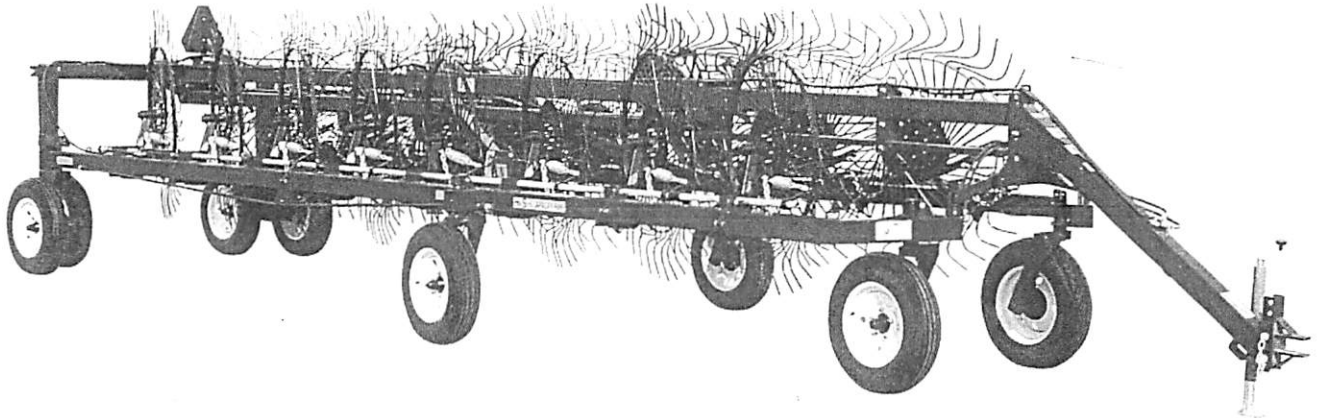


# H&S

## 1460 - 1660 HI-CAPACITY RAKE



### WARNING

READ AND UNDERSTAND THIS MANUAL  
BEFORE OPERATING THIS EQUIPMENT

UNSAFE OPERATION OR MAINTENANCE OF THIS EQUIPMENT CAN RESULT IN  
SERIOUS INJURY OR DEATH

## OPERATOR'S MANUAL AND PARTS LIST

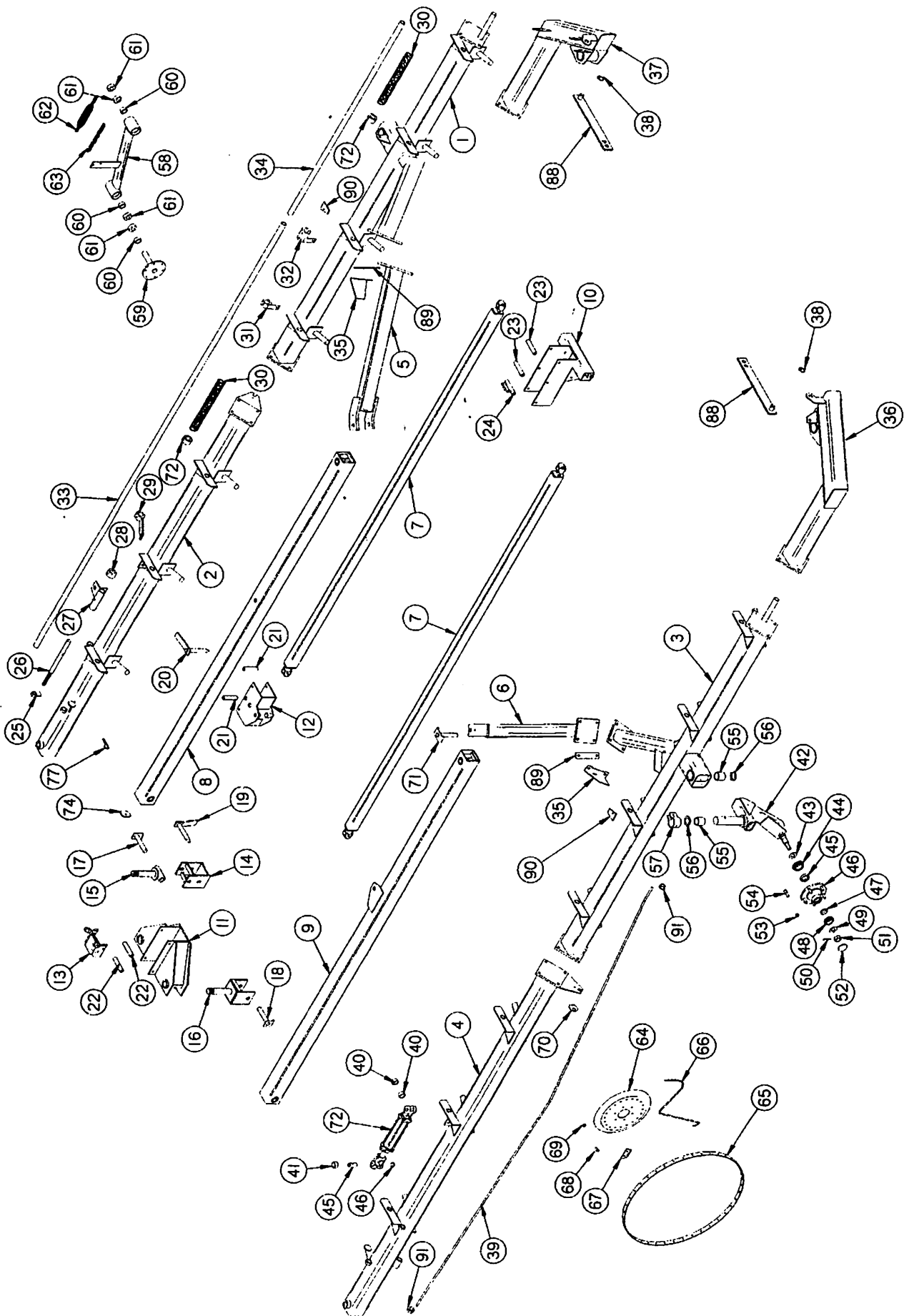
HSMFG0106

Manufactured By

# H&S MANUFACTURING CO., INC.

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

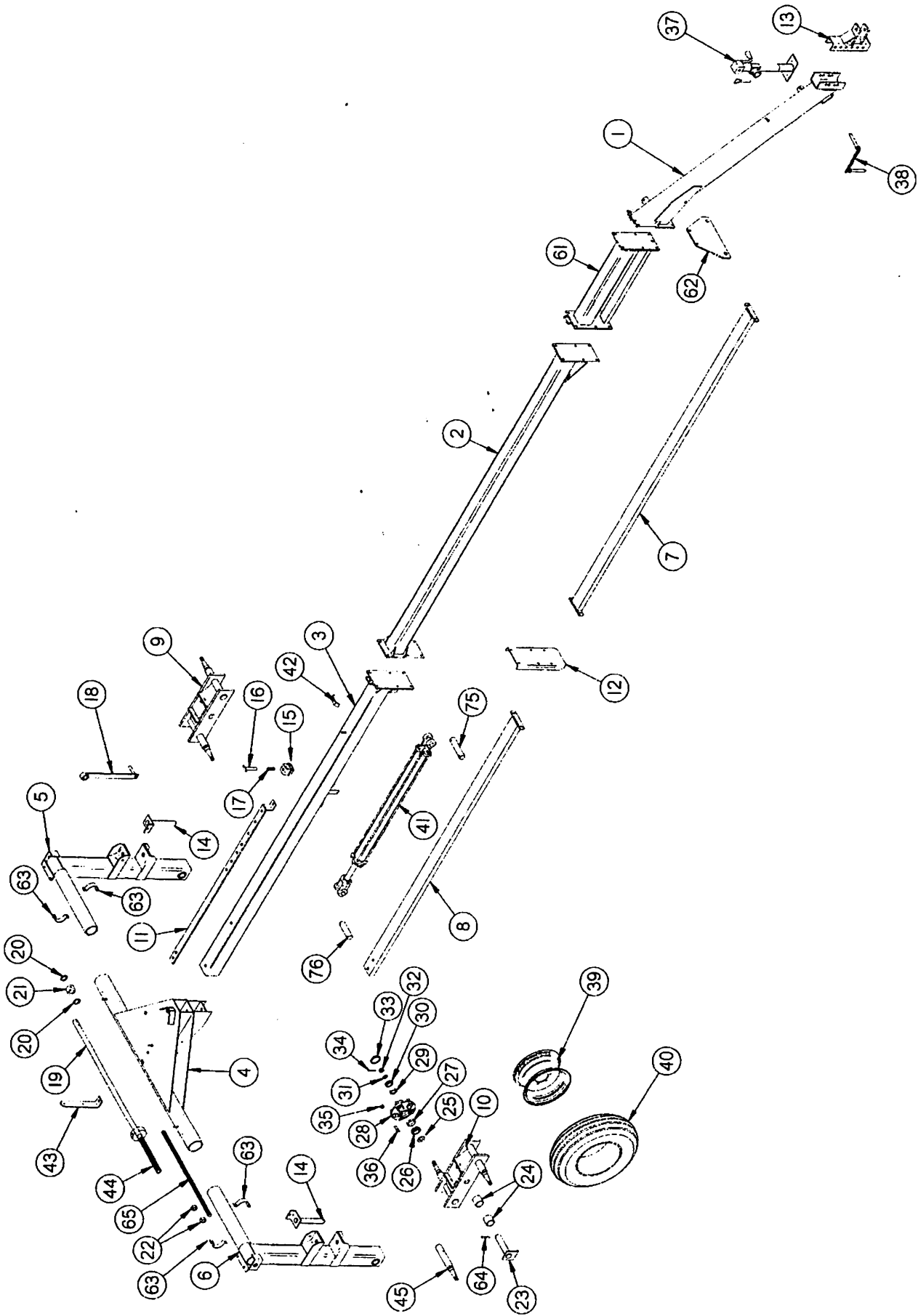
FIGURE 1



**FIGURE 1**  
**1460-1660 HI-CAPACITY RAKE**  
**BEAMS AND LINKAGE**

ITEM	PART NO.	DESCRIPTION	ITEM	PART NO.	DESCRIPTION
1.	BFR473	Front Rake Beam LH	46.	BFR60	Hub
2.	BFR475	Back Rake Beam LH	47.	BFR61	Outer Race
3.	BFR472	Front Rake Beam RH	48.	BFR62	Outer Bearing
4.	BFR474	Back Rake Beam RH	49.	BFR63	Washer
5.	BFR460	Rake Beam Arm LH	50.	BFR65	Cotter Pin
6.	BFR459	Rake Beam Arm RH	51.	BFR64	Nut
7.	BFR458	Front Linkage	52.	BFR66	Hub Cap
8.	BFR463	Left Rear Linkage	53.	BFR144	Nut
9.	BFR462	Right Rear Linkage	54.	BFR143	Stud
10.	BFR455	Front Linkage Slider	55.	BFR527	Bronze Bushing
11.	BFR491	Back Linkage Slider	56.	BFR309	Gauge Wheel Washer
12.	BFR465	Center Slider	57.	BFR311	Brake Collar
13.	BFR616	Width Adjustment Stop	58.	BFR489	Rake Arm LH
14.	BFR477	Back Linkage Yoke LH	*	BFR490	Rake Arm RH
15.	BFR480	Left Pivot Yoke Shaft	59.	BFR657	Rake Wheel Hub
16.	BFR476	Back Linkage Yoke RH	60.	F16	Lock Collar
17.	BFR505	Pivot Yoke Shaft Pin LH	61.	BFR525	Bearing
18.	BFR479	Pivot Yoke Shaft Pin RH	62.	FR44	Rake Arm Spring
19.	BFR468	Linkage Pins	63.	BFR140	Rake Arm Adjusting Chain
20.	BFR716	Flange Nut	64.	FR71	Rake Wheel Center
21.	BFR467	Center Slider Spacer	65.	FR72	Outer Ring
22.	BFR471	Back Slider Roller	66.	FR73	Rake Wheel Tooth
23.	BFR457	Slider Spacer	67.	FR74	Rake Tooth Clip
24.	BFR456	Hose Guide Spacer	68.	T175	10mm x 25mm Carriage Bolt
25.	BFR426	Rake Pressure Handle	69.	BFR652	10mm Lock Nut
26.	BFR486	Rake Arm Lock-up Shaft	*	FR69	Rake Wheel LH
27.	BFR530	Hydraulic Cylinder End Slide LH	*	FR70	Rake Wheel RH
*	BFR531	Hydraulic Cylinder End Slide RH	70.	DF22	Washer
28.	BFR83	Pipe Clamp (2 Holes)	71.	BFR461	Rake Beam Arm Pin
29.	BFR430	RH Spring Bracket	72.	16SV171A	Hydraulic Lift Cylinder (2"x10")
30.	BFR84	Compression Spring	73.	BFR82	Pipe Clamp (1 Hole)
31.	BFR431	LH Spring Bracket	74.	BFR693	Stop Washer
32.	BFR432	LH Lifting Pipe Connector	75.	BFR506	Nylon Wear Block
*	BFR433	RH Lifting Pipe Connector	76.	23N108	Cotter Pin
33.	BFR521	Lifting Pipe Back	77.	BFR137	Hair Pin
34.	BFR520	Lifting Pipe Front	78.	BFR517	Cylinder Pin - Back
35.	BFR549	Tooth Deflector	79.	16SV77	1/2" x 6" Bolt GR. 5
36.	BFR726	Right Extension	80.	ES7	Hair Pin
37.	BFR727	Left Extension	81.	BFR7	3/16" x 3-3/4" Cotter Pin
38.	BFR443	Lynch Pin	82.	BFR481	1-1/2" Slotted Nut
39.	BFR612	Side Arm Stabilizer Rod	83.	BFR111	Back Rake Arm Adjustment Chain
40.	X94	Cylinder Spacer	84.	T143	Cylinder Pin
41.	K106	Cylinder Spacer	85.	16SV136	Washer
42.	BFR312	Complete Fork RH	86.	BFR494	1/2" x 6-1/2" Bolt GR. 5
*	BFR316	Complete Fork LH	87.	BFR641	Washer
43.	BFR57	Seal	88.	BFR597	Safety Bar
44.	BFR58	Inner Bearing	89.	BFR728	Shim
45.	BFR59	Inner Race	90.	BFR729	Rake Arm Stop
NOTE: *	(MEANS NOT SHOWN)		91.	BFR716	3/4" Flange Nut

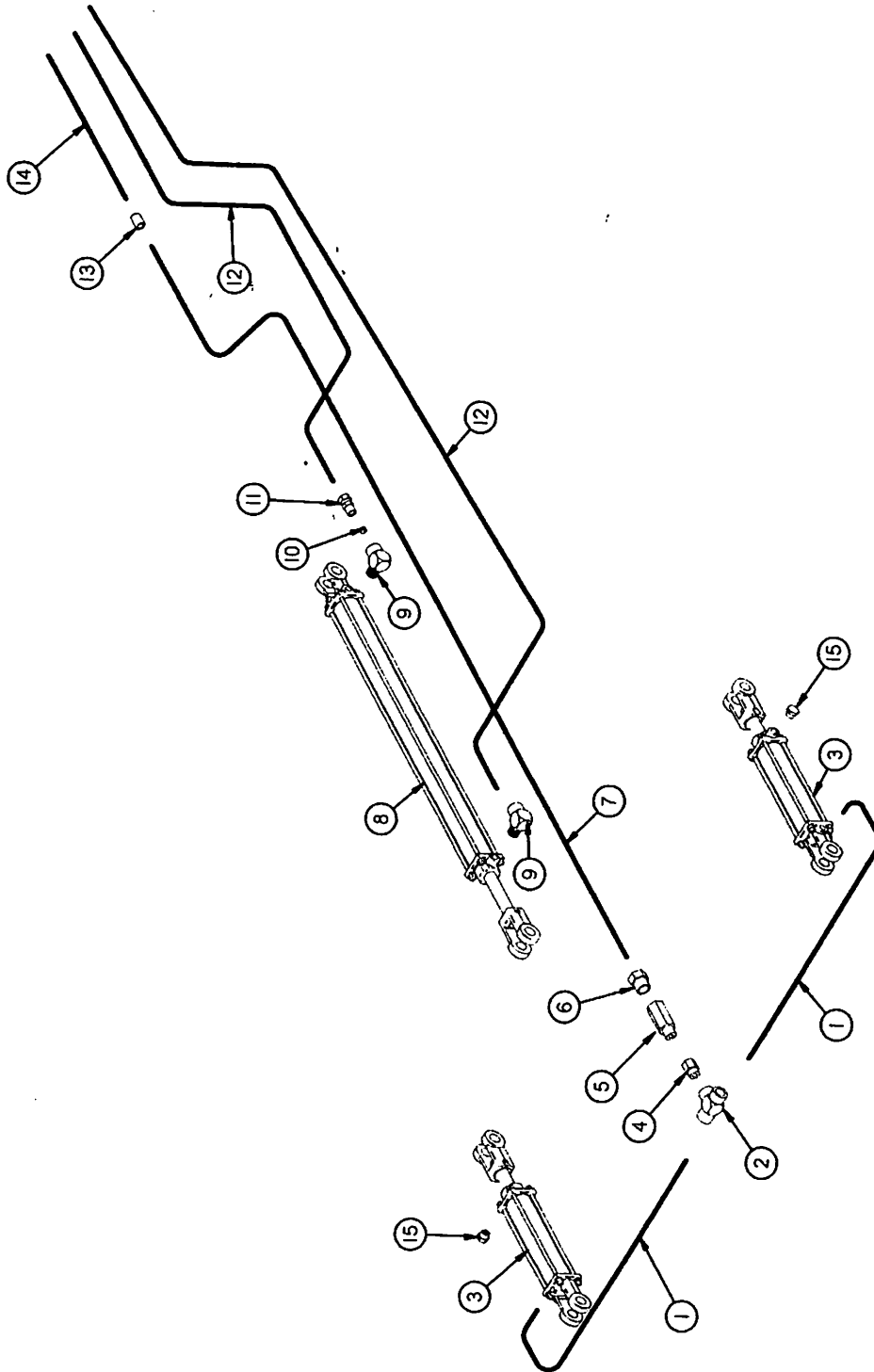
FIGURE 2



**FIGURE 2**  
**1460-1660 HI-CAPACITY RAKE**  
**MAIN FRAME**

ITEM	PART NO.	DESCRIPTION	ITEM	PART NO.	DESCRIPTION
1.	BFR730	Pole	34.	BFR65	Cotter Pin
2.	BFR714	Center Pole Section	35.	BFR144	Nut
3.	BFR715	Back Pole Section	36.	BFR143	Stud
4.	BFR709	Rear Pivot Assembly	37.	BFR223	Jack
5.	BFR662	Left Axle Upright	38.	BFR450	Hitch Pins
6.	BFR661	Right Axle Upright	39.	BFR67	Wheel (15 x 5)
7.	BFR711	Center Pole Brace-Removable	40.	BFR128	Tire (6.70 x 15)
8.	BFR710	Back Pole Brace-Removable	41.	BFR653	Hydraulic Cylinder (2" X 40")
9.	BFR510	LH Tandem Axle	42.	HE42	Hose Holder
10.	BFR509	RH Tandem Axle	43.	BFR649	SMV Bracket
11.	BFR611	Width Adjustment Bar	44.	BFR420	Rear Width Adjustment Rod
12.	BFR712	Middle Linkage Stop	45.	BFR522	Spindle
13.	BFR157	Hitch	46.	BFR396	Cylinder Pin
14.	BFR499	Beam Pivot Shaft	47.	12N14	Jack Mount
15.	BFR239	Sleeve Adjustment Lock	48.	BFR4	Jack Pin & Chain
16.	BFR241	Adjustment Handle	49.	B17B	Jack Handle
17.	BFR240	Spring	50.	BFR107	3/4" x 8-1/2" Bolt GR. 5
18.	BFR423	Width Adjustment Handle	51.	BFR518	3/4" - 16 nut
19.	BFR485	Rear Width Adjustment Tube	52.	BFR634	Front Width Cylinder Pin
20.	BFR523	Poly Washer	53.	BFR724	Self Tapping Bolt
21.	BFR422	Width Adjustment Collar	54.	BFR642	Width Adjustment Spacer
22.	BFR419	3/4" Acme Nut	55.	23N67	Hose Holder
23.	BFR524	Tandem Pin	56.	RG135	1/2" x 1" Bolt GR. 5
24.	BFR625	Bushing	57.	50N129	3/4" x 6" Bolt GR. 5
25.	BFR57	Seal	58.	BFR438	5/8" x 2" Bolt GR. 5
26.	BFR58	Inner Bearing	59.	12V59	3/8" x 2-3/4" Roll Pin
27.	BFR59	Inner Race	60.	BFR117	3/8" x 2-1/2" Bolt GR. 5
28.	BFR60	Hub	61.	BFR534	Pole Extension
29.	BFR61	Outer Race	62.	BFR731	Transport Mount
30.	BFR62	Outer Bearing	63.	BFR732	Width Stop Ring
31.	BFR63	Washer	64.	12V59	3/8" x 2-3/4" Roll Pin
32.	BFR64	Nut	65.	BFR420	Rear Width Adjustment Rod
33.	BFR66	Hub Cap			

FIGURE 3



**FIGURE 3**  
**1460-1660 HI-CAPACITY RAKE**  
**HYDRAULICS**

<b>ITEM</b>	<b>PART NO.</b>	<b>DESCRIPTION</b>
1.	37N60	Hydraulic Hose 108"
2.	BFR74	3/8" Female Tee
3.	16SV171A	Hydraulic Lift Cylinder (2" x 10")
4.	BFR555	Adapter 3/8" Male To 1/2" Female
5.	BFR554	Flow Valve
6.	JB82	Bushing 3/8" x 1/2"
7.	BFR738	Hydraulic Hose 3/8"x255" 1/2"MP x 3/8"MP
8.	BFR653	Hydraulic Cylinder (2" x 40")
9.	23N34	3/8" Street Elbow
10.	BFR120	Orifice
11.	BFR122	3/8" Male Union Adapter
12.	BFR739	Hydraulic Hose 3/8"x321" 3/8"MP x 1/2"MP
13.	HE60	3/8" Pipe Coupler
14.	BFR740	Hydraulic Hose 3/8"x132" 3/8"MP x 1/2"MP
15.	BFR70	Vent Plug

FIGURE 4

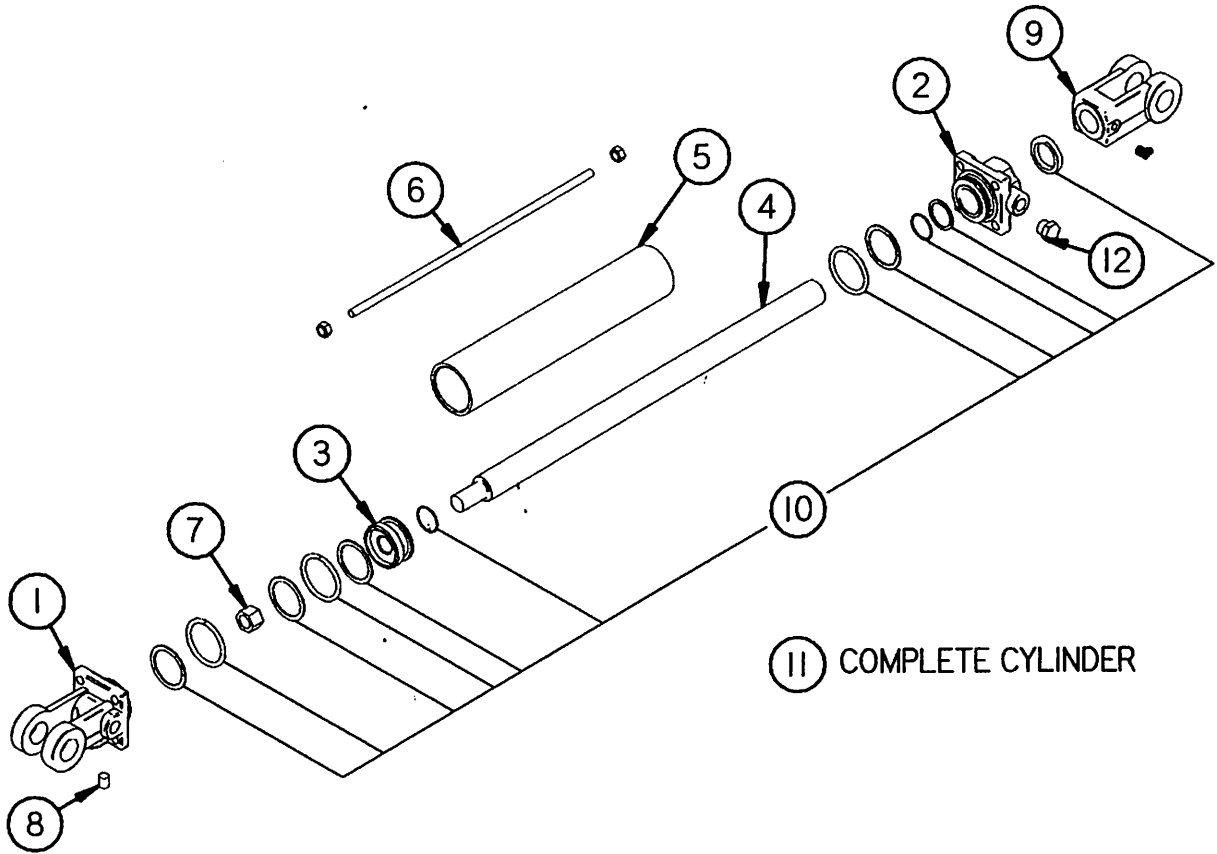


FIGURE 4  
1460-1660 HI-CAPACITY RAKE  
HYDRAULIC LIFT CYLINDER

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 (2" x 10")
12.	BFR70	Vent PLug



FIGURE 5

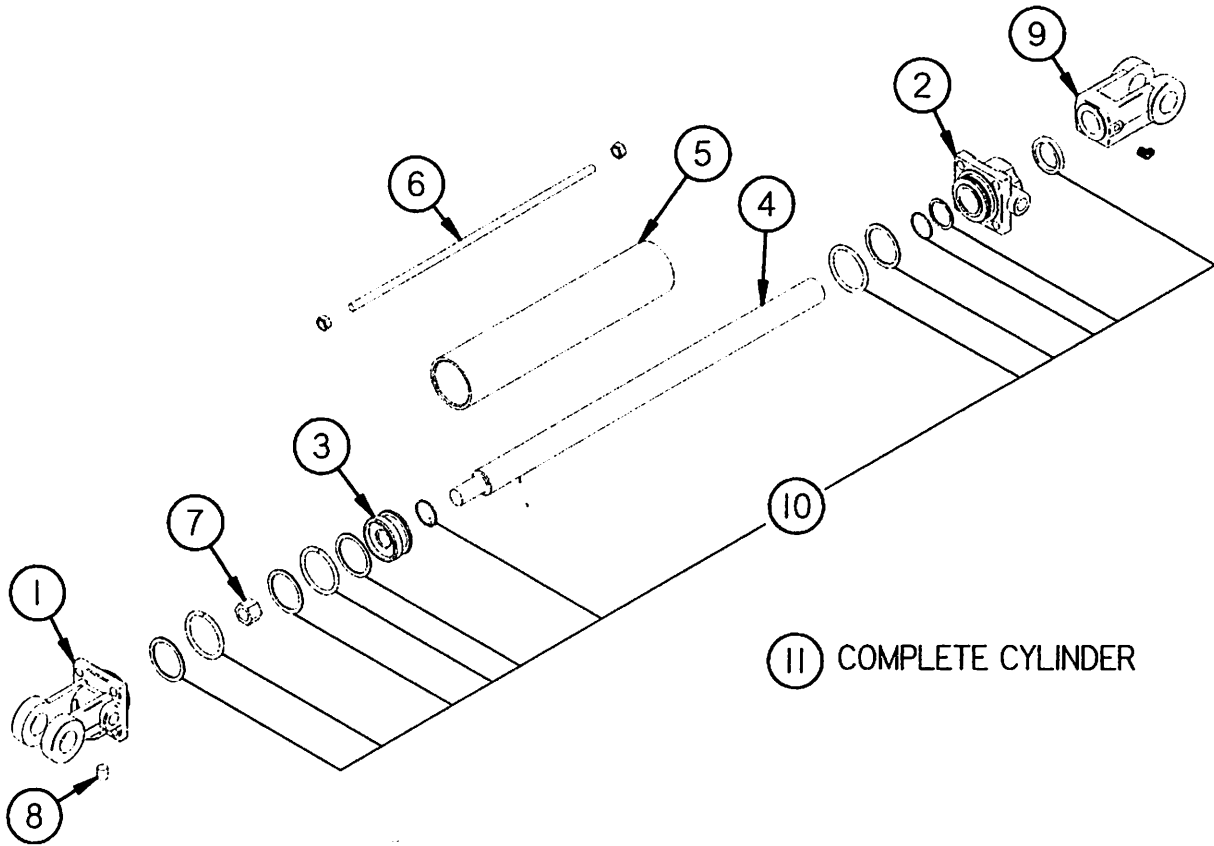


FIGURE 5  
1460-1660 HI-CAPACITY RAKE  
HYDRAULIC OPEN CYLINDER

ITEM	PART NO.	DESCRIPTION
1.	23N142A	Clevis Cap
2.	23N143A	Rod Cap
3.	23N144	Piston
4.	BFR 654	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 (2" x 40")

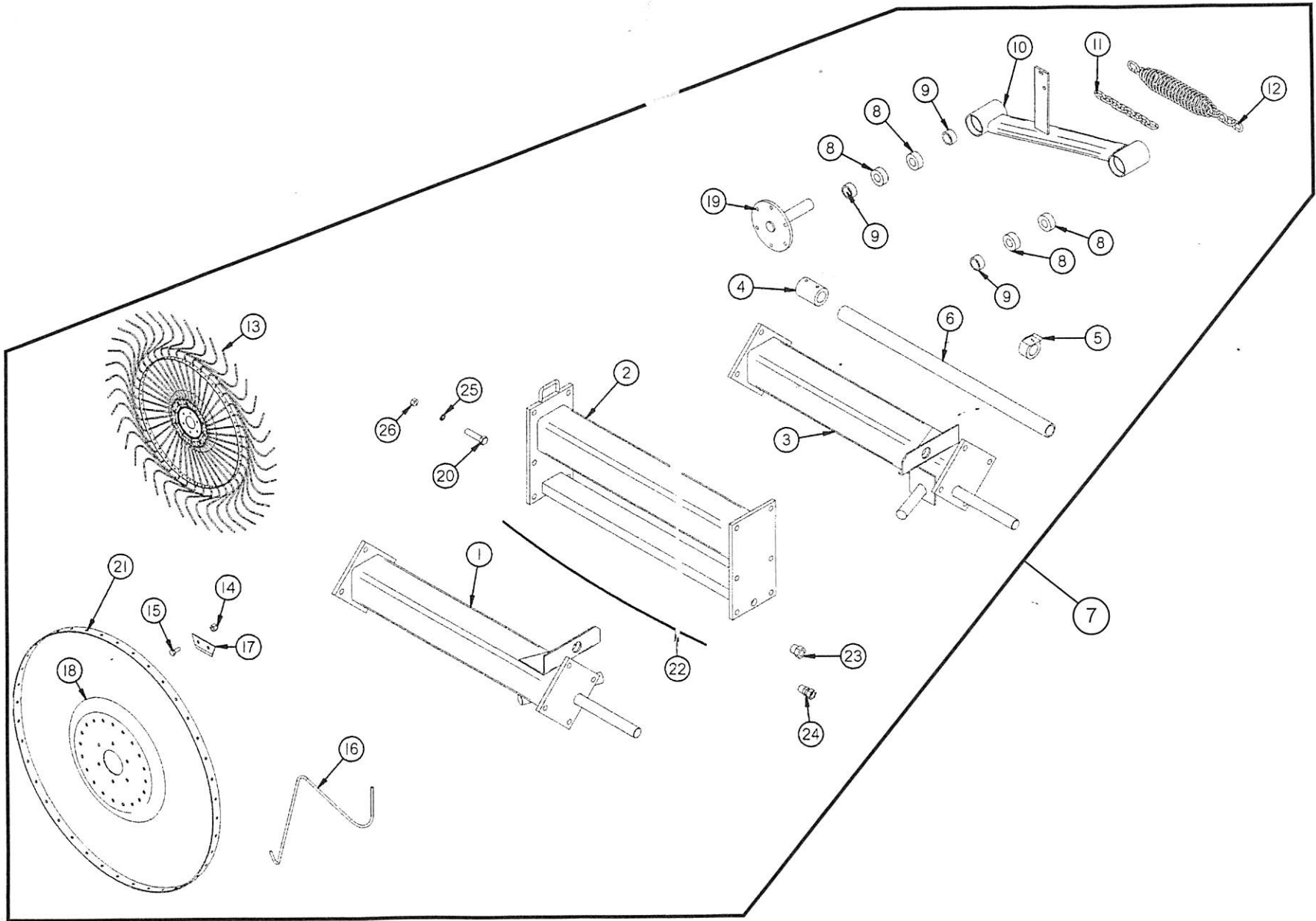
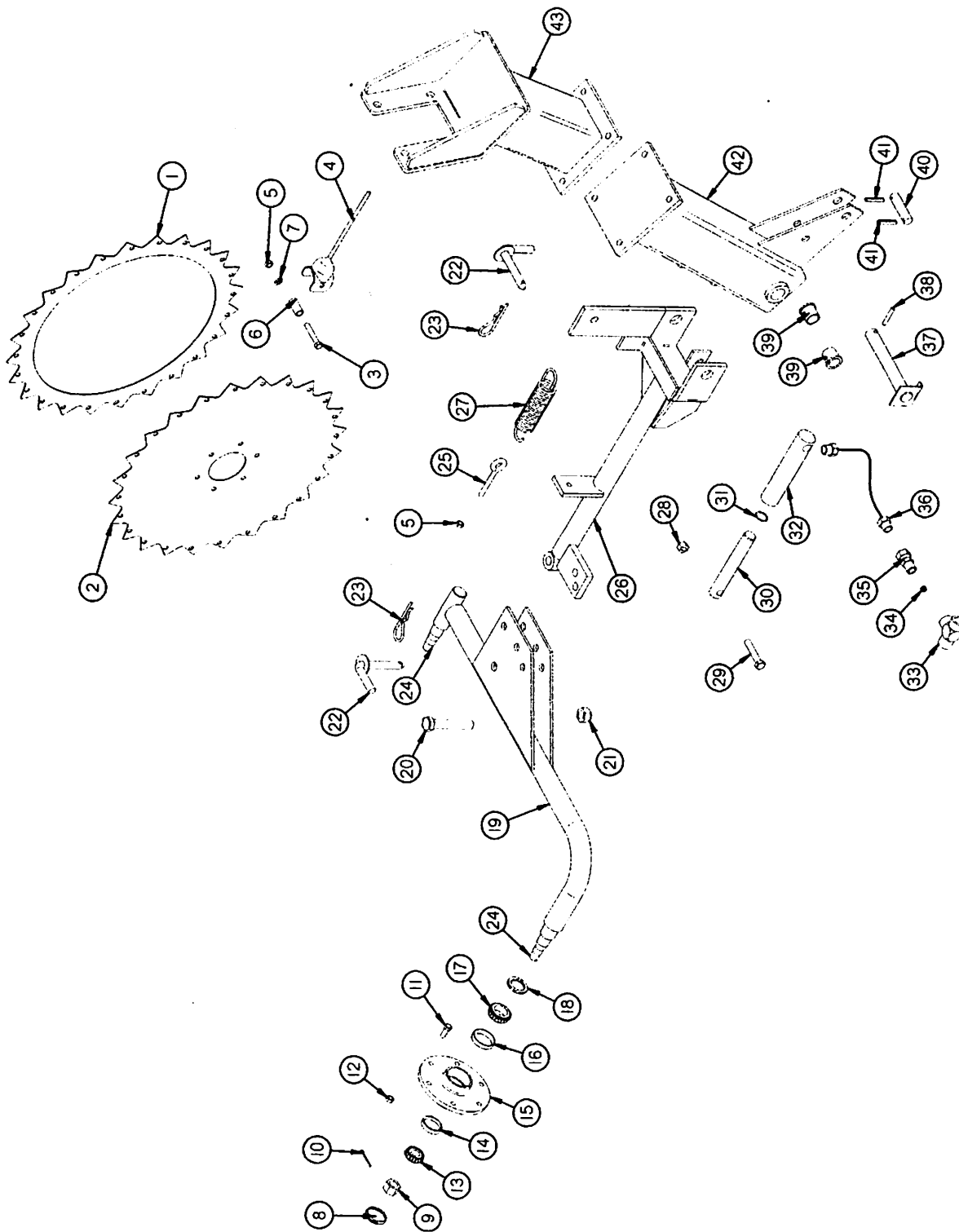


FIGURE 6

**FIGURE 6**  
**1460-1660 HI-CAPACITY RAKE**  
**2-WHEEL EXTENSION KIT**

<b>ITEM</b>	<b>PART NO.</b>	<b>DESCRIPTION</b>
1.	BFR733	Rake Beam Extension RH
2.	BFR534	Pole Extension
3.	BFR734	Rake Beam Extension LH
4.	BFR537	Lifting Pipe Connector
5.	BFR431	LH Spring Clamp
*	BFR430	RH Spring Clamp
6.	BFR536	Lifting Pipe Extension
7.	BFR735	Complete Extension Kit
8.	BFR525	Bearing
9.	F16	Lock Collar
10.	BFR489	Rake Arm LH
*	BFR490	Rake Arm RH
11.	BFR140	Rake Arm Adjustment Chain
12.	FR44	Spring
13.	FR69	Rake Wheel LH
*	FR70	Rake Wheel RH
14.	BFR652	10mm Lock Nut
15.	T175	10mm x 25mm Carriage Bolt
16.	FR73	Rake Wheel Tooth
17.	FR74	Rake Tooth Clip
18.	FR71	Rake Wheel Center
19.	BFR657	Rake Wheel Hub
20.	BFR438	5/8" x 2" Bolt GR. 5 (14 PCS.)
21.	FR72	Rake Wheel Band
22.	BFR635	Hose 1/2"FP x 1/2"MP x 33'
23.	JB82	1/2" To 3/8" Bushing
24.	BFR555	Adapter
25.	T69	Lock Washer
26.	T68	5/8" Nut

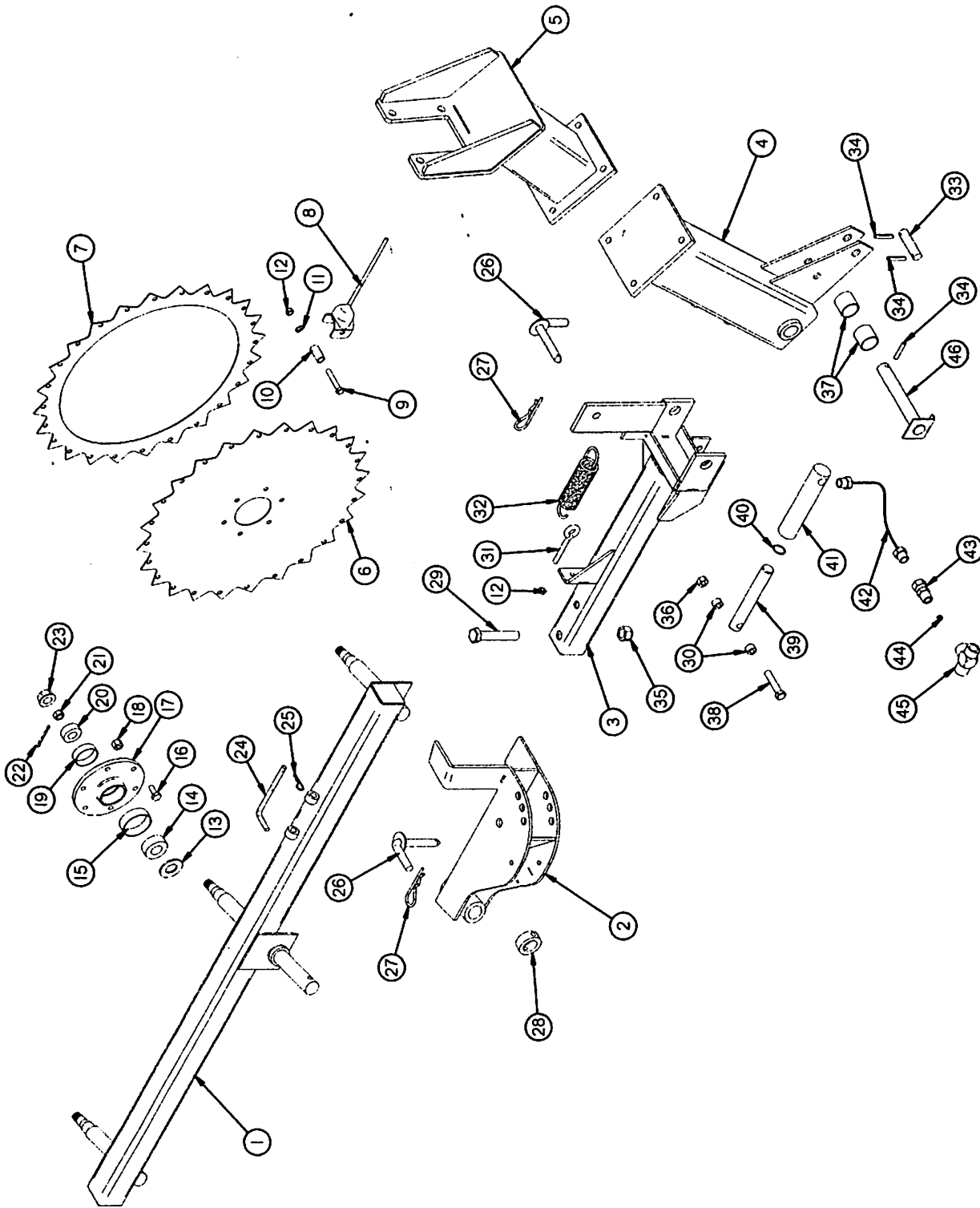
FIGURE 7



**FIGURE 7**  
**1460-1660 HI-CAPACITY RAKE**  
**OPTIONAL 2-WHEEL KICKER WHEEL**

<b>ITEM</b>	<b>PART NO.</b>	<b>DESCRIPTION</b>
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.	B68	3/8" Lock Washer
8.	T173	Hub Cap
9.	T172	Nut
10.	T169	Cotter Pin
11.	T168	10mm x 25mm Bolt
12.	T166	10mm Nut
13.	T170	Outer Bearing
14.	T171	Outer Race
15.	BFR32	Rake Wheel Hub
16.	T165	Inner Race
17.	T164	Inner Bearing
18.	T163	Seal
19.	BFR511	Center Kicker Wheel Arm
20.	18N48	3/4" x 3" Pivot Pin Bolt GR. 5
21.	HE7	Lock Nut
22.	BFR197	Locking Pin
23.	ES7	Hair Pin
24.	BFR369	Spindle
25.	BFR374	3/8" x 3" I-Bolt
26.	BFR512	Center Kicker Wheel Pivot
27.	BR62	Spring
28.	9S17	1/2" Lock Nut
29.	BFR375	1/2" x 2-1/2" Bolt GR. 5
30.	BFR114	Piston
31.	BFR115	O-Ring
32.	BFR116	Hydraulic Cylinder
33.	BFR74	3/8" Pipe Tee
34.	BFR380	Orifice
35.	BFR122	Union Adapter w/Orifice
36.	BFR737	Hydraulic Hose 1/4" x 53" 3/8"MP x 1/4"MP
37.	BFR379	Axle Shaft
38.	3G22	Roll Pin
39.	BFR27	Bushing
40.	BFR515	Cylinder Pin
41.	T72	5/32" x 1-1/2" Cotter Pin
42.	BFR514	Kicker Wheel Offset
43.	BFR736	Stand Off

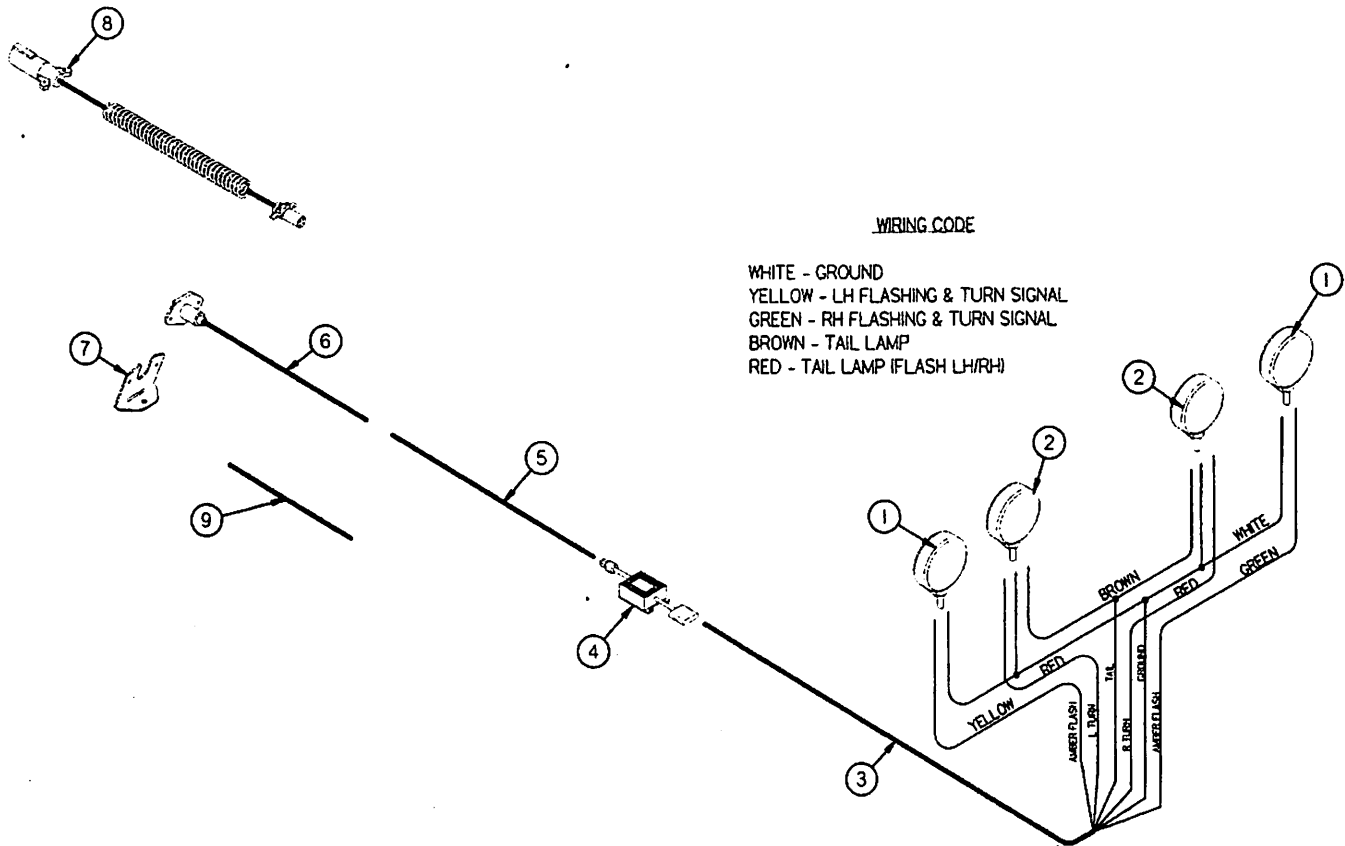
FIGURE 8



**FIGURE 8**  
**1460-1660 HI-CAPACITY RAKE**  
**OPTIONAL 3-WHEEL KICKER WHEEL**

ITEM	PART NO.	DESCRIPTION
1.	BFR717	Kicker Rake Beam
2.	BFR718	Pivot
3.	BFR719	Square Rake Arm
4.	BFR514	Kicker Wheel Offset
5.	BFR736	Standoff
6.	BFR370	Rake Wheel Center
7.	BFR369	Rake Wheel Ring
8.	T82	Rake Wheel Tooth
9.	T123	3/8" x 2-1/4" Bolt GR. 5
10.	BFR371	Rake Wheel Spacer
11.	B68	Lock Washer
12.	K93	3/8" Lock Nut
13.	T163	Seal
14.	T164	Inner Bearing
15.	T165	Inner Race
16.	T168	10mm x 25mm Bolt
17.	BFR32	Rake Wheel Hub
18.	T166	10mm Nut
19.	T171	Outer Race
20.	T170	Outer Bearing
21.	T172	Nut
22.	T169	Cotter Pin
23.	T173	Hub Cap
24.	BFR721	Beam Lock Pin
25.	X97	Hair Pin
26.	BFR197	Locking Pin
27.	ES7	Hair Pin
28.	BFR720	Pivot Lock Collar
29.	BFR23	3/4" x 4" Pivot Pin Bolt GR. 5
30.	BFR722	Lift Cylinder Spacer
31.	BFR374	3/8" x 3" I-Bolt
32.	BR62	Spring
33.	BFR515	Cylinder Pin
34.	3G22	Roll Pin
35.	HE7	Lock Nut
36.	9S17	1/2" Lock Nut
37.	BFR27	Bushing
38.	LW131	1/2" x 3-1/2" Bolt GR. 5
39.	BFR114	Piston
40.	BFR115	O-Ring
41.	BFR116	Hydraulic Cylinder
42.	BFR737	Hydraulic Hose 1/4"x53" 3/8"MPx1/4"MP
43.	BFR122	3/8" Union Adapter
44.	BFR380	Orifice
45.	BFR74	3/8" Pipe Tee
46.	BFR379	Axle Shaft

**FIGURE 9**



**FIGURE 9**  
**1460-1660 HI-CAPACITY RAKE**  
**OPTIONAL LIGHTING**

ITEM	PART NO.	DESCRIPTION
1.	DWM129	Amber Light
2.	BFR675	Red Light
3.	BFR667	Light Harness (6 Wire)
4.	S441	Light Module
5.	BFR741	1460 Light Harness
6.	BFR706	Front Pig Tail
7.	BFR659	Mounting Bracket
8.	S317	Tractor Cord (Optional)
9.	BFR666	1660 Harness Extension