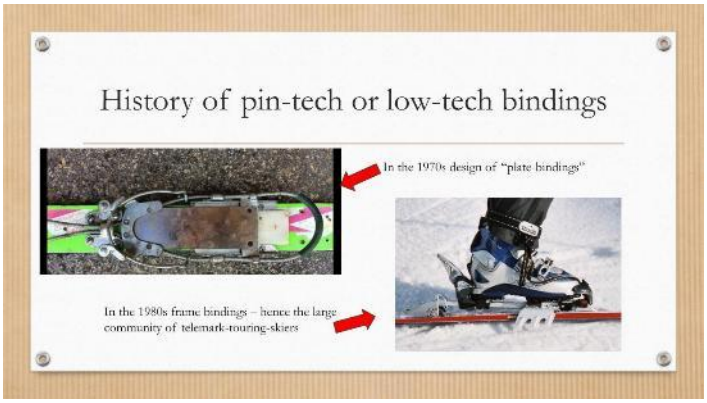
Pin Safety and Bindings | Axel Reiser

Disclosure: I am sponsored and work with the Swiss binding manufacturer Fritschi and I use some of their images here. However, I developed the relationship with Fritschi as a result of my personal inquiry about safety issues with pin-tech systems rather than working with Fritschi in the first place and being encourage by the company to develop a talk. Fritschi has helped me with testing results and technical understanding.

PIN-TECH BINDINGS – retention and release
Guide knowledge for "safer" work with modern ski touring boot-to-touring binding interface

This is a compilation of information on pin-tech or touring binding systems in the wider sense and not at all centred around any Fritschi products. I developed this talk after a few accidents which I personally attributed partially to the mechanics / functioning of the binding systems we are currently using. The low-tech or pin-tech binding solutions are great for guiding and make our work possible. With this summary, I want to help guides to better understand the limitations and peculiarities of touring binding systems and make the ski touring experience safer for us personally and our guests.

In my lifetime, this is where I started from - I am born in 1969. I personally never bothered with touring gear as a young skier. We had plenty of access to the backcountry via the vast European lift systems and backcountry skiing was not that popular in the 1980s and 1990s. Scarcity of terrain and snow was not a real problem for me. The alpine gear offered far more fun and control for skiing.



Here is the party Gottlieb Braun-Elwert assembled for his first Symphony crossing. That was more or less "state of the art" in the 1980s.

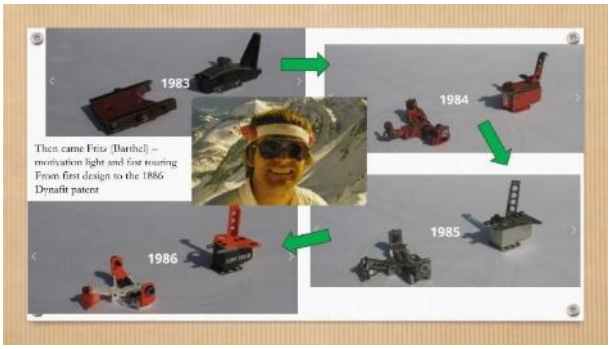
Many "serious" skiers all around the globe - here in New Zealand in the US and in Europe - then did what I did. We gravitated towards telemark and started using telli gear for touring and freeride type downhills.

I was totally unaware of a development that had been started in 1983 by an Austrian "tinkerer" in his garage after getting frustrated with the heavy ski touring equipment at the time. The A-standard was to use most GS skis and mount them with the Silvretta plate binding.

However, the tinkering in that garage got more serious and when Fritz Barthel sold his patent to Dynafit a new binding system was thrown on the market.

Dynafit patented the system and only few people used it. Only when the patent ran out and other manufacturers entered the market in the 2000s the "ski touring revolution" started.

Dynafit held the patent for "Low Tech" (also known as tech or pin tech) bindings for approximately 20 years. The patent was initially granted in 1984 and expired around 2006, allowing other companies to start producing their own versions of tech bindings.



Here's a more detailed breakdown:
→ 1984: Fritz Barthel, the inventor, was granted a patent for the Low Tech binding design.
→ 1989: Dynafit partnered with Barthel to manufacture and market the bindings.
→ 2006: The original patent expired.
→ 2008/2009: Other companies began releasing their own tech bindings after the patent expired.

Before the patent expired, Dynafit was the sole manufacturer of tech bindings, which significantly contributed to their dominance in the touring binding market. The expiration of the patent opened the market to competition, with many brands developing their own versions of these lightweight and efficient bindings.

We have many, many bindings now - however, basically ALL of them still function more or less similar to the original model that was patented in 1984.

You are all familiar with the many different manufacturers and models. One word to start with: manufacturing standards are very high today and no company makes a bad product. All the bindings work and the differences in the physical way they function is not at all that great.

I like to now explain the pros and cons of the system just a little bit.

First - marketing makes many of us think that machined aluminum is THE BEST material for touring bindings.

While machined aluminum is a common and generally reliable material for ski touring bindings, it's not necessarily the most reliable. Aluminum offers a good balance of strength, weight, and durability, but other materials like high-strength steel or composite materials can also be used, each with its own advantages and disadvantages. The best material depends on the specific design and intended use of the binding.

Here's a more detailed breakdown:

- Advantages of Machined Aluminum:
- Lightweight: Aluminum is relatively lightweight, which is crucial for uphill performance in ski touring.
- Strength and Durability: When properly machined, aluminum can be very strong and durable, withstanding the stresses of skiing and touring.
- Corrosion Resistance: Aluminum naturally resists corrosion, which is important for bindings that may be exposed to snow and moisture.
- Cost-Effective: Machining aluminum can be more cost-effective than using some other high-strength materials.

Other Materials Used in Ski Touring Bindings:

- High-Strength Steel: Offers superior strength and durability, often used in critical areas of the binding for added reliability.
- Composites: Materials like carbon fiber or reinforced plastics can be lightweight and strong, but may be more expensive and require specific manufacturing techniques.
- Titanium: Can be used for its high strength-to-weight ratio, but is often more expensive than aluminum.

<u>Factors Affecting Reliability:</u>

Design and Manufacturing:
Even the best materials can fail if not designed and manufactured properly. Careful consideration of stress points, tolerances, and machining processes is crucial.

Specific Use Case:
Different bindings are designed for different types of skiing and touring. A binding designed for aggressive freeride touring might require stronger materials than one designed for lightweight touring.

Maintenance and Care:
Proper maintenance, including regular cleaning and lubrication, can significantly extend the life and reliability of any binding.

Release Mechanism:
The release mechanism, regardless of the material, is critical for safety and should be reliable. This mechanism is often a combination of different materials and precision parts.

In conclusion:
Machined aluminum is a solid choice for ski touring bindings, offering a good balance of properties. However, the best material depends on the specific design and intended use of the binding, and factors like manufacturing quality and maintenance are also crucial for reliability.

Fritschi is the only manufacturer that has created a toe release system that works mechanically different to the original “clamping” mechanism. it is not perfect, but worthwhile looking at if you are after some additional safety features.

Touring bindings fall into 5 different categories.

1. Frame bindings - the classics, several manufacturer made and still make frame bindings. Basically an alpine binding that releases in the heel to tour. Not very ergonomic, but safe and no special boots required.
2. Pin bindings as we know them
3. Hybrid bindings - think Marker Kingpin or Fritschi Tecton

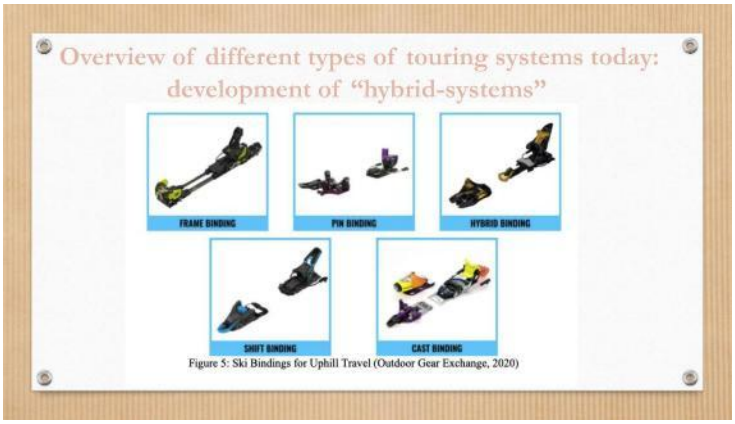


Figure 5: Ski Bindings for Uphill Travel (Outdoor Gear Exchange, 2020)

4. A category created by the Salomon Shift - alpine heel with a toe unit that moves the pins away in ski mode to form an alpine toe - now there are several other brands and models that use a similar system
5. A category created by the US company CAST - an alpine heel unit and the alpine toe is taken off and replaced with a light pin toe for easy uphill travel. Now there are several other brands and models that use a similar system

This overview looks like nothing new, but the key difference is the upwards forces that can release a pin binding toe unit. The upward release is the main reason for making it necessary - in certain conditions caused by a high frequency oscillation (shattering of skis on hard surface) - to lock the toe unit in the original clamping tech toe design.

Whilst the pin toe releases laterally, it does not have the same elasticity as an alpine toe unit.

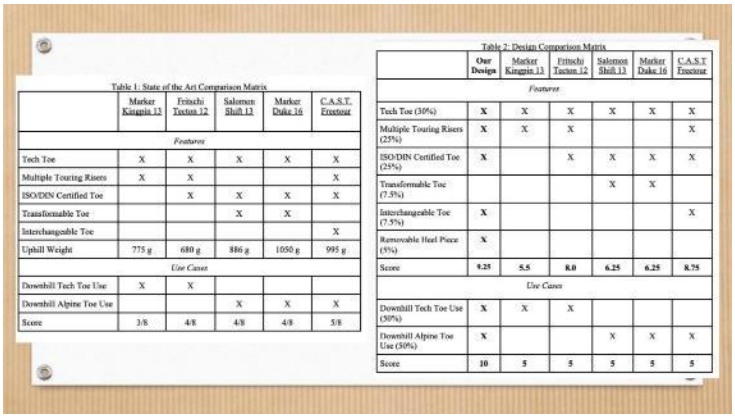


Table 1: State of the Art Comparison Matrix

	Marker Kingpin 13	Fritschi Tecton 12	Salomon Shift 13	Marker Duke 16	C.A.S.T. Freetour
Features					
Tech Toe	X	X	X	X	X
Multiple Touring Risers	X	X			X
ISO/DIN Certified Toe		X	X	X	X
Transformable Toe			X	X	
Interchangeable Toe					X
Uphill Weight	775 g	680 g	886 g	1050 g	995 g
Use Cases					
Downhill Tech Toe Use	X	X			
Downhill Alpine Toe Use			X	X	X
Score	3/8	4/8	4/8	4/8	5/8

Table 2: Design Comparison Matrix

	Our Design	Marker Kingpin 13	Fritschi Tecton 12	Salomon Shift 13	Marker Duke 16	C.A.S.T Freetour
Features						
Tech Toe (30%)	X	X	X	X	X	X
Multiple Touring Risers (25%)	X	X	X			X
ISO/DIN Certified Toe (25%)	X		X	X	X	X
Transformable Toe (7.5%)				X	X	
Interchangeable Toe (7.5%)	X					X
Removable Heel Piece (5%)	X					
Score	9.25	5.5	8.0	6.25	6.25	8.75
Use Cases						
Downhill Tech Toe Use (50%)	X	X	X			
Downhill Alpine Toe Use (50%)	X			X	X	X
Score	10	5	5	5	5	5

This is just a helpful matrix of design features helpful in choosing a touring binding that might be fit for resort / freeride use at a total weight that still allows touring.

The five models listed here are still representative for the choices available in 2025, but there are a few more options from other brands. The total weight has remained approx. the same for the binding with a ski break.

Those bindings are useful for guides teaching courses in-bounds when skiing on groomed runs or patrollers or for guides who take guests freeriding.

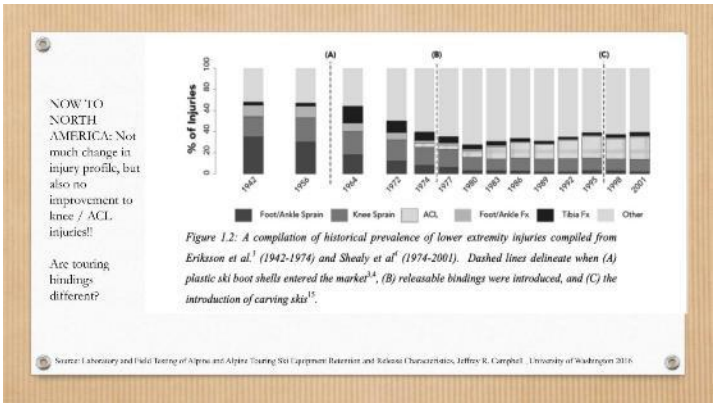
ISSUES AND PROBLEMS

Pin-tech bindings have created our modern touring scene – probably one of the most influential innovations in skiing. Guides need to understand their limitations to provide for safe experiences. Let's have a look…

The next two slides are snapshots of skiing injury profiles from Europe (Davos - Switzerland) and some US statistics.

2 key takeaways:

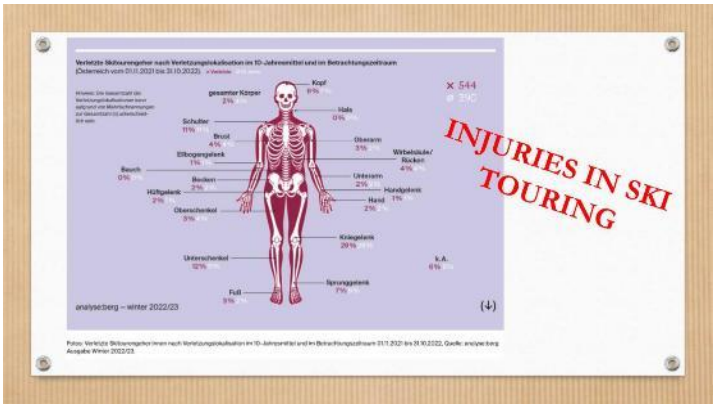
1. even modern alpine bindings do not much improve the occurrence of knee injuries
2. Most people ski on either badly adjusted or badly maintained equipment - questions for guides: how good are you at checking and assessing your personal touring bindings and your guests' bindings? I wonder if we tolerate a similar standard of disrepair (or bad maintenance) as found in the in the Davos study. There are no indications that we behave any different than people in Switzerland.



This graph paints a similar picture: lower leg injuries have been successfully reduced by more modern gear. Knee injuries have remained stubbornly static. ACL injuries appear first in the 1970s (around the introduction of releasable bindings - as and indication of changing technique & higher speeds). Since the 1980s ski binding development does not seem to make any difference to the frequency of ACL ruptures.

There are few injury statistics on purely ski touring and even less comparing ski touring to resort skiing with specific attention paid to the differences in equipment.

Next slide is from Austria …. on ski touring injuries. The next slide does give reason to believe that the equipment used in ski touring leads to more knee & lower leg injuries.



In the above graph "other injuries" are clearly accounting for approximately 60% of all injuries.

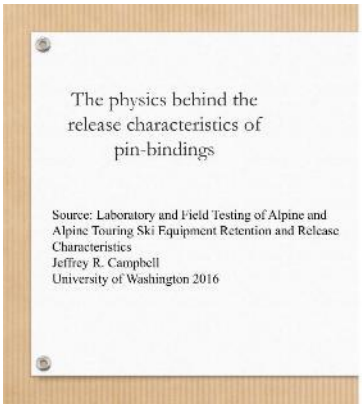
This slide is in German, published by the Austrian Alpine Club.

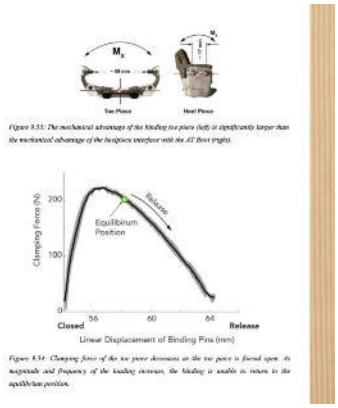
The red figures are injuries that occurred during one year from Nov 2021 to Dec 2022 compared to the white figure which is the 10 year average for the same "injury-class".

NOTE: I assume the graphical display makes it very clear and unnecessary to translate all the German "injury-classes".

The first things that stands out here compared to the last slide:

- Lower leg & knee injuries account for 51% of all injuries
- That might be an indication that the binding systems used in ski touring are "not as safe as alpine binding systems"
- MORE ANALYSIS needed, but again it is hard to imagine that ski touring in New Zealand would be all that different from ski touring in Austria.





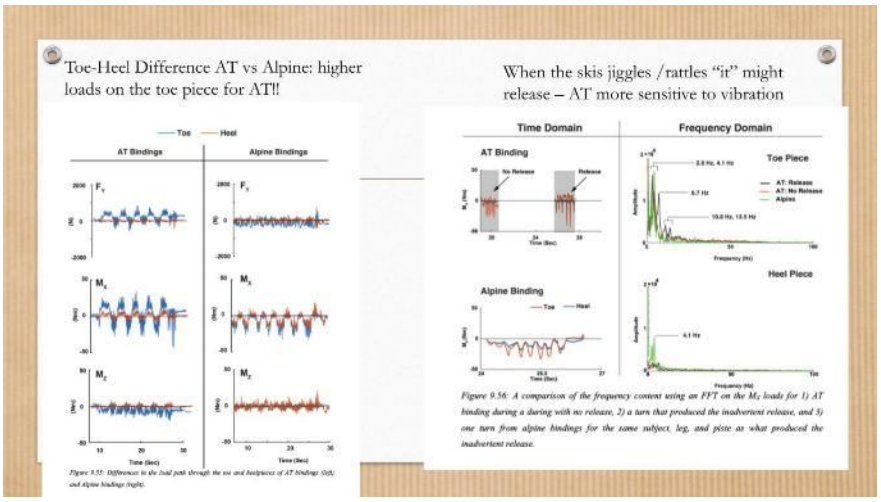
This section is for the engineers. Please go and source the article if you like to dive into the details.

I have extracted what I think is relevant to keep in mind for us as guides.

Here is my interpretation of the diagram: When we ski on a hard surface - ice or frozen melt-forms - our skis often start to jiggle / jump / vibrate and a vibration force is created that acts upwards under the ski and the binding. The toe piece of any touring binding with the classic “clamp” design will open above a certain “frequency” of the vibration caused by the ski jiggling on the surface. At a certain point the springs in the system cannot return fast enough to the equilibrium position that holds the binding shut and the binding opens. As a result, many skiers lock the toe piece into climbing mode.

Obviously, this is a safety compromise and whilst the locking can legitimately work to manage certain hard snow conditions, it is not the best solution for a patchy and variable snow surface. New Zealand often has very variable snow surface conditions with hard surface crust possible through the entire winter - not only in spring.

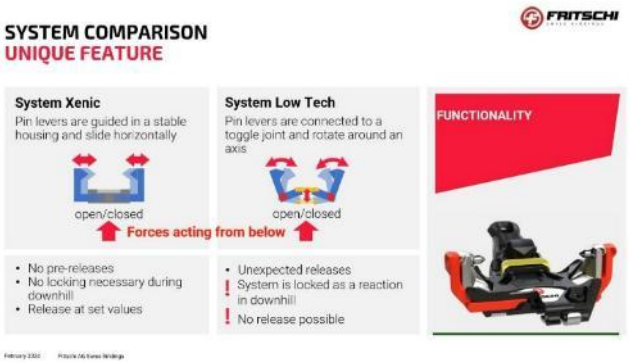
Alternatively, good ski technique during the steering phase of the turn (= early edge engagement before entering the fall line, progressive increase of edge angle, pressure applied gradually to centre of ski and under the leading outside ski) can help to minimise the jiggling and the vibration.



The diagram on the right hand side of the slide re-emphasise that ski vibrations with touring setups should be avoided - if possible - as inadvertent releases are simply more likely (than with alpine bindings).

The left hand diagram holds important info for us all.

- With touring pin-tech bindings we have much higher forces acting at the toe piece. The comparison between an alpine binding and a touring binding shows the clear force spikes.
- There is more research needed on the consequences of the higher forces acting at the toe, but please consider one statistically proven fact across many sports (most of that we know from professional women soccer): The ACL of female athletes rupture under less load than those of men. More women skiers have ACL injuries despite men making up the majority of all injuries. This means that women skiers should place great value on touring set-ups with lateral toe release functionality. Please also take this into account when guiding women in difficult and injury prone snow conditions - breakable crusts, deep & heavy wet snow, etc.



The Fritschi brand to this date is the only brand with a different mechanical pin-toe solution. I only refer to the “classical”, lightweight and none-lateral releasable pin-tech toes units. The toe piece is designed to not act on forces from below and can prevent the inadvertent due to vibration as described above. No locking of the toe piece if required.

I recommend every guide to watch the video that I have linked on the slide.

The situation described here is getting better with companies working towards a “standard”. However, in New Zealand we have a lot of older gear in circulation and we have a complete lack of testing equipment for touring bindings.

Two facts that ski guides should know:

1. Whatever the setting on the heel piece of touring bindings is - it is not a certified DIN setting with the exception of a few brands. It means the heel unit releases at significantly different torque values as recommended by the “DIN curve” (= setting A corresponds to Release Torque B- see diagram on left). The diagram clearly shows that the lower the so-called DIN setting the worse the results. AGAIN - that puts women more at risk
2. The diagram on the left also shows that the boot binding combination influences the results. Some boots work “safer” with some bindings than others, but there is no standard that guarantees this. Some of the reasons for that are listed in the diagram on the right.

The most important reasons are:

- Please be aware that the pin inserts in your boots may have different width leading to unreliable release torque.
- A damaged pin insert can alter the release torque significantly. A touring boot that releases out of a binding can damage the pin insert if the forces are too high - e.g take boot 4 yellow in diagram on left. the release force at low “DIN” settings are much higher than assumed from the setting and could damage the pin insert - see picture in diagram on right.

Checking your guests' boot - binding setup combo is important.

When choosing boots look for the “Dynafit certified orange clip” which will at least guarantee you a certain pin insert quality (dimension and manufacturing quality) that many binding brands will use.

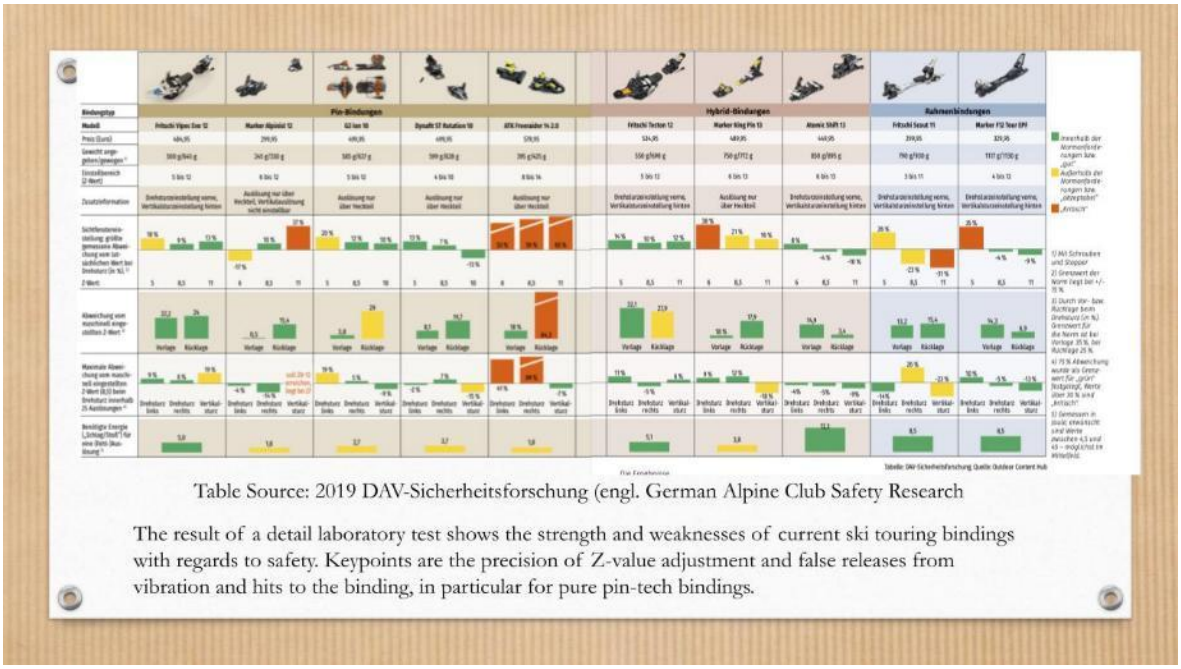


Table Source: 2019 DAV-Sicherheitsforschung (engl. German Alpine Club Safety Research

The result of a detail laboratory test shows the strength and weaknesses of current ski touring bindings with regards to safety. Keypoints are the precision of Z-value adjustment and false releases from vibration and hits to the binding, in particular for pure pin-tech bindings.

This is a busy slide and now somewhat dated - however, the core mechanical binding technology has not changed significantly since 2019. Materials used will have improved. To my knowledge this is one of the only scientifically conducted comparative study of ski touring bindings. Most AI generated searches on the topic of safety aspects of ski touring bindings will cite this study.

The overview is too busy to properly translate into English, but here is the AI generated summary:

The German title "DAV Sicherheitsforschung 2019 Ski Touren Bindungen" translates to "DAV Safety Research 2019 Ski Touring Bindings" in English.

This refers to the research and findings published by the German Alpine Club's (DAV) Safety Research department in 2019 concerning ski touring bindings.

Based on the search results, it's highly likely that this specific report or article is titled:

"Leicht oder sicher?" Sicherheitsforschung: "Touren-Skibindungen", which translates to "Light or safe? Safety Research: Touring Ski Bindings."

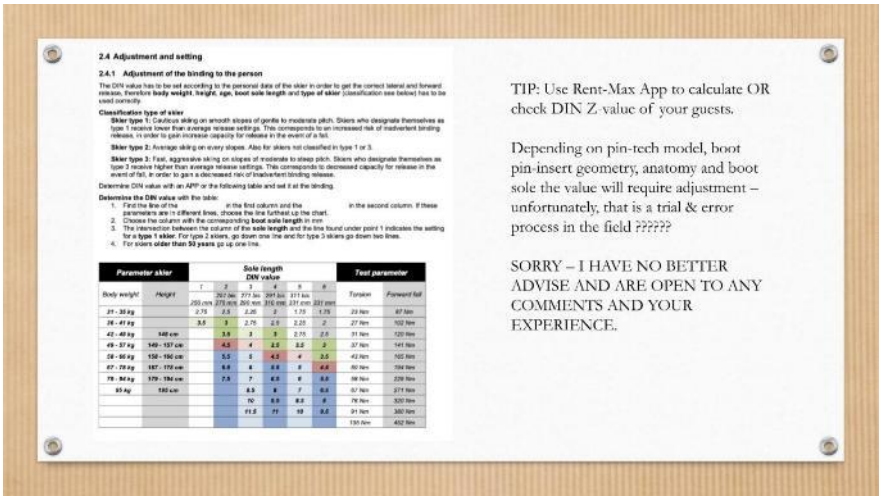
This article, published in the DAV Panorama magazine (1/2019), discusses the results of extensive lab and practical tests of current ski touring bindings, focusing on their safety function, strengths, and weaknesses.

- A more detailed academic abstract related to this research, found from the Technical University of Munich, is titled: "Limitations of current alpine touring ski bindings." This abstract provides a deeper dive into the methodology and findings, including:
- Objectives: Quantifying safety and performance parameters, especially release characteristics, of modern alpine touring bindings.
- Design: Testing 16 alpine touring bindings from the 2018/19 and 2019/20 seasons under standardized conditions.
- Methods: Measuring impact tolerance, influence of forward/backward lean on twist release (referencing ISO 13992), rigidity, accuracy of indicator settings, and consistency of twist release.
- Results: Findings indicated highly varied behavior among bindings. Notably, nine out of sixteen bindings exceeded twist release limits with additional backward lean, and lightweight Tech/Pin bindings showed insufficient rebound elasticity under lateral impact. Some bindings also had imprecise indicator settings.
- Conclusion: The report concluded that a comparable level of reliable release characteristics as found in alpine ski bindings should not be expected from alpine touring equipment, especially concerning release under combined loads. Low impact tolerance could also lead to inadvertent releases.

In summary, the DAV Safety Research 2019 Ski Touring Bindings report (or associated articles/studies) primarily investigated the safety performance of modern ski touring bindings, highlighting their limitations compared to traditional alpine bindings, especially regarding consistent and reliable release under various conditions.

GUIDE CHECKS

What we can and should do BEFORE a trip



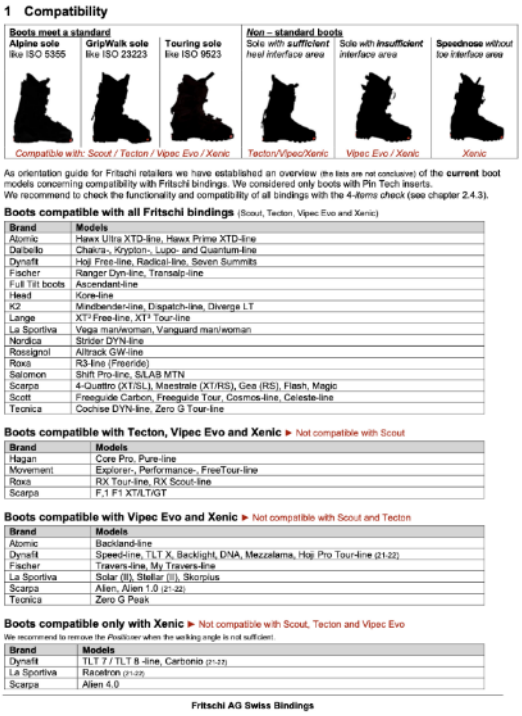
Ski Boot & Binding Compatibility Chart

	Alpine Bindings	GripWalk Bindings	MNC Bindings	WTR Bindings	Sole.ID	Tech/Pin Bindings
ISO 5355 - Alpine DIN	✓	✓	✓	✓	✓	✓*
ISO 9523 - Touring			✓		✓	✓*
ISO 23223 - GripWalk		✓	✓	✓	✓	✓*
Walk To Ride (WTR)			✓	✓	✓	✓*
Non-Compliant Touring						✓

Your background knowledge

Check here for more information on Compatibility of Ski boot soles and ski bindings:

https://www.evo.com/guides/ski-boot-sole-binding-compatibility



1 Compatibility

Boots meet a standard

Alpine sole like ISO 5355	GripWalk sole like ISO 23223	Touring sole like ISO 9523	*Non – standard boots* Sole *with sufficient* heel interface area	Sole *with insufficient* interface area	**Speednose** *without* toe interface area
Compatible with: Scout / Tecton / Vipec Evo / Xenic			*Tecton/Vipec/Xenic*	*Vipec Evo / Xenic*	*Xenic*

As orientation guide for Fritschi retailers we have established an overview (the lists are not conclusive) of the **current** boot models concerning compatibility with Fritschi bindings. We considered only boots with Pin Tech inserts.
We recommend to check the functionality and compatibility of all bindings with the *4-Items check* (see chapter 2.4.3).

Boots compatible with all Fritschi bindings (Scout, Tecton, Vipec Evo and Xenic)

Brand	Models
Atomic	Hawx Ultra XTD-line, Hawx Prime XTD-line
Dalbello	Chakra-, Krypton-, Lupo- and Quantum-line
Dynafit	Hoji Free-line, Radical-line, Seven Summits
Fischer	Ranger Dyn-line, Transalp-line
Full Tilt boots	Ascendant-line
Head	Kore-line
K2	Mindbender-line, Dispatch-line, Diverge LT
Lange	XT³ Free-line, XT³ Tour-line
La Sportiva	Vega man/woman, Vanguard man/woman
Nordica	Strider DYN-line
Rossignol	Alltrack GW-line
Roxa	R3-line (Freeride)
Salomon	Shift Pro-line, S/LAB MTN
Scarpa	4-Quattro (XT/SL), Maestrale (XT/RS), Gea (RS), Flash, Magic
Scott	Freeguide Carbon, Freeguide Tour, Cosmos-line, Celeste-line
Tecnica	Cochise DYN-line, Zero G Tour-line

Boots compatible with Tecton, Vipec Evo and Xenic ▸ Not compatible with Scout

Brand	Models
Hagan	Core Pro, Pure-line
Movement	Explorer-, Performance-, FreeTour-line
Roxa	RX Tour-line, RX Scout-line
Scarpa	F.1 F1 XT/LT/GT

Boots compatible with Vipec Evo and Xenic ▸ Not compatible with Scout and Tecton

Brand	Models
Atomic	Backland-line
Dynafit	Speed-line, TLT X, Backlight, DNA, Mezzalama, Hoji Pro Tour-line (21-22)
Fischer	Travers-line, My Travers-line
La Sportiva	Solar (II), Stellar (II), Skorpius
Scarpa	Alien, Alien 1.0 (21-22)
Tecnica	Zero G Peak

Boots compatible only with Xenic ▸ Not compatible with Scout, Tecton and Vipec Evo

We recommend to remove the Positioner when the walking angle is not sufficient.

Brand	Models
Dynafit	TLT 7 / TLT 8 -line, Carbonio (21-22)
La Sportiva	Racetron (21-22)
Scarpa	Alien 4.0

Fritschi AG Swiss Bindings

Here a list provided by Fritschi, but it can be approx. applied to other manufacturers:

– All boots compatible with ALL Fritschi will fit any touring binding of other manufacturers
– All boots compatible with Tecton, Vipec & Xenic will fit any pintech-binding of other manufacturers AND hybrid bindings BUT not frame bindings
– All boots compatible with Vipec & Xenic will fit any pintech-binding of other manufacturers

Tech Binding Quick Info | Axel's Workshop Info-Sheet

Below is a summary of the practical pre-trip info and knowledge. This information will help with the cross checks of pin-binding heel gap setting and crampon compatibility questions.

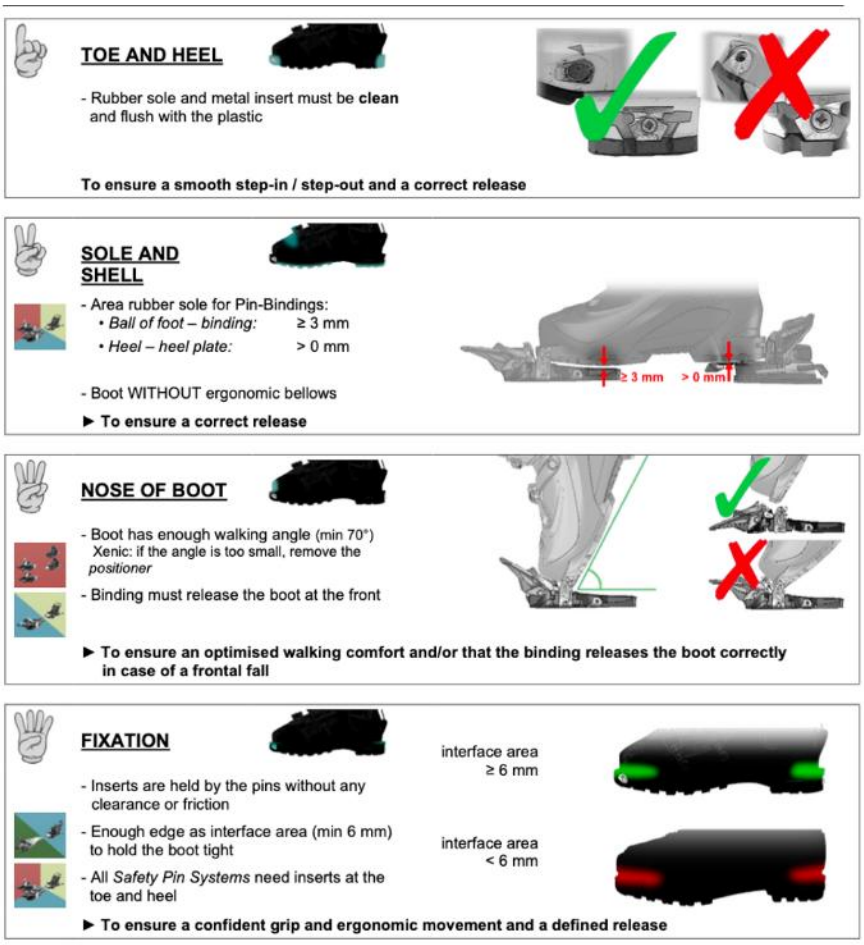
- ➢ Please feel free to add and improve as you develop your own system!
- ➢ Share your experience and new knowledge!

Title	Practical Use	Content	QR Code
Pin Bindings Heel Gaps: Google Sheet	High	Simple google sheet listing the required heel gap for most pi-tech bindings. Simple take-away: it is mostly a 4mm gap with some exceptions.	
Crampon Compatibility:	High	Simple google sheet listing the compatibility of touring bindings with ski crampons	
Plum Tutorial: Videos on maintenance of bindings	Must-know	The video you "land on" is simple and good advice for ALL pin-tech bindings - recommended after-market grease: Motorex Bike 2000	
Info Presentation on Binding Problems **PLEASE WATCH THIS!!!**	Must-know	Great education on the current issues around touring ski bindings with reference to "safety" - that is to stay safe from injury.	
Full Article: Heel Gaps	Background Info	Read this if you like to learn where the simple Pin-tech heel gap list was sourced from.	

HANDOUT POCKET NOTES:

Guest Ski - Binding - Boot Check

- Recommended binding-boot check of guests' personal & hire ski touring equipment during pre-trip gear check:
- Are the binding screws tight? Check with a screwdriver.
- When has the binding been last serviced - looked at last? Ask your guest!
- Perform a visual check OF BINDING and make sure the tow jaw pins are actually intact and tight (some models have had problems with loose pins).
- Check BINDING rear pins for wear and tear - if loose and old the binding will not function safely - advise guests to hire skis (if available on-site).
- If mechanism seem tight, try to grease the springs and moving parts (recommended grease: Motorex Bike 2000)
- Check heel gap of binding to boot and adjust if set incorrectly (use the list provided above)
- Check ski brake mechanism is working
- Check compatibility of ski - binding - boot system. USE 4-POINT CHECK (see below chart)!
  CAUTION: Very wide skis (115mm+) combined with very light pin-tech are not a good fit for NZ snow conditions (see vibration release & force peaks at toe jaw)
- Check pin holes of TOURING BOOTS - in particular the rear pin inserts (if the edges are rounded or broken off, the pin-binding won't function properly.
- PLEASE REMEMBER: Any binding with a heel unit such as **ANY** frame binding, Marker Duke, CAST-system, Atomic/ Salomon Shift or Fritschi Tecton MUST NOT BE USED with very lightweight ski touring boots with rockered soles and none-standard toe box or heel unit (like mountaineering boots)!
- Check ski crampons are compatible with binding and also the correct width (crampons that are too wide can break or damage the bindings - crampons that are too narrow are unusable 🙄)
- (Check skin if fitting, functioning and glue in good condition)
- (Ski: Check if in functioning order = no pulled edged or delamination)



We recommend using a ski binding adjustment and testing equipment according to DIN ISO 11110.

The Fritschi 4-points check:
Applicable to MOST touring set-ups (DISCLAIMER: Please correct me if I have overlooked information from another manufacturer - at least as far as I can find out from the maze of information online and from ski mechanics, the below hold true for all current pin/low-tech bindings)

Ski Crampon Compatibility Chart:

Binding	Ski Crampon Type							
	Dynafit Bar Dynafit, Dynafit Speed, Kreuzspitze	Bar w/ Small Window ATK, Black Diamond, Fritschi Xenic	Plum / Atomic	G3 ION / ZED	Marker Pintech	Fritschi Vipec / Tecton	Salomon / Atomic Shift	Marker Duke PT
ATK	Yes	Yes	No 1	No 1	Yes	No 1	No 4,5	No 2
Atomic Backland	Yes w/ clip	Yes w/ clip	Yes	No 1	Yes w/ clip	No 1	No 4,5	No 2
Atomic Shift	No 4	No 4	No 1,4	No 1,4	No 4	No 1,4	Yes	No 2,4,5
Black Diamond	Yes	Yes	No 1	No 1	Yes	No 1	No 4,5	No 2
Dynafit (most)	Yes	Yes	No 1	No 1	Yes	No 1	No 4,5	No 2
Dynafit Rotation / Speed	Yes	No 2	No 1	No 1	Yes	No 1	No 4,5	No 2
Dynafit P49	None	None	None	None	None	None	None	None
Fritschi Vipec / Tecton	No 1	No 1	No 1	No 1	No 1	Yes	No 1	No 1
Fritschi Xenic	Yes	Yes	No 1	No 1	Yes	No 1	No 4,5	No 2
G3 ION / ZED	No 1	No 1	No 1	Yes	No 1	No 1	No 1	No 1
Hagan	Yes	Yes	No 1	No 1	Yes	No 1	No 4,5	No 2
Kreuzspitze	Yes	Yes	No 1	No 1	Yes	No 1	No 5	No 2
Marker Alpinist	Yes	Yes	No 1	No 1	Yes	No 1	No 4,5	No 2
Marker Duke PT	No 1	No 1	No 1	No 1	No 1	No 1	No 1,2,5	Yes
Marker Kingpin	Not ideal 3	Not ideal 3	No 1	No 1	Yes	No 1	Not ideal 3,5	No 2
Plum	No 1	No 1	Yes	No 1	No 1	No 1	No 1	No 1
Plum Race 99	None	None	None	None	None	None	None	None
Salomon MTN	Yes w/ clip	Yes w/ clip	Yes	No 1	Yes w/ clip	No 1	Not ideal 4,5	No 2
Salomon Shift	No 4	No 4	No 1,4	No 1,4	No 4	No 1,4	Yes	No 2,4,5
Ski Trab	Yes	Yes	No 1	No 1	Yes	No 1	No 4,5	No 2

Heel Gaps for most Pin-tech bindings:

ATK Heel Gaps	
Candy / Crest	4mm
Haute Route	4mm
Raider / Freeraider	4mm
Revolution / Trofeo	4mm
Atomic Binding Heel Gaps	
Backland Tour	4mm
Black Diamond Heel Gaps	
Helio (all)	4mm
Fritschi Heel Gaps	
Vipec / Evo	1mm
Xenic	1mm
Fischer Heel Gaps	
Tour Race 1, 2 & 3	4mm
G3 Heel Gaps	
ION (all)	0mm
ZED 9 / 12	0mm

Grizzly Heel Gaps	
GR 98	4mm
Olympic	4mm
Marker Heel Gaps	
Alpinist	0mm
Plum Binding Heel Gaps	
Race (all)	4mm
Oazo / Pika / WEPA	4mm
Guide / Yak	4mm
Summit	4mm
Salomon Binding Heel Gaps	
MTN	4mm
Ski Trab Binding Heel Gaps	
TR-Race / Adjustable	4mm
Gara Titan	4mm
Titan Vario / Release	5mm
Titan Vario.2	0.75mm

Hagan Binding Heel Gaps	
Core / Core Pro	4mm
Ride / Pure	4mm
Ultra / ZR	4mm
La Sportiva Binding Heel Gaps	
RSR / RST	4mm
Kreuzspitze Binding Heel Gaps	
EL	6mm
RS / RS-A	6mm
SCTT / SCTTT	6mm
GT / GT 2.0	6mm
Slatnar Binding Heel Gaps	
ST Touring	1mm

Dynafit Binding Heel Gaps	
Low Tech Race 1 & 2	4mm
RC1	4mm
Expedition	4mm
Superlite 150	5.5mm
Superlite 1 & 2 / 175	5.5mm
Speed / SpeedFit	5.5mm
Speed Turn 1 & 2	5.5mm
Speed Radical	5.5mm
Radical ST / FT	5.5mm
Radical 2.0	0.1mm
Rotation 10 / 12 / 14	0.1mm
Rotation 7 / Lite	5.5mm
Vertical ST / FT	5.5mm