

**matrx**<sup>®</sup>  
SEATING SERIES



# Invacare Matrx ELITE E2S/E2D BACK FIXED HARDWARE



## INSTALLATION and SET-UP MANUAL

**i** **IMPORTANT!** The installation instructions contained in this manual must only be carried out by a qualified service technician.

*This manual may not be reproduced or reprinted either partly or completely without previous written consent from Motion Concepts or its statutory representatives.*

*This manual is compiled from the latest specifications and product information available at the time of publication. We reserve the right to make any necessary changes as they become necessary. Any changes made to our products may cause slight variations between the illustrations and explanations in this manual and the product you have purchased. If you have any questions or concerns regarding the information provided in this manual, please contact our Customer Service Department for assistance.*

## 1.0 GENERAL WARNINGS/SAFETY INFORMATION

**i IMPORTANT!** The instructions contained in this manual are provided for use by Qualified Technical Service Personnel (for installation purposes only). Additional End User Warnings and Safety Information is provided separately in TRD0586, Matrx Elite E2S/E2D Back User Manual (EU).

**i IMPORTANT!** Please refer to the **Wheelchair Owners/Operators Manual** for additional safety information, warnings and cautions related to the set-up and adjustment of the OEM wheelchair.

### 1.1 SAFETY SYMBOLS:

The following symbols are used throughout this service manual to identify warnings, cautions and important notes. It is very important that you read and understand them completely.

- ⚠ CAUTION!** Failure to heed the cautions in this manual may result in damage to your Matrx Seating product.
- ⚠ WARNING!** Failure to heed the warnings in this manual may result in death, serious injury or damage.
- i IMPORTANT!** Important information to remember during installation, set-up and/or adjustment of your Matrx Seating product.

### 1.2 GENERAL SAFETY AND INSTALLATION WARNINGS!

#### **⚠ WARNING! Risk of Serious Injury**

When establishing the mounting position for the Invacare® Matrx® back, ensure the stability of the wheelchair is not compromised. Adjusting the forward and aft position and/or angle of the backrest will alter the user's center of gravity within the wheelchair. It may be necessary to reposition the front casters, rear wheels, back angle, tilt-in-space, recline position and/or seat depth before use.

#### **⚠ WARNING! Risk of Serious Injury or Damage**

- The procedures in this manual should be performed by a qualified technician
- The hardware provided is high strength and tested for durability. **Do Not substitute hardware.** Use only the original hardware supplied with your Matrx back
- Attaching hardware that is loosely secured could cause loss of stability resulting in serious injury or damage.
- After ANY adjustments, repair or service and before use, make sure that all attaching hardware is tightened securely.
- DO NOT install the Invacare® Matrx® back assembly onto back canes with an outside diameter greater than 1" (25mm) or less than 3/4" (19mm). Otherwise, injury or damage may occur.
- For power seating applications, the Fixed Mounting Hardware must be used.

#### **⚠ WARNING! Risk of Injury**

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

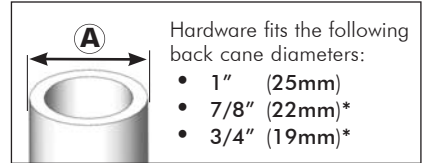
## 2.0 MATRX ELITE E2S/E2D BACK INSTALLATION

### 2.1 FITTING THE E2S/E2D BACK TO THE WHEELCHAIR:

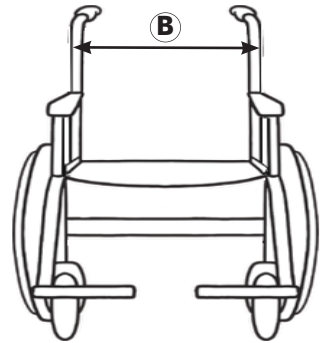
PRIOR to installation, verify the diameter of the wheelchair back canes (**A**) and the width between back canes (**B**)

Model #	Description	Contour Depth
E2Swwhh	Matrx Elite E2	3in (8cm)
E2Dwwhh	Matrx Elite E2 Deep	6in (15cm)

\*wwhh = width/height



E2S/E2D Back Width	FITS ONTO BACK CANE WIDTH (B)		
	Min Width	MiniSet Max Width	EasySet Max Width
14in (36cm)	13in (33cm)	15in (38cm)	16in (41cm)
15in (38cm)	14in (36cm)	16in (41cm)	17in (43cm)
16in (41cm)	15in (38cm)	17in (43cm)	18in (46cm)
17in (43cm)	16in (41cm)	18in (46cm)	19in (48cm)
18in (46cm)	17in (43cm)	19in (48cm)	20in (51cm)
19in (48cm)	18in (46cm)	20in (51cm)	21in (53cm)
20in (51cm)	19in (48cm)	21in (53cm)	22in (56cm)



The type of Mounting Hardware can vary depending on several factors, including the height of the back shell, the needs of the end user and the type of wheelchair.

E2S/E2D Back Height	STANDARD Hardware	OPTIONAL Mounting Hardware			Weight Capacity
	Removable	Heavy-Duty	Fixed	Split	
6in (15cm)	MiniSet -see Installation Instruction TRD0590	HD MiniSet -see Installation Instruction TRD0590	FIXED MiniSet -see Installation Instruction TRD0591	N/A	300lb (136kg)
8in (20cm)					
10in (26cm)					
12in (31cm)*					
14in (36cm)*					
16in (41cm)*	EasySet -see Installation Instruction TRD0590	HD EasySet -see Installation Instruction TRD0590	FIXED EasySet -see Installation Instruction TRD0591	SPLIT Hardware -see Installation Instruction TRD0247	300lb (136kg)
18in (46cm)					
20in (51cm)					

**\*Note:** E2S/E2D Backs may be configured with EasySet hardware for the back heights indicated. (The range of back height adjustment will be limited for these configurations)

## 2.2 E2 FIXED HARDWARE ASSEMBLY OVERVIEW

**i IMPORTANT!** The E2 Fixed hardware utilizes a unique **fixed mounting plate\*** in place of the (seahorse) mounting plate and mounting bracket ass’y used on the E2 Removable Hardware. If converting from removable to fixed hardware, the cane clamps from the E2 Removable Hardware assembly are re-used to complete the E2 Fixed Hardware installation.

**\*Note:** There are two styles of fixed mounting plates for use on the E2S/E2D Back (depending on the overall height of the back shell). Back heights of 16" (41cm) or less come standard with **Fixed MiniSet** hardware; and back heights of 18" (46cm) and greater come standard with **Fixed EasySet** hardware

### 2.2.1 FIXED MINISSET HARDWARE

Standard Mounting Hardware for Back Heights 16" (41cm) or less

2 - MiniSet Fixed Mounting Plate (A)

4 - Width/Height Adjustment Screws (B)

2 - E2 MiniSet Washer Plate (C)

2 - E2 MiniSet Nut Plate (D)

2 - Cane Clamp Ass’y (E)

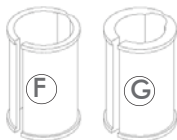
2 - Cane Inserts 7/8" (22mm) (F)

2 - Cane Inserts 3/4" (19mm) (G)

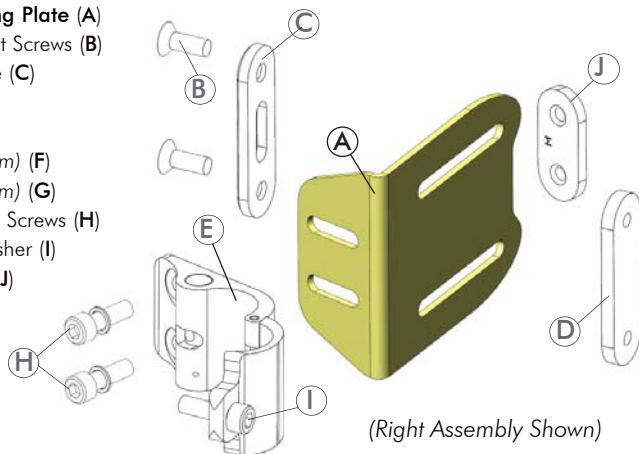
4 - Depth/Angle Adjustment Screws (H)

2 - Cane Clamp Screw/Washer (I)

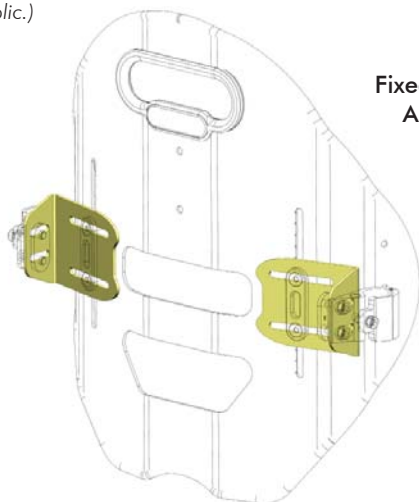
2 - Cane Clamp Nut Plate (J)



cane inserts (if applic.)



(Right Assembly Shown)

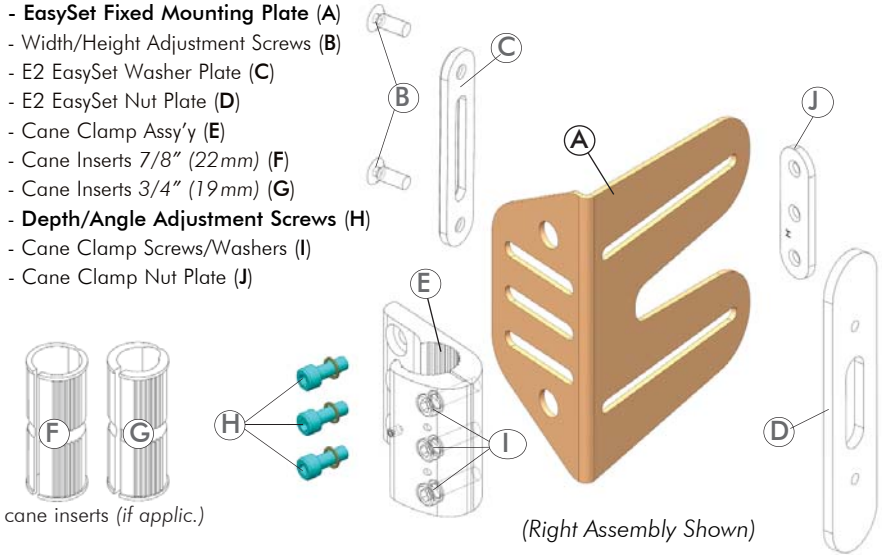


Fixed MiniSet Hardware  
Assembly (Installed)

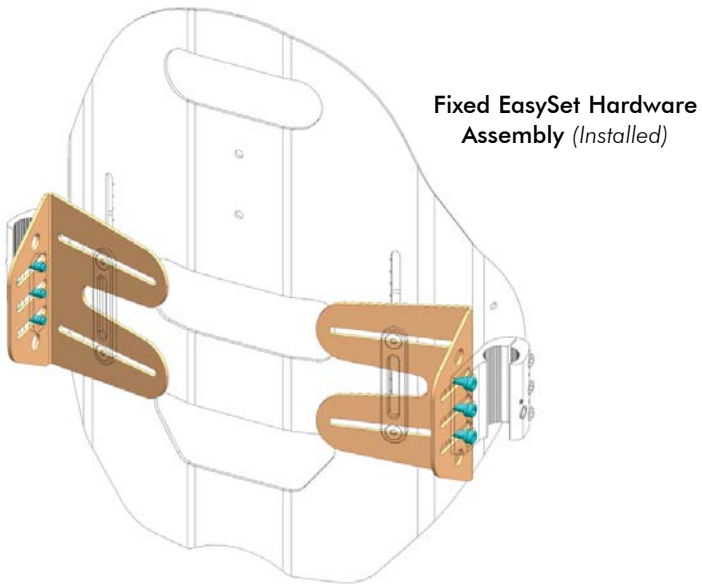
## 2.2.2. FIXED EASYSET HARDWARE

Standard Mounting Hardware for Back Heights **18" (46cm) or greater**  
(<sup>1</sup>Optional Mounting Hardware for Back Heights 12/14/16" (31/36/41cm))

- 2 - EasySet Fixed Mounting Plate (A)
- 4 - Width/Height Adjustment Screws (B)
- 2 - E2 EasySet Washer Plate (C)
- 2 - E2 EasySet Nut Plate (D)
- 2 - Cane Clamp Assy'y (E)
- 2 - Cane Inserts 7/8" (22mm) (F)
- 2 - Cane Inserts 3/4" (19mm) (G)
- 6 - Depth/Angle Adjustment Screws (H)
- 6 - Cane Clamp Screws/Washers (I)
- 2 - Cane Clamp Nut Plate (J)



<sup>1</sup>**Note:** The range of back height adjustment will be limited/reduced when using these non-standard (optional) hardware configurations.



**i** **NOTE:** If any of the supplied hardware is missing or misplaced, please contact your local Service Provider to obtain the necessary replacements.

## 2.3 E2 FIXED MOUNTING PLATE INSTALLATION

**i IMPORTANT!** Unless otherwise necessary, **always** ensure that adjustments are made **symmetrically** on the left and right mounting brackets.

**i IMPORTANT!** The **Fixed MiniSet** mounting plates allow for installation of the E2S/E2D back onto back canes up to **1" (25mm) wider or 1" (25mm) narrower** than the nominal back width. The Fixed **EasySet** mounting plates allows for installation of the E2 Back onto back canes up to **2" (51mm) wider or 1" (25mm) narrower** than the nominal back width.

### 2.3.1 INSTALLING THE E2 FIXED MOUNTING PLATES:

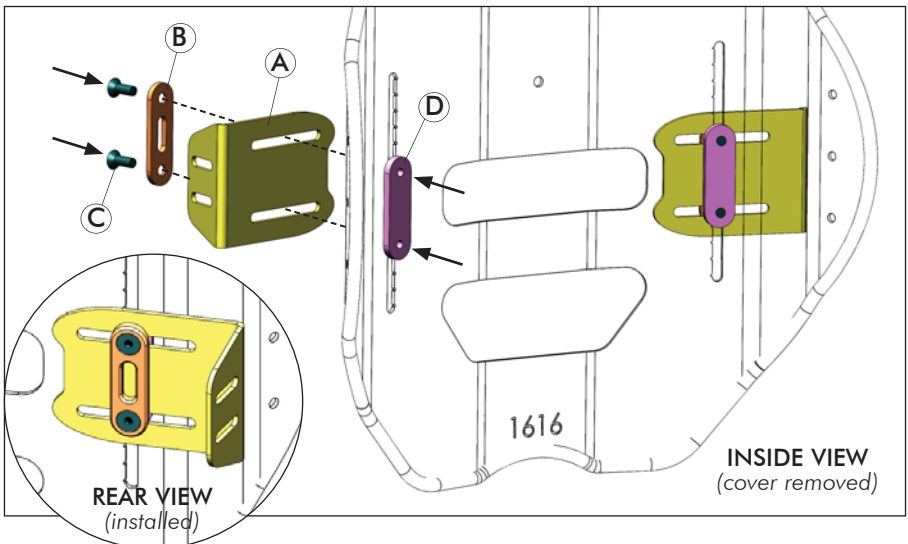
**i NOTE:** Prior to installing the Fixed Mounting Brackets, the E2 Back Cover must first be removed by releasing the hook and loop fasteners along the bottom edge and inside of the back shell.

**Fixed Mounting Plate Installation:** (see Fig. 1 and Fig. 2)

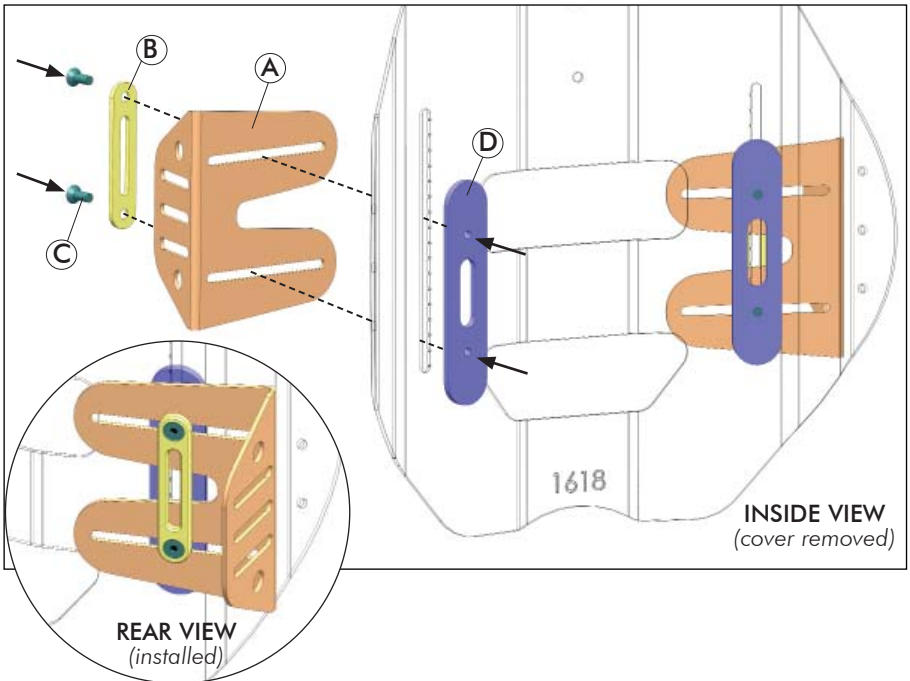
1. Working on one side of the back shell at a time, align the washer plate (B) with the slots in the fixed mounting plate (A) and insert the adjustment screws (C) through both parts.
2. From the rear of the back shell, align the mounting plate assembly (from step 1 above) with the vertical slot in the E2 back shell, then secure\* the adjustment screws into the threaded nut plate (on the inside of the back shell).
3. Repeat steps 1. and 2. to install the fixed mounting bracket onto the opposite side of the back shell.

(\*note: the fixed mounting plates can remain loosely installed at this time. The mounting plate assemblies will be fully secured following final installation/adjustment of the E2S/E2D Back- refer to **section 2.6**)

**Fig. 1. MiniSet Fixed Mounting Plate Installation**



**Fig. 2. EasySet Fixed Mounting Plate Installation**

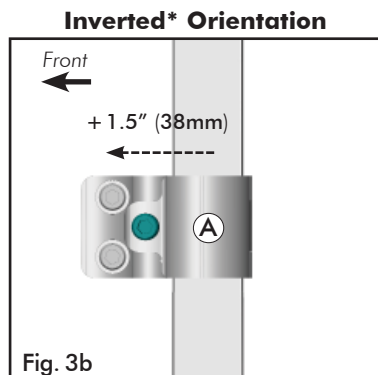
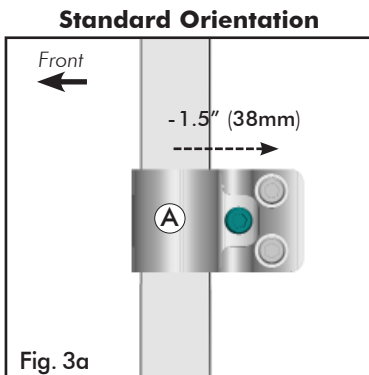


## 2.4 CANE CLAMP ORIENTATION

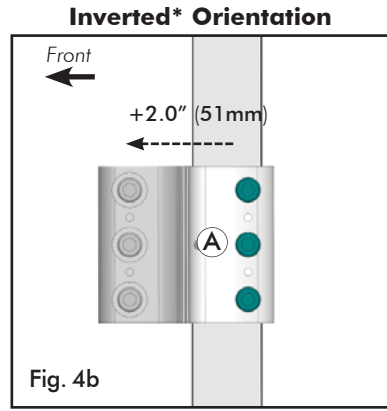
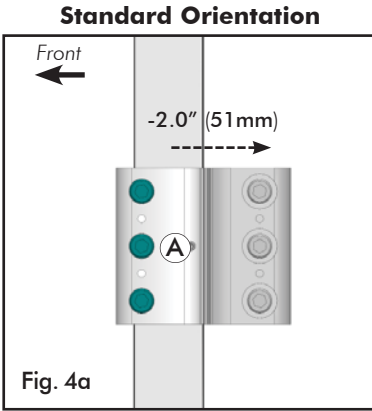
The orientation of the Cane Clamps (A) provides approximately 4" (102mm) of fore/aft adjustment for the **Fixed EasySet** hardware, and 3" (76mm) of fore/aft adjustment for the **Fixed MiniSet** hardware. PRIOR to installing the Cane Clamps, determine the orientation that will best meet the needs of the end user.

- **Standard Orientation (Fig. 3a/4a) = maximized seat depth**
- **Inverted Orientation (Fig. 3b/4b) = minimized seat depth**

**NOTE:** Additional depth adjustments can be made via the slotted channels in the fixed mounting plates - see **section 2.6.2**.







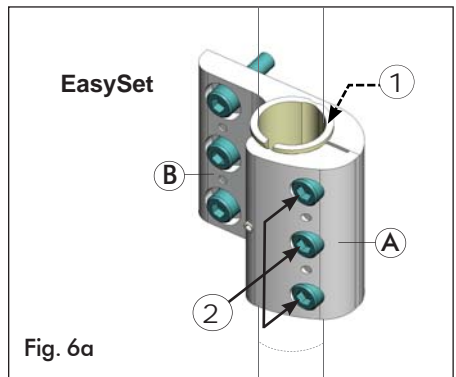
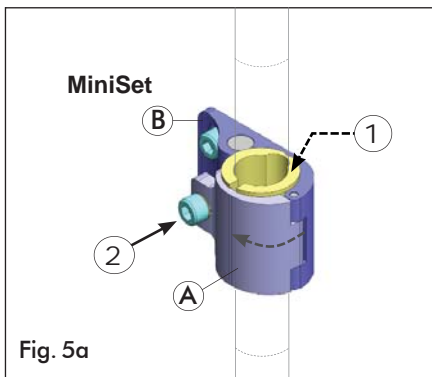
(\*Requires the mounting plate to be disassembled from the cane clamp and rotated 180°)

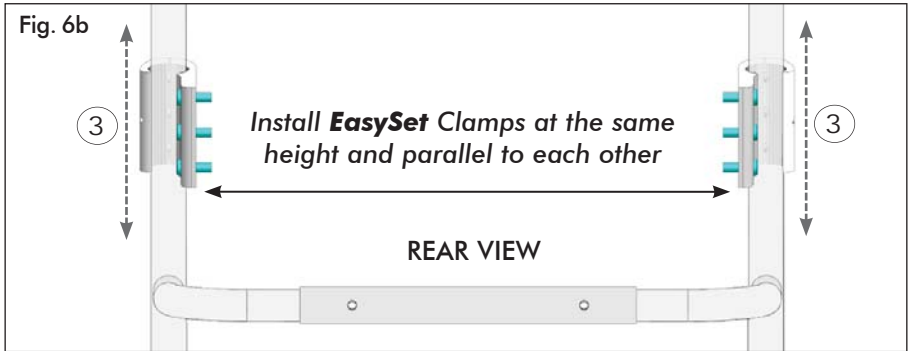
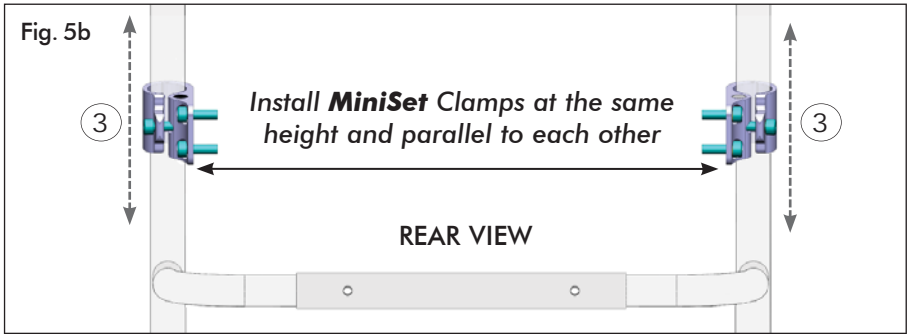
## 2.5 CANE CLAMP INSTALLATION (see Fig. 5a/5b; Fig 6a/6b)

**NOTE:** The mounting position of the cane clamps should be estimated so that, when installed, the installed Elite E2S/E2D back will be close to the desired back height. A higher cane clamp mounting position typically works best. Additional fine-tune height adjustment of the back shell will be available following installation

1. (If applicable) Remove existing wheelchair back according to the wheelchair manufacturers instructions.
2. Install the MiniSet **or** EasySet Cane Clamps onto each back cane as follows:
  - (If necessary) Install the appropriate cane insert onto the back cane (1).
  - Position/close the outer clamp (A) over the back cane (cane insert) and align it with the inner clamp (B).
  - Loosely secure the clamp assembly to the back cane via the mounting screw(s) (2).
  - Adjust the height\* of each clamp assembly (3) equally along the back canes in order to achieve the estimated final back height.
  - Fully secure all cane clamp mounting screws (2)

**\*NOTE:** The final back height can be further adjusted (via mounting brackets) following installation of the Elite E2S/E2D back- see **section 2.6.1**





## 2.6 E2 BACK INSTALLATION, SET-UP & ADJUSTMENT

**i NOTE:** During final set-up, we recommend having the end user seated in the wheelchair to best fit/position the Elite E2S/E2D back.

**i IMPORTANT!** Unless otherwise necessary, **always** ensure that adjustments are made **symmetrically** on the left and right mounting brackets.

### **! PLEASE NOTE**

The E2 Fixed Mounting Plate screws (A) will simultaneously adjust the **Width and Height** of the back (relative to the back canes). Please read through ALL set-up/adjustment instructions, PRIOR to beginning the back installation.

The vertical (height) adjustment slots on each E2S/E2D back shell will vary in length depending on the nominal back height- refer to **Table 1**.

Table 1. BACK SHELL: RANGE OF HEIGHT ADJUSTMENT

Back Height	Adjustment Range	Back Height	Adjustment Range
6" (15cm)	1.25" (32mm)	12" (31 cm)	2.5" (63mm)
8" (23cm)	1.5" (38mm)	14", 16" (36, 41cm)	3.5" (89mm)
10" (26cm)	2.0" (51mm)	18", 20" (46, 51cm)	3.25" (83mm)

## 2.6.1 BACK INSTALLATION, WIDTH AND HEIGHT ADJUSTMENT:

**Installation, Width and Height Adjustment:** (see Fig. 7a/7b, 8a/8b)

1. Loosen (do not remove) the adjustment screws (A), then adjust the width of both mounting plates (B) horizontally (1) so that the mounting plates align with the left and right cane clamp assemblies- see Fig 7a/8a.
2. To install the Elite E2 Back (2), insert the mounting screws (C) through the cane clamp (E) and mounting plate (B), and secure into the threaded nut plate (D).
3. With the E2 Back securely installed, set the final back height\* and adjust the back shell so that it is centered (symmetrically) between the back canes (3). When possible, this step should be performed with the user seated in the chair in order to best set the back position.

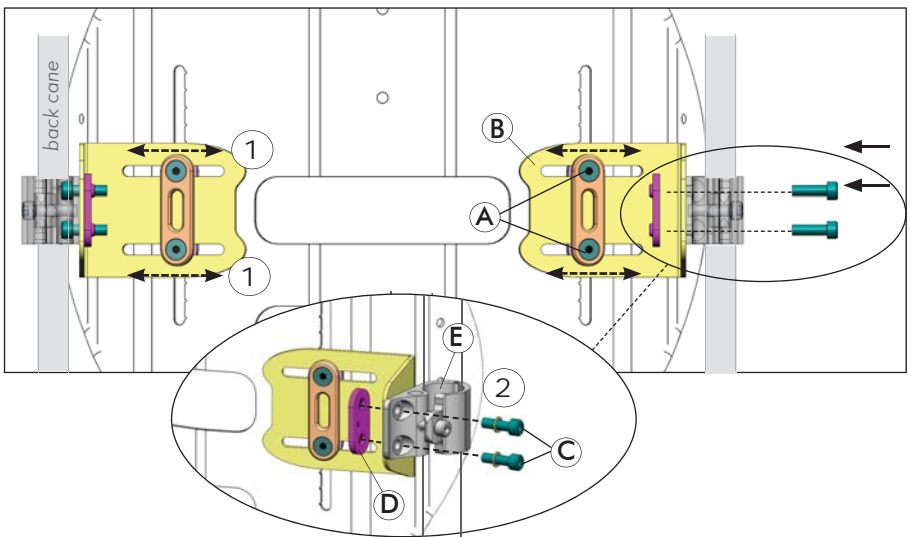
**NOTE:** use the hash marks along the vertical slots on the back shell to ensure both back height (mounting brackets) are adjusted equally. The minimum recommended back height\* is 4" - 5" (10-13cm) from the top of the seat surface - see Fig 7b/8b.

4. Tighten the adjustment screws (A) on both mounting plates (B) to secure the Elite E2S/E2D Back in the desire position.
5. Refer to Section 2.6.2 for E2 Back Depth and Angle Adjustments.

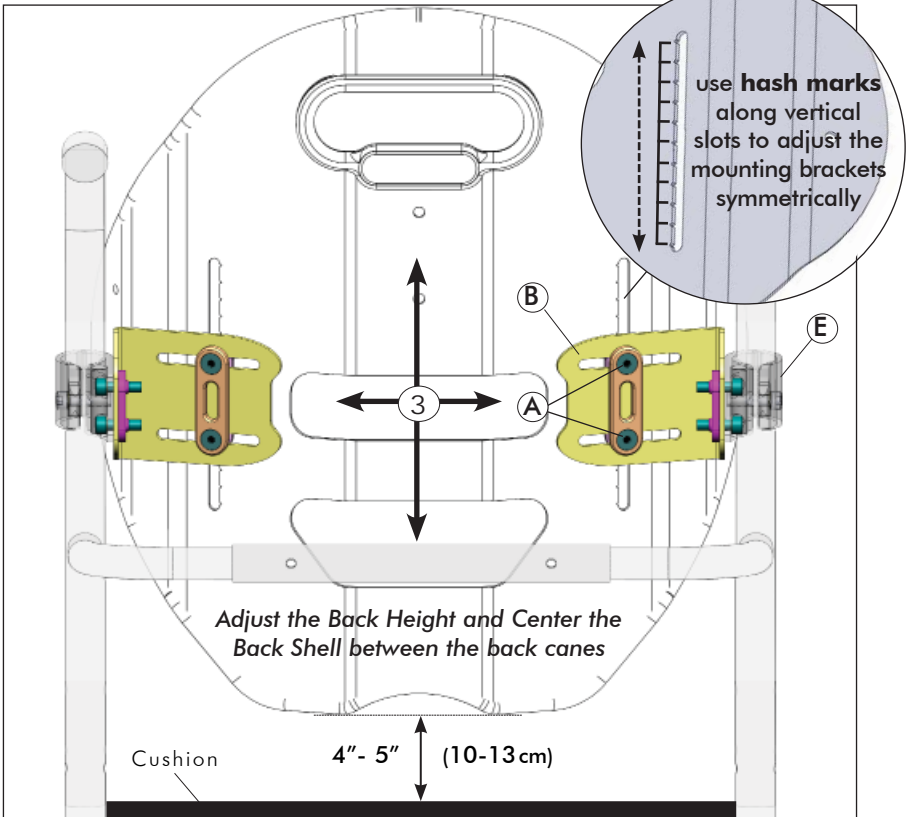
\***Note:** The minimum recommended back height is provided as a guideline only. The final back height should be adjusted/set to best meet the end user's needs-see **Important!** note below.

**i IMPORTANT!** Always ensure that the bottom of the back is positioned anatomically below the Posterior Superior Iliac Spine (PSIS). If you have any questions or concerns regarding proper back height adjustment, please contact your Motion Concepts representative for assistance.

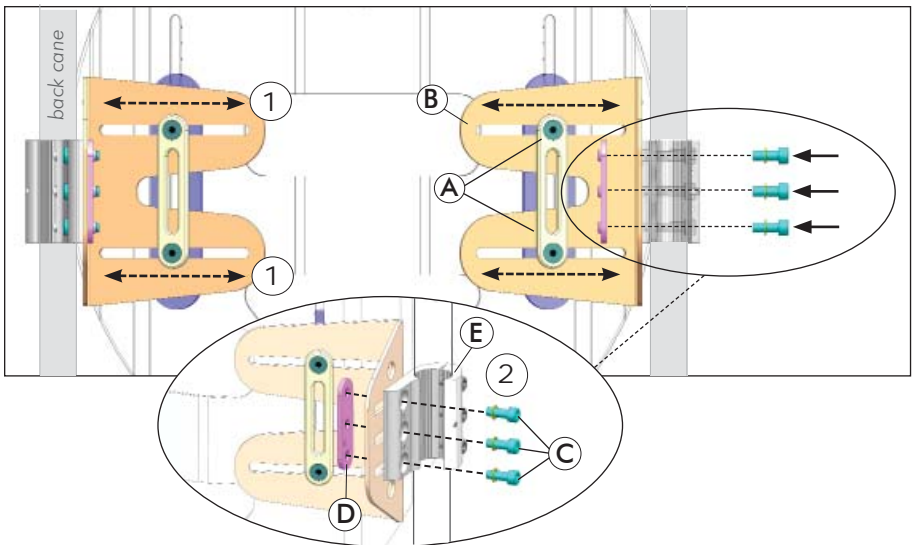
**Fig. 7a E2 Back Installation- Fixed MiniSet:**



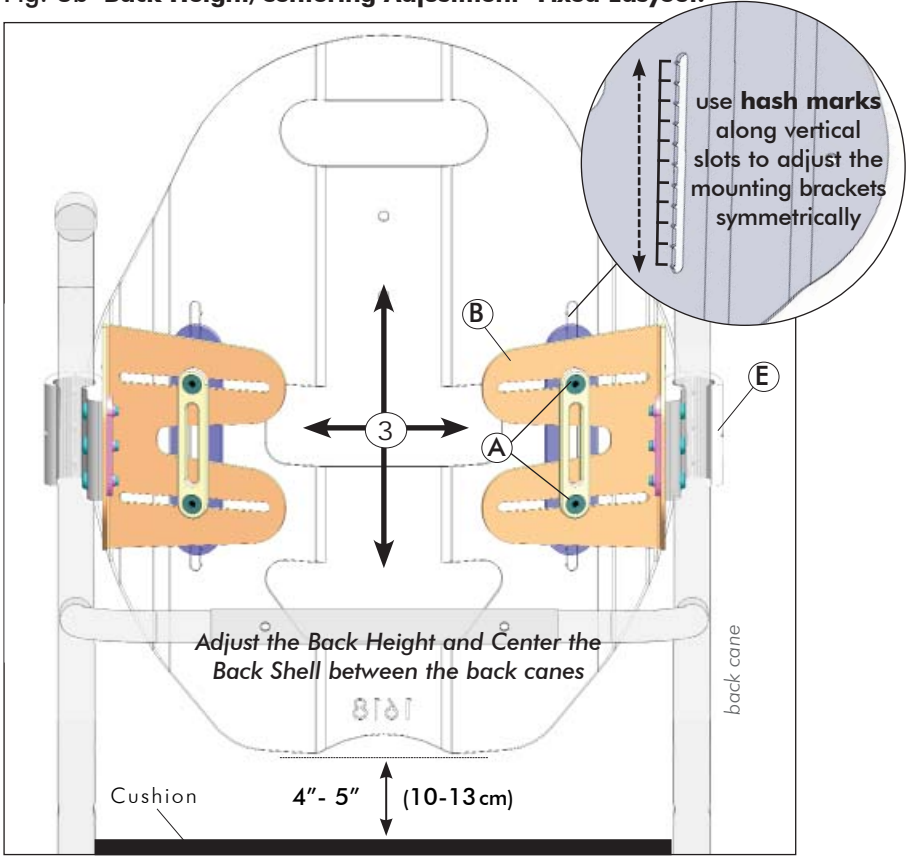
**Fig. 7b Back Height/Centering Adjustment- Fixed MiniSet:**



**Fig. 8a Back Installation- Fixed EasySet:**



**Fig. 8b Back Height/Centering Adjustment- Fixed EasySet:**



## 2.6.2 BACK DEPTH AND ANGLE ADJUSTMENT:

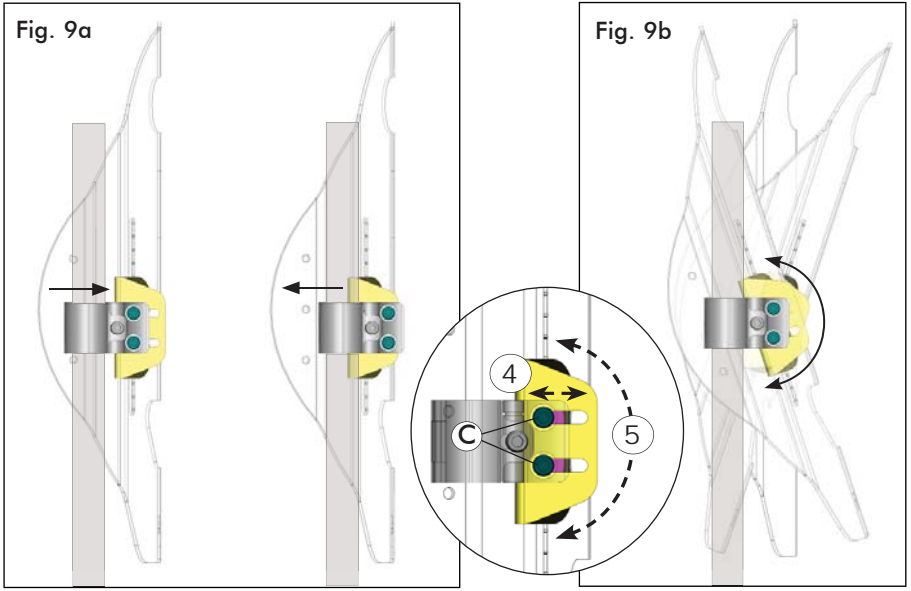
### ! PLEASE NOTE

The Mounting Screws (C) on the cane clamp assembly will simultaneously adjust the **Depth and Angle** of the E2 Back (relative to the back canes). Please read through ALL adjustment instructions, PRIOR to beginning the adjustments

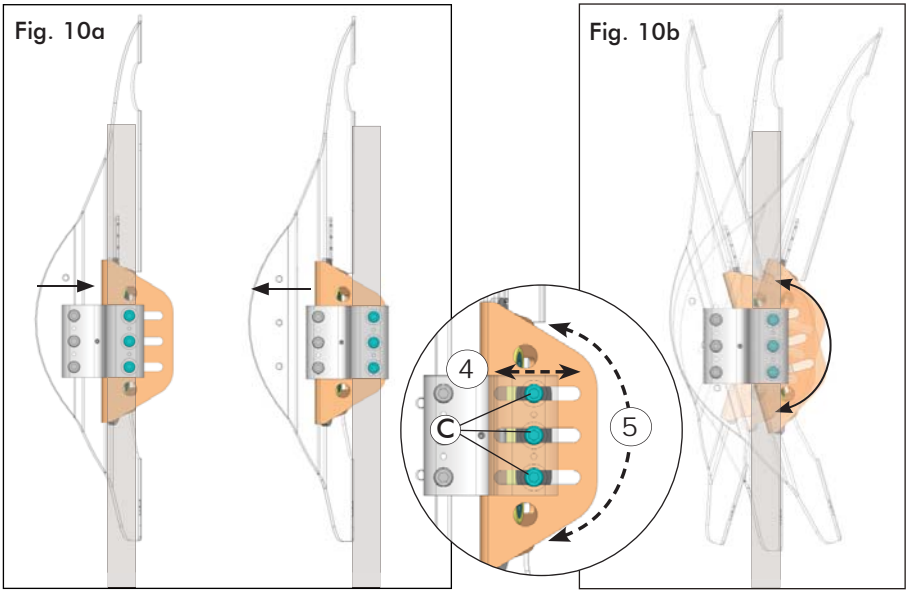
1. With the end user seated in the chair (when possible), loosen (*do not remove*) the mounting screws (C) on the left and right cane clamp assemblies, then adjust the E2 back depth (Fig. 9a/10a) (4) and back angle (Fig. 9b/10b) (5), as necessary, to best fit the needs of the end user\*.
2. Once the final back depth and angle has been determined, fully tighten the mounting screws (C) on both cane clamps (E) to secure the Elite E2S/E2D Back into place, and verify ALL mounting/adjustment hardware is fully secured.

*\*note: the slotted channels in the fixed mounting plates allow for approximately 1" (26mm) of depth adjustment on the Fixed MiniSet hardware, and up to 1.5" (39mm) of depth adjustment on the Fixed EasySet hardware. Both fixed hardware assemblies allow for approximately  $\pm 20^\circ$  of angle adjustment.*

### Back Depth and Angle Adjustment - Fixed MiniSet



### Back Depth and Angle Adjustment - Fixed EasySet

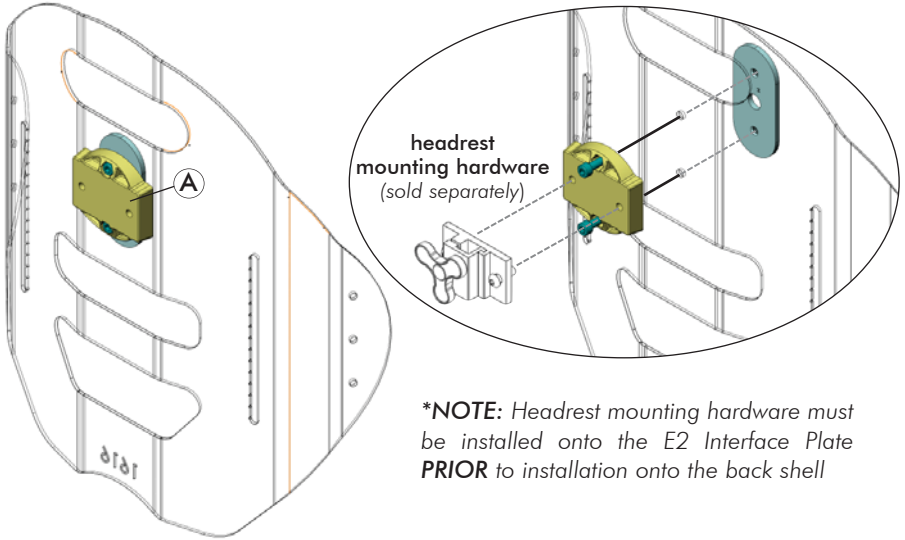


**i** NOTE: The range of depth adjustment will be reduced when the angle of the Elite E2S/E2D back (fixed mounting plate) is altered.

## 3.0 ELITE E2S/E2D ACCESSORIES

### 3.1 E2 HEADREST INTERFACE PLATE

The E2 Headrest Interface Plate (A) is included only with Elite E2S/E2D backs for **Back Heights** ranging from **14" (36cm) up to 20" (51cm)**. The E2 headrest interface is compatible with most industry standard headrest mounting hardware, including our **Matrix Elan Headrest Hardware** (sold separately). The headrest interface plate installs directly onto the E2S/E2D back shell using the hardware provided\*.



**\*NOTE:** Headrest mounting hardware must be installed onto the E2 Interface Plate **PRIOR** to installation onto the back shell

### 3.2 E2 LUMBAR SUPPORT

The E2 Lumbar Support (A) is included with ALL Elite E2S/E2D backs. The Lumbar Support is a pre-fabricated foam insert that provides optional lower back support for improved positioning and comfort. The lumbar support may be installed inside the Matrix Elite E2S/E2D cover when desired (see *instructions/images below*).

#### To install the Lumbar Support:

1. Open the outer cover at the bottom rear of the back shell (via the hook and loop fastener).
2. Install the lumbar support inside the E2 back cover (behind the existing foam pad), as illustrated below.
3. Refasten the outer cover onto the back shell.



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