

SCHULTE®

SPARTAN RWP-1935 VARIABLE WIDTH ROCK WINDROWER/PICKER

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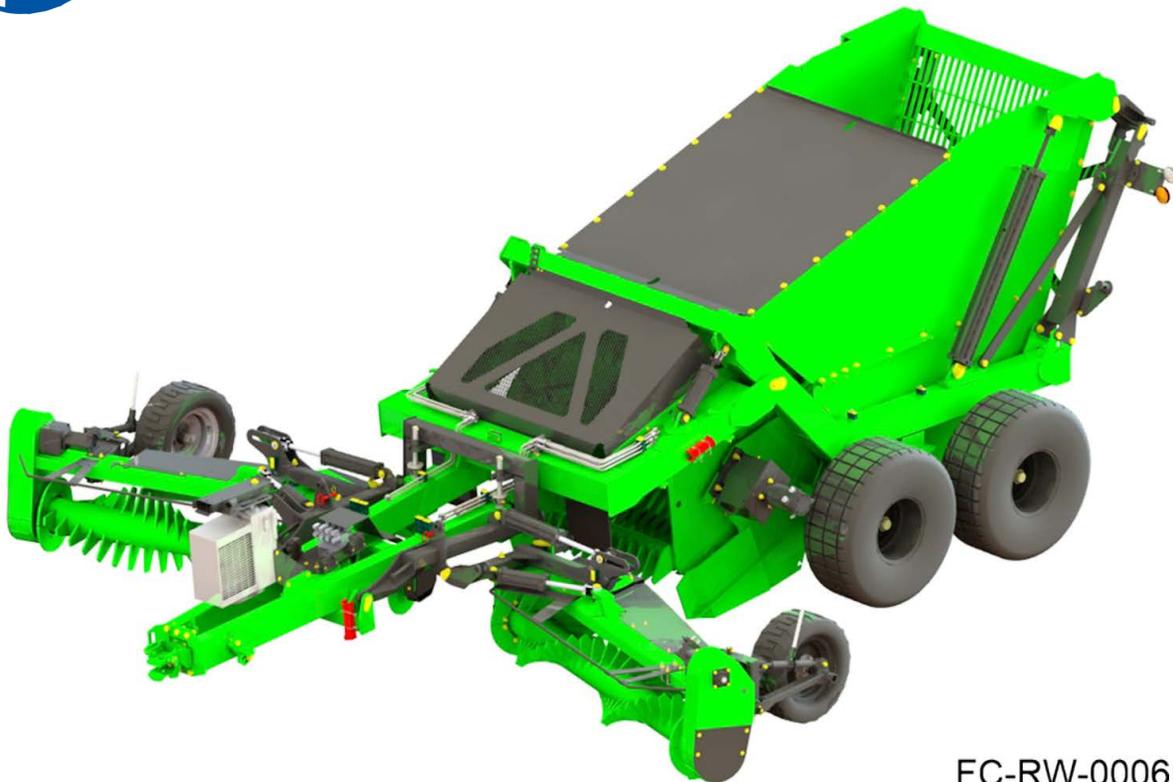
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Part No. R190-010C

OPERATOR'S MANUAL



This Operator's Manual is an integral part of the safe operation of this machine and must be maintained with the unit at all times. **READ, UNDERSTAND,** and **FOLLOW** the Safety and Operation Instructions contained in this manual before operating the equipment. *C01-Cover str*



FC-RW-0006

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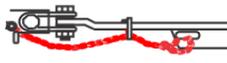
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To the Owner/Operator/Dealer

All implements with moving parts are potentially hazardous. There is no substitute for a cautious, safe-minded operator who recognizes the potential hazards and follows reasonable safety practices. The manufacturer has designed this implement to be used with all its safety equipment properly attached to minimize the chance of accidents.

BEFORE YOU START!! Read the safety messages on the implement and shown in your manual. Observe the rules of safety and common sense!

 DANGER			
FAILING TO FOLLOW SAFETY MESSAGES AND OPERATING INSTRUCTIONS CAN CAUSE DEATH OR SERIOUS INJURY TO OPERATOR OR OTHERS IN THE AREA.			
<p>1. READ MANUAL.</p>  <p>226-374</p>	<p>2. NO RIDERS, NO CHILDREN OPERATORS.</p> 	<p>3. USE SAFETY SHOES, HARD HAT, SAFETY GLASSES, SEATBELT, & ROPS</p> 	<p>4. BLOCKUP SECURELY BEFORE WORKING UNDER.</p> 
<p>1. Study and understand Operator's Manuals, Safety Signs, and Instructional Decals for tractor & implement to prevent misuse, abuse & accidents. Learn how to stop engine suddenly in an emergency. Be alert for passers by and children.</p> <p>2. Allow no children on or near implement or tractor. Allow no riders on tractor or implement. Falling off can cause death or serious injury from being run over by tractor or implement or contact with rotating components.</p> <p>3. Operate only with tractor having Roll-Over Protective Structure (ROPS) and with seatbelt fastened securely and snugly to prevent death or serious injury from falling off tractor or tractor overturn. Personal Protective Equipment such as Hard Hat, Safety Glasses with side shields (marked to comply with ANSI Z87), Safety Shoes, and Ear Plugs are recommended.</p> <p>4. Block up or support raised machine and all lifted components securely before putting hands or feet under or working underneath any lifted component to prevent death or crushing injury from sudden inadvertent dropping. Make certain that area is clear before lowering.</p> <p>5. Before transporting, put Lift Lever in Lift (Detent) position and follow traffic codes. Slow down at night, in turns and on hillsides.</p> <p>6. Make certain that SMV sign, Warning Lights and Reflectors are clearly visible</p> <p>7. Do not back or operate implement in the reverse direction, possible rocks or debris can fly out and cause death or serious injury.</p> <p>8. Before dismounting, secure implement in transport position or lower to ground. Stop PTO, put tractor in park or set Brake, stop engine and remove key. Never mount or dismount a moving vehicle. Crushing from run over may cause death or serious injury.</p>			
<p>5. ALWAYS ATTACH TOW CHAIN</p> 	<p>6. USE SMV, LIGHTS AND REFLECTORS.</p> 	<p>7. DO NOT OPERATE WITH UNIT IN REVERSE DIRECTION</p> 	<p>8. DO NOT MOUNT OR DISMOUNT WHILE MOVING.</p> 

WARRANTY INFORMATION:

Read and understand the complete Warranty Statement found in this Manual. Fill out the Warranty Registration Form in full and return it to within 30 Days. Make certain the Serial Number of the Machine is recorded on the Warranty Card and on the Warranty Form that you retain.

DEALER'S PREDELIVERY SERVICE GUIDE

for the SCHULTE SPARTAN RWP-1935

DETAILS OF ITEMS LISTED BELOW ARE COVERED IN THIS OPERATOR'S MANUAL

- Shipping damage corrected.
- Set up machine as outlined in the shipping instructions attached to these instructions.
- Check that all safety decals are in good condition, replace if necessary.
- Check that gearboxes have been filled with oil.
- Check that all grease fittings have been lubricated.

DEALER'S DELIVERY GUIDE

for the SCHULTE SPARTAN RWP-1935

- Mounting and removal from Skid Steer
- Operation
- Adjustments
- Lubrication
- Maintenance
- Operator's safety precautions
- User's responsibility and warranty
- Operator's manual delivered to owner
- Operator instructed on contents of owner's manual

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SAFETY SECTION

Safety Section 1-1

SAFETY

SAFETY

GENERAL SAFETY INSTRUCTIONS AND PRACTICES

A careful operator is the best operator. Safety is of primary importance to the manufacturer and should be to the owner/operator. Most accidents can be avoided by being aware of your equipment, your surroundings, and observing certain precautions. The first section of this manual includes a list of Safety Messages that, if followed, will help protect the operator and bystanders from injury or death. Read and understand these Safety Messages before assembling, operating, or servicing this Implement. This equipment should only be operated by those persons who have read the manual, who are responsible and trained, and who know how to do so responsibly.



The Safety Alert Symbol combined with a Signal Word, as seen below, is used throughout this manual and on decals which are attached to the equipment. The Safety Alert Symbol means: "ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!" The Symbol and Signal Word are intended to warn the owner/operator of impending hazards and the degree of possible injury faced when operating this equipment.

Practice all usual and customary safe working precautions and above all--remember safety is up to YOU. Only YOU can prevent death or serious injury from unsafe practices.



Indicates a hazardous situation which, if not avoided, WILL result in DEATH OR SERIOUS INJURY.



Indicates a hazardous situation which, if not avoided, COULD result in DEATH OR SERIOUS INJURY.



Indicates a hazardous situation which, if not avoided, COULD result in MINOR OR MODERATE INJURY.



Is used to address practices not related to physical injury.



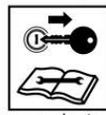
Identifies special instructions or procedures that, if not strictly observed, could result in damage to, or destruction of the machine, attachments or the environment.

NOTE: Identifies points of particular interest for more efficient and convenient operation or repair.

READ, UNDERSTAND, and FOLLOW the following Safety Messages. Death or serious injury may occur unless care is taken to follow the warnings and instructions stated in this Manual and in the Safety Messages on the implement. Always follow the instruction in this manual and use good common sense to avoid hazards.



Pictographs are used throughout this manual to help bring your visual attention to safety issues.

SAFETY HAZARD	SAFETY AVOIDANCE	SAFETY PREVENTION
<p>Pictograph surrounded by a triangle indicates a Safety Hazard that must be avoided.</p> <p><i>Example:</i></p>  <p>Equipment contacting overhead electrical lines</p>	<p>Pictograph in a circle with blue or black background, by itself or inside a box, indicates an avoidance procedure or action that should be followed to prevent injuries.</p> <p><i>Example:</i></p>  <p>Wear safety footwear.</p>  <p>Always shut off engine and remove key before working on equipment.</p>	<p>A circle with a slash through it indicates an action that is prohibited.</p> <p><i>Example:</i></p>  <p>No Smoking</p>

NOTE: If you want a translation of this safety section in one of the following Languages, please contact: Translations at 1502 E. Walnut Street Seguin, TX 78155; Fax: (830) 372-9529; Safety Section Translations are available in Spanish, Portuguese, French, German, Russian. GS01str

SAFETY

OPERATOR SAFETY INSTRUCTIONS AND PRACTICES

⚠ DANGER

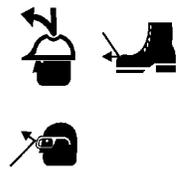
Never operate the Tractor or Implement until you have read and completely understand this Manual, the Tractor Operator's Manual, and each of the Safety Messages found in the Manual or on the Tractor and Implement. Learn how to stop the tractor engine suddenly in an emergency. Never allow inexperienced or untrained personnel to operate the Tractor or Implement without supervision. Make sure the operator has fully read and understood the manuals prior to operation.

(SG-4)str



⚠ WARNING

The operator and all support personnel should wear hard hats, safety shoes, safety glasses, and proper hearing protection at all times for protection from injury including injury from items that may be thrown by the equipment. (SG-16)str



⚠ CAUTION

PROLONGED EXPOSURE TO LOUD NOISE MAY CAUSE PERMANENT HEARING LOSS! Tractors with or without an Implement attached can often be noisy enough to cause permanent hearing loss. We recommend that you always wear hearing protection if the noise in the Operator's position exceeds 80db. Noise over 85db over an extended period of time will cause severe hearing loss. Noise over 90db adjacent to the Operator over an extended period of time will cause permanent or total hearing loss.

NOTE: *Hearing loss from loud noise [from tractors, chain saws, radios, and other such sources close to the ear] is cumulative over a lifetime without hope of natural recovery.* (SG-17)str



⚠ WARNING

Always read carefully and comply fully with the manufacturer's instructions when handling oil, solvents, cleansers, and any other chemical agent. (SG-22)str



⚠ DANGER

KEEP AWAY FROM ROTATING ELEMENTS to prevent entanglement and possible death or serious injury. (SG-24)str



⚠ DANGER

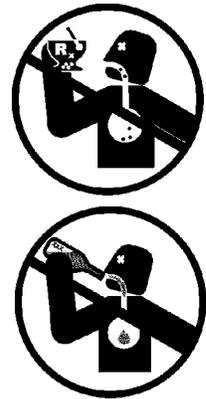
Never allow children to play on or around Tractor or Implement. Children can slip or fall off the Equipment and be killed or injured. Inadvertent contact with controls can cause the Implement to shift or fall crushing themselves or others. (SG-25)str

SAFETY

⚠ DANGER

DO NOT use drugs or alcohol immediately before or while operating the Tractor and Implement. Drugs and alcohol will affect an operator's alertness and coordination and therefore affect the operator's ability to operate the equipment safely. Before operating the Tractor or Implement, an operator on prescription or over-the-counter medication must consult a medical professional regarding any side effects of the medication that would hinder their ability to operate the Equipment safely. NEVER knowingly allow anyone to operate this equipment when their alertness or coordination is impaired. Serious injury or death to the operator or others could result if the operator is under the influence of drugs or alcohol.

(SG-27) str



⚠ WARNING

Prolonged operation may cause operator boredom and fatigue affecting safe operation. Take scheduled work breaks to help prevent these potentially impaired operating conditions. Never operate the Implement and Tractor in a fatigued or bored mental state which impairs proper and safe operation. (SG-32) str

⚠ WARNING

Avoid contact with hot surfaces including hydraulic oil tanks, pumps, motors, valves and hose connections. Relieve hydraulic pressure before performing maintenance or repairs. Use gloves and eye protection when servicing hot components. Contact with a hot surface or fluid can cause serious injury from burns or scalding. (SG-34str)

⚠ WARNING

Use extreme caution when getting onto the Implement to perform repairs, maintenance and when removing accumulated material. Only stand on solid flat surfaces to ensure good footing. Use a ladder or raised stand to access high spots which cannot be reached from ground level. Slipping and falling can cause serious injury or death.

(SG-33) str

⚠ DANGER

DO NOT operate this Implement on a Tractor that is not properly maintained. Should a mechanical or Tractor control failure occur while operating, immediately shut down the Tractor and perform repairs before resuming operation. Serious injury and possible death could occur from not maintaining this Implement and Tractor in good operating condition.

(SG-36) str

⚠ DANGER

Do not operate the implement while wearing loose fitting clothing. Entanglement of the clothing with the rotating elements can result in serious injury or even death. Stay clear of all rotating elements at all times. (SSP-03)str

⚠ WARNING

Be sure you have adequate knowledge of the property you will be working on. Take time to make yourself aware of any area underwater or underground lines or cables. Contact with buried lines or cable could result in serious injury or death. (STL-1) str

⚠ WARNING

In wet conditions where there is a likelihood of material collecting on the Implement, make certain that this material is removed before traveling on public roadways. (STL-7) str

⚠ WARNING

Do not approach the Implement while in motion. Use extreme care near the drive unit to keep your hands or feet clear of the rotating shaft and drive chain. Contact with the rotating items can result in serious injury or even death. Stay clear until the implement is securely parked and all motion has stopped. (STL-12) str

SAFETY



Keep fingers clear of tongue lock pin holes. A sudden movement could cause injury or even amputate fingers. **KEEP CHILDREN AWAY WHEN CHANGING TONGUE POSITION.**
(STL-18) str



Never attempt to remove a jam or service the implement until the Implement Hydraulic Hoses have been **DISCONNECTED AND REMOVED** from the tractor. Serious body injury or death can result from entanglement with the rotating components of the conveyor. (STL-25) str
EQUIPMENT OPERATION SAFETY INSTRUCTIONS AND PRACTICES



Make sure the PTO shield, integral driveline shields, and input shields are installed when using PTO-driven equipment. Always replace any shield if it is damaged or missing. (S3PT-8) str



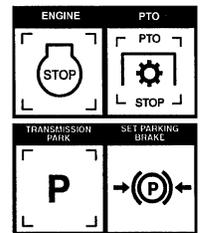
Operate this Implement only in conditions where you have clear visibility in daylight or with adequate artificial lighting. Never operate in darkness or foggy conditions where you cannot clearly see at least 100 yards in front and to the sides of the tractor and implement. Make sure that you can clearly see and identify passersby, steep slopes, ditches, drop-offs, overhead obstructions, power lines, debris and foreign objects. If you are unable to clearly see these types of items discontinue operating this equipment. (S3PT-21) str



Operate this Equipment only with a Tractor equipped with an approved roll-over-protective system (ROPS). Always wear seat belts. Death or serious injury could result from falling off the tractor, particularly during a turnover when the operator could be pinned under the ROPS. (SG-7) str



BEFORE leaving the tractor seat lower the implement, set the parking brake and/or set the tractor transmission in parking gear, disengage the PTO, stop the engine, remove the key, and wait for all moving parts to stop. Place the tractor shift lever into a low range or parking gear to prevent the tractor from rolling. Never dismount a Tractor that is moving or while the engine is running. Operate the Tractor controls from the tractor seat only.
(SG-9)str



Never allow children or other persons to ride on the Tractor or Implement. Falling off can result in death or serious injury. (SG-10)str



Never allow children to operate, ride on, or come close to the Tractor or Implement. Usually, 16-17 year-old children who are mature and responsible can operate the implement with adult supervision, if they have read and understand the Operator's Manuals, been trained in proper operation of the tractor and Implement, and are physically large enough to reach and operate the controls easily. (SG-11) str



SAFETY

SAFETY

WARNING

Do not mount or dismount the Tractor while the tractor is moving. Mount the Tractor only when the Tractor and all moving parts are completely stopped. Dismounting a moving power unit can result in a crushing hazard that can cause death or serious injury. (SG-12) str



DANGER

Start tractor only when properly seated in the Tractor seat. Starting a tractor in gear can result in death or serious injury. Read the Tractor operators manual for proper starting instructions. (SG-13) str



WARNING

Do not operate this Equipment with hydraulic oil or fuel leaking. Oil and fuel are explosive and their presence could present a hazard. Do not check for leaks with your hand! High-pressure oil streams from breaks in the line could penetrate the skin and cause tissue damage including gangrene. To check for a hose leak, SHUT the unit ENGINE OFF and remove all hydraulic pressure. Wear oil impenetrable gloves, safety glasses and use cardboard to check for evidence of oil leaks. If you suspect a leak, REMOVE the HOSE and have it tested at a Dealer. If oil does penetrate the skin, have the injury treated immediately by a physician knowledgeable and skilled in this procedure. (SG-15) str



DANGER

Never run the Tractor engine in a closed building or without adequate ventilation. The exhaust fumes can be hazardous to your health. (SG-23) str

DANGER

Operate the Tractor and/or Implement controls only while properly seated in the Tractor seat with the seat belt securely fastened around you. Inadvertent movement of the Tractor or Implement may cause death or serious injury. (SG-29) str

WARNING

In case of mechanical difficulty during operation, place the transmission in the park position, set the parking brake, shut down all power, including the PTO and the engine and remove the key. Wait until all rotating motion has stopped before dismounting. (SG-39) str

WARNING

Do Not operate this equipment in areas where insects such as bees, may attack you and/or cause you to lose control of the equipment. If you must enter into such areas, use a tractor with an enclosed Cab and close the windows to prevent insects from entering. If a tractor cab is not available, wear suitable clothing including head, face, and hand protection to shield you from insects. Attacking insects can cause you to lose control of the tractor, which can result in serious injury or death to you or bystanders. Never dismount a moving tractor. (SG-40) str

WARNING

The rotating parts of this machine have been designed and tested for rugged use. However, the teeth could fail upon impact with heavy, solid objects such as metal guard rails and concrete structures. Such impact could cause the broken objects to be thrown outward at very high velocities. To reduce the possibility of property damage, serious injury, or even death, never allow the teeth to contact such obstacles.

SAFETY

▲ DANGER

Never leave the Power Unit and Implement unattended while the Implement is in the lifted position. Accidental operation of the lifting lever or a hydraulic failure may cause a sudden drop of the unit with possible injury or death by crushing. Fully lower the Implement to ground level to disconnect the Implement or to perform service. Do not put hands or feet under lifted components. (SPU-30) str

▲ WARNING

Many varied objects, such as wire, cable, rope, or chains, can become entangled in the rotating parts of the Implement. These objects could then swing outside the housing at great velocity. Such a situation is extremely hazardous and could result in serious injury or even death. Inspect the area for such objects before working in the area. Remove any such objects from the site. Never allow the implement to contact such objects. (STL-6) str

▲ WARNING

Do not operate the Implement when bystanders or animals are near (within 50 feet) the equipment. This Implement is capable of throwing objects for significant distances and causing serious injury. Stop the Tractor and Implement immediately if a bystander or animal comes near the equipment. (STL-13) str

▲ WARNING

Do Not attempt to raise or lower the rock bin unless the Implement tongue is securely attached to the Tractor drawbar. The Implement could tip over and cause equipment damage and possible serious injury or death. Raise or lower the bin only while seated in the Tractor operator's seat with the seat belt securely fastened. (STL-14) str

▲ WARNING

Raise the unit to the transport position and secure with the retaining pins before traveling on public roads and when storing. (STL-16) str

▲ DANGER

Never leave the Rock Picker unattended while the hopper bin is in the raised position. Accidental operation of the lifting lever or a hydraulic failure may cause a sudden drop of the unit which could result in injury or death by crushing. If the hopper must be raised for a purpose other than the time required to normally dump, or if someone is going to get under the hopper for any reason, always secure the hopper safety prop into position. (STL-19) str

▲ DANGER

Make sure no bystanders or animals are within 25 feet of the Implement when dumping contents from the hopper. Hopper contents, which may exceed several thousand pounds, could fall and crush a bystander or an animal resulting in possible injury or death. (STL-20) str

▲ DANGER

Never allow riders in the implement hopper bin. Hopper contents, which may exceed several thousand pounds, could fall and crush a rider resulting in possible injury or death. (STL-21) str

▲ WARNING

Hopper contents, which may exceed hundred pounds, could fall and crush a person resulting in possible injury or death. Use extreme care when handling or working on or in load hopper bin. (STL-22) str

▲ WARNING

Use only tractors equipped with ROPS Cabs with the windows in good condition when operating this implement. Rocks can be thrown forward by this Rock Picker. Rocks thrown toward the tractor operator can result in possible injury or death. (STL-23) str

▲ DANGER

Only raise the bucket while on level ground. Raising the bucket on unlevel ground can cause severe damage to the frame, linkage and cylinder causing the bucket to fall uncontrollably leading to death or serious injury.

SAFETY



Do not move the bucket in a jerking, bouncing motion. Doing so can cause cylinder failure causing the bucket to fall uncontrollably leading to death or serious injury.



Always ensure the rock picker has clearance to not contact obstructions when dumping. Contact with trees, trailers, or other obstacles can inhibit the intended motion of the bucket and frame leading to severe damage to the frame, linkage and cylinders causing the bucket to fall uncontrollably leading to death or serious injury.



Do not leave material in the bucket for extended periods of time. Loose material can solidify if left too long. This can make dumping difficult. Always dump material soon after it is picked.

SAFETY

CONNECTING OR DISCONNECTING IMPLEMENT SAFETY INSTRUCTIONS AND PRACTICES

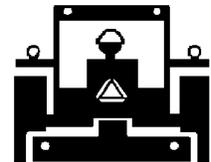


Never unhitch without using the Tongue Jack. The Tongue is very heavy. Attempting to lift the Tongue without using the Tongue Jack could cause strains or other injury. Allowing the tongue to fall suddenly and unexpectedly could result in crushing injury. Use the Tongue Jack for lifting the Implement only. Overloading the Tongue Jack can cause failure with possible serious bodily injury or even death. (STI-04) str

TRANSPORTING SAFETY INSTRUCTIONS AND PRACTICES



Make certain that the "Slow Moving Vehicle" (SMV) sign is installed in such a way as to be clearly visible and legible. When transporting the Equipment use the Tractor flashing warning lights and follow all local traffic regulations. (SG-6)str



SAFETY

WARNING

Transport only at speeds where you can maintain control of the equipment. Serious accidents and injuries can result from operating this equipment at high speeds. Understand the Tractor and Implement and how it handles before transporting on streets and highways. Make sure the Tractor steering and brakes are in good condition and operate properly.



Before transporting the Tractor and Implement, determine the proper transport speeds for you and the equipment. Make sure you abide by the following rules:

Test the tractor at a slow speed and increase the speed slowly. Apply the Brakes smoothly to determine the stopping characteristics of the Tractor and Implement. As you increase the speed of the Tractor the stopping distance increases. Determine the maximum transport speed not to exceed 20 mph (30 kph) for transporting this equipment.

Test the equipment at a slow speed in turns. Increase the speed through the turn only after you determine that the equipment can be operated at a higher speed. Use extreme care and reduce your speed when turning sharply to prevent the tractor and implement from turning over. Determine the maximum turning speed for you and this equipment before operating on roads or uneven ground.

Only transport the Tractor and Implement at the speeds which allow you to properly control the equipment.

Be aware of the operating conditions. Do not operate the Tractor with weak or faulty brakes or worn tires. When operating down a hill or on wet or rain slick roads, the braking distance increases: use extreme care and reduce your speed. When operating in traffic always use the Tractor's flashing warning lights and reduce your speed. Be aware of traffic around you and watch out for the other guy. (SG-19)str



DANGER

Be particularly careful when transporting the Implement using the tractor. Turn curves or go up or down hills only at a low speed and at a gradual steering angle. Make certain that at least 20% of the tractor's weight is on the front wheels to maintain safe steering. Slow down on rough or uneven surfaces. (STI-01) str

WARNING

Only tow the Implement behind a properly sized and equipped Tractor which exceeds the weight of the Implement by at least 20%. DO NOT tow the Implement behind a truck or other type of vehicle. Never tow the Implement and another Implement connected in tandem. Never tow the Implement at speeds over 20 MPH. (STI-06)str



WARNING

Secure the Implement for transport before traveling on public roads. For pull-type Implements, secure the center axle using cylinder stops or transport pin and properly attach a safety chain between the Implement and Tractor. Secure wings in upright position on folding Implements using wing transport locks. (STI-7) str

WARNING

Your driving vision may be reduced or impaired by the tractor, cab, or implement. Before driving on public roadways identify any limited vision areas, and make adjustments to your operating position, mirrors, and the implement transport position so that you can clearly see the area where you will be traveling, and any traffic that may approach you. Failure to maintain adequate vision of the public roadway and traffic can result in serious injury or even death.

(STI-10)

WARNING

Raise the unit to the transport position and secure with the retaining pins before traveling on public roads and when storing. (STL-15) str

SAFETY

SAFETY

MAINTENANCE AND SERVICE SAFETY INSTRUCTIONS AND PRACTICES



Relieve hydraulic pressure prior to doing any maintenance or repair work on the Implement. Place the Implement on the ground or securely blocked up, disengage the PTO, and turn off the tractor engine. Push and pull the Remote Cylinder lever in and out several times. Disconnect and remove the Implement hydraulic hoses from the tractor prior to starting any maintenance or repair work. (STL-17) str



Always maintain the safety signs in good readable condition. If the safety signs are missing, damaged, or unreadable, obtain and install replacement safety signs immediately. (SG-5)str



Do not modify or alter this Implement. Do not permit anyone to modify or alter this Implement, any of its components or any Implement function. (SG-8)str



Never work under the Implement, the framework, or any lifted component unless the Implement is securely supported or blocked up to prevent sudden or inadvertent falling which could cause death or serious injury. (SG-14)str



Never attempt to lubricate, adjust, or remove material from the Implement while it is in motion or while tractor engine is running. (SG-20)str



Periodically inspect all moving parts for wear and replace when necessary with authorized service parts. Look for loose fasteners, worn or broken parts, and leaky or loose fittings. Make sure all pins have cotter pins and washers. Serious injury may occur from not maintaining this machine in good working order. (SG-21)str



Perform service, repairs and lubrication according to the maintenance section. Ensure the unit is properly lubricated as specified in the lubrication schedule and all bolts and nuts are properly torqued. Failure to properly service, repair and maintain this Implement in good operating condition could cause component failure and possible serious injury or even death. (SG-35)str



Always disconnect the auxiliary hydraulic couplers from the Power Unit before performing service on the Implement. Never work on the Implement with the Power Unit auxiliary hydraulics connected. Rotating parts could turn without warning and cause immediate entanglement, injury or death. (SPU-31) str



Ensure any remote starting system is inoperative before servicing or cleaning the machine. Inadvertent engine start up could result in entanglement or runover causing serious injuries or death. (SSB-17) str

SAFETY

⚠ WARNING

Use extreme care when climbing onto the Equipment to perform repairs, maintenance, and cleaning. Use proper stands and ladders to access areas that cannot be reached from ground level. Slipping and falling off the Equipment can cause serious injury or death. (SSB-25) str

⚠ DANGER

All Safety Shields, Guards and other safety devices including (but not limited to) Deflectors, Steel Guards and Gearbox Shields must be used and maintained in good working condition. All safety devices should be inspected carefully at least daily for missing or broken components. Missing, broken, or worn items must be replaced at once to reduce the possibility of injury or death from thrown objects, entanglement, or blade contact. (SSM-07str)

⚠ WARNING

Cancer and Reproductive Harm www.P65Warnings.ca.gov

SAFETY

SAFETY

PARTS SAFETY INSTRUCTIONS AND PRACTICES

PARTS INFORMATION

Use of genuine Schulte replacement parts is your guarantee that parts are of the same quality and are manufactured to the same standards as the original equipment. These parts are made and tested to Schulte specifications. Non-genuine "will fit" parts do not consistently meet these specifications. The use of "will fit" parts may reduce the performance, void Schulte warranties, and present a safety hazard. Use genuine Schulte parts for economy and safety. (SPSI-2) str

SEE YOUR SCHULTE DEALER

Operator's & Parts Manuals



www.algqr.com/spm

CONCLUDING SAFETY INSTRUCTIONS AND PRACTICES

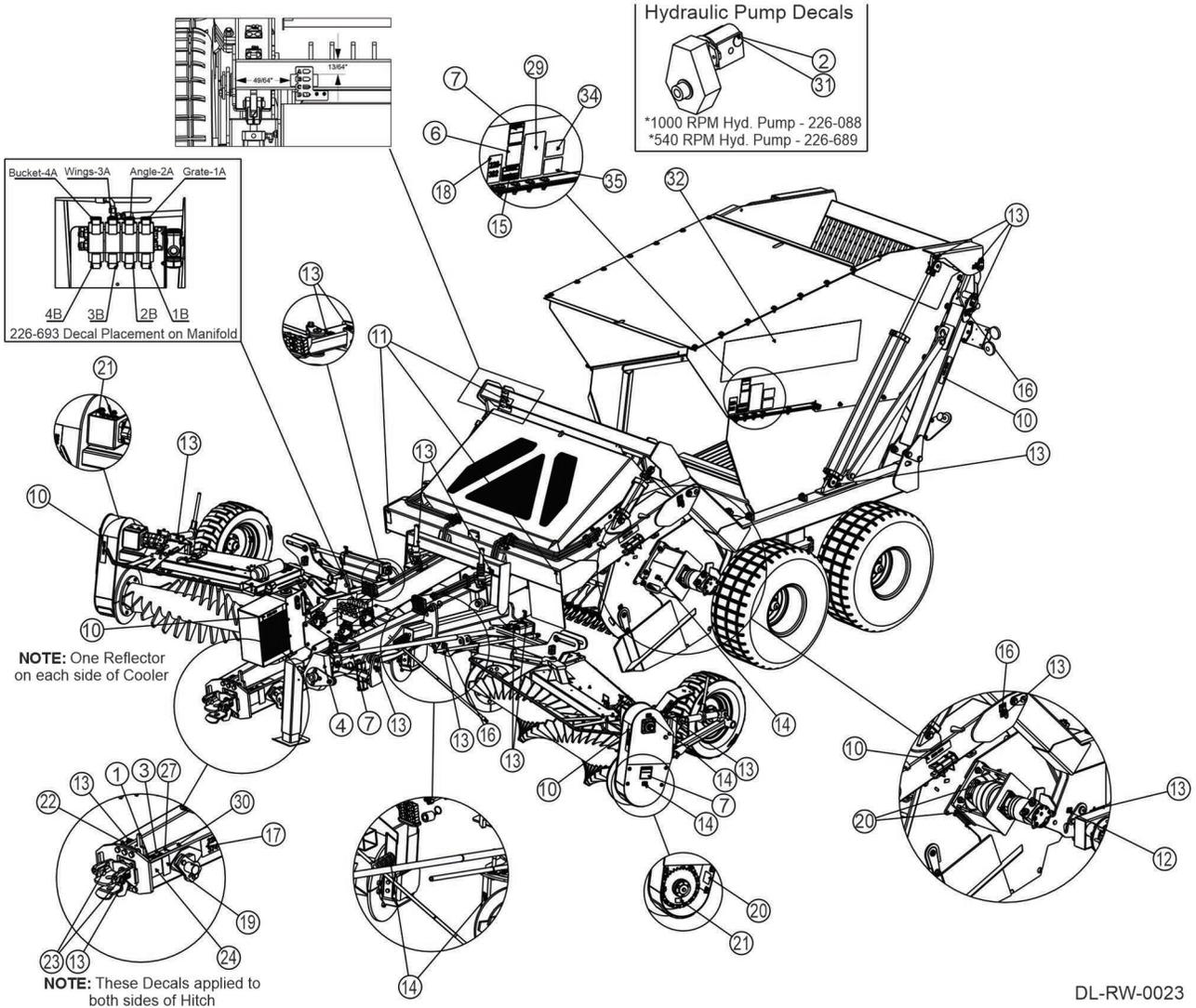
In addition to the design and configuration of this Implement, including Safety Signs and Safety Equipment, hazard control and accident prevention are dependent upon the awareness, concern, prudence, and proper training of personnel involved in the operation, transport, maintenance, and storage of the machine. Refer also to Safety Messages and operation instruction in each of the appropriate sections of the Tractor and Equipment Manuals. Pay close attention to the Safety Signs affixed to the Tractor and Equipment. (SG-18)str

DECAL LOCATION

NOTE: *Schulte supplies safety decals on this product to promote safe operation. Damage to the decals may occur while in shipping, use, or reconditioning. Schulte cares about the safety of its customers, operators, and bystanders, and will replace the safety decals on this product in the field, free of charge (Some shipping and handling charges may apply). Contact your Schulte dealer to order replacement decals.*

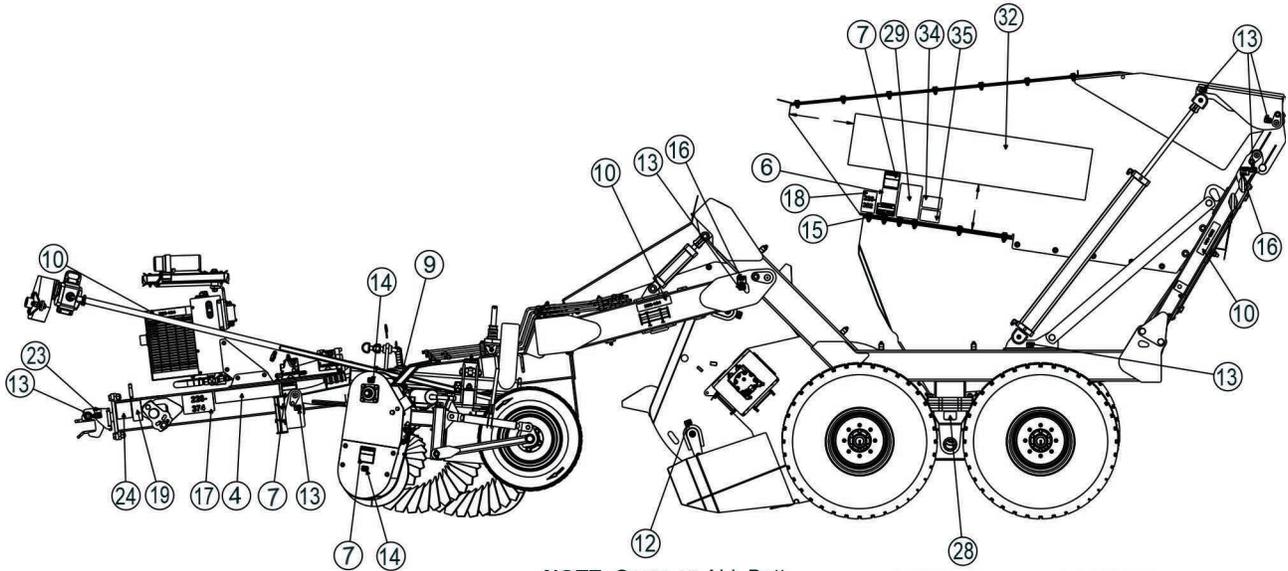
SAFETY

SAFETY



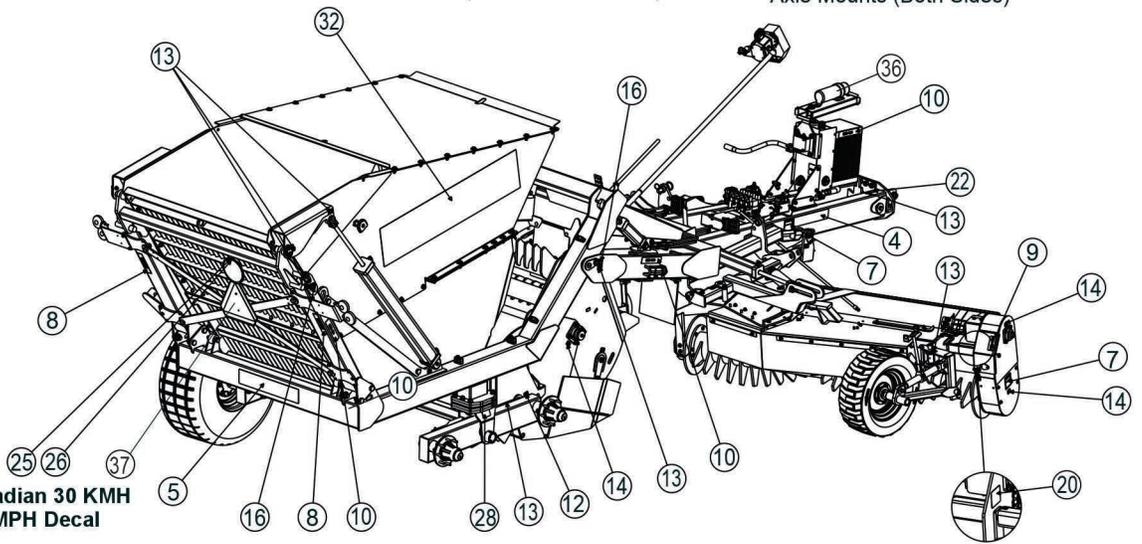
SAFETY

SAFETY



NOTE: Same on ALL Batt locations (Both Sides - 6 Total)

NOTE: Same on both Walking Axle Mounts (Both Sides)



NOTE: Canadian 30 KMH
USA 20 MPH Decal

NOTE: Same on both Chaincases

DL-RW-0022

SAFETY

ITEM	PART NO.	QTY	TYPE	DESCRIPTION
1	226-004	1	LOGO	FEMA Member
2	226-088	1	Decal	1000 RPM
3	226-100	1	SERIAL PLT	Serial Number Plate
4	226-117	2	LOGO	Schulte Medium Profile
5	226-118	1	LOGO	Schulte Large Profile
6	226-150	1	WARNING	Jammed Batt Hazard
7	226-151	5	DANGER	Thrown Rock Hazard
8	226-153	2	REFLECT	Red Reflector 2" x 9"
9	226-1531	2	REFLECT	Red Reflector 2" x 4-1/2"
10	226-154	8	REFLECT	Amber Reflector 2" x 9"
11	226-1541	3	REFLECT	Amber Reflector 2" x 4-1/2"
12	226-180	8	INSTRUCT	4 Hour Greasing
13	226-181	27	INSTRUCT	8 Hour Greasing
14	226-182	8	INSTRUCT	50 Hour Greasing
15	226-334	1	DANGER	Crushing and Pinch Points
16	226-335	6	WARNING	Pinch Points
17	226-374	1	DANGER	Multi-Hazard
18	226-382	1	DANGER	Entanglement Hazard
19	226-430	1	WARNING	7000 lbs, 1870 lbs Jack Decal
20	226-442	6	DANGER	Guard Missing - Do Not Operate
21	226-446	4	DANGER	Guard Missing - Do Not Operate
22	226-459	1	INSTRUCT	Grease Fitting
23	226-499	4	INSTRUCT	This Side Up
24	226-513	1	WARNING	Genuine Schulte Parts
25	226-628	1	IMPORTANT	20 MPH (Non-Canadian Units)
26	226-630	1	IMPORTANT	30 KM/H (Canadian Units)
27	226-659	1	NOTICE	Park on Level Ground - Max 10% Ground Slope
28	226-680	2	INSTRUCT	Tire Pressure, Lug Torque
29	226-682	1	WARNING	Multi Hazard - Towing Hazard
30	226-683	1	INSTRUCT	Hose Color Coding
31	226-689	1	DECAL	540 RPM
32	226-691	2	LOGO	RWP-1935 Logo
33	226-693	1	DECAL	Manifold Decal
34	226-699	1	DANGER	Electrocution Hazard
35	226-700	1	WARNING	Crushing Hazard, Level Ground
36	280-201 R200-010C	1 1	---	Canister, Manual Operator's Manual
37	S000-110	1	REFLECT	SMV

SAFETY

SAFETY

SAFETY

DECAL DESCRIPTION

⚠ DANGER 226-442



GUARD MISSING
To Avoid Death Or Serious Injury Do Not Operate

⚠ DANGER 226-448



GUARD MISSING
To Avoid Death Or Serious Injury Do Not Operate

⚠ WARNING

TO AVOID DEATH OR SERIOUS INJURY:

- ONLY use genuine SCHULTE replacement parts, which have been validated and tested to use on Schulte equipment by the manufacturer.
- The equipment manufacturer cannot verify the material or structural integrity of third-party supplied non-genuine replacement parts.
- Using non-genuine parts can result in the part failing, creating hazardous conditions for operator and bystanders.

Contact local dealer or SCHULTE about repair parts at:
PO BOX 70, Englefeld,
Saskatchewan Canada S0K 1N0
Customer Service: 306-287-3715.
Email: info@schulte.ca



www.algqr.com/swe

⚠ WARNING

Cancer and Reproductive Harm
www.P65 Warnings.ca.gov 226-513

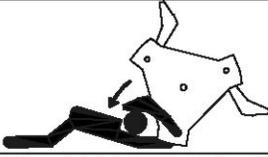
⚠ DANGER

FAILING TO FOLLOW SAFETY MESSAGES AND OPERATING INSTRUCTIONS CAN CAUSE DEATH OR SERIOUS INJURY TO OPERATOR OR OTHERS IN THE AREA.

<p>1. READ MANUAL.</p>  <p>226-374</p>	<p>2. NO RIDERS, NO CHILDREN OPERATORS.</p> 	<p>3. USE SAFETY SHOES, HARD HAT, SAFETY GLASSES, SEATBELT, & ROPS</p> 	<p>4. BLOCKUP SECURELY BEFORE WORKING UNDER.</p> 
<p>1. Study and understand Operator's Manuals, Safety Signs, and Instructional Decals for tractor & implement to prevent misuse, abuse & accidents. Learn how to stop engine suddenly in an emergency. Be alert for passers by and children.</p> <p>2. Allow no children on or near implement or tractor. Allow no riders on tractor or implement. Falling off can cause death or serious injury from being run over by tractor or implement or contact with rotating components.</p> <p>3. Operate only with tractor having Roll-Over Protective Structure (ROPS) and with seatbelt fastened securely and snugly to prevent death or serious injury from falling off tractor or tractor overturn. Personal Protective Equipment such as Hard Hat, Safety Glasses with side shields (marked to comply with ANSI Z87), Safety Shoes, and Ear Plugs are recommended.</p> <p>4. Block up or support raised machine and all lifted components securely before putting hands or feet under or working underneath any lifted component to prevent death or crushing injury from sudden inadvertent dropping. Make certain that area is clear before lowering.</p> <p>5. Before transporting, put Lift Lever in Lift (Detent) position and follow traffic codes. Slow down at night, in turns and on hillsides.</p> <p>6. Make certain that SMV sign, Warning Lights and Reflectors are clearly visible</p> <p>7. Do not back or operate implement in the reverse direction, possible rocks or debris can fly out and cause death or serious injury.</p> <p>8. Before dismounting, secure implement in transport position or lower to ground. Stop PTO, put tractor in park or set Brake, stop engine and remove key. Never mount or dismount a moving vehicle. Crushing from run over may cause death or serious injury.</p>			
<p>5. ALWAYS ATTACH TOW CHAIN</p> 	<p>6. USE SMV, LIGHTS AND REFLECTORS.</p> 	<p>7. DO NOT OPERATE WITH UNIT IN REVERSE DIRECTION</p> 	<p>8. DO NOT MOUNT OR DISMOUNT WHILE MOVING.</p> 

SAFETY

WARNING



JAMMED BATT HAZARD

- SUDDEN RELEASE OF SPRING PRESSURE CAN CAUSE SERIOUS INJURY OR DEATH.
- ALWAYS ATTEMPT TO CLEAR JAM BY USING HYDRAULIC DRIVE TO REVERSE REEL.
- USE LONG POLE OR PRY BAR TO DISLodge.
- DO NOT USE HANDS OR FEET.

226-150

DANGER

CRUSHING AND PINCH POINTS



226-334

MOVING MACHINERY PARTS CAN PINCH OR CRUSH OR FALL - WHICH MAY CAUSE DEATH OR INJURY.

WARNING

AVOID PINCH POINTS THAT CAN RESULT IN SERIOUS INJURY



226-335

DANGER



**THROWN ROCK HAZARD
KEEP AWAY**

- DEATH OR SERIOUS INJURY CAN RESULT FROM THROWN ROCK
- KEEP OTHERS AWAY
- STAY ALERT

226-151

NOTICE

Do not tow at speeds greater than 20 MPH(30 KM/H).

Ensure mass of towing vehicle is at least 2/3 times the mass of the towed machinery.

Be sure to park on level ground to a maximum of 10% ground slope.

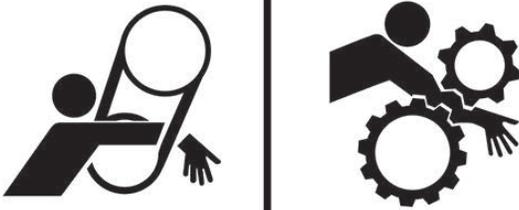
226-659

SAFETY

SAFETY

SAFETY

⚠ DANGER



Entanglement Hazard

To prevent serious Injury

- Do Not operate if Shields or Guards are not secured in place.
- Stop operating implement if bystanders come within 10 feet.
- Do not approach, stand or climb on machine when is operating.
- Stop Tractor Engine, Shut off PTO, Disconnect Implement Driveline from Tractor before servicing, clearing blockage or entangled debris.

226-382

⚠ WARNING



CRUSHING HAZARD

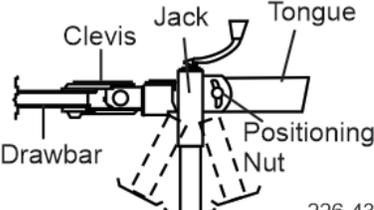
To avoid death or serious injury from being crushed:

- Ensure unit is on level ground. Raising bucket on unlevel ground can damage unit causing bucket to fall.
- Ensure unit does not contact any obstructions like tree, trailers or other obstacles when raising bucket. Contacting obstructions will cause damage to frame, linkage and cylinders causing bucket to fall.
- Avoid jerking and bouncing motion while bucket is loaded. Doing so will cause cylinders to fail causing bucket to fall.

226-700

SAFETY

⚠ WARNING



226-430

Rated Loads	Vertical:	7000 lbs
	Side:	1870 lbs

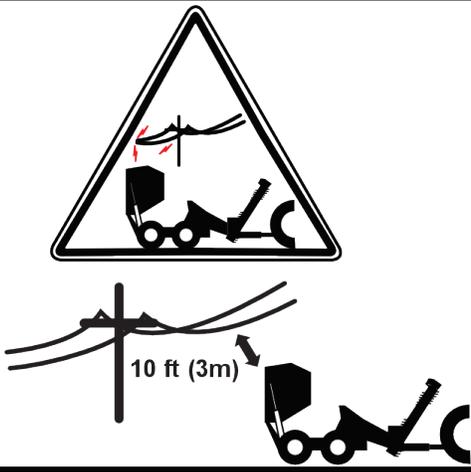
TO AVOID SERIOUS INJURY:

- Fully engage jack retaining pin.
- Adjust jack vertically.
- Torque positioning nut to 250 ft-lbs.
- DO NOT exceed rated loads.



SAFETY

⚠ DANGER



ELECTROCUTION HAZARD

To avoid death or serious injury from electrocution:

- Keep machine a minimum of 10 feet (3 meters) away from overhead power lines.
- Use an observer when working around overhead power lines.

226-699

SAFETY

SAFETY

⚠️ WARNING



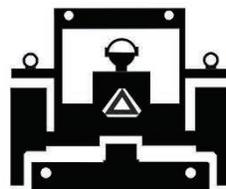
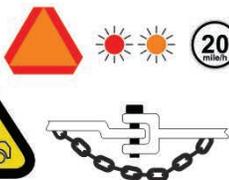
TO AVOID DEATH OR SERIOUS INJURY FROM HIGH PRESSURE HYDRAULIC OIL LEAKS PENETRATING SKIN:

- DO NOT OPERATE equipment with oil or fuel leaks.
- KEEP all hydraulic hoses, lines and connections in good condition and tight before applying system pressure.
- Relieve hydraulic pressure before disconnecting lines or working on the system.
- REMOVE and replace hose if you suspect it leaks. Have dealer test it for leaks.

HIGH PRESSURE FLUID LEAKS CAN BE INVISIBLE. WHEN CHECKING FOR HYDRAULIC LEAKS AND WORKING AROUND HYDRAULIC SYSTEMS:

- DO NOT use hands to check for leaks.
- ALWAYS WEAR safety glasses with side shields (marked to comply with ANSI Z87) and impenetrable gloves.
- USE paper or cardboard to search for leaks.
- KEEP hands and body AWAY from pin holes and nozzles ejecting hydraulic fluid.
- Hydraulic fluid may cause gangrene if not surgically removed immediately by a doctor familiar with this form of injury.

⚠️ WARNING



TO AVOID DEATH OR SERIOUS INJURY WHEN TOWING EQUIPMENT:

- DO NOT TOW with trucks or other vehicles.
- ONLY transport with properly sized and equipped tractor. (see Operator's Manual)
- ATTACH implement SAFETY CHAIN to tractor.
- CHECK SMV sign, SIS sign, reflectors and warning lights for visibility behind unit.
- TURN ON tractor flashing warning lights.

TO AVOID LOSS OF TOWING CONTROL:

- DO NOT tow at speeds over 20 mph.
- REDUCE SPEED on inclines, in turns and in poor towing conditions.

226-682

SAFETY

FEDERAL LAWS AND REGULATIONS

This section is intended to explain in broad terms the concept and effect of federal laws and regulations concerning employer and employee equipment operators. This section is not intended as a legal interpretation of the law and should not be considered as such.

Employer-Employee Operator Regulations

U.S. Public Law 91-596 (The Williams-Steiger Occupational and Health Act of 1970) OSHA

This Act Seeks:

“...to assure so far as possible every working man and woman in the nation safe and healthful working conditions and to preserve our human resources...”

DUTIES

Sec. 5 (a) Each employer-

(1) shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees;

(2) shall comply with occupational safety and health standards promulgated under this Act.

(b) Each employee shall comply with occupational safety and health standards and all rules, regulations and orders issued pursuant to this Act which are applicable to his own actions and conduct.

OSHA Training Requirements

Title 29, Code of Federal Regulations Part 1928.57(a)(6). www.osha.gov

Operator instructions. At the time of initial assignment and at least annually thereafter, the employer shall instruct every employee who operates an agricultural tractor and implements in the safe operating practices and servicing of equipment with which they are or will be involved, and of any other practices dictated by the work environment.

Keep all guards in place when the machine is in operation.

Permit no riders on equipment.

Stop engine, disconnect the power source, and wait for all machine movement to stop before servicing, adjusting, cleaning, or unclogging the equipment, except where the machine must be running to be properly serviced or maintained, in which case the employer shall instruct employees as to all steps and procedures which are necessary to safely service or maintain the equipment.

Make sure everyone is clear of machinery before starting the engine, engaging power, or operating the machine.

Employer Responsibilities:

To ensure employee safety during Tractor and Implement operation, it is the employer's responsibility to:

1. Train the employee in the proper and safe operation of the Tractor and Implement.
2. Require that the employee read and fully understand the Tractor and Implement Operator's Manual.
3. Permit only qualified and properly trained employees to operate the Tractor and Implement.
4. Maintain the Tractor and Implement in a safe operational condition and maintain all shields and guards on the equipment.
5. Ensure the Tractor is equipped with a functional ROPS and seat belt and require that the employee operator securely fasten the safety belt and operate with the ROPS in the raised position at all times.
6. Forbid the employee operator to carry additional riders on the Tractor or Implement.
7. Provide the required tools to maintain the Tractor and Implement in a good safe working condition and provide the necessary support devices to secure the equipment safely while performing repairs and service.
8. Require that the employee operator stop operation if bystanders or passersby come within 300 feet.

Child Labor Under 16 Years of Age

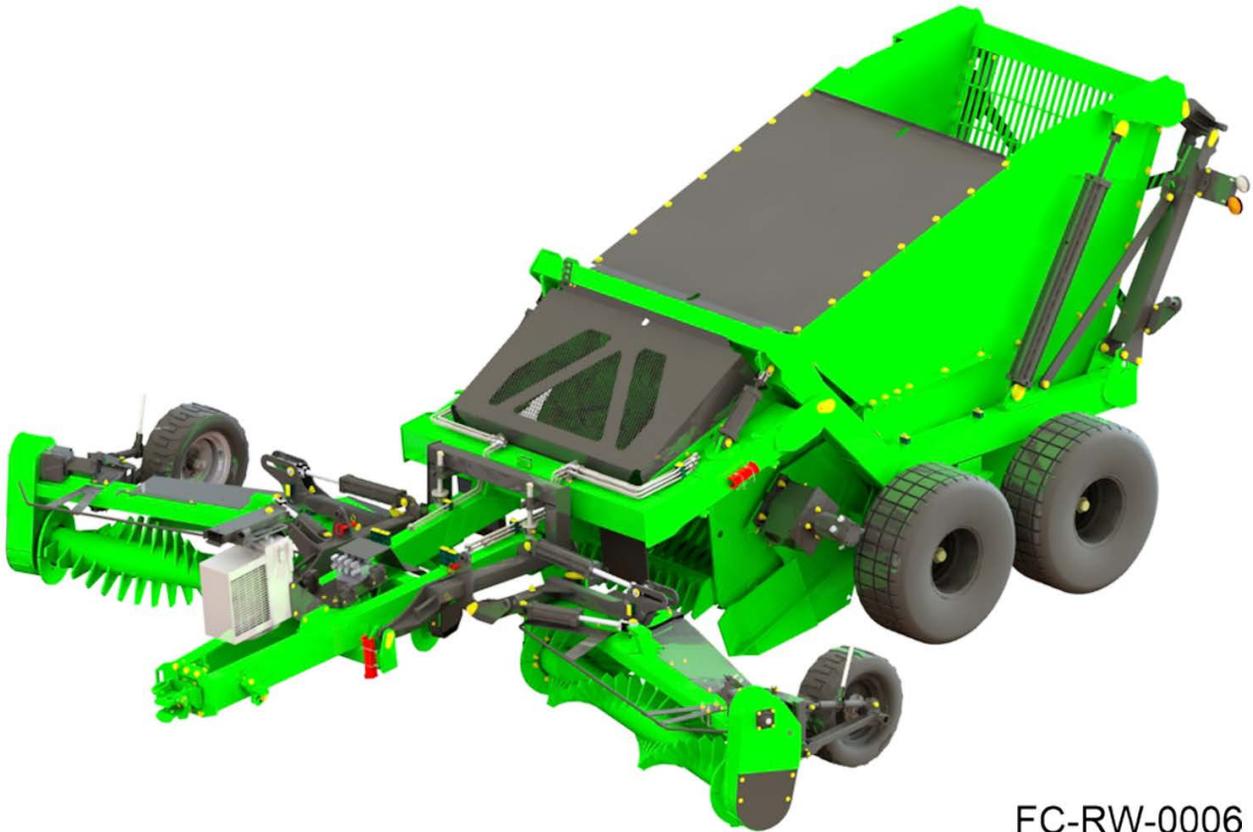
Some regulations specify that no one under the age of 16 may operate power machinery. It is your responsibility to know what these regulations are in your own area or situation. (Refer to U.S. Dept. of Labor, Employment Standard Administration, Wage & Home Division, Child Labor Bulletin #102.)

INTRODUCTION SECTION

Introduction Section 2-1

INTRODUCTION

INTRODUCTION



FC-RW-0006

The Spartan RWP-1935 is designed to windrow and pick small to medium surface rocks, roots and other debris from the fields. With proper maintenance as described in this manual, your Spartan will provide years of dependable performance.

It is required that all operators of this implement read this manual or be instructed of its contents as to safety, proper orientation and maintenance before beginning operation.

When ordering replacement parts, be sure to specify the serial number. The serial number is located on top of the Left Hand Hitch near the front of the machine.

Literature Page



www.algqr.com/sle

All Shields are standard equipment and are to be used at all times.

To place the warranty into effect, fill out the warranty validation form in full, giving all the requested information, and mail promptly. Be sure to give the serial number of your Spartan RWP-1935.

For the purpose of this Schulte equipment, the following definitions apply.

Left-hand side: Side which is to the left when the operator is facing in the normal forward direction of the tractor.

Right-hand side: Side which is to the right when the operator is facing in the normal forward direction of the tractor.

INTRODUCTION

ATTENTION OWNER/OPERATOR

BEFORE OPERATING THIS MACHINE:

1. Carefully read the Operator's Manual, completely understand the Safety Messages and instructions, and know how to operate correctly both the tractor and Rock Windrower/Picker.
2. Fill out the Warranty Card in full. Be sure to answer all questions, including the Serial Number of the Rock Windrower/Picker. Mail within 30 days of delivery date of this implement.

NOTE: Warranties are honored only if completed "Owner Registration and Warranty" forms are received by Schulte within thirty days of delivery of the implement.

3. Record the Rock Windrower/Picker Model and Serial Numbers on the Warranty page at the front of the Operator's Manual. Keep this as part of the permanent maintenance file for the Windrower/Picker.

INTRODUCTION

⚠ WARNING

TO AVOID DEATH OR SERIOUS INJURY:

- ONLY use genuine SCHULTE replacement parts, which have been validated and tested to use on Schulte equipment by the manufacturer.
- The equipment manufacturer cannot verify the material or structural integrity of third-party supplied non-genuine replacement parts.
- Using non-genuine parts can result in the part failing, creating hazardous conditions for operator and bystanders.

Contact local dealer or SCHULTE about repair parts at:
PO BOX 70, Englefeld,
Saskatchewan Canada S0K 1N0
Customer Service: 306-287-3715.
Email: info@schulte.ca



www.algqr.com/swe

⚠ WARNING

Cancer and Reproductive Harm

www.P65Warnings.ca.gov 226-513

INTRODUCTION



SCHULTE INDUSTRIES LIMITED - SPARTAN RWP-1935 GENERAL STATEMENT AFFECTING ALL SCHULTE WARRANTY

Schulte Industries Ltd. warrants to the original purchaser only, that in the event of any defect in material or workmanship in the product sold by Schulte Industries, the subject of this warranty (“the goods”) during the warranty period mentioned below the manufacturer will provide the coverage specified below.

This warranty is in place of any other warranty or guarantee whether implied or expressed in any conditions of purchase of the buyer, and does not extend to impose any further liability on the manufacturer than set out below.

Any work done to the product without being authorized by Schulte, may not be covered by Schulte.

WARRANTY COVERAGE: All coverage applies to manufacturer’s defects only

For Commercial, Agricultural, and Government Use

- Structural Warranty is 12 months. Coverage includes parts and labor on repair.
- Component and Driveline warranty is 12 months. Coverage includes parts and labor on repair
- Tires and Rims are covered for 1 year against manufacturer’s defects only. Coverage includes parts and labor.

For Rental Use

- Component and Driveline Warranty is 30 Days from within the first in-service date.
- Structural warranty is 30 days from within the first in-service date.
- Tires and Rims are covered for 1 year against manufacturer’s defects only. Coverage includes replacement parts and labor.

Where legislation allows:

- The dealer is responsible for any labor charges exceeding a reasonable amount as determined by the manufacturer.
- The customer is responsible for the transportation costs of the product or parts to the dealer for repair.
- Ground freight charges for shipping new warrantable replacement parts to the dealer or customer will be covered by Schulte. **Only ground transportation will qualify for reimbursement.**

INTRODUCTION

CONDITIONAL COVERAGE

All warranty is conditional upon:

- Care, Maintenance and Operation in accordance with the manufacturer's specifications and recommendations (as set out, or referred to in the "Operator's Manual") supplied with the product.
- Submission of the Warranty Registration immediately upon sale of the product.
- The Pre-Delivery Inspection sheet must be sent with the Warranty Registration. Failure to comply will result in warranty claims being denied.

EXCLUSIONS

This warranty does not extend to:

- Damage or deterioration after delivery from the manufacturer not attributable to defective material or workmanship.
- A Multi-Rake that has been physically altered without the approval of the manufacturer.
- Any goods which have sustained damage or deterioration due to encounters with foreign objects for which the product is not intended, inadequate or faulty assembly, improper or inadequate maintenance, neglect, or abuse.
- Shop supplies such as the use of tools, oil or grease used in the repair or replacement of a warrantable part or component.
- Normal wearing parts such as, but are not limited to safety chains, belting, clutch linings, blades and tire wear.

THE WARRANTY CLAIM PROCESS:

- All warranty claims must be submitted as a pre-approval with photos, claimed no later than 60 days after approval.
- The dealer must allow for the examination of the goods by the manufacturer or one of its agents, when requested by the manufacturer to verify that the goods are defective in material or workmanship.
- The Dealer must keep the failed part until the claim is processed, to allow Schulte Industries the option of further examination of the part.

Further examination may mean that pictures are sent, or that the part be returned to Schulte.

- A Return Goods Authorization (RGA) must be sent with any returned part.
- If a failed part is returned to Schulte for examination, Schulte will pay the freight, **Only ground transportation will qualify for reimbursement. Any other types of freight will not be paid, unless authorized on the RGA.**

NOTE: For warranty service or parts the unit can be taken to any authorized Schulte dealer.

Warranty Contacts:

All warranty questions can be emailed to info@schulte.ca or phone Schulte Industries at 1-800-404-6044.

Schulte reserves the right to change and modify this warranty policy at any time.

ASSEMBLY SECTION

Assembly Section 3-1

ASSEMBLY

BEFORE OPERATION

Important

THE MACHINE IS SHIPPED WITHOUT OIL. FILL PUMP GEARBOX WITH GEAR OIL AND THE COOLER/RESERVOIR WITH HYDRAULIC OIL BEFORE OPERATING.

Refer to the **Maintenance Section** of this manual for recommended oil type and viscosity.

Lubricate all grease fittings. Refer to the grease schedule in this manual.

Remove both chain case covers and check that the drive chains are properly tensioned and lubricated.

Refer to the **Maintenance Section** of this manual.

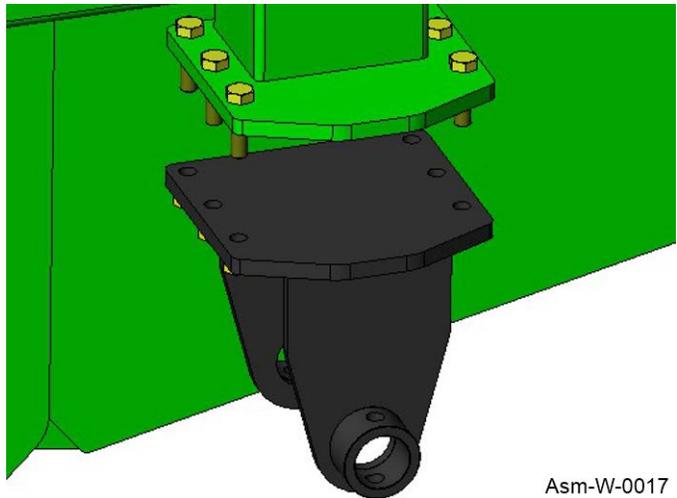
Check that all nuts and bolts are in place and properly tightened. Refer to the **Maintenance Section** of this manual for proper bolt grades and toques.

Some items may appear different than your machine, or have different colors to highlight parts being used.

WALKING AXLE ASSEMBLY

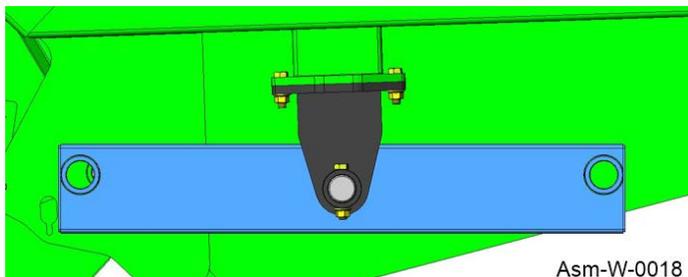
Bolt the Walking Axle Mount onto the main frame as shown. Match plate profile to ensure proper orientation.

NOTE: For units with Axle Spacer Option, install Spacer (R190-401) between Frame and Walking Axle Mount. 3/4" x 4-1/2" bolts are required for this option.



Asm-W-0017

Mount the Walking Axle in the orientation shown (Axle Mount Sleeves up). **Be sure to install retaining bolts in BOTH ends of the pin.**

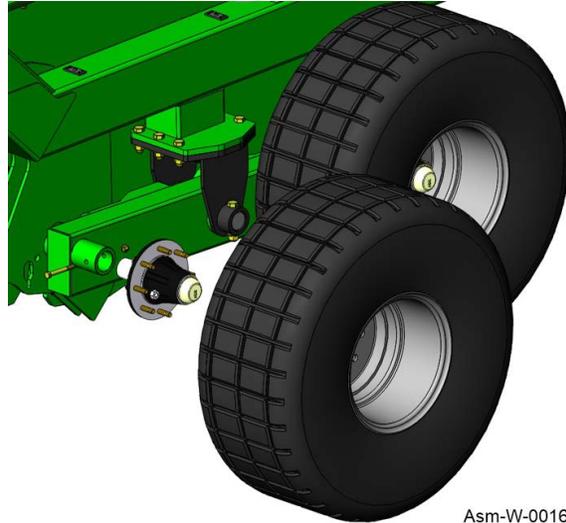


Asm-W-0018

ASSEMBLY

Install Hub/Axle Assemblies as shown.

Install the tire/rim assemblies onto the hubs using eight wheel nuts per wheel. Torque nuts to 180 ft/lbs (250 Nm). Inflate tires to 36 psi.



Asm-W-0016

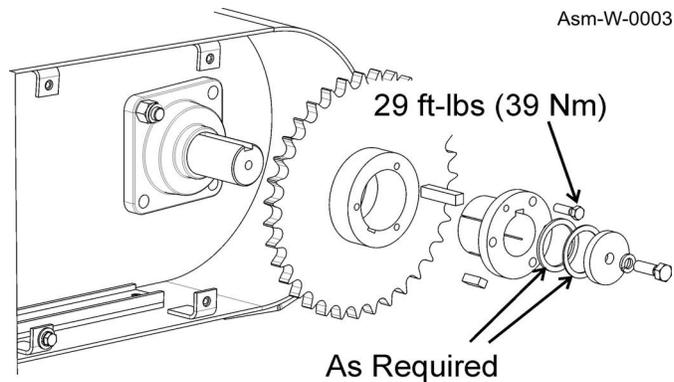
DRUM SPROCKET

After locking the collars on drum end bearings, slide big sprocket on shaft until it is against lock collar.

Insert hub and keys into sprocket.

Tighten hub by alternately tightening the three bolts in hub. Tighten the bolts to 29 ft.-lbs (39 Nm). Over tightening will strip out bolts.

Slide the appropriate amount of machine bushings until they are flush with end of shaft, then cap off and tighten end bolt.



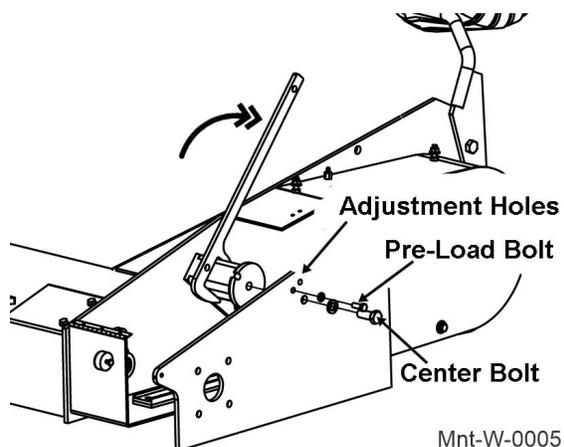
Asm-W-0003

ASSEMBLY

DRIVE CHAIN

Clean out any dirt accumulated in the chain case. Use a brush to spread an even coat of lubrication over the entire length of chain.

Tensioner should always be under load. If tensioner is not under load and/or the chain is connecting the wear strip at the bottom of the chain case, the tensioner needs to be tightened. Using the wrench provided with the machine, load the tensioner and secure with the Center Bolt.



ASSEMBLY

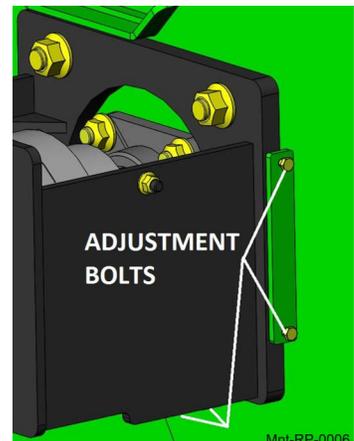
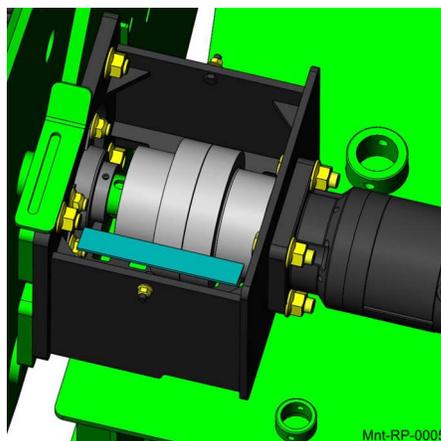
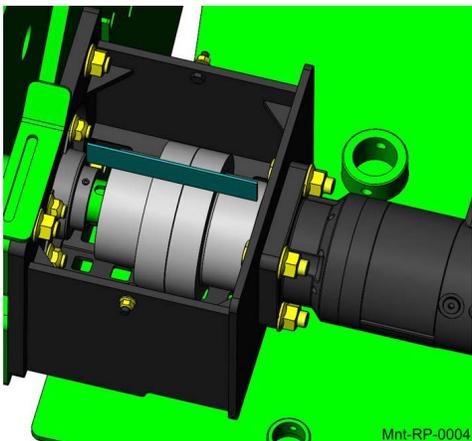
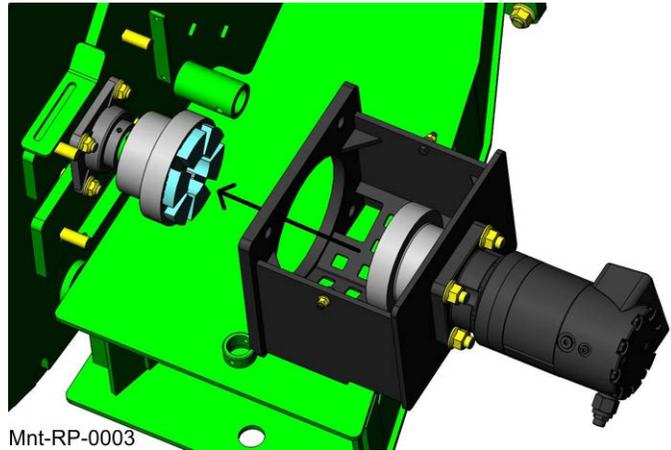
ASSEMBLY

DRIVE COUPLER

The Spartan is equipped with a zero maintenance direct-drive Magnaloy Hytrell Coupler system which is designed to provide years of heavy duty service.

Motor and Coupler Install Instructions:

1. Slide the Steel Bushing Coupler Half (R800-228) onto the reel shaft ensuring good engagement with the key in the reel shaft.
2. With the motor (116-216) secured to the motor mount (R190-136), slide the Motor Coupler Half (R800-229) onto the motor shaft inside the housing ensuring good engagement with the key in the motor shaft.
3. Rest the Hytrell Coupler Insert (R800-227) in the Steel Bushing Coupler Half that is mounted on the Reel.
4. Lift the Motor Assembly and connect the coupler halves with the Hytrell insert between them.
5. Using four (4) $\frac{3}{4}$ "x2-1/2" carriage bolts and $\frac{3}{4}$ " flange lock nuts snug the motor mount to the reel side plate, but do not fully tighten.
6. Push the Reel side coupler half towards the motor until the two halves contact the lip around the outside of the insert. Do not push the Motor side coupler further than necessary onto the motor shaft.
7. Using Loctite® 243, tighten all set screws on both coupler halves to 25.5 ft/lbs (35 Nm).
8. Using the four (4) $\frac{1}{4}$ " bolts and jam nuts installed to the adjustment plates on the reel side plate, align the outer surfaces of the coupler halves to within 0.015". Measure this using a straight edge across the coupler halves. Measure in two places 90 degrees from each other as shown (for example: top and front of the coupler)



9. Rotate the reel to ensure good engagement all around the coupler insert.
10. Torque the $\frac{3}{4}$ " carriage bolts to 260 ft-lbs.

NOTE: Coupler misalignment of greater than 1 degree, or 0.015" will reduce the life of the coupler insert and may cause damage to other components of your rock picker.

ASSEMBLY

ASSEMBLY

PRE-DELIVERY CUSTOMER CHECKLIST

	Is oil level in the gearboxes to correct level?
	Has the proper oil been used in the Gearboxes?
	Is oil in the Reservoir/Cooler to the correct level?
	Has the proper hydraulic oil been used?
	Are the Tires clear of the frame?
	Are all hoses tight and do not leak?
	Are any decals missing? See manual for decal description and placement.
	Are all bolts tight?
	Have all hoses been properly routed so that hoses do not kink or bind when the machine is articulated through all motions?
	Is machine equipped with proper operator protection?
	Are Drum and Reel rotation correct?
	Are both Drum chains tightened?
	Is the Reel Motor coupler properly aligned?
	Are all teeth hard surfaced?
	Does implement operate smoothly at normal operating speed? Implement should not vibrate excessively.

OPERATION SECTION

Operation Section 4-1

OPERATION

SCHULTE SPARTAN RWP-1935 OPERATION INSTRUCTIONS

SCHULTE SPARAN RWP-1935 Rock Picker is manufactured with quality material by skilled workers. The machine is designed to collect and pick surface rock 2" (51mm) to 21" (686mm) in diameter from fields. The implement is equipped with enough protective gear to prevent objects being thrown from the teeth, however, no shielding is 100% accurate. All shields and guards must be maintained in good operational condition.

It is the operator's responsibility to be knowledgeable of all potential operating hazards and to take every reasonable precaution to ensure oneself, others, animals, and property are not injured or damaged by the SPARTAN RWP-1935, tractor, or a thrown object. Do not operate the SPARTAN RWP-1935 if passersby, pets, livestock, or property are within 25 feet of the unit.

This section of the Operator's Manual is designed to familiarize, instruct, and educate safe and proper implement use to the operator. Pictures contained in this section are intended to be used as a visual aid to assist in explaining the operation of a Spartan RWP-1935 Windrower and are not necessarily of a SPARTAN RWP-1935 Windrower. Some pictures may show shields removed for picture clarity. NEVER OPERATE these implements without all shields in place and in good operational condition. The operator must be familiar with the SPARTAN RWP-1935 and tractor operation and all associated safety practices before operating the SPARTAN RWP-1935 and tractor. Proper operation of the SPARTAN RWP-1935 Windrower as detailed in this manual, will help ensure years of safe and satisfactory use.

IMPORTANT: To avoid implement damage, re-torque all bolts after the first 10 hours of operation.

READ AND UNDERSTAND THE ENTIRE OPERATING INSTRUCTIONS AND SAFETY SECTION OF THIS MANUAL AND THE TRACTOR MANUAL BEFORE ATTEMPTING TO USE THE TRACTOR AND IMPLEMENT. If you do not understand any of the instructions, contact your nearest authorized dealer for a full explanation. Pay close attention to all safety signs and safety messages contained in this manual and those affixed to the implement and tractor. *OPS-U- 0001str*

READ, UNDERSTAND, and FOLLOW the following Safety Messages. Death or serious injury may occur unless care is taken to follow the warnings and instructions stated in the Safety Messages. Always use good common sense to avoid hazards. (SG-2str)



Si no lee ingles, pida ayuda a alguien que si lo lea para que le traduzca las medidas de seguridad. (SG-3str)

**¡ LEA EL
INSTRUCTIVO!**



OPERATION

1. STANDARD EQUIPMENT AND SPECIFICATIONS

	SPARTAN RWP-1935
Working Width	192" - 229" (4877 - 5816 mm)
Overall Width	218" - 252" (5537 - 6654 mm)
Overall Length	310" (7890 mm)
Overall Weight (Approximate)	15015 lbs. (6825 kgs)
Hitch Weight	3520 lbs. (1600kgs)
Transport Height	122" (3100 mm)
Dumping Height	8' 7" (2616 mm)
Tire Size (Walking Axle)	16.5L x 16.1 x 10 ply
Tire Size (Wings)	27 x 10.5-15 Skid Steer Tire
Tractor Hydraulic Requirements	16 GPM with Two Remotes
Minimum Tractor HP	125 HP
Recommended Reel Speed	40 RPM
Rock Size Capacity	2" - 27" (5cm - 69cm)
Bucket Capacity	3.5 Cubic Yards (2.68m ³)
Maximum Ground Speed	4 mph (6.4 km/h)

NOTE: Tractor must be equipped with a PTO Shaft.

1.1 Hydraulic Drive Kit

REEL MOTOR	WINDROWER MOTORS
Motor displacement 62.7 cu inch/rev. (1027ml)	Motor displacement 15.3 cu inch/rev. (250 ml)
2500 psi (17.2 MPa) peak pressure	3500 psi (24.1 MPa) peak pressure
Built-in relief valve set to 2000 psi (13.8 MPa) cracking pressure	Built-in relief valve set to 210 bar (3045 psi) cracking pressure
Flow control, variable 0-15 gpm (0-57) L/min	Flow control, variable 0-15 gpm (0-57) L/min
	Driven by PTO Pump (See Options Below)
	OPTIONS - PTO PUMPS
	540 - 1-3/8" 6 Spline
	1000 - 1-3/8" 21 Spline
	1000 - 1-3/4" 20 Spline

OPERATION

2. OPERATOR REQUIREMENTS

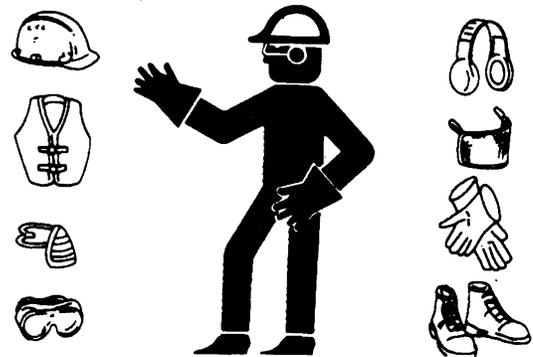
Safe operation of the unit is the responsibility of a qualified operator. A qualified operator has read and understands the implement and power unit Operator's Manuals and is experienced in implement and power unit operation and all associated safety practices. In addition to the safety messages contained in this manual, safety signs are affixed to the implement and power unit. If any part of the operation and safe use of this equipment is not completely understood, consult an authorized dealer for a complete explanation.

If the operator cannot read the manuals for themselves or does not completely understand the operation of the equipment, it is the responsibility of the supervisor to read and explain the manuals, safety practices, and operating instructions to the operator.

Safe operation of equipment requires that the operator wear approved Personal Protective Equipment (PPE) for the job conditions when attaching, operating, servicing, and repairing the equipment. PPE is designed to provide operator protection and includes the following safety wear:

PERSONAL PROTECTIVE EQUIPMENT (PPE)

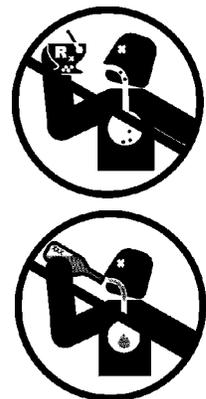
- Always Wear Safety Glasses
- Hard Hat
- Steel Toe Safety Footwear
- Gloves
- Hearing Protection
- Close Fitting Clothing
- Respirator or Filter Mask (depends on operating conditions) OPS-U- 0002_Astr



DANGER

DO NOT use drugs or alcohol immediately before or while operating the Tractor and Implement. Drugs and alcohol will affect an operator's alertness and coordination and therefore affect the operator's ability to operate the equipment safely. Before operating the Tractor or Implement, an operator on prescription or over-the-counter medication must consult a medical professional regarding any side effects of the medication that would hinder their ability to operate the Equipment safely. NEVER knowingly allow anyone to operate this equipment when their alertness or coordination is impaired. Serious injury or death to the operator or others could result if the operator is under the influence of drugs or alcohol.

(SG-27) str



OPERATION

3. TRACTOR REQUIREMENTS

The tractor used to operate the implement must have the power capacity to lift, pull, operate the reel hydraulic motor and operate the Power Take Off (PTO) at the Rock Picker's rated speed while traveling at a ground speed between 2 and 5 MPH. Operating the implement with a tractor that does not meet the following requirements may cause tractor or implement damage and be a potential danger to the operator and passersby.

Tractor Requirements and Capabilities

- ASABE approved Roll-Over Operator Protective Structure and Seatbelt.
- Tractor Safety Devices Slow Moving Vehicle (SMV) emblem, lighting, PTO master shield
- Tractor Horsepower - Recommended..... Minimum 125 hp (93kw)
- Drawbar Cat 2 or 3. Rated to carry the weight of the implement
- Front End Weights As needed to maintain 20% weight on front axle
- Hydraulics Minimum 16 GPM at 1750 PSI with Two remote outlets
- Power Take Off Operating speed and shaft size should match the PTO pump option chosen

3.1 ROPS and Seat Belt

The tractor must be equipped with a Roll-Over-Protective-Structure (ROPS), tractor cab, or roll-bar and seat belt to protect the operator from falling off the tractor, especially during a roll over where the driver could be crushed and killed. Only operate the tractor with the ROPS in the raised position and seat belt fastened. Tractor models not equipped with a ROPS and seat belt should have these life saving features installed by an authorized dealer. OPS-U- 0003str



Operate this Equipment only with a Tractor equipped with an approved roll-over-protective system (ROPS). Always wear seat belts. Death or serious injury could result from falling off the tractor, particularly during a turnover when the operator could be pinned under the ROPS. (SG-7) str



3.2 Tractor Safety Devices

If transporting or operating the tractor and implement near a public roadway, the tractor must be equipped with proper warning lighting and a Slow Moving Vehicle (SMV) emblem which are clearly visible from the rear of the unit. Lights and a SMV emblem must be equipped directly on implements if the visibility of the tractor warning signals are obscured.

Maintain all manufacturer equipped safety shields and guards. Always replace shields and guards that were removed for access to connect, service, or repair the tractor or implement. Never operate the tractor PTO with the PTO master shield missing or in the raised position. OPS-U- 0004str

3.3 Tractor Horsepower

The horsepower required to operate the implement depends on several operating factors including terrain condition, operator experience, condition of the implement and tractor, and other factors. The recommended tractor HP for the SPARTAN RWP-1935 is 125 HP (93 kW). Operating the implement with too large of a tractor will greatly increase the risk of damaging the implement.

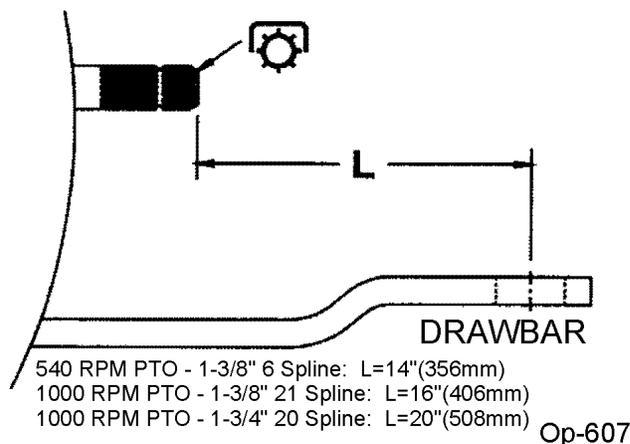
OPERATION

3.4 Drawbar

Ensure that the drawbar is rated to carry the tongue weight of the implement. Also ensure there is a safety chain attachment point on the drawbar.

Position the length of the drawbar from the end of the tractor PTO shaft to the drawbar hitch hole according to the operating speed of the implement. See Figure Op-607 for dimensions based on PTO size and RPM.

IMPORTANT: Damage to the tractor PTO and the implement can result if the drawbar is set incorrectly. Check and make and Make adjustments if necessary.



3.5 Tractor Hydraulics

One hydraulic circuit operates the Reel Motor. This circuit also requires a Case Drain on the tractor.

The second circuit feeds a valve bank which operates the bucket, grate/frame lift, windrower angles and wing lift. Familiarize yourself with the operation of all aspects of the machine before attempting field work.

3.6 Front End Weight

A minimum of 20% total tractor weight must be maintained on the tractor front end at all times. Front end weight is critical to maintain steering control and to prevent the tractor from rearing up while driving. If the front end is too light, add weight until a minimum of 20% total weight is reached on the front tires. Front weights and weight carriers can be purchased through an authorized tractor dealership. OPS-U-0005 str

3.7 Power Take Off (PTO)

The implement is designed to operate at a PTO speed of the chosen PTO Pump. Most tractors operate at either 540, or a combination of 540 and 1000 RPM PTO speeds. The operating speed of the implement and tractor can be determined by the number of splines on the driveline yoke and PTO output shaft. Those operating at 540 RPM will have a 1-3/8" diameter 6-spline shaft and those operating at 1000 RPM will have a 1-3/8" 21-spline shaft or a 1-3/4" 20 spline shaft. Refer to the tractor owner's manual for instructions to change PTO speeds on models that operate at more than one speed.

Older model tractors where the tractor's transmission and PTO utilize one master clutch cannot be used with this implement.



DO NOT use a PTO adapter to attach a non-matching Implement driveline to a Tractor PTO. Use of an adapter can double the operating speed of the Implement resulting in excessive vibration, thrown objects, and blade and implement failure. Adapter use will also change the working length of the driveline exposing unshielded driveline areas. Serious bodily injury and/or equipment failure can result from using a PTO adapter. Consult an authorized dealer for assistance if the Implement driveline does not match the Tractor PTO. (S3PT-14) str



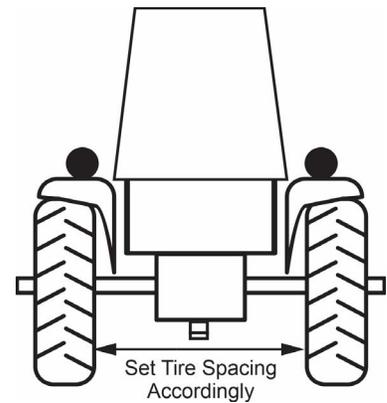
The PTO pump must be securely attached to the Tractor PTO and chained using the attached chain to prevent it from spinning. Failure to fully secure the pump can result in excessive vibration, thrown objects, tractor and/or implement failure, damage, serious injury and/or death.

OPERATION

3.8 Tire Spacing

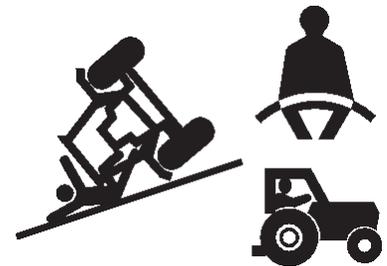
WARNING

The tire spacing of the tractor must be sufficient to maintain stability on the type of terrain where it is intended to be operated and for the type of implement that is being operated. Always refer to the tractor Operator's Manual or consult the tractor's authorized dealer for instructions on sufficient tire spacing or to change tractor tire spacing. Operating without sufficient tire spacing to maintain stability can result in loss of control of the tractor, a rollover accident, or death or serious injury.



WARNING

Operate this Equipment only with a Tractor equipped with an approved roll-over-protective system (ROPS). Always wear a seat belt. Death or serious injury can result from falling off the tractor and/or becoming pinned or trapped under the tractor or implement particularly during a rollover accident..



OPERATION

OPERATION

OPERATION

4. GETTING ON AND OFF THE TRACTOR

Before getting onto the tractor, the operator must read and completely understand the implement and tractor operator manuals. If any part of either manual is not completely understood, consult an authorized dealer for a complete explanation. OPS-U- 0007str



Do not mount the Power Unit while the Power Unit is moving. Mount the Power Unit only when the Power Unit and all moving parts are completely stopped. (SPU-18) str



4.1 Boarding the Tractor

Use both hands and equipped handrails and steps for support when boarding the tractor. Never use control levers for support when mounting the tractor. Seat yourself in the operator's seat and secure the seat belt around you.

Never allow passengers to ride on the tractor or attached equipment. Riders can easily fall off and be seriously injured or killed from falling off and being ran over. It is the operator's responsibility to forbid all extra riders at all times. OPS-U- 0008str



Never allow children to operate, ride on, or come close to the Tractor or Implement. Usually, 16-17 year-old children who are mature and responsible can operate the implement with adult supervision, if they have read and understand the Operator's Manuals, been trained in proper operation of the tractor and Implement, and are physically large enough to reach and operate the controls easily. (SG-11) str



Never allow children or other persons to ride on the Tractor or Implement. Falling off can result in death or serious injury. (SG-10)str



4.2 Dismounting the Tractor

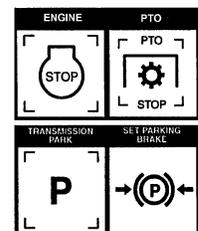
Before dismounting, park the tractor and implement on a reasonably level surface, apply the parking brake, idle the engine down, disengage the PTO, and lower the implement to the ground. Shut down the tractor engine according to the operator's manual, remove the key, and wait for all motion to completely stop. Never leave the seat until the tractor, its engine and all moving parts have come to a complete stop.

Use hand rails and steps when exiting the tractor. Be careful of your step and use extra caution when mud, ice, snow or other matter has accumulated on the steps or hand rails. Use all handrails and steps for support and never rush or jump off the tractor. OPS-U- 0009 str



BEFORE leaving the tractor seat lower the implement, set the parking brake and/or set the tractor transmission in parking gear, disengage the PTO, stop the engine, remove the key, and wait for all moving parts to stop. Place the tractor shift lever into a low range or parking gear to prevent the tractor from rolling. Never dismount a Tractor that is moving or while the engine is running. Operate the Tractor controls from the tractor seat only.

(SG-9)str



OPERATION

5.STARTING THE TRACTOR

The operator must have a complete understanding of the placement, function, and operational use of all tractor controls before starting the tractor. Review the tractor operator's manual and consult an authorized dealer for tractor operation instructions if needed.

Essential Tractor Controls:

- Locate the light control switch
- Locate the engine shut off control
- Locate the brake pedals and the clutch
- Locate the PTO control
- Locate the 3-point hitch control lever
- Locate the hydraulic remote control levers

Before starting the tractor ensure the following:

- Conduct all pre-start operation inspection and service according to the tractor operator's manual.
- Make sure all guards, shields, and other safety devices are securely in place.
- The parking brake is on.
- The PTO control lever is disengaged.
- The 3-point hitch control lever is in the lowered position.
- The hydraulic remote control levers are in the neutral position.
- The tractor transmission levers are in park or neutral.

Refer to the tractor owner's manual for tractor starting procedures. Only start the tractor while seated and belted in the tractor operator's seat. Never bypass the ignition switch by short circuiting the starter solenoid.

After the tractor engine is running, avoid accidental contact with the tractor transmission to prevent sudden and unexpected tractor movement. OPS-U-0028str



Never run the Power Unit engine in a closed building or without adequate ventilation. The exhaust fumes can be hazardous to your health. (SPU-23) str



Start the Power Unit only when properly seated in the Power Unit seat. Starting a Power Unit in gear can result in injury or death. Read the Power Unit Operator's Manual for proper starting instructions. (SPU-19) str



OPERATION

OPERATION

6. CONNECTING THE ROCK PICKER TO THE TRACTOR

Use extreme caution when connecting the SPARTAN RWP-1935 to the tractor. The SPARTAN RWP-1935 should be securely resting at ground level with the parking jack foot. Place a block in front of and behind wheels to prevent the SPARTAN RWP-1935 from moving. Keep hands and feet out from under the SPARTAN RWP-1935 and clear of pinch points between the tractor and SPARTAN RWP-1935.



DANGER

Always shut the Tractor completely down, place the transmission in park, and set the parking brake before you or anyone else attempts to connect or disconnect the Implement and Tractor hitches. (S3PT-15) str

6.1 Connecting the Rock Picker to the Tractor

1. Ensure the tractor is equipped with the correct PTO shaft, the drawbar is set at the correct length, and has a safety chain attachment point.
2. Using the parking jack, position the tongue clevis to the height of the tractor drawbar.
3. Board the tractor and start the engine. Back the tractor to the rock picker aligning the drawbar hitch hole with the rock picker tongue clevis. Turn off the tractor engine, place the tractor in park, and set the parking brake before dismounting.



DANGER

Always shut the Tractor completely down, place the transmission in park, and set the parking brake before you or anyone else attempts to connect or disconnect the Implement and Tractor hitches. (S3PT-15) str

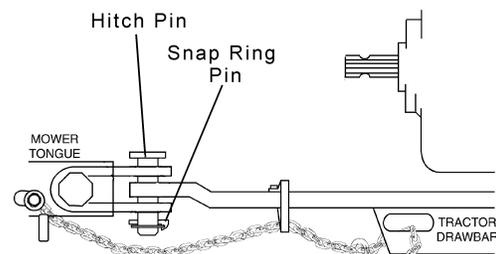
4. To attach the rock picker, place the hitch pin through the hitch clevis and drawbar hole. Then insert the lynch pin into the hitch pin and secure.
5. Attach safety tow chain to implement and tractor. Fasten the large loop of the safety chain to the hitch. Then pass hook end of safety chain through the large loop. Refer to the tractor's operator manual for complete instructions to attach to tractor. Adjust length to allow only enough slack as is needed for turning. Lock hook on chain. Ensure chain rating is equal to or greater than gross weight of towed equipment.
6. Lower the jack until the tongue is completely supported by the drawbar. Remove jack from the tongue and place on storage bracket of windrower.



WARNING

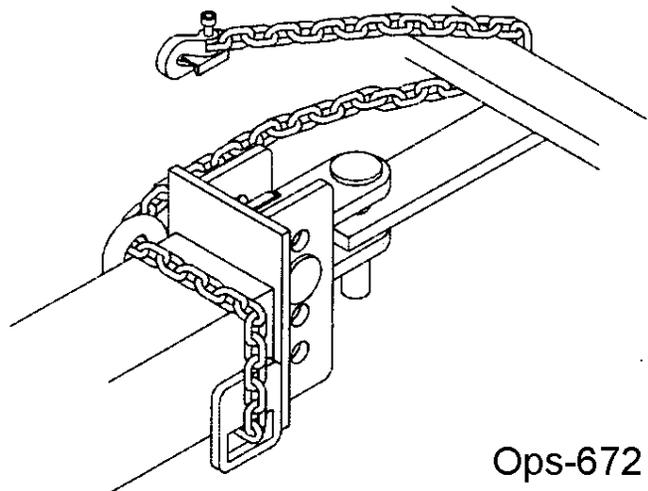
Do not use safety chain for towing. Replace entire chain if any link or end fitting is broken, stretched or otherwise deformed.

Tongue Connection



Attach Safety Chain Securely

Op-233



Ops-672

OPERATION

6.2 Safety Tow Chain

If the implement is towed on a public roadway, a safety chain with tensile strength equal to or greater than the gross weight of the implement must be connected between the tractor and implement. This will help control the implement in the event the tongue becomes disconnected from the drawbar. Make sure the chain is attached to a secure location on the tractor and not to an intermediate support.

After connecting both ends of the safety chain, drive the tractor to the right and left to check for proper chain length. Adjust length as necessary and allow only enough slack in the chain to make a maximum turn in both directions. When not in use, store the safety chain to protect it from mud or standing water by wrapping the chain around the tongue. Replace the safety chain if one or more links or end fittings are broken, stretched or otherwise damaged or deformed. *OPS-W-0014 str*



Always shut the Tractor completely down, place the transmission in park, and set the parking brake before you or anyone else attempts to connect or disconnect the Implement and Tractor hitches. (S3PT-15) str

6.3 Connecting the PTO Pump to the Tractor

The wing windrower hydraulic motors are powered using a Tractor-Mounted PTO pump and self-contained hydraulic reservoir and cooler. With the Rock Picker connected to the tractor, remove the PTO pump from the storage post and attach it to the Tractor PTO shaft, Align the pump splines with the tractor PTO splines. Compress the lock collar spring and slide the pump into place. Release the spring and ensure the pump is locked in place.

Secure the pump rotation with the attached chain and bracket. Connect the chain to a secure location on the tractor by looping the hook end around and hooking it back on itself. Secure the chain with as little slack as possible to keep the pump from rotating.

NOTE: When confirming hose lengths, be sure to watch the lower 3-point arms to avoid damage to the hydraulic cooler.



OPERATION

6.4 Hydraulic Cooler

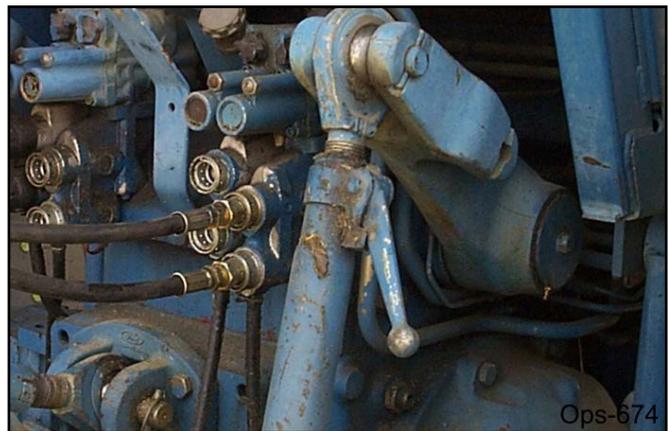
The Spartan is equipped with a self-contained hydraulic reservoir and conditioner that is powered by the PTO Pump. This works to cool the oil used in driving the wing windrower motors. It is equipped with a hydraulically driven fan to increase airflow through the cooler. It is up to the operator to ensure the cooler is kept clean and free of dust and debris. This will ensure proper operation and avoid overheating.



When turning the tractor with the implement attached, be careful that no part of the tractor comes in contact with the hydraulic cooler. This could damage the implement or tractor. A punctured cooler could create a hazard causing injury or death.

6.5 Connecting the Rock Picker Hydraulic Lines to the Tractor

With the tractor shut down and secured in position, relieve hydraulic pressure from the tractor by moving the control levers back and forth several times or placing the levers in the float position. Keep implement hydraulic lines, hoses, quick couplers, and swivels free of contamination. Never leave a disconnected hose end open and cap the tractor hydraulic outlet ports when not in use. If the tractor ports, SPARTAN RWP-1935 ports and hydraulic hose ends become contaminated, wipe clean with a rag before connecting.



Connect the hydraulic hoses to the tractor. One set of hoses feeds the control valve to operate all hydraulic cylinder circuits (Bucket, Grate, Wing Lift, Wing Angle). The other set of hoses operates the Reel hydraulic motor.

The hose with the female coupler connects to the Reel hydraulic motor Case Drain. Always connect the case drain hose to avoid damaging the motor components.

All 3 hydraulic motors are equipped with a flow control valve for adjusting reel and drum speed. Hydraulic oil MUST ENTER the flow control valve through the top port for correct operation. Arrange the hydraulic hoses as necessary.

Allow some slack in the section of hoses between the tractor and hose clamp, otherwise the hose may tighten while traveling over rough terrain and cause damage to the ports, brackets, hoses or pump.

OPERATION

WARNING

Check the tractor hydraulic fluid level after filling cylinders as the cylinders will take several liters out of the tractor's hydraulic system.

WARNING

Do not operate this Equipment with hydraulic oil or fuel leaking. Oil and fuel are explosive and their presence could present a hazard. Do not check for leaks with your hand! High-pressure oil streams from breaks in the line could penetrate the skin and cause tissue damage including gangrene. To check for a hose leak, SHUT the unit ENGINE OFF and remove all hydraulic pressure. Wear oil impenetrable gloves, safety glasses and use cardboard to check for evidence of oil leaks. If you suspect a leak, REMOVE the HOSE and have it tested at a Dealer. If oil does penetrate the skin, have the injury treated immediately by a physician knowledgeable and skilled in this procedure. (SG-15) str



OPERATION

Hydraulic Cylinder Priming

Hydraulic Cylinder must be filled with hydraulic oil before operating the windrower in a certain angle. Hydraulic cylinders and lines are filled by holding the valve control levers in the extended position until the cylinder fully retracts and extends. Place control levers in the float position and repeat process several more times to purge all air from the system.

6.6 Connecting the Electronic Controls to the Tractor

All hydraulic cylinder circuits are powered by one tractor remote, and controlled by a control valve. The valve is controlled by a switch box that will be placed in the tractor cab.

1. Install the switchbox 276-348 into an easily accessible place in the tractor cab.
2. Locate the two Ring Terminals and connect them to the tractor power source.
3. Feed the cable out the back of the tractor and connect it to the implement side harness 276-349.
 - Allow some slack in the section of wiring between the implement and tractor, otherwise the cable may tighten while traveling over rough terrain or turning and cause damage to the cables, connectors, valve, switchbox, or tractor.



OPERATION

7. SETTING THE WINDROWERS

Properly setting the wing height is essential for efficient and safe operation. A properly set implement will feed the rock picker more evenly, require minimal tractor work, and follow the contour of uneven terrain.

Note: Avoid very low windrowing heights. Striking the ground with the teeth gives the most damaging shock loads and will cause damage to the windrower and drive. Windrower teeth contacting the ground may cause objects to be thrown out from under the windrower deck.

DANGER

Never work under the Implement, the framework, or any lifted component unless the Implement is securely supported or blocked up to prevent sudden or inadvertent falling which could cause death or serious injury. (SG-14)str



7.1 Adjusting Drum Level

Drum level will need to be adjusted and fine tuned to match terrain and desired field finish. To initially set the drums, follow these instructions.

DANGER

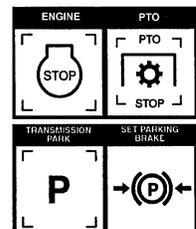
Ensure that no one is near the machine while hydraulics are being activated.

1. First find a level area and unfold the machine.
2. Lower the frame until the Grate Teeth just touch the ground.

DANGER

BEFORE leaving the tractor seat lower the implement, set the parking brake and/or set the tractor transmission in parking gear, disengage the PTO, stop the engine, remove the key, and wait for all moving parts to stop. Place the tractor shift lever into a low range or parking gear to prevent the tractor from rolling. Never dismount a Tractor that is moving or while the engine is running. Operate the Tractor controls from the tractor seat only.

(SG-9)str

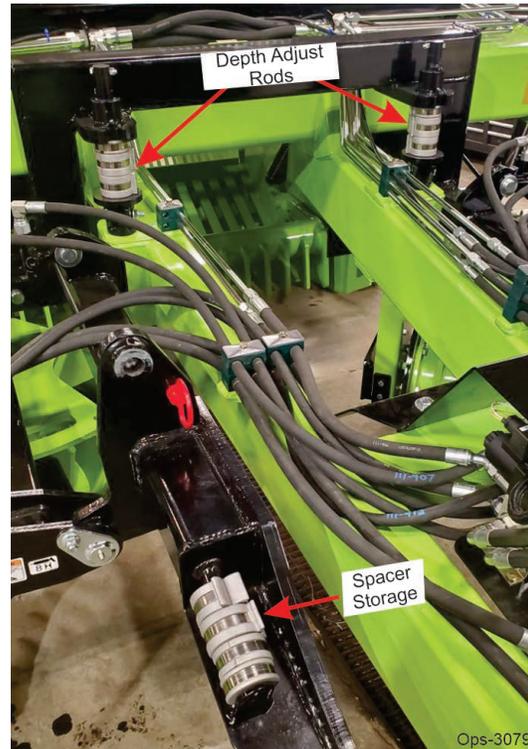


OPERATION

- Exit the tractor and set the drum discharge height by installing Depth Stop Spacers on the Depth Adjust Rods.

NOTE: Both sides must have equal Spacers installed to avoid permanent machine damage by twisting the frame.

- To raise the drums add more Depth Stop Spacers.
- To lower the drums, remove spacers.
- Unused Depth Stop Spacers can be stored near the front pivot of the Float Frame.



OPERATION

- Set the height of the outer wing by adjusting the Gauge Wheel Ratchet Jack.
 - Raise the drum by lowering the wheel.
 - Lower the drum by raising the wheel.

NOTE: When adjusting the gauge wheel level be sure to store the ratchet jack handle in a position where it won't interfere with the machine function.



OPERATION

OPERATION

7.2 Adjusting Machine Width

The Spartan is designed to pick rocks at various widths by rotating the wings in and out. The widest setting has a working width of 19 feet (5.79m) and overall width of 21 feet (6.53m). The narrowest setting has a working width of 16 feet (4.88m) and overall width of 18.2 feet (5.54m).

The wing angles utilize a hydraulic phasing cylinder system. This system works by synchronizing the operation of multiple hydraulic cylinders so that they extend and retract at exactly the same rate. This allows a multi-sectioned machine, such as the Spartan to be adjusted evenly on both wings. Because a hydraulic cylinder has a “Cylinder Rod” attached to the piston, the effective area on the rod side of the cylinder is less than the basic effective area of the cylinder.

In order to receive synchronization, cylinder diameters are reduced as cylinders are connected to the “Main Cylinder” so that the effective area of the upstream cylinder on the rod side is the same effective area of the downstream cylinder on the piston side. the result of this stepping down of cylinder diameters is that all cylinders move at the same rate resulting in an “Even Spread”.

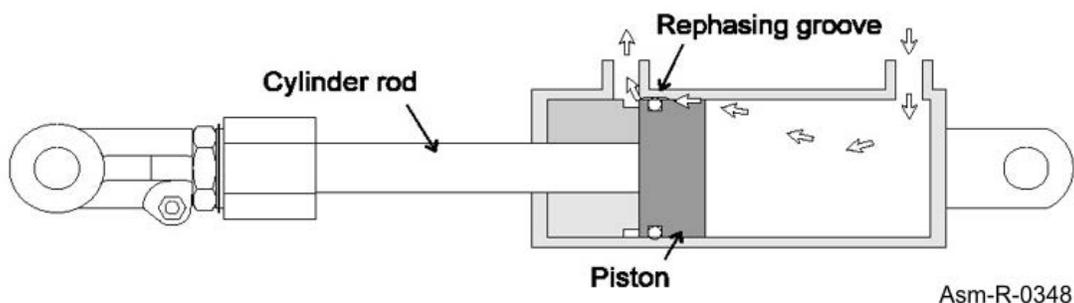
The width can be adjusted from the tractor by activating the Wing Angle cylinders. When the desired width is met, Depth Spacers can be used to help re-set the width if the cylinders creep open.

Over time and during use, phasing cylinders can creep and get “Out of Phase” so one cylinder is more extended or retracted than the other. To remedy this, the cylinders can be re-phased.

Rephasing Groove

Hydraulic oil moves from one cylinder to the next through an indentation in the cylinder wall known as a “Rephasing Groove”. When the cylinder is fully extended this groove creates a bypass over the piston main seal, allowing oil to flow to the next cylinder in the set. Since these grooves are quite small it will often take a number of minutes for oil to completely circulate through the set of cylinders.

On initial startup of a phasing cylinder system it may take a number of minutes to force oil through the system and purge out any air in the hydraulic lines. During normal operation small amounts of oil may leak past piston seals causing cylinders to fall out of synchronization. Synchronization can be restored by fully extending cylinders and holding the circuit open for period of time.



NOTE: When raising the wings to put the machine into transport position, the wings should be spread fully and the Red Cylinder Lock-Up Spacers should be installed over the cylinder rods, When not in use, the Lock-Up Spacers should be installed on the storage location on the Hitch Frame near the pivot of the Float Frame.

OPERATION

8. PRE-OPERATION INSPECTION AND SERVICE

Before each use, a pre-operation inspection and service of the implement and tractor must be performed. This includes routine maintenance and scheduled lubrication, inspecting that all safety devices are equipped and functional, and performing needed repairs. DO NOT operate the rock picker and tractor if the pre-operation inspection reveals any condition affecting safe operation. Perform repairs and replacement of damaged and missing parts as soon as noticed. By performing a thorough pre-operation inspection and service, valuable down time and repair cost can be avoided.



DANGER

Never work under the Implement, the framework, or any lifted component unless the Implement is securely supported or blocked up to prevent sudden or inadvertent falling which could cause serious injury or even death. (SG-43) str



WARNING

Periodically inspect all moving parts for wear and replace when necessary with authorized service parts. Look for loose fasteners, worn or broken parts, and leaky or loose fittings. Make sure all pins have cotter pins and washers. Serious injury may occur from not maintaining this machine in good working order. (SG-21) str



DANGER

Always disconnect any PTO attachments from the Tractor before performing service on the Implement. Never work on the Implement with the tractor PTO attachment connected and running. Rotating parts, drums, teeth, chains, or drives could turn without warning and cause immediate entanglement, injury or death. (S3PT-24) str

OPERATION

8.1 Tractor Pre-Operation Inspection/Service

Refer to the tractor operator's manual to ensure a complete pre-operation inspection and scheduled service is performed according to the manufacturer's recommendations. The following are some of the items that require daily service and inspection:

- Tire condition/air pressure
- Wheel lug bolts
- Steering linkage
- PTO shield
- SMV sign is clean and visible
- Tractor's lights are clean and functional
- Tractor Seat belt is in good condition
- ROPS is in the raised position
- No tractor oil leaks
- Radiator free of debris
- Engine oil level and condition
- Engine coolant level and condition
- Power brake fluid level
- Power steering fluid level
- Fuel condition and level
- Sufficient lubrication at all lube points
- Air filter condition *OPS-U-0030 str*



8.2 Rock Picker Pre-Operation Inspection/Service

Before each implement use, a complete inspection and service is required to ensure the implement is in a good and safe working condition. Damaged and/or broken parts should be repaired and/or replaced immediately. To ensure the implement is ready for operation, conduct the following

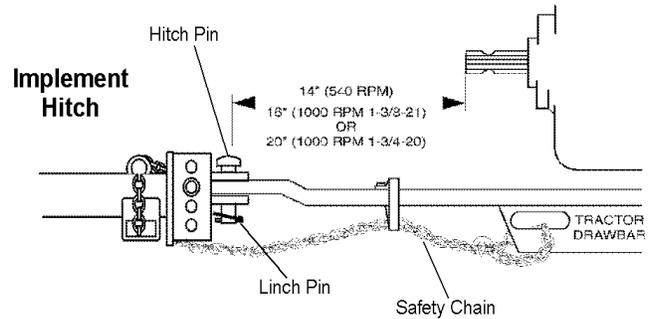
The operator's manual and safety signs affixed on the unit contain important instructions on the safe and proper use of the equipment. Maintain these important safety features on the implement in good condition to ensure the information is available to the operator at all times.

- Ensure the manual canister is secured to the equipment with the operator's manual inside.
- Ensure all safety signs are in place and legible. Replace missing, damaged, and illegible decals. *OPS-U- 0011 str*



OPERATION

- Ensure the rock picker is securely attached to the tractor drawbar with a proper size pin and lynch pin.
- Ensure that a properly rated safety tow chain is equipped securing the rock picker to the tractor.Ops-671
- Ensure all shields and rock deflectors are in position and not damaged. Replace worn, broken and missing sections immediately.
- Inspect that all bolts and screws are in position and properly torqued.
- Ensure the wing drums are in good condition and rotate freely. Ops-3084
- Inspect the windrower teeth and make sure they are hard surfaced and that the bare tooth is not exposed. If the hard surfacing is not properly maintained, highly accelerated tooth wear will result.
- Inspect the condition of the wing drive chains. Ops-3085
- Ensure the chain tensioner are properly set.
- Ensure chain case shields are secure and in good condition.



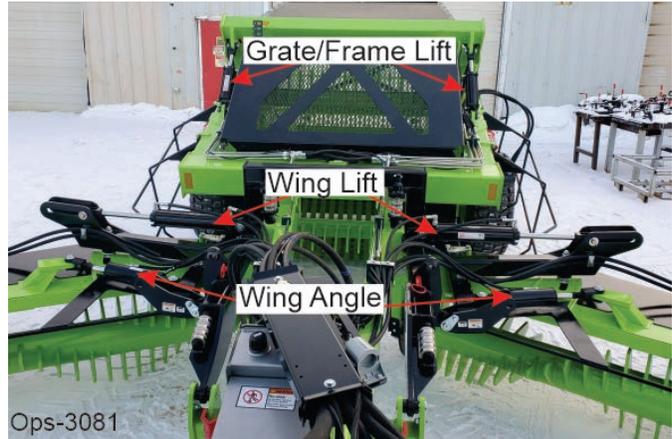
Ops-671_A



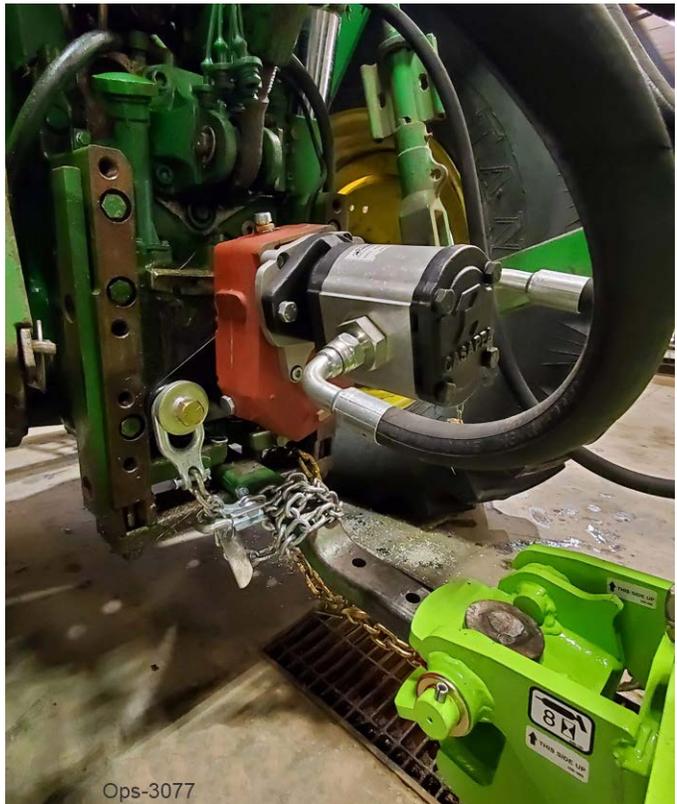
OPERATION

OPERATION

- Ensure hydraulic hose brackets are in place and bolted on correctly.
- Ensure hydraulic hoses have enough slack while being operated or in transport.
- Ensure hydraulic hoses are connected correctly in tractor hydraulic ports and implement hydraulic ports. *OPS-RP-0001_E str*



- Ensure PTO Pump is securely attached to the tractor PTO and the locking collar is seated in the groove of the PTO shaft.
- Ensure the PTO pump chain is securely fastened to the tractor so the pump cannot rotate. *OPS-RP-0014 str*



OPERATION

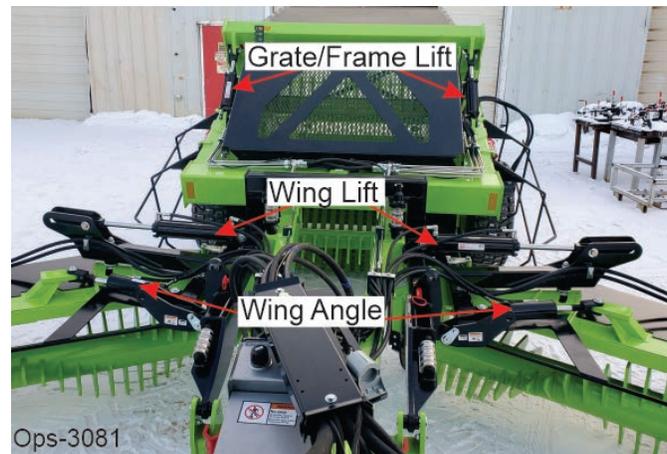
- Ensure that the hydraulic cooler reservoir has the correct amount of oil and fill if necessary.
- Ensure the cooler is clean and free of dust and debris.
- Ensure that the cooler is free of damage,. Replace damaged components before use.



- Perform scheduled lubrication as specified in the maintenance section.
- Ensure drive chain is lubricated as per the maintenance section of this manual.
- Ensure reel is retained correctly and flange is greased according to the maintenance section of this manual.
- Ensure Batt Teeth are in good condition and the batts are retained correctly on the Reel. Refer to the Reel section of your Parts Manual.
- Ensure Batt Springs eyebolts are adjusted correctly according to the maintenance section of this manual.
- Inspect all bolts and screws that they are in position and are properly torqued. *OPS-RP-0003_D str*



- Ensure hydraulic cylinders are installed and retained correctly. Ensure the proper size pins are used to retain the cylinders in place and are secured with pins.
- Ensure bucket, frame and wing cylinders are raising correctly.
- Check for hydraulic oil leaks on the cylinders, along the hydraulic lines, and at tractor hydraulic ports. **IMPORTANT:** DO NOT use your hands to check for oil leaks. Use a piece of heavy paper or cardboard to check for hydraulic oil leaks. *OPS-RP-0004_E str*



OPERATION



Do Not attempt to dump the Rock Picker bucket unless the Rock Picker tongue is securely attached to the tractor drawbar. The Rock Picker could tip over and will cause equipment damage and possible injury.

- Inspect rock pickers tire condition, wheel bearings, and lug nut torque.
- Ensure tire pressure is to suggested specifications. Refer to maintenance sections of your operators manual.

OPS-RP-0005_D str



Ops-3082

OPERATION

FOLDING ROCK PICKER PRE-OPERATION INSPECTION



Implement ID# _____

Date: _____

Make: _____

Shift: _____

IMPORTANT: Scan this QR Code for an electronic copy of this inspection sheet.

Inspection Sheets



www.algqr.com/rpi



Before conducting the inspection, make sure the tractor engine is off, all rotation has stopped and the tractor is in park with the parking brake engaged. Make sure the implment is resting on the ground or securely blocked up and all hydraulic pressure has been relieved.

Item	Condition at Start of Shift	Specific Comments if not OK
The Operator's Manual is in the canister on the implement		
All safety decals are in place and legible		
The tongue/hitch connection bolts and pins are tight		
There are no cracks in tongue, hitch or implement		
The tow chain is secured to the tractor and implement		
The hydraulic cylinder pins are properly retained		
There are no leaking or damaged hoses		
Reel/Drums are in good condition and turn freely		
Reel/Drum Coupler/Chains are adjusted properly		
Reel/Drum Coupler/Chains are in good condition		
Drum chains are properly lubricated		
Check for damaged or missing Reel/Grate/Drum teeth		
PTO Pump is securely attached to tractor		
PTO Pump Chain is securely attached to tractor		
Hydraulic Cooler/Reservoir has the proper amount of oi		
Hydraulic Cooler is free of damage and debris		
Tires are properly inflated and in good condition		
Wheel lug nuts are tight		
Transport locks are in good condition and operational		
Proper hourly greasing done as per Operator's Manual		

Make: _____ Shift: _____

Operator's Signature: _____

DO NOT OPERATE an UNSAFE TRACTOR or IMPLEMENT

OPERATION

OPERATION

TRACTOR PRE-OPERATION INSPECTION



Tractor ID# _____

Date: _____

Make : _____

Shift: _____



Before conducting the inspection, make sure the tractor engine is off, all rotation has stopped and the tractor is in park with the parking brake engaged. Make sure the implement is resting on the ground or securely blocked up and all hydraulic pressure has been relieved.

OPERATION

Item	Condition at Start of Shift	Specific Comments if not OK
The flashing lights function properly		
The SMV Sign is clean and visible		
The tires are in good condition with proper pressure		
The wheel lug bolts are tight		
The tractor brakes are in good condition		
The steering linkage is in good condition		
There are no visible oil leaks		
The hydraulic controls function properly		
The ROPS or ROPS Cab is in good condition		
The seatbelt is in place and in good condition		
The 3-point hitch is in good condition		
The drawbar pins are securely in place		
The PTO master shield is in place		
The engine oil level is full		
The brake fluid level is full		
The power steering fluid level is full		
The fuel level is adequate		
The engine coolant fluid level is full		
The radiator is free of debris		
The air filter is in good condition		
Proper hourly greasing is done per Operator's Manual		

Operator's Signature: _____

DO NOT OPERATE an UNSAFE TRACTOR or IMPLEMENT

OPERATION

9. DRIVING THE TRACTOR AND ROCK PICKER

Safe tractor transport requires the operator possess a thorough knowledge of the model being operated and precautions to take while driving with an attached implement. Ensure the tractor has the capacity to handle the weight of the implement and the tractor operating controls are set for safe transport. To ensure safety while driving the tractor with an attached implement, review the following.

WARNING Transport only at speeds where you can maintain control of the equipment. Serious accidents and injuries can result from operating this equipment at high speeds. Understand the Tractor and Implement and how it handles before transporting on streets and highways. Make sure the Tractor steering and brakes are in good condition and operate properly.



Before transporting the Tractor and Implement, determine the proper transport speeds for you and the equipment. Make sure you abide by the following rules:

Test the tractor at a slow speed and increase the speed slowly. Apply the Brakes smoothly to determine the stopping characteristics of the Tractor and Implement. As you increase the speed of the Tractor the stopping distance increases. Determine the maximum transport speed not to exceed 20 mph (30 kph) for transporting this equipment.

Test the equipment at a slow speed in turns. Increase the speed through the turn only after you determine that the equipment can be operated at a higher speed. Use extreme care and reduce your speed when turning sharply to prevent the tractor and implement from turning over. Determine the maximum turning speed for you and this equipment before operating on roads or uneven ground.



Only transport the Tractor and Implement at the speeds which allow you to properly control the equipment.

Be aware of the operating conditions. Do not operate the Tractor with weak or faulty brakes or worn tires. When operating down a hill or on wet or rain slick roads, the braking distance increases: use extreme care and reduce your speed. When operating in traffic always use the Tractor's flashing warning lights and reduce your speed. Be aware of traffic around you and watch out for the other guy. (SG-19)str

DANGER This Implement may be wider than the Tractor. Be careful when operating or transporting this equipment to prevent the Implement from running into or striking sign posts, guard rails, concrete abutments or other solid objects. Such an impact could cause the Implement and Tractor to pivot violently resulting in loss of steering control, death, or serious injury. Never allow the Implement to contact obstacles. (S3PT-12)str

OPERATION

9.1 Starting the Tractor

The procedure to start the tractor is model specific. Refer to the tractor operator's manual for starting procedures for your particular tractor. Consult an authorized dealer if the starting procedure is unclear. Ensure the 3-point control lever is in the lowered position and the PTO is disengaged before starting the tractor. OPS-U-0033str



9.2 Brake Lock and Differential Setting

Make sure the tractor brakes are in good operating condition. Tractor brakes can be set to operate independently allowing single rear wheel braking action or locked together to provide simultaneous rear wheel braking. FOR MOST DRIVING AND OPERATING CONDITIONS, THE BRAKE PEDALS SHOULD BE LOCKED TOGETHER TO PROVIDE THE MOST EFFECTIVE BRAKING ACTION.

Always disengage the tractor differential lock when turning. When engaged the differential lock will prevent or limit the tractor from turning. During normal operating conditions, locking the differential provides no benefit and should not be used.



WARNING

Be aware of the operating conditions. Do not operate the Tractor with weak or faulty brakes. When operating down a hill or on wet or rain slick roads, the braking distance increases. Use extreme care and reduce your speed in these conditions. When operating in traffic, always use the Tractor's flashing warning lights and reduce your speed. Be aware of traffic around you and watch out for the other guy. OPS-U- 0013 str

Always disengage the tractor differential lock when turning. When engaged the differential lock will prevent or limit the tractor from turning. During normal operating conditions, locking the differential provides no benefit and should not be used.

OPERATION

9.3 Hydraulic Cooler Startup Procedure

1. Fill the system with the recommended oil until it reaches the top of the sight gauge.
2. Make sure to check the hoses and fittings are all plumbed properly and tightened before filling with oil.
3. Engage the PTO
4. Inspect the pump speed, pressure lines for leaks, check oil level in the sight gauge and add more oil until it reaches the top portion of the sight gauge.
5. Let the system run for a couple of minutes to make sure the HCU is running smoothly.
6. Please check the airflow direction and fan orientation (Hydraulic Fan Drive). The fan should spin counter clockwise direction by pulling air through the cooler and blowing it towards the fan motor.
7. Reduce the engine speed to idle and disengage the PTO.
8. Oil should be changed after 10 hours of operation to get rid of any contaminants from the system or based on hydraulic manufacturer's requirements.

NOTE: *If there are any leaks during start up, shut down the system immediately and inspect/tighten the lines leaking connections. Please consult factory if you continue to see this problem.*

9.4 Operating the Wings

This implement uses cylinders to fold and unfold the wings. Make sure that the hydraulic lines and wing fold cylinders are purged of air by fully extending and retracting cylinders a minimum of 6 times on double acting cylinders. On single acting cylinders raise and lower the wings a minimum of 6 times. Only operate the implement with both wings completely lowered. Never operate the implement with a raised wing. Wait until the drums have come to a complete stop before raising wings. Ensure wings are fully raised and secured using the transport lock pins before transporting the implement.



DANGER

When the Wings are folded for transport, the center of gravity is raised and the possibility of overturn is increased. Drive slowly and use extreme caution when turning on hillsides. Overturning the Implement could cause the Implement to overturn the Tractor and vice versa resulting in serious injury or even death. Never fold wings on a hillside...the Implement or unit may overturn. (STI-02) str



WARNING

Use extreme care when lowering or unfolding the implement's wings. Make sure no bystanders are close by or underneath the wings. Allow ample clearance around the implement when folding or unfolding the wings. Use extreme caution around buildings or overhead power lines. (S3PT-05) str

OPERATION

9.5 Driving the Tractor and Rock Picker

Raise the rock picker into transport position by first extending the wing angle cylinders and installing the cylinder locks on the exposed rods. Lift the machine by extending the Frame/Grate lift cylinders and installing the cylinder locks onto those exposed rods. Then fully raise the wings into transport position. Secure the wings by installing the wing lock pins, and confirm installation of the four cylinder locks on the other cylinders. The machine can be put into working position by following the reverse sequence.



Start off driving at a slow speed and gradually increase your speed while maintaining complete control of the tractor and rock picker. Moving slowly at first will also prevent the tractor from rearing up and loss of steering control. The tractor should never be operated at speeds that cannot be safely handled or which will prevent the operator from stopping quickly during an emergency. If the power steering or engine ceases operating, stop the tractor immediately as the tractor will be difficult to control.



Before starting the Rock Picker remove transport pins and locks. After completing, reinstall the transport pins and locks.



Allow sufficient clearance for the Implement to swing outward while turning. Implements carried behind the Tractor will swing outside the tire path when making turns. Contacting a solid object while turning will cause equipment damage and possible injury. (S3PT-20) str

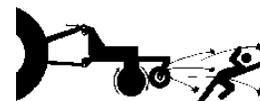
Perform turns with the tractor and rock picker at slow speeds to determine how the tractor with the attached implement handles a turn. When operating the rock picker the overall working length of the unit is increased. Allow additional clearance for the rock picker when turning. Extra precaution should be taken to avoid hitting parked vehicles, sign, road structures, bystanders, and animals due to the overall length and width of the implement.

To avoid overturns, drive the tractor with care and at safe speeds, especially when operating over rough ground, crossing ditches or slopes, and turning corners. Rear tractor tire spacing should be increased when working on inclines or rough ground to reduce the possibility of tipping.

Use extreme caution when operating on steep slopes. Keep the tractor in a low gear when going downhill. DO NOT coast or free-wheel downhill.



Do not let the drum teeth turn when the implement is raised for any reason, including clearance or for turning. Raising the implement exposes the drum teeth which creates a potentially serious hazard and could cause serious injury or even death from objects thrown from the drum teeth.

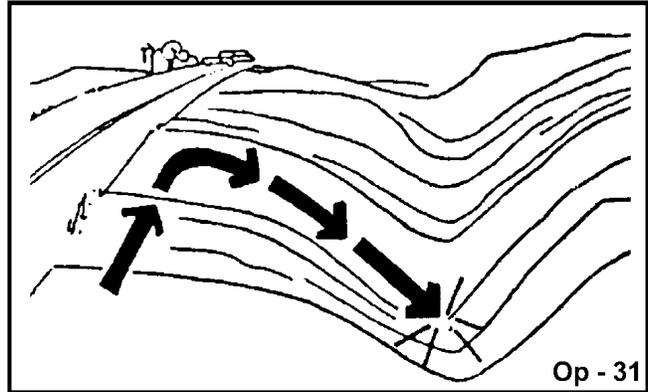


OPERATION

9.6 Crossing Ditches and Steep Inclines

When confronted with an incline or ditch, do not approach from an angle which is perpendicular or straight on as damage may occur.

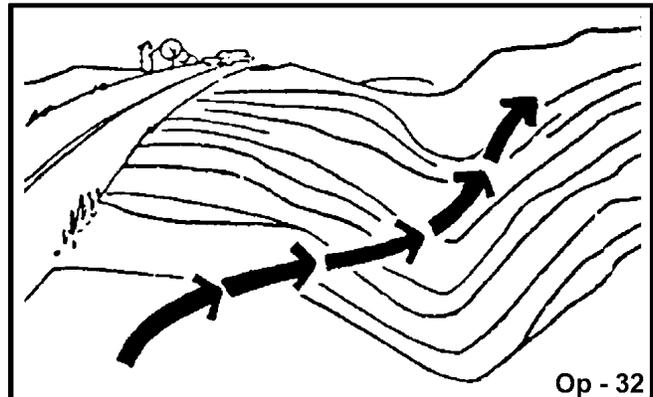
When crossing such terrain, the implement should be lowered as much as possible without ground contact for a lower center of gravity and added stability. OPS-R-0021_E str



INCORRECT: DO NOT approach ditch straight on

Inclines and ditches should be approached along a line which is at an angle as shown. This type of path will reduce the possibility of damage. If the gradient is so steep that such an approach increases the possibility of a tractor roll-over, select an alternate crossing path.

When operating the tractor and implement across slopes and inclines, through ditches, and other uneven terrain conditions, it is important to maintain sufficient ground clearance. If too much dirt being carried in to the windrower, reduce the working depth. Ground contact also produces a severe shock load on the windrower drive and resulting in possible damage and premature wear. OPS-W-0001_A str



CORRECT: Approach ditch at an angle

WARNING

Damage resulting from over-collapse of the driveline's inner profile and its outer housing may allow the driveline to come loose from the Tractor which could cause bodily injury to the operator or bystanders and/or extensive damage to the Tractor or Implement

OPERATION

10.OPERATING THE TRACTOR AND IMPLEMENT

THE OPERATOR MUST COMPLETELY UNDERSTAND HOW TO OPERATE THE TRACTOR AND IMPLEMENT AND ALL CONTROLS BEFORE ATTEMPTING TO OPERATE. The operator must read and understand the Safety and Operation Sections of the implement and tractor operator's manuals. These manuals must be read and explained to any operator who cannot read. Never allow someone to operate the implement and tractor without complete operating instructions.



Before starting any operation, the operator must become familiar with the area to be worked in and any obstacles and hazards contained within to ensure safety to the operator, bystanders, and equipment. Special attention should be paid to foreign debris, rough terrain, steep slopes, and passersby and animals in the area.

WARNING

Many varied objects, such as wire, roots cable, rope, or chains, can become entangled in the rotating parts of the Implement. These objects could then swing outside the housing at great velocities. Such a situation is extremely hazardous and could result in serious injury or even death. Inspect the area for such objects before working in the area. Remove any such objects from the site. Never allow the implement to contact such objects. (STL-6_A) str

OPERATION

11. FOREIGN DEBRIS HAZARDS

Before rock picking, inspect the area to make sure there are no objects larger than 27" to rock pick or debris that can get entangled on the drum. Remove all foreign objects and debris. If objects are too big to remove, mark them clearly and be sure to prevent the implement from contacting them.

If you hit a solid object or foreign debris that is larger than 25", disengage the hydraulics and PTO. Wait for all rotating motion to stop and move the tractor and implement off the object. Inspect the area and mark the location of the debris. Inspect the condition of the implement and make any needed repairs immediately. Make sure the Batts, Reel, Motor, Coupler, Drums, Teeth and Wings are not damaged before resuming operation.



Always wear your seat belt securely fastened and only operate the tractor and rock picker with the ROPS in the raised position. If the tractor or rock picker hits a tree stump or bump, a sudden movement could throw you off of the seat and under the tractor and rock picker. The seat belt is your best protection from falling off the tractor and the ROPS provides protection from being crushed during a tractor roll-over. OPS-W-0002_C str

WARNING

Be sure you have adequate knowledge of the property you will be working on. Take time to make yourself aware of any area underwater or underground lines or cables. Contact with buried lines or cable could result in serious injury or death. (STL-1) str

DANGER

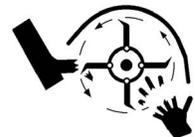
There are obvious and hidden potential hazards in the operation of this Implement as in all power-driven or pulled equipment. REMEMBER! This machine is often operated in rough terrain conditions that include grass, weeds, gullies, holes, slopes, hidden obstructions and the like. Serious injury or even death may occur unless care is taken to assure the safety of the operator and bystanders in the area. Do not operate this machine with anyone in the immediate area. Stop operating if anyone comes within 25 feet of the equipment. (STL-4) str

11.1 Engaging the Power Take Off (PTO)

Before engaging the PTO, make certain that the area is clear of bystanders and passersby. Set the tractor engine speed at approximately 1,000 RPM before engaging the PTO. Shift the PTO control to the on position, and slowly increase the engine speed until the PTO is operating at the rated speed. If you hear unusual noises or see or feel abnormal vibrations, disengage the PTO immediately. Inspect the windrower to determine the cause of the noise or vibration and repair the abnormality.

WARNING

Do not put hands or feet under implement as it can result in death or serious injury. Stay away until all motion has stopped and the frames are securely blocked up. (STL-3) str



DANGER

Make sure the PTO shield, integral driveline shields, and input shields are installed when using PTO-driven equipment. Always replace any shield if it is damaged or missing. (S3PT-8) str



OPERATION

11.2 Ground Speed

Ground speed for the rock picker will depend on the size of the rocks being picked. Recommended speed for efficient wing windrowing and rock picking performance is 2-5 mph. Operate the implement at its full rated PTO rpm to maintain speed for wing windrower operation. Operating at the full rated PTO rpm will ensure adequate oil flow to the wing windrower motor circuits. It is important to match the rock picker reel speed with ground speed. Forward ground speed helps propel the rocks up the grate and into the hopper. Refer to the tractor operator's manual or the tractor instrument panel for the engine speed and gear to provide the required ground speed. Make sure that the rock picker is operating at its full rated speed before entering the field to be rock picked. If it becomes necessary to temporarily regulate engine speed, increase or decrease the throttle gradually.

Ground speed is achieved by transmission gear selection and not by the engine operating speed. The operator may be required to experiment with several gear range combinations to determine the best gear and range which provides the most ideal performance from the implement and most efficient tractor operation. As the severity of cutting conditions increase, the ground speed should be decreased by selecting a lower gear to maintain the proper operating PTO speed.



WARNING Do not exceed the rated PTO speed for the Implement. Excessive PTO speeds can cause Implement driveline or component failures resulting in serious injury or death. (SG-26) str

11.3 Operating the Rock Picker

When ready for field use, remember to remove the transport pins and locks. After completing field work, always prepare the machine for transport by reinstalling the transport pins and locks.

WING WINDROWERS

Set the working depth of the wing windrower teeth to the desired level. Do this by adding or removing spacer pucks to the float frame depth adjust posts and threading the gauge wheel ratchet jacks in or out. Be sure to have equal spacing on both float frame posts to avoid machine damage.

Set the wing windrower drum speed to 100 RPM. Do this by adjusting the lever on the flow control valve until proper drum RPM is obtained, then lock lever in place. Do this on both wings.

In order to protect the wing windrower drive system from shock loads or excessive pressure the motors are equipped with mounted cushion valves. Do not tamper with cushion valve, Increased pressure could damage the motor or other machine components and increases the risk of leaks or other hydraulic system damage. Reduced pressure will reduce the performance of the machine.



Do not operate this Equipment with hydraulic oil or fuel leaking. Oil and fuel are explosive and their presence could present a hazard. Do not check for leaks with your hand! High-pressure oil streams from breaks in the line could penetrate the skin and cause tissue damage including gangrene. To check for a hose leak, SHUT the unit ENGINE OFF and remove all hydraulic pressure. Wear oil impenetrable gloves, safety glasses and use cardboard to check for evidence of oil leaks. If you suspect a leak, REMOVE the HOSE and have it tested at a Dealer. If oil does penetrate the skin, have the injury treated immediately by a physician knowledgeable and skilled in this procedure. (SG-15) str



Do not exceed 5 mph (8 km/h) while operating the windrower. In heavy rock conditions reducing your forward speed will ensure that rocks are not skipped.

OPERATION

If too much dirt is being carried into the center of the machine, reduce the working depth. The gauge wheels can be adjusted up or down to bias the working depth to the inside or outside of the wings. Typically the gauge wheel end is set 1" deeper than the discharge end. This is to help bring material to the surface. The gauge wheels can also be adjusted up or down.

If the windrower wings are stalling reduce forward speed, reduce working depth, or both.

If large rocks are being carried into the windrow, slow the tractor rpm.

Never raise the implement or wings entirely while the teeth are turning. If the implement must be raised higher than 12" from ground level, disengage the tractor PTO and wait for all implement rotation to come to a complete stop before proceeding to raise the implement. If implement is raised too high while the unit is running there is a high risk of damage and danger.



WARNING Do not operate the Implement when bystanders or animals are near (within 50 feet) the equipment. This Implement is capable of throwing objects for significant distances and causing serious injury. Stop the Tractor and Implement immediately if a bystander or animal comes near the equipment. (STL-13) str

CENTER GRATE AND REEL

Adjust the reel speed to 30-40RPM. If your machine is not equipped with a flow control, use the flow control adjustment on your tractor to control the reel speed. If your machine is equipped with a flow control valve, adjust the lever on the flow control valve until the proper reel speed is obtained, then lock the lever in place using the screw on the valve. If your tractor has a flow control adjustment and your machine is equipped with a flow control valve, we recommend that the rock picker flow control be set to fully open and the flow adjustment be made at the tractor. We recommend that a reel speed of 38-39 RPM be initially tried. To obtain 38-39 RPM, 11-12 GPM (41.5 - 45.5 liters/minute) is required. Higher speeds will cause throw over of rocks and slower speed will cause excessive batt tripping. It is important to match reel speed to ground speed. Forward ground speed help propel the rocks up the grate and into the hopper.

Do not exceed 5 mph (8km/h) while operating the rock picker. In heavy rock conditions, slower ground speeds will be required to effectively clear the grate. Field conditions should be reasonably firm and dry for best rock picking.

The Spartan RWP-1935 Rock Picker is designed primarily for picking surface rock. Do not use the machine to dig out buried rock. Bring large rocks to the surface first, then pick them. If a rock is too large to immediately be swept into the bucket, raising the grate slightly will help in loading the rock.

The grate should be set to skim surface rock off the ground. Usually one inch penetration into loose soil is best. If the grate is set too deep, soil may be swept into the bucket. If a large or odd shaped rock should become wedged between the reel and grate, reversing the reel will clear it. Try to feed larger rocks through the center portion of the grate rather than towards the outside ends where they may encounter the reel side plates.

DUMPING THE BUCKET

To dump the bucket, shut off the reel hydraulic motor and disengage PTO. Raise the wings and back up to dump location. Engage bucket hydraulics to raise the bucket. If the bucket contacts the Grate Side Plates lower the bucket and drive forward or reverse to clear any obstacles that the grate might be resting on. If it still does not lower, raise the grate and install the transport locks before attempting to remove any obstacles from beneath the grate. When ready for dumping be sure there are no bystanders, animals, or property that can get damaged when dumping in that area. Also make sure there are no low hanging power lines since bucket is raised considerably high when dumping. To change the dump height, the frame can be raised or lowered by changing the grate height. Lowering the grate raise the dump height and raising the grate lowers the dump height.

OPERATION

When dumping make sure that the rock picker is placed on level ground. Raising the bucket on uneven ground could cause the implement to be off balance and shift causing damage to the implement or tip over.

Avoid traveling in the reverse direction when possible. In situations where the implement must be backed to access areas to be rock picked make sure there are no persons, posts, animals, or foreign debris behind the unit before picking in reverse. The machine cannot operate in the reverse direction.



OPERATION

DANGER

Only raise the bucket while on level ground. Raising the bucket on unlevel ground can cause severe damage to the frame, linkage and cylinder causing the bucket to fall uncontrollably leading to death or serious injury.

DANGER

Always ensure the rock picker has clearance to not contact obstructions when dumping. Contact with trees, trailers, or other obstacles can inhibit the intended motion of the bucket and frame leading to severe damage to the frame, linkage and cylinders causing the bucket to fall uncontrollably leading to death or serious injury.

DANGER

Do not move the bucket in a jerking, bouncing motion. Doing so can cause cylinder failure causing the bucket to fall uncontrollably leading to death or serious injury.

CAUTION

Do not leave material in the bucket for extended periods of time. Loose material can solidify if left too long. This can make dumping difficult. Always dump material soon after it is picked.

DANGER

Ensure that all persons are well clear of the rock picker before dumping the bucket. Watch for low hanging overhead lines.

CAUTION

Do not transport the rock picker at high speeds when it is fully loaded. Take special care while transporting a loaded rock picker over rough ground.

WARNING

Do not operate the rock picker reel at greater than 44 RPM. If rocks become wedged in any location on the machine such as in the ends of the grate bars at the space between the grate and the bucket lip, make sure to remove them. Ensure all shield, guards and other safety devices are in place before operating the implement. Do not pick rocks with two machines in the same area except with Cab tractors with the windows closed.

DANGER

Ensure all persons are well clear of the rock picker before putting it into operation.

DANGER

Operate the Tractor and/or Implement controls only while properly seated in the Tractor seat with the seat belt securely fastened around you. Inadvertent movement of the Tractor or Implement may cause death or serious injury.

OPERATION

Use extreme care when transporting the rock picker on public highways and roads. The combination of rock picker and the tractor is longer in length. The implement is also wider than the tractor. Allow ample clearance when transporting the tractor and implement to insure that they do not contact any bystanders, signs, road structures, or other vehicles.



Ensure that all persons are well clear of the rock picker before dumping the bucket. Watch for low hanging overhead lines.



Do not transport the rock picker at high speeds when it is fully loaded. Take special care while transporting a loaded rock picker over rough ground.

Stay alert and watch for trees, power lines, posts, signs, and all other overhead and ground obstructions while you are rock picking. Use extreme care to avoid hitting these types of obstructions.

11.4 Shutting Down the Implement

To shut down the implement, first bring the tractor to a complete stop. Then slow down the rock picker by reducing the engine speed before disengaging the hydraulics and the PTO. Wait for all rotating motion to stop before proceeding to drive or shut down the tractor.

Park the tractor on a level surface, place the transmission in park or neutral and apply the parking brake, lower the attached implement to the ground, shut down the engine, remove the key, and wait for all motion to come to a complete stop before exiting the tractor.



12.DISCONNECTING THE ROCK PICKER FROM THE TRACTOR



Always shut the Tractor completely down, place the transmission in park, and set the parking brake before you or anyone else attempts to connect or disconnect the Implement and Tractor hitches. (S3PT-15) str



Never stand or allow another person to stand between a running Tractor and the Unit when disconnecting the Implement from the Tractor. Always shut the Tractor off completely and set the parking brake before attempting to disconnect the Implement pins from the Tractor hitch.

Before disconnecting the implement, the PTO and master switch must be disengaged and all rotation at a complete stop. Move the implement to a level storage location and lower the implement to the ground. If the implement is not resting securely on the ground, block the implement up securely before attempting to disconnect it from the tractor.

Use extreme care to keep feet and hands out from under the implement and clear of any pinch points when disconnecting the implement from the tractor.

OPERATION

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1. When disconnecting the implement, the tractor should be completely shut down and secured in position. Relieve hydraulic pressure by moving the control levers back and forth several times.
2. Lower the parking jack and raise the unit until the tongue clevis is no longer resting on the tractor drawbar and is supported solely by the jack. Make sure the jack foot is securely resting at ground level or securely supported by a block before raising the unit.
3. Once the unit tongue is being supported entirely by the jack, remove the hitch pin, and lynch pin.



4. Remove the PTO pump and place it on the storage post behind hitch.
5. Remove hydraulic hoses from the tractor and secure to the unit to prevent contact with dirt.



SHUT DOWN the tractor completely before servicing or adjusting any part of the machine.

13.ROCK PICKER STORAGE

Properly preparing and storing the rock picker at the end of the season is critical to maintaining its appearance and to help ensure years of dependable service. The following are suggested storage procedures:

OPERATION

- Thoroughly clean all debris off the implement to prevent damage from rotting grass and standing water.
- Lubricate all implement grease points as detailed in the maintenance section.
- Tighten all bolts and pins to the recommended torque.
- Check the implement for worn and damaged parts. Perform repairs and make replacements immediately so that the implement will be ready for use at the start of the next season.
- Store the implement in a clean, dry place with the implement frame resting securely on blocks or at ground level.
- Keep the hydraulic lines from sitting in water, dirt and other contaminants.
- Use spray touch-up enamel where necessary to prevent rust and maintain the appearance of the implement. *OPS-RP-0006 str*



DANGER

Always shut the Tractor completely down, place the transmission in park, and set the parking brake before you or anyone else attempts to connect or disconnect the Implement and Tractor hitches. (S3PT-15) str

Use extreme care to keep feet and hands out from under the implement and clear of any pinch points when disconnecting the implement from the tractor.

DANGER

Never allow children to play on or around Tractor or Implement. Children can slip or fall off the Equipment and be killed or injured. Inadvertent contact with controls can cause the Implement to shift or fall crushing themselves or others. (SG-25) str

DANGER

Never stand or allow another person to stand between a running Tractor and the Unit when disconnecting the Implement from the Tractor 3-point hitch. Always shut the Tractor off completely and set the parking brake before attempting to disconnect the Implement pins from the Tractor hitch.

OPERATION

14. TRANSPORTING THE TRACTOR AND IMPLEMENT

Inherent hazards of operating the tractor and implement and the possibility of accidents are not left behind when you finish working in an area. Therefore, the operator must employ good judgment and safe operation practices when transporting the tractor and implement between locations. By using good judgment and following safe transport procedures, the possibility of accidents while moving between locations can be substantially minimized. *OPS-U- 0017str*



Never allow children or other persons to ride on the Tractor or Implement. Falling off can result in death or serious injury. *(SG-10)str*



To set the rock picker into transport position, begin by fully raising the grate and opening the wings to the widest setting. Install the Transport Lock Cylinder Spacers to all four cylinders., Raise the wings and install the transport lock pins. Secure the transport lock pins with lynch pins.

Check local highway regulations concerning moving machinery on highways. If the rock picker obscures the tractor warning or tail lights, it must be equipped with the Transport Light Kit S000-113. Refer to Parts Manual.



Never allow children or other persons to ride on the Tractor or Implement. Falling off can result in death or serious injury. *(SG-10)str*



Important

Remember to place the transport lock pins in the storage locations before operating the hydraulic lift cylinders.

Before transporting the tractor on a public roadway or boarding a trailer for transport, the tractor brake pedals should be locked together. Locking the pedals ensures that both wheels brake simultaneously while stopping, especially when making an emergency stop.

Use extreme caution and avoid hard applications of the tractor brakes when towing heavy loads at road speeds. Never tow the implement at speeds greater than 20 MPH (32 kph). *OPS-U- 0018 str*



In wet conditions where there is a likelihood of material collecting on the Implement, make certain that this material is removed before traveling on public roadways. *(STL-7) str*

OPERATION

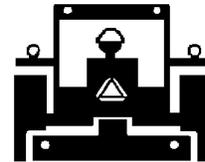
14.1 Transporting on Public Roadways



Never allow children or other persons to ride on the Tractor or Implement. Falling off can result in death or serious injury. (SG-10)str



Make certain that the “Slow Moving Vehicle” (SMV) sign is installed in such a way as to be clearly visible and legible. When transporting the Equipment use the Tractor flashing warning lights and follow all local traffic regulations. (SG-6)str



Extreme caution should be used when transporting the tractor and implement on public roadways. The tractor must be equipped with all required safety warning features including a SMV emblem and flashing warning lights to alert drivers of the tractor’s presence. Remember that roadways are primarily designed for automotive drivers and most drivers will not be looking out for you, therefore, you must look out for them. Check your side view mirrors frequently and remember that vehicles will approach quickly because of the tractor’s slower speed. Be extremely cautious when the piece of equipment that you are towing is wider than the tractor tire width and/or extends beyond your lane of the road.

The SMV (Slow-Moving Vehicle) emblem is universal symbol used to alert drivers of the presence of equipment traveling on roadways at a slow speed. SMV signs are a triangular bright orange with reflective red trim for both easy day and night visibility. Make sure the SMV sign is clean and visible from the rear of the unit before transporting the tractor and implement on a public roadway. Replace the SMV emblem if faded, damaged, or no longer reflective.



OPERATION

OPERATION

Make sure that all tractor flashing warning lights, headlights, and brake/tail lights are functioning properly before proceeding onto public roads. While newer model tractors have plenty of lighting to provide warning signals and operating lighting, most older models are only equipped with operating lights. Consult an authorized tractor dealer for lighting kits and modifications available to upgrade the lighting on older tractor models. *OPS-U- 0021str*



When operating on public roads, have consideration for other road users. Pull to the side of the road occasionally to allow all following traffic to pass. Do not exceed the legal speed limit set in your country for agricultural tractors. Always stay alert when transporting the tractor and implement on public roads. Use caution and reduce speed if other vehicles or pedestrians are in the area. *OPS-U- 0022 str*



Reduce speed before turning or applying the brakes. Ensure that both brake pedals are locked together when operating on public roads. *OPS-U- 0023 str*



⚠ DANGER

This Implement may be wider than the Tractor. Be careful when operating or transporting this equipment to prevent the Implement from running into or striking sign posts, guard rails, concrete abutments or other solid objects. Such an impact could cause the Implement and Tractor to pivot violently resulting in loss of steering control, death, or serious injury. Never allow the Implement to contact obstacles. *(S3PT-12)str*

OPERATION



Allow sufficient clearance for the Implement to swing outward while turning. Implements carried behind the Tractor will swing outside the tire path when making turns. Contacting a solid object while turning will cause equipment damage and possible injury. (S3PT-20) str



Be particularly careful when transporting the Implement using the tractor. Turn curves or go up or down hills only at a low speed and at a gradual steering angle. Make certain that at least 20% of the tractor's weight is on the front wheels to maintain safe steering. Slow down on rough or uneven surfaces. (STI-01) str



Always install the transport pins before transporting the machine on public roads.



Only tow the Implement behind a properly sized and equipped Tractor which exceeds the weight of the Implement by at least 20%. DO NOT tow the Implement behind a truck or other type of vehicle. Never tow the Implement and another Implement connected in tandem. Never tow the Implement at speeds over 20 MPH. (STI-06)str



Secure the Implement for transport before traveling on public roads. For pull-type Implements, secure the center axle using cylinder stops or transport pin and properly attach a safety chain between the Implement and Tractor. Secure wings in upright position on folding Implements using wing transport locks. (STI-7) str



Transport only at speeds where you can maintain control of the equipment. Serious accidents and injuries can result from operating this equipment at high speeds. Understand the Tractor and Implement and how it handles before transporting on streets and highways. Make sure the Tractor steering and brakes are in good condition and operate properly.



Before transporting the Tractor and Implement, determine the proper transport speeds for you and the equipment. Make sure you abide by the following rules:

Test the tractor at a slow speed and increase the speed slowly. Apply the Brakes smoothly to determine the stopping characteristics of the Tractor and Implement. As you increase the speed of the Tractor the stopping distance increases. Determine the maximum transport speed not to exceed 20 mph (30 kph) for transporting this equipment.

Test the equipment at a slow speed in turns. Increase the speed through the turn only after you determine that the equipment can be operated at a higher speed. Use extreme care and reduce your speed when turning sharply to prevent the tractor and implement from turning over. Determine the maximum turning speed for you and this equipment before operating on roads or uneven ground.

Only transport the Tractor and Implement at the speeds which allow you to properly control the equipment.

Be aware of the operating conditions. Do not operate the Tractor with weak or faulty brakes or worn tires. When operating down a hill or on wet or rain slick roads, the braking distance increases: use extreme care and reduce your speed. When operating in traffic always use the Tractor's flashing warning lights and reduce your speed. Be aware of traffic around you and watch out for the other guy. (SG-19)str



OPERATION

14.2 Hauling the Tractor and Implement

Before transporting a loaded tractor and implement, measure the height and width dimensions and gross weight of the complete loaded unit. Ensure that the load will be in compliance with the legal limits set for the areas that will be traveled through. OPS-U- 0024str



Use adequately sized and rated trailers and equipment to transport the tractor and implement. Consult an authorized dealer to determine the proper equipment required. Using adequately sized chains, heavy duty straps, cables and/or binders, securely tie down both the front and rear of the tractor utilizing the proper tie down locations as specified by the tractor manufacturer. OPS-U- 0025 str



Arrange the chains so that when tightened, the chains are pulling downward and against themselves. Carefully tighten the securing chains or other fasteners using boomers or binders to apply maximum tension. Use extreme care when attaching and removing the securing devices as the extreme tension involved when released has the potential to inflict serious injury.

While hauling the tractor and implement, make occasional stops to check that the tractor and implement have not moved or shifted and that the securing chains have maintained tension. If during transport a hard braking, sharp turning, or swerving action was performed, stop at the next safe location to inspect the security of the load. OPS-U- 0026str



OPERATION

15.TROUBLESHOOTING GUIDE

Problem	Possible Cause	Remedy
Wing windrowers are stalling or not turning	Driving too fast	Slow down working speed
	Set too deep	Raise wings at either float frame posts or gauge wheels.
	Cushion Valves are malfunctioning	Check cracking pressure.
		Replace motor mounted cushion valves
	PTO running too slow	Increase PTO RPM to pump rating speed
Oil not getting to hydraulic motors	Check hydraulic connections	
Only one wing windrower turns	Broken Chain	Replace broken Chain
	Failed Coupler	Replace Coupler components
	Malfunctioning Flow Divider	Replace Flow Divider
Overheating Windrower Oil	Clogged Cooler	Clean Hydraulic Cooler
	No enough oil in Reservoir	Add Oil to Reservoir
Wings running at different angles	Wing Angle Cylinders are out of phase	Replace Cylinders
Reel does not turn	Oil not getting into Hydraulic Motor	Check Hydraulic connections
		Check Flow Control Valve
Throwing Rocks over back	Reel speed too fast	Adjust flow control to slow Reel speed
Reel not sweeping rocks into bucket. Excessive batt tripping	Batt Springs too loose	Tighten Springs
Excessive jerky Reel motion	Compressed Coupler Insert	Replace Coupler Insert
Rocks thrown forward or into Front Shield	Overfilling Bucket	Dump Buck more frequently
Bucket not filling	Insufficient Reel speed	Adjust flow control to increase Reel speed
Picking up too much dirt	Poor field conditions	Soil should be firm and dry with minimal surface debris
	Teeth penetrating too deep	Raise wings and grate so teeth just skim surface
Reel slows significantly when the grate is moved	Open Center Hydraulic System on the Tractor	Machine must be run on a tractor with a Closed Center Hydraulic System
Hydraulic Cylinders not functioning	Oil not getting to Cylinders	Check Hydraulic connections
		Check Valve Block and Solenoids
	Electronic Switch Box not functioning	Check Electrical connections

MAINTENANCE SECTION

Maintenance Section 5-1

MAINTENANCE

MAINTENANCE

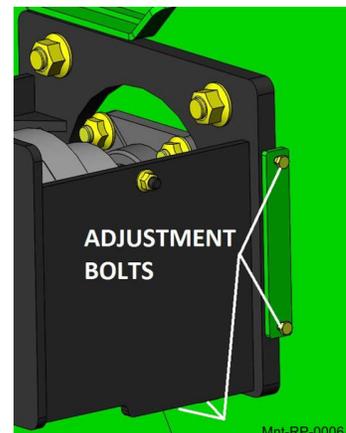
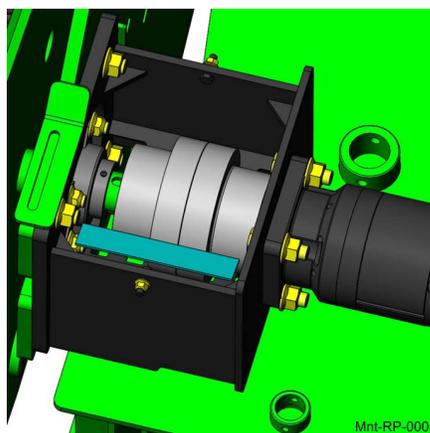
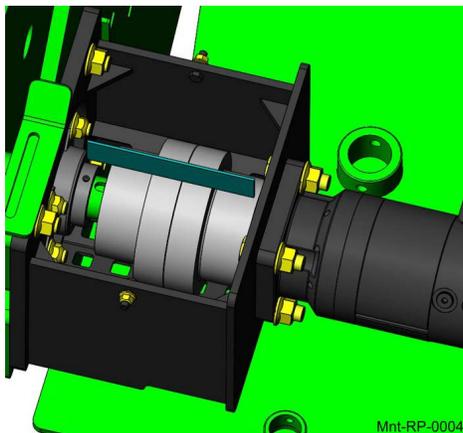
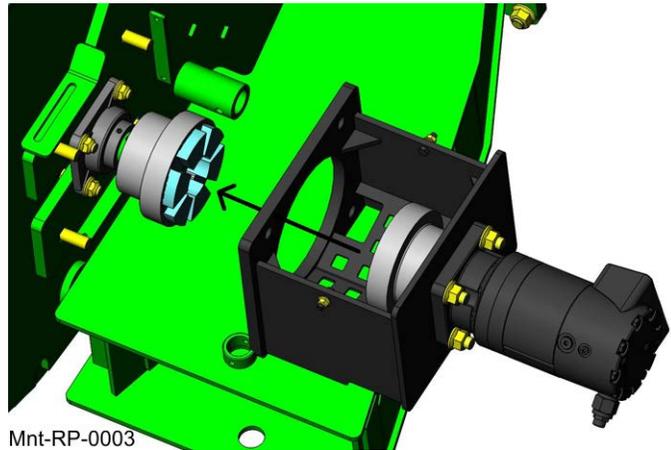
DRIVE COUPLER

NOTE: Experience has shown that the majority of breakdowns are the result of inadequate or improper service and inspection.

The Spartan RWP-1935 is equipped with a zero maintenance direct-drive Magnaloy Hytrel Coupler system which is designed to provide years of heavy duty service.

Motor and Coupler Install Instructions:

1. Slide the Steel Bushing Coupler Half (R800-228) onto the reel shaft ensuring good engagement with the key in the reel shaft.
2. With the motor (116-216) secured to the motor mount (R190-136), slide the Motor Coupler Half (R800-229) onto the motor shaft inside the housing ensuring good engagement with the key in the motor shaft.
3. Rest the Hytrel Coupler Insert (R800-227) in the Steel Bushing Coupler Half that is mounted on the Reel.
4. Lift the Motor Assembly and connect the coupler halves with the Hytrel insert between them.
5. Using four (4) $\frac{3}{4}$ "x2-1/2" carriage bolts and $\frac{3}{4}$ " flange lock nuts snug the motor mount to the reel side plate, but do not fully tighten.
6. Push the Reel side coupler half towards the motor until the two halves contact the lip around the outside of the insert. Do not push the Motor side coupler further than necessary onto the motor shaft.
7. Using Loctite 243, tighten all set screws on both coupler halves to 25.5 ft/lbs (35 Nm).
8. Using the four (4) $\frac{1}{4}$ " bolts and jam nuts installed to the adjustment plates on the reel side plate, align the outer surfaces of the coupler halves to within 0.015". Measure this using a straight edge across the coupler halves. Measure in two places 90 degrees from each other as shown (for example: top and front of the coupler)



9. Rotate the reel to ensure good engagement all around the coupler insert.
10. Torque the $\frac{3}{4}$ " carriage bolts to 260 ft-lbs.

NOTE: Coupler misalignment of greater than 1 degree, or 0.015" will reduce the life of the coupler insert and may cause damage to other components of your rock picker.

MAINTENANCE

REEL HYDRAULIC MOTOR

The Spartan RWP-1935 is equipped with a Heavy Duty Hydraulic Motor with a built in cushion valve for shock protection and long motor life. The motor also contains a case drain port that is integral in extending the life of the motor components. Always connect the case drain when running the hydraulic motor.

Motor Service Instructions:

1. To aid in reassembly of the motor, make a "V" shaped set of lines from the endcover to the housing using either paint or a marker. With the shaft facing down, secure the motor in a vise by clamping on the housing flange (10).
2. Loosen and remove nine bolts (22) holding the motor assembly together. Place an 11/64 x 2 1/2" pin through the endcover (21) drain port and into the manifold. (Note: If the pin is not used, the internal components of the endcover will fall out). Remove the endcover assembly.
3. Flip the endcover assembly over. Remove the 11/64 x 2 1/2" pin from the endcover (21) drain port. Remove the manifold (16), pin (17), commutator (18), piston (19) and springs (20) from the endcover. Place the piston (19) on a flat clean surface with piston seals (8 & 9) facing up. Remove the piston seals from the piston (19) and discard.
4. Remove driver (15), rotor set (14) and wear plate (13) from the motor. Remove all seals from components and discard. (**Caution: Do not allow rolls to drop from rotor assembly when removing rotor assembly from motor**). Remove seal (1) from housing and discard. Remove drive link (11) and spacer ring (12) from housing.
5. To aid in the reassembly of the shaft sub-assembly make a "V" shaped set of line across the rear of the housing and the bearing locking nut on the shaft assembly using either paint or a marker. Remove the housing (10) from the vise and flip over.
6. Remove any shaft hardware, using a press, press the shaft assembly (10a) out of the rear of the housing (10). Remove the seal carrier insert (3). Remove the dust seal (2), o-ring seal (4), backup shim (5), and quad seal (6) and discard all seals.
7. At this point all parts should be cleaned in an oil-based solvent and dried using compressed air (for safety, observe OSHA safety guidelines). All new seals should be lightly coated in clean oil prior to installation.
8. Place new dust seal (2) into seal carrier insert (3) with the lip facing up. Place new o-ring seal (4) into outer groove of the seal carrier insert (3). Insert back up shim (5) then quad seal (6) into seal carrier insert (3). With dust seal (2) facing down, press seal carrier insert into housing bottom bore. Press the shaft assembly (10a) into housing (10) lining up the "V" set of lines on the bottom of the housing and shaft assembly.
9. Insert drive link (11) into shaft assembly (10a) and place bearing spacer (12) into housing (10).
10. If a "V" shaped set of lines was drawn on the motor prior to disassembly, use them as a guide for reassembly to insure proper positioning of components.
11. Install the housing seal (1) in the groove on the housing (10).
12. Install the wear plate (13) with the counter bore towards the housing (10). **Note: Remember to align the "V"**
13. Place body seals (7) in grooves in both sides of rotor set (14). Place rotor set (14) onto wear plate (13) with I.D. spline chamfer facing wear plate. Rotor set must be timed. (See Figure 4 for correct rotor lobe orientation.)

Endcover Sub-Assembly

14. Place the endcover (21) on a flat clean surface with cavity facing up. Place four springs (20) into holes in the bottom of the cavity.
15. Install the O.D. and I.D. piston seals (8 & 9) onto the piston (19). The seals are cone shaped. The I.D. of the outer seal and the O.D. of the inner seal should be installed towards the piston. The opposite edges should be coming out away from the piston. (See Figure 3 for installation of the piston seals.)

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16. Install the piston (19) into the endcover (21). The two alignment pins in the piston (19) should be inserted into the two holes in the bottom of the endcover (21).
17. Install the commutator (18) into the endcover (21) with the I.D. splines facing up. The commutator must be timed correctly. There are two notches on the O.D. of the commutator (18). One of the notches is aligned with a pin closer to the I.D. of the commutator. This notch is to be aligned with the small, drilled hole on the I.D. land of the endcover (21). See Figures 1 and 2 for timing the commutator correctly.
18. Install the manifold dowel pin (17) into the endcover. Install the manifold (16) into the endcover with the large openings facing up and the slot on the O.D. aligned with the dowel pin (17).
19. Install a 11/64 x 2 1/2" pin (or similar) into the drain port of the endcover (21) and into the manifold (16) (Note: If the pin is not used, the internal components of the endcover will fall out). The endcover contents may need to be compressed to be able to insert the pin (or similar) through the drain port and into the manifold.
20. Install the driver (15) into the rotor set (14). Place the endcover (21) onto the rotor set (14) aligning the driver (15) into the commutator (18). (Caution: Make sure to visually align bolt holes before the driver is in the commutator. If the commutator spins during installation, the motor will run in the reverse direction.)
21. Install nine assembly bolts (22) into endcover and pre-torque to 13,6 Nm [10 ft. lb.]. Final torque all bolts to 69,8 ± 7,5 Nm [51.5 ± 5.5 ft. lb.].

NOTE: See Parts Manual for corresponding part numbers

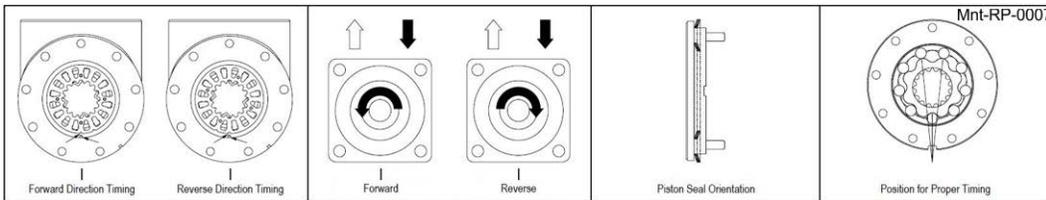
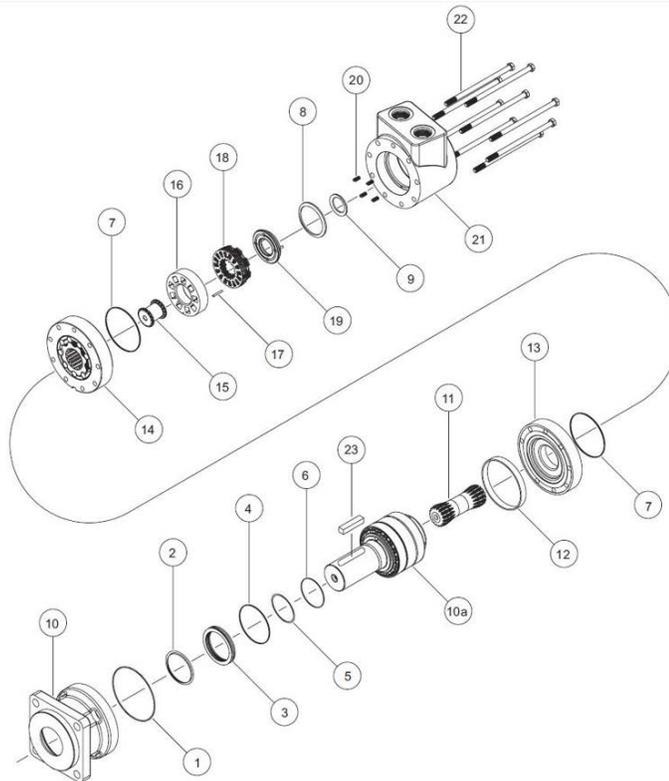


FIGURE 1 - Commutator Orientation

FIGURE 2 - Direction Explanation

FIGURE 3

FIGURE 4



1. * Housing Seal
2. * Dust Seal
3. * Seal Carrier Insert
4. * O-Ring Seal
5. * Backup Shim
6. * Quad Seal
7. * Body Seal (2)
8. * Large Piston Seal
9. * Small Piston Seal
10. Hsg/Shaft Assembly - Housing
- 10a. Hsg/Shaft Assembly - Shaft
11. Drive Link
12. Bearing Spacer
13. Wear Plate
14. Rotor Set
15. Driver
16. Manifold
17. Pin
18. Commutator
19. Piston
20. Piston Springs
21. Endcover
22. Assembly Bolts (9)
23. Shaft Key

* Contained in Seal Kit

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MAINTENANCE

MAINTENANCE

NUTS AND BOLTS

Check all nuts and bolts for tightness after the first 8 hours of operation then weekly. Check the condition of cotter pins, roll pins and other fasteners weekly and replace if necessary.

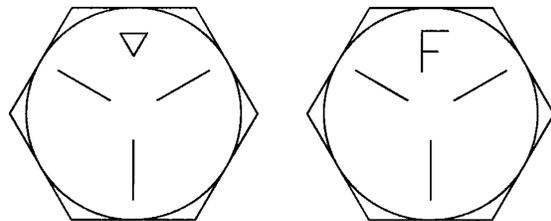
Bolt Grades and Torque

When replacing damaged bolts use only plated Grade 5 bolts unless otherwise specified. Use only bolts of the correct length [Refer to the "Parts" section]. Do not replace lock nuts with nuts and lock washers. Use only original equipment lock nuts.

Recommended Torques in foot pounds for SAE Grade 5 bolts, based on dry assembly:

Bolt Size	UNC		UNF	
	Ft-lbs	Nm	Ft-lbs	Nm
1/4"	8	11	10	14
5/16"	17	23	19	26
3/8"	31	42	35	47
7/16"	49	66	55	75
1/2"	75	102	85	115
5/8"	150	203	170	230
3/4"	269	365	297	403
1"	644	873	704	954
1-1/4"	1255	1700	1380	1870

GRADE (5) Bolt Head



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IMPERIAL TO METRIC CONVERSION TABLE

Diameter of Bolts		
Inches	Inches	Millimeters
0.25	1/4	6
0.3125	5/16	8
0.375	3/8	10
.05	1/2	12
0.625	5/8	16
0.75	3/4	20
1	1	24
1.25	1-1/4	30
1.5	1-1/2	36

Length of Bolts					
Inches	Inches	Millimeters	Inches	Inches	Millimeters
0.5	1/2	12	5.25	5-1/4	130
0.625	5/8	16	5.5	5-1/2	140
.075	3/4	20	5.75	5-3/4	150
1	1	25	6	6	150
1.25	1-1/4	35	6.25	6-1/4	160
1.5	1-1/2	40	6.5	6-1/2	170
1.75	1-3/4	45	6.75	6-3/4	170
2	2	50	7	7	180
2.25	2-1/4	60	7.25	7-1/4	190
2.5	2-1/2	65	7.5	7-1/2	190
2.75	2-3/4	70	7.75	7-3/4	200
3	3	75	8	8	200
3.25	3-1/4	80	8.25	8-1/4	210
3.5	3-1/2	90	8.5	8-1/2	220
3.75	3-3/4	100	8.75	8-3/4	220
4	4	100	9	9	230
4.25	4-1/4	110	9.25	9-1/4	240
4.5	4-1/2	120	9.5	9-1/2	240
4.75	4-3/4	120	9.75	9-3/4	250
5	5	130	10	10	260

Grade / Class			
Imperial		Metric	
	Gr 5	Cl 8.8	
	Gr 8	Cl 10.9	

NOTE: This conversion sheet should only be used when all options to use correct hardware have been exhausted.

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MAINTENANCE

HYDRAULICS

Inspect hydraulic hoses, fittings and cylinders for wear or leaks. Use a piece of cardboard or wood rather than hands to search for suspected leaks. Replace if necessary.

Before applying pressure to the hydraulic system, be sure all connections are tight and that the hoses are not damaged.

WARNING

Do not operate this Equipment with hydraulic oil or fuel leaking. Oil and fuel are explosive and their presence could present a hazard. Do not check for leaks with your hand! High-pressure oil streams from breaks in the line could penetrate the skin and cause tissue damage including gangrene. To check for a hose leak, SHUT the unit ENGINE OFF and remove all hydraulic pressure. Wear oil impenetrable gloves, safety glasses and use cardboard to check for evidence of oil leaks. If you suspect a leak, REMOVE the HOSE and have it tested at a Dealer. If oil does penetrate the skin, have the injury treated immediately by a physician knowledgeable and skilled in this procedure. (SG-15) str



Periodically clean hydraulic cooler of accumulated dust and debris. If the cooler becomes obstructed, overheating could occur.

WARNING

To avoid Equipment and Grass Fires clean Hydraulic Cooler of dust and debris. Overheating can occur and cause equipment breakdown or fire.



WARNING

Avoid contact with hot surfaces including hydraulic oil tanks, pumps, motors, valves and hose connections. Relieve hydraulic pressure before performing maintenance or repairs. Use gloves and eye protection when servicing hot components. Contact with a hot surface or fluid can cause serious injury from burns or scalding. (SG-34str)

MAINTENANCE

MAINTENANCE

Hydraulic PTO Pump

PTO Pump Gearbox

Important

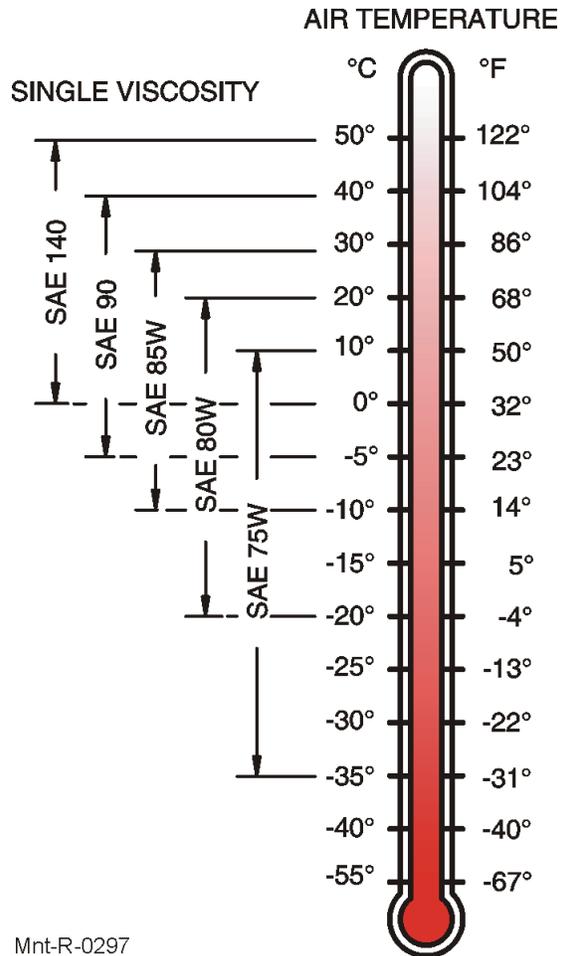
Replace oil in gearbox after the first 50 hours of operation then yearly. The gearbox takes approximately 1.1 L of oil (1.16 qt.)

Gearbox oil should meet the following specifications:

- API Service Classifications GL-5
- Military Specification MIL-L-2105C

Consult the chart for the oil viscosity recommendations.

NOTE: Use SAE 80-90 Gear Oil



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MAINTENANCE

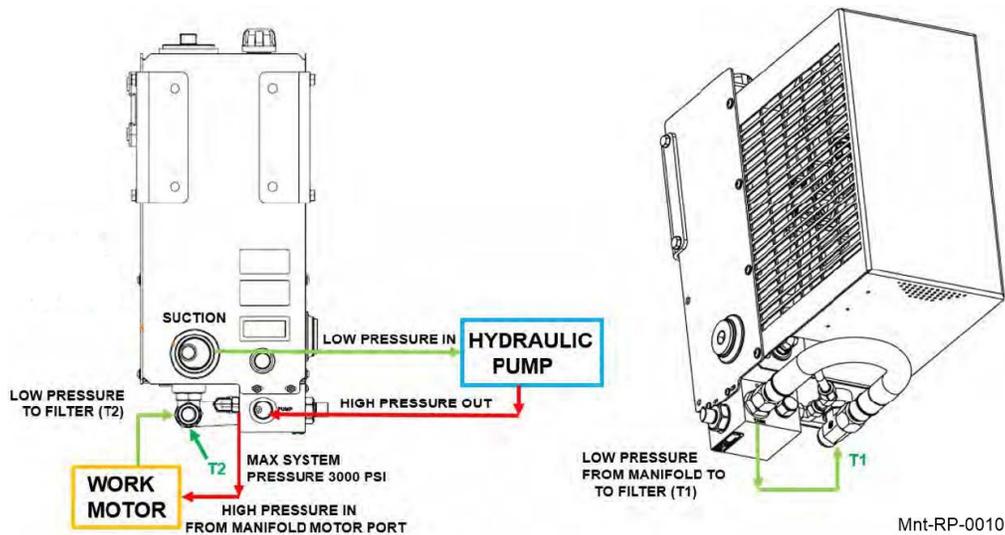
MAINTENANCE

HYDRAULIC CONDITIONING UNIT (HCU)

Hydraulic Reservoir

The hydraulic reservoir can handle up to 35 gpm with <.5% air entrapment as it uses state -of-the-art Hydro nucleation technology to reduce cavitation. They hydraulic reservoir is made out of high Carbon Steel and internally fogged after production to prevent rust.

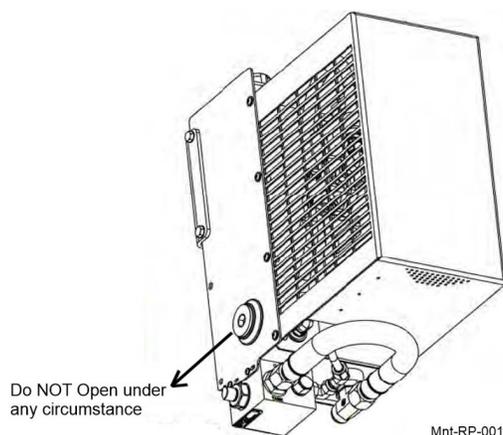
The volume of the hydraulic reservoir is 3.9 gallons and it has three function ports. The bottom of the tank has two ports, the first is the return port to the filter which is an SAE-16 port and the second port is an SAE-8 port for the drain. The back of the tank has the suction port SAE-24 and additional SAE-8 sensor port. On the front side of the reservoir there is an SAE-8 port which is not required for the Spartan.



All of the HCU's have inside out filter and the filter element has a normal flow rating of 40 gpm. The filtration has molded in-seal plastisol end caps. The filter has an efficiency rating of 10 micron at 60 Beta. The maximum temperature rating is 200F. the filter also comes with a bypass and it is rated for 25 psi.



Do not open the internal bypass valve assembly port. Warranty is void if it has been opened, tampered, or damaged by the customer.



MAINTENANCE

Oil Cooler

The HCU uses an oil cooler with an internally plumbed design to minimize the failure of hoses/fittings, cost and space. The oil cooler is rugged aluminum, bar-plate construction, and has a non-fouling fin type that works well in all environments. Moreover oil coolers have AKG's patented flex profiles to reduce thermal fatigue and increase the service life of the cooler. The cooler volume is approximately 0.45 gallons.

Fan Hydraulic Motor

The HCU has a bi-rotational motor with anti-cavitation check valve and does not require a case drain port. The hydraulic fan drive motor receives the high pressure flow from the manifold and the outlet is connected to the hydraulic reservoir.

Displacement: 0.1102 cu. in.

Nominal Pressure: 3000 psi

Nominal Speed: 4000 rpm

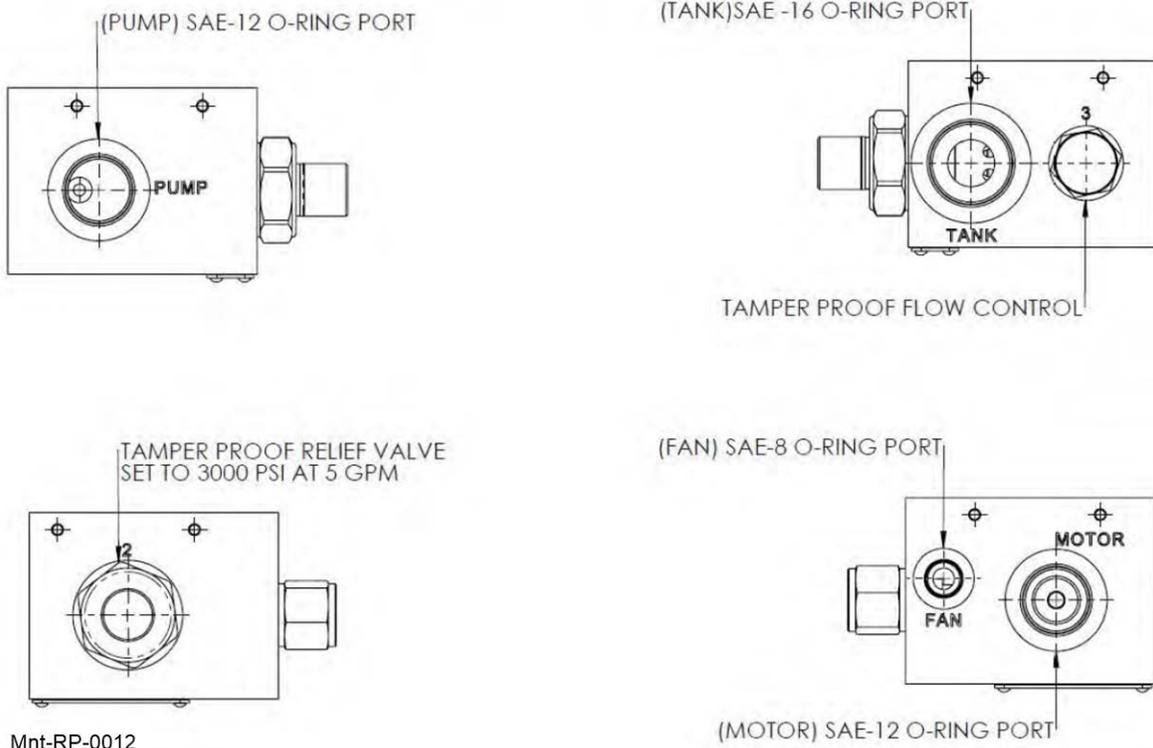
Port: SAE-8, 3/4-16 UNFTHD

The max torque required for the SAE-8 port is around 54 ft-lbs. per SAE guidelines

Full System Relief manifold

The full system relief manifold is designed to simplify connections to the tank, pump and motor to reduce complexity in the system during installation. The manifold is installed at the bottom of the HCU for easy plumbing and serviceability.

System pressure on this manifold is set to 2500 psi and the flow control pressure compensated valve bleeds the flow to the hydraulic fan drive motor. The flow control pressure compensated valve is set to 2 gpm for the hydraulic motor to run the fan.



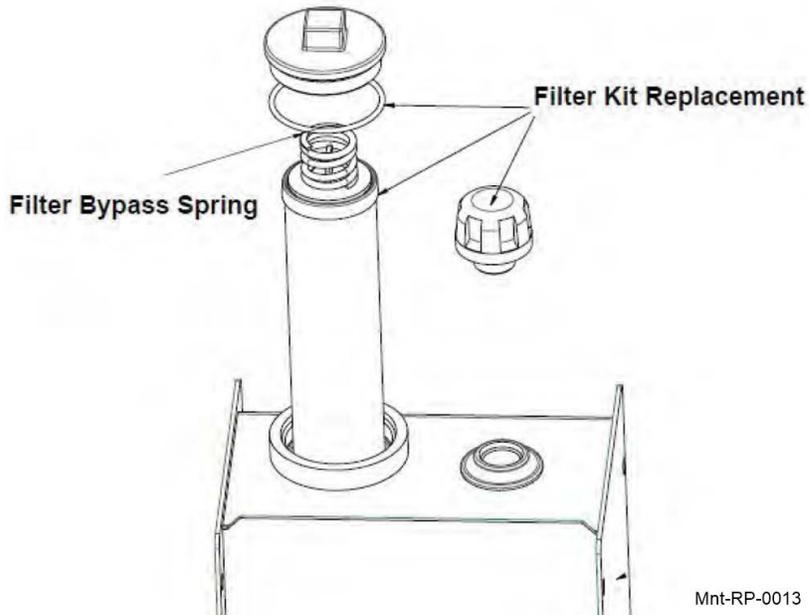
MAINTENANCE

Filter/Breather Replacement

1. Before replacing the filter please make sure to shut down the system and allow it to cool down.
2. Unscrew and remove the filter cap from the tank.
3. Remove the O-ring seal, filter bypass spring and filter from the unit. Place the filter cap on top of the filter port without applying any torque to avoid dust/debris entering the system.
4. Withdraw the old filter and replace it with the new filter and place the bypass spring and O-ring seal as shown and tighten the filter cap. The torque required to tighten the filter cap is around 75 to 85 ft-lbs.
5. Unscrew the breather cap and replace with the new one.
6. The breather cap is made out of plastic and comes with SAE-12 1-1/16-12 thread so the torque required to tighten the breather cap is 78 ft-lbs. per SAE guidelines.
7. While tightening the filter/breather, it is the responsibility of the operating personnel to not damage the threads on the ports as it will lead to potential cracks near the openings.

CAUTION

Do not open the internal bypass valve assembly port. Warranty is void if it has been opened, tampered, or damaged by the customer.



HCU Maintenance Schedule

Every 3 Months

- Check for any leaks in the system.
- Inspect the hoses and fittings. Tighten them if they are loose.
- Clean the outer grille and make sure there is no obstacle blocking the airflow to the system.
- Check for potential cracks in the mounting brackets.
- Inspect high pressure hose lines for bends, wear and tear.

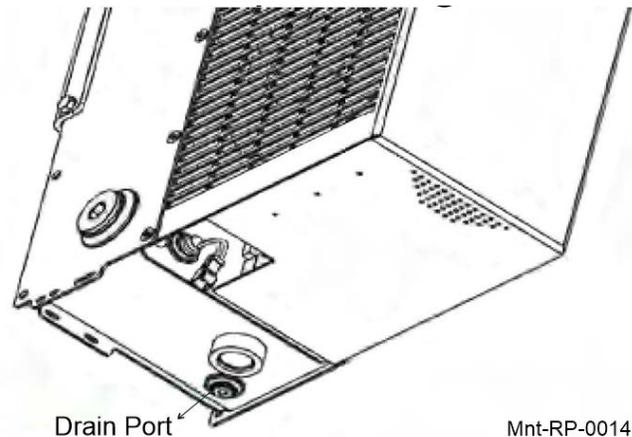
Every 9 Months

- All of the 3 month Maintenance items.
- Replace filter and breather.

MAINTENANCE

How to Drain the HCU

Make sure to shut down the system before draining the oil in the unit. Please allow a couple of hours for the system to cool down if the system is hot. The drain plug is located in the hydraulic reservoir, Figure Mnt-RP-0014. Remove the metal plug and drain the oil completely out of the system. Screw the metal plug back in after all the oil is drained out of the system. The drain plug uses SAE-8-3/4-16 UNF, so do not apply more than 54 ft-lbs. of torque to tighten the plug.



How to Clean the Oil Cooler

1. Schulte recommends pressurized water or compressed air to be sprayed parallel to the direction of the fins to clean the external dust and debris. The pressurized water or compressed air spray should be placed on the opposite side of the air flow to remove air borne contaminants.
2. Please make sure to properly seal the other components in the system like the fans and motors etc. before cleaning the cooler to avoid contamination.
3. For internal cleaning, please flush the cooler with anti-freeze solution to get rid of the internal contaminants.
4. For both internal and external cleaning, it is the responsibility of the authorized personnel to use compatible fluids that work well with metals like Aluminum. Otherwise, it leads to cooler corrosion.

TOP BUCKET LINKAGE

Check nuts and bolts for tightness after the first 8 hours of operation and then weekly thereafter. Check the condition of cotter pins, roll pins, and other fasteners weekly. Replace if necessary. Be sure nuts and bolts are properly torqued.

HUBS AND SPINDLES

Check hubs weekly for bearing play and condition of seal. .

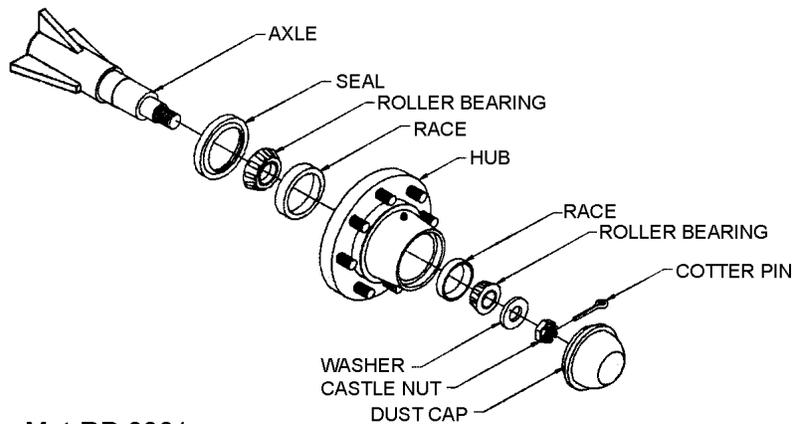
Greasing and Installation

It is recommended that hubs are dismantled, cleaned and repacked every year. Use the diagram and following instructions for maintaining the wheel hubs. Whenever a worn or damaged seal is replaced the bearing assembly should be cleaned and repacked with a good grade of wheel grease.



Always wear protective gloves when handling grease

MAINTENANCE



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1. Using a grease packer, pack both roller bearings with a good grade of wheel grease. The bearings should be thoroughly coated with grease. Spread grease on the outside of the bearing with your gloved finger. Ensure that no dirt or filings contact the grease or the bearings.
2. Pack the inside of the hub with grease. Grease needs to cover complete surface area inside hub but does not need to fill cavity.
3. Smear grease on both races.
4. Install the large bearing into the back of the hub and rotate the bearing several times.
5. Install the dust/grease seal using the right size seal driver. Spread a film of grease on the dust seal rubber and on the axle where the seal fits.
6. Position the hub on the axle and firmly push into place then pull hub towards you about 1". Slowly rotate hub while gently pushing the hub back onto the axle.
7. Check dust seal to ensure seal rubber is positioned correctly.
8. Install the small or outer bearing.
9. Install the axle washer and castle nut on the axle.

Tightening Instructions for 812 Hubs

Proper setting for the tapered roller bearings is described in the following procedure. Always use a new cotter pin when making adjustments to the hubs.

1. Tighten the castle nut to 50 ft-lbs while turning hub clockwise. Then back the nut off 1/2 of a turn. Spin the hub 2 or 3 times. While slowly turning hub clockwise, finger tighten the castle nut until castle nut notch lines up with hole in axle. If notch will not line up, back off nut to previous notch.
2. Put the cotter pin in the axle hole. Before bending the cotter pin, spin the hub. The hub should free wheel from 1/2 to 1 full turn.
3. If the hub spins the right amount, finish installing the cotter pin by bending the ends.
4. Coat the inside of the dust cap with a thin coat of grease by using your gloved finger. Then install on hub using the right dust cap driver.
5. Wipe off all excess grease from hub and axle.

Important

There should not be any drag noticed when spinning a tire installed on a hub. If the axle nut is too tight, the rollers of the wheel bearings will remove the grease from the bearing races, decreasing the life of the bearings.

MAINTENANCE

TIRES AND WHEELS

Periodically check tire inflation pressure. Tires should be inflated to manufacturers' suggested specifications. Higher pressures may cause excessive bouncing over rough ground. Lower pressures may cause excessive wear. Torque wheel nuts to 180 ft.-lbs, (250 Nm). Recommended cold pressures are shown below.

TIRE	MAX PSI
Firestone, All Non-Skid Farm 1-2	24
Firestone, Farm Implement I-1	36
Good Year, Softrac II, Bias R-3, I-2	18
Alliance, Super Soft 802	36



AVOID PERSONAL INJURY. DO NOT work under Rock Picker without support blocks to keep the frame from falling..

BATT SPRINGS

Tighten the eyebolts on the batt springs until they bottom out on the adjustment tab. Occasionally check and retighten the batt springs

IMPORTANT: Do not over torque the batt eyebolts as this may weaken the shank and reduce the life of the bolt."

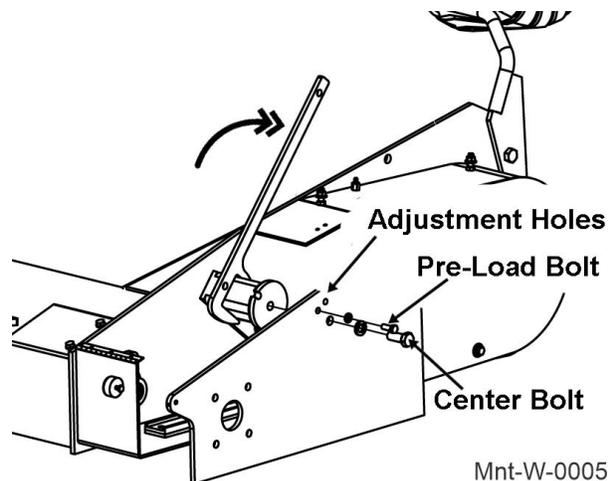


Do not overtighten the batt springs as this will cause damage to the springs and reduce the cushioning effect when picking larger rocks.

DRIVE CHAIN

Clean out any dirt accumulated in the chain case. Use a brush to spread an even coat of lubrication over the entire length of chain.

Tensioner should always be under load. If tensioner is not under load and/or the chain is connecting the wear strip at the bottom of the chain case, the tensioner needs to be tightened. Using the wrench provided with the machine, load the tensioner. Tensioner can be secured in place using a 1/2" bolt in the adjustment holes in the chain case.



WINDROWER TEETH

Hard surfacing applied to the windrower teeth should be reapplied before the original hard surface material has been worn off. Once the hard surface material is gone wear to the base metal of the teeth will be very rapid. CX170 hard surfacing electrodes are recommended.

MAINTENANCE

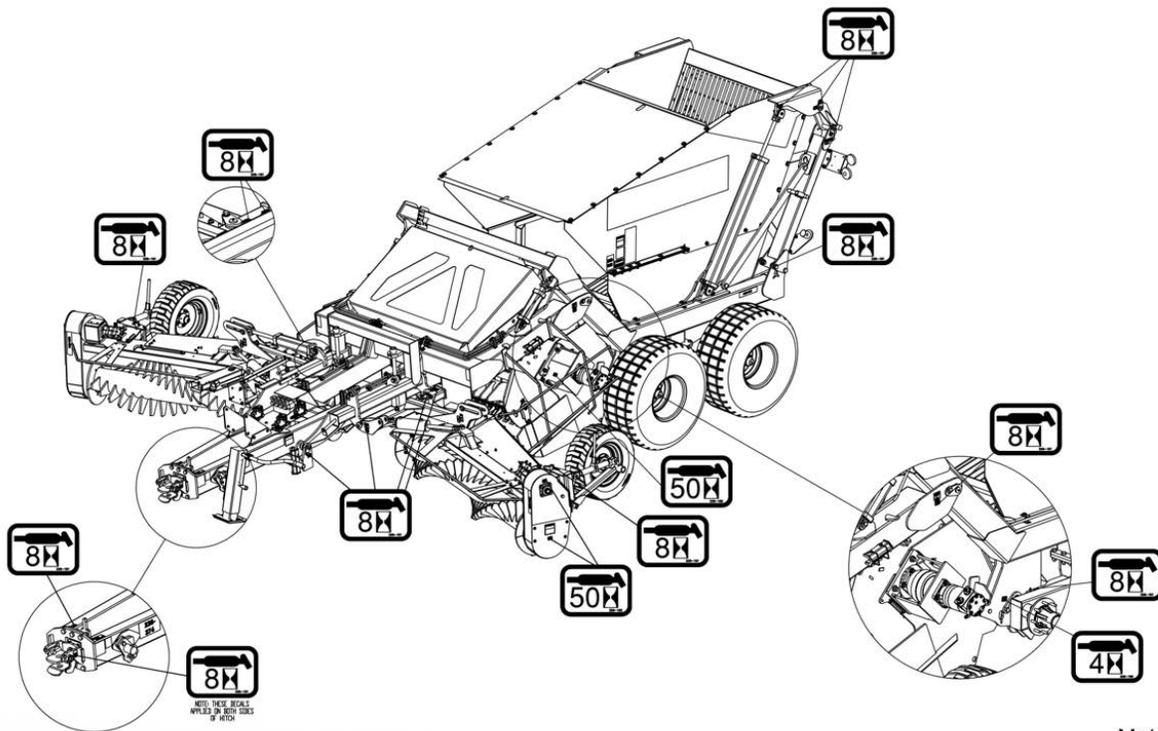
LUBRICATION

Grease Schedule

Grease should meet the following recommendations:

- SAE Multi-purpose grease
- SAE Multi-purpose grease containing 3 to 5 per cent molybdenum disulfide
- Use SAE (NLGI) #2

Grease points around the Rock Picker will be identified by one of the following greasing decals. In some cases, multiple grease points may be identified by a single decal if they are close together and the require the same greasing schedule.

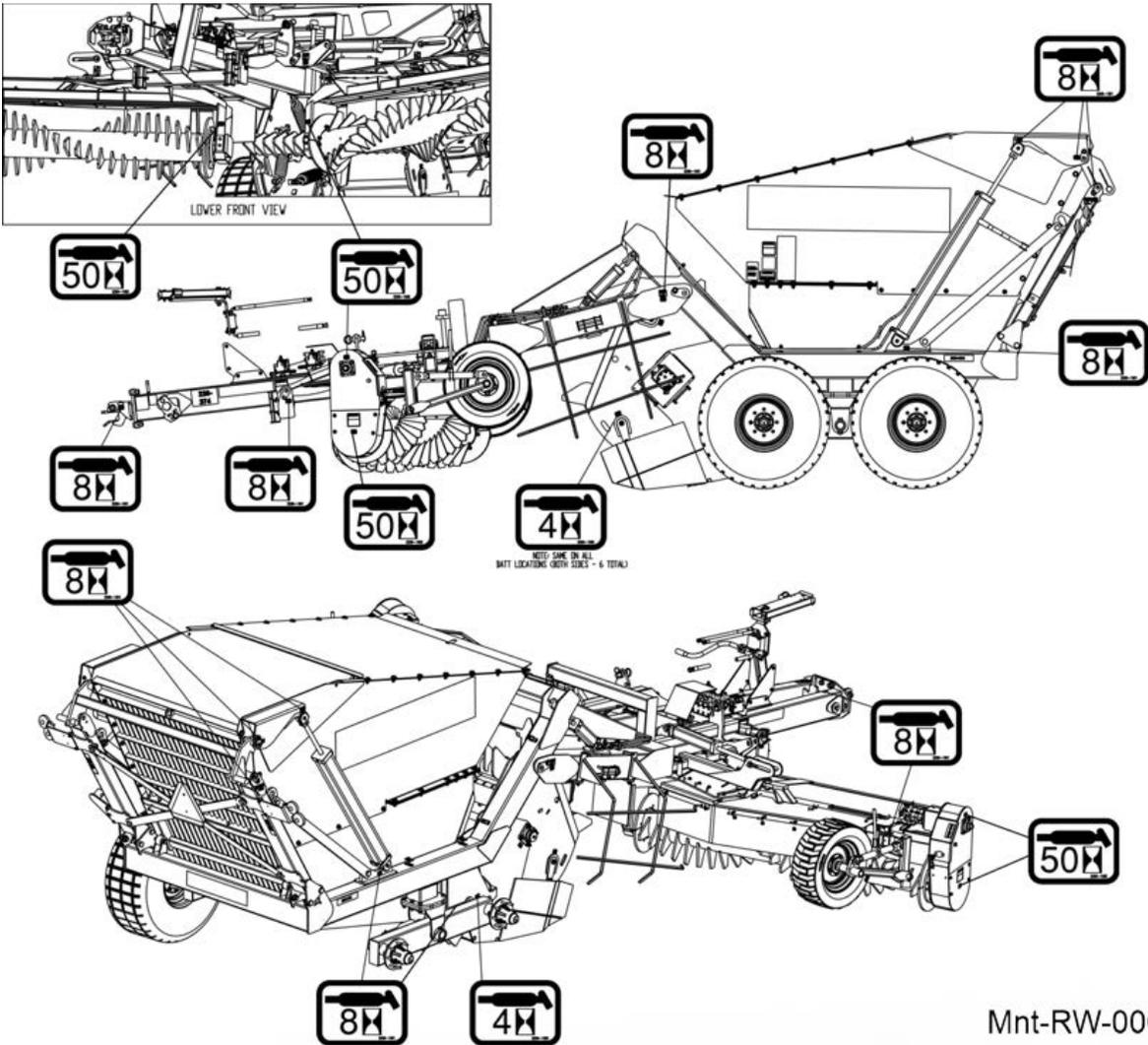


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Drive Chain

- Apply light grease or oil to the drive chain after every 8 hours of operation. Operating conditions may require that the chain be lubricated more frequently. Do not allow the chain to dry out.

Fully retract the hydraulic cylinders and install the transport pins. Retracting the cylinder rods will prevent rusting, ensure that the cylinders are full of oil, and relieve pressure in the hydraulic circuit. Smear grease over any part of the hydraulic cylinder rod that remains exposed.



Before disconnecting hydraulic lines place the grate in transport position and install the transport pins.

MAINTENANCE

STORAGE

If possible, store your rock picker under cover,

Install hitch jack on the lug at the front of the hitch.

It is recommended that drive chains be removed from the machine, cleaned and stored in oil over the winter months, If this is not possible, apply oil to all chains and sprockets.

Where possible, fully retract the hydraulic cylinders and install transport pins. Retracting cylinder rods will prevent rusting, ensure that the cylinders are full of oil, and relieve pressure in the hydraulic circuit. Smear grease over any part of the hydraulic cylinder rod that remains exposed.

Check that all transport locks are in good condition and, if removed, reinstall all locks before moving the machine.

