

Ezee-On

**MODEL 4290/4300
TANDEM DISCS
2 SECTION FRAME**

OWNER'S MANUAL

**c/w
ASSEMBLY INSTRUCTIONS
and
PARTS LIST**

**Manufactured
by**

Ezee-On Mfg. Ltd.

**Vegreville, Alberta
Canada**

Printed in Canada

643C

WARRANTY

EZEE-ON WARRANTY FOR AGRICULTURAL PRODUCTS

EZEE-ON warrants each item of new EZEE-ON equipment sold by it to be free from defects in material and workmanship under recommended agricultural use. This warranty is void if equipment is used for other than agricultural purposes. The sole obligation of EZEE-ON under this warranty is limited to the repair or replacement of those part(s) (F.O.B. EZEE-ON Factory) of the equipment which EZEE-ON in its sole discretion, determines to have failed as a result of defects in material or workmanship occurring prior to the expiration of one year ("Warranty Period") from delivery by EZEE-ON or its selling dealer ("Dealer") to the original purchaser ("Purchaser"). Such defective part(s) will, at the option of EZEE-ON, be either repaired or replaced only to the Purchaser and must be effected by the selling Dealer.

The Purchaser must, within the Warranty Period, give written notice to the Dealer, from whom the equipment was purchased, of any claimed defect. The Dealer will have a reasonable time under the circumstances then existing, to repair or replace defective part(s). This warranty shall not cover damage to any other part(s) of the equipment caused as a result of delay by the Purchaser to repair or replace defective part(s). EZEE-ON's LIABILITY UNDER THIS WARRANTY SHALL BE LIMITED TO, AND IN NO CASE BE GREATER THAN, THE COST OF THE REPAIR OR REPLACEMENT OF THE PART(S) COVERED. THIS WARRANTY SHALL SPECIFICALLY EXCLUDE ANY OTHER COSTS, INCLUDING BUT NOT LIMITED TO, LOSS AND/OR DAMAGE TO CROPS, LOSS OF USE, LOSS OF PROFIT, REVENUE OR OTHER COMMERCIAL LOSSES, INCONVENIENCE OR COST OF RENTAL OR REPLACEMENT EQUIPMENT, TRANSPORTATION EXPENSE TO AND FROM DEALER'S PREMISES, SERVICE CALLS, NORMAL MAINTENANCE AND UPKEEP COSTS, OVERTIME LABOUR COSTS AND ANY AND ALL INJURIES, CLAIMS OR SPECIAL INDIRECT OR CONSEQUENTIAL DAMAGE OR OTHER ECONOMIC LOSS. THE FOLLOWING ITEMS ARE SPECIFICALLY EXCLUDED FROM WARRANTY:

ALL PRODUCTS -	RUBBER TIRES AND TUBES, EXCLUSIVE OF PACKER WHEEL TIRES WHICH ARE WARRANTED DIRECTLY BY AGENTS OF THE TIRE MANUFACTURERS.
CULTIVATORS/CHISEL PLOWS AND AIR DRILLS -	BENT SHANKS AND ALL GROUND ENGAGING TOOLS.
AIR SEEDERS -	TANK PAINT IF DAMAGE IS CAUSED BY CHEMICAL AGENTS.
DISCS -	DISC BLADES.
FRONT END LOADERS -	BUCKET TEETH AND GRAPPLE TEETH. MODIFICATIONS TO LOADER MOUNTS TO ADAPT TO CHANGES MADE BY TRACTOR MANUFACTURERS IN TRACTOR DESIGN.
POST DRIVERS -	ENGINE & ENGINE PARTS WHICH ARE WARRANTED DIRECTLY BY AGENTS OF THE ENGINE MANUFACTURER.

This warranty applies only to new equipment, manufactured by EZEE-ON. This warranty does not cover damage caused to or by any equipment, accessories or part(s) attached to or utilized in conjunction with EZEE-ON equipment. This warranty does not cover damage caused as a result of attachment, modification and incorrect assembly or pre-delivery.

This warranty constitutes the only warranty and is in lieu of any other warranty expressed or implied. There is no warranty of merchantability or of fitness for a particular purpose. No Dealer, salesman or agent has any authority to alter or amend this warranty.

TYPE OF EZEE-ON PRODUCT PURCHASED	_____
MODEL NUMBER	_____
SERIAL NUMBER	_____

This identification should be provided in all correspondence or communication with EZEE-ON regarding your Implement.

INTRODUCTION

THANK YOU for choosing to purchase this Ezee-On implement, we are confident you will be impressed with its performance.

In addition to the traditional values of simplicity, reliability and durability, your new EZEE-ON implement incorporates a number of operational and safety features. We urge you to familiarize yourself with the maintenance and operation of your implement by reading this Manual thoroughly and completely. Failure to do so could result in personal injury or equipment damage.

THIS MANUAL contains important information regarding the assembly, maintenance, operating instructions, and troubleshooting problems, and should be considered a permanent part of your implement.

Remember that it is the responsibility of the Operator to ensure that the implement is field ready, prior to first operation. However, should you encounter a problem, please contact your dealer immediately.

READ THIS MANUAL CAREFULLY TO ENSURE THAT YOUR NEW IMPLEMENT IS ASSEMBLED AND ADJUSTED CORRECTLY PRIOR TO FIRST OPERATION.

RIGHT and LEFT is determined by standing behind the machine and facing FORWARD, in the direction of travel.



This symbol is used to identify safety messages. When you see this symbol, read the safety message carefully.



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EZEE-ON MFG. LTD. RESERVES THE RIGHT to make improvements in design and changes in specifications at any time without notice and without incurring any obligation to install them on units previously sold. Specifications, descriptions, and illustrative material herein are as accurate as known at time of publication, but are subject to change without notice.

SAFETY RECOMMENDATIONS



WATCH FOR THIS SYMBOL. IT IDENTIFIES IMPORTANT SAFETY MESSAGES. WHEN YOU SEE THIS SYMBOL, READ THIS SAFETY MESSAGE CAREFULLY.

GENERAL SAFETY

1. Never allow anyone to ride on the tractor drawbar, or on the disc. The person(s) riding may fall and be seriously or fatally injured.
2. Disc should be operated ONLY by persons responsible and qualified to do so.
3. Never allow anyone to climb or play on the tractor or disc. They may fall and be seriously injured.
4. Follow all safety precautions in your tractor manual.
5. Keep a First Aid Kit in the tractor at all times.

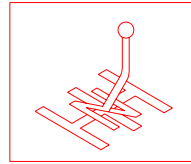


ASSEMBLY SAFETY

1. When assembling disc, use aligning punch to line up holes. Keep fingers out of holes. Any sudden movement of heavy components will severely injure or sever your fingers.
2. Use adequate manpower or hoist to lift the heavy components into place. Attempting to lift heavy components by yourself could cause serious injury.
3. Be sure all bolts and hydraulic fittings are tight, and all cotter pins are installed in the slotted nuts and pins.
4. Support the main and wing frames securely before assembling the components. Inadequate support may result in the heavy components falling and causing serious injury to you or person(s) nearby.
5. Be sure all wheel bolts are checked for tightness during initial transport or when first discing. Loose wheel bolts may result in the wheel falling off, causing serious damage to the disc and may cause serious injury to the operator or person(s) nearby.
6. To fill the wing lift cylinder with hydraulic fluid, remove the pin from the shaft end of each wing lift cylinder and pump fluid into the cylinders. Extend and contract the cylinders until they are completely filled with hydraulic fluid. The wing will free-fall if the cylinder is not completely filled with fluid, resulting in serious damage to machine or serious injury or death to person(s) nearby.
7. Do not raise or lower the main or wing frames until all components are securely tightened. Loose components will cause serious damage to the disc and serious injury or death to you and person(s) nearby if the main or wing frames fell causing serious injury or death.
8. Hydraulic oil escaping under pressure has sufficient force to cause serious injury. Relieve pressure in all hydraulic components before disconnecting any hydraulic components. Before applying pressure to hydraulic system, be sure all connections are tight and components are not damaged. If injured by escaping hydraulic fluid, see a medical doctor immediately.
9. When attaching gang assemblies, wear protective gloves to prevent injury from cutting edges of blades.
10. Before applying pressure to the hydraulic system, be sure all connections are tight and the components are not damaged.
11. Wing will free fall if wing cylinder is not full of oil causing serious damage to machine or serious injury or death to person(s) nearby.
12. If hydraulic cylinder shafts are unpinned and cycled to fill the cylinders with oil, they can be seriously damaged if clevis of shaft strikes rockshaft arm or wing cylinder lug.

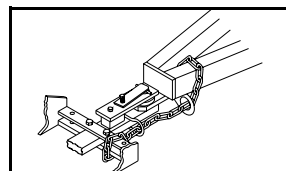
MAINTENANCE SAFETY

1. Do not loosen or disassemble hydraulic components when there is pressure within those components. Hydraulic components under pressure may cause parts and hydraulic fluid to fly out at a high velocity, which could cause serious injury. Always relieve the pressure in the hydraulic system before making adjustments to the hydraulic system. If injured by escaping hydraulic fluid, see a medical doctor immediately.
2. Check all hydraulic hoses periodically for signs of ruptures and leaks. Always use wood or cardboard as a backstop, and wear gloves and eye protection when searching the hydraulic system for leaks. Spurting hydraulic fluid can cause injury if it penetrates the skin or the eyes. If injured by escaping hydraulic fluid, see a medical doctor immediately.
3. Always relieve the pressure in the hydraulic system when the disc is not being operated.
4. Always permit parts which contain hot fluid to cool to a safe temperature before handling or disconnecting these parts.
5. Always wear safety glasses or goggles and gloves when working on the hydraulic system.
6. To fill wing lift cylinder with hydraulic oil, extend and contract cylinder within slot on wing until cylinders are completely filled with oil. Do not fold wing until cylinder is completely filled, wing(s) will free fall if cylinders are not filled with oil, causing serious damage to machine or serious injury or death to person(s) nearby.
7. Lower the disc to the ground when servicing or making adjustments. If the disc must be serviced in the raised position, place blocks under frame. Do not rely on hydraulics lock up valves as a safety device. If the hydraulic system failed, or if the hydraulic lever was accidentally operated, the disc could drop.
8. Do not lubricate disc while it is in motion. You may fall in front of disc and be seriously or fatally injured.
9. Always place all tractor controls in neutral and lock brakes when hitching disc to tractor. Tractor could roll backwards when hitching disc.
10. If wing lift cylinder is removed when wing is folded into transport position, always install a safety chain between wing frame and main frame to prevent wing(s) from falling. If wing(s) fell, serious injury or death could occur to person(s) nearby and machine would be damaged severely.



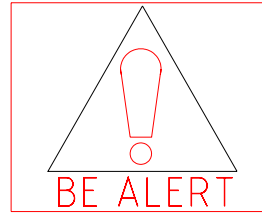
TRANSPORT SAFETY

1. When trailing the disc over public roads, use the SMV emblem and warning light for protection of tractor and other motor vehicle operators. Check local laws for width and height maximums.
2. When transporting disc always place both hydraulic lock up valves in "closed" position. See Section 7 of Operating Instructions on page 6. If hydraulic lever was accidentally operated the disc could drop or wing could fall.
3. Do not exceed 10 mph (16 km/h) when transporting the disc on smooth surfaces. Reduce speed when transporting on rough surfaces. Excessive speed could cause loss of tractor control and damage to disc and tractor. Do not transport the disc with any other vehicle except a tractor.
4. When transporting the disc with the wing(s) folded (UP), be sure there is sufficient clearance under all power lines and other overhead obstructions. Serious injury or death can result from contact with electrical lines. Use care to avoid contact with electrical lines when moving or operating the disc.
5. Always attach a safety chain to the tractor drawbar and the disc hitch before transporting the disc. Serious damage and injury could result from the disc separating from the tractor drawbar.



TRANSPORT SAFETY CONTINUED:

6. Check all reflectors and visibility and cleanliness before transporting the disc. It is important that the reflectors are clean and visible, especially during the evening hours.
7. Regulate your speed on hillsides and curves when transporting the disc. Loss of tractor control could result in serious damage to the disc and possible serious injury or death to you or those nearby.
8. Never allow anyone to ride on drawbar of the tractor or on the disc. The person riding may fall and be seriously injured.
9. When transporting disc always install the complete package of depth control stops 17" (432 mm) long on shaft of main frame cylinder. If any components of hydraulic system failed disc could drop causing serious injury or death to operator or person(s) nearby.



OPERATION SAFETY

1. Be sure person(s) are standing clear before starting or moving the tractor and disc.
2. Only one (1) person (the operator) should be permitted on the tractor when the disc is in operation, and he/she should be familiar with repair procedures and temporary first aid treatment.
3. Never stand between the tractor and disc when hitching disc to the tractor UNLESS all tractor controls are in neutral and the park brake is set. The tractor could roll backwards which could result in serious injury or death to you or persons nearby.
4. When operating on hillsides, use extreme care. The tractor may tip over if it strikes a hole, ditch or other irregularity.
5. To avoid personal injury or death, always stay clear of the folding wing(s) when it is being raised, lowered or in the folded position. If the hydraulic system failed, or if the hydraulic lever was accidentally operated, the wing could drop, resulting in serious injury or death to you or those nearby.
6. Do not stand under wing while wing is being raised or lowered. If any components of hydraulic system should fail, or if hydraulic lever should accidentally be operated, wing could drop causing serious injury or death.

SAFETY DECALS

1. Keep all decals clean and in good condition to provide you with a constant reminder of safe operating procedures.
2. Replace any destroyed, missing or illegible decals.

SPECIFICATIONS

MODEL	BLADE SPACING	APPROXIMATE	NO. OF BLADES	NO. OF GANG	WING LIFT CYL.	GANG BEARING TYPE	
		CUTTING WIDTH		BEARINGS	STROKE	STD.	OPTION
4298 - 50B	8" (203 mm)	17' (5.18 m)	50	12	34-3/4" (883 mm)	211	410
4298 - 54B	8" (203 mm)	18-1/2' (5.63 m)	54	12	34-3/4" (883 mm)	211	410
4298 - 58B	8" (203 mm)	20' (6.09 m)	58	14	34-3/4" (883 mm)	211	410
4298 - 62B	8" (203 mm)	21' (6.40 m)	62	18	36" (914 mm)	211	410
4298 - 66B	8" (203 mm)	22-1/2' (6.85 m)	66	22	36" (914 mm)	211	410
4298 - 70B	8" (203 mm)	24' (7.31 m)	70	22	36" (914 mm)	211	410
4298 -74B	8" (203 mm)	25-1/2' (7.77 m)	74	24	36" (914 mm)		
4299 - 46B	9" (229 mm)	18' (5.48 m)	46	12	34-3/4" (883 mm)	211	410
4299 - 50B	9" (229 mm)	19-1/2' (5.94 m)	50	12	34-3/4" (883 mm)	211	410
4299 - 54B	9" (229 mm)	21' (6.40 m)	54	16	36" (914 mm)	211	410
4299 - 58B	9" (229 mm)	22' (6.70 m)	58	20	36" (914 mm)	211	410
4299 - 62B	9" (229 mm)	23-1/2' (7.16 m)	62	20	36" (914 mm)	211	410
4299 - 66B	9" (229 mm)	25' (7.62 m)	66	22	36" (914 mm)	211	410
4309 - 46B	9" (229 mm)	18' (5.48 m)	46	12	34-3/4" (883 mm)	410	---
4309 - 50B	9" (229 mm)	19-1/2' (5.94 m)	50	12	34-3/4" (883 mm)	410	---
4309 - 54B	9" (229 mm)	21' (6.40 m)	54	16	36" (914 mm)	410	---
4309 - 58B	9" (229 mm)	22' (6.70 m)	58	20	36" (914 mm)	410	---
4309 - 62B	9" (229 mm)	23-1/2' (7.16 m)	62	20	36" (914 mm)	410	---
4309 -66B	9" (229 mm)	25' (7.62 m)	66	22	36" (914 mm)	410	---
4300 - 42B	10-1/2" (267 mm)	18-1/2" (5.63 m)	42	12	34-3/4" (883 mm)	410	T2-215
4300 - 46B	10-1/2" (267 mm)	20' (6.09 m)	46	12	34-3/4" (883 mm)	410	T2-215
4300 - 50B	10-1/2" (267 mm)	22' (6.70 m)	50	16	36" (914 mm)	410	T2-215
4300 - 54B	10-1/2" (267 mm)	23-1/2' (7.16 m)	54	16	36" (914 mm)	410	T2-215
4300 - 58B	10-1/2" (267 mm)	25' (7.62 m)	58	18	36" (914 mm)	410	T2-215

TIRES

MODEL	SIZE	TOTAL NO. of WHEELS	OUTER WHEEL TYPE	M/F TIRES		W/F TIRES	
				SIZE	PRESSURE	SIZE	PRESSURE
4290	17' - 19-1/2' (5.18 m - 5.94 m)	4	Single	11L x 15 F1 Load Range "C"	45	11L x 15 F1 Load Range "C"	45
4290	20' - 25-1/2' (6.09 m - 7.77 m)	6	Dual	11L x 15 F1 Load Range "C"	45	11L x 15 F1 Load Range "C"	45
4300	18' - 20' (5.48 m - 6.09 m)	4	Single	11L x 15 F1 Load Range "D"	60	11L x 15 F1 Load Range "C"	45
4300	21' - 25' (6.40 m - 7.62 m)	6	Dual	11L x 15 F1 Load Range "D"	60	11L x 15 F1 Load Range "C"	45

GANG ANGLE

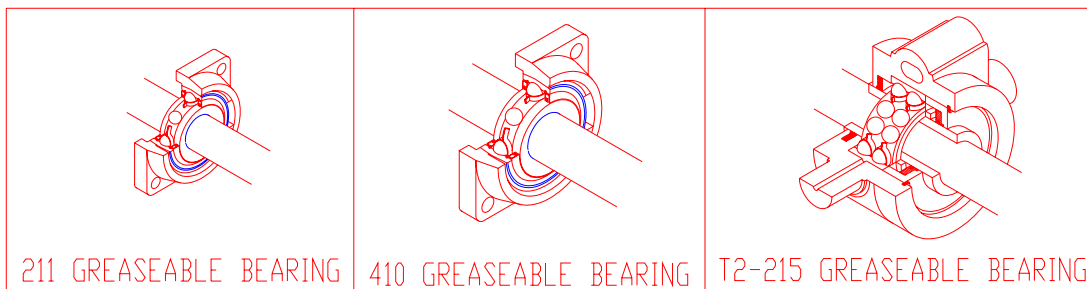
- Front Gang - Adjustable - 22 and 25 degrees
- Rear Gang - Adjustable - 20 and 23 degrees

HYDRAULIC CYLINDERS - Wing Lift (1) - 5" x 36" (127 mm x 914 mm)
 Lift (1) - 3-1/2" x 24" Rephasing (88.9 mm x 610 mm)
 (1) - 3" x 24" Rephasing (76.2 mm x 610 mm)

BOLT TORQUES

- Gang Bolts - 1-15/16" (49 mm) Diameter 3200 ft. lbs. (4336 N.m)
- Gang Beam Bolts - 1-1/4" (31.7 mm) Diameter 840 ft. lbs. (1138.2 N.m)
- Levelling Crank Bolts - 1-1/4" (31.7 mm) Diameter 840 ft. lbs. (1138.2 N.m)
- Wheel Bolts - 9/16" (14.2 mm) Diameter 130 ft. lbs. (176.2 N.m)
- Bearing Hanger U-Bolts - Model 4290 - 5/8" (15.7 mm) Diameter 150 ft. lbs. (203.25 N.m.) - Solid Hangers
 - 3/4" (19 mm) Diameter 260 ft. lbs. (352.3 N.m.) - Stone Flex Hangers
 - Model 4300 - 7/8" (22 mm) Diameter 430 ft. lbs. (582.65 N.m.)

GANG BEARINGS



GENERAL OPERATION

1. Before operating disc, refer to Safety Precautions on pages 2 to 4. Review disc safety items applicable to road transport and field operation of disc.
2. **IMPORTANT:** WHEN LOWERING WING TO FIELD POSITION, BE SURE WING LIFT CYLINDER IS FULLY EXTENDED. AFTER WING TIRES HAVE HIT THE GROUND CONTINUE TO HOLD HYDRAULIC LEVER. THERE WILL BE A SHORT PAUSE BEFORE CYLINDERS FULLY EXTEND. IF CYLINDER IS NOT FULLY EXTENDED, THE WING WILL HANG ON CYLINDERS AND WILL NOT FLEX DOWN.



CAUTION: NEVER STAND BETWEEN THE TRACTOR AND DISC WHEN HITCHING DISC TO THE TRACTOR UNLESS ALL TRACTOR CONTROLS ARE IN NEUTRAL AND THE PARK BRAKE IS SET. THE TRACTOR COULD ROLL BACKWARDS WHICH COULD RESULT IN SERIOUS INJURY OR DEATH TO YOU OR PERSONS NEARBY.

3. For best performance, the tractor drawbar should be pinned at centre of tractor.
4. Ensure disc is level and cutting depth is properly adjusted. If further adjustments are required, see pages 10 to 15.
5. Do not make sharp turns with the disc in ground. Sharp turns put excess pressure on the gangs.

IT IS ADVISABLE TO ALWAYS LIFT MACHINERY OUT OF GROUND FOR MAKING SHARP TURNS. EXCESSIVE SIDE THRUST IS APPLIED TO BEARINGS AND MACHINE IF DISC IS TURNED WHILE IT IS IN THE GROUND.

6. In discing conditions where extreme wing flexibility is required, remove cylinder pin from shaft end of wing lift cylinder and retract cylinder.
7. See Fig. 1. When transporting disc, always place hydraulic lockup valves in closed position. Lock up valves are located at the front end of centre frame.

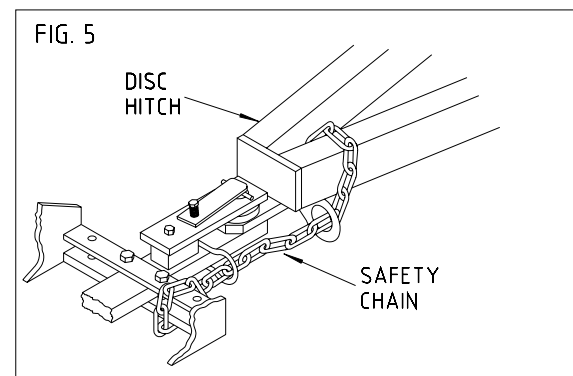
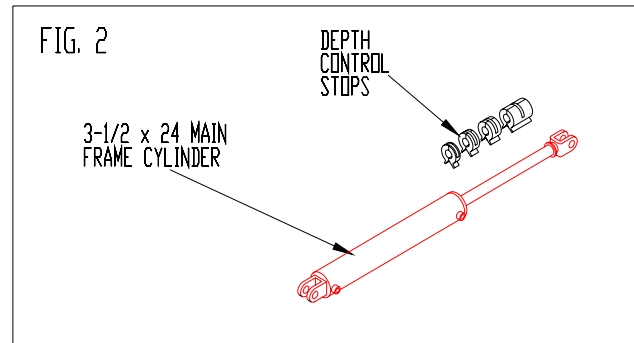


CAUTION: WHEN TRANSPORTING DISC ALWAYS PLACE BOTH HYDRAULIC LOCK UP VALVES IN "CLOSED" POSITION. IF HYDRAULIC LEVER WAS ACCIDENTALLY OPERATED THE DISC COULD DROP OR WING COULD FALL.

8. See Fig. 2. When transporting disc always place the complete depth control package 17" (432 mm) long on shaft of 3-1/2" x 24" (88.9 mm x 610 mm) main frame lift cylinder.



CAUTION: WHEN TRANSPORTING DISC ALWAYS INSTALL THE COMPLETE PACKAGE OF DEPTH CONTROL STOPS 17" (432 mm) LONG ON SHAFT OF MAIN FRAME CYLINDER. IF ANY COMPONENT OR HYDRAULIC SYSTEM FAILED DISC COULD DROP CAUSING SERIOUS INJURY OR DEATH TO OPERATOR OR PERSON(S) NEARBY.



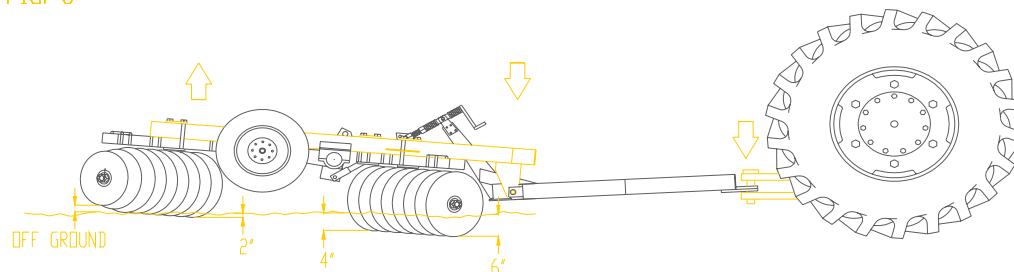
9. **IMPORTANT:** WHEN TRANSPORTING DISC, DO NOT EXCEED SPEED OF 10 MPH (16 KM/H).
10. **IMPORTANT:** DO NOT DISC WITH FRONT GANGS CUTTING DEEPER THAN REAR GANGS. DISC MUST BE LEVEL. IF FRONT GANGS ARE LOWER, EXCESSIVE STRAIN WILL BE PLACED ON BLADES, GANG BEARINGS AND FRAME HITCH, WHICH COULD LEAD TO PREMATURE PARTS FAILURE, ESPECIALLY OUTSIDE BLADES OF FRONT GANGS.
11. **IMPORTANT:** WHEN DISC IS PARKED WITH BLADES RESTING ON FROZEN GROUND, DO NOT ATTEMPT TO LIFT DISC OUT OF FROZEN GROUND BY LOWERING TRANSPORT WHEELS. LIFTING DISC OUT OF FROZEN GROUND WITH TRANSPORT WHEELS MAY CAUSE SERIOUS DAMAGE TO DISC COMPONENTS. DAMAGE WILL MOST LIKELY OCCUR TO MAIN LIFT CYLINDERS AND ROCKSHAFT CYLINDER ARMS. DO NOT PARK DISC WITH BLADES ON GROUND THAT MAY FREEZE. LEAVE DISC PARKED ON TRANSPORT WHEELS.

12. **IMPORTANT:** TO AVOID SERIOUS DAMAGE TO HITCH JACK, BE SURE JACK IS LOCKED IN HORIZONTAL POSITION AND CRANK OF JACK IS NOT HANGING BELOW HITCH WHEN DISC IS IN MOTION. SEE PAGE 22 SECTION 17.
13. **IMPORTANT:** DO NOT OPERATE DISC IN FIELD WITH WING FOLDED IN TRANSPORT POSITION. SEVERE DAMAGE WILL OCCUR WHEN DISCING WITH WINGS FOLDED.



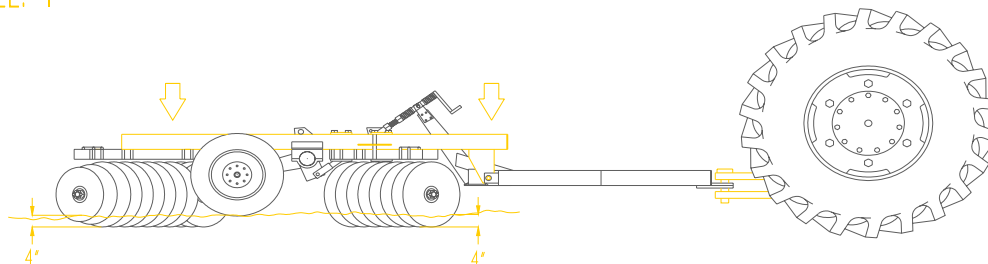
CAUTION: DO NOT STAND UNDER WING WHILE WING IS BEING RAISED OR LOWERED. IF ANY COMPONENTS SHOULD FAIL, OR IF HYDRAULIC LEVER SHOULD ACCIDENTALLY BE OPERATED, WING COULD

FIG. 3



INCORRECT - WHEELS ON GROUND GAUGING DISC DEPTH

ILL. 4



CORRECT - WHEELS ON GROUND GAUGING DISC DEPTH

14. To keep disc level transport wheels must be riding on ground gauging desired discing depth, as shown in Fig. 4.

If conditions are such that disc can not penetrate to maximum depth, do not raise transport wheels off ground as shown in Fig. 3. Raised transport wheels may cause front of disc to drop causing front gangs to cut deeper than rear gangs.

Front of disc may drop because rockshaft and hitch levelling arm is linked. As the wheels are raised, the hitch levelling arm is pulled back allowing hitch to float. If hitch is allowed to float it will not support front of disc allowing front gang to drop.

With front of disc lower than the rear, the front outside blades will cut much deeper than the front inside blades. This means that more of the disc's weight is placed on the front outside blades, forcing them deeper into the ground.

Uneven and deep front gang penetration in tough conditions will place excessive strain on blades, gang bearings, frame and hitch, and will lead to a premature failure of parts especially outside blades and bearings of front gangs.

The condition shown in Fig. 3 may also cause frame to buckle upward at frame hinge point, raising centre blades off ground. If frame is level, as shown in Fig. 4 thrust at outside end of front gangs is greatly reduced. Side thrust is distributed evenly on all front blades, reducing the possibility of centre rising.

IMPORTANT: OPERATING DISC WITH TRANSPORT WHEELS OFF GROUND WILL CAUSE UNEVEN DISCING JOB AND PLACE UNDUE STRAIN ON MACHINE WHICH COULD LEAD TO PARTS FAILURE. ALWAYS OPERATE DISC WITH TRANSPORT WHEELS ON GROUND EVEN IF SOIL CONDITIONS WILL NOT ALLOW DISC TO PENETRATE TO MAXIMUM DEPTH.

GENERAL OPERATION CONTINUED:

15. See Fig. 5. Attach a safety chain to the tractor drawbar and to the disc's hitch before transporting the disc. Use a chain with strength rating greater than the gross weight of disc. (Safety chain available as an option).

CAUTION: WHEN TRANSPORTING A DISC, BE SURE TO ATTACH A SAFETY CHAIN TO TRACTOR DRAWBAR AND DISC HITCH. THE SAFETY CHAIN WILL HELP CONTROL DISC SHOULD IT ACCIDENTALLY SEPARATE FROM THE DRAWBAR. USE A CHAIN WITH A STRENGTH RATING GREATER THAN THE GROSS WEIGHT OF THE TOWED MACHINE.

SERIOUS DAMAGE, INJURY OR DEATH COULD RESULT FROM THE DISC SEPARATING FROM THE TRACTOR DRAWBAR.

CAUTION: DO NOT STAND UNDER THE WING WHILE IT IS BEING RAISED OR LOWERED. IF ANY COMPONENT OF THE HYDRAULIC SYSTEM FAILED OR IF THE HYDRAULIC LEVER WAS ACCIDENTALLY OPERATED, WING COULD FALL CAUSING SERIOUS INJURY OR DEATH.

16. See Fig. 7. Install the "SMV" Emblem (not supplied by Ezee-On) in the "SMV" bracket welded to the rear of main frame before transporting disc.

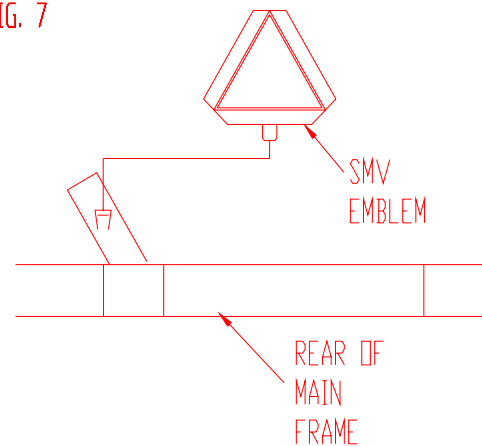
CAUTION: USE THE "SMV" EMBLEM (NOT SUPPLIED BY EZZE-ON) AND WARNING LIGHTS FOR THE PROTECTION OF TRACTOR AND OTHER VEHICLE OPERATIONS WHEN TRANSPORTING THE DISC OVER PUBLIC ROADS. CHECK LOCAL LAWS REGARDING TRANSPORTING REGULATIONS.

CAUTION: WHEN OPERATION ON HILLSIDES, USE EXTRA CARE. TRACTOR MAY TIP SIDEWAYS IF IT STRIKES A HOLE, DITCH OR OTHER IRREGULARITIES.

FIG. 6



FIG. 7





CAUTION: WHEN TRAILING THE DISC OVER PUBLIC ROADS, USE THE SMV EMBLEM AND WARNING LIGHTS FOR PROTECTION OF TRACTOR AND OTHER MOTOR VEHICLE OPERATORS. CHECK LOCAL LAWS FOR WIDTH AND WEIGHT MAXIMUMS AND HEIGHT MAXIMUMS.



CAUTION: DO NOT EXCEED 10 mph (16 km/h) WHEN TRANSPORTING DISC ON SMOOTH ROADS, REDUCE SPEED WHEN TRANSPORTING ON ROUGH ROADS. EXCESSIVE SPEED COULD CAUSE LOSS OF TRACTOR CONTROL AND DAMAGE TO DISC AND TRACTOR. DO NOT TRANSPORT DISC WITH ANY OTHER VEHICLE EXCEPT TRACTOR.



DANGER: WHEN TRANSPORTING DISC WITH WING RAISED, BE SURE THERE IS SUFFICIENT CLEARANCE UNDER ALL POWER LINES AND OTHER OVERHEAD OBSTRUCTIONS. SERIOUS INJURY OR DEATH CAN RESULT FROM CONTACT WITH ELECTRICAL LINES. USE CARE TO AVOID CONTACT WITH ELECTRICAL LINES WHEN MOVING OR OPERATING DISC.



WARNING: WHEN TRANSPORTING DISC, ALWAYS PLACE HYDRAULIC LOCK UP VALVE IN “CLOSED” POSITION. SEE SECTION 8 OF OPERATING INSTRUCTIONS ON PAGE 6. IF THE HYDRAULIC LEVER WAS ACCIDENTALLY OPERATED, THE DISC COULD DROP CAUSING SERIOUS INJURY TO OPERATOR.

17. **REPHASING ROCKSHAFT CYLINDERS** - Periodically, the hydraulic lift cylinder on wing frame will not be synchronized with main frame cylinder. This will cause uneven cutting depth. If this happens it will be necessary to rephase the lift cylinders. Rephasing is done by lifting disc completely out of the ground and holding the hydraulic control lever until both (2) rockshaft cylinders are fully extended. See section 30 on page 29 for further information on the lift hydraulic system.



WARNING: NEVER ALLOW ANYONE TO RIDE ON DRAWBAR OF THE TRACTOR OR ON THE DISC. THE PERSON RIDING MAY FALL AND BE SERIOUSLY INJURED.



WARNING: LOWER THE DISC TO THE GROUND WHEN SERVICING OR MAKING ADJUSTMENTS. IF THE DISC MUST BE SERVICED OR ADJUSTED IN THE RAISED POSITION, PLACE BLOCK UNDER FRAME. DO NOT RELY ON HYDRAULIC LOCK UP VALVES AS A SAFETY DEVICE. IF THE HYDRAULIC SYSTEM FAILED, OR IF THE HYDRAULIC LEVER WAS ACCIDENTALLY OPERATED, THE DISC COULD DROP.

18. **IMPORTANT:** BEFORE DISCONNECTING HYDRAULIC HOSES FROM TRACTOR, RELIEVE PRESSURE IN HYDRAULIC CYLINDERS, SERIOUS DAMAGE COULD OCCUR TO HYDRAULIC CYLINDERS IF OIL EXPANSION TAKES PLACE DUE TO WARM WEATHER OR IF DISC IS STORED IN HEATED BUILDING.

19. **IMPORTANT:** IN DISCING CONDITIONS WHERE EXTREME WING FLEXIBILITY IS REQUIRED, REMOVE CYLINDER PIN FROM SHAFT END OF WING LIFT CYLINDER AND RETRACT CYLINDERS.

WHEN REATTACHING SHAFT END OF WING LIFT CYLINDER TO WING FRAME, BE SURE CYLINDER SHAFT **DOES NOT** STRIKE CYLINDER LUG ON WING FRAME. SERIOUS DAMAGE MAY OCCUR TO CYLINDER IF CYLINDER SHAFT STRIKES CYLINDER LUG. BEFORE EXTENDING CYLINDER SHAFT BLOCK UP CYLINDER SO THAT CYLINDER SHAFT PASSES OVER CYLINDER LUGS.

FIG. 8

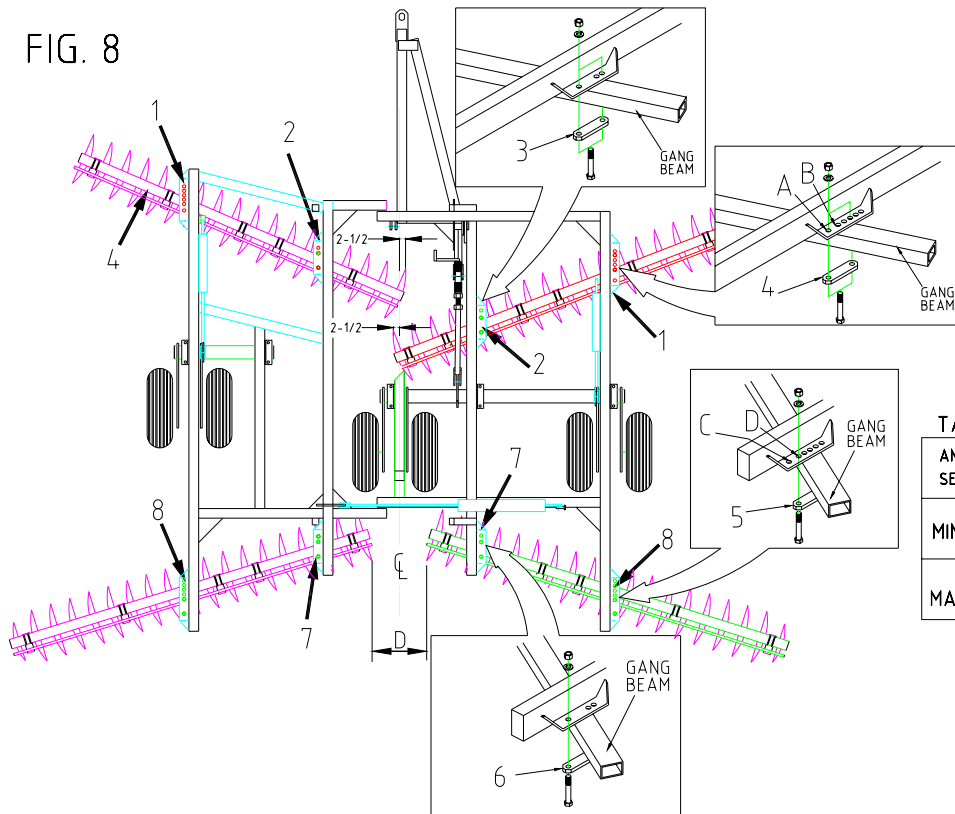


TABLE I

ANGLE SETTING	HOLE SELECTION	
	FRONT GANG	REAR GANG
MINIMUM	A	D
MAXIMUM	B	C

ADJUSTMENTS

1. SETTING ANGLE OF FRONT AND REAR GANGS - See Fig. 8

NOTE: Gang angle adjustments are made on outside of frame.

- a) The angle the gangs are set at is determined by the soil conditions. A field with hard soil will require more cutting angle to penetrate soil than a field with soft soil. In soft soil conditions, disc will push dirt or ridge at outside if there is too much cutting angle. **To start, the minium angle is recommended.**

IMPORTANT: EXCESSIVE GANG ANGLE WILL PUT ADDED PRESSURE ON THE GANGS AND WILL DECREASE THE LIFE OF BEARINGS, BLADES, ETC. WHEN GANGS ARE SET AT AN EXTREME ANGLE, MORE HORSEPOWER IS REQUIRED TO PULL DISC.

IMPORTANT: WHEN SETTING GANG ANGLE BE SURE TO SET THE FRONT WING GANG AT SAME ANGLE AS THE FRONT MAIN FRAME GANG. THE REAR WING GANG MUST BE SET AT SAME ANGLE AS REAR MAIN FRAME GANG. FOR EXAMPLE, IF FRONT WING GANG IS AT THIRD HOLE FROM FRONT, THEN SET FRONT MAIN GANG AT THIRD HOLE FRONT.



CAUTION: WHEN OPERATING ON HILLSIDES USE EXTREME CARE. TRACTOR MAY TIP SIDEWAYS IF IT STRIKES HOLE, DITCH OR OTHER IRREGULARITY.

ADJUSTMENTS CONTINUED:

- b) **ADJUSTING FRONT GANG ANGLE** - See Fig. 8. Loosen inner clamp plate, arrow 3, which fastens gang beam to inner bracket, arrow 2. Remove outer clamp plate, arrow 4, which fastens gang beam to outer bracket, arrow 1. The gang angle is set by fastening rear bolt of clamp plate, arrow 4, to holes "A" or "B" of outer bracket. If minimum angle is desired, select hole "A" and if maximum angle is desired, select hole "B", see Table I. After choosing gang angle, install clamp plate to outer bracket, arrow 2, with (2) 1-1/4" x 7-1/2" (31.75 mm x 190.5 mm) hex bolts c/w nuts and washers.
- c) **ADJUSTING REAR GANG ANGLE** - See Fig. 8. Loosen inner clamp plate, arrow 6, which fastens gang beam to inner bracket, arrow 7. Remove outer clamp plate, arrow 5, which fastens gang beam to outer bracket, arrow 8. The gang angle is set by fastening rear bolt of clamp plate, arrow 5, to hole "C" or "D" of outer bracket. If minimum angle is desired, select hole "D" and if maximum angle is required select hole "C", see Table I. After choosing gang angle, install clamp plate to outer bracket, arrow 8, with (2) 1-1/4" x 7-1/2" (31.75 mm x 190.5 mm) hex bolts c/w nuts and washers.

NOTE: Above instructions along with Fig. 8 describes how to adjust gang angle of main frame gangs. Adjust wing gangs using the same method. Main frame gangs and wing gangs must be set at same angle.

2. LATERAL ADJUSTMENT OF THE FRONT AND REAR GANGS

- A) **FRONT GANGS** - See Fig. 8. Loosen gang beam clamp plates, arrow 3 and 4. Next, adjust front gangs so that leading edge of inside blades, arrow 3, are approximately 2-1/2" (63.5 mm) past centre of disc. The centre of disc is shown in Fig. 8. If the above adjustment is made correctly, the front gangs will not leave any unbroken ground at centre of disc.
- B) **REAR GANGS** - See Fig. 8. Loosen beam clamps, arrow 5 and 6. The opening between the rear gangs, dimensions "D", must be set at a distance that will allow furrow left by the front gangs to be filled evenly. The distance the rear gangs are set apart is determined by the discing speed, discing depth, gang angle and soil conditions. If the rear gangs are set too close together, the rear gangs will leave a ridge at centre. If rear gangs are set too far apart, the furrow at centre left by the front gangs will not be filled. Take note of the amount of soil the rear inside blades are picking up. It may be necessary to increase distance between rear gangs in order to collect enough soil to fill furrow.

To start with this distance should be set at 2" (51 mm) less than diameter of blades. For example, if your machine is equipped with 24" blades, then the opening (Dimension "D") should be 22" (559 mm).

An increase in discing speed may required rear gangs to be set further apart. A decrease in discing speed may require rear gangs to be set closer together.

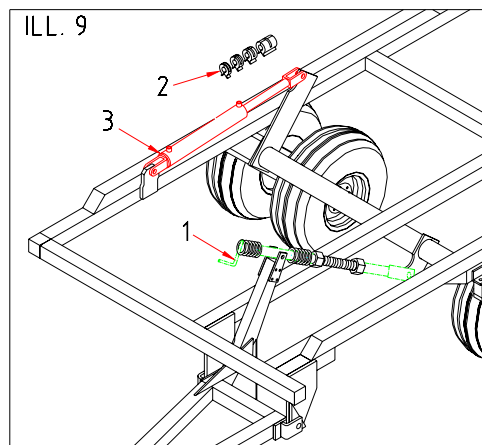
3. **IMPORTANT:** See Fig. 8. When gang adjustments are complete, tighten all gang beam clamp plates, arrows 3, 4, 5 and 6 to 840 ft. lbs. (116 m. kgs.)

4. LEVELLING DISC - Front to Rear - See Fig. 9

When discing the front and rear gangs should be cutting at same depth, the levelling crank, arrow 1, is used to level disc.

To Lower Front Gangs - turn crank, arrow 1, "IN" (clockwise)
To Raise Front Gangs - turn crank, arrow 1, "OUT" (counter clockwise)

VERY IMPORTANT: Always keep disc level from front to rear. Discing with front gangs lower than rear gangs will cause ridging at outside and may cause damage to disc components.



5. **SETTING DISCING DEPTH** - See Fig. 9.

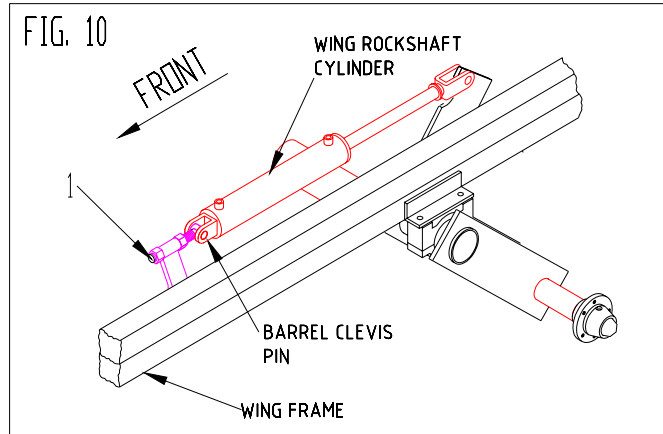
To set discing depth, install depth control segments, arrow 2, on shaft of main frame cylinder, arrow 3. Install segments as required to obtain desired discing depth.

6. **LEVELLING WING FRAME** - See Fig. 10

For even blade penetration, outside of wing frame must be level with main frame or even 1/2" (12.7 mm) higher than main frame.

To level wing frame with main frame, adjust wing rockshaft cylinder I-bolt, arrow 1. If outside of wing frame needs to be raised, loosen rear nut of I-bolt and tighten front nut. This will lower the wheels raising outside of wing. If outside of wing frame needs to be lowered, loosen front nut of I-bolt and tighten rear nut. This will raise the wheels allowing outside of wing to lower.

Before this adjustment is made, be sure centre frame is level from front to rear. After adjustments are complete tighten nuts on cylinder I-bolt.



IMPORTANT: BE SURE BARREL OF CLEVIS PIN IS HORIZONTAL WITH CYLINDER PORTS ARE FACING UP. IF CLEVIS PIN IS NOT HORIZONTAL, CYLINDER WILL NOT BE FREE TO PIVOT UP AND DOWN WHEN IT IS EXTENDED OR CONTRACTED CAUSING SERIOUS DAMAGE.

7. **REMOVE RIDGE AT CENTRE OF DISC** - Make one or more of the following adjustments:

- Level disc from front to rear using levelling crank, see section 4 of adjustments.
- Reducing discing speeds.
- Increasing distance between rear gangs, see section 2 of adjustments.

8. **REMOVE FURROW AT CENTRE OF DISC** - Make one or more of the following adjustments:

- Level disc from front to rear using levelling crank, see section 4 of adjustments.
- Increase discing speed.
- Decrease distance between rear gangs, see section 2 of adjustments.

9. **REMOVE UNBROKEN GROUND LEFT BY FRONT GANGS** - Make the following adjustment:

- Adjust leading edge of inside blade of each front gang so it is 2-1/2" (63.5 mm) past centre of disc, see section 2 of adjustments.

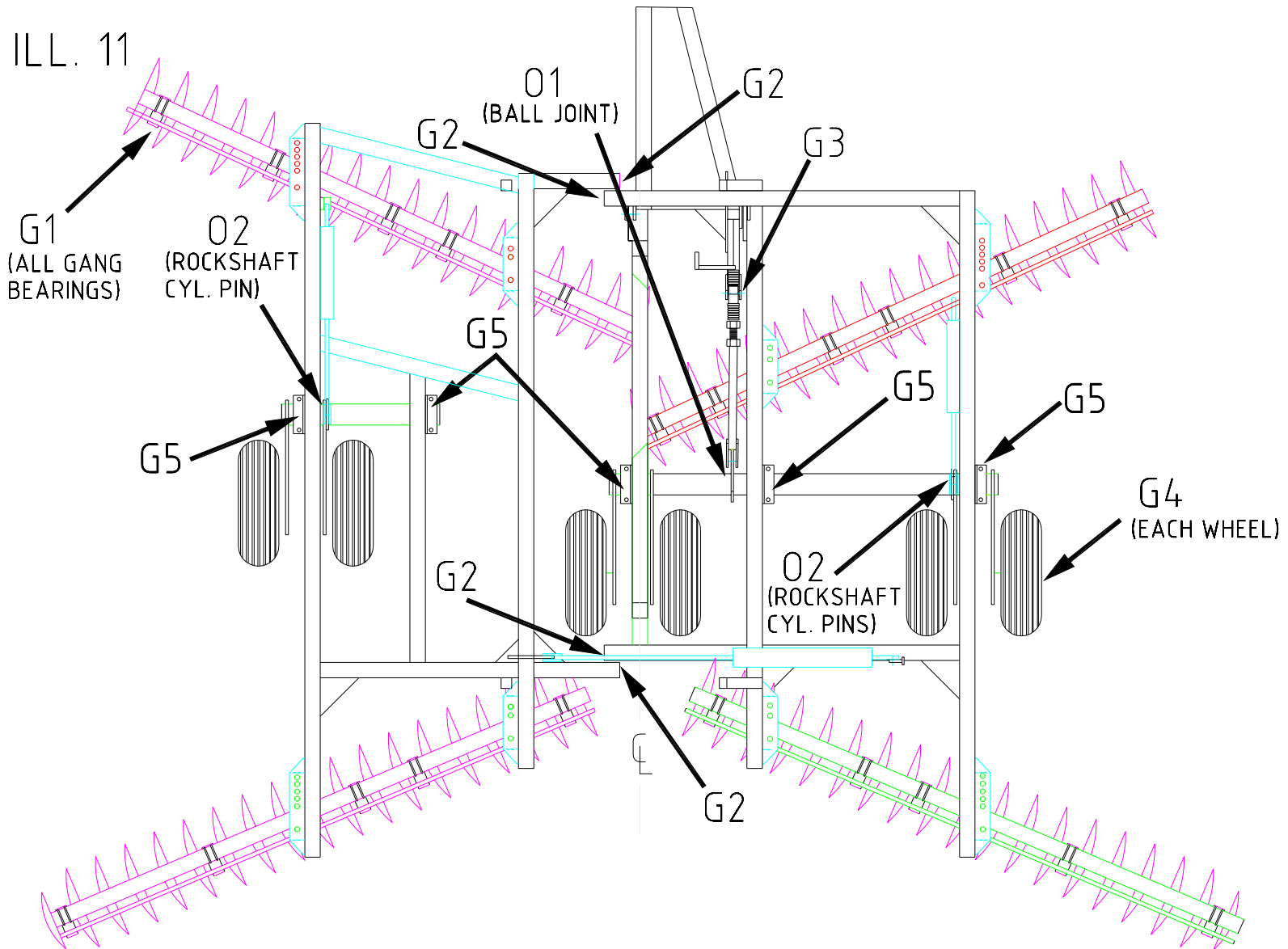
10. **REDUCE SIDE DRAFTING TO ONE SIDE** - Check Following Setting:
 - a) Gang angle setting for right hand gangs must be set same as left hand gangs.
11. **REDUCE GANG PLUGGING** - Make one or more of the following adjustments:
 - a) Adjust scrapers so they contact blades.
 - b) Reduce gang angle if soil conditions are loose causing disc to push soil.



IMPORTANT: DO NOT LOWER FRONT GANGS SO THAT DISC WILL CUT INTO TOUGH CONDITIONS. IF FRONT GANGS ARE LOWERED, EXCESSIVE STRAIN WILL BE PLACE ON FRONT GANGS, FRAME, AND HITCH, WHICH COULD LEAD TO PREMATURE PARTS FAILURE, ESPECIALLY OUTSIDE BLADES OF FRONT GANGS.

12. **STOP DISC FROM BUCKLING UP CAUSING CENTRE BLADES TO RISE OUT OF GROUND** - Make one or more of the following adjustments:
 - a) If front gangs are cutting deeper at outside - raise front of disc with levelling crank.
 - b) Check if transport wheels are raised off ground causing front of disc to drop. If so lower wheel so they ride on ground when discing, see section 14 on page 7.
 - c) Check if outer blades on wing are cutting deeper then outer blades of main frame. If so, raise outside of wing by adjusting anchor bolt fro wing rockshaft cylinder, see section 6 on page 12.

NOTE: *The condition described in section 12 may occur if front gangs are lowered so disc will cut into tough conditions.*



MAINTENANCE

1. LUBRICATION See Fig. 11- Grease all lubricating points on disc are marked with arrow G. The oil lubrication points are marked with arrow O.

- G1) GANG BEARINGS - for 211 or 410 Series - Lubricate every 20 hours of operation with a minimum amount of grease. Excess lubrication may damage seals. Use a high quality SAE multipurpose grease.
- for T2-215 Series - Lubricate every 20 hours of operation. Lubricate until grease comes out around seal, excess lubrication will not damage seal. Use high quality SAE multipurpose grease.



CAUTION: FOR 211 OR 410 SERIES BEARINGS - IF GANG BEARINGS ARE OVER LUBRICATED, THERE IS A POSSIBILITY THAT THE SEALS CAN BE PUSHED OUT. THIS IS MORE LIKELY TO HAPPEN WHEN BEARINGS ARE NEW.

NOTE: *When you receive your new disc, grease all lubricating points before starting to disc. However, use caution when lubricating 211 or 410 series gang bearings. These gang bearings are filled with grease at factory and seals may be damaged if over lubricated.*

G2) Lubricate wing pivot points with grease every 50 hours of operation.

G3) Lubricate levelling crank with grease every 100 hours of operation.

G4) Lubricate wheels with grease every 50 hours of operation.

G5) Lubricate top and bottom half of each rockshaft bearing every 20 hours of operation. If rockshaft bearings are not lubricated, there will be excessive wearing of rockshaft and rockshaft bearings.

O1) Lubricate levelling crank ball joints (with oil) at the end and beginning of each season.

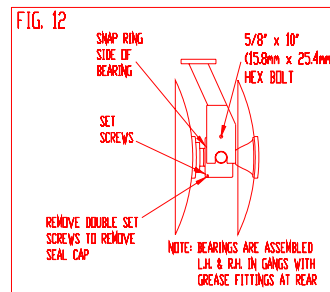
O2) Lubricate rockshaft cylinder pins (with oil) every 50 hours of operation.

2. All bolts and nuts should be checked periodically to make sure they are tight. Special attention should be given to gang bolts, bearing bolts and bearing hanger U-bolts, and wheel bolts. If gang bolts come loose, they must be tightened to 3200 ft. lbs.

They should be tightened as follows:

- Gang bolts - 1-15/16" (49 mm) Diameter - 3200 ft. lbs (4336 N.m) torque
- Gang beam bolts - 1-1/4" (31.7 mm) Diameter - 840 ft. lbs (1138.2 N.m) torque (minimum/maximum)
- Levelling crank bolt - 1-1/4" (31.7 mm) Diameter - 840 ft. lbs (1138.2 N.m) torque(minimum/maximum)
- Wheel bolts - 9/16" (14.2 mm) Diameter - 130 ft. lbs (176.2 N.m) torque
- Bearing hanger U-bolts - 3/4" (19 mm) Diameter - 260 ft. lbs (352.3 N.m) torque (Model 4290 only with stone flex hangers)
- Bearing hanger U-bolts 5/8" (15.7 mm) Diameter - 150 ft. lbs (203.25 N.m) torque (Model 4290 only with solid hangers)
- Bearing hanger U-bolts 7/8" (22 mm) Diameter - 430 ft. lbs (582.65 N.m) torque (Model 4300 only)

Note: *Gangs bolts should be re-tightened after 2 hrs of operation.*



3. When storing disc for a long period of time, grease all lubricating points.

4. Ensure tires are properly inflated. See specifications on page 5 for tire pressures.

5. **IMPORTANT:** SEE FIG. 12. FOR DISCS EQUIPPED WITH T2-215 BEARINGS. IF T2-215 BEARING IS DISMANTLED, DOUBLE SET SCREWS MUST BE REMOVED FROM BOTTOM OF HOUSING TO REMOVE CAP.



CAUTION: DO NOT SERVICE DISC WHILE IT IS IN MOTION. YOU MAY FALL IN FRONT OF DISC AND BE SERIOUSLY INJURED.

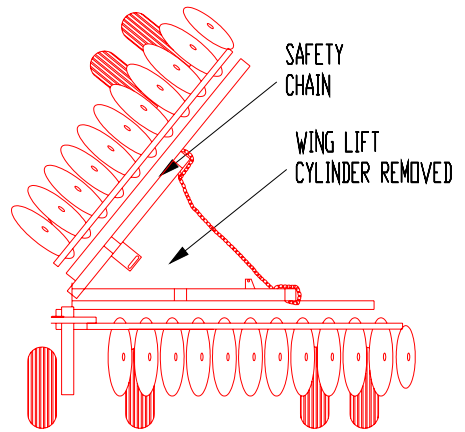


CAUTION: LOWER THE DISC TO THE GROUND WHEN SERVICING OR MAKING ADJUSTMENTS. IF THE DISC MUST BE SERVICED OR ADJUSTED IN THE RAISED POSITION, PLACE BLOCKS UNDER FRAME. DO NOT RELY ON HYDRAULIC LOCK UP VALVES AS A SAFETY DEVICE. IF THE HYDRAULIC SYSTEM FAILED, THE DISC WOULD DROP.

6. See ILL. 12. When reinstalling bearing hanger on **T2-215 Bearing** (if gangs are dismantled) do not over tighten the 5/8" x 10" (15.7 mm x 254 mm) bolts which fastens hanger to bearing. Secure nut by using a jam nut.

7. **WING LIFT CYLINDER REMOVAL** - See Fig. 13. If possible lower wing to field position if wing lift cylinder must be removed for repair or replacement. This machine uses a hydraulic lock out valve as a safety device to lock wing in transport position. Removing wing lift cylinder leaves machine without a safety lock. If wing lift cylinder must be removed with wing in folded position, install a safety chain between wing frame and main frame to prevent wing from falling down.

Fig. 13

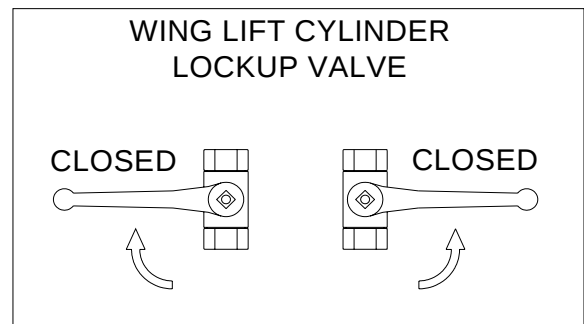


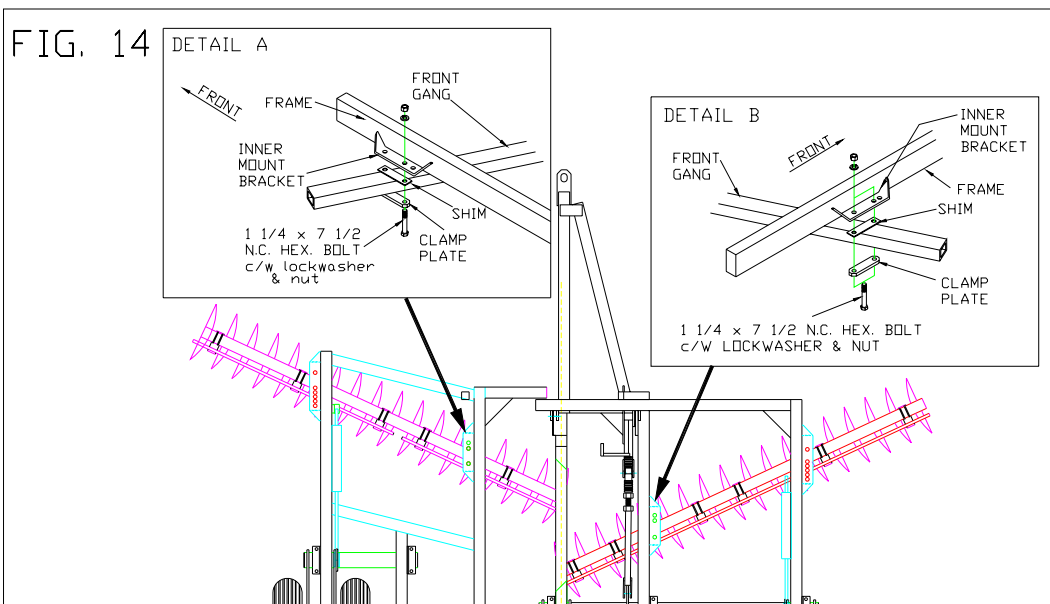
CAUTION: IF WING LIFT CYLINDER IS REMOVED WHEN WING IS FOLDED INTO TRANSPORT POSITION, ALWAYS INSTALL A SAFETY CHAIN BETWEEN WING FRAME AND MAIN FRAME TO PREVENT WING FROM FALLING. IF WING FELL SERIOUS INJURY OR DEATH COULD OCCUR TO PERSON(S) NEARBY AND MACHINE WOULD BE DAMAGED SEVERELY.

8. Keep all safety decals clean and in good condition to provide a constant reminder of safe operating procedures.
9. Replace any destroyed, missing or illegible decals and deflectors.

IMPORTANT: WHEN STORING DISC FOR WINTER, DO NOT LEAVE CYLINDERS UNDER HYDRAULIC PRESSURE, ESPECIALLY IF CYLINDERS ARE ACTIVATED DURING COLD WEATHER. THE EXPANSION OF OIL WHICH TAKES PLACE WHEN WARM OR HOT WEATHER RETURN MAY CAUSE SERIOUS DAMAGE TO CYLINDER, LINES OR HOSES.

IMPORTANT: WINGS MAY UNFOLD DUE TO THERMAL EXPANSION OF HYDRAULIC OIL CAUSING DAMAGE TO CULTIVATOR, PROPERTY OR SEVERE INJURY OR DEATH TO PERSON(S) NEARBY. RELEASE PRESSURE IN ALL CYLINDERS AND CLOSE HYDRAULIC LOCKUP VALVES BEFORE UNHITCHING FROM TRACTOR OR WHEN PARKING WITH TRACTOR.





TROUBLE SHOOTING

PROBLEM	POSSIBLE CAUSE	REMEDY
OUTSIDE BLADES OF FRONT GANGS ARE CUTTING TOO DEEP CAUSING DISC TO RIDGE AT OUTSIDE	- wheels raised off ground causing front of disc to drop - tire pressure is low on outer wheels causing disc to cut deep at outside - disc is lower at front than rear - if above solutions do not solve problem, outer blades may need to be raised	- lower wheels to ground so they gauge discing depth, see Fig. 4 on page 7 - inflate tire, see tire pressures on page 5 - using levelling crank raise front of disc - see Fig. 9 on page 11 - raise outer blades by placing a shim(s) between front gang beam and inner mount bracket. See detail "A" and "B" of Fig. 14. Shim(s) must be ordered from parts
OUTSIDE BLADES OF BOTH FRONT GANGS ARE NOT CUTTING DEEP ENOUGH	- disc is higher at front than at rear	- using levelling crank raise front of disc - see Fig. 9 on page 11.
OUTSIDE BLADE ON WING IS CUTTING TOO DEEP	- outside of wing frame is lower than main frame - wing rockshaft cylinder is not synchronized with main frame rockshaft cylinder	- raise outside of wing with wing rockshaft cylinder anchor bolt see section 6 on page 12 - rephrase rockshaft cylinder, see section 17 on page 9
OUTSIDE BLADES ON WING ARE IS CUTTING DEEP ENOUGH	- outside of wing frame is higher than main frame - wing rockshaft cylinder is not synchronized with main frame rockshaft cylinder	- lower outside of wing with wing rockshaft cylinder anchor bolt, see section 6 on page 12 - rephrase rockshaft cylinder, see section 17 on page 9
DISC IS LEAVING A RIDGE AT CENTRE OF DISCING	- rear gangs are cutting deeper than front gangs - a high discing speed is causing disc to throw dirt further resulting in a pile at centre - gang angle too extreme - rear gangs are too close together	- level disc using levelling crank - see Fig. 9 on page 11 - reduce discing speed - reduce gang angle if reduced gang will give desired discing depth - increase distance between rear gangs see section 1, paragraph C on page 11

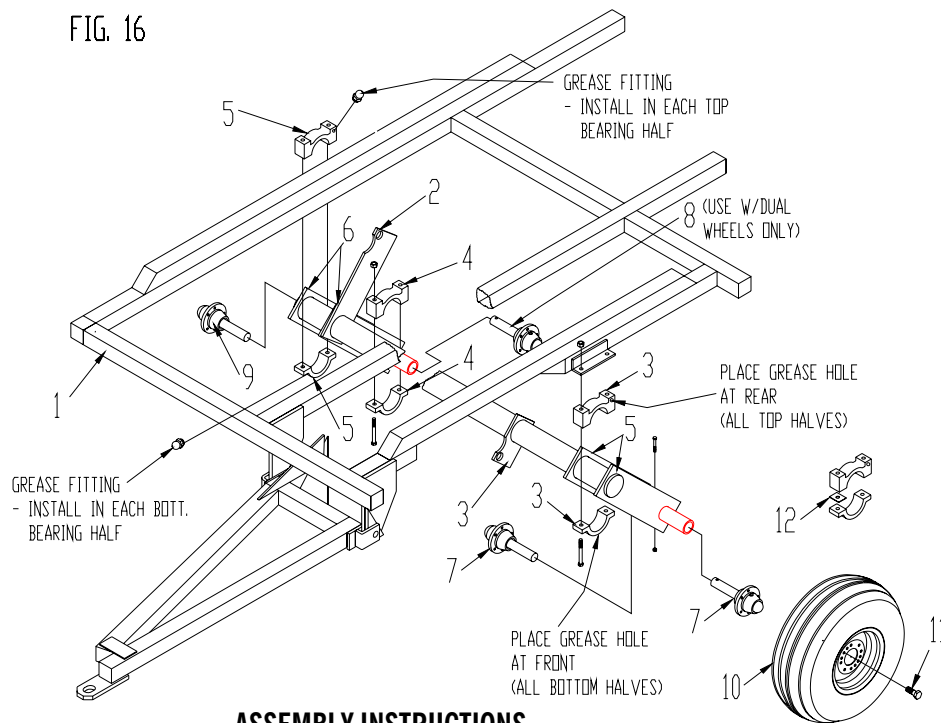
TROUBLE SHOOTING CONTINUED

PROBLEM	POSSIBLE CAUSE	REMEDY
REAR GANGS ARE NOT FILLING FURROW LEFT BY FRONT GANGS AT CENTRE OF DISC	- front gangs are cutting deeper than rear gangs - a low discing speed is causing disc to <i>not</i> throw dirt far enough to fill furrow left by front centre blades - rear gangs are too far apart	- level disc using levelling crank - see Fig. 9 on page 11 - increase discing speed - decrease distance between rear gangs - see section 1, paragraph C on page 11
FRONT GANGS ARE LEAVING UNBROKEN GROUND AT CENTRE OF DISC	- front gangs are either overlapped too much or not enough	- adjust overlap of front gangs - see section 2 on page 11
DISC GANGS ARE PLUGGING	- too much gang angle in a loose soil conditions - scrapers are too far from blades - trash conditions too heavy for your machine	- reduce gang angle - adjust scrapers so they are contacting blades - contact your Ezee-On Dealer
WHEN RAISING DISC OUT OF GROUND, MAIN FRAME COMES OUT OF GROUND WHILE OUTSIDE OF WING LAGS BEHIND OR DOES NOT COME OUT OF GROUND	- piston seals on wing rockshaft cylinder is damaged	- replace piston seals of wing rockshaft cylinder
WHEN RAISING DISC OUT OF GROUND, OUTSIDE OF WING COMES OUT OF GROUND WHILE MAIN FRAME LAGS BEHIND OR DOES NOT COME OUT OF GROUND	- piston seals on main frame rockshaft cylinder is damaged	- replace piston seals of main frame rockshaft cylinder
WHEN RAISING DISC OUT OF GROUND, MAIN FRAME ROCKSHAFT CYLINDER IS FULLY EXTENDED WHILE WING ROCKSHAFT CYLINDER IS NOT FULLY EXTENDED	- rockshaft cylinders are not synchronized	- rephrase rockshaft cylinders, see section 17 on page 9
WHEN RAISING DISC OUT OF GROUND WING ROCKSHAFT CYLINDER IS FULLY EXTENDED WHILE MAIN FRAME ROCKSHAFT CYLINDER IS NOT FULLY EXTENDED	- rockshaft cylinders are not synchronized	- rephrase rockshaft cylinders, see section 17 on page 9
DISC WILL NOT PENETRATE SOIL	- not enough gang angle - soil condition too hard for your machine	- increase gang angle, see section 1 on page 10 - contact your Ezee-On Dealer

ASSEMBLY INDEX

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FIG. 16



ASSEMBLY INSTRUCTIONS

1. See Fig. 16. Raise main frame, arrow 1, approximately 30" (762 mm) from ground and block securely.
2. See Fig. 16. Fasten main frame rockshaft, arrow 2, to bottom of main frame, arrow 1, using three sets of cast rockshaft bearings, arrow 3, 4 and 5. Each set of rockshaft bearings are fasten to a two (2) hole angle bracket welded to side of frame. Lubricate bearings with grease before installing rockshaft in bearings. Position rockshaft so that left hand bearing set, arrow 3, is located between inner wheel legs, arrow 5, and right hand bearing set is located between outer wheel legs, arrow 6. When installing rockshaft bearings, be sure grease hole of top half is **facing rear** and grease hole for bottom half is **facing front**. Fasten each set of rockshaft bearings with two (2) 3/4" x 6-1/2" (19 mm x 165 mm) hex bolts c/w nuts and lockwashers.

NOTE: *If rockshaft bearings are too tight and don't allow rockshaft to turn freely, place necessary shim(s) 2" x 3" (50.8 mm x 76.2 mm) Shim(s), arrow 12, between bearing halves. Shims are packed in hydraulic hose and fitting box.*

3. See Fig. 16. Install one grease fitting in top and bottom halves of rockshaft bearings, arrows 3, 4 and 5.
4. See Fig. 16. Install one (1) hub assembly, arrow 7, in each end of mount tube welded to inner wheel legs, arrow 5. Secure each hub and spindle assembly with one (1) 1/2" x 3-1/2" (12.7 mm x 88.9 mm) hex bolt and nylon locknut.
5. ATTACHING HUB ASSEMBLIES TO OUTSIDE WHEEL LEG:

NOTE: *To determine if your machine is equipped with single or dual outer wheels, see tire chart on page 5.*

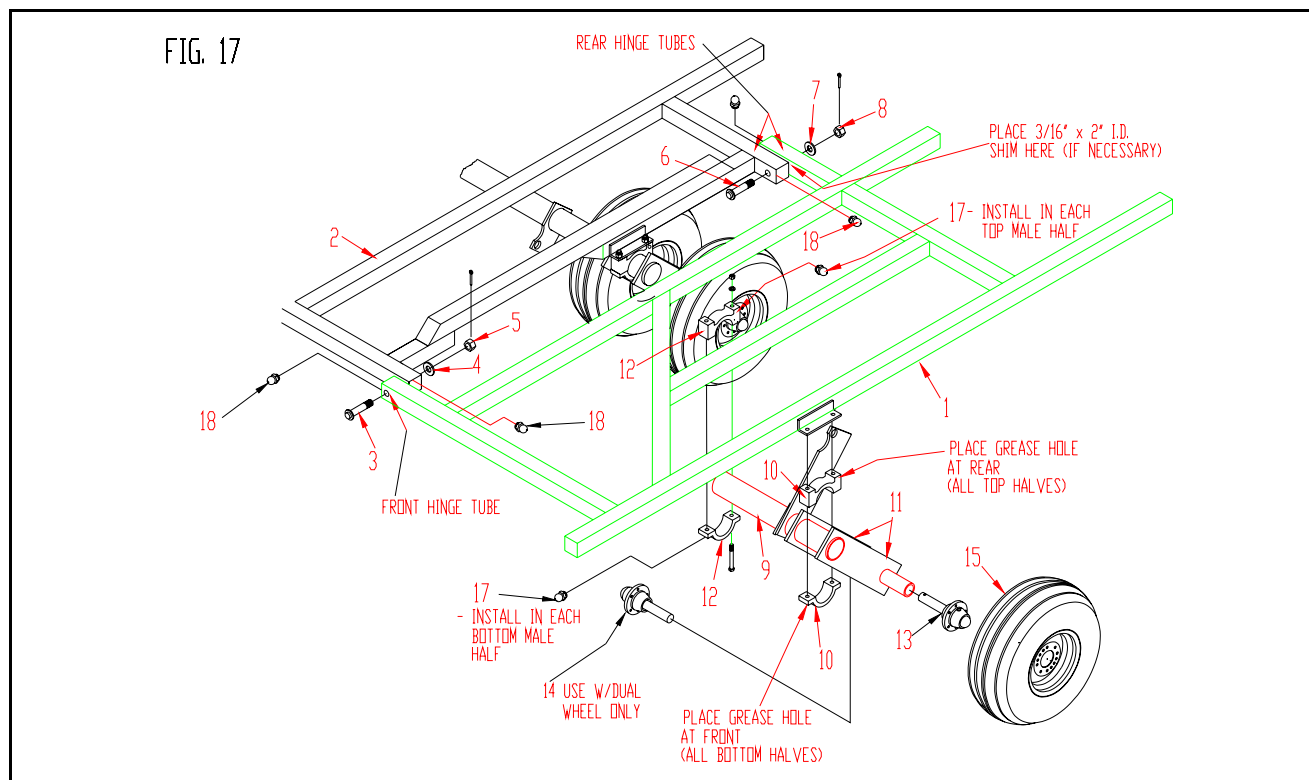
- (a) DUAL WHEELS: See Fig. 16. Install one (1) 6 bolt hub and spindle assembly, arrow 8 and 9, in each end of mount tube welded to outer wheel leg, arrow 6. Secure each assembly with one (1) 1/2" x 3-1/2" (12.7 mm x 88.9 mm) hex bolt and nylon locknut.
- (b) SINGLE WHEELS: See Fig. 16. Install one (1) **only** 6 bolt hub and spindle assembly, arrow 9, in outside end of mount tube weld to outer wheel leg, arrow 6. Secure assembly with one (1) 1/2" x 3-1/2" (12.7 mm x 88.9 mm) hex bolt c/w nylon locknut.
6. See Fig. 16. Install one (1) wheel and tire assembly, arrow 10, to each hub assembly. Secure with six (6) 9/16" x 1-1/8" (14.4mm x 28.6mm) wheel bolts, arrow 11. Tighten wheel bolts to 130 ft. lbs. (18 m. kgs.) To determine load range size of main frame tires for your machine, refer to tire chart on page 5.



CAUTION: SUPPORT MAIN FRAME SECURELY BEFORE ASSEMBLING COMPONENTS. INADEQUATE SUPPORT MAY RESULT IN THE HEAVY COMPONENTS FALLING AND CAUSING SERIOUS INJURY TO YOU OR PERSON(S) NEARBY.



CAUTION: WHEN ASSEMBLING DISC USE ALIGNING PUNCH TO LINE UP HOLES. KEEP FINGERS OUT OF HOLES.



IMPORTANT: WHEEL BOLTS MUST BE KEPT TIGHT. IF BOLTS ARE NOT TIGHT THEY WILL LOOSEN CAUSING SEVERE DAMAGE TO HUBS, WHEELS AND TIRES. CHECK WHEEL BOLTS PERIODICALLY ESPECIALLY THE FIRST FEW HOURS OF OPERATION, EITHER TRANSPORT OR FIELD OPERATION.

7. See Fig. 17. Attach wing frame, arrow 1, to LH side of main frame, arrow 2, as shown. Fasten front hinge tubes with one (1) 2" (50.8 mm) diameter bolts, arrow 3. Bolt is installed from front. Secure front bolt with one (1) 1/2" (12.7 mm) thick flatwasher, arrow 4, and one (1) 2" (50.8 mm) slotted nut, arrow 5. Tighten front hinge bolt taking up the clearance between wing and main frame. DO NOT over tighten front hinge bolt, wing must be free to pivot.

Place one (1) 3/16" x 2" (4.6 mm x 50.8 mm) I.D. shim washer (if shim is required) between rear hinge tubes of wing frame and main frame. Fasten rear hinge tubes with one (1) 2" (50.8 mm) dia. bolt, arrow 6. Bolt is installed from front. Secure rear bolt with one (1) 1/2" (12.7 mm) thick flatwasher, arrow 7, and one (1) 2" (50.8 mm) slotted nut, arrow 8. Tighten rear hinge bolt. DO NOT over tighten bolt. Wing frame must be free to pivot.

Next, install 3/8" x 3-1/2" (9.4 mm x 88.9 mm) cotter pin in slotted nut of both front and rear bolts.

8. See Fig. 17. Fasten wing frame rockshaft, arrow 9, to bottom of wing frame, arrow 1, with 2 sets of cast rockshaft bearings, arrow 10 and 12. Each set of rockshaft bearings are fastened to a two (2) hole angle bracket welded to outside and centre of frame. Lubricate bearing with grease before installing rockshaft in bearings. Position rockshaft so that left hand bearing, arrow 10, is located between wheel legs, arrow 11. When installing rockshaft bearings, be sure grease hole of top half is **facing rear** and grease hole of bottom half is **facing front**. Fasten each set of rockshaft bearings with two (2) 3/4" x 6-1/2" (19 mm x 165 mm) hex bolts with nuts and lockwashers.

NOTE: *If rockshaft bearings are too tight and don't allow rockshaft to turn freely, place necessary shim(s) 2" x 3" (50.8 mm x 76.2 mm) with one hole between bearing halves. Shim(s) are packed in hydraulic hose and fitting box.*

9. See Fig. 17. Install one grease fitting, arrow 18, in top and bottom halves of rockshaft bearings, arrows 10 and 12.
10. See Fig. 17. Install one grease fitting, arrow 17, in pivot bushing welded in front and rear hinge tube of wing frame and main frame (four points).

11. ATTACHING HUB ASSEMBLIES TO WING ROCKSHAFT

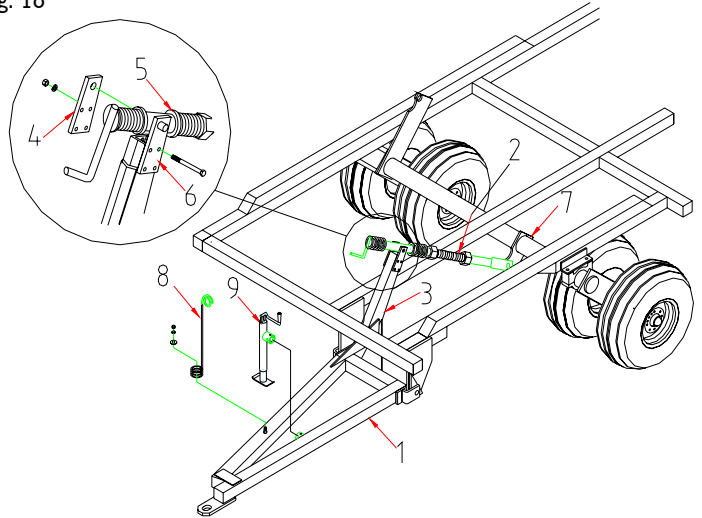
NOTE: To determine if your machine is equipped with single or dual outer wheels, see tire chart on page 5.

- a) DUAL WHEELS - See Fig. 17. Install one (1) 6 bolt hub and spindle assembly, arrows 13 and 14, in each end of mount tube welded to wheel legs, arrow 11. Secure each spindle with one (1) 1/2" x 3-1/2" (12.7 mm x 88.9 mm) hex bolt c/w nylon locknut.
 - b) SINGLE WHEELS - See Fig. 17. Install one (1) **only** 6 bolt hub and spindle assembly, arrow 13, in outside end of mount tube welded to wheel legs, arrow 11. Secure spindle with one (1) 1/2" x 3-1/2" (12.7 mm x 88.9 mm) hex bolt c/w nylon locknut.
12. See Fig. 17. Install one (1) wheel and tire assembly, arrow 15, to each hub assembly. Secure with six (6) 9/16" x 1-1/8" (14.3mm x 28.6mm) wheel bolts, arrow 20. Tighten wheel bolts to 130 ft. lbs. (18 m. kgs.) To determine load range size of wing frame tires for your machine, refer to tire chart on page 5.

13. See Fig. 18. Fasten hitch assembly, arrow 1, to hitch lugs on main frame with (2) two 1-1/4" (31.7 mm) dia. pins. Secure each pin with (2) two 5/16" x 1-1/2" (7.87 mm x 38.1 mm) cotter pins.

14. See Fig. 18. To attach levelling crank assembly, arrow 2, to hitch arm, arrow 3, remove bolt-on lug, arrow 4. Next, install 1" (25.4 mm) diameter pin of bearing tube, arrow 5, into weld-on lug, arrow 6, of hitch arm. Position bearing tube so grease fitting is facing up. Place bolt-on lug, arrow 4, over outside of hitch arm. Install 1" (25.4 mm) diameter pin of bearing tube into bolt-on lug. Fasten the bolt-on lug, arrow 4, to hitch arm with four (4) 1/2" x 5" (12.7 mm x 127 mm) N.C. hex bolts c/w nuts and lockwashers. Install bolts through removable lug so that nuts are on weld-on lug side. Tighten bolts.

Fig. 18



15. See Fig. 18. Attach clevis end of levelling crank, arrow 2, to arm, arrow 7, on rockshaft. Fasten with one 1-1/4" x 4-3/4" (31.7 mm x 120.6 mm) bolt c/w nut and lockwasher. Tighten bolt to 840 ft. lbs. (1138.2 N.m.)

NOTE: The 1-1/4" x 4-3/4" (31.7 mm x 120.6 mm) bolt must be tightened so that the clevis is drawn up tight against the ball joint in arm, arrow 7. Tighten bolt to 840 ft. lbs. (1138.2 N.m.) Ball must also be free to pivot in socket. Lubricate ball with oil and turn in socket to make sure ball is free to pivot.

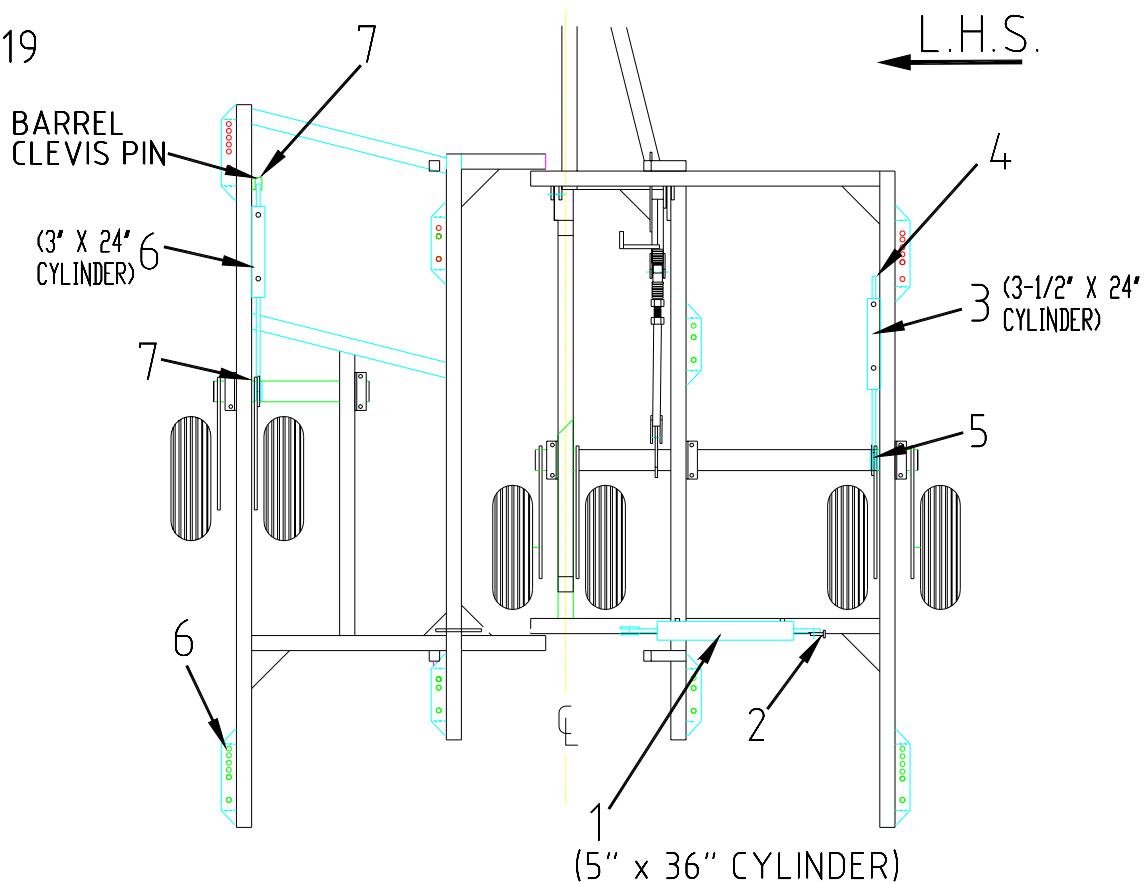


CAUTION: USE ADEQUATE MANPOWER OR A HOIST TO LIFT HEAVY COMPONENTS INTO PLACE. ATTEMPTING TO LIFT HEAVY COMPONENTS BY YOURSELF COULD CAUSE SERIOUS INJURY.

16. See Fig. 18. Fasten hose support, arrow 8, to a bolt welded to top of hitch. Secure with (1) 5/8" (15.7 mm) nut, (1) 11/16" (17.2 mm) I.D. flatwasher, and (1) 5/8" (15.7 mm) lockwasher.
17. See Fig. 18. Mount hitch jack, arrow 9, on round tube welded to inside of hitch. Jack pivots on mounting tube and can be placed in vertical position for supporting disc hitch or horizontal position while disc is in motion. Lock jack in desired position with pin.

IMPORTANT: JACK MUST BE IN HORIZONTAL POSITION WHEN DISC IS IN MOTION. IF JACK IS IN VERTICAL POSITION WHEN DISC IS IN MOTION, JACK MAY STRIKE GROUND OR OBSTRUCTION ON GROUND, CAUSING SEVERE DAMAGE TO JACK, BE SURE CRANK OF JACK IS NOT HANGING BELOW HITCH WHEN JACK IS IN HORIZONTAL POSITION. PLACE CRANK ON TOP OF HITCH TO AVOID DAMAGE.

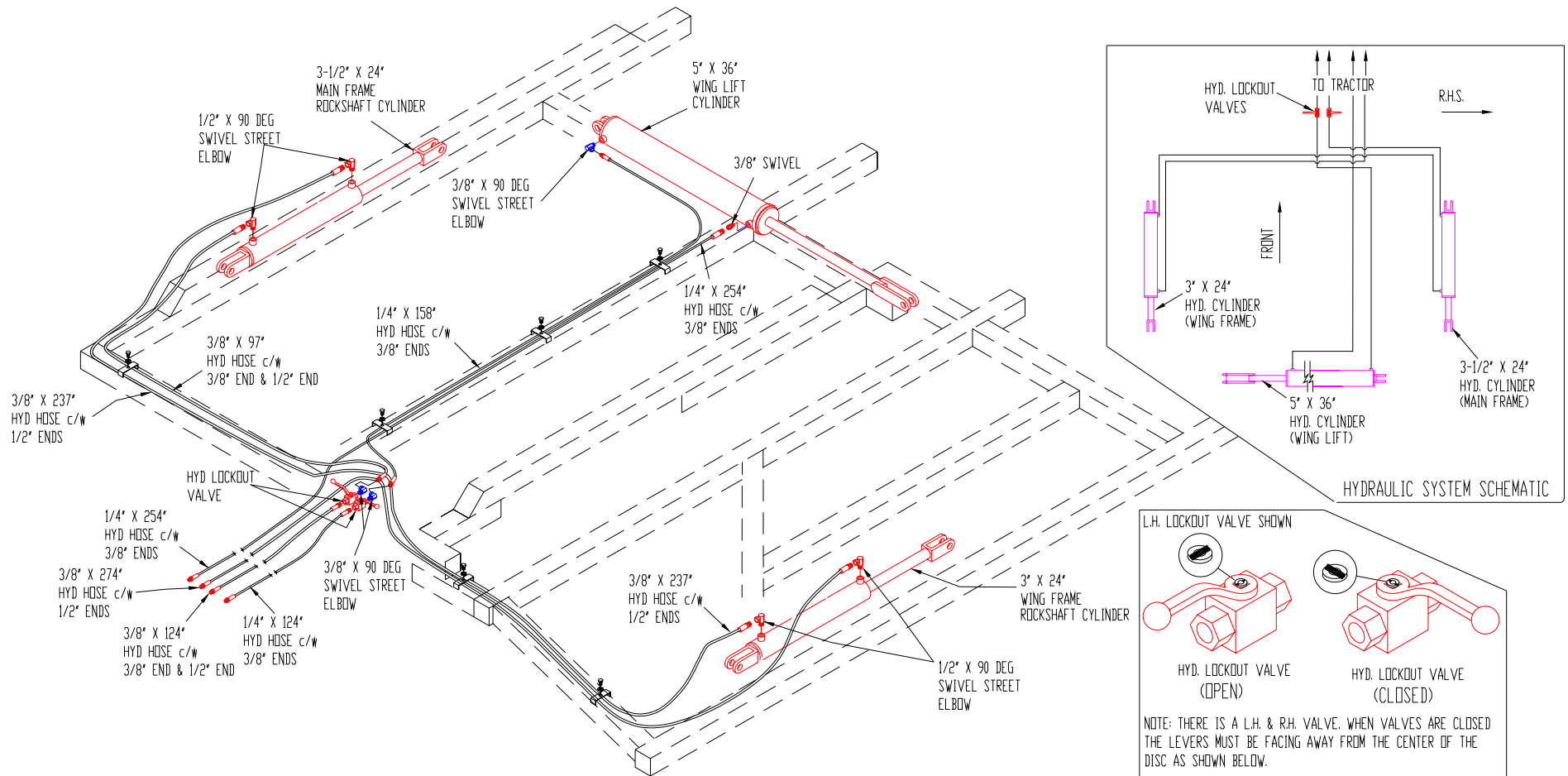
ILL. 19



18. See Fig. 19. Attach one 5" (127 mm) wing lift cylinder, arrow 1, to rear of frame. This cylinder will have a stroke of either 34-3/4" (882.65 mm) or 36" (914 mm) depending on the size of your disc. For cylinder size for your disc refer to specification chart on page 5. Cylinders that have a 34-3/4" (882.6 mm) stroke will have this length stencilled on the barrel. Fasten tube end of cylinder to lug, arrow 2, on main frame with one (1) 1-1/4" x 4-3/4" (31.7 mm x 120.6 mm) pin. Secure pin with two (2) 5/16" x 2" (7.87 mm x 50.8 mm) cotter pins. Ports on cylinder must be facing towards front of disc. Do not attach shaft end of centre until after cylinder has been filled with oil.
19. See Fig. 19. Fasten one (1) 3-1/2" x 24" (88.9 mm x 609.6 mm) rephasing hydraulic cylinder, arrow 3, to main frame. Fasten barrel end to lug, arrow 4, position so ports face up. Fasten shaft end to cylinder arm, arrow 5, on rockshaft. Fasten each end of cylinder with one (1) 1-1/4" x 4-3/4" (31.7 mm x 120.6 mm) pin. Secure each cylinder pin with two (2) 5/16" x 2" (7.87 mm x 50.8 mm) cotter pins.
20. See Fig. 19. Fasten one (1) 3" x 24" (76.2 mm x 609.6 mm) rephasing hydraulic cylinder, arrow 6, to wing frame. Fasten barrel end to 1-1/4" x 8" (31.7 mm x 203 mm) I-bolt, arrow 7, position so ports face up. Fasten shaft end to cylinder arm, arrow 8, on wing rockshaft. Fasten each end of cylinder with one (1) 1-1/4" x 4-3/4" (31.7 mm x 120.6 mm) pin. Secure each cylinder pin with two (2) 5/16" x 2" (7.87 mm x 50.8 mm) cotter pins.

IMPORTANT: BE SURE BARREL CLEVIS PIN OF 3" x 24" (76.2 mm x 610 mm) CYLINDER IS HORIZONTAL WITH CYLINDER PORTS FACING UP. IF CLEVIS PIN IS NOT HORIZONTAL THE 3" x 24" (76.2 mm x 610 mm) ROCKSHAFT CYLINDER WILL NOT BE FREE TO PIVOT UP AND DOWN WHEN IT IS EXTENDED OR CONTRACTED CAUSING SERIOUS DAMAGE.

FIG 20

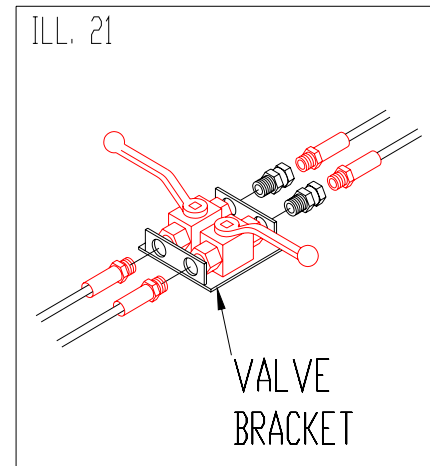


MODEL 4290 - 4300 HYDRAULIC SYSTEM

21. See Fig. 21. Place two (2) hydraulic lock up valves in brackets welded to top R.H.S. of main frame. Each valve is held in place with incoming hose and fittings.

22. **ATTACHING HYDRAULIC HOSES TO ROCKSHAFT CYLINDERS AND WING LIFT CYLINDER:**

IMPORTANT: DO NOT USE TEFLON TAPE TO SEAL HYDRAULIC HOSES AND FITTINGS. IF PIECES OF TAPE GET INTO THE HYDRAULIC SYSTEM THEY MAY PLUG SMALL ORIFICES.



NOTE: To ensure the hydraulic system does not leak, seal fittings and hoses with sealing liquid.

- a) See Fig. 20. Install one (1) 1/2" (12.7 mm) N.P.T. x 90 degree swivel street elbow in the shaft end port of 3-1/2" x 24" (88.9 mm x 610 mm) main frame rockshaft cylinder. Connect a 3/8" x 237" (9.39 mm x 6020 mm) hydraulic hose to same swivel elbow. Then run same hose to front of main frame and across wing frame to 3" x 24" (76.2 mm x 610 mm) wing rockshaft cylinder. Install one (1) 1/2" (12.7 mm) N.P.T. x 90 degree swivel steel elbow in piston end port of 3" x 24" (76.2 mm x 610 mm) wing rockshaft cylinder and fasten the 3/8" x 237" (9.39 mm x 6020 mm) hose to same elbow.
- b) See Fig. 20. Install one (1) 1/2" (12.7 mm) N.P.T. x 90 degree swivel steel elbow in piston end port of 3-1/2" x 24" (88.9 mm x 610 mm) main frame rockshaft cylinder. Connect a 3/8" x 97" (9.39 mm x 2464 mm) hydraulic hose in same swivel elbow. Run same hose to front of main frame. Install one (1) 3/8" (9.39 mm) N.P.T. x 90 degree swivel street elbow in rear port of R.H. lock out valve and fasten the 3/8" x 97" (9.39 mm x 2464 mm) hose to same swivel elbow.
- c) See Fig. 20. Fasten a 3/8" x 124" (9.39 mm x 3150 mm) hydraulic hose in front port of R.H. lock out valve. Run hose to front of hitch.
- d) See Fig. 20. Install one (1) 1/2" (12.7 mm) N.P.T. x 90 degree swivel street elbow in shaft end port of 3" x 24" (76.2 mm x 610 mm) wing rockshaft cylinder. Connect a 3/8" x 274" (9.39 mm x 6960 mm) hydraulic hose to same swivel elbow. Run hose across front of wing frame to front L.H. side of main frame, then run hose to front of hitch.
- e) See Fig. 20. Install one (1) 3/8" (9.39 mm) N.P.T. x 90 degree swivel street elbow in piston end port of 5" x 36" (127 mm x 914 mm) wing lift cylinder. Connect one (1) 1/4" x 158" (6.35 mm x 4013 mm) hydraulic hose in same swivel elbow. Next, run hose to front of main frame. Install one (1) 3/8" (9.39 mm) N.P.T. x 90 degree swivel adapter on rear port of L.H. lock out valve and fasten the 1/4" x 158" (6.35 mm x 4013 mm) hose to same swivel adapter.
- f) See Fig. 20. Fasten one (1) 3/8" x 124" (9.39 mm x 3150 mm) hydraulic hose in front port of L.H. lock out valve. Run hose to front of hitch.
- g) See Fig. 20. Install one (1) 3/8" (9.39 mm) N.P.T. male x 3/8" (9.39 mm) N.P.T. female swivel adaptor in piston end port of 5" x 36" (127 mm x 914 mm) wing lift cylinder. Connect one (1) 1/4" x 254" (6.35 mm x 6452 mm) hyd. hose in same swivel elbow. Next run hose to front of hitch.
- h) See Fig. 20. Install male coupler tips (not supplied by Ezee-On) to the four hoses that are at front of hitch.



CAUTION: DO NOT DISCONNECT HYDRAULICALLY OPERATED COMPONENTS WHEN THERE IS PRESSURE WITHIN THOSE COMPONENTS. HYDRAULIC COMPONENTS UNDER PRESSURE MAY CAUSE PART AND HYDRAULIC FLUID TO FLY OUT AT A HIGH VELOCITY WHICH COULD CAUSE SERIOUS INJURY.

23. **SECURE HYDRAULIC HOSES TO FRAME** - See Fig. 20.

Fasten hoses to frame with one U-shaped hose clamp at each hold down point. Each hold down point has a 1/2" (12.7 mm) hex nut welded to the top of frame. Place hose clamp over two (2) hoses at each point and fasten clamp to weld-on nut with one (1) 1/2" x 3/4" (12.7 mm x 19.0 mm) bolt c/w lockwasher.

24. HOW MAIN LIFT (ROCKSHAFT) HYDRAULIC SYSTEM WORKS - See Fig. 20.

When raising the disc, oil is pumped into the piston end port of 3-1/2" x 24" (88.9 mm x 610 mm) main frame cylinder causing it to extend. Oil is then forced from the shaft end port of same cylinder into the piston end port of the 3" x 24" (76.2 mm x 610 mm) wing cylinder causing it to also extend. The oil from shaft end port of 3" x 24" (76.2 mm x 610 mm) wing cylinder is returned to tractor.

When lowering disc, oil is pumped into shaft end port of 3" x 24" (76.2 mm x 610 mm) wing cylinder causing it to contract. Oil forced from piston end port of same cylinder flows to shaft end port of the 3-1/2" x 24" (88.9 mm x 610 mm) main frame cylinder causing it to also contract. The oil from the piston end port of the 3-1/2" x 24" (88.9 mm x 610 mm) cylinder is returned to the tractor.

NOTE: *Lockup valve must be opened to allow oil to flow to and from lift cylinder.*

Both cylinders extend and contract at the same rate because the amount of oil flowing between the shaft end ports and the piston end ports are equal in volume. For example; the 3-1/2" x 24" (88.9 mm x 610 mm) main frame cylinder has a 1-3/4" (44.4 mm) diameter piston shaft which displaces enough oil from the shaft side to fully extend the 3" x 24" (76.2 mm x 610 mm) wing cylinder.

Each lift (rockshaft) cylinder contains a by-pass to allow oil to flow past piston when each cylinder is fully extended. If both cylinders are not fully extended when disc is raised, continue to pump oil into lift cylinders until all cylinders are fully extended.

25. See Fig. 20. To fill rockshaft cylinders with oil, remove depth control stops to allow cylinders to work full length of stroke. Next, pump oil into the cylinders working shafts in and out. After cylinders have been filled with oil, synchronize cylinders by fully extending them. After the first cylinder is fully extended continue to hold hydraulic lever until the other cylinder is also fully extended.

NOTE: *Before filling wing cylinder with oil, support cylinder so shaft passes over cylinder lug on wing.*

26. See Fig. 20. Pump oil into 5" (127 mm) wing lift cylinder. Extend and contract cylinder shaft until cylinder is completely filled with oil. After cylinder is full of oil fully extend it. Next, attach shaft end to a slotted hole in cylinder lug on wing frame with one (1) 1-1/4" x 4-3/4" (31.7 mm x 120.6 mm) pin. Secure pin with two (2) 5/16" x 1-3/4" (7.87 mm x 44.4 mm) cotter pins.



CAUTION: IF HYDRAULIC CYLINDER SHAFTS ARE UNPINNED AND CYCLED TO THE CYLINDERS WITH OIL, THEY CAN BE SERIOUSLY DAMAGED IF CLEVIS OF SHAFT STRIKES ROCKSHAFT ARM OR WING CYLINDER LUG.



CAUTION: HYDRAULIC OIL ESCAPING UNDER PRESSURE HAS SUFFICIENT FORCE TO CAUSE SERIOUS INJURY. IF INJURED BY ESCAPING FLUID, OBTAIN MEDICAL TREATMENT IMMEDIATELY.

CHECK HYDRAULIC HOSES PERIODICALLY FOR SIGNS OF RUPTURE AND LEAKS. USE A CARD BOARD AS A BACKSTOP TO CHECK FOR ESCAPING HIGH PRESSURE OR HOT FLUID.



CAUTION: WING WILL FREE FALL IF WING CYLINDER IS NOT FULL OF OIL CAUSING SERIOUS DAMAGE TO MACHINE OR SERIOUS INJURY OR DEATH TO PERSON(S) NEARBY.



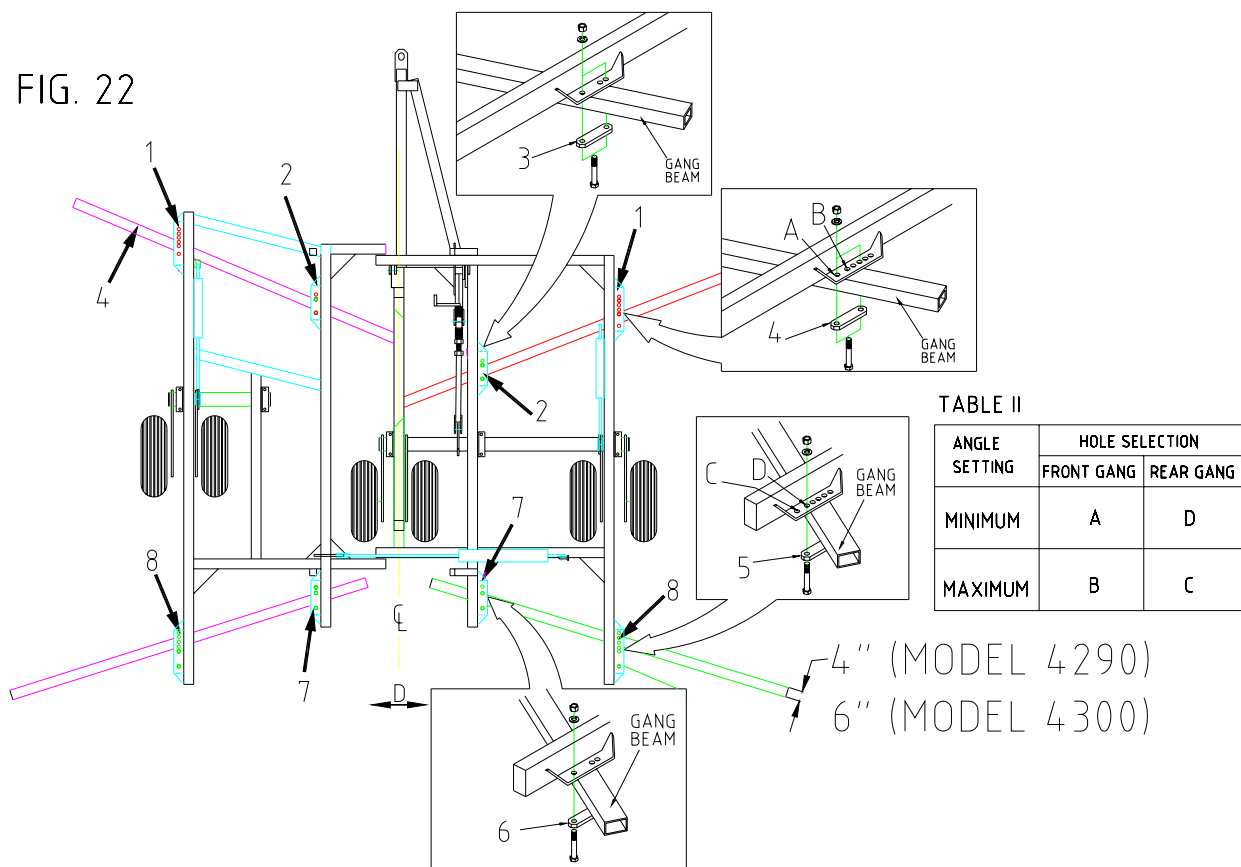
CAUTION: TO ASSEMBLE BALANCE OF DISC, EXTEND MAIN LIFT CYLINDERS RAISING FRAME. BE SURE MAIN LIFT CYLINDERS ARE COMPLETELY FILLED WITH OIL. THEN PLACE ADEQUATE SUPPORT UNDER EACH MAIN FRAME AND WING FRAMES.

DO NOT USE LOCK OUT VALVE AS SAFETY DEVICE TO PREVENT FRAME FROM FALLING. IF HYDRAULIC HOSE(S) OR FITTINGS FAILED DISC COULD DROP CAUSING SERIOUS INJURY OR DEATH TO THOSE NEARBY.



WARNING: DO NOT STAND UNDER WING WHILE WING IS BEING RAISED OR LOWERED. IF ANY COMPONENTS OF HYDRAULIC SYSTEM SHOULD FAIL OR IF HYDRAULIC LEVER SHOULD ACCIDENTALLY BE OPERATED, WING COULD DROP CAUSING SERIOUS INJURY OR DEATH.

FIG. 22



27. ATTACHING GANG BEAMS - See Fig. 22.

NOTE: See gang beam chart on Page 33 to determine gang beam lengths for the size of your disc.

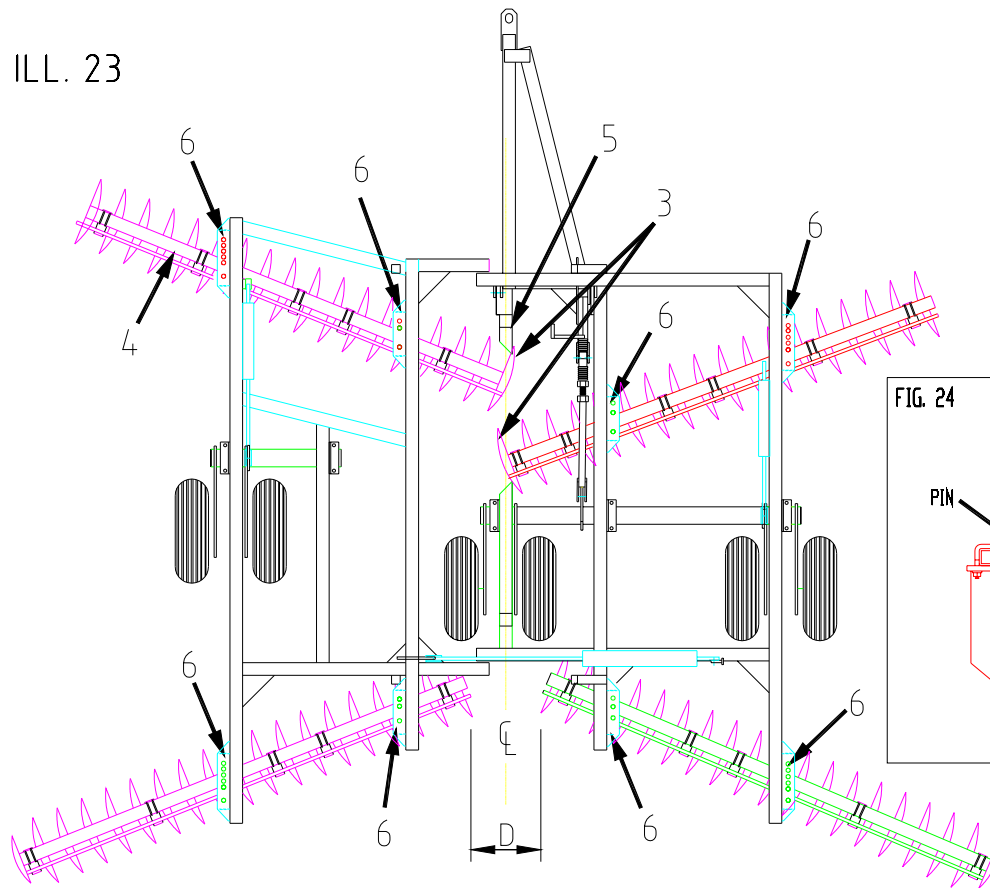
NOTE: The Model 4290 uses a 4" x 4" (102 mm x 102 mm) gang beams. The Model 4300 uses 6" x 4" (152 mm x 102 mm) gang beams.

NOTE: The beam clamp plates for Model 4290 are different than those for the Model 4300. Clamp plates for Model 4290 are 9-3/8" (237.9 mm) long and 11-3/8" (288.7 mm) long for the Model 4300.

- Before installing gang beams, read Section 1 of adjustments on page 10. To start with, it is recommended to set gangs at minimum angle.
- FRONT GANGS:** Clamp each gang beam to two (2) brackets, arrows 1 and 2, that are welded to sides of frame. To start with select holes in outer brackets, arrow 1, that will give the minimum angle, see Table II. Next, using clamp plates, arrows 3 and 4, fasten gang beams to brackets, arrows 1 and 2, using (2) 1-1/4" x 7-1/2" (31.7 mm x 100.5 mm) hex bolts for each bracket. Install rear bolt in hole "A" of outer bracket to obtain a minimum angle. Secure bolts with nut and flatwasher. DO NOT tighten bolts at this time.
- REAR GANGS:** Clamp each gang beam to two (2) brackets, arrow 7 and 8, that are welded to side of frame. To start with select holes in outer bracket, arrow 5, that will give minimum angle, see Table II. Next, using clamp plates, arrows 5 and 6, fasten gang beam to brackets, arrow 7 and 8, using (2) 1-1/4" x 7-1/2" (31.7 mm x 100.5 mm) hex bolts for each bracket. Install rear bolt in hole "D" of outer bracket to obtain minimum angle. Position gang beam ahead of hole "D". Secure bolts with nut and flatwasher. DO NOT tighten bolts at this time.

NOTE: Be sure front wing frame and front main frame gang beams are set at the same angle. Also set rear wing frame and rear main frame gang beams are at the same angle.

ILL. 23



28. **ATTACHING GANG ASSEMBLIES** - See Fig. 23.

NOTE: See gang patterns on pages 34 to 32 to determine gang pattern for your disc.

NOTE: The Model 4290 uses a 4" x 4" (102 mm x 102 mm) gang beam and Model 4300 uses a 6" x 4" (152 mm x 102 mm) gang beam.

- a) **REAR GANGS** - Roll rear gang assemblies in place under rear gang beams. Position rear gangs so that the scrapers are at the rear. The gang assemblies with leveller blades (small diameter blades) must be positioned at the outside. See Fig. 23 for the direction rear gangs face.

Attach bearing hangers to gang beams with two U-bolts per bearing hanger. Leave U-bolt loose. If disc is equipped with optional stone flex hanger, see paragraph "C" below.

- b) **FRONT GANGS** - Roll front gang assemblies in place under front gang beams. Position gang assemblies so that the scrapers are at the rear. See Fig. 232 for the direction the front gangs face.

Attach bearing hangers to gang beams with two (2) U-bolts per bearing hanger. Leave U-bolts loose. If disc is equipped with optional stone flex hanger, see paragraph "C" below.

- c) **OPTIONAL STONE FLEX BEARING HANGERS** - See Fig. 24. Fasten each hanger assembly, arrow 1, to bottom of gang beam, with one (1) backing plate, arrow 2, and two U-bolts c/w nuts and lockwashers. Be sure the pin which is welded to backing plate, arrow 2, is installed in slot of shank. For Model 4290 discs only, place (1) 1/4" thick two hole bearing plate between top of spring shank and bottom of gang beam. Shim is held in place by installed rear leg of each U-bolt through holes in plate. Leave U-bolt loose.



CAUTION: WHEN ATTACHING GANG ASSEMBLIES, WEAR PROTECTIVE GLOVES TO HELP PREVENT INJURY FROM CUTTING EDGES OF BLADES.

- D) See Fig. 23. Set front gangs so that the leading edge of the inside blades, arrow 3, are approximately 2-1/2" (63.5 mm) past centre of disc frame. (Centre of disc is same as centre of hitch)

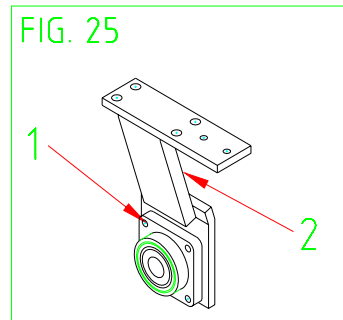
IMPORTANT: THE FRONT GANG BEAM, ARROW 4, ON WING FRAME MUST NOT BE EXTENDED PAST INNER PORTION OF OUTSIDE BEAM, ARROW 5, OF MAIN FRAME. IF WING GANG BEAM IS LOCATED UNDER THIS PORTION OF MAIN FRAME, WING GANG BEAM WILL HIT MAIN FRAME WHEN WING FLEXES DOWN IN NORMAL FIELD USE.

IMPORTANT: BE SURE EXCESS GANG BEAM OF FRONT GANG IS EXTENDED TO OUTSIDE OF DISC TO PREVENT ANY INTERFERENCE WITH FRAME AND ROCKSHAFT.

- E) See Fig. 23. Set rear gangs so that the distance between the rear edge of the two inside blades, dimension "D", is equal to 2" (50.8 mm) less than the blade diameter. For example, if your disc is equipped with 26" (660 mm) diameter blades dimension "D" would be set at 24" (610 mm). Be sure the rear gangs are centred on the frame. See section 2 of adjustments page 11.
- F) See Fig. 23. If your disc has split gangs, adjust the blade to blade distance between gang assemblies. This distance should be the same as the blade spacing of your disc..
- F) Before tightening bearing hanger U-bolts, loosen U-bolts which fasten scraper bar to bearing hanger. Next, check each bearing hanger to make sure hanger is sitting square under gang beam. Also be sure hanger is not turned to one side.
- H) Next tighten U-bolts as follows:
- | | |
|------------|--|
| Model 4290 | - 150 ft. lbs. (203.25 N.m) - for 5/8" (15.7 mm) U-bolts |
| | - 260 ft. lbs. (352.3 N.m) - for 3/4" (19.0 mm) U-bolts |
| Model 4300 | - 430 ft. lbs. (582.65 N.m) - for 7/8" (22.0 mm) U-bolts |

IMPORTANT: IF BEARING HANGERS ARE NOT SITTING SQUARE BEFORE TIGHTENING U-BOLTS, THRUST WILL BE BUILT INTO THE BEARINGS AND THE LIFE OF BEARINGS WILL BE SHORTENED.

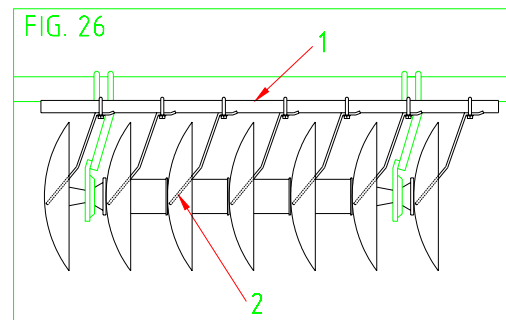
29. **TIGHTENING GANG BEAM CLAMP PLATES** - See Fig. 23. Position gang beams so they are tight against rear bolt of each gang beam clamp plate, arrow 6. Tighten beam clamp plate bolts to 840 ft. lbs. (116 m. kgs.)

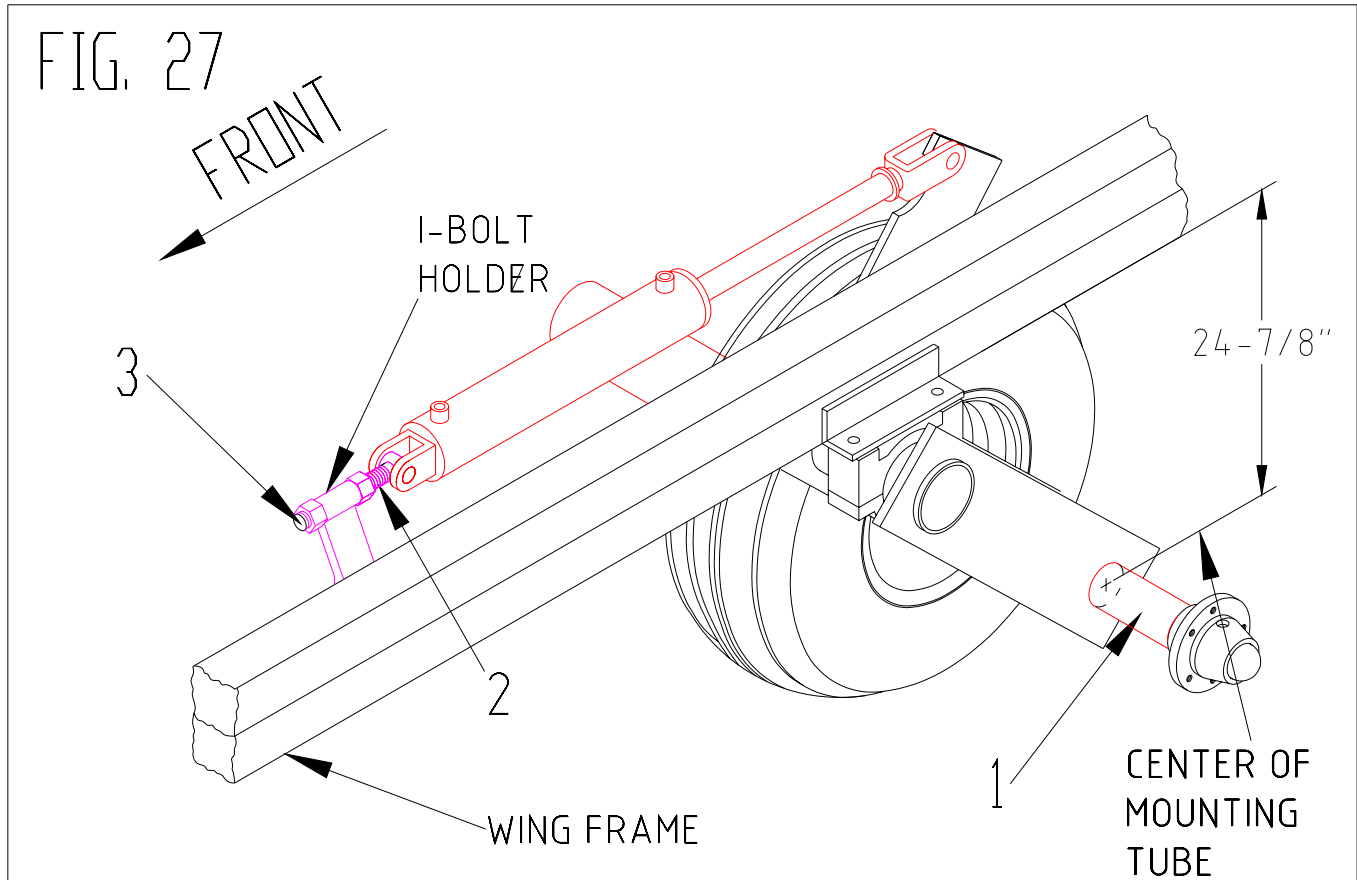


30. See Fig. 25. For Models equipped with 211 and 410 bearings. Loosen all the bolts, arrow 1, which fastens the bearings to the hangers, arrow 2. Then turn the disc blades to allow the bearings to align themselves. Next tighten all the bolts. This will ensure proper bearing alignment, increasing bearing life.

31. See Fig. 26. Adjust scraper bar, arrow 1, and scrapers, arrow 2, of each gang so that each scraper is in contact with disc blade.

IMPORTANT: DISC WILL REQUIRE LESS HORSEPOWER TO PULL IF SCRAPERS ARE ADJUSTED PROPERLY.



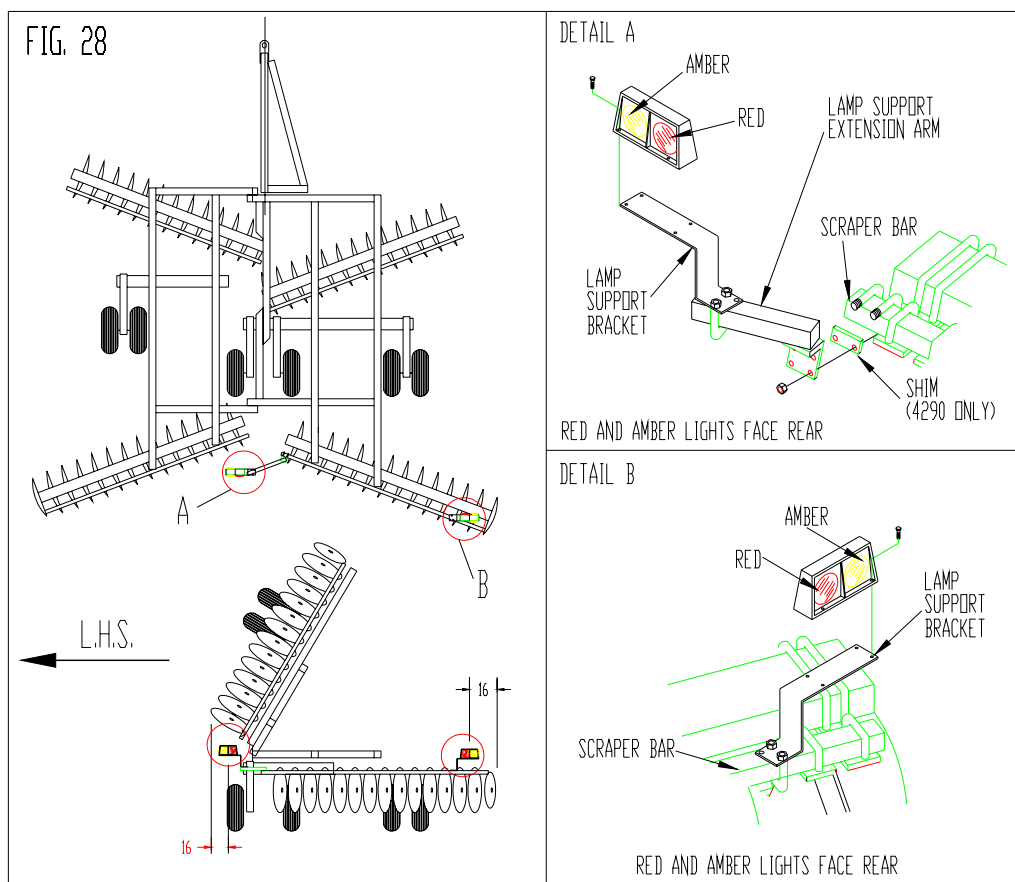


32. See Fig. 27. Level Wing Frame with Main Frame as follows:

- Raise disc by extending rockshaft cylinders. Besure wing rockshaft cylinder is fully extended.
- Check the distance the spindle mounting tube, arrow 1, (welded to bottom of rockshaft wheel leg) is from the bottom of wing frame. This distance should be 24-7/8".
- If spindle mounting tube location is not correct, adjust length of wing cylinder I-Bolt, arrow 2. Extending I-Bolt will move spindle mounting tube further away from bottom of frame while contracting I-Bolt will move it closer.
- After adjustment is complete, lock I-Bolt by tightening front nut, arrow 3, against I-Bolt holder.

NOTE: *The above wheel leg setting is an initial setting only. If wing gangs do not cut at same depth as the main frame gangs, further wing cylinder adjustment will be required.*

IMPORTANT: BESURE AXIS OF BARREL END, PIN IS HORIZONTAL AND CYLINDER PORTS ARE FACING UP. IF CYLINDER AND I-BOLT ARE NOT POSITIONED PROPERLY CYLINDER WILL NOT BE FREE TO PIVOT WHEN ACTIVATED CAUSING SERIOUS DAMAGE.



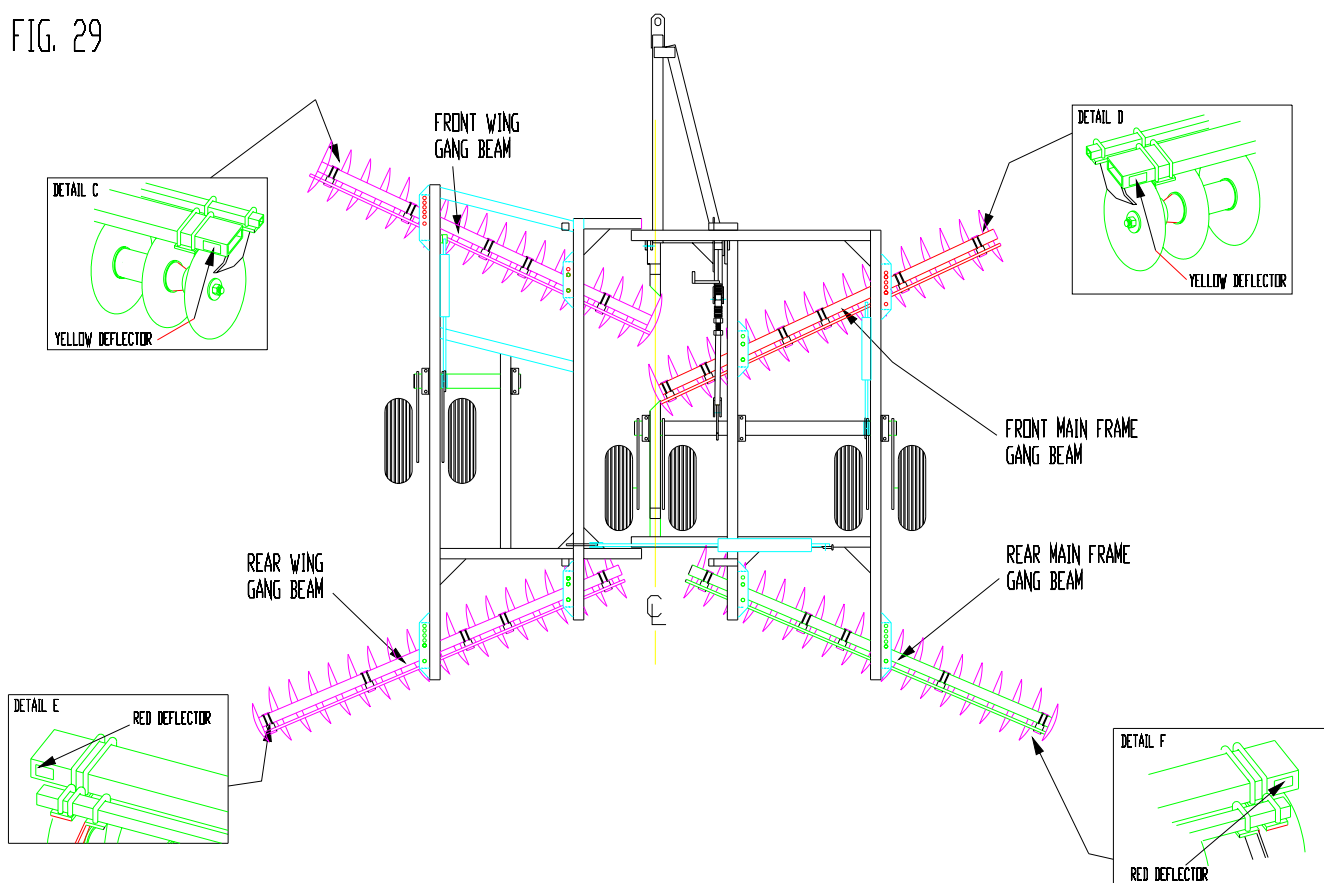
33. WARNING LIGHT KIT MOUNT INSTRUCTIONS (OPTIONAL) - See Fig. 28

- See detail "A". Fasten lamp support extension arm to L.H. end of scraper bar on rear main frame gang. For Model 4290 series discs place a shim over the 2 bottom holes of extension arm's mount plated. This shim will bring extension arm back to a horizontal position. Fasten with two (2) 1/2" x 2" (12.7 mm x 50.8 mm) U-bolts c/w nuts and lockwashers. Do not tighten U-bolts at this time.
- See detail "A". Fasten lamp support bracket to top of extension arm with one (1) 1/2" x 2" (12.7 mm x 50.8 mm) U-bolt c/w nuts and lockwashers. Position bracket as shown. Do not tighten U-bolts at this time.
- See detail "A". Fasten L.H. warning lamp to top of lamp support with four (4) 1/4" x 1-1/4" (6.35 mm x 31.7 mm) hex bolts c/w nuts and lockwashers. To determine which is a L.H. lamp, choose unit that has amber light on L.H.S. when side with amber and red lights are facing rear.
- See detail "B". Fasten lamp support bracket to top R.H. end of scraper bar on rear main frame gang with one (1) 1/2" x 2" (12.7 mm x 50.8 mm) U-bolt c/w nuts and lockwashers. Position as shown. Do not tighten U-bolt at this time.

WARNING LIGHT KIT CONTINUED:

- e) See detail "B". Fasten R.H. warning lamp to top of lamp support with four (4) 1/4" x 1-1/4" (6.35 mm x 31.7 mm) hex bolts c/w nuts and lockwashers. To determine which is R.H. lamp, choose unit that has amber light on R.H.S. when side with amber and red lights are facing rear.
- f) See Fig. 28. With disc folded for transport, position each lamp so it is no more than 16" (406 mm) from centre of lamp to widest point of machine. Lamps are positioned inside of this widest point **not** outside of the widest point. Tighten all U-bolts and bolts.
- g) Run electrical harness along top of frame and along gang beam up to lamps. Plug ends of harness into each lamp. Tie harness to the frame (with supplied ties) as required. Be sure harness clears all moving parts such as disc blades, tires, and rockshaft components. Make sure harness isn't tight anywhere along frame.
- h) Plug front end of electrical harness into receptacle at rear of tractor. If tractor is not equipped with a receptacle, then a receptacle must be wired into the tractor electrical system.

FIG. 29



34. REFLECTOR DECAL INSTALLATION - See Fig. 29.

NOTE: Before installing decals, clean the area they will be placed on.

- a) Place one (1) 1-1/2" x 3" (38.1 mm x 76.2 mm) red reflector decal on rear side of each rear gang beam. Locate decals approximately 1" (25 mm) from end of gang beam. See detail "E" and "F".
- b) Place one (1) 1-1/2" x 3" (38.1 mm x 76.2 mm) yellow reflector decal on front side of each front gang beam. Locate decals approximately 1" (25 mm) from end of gang beam. See detail "C" and "D".

GANG BEAM CHART **4290 - 4300 DISC**

MODEL	GANG BEAM SIZE
4290 -	4" x 4" x 1/4" (102 mm x 102 mm x 6.3 mm)
4300 -	6" x 4" x 3/8" (152 mm x 102 mm x 9.4 mm)

8" (203 mm) SPACING - 4290 ONLY

DISC	L.H. & R.H. FRONT GANG	FRONT GANG BEAM LENGTH	L.H. & R.H. REAR GANG	REAR GANG BEAM LENGTH
50 Blade	12 Blade	105" (2667 mm)	13 Blade	105" (2667 mm)
54 Blade	13 Blade	112" (2845 mm)	14 Blade	112" (2845 mm)
58 Blade	14 Blade	112" (2845 mm)	15 Blade	120" (3048 mm)
62 Blade	6 & 9 Blade	120" (3048 mm)	7 & 9 Blade	128" (3250.8 mm)
66 Blade	7 & 9 Blade	126" (3200 mm)	7 & 10 Blade	136" (3454 mm)
70 Blade	8 & 9 Blade	136" (3454 mm)	7 & 11 Blade	144" (3658 mm)
74 Blade	8 & 10 Blade	144" (3658 mm)	7 & 12 Blade	152" (3861 mm)

9" (229 mm) SPACING - 4290 - 4300

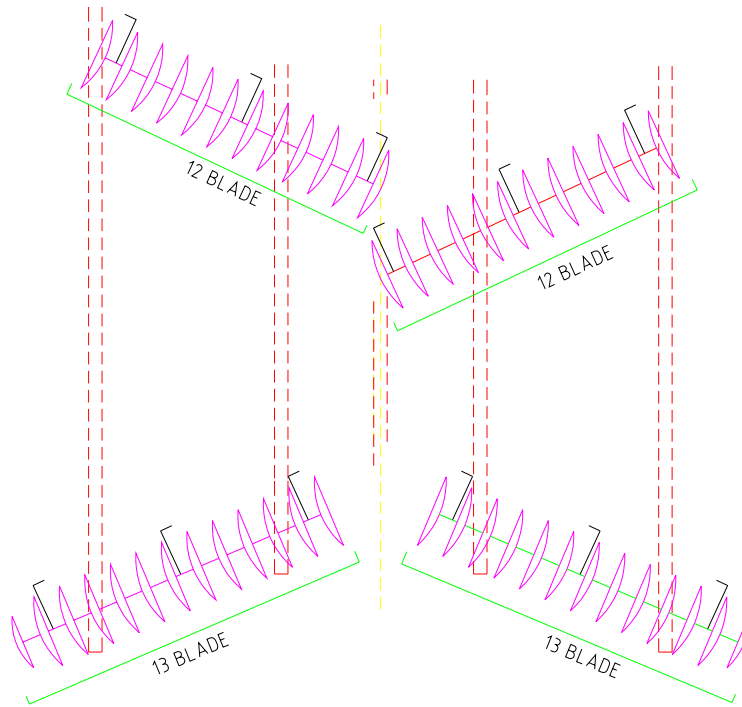
DISC	L.H. & R.H. FRONT GANG	FRONT GANG BEAM LENGTH	L.H. & R.H. REAR GANG	REAR GANG BEAM LENGTH
46 Blade	11 Blade	105" (2667 mm)	12 Blade	105" (2667 mm)
50 Blade	12 Blade	112" (2845 mm)	13 Blade	116" (2946 mm)
54 Blade	13 Blade	116" (2946 mm)	14 Blade	126" (3200 mm)
58 Blade	6 & 8 Blade	126" (3200 mm)	6 & 9 Blade	136" (3454 mm)
62 Blade	7 & 8 Blade	136" (3454 mm)	6 & 10 Blade	144" (3658 mm)
66 Blade	8 & 8 Blade	144" (3658 mm)	6 & 11 Blade	152" (3861 mm)

10-1/2" (267 mm) SPACING - 4300 ONLY

DISC	L.H. & R.H. FRONT GANG	FRONT GANG BEAM LENGTH	L.H. & R.H. REAR GANG	REAR GANG BEAM LENGTH
42 Blade	10 Blade	112" (2845 mm)	11 Blade	112" (2845 mm)
46 Blade	11 Blade	112" (2845 mm)	12 Blade	126" (3200 mm)
50 Blade	12 Blade	120" (3048 mm)	13 Blade	136" (3454 mm)
54 Blade	13 Blade	136" (3454 mm)	14 Blade	144" (3658 mm)
58 Blade	14 Blade	144" (3658 mm)	5 & 10 Blade	155" (3937 mm)

MODEL 4290
DISC GANG PATTERN - 8" (203 mm) SPACING
FRONT
50 BLADE

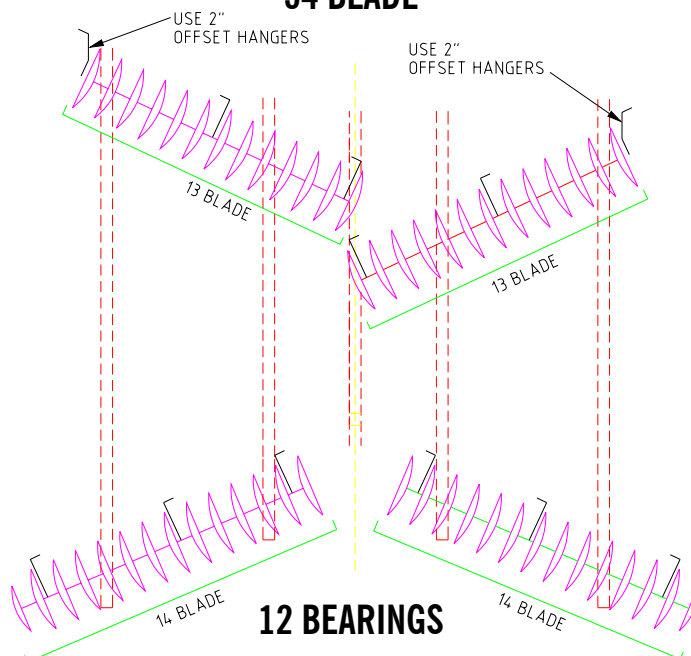
APPROX. WIDTH
17 ft. (5.18 m.)



12 BEARINGS

MODEL 4290
DISC GANG PATTERN - 8" (203 mm) SPACING
FRONT
54 BLADE

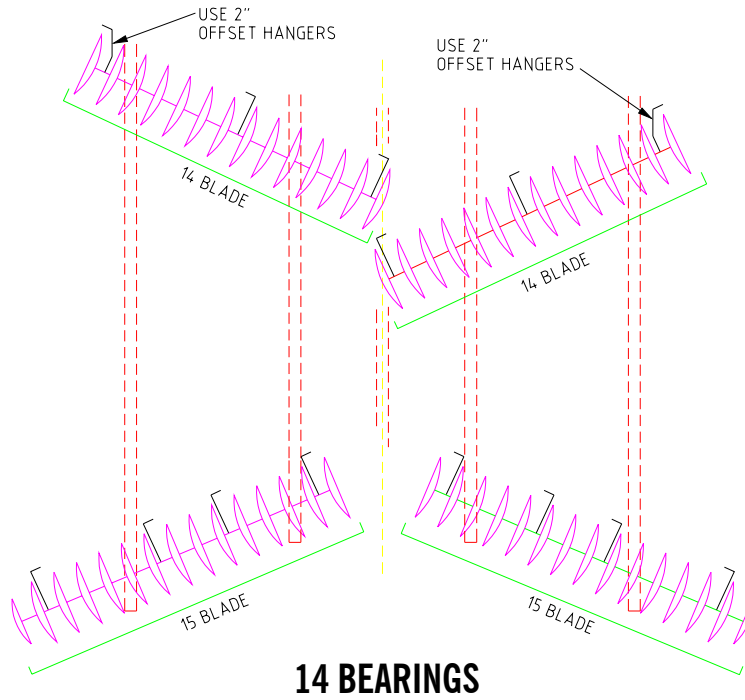
APPROX. WIDTH
18-1/2 ft. (5.63 m.)



12 BEARINGS

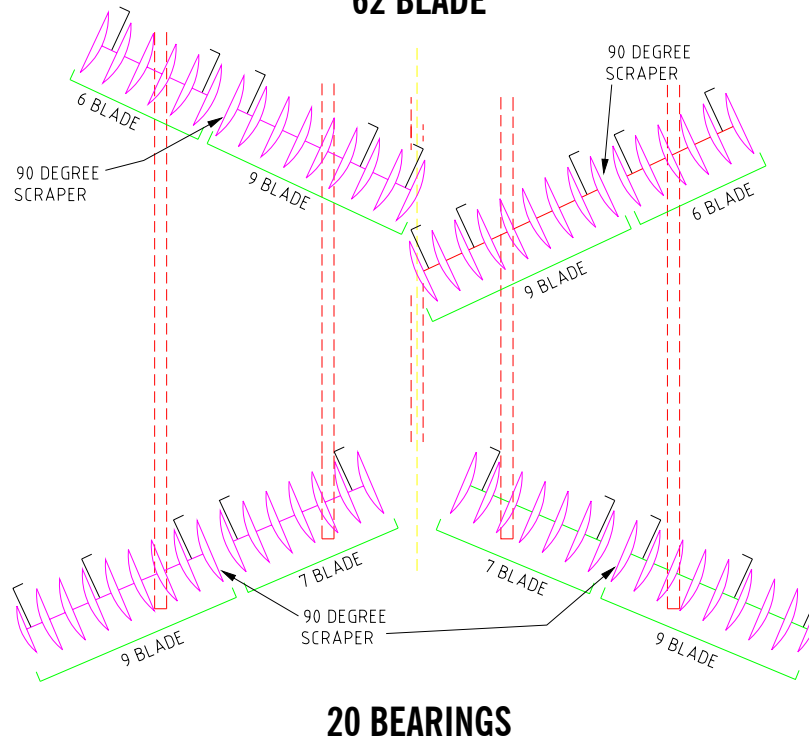
MODEL 4290
DISC GANG PATTERN - 8" (203 mm) SPACING
FRONT
58 BLADE

APPROX. WIDTH
20 ft. (6.09 m.)



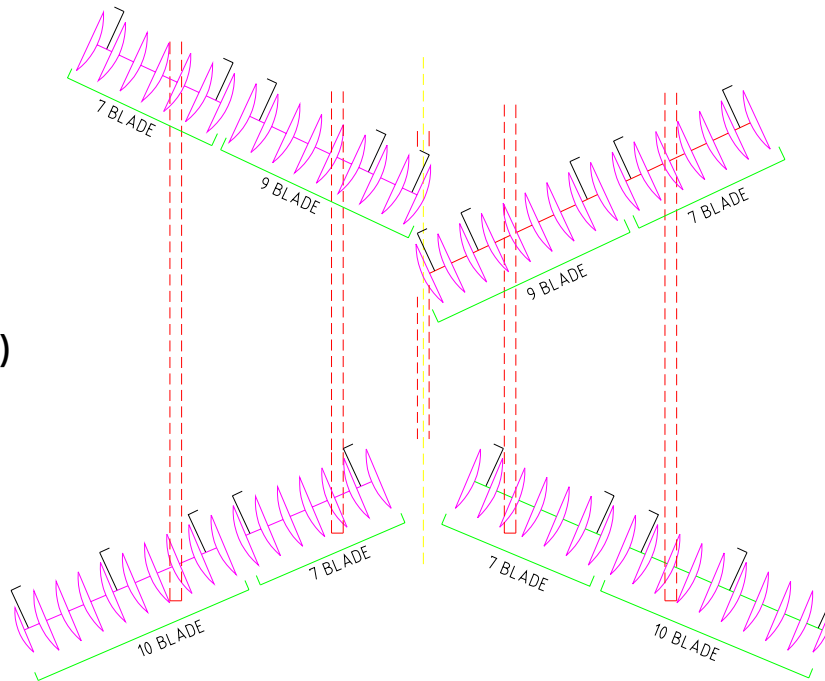
MODEL 4290
DISC GANG PATTERN - 8" (203 mm) SPACING
FRONT
62 BLADE

APPROX. WIDTH
21 ft. (6.40 m.)



MODEL 4290
DISC GANG PATTERN - 8" (203 mm) SPACING
FRONT
66 BLADE

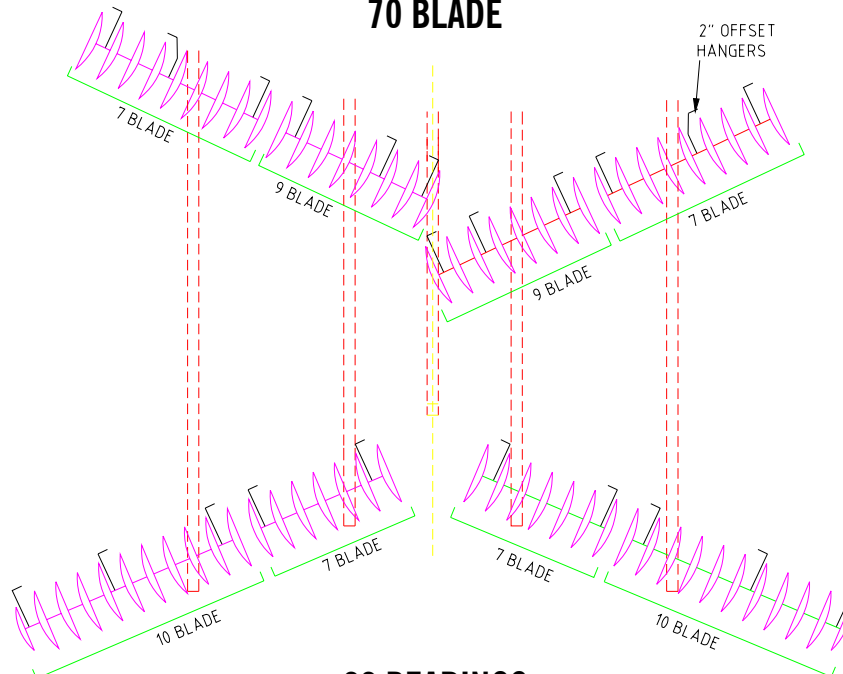
APPROX. WIDTH
22-1/2 ft. (6.85 m.)



22 BEARINGS

MODEL 4290
DISC GANG PATTERN - 8" (203 mm) SPACING
FRONT
70 BLADE

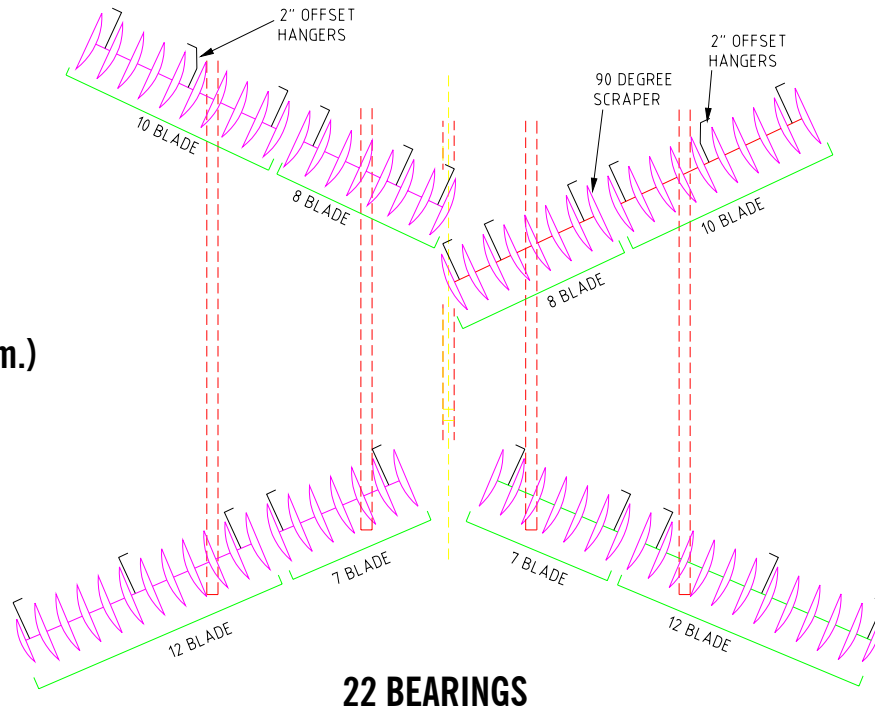
APPROX. WIDTH
24 ft. (7.31 m.)



22 BEARINGS

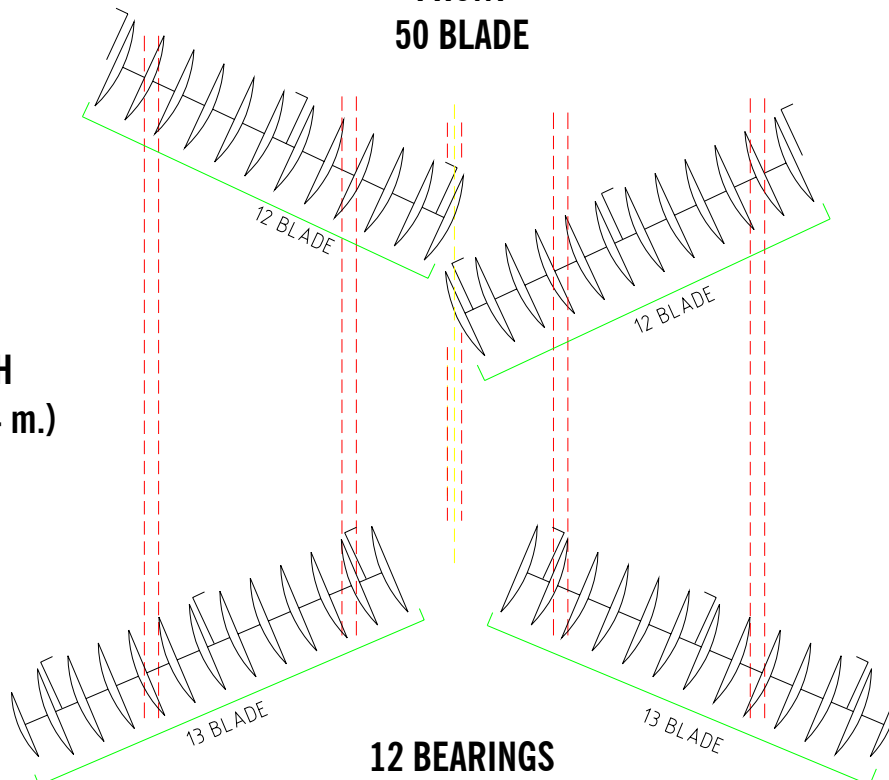
MODEL 4290
DISC GANG PATTERN - 8" (203 mm) SPACING
FRONT
74 BLADE

APPROX. WIDTH
25-1/2 ft. (7.77 m.)



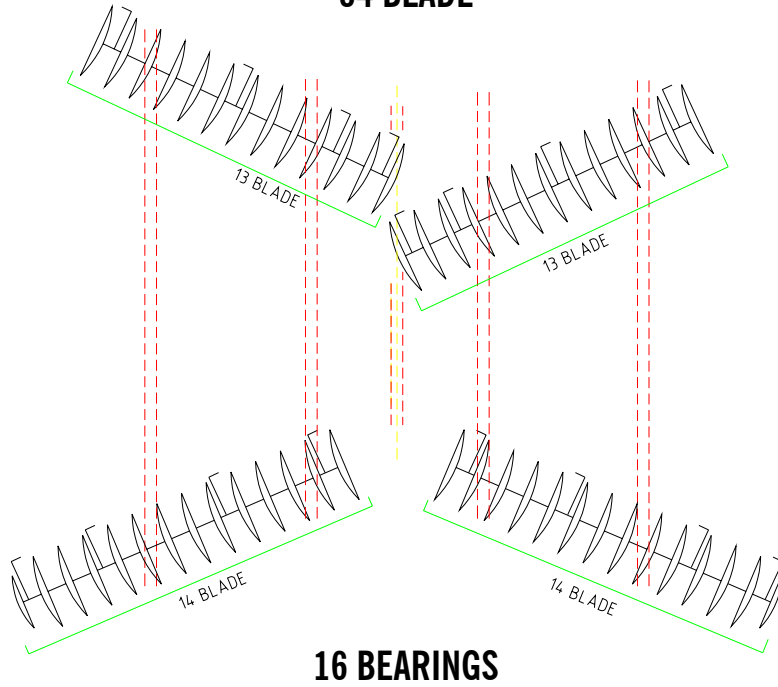
MODEL 4290 - 4300
DISC GANG PATTERN - 9" (229 mm) SPACING
FRONT
50 BLADE

APPROX. WIDTH
19-1/2 ft. (5.94 m.)



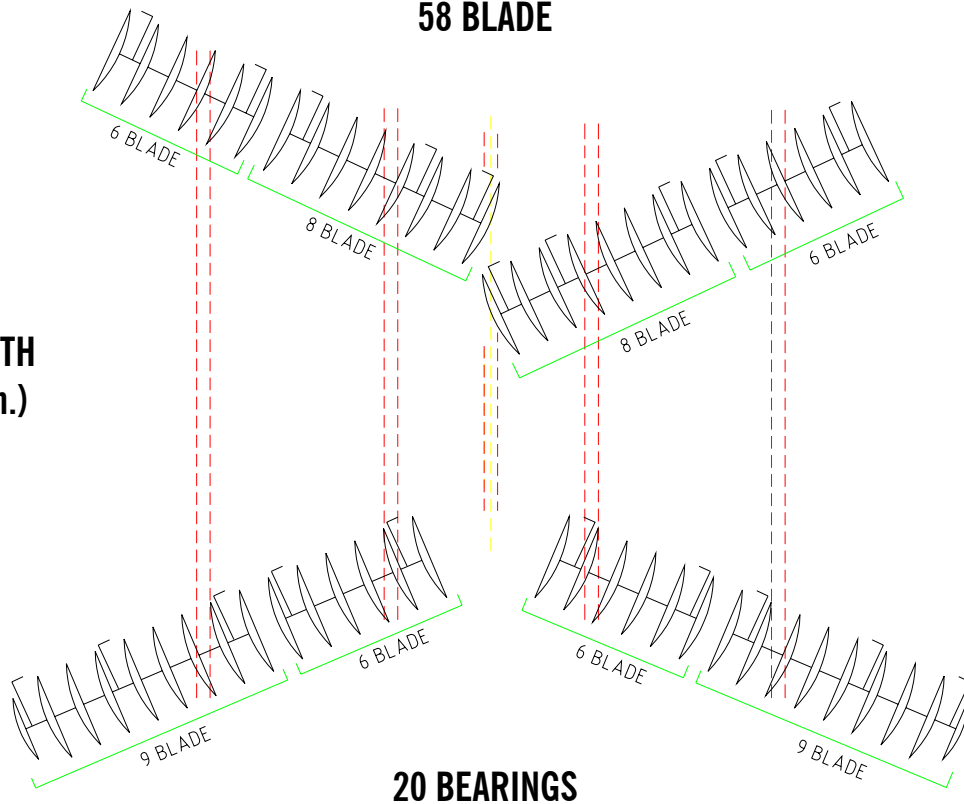
MODEL 4290 - 4300
DISC GANG PATTERN - 9" (229 mm) SPACING
FRONT
54 BLADE

APPROX. WIDTH
21 ft. (6.40 m.)



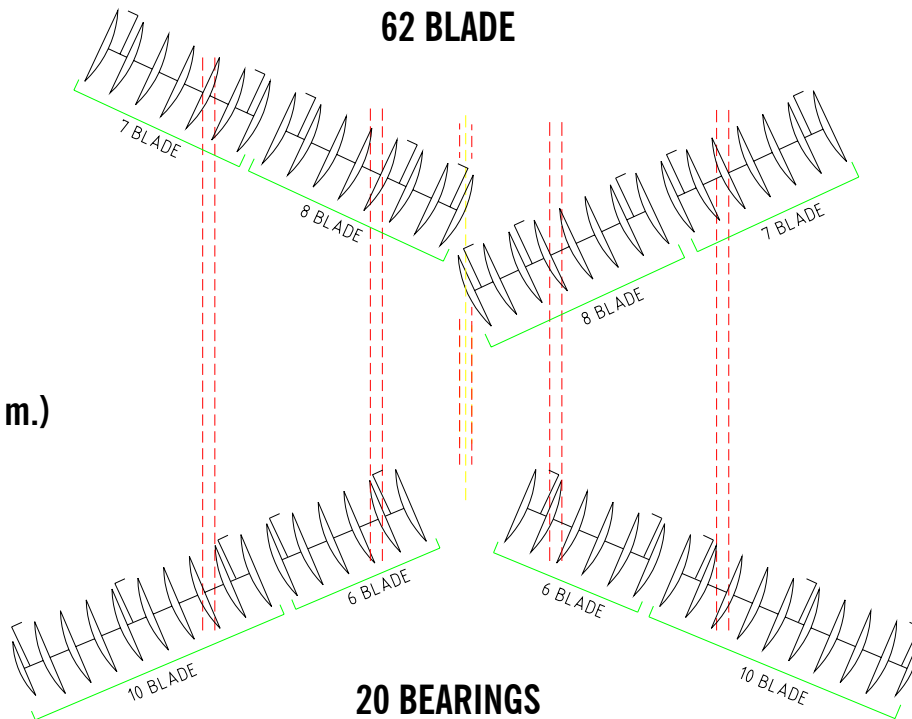
MODEL 4290 - 4300
DISC GANG PATTERN - 9" (229 mm) SPACING
FRONT
58 BLADE

APPROX. WIDTH
22 ft. (6.70 m.)



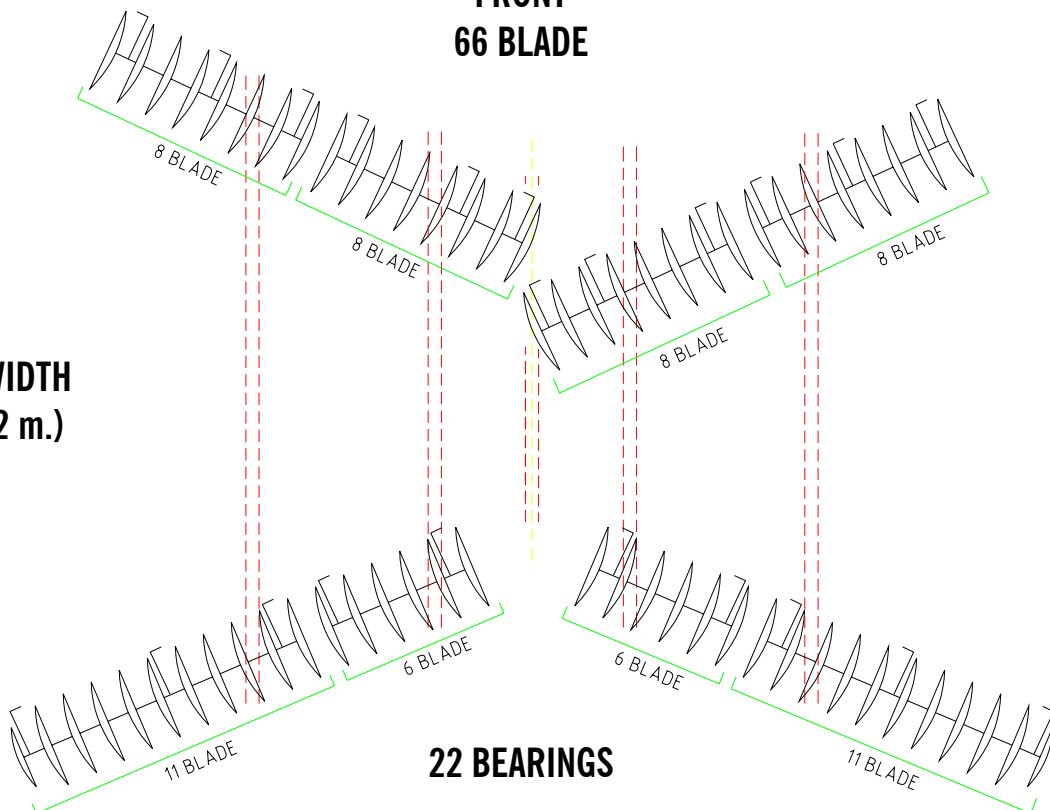
MODEL 4290 - 4300
DISC GANG PATTERN - 9" (229 mm) SPACING
FRONT
62 BLADE

APPROX. WIDTH
23-1/2 ft. (7.16 m.)



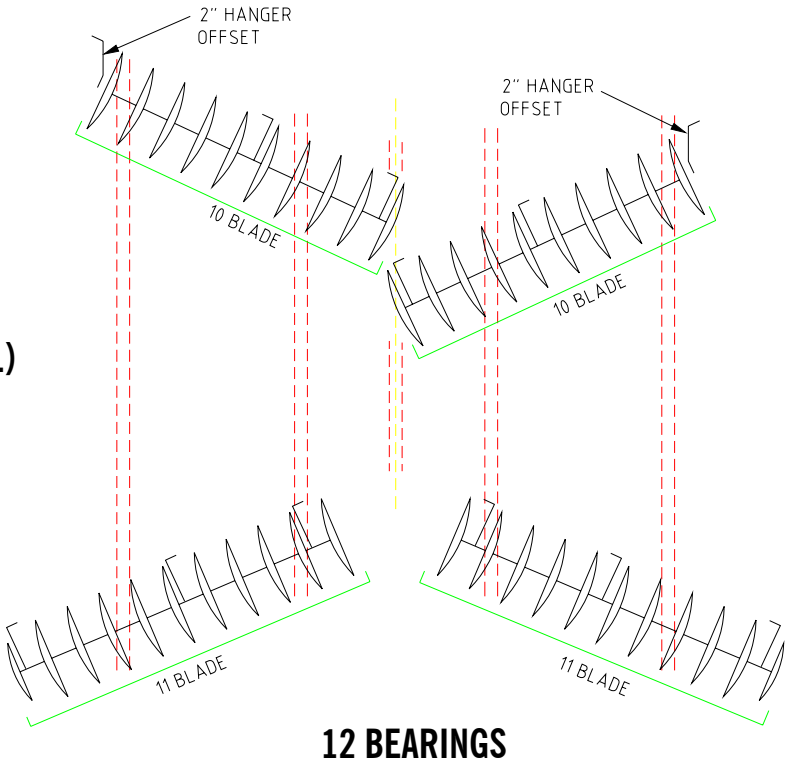
MODEL 4290 - 4300
DISC GANG PATTERN - 9" (229 mm) SPACING
FRONT
66 BLADE

APPROX. WIDTH
25 ft. (7.62 m.)



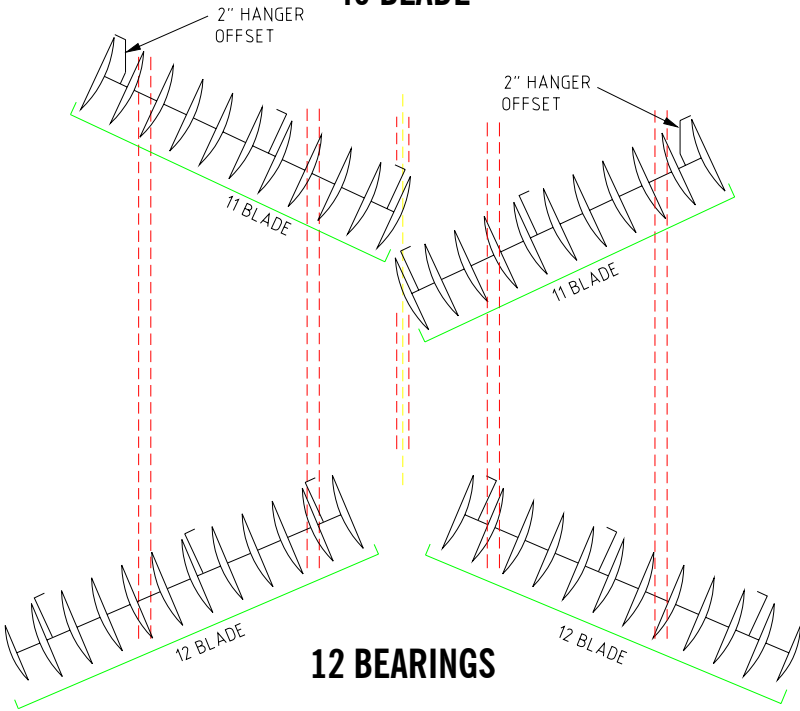
MODEL 4300
DISC GANG PATTERN - 10-1/2" (267 mm) SPACING
FRONT
42 BLADE

APPROX. WIDTH
18-1/2 ft. (5.63 m.)



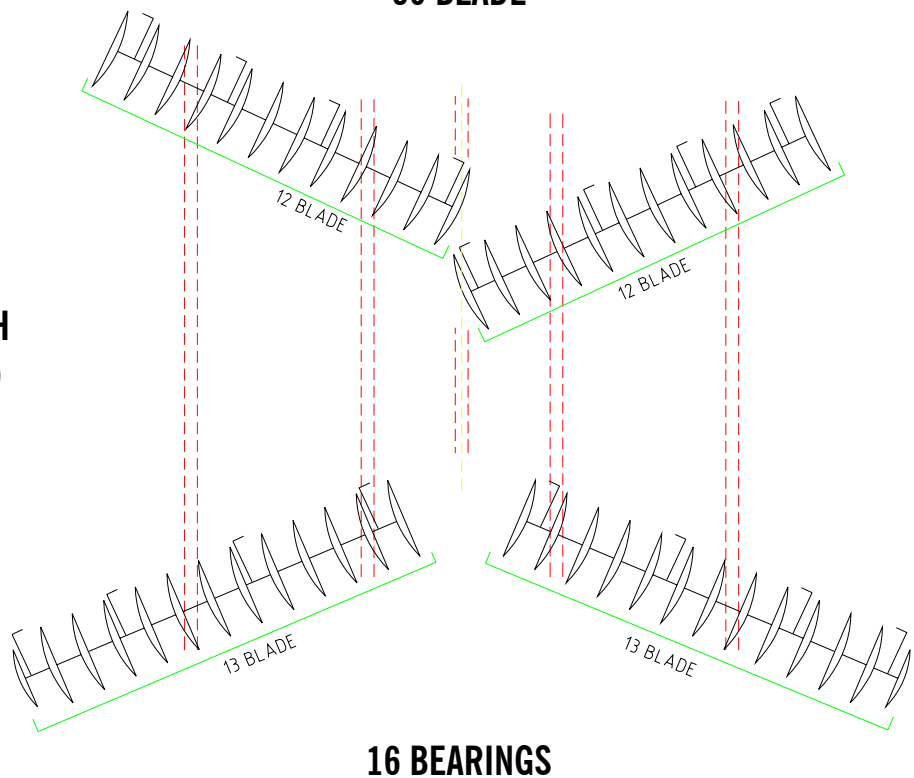
MODEL 4300
DISC GANG PATTERN - 10-1/2" (267 mm) SPACING
FRONT
46 BLADE

APPROX. WIDTH
20 ft. (6.09 m.)



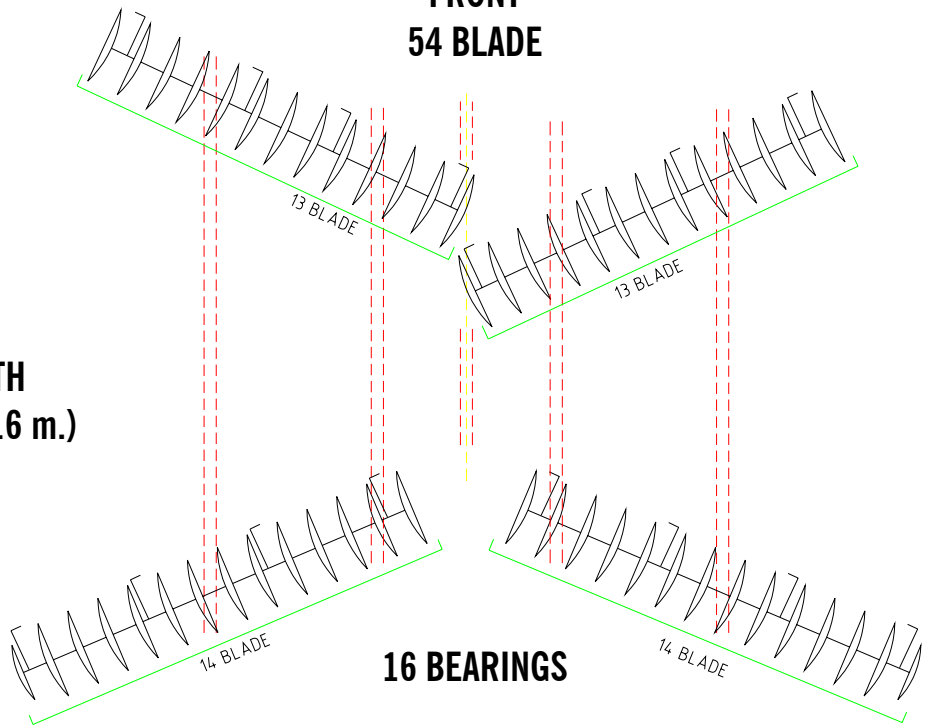
MODEL 4300
DISC GANG PATTERN - 10-1/2" (267 mm) SPACING
FRONT
50 BLADE

APPROX. WIDTH
22 ft. (6.70 m.)



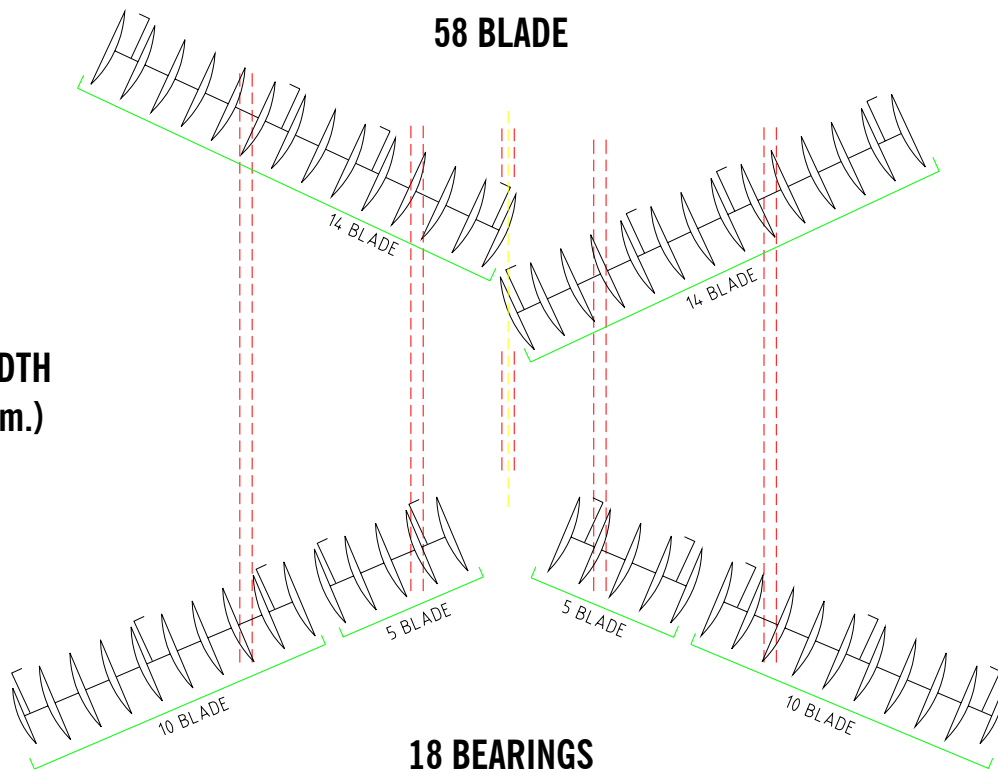
MODEL 4300
DISC GANG PATTERN - 10-1/2" (267 mm) SPACING
FRONT
54 BLADE

APPROX. WIDTH
23-1/2 ft. (7.16 m.)



MODEL 4300
DISC GANG PATTERN - 10-1/2" (267 mm) SPACING
FRONT
58 BLADE

APPROX. WIDTH
25 ft. (7.62 m.)



MODEL 4290 - 4300
DISC GANG PATTERN 10-1/2" SPACING

MODEL 4290 - 4300
DISC GANG PATTERN 10-1/2" SPACING

PARTS LIST INDEX

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MODEL 4300 DISC GANG ASSEMBLY		49
MODEL 4290 SCRAPER ASSEMBLY		50
MODEL 4300 SCRAPER ASSEMBLY		50
PAINT and DECALS		
PART NO.	DESCRIPTION	QTY. REQ'D
L001	EZEE-ON YELLOW - 1 Quart can	*
L002	EZEE-ON YELLOW - 1/2 pint	*
L010	EZEE-ON DECAL	*
	DANGER DECAL	1
	CAUTION DECAL	1

FRAME, HITCH, and LEVELING CRANK

ROCKSHAFT and WHEEL

REF. NO.	PART NO.	DESCRIPTION	QTY REQ'D
1		Main Frame c/w 2 hinge bolts, washers, nuts, and gang pins - ref. #3, 4, 5, 6 and 7	1
2		Wing Frame c/w 2 gang pins - ref. #7	1
3		Hinge Bolt - 12-1/2" overall length	2
4		Rear Hinge Bolt Shim	1
5	DH3	Washer - 4" O.D. x 2" I.D.	2
6	DG82	2" N.C. Slotted Nut	2
7	DF37	Gang Beam Retainer Pin	4
8	DHB8554	Hitch c/w Pins and Crank Lug - ref. 16, 17, 19, 20, 22, 23, 25 and 27	1
9		Hose Support	1
10	DCA3	Crank - 33" Long	1
11	DC5187	Compression Spring - Leveling Crank - 5" Long	2
12	DC15	Thrust Bearing - Timken #T199	2
13	DCA5184	Bearing Tube - Leveling Crank	1
14	DH5	2" N.C. Heavy Hex Nut - drilled for set screw	1
15	DCA8577	Leveling Link - 29" Pipe Length	1
16	DH5146	Leveling Arm Lug	1
17		1/2" x 5" N.C. Hex Bolt	--
18	DR5215	1-1/4" x 4-3/4" Hex Bolt - special	--
19		5/8" N.C. Hex Nut	--
20		1/2" N.C. Hex Nut	1
21		1-1/4" N.C. Hex Nut	4
22		5/8" Lockwasher	1
23		1/2" Lockwasher	1
24		1-1/4" Lockwasher	--
25		5/16" x 1-3/4" Cotter Pin	4
26		3/16" x 1-1/4" Cotter Pin	2
27	DH8562	1-1/4" x 4-1/2" Hitch Pin	1
28		3/8" x 3" Cotter Pin	1
29	DHB5170	Hitch Jack	1

REF. NO.	PART NO.	DESCRIPTION	QTY REQ'D
30		Main Frame Rockshaft	1
31		Wing Frame Rockshaft	1
32	DR8601-T	Rockshaft Bearing - Top	7
33	DR8601-B	Rockshaft Bearing - Bottom	7
34		618 Spindle - 14-1/2" Long	*
35		Grease Seal - NOK #AF7879E	*
36	DR122	Inner Cone Bearing #25580	*
37	DR120	Inner Cup #25520	*
38	DR118	Hub Cap	*
39	DRA9	Outer Cup - #LM48548	*
40	DR92	Outer Cone Bearing - #LM48548	*
41	DR91	2" O.D. x 1-1/16" I.D. x 1/8" Flatwasher	*
42		1" N.F. Hex Slotted Nut	*
43	DR110	Hub Cap	*
44	DR123	Wheel Rim - 15" x 8" - 6 Hole Rim 9.5L x 15 Tire of 11L x 15 Tire	*
45	DR127	9/16" x 1-1/8" N.C. Wheel Studs	*
46	DR125	3/4" x 6-1/2" Hex Bolt	4
47		3/4" Lockwasher	10
48		3/4" N.C. Hex Nut	10
49		5/8" N.C. Hex Nut	20
50		1/4" x 28 Grease Fitting	5
51	10GN1	5/8" Lockwasher	12
52		1-1/4" Ball Joint - Weld-On	1
53	DR5227	Hair Pin Cotter	1
54	DW5	3/16" x 1-1/4" Cotter Pin	1
55	CR50692	2" x 2-7/8" Rockshaft Bearing Shim	*

HYDRAULIC SYSTEM

REF. NO	PART NO.	DESCRIPTION	QTY REQ'D
1	214, 242	5" x 36" Wing Lift Cylinder	1
2	241	4" x 24" Rockshaft Cylinder	1
3		3/8" x 90 Degree Street Elbow - Steel	1
4		3/8" Male - Female Swivel Adapter c/w 1/16" orifice	1
5		3/8" x 90 Degree Swivel Street Elbow	1
6	DR5252	Cylinder Pin - 1-1/4" Diameter x 4-3/4" Long	6
7		1/2" x 198" Hose w/1/2" Ends	1
8		1/2" x 172" Hose w/1/2" Ends	1
9		3/8" x 3/8" Hose - one 3/8" end and one 1/2" end	1
10		3/8" x 279" Hose - one 3/8" end and one 1/2" end	1
11	DL5068	1/2" x 90 Degree Street Elbow - Steel	2
12		Spacer Washer - 1-9/32" I.D. x 2" O.D.	2
13		Clamp - 2 Hole - for 3/8" Hose	2
14		1/2" x 1" N.C. Hex Bolt	8
15		5/16" x 1-3/4" Cotter Pin	1
16	CR50711	Depth Control Collar - 1" Long	1
17	CR50712	Depth Control Collar - 1-1/2" Long	1
18	CR50713	Depth Control Collar - 1-3/4" Long	1
19	CR50717	Depth Control Collar - 4-1/4" Long	1
20		8-1/2" Depth Control Package - all of the above stop collars	1

FRONT GANG BEAMS - MODEL 4290 - 4300 REAR GANG BEAMS - MODEL 4290 - 4300

REF. NO.	PART NO.	DESCRIPTION	QTY REQ'D
1		8" Spacing Model - 4290 Disc Only	
	DBS4-105	105" Gang Beam - 4" x 4" - 46 blade disc	2
	DBS4-112	112" Gang Beam - 4" x 4" - 50 blade disc	2
	DBS4-112	112" Gang Beam - 4" x 4" - 54 blade disc	2
	DBS4-112	120" Gang Beam - 4" x 4" - 58 blade disc	2
	DBS4-120	120" Gang Beam - 4" x 4" - 62 blade disc	2
	DBS4-120	136" Gang Beam - 4" x 4" - 66 blade disc	2
	DBS4-120	144" Gang Beam - 4" x 4" - 70 blade disc	2
		9" Spacing Model - 4290 Disc Only	
	DBS4-136	105" Gang Beam - 6" x 4" - 42 blade disc	2
	DBS4-144	112" Gang Beam - 6" x 4" - 46 blade disc	2
		116" Gang Beam - 6" x 4" - 50 blade disc	2
		126" Gang Beam - 6" x 4" - 54 blade disc	2
		136" Gang Beam - 6" x 4" - 58 blade disc	2
		144" Gang Beam - 6" x 4" - 62 blade disc	2
		9" Spacing Model - 4300 Disc Only	
	DBS4-105	105" Gang Beam - 6" x 4" - 42 blade disc	2
	DBS4-112	112" Gang Beam - 6" x 4" - 46 blade disc	2
	DBS4-116	116" Gang Beam - 6" x 4" - 50 blade disc	2
	DBS4-116	126" Gang Beam - 6" x 4" - 54 blade disc	2
	DBS4-126	136" Gang Beam - 6" x 4" - 58 blade disc	2
	DBS4-126	144" Gang Beam - 6" x 4" - 62 blade disc	2
		10-1/2" Spacing Model - 4300 Disc Only	
	DBS4-136	112" Gang Beam - 6" x 4" - 38 blade disc	2
	DBS4-144	112" Gang Beam - 6" x 4" - 42 blade disc	2
		120" Gang Beam - 6" x 4" - 46 blade disc	2
		136" Gang Beam - 6" x 4" - 50 blade disc	2
		144" Gang Beam - 6" x 4" - 54 blade disc	2
		12" Spacing Model - 4300 Disc Only	
	DBS-105	112" Gang Beam - 6" x 4" - 34 blade disc	2
	DBS-112	112" Gang Beam - 6" x 4" - 38 blade disc	2
	DBS-116	112" Gang Beam - 6" x 4" - 42 blade disc	2
	DBS-126	120" Gang Beam - 6" x 4" - 46 blade disc	2
	DBS-136	136" Gang Beam - 6" x 4" - 50 blade disc	2
	DBS-144		
		DBS-112	
		DBS-112	
		DBS-120	
		DBS-136	
		DBS-144	
		DBS-112	
		DBS-112	
		DBS-112	
		DBS-120	
		DBS-136	
	DBS-144		
	DBS-112		
	DBS-112		
	DBS-112		
	DBS-120		
	DBS-136		
	DBS-144		

REF. NO.	PART NO.	DESCRIPTION	QTY REQ'D
2		8" Spacing Model - 4290 Disc Only	
	DBS4-105	105" Gang Beam - 4" x 4" - 46 blade disc	2
	DBS4-112	112" Gang Beam - 4" x 4" - 50 blade disc	2
	DBS4-120	112" Gang Beam - 4" x 4" - 54 blade disc	2
	DBS4-128	120" Gang Beam - 4" x 4" - 58 blade disc	2
	DBS4-136	120" Gang Beam - 4" x 4" - 62 blade disc	2
	DBS4-144	136" Gang Beam - 4" x 4" - 66 blade disc	2
	DBS4-152	144" Gang Beam - 4" x 4" - 70 blade disc	2
		9" Spacing Model - 4290 Disc Only	
	DBS4-105	105" Gang Beam - 4" x 4" - 42 blade disc	2
	DBS4-112	112" Gang Beam - 4" x 4" - 46 blade disc	2
	DBS4-116	116" Gang Beam - 4" x 4" - 50 blade disc	2
	DBS4-126	126" Gang Beam - 4" x 4" - 54 blade disc	2
	DBS4-136	136" Gang Beam - 4" x 4" - 58 blade disc	2
	DBS4-144	144" Gang Beam - 4" x 4" - 62 blade disc	2
		9" Spacing Model - 4300 Disc Only	
	DBS-105	105" Gang Beam - 6" x 4" - 42 blade disc	2
	DBS-112	112" Gang Beam - 6" x 4" - 46 blade disc	2
	DBS-116	116" Gang Beam - 6" x 4" - 50 blade disc	2
	DBS-126	126" Gang Beam - 6" x 4" - 54 blade disc	2
	DBS-136	136" Gang Beam - 6" x 4" - 58 blade disc	2
	DBS-144	144" Gang Beam - 6" x 4" - 62 blade disc	2
		10-1/2" Spacing Model - 4300 Disc Only	
	DBS-112	112" Gang Beam - 6" x 4" - 38 blade disc	2
	DBS-112	112" Gang Beam - 6" x 4" - 42 blade disc	2
	DBS-120	120" Gang Beam - 6" x 4" - 46 blade disc	2
	DBS-136	136" Gang Beam - 6" x 4" - 50 blade disc	2
	DBS-144	144" Gang Beam - 6" x 4" - 54 blade disc	2
		12" Spacing Model - 4300 Disc Only	
	DBS-112	112" Gang Beam - 6" x 4" - 34 blade disc	2
DBS-112	112" Gang Beam - 6" x 4" - 38 blade disc	2	
DBS-112	112" Gang Beam - 6" x 4" - 42 blade disc	2	
DBS-120	120" Gang Beam - 6" x 4" - 46 blade disc	2	
DBS-136	136" Gang Beam - 6" x 4" - 50 blade disc	2	

If disc is equipped with stabilizer beams. Order front gang beam 6" longer than length listed. This applies only to models with asterisk beside gang beam number.

GANG BEAMS - MODELS 4290 - 4300

REF. NO	PART NO.	DESCRIPTION	QTY REQ'D
5		Gang Beam Clamp Plate - Model 4290 Only	16
		Gang Beam Clamp Plate - Model 4300 Only	16
6	DG163	Front Gang Beam Shim - Model 4300 Only - used to prevent front gangs from ridging - Not Supplied as standard equipment	*
7		1-1/4" x 7-1/2" N.C. Hex Bolt	16
8		1-1/4" N.C. Hex Nut - All Models	16
9	DGA5348	Wrench for 1-1/4" Hex Bolts - All Models	2
10	DG	Handle Extension - for wrench	1
11	DGA8634	Front Gang Beam Shim - Model 4290 Only - used to prevent front gangs from ridging - Not Supplied as standard equipment	*

DISC GANG - MODEL 4290 DISC GANG - MODEL 4290

REF. NO.	PART NO.	DESCRIPTION	QTY REQ'D	REF. NO.	PART NO.	DESCRIPTION	QTY REQ'D
1	DG64 DG60 DG68 DG76 DG137	22" x 6mm (.236) plain disc blade 22" x 7mm (.275) plain disc blade 24" x 6mm (.236) plain disc blade 24" x 7mm (.275) plain disc blade 24" x 8mm (5/16) plain disc blade	* * * * *		DGA66 DGA67 DGA68 DGA69 DGA70 DGA71 DGA72 DGA73 DGA74	Gang Bolt for 9" Spacing 6 blade - 50-3/4" long 7 blade - 60-1/2" long 8 blade - 69-3/4" long 9 blade - 78-3/4" long 10 blade - 88-1/4" long 11 blade - 97-1/2" long 12 blade - 106-3/4" long 13 blade - 115-3/4" long 14 blade - 125" long	* * * * * * * * *
2	DG61 DG138	22" x 7mm (.275) notched disc blade 24" x 8mm (5/16) notched disc blade	* *	16 17	DGA35 DG6080	Socket Wrench 5/8" x 4" x 5-7/16" long U-bolt - rigid hanger	1 *
3	DG84 DG133 DG134	16" x 4mm (.157) plain outrigger blade 18" x 5mm (.197) plain outrigger blade 20" x 5mm (.197) plain outrigger blade	* * *	18 19	10GN1	1/4" x 28" Grease fitting 7/16" x 3" lock pin	* *
4	DG82	2" N.C. heavy hex slotted nut	*	20		1/2" x 2-1/4" N.C. Hex Bolt - 211 series bearings 5/8" x 2-1/4" N.C. Hex Bolt - 410 series bearings	* *
5	DG89	1/4" x 2" I.D. shim washer	*	21		1/2" N.C. Hex Nut - for 211 series bearing 5/8" N.C. Hex Nut - for 410 series bearing	* *
6	DG88	1/2" x 2" I.D. shim washer	*	22		5/8" N.C. Hex Nut	*
7	DG78	5" O.D. x 2" I.D. x 5/8" head washer	*	23		1/2" Lockwasher - for 211 series bearing 5/8" Lockwasher - for 410 series bearing	* *
8	DGA108 DGA97	8" Spacing Short Half Spool - 2-3/8" long 9" Spacing Short Half Spool - 3-1/4" long w/5" washer	* *	24		5/8" Lockwasher	*
9	DGA102 DGA113	8" and 9" Spacing Long Half Spool - 4-7/16" long 8" Spacing Full Spool - 8" long	* *	25 26	DG10290 DG8150	3/4" x 4" x 7" long U-bolt - stone flex hanger 1-1/4" x 2" Spring Shank - stone flex hanger	* *
10	DGA98	9" Spacing Full Spool w/5" end washers - 9" long	*	27 28	DGA8612	Scraper Bar Support Bracket - standard stone flex hanger Scraper Bar Support Bracket - 2" offset stone flex hanger - front R.H. and rear L.H. Scraper Bar Support Bracket - 2" offset stone flex hanger - front L.H. and rear R.H.	* * *
11		211 Series Bearing Housing Only	*	29	DGA10295	Backing Plate for 3/4" U-bolt - stone flex hanger	*
12	DG95 DG38	211 Series Greaseable Bearing EZ410N Series Greaseable Bearing	* *	30	DG5342	L.H. Mounting Bracket for 211 series - stone flex hanger	*
13	DGB5334 DGB5335	211 Housing c/w bearing and grease fitting EZ410N Housing c/w bearing and grease fitting	* *	31	DG5343 DG5324	R.H. Mounting Bracket for 211 series - stone flex hanger Mounting Plate for 214 series bearing - stone flex hanger	* *
14	DGA6089 DGA6090 DGA10280 DGA10281	Front L.H., Rear R.H. straight bearing hanger - 211 series bearing Front R.H., Rear L.H. straight bearing hanger - 211 series bearing Front L.H., Rear R.H. straight bearing hanger - 410 series bearing Front R.H., Rear L.H. straight bearing hanger - 410 series bearing	* * * *	32		2" Offset Mounting Bracket for 211 series stone flex hanger - front R.H. and rear L.H. 2" Offset Mounting Bracket for 211 series stone flex hanger - front L.H. and rear R.H. 2" Offset Mounting Bracket for EZ410N series bearing	* * *
15	DGA86 DGA87 DGA88 DGA89 DGA90 DGA70 DGA92 DGA93 DGA94 DGA95	Gang Bolt for 8" Spacing 6 blade - 46" long 7 blade - 54-1/2" long 8 blade - 62-3/4" long 9 blade - 71" long 10 blade - 79-1/2" long 11 blade - 88-1/4" long 12 blade - 96" long 13 blade - 104-1/4" long 14 blade - 112-1/2" long 15 blade - 121" long	* * * * * * * * * *	33 34 35		3/4" Lockwasher 3/4" N.C. Hex Nut 3/4" x 3-1/2" N.C. Hex bolt	* * *
				36	DG236 DG237	211 Gang Bearing Shield 214 Gang Bearing Shield	* *
				37	DGA5370	5" O.D. x 2" I.D. washer - weld-on	*

* as required

DISC GANG - MODEL 4300 DISC GANG - MODEL 4300 ONLY

REF. NO.	PART NO.	DESCRIPTION	QTY REQ'D	REF. NO.	PART NO.	DESCRIPTION	QTY REQ'D
1	DG60 DG76 DG137 DG74	22" x 7mm (.275) plain disc blade 24" x 7mm (.275) plain disc blade 24" x 8mm (5/16) plain disc blade 26" x 8mm (5/16) plain disc blade	* * * *			Gang Bolt for 12" Spacing - includes washer	
		26" x 8mm (5/16) cone disc blade - rigid hanger	*		DGA115	6 blade - 67-3/4" long	*
2	DG61 DG138 DG75 DG158	22" x 7mm (.275) notched disc blade 24" x 8mm (.275) notched disc blade 26" x 8mm (5/16) notched disc blade 26" x 8mm (5/16) cone disc blade - rigid hanger	* * * *		DGA69	7 blade - 80" long	*
					DGA79	8 blade - 92" long	*
3	DG133 DG134 DG64	18" x 5mm (.197) plain outrigger blade 20" x 5mm (.197) plain outrigger blade 22" x 6mm (.236) plain outrigger blade	* * *		DGA118	9 blade - 104-3/4" long	*
					DGA119	10 blade - 117" long	*
4	DG82	2" N.C. heavy hex slotted nut	*		DGA120	11 blade - 129" long	*
5	DG89	1/4" x 2" I.D. shim washer	*		DGA121	12 blade - 141-3/4" long	*
6	DG88	1/2" x 2" I.D. shim washer	*		DGA122	13 blade - 153-3/4" long	*
7	DG78	5" O.D. x 2" I.D. x 5/8" head washer	*	16	DGA35	Socket Wrench	*
8	DGA106 DGA110	9-1/2" Spacing Short Half Spool - 3-1/4" long w/6" washer - convex side 12" Spacing Short Half Spool - 4-3/4" long w/5" washer - convex side	* *	17	DG5314	7/8" x 7" C.C. x 6-3/8" long U-bolt - standard hanger	*
9	DGA102 DGA103	8" and 9" Spacing Long Half Spool - 4-7/16" long - concave side 9" Spacing Long Half Spool - 4-3/16" long - concave side	* *	18	10GN1	1/4" x 28" Grease fitting	*
10	DGA104 DGA105 DGA100	10-1/2" Spacing Long Half Spool - 5-15/16" long - concave side 10-1/2" and 12" Spacing Long Half Spool - 5-11/16" long - concave side 9" Spacing Full Spool - 6" diameter one end	* * *	19		7/16" x 3" lock pin	*
	DGA101 DGA111	10-1/2" Spacing Full Spool - 6" diameter both ends 12" Spacing Full Spool - 6" diameter both ends	* *	20		1/2" x 2" N.C. Hex Bolt - 211 series bearings 5/8" x 2-1/4" N.C. Hex Bolt - EZ410N series bearings	* *
12		211 Series Bearing Housing Only	*	21		1/2" N.C. Hex Nut - for 211 series bearing 5/8" N.C. Hex Nut - for EZ410N series bearing	* *
13	DG95 DG38	EZ410N Series Bearing Housing Only 211 Series Greaseable Bearing	* *	22		7/8" N.C. Hex Nut	*
14	DGB5334 DGB5335	EZ410N Series Greaseable Bearing 211 Housing c/w bearing and grease fitting EZ410N Housing c/w bearing and grease fitting	* * *	23		1/2" Lockwasher - for 211 series bearing 5/8" Lockwasher - for EZ410N series bearing	* *
	DGA5315 DGA5317 DGA5318 DGA5319	Front L.H., Rear R.H. straight bearing hanger - 211 series bearing Front R.H., Rear L.H. straight bearing hanger - 211 series bearing Front L.H., Rear R.H. straight bearing hanger - EZ410N series bearing Front R.H., Rear L.H. straight bearing hanger - EZ410N series bearing	* * * *	24		7/8" Lockwasher	*
15	DGA66 DGA67 DGA68 DGA69 DGA70 DGA71 DGA72 DGA73 DGA74	Gang Bolt for 9" Spacing 6 blade - 52" long 7 blade - 61-3/4" long 8 blade - 71" long 9 blade - 80" long 10 blade - 89-1/2" long 11 blade - 98-3/4" long 12 blade - 108" long 13 blade - 117-1/2" long 14 blade - 126-1/2" long	* * * * * * * * *	25	DGA5320 DGA5321 DGA5322 DGA5323	Front R.H., Rear L.H. 2" offset bearing hanger - 211 series bearing - 7/8" x 6" U-bolt Front L.H., Rear R.H. 2" offset bearing hanger - 211 series bearing - 7/8" x 6" U-bolt Front R.H., Rear L.H. 2" offset bearing hanger - EZ410N series bearing - 7/8" x 6" U-bolt Front L.H., Rear R.H. 2" offset bearing hanger - EZ410N series bearing - 7/8" x 6" U-bolt	* * * *
	DGA79 DGA80 DGA81 DGA82 DGA83 DGA84	Gang Bolt for 10-1/2" Spacing - includes washer 9 blade - 92" long 10 blade - 103" long 11 blade - 113-3/4" long 12 blade - 124-3/4" long 13 blade - 135-1/2" long 14 blade - 146-1/2" long	* * * * * *	26	DG5325 DG5313 DGA5328	7/8" U-bolt x 7" C.C. x 7-5/8" long - stone flex hanger Spring Shank - 1-1/4" x 2-1/2" - stone flex hanger Backing Plate - stone flex hanger	* * *
				27	DGA5333	Scraper Bar Support Bracket - standard stone flex hanger - 10-1/2" and 12" spacing	*
				28	DGA5336 DGA5337	Scraper Bar Support Bracket - 2" offset stone flex hanger - front L.H. and rear R.H. Scraper Bar Support Bracket - 2" offset stone flex hanger - front R.H. and rear L.H.	* *
				29	DG237	L.H. Mounting Bracket for 211 series - stone flex hanger	*
				30		R.H. Mounting Bracket for 211 series - stone flex hanger	*
				31	DGA5370	1-1/2" Offset Mounting Bracket for 211 series stone flex hanger - L.H. 1-1/2" Offset Mounting Bracket for 211 series stone flex hanger - R.H.	* *
				32		2" Offset Mounting Bracket for 211 series stone flex hanger -L.H. 2" Offset Mounting Bracket for 211 series stone flex hanger -R.H.	* *
						1-1/2" Offset Mounting Bracket for EZ410N series bearing 2" Offset Mounting Bracket for EZ410N series bearing	* *
						1/2" x 2-1/4" N.C. Hex bolt - 211 series bearing 5/8" x 2-1/4" N.C. Hex bolt - EZ410N series bearing	* *
				33		3/4" Lockwasher	*
				34		3/4" N.C. Hex Nut	*
				35		3/4" x 3-1/2" N.C. Hex bolt	*
				36		211 Gang Bearing Shield 214 Gang Bearing Shield	* *
				37		5" O.D. x 2" I.D. weld-on washer - supplied not welded to gang bolt	*

* as required

SCRAPER ASSEMBLY - MODEL 4290 SCRAPER ASSEMBLY - MODEL 4300

REF. NO.	PART NO.	DESCRIPTION	QTY REQ'D
1	DG5300 DG5301	Scraper - Front L.H. & Rear R.H. - used with 5/8" x 6" hanger Scraper - Front R.H. & Rear L.H. - used with 5/8" x 6" hanger	* *
		Scraper Bars for 8" Spacing	
2	DS45 DS52 DS64 DS60 DS73 DS82 DS78 DS92 DS88	6 Blade - 49" 7 Blade - 57-1/2" 8 Blade - 65-1/2" 9 Blade - 73-1/2" 10 Blade - 82" 11 Blade - 90" 12 Blade - 99" 13 Blade - 107" 14 Blade - 115-1/2" 15 Blade - 123"	* * * * * * * * * *
		Scraper Bars for 9" Spacing	
3	DS110 DS107 DS115 DS129 DS41 DS36 DS52 DS58 DS82	6 Blade - 55" 7 Blade - 64" 8 Blade - 73-1/2" 9 Blade - 82" 10 Blade - 92" 11 Blade - 101-1/2" 12 Blade - 110" 13 Blade - 120" 14 Blade - 129-1/2"	* * * * * * * * *
4	DS105	1/2" x 2-9/16" long U-bolt	*
5	DS127	5/8" x 2-11/16" long U-bolt	*
6	DS149	1/2" N.C. Hex Nut	*
7	DS32	5/8" N.C. Hex Nut	*
8	DS45	1/2" Lockwasher	*
9	DS66	5/8" Lockwasher	*

REF. NO.	PART NO.	DESCRIPTION	QTY REQ'D
1	DG5300 DG5301 DG5304 DG5305	Scraper - Front L.H. & Rear R.H. - used with 5/8" x 6" hanger Scraper - Front R.H. & Rear L.H. - used with 5/8" x 6" hanger Scraper - Front L.H. & Rear R.H. - for cone blades only Scraper - Front R.H. & Rear L.H. - for cone blades only	* * * *
		Scraper Bars for 9" Spacing	
2	DS45 DS52 DS64 DS60 DS73 DS82 DS78 DS92 DS88	6 Blade - 7 Blade - 8 Blade - 9 Blade - 10 Blade - 11 Blade - 12 Blade - 13 Blade - 14 Blade -	* * * * * * * * *
		Scraper Bars for 10-1/2" Spacing	
3	DS110 DS107 DS115 DS129 DS41 DS36	9 Blade - 10 Blade - 11 Blade - 12 Blade - 13 Blade - 14 Blade -	* * * * * *
		Scraper Bars for 12" Spacing	
4	DS52 DS58 DS82	6 Blade - 7 Blade - 8 Blade - 9 Blade - 10 Blade - 11 Blade - 12 Blade -	* * * * * * *
5	DS105	1/2" x 2-9/16" long U-bolt	*
6	DS127	5/8" x 2-11/16" long U-bolt	*
7	DS149	1/2" N.C. Hex Nut	*
8	DS32	5/8" N.C. Hex Nut	*
9	DS45	1/2" Lockwasher	*
10	DS66	5/8" Lockwasher	*