

matrx[®]
SEATING SERIES



Invacare Matrix ELITE E2S/E2D BACK REMOVABLE 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.

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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.

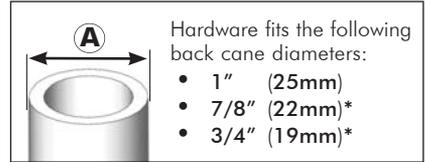
2.0 MATRX ELITE E2S/E2D BACK INSTALLATION

2.1 FITTING THE E2S/E2D BACK TO THE WHEELCHAIR:

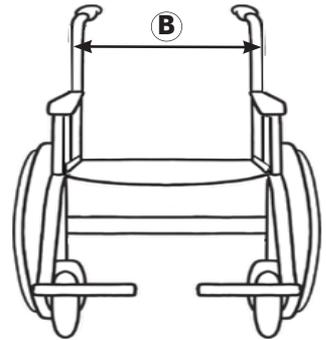
PRIOR to installation, verify the diameter of the wheelchair back canes (**A**) and the width between back canes (**B**)

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)

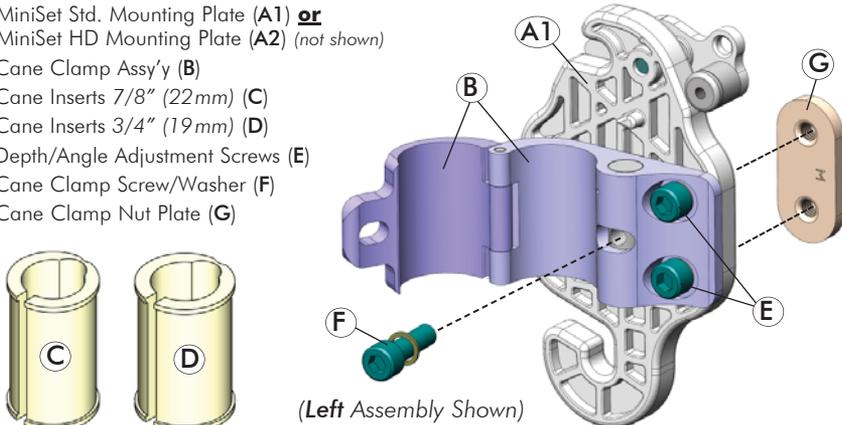
2.2 STANDARD (OR HEAVY-DUTY) REMOVABLE HARDWARE:

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

2.2.1 MINISET REMOVABLE HARDWARE

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

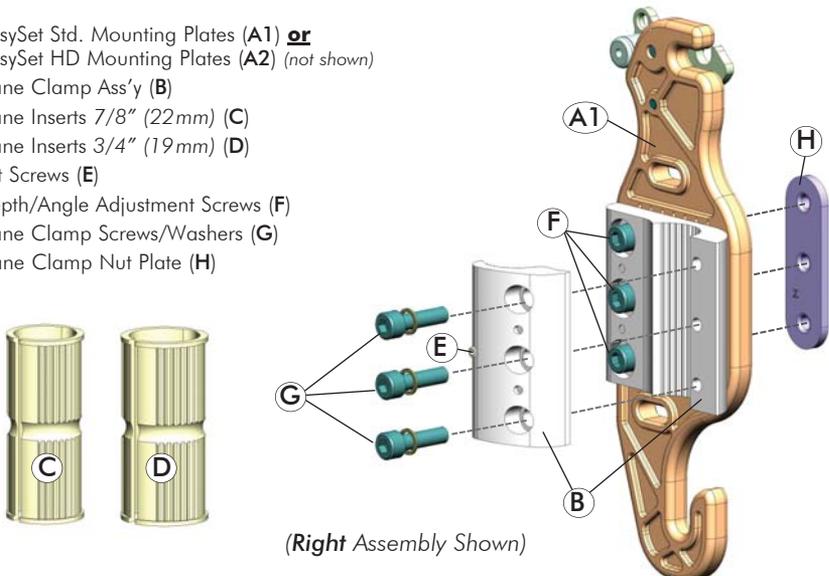
- 2 - MiniSet Std. Mounting Plate (A1) **or**
- 2 - MiniSet HD Mounting Plate (A2) (not shown)
- 2 - Cane Clamp Ass'y (B)
- 2 - Cane Inserts 7/8" (22mm) (C)
- 2 - Cane Inserts 3/4" (19mm) (D)
- 4 - Depth/Angle Adjustment Screws (E)
- 2 - Cane Clamp Screw/Washer (F)
- 2 - Cane Clamp Nut Plate (G)



2.2.2 EASYSET REMOVABLE HARDWARE

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

- 2 - EasySet Std. Mounting Plates (A1) **or**
- 2 - EasySet HD Mounting Plates (A2) (not shown)
- 2 - Cane Clamp Ass'y (B)
- 2 - Cane Inserts 7/8" (22mm) (C)
- 2 - Cane Inserts 3/4" (19mm) (D)
- 2 - Set Screws (E)
- 6 - Depth/Angle Adjustment Screws (F)
- 6 - Cane Clamp Screws/Washers (G)
- 2 - Cane Clamp Nut Plate (H)



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

2.3 CANE CLAMP ORIENTATION

The orientation of the Cane Clamps (A) provides approximately 4" (102mm) of fore/aft adjustment. PRIOR to installing the Cane Clamps, determine the cane clamp orientation that will best meet the needs of the end user.

- Standard Orientation (Fig. 1a/2a) = maximized seat depth
- Inverted Orientation (Fig. 1b/2b) = minimized seat depth

Note: Additional depth adjustments can be made via the slotted channels in the mounting plates - see section 2.5.3.

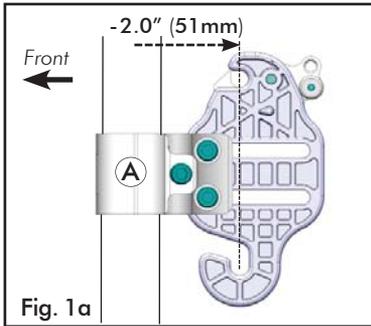


Fig. 1a

Standard Orientation

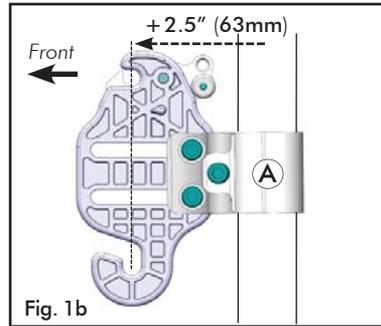


Fig. 1b

Inverted* Orientation

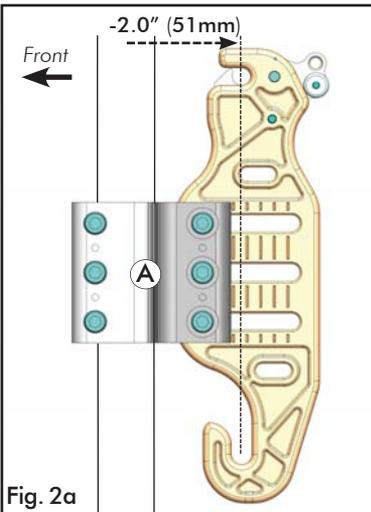


Fig. 2a

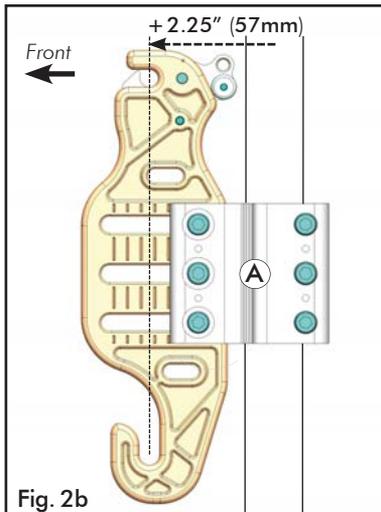


Fig. 2b

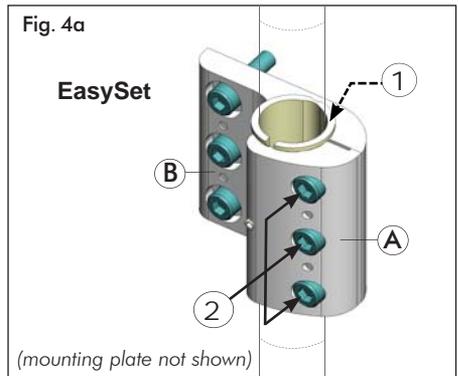
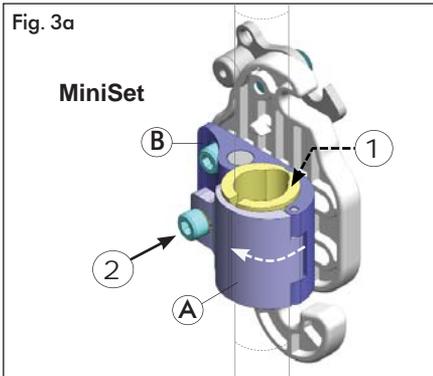
(*Requires the mounting plate to be disassembled from the cane clamp and rotated 180°)

2.4 CANE CLAMP INSTALLATION (see Fig. 3a/3b; Fig 4a/4b)

i 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 2.5.2*



2.5 INSTALLING THE ELITE E2S/E2D BACK

⚠ WARNING! Risk of Damage or Injury

NEVER use loctite on non-metal components/hardware; Non-metal components may degrade and become brittle (break) if contaminated.

⚠ WARNING! Risk of Serious Injury or Damage

When installed, ALWAYS ensure both latch mechanisms on the removable mounting hardware are fully engaged around the upper mounting pins.

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

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

! PLEASE NOTE

*The E2 Mounting Brackets 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 E2S/E2D Back installation.*

2.5.1 MOUNTING BRACKET SET-UP/ PRELIMINARY BACK INSTALLATION:

i NOTE: The Preliminary Set-up should be performed without the user seated in the chair

Mounting Bracket Set-Up: (see Fig. 5a/5b)

1. Loosen the adjustment screws (**A**) and adjust the both mounting brackets (**B**) horizontally (**1**) so that the mounting pins (**C**) will align with the mounting plates (**D**) on the wheelchair back canes.

Preliminary Installation: (see Fig. 6)

2. Install the Elite E2S/E2D back onto the mounting plates (**2**). (**note:** the preliminary installation steps are identical for the MiniSet and EasySet hardware).
 - Align/install the lower mounting pins (**C2**) into the hooked slots at the bottom of each mounting plate (**D**).
 - Lock the upper mounting pins (**C1**) into the latch mechanism (**E**) at the top of each mounting plate (**D**).
3. Proceed to section **2.5.2 Back Height & Width Adjustments**.

E2 Mounting Bracket Set-Up:

Fig. 5a

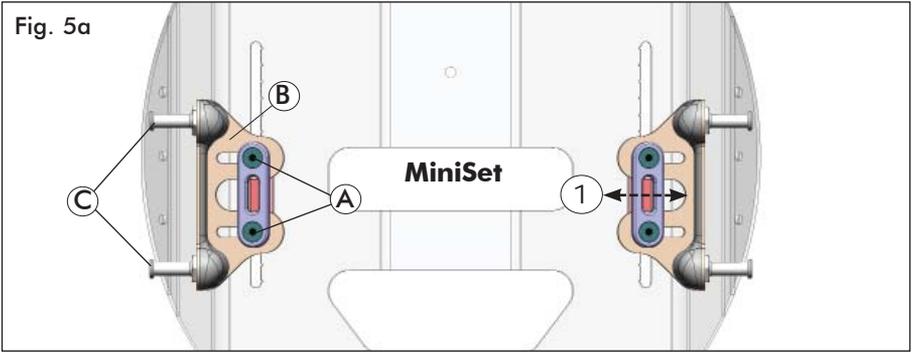
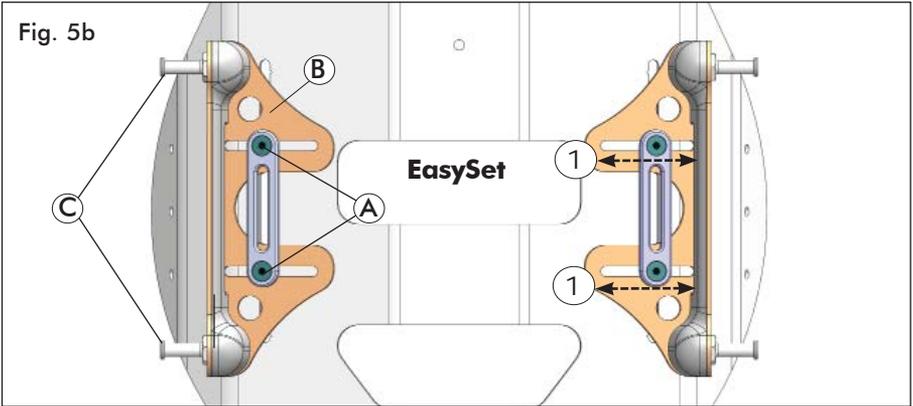
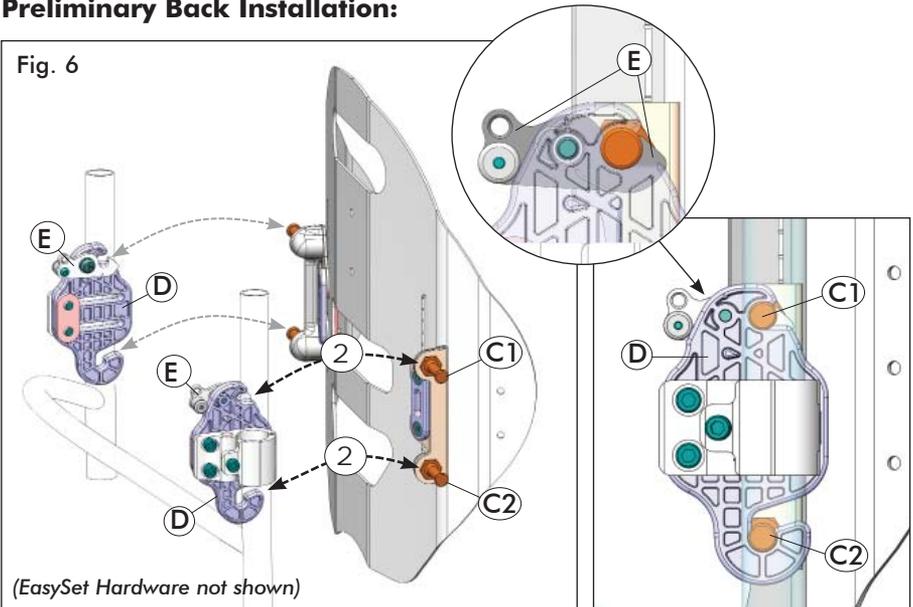


Fig. 5b



Preliminary Back Installation:

Fig. 6



2.5.2 BACK HEIGHT AND WIDTH ADJUSTMENT:

⚠ WARNING! Risk of Damage or Injury

Improper mounting pin set-up may cause damage to the back pan and/or the mounting plates. Ensure sufficient space is provided between the mounting plate and the head of the mounting pins (a minimum gap of 1/8" -1/4" (3mm-6mm) is recommended).

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" (31cm)	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)

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

Back Height and Width Adjustment: (see **Fig. 7, Fig. 8**)

1. With the E2S/E2D back locked into place, and the end user seated in the chair (if possible), carefully adjust the back shell along the vertical adjustment slot **(A)(1)** until the desired back height is achieved.

***NOTE:** the minimum recommended back height* is 4"- 5" (10-13cm) from the top of the seat surface.*

2. While maintaining the desired back height, adjust each mounting bracket horizontally **(2)** so that a **minimum gap of 1/8-1/4" (3-6mm)** exists between the head of the mounting pins **(C)** and the outside of the mounting plate **(D)**.

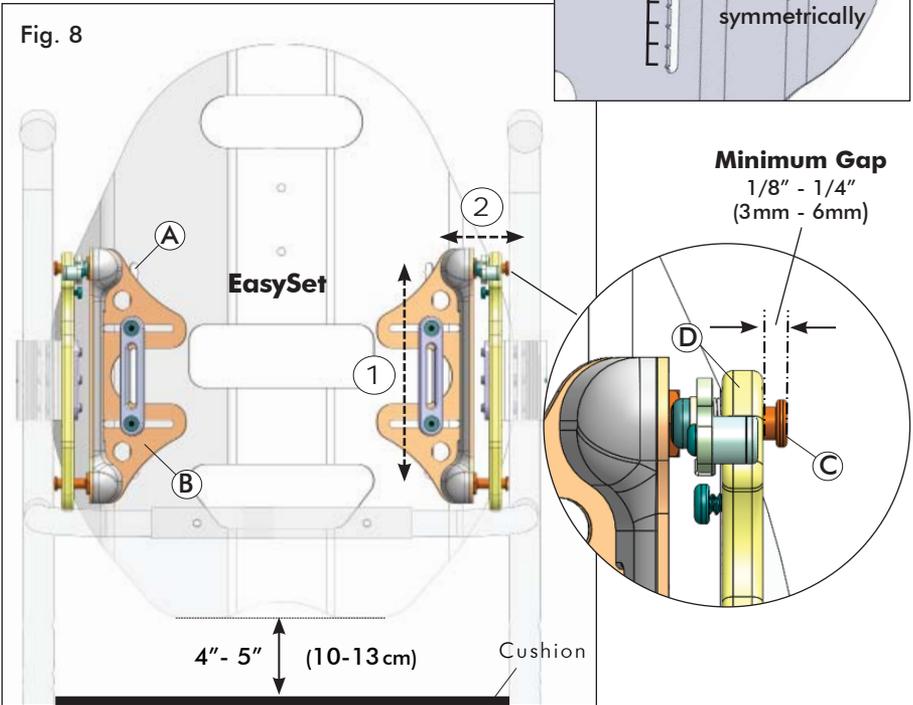
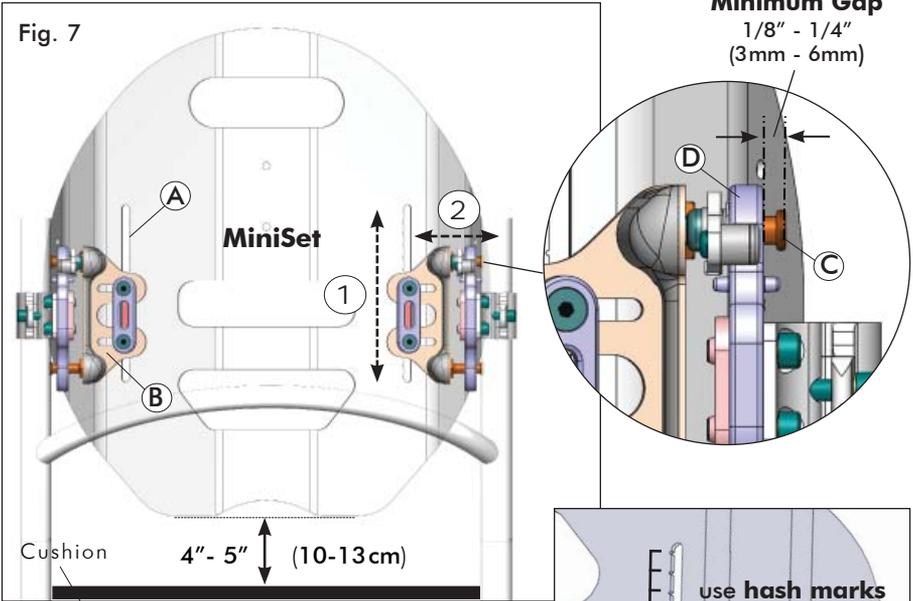
***NOTE:** Unless otherwise necessary, the Elite E2S/E2D back should be centered between the back canes during installation.*

3. Once all height and width adjustments are finalized, fully tighten/secure both mounting brackets into position.
4. Proceed to section **2.5.3 for Back Angle and Depth Adjustment**

***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.

ⓘ 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.

Back Height and Width Adjustments



2.5.3 BACK ANGLE AND DEPTH ADJUSTMENTS

! PLEASE NOTE

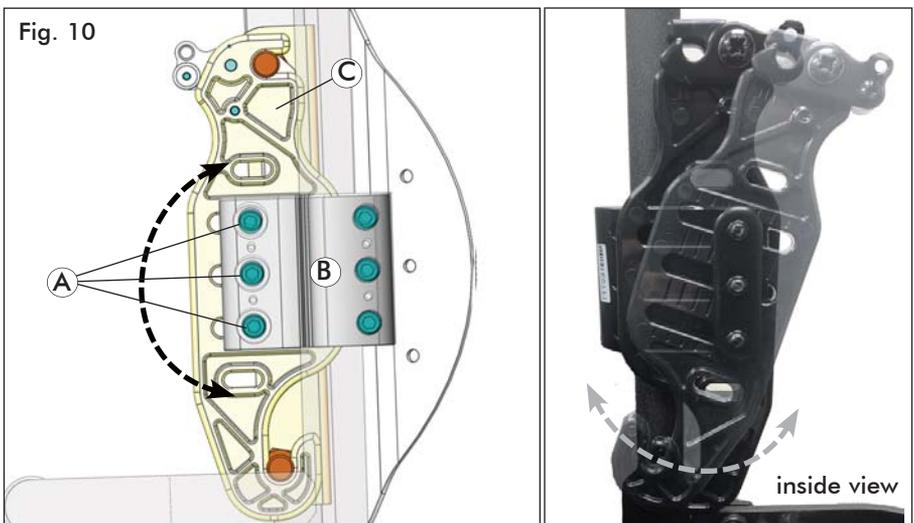
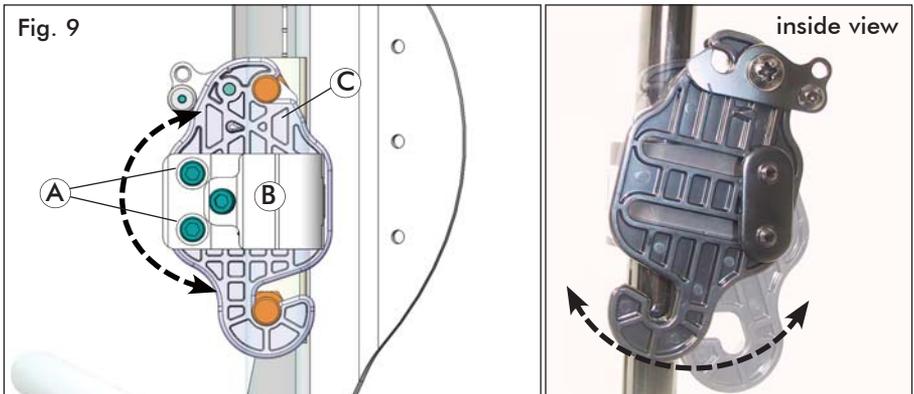
Angle and Depth adjustments on the are made simultaneously via the adjustment screw(s) on the left and right cane clamp assemblies. Unless otherwise required, depth and angle adjustments should be made equally/symmetrically on both mounting plates.

Back Angle Adjustment: (see Fig. 9; Fig. 10)

1. Loosen the depth/angle adjustment screws (A) on each clamp assembly, and rotate the mounting plates (C) to achieve the desired back angle.

- RANGE OF ANGLE ADJUSTMENT = $\pm 20^\circ$

i Note: When adjusting the back angle, the vertical lines in the mounting plates may be used as reference to make equal adjustments on each mounting plate.



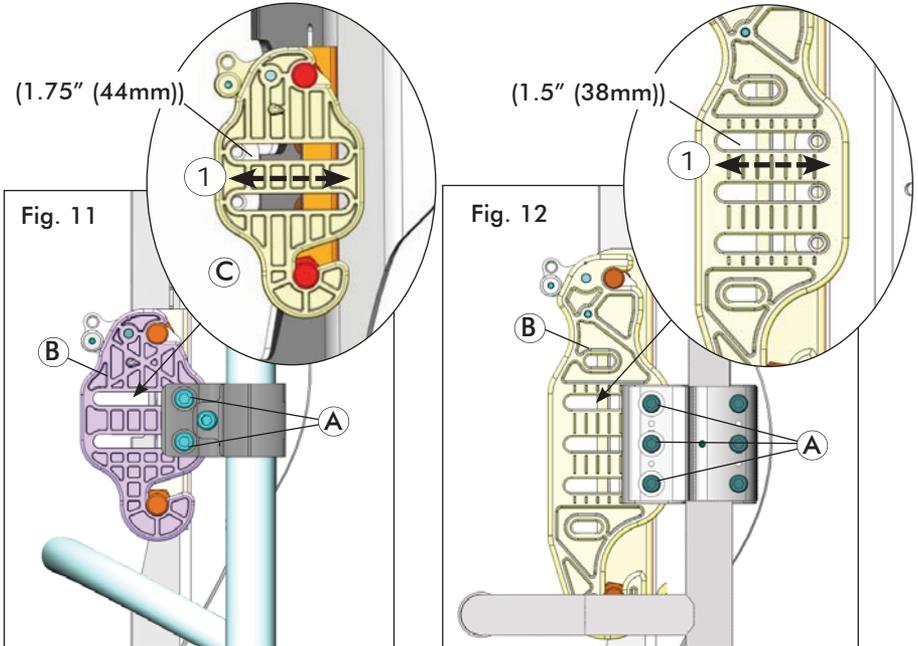
Back Depth Adjustment: (see Fig. 11; Fig. 12)

- Loosen the depth/angle adjustment screw(s) (A) on each clamp assembly, and adjust the fore/aft position of the Elite E2S/E2D Back (mounting plate) (B) via the depth adjustment slots (1).

RANGE OF MOUNTING PLATE DEPTH ADJUSTMENT:

- MiniSet = 1.75" (44mm)
- EasySet = 1.5" (38mm)

NOTE: The final back depth (fore/aft position) is also determined by the cane clamp orientation (see Section 2.3). The standard clamp orientation is illustrated below



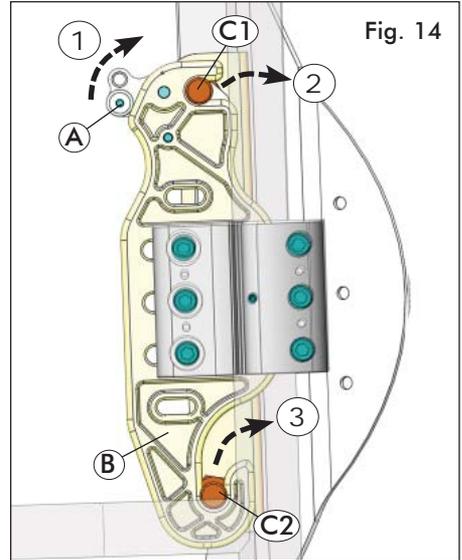
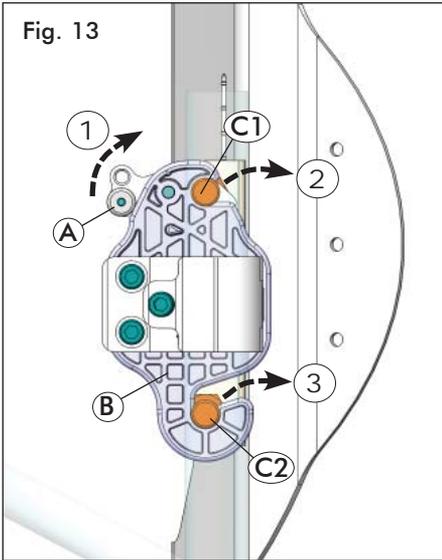
i NOTE: The range of depth adjustment will be reduced when the angle of the Elite E2S/E2D back (mounting plate) is altered.

- Once all angle/depth adjustments are finalized, fully secure **ALL** mounting hardware.

2.6 REMOVING THE ELITE E2S/E2D BACK

Removing/Disengaging the Elite E2S/E2D Back: (see Fig. 13; Fig. 14)

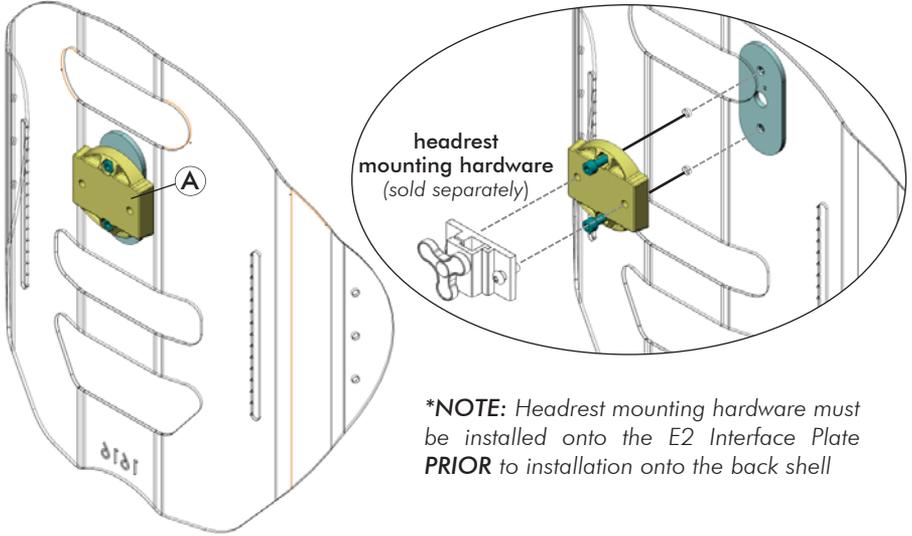
1. To disengage the upper mounting pins, simultaneously lift upward (1) on both latch mechanisms (A), then pull/push forward (2) on the top of the back support to release the upper mounting pins (C1) from the mounting plates (B).
2. Remove the Elite E2S/E2D back by lifting up and forward (3) on the back support to release the lower mounting pins (C2).



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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