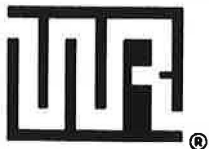


OPERATOR'S MANUAL

WIL-RICH 2500 STANDARD FIELD CULTIVATOR

PRINTED IN USA (74070) J/M-1,500 04/89

HUTCHINSON WIL-RICH
MANUFACTURING COMPANY
BOX 1030 WAHPETON, ND 58074



WIL-RICH·NOBLE®

HUTCHINSON WIL-RICH MANUFACTURING COMPANY
BOX 1030 • WAHPETON, NORTH DAKOTA 58074

WARRANTY VALIDATION AND DELIVERY REPORT

Your new machine is covered by a warranty that appears in your Operator's Manual. To initiate the warranty, this certificate must be completed at the time of delivery and promptly returned to Hutchinson Wil-Rich Manufacturing Company.

IMPORTANT: FAILURE TO DO SO WITHIN 10 DAYS, OR PROVIDING FALSE INFORMATION ON THIS REPORT, WILL INVALIDATE THE WARRANTY.

NOTE: ALL FOLLOWING INFORMATION IS IMPORTANT AND IS KEPT AS A PERMANENT RECORD. PLEASE PRINT OR TYPE ALL DATA.

COMPLETE UNIT DESCRIPTION _____

(Include model description and size of unit)

SERIAL NUMBER _____

DELIVERY DATE _____

DEALER _____

OWNER _____

ADDRESS _____

ADDRESS _____

CITY _____

CITY _____

STATE _____ ZIP
CODE _____

STATE _____ ZIP
CODE _____

NAME OF DISTRIBUTOR _____

(If Applicable)

1. The equipment is set up properly and is in good operating condition.

2. Owner has been instructed by the dealer in the proper use of all safety devices. Owner has also been informed of all safety warnings on the equipment and has been advised to read the Operator's Manual.

3. Owner has received instructions by the dealer on the proper field adjustment and maintenance procedures.

4. Owner has received the proper Operator's Manual and has been advised to read the same before operating the equipment.

Owner's Signature _____

Date _____

Dealer's Signature _____

Date _____

PRINTED IN USA (76266)

WARRANTY

The only warranty Hutchinson Wil-Rich Manufacturing Company 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 this 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 judgement 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.

Hutchinson Wil-Rich Manufacturing Company 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, or other trade accessories are limited to the warranties made by the respective manufacturers of these components. Rubber tires and tubes are warranted directly by the respective tire manufacturer only, and not by Hutchinson Wil-Rich Manufacturing Company.

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

A DELIVERY REPORT FORM MUST BE FILLED OUT AND RECEIVED BY HUTCHINSON WIL-RICH MANUFACTURING COMPANY TO INITIATE THE WARRANTY COVERAGE.

WARRANTY CLAIMS PROCEDURE

1. The warranty form must be returned to Hutchinson Wil-Rich Manufacturing Company within fifteen (15) working days from the repair date.
2. Parts returned to Hutchinson Wil-Rich Manufacturing Company 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 Hutchinson Wil-Rich Manufacturing Company Sales Representatives, District Sales Managers or Service Representatives within the ninety (90) day retaining period.

TO THE OWNER

THE WIL-RICH FIELD CULTIVATOR HAS AS STANDARD EQUIPMENT A CLEARANCE LIGHTING PACKAGE AND A SAFETY CHAIN KIT. IF YOUR CULTIVATOR IS NOT EQUIPPED WITH THESE PACKAGES, THEY CAN BE ORDERED BY CONTACTING YOUR LOCAL DEALER OR THE FACTORY DIRECTLY.


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 of the product and to lubricate and maintain the product according to the information outlined in the Operator's Manual.

The user is responsible for inspecting his machine, and for having parts repaired or replaced when continued use of the 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, and other information of supplementary nature.

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It is the policy of Wil-Rich Operations to improve its products whenever possible and practical to do so. We reserve the right to make changes, improvements, and

Hutchinson Wil-Rich Manufacturing Company Wahpeton, ND Made in U.S.A.	
Serial Number:	<input type="text"/>
	
This machine may be covered by one or more of the following patents:	
- PAT. U.S. - 3,606,928 3,782,481 4,451,052 4,296,695 4,054,177 4,068,723 4,121,852	
- PAT. CAN. - 1974 1976 1982 1985	
- OTHER PATENTS PENDING	

When in need of parts, always specify the model and the serial number. Write this number in the space provided. The serial number plate is located on the main frame in the front left corner.

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MODIFICATIONS

modifications at any time without incurring the obligation to make such changes, improvements, and modifications on any equipment sold previously.

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 AND ASSEMBLY MANUALS PROVIDE
THE NECESSARY INFORMATION.**

IF A MANUAL IS LOST FOR A PARTICULAR IMPLEMENT,

A REPLACEMENT SHOULD BE ORDERED AT ONCE.

OPERATOR'S AND ASSEMBLY MANUALS ARE AVAILABLE

AT NO CHARGE UPON REQUEST.

ADDRESS INQUIRIES TO:

HUTCHINSON WIL-RICH MANUFACTURING COMPANY

P.O. BOX 1030

WAHPETON, ND 58074

(701) 642-2621

Safety decals appear at various locations on your machine. The decals are provided for your safety and should be kept clean. Replace any decal that becomes worn, damaged, painted over, or otherwise difficult to read. Replacement decals are available through your Wil-Rich dealer.

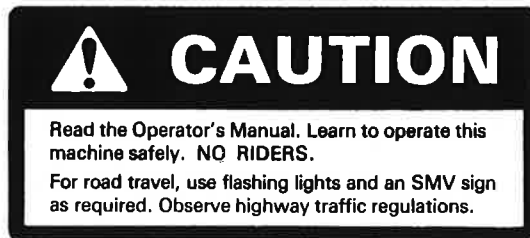
BEFORE OPERATING

Use extreme care when making adjustments.

When working under or around the machine always lower shanks to the ground.

After servicing, be sure all tools, parts, or servicing equipment is removed from the machine.

Make sure that there is no one near the machine just before operating and during operation.



DURING OPERATION

Reduce speed when cornering on field ends and when operating on or across dead furrows.

Do not attempt to remove any obstruction while the machine is in motion.

Use extreme care when operating close to ditches, fences, or on hillsides.

No one other than the operator should ride on the tractor.

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

Hydraulic fluid escaping under pressure can have enough force to penetrate the skin. Hydraulic fluid may also infect a minor cut or opening in the skin. If injured by escaping fluid, see a doctor at once. Serious infection or reaction can result if medical treatment is not given immediately. Make sure all connections are tight and that hoses and line are in good condition before applying pressure to the system. Relieve pressure before disconnecting the lines or performing other work on the hydraulic system. To find a leak under pressure use a small piece of cardboard or wood: Never use hands.

ON-HIGHWAY OPERATION

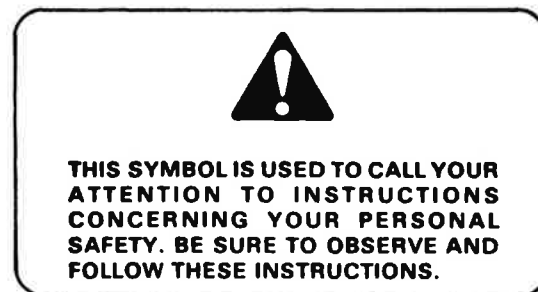
Always place the machine in the transport position.

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

Reduce road speed on corners.

Drive at a reasonable speed to maintain complete control of the machine at all times.

A S.M.V. emblem should be used at all times while traveling on public roads.



PREPARATION

Wil-Rich cultivators come in 3pt. sizes from 8ft. to 25ft. and in drawn sizes from 10ft. to 57ft.

CULTIVATOR PREPARATION

Before using the Wil-Rich cultivator, careful inspection should become routine. A check should be made to insure that all hardware is securely tightened and moving parts properly lubricated.

Tighten all loose nuts and bolts and replace any bent or broken parts.

When tightening bolts, they should be torqued to the proper number of foot-pounds as indicated in the table unless specified (See Fig. 1). It is important that all bolts be kept tight. On new machines, all nuts and bolts should be rechecked after a few hours of operation.

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	2	18	45	89	160	252
G 5	30	68	140	240	360	544
R 8	40	100	196	340	528	792
A 2	21	51	102	178	272	368
D 5	32	70	168	264	392	572
UNF	8	48	112	216	368	792
E 5						840

PI - 75623

Fig. 1 Bolt Torquing Table

When replacing a bolt, use only a bolt of the same grade or higher.

All U-bolts are grade 5.

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.



GRADE 8



GRADE 5



GRADE 2

TIRE INFLATION

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

If the tire buckles or wrinkles, the air pressure should be increased to the point where the sidewalls remain smooth while operating.

Check the air pressure every two or three weeks and do not allow the pressure to drop below the recommended pressure.

NOTE: DO NOT OVER INFLATE TIRES.

WHEEL BOLTS

It is recommended that all wheel bolts be checked for tightness before using and again after one day of use. Paint or rust can work out causing the wheel to become loose. Check periodically to be sure the wheel bolts are tight.

BEARING ASSEMBLIES

Bearing assemblies should be checked periodically for looseness. A loose bearing will cause costly damage after a short period of time.

LUBRICATION

Make sure the cultivator is properly lubricated (See Maintenance, page 14-15).

HYDRAULICS

Check lift and wing folding linkages and cylinders for proper alignment and operation. On new machines check that the hydraulic system has been properly charged and purged. (See wing lift circuitry and depth control circuitry.)

TRACTOR PREPARATION

Refer to the operator's manual furnished with your tractor for recommended adjustments and weight distribution.

When using a 3 point hitch, adjust the sway blocks to allow lateral flexibility when in operation. NOTE: Sway should be locked out during transport.

When using a drawn cultivator, the tractor drawbar should always be pinned in the center to allow for more stability.

Check your tractor's hydraulic fluid level after cycling hydraulics and filling new cylinders and lines. Refill if necessary.



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.
- REMOVE AND STORE THE WING LOCK PINS BEFORE LOWERING WINGS.
- WITH WINGS DOWN, ALWAYS INSTALL HYDRAULIC CYLINDER CHANNEL LOCK(S) FOR TRANSPORTING.

22126

HITCHING-3 POINT MODELS

By using a combination of the hitch pin, spacers, and bushings, the Wil-Rich 3-point cultivators will hitch to a category II or III Quickhitch or 3-point. Refer to your tractor's operator's manual for exact hitching procedures.

HITCHING-DRAWN MODELS

After backing your tractor into position, attach the cultivator hitch to the tractor drawbar, using a hitch pin of adequate strength for the tractor-cultivator combination. Lock the pin in place to prevent loss (particularly when transporting). It is recommended that a safety chain be used for road transport.

Connect the cultivators hydraulic hoses to the proper couplers on your tractor.

NOTE: AN OPTIONAL POLE JACK MAKES THE HITCHING OPERATION EASIER.

TRANSPORTING

A S.M.V. (Slow Moving Vehicle) emblem should be used at all times while traveling on public roads.

Always place the machine in the transport position, always use wing lock pins (See Fig.2) and cylinder channel locks (See Figs. 7, 8). Never depend on your tractor's hydraulic system to carry the weight of the implement while transporting.

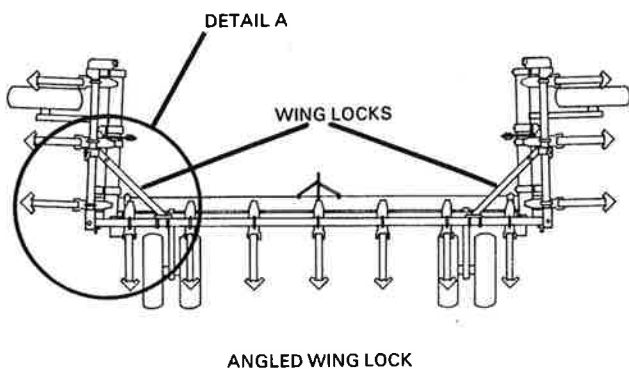
NOTE: USE EXTREME CAUTION WHEN WORKING AROUND OVERHEAD POWER TRANSMISSION LINES.



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.

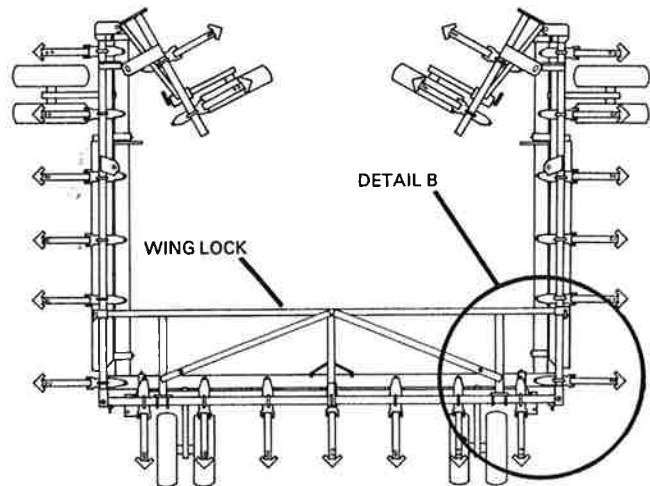
Comply with your state and local laws governing highway safety when moving machinery on a highway.

NOTE: BEFORE RAISING OR LOWERING WINGS, BE SURE WING LOCK PINS HAVE BEEN REMOVED AND PROPERLY STORED.



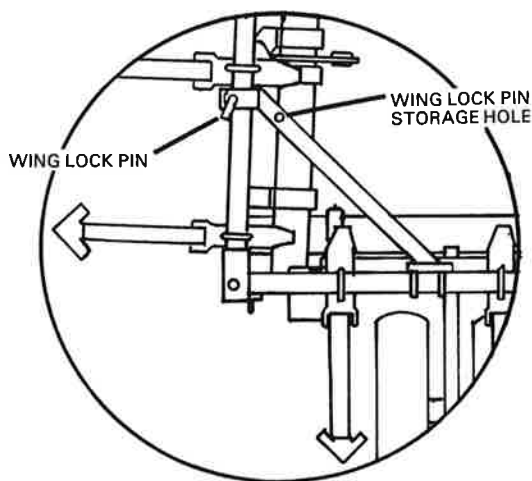
ANGLED WING LOCK

PI-75615



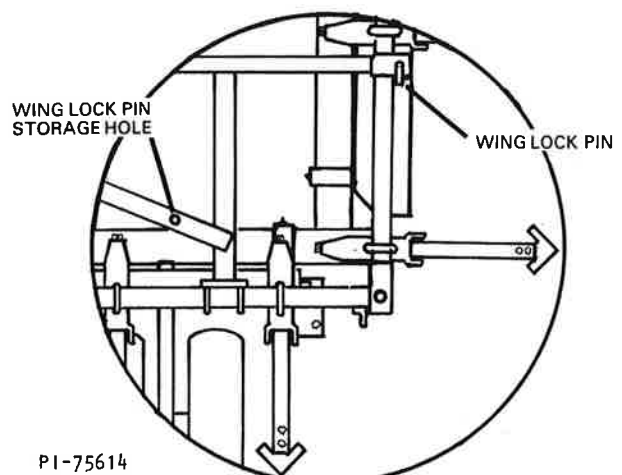
FULL WIDTH WING LOCK

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DETAIL A

PI-75615



DETAIL B

PI-75614

Fig. 2 Wing Locks

WING LIFT CIRCUITRY

Wil-Rich field cultivators equipped with larger than 2-1/2 ft. wings have hydraulic wing lift cylinders to fold the machine for road transport.

Wing lift cylinders are equipped with an integral restrictor on the rod end cylinder port (See Fig. 3). This allows the wings to lower at a slower rate and prevents the wings from falling too fast should there be some type of hydraulic failure.

Fig. 4 (next page) shows a simple two (2) cylinder circuit used to fold a pair of wings. This system is used on Wil-Rich cultivators with a single pair of folding wings.

Multiple wing cultivators use a parallel hydraulic system as shown in Fig's 5 and 6. (next page) Pressure flows to all cylinders at once through a common line from the tractor. Thus the cylinders or pair of cylinders with the least amount of weight to lift will actuate first.

This type of hydraulic system properly sequences the folding and unfolding of the cultivator wings. Check that your hydraulic system is properly connected before operating.

Lower the wings to the ground and hold the tractor control lever until all cylinders are completely extended. Fully extending the cylinders allows the wings to flex properly in the field.

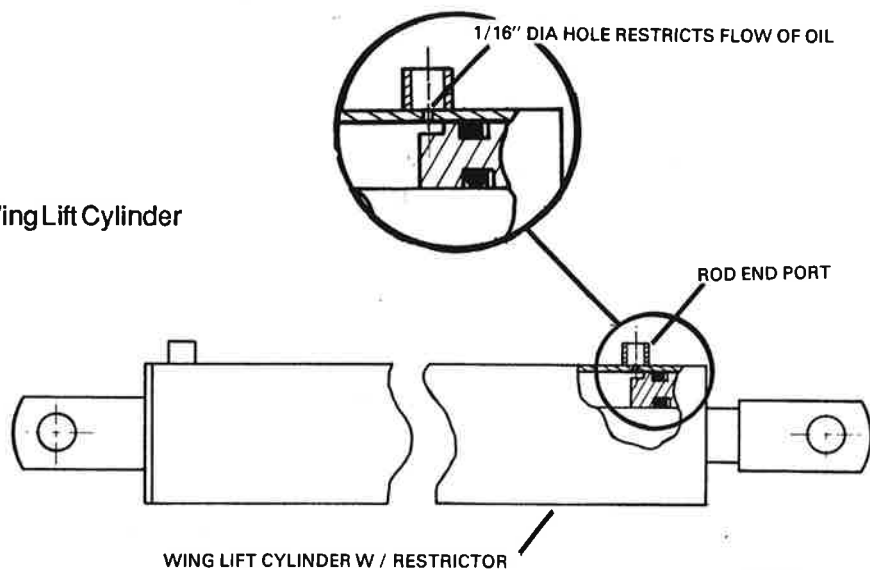
When raising the wings be sure the wing lock(s) is properly positioned to allow the wings to fold and that the wing lock pins have been removed and stored. Fold the main wings until they contact the clevis and install wing lock pins.



CAUTION

THIS CYLINDER HAS AN INTEGRAL RESTRICTOR ORIFICE AND MUST BE REPLACED WITH AN IDENTICAL CYLINDER.

Fig. 3 Wing Lift Cylinder

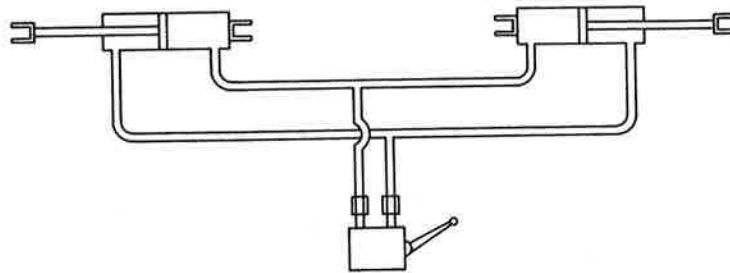


PI-75625



- 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.
- NEVER FORCE THE REMOVAL OF A WING LOCK PIN. CHECK ALL HYDRAULIC AND MECHANICAL WING CONNECTIONS BEFORE REMOVING A TIGHT PIN.
- ALWAYS INSTALL WING LOCK PINS BEFORE TRANSPORTING OR STORING.
- REMOVE AND STORE WING LOCK PINS BEFORE LOWERING WINGS.

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PB-75605

Fig. 4 Two Cylinder Wing Lift Circuit

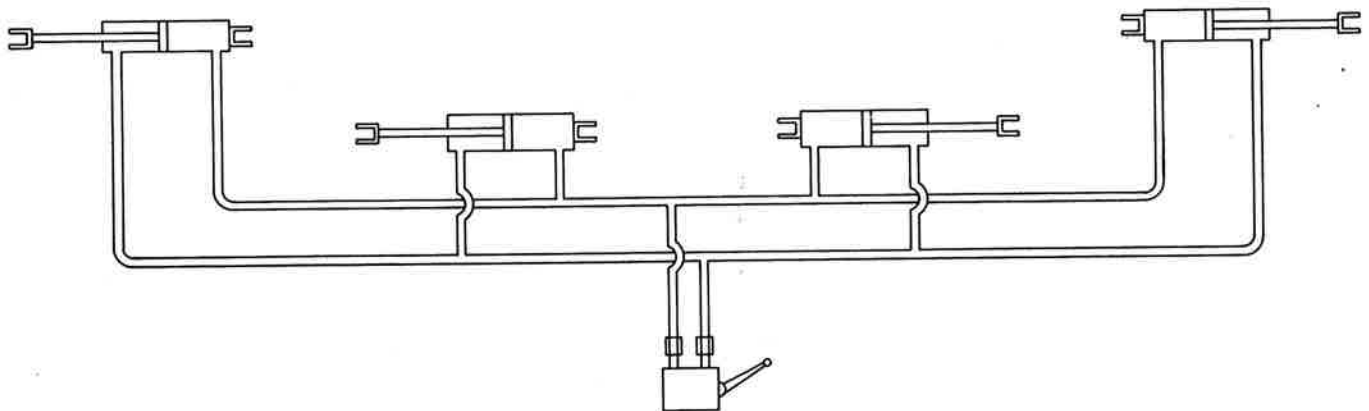


Fig. 5 Four Cylinder Wing Lift Circuit

PC-75606

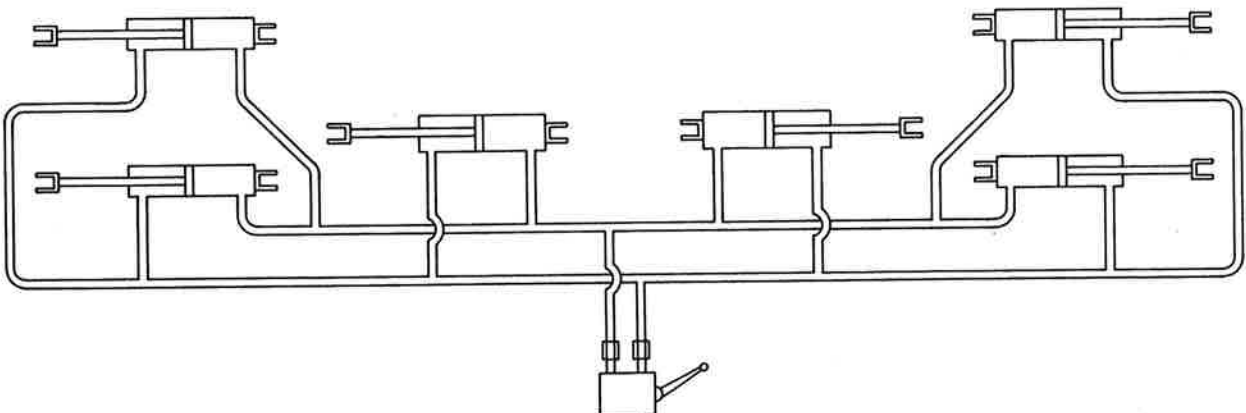


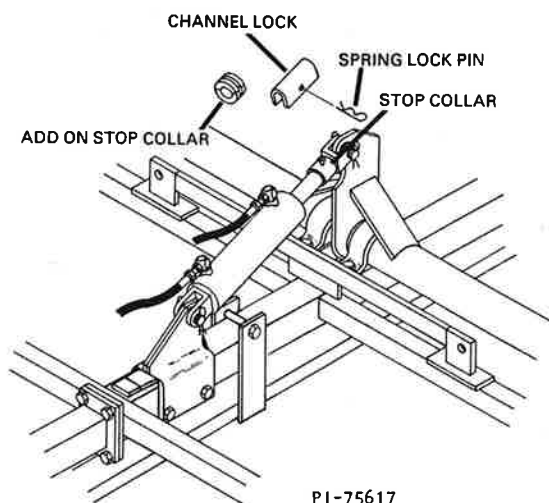
Fig. 6 Six Cylinder Wing Lift Circuit

PC-75607

MAIN FRAME DEPTH ADJUSTMENT

3-point cultivator main frame depth is regulated with the power lift of the tractor. Consult your tractor's operators manual for additional information. Depending on cultivator size and/or application, gaugewheels are available to provide additional depth support. If required, see optional equipment section.

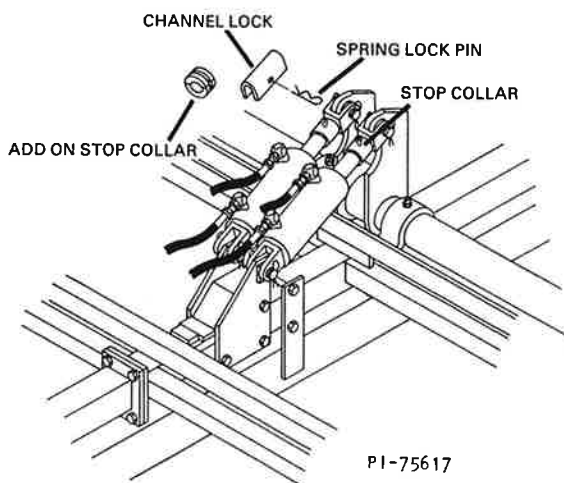
Drawn cultivator main frame depth is regulated by a hydraulic cylinder(s). (See Fig's 7 & 8). The depth is mechanically set by turning the stop collar "down" the cylinder rod for less depth and "up" the rod for more depth. An add-on stop collar is provided if the stop collar doesn't provide a shallow enough setting.



PI-75617

13FT MAIN FRAME (SHOWN)

Fig. 7 Main Lift Cylinder



PI-75617

17FT MAIN FRAME (SHOWN)

Fig. 8 Main Lift Cylinders

NOTE: IT IS IMPORTANT TO SET THE CYLINDER STOP COLLARS EQUALLY WHEN THE MAIN FRAME HAS TWO DEPTH CONTROL CYLINDERS.

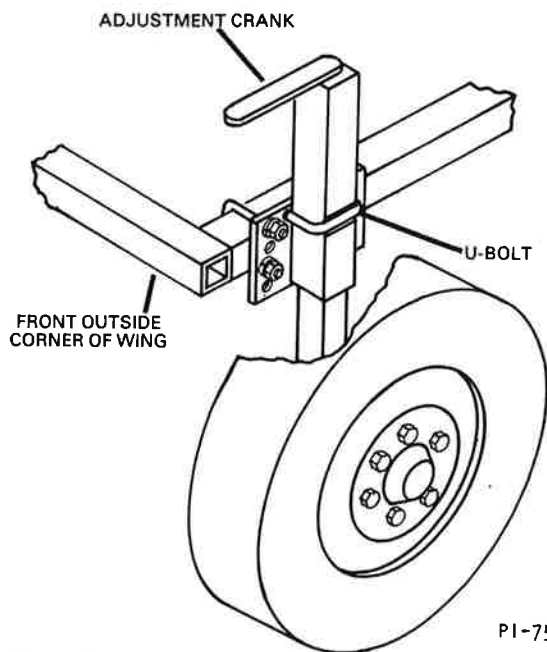
A channel lock is provided to mechanically lock the cylinders in transport position.

WING DEPTH ADJUSTMENT

Wing depth on all Wil-Rich cultivators is held mechanically by independent gaugewheels, an adjustment linkage, or an adjustment rod with hydraulic wings.

GAUGEWHEEL WINGS:

To set gaugewheels, it is advisable to have the weight off the tire, loosen the U-bolt which holds the leg in position and turn the crank to raise and lower the tire. (See Fig. 9.)



PI-75613

Fig. 9 Gaugewheel

CULTIVATOR DEPTH CIRCUITRY

MECHANICALLY LINKED WINGS:

To set the adjustment linkage, lower the cultivator until it is resting on the shanks. This will remove the majority of the weight from the adjustment linkage, allowing it to be turned easily. Shortening the linkage will raise the wing, lengthening the linkage will lower the wing. (See Fig. 10.)

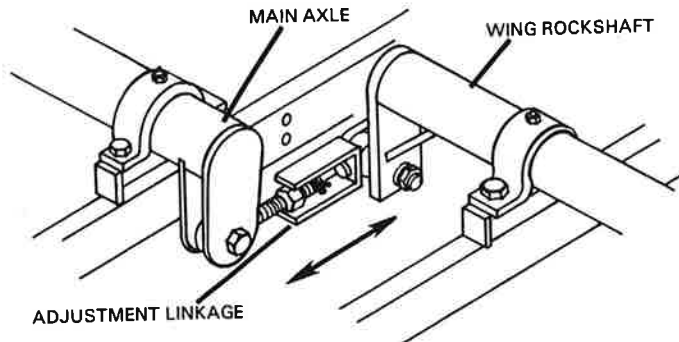


Fig. 10 Adjustment Linkage

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HYDRAULICALLY LINKED WINGS:

To set the wing axle, the adjustment rod is turned either in or out. Lower the cultivator until its weight is support by the shanks. Turning the adjustment rod "into" the adjustment tube will lower the wing and turning it "out" will raise the wing (See Fig. 11).

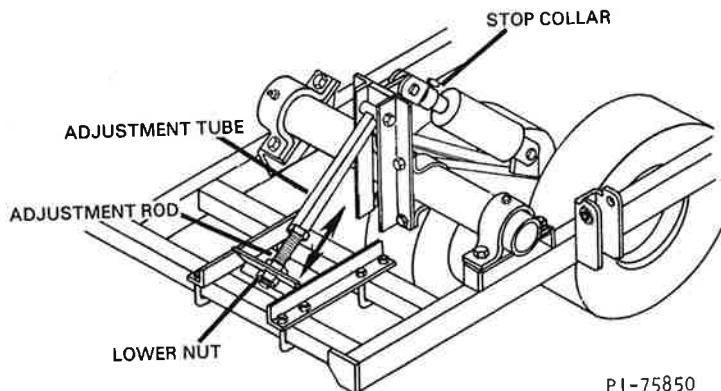
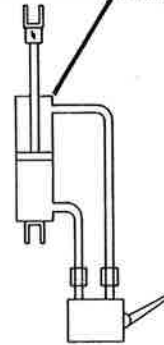


Fig. 11 Hydraulic Wing Adjustment

PI-75850

A single main frame depth control cylinder, used on models without wings or with mechanically linked wings. (See Fig. 12)

4 X 8 OR 5 X 8 STANDARD CYLINDER

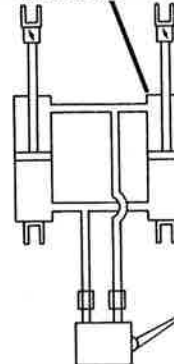


PI-75610

Fig. 12 Depth Control Cylinder

Twin main frame depth control cylinders, used on models with mechanically linked wings. (See Fig. 13).

4 X 8 STANDARD CYLINDERS

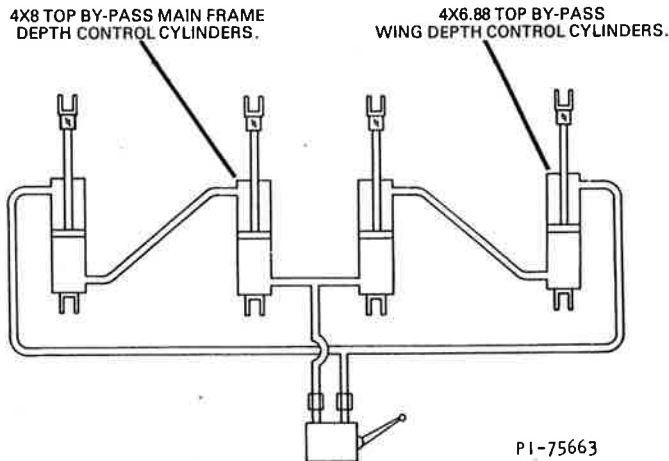


PI-75610

Fig. 13 Depth Control Cylinders

Twin main frame top bypass depth control cylinders with top bypass wing depth control cylinder, used on models with a pair of hydraulic wings. (See Fig. 14).

Top by-pass cylinders will by-pass oil when the cylinder is fully extended. This by-pass condition will exist when the implement is raised to maximum ground clearance. At this time oil will by-pass through the 1/16" dia. by-pass hole and go on to the next cylinder. (See Fig. 15)



NOTE: TO SYNCHRONIZE OR RE-SYNCHRONIZE THE BY-PASS SYSTEM, THE TRACTOR CONTROL VALVE IS HELD IN THE RAISED POSITION UNTIL THE ENTIRE IMPLEMENT IS RAISED AND ANY AIR THAT MAY BE IN THE LINES HAS BEEN EXPELLED.

Fig. 14 Depth Control Cylinders

The top by-pass cylinders are connected in series and therefore to charge the lines between the cylinders the cylinders have the capability of passing oil past the cylinder piston to the next cylinder.

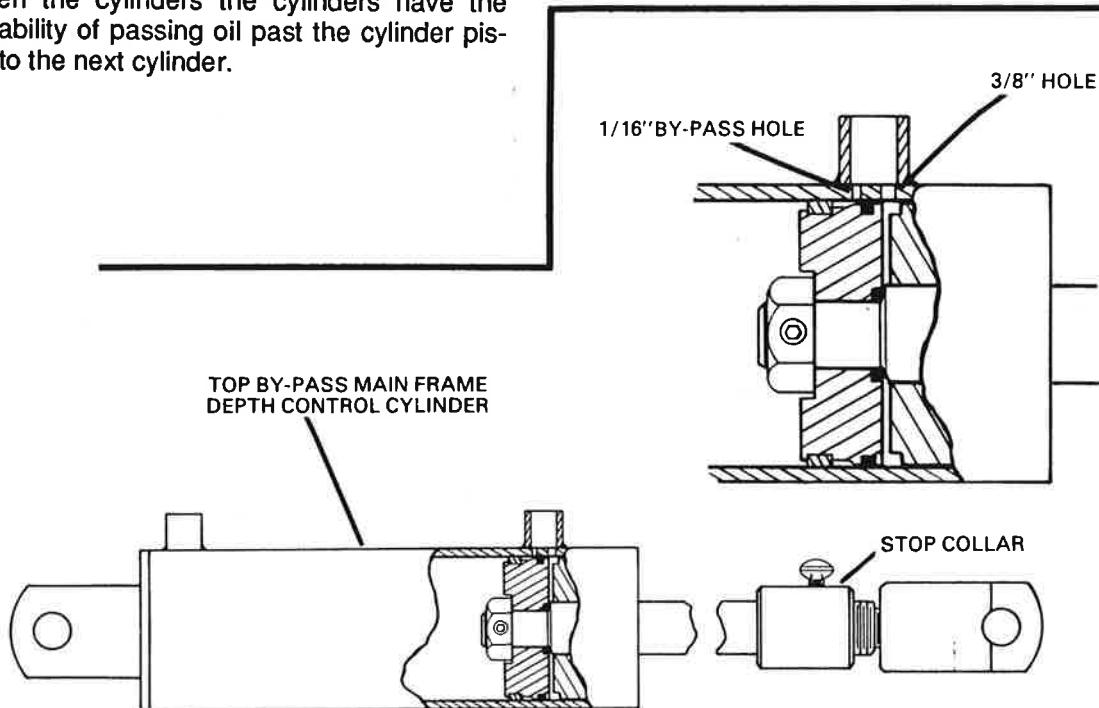
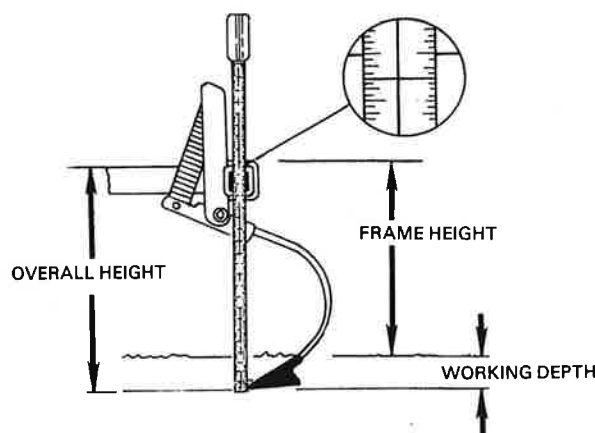


Fig. 15 Top Bypass Cylinder

LEVELING CULTIVATOR

Proper field setting will require the use of a tape measure.

Hook the tape measure under the shovel point and measure to the top of the frame tube to get an overall height dimension. Subtract your working depth from the overall height dimension to arrive at a frame height dimension. The frame height dimension is then used as a gauge to level the machine. (See Fig. 16) Although final leveling must be done in the field at working depth, it would be to your advantage to make pre-field adjustments in the yard to speed up the process in the field.



PI-75612

Fig. 16 Frame Height

LEVELING - 3 POINT CULTIVATORS

Front to rear leveling of 3pt. hitch models is done with the tractor control arms. Consult your tractor operator's manual for specific information.

Optional gauge wheels may be attached to the main frame to help maintain even depth.

The wings are set after the main frame is leveled at working depth.

Wings available to 3pt. cultivators have independent gaugewheels to regulate the wing depth. (See Fig. 9)

The gaugewheels are set by loosening the U-bolt that locks the leg and turning the adjustment crank until the ends of the wings are level with the main frame, at working depth. Retighten U-bolt to secure gaugewheel leg.

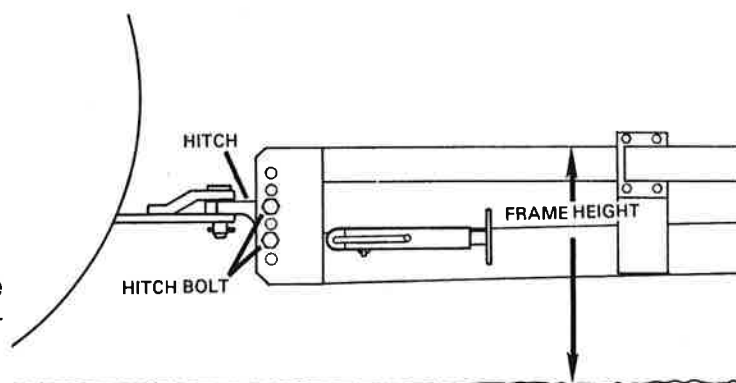
LEVELING-DRAWN CULTIVATORS

Depth setting should be done in a level area of the field.

LEVELING-MAINFRAMES

Set the hitch so the top of the pole is equal to the frame height dimension. The hitch is adjusted by removing the hitch bolt and moving the hitch to the next hole. (See Fig. 17)

NOTE: ON MACHINES EQUIPPED WITH A DUAL CAST HITCH, FLIPPING THE HITCH OVER WILL PROVIDE A FINER ADJUSTMENT THAN MOVING IT TO THE NEXT SET OF HOLES. (AN ADJUSTMENT OF 1" IS OBTAINED INSTEAD OF 2"). ALSO WHEN MOUNTING THE DUAL CAST HITCH, SEPARATE, WHERE POSSIBLE, THE TWO HITCH BOLTS TO PROVIDE MAXIMUM SUPPORT. (SEE FIG. 17)



PI-75612

Fig. 17 Hitch

Drawn cultivators use one or two main lift cylinders to set the main frame to your frame height dimension. When set at working depth turn the stop collar(s) down against the cylinder body to lock the depth setting. (See Fig's 7 & 8)

It is important to have the hitch and main frame set evenly to assure equal penetration between front and rear shanks.

LEVELING - WINGS

NOTE: THE WINGS ARE LEVELED AFTER THE MAIN FRAME IS LEVELED AT WORKING DEPTH.

NOTE: LARGER CULTIVATORS MAY HAVE MORE THAN ONE SET OF WINGS REQUIRING DEPTH SETTING. ON THESE MODELS THE INNER WINGS SHOULD BE LEVELED FIRST.

The following instructions are given on the leveling of wings. There are no specific instructions for each type or size of cultivator with wings. Determine the type or types of wings your cultivator has and follow the instructions given below. On cultivators with more than one set of wings to level, remember, level the inside wings first.

GAUGEWHEEL WINGS:

The gauge wheels are set by loosening the U-bolt that locks the leg and turning the adjustment crank until the ends of the wings are level with the main frame, at working depth. Retighten U-bolt to secure gauge wheel leg. (See Fig. 9)

MECHANICALLY LINKED WINGS:

Wings with rockshafts are leveled by setting the adjustment linkage (See Fig. 10). To set the adjustment linkage, lower the cultivator until it's weight rests on the shanks. Remove the spring lock pin and turn the clevis to lengthen or shorten the linkage until the ends of the wings are level with the main frame at working depth.

Shortening the linkage will raise the wings. Lengthening the linkage will lower the wings.

Reinstall the spring lock pin to hold the setting.

It may be necessary to shorten the adjustment linkage during a season to compensate for wear.

HYDRAULICALLY LINKED WINGS:

Wings with hydraulic cylinders are leveled by setting the adjustment rod. (See Fig. 11)

To set the adjustment rod, lower the cultivator until it's weight rests on the shanks. Loosen the lower nut on the end of the adjustment rod and turn the rod in or out of the adjustment tube until the ends of the wings are level with the main frame at working depth.

NOTE: MAKE SURE ALL TIRES ARE EQUALLY INFLATED.

Retighten the lower nut on the end of the adjustment rod to lock the setting.

When the wings are set level with the main frame at working depth, the stop collars on the wing lift cylinders are to be turned down against the cylinder body and the thumbscrew tightened to lock in the depth setting.

NOTE: IT IS IMPORTANT THAT ALL OF THE STOP COLLARS CONTACT THE CYLINDERS WHEN AT WORKING DEPTH. IF ALL THE STOP COLLARS FAIL TO CONTACT THE CYLINDERS AT THE SAME TIME, THE FIRST TO CONTACT WILL STOP THE LOWERING OF THE MACHINE AND THE REMAINING CYLINDERS WILL NOT BE POSITIVELY LOCKED.

NOTE: BE SURE TO CHECK LEVELING OF CULTIVATOR WHENEVER WORKING DEPTH CHANGES, WHEN CHANGING FIELDS, OR WHEN CHANGING TRACTORS.

SHANK & SHOVEL ADJUSTMENT

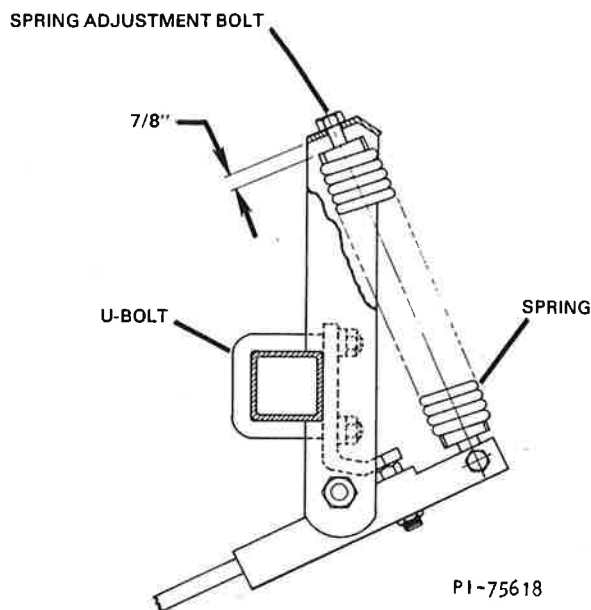
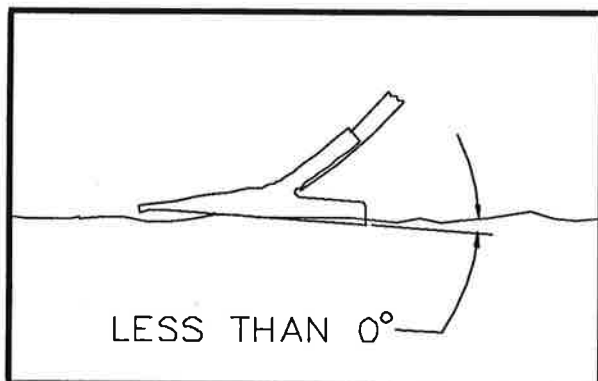


Fig 18 Shank Assembly

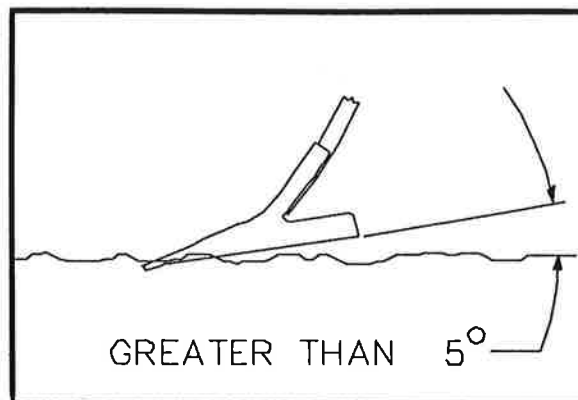
Each shank comes fully assembled from the factory. Install the shanks in their proper location (See assembly manual for shank placements.) and securely tighten U-bolt nuts.

47 degree stem angle shovels are recommended. See your Wil-Rich dealer for a complete shovel shape, size and thickness listing.

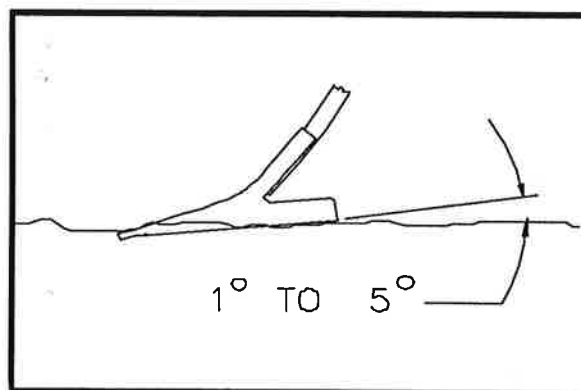
It is important how sweeps meet the ground, as it will affect performance.



Shovel point up: INCORRECT POSITION - The shovel will have a tendency to ride out of the soil, running over rather than plowing out weeds.



Shovel point down-excessively: INCORRECT POSITION - The shovel will have a tendency to pull the shank deeper, plowing weeds at the point, but cutting weeds above ground with the wings.



Shovel point down slightly: CORRECT POSITION - The shovel will now work most effectively, cutting weeds from the point thru the wings.

NOTE: PERIODIC CHECKS SHOULD BE MADE TO ASSURE THAT ALL NUTS AND BOLTS REMAIN SECURELY TIGHTENED.

NOTE: BE SURE TO MAINTAIN ADEQUATE TIRE/SHOVEL CLEARANCE ON SHANKS LOCATED IN AND AROUND THE WHEEL WELL WHEN MACHINE IS FULLY RAISED OR LOWERED.

MAINTENANCE



CAUTION

DO NOT ATTEMPT TO CLEAN, ADJUST, OR LUBRICATE CULTIVATOR WHILE IT IS IN MOTION.

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

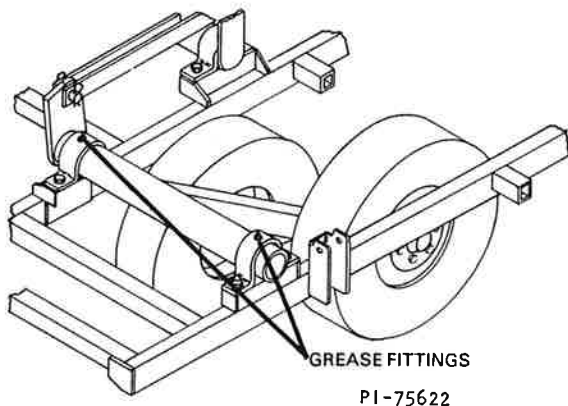


Fig. 19 Axle Caps

AXLE CAPS

All axle caps should be greased once a day with a good quality grease. Lower machine onto the shovel points to relieve pressure on the caps which will make greasing easier. (See Fig. 19)

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 re-pack walking tandem assemblies once each season.

The spindle nut should be tightened to allow a heavy drag when assembly is rotated by hand. (See Fig. 20)

HUB AND SPINDLE ASSEMBLIES

Clean and re-pack hub and spindle bearings once each season.

Tighten spindle nut so that there is a slight drag on the wheel when turned by hand. (See Fig. 20)

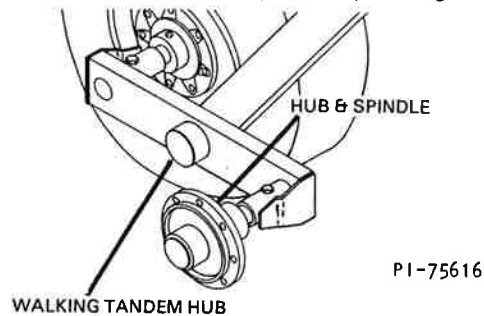


Fig. 20 Walking Tandem

CYLINDER SHAFTS

If cylinder shafts are left exposed for any extended period of time, they should be coated with grease to protect them from rust and corrosion.

STORAGE

NOTE: IF POSSIBLE STORE YOUR CULTIVATOR INSIDE.

At the end of a season; clean trash, soil, and dirty grease from the machine and re-lubricate.

On small cultivators, fold and pin the wings into the wing locks, (if so equipped) retracting the cylinder rods to prevent them from rusting.

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

Avoid possible damage to the hydraulic system by lowering the machine onto the shank and relieve the pressure on the system. Doing this will also prevent damage to the tires by removing the cultivator's weight.

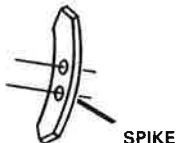
Coat the shovels with grease and place boards under the points to prevent the cultivator from settling into the ground.

OPTIONAL EQUIPMENT

SHOVELS AND SPIKES

Spikes are recommended for deep penetration, hard soil conditions, killing of quack grass and other grassy weeds, and also for general tillage. These spikes are reversible for longer wear

- 2" Reversible Spike
- 2" Hard Surface Spike
- 2" Dura-Face Spike



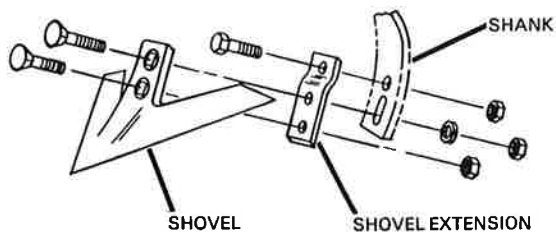
SPIKE

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

- 9" Dura-Face Sweep
- 4" Shovel (924)
- 7" Low Crown Shovel (724)
- 9" Low Crown Shovel (724)
- 7" Low Crown Shovel (924)
- 9" Low Crown Shovel (924)
- 10" Low Crown Shovel (924)
- 12" Low Crown Shovel (924)
- 7" High Crown Shovel
- 9" High Crown Shovel
- 10" High Crown FC Shovel
- 12" High Crown FC Shovel

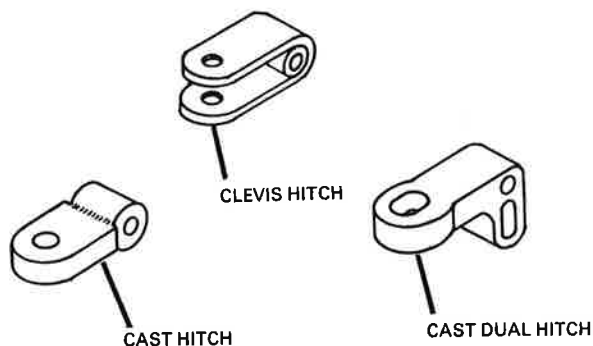
SHOVEL EXTENSION

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



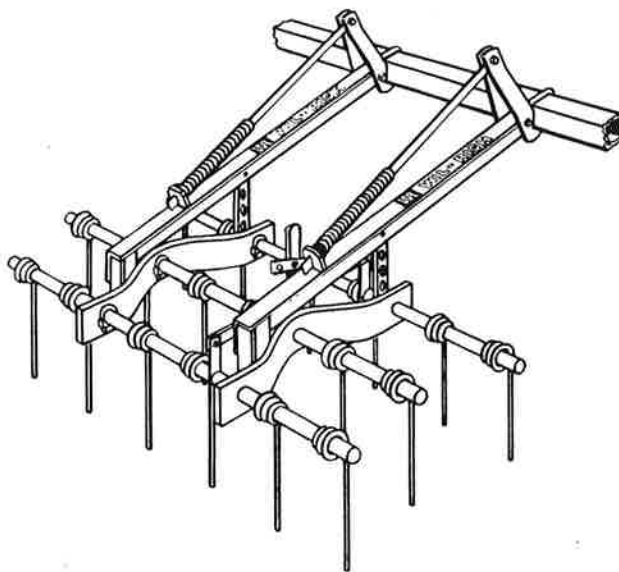
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HITCHES

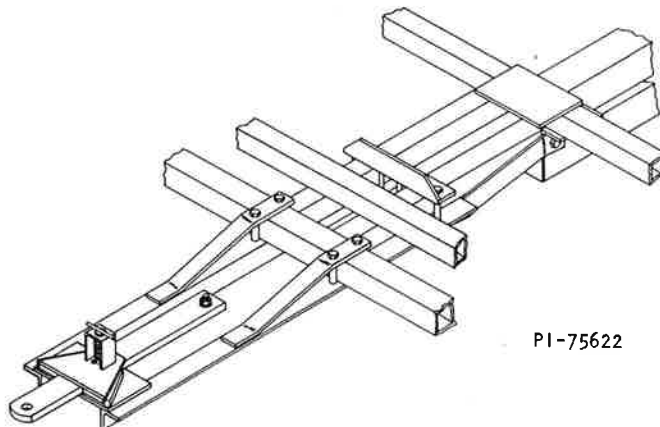


HARROWS

Wil-Rich harrows are available in 3-bar and 4-bar models to fit any size field cultivator.

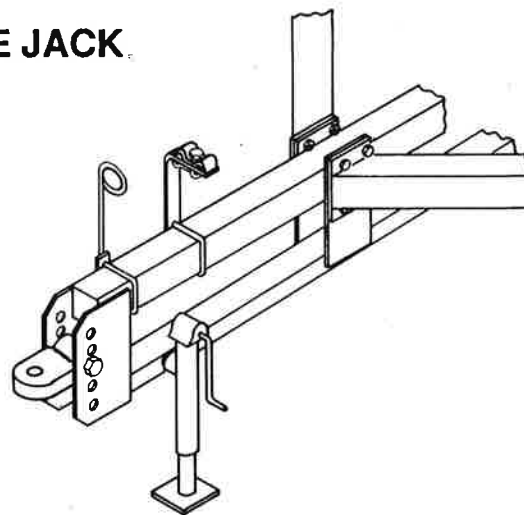


AUXILIARY HITCH



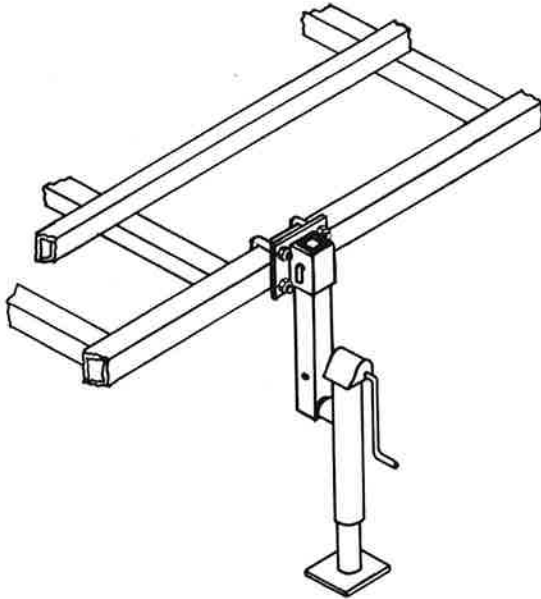
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POLE JACK

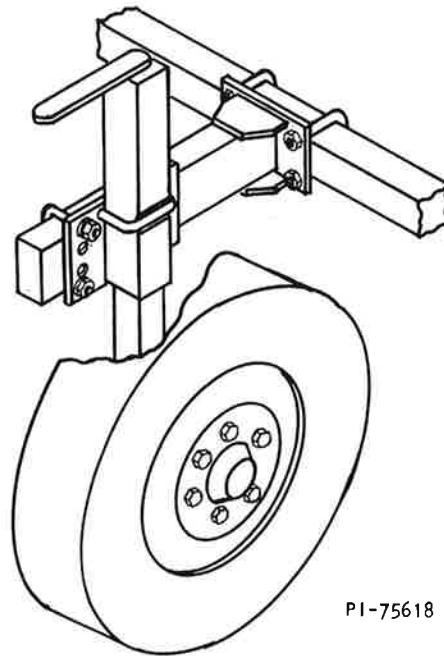


REAR JACK STAND

The rear jack stand kit can be attached to the rear of the cultivator to prevent it from tipping backwards. The pole jack, which attaches to the jack stand, must be ordered separately.

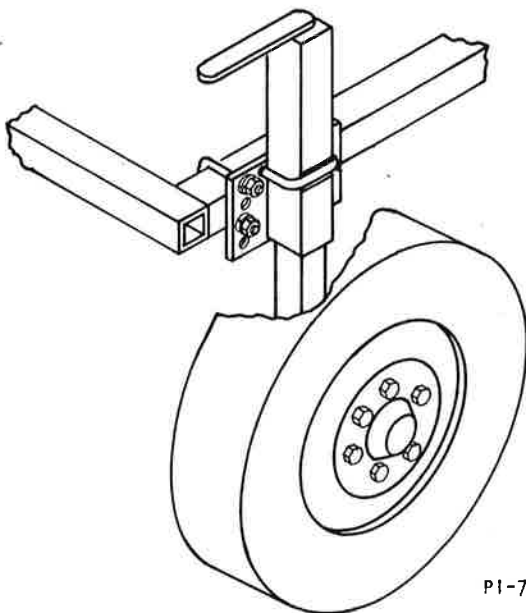


STABILIZER GAUGEWHEEL



PI-75618

GAUGEWHEEL



PI-75613

TROUBLE SHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
Poor or uneven penetration	Incorrect adjustments on main frame or wings.	See leveling, page 12.
		Make sure wing cylinders are fully extended.
	Hitch not adjusted properly	Install clevis hitch or cast hitch in proper hole to keep machine level.
	Hydraulic malfunction - air in lines, cylinders or hoses leaking or not installed properly.	Check for oil leakage in cylinders, hoses and fittings. Make sure all hydraulic cylinders and hoses are properly connected.
	Worn shovel points.	Adjust stop collar of main lift cylinder(s) to compensate for wear. Replace shovels if wear is severe.
Settling of entire implement from raised position.	Leaking cylinder	Replace cylinder seals
	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 page 7 and install correct cylinder.
Machine will not pull straight (skewing)	Cultivator not level	See leveling, page 12.
	Incorrect shank placement	Check shanks for proper location
	Tires not equally inflated	Inflate all tires to recommended pressure.