

User Manual

DEALER: This manual MUST be given to the user of the product.

USER: BEFORE using this product, read this manual and save for future reference.

Invacare® Matr^x® PB



Yes, you can!



I General

I.1 Symbols

Signal words are used in this manual and apply to hazards or unsafe practices which could result in personal injury or property damage. See the information below for definitions of the signal words.



WARNING

Warning indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

Caution indicates a potentially hazardous situation which, if not avoided, may result in property damage or minor injury or both.



Gives useful tips, recommendations and information for efficient, trouble-free use.

I.2 Overview

Important Information

The best way to avoid problems related to pressure sores is to understand their causes and your role in a skin management program.

Your therapist and physician should be consulted if you have questions regarding individual limitations and needs.

All cushions should be selected carefully. Working with your therapist and physician is the best way to assure that a cushion choice matches your individual needs.

As the needs of the individual become more complex, cushion evaluation becomes more important.


Matrx PB

The Matr^x PB back is constructed using molded foam that wraps around the ABS shell for maximum comfort. The back shell is contoured to provide exceptional support and positioning. The Matr^x PB back also includes an optional lumbar support pad that can be installed/inserted behind the molded foam cushion to provide additional positioning capability

Outer Cover

The outer cover is made of a mesh material that is moisture resistant and breathable. Regular cleaning and inspection of the outer cover is recommended. Refer to [Care and Maintenance](#) on page 11.

2 Safety

-  Check ALL parts for shipping damage. If shipping damage is noted, DO NOT use. Contact carrier/dealer for further instruction.

2.1 Transporting the Client Within a Wheelchair Fitted with a Matrix Back in a Motor Vehicle

The following guidelines should be made available to all parties who are responsible for the transportation of the client, such as schools and transport providers.

Wherever practicable the client should be transferred out of the wheelchair into a vehicle seat and use a lap and diagonal seat belt or an appropriate child safety seat.

The Matrix back has been dynamically tested and meets the requirements of ISO 16840-4 and Section 20, ANSI/RESNA WC/Volume 4 "Wheelchair Seating Systems for Use in Motor Vehicles". A Surrogate Wheelchair Base (SWCB) and a Hybrid III Midsize-Adult Male Anthropomorphic Test Device were used in a forward facing frontal impact test. The SWCB was secured by a four-point, strap type wheelchair tie-down and the occupant restraint was a vehicle anchored lap and diagonal occupant restraint system.

Matrix backs should only be used in conjunction with wheelchairs that comply with the performance requirements of ANSI WC19 or ISO 7176-19.

Before Entering the Vehicle Check the Following:

Matrix Back - must be securely fastened into the wheelchair as described in the user manual.


Posture Belts & Harnesses - should remain fitted during transportation, although they are designed to provide postural support only, they are not intended for safety during transportation.

Head Support - must be securely fitted and correctly adjusted close to the rear of the client's head during transportation, in order to reduce the risk of whiplash injuries.

The Wheelchair Tie-down and Occupant Restraint System (WTORS)

Wheelchair Tie-down - The wheelchair must be securely tied down within the vehicle, in a forward facing position, in accordance with the wheelchair and tiedown manufacturers instructions.

Occupant Restraint - A suitable occupant restraint system must also be fitted in accordance with the manufacturer's instructions. A minimum is a lap and diagonal belt (lap belts on their own are not suitable). Restraints that loop over the shoulder and anchor to the vehicle floor should be avoided where possible, as they can cause a heavy downward load through the client during an impact, the preferred type anchor above and behind the shoulder as with a car seat belt. The lap section of the belt should fit snugly over the pelvis of the client and should not be able to ride up to the abdominal area. The upper torso section of belt should be in contact with the client's chest and fit over the shoulder(s), while not cutting into the neck or slipping off the shoulder(s).

-  If the wheelchair and Matrix back are to be transported unoccupied, the wheelchair should be tied down with suitable equipment according to the manufacturer's instructions. If the equipment is to be dismantled for transportation, ensure that all parts are secured safely within the vehicle.

2.2 Intended Use

The Matrix PB is contoured to provide midline support and positioning. The extended range of sizes provides exceptional support and comfort for a wide range of user needs.

2.3 General Warnings



WARNING

DO NOT USE THIS PRODUCT OR ANY AVAILABLE OPTIONAL EQUIPMENT WITHOUT FIRST COMPLETELY READING AND UNDERSTANDING THESE INSTRUCTIONS AND ANY ADDITIONAL INSTRUCTIONAL MATERIAL SUCH AS OWNER'S MANUALS, SERVICE MANUALS OR INSTRUCTION SHEETS SUPPLIED WITH THIS PRODUCT OR OPTIONAL EQUIPMENT. IF YOU ARE UNABLE TO UNDERSTAND THE WARNINGS, CAUTIONS OR INSTRUCTIONS, CONTACT A HEALTHCARE PROFESSIONAL, DEALER OR TECHNICAL PERSONNEL BEFORE ATTEMPTING TO USE THIS EQUIPMENT - OTHERWISE, INJURY OR DAMAGE MAY OCCUR.

ACCESSORIES WARNING

Invacare products are specifically designed and manufactured for use in conjunction with Invacare accessories. Accessories designed by other manufacturers have not been tested by Invacare and are not recommended for use with Invacare products.

INSTALLATION WARNING

After any adjustments, repair or service and before use, make sure that all attaching component parts are secure.

DO NOT install the Matrx PB assembly onto back canes with an outside diameter greater than 1-inch or less than 3/4-inch. Otherwise, injury or damage may occur.

The mounting position of the Matrx PB is directly related to the chair's stability. When the Matrx PB is added to a TILT and/or RECLINING chair, it may cause a decrease in the chair's stability. It may be necessary to reposition the FRONT CASTERS, REAR WHEELS, BACK ANGLE, TILT-IN-SPACE, RECLINE POSITION and/or SEAT DEPTH before use. Use extreme caution when using a new seating position.

When the Matrx PB is added to a TILT and/or RECLINING wheelchair, a RIGIDIZER BAR or CROSSBAR must be present to stabilize the back canes.

Ensure the Matrx PB is properly secured to the wheelchair before using. Otherwise injury or damage may occur.

WARNING

Skin condition should be checked very frequently after the installation of any new seating system. Your therapist and physician should be consulted if you have any questions regarding individual limitations and needs.

Working with your therapist, physician, and equipment supplier is the best way to assure that a seating choice matches your individual needs.

As the needs of the individual become more complex, the seating evaluation becomes more important.

2.4 Weight Limitation and Model Numbers



Refer to the chart for the weight limitation and stock model numbers.

Configured model numbers are: MPB-V, HDB, HDBXW16, HDBXW20, MPBD, DHDB, DHDXW16 and DHDXW20.

MPB = Posture Back, PBD = Posture Back Deep

HDB = Posture Back Heavy Duty, DHD = Posture Back Deep Heavy Duty, XW = Extra Wide

Bold = Stock models, Grey = Sizes not available.

WIDTH	HEIGHT			CONTOUR DEPTH	WEIGHT LIMIT	
	12 IN (30 CM)	16 IN (41 CM)	20 IN (51 CM)			
14 in (36 cm)	MPB1412	MPB1416		5 in (13 cm)	300 lbs (136 kg)	
	PBD1412	PBD1416		7 in (18 cm)		
16 in (41 cm)	MPB1612	MPB1616	MPB1620	5 in (13 cm)		
	PBD1612	PBD1616	PBD1620	7 in (18 cm)		
17 in (43 cm)	MPB1712	MPB1716	MPB1720	5 in (13 cm)		
	PBD1712	PBD1716	PBD1720	7 in (18 cm)		
18 in (46 cm)	MPB1812	MPB1816	MPB1820	5 in (13 cm)		
	PBD1812	PBD1816	PBD1820	7 in (18 cm)		
20 in (51 cm)	MPB2012	MPB2016	MPB2020	5 in (13 cm)		500 lbs (227 kg)
	PBD2012	PBD2016	PBD2020	7 in (18 cm)		
21 in (53 cm)		HDB2016	HDB2020	5 in (13 cm)		
		DHD2016	DHD2020	7 in (18 cm)		
22 in (56 cm)		HDBXw16	HDBXw20	5 in (13 cm)		
		DHDXw16	DHDXw20	7 in (18 cm)		
23 in (58 cm)		HDB2216	HDB2220	5 in (13 cm)		
		DHD2216	DHD2220	7 in (18 cm)		
24 in (61 cm)		HDBXw16	HDBXw20	5 in (13 cm)		
		DHDXw16	DHDXw20	7 in (18 cm)		
25 in (64 cm)		HDB2416	HDB2420	5 in (13 cm)		
		DHD2416	DHD2420	7 in (18 cm)		
26 in (66 cm)		HDBXw16	HDBXw20	5 in (13 cm)		
		DHDXw16	DHDXw20	7 in (18 cm)		
27 in (69 cm)		HDBXw16	HDBXw20	5 in (13 cm)		
		DHDXw16	DHDXw20	7 in (18 cm)		
28 in (71 cm)		HDBXw16	HDBXw20	5 in (13 cm)		
		DHDXw16	DHDXw20	7 in (18 cm)		
29 in (74 cm)		HDBXw16	HDBXw20	5 in (13 cm)		
		DHDXw16	DHDXw20	7 in (18 cm)		
30 in (76 cm)		HDBXw16	HDBXw20	5 in (13 cm)		
		DHDXw16	DHDXw20	7 in (18 cm)		

3 Setup

3.1 Hardware Kit Contents

i If any of the hardware is missing or misplaced, please contact our customer service department and arrangements will be made to send you the necessary replacements.

3/4" (19 mm) cane inserts are available from Motion Concepts upon request.

QTY	DESCRIPTION
2	Back Mounting Plates
2	Cane Clamps
2	Cane Inserts (1" (25 mm))
2	Cane Inserts (7/8" (22 mm))
6	Depth/Recline Adjustment Screws
6	Cane Clamp Screws
2	Cane Clamp Nut Plates
4	Long Mounting Pins (optional)

3.2 Tools Required

Wrenches: 7/8" (22 mm)

Allen Keys: (provided)

Utility Knife/Scissors

Phillips Screwdriver

3.3 Before Installation

Mounting Configuration



WARNING

When establishing the mounting position for the Matrix PB, ensure the stability of the wheelchair is not compromised.

Adjusting the forward and aft position of the backrest will alter the user's center of gravity within the wheelchair. A recessed back position can significantly reduce the rearward stability of the wheelchair. Similarly, a more forward back position will reduce the wheelchair's forward stability.

The mounting plates are shipped pre-assembled on the cane clamps in the rearmost mounting configuration. This maximizes the seat depth on the wheelchair seat (up to a maximum 2.5" (64 mm) rearward offset - see image A).

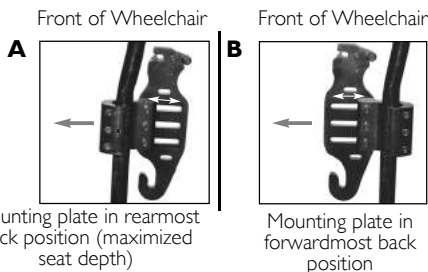
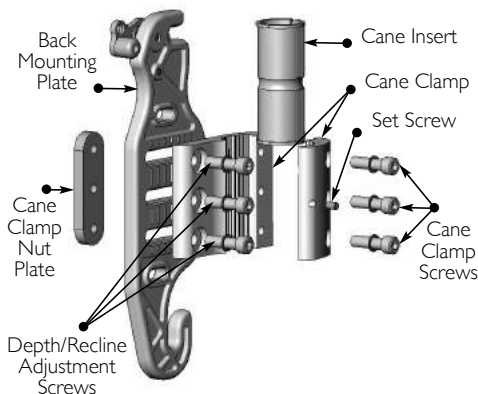
By changing the orientation of the mounting plates on the cane clamps, the assembly can be reconfigured* to provide a more forward mounting position for the back if desired (up to a maximum 2.5" (64 mm) forward offset - see image B).

i Each mounting plates is also designed to provide 1.5" (38 mm) of fore and aft adjustment relative to the cane clamp

*To reconfigure a mounting plate/cane clamp to the forwardmost orientation:

1. Detach the mounting plate from the cane clamp (3 screws);
2. Rotate the cane clamp 180° and re-fasten it to mounting plate;
3. Install cane clamp as illustrated in image B.

Tape Measure/Ruler



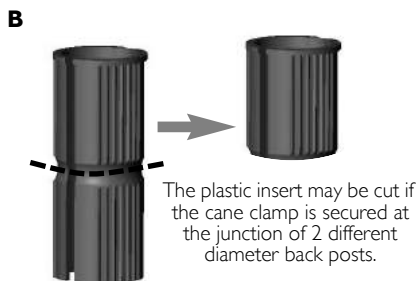
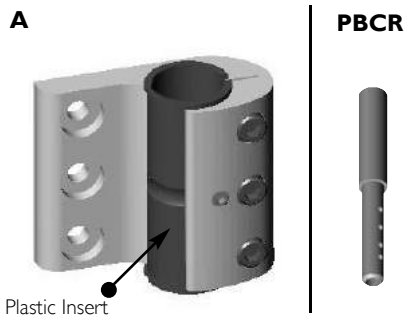
Accommodating Back Post Size

i On some wheelchairs, there may be an uneven seam along the back posts where a smaller diameter tube is inserted into a larger diameter tube. If the cane clamps must be mounted over this seam, the plastic inserts may be cut in half to allow the clamp to fasten securely onto the back posts (see image B).

For wheelchairs with short back canes, it may be necessary to install Matrix PB Cane Replacements (PBCR's). The PBCR's are designed to replace existing push handles or cane extensions on standard 1" (25 mm) back posts. The cane clamps can be mounted directly onto the replacement back canes in order to allow proper installation of the Matrix PB. Cane replacements are available from Motion Concepts (part# TRX2810).

- 1" (25 mm) back post - Cane clamps are installed without plastic inserts.
- 7/8" (22 mm) back post - Requires 7/8" (22 mm) plastic inserts (provided)
- 3/4" (19 mm) back post - Requires 3/4" (19 mm) plastic inserts*

i *3/4" (19 mm) inserts are available from Motion Concepts upon request.



3.4 Installing the Matrix PB

Installing the Mounting Plates



WARNING

The installation hardware provided is high strength and tested for durability. **DO NOT** substitute hardware. Use only the hardware supplied.

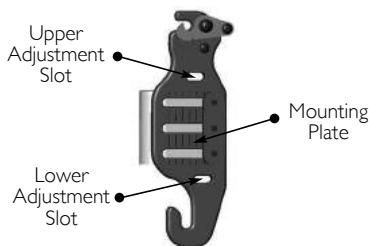
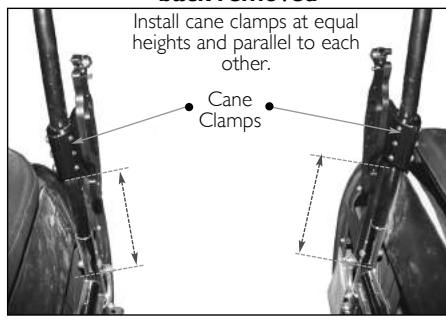
1. Remove existing wheelchair back upholstery (if applicable).
2. Establish the desired mounting plate set-up/configuration for the user. Refer to [Before Installation](#) on page 5.
3. Loosen cane clamp screws (x3) and loosely install the cane clamp (with mounting bracket) onto each back post. (Install plastic inserts if required).
4. Starting on one side, position the cane clamp at the desired height on the back post and tighten the clamp screws enough to hold it in place. Clamps and set screws will be fully tightened after the back is installed and all final adjustments have been made.
5. From a fixed point on the wheelchair (e.g. seat frame) measure the exact height of the installed cane clamp assembly, and install the second cane clamp at the same height on the opposite back post - see image A. Ensure the cane clamps/mounting plates are mounted parallel with each other.



Additional upper and lower adjustment slots are provided on the mounting plate to allow alternate mounting heights if obstacles are encountered. Using these alternate mounting slots will increase or decrease the back height by 7/8" (22 mm). These alternate slots will limit the range of available depth and/or recline angle adjustment.

6. To install the Matrix PB onto the mounting plates:
 - A. Slide the lower mounting pins into the hooked slots at the bottom of each mounting plate (see image B).
 - B. With the lower pins in place, lock/snap the upper mounting pins into the latch mechanism at the top of the mounting plates.

A Front view of wheelchair with back removed



B Upper Mounting Pin



Lower Mounting Pin

Mounting Pin Configurations/Setup



Our standard Matrix PB backs are available in multiple widths (14" (36 cm), 16" (41 cm), 17" (43 cm), 18" (46 cm) and 20" (51 cm)). Two sets of mounting pins are supplied with every Matrix PB (standard pins and long pins). Each backrest is factory assembled with standard mounting pins. Standard pins provide sufficient adjustability to install the Matrix PB onto most typical wheelchair back canes, and are able to compensate for back cane widths up to 1" (25 mm) narrower than the actual back width. However, long pins may be required in situations where the wheelchair seat frame (including back canes) is wider than the actual Matrix PB back width. The long pins will accommodate a wider base seat size up to 1" (25 mm) wider than the actual back width.

Example: for a 16" (41 cm) Matrix PB:

15" (38 cm) wheelchair seat frame (back cane) width = standard pins

16" (41 cm) wheelchair seat frame (back cane) width = standard pins

17" (43 cm) wheelchair seat frame (back cane) width = long pins

When the narrowest setting is used for the back, the depth/recline range will be less than in wider positions.

Extended Mounting Pins* (EMP) are available (sold separately) to allow interfacing of our Matrix PB backs onto wheelchair seat frames up to 2" (5 cm) wider than the actual back width.



CAUTION

* EMP's are only for use with our standard back sizes (for up to 300 lb (136 kg) weight capacity); EMP's are not recommended for use in tilt applications.

Mounting Pin Adjustment



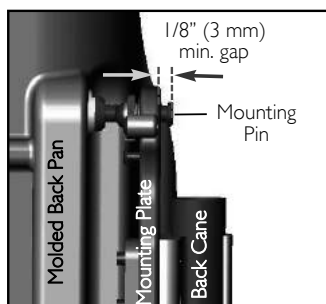
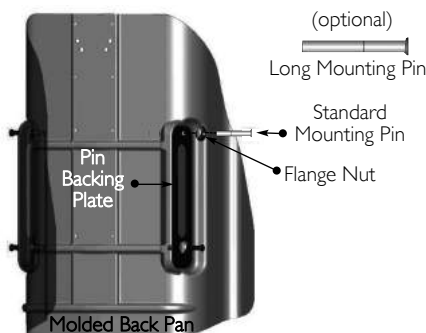
CAUTION

Improper pin set-up may cause damage to the back pan and/or the mounting plates. Ensure sufficient spacing is provided between the mounting plates and the mounting pins (a min. gap of 1/8" (3 mm) is recommended).

Ensure flange nuts are fully tightened; Failure to do so may cause damage/cracking in the back pan.

Ensure pins do not rotate when tightening the flange nuts. NEVER use Loctite® on mounting pin hardware.

1. With the back secured in place on the wheelchair, determine the amount of adjustment required for each mounting pin (see figure).
2. Remove the backrest from the wheelchair and use a wrench to loosen the flange nut on each pin that requires adjustment. If necessary, replace the standard mounting pins with long mounting pins.
3. Adjust the mounting pin depth (clockwise to shorten/counter-clock wise to lengthen) so that a minimum gap of 1/8" (3 mm) exists between the top of the pin and the mounting plate.
4. Re-tighten each flange nut to secure the pins in place.



Installing the Back

1. Verify that the overall fit and alignment of the back is correct (make adjustments as needed).
2. Fully secure the cane clamp screws onto both back posts, and tighten the set screws to ensure the mounting plates do not slip or rotate.
3. To best determine the optimal depth & recline settings for the back, the user should be seated in the wheelchair. While seated, loosen the depth/recline screws on the mounting plates and adjust the back to the desired depth and recline angle. Re-tighten all screws to lock the back in position.

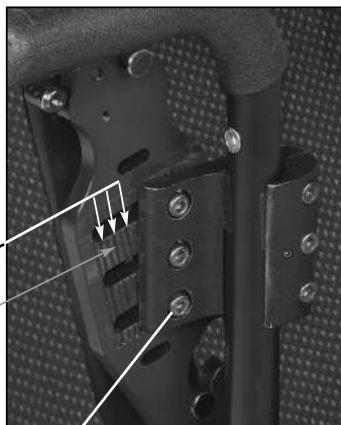
- i** Ensure that the depth/recline adjustment for the back is made symmetrically* on the left & right mounting plates.

The vertical score lines on the mounting plates are designed as a point of reference to assist with symmetrical mounting (see image). Since the back can be mounted in a rotated (reclined) position if desired, it will not always be mounted parallel with these vertical lines.

Score Lines

*Use score lines to make symmetrical adjustments on the left and right mounting plates.

Depth/Recline Screws



4 Usage

4.1 Disengaging the Back from the Wheelchair

1. Perform one of the following:
 - No Cord Release Mechanism - Simultaneously lift the release levers (left & right) to unlock the latch mechanism and release the upper pins from the mounting plates. Refer to the figure.
 - Cord Release Mechanism - Lift cord upward to unlock/open the release levers. Refer to [One-Hand Cord Release Mechanism](#) on page 10.
2. Lift entire backrest up and forward to disengage the lower pins from the lower slots in the mounting plates.

Upper Mounting Pin

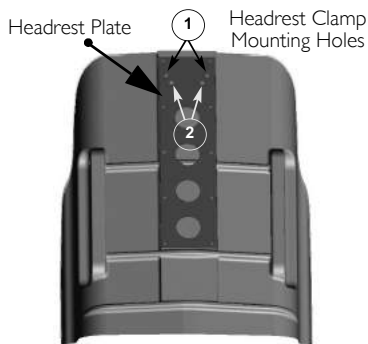


Lower Mounting Pin

4.2 Head/Neck Support Attachments (Optional)

All Matrix PB backs contain a built-in headrest plate which can be used for attaching optional head and neck supports.

Two sets of headrest clamp mounting holes are provided in order to install most standard types of headrests (see Figure). If required, additional holes may be drilled into the back pan and headrest plate to mount the necessary hardware.



Installing a Headrest Clamp

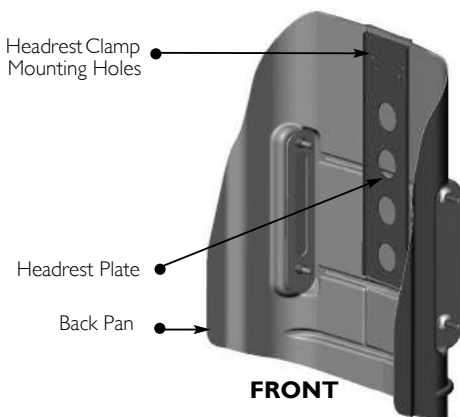


WARNING

Headrests that have been fitted onto the Matrix PB back are not intended for use during transport, and will not provide adequate support in the event of a crash. Users of wheelchairs should be transferred into appropriate seating in vehicles for transportation and use be made of the restraints made available by the auto industry.

The headrest plate is recessed into the back pan to prevent hardware from protruding into the back cushion. Please ensure that the hardware from the headrest clamp does not extend beyond this recessed area.

1. Open (pull down) cover and determine the appropriate set of mounting holes for the headrest clamp (drill new holes if necessary).
2. Close the cover and carefully punch holes through the cover fabric that correspond with the determined mounting holes for the headrest clamp.
3. Open and pull down the front half of the cover (enough to access the appropriate mounting holes on the headrest plate).
4. Place the headrest clamp on the outside of the back cover and push the mounting screws inward through the fabric and through the headrest plate.
5. Secure (bolt) the headrest clamp into place and close the cover.



4.3 One-Hand Cord Release Mechanism

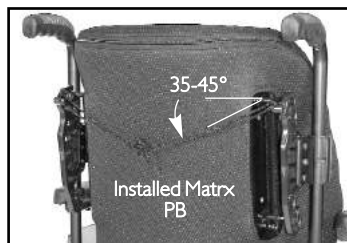
1. Thread the nylon cord through the holes in the latch mechanism at the top of the left and right mounting plates (see image A)
2. Install the cord lock mechanism onto the cord (see image B). Press the button to open the lock mechanism and slide the two open ends of the nylon cord through the opening.
3. With the back properly installed on the wheelchair, adjust the cord length so that it hangs at approximately a 35-45° angle along the back pan (this allows the release mechanism to operate more effectively). If necessary, cut/remove excess cord to eliminate any risk of entanglement. Once adjusted, combine the loose cord ends into a single knot to prevent the cord-lock from slipping.



If the cord length was modified, carefully melt the ends of the cord to prevent fraying.




Thread cord through the latch mechanism.




B

Tie a knot using both cord ends.



Melt cord ends to prevent fraying.

Press button to open/adjust.




5 Care and Maintenance

5.1 Cleaning

The cover may easily be wiped down with a damp cloth when necessary.

The cover can be removed for laundering or providing access to the inside of the back for modification.

Open the zipper at the top and carefully remove the cover by releasing the velcro hook and loop fasteners along the sides of the back shell. The zipper should be closed prior to laundering.

5.2 Inspection



WARNING

Check ALL fasteners weekly to ensure that mechanical connections and attaching hardware are tightened securely - otherwise injury or damage may occur.

DO NOT continue to use this product if problems are discovered. Corrective maintenance can be performed at or arranged through your equipment supplier.

Visually inspect parts including hardware, brackets, upholstery materials, foams (if accessible), and plastics, for deformation, corrosion, breakage, wear or compression.

6 After Use

6.1 Reuse



WARNING: Risk of Injury

Always have a dealer inspect the product for damage before transferring the product to a different user. If any damage is found, DO NOT use the product. Otherwise injury may occur.