



# Technical Bulletin 050 – Racing Harness Installation Guide

Rev3 19/01/2024

Lifeline’s range of racing harnesses are homologated to FIA Standard 8853-2016. They have been extensively tested by Lifeline and external testing facilities to meet and exceed FIA 8853-2016 specifications.

These harnesses are for motorsport use only and should not be fitted to a vehicle to be used on the road. Racing harnesses will only function correctly, ensuring maximum driver safety, when installed correctly to the specifications in this document, FIA Appendix J Article 253 and following individual race series regulations.

The information below provides a guide to Lifeline’s range of racing harnesses along with instructions for their fitment, use and maintenance.

## Section 1 – Component Definitions

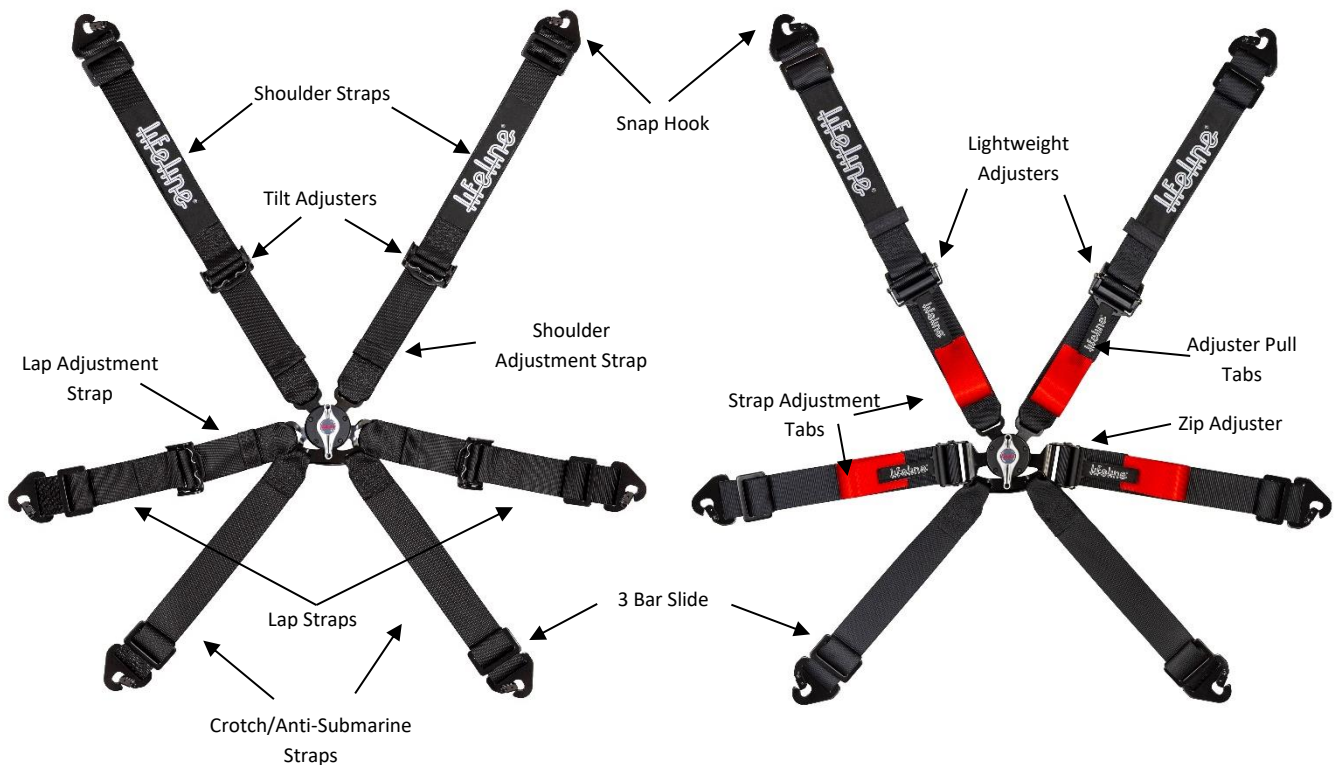


Figure 1: Harness anatomy.

The images above show the main parts of Lifeline’s racing harnesses along with common names that will be used throughout this document.



## Section 2 – Correct Harness Geometry

To ensure maximum occupant safety it is essential that racing harnesses are installed correctly. Failure to follow these instructions and that of the FIA where appropriate can cause severe injuries or even death.

To ensure best performance in an impact, all straps should be kept as short as possible. If the length of shoulder straps rearward of where they leave the wearers shoulders is to exceed 0.5m then the two straps should be crossed over. This will ensure the geometry is kept within the best limits for the frontal head restraint system during an impact.

All straps of a harness must be routed through the appropriate holes in the seat. Crotch straps must NOT be routed over the front of a seat.

Figure 2 shows the recommended installation geometry of Lifeline racing harnesses.

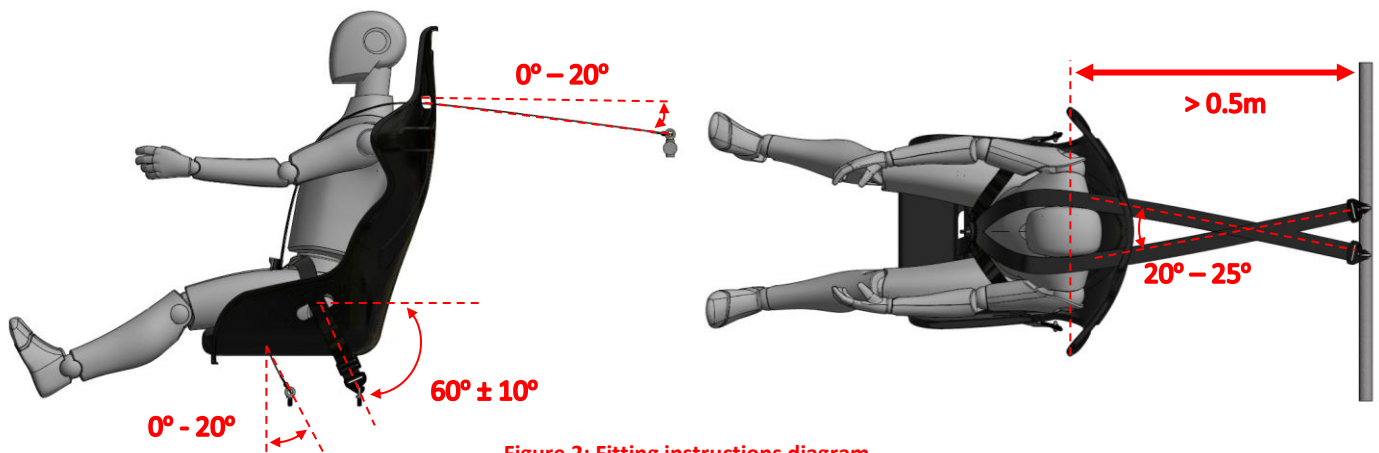


Figure 2: Fitting instructions diagram.



## Section 3 – Attachment Options

Lifeline harnesses can have a range of attachment options depending on which model you have. In all cases it is up to the user to determine what the most appropriate attachment option is for their vehicle providing all appropriate regulations are followed along with the recommendations of this document.

Part Number	Attachment Description	Reference Image
<b>301-003-001 &amp; 301-003-002</b>  <b>AVAILABLE FOR: BECKETTS COPSE STOWE</b>	3 Bar Slide - 2inch – Black 3 Bar Slide - 3inch – Black  The 3-bar slide is provided in the correct size for the width of the strap. Becketts shoulder straps can be either 75mm/3 inches or 50mm/2 inches wide	
<b>301-003-007</b>  <b>AVAILABLE FOR: BECKETTS COPSE</b>	Snap Hook – Black  All snap hooks are supplied with an accompanying split pin. This must be fitted to prevent unlocking.	
<b>301-003-008</b>  <b>AVAILABLE FOR: COPSE</b>	Anchor Plate – Black  It is highly recommended to fit all anchor plates allowing them to swivel to their natural position when tensioning the belts.  Welding: Black coating must be stripped to bare metal to perform secure weld of	
<b>301-003-014</b>  <b>AVAILABLE FOR: STOWE</b>	Lightweight Anchor Plate – Black  It is highly recommended to fit all anchor plates allowing them to swivel to their natural position when tensioning the belts.	



## Section 4 – Fitting to the Vehicle

For all harness models except Stowe the quick release buckle will always remain attached to the two crotch straps. For Stowe harnesses the buckle will remain attached to the right-hand lap strap.

The lap strap tongues MUST be orientated as shown in Figure 3.



**Figure 3: Tongue orientation instruction.**

When fitting shoulder straps, it is important to note that the two straps are NOT interchangeable. Each shoulder strap tongue is angled towards the centre of the buckle. It is essential to ensure that they are fitted in the correct orientation, as shown in Figure 4, with the FIA labels facing out. At all times, the shoulder strap worn on the left shoulder must bear the FIA homologation label and FIA gold hologram. Each shoulder strap tongue has a green R or red L label denoting which shoulder the strap should be worn on.



**Figure 4: Shoulder straps instruction.**



Lifeline recommends using the supplied eyebolts for snap hook end fittings as these have been extensively tested by Lifeline and the FIA.

Eye bolts should be installed in the direction of applied force to remove the possibility of the eyebolt being loosened by torsional forces experienced during loading, as shown in Figure 5. Use of an additional spring washer (supplied) can help ensure that this is possible.



**Figure 5: Force direction on snap hook.**

The table below presents a common option for fitment of both snap hook and bolt in variants. It is always recommended to check with any relevant series and FIA regulations regarding fitment.

Snap Hook & Eyebolt Fitment	Bolt-In Fitment



Where possible, harnesses should be fixed using a minimum of 7/16 UNF Grade 5 or M12 Grade 8.8 screws. However, mounting hardware is NOT part of the FIA homologation therefore it is recommended to check with series and FIA regulations regarding specific requirements.

All Lifeline harnesses are supplied with a fitting kit consisting of either 7/16" UNF eyebolts or 7/16" UNF Grade 5 screws along with washers, spring washers and nuts. This is the most common thread and in some cases this size is mandated as a minimum requirement. Due to the large number of potential fitments it is impossible to supply fixings to suit every installation.

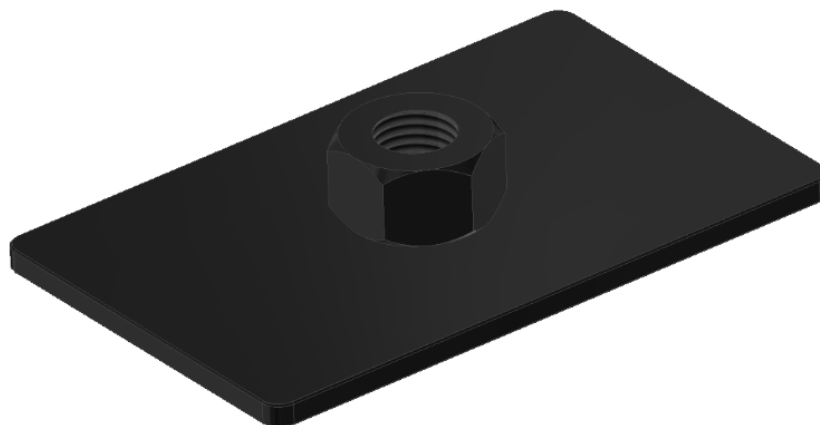
Lifeline recommends that where possible the original factory seatbelt anchorage locations should be used, assuming that they allow the correct mounting geometry of the harness on the driver/co-driver. Should this not be possible new anchorage locations must be created which must comply with current FIA regulations (see Appendix J Article 253)

The following torque figures are recommendations for the most common fixing sizes. Depending on the material, surface coating and/or lubrication of the fixings these torque figures may need to be adjusted accordingly.

Fixing Type and Grade	Recommended Torque	
	Nm	Ft-lb
<b>M8 Grade 8.8</b>	25	18
<b>M10 Grade 8.8</b>	50	37
<b>M12 Grade 8.8</b>	87	64
<b>7/16" UNF Grade 5</b>	68	50

The harness must not be attached to the seat or the seat mounts in **any way**.

Please note, Lifeline supply a 'Nut Backing Plate 7-16 UNF 40cm<sup>2</sup> - 301-003-016' which can be welded to the underside of the vehicle to act as a mounting point for the end fixings of the harness. The backing plate is coated in a black E-coat in accordance with CNS886 / ASTM B117 and hence, does not require coating removal before welding. Ensure a qualified welder is used to fix the backing plate to the underside of the car.



**Figure 6: 301-003-016 - Backing Plate**



Regardless of end fitting, all Lifeline harnesses come with 3 bar slides on each strap. These allow for adjustment of the length of straps to ensure the correct fitment. It is not necessary to completely remove the 3-bar slide to adjust the length of a strap but depending on the adjustment necessary for the installation it may be useful.

The process of re-wrapping a 3-bar slide is as described below.

Step	Description	Reference Image
1	Insert the strap from underneath the 3-bar slide, over the centre section and back through the second slot	
2	Loop the strap through the chosen attachment or around a roll bar if desired	
3	The strap should then pass underneath the 3-bar slide, through the slot, over the centre section and back through the next slot. This is effectively the reverse of how the strap passed through initially.	



Step	Description	Reference Image
4	When wrapping around a roll bar the 3-bar slide must be mounted with its rear most end as close to the roll bar as possible.	
5	<p>The strap should then pass over the top of the 3-bar slide and through the second slot from above.</p> <p>Where necessary excess webbing should be rolled up and secured.</p>	

A correctly wrapped 3-bar slide is shown in side profile in Figure 7.



**Figure 7: 3 bar slide instructions.**

When wrapping on a roll bar it is essential to prevent lateral movement of the straps. This can be achieved several ways, one of which is with strategically placed roll cage padding. Lifeline can supply FIA approved roll cage padding for this purpose. Some lateral roll bars will have C-shaped brackets attached for this purpose also.





On 3-inch-wide straps there will be a wider version of a 3-bar slide but the same snap hook end fitting. The process for refitting snap hooks is as detailed above except that the webbing itself will have to be folded on both sides to fit through the slot in the snap hook. This process is shown in Figure 8. It is important to note that the webbing should be folded equally on either side.



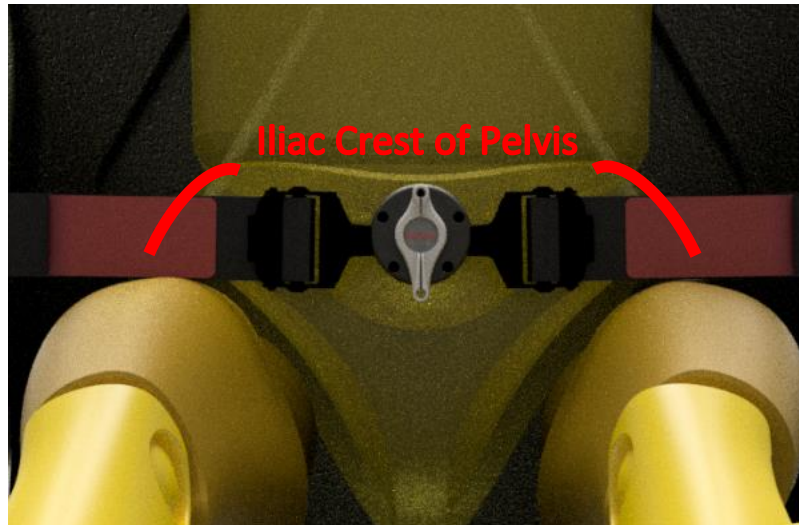
**Figure 8: Webbing folding reference.**

## **Section 5 – Wearing the Harness**

On the first fitment of any Lifeline racing harness it is advised to begin with adjustment of the overall length of the crotch straps.

Crotch straps should be adjusted to a length that allows the lap straps to sit completely within the iliac crest (outer edge) of the pelvis, as close to the upper thighs as possible.

Proper positioning of the lap straps is key to preventing injury, the straps should never be positioned on the abdomen, they must always be on the pelvis to ensure forces are applied to hard points rather than soft tissue.



**Figure 9: Lap strap positioning.**

Lap straps with pull up style adjusters must be adjusted by the 3-bar slide to allow the adjuster either to sit within the seat structure or outside the seat. The most comfortable option is usually to position the adjuster outside of the seat. **The adjusters must not be positioned within the openings in the seat.**

Lap straps with pull down adjusters will have the adjuster integrated into the tongue so the strap should be adjusted to ensure the red strap adjustment tabs are within easy reach of the driver.

Shoulder straps should be adjusted to ensure that they are as short as possible to the mounting points. Care should be taken to ensure that the adjusters are in the correct position when using a frontal head restraint (FHR). See the appropriate FIA guidelines for allowable positioning of adjusters while wearing an FHR device.

For harness being used without an FHR (Becketts 3 Inch ONLY), the adjusters must NOT be placed at collar bone level, they MUST be fitted lower on the chest.

All Lifeline harnesses have shoulder and lap straps that are fully adjustable when seated. It is highly recommended to adjust the lap straps prior to the shoulder straps when first getting into the car.

If using a frontal head restraint, it is recommended to have a mechanic/pit crew member tighten the shoulder straps where possible.

For Stowe harnesses the crotch strap configuration is different to Copse and Becketts. Each crotch strap contains a loop that must pass through another loop on the corresponding lap strap. Each shoulder strap tongue must be fed through the crotch strap loop before engaging into the buckle. This routing is shown in Figure 10.



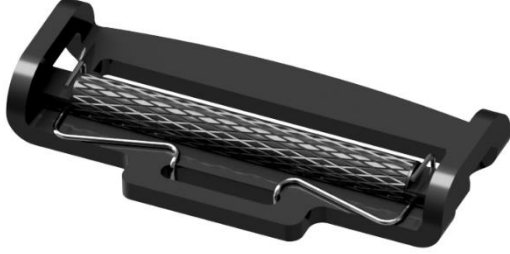

**Figure 10: Strap instructions.**



There are 2 fundamental types of adjusters that are supplied with Lifeline Harnesses. On Becketts harnesses all adjusters will be tilt adjusters, whether for 2-inch or 3-inch straps. On all Copse and Stowe harnesses, adjusters will be lift handle adjusters with pull tabs or zip adjusters with pull tabs. On the Copse Apex, Woodcote and Woodcote Apex, the thin adjuster can also be found on the harnesses.

Description	Reference Image
<p><b>Zip Adjuster.</b></p> <p>To adjust, lift the handle, either directly or using the Lifeline pull tab and pull up and towards the buckle.</p>	
<p><b>Lift Handle Adjuster.</b></p> <p>To adjust, lift the handle, either directly or using the Lifeline pull tab and pull up and away from the buckle.</p>	
<p><b>2-inch Tilt Adjuster.</b></p> <p>To adjust simply lift adjuster so that it is perpendicular to the strap that passes through it and pull away from the buckle.</p>	



Description	Reference Image
<p><b>3-inch Tilt Adjuster.</b></p> <p>To adjust simply lift adjuster so that it is perpendicular to the strap that passes through it and pull away from the buckle.</p>	
<p><b>2-inch Thin Adjuster.</b></p> <p>This is the new lightweight adjuster which requires the Nylon feature to be pushed towards the centre steel bar to allow for adjustment.</p>	

## Section 6 – Maintenance

The straps of the harness may be cleaned using a sponge and warm soapy water. Under no circumstances must solvents of any kind be used.

The straps must be allowed to air dry. They must not be heated in any way to reduce drying time.

The straps of the harness should be inspected regularly for signs of fraying or abrasion and must be replaced immediately if any are apparent.

Due to the nature of the webbing, an impact can cause extension of the webbing that would cause a decreased performance and potentially failure if it were to experience another impact.

Therefore, in the event of an impact the complete harness **MUST** be replaced immediately.

If any of the metallic components show signs of damage the complete harness must be replaced.

Attachments **MUST NEVER** have their hole sizes increased or be altered in any way. This will cause premature failure in an impact potentially causing serious injury.

When replacing a harness, it is highly recommended that all fasteners are replaced, including eyebolts.