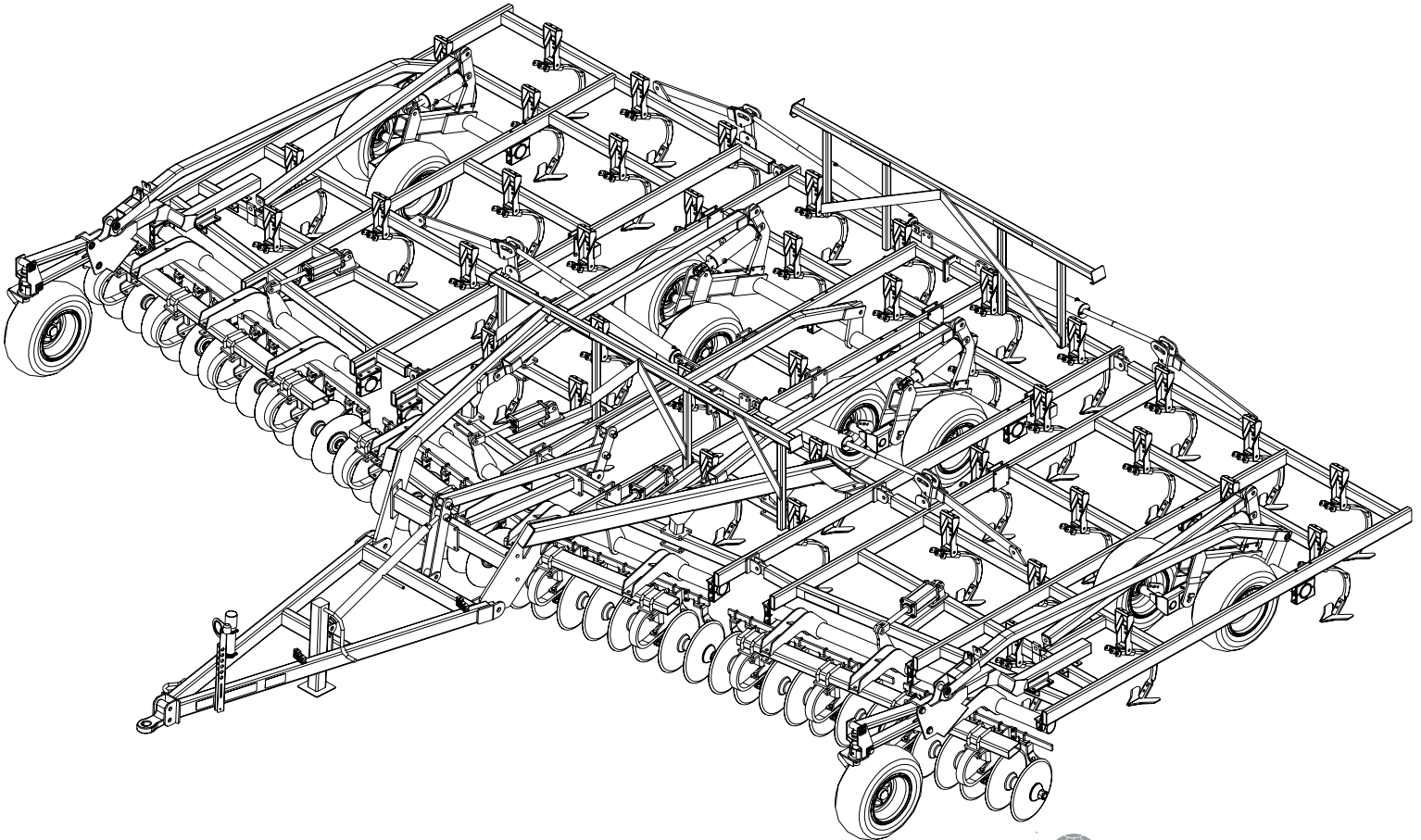




OPERATOR'S MANUAL



Serial # 456654 and up

DISK CULTIVATOR

 **WIL-RICH**

PO Box 1030

Wahpeton, ND 58074

PH (701) 642-2621

Fax (701) 642-3372

WWW.WIL-RICH.COM

Printed in USA (74258) 12/05

WARRANTY

The only warranty Wil-Rich gives and the only warranty the dealer is authorized to give is as follows:

We warrant products sold by us to be in accordance with our published specifications or those specifications agreed to by us in writing at time of sale. Our obligation and liability under this warranty is expressly limited to repairing, or replacing, at our option, within 12 months after date of retail delivery, any product not meeting the specifications. ***We make no other warranty, express or implied and make no warranty of merchantability or of fitness for any particular purpose.*** Our obligation under the warranty shall not include any transportation charges or costs or installation or any liability for direct, indirect or consequential damage or delay. If requested by us, products or parts for which a warranty claim is made are to be returned transportation prepaid to our factory. Any improper use, operation beyond rated capacity, substitution of parts not approved by us, or any alteration or repair by others in such manner as in our judgment affects the product materially and adversely shall void this warranty. ***No employee or representative is authorized to change this warranty in any way or grant any other warranty.***

Wil-Rich reserves the right to make improvement changes on any of our products without notice.

When warranty limited or not applicable: Warranty on hoses, cylinders, hubs, spindles, engines, valves, pumps or other trade accessories are limited to the warranties made by the respective manufactures of these components. Rubber tires and tubes are warranted directly by the respective tire manufacturer only, and not by Wil-Rich.

Warranty does not apply to any machine or part which has been repaired or altered in any way so as in the our judgment to affect its reliability, or which has been subject to misuse, negligence or accident.

A Warranty Validation and Delivery Report Form must be filled out and received by Wil-Rich to initiate the warranty coverage.

WARRANTY CLAIMS PROCEDURE

1. The warranty form must be returned to Wil-Rich within fifteen (15) working days from the repair date.
2. Parts returned to Wil-Rich without authorization will be refused. The parts must be retained at the dealership for ninety (90) days after the claim has been filed. If the Service Department would like to inspect the parts, a packing slip will be mailed to the dealer. The packing slip must be returned with the parts. The parts must be returned prepaid within thirty (30) days of receiving authorization. After the parts are inspected and warranty is verified, credit for the return freight will be issued to the dealer.
3. Parts that will be scrapped at the dealership will be inspected by a Wil-Rich Sales Representative, District Sales Manager or Service Representative within the ninety (90) day retaining period.

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TO THE OWNER


It is the responsibility of the user to read the Operator's Manual and comply with the safe and correct operating procedures as pertains to the operation, lubrication and maintenance of the product according to the information outlined in the Operator's Manual.

If this machine is used by an employee or is loaned or rented, make certain that the operator(s), prior to operating, is instructed in safe and proper use and reviews and understands the Operator's Manual.

The user is responsible for inspecting his/her machine and for having parts repaired or replaced when continued use of this product would cause damage or excessive wear to the other parts. The word **NOTE** is used to convey information that is out of context with the manual text; special information such as specifications, techniques, reference information of supplementary nature.

SERIAL NUMBER BREAK

Every implement has a serial number located on the forward left corner of the main frame. These serial numbers are consecutively assigned to the implements as they are manufactured. To aid in part ordering, we reference the serial number at the point the change occurred to provide an accurate means of determining the proper parts.

WIL-RICH LLC	
Wahpeton, ND	
Serial Number:	<input type="text"/>
	
Made in USA	

When in need of parts, always specify the model and serial number. Write this number in the space provided.

MODIFICATIONS

It is the policy of **WIL-RICH** to improve its products whenever possible and practical to do so. We reserve the right to make changes, improvements and modifications at any time without incurring obligation to make such changes, improvements on any equipment sold previously.



THIS SYMBOL USED TO CALL YOUR ATTENTION TO INSTRUCTIONS CONCERNING YOUR PERSONAL SAFETY. BE SURE TO OBSERVE AND FOLLOW THESE INSTRUCTIONS

PREPARATION

Before operating the **WIL-RICH** Disk Cultivator, a careful inspection must become routine. A check must be made to ensure that all hardware and fasteners are securely tightened and moving parts properly lubricated.

Remove all wires and/or banding material. The parts have been conveniently arranged on the pallet for ease of assembly.

NOTE: Always wear safety glasses or goggles and be careful when cutting wires and steel bands as they are under tension and will spring back when cut.

Wherever the terms "left" and "right" are used, it must be understood to mean from a position behind and facing the machine.

Lubricate all bearings and moving parts as you proceed and make sure they work freely.

FASTENERS

Loosely install all bolts connecting mating

GENERAL INFORMATION

parts before final tightening.

When tightening bolts, they must be torqued to the proper number of foot-pounds as indicated in the table unless specified. It is important that all bolts be kept tight.

On new machines, all nuts and bolts must be rechecked after a few hours of operation.

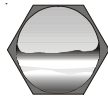


When replacing a bolt, use only a bolt of the same grade or higher. Except in shear bolt applications, where you must use the same grade bolt.

Bolts with no markings are grade 2

Grade 5 bolts furnished with the machine are identified by three radial lines on the head.

Grade 8 bolts furnished with the machine are identified by six radial lines on the head.

All U-bolts are grade 5.

GRADE 2		GRADE 5			GRADE 8		
							
TORQUE IN FOOT POUNDS							
BOLT DIA	3/8	1/2	5/8	3/4	7/8	1	
HEX HEAD	9/16	3/4	15/16	1-1/8	1-5/16	1-1/2	
UNC GR2	18	45	89	160	252	320	
UNC GR5	30	68	140	240	360	544	
UNC GR8	40	100	196	340	528	792	
UNF GR2	21	51	102	178	272	368	
UNF GR5	32	70	168	264	392	572	
UNF GR8	48	112	216	368	792	840	

TORQUE.EPS

Note: Do not inflate tires beyond the specified tire pressure.

TIRE INFLATION

The use of proper air pressure is the most important factor in satisfactory performance and maintenance of implement tire. Underinflation will damage the cord body of the tire and cause a series of diagonal breaks in the fabric sidewall area.

If the tire buckles or wrinkles, the air pressure must be increased to the point where the sidewall remains smooth while operating.

Check the air pressure every two or three weeks and do not allow the pressure to drop to a point where buckling or wrinkling of the tire may be possible.

WHEEL BOLTS

It is recommended that all wheel bolts be checked for tightness before using and again after one day of use. Check periodically to be sure the wheel bolts are tight.

LUBRICATION

Make sure the disk cultivator is properly lubricated.

HYDRAULICS

Check wing lift and depth control cylinders for proper alignment and operation. On any machine, check that the hydraulic system has been properly charged and purged.



CAUTION

FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY AND/OR EQUIPMENT DAMAGE.

- Just before and during operation be sure no one is on or around the implement.
- Before activating the hydraulic system, check hoses for proper connections.
- Before lowering the wings for the first time, make sure the entire system has been charged with oil.
- With wings down always install hydraulic cylinder channel lock(s) for transporting.

49165

49165.EPS

TRACTOR REQUIREMENTS

The **WIL-RICH** Disk Cultivator requires approximately 10 to 12 horsepower per foot. Three remote cylinder outlets and controls are required. Best results will be achieved when operating speed of 6 to 8 miles per hour is maintained.

WHEELS AND TIRES

Dual tractor rear wheels are recommended for use with the Disk Cultivator. See your tractor's operator's manual for tire inflation and instructions for wheel ballast where required.

METERING VALVES

The metering valve may be set to provide varying amounts of hydraulic oil flow to the cylinders (see your tractor operator's manual.)

It is recommended the wing lift cylinders run as slow as possible to prevent damage to the implement, persons and property. Turn wing lift hydraulics metering valves to slow position.

FRONT BALLAST

Tractor front end stability is necessary for safe and efficient operation. Therefore, it is important that the proper amount of weight be installed on the front of the tractor as recommended in your tractor operator's manual.



Note: Ballast recommendations provide for adequate transport stability at recommended speeds. Additional front ballast may be required for satisfactory field operation due to sudden or extreme forces on the Disk Cultivator. These forces may occur when removing the Disk Cultivator from the ground and turning at rows end, or during field transport over very rough ground.

TRANSPORTING

A SMV (Slow Moving Vehicle) emblem **must** be used at all times while traveling on public roads.

The implement must always be placed in transport position and the cylinder channel locks used when traveling on public roads. Never depend on your tractor's hydraulic system to carry the weight while transporting.



Note: Use extreme caution when working around overhead power transmission lines.

Note: Always install lock channels in the main lift cylinders for road transport.

Reduce speed when cornering and when traveling over rough and/or uneven ground. Drive at a reasonable speed to maintain complete control of the machine at all times.

Comply with your state and local laws governing highway safety when moving machinery on a highway.

BEARING ASSEMBLIES

IMPORTANT: The spindle nuts on the wheel assemblies are preset at the factory.

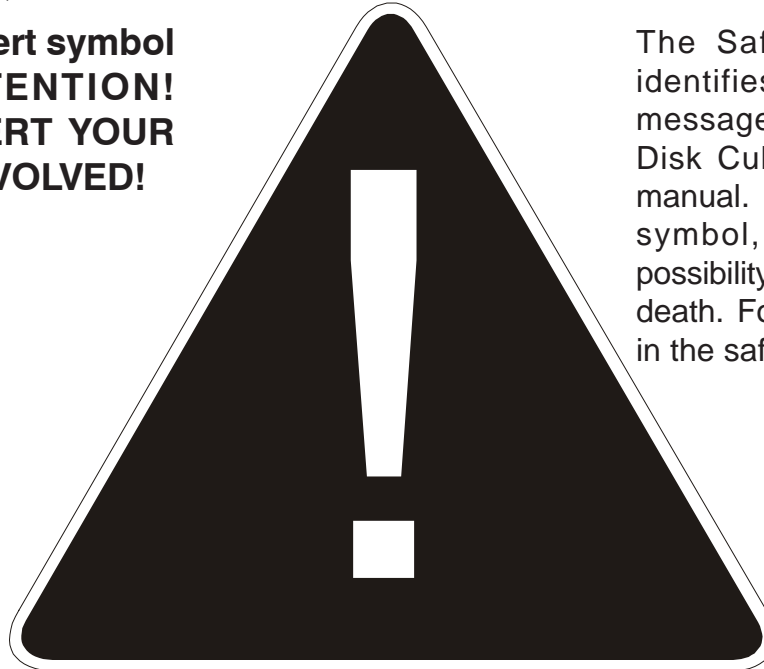
Road transport and field working will seat the bearings and will require additional adjustment. After 20 hours of machine operation remove the grease cap and check the bearing tightness.

Remove the cotter pin and rotate the tire while tightening the spindle nut. Tighten until the drag on the tire stops the rotation. Locate the cotter pin hole in the spindle and loosen the spindle nut just enough to allow insertion of the cotter pin. Replace cotter pin and grease cap.

PERSONAL SAFETY IS IMPORTANT!

ALL PERSONNEL INVOLVED WITH THE ASSEMBLY AND/OR OPERATION OF THIS EQUIPMENT MUST BE INFORMED OF PROPER SAFETY PROCEDURES. OPERATOR'S/ASSEMBLY MANUALS PROVIDE THE NECESSARY INFORMATION. IF THE MANUAL IS LOST FOR A PARTICULAR IMPLEMENT, ORDER A REPLACEMENT AT ONCE. OPERATOR'S AND ASSEMBLY MANUALS ARE AVAILABLE AT NO CHARGE UPON REQUEST.

This Safety Alert symbol means **ATTENTION!** **BECOME ALERT YOUR SAFETY IS INVOLVED!**



The Safety Alert symbol identifies important safety messages on the Wil-Rich Disk Cultivator and in this manual. When you see this symbol, be alert to the possibility of personal injury or death. Follow the instructions in the safety message.

Why is SAFETY important to you?

3 Big Reasons

Accidents Disable and Kill

Accidents Cost

Accidents Can Be Avoided

SIGNAL WORDS:

Note the use of the signal words **DANGER**, **WARNING** and **CAUTION** with the safety messages. The appropriate signal word for each message has been selected using the following guidelines:

DANGER

An immediate and specific hazard which **WILL** result in severe personal injury or death if the proper precautions are not taken.

WARNING

A specific hazard or unsafe practice which **COULD** result in severe personal injury or death if the proper precautions are not taken

CAUTION

Unsafe practices which **COULD** result in personal injury if proper practices are not taken, or as a reminder of good safety practices.

ADDRESS INQUIRIES TO:

WIL-RICH
PO BOX 1030
WAHPETON, ND 58074
PH (701) 642-2621 FAX (701) 642-3372

SAFETY

INFORMATION

YOU are responsible for SAFE operation and maintenance of your Wil-Rich Disk Cultivator. YOU must ensure that anyone who is going to operate, maintain or work around the Disk Cultivator be familiar with the operating and maintenance procedures and related safety information contained in this manual. This manual will take you step by step through your working day, alerts you to all good safety practices that should be adhered to while operating this equipment.



Remember, YOU are the key to safety. Good safety practices not only protect you but also the people around you. Make these practices a working part of your safety program. Be certain that EVERYONE operating this equipment is familiar with the recommended operating and maintenance procedures and follows all safety precautions. Most accidents can be prevented. Do not risk injury or death by ignoring good safety practices.

Disk Cultivator owners must give operating instructions to operators and employees before allowing them to operate the Disk Cultivator, and at least annually thereafter per OSHA regulation 1928.57.

The most important safety device on this equipment is a safe operator. It is the operator's responsibility to read and understand ALL Safety and Operating instructions in the manual and to follow them. All accidents can be avoided.

A person who has not read and understood all operating and safety instructions is not qualified to operate the machine.

An untrained operator exposes themselves and bystanders to possible serious injury or death.

Do not modify the equipment in any way. Unauthorized modifications may impair the function and/or safety and could affect the life of the equipment.

Think SAFETY! Work SAFELY!

GENERAL SAFETY BEFORE OPERATING

Read and understand the operator's manual and all safety signs before operating, maintaining or adjusting the Disk Cultivator.

Review safety related items with all operators annually.

Use extreme care when making adjustments.

When working under or around the machine, always lower the Disk Cultivator to the ground.

After servicing, install and properly secure all shields and guards before operating. Remove all tools, parts, and service equipment from the machine.

Have a first-aid kit available for use should the need arise and know how to use it.

Have a fire extinguisher available for use should the need arise and know how to use it.

Clear the area of people and remove foreign objects from the machine before starting and operating.

Always wear relatively tight and belted clothing to avoid entanglement in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, and head. Wear suitable ear protection for prolonged exposure to excessive noise.

Stop tractor engine, place all controls in neutral, set park brake, remove ignition key and wait for all moving parts to stop before servicing, adjusting, repairing or unplugging. Do not attempt to remove any obstruction while machine is in motion.

HYDRAULIC SAFETY

Always place all tractor hydraulic controls in neutral before dismounting.

Make sure that all components in the hydraulic system are kept in good condition and are clean.

Relieve pressure before working on hydraulic system.



Replace any worn, cut, abraded, flattened or crimped hoses and metal lines.

Before applying pressure to the system, make sure all components are tight and that lines, hoses and couplings are not damaged.

Do not attempt any makeshift repairs to the hydraulic lines, fittings or hoses by using tape, clamps or cements. The hydraulic system operates under extremely high-pressure. Such repairs will fail suddenly and create a hazardous and unsafe condition.

Wear proper hand and eye protection when searching for high pressure leaks. Use a piece of cardboard as a backstop instead of hands to isolate and identify a leak.

If injured by a concentrated high-pressure stream of hydraulic fluid, seek medical attention immediately. Serious infection or toxic reaction can develop from hydraulic fluid piercing the skin surface.

STORAGE SAFETY

Store unit in an area away from human activity.

Do not permit children to play around the stored unit.

Store in a dry, level area. Support the base with planks if required.

TIRE SAFETY

Failure to follow proper procedures when mounting a tire on a wheel or rim can produce an explosion which may result in serious injury or death.

Do not attempt to mount a tire unless you have the proper equipment and experience to do the job.

Have a qualified tire dealer or repair service perform required tire maintenance.

TRANSPORT SAFETY

Read and understand ALL the information in the Operator's Manual regarding procedures and SAFETY when moving the Disk Cultivator in the field, yard or on the road.

Check with local authorities regarding transportation on public roads. Obey all applicable laws and regulations.

Always travel at a safe speed. Reduce speed and use caution when making corners or meeting traffic.

Make sure SMV (Slow Moving Vehicle) emblem and all lights and reflectors that are required by the local highway and transport authorities are in place, are clean and can be seen clearly by all overtaking and oncoming traffic

Use a drawbar pin with provisions for a mechanical retainer.

Attach a safety chain before moving (see safety chain information.)

Keep to the right and yield the right-of-way to allow faster traffic to pass. Drive on the road shoulder, if permitted by law.

Always use hazard warning flashers on tractor when transporting unless prohibited by law.

Do not allow riders.

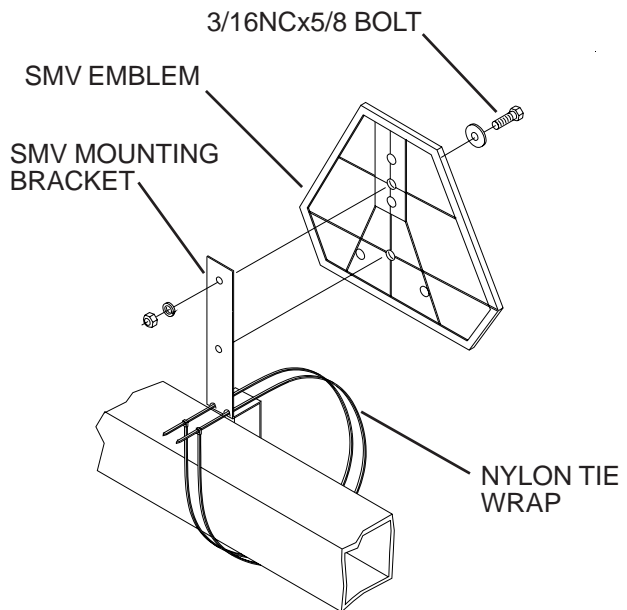
Do not exceed 20 m.p.h. during transport.

SMV

The SMV emblem is to be secured as near to the rear and centered, or as near to the left center of the implement as possible.

The bracket provided is designed to mount to numerous frame sizes and can be orientated in numerous positions to avoid interference with implement components.

Emblem is to be 2 to 6 feet above the ground measured from the bottom edge of the emblem.

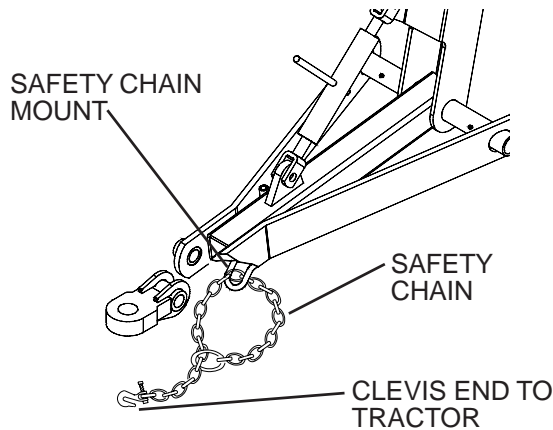


Keep safety decals clean. Replace any safety decals that are damaged, destroyed, missing, painted over or can no longer be read. Replacement safety decals are available through your dealer.

SAFETY DECALS

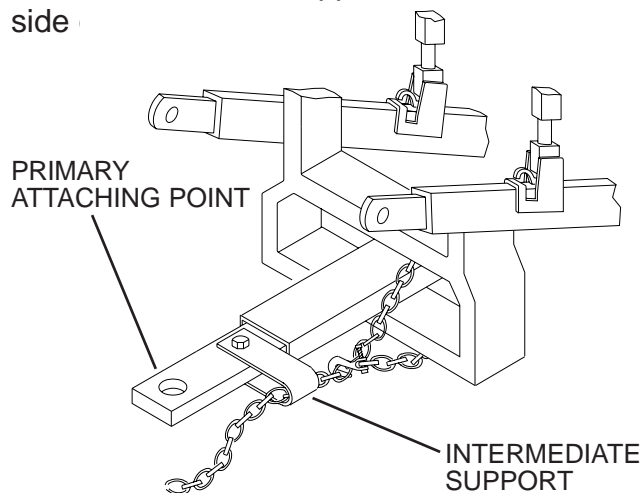
SAFETY CHAINS

The purpose of the safety chain is to provide an auxiliary attaching system to retain the connection between towing and towed machine in the event of separation of the primary attaching system.



The safety chain should be hooked long enough to permit full turns. Unnecessary slack should be taken up.

The intermediate support is to be used if there is more than 6" of unsupported chain on either side.



The intermediate support must not be mounted more than 6" from the primary attaching point (see illustration above.)

Safety decals appear at various locations on your machine. These decals are provided for your safety, your family's safety and your employee's safety. Replace any decal that becomes worn, damaged, painted over or difficult to read.

Keep safety decals and signs clean and legible at all times.

Replace safety decals and signs that are missing or have become illegible.

Replaced parts that displayed a safety sign should also display the current sign.

Safety decals or signs are available from your dealer parts department.

How to install Safety Decals:

Be sure that the installation area is clean and dry.

Decide on the exact position before you remove the backing paper.

Remove the smallest portion of the split backing paper.

Align the decal over the specified area and carefully press the small portion with the exposed sticky backing in place.

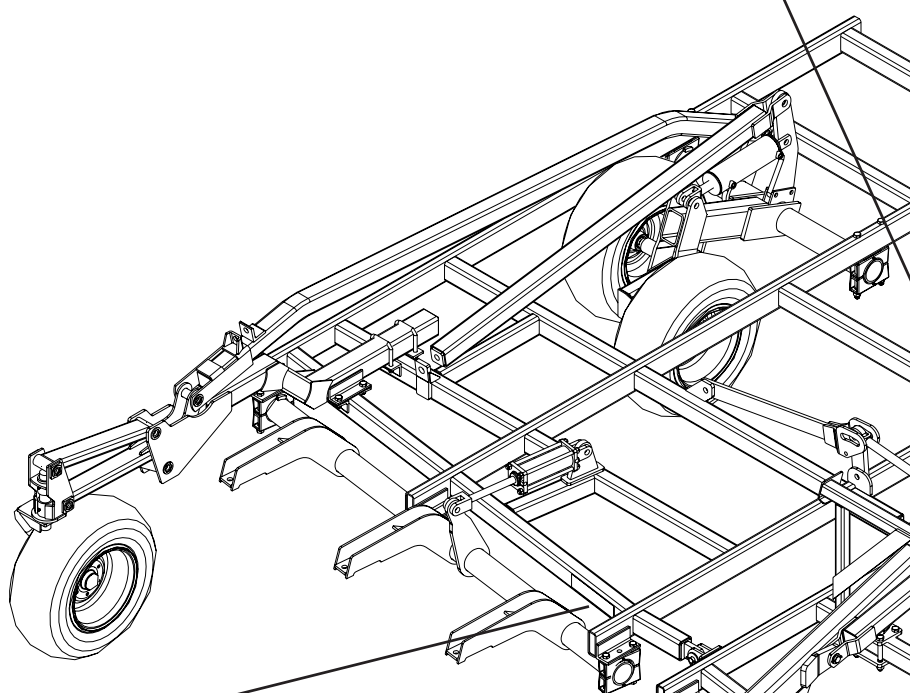
Slowly peel back the remaining paper and carefully smooth the remaining portion of the decal in place.

Small air pockets can be pierced with a pin and smoothed out using the piece of decal backing paper.

SAFETY DECAL PLACEMENT



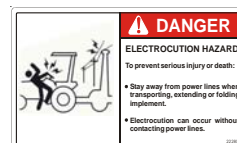
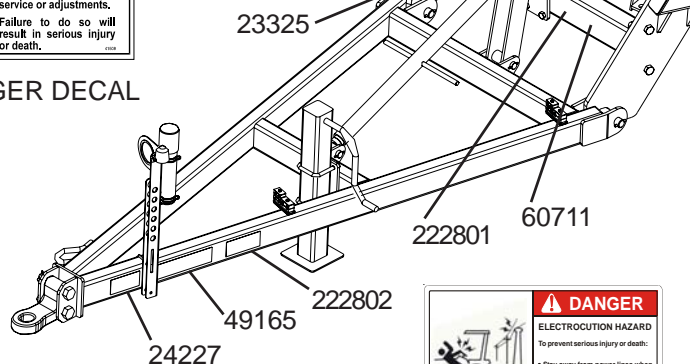
20121 INTEGRAL RESTRICTOR DECAL



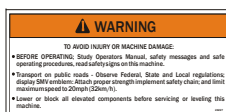
222800 DANGER DECAL



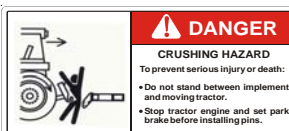
49163 WING LOCK DANGER DECAL



222801 ELECTROCUTION DECAL



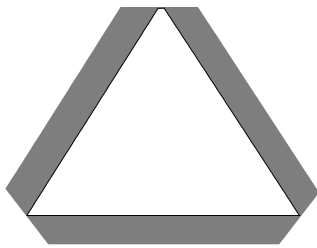
24227 WARNING DECAL-OPERATING



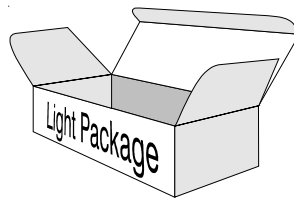
222802 CRUSHING DECAL

WINGS UP	WINGS DOWN	MAIN UP	MAIN DOWN
WINGS UP	WINGS DOWN	MAIN UP	MAIN DOWN
WINGS UP	WINGS DOWN	MAIN UP	MAIN DOWN
WINGS UP	WINGS DOWN	MAIN UP	MAIN DOWN
WINGS UP	WINGS DOWN	MAIN UP	MAIN DOWN
WINGS UP	WINGS DOWN	MAIN UP	MAIN DOWN

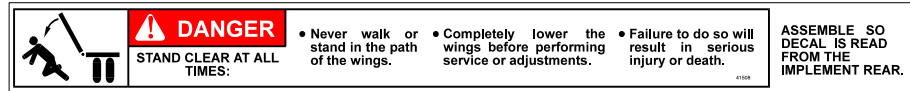
- 54900 WINGS UP DECAL
 54901 WINGS DOWN DECAL
 54902 MAIN UP DECAL
 54903 MAIN DOWN DECAL



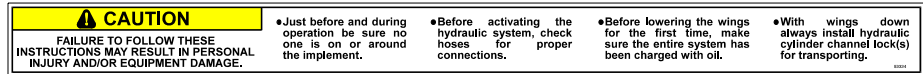
41345 SMV KIT



239474 CLEARANCE LIGHT PACKAGE-19 & 22ft.
223178 CLEARANCE LIGHT PACKAGE-25,28,31,34 & 37ft.



41508 WING LOCK DANGER DECAL



53334 CAUTION DECAL



20121 INTEGRAL RESTRICTOR DECAL

20121

22371

22372

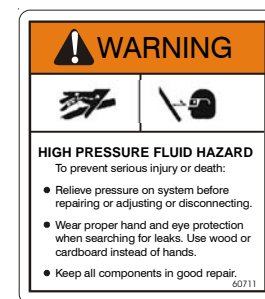
22371 RED DEFLECTOR



22372 AMBER DEFLECTOR



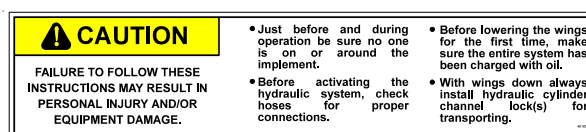
23325 CAUTION DECAL - READ



60711 HIGH PRESSURE FLUID HAZARD



222800 DANGER DECAL



49165 CAUTION DECAL

SIGN-OFF FORM

WIL-RICH follows the general standard specified by the American Society of Agricultural Engineers (ASAE) and the Occupational Safety and Health Administration (OSHA). Anyone who will be operating and/or maintaining the Disk Cultivator must read and understand ALL Safety, Operation, and Maintenance information presented in this manual.

Do not operate or allow anyone else to operate this equipment until such information is reviewed. Annually review this information before the season start-up.

Make periodic reviews of SAFETY and OPERATION a standard practice for all your equipment. We feel that an untrained operator is unqualified to operate this machine.

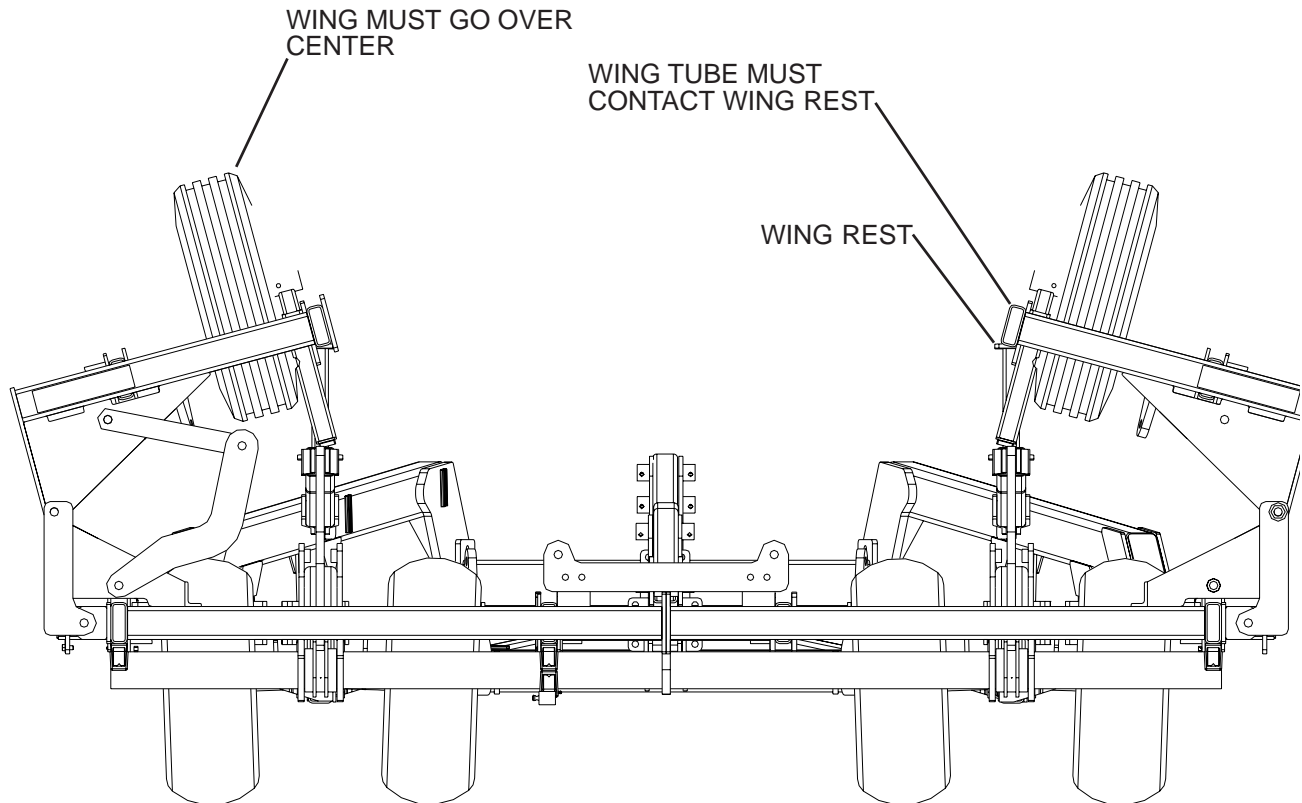
A sign-off sheet is provided for all personnel who will be working with equipment have read and understood the information in the operators manual and have been instructed in the operation of the equipment.

DATE	EMPLOYEE'S SIGNATURE	EMPLOYER'S SIGNATURE

4' WING REST

Note: Before and during operation be sure no one is on or around implement. Serious injury can result from improper use.

Note: Do not fold or unfold the main wings while unit is moving. Stop the unit on a level part of the field when folding and unfolding any wings.



Note: Assemble so decal is read from the implement rear.

Fig. 1 Wing Rest



! DANGER
STAND CLEAR AT ALL TIMES:

- Never walk or stand in the path of the wings.
- Completely lower the wings before performing service or adjustments.
- Failure to do so will result in serious injury or death.

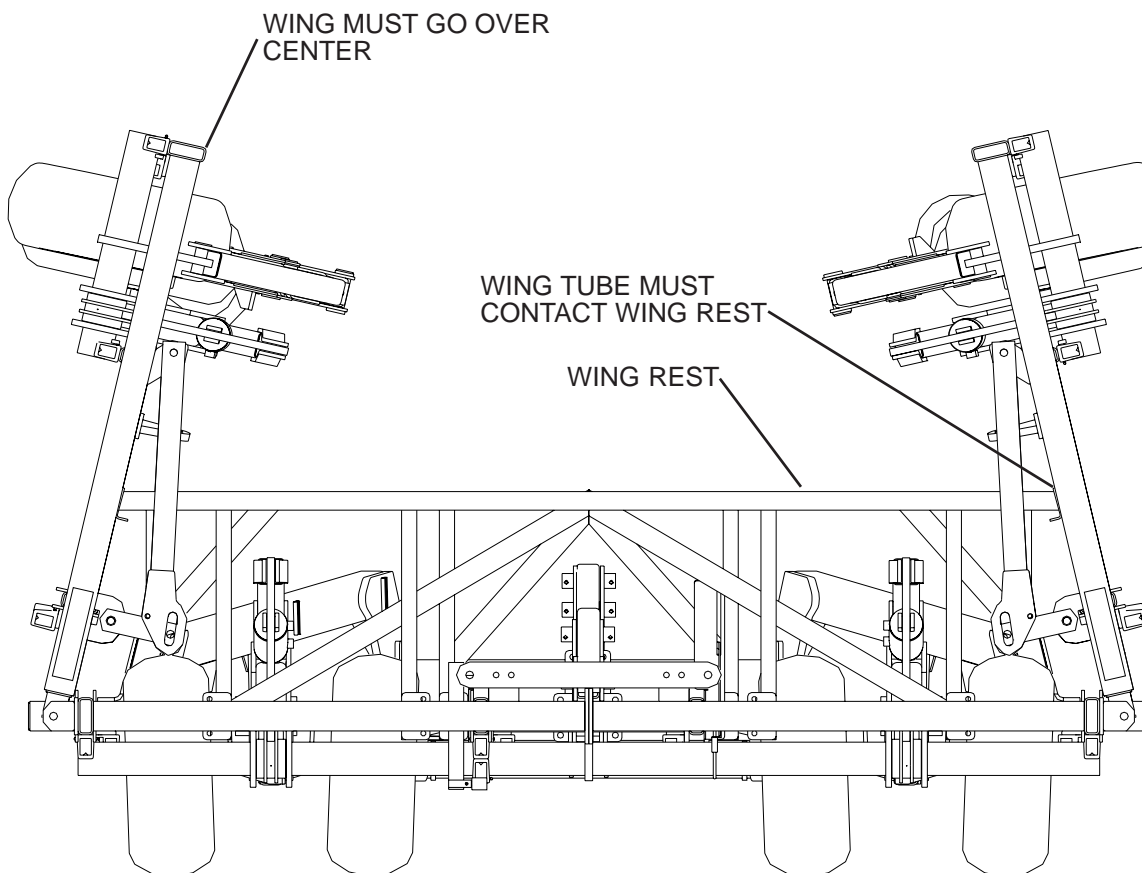
41508

ASSEMBLE SO
DECAL IS READ
FROM THE
IMPLEMENT REAR.

7' WING REST

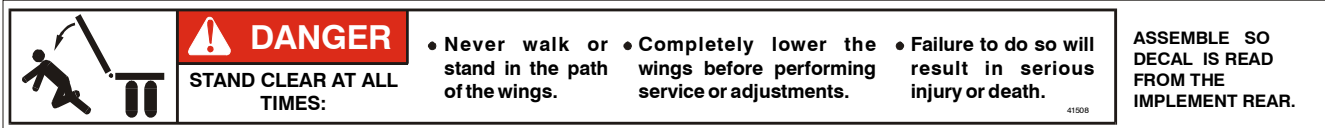
Note: Before and during operation be sure no one is on or around implement. Serious injury can result from improper use.

Note: Do not fold or unfold the main wings while unit is moving. Stop the unit on a level part of the field when folding and unfolding any wings.



Note: Assemble so decal is read from the implement rear.

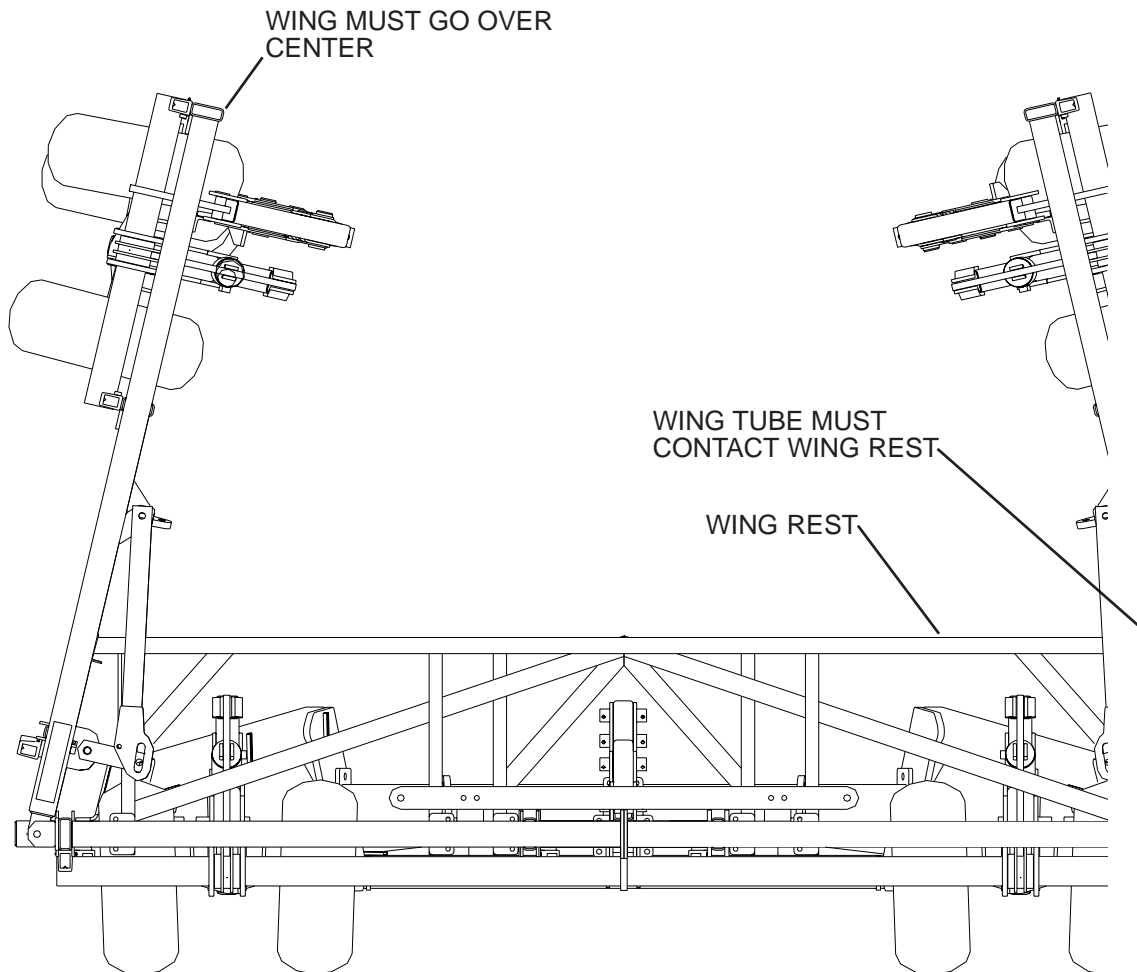
Fig. 1 Wing Rest



10' WING REST


Note: Before and during operation be sure no one is on or around implement. Serious injury can result from improper use.

Note: Do not fold or unfold the main wings while unit is moving. Stop the unit on a level part of the field when folding and unfolding any wings.



Note: Assemble so decal is read from the implement rear.

Fig. 1 Wing Rest

	⚠ DANGER STAND CLEAR AT ALL TIMES:	<ul style="list-style-type: none">• Never walk or stand in the path of the wings.• Completely lower the wings before performing service or adjustments.• Failure to do so will result in serious injury or death.	ASSEMBLE SO DECAL IS READ FROM THE IMPLEMENT REAR.
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MAIN FRAME DEPTH ADJUSTMENT

The main frame depth on the WIL-RICH disk cultivator is controlled by a pair of 12.56" stroke bypass cylinders. These cylinders are located at the rear of the unit, above the main frame lift axles. The cylinders are tied to the main axle and to the main axle mast. The main axle mast is non-adjustable and pinned to the front of the main frame through the main axle tie tube. See Fig 1.

Note: The main and wing lift cylinders need to be positioned with the rod end of the cylinder attached to the axle as shown.

The top bypass cylinders have adjustable mechanical screw collars. These screw collars are rotated on the cylinder rod to vary the retracted length of the cylinder, providing the means to adjust the working depth of the unit.

The main frame depth is mechanically set by turning the screw collar "DOWN" the cylinder rod to decrease the working depth or "UP" the cylinder rod to increase the working depth. An add-on stop collar is provided for situations where the screw stop collar does not allow a shallow enough setting.

NOTE: Proper field operation is dependent upon the screw collars of the main frame lift cylinders being first to contact the mechanical stops. If a wing cylinder screw stop collars contacts first the leveling function of the system will not operate correctly.

NOTE: The cylinder screw stop collars on the main frame depth control cylinders must be set equally – failure to do so can twist the main axle and cause axle failure. Measure the collar locations or count the number of turns each screw collar is rotated to ensure they are set the same.

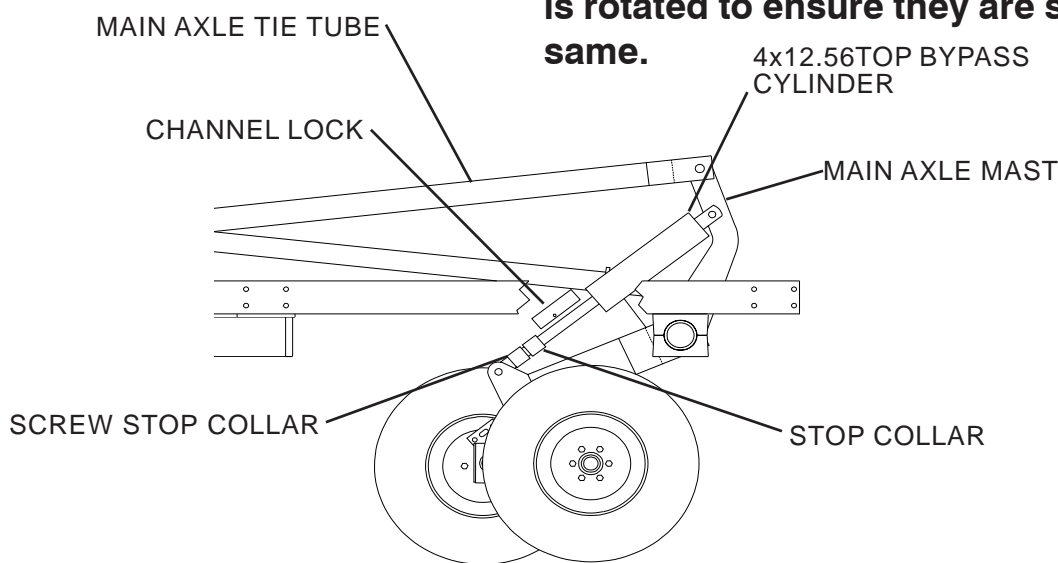


FIG. 1.

WING DEPTH ADJUSTMENT

The operational depth of the wing is controlled by use of a 10.8" stroke slave cylinder located above the wing axle. These cylinders are connected in series with the main frame lift cylinders. The cylinders are attached to the wing axle mast, through the wing axle tie tube and to the front of the wing. See Fig. 2.

NOTE: The screw collars and stop collars are used to set the depth of the wing. Adjustments to level the wing relative to the main frame are made at the front of the unit.

By adjustment of the wing adjustment rod the wing can be adjusted to the main frame. To set the wing axle, the wing adjust rod is made shorter or longer. Lengthening the adjustment rod (counter clockwise rotation as viewed from the front of the machine) will lower the wing and adjusting the rod (clockwise rotation as viewed from the rear of the machine) to a shorter position will raise the wing. To maintain the front to rear level of the wing the front gauge wheel will also need to be adjusted. Refer to the preliminary and field settings for additional setting information.

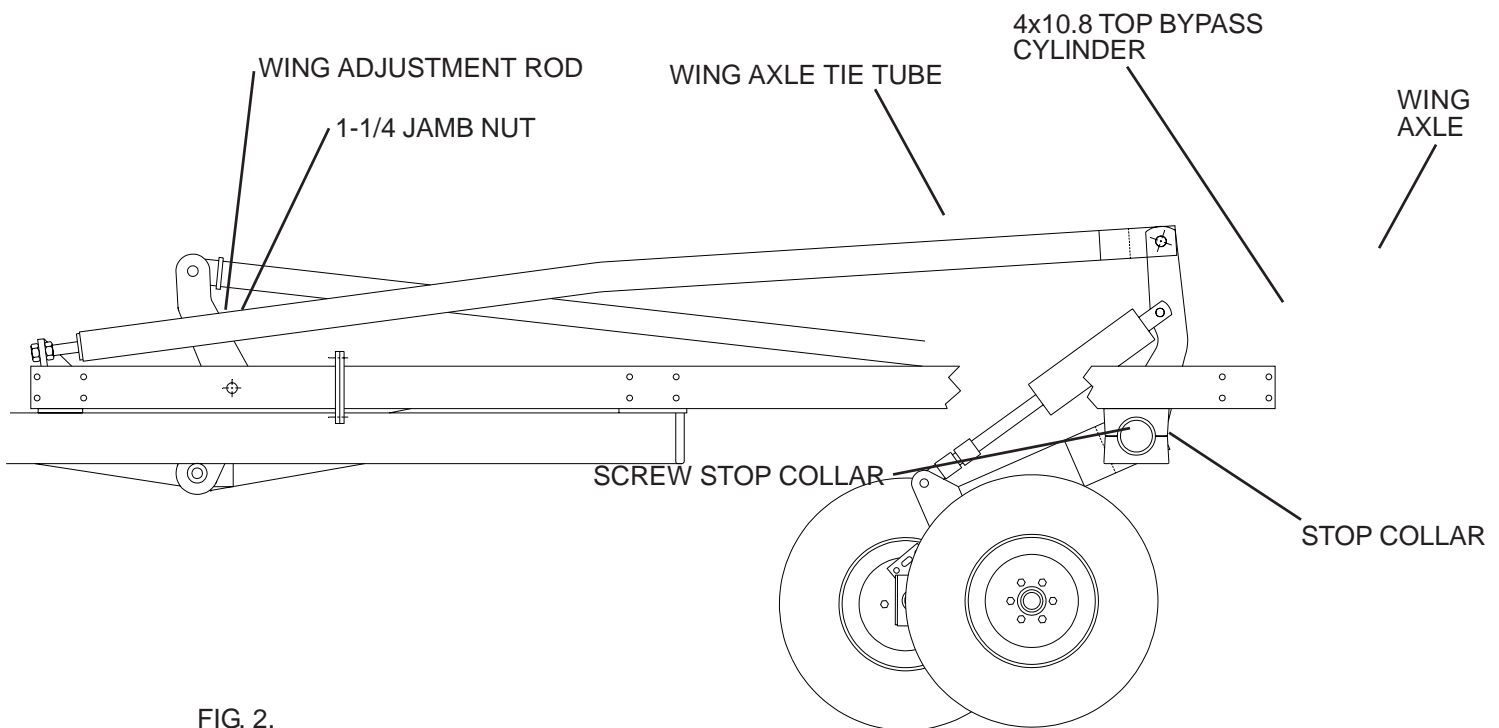


FIG. 2.

DEPTH CONTROL CIRCUITRY

The depth control cylinders are hooked in series. Each cylinder is a top bypass cylinder and when fully extended will pass oil by the piston into the next cylinder charging the system.

Top bypass cylinders will bypass oil when the cylinder is fully extended. This bypass condition will exist when the implement is raised to maximum ground clearance. At this time oil will pass through a 1/16" dia hole and go on to the next cylinder. See Fig. 3.

Note: This system requires periodic raising of the unit and holding of the tractor valve to expel air or contaminants.

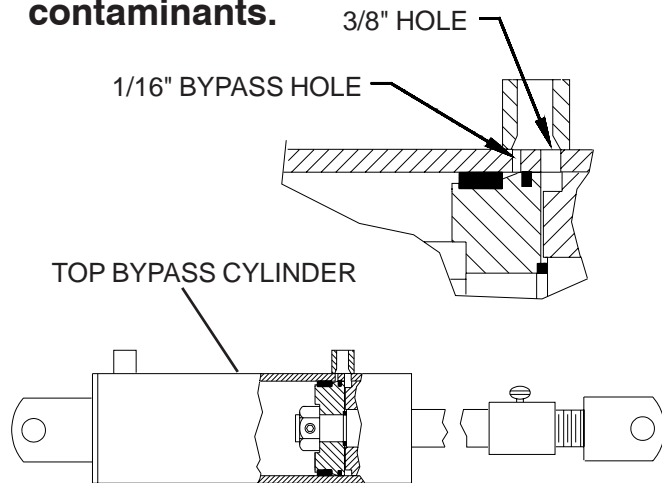


FIG.3.

Note: To synchronize or re-synchronize the bypass system, the tractor control valve must be held in the raised position until the entire implement is raised and any air that may be in the lines has been expelled.

LEVELING

The operational leveling of the field cultivator must be done in a level area of the field. Final front to rear and side to side leveling is done at working depth. Preliminary setting can be completed in the yard to speed up the field setting operation.

The front to rear level of the main frame is controlled by the main axle lift wheels and the setting of the main hitch. The front to rear level of the wing is controlled by the wing axle lift wheels and the hydraulic front gage wheel. Both the main frame and the wings will need to be adjusted correctly for proper operation.

PRELIMINARY SETTINGS

Proper preliminary and field settings will require use of a measuring device. Once the unit has been properly assembled and hitched to the tractor that will be used for field operation, make certain the hydraulic system has been properly charged. Position the unit on a level area of ground and unfold the wings, checking to ensure there are no people or obstructions in the path of the wings.

NOTE: Cycle the main lift hydraulics a number of times to remove air in the system. Holding the hydraulic lever in the "RAISE" position will remove the unwanted air from the circuit.

Lower the unit to the ground so that the front row of shanks on the main frame are 1"-2" above the ground.

Measure the main frame height from the ground to the top of the outer frame tube and compare to the distance measured from the ground to the top of this outer frame tube at the rear of the machine. See fig 4.

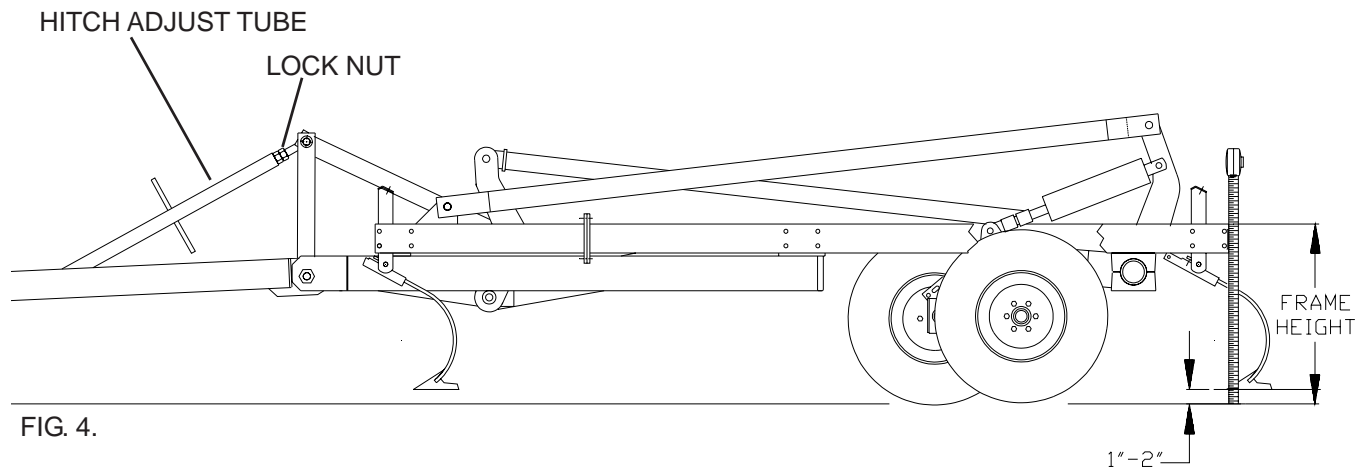


FIG. 4.

If the front dimension is larger (front of frame is higher than the rear) you will need to adjust the hitch adjust tube to drop the front of the unit. Loosen the locking nut and turn the adjust tube to shorten the overall tube length. Re-measure the front and rear dimension and adjust the hitch adjust tube as required to maintain a front to rear level main frame. Once the frame is level front to rear, tighten the lock nut on the hitch adjust tube. Note: the adjustment tube may need to be readjusted in the field.

If the front dimension is less (front of frame is lower than the rear) you will need to lengthen the hitch adjust tube and adjust as required.

NOTE: If the hitch adjust tube is difficult to turn, lower the unit to the ground to remove the weight from the adjust tube.

Once the main frame is level front to rear, cycle the main lift hydraulics and lower the unit to the ground. Measure the frame height at the rear corner of the main frame and at the rear corner of the wing. If the rear of the wing is low, loosen the lock nut on the wing adjust rod at the front of the wing (See Fig. 2) By turning the adjust rod into the wing axle tie tube you will raise the rear of the unit. Conversely if the rear of the unit is high you will need to turn the adjust rod out (counterclockwise) to drop the rear corner of the wing. When the rear corner of the wing is at the same height as the wing the adjustment rod lock nut can be tightened securely.

Repeat the above procedure for the opposite wing. Note: the adjustment tube may need to be readjusted in the field.

The disk cultivator is equipped with a hydraulically controlled front gauge wheel on each wing. This gauge wheel provides support to the wing while transporting the unit with the wings lowered and maintains the level of the front of the wing while working. When adjusting the level of the wing to the main frame this wheel should be set also. Once the rear of the wing has been set to match the main frame loosen the adjustment nuts on the lower link arm. By adjusting these nuts the gauge wheel can be raised or lowered and will adjust the front corner of the wing. Measure to ensure that the front of the wing is level with the rear as shown in fig. 5.

On smaller wings when adjusting in the yard there may be sufficient rigidity in the wing for either the rear axle or the front gauge wheel to carry the complete wing. For example – if you have attempted to adjust the rear axle down to level the wing with the main frame and the wing does not seem to drop, check to see if the front gauge wheel is holding the wing up. Once properly adjusted the front gauge wheel will raise and lower the wing in sequence with the rear axle movement.

The gauge wheel contains a braking feature that may need periodic adjustment. Refer to Fig 5. This brake is to maintain control of the rotation of the gauge wheels. As the unit is operating the loading on this gage wheel will vary as conditions change. While operating observe the gauge wheel – if it tends to rotate rapidly back and forth (oscillate) the brake may need to be tightened. This will place a slight drag on the rotation of the gauge wheel and stabilize the wheel.

Note: Only tighten the brake pad sufficiently to dampen rotation, do not over tighten and restrict rotation. If the wheel tends to push while turning the brake may be too tight. Loosen the adjustment bolts.

SINGLE POINT DEPTH CONTROL

The Disk Cultivator single point depth control is designed to allow the adjustment of the operating depth of the unit. The normal procedure involves use of adjustable screw

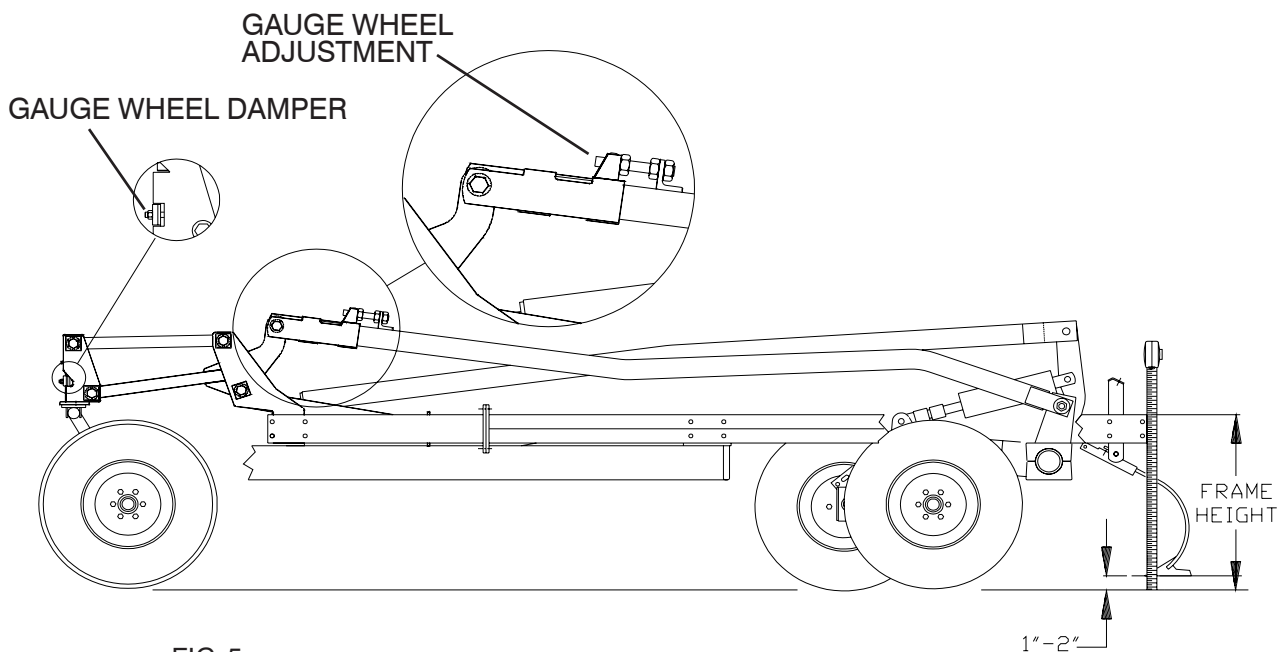


FIG. 5.

stops on the hydraulic lift cylinders. The depth control valve is placed in the base circuit and functions as a shut off valve to contain the oil flow and hold the depth of the machine.

Note: Use of the single point depth control will still require that the lift circuit be regularly purged to maintain the lift sequence. The reliability of the depth control is dependent on the containment of oil in the cylinders and circuit: this valve will not ensure proper function without purging of the system.

ASSEMBLY

The single point control valve is mounted at the rear of the unit. Mount the arm w/bearing to the bottom of the cast bearing cap. Attach the arm to the bearing and secure with the setscrew provided. Mount the DCV valve to the arm with plunger to the front. Mount the depth arm to the axle tube and position the depth arm to align with the DCV valve plunger. Align the contact surface of the depth arm with the back edge of the lift plate in the center and secure. Thread the threaded adjustment arm approximately 1" into the long adjustment tube. Secure the assembly to the arm with the flat washer and cotter pin. Screw the grease zerk into the adjustment tube and pump a liberal amount of grease into the tube to prevent thread seizing and repel water. Add 1/4" flat washers under grease zerk to prevent damage to threaded adjustment rod.

Connect the hoses to the depth valve and into the base side of the main circuit. Route the hoses around shanks or frame members and secure with straps. Insert the adjustment

tube in the front support and mount the front support to the front of the main frame tube with the u-bolt provided. Place cotter pin into the adjustment tube behind the front support, position the spring over the tube in front of the support and secure in position with flat washer and cotter pin. The plastic disk with the adjustment decal is slid on the tube and should rotate freely. Place the rod through the end of the adjustment tube and secure with the 1/4" roll pins in each end.

ADJUSTMENTS

The single point control valve is used to control the operating depth of the unit. As the unit is lowered into the ground the axle will rotate back. By positioning the depth control valve to contact the depth arm the valve will shut off the flow of oil and stop the axle rotation. Once the valve has been installed the adjustments will need to be made in the field. Level the complete unit. Adjust the depth stop collars on all the main lift cylinders to the clevis end of the rod. Cycle the hydraulic system to purge and lower the unit into the ground. As the decal notes each turn of the adjustment tube will adjust the depth of the unit approximately 1/4", either up or down. Turn the adjustment tube clockwise to raise the unit or counterclockwise to lower the unit.

FIELD SETTINGS

Once the preliminary settings have been made in the yard there should be minimal field adjustments required once the unit is taken to the field. It should not be assumed that since the unit is level in the yard it will be level in the field. Variations in ground conditions and loading will impact the functioning and setting of the unit. All final adjustments should be made in the field. Move to the field, unfold the wings and remove the transport channel locks front the main lift cylinders.

Turn all screw collars on the main and wing lift cylinders up to the clevis end of the cylinder rod. Cycle the hydraulics a number of times to clear out any trapped air. Lower the cultivator into the ground and move forward for a short distance. Stop and check the depth of the shanks at the front and rear of the main frame. By use of the screw stops and stop collars provided, set the main frame rear axle cylinders in position at the desired operating depth. Set the screw collars the same on both main frame lift cylinders. Check the depth of the front shanks with a tape measure or a yardstick. Adjust the front relative to the rear as required by adjusting the front hitch tube. (See Fig 4) Once the front and rear depth is close, raise the unit out of the ground, cycle the hydraulics and drop unit into the ground while moving forward. After moving a short distance recheck the front to rear level of the unit. Adjust either the screw collars on the lift cylinders or the front hitch tube to refine the depth settings.

Once the main frame is operating level at the desired depth move to the wings. While the unit is stopped in the field at operating depth, check the operating depth of the shanks at the front and rear of the wing. If the wing requires adjustment loosen the jam nut securing the wing adjust rod at the front of the wing (See Fig 2). By rotating the wing adjust rod as noted in the Preliminary Settings you can set the operational depth of the wing. Set each wing as required and secure the lock nut to the wing adjustment rod. Follow the same process while adjusting the other wing. After the wings have been properly adjusted cycle the hydraulics and lower the unit into the ground until the screw collars of the main lift cylinder's contact the cylinder end plates. Move to the wing and turn the screw stop collars on the wing cylinders down until they contact the end plates. Turn the screw collars one-half turn away from the end plates.

Cycle the hydraulics and check to ensure that

the main frame cylinders are fully retracted and that the wing cylinders are not bottoming out first. If the front gauge wheels on the wings were set properly during the preliminary setting procedure there may be no additional adjustment required. It should be noted that the normal loading on a disk cultivator would tend to rotate the frame down at the front of the machine. The extent of this frame rotation is related to the depth of operation, soil conditions, rear attachments and operating speed. This main frame rotation load is carried through the main hitch and to the tractor. The rotation of the wings is controlled by the connection through the wing hinges to the main frame and by the front hydraulic gauge wheels. On units with smaller wings a significant part of the rotation will be carried by the main frame hitch. On larger winged units the setting of the front gauge wheel is more critical.

Adjust the front wing gauge wheels to carry the wing in a level attitude (See Fig. 5). Loading on the front gauge wheels and main carrying wheels should be about equal while operating. The best way to determine loading is to operate the unit at the desired depth and speed and observe the functioning. If the wings seem to be carrying the front gauge wheel or appears that these wheels are not sinking into the ground you may need to lower the front gauge wheels. If the front gauge wheels always seem to be pushing into the ground you may be carrying too much wing weight. Adjust the gauge wheels to carry less weight.

Once the unit is adjusted level, operate the unit for a period of time and watch the operation. Readjust as required and securely tighten any adjustment rods or locking nuts.

DEPTH GAUGE ASSEMBLY/ OPERATING INSTRUCTIONS

The depth gauge is designed to provide a visual representation of the disk cultivator operating

depth. When properly assembled and set, this gauge will display the approximate operating depth of the unit.

The disk cultivator should already have been set-up, per the instructions noted in the assembly/operator's manual. Next, move the disk cultivator to a flat area or to a concrete surface. Unfold the wings and lower the unit to the ground, so that the sweeps are just contacting the surface.

Align the gauge vertically and loosely secure with the u-bolts indicated. Position the depth indicator arm through the slot in the gauge and secure to the inside of the angle with the 3/8" bolt and lock nut.

The depth indicator arm should be free to rotate, do not over tighten the bolt.

Place the 4-1/2" exhaust clamp around the axle tube and place the angle over the exhaust clamp saddle and secure with the nuts provided. Move the clamp and depth indicator arm laterally as required to align with the slot in the front depth gauge. Once the depth gauge is positioned where desired, tighten the u-bolts securely. Before tightening the exhaust clamp around the rear axle, rotate the clamp, angle and depth indicator arm so that the top edge of the arm is in line with the (0) setting on the depth gauge. The bottom edge of the depth arm should be resting on the angle. Tighten the exhaust clamp to hold the indicator arm at the (0) position with the unit sweeps resting on the ground.

This gauge is designed to give a relative indication of operating depth.

As the unit is lowered into the ground, the axle will rotate and move the indicator arm up to the numbered positions. A reading of "2" indicates an approximate operating depth of 2". You may need to adjust the arm as you get

the unit into the field conditions as ground conditions, type of tires and attachment loading will vary the actual depth of the unit.

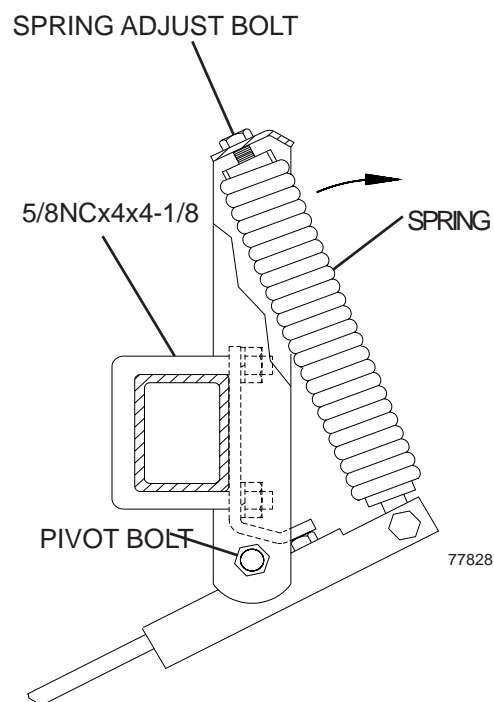
Each shank comes fully assembled from the factory. Install the shanks in their proper location and securely tighten u-bolt nuts.

It is recommended that a 47° stem angle be used on all shank assemblies.

Note: Spring adjust bolt should be tightened just enough to crack the paint between spring coils.

The mounting bolts, U-bolts and shank bolts must all be checked after a few days work and kept tight.

The mounting bolts must not be overtightened, but kept tight enough to allow free movement of the shank.



Wil-Rich disk cultivators are also available with twin spring or single spring shank assemblies. The twin spring shank assemblies are recommended for heavy duty use.

Note: Be sure to maintain adequate tire/shovel clearance on shanks located in or around the wheel well when machine is fully raised or lowered.

MAINTENANCE/ LUBRICATION

REMEMBER: ACCIDENTS DON'T ALWAYS HAPPEN TO THE OTHER GUY SO TAKE GREAT CARE WHEN PERFORMING MAINTENANCE.

After two hours and again after the first eight hours of operation the following checks and adjustments should be made.

- 1 Check and tighten, if necessary, all gang shaft nuts. Tighten to 1200 foot pounds, which is approximately 200 pounds on the end of a 6ft long wrench.
- 2 Tighten all bolts. Especially the bearing stand bolts. Tighten all bolts to torques specified. When bolts are replaced, be sure they are replaced with bolts of equal strength. See bolt head markins on bolt chart. (See Chart on Page 5)
- 3 Check wheel bearings and tighten if necessary. Check and tighten wheel bolts.
- 4 Check all keys and pins to see they are securely fastened.

- 5 Check and adjust scrapers. Scrapers should be adjusted to run against the disk blades.

- 6 Lubricate various components that require lubrication.

- 7 Check all hydraulic components and connections for leaks. Replace any hoses or fittings that develop leaks.

Use the above list as a general guide for later checks and adjustments.



CAUTION: Never clean, adjust, or lubricate a disk that is in motion.

Periodic checks must be made to assure that all nuts and bolts remain securely tightened. Loose hardware is easily bent or lost and can cause excessive wear on parts. Replace any bent or broken bolts as soon as they are discovered.

Clean off any dirt or grease that may accumulate on moving parts at regular intervals. This will prevent any abrasive action which could cause excess or premature wear. Thoroughly inspect the implement for loose or broken parts and adjust or replace as necessary.

It is important that the implement be regularly lubricated as recommended to obtain the most efficient operation. Proper lubrication helps prevent down time due to excessive wear and increase machine life.

CYLINDER SHAFTS

If the cylinder shafts are left exposed for any extended period of time, they should be

coated with grease to protect them from rust and corrosion.

AXLE CAPS

All axle caps must be greased once a week with a good quality grease. Lower machine onto the shovel points to relieve pressure on the caps which will make greasing easier.

HUB AND SPINDLE ASSEMBLIES

Each hub and spindle assembly comes with a grease fitting installed in the hub. These must be greased once a week during steady usage. Caution - do not over grease

Clean and repack hub and spindle bearings once each season.

Tighten spindle nut so that there is a slight drag on the wheel when turned by hand.

WALKING TANDEM ASSEMBLIES

Periodically check each walking tandem assembly for looseness and tighten spindle nut if the bearings show any evidence of side play.

Clean and repack walking tandem assemblies once each season.

The spindle nut should be tightened to allow a heavy drag when assembly is rotated by hand.

HYDRAULICS

Inspect all hydraulic hoses and fittings for cracks and abrasion at least once a year. Tighten or replace as needed.

When connecting the hoses to the cylinders, tubing, or fittings; always use one wrench to prevent the hose from twisting and another

wrench to tighten the union. Excessive twisting will shorten the hose life.

Do not overtighten hydraulic fittings, excessive torque may cause them to crack.

Care must be taken to prevent twisting when tightening hose connections. Straighten any hose that appears twisted immediately. A twisted hose can burst under operating pressure.

GANG BEARINGS

On the Disk Cultivator the gangs are supported by alignable, triple lip sealed ball bearings with lubrication fittings. (See Figure 6)

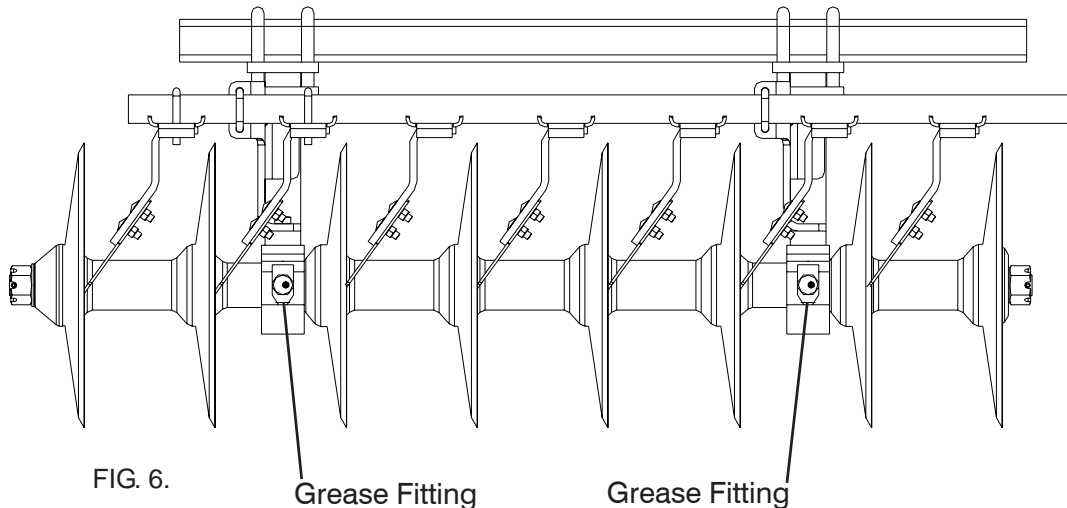
The gang bearings have been lubricated at the factory, but the operator should lubricate all bearings until a little grease appears from the seals before operating the machine for the first time. Triple lip seals allow frequent lubrication without fear of damaging seal.

There are no bearing adjustments to be made other than to make sure the brackets are firmly fastened.

During use the gang bearings should be lubricated daily. They should also be lubricated at the start of each season and especially at the end of the season to protect against corrosion during storage.

Only use a hand grease gun. Wipe dirt from all grease fittings before lubricating. If a grease fitting is missing, replace it immediately.

**IMPORTANT
LUBRICATE GANG BEARINGS
DAILY
USE HAND GREASE GUN**



DISK BLADE MAINTENANCE

Do **NOT** run machine with loose disk blades. Keep gang bolts tight! Tighten to 1200 foot pounds, which is approximately 200 pounds at the end of a six-foot long wrench.

Rust and corrosion are the chief enemies of the disk. Spending a little time and effort protecting the disk blades will reward you with longer service, easier operation, and higher resale value. Dirt and trash will hold moisture, causing rust. Apply a good rust preventative to all land polished surfaces.

STORAGE

At the end of a season, clean the implement thoroughly to remove any trash, soil, or dirty grease which could hold moisture and cause premature rusting. Repaint any chipped, bare,

or rusted areas to prevent any further deterioration. Inspect the machine for any worn or broken parts and adjust or replace as required.

See your Wil-Rich dealer for any parts and/or service which may be needed.

Thoroughly lubricate all grease fittings at the end of the season's use and again before the first operation of the next season.

It is advisable, if possible store larger disk cultivators with the wings down. With the wings completely lowered, the rod end cylinder pins of the wing lift cylinders should be removed and cylinders carefully retracted.

Avoid possible damage to the hydraulic system by lowering the machine onto the shanks and relieve the pressure on the system. Doing this will also prevent damage to the tires

by removing the disk cultivator's weight.

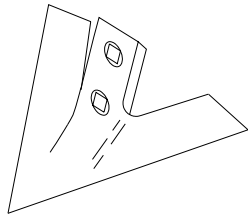
Do not lower Disk Cultivator while wings are folded.

Coat the shovels with grease and place boards under the points to prevent the shovels from settling into the ground.

SHOVELS

Shovels should be used for general tillage, seedbed preparation and weed control.

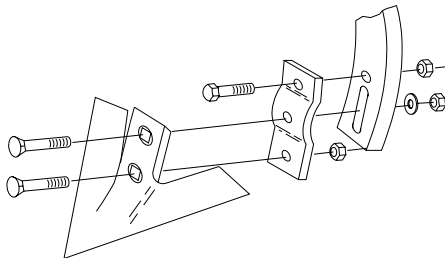
9"x1/4" Terminator sweep



Note: Wil-Rich shanks have a 52° shank angle and a 47° sweep angle is recommended.

SHOVEL EXTENSION

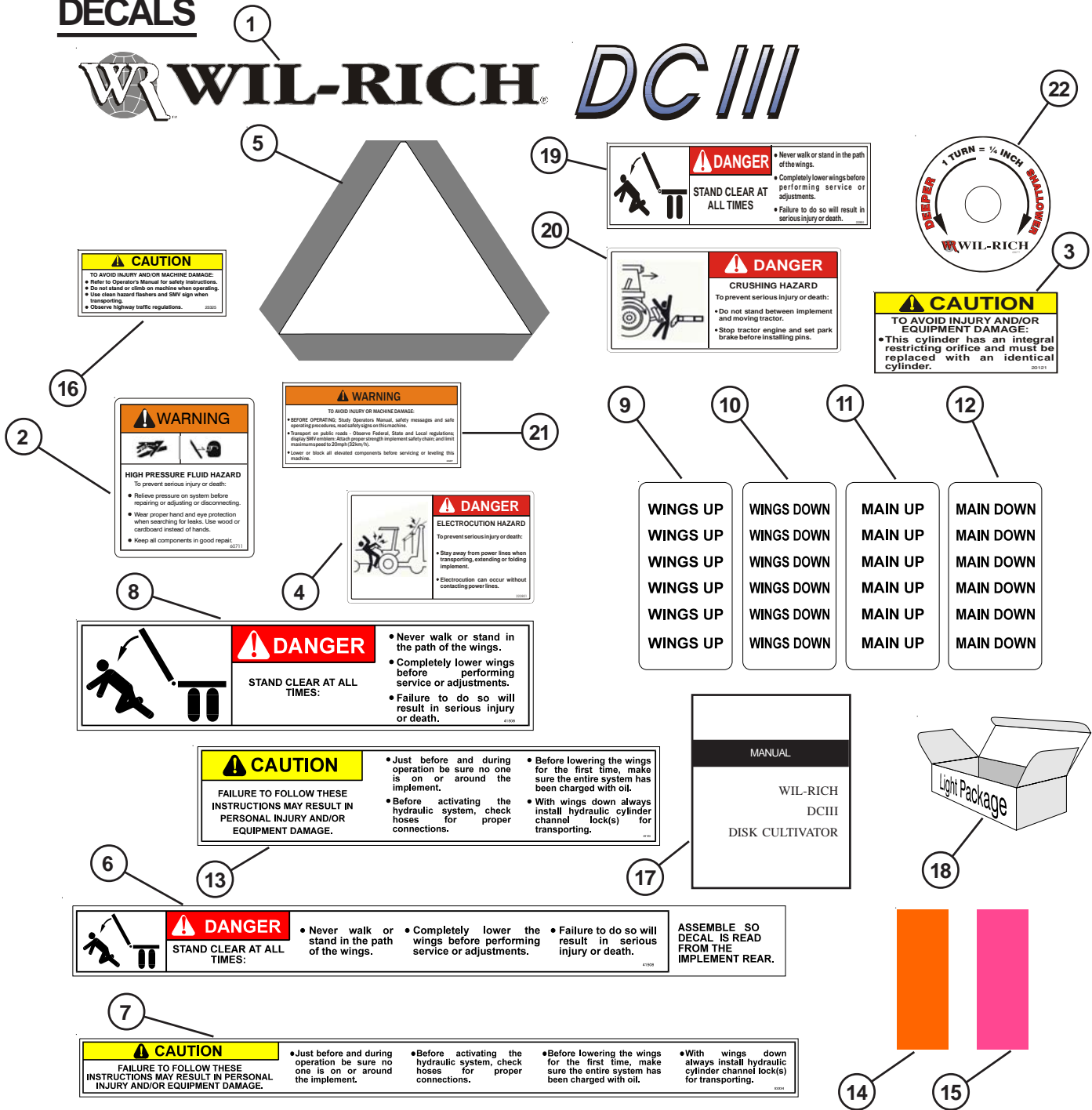
A shovel extension kit is available for increase shovel penetration behind wheel tracks.



DECALS



WIL-RICH DCIII



ITEM	PART NO	DESCRIPTION
1	238430	DCIII DECAL KIT
2	60711	HIGH PRESSURE FLUID HAZARD
3	20121	INTEGRAL RESTRICTOR DECAL
4	222801	ELECTROCUTION DECAL
5	41345	SMV KIT
6	41508	WING LOCK DANGER DECAL
7	53334	CAUTION DECAL
8	49163	WING LOCK DANGER DECAL
9	54900	WINGS UP DECAL
10	54901	WINGS DOWN DECAL
11	54902	MAIN UP DECAL

ITEM	PART NO	DESCRIPTION
12	54903	MAIN DOWN DECAL
13	49165	CAUTION DECAL
14	22372	AMBER REFLECTOR
15	22371	RED REFLECTOR
16	23325	CAUTION DECAL - READ
17	74257	DCIII ASSEMBLY MANUAL
	74258	DCIII OPERATORS MANUAL
18	239474	CLEARANCE LIGHT PACKAGE 19 & 22FT
	223178	CLEARANCE LIGHT PACKAGE 25,28,31,34 & 37FT
19	222800	DANGER DECAL
20	222802	CRUSHING DECAL
21	24227	WARNING DECAL-OPERATING
22	69077	DEPTH ADJUSTMENT DECAL

GENERAL TROUBLE SHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
Machine will not pull straight (skewing or dog tracking.)	Disk Cultivator not level.	See leveling page.
	Incorrect shank placement.	Check shanks for proper location, see assembly manual.
	Tires not equally inflated.	See tire inflation.
Settling of entire implement from raised position.	Leaking cylinder.	Replace cylinder seals (see locating leaking cylinders.)
	Leaking tractor hydraulic control valve.	See tractor manual.
Wings lowering too rapidly.	Incorrect cylinder installed, should have 1/16" dia. integral restrictor cylinder.	See wing lift circuitry and install correct cylinder.
Poor or uneven penetration. Cylinders are getting out of synch.	Incorrect sweep stem angle	Use 47 degree sweeps.
	Incorrect leveling adjustments on main frame or wings.	See leveling page.
	Hydraulic malfunction - air in lines, cylinders or hoses leaking, or hydraulic cylinders and hoses are not installed properly.	Make sure wing fold cylinders are fully extended. Check for oil leakage in cylinders, hoses and fittings. Make sure all hydraulic cylinders and hoses are properly connected.
	Worn shovel points.	Resynchronize cylinders. Adjust stop collar of main lift cylinder(s) to compensate for wear. Replace shovels if wear is severe.
	Tires not equally inflated	See tire inflation.

