

ProAxis^{plus}



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Manufacturer's Details

Name:
Address:

Nightingale Care Beds Ltd
Unit 20 Abenbury Way
Wrexham Industrial Estate
Wrexham
LL13 9UZ, UK

Telephone: +44 (0) 1978 661699
Facsimile: +44 (0) 1978 661705

E-Mail: info@nightingalebeds.co.uk

Website: www.nightingalebeds.co.uk

General Operation of the ProAxis Plus Bed

Warning

This technical manual covers only the general functions of the ProAxis Plus it is in no way a substitute for the user manual.

HANDSET FUNCTIONS

Variable Height



The variable height is operated by the nurse/patient pendant or optional weight indicator. Press the bed up key and the bed will raise, release at the desired height. Press the bed down key and the bed will lower, release at the desired height.

Head Section



The head section is operated by the nurse/patient pendant or the optional weight indicator. Press the head section up key to raise the head section, release at the desired height.

Press the head section down key to lower the head section, release at the desired height. When raising the head section the foot section will begin to lower, at 30° the foot section will lower at an increased rate. The foot section can then be adjusted as required. When the head section is lowered the foot section will not raise automatically, use the foot up key to raise

Foot Section



The foot section is operated by the nurse/patient pendant or the optional weight indicator. Press the foot down key and the foot section will lower, release at the desired height. Press the foot up key and the foot section will raise, release at the desired height.

Preset Chair



Preset chair is operated by the nurse/patient pendant or optional weight indicator. Pressing the preset chair key will raise the head section to its full height and lower the foot section to its lowest height, there will be a 3 second delay before the tilt function is activated to place the bed in the final chair position. This function can be used from any position, and is halted by releasing the key.

Preset Flat



Preset flat is operated by the nurse/patient pendant or the optional weight indicator. Pressing the preset flat key will remove any frame tilt then lower the head section, raise the foot section and lower the bed to its minimum height.

LOCKOUT FUNCTIONS

The lockout panels are located on the side of the bed, centrally under the sleep surface, there is a lockout on both sides. These panels control lockout, trendelenburg and CPR functions.



Lockout

The lockout function is controlled by the central blue keys. To lockout a function press the relevant key (head, foot, height) the LED will illuminate red to indicate lockout is activated. Press the key again and the LED will extinguish to indicate that function is restored.



Trendelenburg

The trendelenburg feature is controlled by the green keys. To operate trendelenburg (head down) press the head down key until the desired angle of tilt is reached (max 13°) the green LED will illuminate whilst the function key is pressed. To remove the tilt, press the opposite function key until the bed stops moving and the green LED flashes. At this point release the key and the bed will be level. Reverse Trendelenburg is achieved in the same way but using the reverse Trendelenburg key (foot down). Please note the bed can also be leveled by using the Preset Flat key on the nurse/patient pendant or the optional weight indicator.



CPR

The fully automated CPR function is designed to level the sleep surface and lower the bed as quickly as possible without manual effort. The function is activated by pressing the red CPR keys together or one after the other within 3 seconds. Once activated, the bed will level from any position without further user input. The function can be stopped by pressing either of the red CPR keys after 2 seconds of operation. All the Lockout panel LED's will flash during CPR operation and no other function is available whilst these are illuminated.

Please note that CPR will override any function of the bed, therefore even if a lockout is activated the bed will still level.

Advanced Maintenance Procedures

ProAxis has been designed as a modular system; it is therefore relatively simple to replace component parts if faulty or damaged. All parts requiring replacement should be substituted for new items, under no circumstances should parts be repaired or modified.

The bed frame is a stressed item and has been manufactured to a high standard, if at any time the frame is damaged i.e. dented or bent then the frame should not be used until the manufacturer has inspected and passed the item as safe.

The actuators are run directly from a 24v dc system that is kept fully charged from a mains power supply outputting at 36v dc.

The charging system is integral to the control board. If the system is disconnected from the mains supply it will still function directly from the batteries. If the system is not reconnected to the mains supply the system will shut down at 50% charge to prevent damage to the batteries.

When the power is reconnected it will only take approx 20 minutes before the system can be used again.

The actuators are software controlled and incorporate a "soft start" feature to prevent jarring, also the system can detect an overload situation and will not operate if excess weight is placed on the bed. Maximum weights

are listed in the relevant manuals, but at the time of issue they are ProAxis – 39 stone (248kg), ProAxis Plus – 50 stone (318kg).

SHUTDOWN PROCEDURE

The following procedures require that the system is shut down before any work is undertaken. To shut the system down, disconnect the power supply at the jack plug, then press



the bed up and bed down buttons on the nurse/patient hand pendant simultaneously until the green LED's stop flashing. It is now safe to continue.

To restore operation to the bed simply reconnect the power supply jack plug.

**THE FOLLOWING PROCEEDURE
REQUIRES 3 PEOPLE**

SPLITTING THE BED

To split the bed for easier installations and to replace the lift actuators firstly remove the head and foot panels, cot sides, and the sleep surface covers. Use the CPR function to place the bed at 600mm. Disconnect the bed from the power supply and put the system to sleep by pressing and holding the UP and DOWN buttons on the handset simultaneously for 10 seconds until lights are extinguished. Apply the brakes.

Detach the connectors to the lift motors (MR2, MR3) (diagram 1) these are of a plug and socket type with a threaded collar to secure. Loose cables should be secured.



Diagram 1

Remove circlips from outside of bearing pins (see diagram 2) with the plastic spacer and put to one side. With one person at the head and one at the foot taking the weight of the bed, the third person should remove

the pins; this may require the use of a suitable drift. Once the pins have been removed the top frame should be slid towards the foot end, this will release the roller bearings from their retaining channel and the top frame will be free, (diagram 3) retain the nylon runner blocks for re-insertion upon rebuild.

Ensure the top frame is not damaged when it is put down.



Diagram 2



Diagram 3

Safety Note:- The bed should NOT be lifted by the head section, please use the main frame only. This is due to the clutch mechanism in the head motor, which can cause the head section to rise whilst lifting.

Even though the frame is now in two halves care must be taken when carrying, health and safety regulations should be complied with. Rejoining the two halves is a reversal of the splitting procedure, with attention being paid to re-inserting the nylon runner blocks the plastic spacer and the fitting of the circlip.

With the bed back together the power supply should be re-connected to activate the control system. The bed should be operated several times up and down to ensure smooth operation, recheck all fittings.

REMOVING AND REPLACING MOTORS

To remove or replace a lift actuator, firstly follow the procedure to split the bed frame.

Once the frame is split simply remove nut from each of the actuator attachment bolts and whilst taking the weight of the actuator remove the bolts. Ensure the actuator is replaced with the correct type (Linak 340208 200mm stroke) and it is in the correct orientation. (See diagram 4).

Reassembly is a reversal of the above procedure; please ensure the nuts are tightened up to the shoulder on the bolts.



Diagram 4

To remove the head actuator. If possible raise the backrest into the fully up position with the handset. Place the system in sleep mode as described in 1. above. Disconnect the actuator cable (MR1). Remove the nuts from each of the actuator attachment bolts and whilst supporting the head section remove the LOWER bolt. Support the actuator and remove the top bolt, the actuator is now free.

Ensure the actuator is replaced with the correct type (Linak 340208 200mm stroke) and it is in the correct orientation. (See diagram 4).

Reassembly is a reversal of the above procedure; please ensure the bots are securely tightened.



Diagram 4

To remove the foot actuator, use the CPR function to ensure the bed frame is level. Remove the foot panel, cot sides, and then the foot section cover. Place the system into sleep mode as described above. Disconnect the actuator (MR4) cable. Remove the nuts off the actuator attachment bolts, then supporting the foot end remove the bolt nearest the centre of the bed. Gently lower the foot end, and then supporting the actuator remove the other bolt. Ensure the actuator is replaced with the correct type (Linak 340207 150mm stroke) and it is in the correct orientation (diagram 5). Reassembly is a reversal of the above procedure; please ensure nuts are tightened against the shoulder of the bolt.



Diagram 5

REMOVING AND REPLACING THE BATTERIES

It is recommended that the batteries are replaced on a five yearly basis to ensure optimum performance. The efficiency of the batteries can be determined by measuring the conductance, fully charged a reading of at least 180 Siemens should be recorded. If after a 4 hour charge cycle the conductance is less than 135 Siemens then the batteries

should be changed. This is achieved by placing the system in sleep mode as described above, then removing the four screws securing the lid of the control box.

Remove the battery connection cables, noting their position, and then loosen the battery securing plate whilst supporting the same. Remove the batteries and replace with new identical units.

Reconnect wiring in the same order as removal. It is imperative that this is done correctly, as reversing the polarity will result in the main board shorting out and permanent damage occurring (diagram 6).



Diagram 6

Please ensure that any used batteries are disposed of in accordance with local legislation.

Diagrammatic view of circuit board layout with used connections labeled.

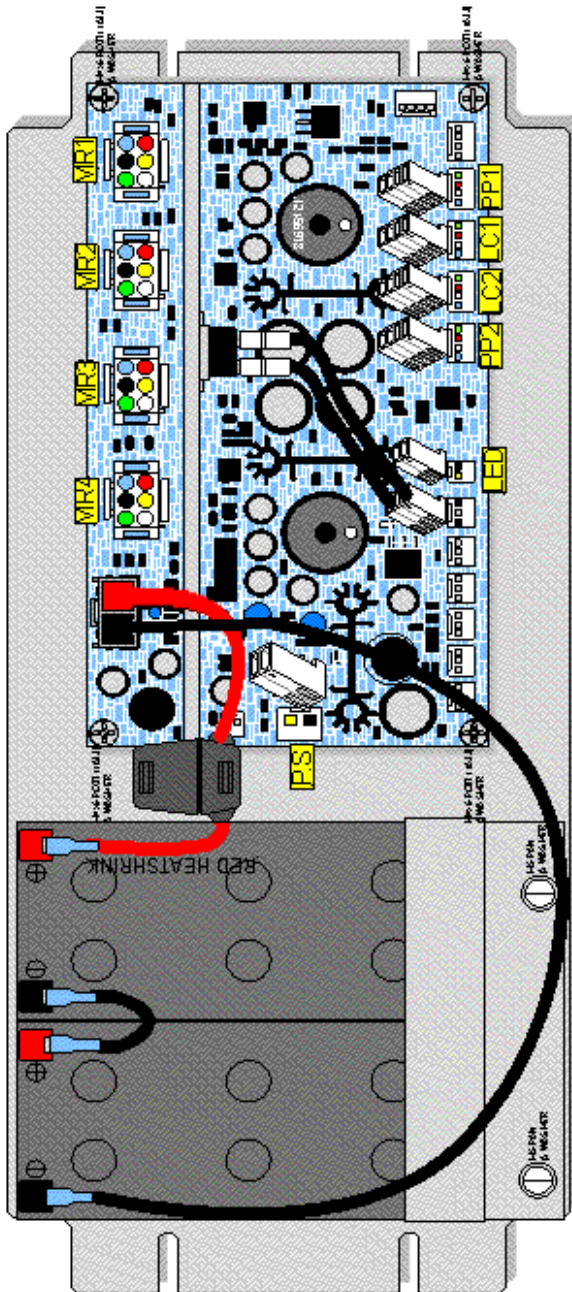


Diagram 7

MAIN BOARD REPLACEMENT

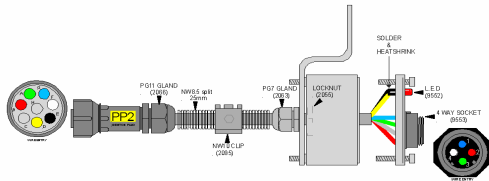
The main control has no user serviceable parts and must be replaced with a new unit if problems occur.

To replace the board shut the system down as explained in the shut down procedure, then remove all the connectors from the board except for the temperature sensor plug. Remove the 4 securing screws and remove the board carefully from the control box.

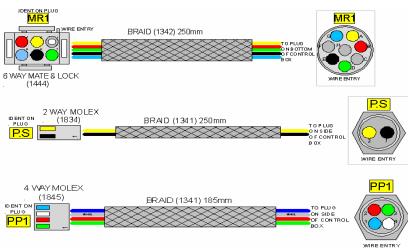
Replacing the board is straightforward, ensure the motor connectors (MR1-4) are on top of the board and in the correct order of assembly, also ensuring the comms and power input connections are at the bottom of the board. Secure the board with the 4 screws and plug in all of the connections, use diagram 7 to ensure the correct connections are made. All plugs used have guides and cannot be connected incorrectly. With the new board connected, reconnect the power supply jack and check all operations of the bed, once satisfied replace the control box cover.

WIRING LOOM

ProAxis Plus utilizes a wiring loom that is sectional and can be replaced as such, this speeds diagnosis and replacement. All connectors have a male and female half secured by a twist collar.

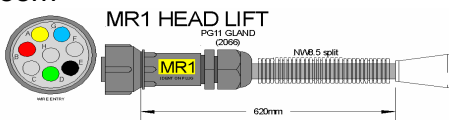


Diagnostic LED and weight indicator interface.



Control Box looms.

Actuator loom



Actuator Connections



Hand Pendant Loom.

If a problem with any of the looms occurs it is most likely due to damage through misuse, as such it is advisable to change any damaged parts for new items.

If however no damage is evident, problems can be isolated to faulty connections. A simple continuity check should be done to isolate the wiring responsible, and then check the corresponding connection at the plug to ascertain where the problem lies. Disconnect the male and female parts of the connection and check that non of the connection pins have been displaced, if this is evident then the pins can be gently pulled outwards with a pair of long nose pliers. If the connection pins are bent or splayed then a replacement loom should be fitted.

Occurrences of loom damage are rare, and will be evident by erratic movement of the bed, I.E. when bed up is pressed on the hand pendant the bed will appear to tilt. This will indicate a fault on the loom to the motor that does not move.

Trouble Shooting Guide

ProAxis Plus utilizes a Diagnostic LED (RED) located at the foot of the bed on the right hand side. This will indicate the majority of problems that may occur to ease rectification. Please use the following guides to diagnose and solve potential problems.

