TIDD TECH
Snow Grooming Equipment

# G2-4', G2-6' & G2-7' TRAIL GROOMER
## Assembly and Operation Manual

You will find the most up to date version of this document on our website
www.tiddtech.com/resource-center/tidd-tech-manuals

1100 Roundhouse Road • Spooner, WI 54801
Phone: 1-715-635-3220
Website: www.tiddtech.com • Email: ttech@tiddtech.com

# Packing List

G2 Trail Groomer

- ☐ **(1) Rear Frame Assembly** (5/16” lags in frame flange and drywall screws with fender washers in comb for attachment to pallet)
- ☐ (1) Comb with UHMW panel attached with 5/16” x 1 FHSS + LN at front angle, 5/16” x 1-1/4” FHSS at rear angle
- ☐ (2) tiddtech.com decal affixed to rear of hoop
- ☐ (2) Weight posts with clip pins - 5/16” x 2-1/2” inserted
- ☐ (2) Skid disks each with 3/8” locknut; bearings installed

- ☐ **(1) Front Frame Assembly**
- ☐ (1) Tidd Tech sticker on front of frame to the left of hitch plate
- ☐ (4) 3/8” x 1 HB + LN hand tightened in joint flanges
- ☐ (2) Toothbar flange bearings attached with (4) 3/8” x 1” HB + LN hand tightened

- ☐ **(1) Toothbar Arm Assembly** with teeth installed (5/16” x 3/4” HB + LoPro LN) onto toothbar

- ☐ **(1) Depth Control System**
- ☐ (1) Pivot plate attached to toothbar (2) 5/8” x 1-1/2” HB (4) 5/8” FW (2) 5/8” LN
- ☐ (1) Depth tube attached to pivot plate (4) 3/8” x 1” HB (8) 3/8” FW (4) 3/8” LN

- ☐ **(1) Arm**
- ☐ (2) 1/2” x 4” HB + 1/2” LN inserted through toothbar pivot tube
- ☐ (2) Sharp teeth stickers on top of toothbar
- ☐ (2) 1/2” x 3-1/2” CB + (4) HN + (2) FW + (2) LW
  **Note measure 2” fom head of CB to TB arm stop tube
- ☐ (2) Shocks (4) M12 x 1-3/4” LN (2) M12 x 1-3/4” x 3/4” HB (2) M12 x 1-3/4” x 100 HB
  All black end of shock goes above toothbar
  small spanner wrench for adjustment wrapped to arm under one shock

- ☐ **(1) Clamp Assembly**
- ☐ (2) 1/2” x 2-3/4” HB and 1/2” LN inserted in hole of toolbar clamp bottom plate which is attached to toothbar pivot shaft with curved face of clamp towards hitch
- ☐ (2) Poly inserts and (4) 3/8” x 3-1/2” CB + LN and top plate

- ☐ **(1) Actuator** (wrapped to frame or in TS box)
- ☐ Long lead wires (do not include these if they are getting a wiring kit)
- ☐ (1) 7/16” x 1-3/4” HB + LN through clevis, hand tightened
- ☐ (2) Flange bearings and parts bag (4) 3/8” x 3/4” HB + LN) wrapped to actuator

- ☐ **(1) Snow Transfer Blade Arm Assembly - Right & Left**
- ☐ (2) Blades for 4’ unit
- ☐ (3) Blades for 6’ or 7’ unit
  Urethane attached with 5/16” x 3/4” BHCS + LN and 1/4” washers

- ☐ **(1) Side Flaps - Right & Left** - Urethane attached with:
- ☐ (4) 5/16” x 1” FHSS + 5/16: LN
- ☐ (1) 3/8” x 3-1/2” HB + LN (end hole)
- ☐ (1) Detente pin (inside hole)

- ☐ **(1) Loop Hitch** with (2) 1/2” x 1” CB + LN (wrapped to frame or in TS box)

## SAFETY INFORMATION

This is the part of the manual that contains IMPORTANT safety information. Many products purchased in today's litigious society come with volumes of so called "safety information" complete with diagrams and intelligence insulting text that are so ridiculously obvious that most people ignore the entire section. We have left out the ridiculous and obvious in order to provide you with concise information we believe you can use. It is simply not possible for a manufacturer to anticipate all of the ways an end user can misuse a product to cause damage or injury, but below are the issues we believe a reasonable and responsible operator should pay attention to. Please read this manual completely before operating your machine. If you discover something you believe we should add to this manual, by all means call us, toll free, at (877) 843-3832. We do appreciate your feedback!

1. The G2 Teeth (and Tracksetter Teeth) are VERY SHARP, and should be treated with respect. Never reach under the front edge to move the groomer. Before touching the groomer, please get down on your hands and knees and LOOK at the teeth (and touch them) so you are aware of where and how sharp they are.
2. Be careful lifting the groomer. Its weight is often increased by snow piled on top. Deep or icy snow makes moving the groomer even more hazardous. Be sure you have secure footing, bend your knees, and keep your back straight. In our experience, the most common injury to trail groomers is back strain from yanking implements and snow machines around, and this is completely avoidable. Keep fingers clear of the hitch when you are hooking up to the snow machine.
3. Maintain a safe distance and proceed slowly when operating near skiers or pedestrians on the trail. Grooming a trail with skiers present should be looked upon as an opportunity to offer some friendly customer service – at a minimum a wave or hello. If your customer looks like they need some assistance, shut down your stinky, noisy snow machine and offer some. Those skiers are the reason you have a job so please do not subject them to injury, intimidate them or otherwise spoil their experience.
4. You may have prior experience with Tidd Tech Trail Tenderizer or Snow Roller products. Please note that the G2 employs a hydraulic spring trip on the Toothbar and DOES NOT HAVE A BREAKAWAY SHEAR PIN ON THE HITCH! The spring trip offers many advantages over a shear pin system, enabling the machine to encounter obstructions, trip the toothbar and reset without interrupting operation. HOWEVER, the spring trip will not protect anything other than the teeth. If you wrap the G2 frame around a tree, post or other obstruction, you will almost certainly damage the G2, the hitch, your snow machine, and most importantly, yourself (see safety issue #6, below).
5. You will not find any handles, foot rests or seat belts on the G2 because it is NOT intended for riders, period. If you need to add weight, see the appropriate section in this manual.
6. Finally, please remember that normal grooming speed is somewhere between 5 and 15 mph (usually 5-10 mph, although the design innovations of the G2 allow for grooming at up to 15 mph in some conditions). This implement is designed to work in that approximate speed range, and not only will this speed range yield the best grooming results, but this speed range also will give both the operator and equipment a reasonable safety margin for error. If you operate this or any other implement behind your snow machine faster than 20 mph (even when you are not grooming), you are simply an irresponsible FOOL looking for an accident to happen, and all of the ridiculous text and diagrams we left out of this safety section would have been lost on you anyway.

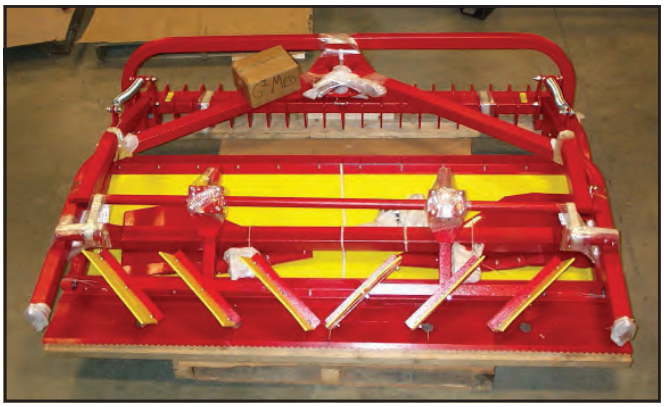
## UNPACKING AND ASSEMBLY

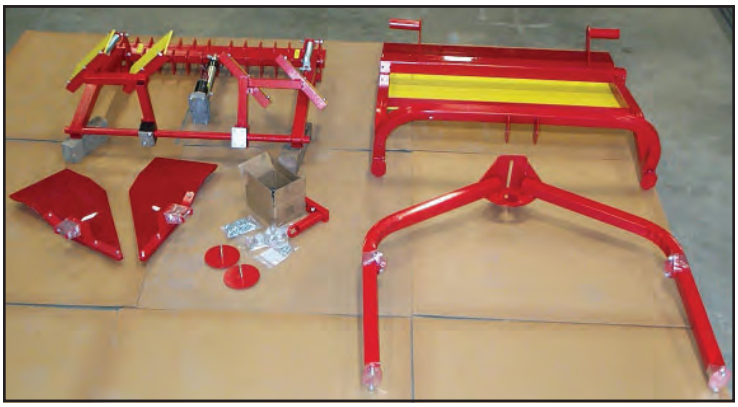
**Tools Recommended:** tape measure, knife, adjustable wrench, (2) 9/16" end wrenches, (1) 1/2" end wrench, ratchet with 1/2", 9/16" and 3/4" sockets, small level, wire cutters. May also need: drill with 3/8" bit.

Remove all of the packing materials, including the bolts attaching the frame members to the pallet and the screws and washers attaching the comb to the pallet.

Place the three main pieces on a flat surface as shown. Set the other components aside for now.

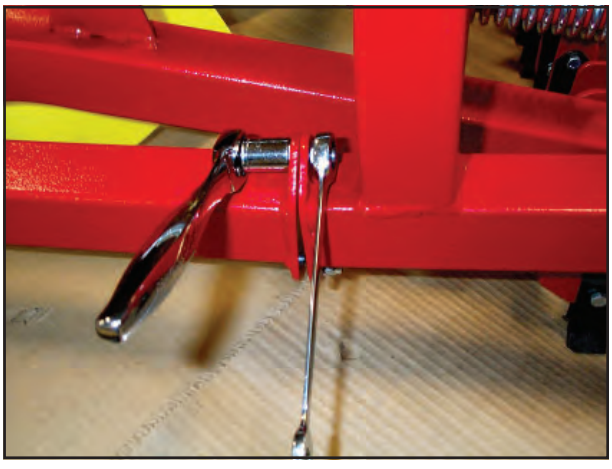
If your groomer did not come with the teeth already mounted, attach the teeth as shown (they are in the parts box along with nuts and bolts). Watch out – these teeth are sharp! Don't worry; there are lots of





teeth, but only two bolts for every two teeth. It was necessary to ship this way for safety and to keep the teeth from damaging the rest of the machine. We have found that it is best to start all of the teeth, bolts and nuts with your fingers. Then put on gloves and tighten all of the bolts and nuts with 1/2" end wrench and 1/2" socket/ratchet – that way if you slip, you will have some protection from the teeth. There will be some play in the bolt holes, so pull the teeth away from the toothbar shaft as you tighten them so they are all positioned the same.

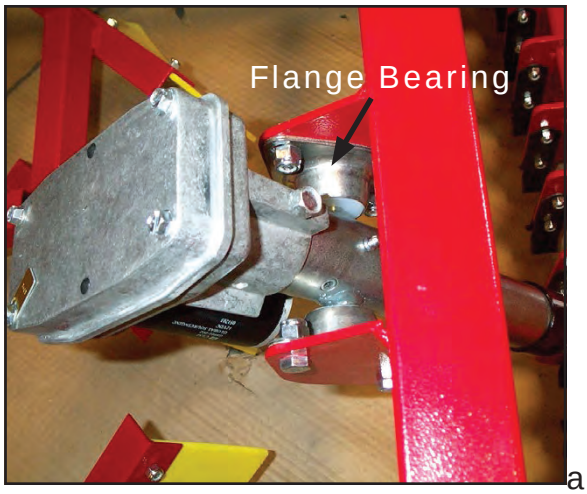
Place the assembled toothbar teeth down on a piece of cardboard (be careful of the sharp teeth!). Bring the front frame member over and place it over the toothbar (wiring guide sleeves should be facing up). Look for the two flange bearings (plates with a short piece of tubing welded on) opposite each other on the inner sides of the front frame. Remove the fasteners and flange bearings. Slip the flange bearings over the ends of the toothbar shaft. Now ease the flange bearings with toothbar back into their original location on the front frame. Attach to the front frame member using the previously removed bolts and nuts with 9/16" wrenches.



Move the rear frame member (with yellow plastic bed and attached comb) into place behind the front frame member. Using the bolts already in place, join the two frame members together and tighten the bolts and nuts with 9/16" wrenches.

Attach the actuator to the center of the tooth bar with the

bolt provided in the actuator clevis. Swing the actuator up into place on the “rollbar” portion of the rear frame, placing the trunnions (short round pegs) on each side of the actuator cylinder into the 1/2” flange bearings (included with actuator) and attach using fasteners provided. NOTE – you may find it helpful to place a block under the toothbar to get it at the right height to line up the holes in the flange bearings. AGAIN – watch those sharp teeth!




Block up the front of the frame under the hitch plate to a height of about 7 1/2”. Check to see that the frame is close to level, and if not, adjust the blocking. Just get it within 1/2”…

## ELECTRICAL CONTROLS

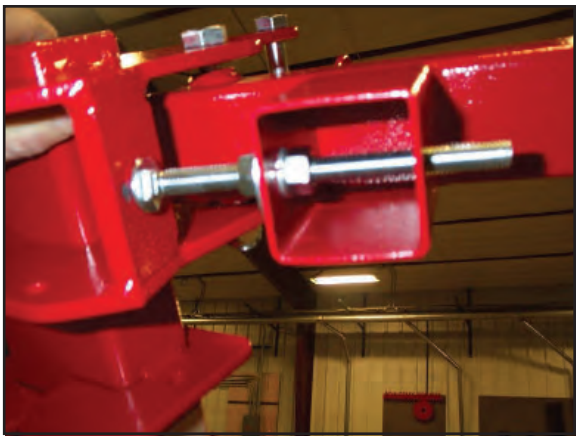
Now is a good time to discuss the electrical controls: Each of the 12v electric actuators will require a simple switch control system to provide electrical power to operate. There are two wires on each actuator, and simply reversing the wires (current direction) will control which direction the actuator runs (up or down). When the actuator reaches the end of its travel in either direction, you will hear a clicking noise that is the built in clutch protection. You can not hurt the actuator by running it to these limits, and in fact, when you operate the actuator when grooming, this clicking noise is your feedback that the actuator is either all the way up or down. However, allowing the clicking to continue for an extended time may result in premature wearing of the clutch protection.

There are many different ways to set up electrical controls for the G2. The route you end up going will likely depend on the beefiness of the electrical system of your tow vehicle. Whatever you choose, these are the basic items needed: one switch (rated 15 amps or better) for each actuator; a 12v DC power source; and a circuit breaker or fuse for your wiring system. Some folks use their snow machine power to run the actuators, or you may use another source. We recommend using a separate power supply, such as one of the 12v portable power packs that come with a set of built in jumper cables, available at any auto parts supply store and most hardware stores. The advantage of a separate power source is that you would be independent of any snow machine power system (which can fail). An independent power source also makes it easy to switch tow vehicles if needed.

## OPTIONAL WIRING KIT

We do offer an optional wiring kit for the G2. It comes in a 2 circuit or 3 circuit version depending on how many actuators you plan on using. The kit mounts behind the hitch of the G2 and is comprised of a battery box housing two 12v batteries and circuit board, heavy duty pendant style control, and wires that run back to the actuators.

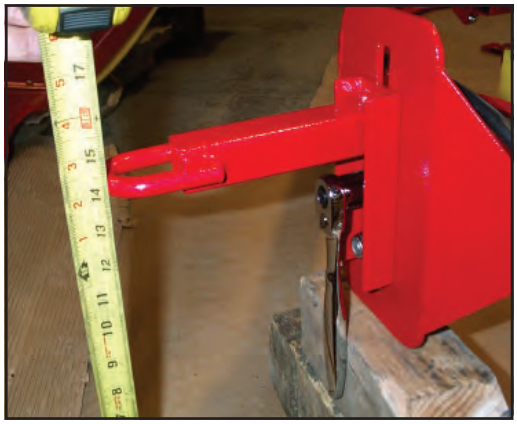
## TOOTHBAR POSITIONING



Using a 12v electrical control source, operate the actuator and run the toothbar down so that the teeth start to contact the floor. If necessary, adjust the carriage bolts on each side (evenly) so that the angle of the toothbar is such that the front teeth come into contact with the floor about 1/8” before the rear teeth resulting in a slight “toeing” effect. Use an adjustable wrench to hold the square portion of the carriage bolt just under the head as you move the nuts on the bolt to make the adjustment. Make sure to retighten the nut and lock washer to keep everything in place when you are satisfied with the adjustment.

## SNOW TRANSFER BLADES

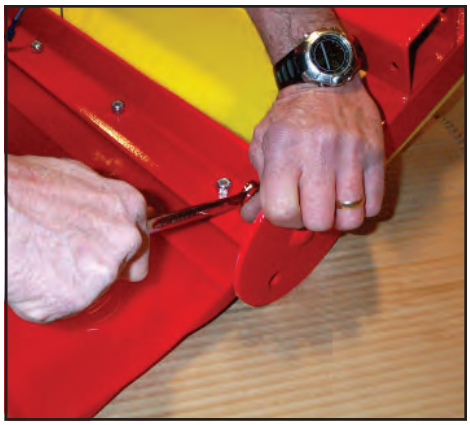
Slightly loosen the clamps that are mounted to the toothbar pivot tube. Attach the snow blade arm assemblies to the clamps with the bolt already located in the bottom of each clamp. NOTE: These assemblies are right and left specific and need to be oriented so that they direct the snow towards the middle of the groomer as shown in the first picture that follows. Adjust the snow transfer blades so that the outside edge of the outer blade is roughly even with the outside of the frame. We like to adjust the clamps so that the blade arms are parallel or slightly below parallel to the main frame. Note that the blade arm assembly is made to pivot up and down in the clamp. This allows the blades to “bounce” up and back down should they come in contact with an obstacle.



## HITCH

With an operator seated on your snow machine, measure the hitch height so that the suspension is compressed as it will be during operation (sometimes this makes as much as a 3” difference). Install the G2 hitch at this height, using the two carriage bolts and nuts. Note that you can place the hitch with the channel pointing up or down, depending on the desired height. The carriage bolts go in from the rear of the plate with the square slot.

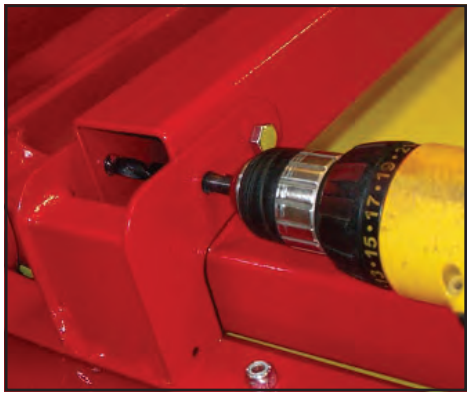
## SKID DISKS



The skid/tracking disks come mounted to your groomer. Check that these disks turn freely. If they do not, adjust the skid disk by hand while holding the nut with a 3/4” wrench. Tighten or loosen to just snug and then back off a bit so the disk rotates freely.

## SIDE FLAPS

Attach the Side Flaps as shown, with the 3/8” bolts thru the outer hole on the flap bracket and the inside hole on the tool bar, using 9/16” wrenches. Do not tighten so far as to impede free movement of the flap up and down. If the detente pin does not freely go in and out of the second set of holes with the flap down, run a 3/8” drill bit through this set of holes to improve the alignment. If you are prone to dropping things in the snow, you may want to consider tying the ring on the pin to a 12” length of nylon cord and tying the other end of this cord to the bolt inside of the tool bar. This will prevent loss of the detente pin.



## CONGRATULATIONS!

This completes the assembly of your G2. If you purchased an optional G2 TrackSetter, please refer to that manual for assembly, installation and operating instructions.

## OPERATION

### Adding Weight to the G2

There is a horizontal post on each of the two rear corners of the G2. Each of these posts accommodate up to (3) 25 lb round Olympic weight lifting plates. In our experience, we have never needed more than (2) 25 lb plates per side, and often require no plates at all. You may purchase these plates locally at a fitness store (much cheaper than us shipping them to you). Your G2 comes with (2) clip pins to hold the weights in place.

This is the recommended way to add weight to the G2. You may want to experiment with various amounts of weight and/or Tracksetter gas spring combinations (see the Tracksetter section) in different conditions on your terrain and with your snow machine. In theory, you get better compaction with more weight, but the trade off is the increased pulling power needed to get up hills.

## SIDE FLAPS

The G2 comes equipped with a 12” side flap on each side of the machine. These can be raised or lowered with a removable pin (see the assembly instructions for a tip on not losing this pin).

The side flaps will bend upward when they hit an obstruction. Normally, you can expect that hitting an obstruction about 2-3” in on the side flaps will not bump the machine enough to disturb tracksetting. Hitting an object up from about 3-6” in from the end of the flap won’t

damage the machine, but may jiggle your tracks. It is not recommended that you hit objects closer than 6” in from the end of the flaps – you could bend the flap arm. If this does happen, you can straighten the arm and reattach. Don’t forget that you can run the side flaps with one up and one down – sometimes a solution when you are trying to renovate close to a set track and not disturb it.

NOTE: You might find that the skid disk may rub a bit on your side flaps when they are in the up position. This is not a problem as the rubbing does not occur on an area of the flap that affects its performance.

## SNOW TRANSFER BLADES

The G2 is equipped with two snow transfer blade arms, each with either (2) or (3) 12” snow transfer blades, depending on whether you have the small or medium G2. These blades are designed to work the snow, moving and stirring it prior to passing through the teeth and on to the compactor bed. The blades each move snow about 8” to the inside of the machine. When working properly, an accumulation of snow is present between the blades and the teeth. A little bit of snow may pass over the teeth, but you should not allow the snow to accumulate to the point that it starts to pass over the compactor bed or outward around the sides of the toothbar. The blades also help fill depressions and aid in leveling.

The amount of snow that accumulates in this area behind the blades and ahead of the teeth is controlled by three factors: the height of the teeth, the height of the blades, and the space between the right and left blade arms. The blade arms are adjusted by loosening the bolts on the clamps and either rotating the blades on the shaft or moving the arms in and out on the shaft or both. We like to adjust the clamp so that the blades go up and down with the toothbar, but slip just enough that we can force them to rotate on the shaft without further loosening the clamp. If you want to move the blades in and out, you will have to loosen and retighten the clamp.

Normally, we like to adjust the blades so that the outside edge is about even with the outside of the frame. We adjust the height so that the blades are just touching the trail surface when the teeth are at the height for the day’s conditions. That means the blades are working snow whether fresh powder or renovating hardpack (they don’t do anything on a first pass over hardpack, but they will help with overlapping passes). Occasionally, we adjust the blades so they pull in snow from the outside (one or both sides). Be very careful when you are operating with the blades outside of the frame. They are not protected by the frame from trees, posts and the like. You will want to experiment with different adjustments and positions in your conditions and terrain.

## TEETH AND TOOTHBAR ADJUSTMENT

The G2 teeth and toothbar are designed to be working in all conditions, from renovating hard pack to grooming deep powder. They are raised and lowered by means of the electric actuator. This actuator will make a clicking sound at either end of its travel. This is normal, and much like the clutch on a cordless drill.

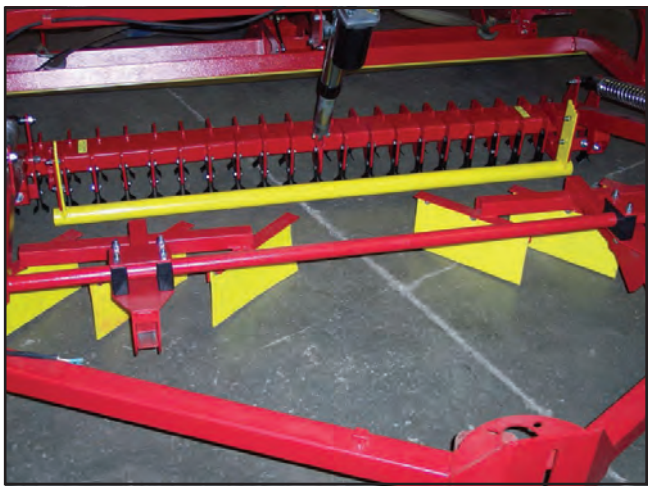
When renovating, the best adjustment is one where the teeth are cutting deep enough to do the job desired, but not so deep as to bog down the snow machine or constantly work the spring trip. Remember, like any tool,

when the job is tough, it is usually more efficient to make multiple light passes than one single slow heavy pass. Also remember that it is neither necessary nor desirable to always renovate as deeply as possible. Often, the best product results from just barely scratching the trail surface.

When working fresh snow, set the teeth as low as possible (without accumulating too much snow – see the Snow Transfer Blade section) so that as much snow as possible gets “worked” by the teeth and toothbar. This often means that the teeth are set right down at the underlying hard trail surface, so that they are doing a good job of leveling the old surface, too. This does not mean that you want to set the teeth so low that you risk “scalping” in low snow conditions, but it is important to remember that the teeth play an important role in working the snow, so use them whenever possible.

## DEPTH CONTROL SYSTEM (DCS)

The G2 depth Control System is a remarkably simple innovation that allows you to achieve a consistent depth of cut regardless of undulations in your terrain. The system allows for vertical adjustment of the depth tube in relation to the G2 teeth. Because the depth tube acts like a “stop”, the G2 teeth are prohibited from ever cutting deeper than the tube is set. Thus, likelihood of incurring scalping or “diving” is greatly reduced if not almost completely removed. Additionally, the depth tube enhances the flow of the snow in front of the toothbar allowing it to flow even more freely across the width of the G2 as well as aiding in removing more air. This enhances surface compaction and side to side levelling. Lastly, consistent depth of cut creates greater efficiency by reducing drag on your tow vehicle.



## DCS USAGE

### Low Snow/Early Season

Adjust the height of the DCS so that the tube bottom sits about 1/4” to 1/2” BELOW the front row of teeth.

Lower the G2 toothbar so that the DCS tube is on the surface of the snow with moderate down pressure. This setting allows considerable leveling and compaction of the trail surface without the risk of scalping off the high spots and mixing dirt, leaves, etc. into your ski trail.

### GOOD SNOW CONDITIONS (3”+ packed base and 0”- 4” new snow)

Set the depth adjustment so the bottom of the DCS tube is 1/2” - 5/8” HIGHER than the front row of teeth.

Lower the G2 toothbar so that the DCS tube is on the surface of the snow with moderate down pressure. This setting allows grooming without over tilling. This is invaluable for when you have to buff out a skate lane but don’t have several hours for the trail to set up properly prior to seeing skiers.

### HARD PACKED SNOW

Set the depth adjustment so the bottom of the DCS tube is 3/8” to 1/2” HIGHER than the front row of teeth (the harder the snow the less the depth).

While in motion, lower the G2 toothbar so that the DCS tube is on the surface of the snow with considerable down pressure. You can usually clean up your skate lane on this setting without having to make multiple passes.

### ICE

Set the depth adjustment so that the DCS tube is only about 1/4” HIGHER than the front row of teeth.

While in motion, lower the G2 toothbar so that the DCS tube is on the surface of the ice. Adjust the down

pressure so that you are not experiencing frequent tripping of the toothbar. Make a single pass over your entire trail to establish better traction. The next pass you can increase the tooth depth a bit (set the depth adjustment so the bar is about 3/8" ABOVE the front row of teeth). The depth of the ice will determine if more than two grooming passes are needed to achieve the desired surface softness.

## SKID DISKS

The skid disks are a nifty feature that serve a number of purposes. First, the disks keep the implement from sliding sideways on a sidehill. They also allow the machine to roll at **creeping** speeds over parking lots, road crossings, bare spots and obstructions while protecting the comb. Lastly, they make handling the G2 a breeze – imagine how much easier it is to move the implement around by hand when it comes with its own set of "wheels. " **CAUTION**: The tracking disks are **NOT** intended to constantly carry the weight load of the G2. If you are running in low snow conditions where the disks are constantly banging the ground and receiving a shock load at grooming speeds, they will destroy themselves pretty quickly. The answer for this condition is simple: Take them off until the snow is deep enough that the disks are running on snow!

## TRACKSETTER OPERATION

See the G2 TrackSetter Assembly and Operation Manual for information specific to the TrackSetter.

## CARE & MAINTENANCE

The G2 will last many years with very simple maintenance procedures. First of all, protect it from ultraviolet (sun) whenever you are not using it. Keeping your groomer under a tarp both during the winter season and while stored in the off season is good practice. The tarp will allow the operator to quickly shake off snow that has accumulated. Clean off any snow or slush after each use, before it freezes. Clean any debris including snow and ice out of the teeth, too (groomer and Tracksetter). Block up the rear of the machine (under the skid disks) enough so that the comb is out of the snow, and clean off the comb with a brush. **Raise all actuators to their fully retracted position and then LOWER partway.**

Go over the machine often (at least monthly) and check for loose or missing bolts and nuts. Apply some grease to the skid disk sleeve zirts (older models) to keep the skid disk shafts and bearings moving smoothly. Nothing special for grease – a low temperature automotive grease is fine. There is also a grease zirt on each actuator. For this component, extend the actuator shaft at least 25% prior to applying grease so that you expose the screw threads to the new grease. Additionally, our actuator manufacturer recommends pulling the cap off the gear box every six months and repacking it with grease. With our seasonal application, doing this at the start or end of a season should be reasonable.

The electrical connectors will hold up better if a light film of dielectric grease (available at an auto parts store) is applied and they are kept clean. Leave the grease off if you are going to let them drag in the dirt… Double check all of the cables and connectors and make sure the cable is not starting to pull out.

Each season, either start or end, it is a good idea to go over the machine and touch up any dings or chips that might rust. The teeth are bare steel and will certainly rust a bit, but this will in no way impede operation (the rust comes right off of the working surface the first time you use the machine). If you cannot stand the idea of the non-working portion of your teeth looking rusty, you can take a can of spray paint to the teeth assembled on the toothbar prior to using the machine, and annually when you put it away for the season. The end of the season is also a good time to check for worn or broken skid disks and TrackSetter side plates. If the height of your TrackSetter sideplates varies from front to back due to wearing, it is probably time to get a new set.

Teeth can easily be sharpened with a 4" angle grinder. Just follow the original bevel angle. Because the teeth are also easily replaceable, it is probably not worth spending too much time on badly damaged teeth. Just call us for replacements.

## OPTIONAL EQUIPMENT

We believe that the G2 is the most versatile lightweight grooming implement around. Our objective in designing this unit was to create a groomer that could tackle whatever kind of snow Mother Nature drops our way. As such, we regularly come out with new accessories that will further enhance the versatility of the G2. Please refer to our website: www.tiddtech.com or call us to find out what accessory items are currently available.

## MORE INFORMATION

Stay tuned to our website, www.tiddtech.com, for updates and information specific to using the G2, and XC trail grooming in general. Please let us know when you discover something that you think other trail groomers would appreciate knowing. We like your feedback!

## LIMITED WARRANTY FOR TIDD TECH PRODUCTS BY TIDD TECH

Products from Tidd Tech carry a one year warranty. If the equipment fails due to a defect in materials or workmanship within one year from the date of purchase, Tidd Tech will repair or replace the part free of charge.

This warranty is not transferable and does not cover damage resulting from anything other than defects in material or workmanship. This warranty does not cover damage caused by unreasonable use, nor replacement of non-defective parts that may wear and need to be replaced within the warranty period.

For warranty service you must, at your own expense, arrange to deliver or ship the product or part(s) for warranty repairs to Tidd Tech at the address below.

This limited warranty is in lieu of all other express warranties. Tidd Tech shall not be liable for any special, incidental or consequential damages.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

TIDD TECH

1100 Roundhouse Road • Spooner, WI 54801
Phone: 1-715-635-3220
Email: ttech@tiddtech.com
www.tiddtech.com