

Introducing the new Tidd Tech Generation Two

By Phil Zink, Tidd Tech, Ltd.

The Tidd Tech Trail Tenderizer has established the standard for snowmobile-powered cross country ski trail grooming over the past 15 years. John Tidd's vision has elevated the quality level of grooming at nearly one thousand Nordic trail systems across North America.

As we envisioned the second generation Tidd Tech we wanted a product design capable of taking the industry leadership position of the Trail Tenderizer to a new level of grooming performance. We believe the Tidd Tech G2 meets this goal.

The success of the Tidd Tech Trail Tenderizer has been built on the foundation of five basic design concepts which the G2 retains and enhances:

1. Lightweight overall design and freedom of "flow".
2. Sized for efficient grooming.
3. Controlled, effective renovation with small particle size.
4. Consistent high quality tracksetting.
5. All-around grooming capability.

Lightweight Overall Design and Freedom of "Flow"

Minimum weight is especially critical during low snow conditions which everyone usually faces during early season and late season grooming. In the Upper Midwest, for example, low snow base depth has been the rule during most of five of the last six seasons. Excess weight and/or resistance to easy "flow" under the compaction bed can result plowing much of your valuable snow off to the side of the trail and can cause dirt and trash to be mixed into your thin snow base. As in medicine, a critical grooming maxim is "do no harm". A lightweight design with a low coefficient of drag also reduces the risk of stalling your snowmobile on a steep uphill when packing heavy new snow or renovating a hard crust.

The medium G2 weighs about 250 lbs., without a tracksetter. This is about 15% more than the 6' Trail Tenderizer and Superflaps, without a tracksetter. Up to 150 lbs. of additional weight may be added in the form of standard 25 lb. Olympic weightlifting plates when needed for heavy renovating and/or tracksetting.

The G2 compaction bed has an extremely low resistance to "flow" because of these important design features:

- Smooth rigid surface which does not deflect under snow-load pressure
- Over 12 sq. feet of surface area
- Fixed low angle of attack (20 degrees)
- Smooth-curved seamless transition a 2-stage dual flex comb

The contact area at the rear of the bed is parallel to the surface of the snow. The combination of this highly efficient sled-nosed compaction bed, the comb-extension flaps on each side of the bed, and the new snow-transfer blades (which we will explain in detail later) result in virtually no snow being plowed off to the side even when grooming 6" of deep new snow.

Sized for Efficient Grooming

A minimum total trail width for a skating lane and a classic track is about 10 ½ feet (3.2 meters). This is the fully renovated and/or compacted width and does not include the beveled edges from the end flaps which extend beyond the compaction bed or tiller bar. This 10 ½ foot dimension includes a comfortable 7 1/2 foot skating lane to minimize damage to the classic track, and a classic track set 2 feet from the trail edge to provide a firm pole plant area and adequate distance from trees for novice skier safety and comfort.

When selecting a grooming implement, the width of the compaction bed and the coverage width of the renovation teeth are important dimensions to consider. For two-pass snowmobile grooming **BOTH** of these dimensions should be a minimum of at least 66". This allows for a 6" overlap on a 10 ½ foot trail. The Medium G2 has a compaction bed width of 72" and 68" total width of renovation teeth, just like the 6' Trail Tenderizer, which allows efficient two-pass grooming. The Small G2 and 4' trail Tenderizer both have a 48" compaction bed and 44" renovation width which makes them efficient three-pass grooming tools.

The capability to set (and remove) double classic tracks with adequate spacing requires a compaction bed of at least 6 feet and a renovation capability of 5 ½ feet. Like the 6 foot Trail Tenderizer, the Medium G2 sets an excellent set of double tracks. The G2 has a somewhat more aggressive renovation capability than the Trail Tenderizer which helps in removing double classic tracks in one pass.

Another efficiency advantage of the new G2 is the ability to groom at significantly higher speeds. This is true in combing a skating lane with a well defined corduroy pattern, renovating a skating lane without chattering, or setting consistent best-line tracks. The reasons for this capability are explained in later sections of this summary.

Consistent, Effective Renovation Capability

The Trail Tenderizer name emphasizes its renovation capability. The durable teeth can be fine-tuned to consistently renovate a skating lane lightly with fine particle size, or cut more deeply to remove an old set of classic tracks. An important design concept is that the teeth are located only about 2 ½ feet in front of the contact point at the rear of the compaction bed. This minimizes the

renovation tooth depth variation over terrain variations. If the teeth are located 1 ½ feet further forward, the tooth depth variation increases by over 50%. This can cause the teeth to grab or skip as the terrain changes, resulting in larger chunks, scalping thin spots, chattering, or overloading the snowmobile.

The G2 teeth are fine-tuned with an electric actuator which is independent of the fixed-angle compaction bed. Like the Trail Tenderizer, the tooth bar is located only about 2 ½ feet in front of the contact point at the rear of the compaction bed. The G2 teeth are easily replaced and inexpensive. The G2 has 90 teeth mounted in two rows with ¾" overall spacing. This is about 1/3 more teeth than the 6' Trail Tenderizer which results in smaller particle size. The 45 deg. angle teeth do not deflect fine snow spray onto the top of the compactor bed or tracksetter (from which it can eventually end up in chunks on your groomed trail). The tooth bar is spring-loaded and easily adjustable. These springs instantly unload the tooth bar when an obstruction like a rock or stump strikes the teeth. This eliminates the need for drawbar shear pins. When snow conditions change the teeth do not tend to dig in suddenly and stall the snowmobile.

Outstanding Tracksetting

The Trail Tenderizer produces firm, consistent classic tracks which are free from wobble and wash-out on corners. The basic Tidd Tech tracksetting principle has been to link the tracksetter close-coupled and semi-rigidly (in the lateral direction) to the rear of the compaction bed. This results in the groomer and the tracksetter trailing as a single unit and setting straight true-line tracks.

A tracksetter mounted on an extended independent arm is required with a snowcat/tiller due to the erratic movement of the tiller bar as the tracked vehicle makes steering corrections. This independent-arm tracksetter linkage can result in a tendency to wobble and bounce at higher tracksetting speeds and/or over uneven surfaces.

The G2 tracksetter is also close-coupled and semi-rigidly attached to the rear of the compaction bed. An electric actuator applies up to 200 lbs. of down pressure through two constant-pressure gas-filled cylinders. An exclusive G2 tracksetter feature is that the down pressure is applied directly over the track cutters and the front of the molded track shoes. The track cutter is a pair of 45 deg. angled teeth (similar to the renovation teeth) which do not collect sticks for rocks. The stability and consistent greater down pressure of the G2 tracksetter allow high-quality tracksetting at considerably higher speeds than the Trail Tenderizer.

All-Around Grooming Capability

The Trail Tenderizer has earned a reputation as a tool which performs well over

a wide range of snow conditions for many purposes. It grooms early snow, deep snow, and wet snow over a broad temperature range. It sets excellent single tracks (or double tracks with the 6' TT), renovates a skating lane, or removes an old track. It levels drifts, but can avoid scalping off a thin base. Many of our customers can only afford to own one grooming implement, so this versatility is an economic necessity.

The G2 continues this all-around performance tradition. In addition several new exclusive G2 features further enhance its capability.

NEW EXCLUSIVE G2 FEATURES:

1. Two-Stage Dual-Durometer Comb

This custom-molded comb design is perhaps the single greatest advancement of the G2 design. The first comb stage is molded of semi-rigid high-density urethane and attached to the rear of the compactor bed with a smooth seamless joint. The second comb stage is molded of more flexible urethane at a 30 deg. down angle. This results in significant down pressure on this rear comb section while maintaining the ability to flex over terrain variations (especially important when you can't risk aggressive leveling due to thin-base conditions. The G2 comb allows much higher grooming speeds (especially when renovating) while maintaining excellent combing performance. The G2 comb (and end flaps) has an exclusive 16 distinct ribs per foot which provide an excellent platform for fast, stable skate skiing.

2. Positive, Easily Adjustable, Three-Position End Flaps

These end flaps match the profile of the G2 comb. They extend 12" beyond each edge of the compaction bed and are much stiffer than the TT Superflaps and provide the same preloaded down pressure as the G2 Comb. This results in excellent combing of the overlap area and eliminates any berm problem even in significant new snow.

These semi-rigid flaps can be easily raised out of the way with a single pin on each flap (no tools). This allows grooming a narrow trail or passing through a gate as narrow as 76" wide. By lifting one flap you can refresh a relatively narrow skating lane at higher speeds with less risk of damage to the classic track. A mid-position is also available which results in a beveled trail edge without undercutting even with deep snow conditions.

3. Easily Adjustable Tracksetter Position

Another great G2 convenience and performance feature is that the tracksetter can be easily relocated in any position over a 58"(?) range quickly and without tools (by loosening a single knob and sliding the tracksetter along the tool bar). The 96" G2 will accommodate two tracksetters with independent control for setting excellent double tracks or switching the track from one side of the trail to the other without tracksetter relocation.

4. Disk Transport Wheels

The G2 incorporates twin permanent transport wheels which are 5" dia. X 1/4" steel discs located at the outside edges of the compaction bed. They roll (rather than skid) when crossing asphalt, concrete or gravel roadways and protect the comb and the compaction bed. These discs are inexpensive and easily replaceable, but will last much longer than skid plates. They also serve the function of tracking fins on the G2. The comb extends behind these disc wheels, so they do not mar the combed surface.

5. Snow Transfer Blades

This innovative feature was conceived by Pete Moline, the owner and master-groomer of Afterglow Lake Resort near Eagle River, WI. We have continued John Tidd's long tradition of listening to our customers because that is where the depth of expert grooming knowledge exists. Like many of you, Pete takes great pride in providing immaculate grooming for his skiing customers. A couple of years ago Pete began experimenting with some baffles attached to his Trail Tenderizer. He grooms a county trail (which connects to his trail system) which is used by ATVs in the off-season. This trail is quite uneven and rutted and Pete wanted to fill the ruts and level the depressions without renovating during the early season. Two Years of the combined efforts of Pete and Tidd Tech have resulted in a great grooming advancement (which is standard on the G2).

These snow transfer blades consist of six (a set of three on each side) stiff but flexible plastic blades which are 6" high X 12" length and mounted at a 45 deg. angle. Each blade moves new snow about 8" in from the edge of the compaction bed. This results in leveling drifts, filling skate marks, old classic tracks, foot prints, dog tracks, or any other depressions with even an inch or two of new snow without significant renovation. The transfer blades also move deeper new snow into the middle third of the compaction bed where it spreads back out over the entire bed as it passes under the bed. This allows grooming deep snow without plowing it off the edges of the bed.

Another advantage of these transfer blades is that they are "working" new snow to help knock the air out. The addition of these exclusive transfer blades makes the G2 a very effective four-stage snow processing machine. Stage one is the

transfer blades (usually set at the surface of the snow). Stage two is the renovation teeth (set at the surface in light new snow or a few inches above the surface in deeper snow). The tooth bar rolls new snow in front of the teeth to further "work" the snow. The third stage is the smooth flowing compaction bed which squeezes the snow through the curved maximum pressure area. The fourth stage is the new comb with positive final down pressure. The result of this four-stage one-pass snow processing is a higher-density trail surface after the snow sets up.

The transfer blades are raised and lowered with the same electric actuator which controls the tooth bar. The relative position of the tooth bar and the blades can be easily adjusted (again without tools).

6. Snow Farming

This is a real bonus of the snow transfer blades. The easily adjustable (no tools) can be moved up to 12" outside either edge (or both edges) of the compaction bed. This provides the capability to "farm snow" from the edge of the trail. This can make the difference in having enough snow base to set good classic tracks in early season conditions.

In conclusion, we believe that the new G2 will out perform any lightweight Nordic ski trail grooming implement on the market. We have incorporated features that provide real benefits for our customers, from the ski trail professional to the recreational groomer. The new G2 is a tool that can help you create a better ski trail product in less time.