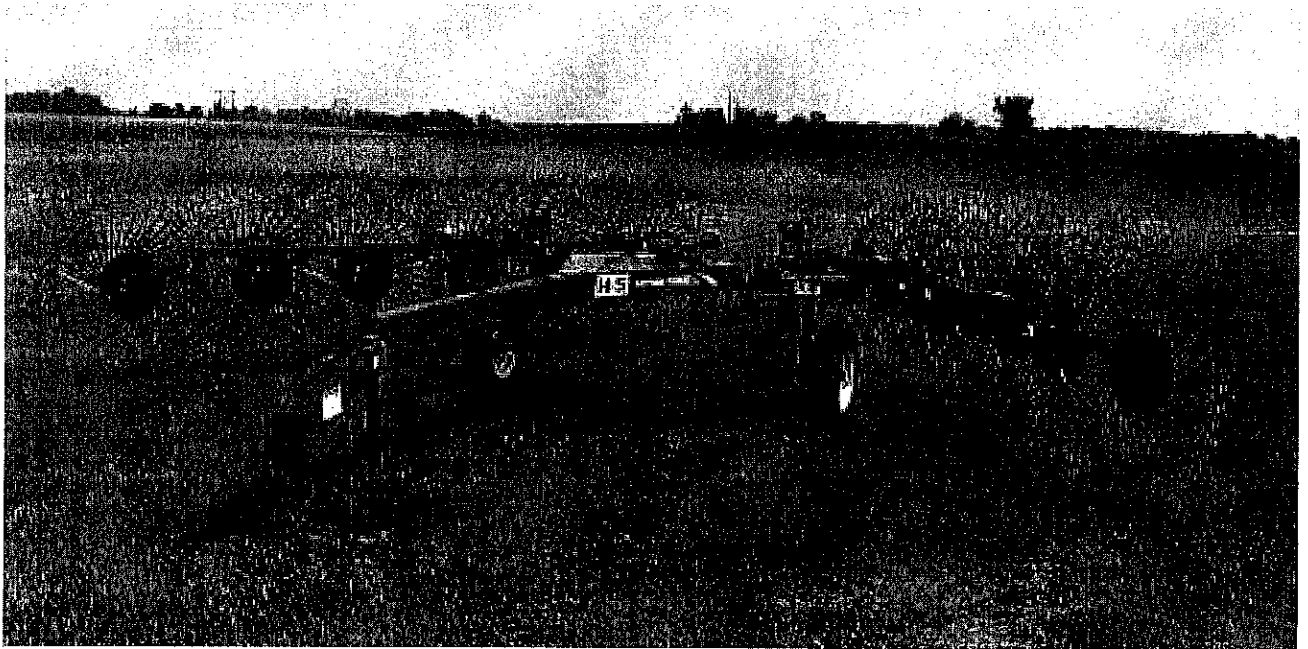


AR08 - AR10 - AR12 ACTION RAKES



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

Revision #1
AR08 Starting Serial #212016
AR10 Starting Serial #214020
AR12 Starting Serial #216019

HSMFG0112

Manufactured By
H&S MANUFACTURING CO., INC.

P.O. BOX 768 (715) 387-3414 FAX (715) 384-5463
MARSHFIELD, WISCONSIN 54449

FIGURE 1
FRAME COMPONENTS

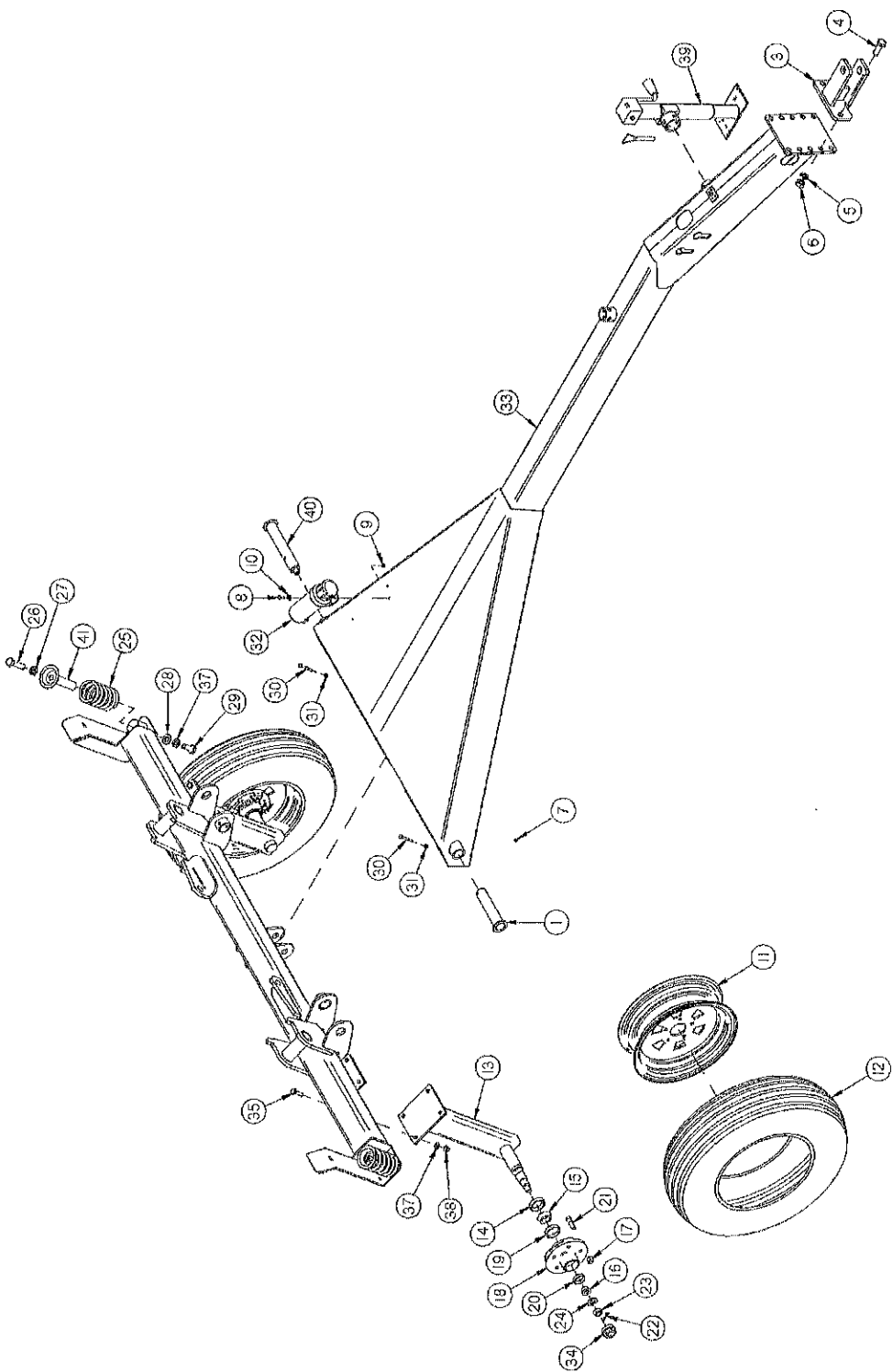


FIGURE 1

FRAME COMPONENTS

<u>ITEM</u>	<u>8 WHEEL</u>	<u>10 WHEEL</u>	<u>12 WHEEL</u>	<u>DESCRIPTION</u>
1	10WR7	"	"	RAKE ARM PIN (TWO OF THESE REQUIRED ON 8 WHEEL RAKE)
2	8ERWE01	10ERWE02	12ERWE11	FRAME WELDMENT
3	10ERWE06	"	"	10ER CLEVIS
4	YBHH24018	"	"	BOLT 3/4"-10 X 2 GR 8 YELLOW ZINC
5	YWLO24005	"	"	WASHER, LOCK, 3/4"
6	YNHX24006	"	"	HEX NUT 3/4"-10 GR. 8
7	G89	"	"	.250 x 28 STRAIGHT GREASE ZERK
8	YBHH08100	"	"	BOLT, 1/4" X 3/4" GR. 5
9	YNRL08005	"	"	HEX NUT, REVERSIBLE-SIDE LOCK, 1/2"-20
10	YWFL08005	"	"	FLAT WASHER
11	CAT18	"	"	WHEEL 15X5 ASM
12	CAT199	"	"	225-75 R15
13	10ERWE07	"	"	AXLE WELDMENT 60 IN WHEEL
14	CAT5	"	"	SEAL
15	CAT6	"	"	INNER CONE
16	CAT10	"	"	OUTER CONE
17	CAT14	"	"	WHEEL NUT 1/2"-20
18	CAT8	"	"	HUB WITH RACES
19	CAT7	"	"	INNER BEARING RACE
20	CAT9	"	"	OUTER BEARING RACE
21	CAT128A	"	"	STUD BOLT 1/2"-20 UNF X 1-7/8" GR 5
22	YPCT05015	"	"	COTTER PIN, 5/32" X 1-1/4"
23	YNSL24010	"	"	HEX NUT, SLOTTED, 3/4"-16
24	YWFL24005	"	"	WASHER, FLAT, 3/4" USS
*	10WR49	"	"	COMPLETE HUB
25	10WR47	"	12WR1	RAKE ARM SPRING
26	YBHH24042	"	"	3/4"-10 X 2-3/4" GR. 5 FULL THREAD
27	YNJM24010	"	"	HEX NUT, JAM, 3/4"-10
28	YWFL24005	"	"	FLAT WASHER
29	YBHH24014	"	"	BOLT, 3/4"-10 X 1-3/4" GR. 5
30	YBHH10085	"	"	5/16"-18 x 2-1/2" GR. 5
31	YNL10005	"	"	NUT, 5/16" TOP LOCK
32	S522	"	"	MANUAL HOLDER
33	10ERWE01	"	12ERWE12	POLE
34	CAT46	"	"	HUB CAP
35	YBHH16055	"	"	BOLT, 1/2" X 1-3/4" GR 5
36	10ERWE08	"	"	AXLE WELDMENT LH 60 IN WHEEL
37	YWLO16005	"	"	WASHER, LOCK, 1/2"
38	YNHX16005	"	"	HEX NUT, 1/2"
39	BFR753A	"	"	JACK 2000# SIDE WIND
40	-	0240WE05	"	PIVOT ARM PIN
41	10ERWE05	"	"	SPRING HOLDER

**NOTE: " MEANS SAME AS PREVIOUS MODEL
 - MEANS NOT USED ON THIS MODEL**

FIGURE 2

RAKE BEAMS AND WHEELS

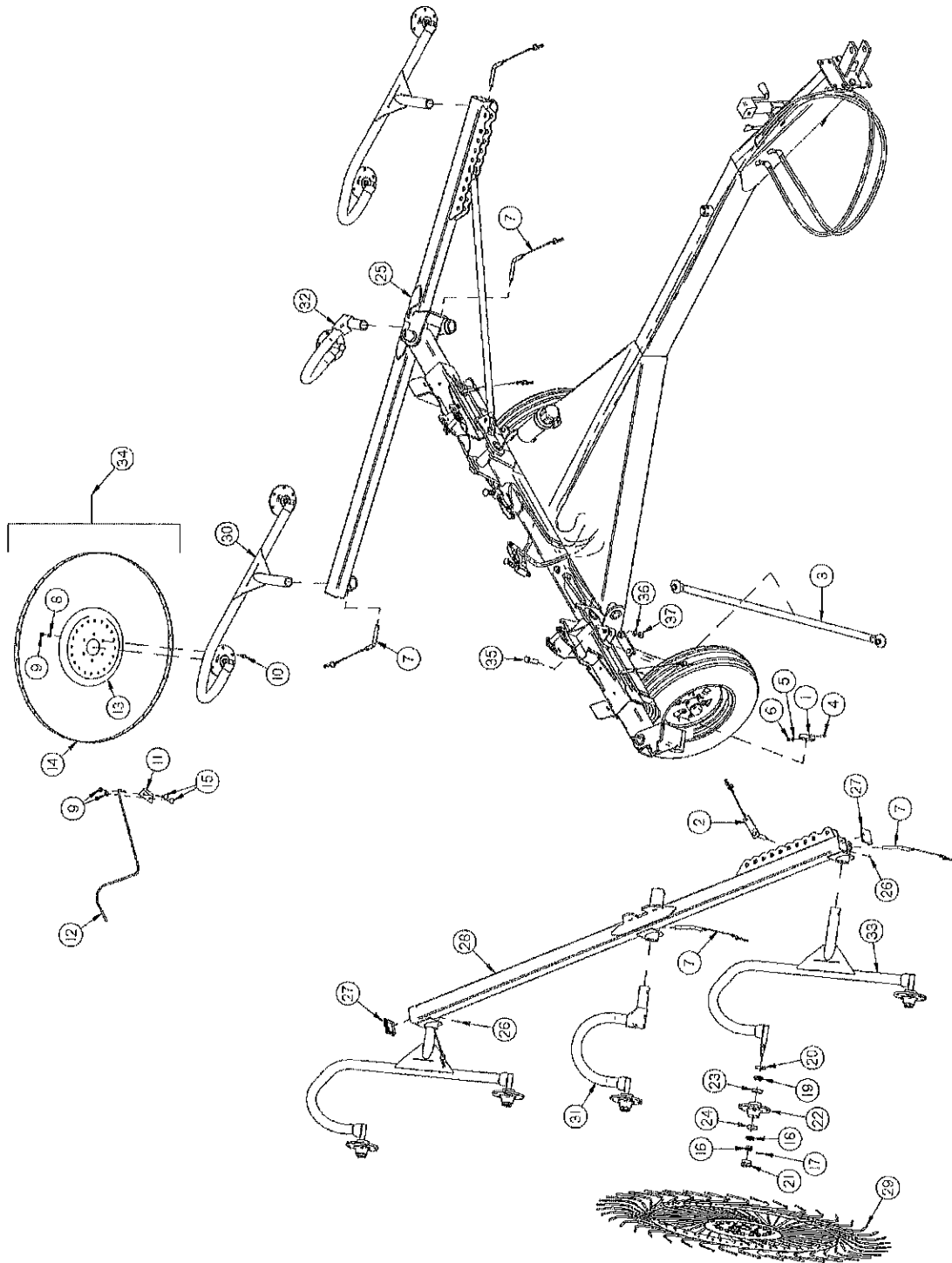


FIGURE 2

RAKE BEAMS AND WHEELS

<u>ITEM</u>	<u>8 WHEEL</u>	<u>10 WHEEL</u>	<u>12 WHEEL</u>	<u>DESCRIPTION</u>
1	10WR8	"	"	PIVOT THRUST WASHER
2	10ERAS20	"	"	WIDTH LINK PIN ASSEMBLY
3	8ERWE06	10ERWE13	"	BEAM ANGLE LINK
4	YBHH10110	"	"	BOLT, 5/16 X 3-1/2 GR 5
5	YWLO10005	"	"	WASHER, LOCK, 5/16
6	YNHX10005	"	"	HEX NUT
7	10ERAS08	"	"	CANE PIN ASSEMBLY
8	YWLO76015	"	"	WASHER, LOCK, M10
9	YNHX76015	"	"	HEX NUT, M10-1.5
10	YBHH76015	"	"	BOLT, M10-1.5 (25MM)
11	T178	"	"	TOOTH CLIP
12	FR73	"	"	60 IN WHEEL TOOTH
13	T179	"	"	RAKE WHEEL DISH
14	FR72	"	"	60 IN WHEEL BAND
15	YBCR76005	"	"	CARR. BOLT, 10MM X 25MM (T168)
16	T172	"	"	1.5 X 18MM CASTLE NUT
17	1088	"	"	RETAINING CLIP (REPLACES T169)
18	T170	"	"	OUTER CONE
19	T164	"	"	INNER CONE
20	T163	"	"	SEALING WASHER
21	T173	"	"	HUB CAP
22	1086	"	"	ITALIAN RAKE WHEEL HUB
23	T165	"	"	INNER RACE
24	T171	"	"	OUTER RACE
25	8ERWE05	10ERWE09	12ERWE10	LEFT RAKE BEAM
26	G89	"	"	.250 x 28 STRAIGHT GREASE ZERK
27	1075	"	"	TUBING CAP 3 X 3 SQ.
28	8ERWE04	10ERWE03	12ERWE09	RIGHT RAKE BEAM
29	FR70	"	"	60" RAKE WHEEL RH
30	12ERWE04	"	"	LEFT CANE WELDMENT
31	-	10ERWE11	-	CENTER CANE WELDMENT RH
32	-	10ERWE12	-	CENTER CANE WELDMENT LH
33	12ERWE08	"	"	RIGHT CANE WELDMENT
34	FR69	"	"	60" RAKE WHEEL LH

NOTE: " MEANS SAME AS PREVIOUS MODEL
 - MEANS NOT USED ON THIS MODEL

FIGURE 3
LIFT ARMS AND HYDRAULICS

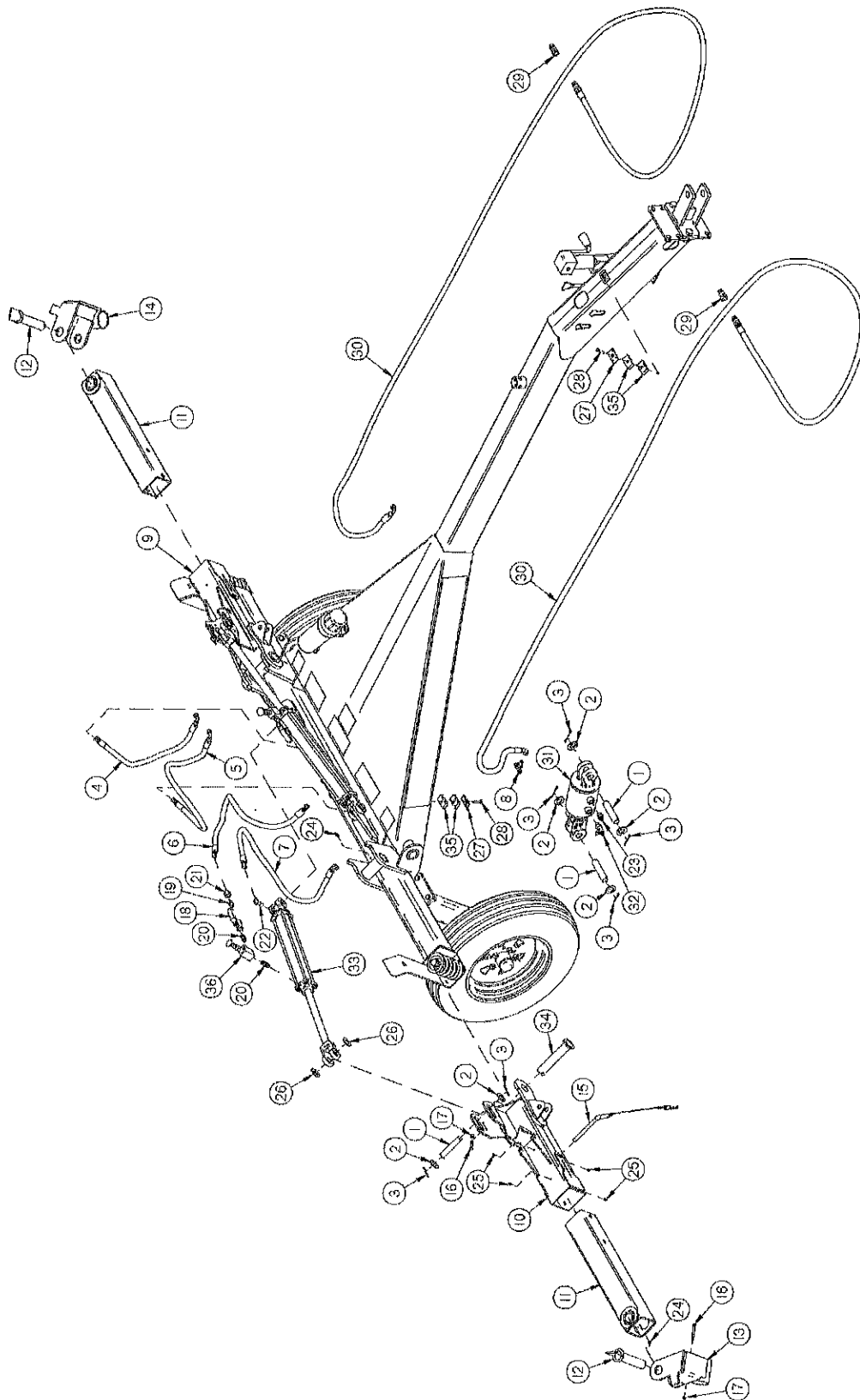


FIGURE 3

LIFT ARMS AND HYDRAULICS

<u>ITEM</u>	<u>8 WHEEL</u>	<u>10 WHEEL</u>	<u>12 WHEEL</u>	<u>DESCRIPTION</u>
1	LW55	"	"	CYLINDER PIN, LONG
2	16SV136	"	"	SPEED CONTROL WASHER
3	YPCT06020	"	"	COTTER PIN 3/16" X 2"
4	10ERMS02	"	"	HOSE, 90 DEG ENDS
5	10ERMS07	"	"	HOSE, 90 DEG ENDS
6	10ERMS03	"	"	HOSE, STRT ENDS
7	10ERMS08	"	"	HOSE, 90 DEGREE ENDS
8	8005	"	"	06 BULKHEAD TEE FITTING
9	-	10ERWE04	"	LEFT SLIDER HOUSING WELDMENT
10	-	12ERWE07	"	RIGHT SQUARE SLIDER HOUSING
11	-	10WR34	"	SLIDE ARM
*	8ERWE08	-	-	MAIN BEAM ARM LH
*	8ERWE07	-	-	MAIN BEAM ARM RH
12	10WR6	"	"	RAKE BEAM PIN
13	12ERWE06	"	"	12ER RIGHT INTERMEDIATE LINKAGE
14	12ERWE05	"	"	12ER LEFT INTERMEDIATE LINKAGE
15	10ERAS01	"	"	ARM SLIDER PIN ASSEMBLY
16	YBHH10085	"	"	5/16"-18 x 2-1/2" GR. 5
17	YNTL10005	"	"	NUT, 5/16" TOP LOCK
18	16SV338	"	"	3/8" BALL VALVE
19	CHM202	"	"	3/8" MALE NPT TO 06 MALE 90 ELBOW
20	16SV351	"	"	3/8" NIPPLE
21	1023	"	"	06-06 M/F ORIFICE, 0.047
22	CHM164	"	"	MALE ELBOW CTX ~ 6-6 CTX
23	CHM207	"	"	06 TO 3/4"-16 ORB STRT FITTING
24	RG21	"	"	1/4"-28 45° ZERK
25	G89	"	"	1/4" x 28 STRAIGHT GREASE ZERK
26	BFR33	"	"	WASHER
27	CHM277	"	"	3/8" COVER PLATE
28	YBHH10010	"	"	BOLT, 5/16" X 1" GR. 5
29	DWM205	"	"	MALE QUICK COUPLER 1/2"
30	10ERMS04	"	12ERMS01	HOSE, TRACTOR
31	1059	"	"	CYLINDER, ACTION REPHASE
32	1076	"	"	TEE, 1/2" ORB TO 3/8" JIC
33	23N111A	"	"	HYD. CYLINDER, 2" X 16"
34	10WR7	"	"	RAKE ARM PIN
35	CHM278	"	"	3/8" DOUBLE HOSE CUSHIONS
36	8735	"	"	SEQUENCE VALVE

NOTE: " MEANS SAME AS PREVIOUS MODEL
 - MEANS NOT USED ON THIS MODEL
 * MEANS NOT SHOWN

FIGURE 4

OPTIONAL KICKER WHEELS

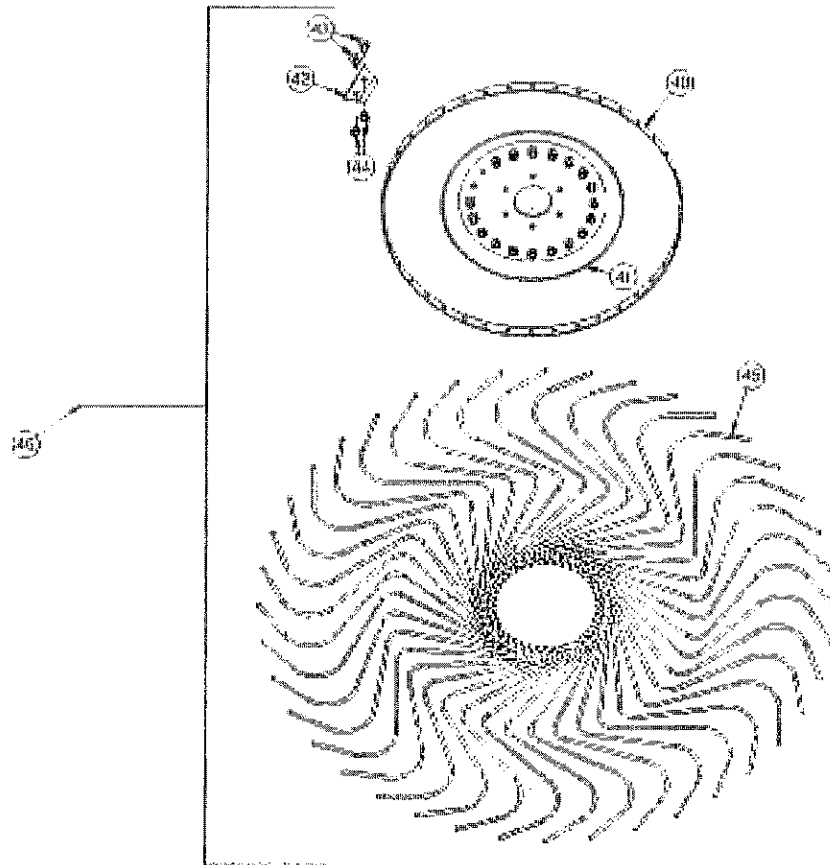
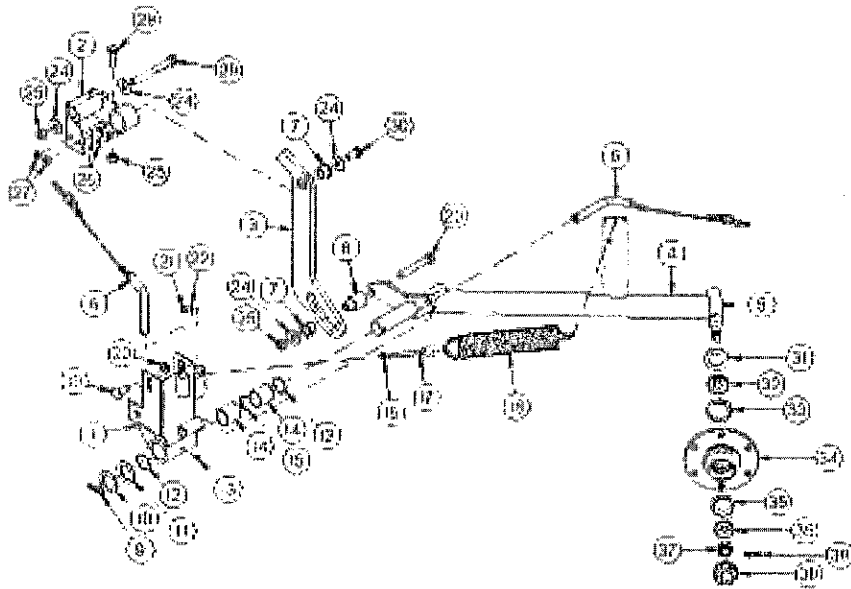


FIGURE 4

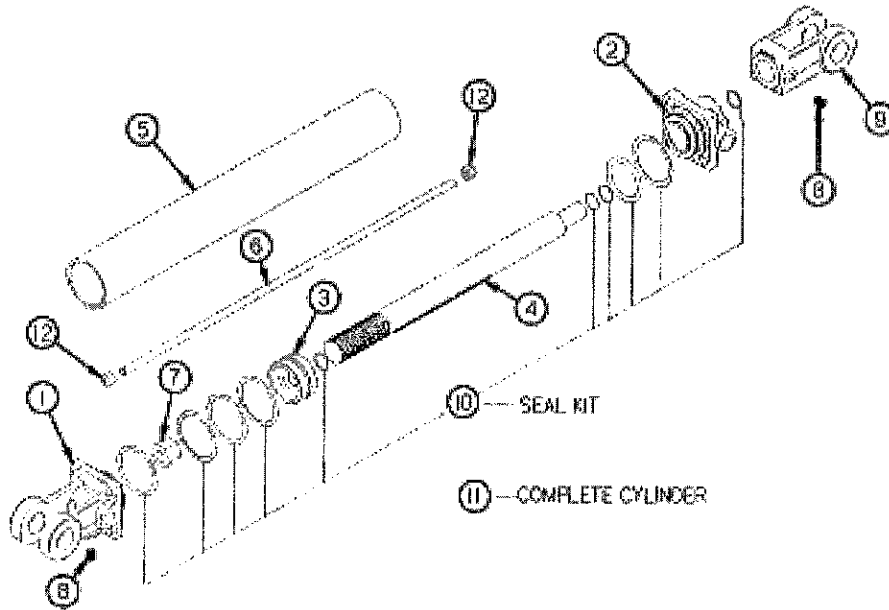
OPTIONAL KICKER WHEELS

<u>ITEM</u>	<u>8 WHEEL</u>	<u>10 WHEEL</u>	<u>12 WHEEL</u>	<u>DESCRIPTION</u>
1	-	0240WE04	"	KICKER MOUNT WELD
2	-	0240WE07	"	KICKER STOP WELDMENT
3	-	0240HF03	"	KICKER LEVER LINK FRAME PIVOT
4	-	0240WE03	"	KICKER ARM WELD
5	-	BFR36	"	RAKE WHEEL SPINDLE
6	-	10ERAS08	"	CANE PIN ASSEMBLY
7	-	8579	"	POLY PIVOT BEARING
8	-	0240TU04	"	KICKER PIVOT SPACER LOWER
9	-	YPEX10017	"	EXPANSION PIN, 5/16" X 2"
10	-	12X1818	"	WASHER
11	-	BFR221	"	POLY WASHER
12	-	S99	"	KICKER O RING
13	-	G89	"	1/4" X 28 GREASE ZERK
14	-	G16	"	BRONZE BUSHING 1-1/2" OD X 1-1/4" ID X 1.5"
15	-	BFR230	"	BEARING SPACER
16	-	YNHX10005	"	HEX NUT, 5/16"
17	-	YBTE10030	"	TURNED EYE BOLT, 5/16" X 3"
18	-	BFR110	"	SPRING
19	-	YBCR16015	"	CARR. BOLT, 1/2" X 1-1/4" GR. 5
20	-	YNSF16005	"	HEX NUT, SERRATED FLANGE, 1/2"-13"
21	-	YNNY10005	"	HEX NUT, NYLON LOCKNUT, 5/16"-18
22	-	YWFL10005	"	WASHER, FLAT, 5/16" USS
23	-	YBHH16120	"	BOLT, 1/2" X 3-1/4" GR. 5
24	-	YWFL16005	"	WASHER, FLAT, 1/2" USS
25	-	YNRL16005	"	HEX NUT, REVERSIBLE-SIDE LOCK, 1/2"-13
26	-	YBHH12010	"	BOLT, 3/8" X 1" GR. 5
27	-	YNRL12005	"	HEX NUT, REVERSIBLE-SIDE LOCK, 3/8"-16
28	-	YBHH16030	"	BOLT, 1/2" X 1-1/2" GR. 5
29	-	YBHH16140	"	BOLT, 1/2" X 4-1/2" GR. 5
30	-	YBHH16010	"	BOLT, 1/2" X 1" GR. 5
31	-	T163	"	SEALING WASHER
32	-	T164	"	INNER CONE
33	-	T165	"	INNER RACE
34	-	1086	"	ITALIAN RAKE WHEEL HUB
35	-	T171	"	OUTER RACE
36	-	T170	"	OUTER CONE
37	-	T172	"	1-1/2" X 18MM CASTLE NUT
38	-	1088	"	RETAINING CLIP
39	-	T173	"	HUB CAP
40	-	T177A	"	RAKE WHEEL BAND
41	-	T179	"	RAKE WHEEL DISH
42	-	T178	"	TOOTH CLIP
43	-	YBCR76005	"	CARR. BOLT, 10MM X 25MM
44	-	YNHX76015	"	HEX NUT, M10-1.5
45	-	10WR42	"	RAKE WHEEL TOOTH
46	-	10WR17	"	LH RAKE WHEEL COMPLETE

**NOTE: " MEANS SAME AS PREVIOUS MODEL
 - MEANS NOT USED ON THIS MODEL**

FIGURE 5

HYDRAULIC CYLINDER



<u>ITEM</u>	<u>8 WHEEL</u>	<u>10 WHEEL</u>	<u>12 WHEEL</u>	<u>DESCRIPTION</u>
1	T181A	"	"	CLEVIS CAP
2	T182A	"	"	ROD CAP
3	T183	"	"	PISTON
4	23N145A	"	"	ROD
5	10WR45	"	"	CYLINDER TUBE
6	23N147	"	"	TIE ROD
7	23N148	"	"	PISTON NUT
8	23N149	"	"	PLUG
9	23N150A	"	"	ROD CLEVIS
10	T187	"	"	SEAL KIT
11	10WR11A	"	"	COMPLETE HYDRAULIC CYLINDER

Specifications

<u>Model</u>	<u>AR08</u>	<u>AR10</u>	<u>AR12</u>
Number of Wheels	8	10	12
Wheel Diameter	60"	60"	60"
Teeth per Wheel	40	40	40
Tooth Diameter – 60"	7.5mm	7.5mm	7.5mm
Rake Wheel Hubs	Tapered Brgs.	Tapered Brgs.	Tapered Brgs.
Transport Width	10'	10'8"	12'
Transport Length	17'	19'	21'6"
Transport Height in Transport Position	86"	101"	105"
Raking Width	15' – 19'	18' – 22'	20' – 24'
Windrow Width Adjustment	3' – 5'	4' – 6'	4' – 6'
Number of Raking Positions w/Transport Position	6	10	10
Ground Pressure Rake Wheel Adjustment	Adjustable Tension Spring	Adjustable Tension Spring	Adjustable Tension Spring
Action Cylinder – Raise/Lower	4½"	4½"	4½"
Wing Cylinders	2" x 16"	2" x 16"	2" x 16"
Jack	Standard	Standard	Standard
Weight	1,400#	1,670#	1,860#
Center Kicker Wheel	N/A	Optional	Optional

