



How the
Best Play Better

PERFORMANCE PROFILING

ELITE BLADE PERFORMANCE TECHNOLOGY / WHITE PAPER



**ELITE BLADE
PERFORMANCE
TECHNOLOGY**

Performance Profiling

Nothing is more important to performance on the ice than a player's blades. ELITE Blade Performance Technology offers a wide range of profile template options, allowing hockey players to find the optimal blade shape to maximize their skating performance based on their personal preferences. The following is a brief discussion of profiling theory and the performance characteristics of the major types of profiles we offer.

Profiling: An Overview

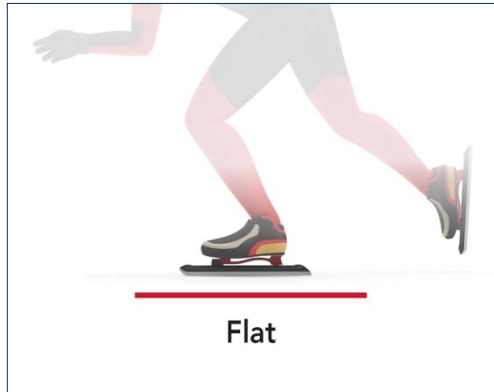
When hockey players take to the ice, they are looking for many different skating performance characteristics in their blades. These qualities include:

- Top Maximum Speed
- Explosiveness – rapid first few strides
- Stability
- Agility
- Efficiency – how much speed/distance per unit of effort
- Aggressiveness – how solid the “bite”

The challenge for players is that many of these qualities are in opposition to each other. To get more of certain attributes, they have to accept less of others. The art of custom profiling is to find the shape of blade which gives the best combination of attributes to suit the skating and playing style of a given player.

To illustrate these trade-offs, imagine a hockey player wanting a blade to provide only maximum top speed, maximum front to back stability, and maximum energy efficiency.





The ideal profile might look very much like the blade of a speed skate – really long and flat, with a lot of steel in contact with the ice so that it would float over the surface. It would have great stability front-to-back, and fantastic top-end speed.

But, of course, it would be impossible to play hockey on speed skates. The first few strides would be really slow and clunky, the player would not be able to turn at all, and if he ever tried to stop suddenly, he would probably snap his legs off at the ankles!

On the other hand, if a player wanted only maximum agility and maximum explosiveness, he would want a blade with lots of “rocker” – that is, heavily curved, with not much blade in contact with the ice. This player could really lean into his first few strides and would be able to turn on a dime. But he would have very little stability front-to-back, and slow cruising speed as the short radius blade would sink into the ice instead of gliding over it.

The response of skate manufacturers, traditionally, has been to look for a compromise curve that does a bit of everything. Not too flat, so it keeps some manoeuvrability and some jump. Not too rockered, so it keeps some cruising speed and stability. Most standard, out-of-the-box blades come with a generic profile that is something close to a 10-foot radius curve along the effective skating surface. Some are a little more rockered (9-foot, for example) or minimally pitched (9½ - 10½), but they are generally in this range.

For a long time, equipment professionals have been aware of the limitations of the generic profile, as strong skaters have looked for something faster and more powerful than these standard blades. Most early efforts at custom profiling (or contouring, as it was first known) consisted of taking the generic 10-foot radius blade and flattening it out – say to an 11-, 12- or even 13-foot radius. These changes certainly created higher top speeds and a very solid feeling, but they came at a significant cost to agility and initial acceleration. This unsatisfactory trade-off led people to start experimenting with multiple-radius profiles, hoping to provide players with something closer to optimal performance.

Performance Profiling

Boiled down to its essence, performance profiling is about customizing the shape of a hockey skate blade to put more blade in contact with the ice (with the attendant gains in top speed, stability and efficiency), while preserving the agility and explosiveness that are essential to the game of hockey. And, very importantly, the art of performance profiling is to find a profile that fits the particular skating

style of a player, so that he or she feels great on the ice. At ELITE we believe there is a perfect profile for every player that matches his or her skating style and performance preferences.

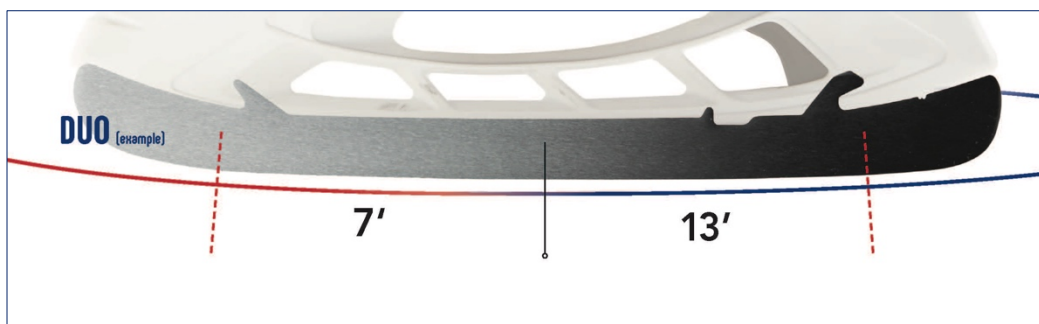
There have been many multiple-radius profile formulas tried over the years, but we see almost all of these efforts fitting into two broad conceptual categories. We refer to these as **Heel Glide profiles** and **Center Glide profiles**. Both categories include many dynamic profiles, and the choice between heel glide and center glide is really a matter of personal feel and preference.

Heel Glide Profiles

In Heel Glide profiles, as the name implies, the blade is flattened from the middle of the foot back towards the heel, creating an area with more steel on the ice. So instead of a 10-foot radius on the back half, it might be a 12-, 13-, or 14-foot radius, or perhaps even flatter. This gives the blade excellent glide characteristics and feels extremely stable.

But, as noted above, if we were to apply that flatter radius to the whole length of the blade, the performance would become very heavy and unresponsive. So we “lighten” the front section of the blade with a shorter, more rockered radius in order to preserve agility and explosiveness.

By way of example, here is an illustration of a 7-13, one of our most popular Heel Glide profiles. The back portion of the effective skating surface is stretched out to a 13-foot radius, while the front part is rockered to 7-feet. A favourite of forwards and defence alike, the 7-13 has lots of jump and agility but also powerful glide and stability with a slight feeling of forward pitch.



Most custom blade profiles on the market today fit into this broad category of Heel Glide profiles. All our performance Duos, Triples and Quads share the common characteristic of starting out comparatively rockered in front and becoming progressively flatter towards the heel.

ELITE offers a wide selection of Heel Glide profile templates, and can also make custom templates on request. Here is a list of our most popular Heel Glide profiles, with some impressions about their playing characteristics based on our own testing, as well as pro player feedback.

Name	Radius	Description
7-12 Duo	7' – 12'	"Lightest", most agile duo. Slight forward pitch feeling
7-13 Duo	7' – 13'	Great all-around profile, strong glide, some forward pitch feel
7-14 Duo	7' – 14'	Strong glide. Pronounced forward pitch feel
8-12 Duo	8' – 12'	Similar to 7-12, slightly less forward pitch feel. Marginally less agile.
8-13 Duo	8' – 13'	Similar to 7-13, slightly less forward pitch feel. Marginally less agile.
8-14 Duo	8' – 14'	Very solid, stable feel. Great glide. Definitely a bit "heavier" sensation.
9-13 Duo	9' – 13'	Solid, slightly heavy. Very stable. Limited feeling of pitch.
EL3-1 Triple	6' – 12' – 26'	Fast, powerful, solid. Smooth transitions. Slight forward pitch feel.
EL3-2 Triple	6' – 13' – 26'	Like EL3-1, but even more "solid". Favors wide arcs over agility. Less pitch.
EL4-1 Quad	6' – 9' – 11' – 13'	Quite light and agile. Smooth transition from rocker to glide.
EL4-2 Quad	7' – 10' – 13' – 16'	Very smooth, well balanced. Good mix of power and agility.
EL4-3 Quad	6' – 9' – 11' – 26'	Very solid, smooth, stable. Powerful, slightly "heavy" feel.

Center Glide Profiles

The other broad category of performance profiles is Center Glide. As the name suggests, in the Center Glide profiles the area under the middle of the foot is flattened out to allow more contact with the ice surface, while the toe and heel sections are comparatively curved, or rockered.

SCS Series

The SCS Series is ELITE's proprietary family of Center Glide profiles, with a sequence of flatter radius curves under the middle of the foot, and comparatively rockered toe and heel sections. The effect is a very powerful and smooth-skating profile, which provides high top-end speed and powerful striding turns while preserving agility and explosiveness.

There are three models in the ELITE SCS profile series (SCS-1, SCS-2 and SCS-3), and each is available in Standard and Long sizes. The only difference between the two sizes is that the Standard profiles have a slightly shorter section of wide-radius curves under the mid-foot compared to the Long version. As a starting point, we recommend using the Long version for any blade 272 mm and above, and the Standard version for blades 263 mm and below. These are only guidelines, however, and

players may want to experiment with both sizes to see what feels best. In general, the Standard model will feel slightly “lighter” or more agile, while the Long model will feel a bit faster and more stable.

All three SCS profiles share similar fundamental performance characteristics – a mid-foot balance point, smooth transitions, and powerful acceleration – but are subtly different in terms of feel.

SCS-1 Standard or Long	“lightest” or most agile, with the most rockered heel and toe sections.
SCS-2 Standard or Long	same mid-foot wide-radius curves as the SCS-1, but with slightly less rockered heel and toe for greater stability.
SCS-3 Standard or Long	slightly flatter curves under the mid-foot, plus the less rockered heel and toe of the SCS-2, with the most “solid” feel of the three profiles.

Center Flat Series

Center Flat profiles are designed to increase the area of blade in contact with the ice surface by creating an actual flat section (or infinite radius curve), at or near the middle of a generic mono blade. These profiles come in a variety of lengths of flat section, and also in neutral and more forward-pitched configurations, to meet the needs of skaters of different sizes and skating styles.

These are two main parameters to consider in choosing a Center Flat profile – the length of the flat section, and the “pitch” or angle of the flat section.

In general terms, the longer the flat section, the greater the benefit in terms of speed and glide, but the greater the cost in agility and fluidity of skating. For smaller players skating on shorter blades, it is important not to choose too long a flat section, or there is a risk of a “railroad track” effect where it is difficult to initiate a turn. We recommend that players start small and experiment with larger flats until they find their optimal profile.

ELITE Center Flat profiles are available with flat lengths of 40, 50, 60, 70, and 80 millimeters. Each length is available in Neutral (50% in front of blade center, 50% behind), P1 (light forward pitch, with 58% of the flat in front, 42% behind) and P2 (heavier pitch, 67% front and 33% behind).

The following chart shows the standard Center Flat templates, with the lengths in millimeters in front of and behind blade center. Other custom Center Flat profiles are available on request.

Center Flat Length (mm)	Neutral Position	Forward P1 Position	Forward P2 Position
40	20-20	23-17	27-13
50	25-25	29-21	33-17
60	30-30	35-25	40-20
70	35-35	41-29	47-23
80	40-40	47-33	53-27

Monos and Minimal Pitch Profiles

At ELITE, we are strong proponents of the benefits of Performance Profiles. We recognize, however, that there are some players, and equipment managers, who prefer profiles which more closely resemble OEM blades. ELITE offers a complete line of mono and minimally pitched profile templates for skaters looking for something close to a generic profile, including:

Mono Radius	9"	10"	11"	12'	13'
Minimal Pitch	9'-10'	9.5'-10.5'	10'-11'	10.5'-11.5'	

Goalie Profile Templates

Goalie blade profiles are much flatter than player profiles, providing superior stability and lateral power, helping a netminder stay in balance and move quickly side-to-side. These characteristics come at the expense of acceleration and agility, which is why goalies aren't pretty when skating on open ice!

The standard goalie blade profile is a 30-foot radius over the effective skating surface, with a very short "release" zone at each end with very much smaller (4-5 inch) radius curves. ELITE offers a 30-foot mono template, for goalies who prefer a factory standard profile, as well as 28 and 29-foot monos for those wanting a slightly more rockered feel. Goalie blades, with their relatively flat radius, are notoriously difficult to hand sharpen without distorting their shape. ELITE mono goalie templates are especially useful for periodically restoring factory specs on blades that have lost their original profile.

Many goalies find that they like the feel of a Duo Performance Profile, with the front half of the blade profiled to a slightly shorter radius curve (24-foot seems to be most popular). These profiles preserve the required stability, but offer a slightly more aggressive pitch forward, which some goalies feel gives them quicker lateral movement and allows them to regain their feet more quickly after dropping down in the butterfly technique favoured by goaltenders today.

The standard line of ELITE Goalie Profile templates includes both Monos and Performance Duos. Other goalie templates are available, and custom profiles can be ordered if desired.

Goalie Monos	Goalie Performance Duos
30-foot	28-30
29-foot	26-30
28-foot	24-30
	22-30
	24-28

About ELITE Blade Performance Technology

ELITE Blade Performance Technology is a Canadian manufacturer of high-precision skate blade profilers and revolutionary, computer-controlled, fully automated skate blade sharpeners. ELITE has reimaged and reengineered the critical materials, practices and processes of skate blade profiling and sharpening to establish a new era of precision and consistency.

We hope that this white paper has helped you to understand some of the theory that drives Performance Profiling. We continue to try to deepen our knowledge of the science of profiling and would welcome the opportunity to learn from your experience.

Please share your feedback with us. What profiles work for you or your team? Feel free to contact us for more information.

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