

# ***USER MANUAL***



# **LEATT<sup>®</sup>** **SIXRR** **ROAD RACING NECK BRACE**

INDEPENDENTLY TESTED AND **CE** CERTIFIED  
AS PERSONAL PROTECTIVE EQUIPMENT

Note: The products depicted in this user manual may vary to some degree in product graphics or color.







## **WARNING**

All motorsports are hazardous.

Participants can suffer severe brain, head, or neck injuries causing permanent paralysis or even death.

A properly fitted Leatt-Brace<sup>®</sup>, worn in conjunction with a full-face helmet, can help reduce the incidence or severity of neck injuries, but no known safety device can eliminate the physical risks inherent in any motorsport activity.

### ***Read and follow all safety instructions***

-  A Leatt-Brace<sup>®</sup> is not a substitute for skill or experience. Do not attempt potentially hazardous maneuvers while wearing a Leatt-Brace<sup>®</sup> that you would not attempt without a brace.
-  The Leatt-Brace<sup>®</sup> must be correctly fitted to the wearer's body. Follow the sizing and fitment directions in this manual to insure that your brace fits properly.
-  Failure to achieve a correct fit of the Leatt-Brace<sup>®</sup> will reduce the effectiveness of the brace and may subject the wearer to unexpected risks.
-  A cracked, bent, or deformed Leatt-Brace<sup>®</sup>, or any Leatt-Brace<sup>®</sup> worn by a user during an injury-producing accident or fall, should not be used again by anyone. Damage affecting the structural integrity and performance of the brace may not be visible to the naked eye.

## **Leatt-Brace® STX**

The STX RR is a neck brace specifically designed for motorcycle road racing. It is not designed for street use where Leatt®'s STX neck brace is a more appropriate choice.

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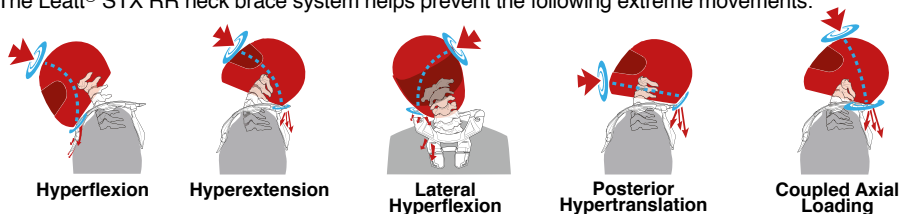
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## User manual introduction

Welcome to the world of Leatt® and thank you for choosing our product. The Leatt-Brace® you have purchased is based on years of academic research and extensive evaluation of the mechanisms of head and neck injuries. Together with testing in test facilities and via simulation software, the brace has been evaluated using various static and dynamic tests. The Leatt-Brace® is part of the protective equipment ensemble available for use by participants in cycling and motor sports activities

The design rationale behind the Leatt-Brace® is to help bring the head to a controlled stop during an accident/fall. This is achieved by providing a padded rigid structure that helps act as an alternative load path for neck forces. Helmet impacts otherwise transmitted from the helmet to skull and then to the neck are re-directed from the helmet to the brace and then to other body structures. The design of the Leatt-Brace® helps prevent the helmet/head from projecting over the brace and therefore helps prevent a fulcrum action which has been documented in literature pertaining to the use of foam collar devices. The Leatt-Brace® may be worn with most types of motor sport body armor and chest protectors.

The Leatt® STX RR neck brace system helps prevent the following extreme movements:



**Hyperflexion:** Over-bending of the head in forward direction. **Hyperextension:** Over-bending of the head in rearward direction. **Lateral Hyperflexion:** Over-bending of the head to one side. **Posterior Hypertranslation:** Extreme movement of head and helmet, rearward on the neck. **Coupled Axial Loading:** Axial forces acting in combination with other mechanisms.

Leatt® STX RR has been tested against the manufacturer's specifications and EC Type-Examination certification has been issued by RICOTEST Via Tione, 9 - 37010 Pastrengo (VR) Italy, Notified Body No. 0498. It is CE marked to denote compliance with the EU Personal Protective Equipment Directive 89/686/EEC.

In addition to certification against the PPE directive, the Leatt-Brace® has also passed a battery of additional tests compiled by the Notifying Body RICOTEST that includes elements from EN 1621-2:2003 (the European Standard for Motorcyclists Back Protectors), ISO 20344:2004 to evaluate Impact resistance in the rear and a RICOTEST internal test protocol me-int-074-00 to evaluate ergonomics, tensile strength and the content and comprehensiveness of the manufacturers information.

All the materials that make up the Leatt-Brace® have passed chemical innocuousness testing as required by the European Standard EN 340:2003 for general requirements of protective clothing.

Please e-mail any comments you might have to [info@leatt.com](mailto:info@leatt.com).

The Leatt® STX RR (*Figure 1*) has been designed to be set up in stages to suit your requirements. Please follow the fitment process carefully. It should take you about 20 minutes to complete.

Figure 1



**Please note:** The product shown may vary in colour. Brace components are depicted in contrasting colours to indicate individual identification.

## Test Data

Technical inputs to the development of this product include:

- Eurotype Hybrid III instrumented sled tests (Land Mobility Technologies document No.P/2/00/00431, May 2004)
- BMW Pendulum Testing and Validation Model using Lifemod™ – BMW Test Facilities, Munich, Germany (2006)
- Innovations at BMW Motorrad in the development of equipment for motorcycle riders to reduce the risk of injuries based on the example of the Neck Brace System (proceedings of the 6th International Safety - Environment - Future Conference; Cologne, Germany, 9 – 10 October 2006)
- Side Impact Simulations Using a Validated Pendulum Test Methodology (Leatt® Corporation Biomechanics Division)
- Leatt® Lab Quasi-Static Testing
- Leatt® Lab Destructive Impact Testing
- Leatt® Lab Pendulum Testing
- Detailed Spine Simulation Modeling (LifeMod / ADAMS)
- EN 340:2003 – “Protective clothing – General Requirements”

The first four test protocols listed assess the ability of the Leatt-Brace® to help reduce forwards and backwards movement of the wearer’s head and neck in a collision, or when impacting the road surface. Leatt® Lab Quasi-Static Testing includes evaluations of the resistance of the Leatt-Brace® fastenings to opening in the event of an impact. The chemical content of the materials and components used in the construction of the Leatt-Brace® has been assessed in accordance with the requirements of EN 340:2003.

# Leatt-Brace<sup>®</sup> sizing chart

The sizing chart below is a guide to determine if the STX RR will fit your body type. If you are out of the range of the sizing chart or are unsure of your exact fit, please contact us, wearing the STX RR with certain protectors could result in a safe fit. The sizing chart is based on your height and chest circumference right below the arms, therefore make sure that you take the correct measurements before utilizing the chart.

		Chest circumference			
		inches			
Height		33.9 - 35	35.4 - 37	37.4 - 43.3	43.7 - 45.3
	cm	86 - 89	90 - 94	95 - 110	111 - 115
5'1" - 5'4"	156 - 163	STX RR	STX RR		
5'4" - 5'5"	164 - 166	STX RR	STX RR	STX RR	
5'6" - 5'7"	167 - 169	STX RR	STX RR	STX RR	STX RR
5'7" - 5'8"	170 - 172	STX RR	STX RR	STX RR	STX RR
5'8" - 5'9"	173 - 175	STX RR	STX RR	STX RR	STX RR
5'9" - 5'10"	176 - 178	STX RR	STX RR	STX RR	STX RR
5'10" - 5'11"	179 - 181	STX RR	STX RR	STX RR	STX RR
5'11" - 6'	181 - 183	STX RR	STX RR	STX RR	STX RR
6' - 6'1"	183 - 185		STX RR	STX RR	STX RR
6'1" - 6'3"	185 - 190			STX RR	STX RR
6'3" - 6'4"	191 - 195				STX RR

ft

cm



\* Height



\* Chest circumference right below the arms

## Correct fitment

Figure 2a

Figure 2b

The following is to ensure that your brace is setup correctly, please go through entire section. Fit the brace by pulling it over your head with the scapula wings attached (p7). (Figure 2a) Please ensure that the brace is facing the correct way. (Figure 2b)



The size of the brace should be correct for your body shape and allows for adjustability to ensure correct fitment and comfort. (Figure 3a) When correctly adjusted and worn with your helmet, the Leatt-Brace<sup>®</sup> should allow for a full safe range of a rider's head and neck movements (i.e. looking up, looking down and looking side-to-side, such as when performing an over-the-shoulder check); **the Leatt-Brace<sup>®</sup> and the helmet must come into contact with each other as the full safe range of normal riding head movement is reached.** (Figure 3b)

Figure 3a

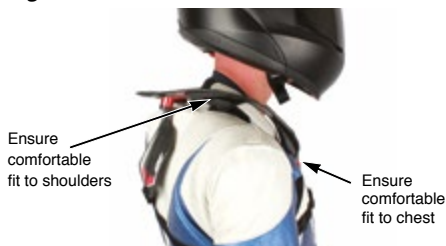
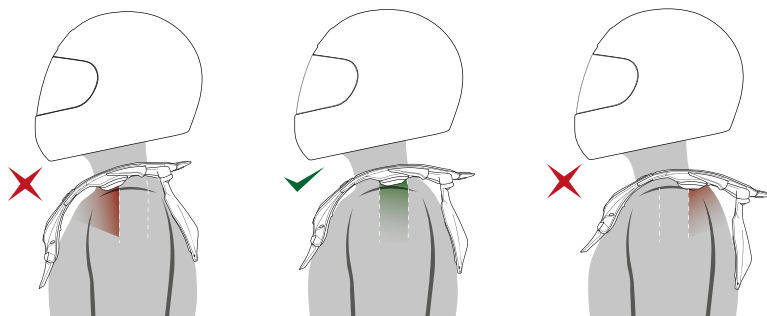


Figure 3b



Please ensure that the brace wings are correctly aligned over your shoulder as shown below:

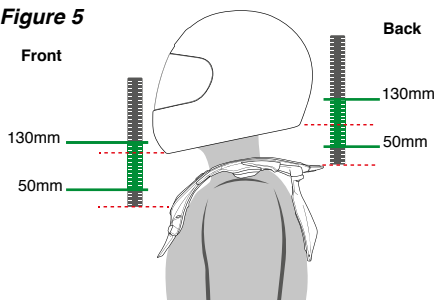
Figure 4



If the wing does not align correctly please move on to step1 in the adjustment section (p7)

Check that you have the right helmet rim clearance. Please use assistance to do this measurement, do not do it yourself. Place a ruler in the middle of the upper rim of the brace at 90 to the ground, with your head in a neutral (level) position. Remember to do front and back. The helmet rim should be within the safe zone, the front and back safe zones are between 50mm to 130 mm. (Figure 5)

Figure 5



If any resistance or discomfort is experienced when attempting to complete the full safe range of head and neck movements, or if the brace does not make contact with the helmet when the full range of movement is reached, further adjustment, or an alternative size of Leatt-Brace® may be required. In extreme circumstances, it may be necessary to purchase an alternative model of helmet in order to achieve the required level of compatibility and safety.

If the brace interferes with any of the above mentioned, please move on to the adjustment section (p7) . Please ask the retailer or contact Leatt® if you require further advice on sizing, adjustment or fitting.



## Leatt-Brace<sup>®</sup> Adjustment

Your STX RR brace is supplied with the shoulder height adjuster fitted. The following steps will help you adjust your Leatt-Brace<sup>®</sup> for the best fit. After adjusting, return to Correct fitment *p5* to ensure your adjustments are accurate. Please refer to the Exploded view & parts list on *p15*.

### Scapula wings

To configure the scapula wings you must open the strut clip. When the strut clip is opened you can slide the upper scapula wings in your favourable position. (Figure 7a)

Close the strutclip when the scapula wing is in the preferred position. (Figure 7b)

To rotate the scapula wings to fit your racing gear, adjust the rotation screw with the provided 4mm allen key (Figure 8a). Rotate the scapula wings using the position indicators to make sure they match up. (Figure 8b)

By rotating the scapula wings you can use the brace with a racing hump or without (Figure 9A & 9b)



Figure 6a

Figure 7a



Figure 7b





Figure 8a



Figure 8b



Figure 9a



Figure 9b





## Shoulder height adjustment

The shoulder height on the STX RR brace can easily be adjusted by removing the STX Height Adjusters (see *Figure 10a*) by holding the side and lifting it away from the brace. (*Figure 10b*).

*Figure 10a*



*Figure 10b*



## Back height adjustment

In extreme cases, were a rider might not feel the brace if he bends his head backwards, or the measurement on the back exceeds the indicated value on p6, it is recommended to attach the back height adjuster for extra support. The adjuster is attached on top of the back assembly of the brace.

Figure 11a



Figure 11a

Back height adjuster attaches from the top





## STX Body straps

Figure 12a



At the end of each strap you have a Velcro loop.

Figure 12b



Before attaching the strap, open the velcro loop as shown in the picture above

Figure 12c



When open, insert the end of the strap through the strap insert on the front or back of the brace. Please remember to position the strap buckle at the front.

Figure 12d



After you have inserted the strap end, close the strap as shown in Figure 12d. Repeat these steps until both straps are attached.

Figure 12e



The buckle side should be attached to the front lower of the brace. The straps should be routed under the arms to the back of the brace.

Figure 12f



We recommend that the straps be criss-crossed at the back.

## Emergency open

In emergency situations, there are two emergency opening points on the shoulders of the brace. Using a coin or flat screwdriver (*Figure 13a*) unscrew the emergency open points.

Figure 13a



Unscrew both sides and lift the front assembly from the back (*Figure 13b*)

Figure 13b



To reassemble follow the steps in reverse



## ***Proper care and Maintenance***

Make it a habit to inspect your Leatt-Brace® as you would other safety equipment. Frequently worn braces should be discarded and replaced every two years.

Do not make any alterations or modifications to your Leatt-Brace®. If you lose or damage adjustment pins, hinges, struts, padding, or other components, purchase replacements from Leatt Corporation.

Keep your Leatt-Brace® clean by washing it with plain soap and water. **Solvents, abrasive cleaners, and high heat can damage the brace and reduce its effectiveness just when you need it the most.**

### **LIMITED WARRANTY**

YOUR LEATT-BRACE® IS WARRANTED TO BE FREE OF DEFECTS IN MATERIALS OR MANUFACTURING FOR ONE YEAR FROM THE DATE OF PURCHASE. THE LEATT-BRACE® IS DESIGNED TO YIELD OR BREAK UNDER CERTAIN CONDITIONS OF USE, SO DAMAGE CAUSED BY ACCIDENTS, FALLS, ABUSE OR MISUSE IS NOT COVERED BY THIS LIMITED WARRANTY.

TO MAKE A WARRANTY CLAIM, GO TO [WWW.LEATT.COM](http://WWW.LEATT.COM) OR SEND AN EMAIL TO [WARRANTY@LEATT.COM](mailto:WARRANTY@LEATT.COM).

LEATT CORPORATION EXPRESSLY DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

## ***In the event of a crash***

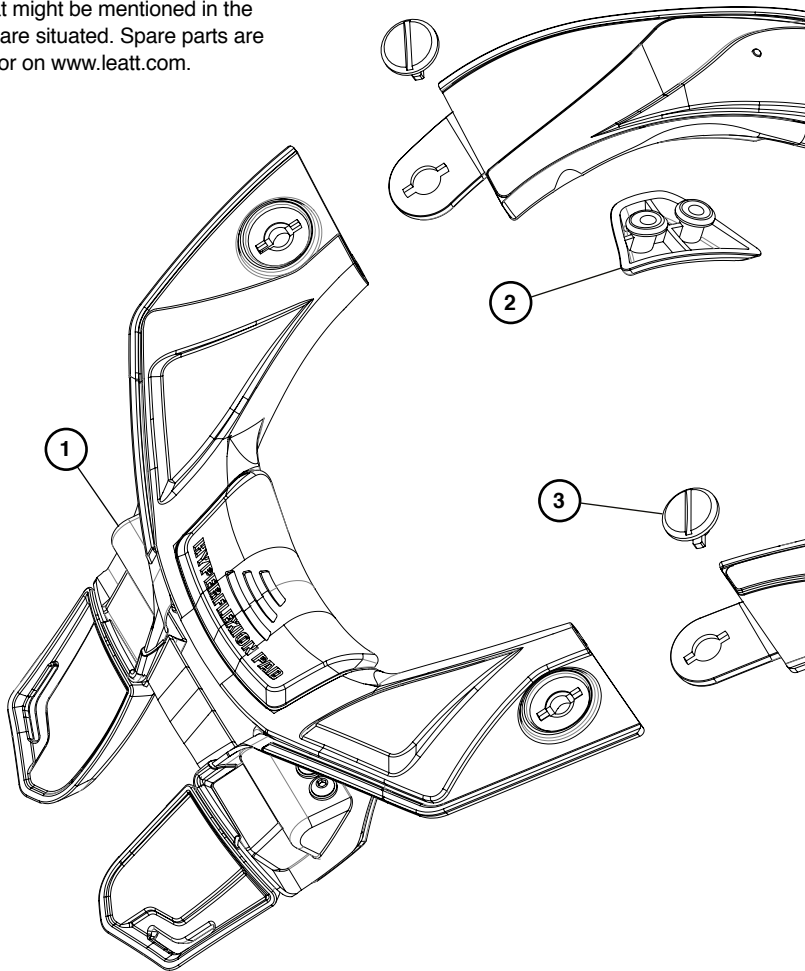
1. Should your Leatt-Brace® be damaged as result of a serious accident, no Warranty Claim is possible.
2. The Leatt-Brace® is designed to become damaged as it helps protect you, i.e. rear thoracic strut snaps off.
3. The Leatt® Corporation would like to hear from you if you have been involved in a crash event. The feedback is used to advance the understanding of crash dynamics in the Leatt® Lab and assist in improving our products.
4. In event of a crash, if you have supporting footage, photos or medical information, gather all the supporting information and submit it to the address below.
5. After evaluation by the Leatt® Lab and subject to the Leatt® Lab discretion incentives may be offered for fully completed Injury Assessment forms;

You can fill in our online injury assesment form at: [www.leatt.com/customer-support/accident-form/](http://www.leatt.com/customer-support/accident-form/)



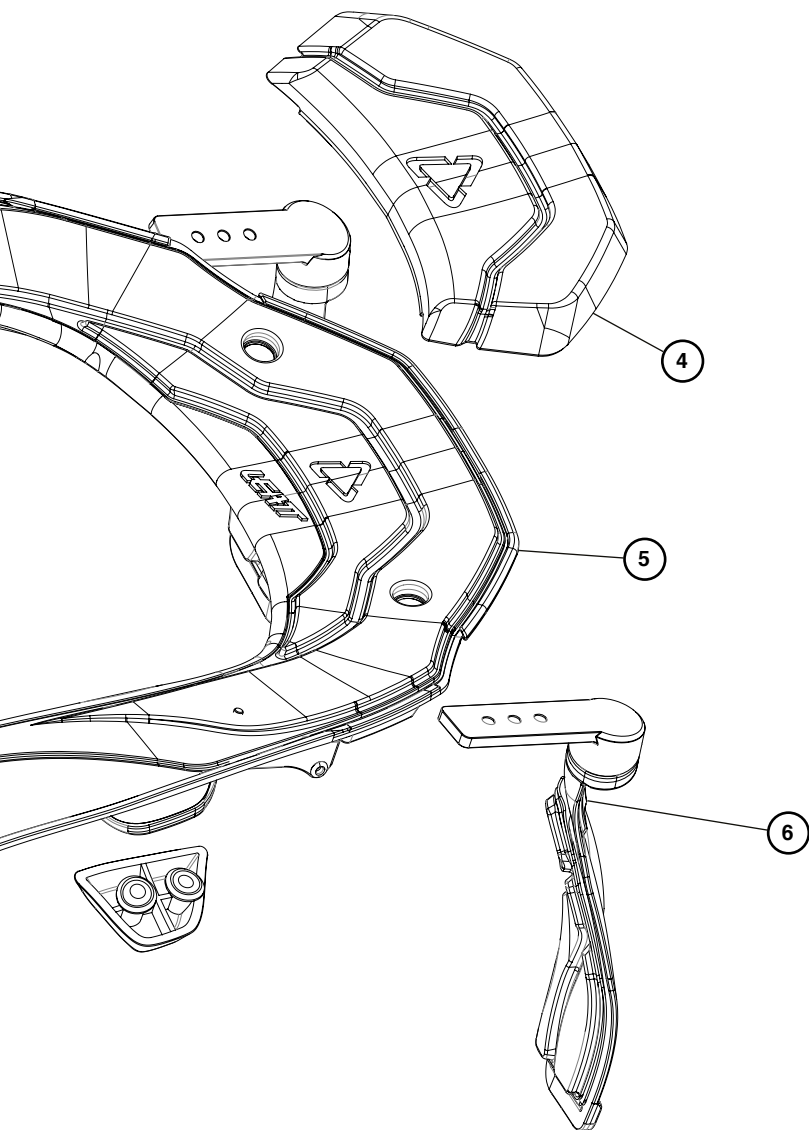
## STX RR exploded view & parts list

Here is a list of parts that might be mentioned in the manual and where they are situated. Spare parts are available at your dealer or on [www.leatt.com](http://www.leatt.com).



Parts/Components List	QTY		QTY
1 - STX Front Assembly	1	4 - Rear Height Adjuster	1
2 - Shoulder Height Adjuster	2	5 - STX Back Assembly	1
3 - Emergency Open Screw	2	6 - Scapula wings	2







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### **Contact details**



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