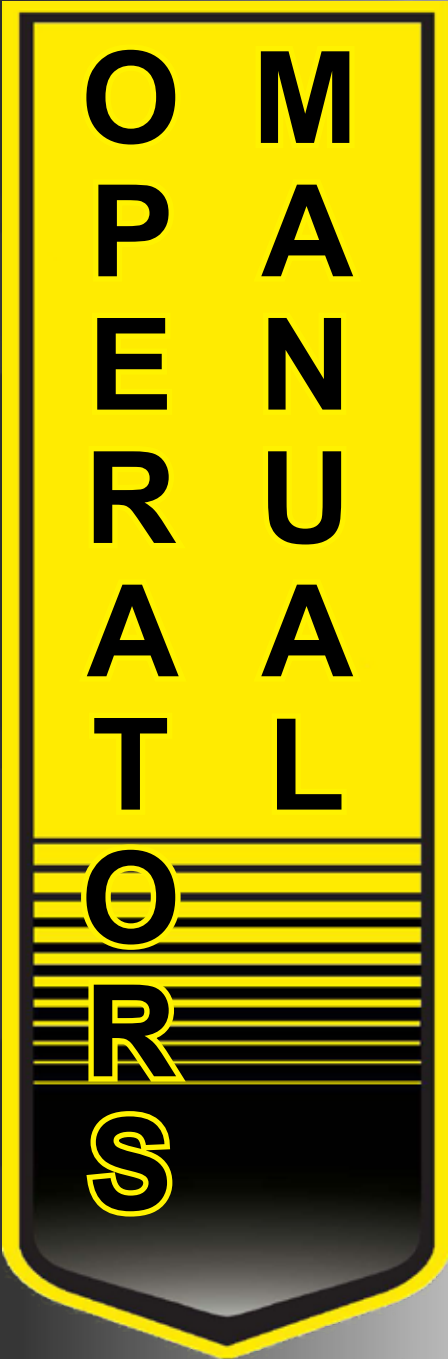




7116
Hi-CAPACITY
RAKE



WARNING

READ AND UNDERSTAND THIS MANUAL BEFORE OPERATING THIS EQUIPMENT. UNSAFE OPERATION OR MAINTENANCE OF THIS EQUIPMENT CAN RESULT IN SERIOUS INJURY OR DEATH.

7116 Starting Ser. #321HCD6031

Part #82874

Rev. #02

HSMFG0223

STRONG HERITAGE - STRONG PEOPLE - STRONGER FUTURE

CONTENTS

Warranty	1
Manufacturer's Statement	2
Warranty Registration Form	3
Dealer Pre-Delivery Checklist	5
Dealer Delivery Checklist	7
Safety Information - Be Alert Symbol	9
Explanation of Safety Signs	10
Safety Decals	11
Safety Information - Warning - Owner Must Read and Understand	12
Cap Screw Torque Values	13
Set-Up & Assembly	14
Transporting	15
Preparing for Operation	16
Operation & Adjustments	17-18
Optional Equipment	19
Lubrication Guide	20-22
Decal Location	23-28
Troubleshooting	29-30
Service Notes	31-32

H&S WARRANTY

H&S Manufacturing Co., Inc. ("H&S") warrants this product to be free from defect in material and workmanship. Except as noted below, this warranty term is twelve (12) months on parts and labor, and twenty-four (24) months on parts only from the date of delivery of the product to the original purchaser by an authorized H&S dealer. Under this warranty, H&S will repair or replace, at its option, any covered part which is found to be defective in material or workmanship during the applicable warranty term. In no case will the covered repair cost of a part or parts exceed the replacement cost of that part. In no case, unless pre-authorized by H&S, will a component be replaced versus repaired unless the cost of labor and parts exceeds 75% of the cost of a new component. Warranty repairs must be performed by H&S or a dealer authorized by H&S to sell and/or service the product involved, and will use only new or remanufactured parts or components furnished by H&S. Any warranty repairs needing to be performed by a third party must be pre-authorized by H&S. Standard freight costs will be covered by H&S for any part used to make a warrantable repair, any form of express freight will not be covered unless pre-authorized by H&S. This warranty includes approved parts and labor to repair the product but does not include, and the purchaser is responsible for, any service call and/or transportation of the product to and from the dealer's place of business, for any costs related to travel, for any premium charged for overtime labor requested by the purchaser, and for any service work not directly related to any defect covered under this warranty.

This warranty includes only those components of the product manufactured by H&S. Warranty for any component not manufactured by H&S including, but not limited to, engines, batteries, tires, rims, hydraulic motors, pumps, etc. are covered by the warranty, if any, provided separately by their respective manufacturers. H&S reserves the right to request the return of any failed component.

This warranty in all its parts is extended solely to the original purchaser of the product, is terminated upon any subsequent transfer or sale from or by the original purchaser, and extends no third party benefits or rights whatsoever.

The warranty term for any product used in any for hire, rental fleet or rental application, is limited to six (6) months from the date of delivery of the product to the original purchaser by an authorized H&S dealer.

This warranty does not include: (1) Any product that has been altered or modified in ways not approved by H&S; (2) Depreciation or damage caused by normal wear, use for which the product was not designed, misuse, improper or insufficient maintenance, improper operation, accident or failure to follow the product Operator's Manual recommendations and product decal recommendations; (3) Normal maintenance parts and service; (4) Repairs made with parts other than those available from H&S or performed by anyone other than H&S or a dealer authorized by H&S to sell and/or service the product involved.

To secure warranty service the purchaser must report the product defect to a dealer authorized by H&S to sell and/or service the product involved within the applicable warranty term together with evidence of the warranty start date and make the product available to that dealer within a reasonable period of time.

For these warranty terms to be in effect the selling authorized H&S dealer and/or the customer must submit the warranty registration to H&S.

THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE OF THIS WARRANTY. H&S and the companies affiliated with it make no warranties, representations, or promises, express or implied, as to the performance or freedom from defect of its products other than those set forth above and NO IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS OR FITNESS FOR A PARTICULAR PURPOSE IS MADE. IN NO EVENT WILL THE DEALER, H&S OR ANY COMPANY AFFILIATED WITH H&S BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES. The ONLY REMEDY the purchaser has in connection with the breach of performance of any warranty on H&S products are those set forth above.

The selling dealer has no authority to make any representation or promise on behalf of H&S, or to modify the terms or limitations of this warranty in any way.

12/20/22

MANUFACTURER'S STATEMENT

Congratulations on your selection of an H&S product. Your new H&S product has been manufactured of the finest quality materials and components. The performance you receive from your machine is largely dependent upon how well you read, understand this manual, and apply this knowledge. There is a right and a wrong way to do everything. Please do not assume that you know how to operate and maintain your machine before reading this manual carefully. Keep this manual available for ready reference. We are very appreciative of your patronage.

H&S reserves the right to make changes or add improvements to its products at any time without incurring any obligation to make such changes to products previously manufactured. Specifications, statements and descriptions of products contained in this publication are subject to change without prior notification.

WARRANTY REGISTRATION

- Date of Purchase: _____
- Purchaser Name: _____
- Street Address: _____
- City: _____
- State: _____ Zip: _____
- Phone Number: _____
- E-mail Address: _____
- Product: _____
- Model Number: _____
- Serial Number: _____
- You have received the Operator's Manual for this product. Yes _____ No _____
- Interested in receiving the H&S E-mail Newsletter? Yes _____ No _____

-
- Dealer Name: _____
 - Street Address: _____
 - City: _____
 - State: _____ Zip: _____
 - Signature: _____

- All fields must be filled out to ensure prompt notification of product and/or warranty updates.

Please mail the completed WARRANTY REGISTRATION FORM to:
H&S Manufacturing Co., Inc.
2608 S. Hume Ave.
Marshfield, WI 54449

Intentionally Left Blank

DEALER PRE-DELIVERY CHECKLIST

AFTER COMPLETION, DEALER SHOULD REMOVE AND RETAIN FOR RECORDS

After the rake has been completely set up, check to be certain it is operating correctly before delivering to the customer. The following is a list of points to inspect. Check off each item as you have made the proper adjustments and found the item operating satisfactorily.

- Rake was not damaged in shipment. Check for dents and loose or missing parts. Report damage immediately to H&S Manufacturing Co., Inc.
- Rake has been correctly assembled according to the set-up instructions. Wheel nuts and all other fasteners are tightly secured.
- All bolts and fasteners are tight.
- All grease fittings have been lubricated. See Lubrication Chapter of this manual for details.
- Hoses and fittings are properly attached and there are no visible leaks.
- All mechanisms are operating trouble free.
- Rake wheels touch ground in unison when lowered into position. (Rake setting level)
- Wheels are properly mounted.
- Tires are inflated to correct pressure.
- Decals are in place and legible.

Model Number _____

Serial Number _____

Dealer's Name _____

Inspection Date _____

Signature of Pre-Delivery Inspector _____

(Remove Dealers File Copy At Perforation)

Intentionally Left Blank

DEALER DELIVERY CHECKLIST

AFTER COMPLETION, DEALER SHOULD REMOVE AND RETAIN FOR RECORDS

This check list that follows is an important reminder of valuable information that should be passed on to the customer at the time this Rake is delivered.

Check off each item as you explain it to the customer.

This delivery checklist, when properly filled out and signed, assures the customer that the pre-delivery service was satisfactorily performed.

- Explain to the customer that the pre-delivery inspection was made.
- Explain to the customer all the safety precautions they must exercise when operating this unit.
- Explain raking and windrow width adjustments.
- Explain to customer that regular lubrication is required for proper operation and long life of machine.
- Show customer the lubrication section of Owner's Manual.
- Give the customer Owner's Manual and make sure they read and understand all operating and service instructions.
- Have the customer sign a completed "Warranty Registration" and mail it.

Date Delivered _____

Dealer's Name _____

By _____

Signature of Original Buyer _____

Note: Warranty is not valid until warranty card is completed and returned to H&S Mfg. Co., Inc.

Intentionally Left Blank

SAFETY INFORMATION



**BE
ALERT!**

**YOUR SAFETY
IS INVOLVED.**

THIS SYMBOL IS USED THROUGHOUT THIS BOOK WHENEVER YOUR PERSONAL SAFETY IS INVOLVED. TAKE TIME TO BE CAREFUL. REMEMBER: THE CAREFUL OPERATOR IS THE BEST OPERATOR. MOST ACCIDENTS ARE CAUSED BY HUMAN ERROR. CERTAIN PRECAUTIONS MUST BE OBSERVED TO PREVENT THE POSSIBILITY OF INJURY OR DAMAGE.

H&S MANUFACTURING CO., INC.

SAFETY INFORMATION

RECOGNIZE SAFETY INFORMATION

This is the safety alert symbol. When you see this symbol on your machine or in this manual, be alert to the potential for personal injury.

Follow recommended precautions and safe operating practices.



UNDERSTAND SIGNAL WORDS

A signal word - DANGER, WARNING, or CAUTION - is used with the safety-alert symbol. DANGER identifies the most serious hazards.

Safety signs with signal word DANGER or WARNING are typically near specific hazards.

General precautions are listed on CAUTION safety signs.



WARNING



CAUTION



FOLLOW SAFETY INSTRUCTIONS

Carefully read all safety messages in this manual, and all safety signs on your machine. Follow all recommended precautions and safe operating procedures.

Keep signs in good condition. Immediately replace any missing or damaged signs.

OBSERVE MAXIMUM TRANSPORT SPEED

The maximum transport speed for this implement is 32 km/h (20 mph).

Some tractors are capable of operating at speeds that exceed the maximum transport speed of this implement. Regardless of the maximum speed capability of the tractor being used to tow this implement, do not exceed the implement's maximum transport speed.

Exceeding the implement's maximum transport speed can result in:

- * Loss of control of the tractor/implement combination
- * Reduced or no ability to stop during braking
- * Implement tire failure
- * Damage to the implement structure or its components

Use additional caution and reduce speed when towing under adverse surface conditions, when turning, and when on inclines.


Do not attempt transport if the fully loaded implement weighs more than 1.5 times the weight of the tractor.



SAFETY INFORMATION

⚠ WARNING	
HELP AVOID INJURY	
<ul style="list-style-type: none">• READ & UNDERSTAND THE OPERATORS MANUAL PROVIDED WITH THIS MACHINE. IF MISPLACED CALL H & S MANUFACTURING AT 715-387-3414 WITH MODEL AND SERIAL NUMBER.• UNDERSTAND ALL SAFETY WARNINGS AND FUNCTION OF CONTROLS.• KEEP SAFETY DEVICES IN PLACE AND WORKING.• KEEP YOURSELF AND OTHERS WELL CLEAR OF MOVING PARTS.• DISCONNECT ALL POWER BEFORE SERVICING OR CLEANING THIS MACHINE.• DO NOT EXCEED 20 MPH	
	72203A

 11694A	⚠ DANGER
	STAY CLEAR OF RAKE WHEN OPENING OR CLOSING.
	FAILURE TO HEED THIS WARNING MAY RESULT IN PERSONAL INJURY OR DEATH
	KEEP CLOTHING, YOURSELF AND OTHERS WELL CLEAR.

 2195	⚠ WARNING
	STAY CLEAR OF RAKE WHEN RAISING OR LOWERING RAKE WHEELS.
	FAILURE TO HEED THIS WARNING MAY RESULT IN PERSONAL INJURY OR DEATH
	KEEP CLOTHING, YOURSELF AND OTHERS WELL CLEAR

 11599	⚠ WARNING
	DO NOT GO NEAR LEAKS
	<ul style="list-style-type: none">• High pressure oil easily punctures skin causing serious injury, gangrene or death.• If injured, seek emergency medical help. Immediate surgery is required to remove oil.• Do not use finger or skin to check for leaks.• Lower load or relieve hydraulic pressure before loosening fittings.
	11599

TRACTOR:

This operator's manual uses the term "Tractor" when identifying the power source.

**TO PREVENT SERIOUS INJURY OR DEATH**

BEFORE YOU ATTEMPT TO OPERATE THIS EQUIPMENT, READ AND STUDY THE FOLLOWING INFORMATION. IN ADDITION, MAKE SURE THAT EVERY INDIVIDUAL WHO OPERATES OR WORKS WITH THIS EQUIPMENT, WHETHER FAMILY MEMBER OR EMPLOYEE, IS FAMILIAR WITH THESE SAFETY PRECAUTIONS.

DO NOT ALLOW PERSONNEL OTHER THAN THE QUALIFIED OPERATOR NEAR THE MACHINE.

Stop the tractor engine, remove ignition key, and allow all mechanisms to stop before cleaning, working, or adjusting on machine.

DO NOT attempt to perform maintenance or repair with tractor running.

DO NOT step up on machine at any time.

DO NOT allow minors to operate or be near the machine.

Loose or floppy clothing should not be worn by the operator.

Stay clear of hydraulic lines, they may be under extreme pressure or heat.

Stay clear of the rake when opening or closing main rake arm beams, opening the backbone or raising and lowering the rake wheels.

For transport, always make sure that the hair pin at the rear of the lift pipes, and the transport lock bars with safety clip pins for main rake beam, are securely locked in place.

To reduce stress on rake arms, lift pipe, springs and spring brackets, reduce the oil flow from the tractor to the lift cylinders whenever possible.

Be sure to raise the rake wheels before opening or closing the main rake beams.

H&S Manufacturing Co. always takes the operator and their safety into consideration and guards exposed moving parts for their protection. However, some areas cannot be guarded or shielded in order to assure proper operation. In addition, the operators manual and decals on the machine itself warn you of further danger and should be read and observed closely.

Study The Above Safety Rules**ATTENTION - BE ALERT - YOUR SAFETY IS INVOLVED**

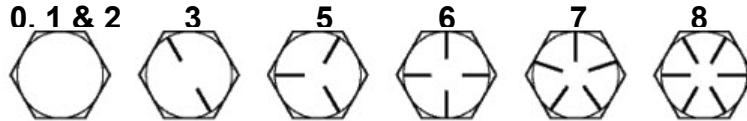
CAP SCREW TORQUE VALUES

The specifications below are the torque values for fasteners as it adheres to the SAE torque value standards. All fasteners should be torqued to the proper values found in the figures below unless otherwise specified by the engineering drawing.

- Lubed torque would be any fastener that has grease, liquid Loctite, oil, etc. on the threads.
- Dry torque would be any fastener which has threads that are clean and dry and do not have any liquid Loctite or grease on them.

Hex Head Fasteners

The figure shown below shows how to determine what SAE grade a fastener is.



SUGGESTED ASSEMBLY TORQUE VALUES

WORKING TORQUE

	SAE GR. 2-6"		SAE GR. 5		SAE GR. 8		18-8 SS	316 SS	Brass	Silicon Bronze
Dia. & Thrds. per inch	Dry Ft. Lbs.	Lube Ft. Lbs.	Dry Ft. Lbs.	Lube Ft. Lbs.	Dry Ft. Lbs.	Lube Ft. Lbs.	Inch Lbs.	Inch Lbs.	Inch Lbs.	Inch Lbs.
1/4-20	5.5	4.2	8	6.3	12	9	75.2	78.8	61.5	68.6
1/4-28	6.3	4.7	10	7.2	14	10	94.0	99.0	77.0	87.0
5/16-20	11	8	17	13	24	18	132	138	107	123
5/16-28	12	9	19	14	27	20	142	147	116	131
3/8-16	20	15	30	23	45	35	236	247	192	219
3/8-24	23	17	35	25	50	35	259	271	212	240
7/16-14	32	24	50	35	70	50	376	393	317	349
7/16-20	36	27	55	40	80	60	400	418	327	371
1/2-13	50	35	75	55	110	80	517	542	422	480
1/2-20	55	40	85	65	120	90	541	565	443	502
9/16-12	70	55	110	80	150	110	682	713	558	632
9/16-18	80	60	120	90	170	130	752	787	615	697
5/8-11	100	75	150	110	210	160	1110	1160	907	1030
5/8-18	110	85	170	130	240	180	1244	1301	1016	1154
3/4-10	175	130	260	200	380	280	1530	1582	1249	1416
3/4-16	200	140	300	220	420	310	1490	1558	1220	1382
7/8-9	170	125	430	320	600	450	2328	2430	1905	2140
7/8-14	180	140	470	350	670	500	2318	2420	1895	2130
1-8	250	190	640	480	910	680	3440	3595	2815	3185
1-14	280	210	720	540	1020	760	3110	3250	2545	2885

HYDRAULIC FITTING TORQUE SPECIFICATIONS

Tapered Pipe Thread Size - Assembly turns from Finger Tight (TFFT) for Tapered Threads		TFFT
BSPT (Uncommon)	NPTF (Common)	
1/8-28	1/8-27	2 - 3
1/4-19	1/4-18	2 - 3
3/8-19	3/8-18	2 - 3
1/2-14	1/2-14	2 - 3
3/4-14	3/4-14	2 - 3
1-11	1-11 1/2	1.5 - 2.5
1 1/4-11	1 1/4-11 1/2	1.5 - 2.5
1 1/2-11	1 1/2-11 1/2	1.5 - 2.5
2-11	2-11 1/2	1.5 - 2.5



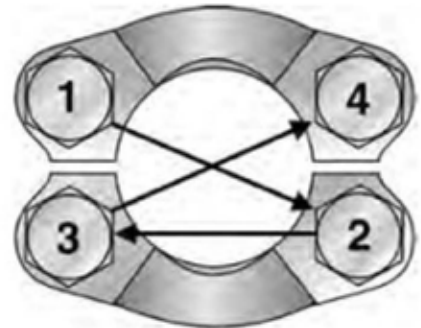
ORB - SAE J1926 Straight Thread Port Assembly Torques													
		Assembly Torque (+10% -0) **If fitting is being torqued into aluminum or brass, subtract 35% from standard torque value**											
		Non-Adjustable				Adjustable				Plugs			
		ORFS		JIC NPT		ORFS		JIC		Hollow Hex		Hex Head	
Dash Size	SAE Size (UN/UNF)	Ft. lbs. (In. lbs.)	Into Alum. Or Brass Ft. lbs. (in. lbs.)	Ft. lbs. (In. lbs.)	Into Alum. Or Brass Ft. lbs. (in. lbs.)	Ft. lbs. (In. lbs.)	Into Alum. Or Brass Ft. lbs. (in. lbs.)	Ft. lbs. (In. lbs.)	Into Alum. Or Brass Ft. lbs. (in. lbs.)	Ft. lbs. (In. lbs.)	Into Alum. Or Brass Ft. lbs. (in. lbs.)	Ft. lbs. (In. lbs.)	Into Alum. Or Brass Ft. lbs. (in. lbs.)
2	5/16-24	-	-	(85)	(55)	-	-	(60)	(39)	(30)	(19.5)	(85)	(55)
3	3/8-24	-	-	(155)	(101)	-	-	(100)	(65)	(55)	(36)	(155)	(101)
4	7/16-20	(310)	(201.5)	(260)	(169)	(180)	(117)	(180)	(117)	(120)	(78)	(260)	(169)
5	1/2-20	(360)	(234)	(280)	(182)	(360)	(234)	(250)	(162.5)	(170)	(110.5)	(280)	(182)
6	9/16-18	(420)	(283)	(350)	(227.5)	(420)	(273)	(350)	(227.5)	(410)	(266.5)	(350)	(175)
8	3/4-16	60	39	(620)	(403)	60	39	(620)	(217)	60	39	(620)	(403)
10	7/8-14	100	65	85	55	100	65	85	55.25	100	65	85	55
12	1 1/16-12	135	88	135	88	135	88	135	88	135	88	135	88
14	1 3/16-12	175	114	175	114	175	114	175	114	175	114	175	114
16	1 5/16-12	200	130	200	130	200	130	200	130	200	130	200	130
20	1 5/8-12	250	162.5	250	162.5	250	162.5	250	162.5	250	162.5	250	162.5
24	1 7/8-12	305	198	305	198	305	198	305	198	305	198	305	198
32	2 1/2-12	375	244	375	244	375	244	375	244	375	244	375	244

HYDRAULIC FITTING TORQUE SPECIFICATIONS

Code 61 and 62 Flange Recommended Bolt Torques

Steps to Properly Assemble the Flange Port Clamping Bolts:

1. Inspect components to ensure that male and female port threads and sealing surfaces are free of burrs, nicks and scratches, or any foreign material.
2. Lubricate the O-ring
3. Position flange and clamp halves
4. Place lock washers on bolts and insert through clamp halves
5. Hand tighten bolts.
6. Torque bolts in diagonal sequence in small increments to the appropriate torque level **refer to the table below.



Flange Bolt Tightening Sequence

Code 61						Code 62					
Dash Size	Flange Size	Inch Bolt (SAE J518)	Torque ft. lbs.	Metric Bolt (ISO 6162)	Torque N-m	Dash Size	Flange Size	Inch Bolt (SAE J518)	Torque ft. lbs.	Metric Bolt (ISO 6162)	Torque N-m
8	1/2	5/16-18	17 ± 2	M8	24	8	1/2	5/16-18	17 ± 2	M8	24
12	3/4	3/8-16	31	M10	50	12	3/4	3/8-16	31	M10	50
16	1	3/8-16	31 ± 4.5	M10	50	16	1	7/16-14	52	M12	92
20	1-1/4	7/16-14	52	M12	92	20	1-1/4	1/2-13	77	M14	130
24	1-1/2	1/2-13	77	M12	92	24	1-1/2	5/8-11	155	M16	210
32	2	1/2-13	77	M12	92	32	2	3/4-10	265	M20	400
40	2-1/2	1/2-13	77	M12	92						
48	3	5/8-11	155	M16	210						
56	3-1/2	5/8-11	155	M16	210						
64	4	5/8-11	155	M16	210						
80	5	5/8-11	155	M16	210						

37° Flare (JIC) Assembly Torques and FFWR					
SAE Dash Size	Thread Size	Assembly Torque (+10%-0)		Tube Connection FFWR	Swivel Nut or Hose Connection FFWR
		In. lb.	ft. lb.		
-2	5/16-24	35	3	-	-
-3	3/8-24	65	5	-	-
-4	7/16-20	155	13	2 1/2	2
-5	1/2-20	165	14	2	2
-6	9/16-18	265	22	2	1 1/2
-8	5/8-16	505	42	2	1 1/2
-10	7/8-14	720	60	1 1/2	1 1/2
-12	1 1/16-12	1000	84	1 1/2	1 1/4
-14	1 3/16-12	1200	100	1 1/2	1 1/4
-16	1 5/16-12	1415	118	1 1/2	1
-20	1 5/8-12	2015	168	1	1
-24	1 7/8-12	2340	195	1	1
-32	2 1/2-12	3180	265	1	1
-40	3-12	-	-	1	1

SET-UP & ASSEMBLY

NOTE: Determine the right or left side of the wheel rake by viewing it from the rear. If instructions or parts lists call for hardened bolts, refer to the Cap Screw Torque Value Chart.

1. Assemble the rake or check the rake for proper assembly and adjustment. Make sure that all bolts are tightened.
2. Attach the wheels with tires, using the lug nuts furnished and torque the mounting hardware to 95 ft./lbs. of torque. Check wheel bolts periodically thereafter.
3. Check tires and inflate to the recommended pressure. (IF240/80R15IMP to 35 pounds)
4. Lubricate the rake completely (See Lubrication Chapter in This Manual).

TRANSPORTING

TRANSPORT LOCKS

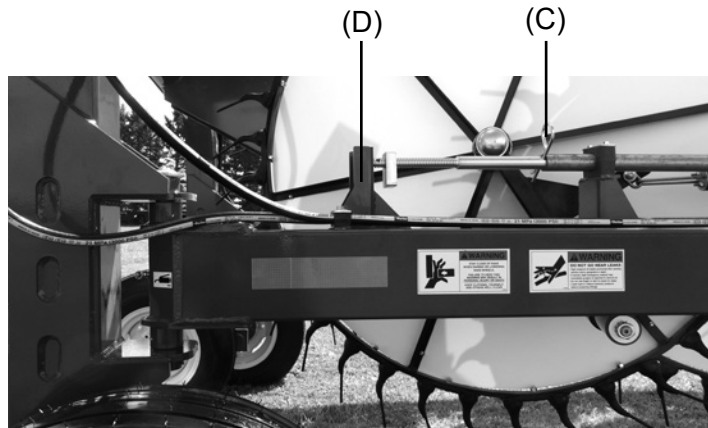
Latch System

The Latch System (A) is mounted at the front of the pole. When the rake is in the transport position, make sure that the safety pin on each latch is placed in the hole (B) before transporting on the highway.



Rake Wheel Locks

Located on the lift pipe is a hair pin which is used to secure the rake wheels in the up position for transport (C). When in the down or raking position, place the locking hair pin in the convenient storage position hole (D).



TOWING ON HIGHWAY

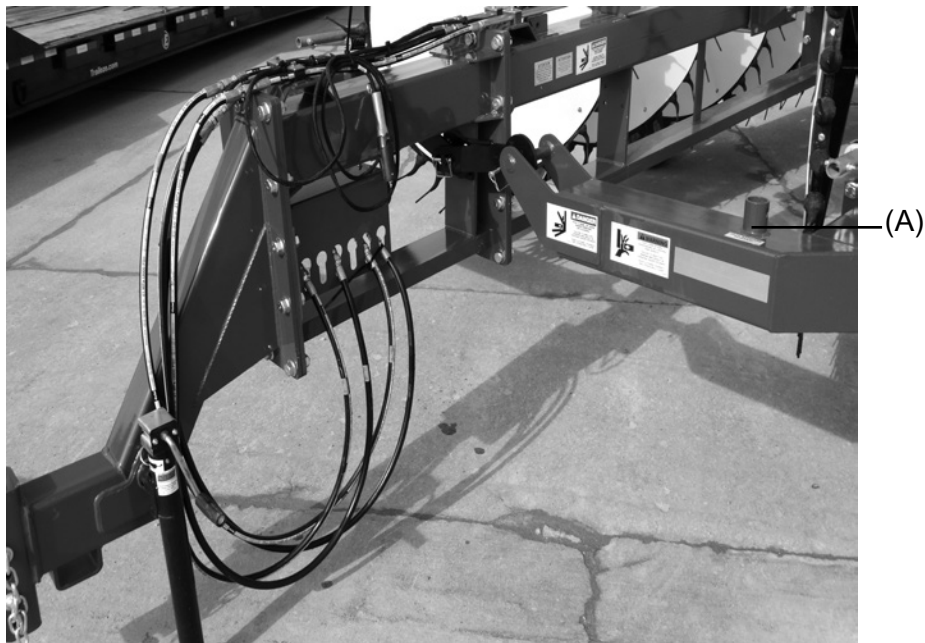
Follow state and local regulations when towing farm equipment on public highways. Never tow the rake on a public highway at a speed greater than 20 mph (32 kph).

REFLECTORS

Red and Amber reflective safety decals are on the rake for safety. Refer to the [Decal Placement Chapter](#) for location.

PREPARING FOR OPERATION

1. Adjust the tractor hitch (13 to 17 inches above ground) and attach the rake to the tractor with a **hitch pin and a safety locking device**.



2. Remove the weight from lift jack. Remove the jack from the pipe and place it on the convenient storage mount located on the front top of rake beam (A).
3. Connect the hydraulic hoses for raising and lowering the rake wheels to a double acting valve on the tractor.
4. Connect the hydraulic hoses for opening and closing the rake to a double acting valve on the tractor.
5. If the rake is equipped with the optional Hydraulic Rear Opening Width Cylinder, connect the hydraulic hoses to a double acting valve on the tractor.
6. Connect the 7-pin electrical connector to tractor if the rake is equipped with optional transport lighting.

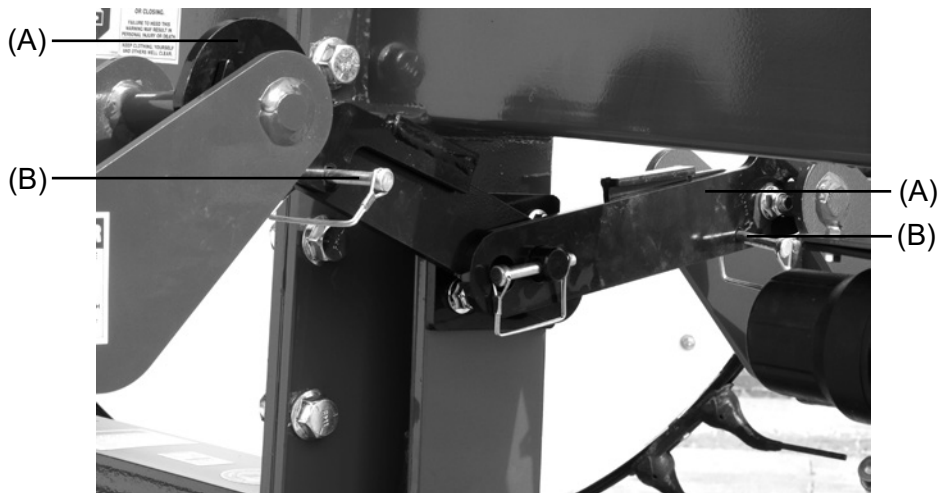
OPERATION & ADJUSTMENTS

EMERGENCY SHUTDOWN

Stop the tractor engine, remove ignition key, and allow all mechanisms to stop before cleaning or working on the machine.

Latch System

The Latch System (A) is mounted at the front of the pole. When the rake is in the transport position, make sure that the safety pin on each latch is placed in the hole (B) before transporting on the highway. Before opening for field operation, remove the safety pins and place them in the storage position hole. Lift up on the handle of the latch to release the transport lock. Hydraulically open the rake to raking width. Place the safety pins back in the latch mechanism after opening. For transport, remove the safety pins from the latch mechanism, hydraulically close the rake to transport position, clamp each latch mechanism around each pin and replace the safety pins.



RAKING WIDTH

Raking width is determined by setting the spring loaded stop, located above the rear pole section as shown.



OPERATION & ADJUSTMENTS

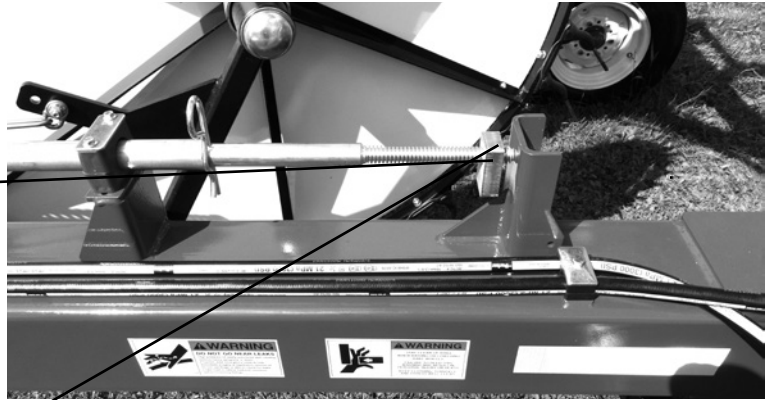
HYDRAULIC OPENING WINDROW WIDTH ADJUSTMENT

A Hydraulic Cylinder Opening Windrow Width Adjustment requires a 3rd tractor remote. The operator must be moving forward or backward when adjusting the hydraulic windrow width.



GROUND PRESSURE

Rake wheel to ground pressure is adjusted by turning the tab nut on the threaded rod while the rake wheels are in the raised position. Setting the ground pressure as light as possible will reduce ash content in the crop. The further forward that the nut is on the threaded rod, the lesser the amount of rake wheel ground pressure. The further back that the nut is on the threaded rod, the greater the amount of rake wheel ground pressure. After adjustment has been made, lock the bolt down to keep the proper setting.



GAUGE WHEELS

Outboard gauge wheels are located on each rake beam. These gauge wheels support the rake beams to allow the rake wheels to better follow the contour of the ground. The gauge wheels can be mounted in two different positions. The mid-mount position is better for rolling hills. Located on each gauge wheel pivot spindle is an adjustable disc brake assembly. Adjust the brake by loosening or tightening the nuts. The brake should have enough tension to prevent zig-zag motion, but still allow the wheel to pivot when making corners. Rule-of-thumb is to have spacing the gap of a dime between the spring coils.

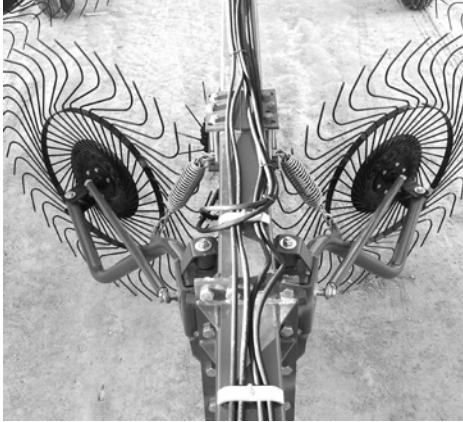
Adjustable Brake Assembly Nuts



OPTIONAL EQUIPMENT

FFOCKW - 3-WHEEL CENTER KICKER

A 3-Wheel Center Kicker Assembly disturbs and moves the unraked crop in the center.



INTERRUPTER 8000

Corn Stalk Breaker w/8' Bar - Interrupt/knock down/break up corn stalks while minimizing baler tooth breakage to protect your cattle feed.



LIGHTING PACKAGE

The Lighting Package includes tail lights and work lights.



HCHO2WHL - (2) WHEEL FRONT ADD-ON KIT

A (2) Wheel Front Add-on Kit is available to make the rake an 18-wheel rake.

FFOH2P - SET OF (2) CASTER WHEELS

A set of (2) Caster Wheels are available for additional ground floatation.

HCHO2CW - 2-Point Hitch

A 2-Point Hitch is available in place of the standard clevis hitch.

HCOH2PTH - 2-Point Hitch w/Transport Locks

A 2-Point Hitch w/Transport Locks is available in place of the standard clevis hitch.

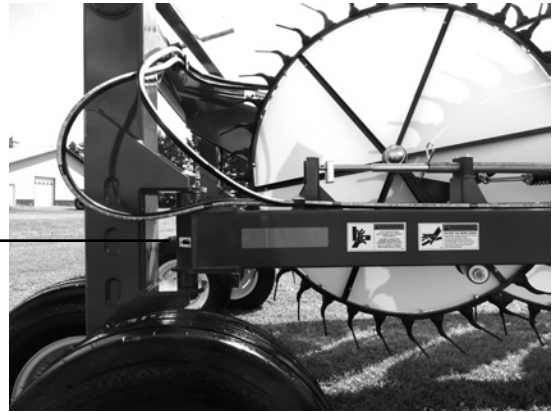
LUBRICATION GUIDE

GREASE FITTINGS

There are numerous grease fittings on the rake. Lubricating properly and often enough will prolong the life of your rake. Grease daily during normal use and **before and after storage and after power washing**. Use a good grade of high quality grease. Make sure that grease comes out around the shaft on sleeve type bearings. Wipe off excessive grease to prevent accumulation of chaff or grit around the bearing.



One on each
L.H./R.H. Rake
Arm Beam Pivot



One on the
backside of
each Transport
Wheel Hub

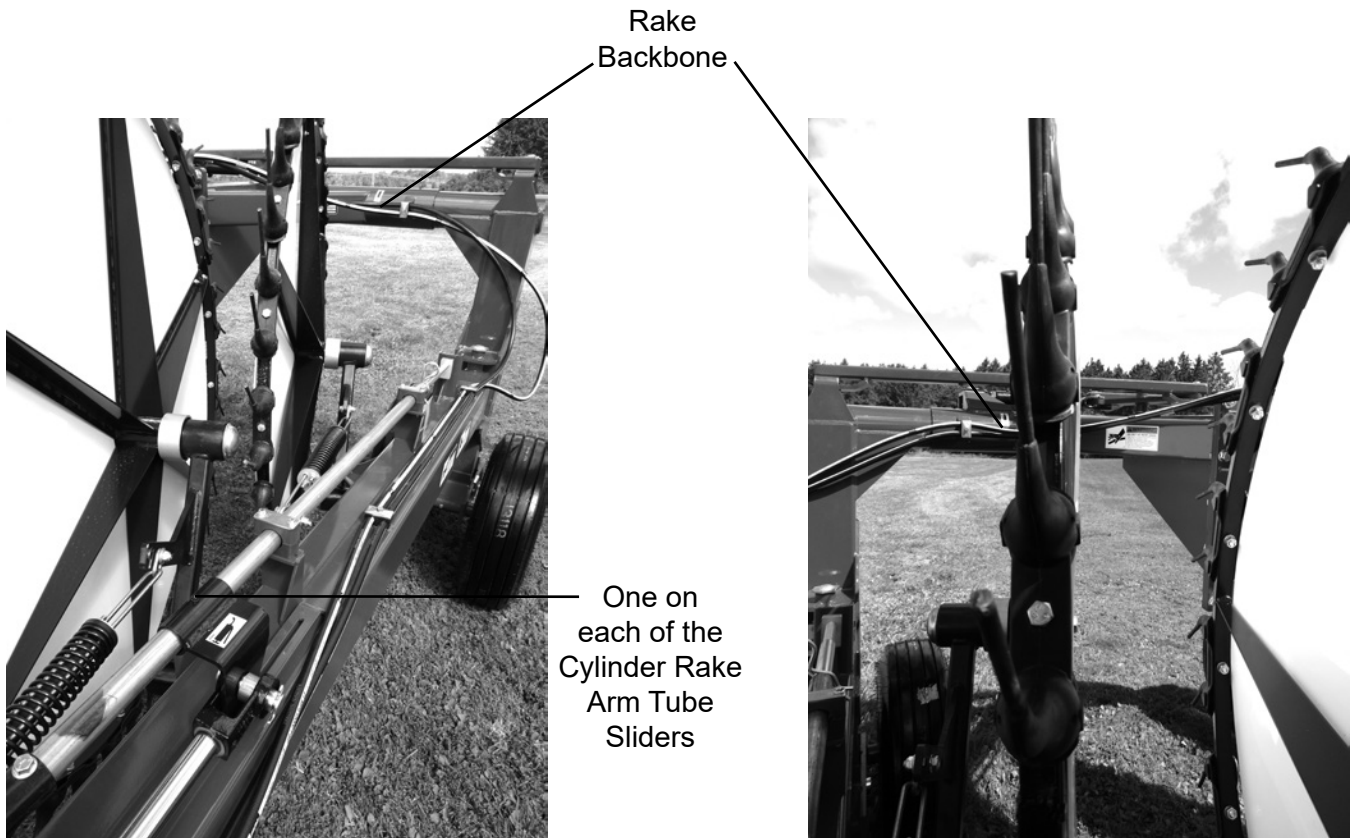
One on the
pivot
of each
Gauge
Wheel



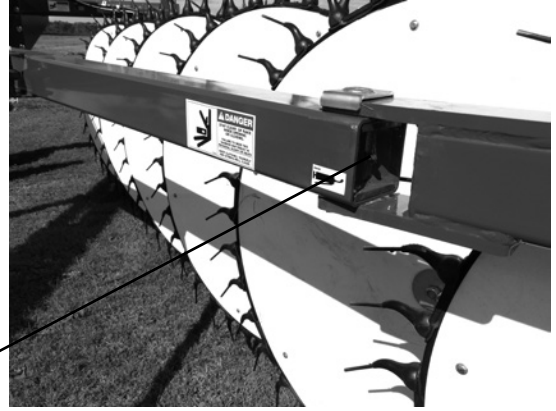
Linkage
Pivot
Points

Linkage
Pivot
Points

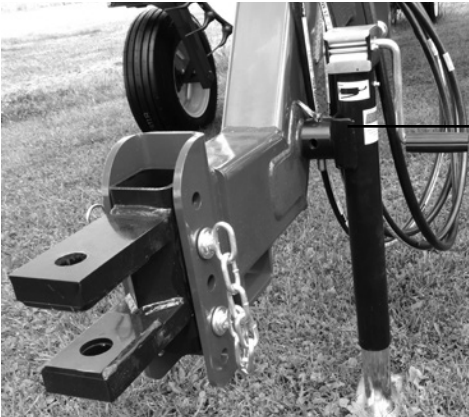
LUBRICATION GUIDE



LUBRICATION GUIDE



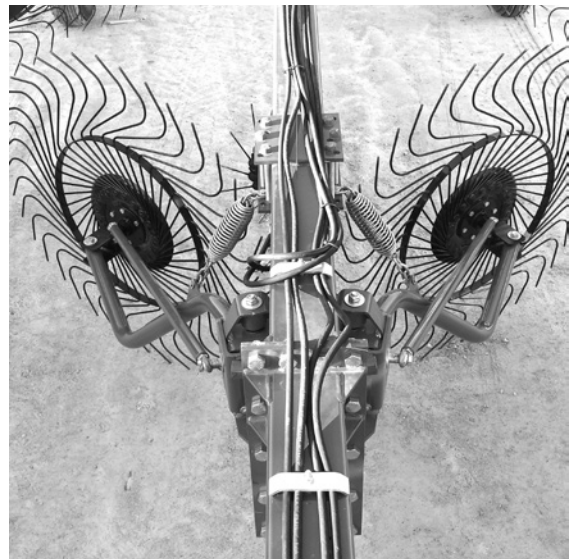
Linkage
Pivot



Jack

OPTIONAL 3-WHEEL CENTER KICKER

Grease the pivot points if your rake is equipped with a center kicker wheel.



DECAL LOCATION

Your rake was manufactured with operator safety in mind. Located on the rake are various decals to aid in operation, and warn of danger or caution areas. Pay close attention to all the decals.



**DO NOT REMOVE ANY OF THESE DECALS. IF DECALS ARE LOST, DAMAGED, OR IF THE RAKE IS REPAINTED, REPLACE DECALS.
REMEMBER: DECALS ARE FOR YOUR PROTECTION AND INFORMATION.**

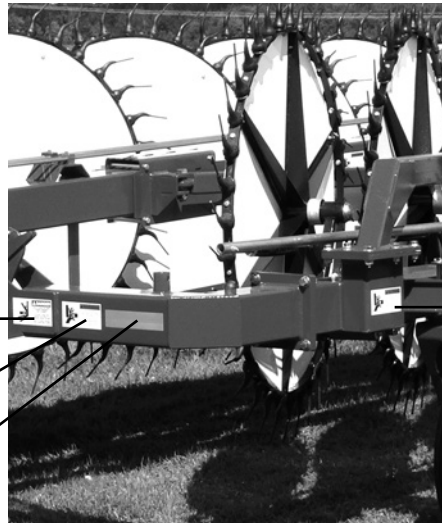
Listed below are the decals on your H&S Rake. These decals may be ordered individually by part number or by ordering complete set.

<u>PART</u>	<u>QUANTITY</u>	<u>DESCRIPTION</u>
311	1	Patent Numbers
2195	12	WARNING - Stay Clear of Rake
21804	1	Attention - Never Adjust Main Frame
82303	1	H&S RH Branding
82304	1	H&S LH Branding
83198	2	Model Number-7116
11599	10	WARNING - Do Not Go Near Leaks
11694A	10	DANGER - Stay Clear of Rake
12197A	1	Attention: Raise Rake Wheels
54034	1	Made in the USA - 4"
84044	1	FEMA Decal
84045	1	H&S Since 1967
71188B	1	Jack Storage Position
72203A	1	WARNING - Help Avoid Injury
DCAMB	6	Amber Reflector - 2" x 9"
DCRED	2	Red Reflectors
093020	19	Grease Zerk

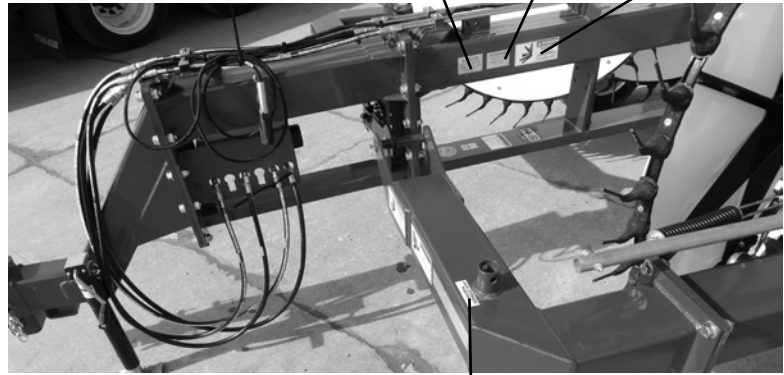
DECAL LOCATION



093020



11694A
2195
DCAMB



12197A 21804 11694A

71188B



11694A

DCAMB 2195 11694A

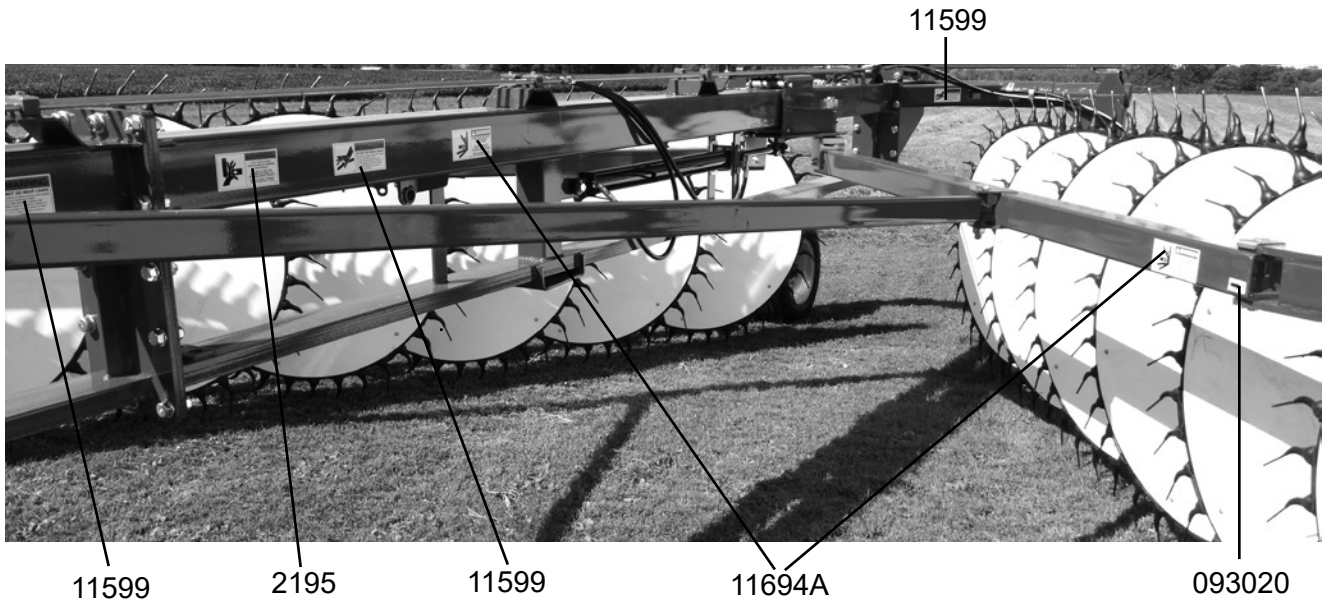


11694A

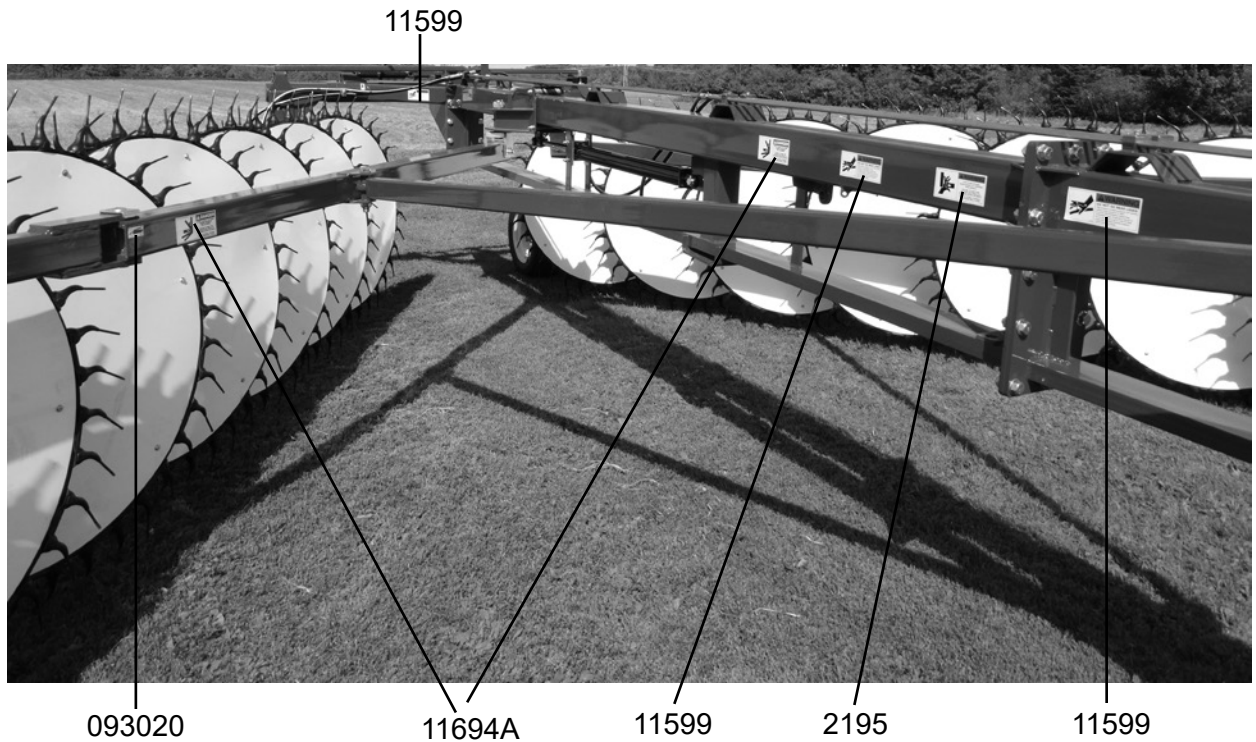
311

84045 72203A 84044 54034

DECAL LOCATION
Interior Left Rake Beam

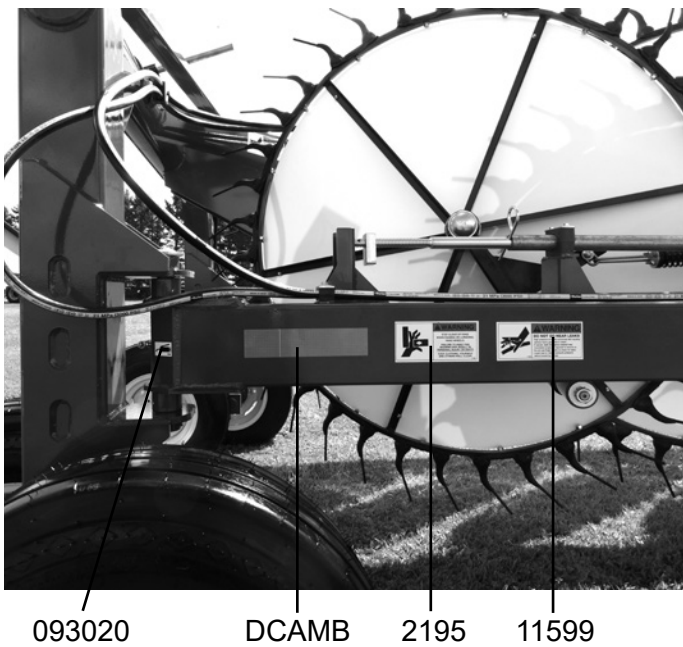


Interior Right Rake Beam



DECAL LOCATION

Right Rake Beam w/Optional Front Caster



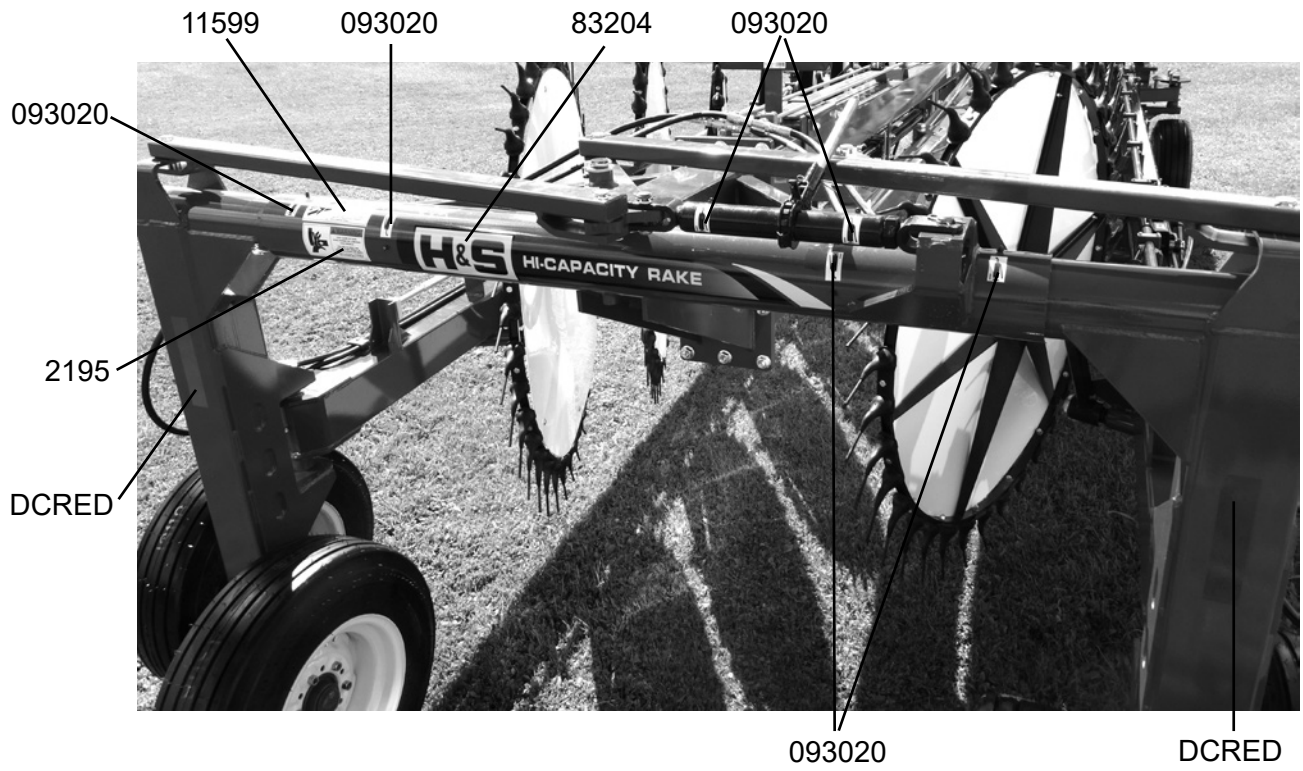
DECAL LOCATION

Left Rake Beam w/Optional Front Caster



DECAL LOCATION

Rear



TROUBLESHOOTING



WARNING:

MAKE SURE THAT THE TRACTOR IS SHUT OFF AND THE RAKE CANNOT MOVE BEFORE SERVICING THE FLEX-FRAME RAKE. MAINTENANCE AND REPAIR SERVICE WORK TO BE PERFORMED BY A QUALIFIED SERVICE PERSON ONLY.

<u>TROUBLE</u>	<u>POSSIBLE CAUSE</u>	<u>POSSIBLE REMEDY</u>
Rake Will Not Open	<p>Rake Locked In Transport</p> <p>Pull Rope or Cable Broken</p> <p>Hydraulic Couplers Not Coupled To Tractor Properly</p> <p>Tractor Hydraulics Do Not Have Sufficient Pressure</p>	<p>Remove Transport Locks And Return To Storage Position</p> <p>Replace Rope or Cable</p> <p>Couple Hydraulic Hoses To Tractor</p> <p>Tractor Should Have At Least 1500 PSI To Operate Rake</p> <p>NOTE: Always Drive Forward Slowly And Open Rake At The Same Time</p>
Rake Will Not Close	<p>Tractor Hydraulics Do Not Have Sufficient Pressure</p>	<p>Tractor Should Have At Least 1500 PSI To Operate Rake</p> <p>NOTE: Always Drive Forward Slowly And Open Rake At The Same Time</p>
Rake Wheels Will Not Lower	<p>Rake Wheels Locked In Transport</p> <p>Lift Pipe Binding</p> <p>Hydraulic Hoses Mixed Up With Rake Wheel Lift Hose</p>	<p>Remove Hair Pin From Adjuster, Place In Storage Position</p> <p>Check Lift Pipe Make Sure It Is Free Moving</p> <p>Sort Hoses Correctly And Re-couple To Tractor</p>
Rake Will Not Latch	<p>Tractor not on level ground</p> <p>Hitch not adjusted properly</p> <p>Not enough hydraulic power</p>	<p>Move to level location</p> <p>Adjust hitch so the latch bar is centered in the auto-latch opening when the rake is on level ground.</p> <p>Move in reverse to help the rake arms pull in</p>

TROUBLESHOOTING

<u>TROUBLE</u>	<u>POSSIBLE CAUSE</u>	<u>POSSIBLE REMEDY</u>
Rake will not rake crop	Rake wheel ground pressure set too light Not picking up crop in valleys Rake teeth wore out	Increase rake wheel ground pressure Move caster wheels to center position Replace rake teeth
Rake banging as travelling across the field	Field too rough for single caster wheel	Add optional caster wheel
Rake swerving in transport	Brakes set too loose.	Tighten brake adjustment springs
Rake casters don't turn in field	Brakes set too tight	Loosen brake adjustment springs
Rake wheels digging in the ground	Rake wheel ground pressure set too heavy Rake wheels digging on hill crests	Reduce rake wheel ground pressure Move caster wheel to center position
Center Kicker Wheels won't drop	Center Kicker Wheel system not adjusted properly	Adjust Center Kicker Wheel

SERVICE NOTES

SERVICE NOTES

H&S MFG. CO.

products approved

for the

FEMA SEAL OF QUALITY



Manufactured By:

H&S MANUFACTURING CO., INC.

2608 S. HUME AVE. MARSHFIELD, WI 54449

(715) 387-3414 | hsmfgco.com

