

SAFETY AND OPERATING PROCEDURES FOR THE TnT5 WITH ELECTRIC ACTURATOR ON CUTTING BED

To achieve optimum performance from your Advance Track Setting Systems (ATS) TnT5 and to ensure your personal safety and the safety of others, please follow the recommended safety and operating procedures.

SAFETY FIRST!

- Always conduct a pre-use hazard assessment and ensure appropriate controls are considered before grooming.
- Always be aware and respectful of all trail users while grooming and that you may not be able to control their behaviors. Expect the unexpected.
- Do not allow riders on this implement while in tow.
- This equipment is intended for grooming snow-covered surfaces only.
- Be sure the surface to be groomed is free from obstacles that may interfere with the various grooming procedures such as rocks, tree trunks, tree stumps, protruding pipes, culverts, posts or any steel markers.
- Use proper body mechanics when loading, unloading or maneuvering any ATS implement.
- Always get assistance to load or unload the TnT5 to/from truck or trailer.
- Reduce risk of strain or slipping when pulling on the TnT5 loaded with weights manually by using two people or removing the weights or snow first.
- Do not place weights on the TnT5 in a manner where one or more could fall off.
- It is recommended to use weights with a one and one quarter inch hole in them where they can easily slide over the weight pin.
- Be aware of pinch points when adding or removing weights.
- Always remove any weights before attempting to lift onto its side for storage.
- Use only the supplied flat plate or ball style hitch connector when attaching the TnT5 to your towing vehicle.

ASSEMBLING THE TnT5 AFTER SHIPMENT (if shipped disassembled)

- The TnT5 may require reassembly after receipt and unpacking. The procedure is straight forward.
- **Always utilize two persons during assembly as the components are awkward and may be considered too heavy for one person to handle and position. It will also prevent damage to the components.**
- Tools required: soft faced hammer, 7/16" combination wrench and 7/16" socket and ratchet or light duty battery powered impact gun.
- Remove the tie down straps and carefully lift the TnT5 Track Setter sub-assembly off of the pallet.
- Remove the tie down straps and carefully lift the TnT5 Renovating Leveler off of the pallet. The Tow Bar is located under the Renovating Leveler.

INSTALLING TRACKSETTER

- Remove the 3/8" nuts from the TNT Tracksetter Mounting Clamp and remove the Back Plate. **Keep the Rollers on the bolts.** Tools required: 7/16" combination wrench and 7/16" socket and ratchet or light duty battery powered impact gun.
- The Tracksetter was shipped in its raised position



- **For safety, ease and efficiency, it is strongly recommended to use two people for this task.** Align the TnT Tracksetter Mounting Clamp Front Plate and Rollers with the Mounting Beam then slip over the Rollers over top of the horizontal Mounting Beam. Align and reinstall the Back Plate then secure with the 3/8" nuts and washers.



- Position the TnT Tracksetter Mounting Clamp where you want it along the Mounting Beam and secure by tightening the 3/8" nut/bolt combinations. Once installed, it should look like this;



- You may position the TNT Tracksetter anywhere along the beam. It is recommended

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however to allow approximately 20" from the outside edge of the Renovating Leveler as this allows a packed surface for pole planting.

- Connect the electrical conductor quick connect of the Actuator to the cable leading to the Junction Box. Tracksetter conductor cable is marked



INSTALLING TOW BAR

- For ease and efficiency, it is strongly recommended to use two people for this task. Install the Tow Bar with supplied lynch pins. Ensure washers are installed. Tools required: soft faced hammer.



TOW BAR LOCK

- The Tow Bar Lock was initially designed for use with the Wheel Kit. However, it has been determined through use to be useful in making the Renovating Leveller Tow Bar a rigid connection with the tow machine. This helps to keep the Renovating Leveler level during operation and preventing "nose diving" effect when the renovating teeth are engaged in hard packed snow. It also helps when breaking through snow drifts.
- It is recommended to lock the tow bar when using the Renovating Leveler with the Tow Bar locked rigidly with the Top Link. It is simply pinned to the Renovating Leveler frame with a lynch pin. See below photo;



- The height of the Tow Bar connection that engages with the tow machine can be adjusted by loosening the locknut and rotating the center section of the Top Link (that is the actual name) clockwise or counter clockwise. Adjust the length until the Renovating Leveler is about level. Then snug up the lock nut. See below photo.



- When the Renovating Leveler is not in use, the Tow Bar can be unpinned from Renovating Leveler frame and flipped back on the tow bar thus allowing the Tow Bar to float or be raised out of the way for storage. See below photo;



ELECTRICAL CONTROL CONNECTION FOR THE ACTUATORS

- **This TnT5 was ordered based on the towing machine having electrical**

control switches for activating the extension and retraction of the actuators. Customer will have to provide power and controls to the TnT5. Conductor cables for Tracksetter and Cutting Bed on the TnT5 have been identified for Customer to connect to.

- This TnT5 was not supplied with an ATS Pendant Control that will have to be connected to the terminals on the towing machine battery. The yellow conductor cable goes to the battery (power source). Install the supplied in-line fuse for protection in the event of an electrical short or similar.



- ATS has labelled the actuator control pendant accordingly for simplicity.
- The black conductor goes to the rear of the tow machine to connect to the TnT5. It is equipped with a 4-pin trailer connector. The female part of the trailer can be mounted on the towing machine bumper. Then the TnT5 can be unhooked and hooked easily from the towing machine.



- If any modifications to the wiring are to be made by the Customer, follow the attached 12V DC linear actuator wiring diagram in the instruction manual. **Failure to do so may cause damage to the actuator and void the warranty.**
 - It is recommended to solder all connections
 - It is recommended to heat shrink connections
 - It is recommended the system has a 20A fusible link.
- Some towing machines may have a spare 12V DC terminal/fuse available while other machines will require connections directly to the 12V battery.
- Ensure the conductor cable has enough length to allow for turning.
- Ensure the conductor cable is secured to prevent being caught on moving parts or dragged on the ground.
- Use tie wraps to secure excess cable to Tow Bar.

OPERATING THE TnT5

The TnT5 is essentially a combination of the ATS Renovating Leveler and Electrically Actuated version of the ATS Light Weight Track Setter. This TnT5 has an Electrically Actuated Renovating Cutting Bed.

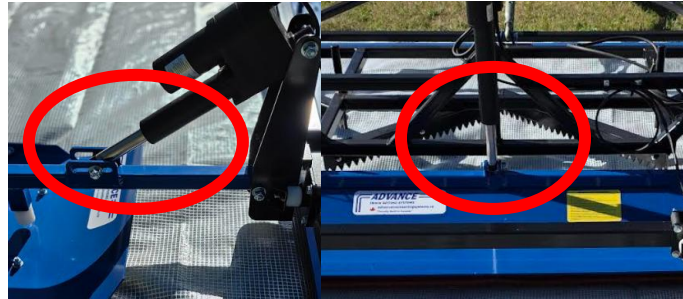
There are critical operating requirements/procedures that must be followed to prevent damage to the TnT5 and get satisfactory grooming and track setting results.

- **ALWAYS LIFT THE TnT5 TRACK SETTER UP BEFORE MAKING ANY SHARP TURNS**
- **ALWAYS LIFT THE TnT5 TRACK SETTER UP BEFORE PROCEEDING THROUGH AN DEEP DITCHES**
- **ALWAYS LIFT THE TnT5 TRACK SETTER AND RENOVATING CUTTING BED BEFORE BACKING THE TnT5 UP**
- **ALWAYS LIFT THE TnT5 TRACK SETTER UP FULLY WHEN JUST CARRYING OUT LEVELING AND RENOVATING OPERATIONS**

- **ALWAYS LIFT THE TnT5 TRACK SETTER AND RENOVATING CUTTER BED UP FULLY BEFORE CROSSING GRAVELLED, ASPHALT, CONCRETE**

ROADS OR SIDEWALKS.

- **ALWAYS PROTECT THE ELECTRIC ACTUATORS FROM BEING STRUCK, BENT OR SCRATCHED.**



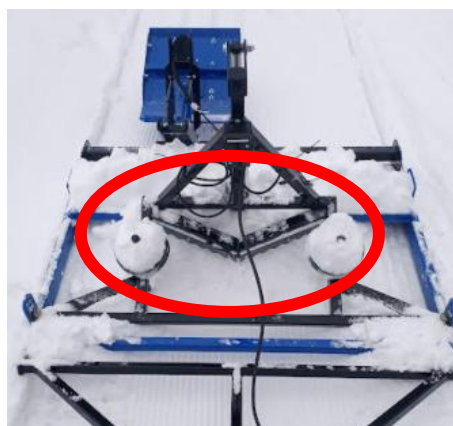
- **DO NOT OPERATE THE TnT5 IN TEMPERATURES LOWER THAN -26 DEG.C AS DAMAGE TO LINEAR ACTUATOR MAY OCCUR.**
- **ALWAYS DISCONNECT THE ELECTRICAL CONDUCTOR TO THE TnT5 WHEN UNHOOKING THE FROM THE TOWING MACHINE.**
- **THE RENOVATING LEVELER MAY REQUIRE SUPPLEMENTARY WEIGHTS ADDED TO BALANCE THE UNIT AND APPLY DOWNWARD FORCE ON THE CUTTING BED.**

RENOVATING AND LEVELING (please note at time of writing, there was no snow yet on the ground so historical photos/mockups had to be used to help convey information)

- Hook the TnT5 up to the towing machine.
- Hook up the electrical conductor
- The Renovating Leveler component of the TnT5 is designed to pack new snow or renovate the existing base by either grinding new snow into the base to add air (decrease density) or remove air (increase density).
- Under very deep snow conditions (>3") you will have to prepack the new snow with just the towing vehicle or a roller.
- When packing fresh new snow (<3"), the renovator cutting bed can be in a raised position. There is no need to add additional resistance created by the cutting teeth.



- When packing, and renovating to “mechanically age” new snow while towing, lower the renovator sufficiently enough to scratch the hard pack base. If there is too much resistance, raise the cutting bed to a height where towing is possible.
- To mix new snow into the base or tear up an older base to renovate, lower the cutting bed only as far as needed using both front mounts and actuator. Multiple passes maybe required and will depend on your desired results.
- For optimal leveling and renovating results when working hard packed or icy snow, the Renovating Leveler may require additional weight/mass added on the front weight pins. Allowing snow to accumulate on top of pan adds weight/mass as well.
- Ensure the power cable is connected to the 12 V DC supply on the towing machine.
- Using the control switch on the towing machine or ATS Pendant Control;
 - Lower the Raise or Lower the Renovator with momentary toggle switch



- Maximum recommended towing speed for packing and leveling is 5 to 10 kpm. For best results, the slower the better.

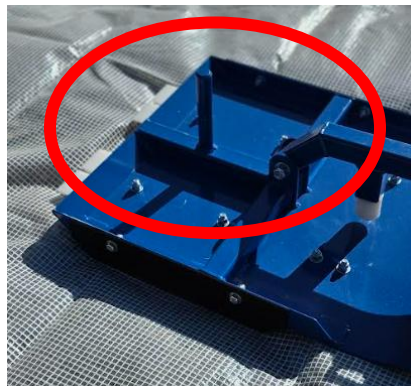


SETTING TRACKS

- The TnT5 Tracksetter gets its track setting compaction capability (downward force) by the addition of weights onto rear of the Tracksetter pan. The weight can be in the form of barbell plates placed over the pin or sand/rock chip bags set on each side of the Tracksetter pan. Depending on the relative hardness of the compacted snow covered surface the amount of weight required can vary. 50 to 100 lbs of weight is usually sufficient.



- The actuator has plenty of power to raise the Tracksetter and supplementary weight. You may observe the front of the Renovating Leveler wanting to raise.



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- Under optimal snow conditions, where the packed base is at least 2-3 inches deep, lower the TnT5 Track Setter onto the snow surface until the actuator reaches the end of its stroke. When it is at the end of its stroke, the Tracksetter can float to accommodate the terrain. The Track setter also has the ability to move laterally when turning. The Tracksetter will track in a straight line as it's has Skag Plates that act as guides.
- **Caution: for packed bases less than 2-3 inches, the Pre-cutters under the Tracksetter Pan may dig up grass and roots. Damage to the equipment and ground may occur.**
- Ensure the power cable is connected to the 12 V DC supply on the towing machine.
- Using the control switch on the towing machine
 - Lower the Track Setter with momentary toggle switch
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- Tow at slow speeds (**no faster than 5 to 8 km per hour**) to allow the TnT5 Track Setter to compress solid, well-formed tracks.



- It is recommended to leave the new tracks settle and solidify for at least 2 hours prior to skiing on them if at all possible.

MAINTENANCE AND STORAGE

- Do not use sharp tools to remove any buildup of ice on the TnT5 Renovating Leveler or Track Setter. Gently tap ice with a hammer or piece of wood.
- If desired, remove snow from the pan before storing the renovating leveler on its side or off the snow.
- Place wooden blocks under runners to prevent sticking to snow.
- Store in a dry area to help prevent rusting over time if possible.
- It is recommended that the implement be tarped or shedded for long term off-season storage.

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- Ensure the polyurethane comb and track shoes are protected from ultraviolet rays during long term storage.
- Check the wiring connections regularly
- Ensure tow bar and cutting bed retaining pins are in place and secured with lynch pins.
- Lubricate the pivot points on the TnT5 Track Setter and Renovating Leveler monthly during grooming season with a moly spray or silicone lubricant.