



# Hoist and sling assessment guidelines

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## Introduction

### Invacare, is a world leading manufacturer of home health care equipment.

Invacare's **Safe Patient Handling** product range has been developed to offer safe, non complex and cost effective products that closely meet the requirements of community and residential healthcare environments.

Invacare's comprehensive product range includes:

- Safe Patient Handling
- Bathing and hygiene
- Community beds and pressure reducing mattresses
- Mobility
- Oxygen therapy.



**This resource** is designed to help you assess a client for the selection of a suitable hoist and sling.

All assessment and equipment selection needs to incorporate balanced decisions. Elements include client need, the needs of the organisation providing the equipment as well as the needs and capability of the person that will operate the equipment.

**'A comprehensive risk assessment must be carried out.**

**It must also be reviewed regularly'.**

### Safe practice and legislation

Requirements of good practice are set out legislatively:

- Management of Health and Safety at Work Regulations 1999
- Manual Handling Operations Regulations 1992, amended 2004
- Lifting Operations and Lifting Equipment Regulations (LOLER) 1998
- Provision and Use of Work Equipment Regulations (PUWER) 1998
- Human Rights Act 1998
- Mental Capacity Act 1998.

'A comprehensive risk assessment must be carried out. It must also be reviewed regularly'.

A suitable and sufficient written risk assessment must have been completed in accordance with the Manual Handling Operations Regulations 1992 and an up to date handling/hoisting plan must be in place.

The assessment should include:

- Name of hoist
- Name of sling
- Size of sling and the loop configuration.

The risk assessment must be reviewed and updated regularly.

This is particularly important if the client's physical and/or cognitive (mental) condition will change.

## Key risk assessment principles

**The person prescribing equipment should consider the following within their written risk assessment.**

The risk assessment process can be used in assessing for equipment and should always be carried out before undertaking any new moving and handling procedure e.g. before first use of equipment.

Task
Identify the task — for example transfer from floor to bed, bed to toilet
Consider manual handling — eliminate heavy pushing, pulling, twisting, over reaching and bending
Can the move be mechanised?
Consider the frequency of the task — every day, number of times per day?
What equipment will be involved in the task, bed, chair, commode, shower chair, wheelchair?
Load (person being lifted)
Assessment of height
Assessment of body shape
Weight and BMI
How much can the person assist — (for example with fitting sling) consider FIM score page 6
Any limb amputation
Sitting balance and trunk (upper body) control
Medical conditions
Compliance and behaviour
Skin condition
Medical attachments, for example catheters or stoma
Environment (where is the equipment to be used)
Check there is sufficient clearance to carry out the operation
Check there is sufficient lighting in the working area
Check there is sufficient space in which the operation will take place

The assessment should consider five elements:

### 1. Task

### 2. Individual

### 3. Load

### 4. Environment

### 5. Equipment.

Equipment being provided and used
Consider type of hoist, mobile versus gantry or ceiling system
Consider sling choice according to level of the persons function and disability
Consider type of fabric according to the person's skin integrity
Safe working load of equipment and sling
Ensure the person and carer know when equipment is due for a service and who to contact should there be an equipment failure
Will it be necessary to use one manufacturer's sling with another manufacturer's hoist?
Consider turning circle within the room that the equipment is being used. Check there is sufficient space to use a mobile hoist or stand assist lifter
Check the flooring is level, smooth and free from trip hazards
Written instructions about how the equipment should be used, including name of hoist/stand aid, size and model of sling and loop configuration
Will the carers have access to a bed that is adjustable in height?

'It is important that the equipment is demonstrated, and that the person carrying out the task is trained and competent to use the equipment safely'.

Additional considerations:

N.B. In the case of plus sized people some properties may need a structural survey before a ceiling track hoist can be installed.

## Functional Independence Measurement (FIM)

**Functional Independence Measurement is a widely used assessment tool to classify a clients function from 'Independence' to 'Total assistance required'.**

This is a useful tool and will allow the assessor to understand the clients ability to assist in the moving and handling procedure.



1. Independent
2. Dependent
3. Complete dependence.

Category	Level
Independent	<b>7. Complete independence</b> Another person is not required for the activity which is performed safely, without modification or outside assistance and within a reasonable time
	<b>6. Modified independence</b> Activity requires one or more of the following: an assistive device, more than reasonable time or safety (risk) considerations
Dependent	<b>5. Supervision or set up</b> Someone required to help by observation or encouragement without contact.
	<b>4. Minimal assistance</b> Someone required to help — by touching or making encouragement without contact.
	<b>3. Moderate assistance</b> Someone required to help by more than touching — client makes 50-75% of the effort.
Complete Dependence	<b>2. Maximum assistance</b> Complete dependence. Client makes less than 50% but at least 35% of effort.
	<b>1. Complete dependence</b> Client makes less than 24% of effort.

## Stand assist & mobile hoists

**Stand Assist lifters are often known as active lifters or hoists because they are used to support a person into a semi-standing position for transfers or for walking rehabilitation.**

Stand assist lifters provide safe, comfortable and mechanical assistance from one seated position to another for people who have limited mobility and/or rehabilitation needs.

Certain stand assist lifters can also be used to support a person to walk, usually for rehabilitation without putting the handler at risk of injury.

Commonly, there is a choice of two types of slings that are compatible with Stand Assist lifters.

N.B. Stand Assist lifters that are designed for walking rehabilitation may have alternative sling types available.



**Stand Assist Sling** — FIM Score 4 and 5

Can be used with people with some weight bearing ability, good trunk control and ability to hold onto lifter.  
Can be used for seated to seated transfers or to assist with walking.



**Transfer Stand Assist Sling** — FIM Score 3

The sling is fitted with additional sections and useful for people with less standing ability, risk of falling, less trunk stability.

By using FIM you will be able to work out if a client requires the use of an active lifter. Choosing the correct equipment is dependent upon a thorough risk assessment of the client's dependency, the environment, the task and the carers ability to understand and use the equipment.

## Provision of slings



When considering a passive lifter, such as a mobile lifter or overhead hoist, the correct selection of sling is paramount in providing a safe, dignified and comfortable transfer.

This section deals with:

### 1. Sling design

### 2. Sling fabric

### 3. Sling size

'Invacare slings are available in a range of standard sizes to accommodate a variety in height, shape and weight of patients.

All these factors must be taken into consideration when selecting the appropriate sling for the patient.'

## 5.1 Choosing the correct sling

Selecting the correct type of sling depends on:

- **Type of transfer** — from which position
  - sitting to lying or vice versa. Sitting to sitting.
  - Transfer from floor
- **Client's medical condition**, functional ability, sitting ability
- **Comfort of the client** — consider chronic pain, medical attachments
- **The hoist and spreader bar** that the sling will be interfaced with.





## 5.2 Sling models

Choice of sling will depend upon the physical characteristics of the client, such as height and weight, whether the client has trunk control, needs head support, leg support or a commode aperture is required.

### 1. Universal Sling (High)

<b>Support type</b>	Supports the whole body and the head
<b>Positioning</b>	Comfortable and slightly reclined sitting position during hoisting
<b>Physical characteristics</b>	Limited control of the head, trunk or hips
<b>Type of transfer</b>	Transfers to and from a semi-supine position Seated to seated transfers
<b>FIM score</b>	1 and 2.



### 2. Universal Standard Sling

<b>Support type</b>	Supports the whole body; including the shoulders
<b>Positioning</b>	Comfortable and upright position
<b>Physical characteristics</b>	Good head control
<b>Type of transfer</b>	Seated to seated transfers A good all-round sling for the elderly
<b>FIM score</b>	1 and 2.



### 3. Universal High (Plus) Sling

<b>Support type</b>	Supports the whole body including the head*
<b>Positioning</b>	Comfortable and slightly reclined sitting position. This sling allows the client to keep their arms outside the sling
<b>Physical characteristics</b>	Limited control of the head, trunk or hips
<b>Type of transfer</b>	Transfers to and from a semi-supine position Seated to seated transfers
<b>FIM score</b>	1 and 2.

\*Stiffened fabric in the back section ensures optimal weight distribution and comfort for the client.



### 4. Universal Low Sling

<b>Support type</b>	Supports the hips and lower back
<b>Positioning</b>	Comfortable and upright position, with good visibility for the client
<b>Physical characteristics</b>	Full head control, some trunk control
<b>Type of transfer</b>	Seated to seated transfers
<b>FIM score</b>	2 and 3.



## 5.2 Sling models (cont...)

### 5. Dress/Toileting Sling\*

<b>Support type</b>	Supports the trunk and thighs, belt offers increased support
<b>Positioning</b>	Upright position, allows dressing and undressing whilst sling is in place
<b>Physical characteristics</b>	Limited mobility. High sling* for reduced head control
<b>Type of transfer</b>	Seated to seated/toileting transfers
<b>FIM score</b>	2 and 3 following careful risk assessment.

\*Dress/toileting high sling with integrated head support



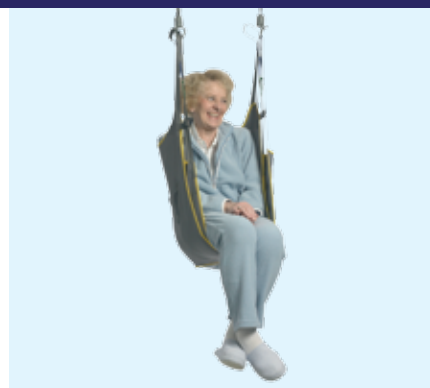
### 6. Comfort Sling (hammock style sling)

<b>Support type</b>	Supports the whole body and the head
<b>Positioning</b>	Upright seated position
<b>Physical characteristics</b>	Physically disabled, chronic pain Can be used for amputees
<b>Type of transfer</b>	Applied whilst lying to transfer to a seated position (toilet aperture option allows toileting with sling in situ)
<b>FIM score</b>	1 and 2. Transfers from floor.



### 7. Amputee Sling

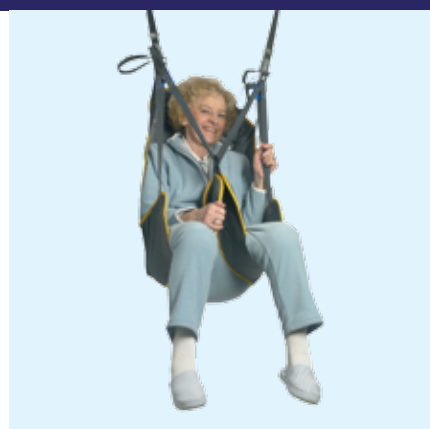
<b>Support type</b>	Supports the trunk and thighs
<b>Positioning</b>	Upright seated position
<b>Physical characteristics</b>	Single or double amputees. Client must have good head control. Not suitable if client is at risk of spasm
<b>Type of transfer</b>	Seated to seated transfers
<b>FIM score</b>	1, 2 and 3 following careful risk assessment.



### 8. Easy Fit Sling

**Often referred to as quick fit or fast fit slings. These slings have specially designed leg support that make the sling very easy to apply.**

<b>Support type</b>	Supports the whole body and the head
<b>Positioning</b>	Good hip position, relatively upright
<b>Physical characteristics</b>	Most challenging physical disabilities. May be suitable for amputees
<b>Type of transfer</b>	Most types of transfers, lying, seated and from floor
<b>FIM score</b>	1 and 2



## 5.3 Sling fabrics

There are a number of different types of fabric available:



### Solid Polyester

A popular and standard material for slings that is easy to apply. Polyester slides smoothly on application and dries quickly after washing.



### Net

Predominantly used for bathing because the material allows water to drain away and dries quickly after use.



### Spacer fabric

A three dimensional mesh, multi stretch fabric that adapts to the clients body shape. Well suited for those with skin integrity issues and can be left underneath a seated client.\*

\*It is important to carry out a thorough risk assessment with reference to skin integrity for those who will be seated on a sling for long periods.

Most sling fabrics can be washed at high temperatures to allow effective infection control, and have high weight carrying capacities. Always check washing instructions and weight limit before use.



### Special fabrics

#### Parachute silk

This type of fabric is often used for those who sit in moulded seating systems as it is lightweight, thin, easy to apply and can be left in situ.

A risk assessment should be completed prior to leaving any sling in place for long periods.



## 5.6 Identification label

Under **LOLER** and **PUWER** it is a legal requirement that each sling has its own identification with essential information such as:

- Model reference number
- Type of sling
- Size
- Testing mark (CE or similar)
- Date of manufacture
- Care instructions
- Safe working load (SWL)
- Bar code (not shown)
- Identification picture
- Each sling will have a unique serial number to enable traceability. This is useful when completing inspection and audit records.

If the label is missing or cannot be read the sling should not be used.

## 5.4 Sling sizing

It is very important to use the correct sized sling and ensure it is properly fitted before attempting to lift. This will ensure the person being lifted feels safe, and has a dignified and comfortable transfer.

Generally speaking the more fabric there is in a sling the greater level of support it offers.

Most manufacturers offer five standard sizes of sling. Colour coding of the binded edge denotes the sling size.

### Invacare colour coding for size:

- **Extra small (XS) Red**
- **Small (S) Orange**
- **Medium (M) Yellow**
- **Large (L) Blue**
- **Extra Large (XL) Black.**

N.B.

It is important to note that manufacturers do not all use the same colour coding.

On a clients care plan, the colour code, name of sling as well as the size of the sling should be documented.

## 5.5 Weight capacity

The safe working load is clearly stated on the sling label.

This can vary dependent on sling type, and manufacturer. Always check the label before use.

## 5.7 Special slings

Where a standard style and type sling does not address a particular patient need it is possible to select a 'Special Sling' which is individually made to order. 'Special Slings' are special by virtue of:

- Alternative sizing specifics e.g. longer in the body, smaller commode aperture
- Fabric used e.g. lining specific parts of the sling with fleece type fabric
- Loop modification e.g. alternative size, alternative position
- Additional safety features e.g. waist strap.

## 5.8 Stretcher slings

Stretcher slings are used when clients need to be kept in a supine (lying) position. The slings can be used with clients who have minimal compliance. Clients can be transferred from the floor, bed or on and off a shower/A&E/X-ray trolley. Fabric stretcher slings are used with a specialist spreader bar attachment. (Invacare's Robin stretcher consists of an aluminium frame with sling fabric and attaches directly to the lifting straps, (see below).



Invacare's Robin stretcher

## Sling and hoist compatibility

**The sling represents the interface between the client and hoist and should be selected with care.**

There are considerations around the use of one manufacturer's slings with another's hoist. If in doubt, contact the manufacturer.

It is considered essential to perform a risk assessment of each moving and handling task, to document in detail and to define the risk. It is important to examine:

Consider whether the attachment method on both designs is as the manufacturer intended, are the attachment points of a suitable size, position and shape. Could the sling become inadvertently detached, could the selected method cause undue wear or damage to either hoist attachment or sling. For example a sling with a keyhole clip attachment should only be used with compatible clip spreader bar attachments.

### Risk associated with spreader bar shape and size

#### Clearance risk

Could the client hit any part of their body on the equipment. Will the selected combination adequately lower/raise the client relative to other equipment being used. For example an inappropriate sling choice may result in the spreader bar being too close to the client's face.



### Stability

Could the configuration impact on the centre of gravity and affect the hoist's stability.

Many manufacturers use a 'Looped Sling and Coat Hanger Spreader Bar System'. It is therefore possible to one another manufacturer's looped sling on another manufacturers spreader bar.

Providing a risk assessment is carried out on the sling and hoist interface, Invacare approve the use of its looped slings on suitable patient transfer systems.

It is not possible to use Invacare slings on keyhole/clip type spreader bar attachments or on tilting frames.



## Hoist selection

**Hoist selection is dependent upon the person's anthropometrics, body shape, size and weight and the environment in which the equipment is being used. The right selection of equipment can reduce the number of carers required for the task and importantly reduce physical loading on the carer/s.**

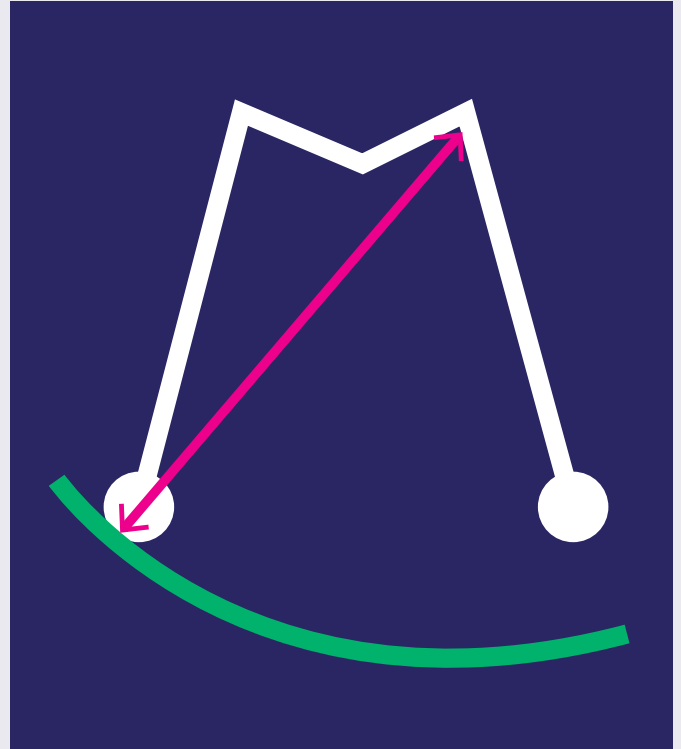
Generally it is good practice for 1-2 people to operate a mobile hoist and 1 or more people a ceiling track hoist. This is dependant upon the client's shape, size and dependency.

A mobile hoist requires a minimum turning space of 1.20m<sup>2</sup>.

If the space is less than this a ceiling track hoist is recommended.

For bariatric clients (e.g. exceeds the weight and width of standard equipment) a ceiling track hoist is recommended.

If one carer is required to use a passive hoist a ceiling track installation is recommended.



### 7.1 Spreader bars

Generally speaking the greater the number of points of suspension for the loops of the sling onto the spreader bar, the easier it will be to position the client comfortably and to take account of any pain, spasm or other involuntary movement. Suspension points that are closer in width and/or depth afford improved support, decreased pressure around the periphery of any commode aperture, reduced risk of client 'jack knifing' and reduced tendency for the client to be in a reclined position when being transferred.

Wider suspension points offer reduced risk of discomfort, respiratory problems on hoisting, pressure on legs and shoulders, and reduced tendency to pitch forward whilst in the sling. Wider suspension points are useful for the bariatric client.

It will be necessary to trial several different loop positions onto the spreader bar before the most comfortable and posturally appropriate position is identified. Once identified, it is advisable to mark the loops in some way to ensure that all carers use them correctly. It should be noted that a patient with a changing condition may well need this modifying, dependent on how they are presenting at any given time.

For example, if there is an increase in spasm it may be necessary to shorten the leg support a little, relative to the shoulder support, in order to lift the patient in a position that reduces hip flexion, thus reducing the effect of that spasm.

A risk assessment with written instructions should be left with client and carer denoting which loops to use.

## Two Point Spreader Bars

### Advantages

Quick and easy to apply the sling straps as they are close together

Can be used for a seated to seated transfer as facilitates a more aggressive sitting position

Assists management of spasm or high muscle tone because of closed postural position

Reduces risk of hoist related falls because of the closed postural position

Useful for smaller clients.

### Disadvantages

Reduced comfort for some clients, due to closed position

Not useful with bariatric clients

Closed postural positioning will reduce access when used with slings with apertures

Useful for smaller clients.



## Four Point Spreader Bars

### Advantages

Easy to position taller/bigger clients

Easier to attach sling loops when carrying out a floor lift

Easier to position to middle of larger bed.

### Disadvantages

Can exacerbate spasm because of more 'open' postural position

Difficult to position in a chair in a 90° angle.



## Tilting Frame

### Advantages

Increased comfort because of more natural and supportive sitting position.

Useful for bariatric clients.

Useful for clients who have complex disabilities, because the spreader bar can be moved to facilitate accurate positioning.

### Disadvantages

Can only be used with specific, but very supportive, slings designed to fit shape of spreader bar

Sling needs to be more rigid to effect the supported seated silhouette creating application difficulties

Carer needs to be physically strong enough to manoeuvre patient in tilt frame.

## 7.2 Hoisting systems

Hoists can be categorised in to the following:



### Mobile hoists:

- Electrically or manually operated legs
- Manual or powered base
- Fixed or detachable battery.



### Overhead tracking hoists:

- Single track system — straight or curved
- Room to room system
- Manual or powered traverse
- X-Y tracking system
- Free standing gantry system.

## 7.3 Mobile hoists

It is important to ensure that mobile hoists are used only to assist the safe and effective transfer of a client. It is not advisable to transport patients over a longer distance. The recommended minimum required turning space by a bed for a mobile hoist is 3.6m (Hignett et al 2006).

## 7.4 Mobile hoist versus overhead tracking hoist

In recent years, many care facilities and local authorities providing domicillary care are reviewing care packages. e.g. number of carers required to undertake care of an individual.

Whilst mobile hoists are a flexible and cost effective option, it is recommended that two carers are present during transfer.

A ceiling hoist however can be operated by one carer, providing a full risk assessment is carried out.

### Single carer working

There is a growing body of evidence to show that changing from a mobile hoist to a ceiling hoist installation and subsequently reducing the number of care staff can result in a significant reduction in the cost of care.



## 7.5 Selecting a mobile hoist

### Castors

A castor size of 100mm allows excellent maneuverability, even on carpets.



### Boom

The design of the boom will determine the lift height range and also the clearance for the client from the main body of the hoist whilst transferring. Look for booms that can achieve a floor lift, and clearance whilst transferring from a high surface e.g. a bed with dynamic mattress. Also configurations that allow the client to be turned 360° whilst transferring without coming into contact with the actuator, facilitate more comfortable transfers.



### Electric versus manual legs

Manual leg operation is of course straightforward, cost effective, and is adequate for most situations.

An electrical leg can be considered for:

- Heavier clients
- Heavily carpeted floor
- Carer effort to open/close legs taken into account.



## 7.6 Overhead track hoists



Overhead track hoists are generally provided:

- When space is too limited for a mobile hoist
- Carers find manoeuvring mobile hoists difficult. (Pushing forces upon lumbar spine exceed 20 Newton's (men) and 15 Newton's (female)).
- A reduction in the number of carers is required
- Bariatric clients\*
- Independent wheelchair users who can self-transfer\*\*.

Overhead track hoists are physically easier to use as the carer is not required to move the mobile hoist as well as the weight of the client. The track and trolley interface allows the carer to glide the hoisted client along the track with minimal effort. In some instances, clients can assist in the transfer process. Traverse types include manual (this is sufficient in most situations) and powered. This is more costly and is usually required for heavier clients or in instances where independent transfer is possible.

Hoist tracks can be installed in order to allow a client to be moved from one point to another in any area of a house or institution with dedicated accessories relative to specific environmental needs.



**Single track systems** take a patient to and from fixed points along a single straight, angled or curved track (this can also be mounted on a gantry A-frame system for temporary use).

**X-Y systems** are where one track is positioned between two other parallel tracks thus allowing for infinite pick up / lowering points within the range of both tracks.

Shunting allows the patient to be moved from one track in one area to another track in an adjacent area in a choice of directions. Ceiling track hoists are a permanent fixture which always require a structural survey\* to be completed to ensure that the tracking can be safely and securely fitted.

In instances where a track cannot be installed, as a temporary solution or where there is not the required turning circle for a mobile hoist, a **Gantry System** can be used. Usually located over a bed, a gantry allows a client to be lifted from bed to chair or wheelchair, with minimal effort.



\*A structural assessment is require before installation of any track system. Additional structural strengthening may be required for bariatric overhead hoists.

\*\*Powered traversed is suitable here

## Informed equipment choices

All assessment and equipment selection needs to incorporate balanced decisions.

Elements include client need, the needs of the organisation providing the equipment as well as the needs and capability of the person that will operate the equipment.

It may be necessary to make compromises but these compromises should never threaten the health and safety of the client or the carer.



### For guidance only

This document provides general opinion and advice. However it does not deal with specific individuals or situations. A practitioner should always seek appropriate and specific advice from a suitably qualified professional before attempting to use methods outlined in the above.

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