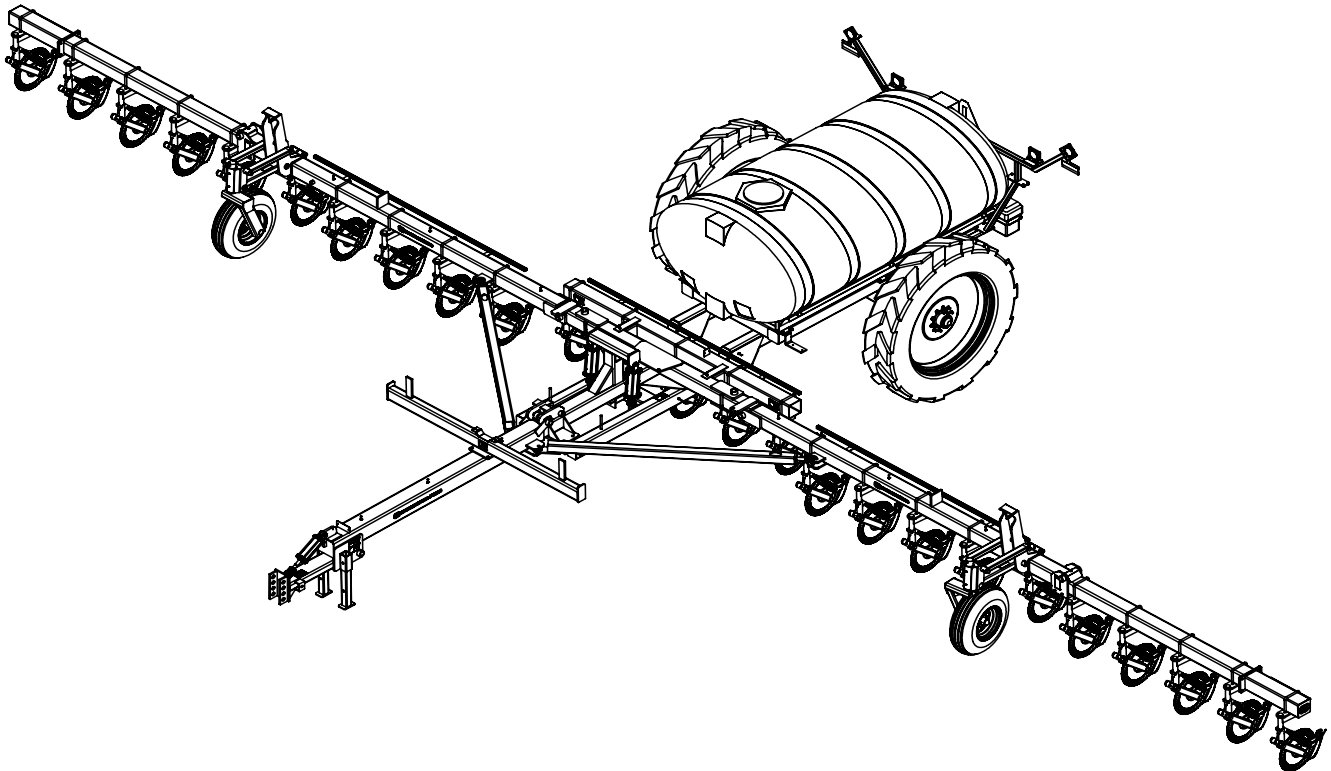


KONGSKILDE F3500

LIQUID SIDEDRESS APPLICATOR-OPERATOR'S MANUAL

Kongskilde
F3500



Model
F3500

763500901 60' Liquid Sidedress Applicator

*Model may not be exactly as shown.
Kongskilde reserves the right to make changes to product designs and specifications without notice or obligation to rework.
See your local Kongskilde representative for current product specifications and options.

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INTRODUCTION

This manual has been developed to assist you in operating and servicing your new Kongskilde product. Read it carefully: it will provide you with information that will enable you to obtain years of dependable service.

Before attempting to operate this equipment, read, and understand this manual fully and follow all safety precautions. In addition, make sure that every individual who operates or works with this equipment is familiar with these instructions. Observation of these safety precautions will make your farm a safer place to work.



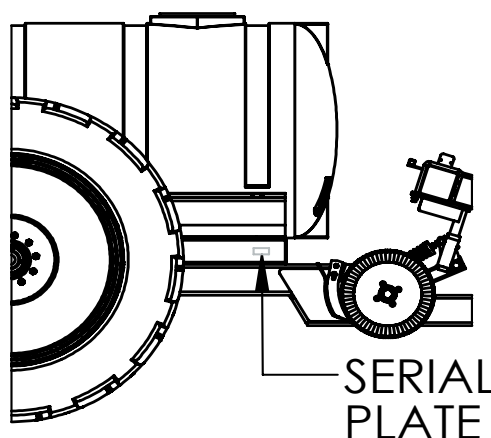
**READ THE OWNERS MANUAL BEFORE
OPERATING OR SERVICING THE MACHINE**

Machine Identification

The machine manufacturer along with the model and serial number are provided on the metal Serial Number Plate located on the lift cylinder tower on the mainframe.

Please record the model and serial number of the machine on the registration form provided in the back of the book and have it ready for reference when making inquiries regarding spare parts or service information.

If you did not receive a warranty registration form, contact your dealer and they will obtain one for you. It is important that the warranty registration be completed and returned to Kongskilde to validate the warranty protection period.



SAFETY ALERT SYMBOL:

This safety symbol, is used to call your attention to instructions concerning the personal safety of the owner or operator.

WARNING! Do not operate this machine unless you have read and understood the instructions and safety information in the Kongskilde Operator's Manual.

Failure to follow the instructions for safe operation of the equipment could result in serious injury or death. Proper care and operation of this implement is your responsibility.

Contact your dealer or Kongskilde for replacement manuals, safety decals and replacement parts.



SAFETY KEY WORDS & ALERTS:

The key words - DANGER, WARNING and CAUTION used alone or in combination with the Safety Hazard Alert Symbol in this Operators Manual and on Safety Decals located on the framework of the machine, are used to identify hazards on or near the implement.

Safety Instructions indicate procedures which must be followed to avoid hazards.

Hazard Alerts are identified by the key word, and the symbol:

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

WARNING - A potential hazard or unsafe practice which **COULD** result in serious personal injury or death if the proper precautions are not taken.

CAUTION - A potential hazard or unsafe practice which **COULD** result in personal injury or in product or property damage if the proper precautions are not taken.



SAFETY DECALS:

Safety Decal Locations:

Safety Decals are located on the framework of the implement. The specific locations are chosen to provide optimal visibility to the operator or bystanders. In the case of hidden or obstructed hazards or safety precautions, the decals may be located on or near the hazard, or other convenient locations near hook-up points, adjustment devices or service points frequently visited by the operator.

Please read and obey all safety decals on the machine. Ensure they are kept clean and in good condition. Kongskilde is committed to safety and provides replacement safety decals and operator manuals at no charge if they become lost, damaged or illegible.

Each safety decal is identified by a part number, and are available through your Kongskilde Dealer.

IMPORTANT NOTICE:

Kongskilde cannot anticipate every possible circumstance that might involve a hazard with this product. The hazard alerts and safety instructions in this publication and on the product are therefore not all inclusive. If a tool, procedure, work method or operating technique not specifically recommended by Kongskilde is used, you must satisfy yourself that is safe for you and others. You must ensure that the implement will not be damaged or made unsafe by the operation, maintenance or repair procedures you choose.

Kongskilde will not be held responsible for any unauthorized modifications made to this product and will immediately void the warranty coverage.

PRODUCT SAFETY PRECAUTIONS



Make certain all safety decals, reflectors and SMV signs are applied to your machine. Refer to your local governmental regulations for more information on proper procedures and markings for safe road transport in your area.



IMPORTANT NOTE: This unit has a narrow transport width and a high center of gravity which may pose a tipping hazard when folded for transport.



Do not transport over 32 kmh (20 M.P.H.) Reduce speed in adverse weather, when turning or traveling on inclines or uneven ground. Always start and stop slowly..

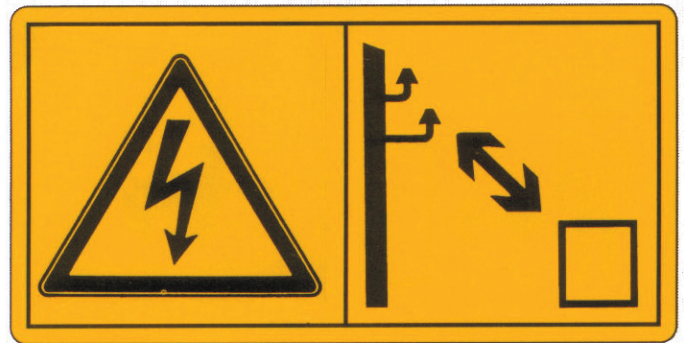




The operator is responsible at all times to comply with the local government regulations and insure the safe transport of the implement when transporting large or oversized implements on public or private roadways. Careful consideration must be given in order to prevent accidents with other vehicles and avoid coming in contact with obstacles such as: bridges, tunnels, overpasses, guard rails, road signs, traffic lights, power lines, public utilities, and other structures that may be encountered along the chosen route. In some jurisdictions the operator may be required to obtain special permits or arrange for escorts before transporting oversized equipment. Kongskilde is not liable for personal or property damage caused by inappropriate, unauthorized or unsafe transport or operation of equipment.



DANGER! Watch for wires.
Take care when transporting, folding or unfolding the implement around power lines. Serious injury or death to the operator or bystanders will result through direct or indirect contact with power lines.

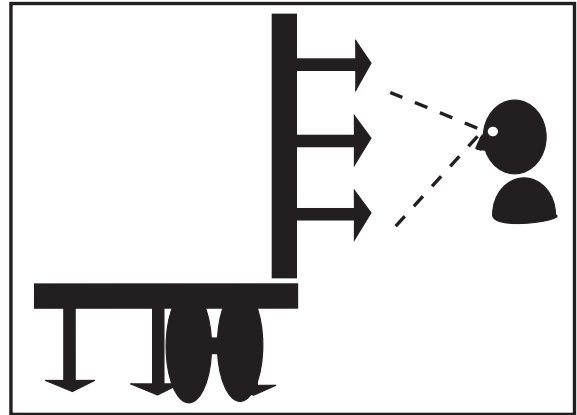


Never unfold when there are bystanders in the area of the wing fall zone. Be certain all persons are clear of working area in and around the machine whenever folding, unfolding, raising or lowering the machinery or in any way using the hydraulic system.





Be alert when walking around the machinery in the folded transport position to avoid walking into the edge of a sharp blade. Severe head or body injury could result.



Make sure that the tractor is shifted into park before getting out to remove transport locks and wing fold lock pins. Never remove wing lock pins or transport locks when the implement is sitting on uneven ground where tipping could occur.



Never remove transport lockout devices or unfold the unit unless cylinders are completely full of oil. Failure to properly charge the folding hydraulics with oil could allow the wings to free fall when unfolding, causing damage to the equipment and possible injury to the operator or bystanders. Never fold the implement wings by any mechanical method! Always charge the hydraulic system first and use it to fold and unfold the wings. Stand clear of the machine and watch for overhead hazards or objects in the wing-fall zone when folding and unfolding.

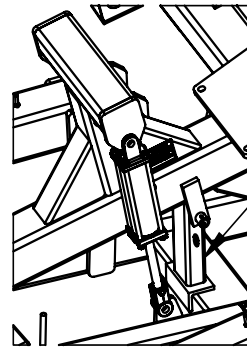


SAFETY DEVICES FOR Folding and Transporting Implements:



TRANSPORT LOCK

Fully raise machine and fold in wings. Lower slowly. Main transport lock engages automatically. Ensure transport lock fully engages before transport, storage, or working under machine.



MAIN
TRANSPORT
LOCK

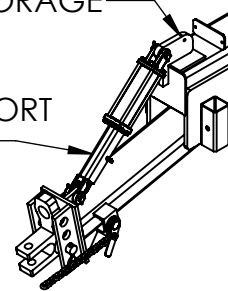


HITCH CYLINDER TRANSPORT LOCK

Always use hitch cylinder transport lock when transporting machine, storage, or working under machine.

HITCH TRANSPORT
LOCK STORAGE

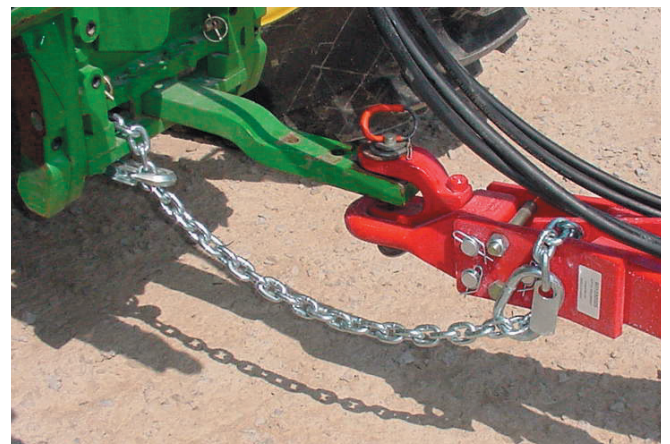
HITCH
TRANSPORT
LOCK



DRAW PIN AND SAFETY TOW CHAIN

Always use an approved hitch pin with safety lock pin when hooking towed implements to the tractor draw bar.

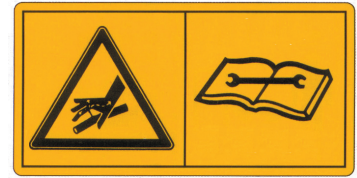
For added security, use a certified safety tow chain to connect the implement to the tractor draw frame before transporting.



MAINTENANCE & LUBRICATION



Use extreme caution around suspected hydraulic leaks or damaged hose lines. Hydraulic fluid under pressure can be extremely dangerous. Always wear hand and eye protection. Always lower the cultivator to the ground and release hydraulic pressure before performing maintenance to the hydraulic system.



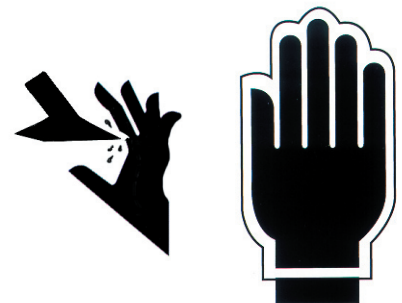
Take care to keep the floor area clean when performing maintenance to the machine. Help protect our environment and prevent injuries from falls by cleaning up any spilled or leaking fluids with absorbent products. Take care to dispose of contaminated rags or absorbents in accordance with your local environmental regulations. Put away tools and roll up any air lines or electrical cords that were used when making repairs to the equipment and dispose of scrap materials or worn out parts in an appropriate manner.



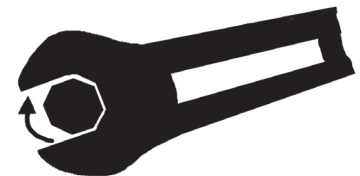
Never crawl under the machine to make repairs or adjustments or replace tines and shares, etc. unless you have properly blocked and supported the cultivator frame. The cultivator must be secured in a fixed position in order to prevent it from moving or falling before making any attempt to work underneath. Use suitable shop stands or lifting devices that can support the entire weight of the implement. Never use cement blocks, bricks, hollow tiles or other props that may crumble or collapse under continuous load.



Wear gloves when changing shares or removing share bolts as the edges can become extremely sharp when worn.



Regularly check all nuts and bolts for tightness and secure if loose. Replace worn out or damaged machine components. Establish a good routine for regular inspection, lubrication and maintenance in order to keep the machine in good operating condition.





TIRE PRESSURE:

Explosive separation of tire and rim can result in serious injury or death. To prevent tire explosion, maintain proper tire pressure. Inflating a tire below or above the recommended pressure can result in tire damage (see illustration below). Tires should only be mounted by properly trained personnel. Replace damaged or worn tires and rims immediately. Replace all missing lug nuts and bolts.

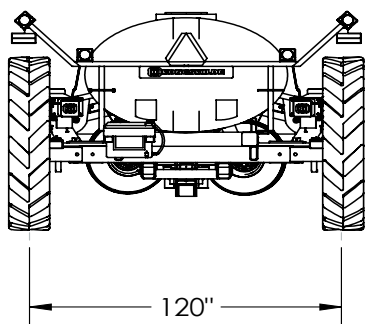
OPERATING PRESSURE RECOMENDED BY TIRE MANUFACTURER:

Titan 14.9R x 46.....Inflate to 68 psi (469 kPa)

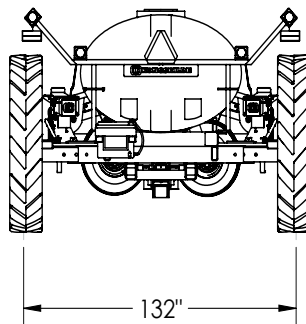
Titan 12.5L x 15.....Inflate to 52 psi (193 kPa)



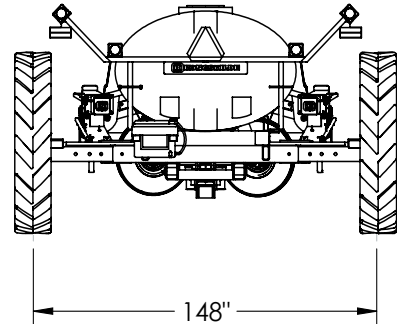
F3500 AXLE TRACK WIDTHS



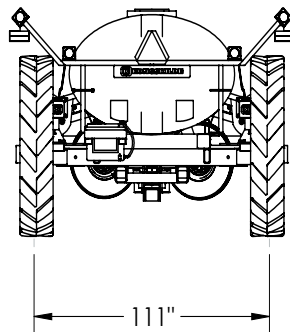
20", 30", 40"
ROW SPACINGS



22"
ROW SPACING



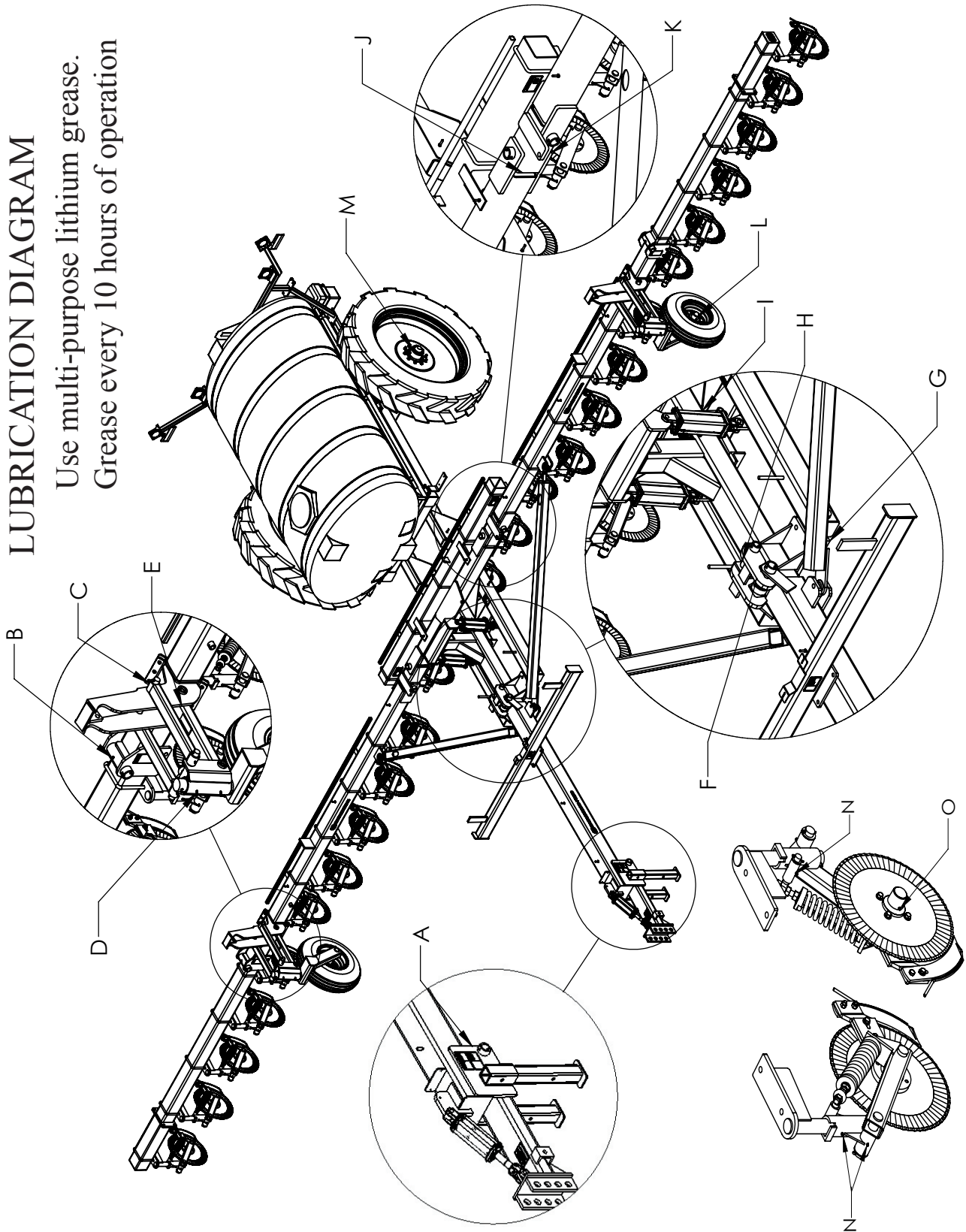
36", 38"
ROW SPACINGS



27.5", 28"
ROW SPACINGS

LUBRICATION DIAGRAM

Use multi-purpose lithium grease.
Grease every 10 hours of operation



LUBRICATION

GREASE POINTS	Qty	
A. Hitch Pivot	1	- Wipe grease fitting with a clean rag before greasing to prevent injecting contaminants into joint.
B. Outer Wing Pivots	2	
C. Upper Parallel Arms	8	
D. Caster Pivot	4	
E. Lower Parallel Arms	4	-Replace or repair any broken fittings.
F. Hitch Tube Roller	2	
G. Mainframe Pivot Blocks	2	-Ensure all grease fittings take grease. In fitting does not take grease, remove and clean thoroughly. Replace fitting if necessary.
H. Latch	1	
I. Transport Safety Pivot	1	
J. Inner Bushing Wing Pivot	2	
K.Outer Bushing Wing Pivot	2	
L. Gauge Wheel Hub	2	
M. Wheel Hub	2	
N. Coulter Swivel Casting	3/unit	
O. Coulter Hub	1/unit	

FIELD SET-UP OVERVIEW

1. Folding and Un-folding machine
2. Adjusting Coulter Depth
3. Nozzle/Orifice Charts
4. Injector Placement
5. Knife Placement
6. Adjusting Individual Coulter Depth and Down Pressure

INSTRUCTIONS

1. FOLDING AND UNFOLDING TOOLBAR



CAUTION: ENSURE BYSTANDERS ARE CLEAR OF TOOLBAR BEFORE ATTEMPTING TO FOLD OR UNFOLD MACHINE.

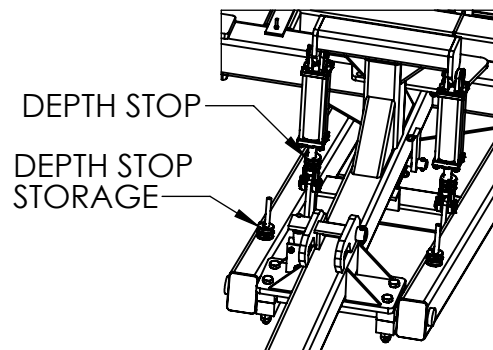
Folding Procedure

1. Using main lift lever, lift toolbar to completely raised position.
2. Position tractor in line with toolbar tongue and put transmission in neutral.
3. Lower front hitch until front hitch cylinder is completely collapsed.
4. Fold in wings until wings are over wing cradle.
5. Lift front hitch to fully raise position.
6. Reverse main lift lever and lower machine. Ensure main transport lock has fully engaged.
7. Continue lowering with main lift lever to pull wing caster wheels up.
8. Place transport lock in hitch cylinder.
9. Slowly lower hitch until cylinder hits transport lock.

To unfold toolbar, reverse steps above.

2. ADJUSTING COULTER DEPTH:

To adjust depth, use cylinder stops on lift cylinders. Cylinder stops range in thickness. Select desired thicknesses and place on lift cylinders. Ensure same thicknesses are used on each cylinder. To allow coulters to go deeper, decrease total stop thickness. To raise coulter depth, increase total stop thickness. When not in use, store depth stops on depth stop storage rod as shown below.



3. NOZZLES (INJECTORS)/ORIFICE PLATES (KNIFE) CHARTS:

KONGKSILDE INDUSTRIES

19500N. 1425E Rd HUDSON IL. 61748

NOZZLES FOR USE WITH LIQUID INJECTOR KIT

(Order 1 per row)

SPRAY NOZZLES Progressive Part # Tip #	PSI	Capacity One Nozzle in GPM	Gal. per acre - 30" Centers		
			4 MPH	6 MPH	8 MPH
701006 TP0004-SS	10	0.20	9.9	6.6	5
	20	0.28	13.9	9.2	6.9
	30	0.35	17.3	11.6	8.7
	40	0.40	19.8	13.2	9.9
701007 TP0006-SS	10	0.30	14.9	9.9	7.4
	20	0.42	21	13.9	10.4
	30	0.52	26	17.2	12.9
	40	0.60	30	19.8	14.9
701005 TP0008-SS	10	0.40	19.8	13.2	9.9
	20	0.57	28	18.8	14.1
	30	0.69	34	23	17.1
	40	0.80	40	26	19.8
701000 TP0010-SS	10	0.50	25	16.5	12.4
	20	0.71	35	23	17.6
	30	0.87	43	29	22
	40	1.00	50	33	25
701001 TP0015-SS	10	0.75	37	25	19
	20	1.06	52	35	26
	30	1.30	64	43	32
	40	1.50	74	50	37
701002 TP0020-SS	10	1.00	50	33	25
	20	1.41	70	47	35
	30	1.73	86	57	43
	40	2.00	99	66	50
701003 TP0030-SS	10	1.50	74	50	37
	20	2.12	105	70	52
	30	2.60	129	86	64
	40	3.00	149	99	74
701004 TP0040-SS	10	2.00	99	66	50
	20	2.83	140	93	70
	30	3.46	171	114	86
	40	4.00	198	132	99

ORIFICE PLATES FOR USE WITH LIQUID KNIFE KIT

(Order 1 per row)

To determine the orifice plate needed, use the following equations:

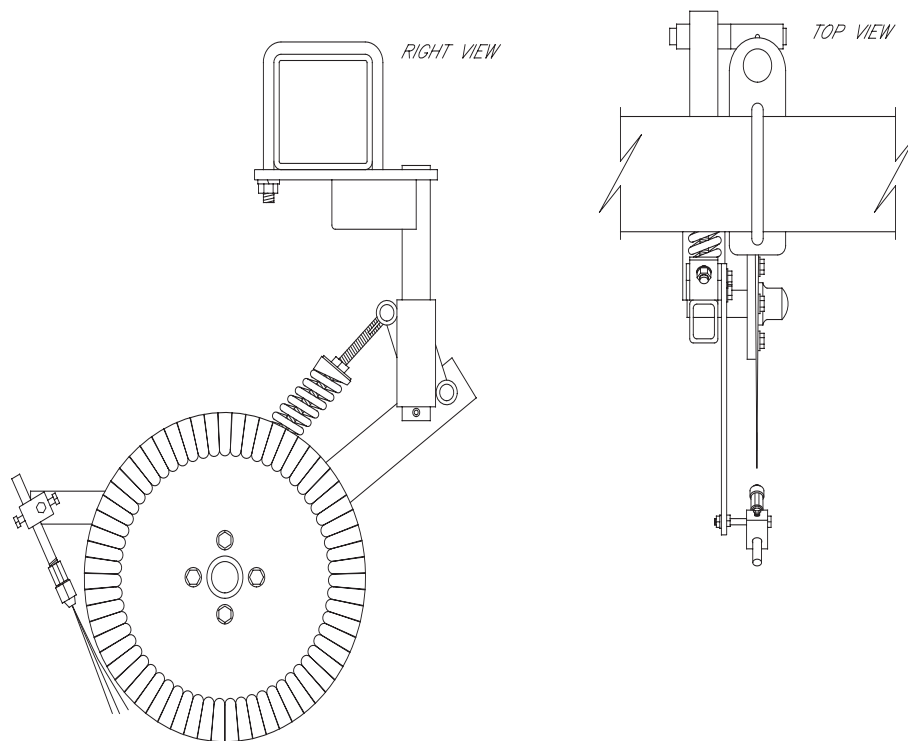
$$\text{GPM (Per Nozzle)} = \frac{\text{GPA} \times \text{MPH} \times \text{W (Row Spacing)}}{5940}$$

$$\text{GPA} = \frac{5,940 \times \text{GPM (Per Nozzle)}}{\text{MPH} \times \text{W}}$$

ORIFICE PLATES Progressive Part # Orifice #	Gallons per minute (GPM)			ORIFICE PLATES Progressive Part # Orifice #	Gallons per minute (GPM)		
	20 PSI	30 PSI	40 PSI		20 PSI	30 PSI	40 PSI
701015 CP4916-65	0.369	0.452	0.522	701019 CP4916-125	1.390	1.700	1.960
701016 CP4916-72	0.453	0.544	0.640	701013 CP4916-128	1.440	1.770	2.040
701009 CP4916-78	0.544	0.667	0.770	701017 CP4916-151	2.080	2.550	2.940
701010 CP4916-86	0.664	0.813	0.939	701014 CP4916-156	2.200	2.690	3.110
701012 CP4916-95	0.808	0.990	1.140	701018 CP4916-182	2.950	3.610	4.170
701011 CP4916-107	1.040	1.270	1.470				

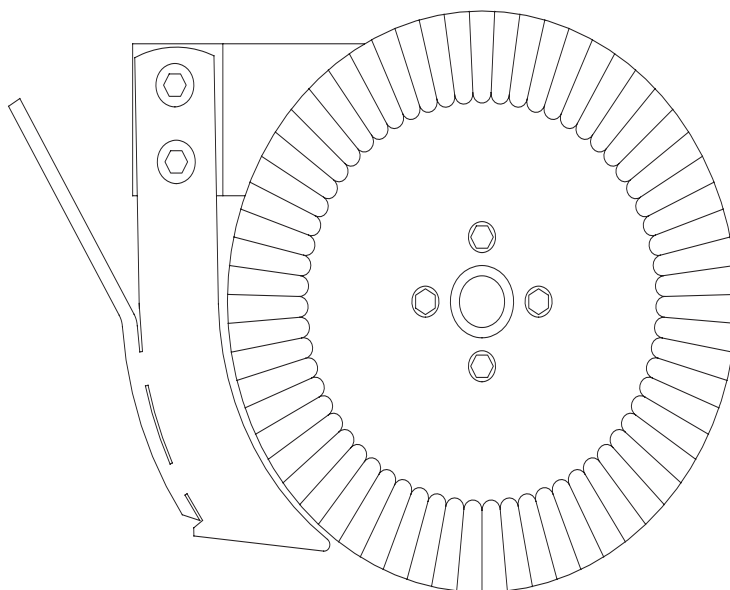
4. INJECTOR PLACEMENT:

Nozzle must be set so that stream just misses coulter. This ensures nitrogen is injected to maximum depth of coulter. This placement reduces chances of splatter. Proper size nozzle should be chosen to maintain 40 to 60 p.s.i. for the rate and speed being used.



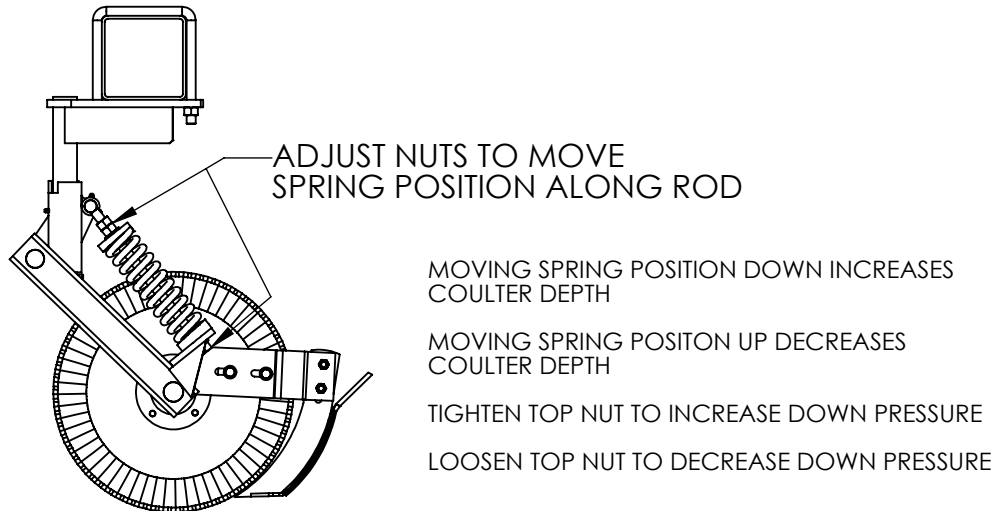
5. KNIFE PLACEMENT:

Place point of knife as close to disc as possible without touching, then move top of knife back away from coulter 1/4". Ensure knife is centered with disc blade. Use shims as needed to center knife.



6. ADJUSTING INDIVIDUAL COULTER DEPTH AND DOWN PRESSURE

- i. Coulter Depth- Equally adjust nuts on top and bottom of spring to move spring position along rod. Moving spring position down the rod increases coulter depth while moving spring position up decreases coulter depth.
- ii. Down Pressure-Tighten top nut to increase down pressure. Loosen top nut to decrease down pressure.



TROUBLE SHOOTING



OPERATIONAL TROUBLESHOOTING:

Problem	Cause	Remedy
1) Ground drive tire won't engage.	Toolbar not level causing pump to be raised	Level toolbar. See Field Set-up Instruction #6
2) Individual coulter won't penetrate ground.	a) Insufficient spring tension	Increase coulter spring tension. See Field Set-up Instruction #7
	b) Coulter too shallow	Increase coulter depth. See Field Set-up Instruction #7
3) Coulters not penetrating hard ground.	Upward force on hitch, play in hitch clevis	Raise clevis up one hole. Use washers on hitch pin between drawbar and clevis to tighten hitch connection.
4) Wing coulters shallower than center coulters.	a) Wings not lowered enough	a) Adjust wing stop bolts. See Field Set-up Instruction #2
	b) Wing cylinder fully extended, needs extended further	b) Remove cylinder pin on rod end. Loosen cylinder clevis set screw. Unscrew clevis 1/2 turn. Tighten set screw. Reinstall cylinder pin. Adjust wing stop bolts. See Field Set-up Instruction #2

HYDRAULIC TROUBLE SHOOTING CHART

Problem	Cause	Remedy
1) Hydraulic cylinders do not work in unison. Cylinders seem spongy.	Air in System	Raise implement to highest transport position. Hold the hydraulic lever on the tractor in the "raise" position for approx. 30 seconds. Cycle cylinder.
2) One wing raises while the other lowers.	Hose connections wrong.	Check circuit according to the hose layout diagram.
3) One section of implement settles down in use	a) External leak from cylinder b) Internal leak in cylinder	Repair leaking component Install new cylinder seal kit in section that settles.
4) Both wing sections settle	Tractor valve leaking back	To check, remove hose from the tractor when wings are level. This eliminates tractor valve from circuit. CAUTION: Make certain your tractor connections safely allow this operation.
5) Air returns to system causing problems 1, 3, 4 to reoccur.	a) Air entering system. b) See item 3	Check tractor oil level. Check tractor hydraulic pump. See item 3. Note: A mixture of oil and air forms a foam which may give unexpected results. It may take a few hours use before all foam is expelled



Problem	Cause	Remedy
6) Entire machine settles.	a) External leak in lift cylinder circuit. b) Internal leak in lift cylinder c) Tractor valve leaking back	Repair leaking component. Install new cylinder seal kits. To check, remove hose from the tractor when wings are level. This eliminates tractor valve from circuit. CAUTION: Make certain your tractor connections safely allow this operation.
7) Implement settles in transport or while parked.	Not using the transport lock.	The hydraulic system is not intended to hold the implement up permanently. A slow settling when not in use is
8) Center section is not level or goes out of level in use.	Unequal thickness depth stops on lift cylinders	Use same thickness depth stops on lift cylinders



WARRANTY

Kongskilde Limited and / or Kongskilde Incorporated, hereinafter referred to as Kongskilde, as manufacturer, warrants to the original retail purchaser of its products, that the products are constructed free from manufacturing defects. This warranty covers all Kongskilde group products including the brand names; Kongskilde, Overum, Howard and Progressive.

The Kongskilde obligation under this warranty is expressly limited, at their option, to the replacement or repair of such parts, as inspection shall disclose to have been defective, within 365 days from the date of delivery. Repair or replacement of defective part(s), to be made at an authorized Kongskilde dealer location, transportation charges prepaid by the end user.

No warranty of any kind is made by Kongskilde with regard to products which have been subject to normal wear, misuse, abuse, negligence or accident, or have been altered or repaired in any manner not authorized by Kongskilde or if repairs have been made with parts other than those obtainable from Kongskilde.

This warranty is subject to any conditions of supply, which may directly affect our ability to obtain materials or manufacture replacement parts.

Kongskilde reserves the right to make improvements in design or change in specifications at any time, without incurring any obligations to owners of units previously sold.

This warranty shall not be interpreted to render us liable for injury or damages of any kind of nature, direct, consequential, or contingent to person or property.

This warranty does not extend to loss of crops, loss because of delay or any expense of loss incurred for labor, supplies, substitute machinery, rental, or for any other reason.

Any defects in components purchased by Kongskilde as complete units for installation in or with Kongskilde equipment, will only be covered to the extent that the original manufacturer warrants them to Kongskilde, e.g.. Hydraulic cylinders, bearings, tires, etc.

Kongskilde makes no other express warranty, nor is anyone authorized to make any on behalf of Kongskilde.

THIS WARRANTY IS EFFECTIVE ONLY WHEN THE "WARRANTY REGISTRATION FORM" HAS BEEN COMPLETED AND RETURNED WITHIN 20 DAYS FROM THE TIME OF SALE TO THE ORIGINAL RETAIL PURCHASER.

KONGSKILDE INDUSTRIES INC.
19500 N 1425 EAST ROAD
HUDSON, IL 61748
Tel: 866-214-5664 / Fax: 866-264-5664





OWNER REGISTRATION & WARRANTY FORM

Covering Kongskilde, Overum, Howard and Progressive Products.

To initiate warranty coverage, this form must be filled out and signed by both Dealer and Owner at time of delivery and returned to:

KONGSKILDE INDUSTRIES INC.
19500 N 1425 EAST ROAD
HUDSON, IL 61748
Tel: 866-214-5664 / Fax: 866-264-5664

**FAILURE TO COMPLETE AND FILE THIS REPORT OR
ANY FALSE INFORMATION WILL INVALIDATE THE WARRANTY.**

ITEM:.....	DELIVERY DATE:.....
MODEL #:.....	SERIAL #:.....
DEALER:.....	OWNER:.....
ADDRESS:.....	ADDRESS:.....
CITY:.....	CITY:.....
PROV/STATE:.....	PROV/STATE:.....
ZIP/P. CODE:.....	ZIP/P. CODE:.....
PHONE NUMBER:.....	PHONE NUMBER:.....

Dealer's Statement:

I have conducted a pre-delivery inspection and have thoroughly instructed the customer on the equipment described above. I have reviewed the owner's manual content including; proper equipment care, adjustments, safe operating practices and the attached warranty policy. I confirm that this equipment was assembled properly as directed by the manufacturer and that the safety equipment and decals provided have been installed and the unit is ready for delivery.

Dealer's Signature:..... Date:.....

Owner's Statement:

The above equipment appears to be set up properly and in good condition. I have been thoroughly instructed as to the proper care, adjustments and safe operating practices and use of the safety devices provided for this equipment. I have reviewed and received my copy of the owner's manual and warranty policy. I agree to accept delivery and responsibility for the safe operation, care and maintenance of this equipment in accordance with the local regulations and the warranty policy.

Owner's Signature:..... Date:.....

ORIGINAL COPY TO KONGSKILDE, HUDSON
2nd COPY TO DEALER
3rd COPY TO CUSTOMER