

Völker information

New all-round protection



**Völker safety frames and assist rails
both protect and help**

VÖLKER

Better Beds

Human dignity is inviolable.

Nowadays, safety frames (side rails) are an integral part of health-care beds. They are intended to stop restless or confused occupants falling out of bed. However, safety frames are also designed to give care-receivers a sense of security by marking the outer limits of the bed. In the meantime, there is a wide variety of safety frame designs (see p. 6).

Raised end-to-end safety frames can increase the risk of accidents if residents try to clamber over them (see p. 4). Moreover, their use as a restraint causes appreciable psychological stress in the form of anxiety and a feeling of being imprisoned.

From a technical point of view, safety frames can be appropriate if occupants wish for the security they provide, or if they tend to overestimate their ability to walk and (eg) unsuspectingly get out of bed at night. In such cases, raising safety frames is motivated by a sense



Lying behind end-to-end safety frames can also be a source of psychological stress for those affected.



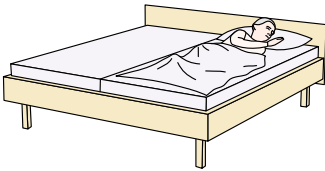
of being responsible for occupants' safety; they have been used as an accessory in this way for ages. Integrated end-to-end safety frames on the other hand were first perfected by Völker in the mid 1980s and are still a feature of the 2080 healthcare bed. As earlier, their use is always justified as a protective measure with the prior written agreement of care-receivers. If this is not the case, however, caregivers are faced with an issue of conscience: raise the safety frames, or not?



Völker 2080 safety frames are located in guiderails, let into the head- and footboard of the bed. They are raised to full height in one movement and are also lockable on one side. To lower, the safety frame is lightly raised while pressing the button on the head- or footboard, as appropriate.

A risk of falling despite the use of side rails.

Moving into a residential home or care facility is always a major turning-point. It also often means exchanging a wide shared double bed for a narrow health-care bed, frequently in the form of a



standard tubular-steel hospital bed with wooden trim and a wobbly scissor-type jack. And this at a time when advancing immobility makes the bed the place in which residents spend increasing amounts of their time. No wonder the very idea repels, both aesthetically and functionally.



While side rails are permissible as a protective measure, their use as a means of physical restraint is attracting growing criticism. There are doubtless situations in which side rails on healthcare beds can be routinely raised with a clear conscience. However, there is no basis in law for this kind of restraint, and nor can it be readily validated by simply revising the care documentation. According to legal opinion, the German civil code requires the occupant's legal representative to assume responsibility for the routine use of side rails, and it must also be sanctioned by the appropriate court.

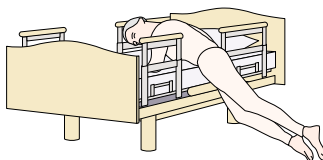
But there is a further basic objection to the use of side rails: the risk of falling. Falls and fall-related injuries are a main cause of litigation involving care homes in the USA. According to Liz Capezuti and Julie Braun: "Between

100 and 200 falls a year are reported by a typical 100-bed home. It is estimated that over 50% of all residents fall at least once a year, over 40% repeatedly. About 11% of falls result in serious injury". Furthermore, "Falls are a common cause of death among older people, about 20% of fall-related deaths (in the USA) occurring among the less than 5% of old people living in care facilities".¹⁾

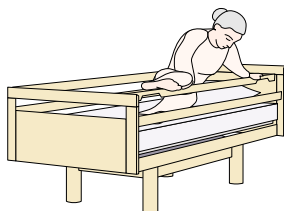
The most frequently voiced justification for the use of physical restraints and side rails is to protect residents of care homes from falls and fall-related injuries. A further reason for such measures is the fear of litigation should a resident indeed fall and suffer injury. A study into staff attitudes reveals that caregivers most frequently justify physical restraint by pointing to the risk of falls, violent behaviour, interference with medical procedures, mental confusion and, finally, impaired mental competence. As in other studies, the fear of fall-related litigation because of a failure to provide due care was found to be the decisive reason for the use of mobility restraints. In the case of older people, mobility restraints hasten physical decline and have a degenerative effect on both the ability to walk and the sense of balance. This in turn increases the risk of falls and injuries yet further. Moreover, lengthy periods of immobility cause many other complications, (eg) arthritic contraction, chronic constipation, incontinence, bedsores, heart problems, bruising, neurovascular disorders, nosocomial infections, the abnormal alteration of the bodily chemistry, circulation and blood volume, orthostatic hypertension, tissue oedema, demineralisation of the bone tissue and the exaggerated growth of the opportunistic organs.

The fact that side rails are an integral part of most beds used in care homes promotes their often inappropriate and routine use. As in the case of other forms of physical restraint, the use of side rails is rooted in the fallacy that they prevent falls and fall-related injuries. A further false idea is the notion that side rails are not only effective, but also humane. Ironically, the most common injury arising from the use of side rails is caused by residents falling

while trying to escape from them. In fact, side rails were called into question as an effective means of preventing falls as early as 1983, when researchers at Harvard University found that their use led to a unexpectedly high number of falls and injuries. Meanwhile, British researchers reported a relatively low fall rate in homes making no use of side rails. A study carried out in New Zealand also found a decrease in falls and injuries as a result of reducing the use of side rails. A further study that investigated 332 mobile residents with dementia in three homes in Philadelphia over a period of nine and a half months, found that the use of

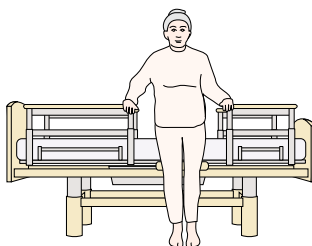


The Völker 3080 side rails on the other hand provide occupants with a wide enough central gap to enable them to slide gently to the floor from a moderate height.



restraining measures led to no reduction in falls or fall-related injuries. These findings confirm that an individual assessment of the risk of falls is more effective than the general use of physical restraints. The studies also provide further convincing evidence that restrained residents continue to fall, hence calling into question the very notion that physical restraint provides effective protection against such incidents.

Braun and Capezuti point to the Völker 3080 healthcare bed as a sound alternative. This bed is fitted with split side rails on both sides that can be raised in two stages and that are automatically repositioned during lying surface adjustment. The exceptional flexibility of the bed means that individually appropriate protective measures can be chosen on the basis of discussions with its occupant.



In addition, the Völker 3080 split side rails promote mobilisation (see p 16).

1) Capezuti/Braun: "The prevention of falls among care-receivers without the use of physical restraints and side rails" (Lecture delivered at the Institute of Care Science in the University of Witten-Herdecke, June 2002)

Variable safety provides individual protection.

Although end-to-end side rails may cause anxiety and a feeling of being imprisoned, split side rails may not be too small or flimsy, either. This is because the need for protection of a person in a relatively narrow healthcare bed with electrically adjustable height and lying surface is beyond question.

For this reason, the use of side rails when carrying out care procedures at the ideal working height and also in the interests of occupants' independent mobilisation is essential.

Völker has solved ethical conflicts about whether to raise the side rails or not that trouble caregivers with the side rails of its 3080 healthbed. These rails are split on both sides, with a central gap of sufficient width to enable users to come and go at will. In addition, as both elements of each side rail can be raised in two stages, little space is needed next to the bed. When horizontal, the robust elements can also be used as a wide shelf or for therapeutic positioning purposes (see p 14/15).

When raised to first stage, the elements create a low but effective barrier at mattress level (see p 14); fully raised to second stage, they provide complete protection.

For safety reasons, all four elements – ie those at both the head and foot end of the bed – are automatically repositioned during lying surface adjustment.



The new side rails.



The newly developed and patented side rails on the Völker 3080 or S 380 health-care bed comply with the entrapment, height and gap dimensions given in applicable national and international standards (see p 11).

When not in use, the side rails are integrated out of sight in the lying surface (see below). They do not interfere with the fitment of accessories or obstruct access to the space below the bed.

They are extremely robust, bisectional and can be raised in two stages. Völker side rails are easy to operate, are fitted with a safety lock and do not autorelease under load.

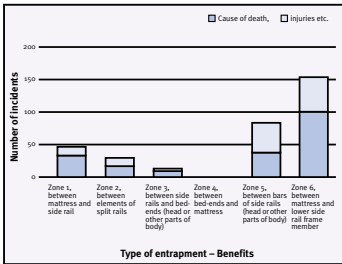
In the event of overloading, the side rails deform flexibly so that a sudden fracturing of the guides or the side rails themselves is out of the question.



Dangers of non-observance of standards.

Over a period of four years, the American Food and Drug Administration (FDA) received 102 reports from hospitals and care homes about the entrapment of the head and other parts of the body in side rails, 68 of them fatal. Entrapment occurred through the side rails, through the gap in bisectional side rails, between the side rail and mattress or between the head- or footboard, the bed rail and the mattress.

All fatalities were caused by the entrapment of the head, throat or thorax, while most injuries were in the form of fractures or abrasions. Victims were mostly people already suffering from dementia, restlessness, muscular atrophy, motor disorders or a combination of these conditions. When categorised, there are 6 danger zones.



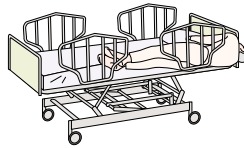
As 80% of all entrapment incidents occur in danger zones 1, 5, and 6, it is essential that home operators check old equipment for entrapment risk. Manufacturers of healthcare and hospital beds must also make the risk of entrapment part of their risk analysis programme. A test instrument was developed under the control of the FDA in April 1999. This instrument is a combination of ball and cylinder that reflects the size and weight of the head, and the size of the throat and thorax, of an older male. In 95% of all males, the width of the head is 170 mm and its weight 5.5 kg, while the average diameter of the throat is 60 mm and depth of thorax at least 600 mm. This instrument makes it possible to define the maximum and minimum sizes of openings, cracks and gaps in healthcare and hospital beds, and to develop appropriate guidelines relating to entrapment risk.



Between side rail and mattress.



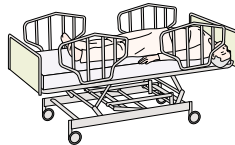
Between elements of split rails.



Between headboard, rail and mattress.



Within rail frame.



Between rail frame and mattress.



Between mattress and lower side rail frame member.

The safety of Völker side rails.

At present there are still different regulations relating to side rails on healthcare beds. Until standardised regulations have been issued, it is up to manufacturers to lay down how their side rails are to be used according to their various risk analysis programmes. In as far as it is known, EN 1970:2000 (adjustable beds for the disabled) is often used as a guide. However, the working group on 'powered hospital beds' 1) does not regard this standard as adequate and recommends the use of EN 60601-2-38/A1 instead. The design of the side rails on the Völker 3080 healthcare bed complies with sizes as defined by the latest ergonomic knowledge, taking into account the findings of the American FDA (Food and Drug Administration, see p 9) and the strict DIN EN 60601-2-38 standard (requirements relating to healthcare and hospital beds) mentioned above.



To avoid risks relating to side rails, children under the age of 12 and people with reduced mental faculties should be protected by appropriate safety measures as laid down in the user's instructions and service manual.

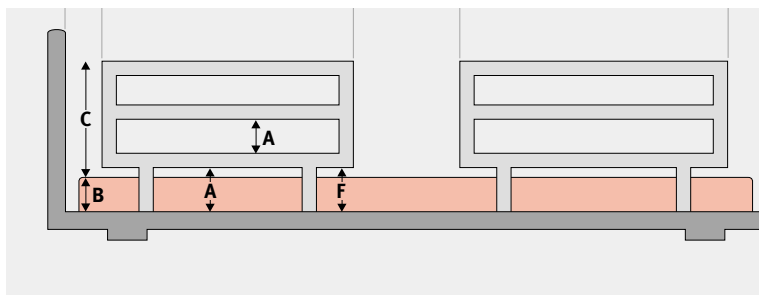
According to the situation, these include (eg)

the use of slide-in plates to close the central gap or of Völker side rail protective covers (see 'Accessories', p 18/19).

1) The working group 'powered hospital beds' of the German commission in the DIN and VDE (DKE) organisations does not think the specific proposals given in EN 1970 are adequate and recommends the use of EN 60601-2-38/A1 (Electric medical devices – Part 2: Special regulation governing the safety of electric hospital beds) instead.

TÜV Product Service as inspection agency and member of the international working party on beds used for medical purposes also recommends EN 60601-2-38/A1. Moreover, in the latest version of its quality standards relating to beds for the disabled or healthcare beds (§ 139 SGB V), the Federal Association of Health Insurers (IKK Bundesverband) has also abandoned EN 1970 in favour of EN 60601-2-38/A1.

Dimensions relating to the Völker 2080 healthcare bed.



Dimensions relating to the Völker 3080 healthcare bed.

Letter	Description	Dimensions according to 2-38 standard	
*A	Smallest distance between elements within side rail frame when raised and locked, or within space between side rail and fixed parts of bed	≤ 120 mm	
*B	Thickness of mattress when correctly used	see manufacturer's data	
*C	Height of upper edge of side rail above mattress when not compressed	≥ 220 mm	
*D	Distance between head-/footboards and side rail	≤ 60 mm or ≥ 235 mm	
*E	Distance between split side rails and flat lying surface	≤ 60 mm or ≥ 235 mm	
*F	Smallest dimension of all accessible apertures between side rail and lying surface	if D or E ≥ 235 mm then F ≤ 60 mm	if D or E ≤ 60 mm then F ≤ 120 mm
*G	Total length of side rail or sum of lengths of split side rails on one side of bed or lying surface	G ≥ 1/2 of length	

Ease of operation.

When not in use, the side rails of the Völker 3080 nursing bed are pushed flush into the lying surface. The side rails are split in two on both sides. All four elements can be raised in two stages and are automatically repositioned during lying surface adjustment to protect occupants.

1) To raise, first the side rail element concerned is pulled horizontally a short way out of the lying surface. As the sideways projection is minimal, little space is needed next to the bed.

2) The element is then swung upwards in one movement to a little above mattress level. At this first stage, the element already serves as both a protection against falling out of bed by marking the limits of the mattress and as a mobilisation aid (see also p 15, top illustration).

3) To raise to second stage, the element is simply telescoped upwards.

4) The element is raised to full height by lifting it to its end-stop.

5) To lower, the locking mechanisms on the ends of the handrail are released.

6) The individual elements can then be returned to their location beneath the lying surface by applying light downward pressure to the lower member of the frame.



Völker side rails facilitate routine daily care while increasing residents' contentment and sense of well-being.

1) First of all, the robust side rails protect the occupant of the bed. In the illustration above, the fully raised head-end rear element protects the occupant's back. The equivalent front element is raised to only half height. In this position it serves mainly as an amenable protective barrier at mattress level and also as an aid when turning over or sitting up.

2) Thanks to their stability when pulled out horizontally the side rail elements can be used as a wide shelf or for therapeutic purposes, for example when using the Bobath method with occupants suffering from hemiplegia. In the middle illustration, the fully raised rear element is used to support the occupant's back and for a further positioning pillow. Hence the variable elements also provide appropriate protection when repositioning occupants of the bed.

3) When not in use, the side rails of the Völker 3080 are pushed out of sight flush into the lying surface. Hence they neither obstruct the fitment of accessories to the slide rails nor hinder access to the space beneath the bed. In accordance with the occupant's individual needs, only the rear side rail element is fully raised, the front element remaining unused: As much safety as necessary, as much freedom as possible.

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Völker safety rails as mobilisation aids.

The extremely robust safety rails on the Völker 3080 also serve as an aid to sitting up and getting into or out of bed. This is because they provide ideal support and hence a sense of psychological and physical security during mobilisation procedures and when carrying out activities like sitting up and getting out of bed. By means of the coordinated use of the handset functions 'Raise back section' and 'Adjust height', the occupant can become independently active and caregivers are relieved of these routine tasks.

- 1) Occupant of Völker 3080 nursing bed lying down/resting.
- 2) Lifting upper body by raising back section of lying surface via handset attached to spiral cable.
- 3) Sitting up with help of stable head-end side rail element.
- 4) Turning over into position to get up.
- 5) Searching for floor contact with feet.
- 6) Making secure floor contact with handset functions 'Height Up' or 'Height Down'.
- 7) The bed is put into an optimal position by using the same functions.
- 8) When standing position is finally achieved getting up is effortless, the head-end element still providing support and a sense of security.



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Accessories for Völker side rails.

As Völker accessories are subject to the strictest quality standards, you can be secure in the knowledge that you are working with the best materials.

1) The slide-in plate of unbreakable macrolon glass provides complete security in the 3080 healthcare bed. It is simply slid into the grooves in the vertical seat bearers.

2) In the case of confused occupants, we recommend using the slide-in glass plate with a protective cover.

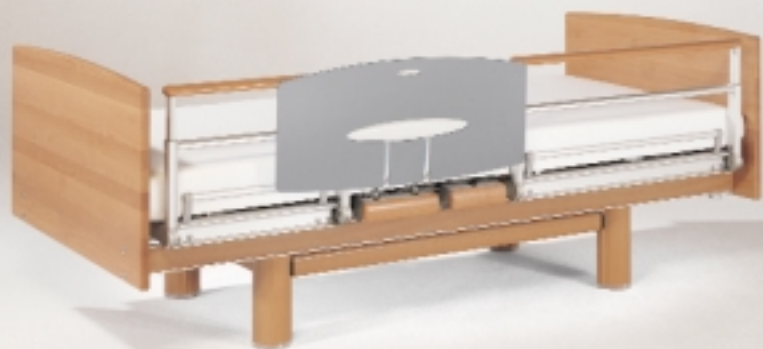
3) For the same reason, we recommend the use of protective covers for both the head- and foot-end side rail elements of the 3080 healthcare bed. Of course, these covers are also available for beds with a special length of 220 cm.

4) We recommend end-to-end protective covers for the 2080 healthcare bed.



A further useful accessory for the 2080 healthcare bed is the sliding tray. This is simply laid on the end-to-end side rails.

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