



430 MAX

4 - WHEEL DRIVE TRACTOR

Starting Serial No. 7001

Use this manual for 75-70004 25hp Kohler 430

Owner / Operator's Manual



CAUTION

Avoid injuries. Read and understand Operator's manual
before operating tractor or equipment.
It contains instructions for safe operation.



CAUTION

- READ AND UNDERSTAND OPERATORS MANUAL BEFORE OPERATING OR SERVICING.
- OBEY ALL SAFETY INSTRUCTIONS. FAILURE TO DO SO MAY RESULT IN INJURY TO YOU OR OTHERS.
- BE SURE MACHINE IS IN SAFE OPERATING CONDITION BEFORE USE.
- INSPECT MACHINE DAILY. REPLACE ALL WORN OR DAMAGED PARTS.
- KEEP ALL GUARDS AND SHIELDS IN PLACE.
- CHECK OPERATION OF ALL SAFETY INTERLOCK SWITCHES DAILY.
- DO NOT OVERRIDE INTERLOCK SYSTEM, IT IS FOR YOUR PROTECTION.
- DO NOT ALLOW MINORS OR THE INEXPERIENCED TO OPERATE MACHINE.
- KEEP PEOPLE AND PETS A SAFE DISTANCE AWAY FROM MACHINE USING POWER DRIVEN ATTACHMENTS. INJURY COULD RESULT FROM FLYING DEBRIS.

Date of Purchase: Month _____ Day _____ Year _____

Dealer Name _____ Phone _____

Serial Number _____

Model Number _____

ALWAYS GIVE MODEL AND SERIAL NUMBER WHEN ORDERING SERVICE PARTS

STEINER
TEXTRON

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Description

The Steiner 430 MAX is designed for the commercial user or homeowner. From the rugged industrial frame to the operator controls... the tractor is ready for demanding turf and grounds care assignments.

Power steering and articulated frame, combined with a low center of gravity and high flotation tires, provide exceptional maneuverability.

Fully hydrostatic, single lever control lets you choose infinite ground travel speeds to match the task. No clutching, jerking or braking, just smooth power flow to the 4 full time drive wheels for added traction in tough areas.

Front mounted attachments offer a wide range of working tools and all of them attach to the "Quick Hitch" that is a Steiner exclusive. The front hitch is standardized for all models of Steiner power units so your present attachments are not obsolete.

You can do many tasks with this one tractor, compared to higher priced single purpose machines, by simply changing attachments in less than 2 minutes.

Operator safety and comfort, power, performance and dependability will provide years of enjoyment with your Steiner tractor.

SPECIFICATIONS

Dimensions:

Overall Width	44"
Overall Length	64"
Overall Height	49"
Wheelbase	38"
Inside Turning Radius	46"
Weight (Linamar)	1000 lbs.
Weight (Kohler)	1000 lbs.
Weight (Kubota)	1100 lbs.

Engine:

Standard	Linamar LX790 20 HP air-cooled
Optional	Kubota D722-E Diesel 44 cu. In. (719 cc) liquid-cooled 21 HP @3600 RPM
Optional	Kubota WG750-E Gas 45 cu. In. (740 cc) liquid-cooled 21 HP
Optional	Kohler Command V-Twin 25 HP air-cooled

Drive Train:

Transmission	Sundstrand Hydrostatic Series 15 Pump and 2 motors
Transaxles	Peerless 2500 Series 2-speed

SPEEDS:

Forward (Traction Type Tires)	0-8.5 MPH (high range) 0-4.4 MPH (low range)
Reverse (Traction Type Tires)	0-5.3 MPH (high range) 0-2.8 MPH (low range)

Steering	Hydraulic power steering
Parking Brake	Disc type

Tires:

Traction Type	21 x 11.00-8, Rawhide
Turf Type, optional	20 x 10.00-8, Turfmate

Electrical:

Starting	12 volt, Key switch
Battery	12 volt, Group 26

Fuel System:

Tank capacity	6 Gallons
Fuel Pump	Diaphragm (Linamar) Diaphragm (Kohler) Electric (Kubota)

Specifications are subject to change without notice.



BE ALERT!

ATTENTION:

This symbol identifies potential health and safety hazards. It marks safety precautions. Your safety and the safety of others is involved.

SIGNAL WORD DEFINITIONS



Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. This signal word is limited to the most extreme cases.



Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury and/or property damage. It may also be used to alert against unsafe practices.



WARNING

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

CALIFORNIA

Proposition 65 Warning

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects and other reproductive harm.

CALIFORNIA PROPOSITION 65 Battery Warning

Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm.

WASH HANDS AFTER HANDLING!

IMPORTANT

Safety Practices For Commercial Turf Care Equipment

I Training

1. Read the Operator's manual and other training material. If the operator(s) or mechanic(s) can not read English it is the owner's responsibility to explain this manual to them.
2. Become familiar with the safe operation of the equipment, operator controls, and safety signs.
3. All operators and mechanics should be trained. The owner is responsible for training the users.
4. Never let children or untrained people operate or service the equipment. Local regulations may restrict the age of the operator.
5. The owner/user can prevent and is responsible for accidents or injuries occurring to themselves, other people, or property.

II Preparation

1. Evaluate the terrain to determine what accessories and attachments are needed to properly and safely perform the job. Only use accessories and attachments approved by the manufacturer.
2. Wear appropriate clothing including hard hat, safety glasses, and ear protection. Long hair, loose clothing, or jewelry may get tangled in moving parts.
3. Inspect the area where the equipment is to be used and remove all objects such as rocks, toys, and wire which can be thrown by the machine.
4. Use extra care when handling gasoline and other fuels. They are flammable and the vapors are explosive.
 - a. Use only an approved container.
 - b. Never remove gas cap or add fuel with engine running. Allow engine to cool before refueling. Do not smoke.
 - c. Never refuel or drain the machine indoors.

5. Check that operator's presence controls, safety switches, and shields are attached and functioning properly.

III Operation



Slopes are a major factor related to loss-of-control and tip-over accidents, which can result in severe injury or death. All slopes require extra caution.

1. Never run an engine in an enclosed area.
2. Only operate in good light, keeping away from holes and hidden hazards.
3. Be sure F-R lever is in neutral, PTO is off, and parking brake is engaged before starting engine. Operate all controls from the operator's seat. Use seat belts if provided.
4. Slow down and use extra care on hillsides. Be sure to travel in the recommended directions on hillsides. Turf conditions can affect the machines stability. Use caution when operating near drop-offs.
5. Follow the manufacturers recommendations for wheel weights or counterweights to improve stability. (See Section 4, page 4-4; also the owner's manual for the attachment being used.)
6. Slow down and use caution when making turns and when changing directions on slopes.
7. Never raise mower deck with the blades running.
8. Never operate with guards not securely in place. Be sure all interlocks are attached, adjusted properly, and functioning properly.
9. Never operate mower with the discharge deflector raised, removed or altered, unless using a grass catcher.
10. Do not change the engine governor setting or overspeed the engine.
11. Never leave a running machine unattended.

12. Stop on level ground, lower implements, disengage drives, engage parking brake, and shut off engine before leaving the operator's position for any reason including emptying the catchers or unclogging the chute.
 13. Stop equipment and inspect blades after striking objects or if an abnormal vibration occurs. Make necessary repairs before resuming operations.
 14. Keep hands and feet away from cutting units.
 15. Look behind and down before backing up to be sure of a clear path.
 16. NO RIDERS. Never carry passengers and keep pets and bystanders away.
 17. Slow down and use caution when making turns and crossing roads and sidewalks. Stop blades if not mowing.
 18. Be aware of the mower discharge direction and do not point it at anyone.
 19. Do not operate the machine under the influence of alcohol or drugs.
 20. Use care when loading or unloading the machine into a trailer or truck.
 21. Use care when approaching blind corners, shrubs, trees, or other objects that may obscure vision.
7. Carefully release pressure from components with stored energy.
 8. Disconnect battery or remove spark plug wire before making any repairs. Disconnect the negative terminal first and the positive last. Reconnect positive first and negative last.
 9. Use care when checking or changing blades. Wrap the blade(s) or wear gloves, and use caution when servicing them. Only replace blades. Never straighten or weld them.
 10. Keep hands and feet away from moving parts. If possible, do not make adjustments with the engine running.
 11. Charge batteries in an open well ventilated area, away from sparks or flames. Unplug charger before connecting or disconnecting from battery. Wear protective clothing and use insulated tools.
 12. Keep all parts in good working condition and all hardware tightened. Replace all worn or damaged safety decals.

IV Maintenance and storage

1. Disengage drives, lower implement, set parking brake, stop engine and remove key or disconnect spark plug wire. Wait for all movement to stop before adjusting, cleaning, or repairing.
2. Clean grass and debris from cutting units, drives, mufflers, and engine to help prevent fires. Clean up oil or fuel spillage.
3. Let engine cool before storing and do not store near flame.
4. Shut off fuel while storing or transporting. Do not store fuel near flames or drain indoors.
5. Park machine on level ground. Never allow untrained personnel to service machine.
6. Use jack stands to support components when required.



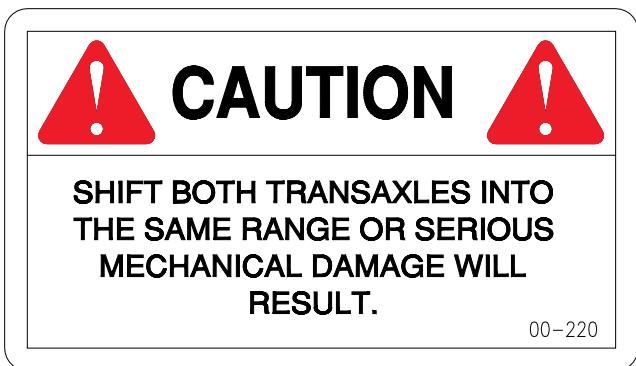
Location:

On top of rear hydraulic motor shield.



Location:

On front grille.



Location:

On right side of front frame.
And front right side of fuel tank.



Location:

On steering column.

BEFORE STARTING:

1. READ SAFETY DECALS
2. Check engine and transaxle oil levels.
3. Visually check tires.
4. Visually check for loose or missing parts or bolts.
5. Fill with clean fuel.
6. Check coolant level. (Kubota)

STARTING INSTRUCTIONS:

1. Safety switch requires Forward - Reverse lever to be in NEUTRAL and PTO to be OFF for engine to start.
2. Open throttle approximately one-fourth of its travel.
3. GASOLINE ENGINES: Pull choke until engine starts.

DIESEL ENGINE: Turn key counter-clockwise to "preheat" until indicator light goes off. No "preheat" is required when the engine is warm.
4. Turn key to start engine.
5. Warm up engine at medium speed. Push in choke on gasoline engines as engine warms up.
6. In cold weather, allow the hydraulic oil to warm up a few minutes at medium engine speed before using tractor.



NEVER USE ETHER AS A STARTING AID, OR SEVERE DAMAGE TO ENGINE MAY OCCUR.



NEVER FILL FUEL TANK WITH ENGINE RUNNING!

SPECIFICATIONS FOR FUELS AND OILS

ENGINE OIL

Fill the crankcase with oil that meets API service designation SF, SF/CC, or SF/CD. Do not mix brands or grades of oil. Recommended weights for expected temperatures are:

LINAMAR ENGINES:

32° F (0° C) and higher.....SAE 30
0° F to 80° F (-18° C to 27° C).....SAE 10W30
or SAE 10W40
-20° F to 50° F (-28° C to 10° C)....SAE 5W-30

KUBOTA DIESEL ENGINES:

77° F (25° C) and higher.....SAE 30
or SAE10W30
32° F to 77° F (0° C to 25° C).....SAE 20
or SAE10W30
Below 32° F (0° C).....SAE 10W
or SAE10W30

KUBOTA GAS ENGINES

77° F (25° C) and higher.....SAE 30
or SAE 10W30
32° F to 77° F (0° C to 25° C).....SAE 20
or SAE 10W30
10° F to 32° F (-12° C to 0° C)....SAE 10W
or SAE 10W30
Below 10° F (-12° C).....SAE 5W30

KOHLER ENGINES

Below 32° F (0° C).....SAE 5W20
or SAE 5W30
0° F and higher (-18° C) & higher..SAE 10W30
or SAE 10W40

FUEL

GASOLINE: Use clean, fresh, regular or unleaded fuel. Use of unleaded fuel results in less maintenance.

DIESEL: Use clean, fresh No. #2 diesel fuel. In extreme cold temperatures No. #1 diesel fuel may be used. *Do not use kerosene or damage to engine may result.* Refer to engine manual for fuel bleeding instructions.

TRANSAXLE HYDRAULIC OIL

Fill transaxle to the safe range with approved hydraulic oil. Use only Steiner Trans-Hydraulic Oil or Texas Refinery Corp. 6440 Universal Torque Fluid. Do not use automatic transmission fluid, motor oil, or any other type of hydraulic oil.

NOTE:

THE USE OF ANY OIL OTHER THAN STEINER TRANS-HYDRAULIC OIL OR TRC 6440 UNIVERSAL TORQUE FLUID IS NOT RECOMMENDED. IF A SUBSTITUTE OIL CAUSES OR SUBSTANTIALLY CONTRIBUTES TO A FAILURE, THAT FAILURE MAY NOT BE COVERED BY WARRANTY.

CAUTION

BE ALERT! STOP RUNNING THE UNIT AT THE FIRST SIGN OF ANY ABNORMAL HYDRAULIC FUNCTION. SERIOUS DAMAGE TO THE HYDRAULIC SYSTEM CAN RESULT!

COOLANT

Fill coolant system with a mixture of one part Permanent Anti-freeze and one part water.

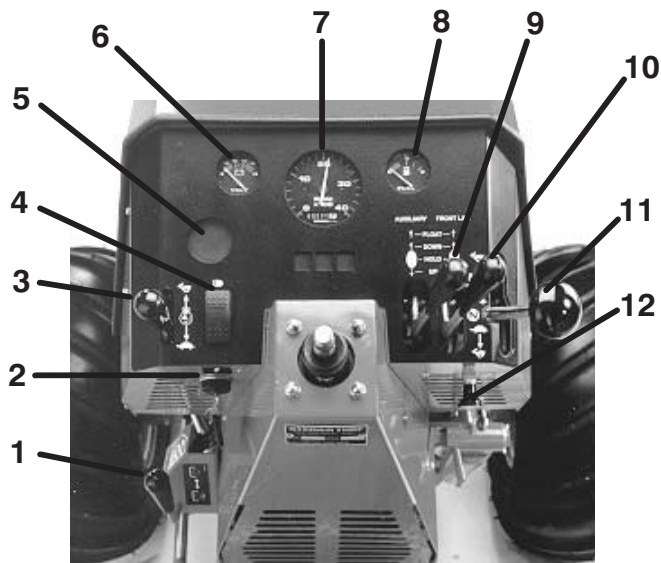


Photo 2 - Controls, Left Side

CONTROLS... Left side

1. **PTO Lever** - Controls Power Take Off front belt drive for attachments.
2. **Key Switch** - Starting and ignition.
3. **Throttle Lever** - Throttle controls engine speed.
4. **Light Switch** - Lights.
5. **Water Temperature Gauge** - Used only on water cooled engines.
6. **Voltmeter** - Voltmeter shows condition of battery or charging system.
7. **Tachometer and Hour Meter** - Shows engine RPM and records total engine running time.

CONTROLS... Right side

8. **Fuel Gauge** - Shows fuel level in tank.
9. **Auxiliary Hydraulic lever** - Auxiliary lever controls the attachments which are connected to the auxiliary couplers. Float position is provided for those attachments which require float.
10. **Hydraulic Front Lift Lever** - Lift lever controls front mounted implements. Float position is provided for those attachments which require float.
11. **Forward - Reverse Lever** - Single lever controls forward and reverse infinitely variable speeds.
12. **Choke** - Choke for cold engine starting. (Gas engines only)
13. **Steering wheel** - Full power steering for easy handling.

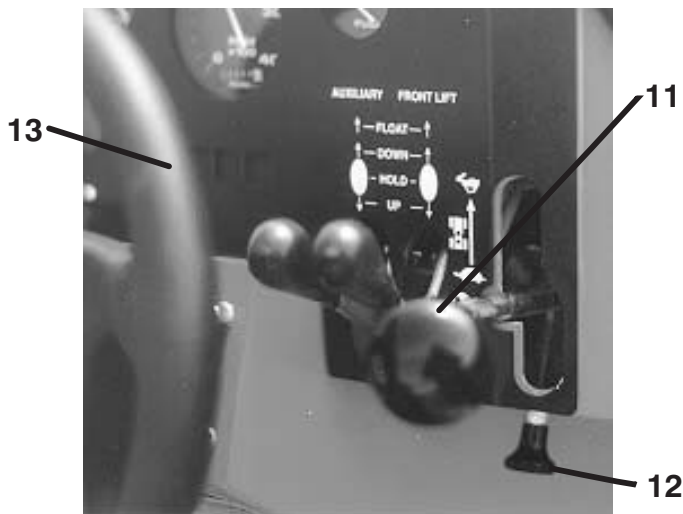


Photo 3 - Controls, Right Side

Controls Continued



Photo 4 - Indicator Lights

14. Oil Light - Warning light for low engine oil pressure.

15. Glow plug indicator - (Indicator for diesel engine only.)



Photo 5 - Controls, Rear Transaxle Selector Lever

16. Rear Transaxle Range Selector Lever - See section 4.4 for HI - LO Range Selection

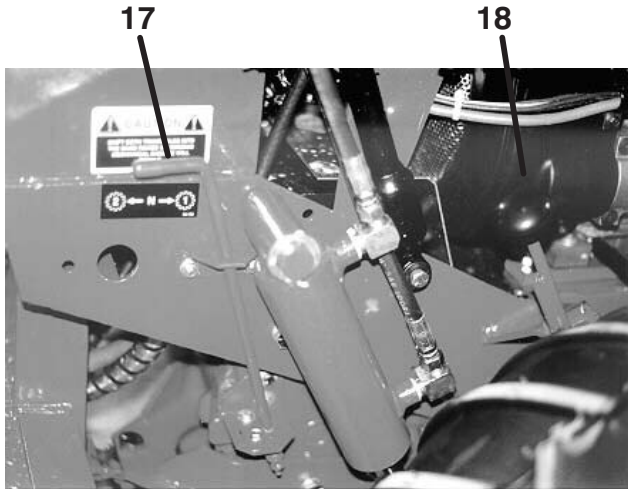


Photo 6 - Front Transaxle selector lever and Front Hitch Release Lever

17. Front Transaxle Range Selector Lever - See section 4.4 for HI - LO Range Selection

18. Front Hitch Release Lever - Releases quick hitch latch for attachments.

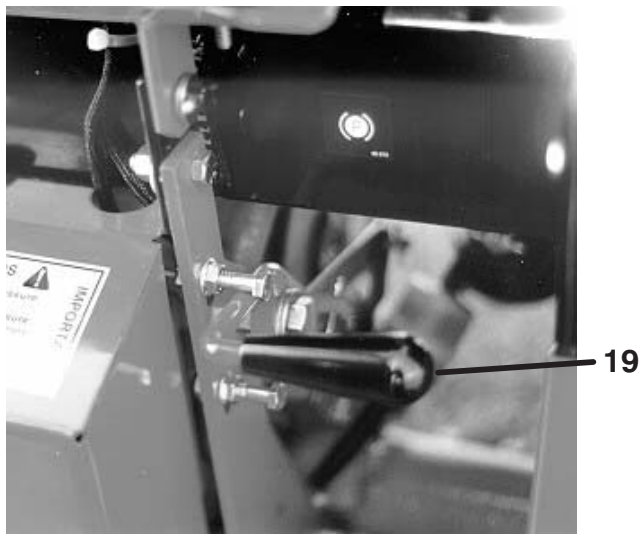


Photo 7 - Controls, Parking Brake

19. Parking Brake Lever (On left side) - Set parking brake before dismounting.

OPERATING PRECAUTIONS

- Observe all Safety Decals.
- Keep all Shields in place.
- Do not allow minors or the inexperienced to operate machine. **NO RIDERS!**

CAUTION

Slow down on rough, uneven or steep terrain and for operation of power driven mounted attachments.

- Do not operate mower with other persons in the area. Irregularities in ground surface can permit foreign material to be propelled from beneath deck to cause serious injury or death.
- Before leaving operator's seat, disengage PTO, set PARKING BRAKE and STOP ENGINE.
- Remove key from ignition if maintenance procedures are to be performed or tractor is to be left unattended.

CAUTION

Stop running the unit at the first sign of any abnormal hydraulic function. Serious damage to the hydraulic system can result.

CAUTION

Rear weights must be used with attachments over 120 pounds for stability. See attachment operator's manual for weight requirements.

Always remove all rear weights when front mounted attachments are removed, or when using attachments less than 120 pounds, to reduce the danger of unit tipping over backward while climbing steep slopes or loading ramps.

OPERATING INSTRUCTIONS

1. Read and understand this manual before attempting to operate this machine.
2. Check all fluid levels before starting unit.
3. Become familiar with all controls and their functions.
4. Safety interlock requires the Forward - Reverse control lever to be in the neutral position to start engine.
5. Select desired engine speed with the throttle. For power driven attachments, the engine is normally run at maximum RPM.
6. Vary vehicle speed with the Forward - Reverse control lever. If the attachment or a steep slope causes excessive drop in engine RPM; reduce ground speed. **Do not lug the engine at reduced RPM.** Do not make sharp turns at high speeds. Always look before backing.
7. Operate mower and other similar front mounted equipment with front lift lever in "FLOAT" position.
8. Safety seat switch requires operator to be seated when PTO is "ON" or engine will stop. Disengage PTO before attempting to start engine.
9. The hydrostatic transmission provides a braking action when the Forward - Reverse control lever is returned to neutral.
10. Set parking brake and stop engine before dismounting.
11. **DO NOT TOW!** Serious damage to hydraulic system will result. See Section 4.6 for emergency moving instructions.
12. Be alert for loose bolts and nuts. It is the operator's responsibility to keep bolts tight.
13. Tire pressures are very important! Check tire pressures according to Service Schedule. (Section 5.1)
14. See the following pages for more information on specific operator controls and adjustments.

TIRE BALLAST

Liquid, foam, rubber or powder ballast in tires causes excess loads on the drive train. **Failures caused by excess loading may not be covered by warranty.**

Modified or makeshift weights are not acceptable.

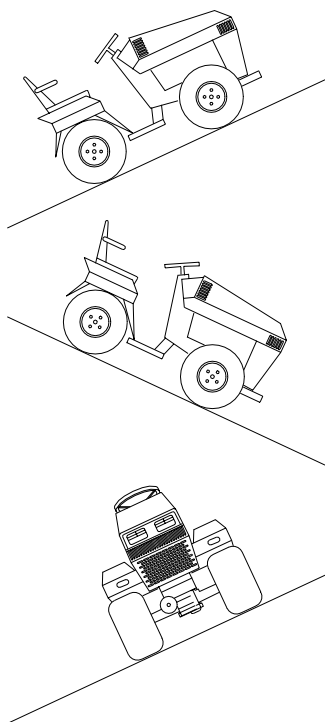
OPERATING ON SLOPES

USE EXTRA CARE WHEN WORKING ON SLOPES. The operator must be experienced with the Steiner tractor and its unique operational responses. Be alert to dips and rises which change the general slope. Watch for holes, rocks, and roots in the terrain and other hidden hazards. Keep away from drop offs. Avoid ground conditions which will cause the machine to slide. Maintain engine RPM and control ground speed with the Forward - Reverse control lever.

The following recommendations for slopes are only a guide, based on normal turf conditions. If the operator is uncomfortable or unsure of the machines stability, he should cease operation on the slope immediately.

- 30 Degrees max. down slope in forward.
- 25 Degrees max. across slope.
- 30 Degrees max. up slope in forward.
- 30 Degrees max. backing up slope in reverse.
- 25 Degrees max. backing down slope in reverse.

On uneven, loose or wet ground, the angles should be reduced. Only smooth maneuvers (not erratic) should be made to help maintain stability. Avoid high speeds and sharp turns on slopes. Do not start or stop suddenly when going uphill or downhill.



NOTE:

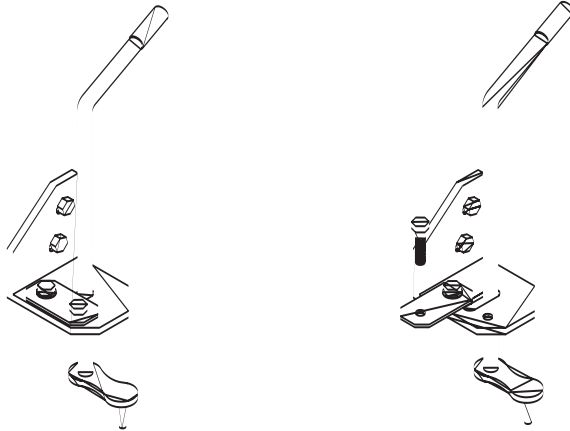
**THE ULTIMATE
RESPONSIBILITY FOR SAFE
OPERATION ON SLOPES
RESTS WITH THE OPERATOR.**

MAXIMUM ENGINE INCLINATION RECOMMENDATIONS

When using an engine in an inclined position continuously, the following points must be remembered:

1. The effective volume of the fuel tank becomes less, so air suction must be prevented.
2. The effective volume of the engine oil sump is reduced, increasing the possibility of improper engine lubrication.

Position	Less than 10 minutes continuous operation	Continuous operation
Front up	30°	25°
Front down	30°	25°
Left or right side down	30°	25°



LOCKED POSITION

SHIFTER POSITION

HIGH - LOW RANGE SELECTION

Do not attempt to select ranges on slopes or when the unit is traveling. Select ranges only on level surfaces.

A locking device has been installed on the gear range selector levers. The units are shipped with the transaxle gear range selector in HIGH (2) range. This range selection is recommended for most of the operating tasks. If slower speeds and more responsive F-R control is needed, use LOW (1) range selection.

INSTRUCTIONS FOR TRANSAXLE RANGE SELECTION

1. Stop the unit on a level surface and set PARKING BRAKE.
2. Stop the engine and dismount.
3. Remove the 1/4 x 3/4 flange bolt from the lever lock strap and swing it away from the lever, revealing a slot. (See Shift Position drawing.)
4. Shift the range selector lever, observing the 2 - N - 1 decal for range selection. A slight rocking motion of the unit may be needed to fully engage the selector.
5. With the selection completed, replace the lock strap and tighten the 1/4 x 3/4 flange bolt to 12 - 15 ft. lbs. torque. (See Locked Position drawing.)
6. Repeat step 3, 4, and 5 for the other transaxle.

EMERGENCY TOWING INSTRUCTIONS FOR A STALLED UNIT

1. Both transaxles must be in neutral before moving a stalled unit. Neutral position is between HIGH (2) and LOW (1) range position.
2. Release the locking straps on both transaxles to shift into "Neutral".
Failure to shift transaxles into "Neutral" will cause serious damage to the hydrostatic system.
3. Remember to lock the lever lock strap after towing.



Be sure to shift both transaxles into the same range or serious mechanical damage will result!

DO NOT OPERATE UNIT WITHOUT THE LEVER LOCK STRAPS IN THE LOCKED POSITION!

AUXILIARY HYDRAULICS

The auxiliary valve and quick couplers are standard equipment. Keep dust covers in place when couplers are not in use. Float position is provided for those attachments which require float.

FRONT LIFT

The front lift control valve is equipped with a detent float position. Always use "FLOAT" position when mowing, sweeping, etc.

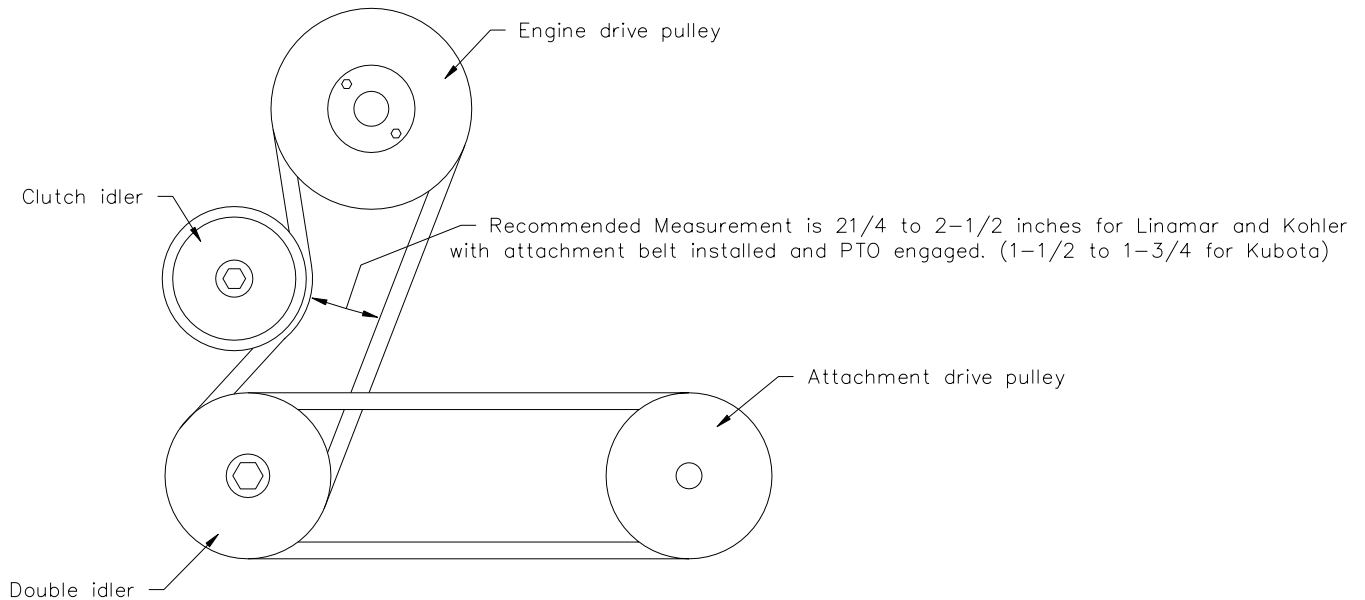
The QUICK HITCH allows fast interchange of attachments. Push down on hitch control handle to open latches. Install the attachment. Pull up control handle to close and lock latches. See PTO BELT DRIVE for power driven attachments and drive belt installation.

PTO BELT DRIVE

A belt drive is provided for power transfer to attachments.

The attachment drive belt is installed around the left hitch arm before the attachment is connected to the front lift Quick Hitch. To install the drive belt: Turn the engine off and remove the key. Lift up on the belt release catch located on the right front frame and push toward the center of the tractor. Install the implement drive belt on the pulleys and pull the roll pin T-handle to re-engage the release catch. (See Photo 7)

Each time a PTO belt driven attachment is installed, it is necessary to check the drive belt tension. See PTO BELT ADJUSTMENT on the next page (Section 4.6) for adjustment instructions.



PTO BELT ADJUSTMENT

It is necessary to check the PTO belt adjustment

- A.** Each time a new attachment is installed.
- B.** If the PTO drive belt slips or does not release properly.

1. Attach the new implement using the correct attachment drive belt. See the Attachment Operator’s Manual for the correct belt or the belt chart on page 5-10 in this manual.
2. Stop the engine, engage the PTO lever and check the distance as shown in above drawing. The correct distance between the PTO drive belt is 2-1/4 to 2-1/2 inches (1-1/2 to 1-3/4 Kubota). If the distance is less than 2-1/4 inches (1-1/2 Kubota) the drive belt may slip. If the distance is greater than 2-1/2 inches (1-3/4 Kubota) the drive belt may not release properly when the attachment is raised to the highest position.

3. Disengage the PTO and adjust the idler slide assembly by turning the belt release catch handle clockwise to tighten belt and counter clockwise to loosen belt. Adjust to obtain the correct measurement as stated in step 2.
NOTE: If correct measurement is not possible, check for an improper size drive belt.
4. Start the unit and raise the attachment to full height. The attachment should not run with PTO disengaged. If it does, the drive belt adjustment is too tight. Repeat Steps 1 through 4.

⚠ CAUTION

STOP ENGINE! DO NOT ATTEMPT TO INSTALL BELTS OR MAKE BELT ADJUSTMENTS WITH THE ENGINE RUNNING.

SERVICE

section 5

SERVICE CHART	DAILY	50 HOUR	100 HOUR	250 HOUR
Read safety decals.	X			
Check fuel level.	X			
Check engine oil level.	X			
Check transaxle oil level.	X			
Check air cleaner.	X			
Check coolant level (Kubota).	X			
Visual inspection of:				
Bolts and fittings for signs of loosening.	X			
Accumulation of dirt or foreign matter around engine restricting engine cooling.	X			
Oil leaks or hydraulic hoses, belts, electrical wiring, showing signs of wear.	X			
Tires for low pressure or signs of abnormal wear.	X			
Change engine oil and filter:				
LINAMAR: Initial change at 25 hours and 50 hours thereafter. KOHLER: Initial change at 25 hours and 100 hours thereafter. KUBOTA: Initial change at 35 hours and 100 hours thereafter.		X	X	X
Check air cleaner:				
Clean or replace.	X	X	X	X
Check battery water level:				
If battery is serviceable, fill to cover the plates 1/4".		X	X	X
Transaxles:				
Check transaxle oil level.	X	X	X	X
<i>Use only Steiner Trans-Hydraulic Oil or Texas Refinery Corp. 6440 Universal Torque Fluid. Do not use automatic transmission fluid or motor oil.</i>				
Initial hydraulic filter change 25 hours. Initial hydraulic oil and filter change 50 hours		X		
Change hydraulic oil and filter every 250 hours or annually (whichever occurs first)				X
Replace hydraulic oil and filter every 250 hours or at the first sign of any abnormal hydraulic function.				X
Fuel System:				
Check or replace filter.			X	
Lubrication:				
Grease center pivot, PTO idler arm, and (drive shaft on Linamar & Kohler).			X	
Check Tire Pressure:				
Air Pressure - 5 to 8 lbs. -- (Duals - 3 to 4 lbs.) <i>Outside duals should have no more than 50% of the inner tire pressure.</i>		X		
Storage:				
Drain fuel tank.				X
Maintain proper tire pressure.				X

CAPACITIES CHART

CAPACITY OF:	QUANTITY
Engine Oil (Linamar)	1.8 U.S. Quarts (1.7 liter)
Engine Oil (Kohler)	2.1 U.S. Quarts (2 liter)
Engine Oil (Kubota Gas)	3 U.S. Quarts (2.9 liter)
Engine Oil (Kubota Diesel)	3 U.S. Quarts (2.9 liter)
Engine Coolant (Kubota Gas)	3 U.S. Quarts (2.9 liter)
Engine Coolant (Kubota Diesel)	3 U.S. Quarts (2.9 liter)
Hydraulic Oil (Rear Axle)	(Approx.) 6 quarts (5.7 liter)
Hydraulic Oil (Front Axle)	(Approx.) 7 quarts (6.6 liter)
Fuel Tank	6 gal. (22.7 liter)

ELECTRICAL

- Do not bypass or eliminate safety devices.
- Keep all electrical connections clean and dry.
- Do not add extra electrical equipment.
- If wire replacement is necessary, replace with the same gauge and color code.
- Make certain there is a ground strap between engine and frame.
- Follow recommended jump starting procedures.
- Use only factory recommended size batteries.
- Make a periodic visual inspection of all wiring to ensure it is not damaged.
- Maintain battery by keeping terminals and top of battery clean.

CALIFORNIA PROPOSITION 65
Battery Warning

Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm.

WASH HANDS AFTER HANDLING!

ENGINE

Engine Oil Specifications and Recommendations

Fill the crankcase with oil that meets API service designation SF, SF/CC, or SF/CD. Do not mix brands or grades of oil.

Recommended weights for expected temperatures are listed in Section 3 Pre-Start Instructions:

Engine Oil and Filter Change Procedure

1. Run engine until engine is warm for complete draining.
2. Remove oil drain plug (Linamar and Kohler). Open drain cock (Kubota).
3. Remove oil filter and wipe filter base clean.
4. Lube filter gasket with oil and install new filter. Tighten 1/2 turn after seal contacts base. Do not over tighten.
5. Re-install drain plug (Linamar and Kohler). Close drain cock (Kubota).
6. Fill with engine oil.
Linamar:
Add 1.8 U.S. Quarts (1.7 liter) engine oil.
Kohler:
Add 2.1 U.S. Quarts (2 liter) engine oil
Kubota:
Add 3 U.S. Quarts (2.9 liter) for **Kubota** engines. Refer to engine manual for oil specifications.
7. Run engine and check filter and drain plug or cock for leaks.
8. Stop engine and refill to proper oil level.

NOTE:

THE USE OF ANY AIR FILTER OR OIL FILTER OTHER THAN THOSE SPECIFIED BY THE ENGINE MANUFACTURER IS NOT RECOMMENDED. IF A NON-GENUINE PART CAUSES OR SUBSTANTIALLY CONTRIBUTES TO A FAULTURE, THAT FAILURE MAY NOT BE COVERED BY WARRANTY.

Air Filters

- Install filters properly, do not over tighten and deform element.

Linamar & Kohler

- Keep an extra foam wrap oiled and ready - Can keep the extra foam wrap in tool box.

Kubota

- Don't over service, remove end cap only to clean out dust. Don't tap dirt out.
- Don't blow out with compressed air. Don't change filter until the engine starts to smoke.
- Check intake hoses and fittings for damage or leaking.

Oil Filters

- Use only O.E.M. Brand filters. - Some after market filters are not constructed the same.

Fuel Filters

- Use only O.E.M. brand filters
- Buy your fuel from a reputable supplier. Recommended gasoline is 87 octane. Recommended diesel fuel is No. 2. Store it properly - keep moisture out.
- Shelf life of fuel is about 3 months - gasoline and diesel.
- Store fuel in proper, clean containers.

Cooling

- Keep chaff screen clean. - Air cooled and liquid cooled.
- Keep engine block clean. Grass, dirt, misc. debris will act as an insulator.
- Do not run Linamar engine with oil filter boot removed.

- Do not pressure wash a hot or running engine.
- Keep radiators clean. - Do not use high pressure air or washers to clean. Use only low air or water pressure. Blow directly through fins and not on an angle so as not to damage or close fins.
- Use only commercial grade anti freeze (for cast iron liquid cooled engines) and deionized water in a 50/50 mix. Mix outside of engine. Don't mix Propylene Glycol and Ethylene Glycol.
- Do not remove thermostat.

Starting Tips.

- Never use starting fluid or ether as a starting aid.
- Linamar, Kohler and Kubota Gas - Use choke as needed on cold engines.
- Kubota Diesel - Open throttle half and crank engine two to three seconds. Turn preheat until light goes out, or for no more than fifteen to thirty seconds, start engine. No choke or preheat is required when engine is warm.
- Ensure battery cables are clean and making good connections.
- Make sure battery is in fully charged condition.
- Do not engage starter longer than 30 seconds.
- In severe cold applications, utilize starting aids such as block heaters, etc.

Stopping the engine... Cool down procedure

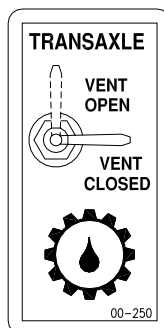
- **Linamar...** Run at full throttle - No load for three to four minutes, then idle for three to four minutes and shut down.
- **Kohler...** Run at full throttle - No load for three to four minutes, then move to half throttle for two minutes and shut down.
- **Kubota...** Run at half throttle - No load for two to three minutes, then idle for one to two minutes and shut down.

HYDRAULIC SYSTEM

1. Keep system filled with proper fluid.
 - Check only at transaxle dip stick. Daily
 - Check when oil is cold. Daily
 - Use only clean containers. Keep it clean! Daily
2. Keep oil and filter changed.
 - Initial filter change 25 hours, then oil and filter change at 50 hours..
 - Change oil and filter every 250 hours thereafter or annually. (whichever occurs first)
 - Change oil when warm (not hot).
 - Make sure filter is primed.
 - Use only Steiner filter and Steiner fluid or TRC 6440.
 - Check oil level after 30 minutes of operation.
 - Do not over tighten drain plug.
 - Make sure filter is tight.
 - Change hydraulic oil and filter at the first sign of abnormal hydraulic functions.
3. Check for leaks daily (Never operate a unit if a leak is detected).
 - Inspect hoses for leaks or chafing.
 - Inspect fittings and hose ends for seepage.
4. Keep tractor/unit clean.
 - Keep auxiliary hoses and couplers clean and plugged.
 - Grass and debris will hold in heat.
 - A clean unit is easier to work on and safer to operate. And it is easier to do regular checks.
 - See your dealer for a high pressure filter of the entire system if drive system has been opened (such as hoses removed, pump or motors removed).

NOTE:

THE USE OF ANY OIL FILTER OTHER THAN THOSE SPECIFIED BY THE MANUFACTURER IS NOT RECOMMENDED. IF A NON-GENUINE PART CAUSES OR SUBSTANTIALLY CONTRIBUTES TO A FAILURE, THAT FAILURE MAY NOT BE COVERED BY WARRANTY.



TRANSAXLE OIL CHANGE PROCEDURE

Change oil and filter at any time contamination is suspected. Approximately 3 gallons of approved hydraulic oil are needed to change oil.

1. It is best to drain transaxles after the tractor has been thoroughly warm to assure maximum drain.
2. Remove fill neck cap from rear transaxle.
3. Remove drain plug from rear transaxle.
4. Open the front transaxle vent.
5. Remove drain plug from front transaxle. After approximately 1 quart of hydraulic oil has been drained from the front transaxle, remove the fill tube cap.
6. Remove hydraulic oil filter and wipe filter base clean.
7. Fill the new Steiner hydraulic filter with hydraulic oil and lube the filter gasket.
8. Install the new hydraulic oil filter. Tighten 3/4 to 1 turn after gasket makes contact with the filter base. Do not overtighten.
9. Install drain plugs in both transaxles.
10. Fill front transaxle to the top of the fill tube, approximately 6 quarts.
11. Close the front transaxle vent.
12. Fill the rear transaxle to the top of the fill neck.
13. Run engine, and turn steering wheel extreme right to extreme left several times to purge all air from the circuit.
14. Drive the unit back and forth about 50 feet to purge air from the drive circuit.
15. Repeat step 12 as needed.



Shut-Off Valve

NOTE:

THE USE OF ANY OIL OTHER THAN STEINER TRANS-HYDRAULIC OIL OR TRC 6440 UNIVERSAL TORQUE FLUID IS NOT RECOMMENDED. IF A SUBSTITUTE OIL CAUSES OR SUBSTANTIALLY CONTRIBUTES TO A FAILURE, THAT FAILURE MAY NOT BE COVERED BY WARRANTY.

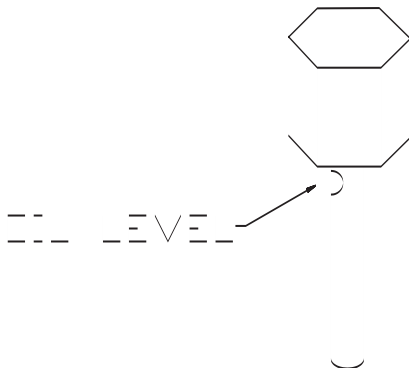
HYDROSTATIC TRANSMISSION

CAUTION

When servicing any part of the hydrostatic system, observe clean shop practices. A small amount of contamination in the high pressure circuit will cause damage to the system. Improper hoses can cause injury. See your Steiner dealer for quality service parts and service of the high pressure hydrostatic system.

TRANSAXLE OIL LEVELS

After a period of time the level on the rear transaxle may be low even though there are no apparent oil leaks. This condition could be caused by a transfer of oil from the rear transaxle to the front transaxle. **Add oil only to the rear transaxle to bring it up to the top of the filler neck.** It is normal for the front transaxle to appear over full if the filler cap is removed.



Rear Transaxle Dipstick

Forward - Reverse Lever Tension Adjustment

Tension is adjusted by tightening the spring-loaded friction washers on the Forward - Reverse lever. Tighten the friction washers to hold the lever in the desired position under normal loads. When the hydrostatic system is subjected to heavy loads, the Forward-Reverse lever has a tendency to return to the neutral position. Additional holding pressure from your hand may be needed to keep the lever in the desired position.

Neutral Linkage Adjustment:

Absolute neutral is when the tractor will not creep with the engine running and the Forward - Reverse lever in neutral. If the unit creeps it is necessary to adjust the control linkage. Adjust the linkage by removing the bolt at one end of the connecting link and rotate the rod end one-half turn at a time until the desired setting is reached. Shorten the rod if the unit creeps forward or lengthen the rod if the unit creeps backward. Tighten jam nuts when neutral setting is correct. (see Photo 10)



Photo 10 - Neutral Linkage Adjustment

FRAME

1. Check for loose or missing fasteners after first 10 hours. - Every 100 hours thereafter.
 - Torque transaxle mount bolts 60 - 65 ft. lbs. Torque wheel hub bushing bolts to 192 inch lbs. ToTorque in three increments until specified torque is reached.
 - Torque all standard hardware bolts to standard grade 5 spec.
 - Steering cylinder mount bolts, front... torque to 105 ft. lbs., rear... torque to 230 ft. lbs.
 - Center link bolts, torque to 230 ft. lbs. Tighten 1" center bolt to 560 ft. lbs. max.
 - If ROPS equipped, torque bolts to 80 ft. lbs. Do not cut, weld, drill or modify roll bar in any way. Replace if roll bar becomes bent or damaged.
2. Do not remove guards, shields or lock straps.
 - Repair or replace any broken parts.
 - Keep frame parts clean, it makes it easier to find loose or broken parts.
 - If used in toxic areas, wash after each use - fertilizer, manure, etc., can cause corrosion of aluminum parts.
3. Keep parking brake adjusted properly.
 - Ensure that brake holds unit from creeping.
4. Lubrication
 - Grease all fittings as recomended on chart.
 - Grease PTO slider bracket pivot and apply grease to PTO slider bracket saddle and rod every 25 hours.
 - Use Chain Lube,WD40 or light motor oil to lubricate all pivot points, hood hinges, tie rod ends, center link, etc. every 25 hours.
 - Grease drive shaft U-joints every 100 hours.

PARKING BRAKE ADJUSTMENT

The parking brake is a dry disc type located on the rear transaxle. As the friction pads wear it may be necessary to adjust the brake. (see Photo 11)

NOTE: Check brake disc periodically to ensure it will float on the brake shaft. Remove and coat with never-sieze annually.

To Adjust The Brake:

1. Release the brake and remove the cotter pin from the adjusting nut.
2. Tighten the adjusting nut carefully until the disc cannot be moved freely by trying to rotate the disk by hand, then back off just far enough to allow the disk to move freely.
3. Align nut and re-install cotter pin.

To Replace Brake Pads:

1. Remove the two bolts which fasten the brake assembly to the transaxle. Caution: There are two loose pins and a backing plate which may fall out upon dis-assembly. Be sure these are in place before assembling the brake.
2. Slide the disk off the brake shaft. Note: A woodruff key in the shaft must stay in place.
3. Replace inner pad and install disk on the brake shaft. It must slide freely on the shaft.
4. Back off brake adjustment nut, replace outer pad in housing and reinstall the assembly to the transaxle.
5. Adjust brake.

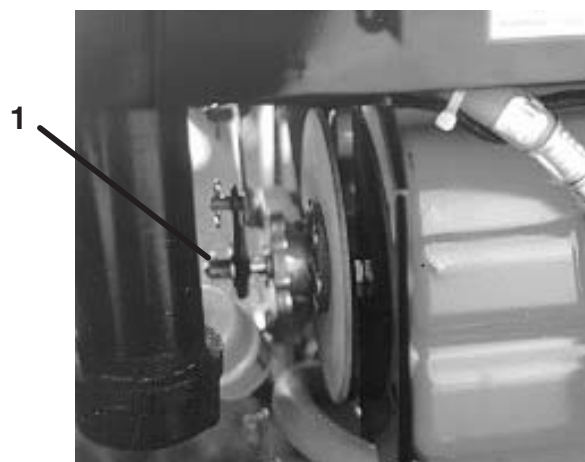


Photo 11 - Parking Brake Adjustment

Throttle Adjustment

Tension adjustment is made by simply tightening the spring loaded friction washers on the throttle lever. High and low idle speeds are obtained by adjusting the linkage at the engine.

Engine	Low idle	High idle
Linamar	1400 rpm	3600 rpm
Kohler	1400 rpm	3600 rpm
Kubota gas	1400 rpm	3600 rpm
Kubota diesel	1600 rpm	3600 rpm

WHEELS & TIRES

- Use only factory recommended wheels and tires.
- Never use different sizes in any combination.
- Maintain proper air pressure.
- Do not load tires with ballast or use wheel weights.
- Tire sealer may be used.
- Be sure dual wheels are installed correctly and the tire pressures are correct.
(See instruction sheet for dual wheels #19-166)
- Duals must be checked for tightness every day until they are seated in. Torque center bolt to 80 ft. lbs.
- Avoid close operating conditions with duals installed.
- Check lug nuts for torque.... 85 ft lbs.
- Seal beads with Permatex Liquid Sealer.

PTO and Belts



STOP ENGINE! DO NOT ATTEMPT TO INSTALL BELTS OR MAKE BELT ADJUSTMENTS WITH THE ENGINE RUNNING.

1. Belt Drive

- Steiner belts are recommended. (See Belt Chart for sizes). Steiner specification belts are Kevlar reinforced to take back bend and retain a consistent length - to keep belt to pulley geometry consistent.

2. Engaging/Disengaging

- Never engage at full RPM always reduce engine RPM before engaging PTO.

3. Keep all moving parts lubricated

- Slider bracket arm.
Grease every 25 hours.
It must swing freely
Spray lubricant on adjustment threads every 25 hours.

4. Alignment

- Make sure slider bracket arm isn't bent.
- Engine pulley to double idler - Lay straight edge on engine pulley, should line up with the center ridge of double idler pulley.

Linamar & Kohler... Move engine pulley to adjust.

Kubota... Space double idler to adjust.

- Double idler to mower deck pulley - With tractor & mower on a flat surface with front lift in float, tops of pulleys should be in line.

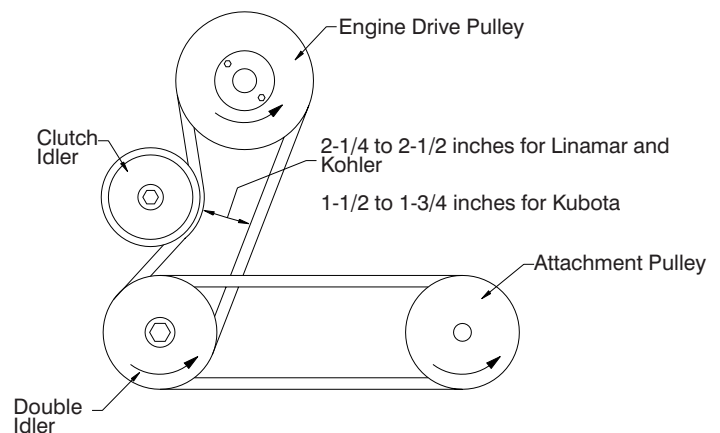
5. Adjustments

(Must be made with an attachment on the tractor)

- Every time attachments are changed.
See Section 4, page 4-8 for additional instructions.
- Every time belts are changed.
- Adjustment is made by turning the belt release catch handle (located front right side of tractor).
- To tighten belt turn adjuster handle clockwise.
- To loosen belt turn adjuster handle counter clockwise.
- Over tightening could cause severe damage.

Operation

- The PTO drive is designed so that the harder the attachment pulls the tighter the belt gets and wraps more on the pulley.
When PTO is engaged the idler arm is on the slack side which causes the belt to wrap more around the pulleys.
With the PTO engaged, as the front lift moves up and down, the attachment pulley (moving with the front lift) pulls on the double idler and keeps a constant tension on both drive belts.



PTO Drive Belts

430 BELT CHART

Model	Description	Belt Number
430	Engine drive pulley to Double Idler	81-B039
Attachment Drive Belts		
ALL	Rotary Mowers	81-A040
BM425	Boom Mower	81-A040
CS312	Chipper / Shredder	81-B041
LD300	Loader	81-A026
MC444	Tree Farm Mower	81-A040
PB100	Power Blower	81-A040
PB200	Power Turbine Blower	81-A040
PR348	Power Box Rake	81-A043
RM674 and RM684	Reel Mower	81-A043
RS350	Rotary Sweeper	81-A040
SB348	Snowblower (1001 - 1713) (1714 -)	81-A053 81-A051
SC101	Stump Cutter	81-A043
TH300	Trencher	81-B051
TL348	Tiller	81-A040
VA242	Vertical Auger	81-A027

TROUBLE SHOOTING CHART

SYMPTOM: Engine will not turn over	
Possible Cause	Remedy
Forward - Reverse control lever not in neutral.	Adjust neutral linkage. (See page 5-6)
P.T.O. engaged	Disengage P.T.O.
Battery dead.	Check battery, charge or replace.
Defective wiring, broken or loose connections.	Visually check, or check with test light for continuity on the circuits.
Defective starter or starter solenoid.	Check by using a jumper from the battery terminal to the solenoid terminal.
Safety switches out of adjustment.	Adjust switches so they are fully depressed.
SYMPTOM: Engine difficult to start, or runs poorly.	
Possible Cause	Remedy
Fuel valve partly closed or plugged	Open fuel valve all the way or remove and clean.
Fuel filter dirty.	Replace fuel filter.
Air cleaner dirty.	Replace air cleaner element.
Water or dirt in the fuel.	Drain and refill with fresh clean fuel.
Engine running too hot.	Clean engine screen and fins.
Air in fuel system.	Bleed air out of fuel system.
Defective fuel pump.	Check fuel pump.

TROUBLE SHOOTING CHART

SYMPTOM: Power steering slow and/or front lift will not lift	
Possible Cause	Remedy
Oil level too low in transaxle.	Check transaxle oil level and refill to proper oil level.
Hydraulic oil filter dirty or plugged.	Replace with Steiner approved filter.
Low charge pump pressure.	See Steiner dealer for pump service.
SYMPTOM: Implement drive belt slips.	
Possible Cause	Remedy
Drive belt tension needs adjusting.	Adjust PTO drive belt tension according to adjustment instructions. (See page 4-8)
Wrong size drive belt.	Use correct belt size.
Excessive load on attachment drive system.	Check implement attachment for worn or damaged drive parts, blades, bearings, or excessive foreign material buildup.

TROUBLE SHOOTING CHART

SYMPTOM: Tractor will not move with engine running and Forward - Reverse control lever in forward or reverse position.	
Possible Cause	Remedy
Parking brake set.	Release parking brake.
Oil level too low in transaxles.	Check transaxle oil level and refill to proper oil level.
Hydraulic oil filter dirty or plugged.	Replace hydraulic oil filter with Steiner approved filter.
Air leak in suction line.	Check for loose fittings or damaged suction line.
Drive coupling failure.	Check drive coupling to determine if pump input shaft is turning.
Pump control linkage failure.	Check pump control linkage and repair.
Transaxle shift lever(s) in neutral.	Check transaxle shift lever(s). Be sure shift lever(s) is completely engaged.
Low charge pump pressure or faulty hydrostatic system.	See Steiner dealer for pump service.
SYMPTOM: PTO will not run.	
Possible Cause	Remedy
Operator not seated.	With Operator seated, restart PTO.
Electrical problem.	See Steiner dealer for electrical service.
Belt slipping.	Check for broken or wrong size engine drive belt.

**EMERGENCY TOWING INSTRUCTIONS
FOR A STALLED UNIT**

1. Both transaxles must be in neutral before moving a stalled unit. Neutral position is between HIGH (2) and LOW (1) range position.
2. Release the locking straps on both transaxles to shift into "Neutral".
Failure to shift transaxles into "Neutral" will cause serious damage to the hydrostatic system.
3. Remember to lock the lever lock strap after towing.

Assembly Instructions for 430 Tractor:

1. Remove unit and all parts from crate.
2. Install the wheels with valve stems facing outward and traction bar tread facing in the proper direction. There are two right wheels and two left wheels. Tighten wheel nuts to 85 ft. lbs. Adjust tire pressures. Refer to Service Schedule in Section 5.
3. Install the seat (if removed) and connect the wiring for the seat switch. It is very important to connect this wiring for safety interlock and operator presence control.
4. Install the steering wheel (if removed) and torque the nut to 40 ft. lbs. Snap the center cover in place.
5. Check all fluid levels. Refer to Service Schedule in Section 5.
6. Visually inspect for loose bolts or fittings.
7. Start the unit and test drive to check all functions.

STATEMENT OF LIMITED WARRANTY

STEINER TURF EQUIPMENT INC. warrants its line of equipment to be free from defects in material and factory workmanship for a period of 12 months. This statement does not limit engine warranties in which the engine manufacturers carry extended time periods beyond the 12 months. Engine warranty claims will be subject to the engine manufacturer's approval.

Exception to this warranty period will be the Chipper/Shredder, Trencher and Generator, which carry a 90 day warranty. Homeowner warranties will be extended to a 24 month warranty on power units only.

Replacement Parts carry a 90 day replacement warranty and are reimbursed to the dealer, net of the prompt payment. All electrical and hydraulic parts are limited by this policy and will only be covered upon approval by the service department after the inspection of the part. The installation and removal of a part will automatically place that part under the replacement parts warranty.

This guarantee is limited exclusively to equipment manufactured or supplied by STEINER TURF and is subject to the inspection and analysis by the company to conclusively identify or confirm the nature and cause of failure.

PRODUCT REGISTRATION FORM must be completely filled out, signed by the customer, and returned to STEINER TURF before any warranty claims will be considered.

STEINER TURF reserves the right to incorporate improvements in material and design of its products without notice and is not obligated to make the same improvements to equipment previously manufactured.

STEINER TURF is not obligated under any warranty different from the warranty as published above.

STEINER TURF'S RESPONSIBILITIES

STEINER TURF'S obligation under the terms of this warranty is limited to the repair, replacement or credit, at its option, of the equipment, parts or supply items that conform to this warranty.

STEINER TURF will pay for the parts and the cost of surface transportation for the parts that conform to this warranty.

DEALER'S RESPONSIBILITIES

1. Only factory-trained service personnel will be permitted to perform warranty service on STEINER TURF equipment.

2. All major warranty claims such as overhauls - rebuilds must be authorized by STEINER TURF before work is performed.

3. All replacement parts used in warranty situations must be furnished by STEINER TURF or approved by STEINER TURF service personnel. The use of non-recommended oil or parts may void the warranty.

OWNER'S RESPONSIBILITIES

The owner is obligated to operate and maintain the equipment in accordance with the recommendations published by STEINER TURF in the owner/operator's manual for the unit. The owner is responsible for the costs associated with such maintenance and operating adjustments which may be required on a regularly scheduled basis. The owner is responsible for transportation to and from the dealership or service calls made by the dealer.

CONDITIONS WHICH VOID WARRANTY

This warranty shall not apply to equipment which:

1. Has had repairs or modifications not authorized by STEINER TURF.

2. Has been subject to abuse, improper maintenance, or improper application.

Attachments are intended for use only on tractors manufactured by Steiner Turf Equipment, Inc. Use in any other application may void the attachment warranty.

WARRANTY EXCEPTIONS

This warranty does not apply to the following items:

1. Wear items including blades, cutting edges, spark plugs, points and condensers, belts, filters, bearings, sprockets, chains, tires, light bulbs, lubricants and fluids.

2. Damages to engine/drive systems caused by a lack of/improper lubricants and/or fluids.

3. Damages to engine/drive systems caused by improper operation and/or maintenance.

FREIGHT CARRIER DAMAGE

Claims for equipment damaged in transit should be referred to the freight carrier. Visible damage should be reported immediately, and concealed damage as soon as possible, in accordance with freight carrier regulations.



WARNING



The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

CALIFORNIA Proposition 65 Warning

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects and other reproductive harm.

CALIFORNIA PROPOSITION 65 Battery Warning

Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm.

WASH HANDS AFTER HANDLING!