



CLIMBING SHOES



MAMMUT



photo: Carsten von Brichham

Mammut is one of the world's leading manufacturers of high quality mountaineering equipment. Mammut products range from clothing and sleeping bags to climbing harnesses, ropes and climbing shoes.

For over 140 years Mammut climbing shoes have exemplified uncompromising quality standards. We are only satisfied when our customers are satisfied.

Our concept of customer service doesn't end with the manufacture of a top product. Accurate technical information is just as important. We've created this brochure to help you make informed purchases, get the most out of the equipment you buy. Technical information about materials and construction are simply explained. So that this information is even easier to understand, all technical terms marked with this symbol \rightsquigarrow can be looked up in the glossary starting on page 24.

Your Mammut Team

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KNOW HOW

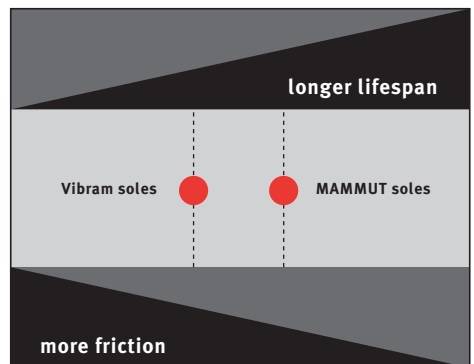
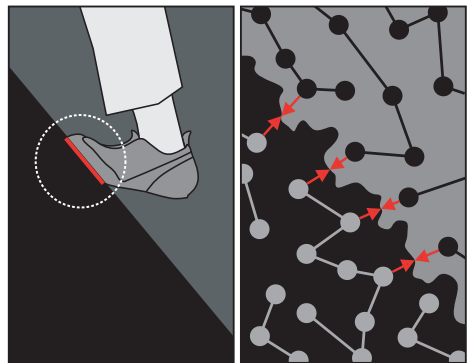
Just like in Formula 1 racing, the rubber used for climbing is also important for grip and precision. The development laboratory keeps the mixture a strictly protected secret, and the lower case (or missing) information on the friction topic is hotly debated between specialists of friction slabs and micro-edging. However every rubber mixture must find a compromise between friction and longevity. Soft rubber grips better on the rock, but wears out faster.

Why does the rubber stick?

Rubber friction is something special. «Normal» friction depends only on the force (e.g. the pressure), and is a consequence of the material and the constant friction factor. Rubber, on the other hand, is from a physical view fluid, but also very viscous. With such material the friction not only depends on the mechanical indentation of the surface, but also on the temperature and speed, and most of all on the adhesion process, or the «sticking» of the molecules onto each other. Here the adhesive forces interact on the interfaces between a solid (rock) and a fluid (rubber) phase. We can observe the same principal with a droplet of water that clings to the bottom of a surface but does not fall.

Rubber Quality

For our high performance models, where optimum friction has priority, we use the super-grippy Vibram XSV 4mm sole, which has established itself as one of the best climbing rubbers. The soles are the parts that wear the most with climbing shoes, which is why we use our own rubber with all other shoes, the «Mammut Standard», which is optimised for durability.



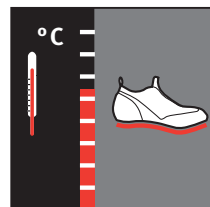
^
Every rubber mixture is a compromise. The Vibram-sole has greater friction, the Mammut-sole the longer duration of life.

^
Rubber has a greater friction than other materials because the molecules of rubber and solid materials (e.g. rock) are pulling against each other.

How useful is it in practice?

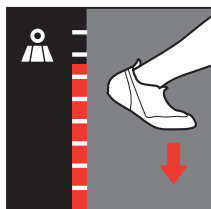
On the rock it is not only the chemical composition of the rubber which is important as to whether the foot stays on the step or slides off. The right foot technique is just as important. With the implementation of the physical elements that means:

Temperature



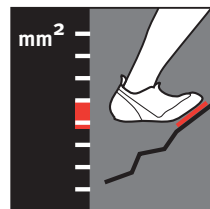
Higher temperature = better friction:
Before climbing rub the soles with the ball of your hand.

Contact pressure



Higher contact pressure = more friction:
«Stand on your feet» – it not only relieves the hands, but the foot holds better.

Surface Area



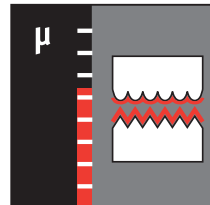
More surface contact area = more friction:
Take advantage of the steps as flatly as possible, with friction climbing mostly by sinking of the heels to maximise the amount of rubber contact.

Slopes



Flat rock = more friction
Continuously look for flat places and dents to step onto, as with more surface contact you'll stick better. Make sure to load the edge with an upright body position.

Surface

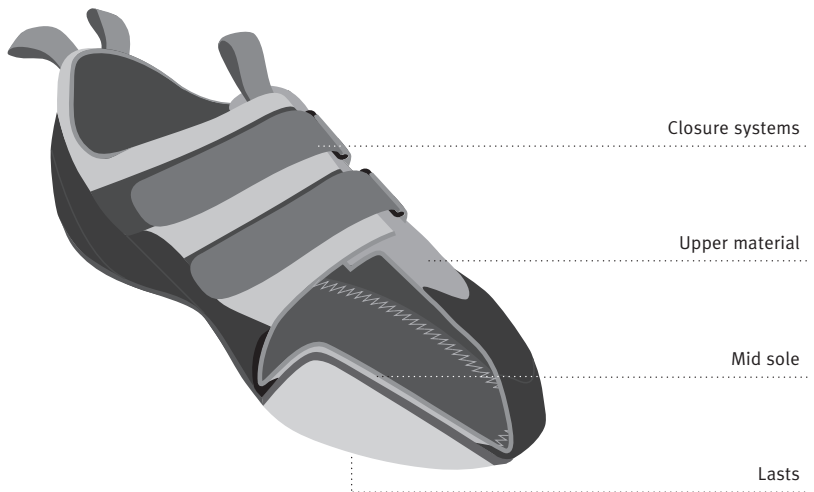


Rough rock = more friction
Use the mini structures of the rock surface for stepping; preferably a smaller, rougher edge than a bigger, flatter one.



CONSTRUCTION OF A CLIMBING SHOE

Different construction elements, materials and uses shape the character of a shoe for various uses and personal preferences. Besides the different closure systems and lasts, which can be seen in more detail on pages 8 - 9, it is the sole rubber, the leather material and the shape and composition of the mid-sole which decides the function, durability and performance of a climbing shoe.



In every shoe there is a small sticker with different symbols. These give information about the materials used in the shoe.

The following symbols indicate the area of use on a material:

The following symbols give information about the material used:

Area of use	
Upper material	
Inner material / Inner lining	
Sole	

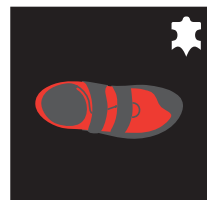
Material			
Leather		Rubber	
Synthetic		Artificial leather	
Cotton			

Closure systems



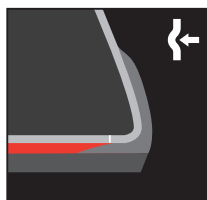
The closure system influences the speed and comfort when putting on and taking off the shoe, as well as the precise fit of the shoe. We use 4 different systems: classic eyelets, the comfortable and exact quick-lacing, Velcro for a fast and precise hold, and a high quality elastic for fast and easy on and off.

Upper material



Almost all Mammut climbing shoes are made of Velours split leather, the smooth inside of the animal skin. In some models an inner lining made of cotton reduces the stretch and makes the upper more supportive. Climbing shoes made of artificial leather hardly stretch, and are very light.

Mid sole



The mid sole gives edging stability. If it is drawn through the whole shoe, it becomes somewhat stiffer, if it only covers the forefoot, then the shoe is more sensitive. With the more extreme models it supports the pre-tensioning in the ball area. If the convex midsole is bendable lengthwise, the shoe gives greater sensitivity on the rock.

Lasts



The shoe is put into its final shape on a last, a hard foot model made of synthetic material. The shape of the last determines the fit and character of the shoe. Four different last models allow the Mammut range to have the right shoe for every individual foot shape and a variety of climbing requirements.



ANATOMY



















Our entire body weight rests on our feet with its 26 bones, 114 ligaments and 20 muscles. When climbing, this energy is concentrated onto the toes or a tiny pressure point on the ball of your foot – this is an extreme load, requiring perfect coordination of all the anatomical elements. A sensibly constructed climbing shoe that fits well can thus support the foot and reduce the danger of damage to the shoe or your foot. If you can stand properly in your shoes, then you can stand properly on the rock.

Developers of climbing shoes have to be experts in foot anatomy, because for every typical foot shape there has to be a suitable model shoe in the range. Even for the user, a little medical background knowledge is also useful. Those who know their own anatomical peculiarities will be quicker to find the right shoe, giving them a healthy and comfortable fit.

A healthy foot distributes and dampens the energy in a balanced way throughout the lengthwise (front-to-back) and crosswise arches (left-right). With a hollow foot the lengthwise arch is increased and thus the instep is higher. A sunken lengthwise arch forms a flat foot. Women often have a narrow heel and a high, narrow mid-foot.

Individual foot shapes prefer high or low insteps while wide or narrow foot shapes with strongly or less strongly defined heels, especially long toes, or the bulging out of the big toe base joint, have to be taken into account when choosing shoes. One comfort for painful feet: tight climbing shoes do not damage your feet – but they don't heal them either.

The chart will help you to more quickly find the Mammut climbing shoe which, due to its cut and last shape, is best suited to your individual foot shape. We still recommend trying the shoes on before buying them, as most models will fit a wide range of foot shapes. A tip if your feet hurt most days: orthopaedic inlays in your street shoes can help correct extreme foot shapes and thus make your climbing shoes more comfortable to wear.

Lasts	Mammut Models	«Normal» foot								
										
		Second toe longer	Base joint of big toe prominent	Narrow foot	Wide foot	Well-defined heel	Less well-defined heel	High instep	Flat foot	
	EXTREME	●	●	●	○	●	○	●		
	BOULDOZER	●	●	●		●		○		
	PSYCHO	●	○	○	○	○	○	○	○	
	GRAPPLER VELCRO	●	●	○	○	○		○	○	
	BLAZE LACE SOFT	●	●	●	○	○	●	●	○	
	BLAZE VELCRO SOFT	●	○	○	●	○	●	●	○	
	BLAZE LACE PRO	●	●	○	●	○		●	●	
	BLAZE VELCRO EDGE	●	●		●	○	○	○	●	
	BLAZE LACE EDGE	●	●	○	●	●	●	●	●	
	BLAST	●	●	○	●	○	○	●	○	
	VELVET	●	●	●	●	●	●	●	●	
	MINIFANT (KIDS)	●								

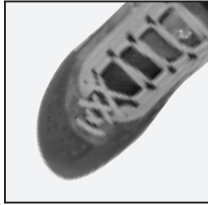
- Optimal
- Suitable



CLOSURE SYSTEMS

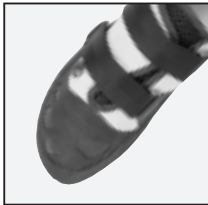
Besides a functional choice of upper materials and midsoles – and of course, an optimum grippy sole rubber – it is the type of closure and the last which decide the fit, comfort and also the performance of a shoe.

Quick Lacing System



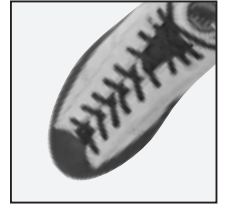
This ingenious solution for allrounders and experts, gives the same advantages of the classic lacing system, but with a plus when it comes to handling. With this modern lacing system the laces run through leather channels and can be precisely adjusted with just one pull. This accelerates the time it takes to put on the shoe and gives an optimum fit, independent of the height of the instep and stretching of the material.

Velcro slipper



Velcro is fast and comfortable to put on and gives a skin-tight hold, like a sock: A flap on the instep, over which the velcro strips are closed, distributes the energy evenly, even with stretched leather and a high instep. In unfavourable situations velcro can be opened inadvertently, but in 99.9% of cases it guarantees comfort and speed with plenty of precision.

Classic Lacing System



The eyelet lacing system allows an exact fit of the shoe over the entire length of the foot, even with expanded leather and independent of the height of the instep. Lacing, however, is somewhat time-consuming; fast adjustment is not possible. A carefully laced shoe should not have to be re-laced. The system is thus practical if the shoe is worn for a longer period, like with alpine rock climbing.

Slipper



For anyone who does not want to fumble around with any type of closure for bouldering, climbing or training, the slipper is the most convenient. The fit in this construction cannot be adjusted beyond the stretch of the elastic, so it must be fit tightly to accommodate the stretch of the leather, or a loss of edging power can result.

THE LASTS

The last is the shoemakers foot model, on which the shoe is finished. It gives the shoe its shape. Every last has its own character. Features like heel shape and instep height are taken into account for the foot shape of the climber. In order to produce comfortable shoes for different feet, as well as for various climbing requirements, a variety of lasts are needed. Mammut produces shoes on 4 different lasts and can thus offers shoes for nearly every foot shape, from beginners to advanced climbers. All requirements cannot fit under one umbrella though. A top, precise shoe is not comfortable enough to wear all day, and a comfortable shoe cannot have every feature necessary for standing on tiny edges. Personal priorities determine the choice of the suitable last.



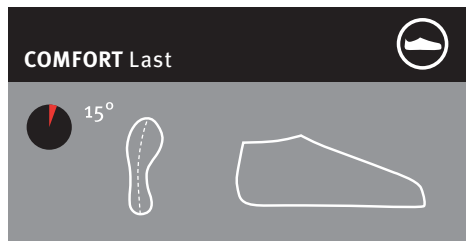
The Radical last is made for high performance. Strongly asymmetric, with a lot of pre-tensioning, flat instep and clearly tensioned heels guarantee maximum pressure on the toes and thus absolute precision on the smallest steps.



The Asymmetric last also offers maximum performance. Its strongly asymmetric shape suits narrower feet. The tensioned heels and the flat toe area provide medium pre-tensioning.






The Standard last has a higher instep, a barely tensioned heel and a classic, light asymmetric shape. This last gives the maximum amount of sensitivity for wide feet, for whom the Radical or Asymmetric lasts are too tight.




The Comfort lasts give the most comfortable fit. With a minimally asymmetric shape, the lightly tensioned heels and the flat instep is the best for these lasts, for all those who place more importance on comfort than on precision.









WHICH SHOE IS THE RIGHT ONE

What do I need my shoes for?								Which shoe is the right one for me?
Extremely difficult climbing	Sport climbing	Bouldering	Indoor climbing	Long, difficult free climbs	Traditional climbing	Alpine Rock climbing	Big wall climbing	
●	●	○	○	●	○			 CHALLENGE LINE ultimate precision
●	●	●	●	●	○			
○	●	●	●	○	●			
●	●	●	●					
●	●	○	○	●	●	○		 BALANCE LINE balanced all-rounder
○	●	●	●	●	●	○		
●	●	○	○	●	●	○		
	○	○	●	○	●	●		
			●		●	●		
	○		○		●	●	●	 ENDURANCE LINE durable comfort
					○	●	●	
	●	●	●		●			

- Optimal
- Suitable

Challenge Line – ultimate precision 

Shoes for the hardest routes. Highest precision through an extremely asymmetric shape, aggressive pre-tensioning, strongly tensioned heels and positioned toes. The shoes from the Challenge Line are radically optimised for the highest performance. Just the right thing when you need the maximum amount of strength and technique on the rock.

Selection of the right shoes.				Strengths						
Lasts	Model	Robber	Closure system	Allround	Edges	Pockets	Friction	Cracks	Heel hook	Toe hook
	EXTREME	Vibram	Quick lace	○	●	●	○	○	●	●
	BOULDOZER	Vibram	Velcro	●	○	●	●	●	●	●
	PSYCHO	Mammut	Slipper	●	○	●	●	○	○	●
	GRAPPLER VELCRO	Mammut	Velcro	○	●	●	○		●	●
	BLAZE LACE SOFT	Vibram	Quick lace	●	○	●	●	○	●	○
	BLAZE VELCRO SOFT	Mammut	Velcro	●	○	●	●	○	○	○
	BLAZE LACE PRO	Vibram	Quick lace	●	●	●	●	○	●	○
	BLAZE VELCRO EDGE	Mammut	Velcro	○	●	○	○		○	
	BLAZE LACE EDGE	Mammut	Quick lace	○	●	○	○		○	
	BLAST	Mammut	Lace Shoe	○	●	○		○		
	VELVET	Mammut	Lace Shoe		●	○				
	MINIFANT	Mammut	Velcro	●	○	○	○			

Balance Line – balanced all-rounder



The precise all-rounder. The small compromises in the shaping and toe positioning clearly give more comfort. For those that want to be able to master every situation with one pair of shoes, we advise choosing shoes from the Balance Line. The top models from the Balance Line also give sufficient precision to stand in very small pockets.

Endurance Line – durable comfort



Reliable companion for long climbs. For longer alpine routes and even Big walls, it is especially important that your feet do not start hurting on the second pitch, and that the shoes are not worn out after only a week of climbing. The shoes from the Endurance Line are shaped to be comfortable, and the especially robust construction is great for all climbing adventures which require stamina.

WHAT DO I NEED CLIMBING SHOES FOR

Climbing is not just climbing. There are as many different disciplines as there are shoes and feet. No wonder that versatile climbers often have several pairs of shoes lying in their closet. Every discipline has different requirements when it comes to precision, durability, comfort, and ease of putting on and taking off. A carefully chosen shoe can considerably increase how much you enjoy and have success with climbing.

Extreme Sport Climbing

From your personal project to Action Direct (9a) or Realization (9a+)

When pushing the borders of your personal performance, especially in the highest grades, comfort has to take a back seat in favour of precision. Tiny features in the rock can only be perfectly used for transferring strength and weight if the shoe not only fits like skin, but also makes a new, grippy working tool out of the foot. Features like asymmetric shape, pre-tensioning and hooking-rubber rands help with this.

Sport Climbing

e.g. Rifle (US), Frankenjura (D), Orpierre (South of France)

Precision is more important than comfort for single pitch climbs on rock over a long period of time. To be able to stand safely, the shoe has to fit tightly onto the foot and be edge-stable. Since the shoe is usually just put on for one climb, a shoe which can be put on and taken off comfortably and quickly is preferable.

Bouldering

e.g. Fontainebleau (F), Hueco Tanks (USA), Cresciano (CH), Rocklands (ZA)

When depending on millimetre stepping precision and body loading in order to solve a bouldering problem, the shoe has to be an exact fit. Asymmetric lasts with strong curvature put a lot of pressure on the toes; stable edging and hooking rubber allow the use of the smallest of features. When only climbing for a short period of time, it is possible to bear a tighter shoe, and shoes that favour quickly putting on and taking off are favoured.

Indoor Climbing

e.g. Gaswerk (Zürich), The Spot (Boulder), The Foundry (Sheffield)

Those who wear climbing shoes just for one route prefer a quick closure system and wear the shoes so tight, that it gives a good foothold. Because of the rough surface and the mostly large steps, stable edges and an extremely tight fit are only necessary for difficult competition walls. Hooking features are important for the many tricky turning movements. Wear and tear is usually more significant when indoor climbing than with natural rock., mostly due to imprecise footwork.

Moderate Traditional Climbing

e.g. Shawangunks, Col de Pillon, Grimsel lakes, Brüggler

This type of climbing was made well known by Jürg von Känel, with enjoyment standing in the foreground: Long, multi-pitch routes with, where possible, perfect safety in average grades (up to about 5.10 or 6b). Comfortable shoes are of utmost importance, which, through a solid lacing system, ensure a good hold even on sweaty feet; the stiffer midsoles reduce tiredness of the foot muscles.

Long, difficult free climbs

e.g. Wendenstöcke (CH), Verdon (F), The Diamond or El Capitan (US)

Going to your limits on routes that are several rope lengths has been made possible through the safety of modern climbing equipment. For the most difficult routes, just as with normal sport climbing, a tight fit and edge-stable shoes are important. That is why some climbers take their shoes off on every stance – a fast closure system and something to hang them on are then useful. Those that want to economise in this area have to either compromise on their precision or accept painful feet

Alpine Climbing

e.g. Dolomites, Chamonix-Classic, Tetons, Rocky Mountain Nat. Park

For long, alpine classics you need shoes which will be comfortable all day, but also have good lacing and fit tightly on the foot. A midsole supports the foot muscles; stable upper material ensures the shoe has a long lifespan even in cracks and chimneys.

Bigwall Climbing

e.g. Yosemite, Val di Mello, Baffin Island

Bigwall climbing is usually done on granite, and usually include lots of cracks and plenty of aid climbing. Only a robust shoe that withstands chafing survives such tortures; the feet want a comfortable fit and stable hold through a solid lacing system. For pure aid routes, professionals use trekking shoes to save strength when standing in aiders; if free climbing is mixed into it, a normal climbing shoe is preferred, if possible with a firm midsole.



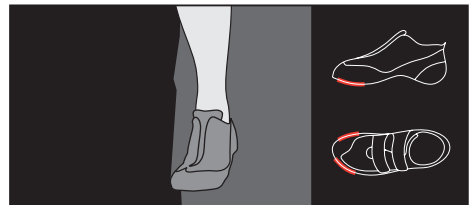
TYPES OF CLIMBING

There are not only many different climbing disciplines – there are also many different possibilities and techniques to find a hold with your foot. Edges in Eldorado Canyon, Pockets at Mt. Charleston or Ceüse, friction in Tuolumne or Looking Glass, cracks in Yosemite or Indian Creek, refined hooks in overhanging areas like Rifle and Rumney – every area has its own type of climbing which requires a special footwork. And every foot technique benefits from the specific features of a climbing shoe. A brand new, edge-stable shoe will give you little joy on friction, while a worn out friction shoe becomes a menace in cracks. With the right shoe in each area you have more chance of success – one more argument for an intelligent shoe range. Luckily you will find the right model for every purpose in our range.



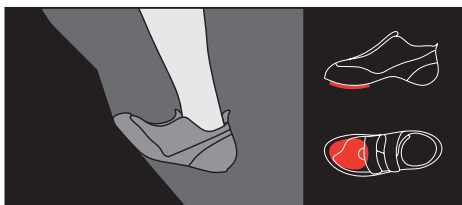
Pockets

Wide, high pockets can be stepped on like edges. In the smallest pockets there will often only be enough space for the tips of the toes, sometimes by raising the heel the pressure can be increased. Strongly asymmetrical shoes with pre-tensioning and downturned toe positioning bring out the best in pocket climbing.



Edges

On edges the inner ball (depending on the sequence of movement, also with the outer ball) of the foot is used to step onto the ledge. To take optimum advantage of the move, the sole is placed on an angle on the edge and is precisely rolled into the edge. The heel stands horizontally to lightly hanging. A firm shoe with a stable midsole makes the transfer of energy easier.



Friction

Friction routes have minimal edges. In subtle dents and waves, the ball of the toe is precisely placed, the heel is low, and good movement in the ankle joint helps. After placing the foot with as much of the surface of the sole as is possible on the rock, you no longer move, in order not to slip. Flexible midsoles give a lot of feeling, and good rubber helps make impossible-looking moves possible.



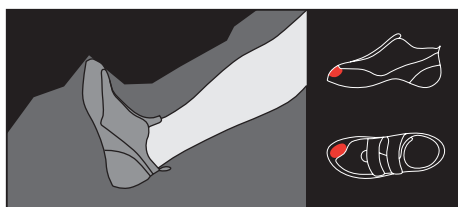
Heel hook

A Heel hook can be used to help pull over steep terrain, to help maintain balance, or to aid in resting. The heel can be hooked on pronounced ledges and pockets or around corners, and holds like a third hand. High-cut rubber on the heels protects the leather and adds the necessary friction for tenuous hooks, while a tensioned heel prevents the shoe from pulling off.



Cracks

Depending on the width of the crack the foot is cammed sideways into, or jammed across the crack. Camming the foot sideways in the crack increases the friction so that the shoe holds. A solid leather with a lining increases the lifespan of the shoe and improves comfort.






Toe hook

Hooking the toe in is more refined than a heel hook (the placement possibilities are the same), and in overhanging passages and roofs can often bring relief. Extra rubber coverage in the toe area increase the hooking possibilities and protects the leather.



WHAT SHOULD I LOOK FOR WHEN BUYING SHOES

The golden rule for the best shoe is: it has to fit! But what does that mean exactly for a climbing shoe? It is no use choosing a shoe carefully if the size is not right. If the shoe is too wide then you will slide around it, shoes that are too tight can be so painful that you don't want to wear them at all.

PERFORMANCE		foot length [mm]	shoe size
		-10	-0,5 / -1,0
ALLROUND		foot length [mm]	shoe size
		+/- 5	+0,5 / -0,5
COMFORT		foot length [mm]	shoe size
		+10	+0,5 / +1,0

Rules of thumb

A climbing shoe has to be tighter than a street shoe. But how much?

Performance

For performance-oriented climbing on the smallest of steps the shoe has to clearly be under your normal size, in order to give enough sensitivity. Tight shoes are just used for one pitch climbs or bouldering and are taken off immediately afterwards. Ambitious climbers frequently have several pairs of shoes, one pair being really tight for the more difficult projects; the others are somewhat more comfortable for climbing and training.

Allround

For all-round use you should not buy shoes that are really tight, so that you can still enjoy multi-pitch climbs without your feet hurting. For crack and friction climbing, shoes that are too tight have no advantages. Shoes with a mid-sole have sufficient edge stability if they do not have too tight a fit.

Comfort

Beginners, pleasure climbers and children should buy climbing shoes only marginally – if at all – smaller than their normal shoes. The precision is compromised, but the shoe does not need to be worn in first and will not be painful on longer climbs.

Measuring shoe size

Put a piece of paper on the floor against the wall; stand on it with your heel against the wall. Put a book or shoebox against the biggest toe, and mark this with a thin pen. Your foot length in millimetres can be correlated to the specific Mammut shoe sizes in the chart.

Trying on

Since climbing shoes are a handmade product, every pair is individual and thus we recommend trying them on in the sport shop. The following points should be taken into account:

- Try both shoes: very few people have feet that are exactly the same size.
- Genuine leather stretches after use – this can be up to another whole shoe size. Thus the shoe should be bought tighter; which means putting up with a painful «wearing in» phase, but later the shoe will fit perfectly.
- Artificial leather or leather with an inner lining stretches less. Flexible thin shoes become wider than more solid constructions.
- Shoes with lacing systems can be laced tightly even after the material has stretched, and can thus be bought in a tight fit. In contrast, Slippers can wear out quicker and have to be a tighter fit.
- If you are trying shoes on in the morning, don't forget that your feet get bigger during the course of the day.

length [mm]	US	UK	EU
220 – 224	3,0	2,0	34,5
225 – 230	3,5	2,5	35
231 – 234	4,0	3,0	35,5
235 – 240	4,5	3,5	36
241 – 245	5,0	4,0	36,5
246 – 250	5,5	4,5	37
251 – 254	6	5	38
255 – 258	6,5	5,5	38,5
259 – 263	7	6	39
264 – 269	7,5	6,5	40
270 – 274	8	7	41
275 – 278	8,5	7,5	41,5
279 – 282	9	8	42
283 – 286	9,5	8,5	42,5
287 – 290	10	9	43
291 – 294	10,5	9,5	44
295 – 298	11	10	44.5
299 – 303	11,5	10,5	45
304 – 310	12	11	46
311 – 316	13	12	47
317 – 323	14	13	48



PRACTICAL TIPS

If you have the proper fit for your foot, not only will your feet be more comfortable, but your shoes will perform better. Taking into consideration these tips will improve performance and extend the lifetime of your shoes.

Wearing in



If the shoes are purchased as a very tight fit, then it takes some time until they reach their optimum climbing performance. The leather has to stretch to fit your foot and become softer. Avoid using new shoes straight away for difficult climbs or long days. Very tight precision shoes can be broken in at home, e.g. for a few minutes while watching TV, or on easier, short routes.

Sole tuning



Not only the uppers, but also the soles need a few days to wear in to reach their optimum grippiness. A natural sign of use is the «dandruff» of the soles – sandpaper can be used to even out rough and uneven patches. Bits of rubber hanging off or a rubber seam on the edge of the sole can be cut or ground off. When climbing the soles should be absolutely clean and dry. Remove rough dirt by rubbing the shoe on rock or a cleaning sponge, if necessary on the leg of your pants or shoe leather. Fine dust can be removed from the toes and ball of the foot of the soles with the ball of your hand or some spit. For sport climbing the rope bag is useful, or the special Mammut carpet at the bottom of the climb to keep the shoes clean. You can reduce the danger of getting them dirty if you take them off after every climb.

Odour



We cannot avoid the facts: genuine leather absorbs sweat. When airing isn't effective in getting rid of the odour, you can try to get rid of it through freezing the sweat bacteria, with baking soda or other disinfection agents. Disinfection agents are the best aid, but can make the leather stiff (try it out on a worn out shoe). When nothing helps, there is still the comforting saying: a serious climber can be recognised by the smell.

Storage



Give your shoes the same good storage conditions as a good wine: cool, dry, dust-free, dark. Direct sunlight and heat (coffee room!) damage the material. Some professionals swear by using a shoe tree, in order to avoid the leather shrinking when not used for a while, or stuffing them with newspaper also helps. Cellars are good places to store them.

Cleaning

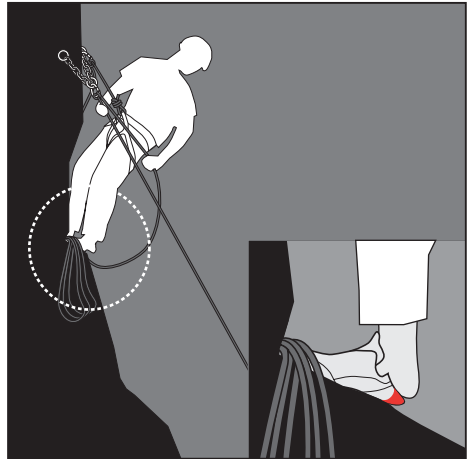


Dirty climbing shoes cannot withstand soap or chemicals or washing machines. Luke warm water and a cloth or a medium hard brush are the right tools. Dirty soles can be made grippy again with some alcohol on a rag. Soft (!) brushing with a wire brush from the toes to the heel can help the roughness, but wears the rubber – so be careful! If your shoes get wet due to washing or rain, they should be slowly dried before storing. Stuff them with newspaper to soak up the moisture, (changing it frequently), and place or hang them to dry where there is good ventilation. Direct heat from ovens or fire is too rough – rule of thumb: if your skin can take it, then so can the leather. Excessive heat may also cause the soles to delaminate.



LONGEVITY

Climbing shoes are consumable items. Every time they are used it contributes to their deterioration. Professionals, who climb almost daily, wear out their shoes in a matter of weeks, opportunist climbers can use them for much longer. Those that follow the instructions for care, avoid rough treatment and get the shoes resoled early enough will be able to optimise the longevity.



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The climbing shoe has a longer life, if it is taken off at the belay, instead of standing on the downturned heel.

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The main influence on excessive wear is dragging of the foot over rough rock.

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You should resole your shoes before the leather becomes visible.

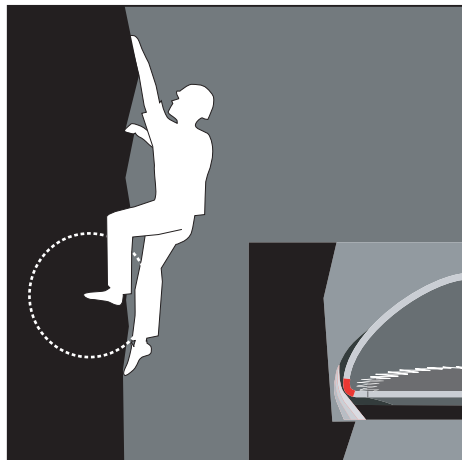
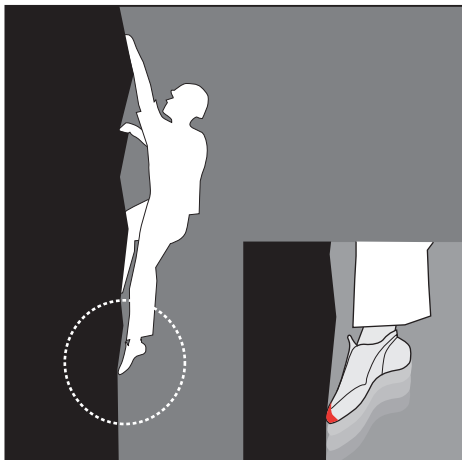
Standing on the shoes

Older, stiff leather, attached inner linings or rubber applications can suffer through bending under load. That is why you should never stand on your climbing shoes. Even when resting your feet when alpine climbing, do not stand on the outer heels of the shoes as it can damage the fit.

Tip: take your shoes right off and hang them by their pull-on loops onto your harness or stance with a carabiner.

Foot dragging

For optimum precision and comfort the leather and sole materials of high quality climbing shoes are kept as thin as possible. This makes them more sensitive to friction on the rock. New climbers are often seen to be «dragging» their feet onto the next step, grazing the tip or the edge of the shoe across the rock, causing wear.



Tip: shift your centre of gravity cleanly over the supporting leg, calmly lift the other foot and put it cleanly onto the next step. This looks after the shoe leather and boosts your energy reserves – you will be able to climb better for longer.

Rock

The rougher or the sharper the edges of the terrain, the faster the soles and leather wears out. Some «shoe killers» are: sharp-edged Karst limestone (Velebit), sandstone, rough grain granite (Chamonix) and gneiss, as well as rough indoor walls. Less critical are glacier carved granite (Grimsel), smoother or sponge-holed chalk (Frankenjura) and uncoated wooden slabs indoors.

Tip: In aggressive rock structures you should make sure you are using clean foot techniques (see above). If climbing a lot on aggressive rock or on rough artificial walls, then a shoe with a stronger sole or with a somewhat harder and thus more durable rubber is a better choice as a top performer.

Resoling

A good shoemaker can resole a climbing shoe with the original rubber, so that not much of the performance that was had at the start is lost. If the sole rubber becomes translucent or is worn out on the edge through to the rubber coating, then it is high time for new tread. If the leather is already showing through, it is too late. That is why you should always check the toe and toe ball area.

Tip: send your shoes back through a specialist – then you can be sure that the resoling is done by the right people using the original materials.

Replacement

It is recommended to get a replacement early enough! Then the shoes can be slowly worn in. For longer climbs you can still use the old shoes until the new ones are comfortable enough to wear.



HOW IS A SHOE PRODUCED

A climbing shoe is made up of up to 40 individual parts. Perfect construction – besides the rubber mixture – is one of the success secrets of the climbing shoe. All Mammut climbing shoes are completely hand-finished.

1. Punching of the individual parts

Only perfect leather passes the incoming-components inspection. All parts of the shoe are one hundred per cent cleanly and precisely cut out on the heavy punching machine.

2. Sewing of the individual parts

With special sewing machines and chafe-resistant special threads the individual parts of the shoe are sewn by hand to make crafted leather casings, and features like the pull-on loops and closure systems are added.

3. Quality control of the stitching

Quality testers check the thread tension, stitch quality and the correct fit of all the features. If one of the casings does not fulfil the strict test criteria, it is rejected.

4. Pulling onto the lasts

The process continues with the leather casing being pulled onto the last (the foot-shaped model made of plastic →pg. 9). This is how the shoe gets its fit and the leather is pre-stretched.



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5. Preparation of the rubber parts

Sole and edge rubber is punched out to the right shape. Pores form in the rubber after sanding, so that the rubber sticks well to the leather.



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6. Gluing of rubber and leather

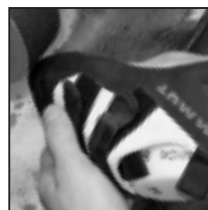
With the help of stencils, the glue is precisely applied on to the casing, and through the subsequent adhesive bonding the shoe gets its definite shape. After the bonding of the sole the glue is hardened in a squeezing machine.



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7. Sanding and Tuning

Now the shoe is ready for the «final polish». The sole is trimmed with a special granulation for good friction, and the sole edges are ground to an angle that guarantees optimum edge stability.



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8. Final check

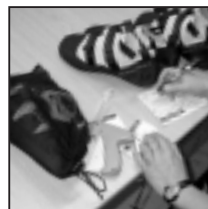
Still on the last, the finished climbing shoe is precisely tested: does the closure system fit and function, has the rubber been glued perfectly, is the cut right? Only perfect shoes are put onto the market.



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9. Packaging and Labelling

After putting the laces in the shoes, the packaging and labelling kicks the shoes off onto their travels – we have given them all of our knowledge and technical passion to take with them on their way!



9



GLOSSARY

Slipper 8

Elastic-closure shoe

Downpoint toe position 14

Extreme shape of the →pre-tensioning, where the toes are pointed downwards.

Tensioned heel 9

Shoe shape, where the back side above the heel is not straight, but is shaped in the direction of the toes. Gives a better hold in the shoe, but puts more pressure on the Achilles tendon.

Edge stability 8, 14, 16

A term used to describe the stability of a climbing shoe, which allows standing on thin edges.

Lasts 5, 9

Foot model used during production where the shoe gets its exact shape. For development purposes it is made of wood, for the series production it is made of plastic.

Instep 6

The upper surface of the foot; individual foot shapes such as a high or flat instep require different last shapes.

Pre-tensioning 9

Shoe construction with strong curvature in the sole area; gives better transferral of energy when standing on the smallest holds.



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