DAKOTA™ TURF CONTRACTOR OWNER / OPERATOR'S MANUAL

This manual is to be considered a permanent part of this Turf Contractor and must remain with the Turf Contractor at all times. Replacement manuals may be ordered through an Authorized Dakota dealer.

p/n 22846 Rev 01

WARRANTY

DAKOTA PEAT & EQUIPMENT is hereinafter called DAKOTA™.

(A) Warranty.

DAKOTA™ warrants all products manufactured by it to be free from defects in material and manufactured at the time of shipment and for twelve (12) months from date of delivery to customer. DAKOTA™ will furnish to the dealer, without charge, f.o.b. East Grand Forks, Minnesota, replacements for such parts as DAKOTA™ finds to have been defective at the time of shipment; or at DAKOTA™'s option, will make or authorize repairs to such parts, provided that, upon request, such parts are returned, transportation prepaid, to the factory at East Grand Forks, Minnesota.

This warranty shall not apply to any product that has been subjected to misuse, misapplication, neglect (including but not limited to improper maintenance), accident, improper installation, modification (including but not limited to use of unauthorized parts or attachments), adjustment, or repair. Engines, motors, and any accessories furnished with DAKOTA™'s products, but which are not manufactured by DAKOTA™, are not warranted by DAKOTA™ but are sold only with the express warranty, if any, of the manufacturers thereof. THE FOREGOING IS IN LIEU OF ALL OTHER WARRANTIES, WHETHER EXPRESS OR IMPLIED (INCLUDING THOSE OF MERCHANTABILITY AND FITNESS OF ANY PRODUCT FOR A PARTICULAR PURPOSE), AND OF ANY OTHER OBLIGATION OF LIABILITY ON THE PART OF DAKOTA.

(B) Limitation of Liability.

It is expressly understood that DAKOTA™'s liability for its products, whether due to breach of warranty, negligence, strict liability, or otherwise, is limited to the furnishing of such replacement parts, and DAKOTA™ will not be liable for any other injury, loss, damage, or expense, whether direct or consequential, including but not limited to loss of use, income, profit, or production, or increased cost of operation, or spoilage of or damage to material, arising in connection with the sale, installation, use, or inability to use, or the repair or replacement of, DAKOTA™'s products.

Any operation expressly prohibited in the operating instructions or manuals furnished with the machine, or any adjustment, or assembly procedure not recommended or authorized in the operating or service instructions shall void such warranty.

(C) Registration.

THIS WARRANTY IS VOID UNLESS YOUR DEALER COMPLETED AND RETURNED A "NEW PRODUCT REGISTRATION AND WARRANTY" CARD TO DAKOTA™ WITHIN 30 DAYS AFTER DELIVERY OF UNIT TO CUSTOMER.

PLEASE COMPLETE AND RETURN THE NEW PRODUCT REGISTRATION AND WARRANTY CARD, LOCATED AT THE END OF THIS MANUAL, IF YOU FEEL YOUR DEALER MAY NOT HAVE COMPLETED ONE FOR YOU AT THE TIME OF DELIVERY.

No Parts shall be returned under warranty unless a Return Goods Authorization (RGA) is obtained from DAKOTA™.

ALWAYS GIVE PART NAME, NUMBER AND MACHINE SERIAL NUMBER WHEN ORDERING PARTS.

NOTE: DAKOTA reserves the right to make changes to design or construction without obligation to incorporate such changes in equipment previously sold.

The tire manufacturer's warranty supplied with your Turf Contractor may not apply outside the U.S.

YOUR DEALER IS RESPONSIBLE FOR COMPLETION OF THE PRODUCT REGISTRATION CARD AND RETURNING IT TO DAKOTA *AS SOON AS YOU TAKE DELIVERY OF YOUR TURF CONTRACTOR. PLEASE REFER TO THE "WARRANTY" SECTION FOR ADDITIONAL INFORMATION.*

D) Parts, Service, and Warranty

Contact your local dealer for parts, service, and warranty.

Warranty will be denied if the registration and warranty card is not sent in within 30 days after delivery.

TABLE OF CONTENTS

CE DECLARATION OF CONFORMITY

Manufacturer's Name: DAKOTA, Inc.
Manufacturer's Address: 833 Gateway Drive N.E.
East Grand Forks, Minnesota 56721

Declares that the machinery described below complies with applicable essential health and safety requirements of Parts 1 and 4 and related clauses of Part 3 of Annex 1 of the Machinery Directive 98/37/EC.

Description: DAKOTA TURF CONTRACTOR 525/550

Model Numbers: Type 525/550 CONTRACTOR

Options: 2 or 4 Electric Brakes, Turf Tires

Serial Number: _____

The following standards have either been referred to or been complied with, in part or in full, as relevant:

EN 292 - 2	Machinery Safety -	Basic concepts, general principals for design – Part 2: Technical principals and specifications.
EN 294	Machinery Safety -	Safety distances to prevent danger zones being reached by the upper limbs.
EN 811	Machinery Safety -	Safety distances to prevent danger zones being reached by the lower limbs.
EN 953	Machinery Safety -	General requirements for the design and construction of guards.
EN 954-1	Machinery Safety -	Safety Related Parts of Control Systems – Part 1: General Principals for Design.
EN 60204-1	Machinery Safety -	Electrical Equipment of Machines.
EN60947-3-1	Electrical Safety -	Switches
SAE J1128	Electrical Safety-	Wire
ASAE	Machine Safety-	Tip Over Testing
ASAE	Machine Safety-	Brake Testing of Trailers

Full Name of responsible person.

Kevin Pierce **Position:** ***President, DAKOTA, Inc.***

Signature:_____ **Date:**_____

Full Name of Authorized European Representative.

_____ (Typed). **Position** _____ (Typed).

Signature:_____ **Date:**_____

Original must remain with machine owner. EU representative (Dealer) must fax or send fully completed copy to DAKOTA, Inc. Fax number is 218-773-0701.

YOUR DEALER IS RESPONSIBLE FOR COMPLETION OF THE NEW PRODUCT REGISTRATION CARD AND RETURNING IT TO* DAKOTA™ *AS SOON AS YOU TAKE DELIVERY OF YOUR MACHINE. PLEASE REFER TO THE "WARRANTY" SECTION FOR ADDITIONAL INFORMATION.

IF YOU FEEL THAT A NEW PRODUCT REGISTRATION AND WARRANTY CARD WAS NOT COMPLETED AND MAILED IN, PLEASE COMPLETE THE WARRANTY CARD LOCATED AT THE BACK OF THIS MANUAL WITHIN 30 DAYS OF ACCEPTING DELIVERY.

DAKOTA PEAT & EQUIPMENT
833 Gateway Drive NE
East Grand Forks, Minnesota 56721
United States of America

SPECIFICATIONS

ITEM	525	550
Overall Dimensions		
Height	59.5 in.	62 in.
Length	140 in.	172 in.
Width	79 in.	96 in.
Maximum Weight (GVW)	6,940 lbs	13,080 lbs
Shipping Weight	1,940 lbs	3,080 lbs
Box Dimensions		
Width	55 in.	84 in.
Length	84.5 in.	120 in.
Side Height	16 in.	16 in.
Floor Height	32.5 in.	38 in.
Capacity	2 Cubic Yards	4 Cubic Yards
Weight (Max)	5,000 lbs	10,000 lbs
Maximum Transport Speed		
Empty	15 mph or 25 kph (Not for highway use)	
Loaded	Dependent on terrain conditions for safe operation.	
Tires		
Size	26.5x14x12-4	33x16x16.1
Brand	Dakota Turf Tire	Dakota Turf Tire
Ply	4 ply	4 ply
Pressure Range	18 to 35 psi	18 to 35 psi
Maximum Pressure	35 psi	35 psi

NOTE: Specifications subject to change without notice.

MODEL #_____ SERIAL #_____

SAFE OPERATIONAL PRACTICES

BEFORE OPERATING

Read Operator's Manuals

Prior to operating the Turf Contractor, read and understand the contents of this Operator's Manual and the Operator's manual of vehicle either towing or carrying the Turf Contractor. Become familiar with all control functions and know how to turn the vehicle off and stop effectively.

REPLACEMENT MANUAL

A replacement manual is available by sending complete Model and Serial Number to

Dakota, Inc.
833 Gateway Drive, North East
East Grand Forks, Minnesota 56721

Unauthorized Operators

Never allow children to operate the Turf Contractor. Do not allow anyone to operate the Turf Contractor without proper instruction or training. Only trained and authorized persons should operate the Turf Contractor.

The operator is defined as being the person responsible for supervising the operation of the Turf Contractor and driving the vehicle that tows it.

Drugs And Alcohol

Never operate the Turf Contractor when under the influence of drugs or alcohol.

Shields And Safety Devices

Keep all shields, guards, and safety devices in place. If a shield, guard, or safety device is damaged, replace or repair it prior to operating the Turf Contractor. If a decal is illegible, order and install a new one.

Loose Fasteners And Fittings

Although the Turf Contractor has been designed so that components will not come loose during normal operation of the Turf Contractor, always check the Turf Contractor prior to start up and after each use for loose fasteners, fittings, connectors and other components. Tighten, repair, or replace as necessary. This includes electrical and hydraulic system components, also. Only use original **DAKOTA** replacement parts.

Modifications To Turf Contractor

Do not modify the Turf Contractor in any way. Modifying the Turf Contractor will void the warranty.

Safe Attire

Do not operate the Turf Contractor while wearing sandals, tennis shoes, sneakers, or shorts. Always wear long pants and substantial shoes. Do not wear loose fitting clothing which could get caught in control switches or moving parts. The wearing of safety glasses, safety shoes, hearing protection, and a hard hat is recommended and may be required by some ordinances and insurance regulations.

WHILE OPERATING

Vehicle Instructions

Turf Contractors can be towed by most utility tractors with adequate brakes and a drawbar hitch capacity to handle a 14500 lb (6580 Kg) trailer. Refer to your Tractor Operator's Manual for towing capacities, instructions, and precautions.

WARNING

Do not attempt to tow a loaded Turf Contractor with a light utility vehicle or runabout. Never tow a Turf Contractor with a vehicle that does not have the brakes, suspension, or frame strength to handle the load.

When operating a Turf Contractor equipped with electric brakes on hilly terrain, it is recommended to use the Turf Contractor's brakes in conjunction with the tow vehicle's brakes. The fully loaded weight of the Turf Contractor may be beyond the capacity of the just the tow vehicle's brakes.

Confined Space Operation

Do not run the vehicle's engine in a confined area without sufficient ventilation. Exhaust fumes are hazardous and could possibly be deadly.

Danger Zones

The following danger zones exist in and around the Turf Contractor:

1. A crush hazard exists in any area beneath the Turf Contractor.
2. A hydraulic jet puncture hazard and hot oil burn hazard exists in any area within 6 feet (2 m) of a hydraulic hose due to the possibility of a puncture in a hose.
3. A crush hazard exists in the area around the tongue and the area between the box and frame.
4. A crush hazard exists around the perimeter of the Turf Contractor if operated on a slope exceeding either the vehicle's or Turf Contractor's recommended maximum speed and operational angle (20° side to side and 26° front to back).
5. A potential entrapment hazard exists within the box.
6. A crush hazard exists at the rear and an impact hazard exists at the front of the Turf Contractor during loading or uncoupling if the load is not evenly distributed and balanced in front of the wheels due to the rear tipping down. Never load the Turf Contractor when it is uncoupled from its tow vehicle. Never uncouple the Turf Contractor when there is a load in the box. There is potential of the Turf Contractor tipping backwards which could cause damage to the Turf Contractor or injury or even death.
7. A crush hazard exists due to the Turf Contractor rolling if uncoupled from its tow vehicle. Always solidly chock both the front and rear of the outermost wheels before uncoupling from the tow vehicle.
8. A crush hazard exists beneath the hopper when it is raised to do maintenance on the vehicle. Always engage the Safety Bar to secure the box in the raised position. Never use the Safety Bar to support a loaded box.

For these reasons, the only person that is allowed to be near a loaded or operating Turf Contractor is the operator seated in the driver's position of the vehicle.

You, the operator in control, are responsible for using good, safe judgment in the operation of the Turf Contractor and ensuring that no one will be injured by it's operation.

Passengers

Never carry passengers on this Turf Contractor. The Turf Contractor is not designed to carry anybody.

Drive Carefully

Using the Turf Contractor demands attention to operation. Failure to operate the Turf Contractor safely may result in an accident, tip over, or serious injury or death. To prevent tipping or loss of control:

1. Never exceed the tow vehicle's load capacity. One of the most dangerous operations associated with the Turf Contractor is attempting to haul or tow it with an undersized vehicle due to the vehicle's limited traction and braking capacity. Exceeding the vehicle's capacity may result in loss of control, damage, serious injury, or even death. Refer to your vehicle's manual for load capacities and restrictions.
2. Use extreme caution, reduce speed, and maintain a safe distance when operating around sand traps, ditches, creeks, trees, ramps, unfamiliar areas, or other hazards.
3. Be alert for severe ground depressions, holes, or other hidden hazards. If an outside wheel drops into a hole, it may cause the Turf Contractor to tip over.
4. Use caution when operating the Turf Contractor on slopes. Normally travel straight up or down slopes. Shift the vehicle into a lower gear before attempting to either go up or down a slope.
5. Avoid making turns or dumping the box on slopes.
6. Reduce speed when making turns.
7. Use extra caution when operating on wet surfaces, at high speeds, or with a full load. Stopping time increases with a full load.

NOTE: A worst-case control scenario exists when the Turf Contractor is being driven down a wet slope at an angle to the slope and the operator is attempting to turn and/or brake. Loss of control could result in an accident, tip over and serious injury or death.

8. Avoid sudden stops and starts. Do not go from forward to reverse or from reverse to forward without coming to a complete stop.
9. Do not attempt sharp turns or abrupt maneuvers or other unsafe driving actions which may cause loss of control.
10. If the vehicle's engine stalls or loses headway on a hill, never attempt to turn the vehicle around. Always back straight down the hill in reverse. Never back down a hill in neutral or with the clutch depressed using only the brakes.
11. Make sure the area is clear prior to backing up. Back up slowly as the visibility behind the Turf Contractor box is limited.
12. Always avoid low hanging objects such as tree limbs, doorways, door jambs, power lines, etc. Ensure there is enough clearance for both you and the machine(s) you are operating.
13. Always avoid objects, which may "hook" the wheels such as trees, posts, etc. Be constantly aware of the width and turning radius of the Turf Contractor. Failure to do so may result in damage to the vehicle or Turf Contractor.
14. Watch out for traffic when near or crossing roads. Always yield the right of way to pedestrians and other vehicles. This vehicle was not designed for travel on streets or highways. Obey all traffic rules and regulations pertaining to controlled and uncontrolled traffic areas.
15. Limit load size if working on steep or rough terrain.
16. Do not pull the Turf Contractor with the box raised.
17. STOP and ask your supervisor if you are ever unsure about safe operation.

LOADING

WARNING

Never load the Turf Contractor when it is uncoupled from its tow vehicle.

When loading material, distribute the load evenly to keep it from shifting. Operate the Turf Contractor with extra care when the box is full of heavy material.

Slowly fill the box over a few seconds of time with the loader bucket as low as possible. Avoid "dropping" the load into the box from an excessively high loader bucket. This is safer in terms of maintaining a balanced load and will also extend the life of the Turf Contractor.

Do not exceed the load capacity of the Turf Contractor or vehicle. Refer to the Specifications section to determine the maximum load capacity of the Turf Contractor.

Never add sideboards to the box to increase its capacity for dense or heavy materials. The additional weight will increase the chance of tipping or rolling over. The box capacity of the may be increased for low-density materials such as peat.

GENERAL INFORMATION

Owners and operating personnel must thoroughly read and understand this manual in order to properly operate, lubricate, and maintain the Turf Contractor. Failure to do so could result in personal injury or equipment damage. Refer to this manual as frequently as necessary.

LABELING AND TERMINOLOGY

The Turf Contractor and this manual use the following terms and symbols to bring attention to the presence of hazards of various risk levels and important information concerning the use and maintenance of the Turf Contractor.

WARNING: Indicates presence of a hazard which can cause severe personal injury, death, or substantial property damage if ignored.

CAUTION: Indicates presence of a hazard which will or can cause minor personal injury or property damage if ignored.

NOTE: Indicates supplementary information worthy of particular attention relating to installation, operation, or maintenance of the Turf Contractor but is not related to a hazardous condition.

Be sure to follow all instructions and related precautions as they are meant for your safety and protection.

This manual is considered a permanent part of the Turf Contractor and must remain with the Turf Contractor when sold.

Use only the correct replacement parts and fasteners. Right and left-hand sides are determined by facing in the direction of forward travel.

Record the model and serial numbers in the specifications section so they are readily available when contacting a dealer for parts or service. Many owners employ the dealer's Service Department for all work other than routine care, cleaning, and adjustments. We strongly urge the use of genuine **DAKOTA** parts to protect the investment in your Turf Contractor.

Our warranty is provided to support customers who operate and maintain their equipment as described in this manual. This warranty provides you the assurance that **DAKOTA** will back its products where defects appear within the warranty period. Should the equipment be abused, or modified to change its performance beyond the original factory specifications, the warranty will become void and field improvements will be denied.

AUTHORIZED MAINTENANCE

Perform only the maintenance described in this manual that you are qualified to perform. If major repairs are ever needed or assistance is desired, contact an Authorized **DAKOTA** Dealer for their professional service.

UNLOAD BOX PRIOR TO DOING MAINTENANCE

Any material in the box must be removed prior to performing maintenance on or beneath the Turf Contractor.

POWER OFF MAINTENANCE AND ADJUSTMENTS

All maintenance and adjustments to the Turf Contractor must be made with the vehicle's parking brakes set and engine off. The tow vehicle must remain coupled to the Turf Contractor. Failure to do so could result in injury or even death.

TIRES

Check the tires frequently for cracks, checks, and proper inflation. An under inflated tire poses a significant tipping and braking hazard and may cause an accident, injury and death. Do not attempt to jack or perform tire maintenance with material in the box. The recommended tire pressure operating range is 18-35 psi (124-241 kPa). Do not exceed the maximum tire pressure listed. Tire pressure is an indication of the ground pressure the Turf Contractor has on turf; however, using a tire pressure which is too low may cause tire problems and also result in nonuniform ground pressure at the tire's face.

MAINTAIN SAFE OPERATING CONDITIONS

Grease all fittings as described in this manual. Proper lubrication is essential for the safe operation and longevity of the Turf Contractor.

RELIEVE HYDRAULIC PRESSURE

Before disconnecting or performing any work on the hydraulic system, all pressure in the system must be relieved by placing the hydraulic supply valve in the float position, and stopping the engine of the vehicle.

Residual hydraulic pressure may still be present, so care must be taken. Make sure parts of the Turf Contractor actuated by hydraulic pressure are supported or otherwise restrained to prevent movement prior to relieving hydraulic pressure. Failure to do so could result in damage, injury or even death.

KEEP TURF CONTRACTOR CLEAN

Keep the Turf Contractor free of excessive grass, leaves, and accumulations of dirt and sand. Materials such as this can compromise seals and bearings.

REPLACEMENT PARTS

To ensure optimum performance and safety, always purchase genuine **DAKOTA** replacement parts and accessories. NEVER USE "WILL-FIT" REPLACEMENT PARTS AND ACCESSORIES MADE BY OTHER MANUFACTURERS. Using unapproved replacement parts and accessories voids the warranty of the **DAKOTA** Turf Contractor.

SAFETY AND INSTRUCTION DECALS

The following decals are installed on the Turf Contractor. If one should become damaged or illegible, replace it. The caution decal part number is 12570 and the warning decal part number is 12569. Replacement decals may be ordered from an Authorized **DAKOTA** dealer.

SETUP

To properly setup the Turf Contractor, several items will need to be performed in conjunction with the tow vehicle. You will need to install the brake control on the tow vehicle.

CAUTION

Always complete a safety inspection before hooking to the tractor and before using the Turf Contractor. This safety inspection "walk around" is described in the safety section of this manual.

Brake Control Power Cable

1. Route the power cable from the battery, beneath the tractor platform, and over to the right rear fender of the tractor. Make sure the cable does not contact any hot or moving parts and will not be pinched under the fender. Leave some slack in the cable at the brake control end so that the cord will not pull loose if the brake control shifts or moves.
2. Using cable ties, attach the cord to the tractor in several places. Make sure the cord will not come loose and move into a position to become pinched or cut.
3. Attach the black wire to the positive terminal and the white wire to the negative terminal on the tractor battery.

NOTE: It is recommended to install a 20 amp auto-reset circuit breaker in the circuit between the positive terminal and the brake control.

Mounting The Brake Control

The mounting bracket for the brake control is to be mounted in a position convenient for the operator (either on the right rear fender, on the dash, or to the roll bar of the tractor). Select a location for mounting the bracket making sure you will be able to remove and install the brake control (if desired) from the bracket without interference. To mount the bracket to the fender, use the following procedure:

NOTE: If it is desired to mount the brake control to the roll bar of the tractor, a bracket must be designed and built.

CAUTION

Do not drill holes in the roll bar to mount the brake control bracket to the roll bar. Holes in the roll bar may weaken the structure.

Hold the bracket in the desired mounting location making sure there are no electrical wires in the area (above and below the fender). Using the bracket as a template, mark the location for the mounting holes on the fender; then center punch the holes.

Using a 1/4 in. drill bit, drill the holes in the fender. Using the hardware included, secure the bracket to the fender; tighten securely. Place the brake control on the bracket and secure with the four screws. Adjust the control to the desired position; then tighten the screws securely.

CAUTION

Before using Turf Contractor for the first time, check the wheel bolts to make sure they are tight. They must be torqued to 90 ft-lb (12.4 kg-m).

WARNING

Recheck each wheel bolt's torque within the first 1 hour of use and every 10 hours thereafter until the bolts maintain the proper torque. Failure to do so may result in a serious accident.

CAUTION

It is the operator's responsibility to inspect and torque the lug bolts upon delivery and during normal usage.

WARNING

Check the tire pressure on all tires and look for any obvious leaks in the hydraulic system prior to each use. Failure to do so may result in a serious accident.

SAFETY INSPECTION

Every day before operating the Turf Contractor, it is important to perform a safety inspection "walk around" of the Turf Contractor. The purpose of the safety inspection is to inspect the Turf Contractor for any unsafe conditions and maintenance concerns. Finding these conditions before using the Turf Contractor can save time, money, and the possibility of injuries. Check for loose nuts or bolts, broken or cracked metal and welds, bent or damaged components, under-inflated tires and leaking hydraulic components and hoses. Any of these conditions may indicate a potentially serious situation. All Turf Contractor models require the same basic safety inspection procedure.

Start the inspection at the hitch. Check the hitch for excessive wear or cracks. Check the tongues of the hitch coupler (the part that directly hitches to the tractor drawbar). The coupler is made of cast iron and designed to break away in case the Turf Contractor is driven on an unsafe slope and rolls. The cast iron tends to wear faster than steel and does wear out. This coupler may be turned over to allow wear on both tongues before replacement is necessary. Make sure the bolts attaching the hitch are not loose. Check the entire area any hydraulic leaks. Check for loose wires. All wiring should be secured to the Turf Contractor and should not be hanging loose.

Check the left side of the Turf Contractor for any unsafe conditions. Visually, make sure the tires are inflated properly. If in doubt, use a tire gauge and check the tire pressure. At the back of the Turf Contractor, check the rear tailgate and gate release to be sure they are not bent or damaged and are operating properly. On the right side of the Turf Contractor, visually, make sure the tires are inflated properly.

When finished with the safety inspection and any repairs or adjustments that need to be made, the Turf Contractor is ready for operation.

HOOKING TO THE TRACTOR

It is required that the tractor be equipped with a regular drawbar. Set the drawbar length to the longest position for maximum turning clearance between the tractor and the Turf Contractor. Do not use either a 3-point drawbar or any type of clevis hitch.

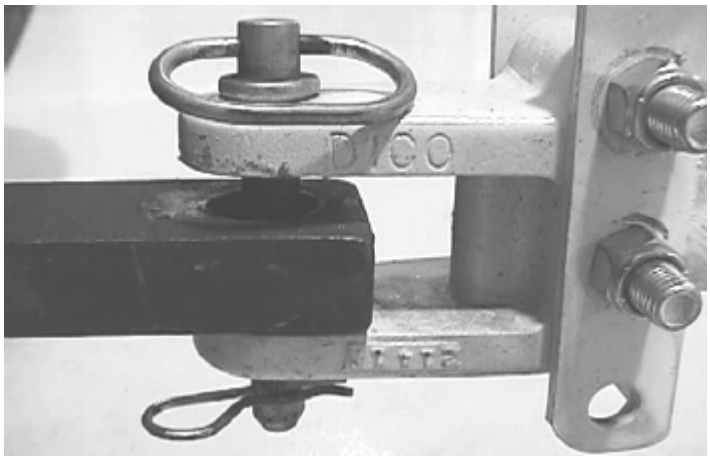
CAUTION

Do not use a 3-point drawbar since it limits maneuverability. It may also damage the hitch on the Turf Contractor.

Back the tractor up to the Turf Contractor so that the tractor drawbar lines up with the hitch on the Turf Contractor. Set the parking brake and shut off the tractor. Using the Turf Contractor jack stand, level the Turf Contractor; then compare the height of the tractor drawbar with the height of the hitch. If necessary, adjust the height of the hitch coupler so that the Turf Contractor, when pulled, will be level. To adjust hitch coupler height, remove the bolts and nuts securing the coupler, move the coupler either up or down as necessary, and secure with the bolts and nuts. Tighten securely. Using the jack stand on the Turf Contractor, raise or lower the hitch as needed to align the tractor drawbar and hitch. Start the tractor, release the parking brake, and back into position.

NOTE: Adjustment of the hitch coupler height will only have to be made the first time the Turf Contractor is to be hooked up to the tractor.

Set the parking brake and shut off the engine. Secure the Turf Contractor to the drawbar using a 5/8 inch pin. Secure the pin with either a hitch pin or cotter key.

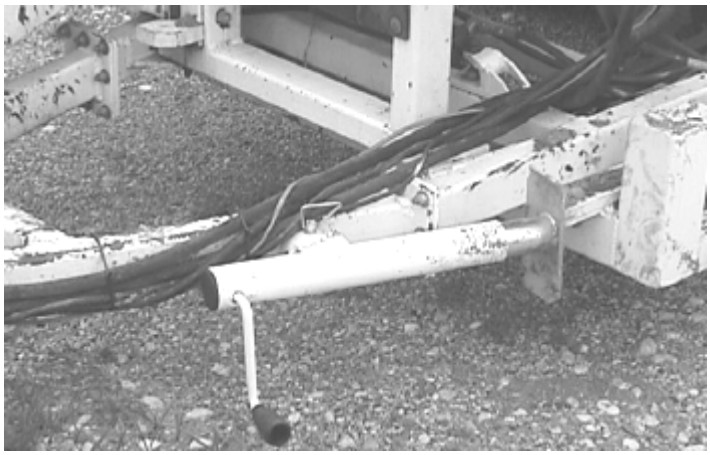


CAUTION

Do not use bolts or other substitutes for a hitch pin. These may not be strong enough and may cause the Turf Contractor to disconnect.

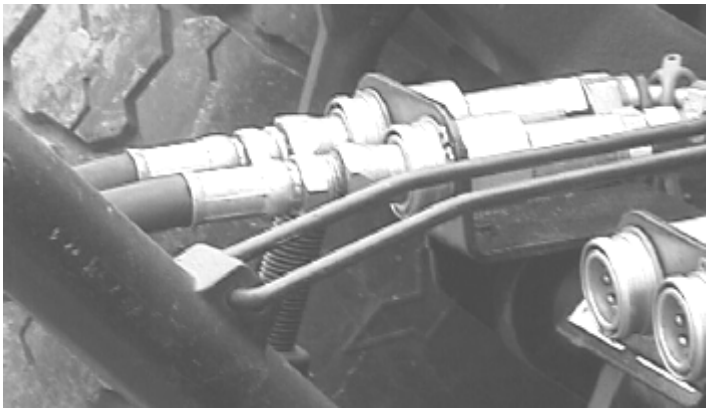
Using the jack stand, lower the hitch of the Turf Contractor until all Turf Contractor weight is on the drawbar of the tractor and the jack stand is loose. Remove the pin securing the jack stand, turn the jack stand 90 degrees counterclockwise (putting the bottom of the jack stand toward the rear of the Turf Contractor) and install the pin. This is the stow position for the jack stand and will keep it out of the way during all operations.

NOTE: The jack stand can also be removed completely and stored in the toolbox if that is desired. The jack stand should always be kept near the Turf Contractor if it becomes necessary to unhook quickly.



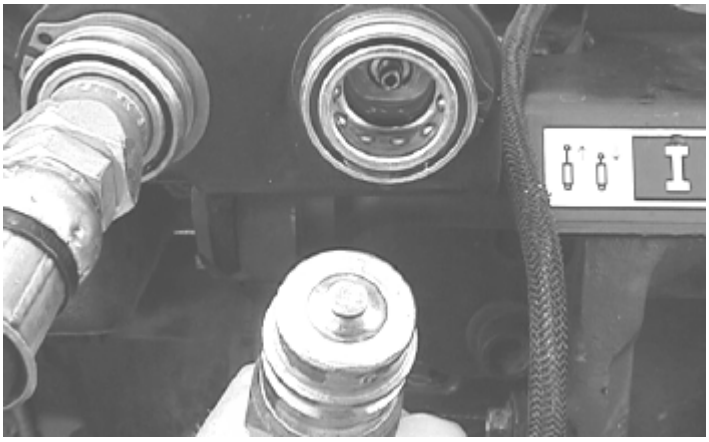
Noting the supply and return hydraulic couplings for both the tractor and Turf Contractor and making sure the couplings are clean, hook up the two hydraulic hoses to the tractor couplings. The hoses must be attached to the proper couplings for the Turf Contractor to operate properly.

NOTE: The hose that goes to the supply coupling on the tractor is marked at the factory with a plastic cable tie. The tractor supply coupling will vary from tractor to tractor.



CAUTION

Make sure that the hose ends and tractor couplings are clean before hooking up hydraulic hoses. Contamination of the hydraulic system may cause failure of components on the Turf Contractor and tractor.



Inspect the brake wiring harness connector to make sure it is clean and not worn or damaged. Good electrical connections are important, especially when equipped with electric brakes; then connect the brake wiring harness to the brake control.

CAUTION

Do not allow the hoses or wiring harness to wrap around or fasten to any part of the tractor other than the connectors at the tractor. The hoses and wiring harness are designed to pull loose if the Turf Contractor disconnects.

Excess hose and wiring harness length should be coiled and secured to the top of the Turf Contractor's hitch frame. If the same tractor is used with the Turf Contractor every time, the excess hose and harness length coil my be left secured to the hitch. Leave some slack in both the hoses and the wiring harness for turning and maneuvering the Turf Contractor.

CAUTION

Do not allow the hoses or wiring harness to wrap around any parts of the tractor or to drag on the ground.

Start the tractor engine; then using the hydraulic control lever, check to be sure the hoist works properly. If the hoist works properly, the Turf Contractor is ready for operation.

NOTE: If necessary to switch the hose connections, set the parking brake, if you have released it, and shut off the tractor engine. Relieve the pressure on the hydraulic system by moving the tractor hydraulic valve to the neutral position; then switch the hydraulic hose connections. Start the tractor engine and test the hydraulic functions of the Turf Contractor.

UNHOOKING FROM THE TRACTOR

WARNING

The Turf Contractor must not have any material in the box when uncoupling. Failure to empty the box prior to unhooking from the tractor may result in a rear tipping hazard resulting in damage, injury or even death.

Find a level, dry place to park the Turf Contractor. Set the parking brake on the tractor and shut off the engine.

WARNING

Park the Turf Contractor on a flat, solid surface. Parking the Turf Contractor on an incline may create an unsafe condition. It may be necessary to chock the Turf Contractor wheels to remove the possibility of it rolling from its parked position.

Relieve the pressure on the hydraulic system by moving the tractor hydraulic valve to the neutral position.

Unplug the brake control wiring harness; then disconnect the hydraulic hoses. Coil and cap them and place them on the top of the hitch frame for storage. Do not allow the hoses to fall in the dirt.

Remove the pin securing the jack stand in the stow position; then turn the jack stand upright and install the pin. Using the jack stand, lift the hitch of the Turf Contractor until it is no longer putting weight on the tractor drawbar.

Chock the Turf Contractor wheels to prevent movement; then remove the pin from the hitch.

Make sure there is no further connection between the tractor and the Turf Contractor. Get on the tractor, start the engine, release the parking brake and drive away.

WARNING

The Turf Contractor must be hooked up to the tractor prior to loading. Failure to do so may result in damage, injury or even death.

Tailgate and Sides

When it is desired to dump the Turf Contractor the tailgate will open as the box is raised. Use the hydraulics to raise the box and dump the material. The tailgate may also be opened using the manual release. If using the manual release, be sure to set the parking brake before dismounting the tractor. Then dismount the tractor and open the tailgate. Return to the tractor; then using the hydraulics raise the box and dump the material.

CAUTION

Be sure to set the parking brake prior to dismounting the tractor. Also, be sure the tailgate is closed prior to filling the box.

The tailgate and sides of the box may be removed if it is desired to use the Turf Contractor as an open trailer. Be sure to have an adequate number of people available to help with the removal or installation process. When installing, be sure to tighten all hardware securely.

CAUTION

All mounting hardware for the sides and tailgate must be securely fastened or damage to components or injury may result.

ELECTRIC BRAKES

Overview

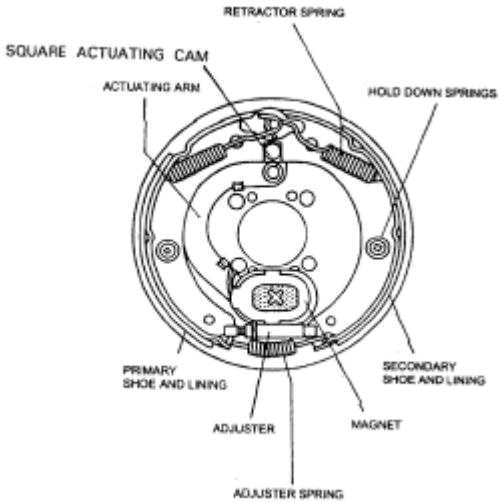
The Turf Contractors comes equipped with electric brakes. Electrically actuated brakes have several advantages over other brake actuation systems.

1. They can be manually adjusted to provide the correct braking capability for varying terrain and load conditions.
2. They can be modulated to provide more or less braking force, thus easing the brake load on the towing vehicle.
3. They can provide braking independent of the tow vehicle.

Basics Of Operation

The electric brakes on the Turf Contractor are similar to the drum brakes on an automobile. The difference is that automotive brakes are actuated by hydraulic pressure while electric brakes are actuated by an electromagnet. Electric brakes operate in the following manner:

1. When the electrical current is fed into the system by the brake control, it flows through the electromagnets in the brakes.



2. The electromagnets are energized and are attracted to the rotating armature surface of the drums which moves the actuating levers in the direction that the drums are turning.
3. The resulting force causes the actuating cam block at the shoe end of the lever to push the primary shoe out against the inside surface of the brake drum.
4. The force generated by the primary shoe acting through the adjuster link then moves the secondary shoe out into contact with the brake drum.
5. As the current flow to the electromagnet is increased, it causes the magnet to grip the armature surface of the brake drum more firmly. This results in an increased pressure against the shoes and brake drums.

CAUTION

The Turf Contractor will not have the correct amperage flow to the brake magnets to give you comfortable, safe braking unless the proper brake system adjustments have been made.

Varying load and driving conditions as well as uneven alternator and battery output can mean unstable current flow to your brake magnets. Therefore, it is imperative that a properly modulated brake controller be used and the brakes be maintained and adjusted according to the information in this manual.

It is important that the brake controller provide approximately 2 volts to the braking system when the brake switch is first activated. The further the brake slide is moved in the ON position, the voltage to the brakes gradually increases up to a maximum of 12 volts. If the controller voltage jumps immediately to a high voltage output, even during a gradual stop, then the electric brakes will always be fully energized during brake activation and will result in harsh braking and potential wheel lockup.

Proper brake system setup adjustments can only be accomplished by road testing. Brake lockup, grabbiness, or harshness is quite often due to:

1. Improper setup of the Turf Contractor.
2. Too high of a threshold voltage (over 2 volts).
3. Under adjusted brakes.

Before any brake setup adjustments are made (in the brake control box on the right side of the Turf Contractor), the Turf Contractor brake drums should be burnished-in by applying the brakes 20-30 times at 15 mph and coming to almost a complete stop. Allow ample time for brakes to cool between each application. This allows the brake shoes and magnets to slightly "wear-in" to the drum surfaces.

Operating the Electric Brake

The slide on the brake control controls the activation of the brakes. The further the brake slide is moved in the ON position, the voltage to the brakes gradually increases up to a maximum of 12 volts and the amount of braking increases. Only move the slide as much as needed until adequate braking is attained.

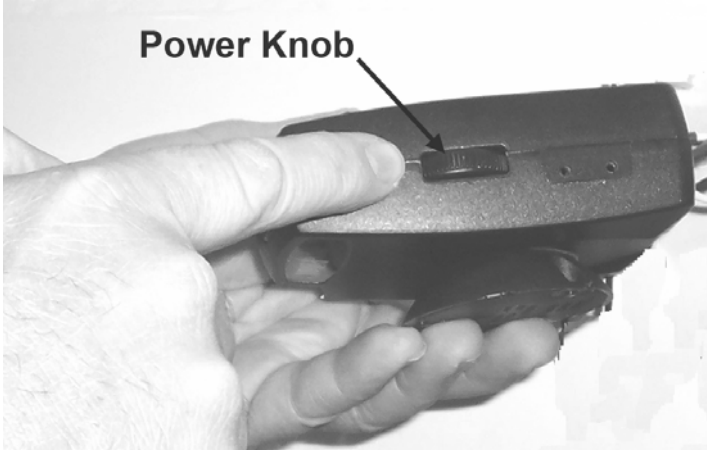
NOTE: Moving the slide further from the OFF position gradually increases the voltage (stopping power) of the brakes.

BRAKE CONTROLLER ADJUSTMENT

WARNING

Before making road tests, make sure the area is clear of vehicular and pedestrian traffic.

Move the slide to the fully ON position and observe the display. Adjust the POWER KNOB until the display reads 4.0. Tow the Turf Contractor at slow speed (approximately 8 mph) on a hard, level, and dry road surface. Activate the brake slide and hold for a few seconds; then release. If the brakes lock up, back the POWER KNOB off slightly. If the brakes are weak, turn the POWER KNOB up until the brakes don't quite lock up. Repeat the procedure until the brakes operate properly.



WARNING

Gain should be turned down in wet or slippery conditions. Gain should never be set to a level high enough to cause the brakes to lock up. Skidding wheels can cause loss of directional stability of the Turf Contractor and tractor possibly resulting in injury or even death.

The GAIN control may need to be reset to adjust for different load weights and terrain conditions. Braking performance may be sluggish in subfreezing temperatures. In subfreezing temperatures, allow adequate time for the control to warm up prior to use.

WARNING

After all repairs and/or adjustments, always test the Turf Contractor before operating. Failure to do may result in injury or even death.

RUNNING GEAR

Wheels

There is very little chance of a problem with your wheels unless you are driving on a flat tire or if the wheel bolts have loosened. If a problem should develop with a wheel, remove it; then repair or replace as needed.

Axles

The Turf Contractor has two wheels on each side of the Turf Contractor that are attached to independent "walking beam" axles. The axles, if maintained properly, will give many years of service.

WARNING

Tire and wheel mounting and demounting can be dangerous and must only be done by trained personnel using proper tools and procedures. Failure to comply with safety procedures and information contained here can result in serious injury or even death.

Tires

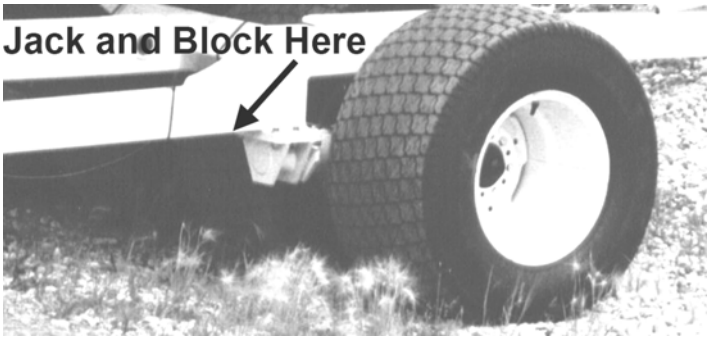
The tires on the Turf Contractor are designed to provide good flotation (less compaction) under normal circumstances. It is important to check tire pressure on all tires periodically to ensure they are properly inflated. Proper inflation will extend wear and provide good flotation. The recommended tire pressure operating range is 18-35 psi (124-241 kPa). Do not exceed the maximum tire pressure listed.

WARNING

Operation of the Turf Contractor with improperly inflated tires could result in serious injury or even death due to the potential rollover under certain conditions such as operating on a hillside.

CHANGING AN OUTSIDE TIRE

1. Empty all material from the box; then chock the wheels on the opposite side of the Turf Contractor.
2. With the Turf Contractor hooked to a tractor that has the parking brake set, jack up the frame directly in front of the axle mount.



3. Using jack stands, support the frame so it is safe to work beneath. Under no conditions should cement blocks (cinder blocks) or unstable piles of wood blocks be used.

WARNING

Do not perform maintenance of any kind below the Turf Contractor unless it is properly secured and stabilized.

4. Remove the wheel bolts; then remove the wheel.
5. Bring the wheel to a tire repair center to fix or replace the tire.

NOTE: Due to the specialized equipment necessary, tire removal, repair, and mounting should be only performed by a tire repair service shop.

6. Place the wheel back into position; then install the wheel bolts. Tighten until snug.

NOTE: Do not lubricate threads.

7. Using a crisscross pattern, tightening wheel bolts to 90 ft-lb (12.4 kg-m).

CAUTION

Do not under or over torque the wheel bolts. Inappropriate wheel bolt torque will result in wheels loosening and possibly falling off.

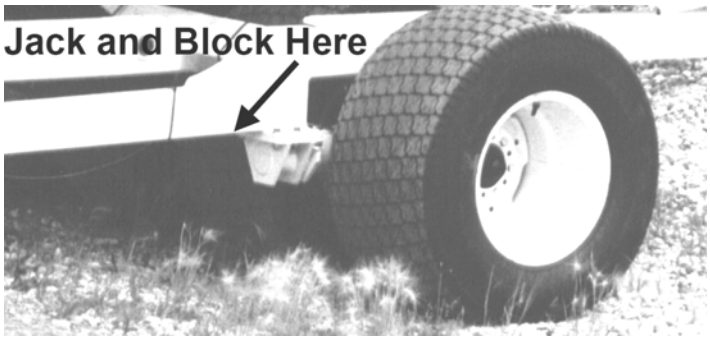
8. Remove the jack stands from beneath the Turf Contractor; then lower the jack.

NOTE: Wheel bolt torque must be checked every 10 hours after mounting a wheel until the bolts maintain the proper torque.

CHANGING AN INSIDE TIRE

Changing an inside tire is slightly more complicated than changing an outside tire since it involves removing the "walking beam" axle assembly and rolling it out from beneath the Turf Contractor.

1. Empty all material from the box; then chock the wheels on the opposite side of the Turf Contractor.
2. With the Turf Contractor hooked to a tractor that has the parking brake set, jack up the frame directly in front of the axle mount.



3. Using jack stands, support the frame so it is safe to work beneath. Under no conditions should cement blocks (cinder blocks) or unstable piles of wood blocks be used.

WARNING

Do not perform maintenance of any kind below the Turf Contractor unless it is properly secured and stabilized.

4. Remove the walking beam axle mounting bolts and nuts (front & rear). Roll axle assembly out to the rear.
5. Stand the axle assembly on end and remove the wheel bolts; then remove the wheel.
6. Bring the wheel to a tire repair center to fix or replace the tire.

NOTE: Due to the specialized equipment necessary, tire removal, repair, and mounting should be only performed by a tire repair service shop.

7. Place the wheel back into position; then install the wheel bolts. Tighten until snug.

NOTE: Do not lubricate threads.

8. Using a crisscross pattern, tightening wheel bolts to 90 ft-lb (12.4 kg-m).

CAUTION

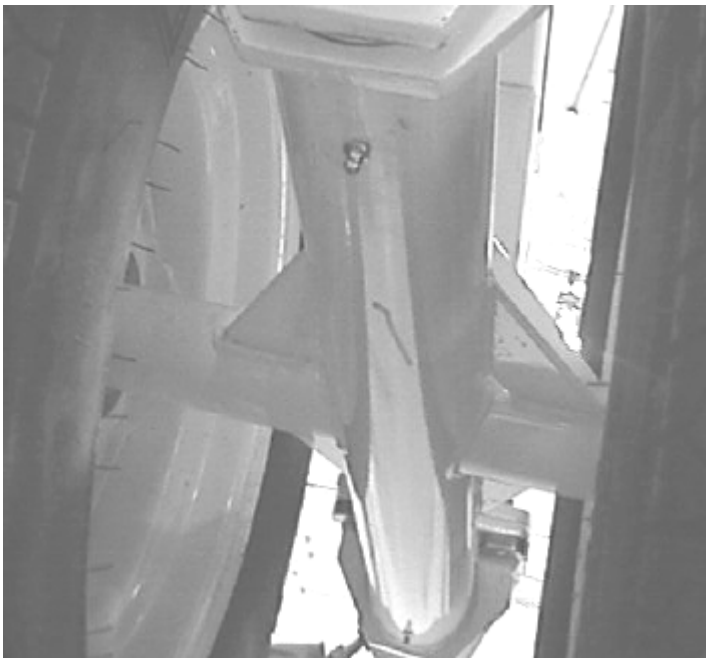
Do not under or over torque the wheel bolts. Inappropriate wheel bolt torque will result in wheels loosening and possibly falling off.

9. Roll the axle assembly back under the Turf Contractor and install the eight bolts and nuts securing it to the frame. Tighten the hardware to 75 ft-lb (10.3 kg-m).
10. Remove the jack stands from beneath the Turf Contractor; then lower the jack.

NOTE: Wheel bolt torque must be checked every 10 hours after mounting a wheel until the bolts maintain the proper torque.

Axle Lubrication

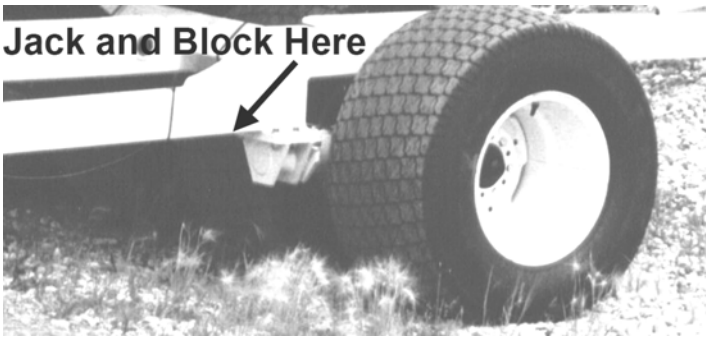
The walking beam axles allow the Turf Contractor to follow the contour of the ground better giving you more stability and less chance of damaging turf. The walking beam axles need regular greasing maintenance. There are grease points on the front and rear of each axle assembly. General lithium grease may be used for a lubricant. See the lubrication schedule for proper lubrication application.



Wheel Bearings

The wheel bearings should be repacked with grease and the seals inspected annually under normal use and conditions. This procedure should be done more often if you are using the Turf Contractor every day or if working with extremely abrasive materials or fertilizers.

1. Empty all material from the box; then chock the wheels on the opposite side of the Turf Contractor.
2. With the Turf Contractor hooked to a tractor that has the parking brake set, jack up the frame directly in front of the axle mount.



3. Using jack stands, support the frame so it is safe to work beneath. Under no conditions should cement blocks (cinder blocks) or unstable piles of wood blocks be used.

WARNING

Do not perform maintenance of any kind below the Turf Contractor unless it is properly secured and stabilized.

4. Remove the eight walking beam axle mounting bolts and nuts (four at the front and four at the rear). Roll axle assembly out to the rear.
5. Stand the axle assembly on end and remove the wheel bolts; then remove the wheels.
6. For each wheel bearing, remove the grease cap.
7. Bend the cotter key straight and remove; then remove the spindle nut and washer.
8. Remove the hub from the spindle being careful not to allow the outer bearing to fall out. The inner bearing will be retained by the seal on the back side of the hub assembly.

NOTE: It is important to protect the wheel bearing bores (inside portion of the hub) from metallic chips and contamination. Ensure the wheel bearing cavities are clean and free of contamination before installing the bearings and seal.

9. Using a suitable solvent, wash all grease and oil from the bearings. Dry the bearing with a clean, lint-free cloth; then thoroughly inspect each bearing. If any pitting, spalling, or corrosion is present, the bearing must be replaced.

NOTE: Bearings must always be replaced in sets of inner and outer bearings.

10. Inspect the seal to assure that it is not nicked or torn and is still capable of sealing the bearing cavity.
11. Pack the bearings with a Lithium complex NLGI No. 2 grease.

12. Assemble the hub (seal, bearings, spindle washer, and spindle nut) back on the spindle being careful to not spill grease on the outside of the spindle (backside) where it could drop onto the brakes.
13. Rotate the hub assembly slowly while tightening the spindle nut to approximately 50 ft-lb (7 kg-m); then loosen the spindle nut to remove the torque. Without rotating the hub, finger tighten the spindle nut until just snug. Back the spindle nut out slightly until the first castellation (slot) lines up with the cotter key hole and insert the cotter key. Spread the legs of the cotter key.

NOTE: The nut should move freely with the only restraint being the cotter key.

14. Install the spindle cap.
15. Install the wheels; then install the axle assembly. Refer to the "Changing an Inside Tire" section for the procedure and proper torque specifications.

ELECTRIC BRAKES

Features

Electrically actuated brakes have several advantages over other brake actuation systems.

1. They can be manually adjusted to provide the correct braking capability for varying terrain and load conditions.
2. They can be modulated to provide more or less braking force, thus easing the brake load on the towing vehicle.
3. They can provide braking independent of the tractor.

Testing the Brake Controller

To perform a quick and easy test on the brake control, use a 12-volt test light (not a voltmeter) and the following procedure:

1. Connect the ground clip from the test light to a solid ground (WHITE wire) and pierce the brake wire (BLUE wire) with the point of the test light.
2. Activate the brake switch and slowly move the slide to the fully ON position. The test light should get steadily brighter in intensity. Release the brake switch and the test light should go out.

This test allows you to quickly see if the brake controller is functioning properly. If the controller tests good with a test light, but will not work properly with a Turf Contractor connected, check for a poor connection or broken wire.

NOTE: Minimum vehicle stopping distances are achieved when the wheels approach lockup. Brake lockup should be avoided as it results in poor vehicle stability and control. Depending upon load, driving surface, wheels and tires, not all brakes are capable of wheel lockup under all conditions.

WARNING

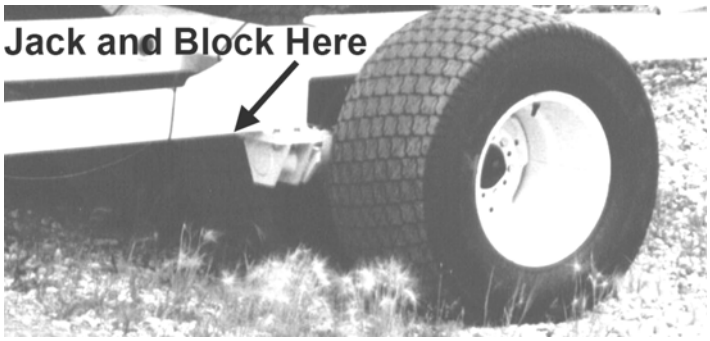
Do not adjust the controller outside the parameters outlined in these instructions.

General Maintenance

BRAKE ADJUSTMENT

Brakes should be adjusted: after the first 10 hours of operation when the brake shoes and drums have "seated," at 300 hour intervals thereafter, and as use and performance requires. To adjust the brakes, use the following procedure:

1. Empty all material from the box; then chock the wheels on the opposite side of the Turf Contractor.
2. With the Turf Contractor hooked to a tractor that has the parking brake set, jack up the frame directly in front of the axle mount. Check that the wheel and drum rotates freely.



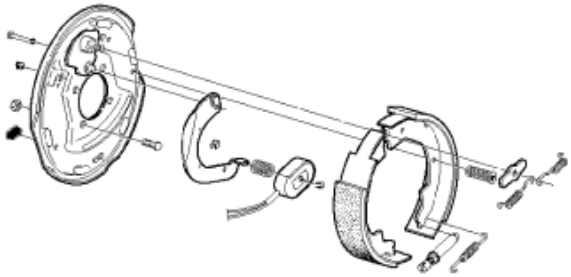
3. Using jack stands, support the frame so it is safe to work beneath. Under no conditions should cement blocks (cinder blocks) or unstable piles of wood blocks be used.

WARNING

Do not perform maintenance of any kind below the Turf Contractor unless it is properly secured and stabilized.

CAUTION

Do not lift or support the Turf Contractor on any part of the axle or the suspension system. All lifting and support must be done on the frame directly in front of the axle mount point.



4. Remove the cover from the adjusting slot on the bottom of the brake backing plate.
5. Using a screwdriver or standard brake adjusting tool, rotate the starwheel of the adjuster assembly to expand the brake shoes. Adjust the brake shoes out until the pressure of the linings against the drum makes the wheel very difficult to turn.
6. Rotate the starwheel in the opposite direction until the wheel turns freely with a slight lining drag.
7. Install the cover and lower the wheel to the ground. Repeat procedure on all brakes.

BRAKE CLEANING AND INSPECTION

The brakes must be inspected and serviced at yearly intervals (more often as use and performance requires). Magnets and shoes must be changed when they become worn or scored thereby preventing adequate braking. Be sure to clean the backing plate, magnet arm, magnet, and brake shoes.

Make certain that all the parts removed are installed in the same brake and drum assembly. Inspect the magnet arm for any loose or worn parts. Check shoe return springs, hold down springs, and adjuster springs for stretch or deformation; replace if required.

BRAKE LUBRICATION

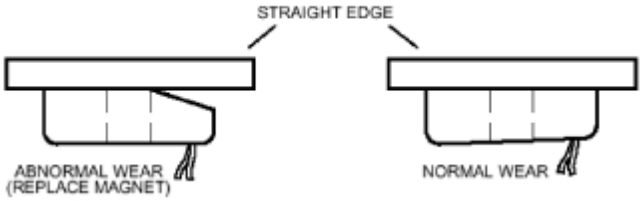
Before assembling, apply a light film of Lubriplate or Anti-Seize compound on the brake anchor pin, the actuating arm bushing and pin, and the areas on the backing plate that are in contact with the brake shoes and magnet lever arm. Apply a light film of grease on the actuating block mounted on the actuating arm.

CAUTION

Do not get grease or oil on the brake linings, drums, or magnets.

MAGNETS

The electric brakes are equipped with high quality electromagnets that are designed to provide the proper input force and friction characteristics. The magnets should be inspected and replaced if worn unevenly or abnormally. Check the magnets for wear using a straightedge.



Even if wear is normal as indicated by your straightedge, the magnets should be replaced if any part of the magnet coil has become visible through the friction material facing of the magnet.

NOTE: It is recommended that the drum armature surface be re-faced when replacing magnets.

Magnets should be replaced in pairs - both outer sets and/or both inner sets. Use only genuine DAKOTA replacement parts when replacing the magnets.

SHOES AND LININGS

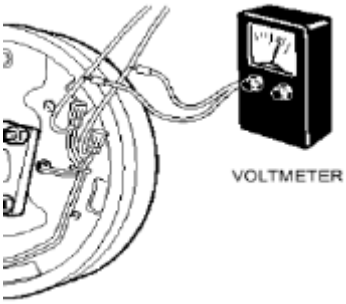
A visual inspection of your brake linings will indicate if they are in need of replacement. Replacement is necessary if the lining is worn to 1/16 in. (1.5 mm) or less, contaminated with grease or oil, or abnormally scored or gouged. Hairline heat cracks are normal in bonded linings and is not a cause for concern. To retain the "balance" of your brakes, it is important to replace both shoes on each brake and both brakes of the same set (inner and/or outer).

Troubleshooting

Most electric brake malfunctions that cannot be corrected by either brake or controller adjustments, can generally be traced to electrical system failure. Mechanical causes are ordinarily obvious, i.e. bent or broken parts, worn out linings or magnets, seized lever arms or shoes, scored drums, loose parts, etc. A voltmeter and ammeter are essential tools for proper troubleshooting of electric brakes.

MEASURING VOLTAGE

Brake system voltage is measured at the magnets by connecting the voltmeter to the two magnet lead wires at any brake. This is accomplished using pin probes inserted through the insulation of the wires dropping down from the chassis. The engine of the towing vehicle should be running when checking the voltage so that low battery voltage will not adversely affect the readings.



Voltage in the brake system is designed to modulate (begin at 0 volts and, as the brake slide is slowly moved to the fully ON position, gradually increase [modulate] to about 12 volts). If no modulation occurs (immediate high voltage applied to the brakes just when the controller begins to apply voltage), adjust and/or troubleshoot the brake system.

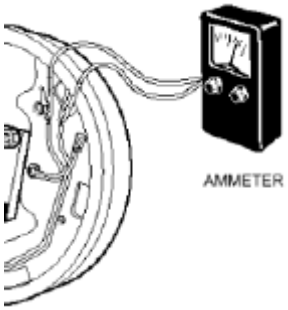
The threshold voltage of the controller is the voltage applied to the brakes when the controller is first applied. The lower the threshold voltage, the smoother the brakes will operate. Too high of a threshold voltage (in excess of 2 volts as quite often found in heavy duty controllers) can cause grabby, harsh brakes.

MEASURING AMPERAGE

System amperage is the amperage being drawn by all brakes on the Turf Contractor. The engine of the towing vehicle should be running when checking amperage.

Measure system amperage at the BLUE controller wire (the output to the brakes). The BLUE wire must first be disconnected and the ammeter put in series into the line. Make sure the ammeter has sufficient capacity to handle the current draw of about 6 amps. To prevent damaging the ammeter, be sure to observe polarity.

Individual amperage draw can be measured by inserting the ammeter in the line at the magnet you want to check. Disconnect one of the magnet lead wire connectors and attach the ammeter between the two wires. Make sure that the wires are properly connected and sealed after the testing is completed.



By far, the most common electrical problem is either low or no voltage and amperage at the brakes. Common causes of this condition are:

1. Poor electrical connections
2. Open circuit(s)
3. Insufficient wire size
4. Broken wires
5. Damaged circuit breaker (use of a fuse is not recommended).
6. Improperly functioning switch, controller, or resistors

Another brake system electrical problem may be shorted or partially shorted circuits (indicated by abnormally high system amperage). These are occasionally the most difficult to find. Possible causes are:

1. Shorted magnet coils
2. Defective controller
3. Bare wires contacting a grounded object

Finding a short in the wiring system is a matter of isolation. If the high amperage reading drops to zero by unplugging the wiring harness, the short is in the Turf Contractor. If the amperage reading remains high with all the brake magnets disconnected, the short is in the wiring leading to the Turf Contractor.

All electrical troubleshooting procedures should start at the brake control. Most problems regarding brake harshness or malfunctions are traceable to improperly adjusted or non-functioning controllers. See the controller information for proper adjustment and testing procedures previously discussed. If the voltage and amperage are not satisfactory, proceed to the connector and then to the individual magnets to isolate the problem source. 12 volts output at the controller should equate to 10.5 volts minimum at each magnet. **Nominal system amperage at 12 volts with magnets at normal operating temperatures (i.e. not cold and controller at maximum gain) should be about 6 amps with full braking force applied.**

LUBRICATION

There are two grease fittings on the rear hoist pivots which should be greased on a regular basis. In order to grease these fittings, it is necessary to fully raise an empty box. Once the box is fully raised, secure the box in the fully raised position using the body prop; then grease the two fittings. Remove the body prop and lower the box.

WARNING

Do not attempt any service between a raised box and the frame without securing the raised box with body prop. Also, do not use the body prop to support a box with a load.

BODY PROP

The body prop is designed to hold an empty box in the raised position when performing maintenance between the raised box and frame. It is not designed to support a box with a load. To activate the body prop, lock the parking brake of the tow vehicle and use the following procedure:

1. Fully raise the empty box.
2. At arms length, grasp the body prop and lift the prop upward.
3. Swing the prop up to the vertical position and push down until the prop locks in line with the support bracket on the frame.
4. Slowly lower the box until the box is supported by the body prop.
5. After performing the desired maintenance, fully raise the box. Push up on the prop; then rotate the prop downward to the storage position.

WARNING

Do not attempt any service between a raised box and the frame without securing the raised box with body prop. Also, do not use the body prop to support a box with a load.

HYDRAULIC SYSTEM

Interchange Chart for HDZ-46 Oil	
AMOCO	RYKON MV
CHEVRON	AW HYDOIL MV 46
EXXON	UNIVIS N46
MOBIL	DTE 15 M
SHELL	TELLUS OIL T46
TEXACO	RANDO HDZ46

The hydraulic system providing hydraulic fluid to the Turf Contractor should be filled with premium grade hydraulic fluid per the recommendations of the vehicle's owner's manual. The oil should be good for at least two years unless one of the following problems occur:

1. If the reservoir is **contaminated with excessive water or dirt**. Hydraulic fluid can hold more than 20% water in solution. Usually at these high levels, the fluid will appear milky. A quick test for water at lower concentrations may be performed outside with a hot (>300°F) sheet of steel. With the sheet heated, drop a small amount of hydraulic fluid in the center of the sheet. If it sputters there is a significant amount of water in the fluid and the fluid should be replaced.
2. If the oil has been **overheated** [above 190° F (87°C)]. The oil will have a foul odor. Do not use oil that has been overheated. The lubricating properties have been destroyed and acids and varnish have been created by oxidation.
3. If a **pump or motor has had a catastrophic failure** resulting in metal fragments and particles entering the fluid. These particles may cause the replacement components to fail before the filter cleans up the system. The filter in a hydraulic system does not filter out 100% of all particles as the fluid passes through it.

After any of the above have occurred, the entire system should be drained, cleaned, and filled with new fluid. A new filter should always be installed after any maintenance to the hydraulic system.

FITTINGS AND HOSES

All hoses and fittings are rated for 3000 psi or greater. All replacement fittings and hoses must meet or exceed this specification.

STORAGE

Before storing the Turf Contractor for an extended period of time, such as over the winter, it is important to make sure the Turf Contractor is in good condition and all maintenance is complete.

Wash the Turf Contractor thoroughly to make sure you have removed all corrosive or potentially corrosive materials. Let the Turf Contractor dry completely, especially if you will be covering the Turf Contractor.

Grease the axles and rear hoist pivots. This is a good time to do the annual repacking of the wheel bearings. Otherwise it will need to be done when you remove the Turf Contractor from storage.

Check the air pressure on all tires and fill if needed to maintain recommended pressure. It is usually a good idea to make any needed repairs before storing the Turf Contractor. If all repairs and maintenance is completed before storing the Turf Contractor, it will be ready for use immediately when you need it.

If you have taken the time to complete these season storage operations, removing the Turf Contractor from storage will be easy. Do a safety inspection as you would any time you hook up to the Turf Contractor.

If you did not have time to store your Turf Contractor properly you may have to do repair work on the Turf Contractor before you can use it. Grease the axles and rear hoist pivots. Repack the axle bearings if this was not done. Check the tire pressure and fill the tires. Do a complete safety inspection of the Turf Contractor to spot any potential problem areas. Fix any problems that you find. Hose off the layer of dust that has collected on the Turf Contractor. The Turf Contractor should be ready to use.

LUBRICATION SCHEDULE

ITEM	GREASE INTERVAL
AXLE PIVOTS	150 HOURS
REAR HOIST PIVOTS	50 HOURS
WHEEL BEARINGS	ANNUALLY

Please have the Turf Contractor serial number and model information available when contacting Dakota for service parts.

Your dealer is responsible for completion of the new product registration card and returning it to Dakota as soon as you take delivery of your Turf Contractor. Please refer to the "warranty" section for additional information.

If you feel that a new product registration and warranty card was not completed and mailed in, please complete the following warranty information below and either mail or fax a copy of it to Dakota within 30 days of accepting delivery.

NEW PRODUCT REGISTRATION AND WARRANTY

COMPANY NAME: _____

ADDRESS: _____

CITY: _____

STATE/PROVINCE: _____

ZIP/POSTAL CODE: _____

COUNTRY:_____

CONTACT PERSON: _____ POSITION: _____

TELEPHONE: _____

CONTACT PERSON: _____ POSITION: _____

TELEPHONE: _____

DAKOTA MACHINE PURCHASED: _____(MODEL NUMBER)

SERIAL NUMBER: _____

DATE OF PURCHASE: _____ (MONTH-DAY-YEAR)

DEALER YOU PURCHASED FROM:_____

DO YOU OWN OTHER DAKOTA EQUIPMENT? YES NO

IF YES, WHICH MODELS? _____

TYPE OF BUSINESS (CHECK THOSE THAT APPLY):

GOLF COURSE

SPORTS FIELD

LANDSCAPING

COURSE CONSTRUCTION

DRAINAGE

BUNKER RENOVATIONS

TURFGRASS MAINTENANCE

PARK DISTRICT/MUNICIPALITY/SCHOOL DISTRICTS

OTHER: _____

SIZE OF BUSINESS (e.i. 18 HOLE COURSE): _____

IF YOU WOULD LIKE ADDITIONAL PRODUCT OR DEALER INFORMATION, PLEASE CALL 800-477-8415.

NOTES

NOTES

Team DAKOTA™

With your purchase of the Dakota Turf Contractor™, you have become an important member of Team DAKOTA. Yet we have found that many of the team members do not know all of the components of Team DAKOTA. Team DAKOTA includes many facets including quality tending and blending equipment, laboratory testing services, agronomy services, top dressing material, and material recommendations. Since you are already aware of the quality and function of the Turf Contractor, we will inform you of the other Team DAKOTA components.

Blending Equipment

The Dakota Blender™, manufactured by Dakota Blenders, Inc. (another valuable member of Team DAKOTA) is the most thorough blender available in the industry today. For a complete description of the blender, see us on the web at dakotapeat.com or contact us directly at 1 800 477-8415 for the dealer nearest you. If the size of your operation does not justify the purchase of a blender, blending services are available from Team DAKOTA by Dakota Blenders, Inc. or through numerous sand companies that Team DAKOTA has blending relationships with. Check with us for the participating sand company nearest you.

Testing Laboratory

The testing of sand for USGA spec's can be obtained through another member of Team DAKOTA. Dakota Analytical, Inc. is one of eight laboratories world wide accredited by A2LA to be listed on the USGA's web site as one of the labs to be used in the testing of construction materials for greens and other sports fields. Our lab has analyzed hundreds of sand and mix samples since its establishment and is ready to serve any of your needs.

Agronomy Services

Dakota Agronomics provides root zone and greens construction advice, sand sourcing, and maintenance consultation. Our staff has nearly 20 years of experience. All advice is based upon individual customer needs and desires. If you would like to speak to us on any agronomy issues, contact us either on the web or at 1 800 477-3443.

Top Dressing Material

In cooperation with several universities and soil testing laboratories nationwide, Team DAKOTA has developed a highly concentrated organic material called Dakota Peat.

Dakota Peat is formed principally from partially decomposed reeds, sedges, marsh grasses, and other associated plants. These plants have a unique cellular structure that resists further decomposition. Cells with exceptionally high plant feeding ability are essential for successful development of a plant's root system and the right balance of air and water. This makes it an ideal soil conditioner and growing medium.

Dakota Peat is the finest quality peat from selected deposits, carefully processed to maintain its excellent, agronomic horticultural attributes. It is naturally dried by summer sun and winds; then gently packaged by vibrating machines to preserve its unique cellular structure. Dakota Peat is high in organic content, odorless, and free of harmful substances.

Material Recommendations for Use in Greens, Tees Boxes, and Sports Field Maintenance

The Agronomists at Dakota Peat and Equipment have performed thousands of hours of research into top dressing materials and have many recommendations for maintaining a quality green and healthy turf. One such recommendation is using a mix of USGA spec. sand and Dakota Peat in varying ratios for all situations of green and tee box maintenance. Dakota Peat blends can be utilized in sand-to-peat ratios from 80/20 to 90/10 (depending upon the needs of various turf problems or objectives). Simply stated, the facts are that this combination of components will enhance the quality, resiliency and playability of all surfaces and subsurfaces for future use. This applies to normal top dressing, top dressing prior to over-seeding, and top dressing after coring or other soil tillage practices. Using Dakota Peat/sand blends also helps mend the problem spots that may show up on all courses and/or fields from time to time.

Dakota Peat is the "one" amendment which virtually fulfills all dressing needs for healthy growth and maintenance of golf and sports turf. What makes Dakota Peat different from other peat materials and necessary for sand blends? We believe the following points will explain the benefits of Dakota Peat.

- When used with a tested, spec. sand, the resulting Dakota Peat/sand blend increases the water holding capacity of the sand while allowing excellent water infiltration and air exchange for optimum root growth and turf health.
- The Dakota Peat/sand blend retains fertilizer and pesticides in the upper soil horizon thereby maximizing usage and absorption by the turf and target pests. This limits chemical runoff and leaching potential creating a fertilizer and pesticide cost savings while reducing environmental responsibilities. This increase in retention is due to the unique CEC (cation exchange capacity) of Dakota Peat which greatly increases the blend's capacity for stabilization of leachable inputs and its water holding capacity.
- The "near neutral" pH of Dakota Peat continues to provide the best environment for microbial activity that decomposes thatch. This reduction in thatch keeps the turf as healthy as possible since (as we all know), thatch ties up fertilizer, prevents water infiltration, and is a huge disease "reservoir." Thatch also reduces root mass due to poor gas exchange. Even if using an aggressive aeration program, Dakota Peat/sand blends increase positive results by increasing the ability of the "sterile" sand to hold more fertility and water without inhibiting air exchange and water infiltration.
- The humic acid content of Dakota Peat aids in the gas exchange through the soil surface plus water infiltration by promoting soil particle aggregation. Its fulvic acid content helps stimulate root growth into core areas and also into any new root zones.
- Ideal particle size and density allows the Dakota Peat to become "part" of the sand since most of the particles fit the profile of the sand and stay there.

The goal of Team Dakota is to be your one-stop center for all of your golf course and sports field questions, needs, and equipment. For additional information, contact us either on the web at dakotapeat.com or by phone at either 1 800 477-8415 or 1 800 424-3443.