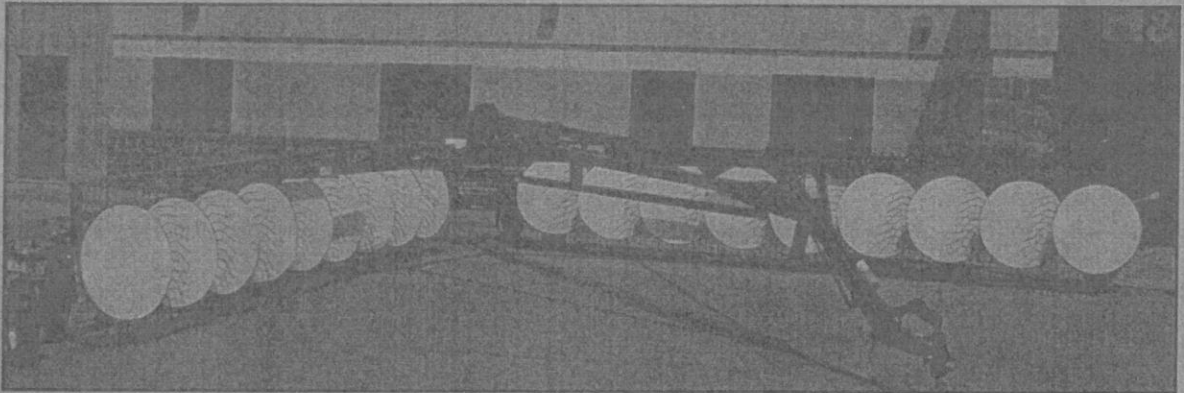


H&S

14 & 16 WHEEL/18 & 20 WHEEL HD HI CAPACITY BI-FOLD 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.

OPERATOR'S MANUAL and PARTS LIST

7-3-2002

Manufactured By

H&S MANUFACTURING CO., INC.

P.O. BOX 768 • (715) 387-3414 FAX (715) 384-5463

MARSHFIELD, WISCONSIN 54449

H&S
HD HI CAPACITY 14 & 16/18 & 20 WHEEL
BI-FOLD RAKE
PARTS AND OPERATOR'S MANUAL

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WARRANTY

Mr. Owner: Before Operating—Read and Understand Operating and Safety Instructions

H&S Manufacturing Co., Inc. truly believes you have made a wise choice and a sound and lasting investment. Many years of development have made available these quality machines to assure you the performance and reliability you need. **We ask you to read the following agreement and warranty as this unit is subject to this warranty and agreement and no other.**

THE H&S WARRANTY

H&S Manufacturing Co., Inc. warrants this unit to be free from breakage or malfunctions due to defects in material and or workmanship for a period of one year from date of original sale on parts and limited labor, two years parts. Should such breakage or malfunction occur within warranty period the liability of H&S, its employees, agents, authorized distributors, and dealers (Hereinafter collectively referred to as sellers) is hereby expressly limited to repairing or, at its option, replacing free of charge at its factory, any such defective part or parts. Sellers liability is further expressly limited with respect to components manufactured by others, such as universal joints, bearings, detachable link and roller chains, tires, belts or trade accessories, to the extent of such warranties as are extended thereon to sellers by these manufacturers.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTIES OF MERCHANTABILITY OR APPLICABLE FOR ANY PARTICULAR PURPOSE, AND THE OBLIGATION AND LIABILITY OF SELLERS UNDER THIS WARRANTY, DOES NOT EXTEND TO LOSS OF CROPS, LOSS BECAUSE OF DELAY IN HARVESTING OR ANY EXPENSE OR LOSS INCURRED FOR LABOR, SUPPLIES, SUBSTITUTE MACHINERY OR RENTAL MACHINERY, TRANSPORTATION OR OTHER CHARGES, OR ANY OTHER INDIRECT OR CONSEQUENTIAL LOSS.

H&S Mfg. Co., Inc. reserves the right to make changes in design and components or material or to utilize available materials which it deems satisfactory, in order to improve its products. Also H&S reserves the right to make changes in the construction or design of any parts without any incurring obligations to install these improvements or changes on previously delivered units.

This warranty shall be void if any part or parts not manufactured or supplied by H&S are used either in servicing and maintaining the unit, and sellers obligation to repair or replace parts are then voided. This warranty shall be void if in the judgement of H&S, repairs are made in such a manner to affect this unit in a materially adverse manner or if this unit is operated unsafely or while in a state of disrepair.

The terms and conditions of this warranty cannot be altered, modified, or waived by any seller without the expressed, written consent of an officer of H&S Mfg. Co., Inc.

NOTICE

H&S Manufacturing Co., Inc. disclaims any liability for the operation of the equipment with the safety guards removed or modified. The nature of this product requires that it be operated in a safe way only, and in good repair by qualified persons. Each purchaser, through the process of purchasing this equipment, agrees with H&S Manufacturing Co., Inc. to operate it in a safe manner and in accordance with applicable state and federal laws and agrees to indemnify and hold harmless H&S Manufacturing Co., Inc. from any loss to any person or persons caused by purchaser's failure to do so. Each purchaser further agrees to bring to the attention this notice to each subsequent purchaser, and to obtain his agreement thereto as a condition of resale or transfer.

IMPORTANT

TO MAKE THIS WARRANTY EFFECTIVE, THE OWNERS WARRANTY REGISTRATION FURNISHED WITH EACH MACHINE MUST BE FILLED OUT AND SENT TO H&S MANUFACTURING CO., INC. IF PURCHASER DOES NOT ACCEPT THIS WARRANTY AND AGREEMENT, HE MAY RESCIND THE SALE BY NOTIFYING ANY OF THE SELLERS IN WRITING OF THAT FACT WITHIN TEN DAYS FROM DATE OF SALE AND/OR PRIOR TO ANY USE OF THE EQUIPMENT WITHIN THIS 10 DAYS.

2/97

WARRANTY REGISTRATION

Date of Purchase _____

Purchaser _____ Address _____

City _____ State _____ Zip _____

Product _____ Model # _____ Serial # _____

Dealer _____ Address _____

City _____ State _____ Zip _____

Signature of original buyer

**FILL OUT AND MAIL
IMMEDIATELY TO MAKE
WARRANTY EFFECTIVE**



IMPORTANT!

Tear on dotted line, provide the information requested on the card. The H&S Warranty is valid **“only”** after this card is received and recorded at H&S Mfg. Co. Mail at once. No postage is required in the U.S.A.

This Is Your Warranty Card
Please Fill Out
And Mail Immediately



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

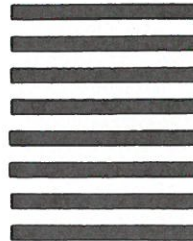
BUSINESS REPLY MAIL

FIRST CLASS MAIL Permit No. 195 Marshfield, WI 54449

POSTAGE WILL BE PAID BY ADDRESSEE

H&S Manufacturing Co., Inc.

PO Box 768
Marshfield WI 54449-9963



AFTER COMPLETION, DEALER SHOULD REMOVE AND RETAIN FOR RECORDS

**H&S
DEALER PRE-DELIVERY CHECK LIST**

After the HD Hi Capacity Bi-Fold Rake has been completely set-up, check to be certain it is in correct operating order 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.

- All grease fittings have been lubricated
See lubrication guide in this manual.
- All mechanisms are operating trouble free.
- Rake wheels touch ground in unison when lowered into raking position.
(rake sitting level)
- All bolts and fasteners are tight.
- All decals are in place and legible.

(Dealer's Name)	Model Number
(Signature of Pre-Delivery Inspector)	Serial Number
(Signature of Pre-Delivery Inspector)	(Inspection Date)

DEALER DELIVERY CHECK LIST

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

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

This pre-delivery check list, 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 he reads and understands all operating and service instructions.
- Record Serial Number on Page 17 of this Manual.
- Have customer sign a completed "Warranty Registration," and mail it promptly.

Date Delivered _____ Dealer's Name _____

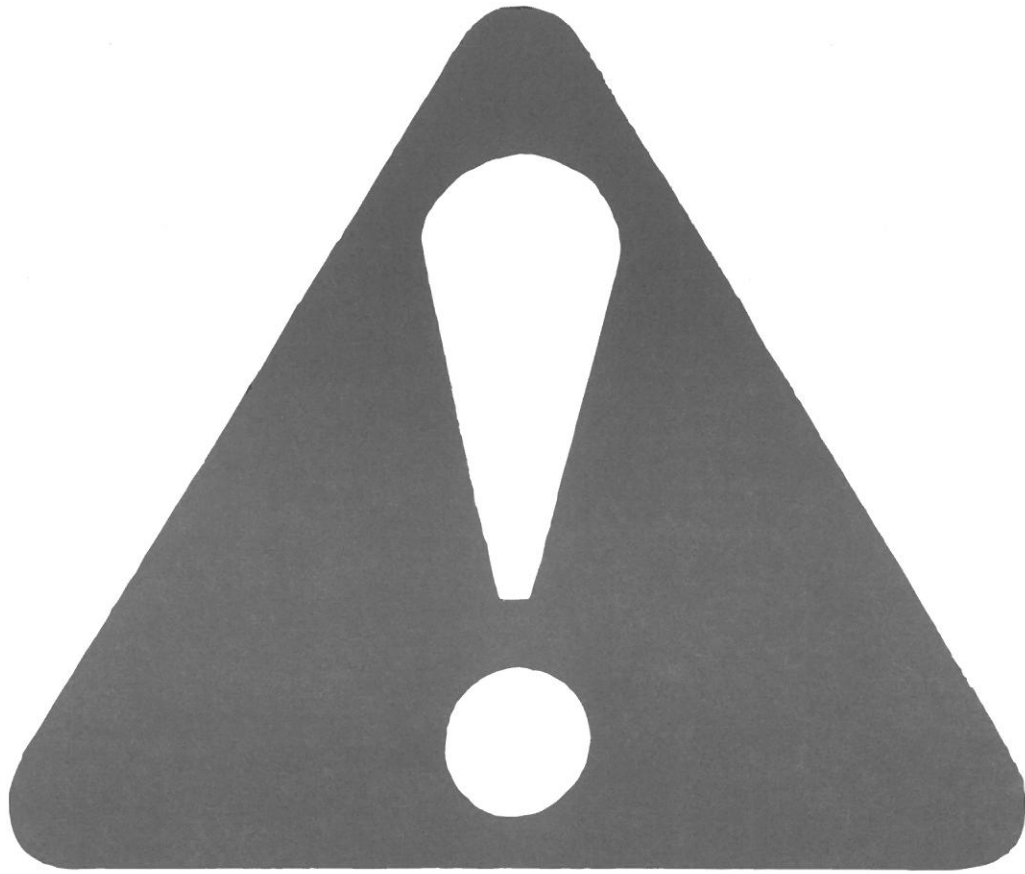
By _____

Signature of Original Buyer

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

Remove Dealers File Cover At Perforation





**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.

TRACTORS

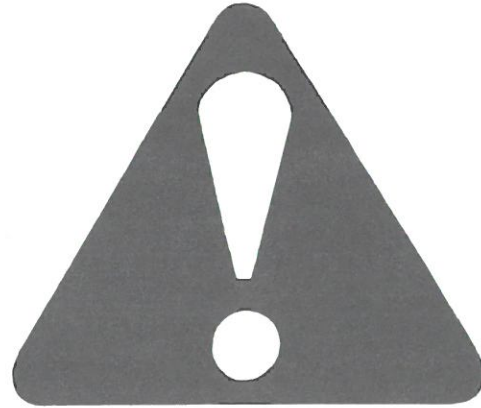
This operator's manual uses the term "Tractor" when identifying the power source for towing and lifting rake.

H&S MANUFACTURING CO. INC.

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.



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.

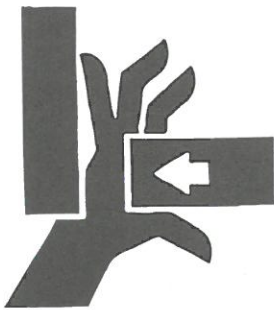


! WARNING

DO NOT GO NEAR LEAKS

- 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



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.

ATTENTION

RAISE RAKE WHEELS BEFORE CLOSING RAKE. LOCK RAKE WHEELS UP IN TRANSPORT POSITION BEFORE DISCONNECTING HYDRAULIC HOSES.

12197A

! WARNING

HELP AVOID INJURY

- 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.

5896A



11694B

! 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.

KEEP CLOTHING, YOURSELF AND OTHERS WELL CLEAR.

H&S HD HI CAPACITY BI-FOLD RAKE



WARNING

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 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.

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

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

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

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

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

For transport, always make sure that the transport pin at the rear of the lift pipe, and the transport lock bars with safety linch pins, are securely locked in place.

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

Be sure to raise rake wheels before closing to transport position.

H&S Mfg. Co. always takes the operator and his safety into consideration and guards exposed moving parts for his 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.

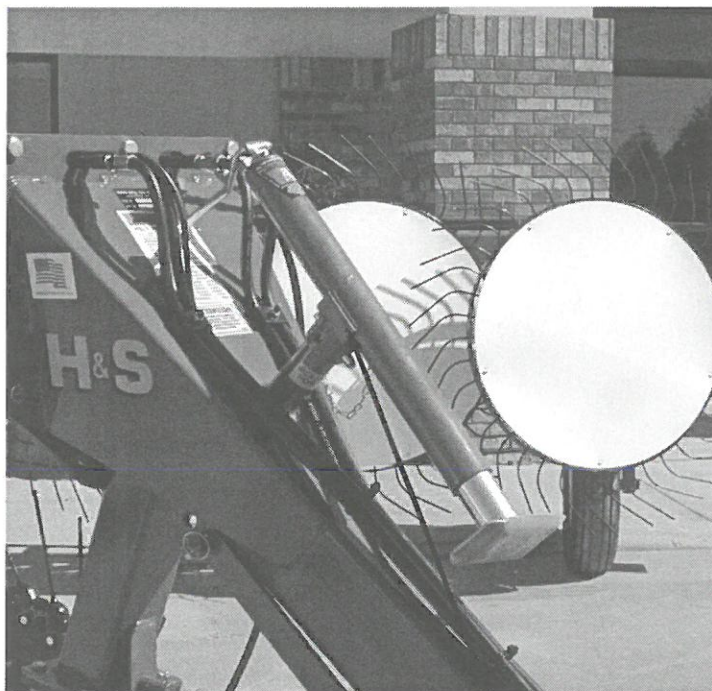
Study The Above Safety Rules

ATTENTION - BE ALERT - YOUR SAFETY IS INVOLVED

OPERATION

1. Check for proper assembly and adjustment and make sure that all bolts are tightened. Securely retighten after a few hours of operation. Bolts can loosen up on new machinery. Check wheel bolts upon delivery and periodically thereafter. Wheel bolts should be tightened at 85-95 ft./lbs. of torque.
2. Check tires and inflate to recommended pressure.
3. Adjust the tractor hitch (13 to 17 inches above ground) and attach rake to tractor with a hitch pin that has a safety locking device.
4. Remove weight from lift jack. Place jack into storage position.
5. Connect hydraulic hose for raising and lowering rake wheels from rake to double acting valve on the tractor.
6. Connect hydraulic hoses for opening and closing the rake to double acting valve on the tractor.
7. Connect electric rear width adjustment control box to tractor power source, attach to a convenient place on the tractor.
8. Lubricate the machine completely.
9. On all rake wheels, tooth bolts must be torqued to 40 ft. lbs. to help prevent excessive tooth breakage, re-torque rake tooth bolts after the first 100 acres. Check periodically thereafter.

NOTE: Determine right or left side of your HD Hi Capacity Rake by viewing it from the rear. If instructions or parts lists call for hardened bolts, they are identified as Grade 5 by three lines on the head.



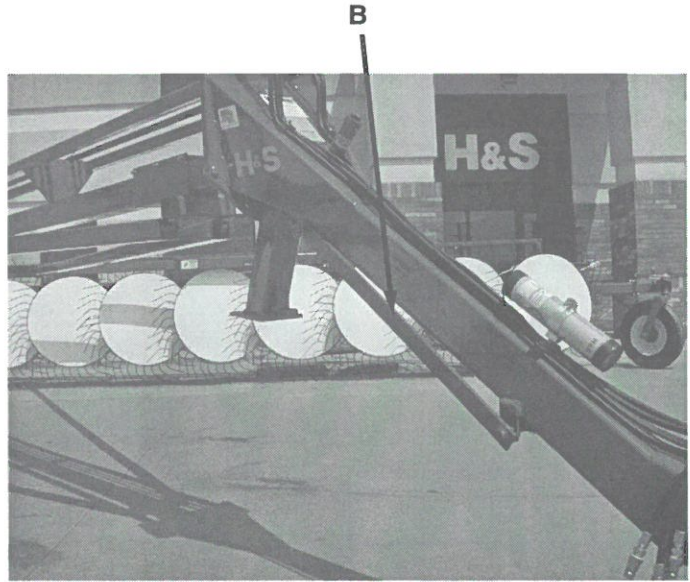
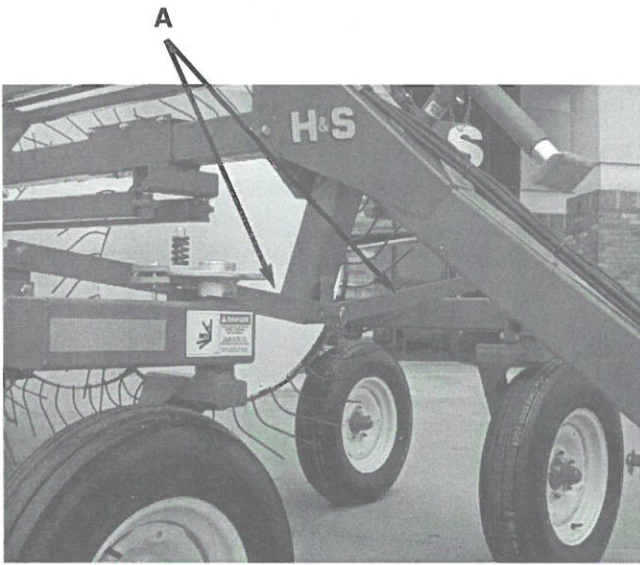
JACK STORAGE POSITION

OPERATION *(Continued)*

TRANSPORT LOCKS, FRONT & REAR

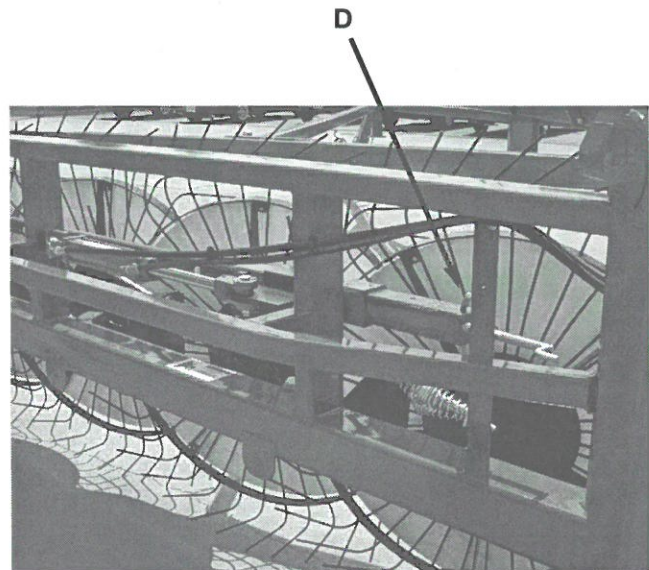
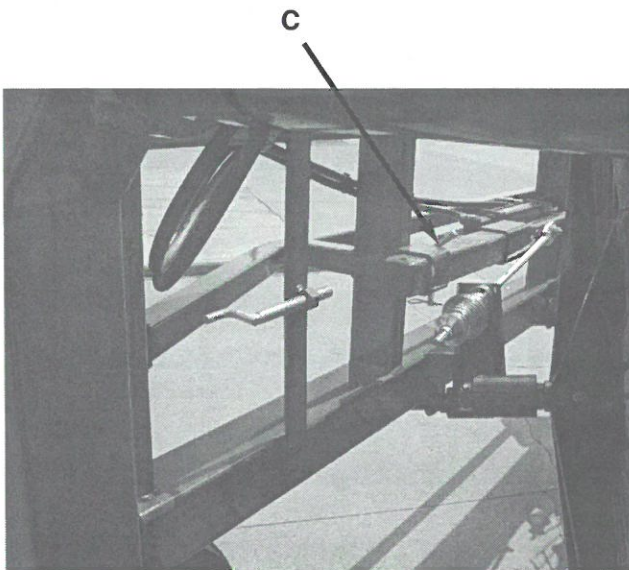
Front Locks

Mounted to the front of the main frame, are left and right transport locks. (A) Shows the right and left sides of the rake locked into transport position. (B) Shows the transport lock in the convenient storage position, to be used when in the raking mode. **Rear width adjustment should be in the narrowest position before locking the front locks for transport.**



REAR LOCKS

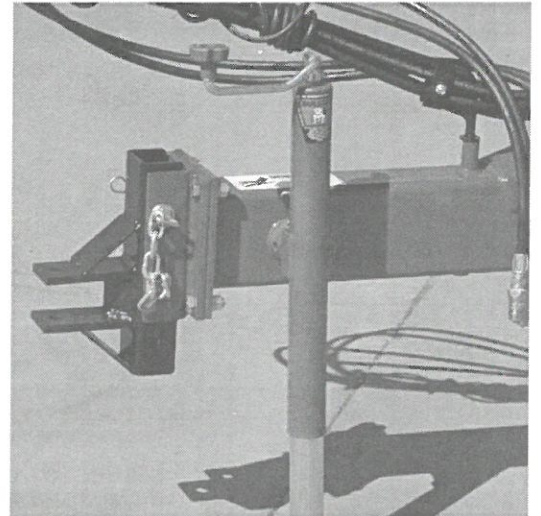
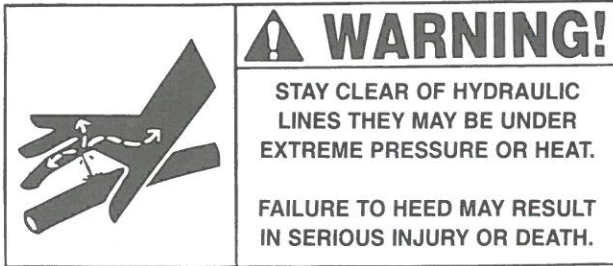
Located at the rear of the lift pipe, is a transport pin which is used to secure the rake wheels in the up position for transport (C). When in the down, or raking position, place the transport pin in the convenient storage position as shown (D).



ADJUSTMENTS

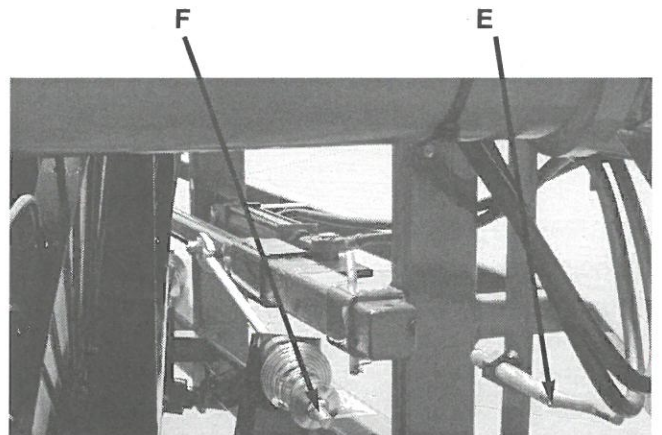
HITCH

There are ten different positions to adjust the hitch on your new HD Hi Capacity Rake. Hitch should be adjusted so main frame of the rake is level or parallel to the ground.



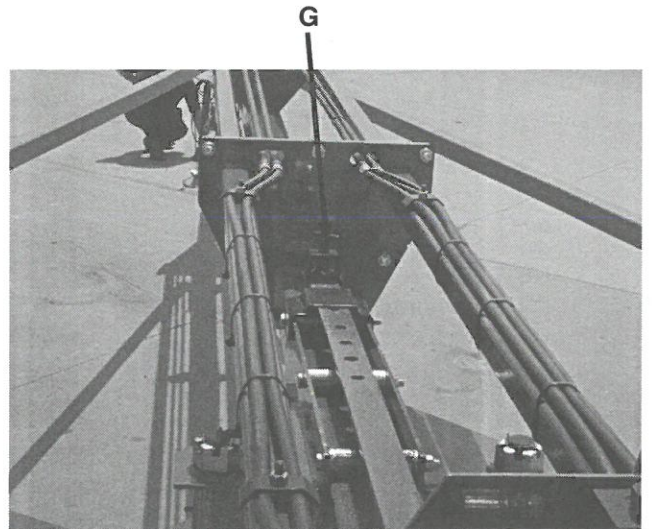
GROUND PRESSURE

Rake wheel to ground pressure may be adjusted in one of two ways. Pressure may be adjusted each side at a time (right or left) or by each individual wheel. To adjust a side, turn crank (E) until desired ground pressure is obtained. Each individual wheel may be adjusted by tightening or loosening nut (F).



RAKING WIDTH

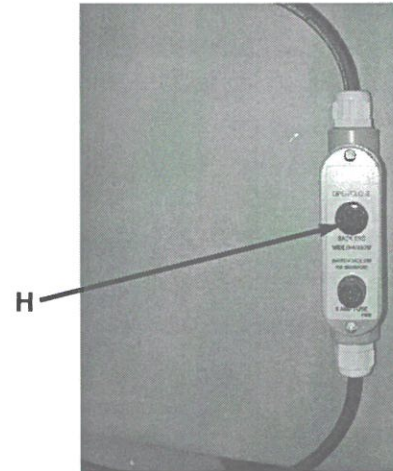
Raking width is determined by setting the spring loaded stop, located above the rear pole section as shown. (G)



ADJUSTMENTS *(Continued)*

WINDROW WIDTH

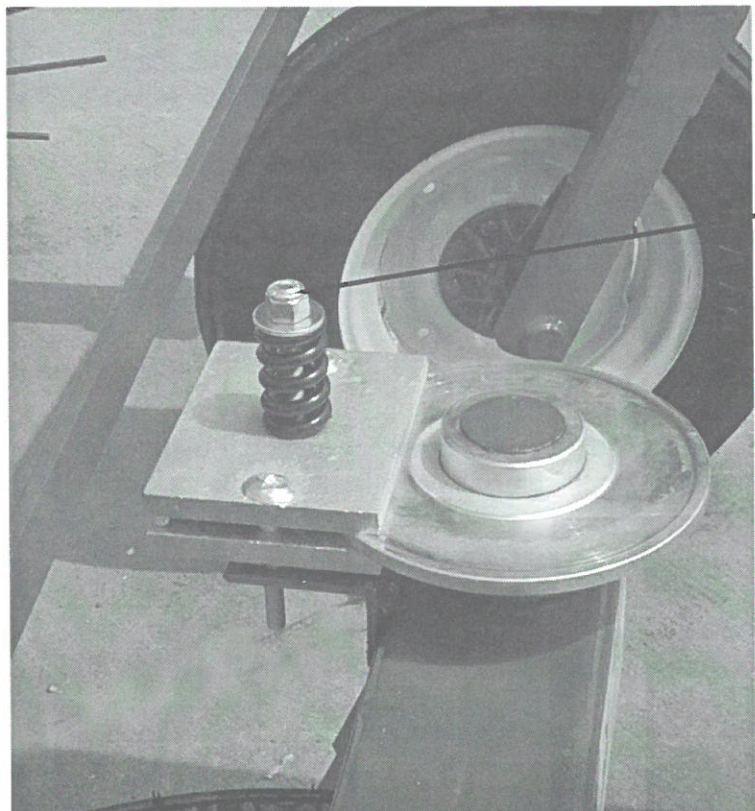
Windrow width is hydraulically adjustable from 38" to 58". Adjustment is made by holding switch (H) and operating tractor lever that normally opens and closes the rake. Adjustment should be made while moving. This will reduce the amount of stress on wheels and parts involved.



	! WARNING
	<p>STAY CLEAR OF RAKE WHEN RAISING OR LOWERING RAKE WHEELS.</p> <p>FAILURE TO HEED THIS WARNING MAY RESULT IN <u>PERSONAL INJURY OR DEATH.</u></p> <p>KEEP CLOTHING, YOURSELF AND OTHERS WELL CLEAR.</p>

GAUGE WHEELS

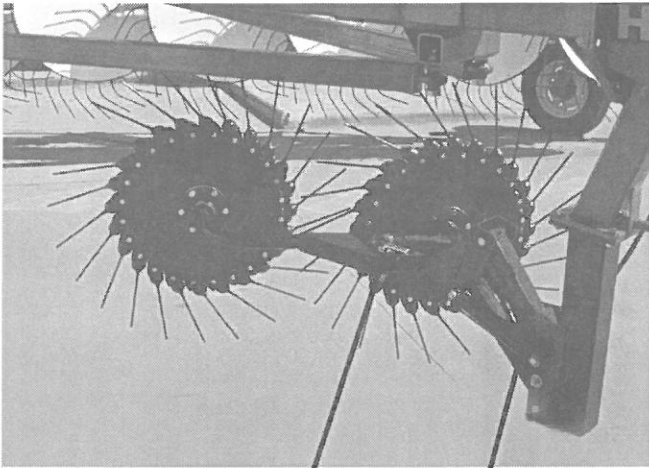
Outboard gauge wheels are located on the forward section of each rake beam. These gauge wheels support the rake beams to allow the rake wheels to better follow the contour of the ground. Located on the gauge wheel pivot spindle is an adjustable brake assembly. Adjust brake by tightening bolt (I). The brake should have enough tension to prevent zig-zag motion, but still allow the wheel to pivot when making corners.



OPTIONAL CENTER KICKER WHEEL

An optional center kicker wheel assembly is available for the HD Hi Capacity Rakes. If the hay is laying out flat, these extra wheels allow you to raise the hay laying in the center of the rake out of the stubble for faster drying, and easier pick-up. A separate cylinder controls the kicker wheel assembly. It raises and lowers with the rake wheels. To engage center kicker wheels, hydraulically open rake to desired raking width. Next remove locking pin from position (J). Lower rake wheels. Place pin in storage position (J). Remove pin (L), swivel center kicker wheels to desired angle, lock into place with pin (L). To return to transport position, reverse above steps.

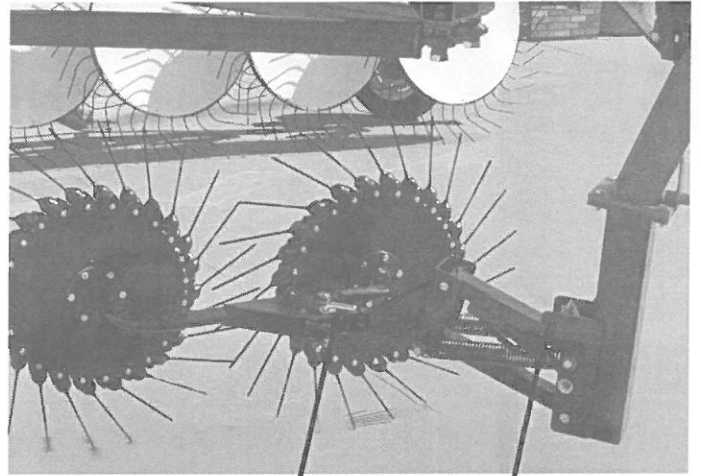
RAISED



L

J

LOWERED



L

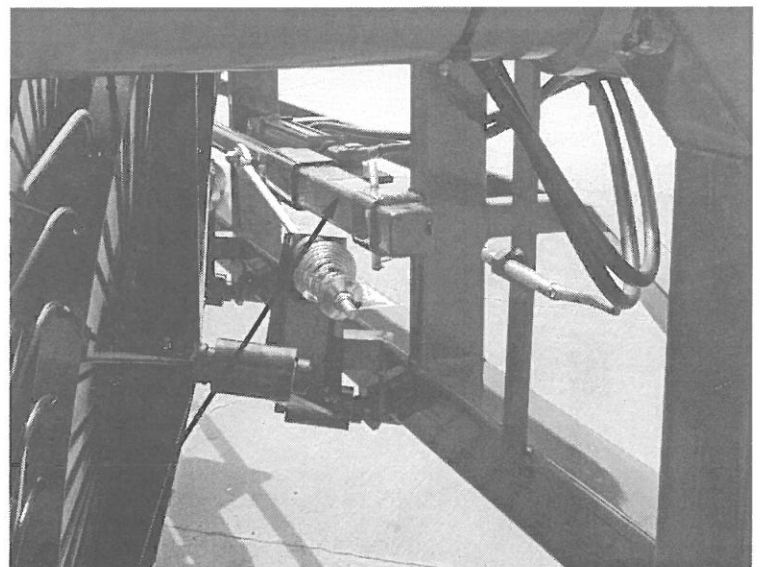
J

LUBRICATION GUIDE

GREASE FITTINGS

There are 21 grease fittings on the 14 wheel, 23 fittings on the 16, 18, and 20 HD Hi Capacity Rakes. If equipped with a center kicker wheel, there will be four more on the pivot points. If lubricated properly and often enough, it will prolong the life of your HD Hi Capacity Rake. Grease daily during normal use and before and after storage. 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 or chaff or grit around the bearings.

Grease should be smeared on the lifting pipe slide (K) daily. This will reduce wear and ensure proper operation. Improper maintenance of this area may cause rake wheels to not lower properly.



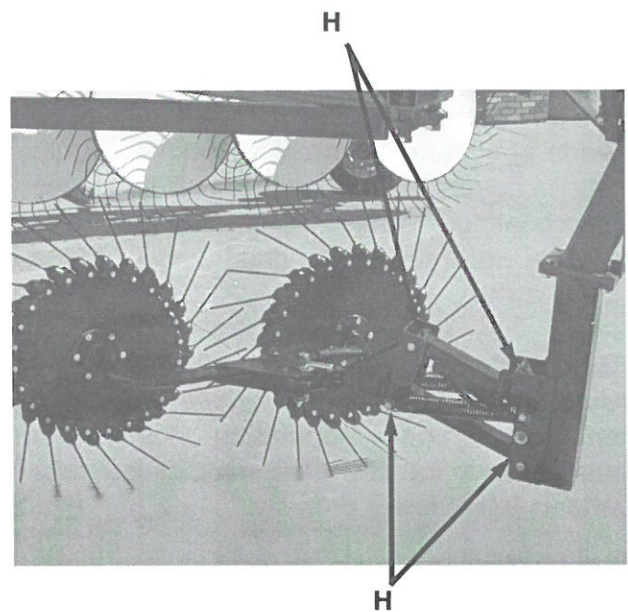
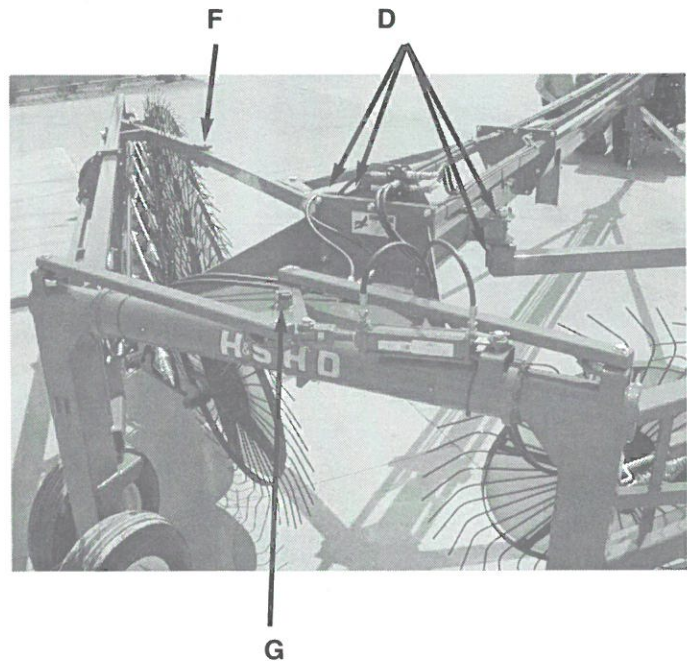
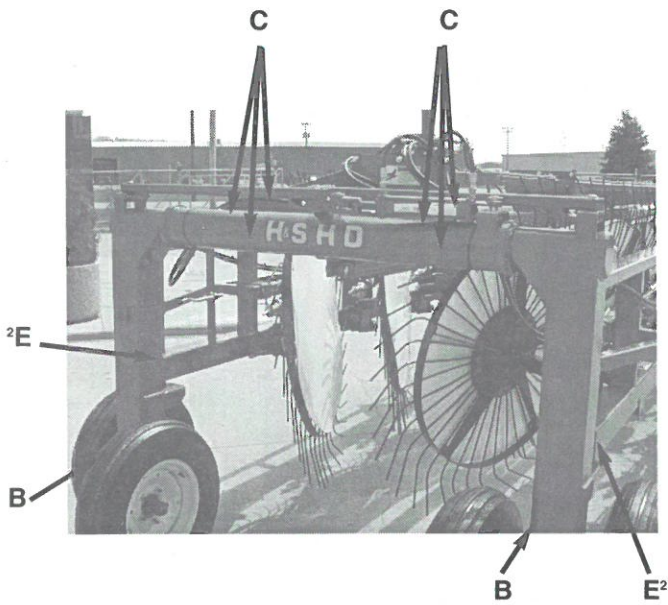
K

LUBRICATION GUIDE *(Continued)*

LOCATION

Listed and shown are the description of location and number of grease fittings.

- A. (4) One on each Front Wheel Pivot (2 on 14 Wheel)
- B. (2) One on each Tandem Walking Beam Pivot
- C. (6) Two on three sides of Top Rear Support
- D. (4) Two on each Support Arm Pivot
- E. (4) Two on each side, Rear Main Beam Pivots
- F. (2) One on each Folding Support Arm Hinge
- G. (1) Width Adjustment Pivot
- H. (4) One on each Center Kicker Wheel Pivot Point (If so equipped)



DECAL LOCATION

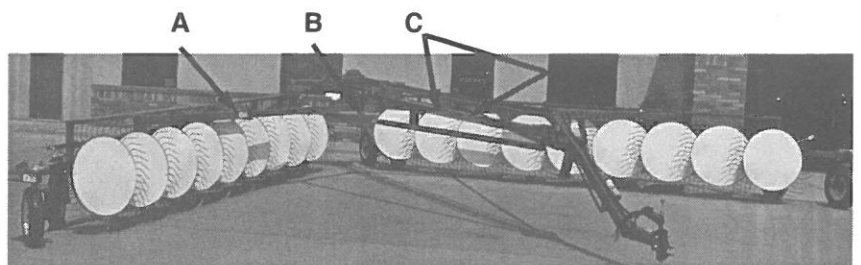
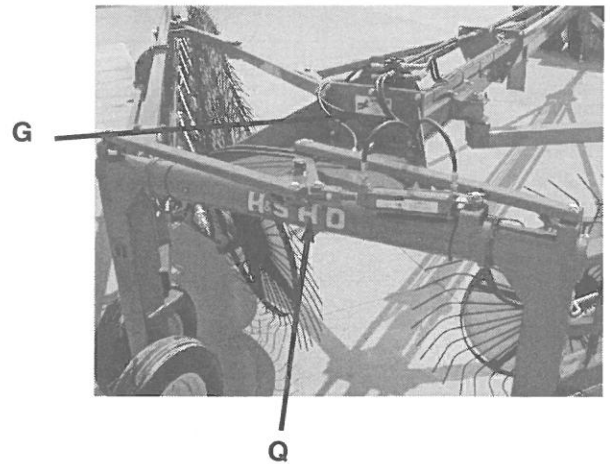
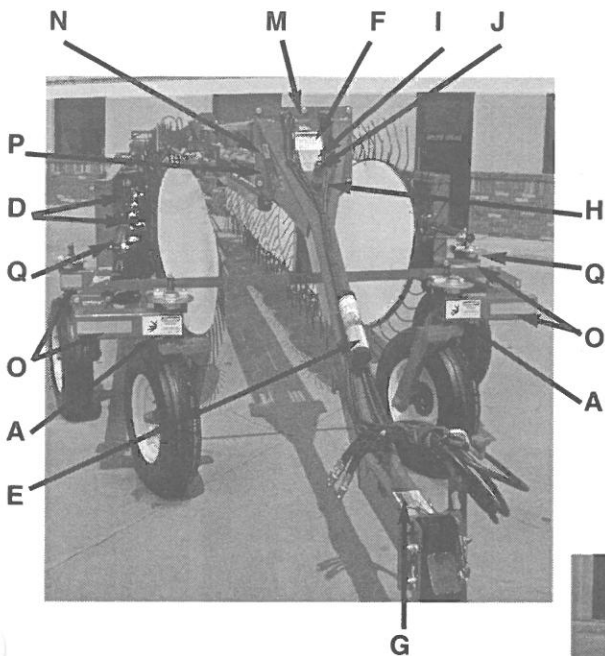
Your H&S H D Hi Capacity Rake was manufactured with operator safety in mind. Located on the Hi Capacity Rake are various decals to aid in operation, and warn of danger or caution areas. Pay close attention to all the decals.



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

Listed below are the decals on your HD Hi Capacity Rake. These decals may be ordered individually by part number or by ordering a complete set.

ITEM	PART NO.	DESCRIPTION
A	11694A	(4) DANGER - Stay Clear of Rake
B	11694B	(2) Danger - Stay Clear of Rake
C		(2) H&S Hi Capacity Rake
D	2195	(4) WARNING - Stay Clear of Rake
E		Operator Manual Storage
F	5896A	Warning - Help Avoid Injuries
G	11599	(2) WARNING - Stay Clear of Leaks
H	71188B	Jack Storage Position
I		Patent Numbers
J	12197A	Attention - Raise Rake Wheels
L	52802	Control Switch Decal
M		Serial Number
N		Made in USA-Flag
O		Amber Reflective Decal
P		(2) H&S
Q		(3) H&S HD
	70302-HDHiCap	Complete Set of Decals



INSTRUCTIONS FOR ORDERING PARTS

All service parts should be ordered through your authorized H&S dealer. He will be able to give you faster service if you will provide him with the following:

1. Model & Serial Number - Both can be located on the left, rear main frame of your unit
2. All reference to left or right apply to the machine as viewed from the rear.
3. Parts should not be ordered from illustration only. Please order by complete part number.
4. If your dealer has to order parts - give shipping instructions:

VIA truck - large pieces (please specify local truck lines)

VIA United Parcel Service (include full address)

H&S Mfg. Co.	
MARSHFIELD, WIS.	
MOD. NO.	<input type="text"/>
SER. NO.	<input type="text"/>

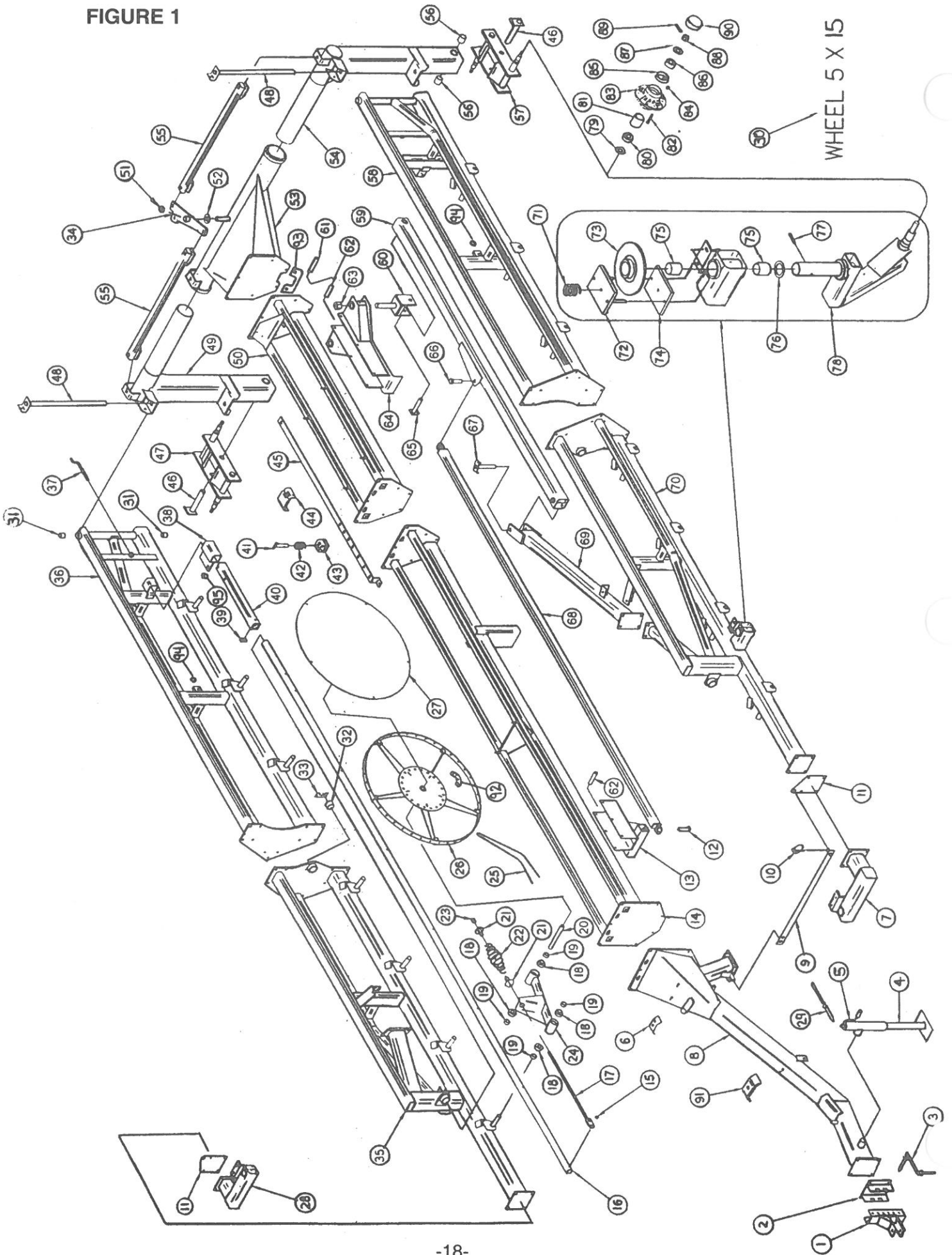
PLEASE RECORD NUMBERS FOR YOUR UNIT FOR QUICK REFERENCE

ABOUT IMPROVEMENTS

H&S IS CONTINUALLY STRIVING TO IMPROVE ITS' PRODUCTS.

We must therefore, reserve the right to make improvements or changes whenever it becomes practical to do so, without incurring any obligation to make changes or additions to the equipment previously sold.

FIGURE 1



H&S HD 14 & 18 HEAVY DUTY RAKE MAIN FRAME FIGURE 1

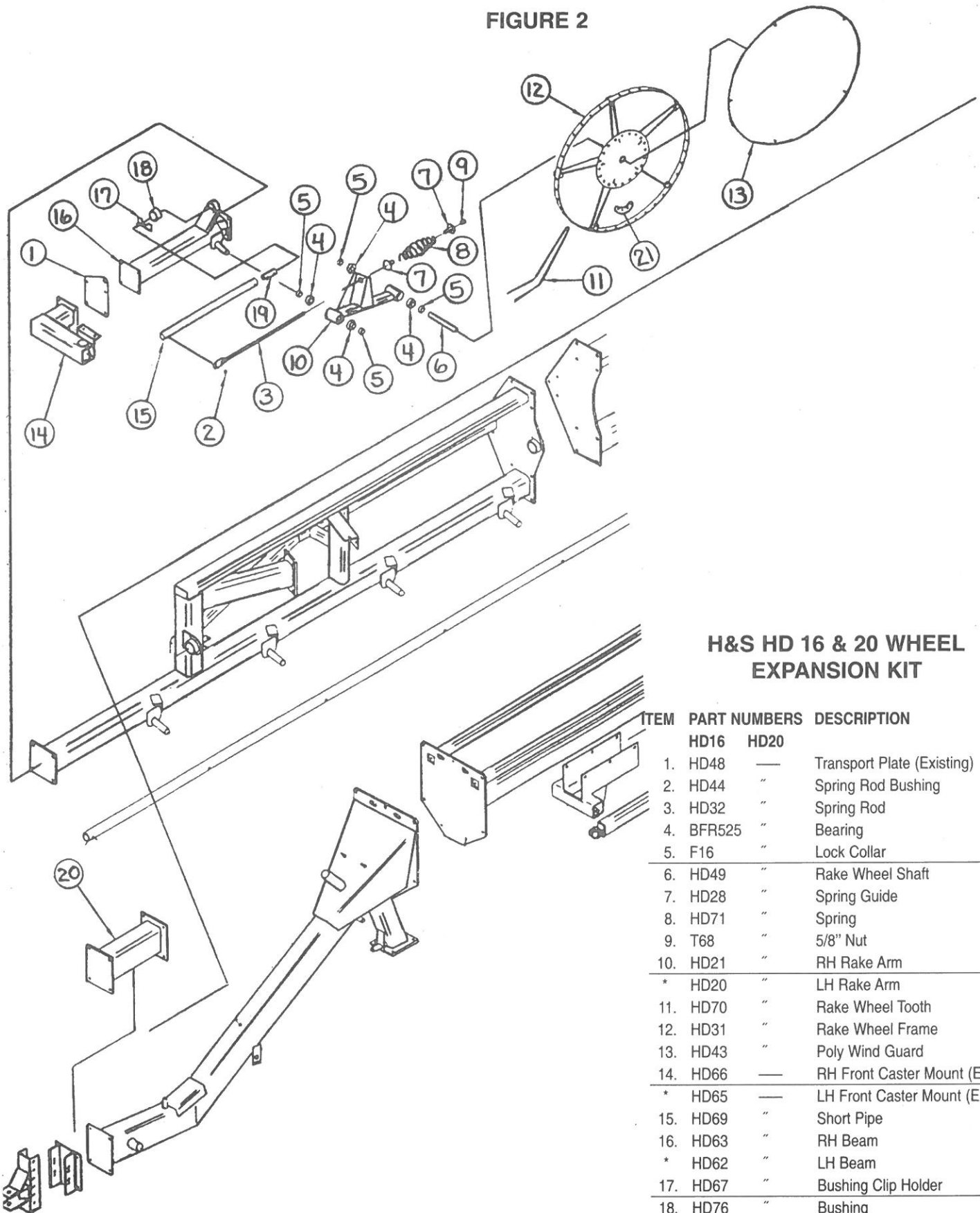
ITEM	PART NUMBERS		DESCRIPTION	ITEM	PART NUMBERS		DESCRIPTION
	HD14	HD18			HD14	HD18	
1.	BFR157	"	Hitch				
2.	HD25	"	Hitch Plate	48.	HD34	"	Rake Beam Pin
3.	BFR450	"	Hitch Pins	49.	HD13	"	Right Axle Upright
4.	BFR223	"	Jack	50.	HD5	"	Center Pole
5.	B17B	"	Jack Handle	51.	S218	"	Spacer
6.	23N67	"	Hose Bracket	52.	BFR229	"	Washer 1-1/4"IDx2"ODx3/16"
7.	—	HD65	LH Front Caster Mount	53.	HD2	"	Rear Pivot
8.	HD7	"	Pole	54.	HD12	"	Left Axle Upright
9.	HD11	"	Transport Bar (2)	55.	HD4	"	Back Link
10.	BFR443	"	Lynch Pin	56.	BFR625	"	Bushing 1-1/2"IDx1-3/4"ODx2-1/2"
11.	HD48	"	Transport Plate	57.	HD22	"	LH Tandem
12.	BFR177	"	Bolt 1" x 4" GR.5	58.	HD9	"	Back LH Beam
13.	HD14	"	Front Slider	59.	HD18	"	Pivot Linkage
14.	HD6	HD57	Front Pole	60.	BFR476	"	Back
15.	HD44	"	Spring Rod Bushing	61.	BFR471	"	Back Slider Roller
16.	HD47	HD61	Lifting Pipe	62.	BFR457	"	Slider Spacer
17.	HD32	"	Spring Rod	63.	BFR481	"	1-1/2" Nut
18.	BFR525	"	Bearing	64.	HD3	"	Back Slider
19.	F16	"	Lock Collar	65.	HD35	"	LH Pivot Yoke Shaft Pin
20.	HD49	"	Rake Wheel Shaft	66.	BFR544	"	1"x6" Bolt GR.5
21.	HD28	"	Spring Guide	67.	HD36	"	Beam Arm Pin
22.	HD71	"	Wheel Spring	68.	HD37	HD58	Ball Joint Pivot Arm
23.	T68	"	5/8" Nut	69.	HD17	"	Extension Arm LH
24.	HD21	"	RH Rake Arm	*	HD24	"	Extension Arm RH
*	HD20	"	LH Rake Arm	70.	HD10	HD59	Front LH Beam
25.	HD70	"	Rake Wheel Tooth	71.	HD72	"	Brake Spring
26.	HD31	"	Rake Wheel Frame	72.	HD15	"	Top Brake Pad
*	HD74	"	RH Comp. Rake Wheel Less Poly	73.	HD16	"	Brake Disk
*	HD75	"	LH Comp. Rake Wheel Less Poly	74.	HD73	"	Bottom Brake Pad
27.	HD43	"	Poly Wind Guard	75.	BFR527	"	Bushing 2"IDx2-1/4"ODx2"
28.	—	HD66	RH Caster Mount	76.	RG24	"	Bronze Thrust Washer
29.	BFR4	"	Jack Pin & Chain	77.	S106	"	Roll Pin
30.	BFR67	"	Wheel 5x15	78.	BFR316	"	Left Hand Fork
31.	RG132	"	Bushing 1-1/4"ID x 1-1/2"OD x 2	*	BFR312	"	Right Hand Fork
32.	HD76	"	Bushing-Plastic	79.	BFR57	"	Seal
33.	HD45	"	Bushing Clip	80.	BFR58	"	Inner Bearing
34.	HD8	"	Cam Arm	81.	BFR59	"	Inner Race
35.	HD38	HD60	Front RH Beam	82.	BFR143	"	Stud Bolt
36.	HD26	"	Back RH Beam	83.	BFR60	"	Hub
37.	HD29	"	Acme Crank	84.	BFR144	"	Nut
38.	HD27	"	Cylinder Slider	85.	BFR61	"	Outer Race
39.	HD41	"	Stop Block	86.	BFR62	"	Outer Bearing
40.	HD30	"	Square Lifter	87.	BFR63	"	Washer
41.	BFR141	"	Adjustment Handle	88.	BFR64	"	Castellated Nut
42.	BFR240	"	Spring	89.	BFR65	"	Cotter Pin
43.	BFR239	"	Sleeve Adjustment Lock	90.	BFR66	"	Hub Cap
44.	HD40	"	Width Stop	91.	T223	"	Hose Bracket
45.	HD33	"	Width Adjustment Bar	92.	HD42	"	Rake Wheel Clip
46.	HD19	"	Axle Pivot Pin	93.	HD78	"	Cylinder Yoke
47.	HD23	"	RH Tandem	94.	BFR33	"	Washer
				95.	K132	"	Spacer

NOTE: * (Means Not Shown)

" (Means Same as Preceding)

— (Means Not Used on This Model)

FIGURE 2

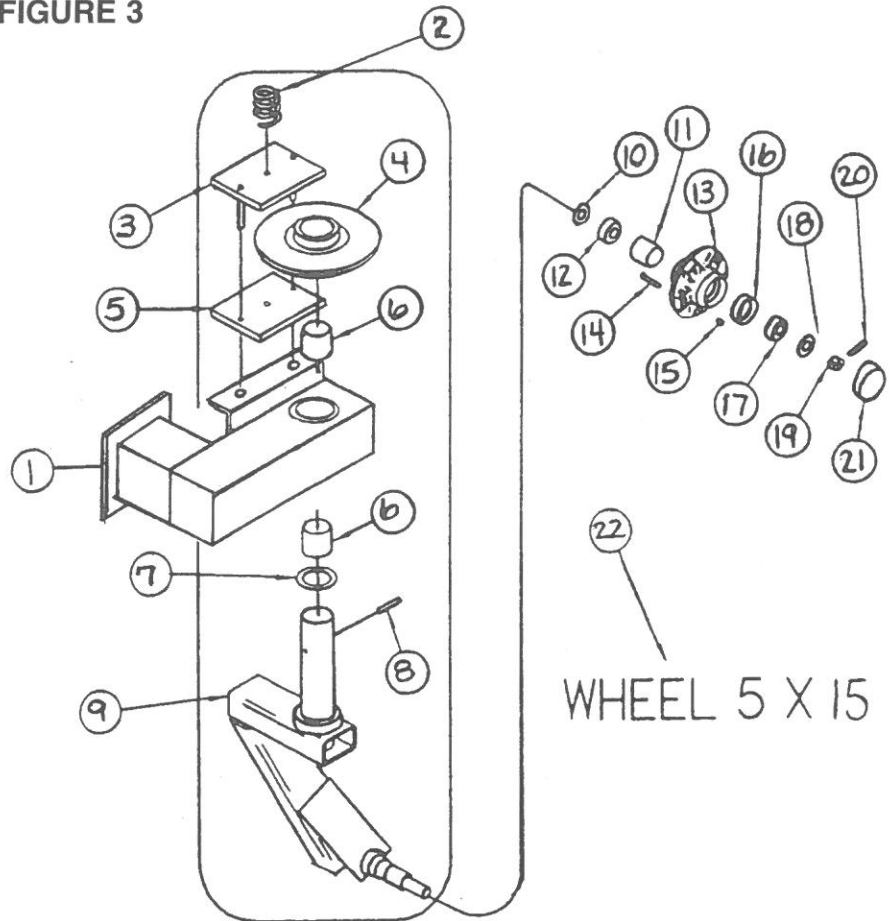


**H&S HD 16 & 20 WHEEL
EXPANSION KIT**

ITEM	PART NUMBERS		DESCRIPTION
	HD16	HD20	
1.	HD48	—	Transport Plate (Existing)
2.	HD44	"	Spring Rod Bushing
3.	HD32	"	Spring Rod
4.	BFR525	"	Bearing
5.	F16	"	Lock Collar
6.	HD49	"	Rake Wheel Shaft
7.	HD28	"	Spring Guide
8.	HD71	"	Spring
9.	T68	"	5/8" Nut
10.	HD21	"	RH Rake Arm
*	HD20	"	LH Rake Arm
11.	HD70	"	Rake Wheel Tooth
12.	HD31	"	Rake Wheel Frame
13.	HD43	"	Poly Wind Guard
14.	HD66	—	RH Front Caster Mount (Existing)
*	HD65	—	LH Front Caster Mount (Existing)
15.	HD69	"	Short Pipe
16.	HD63	"	RH Beam
*	HD62	"	LH Beam
17.	HD67	"	Bushing Clip Holder
18.	HD76	"	Bushing
19.	HD68	"	Coupler
20.	HD64	"	Pole Extension
21.	HD42	"	Rake Wheel Clip

NOTE: * (Means Not Shown)
 " (Means Same as Preceding)
 — (Means Not Used on This Model)
NOTE: (RH Shown)

FIGURE 3



WHEEL 5 X 15

H&S HD GAUGE WHEEL
HD 14 (Optional)
HD 16-18-20 (Standard)

ITEM	PART NUMBER	DESCRIPTION
1.	HD66	RH Front Caster Mount
*	HD65	LH Front Caster Mount
2.	HD72	Brake Spring
3.	HD15	Top Brake Band
4.	HD16	Brake
5.	HD73	Bottom Brake Band
6.	BFR527	Bushing
7.	RG24	Bronze Thrust Washer
8.	S106	Roll Pin
9.	BFR316	LH Fork
*	BFR312	RH Fork
10.	BFR57	Seal
11.	BFR59	Inner Race
12.	BFR58	Inner Bearing
13.	BFR60	Hub
14.	BFR143	Stud Bolt
15.	BFR144	Nut
16.	BFR61	Outer Race
17.	BFR62	Outer Bearing
18.	BFR63	Washer
19.	BFR64	Castellated Nut
20.	BFR65	Cotter Pin
21.	BFR66	Hub Cap
22.	BFR67	Wheel 5x15

NOTE: * (Means Not Shown)

FIGURE 4

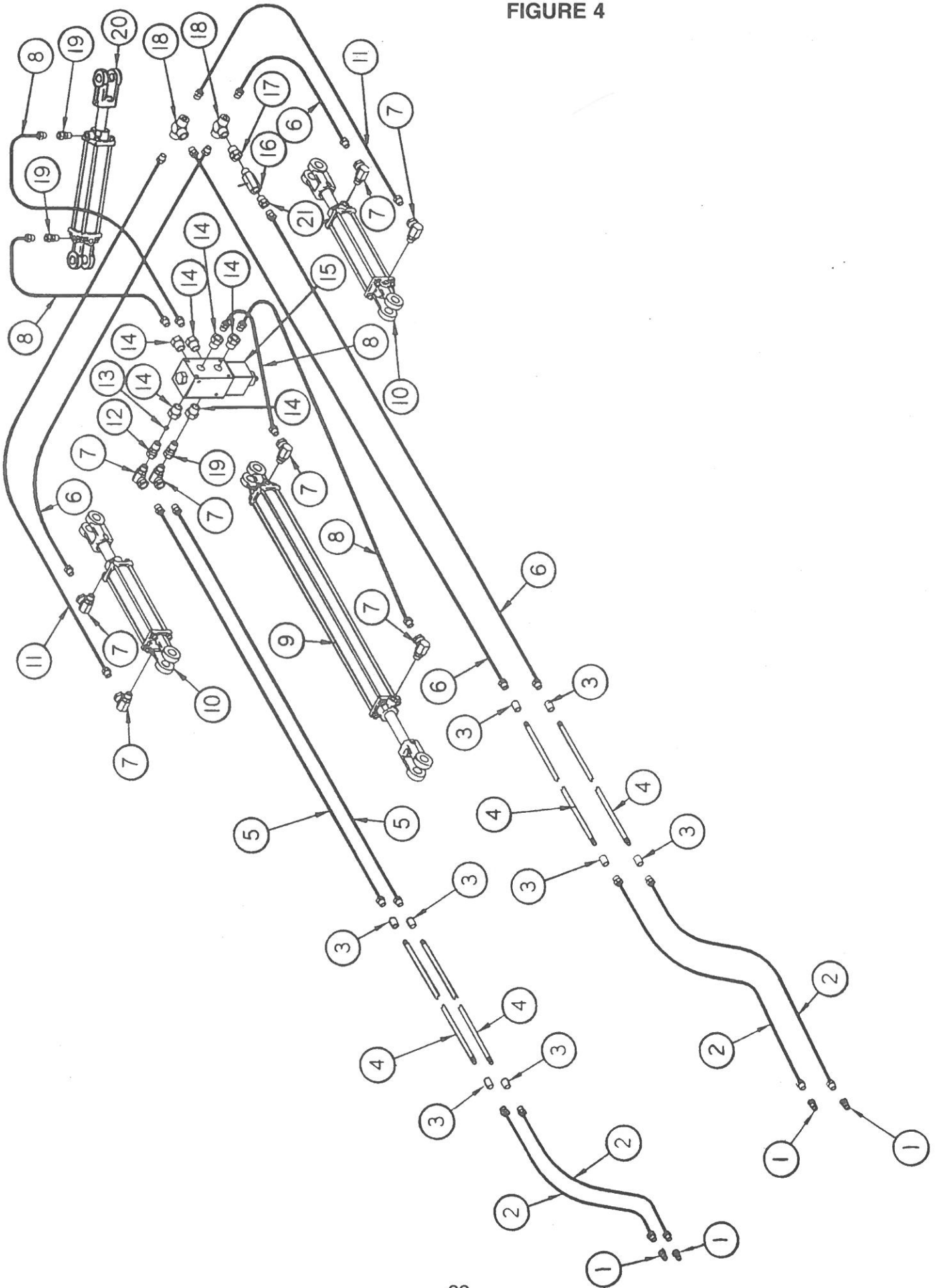
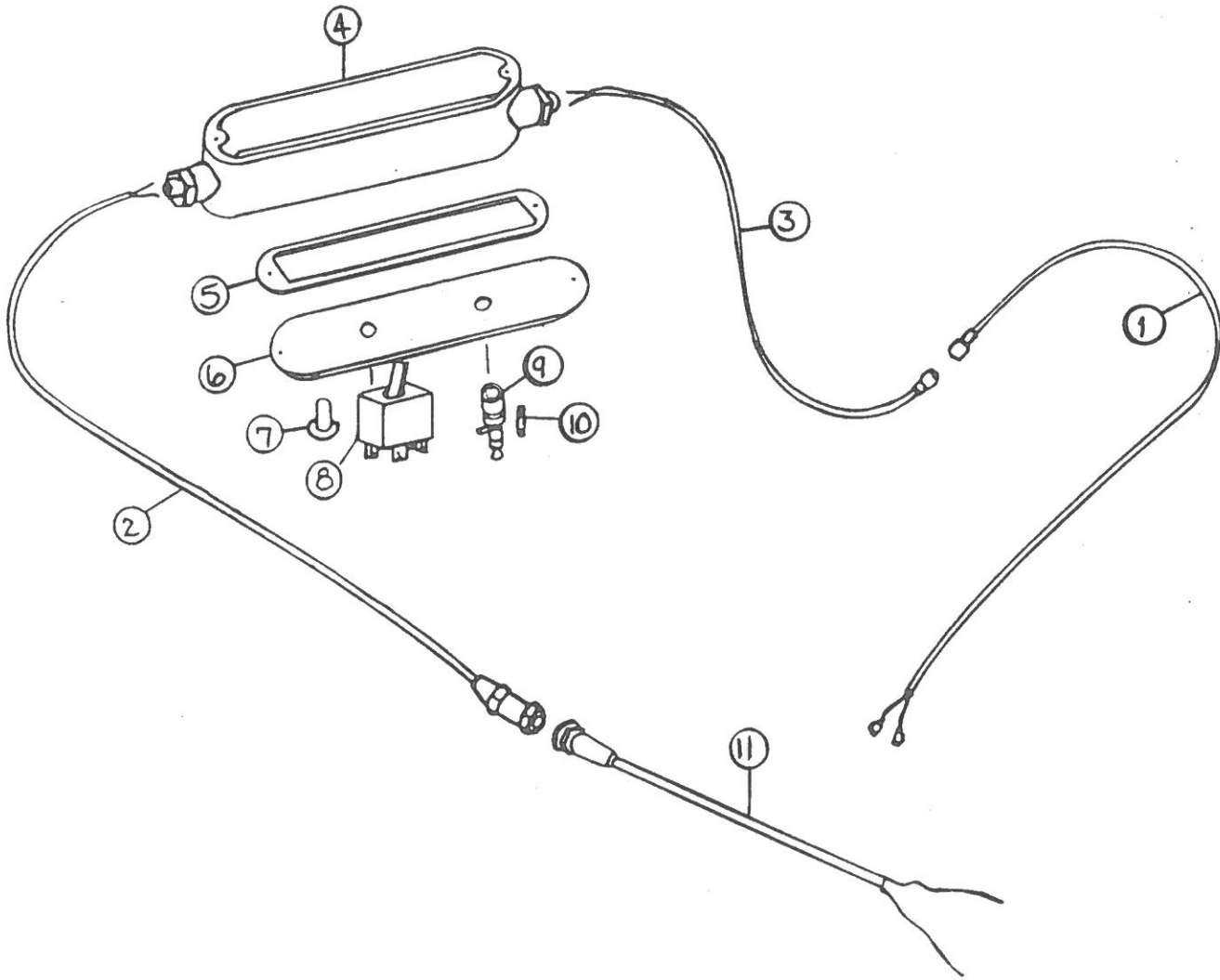


FIGURE 4
HD RAKE HYDRAULICS

ITEM	PART NUMBER	DESCRIPTION
1.	DWM205	Male Coupler
2.	HD77	3x8x155"-3/8 MP & 1/2 MP
3.	HE60	3/8" Pipe Coupler
4.	HD46	3/8" Steel Lines (HD14 & HD16)
*	HD50	3/8" Steel Lines (HD18 & HD20)
5.	HD51	3/8"x72"-3/8 MP & 3/8 MP
6.	HD52	3/8"x96"-3/8" MP & 3/8 MP
7.	DWM110	3/8" 90° Male Union Adapter
8.	HD53	3/8"x48"-3/8 MP & 3/8 MP
9.	HD55	2-1/2"x36" Cylinder
10.	16SV171A	2"x10" Cylinder
11.	HD54	3/8"x108"-3/8 MP & 3/8 MP
12.	BFR122	3/8" Male Union Adapter
13.	BFR120	1/16" Orifice
*	BFR617	Union Adapter w/Orifice
14.	WM148	3/4" O-Ring to 3/8" Pipe Adapter
15.	16SV247	Electric Valve
16.	BFR554	Flow Valve
17.	BFR555	1/2" to 3/8" Adapter
18.	BFR74	3/8" Female Tee
19.	DWM233	3/8" Male Union Adapter
20.	T188A	2-1/2"x8" Cylinder
21.	JB82	3/8"-1/2" Bushing

NOTE: * (Means Not Shown)

FIGURE 5

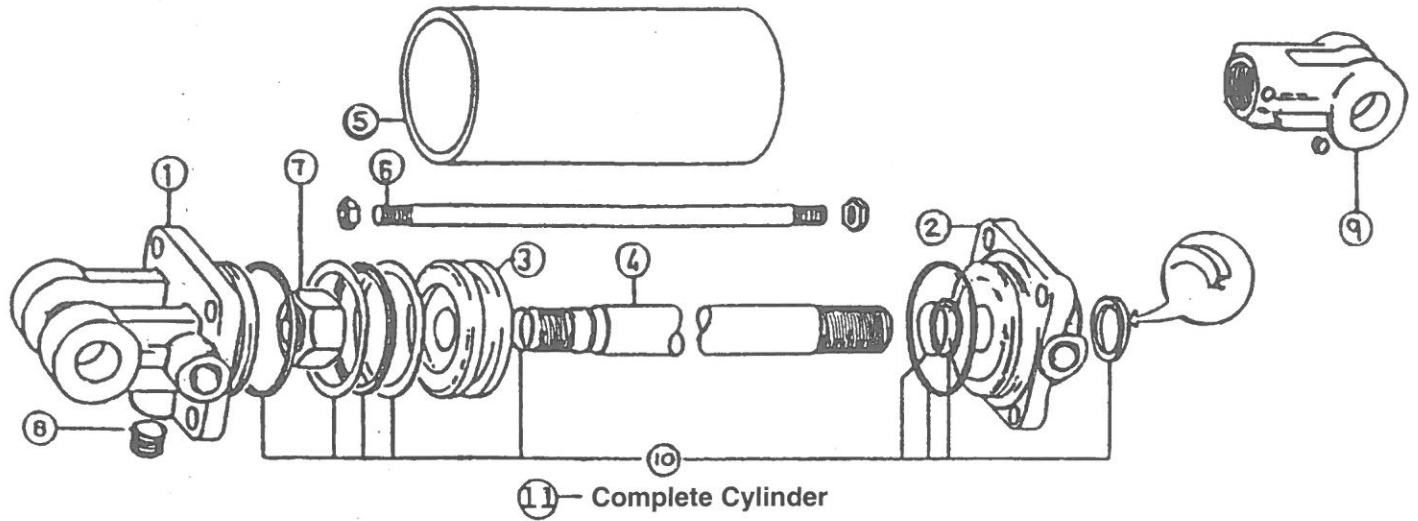


H&S HD ELECTRIC CONTROL BOX

ITEM	PART NUMBER	DESCRIPTION
1.	HD1	Rake Power Supply Cord w/Ends
2.	16SV271	Control Box Power Supply W/Plug in Slots
3.	16SV270	Tractor Power Supply w/Pins
4.	16SV316	Control Box
5.	16SV317	Control Box Gasket
6.	16SV318	Control Box Cover
7.	16SV235	Switch Boot
8.	WM109	Switch
9.	16SV231	Fuse Holder
10.	16SV232	Fuse
11.	16SV269	Tractor Control Cord
*	HD56	Control Box Complete

NOTE: * (Means Not Shown)

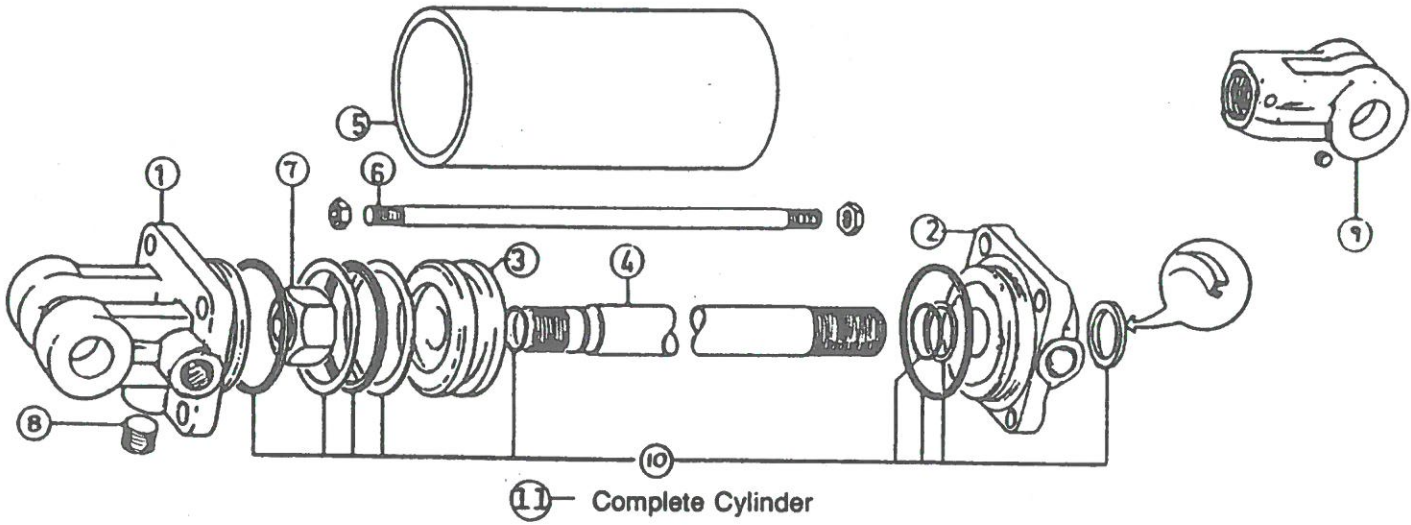
FIGURE 6



HYDRAULIC LIFT CYLINDER (2"x10")

ITEM	PART NUMBER	DESCRIPTION
1.	23N142A	Clevis Cap
2.	23N143A	Rod Cap
3.	23N144	Piston
4.	16SV168A	Rod
5.	16SV169	Cylinder Tube
6.	16SV170	Tie Rod
7.	23N148	Piston Nut
8.	23N149	Plug
9.	23N150A	Rod Clevis
10.	23N151	Seal Kit
11.	16SV171A	Complete Hydraulic Cylinder

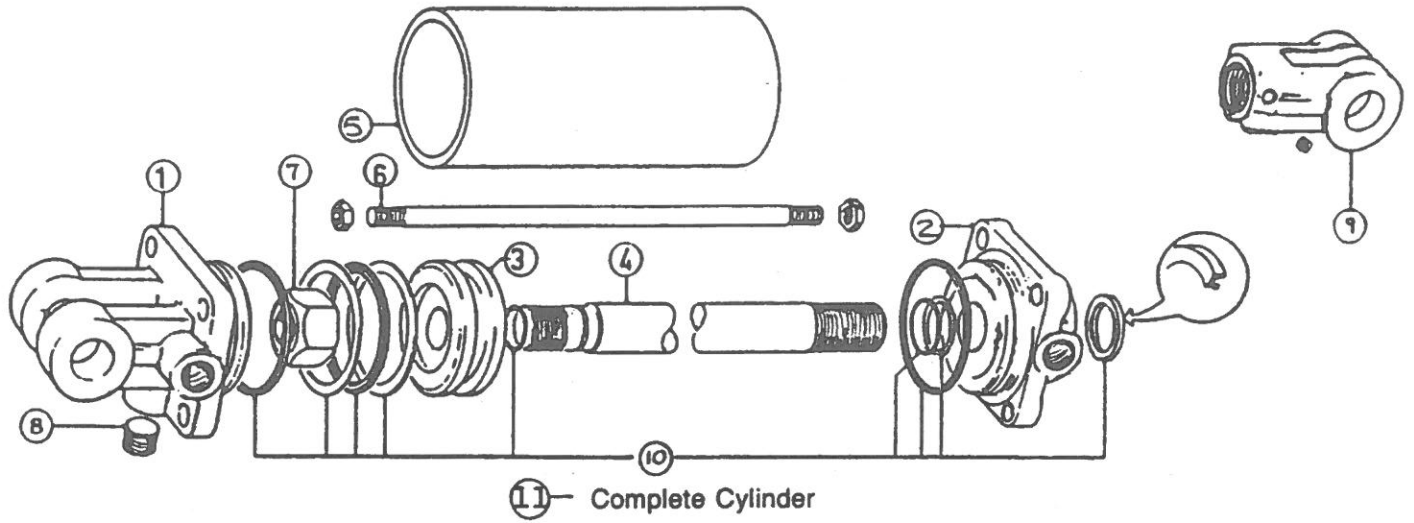
FIGURE 7



HYDRAULIC WINDROW ADJUSTMENT CYLINDER (2-1/2"x8")

ITEM	PART NUMBER	DESCRIPTION
1.	T181A	Clevis Cap
2.	T182A	Rod Cap
3.	T183	Piston
4.	T184A	Rod
5.	T185	Cylinder Tube
6.	T186	Tie Rod
7.	23N148	Piston Nut
8.	23N149	Plug
9.	23N150A	Rod Clevis
10.	T187	Seal Kit
11.	T188A	Complete Cylinder

FIGURE 8



HYDRAULIC OPENING CYLINDER (2-1/2"X36")

ITEM	PART NUMBER	DESCRIPTION
1.	T181A	Clevis Cap
2.	50N181	Rod Cap
3.	T183	Piston
4.	HD79	Rod
5.	HD80	Cylinder Tube
6.	HD81	Tie Rod
7.	23N148	Piston Nut
8.	23N149	Plug
9.	23N150A	Rod Clevis
10.	50N182	Seal Kit
11.	HD55	Complete Cylinder

H&S HD HI CAPACITY BI-FOLD RAKE

Your new H&S HD Hi Capacity Rake has been manufactured of the finest quality materials and components. The performance you get from your machine is largely dependent upon how well you read and 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 Bi-Fold Rake before reading this manual carefully. Keep this manual available for ready reference.

14 & 16/18 & 20 Wheel HD HI CAPACITY SPECIFICATIONS

	HD 14	HD16	HD18	HD20
Wheel Diameter	58"	"	"	"
Teeth Per Wheel	40 (20 sets of 2)	"	"	"
Tooth Diameter	.306" (7.8mm)	"	"	"
Transport Width	8'6"	"	"	"
Transport Length	30'	31'4"	35'6"	37'10"
Windrow Width Adjustment	38"-58"	"	"	"
Raking Width	To 28'	To 32'	To 36'	To 40'
Raking Wheel Hubs	Roller Bearings	"	"	"
Wing Flex	3' up or down	"	"	"
Hitch Jack	Standard	"	"	"
Center Kicker Wheel	Optional	"	"	"
Gauge Wheels 15" (670-15)	Standard (2) Optional (4)	Standard (4")	"	"
Tandem Wheels 15" (670-15)	Standard (4)	"	"	"
Weight	5700 lbs.	6380 lbs.	7020 lbs.	7420 lbs.
FEATURES				
58" Rake Wheels				
7.8mm Rake Teeth				
Rake Wheel Hay Guards				
Hydraulic Rear Width Adjustment				
Compression Spring Rake Wheel Flotation				
Twin Rake Arm Beams				
TRACTOR REQUIREMENTS				
Horsepower 65 (50 k W)				
Hydraulic - One Double Acting Remote Valve (Hydraulic Fold)				
One Double Acting Remote Valve (Rake Wheel Lift)				

Warranty

1st Year-Parts & Limited Labor
2nd Year-Parts

H&S MANUFACTURING CO. INC.

2608 S. Hume Ave.
P.O. Box 768 - Telephone (715) 387-3414
FAX (715) 384-5463
MARSHFIELD, WI 54449



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