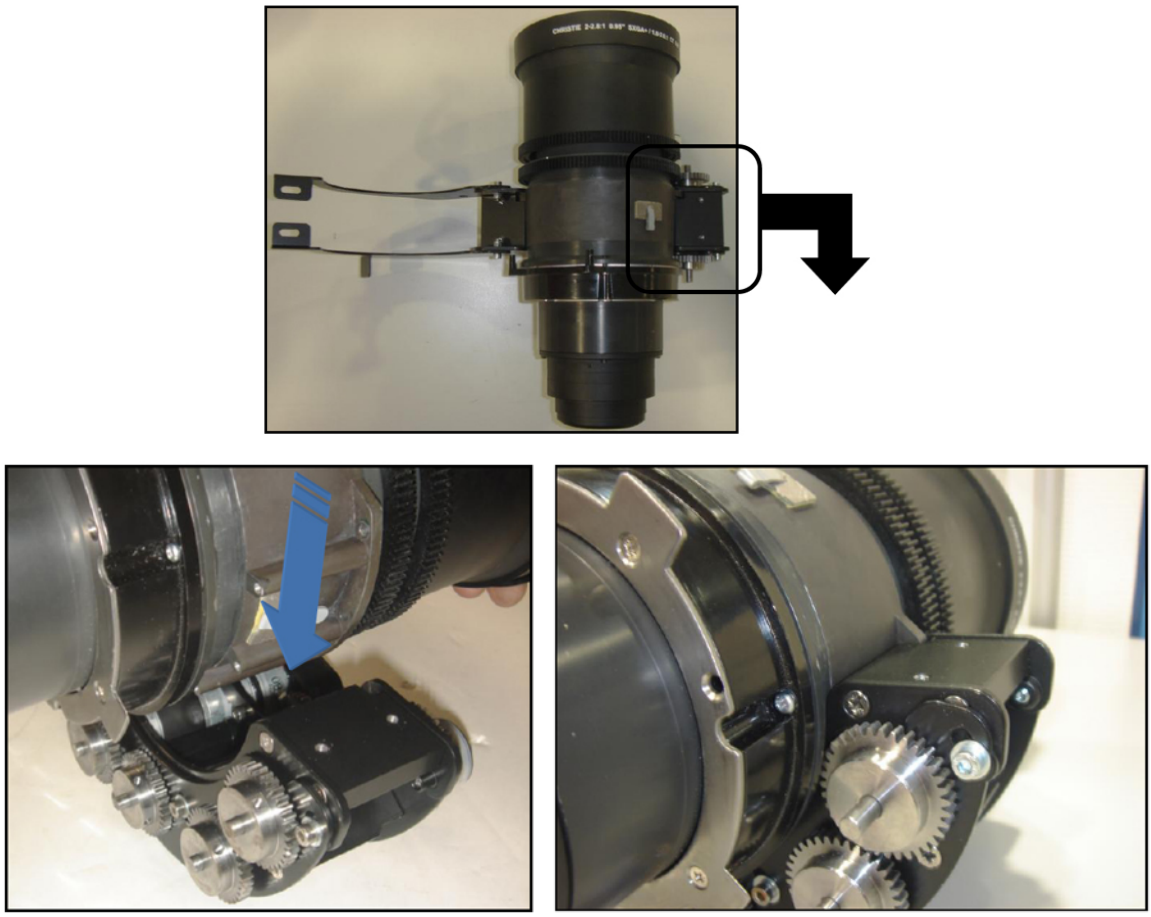


Figure 3-9 Place Lens in Motor Set

7. Close the motor set arms and fasten them with the hardware shown in **Figure 3-10.**

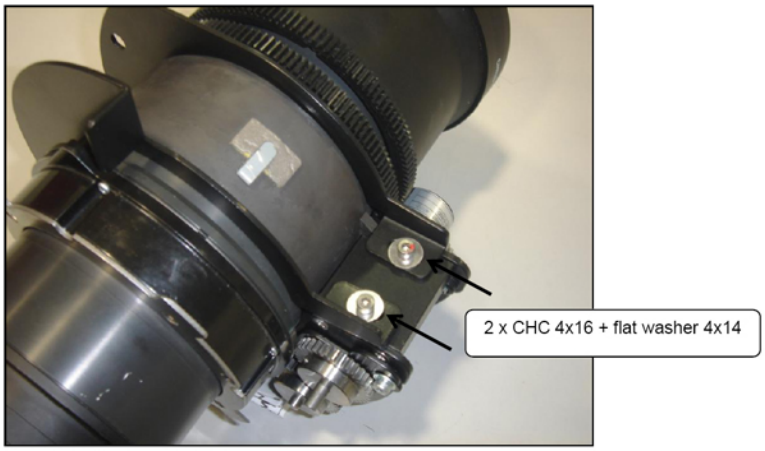


Figure 3-10 Fasten Motor Arms

8. Allow the motor gears to mesh with the lens gears. (**Figure 3-11**)

NOTICE! *DO NOT apply additional pressure on the gears in an effort to mesh them.*

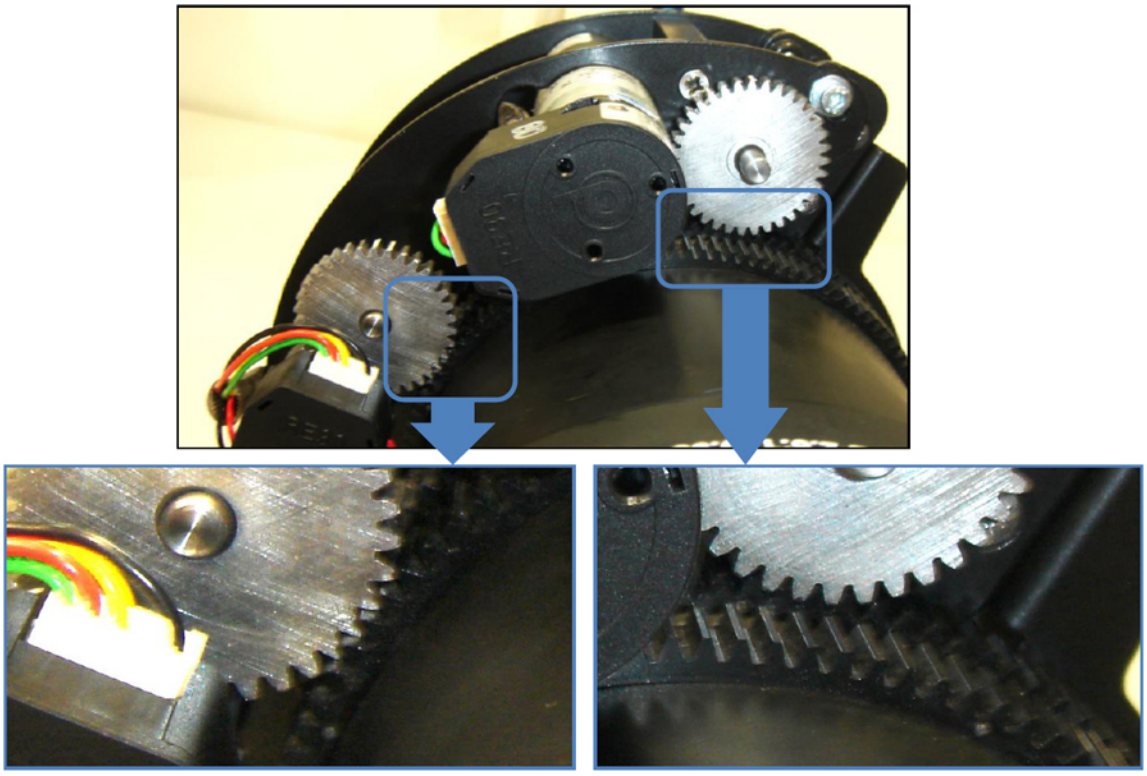


Figure 3-11 Engage Gears

9. Inspect the motor gears to ensure they are meshed with the lens gears. Tighten the motor position adjustment screws loosened earlier (Refer back to **Figure 3-8**).
10. Carefully rotate the lens gears and verify that the motor gears are rotating. If gear operation is satisfactory, the lens is ready for installation.

Figure 3-12 Lens with Replacement Motors

3.2 Roadster Series Bracket

3.2.1 Bracket Description

The Roadster Series projector is mounted on a unique video head, or bracket. The bracket includes two triangular plates that form part of a Quick Lock system (**Figure 3-13**), which allows the projector to be quickly mounted on or dismounted from the YK200.

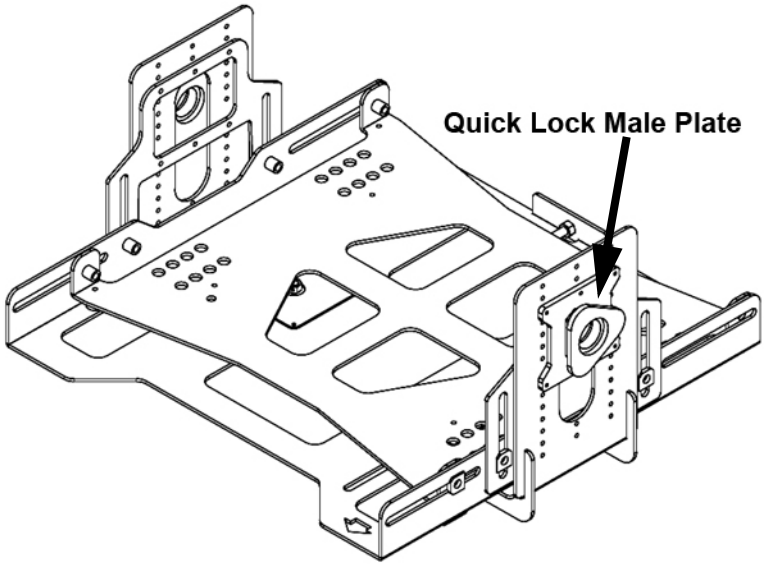


Figure 3-13 Bracket with Quick Lock plate

Quick Lock System

This system is comprised of triangular plates on the projector bracket that mate with a slots on the YK200 tilt mechanism (**Figure 3-14**). They are secured with a latch that fastens with (2) nuts, (3) blocking bolts and (1) safety bolt. With only a few steps, the user can quickly change out projectors that have been pre-mounted onto brackets.

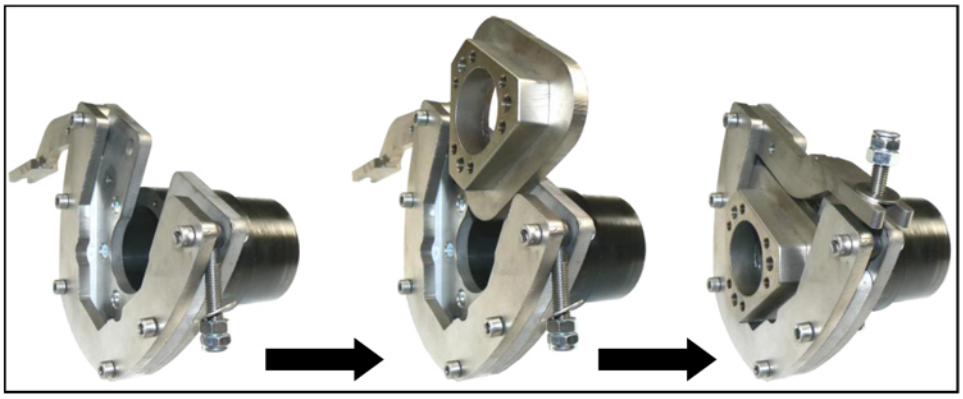


Figure 3-14 Quick Lock System

3.2.2 Bracket Setup

⚠ WARNING All servicing must be performed by CHRISTIE accredited service technicians. Use replacement parts that are manufacturer-approved only. Use of any other part other than the ones specified by the manufacturer can result in fire, electric shock or risk of personal injury and irreparable equipment damage.

Removing the Bracket from the YK200

On occasion, it may be necessary to remove the bracket from the YK200. Perform the following steps on both sides of the bracket:

1. Lock the tilt axis, then loosen (2) M8 latch nuts (**Figure 3-15**).
2. Back off the (3) TH 6x16 blocking bolts (**Figure 3-16**).

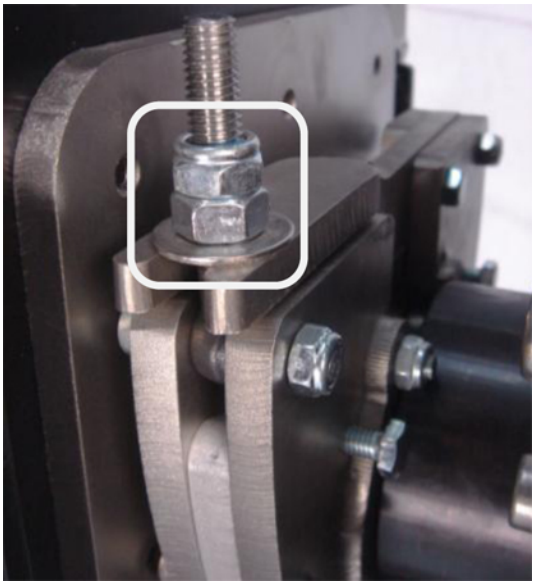


Figure 3-15 Undo 2 Latch Nuts

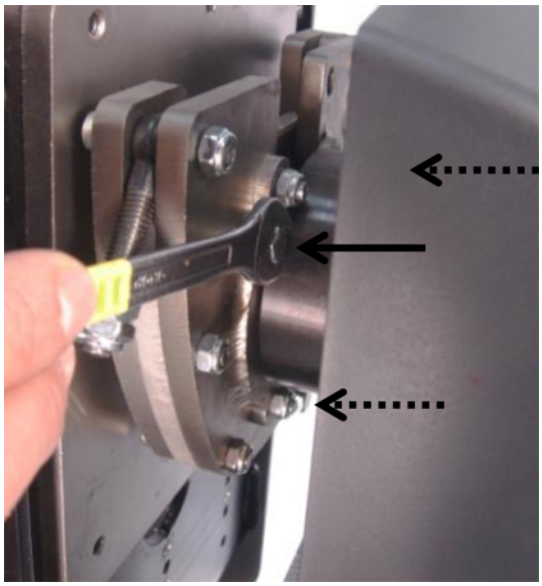


Figure 3-16 Undo 3 Blocking Bolts

3. Back off the safety bolt (**Figure 3-17**).
4. Open the latch (**Figure 3-18**).
5. Remove the yoke arm cover (6 screws) and pull the cables through the tilt axis opening (**Figure 3-19**).
6. Lift the bracket from the YK200.

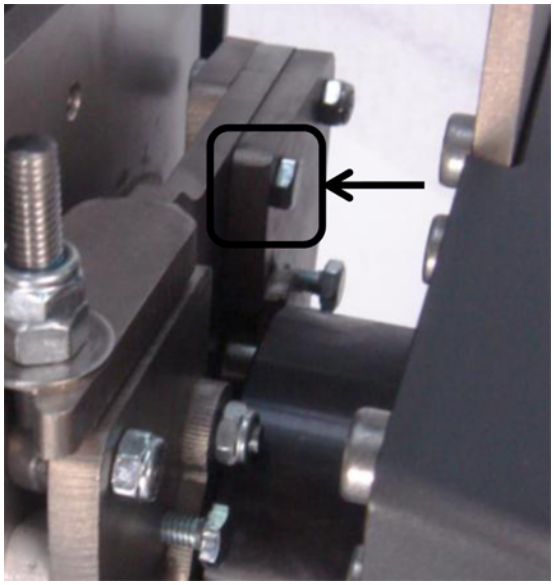


Figure 3-17 Undo Safety Bolt

Figure 3-18 Open Latch

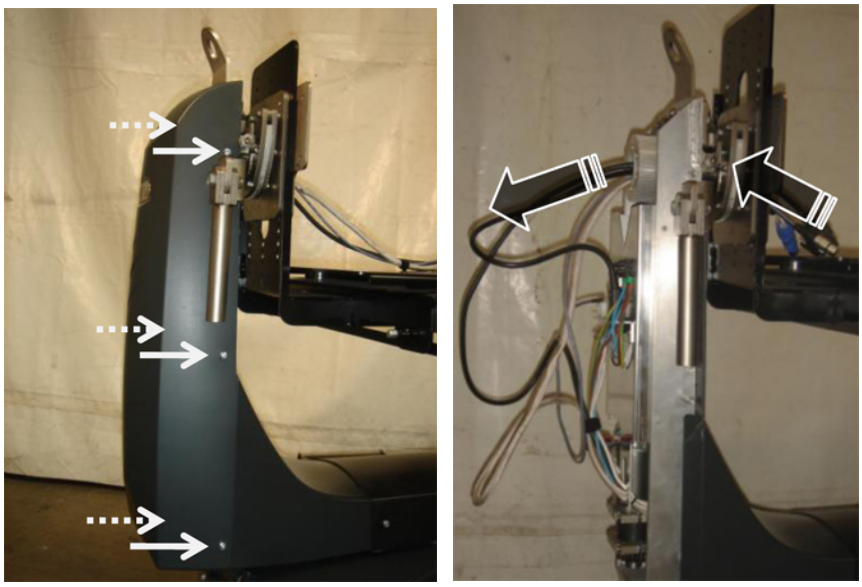


Figure 3-19 Remove Covers and Extract Cables through Tilt Mechanism

Installing the Bracket on the YK200

NOTICE! *Perform the following steps on both sides of the yoke.*

1. Ensure the tilt mechanism is locked.

Figure 3-20 Lock Tilt Mechanism

2. Rotate the bracket until the arrow on the bracket (circled in **Figure 3-21**) points upward and slide the Quick Lock plates into the yoke. The arrow on the bracket also indicates where the lens end of the projector will be located.

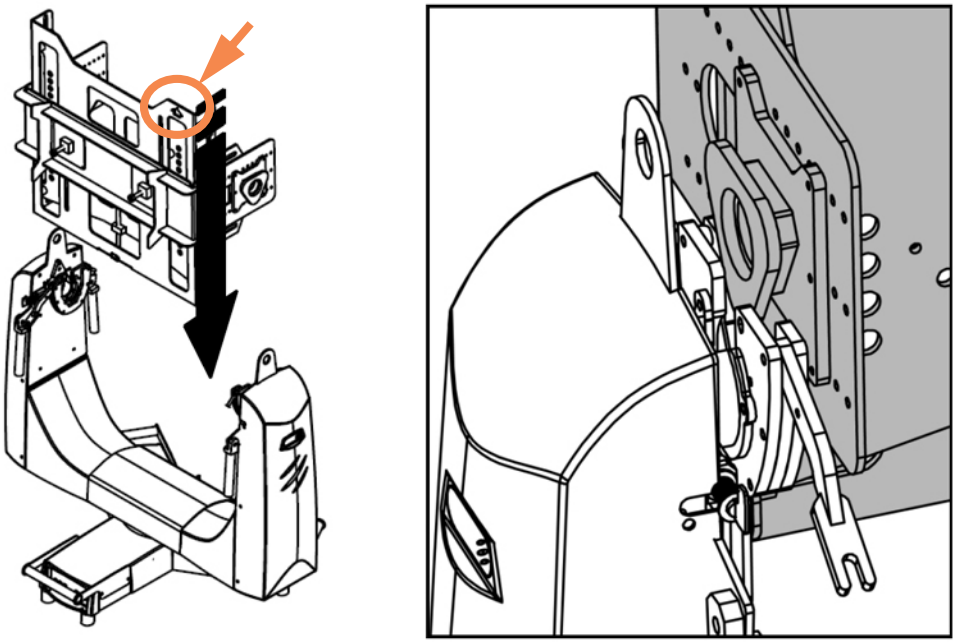


Figure 3-21 Mount Bracket onto Yoke

NOTICE! *There are 2 ways that the bracket can be oriented when mounting onto the yoke. The correct orientation is with the right side of the projector (as viewed from lens end) closest to yoke Arm#1, which contains the sub connection panel. The upward arrow on the bracket also indicates the correct orientation.*

3. Close the latch. (**Figure 3-22**)
4. Tighten the safety bolt. (**Figure 3-23**)

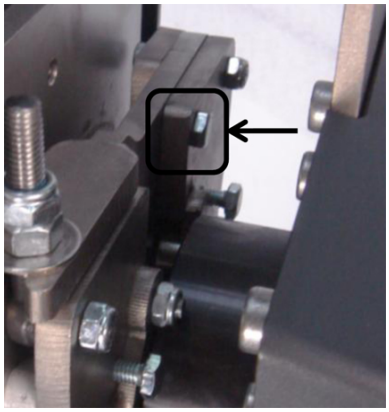


Figure 3-23 Tighten Safety Bolt

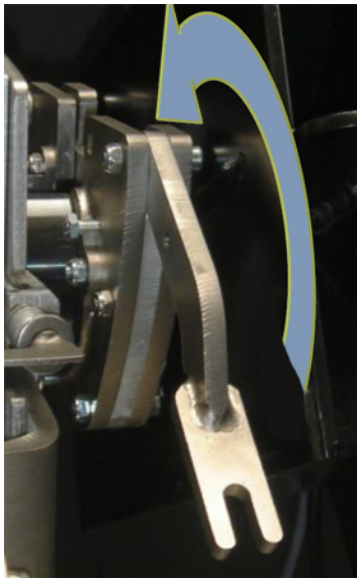


Figure 3-22 Close Latch

5. Tighten (3) blocking bolts. (**Figure 3-24**)
6. Tighten (2) latch nuts. (**Figure 3-25**)

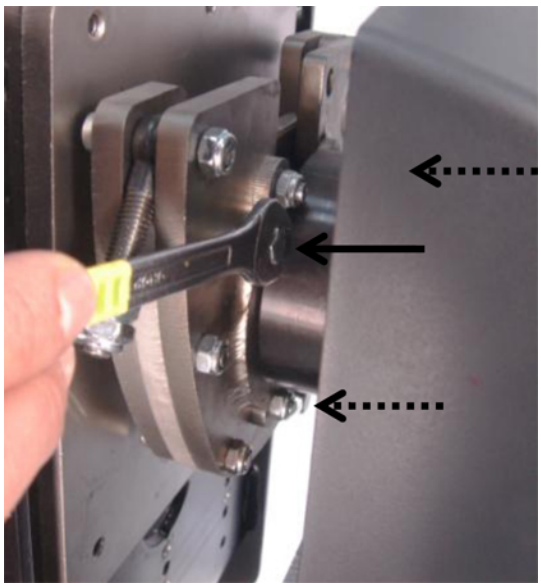


Figure 3-24 Tighten Blocking Bolts

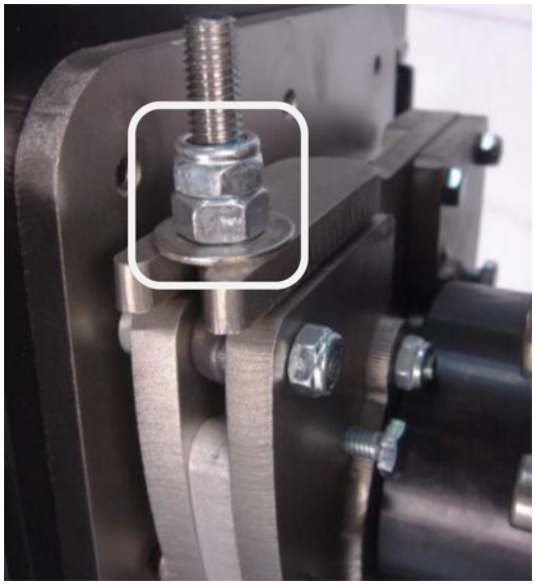


Figure 3-25 Tighten Latch Nuts

7. Refer back to **Figure 3-19**. With the vertical cover removed, thread the DMX and power cables through the tilt axis.
8. Unlock the tilt mechanism, rotate the bracket until it is horizontal and lock the tilt mechanism again.

3.2.3 Installing the Roadster Series Projector on the Bracket

The bracket assembly includes an adjustable plate which allows the projector position on the bracket to be adjusted for optimum balance. The projector is mounted to this plate with (2) adaptor plates.

Before mounting the projector on the bracket, the vertical position of the adjustable plate must be set for the Roadster.

1. Ensure that the (6) screws are located starting at the third set of holes from the top (bottom illustrations in **Figure 3-26**).

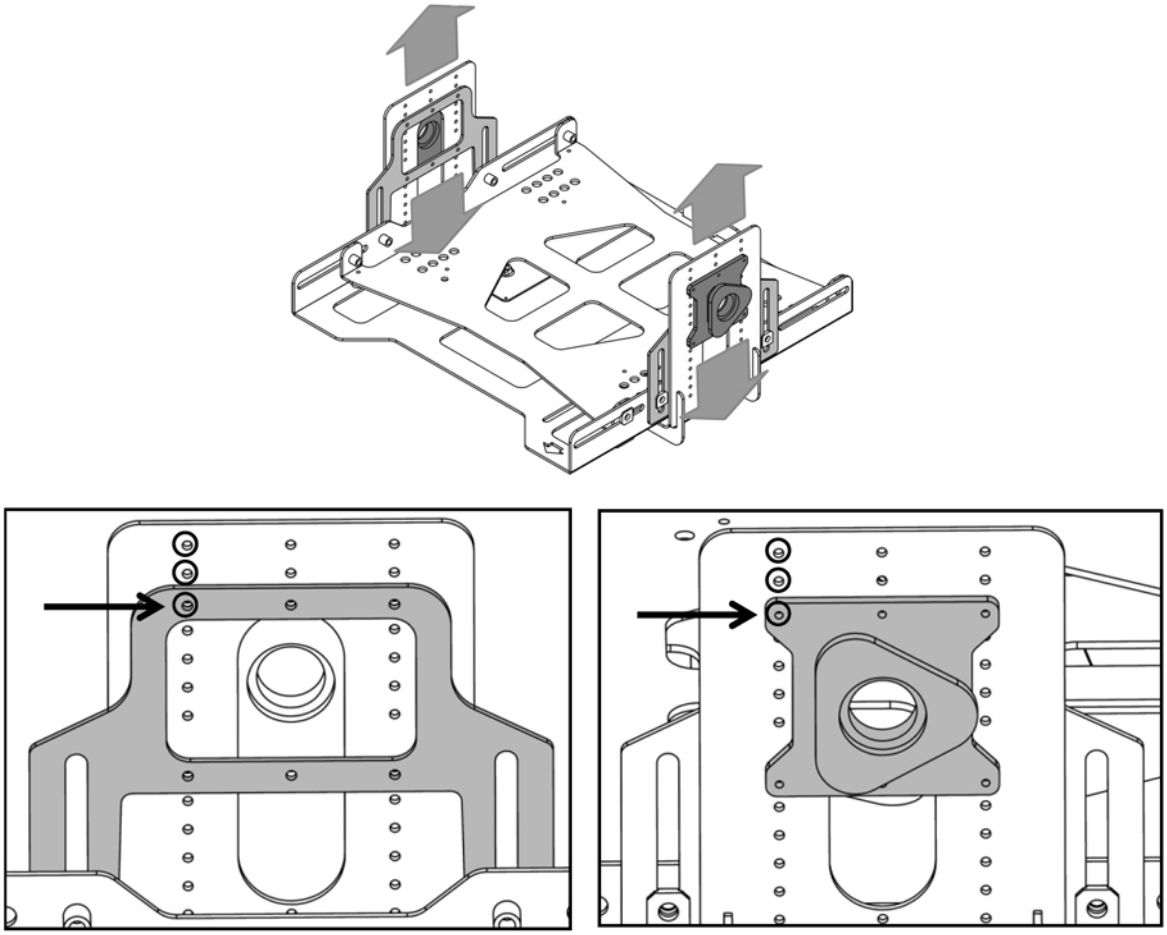


Figure 3-26 Vertical Height Adjustment for Roadster

2. Attach the Roadster adaptor plates to the bottom of the projector (**Figure 3-27**) in the orientation shown using (4) TH 12x25 screws and (4) 12mm split lock washers. Note that the notch on each adaptor plate must align with the screw heads as shown at bottom right. Slide the plates then fasten the M12 screws once the plates are aligned.

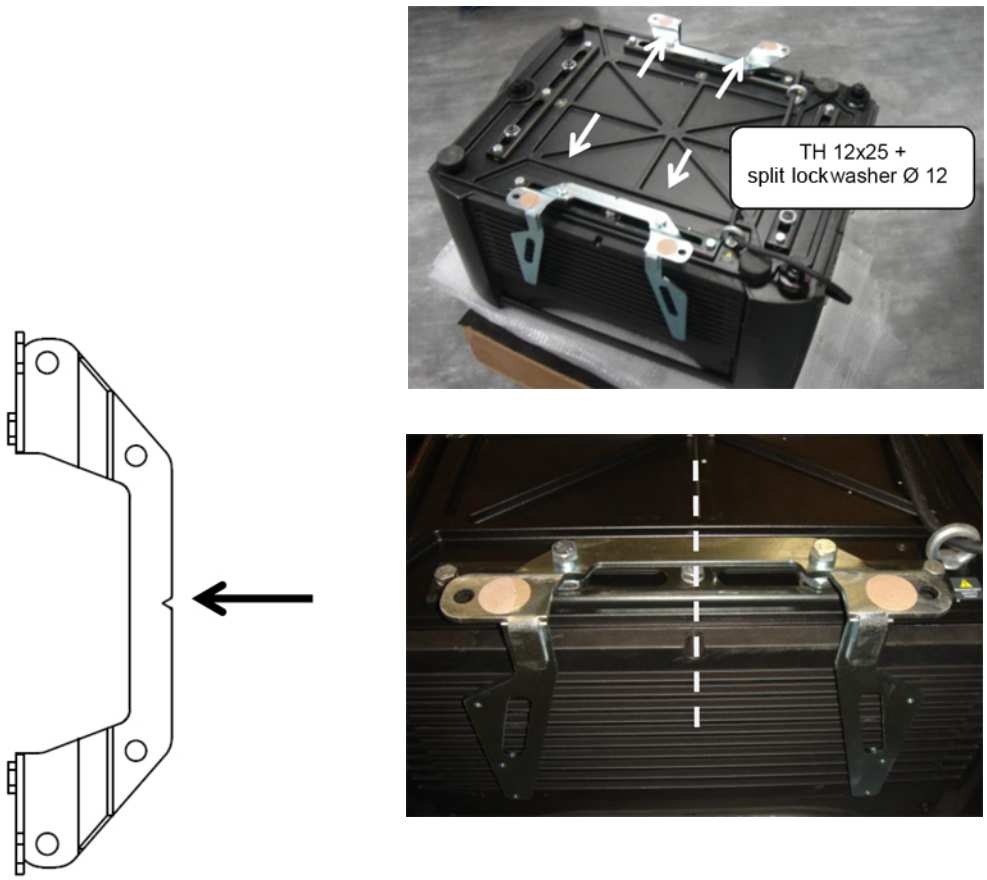


Figure 3-27 Attach the Adaptor Plates to the Projector

3. Turn the projector upright, and place it on the bracket. Note that the front (2) adaptor plate holes shown, in **Figure 3-28,** must align with the second set of holes (shown in red) from the front of the bracket. (Front is indicated by the arrow in the blue box in **Figure 3-28**).
4. Fasten at (4) locations (**Figure 3-30**) using a TH12x30 screw, (2) 12x27 flat washers and (1) M12 Nylstop at each location.

NOTE: *Balance adjustment depends on the lens used, and is not performed at this point.*

⚠ CAUTION Ensure that the tilt mechanism is locked before mounting projector.

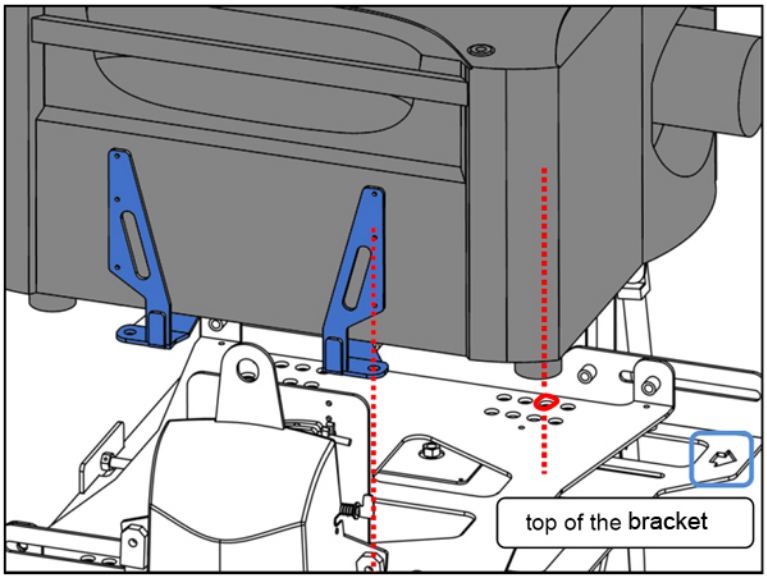


Figure 3-28 Place Projector on Bracket

Figure 3-29 Alignment of Adaptor Plates with Bracket Holes

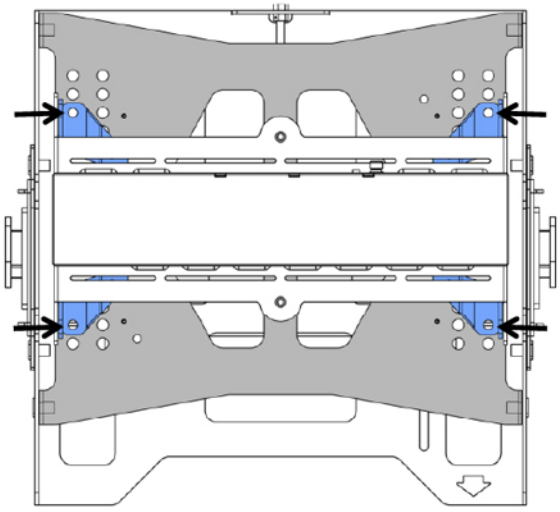


Figure 3-30 Fastener Details and Locations

5. Install the Head Box as shown in **Figure 3-31** using (2) TH 6x16 screws, (1) 6x18 flat washer and (1) split lockwasher on each side.

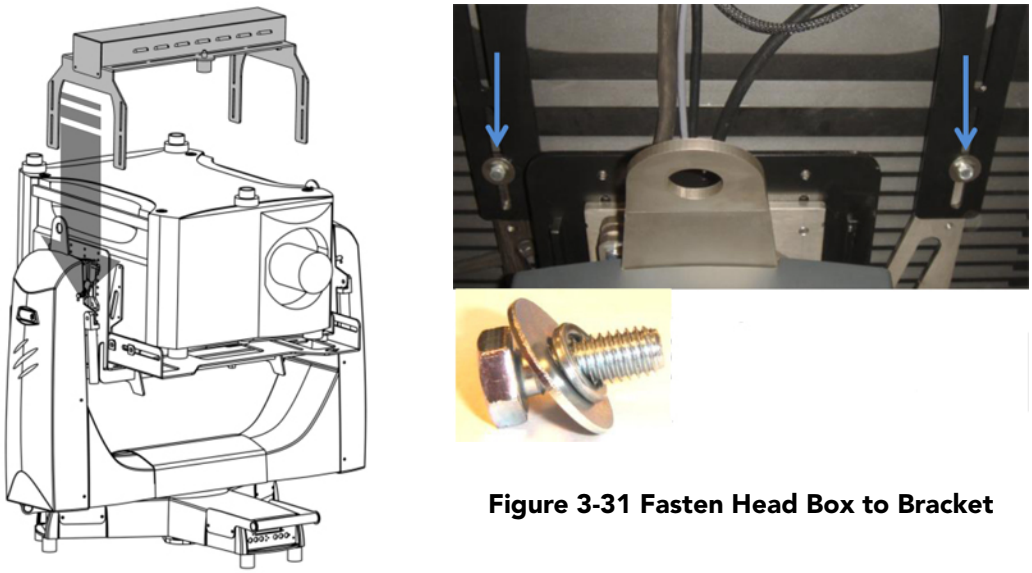


Figure 3-31 Fasten Head Box to Bracket

3.2.4 Lens Installation

1. Connect the lens connector to the external zoom and focus cable from the Head Box. (**Figure 3-32**)

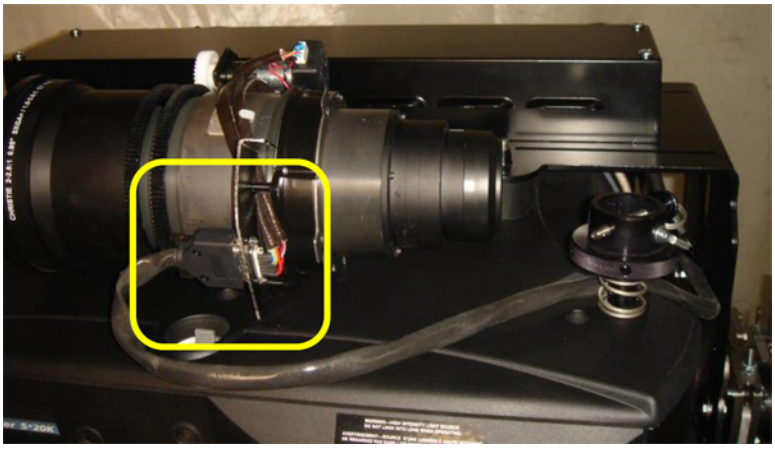


Figure 3-32 Lens Connection to Zoom and Focus Cable

NOTICE! *Before lens installation, remove rear lens cap.*

2. Align the tabs on the lens with the slots in the lens retainer ring on the projector. Push the lens in until the tabs touch the back of the retainer ring. (**Figure 3-33**)

Figure 3-33 Install Lens

3. To ensure the lens is secured in the lens mount, turn it clockwise until you feel the tabs on the lens butting against the end stops on the lens mount retaining ring (**Figure 3-34**). To ensure the locking pin is properly engaged, turn the lens counter-clockwise. If the lens rotates, the locking pin is not properly engaged. Turn the lens clockwise and pull the lens plunger assembly out until the plunger assembly stops.
4. Recheck by turning the lens counter-clockwise.The lens should not rotate.

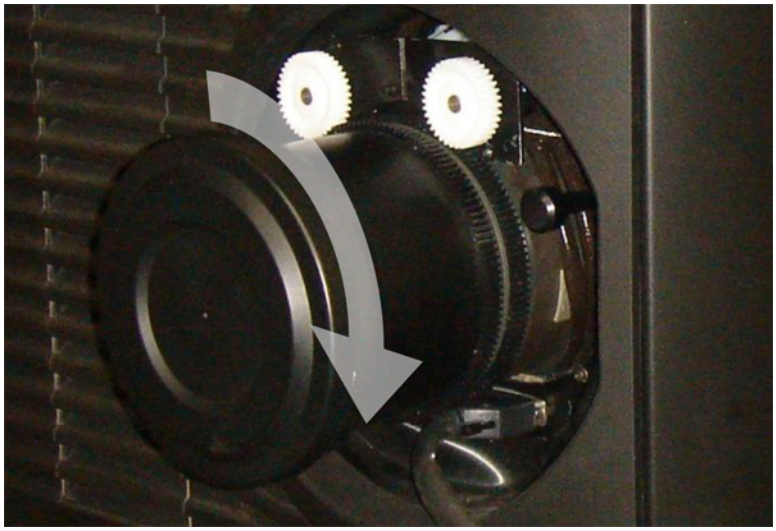


Figure 3-34 Lock Lens by turning clockwise

3.2.5 Balancing the Roadster Series Projector

Depending upon the choice of lens used on the Roadster, the balance adjustment will vary. Balancing is achieved by adjusting the bracket in both the horizontal and vertical directions. (**Figure 3-35**)

NOTICE! *Ensure the lens is installed before proceeding.*

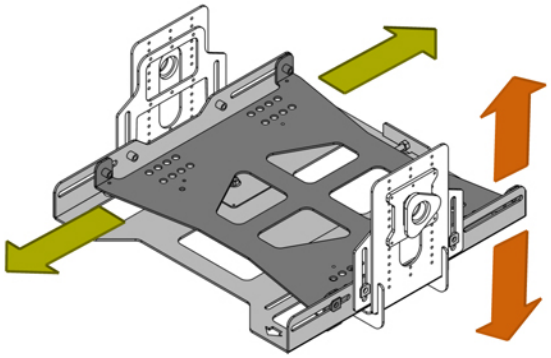


Figure 3-35 Bracket Balance Axes

Adjustments are made with 2 screws for the vertical axis and 1 screw for the horizontal axis.

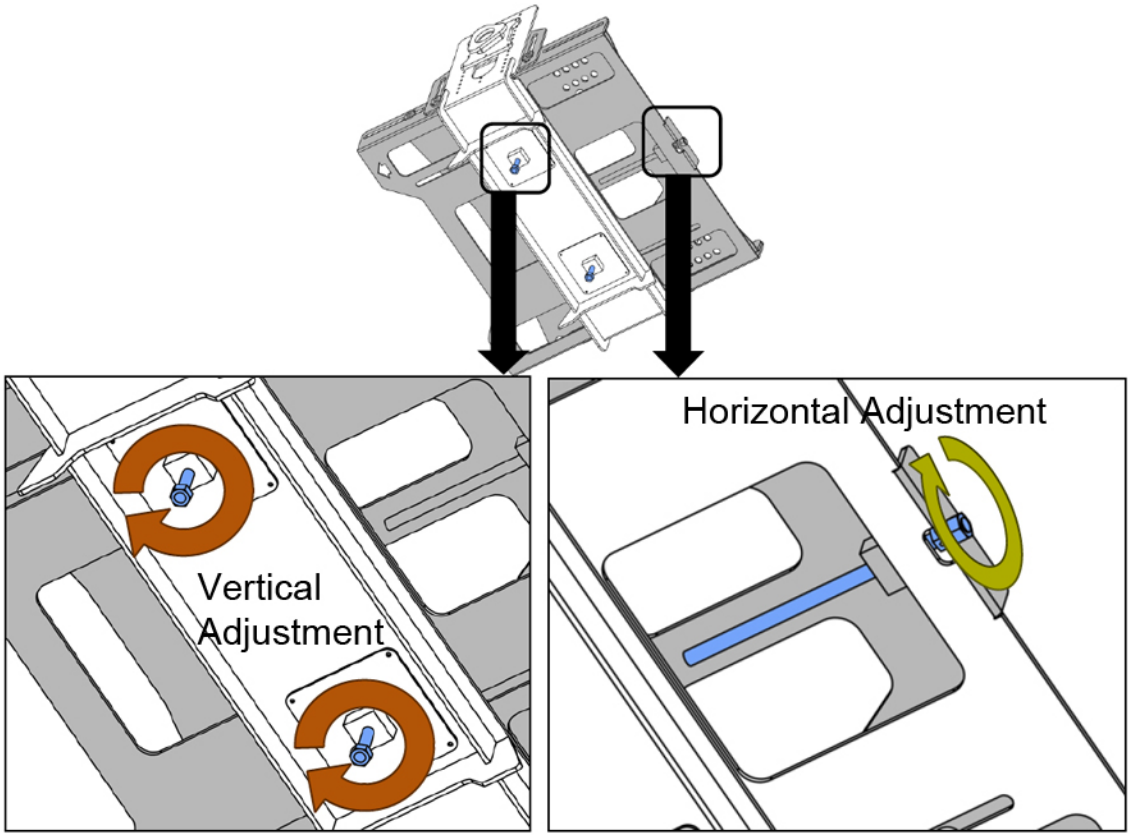


Figure 3-36 Bracket Vertical and Horizontal Adjustment Screws

When adjusting the bracket height, use the scales to ensure all bolts are set to the same value.

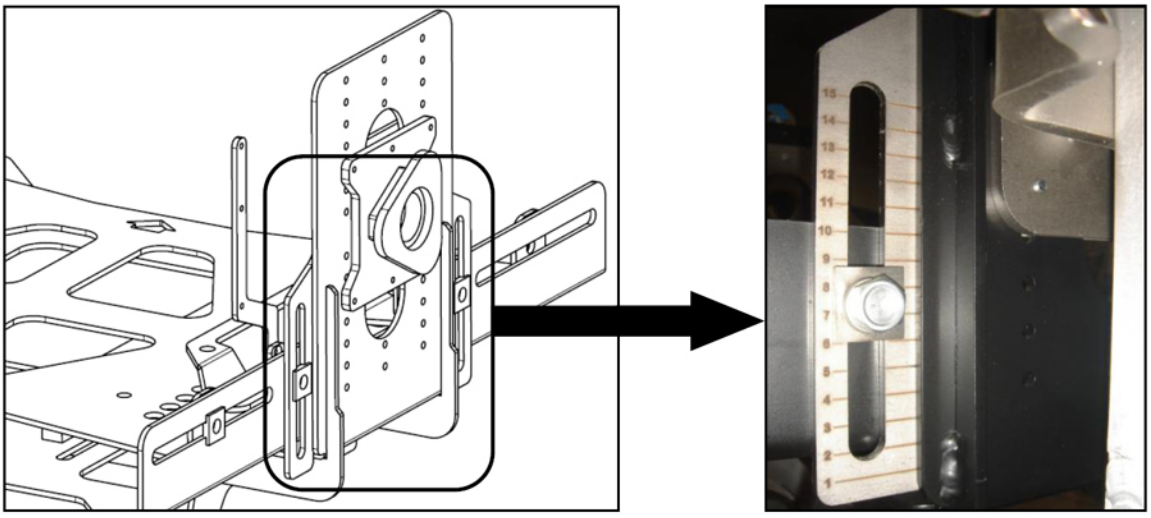


Figure 3-37 Vertical Adjustment Scales

NOTICE! *With the YK200 power turned off and the tilt axis unlocked, balance is only achieved when the projector does not tilt on its own when set to tilt angles of 0°, 45° and 90°. As a result, it may be necessary to perform the balance adjustment more than once until this is achieved.*

When all balance adjustments have been completed, lock all 8 blocking screws. (**Figure 3-38**)

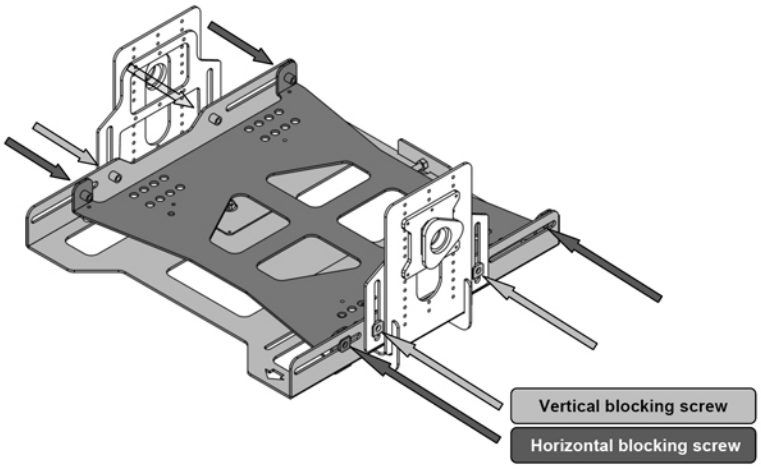


Figure 3-38 Balance Blocking Screws

3.2.6 Making Electrical Connections

⚠ WARNING All servicing must be performed by CHRISTIE accredited service technicians. Use replacement parts that are manufacturer-approved only. Use of any other part other than the ones specified by the manufacturer can result in fire, electric shock or risk of personal injury and irreparable equipment damage.

1. Remove the yoke arm cover on Arm #1, which contains the sub connection panel (6 screws). See **Figure 3-39**.

2. Connect the Roadster AC cable to the sub connection panel as shown in **Figure 3-40**.

Figure 3-39 Remove Yoke Arm Cover

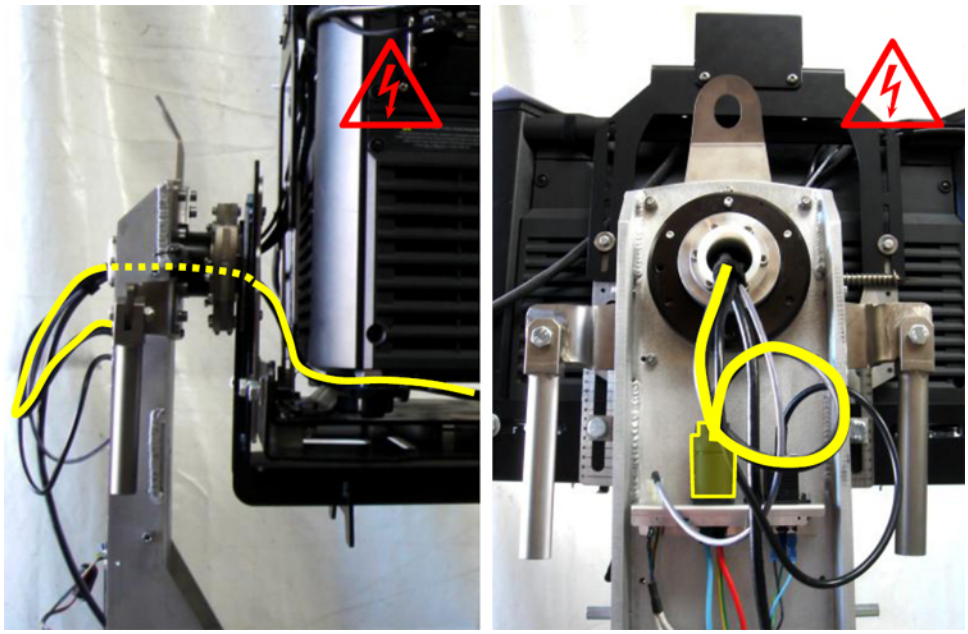


Figure 3-40 Roadster AC Connection to Yoke

3. Attach the DMX Data In cable and the Power Supply cable to the sub connection panel (circled in **Figure 3-41**).

4. Route the Power In and DMX Data In cables to the Head Box as shown in **Figure 3-42**. Make connections to the Head Box (**Figure 3-43**). The Power In connector must be locked by turning the shell clockwise.

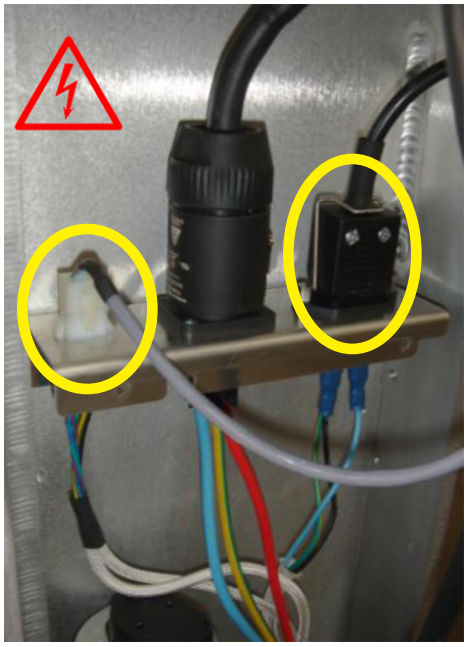


Figure 3-41 Head Box Connections to Sub Connection Panel

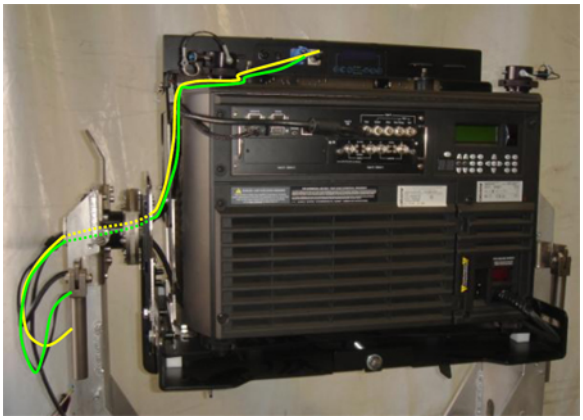


Figure 3-42 Head Box to Yoke Routing

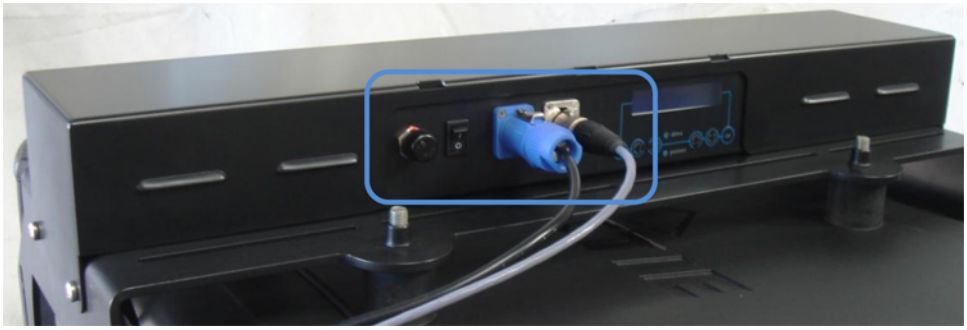


Figure 3-43 Head Box Connections

5. Make the RS232 and DVI connections as shown in **Figure 3-44**. Ensure that the RS232 cable is plugged into the **RS232 OUT** connector.

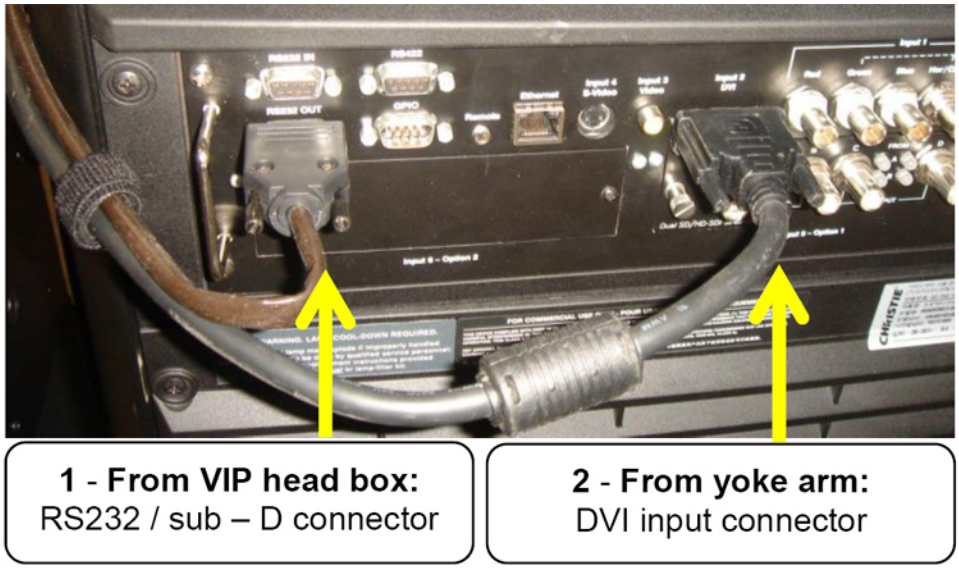


Figure 3-44 Roadster Projector Connections

6. Remove the Head Box cover. The location of the zoom and focus board is highlighted in **Figure 3-45**.

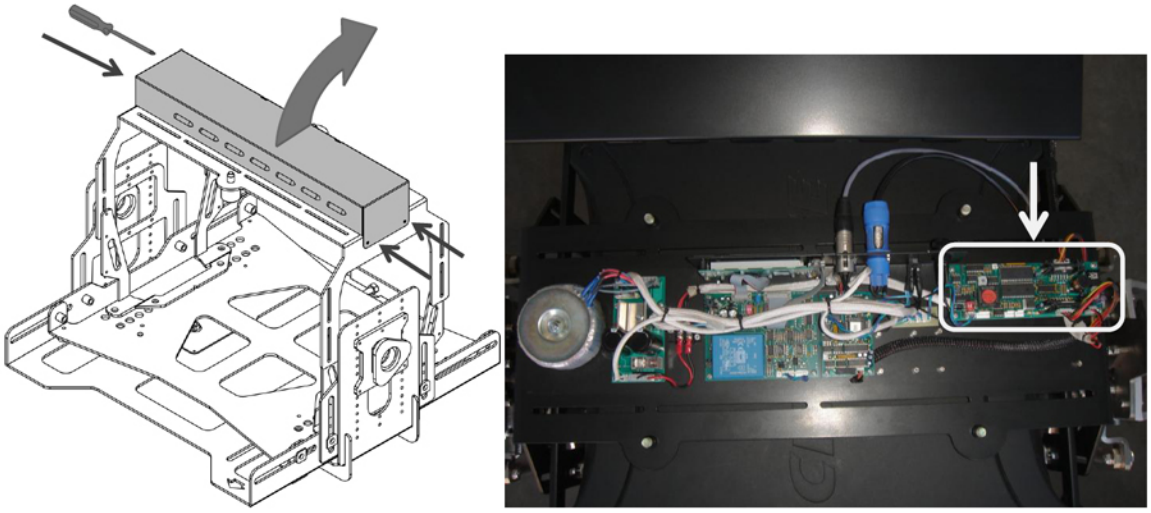


Figure 3-45 Head Box Cover Removal and Zoom and Focus Board Location

7. Ensure that the grey coding wheel (arrow in **Figure 3-46**) on the Zoom and Focus board is set to “1” and that the DIP switches (circled in **Figure 3-46**) are set as shown (switch #1 OFF, switch #2 OFF).

NOTICE! *Head Box power must be* OFF *before changing the address with the grey coding wheel. Failing to do so may produce destructive or disruptive effects.*

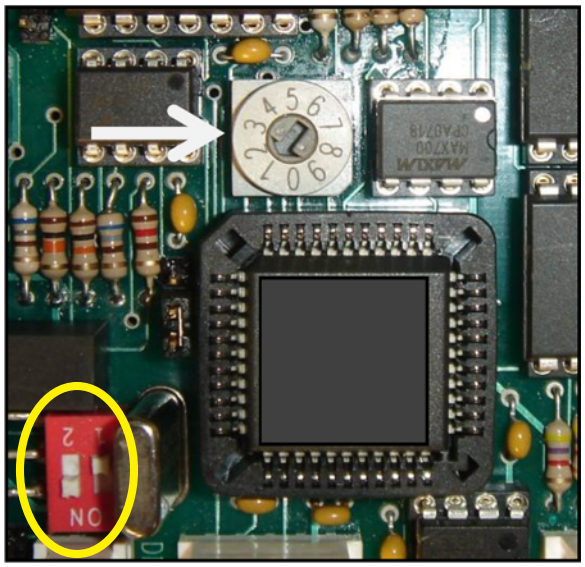


Figure 3-46 Zoom and Focus Grey Coding Wheel

8. Locate the DMX/RS232 board in the Head Box (highlighted in **Figure 3-47**).

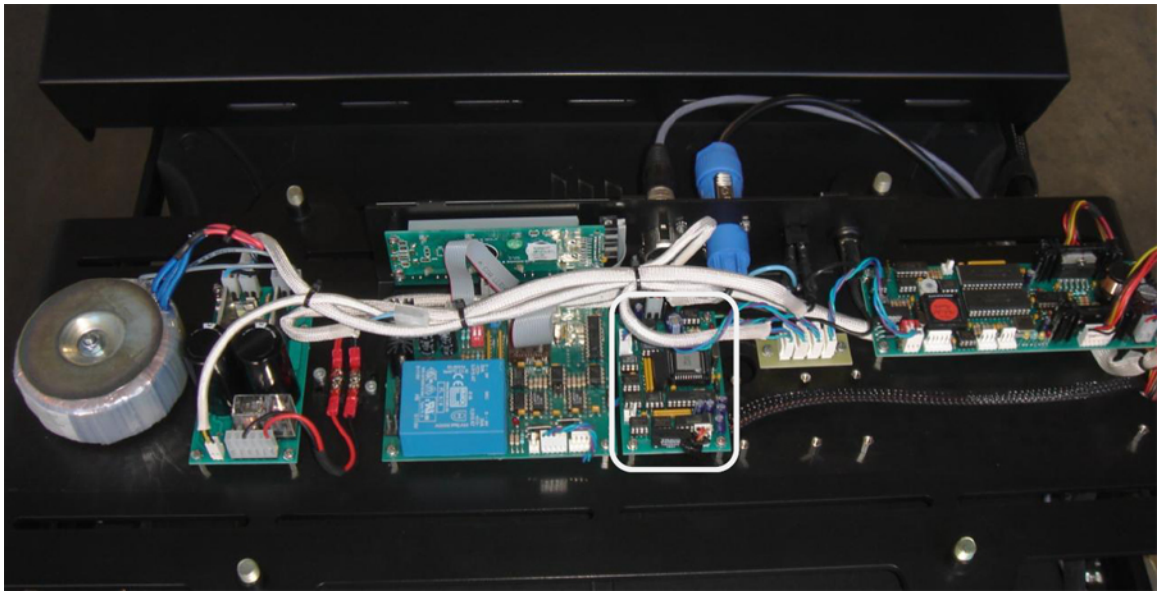


Figure 3-47 DMX/RS232 Board Location in Head Box

9. **Figure 3-48** shows the DMX/RS232 board detail. For the Roadster Series, ensure that a jumper is **not** present on the pins highlighted in red.

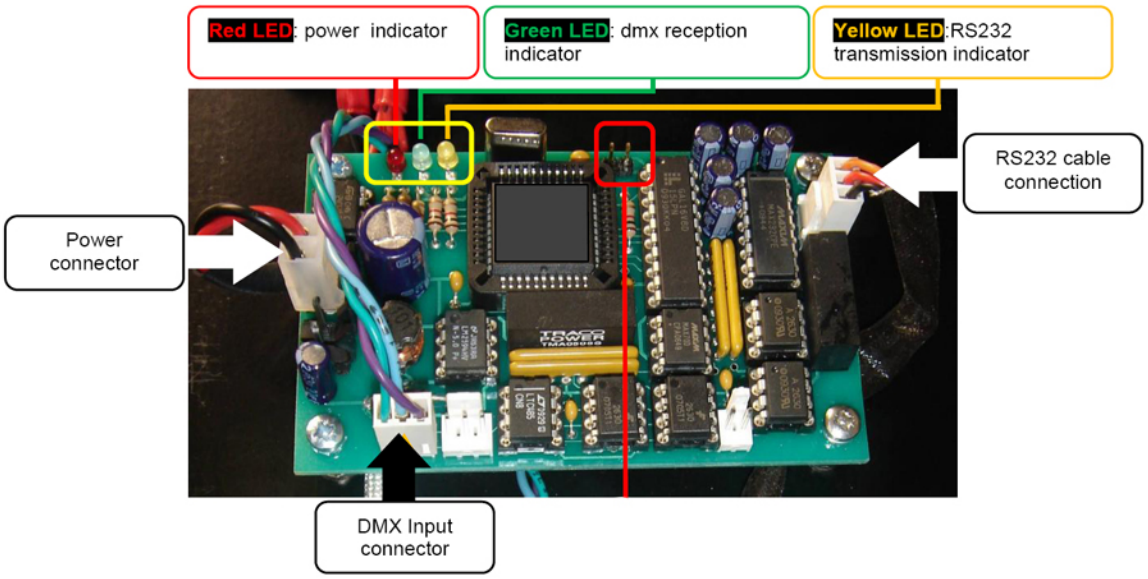


Figure 3-48 DMX/RS232 Board Detail

10. Install Head Box cover.

4 Operation

This section provides information and procedures for operating the Christie Nitro YK200 yoke.

4.1 Pan and Tilt Movements

4.1.1 Description

The YK200 allows a Roadster Series projector to be remotely oriented from a DMX console, using both pan and tilt motion. Pans can be implemented through a full 600° range, while tilting operates over a 270° range. (**Figure 4-1**)

NOTE: *The motherboard CPU automatically shuts down motor power when pan or tilt movements encounter any kind of physical resistance. This automatic safety feature can only be defeated by removing the source of resistance and sending a new command from the DMX control console.*

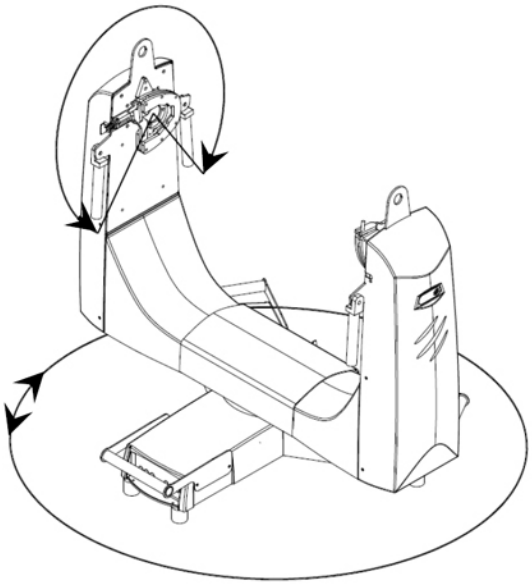


Figure 4-1 Pan and Tilt Movements

4.1.2 Locking System

The YK200 incorporates mechanical locks for both the pan and tilt axes. **Figure 4-2** illustrates the lock locations and their locked and unlocked positions.

NOTE: *Tilt has 2 angles at which it can be locked, while the pan axis locks at 3 locations.*

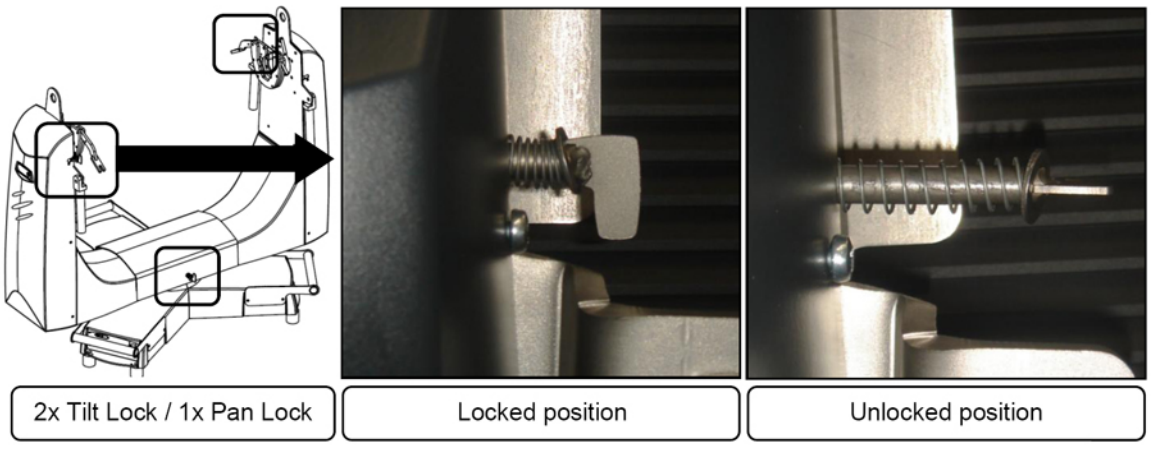


Figure 4-2 Pan and Tilt Locking

The 3 pan lock positions are shown in **Figure 4-3**. Note that the tripod is in exactly the same orientation in each case.

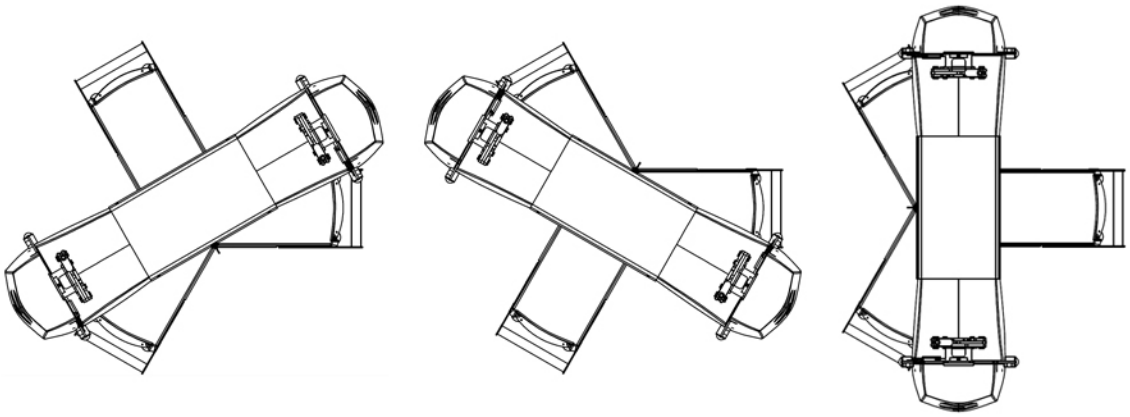


Figure 4-3 Pan Lock Positions

Tilt locking can be used to facilitate handling or maintenance (ie. bracket removal).

NOTICE! *Before switching on the projector, verify that the 3 locking bars are in the unlocked position. This is required to allow the projector to reset. The YK200 will not respond to DMX commands when locked.*

4.2 Setup

This procedure applies to the YK200 equipped with a Roadster Series projector.

The stability of the YK200 base should always be checked and the strength of the platform needed to support it should never be underestimated. The momentum generated by pan and tilt movements should also be taken into account. The average surface area of the platform needed is 1.70m x 1.70m. The footprint of the YK200 without projector is shown in **Figure 4-4**.

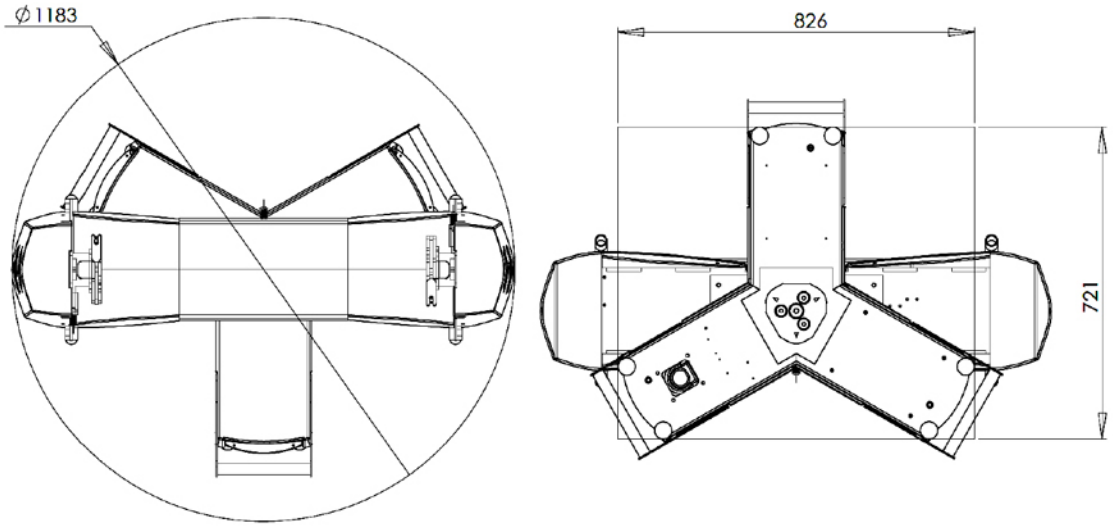


Figure 4-4 YK200 Dimensions (mm)

4.2.1 Opening and Ground Setup from a Flight Case

Description

The flight case provides a means of safely transporting the YK200 with a pre-mounted projector. It also simplifies setup and packing.

Setup

1. Remove flight case cover. (**Figure 4-5**)

NOTE: *To move the flight case over long distances, wheels on the flight case should be used.*

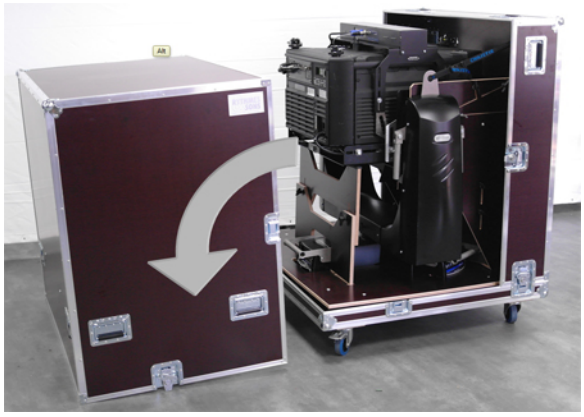


Figure 4-5 Open Flight Case

2. Unlock the retention plate (2 places), slide it down then remove it. (**Figure 4-6**)

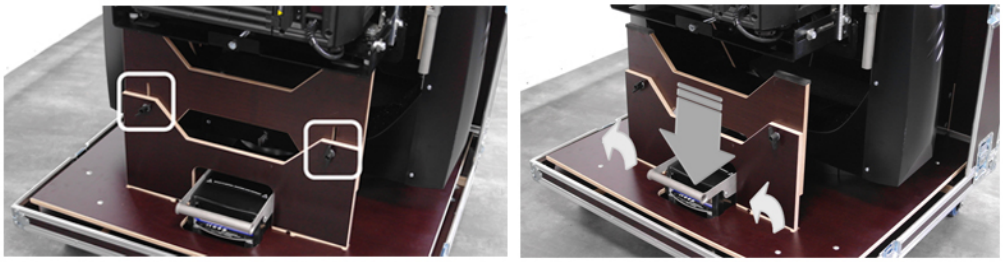


Figure 4-6 Remove Retention Plate

3. Lock the tilt axis (2 places) on the YK200. (**Figure 4-7**)

Figure 4-7 Lock Tilt Axis on YK200

4. Tilt the flight case base up. (**Figure 4-8**)

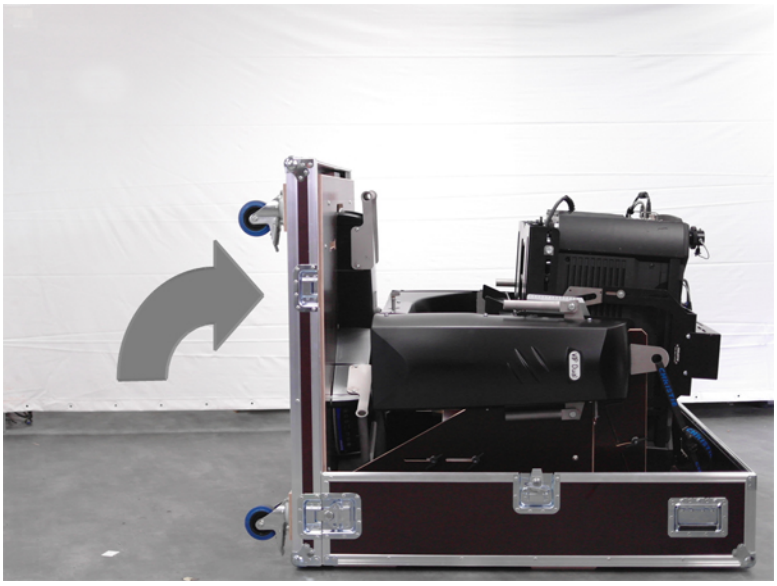


Figure 4-8 Tilt Flight Case Base Up

5. Undo latches on flight case and separate the base. (**Figure 4-9**)

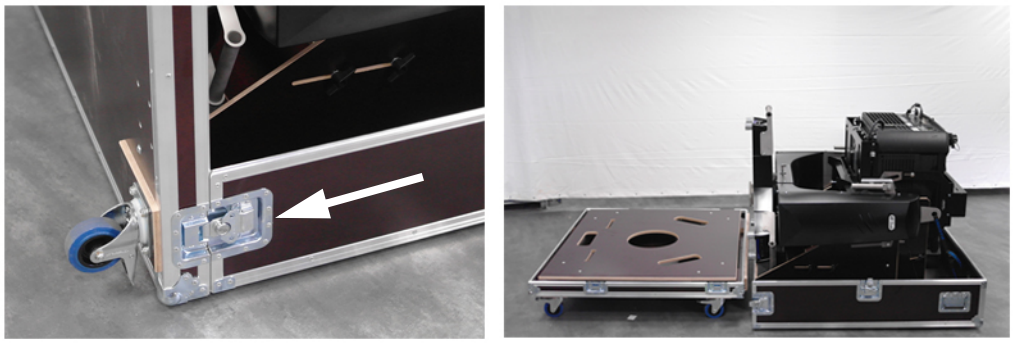


Figure 4-9 Remove Flight Case Base

6. Tilt the flight case up until the yoke tripod touches the ground.

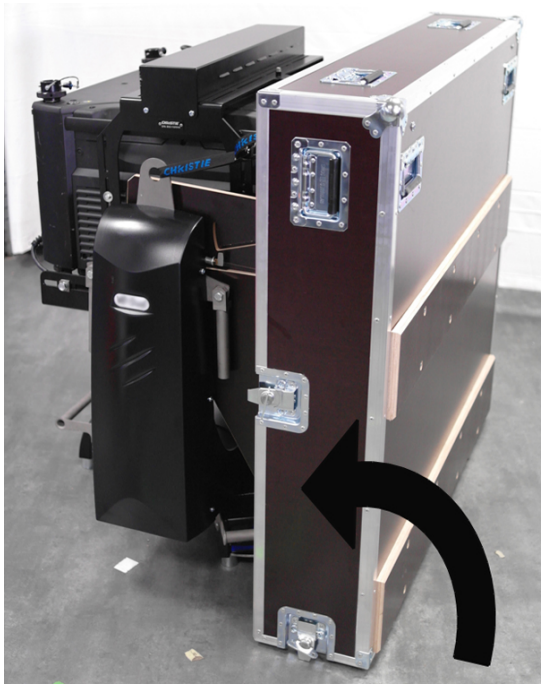


Figure 4-10 Tilt Flight Case Up

7. Remove the straps securing the YK200 to the flight case base. (**Figure 4-11**)

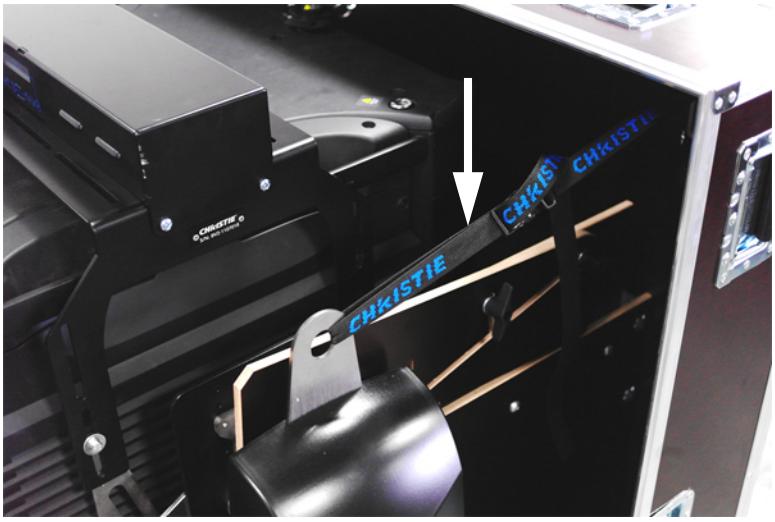


Figure 4-11 Remove Security Straps

8. Open the internal locks (both sides) and separate the flight case from the yoke. (**Figure 4-12**)

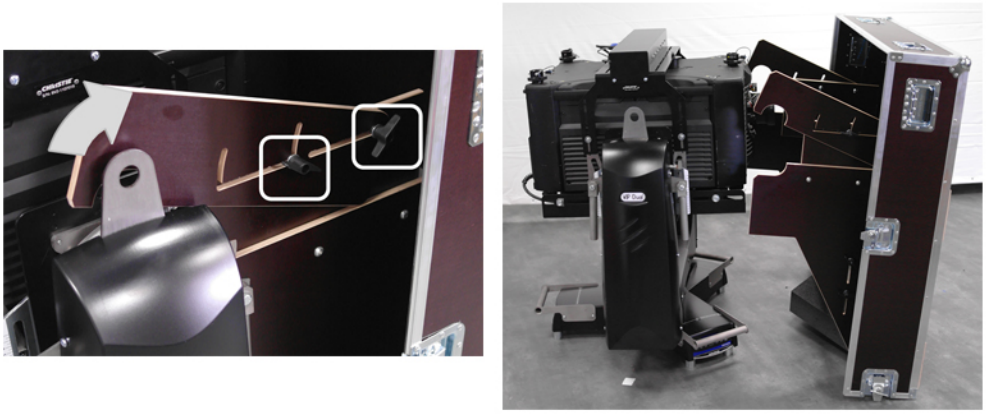


Figure 4-12 Separate Flight Case

⚠ CAUTION The flight case is heavy. Take care when handling.

4.2.2 System Power Up

NOTICE! *Before switching on the YK200, verify that the 3 locking bars (2 tilt and 1 pan) are in the unlocked position. This is required to allow the YK200 to reset.*

⚠ WARNING **In order to disconnect both yoke and projector from the power source in an emergency, it will be necessary to pull the power plug from the power source receptacle.**

Procedure

1. Complete this checklist:
   - Verify that power is available near the YK200 installation location
   - Verify that ground fault protection is functioning
   - Verify that power cables are undamaged
   - Verify that the YK200 power switch is in the OFF position
2. Plug the power cable into a 32 Amp socket. (**Figure 4-13**)

The mains voltage used in the country where the YK200 is used should always be checked:

Europe	230V Single Phase
North America	208V Dual Phase

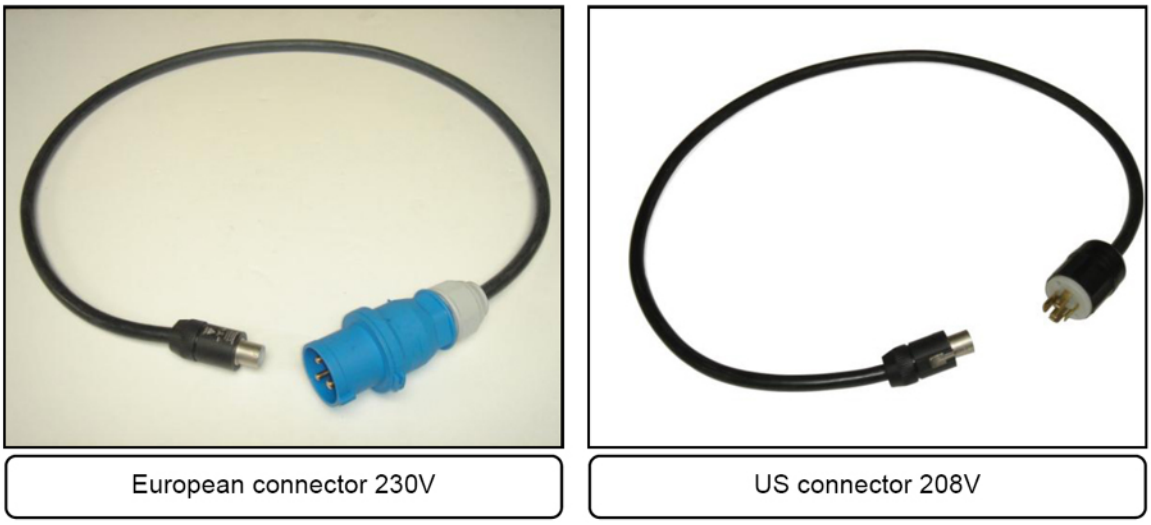


Figure 4-13 Power Cables

3. Attach the power cable to the YK200 (**Figure 4-14**) and lock the connector (**Figure 4-15**).

Figure 4-14 Attaching Power Cable

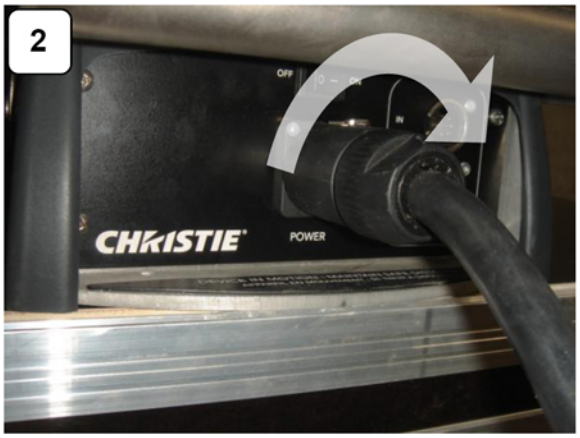


Figure 4-15 Locking Power Cable

4. Connect Ethernet and DVI cables to the input panel. (**Figure 4-16**)
5. Connect the DMX 5 pin XLR connectors to the power panel. (**Figure 4-17**)

Figure 4-16 Connect Ethernet RJ45 and DVI-I

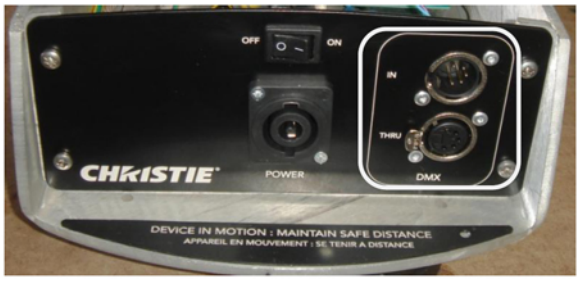


Figure 4-17 DMX In and Thru XLR Connectors

NOTE: *The YK200 should always be connected to DMX data using star topology, strictly following DMX standard instructions.*

6. Ensure both tilt locking systems are unlocked (**Figure 4-18**) and that the pan lock is unlocked.

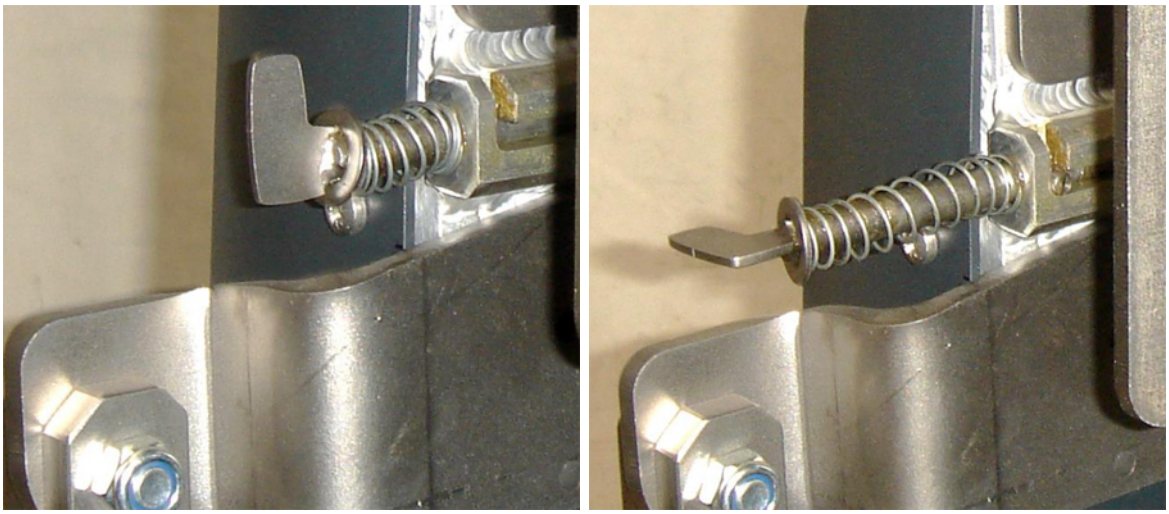


Figure 4-18 Tilt locked (left panel) and unlocked (right panel)

⚠ CAUTION **Never switch on the projector and yoke at the same time.**

7. Switch on the projector.

⚠ CAUTION **Always ensure personnel are not close to the YK200 at startup.**

8. Turn on the main YK200 power switch (**Figure 4-19**). The unit will start its pan and tilt reset. Wait for the reset to complete.

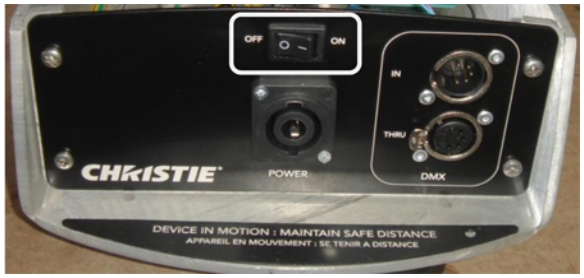


Figure 4-19 YK200 Power Switch

NOTE: *The main YK200 power switch only switches on the yoke components (motors and electronic boards). The projector power switch is independent of the yoke.*

9. Once reset is complete, switch on Head Box power (circled in **Figure 4-20**).

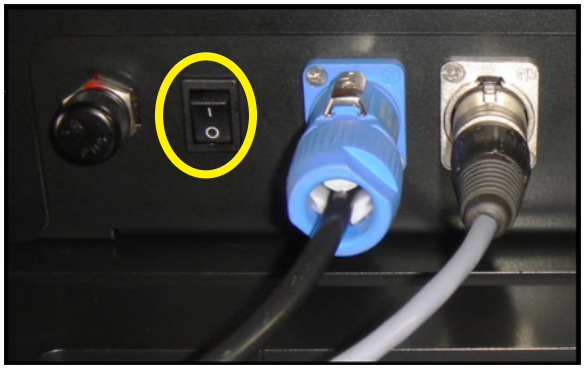


Figure 4-20 Head Box Power Switch

10. Check the LCD Panel on both the Head Box and the Tripod. In both places, both **dmx** and **power** LEDs on the Display LCD panel should be lit. (**Figure 4-21**)

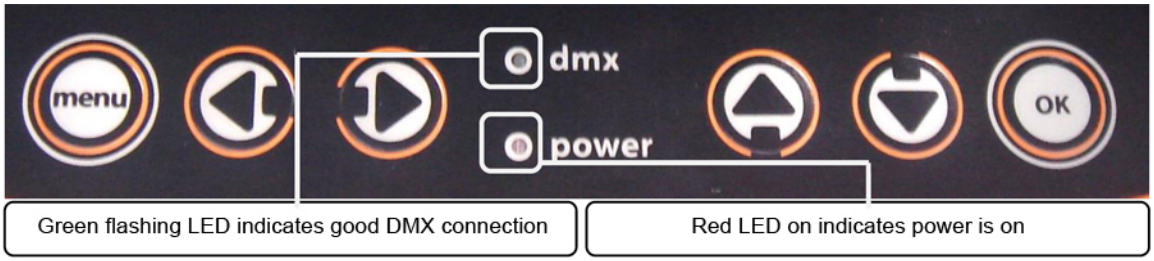


Figure 4-21 Display LCD Panel LEDs

NOTE: *A green flashing* **dmx** *LED indicates that a DMX signal is being received.*

⚠ CAUTION Always wait until the reset process is complete before switching on the next YK200 and projector system.

⚠ CAUTION There should always be two technicians at every YK200 startup: one at the DMX console and one at the yoke

4.3 Truss Mounting

4.3.1 Nitro Rigging Clamp Description

The Nitro Rigging Clamp hook was specially designed for the YK200 system. It can be fixed on or under trusses ranging from 300mm (11.8”) to 500mm (19.7”) wide with 50mm(2”) section tubes. The Nitro Rigging Clamp is designed to support a weight of 500 Kg (1102 lbs).

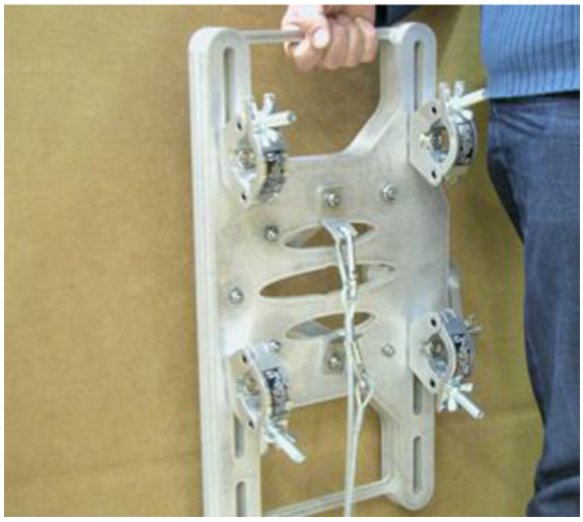


Figure 4-22 The Nitro Rigging Clamp

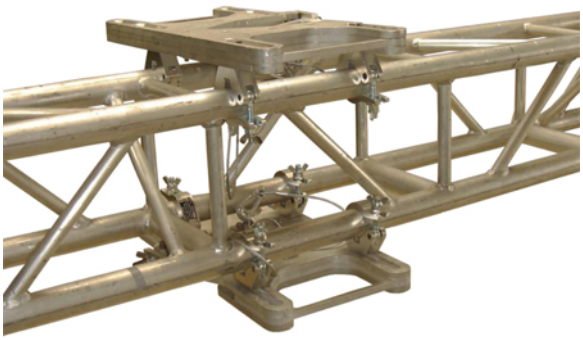


Figure 4-23 Nitro Rigging Clamps mounted above and below a truss

4.3.2 Rigging Procedure

1. Remove flight case cover and locate yoke below truss. (**Figure 4-24**)

NOTE: *To move the flight case over long distances, wheels on the flight case should be used.*

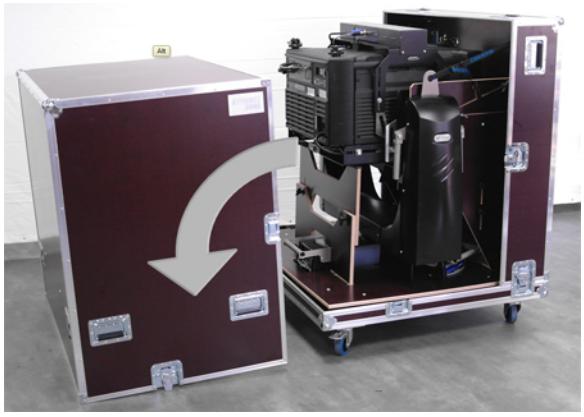


Figure 4-24 Open Flight Case

2. Unlock the retention plate (2 places), slide it down then remove it. (**Figure 4-25**)

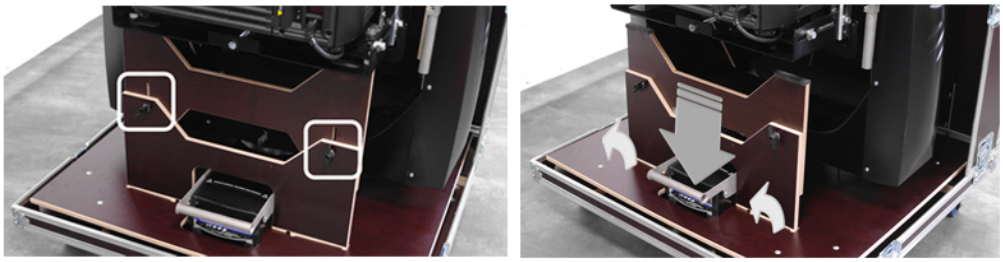


Figure 4-25 Remove Retention Plate

3. Lock the tilt axis (2 places) on the YK200. (**Figure 4-26**)

Figure 4-26 Lock Tilt Axis on YK200

4. Tilt the flight case base up. (**Figure 4-27**)

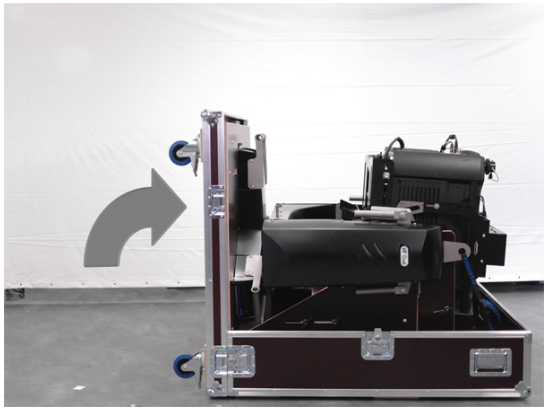


Figure 4-27 Tilt Flight Case Base Up

5. Undo latches on flight case and separate the base. (**Figure 4-28**)

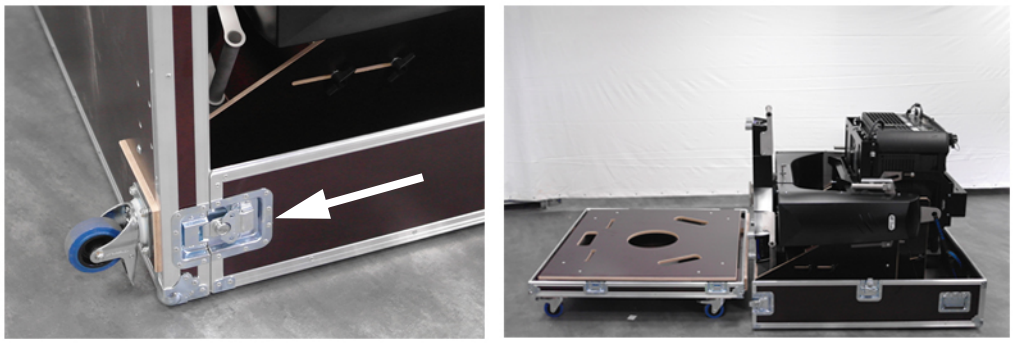


Figure 4-28 Remove Flight Case Base

6. Remove the security straps (both sides) and lock the pan axis. (**Figure 4-29**)

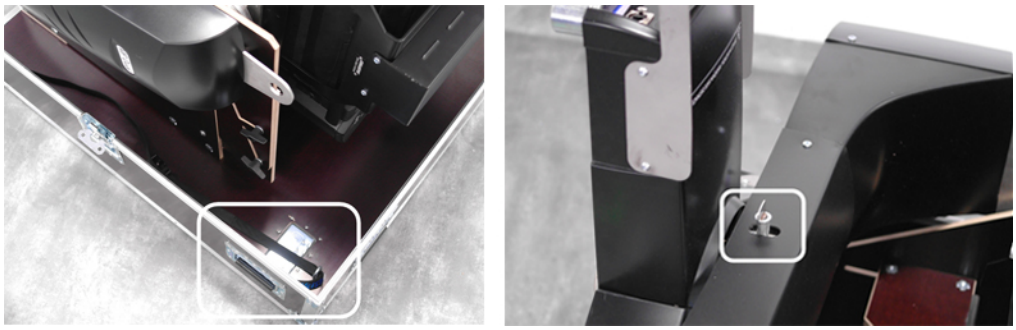


Figure 4-29 Remove Security Straps and Lock Pan Axis

7. Unlock the tilt axis and tilt the yoke up. Open the internal locks (both sides). (**Figure 4-30**)

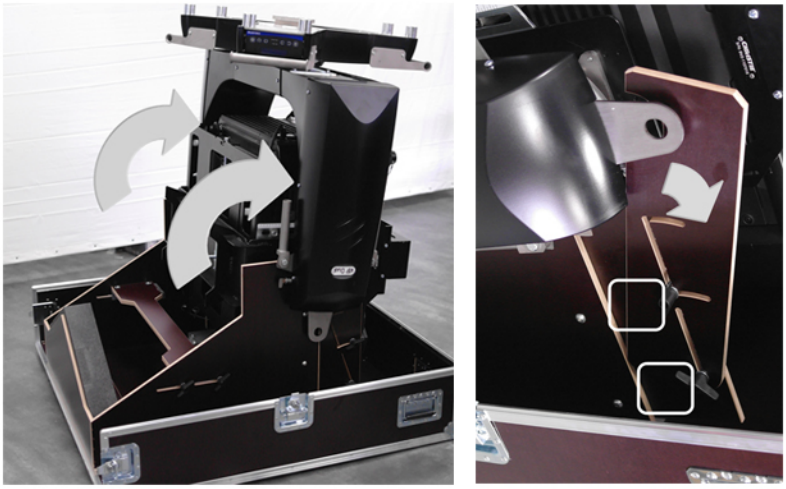


Figure 4-30 Tilt Yoke Up and Open Locks

8. Place the Nitro Rigging Clamp over the yoke base. (**Figure 4-31**)

Figure 4-31 Nitro Rigging Clamp on YK200 Base

9. Clockwise from top left in **Figure 4-32** - Open the lock arm on the Nitro Rigging Clamp, engage the triangular plate on the YK200 tripod with the Nitro Rigging Clamp, then close and firmly tighten the lock.

Figure 4-32 Engage and Lock YK200 Tripod to Nitro Rigging Clamp

10. Lower the truss toward the tripod. When installing an Nitro Rigging Clamp, inspect the clamp for damage and verify the four mounting hooks are securely attached to the truss. For added security, use the safety cables included with the Nitro Rigging Clamp to connect the YK200 to the Nitro Rigging Clamp and the Nitro Rigging Clamp to the truss.

11. Lift the truss. (**Figure 4-33**).

NOTICE! *Before lifting the truss, check that pan and tilt locking bars are all in the unlocked position, that all connections have been made to the tripod and that the YK200 power switch is on. Failing to do so will require lowering the truss again to rectify these conditions.*

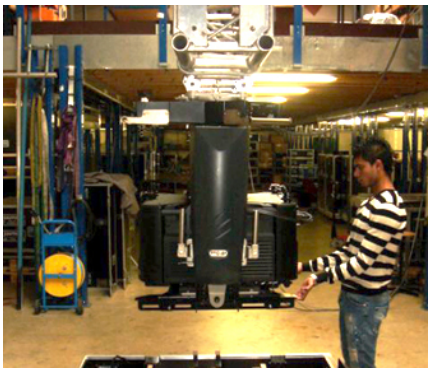


Figure 4-33 Lift the Truss

4.4 DMX

The YK200 yoke is DMX managed according to USITT standards.

4.4.1 Controlling from a DMX Console or Controller

The DMX protocol used to control the YK200 yoke adheres to United States Institute for Theatre Technology (USITT) standards. You can use any DMX console or controller that complies with these standards to control the YK200 yoke.

If you are using DMX star topology, use XLR 5 pin connectors for all connections. In addition, use a shielded twisted-pair cable designed for RS-485 devices. Do not use microphone cable or other cable with characteristics different from the EIA RS-485 specifications. It is recommend that you use double pair shield cabling.

4.4.2 Control Panel

Description

The YK200 yoke control panel has 6 keys to provide navigation through various menus:

- The MENU key returns the display to the **Welcome Menu**
- The ▶ key allows scrolling through main menu items and between submenu items
- The ◀ key also allows scrolling through main menu items and between submenu items, but in the reverse sequence to the ▶ keyThe ▲ key allows increasing the value of a parameter
- The ▼ key allows decreasing the value of a parameter
- The OK key allows to enter a submenu or to validate a setup.

Figure 4-34 YK200 Display and Controls

When switching on, the LCD display indicates the product software version. This is displayed for one second, then the **Welcome Menu** appears.

All the functions and characteristics of the yoke and projectors are managed by a microchip located on the motherboard. All software upgrades are implemented by changing the microchip installed on the motherboard.

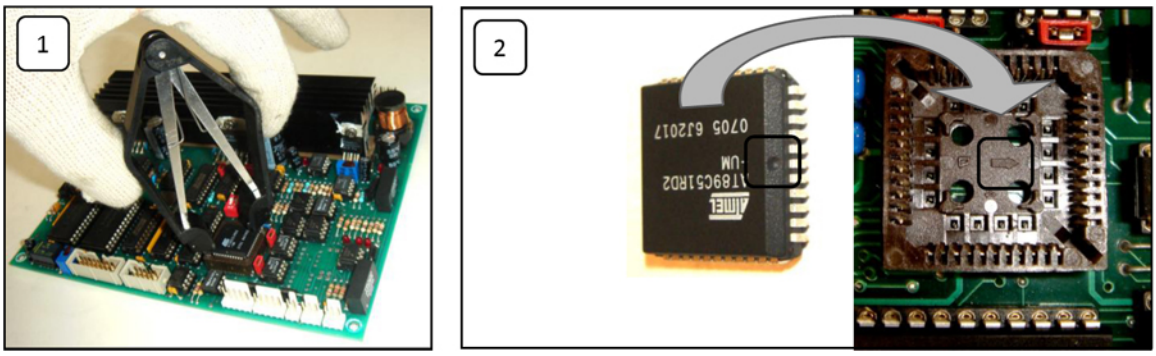


Figure 4-35 Removal (panel 1) and replacement (panel 2) of microchip

⚠ WARNING All servicing must be performed by CHRISTIE accredited service technicians. Use replacement parts that are manufacturer-approved only. Use of any other part other than the ones specified by the manufacturer can result in fire, electric shock or risk of personal injury and irreparable equipment damage.

NOTICE! *Use care when inserting the microchip into the socket and ensure leads are not damaged.*

NOTICE! *Microchip must be inserted with the dimple facing the side of the socket indicated by the arrow on the socket base as shown in panel 2 of* **Figure 4-35**.

NOTE: *Recommended PLCC extraction tool is Bernstein #2-620.*

Table 4.1 CPU Software Versions

Projector	Version
Roadster Series	REFER TO CHRISTIEDIGITAL.COM FOR THE LATEST VERSION

Roadster Series Menu

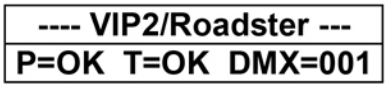
When using an Roadster Series projector with the YK200, these menus are available:

- **Welcome** menu
- **DMX Number Changing** menu
- **DMX Channel Visualization** menu
- **Test Program** menu
- **General Configuration** menu
- **System Command** menu
- **Information System** menu

For an overview of the menu structure, refer to **Figure 4-36 Menu Tree - Roadster Series, on page 4-21** .

Welcome Screen

This menu displays the machine status when searching for home positions.



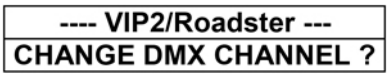
Question marks (?) indicate that the system is calibrating the pan and tilt motors. When both pan and tilt home positions are found, the menu indicates OK. The DMX address or the machine number is displayed.

NOTICE! *If question marks persist after the YK200 is powered on and has reset, the pan or tilt axes may still be locked.*

Selecting a Menu

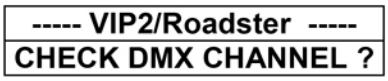
After the **Welcome** menu appears, press the ▶ or ◀ key to select the following main menu items. Once inside a main menu item, however, the MENU key must be pressed first in order to select a different main menu with the ▶ or ◀ keys.

DMX Address Modification Menu

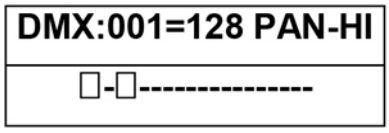


1. From the **Welcome** menu, press ▶ once to select this menu item.
2. Press the OK key to change the DMX address.
3. Press the ▲ key to increase channel number.
4. Press the ▼ key to decrease channel number.
5. Hold down the ▲ or ▼ key to scroll quickly.
6. Press OK to validate this number.
7. Press MENU to return to the **Welcome** menu.

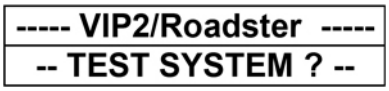
DMX Channel Visualization Menu



1. Press the ▶ or ◀ key to select this menu item.
2. Press the OK key to access the DMX screen.
3. Press the ▲ or ▼ keys to review the DMX values for each channel
4. Press MENU to return to the **Welcome** menu.

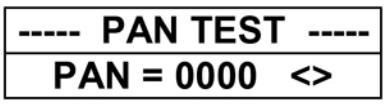


Test Program Menu



1. Press the ▶ or ◀ key to select this menu item.
2. This menu has 6 submenus. Press the OK key to enter the first submenu:

Pan Test Submenu

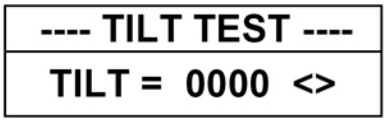


1. Press the ▲ key to run the motor counterclockwise (as viewed from above).
2. Press the ▼ key to run the motor clockwise.

The LCD display indicates the coding point value of stripe converters in Hex mode (500 steps for 1 motor cycle).

3. Press the ▶ or ◀ key to select the next submenu.

Tilt Test Submenu

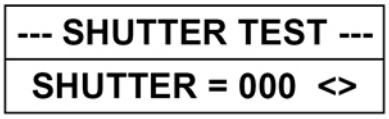


1. Press the ▲ key to run the motor clockwise (as viewed from yoke arm side).
2. Press the ▼ key to run the motor counterclockwise.

The LCD display indicates the coding point value of stripe converters in Hex mode (500 steps for 1 motor cycle).

3. Press the ▶ or ◀ key to select the next submenu.

Shutter Test Submenu

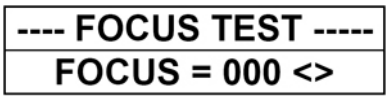


1. Press the ▲ key to increment the value of the parameter.
2. Press the ▼ key to decrease the value of the parameter.

Holding the ▲ or ▼ key will quickly scroll through the range 0-255.

3. Press the ▶ or ◀ key to select the next submenu.

Focus Test Submenu

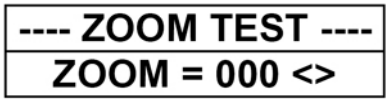


1. Press the ▲ key to increase the value.
2. Press the ▼ key to decrease the value.

Holding the ▲ or ▼ key will quickly scroll through the range 0-255.

3. Press the ▶ or ◀ key to select the next submenu.

Zoom Test Submenu



1. Press the ▲ key to increment the value of the parameter.
2. Press the ▼ key to decrease the value of the parameter.

Holding the ▲ or ▼ key will quickly scroll through the range 0-255.

3. Press the ▶ or ◀ key to select the next submenu.

Laser Test Submenu

1. Press the OK key to toggle the laser pointer ON or OFF.
2. Press MENU to return to the **Welcome** menu.

General Setup Menu

1. Press the ▶ or ◀ key to select this menu item.
2. This menu has 2 submenus. Press the OK key to enter the first submenu:

Patch type Submenu

Allows you to address the YK200 with **DMX** channels or with **UNIT** number.

1. Press the OK key to change from **DMX** to **UNIT** patch configuration.
2. Press the ▶ or ◀ key to select the next submenu.

Default Parameters Configuration Submenu

1. Press the OK key to restore the default parameters. The default parameter is DMX Channels address setting.
2. Press MENU to return to the **Welcome** menu.

Command System Menu

1. Press the ▶ or ◀ key to select this menu item.
2. This menu has 9 submenus. Press the OK key to enter the first submenu, then ▶ or ◀ to navigate between submenus if desired:

Video Control Submenu

1. Press the OK key to switch ON the video control.

Yoke Reset Submenu

1. Press the OK key to reset the pan and tilt motors (Home calibration).
2. The confirmation message `Are You Sure?` appears.
3. Press the OK key to confirm. The **Welcome** menu appears.

General Reset Submenu

1. Press the OK key to reset the pan and tilt motors, zoom, focus and video control boards.
2. The confirmation message `Are You Sure?` appears.
3. Press the OK key to confirm. The **Welcome** menu appears.

Head Reset Submenu

1. Press the OK key to reset the zoom, focus and video control boards.
2. The confirmation message `Are You Sure?` appears.
3. Press the OK key to confirm. The **Welcome** menu appears.

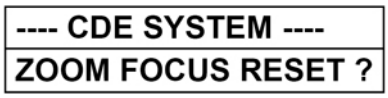
Zoom Reset Submenu

1. Press the OK key to reset the zoom control board.
2. The confirmation message `Are You Sure?` appears.
3. Press the OK key to confirm. The **Welcome** menu appears.

Focus Reset Submenu

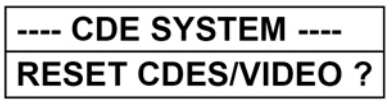
1. Press the OK key to reset the focus control board.
2. The confirmation message `Are You Sure?` appears.
3. Press the OK key to confirm. The **Welcome** menu appears.

Zoom and Focus Reset Submenu



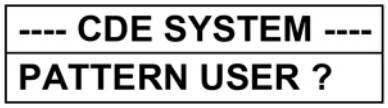
1. Press the OK key to reset the zoom and focus control boards.
2. The confirmation message `Are You Sure?` appears.
3. Press the OK key to confirm. The **Welcome** menu appears.

Command Video Reset Submenu



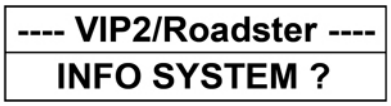
1. Press the OK key to reset the video control board.
2. The confirmation message `Are You Sure?` appears.
3. Press the OK key to confirm. The **Welcome** menu appears.

Pattern Submenu



1. Press the OK key to choose a pattern.
2. Press the ▲ or ▯ key to scroll through 9 different patterns.
3. Press the OK key to confirm the choice. The **Welcome** menu appears.

Info System Menu



1. Press the ▶ or ◀ key to select this menu item.
2. Press the OK key to display the CPU software version.

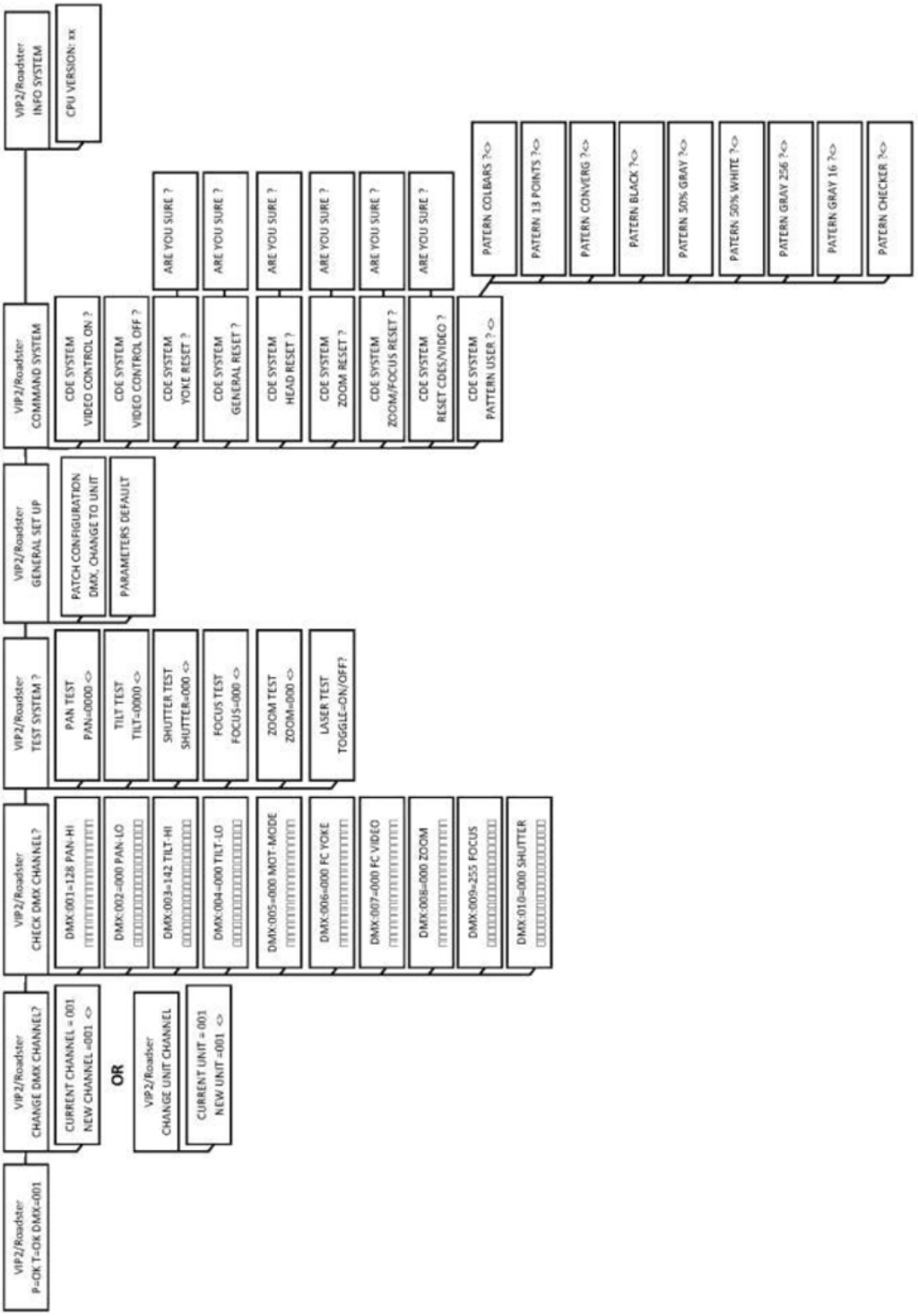


Figure 4-36 Menu Tree - Roadster Series

Roadster Series DMX Protocol

Table 4.2 lists the DMX channels and their function with a Roadster Series projector.

Table 4.2 Roadster Series DMX Parameters

Channel	DMX Value	Default DMX Value	Function	Comments
1	0-255	128	**PAN HIGH**	
2	0-255	128	**PAN LOW**	
3	0-255	128	**TILT HIGH**	
4	0-255	128	**TILT LOW**	
5	 0-32 33-64 65-96 97-128 129-160	0	**MOTOR MODE** MODE 0 MODE 1 MODE 2 MODE 3 MODE 4	MOTOR MODE THE SPEED AT WHICH THE YOKE WILL MOVE. DEFAULT MODE IS MODE 0, WHICH IS THE SLOWEST. MODE 4 IS THE FASTEST. THE SLOWER THE MODE, THE MORE ACCURATE THE YOKE WILL BE FOR RECALL POSITIONS.
6	 15 20 25 30 35 40 86 171	0	**YOKE FUNCTIONS** ZOOM-FOCUS RESET YOKE RESET HEAD RESET ALL RESET LASER ON LASER OFF LOAD EXECUTE	FOR ALL THE FUNCTIONS, YOU MUST CHOOSE THE FUNCTION FIRST, THEN LOAD IT AND EXECUTE IT. FOR EXAMPLE, TO RESET THE YOKE: SET CHANNEL #6 AT DMX 30 ("ALL RESET" VALUE), SET CHANNEL #6 AT DMX 86 TO LOAD THE FUNCTION, SET CHANNEL #6 AT DMX 171 TO EXECUTE THE FUNCTION.

Table 4.2 Roadster Series DMX Parameters

Channel	DMX Value	Default DMX Value	Function	Comments
7		0	**VIDEO FUNCTIONS**	FOR ALL FUNCTIONS, YOU MUST CHOOSE THE FUNCTION FIRST, THEN LOAD IT AND EXECUTE IT. FOR EXAMPLE, TO POWER ON THE PROJECTOR: SET CHANNEL #7 AT DMX 25 ("POWER ON" VALUE) SET CHANNEL #7 AT DMX 86 TO LOAD THE FUNCTION SET CHANNEL #7 AT DMX 171 TO EXECUTE THE FUNCTION.
	20		VIDEO RESET	
	25		POWER ON	
	30		POWER OFF	
	35		LIVE VIDEO	
	36		MIRE CHECKER	
	37		MIRE GREY SCALE 16	
	38		MIRE GREY SCALE 256	
	39		MIRE WHITE	
	40		MIRE 50 GREY	
	41		MIRE BLACK	
	42		MIRE CONVERGENCE	
	43		MIRE 13 POINTS	
	44		MIRE COLOR BARS	
	86		LOAD	
	171		EXECUTE	
8	0-255	128	**ZOOM**	
9	0-255	128	**FOCUS**	
10	0-255	255	**SHUTTER**	0 = CLOSED 255 = OPEN

5 Maintenance

Installers, service trained operators and all other users must maintain a safe operating environment at all times. Read through this section in its entirety and understand all warnings and precautions before attempting to operate the YK200 system.

5.1 Safety Warnings and Guidelines

5.1.1 General Precautions

⚠ WARNING All servicing must be performed by CHRISTIE accredited service technicians. Use replacement parts that are manufacturer-approved only. Use of any other part other than the ones specified by the manufacturer can result in fire, electric shock or risk of personal injury and irreparable equipment damage.

⚠ WARNING For protection from electric shock, the YK200 must be grounded (earthed) to protect against electrical shock and the AC power distribution circuit must be equipped with a fuse or circuit breaker and ground-fault (earth-fault) protection.

⚠ WARNING Disconnect the YK200 from AC power before removing any cover or part – including fuses – and when not in use. Covers shall only be removed by CHRISTIE accredited service technicians.

⚠ WARNING Isolate the YK200 from power immediately if any power connector, power cable, seal, cover or other component is damaged, defective, deformed, wet or showing signs of overheating. Do not reconnect power until repairs have been completed.

⚠ WARNING Do not expose the YK200 to rain or moisture.

This symbol appears in this manual for procedures where a Pinching or Crushing hazard between chain and sprocket exists. Keep hands clear when unit is powered. Disconnect power before servicing.

This symbol appears in this manual for procedures where a Pinching or Crushing hazard between rotating and stationary surfaces exists. Keep hands clear when unit is powered. Disconnect power before servicing or apply rotation locks.

5.2 Pre-Operational Checklist

Before you operate the Christie Nitro YK200, check these items:

- Verify that the power cable connector is locked to the yoke base.
- Verify that the green LED is flashing on the control panel. This indicates that the yoke is receiving a DMX signal.
- Verify that the connection between the projector and the yoke is correct.

- Verify that the yoke and projector can move freely without colliding with other objects.
- Verify the pan and tilt functions on the yoke are unlocked. See *4.1.2 Locking System, on page 4-1*.
- Verify the Nitro Rigging Clamps are installed securely. See *4.3 Truss Mounting, on page 4-10*.
- Verify that the Quick Lock is locked and secured. See *Quick Lock System, on page 3-6*.
- Verify that the yoke is properly grounded.
- Verify that the AC power complies with the local building and electrical codes and has both overload and ground-fault (earth-fault) protection.
- Verify that all power distribution equipment and cables are in good condition and rated for the requirements of the connected devices.
- Verify that the DMX distribution has XLR 5 pin connectors. See *Figure 4-17 DMX In and Thru XLR Connectors, on page 4-8*.

5.3 Cleaning

5.3.1 Yoke

The plastic covers may be cleaned with water or alcohol 90.

5.3.2 Projector

Refer to the Maintenance section of the Roadster Series User Manual for cleaning information.

5.4 Lubrication

5.4.1 Chains

Chain lubricant may be applied as needed to the pan and tilt chains and checked at a minimum of every 3 months.

5.5 User-Serviceable Components

The components detailed below may be serviced by the user. All other service must be performed by a Christie accredited service technician.

5.5.1 Yoke

Power Cable

WARNING Use only the AC power cable supplied. Do not attempt operation if the AC supply and cable are not within the specified voltage and power range.

If the power cable is damaged or worn, replace it with the replacement part recommended by Christie.

Microchip

If the CPU fails or a software upgrade is required, refer back to *page 4-16* for microchip replacement details.

Fuses

⚠ WARNING Disconnect the YK200 from power before replacing a fuse. Replace fuses with ones of the same type and rating. Never bypass or bridge a fuse. Covers shall only be removed by CHRISTIE accredited service technicians.

The YK200 head box is protected by one fuse located in the fuse holder next to the power switch:

- T750mA for 200-240V

Two fuses are also located in Leg #2 of the Tripod. See **Figure 5-1** and **Table 5.1**. The transformer primary fuse is shown circled, and the secondary fuse (indicated by an arrow) is located in an inline fuse holder.

Table 5.1 Fuse Values

Description		Voltage Range	Fuse protection
POWER SUPPLY TRANSFORMER (150 VA)	PRIMARY	208-230 V	T1.6A (250V) - USE ONLY CONQUER ELECTRONICS CO., LTD # UTE1.60)
	SECONDARY	22 V	T6.3A (250V)- USE ONLY SCHURTER AG # 0034.3125

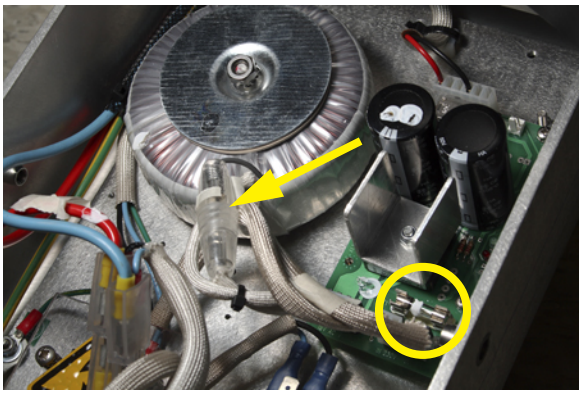


Figure 5-1 Power Supply Fuses

Chain

The chain tension should be checked every 3 months or less, depending on frequency of use.

5.5.2 Projector

If a lens is changed, projector balance must be assessed.

NOTICE! *With the YK200 power turned off and the tilt axis unlocked, balance is only achieved when the projector does not tilt on its own when set to tilt angles of 0°, 45° and 90°. As a result, it may be necessary to perform the balance adjustment more than once until this is achieved.*

Refer to the Maintenance section of the Roadster Series User Manual for information on user-serviceable projector components.

6 Troubleshooting

This section provides information and procedures for resolving common issues with the Christie Nitro YK200 yoke. If the problem can not be resolved, contact your dealer for assistance.

NOTE: *Only Christie accredited technicians can perform service beyond the solutions listed in the Troubleshooting Chart.*

6.1 Yoke

Table 6.1 Troubleshooting Chart

Symptom	Action/Solution	Notes
No power (Red LED not lit on the control display planel)	Check MAIN ON/OFF switch is ON	
	Check that the Powercon connector (black) is properly locked on the power/ DMX panel.	
	Check the power supply network	
	Check power supply fuses in LEG #2	
No reset (after switching the yoke on / Red LED is lit on the control display panel)	Check that PAN and TILT Locks are properly released	If not, release them, and switch the yoke on again.
	Check that PAN and TILT motor cables are properly connected on motherboard (CPU)	
The reset sequence does not run properly : The control panel doesn't display: "PAN=ok TILT=ok DMX=###"	PAN & TILT detection is not working:	
	Check PAN & TILT sensors input connection on the CPU	
	Check detection LED indicators (orange light) on the bottom of PAN & TILT sensors are on	
	Check PAN & TILT detection LED indicator on the CPU	
The reset sequence does not run properly (slowly): PAN or TILT starts with a high speed movement	Check motor cables and cables linking motors to CPU	
PAN & TILT movement are not linear (oscillate) when moving to a precise position	Check the PAN and TILT tension	
	For TILT : Check balance is properly adjusted for the model of lens installed in the projector	

Table 6.1 Troubleshooting Chart

PAN & TILT cannot be controlled via DMX Lighting console	Check DMX network linking Lighting console to the YK200. Ensure that DMX cables used are certified DMX standard.	
	Check if DMX cable is properly plugged into "DMX IN" input, on the power/DMX panel	
	Check DMX reception LED indicator on the control display panel (green LED should be flashing)	
	Check that DMX address is properly set	
	Check that "PAN=ok TILT=ok DMX=###" is displayed on the control panel: DMX signals will start to be received only after the yoke reset is completed.	
No power to the Roadster series projector*	Check that power switch above power cord on projector is in the ON position.	
	Check that power cable is properly plugged and locked into the yoke sub connection panel under the vertical cover.	
No power to the head box (Red LED on the head box is not lit)	Check that the MAIN ON/OFF switch on the head box is ON	
	Check the powercon connector (blue) is properly locked on the power/DMX head box control display panel. Check that power supply cable is also properly connected to the yoke sub connection panel under the vertical cover.	
	Check power input fuse (external fuse holder on head box).	
	Remove the head box cover and check internal fuses.	
Roadster series projector doesn't work using DMX lighting console	Check DMX reception indicator on the head box control display panel (green LED flashing).	
	Ensure that projector internal communication parameter is set to 19200 Baud.	
	Check DMX cable linking head box to the YK200 yoke is properly plugged into the head box and into the yoke sub connection panel under the vertical cover.	
	Check head box DMX address is set at "1".	
	Check that RS232 cable (SUB-D connector) is properly connected to RS232 OUTPUT on the Roadster series projector.	
Video function (DMX channel #7) of the Roadster series projector doesn't work properly.	Remove head box cover and ensure the R232/DMX interface is properly set (jumper).	

Table 6.1 Troubleshooting Chart

Roadster zoom & focus module doesn't work	**Check that cable linking head box to zoom/focus module is properly plugged in (SUB-D).**	
	Remove head box cover and check LED indicators are lighting or flashing.	
Zoom & focus module movement is not linear.	**Check that zoom/focus module is properly installed in the lens**	
No video signal transmitted*	**Check that DVI or Ethernet cable link is properly connected to the YK200 and to the rear panel of the Roadster series projector.**	
	Check that DVI signal input is activated via the rear control panel of the Roadster series projector	

6.2 Projector

*Refer to the troubleshooting section of the Christie User Manuals for the Roadster Series projector.

7 Specifications

This section provides specifications for the Christie Nitro YK200 yoke. Due to continuing research, specifications are subject to change without notice.

7.1 General Capabilities

7.1.1 Pan and Tilt Movements

- High Resolution - 8 arc minutes precision – Ratio 64:1
- Linear command - Pan: 600°; Tilt: 270°
- DC servo motor – 24 Volts
- Maximum speeds: PAN: 8 sec TILT: 4.3 sec

7.1.2 Focus Control

- Remote - via DMX dedicated channels

7.1.3 Zoom Control

- Remote - via DMX dedicated channels

7.2 Physical

7.2.1 Yoke Dimensions

- H 1004 mm x W 830 mm x L 1183 mm
- H 39.5” x W 32.7” x L 46.6”
- Footprint - see **Figure 7-1**

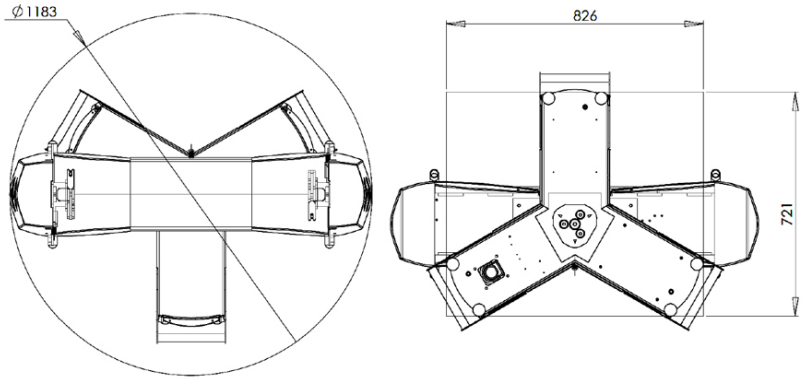


Figure 7-1 YK200 Footprint

7.2.2 Yoke Body

- Body structure: Aluminum
- Cover: thermoformed plastic
- Color: grey-black
- Pan and Tilt Lock for transport and maintenance

7.2.3 Mounting Options

- Floor mounted, upright
- Truss mounted with Nitro Rigging Clamp: upright or inverted

7.3 Weights

7.3.1 YK200

- 90 kg (198.4 lbs)

7.3.2 YK200 + Roadster Series Projector

- 200kg (440 lbs) without lens

7.4 Power Requirements

7.4.1 Voltage and Current

- Europe: 230 VAC@50/60 Hz single phase
- USA: 208 VAC@50/60 Hz dual phase
- Operating current (Yoke only): 1A at 230VAC; 1.8A at 208VAC
- Operating current (Yoke + Projector): 15A worst case
- Power consumption: 150W max

7.4.2 Fuses

- Head Box: T750mA
- Power Supply Primary: T1.6A (Conquer Electronics Co., Ltd # UTE1.60)
- Power Supply Secondary: T6.3A (Schurter AG # 0034.3125)

7.5 Flight Case

7.5.1 Dimensions

- See **Figure 7-2**.

7.5.2 Weight

Empty

135 kg (297 lbs)

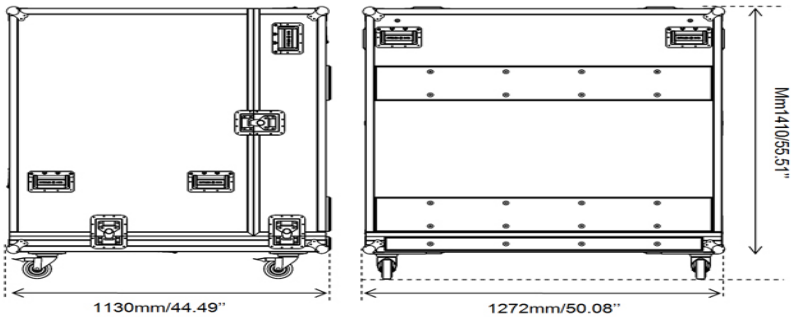


Figure 7-2 Flight Case Dimensions

With YK200 + Roadster Series Projector

335 kg (737 lb) without lens

7.6 Regulatory

- CE
- CSA
- UL Listed

7.7 Environment

- Maximum ambient temperature (T_a max): 45°C (113°F)
- Minimum ambient temperature (T_i max): -5°C (23°F)

7.8 Optional Components

- Nitro Rigging Clamp

Corporate offices

USA – Cypress
ph: 714-236-8610

Canada – Kitchener
ph: 519-744-8005

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