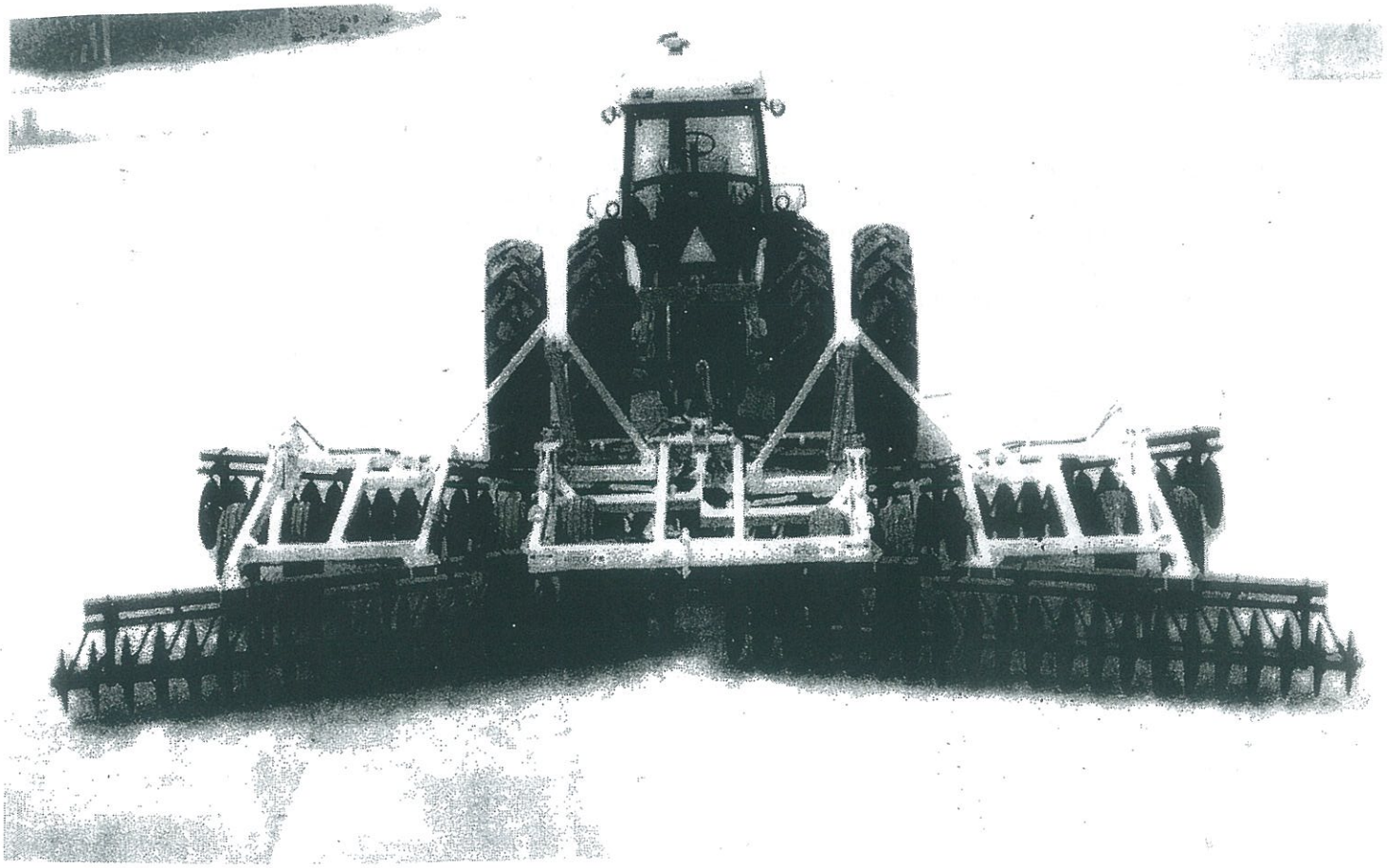
F15 DOUBLE OFFSET FLEXWING
24' – 39'

OPERATION**MAINTENANCE**SET-UP INSTRUCTIONS



AMCO MANUFACTURING COMPANY

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TO THE PURCHASER

The care you give your new AMCO F15 Double Offset Tandem Disk Harrow will greatly determine the satisfaction and service you will obtain from it. By observing the instructions and suggestions in this manual, your AMCO F15 Disk Harrow will serve you well for many years.

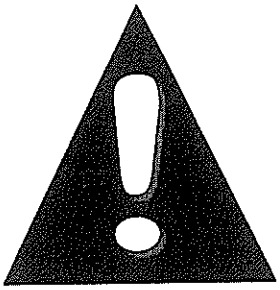
As an Authorized AMCO Dealer, we stock Genuine AMCO Parts, which are manufactured with the same percision and skill as the original equipment. For the best pervormance and longer life, use only genuine AMCO replacement parts. Our factory-trained staff is kept fully informed of the most efficient methods of servicing AMCO equipment and is ready and able to assist you.

When you sell your F15 Double Offset Tandem Disk Harrow, you should pass this manual to the new owner.

If you should require additional aid or information, contact us.

YOUR AUTHORIZED AMCO DEALER

OSHA requires that, as a farm employer, you meet certain safety requirements. Become familiar with and comply with those requirements. Be sure anyone who operates this equipment understands all safety related items. If this harrow is repainted, be certain new decals are ordered. Decals pertaining to personal safety must be replaced.



Look for this symbol to point out important safety precautions. It means: ATTENTION! Become Alert! Your safety is involved.

To insure efficient and prompt service, please provide the model number and serial number of your AMCO F15 Double Offset Tandem Disk Harrow in all correspondence or contacts. Remember, the right- and left-hand sides of the harrow are determined by standing at the rear of the harrow and facing the direction of travel.

MODEL NUMBER _____

SERIAL NUMBER _____

DOUBLE OFFSET TANDEM

MODEL "F15"

24'0", 27'0", 30'0" Sizes

(Heavy Primary Tillage)

STANDARD SPECIFICATIONS

(Metrics in Parentheses)

AXLES: 1-1/2" square, high carbon cold rolled steel

BLADES: 24"x1/4"(6mm) Plain Diminishing with two feathering blades on rear gangs

SCRAPERS: High carbon replaceable blades on heavy duty shanks, mounted with grade 5 bolts on high carbon angle iron bars

TONGUE: 90" long with tongue jack and base hitch clevis

FRONT WING DEPTH GAUGE WHEEL & TIRE: With adjustable ratchet jack on 27' & 30' models

HYD CYLINDERS: 2 - 4"x12" center lift w/DIAL-A-DEPTH depth control (3000 PSI)
2 - 3-1/2"x12" wing lift w/DIAL-A-DEPTH depth control (3000 PSI)
2 - 4"X24" for folding wings (3000 PSI)

HYDRAULIC HOSES: 1/4" complete to front of main frame. Includes hose bundle to tractor

BEARINGS: Protect-O-Shield®, 1-1/2"(38mm) square bore greasable ball type, toggle mounted, with zerk guards and wear guards

WHEELS: 4 - 15x10" center section
4 - 15x8" wing section
* 4 - 15x6" wing section (66 blade only)

WRENCH: 1 for gang bolt

DISC SPACING: 9 Inches

GANG ANGLE: Preset at 17°. No adjustment necessary

WEIGHT: 135 to 145 lbs per blade
375 to 390 lbs. per foot

TRANSPORT WIDTH: Under 14'6"

TRANSPORT HEIGHT: 12'0" on 27', 13'3" on 30' Model

Model No.	Cutting Width	No. of Discs	No. of Bearings	Approximate Drawbar HP Required	Approximate Weight lbs (kg)
F15-6624*	24'0" (7.32M)	66	20	180-220 (134-164)	11311 (5141)
F15-7424	27'0" (8.24m)	74	22	180-220 (134-164)	11955 (5693)
F15-8224	30'0" (9.15m)	82	22	190-235 (142-175)	12607 (6003)
	Note: For split gangs, see page 19				
	OPTIONAL EQUIPMENT				
	Shock absorber gang risers in lieu of Std. cast gang risers, Add per bearing				Add 18 (8) ea
	(Note: AMCO recommends 1/4"(6mm) blades for use with shock absorber gangs)				
	(4) Heavy Duty 8 hole hub and wheel in lieu of Standard 6 hole (On center section only)				Add 20.0 (9.1)
AN-20-0001	15x10 wheels in lieu of 15x8 standard				Add 6.0 (2.7)ea.
	22" x 1/4"(6mm) Plain blades in lieu of standard				Ded 6.0 (2.7)ea.
	22" x 1/4"(6mm) Cutout blades in lieu of standard				Ded 7.9 (3.6)ea.
	24" x 1/4"(6mm) Cutout blades in lieu of standard				Ded 2.0 (0.9)ea.
	26" x 1/4"(6mm) Cutout blades in lieu of standard				Add 3.8 (1.8)ea.
	26" x 1/4"(6mm) Plain blades in lieu of standard				Add 5.8 (2.8)ea.
	RECOMMENDED TIRE SIZE				
*	4 - 9.5lx15 Tires, 6 or 8 Ply, for wings on 66 blade only				Add 27 (12.3)ea.
	4 - 12.5 X 15 Tires, 12 ply, on Center Section				Add 47 (21.0)ea.
	4 - 11L X 15 Tires, 8 ply, on Wing Section				Add 35 (15.9)ea.

AMCO PL Effective August 15, 2011

F.O.B. Yazoo City, Mississippi

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THIS SAFETY ALERT SYMBOL INDICATES IMPORTANT SAFETY MESSAGES IN THIS MANUAL. WHEN YOU SEE THIS SYMBOL, CAREFULLY READ THE MESSAGE THAT FOLLOWS AND BE ALERT TO THE POSSIBILITY OF PERSONAL INJURY.

CAUTION *Never stand between tractor and disk harrow when hitching unless all controls are in neutral and the brakes are locked.*

CAUTION *Park or block the disk harrow so it will not roll when disconnected from the tractor drawbar.*

CAUTION *When working on disk harrows, care should be exercised in handling or tightening bolts near disk blades to avoid injury.*

CAUTION *Always secure for transport by using the lock pin and wing lock pins.*

CAUTION *Never clean, adjust or lubricate a disk harrow that is in motion.*

CAUTION *Stay out from underneath wing gangs, when folding or unfolding.*

CAUTION *When transporting machinery over public roads, comply with your local and state laws regarding length, width and lighting.*

CAUTION *When trailing the harrow over public roads, the SMV Emblem must be used, for protection of tractor and motor vehicle operators.*

CAUTION *When transporting farm implements on public roads after dusk it is the responsibility of the operator to provide lighting and reflectors on the rear of the implement in accordance with your state law.*

CAUTION *All hydraulically or mechanically elevated operating components must be blocked to prevent accidental lowering or must be lowered to the ground when making adjustments or when the equipment is idle.*

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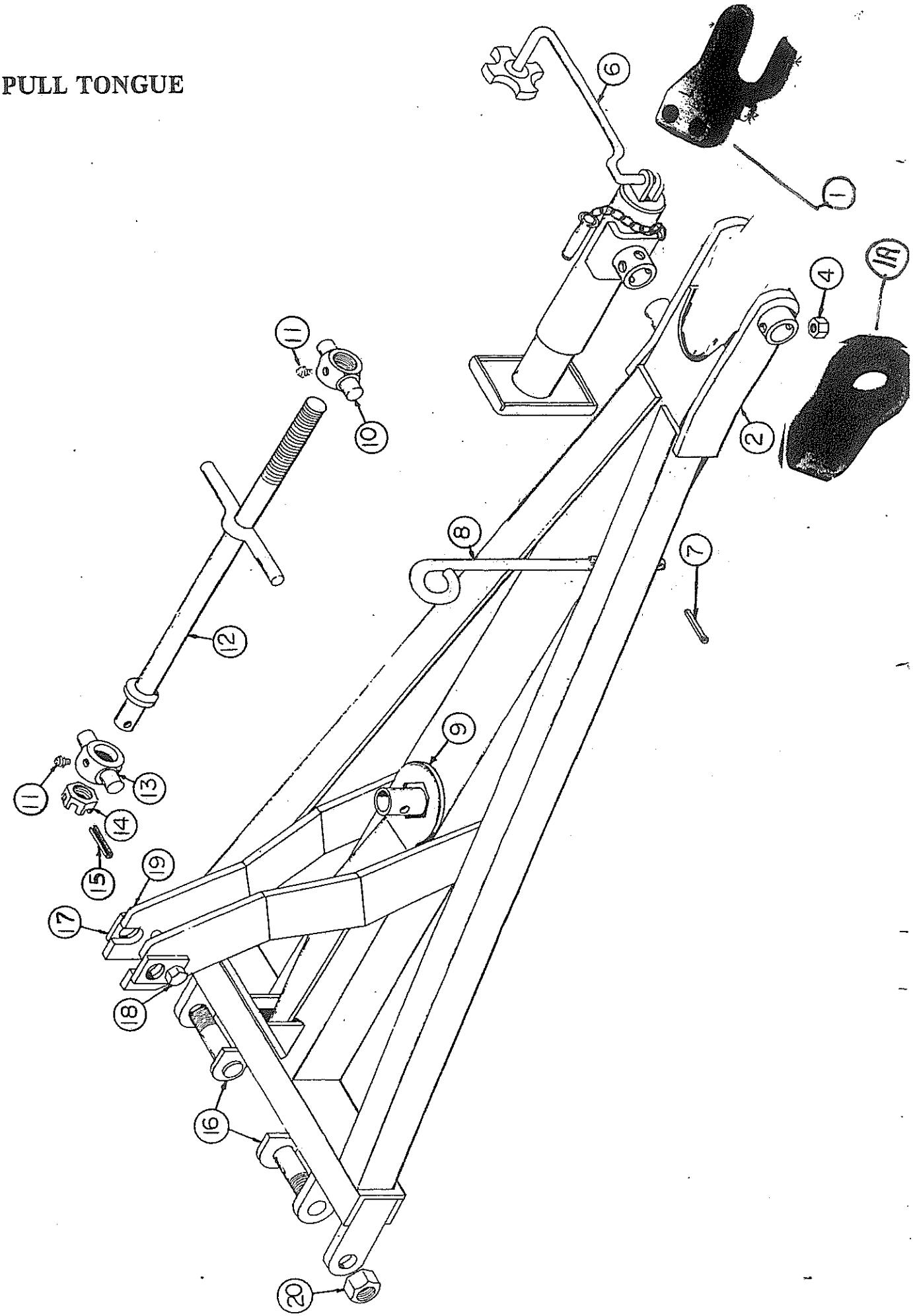
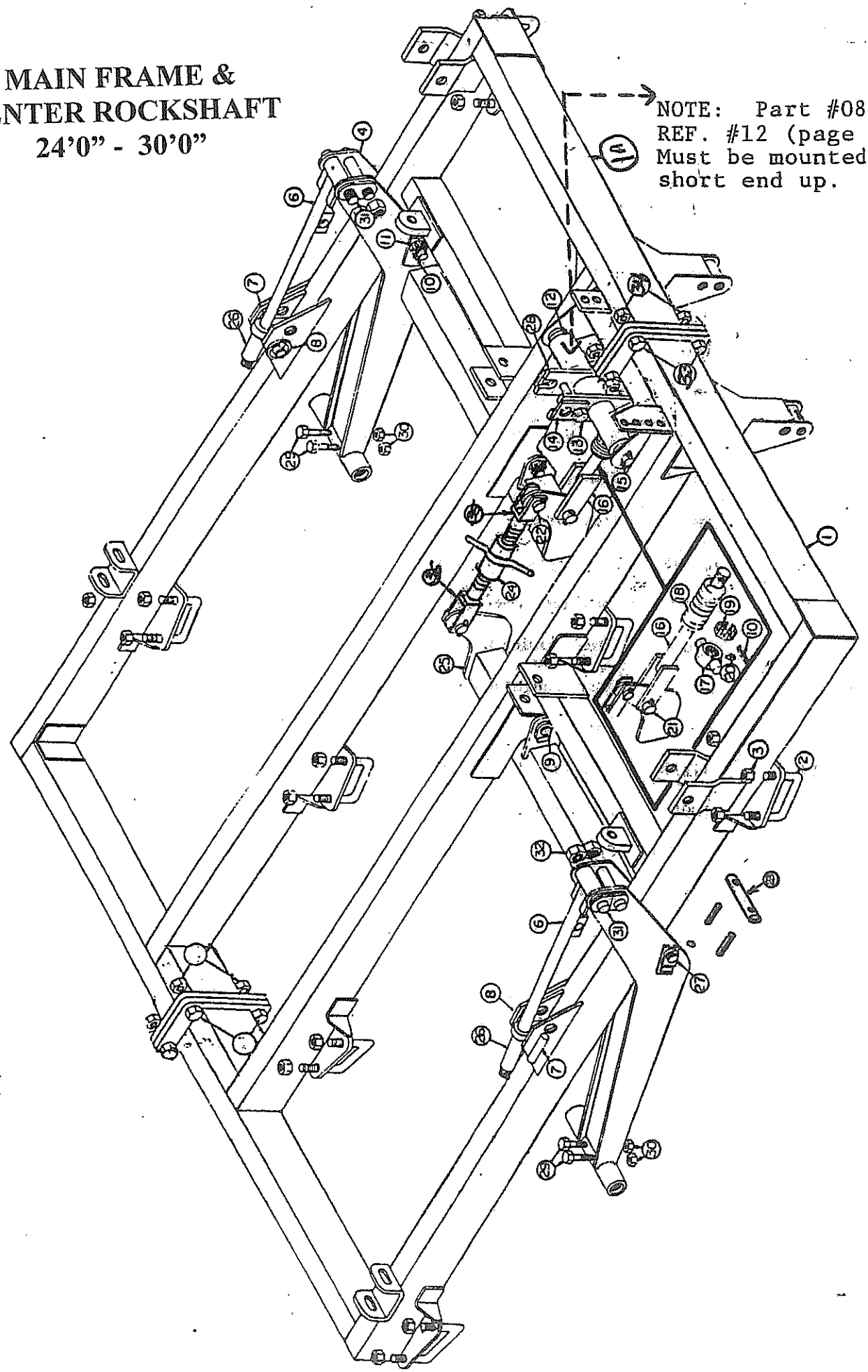
PULL TONGUE



AMCO
F15 Series Disk Harrow
Pull Tongue
24' - 39'

Ref. No.	Part No.	Description	No. Req'd
1	12453	Clevis 24' - 30'	1
1A	12459	Clevis 34'6" - 39'0"	1
	10304	Hex Bolt 1 x 6-1/2 NC, PLT, Gr. 5	2
	10868	Lock Nut 1 NC, PLT	2
2	0832B	Assy. Pull Tongue 24' - 39'	1
6	11261	Tongue Jack	1
7	10075	Cotter Pin 1/4 x 1-1/2	1
8	100061	Hose Holder	1
9	100134	Nut Wrench	1
10	9919A	Stabilizer Swivel	1
11	10606	Grease Fitting 5/16 Threaded - 90 degree	2
12	0862	Assy. Tongue Adjusting Rod	1
13	9892	Swivel	1
14	11279	Hex Nut 1-3/8 NC, PL, Slotted	1
15	10910	Roll Pin 5/16 x 2-1/4	1
16	0942A	Pin 1-1/4 Dia. X 8-5/8 Long	2
17	9628	Clamp Trunnion 3/8 x 2-1/2 - 3-3/4 Long	2
18	10067	Hex Head Machine Bolt 5/8 x 5-1/2 NC, PL	1
19	10299	Lock Nut 5/8 NC, PL	1
20	10397	Lock Nut 1-1/4 NC, PL	2

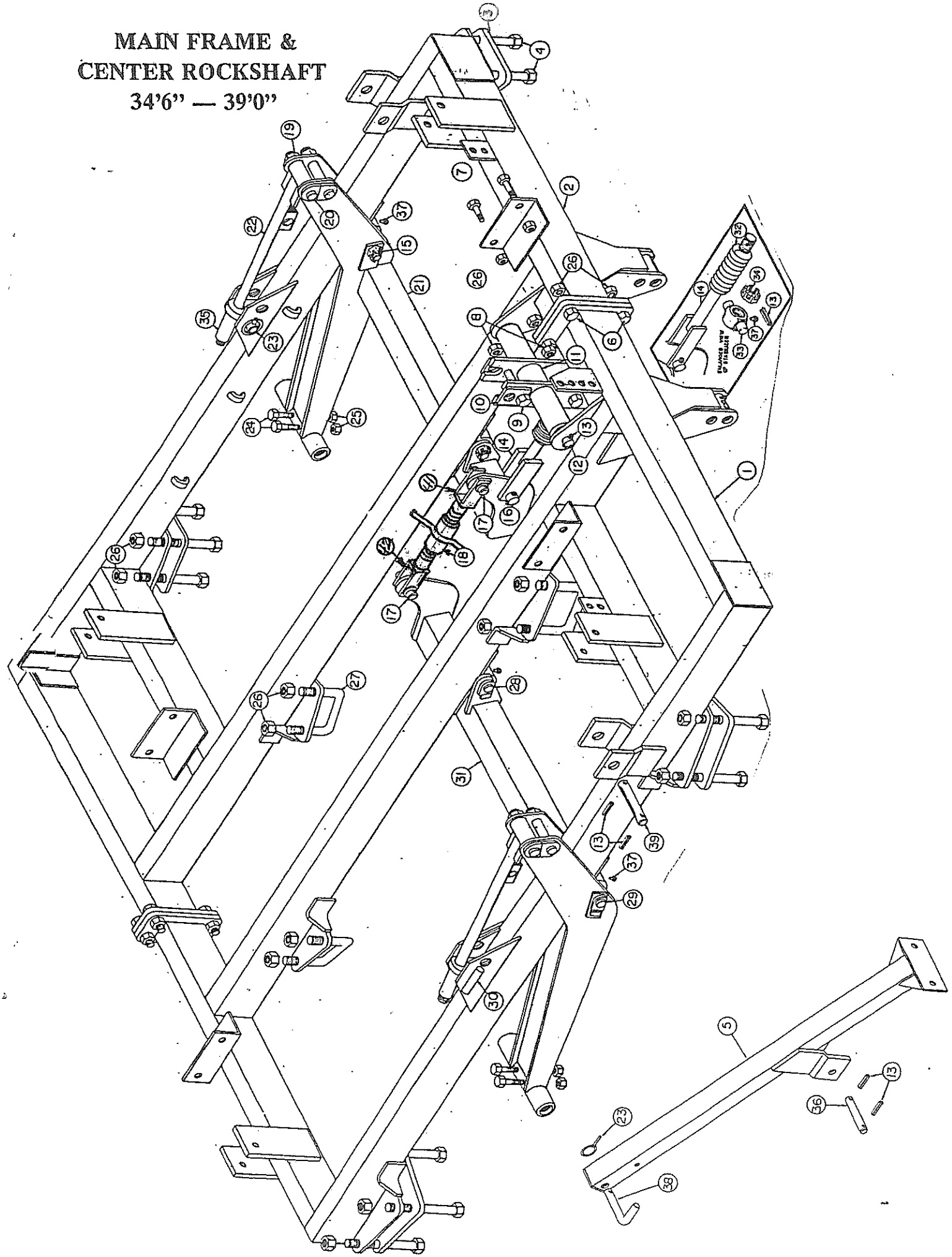
MAIN FRAME & CENTER ROCKSHAFT
24'0" - 30'0"



AMCO
F15 Series Disk Harrow
Main Frame and Center Rockshaft
24'0" - 30'0"

Ref. No.	Part No.	Description	No. Req'd.
1	20542	Assy. Main Frame - RH	1
1A	20543	Assy. Main Frame - LH	1
2	11280	U-Bolt 7/8 Dia.	16
3	10396	Lock Nut 7/8 NC, PLT	32
4	0854	Assy. Rockshaft - LH	1
6	0868A	Assy. Center Depth Gauge Bar	2
7	0871	Assy. Transport Pin 5" Long	2
8	10317	Klik Pin 1/4	2
9	0866	Assy. Rockshaft Pivot Pin 7-5/8 Long	2
10	10910	Roll Pin 5/16 x 2-1/4	23
11	10232	Hex Nut 1-1/2 NC, Slotted	4
12	0863A	Assy. Tongue Pivot Bracket	1
13	10043	Machine Bolt 5/8 x 6-1/2 NC, PLT, Gr.5	2
14	9628	Clamp Trunion 3/8 x 2-1/2 - 3-3/4 Long	4
15	100576	Pin 1-1/4 Dia. - 24-1/4 Long	1
16	0841	Assy. Tongue Control Rod -Long	1
17	9892	Swivel	1
18	10460A	Spring 3 OD x 5/8 Wire - 6-7/8 Long	1
19	11279	Hex Nut 1-3/8 NC, PLT, Slotted	1
20	11081	Grease Fitting 5/16 Straight Drive-In	7
21	100567	Pin 1 Dia. X 3-7/8 Long	1
22	7397	Pin 1 Dia. - 4-3/8 Long	2
23	100575	Pin 1-1/4 Dia. - 7-3/8 Long	2
24	20045	Connector	1
25	0853	Assy. Rockshaft - RH	1
26	0867A	Assy. Depth Gauge Stop	2
27	0840	Assy. Rockshaft Pivot Pin - Outside 8-5/8 Long	2
28	10299	Lock Nut 5/8 NC, PLT	2
29	10834	Machine Bolt 1/2 x 4 NC, PLT, Gr. 5	4
30	10395	Lock Nut 1/2 NC, PLT	4
31	0942	Pin 1-1/4 Dia. - 8-3/8 Long	4
32	10397	Lock Nut 1-1/4 NC, PL	4
33	10189	Machine Bolt 7/8 x 3 NC, PLT, Gr. 5	8
34	11691	Flange Lock Nut 7/8 NC, PLT, Gr.5	8
35	20357	Yoke - RH	1
36	20358	Yoke - LH	1
	9270	Bushing - Bronze (not shown)	8
	102528	Spherical Washer use with 0867A	1
		Depth Gauge Stop (not shown)	

MAIN FRAME & CENTER ROCKSHAFT
34'6" — 39'0"



AMCO
F15 Series Disk Harrow
Main Frame & Center Rockshaft
34'6" - 39'0"

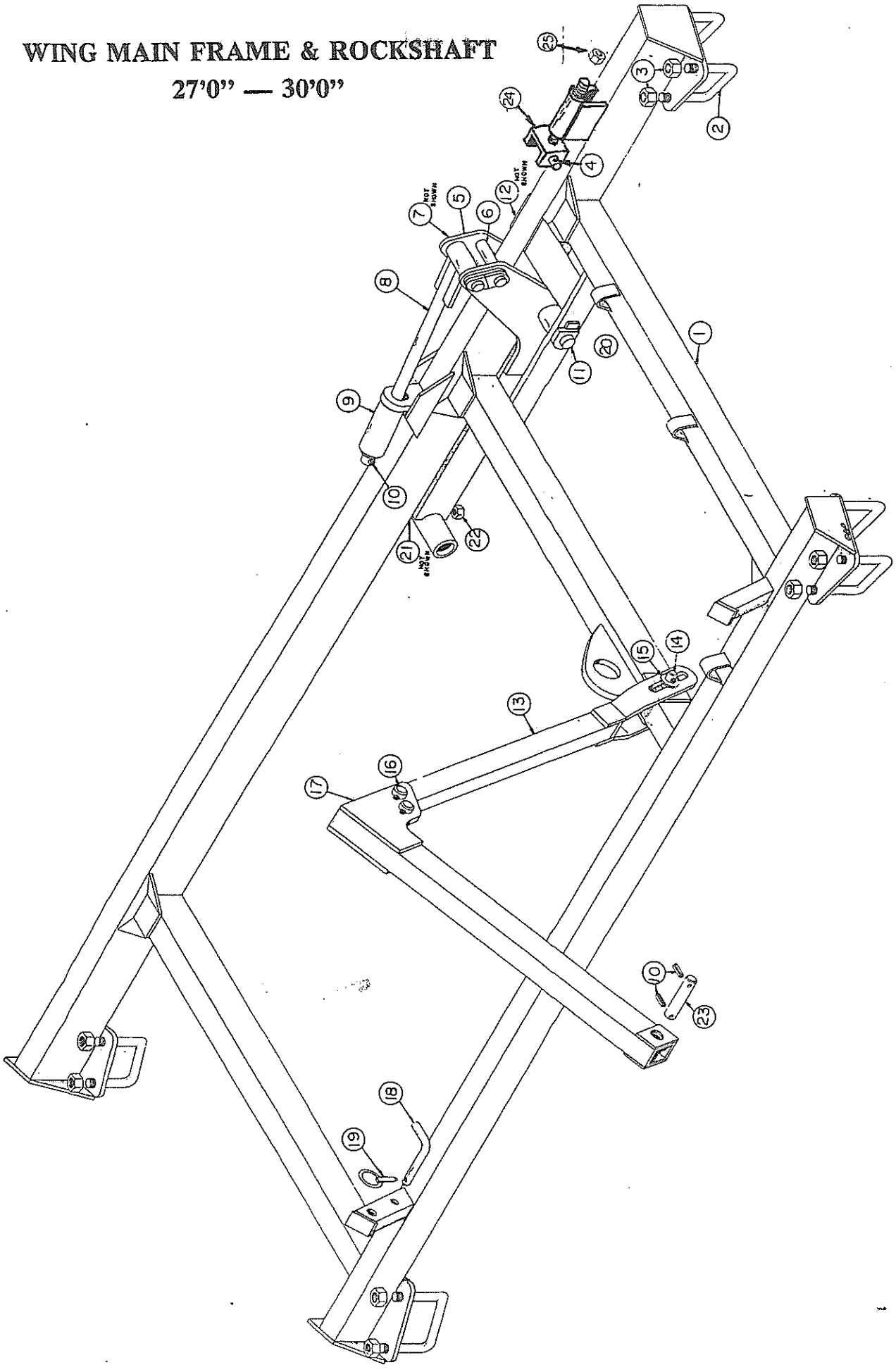
Ref. No.	Part No.	Description	No. Req'd
1	20279	Assy. Main Frame - RH	1
2	20280	Assy. Main Frame - LH	1
3	100736	Plate 3/4 x 8-1/8 x 9-3/4	4
4	10760	Cap Screw 7/8 x 5-1/2 NC, PL, Gr. 5	16
5	20278	Assy. Transport Stand & Cylinder Mount	4
6	10189	Hex Screw 7/8 x 3 NC, PL, Gr. 5	8
7	11692	Hex Screw 7/8 x 2 NC, PL, Gr. 5	8
8	10299	Lock Nut 5/8 NC, PL	2
9	10043	Machine Bolt 5/8 x 6-1/2 NC, PL, Gr. 5	2
10	9628	Clamp Trunnion 3/8 x 2-1/2 x 3-3/4 Long	4
11	0863A	Assy. Tongue Pivot Bracket	1
12	100576	Pin 1-1/4 Dia. - 24-1/4 Long	1
13	10910	Roll Pin 5/16 x 2-1/4	33
14	0841	Assy. Tongue Control Rod - Long	1
15	10232	Hex Nut 1-1/2 NC, Slotted	4
16	100567	Pin 1 Dia. - 3-7/8 Long	1
17	7397	Pin 1 Dia. - 4-3/8 Long	2
18	20045	Connector	1
19	10397	Lock Nut 1-1/4 NC, PL	4
20	0942	Assy. Pin 1-1/4 Dia. - 8-3/8 Long	4
21	0854	Assy. Rockshaft - LH	1
22	0868A	Assy. Center Depth Gauge Bar	2
23	10317	Klik Pin 1/4	6
24	10834	Machine Bolt 1/2 x 4 NC, PL, Gr. 5	4
25	10395	Lock Nut 1/2 NC, PL	4
26	10396	Lock Nut 7/8 NC, PL	40
27	11280	U-Bolt 7/8 Dia.	8
28	0866	Assy. Rockshaft Pivot Pin - Inside 4-5/8 Long	2
29	0840	Assy. Rockshaft Pivot Pin - Outside 8-5/8 Long	2
30	0871	Assy. Transport Pin	2
31	0853	Assy. Rockshaft - RH	1
32	10460A	Spring 3 OD x 5/8 Wire x 6-7/8 Long	1
33	9892	Swivel	1
34	11279	Hex Nut 1-3/8 NC, PL, Slotted	1
35	0867A	Assy. Depth Gauge Stop	2
36	101713	Pin 1 Dia. - 6-1/2 Long	4
37	11081	Grease Fitting 5/16 Straigh - Drive-In	7
38	100683	Lock Pin 3/4 Dia. - 6-1/2 Long	4
39	100575	Pin 1-1/4 - 7-3/8 Long	2
	9270	Bushing - Bronze (not shown)	8
40	11691	7/8 Flange Lock Nut	8
41	20357	Yoke - RH	1
42	20358	Yoke - LH	1
	102528	Spherical Washer - See Page 7	1

Note: Serial No. 82120538 and above will require replacement parts from above list.

All Serial No. below 82120538 should see previous parts book.

WING MAIN FRAME & ROCKSHAFT

27'0" — 30'0"



AMCO

F15 Series Disk Harrow

Wing Main Frame, Rockshaft & Wheel Mount

24' - 30'

Ref. No.	Part No.	Description	No. Req'd. 24'	No. Req'd. 27' & 30'
1	20591	Assy. Wing Main Frame - RH	1	
1	20592	Assy. Wing Main Frame - LH	1	
1	0909A	Assy. Wing Main Frame - RH		1
1	0910A	Assy. Wing Main Frame - LH		1
2	11280	U-Bolt 7/8 Dia.	8	8
3	10396	Lock Nut 7/8 NC, PL	16	16
4	100573	Pin 1-1/4 Dia. - 6-3/8 Long	1	1
5	20303	Assy. Wing Wheel Mount	1	1
6	0942	Assy. Pin 1-1/4 Dia. X 8-3/8 Long	2	2
7	10397	Lock Nut 1-1/4 NC, PLT	2	2
8	0869	Assy. Wing Depth Gauge Bar	1	1
9	0867A	Assy. Depth Gauge Stop	1	1
10	10910	Roll Pin 5/16 x 2-1/4	14	14
11	0593	Assy. Wing Pivot Pin	1	1
12	10232	Hex Nut 1-1/2 NC, Slotted	1	1
13	0865	Assy. Outside Lift Arm	1	1
14	100589	Pin 1 Dia. - 6-3/8 Long	1	1
15	10879	Cut Washer 1 PL	2	2
16	100569	Pin 1-1/4 Dia. - 4-7/8 Long	2	2
17	0864	Assy. Inside Lift Arm	1	1
18	100683	Lock Pin 3/4 Dia. - 6-1/2 Long	1	1
19	10317	Klik Pin 1/4	1	1
20	11081	Grease Fitting - 5/169 Straight	2	2
21	10773	Machine Bolt 3/8 x 3-1/2 NC, PL, Gr.5	1	1
22	10509	Lock Nut 3/8 - NC, PL	1	1
23	100570	Pin 1-1/4 Dia. - 5-3/8 Long	1	1
24	20302	Assy. Adjustable Cylinder Mount	1	1
25	10149	Hex Nut 1-1/4 NC, Finished	2	2
	102528	Spherical Washer use with 0867A	1	
		Depth Gauge Stop (not shown)		

NOTE: Serial No. 83100553 and above will require replacement parts from above list.

All Serial No. below 83100553 should see previous parts book.

AMCO
F15 Series Disk Harrow
Insert

BC-05-0326 consists of:

1.	20357	Assy. Adjusting Yoke – RH
1.	20358	Assy. Adjusting Yoke - LH
1.	20045	Assy. Connector – 7-1/2" Long
2.	7397	Pin 1" Dia. – 4-3/8 Long
1.	10606	Grease Fitting 1/8 x 27 NPT
4.	10910	Roll Pin 5/16 x 2-1/4
1	10053	Jam Nut 1-3/8 NC, RH

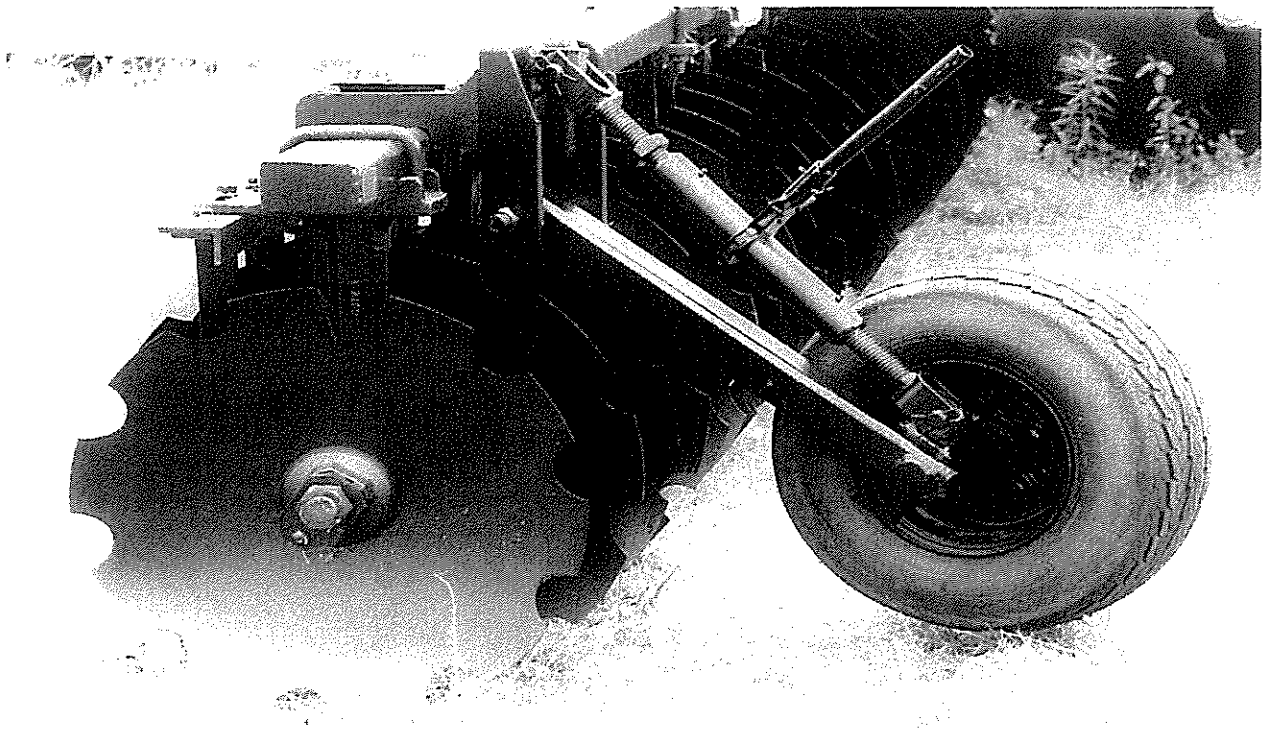
***BC-05-0326

Tie Link Adjustment

Adjustable tie link should be set on 20" hole centers during assembly. After disk has been assembled and hydraulic system has been charged, raise the disk in the transport position. The two 4 x 12 hydraulic cylinders should fall about ½ inch and hold. If the left hand cylinder creeps down, the adjustable tie link is to short. Adjust the tie link required. If adjusting properly, the disk should hold when raised to transport position. If both the cylinders creep down, oil is leaking out of the system.

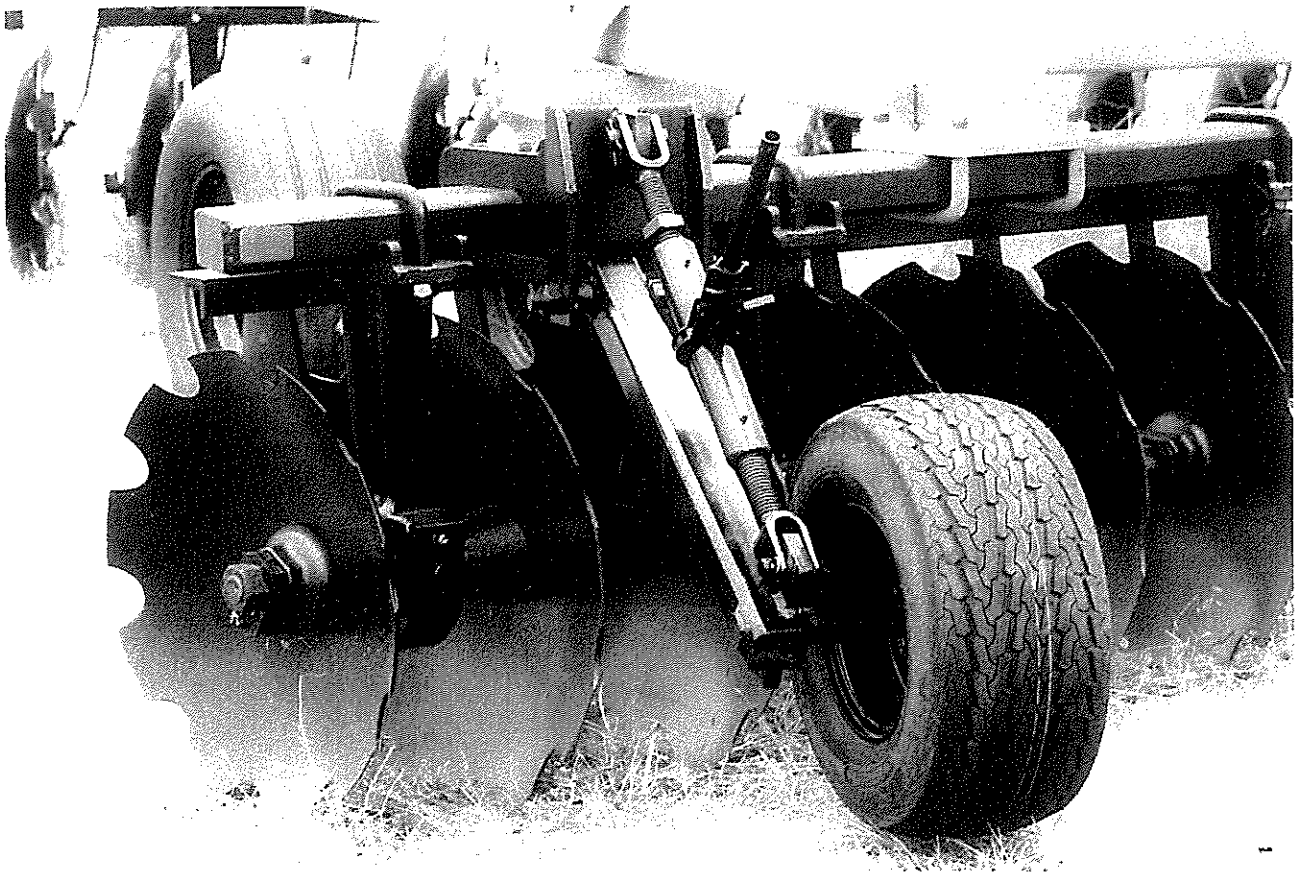
Note: See page 6 & 8 for Parts Layout.

INSERT

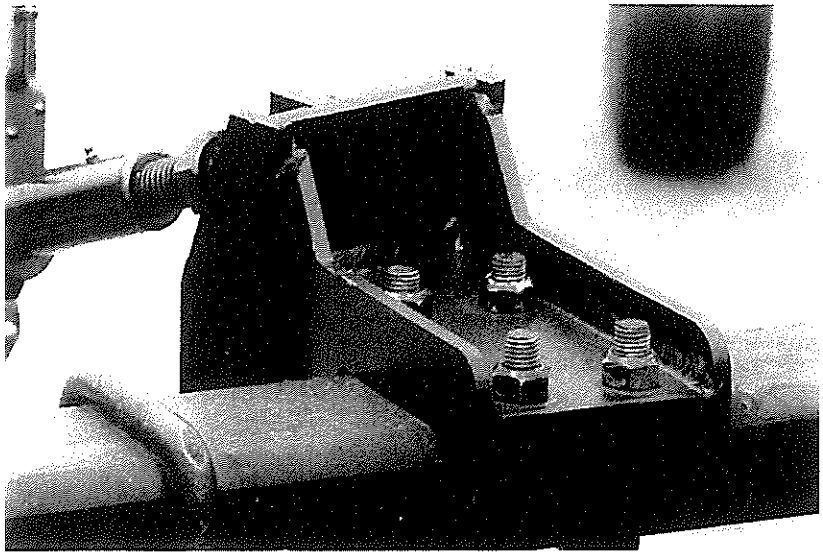


Front Wing Depth Gauge Bracket with Wheel and Tire

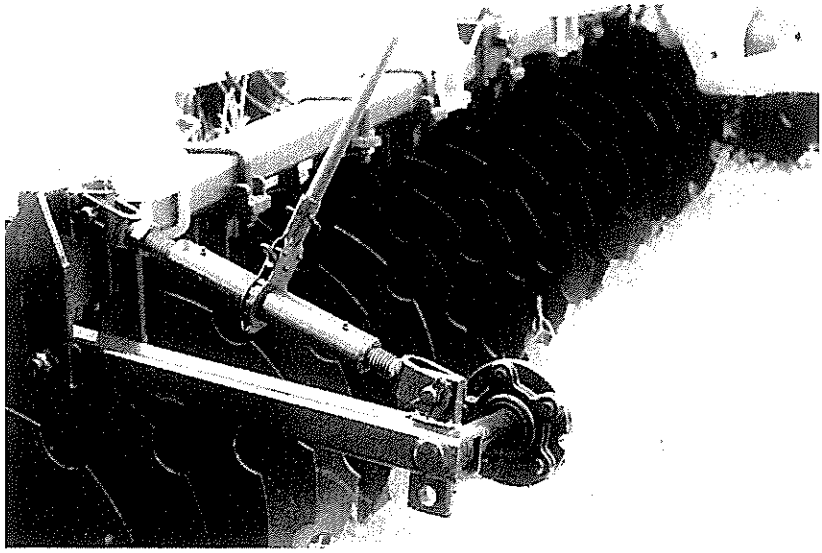
Mount right hand gauge wheel just inside right front outside bearing risers, adjust wheel to about 3" from the ground, tighten lock nut on ratchet jack and remove adjusting handle. Repeat the same on left side.



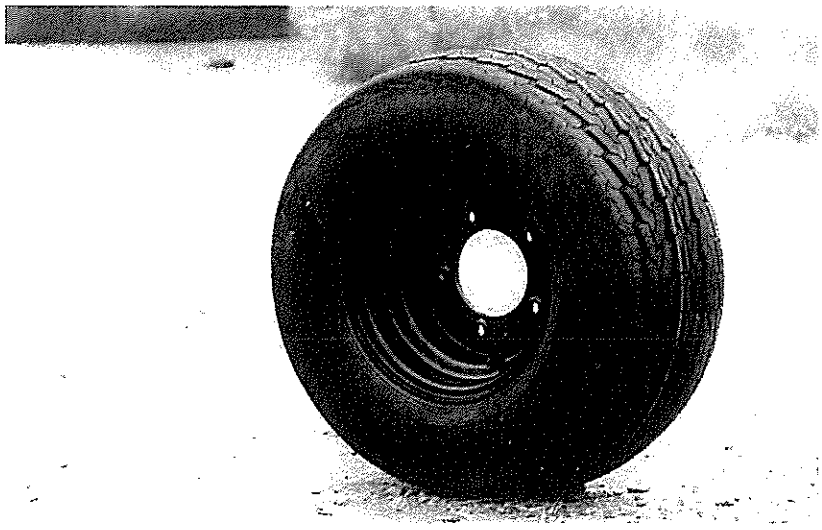
See other side for parts list



Req'd	Part No.	
(1)	20665	Depth Gauge Bracket R.H. Shown
(1)	20666	Depth Gauge Bracket L.H.
(2) Per Wh.	6513	U-Bolt
(4) Per Wh	10300	3/4 NC Lock Nut



Req'd	Part No.	
(1) Per Wh.	11494	Ratchet Jack
(1) Per Wh.	20124	Spindle Leg
(1) Per Wh.	10351	Hub (5-Hole)

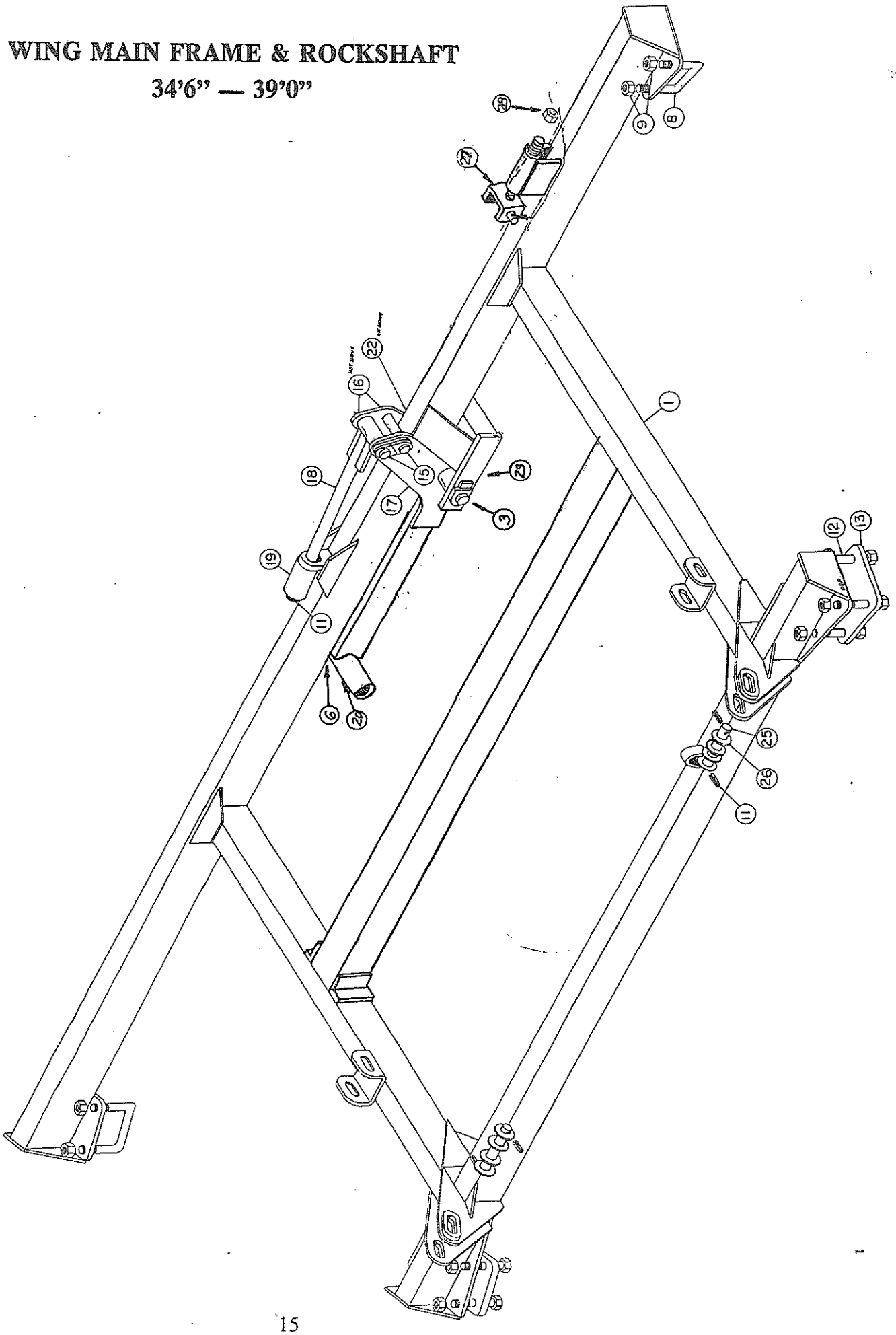


Req'd	Part No.	
(1 per Wh.)	12172	Wheel & Tire (20.5 x 8 x 10)

Note: Gauge Wheels not used on a F15-66Blade (24')

WING MAIN FRAME & ROCKSHAFT

34'6" — 39'0"

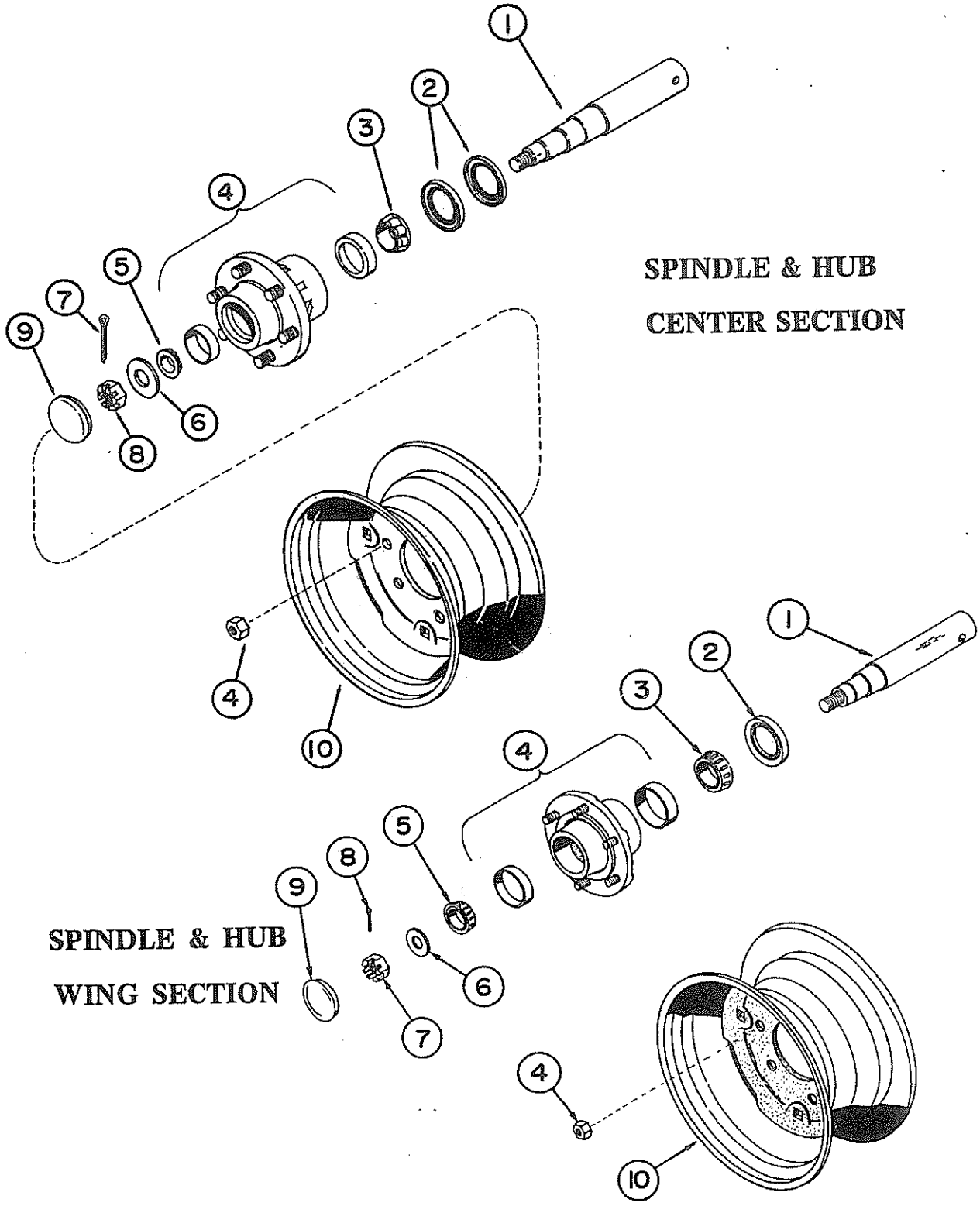


AMCO
F15 Series Disk Harrow
Wing Main Frame, Rockshaft & Wheel Mount
34'6" - 39'0"

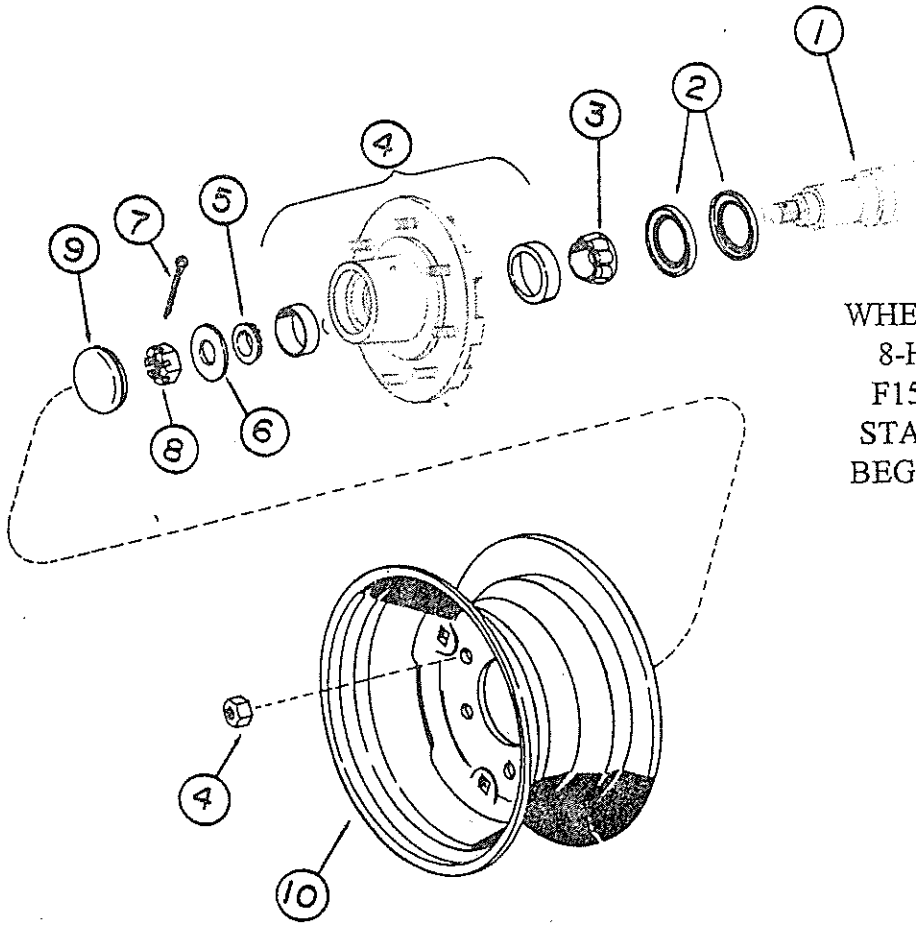
Ref. No.	Part. No.	Description	No. Req'd.
1	0849B	Assy. Wing Main Frame - RH	1
1	0850B	Assy. Wing Main Frame - LH (shown)	1
3	0593	Assy. Wing Pivot Pin	2
6	10509	Lock Nut 3/8 NC, PL	4
8	11280	U-Bolt 7/8 Dia.	4
9	10396	Lock Nut 7/8 NC, PL	16
11	10910	Roll Pin 5/16 x 2-1/4	13
12	10760	Cap Screw 7/8 x 5-1/2 NC, PLT, Gr. 5	8
13	100736	Plate 3/4 x 8-1/8 x 9-3/4	2
14	100573	Pin 1-1/4 Dia. - 6-3/8 Long	1
15	0942	Assy. Pin 1-1/4 Dia. - 8-3/8 Long	2
16	10397	Lock Nut 1-1/4 NC, PLT	2
17	20303	Assy. Wing Wheel Mount	1
18	0869	Assy. Wing Depth Gauge Bar	1
19	0867A	Assy. Depth Gauge Stop	1
20	10773	Machine Bolt 3/8 x 3-1/2 NC, PL, Gr.5 (not shown)	4
22	10232	Hex Nut 1-1/2 NC, Slotted (not shown)	2
23	11081	Grease Fitting 5/16 Straight - Drive-In	4
25	100574	Pin 1-1/4 Dia. - 6-7/8 Long	2
26	10077	Cut Washer 1-1/4 PLT	8
	9270	Bushing (not shown)	4 Req'd in #17
27	20302	Assy. Adjustable Cylinder Mount	1
28	10149	Hex Nut 1-1/47 NC, Finished	2
	102528	Spherical Washer use with 0867A (not shown)	1

Note: Serial No. 83100553 and above will require replacement parts from above list.

All Serial No. below 83100553 should see previous parts book.


SPINDLE & HUB
CENTER SECTION
SPINDLE & HUB
WING SECTION

		AMCO	
		F15 Series Disk Harrow	
		Spindle & Hub Center Section	
		24' - 30'	
Ref. No.	**Part. No.**	**Description**	**No. Req'd.**
1	10922	Spindle 2-7/32 Dia. X 14-1/2 Long	4
2	10467	Seal (C/R 52430)	4
3	10469	Cone - Inner Timken #25590	4
4	10463-1	Hub with 2 Cups, 6 Hub Bolts, Nuts & Grease Fitting	4
4	10468	Cup - Inner Timken #25520	4
4	10472	Cup - Outer Timken #25821	4
4	10470	Hub bolt 9/16 x 2-1/4 NF	24
4	10471	Hub Nut 9/16 NF	24
5	10473	Cone-Outer Timken #25877	4
6	10263	Washer 7/8	4
7	10291	Cotter Pin 5/32 x 1-1/4	4
8	10264	Nut 7/8 NF, Slotted	4
9	10474	Hub cap	4
10	11236	Wheel 15 x 10 - 6 bolt	4
11	10606	Grease Fitting (not shown)	4
	JA-05-0024	Sub Bundle Spindle & Hub Complete	4



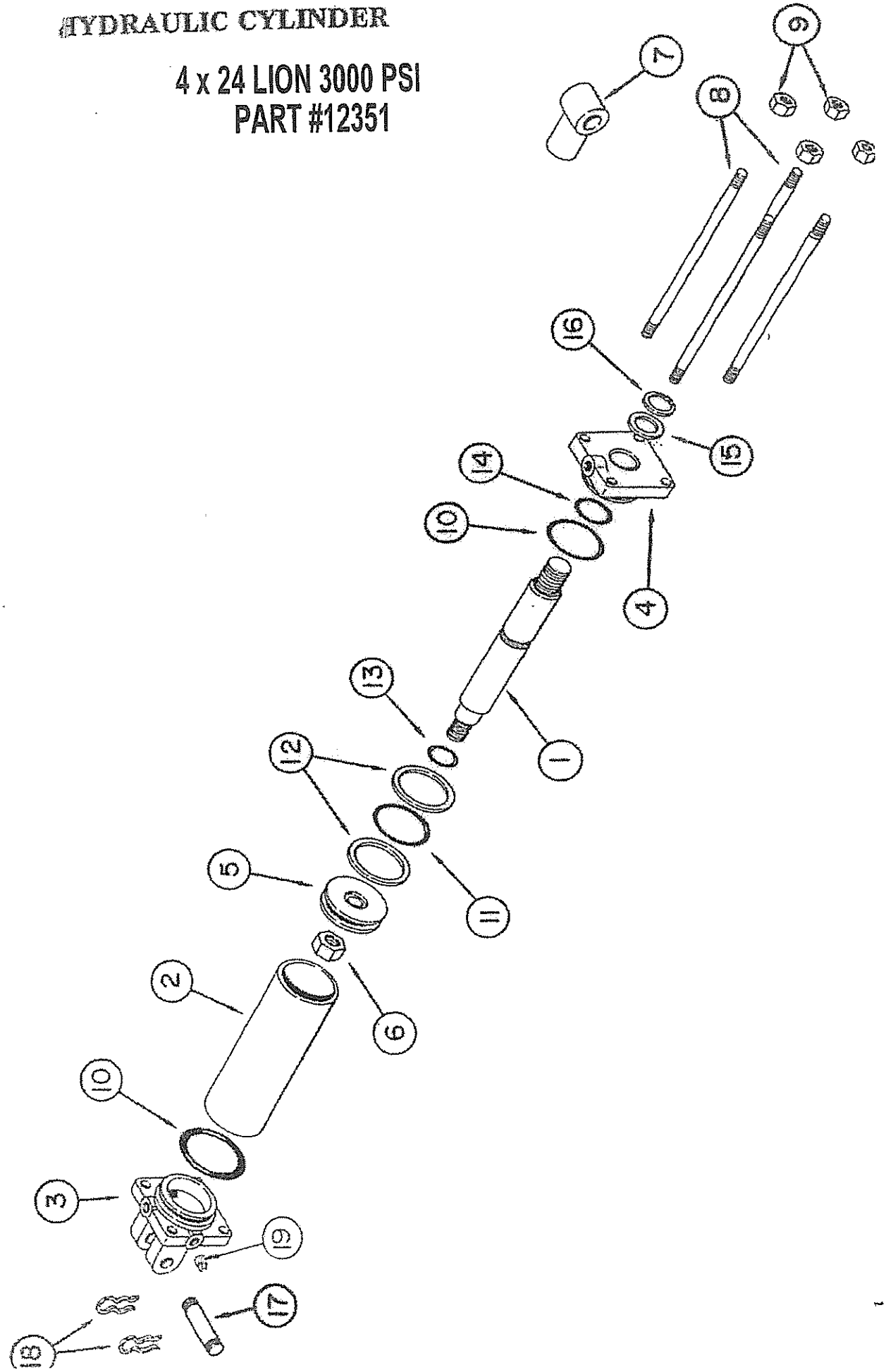
WHEEL - 8-Hole Spindle & Hub
8-Hole CENTER SECTION
F15 - 94 Blade & 106 Blade
STANDARD EQUIPMENT
BEGIN W/SERIAL #96020088

		AMCO	
		F15 Series Disk Harrow	
		Spindle & Hub Center & Wing Section	
Ref. No.	**Part. No.**	**Description**	**No. Req'd.**
1	12164	Spindle	4
2	12191	Seal	4
3	12187	Cone - Outer	4
4	12186-1	Hub with 2 Cups, Grease Fitting & Press-In Studs	4
		With Nuts	
4	12189	Cup - Inner	4
4	12190	Cup - Outer	4
4	12192	Hub Bolt	32
4	12193	Hub Nut	32
5	12188	Cone - Inner	4
6	12195	Washer - Spindle	4
7	12197	Cotter Pin - Spindle	4
8	12196	Nut - Spindle	4
9	12198	Hub Cap	4
10	12305	Wheel - 15 x 10 Hole (Heavy Duty)	4
11	10606	Grease Fitting (not shown)	4
Note: Part # BC-05-0331 - Sub-Bundle Spindle & Hub Complete			
Note: Refer to page 15 when ordering parts for units before Serial No. 96020088			

		AMCO		
		F15 Series Disk Harrow		
		Spindle & Hub Wing Section		
		24' - 30'		
			No.	Req'd
Ref. No.	Part. No.	Description	27'-30'	34'6"-39'0"
1	10880	Spindle 50mm Dia. X 13 Long	4	4
2	10256	Seal (C/R 22870)	4	4
3	10258	Cone - Inner (Timken 342A)	4	4
4	11297	Hub with 2 Cups, 6 Hub Bolts, Nuts & Grease Fitting	4	4
4	10257	Cup - Inner (Timken 332)	4	4
4	10261	Cup - Outer (Timken 14276)	4	4
4	11299	Hub Bolt 1/2 x 1-7/8 NF	24	24
4	11046	Hub Nut 1/2 NF	24	24
5	10262	Cone - Outer (timken 14137A)	4	4
6	10263	Washer - Spindle 7/8	4	4
7	10264	Nut - Spindle 7/8 NF, Slotted	4	4
8	10291	Cotter Pin 5/32 x 1-1/4	4	4
9	10242	Hub Cap	4	4
10	10936	Wheel 15 x 8 - 6 bolt	4	4
11	10606	Grease Fitting (not shown)	4	4
	BC-05-0098	Sub Bundle Spindle & Hub Complete		
Note: Use Part # 10265 - 15 x 6 - 6 Wheels on F15-66 BL- 24', wing section only.				

HYDRAULIC CYLINDER

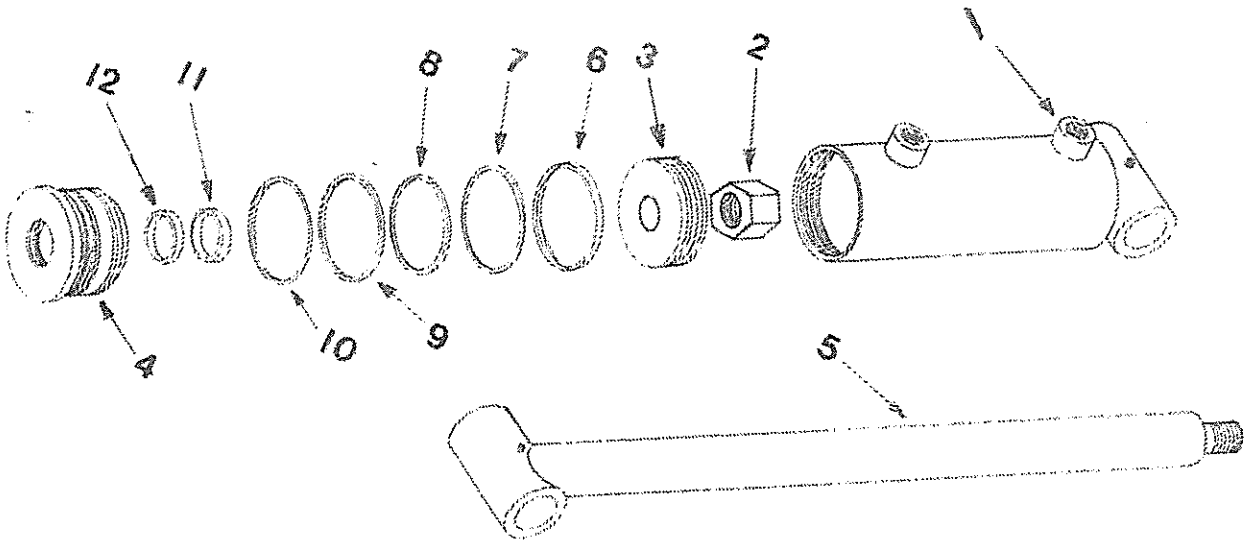
4 x 24 LION 3000 PSI
PART #12351



		AMCO	
		F15 Series Disk Harrow	
		Hydraulic Cylinder	
		4 x 24 Lion 3000 PSI	
		24' - 39'	
Ref. No.	**Part. No.**	**Description**	**No. Req'd.**
	12351	4 x 24 Hydraulic Cylinder Complete	1
1	12385	Rod Piston	1
2	12386	Tube	1
3	12387	Butt	1
4	12388	Head - Piston	1
5	12253	Piston	1
6	12246	Lock Nut 1-1/8 - 12 UNF, Gr. C	1
7	10942	Clevis	4
8	12390	Tie Rod 5/8 x 24"	4
9	12248	Hex Nut 5/8 UNF, Gr. 5	4
10	12391	Seal Kit - Complete	1
		Note: Ref. No. 10-16 Sold in Repair Kit Only	
17	10956	Pin - Clevis	1
18	10957	Clip	2
19	12277	Plug - Pipe 3/4 - 16 UNF Socket Head	1
		Beginning with Serial No. 00030152, order above parts	

HYDRAULIC CYLINDER

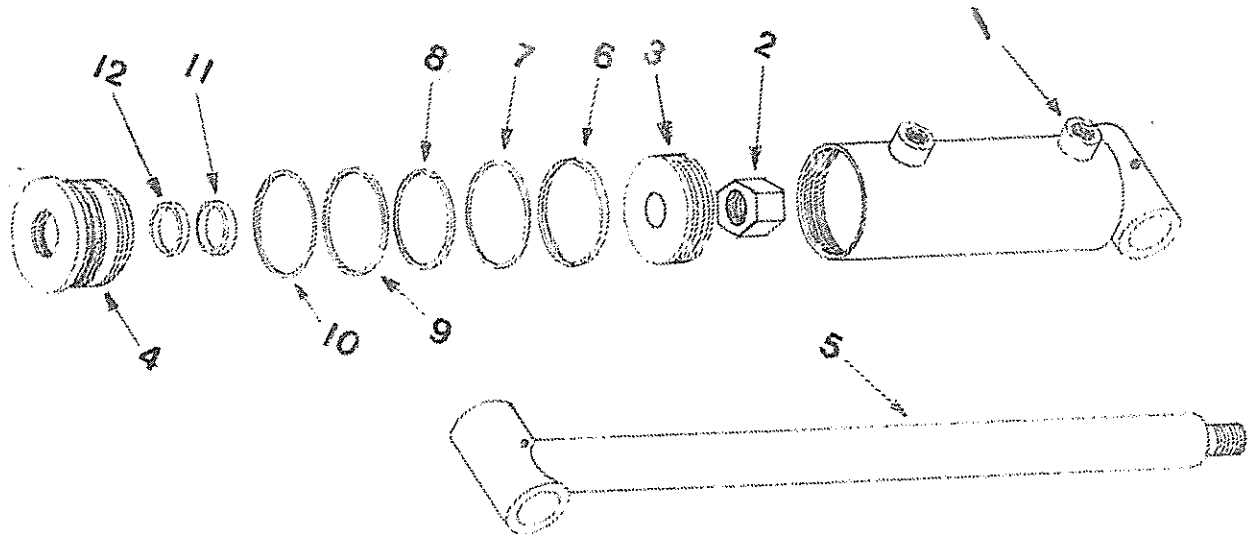
4 X 12 Lion 3000 PSI
Part #12331



		AMCO	
		F15 Series Disk Harrow	
		Hydraulic Cylinder	
		4 x 12 Lion 3000 PSI	
Ref. No.	Part. No.	Description	No. Req'd.
	12331	4 x 12 Hydraulic Cylinder Complete	1
1	12402	Barrell Assy.	1
2	12246	Lock Nut - 1/8 - 12 UNF, Gr. C	1
3	12403	Piston	1
4	12404	Cylinder Head	1
5	12406	Cylinder Rod with Clevis	1
	12367	Seal Repair Kit (complete)	1
		Items 6-12 Sold in Repair Kit only.	
Note: Beginning with Serial No. 99070267 order above parts. Will need to order 2 of			
Part # 12180 - O-Ring fittings when replacing 2500 PSI Cylinder Part No. 11256.			

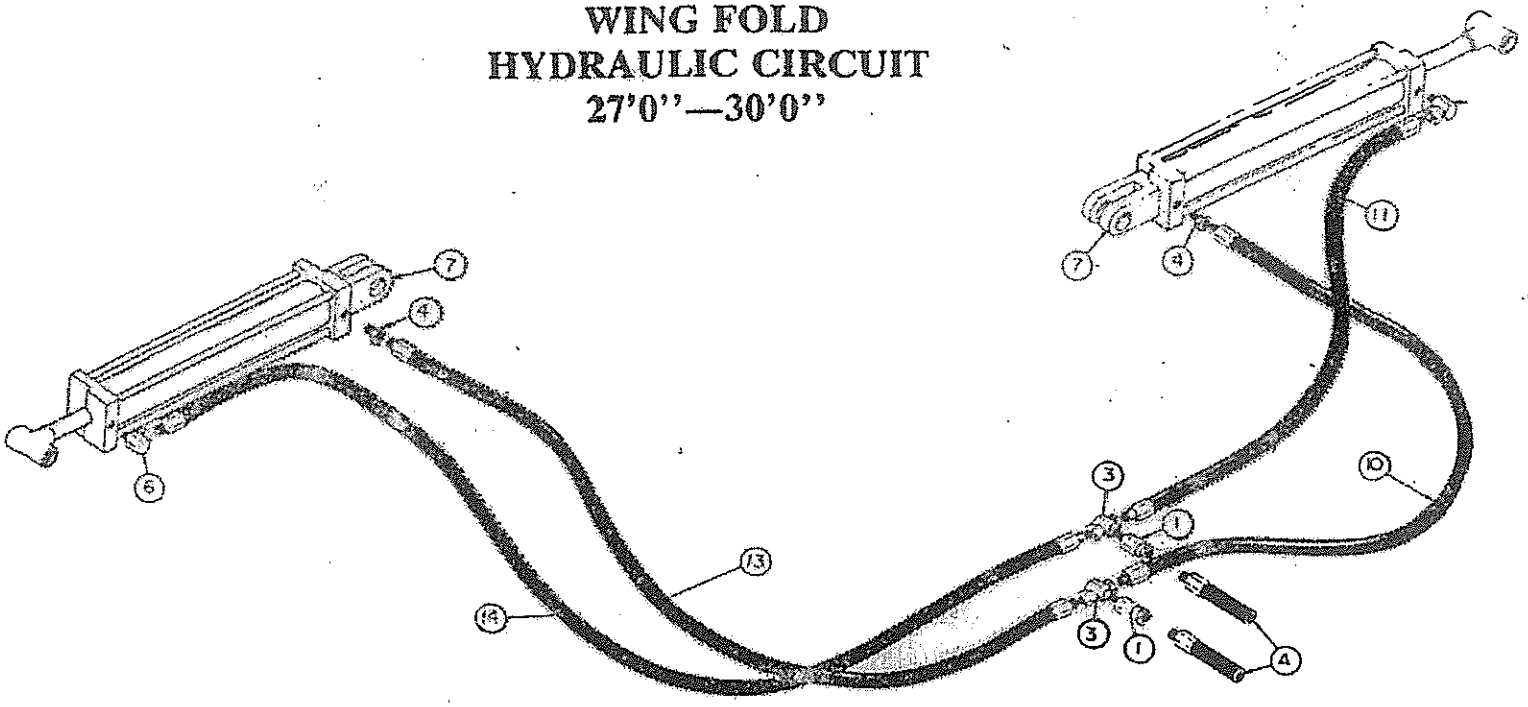
HYDRAULIC CYLINDER

3-1/2 x 12 Lion 3000 PSI
Part #12330

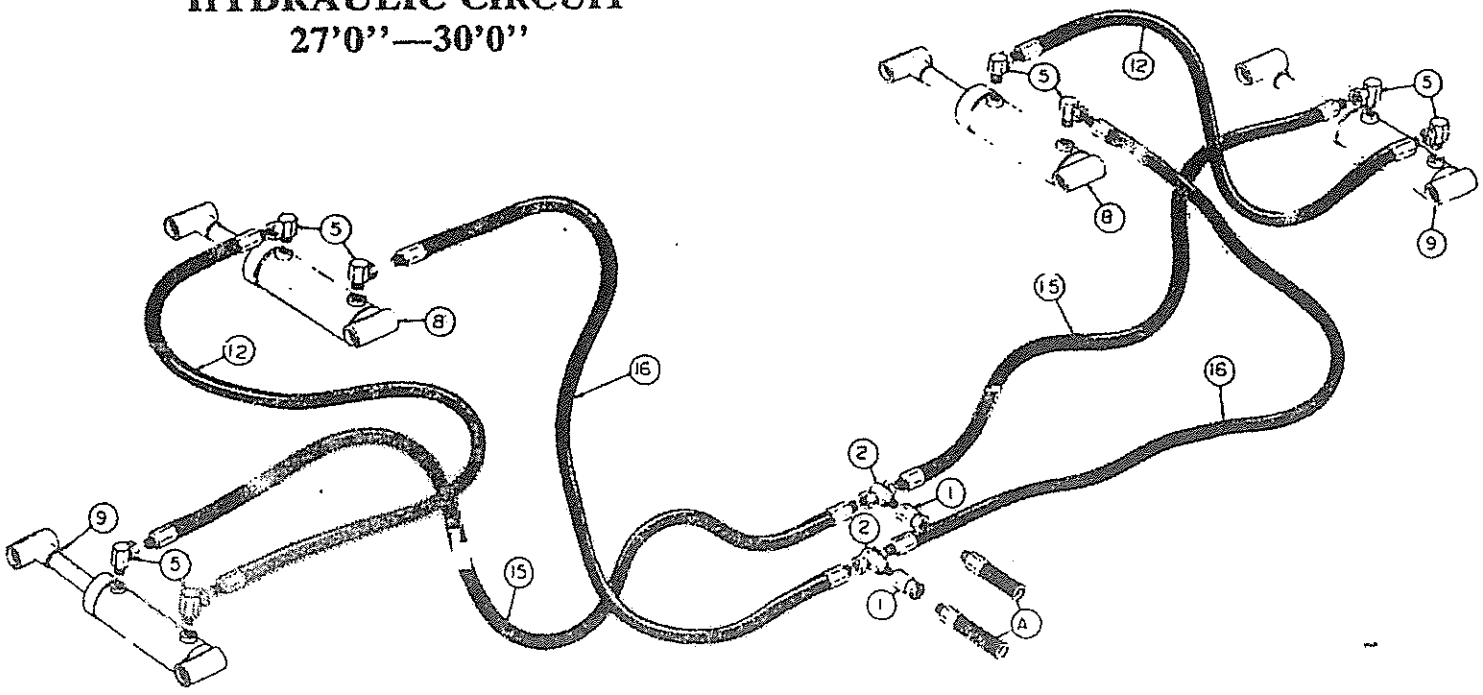


		AMCO	
		F15 Series Disk Harrow	
		Hydraulilc Cylinder	
		3-1/2 x 12	
Ref. No.	Part. No.	Description	No. Req'd.
	12330	3-1/2 x 12 Hydraulic Cylinder Complete	
1	12392	Barrel Assy.	1
2	12393	Lock Nut 1-1/4 UNF, Gr. B	1
3	12394	Piston	1
4	12396	Cylinder Head	1
5	12397	Rod Assy. With Clevis	1
	12366	Seal Repair Kit (Complete)	
		Items 6-12 sold in Repair Kit only.	
Note: Beginning with Serial No. 99070267 order above parts. Will need to order 2 of Part # 12180 - O-Ring fittings when replacing 2500 PSI Cylinder Part No. 11241.			

WING FOLD
HYDRAULIC CIRCUIT
27'0''—30'0''



WHEEL LIFT
HYDRAULIC CIRCUIT
27'0''—30'0''



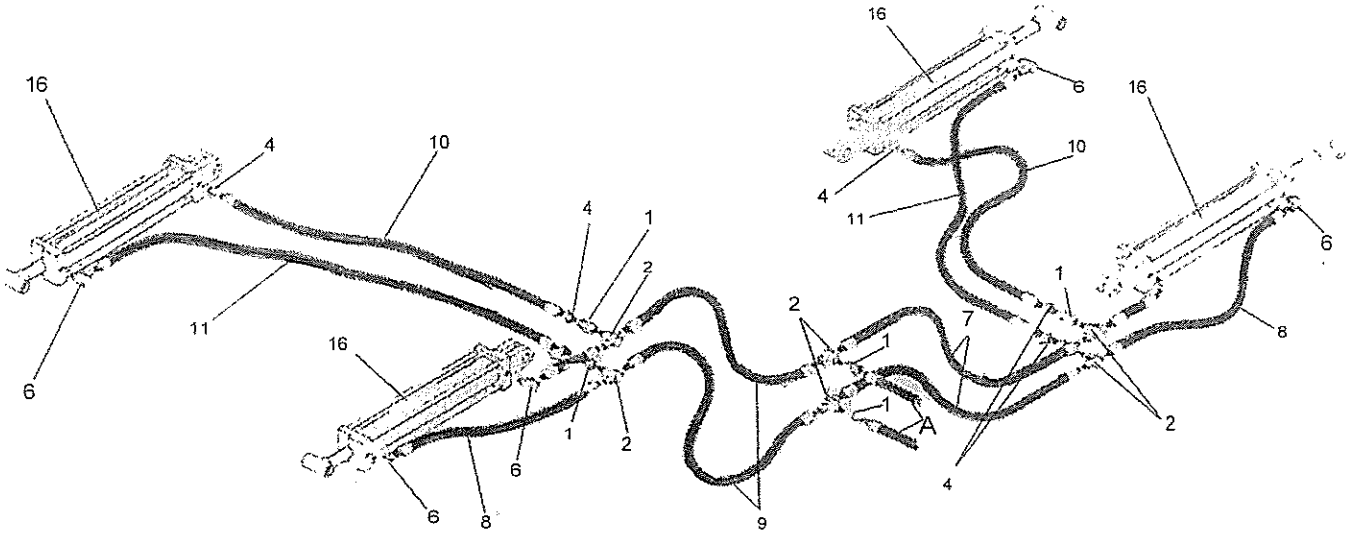
AMCO
F15 Series Disk Harrow
Wing Fold Hydraulic Cylinder
24' - 30'

Ref. No.	Part. No.	Description	No. Req'd.
A	10720	Hose 1/2" x 12' (Optional Equipment)	4
1	11157	Swivel Unions - 1/2 Male to 1/2 Female	2
3	11126	Special Male Tee - 1/2 Male to 1/4 Female, O-Ring fit, NWO	2
4	12370	Reducer - 1/2 to 1/4 O-Ring Fitting, NWO	2
6	12165	Swivel Elbows - 1/2 Male to 1/4 Female	2
7	12351	Cylinder - 4 x 24	2
10	11166	Hose 1/4 x 48 with 1/4 NPT Fittings	1
		Connects Lower Male Tee to Butt End of 4 x 27 Cylinder	
11	11121	Hose 1/4 x 72 with 1/4 NPT Fittings	1
		Connects Upper Male Tee to Rod End of 4 x 24 Cylinder	
13	11123	Hose 1/4 x 96 with 1/4 NPT Fittings	1
		Connects Lower Male Tee to Butt End of 4 x 24 Cylinder	
14	11124	Hose 1/4 x 108 with NPT fittings	1
		Connects Upper Male Tee to Rod End of 4 x 24 Cylinder	

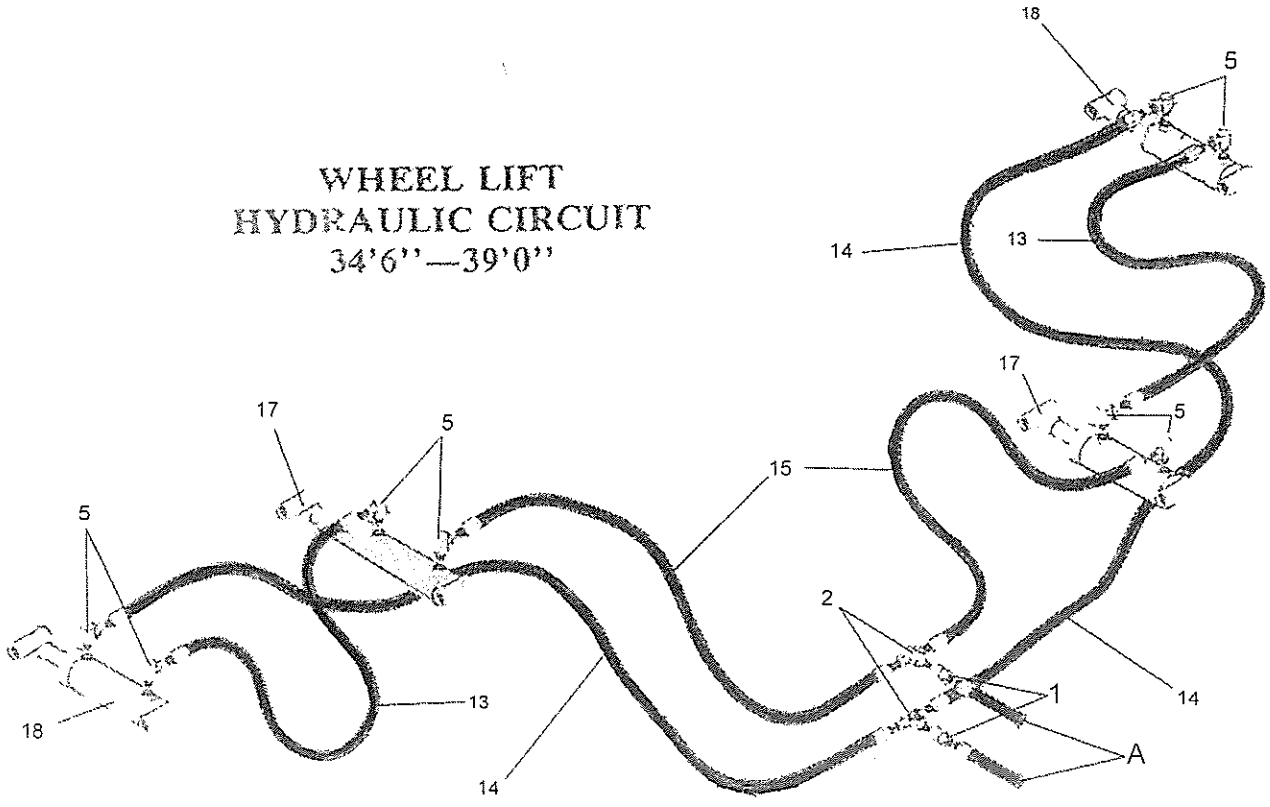
AMCO
F15 Series Disk Harrow
Wheel Lift Hydraulic Cylinder
24' - 30'

Ref. No.	Part. No.	Description	No. Req'd.
A	10720	Hose 1/2" x 12' (Optional Equipment)	2
1	11157	Swivel Unions - 1/2 Male to 1/2 Female	2
2	10923	Special Male Tee 1/2 Male to 1/2 Female	2
5	12180	Swivel Elbows - 1/2 Male to 1/2 Female, O-Ring Fitting, NWO	8
8	12331	Cylinder - 4 x 12 Lion 3000 PSI	2
9	12330	Cylinder - 3-1/2 x 12 Lion 3000 PSI	2
12	10927	Hose 3/8 x 108 with 1/2 NPT Fittings	2
		Connects Butt End of 3-1/2 x 12 Cylinder to Rod End of 4 x 12 Cylinder	
15	11311	Hose 3/8 x 168 with 1/2 NPT Fittings	2
		Connects Upper Male Tee to Rod End of 3-1/2 x 12 Cylinder	
16	11305	Hose 3/8 x 66 with 1/2 NPT Fittings	2
		Connects Lower Male Tee to Butt End of 4 x 12 Cylinder	

WING FOLD
HYDRAULIC CIRCUIT
34'6''—39'0''



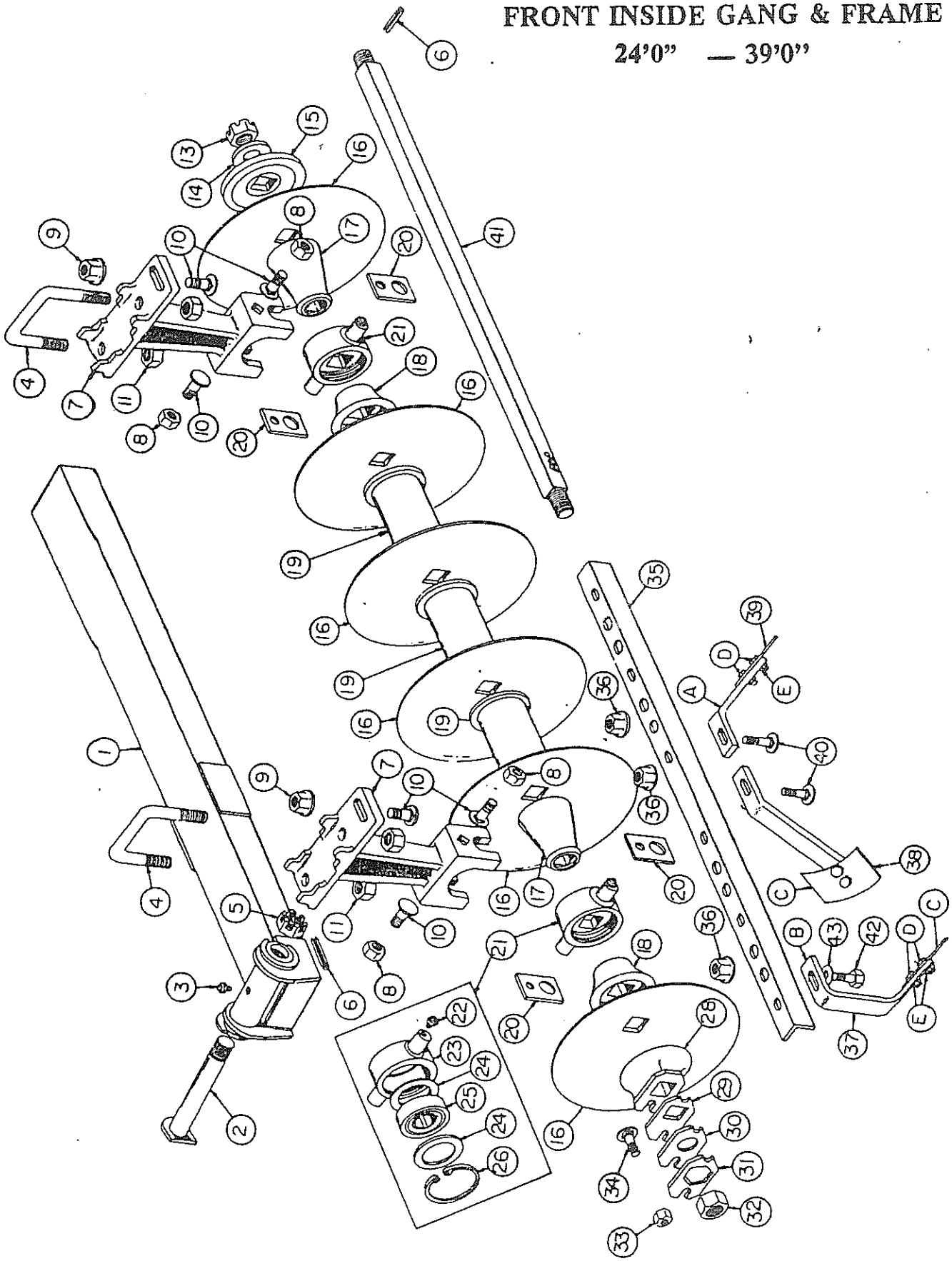
WHEEL LIFT
HYDRAULIC CIRCUIT
34'6''—39'0''



		AMCO	
		F15 Series Disk Harrow	
		Wing Fold Hydraulic Circuit	
		34'6" - 39'0"	
Ref. No.	**Part No.**	**Description**	**No. Req'd**
A		Hydraulic Hose 1/2" x 12' of 3/8" x 12' (optional)	
1	11157	Swivel Union	6
2	11126	Tee 1/2 Male to 1/4 Female	6
4	12370	Reducer 1/2 Male to 1/4 Female, O-Ring Fitting, NWO	6
6	12165	Swivel Elbow 1/2 Male to 1/4 Female, O-Ring Fitting, NWO	6
7	11165	Hose 1/4 x 42	2
		Connects the #2 Male Branch Tees on the Left Front of	
		the harrow	
8	11324	Hose 1/4 x 38	2
		Connects the Rod End of the Front 4 x 24 Cylinders to the	
		bottom #2 Male Branch Tees	
9	11174	Hose 1/4 x 30	2
		Connects the #2 Branch Tees on the Right Front of Harrow	
10	11124	Hose 1/4 x 10/	2
		Connects the butt of the Rear 4 x 24 Cylinders to the Top	
		Male Branch Tee	
11	11172	Hose 1/4 x 120	2
		Connects Rod End of Rear 4 x 24 Cylinders to the Bottom	
		Male Branch Tee	
12	11321	Hose 1/4 x 15	2
		Connects the Butt End of the Front 4 x 24 Cylinders to the	
		Top Male Branch Tee	
16	12351	4 x 24 Cylinder	4
		AMCO	
		F15 Series Disk Harrow	
		Wing Lift Hydraulic Circuit	
Ref. No.	**Part No.**	**Description**	**No. Req'd**
A		Hydraulic Hose 1/2" x 12' or 3/8" x 12' (optional)	2
1	11157	Swivel Union	2
2	10923	1/2 x 1/2 x 2	2
5	12180	Swivel Elbows 1/2 Male to 1/2 Female, O-Ring Fitting, NWO	8
13	11310	Hose 3/8 x 156	2
		Connects Rod End of 4 x 12 Cylinders to Butt End of	
		3-1/2 x 12 Cylinders of Wings	
14	11315	Hose 3/8 x 216	2
		Connects Rod End of 3-1/2 x 12 Cylinders to Male	
15	11305	Hose 3/8 x 66	2
		Connects Butt Ends of tow 4 x 12 Cylinders to the Bottom	
		Male Branch Tee	
17	12331	4 x 12 Hydraulic Cylinder 3000 PSI	2
18	12330	3/1/2 x 12 Hydraulic Cylinder 3000 PSI	2

FRONT INSIDE GANG & FRAME

24'0" — 39'0"

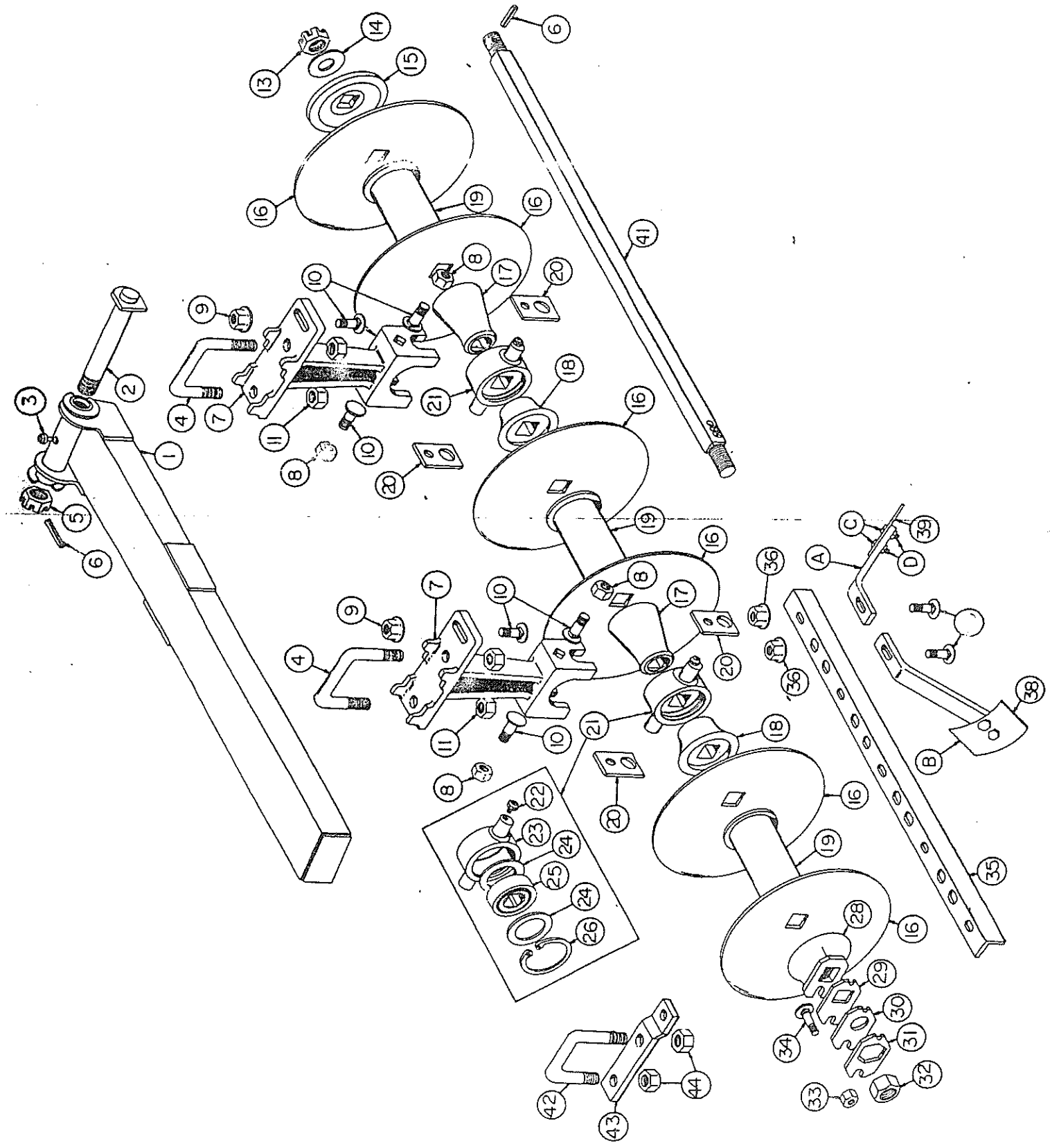


AMCO
F15 Series Disk Harrow
Front Inside Gang & Frame
24' - 39'

Ref. No.	Part No.	Description	No. Req'd 24'	27'0"-30'0"	34'6-39'0"
1	0880	Assy. Gang Frame - Right Front, Left Rear	1	1	
1	0879	Assy. Gang Frame - Left Front, Right Rear	1	1	
1	0882	Assy. Gang Frame - Right Front, Left Rear			1
1	0881	Assy. Gang Frame - Left Front, Right Rear			1
2	0827	Assy. Wing Pivot Pin 1-1/2 Dia. X 10-1/4 Long	1	1	1
3	11081	Grease Fitting 5/16 Drive-In	1	1	1
4	11280	U-Bolt 7/8 Dia.	3	3	3
5	10232	Hex Nut 1-1/2 NC, Slotted	1	1	1
6	10910	Roll Pin 5/16 x 2-1/4	2	2	2
7	16012A	Bearing Riser	3	3	3
8	10299	Lock Nut 5/8 NC, PL	6	6	6
9	11647	Flange Lock Nut 5/8 NC, PL	3	3	3
10	10135	Carriage Bolt 5/8 x 1-3/4 NC, PL	9	9	9
11	10396	Lock Nut 7/8 NC, PL	6	6	6
13	10226	Nut Gang Bolt 1-1/2 NF, Slotted	1	1	1
14	10872	Cut Washer 1-3/8 PL	1	1	1
15	2404	Bumper Washer	1	1	1
16	3276	Blade 22 x 1/4 PL	8	8	10
16	3275	Blade 22 x 1/4 CO	8	8	10
16	3250	Blade 24 x 1/4 CO	8	8	10
16	3255	Blade 24 x 1/4 PL	8	8	10
17	17014	End Bell - Small	3	3	3
18	17010	End Bell - Large	3	3	3
19	0522	Spacer Spool	4	4	6
20	20579	Grease Guard	3	3	3
20A	102489	Wear Guard	3	3	3
21	FB-09-0015	Sub. Assy. Housing & Bearing	3	3	3
22	12384	Grease Fitting 1/8 NPT, Straight	1	1	1
23	16003	Housing - Bearing	1	1	1
24	100104	Washer 100mm	2	2	2
25	11503	Bearing GW211PP-17	1	1	1
26	11064	Snap Ring	1	1	1
28	1222A	End Gang Washer	1	1	1
29	100099	Spacer Plate	1	1	1
30	100098	Bearing Plate	1	1	1
31	5622A	Lock Plate	1	1	1
32	10489	Nut Gang Bolt 1-1/2 NF	1	1	1
33	10395	Lock Nut 1/2 NC, PL	8	8	9
34	10710	Carriage Bolt 1/2 x 2 NC, PLT, Gr. 5	1	1	1
35	100367	Scraper Bar 2x 2 x 3/8 - 88-7/16			1
35	9550	Scraper Bar 2x 2 x 3/8 - 70-1/16	2	1	
36	11646	Flange Lock Nut 1/2 NC, PL	7	7	9
37	0824	Assy. Scraper - Special RH	1	1	1
37	0825	Assy. Scraper - Special LH	1	1	1
38	0789	Assy. Scraper - LH	7	7	9
A	100271	Scraper Shank	1	1	1
B	100368	Scraper Shank - Special	1	1	1
C	100270	Scraper Blade 3/16 x 6 x 4	1	1	1
D	10785	Hex Head Machine Bolt 1/2 x 1-1/2 NC, PL	2	2	2
E	10395	Lock Nut 1/2 NC, PL	2	2	2
39	0788	Assy. Scaper - RH	7	7	9
40	10870	Carriage Bolt 1/2 x 1-1/2 NC, PL, Gr. 5	6	6	8
41	9444	Gang Bolt 1-1/2 Sq. - 70-5/8 Long	1	1	
41	9446	Gang Bolt 1-1/2 Sq. - 84-1/8 Long			1
42	10097	Machine Bolt 1/2 x 2-1/2 NC, PL, Gr.5	1	1	1
43	10832	Cut Washer 1/2 PL	1	1	1

REAR INSIDE GANG & FRAME

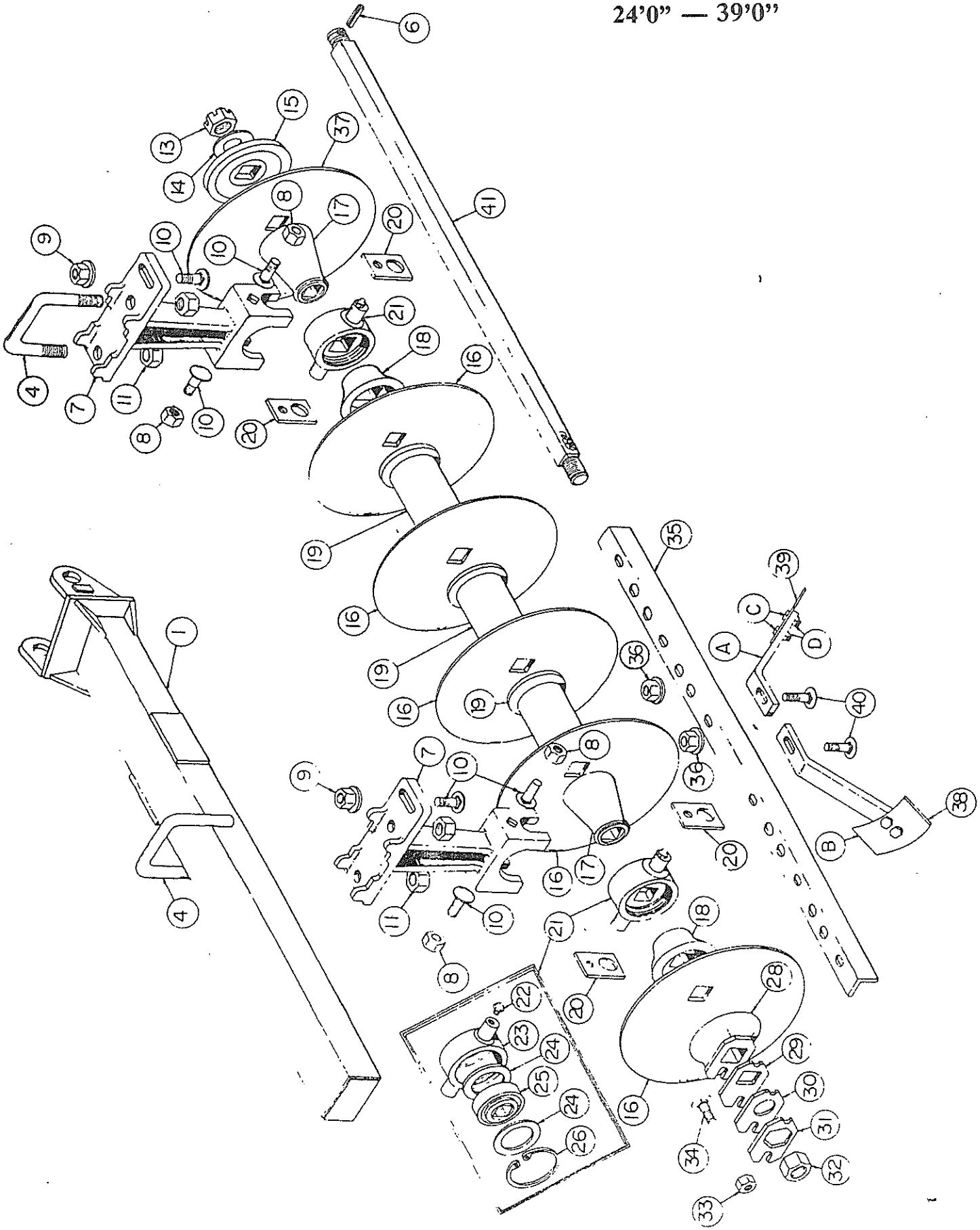
24'0" — 39'0"



		AMCO			
		F15 Series Disk Harrow			
		Rear Inside Gang & Frame			
		24' - 39'			
			No.	Req'd	
Ref. No.	Part No.	Description	24'	27'0"-30'0"	34'6-39'0"
1	0881	Assy. Gang Frame - Right Rear, Left Front			1
1	0882	Assy. Gang Frame - Left Rear, Right Front			1
1	0879	Assy. Gang Frame - Right Rear, Left Front	1	1	
1	0880	Assy. Gang Frame - Left Rear, Right Front	1	1	
2	0827	Assy. Wing Pivot Pin 1-1/2 Dia. X 10-1/4 Long	1	1	1
3	11081	Grease Fitting 5/16 Drive-In	1	1	1
4	11280	U-Bolt 7/8 Dia.	2	2	3
5	10232	Hex Nut 1-1/2 NC, Slotted	1	1	1
6	10910	Roll Pin 5/16 x 2-1/4	2	2	2
7	16012A	Bearing Riser	2	2	3
8	10299	Lock Nut 5/8 NC, PL	4	4	6
9	11647	Flange Lock Nut 5/8 NC, PL	3	3	4
10	10135	Carriage Bolt 5/8 x 1-3/4 NC, PL	7	7	9
11	10396	Lock Nut 7/8 NC, PL	4	4	6
13	10226	Nut Gang Bolt 1-1/2 NF, Slotted	1	1	1
14	10872	Cut Washer 1-3/8 PL	1	1	1
15	2404	Bumper Washer	1	1	1
16	3276	Blade 22 x 1/4 PL	8	7	9
16	3275	Blade 22 x 1/4 CO	8	7	9
16	3250	Blaade 24 x 1/4 CO	8	7	9
16	3055	Blade 24 x 1/4 PL	8	7	9
17	17014	End Bell - Small	2	2	3
18	17010	End Bell - Large	2	2	3
19	0522	Spacer Spool	5	5	6
20	20579	Grease Guard	2	2	3
20A	102489	Wear Guard	2	2	2
21	FB-09-0015	Sub. Assy. Housing - Bearing	2	2	3
22	12384	Grease Fitting 1/8 NPT, Straight	1	1	1
23	16003	Housing Bearing	1	1	1
24	100104	Washer 100mm	2	2	2
25	11503	Bearing GW211PP-17	1	1	1
26	11064	Snap Ring	1	1	1
28	1222A	End Gang Washer	1	1	1
29	100099	Spacer Plate	1	1	1
30	100098	Bearing Plate	1	1	1
31	5622A	Lock Plate	1	1	1
32	10489	Nut Gang Bolt 1-1/2 NF	1	1	1
33	10395	Lock Nut 1/2 NC, PL	8	8	10
34	10710	Carriage Bolt 1/2 x 2 NC, PL, Gr. 5	1	1	1
35	9549	Scraper Bar 2 x 2 x 3/8 - 60-7/8 Long	1	1	
35	9551	Scraper Bar 2 x 2 x 3/8 - 79-1/4 Long			1
36	11646	Flange Lock Nut 1/2 NC, PL	7	7	9
37	11588	Blade 20 x 1/4 PL	1	1	1
37	11589	Blade 20 x 1/4 CO	1	1	1
38	0789	Assy. Scraper Bar - LH	7	7	9
A	100271	Scraper Shank	1	1	1
B	100270	Scraper Blade 3/16 x 6 x 4	1	1	1
C	10785	Hex Head Machine Bolt 1/2 x 1-1/2 NC< PL	2	2	2
D	10395	Lock Nut 1/2 NC, PL	2	2	2
39	0788	Assy. Scraper - RH	7	7	9
40	10870	Carriage Bolt 1/2 x 1-1/2 NC, PL, Gr. 5	7	7	9
41	9444	Gang Bolt 1-1/2 Sq.	1	1	
41	9446	Gang Bolt 1-1/2 Sq.			1
42	6513	U-Bolt 3/4 Dia. - 5/8 x 2 x 11-1/16	1	1	1
43	100365	Scraper Bar Mount	1	1	1
44	10300	Lock Nut 3/4 NC, PL	2	2	2

FRONT WING GANG & FRAME

24'0" — 39'0"

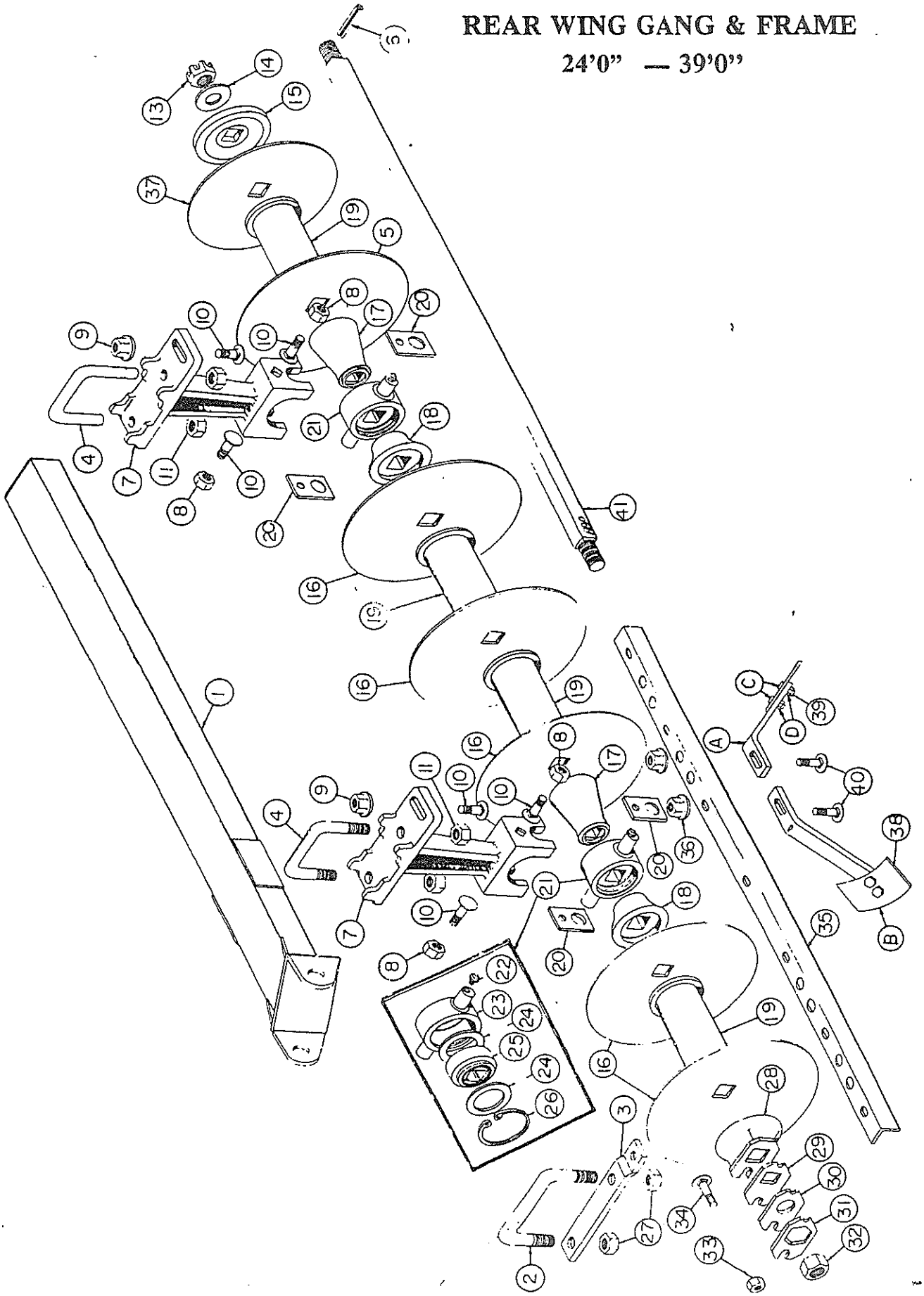


AMCO
F15 Series Disk Harrow
Front Wing Gang & Frame
24' - 39'

Ref. No.	Part No.	Description	No. Req'd 24'	27'	30'	34'6"	39'0"
1	20593	Assy. Gang Frame - Front RH	1				
1	20594	Assy. Gang Frame - Front LH	1				
1	0913	Assy. Gang Frame - Right Front, Left Rear		1			
1	0914	Assy. Gang Frame - Left Front, Right Rear		1			
1	0897	Assy. Gang Frame - Right Front, Left Rear			1		
1	0898	Assy. Gang Frame - Left Front, Right Rear			1		
1	0899	Assy. Gang Frame - Right Front, Left Rear				1	
1	0900	Assy. Gang Frame - Left Front, Right Rear				1	
1	0903	Assy. Gang Frame - Right Front, Left Rear					1
1	0904	Assy. Gang Frame - Left Front, Right Rear					1
2	6513	U-Bolt 3/4 Dia.	1		2	2	2
3	100365	Scraper Bar Mount 5/8 x 2 - 11-1/16	1		2	2	2
4	11280	U-Bolt 7/8 Dia.	3	3	3	3	4
6	10910	Roll Pin 5/16 x 2-1/4	1	1	1	1	2
7	16012A	Bearing Riser	3	3	3	3	4
8	10299	Lock Nut 5/8 NC, PL	6	6	6	6	8
9	11647	Flange Lock Nut 5/8 NC, PL	3	3	5	5	6
10	10135	Carriage Bolt 5/8 x 1-3/4 NC, PL	9	9	11	11	14
11	10396	Lock Nut 7/8 NC, PL	6	6	6	6	8
13	10226	Nut Gang Bolt 1-1/2 NF, Slotted	1	1	1	1	2
14	10872	Cut Washer 1-3/8 PL	1	1	1	1	2
15	2404	Bumper Washer	1	1	1	1	2
16	3276	Blade 22 x 1/4 PL	8	9	11	12	15
16	3275	Blade 22 x 1/4 CO	8	9	11	12	15
16	3250	Blade 24 x 1/4 CO	8	9	11	12	15
16	3255	Blade 24 x 1/4 PL	8	9	11	12	15
17	17014	End Bell - Small	3	3	3	3	4
18	17010	End Bell - Large	3	3	3	3	4
19	0522	Spacer Spool	4	6	8	9	10
20	20579	Grease Guard	3	3	3	3	4
20A	102489	Wear Guard	3	3	3	3	3
21	FB-09-0015	Sub. Assy. Housing & Bearing	3	3	3	3	4
22	12384	Grease Fitting 1/8 NPT Straight	1	1	1	1	1
23	16003	Housing Bearing	1	1	1	1	1
24	100104	Washer 100mm	2	2	2	2	2
25	11503	Bearing GW211PP-17	1	1	1	1	1
25	11064	Snap Ring	1	1	1	1	1
27	10300	Lock Nut 3/4 NC, PL			4	4	4
28	1222A	End Gang Washer	1	1	1	1	2
29	100099	Spacer Plate	1	1	1	1	2
30	100098	Bearing Plate	1	1	1	1	2
31	5622A	Lock Plate	1	1	1	1	2
32	10489	Nut Gang Bolt 1-1/2 NF	1	1	1	1	2
33	10395	Lock Nut 1/2 NC, PL	1	1	1	1	2
34	10710	Carriage Bolt 1/2 x 2 NC, PL, Gr. 5	1	1	1	1	2
35	100367	Scraper Bar 2 x 2 x 3/8 - 88-7/16 Long		1			
35	100366	Scraper Bar 2 x 2 x 3/8 - 106-13/16 Long			1		
35	100446	Scraper Bar 2 x 2 x 3/8 - 116 Long				1	
35	9550	Scraper Bar 2 x 2 x 3/8 - 70-1/16 Long	1				2
36	11646	Flange Lock Nut 1/2 NC, PL	1	9	11	12	15
37	3276	Blade 22 x 1/4 PL	1	1	1	1	1
37	3275	Blade 22 x 1/4 CO	1	1	1	1	1
38	0789	Assy. Scraper - LH	8	9	11	12	15
A	100271	Scraper Shank	1	1	1	1	1
B	100270	Scraper Blade 3/16 x 6 x 4	1	1	1	1	1
C	10785	Hex Head Machine Bolt 1/2 x 1-1/2 NC, PL	2	2	2	2	2
D	10395	Lock Nut 1/2 NC, PL	2	2	2	2	2
39	0788	Assy. Scraper - RH	8	9	11	12	15
40	10870	Carriage Bolt 1/2 x 1-1/2 NC, PL, Gr. 5	8	9	11	12	15
41	9446	Gang Bolt 1-1/2 Sq. - 89-1/8		1			
41	9448	Gang Bolt 1-1/2 Sq. - 107-5/8			1		
41	100447	Gang Bolt 1-1/2 Sq. - 116-7/8				1	
41	9444	Gang Bolt 1-1/2 Sq. - 70-5/8	1				2
42	3278	Back-up Blade 10 x 11 Ga. PL	1	1	1	1	1

REAR WING GANG & FRAME

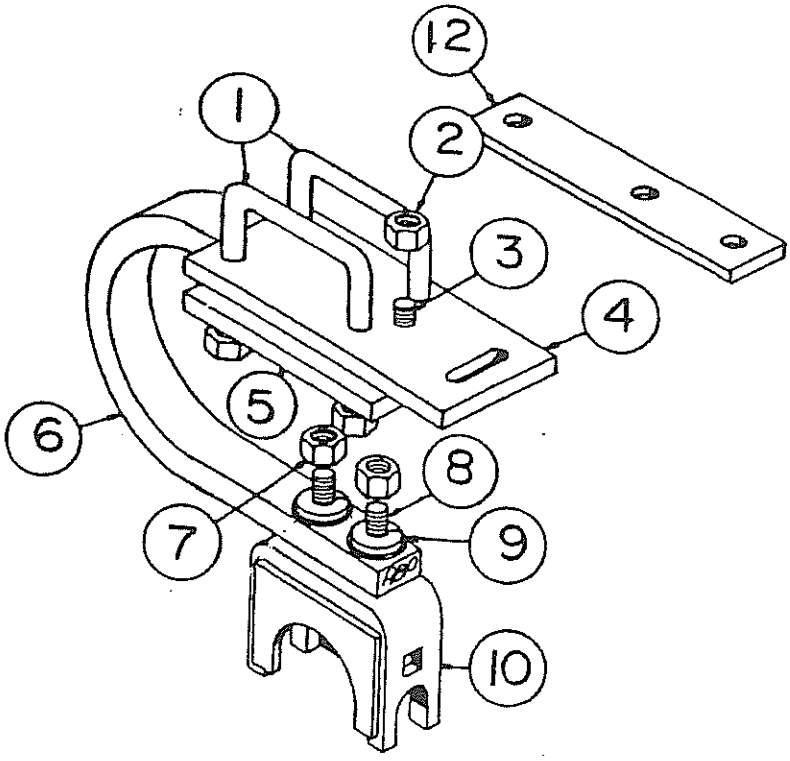
24'0" — 39'0"



AMCO
F15 Series Disk Harrow
Rear Wing Gang & Frame
24' - 39'

Ref. No.	Part No.	Description	No. Reg'd 24'	27'	30'	34'6"	39'0"
1	20595	Assy. Gang Frame - Rear RH	1				
1	20596	Assy. Gang Frame - Rear LH	1				
1	0916	Assy. Gang Frame - Right Rear, Left Front		1			
1	0915	Assy. Gang Frmae - Left Rear, Right Front		1			
1	0900	Assy. Gang Frame - Right Rear, Left Front			1		
1	0899	Assy. Gang Frame - Left Rear, Right Front			1		
1	0902	Assy. Gang Frame - Right Rear, Left Front				1	
1	0901	Assy. Gang Frame - Left Rear, Right Front				1	
1	0906	Assy. Gang Frame - Right Rear, Left Front					1
1	0905	Assy. Gang Frame - Left Rear, Right Front					1
2	6513	U-bolt 3/4 Dia.	1	1	2	1	1
3	100365	Scraper Bar Mount 5/8 x 2 - 11-1/16 Long	1	1	2	1	1
4	11280	U-Bolt 7/8 Dia.	2	3	3	4	5
5	11588	Blade 20 x 1/4 PL	1	1	1	1	1
5	11589	Blade 20 x 1/4 CO	1	1	1	1	1
6	10910	Roll Pin 5/16 x 2-1/4	1	1	1	2	2
7	16012A	Bearing Riser	3	3	3	4	5
8	10299	Lock Nut 5/8 NC, PL	6	6	6	8	10
9	11647	Flange Lock Nut 5/8 NC, PL	4	4	5	5	6
10	10135	Carriage Bolt 5/8 x 1-3/4 NC, PL	9	9	11	13	16
11	10396	Lock Nut 7/8 NC, PL	6	6	6	8	10
13	10226	Nut Gang Bolt 1-1/2 NF, Slotted	1	1	1	2	2
14	10872	Cut Washer 1-3/8 PL	1	1	1	2	2
15	2404	Bumper Washer	1	1	1	1	2
16	3276	Blade 22 x 1/4 PL	9	9	11	12	15
16	3275	Blade 22 x 1/4 CO	9	9	11	12	15
16	3250	Blade 24 x 1/4 CO	9	9	11	12	15
16	3255	Blade 24 x 1/4 PL	9	9	11	12	15
17	17014	End Bell - Small	2	3	3	4	5
18	17010	End Bell - Large	2	3	3	4	5
19	0522	Spacer Spool	6	7	9	8	10
20	20579	Grease Guard	2	3	3	4	5
20A	102489	Wear Guard	2	3	3	4	5
21	FB-09-0015	Sub. Assy. Housing and Bearing	2	3	3	4	5
22	12384	Grease Fitting 1/8 NPT, Straight	1	1	1	1	1
23	16003	Housing Bearing	1	1	1	1	1
24	100104	Washer 100mm	2	2	2	2	2
25	11503	Bearing GW211PP-17	1	1	1	1	1
26	11064	Snap Ring	1	1	1	1	1
27	10300	Lock Nut 3/4 NC, PL	2	2	4	2	2
28	1222A	End Gang Washer	1	1	1	2	2
29	100099	Spacer Plate	1	1	1	2	2
30	100098	Bearing Plate	1	1	1	2	2
31	5622A	Lock Plate	1	1	1	2	2
32	10489	Nut Gang Bolt 1-1/2 NF	1	1	1	2	2
33	10395	Lock Nut 1/2 NC, PL	1	1	1	2	2
34	10710	Carriage Bolt 1/2 x 2 NC, PLT, Gr. 5	1	1	1	2	2
35	100534	Scraper Bar 2 x 2 x 3/8 - 97-5/8 Long	1	1			
35	100446	Scraper Bar 2 x 2 x 3/8 - 116 Long			1		
35	9548	Scraper Bar 2 x 2 x 3/8 - 51-11/16 Long				1	
35	9550	Scraper Bar 2 x 2 x 3/8 - 70-1/16 Long					1
35	9551	Scraper Bar 2 x 2 x 3/8 - 79-1/4 Long	1				1
36	11646	Flange Lock Nut 1/2 NC, PL	8	11	13	14	17
37	3055	Blade 16 x 9 PL	1	1	1	1	1
37	9482	Blade 18 x 8 PL	1	1	1	1	1
38	0789	Assy. Scraper - LH	8	11	13	14	17
A	100271	Scraper Shank	1	1	1	1	1
B	100270	Scraper Blade 3/16 x 6 x 4	1	1	1	1	1
C	10785	Hex Head Machine Bolt 1/2 x 1-1/2 NC, PL	2	2	2	2	2
D	10395	Lock Nut 1/2 NC, PL	2	2	2	2	2
39	0788	Assy. Scraper - RH	8	11	13	14	17
40	10870	Carriage Bolt 1/2 x 1-1/2 xNC, PLT, Gr. 5	8	11	13	14	17
41	9447	Gang Bolt 1-1/2 Sq. - 98-3/8		1			
41	100447	Gang Bolt 1-1/2 Sq. - 116-7/8			1		
41	9443	Gang Bolt 1-1/2 Sq. - 61-3/8				2	1
41	9446	Gang Bolt 1-1/2 Sq. - 89-1/8	1				1
41	9445	Gang Bolt 1-1/2 Sq. - 79-7/8	2	3	3	4	5

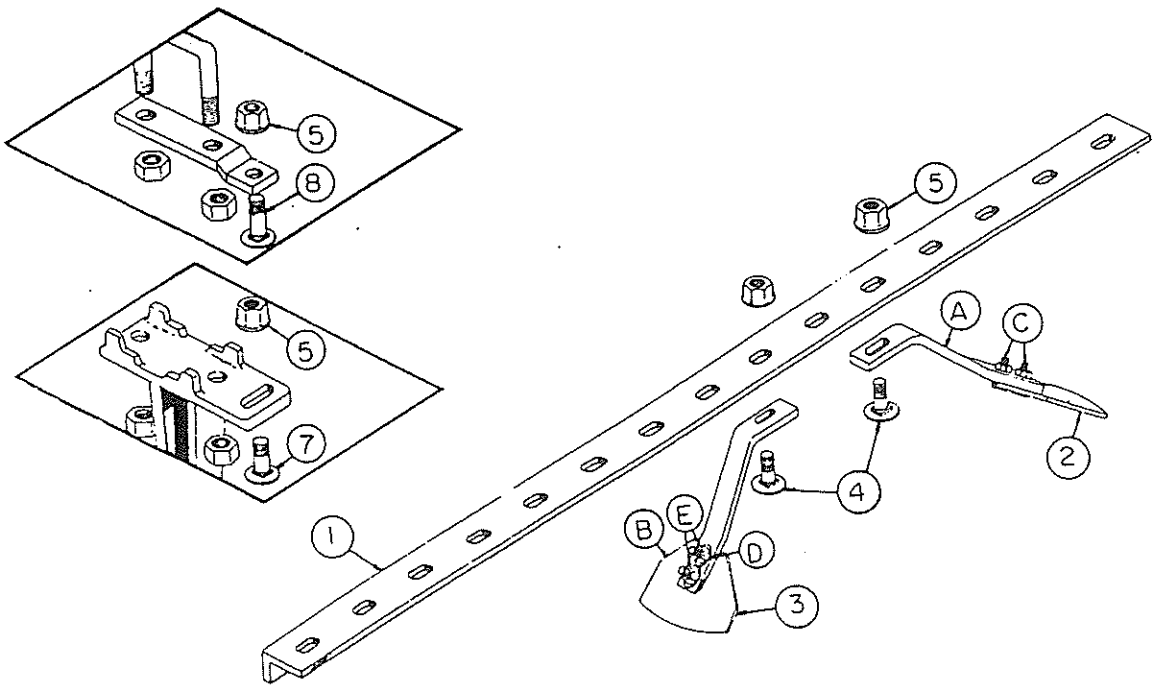
		AMCO		
		F15 Series Disk Harrow		
		Shock Absorber Bearing Riser		
Ref. No.	Part No.	Description	No. Req'd.	
1	11467	U-bolt 3/4 Dia. - 1/-1/4 Long	2	
2	10300	Lock Nut 3/4 NC, PLT, Gr.5	5	
3	10320	Machine Bolt 3/4 x 3-1/4 NC, PLT, Gr.5	1	
4	100801	Top Plate 1/2 x 5 - 12 Long	1	
5	100802	Bottom Plate 5/8 x 5 - 8-3/4 Long	1	
6	11521	Shock Absorber Shank (pp)	1	
7	12069	Lock Nut 3/4 NC, PLT, Flange	2	
8	10579	Carriage Bolt 3/4 x 3 NC, PLT	2	
10	0944	Assy. Trunnion Mount	1	
12	100846	Scraper Bar Support	1	
Note: Parts 1-10 are required to replace Bearing Riser 16012A on a Shock Absorber H				
Part 12 is used to replace 100365 on a Shock Absober Harrow.				



SHOCK ABSORBER BEARING RISER

		AMCO					
		F15 Series Disk Harrow					
		Option Heavy Duty Scrapers					
			No.	Req'd			
Ref. No.	Part No.	Description	24'	27'	30'	34'6"	39'0"
1	101074	Scraper Bar 3 x 2 x 1/2< - 50-1/2 Long				2	
		Rear Righ Hand, Rear Left Hand Inside					
1	101076	Scraper Bar 3 x 2 x 1/2< - 59-3/4 Long	2	2	2		
		Rear Right Hand, Rear Left Hand Inside					
1	101077	Scraper Bar 3x 2 x 1/2 - 64-3/8 Long					2
		Wings, Front Right & Left					
1	101078	Scraper Bar 3 x 2 x 1/2< - 69 Long	4	2	2	2	4
		34'6" Left & Right Rear Wing					
		27' & 30' Left & Right Front Inside					
		39' Left & Right Front Wing					
		39' Left & Right Rear Inside					
1	101080	Scraper Bar 3 x 2 x 1/2 - 78-1/4 Long	2			2	4
		34'6" & 39' Left & Right Rear Inside					
		39' Left & Right Rear Wing					
1	101081	Scraper Bar 3 x 2 x 1/2 - 82-7/8 Long		2			
		Front Right & Left Wings					
1	101082	Scraper Bar 3 x 2 x 1/2 - 87-1/2 Long				2	2
		Front Right & Left Inside					
1	1401084	Scraper Bar 3 x 2 x 1/2 - 96-3/4 Long		2			
		Rear Right & Left Wing					
1	101085	Scraper Bar 3 x 2 x 1/2 - 101-3/8 Long			2		
		Front Right & Left Wing					
1	101087	Scraper Bar 3 x 2 x 1/2 - 110-5/8 Long				2	
		Front Right & Left Wing					
1	101088	Scraper Bar 3 x 2 x 1/2 - 115-1/4 Long			2		
		Rear Right & Left Wing					
2	20068	Scraper - RH	29	34	38	44	50
A	101049	Scraper Shank .360 x 2	1	1	1	1	1
B	101019	Scraper Blade 3/16 x 6-1/2	1	1	1	1	1
C	10785	Hex Head Screw 1/2 x 1-1/2 NC, PL	2	2	2	2	2
D	10832	Cut Washer 1/2 PL	2	2	2	2	2
E	10395	Lock Nut 1/2 NC, PL	2	2	2	2	2
2A	20112	Special Scraper - RH (not shown)	1	1	1	1	1
3	20069	Scraper - LH	29	34	38	44	50
3A	20113	Special Scraper - LH (not shown)	1	1	1	1	1
4	10135	Carriage Bolt 5/8 x 1-3/4 NC, PL, Gr.5	62	70	78	90	102
5	11647	Flange Lock Nut 5/8 NC, PL	62	70	78	90	102
7	10665	Carriage Bolt 5/8 x 2 NC, PL, Gr. 5	22	24	30	32	36
8	10722	Carriage Bolt 5/8 x 2 x 1/2 NC, PL	4	2	2	2	2

OPTIONAL HEAVY DUTY SCRAPERS



DECALS

AMCO

YAZOO CITY, MISS.

⚠ WARNING

1. BEFORE OPERATING – STUDY OPERATORS MANUAL SAFETY MESSAGES AND SAFE OPERATING PROCEDURES, READ SAFETY SIGNS ON THIS MACHINE.
2. TRANSPORT ON PUBLIC ROADS – OBSERVE FEDERAL, STATE AND LOCAL REGULATIONS; DISPLAY SMV EMBLEM; ATTACH PROPER STRENGTH SAFETY CHAIN TO TOWED IMPLEMENT; AND LIMIT MAXIMUM SPEED TO 20mph (32 km/h).
3. LOWER OR BLOCK ALL ELEVATED COMPONENTS BEFORE SERVICING OR LEAVING THIS MACHINE.

11741 321-6625

MAINTENANCE INSTRUCTIONS

Keep all bolts tight. Check after first 50 hours or one week's operation. Visually inspect all bolts daily.

Keep wheel bearings properly adjusted. Clean and repack each season or every 300 hours. Replace all worn or damaged parts when repairing

Keep gang bolts tight! Tighten after first day's operation. Do not run with loose disk blades. If gang bolts have been operated in a loose condition, retighten, then tighten again after 30 minutes use, again after 4 to 5 hours, and again after 8 to 10 hours

4 Grease gang bearings daily with a hand grease gun and a good grade of clean, number 2, lithium soap base grease. Always wipe fittings clean before greasing. Apply grease until old or dirty grease is purged from bearings. Avoid high-pressure greasing.

5 Inspect for damaged or misaligned parts if gangs do not turn smoothly by hand. Bearings will fail prematurely if operated with misaligned or damaged gang parts. If a gang is operated for one or more hours following a bearing failure, replace all bearings on the gang.

11716

Refer to operator's manual for other important maintenance instructions

⚠ WARNING

FOLDING WINGS — CAN CAUSE INJURY BY:

1. DROPPING DUE TO HYDRAULIC FAILURE, AIR IN CYLINDERS, OR ACCIDENTAL CONTROL MOVEMENT.
2. CONTACTING ELECTRIC LINES OR OVERHEAD OBSTRUCTIONS.

STAY CLEAR — CHARGE CYLINDERS WITH OIL TO REMOVE AIR BEFORE FIRST USE. SECURE WINGS FOR TRANSPORT. MEASURE OVERALL TRANSPORT HEIGHT AND ASSURE CLEARANCE.

		AMCO		
		F15 Series Disk Harrow		
		Decals		
Ref. No.	Part No.	Description	No. Req'd.	
1	11465	Decal - AMCO	2	
2	11741	Decal - Warning	1	
3	11716	Decal - Maintenace	1	
4	11743	Decal - Warning	1	
5	12540	Reflector - Orange (not shown)	2	
6	12541	Reflector - Red (not shown)	2	

GENERAL TORQUE SPECIFICATION TABLE

ALL BOLTS SHOULD BE TIGHTENED TO THE
RECOMMENDED TORQUES SHOWN IN THE
"GENERAL TORQUE SPECIFICATION TABLE"

GENERAL TORQUE SPECIFICATION TABLE

USE THE FOLLOWING TORQUES WHEN SPECIAL TORQUES ARE NOT GIVEN

Note: These values apply to fasteners as received from supplier, dry, or when lubricated with normal engine oil. They do not apply if special graphited or moly-disulphide greases or other extreme pressure lubricants are used. This applies to both UNF and UNC threads.

SAE Grade No		2		5		8 *	
Bolt head identification marks as per grade NOTE: Manufacturing Marks Will Vary							
Bolt Size		Torque Foot Pounds		Torque Foot Pounds		Torque Foot Pounds	
Inches	Millimeters	Min	Max	Min	Max	Min	Max
1/4	6 35	5	6	9	11	12	15
5/16	7 94	10	12	17	20 5	24	29
3/8	9 53	20	23	35	42	45	54
7/16	11 11	30	35	54	64	70	84
1/2	12.70	45	52	80	96	110	132
9/16	14.29	65	75	110	132	160	192
5/8	15.88	95	105	150	180	220	264
3/4	19.05	150	185	270	324	380	456
7/8	22.23	160	200	400	480	600	720
1	25.40	250	300	580	696	900	1080
1-1/8	25.58			800	880	1280	1440
1-1/4	31 75			1120	1240	1820	2000
1-3/8	34.93			1460	1680	2380	2720
1-1/2	38 10			1940	2200	3160	3560

* Thick nuts must be used with Grade 8 bolts

assembly instructions

AMCO F15 HARROW
24' and 30'0" Models

The AMCO F15 Harrow is shipped from the factory with maximum pre-assembly. The following bundles are required for a complete harrow:

A. Bundle Pull Tongue (with tongue jack)
B. Bundle Main Frame (with rockshafts)
C. Two 4 x 12 Hydraulic Cylinders
D. Two 3-1/2 x 12 Hydraulic Cylinders
E. Hydraulic Kit with Hose and Assembly Instructions
F. Two 4 x 24 Hydraulic Cylinders
G. Bundle Wing Main Frame — Right Hand (with Depth Gauges)
H. Bundle Wing Main Frame — Left Hand (with Depth Gauges)
I. Bundle Front Right Hand Inside Gang Frame
J. Bundle Front Left Hand Inside Gang Frame
K. Bundle Rear Right Hand Inside Gang Frame
L. Bundle Rear Left Hand Inside Gang Frame
M. Bundle Front Right Hand Wing Gang Frame
N. Bundle Front Left Hand Wing Gang Frame
O. Bundle Rear Right Hand Wing Gang Frame
P. Bundle Rear Left Hand Wing Gang Frame
Q. Four 15 x 10 Six Bolt Wheels
R. Four 15 x 8 Six bolt Wheels
S. Four 145 x 6 Six Bolt Wheels (F15 – 66BL – Wing Sector Only)

Step 1.
Select a clear level area to assemble the harrow. Place all parts and bundles where they will be readily accessible during assembly.

Step 2.
Place the center main frame "right side up" on sturdy stands at least 33" High.

CAUTION: Use sturdy stands to prevent frame from falling.

Step 3.
Attach the two inside front gangs and gang frames to the center main frame. Clamp in place with the 7/8" "U" bolts. These gangs have eight blades and three bearings. The gangs should be located to throw soil away from the center of the harrow. Leave the 7/8" "U" bolts snug but not tight.

Step 4.
Attach the two inside rear gangs to the center main frame. Clamp in place with the 7/8" "U" bolts. These gangs have eight blades and two bearings. The gangs should be located to throw soil toward the center of the harrow. Leave the 7/8" "U" bolts snug but not tight.

Step 5.
Attach the two front gang frames to the inside front gang frames. Use the 1-1/2" diameter wing pivot pins. Tighten the nuts snug but not tight.

CAUTION: When working on disk harrows care should be exercised in handling or tightening bolts near disk blades to avoid injury. All hydraulically or mechanically elevated components must be blocked or lowered to prevent accidents when servicing the harrow.

Step 6.
Attach the two rear wing gang frames to the inside rear frames. Use the 1-1/2" diameter wing pivot pins. Tighten the nuts snug but not tight.

Step 7.
Mount four 12.5L x 15 eight ply tires on the four 15 x 10 wheels. Inflate to 40-50 PSI. Mount wheels on center rockshafts. Tighten hub bolts tight. Remove all stands from underneath the main frame.

Step 8.
Clamp the wing main frames to the wing gang frames using the 7/8" "U" bolts. Shift gangs as required to align all holes. Thoroughly tighten all thirty-two 7/8" "U" bolts. Tighten four 1-1/2" diameter wing pivot pins. Secure with 5/16 x 2-1/4 Roll Pins.

CAUTION ***When working on disk harrows, care should be exercised in handling or tightening bolts near disk blades to avoid injury.***

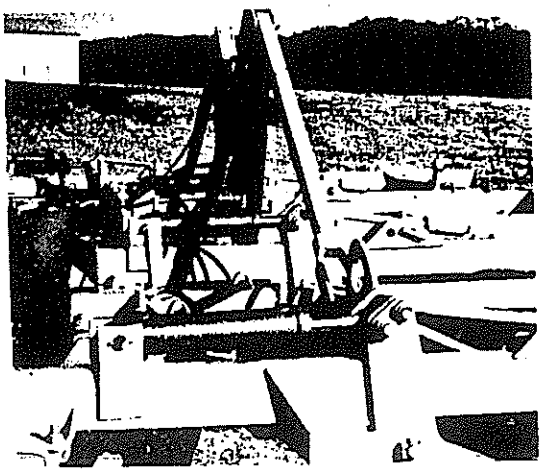
Step 9.
Mount two 11L x 15 six or eight ply tires on the two 15 x 8 wheels. Inflate to 40-50 PSI. Mount wheels on wing rockshafts. Tighten hub bolts tight. If harrow is equipped with optional dual wing wheels they should be installed at this time.

Step 10.
Install the two 4 x 12 hydraulic cylinders on the center main frame and the two center rockshafts. The rod end should be attached to the rockshaft.
NOTE: Remove the straps that clamp the rockshafts to the main frame.

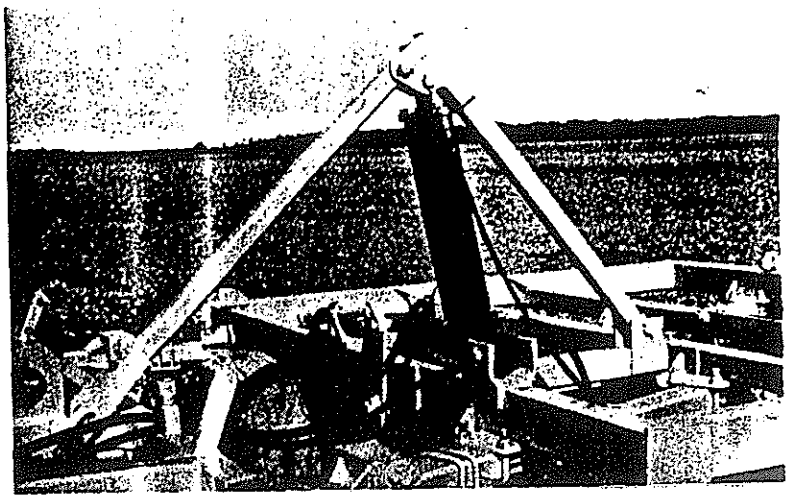
Step 11.
Install the two 3-1/2 x 12 Hydraulic Cylinders on the wing main frames and the two wing depth gauges. The rod end should be attached to the wing depth gauges.
NOTE: Remove the straps that clamp the wing depth gauges to the wing main frame.

Step 12.
Install the wing lift links on the center main frame and wing main frames. Secure with the 1-1/4 DIA. Pin, 1" DIA. Pin and 5/16 x 2-1/4 Roll Pins.

Step 13.
Install the two 4 x 24 hydraulic cylinders. Turn ports to front on both cylinders. Check plug on bottom of butt casting on each cylinder. It must be tight!



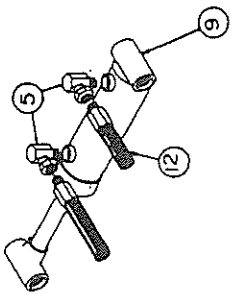
4 X 12 CYLINDER INSTALLATION

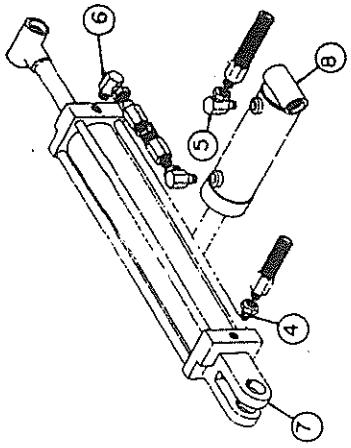


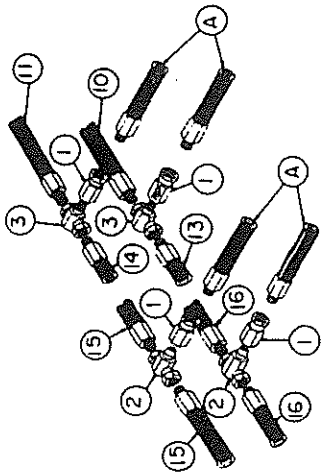
4 X 24 CYLINDER INSTALLATION

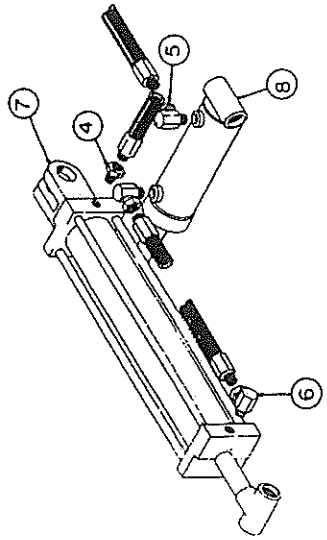
HYDRAULIC CIRCUIT

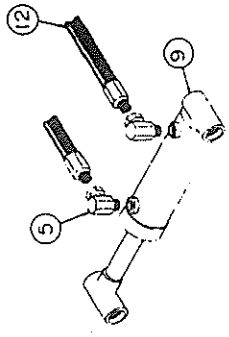
27'0" — 30'0"











Step 14.
Install Hydraulic Fittings as follows: (See illustrations on pages 20 & 38)

A. Install eight 12180 1/2 Male to 1/2 Female swivel elbows into the ports on the 4 x 12 and 3-1/2 x 12 cylinders. Turn fittings as shown in drawing. Coat fittings with pipe sealant before installation. Do not put sealant over end of fitting. This will keep the sealant out of the tractor hydraulic system. Tighten fittings!

B. Install two #11127 1/2 Male to 1/4 Female swivel elbows into ports on rod end of both 4 x 24 cylinders. Turn fittings down as shown on drawing.

C. Install two #11284 1/2 Male to 1/4 Female reducers in the ports on the butt end of the two 4 x 24 cylinders. Coat fittings with sealant before installation. Tighten fittings.

D. The four #11157 1/2 Male to 1/2 Female swivel unions are used to secure the four tees to the mounting brackets. The swivel on the unions should be turned to the front to simplify attachment of the four 1/2" x 12' hoses that go to the tractor. The two #11156 1/2 male to 1/4 female tees should be installed in the left hand mount bracket. The two #11260 1/2 male to 1/2 female tees should be installed in the right hand mount bracket. Use sealant as explained.

E. Connect cylinders with hoses. Lay the hoses out where they will be readily accessible and start with the shortest 1/4" diameter hoses first. Connect hoses, fittings and cylinders as follows: (Refer to page 21)

(1) The #11166 1/4 x 48 hose is used to connect the butt end of the left 4 x 24 cylinder to the bottom male branch tee on the support bracket.

(2) The #11121 1/4 x 72 hose is used to connect the top male branch tees on the left front of the harrow to the rod end of the left hand 4 x 24 cylinder.

(3) The #11123 1/4 x 96 hose is used to connect the bottom male branch tee on the left front of the harrow to the butt end of the right hand 4 x 24 cylinder.

(4) The #11124 1/4 x 108 hose is used to connect the rod end of the right hand 4 x 24 cylinder to the top male branch tee on the support bracket.

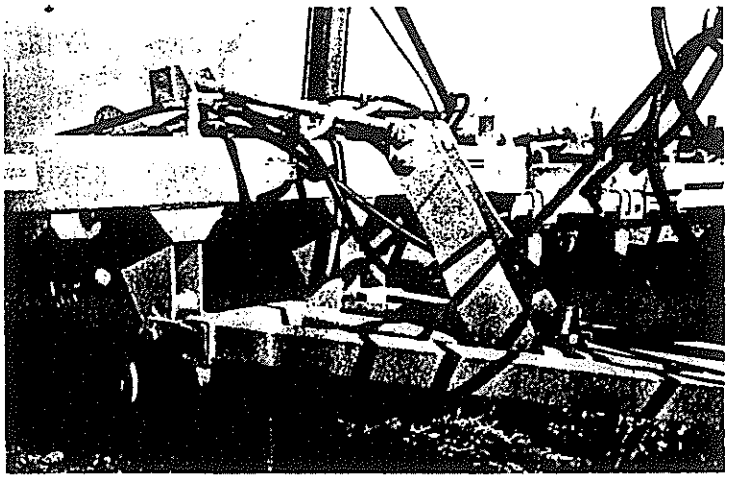
This completes assembly of the hydraulic circuit for folding the wings. Carefully check your assembly and hose routing. All hoses must be routed through the support brackets to prevent damage when the wings are folded and the harrow is raised for transport. Check the hose connections to assure that both 4 x 24 cylinders are connected in parallel so they will extend together to fold in the disk. The butt ends of both cylinders must be connected together!

(5) Two #11305 3/8 x 66 hoses are used to connect the butt ends of the two 4 x 12 cylinders to the bottom male branch tee on the right hand support bracket. Route hoses through supports.

(6) Two #10927 3/8 x 108 hoses are used to connect the rod ends of the 4 x 12 cylinders to the butt ends of the cylinders on the wing main frames. Turn the fittings to give the hose plenty of slack to prevent binding. Route hoses through hose supports.

(7) Two #11311 3/8 x 168 hoses are used to connect the rod end of the 3-1/2 x 12 cylinders to the male branch tee on the front of the main frame. Refer to the drawing and carefully route this hose through the supports and under the 4 x 12 cylinders. All fittings should be coated with sealant and tightened securely.

Step 15.
Install pull tongue. Install tongue adjusting rod sub assembly.



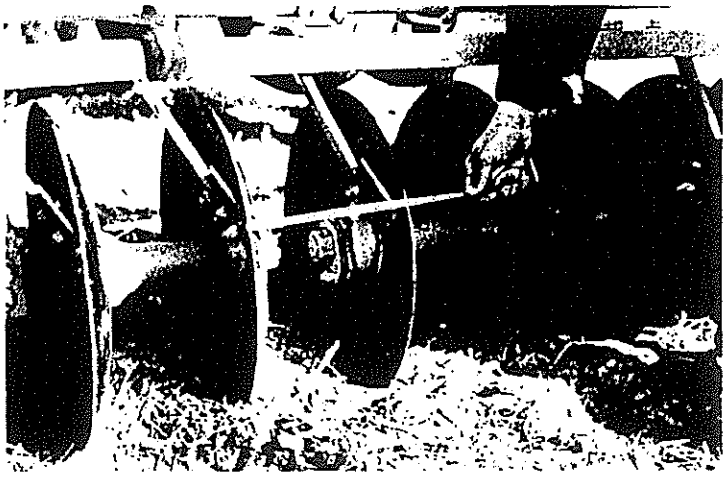
Step 16.
Attach four 1/2" x 12' or 3/8" x 12' SAE 100R2 or SAE 100R8 Double Braid Hydraulic hoses to the swivel adaptors on the main frame. Attach quick couplers. (Hoses and Couplers are available as optional equipment). Attach harrow and hoses to tractor.

Step 17.
Install the two 3/4" wing lock pins in the bottom holes in the wing stands. This will keep the pins from getting damaged when the harrow is folded.

Step 18.
Final Grooming and Check Points.

A. Check inside front gangs. They should overlap in center about 2-1/2" to 3-1/2". (Front tips of inside blades should be 1-1/4" to 1-3/4" over center line of harrow.) This can be adjusted by shifting the gangs on the gang frames. It is important that center blades clear by at least 1".

B. Check the inside rear gangs. They should be 26" to 30" apart. (The front tips of the inside blades should be 13" to 15" from the harrow centerline.) Shift gangs as required to obtain this spacing.



C. Check the spacing between the blades on the center gangs and wing gangs. This spacing should be 9-1/4" to 9-3/4". The harrow must be on a level area when checking this spacing. Shift wing gangs as required to obtain this spacing. All bearing risers must be shifted evenly to prevent bearing pre-load.

CAUTION ***Stand clear when disk wings are being raised or lowered. Do not work or stand under disk wings unless wing lock pins are installed. Accidental operation of hydraulic lever or failure of any hydraulic component could cause wing to drop, causing serious injury or damage.***

D. Check scraper adjustment. Scrapers should be adjusted to run 1/16" to 1/8" from disk blades.

E. Raise and lower harrow 4 or 5 times with 4 x 12 and 3-1/2 x 12 cylinders to be sure that hoses are properly routed. Check transport locks 4 or 5 times to see if they function properly. The hydraulic control lever must be held in the raising position several minutes to fill the two 3-1/2 x 12 wing wheel cylinders with hydraulic fluid.

F. The four depth control stops should be set near the end of the rod or maximum depth position. They can be adjusted as required after the harrow is placed in use.

G. Fold and unfold the wings 4 or 5 times. Check wings and hose routing to be sure they fold properly. Make sure the transport lock pins are stored in the holes on the wing stands. The pins should easily slip into the holes to lock the wings in transport position. Adjust wing stands as required to align all holes.

H. Fully extend the 4 x 12 and 3-1/2 x 12 cylinders and raise the harrow for transport. Adjust the tongue adjusting rod to level the harrow for transport.

I. Check all hydraulic hoses and fittings for leaks. Repair as required. Replace fittings that continue to leak after tightening.

J. Lubrication for 27' and 30' Harrow:
Raise harrow for transport as described above. Use a good grade of clean Lithium soap base chassis grease to grease the entire harrow. This is very important if the harrow will be kept in inventory for several weeks before being placed in service. Grease the harrow as follows:

(1) Grease the six rockshaft pivot pins until grease appears at the ends of the pivot journals.

(2) Grease the four wing pivot pins until grease appears.

(3) Grease the two fittings on the tongue adjusting rod and the one fitting on the tongue control rod. This fitting is located under the front center portion of the harrow main frame. It is immediately in front of the compression spring on the tongue control rod. Remove tape from tongue adjusting rod.

(4) Grease the gang bearings with 4 or 5 shots of grease to purge any condensation that has accumulated during shipment and storage.

K. Lubrication for 34'6" and 39'0" Harrow:

Raise harrow for transport as described above. Use a good grade of clean Lithium soap base chassis grease to grease the entire harrow. This is very important if the harrow will be kept in inventory for several weeks before being placed in service. Grease the harrow as follows:

(1) Grease the eight rockshaft pivot pins until grease appears at the ends of the pivot journals. It will take several strokes to initially fill the pivot journals.

(2) Grease the four wing pivot pins until grease appears.

(3) Grease the two fittings on the tongue adjusting rod and the one fitting on the tongue control rod. This fitting is located under the front center portion of the harrow main frame. It is immediately in front of the compression spring on the tongue control rod. Remove tape from tongue adjusting rod.

assembly instructions

AMCO F15 HARROW
34'6" and 39'0" Models

The AMCO F15 Harrow is shipped from the factory with maximum pre-assembly. The following bundles are required for a complete harrow:

A. Bundle Pull Tongue (with tongue jack)
B. Bundle Main Frame (with rockshafts)
C. Two 4 x 12 Hydraulic Cylinders
D. Two 3-1/2 x 12 Hydraulic Cylinders
E. Hydraulic Kit with Hose and Assembly Instructions
F. Four 4 x 24 Hydraulic Cylinders
G. Bundle Wing Main Frame — Right Hand (with Depth Gauges)
H. Bundle Wing Main Frame — Left Hand (with Depth Gauges)
I. Bundle Front Right Hand Inside Gang Frame
J. Bundle Front Left Hand Inside Gang Frame
K. Bundle Rear Right Hand Inside Gang Frame
L. Bundle Rear Left Hand Inside Gang Frame
M. Bundle Front Right Hand Wing Gang Frame
N. Bundle Front Left Hand Wing Gang Frame
O. Bundle Rear Right Hand Wing Gang Frame
P. Bundle Rear Left Hand Wing Gang Frame
Q. Four 15 x 10 Eight Bolt Wheels
R. Four 15 x 8 Six Bolt Wheels

Step 1.
Select a clear level area to assemble the harrow. Place all parts and bundles where they will be readily accessible during assembly.

Step 2.
Place the center main frame "right side up" on sturdy stands at least 33" High.

CAUTION *Use sturdy stands to prevent frame from falling.*

Step 3.
Attach the two inside front gangs and gang frames to the center main frame. Clamp in place with the 7/8" "U" bolts and four 7/8 Hex bolts and plate. These gangs have ten blades and three bearings. The gangs should be located to throw soil away from the center of the harrow. Leave the 7/8 "U" bolts and Hex bolts snug but not tight.

Step 4.
Attach the two inside rear gangs to the center main frame. Clamp in place with the 7/8" "U" bolts and four 7/8 Hex bolts and plate. These gangs have ten blades and three bearings. The gangs should be located to throw soil toward the center of the harrow. Leave the 7/8 "U" bolts and 7/8" Hex bolts snug but not tight.

CAUTION *When working on disk harrows care should be exercised in handling or tightening bolts near disk blades to avoid injury. All hydraulically or mechanically elevated components must be blocked or lowered to prevent accidents when servicing the harrow.*

Step 5.
Attach the two front wing gang frames to the inside front gang frames. Use the 1-1/2" diameter wing pivot pins. Tighten the nuts snug but not tight.

Step 6.
Attach the two rear wing gang frames to the inside rear gang frames. Use the 1-1/2" diameter wing pivot pins. Tighten the nuts snug but not tight.

CAUTION ***When working on disk harrows, care should be exercised in handling or tightening bolts near disk blades to avoid injury.***

Step 7.
Mount four 12.5L x 15 eight ply tires on the four 15 x 10 wheels. Inflate to 40-50 PSI. Mount wheels on center rockshafts. Tighten hub bolts tight. Remove all stands from underneath the main frame.

Step 8.
Clamp the wing main frames to the wing gang frames using the 7/8" "U" bolts and the 7/8" Hex bolts. Shift gangs as required to align all holes. Thoroughly tighten all thirty-two 7/8" nuts. Tighten four 1-1/2" diameter wing pivot pins. Secure with 5/16 x 2-1/4 Roll Pins.

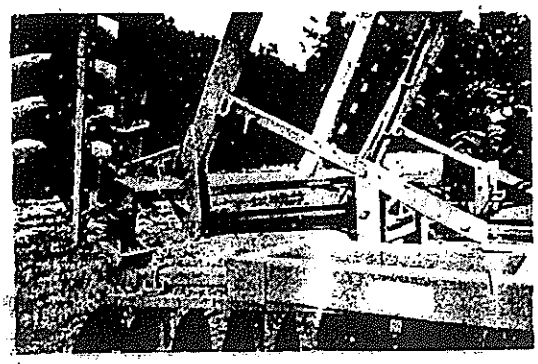
Step 9.
Mount six 11L x 15 six or eight ply tires on the six 15 x 8 wheels. Inflate to 40-50 PSI. Mount wheels on wing rockshafts. Tighten hub bolts tight.

Step 10.
Install the two 4 x 12 hydraulic cylinders on the center main frame and the two center rockshafts. The rod end should be attached to the rockshaft.
NOTE: Remove the straps that clamp the rockshafts to the main frame.

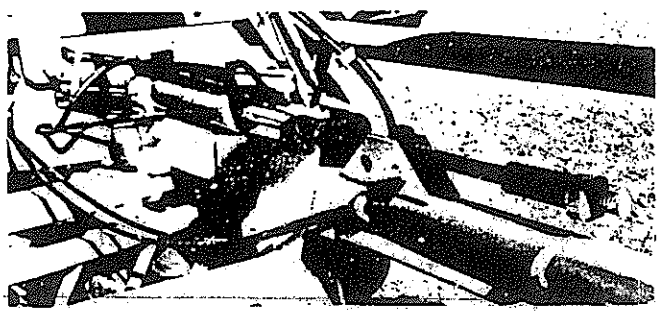
Step 11.
Install the two 3-1/2 x 12 Hydraulic Cylinders on the wing main frames.

Step 12.
Install the four 4 x 24 Hydraulic Cylinders. Turn ports to front on all four cylinders. Check plug on bottom of butt casting on each cylinder. It must be tight!

Step 13.
Extend the two 4 x 24 cylinders and attach to the wing main frames. Note how the four 1-1/4" washers are located. Secure with a 1-1/4" pin and the 5/16 x 2-1/4 roll pins.



4 X 24 CYLINDER INSTALLATION



4 X 12 CYLINDER INSTALLATION

Step 14.
Install Hydraulic Fittings as follows: (See Illustration on Pages 22 & 46).

A. Install eight #10921 1/2 male to 1/2 female swivel elbows into the ports on the 4 x 12 and 3-1/2 x 12 cylinders. Turn fittings as shown in drawing. Coat fittings with pipe sealant before installation. Do not put sealant over end of fitting. This will keep sealant out of the tractor hydraulic system. Tighten fittings!

B. Install four #11127 1/2 male to 1/4 female swivel elbows into ports on rod end of all four 4 x 24 cylinders. Turn fittings toward center of harrow as shown on drawing. Install two #11127 1/2 male to 1/4 female swivel elbows into ports on butt end of 4 x 24 cylinders. Turn the fittings down as shown on the drawing. Coat the fittings with pipe sealant before installation. Tighten fittings!

C. Install two #11284 1/2 male to 1/4 female reducers in the ports on the butt end of the two rear 4 x 24 cylinders. Coat fittings with pipe sealant before installation. Tighten fittings!

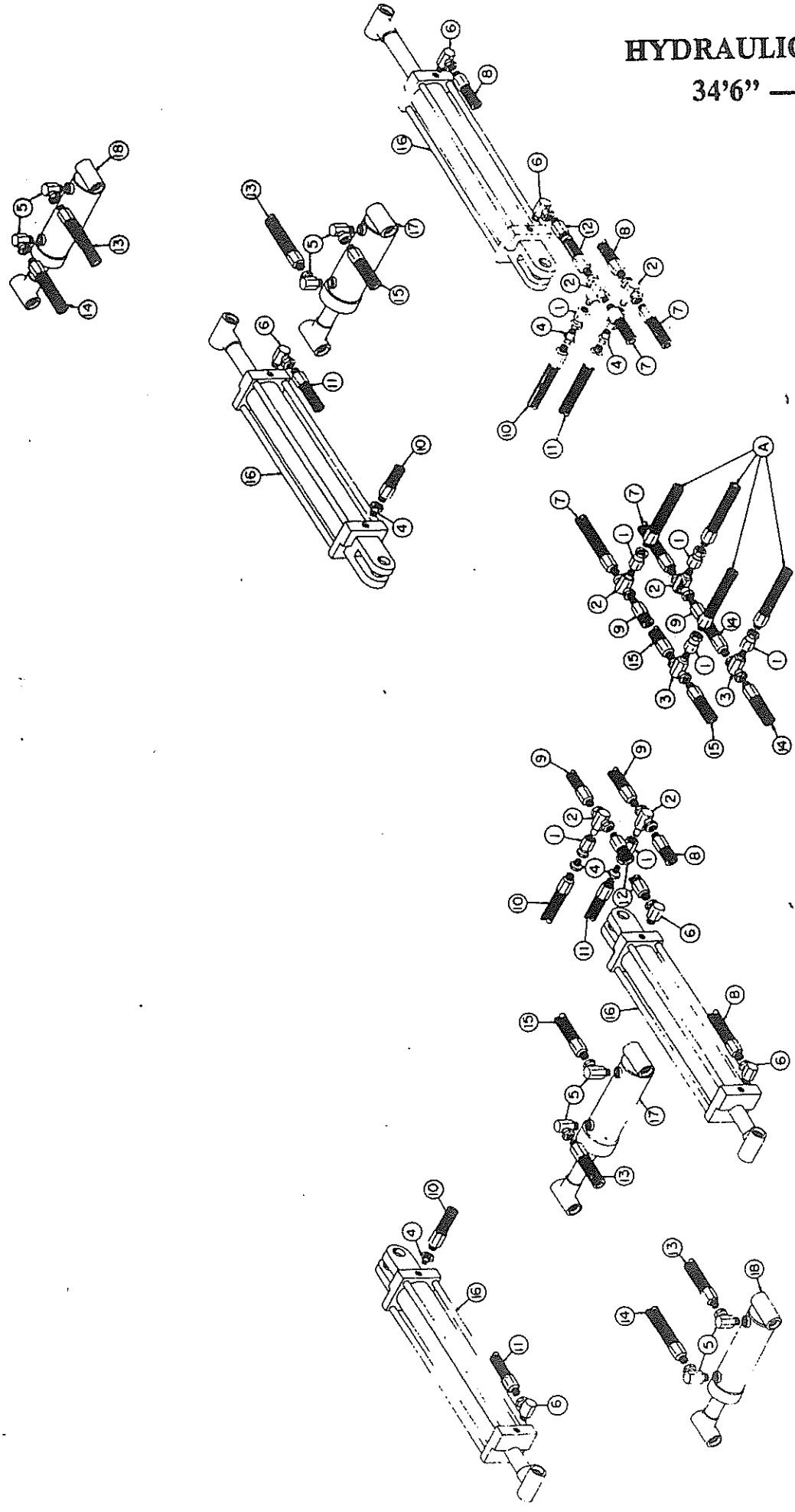
D. Install the eight tees and eight swivel unions as follows:
   (1) Install two #11260 1/2 male to 1/2 female branch tees in the mount bracket located on the front cross bar of the main frame. This bracket is 9" to the right of the harrow center line. The branches should be turned to the rear and the #11157 swivel union used to secure the tee to the bracket. The swivel on the union should be turned toward the front to simplify attachment of the 1/2" x 12' hoses that go to the tractor.
   (2) Install two #11156 1/2 male to 1/4 female branch tees in the mount bracket located on the front cross bar of the main frame. This bracket is 9" to the left of the harrow centerline. The branches should be turned to the rear and the #11157 swivel union used to secure the tees to the bracket. The swivel on the union should be turned toward the front to simplify attachment of the 1/2" x 12' hoses that go to the tractor.
   (3) Install four #11156 1/2 male to 1/4 female branch tees in the two mount brackets located near the outer edges of the main frame. The branches should be turned toward the front of the harrow and the #11157 swivel unions used to secure the tees to the bracket. The swivel on the unions should be turned toward the rear. Coat all fittings with pipe sealant and tighten securely.

E. Install four #11284 bushings 1/2 male to 1/4 female in the #11157 swivel unions that are turned to the rear. See D-3 above.

F. Connect cylinders with hoses. Lay the hoses out where they will be readily accessible and start with the shortest 1/4" diameter hoses first. Connect hoses, fittings and cylinders as follows: (Refer to page 23)
   (1) Two #11321 1/4 x 15 hoses are used to connect the butt end of the front 4 x 24 cylinders to the top male branch tee on the support bracket.
   (2) Two #11323 1/4 x 24 hoses are used to connect the male branch tees on the left front of the harrow. Refer to the drawing and route hoses through the support brackets.
   (3) Two #11119 1/4 x 36 hoses are used to connect the rod ends of the front 4 x 24 cylinders to the bottom male branch tee on the support bracket.
   (4) Two #11166 1/4 x 48 hoses are used to connect the male branch tees on the right front of the harrow. Refer to drawing and route hoses through the support brackets.
   (5) Two #11124 1/4 x 108 hoses are used to connect the butt of the rear 4 x 24 cylinders to the top male branch tee on the support bracket. Refer to drawing and route hoses through the support brackets.

HYDRAULIC CIRCUIT

34'6" — 39'0"



(6) Two #11172 1/4 x 120 hoses are used to connect the rod end of the rear 4 x 24 cylinders to the bottom male branch tee on the support bracket. Refer to drawing and route hoses through the support brackets.

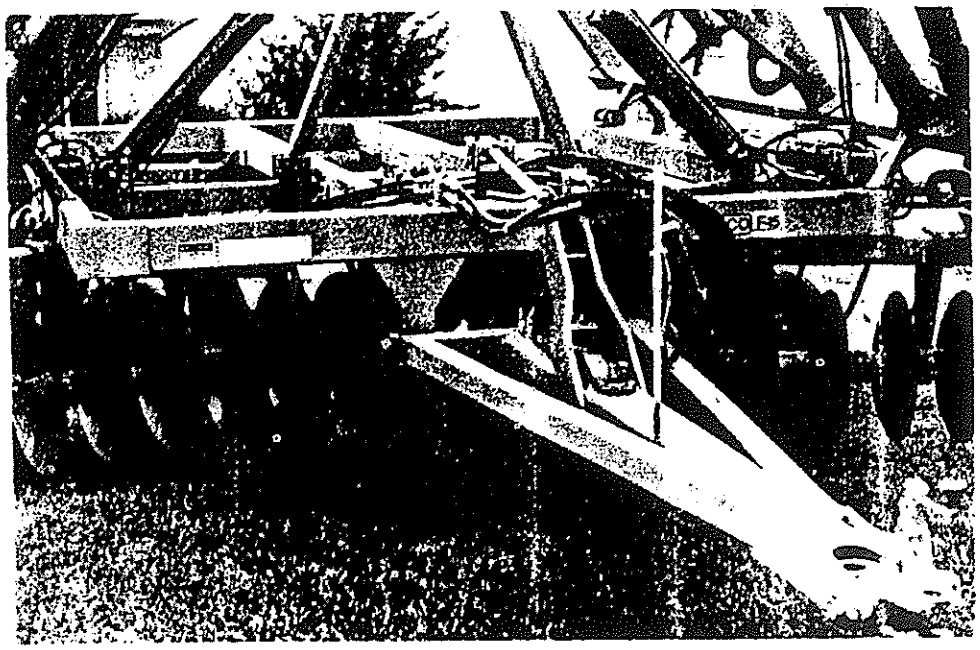
This completes assembly of the hydraulic circuit for folding the wings. Carefully check your assembly and hose routing. All hoses must be routed through the support brackets to prevent damage when the wings are folded and the harrow is raised to transport. Check the hose connections to assure that all four 4 x 24 cylinders are connected in parallel so they will retract together to fold the disk. The butt ends of all four cylinders must be connected together!

(7) Two #11305 3/8 x 66 hoses are used to connect the butt ends of the two 4 x 12 cylinders to the bottom male branch tee on the support bracket. Refer to the drawing to route hoses through the supports.

(8) Two #11310 3/8 x 156 hoses are used to connect the rod ends of the 4 x 12 cylinders to the butt ends of the cylinders on the wing main frames. Turn the fittings to give the hose plenty of slack to prevent binding. Refer to drawing and route the hoses through the hose supports.

(9) Two #11315 3/8 x 216 hoses are used to connect the rod end of the 3-1/2 x 12 cylinders to the male branch tee on the front of the main frame. Refer to the drawing and carefully route this hose through the supports and under the 4 x 12 cylinders. All fittings should be coated with pipe sealant and tightened securely.

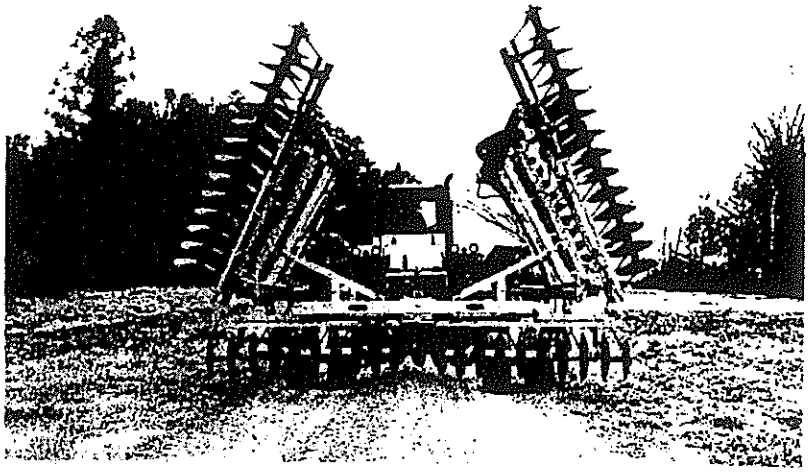
Step 15.
Install pull tongue. Install tongue adjusting rod sub assembly.



Step 16.
Attach four 1/2" x 12' or 3/8" x 12' SAE 100R2 or SAE 100R8 Double Braid Hydraulic hoses to the swivel adaptors on the main frame. Attach quick couplers. (Hoses and Couplers are available as optional equipment). Attach harrow and hoses to tractor.

Step 17.
Install the four wing stands on tubes extending upward on the corners of the center main frame. Secure each of the wing stands with two 3/4" bolts. Tighten securely. Install the four 3/4" wing lock pins in the 13/16" hole near the top of the wing stands. This will keep the pins from getting damages when the harrow is folded.

Step 18.
Refer to page 38, Step 18 for Final Grooming and Check Points.



NOTES:

lubrication

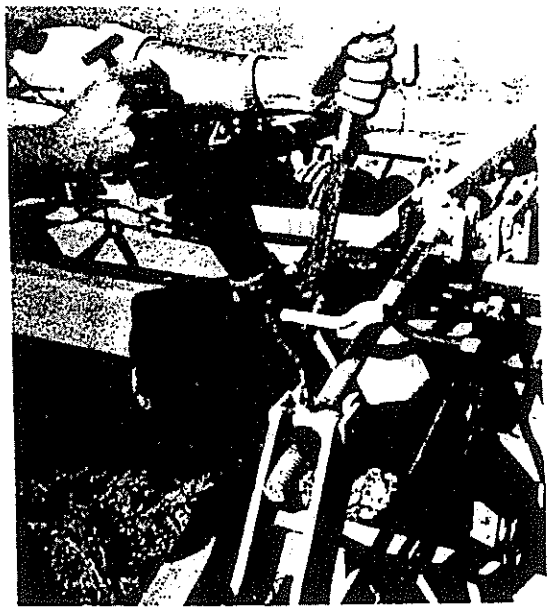
Careful and regular attention to lubrication will greatly increase the life of the harrow. For economical and efficient operation, the proper lubrication of frame fittings, gang bearings, and wheel bearings is essential.

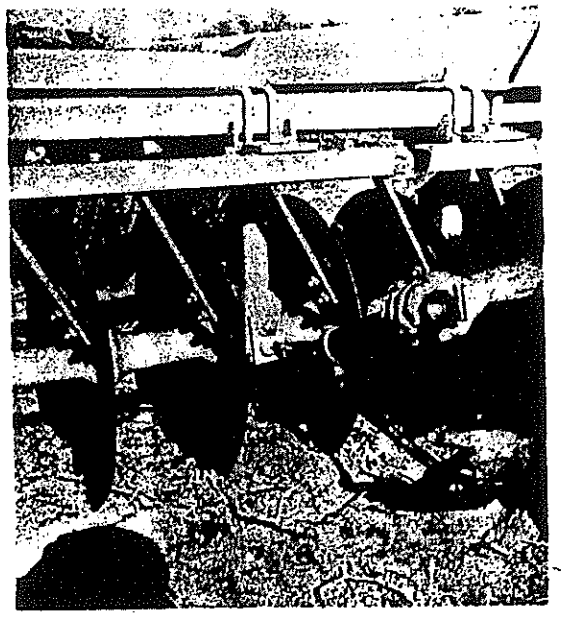
Be sure fittings are free of dirt before greasing. If a fitting is lost or damaged, replace it immediately. Lubricate all parts throughly with a good grade No. 2 gun grease (Lithium Base).

Miscellaneous working parts not provided with lubrication fittings should be oiled occasionally with a good grade of lubrication oil.

ROCKSHAFT PIVOT PINS: A high carbon steel pin with a grease fitting joins each rockshaft to the main frame in two places. These 6 pins for the 27'0" and 30'0" and 8 pins for the 34'6" and 39'0" should be greased every 50 hours of operation. They should also be greased at the beginning and end of the disking season. A good grade of Lithum soap base grease is recommended.

TONGUE ADJUSTING ROD AND TONGUE CONTROL ROD: The two swivels on the tongue adjusting rod and the fitting on the tongue control rod should be greased every 50 hours of operation. Also, at the beginning and end of each disking season. The threads on the rod should be cleaned and oiled occasionally for smooth operation.

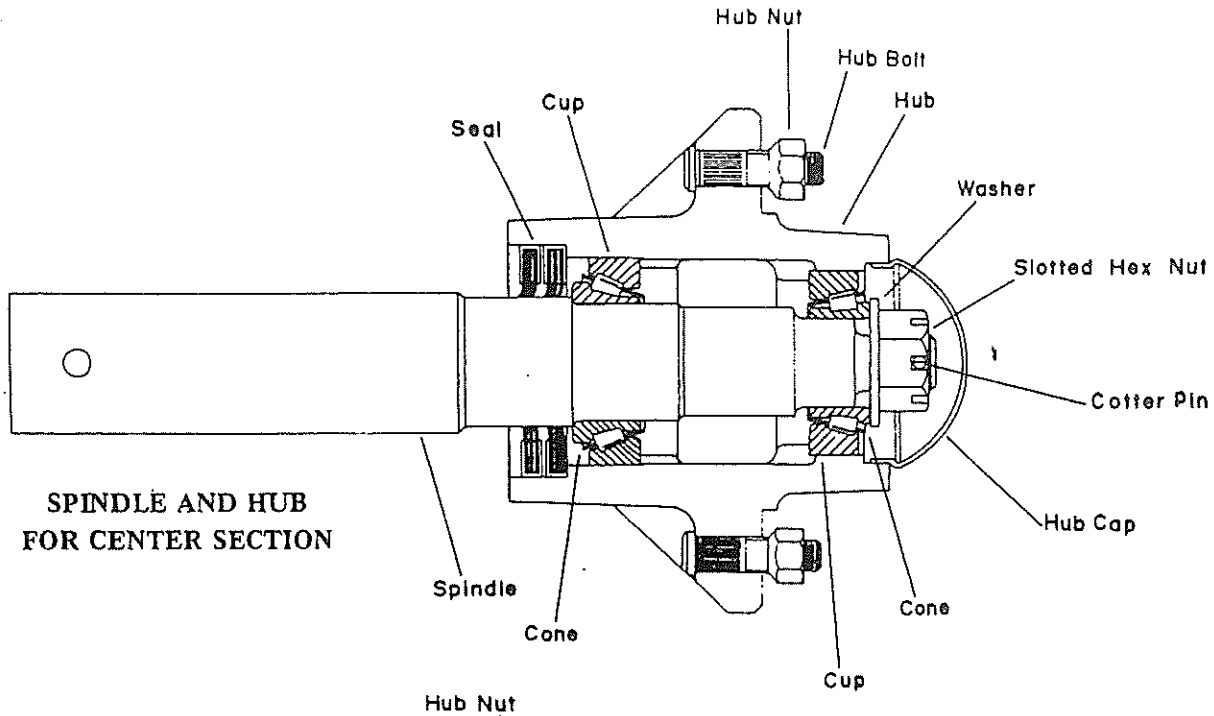




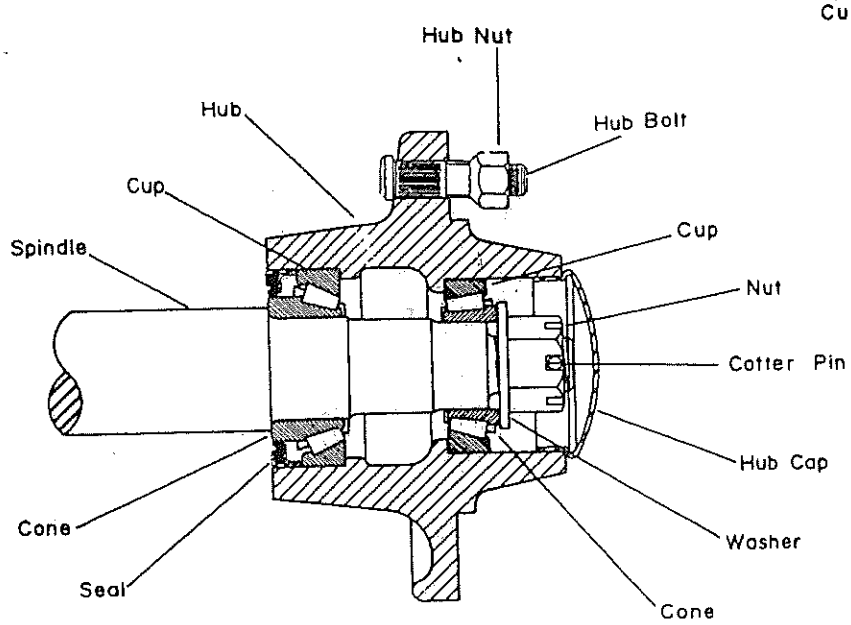
GANG BEARINGS: The AMCO F15 Harrow Gangs are equipped with regreasable Protect-O-Shield ball bearings. The grease fitting is located on the rear of each bearing housing. They should be greased every 50 hours of operation with a good grade of lithum soap base chassis grease, preferrably with a low volume-low pressure hand operated grease gun. All bearings should be greased at the beginning and end of each disking season. To protect the seals from the elements, raise the harrow on its wheels and slowly spin the gangs so the grease wraps around the seals.

More frequent greasing is recommended when working in very sandy or wet conditions.

WHEEL HUB BEARINGS: The wheel hubs are equipped with tapered roller bearings. These hubs are packed with grease and adjusted at the factory. They should be repacked and the spindle nut properly adjusted each disking season or every 300 hours of operation. Use a good grade of clean lithum soap base grease.



SPINDLE AND HUB FOR CENTER SECTION



SPINDLE AND HUB FOR WING SECTION

WING PIVOT PINS: The hydraulically folded wings pivot on four 1-1/2" diameter high carbon steel pins. These pivot pins should be greased each week or every 50 hours of operation.

CAUTION ***All hydraulically or mechanically elevated operating components must be blocked to prevent accidental lowering or must be lowered to the ground when making adjustments or when the equipment is idle.***

ROCKSHAFT DEPTH GAUGES: The center depth gauges are used in field adjustments. The threads should be periodically cleaned and lubricated to assure smooth operation. They should also be greased each week or every 50 hours of operation.

storage

Proper storage will add to the life of your disk harrow, and assure its being in good condition for the next season. The following procedure is recommended.

Clean off all foreign matter, and thoroughly lubricate the harrow.
(See LUBRICATION INSTRUCTIONS)

Tighten loose bolts and replace any damaged or missing parts.

Repaint the harrow where the original paint has worn off.

Coat the disk blades and hydraulic cylinder rod with a good rust preventative.

Store in a dry place, with the gangs resting on boards to remove weight from the tires.

Carefully rotate each gang and check for worn or damaged blades, bent gang shafts, worn scrapers, damaged bearings and other parts which may need replacing.

Whenever disk blades or bearings are replaced, the gang shaft nuts must be torqued to 1200 foot pounds.

CAUTION ***All hydraulically or mechanically elevated operating components must be blocked to prevent accidental lowering or must be lowered to the ground when making adjustments or when the equipment is idle.***

CAUTION ***Hydraulic systems are highly pressurized. Escaping hydraulic oil, even an invisible pinhole leak, can penetrate body tissues causing serious injury. Use a piece of wood or cardboard when looking for leaks—never use the hands or other parts of the body.***

Relieve hydraulic pressure before disconnecting circuits. When reassembling, make absolutely certain that all connections are tight.

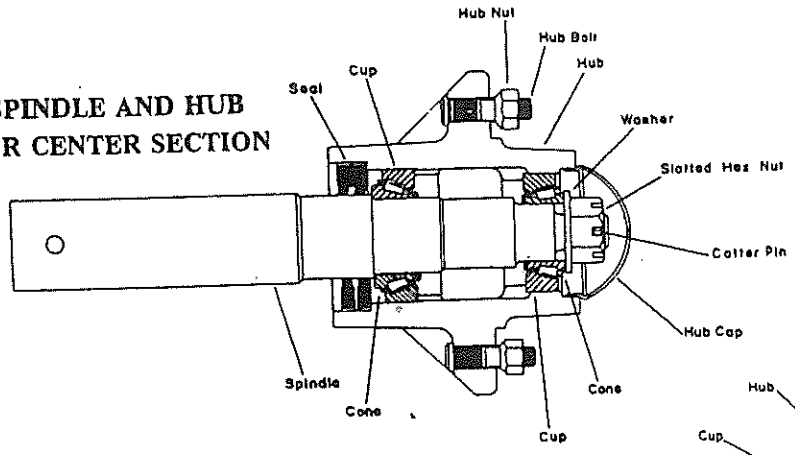
If injured by hydraulic oil escaping under pressure, see a doctor immediately. Serious infection or reaction may occur if medical attention is not given at once.

maintenance

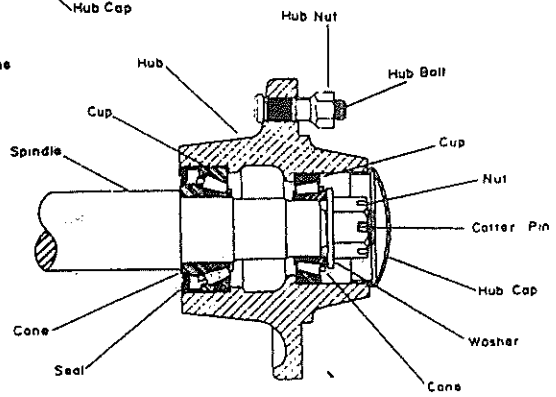
WHEEL BEARING REPAIR: Wheel bearings should be repacked with grease and adjusted annually. Under extreme conditions, they should be serviced more frequently. Check occasionally for excessive end play.

To disassemble the hub, remove the dust cap by prying around it. Remove the cotter pin, slotted nut and flat washer. Carefully remove the hub and bearings from the spindle. Inspect all parts for wear and replace if necessary.

SPINDLE AND HUB FOR CENTER SECTION



SPINDLE AND HUB FOR WING SECTION



Use the following procedure when repairing or servicing wheel hubs:

1. Clean all parts that are to be re-used.
2. Carefully inspect the metal case on the grease seal. Discard seal if case is bent or damaged. Check seal lips for cuts, tears or excessive wear. The hubs on the wing depth gauges use the inner bearing race as the sealing surface. Make sure the seal fits snugly on this surface. The seal must be replaced if excessively worn. The hubs on the center section have two seals that seal on the spindle. Check the seals and the spindle for good sealing surfaces. Particular attention must be paid to cleaning the spindle prior to reassembly. Use emory cloth to smooth the grease seal seats and provide a smooth sealing surface.
3. Carefully inspect both sets of bearings cones. Bearing bore and rollers must be smooth and free of nicks and scratches. Replace cones if damaged.
4. Inspect hub to make sure that hub bolts have a good thread. Bearing cups must be smooth and free of surface blemishes. Cups must be removed from the hub and replaced if damaged. Cups should be fully pressed into the hub and rest squarely against the shoulder inside the hub. Hub cap and grease seal should fit snugly inside the hub. Severely damaged hubs should be replaced.
5. Threads on spindle must be in good condition. Bearing cone seats must be smooth and free of blemishes. Bearing cones must fit squarely on spindle.

6. Spindle washer, slotted nut, cotter pin and hub cap must be in good condition. Replace if worn or damaged.

7. To reassemble the hub, repack each bearing cone with grease and fill the hub cavity 1/3 full of grease. Place inner bearing assembly in hub, press grease seal into the hub and carefully re-install the hub on the spindle. Install the outer bearing assembly into the hub, and replace the spindle washer and slotted nut. Tighten the slotted nut, to seat the bearings, until the hub binds when rotated. Check seal lips to be certain they are turned out to exclude contamination.

   Back the slotted nut off to the nearest slot. Rotate the hub five or six revolutions in each direction to seat all parts. Re-tighten the slotted nut while rotating the hub. When the hub binds, back the slotted nut off to the nearest slot and secure with a cotter pin. Install dust cap and re-mount wheel on hub.

GANG REPAIR:

CAUTION ***When working on disk harrows, care should be exercised in handling or tightening bolts near disk blades to avoid injury.***

1. With the harrow in its "down" or working position, loosen the gang bolt nut. It is helpful to clean the threads of all bolts with a wire brush and apply penetrating oil before removing the nuts.
2. Remove the nuts that secure the gang to the bearing riser.
3. Remove the trunion clamps.
4. Raise the harrow on its wheels. The entire gang can then be rolled away from the harrow. In most cases time can be saved by removing the scraper bars and scrapers.
5. Remove the gang bolt nut and end washer.
6. Remove the blades, spacer spools and bearings being careful not to damage the threads on the gang bolt.
7. Tear the entire gang down and clean all parts. Check disk axle for straightness. Bowed, bent or worn axles must be replaced.
8. Check spacer spools for damage caused by running disk with loose gangs or hitting underground obstructions. Replace spools if they are damaged.
9. Carefully check all end bells. The large end must contact the disk blade around the entire circumference of the end bell. The small end must be smooth and perpendicular to the axle. The end bells must be replaced if they are cracked or worn on the surface adjacent to the bearing.
10. Check all disk blades for cracks, wear and other damage. Replace worn or damaged disk blades.
11. Check all the bearings on the gang. Running a harrow for one hour or more after a bearing failure will seriously damage other bearings on the gang. This damaged bearing will then fail within a few hours after the failed bearing has been replaced. Continued operation with this failed bearing will damage the new bearing thus it will fail after a few hours use. In most cases it will be best to replace all bearings on a gang when it is torn down for repairs. A triple lip sealed bearing should always be used for bearing replacement. Also, a regreasable type bearing should always be used.

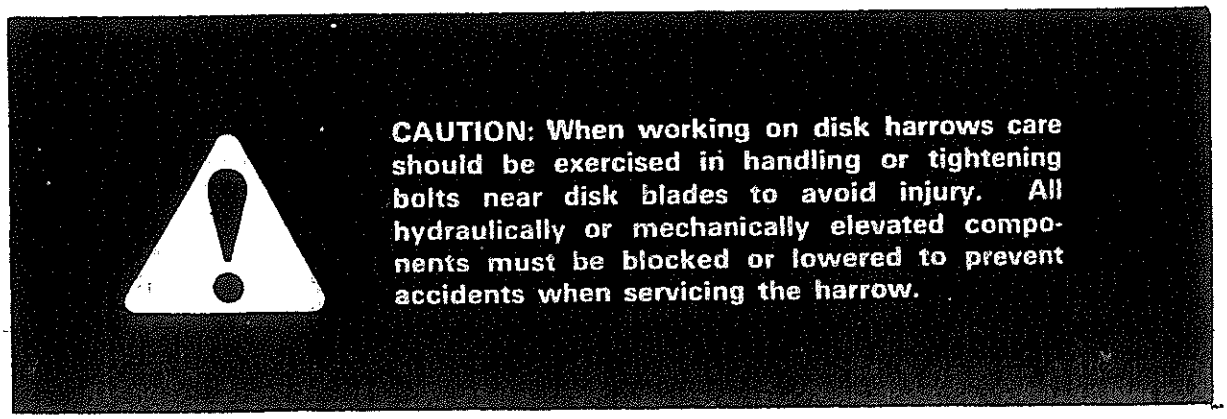
12. To replace a bearing, the snap ring must be removed. The old bearing should then be pressed out of the housing. Clean and wash out old grease and carefully check the housing. Replace the housing if it is damaged. Check the Protect-O-Shield washers. They should fit snug in the bearing housing requiring a few light taps with a hammer to remove or install them. If they are loose or show signs of wear, near the inner race of the bearing, they should be replaced. Do not use the harrow without the washers being installed. Press the new bearing straight into the housing. Always press against the outer race of the bearing. NEVER press against the seal or inner race of the bearing. Check location of the grease hole in the outer race of the bearing. This hole must align with the grease groove in the bearing housing. Rotate the bearing in the housing after it is pressed in to be sure it turns freely. Install the snap ring in the housing.

13. After cleaning, checking and replacing all damaged parts, the gang should be assembled. Be sure the grease fittings in the bearing housing face to the rear. Be sure the snap ring in the bearing housing is turned toward the convex (back) side of the disk blades. The 1-1/2" square gang bolt nut should be torqued to 1200 FT/LBS. The axle nut should be locked in place with the lock strap.

14. After the gang is assembled it should be attached to the harrow. The bearing risers should be carefully spaced to match the bearing housings. Poorly spaced bearing risers will overload the bearings and cause premature failure. The gang should be rotated 4 or 5 complete revolutions to be sure that all parts are aligned and the gang turns freely.

15. The bearings should be greased each week or every 50 hours of use with a good grade of clean, lithium soap base grease. Use of dirty grease or a grease with metallic additives will reduce bearing life.

16. It is essential that gang bolts be kept tight to prevent axle bending, blade breakage, spacer spool breakage and damage to other gang parts. Gang parts tend to wear on a bevel when the harrow is operated with a loose gang bolt. This reduces the area of contact between mating gang parts. Therefore, it is often difficult to keep a gang bolt tight if it has been operated in a loose condition. After such a gang bolt has been properly torqued it should be retorqued after about 30 minutes of operation, again after 4 or 5 hours of operation and again after 8 to 10 hours of use. This will assure that proper gang bolt tension is maintained while the mating components are reseating. If the gang bolt will not stay tight, the gang should be completely disassembled and all parts carefully inspected. All damaged parts should be replaced before reassembling the gang.



SCRAPER REPAIR: Bent scraper bars or shanks should be replaced or straightened if possible. The blades can be replaced when they wear to the extend they are not performing properly. Keep the blades adjusted from 1/16" to 1/8" from the disk blades. The scrapers can be adjusted by loosening the mount bolt and sliding the scraper to the proper position then tightening the mount bolt. Additional adjustment can be obtained by loosening the scraper bar mount bolts and shifting the entire scraper bar. Do not allow the scraper blades to run on the spacer spools as immediate damage to the spool will occur.

ROCKSHAFT PIVOT PIN REPAIR: The rockshafts are equipped with replaceable, regreasable, bronze bushings. If properly lubricated they should last for several seasons. The bushings should be checked each disking season for excessive pivot pin or bushing wear. Worn bushings and pivot pins should be replaced. Failure to replace worn or damaged parts will damage other parts.

1. **HYDRAULIC CYLINDER REPAIR: 4 x 24 Tie Rod Type Cylinder**
   - A. Remove hoses and fittings from cylinder.
   - B. Remove cylinder from harrow and clean outside of cylinder.
   - C. Dis-Assemble cylinder by removing the rods and nut from end of cylinder rod. Slip piston and gland off cylinder rod.
   - D. Carefully clean and inspect all parts for wear or damage. Small nicks, scratches or blemishes on rod and inside barrel should be smoothed with fine steel wool or emory cloth. Replace parts that cannot be repaired.
   - E. Remove all "O" Rings from piston and gland. Replace all seals with new parts.
   - F. Assemble cylinder using care to prevent damage to "O" Rings and Seals.
   - G. Replace cylinder on harrow and attach hoses.

2. **HYDRAULIC CYLINDER REPAIR: 3-1/2 x 12 and 4 x 12 All Welded Cylinder**
   - A. Remove hoses and fittings from cylinder.
   - B. Remove cylinder from harrow and clean outside of cylinder.
   - C. Dis-assemble cylinder by rotating cap on rod end of cylinder. Use a spanner wrench to remove cap.
   - D. Pull cylinder rod to slip rod, gland and piston out of barrel.
   - E. Remove nut on end of rod then slip piston and gland off rod. Use care to avoid damaging rod while removing nut.
   - F. Carefully clean and inspect all parts for wear or damage. Small nicks, scratches or blemishes on rod and inside of barrel should be smoothed with fine steel wool or emory cloth.
   - G. Remove all "O" rings, seals and "U" cups from piston and gland. Carefully replace all seals with new parts.
   - H. Assemble cylinder using care to prevent damage to "O" rings, seals and "U" cups.
   - I. Replace cylinder on harrow and attach hoses.

Check cylinder for leaks by applying pressure to butt end of cylinder before attaching hose to rod end of cylinder. Oil will flow from port on rod end of cylinder if piston seals are not sealing properly. Attach hose to rod end of cylinder and apply pressure to check for gland or rod seal leaks.

GENERAL:
Keep all bolts tight. Check all bolts after 50 hours operation and each season thereafter. Visually inspect all bolts daily. Do not run with loose gang bolts. Keep the gang bolts torqued to 1200 FT/LBS.

operating instructions

TRANSPORTING THE DISK: Extreme caution is required when transporting any machinery on roads or highways. Remember you are responsible for compliance with State and Local laws regarding lighting, reflectors, and SMV emblems as well as length, width, and height.

CAUTION *When transporting farm implements on public roads after dusk, it is the responsibility of the operator to provide lighting and reflectors on the rear of the implement in accordance with your state law.*

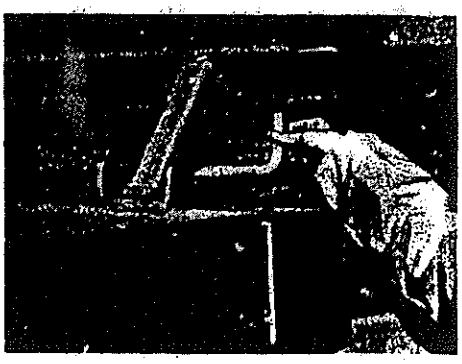
CAUTION *When transporting machinery over public roads, comply with your local and state laws regarding length, width and lighting.*

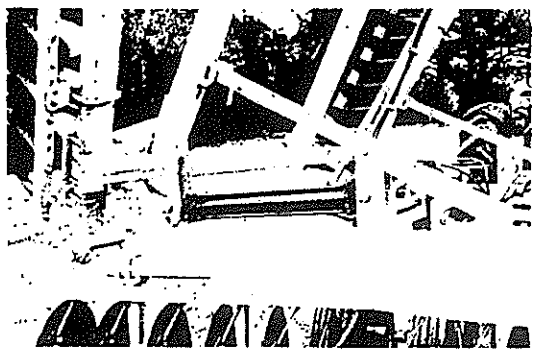
CAUTION *Be sure the area is clear of any personnel before safely driving tractor with disk attached.*

CAUTION *Raised wings can contact electric utility lines and overhead obstructions while in transport. Drive carefully. Measure overall transport height and assure clearance.*

Before transporting the disk check your tires for proper inflation. Be sure that hub bolts and nuts are tight. Wheel bearings should be checked for proper adjustment and lubrication prior to roading the disk over long distances.

The F15 is equipped with transport pins for each wing. These pins should be inserted to keep the wings secure during transport.





CAUTION *Always secure for transport by using the transport lock and wing hold pins.*

Each of the 4" x 12" hydraulic cylinders used for lifting the F15 is equipped with a transport pin. When the harrow is on its wheels in the transport position, these pins should be installed to prevent the cylinders retracting. These pins should always be used when the harrow is transported.

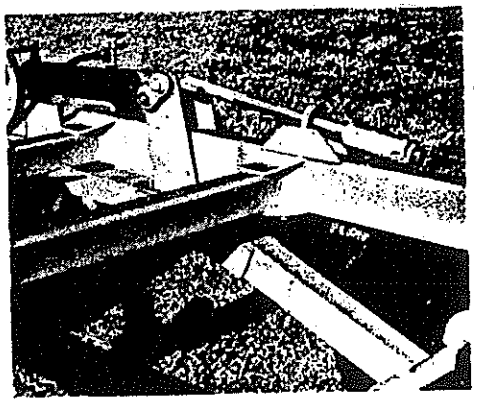
The drawbar pin should be in good condition and strong enough to secure the disk to the tractor. Secure the drawbar pin to keep it in place. The drawbar should be secured to prevent swinging.

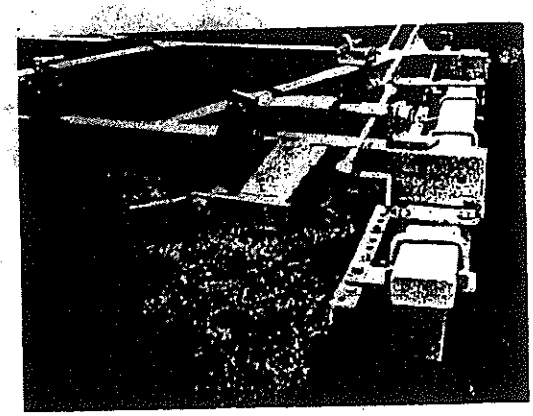
HYDRAULIC TROUBLE SHOOTING:

If a new harrow fails to raise level across its entire width you should check the assembly instructions for proper hose routing. The hoses from the rod end of the center section lift cylinders must go to the butt end of the wing lift cylinders. Hold the hydraulic control lever in the raising position for several minutes to fill the rephasing type wing wheel cylinders with hydraulic fluid. Raise and lower the disk several times to remove all air from the system. It may be necessary to rephase the cylinders occasionally during the disking season. The cylinders can get out of phase if oil leaks out of the system or back through the valves on the tractor. Remember to check the tractor hydraulic system oil level after all cylinders have been filled with hydraulic fluid. The cylinders on the 27' and 30' models require 6 gallons of hydraulic fluid. The cylinder on the 34'6" and 39' models require 8.5 gallons of hydraulic fluid. The disk should be raised to maximum height while turning to keep the cylinders properly phased.

DEPTH CONTROL:

Disc as deep as necessary to do a satisfactory job. Trying to disk excessively deep will place a heavier load on the tractor thus using extra fuel. It will also add extra load to the disk frame. Bearing life will be shortened. Never let soil "bulldoze" in front of the spacer spools or flow over them. Never disk with the wings folded. Disking depth can be controlled by carrying part of the disk weight on the wheels. Two of the lift cylinders have a screw type depth control.





The depth control collars should be adjusted evenly so the harrow penetration is uniform across its entire width. The depth controls can be adjusted individually to level the center section from side to side. They can also be adjusted to control the wing cutting depth. Disking depth can be reduced by shortening the depth control rod. This will place more weight on the wheels. This procedure works exceptionally well when precise depth control is required.

CENTER RIDGE:

When a ridge is being thrown up behind the center of the disk, it may be eliminated by shortening the torque adjusting rod. In some cases, such as very loose dry soil, it may be necessary to shift the inside rear gangs outward on the gang frames. When this is done care must be taken to properly space the gang risers. This will prevent excessive bearing preload.

OUTER RIDGE:

In some conditions the disk will throw up ridges from the outside front corners. This can be corrected by lengthening the tongue control rod. Turn the rod two or three complete revolutions and check your adjustment. Over adjustment will result in a center ridge. The depth control on the wing depth gauge may be shortened slightly to raise the outer blades on the front wings of 27' and 30' models.

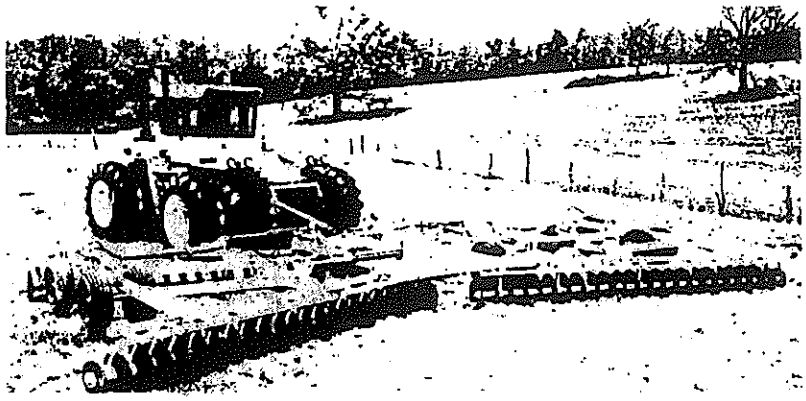
The 34'6" and 39' models have a special wing depth gauge. This wheel can be adjusted for precise depth control in rolling land, loose loomy soil, soft wet soil or in other conditions. Extending the screw type adjustment adds weight to this gauge wheel thus reducing cutting depth. Retracting this screw reverses this effect.

TONGUE CONTROL ROD:

The tongue control rod should be adjusted to level the center main frame from front to rear. Shortening the tongue control rod will increase penetration of the front gangs. Lengthening the tongue control rod will decrease penetration of the front gangs. In most conditions the tongue control rod should be slightly shortened to add weight to the front gangs. This aids penetration in harder soil. Extending the tongue control rod reverses this effect.

TONGUE HEIGHT ADJUSTMENT:

The tongue should be installed in the lower hole on the main frame pull points. This position works best on most tractors. The tongue should be installed on the upper pull holes if the front gangs do not penetrate properly. The upper pull holes should also be used if the rear gangs are cutting too deep.



operating tips

OPERATING TIPS FOR LONG LIFE AND SATISFACTORY PERFORMANCE

1. Match the harrow with the proper size tractor. Too much horsepower and speed will result in excessive maintenance cost.

2. Lubricate with clean grease at the recommended intervals.

3. Use good quality tires, hoses, and hydraulic cylinders.

4. Use the tongue adjusting rod, proper cutting depth, and travel speed to get level disking and smooth fields.

5. Wash corrosive materials such as fertilizer and herbicides from the disk when it is not in use.

6. Insist on genuine AMCO replacement parts. Items such as bearings and blades look alike but are not as reliable as original equipment.

7. Never allow unsafe conditions or operating practices. Your safety is of prime importance.

8. Raise the disk harrow on its transport wheels when turning. Failure to do so will result in broken blades, bent axles, and excessive strain on the tongue and main frame. The disk should be fully raised while turning to keep the hydraulic cylinders properly phased.

9. Reduce operating speed in areas containing stumps or rocks to reduce blade breakage.

10. DO NOT operate disk with wings folded. Operating disk with wings folded will cause excessive blade breakage, bent axles and undue strain on related parts.

NOTE: When folding the wings for transport set the disk flat on the ground to reduce the stress on the inside gang frame.

MOST OFTEN ENCOUNTERED DISK BLADE FAILURES

Most disk blade failures can be prevented by selecting the correct blade size and thickness for individual conditions when buying a disk. Reduction of speed in areas containing rocks and stumps will greatly lengthen the blade life. Keeping gang bolts properly torqued and raising the harrow while turning will also reduce disk blade breakage.

FIGURE 1 — Laminated Disc—defective steel. Eligible for warranty consideration.

SURFACE VIEW EDGE VIEW

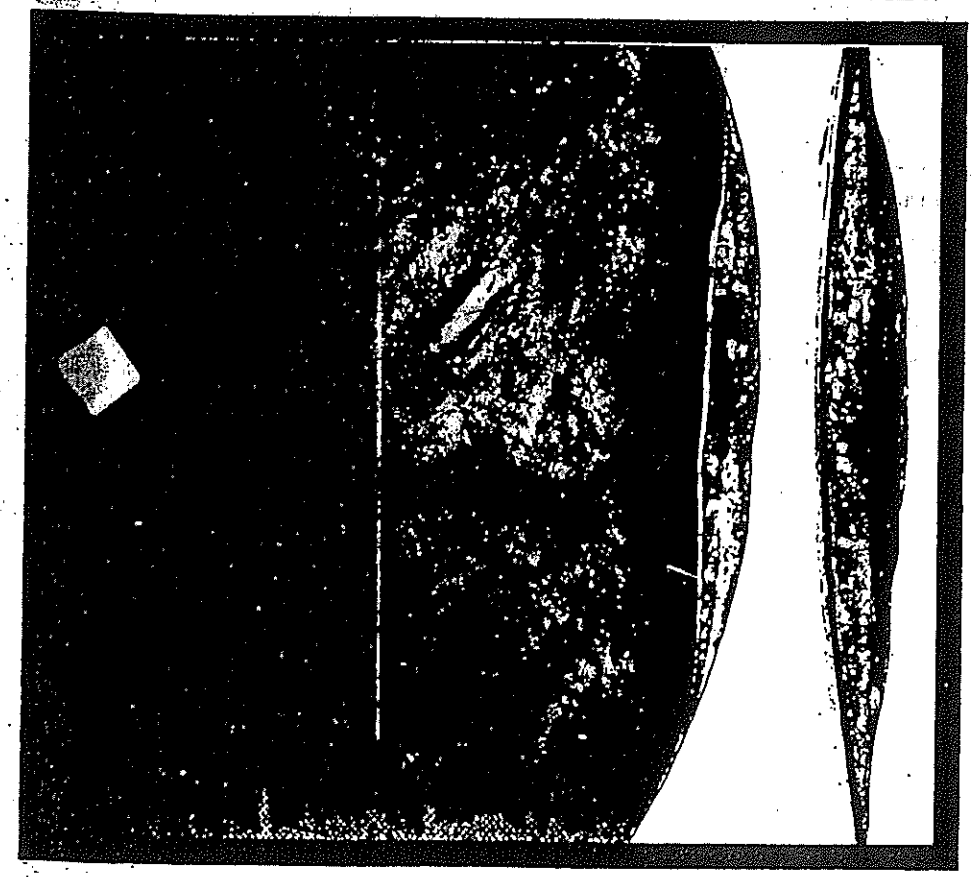


FIGURE 2 — Straight directional break caused by defective steel. Eligible for warranty consideration.

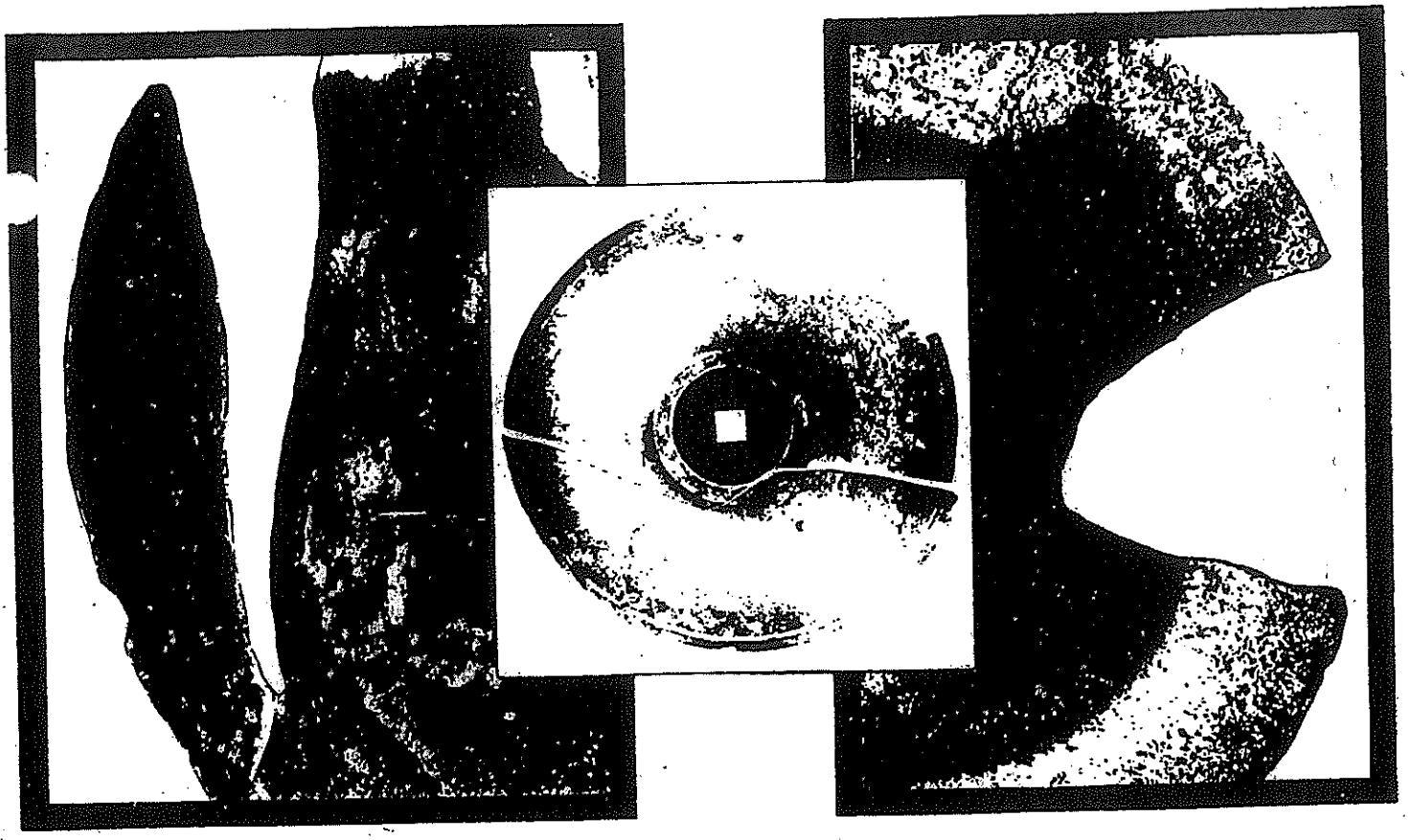
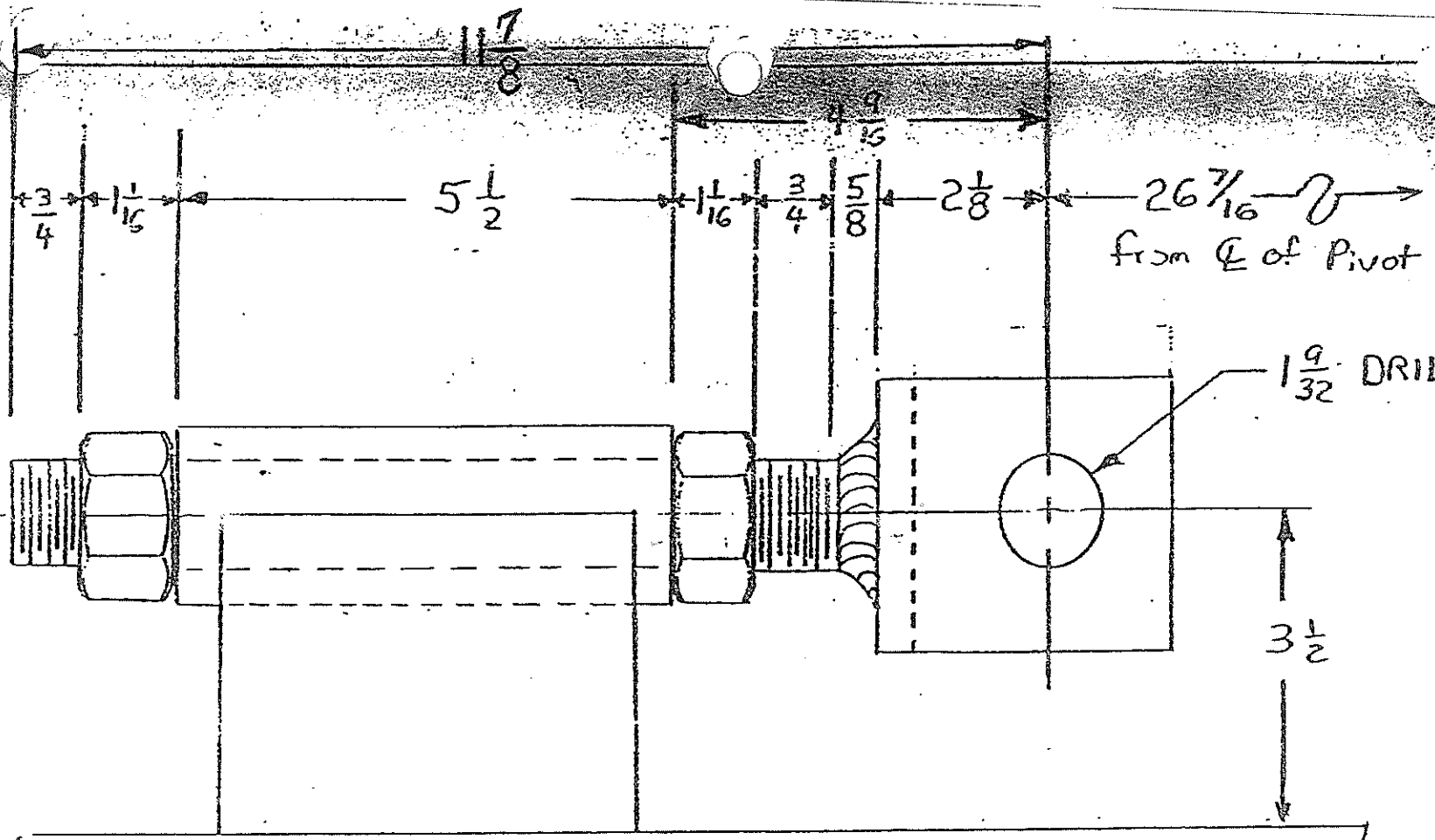


FIGURE 3, 4, 5 — Irregular breaks caused by contact against rocks or stumps. Not covered by warranty.

FIGURE 6 — Chipped or dented edges resulting from use in areas containing rocks or stumps. Not covered by warranty.

FIGURE 7 — Center broken out—Experience has shown that this is usually caused by loose bolts, excessive flexing, or by contact with rocks and stumps. Not covered by warranty.

ADJUSTABLE CYLINDER MOUNT



Threaded Rod Length = 9 3/4"

Distance from ℄ of Pivot to front of tube = 31"

1/2 Scale