



LimLogic VS

VACUUM SUSPENSION SYSTEM

A new development by Ohio Willow Wood distributed exclusively by Ortho Europe



REMOTE CONTROLLED SUSPENSION

For the first time patients have the ability to remotely monitor and adjust their individual vacuum level using the fob provided. This fob also allows the patient to monitor the status of the battery between charges.

IN LINE CONSTRUCTION

Using standard 4 hole fixing, this integrated design eliminates the need for attaching an external tube or adding an externally fitted device to the socket.

SET AND FORGET

After setting Limlogic to the desired level, the system continually monitors the vacuum pressure in the socket to maintain a secure and comfortable fit.

BILATERAL SOLUTIONS

Bilateral kits are available. These include two controllers and one fob which is programmed to control both units independently

AUTOMATIC LEAK DETECTION

Should a leak occur the system will automatically recognise a problem and notify the patient through a vibrating warning and a message on the fob display

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LimbLogic VS



The latest in vacuum suspension technology is **LimbLogic VS**. This is the first remote-controlled vacuum suspension system on the market. The 4-Hole Controller is mounted inline allowing for complete integration without the annoyances of external fixtures.

LimbLogic VS operates quietly and features 'Set & Forget' monitoring. This means that the system monitors the level of vacuum within the socket to maintain a secure and comfortable fit. Clinicians program LimbLogic VS for a set range of vacuum. The amputee may use the fob to adjust the vacuum level within the clinicians set range. Each LimbLogic VS kit includes a 4-Hole Controller, fob, battery charger, patient accessories kit, a fabrication kit, and a distal adaptor with forming plate. Bilateral kits are also available and include two 4-Hole Controllers and one fob. The fob in a bilateral kit is programmed to control both units independently. Also available is a diagnostic kit which aids in determining the location of a leak in the socket or system. Each system includes a 100V to 240V adaptable switching power supply which includes an interchangeable international power plug set.

The key to success with LimbLogic VS is an airtight prosthesis. Use a reflected Alpha MAX Liner or an Alpha DESIGN® Liner using MAX fabric, an airtight laminated socket, and the Alpha Flex Sleeve for a gel-on-gel seal to attain an airtight prosthesis.

- **Remote-Controlled Vacuum Suspension**
- **Set & Forget Technology**
- **Inline Fabrication**
- **Quiet Operation**
- **Water Resistant Controller**
- **Suitable for Maximum weight 160Kg (US activity level 3)**
- **Warranty 24 months**

Part Number

LLV-1400 LIMBLOGIC VS 4 Hole Kit

LLV-1402 LIMBLOGIC VS 4 Hole Bilateral Kit

Specifications	
Product Weight	4-Hole Housing: 195g; Fob: 45g
Product Height	4-Hole Housing: (36 mm)
Patient Weight	(160 kg) for U.S. Activity Level 3* (136 kg) for U.S. Activity Level 4*
Warranty	24 months

* Body weight plus any loads normally routinely carried cannot exceed this weight limit

LimLogic VS Accessories

LimLogic VS Vacuum Plate & LimLogic VS Vacuum Pyramid

1



2



The LimLogic VS Plate and LimLogic VS Pyramid are suitable for instances when there is insufficient clearance to mount a LimLogic VS controller directly below the socket. The Vacuum Plate and Vacuum Pyramid allow practitioners to relocate the controller while maintaining the inline design of a prosthesis. The components are ideal for knee disarticulations and long transfemoral patients. Additionally, the components also allow practitioners to retrofit existing vacuum sockets for use with LimLogic VS.

Product No.	Description
1 LLV-01043	LimLogic™ VS Vacuum Plate (50g)
2 LLV-01044	LimLogic™ VS Vacuum Pyramid (62g)

LimLogic VS Cosmesis Kit



A LimLogic VS prosthesis with cosmesis kit applied

The LimLogic VS Cosmesis Kit allows the LimLogic VS controller to be cosmetically covered without compromising use and accessibility. The added cosmetic panel extends the charging port and operation button flush to the surface of the cosmesis. The cosmetic panel also includes a barb which may be used to route the exhaust tube into the foot shell.

Product No.	Description
LLV-01046	LimLogic™ VS Cosmesis Kit

Product No.	Description
LL-01240	LimLogic VS Fob Replacement Battery
LLV-01011	LimLogic VS 1500 Battery Charger
LLV-1300	LimLogic VS Diagnostic Kit
LLS-3N	LimLogic VS Latex Sleeve , Size 3
LLS-4N	LimLogic VS Latex Sleeve, Size 4
LLS-5N	LimLogic VS Latex Sleeve, Size 5
LLS-KIT	LimLogic VS Latex Sleeve Fitting Kit (set of 3)

LimbLogic VS Accessories

Alpha Flex Sleeve

Featuring a highly flexible fabric for greater comfort, flexibility and increased range of motion. **The Alpha Flex Sleeve** may be used with locking suspension, suction suspension, or with LimbLogic VS for creating an airtight seal. **The Alpha Flex** uses a unique blend of Kevlar pulp and traditional Alpha gel with mineral oil. The blend provides increased sleeve durability as well as greater puncture and abrasion resistance without compromising comfort. For even more durability the **Alpha Flex Sleeve** features a contoured polyurethane pad on the interior fabric cuff. This pad, which covers the typical brim, helps reduce damage to the seal due to impacts in the brim area.



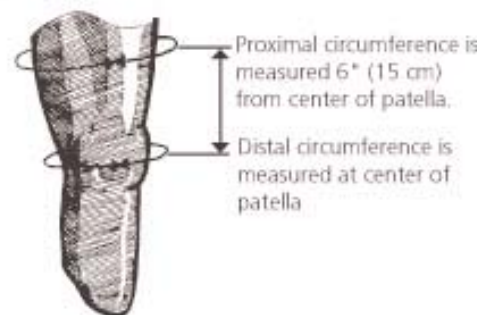
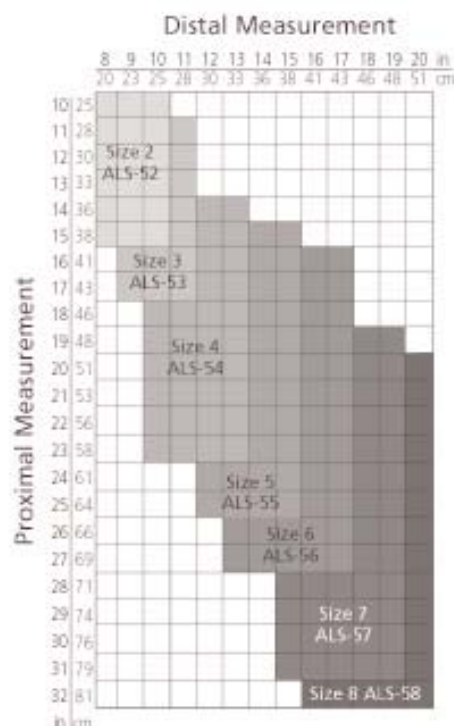
Specifications	
Sizes	Seven Sizes (Size 2 through 8)
Colours	Buff Black
Gel thickness	3mm
Warranty	90 Days

Part Number	ALS/52	Size 2	ALS/53	Size 3
	ALS/54	Size 4	ALS/55	Size 5
	ALS/56	Size 6	ALS/57	Size 7
	ALS/58	Size 8		

Colour Buff Gel Thickness 3mm Add (B) for Buff and (K) for Black
example: ALS/52B Flex Sleeve size 52 Buff

- Features Kevlar-Reinforced Alpha Gel
- Flexible Fabric
- Use with LimbLogic VS and Reflected Alpha Max liner for Airtight Seal
- Interior Polyurethane Pad at Brim Provides Extra Protection
- Available in Seven Sizes

Alpha® Flex Sizing Chart



Alpha AK Sleeve



Designed specifically for transfemoral amputee's. The **Alpha AK Sleeve** may be used with suction suspension as well as with LimbLogic VS for creating an airtight seal. The sleeve features the same flexible fabric as the Alpha Flex Sleeve. The Alpha AK Sleeve also uses a unique blend of Kevlar pulp and traditional Alpha gel with miner oil for increased sleeve durability and greater puncture and abrasion resistance.

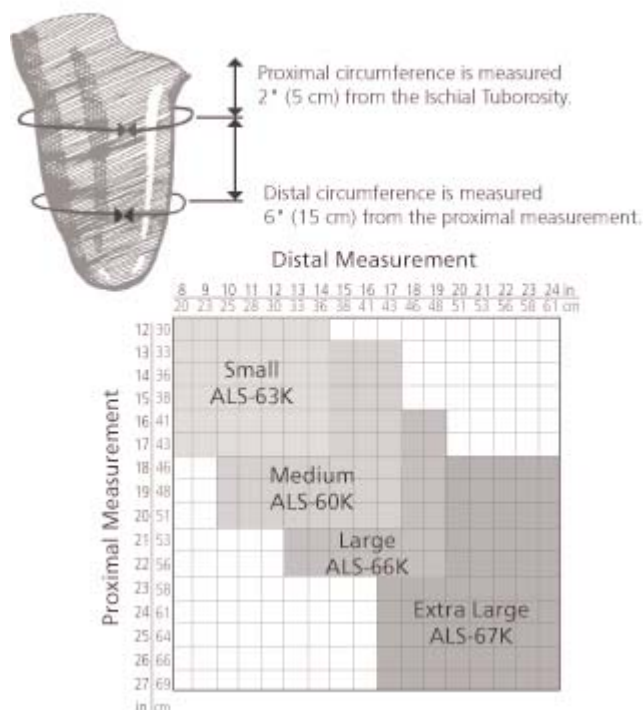
- Designed for Transfemoral Use with LimbLogic VS
- Features Kevlar-Reinforced Alpha Gel
- Flexible Fabric

Specifications	
Sizes	Four Sizes (Small, Medium, Large, Extra Large)
Colours	Black
Gel thickness	3mm
Warranty	90 Days

Part Number ALS/63K Small ALS/60K Medium
ALS/66K Large ALS/67K Ex Large

Colour Buff Gel Thickness 3mm Add (B) for Buff and (K) for Black
example: ALS/52K Flex Sleeve size 52 Black

Alpha AK Sleeve Sizing Chart



Limblologic VS Frequently asked questions

- Q. What is the battery life?**
A. The battery life is dependant upon the quality of the seal and the amputee's activity level. Testing has shown the system can normally last between 1 day and one week on a patient. It is recommended that the unit be charged daily to keep a constant routine. The fob has a user replaceable CR2 camera battery that should last 6 months with normal usage.
- Q. Is there anything special with the fabrication of the socket?**
A. Yes having an airtight socket is critical to the operation of the overall system. Ohio Willow Wood provides recommended socket fabrication methodology to achieve airtight sockets
- Q. Does this work for AK amputee's?**
A. Yes the system is suitable for BK & AK amputee's
- Q. What type of maintenance is required for the system?**
A. The coarse filter (Poron) in the socket must be kept clear of large debris or lint that would block the airflow. The patients perspiration will form salt crystals in the vacuum lines, so the system should be flushed with distilled water or isopropyl alcohol on a monthly basis as recommended in the user instructions.
- Q. What are the system settings?**
A. The vacuum is adjustable from 0 to 20 in-Hg (508mm-Hg) with most BK patients using a 10 to 16 in-Hg upper set point. The default control range is a span of 6 in-Hg
- Q. What type of liners are needed with the system?**
A. Ohio Willow Wood testing has been done with Alpha MAX and Alpha DESIGN liners. The MAX fabric provided the best compatibility with the vacuum.
- Q. What is the difference between the settings of inches of mercury (in-Hg) and millimetres of mercury (mm-Hg)?**
A. The Limblologic system displays vacuum settings in inches of mercury. To convert from inches of mercury to millimetres of mercury simply multiple by 25.4
- Q. What is the difference between suction suspension and vacuum suspension?**
A. Both methods use a difference in atmospheric pressure to attach the socket to the residual limb. Suction suspension normally uses a passive expulsion valve to allow air to exit from the socket, but only creates a negative pressure differential when the limb begins to move. Vacuum suspension uses an active pump to create a negative pressure differential which doesn't depend upon the limb position
- Q. How does vacuum suspension work?**
A. The vertical extraction holding force is determined by the diameter of the socket at the sealing point on the limb. The limb in the socket behaves much like a syringe plunger when the syringe is blocked. The vertical holding force is equal to the cross sectional surface area of the limb at the sealing point multiplied by the pressure differential. A negative air pressure is created between the outside of the fabric coated liner and the airtight socket when the vacuum pump pulls the air from between the liner and socket wall. The negative air pressure pulls the liner towards the wall of the socket. The gel liner creates a similar airtight seal to the limb, so when the liner is pulled towards the socket, the body's internal interstitial outward force in the limb is pushed towards the socket and holds the limb firmly in place. The side force stabilizes the limb in the socket
- $$F = \text{Area} \times \text{pressure} = \pi (C/2)^2 \times P = 0.39 \times C^2 \times P \text{ (assumes a round limb shape at sealing point)}$$
- where
 F=approximate vertical extraction force (lbs) C=circumference of limb at sealing point (in) P= negative pressure in socket (in-Hg) (note 0.4912 psi/in-Hg)
- Q. What is the difference between the system maximum setting and the upper set point**
A. The upper set point (USP) and the system maximum (SM) settings are related, but they are not the same. The upper set point is easily amputee adjustable by the up/down fob buttons and USP is the highest vacuum level that the pump will regulate to when in automatic mode. The upper set point can not be greater than the system maximum setting ie $0 < USP \leq SM$ The system maximum is prosthetist adjustable and it sets what a prosthetist determines is the maximum vacuum level that should be applied to a limb. The largest system maximum value is limited by the capabilities of the pump hardware and it is set equal or less than 20 in-Hg ie $0 < SM \leq 20$ in-Hg

**For further information on the Limblogic VS
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Our customer service department**



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