

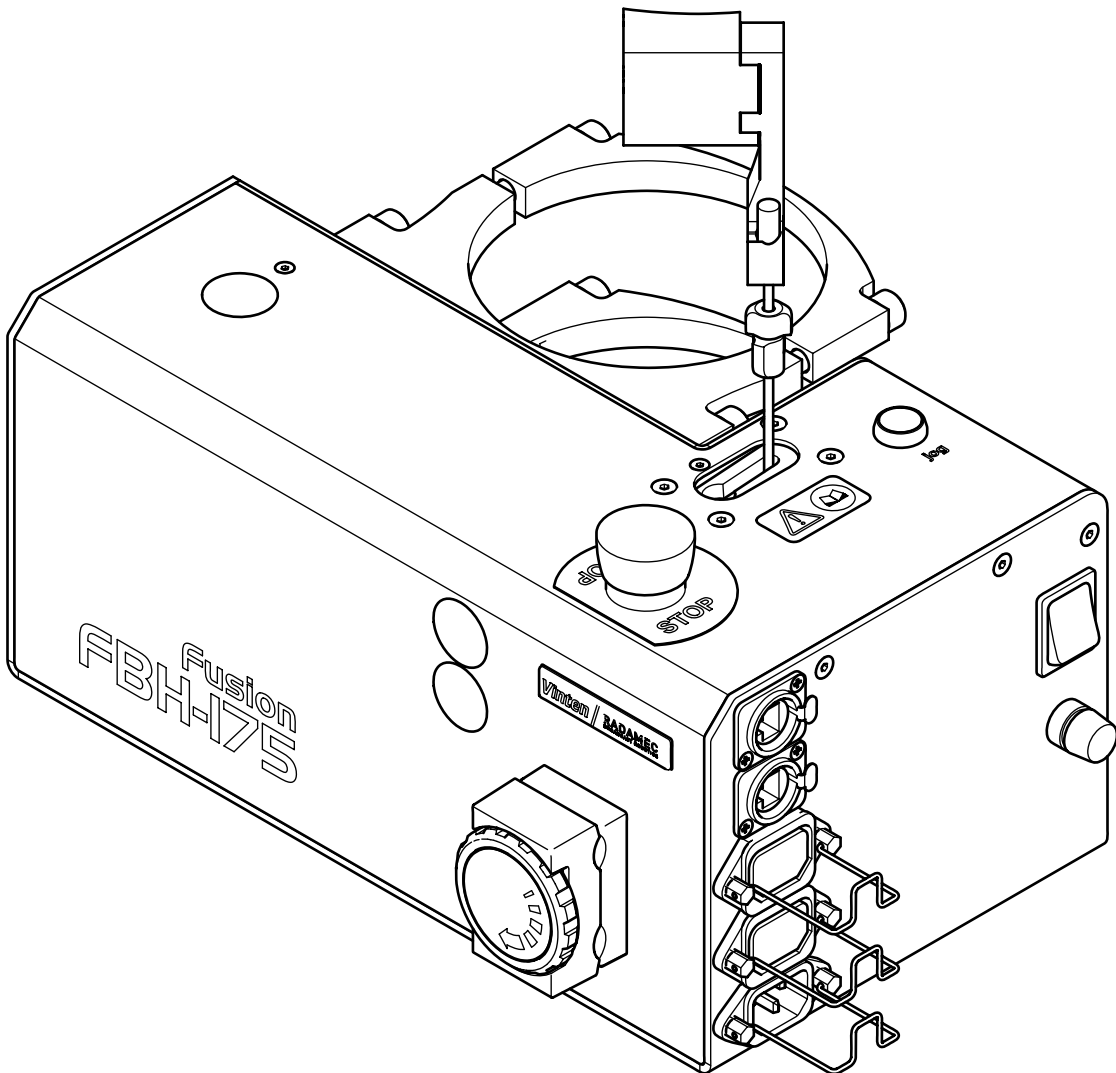
# Fusion FBH-175 Height Drive

Operators Guide  
V4031-4980

Vinten

RADAMEC  
BROADCAST ROBOTICS

Robotic Camera Control Systems





## **Operators Guide**

# **Fusion FBH-175 Height Drive**

**Publication Part No. V4031-4980  
Issue 2 (December 2007)**

**Original Instructions**

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## Preface

### **Thank you for buying the Fusion Bolt on Height Drive 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 Height Drive's many features.

Also included are the health and safety guidelines.

### **Features and benefits of your new Fusion Bolt on Height Drive**

Combination of the established Vinten mechanical engineering with the very latest in machine control technology provides you with the latest technology in robotic height movement.

- **The FBH-175 is rated to carry the full pedestal payload, less a 10–15kg (22–26.45 lb) over-gas pressure, with an 'on-shot' stroke of 800mm (31.5 in.).**
- **Combining the FBH-175 with the Fusion robotic only head provides a simple and flexible solution for a robotic studio system**
- **The simple cabling using standard Ethernet and mains connectors have been used with local availability in mind and ease of integration.**
- **Simple and flexible installation to fit a variety of manual pedestals**

**Once again, thank you for choosing the Fusion Bolt on Height Drive.**

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

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# 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).

### БЪЛГАРСКИ

- (BG)** Оригиналните инструкции, представени в настоящото ръководство на производителя, бяха написани на английски език, а след това - преведени на други езици. Ако не разбирате тези езици, свържете се с Vinten Radamec или с Вашия дистрибутор, за да получите оригиналните инструкции (за страните от Европейския съюз).

### Česky

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### Eesti

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- (ES)** Las instrucciones originales que se indican en esta guía del operador se han redactado en inglés y posteriormente se han traducido a otros idiomas. Si no entiende estas instrucciones, póngase en contacto con Vinten Radamec o con su distribuidor para obtener una traducción de las instrucciones originales (para países de la UE).

### Français

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- (GA)** Scríobhadh na treoracha bunaidh don treoirleabhar oibritheora seo as Béarla, agus aistríodh iad go teangacha eile ina dhiaidh sin. Mura bhfuil tú in ann na treoracha seo a thuiscint, téigh i dteagmháil le Vinten Radamec nó le do dháileoir, chun aistriúchán de na treoracha bunaidh a fháil (Tíortha an AE).

### Italiano

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### Latviešu

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### Lietuvių

- (LT)** Šiame operatoriaus vadove pristatomos pirminės instrukcijos parašytos anglų kalba ir vėliau išverstos į kitas kalbas. Jei šių instrukcijų nesuprantate, susisiekite su „Vinten Radamec“ arba savo platintoju ir gaukite pirminių instrukcijų vertimą (ES šalies kalba).

### Magyar

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### Malti

- (MT)** L-istruzzjonijiet originali ipprezentati f'din il-gwida ta' operaturi kienu miktuba bl-Ingliż, u sussegwentement maqluba fl-lingwi ohra. Jekk ma tistax tifhem dawn l-istruzzjonijiet, ikkuntattja lil Vinten Radamec jew id-distributur tieghek biex tikseb traduzzjoni ta' l-istruzzjonijiet originali (Pajjiżi ta' UE).

### Nederlands

- (NL)** De oorspronkelijke instructies in deze bedieningshandleiding zijn geschreven in het Engels en vervolgens in andere talen vertaald. Als het onmogelijk is deze instructies te begrijpen, neemt u contact op met Vinten Radamec of met uw distributeur om een vertaling te bemachtigen van de oorspronkelijke instructies (EG-landen).

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### Português

- (PT)** As instruções originais apresentadas no guia do operador foram escritas em Inglês e traduzidas para outras idiomas. Se não conseguir compreender estas instruções contacte a Vinten Radamec ou o seu distribuidor para obter a tradução das instruções originais (Países da UE).

### Română

- (RO)** Instrucțiunile originale prezentate în acest ghid pentru operatori au fost scrise în limba engleză, și traduse ulterior în alte limbi. În cazul în care nu înțelegeți aceste instrucțiuni, contactați Vinten Radamec sau distribuitorul dumneavoastră pentru a obține o traducere a instrucțiunilor originale (Țările UE).

### Slovensky

- (SK)** Pôvodné pokyny, uvedené v tomto návode na obsluhu, boli napísané v angličtine a následne preložené do iných jazykov. Ak nerozumiete týmto pokynom, obráťte sa na spoločnosť Vinten Radamec alebo vášho distribútora, aby vám zaslal preklad originálnych pokynov (krajiný EU).

### Slovenščina

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### Svenska

- (SV)** Instruktionerna i denna handbok skrevs ursprungligen på engelska och har sedan översatts till flera språk. Om du inte förstår dessa instruktioner, kontakta Vinten Radamec eller din återförsäljare för en ny översättning av originalinstruktionerna (EU-länder).

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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 61000-6-2:2005

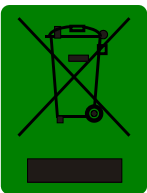
EN 61000-3-2:2000

EN 61000-3-3:1995 (+A1/A2)

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](http://www.vinten.com/recycle) for details.







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# Contents

	Page
<b>Preface</b> .....	<b>3</b>
<b>Safety - read this first</b> .....	<b>4</b>
<b>Regulatory information</b> .....	<b>6</b>
<b>Usage</b> .....	<b>10</b>
<b>Technical data</b> .....	<b>11</b>
<b>Further information</b> .....	<b>11</b>
<b>Introduction</b>	
Pedestal height control .....	13
Fusion head provision .....	13
<b>Operation</b>	
Installing the height drive .....	14
Balance the pedestal .....	14
Power connections .....	14
Switching on .....	15
Connect and set the height-extension cable .....	15
Learn height stroke length .....	16
Ethernet connection .....	18
Cable clamp .....	18
Emergency stop .....	18
Setting the height drive number .....	18
System configuration port .....	18
Servo Configuration .....	19
Bottom limit reset .....	19
<b>Servicing</b>	
General .....	20
Cleaning .....	20
Routine checks .....	20
Routine maintenance .....	20
<b>Illustrations</b>	<b>Page</b>
Fig 1 Fusion FBH-175 Height Drive .....	12
Fig 2 System configuration software application, main screen .....	17
Fig 3 Set pan, tilt & height limits form .....	17

## Associated publication

Fusion FBH-175 Height Drive  
Technical Manual  
Publication Part No. V4031-4990

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## Usage

The Fusion FBH-175 height drive is designed for use in television studios to remotely drive specified manual studio pedestals over their full height range with on-shot quality of movement.

Fusion FBH-175 height drives are intended to be used by television camera operators.



**WARNING!** 1. Do NOT attempt to use this product if you do not understand how to operate it. Only trained operators should use the pedestal.

2. Do NOT use this product for any other purpose than that specified in the Usage statement above.

3. Maintenance beyond that detailed in this Operators Guide must be performed only by competent personnel in accordance with the procedures laid down in the Maintenance Manual.

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

5. Only operate the height drive remotely if you are able to see the pedestal, to avoid obstacles and collision hazards.

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## Technical data

Weight	7.9 kg (17.4 lb)
Height	17.0 cm (6.7 in.)
Length	34.2 cm (13.4 in.)
Width	22.0 cm (8.6 in.)
Maximum (unbalanced) drive load	12 kg (26.5 lb)
Minimum (unbalanced) drive load	8 kg (17.6 lb)
Maximum height-extension cable feed length	92 cm (36.2 in.)
(maximum height range will depend on the pedestal to which the unit is fitted)	
Pedestal fixing	Purpose mounting kit (split clamp/cable bracket)
Fastest speed	150 mm per second
Slowest speed	10 mm per second
Power consumption peak	170 W - peak
Maximum current	
Total	8 Amps
Height drive	2 Amps
Head output	3 Amps
Auxiliary output (not switched or e-stopped, refer to <b>Power connections</b> on page 14)	3 Amps
Power input	Autoranging 90-250V AC 50/60Hz
Operational temperature range	0°C to 40°C
Supported protocols	
System communication	Ethernet Power Link
Maintenance and configuration	USB and RS422

## Further information

For further information or advice regarding this height drive, 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 FBH-175 Height Drive Technical Manual and Illustrated Parts List (Publication Part No. V4031-4990). This is obtainable from Vinten Radamec or your local Vinten Radamec distributor. For information on-line, visit our website at

**[www.vintenradamec.com](http://www.vintenradamec.com)**.



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(1)	Upper mounting bracket (part of mounting kit)
(2)	Height-extension cable
(3)	Height-extension cable adjuster
(4)	Jog button
(5)	Power switch
(6)	System fuse
(7)	EPL out (ethernet) port
(8)	EPL in (ethernet) port
(9)	Power connector retaining clip
(10)	Power input connector
(11)	Head power output socket
(12)	Auxiliary power output socket
(13)	Cable clamp
(14)	Drive identification setting switch/cover
(15)	System configuration port (USB)/cover
(16)	Emergency stop button
(17)	Servo configuration port/cover
(18)	Lower mounting bracket (part of mounting kit)

## Introduction

The Fusion FBH-175 height drive (Fig 1) has been designed to intergrate with the Vinten Radamec Control System and Fusion heads, remotely driving manual pedestal height position with on-shot quality. A pedestal mounting kit is supplied to attach the height drive to supported pedestals. For a list of these kits and supported pedestals, please refer to **Parts List** on page 21.

### Pedestal height control

The main height drive unit mounts to the bottom, non-moving, stage of the column. Pedestal height is controlled using a cable attached to the top stage of the overgassed pedestal. The height drive feeds the cable in or out as controlled by the Vinten Radamec Control System.

### Fusion head provision

The FBH-175 height drive supplies the connected Fusion head with power (11) and communication to the VRC Control System (7).

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# Operation

## Installing the height drive

The Fusion FBH-175 height drive can be mounted on any of the supported pedestals using the appropriate mounting kit (1), (18) (please refer to **Parts List** on page 21). Each mounting kit contains instructions for installing the height drive on the relevant pedestal.

## Balance the pedestal

The pedestal must be overgassed to allow the height drive to function. To provide the correct amount of overgassing, proceed as follows:

1. Ensure the pedestal has all relevant equipment attached (pan and tilt head, camera, pan bars and any ancillary devices and cables).
2. Add another 10 kg (22 lb) of trim weights and balance the pedestal according the pedestal's operating instructions.
3. Extend the pedestal column to maximum height and remove the extra 10 kg (22 lb) of trim weights.

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**CAUTION!** Over pressurize the pedestal to balance an extra 8 to 12 kg (17.6 to 26.4 lb) of payload (10 kg or 22 lb nominal). Exposing the height drive to balance pressures outside of these limits may damage the device.

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**WARNING!** Overgassing the pedestal by 8 to 12 kg (17.6 to 26.4 lb) will reduce the pedestal's maximum payload by the same amount. Do NOT exceed the maximum working pressure of the pedestal.

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## Power connections

External mains power is connected to the power input connector (10). The FBH-175 height drive also has two power output sockets (11) and (12). The head power output socket (11) supplies power to a Fusion head (for more information please refer to the Fusion FH-100/FHR-100 Operators Guide—Publication Part No. V3979-4980). This socket (11) is controlled by the height drive, it is switched (5), fused (6) and isolated on activation of the emergency stop (16). The auxiliary power output socket (12) is protected by a system fuse, but is permanently live and is intended to supply 'non moving' auxiliary devices such as a monitor.

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**Note:** Each power connector (10), (11) and (12) is fitted with a connector retaining clip (9) to prevent power loss if the power cable becomes snagged.

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**WARNING!** 1. Do NOT plug 'moving' devices into the auxiliary port (12). This port can not be switched off (5) at the height drive, and is NOT affected by the emergency stop (16).

2. Devices plugged into this port (12) must have an independent isolator switch.

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## Switching on

Once all power connections have been made the height drive can be switched on using the power switch (5).



**WARNING!** 1. Switching on the height drive (5) will also supply power to the Fusion head connected to the head power output socket (11).

2. The auxiliary power output socket (12) is not affected by the power switch (5) and remains permanently live if power is supplied to the power input socket (10).

3. Keep clear of the column when switching off (5) the height drive. The column may slowly extend to full height when power is turned off. This behaviour is normal.

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## Connect and set the height-extension cable

To connect the height-extension cable (2), proceed as follows:

1. Ensure that the Height Drive is fitted to the pedestal according to the instructions in the relevant Height Drive Mounting Kit (please refer to **Parts List** on page 21).
2. Ensure the Height Drive is turned off (5).
3. Ensure that the pedestal is at full height extension and the USB system configuration cable (15) and ethernet cables (7), (8) are all disconnected.
4. Switch on the Height Drive (5) and wait 20-seconds for the unit to boot up.



**WARNING!** Take care when handling the height-extension cable (2) to avoid trapping/pinching fingers. The height-extension cable (2) is sprung loaded, and will automatically retract into the unit.

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5. Pull firmly on the end of the height-extension cable (2) while pressing the jog button (4) to feed out the cable (2) to full length, toward the fitted upper mounting bracket (1).

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**Note:** The jog button (4) will not function if ethernet cables are connected to the EPL ports (7), (8). Ensure that ethernet cables are disconnected before using the jog button (4).

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6. Depress the pedestal moving column sufficiently to fit the end of the cable (2) into the upper mounting bracket (1) according to the instructions included with the mounting kit. Allow the column to fully extend.
7. Set the cable length adjuster (3) to achieve the dimension specified in the mounting kit instructions.
8. Switch off the Height Drive (5) and wait 4-seconds, to allow all power to leave the system.
9. Set the pedestal limits of travel (refer to **Learn height stroke length** on page 16).

## Disconnecting the height-extension cable

If required, to disconnect the height-extension cable (2), proceed as follows:

1. Ensure the column is at full height extension, and the Height Drive is turned off (5).
-



- 
2. Ensure that the USB system configuration cable (15) and ethernet cables (7), (8) are all disconnected.



**WARNING!** Take care when handling the height-extension cable (2) to avoid trapping/pinching fingers. The height-extension cable (2) is sprung loaded, and will automatically retract into the unit.

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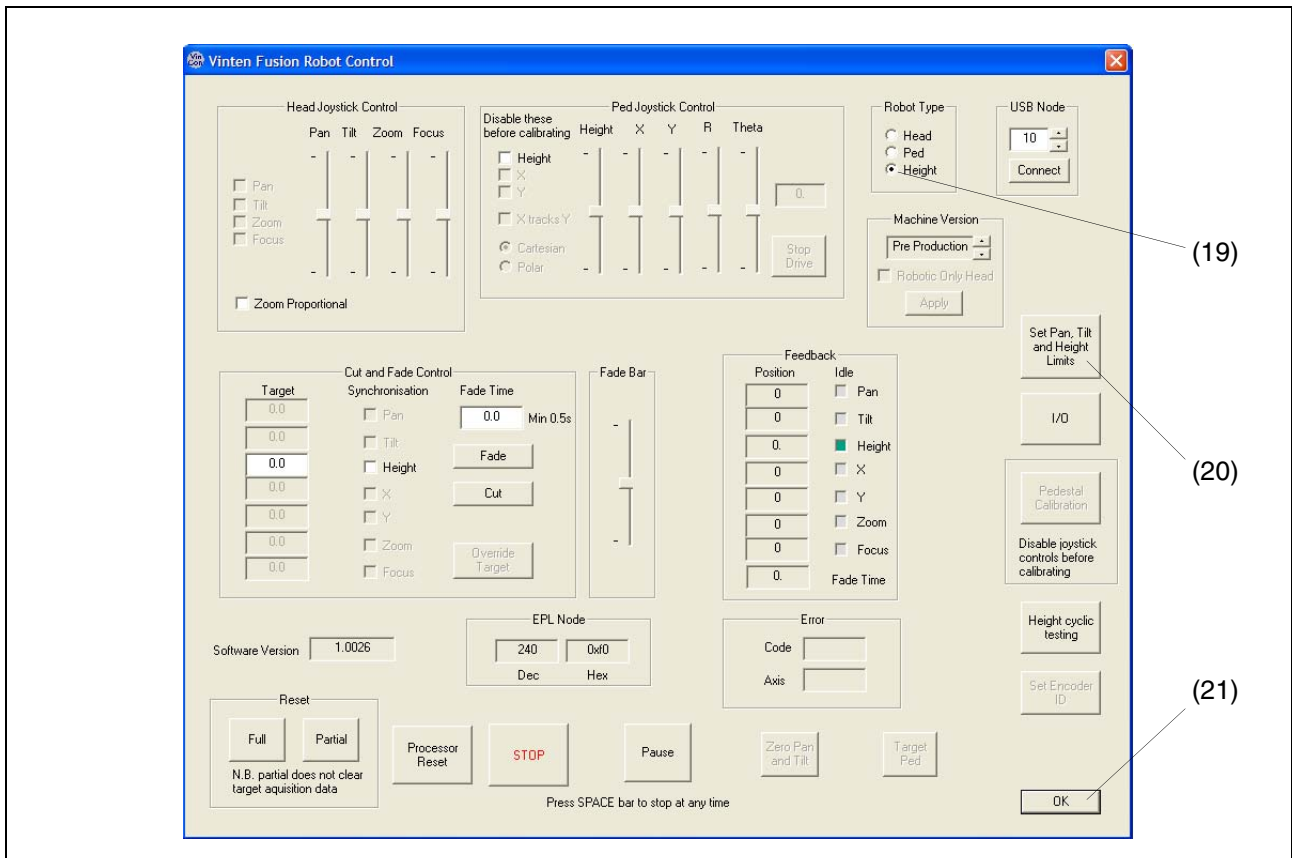
3. Pull firmly on the height-extension cable (2) while depressing the pedestal column sufficiently to remove the end of the cable (2) from the upper mounting bracket (1) according to the instructions included with the mounting kit.
4. Allow the column to fully extend, and carefully allow the height-extension cable to retract into the unit.

## Learn height stroke length

The height drive only needs to learn the limits of travel once during the initial mechanical installation. After this, if the unit remains clamped to the pedestal in the same position, the height drive only needs initializing in the control system software to obtain positional reference.

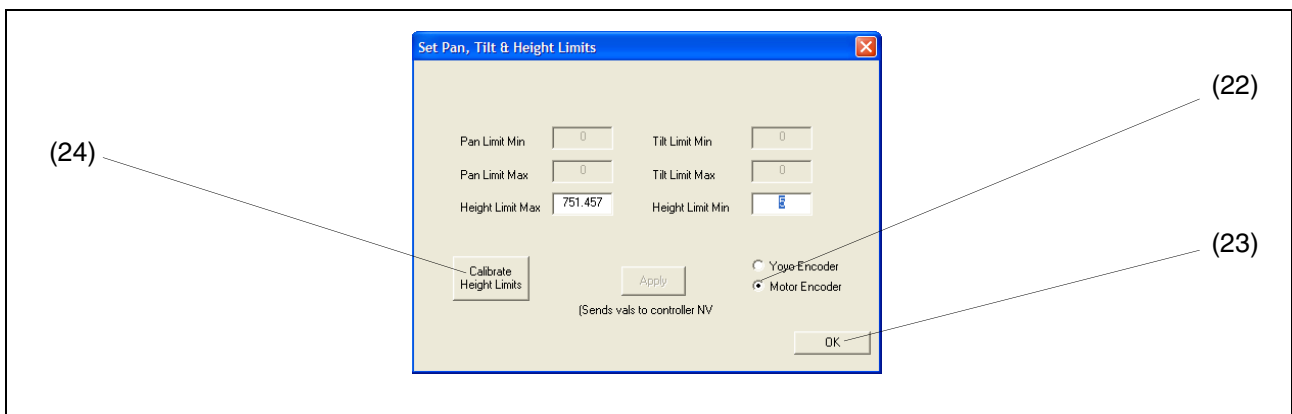
Once the height-extension cable has been fitted, to configure the pedestals limits of movement, proceed as follows:

1. Install the system configuration software (included with the system, see **Parts List** on page 21) on a suitable laptop PC.
2. Remove the configuration port cover (15) and using the USB lead (see **Parts List** on page 21), connect the system configuration port (15) to the laptop PC.
3. Switch on the Height Drive (5) and wait 20-seconds for the unit to boot up.
4. Run the system configuration software application.



**Fig 2 System configuration software application, main screen**

5. From the main screen (Fig 2), set the 'Robot Type' to HEIGHT (19), then select the SET PAN,TILT AND HEIGHT LIMITS button (20).



**Fig 3 Set pan, tilt & height limits form**

6. Ensure MOTOR ENCODER (22) is selected from the 'Set Pan, Tilt & Height Limits' form (Fig 3).

7. Select CALIBRATE HEIGHT LIMITS (24).

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The height drive will then automatically move the column repeatedly over its stroke to establish limits of travel.

8. Once movement has ceased, select OK (23) to close the 'Set Pan, Tilt & Height Limits' form (Fig 3).
9. Select OK (21) to close the main screen (Fig 2).
10. Disconnect the USB lead from the system configuration port and replace the cover (15).

## Ethernet connection

The studio ethernet cable connects to the EPL in port (8) from the VRC system. The head communication cable connects from the Fusion head to the EPL out port (7).

## Cable clamp

All cables can be fed through and secured using the cable clamp (13) to keep the system tidy and prevent connectors/ports being damaged if a cable becomes snagged.

## Emergency stop

If the emergency stop button is depressed (16), power to the Fusion FBH-175 height drive is immediately disconnected. This loss of power will also affect the Fusion head connected to the head power output socket (11).



**WARNING! The emergency stop button (16) has no effect on devices connected to the auxiliary power socket (12). Only connect 'non-moving' devices to this port.**

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To reset the emergency stop, twist and lift the stop button (16). Power will immediately be reinstated, but the height drive will need re-initialising by the Vinten Radamec Control System (refer to the Vinten Radamec Control System Operators Guide for further detail, Publication No. V4009-4980).

## Setting the height drive number

Each Fusion unit 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. The drive identification setting switch is located beneath the a cover (14). Please refer the Fusion FBH-175 Height Drive Maintenance Manual (Publication Part No. V4031-4990) for further detail.

## System configuration port

The USB system configuration port is located beneath a cover (15), and allows external connection to configuration software tools. For more information refer to **Learn height stroke length** on page 16 and the Fusion FBH-175 Height Drive Maintenance Manual (Publication Part No. V4031-4990).

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## Servo Configuration

The servo configuration port (17) is located beneath a protective cover, and allows trained service engineers to configure servo motor settings. For more information refer to the Fusion FBH-175 Height Drive Technical Manual (Publication Part No. V4031-4990).

### Bottom limit reset

If the height-extension cable adjuster (3) hits the bottom limit stop, the unit will need resetting as follows:

1. Switch off the Height Drive (5) and wait 4-seconds, to allow all power to leave the system.
2. Check the height-extension cable adjuster (3) is set to achieve the dimension specified in the mounting kit instructions.
3. Switch on the Height Drive (5) and wait 20-seconds for the unit to boot up.

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# Servicing

## General

The Fusion FBH-175 height drive is robustly made to high engineering standards and little attention is required to maintain serviceability save regular cleaning. Refer to the relevant section of the Technical Manual if any defect is apparent. Adjustments and repairs should be carried out by a competent person. Attention to the following points will ensure a long and useful service life with minimum need for repair.

## Cleaning

During normal studio 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 various connection ports (7), (8), (10), (11) and (12).

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- 
- CAUTION!**
- 1. Do NOT use oil or grease on the height-extension cable (2). 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.**
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## Routine checks

During use, check the following daily:

Check the condition of the height-extension cable (2), especially where it connects to the upper bracket (1). If required, replace the height-extension cable in accordance with the appropriate section in the Maintenance Manual.

Check that the height-extension cable (2) does not rub on the slot as it enters the height drive unit. Reposition the height drive on the pedestal in accordance with the instructions of the relevant Height Drive Mounting Kit (please refer to **Parts List** on page 21).

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

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

Check the minimum height setting/height-extension cable length (3). Re-adjust if necessary.

## Routine maintenance

At three-yearly intervals, the height-extension cable should be replaced.

This procedure should be carried out by a competent person in accordance with the appropriate section in the Maintenance Manual.

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## 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](http://www.vintenradamec.com)**.

### **Main assemblies**

Fusion FBH-175 height drive	V4031-0001
Height drive mounting kit (Osprey Elite Pedestal) including instructions	V4031-0002
Telescopic pan bar and clamp (for FH-100 head only)	3219-91
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
USB system configuration cable	D200-103
System configuration software	V3952-8000

### **Optional accessories**

Fusion FH-100 pan and tilt head	V3979-0001
Fusion FHR-100 pan and tilt head	V4030-0001
Osprey Elite Pedestal	3574-3C
Heavy-duty Quickfix adaptor	3490-3
Fixing bolt	L054-714
Washer - for fixing bolt	L602-122
Spanner - for fixing bolts	J551-001



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Vinten Radamec reserves the right, without notice, to make changes in equipment design or performance as progress in engineering, manufacturing or technology may warrant.