

## **ORWOODS – Guidance on Bed Rails / Cot-Sides** **for use with adjustable beds in the personal home environment**

### ***Introduction***

There is a common need for the fitting of some sort of side rail to a bed to prevent bed users from injuring themselves by rolling / falling out of bed and on to the floor, potentially also colliding with bedroom furniture such as bedside tables in the process. ORWOODS offer 3-bar and 4-bar bed rail solutions.

Plans to attach bed rails do require a ‘pause for thought’, since there are some issues which need to be considered and taken into account before decisions are made.

### ***Historic problems***

Although there is no doubt about the overwhelming security benefits that the use of a rail or rails can offer in terms of reducing or eliminating the risk of roll-out-of-bed, there have been a number of serious cases over the years where bed users have become entrapped and caught up in fixed bed rails. The problem is not specifically limited to adjustable beds – it is relevant for any type of bed where a rail is fixed in place. The serious entrapment cases have resulted in significant injury to bed users, including at times fatality through asphyxiation, and this history has led to the publication of official ‘best-practice’ guidelines on how such devices should / should not be fitted to beds: these guidelines should not be ignored.

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The Guidelines referred to are entitled “Safe use of bed rails” produced by the MHRA Medicines & Healthcare Regulatory Agency – they are accessible via download elsewhere on this web-page (December 2013 version – you can check online to see if there has been any change to these guidelines by google-searching ‘MHRA safe use bed rails’). Please read through these before deciding to buy bed rails. If you do decide to buy bed rails from us, you will be asked to confirm that you have had access to and have taken notice of both this document and the guidelines before we will process your order.

### ***The essential issues***

The idea behind the guidelines is that a ‘risk assessment’ should be carried out before any rails are fitted to a bed. The risk assessment is to consider the rail and how it fits to the bed in question, and where it should best be fitted, in the light of the specific characteristics both of the existing bed and mattress, and of the person who is expected to be using the bed. The guidelines have been written with healthcare professionals or care workers etc in mind, but it makes sense in the personal home context to follow the guidelines’ thinking and ensure that the issues it raises are addressed, and that the recommendations it makes are followed where relevant.

The guidelines expressly acknowledge ‘adverse incident’ investigations have shown that the physical or clinical condition of bed users affects risk of entrapment, with older people, adults or children with communication problems or confusion, dementia, repetitive or involuntary

movements or impaired or restricted mobility being particularly vulnerable. If any prospective user comes within any of these descriptions then particular care should be taken to ensure that any proposed solution will in fact be appropriate.

***Question 1: – are the rails capable of being fitted to the existing bed?***

Before even considering the suitability of using one or a pair of 3- or 4-bar bed rails in the light of the bed user’s personal characteristics, the first question will be: can the rails be fitted to the bed at all? or put another way, is the bed suitable for having such sides fitted? - is the side strong enough to take a bed rail fixing and then for someone to lean against it?

Bed construction is relevant here.

**ORWOODS beds** (designated medical devices) are all made with two particular features stipulated in part specifically with a view to being suitable for the addition of cot-sides / bed rails and side grab rails / handles / bed levers: firstly, the box frame surround of our beds is always made of high-quality furniture grade high-strength plywood panelling; and secondly, the quality-certified profiling mechanisms we use always have a secondary strong laminated ply surrounding frame and outer-rail built around the slatted moving sections. Because the fitting of cotsides / bed rails to an adjustable bed relies on drillings and bolt-fixings through the bed-sides, the relative strength of the bed sides is an important factor – fixings made through a strong ply wall and a secondary laminated ply outer rail cannot tear-through when the user on top rolls against a bed rail.



**MDF/chipboard base with inserted mechanism** - If the bed in question is not an ORWOODS bed, it is very likely that it will have weaker MDF or chip-board panel sides. Although the base may be an MDF / chipboard box frame, if it has a ‘drop-in’ style mechanism in the same way as the ORWOODS mechanism pictured above, then it is likely the mechanism will also have an external frame including strong laminated ply outer side rails. Drilling and fixing through both the outer MDF/chipboard panel and through any such strong laminated ply outer-rail will provide adequate anchor points for bed rails.

**MDF/chipboard base with built-in mechanism** - Many adjustable beds are made of MDF/chipboard frame surrounds with metal profiling action parts screwed or bolted directly into the bed sides instead of having any ‘drop-in’ type mechanism; in other words they do not have any strong laminated ply outer rails which can be relied on for anchoring a bed rail. In these cases, we recommend that a small backing plate - of eg high-grade plywood, minimum 10mm thick and at least 4” square - be placed behind the upholstered MDF/chipboard bed-side where the drilling / bolt-fixing is to be located. Drilling through and anchoring to such a backing plate in this way will prevent tear-through of MDF/chipboard at the point of the bolt-fixings.



*Drilling and fixing through a backing plate adds strength behind an MDF side*

Note that although the use of a backing plate behind MDF/chipboard to fix through will prevent tear-through of the bed side at the point of fixing, it will not necessarily guarantee against the breaking off of a larger piece of MDF/chipboard, as where a ‘chunk’ of the bed side breaks off because drilling points are too close to the top edge of the MDF/chipboard panel and the top edge of the MDF/chip panel parts company with the rest of the side from the point of drilling upwards. Ensure that drill-fixings are not too close to the top edge of bed sides! Thickness / sturdiness of the side panel will be relevant. These are clearly matters for risk assessment before fitting.

**Other base types** – Some beds do not have solid sides at all, but instead have ‘lookalike’ hollow sides, or even empty-centre square framed sides with paper or card-backed fabric stretched over the front to make the bed appear to be solid-sided. In these cases we do not recommend trying to fix bed rails / cot-sides at all, as such open frames (or the framed edge rails that are present) will never provide adequate anchoring support for a cot-side that is expected to withstand a user rolling against it.

**Corner joints** - in all cases where the use of bed rails / cot-sides is proposed, the strength of the corner joints of the outer bed frame should also be considered: if a bed rail / cot-side is fixed by means of a bolt through the bed side, then any rolling against the bed rail will ultimately be transferred through that bolt fixing and side to cause stress at the bed frame corner joint. Our beds are made with traditional and very strong oak corner block jointing - but not all beds are made this way. Check before fitting!

**General** - although all of these points should be considered, at the end of the day it is really just a question of good common sense: is the bed frame basically ‘strong enough’?

Ultimately, the whole issue of evaluating whether an existing bed base (MDF, chipboard or otherwise) is suitable for the fixing of bed rails of any kind is exclusively a matter for – and can only be carried out by - the person deciding to make the fixing. ORWOODS obviously cannot comment on the suitability of any non-ORWOODS bed base for the fitting of bed rails of any kind – and accept no liability on the topic.

***Question 2 – how exactly should the bed rails / cot-sides be fixed to the bed?***

As already mentioned, when fitting to our own beds, we rely on a drilling and a bolt-fixing which passes through both the bed side outer frame and also the strong laminated outer rail of the profiling mechanism. Taking into account the dimensions of the housing into which the bed rail upright will fit, together with the additional thicknesses of the bed side outer frame and the laminated rail, the assembly fits together with an 8mm bolt which has a threaded length of 85mm. This is just the right length to allow the bolt fixing to be made through the ply bed side and the laminated outer rail of the profiling mechanism, and finally tightened into a flat-head threaded T-nut housing, without in any way interfering with the moving parts of the mechanism.

If you are fixing otherwise than into an ORWOODS bed or a similar equivalent, then obviously either the bolt length required or the exact position of drilling may be affected depending upon what you are drilling and fixing through (the thickness of the MDF/chipboard bed side and any backing plate), having due regard also to whether there are any moving mechanism parts which need to be avoided.

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The components and exact fixing method for the bed rail / cot-side housings (which are attached to the bed frame and through which the uprights of the bed rails / cot-sides pass) are detailed in pictures in ‘ORWOODS Assembly Instructions for Bed Rails / Cot-Sides’.

***Question 3 – where exactly should the bed rails / cot-sides be fitted to the bed?***

This is partly answered in ‘ORWOODS Assembly Instructions for Bed Rails / Cot-Sides’ and by reference to the MHRA Guidelines; it can however only be completely answered by the person fitting - your fixing points should be determined by a risk assessment taking into account all the relevant matters discussed in these documents.

For quick reference (but without prejudice to the full content of the Guidelines in particular) the main items are:

- Uprights at the head end of the bed to be not more than 60mm / 2.25” from any fixed headboard / hard head end (to prevent entrapment between head end of bed and head end of rail)

- Gap between low edge of bottom horizontal rail and compressed mattress not to exceed 120mm / 4.75” (to prevent bed user sliding down between the lowest rail and the bed side)
- Height of top edge of highest horizontal rail above uncompressed mattress surface to be preferably not less than 220mm / 8.5” (ie to be sufficient to eliminate any likelihood that an ‘active’ user could climb out / over the top of highest rail).

## NOTES:

**Note 1:** guidelines are guidelines – they are not prescriptive, and a risk assessment may determine that risk has been adequately addressed notwithstanding the fact that exact fixing method does not meet all aspects of the MHRA Guidelines; guidelines inevitably have to try to foresee all risks, assume that a single theoretical user exhibits all risks possible, and then set a standard which is in excess of all the foreseeable requirements of such a theoretical user (use of rails in more public settings such as residential homes - ie non-personal home environments - will foreseeably lead to a bed rail / cot-side being re-used for many different individuals over time, each with different specific build, mobility and personality characteristics and therefore different risk needs; the guidelines are drafted to try to meet all of them). This is particularly relevant with regard to the likelihood or possibility of bed user climbing out over the top of rails taking into account both user mobility and degree of compression which a mattress exhibits with the relevant user on top. Risk assessment means assessment of risk with regard to the specific individual user who will be using the bed, nothing more and nothing less.

**Note 2:** If you are unsure about entrapment between bars, a possible simple solution might be to use bed rails / cot-sides with bumpers fitted: these are soft cushioned or padded covers which fit over rails, completely covering the gaps between rails – contact us for details.

**Note 3:** Comments on specific references in the December 2013 MHRA Guidelines:

- i) Page 10, 4.1 Purchase *“recognised product standards regarding dimensions, such as BS EN 60601-2-38, BS EN 1970, or BS EN 60601-2-52”*

It is our understanding that the first two of these listed standards are now obsolete, having been replaced by the third standard listed which came ‘into force’ in 2013; so far as we are aware this standard only refers to bed rails / cot-sides in so far as they are integral sides in hospital beds – it is not a standard which specifies details in connection with devices intended to help in the prevention of roll-out from upholstered home-style conventional or adjustable profiling beds in the private personal home environment.

- ii) Page 12 5.1 Adjustable or Profiling Beds *“Most adjustable and profiling beds feature integral bed rails that are incorporated into the bed design or are offered as an optional accessory by the bed manufacturer”*. This is simply inaccurate: the

comment may have been intended to refer specifically to hospital beds, in which case it would be correct; but the vast majority of adjustable and profiling beds used by the public in the private personal home environment have never had any facility for integral rails.

**Note 4:** Please feel free to contact us by e-mail or telephone if you have any queries about bolts or similar / related component specifications.

**Note 5:** No liability is accepted by ORWOODS for any inaccuracy, recommendation or other matter discussed in this document – the issues of risk assessment and any decision to fit bed rails / cot-sides are ultimately issues exclusively for the individual who decides to fit such bed rail(s). If you are not comfortable about reaching a decision to fit, please seek advice from an appropriate healthcare professional who is familiar with the needs of the individual bed user concerned.