

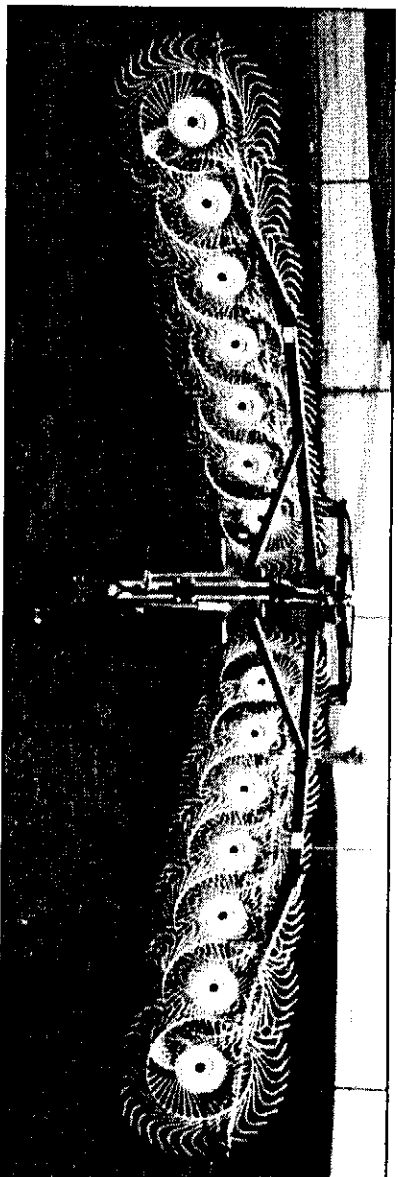
H&S

DELUXE

12 & 14 WHEEL

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

11-19-04

Manufactured By

H&S MANUFACTURING CO., INC.

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

MARSHFIELD, WISCONSIN 54449

H&S
HI CAPACITY 12 & 14 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.**

H&S MANUFACTURING CO., INC. 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 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. Warranty service must be performed by H&S or a dealer authorized by H&S to sell and/or service the product involved, which will use only new or remanufactured parts or components furnished by H&S. This warranty includes approved parts and labor to fix 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 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.

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 commercial, custom for hire 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.

Polybonded (polyethylene and plywood) panels utilized in H&S Manure Spreaders are warranted, to the original purchaser, to not wear through and the polyethylene overlay to not tear free of the plywood for the functional life to the spreader. This specific warranty on polybonded panels includes only replacement of any defective panel part without any allowance for labor beyond the terms of the general warranty (12 or 6 months), and is further limited to manure spreaders used to spread normal agricultural manure.

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, misuse, improper or insufficient maintenance, improper operation, accident or failure to follow the product Operator 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.

THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE OF THIS WARRANTY. H&S and the companies affiliated with it makes no warranties, representations, or promises, express or implied, as to the quality or 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.

WARRANTY REGISTRATION

Date of Purchase _____

Purchaser _____ Address _____

City _____ State _____ Zip _____

Product _____ Model # _____ Serial # _____

Dealer _____ Address _____

City _____ State _____ Zip _____

Signature of original buyer

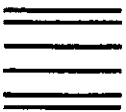
FILL OUT AND MAIL
IMMEDIATELY TO MAKE
WARRANTY EFFECTIVE



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

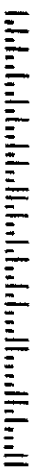
BUSINESS REPLY MAIL

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 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

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 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 _____

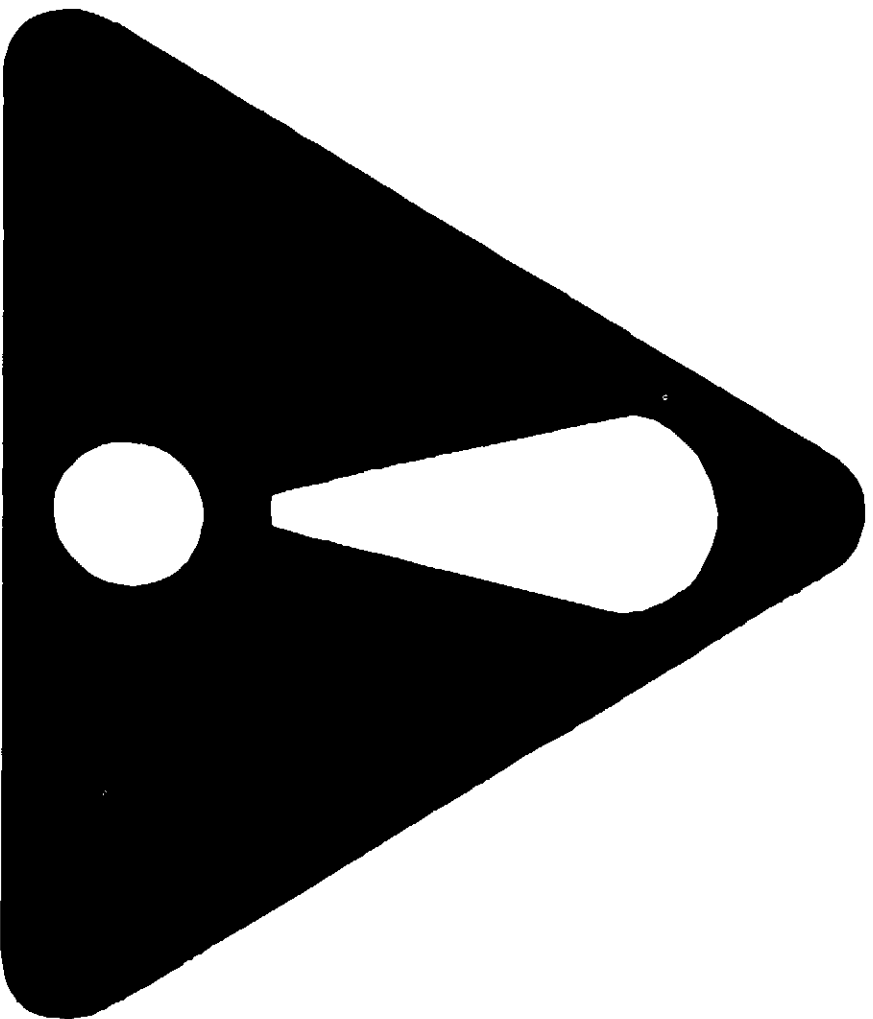
Dealer's Name _____

By _____

Signature of Original Buyer

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





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

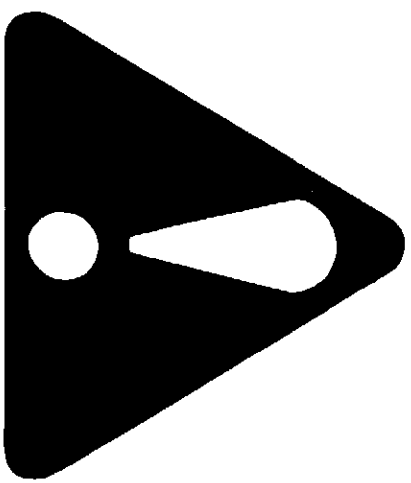
This operator's manual uses the term "Tractor" when identifying the power source for towing and lifting rake.

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.



WARNING



CAUTION

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

General precautions are listed on CAUTION safety signs.



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.



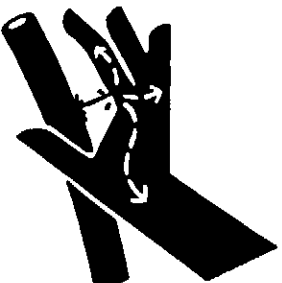
11894A

⚠ 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.

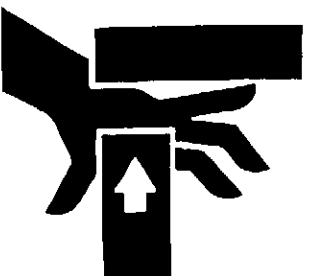


⚠ WARNING

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



⚠ 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.

2195



11894B

⚠ 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.

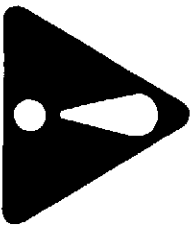
⚠ WARNING

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.
- DO NOT EXCEED 20 MPH

72203A

H&S 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, remove ignition key, 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 hair pin at the rear of the lift pipe, and the transport lock pipes with safety lynch 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.

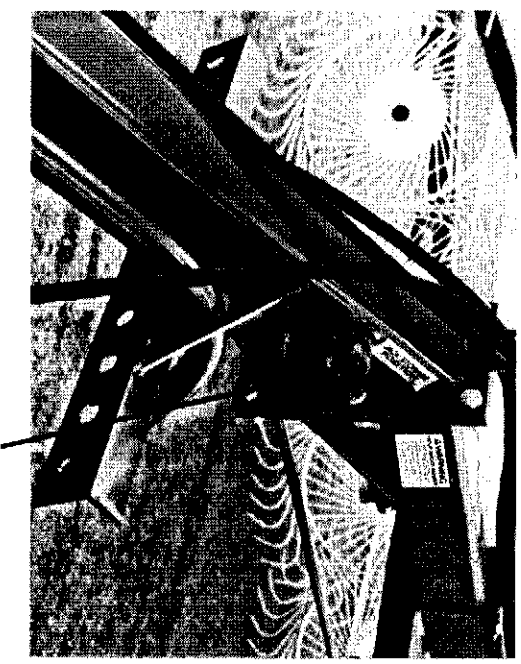
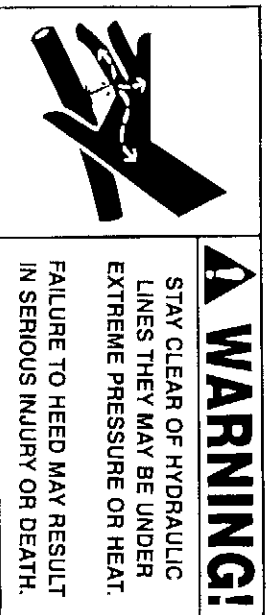
Study The Above Safety Rules

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 as 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. Remove jack from pipe mount and place on convenient storage mount located on the top left side of main frame. (see below).
5. Connect hydraulic hose for raising and lowering rake wheels from rake to single or double acting valve on the tractor.
6. Connect hydraulic hoses for opening and closing the rake to double acting valve on the tractor.
7. Lubricate the machine completely.
8. 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. (Part No. T175). Check periodically thereafter.

NOTE: Determine right or left side of your 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.



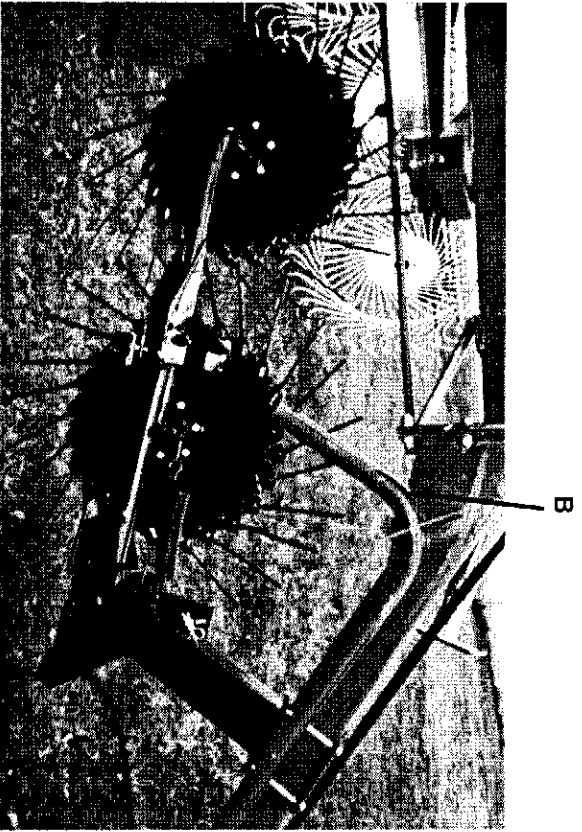
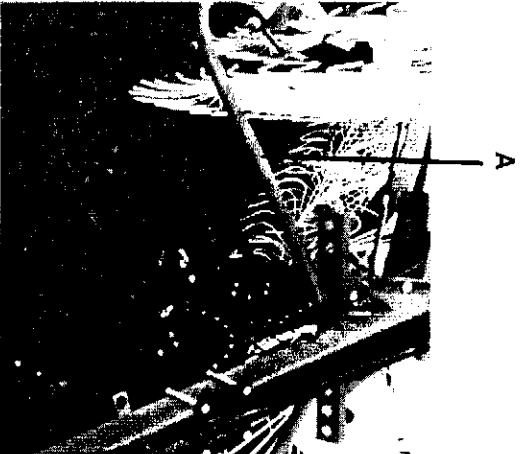
JACK STORAGE POSITION

OPERATION (Continued)

TRANSPORT LOCKS, FRONT & REAR

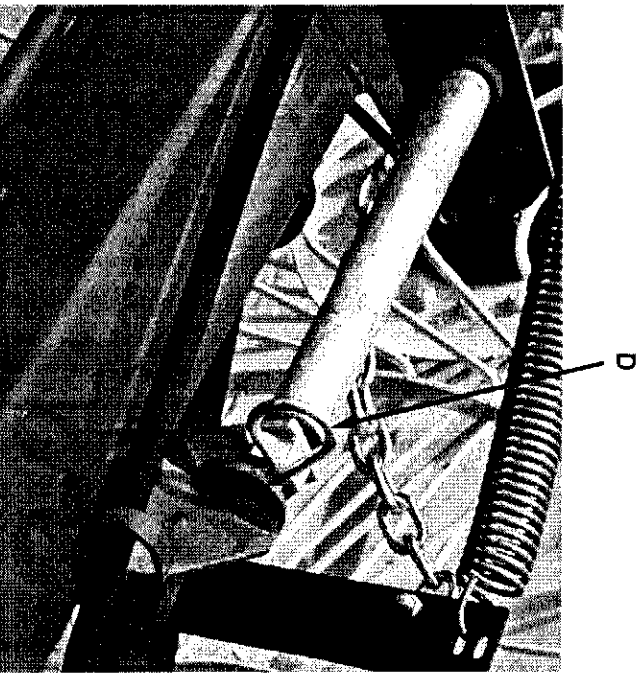
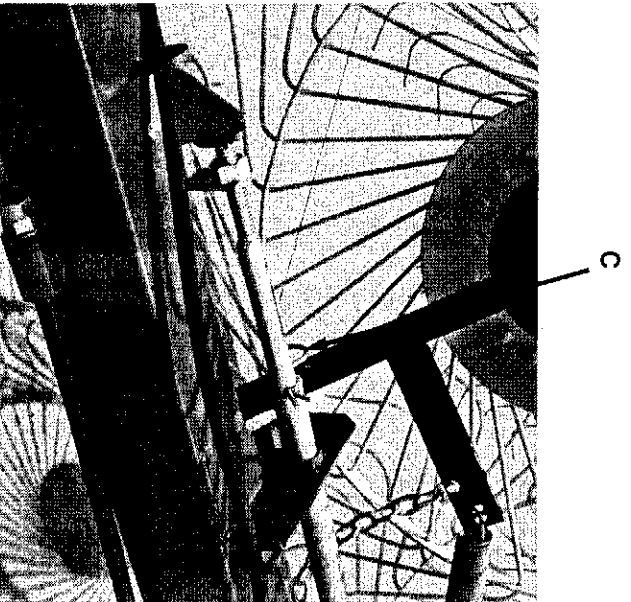
Front Locks

Mounted to the front of the main frame, are left and right pipe-type transport locks. (A) Shows the right side 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 LOCKS


Located at the rear of 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 as shown (D).

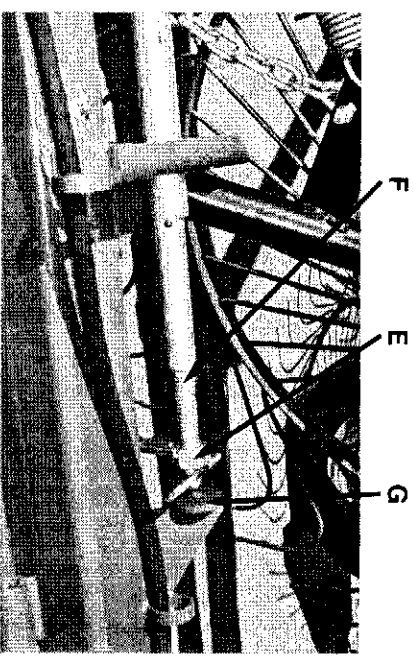
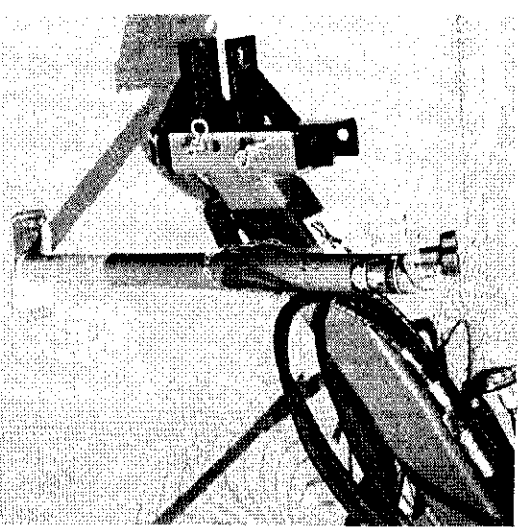


ADJUSTMENTS

HITCH

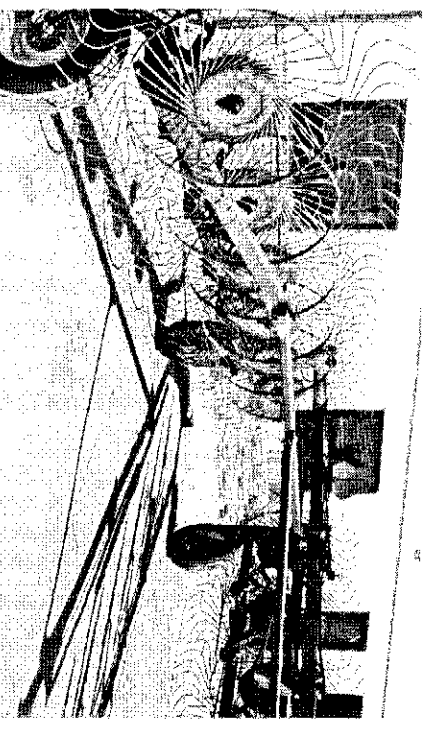
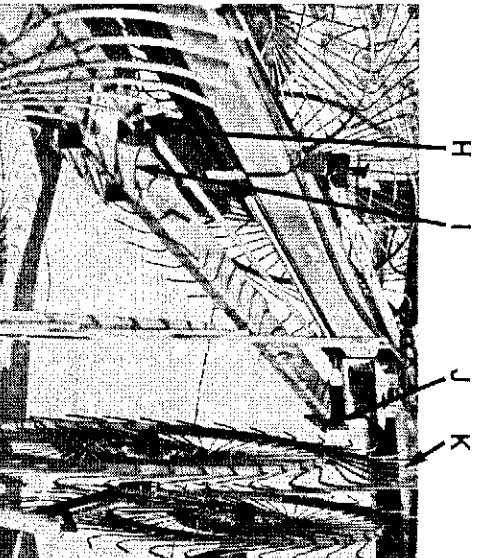
There are ten different positions to adjust the hitch on your new Bi-Fold Rake. Hitch should be adjusted so main frame of the rake is level or parallel to the ground.

	▲ 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.
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Rake wheel to ground pressure is adjusted by turning locking nut and collar (E) in to decrease pressure, or out to increase pressure. The length of the threaded bolt (F), between (E) and Stop (G), will determine the rake wheel to ground pressure.

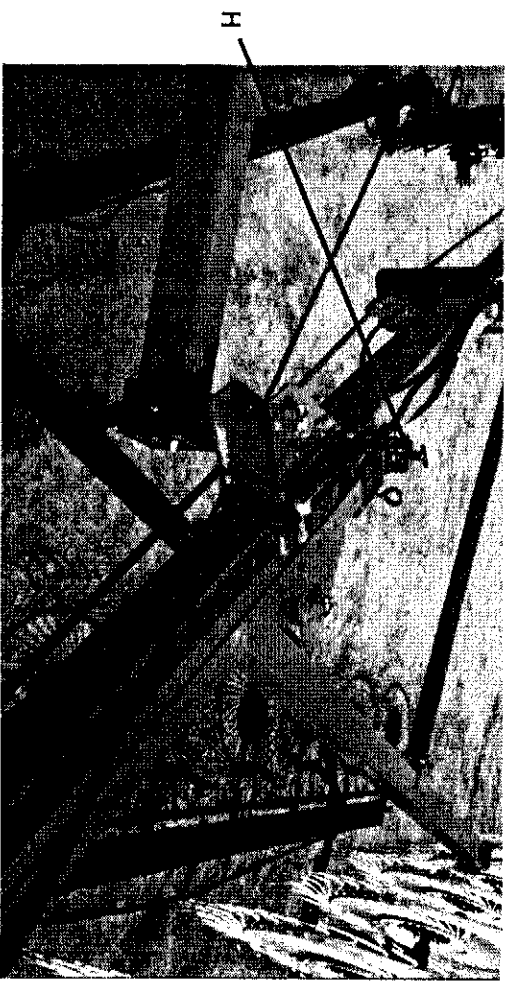
Raking with one side only can be accomplished by first locking the left side of the rake into transport position utilizing both the front and rear transport locks. Next, remove pin (H) attaching front linkage arm to main linkage arm, and place in storage hole (I). Also remove pin (J) at the rear of the main linkage arm and place in the storage position (K) located in hitch attachment gusset at the rear of the rake. The right side can now be opened, and used to rake. **NOTE:** Only the right side of your Hi Capacity Rake can be used in this manner.

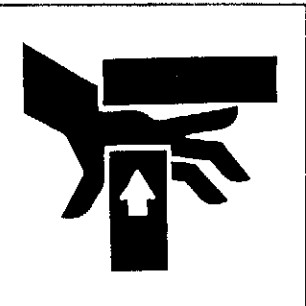


ADJUSTMENTS (Continued)

RAKING WIDTH

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



	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.
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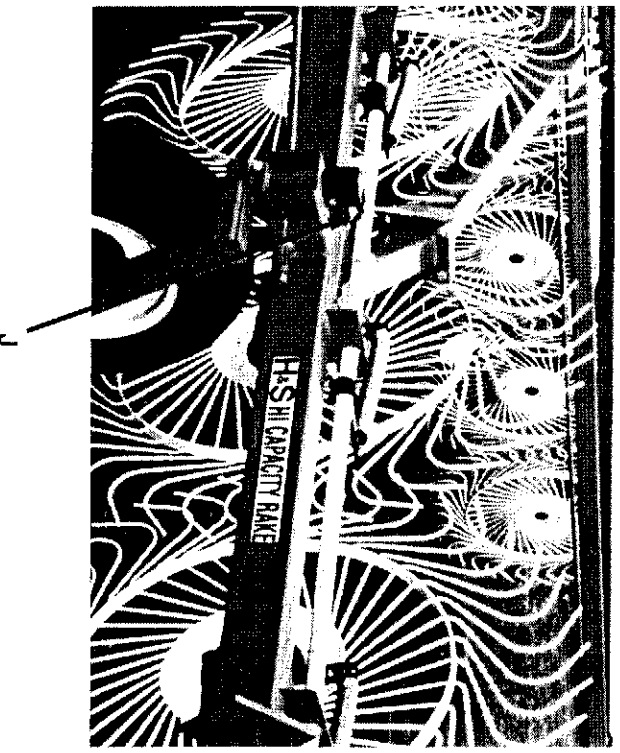
WINDROW WIDTH

Windrow width is adjustable from 38" to 58". Adjustment is made by turning crank (I), located on the left of the rear of the rake as shown. (I)



GAUGE WHEELS

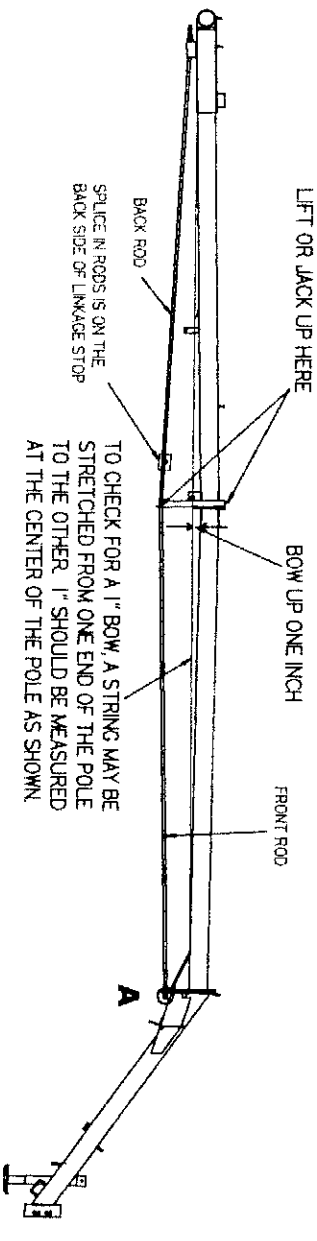
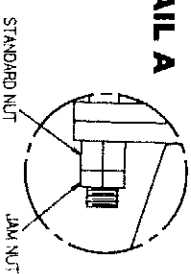
Outboard gauge wheels are located on the forward section of each rake beam. These gauge wheels support the rake beams to allow the rake wheels to better follow the contour of the ground. Located on the gauge wheel pivot spindle is an adjustable brake assembly. Adjust brake by tightening bolt (J). The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



IMPORTANT

PERIODICALLY CHECK THE RAKE FOR A 1" BOW IN THE CENTER OF THE POLE. FAILURE TO MAINTAIN A 1" BOW WILL CAUSE PRE-MATURE FAILURE OF THE TRUSS RODS AND POLE.

DETAIL A



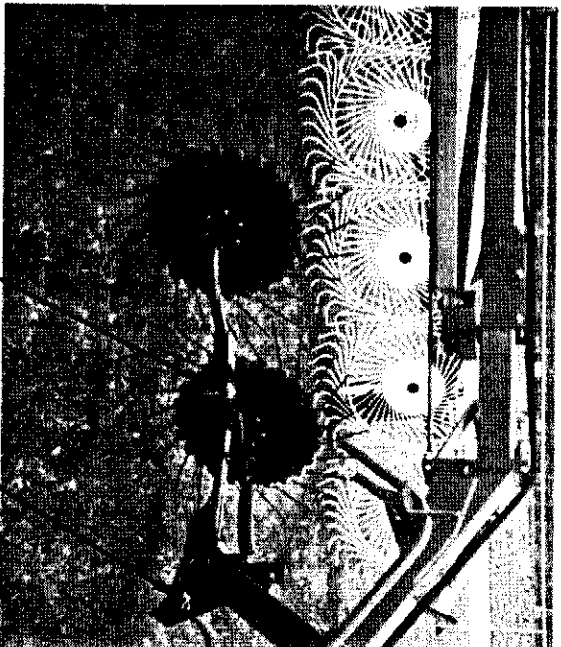
IF NUTS CANNOT BE TIGHTENED ENOUGH TO ACHIEVE A 1" BOW, THE POLE SHOULD BE LIFTED OR JACKED UP IN THE CENTER UNTIL THE FRONT GROUND JACK IS SLIGHTLY OFF THE GROUND. THIS WILL "PRE-BOW" THE POLE ENOUGH TO TIGHTEN THE NUTS.

OPTIONAL CENTER KICKER WHEEL

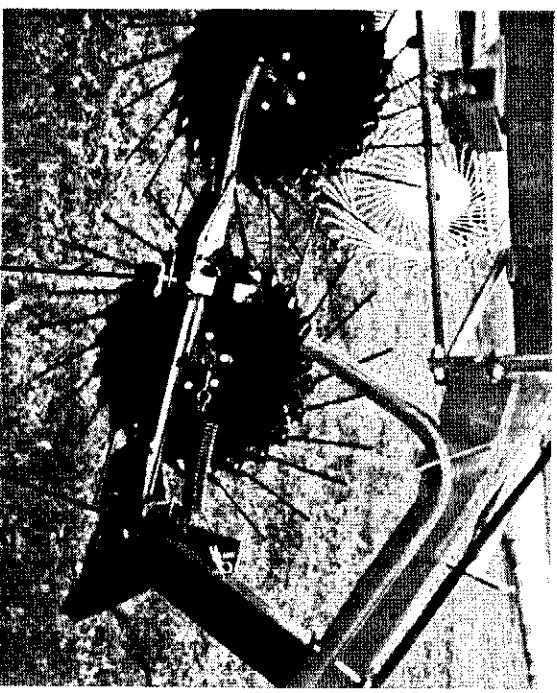
An optional center kicker wheel assembly is available for the Hi Capacity Rakes. If the hay is laying out flat, these extra wheels allow you to raise the hay laying in the center of the rake out of the stubble for faster drying, and easier pick-up. A separate cylinder controls the kicker wheel assembly.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

To return to transport position, PRIOR TO CLOSING RAKE, raise rake wheels. (This will also raise the center kicker wheel assembly) Remove locking pin (C). Swivel kicker wheel assembly so that it is in line with the hitch pole. Re-insert locking pin (C). Remove locking pin from storage position (B), and insert to lock the unit into the up, or transport position (A). Rake beams may now be closed for transport.

LOWERED



RAISED



LUBRICATION GUIDE

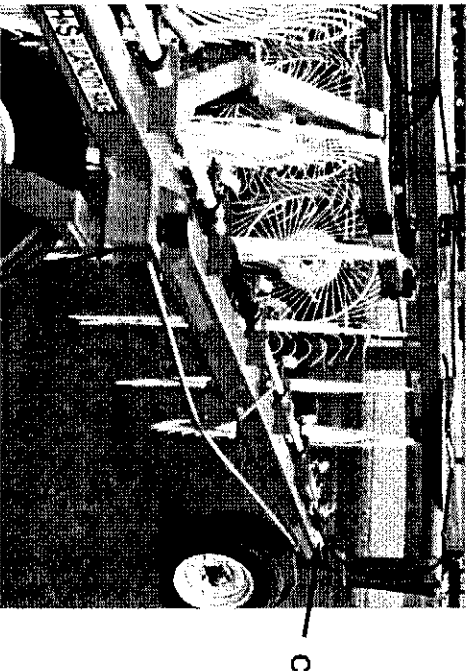
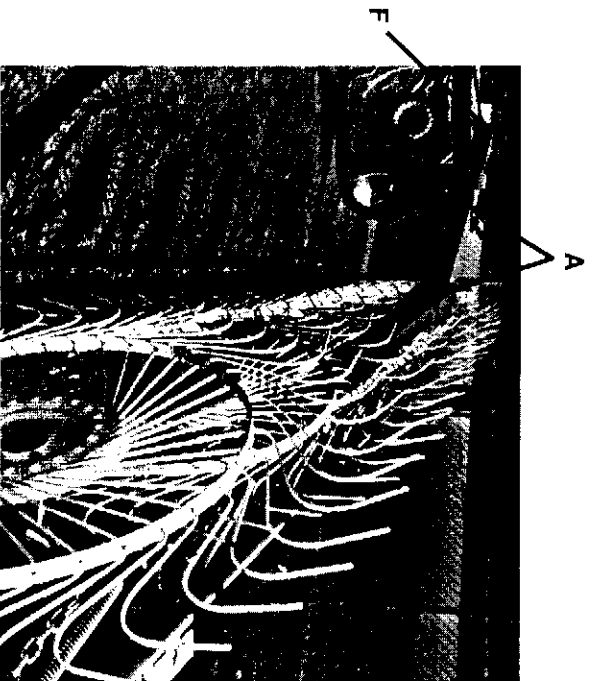
GREASE FITTINGS

There are 30 grease fittings on the 12 wheel, and 18 on the 14 wheel Hi Capacity Rake. If equipped with a center kicker wheel, there will be one more on the pivot point. If lubricated properly and often enough, it will prolong the life of your 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 of chaff or grit around the bearing.

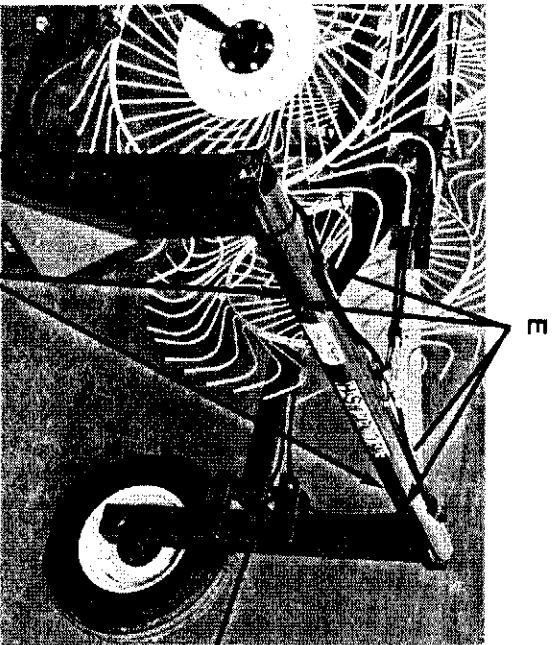
LOCATION

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

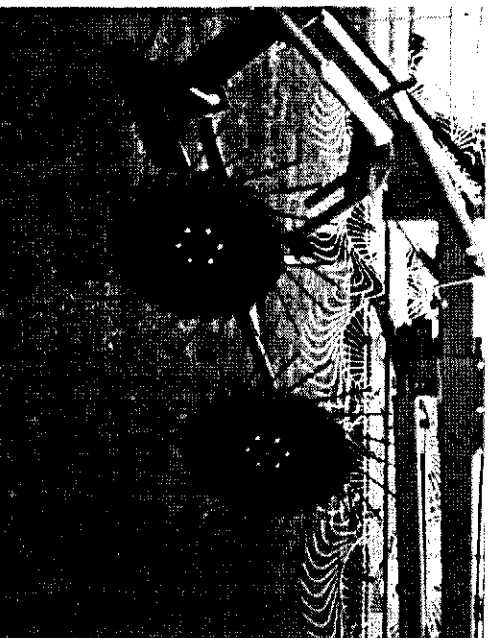
- A. (2) Top Opening Arm Front Pivot
- B. (2) One on each Gauge Wheel
- C. (2) One on each Lift Cylinder Mounting Bracket
- D. (2) Each Rake Beam Pivot
- E. (6) Top Rear Windrow Width Adjustment
- F. (4) Top Opening Arm Rear Pivot
- G. (12) Each Rake Arm Pivot (Twelve Wheel Rake Only)
- H. (1) Center Kicker Wheel Pivot (if so equipped)



B



E



C

D

E

D

H

DECAL LOCATION

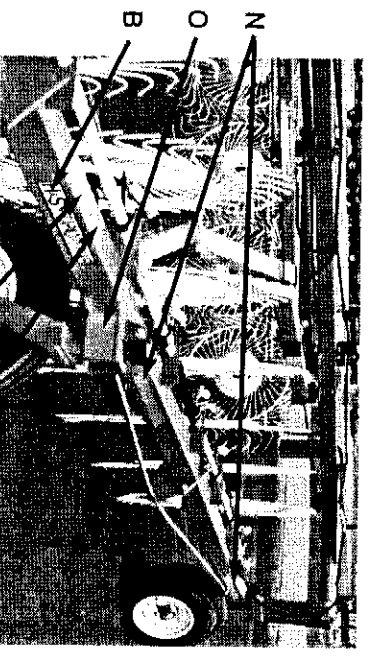
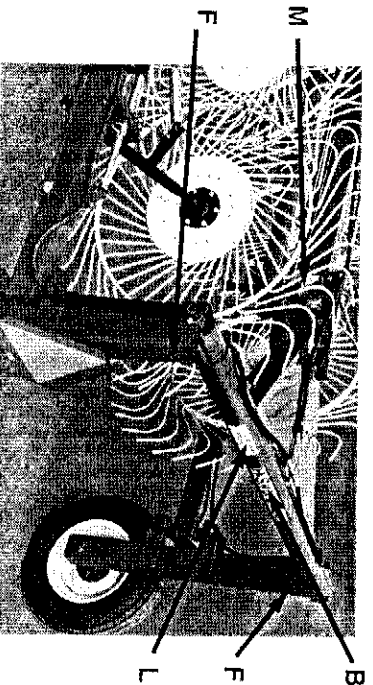
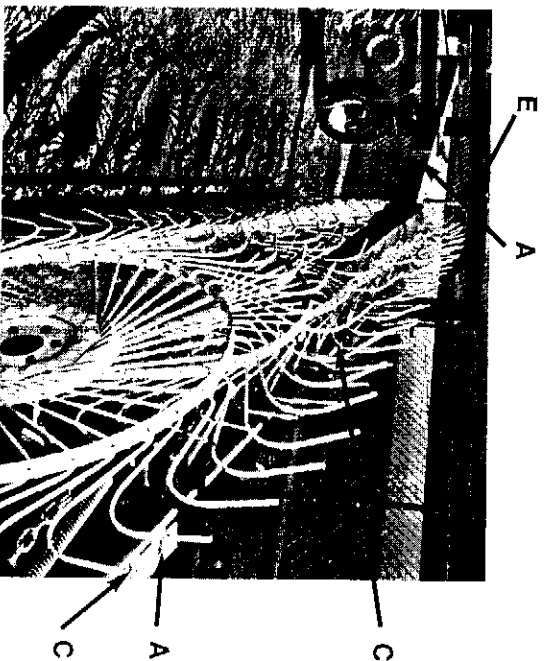
Your H&S Hi Capacity Rake was manufactured with operator safety in mind. Located on the Hi Capacity Rake are various decals to aid in operation, and warn of danger or caution areas. Pay close attention to all the decals.



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

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

ITEM	PART NO.	DESCRIPTION
A	11694A	(6) DANGER - Stay Clear of Rake (14 wheel - (4) - 12 wheel)
B	2195	(3) H&S Hi Capacity Rake
C	71188B	(4) WARNING - Stay Clear of Rake
D		Jack Storage
E		Serial Number
F		(2) Red Reflector
G	11599	WARNING - Stay Clear of Leaks
H	H&S	Patent Numbers
I	12197A	Attention Raise Rake Wheels
J	11694B	(2) Danger - Stay Clear of Rake (12 Wheel Only)
K	72203A	Warning - Help Avoid Injuries
L	11102	ATTENTION: Adjust Flange Nut
M	11501A	(2) ATTENTION: Remove Both Pins (12 Wheel Only)
M	11501B	(2) ATTENTION: Remove Both Pins (14 Wheel Only)
N		(4) Amber Reflector - 2" x 9" (2 On Each Main Rake Beam)
O		Amber Reflector - 3-1/4" x 5-5/8"
	10303HiCap	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. INC.	
MARSHFIELD, WIS.	
MOD. NO.	_____
SER. NO.	_____
DESCR.	_____

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.

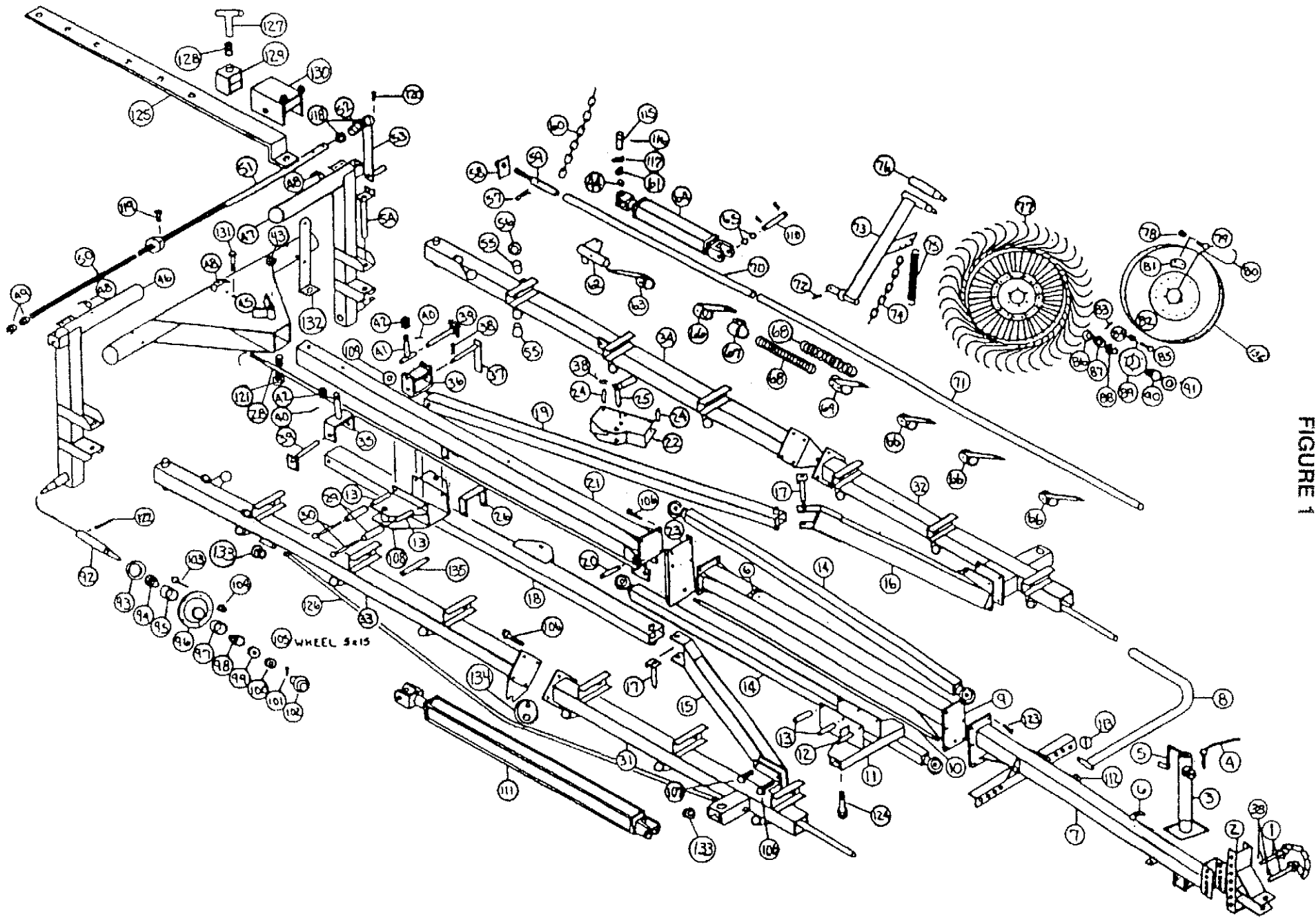


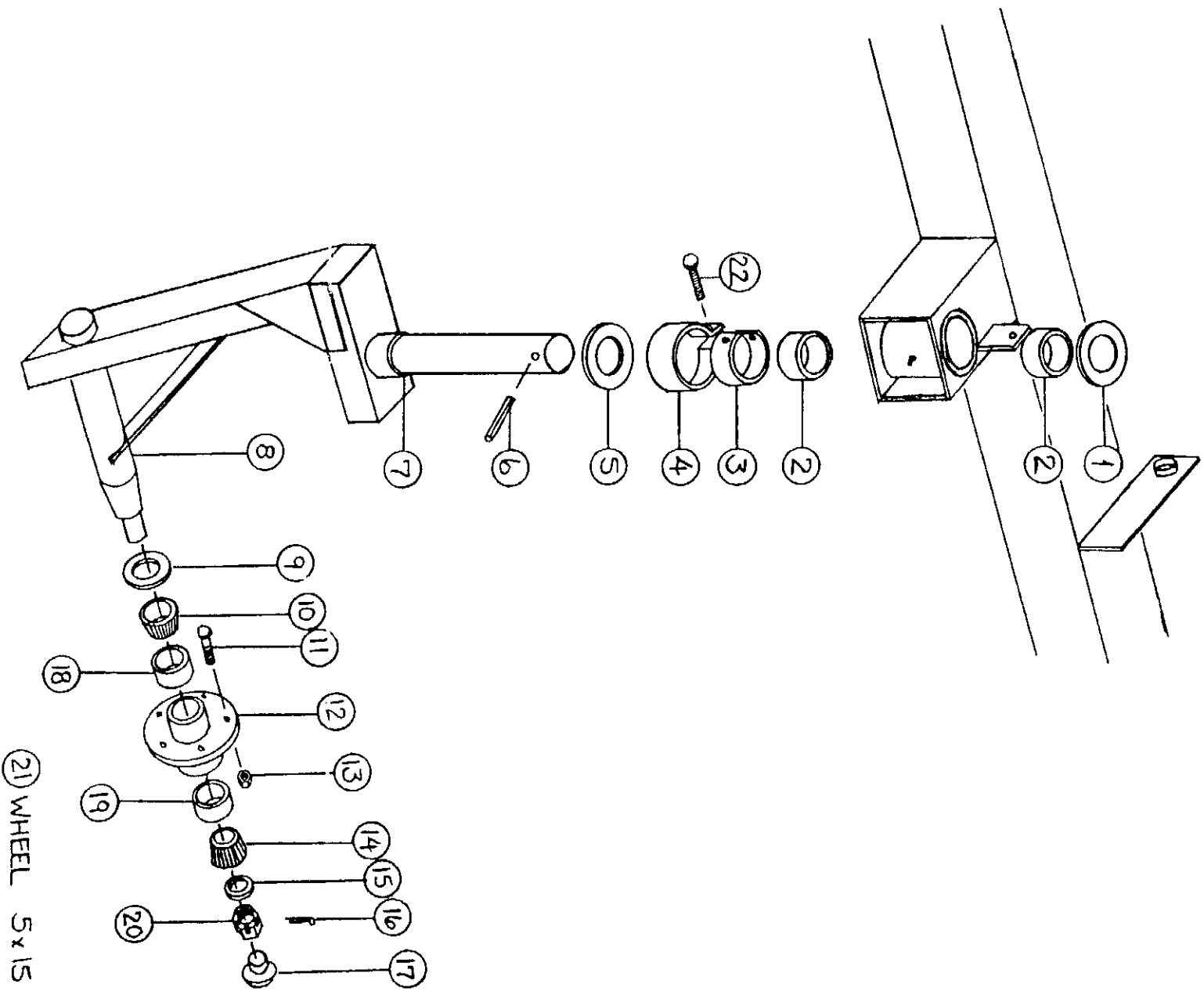
FIGURE 1

**FIGURE 1
H&S 12 WHEEL HI CAPACITY RAKE – MAIN FRAME**

ITEM	PART NO.	DESCRIPTION	ITEM	PART NO.	DESCRIPTION
1.	BFR450	Hitch Pin	70.	BFR519	Lifting Pipe Back
2.	BFR157	Hitch	71.	BFR520	Lifting Pipe Front
3.	BFR223	Jack	72.	3G22	Roll Pin
4.	BFR4	Jack Pin & Chain	73.	BFR436	Rake Arm LH
5.	B17B	Jack Handle	*	BFR437	Rake Arm RH
6.	HE42	Hose Holder	74.	BFR140	Rake Arm Adjustment Chain
7.	BFR660	Pole	75.	BFR138	Rake Arm Spring
8.	BFR384	Transport Lock Pipe LH	76.	BFR36	Rake Arm Spindle
9.	BFR415	Transport Lock Pipe RH	77.	T174	Rake Wheel LH
	BFR385	Center Pole Section	*	BFR31	Rake Wheel RH
10.	BFR502	Front Rod	78.	BFR652	10MM Lock Nut
11.	BFR387	Front Linkage Slider	79.	T175	10MM x 25MM Carriage Bolt
12.	BFR388	Hose Guide Spacer	80.	T176	Rake Wheel Tooth
13.	BFR389	Slider Spacer	81.	T178	Rake Tooth Clip
14.	BFR390	Front Linkage	82.	T179	Rake Wheel Center
15.	BFR391	Rake Beam Arm RH	83.	T169	Cotter Pin
16.	BFR392	Rake Beam Arm LH	84.	T166	10MM Nut
17.	BFR393	Rake Beam Arm Pin	85.	T168	10MM x 25MM Bolt
18.	BFR394	Right Rear Linkage	86.	T173	Hub Cap
19.	BFR395	Left Rear Linkage	87.	T172	Nut
20.	BFR396	Cylinder Pin	88.	T170	Outer Bearing
21.	BFR397	Back Pole Section	*	T171	Outer Race
22.	BFR398	Center Slider	89.	BFR32	Rake Wheel Hub
23.	BFR399	Linkage Stop	90.	T164	Inner Bearing
24.	BFR400	Center Slider Spacer	*	T165	Inner Race
25.	BFR401	Center Slider Pin	91.	T163	Seal
26.	BFR402	Hose Guide	92.	BFR449	Spindle
28.	BFR503	Back Rod	93.	BFR57	Seal
29.	BFR404	Back Slider Roller	94.	BFR58	Inner Bearing
30.	BFR405	1/2" x 5-1/2" Bolt GR 5	95.	BFR59	Inner Race
31.	BFR406	Front Rake Beam RH	96.	BFR60	Hub
32.	BFR407	Front Rake Beam LH	97.	BFR61	Outer Race
33.	BFR408	Back Rake Beam RH	98.	BFR62	Outer Bearing
34.	BFR409	Back Rake Beam LH	99.	BFR63	Washer
35.	BFR410	Back Linkage Yoke RH	100.	BFR64	Nut
36.	BFR411	Back Linkage Yoke LH	101.	BFR65	Cotter Pin
37.	BFR412	Back Linkage Yoke Pin	102.	BFR66	Hub Cap
38.	ES7	Hair Pin	103.	BFR143	Stud Bolt
39.	BFR413	Pivot Yoke Shaft Pin	104.	BFR144	Nut
40.	BER7	Cotter Pin 3/16" x 3-3/4"	105.	BFR67	Wheel 5 x 15
41.	BFR414	Left Pivot Yoke Shaft	106.	BFR438	5/8" x 2" Bolt GR.5
42.	BFR228	Slotted Nut 1-1/4"	107.	BFR439	5/8" x 1-3/4" Bolt GR.5
43.	BFR518	3/4" Nut	108.	BFR440	Back Linkage Slider
44.	BFR506	Nylon Wear Block	109.	BFR441	Stop Washer
45.	BFR498	Rear Pivot Assembly	110.	T143	Cylinder Pin
46.	BFR661	Right Axle Upright	111.	BFR653	Hydraulic Cylinder
47.	BFR662	Left Axle Upright	112.	12N14	Jack Mount
48.	23N67	Hose Holder	113.	BFR443	Linch Pin
49.	BFR419	3/4" Acme Nut	115.	BFR517	Cylinder Pin
50.	BFR420	Rear Width Adjustment Rod	116.	23N108	Cotter Pin
51.	BFR485	Rear Width Adjustment Tube	117.	16SV136	Washer
52.	BFR422	Width Adjustment Collar	118.	BFR523	Poly Washer
53.	BFR423	Width Adjustment Handle	119.	RG135	Bolt 1/2" x 1" GR.5
54.	BFR499	Beam Pivot Shaft	120.	BFR117	Bolt 3/8" x 2-1/2" GR.5
55.	BFR425	Rake Arm Bushing W/Flange	121.	BFR614	Bolt 5/8" x 8" GR.5
56.	BFR229	Rake Arm Washer	122.	12V59	Roll Pin 3/8" x 2-3/4"
57.	BFR137	Hair Pin	123.	BFR438	Bolt 5/8" x 2" GR.5
58.	BFR426	Rake Pressure Handle	124.	BFR545	Bolt 1" x 3-1/2" GR.5
59.	BFR427	Rake Arm Lock-Up Shaft	125.	BFR509	RH Tandem Axle
60.	BFR111	Back Rake Arm Adjustment Chain		BFR510	LH Tandem Axle
61.	K106	Cylinder Spacer	125.	BFR611	Width Adjustment Bar
62.	BFR428	Hydraulic Cylinder End Slide LH	126.	BFR612	Side Arm Stabilizer Rod
63.	BFR429	Hydraulic Cylinder End Slide RH	127.	BFR241	Adjustment Handle
64.	BFR622	Spring Bracket (2 Hole)	128.	BFR240	Spring
64.	BFR69A	Hydraulic Lift Cylinder	129.	BFR239	Sleeve Adjustable Lock
65.	X94	Cylinder Spacers	130.	BFR613	Width Adjustment Stop
66.	BFR431	LH Spring Bracket	131.	RG174	5/8" x 5" Bolt GR.5
67.	BFR430	RH Spring Bracket	132.	BFR649	SMV Bracket
68.	BFR82	Pipe Clamps	133.	BFR716	Flange Nut
68.	BFR84	Compression Spring	134.	DF22	Washer
69.	BFR432	LH Lifting Pipe Connector	135.	DFR634	Cylinder Pin
69.	BFR433	RH Lifting Pipe Connector	136.	T177	Outer Ring

TANDEM OPTIONS:

FIGURE 2



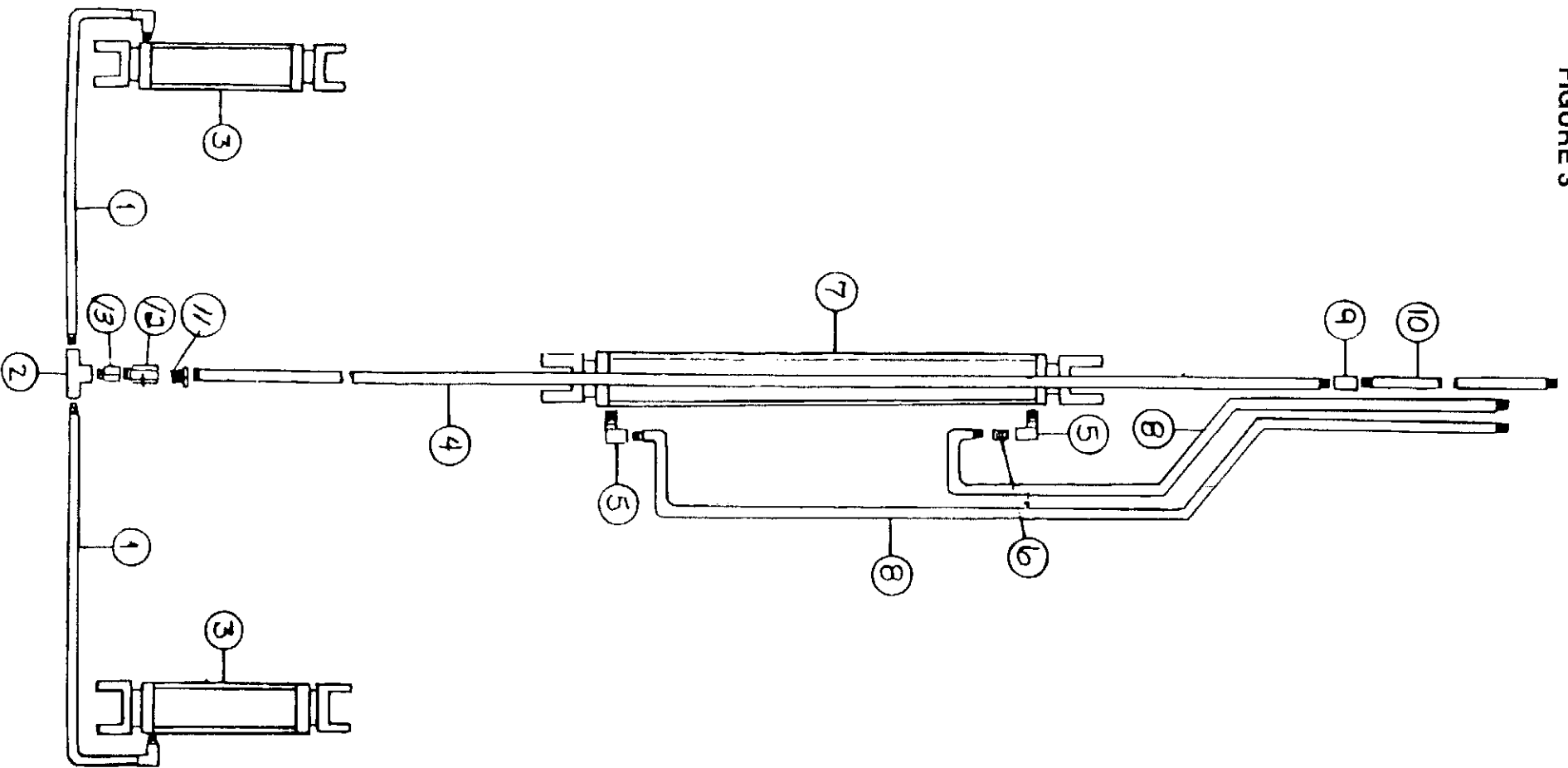
(21) WHEEL 5 x 15

FIGURE 2
H&S 12 & 14 WHEEL HI CAPACITY RAKE
GAUGE WHEEL

ITEM	PART NO.	DESCRIPTION
1.	BFR309	Gauge Wheel Washer
2.	BFR527	Bronze Bushing
3.	BFR310	Brake Pad (2)
4.	BFR311	Brake Collar
5.	RG24	Bronze Washer
6.	BFR313	Roll Pin 5/16" x 2-3/4"
7.	BFR312	Complete Fork RH
*	BFR316	Complete Fork LH
8.	BFR56	Spindle
9.	BFR57	Seal
10.	BFR58	Inner Bearing
11.	BFR143	Stud Bolt
12.	BFR60	Hub
13.	BFR144	Nut
14.	BFR62	Outer Bearing
15.	BFR63	Washer
16.	BFR65	Cotter Pin
17.	BFR66	Hub Cap
18.	BFR59	Inner Race
19.	BFR61	Outer Race
20.	BFR64	Nut
21.	BFR67	Wheel 5 x 15
22.	X26	Bolt 3/8" x 3" Full Thread

NOTE: * (Means Not Shown)

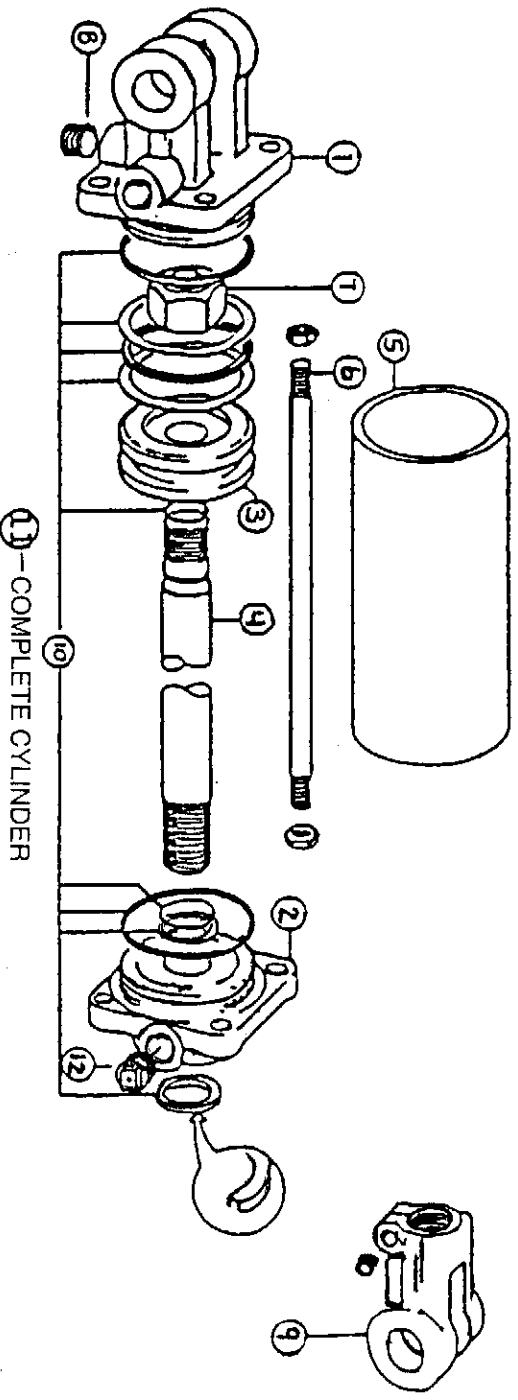
FIGURE 3



**FIGURE 3
H&S 12 WHEEL HI CAPACITY RAKE HYDRAULICS**

ITEM	PART NO.	DESCRIPTION
1.	37N60	108" Hose
2.	BFR74	3/8" Female Tee
3.	BFR69A	Hydraulic Lift Cylinders
4.	23N302	264" Hose
5.	23N234	3/8" Street Elbow
6.	BFR617	Male Adapter Union w/Orifice
7.	BFR653	Hydraulic Open Cylinder
8.	BFR621	256" Hose
9.	HE60	3/8" Pipe Coupler
10.	BFR448	66" Hose
11.	JB82	Bushing 3/8" to 1/2"
12.	BFR354	Flow Valve
13.	BFR555	Adapter

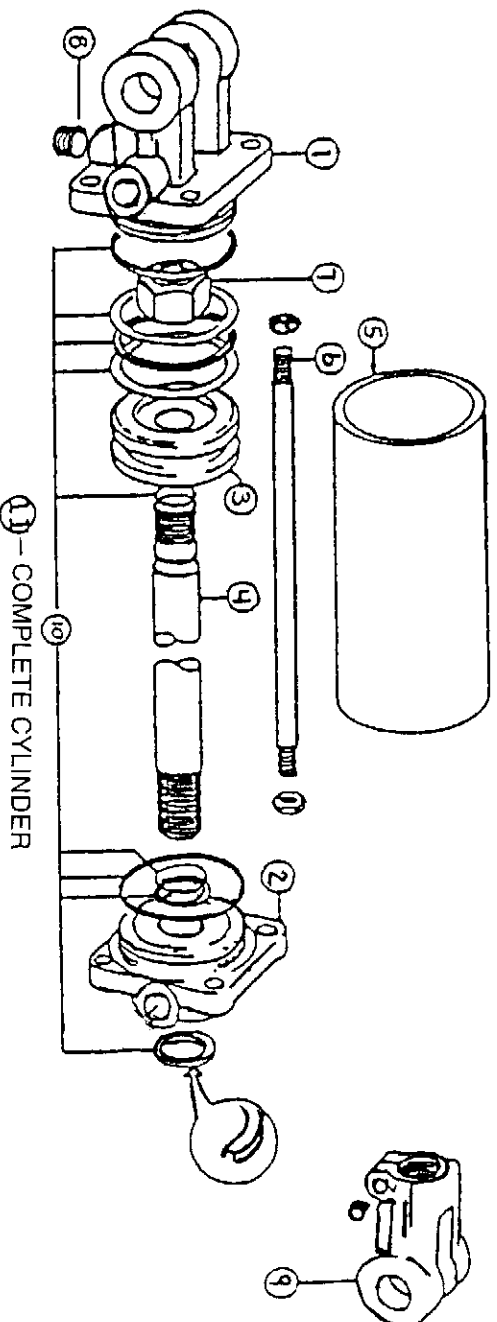
FIGURE 4



**H&S 12 WHEEL HI CAPACITY RAKE
HYDRAULIC LIFT CYLINDER**

ITEM	PART NO.	DESCRIPTION
1.	23N142A	Clevis Cap
2.	23N143A	Rod Cap
3.	23N144	Piston
4.	T184A	Rod
5.	BFR68	Cylinder Tube
6.	T186	Tie Rod
7.	23N148	Piston Nut
8.	23N149	Plug
9.	23N150A	Rod Clevis
10.	23N151	Seal Kit
11.	BFR69A	Complete Cylinder
12.	BFR70	Vent Plug

FIGURE 5



H&S 12 & 14 WHEEL HI CAPACITY RAKE
HYDRAULIC OPEN CYLINDER

ITEM	PART NO.	DESCRIPTION
1.	23N142A	Clevis Cap
2.	23N143A	Rod Cap
3.	23N144	Piston
4.	BFR654	Rod
5.	BFR655	Cylinder Tube
6.	BFR656	Tie Rod
7.	23N148	Piston Nut
8.	23N149	Plug
9.	23N150A	Rod Clevis
10.	23N151	Seal Kit
11.	BFR653	Complete Cylinder

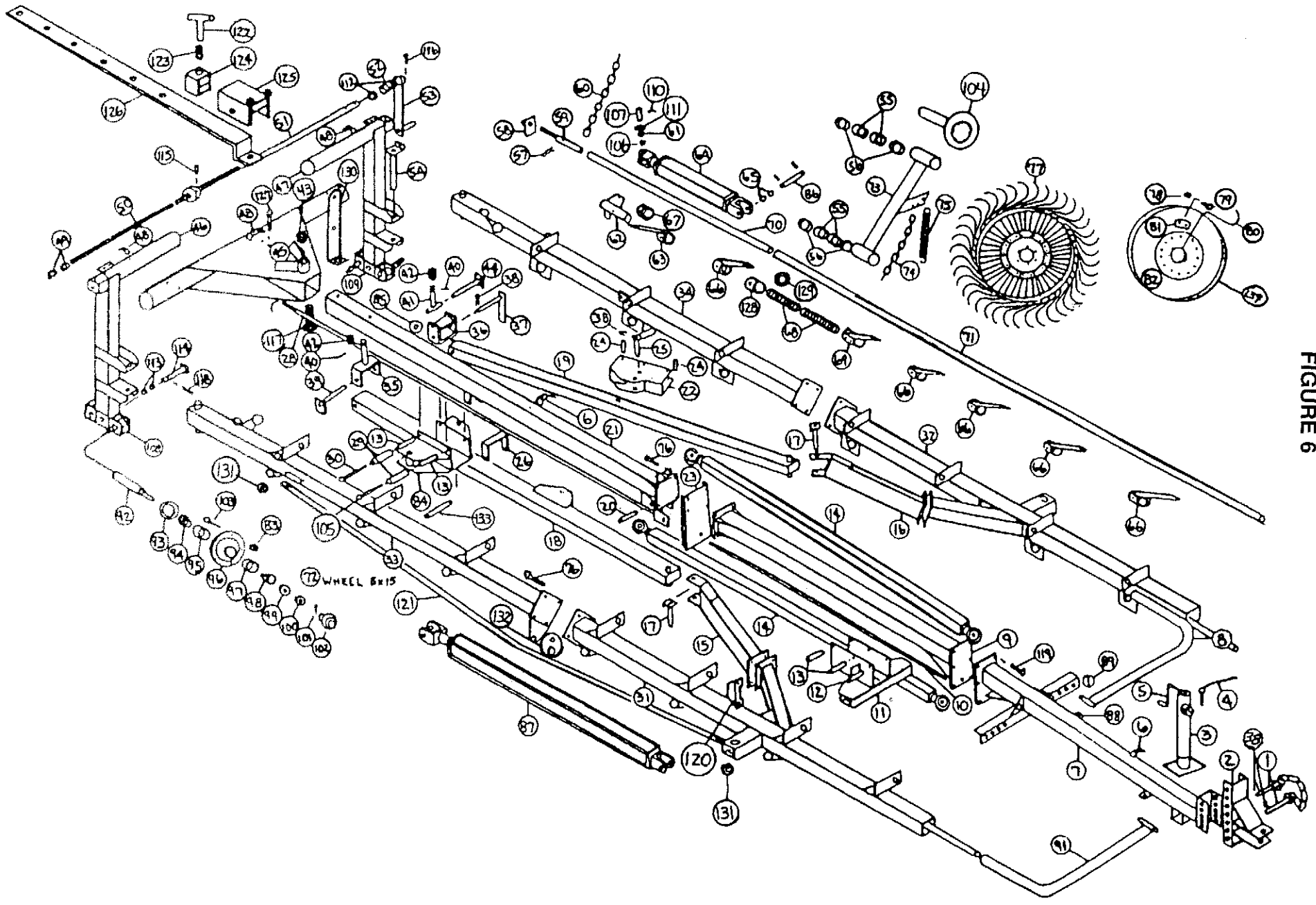


FIGURE 6

FIGURE 6

H&S 14 WHEEL HI CAPACITY RAKE – MAIN FRAME

ITEM	PART NO.	DESCRIPTION	ITEM	PART NO.	DESCRIPTION
1.	BFR450	Hitch Pin	69.	BFR432	LH Lifting Pipe Connector
2.	BFR157	Hitch	*	BFR433	RH Lifting Pipe Connector
3.	BFR223	Jack	70.	BFR521	Lifting Pipe Back
4.	BFR4	Jack Pin & Chain	71.	BFR520	Lifting Pipe Front
5.	B17B	Jack Handle	72.	BFR67	Wheel 15 x 5
6.	HE42	Hose Holder	73.	BFR489	Rake Arm LH
7.	BFR663	Pole	*	BFR490	Rake Arm RH
8.	BFR452	Transport Lock Pipe LH	74.	BFR140	Rake Arm Adjustment Chain
9.	BFR453	Center Pole Section	75.	BFR138	Rake Arm Spring
10.	BFR500	Front Rod	76.	BFR438	5/8" x 2" Bolt
11.	BFR455	Front Linkage Slider	77.	T174	Rake Wheel LH
12.	BFR456	Hose Guide Spacer	*	BFR31	Rake Wheel RH
13.	BFR457	Slider Spacer	78.	BFR652	10mm Lock Nut
14.	BFR458	Front Linkage	79.	T175	10mm x 25mm Carriage Bolt
15.	BFR459	Rake Beam Arm RH	80.	T176	Rake Wheel Tooth
16.	BFR460	Rake Beam Arm LH	81.	T178	Rake Tooth Clip
17.	BFR461	Rake Beam Arm Pin	82.	T179	Rake Wheel Center Nut
18.	BFR462	Right Rear Linkage	83.	BFR144	Back Linkage Slider
19.	BFR463	Left Rear Linkage	84.	BFR491	Stop Washer
20.	BFR396	Cylinder Pin	85.	BFR693	Cylinder Pin
21.	BFR464	Back Pole Section	86.	T143	Hydraulic Cylinder
22.	BFR465	Center Slider	87.	BFR653	Jack Mount
23.	BFR466	Linkage Stop	88.	T2N14	Linch Pin
24.	BFR467	Center Slider Spacer	89.	BFR443	Hair Pin
25.	BFR468	Center Slider Pin	90.	ES7	Transport Lock Pipe RH
26.	BFR469	Hose Guide	91.	BFR492	Spindle
28.	BFR503	Back Rod	92.	BFR522	Seal
29.	BFR471	Back Slider Roller	93.	BFR57	Inner Bearing
30.	16SV77	1/2" x 6" Bolt GR.5	94.	BFR58	Inner Race
31.	BFR472	Front Rake Beam RH	95.	BFR59	Hub
32.	BFR473	Front Rake Beam LH	96.	BFR60	Outer Race
33.	BFR474	Back Rake Beam RH	97.	BFR61	Outer Bearing
34.	BFR475	Back Rake Beam LH	98.	BFR62	Washer
35.	BFR476	Back Linkage Yoke RH	99.	BFR63	Nut
36.	BFR477	Back Linkage Yoke LH	100.	BFR64	Cotter Pin
37.	BFR468	Back Linkage Yoke Pin	101.	BFR65	Hub Cap
38.	ES7	Hair Pin	102.	BFR66	Stud Bolt
39.	BFR479	Pivot Yoke Shaft Pin RH	103.	BFR143	Rake Wheel Hub
40.	BFR7	Cotter Pin 3/16" x 3-3/4"	104.	BFR657	1/2" x 6-1/2" Bolt GR.5
41.	BFR480	Left Pivot Yoke Shaft	105.	BFR494	Nylon Wear Block
42.	BFR481	Slotted Nut 1-1/2"	106.	BFR506	Cylinder Pin
43.	BFR518	3/4" - 16 Nut	107.	BFR517	RH Tandem Axle
44.	BFR505	Pivot Yoke Shaft Pin LH	108.	BFR509	LH Tandem Axle
45.	BFR482	Rear Pivot Assembly	109.	BFR510	Cotter Pin
46.	BFR661	Right Axle Upright	110.	23N108	Washer
47.	BFR662	Left Axle Upright	111.	16SV136	Poly Washer
48.	23N67	Hose Holder	112.	BFR523	Bushing
49.	BFR419	3/4" Acme Nut	113.	BFR625	Tandem Pin
50.	BFR420	Rear width Adjustment Rod	114.	BFR524	Bolt 1/2" x 1" GR.5
51.	BFR485	Rear width Adjustment Tube	115.	RG135	Bolt 3/8" x 2-1/2" GR.5
52.	BFR422	Width Adjustment Collar	116.	BFR117	Bolt 3/4" x 8-1/2" GR.5
53.	BFR423	Width Adjustment Handle	117.	BFR107	Roll Pin 3/8" x 2-3/4"
54.	BFR499	Beam Pivot Shaft	118.	12V59	Bolt 5/8" x 2" GR.5
55.	BFR525	Bearing	119.	BFR438	Tooth Deflector
56.	F16	Lock Collar	120.	BFR549	Side Arm Stabilizer Rod
57.	BFR137	Hair Pin	121.	BFR612	Adjustment Handle
58.	BFR 426	Rake Pressure Handle	122.	BFR241	Spring
59.	BFR486	Rake Arm Lock-Up Shaft	123.	BFR240	Sleeve Adjustable Lock
60.	BFR111	Back Rake Arm Adjustment Chain	124.	BFR239	Width Adjustment Stop
61.	K106	Cylinder Spacer	125.	BFR616	Width Adjustment Bar
62.	BFR530	Hydraulic Cylinder End Slide LH	126.	BFR611	3/4" x 6" Bolt GR.5
*	BFR531	Hydraulic Cylinder End Slide RH	127.	50N129	Pipe Clamp (1 Hole)
63.	BFR430	RH Spring Bracket	128.	BFR82	Washer
64.	16SV171	Hydraulic Lift Cylinder	129.	BFR641	SMV Bracket
65.	X94	Cylinder Spacers	130.	BFR649	Flange Nut
66.	BFR431	LH Spring Bracket	131.	BFR716	Washer
67.	BFR83	Pipe Clamps (2 Holes)	132.	DF22	Cylinder Pin
68.	BFR84	Compression Spring	133.	BFR634	Outer Ring
			134.	T177	

16 WHEEL EXPANSION KIT

ITEM	PART NO.	DESCRIPTION
1.	BFR532	RH Rake Beam Extension
2.	BFR534	Pole Extension
3.	BFR533	LH Rake Beam Extension
4.	BFR537	Lifting Pipe Connector
5.	BFR431	LH Spring Clamp
*	BFR430	RH Spring Clamp
6.	BFR536	Lifting Pipe Extension
7.	BFR535	Complete Expansion Kit
8.	BFR525	Bearing
9.	F16	Lock Collar
10.	BFR489	Rake Arm LH
*	BFR490	Rake Arm RH
11.	BFR140	Rake Arm Adjustment Chain
12.	BFR138	Spring
13.	T174	Rake Wheel LH
*	BFR31	Rake Wheel RH
14.	BFR652	10MM Lock Nut
15.	T175	10MM x 25MM Carriage Bolt
16.	T176	Rake Wheel Tooth
17.	T178	Rake Tooth Clip
18.	T179	Rake Wheel Center
19.	BFR657	Rake Wheel Hub
20.	BFR438	Bolt 5/8" x 2" GR.5 (14 pcs.)
21.	T177	Outer Ring
*	BFR635	Hose 1/2" FP x 1/2" MP x 33" (3)
*	BFR555	Adapter
*	JB82	1/2 To 3/8 Bushing

NOTE: * (Means Not Shown)

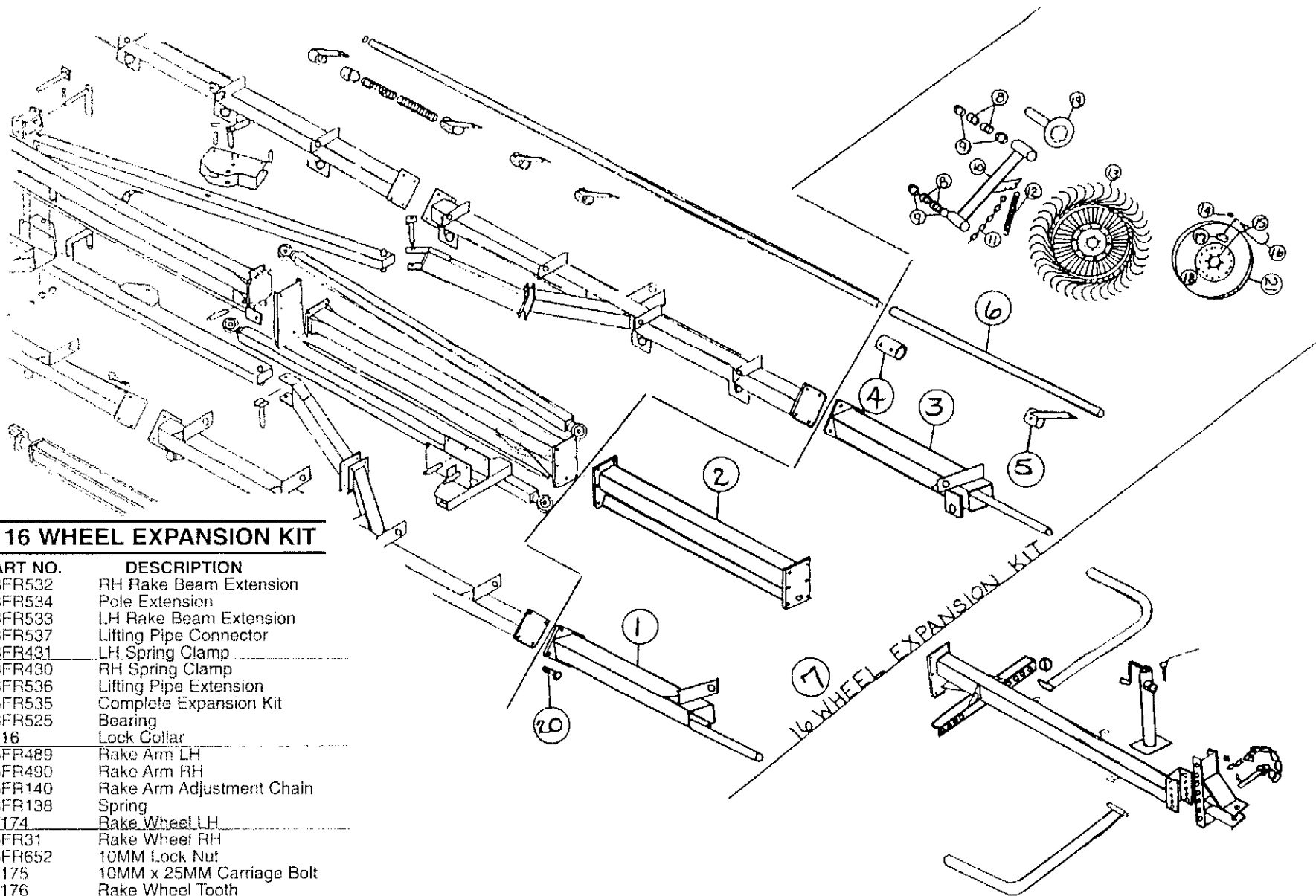


FIGURE 7

FIGURE 8

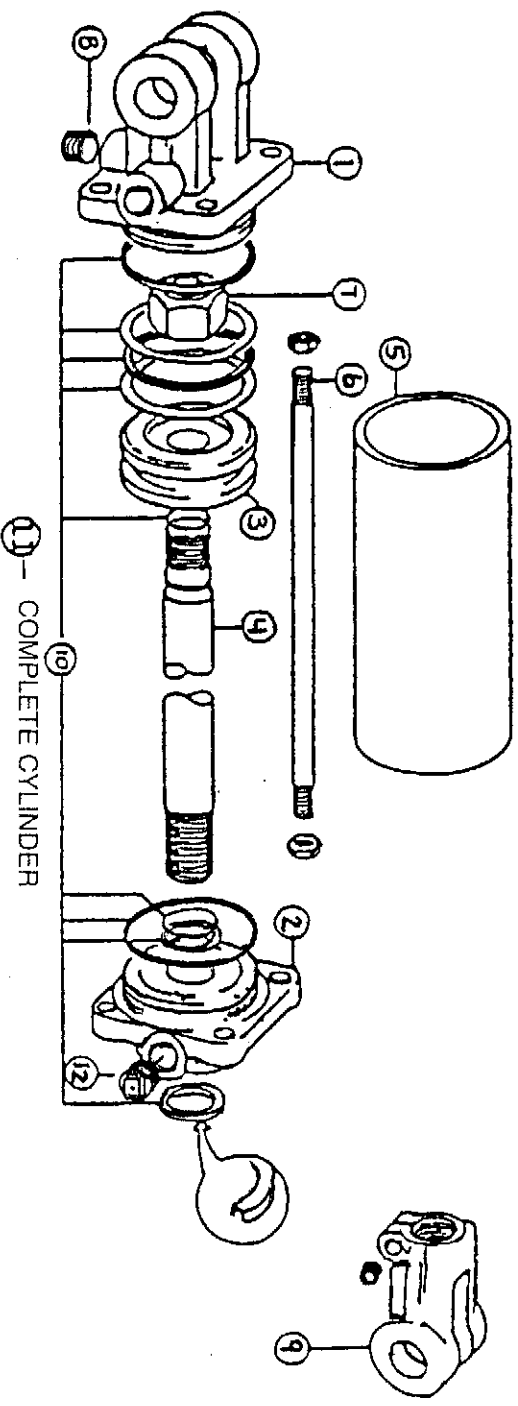


FIGURE 8
H&S 14 WHEEL HI CAPACITY RAKE
HYDRAULIC LIFT CYLINDER

ITEM	PART NO.	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 Cylinder
12.	BFR70	Vent Plug

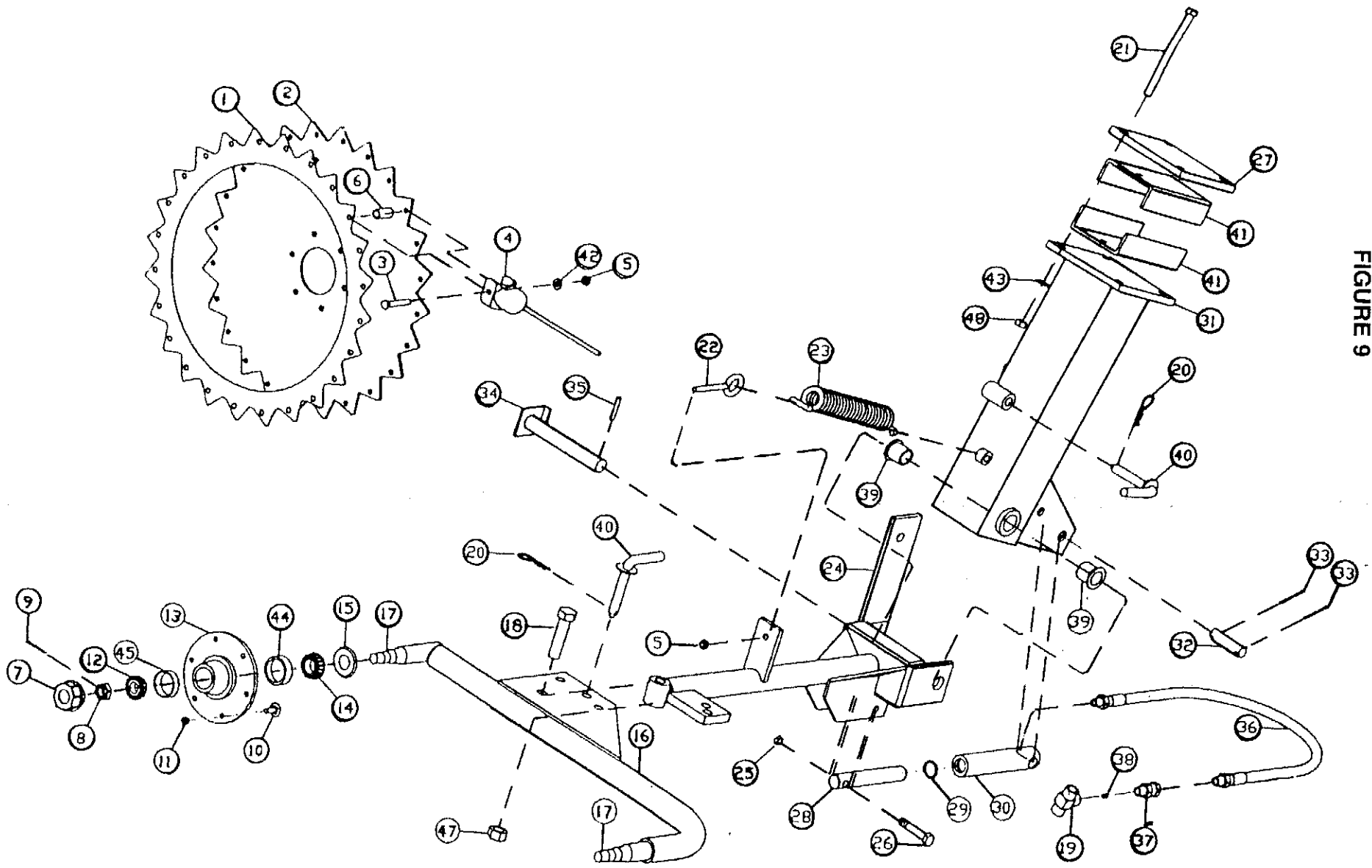


FIGURE 9

FIGURE 9
H&S 12 & 14 WHEEL HI CAPACITY RAKE
OPTIONAL CENTER KICKER WHEEL

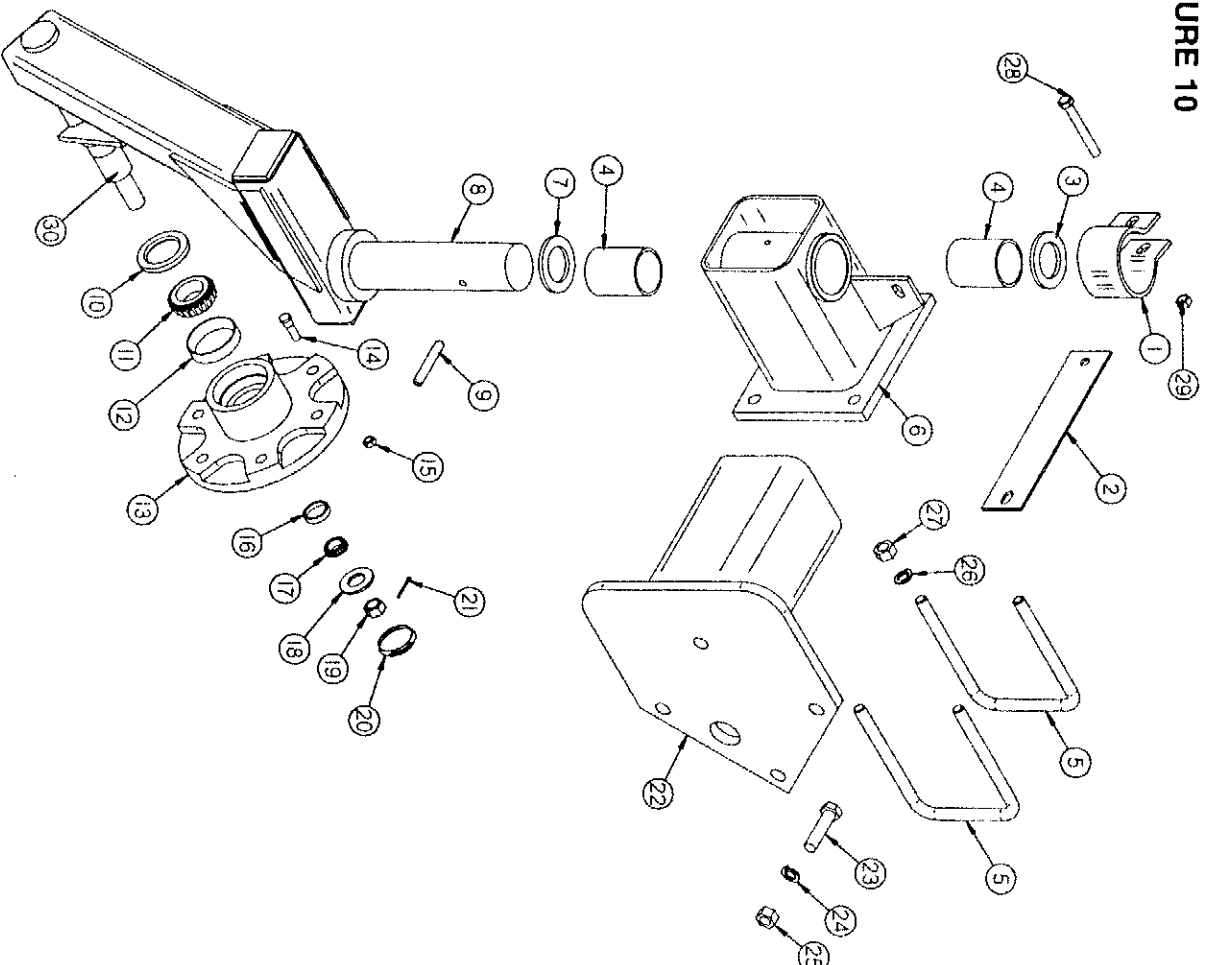
ITEM	12 WHEEL	14 WHEEL	DESCRIPTION
1.	BFR369	"	Rake Wheel Ring
2.	BFR370	"	Rake Wheel Center
3.	T123	"	3/8" x 2-1/4" Bolt GR.5
4.	T82	"	Rake Wheel Tooth
5.	K93	"	3/8" Lock Nut
6.	BFR371	"	Rake Wheel Spacer
7.	T173	"	Hub Cap
8.	T172	"	Nut
9.	T169	"	Cotter Key
10.	T168	"	10MM x 25MM Bolt
11.	T166	"	10MM Nut
12.	T170	"	Outer Bearing
13.	BFR32	"	Rake Wheel Hub
14.	T164	"	Inner Bearing
15.	T163	"	Seal
16.	BFR511	"	Center Kicker Wheel Arm
17.	BFR36	"	Spindle
18.	18N48	"	Pivot Pin Bolt 3/4" x 3" GR.5
19.	BFR74	"	3/8" Pipe Tee
20.	ES7	"	Hair Pin
21.	BFR494	"	1/2" x 6-1/2" Bolt GR.5
22.	BFR374	"	3/8" x 3" I-Bolt
23.	BR62	"	Spring
24.	BFR512	"	Center Kicker Wheel Pivot
25.	9S17	"	1/2" Locknut
26.	BFR375	"	1/2" x 2-1/2" Bolt GR.5
27.	BFR513	"	Kicker Wheel Mount
28.	BFR114	"	Piston
29.	BFR115	"	"O" Ring
30.	BFR116	"	Hydraulic Cylinder
31.	BFR514	"	Kicker Wheel Offset
32.	BFR515	"	Cylinder Pin
33.	T72	"	5/32" x 1-1/2" Cotter Key
34.	BFR379	"	Axle Shaft
35.	3G22	"	Roll Pin
36.	BFR121	"	Hose
37.	BFR122	"	3/8" Union/Adapter
*	BFR529	"	Adapter Union w/Orifice
38.	BFR380	"	Orifice
39.	BFR27	"	Bushing
40.	BFR197	"	Locking Pin
41.	BFR516	-	Filler Plate
42.	B68	"	Lockwasher
43.	R3	"	Lockwasher
44.	T165	"	Inner Race
45.	T171	"	Outer Race
47.	HE7	"	Locknut
48.	R11	"	Locknut

NOTE: " (Same Part No. as 12 Wheel Rake)

- (Part is Not Used on This Model)

* (Means Not Shown)

FIGURE 10



H&S 14 & 16 WHEEL HI CAPACITY RAKE OPTIONAL 15" GAUGE WHEEL

ITEM	PART NO.	DESCRIPTION	ITEM	PART NO.	DESCRIPTION
1.	BFR311	Brake Collar	17.	BFR62	Outer Bearing
2.	BFR310	Brake Pad (2)	18.	BFR63	Washer
3.	BFR309	Gauge Wheel Washer	19.	BFR64	Nut
4.	BFR527	Bronze Bushing	20.	BFR66	Hub Cap
5.	BFR600	U-Bolt	21.	BFR65	Cotter Pin
6.	BFR643	Gauge Wheel Mount	22.	BFR644	Gauge Wheel Extension Left
7.	RG24	Bronze Washer	*	BFR645	Gauge Wheel Extension Right
8.	BFR316	Complete Fork LH	23.	BFR438	5/8" x 2" Bolt
*	BFR312	Complete Fork RH	24.	T69	5/8" Lock Washer
9.	BFR313	Roll Pin 5/16" x 2-3/4"	25.	T68	5/8" Nut
10.	BFR57	Seal	26.	R35	1/2" Lock Washer
11.	BFR58	Inner Bearing	27.	R29	1/2" Nut
12.	BFR59	Inner Race	28.	X26	3/8" x 3" Bolt Full Thread
13.	BFR60	Hub	29.	K60	3/8" Nut
14.	BFR143	Stud	30.	BFR56	Spindle
15.	BFR144	Nut	*	BFR67	15 x 5 Wheel
16.	BFR61	Outer Race	*	BFR128	6.70 x 15 Tire

NOTE: * (Means Not Shown)

14 WHEEL HI CAPACITY RAKE HYDRAULICS

ITEM	PART NO.	DESCRIPTION
1.	37N60	108" Hose
2.	BFR74	3/8" Female Tee
3.	16SV171	Hydraulic Lift Cylinders
4.	BFR448	66" Hose
5.	23N234	3/8" Street Elbow
6.	BFR617	Male Adapter Union w/Orifice
7.	BFR653	Hydraulic Open Cylinder
8.	27N45	288" Hose
9.	HE60	3/8" Pipe Coupler
10.	JB82	Bushing 3/8" to 1/2"
11.	BFR554	Flow Valve
12.	BFR555	Adapter

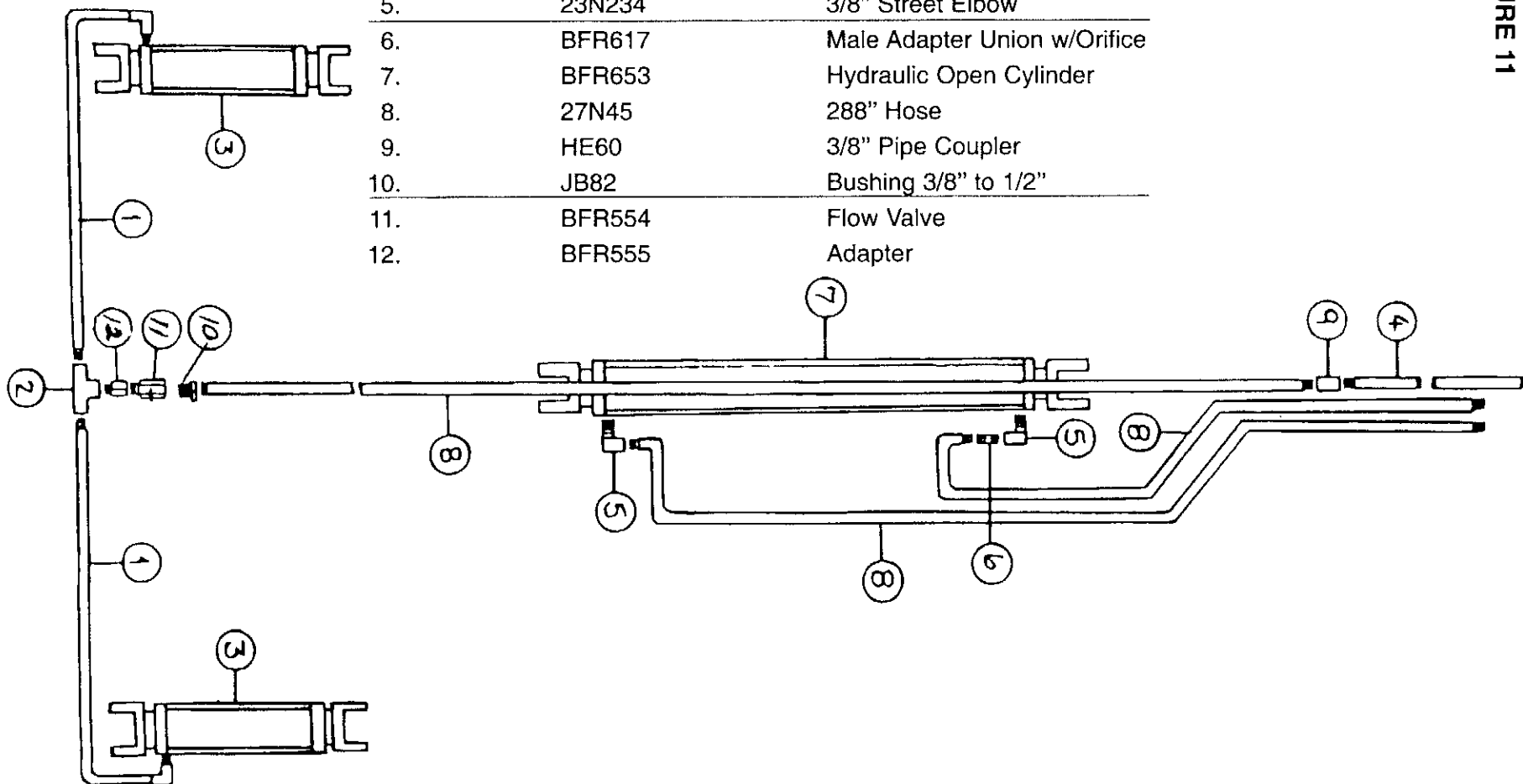
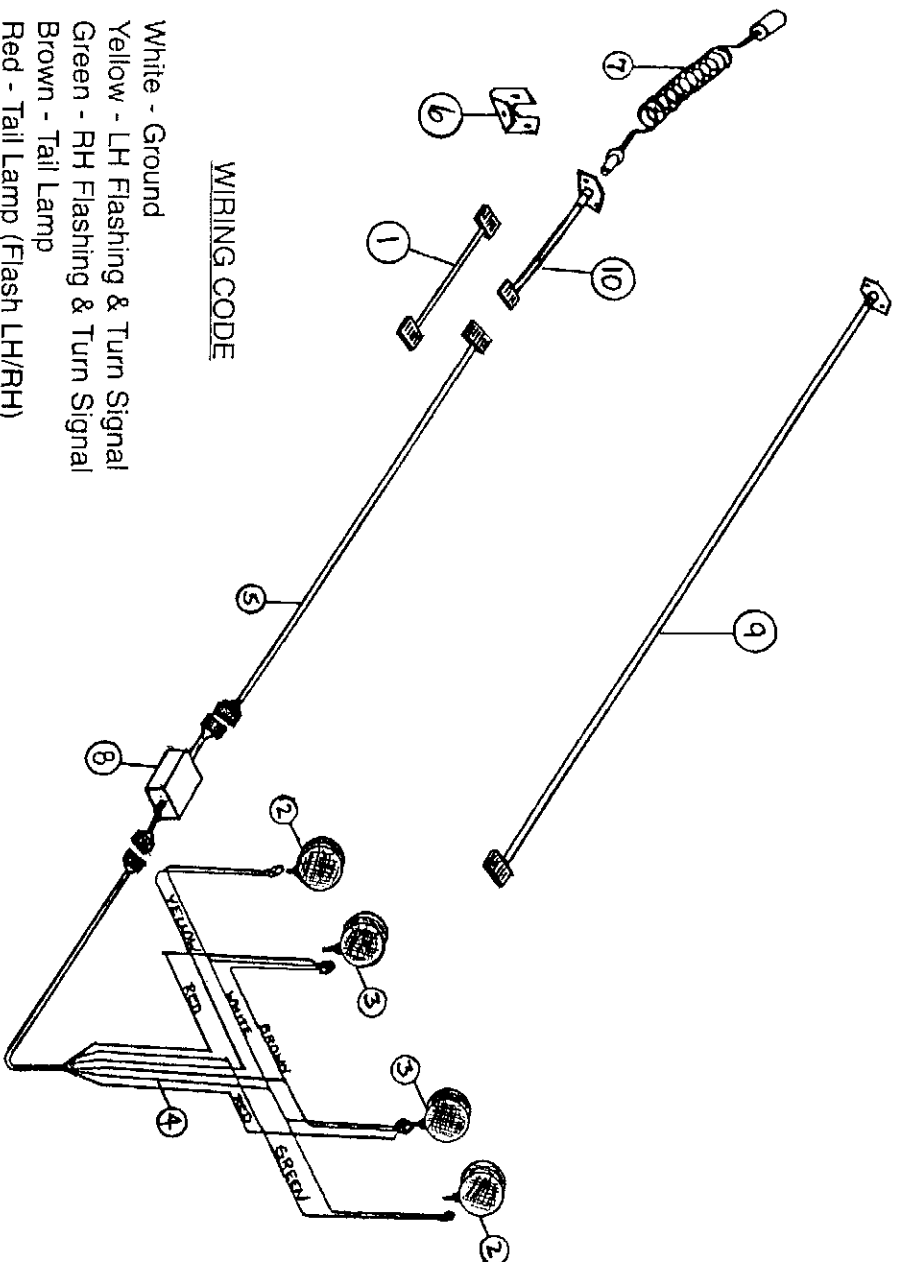


FIGURE 11

FIGURE 12



12-14-16 WHEEL HI-CAP OPTIONAL RAKE LIGHTING

ITEM	PART NO.	DESCRIPTION
1.	BFR666	16 Wheel Ext. Light Harness
2.	DWM129	Amber Light
3.	BFR675	Red Light
4.	BFR667	Light Harness (6 WIRE)
5.	BFR705	14 Wheel Light Harness
6.	BFR659	Mounting Bracket
7.	S317	Tractor Cord (Optional)
8.	S441	Light Module
9.	BFR668	12 Wheel Light Harness
10.	BFR706	Front Pigtail
*	BFR671	12 Wheel Comp. Light Harness Less Optional Cord
*	BFR707	14 Wheel Comp. Light Harness Less Optional Cord
*	BFR708	16 Wheel Comp. Light Harness Less Optional Cord

H&S HI CAPACITY BI-FOLD RAKE

Your new H&S 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.

HI CAPACITY SPECIFICATIONS

Rake wheel diameter – 55"

Number of teeth per wheel – 40

Diameter of rake teeth – 7 mm

	12 Wheel	14 Wheel	16 Wheel
Overall Length	24' 6"	27' 3"	30' 3"
Overall Width	8'	8' 1"	8' 1"
Weight	3500	3800	4200
Tires	670 x 15" 6 ply	670 x 15" 6 ply	670 x 15" 6 ply
Raking Width (range)	0' to 24'	0' to 28'	0' to 31'6"
Windrow Width (range)	38" to 58"	38" to 58"	38" to 58"

NOTE

Determine right or left side of 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.

H&S MANUFACTURING CO. INC.

2608 S. Hume Ave.

P.O. Box 768 – Telephone (715) 387-3414

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MARSHFIELD, WI 54449



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P.O. Box 1260 – Telephone (716) 736-7595

FAX (716) 736-7596

RIPLEY, NY 14775

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