



Operators Guide

Fusion FH-100 / FHR-100

Pan and Tilt Head

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Original Instructions

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Preface

Thank you for buying the Fusion Head from Vinten Radamec.

We want you to get the most from your new system, and therefore encourage you to read this operator's guide to familiarise yourself with the Fusion Head's many features.

Also included are the health and safety guidelines.

Features and benefits of your new Fusion Head

The combination of established Vinten mechanical engineering design with the latest in machine control technology provides the very forefront of solutions to the modern camera operator.

- **The head is rated to carrying 55 kg (125 lb) providing capacity for a prompter, a preview monitor, and an ENG style camera and lens configuration.**
- **There is the option to have a robotic only or robotic/manual head. The switchover to manual from robotic control provides the attributes expected from a Vinten fluid head, using the award winning lubricated friction drag system from the Vision and Vector range of heads.**
- **Simple cabling, using standard ethernet and mains connectors, has been employed with local availability in mind and ease of integration.**
- **Fast and incomparable accuracy, providing the very best and latest in camera support technology.**

Once again, thank you for choosing the Fusion head.

We are confident it will give you many years of reliable performance.

Safety - read this first

Understanding these instructions

English

- (EN)** The original instructions presented in this operators guide were written in English, and subsequently translated into other languages. If you are unable to understand these instructions, contact Vinten Radamec or your distributor to obtain a translation of the original instructions (EU Countries).

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Warning Symbols in this Operators Guide



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

Where there is a risk of damage to the product, associated equipment, process or surroundings, comments appear highlighted by the word **CAUTION!**

Warning symbols on the product



On encountering the warning triangle and open book symbols it is imperative that you consult this operators guide before using this product or attempting any adjustment or repair.



Where there is a risk of electric shock, comments appear supported by the hazardous voltage warning triangle symbol.

Regulatory information

This product conforms to the following European Directives:



2006/42/EC (CE Marking Directive)

98/37/EC (Machinery Directive)

73/23/EEC (Low Voltage Directive)

2004/108/EC (Electromagnetic Compatibility Directive)

This product has been tested and found compliant to the following test standards:

EMC:

EN 61000-6-4:2001

EN 61000-6-2:2001

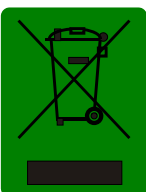
EN 61000-3-2:2000

EN 61000-3-3:1995 (+A1)

FCC:

CFR 47:2006 Class A

WEEE directive



WEEE Directive 2002/96/EC mandates the treatment, recovery and recycling of electric and electronic equipment. This product is subject to WEEE disposal regulations. Please visit www.vinten.com/recycle for details.

Technical data

Weight

FH-100 head 23 kg (50.7 lb)

FHR-100 head 19.3 kg (42.5 lb)

Height to wedge adaptor mounting face

FH-100 head 25.7 to 36.6 cm (10.1 to 14.4 in.)

FHR-100 head 23.7 to 34.6 cm (9.3 to 13.6 in.)

Height

FH-100 head 51.9 cm (20.4 in.)

FHR-100 head 49.9 cm (19.6 in.)

Length

FH-100 head 22.5 cm (8.9 in.)

FHR-100 head 22.5 cm (8.9 in.)

Width

FH-100 head 40.4 cm (15.9 in.)

FHR-100 head 39.4 cm (15.5 in.)

Maximum payload

55 kg (125 lb)

Tilt range

±90°

Pan range

359°

Pedestal/tripod fixing

Four-hole flat base
'Quickfix' adaptor

Lens control

Direct lens control for full servo
Canon or Fujinon broadcast lenses

Position repeatability of head

60 Arc seconds

Fastest speed

60° per second

Slowest speed

0.05° per second

Manual operation

FH-100 head Yes

FHR-100 head No

Manual drag (FH-100 head only)

Lubricated Friction (LF system)

Power consumption peak

250W - peak

Power input

Autorangeing 110-240V AC 50/60Hz

System fuse

T6.3A

Further information

For further information or advice regarding this pan and tilt head, please contact Vinten Radamec or your local Vinten Radamec distributor (see back cover) or visit our website.

For details on installation, maintenance and spare parts, please refer to the Fusion FH-100 / FHR-100 Pan and Tilt Head Technical Manual and Illustrated Parts List (Publication Part No. V3979-4990). This is obtainable from Vinten Radamec or your local Vinten Radamec distributor. For information on-line, visit our website at

www.vintenradamec.com

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Associated publication

Fusion FH-100 / FHR-100 Pan and Tilt Head
 Technical Manual
 Publication Part No. V3979-4990

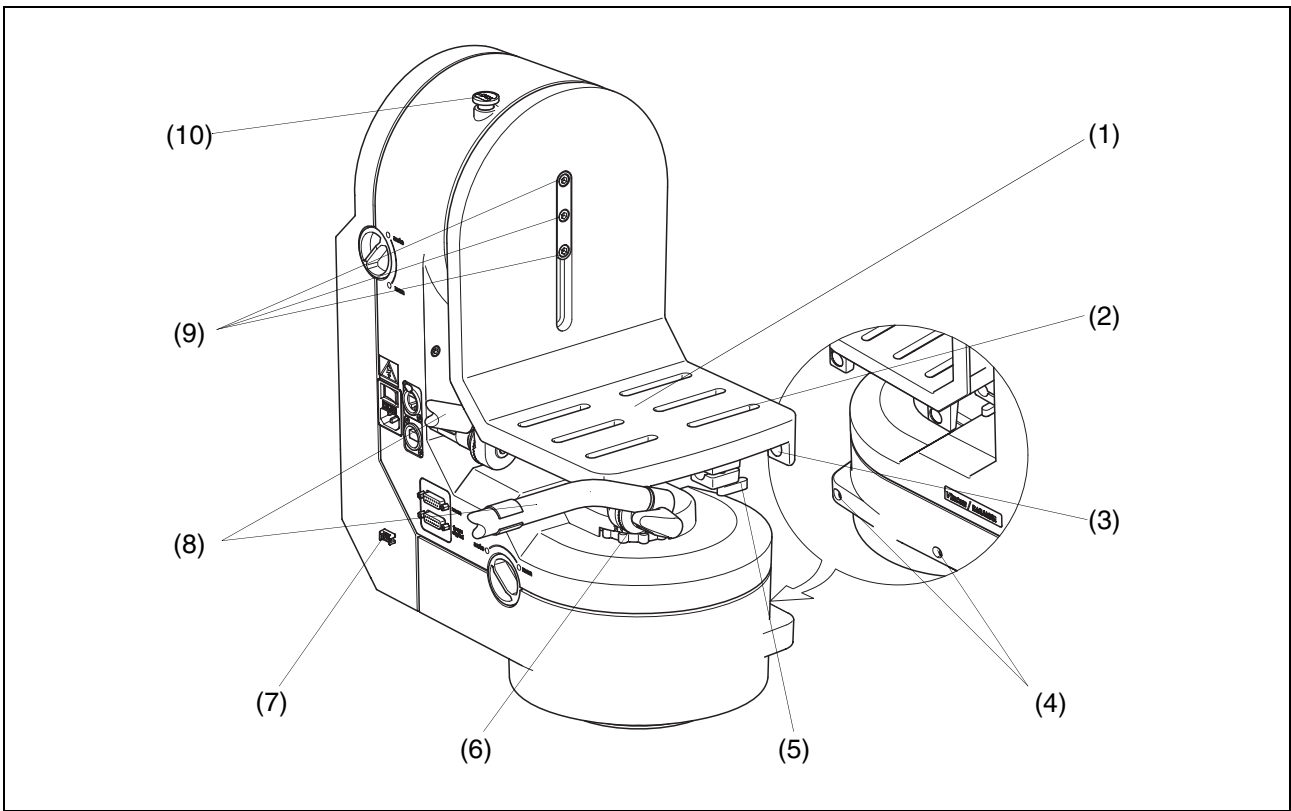
Usage

Fusion FH-100 and FHR-100 pan and tilt heads are designed for use in television studios to support and balance cameras and ancillary equipment, remotely controlling camera zoom, focus, and pan and tilt axis movements. The Fusion FH-100 pan and tilt head also allows manual camera control.

Fusion FH-100 / FHR-100 pan and tilt heads are intended to be used by television camera operators, trained to use Vinten Radamec robotic equipment.

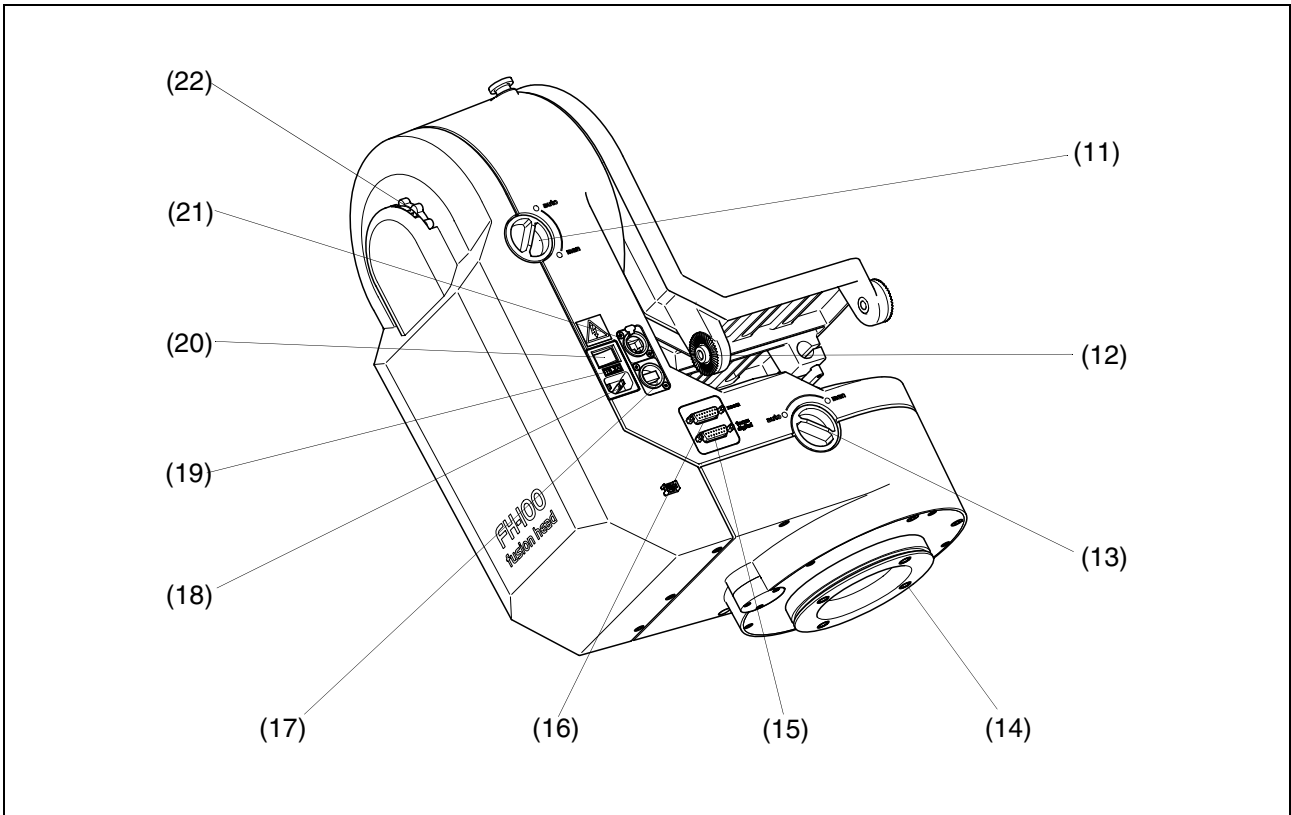


- WARNING!**
1. Do NOT attempt to use this product if you do not understand how to operate it.
 2. Do NOT use this product for any other purpose than that specified in the Usage statement above.
 3. This product has been designed for indoor use. Protect from water, moisture and dust.
 4. Maintenance beyond that detailed in this Operators Guide must be performed only by competent personnel in accordance with the procedures laid down in the Technical Manual.
 5. Display prominent warning signs in studios, alerting personnel that robotic equipment is present and may move without warning.
 6. Ensure personnel remain a minimum of 1-meter (40 inches) clear of robotic equipment during use.
 7. Operators must familiarise themselves with the resulting working envelope of the robotic head including all ancillary equipment (lens, zoom and focus controls, viewfinder, prompter etc.), to prevent inadvertent collisions.
-
-



**Fig 1 Fusion FH-100 Pan and Tilt Head
(Right-Hand Side)**

- | | |
|------|---------------------------|
| (1) | Platform |
| (2) | Camera mounting slot |
| (3) | Prompter mount hole |
| (4) | Vanity monitor mounts |
| (5) | Prompter mount clamp |
| (6) | Pan drag adjustment knob |
| (7) | Cable strain anchor point |
| (8) | Pan bar |
| (9) | Platform fixing screws |
| (10) | Centre lock button |



**Fig 2 Fusion FH-100 Pan and Tilt Head
(Left-Hand Underside)**

- | | |
|------|-------------------------------------|
| (11) | Tilt mode knob |
| (12) | Pan bar mounting |
| (13) | Pan mode knob |
| (14) | Four-hole mounting plate |
| (15) | Analogue focus / digital RS232 port |
| (16) | Analogue zoom port |
| (17) | USB head configuration port |
| (18) | Power socket |
| (19) | System fuse |
| (20) | Power on / off switch |
| (21) | Ethernet port |
| (22) | Tilt drag adjustment knob |

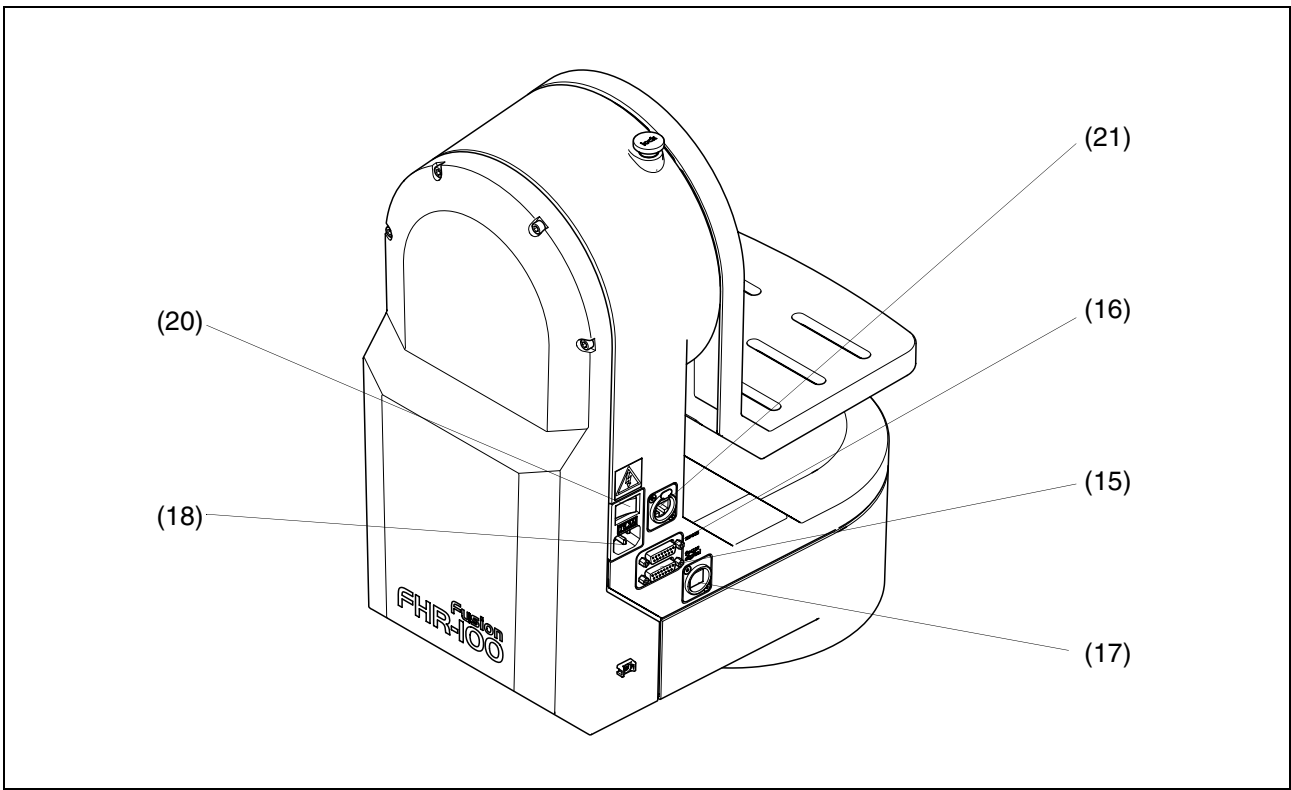


Fig 3 Fusion FHR-100 connection ports

- | | |
|------|-------------------------------------|
| (15) | Analogue focus / digital RS232 port |
| (16) | Analogue zoom port |
| (17) | USB head configuration port |
| (18) | Power socket |
| (20) | Power on / off switch |
| (21) | Ethernet port |

Introduction

This operator guide provides instructions for use of both Fusion FH-100 and FHR-100 pan and tilt heads. The FH-100 head (Fig 1 and Fig 2) has both manual and robotic capability, utilising lubricated friction (LF) drag assemblies for manual pan and tilt motions. Alternatively, the FHR-100 head (Fig 3) offers only robotic capability.

The FH-100 head is used as the main example throughout the guide, as it has more features. Indications will be made where functionality is explained that is either different or not present on the FHR-100 head.

Both products have been designed for use as a stand-alone device or for seamless integration with Fusion pedestals and height drives.

Balance

The FH-100/FHR-100 head allows the camera load to swing about its own centre of gravity (C of G), as opposed to balancing with the use of springs or cams. The camera and accessories are mounted on the platform (1) so the resulting C of G aligns with the tilt-axis pivot point, providing true balance.

LF drag

Note: LF drag is not present on the FHR-100 head.

Both the pan and tilt mechanisms on the FH-100 head incorporate the patented Vinten lubricated friction (LF) system to ensure smooth movement of the camera about these axes and are fitted with control knobs (6), (22) to adjust the drag setting.

Centre lock

A centre lock (10) allows the platform (1) to be locked in the horizontal position.

Pan bars

Note: Pan bars (8) are not present on the FHR-100 head.

Pan bar mounting points (12) are located at the rear of the FH-100 head, on either side of the camera mounting platform (1). Two telescopic pan bars (8) are supplied and are attached using a pan bar clamp, with angular adjustment available on the mount serrations.

Four-hole mounting plate

The head is provided with a standard Vinten four-hole mounting plate (14), which includes a 'Quickfix' mounting.

Manual and robotic capability

Note: Manual capability is not present on the FHR-100 head.

Rotary knobs (11), (13) indicate in which mode pan and tilt axes are independently operating in, and allows manual mode selection. Automatic mode is selected remotely via the Control System.

Integral lens Drive

Zoom (16) and focus / digital (15) ports connect directly to any full servo Canon or Fujinon broadcast lens.

Note: The exact location of connection ports differ on the FHR-100 head, refer to Fig 3 on page 15 for clarification.

Vanity monitor

A vanity monitor may be fixed to the front of the head using the vanity monitor mounts (4).

Operation

Installing the head

The Fusion FH-100/FHR-100 head seamlessly integrates with Fusion pedestals and height drives, but may be installed on a standard 'Vinten' HD tripod or pedestal using the four mounting bolts and washers provided or using a 'Quickfix' adaptor.

CAUTION! Before installing the head, hold a fixing bolt in position and check that the threaded end does not project more than 12 mm (15/32 in.) above the mounting face.

Pan bars

Note: Pan bars (8) are not present on the FHR-100 head.

Fit the pan bars (8) on the mountings (12) and adjust the position of each one before tightening the clamps. Adjust the length of the telescopic pan bar.

Fitting a camera



WARNING! 1. Switch off power (20) and engage the centre lock (10) before fitting a payload.

2. Do NOT exceed maximum payload. The weight of the total payload must not exceed 55 kg or 125 lb.

Where the camera is supplied with its own mounting plate, this assembly can be attached directly to the platform (1) using the supplied fixing bolts. To fit a camera, proceed as follows:

1. Switch off the power (20) to the head.
2. Position the platform (1) horizontal and engage the centre lock (10).
3. Loosen the three screws (9) securing the platform (1) to the tilt drive, and lower the platform (1) to its lowest position. Re-secure the three fixing screws (9). Setting the platform in this way will aid subsequent balancing of the camera payload (see '**Balancing the head**' on page 19).
4. Attach the camera assembly via its mounting plate to the platform (1), securing with the supplied fixing bolts from the underside of the platform through the mounting slots (2).
5. Install the remainder of the payload (lens, zoom and focus controls, viewfinder, prompter etc).

Note: Depending on the camera configuration, it may be necessary to use an intermediate plate to raise the C of G sufficiently to align with the tilt axis (see '**Balancing the head**' on page 19).

Balancing the head

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

Fore and aft balance

When positioning the payload it is important to be aware of the potential danger of an unbalanced payload falling away suddenly.

Balance the payload fore and aft as follows:



WARNING! Robotic equipment may move without warning. Switch off the power (20) to the head before making any adjustments to the head.

1. Ensure power to the head is switched off (20), the centre lock (10) is engaged (see 'Locking the platform' on page 21) and that the camera and all accessories are fitted.

Note: It is important that the pan bar(s) (8) and all camera accessories (lens, zoom and focus controls, viewfinder, prompter etc.) are fitted in their operational position before balancing the head. Any equipment fitted or adjusted later will unbalance the head.

2. Ensure the tilt mode knob (11) is rotated fully anti-clockwise, indicating automatic operation (please refer to 'Selecting manual or automatic mode' on page 22).

Note: The FHR-100 head is permanently in 'automatic' operation mode.



WARNING! Risk of finger trap in moving parts. Be prepared to prevent the head falling away suddenly.

3. Hold and steady the platform (1), and disengage the centre lock (10) (see 'Locking the platform' on page 21). Carefully release the platform (1) and observe how it moves and comes to rest.
 4. If the platform (1) tilts forward (points downward) then the camera must be moved toward the rear of the head.
 5. If the platform (1) tilts backward (points upward) then the camera must be moved toward the front of the head.
 6. Reposition the camera as required on the platform and secure in position (see 'Fitting a camera' on page 18). The horizontal balance is correct when the platform (1) comes to rest in a horizontal position.
 7. If there is insufficient movement within the platform slots (2) to achieve horizontal balance, reposition the mounting plate (supplied with the camera) on the camera as required, and re-fit to the platform (1).
-

-
8. If a prompter is attached to the mounting holes (3), it may be necessary to attach counter balance weights to the either the panbar handles (8), if present, or the prompter mounting plate supplied with the prompter.

C of G height adjustment

When fore and aft balance has been achieved, align the payload C of G (centre of gravity) vertically to the tilt axis as follows:



WARNING! 1. Risk of finger trap in moving parts. The total camera payload can reach 55 kg (125 lb). Take the necessary precautions to safely handle this weight before loosening the platform fixing screws (9).

2. Do NOT remove the platform fixing screws (9) while the platform is loaded.

1. Ensure power to the head is switched off (20) and engage the centre lock (10).
2. Loosen the three screws (9) securing the platform (1) to the tilt drive, and raise the platform (1) to vertically align the camera assembly C of G with the tilt axis.

Note: If required, use an intermediate plate to raise the C of G sufficiently to align with the tilt axis.

3. Tighten the three screws (9) to re-secure the platform.
4. Ensure that the tilt mode knob (11) is fully rotated anti-clockwise, selecting automatic operation.

Note: The FHR-100 head is permanently in 'automatic' operation mode.

5. Disengage the centre lock (10).
6. Tilt the platform (1) forward and backward, checking that the head remains at any angle of tilt unassisted.
7. If the platform (1) angle tends to fall toward horizontal when unsupported, then raise the platform. If the platform (1) angle tends to rise toward vertical when unsupported, then lower the platform.
8. Re-position and re-secure the platform (1) vertically as required.

Note: Ensure all necessary cables are connected to the camera and lens, and dress them to impose minimum drag and full movement about the tilt axis. The weight of the cables should also be balanced about the tilt axis.

9. After adjusting the C of G height, it may be necessary to re-check that the fore and aft balance remains satisfactory. Re-adjust the position of the camera horizontally on the platform (1) as required (see 'Fore and aft balance' on page 19).
10. After balancing, exercise the head through both axes to confirm that it operates smoothly.

Note: Re-positioning the pan bar handles (where fitted) will upset the balance of the head. Care should be taken when moving any item fixed to the camera or platform (1) to ensure that the head remains balanced.

Locking the platform



WARNING! Robotic equipment may move without warning. Ensure power to the head is switched off (20) before making any adjustments to the head.

The centre lock mechanism is operated by a button (10) on the top of the head. To engage the lock, ensure power to the head is switched off (20), hold the platform (1) in the horizontal position and gently rock the platform whilst pulling the button (10) upward until it latches.

To release the centre lock, gently rock the platform and push down on the centre lock button (10).

CAUTION! Disengage the centre lock (10) before attempting to drive the tilt axis remotely, to avoid damaging the head.

Pan and tilt drag

Note: LF drag is not present on the FHR-100 head.



WARNING! Robotic equipment may move without warning. Take care to avoid trapping fingers when making adjustments to the head.

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

The drag adjustment knobs are mounted directly on each axis. The pan drag adjustment knob (6) is located beneath the platform (1) toward the lower right hand side of the main body, with the tilt drag adjustment knob (22) positioned to the upper left of the head.

To increase drag, turn the knob clockwise. To decrease drag, turn the knob counter-clockwise. The whip-pan facility is unaffected by the pan drag setting.

Selecting manual or automatic mode

Note: Manual capability is not present on the FHR-100 head.



WARNING! Robotic equipment may move without warning. Take care to avoid trapping fingers when making adjustments to the head.

Manual mode disengages the robotic drives and engages drag modules, allowing the operator to smoothly control the camera using the fitted pan bars. Pan and tilt axes can be independently set to manual mode by turning the appropriate rotary knob (11),(13) fully clockwise and then rotating the axis until the drag module engages. The pan mode knob (13) is located toward the bottom-centre at the rear of the FH-100 head, and the tilt mode knob (11) is toward the upper-left at the rear of the FH-100 head.

Automatic mode can only be selected remotely via the control panel, and the rotary knobs (11),(13) automatically rotate counter-clockwise to indicate the operating mode of each axis. Please refer to the VRC System Operators Guide for detail on activating robotic control.

External connections

All of the Fusion FH-100/FHR-100 head's external ports are located at the rear of the main body.

Note: The exact location of connection ports differ on the FHR-100 head, refer to Fig 3 on page 15 for clarification.

Lens drive

Full servo Canon or Fujinon broadcast lenses can be connected directly to the Fusion FH-100/FHR-100 head. The RS232 digital zoom / focus lens cable connects to the focus / digital port (15).

Analogue lenses require both the zoom and the focus cables be connected. The analogue zoom cable plugs into the zoom port (16) and the analogue focus cable plugs into the focus / digital port (15).

Note: A digital lens may have analogue zoom and focus hand-controls connected simultaneously with a RS232 digital zoom / focus cable. However, the analogue hand-controls will not function until the digital cable connection is removed either at the head or the lens.

A separate Hand Control Interface unit is available to automate switching camera lens control (Canon or Fujinon) between robotic lens control and manual hand controls—depending on the on the operating mode of the robotic head. Please contact Camera Dynamics Limited for more information.

Ethernet and power

The ethernet cable plugs into the ethernet port (21) and the power cable plugs into the power socket (18) at the rear of the head.

If the Fusion FH-100/FHR-100 head is mounted on a Fusion pedestal or height drive, both the ethernet and power connections can be supplied to the head via short cables directly from the Fusion pedestal or height drive. Please refer to the relevant Operators Guide for further detail.

USB head configuration port

The USB port (17) allows external connection to head configuration software tools. For more information refer to the Fusion FH-100/FHR-100 Pan and Tilt Head Maintenance Manual (Publication Part No. V3979-4990).

Setting pan and tilt software limits

Once the head is installed, it is necessary to establish the limits of movement for both pan and tilt axes to prevent accidental collision with permanent obstacles, or to keep undesirable areas of the studio out of shot. These limits are configured as follows:

1. Install the head set-up software included with the system (see 'Parts List' on page 27) on a suitable laptop PC.

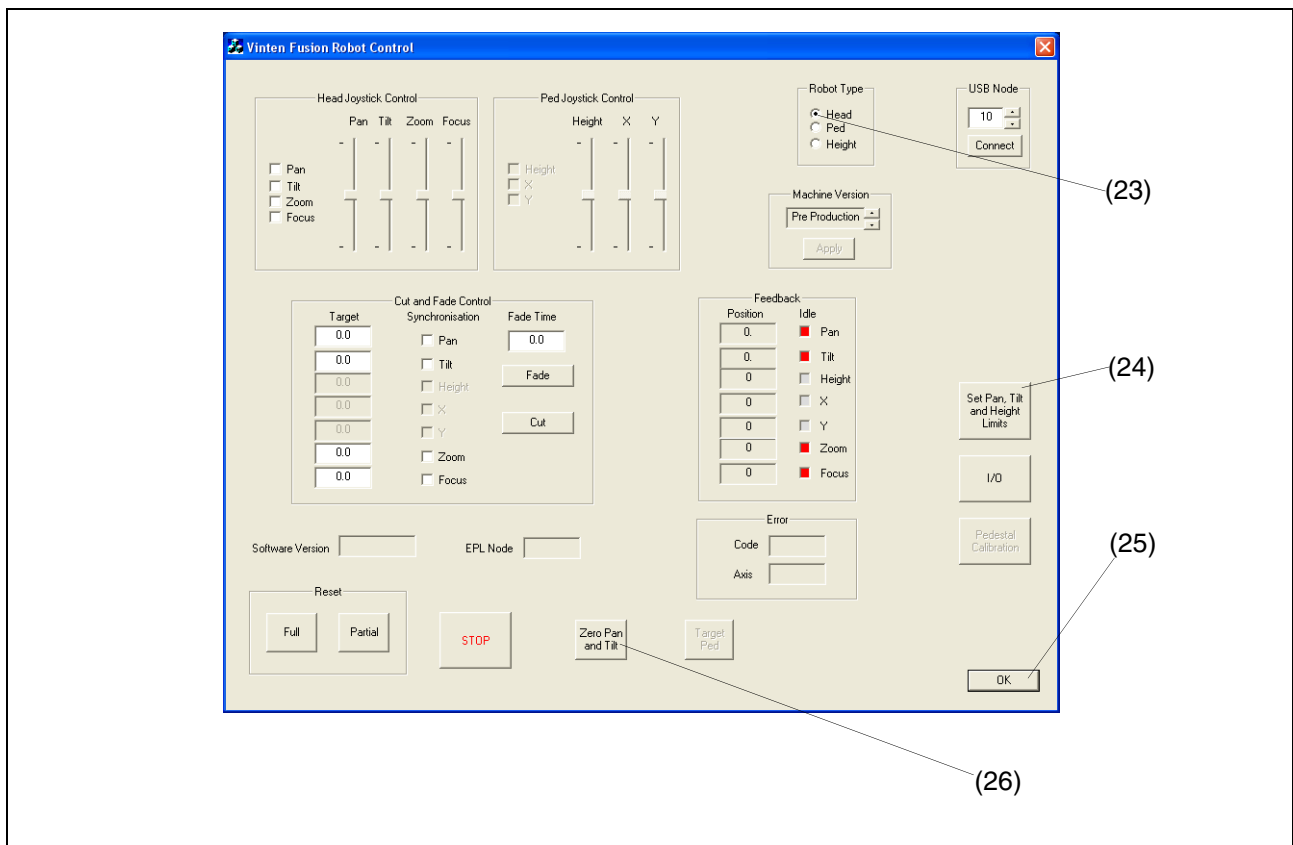


Fig 4 Vincon, main screen

2. Ensure the Fusion head has power connected (18), is switched on (20) and the ethernet cable is disconnected (21).
3. Connect the laptop PC (running the set-up software) to the USB head configuration port (17) using the USB lead (see 'Parts List' on page 27).

-
4. Ensure that the Fusion FH-100 pan and tilt head is in automatic mode (see 'Selecting manual or automatic mode' on page 22), and manually position (back-driving axis servos) the pan and tilt axes of the head in the desired 'zero' position.

Note: The FHR-100 head is permanently in 'automatic' operation mode.

5. Run the head set-up software, included with the system (see 'Parts List' on page 27) on the laptop PC.
6. From the main screen (Fig 4), select the ZERO PAN AND TILT button (26) to set the current head position as the 'zero datum' in the software.
7. Set the 'Robot Type' to HEAD (23), then select the SET PAN, TILT AND HEIGHT LIMITS button (24).

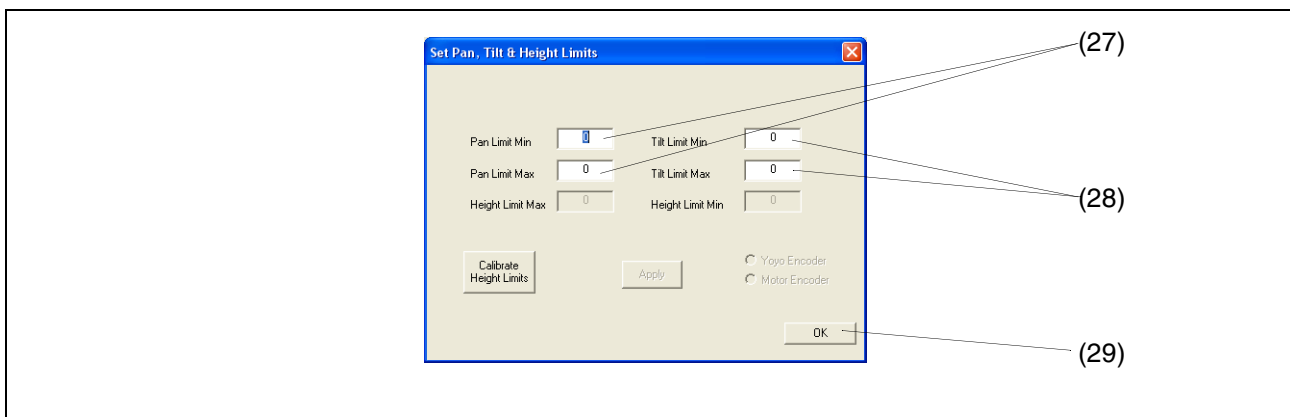


Fig 5 Set pan, tilt & height limits form

8. From the 'Set Pan, Tilt & Height Limits' form (Fig 5), type in the allowed angle of travel (in degrees) either side of the zero datum position for both pan (27) and tilt (28) axes.

Note: The positive direction (max) for the pan axis is clockwise when viewed from above. The positive direction (max) for the tilt axis is clockwise when looking at the platform fixing screws (9).

9. Select OK (29) to close the 'Set Pan, Tilt & Height Limits' form.
10. Select OK (25) to close the main screen (Fig 4).
11. Disconnect the lead from the USB port (17).
12. Carefully drive the head to its limits in both pan and tilt axes, using the joystick control panel, to determine if the limits have been correctly set.



WARNING! Closely observe the camera movement while checking the software axis limits to avoid potential personal injury or damage to the equipment.

13. Re-set the software limits as required.

Setting the camera number

Each head in a system is uniquely identified so that when a camera channel is selected on the control panel, communication is established with the correct channel. This identification is configured at the factory, but may be re-assigned later if required. Please refer to the Fusion FH-100/FHR-100 Pan and Tilt Head Maintenance Manual (Publication Part No. V3979-4990) for further detail.

Switching on

When the complete system is ready, ensure that all external cable connections are complete, observe the pan and tilt mode knob settings (11), (13), ensure the centre lock (10) is disengaged and turn on the power switch (20). The head should not move, but zoom and focus will take up demanded positions on analogue lenses.



WARNING! 1. Only trained operators should use the head.

2. Display prominent warning signs in studios alerting personnel that robotic equipment is present and may move without warning.

3. Ensure personnel remain a minimum of 1-meter (40 inches) clear of robotic equipment during use.

3. Operators must familiarise themselves with the resulting working envelope of the robotic head including all ancillary equipment (lens, zoom and focus controls, viewfinder, prompter etc.), to prevent inadvertent collisions.

Servicing

General

Fusion FH-100 and FHR-100 pan and tilt heads are robustly made to high engineering standards and little attention is required to maintain serviceability save regular cleaning.

Refer to the appropriate section in the Maintenance Manual if any defect is apparent. Adjustments and repairs should be carried out only by a competent person.

Routine checks

During use, check the following:

Check the balance of the head. Re-balance as necessary.

Check the effectiveness of the pan and tilt drag controls (FH-100 head only). Reset as necessary.

Check the data communication with the control panel. Re-fit cables if necessary.

Check lens zoom and focus communication with the head. Re-fit cables if necessary.

No further routine maintenance is required.

Cleaning

During normal use the only cleaning required should be a regular wipe over with a lint-free cloth. Dirt accumulated during storage or periods of disuse may be removed with a semi-stiff brush. Particular attention should be paid to the four-hole mounting (14) and camera mounting faces (1), (2), along with all the connection ports (15), (16), (17), (18), (21).

CAUTION! 1. Do NOT use oil or grease on any exposed part of the product. This is unnecessary and traps dirt which acts as an abrasive.

2. DO NOT use solvent- or oil-based cleaners, abrasives or wire brushes to remove accumulations of dirt as these damage the protective surfaces. To clean mechanical surfaces, use only detergent-based cleaners.

3. External electrical connection ports should only be cleaned with a semi-stiff brush or a clean, dry air supply.

Adjustments

Other than periodically checking the head balance and general camera and head fixings, the only other adjustment required may be pan and tilt drag control adjustment.

Drag control knob adjustment

Note: LF drag is not present on the FHR-100 head.

The drag controls may require adjustment after prolonged use. These adjustments should be carried out by competent persons as detailed in the Maintenance Manual. The Fusion FH-100/FHR-100 Pan and Tilt Head Maintenance Manual (Publication Part No. V3979-4990) may be obtained from Vinten Radamec or your local Vinten Radamec distributor or from our website at www.vintenradamec.com.

Parts List

The following list includes the main assemblies and optional accessories. For further information regarding repair or spare parts, please contact Vinten Radamec or your local Vinten Radamec distributor.

For information on-line, visit our website at

www.vintenradamec.com

Main assemblies

Fusion FH-100 pan and tilt head	V3979-0001
Fusion FHR-100 pan and tilt head	Please contact Camera Dynamics Limited for details
Telescopic pan bar and clamp (for FH-100 head only)	3219-91
Fixing bolt	L054-714
Washer - for fixing bolt	L602-122
Spanner - for fixing bolts	J551-001
Floor cable (power/ethernet) options	
10m long	V3980-5009-0010
25m long	V3980-5009-0025
50m long	V3980-5009-0050
75m long	V3980-5009-0075
Lens cable options	
FH Fuji focus 12 pin	V3990-5021
FH Fuji zoom 12 pin	V3990-5022
FH Fuji zoom (NON-POS) 8 pin	V3990-5023
FH Fuji serial digital 10 pin	V3990-5024
FH Canon focus 6 pin	V3990-5025
FH Canon zoom (NON-POS) 8 pin	V3990-5026
FH Canon zoom 12 pin	V3990-5027
FH Canon serial digital 20 pin	V3990-5028
USB system configuration cable	D200-103
System configuration software	V3952-8000

Optional accessories

Fusion FP145 pedestal	V3952-0001
Fusion FHB-175 height drive	V4031-0001
Heavy-duty Quickfix adaptor	3490-3