

Fusion Seating System

Instructions for Use



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General Information

Intended Usage

The Fusion Seating system range has been specifically designed to meet demanding postural requirements, whilst being very adjustable, adaptable and easy to use.

The following information is intended for general use of your seating system that are appropriate for all users. Adjustments to the seating system not outlined in this manual should be completed by a competent therapist or rehab engineer.

Your seat could come in a few configurations including seat or backrest online. Please read the appropriate sections based upon the seat you have been provided. If you are unsure, please check with your prescriber.

Statement of Conformity

Active Design Ltd. As a manufacturer with sole responsibility declares that this product is a Class 1 Medical Device as defined in MDD 93/42/EEC and amendments.

Warranty

Active Design Ltd warrants that equipment sold by Active Design will be free of all defects in material and workmanship for a period of 12 months from the date of purchase. Active Design will not be held responsible for any damage or injury due to misuse or modifications of these products

Information

If you require further information please call us on 0121 326 7506 to speak to one of our team members, or visit www.activedesign.co.uk

Initial set up

Your Fusion Seating system should be already set up and adjusted by a qualified prescriber. Clinical suitability and stability of the seating system should also be checked at delivery.

It is important to check the seat, particularly the adjustable parts, during the first few weeks of use. Most importantly, check the effect the seat has when it is first delivered. Tell the fitting team if you have any cause for concern, e.g. if the person has very red knees or a sore bottom, or if he does not even want to use the seat.

The seat will be providing a new posture for the person to learn. Try to avoid introducing him to other new things at the same time! Do not let your child sit in it for too long when he is just getting used to it, check with your therapist if you are unsure how long to expect him to use the seat at first.

Small adjustments, by the seating team, may be necessary during the first week or so, as he becomes accustomed to the seat.

After initial set-up adjustments are made, the family or carer should check the Fusion daily for fabric wear and to check all the parts are operating to a good standard.

Installation

The fusion seating system comes in various configurations. Please read the relevant sections, if you are unsure of what configuration you have please contact your prescriber or Active Design.

Seat Installation

Your seat will arrive with two boards, wooden seat board and a polypropylene base. These two boards work in conjunction together to provide seat depth adjustment. You will also receive four drop hooks and a set of lock and latch brackets. The polypropylene base comes pre drilled with a series of holes to mount onto the wheelchair, and slots to mount the wooden top to.

- Begin by removing any seat canvas on the wheelbase (methods may vary depending on wheelbase)
- Remove the wooden seat board from the top of the polypropylene base board by undoing the cap head screws underneath
- Fit the lock and latch brackets to the seat rails, with the latch (figure 1) at the front and lock (figure 2) at the back as shown below, do not tighten as you will be adjusting these later. Use the drop hook brackets to ascertain a good position and check for obstacles on the frame



Figure 1: Front Latch



Figure 2: Rear Lock

- Using the polypropylene base board, check where the drop hook brackets need to be mounted so when placed on the seat rails they will be locked in place by the lock and latches. Drill out the necessary holes and fit the drop hook brackets
- Tighten the lock and latch brackets in place and refit the wooden seat board

Backrest Installation

Depending on your chosen configuration, your backrest will arrive with a set of lock and latch mounting brackets with countersunk holes machined part way through the backrest board. If Active Design have some basic measurements the backrest brackets will also come fitted to the board. However, this might need to be changed depending on the required position of the backrest.

There are 3 versions of the backrest available. All variations include a top hook bracket (figure 4) which will be secured to the wheelchair using a latch bracket (removable) or a tube clamp (fixed).

- **4 Point fixing** – Using a lock bracket or tube clamp to secure the base of the backrest (see figure 5)
- **2 Point with Hinge** – Uses a hinge connected to the seat making the whole system one unit (see figure 6)
- **2 Point with Tongue** – Uses a tongue mounted off the base of backrest which fits into a slot on the seat board. (see figure 7)



Figure 3: Hook Bracket



Figure 4: Top Latch Bracket



Figure 5: 4 point Lock Bracket



Figure 6: Hinge



Figure 7: Tongue

- Disconnect and remove wheelchair backrest canvas. (Methods may vary according to make and model of wheelchair).
- Temporarily support the Fusion backrest in its intended position on the front face of the wheelchair backrest frame tubes.
- Mark the wheelchair backrest frames in line with the bottom edges of the lower Backrest Mounting Hook Brackets. NOTE: Check the wheelchair backrest frame tubes for obstacles preventing the Backrest Brackets from sitting correctly against the frames.
- Should it be necessary to relocate the Backrest Brackets remove the M6 Lock-nuts from each screw. The hole position of the bracket on the board can be changed for height adjustment, part machines holes can be found across the height of the backrest, please use a screwdriver to punch through your desired holes. Width adjustment can be done via the slot contained within the bracket.
- Fit the lower lock brackets with clamp inline with hook mark
- Re-install Fusion Backrest onto wheelchair with the lower Mounting Hook Brackets located against the Backrest Lock Brackets.
- Check for correct contact of the Hook Brackets against the wheelchair backrest frame tubes, as angles may vary dependent on wheelchair make and model. Where the Hooks do not sit flat against the tubes, this can be adjusted by slackening nuts on the Hook Brackets. Correctly position Hooks and re-tighten screws sufficient to maintain Bracket positions.
- With the Backrest resting against frame tubes, lightly mark positions of the top edges of the upper Mounting Hook Brackets.
- Install the Upper latch brackets with their locking plungers in the raised position. Install securing screws and tighten sufficient to maintain their position.
- Lock Backrest in place by sliding the Latch plungers downwards, over each Hook Bracket, until they click into their locked position.

- Basic adjustments to the Backrest angle and seat depth can be made by slackening the M6 Lock Nuts on the hook brackets and allowing the Backrest to move forwards or rearwards within the limits of the elongated slots of the Hook Brackets. (This adjustment is available on both upper and lower Hook Brackets). Fully tighten all screws, sufficient to maintain the Bracket positions after making adjustments and finally re-tighten all M5 Lock Nuts.
- Finally, the red safety strap supplied with the backrest needs to be wrapped around the push handles and tightened. This prevents the backrest from moving if the

Please ensure all fastenings are tight and the hook brackets are securely placed under the relevant lock and latch brackets and the red safety strap is engaged around the wheelbase push handles.

Seat Depth Adjustment

The Fusion seating system comes with seat depth growth. The amount of growth is around 40mm, however this might vary depending on the size of the seat and size of the wheelbase. Seat depth adjustment can be obtained by sliding the sliding the wooden seat board forwards, this can be done by loosening the screws as shown in the figure 8.

Dependant on wheelbase configuration, further adjustment might be available by altering the position of the drop hooks on the wheelbase and/or the polypropylene base board.



Figure 8: Seat depth adjustment

Backrest Height Adjustment

4 Point Mounting

Height adjustment available through altering the position of the hook brackets on the backrest board or by raising the lock and latch brackets (tube clamps for fixed version) as shown in figures 4, 5 and 6.

2 Point with Hinge

The hinge will allow for backrest height adjustment through loosening of the 4 bolts as shown in figure 9 and slide the backrest up. The top latch or hook position will also need to be altered.

2 Point with Tongue

Remove the tongue by undoing the bolts seen in Figure 7. The Tongue comes with part machines holes as seen in Figure 10. Using a drill open up the desired holes and move the tongue down the backrest, this will give you some backrest height adjustment. The top latch or hook position will also need to be altered.



Figure 9:Hinge height adjustment



Figure 10: Tongue Height Adjustment

Pelvic Lateral Adjustment

The pelvic laterals come with height and width adjustment. This will allow the seat width to be grown, and if the backrest height is adjusted the position of the pelvic laterals can be adjusted to suit too. To adjust the width, loosen the pelvic lateral bolts as show in figure 11 and slide the laterals in or out. If you need to adjust the position, there are part machined holes on the board which you will be able to see from the front. Open up the appropriate holes as required by punching through with a drill.

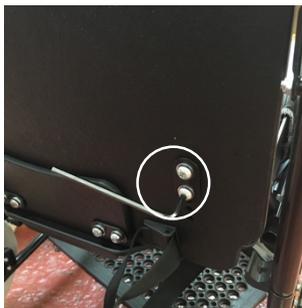


Figure 11: Pelvic Lateral Adjustment

Thoracic Lateral Adjustment

The Thoracic laterals come with height and width adjustment. To adjust the width & height, loosen the thoracic lateral bolts (or lever locks) as show in figure 12 and slide the laterals in/out and up/down within the machined slot.



Figure 12: Thoracic Lateral Adjustment

Headrest Fitting and Adjustment

The headrest can be adjusted to provide optimum support; it can also be removed. To remove the headrest and adjust the height loosen the headrest block lever (figure 13) to release the headrest stem, tighten the lever when the headrest is in the desired position. To adjust the depth position and angle of the headrest loosen the headrest bolts (figure 14), this will free the headrest to allow for adjustment. Tighten up bolts when the desired position is achieved.



Figure 13: Headrest block lever



Figure 14: Headrest Adjustment

Fitting Removing & Adjusting Pommel

If your system comes with a knee block or pommel you can remove it and adjust the height and depth. To remove press the release pin (figure 15), located on the pommel mounting bracket underneath the seat, and pull the pommel out. To adjustment the height by loosening the bolt underneath the vertical stem (figure 15) and move the pommel up or down as needed, tighten the bolt to fix in position. To adjust the depth of the pommel, relocate the release pin into one of the pre-drilled holes (figure 16).



Figure 15: Pommel adjustment

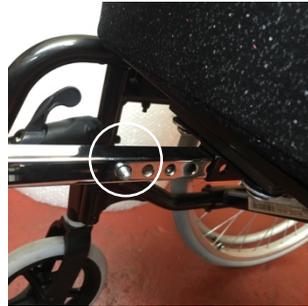


Figure 16: Pommel depth adjustment

Adjusting Knee Laterals

If your Fusion Seating System comes with Knee Laterals, the width and angle can be adjusted. To adjust these lift up the seat cushion and loosen the bolts as shown in Figure 17. Adjust knee laterals to desired position and tighten bolts up.

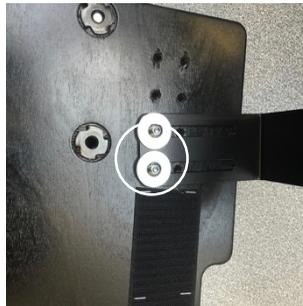


Figure 17: Knee Lateral Adjustment

Removing and re-fitting the Seating System

Depending on the configuration of the seating system, the method of removal will vary. This mainly applies to the different backrest mounting options available. If you have a backrest only system, please follow steps 1 to 3.

Note: Your system could also be fixed into your wheelbase, if so you will not have lock and latches as described below, instead you will have clamps fixed directly onto the wheelbase push handles. If you are unsure of your Fusion configuration, please contact your prescriber or Active Design.

To refit the system please follow these instructions in reverse and ensure drop hooks are firmly placed under the locks, and the latches are firmly locked over the drop hooks.

Backrest Mounting Options:

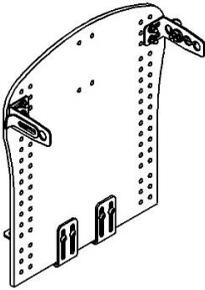


Figure 18: 2 point mounting with hinge

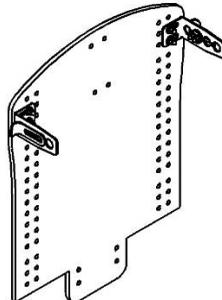


Figure 19: 2 point mounting with tongue

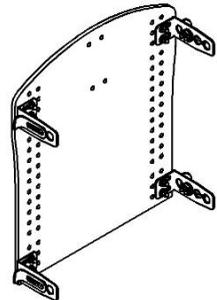


Figure 20: 4 point mounting

Step 1: Release Red Safety Strap

Release the red safety strap on the backrest as shown in figure 21.

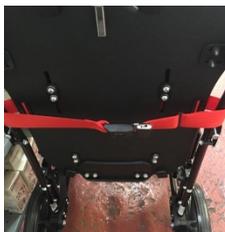


Figure 21: Safety strap

Step 2: Release top Backrest Hook brackets

All backrests come with two upper latches fitted to the wheelchair back canes. The backrest top hook brackets are locked to the wheelchair using the latches. Lift the latch up to release the top hooks brackets and push the backrest forwards so that the top hooks are clear of the latches.



Figure 22: Latch in lock position



Figure 23: Latch unlocked



Figure 24: Push backrest forwards

Step 3: Remove backrest

This step applies to **4 point mounting** and **2 point mounting with tongue** configurations.

With the top hooks clear of the latches the backrest should now be free to be removed from the system by lifting the backrest up out of the lower mountings.



Figure 25: Lower hook, lift up to free backrest



Figure 26: Tongue engaged in seat



Figure 27: Lift back out of seat slot

Step 4: Release Seat hook brackets

With the backrest free, you can now release the seat. Unlock the front latch as shown in Figure 28. Slide the seat forwards and up to remove the seat.



Figure 28: Front seat hook and latch

Re-fitting the seat

To refit the seat and backrest please follow the above procedure in reverse order.

Please ensure all hook brackets are placed securely under appropriate lock and latches. If available, the tongue needs to be engaged within the seat slot. Please also ensure the red safety strap is wrapped around the wheelbase push handles and securely engaged, please tighten to make taut.

Harnessing

Pelvic Belt

Your Fusion seating system comes with a pelvic belt. Please see relevant information supplied. Pelvic belt mounts are supplied with the Fusion seating system, with a set of holes please position belts on the most appropriate position for the user.



Figure 29: Pelvic belt mount

Shoulder Harness

Your fusion backrest will come with two top inserts and two lower inserts to fit shoulder harness mounting, along with integrated harness guides to help maintain shoulder harness positioning.



Figure 30: Harness mounting

Upholstery Information

All Fusion upholstery is machine washable at 40 degrees. Tumble dry on a cool setting.

Further information can be found on the label.

What does posture mean to us?

We can all be recognised by our own individual posture - the way we stay upright, slump or move out of position. The way that we "hold" ourselves and move against gravity (our postural ability) contributes to the shape of our bodies. We achieve this ability during our early childhood.

People with physical problems may lack this ability to move, to be comfortable, or even to balance. They may be able to achieve sitting by "fixing" themselves in one position, or they may adopt a crooked position that they can't move from. If you have ever fallen asleep, perhaps on a journey, you will have some idea of how staying in one position for a long time can make you feel stiff and uncomfortable.

Our posture can say a lot about us - whether we are tense, relaxed, or awake. How many times were you told to sit or stand up straight when you were at school? This was because the upright posture is recognised as the "thinking" or alert posture. If someone slumps in an armchair, do you feel he is listening intently to what you are saying? We all slump when we are tired or relaxing, but we generally choose to sit upright when doing tasks that require brain power. However, we can decide to change or adjust our posture when we get uncomfortable and we are able to do so. Habitual slumped sitting postures can cause back strain, pain and changes to the joints themselves.

When a person is feeling physically insecure it is difficult for him to think about anything else. His inattention can be interpreted as laziness, tiredness and/or low mental ability.

How do we learn our posture?

Posture is not static, it is a "ready steadiness", a dynamic balance. We all learn postural ability (control of our balance and movement) through maturation and normal developmental experience. We begin life unable to balance. Soon we progress to being able to balance in different positions, asymmetrical or "crooked" positions.

From the early stages of development our ability to balance (i.e. to control our posture) enables us to move for action and exploration. The main ingredient that enables us to balance and move is the ability to control the movement of our pelvis and shoulders.

What does the Fusion seat do?

The Fusion seat encourages a normal sequence of motor development by providing the opportunity to experience a symmetrical balanced sitting posture. This, in turn, will lead on to the development of the ability to move the upper body forwards and backwards. This is the first stage in the development of sitting ability.

Uneven weight bearing or an unequal amount of movement to one side of the body can lead to the development of deformity. In particular, if a person sits with both legs pointing to one side he is in danger of developing hip and spinal deformities. If that person is supported in sitting so that he doesn't need to stabilise himself in a crooked position, this will help to prevent deformity. In some cases, where deformity has already occurred, it can be reduced as the person learns to relax in the symmetrical position provided by the seat.

When a person has physical security he experiences independence - other people will not need to hold on to him or adjust his posture continually. The knowledge that he has the competence to sit will give him the important feeling of self worth.

The upright posture provided by the Fusion assists:

Eating and drinking

It is easier to swallow and avoid choking when in an upright posture than when reclined, or tipped back.

Breathing and Digestion

These are easier when the person is upright, and when he can maintain his head position in line with his body.

Vision

It is difficult to look straight ahead when reclined or tilted backwards.

Practical Skills

It is easier for a person to attend, listen and play when secure in an upright posture than it is if he has to concentrate on balance and remaining upright. It also makes it easier to use the hands and arms, and this increases function.

How does the Fusion assist postural development?

The FUSION provides postural security for people with low physical ability by helping them achieve a balanced posture (with pelvis and shoulder control). This security enables head and arm movement without loss of sitting balance.

An infant starts to sit with his upper trunk leaning forward over his legs. Gradually, as he achieves greater control of his balance, his trunk becomes more upright. This normal sequence cannot be followed if a person is reclined, tilted back or slumped, so it is normally essential that the Fusion seat is mounted and used horizontally on its base to provide the correct support for a good posture.

There may be specific reasons for a seat to be reclined or tilted and these will have been discussed with you during the assessment.

We cannot sit without the ability to stabilise our pelvis. To help each person achieve this, the Fusion has been designed with various special cushions and supports, including a ramped seat cushion, a sacral support, a knee block, side pelvic pads and a lap strap. For this system to work correctly the seat cushion has to be the correct length and the footplates also need to be adjusted to the correct height to provide good, even support. All these adjustments will have been made when the seat was fitted. The trunk side pads, the height of the headrest and the tray will also have been adjusted.

The lap strap is adjustable to allow different thicknesses of clothing, but it should fit snugly or it will not be doing its job properly.

Summary

We all need to feel secure before we are physically (and emotionally) able to play or work happily. If a person is in a posture that provides inadequate support he will be learning the wrong things. The Fusion seat provides the opportunity to experience a balanced, comfortable sitting posture and provides adequate security to allow a person to experience normal patterns of movement. When the seat is adjusted correctly for his ability and size, he will be more able in it than he is out of it.

Most importantly the Fusion seat will help the person grow, learn, play and develop his abilities in a positive way.

Frequently Asked Questions

We have a frequently asked questions section on our website. Visit us at www.activedesign.co.uk

Further Information

If you have a problem with any of our products, your first contact should be the organisation who supplied the product to you. If there is a problem that your therapist is unable to answer then please phone, fax or email us.

Maintenance

Upholstery should be washed weekly if used intensively, and immediately washed if the covers are soiled or have visible stains.

Daily checks should be undertaken by the family or carer to ensure the Fusion seat is stable, the fabric is not heavily worn, and that parts such as the laterals, fixings to the wheelchair and harness fixings are firm and solid.

The Fusion and interface should be checked by the organisation who provided the seat every 6 months for security of fixings, nuts and bolts. Seat & back cushions and lateral supports should be checked for wear and degradation of the foam.

Straps should also be checked for signs of wear (especially stitching). The Fusion is fully guaranteed for 24 months but should last between 3 and 5 years if the seat is correctly maintained.

Transportation

Travelling in a vehicle whilst seated in a wheelchair is normally safe if you follow basic safety guidelines. Whilst thousands of people are killed on the roads each year almost none of these deaths include people seated in wheelchairs.

The highest risk to most wheelchair users occurs whilst getting on or off the vehicle. The hazards of normal driving, cornering and heavy braking often present a greater hazard than those of a crash and should be considered accordingly.

Each new seating system and wheelchair should normally be assessed for use in a vehicle and you should be given information this by the person issuing the equipment.

If not please ensure you check with them as soon as possible.

The following key points should always be considered:

- Take care getting on or off the vehicle (this is where most accidents happen)
- Transfer to a vehicle (safety) seat wherever possible
- Travel forward facing
- Secure the seat (Fusion) to the wheelchair
- Secure the wheelchair to the vehicle
- Always use a vehicle lap & shoulder seat belt (regardless of posture belts)
- Use the headrest as normal (ensure it is securely tightened in position)
- Use the knee block if normally used
- Use postural straps like a lap strap or harness as normal
- Our seats can be used in a tilted position, but check with the wheelchair manufacturer.
- Remove the tray
- Larger vehicles = less risk to occupants

Suitablility for Transportation

The Fusion Seating System is suitable for use in transport with an occupant:

- if it was supplied interfaced onto the wheelbase that it is only used in the configuration and on the base with which it was originally supplied
- if it was supplied as a kit to be interfaced onto the wheelbase by the customer, that it has been fitted in line with the fitting instructions and only to a compatible wheelbase that is suitable for transportation
- it is only used in a forward-facing position when used in a vehicle
- it is used in line with the Fusion & Wheelbase user instructions.

Also:

- trays should always be removed and safely secured elsewhere in the vehicle during transport
- postural support devices, such as postural lap straps and postural harnesses, should NOT be the PRIMARY means of restraint in transport
- if you wish to modify the configuration, you need to ask us first
- vehicle-based occupant restraint pelvic and shoulder straps should meet ISO 10542-1: 2001
- children less than 22kg should be transferred to a car safety seat .

Securing the Seat

Ensure that the seating system is fully secured into the lock and latches and the red safety strap is securely wrapped around the push handles.

If you are unclear about this stage, contact your prescriber or Active Design.

Securing the Wheelchair

The wheelchair should be secured into the vehicle by the transport provider (bus driver). It should normally only be used forward facing and will normally be secured with a four-point tie-down system (special webbing belts at each corner). Please refer to the wheelbase user manual for more details.

Securing the Occupant

The transport provider should secure the user with an extra seat belt (similar to that used in a car).

Care should be taken with the placement of the lap strap to ensure it is placed so as to lie across the hips in a position where it will anchor the pelvis and not ride up into the abdomen. The shoulder strap should be positioned across the torso and over the shoulder, ensuring the strap neither cuts into the neck or slides off the shoulder.

Posture belts & harnesses should remain fastened.

The following Journey Checklist may help to ensure all steps are taken to ensure the safe use of the Fusion Seating System in transport.

 Journey Checklist
Seat secured to wheelchair
Seating system latched onto locking interface
Red strap tightened
Wheelchair secured into vehicle
Normally a four point webbing system
Lap and diagonal seat belt fitted around user
Postural straps to remain in place
Knee block used as normal
Headrests used as normal
Tray should normally be removed
Other items are secured or fitted in line with transport plan

Active Design also publish more comprehensive guidance in a document called 'Using Active Design Seating Systems in Vehicles', document ref: LFT075.

Please contact us to receive a free copy or further advice

Service History Log Book

Date	Service	Signature

Notes

Notes



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