

Taylor-Way

REG. U. S. PAT. OFF.

PARTS LIST

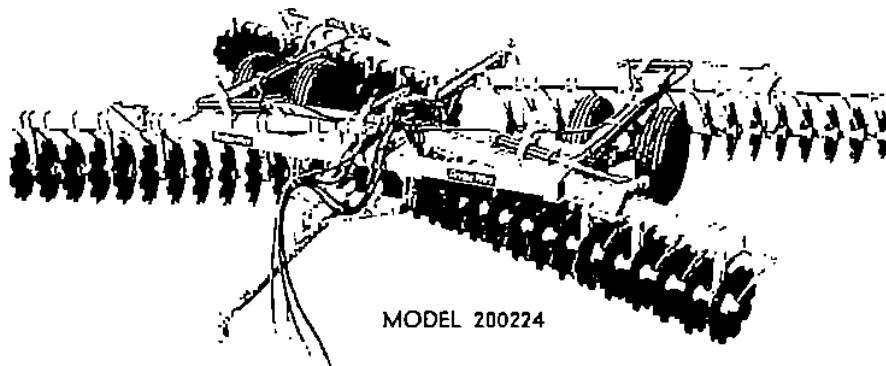
Setting-up and Operating Instructions for PULVERIZING

WING-TYPE TANDEM HARROW

TRANSPORT WIDTH: MODEL 200217-200220 = 10 FT., 10 INCHES MODEL 200221-200224 = 14 FT., 10 INCHES
REGREASABLE BALL BEARINGS 8" DISC SPACING 1 1/4" SQUARE AXLE

Model Number	Size of Wings	No. of Discs	No. of Tapered Discs	Disc Spacing	Width of Cut	Approximate Weight						Suggested D. B, H, P.
						18" C.O.	Spring Fold 20" C.O.	22" C.O.	18" C.O.	Hydraulic Fold 20" C.O.	22" C.O.	
200217	Basic Unit, Less Wings	28	0	8"	9'8"	2940	3035	3135	2940	3035	3135	50
200218	3-Disc Front, 4-Disc Rear	42	6	8"	13'5"	3830	3975	4125	3970	4115	4265	70
200219	4-Disc Front, 5-Disc Rear	46	6	8"	14'8"	3940	4105	4265	4080	4245	4405	75
200220	5-Disc Front, 6-Disc Rear	50	6	8"	15'11"	4070	4245	4385	4210	4420	4560	80
200221	Basic Unit, Less Wings	40	0	8"	13'5"	3810	3950	4090	3810	3950	4090	70
200222	3-Disc Front, 4-Disc Rear	54	6	8"	17'2"	4705	4890	5080	4845	5030	5220	90
200223	4-Disc Front, 5-Disc Rear	58	6	8"	18'6"	4815	5020	5220	4955	5160	5360	95
200224	5-Disc Front, 6-Disc Rear	62	6	8"	19'9"	4945	5160	5375	5085	5300	5515	100

Models equipped with Wings are shipped with extra disc on outside of each rear wing that is 4" in diameter smaller than standard disc on implement. Shipped with 15" x 6" Rims as Standard Equipment. Tires and Hydraulic Cylinder for transport not furnished. Use standard ASAE 8" stroke double or single action Hydraulic Cylinder. Four 2 1/2" x 16" double action Hydraulic Cylinders with all hoses and fittings shipped as Standard Equipment on Implements ordered with Hydraulic Folding Wings. Basic Unit models shipped less Wing Springs and fittings or Hydraulic Cylinders and fittings.



TAYLOR IMPLEMENT DIVISION

PITTSBURGH FORGINGS CO.

TRACTOR DRAWN *Taylor-Way* IMPLEMENTS

ATHENS, TENNESSEE 37303-TELEPHONE AREA CODE 615-745-3110

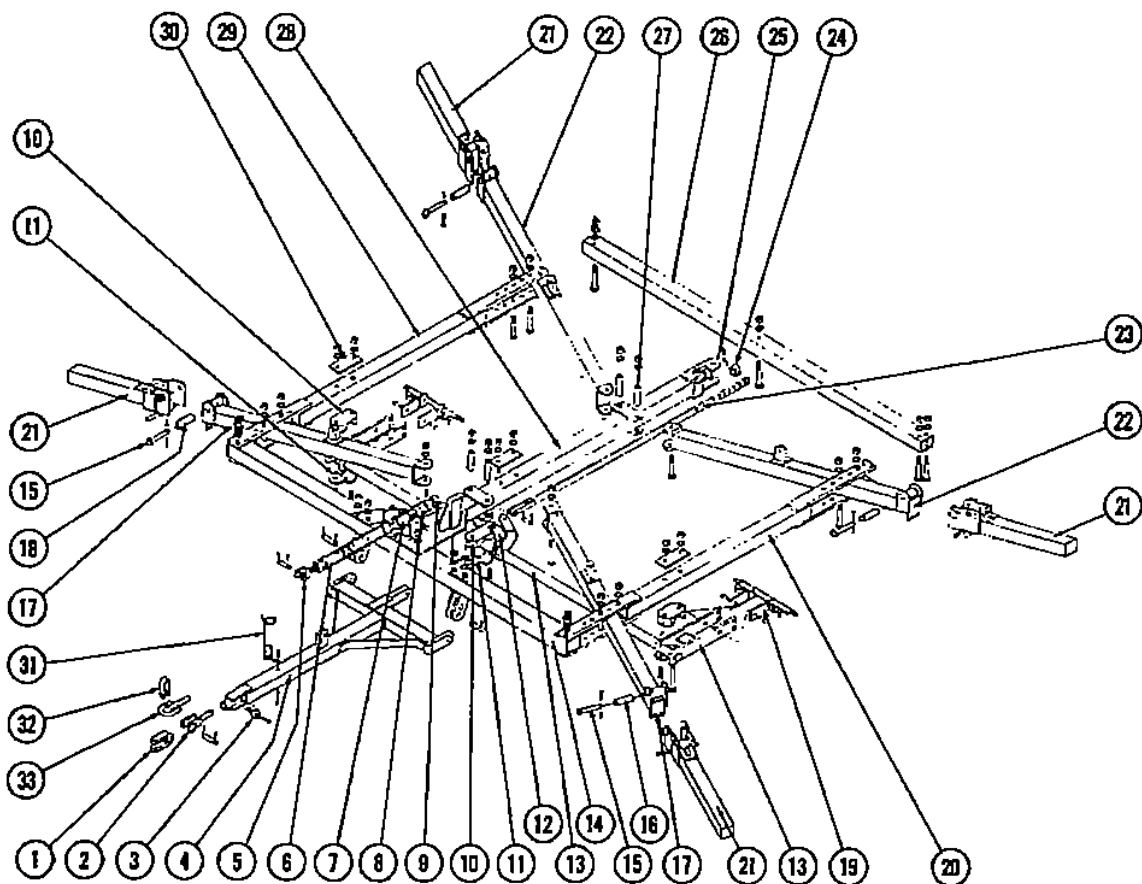
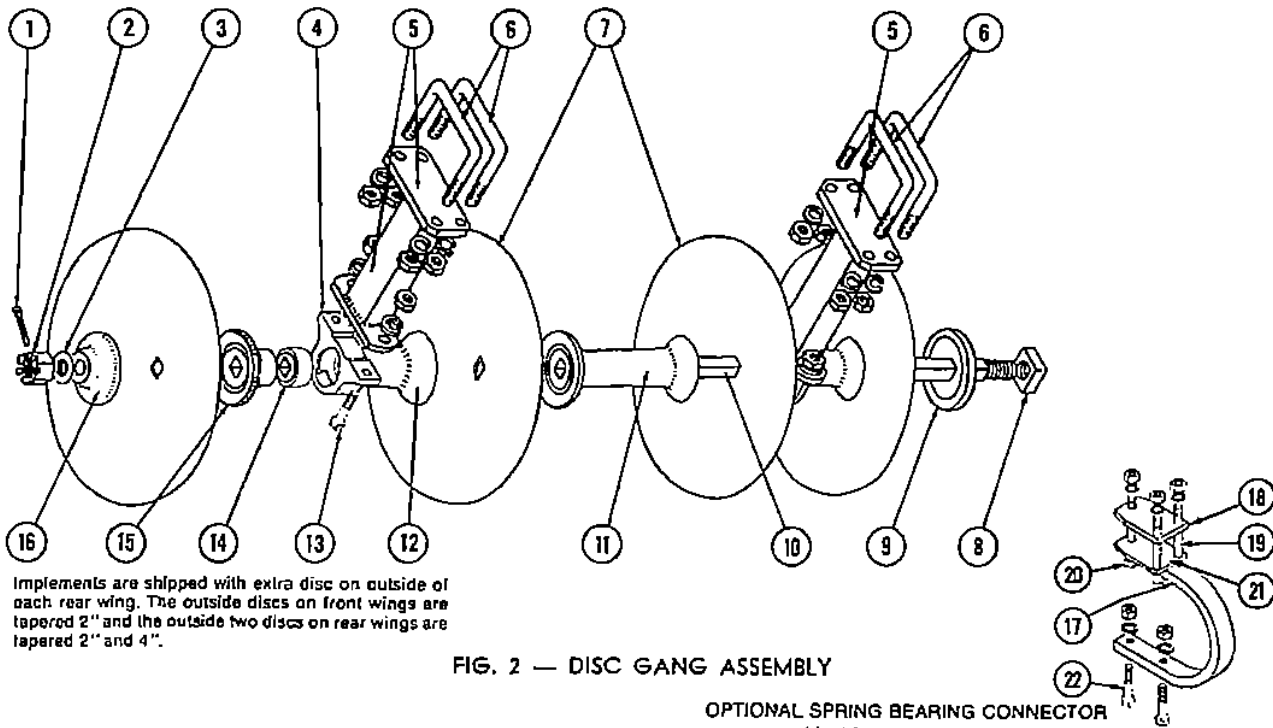


FIG. 1 — BASIC FRAME ASSEMBLY

Item No.	Part Number	FOR MODEL								Description	Size
		200 217	200 218	200 219	200 220	200 221	200 222	200 223	200 224		
1	207820	1	1	1	1	1	1	1	1	Clevis	
	206123	1	1	1	1	1	1	1	1	Clevis Bolt w/Nut H.T.	1" x 5 1/2"
	205831	1	1	1	1	1	1	1	1	Cotter	
2	207798	1	1	1	1	1	1	1	1	Swivel Clevis	
	207860	1	1	1	1	1	1	1	1	Pin	1 1/8" x 5 3/16"
		2	2	2	2	2	2	2	2	Cotter	3/8" x 2"
3	207046	1	1	1	1	1	1	1	1	Swivel Collar	
		1	1	1	1	1	1	1	1	Bolt w/Nut	3/8" x 3 1/2"
		1	1	1	1	1	1	1	1	Lock Washer	3/8"
4	207532	1	1	1	1	1	1	1	1	Tongue	
	40+125	2	2	2	2	2	2	2	2	Pin	1 1/4" x 4 1/4"
	208867	1	1	1	1	1	1	1	1	Tongue Screw Jack	
		4	4	4	4	4	4	4	4	Cotter	3/8" x 2"
5	206808	1	1	1	1	1	1	1	1	Spring Rod	1 3/8"
	205514	1	1	1	1	1	1	1	1	Spring Rod	1 1/4"
	203100	1	1	1	1	1	1	1	1	Pin	7/8" x 3 1/4"
		2	2	2	2	2	2	2	2	Cotter	5/16" x 1 1/2"
6	20+36+	1	1	1	1	1	1	1	1	Spring	
	205163	1	1	1	1	1	1	1	1	Special Flat Washer	
7	203742	1	1	1	1	1	1	1	1	Spring Rod Slide. Used with 1 3/8" Rod	
	205314	1	1	1	1	1	1	1	1	Spring Rod Slide. Used with 1 1/4" Rod	
		1	1	1	1	1	1	1	1	Alemite	1/8"
	203748	2	2	2	2	2	2	2	2	Shoulder Bolt	7/8" x 1 1/2"
		2	2	2	2	2	2	2	2	Lock Washer	3/8"
8	206325	1	1	1	1	1	1	1	1	Spring Used with 1 3/8" Rod	
	204969	1	1	1	1	1	1	1	1	Spring Used with 1 1/4" Rod	
	205163	1	1	1	1	1	1	1	1	Special Flat Washer	
9		1	1	1	1	1	1	1	1	Heavy Hex Nut	1 3/8"
		1	1	1	1	1	1	1	1	Hex Nut. Repairs Only	1 1/4"
10	207010	3	3	3	3	3	3	3	3	Lift Roll Bearing	
		6	6	6	6	6	6	6	6	Bolt w/Nut H.T.	3/4" x 8"
		6	6	6	6	6	6	6	6	Lock Washer	3/4"
		3	3	3	3	3	3	3	3	Alemite	1/8"

Item No.	Part Number	FOR MODEL								Description	Size
		200 217	200 218	200 219	200 220	200 221	200 222	200 223	200 224		
11	208367	3	3	3	3	3	3	3	3	Lift Roll Strap	
12	207141	1	1	1	1	1	1	1	1	Hydraulic Cylinder Bracket	
	208863	1	1	1	1	1	1	1	1	Tension Bushing	1" ID ± 1/8" W
13	207765	1	1	1	1	0	0	0	0	Lift Roll Axle	
	207557	0	0	0	0	1	1	1	1	Lift Roll Axle	
14	207763	1	1	1	1	0	0	0	0	Front Cross Frame	
	207537	0	0	0	0	1	1	1	1	Front Cross Frame	
15	208111	0	4	4	4	0	4	4	4	Wing Hinge Pin	1 1/8" x 7/8"
		0	4	4	4	0	4	4	4	Bolt w/Nut	1/2" x 2 3/4"
		0	4	4	4	0	4	4	4	Lock Washer	1/2"
16	208269	0	4	4	4	0	4	4	4	Wing Hinge Bushing	
17	208308	2	2	2	2	0	0	0	0	Front Gang Frame	
	208261	0	0	0	0	2	2	2	2	Front Gang Frame	
		2	2	2	2	2	2	2	2	Alemite	1/8"
		2	2	2	2	2	2	2	2	Bolt w/Nut	3/4" x 7"
		2	2	2	2	2	2	2	2	Lock Washer	3/4"
19	207562	2	2	2	2	2	2	2	2	Wheel Axle Assembly	
		12	12	12	12	12	12	12	12	Bolt w/Nut	3/4" x 2"
		12	12	12	12	12	12	12	12	Lock Washer	3/4"
										Wheel Hub Assembly (See Page 5, Fig. 5)	
20	208379	1	1	1	1	0	0	0	0	Left Side Frame	
	207553	0	0	0	0	1	1	1	1	Left Side Frame	
		4	4	4	4	4	4	4	4	Bolt w/Nut, H.T.	3/4" x 6 1/2"
		4	4	4	4	4	4	4	4	Bolt w/Nut	3/4" x 6 1/2"
		8	8	8	8	8	8	8	8	Lock Washer	3/4"
21	208286	0	4	2	0	0	4	2	0	Front and Rear 4-Disc Wing	
	208288	0	0	2	2	0	0	2	2	Front and Rear 5-Disc Wing	
	208289	0	0	0	2	0	0	0	2	Rear 6-Disc Wing	
22	208312	2	2	2	2	0	0	0	0	Rear Gang Frame	
	208268	0	0	0	0	2	2	2	2	Rear Gang Frame	
		2	2	2	2	2	2	2	2	Bolt w/Nut	3/4" x 7"
		2	2	2	2	2	2	2	2	Lock Washer	3/4"
		2	2	2	2	2	2	2	2	Alemite	1/8"
23	207803	1	1	1	1	0	0	0	0	Depth Control Bar	
	207564	0	0	0	0	1	1	1	1	Depth Control Bar	
	204758	1	1	1	1	1	1	1	1	Pin	3/4" x 3 1/4"
		2	2	2	2	2	2	2	2	Cotter	5/16" x 1 1/2"
24	204683	1	1	1	1	1	1	1	1	Depth Control Cuff	
25	203058	1	1	1	1	1	1	1	1	Depth Control Pin	
	205829	1	1	1	1	1	1	1	1	Special Cotter	
26	207764	1	1	1	1	0	0	0	0	Rear Cross Frame	
	207538	0	0	0	0	1	1	1	1	Rear Cross Frame	
27	207584	4	4	4	4	4	4	4	4	Bushing	
28	207753	1	1	1	1	0	0	0	0	Center Frame	
	207539	0	0	0	0	1	1	1	1	Center Frame	
		5	5	5	5	5	5	5	5	Bolt w/Nut	3/4" x 6"
		2	2	2	2	2	2	2	2	Bolt w/Nut	1/4" x 5 1/2"
		7	7	7	7	7	7	7	7	Lock Washer	3/4"
29	207759	1	1	1	1	0	0	0	0	Right Side Frame	
	208380	0	0	0	0	1	1	1	1	Right Side Frame	
		4	4	4	4	4	4	4	4	Bolt w/Nut, H.T.	3/4" x 6 1/2"
		4	4	4	4	4	4	4	4	Bolt w/Nut	3/4" x 6 1/2"
		8	8	8	8	8	8	8	8	Lock Washer	3/4"
30	207861	3	3	3	3	3	3	3	3	Plate	
31	205553	1	1	1	1	1	1	1	1	Hose Holder	
		1	1	1	1	1	1	1	1	Bolt w/Nut	1/2" x 4"
		1	1	1	1	1	1	1	1	Lock Washer	1/2"
		1	1	1	1	1	1	1	1	Flat Washer	1/2"
32	204048	1	1	1	1	1	1	1	1	Clevis (Optional)	
33	208195	1	1	1	1	1	1	1	1	Single or Double Draw Bar Clevis (Optional)	



Implements are shipped with extra disc on outside of each rear wing. The outside discs on front wings are tapered 2" and the outside two discs on rear wings are tapered 2" and 4".

FIG. 2 — DISC GANG ASSEMBLY

OPTIONAL SPRING BEARING CONNECTOR
Machinery No. 298063

Item No.	Part Number	FOR MODEL								Description	Size
		200 217	200 218	200 219	200 220	200 221	200 222	200 223	200 224		
1		4	8	8	8	8	12	12	12	Cotter	3/16"x2"
2		4	8	8	8	8	12	12	12	Hex Slotted Nut	1 1/8"
3		4	8	8	8	8	12	12	12	Flat Washer	1 1/8"
4	208155	12	20	20	20	16	24	24	24	Regreasable Bearing Holder	
		12	20	20	20	16	24	24	24	Alemite	1/8"
5	207585	12	20	20	20	16	24	24	24	Bearing Connector	
6	603013	24	40	40	40	32	48	48	48	U-Bolt	
		48	80	80	80	64	96	96	96	Nut	3/8"
		48	80	80	80	64	96	96	96	Lock Washer	3/8"
7	205003	28	38	42	46	40	50	54	58	18" x 5/32" Rd. Disc	
	205002	28	38	42	46	40	50	54	58	18" x 5/32" C.O. Disc	
	204004	28	36	40	44	40	48	52	56	20" x 11/64" Rd. Disc	
	204003	28	36	40	44	40	48	52	56	20" x 11/64" C.O. Disc	
	204010	28	36	40	44	40	48	52	56	22" x 11/64" Rd. Disc	
	205020	28	36	40	44	40	48	52	56	22" x 13/64" Rd. Disc	
	204005	28	36	40	44	40	48	52	56	22" x 11/64" C.O. Disc	
	205005	28	36	40	44	40	48	52	56	22" x 13/64" C.O. Disc	
Note: One Disc Blade Tapers on each front wing.											
Two Disc Blades taper on each rear wing (with exception of 18" disc blades).											
TAPERED DISC BLADES FOR WINGS WITH 16" DISC BLADES											
	208440	0	4	4	4	0	4	4	4	16" x 1/4" Rd. Disc	
	208439	0	4	4	4	0	4	4	4	16" x 1/4" C.O. Disc	
TAPERED DISC BLADES FOR WINGS WITH 20" DISC BLADES											
	205003	0	4	4	4	0	4	4	4	18" x 5/32" Rd. Disc	
	205002	0	4	4	4	0	4	4	4	18" x 5/32" C.O. Disc	
	208440	0	2	2	2	0	2	2	2	16" x 1/4" Rd. Disc	
	208439	0	2	2	2	0	2	2	2	16" x 1/4" C.O. Disc	
TAPERED DISC BLADES FOR WINGS WITH 22" DISC BLADES											
	204004	0	4	4	4	0	4	4	4	20" x 11/64" Rd. Disc	
	204003	0	4	4	4	0	4	4	4	20" x 11/64" C.O. Disc	
	205003	0	2	2	2	0	2	2	2	18" x 5/32" Rd. Disc	
	205002	0	2	2	2	0	2	2	2	18" x 5/32" C.O. Disc	
8	208831	4	8	8	8	8	12	12	12	Square Nut	1 1/8"
9	206513	4	8	8	8	8	12	12	12	Butt Plate	
10	207098	4	4	4	4	0	0	0	0	7-Disc Axle, 8" Spacing	52 15/16"
	207439	0	0	0	2	4	4	6	6	6-Disc Axle, 8" Spacing	44 15/16"
	207637	0	0	2	2	0	0	2	2	5-Disc Axle, 8" Spacing	36 15/16"
	207638	0	2	2	0	4	6	6	4	4-Disc Axle, 8" Spacing	28 15/16"
	207923	0	2	0	0	0	2	0	0	3-Disc Axle, 8" Spacing	20 15/16"
11	207339	12	14	18	22	16	18	22	26	Double End Spacer	8" Spacing
12	207342	12	20	20	30	16	24	24	24	Convex Spacer	8" Spacing
13		24	40	40	40	32	48	48	48	Bolt w/Nut	3/8"x2"
		24	40	40	40	32	48	48	48	Lock Washer	3/8"

Fig. 2 Continued

Item No.	Part Number	FOR MODEL								Description	Size
		200 217	200 218	200 219	200 220	200 221	200 222	200 223	200 224		
14	207359	12	20	20	20	16	24	24	24	Regreaseable Ball Bearing	
15	207341	12	20	20	20	16	24	24	24	Concave Spacer	8" Spacing
16	204704	4	8	8	8	8	12	12	12	End Washer	
17	207664	12	20	20	20	16	24	24	24	Spring Bearing Connector	
18	207810	12	20	20	20	16	24	24	24	Top Strap	
Optional 19	207808	12	20	20	20	16	24	24	24	U-Bolt	
		24	40	40	40	32	48	48	48	Nut	3/4"
20		24	40	40	40	32	48	48	48	Lock Washer	3/4"
		12	20	20	20	16	24	24	24	Bolt w/Nut	3/4" x 6 1/2"
21	208477	12	20	20	20	16	24	24	24	Lock Washer	3/4"
		12	20	20	20	16	24	24	24	Bearing Connector Support	
22		24	40	40	40	32	48	48	48	Bolt w/Nut, Grade 5	5/8" x 2 1/2"
		24	40	40	40	32	48	48	48	Lock Washer	5/8"

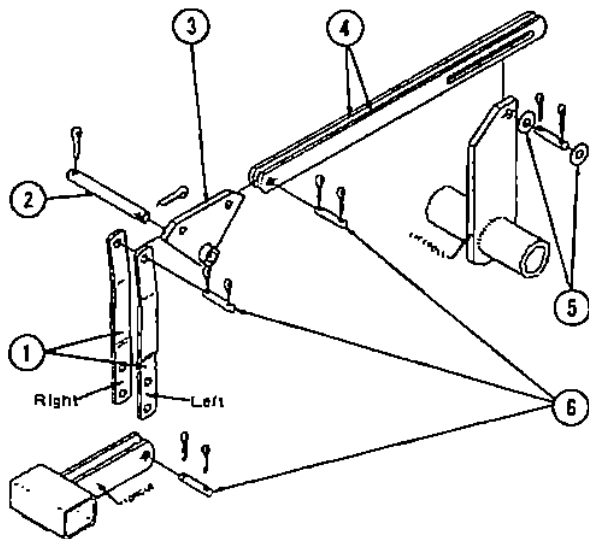


FIG. 3 — LEVELING ASSEMBLY

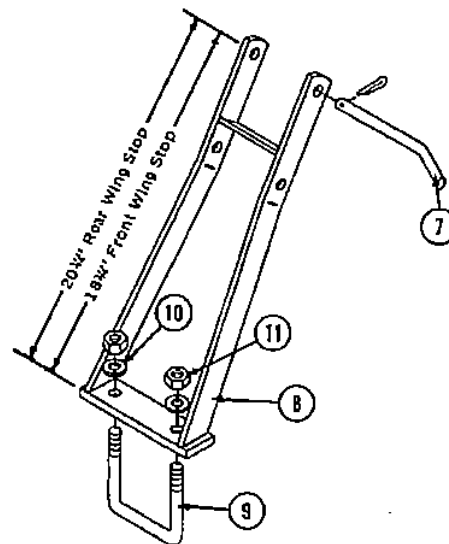


FIG. 4 — WING STOP ATTACHMENT

Item No.	Part Number	FOR MODEL								Description	Size
		200 217	200 218	200 219	200 220	200 221	200 222	200 223	200 224		
1	207657	1	1	1	1	1	1	1	1	Right Connector Bar	
	207809	1	1	1	1	1	1	1	1	Left Connector Bar	
2	207624	1	1	1	1	1	1	1	1	Pin	
		2	2	2	2	2	2	2	2	Cotter	3/8" x 2"
3	207654	1	1	1	1	1	1	1	1	Hinge Assembly	
4	207658	2	2	2	2	2	2	2	2	Pull Arms	
5		2	2	2	2	2	2	2	2	Flat Washer	3/4"
6	204215	4	4	4	4	4	4	4	4	Pin	
		8	8	8	8	8	8	8	8	Cotter	5/16" x 1 1/2"
7	208597	0	4	4	4	0	4	4	4	Wing Latch Pin	
		0	4	4	4	0	4	4	4	Special Cotter	
8	208594	0	2	2	2	0	2	2	2	Front Wing Stop	18 3/4"
		0	2	2	2	0	2	2	2	Rear Wing Stop	20 3/4"
9	603013	0	4	4	4	0	4	4	4	U-Bolt	
10		0	8	8	8	0	8	8	8	Lock Washer	3/8"
		0	8	8	8	0	8	8	8	Nut	3/8"

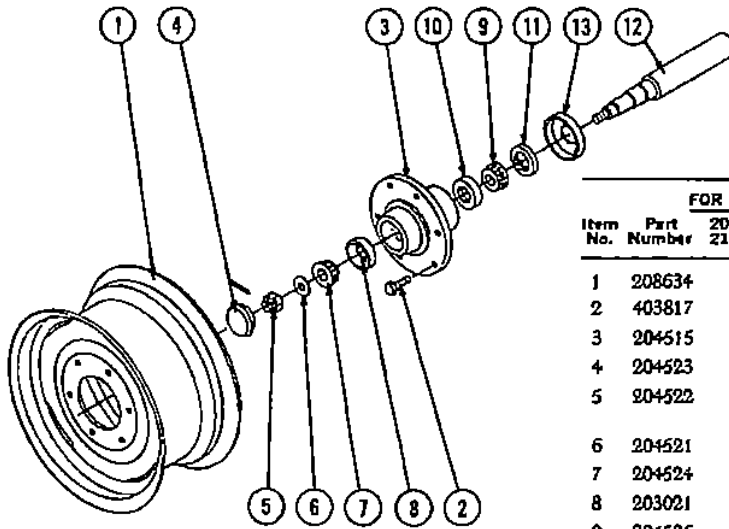


FIG. 5 — WHEEL HUB ASSEMBLY
SEE ITEM 14

FOR ALL MODELS					
Item No.	Part Number	200 217	thru 200 224	Description	Size
1	208634	4		15" x 6" Wheel for Rubber	
2	403817	24		Lug Bolt	
3	204515	4		Wheel Hub w/Two Cups	
4	204523	4		Hub Cap	
5	204522	4		Bearing Adjustment Nut	
		4		Cotter	5/32"x1 1/4"
6	204521	4		Special Flat Washer	7/8"
7	204524	4		Bearing Cone	
8	203021	4		Bearing Cup	
9	204526	4		Bearing Cone	
10	204525	4		Bearing Cup	
11	204527	4		Grease Seal	
12	206443	2		Stub Axle	
13	204520	4		Dust Collar	
14	207889	4		Wheel Hub (Complete) Includes Items 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 & 13.	

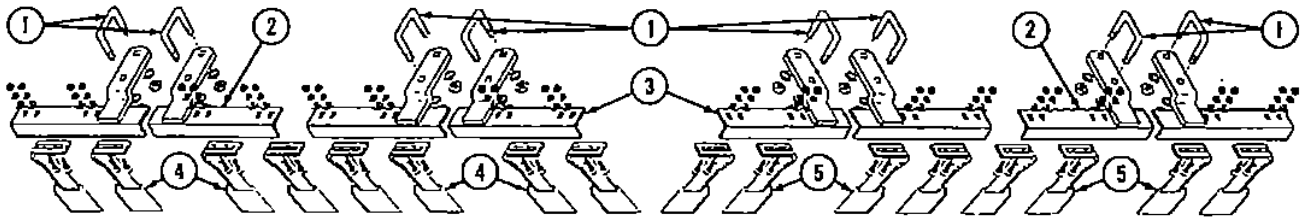


FIG. 6 — SCRAPER BARS & SCRAPERS

Item No.	Part Number	FOR MODEL								Description	Size
		200 217	200 218	200 219	200 220	200 221	200 222	200 223	200 224		
1	603013	8	16	16	16	8	16	16	16	U-Bolt	
		16	32	32	32	16	32	32	32	Nut	5/8"
		16	32	32	32	16	32	32	32	Lock Washer	3/8"
2	207924	0	1	0	0	0	1	0	0	3-Disc Right Front Scraper Bar	8" Spacing
	207927	0	1	0	0	0	1	0	0	3-Disc Left Front Scraper Bar	8" Spacing
	207590	0	2	0	0	0	2	0	0	4-Disc Rear Scraper Bar	8" Spacing
	208644	0	0	1	0	0	0	1	0	4-Disc Right Front Scraper Bar	8" Spacing
	208645	0	0	1	0	0	0	1	0	4-Disc Left Front Scraper Bar	8" Spacing
	207592	0	0	2	2	0	0	2	2	5-Disc Front and Rear Scraper Bar	8" Spacing
	208292	0	0	0	2	0	0	0	2	6-Disc Rear Scraper Bar	8" Spacing
3	207745	4	4	4	4	0	0	0	0	7-Disc Front and Rear Scraper Bar	8" Spacing
	207587	0	0	0	0	4	4	4	4	10-Disc Front and Rear Scraper Bar	8" Spacing
4	207603	14	21	23	25	20	27	29	31	Left Scraper	
		28	42	46	50	40	54	58	62	Carriage Bolt w/Nut	1/2" x 1 1/2"
		28	42	46	50	40	54	58	62	Lock Washer	1/2"
		28	42	46	50	40	54	58	62	Flat Washer	1/2"
5	207600	14	21	23	25	20	27	29	31	Right Scraper	
		28	42	46	50	40	54	58	62	Carriage Bolt w/Nut	1/2" x 1 1/2"
		28	42	46	50	40	54	58	62	Lock Washer	1/2"
		28	42	46	50	40	54	58	62	Flat Washer	1/2"

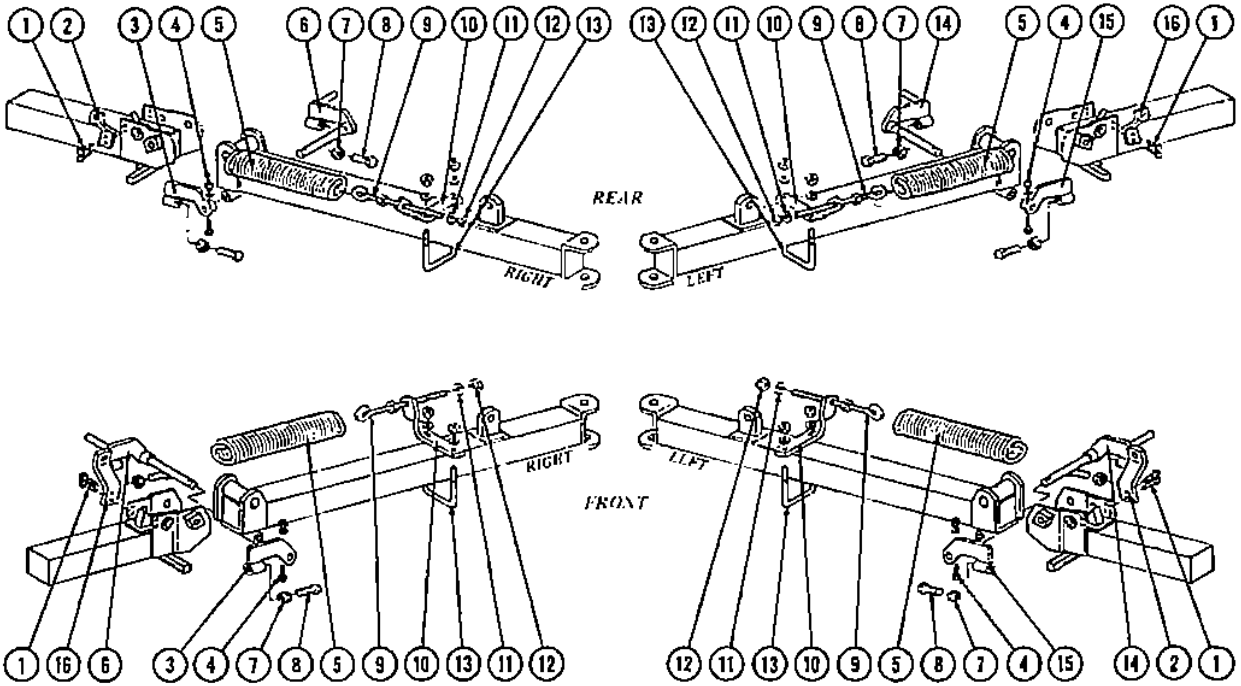


FIG. 7 — SPRING FOLDING ATTACHMENT
MACHINERY NO. 299060

Item No.	Part Number	FOR MODEL								Description	Size
		200 217	200 218	200 219	200 220	200 221	200 222	200 223	200 224		
1		0	8	8	8	0	8	8	8	Bolt w/Nut, Grade 5	½" x 1 ¾"
		0	8	8	8	0	8	8	8	Lock Washer	½"
2	208582	0	2	2	2	0	2	2	2	L.F. & R.R. Spring Brkt.	
3	208635	0	2	2	2	0	2	2	2	Right Wing Lock	
4		0	4	4	4	0	4	4	4	Bolt w/Nut, H.T.	¾" x 2"
		0	4	4	4	0	4	4	4	Lock Washer	¾"
5	207643	0	4	4	4	0	4	4	4	Extension Spring	
6	208636	0	2	2	2	0	2	2	2	Right Wing Lock with Handle	
7		0	8	8	8	0	8	8	8	Jam Nut	¾"
8		0	8	8	8	0	8	8	8	Bolt, H.T.	¾" x 2"
9	206872	0	4	4	4	0	4	4	4	Eye Bolt	
10	208377	0	4	4	4	0	4	4	4	Eye Bolt Connector	
11		0	4	4	4	0	4	4	4	Flat Washer	¾"
12		0	8	8	8	0	8	8	8	Nut	¾"
13	603013	0	4	4	4	0	4	4	4	U-Bolt	
		0	8	8	8	0	8	8	8	Nut	¾"
		0	8	8	8	0	8	8	8	Lock Washer	¾"
14	208580	0	2	2	2	0	2	2	2	Left Wing Lock with Handle	
15	208576	0	2	2	2	0	2	2	2	Left Wing Lock	
16	208581	0	2	2	2	0	2	2	2	R.F. & L.R. Spring Brkt.	

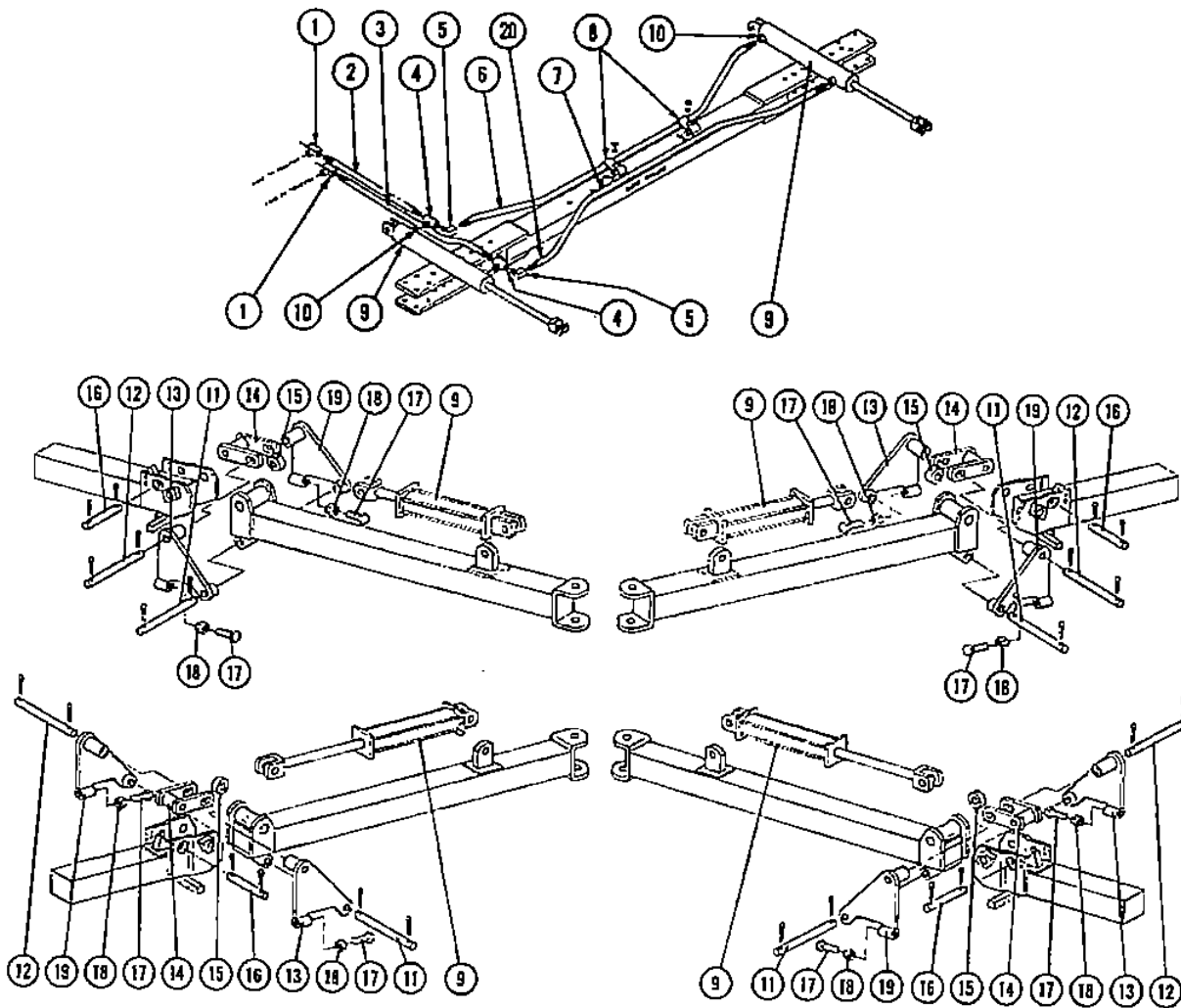


FIG. 8 — HYDRAULIC FOLDING ATTACHMENT
MACHINERY NO. 299064

Item No.	Part Number	FOR MODEL								Description	Size
		200 217	200 218	200 219	200 220	200 221	200 222	200 223	200 224		
1	207983	0	0	0	0	0	2	2	2	Hydraulic Tee (All Female)	1/2"
2	208385	0	0	0	0	0	2	2	2	Hydraulic Hose	40"
3	208386	0	0	0	0	0	2	2	2	Hydraulic Hose	59"
4	207981	0	0	0	0	0	4	4	4	Hydraulic Tee	1/2"
5	207982	0	0	0	0	0	4	4	4	Hydraulic 90° Street El	1/2"
6	208387	0	0	0	0	0	2	2	2	Hydraulic Hose	92"
7		0	0	0	0	0	4	4	4	Carriage Bolt w/Nut	1/2" x 1 1/4"
		0	0	0	0	0	4	4	4	Lock Washer	1/2"
8	208259	0	0	0	0	0	4	4	4	Hose Clamp	
9	208346	0	0	0	0	0	4	4	4	Hydraulic Cylinder	2 1/2" x 16"
10	208569	0	0	0	0	0	4	4	4	Flow Restrictor (Not Shown)	
11	208575	0	0	0	0	0	4	4	4	Hinge Pin	1" x 11"
		0	0	0	0	0	8	8	8	Cotter	3/8" x 2"
12	208574	0	0	0	0	0	4	4	4	Hydraulic Cylinder Pin	1 1/8" x 11"
		0	0	0	0	0	8	8	8	Cotter	3/8" x 2"
13	208571	0	0	0	0	0	4	4	4	Left Hydraulic Wing Lock	
14	208572	0	0	0	0	0	4	4	4	Lift Arm	
15	208528	0	0	0	0	0	4	4	4	Roller	
16	208573	0	0	0	0	0	4	4	4	Pin	1" x 5 5/8"
		0	0	0	0	0	8	8	8	Cotter	3/8" x 2"
		0	0	0	0	0	8	8	8	Bolt, Grade 5	7/8" x 2"
17		0	0	0	0	0	8	8	8	Jam Nut	7/8"
18		0	0	0	0	0	4	4	4	Right Hydraulic Wing Lock	
19	208294	0	0	0	0	0	4	4	4	Right Hydraulic Wing Lock	
20	208630	0	0	0	0	0	2	2	2	Hydraulic Hose	81 1/2"

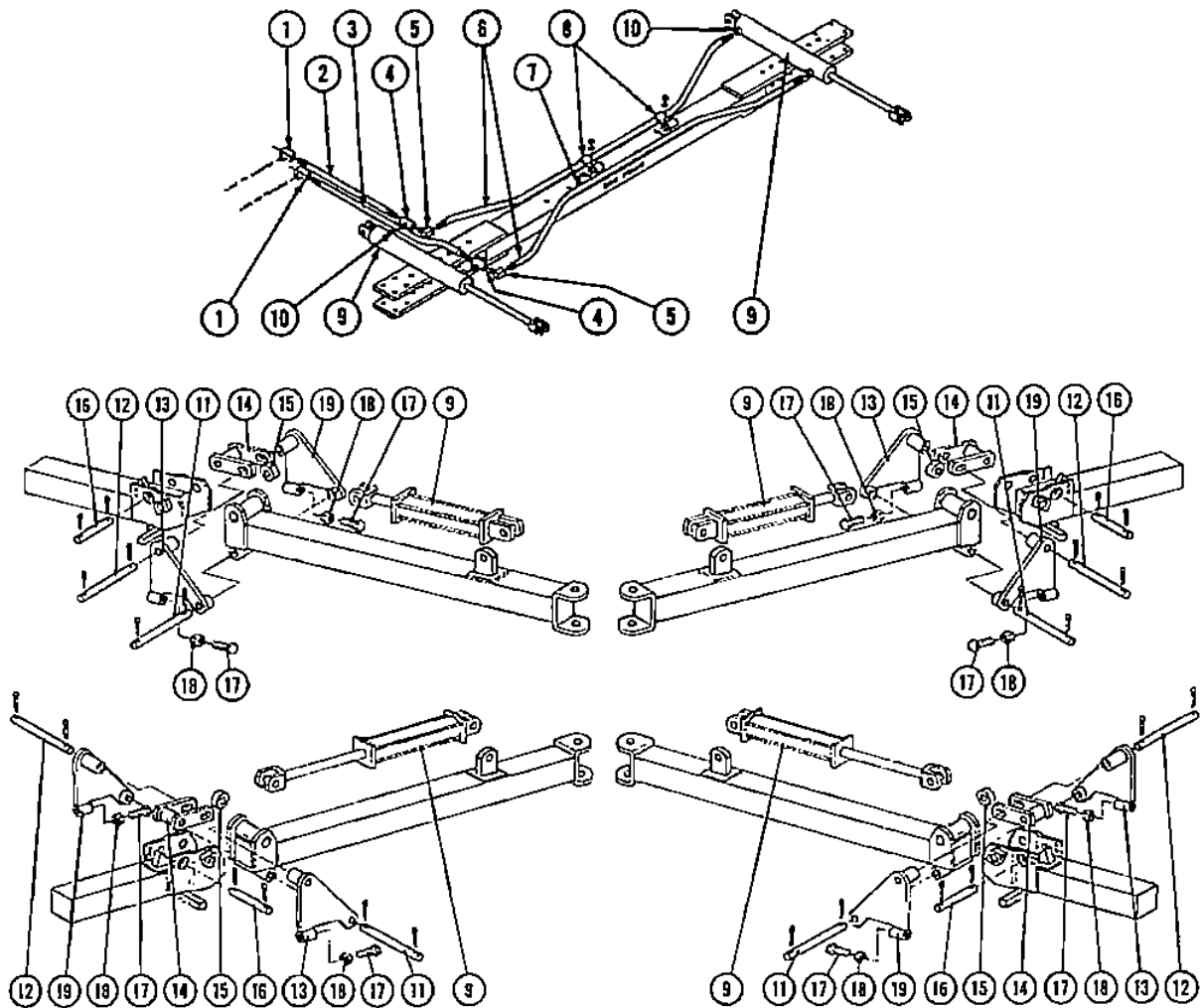


FIG. 9 — HYDRAULIC FOLDING ATTACHMENT
MACHINERY NO. 299059

Item No.	Part Number	FOR MODEL								Description	Size
		200 217	200 218	200 219	200 220	200 221	200 222	200 223	200 224		
1	207983	0	2	2	2	0	0	0	0	Hydraulic Tee (All Female)	1/2"
2	208600	0	2	2	2	0	0	0	0	Hydraulic Hose	17"
3	208201	0	2	2	2	0	0	0	0	Hydraulic Hose	35"
4	207981	0	+	+	+	0	0	0	0	Hydraulic Tee	1/2"
5	207982	0	+	+	+	0	0	0	0	Hydraulic 90° Street Ell	1/2"
6	208598	0	+	+	+	0	0	0	0	Hydraulic Hose	3"
7		0	+	+	+	0	0	0	0	Carriage Bolt w/Nut	1/2" x 1 1/4"
8	208259	0	+	+	+	0	0	0	0	Lock Washer	1/2"
9	208546	0	+	+	+	0	0	0	0	Hydraulic Cylinder	2 1/2" x 16"
10	208569	0	+	+	+	0	0	0	0	Flow Restrictor (Not Shown)	
11	208575	0	+	+	+	0	0	0	0	Hinge Pin	1" x 11"
12	208574	0	8	8	8	0	0	0	0	Cotter	3/8" x 2"
13	208571	0	+	+	+	0	0	0	0	Hydraulic Cylinder Pin	1 1/8" x 11"
14	208572	0	+	+	+	0	0	0	0	Cotter	3/8" x 2"
15	208528	0	+	+	+	0	0	0	0	Left Hydraulic Wing Lock	
16	208573	0	+	+	+	0	0	0	0	Lift Arm	
17		0	5	8	8	0	0	0	0	Roller	
18		0	5	8	8	0	0	0	0	Pin	1" x 5 3/8"
19	208291	0	+	+	+	0	0	0	0	Cotter	3/8" x 2"
		0	8	8	8	0	0	0	0	Bolt, Grade 5	7/8" x 2"
		0	8	8	8	0	0	0	0	Jam Nut	7/8"
		0	+	+	+	0	0	0	0	Right Hydraulic Wing Lock	

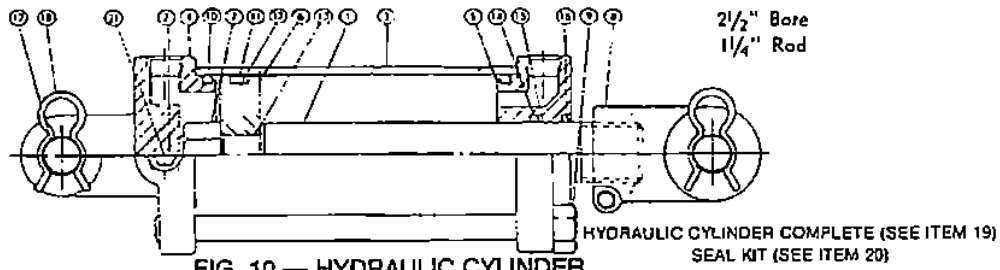


FIG. 10 — HYDRAULIC CYLINDER

Item No.	Prince Part Number	Hydra. Cyl. Part Number	FOR MODEL								Description	Size
			200 217	200 218	200 219	200 220	200 221	200 222	200 223	200 224		
1	208601	208902	0	4	4	4	0	4	4	4	Piston Rod	
2	208602	208903	0	4	4	4	0	4	4	4	Pipe Plug	
3	208603	208904	0	4	4	4	0	4	4	4	Tube	
4	208604	208905	0	4	4	4	0	4	4	4	Butt	
5	208605	208906	0	4	4	4	0	4	4	4	Gland	
6	208606	208907	0	4	4	4	0	4	4	4	Piston	
7	208607	208908	0	4	4	4	0	4	4	4	Lock Nut	3/4"
8	208493	208909	0	4	4	4	0	4	4	4	Clevis Assembly	
9	208608	208910	0	16	16	16	0	16	16	16	Tie Rod	1/2"
10	208609	208609	0	8	8	8	0	8	8	8	O-Ring	
11	208610	208610	0	4	4	4	0	4	4	4	O-Ring	
12	208611	208611	0	8	8	8	0	8	8	8	BU-Washer	
13	208612	208612	0	4	4	4	0	4	4	4	O-Ring	
14	208613	208613	0	4	4	4	0	4	4	4	O-Ring	
15	208614	208614	0	4	4	4	0	4	4	4	BU-Washer	
16	208615	208615	0	4	4	4	0	4	4	4	Wiper	
17	208616	208616	0	4	4	4	0	4	4	4	Clevis Pin	
18	208617	208617	0	8	8	8	0	8	8	8	Hairpin Clip	
19	208546	208920	0	4	4	4	0	4	4	4	2 1/2"x16" Hydraulic Cyl. Complete	
20	208618	208618	0	4	4	4	0	4	4	4	Seal Kit (Includes Items 10 thru 16).	
21	208569	208569	0	4	4	4	0	4	4	4	Flow Restrictor (Not Shown)	

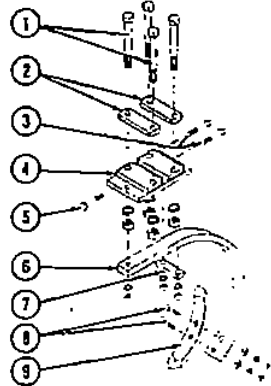


FIG. 11 — BALK BREAKER ATTACHMENT — MACH. NO. 299053

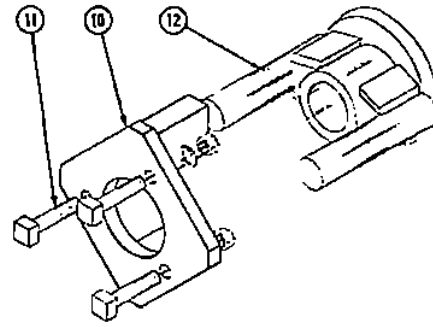


FIG. 12 — GANG COUPLER MACH. NO. 200092

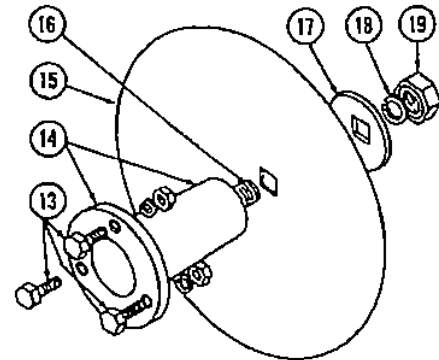


FIG. 13 — FURROW FILLER ATTACHMENT — MACH. NO. 200080

Item No.	Part Number	FOR MODEL								Description	Size
		200 217	200 218	200 219	200 220	200 221	200 222	200 223	200 224		
1	208839	4	4	4	4	4	4	4	4	Bolt w/Nut	3/4"x7"
2	603895	2	2	2	2	2	2	2	2	Lock Washer	3/4"
3		2	2	2	2	2	2	2	2	Strap	
4	207785	1	1	1	1	1	1	1	1	Bolt w/Nut	3/4"x3"
5		1	1	1	1	1	1	1	1	Lock Washer	3/8"
6	206726	1	1	1	1	1	1	1	1	Shank Connector Assy.	1/2"x2 1/2"
7	603710	1	1	1	1	1	1	1	1	Bolt w/Nut	3/8"
8		2	2	2	2	2	2	2	2	Lock Washer	7/8"
9	603014	1	1	1	1	1	1	1	1	22" Shank	
10	207315	4	8	8	8	4	8	8	8	Support Strap	
11		12	24	24	24	12	24	24	24	Flow Bolt w/Nut, H.T.	3/4"x2 1/2"
12	207307	4	8	8	8	4	8	8	8	Lock Washer	3/4"
13		6	0	0	0	6	0	0	0	Flat Washer	7/8"
14	206679	6	0	0	0	6	0	0	0	Chisel	
15	204000	2	0	0	0	2	0	0	0	Butt Plate Drive	
16	204001	2	0	0	0	2	0	0	0	Bolt w/Nut	1/2"x2 1/2"
17	203986	2	0	0	0	2	0	0	0	Lock Washer	1/2"
18		2	0	0	0	2	0	0	0	End Washer Drive	
19		2	0	0	0	2	0	0	0	Bolt w/Nut	1/2"x1 1/2"
		2	0	0	0	2	0	0	0	Lock Washer	1/2"
		2	0	0	0	2	0	0	0	Nut	3/8"

Bundle Number Tags

Bundles for Disc Gang Assemblies may vary with the type of bearing connector; use of gang connectors; size of disc blade and type of bearing. Two bundle number tags are attached to disc gang assemblies to fully describe the bundle.



Type of Bearing Connector; or Use of Gang Connectors

Code No.	Description
1	Standard Bearing Connectors
2	Spring Bearing Connectors
3	Standard Bearing Connectors with Gang Connectors
4	Spring Bearing Connectors with Gang Connectors

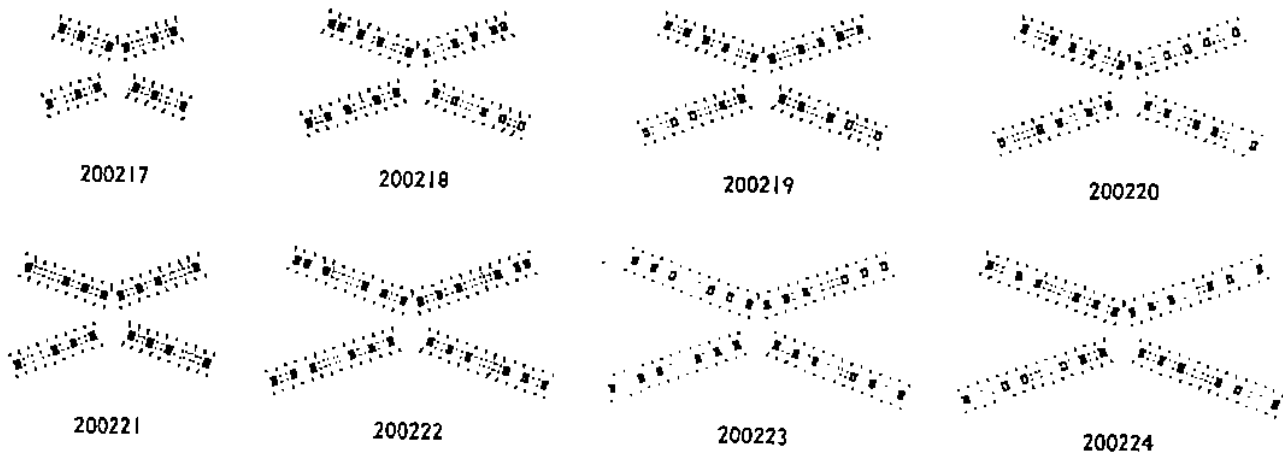
Disc Blade

Code No.	Part No.	Diameter	Axle or Housing Size	Cut-Out or Round
06	205002	18"	1 1/8" Sq.	C.O.
07	205003	18"	1 1/8" Sq.	Rd.
10	204003	20"	1 1/8" Sq.	C.O.
11	204004	20"	1 1/8" Sq.	Rd.
14	204005	22"	1 1/8" Sq.	C.O.
15	204010	22"	1 1/8" Sq.	Rd.
16	205005	22"	1 1/8" Sq.	C.O.
17	205020	22"	1 1/8" Sq.	Rd.

Type of Bearing

Code No.	Description
1	Gray Iron
2	7/8" Sealed Bearing
3	1 1/8" Sealed Bearing Flange Mount
4	1 1/8" Sealed Bearing Pillow Block Mount
5	1 1/8" Regreasable Bearing Flange Mount
6	1 1/8" Regreasable Bearing Pillow Block Mount
7	1 1/8" Regreasable Bearing
8	1 1/2" Special Regreasable Bearing

DIAGRAM SHOWING RESPECTIVE POSITIONS OF AXLES AND BEARINGS



SETTING-UP INSTRUCTIONS

Wing-Type Wheel Mounted Tandem Harrow

General

Right and left are determined by standing at the rear of the harrow. All items designated as right and left fit into their respective positions on the front section. When used on the rear section, the procedure is reversed and items designated as right will fit onto the left side and vice versa.

These harrows are shipped "Knocked Down" and are bundled into the bundles listed below:

Bundle Number	FOR MODEL								Description
	200 217	200 218	200 219	200 220	200 221	200 222	200 223	200 224	
201100	1	1	1	1	1	1	1	1	Tongue Bundle
201101	1	1	1	1	0	0	0	0	Front & Rear Cross Frame
201128	0	0	0	0	1	1	1	1	Front & Rear Cross Frame
201102	1	1	1	1	0	0	0	0	Center Frame
201129	0	0	0	0	1	1	1	1	Center Frame
201103	1	1	1	1	0	0	0	0	Side Frame
201130	0	0	0	0	1	1	1	1	Side Frame
201104	1	1	1	1	0	0	0	0	Wheel Axle Bundle w/Hubs
201131	0	0	0	0	1	1	1	1	Wheel Axle Bundle w/Hubs
201449	+	+	+	+	+	+	+	+	15" x 6" Rims
201358	1	1	1	1	0	0	0	0	Right Front 7-Disc Gang 8"
201359	1	1	1	1	0	0	0	0	Left Front 7-Disc Gang 8"
201360	1	1	1	1	0	0	0	0	Right Rear 7-Disc Gang 8"
201361	1	1	1	1	0	0	0	0	Left Rear 7-Disc Gang 8"
201362	0	0	0	0	1	1	1	1	Right Front 10-Disc Gang 8"
201363	0	0	0	0	1	1	1	1	Left Front 10-Disc Gang 8"
201364	0	0	0	0	1	1	1	1	Right Rear 10-Disc Gang 8"
201365	0	0	0	0	1	1	1	1	Left Rear 10-Disc Gang 8"
201366	0	1	0	0	0	1	0	0	Right Front 3-Disc Wing 8"
201367	0	1	0	0	0	1	0	0	Left Front 3-Disc Wing 8"
201368	0	1	0	0	0	1	0	0	Right Rear 4-Disc Wing 8"
201369	0	1	0	0	0	1	0	0	Left Rear 4-Disc Wing 8"
201374	0	0	1	0	0	0	1	0	Right Front 4-Disc Wing 8"
201375	0	0	1	0	0	0	1	0	Left Front 4-Disc Wing 8"
201370	0	0	1	0	0	0	1	0	Right Rear 5-Disc Wing 8"
201371	0	0	1	0	0	0	1	0	Left Rear 5-Disc Wing 8"
201376	0	0	0	1	0	0	0	1	Right Front 5-Disc Wing 8"
201377	0	0	0	1	0	0	0	1	Left Front 5-Disc Wing 8"
201346	0	0	0	1	0	0	0	1	Right Rear 6-Disc Wing 8"
201347	0	0	0	1	0	0	0	1	Left Rear 6-Disc Wing 8"
201391	0	1	1	1	0	1	1	1	Manual Lock
201121	0	1	1	1	0	1	1	1	Wing Spring Bundle
201398	0	1	1	1	0	1	1	1	Wing Spring Holder Bundle
201390	0	4	4	4	0	4	4	4	Hydraulic Lock
201383	0	4	4	4	0	4	4	4	2½" x 16" Hydraulic Cylinder
201389	0	1	1	1	0	0	0	0	Hydraulic Hose Bundle
201228	0	0	0	0	0	1	1	1	Hydraulic Hose Bundle
201474	0	1	1	1	0	1	1	1	Wing Stop Bundle
TOTAL	13	21/27	21/27	21/27	13	21/27	21/27	21/27	With Spring Folding Wings With Hydraulic Folding Wings

Extra Equipment

If implements are ordered with Extra Equipment these bundles will be shipped as shown below.

- Machinery No. 200092 — Gang Coupler, used to connect split gangs together. one connector required for each set of gangs connected. When shipped assembled on implements, these are included in the disc gang bundle.
- Machinery No. 299053 — Balk Breaker Attachment.
- Machinery No. 299059 — Converts Spring Assisted Folding Wing to Hydraulic Folding Wings for Model 200217-200220.
- Machinery No. 299060 — Converts Hydraulic Folding Wings to Spring Folding Wings.
- Machinery No. 299064 — Converts Spring Assisted Fold Wing to Hydraulic Folding Wing for Model 200222-200224.
- Machinery No. 299063 — Converts Standard Bearing Connectors to Spring Bearing Connectors.
- Machinery No. 200080 — Furrow Filler Attachment, less Discs.
- (For Models 200217 & 200221 only) Furrow Filler Attachment w/16" Rd. Discs.
- Furrow Filler Attachment w/18" Rd. Discs.

Bundle Number	200092	299053	299059	299060	299064	299063	200080	Description
201051	1	0	0	0	0	0	0	Gang Coupler
201127	0	1	0	0	0	0	0	Balk Breaker Attachment
201389	0	0	1	0	0	0	0	Hydraulic Hose Bld.
201383	0	0	4	0	4	0	0	Hydraulic Cylinder Bld., 2½"x16"
201390	0	0	4	0	4	0	0	Hydraulic Lock Bld.
201398	0	0	0	1	0	0	0	Spring Holder Bld.
201121	0	0	0	1	0	0	0	Spring Bundle
201391	0	0	0	1	0	0	0	Manual Lock Bundle
201228	0	0	0	0	1	0	0	Hydraulic Hose Bld.
201394	0	0	0	0	0	1	0	Spring Bearing Conn.
201048	0	0	0	0	0	0	1	Furrow Filler Attachment, Less Disc
201049	0	0	0	0	0	0	1	Furrow Filler Attachment, w/16" Rd. Disc
201050	0	0	0	0	0	0	1	Furrow Filler Attachment, w/18" Rd. Disc
TOTAL	1	1	9	1	9	1	1	

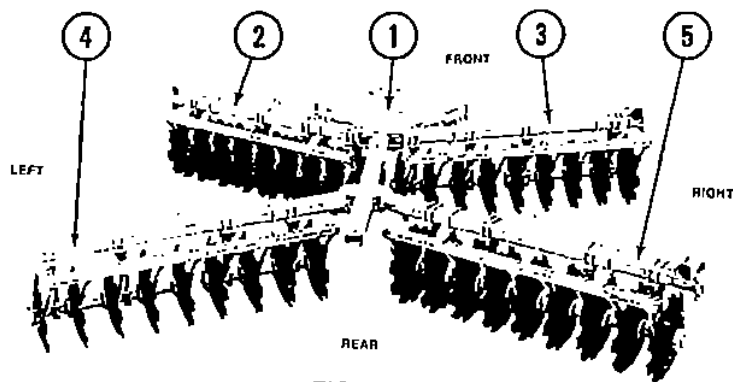


FIG. 14

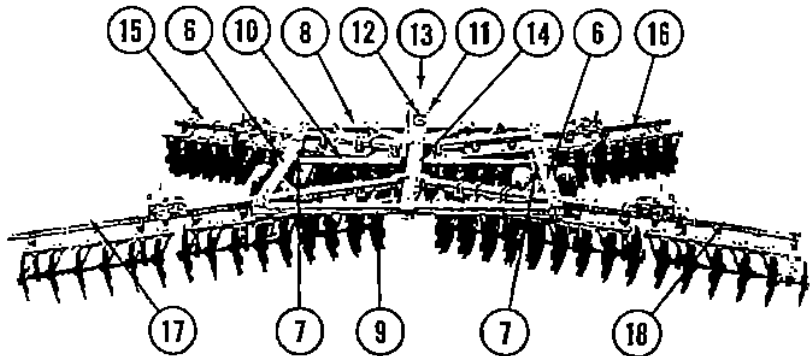


FIG. 15

Basic Harrow Assembly

1. Remove all bundling wire and proceed as follows; Note: Right and Left are determined by standing at the rear and looking at the harrow.
2. Position the *Center Frame Bundle* (Item 1, Fig. 14) in the center of the work area. Block the center frame bundle up approximately 3 feet off the ground level.
3. Position the *Left and Right Front Gang Bundles* (Items 2 and 3) as shown in Fig. 14. Block up the bundles so they will be in an upright position. Remove the gang bolt ($\frac{3}{4}$ " x 7") and bushings. Position the spacer bushing into the center frame bracket and attach the ends of each front gang bundle onto the bracket provided on the center frame bundle (Item 1).
4. Set the *Right and Left Rear Gang Bundles* (Items 4 and 5, Fig. 14) in position as described in Step 3 and secure to the center frame (Item 1) as shown in Figure 14.
5. Remove the bolts from both ends of the *Side Frame Bundle* (Item 6, Fig. 15). Spread the front and rear gang frame bundles (Items 2, 3, 4 and 5) by pushing the front gang frames forward and the rear gang frames towards the rear. Position the side frame members so that the wheel axle bearing (Item 7) is to the front and downward. Slide the open end of the side frame member over the front gang tube. Then slide the other end of the side frame over the rear gang tube. Close the front and rear bundle by pushing the front gang bundle backward and the rear gang bundle forward. Repeat this procedure on the other side.
6. Remove the four $\frac{3}{4}$ " x 6" and the two $\frac{1}{2}$ " x $5\frac{1}{2}$ " bolts from the front of the center frame bundle (Item 1), insert the *Front Cross Frame Member* (Item 8) with the holes in the center of the front cross frame member to the front. Align all holes in the front cross frame with the holes in the center frame and side frame. Bolt into position but do not tighten the bolts.
7. Remove the one $\frac{1}{4}$ " x 6" bolt from the *Rear Cross Frame* (Item 9), attach the rear cross frame to the rear of the center frame and to the side frames. Bolt into position but do not tighten the bolts.
8. Position the *Wheel Axle Bundle* (Item 10) under the side frames and the center frame with the wheel axle for rubber tires to the rear of the harrow and the hydraulic cylinder bracket upward. Remove the wheel axle bearing (Item 7) from the center frame. Raise the wheel axle (Item 10) and position three wheel axle bearings with the alemites to the rear between the wheel axle (Item 10) and the center frame (Item 1); side frame (Item 6). Secure the wheel axle with the wheel axle straps and the bolts previously removed.
9. Remove the two pins from the front bottom of the center frame bundle (Item 1). Position the *Tongue Bundle* (Item 11) with the spring rod bracket upward between the tongue connector brackets on the front of the center frame and secure with the two pins previously removed. Connect the spring rod (Item 12) to the tongue (Item 11) with the pin found in the tongue end of the spring rod. Connect the other end of the spring rod to the center frame with the two $\frac{1}{2}$ " shoulder bolts found at the connecting point. Connect the hose holder (Item 13) to the tongue with the bolt provided.
10. Remove the pins from the depth adjustment bar (Item 14) place the rear of the depth adjustment bar through the opening provided at the rear of the center frame. Connect the front of the depth adjustment bar to the bracket provided on the wheel axle (Item 10) and secure with the pin and cotter provided. Replace the depth adjustment cuff, pin and cotter on the depth adjustment bar behind the depth bar bracket.
11. Position the front and rear gang bundles (Items 2, 3, 4 and 5) at the desired angle. Note: The left front and right front gang must be at the same angle. Left rear and right rear gang must have the same angle. Put one $\frac{1}{4}$ " x $6\frac{1}{2}$ " bolt in front and one $\frac{1}{4}$ " x $6\frac{1}{2}$ " bolt behind each gang frame holding the disc gang bundle in the desired angle.
12. Adjust all scrapers, mount wheels, and tighten all bolts.

Wing Assembly

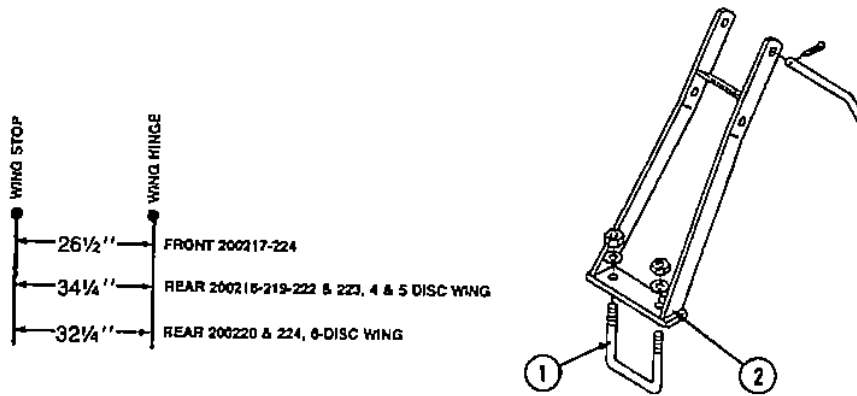


FIG. 16 — WING STOP

Note: The rear wing gangs have one more disc 4" smaller than on the front wing gang.

1. Remove the wing connector pin and the bushing from the wing gang frame. Insert the bushing in the main gang frame of the basic unit. (Fig. 1, Item 16). Place the wing Bundles in their respective position and connect with the pin previously removed.

2. Remove the U-bolt, Item 1, from the wing stop (Item 2, Fig. 16). Position the wing stop in its proved position (see above figure) and secure with the U-bolt previously removed.

Note: Wing stops are made different for front and rear.
Short wing stops work on front gangs and
Long wing stops work on rear gangs.

Attachments

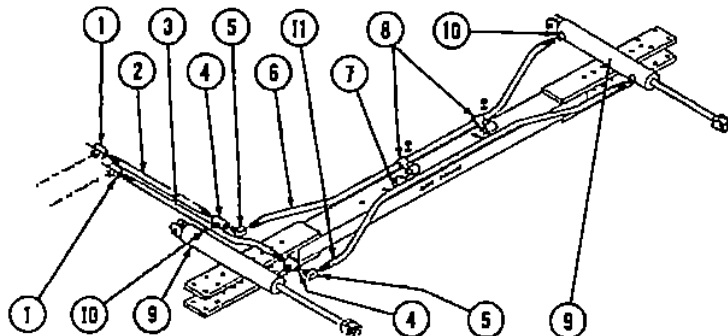


FIG. 17 — HOSE ASSEMBLY

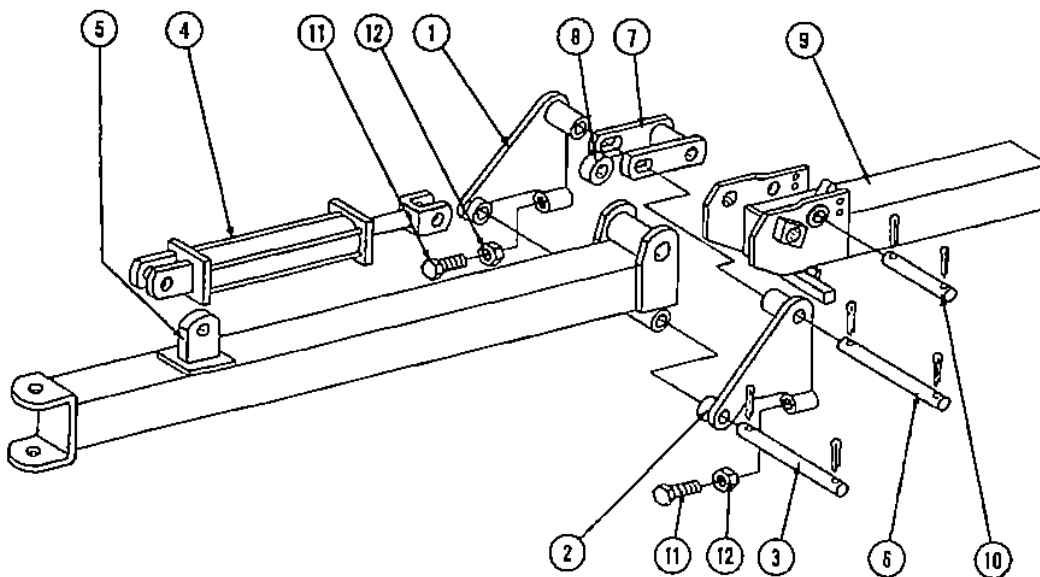


FIG. 18 — HYDRAULIC FOLDING ASSEMBLY

Hydraulic Folding Attachment

For Models 200218-200220
Machinery No. 299059

1. Connect the right and left hydraulic wing lock (Item 1 and 2, Fig. 18) to the gang frame by using the hinge pin (Item 3, Fig. 18). Insert the two $\frac{3}{8}$ "x2" cotter in the hinge pin to secure the right and left hydraulic wing locks.
2. Adjust the cylinder cuff to the length of $31\frac{1}{2}$ " between the pin centers. Connect the butt end of the hydraulic cylinder (Item 4, Fig. 18) to the hydraulic cylinder bracket (Item 5, Fig. 18) on the gang frame.

For cylinders mounted on front gangs: turn the cylinder so that the hydraulic hose ports are toward the rear of the harrow.

For cylinders mounted on the rear gangs: turn the cylinder so that the hydraulic hose ports are toward the front of the harrow.

Fasten the hydraulic cylinders to the brackets with the pins provided.

3. Insert the hydraulic cylinder pin (Item 6) through the hole in the left hydraulic wing lock (Item 1). Position the lift arm (Item 7) so that the pin can slide through the slotted hole. Push the pin through one side of the hydraulic cylinder cuff. Place the roller (Item 8) between the cuff. Push the pin through the roller and the other side of the hydraulic cylinder cuff. Place the lift arm (Item 7) in the position so that the pin can be pushed through the slotted hole and into the hole in the right hydraulic wing lock (Item 2). Key the pin with the two cotters ($\frac{3}{8}$ "x2").
4. Connect the lift arm (Item 7) to the wing gang frame (Item 9), by inserting the pin (Item 10) through the wing frame and the lift arm. Secure with the two cotters ($\frac{3}{8}$ "x2").
5. Items 11 and 12 will already be assembled. Screw the adjustment bolts into the hydraulic wing lock as far as they will go.
6. Connect the flow restrictor (Item 10) to the butt end of the hydraulic cylinder as shown by the arrows in Fig. 17. Connect the hydraulic tees (Item 4) to the four ports in the front hydraulic cylinders. Connect the two hydraulic hoses (17" long) (Item 2) to the inside hydraulic tee of the cylinder. Connect the two hydraulic hoses (35" long) (Item 3) to the outside tees of the hydraulic cylinder. Connect the two (17" long) hoses together with the all female hydraulic tee (Item 1). Connect the two (35" long) hydraulic hoses together with the all female hydraulic tee. (Item 1). Connect the flow restrictor (Item 10) to the port closest to the butt end of the rear hydraulic cylinders. Connect the 90° hydraulic street ell (Item 5) to the hydraulic tee on the front hydraulic cylinders. Connect the (83" long) hydraulic hose (Item 6) to the butt end of the front hydraulic cylinder. Connect the other end of the 83" long hydraulic hose to the butt end of the rear hydraulic cylinder. Connect the (73½" long) hydraulic hose (Item 11) to the rod end of the hydraulic cylinder. Connect the other end of the hose to the rod end of the rear hydraulic cylinder. Connect the hydraulic hose (Items 6 and 11) to the side frame with equal slack between front and rear with the hose clamps (Item 8). Tighten clamp down to secure hose.
7. Extend the hydraulic cylinder rod to the full length. Adjust the adjustment bolts (Item 11, Fig. 18) so that they are snug on the wing lock bar. Lock the adjustment bolts into position with the jam nuts (Item 12, Fig. 18).

Hydraulic Folding Attachment

For Models 200222-200224
Machinery No. 299064

1. Connect the right and left hydraulic wing lock (Item 1 and 2, Fig. 18) to the gang frame by using the hinge pin (Item 3, Fig. 18). Insert the two $\frac{3}{8}$ "x2" cotter in the hinge pin to secure the right and left hydraulic wing locks.
2. Adjust the cylinder cuff to the length of $31\frac{1}{2}$ " between the pin centers. Connect the butt end of the hydraulic cylinder (Item 4, Fig. 18) to the hydraulic cylinder bracket (Item 5, Fig. 18) on the gang frame.

For cylinders mounted on front gangs: turn the cylinder so that the hydraulic hose ports are toward the rear of the harrow.

For cylinders mounted on the rear gangs: turn the cylinder so that the hydraulic hose ports are toward the front of the harrow.

Fasten the hydraulic cylinders to the brackets with the pins provided.

3. Insert the hydraulic cylinder pin (Item 6) through the hole in the left hydraulic wing lock (Item 1). Position the lift arm (Item 7) so that the pin can slide through the slotted hole. Push the pin through one side of the hydraulic cylinder cuff. Place the roller (Item 8) between the cuff. Push the pin through the roller and the other side of the hydraulic cylinder cuff. Place the lift arm (Item 7) in the position so that the pin can be pushed through the slotted hole and into the hole in the right hydraulic wing lock (Item 2). Key the pin with the two cotters ($\frac{3}{8}$ "x2").
4. Connect the lift arm (Item 7) to the wing gang frame (Item 9), by inserting the pin (Item 10) through the wing frame and the lift arm. Secure with the two cotters ($\frac{3}{8}$ "x2").
5. Items 11 and 12 will already be assembled. Screw the adjustment bolts into the hydraulic wing lock as far as they will go.
6. Connect the flow restrictor (Item 10) to the butt end of the hydraulic cylinder as shown by the arrows in Fig. 17. Connect the hydraulic tees (Item 4) to the four ports in the front hydraulic cylinders. Connect the two hydraulic hoses (40" long) (Item 2) to the inside hydraulic tee of the cylinder. Connect the two hydraulic hoses (59" long) (Item 3) to the outside tees of the hydraulic cylinder. Connect the two (40" long) hoses together with the all female hydraulic tee (Item 1). Connect the two (59" long) hydraulic hoses together with the all female hydraulic tee. (Item 1). Connect the flow restrictor (Item 10) to the port closest to the butt end of the rear hydraulic cylinders. Connect the 90° hydraulic street ell (Item 5) to the hydraulic tee on the front hydraulic cylinders. Connect the (92" long) hydraulic hose (Item 6) to the butt end of the front hydraulic cylinder. Connect the other end of the 92" long hydraulic hose to the butt end of the rear hydraulic cylinder. Connect the (81½" long) hydraulic hose (Item 6) to the rod end of the hydraulic cylinder. Connect the other end of the hose to the rod end of the rear hydraulic cylinder. Connect the hydraulic hose (Item 6) to the side frame with equal slack between front and rear with the hose clamps (Item 8). Tighten clamp down to secure hose.
7. Extend the hydraulic cylinder rod to the full length. Adjust the adjustment bolts (Item 11, Fig. 18) so that they are snug on the wing lock bar. Lock the adjustment bolts into position with the jam nuts (Item 12, Fig. 18).

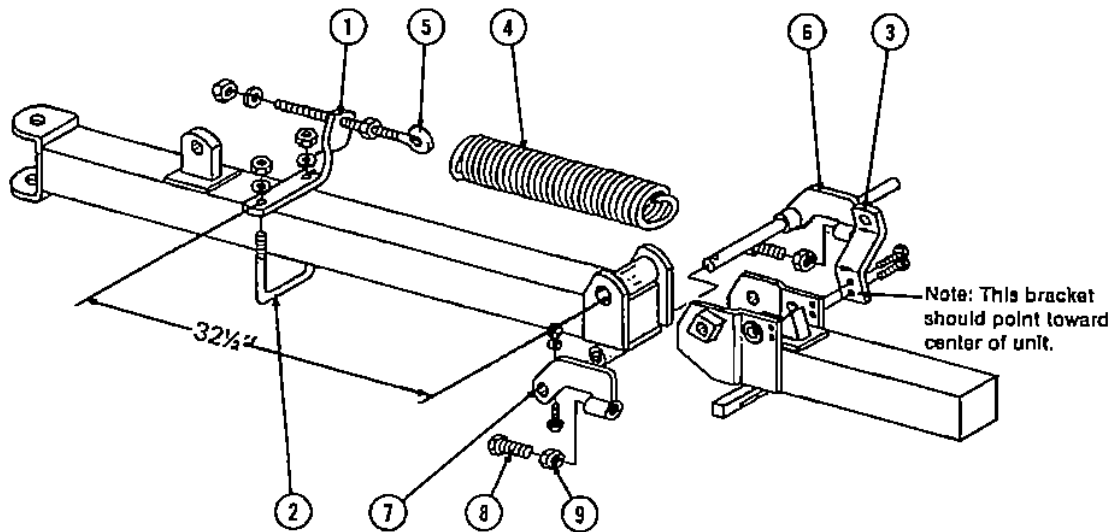


FIG. 19 — SPRING FOLDING ATTACHMENT
MACHINERY NO. 299060

Spring Folding Attachment

See Figure 19

MACHINERY NO. 299058

1. Remove the nuts from the U-bolt of the spring connector bracket bundle (20112E) and separate the four (+) (Item 1) brackets and U-bolts (Item 2).
2. Position the spring connector bracket (Item 1) on the gang frame tube approximately $32\frac{1}{4}$ " from the wing connector pin. Fasten with the U-bolts previously removed.
3. Bolt the spring connector bracket (Item 3) to the wing as shown in the above figure by using the two ($\frac{1}{2}$ " x $\frac{3}{4}$ " bolts).
4. Connect one end of the spring (Item 4) to the hole in the top of the spring connector bracket (Item 3).
5. Connect the eye bolt (Item 5) to the other end of the spring (Item 4).
6. Raise the wing to approximately 45° angle and insert the

eye bolt through the hole in the spring connector bracket. Secure with the nut and flat washer.

7. Adjust the tension in the extension spring with the nut on the eye bolt until the wing assemblies can be raised and lowered easily.
8. Insert the wing lock (Item 6) through the bushing under the gang frame tube as shown in the figure. Position the other wing lock (Item 7) over the pin and secure with the bolt ($\frac{3}{8}$ " x $2\frac{1}{2}$ ").
9. With the wing in the full downward position, adjust the adjustment bolt and nut (Items 8 and 9) until the bolt puts a slight pressure on the wing bar.
10. By pushing down on the end of the wing the manual wing latch can be raised allowing the wing to be folded.

Gang Coupler Attachment

MACHINERY NO. 200092

Figure 12, Page 10

1. Remove the nut, washer and end washer (Items 1, 2, 3 and 16, Fig. 2) from the axle (Item 10, Fig. 2) in the opening where the two axles are to be connected. Slip the axle (Item 10, Fig. 2) back approximately $1\frac{1}{2}$ ". This will give sufficient clearance to install the coupler. *On the front gangs, start on the outside and work to the inside. On the rear gangs start on the inside and work to the outside.*
2. With the bolts provided, mount the butt plate driver (Item 10, Fig. 12) to the butt plate (Item 9, Fig. 2). Tighten all bolts evenly and securely.
3. Replace the end washer (Item 10, Fig. 2) with the end washer drive (Item 12, Fig. 12) of the coupler. Slip the axle back into its original position and replace the washer and nut (Item 2 and 3, Fig. 2). Tighten securely.

Balk Breaker Attachment

MACHINERY NO. 299053

Figure 11, Page 10

Remove the four bolts (Item 1, Fig. 11) from the Balk Breaker Connector (Item 4, Fig. 11). Mount the Balk Breaker Attachment on the Center Frame (Item 28, Fig. 1) directly behind the Wheel Axle Bearings (Item 10, Fig. 1) and secure in place with the four bolts previously removed.

Furrow Filler Attachment

MACHINERY NO. 200086

Figure 13, Page 10

Remove the three $\frac{1}{2}$ " x $1\frac{1}{2}$ " bolts (Item 13, Fig. 13) from each furrow filler spacer (Item 14, Fig. 13). Mount the furrow filler spacers onto the butt-plates (Item 17, Fig. 2) on the outside rear of the harrow. To mount the furrow filler spacers insert the heads of the $\frac{1}{2}$ " x $1\frac{1}{2}$ " bolts into the three slots provided on the outside of each butt-plate and secure the furrow filler spacers to the butt-plates. Mount the discs (Item 15, Fig. 13) onto the furrow filler spacers and tighten into position, using the furrow filler butt-plates, lock washers and nuts (Items 17, 18, & 19, Fig. 13) provided. Any disc with a $\frac{3}{8}$ " square center hole can be used. For best results, use a disc that is 4" x 6" smaller than the discs on the harrow.

OPERATING INSTRUCTIONS

Wing-Type Wheel Mounted Tandem Harrow

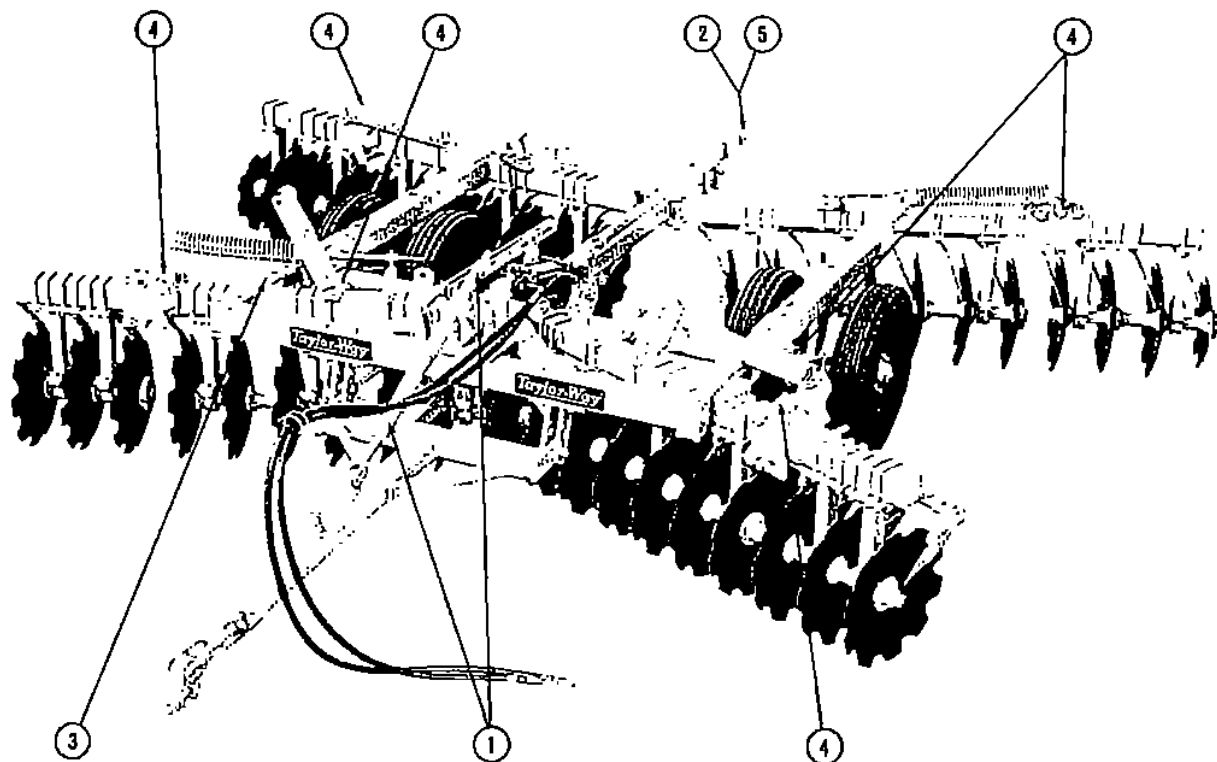


FIG. 20 — OPERATING INSTRUCTIONS

Front to Rear Leveling

See Item 1, Figure 20

To level the harrow from front to rear, use the Spring Adjusting Rod (Item 1, Fig. 20). Loosen the Top Nut (Item 9, Fig. 1) so that no pressure is exerted on the Top Spring (Item 8, Fig. 1) when the harrow is down and in its plowing position. With the Top Spring loose, tighten the Bottom Spring (Item 6, Fig. 1) by screwing up on the Wing Nut located on the Spring Adjusting Rod to increase the cutting depth of the rear section. To decrease the cutting depth of the rear section, loosen the Bottom Spring by screwing down on the Wing Nut. After the cutting depth has been adjusted, lift the harrow to its transport position and tighten the Top Spring by screwing down on the Top Nut located on top of the Spring Adjusting Rod until the harrow is approximately level.

If the Tongue (Item 4, Fig. 1) needs to be adjusted to compensate for the draw bar height of the tractor, remove the two Pins securing the Tongue to the Center Frame (Item 28, Fig. 1) and move the Tongue up or down as required.

Depth of Cut

See Item 2, Figure 20

The depth of cut is controlled by the use of a ASAE standard 8" stroke single or double action Hydraulic Cylinder with a 3½" or larger bore or by use of the Depth Adjustment bar, Cuff, Pin and Cotter (Item 2, Fig. 20). To adjust the depth of cut using the Depth Adjustment Bar, remove the Depth Adjustment Pin and Cotter and slide the Depth Adjustment Cuff forward to decrease the depth of cut, and to the rear to increase the depth of cut. For transport, move the Depth Adjustment Cuff to the foremost hole. Never pin the Depth Adjustment Cuff in front of the slide which the Depth Adjustment Bar travels

through on the rear of the harrow. Also, do not place a wedge or any other object between the rear Hydraulic Cylinder Bracket and the Bracket Holder welded to the Wheel Axle (Item 13, Fig. 1) to make the harrow lift higher in the transport position.

Adjustment for Disc Angle

See Item 3, Figure 20

The disc angle is changed by removing the ¾" x 5½" bolts behind each Gang Frame (Item 3, Fig. 20) and shifting the outside ends of each Gang Frame forward or rearward until the desired amount of angle is obtained. Reinsert the bolts behind each Gang Frame and tighten. Always have the same amount of angle in both Front Gang Assemblies and the same amount of angle in both Rear Gang Assemblies.

Adjusting for Balk

Loosen the U-Bolts holding the Bearing Connectors (Item 6, Fig. 2) and the Scraper Bars (Item 1, Fig. 6) onto the Front Gang Frames (Item 17, Fig. 1) and move all front Disc Gang Assemblies (Fig. 2) in toward the center until the inside discs are touching. Make sure all U-Bolts are moved the same distance toward the center before tightening.

Adjusting for Ridging or Furrowing

Loosen the U-Bolts holding the Bearing Connectors (Item 6, Fig. 2) and the Scraper Bars (Item 1, Fig. 6) onto the Rear Gang Frames (Item 22, Fig. 1) and move all rear Disc Gang Assemblies (Fig. 2) out if the harrow is ridging and in if the harrow is not filling up the furrow left by the center of the front gangs. Make sure that all U-Bolts are moved the same

distance toward or away from the center of the harrow. The speed that the harrow is to be pulled will affect these adjustments: therefore, adjustments should be made for the speed that the harrow will normally be pulled.

Lubrication

See Item 4, Figure 20

The bearing (Items 7 and 9, Fig. 5) used in the Wheel Hub Assemblies are packed with grease at the factory prior to shipment. These bearings should be checked and adjusted periodically and repacked with grease. The harrow should be greased at all stem fittings as often as necessary to insure ease of operation and long life of the working parts. These points are indicated as (Item 4, Fig. 20). The ball bearings (Item 14, Fig. 2) are regreaseable ball bearings and should be greased daily when operating.

Transporting Harrow

See Item 5, Figure 20

When transporting the harrow at transport speeds always have the Wing Assemblies folded over on top of the basic harrow. Fold the wings and pin the wings in the folded position with the wing latch pin (Item 7, Fig. 4) provided.

Pin the depth control bar in transport position when transporting. Remove the depth adjustment pin (Item 2, Fig. 20) and the depth adjustment cuff (Item 5, Fig. 20). Position the depth adjustment cuff over the hole closest to the front of the unit and replace the depth adjustment pin.

Spring Folding Attachment

The wing lock may be adjusted to increase pressure on the wing lock bar. However the adjustment bolts must not be so tight that the wing lock cannot be pulled up by hand. Applying pressure on the wing will loosen the lock so it can easily be raised.

Hydraulic Folding Attachment

The wing lock may be adjusted to increase pressure on the wing lock bar. However the adjustment bolts must not be so tight that the wing lock cannot go over the wing lock bar. Adjust bolts to allow the wing lock to go over the bar with only a small force. Adjustment may be made on the hydraulic cylinder cuff to raise or lower the adjustment bolt on the wing lock bar. The adjustment bolts should stop in the center of the wing lock bar when the hydraulic cylinder is fully extended. Be careful not to lower the wings when the basic frame is already in plowing position.