

H&S

PARTS BOOK

HD8117 RAKE



Revision #05

Starting Ser. #021HD17001

HSMFG0420

PART #59780

Manufactured by:

H&S MANUFACTURING CO., INC.

2608 S. HUME AVE. MARSHFIELD, WI 54449

(715) 387-3414 - FAX (715) 384-8736 - WWW.HSMFGCO.COM

CONTENTS

Instructions for Ordering Parts.	1
Figure 1 - Axle - Uprights and Tandems.	2-3
Figure 2 - Main Frame.	4-5
Figure 3 - Rake Beams.	6-9
Figure 4 - Hydraulics.	10-11
Figure 5 - Wiring.	12-13
Figure 6 - Hydraulic Cylinders.	14-15
Figure 7 - Hydraulic Valve.	16-17
Figure 8 - Main Harness.	18
Figure 9 - Control Box Wiring.	19
Figure 10 - Open Center Change.	20-21
Figure 11 - Front Rake Wheel Extension.	22-23
Figure 12 - Right Rear Wheel Extension.	24-25
Parts Notes	26

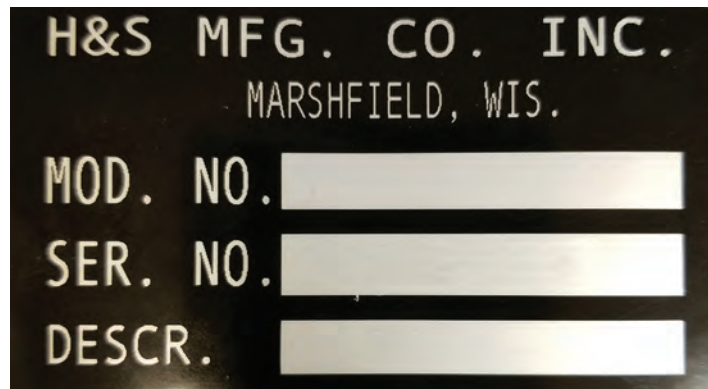
INSTRUCTIONS FOR ORDERING PARTS

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

1. Model & Serial Number - Both can be located on the left side of the rear frame.
2. All references to left or right apply to the machine as viewed from the rear.
3. Parts should not be ordered from illustration only. Please order 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)



PLEASE RECORD NUMBERS FOR YOUR UNIT FOR QUICK REFERENCE

ABOUT IMPROVEMENTS

H&S IS CONTINUALLY STRIVING TO IMPROVE IT'S 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
AXLE - UPRIGHTS AND TANDEM

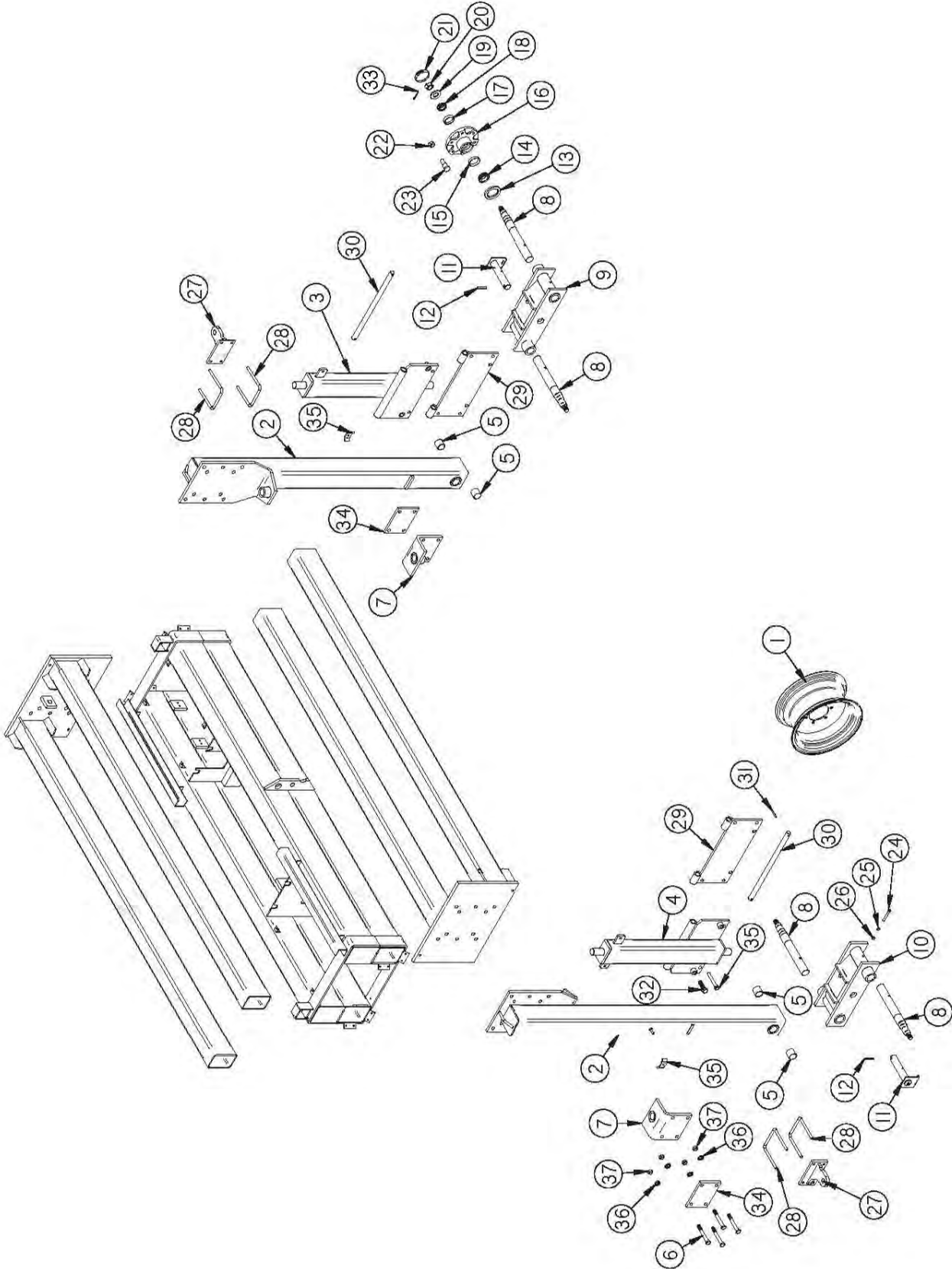


FIGURE 1

AXLE - UPRIGHTS AND TANDEMS

<u>ITEM</u>	<u>PART#</u>	<u>DESCRIPTION</u>
1	12N24	WHEEL 15 X 8
*	85423	IF240/80R15IMP TIRE MTD ON 15X8 OFF-WHITE WHEEL
2	HD94	AXLE UPRIGHT
3	HD95	BEAM PIVOT LH
4	HD96	BEAM PIVOT RH
5	HD153	BUSHING
6	YBHH20105	BOLT HEX, 5/8 X 7 G5
7	HD98	UPRIGHT BOTTOM PIVOT
8	HD99	SPINDLE
9	HD100	TANDEM AXLE LH
10	HD101	TANDEM AXLE RH
11	HD102	TANDEM PIN
12	YPEX12025	EXPANSION PIN, 3/8 X 2-3/4
13	12N17	SEAL
14	12N18	INNER BEARING
15	12N19	INNER RACE
16	RG101	HUB
17	17G146	OUTER RACE
18	17G145	OUTER BEARING
19	HD200	WASHER
20	YNSL28005	NUT HEX, SLOTTED, 7/8-14
21	17G144	DUST CAP
22	YNWL16005	WHEEL NUT, 1/2
23	YBSD16005	BOLT STUD, 1/2-20 UNF X 1-7/8 X 3/8 G5
24	YBHH12145	BOLT HEX, 3/8 X 3-1/2 G5
25	YWLO12005	WASHER, LOCK, 3/8
26	YNHX12005	NUT HEX, 3/8
27	HD151	CYLINDER MOUNT UPRIGHT END
28	HD152	U-BOLT 1/2
29	HD164	BEAM PIVOT PLATE
30	HD165	HINGE PIN
31	YPEX10015	EXPANSION PIN, 5/16 X 1-3/4
32	YBHH24020	BOLT HEX, 3/4 X 2-1/2 G5
33	YPCT05010	COTTER PIN, 5/32 X 1-1/2
34	HD182	PIVOT MOUNT PLATE
35	HE42	HOSE CLAMP
36	YWLO20005	WASHER, LOCK, 5/8
37	YNHX20005	NUT HEX, 5/8

*MEANS NOT SHOWN

FIGURE 2
MAIN FRAME

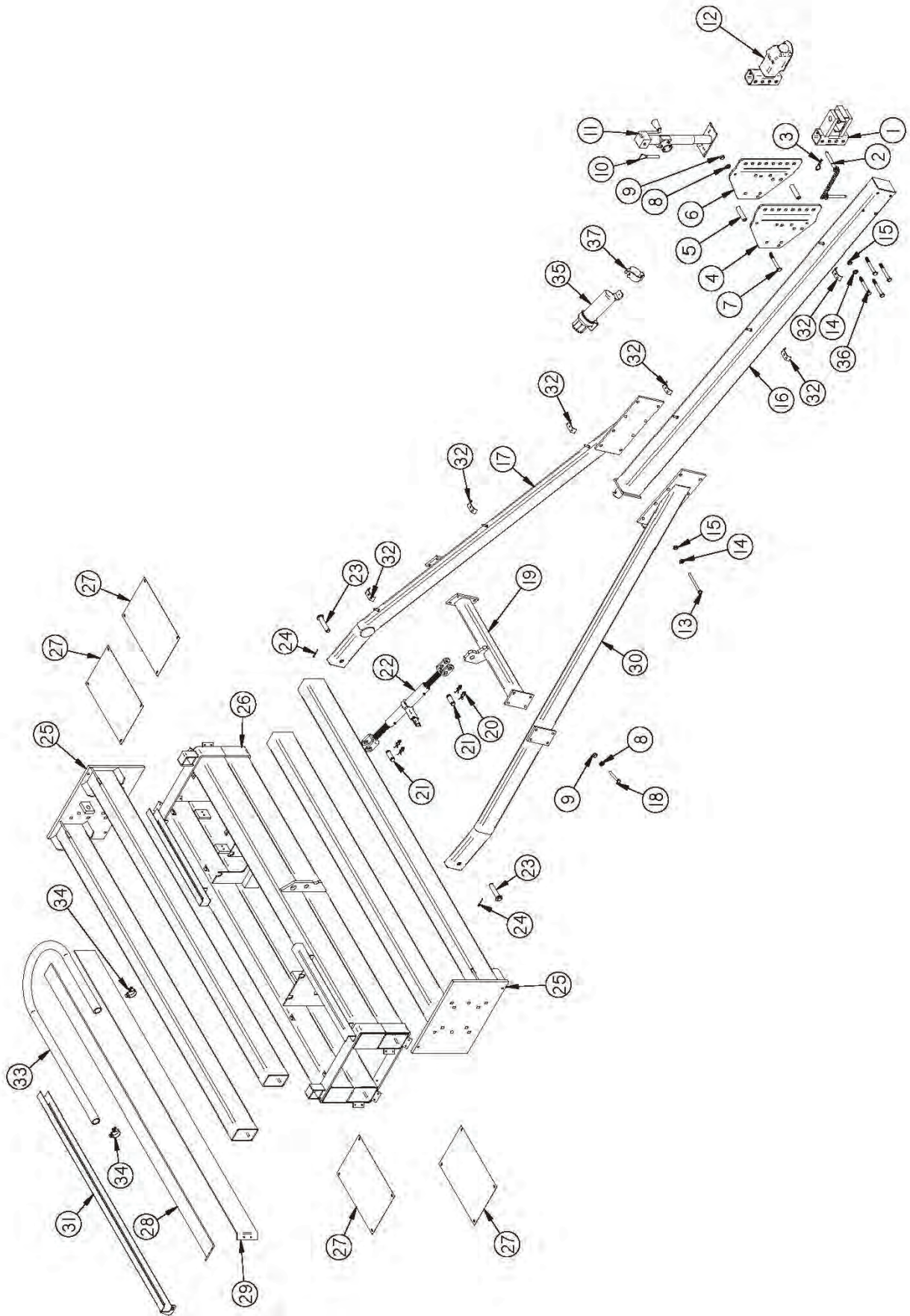


FIGURE 2

MAIN FRAME

<u>ITEM</u>	<u>PART#</u>	<u>DESCRIPTION</u>
1	HD83	HITCH CLEVIS
2	BFR450	HITCH PIN
3	YPHR02010	HAIR PIN, #21-07
4	HD84	HITCH MOUNT RIGHT HITCH
5	BFR467	CENTER SLIDER SPACER
6	HD86	HITCH MOUNT LH
7	YBHH16160	BOLT HEX, 1/2 X 5-1/2 G5
8	YWLO16005	WASHER LOCK, 1/2
9	YNHX16005	NUT HEX, 1/2
10	12N117	JACK PIN & CHAIN
11	BFR753A	JACK
12	HD172	BALL COUPLER (OPTIONAL)
13	YBHH20100	BOLT HEX, 5/8 X 6 G5
14	YWLO20005	WASHER LOCK, 5/8
15	YNHX20005	NUT HEX, 5/8
16	HD89	POLE FRONT
17	HD90	POLE BACK LH
18	YBHH16125	BOLT HEX, 1/2 X 3-3/4 G5
19	HD92	JACK MOUNT TUBING HAIR
20	YPHR02020	PIN, #23-10
21	T143	JACK PIN
22	60206	RATCHET JACK
23	HD93	POLE PIVOT PIN
24	YPCT05010	COTTER PIN, 5/32 X 1-1/2
25	HD103	INNER SLIDER
26	HD104	CENTER SLIDER OUTSIDE
27	HD105	SHIELD
28	HD106	POLY SLIDE NARROW 1/4
*	HD155	POLY SLIDE NARROW 3/16
29	HD107	POLY SLIDE WIDE 1/4 POLY
*	HD156	SLIDE WIDE 3/16 POLE
30	HD108	BACK RIGHT
31	HD140	HOSE CHANNEL
32	23N67	HOSE BRACKET
33	HD169	HOSE SHIELD
34	HD170	HOSE CLAMP (SIZE 40)
35	S522	MANUAL HOLDER
36	YBHH20095	BOLT HEX, 5/8 X 5-1/2 G5
37	S23	MANUAL CLAMP - LARGE

*MEANS NOT SHOWN

FIGURE 3
RAKE BEAMS

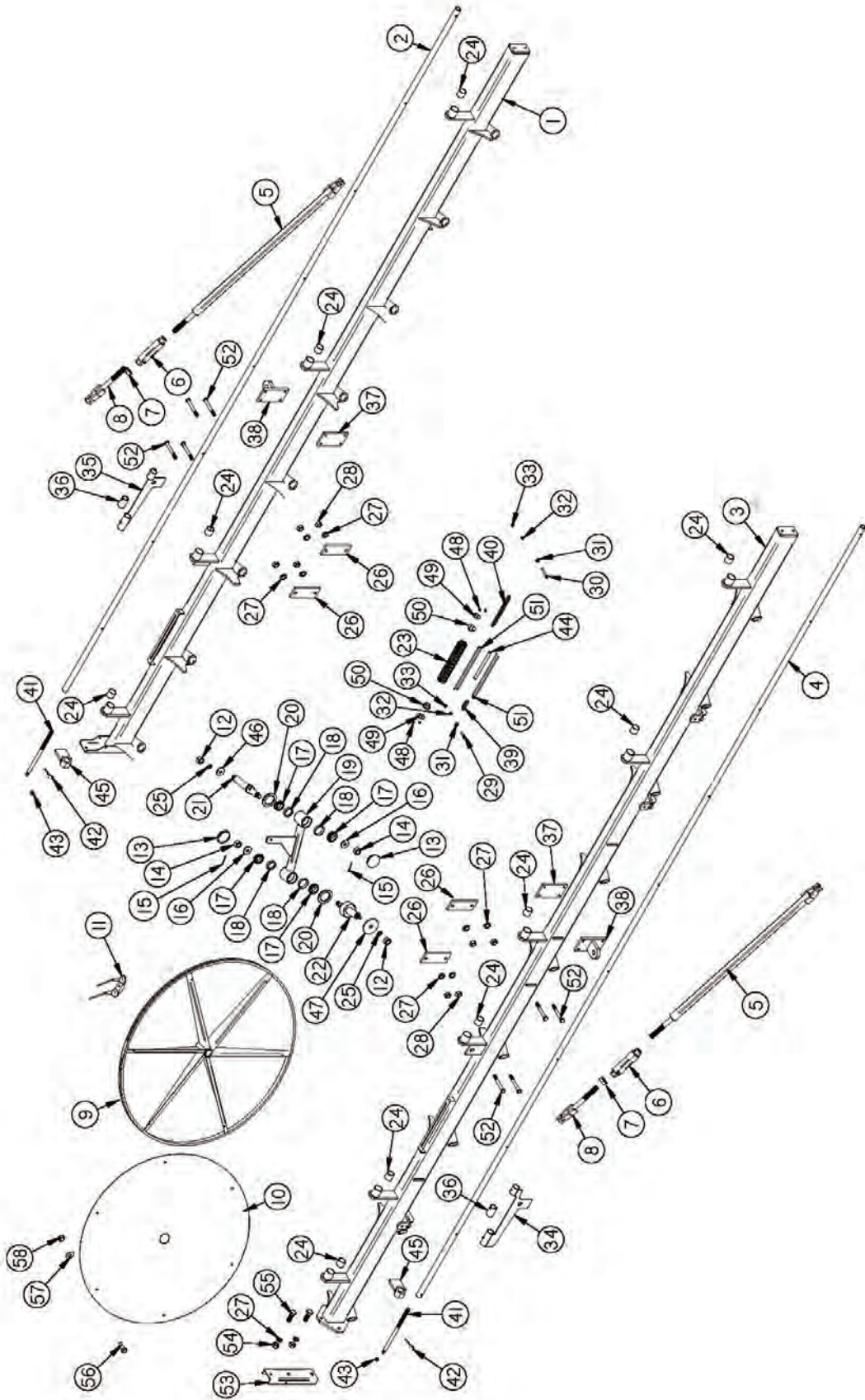


FIGURE 3 RAKE BEAMS

<u>ITEM</u>	<u>PART#</u>	<u>DESCRIPTION</u>
1	HD229	RAKE BEAM LEFTA
2	HD110	LIFTING PIPE LEFT
3	HD230	RAKE BEAM RIGHTA
4	HD112	LIFTING PIPE RIGHT
5	HD113	STABILIZER TUBING
6	HD114	TURNBUCKLE
7	YNJM32010	NUT HEX, JAM, 1
8	HD116	TURNBUCKLE END
9	HD117	RAKE WHEEL
*	HD203	RAKE WHEEL LH
*	HD204	RAKE WHEEL RH
10	HD118	WIND GUARD
11	58710	RAKE TOOTH, DOUBLE RUBBER
12	YNHX24005	NUT HEX, 3/4
13	17G144	DUST CAP
14	YNSL28005	NUT HEX, SLOTTED, 7/8
15	YPCT05010	COTTER PIN, 5/32 X 1-1/2
16	YWFL28005	WASHER FLAT, 7/8
17	HD122	BEARING
18	3G18	BEARING RACE
19	HD123	RAKE ARM
20	HD124	SEAL
21	HD125	PIVOT SPINDLE
22	HD126	RAKE WHEEL SPINDLE
23	HD127	SPRING
*	HD201	COMPLETE SPRING ASSEMBLY
24	HD128	BUSHING
25	YWSI24005	WASHER LOCK, STAR, INTERNAL/EXTERNAL, 3/4
26	HD202	BEAM PLATE
27	YWLO20005	WASHER LOCK, 5/8
28	YNTL20005	NUT HEX, TOP LOCK, 5/8
29	YBHH12035	BOLT HEX, 3/8 X 1-1/4 G5
30	YBHH12100	BOLT HEX, 3/8 X 2-1/4 G5
31	YWFL12005	WASHER FLAT, 3/8
32	YWLO12005	WASHER LOCK, 3/8"
33	YNTL12005	NUT HEX, TOP LOCK, 3/8

*MEANS NOT SHOWN

FIGURE 3
RAKE BEAMS

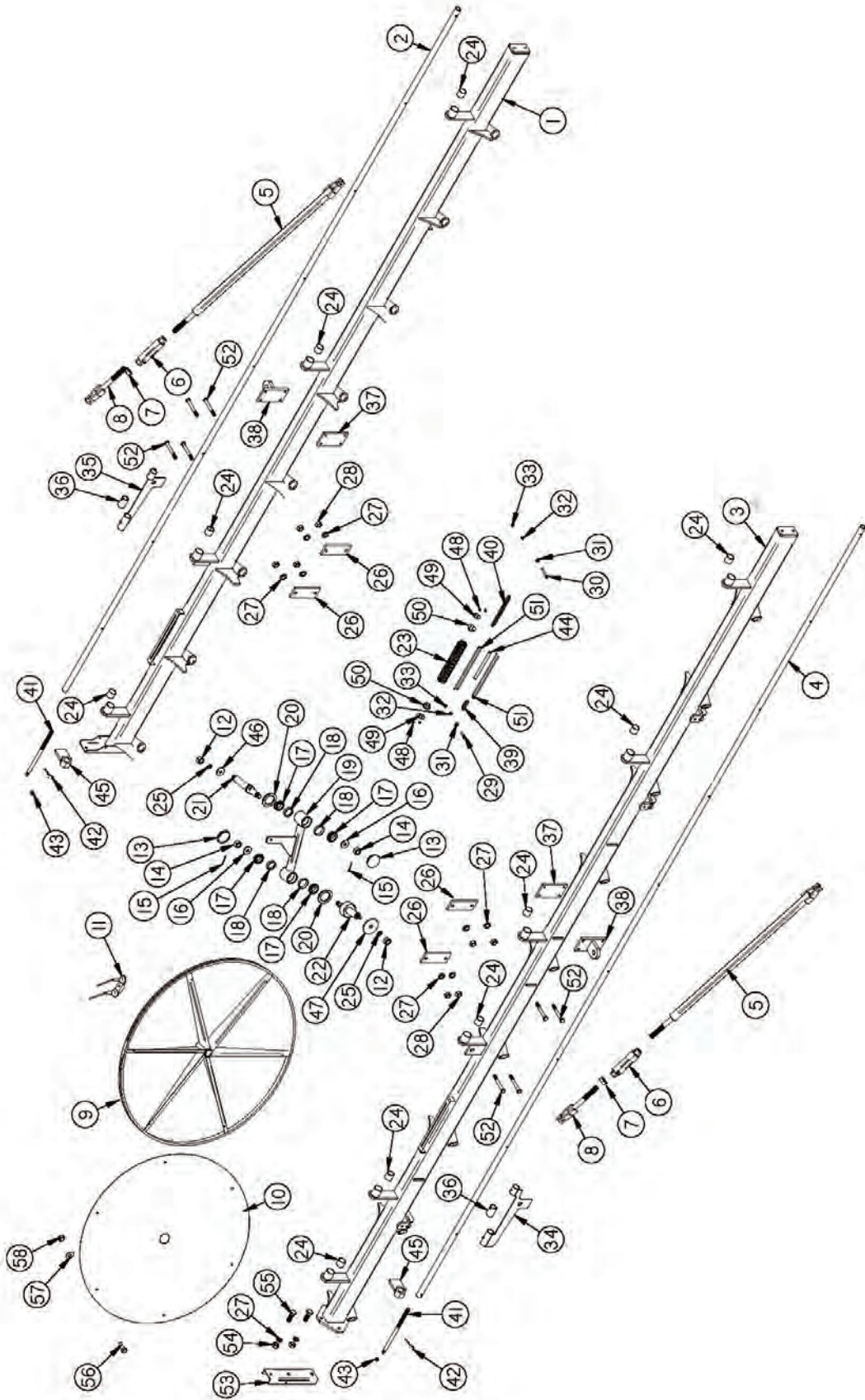


FIGURE 3 RAKE BEAMS

<u>ITEM</u>	<u>PART#</u>	<u>DESCRIPTION</u>
34	HD130	LIFTING CYLINDER MOUNT RH
35	HD131	LIFTING CYLINDER MOUNT LH
36	HD175	LIFTING PIPE COLLAR
37	HD91	STANDOFF MOUNTING PLATE
38	HD132	CYLINDER MOUNT
39	HD214	RAKE WHEEL SHORT CHAIN
40	HD210	RAKE WHEEL CHAIN
41	HD154	ACME ROD
42	YPHR08040	HAIR PIN, 1/4 X 5
43	YNHX16005	NUT HEX, 1/2
44	HD179	SPRING STOPPER
45	BFR426	RAKE PRESSURE HANDLE
46	HD157	PIVOT WASHER
47	HD158	SPINDLE WASHER
48	YNNY08005	NUT HEX, NYLON LOCKNUT, 1/4
49	HD176	SPRING HOLDER WASHER
50	HD177	POLY SPRING HOLDER
51	HD178	TORSION BAR
52	YBHH20085	BOLT HEX, 5/8 X 5 G5
53	HD231	ADJUSTMENT POST RH
54	YNHX20005	NUT HEX, 5/8
55	YBHH20010	BOLT HEX, 5/8 X 1-1/2 G5
56	YBHH08100	BOLT HEX, 1/4 X 3/4 G5
57	YWFL08005	WASHER FLAT, 1/4
58	YNTL08005	NUT HEX, TOP LOCK, 1/4

FIGURE 4
HYDRAULICS

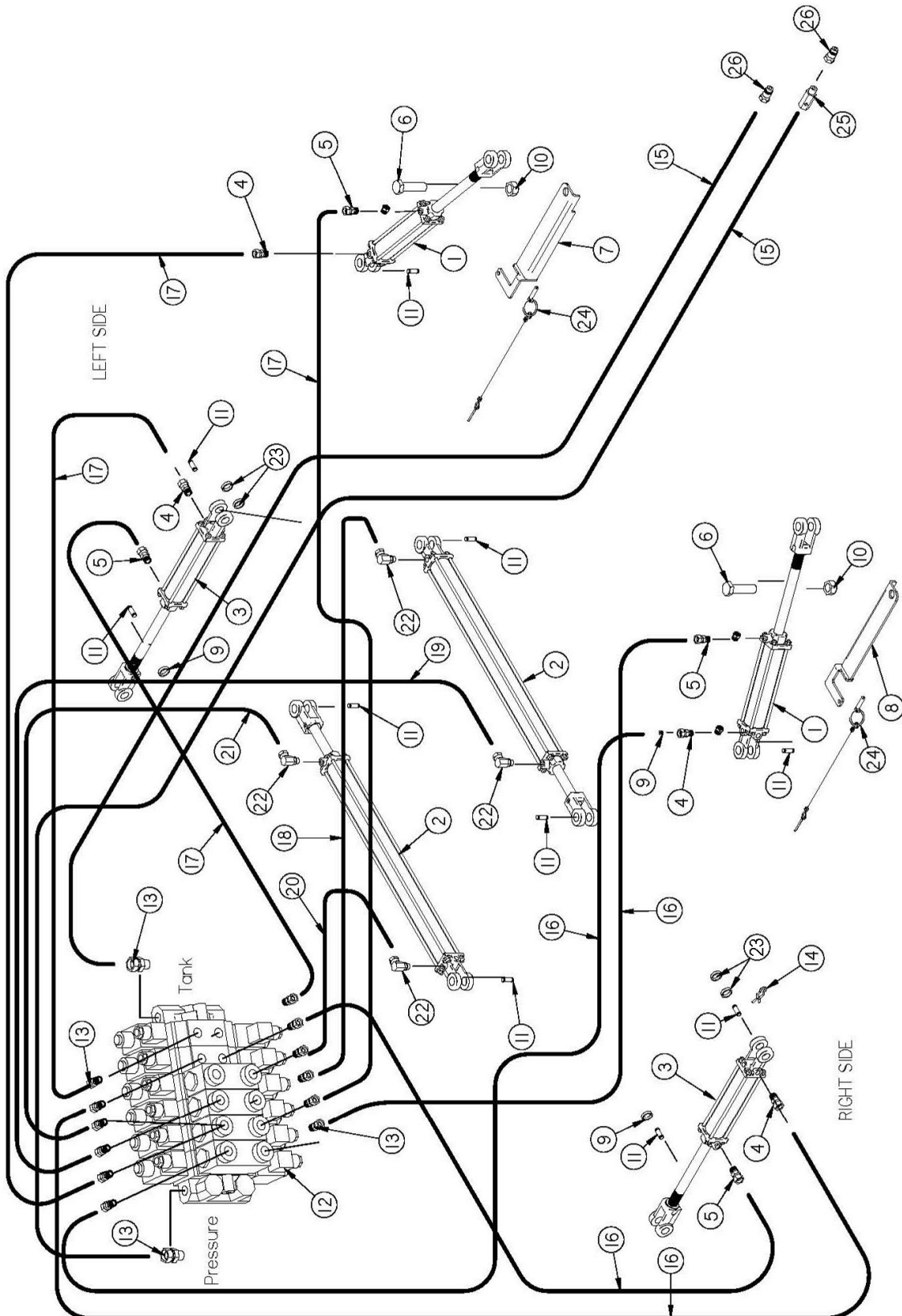


FIGURE 4 HYDRAULICS

<u>ITEM</u>	<u>PART#</u>	<u>DESCRIPTION</u>
1	56009	HYDRAULIC CYLINDER, 3 X 8
2	56014	HYDRAULIC CYLINDER, 3-1/2 X 60
3	56000	HYDRAULIC CYLINDER, 2 X 10
4	58723	ADAPTER 3/8 MALE WITH .0625 ORIFICE
5	DWM233	UNION ADAPTER, 3/8
6	YBHH32015	BOLT HEX, 1 X 4 G5
7	HD137	TRANSPORT LOCK LH
8	HD138	TRANSPORT LOCK RH
9	HD187	SPACER, 3/4 x 1
10	YNTL32005	NUT HEX, TOP LOCK, 1
11	T143	HYDRAULIC CYLINDER PIN
12	HD139	HYDRAULIC VALVE
*	60724	TIE ROD, VALVE
*	HD216	SOLENOID TUBE
13	DWM268	1-RING, MALE. 9/16 TO 3/8 PIPE UNION ADAPTER
14	YPHR02020	CYLINDER CLIP PIN
15	HD141	HYDRAULIC HOSE, 3/8 X 288
16	HD142	HYDRAULIC HOSE, 1/4 X 288
17	HD143	HYDRAULIC HOSE, 1/4 X 210
18	HD144	HYDRAULIC HOSE, 1/4 X 36
19	HD145	HYDRAULIC HOSE, 1/4 X 96
20	HD147	HYDRAULIC HOSE, 1/4 X 60
21	HD146	HYDRAULIC HOSE, 1/4 X 20
22	WM175	UNION ADAPTER, 1/2 90 DEGREE
23	X94	SPACER, 5/16 X 1
24	HD224	LYNCH PIN LANYARD
25	DF18	CHECK VALVE, 1/2
26	DWM205	MALE QUICK COUPLER, 1/2

*MEANS NOT SHOWN

FIGURE 5 WIRING

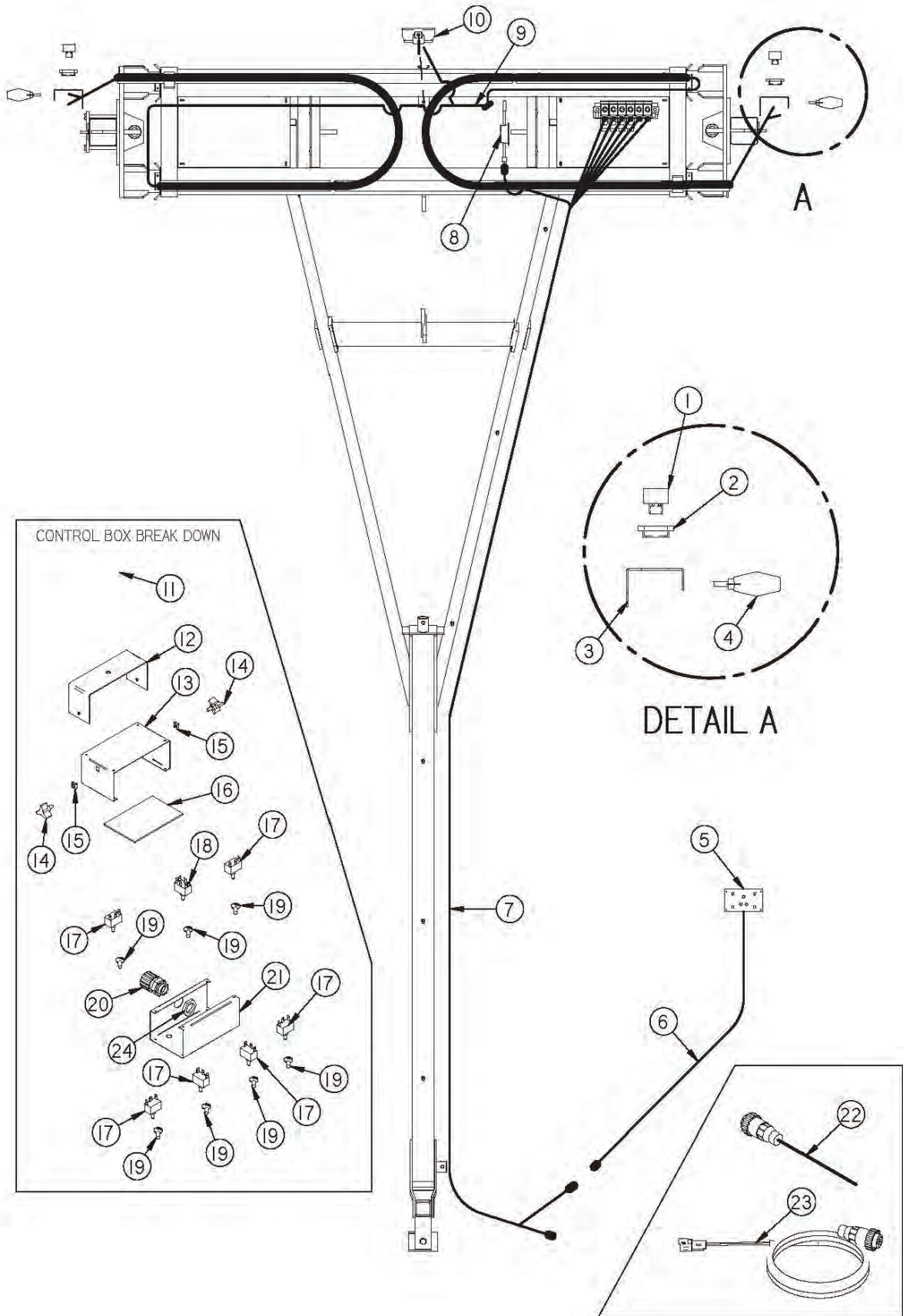


FIGURE 5 WIRING

<u>ITEM</u>	<u>PART#</u>	<u>DESCRIPTION</u>
1	S310	RED TAIL LIGHT
2	S308	RUBBER LIGHT MOUNT
3	HD148	LIGHT BRACKET
4	DWM129	YELLOW HAZARD LIGHT
5	HD180	COMPLETE CONTROL BOX W/ HARNESS
6	HD160	CONTROL BOX WHIP
7	HD161	MAIN HARNESS
8	69908	MODULE, CONTROL, BLINKER
9	HD149	TAIL LIGHT LOOM
10	DWM130	FLOOD/WORK LIGHT
11	61003	CONTROL BOX DECAL
12	DWM326	CONTROL BOX MOUNT
13	DWM140	CONTROL BOX BOTTOM
14	HD174	KNOB
15	HD173	PANEL NUT
16	HD163	POLY SHIELD
17	HD207	MOMENTARY SWITCH
18	HD159	MASTER SWITCH
19	16SV235	SWITCH BOOT
20	DWM175	STRAIN RELIEF
21	HD150	CONTROL BOX TOP
22	16SV269	TRACTOR CONTROL CABLE
23	59107	CABLE, POWER
24	56918	NUT POLY, 3/4 NPT

FIGURE 6 HYDRAULIC CYLINDERS

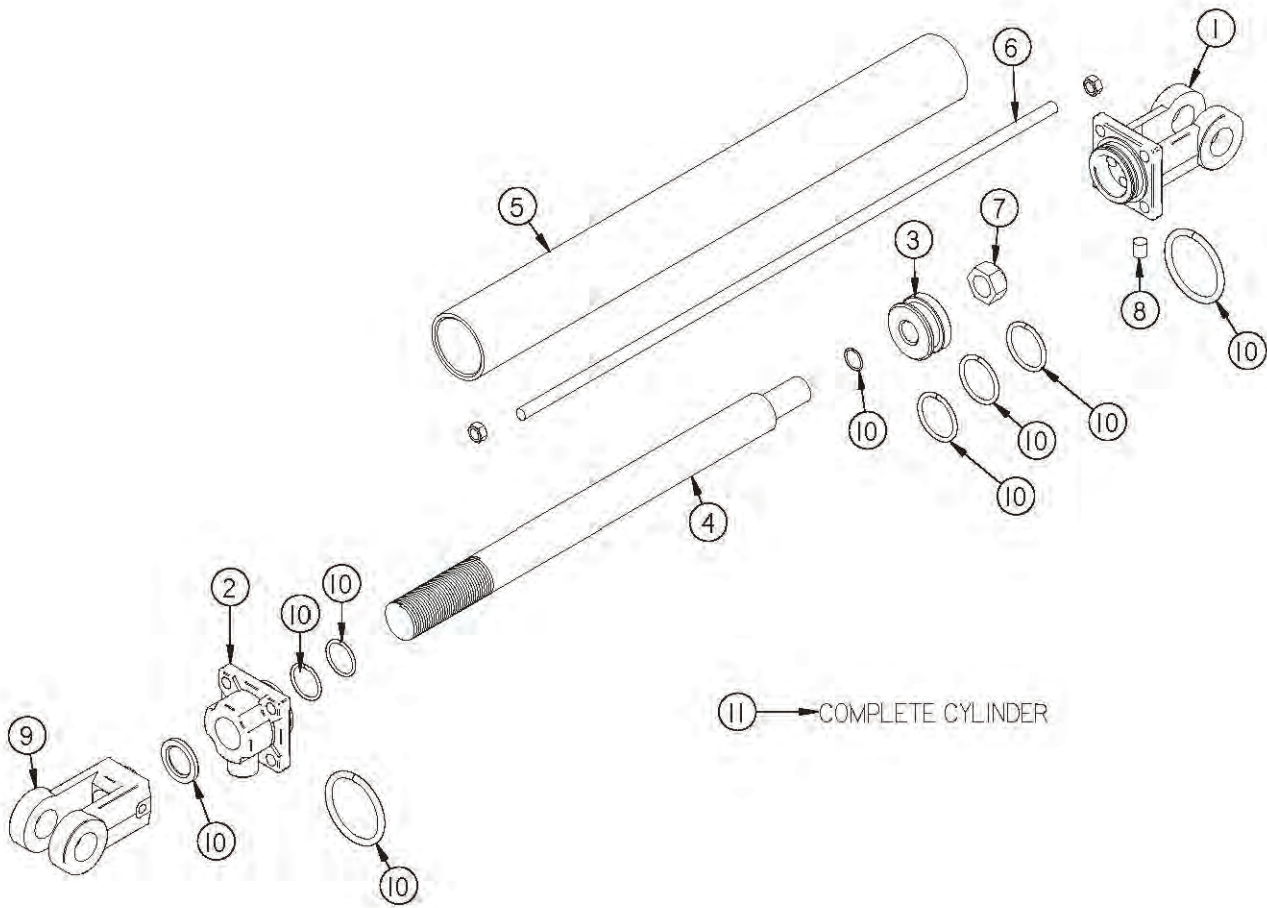


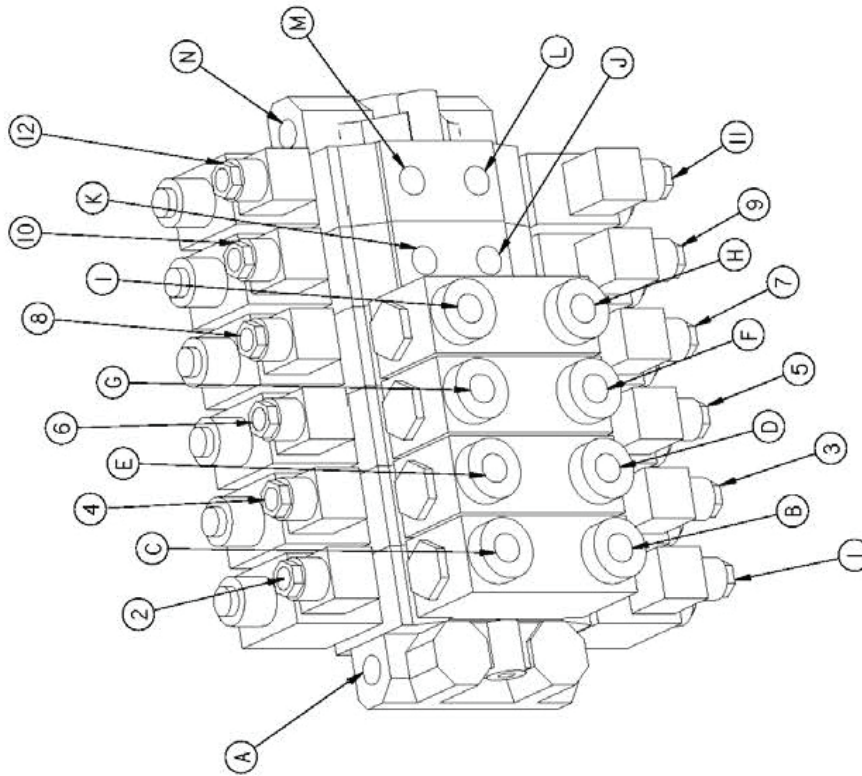
FIGURE 6

HYDRAULIC CYLINDERS

<u>ITEM</u>	<u>LIFT CYL</u> <u>2 X 10</u>	<u>WING CYL</u> <u>3 X 28</u>	<u>FRAME WIDTH</u> <u>3-1/2 X 60</u>	<u>DESCRIPTION</u>
1	23N142A	CHM138	XR55	CLEVIS CAP
2	23N143A	HD188	HD189	ROD CAP
*	56174	56176	56179	ROD CAP
3	23N144	DWM194	HD198	PISTON
*	56180	56009	56014	PISTON
4	16SV168A	HD190	HD191	ROD
5	16SV169	HD192	HD193	CYLINDER TUBE
6	16SV170	HD194	HD195	TIE ROD
7	23N148	XR61	XR61	PISTON NUT
8	23N149	XR62	XR62	PLUG
9	23N150A	XR63	XR63	ROD CLEVIS
10	23N151	HD196	HD197	SEAL KIT
*	56187	56189	56192	SEAL KIT
11	16SV171A	HD135	HD136	HYDRAULIC CYLINDER
*	56000	56009	56014	HYDRAULIC CYLINDER

*MEANS NOT SHOWN

FIGURE 7 HYDRAULIC VALVE



A	PRESSURE PORT	
B	RIGHT BEAM OPEN	Din # 1
C	RIGHT BEAM CLOSED	Din # 2
D	LEFT BEAM OPEN	Din # 3
E	LEFT BEAM CLOSED	Din # 4
F	RIGHT WIDTH OUT	Din # 5
G	RIGHT WIDTH IN	Din # 6
H	LEFT WIDTH OUT	Din # 7
I	LEFT WIDTH IN	Din # 8
J	RIGHT RAKE WHEEL UP	Din # 9
K	RIGHT RAKE WHEEL DOWN	Din # 10
L	LEFT RAKE WHEEL UP	Din # 11
M	LEFT RAKE WHEEL DOWN	Din # 12
N	TANK PORT	

FIGURE 7
HYDRAULIC VALVE

SEE DIAGRAM

FIGURE 8 MAIN HARNESS

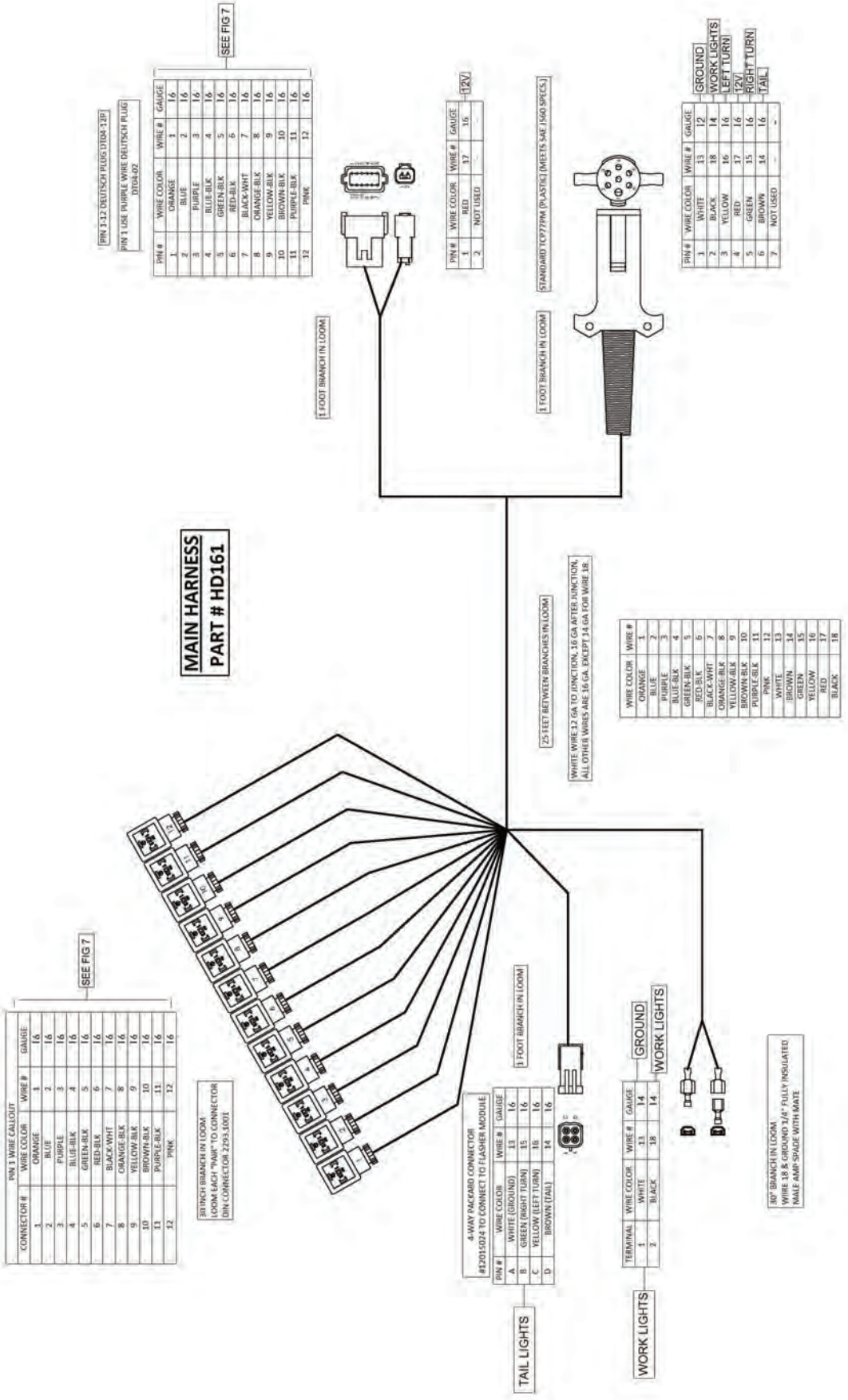


FIGURE 9 CONTROL BOX WIRING

CONTROL BOX WHIP

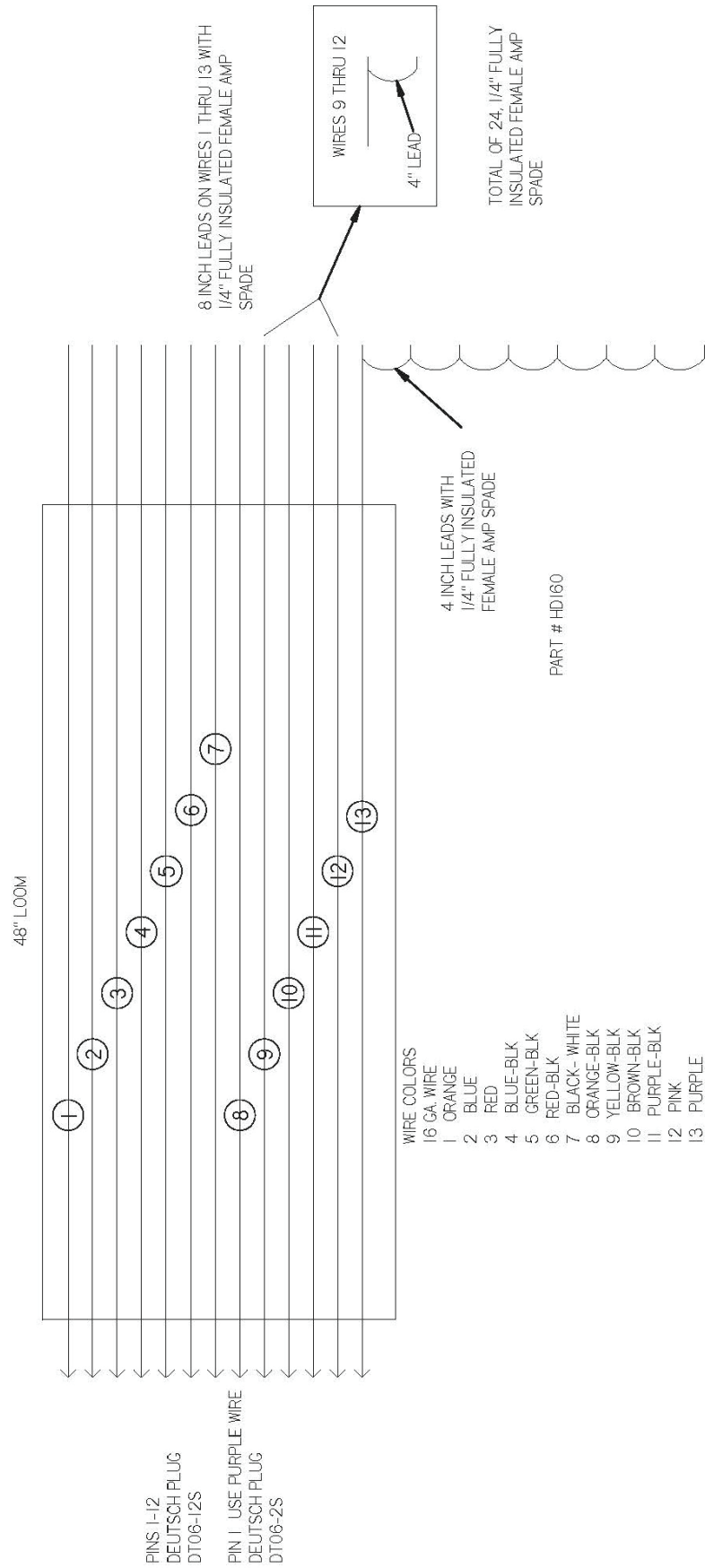
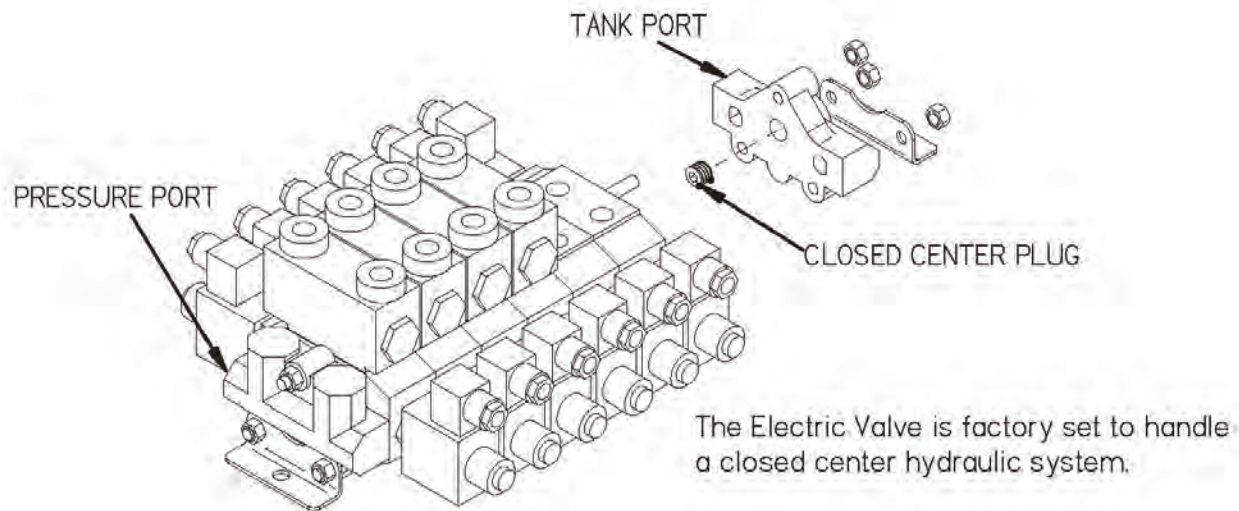


FIGURE 10 **OPEN CENTER CHANGE**



If closed center valve is used on a open center tractor it will cause the oil to heat because oil is dumping over relief.

Instructions for converting valve to open center:

1. Widen left side of rake using left frame width switch on control box (Remember to be moving forward or rearward when doing this).
2. Release all pressure in hydraulic system (Shut tractor OFF and remove ignition Key).
3. Support valve bottom.
4. Remove left mounting bolt.
5. Remove 3 tie rod nuts on tank port (the outward side of valve).
6. Remove end cap, (do not loose the o-rings that are between the sections).
7. Remove plug in end cap with allen wrench, (save for future use).
8. Re-Assemble end cap and mounting angle, (torque tie rod nuts to 140 in.lbs. (16 N-M).
9. Install bolt in mounting angle.

FIGURE 10
OPEN CENTER CHANGE

SEE DIAGRAM

FIGURE 11 **FRONT RAKE WHEEL EXTENSION**

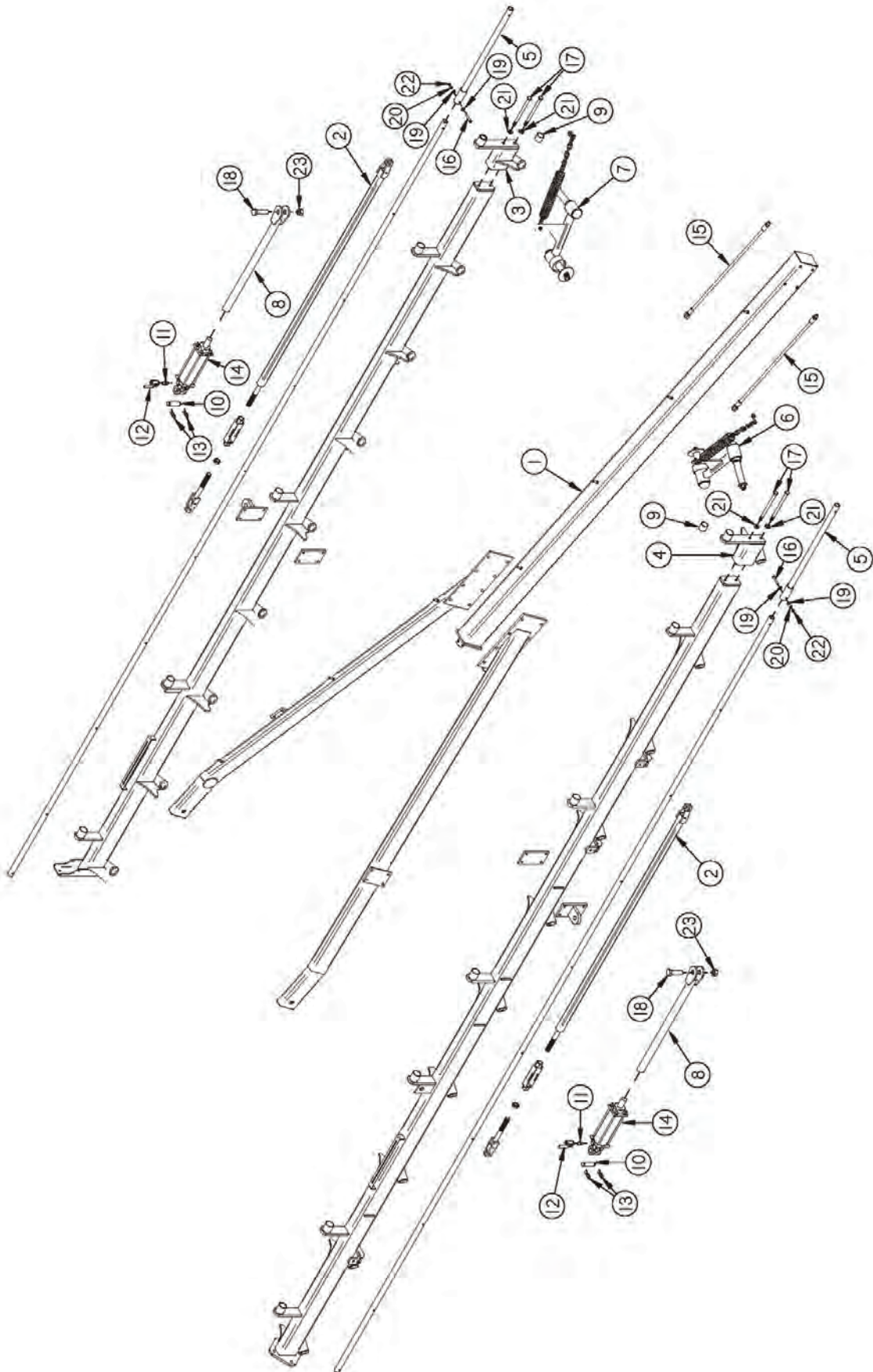


FIGURE 11

FRONT RAKE WHEEL EXTENSION

<u>ITEM</u>	<u>PART#</u>	<u>DESCRIPTION</u>
1	HD252	POLE
2	HD251	TURNBUCKLE LONG STUB LH
3	HD259	RAKE BEAM EXTENSION LH
4	HD260	RAKE BEAM EXTENSION RH
5	HD253	LIFT PIPE
6	HD246	RAKE ARM RH
7	HD245	RAKE ARM LH
8	HD248	CYLINDER ROD
9	HD128	BUSHING
10	T143	CYLINDER PIN
11	16SV351	NIPPLE, 3/8
12	16SV338	BALL VALVE, 3/8
13	YPHR02020	CYLINDER CLIP PIN
14	56810	CYLINDER, WITH NO ROD CLEVIS, 3 X 8
15	BFR635	HYDRAULIC HOSE 3/8 X 33
16	YBHH12090	BOLT HEX, 3/8 X 2-1/2 G5
17	YBHH20120	BOLT HEX, 5/8 X 9 G5
18	YBHH32010	BOLT HEX, 1 X 3-1/2 G5
19	YWFL12005	WASHER, FLAT, 3/8
20	YWLO12005	WASHER, LOCK, 3/8
21	YWLO20005	WASHER, LOCK, 5/8
22	YNHX12005	NUT HEX, 3/8
23	YNTL32005	NUT HEX, TOP LOCK, 1
*	HD203	RAKE WHEEL LH
*	HD204	RAKE WHEEL RH

*MEANS NOT SHOWN

FIGURE 12

RIGHT REAR WHEEL EXTENSION

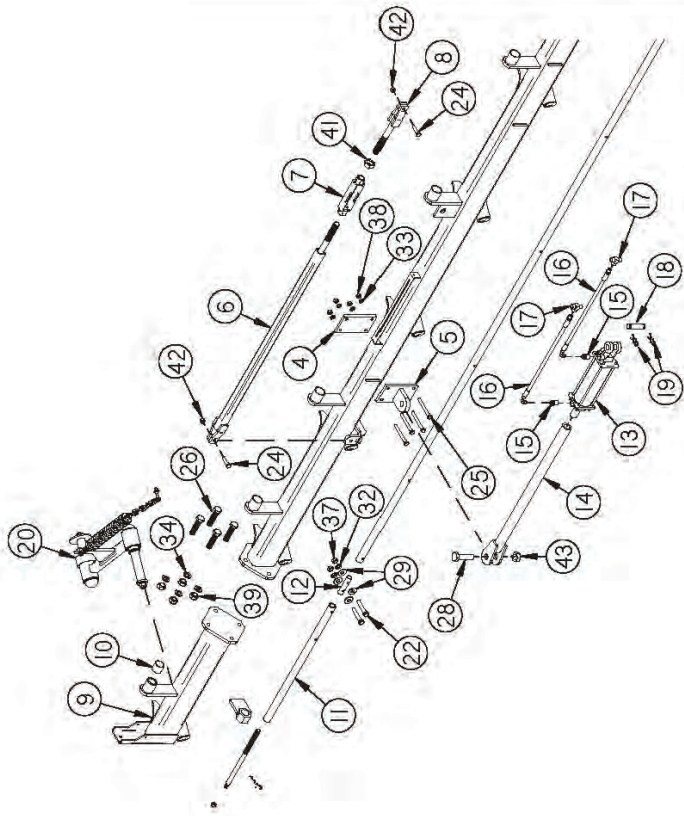
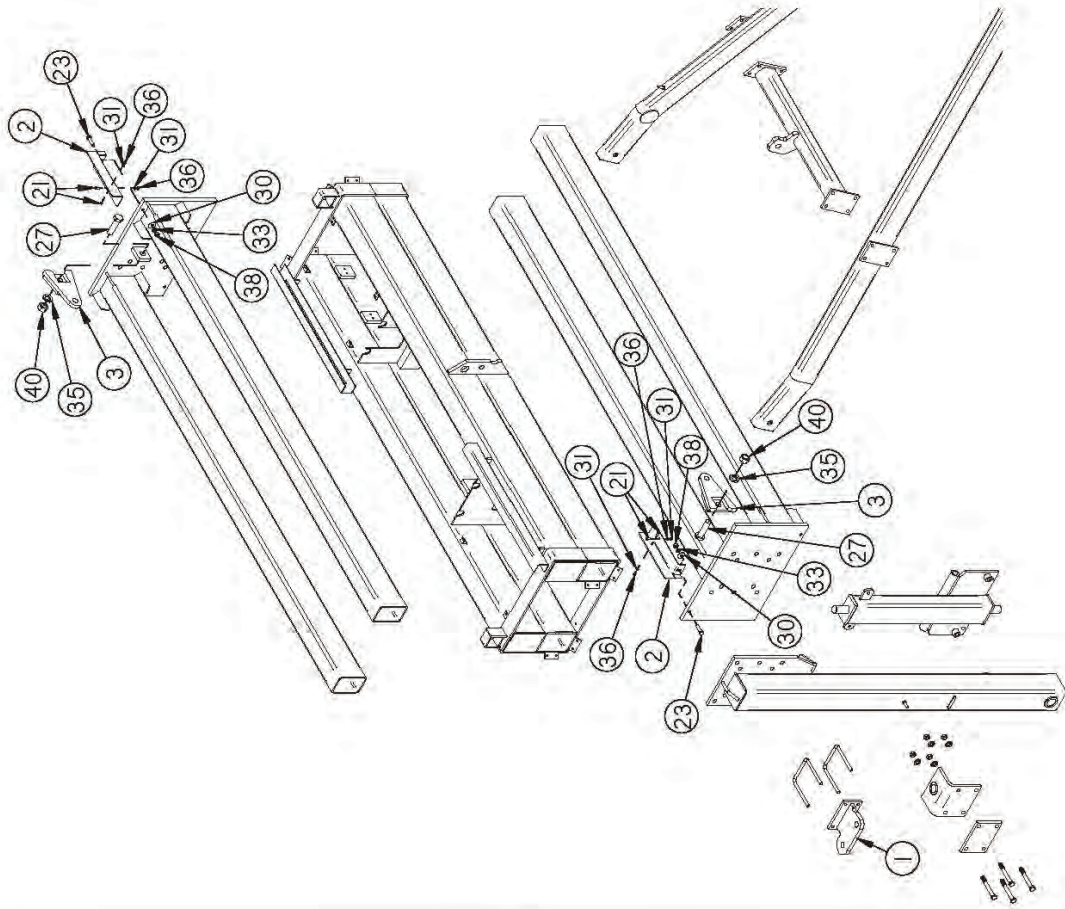


FIGURE 12

RIGHT REAR WHEEL EXTENSION

<u>ITEM</u>	<u>PART#</u>	<u>DESCRIPTION</u>
1	HD244	CYLINDER MOUNT DOUBLE
2	HD242	HOSE HOLDER
3	HD243	CYLINDER MOUNT EXTENSION
4	HD91	STANDOFF MOUNTING PLATE
5	HD132	CYLINDER MOUNT
6	HD113	STABILIZER TUBING
7	HD114	TURNBUCKLE
8	HD116	TURNBUCKLE END
9	HD239	RAKE BEAM EXTENSION, BACK
10	HD128	BUSHING
11	HD241	LIFT PIPE
12	XR41	EXTENSION LIFT PIPE CONNECTOR
13	56810	CYLINDER, WITH NO ROD CLEVIS, 3 X 8
14	HD248	CYLINDER ROD
*	HD256	REAR CYLINDER WITH ROD
15	SHM32	MALE CONNECTOR FTX 4-8
16	0216AS10	HYDRAULIC HOSE 1/4 X 22
17	23N116	SERVICE TEE .375
18	T143	CYLINDER PIN
19	YPHR02020	CYLINDER CLIP PIN
20	HD246	RAKE ARM RH
21	YBHH08100	BOLT HEX, 1/4 X 3/4 G5
22	YBHH12075	BOLT HEX, 3/8 X 2 G5
23	YBHH16055	BOLT HEX, 1/2 X 1-3/4 G5
24	YBHH16065	BOLT HEX, 1/2 X 2 G5
25	YBHH16150	BOLT HEX, 1/2 X 4-3/4 G5
26	YBHH20025	BOLT HEX, 5/8 X 2 G5
27	YBHH32006	BOLT HEX, 1 X 2-3/4 G5
28	YBHH32010	BOLT HEX, 1 X 3-1/2 G5
29	YWFL12005	WASHER, FLAT, 3/8
30	YWFL16005	WASHER, FLAT, 1/2
31	YWLO08005	WASHER, LOCK, 1/4
32	YWLO12005	WASHER, LOCK, 3/8
33	YWLO16005	WASHER, LOCK, 1/2
34	YWLO20005	WASHER, LOCK, 5/8
35	YWLO32005	WASHER, LOCK, 1
36	YNHX08005	NUT HEX, 1/4
37	YNHX12005	NUT HEX, 3/8
38	YNHX16005	NUT HEX, 1/2
39	YNHX20005	NUT HEX, 5/8
40	YNHX32010	NUT HEX, 1
41	YNJM32010	NUT HEX, JAM, 1
42	YNTL16005	NUT HEX, TOP LOCK, 1/2
43	YNTL32005	NUT HEX, TOP LOCK, 1
*	HD203	RAKE WHEEL LH
*	HD204	RAKE WHEEL RH
*	HD240	RAKE BEAM EXTENSION KIT, BACK

*MEANS NOT SHOWN

CHANGE NOTES

H&S MFG. CO.

products approved

for the

FEMA

SEAL OF QUALITY

