

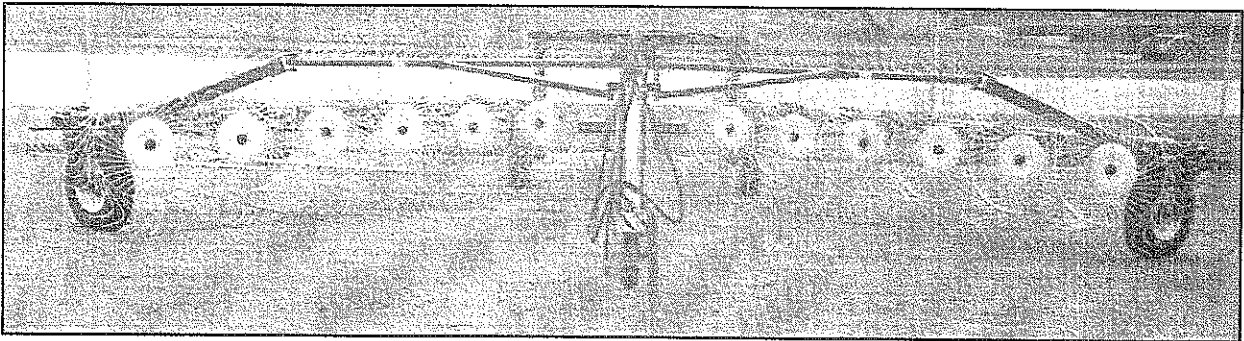
H&S

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

11-26-97

Manufactured By

H&S MANUFACTURING CO., INC.

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

MARSHFIELD, WISCONSIN 54449

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

ITEM	PART NO.	DESCRIPTION	ITEM	PART NO.	DESCRIPTION	
1.	BFR5	Hitch Pin	66.	BFR431	LH Spring Bracket	
2.	BFR157	Hitch	67.	BFR34	Pipe Clamps	
3.	BFR223	Jack	68.	BFR84	Compression Spring	
4.	BFR4	Jack Pin & Chain	69.	BFR432	LH Lifting Pipe Connector	
5.	B17B	Jack Handle		BFR433	RH Lifting Pipe Connector	
6.	HE42	Hose Holder	70.	BFR519	Lifting Pipe Back	
7.	BFR383	Pole	71.	BFR520	Lifting Pipe Front	
8.	BFR384	Transport Lock Pipe LH	72.	3G22	Roll Pin	
* 8.	BFR415	Transport Lock Pipe RH	73.	BFR436	Rake Arm LH	
9.	BFR385	Center Pole Section	*	BFR437	Rake Arm RH ✓	
10.	BFR502	Front Rod	74.	BFR140	Rake Arm Adjustment Chain	
11.	BFR387	Front Linkage Slider	75.	BFR138	Rake Arm Spring	
12.	BFR388	Hose Guide Spacer	76.	BFR36	Rake Arm Spindle	
13.	BFR389	Slider Spacer	77.	T174	Rake Wheel LH	
14.	BFR390	Front Linkage	*	BFR31	Rake Wheel RH	
15.	BFR391	Rake Beam Arm RH	78.	T166	10MM Nut	
16.	BFR392	Rake Beam Arm LH	79.	T175	10MM x 25MM Carriage Bolt	
17.	BFR393	Rake Beam Arm Pin	80.	T176	Rake Wheel Tooth	
18.	BFR394	Right Rear Linkage	81.	T178	Rake Tooth Clip	
19.	BFR395	Left Rear Linkage	82.	T179	Rake Wheel Center	
20.	BFR396	Cylinder Pin	83.	T169	Cotter Pin	
21.	BFR397	Back Pole Section	84.	T166	10MM Nut	
22.	BFR398	Center Slider	85.	T168	10MM x 25MM Bolt	
23.	BFR399	Linkage Stop	86.	T173	Hub Cap	
24.	BFR400	Center Slider Spacer	87.	T172	Nut	
25.	BFR401	Center Slider Pin	88.	T170	Outer Bearing	
26.	BFR402	Hose Guide	*	T171	Outer Race	
27.	X94	Cylinder Spacer	89.	BFR32	Rake Wheel Hub	
28.	BFR503	Back Rod	90.	T164	Inner Bearing	
29.	BFR404	Back Slider Roller	*	T165	Inner Race	
30.	BFR405	1/2" x 5-1/2" Bolt GR.5	91.	T163	Seal	
31.	BFR406	Front Rake Beam RH	92.	BFR449	Spindle	
32.	BFR407	Front Rake Beam LH	93.	BFR57	Seal	
33.	BFR408	Back Rake Beam RH	94.	BFR58	Inner Bearing	
34.	BFR409	Back Rake Beam LH	95.	BFR59	Inner Race	
35.	BFR410	Back Linkage Yoke RH	96.	BFR60	Hub	
36.	BFR411	Back Linkage Yoke LH	97.	BFR61	Outer Race	
37.	BFR412	Back Linkage Yoke Pin	98.	BFR62	Outer Bearing ✓	
38.	ES7	Hair Pin	99.	BFR63	Washer	
39.	BFR413	Pivot Yoke Shaft Pin	100.	BFR64	Nut	
40.	T56	Cotter Pin 5/32" x 2"	101.	BFR65	Cotter Pin	
41.	BFR414	Left Pivot Yoke Shaft	102.	BFR66	Hub Cap	
42.	BFR228	Slotted Nut 1-1/4"	103.	BFR143	Stud Bolt	
43.	BFR518	3/4" Nut	104.	BFR144	Nut	
44.	BFR506	Nylon Wear Block	105.	BFR67	Wheel 5 x 15	
45.	BFR498	Rear Pivot Assembly	106.	BFR438	5/8" x 2" Bolt GR.5	
46.	BFR483	Right Axle Upright	107.	BFR439	5/8" x 1-3/4" Bolt GR.5	
47.	BFR484	Left Axle Upright	108.	BFR440	Back Linkage Slider	
48.	23N67	Hose Holder	109.	BFR441	Stop Washer	
49.	BFR419	3/4" Acme Nut	110.	T143	Cylinder Pin	
50.	BFR420	Rear Width Adjustment Rod	111.	BFR447	Hydraulic Cylinder	
51.	BFR485	Rear Width Adjustment Tube	112.	12N14	Jack Mount	
52.	BFR422	Width Adjustment Collar	113.	BFR443	Linch Pin	
53.	BFR423	Width Adjustment Handle	114.	BFR7	Hair Pin	
54.	BFR499	Beam Pivot Shaft	115.	BFR517	Cylinder Pin	
55.	BFR425	Rake Arm Bushing W/Flange	116.	23N108	Cotter Pin	
56.	BFR229	Rake Arm Washer	117.	16SV136	Washer	
57.	BFR137	Hair Pin	118.	BFR523	Poly Washer	
58.	BFR426	Rake Pressure Handle	119.	RG135	Bolt 1/2" x 1" GR.5	
59.	BFR427	Rake Arm Lock-Up Shaft	120.	BFR117	Bolt 3/8" x 2-1/2" GR.5	
60.	BFR111	Back Rake Arm Adjustment Chain	121.	RG174	Bolt 5/8" x 5" GR.5	
61.	K106	Cylinder Spacer	122.	12V59	Roll Pin 3/8" x 2-3/4"	
62.	BFR428	Hydraulic Cylinder End Slide LH	123.	BFR438	Bolt 5/8" x 2" GR.5	
* 62.	BFR429	Hydraulic Cylinder End Slide RH	124.	BFR545	Bolt 1" x 3-1/2" GR.5	
63.	BFR430	RH Spring Bracket	TANDEM OPTIONS:		BFR509	RH Tandem Axle
64.	BFR69	Hydraulic Lift Cylinder			BFR510	LH Tandem Axle
65.	X94	Cylinder Spacers				

NOTE: * (Means Not Shown)

FIGURE 2

welded Part

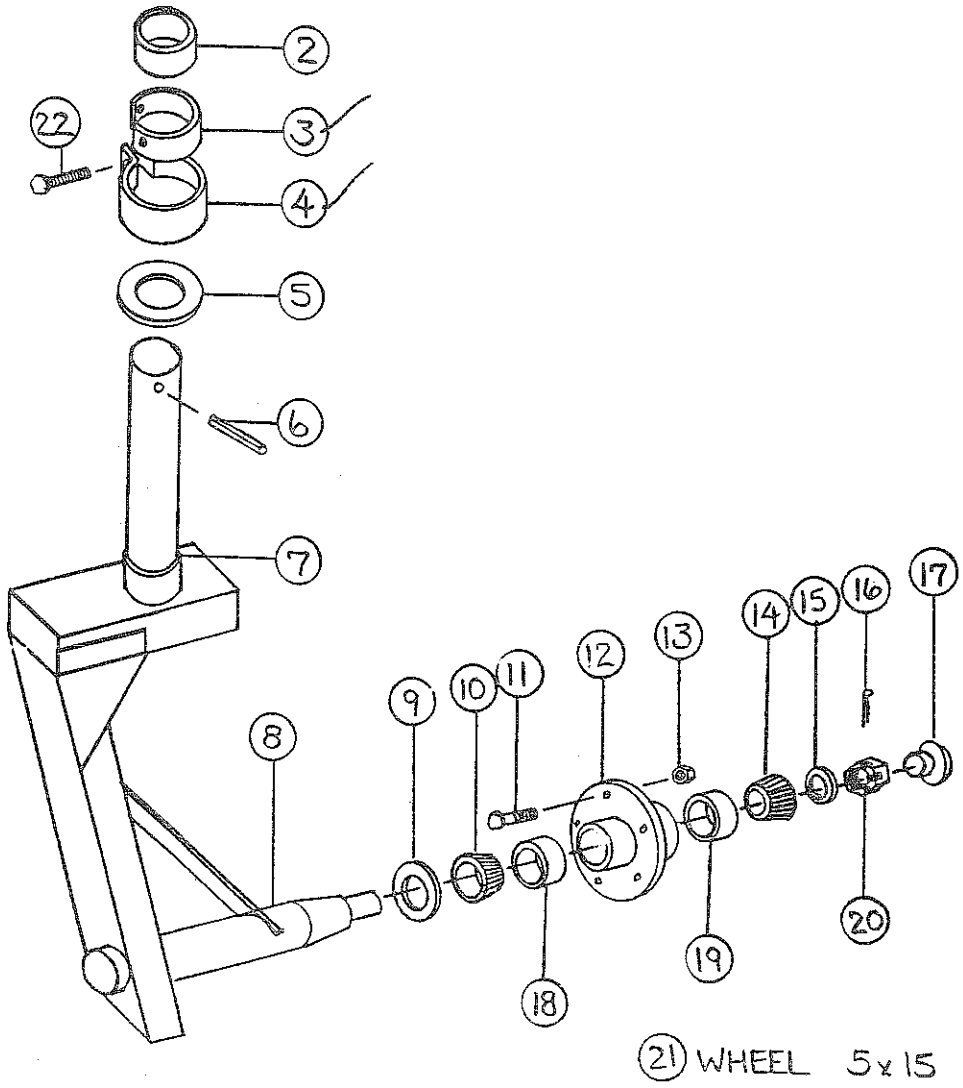
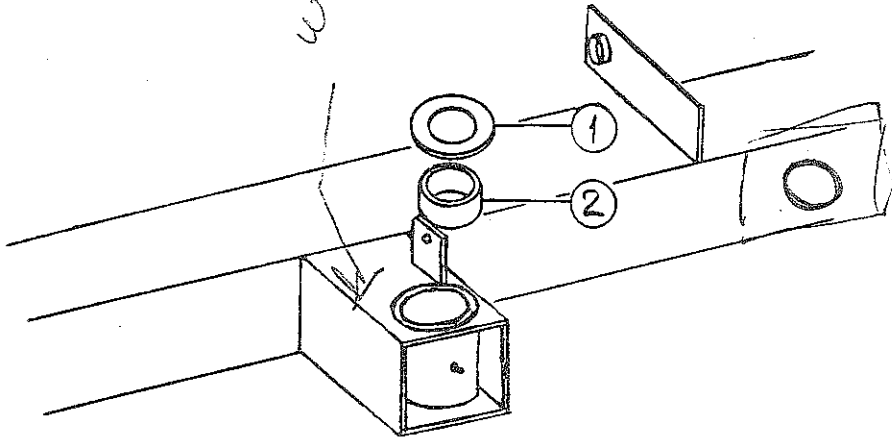


FIGURE 2
H&S 12 & 14 WHEEL HI CAPACITY RAKE
GAUGE WHEEL

ITEM	PART NO.	DESCRIPTION
1.	BFR309	Gauge Wheel Washer
2.	BFR527	Bronze Bushing
3.	BFR310	Brake Pad
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 ✓ <i>Just Fork</i>
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

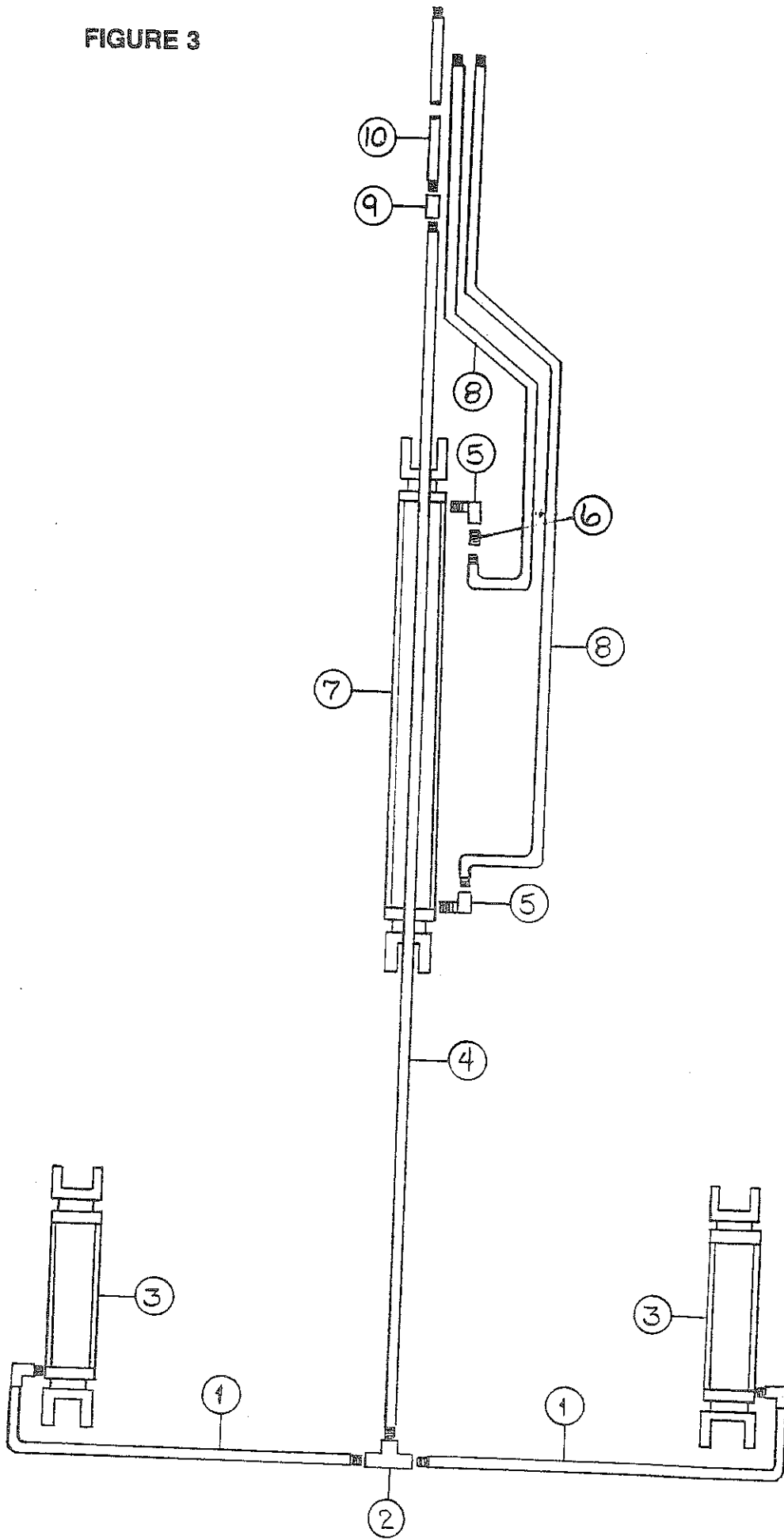


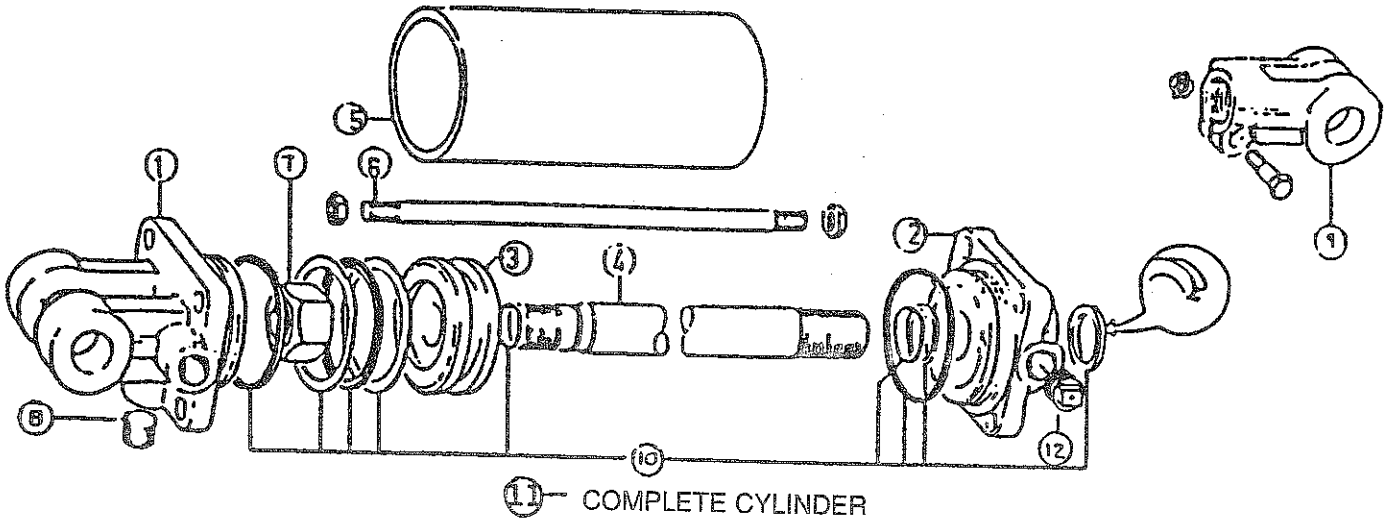
FIGURE 3
H&S 12 WHEEL HI CAPACITY RAKE HYDRAULICS

ITEM	PART NO.	DESCRIPTION
1.	37N60	108" Hose
2.	BFR74	3/8" Female Tee
3.	BFR69	Hydraulic Lift Cylinders
4.	23N118	264" Hose
5.	23N234	3/8" Street Elbow
6.	BFR122	Male Adapter Union
7.	BFR447	Hydraulic Open Cylinder
8.	BFR504	256" Hose
9.	HE60	3/8" Pipe Coupler
10.	BFR448	66" Hose

BFR 554 / C valve

\$ 13.36

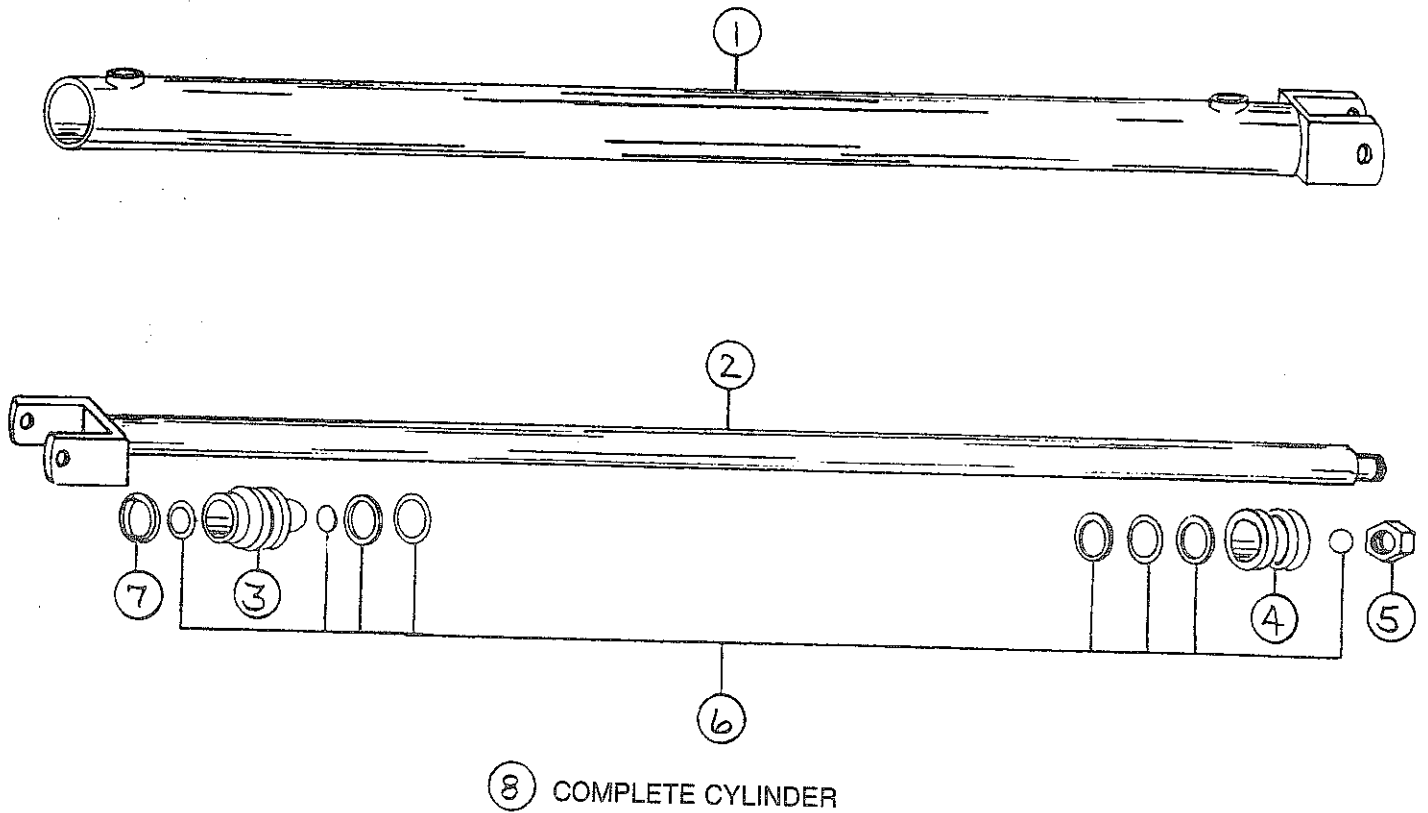
FIGURE 4



H&S 12 WHEEL HI CAPACITY RAKE
HYDRAULIC LIFT CYLINDER

ITEM	PART NO.	DESCRIPTION
1.	23N142	Clevis Cap
2.	23N143	Rod Cap
3.	23N144	Piston
4.	T184	Rod
5.	BFR68	Cylinder Tube
6.	T186	Tie Rod
7.	23N148	Piston Nut
8.	23N149	Plug
9.	23N150	Rod Clevis
10.	23N151	Seal Kit
11.	BFR69	Complete Cylinder
12.	BFR70	Vent Plug

FIGURE 5



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

ITEM	PART NO.	DESCRIPTION
1.	BFR445	Case Weldment
2.	BFR446	Rod Weldment
3.	BFR330	Head Gland
4.	BFR331	Piston
5.	BFR332	Jam Nut
6.	BFR333	Seal Kit
7.	BFR334	Snap Ring
8.	BFR447	Complete Cylinder

FIGURE 6

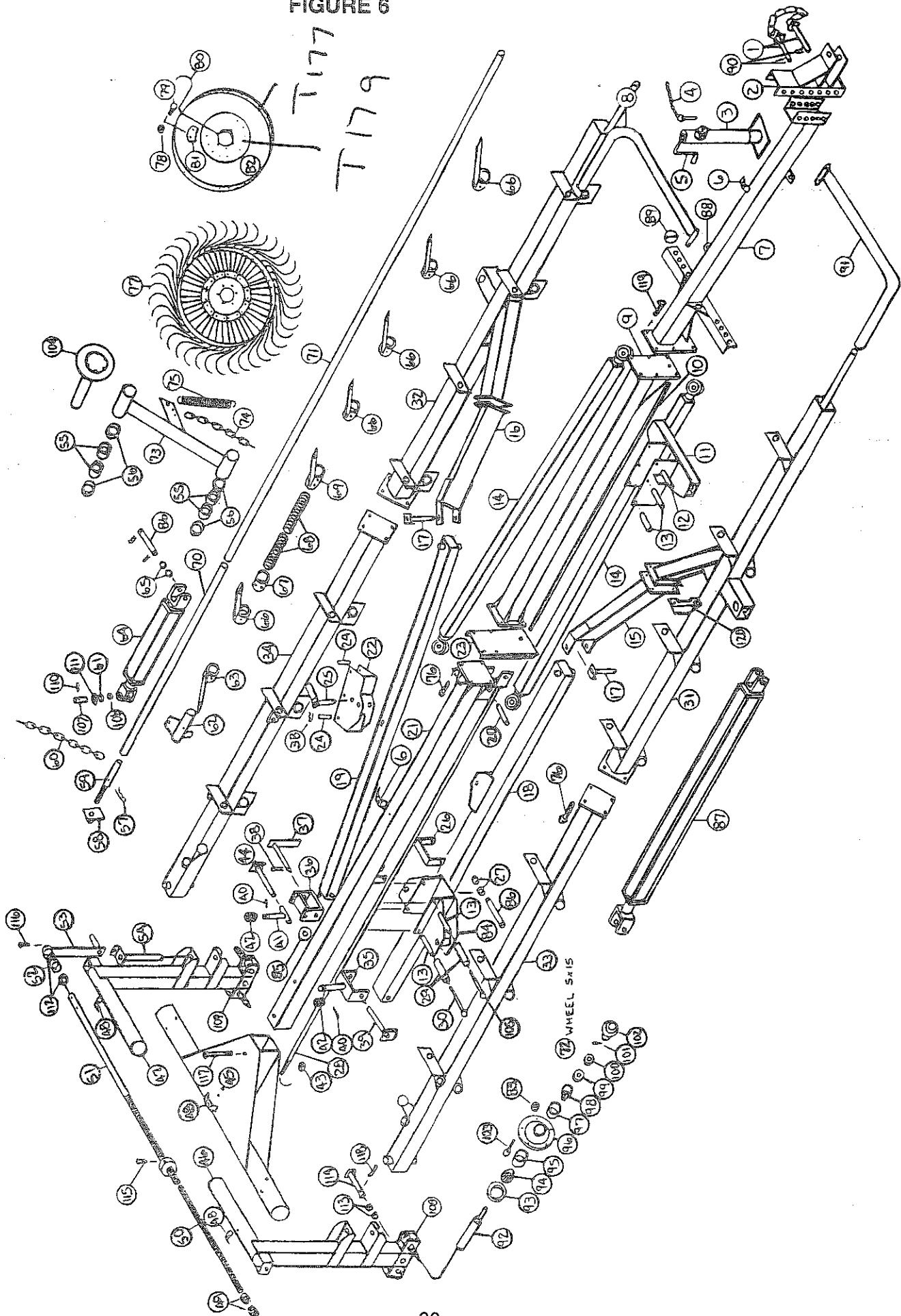
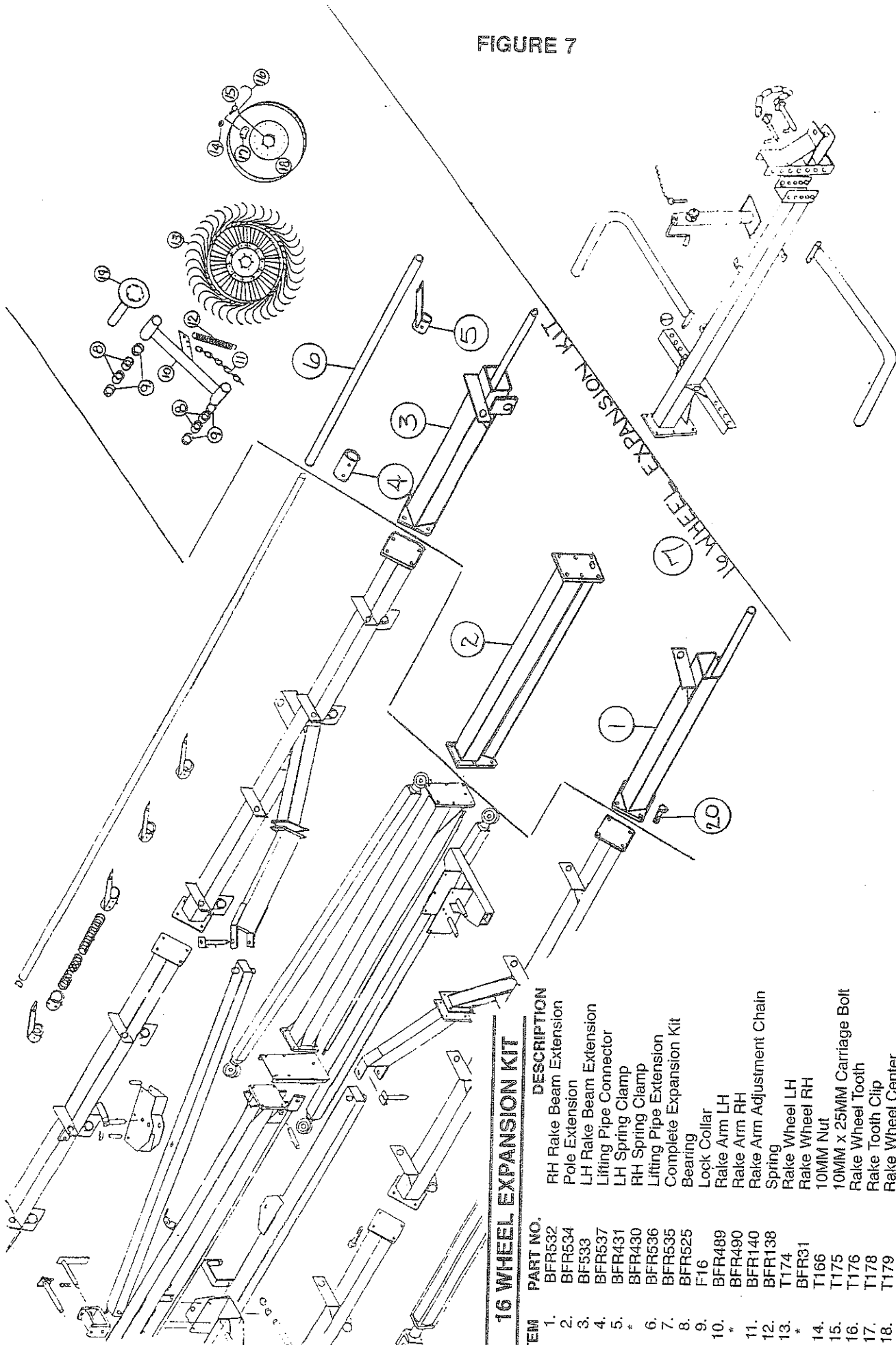


FIGURE 6
H&S 14 WHEEL HI CAPACITY RAKE – MAIN FRAME

ITEM	PART NO.	DESCRIPTION	ITEM	PART NO.	DESCRIPTION
1.	BFR450	Hitch Pin	64.	16SV171	Hydraulic Lift Cylinder
2.	BFR157	Hitch	65.	X94	Cylinder Spacers
3.	BFR223	Jack	66.	BFR431	LH Spring Bracket
4.	BFR4	Jack Pin & Chain	67.	BFR83	Pipe Clamps
5.	B17B	Jack Handle	68.	BFR84	Compression Spring
6.	HE42	Hose Holder	69.	BFR432	LH Lifting Pipe Connector
7.	BFR451	Pole	*	BFR433	RH Lifting Pipe Connector
8.	BFR452	Transport Lock Pipe LH	70.	BFR521	Lifting Pipe Back
9.	BFR453	Center Pole Section	71.	BFR520	Lifting Pipe Front
10.	BFR500	Front Rod	72.	BFR67	Wheel 15 x 5
11.	BFR455	Front Linkage Slider	73.	BFR489	Rake Arm LH
12.	BFR456	Hose Guide Spacer	*	BFR490	Rake Arm RH
13.	BFR457	Slider Spacer	74.	BFR140	Rake Arm Adjustment Chain
14.	BFR458	Front Linkage	75.	BFR138	Rake Arm Spring
15.	BFR459	Rake Beam Arm RH	76.	BFR438	5/8" x 2" Bolt
16.	BFR460	Rake Beam Arm LH	77.	T174	Rake Wheel LH
17.	BFR461	Rake Beam Arm Pin	*	BFR31	Rake Wheel RH
18.	BFR462	Right Rear Linkage	78.	K93	3/8" Lock Nut
19.	BFR463	Left Rear Linkage	79.	17G141	3/8" x 1-1/4" Bolt GR.5
20.	BFR396	Cylinder Pin	80.	T176	Rake Wheel Tooth
21.	BFR464	Back Pole Section	81.	T178	Rake Tooth Clip
22.	BFR465	Center Slider	82.	T179	Rake Wheel Center
23.	BFR466	Linkage Stop	83.	BFR144	Nut
24.	BFR467	Center Slider Spacer	84.	BFR491	Back Linkage Slider
25.	BFR468	Center Slider Pin	85.	BFR495	Stop Washer
26.	BFR469	Hose Guide	86.	T143	Cylinder Pin
27.	X94	Cylinder Spacer	87.	BFR447	Hydraulic Cylinder
28.	BFR503	Back Rod	88.	12N14	Jack Mount
29.	BFR471	Back Slider Roller	89.	BFR443	Linch Pin
30.	16SV77	1/2" x 6" Bolt GR.5	90.	ES7	Hair Pin
31.	BFR472	Front Rake Beam RH	91.	BFR492	Transport Lock Pipe RH
32.	BFR473	Front Rake Beam LH	92.	BFR522	Spindle
33.	BFR474	Back Rake Beam RH	93.	BFR57	Seal
34.	BFR475	Back Rake Beam LH	94.	BFR58	Inner Bearing
35.	BFR476	Back Linkage Yoke RH	95.	BFR59	Inner Race
36.	BFR477	Back Linkage Yoke LH	96.	BFR60	Hub
37.	BFR468	Back Linkage Yoke Pin	97.	BFR61	Outer Race
38.	ES7	Hair Pin	98.	BFR62	Outer Bearing
39.	BFR479	Pivot Yoke Shaft Pin RH	99.	BFR63	Washer
40.	T56	Cotter Pin 5/32" x 2"	100.	BFR64	Nut
41.	BFR480	Left Pivot Yoke Shaft	101.	BFR65	Cotter Pin
42.	BFR481	Slotted Nut 1-1/2"	102.	BFR66	Hub Cap
43.	BFR518	3/4"-16 Nut	103.	BFR143	Stud Bolt
44.	BFR505	Pivot Yoke Shaft Pin LH	104.	BFR493	Rake Wheel Hub
45.	BFR482	Rear Pivot Assembly	105.	BFR494	1/2" x 6-1/2" Bolt GR.5
46.	BFR483	Right Axle Upright	106.	BFR506	Nylon Wear Block
47.	BFR484	Left Axle Upright	107.	BFR517	Cylinder Pin
48.	23N67	Hose Holder	108.	BFR509	RH Tandem Axle
49.	BFR419	3/4" Acme Nut	109.	BFR510	LH Tandem Axle
50.	BFR420	Rear width Adjustment Rod	110.	23N108	Cotter Pin
51.	BFR485	Rear width Adjustment Tube	111.	16SV136	Washer
52.	BFR422	Width Adjustment Collar	112.	BFR523	Poly Washer
53.	BFR423	Width Adjustment Handle	113.	23N17	Bushing
54.	BFR499	Beam Pivot Shaft	114.	BFR524	Tandem Pin
55.	BFR525	Bearing	115.	RG135	Bolt 1/2" x 1" GR.5
56.	F16	Lock Collar	116.	BFR117	Bolt 3/8" x 2-1/2" GR.5
57.	BFR137	Hair Pin	117.	50N129	Bolt 3/4" x 6" GR.5
58.	BFR 426	Rake Pressure Handle	118.	12V59	Roll Pin 3/8" x 2-3/4"
59.	BFR486	Rake Arm Lock-Up Shaft	119.	BFR438	Bolt 5/8" x 2" GR.5
60.	BFR111	Back Rake Arm Adjustment Chain	120.	BFR549	RH Tooth Deflector
61.	K106	Cylinder Spacer	*	BFR550	LH Tooth Deflector
62.	BFR530	Hydraulic Cylinder End Slide LH			
*	BFR531	Hydraulic Cylinder End Slide RH			

NOTE: * (Means Not Shown)

FIGURE 7

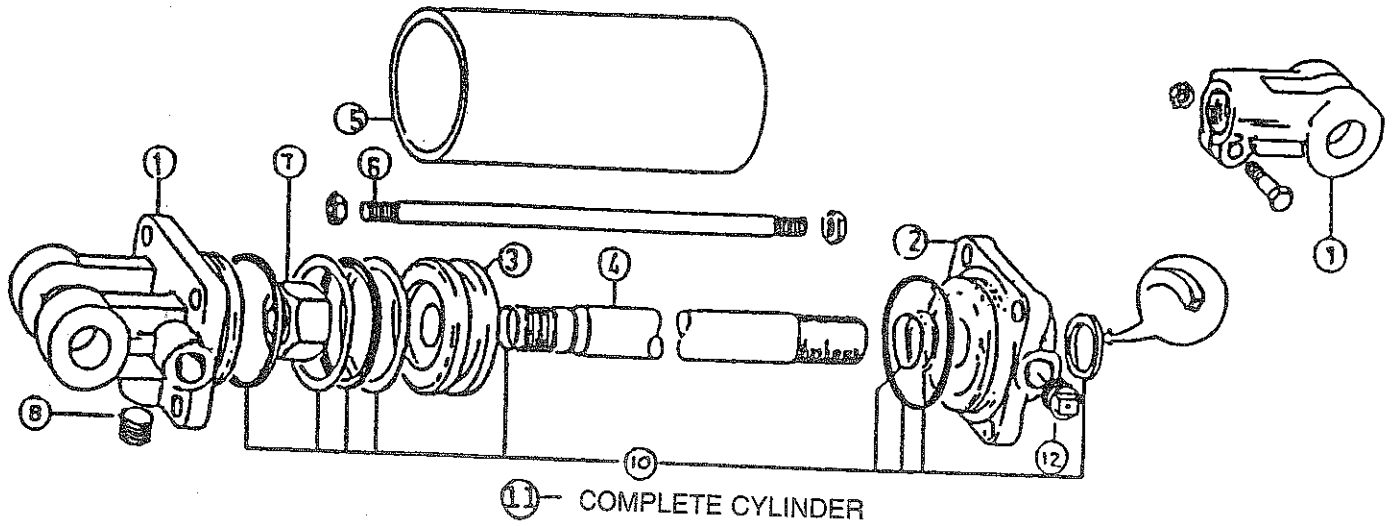


16 WHEEL EXPANSION KIT

ITEM	PART NO.	DESCRIPTION
1.	BFR532	RH Rake Beam Extension
2.	BFR534	Pole Extension
3.	BF533	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.	T166	10MM Nut
15.	T175	10MM x 25MM Carriage Bolt
16.	T176	Rake Wheel Tooth
17.	T178	Rake Tooth Clip
18.	T179	Rake Wheel Center
19.	BFR493	Rake Wheel Hub
20.	BFR438	Bolt 5/8" x 2" GR.5 (14 pcs.)

NOTE: * (Means Not Shown)

FIGURE 8



H&S 14 WHEEL HI CAPACITY RAKE
HYDRAULIC LIFT CYLINDER

ITEM	PART NO.	DESCRIPTION
1.	23N142	Clevis Cap
2.	23N143	Rod Cap
3.	23N144	Piston
4.	16SV168	Rod
5.	16SV169	Cylinder Tube
6.	16SV170	Tie Rod
7.	23N148	Piston Nut
8.	23N149	Plug
9.	23N150	Rod Clevis
10.	23N151	Seal Kit
11.	16SV171	Complete Cylinder
12.	BFR70	Vent Plug

FIGURE 9

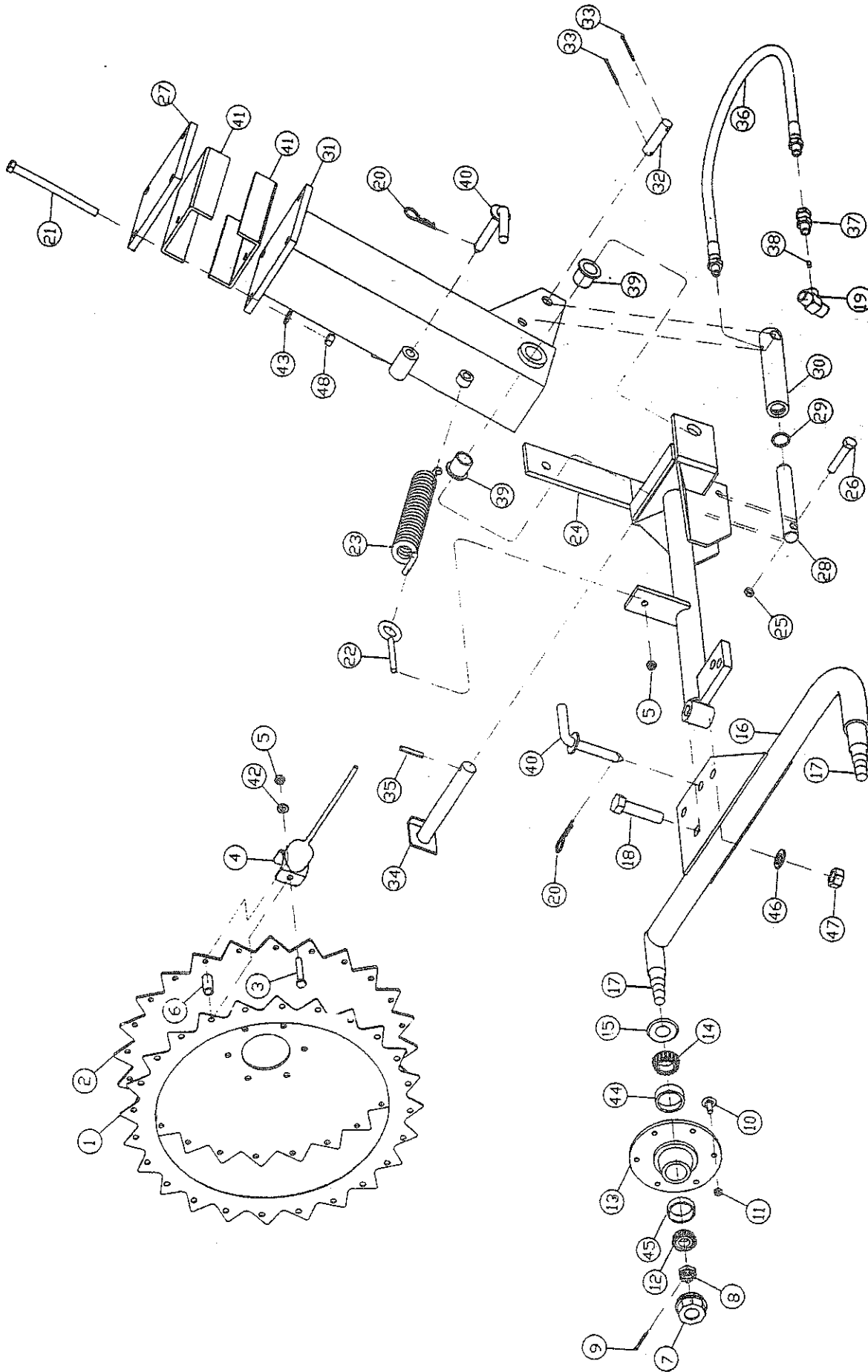


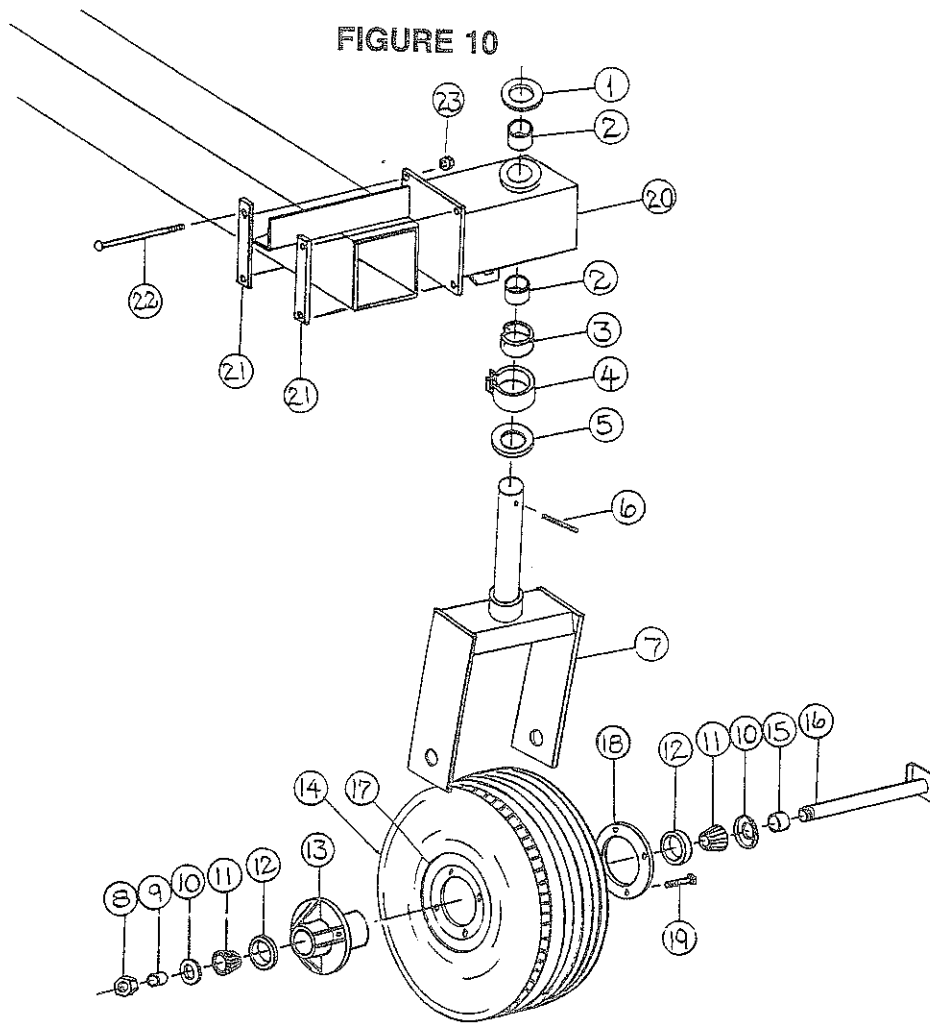
FIGURE 9
H&S 12 & 14 WHEEL HI CAPACITY RAKE
OPTIONAL CENTER KICKER WHEEL

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.	BFR529	"	3/8" Union/Adapter
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
46.	RG199	"	Lockwasher
47.	HE7	"	Locknut
48.	R11	"	Locknut

NOTE: " (Same Part No. as 12 Wheel Rake)
 - (Part is Not Used on This Model)

628H-LS3

FIGURE 10



H&S 14 WHEEL HI CAPACITY RAKE OPTIONAL 12" GAUGE WHEEL.

ITEM	PART NO.	DESCRIPTION
1.	BFR179	Washer
2.	23N17	Bronze Bushing
3.	BFR267	Brake Pad
4.	BFR268	Brake
5.	BFR269	Bronze Washer
6.	F26	Roll Pin
7.	BFR270	Complete Fork
8.	BFR271	1" Nylon Lock Nut
9.	BFR272	Spacer
10.	BFR273	Seal
11.	BFR274	Bearing
12.	BFR275	Race
13.	BFR276	Hub
14.	BFR277	Tire
15.	BFR278	Spacer
16.	BFR279	Axle Shaft
17.	BFR280	Wheel
18.	BFR326	Gauge Wheel Re-enforcement Plate
19.	BFR339	Lug Bolt
20.	BFR496	Gauge Wheel Mount
21.	BFR497	Gauge Wheel Mount Strap
22.	BFR494	Mount Bolt 1/2" x 6-1/2" GR.5
23.	9S17	Lock Nut 1/2"
NOT SHOWN	BFR342	Gauge Wheel Hub Complete
	BFR508	Complete Gauge Wheel Assembly (Includes Both Sides)

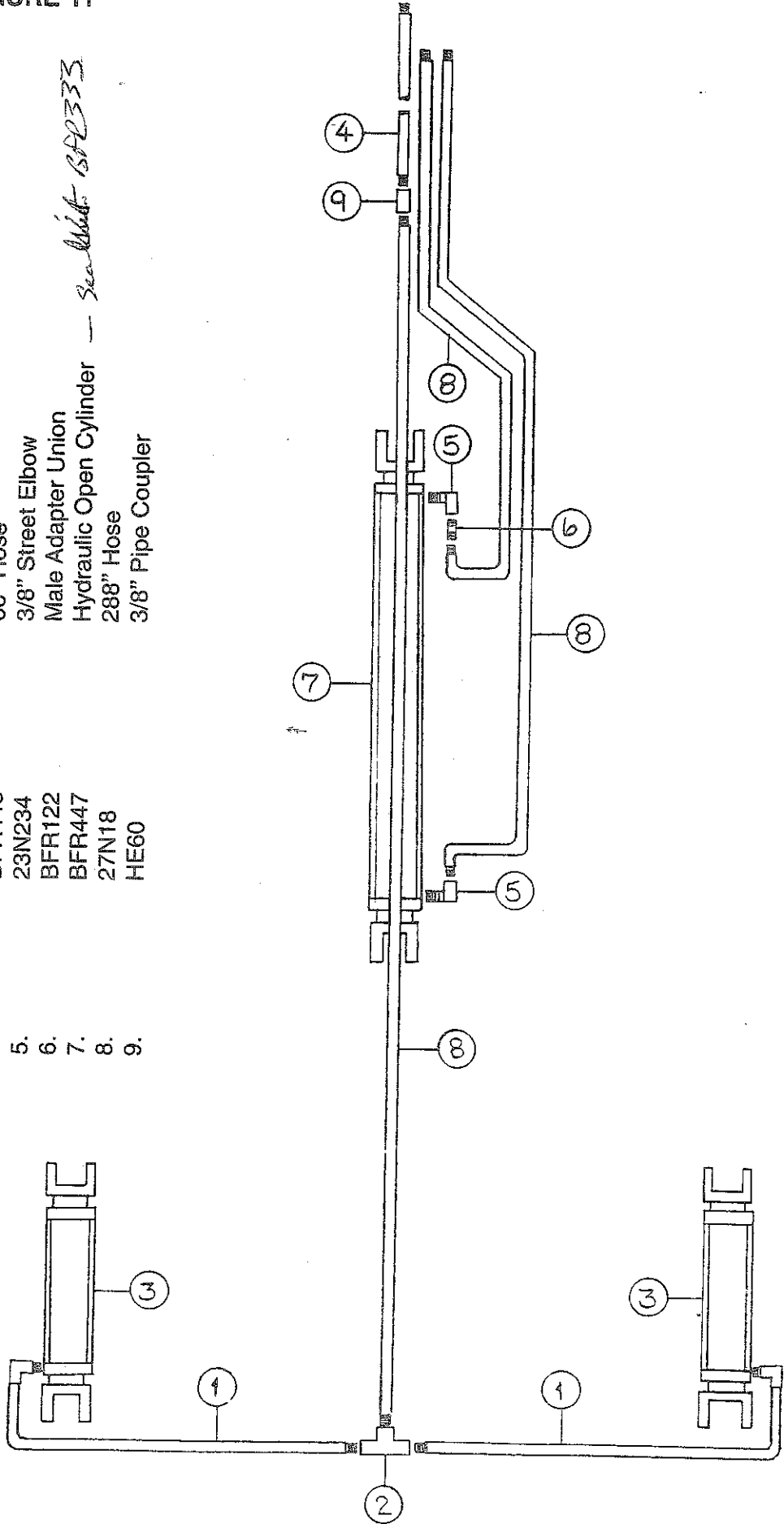
FIGURE 11

14 WHEEL HI CAPACITY RAKE HYDRAULICS

- ITEM 1. 2. 3. 4. 5. 6. 7. 8. 9.

- PART NO.
 37N60
 BFR74
 16SV171
 BFR448
 23N234
 BFR122
 BFR447
 27N18
 HE60

- DESCRIPTION
 108" Hose
 3/8" Female Tee
 Hydraulic Lift Cylinders
 66" Hose
 3/8" Street Elbow
 Male Adapter Union
 Hydraulic Open Cylinder
 288" Hose
 3/8" Pipe Coupler



See sheet BPR333