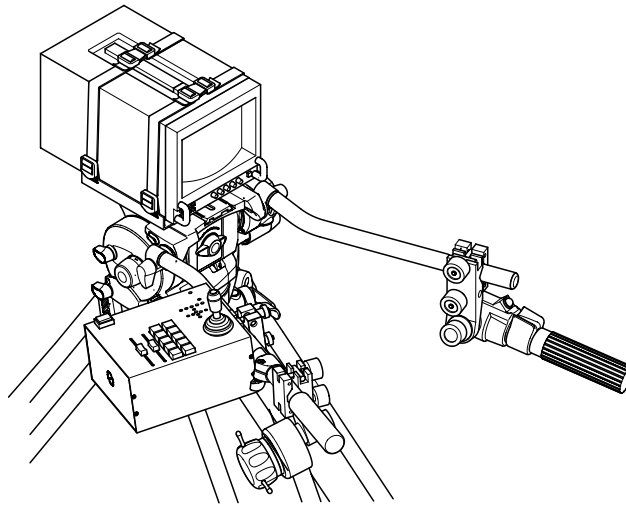


Lynx



Controller



Preliminary Issue

Operators Guide

AutoCam
Vinten

AutoCam™

Lynx

Controller

**Installation
and
Operating Instructions**

Publication Part No. *****

Preliminary Issue

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Foreword

This manual provides Safety, Installation and Operating Instructions for the AutoCam Lynx Controller.



WARNING!: Read the Safety Section on [page 5](#) before using this controller or attempting any adjustment or repair.

It is recommended that this manual is read carefully and the illustrations studied prior to operating the controller. Attention to the details contained herein will ensure that the controller will operate efficiently with the minimum of attention over a long service life.

To order spare parts or to obtain further information, application should be made to Vinten Broadcast Limited or to your local distributor, or visit our website at www.vinten.com.

NOTE: Information contained in this document is subject to change. Vinten Broadcast Ltd reserves the right, without notice, to make changes in equipment design or performance as progress in engineering, manufacturing or technology may warrant.

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Safety - Read This First

Warning symbols in this operators guide



Where there is a risk of personal injury, injury to others, or damage to the tripod or associated equipment, comments appear, highlighted by the word **WARNING!** and supported by the warning triangle symbol.

Warning symbols on the product

Various coloured safety labels are attached to the AutoCam equipment to alert you to hazardous situations. The labels and their meaning are described below.



DANGER (with a red background) indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.



WARNING (with an orange background) indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION (with a yellow background) indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.



CAUTION (with a yellow background, but without the Safety Alert symbol) indicates a potentially hazardous situation which, if not avoided, may result in property damage.

Safety issues

Safety issues including important warnings, risks and related topics are covered in this section of the manual. It is very important that this information be available to all personnel who will work on or near the AutoCam equipment.

Very important warnings



WARNING! To avoid personal injury, always exercise caution when working in the vicinity of energized pan/tilt heads and elevation units as they can start to move without any warning.



WARNING! Unless it is impossible, you should always de-energize the elevation unit and head before working on any part of the elevation unit, the head, the camera/lens, or any associated equipment.

Customer responsibility

It is the customer's responsibility to ensure that the workplace is safe. In normal operation, the remote controlled elevation units, heads and payloads in an AutoCam system can move suddenly and without warning. Since audible warnings are out of the question in normal television applications, it is recommended that only trained personnel be allowed to work in the active areas where the remote controlled elevation units, heads and payloads are located. As part of the training, personnel must be made aware of the hazards of working in a robot environment, including the specific hazards listed below. The forces are sufficient to cause personal injury, or injury to others and therefore, caution is essential.

Safe working environment



WARNING! Each of the remote controlled elevation units should be within the view of the operator of the AutoCam system at the controller. Before and during remote operation, the controller operator must verify visually that the active area is clear. If personnel are too close to one of the elevation units that is about to move, the operator can prevent the motion from starting, or stop the motion after it has started.

If the direct line of sight is obstructed in your installation, it is recommended that one or more viewing cameras are installed to cover the active areas and allow the operator to view the entire workspace at all times.

Safe operating zone and elevation unit footprint



WARNING! The safe operating zone for personnel is a minimum of 3 feet (1m) outside of the elevation unit footprint. This allows time for the personnel to avoid a elevation unit that starts to move at its maximum speed of approximately 1 foot per second (0.3m per second).

The elevation unit footprint is typically larger than the elevation unit base itself. In most installations, the teleprompter is the piece of equipment mounted on the head that protrudes the furthest beyond the base of the elevation unit. Or, it may be the manual control bars on the rear that protrude the furthest. The footprint must take into account the overhang of the teleprompter and/or manual control bars as the head pans around.

If your operating practices require personnel to work less than 3 feet (1m) outside the elevation unit footprint, you must make sure that they are trained and are aware of the hazards of working in a robot environment, including the specific hazards listed below. The forces are sufficient to cause personal injury, or injury to others and therefore, caution is essential.

Warning signs

Warning signs should be displayed prominently in the workplace as a reminder to trained personnel, and a primary warning to untrained personnel and visitors.

A typical sign might read:



**WARNING:
Robotic Pedestals, Heads &
Cameras Move Suddenly
Without Warning**

Elevation units and heads can start unexpectedly



WARNING!The hazards associated with robotic camera systems are only slightly different than those associated with operating a camera under conventional manual control. The speeds and camera weights are similar. The main difference is that with automation, the operator is normally not near the cameras, and it is more difficult to verify that the area is clear. For personnel working on or near the elevation units, they must be aware that the equipment can start moving unexpectedly. All personnel should be trained and aware of the hazards of robotic elevation units and heads, and the fact that they can move at any time. They must be trained on how far the elevation units, heads and payloads can move, the speeds involved, and the need to stay back an appropriate distance. Most adjustments to the camera and head, such as balancing and camera calibration, should be made with the system de-energized. However, if adjustments are absolutely necessary while the elevation unit and/or head is powered, they should only be made by trained technical personnel familiar with the AutoCam robotics system. They must understand that the elevation unit or head can move unexpectedly at any time, and they must position themselves so that any motion would not cause them personal harm. When the robotic heads move, the speeds involved are fairly slow. However, the equipment is still capable of generating sufficient force to cause injury. Therefore, it is essential that you exercise caution. In particular, be aware that the teleprompter is usually the fastest swinging element. Any failure of the system could possibly cause one or more axes to move on their own, but the speeds and forces should not be noticeably greater than those encountered during normal use.

Pinch points



WARNING!Particular care should be exercised around possible points where you could get pinched, such as the tilt cradle. Here, the forces can be somewhat greater, due to the short lever arm.

Sharp edges



WARNING!If the lens, teleprompter or other camera attachments have sharp edges that could cause injury, make sure they are padded or protected.

Critical data

Input Voltage	24 Vdc, supplied from external power supply
Input Current	0.25 Amps nominal
Date Of Manufacture	2002



Technical specification

Weight

* kg (* lb)

Technical support

If you are based in North, South or Central America and need technical support on the AutoCam system, contact Vinten Inc. at:

709 Executive Blvd.
Valley Cottage, NY 10989
USA
Phone: 1-888 4 VINTEN (1-888-484-6836) - Toll free in the U.S.A.
+1 845-268-0100
Fax: +1 845-268-0113

Or, if you are based outside of North, South or Central America, contact Vinten Broadcast Limited at:

Western Way
Bury St. Edmunds
Suffolk IP33 3TB
ENGLAND
Phone: +44 (0) 1284 752121
Fax: +44 (0) 1284 750560

Manual outline

Safety - Read This First	covers important safety issues
Chapter 1 -	describes the components of the Lynx control system
Chapter 2 -	contains step-by-step instructions for installing the Lynx control system
Chapter 3 -	contains step-by-step operating instructions
Chapter 4 -	details servicing, including cleaning, routine checks and adjustments

Chapter 1 - Introduction and Description

Introduction

The Lynx Controller from AutoCam provides remote control of a camera from a conventional pan bar input system. The system may be used in conjunction with an AutoCam HS-102 or HS-105 series remotely controlled head or a Predator high-speed remotely controlled head.

Description

(Fig 1.1)

Central to the system is a Vinten Vision 250E pan and tilt head (5).

A monitor (1), connected to the output of the remotely-controlled camera, is rigidly mounted on the head. This allows the camera operator to see exactly how the camera is responding and to react accordingly.

A control panel (4) is pan bar mounted. Other controls, for zoom (2) and focus (3), are also pan bar mounted.

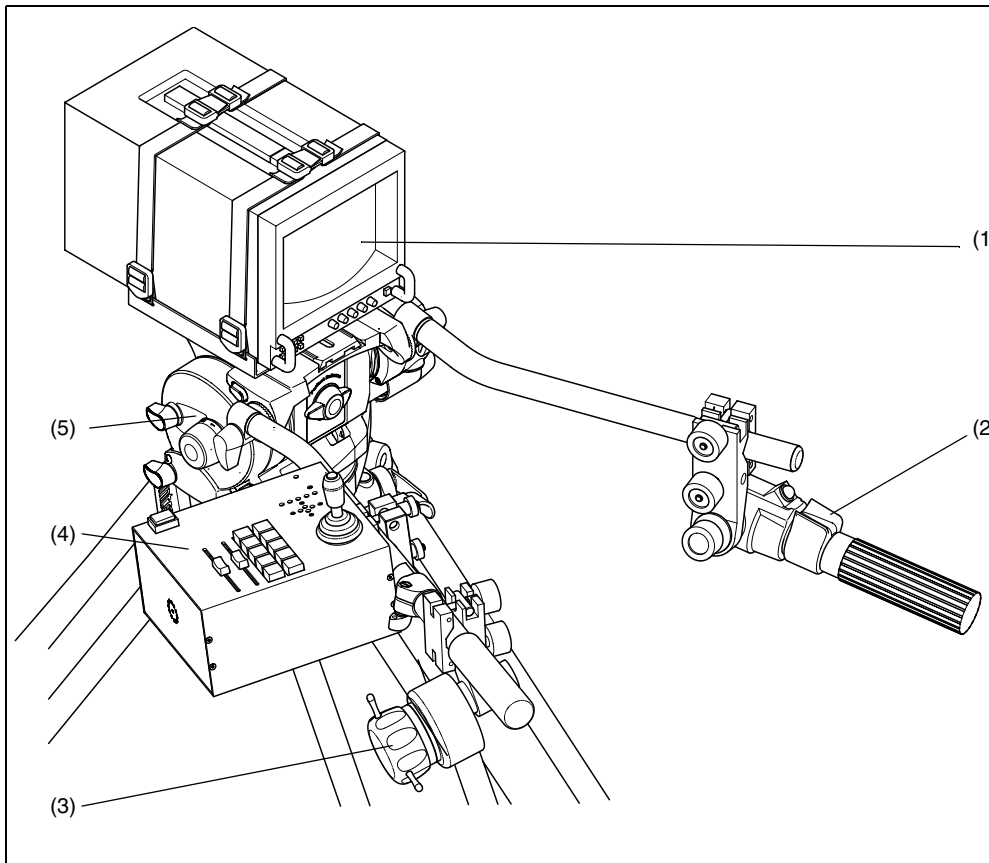


Fig 1.1 Lynx controller)

Vinten Vision 250E pan and tilt head

(Fig 1.2)

The Vision 250E combines a manually-operated EFP-type pan and tilt head with electronic encoders to provide precise real-time digital electronic positioning.

Two pan bars (7) are supplied, attached using a pan bar clamps, with angular adjustment available on the mount serrations.

The head has a flat base (14), with 'Quickfix'® and standard four-hole fixing. Mounting bolts, washers and a spanner are provided.

Perfect balance

Perfect balance is achieved by means of an innovative and patented infinitely-variable spring mechanism. This allows the heads to tilt through the full range of $\pm 90^\circ$ in perfect balance.

The balance system is easily adjusted by a knob (9) on the rear of the head. A digital display (12) indicates the setting of the balance mechanism on a scale of 00 - HI. The display is illuminated by pressing the switch (18) and extinguishes automatically approximately 15 seconds after adjustments are complete. The same switch also illuminates the level bubble (11) and the scales of the pan and tilt drag knobs (16)(20). A sensor automatically compensates for ambient light levels and dims the display. If the ambient light level is high, the level bubble and drag knob scales will not be lit. The battery for the system is housed in a compartment (13) in the base of the head, closed by a cover.

TF (Thin-Film) drag

Developed for the discerning camera operator, TF drag is used in the Vision 250E to provide precise head control in demanding conditions. It is a fully calibrated drag system, allowing camera operators to 'dial in' their preferred settings. From critical slow pans with lenses of long focal length to fast-moving sports applications, TF always offers total control. The whip-pan facility is unaffected by the pan drag setting.

Both the pan and tilt mechanisms incorporate the Vinten TF system and are fitted with control knobs to adjust the drag setting. Both drag knobs (16)(20) are provided with scales illuminated by the switch.

Pan and tilt brakes

Friction brakes on each axis allow the head to be locked at any chosen position. The operating knobs (19)(21) for both brakes are fitted on the left-hand side of the head.

A centre lock (10) allows the head to be locked in the horizontal position.

Illuminated level bubble

A level bubble (11), illuminated by pressing the switch (18), is fitted to the rear of the head.

Positioning encoders

The Vision 250E is fitted with encoders for pan (15) and tilt (17), which provide high-resolution real-time digital output of up to 697,666 counts for 360° of pan and 533,333 counts for 360° of tilt. This output is connected to the ENCODER connector on the control panel.

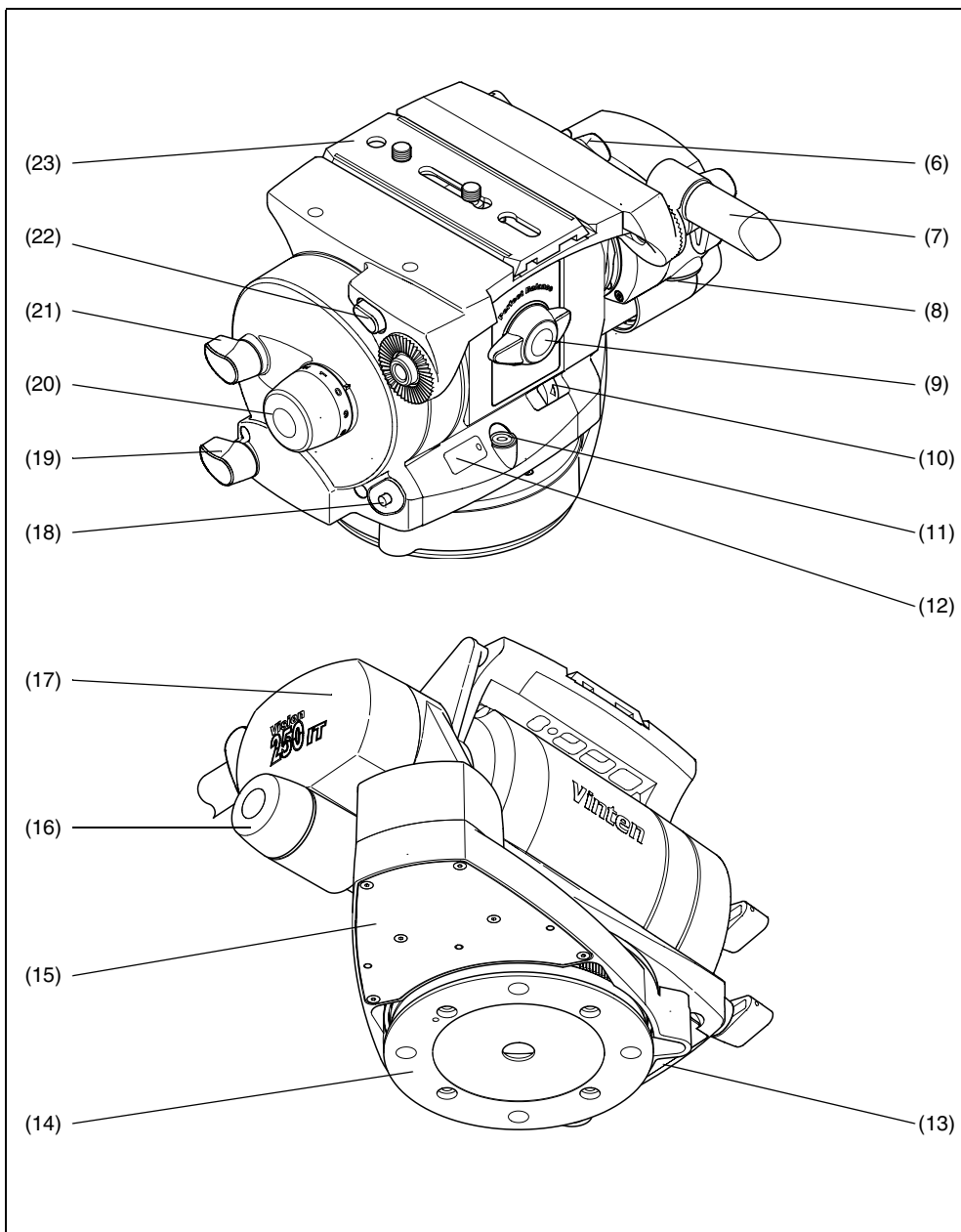


Fig 1.2 Vision 250E pan and tilt head

Monitor

A monitor, connected to the video OUT connector on the control panel, is rigidly mounted on the head. This allows the camera operator to see exactly how the camera is responding and to react accordingly.

The monitor is attached to the platform slide plate, which allows fore-and-aft balancing. Depending on the type of monitor, counterbalance weights may be necessary for centre-of-gravity adjustment.

Control panel

(Fig 1.3)

The control panel is pan bar mounted and comprises the following controls, indicators and connectors:

NOTE: See “[Configuration](#)” on page 26 and “[Lynx control panel](#)” on page 28 for details of control operations.

ENABLE

The ENABLE switch (45) connects communications to the remote head. When activated it is lit.

SENSITIVITY

The PAN and TILT sliders (39) adjust the response to pan and tilt movement - max x4, min x0.5

Function switches

There are ten function switches on the control panel. The switches are lit when depressed:

RESET CNT

This switch (44) sets the centre position of the remote head or returns the remote head to centre position at MAX SPEED.

AUX 1/ AUX 2/ AUX 3/ AUX 4

In normal operation these switches (40)(41)(42)(43) each control an auxiliary function, such as wipers etc.

In ALT mode, they are used to set head protocols.

PAN REV

This switch (34) reverses pan direction.

TILT REV

This switch (35) reverses tilt direction.

PAN HOLD

Pressing this switch (36) allows repositioning of the Lynx control in pan without moving the remote head.

TILT HOLD

This switch (37) allows repositioning of the Lynx control in tilt without moving the remote head.

ZOOM REL

This switch (38) reduces pan and tilt sensitivity on tight zooms.

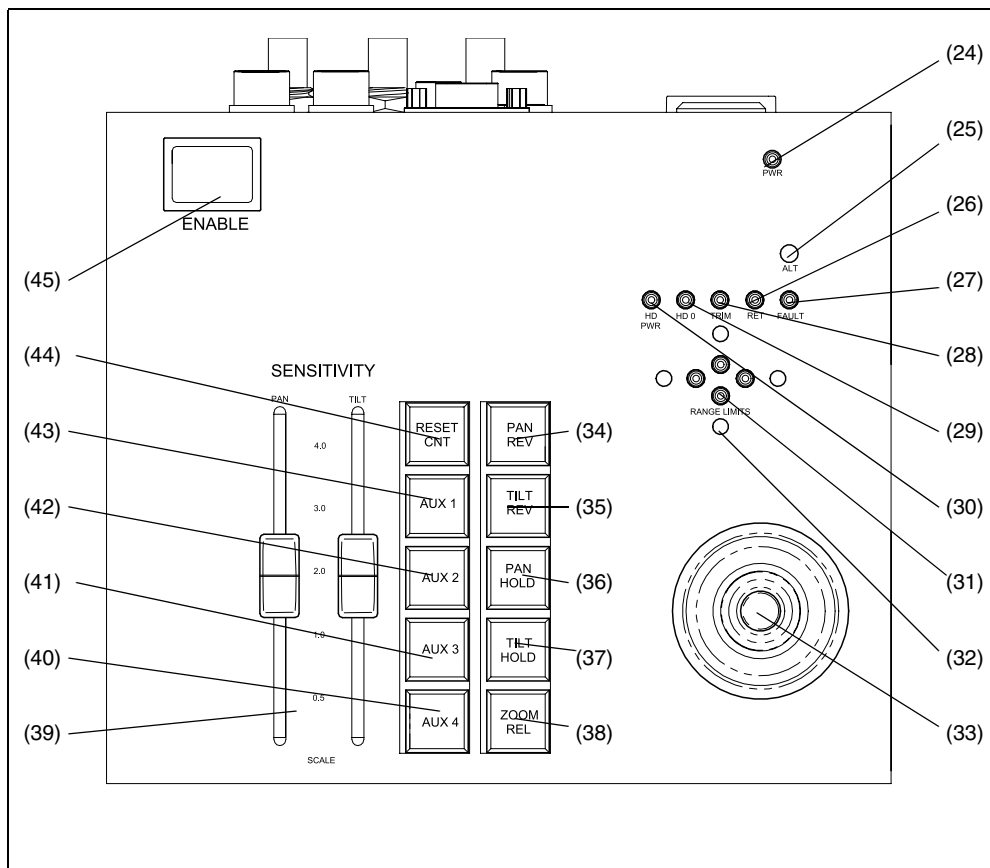


Fig 1.3 Lynx control panel - controls and indicators

Recessed switches

There are five recessed switches on the control panel:

ALT

Pressing the ALT recessed switch (25) selects the ALT function for the AUX switches.

RANGE LIMITS

Left, right, up and down range limits are set using the appropriate recessed switch (32) and the joystick (33).

Indicator LEDs

There are ten indicator LEDs on the control panel:

PWR

The PWR LED (24) is lit when the power supply is connected to the control panel.

RANGE LIMITS

Left, right, up and down range limit LEDs (31) flash when range limits are being set and are lit when limits are reached.

HD Power

The HD Power LED (30) is red when the remote head is unpowered, green when powered.

HD 0

The HD 0 LED (29) is green when the remote head is at its reference position.

TRIM

The TRIM LED (28) is lit whenever the joystick is used.

RET

The RET LED (26) is lit when return video is active.

FAULT

The FAULT LED (27) is red when communications to the remote head fail.

Joystick

The joystick (33) is used to trim shots and set range limits. It has a push button incorporated in the handle which must be pressed to enable the joystick.

Connectors

(Fig 1.4)

Eleven connectors are grouped on the rear of the control panel:

PWR IN

24Vdc is supplied to the control panel from the power supply via an XLR4 connector (55).

ENCODER

The output from the encoders in the Vision 250E head is connected via a 27-pin connector (52).

Video in/out

Three BNC connectors (A IN (51), B IN (50), OUT(49)) provide a switchable video input/output to the monitor, controlled by the video return switch on the pan bar mounted zoom control.

CANON/FUJINON ZOOM/FOCUS

Connections are provided for Canon (53)(54) and Fujinon (47)(48) pan bar mounted zoom and focus controls.

DATA

The power supply for the remote head may be up to 1.5 km (5,000 ft) from the control panel. It is connected via a 9-pin D-type RS422 connector (56). The maximum distance from the power supply to the remote head varies with type.

SERVICE

This 8-pin connector (46) enables software upgrades by connecting to a compatible PC.

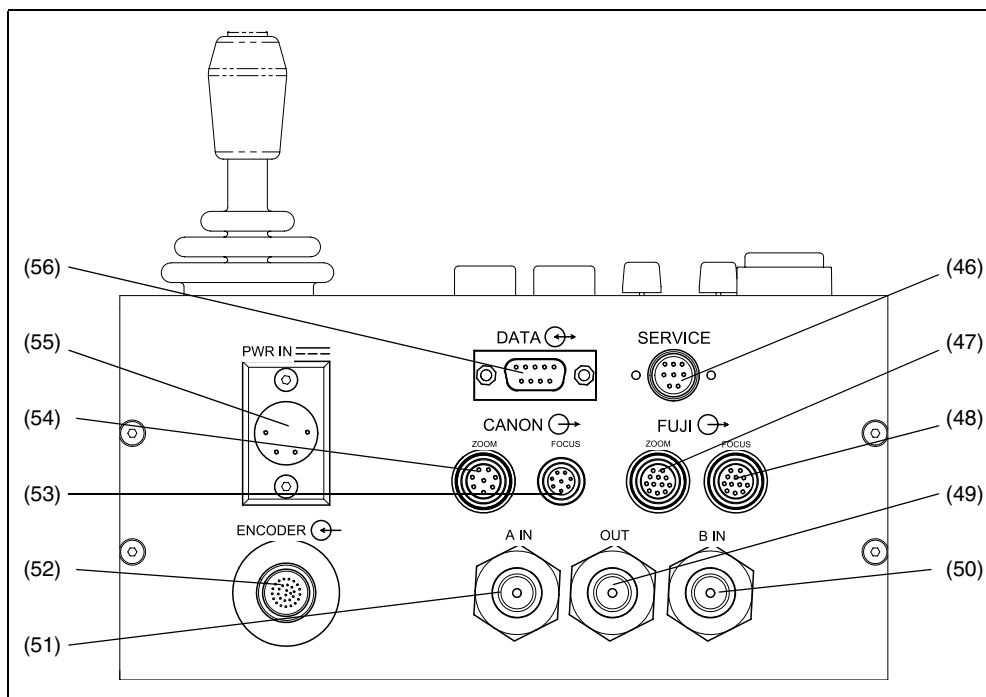


Fig 1.4 Lynx control panel - connectors

Power supply

24 Vdc is supplied to the control panel from a mains-operated (110-240 Vac) power supply.

Zoom and focus controls

Proprietary zoom and focus hand controls are pan bar mounted and connected to the appropriate connectors on the control panel.

Chapter 2 - Installation

Installation

Installing the Vision 250E head

The Vision 250E head is supplied with a flat base and is designed for installation on a compatible Vinten tripod or pedestal, using either the four mounting bolts and washers provided or by using a 'Quickfix' adaptor.

Adaptors are available which enable the heads to be installed on tripods or pedestals fitted with other mountings.

The head may be levelled with the aid of the level bubble which is illuminated by pressing the switch. The light will extinguish after 15 seconds.

NOTE: If the ambient light level is high, the level bubble will not be lit.

Pan bars

Two pan bars are supplied. These should be attached to the mounts on either side of the platform and secured with the pan bar clamps. Angular adjustment is available on the mount serrations.

Mount the zoom and focus hand controls and the Lynx control panel on the pan bars in the desired position.

Monitor

A monitor is rigidly mounted on the head platform. To install the monitor:

Remove the slide plate from the platform by releasing the slide plate clamp, pressing the slide lock release and pulling the plate to the rear.

NOTE: It may be necessary to provide counterbalance weights to adjust monitor centre of gravity.

Attach the slide plate to the monitor under the approximate centre of the monitor's weight using both mounting screws. Position the screws as far apart as possible.

Set the platform level and engage the centre lock.

Push the slide plate and monitor into the platform from the rear, ensuring slide lock release snaps into position.

Connecting the controller

(Fig 2.1)

Using the appropriate cables, connect components as follows:

Connect the zoom and focus hand controls to the appropriate Canon or Fujinon connectors on the control panel.

Connect the Vision 250E encoder connector to the encoder connector on the control panel.

NOTE: Ensure that the encoder cable is installed correctly, with the appropriate connectors in the Vision 250E and control panel.

Connect the monitor video input to the video OUT connector on the control panel.

Connect the video input(s) to the video IN connector(s) on the control panel.

Connect the controller power supply to the PWR IN connector on the control panel.

Connect the power supply for the remote head to the D-type connector on the control panel.

Connect the controller power supply to the mains power supply.

Connect the power to the monitor.

Ensure all cables are routed and secured to prevent interference with the operation of the controller.

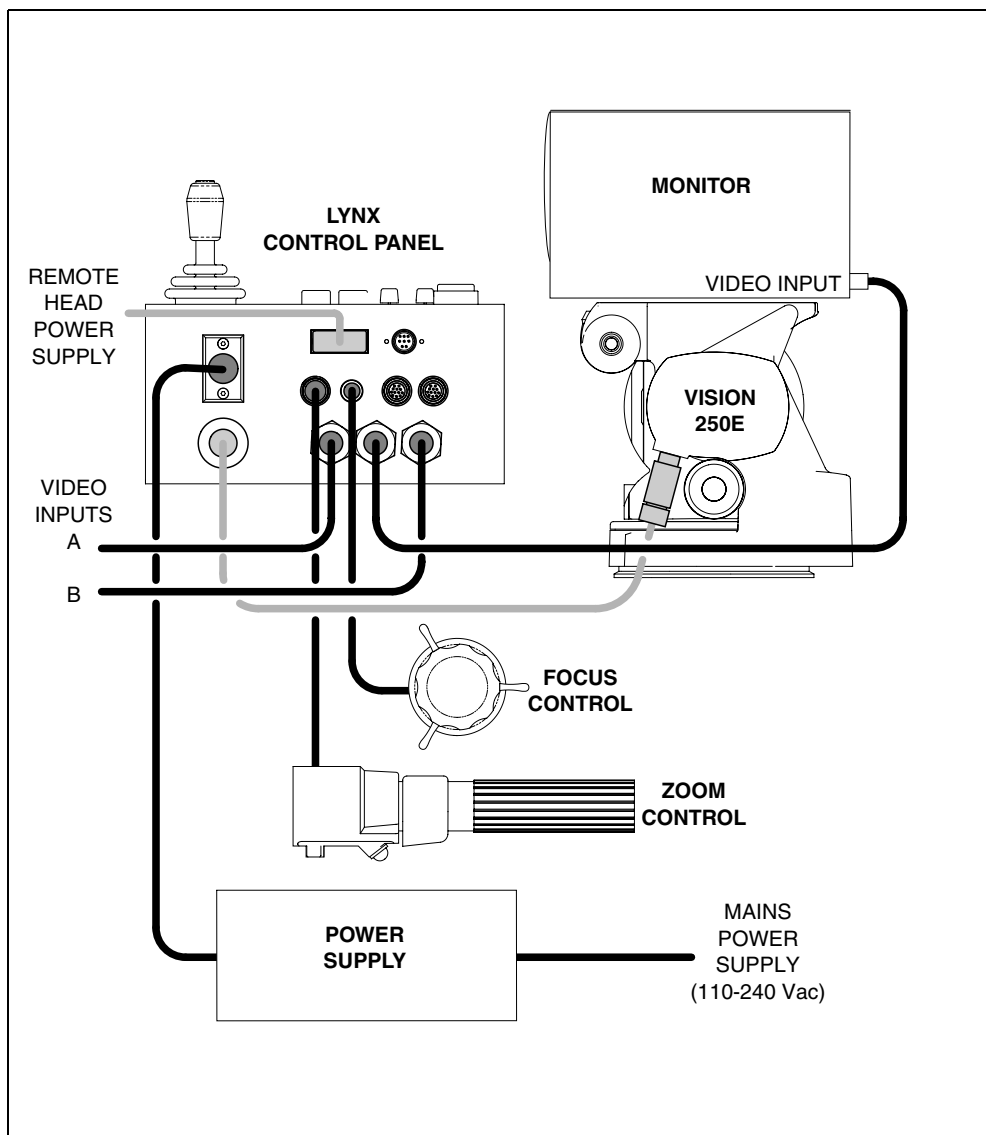


Fig 2.1 Connecting the controller

Balancing the head

(Fig 1.2)

Balancing the Vision 250E head achieves two objectives. Firstly, when a head is correctly balanced the operator will need a minimum amount of even effort to move the head. Secondly, once balanced, the head and its payload can be set to any tilt position and the head will maintain this position with 'hands off'.

Prior to balancing the head ensure that the pan bars, zoom and focus hand controls, the Lynx control panel and the monitor have been fitted and connected in order to prevent upsetting the balance once it has been achieved.

NOTE: Be prepared to prevent the head falling away suddenly

1. Turn the tilt drag (16) to zero. Release the centre lock (10) and the tilt brake (21). Turn the balance knob (9) counter-clockwise until the head falls away from horizontal under the weight of the monitor.
2. Release the slide plate clamp (6) and slide the monitor backwards or forward until it balances horizontally. Apply the slide plate clamp.
3. Turn the balance knob (9) clockwise until the camera does not fall away when the head is tilted and released.

NOTE: If the digital balance setting of the particular payload is known, press the switch (18) and turn the balance knob until the digital display (12) shows that setting.

4. Repeat steps 2 and 3 until perfect balance is achieved, when the camera will remain set at any angle from +90° to -90° without falling away or springing back. Re-apply the centre lock (10) and the tilt brake (21).
5. Press the switch (18) and make a note of the digital display (12). This will facilitate rebalancing this particular payload.

Configuration

Switching on

(Fig 1.3)

Turn on the power supplies for the Lynx control panel, the monitor and the remote head. Ensure the remote head is switched on.

Indications at the Lynx control panel should be:

PWR indicator (24) green.

HD PWR indicator (30) green.

FAULT indicator (27) red.

Depress the ENABLE switch (45). The remote head should go through its initialisation procedure and the FAULT indicator extinguish.

Head protocol

(Fig 1.3)

Set the head protocol as follows:

Press the ALT recessed switch (25). The AUX switches flash.

Press the appropriate AUX switch, which is then permanently lit.

AUX 1 (43)	Predator high speed remotely controlled head
AUX 2 (42)	HS-105 series remotely controlled head
AUX 3 (41)	HS-102 series remotely controlled head
AUX 4 (40)	Not used

Press the ALT recessed switch (25) again. The AUX switches are extinguished.

Chapter 3 - Operation

Vision 250 head

(Fig 1.2)

Locking the platform

The centre lock mechanism is operated by a slider (10) on the rear of the head. To engage the lock, hold the platform in the horizontal position and push the slider to the left.

To release the centre lock, push the slider to the right.

Pan and tilt brakes

Friction brakes on each axis allow the head to be locked at any chosen position. The operating levers for the pan and tilt brakes (19)(21) are fitted on the left-hand side of the head.

To apply the brake, turn the lever fully clockwise. To release the brake, turn the lever fully anti-clockwise.

Pan and tilt drag

Both the pan and tilt mechanisms incorporate the Vinten thin film (TF) system to ensure smooth movement of the camera about these axes and are fitted with control knobs to adjust the drag setting.

Both drag knobs are provided with illuminated scales, graduated from 0 to 9. To illuminate the scales, press the switch (18). The lamp will extinguish after 15 seconds.

NOTE: If the ambient light level is high, the scales will not be lit.

The tilt drag adjustment knob (20) is on the left-hand side of the head, the pan drag knob (16) is on the right-hand side. The pan drag knob may be slid out to facilitate operation.

To increase drag, turn the knob clockwise, towards a higher graduation. To decrease drag, turn the knob anti-clockwise, towards a lower graduation. The whip-pan facility is unaffected by the pan drag setting.

Lynx control panel

(Fig 1.3)

Switch on and configure the control panel (See "Configuration" on page 26). Ensure the monitor is operating.

Pan and tilt direction

While observing the monitor, move the head in the pan and tilt axes. Ensure the remote head moves in the same direction.

If, due to the way the head is mounted or configured the direction of either axis is reversed, press the PAN REV (34) or TILT REV (35) switches.

Pan and tilt sensitivity

Set pan and tilt sensitivity according to personal preference by adjusting the sensitivity sliders (39).

Setting the centre position

Press and release the RESET CNT button (44). The head will drive to the previously set centre position AT MAXIMUM SPEED.

Move the head in the pan and tilt axes until the desired centre position is reached.

Press and hold the RESET CNT button (44). The button will flash three times, then be lit permanently.

Release the RESET CNT button to set the new centre position.

Pan and tilt hold

By pressing either or both of the PAN HOLD (36) and TILT HOLD (37) switches, the Vision 250 head can be oriented without moving the remote head.

This facility may be used to allow the operator to adopt a more comfortable position at the controls.

Range limits

Set the left, right, up and down range limits as follows:

Press the appropriate recessed switch (32). The associated LED (31) flashes.

Using the joystick- and remembering to press the push button in the handle - drive the remote head to the desired position.

Press the recessed switch (32) again.

When range limits are reached in normal operation, the appropriate LED is lit.

Zoom relative switch

When the ZOOM REL switch (38) is pressed, pan and tilt sensitivity is automatically reduced on tight zooms.

Chapter 4 - Servicing

Routine maintenance

Vision 250 head

Replace the balance mechanism digital display battery yearly.

During use, check the following:

- Check the effectiveness of the pan and tilt brakes. Reset as necessary.

- Check the operation of the balance mechanism digital display and the illumination of the level bubble and drag knobs. Replace battery if necessary.

No further routine maintenance is required.

Lynx control panel

No routine maintenance is required.

Cleaning

During indoor use, the only cleaning required should be a regular wipe over with a lint-free cloth. Dirt accumulated during storage may be removed using a semi-stiff brush.

Use out-of-doors under adverse conditions will require special attention. Salt spray should be washed off with fresh water at the earliest opportunity. Sand and dirt acts as an abrasive and should be removed using a semi-stiff brush or vacuum cleaner.

NOTE: Use only detergent-based cleaners. DO NOT use solvent- or oil-based cleaners, abrasives or wire brushes to remove accumulations of dirt, as these damage the protective surfaces.

Vision 250 head battery replacement

(Fig 4.1)

The battery powers the balance mechanism digital display and illuminates the level bubble and the drag knob scales. All are operated simultaneously by pressing the switch and remain active for approximately 15 seconds.

The battery should be replaced yearly or whenever the illumination is considered inadequate.

NOTE: The illumination level of the digital display and the level bubble and the drag knob scales varies with the intensity of the ambient light. If the ambient light level is high, the level bubble and drag knob scales will not be lit. Removal of the battery will not affect the calibration of the balance mechanism display.

To install or replace the battery:

- Prise out the battery cover (13).

- Pull the battery (13.2) out of the battery compartment as far as the wiring will allow.

- Pull the connector (13.1) off the terminals of the old battery and push it onto the terminals of the new battery (13.2).

- Install the battery (13.2) in the battery compartment, ensuring that the wiring is neatly stowed.

Refit the battery cover (13).

Press the switch (18) and ensure that the balance mechanism digital display is lit for approximately 15 seconds.

Put a finger over the digital display and press the switch (18). Ensure that the level bubble and drag knob scales are lit.

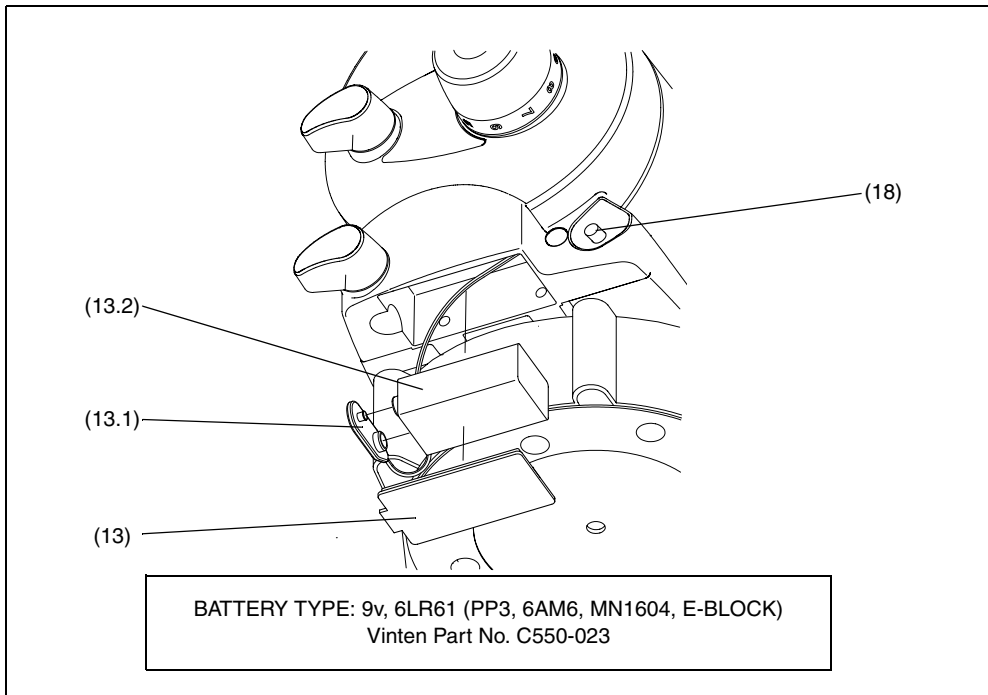


Fig 4.1 Vision 250 head battery replacement

Vision 250 head balance mechanism digital display calibration

(Fig 4.2)

The digital display (12) indicates setting of the balance mechanism on a scale of **00** (minimum setting) to **HI** (maximum setting). In the unlikely event of this system requiring calibration, proceed as follows:

Level the platform and apply centre lock (10).

Turn the balance knob (9) fully clockwise to its maximum stop.

NOTE: If more than 15 seconds is allowed to elapse between steps, the system will shut down and revert to its previous settings.

Press and hold the switch (18) for approximately eight seconds, until the digital display (12) shows **CA**. Release the switch (18). The display shows **HI**.

With the balance knob (9) still turned fully clockwise, press and release the switch (18). The display will now show **LO**.

Turn the balance knob (9) fully counter-clockwise to its minimum stop.

Press and release switch (18).

If the calibration is successful, the display will now show **00**.

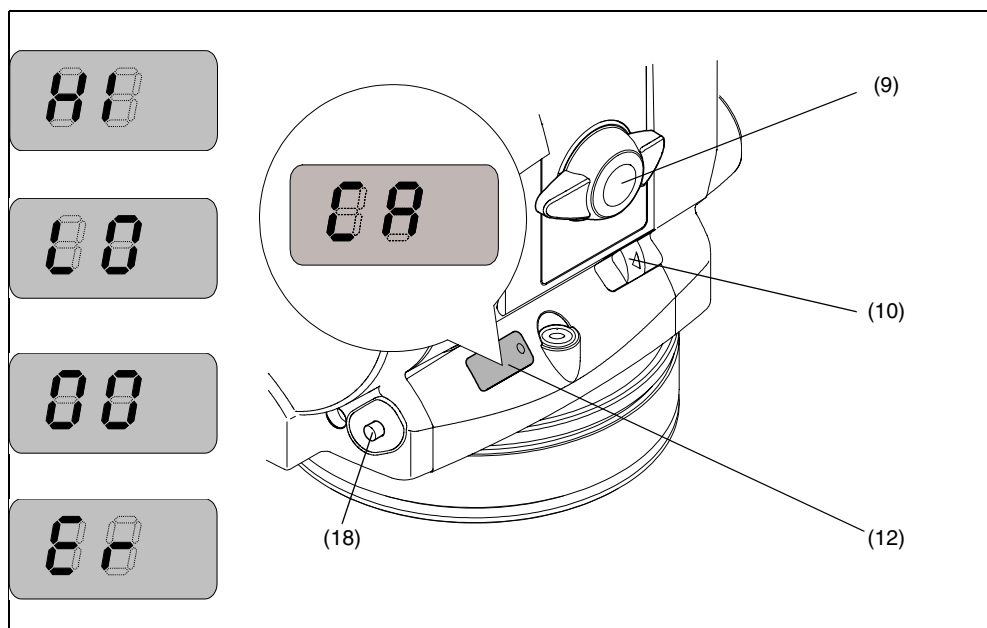


Fig 4.2 Vision 250 head balance mechanism digital display calibration

If unsuccessful, **Er** will be displayed. Pressing the switch (18) again, or waiting for 15 seconds, will allow the system to revert to its previous settings. Calibration may now be carried out again.

After calibration, rebalance the head (See “Balancing the head” on page 25).

Vision 250 head brake knob and drag control knob adjustment

The pan and tilt brake and drag controls may require adjustment after prolonged use. These adjustments should be carried out by competent persons as detailed in the Vision 250 E/IT Pan and Tilt Head Maintenance Manual (Publication Part No. 3791-9).

The Maintenance Manual may be obtained from Vinten Broadcast Limited or your local Vinten distributor or from our website at **www.vinten.com**.