

MANUFACTURING, CO.

F15B DOUBLE OFFSET FLEXWING

16'6" – 24'0" OPERATIONS**MAINTENANCE**SET-UP





AMCO MANUFACTURING COMPANY

800 South Industrial Parkway P.O. Box 1107 Yazoo City, Mississippi (MS) 39194 USA (662) 746-4464 Toll free 800-748-9022 Fax (662) 746-6825 www.amcomfg.com

TO THE PURCHASER

The care you give your new AMCO F15B 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 F15B Harrow will serve you well for many years.

As an Authorized AMCO Dealer, we stock Genuine AMCO Parts, which are manufactured with the same precision and skill as the original equipment. For best performance 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 F15B 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 ditcher is repainted, be certain new decals are ordered. Decals pertaining to personal safety must be replaced.



Look for thin symbol to point out important safety precautions. It means —ATTENTION! Become alert! Your safety is involved.

Remember, the right and left hand sides the harrow are determined by standing at the rear of the harrow and facing the direction of travel.

To insure efficient and prompt service, please provide the model number and serial number of your AMCO Harrow in all correspondence or contacts.

MODEL NUMBER

SERIAL NUMBER

DOUBLE OFFSET TANDEM

MODEL "F15B"

16'6", 18'0", 19'6", 21'0", 24'0" Sizes (General Purpose) STANDARD SPECIFICATIONS

AXLES:	1-1/2" square, high carbon cold
	rolled steel
BLADES:	22" x 1/4"(6mm) Plain diminishing with two
	feathering blades on rear gang
SCRAPERS:	High carbon replaceable blades on heavy
	duty shanks, mounted with
	u-bolts on 2.5x2.5" square tubing.
TONGUE:	90" long with tongue jack and
	base hitch clevis
HYDRAULIC C	CYLINDERS: 2 - 4"x8" w/depth control
	(3000 PSI). 2 - 4"x24" for folding wings
HYDRAULIC H	IOSES: 1/4" complete to front of main
	frame Includes hose bundle to tractor

BEARINGS:	Maintenance-Free Bearings with 3-year warranty. Bearings eliminate possibility of contamination and need for re-lubrication.
WHEELS:	4 - 15x8" center section
	2 - 15x8" wing section
	*4 - 15x8" wing section (21'& 24' only)
WRENCH:	1 for gang bolt
DISC SPACING:	9 Inches
GANG ANGLE:	Preset at 17°. No adjustment necessary
WEIGHT:	122 to 140 lbs per blade
	337 to 389 lbs. per foot
TRANSPORT WID	TH: 12'6"
TRANSPORT HEIC	GHT: 12'6"

	Outtin a	No. of	No. of	Approximate	A	pproximate
Model No.	Width	Disc	Bearings	Required		lbs (kg)
		70" M				
F15B-4622	16'6" (5.03M)	46	16	115-130 (86-97)	6	6705 (3041)
F15B-5022	18'0" (5.49M)	50	16	120-140 (89-104)		7419 (3365)
F15B-5422	19'6" (5.95M)	54	16	125-150 (92-112)		7623 (3457)
F15B-5822*	21'0" (6.41M)	58	16	135-165 (101-123)	8	8346 (3785)
F15B-6622*	24'0" (7.32M)	66	20	150-180 (112-134)	9	9306 (4221)
		OPTIONAL		r		
	Shock absorber gan	g risers in lie	u of Std. cast g	- gang risers,		
	Add per bearing				Add 18	8 (8) ea
	(Note: AMCO recom	mends 1/4"((6mm) blades fo	or use with		
	22" x 1/4"(6mm) Cut	out blades in	lieu of standa	rd	Ded [·]	1.9 (0.9) ea.
	24" x 1/4"(6mm) Cut	out blades in	lieu of standa	rd	Add 4	4.0 (1.8) ea.
	24" x 1/4"(6mm) Plai	n blades in li	eu of standard		Add 6	6.0 (2.8) ea.
	26" x 1/4"(6mm) Cut	out blades in	lieu of standa	rd	Add 7	7.8 (3.7) ea.
	26" x 1/4"(6mm) Plai	n blades in li	eu of standard		Add 9	9.8 (4.7) ea.



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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 gags, when holding 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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Rev. 3/19/2024	

F15B Pull Tongue



F15B Pull Tongue

			No
Ref No.	Part No.	Description	Req'd.
1	11261	Tongue Jack	1
2	100061	Hose Holder	1
2	10075	Cotter Pin 1/4 x 1-1/2	1
3	100134	Nut Wrench	1
4	BC-05-0091	Tongue Adjusting Rod Assy. (see pg. 7)	1
5	20657	Pull Tongue	1
6	10067	5/8 x 5-1/2 HHCS, GR 5	1
7	10299	5/8 Lock Nut	1
8	9628	Trunnion Clamp	2
9	100574	Pin 1.25 x 6.875	2
10	10910	Roll Pin 5/16 x 2-1/4	4
11	10304	1 x 6-1/2 HHCS, GR 5	2
12	10868	1" Lock Nut	2
13	12453	Clevis – Category 3	1
14	12456	Clevis Attachment	1
15	12075	3/4 x 5-1/2 HHCS, GR 5	1
16	10300	3/4 Lock Nut	1

Tongue Adjusting Rod Assembly



Ref.	Part No.	Description	No Req'd.
А	0862	Tongue Adjusting Rod	1
В	9892A	Swivel	1
С	9919A	Stabilizer Swivel (Threaded)	1
D	11279	1-3/8 Slotted Nut	1
E	10910	Roll Pin 5/16 x 2-1/4	1
F	10606	1/8" 45° Pipe Thread Grease Fitting	2





F15B CENTER MAIN FRAME (16'6" - 24'0")

Ref No.	Part No.	Description	No. Req'd
1	0842	Tongue Control Bracket	1
2	0866	Rockshaft Pivot Pin, 6.75" long	4
3	9628	Trunnion Clamp	4
4	9856	Strap	8
5	10043	5/8" x 6-1/2" HHCS, GR 5	2
6	10232	1-1/2"-6 NC Slotted Nut	4
7	10299	5/8″ Lock Nut	2
8	10910	5/16" x 2-1/4" Roll Pin	6
9	11465	"AMCO" Decal	1
10	11492	Bushing	2
11	11691	7/8" Flange Lock Nut, GR "G"	16
12	11694	Bushing	2
13	11713	Serial Plate	1
14	11716	"Maintenance" Decal	1
15	11741	"Warning" Decal	1
16	11743	"Warning" Decal	1
17	11766	"F15B" Decal	1
18	12082	7/8" x 9" Hex Cap Screw, GR 5	16
19	12156	1/4" Zerk Straight Self Tap	4
20	19021	"Made In USA" Decal	1
21	19028	Self-Tapping Screw	2
22	20190	F15B Main Frame	1
23	100568	Pin – 1" dia. X 22.25" long	1
24	BC-05-0101	Rockshaft Tie Link Assembly (see pg.11)	1
25	BC-05-0175	Turn Buckle Assembly (see pg.12)	2
26	BE-05-0097	Tongue Control Rod (see pg. 13)	1
27	BE-05-0098	Center Rockshaft, RH (see pg. 14)	1
28	BE-05-0099	Center Rockshaft, LH (see pg. 14)	1
29	MT-01-0001	Manual Tube	1

Note: After assembly of the center frame all 7/8" Flange Lock Nuts must be bolted on top of the frame as shown. (Ref. No. 11)



			No
Ref. No.	Part No.	Description	Req'd.
1	7397	Connecting Pin 4.375" x 1"	2
2	10910	Roll Pin 5/16 x 2-1/4	4
3	20067	Rockshaft Tie Link	1

TURN BUCKLE ASSEMBLY BC-05-0175



			No
Ref. No.	Part No.	Description	Req'd.
1	10053	1-3/8 Hex Jam Nut	1
2	10606	1/8" 45° Pipe Thread Grease Fitting	1
3	10910	Roll Pin 5/16 x 2-1/4	2
4	16025	Adjusting Yoke, RH thread	1
5	16026	Adjusting Yoke, LH thread	1
6	20094	Retainer Pin	2
7	20046A	Connector	1

TONGUE CONTROL ROD ASSEMBLY BE-05-0097



			No
Ref. No.	Part No.	Description	Req'd.
1	10606	1/8" 45° Pipe Thread Grease Fitting	1
2	10910	Roll Pin 5/16 x 2-1/4	3
3	11279	1-3/8 Slotted Nut	1
4	20191	Tongue Control Rod	1
5	101414	Pin	1
6	10460A	Spring	1
7	9892A	Swivel	1

CENTER ROCKSHAFT ASSEMBLY (LH & RH) BE-05-0098 (LH), BE-05-0099 (RH)



			No
Ref. No.	Part No.	Description	Req'd.
1	10509	3/8 Lock Nut	2
2	10773	3/8 x 3-1/2 HHCS, GR 5	2
3	20183	F15B Center Rockshaft, LH	1
3	20182	F15B Center Rockshaft, RH (Shown)	1
4	BC-05-0098	Hub & Spindle Assembly, 6-bolt (see pg.15)	2

SPINDLE & HUB ASSEMBLY, 6-BOLT BC-05-0098





Ref No.	Part No.	Description	No Req'd.
1	10242	Hub Cap	1
2	10256	Grease Seal	1
3	10258	Cone, Outer	1
4	10262	Cone, Inner	1
5	10263	7/8" Spindle Washer	1
6	10264	7/8" Slotted Nut	1
7	10291	Cotter Pin	1
8	10606	1/4" 45 degree Pipe Thread Grease Fitting	1
9	10880	Spindle	1
10d	11297	6-Bolt Hub (includes races, studs & nuts)	1
10b	10257	Bearing Cup, Outer	1
10a	10261	Bearing Cup, Inner	1
10c	11046	Hub Nut	6
10e	11299	Hub Bolt	6

Note: F15B 46-54 Blade requires qty 6 Hub & Spindle Assy

Note: F15B 58 & 66 Blade requires qty 8 Hub & Spindle Assy

WING MAIN FRAME



			No
Ref. No.	Part No.	Description	Req'd.
1	20188	F15B Small Wing Frame – RH (16'6" – 19'6")	1
1	20189	F15B Small Wing Frame – LH (16'6" – 19'6")	1
1	20186	F15B Large Wing Frame – RH (21' & 24') (Shown)	1
1	20187	F15B Large Wing Frame – LH (21' & 24')	1
2	12082	7/8 x 9 HHCS, GR 5	8
3	11691	7/8 Flange Lock Nut	8
4	9856	Strap	4
5	0866	Rockshaft Pivot Pin 1.5 x 6.75	2
6	10232	1-1/2 Slotted Nut	2
7	10910	Roll Pin 5/16 x 2-1/4	4
8	100573	Pin 1.25 x 6.375	1
9	10077	1-1/4 Flat Washer	4
10	100683	Transport Lock Pin	1
11	10317	Klik Pin 1/4"	1
12	12156	1/4" Zerk, Straight Self Tap	2
13	BC-05-0106	F15B Small Wing Rockshaft Assy. – RH (16'6"–19'6") – see pg.16	1
13	BC-05-0107	F15B Small Wing Rockshaft Assy. – LH (16'6 –19'6") – see pg.16	1
13	BE-05-0100	F15B Large Wing Rockshaft Assy. – RH (21' & 24') – see pg.17	1
13	BE-05-0101	F15B Large Wing Rockshaft Assy. – LH (21' & 24') – see pg.17	1

Note: After assembly of the wing frame all 7/8" Flange Lock Nuts must be bolted on top of the frame as shown. (Ref. No. 3)

SMALL WING ROCKSHAFT ASSEMBLY BC-05-0106 (RH), BC-05-0107 (LH) F15B – 16'6", 18'0", 19'6"



			No
Ref. No.	Part No.	Description	Req'd.
1	10509	3/8 Lock Nut	1
2	10773	3/8 x 3-1/2 HHCS, GR 5	1
3	0855A	F15B Small Wing Rockshaft, RH (Shown)	1
3	0856A	F15B Small Wing Rockshaft, LH	1
4	BC-05-0098	Hub & Spindle Assembly, 6-bolt (see pg.14)	1



			No
Ref. No.	Part No.	Description	Req'd.
1	10509	3/8 Lock Nut	2
2	10773	3/8 x 3-1/2 HHCS, GR 5	2
3	20184	F15B Large Wing Rockshaft, RH (Shown)	1
3	20185	F15B Large Wing Rockshaft, LH	1
4	BC-05-0098	Hub & Spindle Assembly, 6-bolt (see pg.14)	2

4 X 8 HYDRAULIC CYLINDER (LION) 3000 PSI - Wheel Lift -



Ref. No.	Part No.	Description	No Req'd.	
1	0873	Transport Lock	1	
2	10077	1-1/4 USS Flat Washer	2	
3	10910	Roll Pin 5/16 x 2-1/4	2	
4	10956	Clevis Pin	1	
5	10957	Hair Pin #19	2	
6	12382	4 x 8 Cylinder w/ Narrow Clevis	1	
7	100570	Pin 5.375 x 1.25	1	
	11296	Clevis (NOT SHOWN)	1	
**All parts listed can be purchased as kit BC-20-0001				



4 X 24 HYDRAULIC CYLINDER (LION) 3000 PSI - Wing Fold –



Ref. No.	Part No.	Description	No Req'd.
1	10910	Roll Pin 5/16 x 2-1/4	2
2	12351	4 x 24 Cylinder	1
3	101333	Pin 5.25 x 1	1

**All parts listed can be purchased as kit BD-20-0002



DECALS



- 1. BEFORE OPERATING -- STUDY OPERATORS MANUAL SAFETY MESSAGES AND SAFE OPERATING PROCEDURES, READ SAFETY SIGNS ON THIS MACHINE.
- 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 20 MPH (32 KM/H).
 LOWER OR BLOCK ALL ELEVATED COMPONENTS BEFORE
- SERVICING OR LEAVING THIS MACHINE.

- FOLDING WINGS CAN CAUSE INJURY BY: 1: DROPPING DUE TO HYDRAULIC FAILURE, AIR IN CYLINDERS, OR ACCIDENTAL CONTROL MOVEMENT
- 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.

MAINTENANCE INSTRUCTIONS

- 1. Keep all bolts tight. Check after first 50 hours or one weeks operation. Visually inspect all bolts daily.
- 2. 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.

Refer to operator's manual for other Important maintenance instructions.

AMCOMFG.CO YAZOO CITY, MS. USA- WWW.AMCOMFG.C PHONE: 800-748-9022	
MODEL #	
SERIAL#	

F15B DECALS

Part No.	Description	No. Req'd
11465	Decal – AMCO	3
11766	Decal – F15B	3
11741	Decal – Warning	1
11743	Decal – Warning	1
11716	Decal – Maintenance	1
19021	Decal – Made In USA (Not Shown)	1
11713	Serial Tag	1

F15B SERIES DISK HARROW HYDRAULIC CIRCUIT 16' – 24'

Ref. No.	Part No.	Description	No. Req'd
*1	12382	4 X 8 Cylinder (Lion – 3000 PSI – Narrow Clevis)	2
2	12180	Swivel Elbow 90 degree NPT male to 1/2 NPT	4
		Female (O-Ring Fittings NWO)	
3	11302	Hose 3/8 x 42 with 1/2 NPT fittings	1
4	11301	Hose 3/8 x 30 with 1/2 NPT fittings	1
5	12165	Swivel Elbow 90 degree 1/2 NPT male to 1/4 NPT	4
		female (O-Ring fitting – NWO)	
*6	12351	4 x 24 Cylinder (Lion – 3000 PSI)	2
7	1165	Hose 1/4 x 42 with 1/4 NPT fittings	1
8	11321	Hose 1/4-x 15 with 1/4 NPT fittings	1
9	11157	Swivel Union 1/2 NPT female to 1/2 NPT female	4
10	11126	Male Branch Tee – 1/2 NPT male to 1/4 NPT female	2
		branches	
11	10923	Male Branch Tee – 1/2 NPT male to 1/2 NPT female	2
12	11323	Hose 1/4 x 24 with 1/4 NPT fittings	1
13	11119	Hose 1/4 x 36 with 1/4 NPT fittings	1
14	10917	Hose 3/8 x 36 with 1/2 NPT fittings	1
15	11303	Hose 3/8 x 48 with 1/2 NPT fittings	1
	BE-01-0006	Bundle Hydraulic Kit Complete	
	*Not Included	in Hydraulic Kit	
		NOT SHOWN	
	10720	1/2 x 144 with 1/2 NPT Fitting Hose	4
	19010	1/2 Male Quick Disconnect	4
	AG-20-0011	Bundle Hose Kit to Tractor	



F15B LIGHT KIT LK-01-0008



			No
Ref No.	Part No.	Description	Req'd.
1	1300-137	Amber Light Assembly	2
2	1300-446	Harness, Common Wiring	1
3	1300-447	Lamp, Red	2
4	2502-195	M8 x 12mm HHCS, GR 5	4
5	2515-405	Cable Tie, 1/2 x 40.5	10
6	10097	1/2 x 2-1/2 HHCS, GR 5	2
7	10395	1/2 Lock Nut	2
8	11646	1/2 Flange Lock Nut	16
9	12466	SMC Emblem	1
10	12467	Spade for SMV	1
11	12519	1/4 x 2 HHCS, GR 5	1
12	12520	1/4 Hex Nut	2
13	19033	1/2 x 5 L-Bolt	8
14	19073	1/4 x 1/2 HHCS, GR 5	1
15	21045	Safety Chain Kit	1
16	21059	Amber Light Bracket	2
17	103399	Light Bracket	2
18	RE152269	Module, Implement Turn Signal	1
See nog	a 50 51 for as	comply instructions	

See page 50-51 for assembly instructions.

FRONT INSIDE GANG FRAME



			No
Ref No.	Part No.	Description	Req'd.
1	0827	Wing Pivot Pin	1
2	6513	3/4 x 5-1/16 x 4-3/4 U-Bolt	2
3	10232	1-1/2 Slotted Nut	1
4	10299	5/8 Lock Nut	4
5	10300	3/4 Lock Nut	4
6	10396	7/8 Lock Nut	4
7	10666	5/8 x 5 HHCS, GR 5	2
8	10910	Roll Pin 5/16 x 2-1/4	1
9	11280	U-Bolt	2
10	12156	1/4" Zerk, Straight Self Tap	1
11	20193	Inside Gang Frame - Left Front, Right Rear	1
11	20194	Inside Gang Frame - Right Front, Left Rear (Shown)	1
12	101055	Clamp Bracket	1
13	103454	Scraper Bar	1
14	103515	Scraper Bar Support	2
15	100002A	5/8 x 2.50 x 4.25 U-Bolt	1
16	16012A	Bearing Riser	2

FRONT INSIDE GANG FRAME COMPONENTS



			No
Ref No.	Part No.	Description	Req'd.
1	9628	Trunnion Clamp	2
2	10135	5/8 x 1-3/4 Carriage Bolt, GR 5	4
3	10299	5/8 Lock Nut	14
4	21040	Scraper Assembly – RH (FRH) [Shown]	6
4	21041	Scraper Assembly – LH (FLH)	6
А	10395	1/2 Lock Nut	2
В	10832	1/2 USS Flat Washer	1
С	11652	1/2 x 1-1/4 HHCS, GR 5	2
D	102533	Scraper Blade	1
E	103341	Scraper Shank	1
5	101055	Clamp Bracket	5
6	102489	Wear Guard	2
7	100002A	5/8 x 2.50 x 4.25 U-Bolt	5

FRONT INSIDE GANG COMPONENTS



			No
Ref No.	Part No.	Description	Req'd.
1	545	Spacer Spool – 9" spacing	3
2	2404	Bumper Washer	1
3	3276	Disc Blade 22 x 1/4	6
4	9442	1.50 x 52.375 Square Axle	1
5	10226	1-1/2 UNF Slotted Nut	1
6	10395	1/2 Lock Nut	1
7	10489	1-1/2 NF Hex Nut, GR 8	1
8	10710	1/2 x 2 Carriage Bolt, GR 5	1
9	10872	1-3/8 USS Flat Washer	1
10	10910	Roll Pin 5/16 x 2-1/4	1
11	17010	End Bell, Large	2
12	17014	End Bell, Small	2
13	100098	Bearing Plate	1
14	100099	Spacer Plate	1
15	1222A	End Washer	1
16	5622A	Lock Plate	1
17	FB-09-0021A	Bearing & Housing Assy (Maintenance-Free)	2

REAR INSIDE GANG FRAME



			No
Ref No.	Part No.	Description	Req'd.
1	0827	Wing Pivot Pin	1
2	6513	3/4 x 5-1/16 x 4-3/4 U-Bolt	2
3	10232	1-1/2 Slotted Nut	1
4	10299	5/8 Lock Nut	4
5	10300	3/4 Lock Nut	4
6	10396	7/8 Lock Nut	4
7	10666	5/8 x 5 HHCS, GR 5	2
8	10910	Roll Pin 5/16 x 2-1/4	1
9	11280	U-Bolt	2
10	12156	1/4" Zerk, Straight Self Tap	1
11	20193	Inside Gang Frame – Left Front, Right Rear (Shown)	1
11	20194	Inside Gang Frame – Right Front, Left Rear	1
12	101055	Clamp Bracket	1
13	103478	Scraper Bar	1
14	103515	Scraper Bar Support	2
15	100002A	5/8 x 2.50 x 4.25 U-Bolt	1
16	16012A	Bearing Riser	2

REAR INSIDE GANG FRAME COMPONENTS



			No
Ref No.	Part No.	Description	Req'd.
1	9628	Trunnion Clamp	2
2	10135	5/8 x 1-3/4 Carriage Bolt, GR 5	4
3	10299	5/8 Lock Nut	12
4	21040	Scraper Assembly – RH (FRH)	5
4	21041	Scraper Assembly – LH (FLH) [Shown]	5
А	10395	1/2 Lock Nut	2
В	10832	1/2 USS Flat Washer	1
С	11652	1/2 x 1-1/4 HHCS, GR 5	2
D	102533	Scraper Blade	1
E	103341	Scraper Shank	1
5	101055	Clamp Bracket	4
6	102489	Wear Guard	2
7	100002A	5/8 x 2.50 x 4.25 U-Bolt	4

REAR INSIDE GANG COMPONENTS



			No
Ref No.	Part No.	Description	Req'd.
1	545	Spacer Spool – 9" spacing	3
2	2404	Bumper Washer	1
3	3276	Disc Blade 22 x 1/4, Plain	5
4	9442	1.50 x 52.375 Square Axle	1
5	10226	1-1/2 UNF Slotted Nut	1
6	10395	1/2 Lock Nut	1
7	10489	1-1/2 NF Hex Nut, GR 8	1
8	10710	1/2 x 2 Carriage Bolt, GR 5	1
9	10872	1-3/8 USS Flat Washer	1
10	10910	Roll Pin 5/16 x 2-1/4	1
11	11588	Disc Blade 20 x 1/4, Plain	1
12	17010	End Bell, Large	2
13	17014	End Bell, Small	2
14	100098	Bearing Plate	1
15	100099	Spacer Plate	1
16	1222A	End Washer	1
17	5622A	Lock Plate	1
18	FB-09-0021A	Bearing & Housing Assy (Sealed)	2



FRONT WING GANG FRAME

					No Req'd		
Ref No.	Part No.	Description	16'6"	18'0"	19'6"	21′0″	24'0"
1	6513	3/4 x 5-1/16 x 4-3/4 U-Bolt	2	2	2	2	2
2	10299	5/8 Lock Nut	4	4	4	4	4
3	10300	3/4 Lock Nut	4	4	4	4	4
4	10396	7/8 Lock Nut	4	4	4	4	6
5	10785	1/2 x 1-1/2 HHCS, GR 5	2	2	2	2	2
6	10832	1/2 USS Flat Washer	2	2	2	2	2
7	10886	1/2 Split Lock Washer	2	2	2	2	2
8	11280	U-Bolt	2	2	2	2	3
9	20195	Wing Gang Frame – FRH	1				
9	20196	Wing Gang Frame – FLH	1				
9	20197	Wing Gang Frame – FRH (Shown)		1			
9	20198	Wing Gang Frame – FLH		1			
9	20199	Wing Gang Frame – FRH			1		
9	20200	Wing Gang Frame – FLH			1		
9	20201	Wing Gang Frame – FRH				1	
9	20202	Wing Gang Frame – FLH				1	
9	20205	Wing Gang Frame – FRH					1
9	20206	Wing Gang Frame – FLH					1
10	101436	Leveling Plate	1	1	1	1	1
11	103467	Scraper Bar – 2.5 x 2.5 x 58"	1				
11	103454	Scraper Bar – 2.5 x 2.5 x 50.5"		1			
11	103450	Scraper Bar – 2.5 x 2.5 x 60.875"			1		
11	103449	Scraper Bar – 2.5 x 2.5 x 70.063"				1	
11	103451	Scraper Bar – 2.5 x 2.5 x 88.5"					1
12	103515	Scraper Bar Support	2	2	2	2	2
13	100002A	5/8 x 2.50 x 4.25 U-Bolt	2	2	2	2	2
14	16012A	Bearing Riser	2	2	2	2	3

FRONT WING GANG FRAME COMPONENTS



FRONT WING	GANG F	FRAME CO	MPONENTS
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			No Req'd.				
Ref No.	Part No.	Description	16'6"	18'0"	19'6"	21'0"	24'0"
1	9628	Trunnion Clamp	2	2	2	2	3
2	10135	5/8 x 1-3/4 Carriage Bolt, GR 5	4	4	4	4	6
3	10299	5/8 Lock Nut	12	14	16	18	24
4	21040	Scraper Assembly - RH (FRH) [Shown]	4	5	6	7	9
4	21041	Scraper Assembly - LH (FLH)	4	5	6	7	9
А	10395	1/2 Lock Nut	2	2	2	2	2
В	10832	1/2 USS Flat Washer	1	1	1	1	1
С	11652	1/2 x 1-1/4 HHCS, GR 5	2	2	2	2	2
D	102533	Scraper Blade	1	1	1	1	1
E	103341	Scraper Shank	1	1	1	1	1
5	101055	Clamp Bracket	4	5	6	7	9
6	102489	Wear Guard	2	2	2	2	3
7	100002A	5/8 x 2.50 x 4.25 U-Bolt	4	5	6	7	9

FRONT WING GANG COMPONENTS



FRONT WING GANG COMPONENTS

					No Req'd		
Ref No.	Part No.	Description	16'6"	18'0"	19'6"	21'0"	24'0"
1	545	Spacer Spool - 9" Spacing	2	3	4	5	6
2	2404	Bumper Washer	1	1	1	1	1
3	3276	Disc Blade 22 x 1/4, Plain	4	5	6	7	9
4	3278	Back-up Blade 10"	1	1	1	1	1
5	9441	1.50 x 43.125 Square Axle, 5-blade	1				
5	9442	1.50 x 52.375 Square Axle, 6-blade		1			
5	9443	1.50 x 61.375 Square Axle, 7-blade			1		
5	9444	1.50 x 70.625 Square Axle, 8-blade				1	
5	9446	1.50 x 89.125 Square Axle, 10-blade					1
6	10226	1-1/2 UNF Slotted Nut	1	1	1	1	1
7	10395	1/2 Lock Nut	1	1	1	1	1
8	10489	1-1/2 NF Hex Nut, GR 8	1	1	1	1	1
9	10710	1/2 x 2 Carriage Bolt, GR 5	1	1	1	1	1
10	10872	1-3/8 USS Flat Washer	1	1	1	1	1
11	10910	Roll Pin 5/16 x 2-1/4	1	1	1	1	1
12	11588	Disc Blade 20 x 1/4, Plain	1	1	1	1	1
13	17010	End Bell, Large	2	2	2	2	3
14	17014	End Bell, Small	2	2	2	2	3
15	100098	Bearing Plate	1	1	1	1	1
16	100099	Spacer Plate	1	1	1	1	1
17	1222A	End Washer	1	1	1	1	1
18	5622A	Lock Plate	1	1	1	1	1
19	FB-09-0021	Bearing & Housing Assy (Sealed)	2	2	2	2	3

REAR WING GANG FRAME



REAR WING GANG FRAME

					No Req'd		
Ref No.	Part No.	Description	16'6"	18'0"	19'6"	21'0"	24'0"
1	6513	3/4 x 5-1/16 x 4-3/4 U-Bolt	2	2	2	2	2
2	10299	5/8 Lock Nut	4	4	4	4	4
3	10300	3/4 Lock Nut	4	4	4	4	4
4	10396	7/8 Lock Nut	4	4	4	4	6
5	10785	1/2 x 1-1/2 HHCS, GR 5	2	2	2	2	2
6	10832	1/2 USS Flat Washer	2	2	2	2	2
7	10886	1/2 Split Lock Washer	2	2	2	2	2
8	11280	U-Bolt	2	2	2	2	3
9	20197	Wing Gang Frame - RLH	1				
9	20198	Wing Gang Frame - RRH	1				
9	20199	Wing Gang Frame - RLH		1			
9	20200	Wing Gang Frame - RRH (Shown)		1			
9	20201	Wing Gang Frame - RLH			1		
9	20202	Wing Gang Frame - RRH			1		
9	20203	Wing Gang Frame - RLH				1	
9	20204	Wing Gang Frame - RRH				1	
9	20207	Wing Gang Frame - RLH					1
9	20208	Wing Gang Frame - RRH					1
10	101436	Leveling Plate	1	1	1	1	1
11	103466	Scraper Bar - 2.5 x 2.5 x 51.688"	1				
11	103450	Scraper Bar - 2.5 x 2.5 x 60.875"		1			
11	103449	Scraper Bar - 2.5 x 2.5 x 70.063"			1		
11	103459	Scraper Bar - 2.5 x 2.5 x 80.313"				1	
11	103452	Scraper Bar - 2.5 x 2.5 x 97.625"					1
12	103515	Scraper Bar Support	2	2	2	2	2
13	100002A	5/8 x 2.50 x 4.25 U-Bolt	2	2	2	2	2
14	16012A	Bearing Riser	2	2	2	2	3

REAR WING GANG FRAME COMPONENTS



REAR WING GANG FRAME COMPONENTS

			No Req'd.				
Ref No.	Part No.	Description	16'6"	18'0"	19'6"	21'0"	24'0"
1	9628	Trunnion Clamp	2	2	2	2	3
2	10135	5/8 x 1-3/4 Carriage Bolt, GR 5	4	4	4	4	6
3	10299	5/8 Lock Nut	16	18	20	22	28
4	21040	Scraper Assembly - RH (RLH)	6	7	8	9	11
4	21041	Scraper Assembly - LH (RRH) [Shown]	6	7	8	9	11
А	10395	1/2 Lock Nut	2	2	2	2	2
В	10832	1/2 USS Flat Washer	1	1	1	1	1
С	11652	1/2 x 1-1/4 HHCS, GR 5	2	2	2	2	2
D	102533	Scraper Blade	1	1	1	1	1
E	103341	Scraper Shank	1	1	1	1	1
5	101055	Clamp Bracket	6	7	8	9	11
6	102489	Wear Guard	2	2	2	2	3
7	100002A	5/8 x 2.50 x 4.25 U-Bolt	6	7	8	9	11

REAR WING GANG COMPONENTS



REAR WING GANG COMPONENTS

					No Req'd		
Ref No.	Part No.	Description	16'6"	18'0"	19'6"	21'0"	24'0"
1	545	Spacer Spool - 9" Spacing	3	4	5	6	7
2	2404	Bumper Washer	1	1	1	1	1
3	3055	Disc Blade 16 x 1/4, Plain	1	1	1	1	1
4	3276	Disc Blade 22 x 1/4, Plain	3	4	5	6	8
5	9442	1.50 x 52.375 Square Axle, 6-blade	1				
5	9443	1.50 x 61.375 Square Axle, 7-blade		1			
5	9444	1.50 x 70.625 Square Axle, 8-blade			1		
5	9445	1.50 x 79.875 Square Axle, 9-blade				1	
5	9447	1.50 x 98.375 Square Axle, 11-blade					1
6	9482	Disc Blade 18 x 1/4, Plain	1	1	1	1	1
7	10226	1-1/2 UNF Slotted Nut	1	1	1	1	1
8	10395	1/2 Lock Nut	1	1	1	1	1
9	10489	1-1/2 NF Hex Nut, GR 8	1	1	1	1	1
10	10710	1/2 x 2 Carriage Bolt, GR 5	1	1	1	1	1
11	10872	1-3/8 USS Flat Washer	1	1	1	1	1
12	10910	Roll Pin 5/16 x 2-1/4	1	1	1	1	1
13	11588	Disc Blade 20 x 1/4, Plain	1	1	1	1	1
14	17010	End Bell, Large	2	2	2	2	3
15	17014	End Bell, Small	2	2	2	2	3
16	100098	Bearing Plate	1	1	1	1	1
17	100099	Spacer Plate	1	1	1	1	1
18	1222A	End Washer	1	1	1	1	1
19	5622A	Lock Plate	1	1	1	1	1
20	FB-09-0021	Bearing & Housing Assy (Sealed)	2	2	2	2	3

Ref No.	Part No.	Description	No Req'd.
1	11647	3/4" x 5" x 6.25" U-Bolt	2
2	100802	Bottom Plate	2
3	10300	3/4" Lock Nut	5
4	10727	3/4" x 3" Hex Cap Screw, GR 5	1
5	BC-09-0001	Bearing Riser Bundle	1
5a	11521A	RockFlex Shank	1
5b	0944A	Trunion Mount	1
5c	10579	3/4" x 3" Carriage Bolt, GR 5	2
5d	12069	3/4" Flange Lock Nut	2
			•

OPTIONAL SHOCK ABSORBER BEARING RISER

Note: Parts 1-5 are required to convert bearing riser #16012A to a Shock Absorber.





ASSEMBLY INSTRUCTIONS F15B 16'6" – 24'0"

The AMCO FI5B 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. Four 15 x 8 Six Bolt Wheels
- D. Two 4 x 8 Hydraulic Cylinders with Transport lock
- E. Two 4 x 24 Hydraulic Cylinders
- F. Bundle Wing Main Frame Right Hand (with rockshaft)
- G. Bundle Wing Main Frame Left Hand (with rockshaft)
- H. Bundle Hose Kit
- I. Bundle Front Right Hand Inside Gang and Gang Frame
- J. Bundle Front Left Hand Inside Gang and Gang Frame
- K. Bundle Rear Right Hand Inside Gang and Gang Frame
- L. Bundle Rear Left Hand Inside Gang and Gang Frame
- M. Bundle Front Right Hand Wing Gang and Gang Frame
- N. Bundle Front Left Hand Wing Gang and Gang Frame
- O. Bundle Rear Right Hand Wing Frame and Gang Frame
- P. Bundle Rear Left Hand Wing Gang and Gang Frame
- Q. Bundle Light Kit

Step 1.

Select a clear level to assemble the harrow. Place all parts and bundles where they will be readily accessible during assembly. Remove banding material and other parts from the main frame.

NOTE: The right and left hand sides of the harrow are determined by standing at the rear of the harrow facing the direction of travel.

Step 2.

Place the center main frame "right side up" on sturdy stands at least 33" high. Install rockshafts and related linkages. Tighten bolts and install all $5/16 \times 2-1/4$ roll pins.

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 x 9 bolts and 5/8 x 3 straps. These gangs have six blades and two bearings. The gangs should be located to throw soil away from the center of the harrow. Leave the 7/8 x 9 bolts snug but not tight. THE 7/8 FLANGE LOCK NUTS MUST BE BOLTED ON TOP OF THE MAIN FRAME & WING FRAME AS SHOWN ON PAGES 8 & 15.

Step 4.

Attach the two inside rear gangs to the center main frame. Clamp in place with the $7/8 \ge 9$ bolts and $5/8 \ge 3$ straps. These gangs have six blades and two bearings. The gangs should be located to throw soil toward the center of the harrow. Leave the $7/8 \ge 9$ bolts snug but not tight.

Step 5.

Attach the two front wing gang frames to the inside 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 gang frames. Use the $1 \frac{1}{2}$ diameter wing pivot pins. Tighten the nuts snug but not tight.



Step 7.

Install four 6-hole hub assemblies to center rockshafts. Mount four 9.5L tires on 16'6", 18' and 19'6" models or four 11L tires on 21' and 24' models. 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 x 9 bolts and 5/8 x 3 straps. Shift gangs as required to align all holes. Thoroughly tighten all thirty-two 7/8 x 9 clamp bolts. Tighten four $1 \frac{1}{2}$ " diameter wing pivot pins. Secure the four wing pivot pins with 5/16 x 2-1/4 roll pins.



Step 9.

Install 6-bolt hub assemblies to wing rockshafts. Mount two 9.5L tires on 16'6", 18' and 19'6" models or four 9.5L tires on 21' and 24' models. Inflate to same pressure as center section tires. Tighten hub bolts tight.

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



16'6'', 18'0'' & 19'6" WING MAIN FRAME



21'0" AND 24'0" WING MAIN FRAME



TURNBUCKLES



HYDRAULIC CYLINDER MOUNTING

Step 10.

Adjust turnbuckles to 15" length before installation. Install the turnbuckle sub. Assemblies between the center rockshafts and the wing rockshafts. The 1 3/8 NC jam nut should be located to the rear and tightened. Never extend over 16" or under 14".



Step 11.

Install the two 4" x 8" hydraulic cylinders on the center main frame and the two center rockshafts. The rod end should be attached to the rockshaft. The two 1-1/4" cut washers should be installed between the transport lock and cylinder clevis.



Step 12.

Install the two 4" x 24" hydraulic cylinders. Turn ports to rear on left hand cylinder. Turn ports to front on right hand cylinder. 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 the 1-1/4" pins and the 5/16" x 2-1/4" roll pins.



4 X 8 CYLINDER INSTALLATION



4 X 24 CYLINDER INSTALLATION



Step 14.

Install hydraulic fittings as follows:

Note: Remember the right and left hand sides of the plow are determined by standing at the rear of the plow and facing the direction of travel.

- A. Install four #12180 ¹/₂" Male to ¹/₂" Female swivel elbows into the ports on the 4" x 8" cylinders. Turn fittings as shown in drawing. Use small amount of pipe sealant on each fitting to eliminate fluid seeps. Tighten fittings!
- B. Install four #11127 ¹/₂" Male to 1/4" Female swivel elbows into ports on 4 x 24 cylinders. Turn, fittings as shown in drawing. Tighten fittings!
- C. The four #11157 ½" Female to ½" Female swivel unions are used to secure the four tees to the mounting bracket. The swivel on the union should be turned to the front to simplify attachment of the four ½" x 10" hoses that go to the tractor. The two #10923 ½" Male to ½" Female tees should be installed in the two bottom holes. The two #11126 ½" male to 1/4" Female tees should be installed in the two top holes. Use the sealant as described above.
- D. Connect cylinder with hoses as follows:
 - (1) #11302 3/8" x 42" hose goes from rod end of left hand 4 x 8 cylinder to the bottom tee on the mount bracket.
 - (2) #11303 3/8" x 48" hose goes from rod end of right hand 4 x 8 cylinder to the bottom tee on the mount bracket.
 - (3) #11301 3/8" x 30" hose goes from butt end of left hand 4 x 8 cylinder to the second tee from the bottom.
 - (4) #10917 3/8" x 36" hose goes from butt end of right hand 4 x 8 cylinder to the second tee from the bottom.
 - (5) #11119 1/4" x 36" hose goes from rod end of right hand 4 x 24 cylinder to the second tee from the top.
 - (6) #11165 1/4" x 42" hose goes from rod end of left hand 4 x 24 cylinder to the second tee from the top.
 - (7) #11323 1/4" x 24" hose goes from butt of right hand 4 x 24 cylinder to top tee
 - (8) #11321 1/4" x 15" hose goes from butt of left hand 4 x 24 cylinder to top tee.

Use small amount of pipe sealant on each hydraulic fluid fitting to eliminate fluid seeps. Tighten fittings.

Step 15.

Install pull tongue to main frame using two 1-1/4" x 6-7/8" pins and four 5/16" x 2-1/4" roll pins. Install adjusting rod sub assembly.



Step 16.

Attach four ¹/₂" x 10" or 3/8" x 10" SAE 100R2 or SAE 100R8 Double Braid Hydraulic hoses to the swivel adaptors on the main frame. Attach quick couplers. Attach hoses to tractor.



Step 17. Install Light Kit and SMV Emblem

			No
Ref No.	Part No.	Description	Req'd.
1	1300-137	Amber Light Assembly	2
2	1300-446_2 Pin	2-way Amber Lamps LH/RH	2
3	1300-446_4 Pin	4-way Red Lamps LH/RH	2
4	1300-446_5 Pin	5-way Flash Module	1
5	1300-446_7 Pin	7 Pin Connector Main Plug	1
6	1300-447	Lamp, Red	2
7	2502-195	M8 x 12mm HHCS, GR 5	4
8	10097	1/2 x 2-1/2 HHCS, GR 5	2
9	10395	1/2" Lock Nut	2
10	11646	1/2" Flange Lock Nut	16
11	12466	SMV Emblem	1
12	12467	Spade for SMV Emblem	1
13	12519	1/4 x 2 HHCS, GR 5	1
14	12520	1/4" Hex Nut	2
15	19011	1/2" 4 x 7 L-Bolt	8
16	19073	1/4 x 1/2 HHCS, GR 5	1
17	21059	Amber Light Bracket	2
18	103399	Red Light Bracket	2
19	RE152269	Module, Implement Turn Signal	1

see next page for layout



Step 18.

Final Grooming and Check Points.

- A. Check inside front gangs. They should overlap in center about 1-1/2" to 2-1/2". (Front tips inside blades should be 3/4" to 1-1/4" over center line of harrow.) This can be adjusted by shifting the gang frames.
- 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.
- 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 8" cylinders to be sure that hoses are properly routed. Check transport locks to see if they function properly.
- F. Check adjustment of turn buckles between center and wing rockshafts. Both 4" x 8" cylinders must be fully retracted. Extend or retract turnbuckles for equal ground clearance under all four tires. Extending the turnbuckles will raise the wing gauge wheels. Retracting the turnbuckles will lower the wing gauge wheels. The turnbuckles should never be extended to over 16" in length. They should never be retracted to under 14" in length. The 1-3/8 NC jam nut should be tightened.

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.

- G. Fold and unfold the wings 4 or 5 times. Check hose routing to be certain hoses and fittings will not be damaged in normal operation. Check wings to be sure they fold properly. Make sure the transport lock pins are stored in the holes on the wing main frames. The pins should easily slip into the holes to lock the wings in transport position.
- H. Fully extend the 4" x 8" 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.
- J. 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 two turnbuckles between the center rockshafts. Fill the cavity until grease appears around the threads. Again, it will take several strokes to initially fill the cavity. Grease the four wing pivot pins.
 - (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 of the harrow main frame. It is immediately in front of the compression spring on the tongue control rod.
 - (4) If the harrow is in storage for four to six months, the entire harrow should again be lubricated before placing in service. It should also be greased every 50 hours while in use, at the end of each season and at the start of each season.

- (5) Check decals to be certain they are in place and in good condition. Touch up paint as required before delivery. Place Operators Manual in the heavy plastic shipping bag and place securely back into Manual Tube bolted to the Main Frame.
- K. Check all bolts for proper torque.

Step 19.

Review all steps of the assembly process to be certain the harrow is properly assembled. Check all bolts to be sure they are properly torqued. Visually inspect the harrow for any missing, damaged, or defective parts. Repaint any areas that need improvements.

Remember, a little extra attention to details at this time can prevent problems after the harrow is placed in service.

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 thoroughly 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 8 pins 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 Lithium 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 F15B Harrow Gangs are equipped Maintenance-Free bearings. No lubrication needed. Bearings come with 3-year manufacturer warranty.



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 lithium soap base grease.



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 TURNBUCKLES: The center rockshafts and wing rockshafts are connected with turnbuckles. 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 and 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 carboard when looking for leaks-never user 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.



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 emery 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 surfaces 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 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 trunnion 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 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 gangs. 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 thus it will fail 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.
- 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 riser should be carefully spaced to match the bearing housing. 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. 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 resealing. 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 extent 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 bar mount 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 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.

HYDRAULIC CYLINDER REPAIR:

- 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 of barrel should be smoothed with fine steel wool or emery 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. Check cylinder for 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

Operating Instructions

TRANSPORTING THE DISK: Extreme caution is required when transporting and 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 and width.

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 implements 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.

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 Fl5B is equipped with transport pins for each wing. These pins should be inserted through the bracket on the main frame and stand on the wing frames.



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

Each of the 4" x 8" hydraulic cylinders used for lifting the F15B is equipped with a transport latch. When the harrow is on its wheels in the transport position, these latches may be folded over the cylinder rods preventing the cylinders retracting. These latches should always be used when the harrow is transported.

The draw bar 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.

FIELD ADJUSTMENTS: By using the tongue adjusting rod, level the harrow from front to rear. This rod compensates for different drawbar heights and soil conditions. It is used to adjust the disk for proper soil penetration and levelling. After a few minutes of operation any minor adjustments needed on the tongue adjusting rod will be apparent. Use the stroke control devices on the 4" x 8" hydraulic cylinders to regulate cutting depth. These stroke controls should be adjusted evenly. Disc as deep as necessary to do a satisfactory job, but, trying to disk excessively deep exerts undue strain on the tractor, wastes fuel, puts strain on the disk frame and shortens the bearing life. Never let soil "Bulldoze" over or in front of the spacer spools.

With the center section disking at the proper depth and running level the wings can be adjusted to give uniform penetration and levelling across the entire harrow width. If the wings are cutting deeper than the center section, shorten the turnbuckles that connect the wing rockshafts to the center rockshafts. If more penetration is desired on the wings, lengthen the turnbuckles. The turnbuckle length should be approximately 15 inches. The turnbuckles should always be between 14" and 16" in length.

TIPS FOR LEVEL DISKING: Five factors must be considered when level disking is required. They are (1) depth of cut (2) tractor speed (3) tongue adjusting rod length (4) lateral gang adjustment and (5) soil conditions. Improper adjustments and tractor speeds above 6 MPH contributes to ridging and furrowing.

When a center ridge is left behind the disk you should shorten the tongue adjusting rod to put less weight on the rear gangs, adjust the inside rear gang outward slightly, or reduce tractor speed. Perhaps, a combination of all three adjustments will be required.

A center furrow may be corrected by lengthening the tongue adjusting rod to put more weight on the rear gangs. The inside rear gangs may be shifted inward slightly if necessary.

Outer ridges or furrows are usually the opposite action of ridges or furrows in the center. Therefore, most can be corrected by adjusting the tongue adjusting rod. In some cases it may be necessary to adjust the turnbuckle between the main frame and wing frame to prevent the wing tips from digging in and throwing up a ridge.



A combination of the adjustments described above will generally correct any unlevel condition. However, wing levelling problems could persist when cutting deep, when in hard ground or when disking heavy clay soils. In this case, levelling plates are provided at all four wing hinges to prevent wings from cutting deeper than the center section. Simply fold wings into transport position, secure with transport pins for safety, remove levelling plates from the outside of the hinges and bolt them between the hinge plates to insure level disking from side to side. When using levelling plates, make sure all four plates are used simultaneously or frame damage may result. Adjustment of wing gauge wheels with turnbuckles should handle any wing levelling needs when shallow disking, and levelling plates should not be used.

SUMMARY: The F15B has three primary adjustments that can be used to "set" the disk for proper operation. They are (1) stroke control on the lift cylinders (2) turnbuckles to control wing cutting depth and (3) tongue adjusting rod to level the disk front to rear. These are the only components that will normally need to be adjusted to match field conditions. In extremely loose soil (dry powder), it may be necessary to shift the rear gangs laterally to get good level disking. When wing gauge wheels cannot be used to level the wings, levelling plates can be used at each hinge to insure that wings are level with the center section.

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.

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

If the harrow is not levelling properly, after making these adjustments, you should go back to the assembly section and carefully check the entire harrow for proper assembly.

Operating tips

OPERATING TIPS FOR LONG 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.
- 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.

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 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.



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



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

