



# USER MANUAL



DIRT PROOF



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WALK MODE



EXTENSIBLE



# CROSSOVER

Hybrid Multi-Purpose Knee

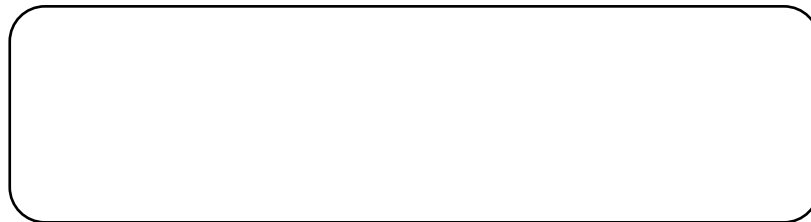
## Crossover™ Hybrid Knee

### *“Infinite Possibilities”*

Congratulations on your decision to purchase the new Crossover™ Hybrid Knee! We have taken our original Crossover knee design and made it even better! The new Crossover™ is an ambulatory hybrid knee that transforms into a sports knee in less than three minutes with all the needed parts integrated! No need to attached tendons to the socket anymore!

This state-of-the-art prosthetic knee system will be very gratifying if you service and maintain it accordingly.

Please enter the serial numbers of your knee below. You will provide this number if the knee unit requires servicing. Serial numbers are located on the knee frame under the protective cover.



This owner's manual contains the latest information for this model (as of May 2018). Future minor differences due to developments in the knee design cannot be ruled out completely.

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## Crossover™ Knee Walking Configuration



1. Multidurometer impact/kneeling pads
2. Rubber protective cover
3. Rubber socket flexion limiters
4. Easy to access “On Demand” shock controls
5. RT3 pneumatic/hydraulic shock

## Crossover™ Knee Sport Configuration



1. Multidurometer VED impact/kneeling pads
2. Rubber protective cover system
3. X/CAM™ Optimal position CAM
4. Rubber socket flexion limiters
5. Integrated urethane tendons
6. X/CAM™ Quick release
7. RT3 pneumatic/hydraulic shock

## Crossover™ Knee Parts

1



2



3



*\*Note: Not actual image of 2018 CAM.  
New image coming soon.*

4



5



6

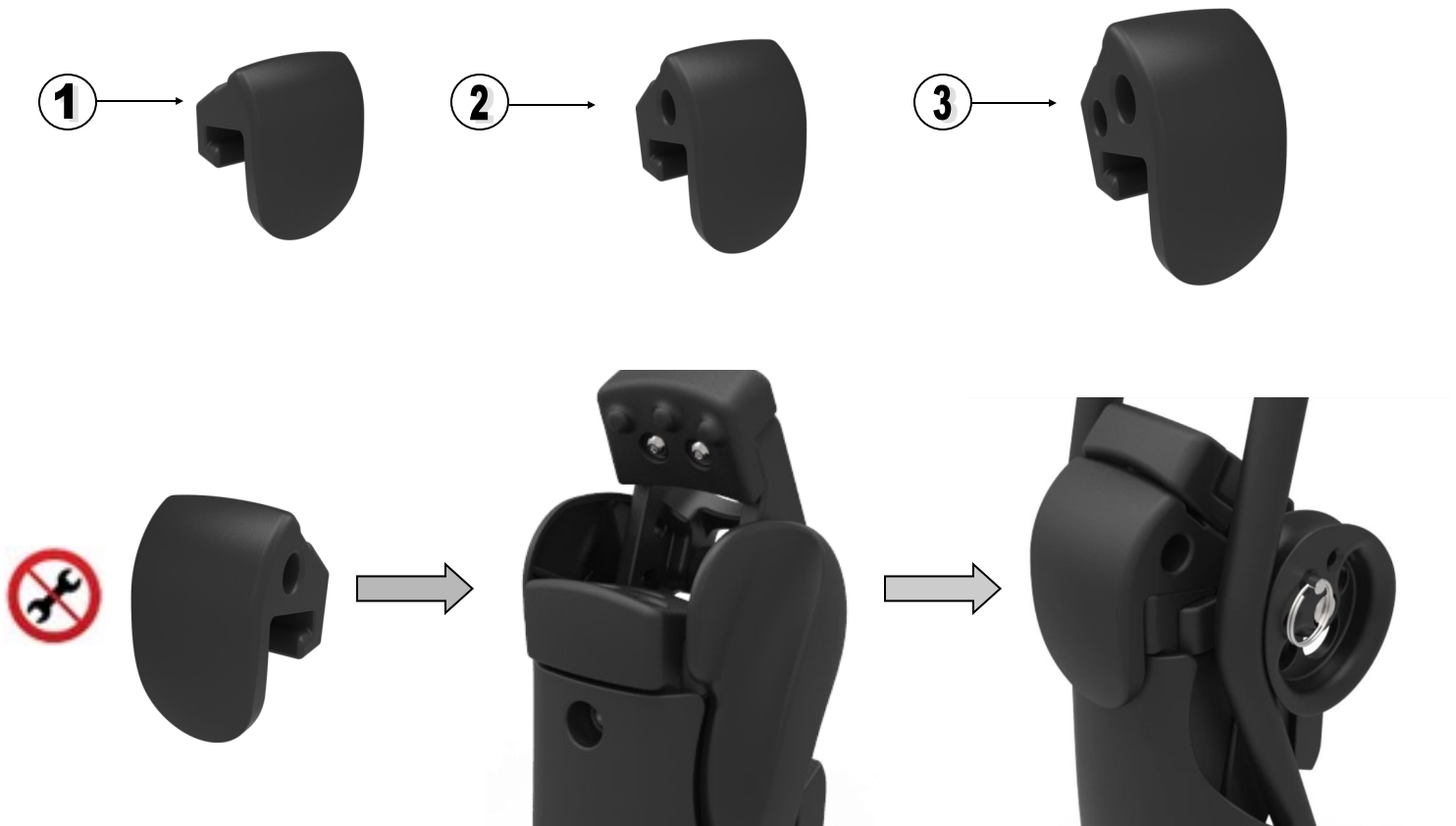


1. Multidurometer VED impact/kneeling pads
2. X/CAM™ Optimal position guide wheels
3. Urethane tendons
4. RT3 shock pump
5. Rubber protective cover, knee frame
6. RT3 pneumatic/hydraulic shock
7. Crossflex preflexion wedges

6



## Crossflex™ Preflexion Wedges



*\*Note: Not actual image of 2018 Knee.  
New image coming soon.*



*When installing Crossflex™ preflexion wedges, take care as to not tear the foam section that locks into the knee unit.*



*Note: Please visit [www.leftside.life](http://www.leftside.life) for future instructional videos*

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## General Knee Description

Designed exclusively for lower limb prosthetic fittings, the Crossover™ knee is a monocentric (single axis) articulated Hybrid knee that can be used for general ambulation or—with simple additions/adjustments—can be used for high activity sports. Designed similar to the Mauch S-N-S knee unit, the Crossover™ knee has the advantage of having the ability to add a patented highly adjustable Tendon and Optimal-Position X/CAM™ system when the user wants to participate in high activity sports or other activities.

## Design Features & Function

- Single-axis pneumatic/hydraulic knee system with swing and stance control adjustments
- Designed for multispeed ambulation and sport activities
- Adjustable Variable Extension Dampening “VED” bumper system (kneeling and impact)
- Multi-faceted mode selector to control flexion and extension
- Patented urethane tendon and Optimal Position X/CAM™ system, offering tunable resistance and return in a removable Hybrid format
- Crossflex™ preflexion foam wedges for sport activities. Three pack kit comes in 20°, 30° and 40° degree wedge settings
- Removable rubber protective impact cover
- Ultra lightweight CNC machined 6061-T aircraft aluminum frame with stainless steel inserts
- Oilite™ self-lubricating bushings:
  - \* No maintenance with increased durability
  - \* Smooth motion in light use or heavy impact situations
  - \* Reduced play
  - \* All parts serviceable
- Water and salt water resistant



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## Crossover™ Kit Contents

The Crossover knee kit comes with everything you will need to get your patient up and walking and participating in sports or other high activities.

### **Kit Contents: (PN: 1001-4)**

- Crossover™ Knee with 75 durometer Variable Extension Dampening “VED” bumpers (upper/lower)
- Protective rubber impact covers
- Shock pump
- 2 pair urethane tendons
- 6061-T CNC X/CAMs™ with removable hardware
- User manual

**Note: Consumable Products:** *The following items are classified as “Consumable Products” and will require replacement when visual wear, cracks or tears are present. See “Periodic Maintenance Table” (Pages 19-21)*

- Urethane tendons
- “VED” dampening bumpers
- Crossflex™ inter-changeable preflexion wedges

### **Note: Available additional items:**

- Crossflex™ adjustable preflexion wedges are available for purchase in a three (3) pack kit (PN: C113)
- 85 durometer “VED” bumper set

## Compatible Activities, Sports and Rehabilitation

### Ambulation

- Walking and community ambulation.

### Winter Sports

- Alpine skiing
- Telemark skiing
- Cross country skiing
- Snowboarding
- Snow shoeing
- Ice Skating
- Hockey
- Snow kiting

### Water Sports

- Water skiing
- Wakeboarding
- Wind surfing
- Surfing
- SUP
- Kite boarding
- Scuba diving
- Rowing / crewing
- Swimming

### Summer Sports

- Mountain biking
- Road cycling
- Skate boarding
- Inline skating
- Backpacking
- Fighting sports
- Hiking
- Golf
- Beach days

### Moto Sports

- Moto-cross
- Enduro and trail
- Motorcycle ADV
- Snowmobile

### Rehabilitation

- Build muscle
- Weight lifting / squatting
- Promote general fitness
- Increase active, quality time with family

## **New Features and Benefits**

- New Integrated X/CAM and tendon quick release system
- 8° - 140° expanded range of USABLE flexion
- No fade after 90° degrees flexion
- New compact, lighter, stronger and 5cm (2") shorter frame
- New rubber impact covers for sport and ambulation
- Multi-durometer Variable Extension Dampening "VED" bumper system
- Kneeling pad
- 3ea Crossflex™ adjustable pre-flexion position wedges
- Oilite™ bushings that require no service
- Demo/trial program

## **Technical Specifications**

- Maximum weight 125kg (275lbs)
- Net weight 908g (2lbs)
- Frame size 20cm (8 inches)
- 8° to 150° knee flexion available range

## Understanding the Crossover™ Knee System



**Ambulation**



**Sport**

### ***Ambulation Configuration***

- In the ambulation configuration the Crossover™ knee functions like a monocentric (single axis) S-N-S knee unit, with a free swing feature utilizing a pneumatic/hydraulic shock with micro adjustment capabilities and a unique “VED” impact multi-durometer inter-changeable bumper system to address swing and stance gait phases.
- Under normal ambulation conditions no tendons and X/CAMs™ are used. However, the tendon and X/CAM™ system may be used for highly active walking situations like—for example—back packing or hiking.
- The Crossover™ knee utilizes a highly adjustable pneumatic/hydraulic cylinder to control flexion and extension adjustments.
- Variable Extension Dampening “VED” bumper system is also used to address stance phase.

### ***Sport Configuration***

- In the sport configuration the Crossover™ knee functions the same as in the ambulation noted above. But, when combined with the relatively linear spring rate of the tendons and X/CAM™ system the Crossover™ delivers a smooth even energy absorption and return. It is this smooth isotonic stability that makes the Crossover™ knee such a good choice for rehab and sport applications.
- Under sporting conditions, the tendon and X/CAM™ system are generally used. This system takes a user about 3 minutes to add to the knee.
- Crossflex™ adjustable preflexion wedges may also be used to position the user into a more preflexed position. For example, snowboarding uses a 30° preflexion position.
- In general more air is added to the shock during heavy sport activities in combination with the tendon and X/CAM™ system.

## How the Systems Work Together

### Tendons

The tendon system is the heart of the Crossover™ knee, offering a highly variable and infinitely tunable resistance and return mechanism. This relatively linear spring rate of tendons and X/CAM™ system delivers a smooth, even energy absorption and return. This patented tendon and X/CAM™ system is what makes it possible for the user to get extension/resistance moments that provide the needed assistance to enable exiting and absorbing the extreme flexion moments associated with sport activities.

- This system is comprised of two primary components: tendons, X/CAM™ guide wheels.
- Only one tendon durometer is needed with the Crossover™ knee.
- One OR two tendons may be used at a time.
- The primary goal in setting selections is to find the winning combination that provides the optimal flexion resistance and extension assistance that will balance forces like a natural leg for the activity the user is doing. The idea is: *“helping, but not hindering.”*



### Integrated Quick-release X/CAM™ Guide Wheels

To enhance the fluid dynamic feel of the tendons a tendon X/CAM™ Guide Wheel system is used in conjunction with the tendons at the knee axis. These X/CAMs™ allow the highest tuning of tendon response within further progression of knee flexion.

Tendon resistance is properly tuned within a optimal range of flexion in the new integrated X/CAM knee system. This means the flexion for the tendon is offering additional support where it's needed and the energy for explosive returns is always ready. Because of this X/CAM™ action Crossover™ users also achieve much lower *preflexion resistance* allowing them to conserve much needed energy while still providing the power and support needed flexing 25 degrees and beyond.

Each X/CAM™ offers the optimal level of progression and can be used with the Crossover™ tendons in singles or pairs. Integrated X/CAM's now have a tendon quick release function that can all be activated on-the-fly without tools.



\*Note. Not actual image of 2018 CAM.  
New image coming soon.

## RT3 Shock

The Crossover™ knee utilizes a pneumatic/hydraulic shock. This shock uses a combination of air, oil and valving to control and change flexion and extension moments. Air pressure is user adjustable and the regulated air spring/air pressure will dictate how firm that spring is. The user controls will regulate flexion and extension rates.

Similar in function to the S-N-S Mauch units this pneumatic/hydraulic shock provides the ability to manage average ambulation requirements, and when combined with the tendon, X/CAM™ and Crossflex™ wedges (see below), provides the additional dampening and rebound for high activity sports.



## Crossflex™ Wedges

Crossflex™ preflexion wedges are a mid-durometer foam wedge system that is user added to change the preflexion angle/position per sport activity. Different sports require different preflexion settings. Snowboarding for example may require 30° whereas mountain biking may do better at 10°.

Crossflex™ wedges are designed to act like knee cartilage and provide a small amount of compression absorption. This feature absorbs a small percentage of impact energy keeping it from directly translating into the prosthetic limb. The net result is a less stressed prosthetic limb.

Crossflex™ wedges require no tools to add to the knee and are inserted at the knee axis.

20, 30 and 40 degree angle/positions are available. *Note: When standing forces are placed on the wedges, there is an average compression rate of 5 to 10% to the wedges.*



## Variable Extension Dampening “VED” Bumper System

VED bumpers come in 75° and 85° durometer ratings and can be interchanged to address knee performance during stance phase. 85 durometer VED pads can be ordered separately. ( Page 26)



## Alignment and Initial Ambulation Settings

***This procedure addresses both ambulation and sport***

When setting up the Crossover™ knee for the first time on a new patient, the goal is to align the knee in a stable condition for ambulation. All adjustments to tune the knee are after the patient is set in a stable alignment.

Make sure the patient is in parallel bars for safety as the knee will be in free swing with no or very little resistance in the initial set up phase.

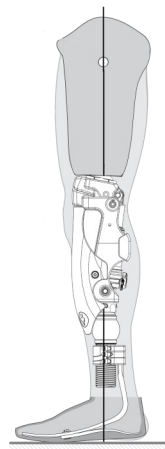


***Warning! If the patient is not stable they can fall at this stage of the fitting.***

1. Unpack the box and make sure all items are in the package.
2. Remove air cap on shock and remove any residual air pressure. Depress valve to remove air. (Figure 1)
3. Set all shock settings to the zero position. (Page 11-12)
4. Remove protective covers for easy adjustments.
5. Attach Crossover™ to prosthetic.
6. For recommended beginning alignment. (Figure 2)



Figure 2



## Alignment & First Time Set-Up

*The alignment reference line is equal to the weight line*

1. Alignment Reference Line (Socket Bisection)
2. Knee Axis Reference Point
  - Establish a vertical pylon.
  - Establish the knee center height.
  - Establish the appropriate socket angles. 5 degrees of socket flexion is recommended.
  - Position the socket so that the alignment reference line bisects the lateral wall at the ischial level of the socket and falls through or slightly posterior to the knee axis.
  - Establish the correct length of the prosthesis.

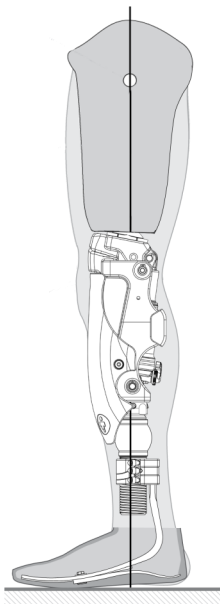


*If the weight line is too far anterior to the knee axis, the knee may require much more effort to create a hyperextension moment that will engage the knee axis and allow for fluid initiation of the knee flexion.*



*Premature knee flexion may result from a weight line position too posterior to the knee axis and will make the knee unstable.*

Figure 2



## Understanding Shock Controls

### Flexion Resistance—Blue Lever

This lever controls flexion, also known as “dampening” on this shock. The flexion lever has three positions. Looking at the shock in the knee frame, these positions are 10, 2 and 6 O'clock.

On the shock these positions are labeled as the following: (Figure 3)



- 10 O'clock = Unlock 
- 2 O'clock = Pedal
- 6 O'clock = Lock 



Figure 3

### Most common setting for ambulation:


- 10 O'clock position = Lowest flexion resistance. “Unlock”  (Figure 4)



Figure 4

### Additional settings most commonly used to address ambulation on uneven terrain, stairs and steep declines:


- 2 O'clock position = Medium flexion resistance. “Pedal” (Figure 5)
- 6 O'clock position = Highest flexion resistance. “Lock”  (Figure 6)



Figure 5


 Note: With higher air pressures the 6 O'clock setting can act as an on demand extension lock.



Figure 6

## Extension Resistance—*Red Dial*

This red dial controls extension, also known as “rebound” on this shock. The red dial is located directly behind the blue flexion lever. The red extension dial has a BLACK notch on it to indicate its position.(Figure 7)

- The dial rebound adjuster has ten positions with audible/tactile clicks
- Clockwise rotation = slow extension (rebound) 🐢
- Counter-clockwise rotation = faster extension (rebound) 🐰

## ***Air Pressure:***

Air pressure influences flexion and extension based on the amount of air pressure added to the shock.

- High air pressures create more resistance and are better for heavy impact sport.
- Lower air pressures create less resistance and are better for walking.
- You can run 1psi to 275psi depending on the user’s requirements and the activity.

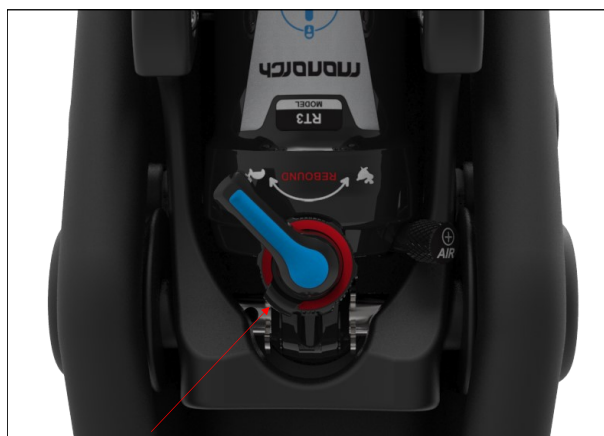


Figure 7

## Walking the Patient and Adjusting the Shock

### Step 1.

Set the shock to the zero set point.

- Set the Blue Lever to the 10 O' Clock position.
- Turn the Red Dial in a clockwise rotation until it stops.
- Remove all the air from the shock.
- Remove air cap and depress the valve with a tool.

### Step 2.

Set shock to "Recommended Home Position." *This is your starting position for each change in air pressure.*

- Blue Lever set to the 10 O' Clock position.
- Turn Red Dial (4) clicks counter clockwise. The black notch should be at the 7 O' Clock position.
- Add 10 psi to the shock using the supplied shock pump.


### Step 3.



**Warning! If the patient is not stable they can fall at this stage of the fitting.**



*Note: Keep notes on settings while working through adjustments. (Page 26)*

- With the knee set at "Home Position" have the patient walk a few times in the parallel bars. They should feel a slight resistance in the shock. This is a good starting point for ambulation tuning.
- The first adjustment to address is extension. Adjust the red dial either COUNTER-CLOCKWISE (faster extension) or CLOCKWISE (slower extension) from the original 7 O'clock home position. Find the desired extension speed of the knee while walking the patient in the parallel bars. Move the dial one click at a time faster or slower as it may only take one click either way to find the desired settings.
- The second adjustment should be to flexion by adjusting the Blue Lever into one of three position options on the shock.
- The patient should be at an air pressure range that they can walk with while the Blue Lever is in the 10 O'clock position. (labeled as "Unlock"  on the shock)

## Walking the Patient and Adjusting the Shock

### **Additional Information:**

*As noted in the previous “Understanding Shock Controls” section, the additional two blue lever settings are commonly used to address ambulation on uneven terrain, stairs and steep declines as they can be adjusted quickly “on-the-fly” by the patient when on-demand flexion resistance is needed. These two settings provide the on-demand flexion resistance that deliver additional security when desired without the need to add more air to the shock.*

### **Step 4.**

While walking the patient and changing adjustments as needed, determine whether or not 10 psi is a good air pressure for your patient’s ambulation needs. If more air pressure is required, add more air with the air pump.



*Note: If air pressure is added or reduced, always reset the knee to the home position dial and lever settings, and start the tuning process again.*



**Warning!** When adding or changing air pressure keep the knee fully extended.

- When adding air go up at a scale of 5-10psi if you are close to where you’d like the patient to be. If not, close jump up 10-20psi at a time.
- Repeat adjustment process as in Step 3 until desired ambulation is met.

## Sports Set-Up

*There are two common sport mode applications for this knee:*

- 1. Low Impact: SUP, hiking, golfing, snorkeling, snow shoeing, etc.*
- 2. High Impact: downhill skiing, alpine skiing, snowboarding, moto, skydiving, etc.*

### Low Impact Sport

For low impact applications the Crossover™ can be utilized in the “Walk Mode” with the addition of more air pressure to get desired resistance levels while adjusting the shock adjustments to fit the ideal 3 position (Blue Lever) operating range.

### High Impact Sport

For high impact applications the Crossover™ will need to be converted to the X/CAM™ sport mode configuration.

This conversion can be done in just minutes while the patient is wearing the knee with a rotator device (*this is suggested*) in the knee or simply by removing the leg and making these changes.

## Installing X/CAM's™

*Required Tools: 3, 4, 5mm Allen wrench & Phillips screwdriver*

### Step 1. X/CAMs™


- Using a 3mm Allen tool, remove the screws on both side covers. Place in bag for safe keeping.
- Using a 4mm Allen tool, attach the X/CAMs™ to the sides of the Crossover™. Torque to 8nm.

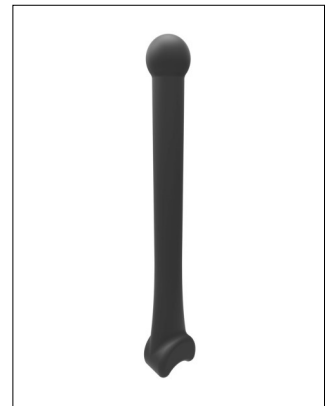


## Tendons Set Up

- The Crossover knee, X/CAM and tendons come preassembled. Simply bolt on the upper X/CAMs and attached the lower tendon screws to the knee frame and you are ready to go.

## Crossflex™ Wedges Set Up

- Crossflex™ preflexion wedges are easy for the user to install and require NO  tools. Crossflex™ wedges are only used during sport activities.
- While the leg is on, simply flex the leg so the upper knee opening is at its widest point.
- Insert the narrow end of the Crossflex™ wedge into the open knee cavity. The foam hook will create a lock on the inside of the knee holding the wedge in place.
- Remove in reverse, being careful not to tear or damage the foam.





*Note: See video at [www.leftside.life](http://www.leftside.life) for example.*

## Baseline Activity Recommendations Chart

*All baseline settings are provided as a guideline for initial setup. The final settings will vary from user to user based on user preferences and conditions.*

*\*N/A indicates no use of the Crossflex™ Wedges or X/CAM™ and tendons necessary for particular application*

*\*(10) Unlock =  , (2) Pedal, (6) Lock =  - indicate the position of the Flexion Lever (Blue Lever) on the shock body*

*\*Fast, Medium, Slow – indicates the Extension Speed (Red Dial) of the Knee*

<i>Ambulation</i>	<i>Crossflex™ Wedge</i>	<i>Flexion Resistance</i>	<i>Extension Speed</i>	<i>X/CAM™ Position</i>	<i>Air Pressure</i>
<i>Walking &amp; Community ambulation</i>	<i>N/A</i>	<i>Unlock (10) / Pedal (2)</i>	<i>Medium to Slow</i>	<i>N/A</i>	<i>5-30psi</i>
<b><i>Winter Sports</i></b>					
<i>Alpine Skiing</i>	<i>20° / 30°</i>	<i>Pedal (2) / Lock (6)</i>	<i>Medium to Slow</i>	<i>N/A</i>	<i>15-60psi</i>
<i>Telemark Skiing</i>	<i>30° / 40°</i>	<i>Pedal (2) / Lock (6)</i>	<i>Medium to Slow</i>	<i>N/A</i>	<i>15-80psi</i>
<i>Cross Country Skiing</i>	<i>20°</i>	<i>Unlock (10) / Pedal (2)</i>	<i>Medium to Fast</i>	<i>N/A</i>	<i>15-60psi</i>
<i>Snowboarding</i>	<i>30° / 40°</i>	<i>Pedal (2) / Lock (6)</i>	<i>Medium to Slow</i>	<i>N/A</i>	<i>25-165psi</i>
<i>Snow Shoeing</i>	<i>N/A</i>	<i>Pedal (2) / Lock (6)</i>	<i>Medium to Fast</i>	<i>N/A</i>	<i>5-35psi</i>
<i>Ice Skating</i>	<i>None to 20°</i>	<i>Pedal (2) / Lock (6)</i>	<i>Medium to Fast</i>	<i>N/A</i>	<i>15-80psi</i>
<i>Hockey</i>	<i>20° / 30°</i>	<i>Pedal (2) / Lock (6)</i>	<i>Medium to Fast</i>	<i>N/A</i>	<i>15-60psi</i>
<i>Snow Kiting</i>	<i>20° / 30°</i>	<i>Pedal (2) / Lock (6)</i>	<i>Medium to Slow</i>	<i>N/A</i>	<i>15-140psi</i>

## Baseline Activity Recommendations Chart

<i>Water Sports</i>					
<i>Water Skiing</i>	<i>None to 20°</i>	<i>Pedal (2) / Lock (6)</i>	<i>Medium to Fast</i>	<i>N/A</i>	<i>15-140psi</i>
<i>Wakeboarding</i>	<i>20° / 30°</i>	<i>Pedal (2) / Lock (6)</i>	<i>Medium to Slow</i>	<i>N/A</i>	<i>25-165psi</i>
<i>Wind Surfing</i>	<i>20° / 30°</i>	<i>Pedal (2) / Lock (6)</i>	<i>Medium to Slow</i>	<i>N/A</i>	<i>15-65psi</i>
<i>Surfing</i>	<i>None to 20°</i>	<i>Pedal (2) / Lock (6)</i>	<i>Medium to Slow</i>	<i>N/A</i>	<i>35-165psi</i>
<i>SUP</i>	<i>None to 20°</i>	<i>Pedal (2) / Lock (6)</i>	<i>Medium to Fast</i>	<i>N/A</i>	<i>30-100psi</i>
<i>Kite Boarding</i>	<i>20° / 30°</i>	<i>Pedal (2) / Lock (6)</i>	<i>Medium to Slow</i>	<i>N/A</i>	<i>15-140psi</i>
<i>Scuba Diving</i>	<i>N/A</i>	<i>Unlock (10)</i>	<i>Fast</i>	<i>N/A</i>	<i>5-30psi</i>
<i>Swimming</i>	<i>N/A</i>	<i>Unlock (10)</i>	<i>Fast</i>	<i>N/A</i>	<i>15-60psi</i>

<i>Summer Sports</i>					
<i>Mountain Biking (DH)</i>	<i>20° / 30°</i>	<i>Pedal (2) / Lock (6)</i>	<i>Medium to Slow</i>	<i>N/A</i>	<i>25-165psi</i>
<i>Mountain Biking (XC)</i>	<i>20° / 30°</i>	<i>Unlock (10) / Pedal (2)</i>	<i>Medium to Slow</i>	<i>N/A</i>	<i>15-60psi</i>
<i>Road Biking</i>	<i>20°</i>	<i>Unlock (10) / Pedal (2)</i>	<i>Medium to Fast</i>	<i>N/A</i>	<i>15-80psi</i>
<i>Skate Boarding</i>	<i>None to 20°</i>	<i>Pedal (2) / Lock (6)</i>	<i>Medium to Fast</i>	<i>N/A</i>	<i>15-100psi</i>
<i>Inline Skating</i>	<i>None to 20°</i>	<i>Pedal (2) / Lock (6)</i>	<i>Medium to Fast</i>	<i>N/A</i>	<i>15-100psi</i>
<i>Backpacking</i>	<i>N/A</i>	<i>Unlock (10) / Pedal (2) / Lock (6)</i>	<i>Medium to Fast</i>	<i>N/A</i>	<i>10-50psi</i>
<i>Fighting Sports</i>	<i>N/A</i>	<i>Pedal (2) / Lock (6)</i>	<i>Medium to Fast</i>	<i>N/A</i>	<i>15-80psi</i>
<i>Hiking</i>	<i>N/A</i>	<i>Unlock (10) / Pedal (2) / Lock (6)</i>	<i>Medium to Slow</i>	<i>N/A</i>	<i>10-30psi</i>
<i>Golfing</i>	<i>N/A</i>	<i>Unlock (10) / Pedal (2) / Lock (6)</i>	<i>Medium to Slow</i>	<i>N/A</i>	<i>10-45psi</i>
<i>Beach Days</i>	<i>N/A</i>	<i>Unlock (10) / Pedal (2) / Lock (6)</i>	<i>Medium to Slow</i>	<i>N/A</i>	<i>10-30psi</i>

## Baseline Activity Recommendations Chart

<i>Moto Sports</i>					
<i>Motocross</i>	<i>30° / 40°</i>	<i>Pedal (2) / Lock (6)</i>	<i>Medium to Slow</i>	<i>N/A</i>	<i>25-185psi</i>
<i>Enduro &amp; Trail</i>	<i>20° / 30°</i>	<i>Pedal (2) / Lock (6)</i>	<i>Medium to Slow</i>	<i>N/A</i>	<i>15-60psi</i>
<i>Motorcycle ADV</i>	<i>None to 20°</i>	<i>Pedal (2) / Lock (6)</i>	<i>Medium to Slow</i>	<i>N/A</i>	<i>15-80psi</i>
<i>Snowmobile</i>	<i>30° / 40°</i>	<i>Pedal (2) / Lock (6)</i>	<i>Medium to Slow</i>	<i>N/A</i>	<i>25-185psi</i>

## Knee Maintenance

### General Inspection

Before you use your Crossover™ knee, personally inspect the knee before each use. Check the knee for:

- Loose or missing bolts or screws
- Proper air pressure as indicated by your prosthetist determined during knee set up for the corresponding activity you intend to do
- Cracks or damage to protective covers
- Tear or damage to a rubber tendons and rubber pads

### Periodic Maintenance Schedule

To maintain the high performance, safety, and long life of your Crossover™ knee, it is required that you periodically check the knee system and perform routine maintenance on your shock. If you use the shock and knee in extreme conditions, compliance checks and maintenance should be performed more frequently.

## Knee Maintenance

**Normal use. Walking and occasional sports. No water.**

Wear and Tear Parts	Interval (hours)	Replace
Inspect rubber tendons for excessive wear, abrasion or tears. Replace if necessary.	8hrs or after every sport activity	Annually
Inspect 75 durometer terminal impact pads for excessive wear, abrasion or tears. Replace if necessary.	100hrs	Annually
Inspect 85 durometer terminal impact pads for excessive wear, abrasion or tears. Replace if necessary.	100hrs	Annually
Inspect ABS protective cover for excessive wear, abrasion or cracks. Replace if necessary.	8hrs or after every sport activity	As indicated by damage
Inspect Crossflex™ adjustable preflexion wedges for excessive wear, abrasion or tears. Replace if necessary.	After every sport activity	As indicated by damage or wear.

Shock Maintenance Service Chart	Interval (hours)	Replace
Clean your shock with mild soap and a toothbrush.	8	NA
Keep mounting hardware clean and lubricated.	8	NA
Remove, clean, and grease mounting hardware.	20	NA
Clean and inspect extension/preflexion spacers. Replace if necessary.	20	NA
Inspect eyelet bushings and mounting hardware for wear and play. Replace if necessary	100	Annually
Replace all seals.	100	Annually
Inspect shaft, reservoir, damper body and air can for scratches or damage (if applicable). Replace if necessary.	100	Annually
Replace damping fluid (if applicable).	100	Annually

Knee Frame and Knee Parts	Interval (hours)	Replace	Torque
Inspect X/CAM, for dings or sharp edges that may cut into tendons. Inspect 4mm SS attachment screws for damage. Replace if necessary.	After each sporting activity	If damaged	8nm
Knee frame. Inspect for any damage.	Annually	If damaged	NA
Inspect protective rubber cover 3mm mounting screws.	After each removal	If damaged	Hand tight
Inspect nylon washers, rubber O-rings, and cir-clips.	Annually	If damaged	

## Knee Maintenance

### High Use: Mostly Sports. Fresh and Saltwater.

Wear and tear parts	Interval (hours)	Replace
Inspect rubber tendons for excessive wear, abrasion or tears replace if necessary.	After every sport activity	As indicated by damage or wear.
Inspect 75 durometer terminal impact pads for excessive wear, abrasion or tears replace if necessary.	30hrs	As indicated by damage or wear.
Inspect 85 durometer terminal impact pads for excessive wear, abrasion or tears replace if necessary.	30hrs	As indicated by damage or wear.
Inspect rubber protective cover for excessive wear, abrasion or cracks replace if necessary.	After every sport activity	As indicated by damage
Inspect Crossflex™ adjustable pre-flexion wedges for excessive wear, abrasion or tears replace if necessary.	After every sport activity	As indicated by damage or wear.

Shock maintenance service chart	Interval (hours)	Replace
Clean your shock with mild soap and a toothbrush	After every sport activity	NA
Keep mounting hardware clean and lubricated	After every sport activity	NA
Remove, clean, and grease mounting hardware	After every sport activity	NA
Inspect eyelet bushings and mounting hardware for wear and play. Replace if necessary	30	As indicated by damage or wear.
Replace all seals	30	Annually
Inspect shaft, reservoir, damper body and air can for scratches or damage (if applicable). Replace if necessary	30	Annually
Replace damping fluid (if applicable)	30	30

Knee frame and knee parts	Interval (hours)	Replace	Torque
Inspect X/CAM™ for dings or sharp edges that may cut into tendons. Inspect 5mm SS attachment screws for damage. Replace if necessary.	After each sporting activity	If damaged	8nm
Knee frame. Inspect for any damage.	After each sporting activity	If damaged	NA
Inspect protective ABS cover 3mm mounting screws	After each removal	If damaged	Hand tight
Nylon washers, rubber O-rings, circlips	Annually	If damaged	

## **Warranty**

### ***Leftside Industries, Inc.***

Leftside Industries Inc. warrants its products to be free from defects in materials and/or workmanship for a period of 36 months from date of original purchase. This warranty is non-transferable and voided if the serial number or production code has been deliberately altered, defaced or removed. Claims must be accompanied by original proof of purchase. All shipping costs are the responsibility of the party making the warranty claim.

This warranty does not apply to products that have been modified, incorrectly installed and/or improperly adjusted. This warranty does not apply to normal wear and tear, crash impact, abuse or non-compliance with the manufacturers' specifications.

Final determination on all warranty claims is at the sole discretion of Leftside Industries Inc.

### **LIMITATIONS OF WARRANTY**

This warranty does not apply to normal wear and tear. Wear and tear parts are subject to damage as a result of normal use, failure to service according to Leftside Industries recommendations and/or sports or installation in conditions or applications other than recommended.

Wear and tear parts are identified below and are NOT covered by the 36 month warranty. Please refer to maintenance service charts.

### **MAJOR COMPONENTS**

- Urethane tendons
- Variable Extension Dampening bumpers
- Protective rubber cover
- Crossflex™ adjustable pre-flexion wedges
- Shock (*See shock warranty*)

### **SHOCK COMPONENTS**

- Dust seals
- Bushings
- Air sealing O-rings
- Glide rings
- Rubber moving parts
- Foam rings
- Rear shock mounting hardware and main seals

## Shock Warranty

### SRAM LLC WARRANTY

#### EXTENT OF LIMITED WARRANTY

Except as otherwise set forth herein, SRAM warrants its products to be free from defects in materials or workmanship for a period of two years after original purchase. This warranty only applies to the original owner and is not transferable. Claims under this warranty must be made through the retailer where the product or the SRAM component was purchased. Original proof of purchase is required. Except as described herein, SRAM makes no other warranties, guaranties, or representations of any type (express or implied), and all warranties (including any implied warranties of reasonable care, merchantability, or fitness for a particular purpose) are hereby disclaimed.

#### LIMITATIONS OF LIABILITY

To the extent allowed by local law, except for the obligations specifically set forth in this warranty statement, in no event shall SRAM or its third party suppliers be liable for direct, indirect, special, incidental, or consequential damages.

#### LIMITATIONS OF WARRANTY

This warranty does not apply to products that have been incorrectly installed and/or adjusted according to the respective SRAM user manual. The SRAM user manuals can be found online at [sram.com](http://sram.com), [rockshox.com](http://rockshox.com), [avidbike.com](http://avidbike.com), [truvativ.com](http://truvativ.com), or [zippro.com](http://zippro.com).

## Snow & Water



The Crossover™ knee is designed to be used in wet conditions. To ensure a long lifespan the unit should be rinsed with clean water after it has been used in salt water, resort snow (*resort snow contains conditioning chemicals that may corrode parts*), and in other conditions in which water is questionable. Never store the unit wet. After rinsing the Crossover™ knee off with fresh clean water it should be dried, then lubricated with a lithium based lubricant to all moving parts of the knee. Always store dry.



Prolonged submersion of the shock will void the manufacture's warranty. Diving and snorkeling while using the Crossover™ knee are recommended without the shock unit in, using tendons only. While performing activities such as water skiing, kite-boarding or wave running where the shock is recommended, simply follow snow and water care instructions and don't submerge shock for prolonged periods.

## **Service / Technical Contact Information**

Please contact:

Leftside Industries Inc.

Phone: 1-800-826-7657

9:00AM -5:00PM EST

Email: [info@leftside.life](mailto:info@leftside.life)

4616 25th Ave NE [#285] Seattle, WA 98105

## Set-Up Reference Notes

	Flexion Setting	Extension Setting	PSI	Result
1				
2				
3				
4				
5				

	Sport	X/CAM™ Setting	Crossflex™ Wedge	Flexion Setting	Extension Setting	PSI	Result
1							
2							
3							
4							
5							