

# Central Braking Castors

## Congratulations for choosing Australia's famous Fallshaw castors

These instructions are in 4 sections...

### 1/ Configuration

Preferred combinations of castor layout.

### 2/ Requirements (prior to assembly)

Bed to castor interface requirements. These instructions cover most of the different manufacturers beds similar to the model shown below.

If the frame you have is substantially different you may need to adapt these instructions. Please contact our service department for help.

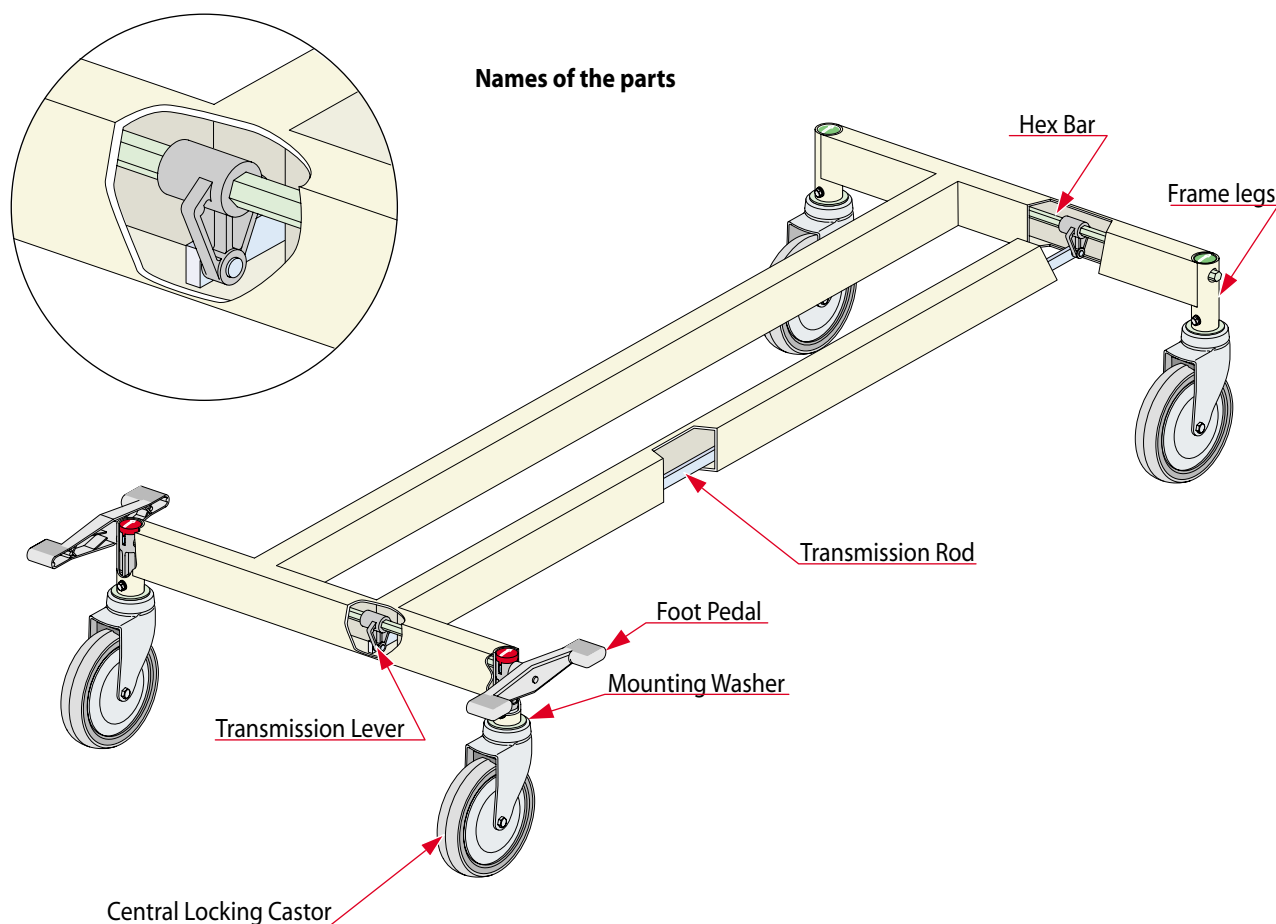
### 3/ Assembly Instructions

Fitting the castors to the frame. These instructions are based around the normal pattern of fitting which has two Total Brake castors at one end, and a Directional Lock and a Plain at the other.

If you require a different pattern you will need to adapt these instructions.

### 4/ Maintenance of Castors

Castors do a lot of work, and should be maintained at least each 12 months. Castors can not work properly if the bed frame is bent/distorted/not level, and this must be corrected before you work on the castors.



**If you require additional assistance.** Request from one of our Sales Offices a copy of the training video showing you how these castors are installed.

**If you still need help.** Telephone our Head Office and ask for "Technical Assistance". Please have these instructions with you when you phone so it is easy to work through the difficulty.



## SECTION 1

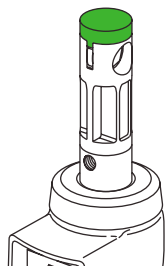
# Central Braking Castors

## Selection of Castor Configuration

Different hospitals have different practices as to which end of the bed/trolley they push. Some prefer the patient's head to lead while some prefer their feet to lead. In these notes the leading end is the opposite end to that you will push. This minimises twisting of the pusher's spine (OH&S issue) and gives maximum leverage on the bed.

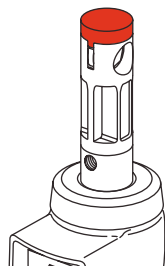
Different makers of castors can have small variations, but the way Fallshaw castors work (shown below) is common to most makes.

Different brake operation levers are available. The most commonly found types are mounted at the side of the bed, and the notes below apply to them. Some newer beds have them fitted at the end so the attendant can use them from the pushing end. These are normally clearly marked so you can see the effect of pushing any lever.



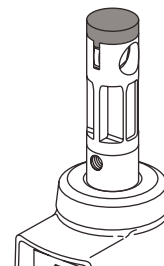
DL (Green Cap)

- Pedal level - swivels
- Step on green pedal to lock swivel direction (front and back) so trolley can be steered.
- Step on red pedal to lock wheel and swivel. This stops any movement of castor. If all castors are locked trolley will be steady.



TB (Red Cap)

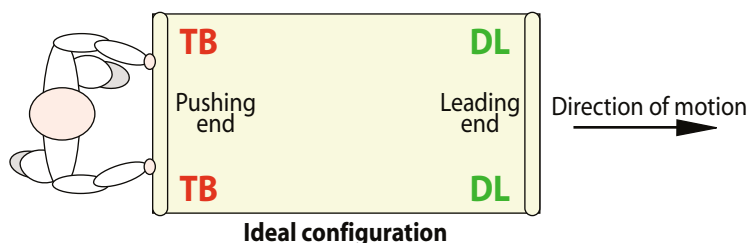
- Pedal level - swivels
  - Step on red pedal to lock wheel and swivel. This stops any movement of castor.
  - Stepping on other side of pedal leaves castor as swivel.
- This feature means DL castors can be operating to steer front of trolley while



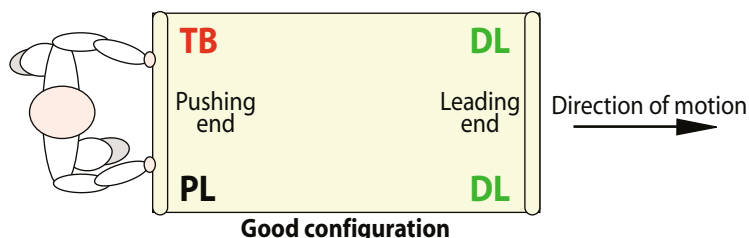
Plain (Black Cap)

- Always swivels
- Appearance and stem dimensions are same as DL/TB; except this has no braking function. The cam hole can support the operating rod. Provides a way of lowering the cost of a set, but is not recommended.

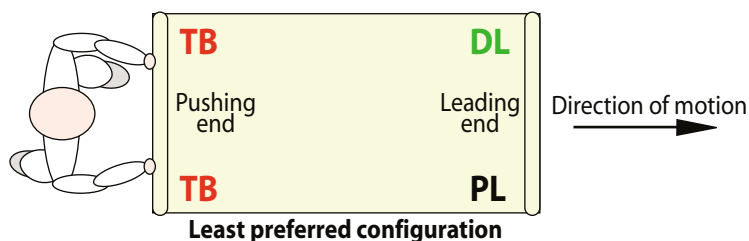
**Ideal configuration:** We recommend 2 Directional Locks on the leading end of the bed/trolley, and 2 Total Brakes on the rear. This gives maximum ease and security of steering, and maximum stability when locked (all 4 are locked).



**Good configuration:** There are many beds in use where they are set up with 2 Directional Locks on the leading end and one Total Brake and one Plain at the rear end. This gives maximum ease and security of steering, and good stability when locked (only 3 are locked).



**Least preferred configuration:** Occasionally you find one Directional Lock and one Plain at the leading edge, with 2 Total Brake at the rear. This gives lesser ease and security of steering, and lesser stability when loaded.



## SECTION 2

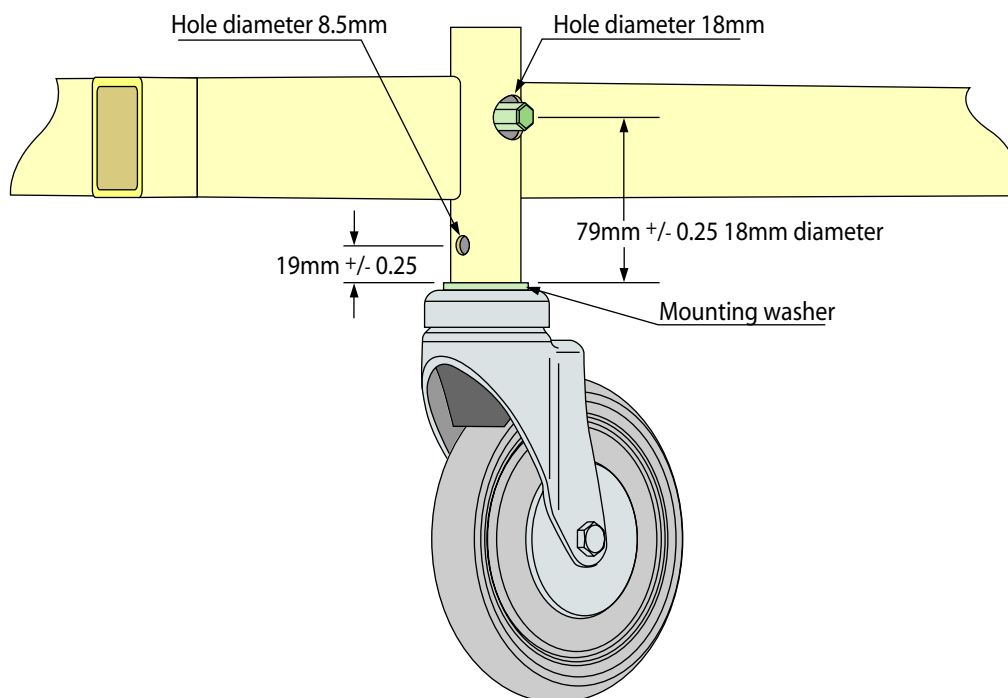
# Central Braking Castors

This page outlines the requirements needed to ensure that your Fallshaw centre locking castors function correctly when initially fitted and also continue to function for the life of the product. If you are unable to meet one or more of these requirements please speak to our technical team to see if a special product can be arranged.

### Requirements prior to assembly

#### Mounting Heights

It is critical that the load of the bed sit on the mounting washer. This reduces movement of the product over time and reduces the stress placed on the attachment bolts and holes. If the load of the bed doesn't sit on the washer, with time the mounting bolt holes elongate, the castor pushes up into the leg and ceases to function. It is also critical that the hex bar for actuating the castor is free to move. To achieve both of these it is important to control the height from the bottom of the tube to the attachment holes, and also to the hex bar hole (see drawing for dimension and tolerances).



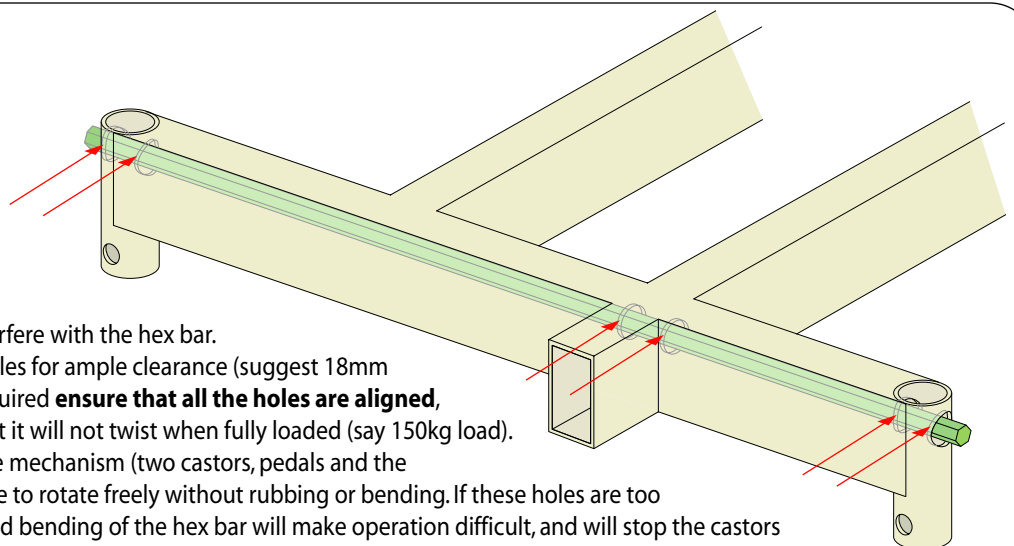
These dimensions are to suit the Australian and European Standard (EN12531:1999). If you are unable to meet these dimensions please speak to our sales department about a special washer to adapt the product to suit your needs.

#### Hex Bar Clearance

Ensure that the frame does not interfere with the hex bar.

This involves either drilling large holes for ample clearance (suggest 18mm diameter) or if smaller holes are required **ensure that all the holes are aligned**, and the frame is strong enough that it will not twist when fully loaded (say 150kg load).

The hex bar should only contact the mechanism (two castors, pedals and the transmission lever), it should be able to rotate freely without rubbing or bending. If these holes are too small, or misaligned, the rubbing and bending of the hex bar will make operation difficult, and will stop the castors from functioning.



## SECTION 3

# Central Braking Castors

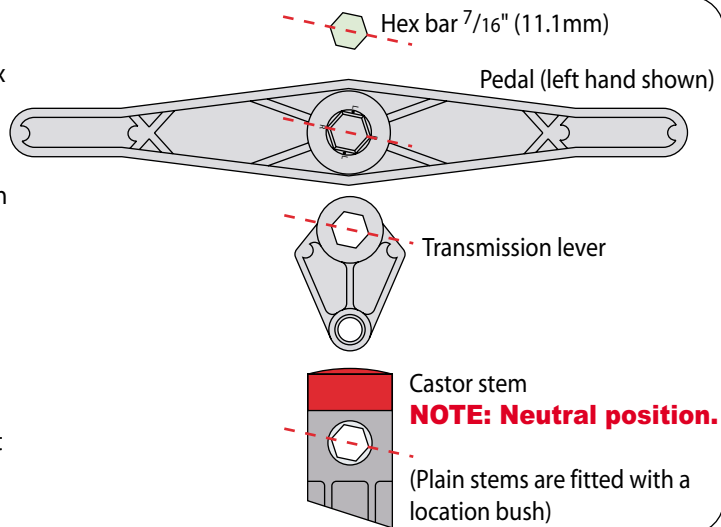
### Important Note

You must maintain the alignment of the hex holes in each of the pieces.

Periodically check to make sure all the components are lined up correctly as shown by the dotted line and that they have not moved out of alignment.

In this diagram you are looking from the right side of the bed at the inside of the left pedal.

When viewing from the left side to the right side the offset is reversed.



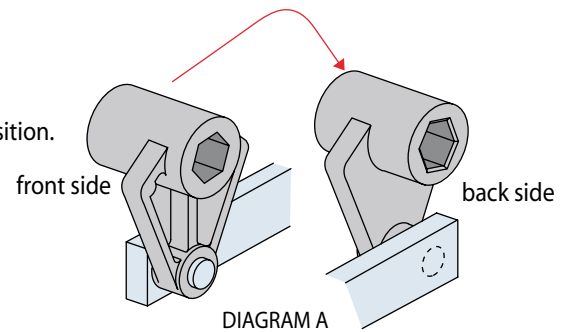
Part 1

### Bed Base Assembly.

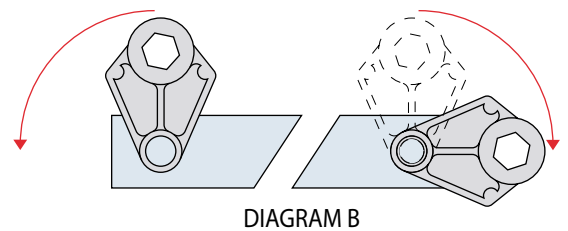
Please read these instructions before commencing and keep them handy during assembly so as you can refer to them at any time for details.

#### Transmission Rod. (Refer drawings for details.)

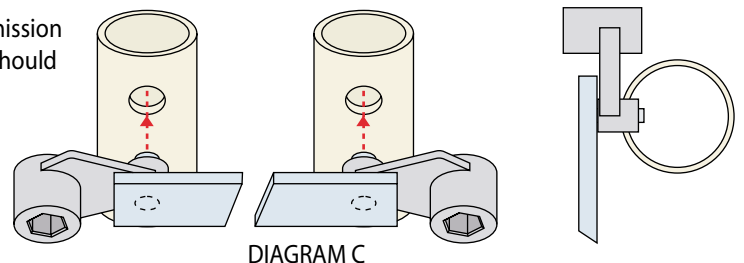
- 1/ Remove burrs from all tube ends
- 2/ Position bed at a comfortable working height ensuring that it is in normal upright position.
- 3/ Assemble 2 Transmission Levers to Transmission Rod as per diagram A.



- 4/ It is important that the Transmission Levers are spaced correctly on the transmission rod, so that the front and rear hex bars remains in alignment. If incorrectly spaced rear castors may brake without engaging front castor brakes. To space these correctly turn both transmission levers down, this moves the larger boss on the transmission lever out of the way. Diagram B.

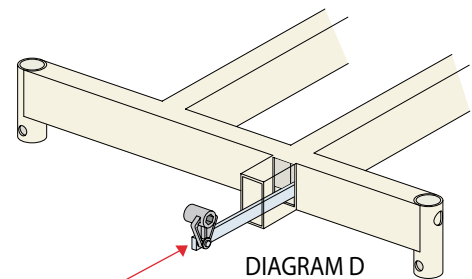


...then place the assembly against the bed frame lining up the transmission lever boss with the holes in the frame - the bosses and the holes should be spaced the same. Diagram C.



- 5/ Reposition transmission levers to vertical position.

- 6/ With transmission levers in the vertical position and on the right hand side of the transmission rod, insert the assembly into the bed from the rear (transmission lever hex holes will now be aligned with the cross drilled holes in the bed frame). Diagram D.



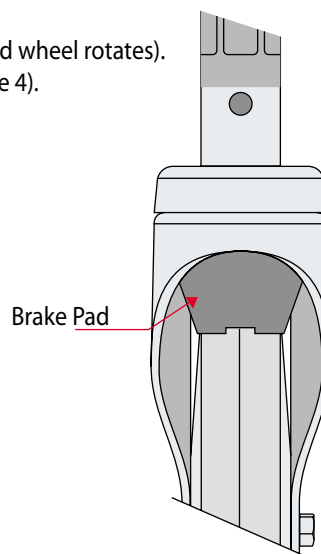
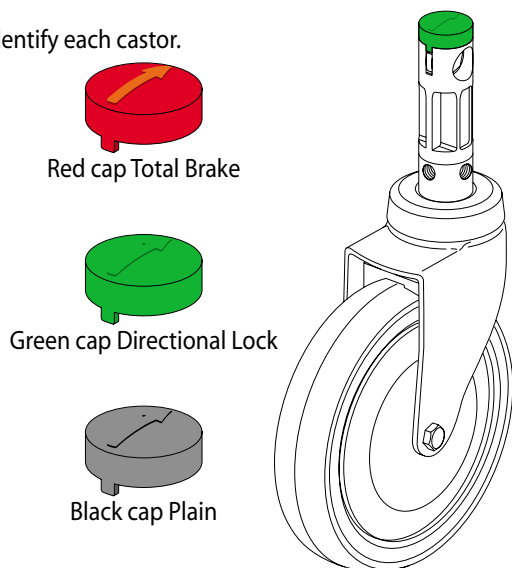
# Central Braking Castors

## Part 2

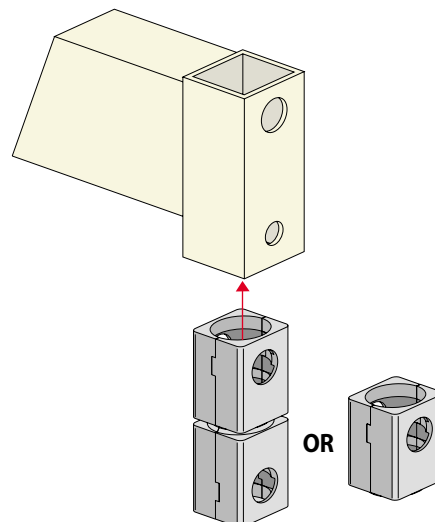
### Castor Assembly.

Please ensure all castors are in the neutral position (as supplied by the factory, castor swivels and wheel rotates). A short piece of hex bar inserted into a pedal makes a useful tool for checking this (see top page 4).

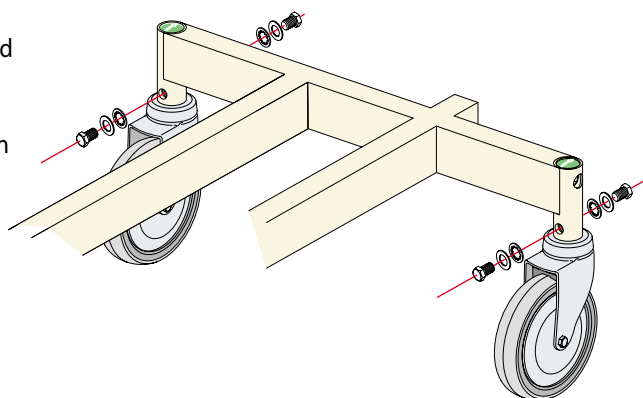
1/ Identify each castor.



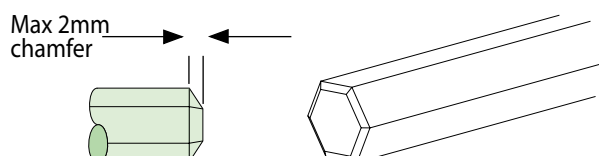
2/ If you are using the alternative square tube adaptors, it is at this point you should insert them into the frame.



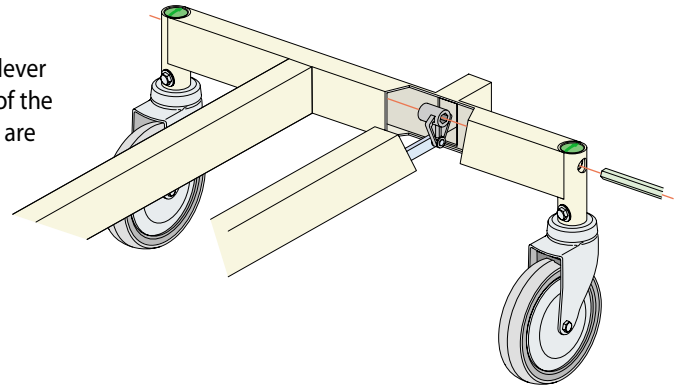
3/ Fit Directional Lock castor into the right hand front (leading end) of the bed (ensuring that the arrow on cap is pointing to the front (leading end)). Locate with 2 x 8mm set screws (use spacer washers to ensure the set screws do not foul the control stem in the body of the castor) and finger tighten. Fit the plain castor into the left hand front (leading end) of the bed. Locate with 2 x 8mm set screws and finger tighten.



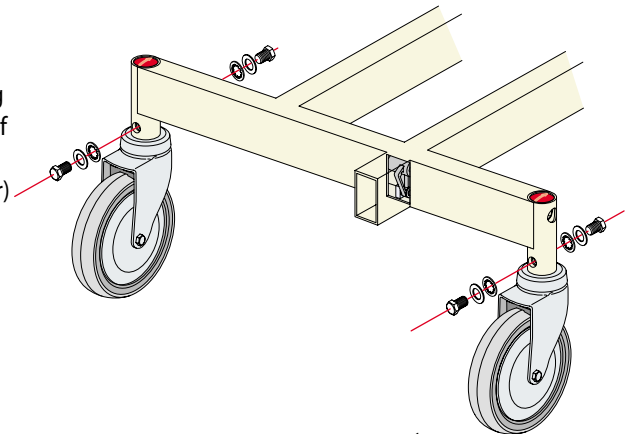
4/ Remove burrs from ends of hex rod (supplied by customer) and grind lead in chamfer - max 2mm



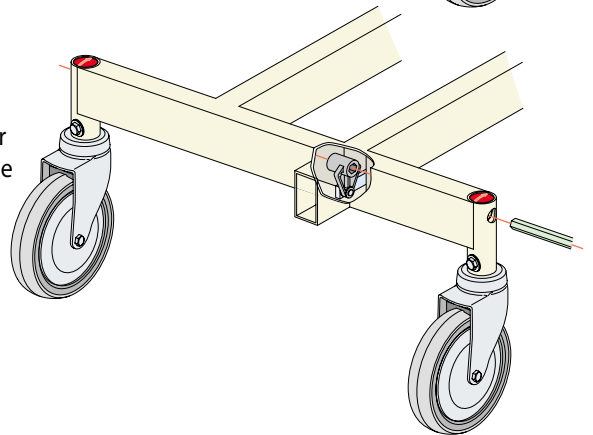
- 5/ Pass hex operating bar through the hex hole the castor stem and then through the transmission lever hex, making sure that the transmission lever is vertical, continue to insert hex bar until it is in position at both sides of the bed (the length of the hex rod may vary depending on whether pedals are fitted).



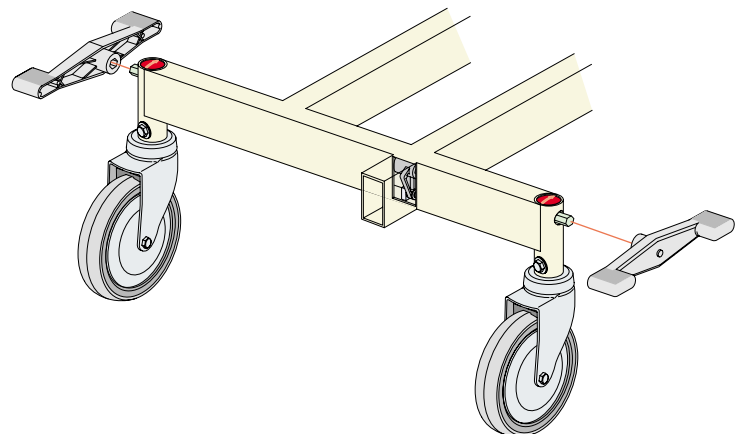
- 6/ Fit the Total Brake castors to the rear (pushing end) of the bed ensuring that the arrow on the red caps are pointing to the front (leading end) of the bed. Locate with 2 x 8mm set screws (use spacer washer to ensure the set screws do not in foul the control pintle in the body of the castor) and finger tighten.



- 7/ Pass hex operating bar through the hex hole the castor stem and then through the transmission lever hex, making sure that the transmission lever is vertical, continue to insert hex bar until it is in position at both sides of the bed (the length of the hex rod may vary depending on whether pedals are fitted).



- 8/ With the hex operating bar in the neutral position fit the right hand and left hand pedals in a horizontal position with grips facing upwards.



- 9/ Check pedal and brake effort.

Pedal operation	Horizontal	=	NEUTRAL
	45° down at front	=	DIRECTIONAL LOCK
	45° down at rear	=	TOTAL BRAKE

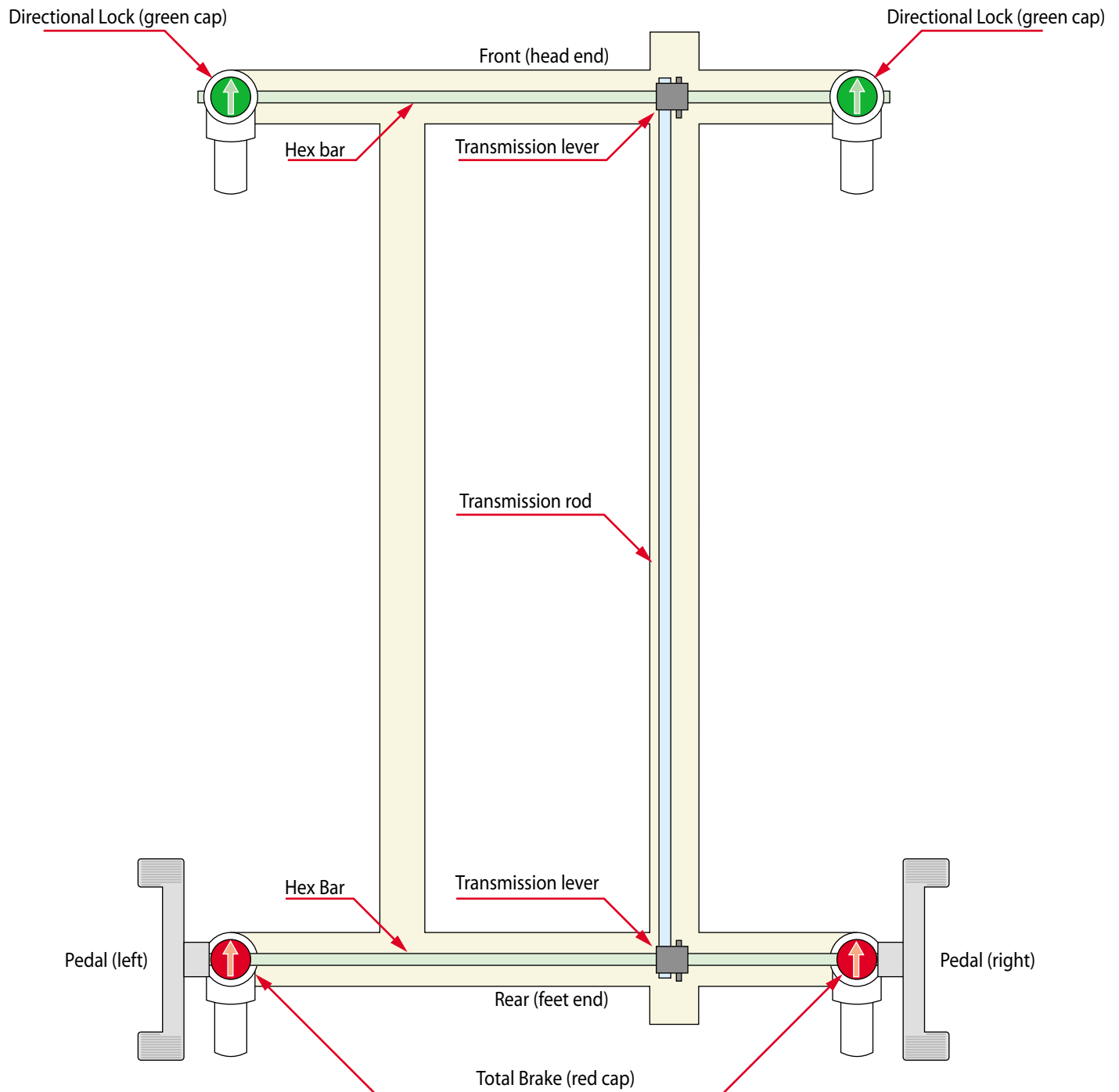
- 10/ Tighten all mounting screws when you are happy with fitting.

### Typical bed assembly

Note orientation of transmission levers. Castor and pedal/s can be located on the frame which best suits your application

#### Plan view

Looking down on top of bed



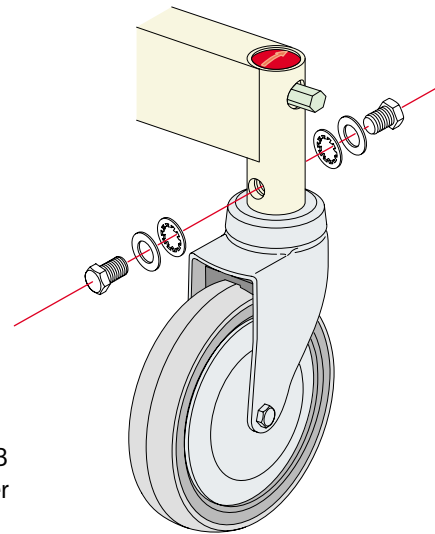
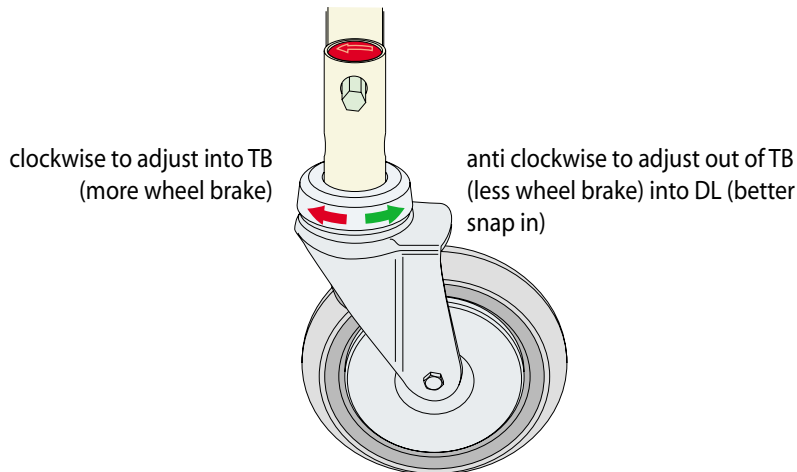
Arrows on top of Total Brake and Directional Lock castors must face towards the head of the bed.

(Where fitted, because the plain castor has no mechanism inside the stem, other than an idler cam to help with hex bar location and silencing, it is not important which way the arrow faces.)

### Single wheel centre locking castors

1/ Place the brake in the neutral position.  
 Remove mounting screws leaving the hex bar (and pedals) in position.

2/ Twist the shroud (silver top of castor).  
 Adjust the castor progressively...  
 ie  $\frac{1}{4}$  or  $\frac{1}{2}$  turn then engage the brake to check.



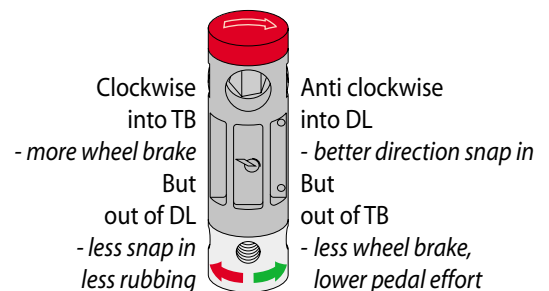
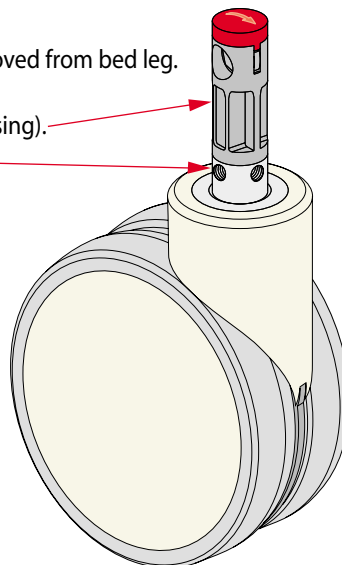
3/ When satisfied with adjustment replace mounting bolts and tighten.  
 NOTE: If adjusting DL castors; click the castor into direction lock and ensure that it locks forwards and backwards not side to side.

### Twin wheel centre locking castors

1/ Place the brake in the neutral position.  
 Remove mounting screws.

2/ Remove pedal or hex bar cover.  
 Tap hex bar inwards until castor can be removed from bed leg.

3/ Hold the top of the castor (black plastic housing).  
 Twist the metal pintle to adjust.



4/ Replace castor into bed leg (if DL ensure locking is forwards/backwards not side to side).

5/ Replace mounting bolts - finger tight. Tap hex bar back through the top cam of the castor and replace the pedal or hex bar cover.  
 Tighten the mounting bolts.

6/ Test brake to ensure the castor functions correctly.



## SECTION 4

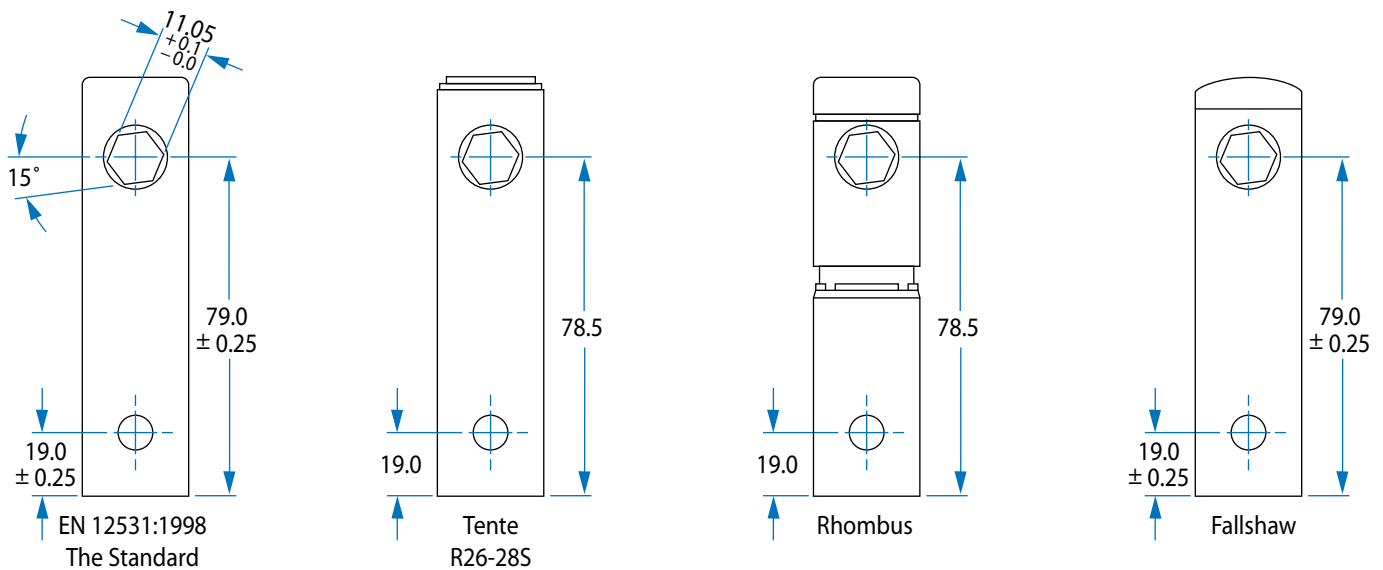
# Central Braking Castors

## Maintenance of Castors

Most hospital beds in Australia are fitted with Tente, Rhombus or Fallshaw centre locking castors. Other makes are used in much smaller quantities and are not dealt with here.

These 3 types have different features and designs, but the same general dimensions, and they function in the same way. There are some small variations depending on when and by whom, the castor was made. All the castor makers are now beginning to conform to the international standard EN12531 Hospital Bed Castors, but all have, from past manufacture, some non-conforming products in use. When making repairs to beds, the repairer needs to be careful to allow for these variations so that the castor is correctly held into the frame legs, and the 4 castors are all level on the floor surface.

### Dimensions of castors



### Maintenance and repairs for centre locking castors.

To check the castors:

#### In neutral

Place the foot pedal in the central (neutral) position.

- check the castors swivel and the wheels rotate freely.

#### In total brake

Apply foot pedal into total brake (red end).

- check that braking castors lock the swivel and stops the wheel from rotating. The number of locking castors will depend on the configuration (see page 2) but at least 3 castors on a bed should be brake castors.

#### In direction lock

Apply foot pedal into direction lock (green end).

- swivel the direction lock castors around and check that they lock into position both forwards and backwards. The number of direction lock castors will also depend on the configuration. Commonly there is only one, and is located at the leading end of the bed (see page 2).

Increasing two are being used to increase the ease of use, and you should check with the hospital as to whether they would like an 'upgrade'.

## SECTION 4

# Central Braking Castors

## Maintenance of Castors

### Trouble Shooting

**Note:** Adjustability was introduced to Fallshaw centre castors in August 2003. Pre August 2003 product were non-adjustable, therefore please ignore adjustment instructions.

#### **In Neutral**

##### **Castor wheels do not spin freely**

1. Check for dirt build up. If apparent, remove the wheels and clean out debris. With wheel removed also check that black brake pad is securely fastened in position with its cap screw.
2. Check castor adjustment (section 3).
3. Remove the whole castor from the bed and check the frame (see frame section).

#### **In Total Brake**

##### **Castor is able to swivel or wheel slips when in total brake**

1. Check castor adjustment (section 3).
2. Remove the whole castor from the bed and check frame (see frame section).

##### **Pedal is hard to activate or jumps out of position**

1. Check the mounting screws are not too long by loosening screws and reapplying pedal.
2. Check castor adjustment (section 3).
3. Remove the whole castor from the bed and check the frame (see frame section).

#### **In Direction Lock**

##### **Castor does not lock into position or clicks out under pressure**

1. Check castor adjustment (section 3).
2. Remove the whole castor from the bed and check the frame (see frame section).

##### **Pedal is hard to activate or jumps out of position**

1. Check the mounting screws are not too long by loosening screws and reapplying pedal. If necessary, use longer screws.
2. Check castor adjustment (section 3).
3. Remove the whole castor from the bed and check the frame (see frame section).

##### **Castor locks into direction lock position in the wrong direction, horizontal to bed.**

1. Check castor adjustment (section 3).

##### **Excess play from side to side when in Direction Lock**

1. Ensure mounting bolts are tight.

#### **Frame Check**

Things to watch out for:

- The end of the bed leg must sit on the castor mounting washer, so that the weight of the bed is taken on top of the castor and not the mounting screws or hex bar. If not the case, remove the castor and replace the mounting washer with thicker washer so that the bed leg does sit on it (mounting washers available, contact Sales/Technical assistance team).
- Check the braking mechanism functions correctly without castors in place.
- Check that the hex bar rotates freely at each end of the bed without interference from the frame. If the hex bar holes are misaligned or too small it makes the brakes hard to apply and can damage the castors. These holes should be aligned and 18mm in diameter.
- Check that the transmission lever is correctly attached to the hex bars at both ends of the bed and that it is free to move without interference (check the manufacturers instructions on how the braking mechanism should be assembled and fitted to the frame).
- The ends of the frame legs should not be cut at an angle, but be at 90° to the leg. An angled end puts side loads on the mounting stem. It is better if at least half the circumference is level and at right angles to the leg.
- The ends of the frame leg should be level. If the frame has become bent they will not be, and this prevents all 4 wheels being loaded correctly. If attempting to correct a bent frame, ensure the frame leg tubes are not damaged as this will require a replacement frame.
- The frame legs should be at least 1.6mm wall section material (this gives a 28.6mm ID if the internal weld has been removed - noting the 27.5mm castor OD). Some makers use a 2mm wall section material machined to give a 28mm neat, which gives a very snug fit. Use of 1.2mm allows the leg to bend too easily and is not recommended.
- When reattaching the castors ensure that the mounting bolts are tight, and held on with some Loctite or spring washers and are not screwed too far in so that they interfere with the brake mechanism (if this occurs use shorter screws for preference, or more washers).