

Ezee-On

MODEL 4490 DISC MEDIUM DUTY TANDEM 3 SECTION FRAME

OWNER'S MANUAL

c/w

ASSEMBLY INSTRUCTIONS

and

PARTS LIST

Manufactured by

Ezee-On Mfg. Ltd.

Vegreville, Alberta

Canada

Printed in Canada

642C

EZEE-ON MANUFACTURING

Limited Warranty Policy

Ezee-On Manufacturing's products are warranted to the original non-commercial purchaser to be free from defects in material and workmanship for a minimum period of twelve (12) months from the original date of purchase.

Ezee-On Manufacturing's obligation under this warranty shall be limited to the repair or exchange, at Ezee-On's option, free of charge to the original purchaser, any part or component that, in our judgment, shows evidence of such defect. Further, that such part shall be returned within thirty (30) days from date of failure to Ezee-On Manufacturing, routed through the dealer and distributor from whom the equipment was purchased, **transportation charges prepaid**.

This warranty shall not be interpreted to render Ezee-On Manufacturing liable for injury or damages of any kind or nature to person or property. This warranty does not include claims for, or extend to the loss or damage of crops, loss because of delay in seeding/ planting or harvesting, or any expense or loss incurred for labor, substitute machinery, rental, transportation expense or for any other reason.

Except as set forth above, Ezee-On Manufacturing shall have no obligation or liability of any kind on account of any of its equipment and shall not be liable for special or consequential damages. Ezee-On Manufacturing makes no other warranty, expressed or implied, and, specifically, Ezee-On Manufacturing disclaims any implied warranty or merchantability or fitness for a particular purpose. The purchaser is solely responsible for determining suitability of Ezee-On equipment purchased. This warranty is subject to any existing conditions of supply, which may directly affect our ability to obtain materials or manufacture replacement parts.

Ezee-On reserves the right to make improvements in the design of products and/ or changes in specifications at any time, without incurring any obligation to owners of units previously sold. No one other than Ezee-On Manufacturing is authorized to alter, modify or enlarge this warranty.

Genuine Ezee-On replacement parts and components will be warranted for 90 days from date of purchase, or the remainder of the original equipment warranty period, whichever is longer.

Under no circumstances will this warranty cover any merchandise or components thereof, which, in the opinion of the Company, has been subjected to misuse, unauthorized modifications, alteration, an accident or if repairs have been made with parts other than those obtainable through Ezee-On Manufacturing.

Commercial Use: Warranty for commercial, rental or custom use of any Ezee-On product is limited to 90 days, parts and labor.

Twelve Months Warranty:

All Ezee-On manufactured products are warranted for twelve consecutive months from the date of delivery of the new Ezee-On product to the original non-commercial purchaser.

- 1-12 Months: 100% parts and labor coverage

Extended Coverage Limited Warranty (24 additional months):

Air Drills, Coulter Drills, Air Carts, Cultivators, Chisel Plows, Offset and Tandem Discs and Post Drivers carry limited extended warranty. Ezee-On Manufacturing's obligations under this extended warranty coverage shall be limited to repair or exchange, at Ezee-On Manufacturing's option, for the original, non-commercial owner:

- 13-24 Months: 100% Ezee-On manufactured components only, NO labour – see below for description
- 25-36 Months: 50% Ezee-On manufactured components only, NO labour – see below for description

Ezee-On manufactured components are, but not limited to: frames, axles, hitches, castor assemblies, packers, turnbuckles, rockshafts, packer frames, packers – steel, tanks – air cart seed and fertilizer tanks, seed cups, metering rollers.

NON Ezee-On manufactured components are, but not limited to: Monitors, tires, rims, bearings, hydraulics: motors, pumps, controls, cylinders, hoses and valves; sprockets, chain, rubber packer wheel tires, polyurethane wheel mounted packers, coulter blades, shanks, springs, bolts, pulleys, air hoses, sweeps, spikes, spoons, seals, power wheels, hitch jacks, hubs and wheels.

The Company in no way warrants engines, batteries, coulter assemblies, rubber tires, or other trade accessories since these items are warranted separately by their respective manufacturers.

T2-215 Bearing Extended Coverage Limited Warranty:

Seven year limited warranty: Extended coverage (13-84 months) on T2-215 Series bearing is limited to the replacement of ball bearings and seals for the original, non-commercial owner. Associated bearing parts, labor, freight, etc., are not covered.

Warranty Limitations and/ or Exclusions:

1. Buckets & bucket tines, bale spears & tines, grapple tines, pallet forks, shanks, all ground engaging tools, disc openers and disc blades, air seeder hose and normal wear parts/ items carry NO warranty.
2. There is no warranty coverage if parts or attachments, other than those made or marketed by Ezee-On Manufacturing have been used in connection with the unit, and in the sole judgment of Ezee-On, such use affects its performance or reliability.
3. If the equipment has been altered or repaired in a manner which, in the sole judgment of Ezee-On, affects its performance, stability or reliability.
4. The purchaser shall be responsible for dealer travel time to the machine or to deliver the machine to the dealer's service shop for repair. Ezee-On Manufacturing does not cover delivery charges or travel time.

This warranty policy is subject to change without prior written notice at Ezee-On Manufacturing's sole discretion.

Revision: September 1, 2004

EZEE-ON MANUFACTURING

Warranty Registration Form

NOTE: Warranty reimbursement is contingent upon product registration. Please complete this form and forward by mail or fax to the address above.

OWNER'S NAME: _____

ADDRESS: _____

CITY: _____ STATE/ PROVINCE: _____

POSTAL/ ZIP CODE: _____

PHONE #: _____

EMAIL Address: _____

Model Purchased: _____

Serial Number: _____

Dealer's Name: _____

Dealer's Location: _____

I/ We acknowledge receipt of the Owner's manual for the above specified implement and acknowledge that the Owner's Manual contains the Limited Warranty Statement governing the implement purchased and also contains information vital to the proper and safe operation of this equipment.

Owner's Signature(s)

Date Signed

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 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 BOOK 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.

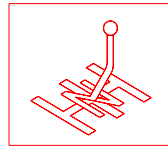


ASSEMBLY SAFETY

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 cylinders 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 wings will free-fall if the cylinders are 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.
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. Wings will free fall if wing cylinders is not full of oil causing serious damage to machine or serious injury or death to person(s) nearby.
12. When assembling gangs ensure adequate support is placed under main frame and wing frame. Do not use lock out valves as safety devise to prevent frame from falling. If any hydraulic component failed, disc could drop causing serious injury or death to person(s) nearby.

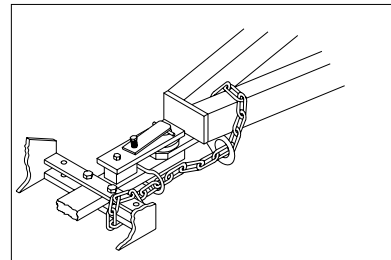
MAINTENANCE SAFETY

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 cylinders 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 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 a wing lift cylinders or wing lift hydraulic hoses are removed when wings are folded into transport position, always install a safety chain between wing frame and main frame to prevent wings from falling. If wings 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 6 of Operating Instructions on page 6. If hydraulic lever was accidentally operated the disc could drop or wings could fall causing serious injury or death to operator or person(s) nearby.
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 wings 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. 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.



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 person(s) 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" long) on shaft of main frame cylinder. If any component 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 person(s) 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 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.

STORAGE

1. Wings may unfold due to thermal expansion of hydraulic oil causing damage to disc, property or severe injury or death to person(s) nearby. Release pressure in all cylinders then close hydraulic lockup valves before unhitching from tractor or when parking with tractor.

SPECIFICATIONS

MODEL	WING WIDTH	BLADE SPACING	APPROXIMATE CUTTING WIDTH	NO. OF BLADES	NO. OF GANG BRGS	GANG BEARING TYPE		APPROX TRANSPORT WIDTH	APPROX TRANSPORT HEIGHT
4490-54SN	96" (2438mm)	8" (203mm)	18-1/2' (6.3m)	54	18	211	410WSS	11'6" (3.5m)	10'0" (3.1m)
4490-58SN		8" (203mm)	20' (6.0m)	58	20	211	410WSS		10'6" (3.2m)
4490-62SN		8" (203mm)	21' (6.4m)	62	20	211	410WSS		11'1" (3.4m)
4490-70N		8" (203mm)	24' (7.3m)	70	22	211	410WSS		12'4" (3.8m)
4490-74N		96" (2438mm)	25-1/2' (7.8m)	74	22	211	410WSS		12'11" (3.3m)
4490-78N		68" (1729mm)	27' (8.2m)	78	24	211	410WSS		13'7" (4.0m)
4490-86W		68" (1729mm)	29-1/2' (9.0m)	86	24	211	410WSS		14'10" (4.6m)
4490-94W		68" (1729mm)	32' (9.8m)	94	28	211	410WSS		16'1" (4.9m)
4490-46SN	96" (2438mm)	9" (229mm)	18' (5.5m)	46	20	211	410WSS	11'6" (3.5m)	10'0" (3.1m)
4490-50SN		9" (229mm)	19-1/2' (5.9m)	50	20	211	410WSS		10'9" (3.3m)
4490-54SN		9" (229mm)	21' (6.4m)	54	20	211	410WSS		11'6" (3.5m)
4490-62N		9" (229mm)	23-1/2' (7.2m)	62	22	211	410WSS		12'3" (3.7m)
4490-66N		68" (1729mm)	25' (7.6m)	66	22	211	410WSS		13'0" (4.0m)
4490-70N		68" (1729mm)	26-1/2' (8.1m)	70	22	211	410WSS		13'8" (4.2m)
4490-78W		68" (1729mm)	29-1/2' (9.0m)	78	24	211	410WSS		15'1" (4.6m)
4490-86W		96" (2438mm)	32-1/2' (9.9m)	86	26	211	410WSS		16'6" (5.1m)

TIRES

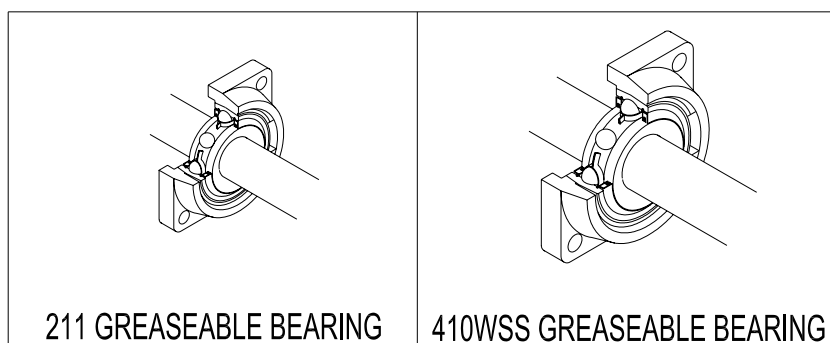
SIZE	TOTAL NO. of WHEELS	WING WHEEL TYPE	M/F TIRES		W/F TIRES	
			SIZE	PRESSURE	SIZE	PRESSURE
23-1/2' to 27' (7.2m to 8.2m)	6	SINGLE	11L x 15 FI Load Range "F"	55 PSI (380 kPa)	11L x 15 FI Load Range "D"	50 PSI (345 kPa)
29-1/2' to 32-1/2' (9.0m to 9.9m)	8	DUAL	11L x 15 FI Load Range "F"	55 PSI (380 kPa)	11L x 15 FI Load Range "D"	50 PSI (345 kPa)

GANG ANGLE - Front Gang - Fixed - 20 degrees
 - Rear Gang - Fixed - 17 degrees

HYDRAULIC CYLINDERS - Wing Lift (2) - 5" x 36" (127 mm x 914 mm)
 Lift (1) - 4" x 24" Rephasing (88.9 mm x 610 mm) Centre Frame
 (1) - 3-1/2" x 24" Rephasing (88.9 mm x 610 mm) L.H. Wing
 (1) - 3" x 24" Rephasing (76.2 mm x 610 mm) R.H. Wing

BOLT TORQUES - Gang Bolts ----- 1-15/16" (49 mm) Diameter 3200 ft. lbs. (4336 N . m)
 Leveling Crank Bolts ----- 1-1/4" (31mm) Diameter- 840 ft. lbs. (1138.2 N . m)
 Wheel Bolts----- 9/16" (14mm) Diameter 150ft. lbs. (203.25 N . m)
 Bearing Hanger U-Bolts -- 5/8" (15mm) Diameter -- 150 ft. lbs. (203.25 N . m) (Solid Hangers)
 Bearing Hanger U-Bolts -- 3/4" (19mm) Diameter - 260 ft. lbs. (352.3 N . m) (Stone Flex Hanger)

GANG BEARINGS



GENERAL OPERATING INSTRUCTIONS

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 WINGS TO FIELD POSITION, BE SURE WING LIFT CYLINDERS ARE 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 PERSON(S) NEARBY.

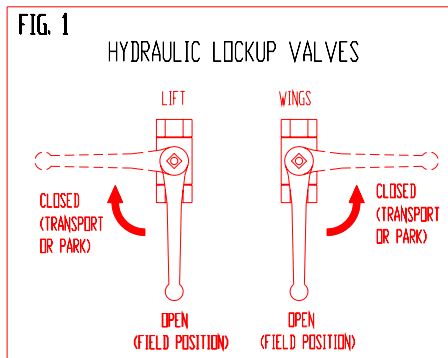
3. For best performance, the tractor drawbar should be pinned at centre of tractor.
4. Ensure disc is level and cutting depth is properly adjusted. If further adjustments are required, see pages 11 to 16.
5. Do not make sharp turns with the disc in ground. Sharp turns put excess pressure on the gangs.

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. 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.



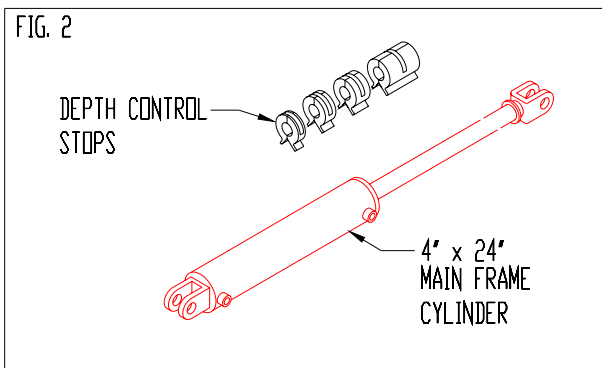
CAUTION: WHEN TRANSPORTING DISC ALWAYS PLACE BOTH HYDRAULIC LOCK UP VALVES IN "CLOSED" POSITION. IF THE HYDRAULIC LEVER WAS ACCIDENTALLY OPERATED THE DISC COULD DROP OR WINGS COULD FALL CAUSING SERIOUS INJURY OR DEATH TO OPERATOR OR PERSON(S) NEARBY.



7. See Fig. 2. When transporting disc always place the complete depth control package (17" long) on shaft of 4" x 24" centre frame lift cylinder.



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



8. **IMPORTANT:** WHEN TRANSPORTING DISC, DO NOT EXCEED SPEED OF 10 MPH (16 KM/H).
9. **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.
10. **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.

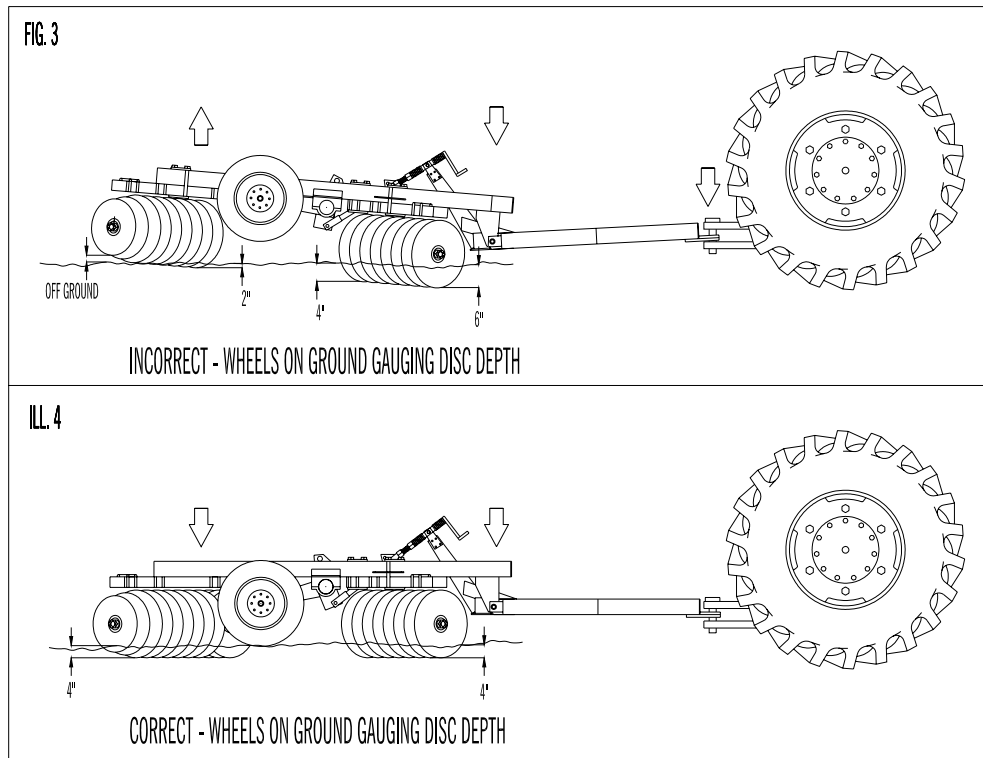
DO NOT PARK DISC WITH BLADES ON GROUND THAT MAY FREEZE. LEAVE DISC PARKED ON TRANSPORT WHEELS.

GENERAL OPERATING INSTRUCTIONS CONTINUED:

11. **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 19, SECTION 11.
12. **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



13. 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:

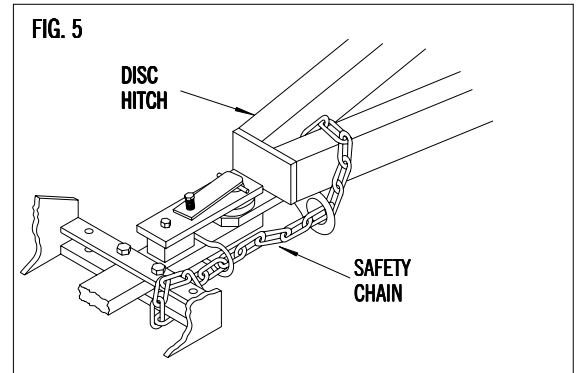
14. See Fig. 5. Attach a safety chain to the tractor drawbar and to the disc's hitch before transporting the disc. Use a chain with strength rating greater than the gross weight of disc. (Safety chain available as an option).



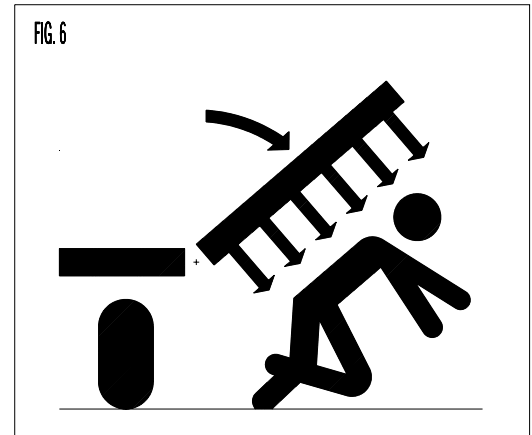
CAUTION:

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.



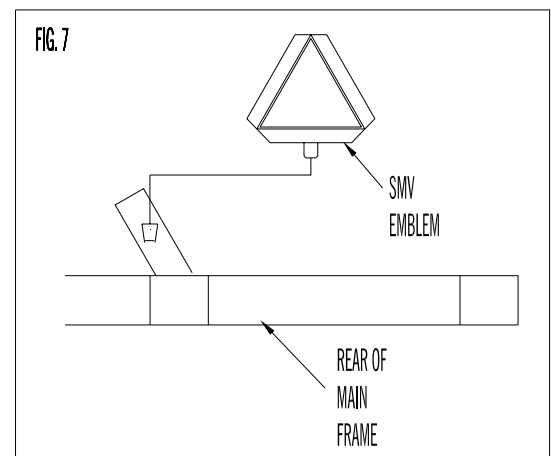
CAUTION: DO NOT STAND UNDER THE WING WHILE IT IS BEING RAISED OR LOWERED. IF ANY COMPONENT OF THE HYDRAULIC SYSTEM FAILED OR IF THE HYDRAULIC LEVER WAS ACCIDENTALLY OPERATED, WING COULD FALL. SEE FIG. 6.



15. See Fig. 7. Before transporting disc, install a SMV emblem (not supplied by Ezee-On) in the SMV bracket bolted to rear L.H. gang assembly of center frame.



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 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 WINGS 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 OR WING COULD FALL CAUSING SERIOUS INJURY OR DEATH TO OPERATOR OR PERSON(S) NEARBY.

16. Rephasing Rockshaft Cylinders - periodically the hydraulic lift cylinders on wing frames will not be synchronized with centre 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 all (3) rockshaft cylinders are fully extended



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 BLOCKS 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 TO ACCIDENTALLY OPERATED, THE DISC COULD DROP.



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

17. **IMPORTANT:** WHEN PARKING DISC ALWAYS RELEASE PRESSURE IN HYDRAULIC CYLINDERS. SERIOUS DAMAGE COULD OCCUR TO HYDRAULIC CYLINDER IF THERMAL EXPANSION OF HYDRAULIC OIL TAKES PLACE DUE TO WARMER WEATHER OR IF DISC IS STORED IN HEATED BUILDING.
18. **IMPORTANT:** WHEN PARKING DISC ALWAYS PLACE BOTH HYDRAULIC LOCKUP VALVES IN "CLOSED POSITION". SEE FIG. 1 ON PAGE 6.
19. **IMPORTANT:** IN DISCING CONDITIONS WHERE EXTREME WING FLEXIBILITY IS REQUIRED, REMOVE CYLINDER PIN FROM SHAFT END OF EACH WING LIFT CYLINDER AND RETRACT CYLINDERS.

WHEN REATTACHING SHAFT END OF WING LIFT CYLINDERS 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 SHAFTS BLOCK UP CYLINDER SO THAT CYLINDER SHAFT PASSES OVER CYLINDER LUGS.

ADJUSTMENTS

1. LATERAL ADJUSTMENT OF THE FRONT AND REAR GANGS

- 1) **FRONT GANGS** - See Fig. 9. Loosen U-Bolts which fasten bearing hangers to front gang beams. Adjust front gangs so that leading edge of inside blades are, arrow 1, are approximately 2-1/2" (63.5mm) past centre of disc. The centre of disc is shown in Fig. 9. If the above adjustment is made correctly, the front gang will not leave any unbroken ground at centre of disc.
- 2) **REAR GANGS** - See Fig. 10. Loosen U-Bolts which fasten bearing hangers to rear gang bearings.

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" (50.8mm) less than diameter of blades. For example, if your machine is equipped with 24" (609mm) blades, then the opening (Dimension "D") should be 22" (559mm).

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

NOTE: Be sure the blade to blade between individual gangs are adjusted to match your disc's blade spacing.

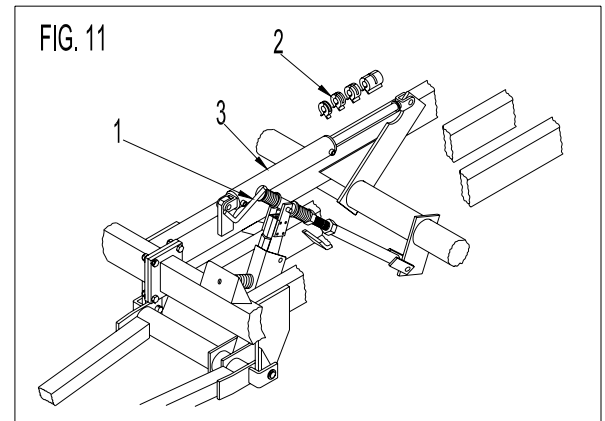
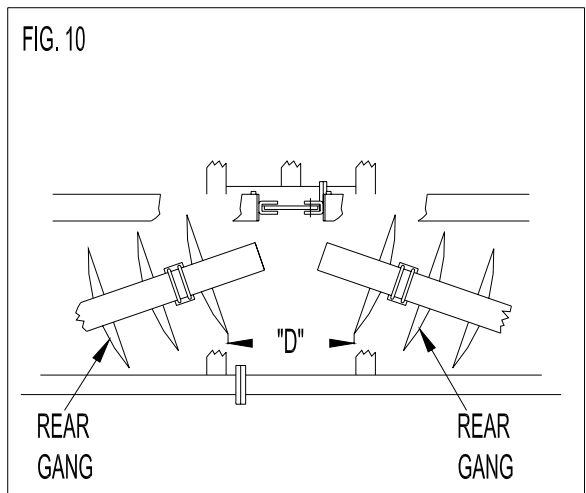
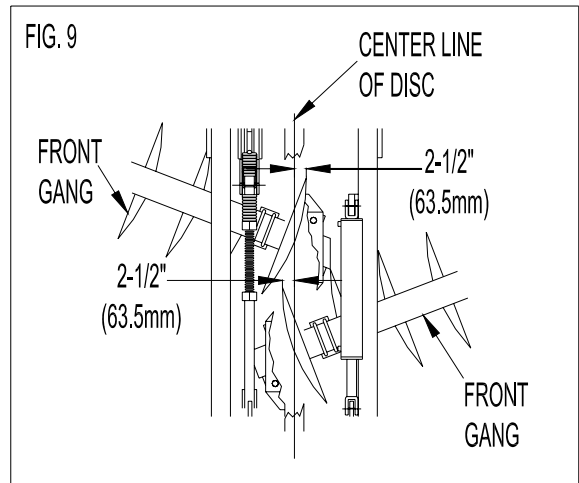
- 3) When gang adjustments are complete, tighten all bearing hanger U-Bolts. See section 1 on page 13.

2. IMPORTANT: WHEN RAISING WINGS INTO TRANSPORT FOR THE FIRST TIME AFTER ADJUSTING GANGS, RAISE WINGS SLOWLY MAKING SURE WING GANGS CLEAR CENTRE FRAME GANGS AND GANG BEAMS.

3. **LEVELLING DISC** - See Fig. 11. When discing, the front and rear gangs should be cutting at the same depth. The levelling crank, arrow 1, is used to level disc. TO LOWER FRONT GANGS, turn crank, arrow 1, clockwise (in). TO RAISE FRONT GANGS, turn crank, arrow 1, counter-clockwise (out).

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.

4. **Setting Discing Depth** - See Fig. 11. To set discing depth, install depth control segments, arrow 2, on shaft of center frame cylinder, arrow 3. Install segments as required to obtain desired discing depth.

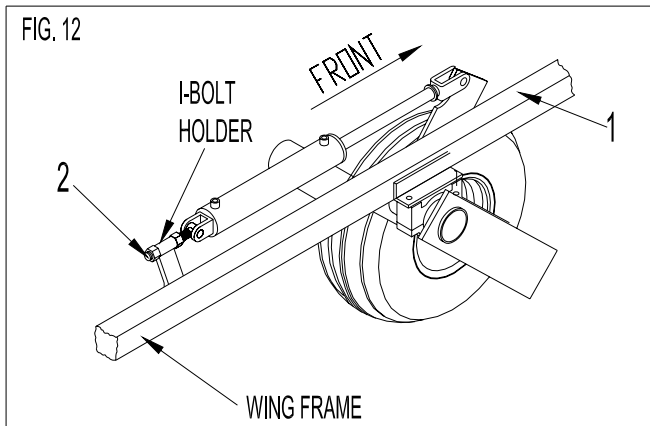


ADJUSTMENT CONTINUED:

5. Levelling Wing Adjustment - See Fig. 12.

For even blade penetration, outside of wing frames must be level with centre frame or even 1/2" higher than centre frame.

Before this adjustment is made, be sure centre frame is level from front to rear. To level wing frame with centre frame, adjust wing rockshaft cylinder I-Bolt, arrow 1. If outside of wing frame needs to be raised, loosen outer nut, arrow 2, and tighten inner nut. This will lower the wheels raising outside of wing. If outside of wing frame needs to be lowered, loosen inner nut and tighten outer nut. This will raise the wheels lowering outside of wing. After adjustments are complete tighten nuts against I-Bolt holder.



IMPORTANT: BE SURE AXIS OF CLEVIS PIN IS HORIZONTAL WITH CYLINDER PORTS FACING UP. IF CLEVIS BOLT IS NOT POSITIONED PROPERLY, CYLINDER WILL NOT BE FREE TO PIVOT WHEN ACTIVATED, CAUSING SERIOUS DAMAGE.



CAUTION: ALWAYS PLACE TRACTOR CONTROLS IN NEUTRAL AND LOCK BRAKES WHEN HITCHING DISC TO TRACTOR, TRACTOR COULD ROLL BACKWARDS WHEN HITCHING DISC.



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

6. REMOVE RIDGE AT CENTRE OF DISC - Make one or more of the following adjustments:
 - a) Level disc from front to rear using levelling crank, see Section 3 of adjustments.
 - b) Reduce discing speeds.
 - c) Increase distance between rear gangs, see Section 1 of adjustments.
7. REMOVE FURROW AT CENTRE OF DISC - Make one or more of the following adjustments:
 - a) Level disc from front to rear using levelling crank, see Section 3 of adjustments.
 - b) Increase discing speed.
 - c) Decrease distance between rear gangs, see Section 1 of adjustments.
8. REMOVE UNBROKEN GROUND LEFT BY FRONT GANGS - Make the following adjustments:
 - a) Adjust leading edge of inside blade of each front gang so it is 2-1/2" (63.5mm) past centre of disc, see Section 1 of adjustments.
9. REDUCE GANG PLUGGING - Make the following adjustment:
 - a) Adjust scrapers so they contact blades.

MAINTENANCE

1. LUBRICATION See Fig.13 - Grease all lubricating points on disc are marked with arrow G. The oil lubrication points are marked with arrow O.

G1) Lubricated gang bearings every 20 hours with a minimum amount of grease. Excess lubrication may damage seals. Use a high quality SAE multi-purpose 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.

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.

NOTE: When you receive your new disc, grease all lubricating points before starting to disc. Do not over lubricate gang bearings. See paragraph (a) above.

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

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. (4436 N . m)

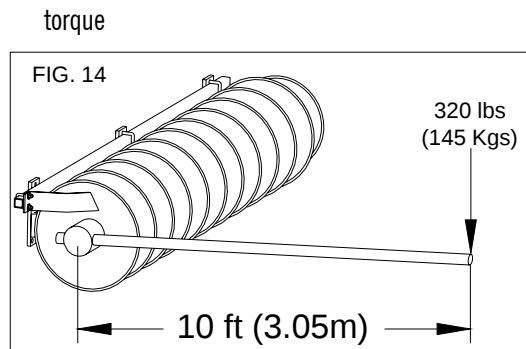
TIGHTEN BOLTS AS FOLLOWS:

- Gang bolts 1-15/16" (49mm) Diameter - 3200 ft. lbs (4339 N .m) torque
- See Fig. 14. To tighten gang bolt to 3200 ft. lbs. (4339 N.m) install a 10 ft. (3.05m) bar in socket wrench and apply 320 lbs. (145 kgs) of force to end of bar.

IMPORTANT: After repairing, the gang bolt should be retightened after 2 hours of operation.

- Levelling crank bolt 1-1/4" (31.7mm) Diameter - 840 ft. lbs (1139 N . m) torque(minimum/maximum)
- Wheel bolts 9/16" (14.2mm) Diameter - 130 ft. lbs (176.3 N . m) torque
- Bearing hanger U-Bolts (for Stone Flex Hangers) - 3/4" (19mm) Diameter - 260 ft. lbs (30 m/kgs) torque
- Bearing hanger U-Bolts (for Solid Hangers) - 5/8" (15.7mm) Diameter - 430 ft. lbs (59.5 m/kgs)

NOTE: Gangs should be re-tightened after 2 hours of operation.



IMPORTANT!!!
SEVERE DAMAGE WILL OCCUR IF GANG BOLTS ARE LOOSE.

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.

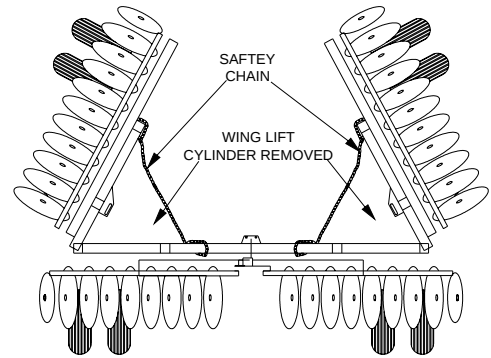


CAUTION: DO NOT SERVICE DISC WHILE IT IS MOTION. YOU MAY FALL IN FRONT OF DISC AND BE SERIOUSLY INJURED.



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 COULD DROP.

5. **WING LIFT CYLINDER REMOVAL** – See Fig. 14. If possible lower wings to field position if the wing lift cylinder hydraulic system must be serviced or repaired. If a wing lift cylinder hydraulic system must be serviced or repaired with wings in folded position, install a safety chain between both wings and main frame to prevent wings from falling down. Always install a chain on both wings even if only one cylinder is being worked on



CAUTION: ALWAYS RELIEVE THE PRESSURE IN HYDRAULIC SYSTEM AND CLOSE BOTH HYDRAULIC LOCKUP VALVES WHEN THE DISC IS NOT BEING USED.

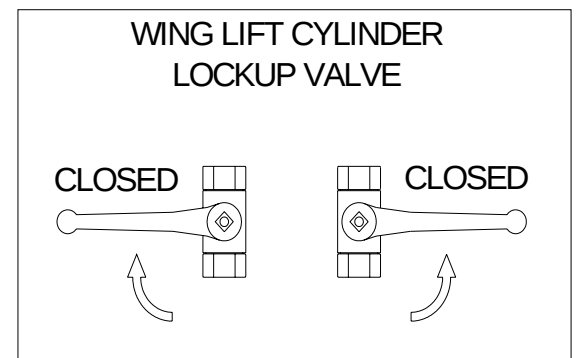


CAUTION: IF WING LIFT CYLINDER(S) OR WING LIFT HYDRAULIC HOSES ARE REMOVED WHEN WINGS ARE FOLDED INTO TRANSPORT POSITION, ALWAYS INSTALL A SAFETY CHAIN BETWEEN WING GRAMES AND MAIN FRAME TO PREVENT WINGS FROM FALLING. IF WINGS FELL SERIOUS INJURY OR DEATH COULD OCCUR TO PERSON(S) NEARBY AND MACHINE WOULD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

6. Keep all safety decals clean and in good condition to provide a constant reminder of safe operating procedures.
7. Replace any destroyed, missing or illegible decals and reflectors.
8. **IMPORTANT:** WHEN STORING DISC DO NOT LEAVE CYLINDERS UNDER HYDRAULIC PRESSURE, ESPECIALLY IF CYLINDERS ARE ACTIVATED DURING COOL TEMPERATURES. THE EXPANSION OF OIL WHICH TAKES PLACE WHEN THE MACHINE IS IN A WARMER ENVIROMENT 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	- wheel 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	- 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. 11 on page 10
OUTSIDE BLADES ON WING (S) ARE CUTTING TOO DEEP	- outside of wing frame(s) is lower than main frame - wing rockshaft cylinder(s) is not synchronized with main frame rockshaft cylinder	- raise outside of wing with wing rockshaft cylinder anchor bolt see section 5 on page 12 - rephrase rockshaft cylinder(s), see section 16 on page 9
OUTSIDE BLADES ON WING ARE NOT CUTTING DEEP ENOUGH	- outside of wing frame is higher than main frame - wing rockshaft cylinder(s) is not synchronized with main frame rockshaft cylinder	- lower outside of wing with wing rockshaft cylinder anchor bolt, see section 4 on page 11 - rephrase rockshaft cylinder(s), see section 16 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 - rear gangs are too close together	- level disc using levelling crank - see Fig. 11 on page 10 - reduce discing speed - increase distance between rear gangs see section 2 on page 10

TROUBLE SHOOTING CONTINUED

PROBLEM	POSSIBLE CAUSE	REMEDY
DISC IS LEAVING A FURROW 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. 11 on page 10 - increase discing speed - decrease distance between rear gangs - see section 2 on page 10
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 1 on page 10
DISC GANGS ARE PLUGGING	- scrapers are too far from blades	- adjust scrapers so they are contacting blades
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 16 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 16 on page 9

MODEL 4490 DISC
ASSEMBLY INDEX

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ASSEMBLY INSTRUCTIONS

1. See Fig. 16. Raise main frame, arrow 1, approximately 46" (1168mm) from ground and block securely.
2. See Fig. 16 & 17. Fasten main frame rockshaft, arrow 2, to bottom of main frame using three (3) cast rockshaft bearings, arrow 3, 4 and 5. Secure with (2) 3/4" x 6-1/2" (19mm x 165mm) bolts for each bearing. Install top half of rockshaft bearings so grease hole faces rear. Install bottom half of rockshaft bearings so grease holes faces front. Position rockshaft so that centre bearing is located between cleats welded to rockshaft. Lubricate bearings with grease before installing rockshaft in bearings.
3. See Fig. 16. Install four (4) six bolt hub and spindle assemblies, arrow 6, into tube holdings at bottom of rockshaft wheel legs. Fasten each spindle to the tube with one (1) 1/2" x 3-1/2" (12.7mm x 88.9mm) N.C. hex bolt complete with 1/2" (12.7mm) nylon locknut.
4. See Fig. 16. Install one six bolt tire and wheel assembly, arrow 7, to hub assembly, arrow 6, on each side of each wheel leg. Centre frame uses 11L x 15 FI load range front tires. Secure with six (6) 9/16" x 1 1/8" (14.9mm x 28.6mm) wheel bolts, arrow 8. Tighten wheel bolts to 130 ft. lbs. (18m/kgs).



WARNING: 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 HUB, WHEEL TIRE. CHECK WHEEL BOLTS PERIODICALLY, ESPECIALLY THE FIRST FEW HOURS OF OPERATION, EITHER TRANSPORT OR FIELD WORK.

5. See FIG. 16. Fasten 4 gang beam extension (12" (305mm) long), arrow 8, to plates welded to frame. Fasten each extension with (4) 3/4" x 2-1/2" (19mm x 63.5mm) bolts. Use necessary 1-1/2" x 1-1/2" (38.1mm x 38.1mm) shim plates to align and level extension with 4" x 4" (101.6mm x 101.6mm) beams welded on main frame.

6. See FIG. 18. Attach hitch assembly, arrow 1, to hitch lugs on main frame with two (2) 1-1/4" (31.8mm) diameter pins. Secure pins with two (2) 5/16" x 1-3/4" (8mm x 44.5mm) cotter pins.
7. See FIG.18. To attach levelling arm, arrow 2, to levelling arm, arrow 3, remove bolt on lug, arrow 4, of hitch levelling arm. Next install 1" (25.4mm) diameter pin on bearing tube, arrow 5, into weld on lug, arrow 6, of levelling arm. Position retaining tube so grease fitting is facing up. Place bottom lug, arrow 4, over outside of levelling arm. Install 1" (25.4mm) diameter pin of retaining tube into bolt on lug. Fasten the bottom lug to levelling arm with four (4) 1/2" X 5" (12.7mm x 127mm) N.C. hex bolts comes with nuts and lock washers.
8. See FIG. 18. Attach clevis end of levelling link, arrow 2, to arm, arrow 7, on main frame rockshaft. Fasten with one (1) 1- 1/4" x 4-3/4" (31.8mm x 121mm) bolt c/w nut and lockwasher.

NOTE: *The 1-1/4" x 4-3/4" (31.7mm X 170.6 mm) bolt must be tight so that the clevis is drawn up tight against the ball joint in arm, arrow 7. Tighten bolt to 840 ft. Lbs.. Ball must 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.

9. See FIG. 18. Fasten hose support, arrow 8, to a bolt welded to top of hitch. Secure with one (1) 5/8" (15.7mm) nut, one (1) 11/16" (17.2 mm) I.D flatwasher, and one (1) 5/8" (15.7 mm) lockwasher.
10. See FIG. 18. Mount hitch jack, arrow 9, mount jack on round tube welded to inside of hitch. Jack pivots on mounting tube and can be placed in a 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 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.

11. See FIG. 18. Fasten one (1) wing frame hinge lug, arrow 10, to each 4 hole mount plate, arrow 11, located at front and rear corners on each side of main frame. Be sure to install the notched hinge lug on the front L.H.S. mount plate, secure each hinge lug with four (4) 3/4" x 2-1/2" hex bolts c/w nuts and lockwashers.

NOTE: *Position rockshaft bearing set, arrow 7, so grease hole in top half from rear and grease hole in bottom half face front.*

12 See Fig. 19. Before assembling wing frames, arrows 1 and 2, install grease fitting, arrow 4, in pivot bushings welded in front and rear hinge tubes of each wing frame.

13a) See FIG. 19. Attach L.H. wing frame, arrow 1, to LH side of main frame and attach R.H. wing frame, arrow 2, to R.H. side of main frame. Fasten with (2) two 1-1/4" x 8" (31.8mm x 203mm) bolts, arrow 3, come with nuts and lock washers. Install bolts from front. Wing should not be free to move back and forth in hinge bracket. To take up slack, place shim(s), between hinge bracket and wing tube. DO NOT over tighten bolts causing hinge lugs to bend. Wing must be free to pivot. There are two (2) wing frame widths, narrow (68" (1727mm)) wide (96" (2438mm)). Models 23-1/2' to 32-1/2' (8.99m to 9.90m) use wide wing frames. See 'Specifications' chart on Page 5.

Model 4490 uses a narrow wing frame (65" wide)

for the following models:

8" spacing – 86 and 94 blades

9" spacing – 78 and 86 blades

8" spacing – 70, 74 and 78 blades

9" spacing – 62, 66 and 70 blades

Model 4490 uses a wide wing frame (93")

for the following models:

8" spacing – 86 and 94 blades

9" spacing – 78 and 86 blades

8" spacing – 70, 74 and 78 blades

9" spacing – 62, 64 and 70 blades

NOTE: *To determine which is the proper wing frame for L.H. and R.H. side, see FIG. 19. L.H. wing frame has gang in front of front hinge bolt, arrow 2*

b) See FIG. 19. Fasten L.H. and R.H. wing rockshafts, arrows 4 and 5 to bottom of L.H and R.H. wing frame. Be sure correct rockshaft is used. Wheel lug points towards rear with cylinder arm on top. Secure each rockshaft to two (2) bearing brackets, arrow 6, with two(2) sets of 5-1/2" (139.2 mm) rockshaft bearings, arrow 7, fasten each rockshaft bearing to bearing set to bearing bracket with two (2) 3/9" x 6-1/2" (19 mm x 6-1/2 mm) hex bolts come with nuts and lock washers. Position top half of rockshaft bearing so grease hole faces rear. Position bottom half of rockshaft bearing so grease hole faces front. After tightening rockshaft bearing bolts, rockshaft should be free to pivot in bearings.

NOTE: *If rockshaft bearings are too tight and don't allow crankshaft to turn freely place necessary 2" x 3" (50.8 mm x 76.2 mm) shims, arrow 8, (as required) between bearing halves. Shim(s) are placed in hydraulic hose and fitting box.*

NOTE: *Before installing rockshaft bearings place a coat of grease on bearing surface.*

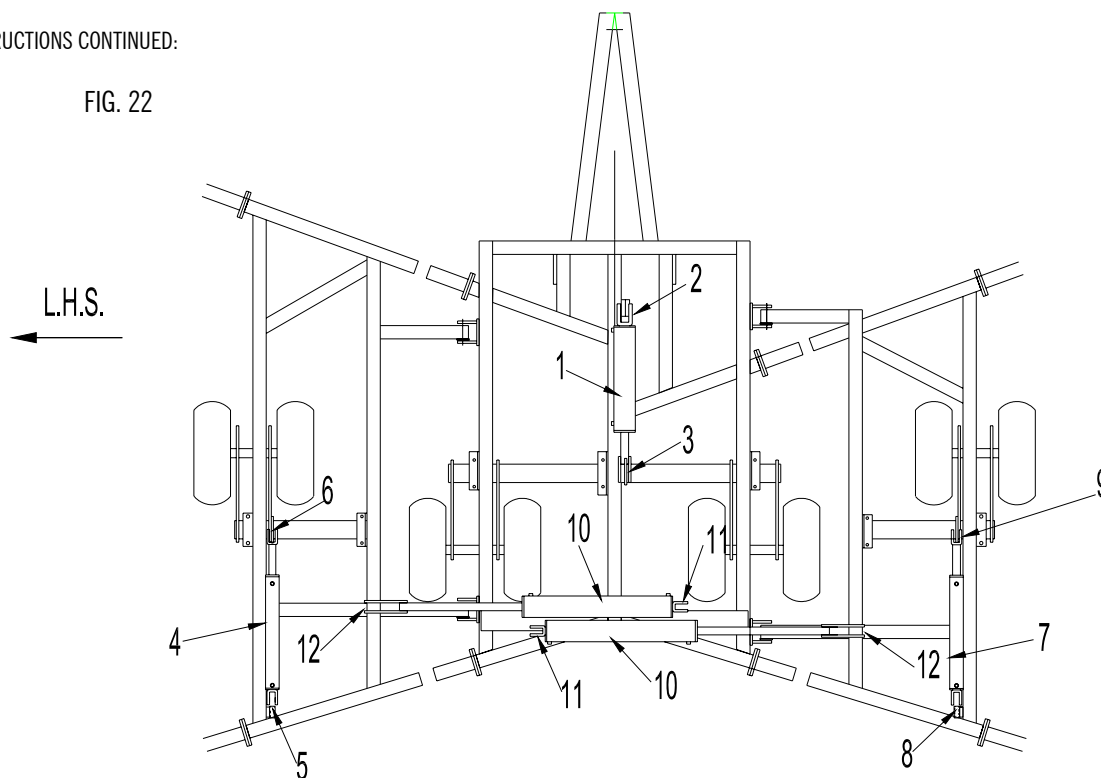
14. See Fig. 20 and 21. Fasten R.H. wing rockshafts, arrow 1, to bottom of R.H. wing frame. Be sure correct rockshaft is used. Wheel legs, arrow 6, should point towards front with cylinder arm pointing up. Secure each rockshaft to wing frame with two (2) cast rockshaft bearings, arrows 2 and Position top half of rockshaft bearing so grease hole faces rear. Position bottom half of rockshaft bearing so grease hole faces front. Secure each bearing with (2) $\frac{3}{4}$ " x 6-1/2" (19mm x 165mm) hex bolts. Coat bearings with grease before assembling.
- 15 See FIG. 19. Install one grease fitting, arrow 9, in top and bottom halves of rockshaft bearings, arrow 9.
- 16 See FIG. 19. Install one grease fitting, arrow 10, in pivot bushing welded in front and rear hinge tubes of each wing frame.
- 17 Attach hub assembly to wing rockshafts.

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

- a) Dual wheels - See FIG.19. Install one (1) .6 bolt hub and spindle assembly, arrows 11 and 12, in each end of mount tube welded to wheel legs, arrow 13. Secure each spindle with one (1) 1/2" x 3-1/2" (12.7 mm x 88.9 mm) hex bolt complete with nylon locknut.
- b) Single wheels - See FIG.19. Install one (1) only 6 bolt hub and spindle assembly, arrow 11, in outside end of mount tube welded to wheel legs, arrow 13. Secure spindle with one (1) 1/2" x 3-1/2" (12.7mm x 88.9 mm) hex bolt complete with nylon locknut.
- 18 See FIG.19. Install one (1) wheel and tire assembly, arrow 14, to each hub assembly. Secure with six (6) 9/16 x 1-1/8" (19.3 mm x 28.6 mm) wheel bolts, arrow 5. 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.

IMPORTANT: *Wheel bolts must be kept tight. If bolts are not tight they will loosen causing severe damage to hub, wheel, and tire. Check wheel bolts periodically, especially the first few hours of operation, either transport or field work.*

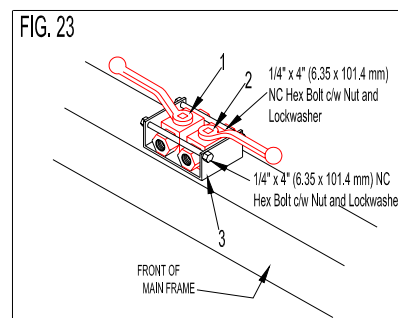
FIG. 22



19. See FIG.22. Fasten one (1) 4" x 24" (101.6 mm x 610 mm) lift cylinder , arrow 1, to main frame and rockshaft arm. Fasten barrel end to cylinder lug, arrow 2. Position so ports face L.H.S. Fasten shaft end to cylinder arm, arrow 3, on rockshaft. Fasten each end of cylinder with one (1) 1-1/4" x 4-3/16" (31.7 mm x 106.4 mm) pin. Secure cylinder pins with one (1) 5/16" x 2" (7.9 mm x 50.8 mm) cotter pin.
20. See FIG.22. Fasten one (1) 3-1/2 x 24" (88.9 mm x 610 mm) rockshaft cylinder, arrow 4, to L.H. wing frame and rockshaft arm. Fasten barrel end end to 1-1/4 x 8" (31.7 mm x 203 mm) I-bolt, arrow 5. Position so ports face up. Fasten shaft end to cylinder arm, arrow 6, on rockshaft. Fasten each end of cylinder with one (1) 1-1/4" x 4-3/16" (31.7 mm x 106.4 mm) clevis pin. Secure pins with one (1) 5/16" x 2" (7.9 mm x 50.8 mm) cotter pin.
21. See FIG. 22. Fasten one (1) 3" x 24" (76.2 mm x 610 mm) rockshaft cylinder, arrow 7, to R.H. wing frame and rockshaft arm. Fasten barrel end to 1-1/4" x 8" (31.7 mm x 203 mm) I-bolt, arrow 8. Position so ports face up. Fasten shaft end to cylinder arm, arrow 9, on rockshaft. Fasten each end of cylinder with one (1) 1-1/4" x 4-3/16" (31.7 mm x 106.4 mm) clevis pin. Secure cylinder pin with one (1) 5/16" x 2" (7.9 mm x 50.8 mm) cotter pin.

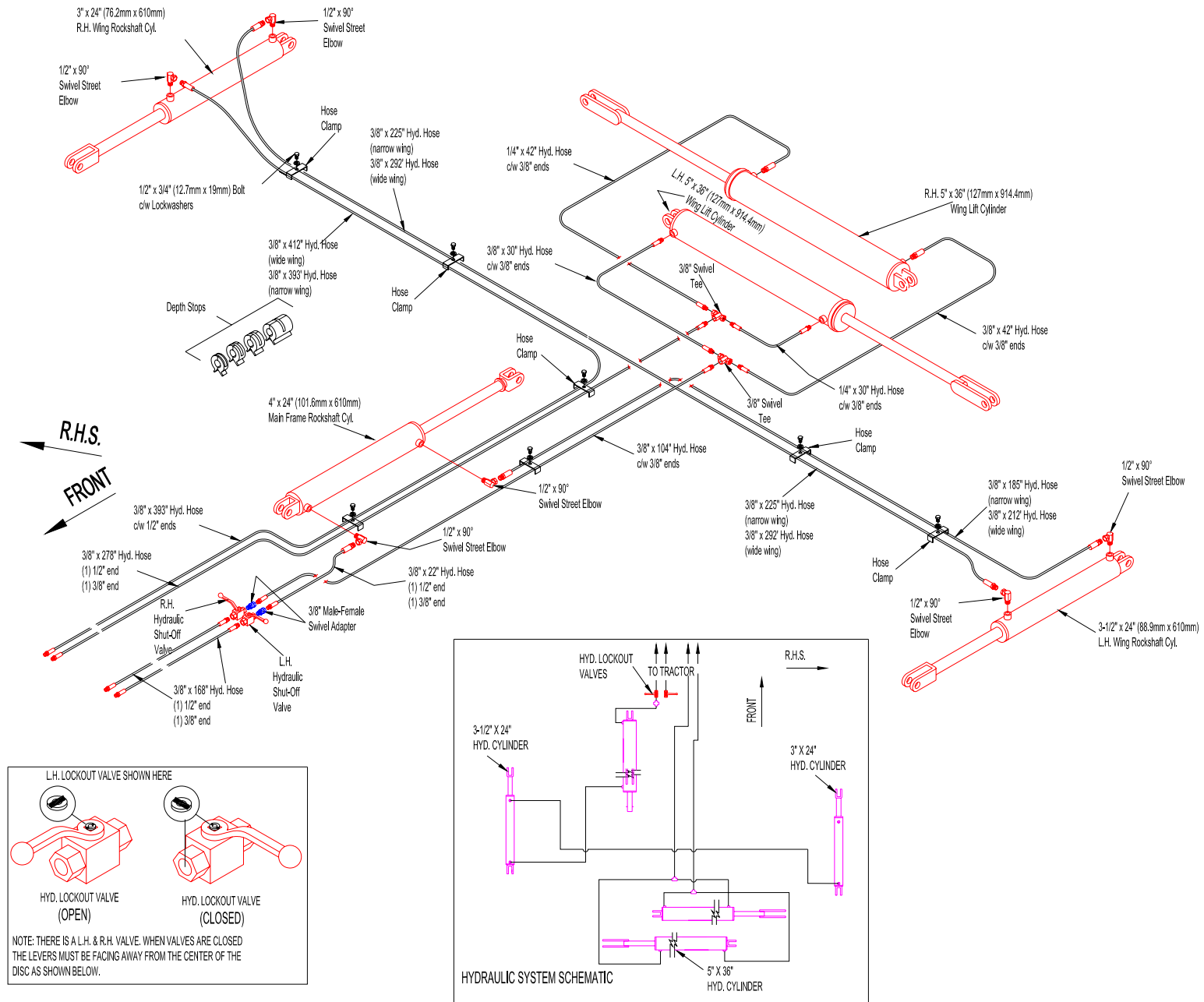
IMPORTANT: *If cylinder pin on barrel end is not positioned properly, serious damage may occur to cylinder or I-bolt. If cylinder barrel is turning so axis of cylinder pin is not horizontal, cylinder will not be free to pivot up and down when cylinder is actuated*

22. See FIG. 22. Fasten (2) 5" x 36" wing lift cylinders, arrow 10, to cylinder lugs on rear tube of main frame. Position front cylinder with ports facing the front and rear cylinder with ports facing the rear of disc. Fasten barrel end of each cylinder to lug, arrow 11, with one (1) 1-1/4" x 4-3/16" (31.7 mm x 106.4 mm) clevis pin. Secure each pin with one (1) 5/16" x 2" (7.9 mm x 50.8 mm) cotter pins. Do not attach shafts at this time.
23. See Fig. 23. Place two (2) hydraulic lockup valves, arrow 1 and 2, in bracket, arrow 3, welded to front centre of main frame. Valves are assembled L.H. and R.H. Position valves as shown so handle moves out when closing valve (as shown) and forward when opening valves. Position valves between front and rear holes in bracket, arrow 3, then installing (2) 1/4" x 4" (6.35mm x 101.6mm) N.C. hex bolts c/w nuts and lockwashers in bracket to hold valves in place.



4490 DISC - Hydraulic System

FIG 24



24. Attaching hydraulic hoses to rockshaft cylinders and wing lift cylinders.

IMPORTANT: Do not use teflon tape to seal hydraulic hoses and fittings. If piece of tape gets into the hydraulic system they may plug small orifices.

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

- 1) See Fig. 24. Install one (1) 1/2" x 90 degree (12.7 mm) swivel street elbow in the shaft end port of the R.H. 3" x 24" (76.2 mm x 610 mm) wing rockshaft cylinder. NARROW WING- Connect one (1) 3/8" x 393" (9.39 mm x 9982 mm) hydraulic hose to same swivel street elbow. WIDE WING- Connect one (1) 3/8" x 412" (9.39mm x 10465mm) hydraulic hose to same swivel street elbow. Then run the hose across the wing frame to the centre of the main frame, and to front of hitch.
- 2) See Fig. 24. Install one (1) 1/2" x 90 degree (12.7 mm) swivel street elbow in shaft end, port of 3-1/2" x 24" (88.9 mm x 610 mm) L.H. wing rockshaft cylinder. Install one (1) 1/2" x 90 degree (12.7 mm) swivel street elbow, in the barrel end port of the R.H. 3" x 24" (76 mm x 610 mm) wing rockshaft cylinder. NARROW WING- Connect one (1) 3/8" x 225" (9.39 mm x 5715 mm) hydraulic hose to swivel elbow on R.H. cylinder. WIDE WING- Connect one (1) 3/8" x 292" (9.39mm x 7497mm) hydraulic hose to swivel elbow on R.H. cylinder. Next run hose across frame to 1/2" x 90 degree (12.7 mm) swivel elbow on shaft end port of L.H. cylinder.
- 3) See Fig. 24. Install one (1) 1/2" x 90 degree (12.7 mm) swivel street elbow to barrel end port of L.H. 3-1/2" x 24" (88.9 mm x 610 mm) wing rockshaft cylinder. Install one (1) 1/2" x 90 degree (12.7 mm) swivel street elbow, to shaft end port of 4" x 24" (101.6 mm x 610 mm) main frame cylinder. NARROW WING- Connect one (1) 3/8" x 185" (9.39 mm x 4699 mm) hydraulic hose to swivel elbow on shaft end port of main frame cylinder. WIDE WING- Connect one (1) 3/8" x 212" (9.39mm x 5385mm) hydraulic hose to swivel elbow on shaft end port of main cylinder. Next run same hose across frame to 1/2" x 90 degree (12.7 mm) swivel elbow on barrel end port of L.H. 3-1/2" x 24" (88.9 mm x 610 mm) wing rockshaft cylinder.
- 4) See Fig. 24. Install one (1) 1/2" x 90 degree (12.7 mm) swivel street elbow into the barrel end port of 4" x 24" (101.6 mm x 610 mm) main frame cylinder. Connect one (1) 3/8" x 24" (9.39 mm x 610 mm) hydraulic hose, to rear port of R.H. lock-up valve, with one (1) 3/8" (9.39 mm) male-female swivel. Next connect same hose to 1/2" x 90 degree (12.7 mm) swivel elbow, on front port of main frame cylinder.
- 5) See Fig. 24. Install one (1) 3/8" (9.39 mm) male x 3/8" (9.39 mm) male union in the barrel end port of the L.H. 5" x 26" (127 mm x 660 mm) wing lift cylinder. Then install one (1) 3/8" x 3/8" x 3/8" (9.39 mm x 9.39 mm x 9.39 mm) tee, to the 3/8" (9.39 mm) union. Install one (1) 3/8" x 90 degree (9.39 mm) street elbow, into the shaft end of L.H. 5" x 36" (127 mm x 914 mm) wing lift cylinder.
- 6) See Fig. 24. Install one (1) 1/4" x 30" (6.35 mm x 762 mm) hydraulic hose to the shaft end port of the L.H. 5" x 36" (127 mm x 914 mm) wing lift cylinder then fasten opposite end to one (1) 3/8" (9.39 mm) swivel tee. Fasten one (1) 1/4" x 42" (6.35 mm x 1067 mm) hydraulic hose to the shaft end port of the R.H. 5" x 36" (127 mm x 914 mm) wing lift cylinder and fasten opposite end to same 3/8" (9.39 mm) swivel tee.
- 7) See Fig. 24. Install one (1) 3/8" (9.39 mm) male x 3/8" (9.39 mm) female swivel adapter, in to the L.H. lockup valve. Fasten one (1) 3/8" x 100" (9.39 mm x 2540 mm) hydraulic hose, in 3/8" (9.39 mm) swivel tee (connects hoses to barrel end ports of 5" x 36" cylinders). Fasten opposite end of same hose to the 3/8" (9.39 mm) male x 3/8" (9.39 mm) female swivel adaptor in R.H. lockup valve.
- 8) See Fig. 24. Install two (2) 3/8" x 168" (9.39 mm x 4267 mm) hydraulic hoses to the front port of hydraulic lockup valves, and run hoses to front of hitch.
- 9) See Fig. 24. Install one (1) 3/8" x 278" (9.39 mm x 7061 mm) hydraulic hose to the 3/8" (9.39 mm) swivel tee (connects hoses to shaft end ports of 5" x 36" cylinders) to front of hitch.

25. **SECURING HYDRAULIC HOSES TO FRAME** - See Fig. 24

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

26. **HOW MAIN LIFT ROCKSHAFT HYDRAULIC SYSTEM WORKS** - See Fig. 24

When raising the disc, oil is pumped into the barrel end port of 4" x 24" (101.6mm x 610mm) centre frame cylinder causing the cylinder to extend. Oil is then forced from the shaft end port of same cylinder into the barrel end port of the 3-1/2" x 24" (88.9 mm x 610 mm) cylinder on L.H. side causing wing cylinder to extend. Oil is then forced from the shaft end port of the 3-1/2" x 24" (88.9 mm x 610 mm) cylinder into the piston end port of the 3" x 24" (76.2 mm x 610 mm) wing cylinder on R.H.S. causing wing cylinders to extend. The oil from shaft end port of the 3" x 24" (76.2 mm x 610 mm) cylinder on R.H.S. is returned to the tractor.

When lowering disc, oil flows from tractor to shaft end port of the 3" x 24" (76.2 mm x 610 mm) wing cylinder, causing wing cylinder to contract. Oil forced from piston end port of the 3" x 24" (76.2 mm x 610 mm) wing cylinder flows to shaft end port of L.H. 3-1/2" x 24" (88.9 mm x 610 mm) cylinder, causing cylinder to contract. The oil forced from the piston end port of the L.H. 3-1/2" x 24" (88.9 mm x 610 mm) wing cylinder flows to shaft end port of main frame 4" x 24" (101.6 mm x 610 mm) cylinder causing cylinder to contract. The oil from piston end port of the 4" x 24" (101.6 mm x 610 mm) cylinder is returned to the tractor.

NOTE: *Lockup valve must be open to allow oil to flow to and from lift cylinders.*

All cylinders extend and contract at the same rate because the amount of oil flowing between the shaft end ports and the piston end ports is equal in volume. For example, the 4" x 24" (101.6 mm x 610 mm) main frame cylinder has a 2" (50.8 mm) diameter piston shaft which displaces enough oil from the shaft side to fully extend the 3-1/2" x 24" (88.9 mm x 610 mm) L.H. wing cylinder. The same method is used between the 3-1/2" x 24" (88.9 mm x 610 mm) L.H. wing cylinder and the 3" x 24" (76.2 mm x 610 mm) R.H. wing cylinder.

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

27. **NOTE:** *Before filling lift cylinders with oil, remove clevis pin from shaft end of each cylinder so that the cylinders may be extended and contracted WITHOUT ACTUATING rockshafts. Support cylinders so shafts pass over rockshaft arms and frame components.*

See Fig. 24. 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 all cylinders have been completely filled with oil, synchronize cylinders by fully extending them. After the first cylinder is fully extended continue to hold hydraulic lever until the other two (2) cylinders are all fully extended. Attach shaft end of each cylinder to rockshaft arm with one (1) 1-1/4" x 4-3/4" (31.7 mm x 121 mm) pin. Secure each pin with two (2) 5/16" x 1-3/4" (7.57 mm x 44.4 mm) cotter pins.

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

See Fig. 24. Pump oil into all 5" x 36" (127 mm x 914 mm) wing cylinders. Extend and contract cylinder shafts until cylinders are completely filled with oil. After cylinders are full of oil, fully extend all of them. Next, attach shaft end of each cylinder to a slotted hole in lug on wing frame with one (1) 1-1/4" x 4-3/4" (31.7 mm x 121 mm) pin. Secure each pin with two (2) 5/16" x 1-3/4" (7.87 mm x 44.4 mm) cotter pins.



CAUTION: **HYDRAULIC CYLINDERS CAN BE SERIOUSLY DAMAGED IF CLEVIS OF SHAFT STRIKES ROCKSHAFT ARM OR WING CYLINDER LUG AS CYLINDERS ARE BEING CYCLED TO FILL THEM WITH OIL.**



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

- CAUTION:** DO NOT DISCONNECT HYDRAULICALLY OPERATING 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.
- 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:** WINGS WILL FREE FALL IF WING CYLINDERS ARE NOT FULL OF OIL, CAUSING SERIOUS DAMAGE 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 PERSON(S) NEARBY.
- WARNING:** DO NOT STAND UNDER WINGS WHILE WINGS ARE BEING RAISED OR LOWERED. IF ANY COMPONENTS OF HYDRAULIC SYSTEM SHOULD FAIL OR IF HYDRAULIC LEVER SHOULD ACCIDENTALLY BE OPERATED, WINGS COULD DROP CAUSING SERIOUS INJURY OR DEATH.

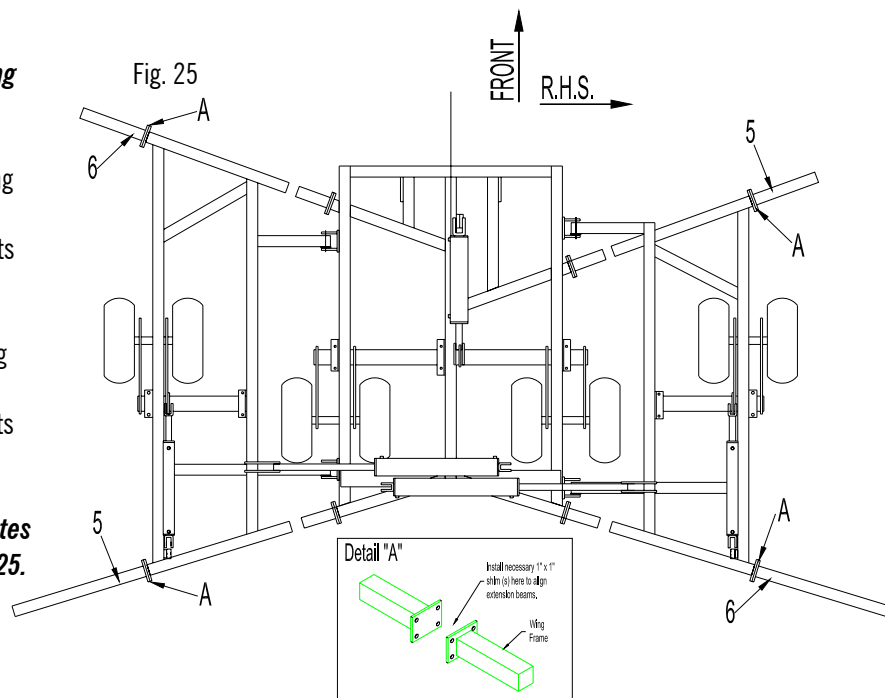
29. ATTACHING GANG BEAM EXTENSIONS- See FIG 25

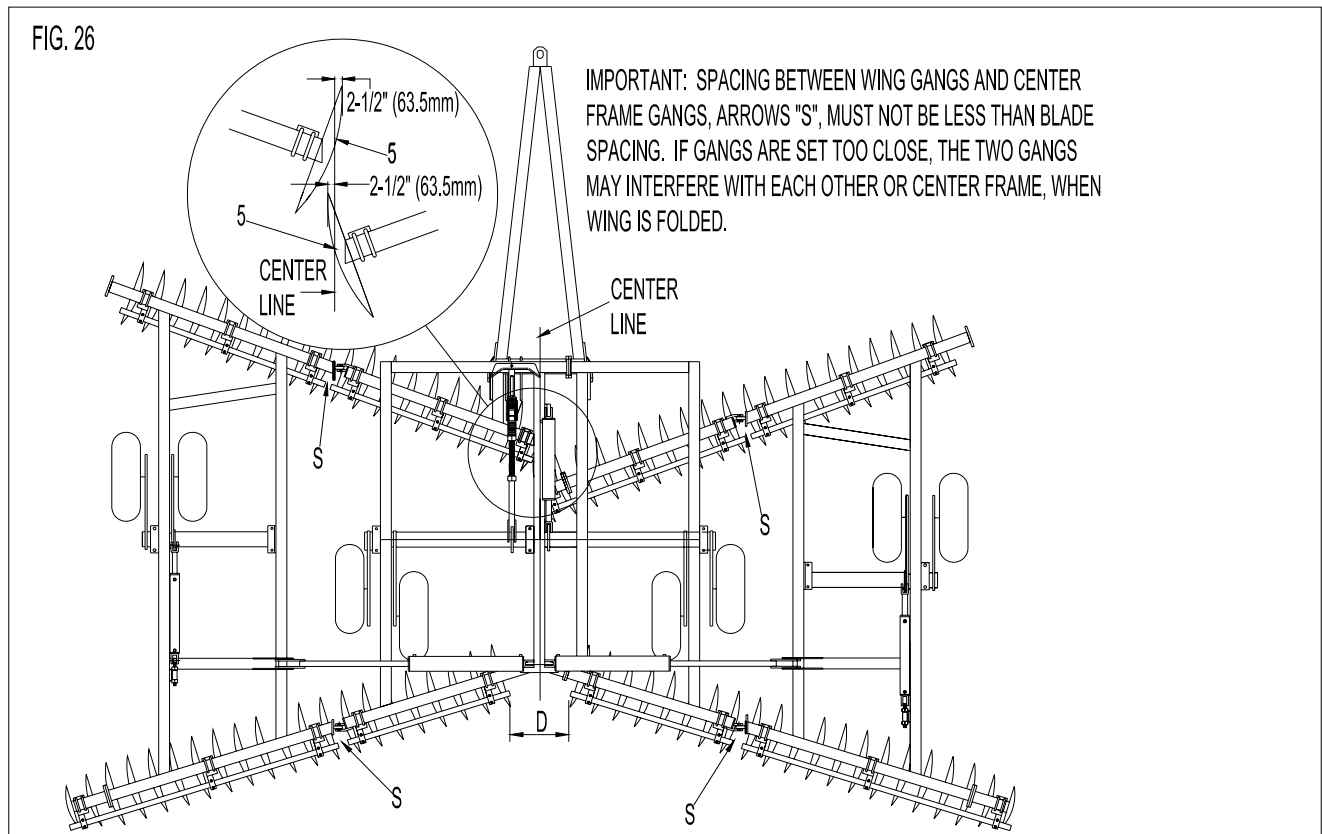
NOTE: See gang beam chart on Page 32 to determine gang beam lengths for the size of your disc.

- A) FRONT GANG: Clamp front gang beams, arrow 1, to attaching plates that are welded to wing frame with (4) 3/4" x 2-1/2" (19mm x 254mm) bolts c/w nuts and lockwashers.
- B) REAR GANG: Clamp rear gang beams, arrow 2, to attaching plates that are welded to wing frame with (4) 3/4" x 2-1/2" (19mm x 254mm) bolts c/w nuts and lockwashers.

NOTE: Use necessary 1" x 1" (25.4mm x 254mm) shim plates to align and level each beam extension. See FIG. 25.

- CAUTION:** TO PREVENT SERIOUS INJURY OR DEATH FROM FALLING FRAMES, ALWAYS PLACE ADEQUATE SUPPORTS UNDER ALL THREE FRAMES.





30. ATTACHING GANG ASSEMBLIES - See FIG. 26

NOTE: See gang pattern on pages 33 to 38 to determine gang position for your disc.

- 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 outrigger blades (small diameter blades) must be positioned at the outside. See FIG. 26. for the direction rear gangs face.

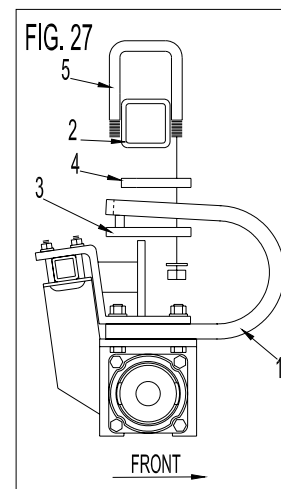
Attach bearing hangers to gang beams with two U-bolts per bearing hanger. Leave U-bolt loose. If disc is equipped with optional spring bearing hangers, see step (c) to attach hangers.

- 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. 26. for the direction the front gangs face.

Attach bearing hangers to gang beams with two U-bolts per bearing hanger. Leave U-bolts loose. If disc is equipped with optional spring bearing hangers, see step (c) to attach hangers.

NOTE: See FIG. 27. Optional stone flex bearing hangers - Fasten each hanger assembly, arrow 1, to bottom of gang beam, arrow 2, with one (1) backing plate, arrow 3, one (1) 1/4" x 4-1/2" x 4-1/2" (6.3mm x 114mm x 114mm) bearing plate, arrow 4, and two (2) 3/4" x 4" x 7" (19.0 x 102 x 178mm) U-bolts, arrow 5. The bearing plate is placed between bottom of gang beam and top of shank. Be sure the pin on backing plate, arrow 3, is inserted in slot of shank. When installing U-Bolts, be sure rear leg of each U-Bolt is installed through a hole in rear of plate.

NOTE: The bearing plate, arrow 4, is required to reinforce mounting surface of gang beam.



- c) See FIG. 26. Set front gangs so that the leading edge of the inside blade, arrow 5, is approximately 2-1/2" (63.5 mm) past centre of disc.
- d) See FIG. 26. Adjust spacing between each front gang assemblies, arrow 5. This spacing should be the same as the blade spacing in the gang assemblies.

IMPORTANT: SPACING BETWEEN WING GANGS AND CENTRE FRAME GANGS, ARROW □S□, MUST NOT BE LESS THAN BLADE SPACING. IF GANGS ARE SET TOO CLOSE, THEY MAY INTERFERE WITH EACH OTHER OR CENTRE FRAME WHEN WINGS ARE FOLDED OR FLEX.

- e) See FIG. 26. Set rear gangs so that the distance between the rear edge of the two inside blades, dimension "D", is equal to 2" (50.8mm) less than blade diameter. For example, if your disc is equipped with 24" (610 mm) diameter blades, dimension "D" would be set at 22" (559 mm). Be sure the rear gangs are centred on the frame.
- f) See FIG. 26. Adjust spacing between rear gang assemblies, arrow 5. This spacing should be the same as the blade spacing in the gang assemblies.
- g) Before tightening bearing hanger U-bolts, loosen U-bolts which fasten scraper bar to bearing hanger. Then 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. For discs equipped with solid hangers, tighten U-bolt to 150 ft. lbs (203.25 N.m). For discs equipped with stone flex hangers, tighten U-bolts to 260 ft. lbs (352.3 N.m)

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

- 31. See FIG. 28. VERY IMPORTANT - Loosen all the bolts, arrow 1, which bolt 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.

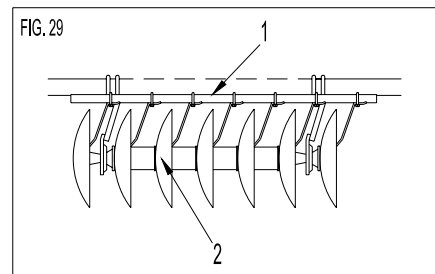
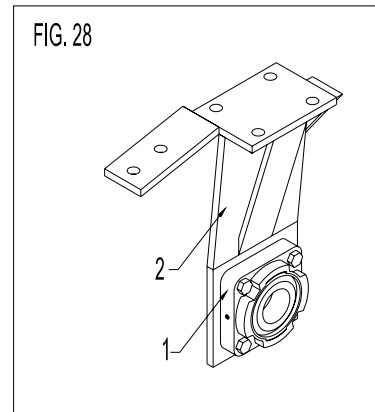
IMPORTANT: WHEN RAISING WINGS FOR TRANSPORT FIRST TIME AFTER ADJUSTING GANGS, RAISE WINGS SLOWLY MAKING SURE WING GANGS CLEAR CENTRE FRAME.

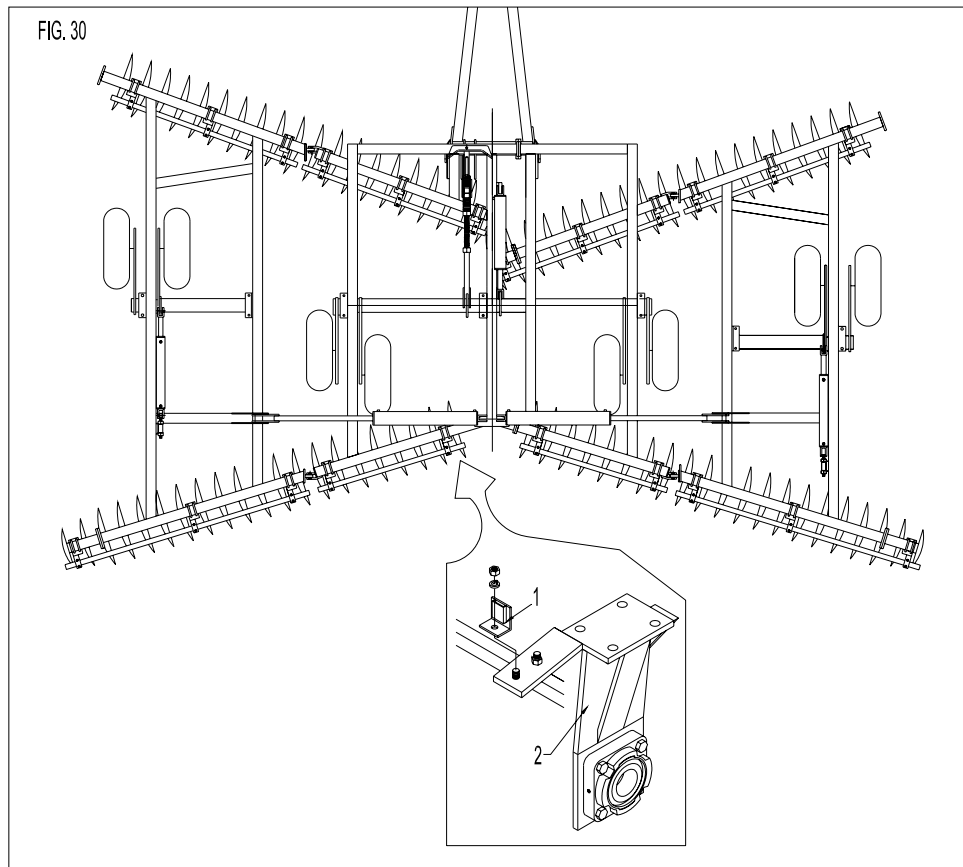
- 32. See FIG. 29. Adjust scraper bar, arrow 1, and scrapers, arrow 2, of each gang so that each scraper blade is in contact with disc blade.

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



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

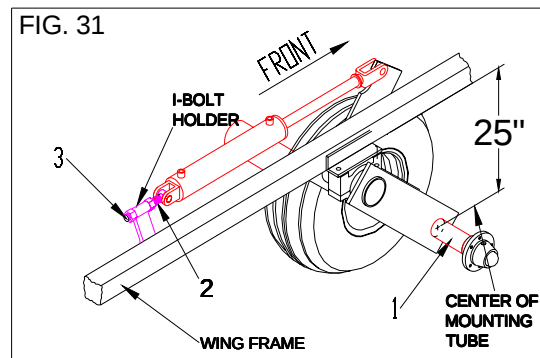




33. See Fig. 30. Mount the SMV bracket, arrow 1, to the main frame's rear inside bearing hanger on the L.H. rear gang. Secure to the top of the scraper bar support with the same U-bolt used to fasten the scraper bar to the bearing hanger.

34. See FIG. 31. Level wing frame with main frame as follows:

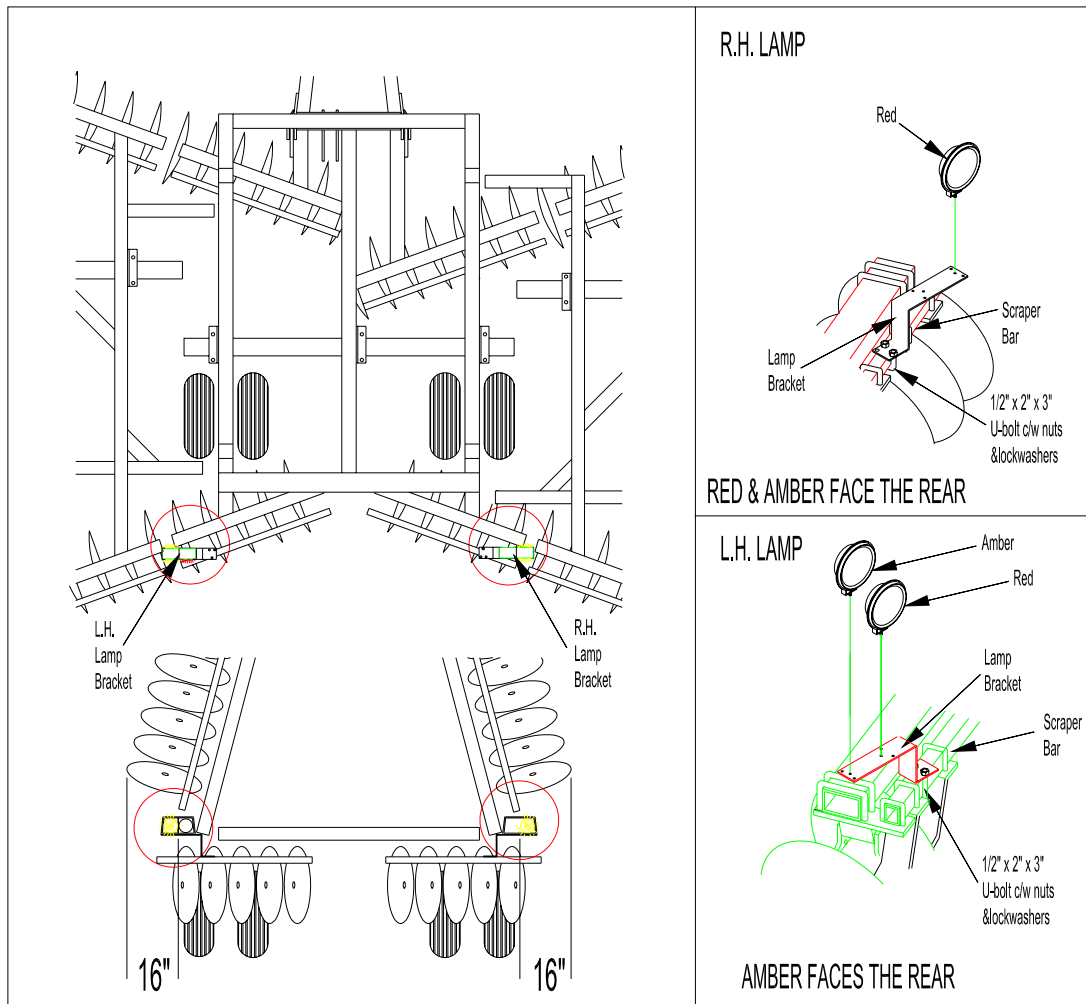
- 1) Raise disc by extending rockshaft cylinder. Be sure wing rockshaft cylinders are fully exterior.
- 2) Check the distance the spindle mounting tube, arrow 1, (welded to bottom of rockshaft wheel leg) is from the bottom of each wing frame. This distance should be 25" (635mm).
- 3) If spindle mounting tube location is not correct, adjust length of wing cylinder, I-bolt, arrow 2.
- 4) 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: Be sure axis of barrel end pin is horizontal and cylinder points are facing up. If cylinder and I-bolt are not positioned properly cylinder will not be free to pivot when activated causing serious damage.

FIG 32



35. WARNING LIGHT INSTALLATION INSTRUCTIONS (OPTIONAL)- See FIG 32

- Fasten on lamp support bracket to each side of main frame. Locate on inside of 4" x 4" (101.6mm x 101.6mm) tube at rear of main frame. Fasten each support with tow (2) 1/2" x 7-1/2" (12.7mm x 190.5mm) hex bolt c/w nuts and lockwashers and one (1) backing plate.
- Fasten one (1) mount plate to top of each lamp support bracket with one (1) 1/2" x 2" x 3" (12.7mm x 50.8mm x 76.2mm) U-Bolt c/w nut and lockwasher. DO NOT tighten U-Bolts at this time.
- Fasten one(1) amber and one (1) red lamp to L.H. lamp support. Position so amber and red lamps face rear with the amber lamp on outside. Install lamps through 3/4" (19.1mm) holes in mount plate. Secure with nuts. Leave nuts loose on amber lamps so ring connector on wiring can be installed later.
- Fasten one (1) amber lamp to R.H. lamp support. Position so amber faces rear. Install lamp through 3/4" (19.1mm) hole in mount plate. secure with nuts.
- With disc folded into transport position lamps. Position L.H. dual lamps so the center line between the two (2) lamps is 9" (228.6mm) **INSIDE** the widest point of the disc. Position R.H. amber lamp so the center of lamp is 9" (228.6mm) inside the widest point of disc. tighten mount plate U-Bolts of both L.H. and R.H. assemblies.

IMPORTANT: Paragraphs "b" and "c" and Fig. 32 describe and show lamp position for North American public roads. For other countries such as Australia, check local laws and regulations for required warning lamp mounting positions.

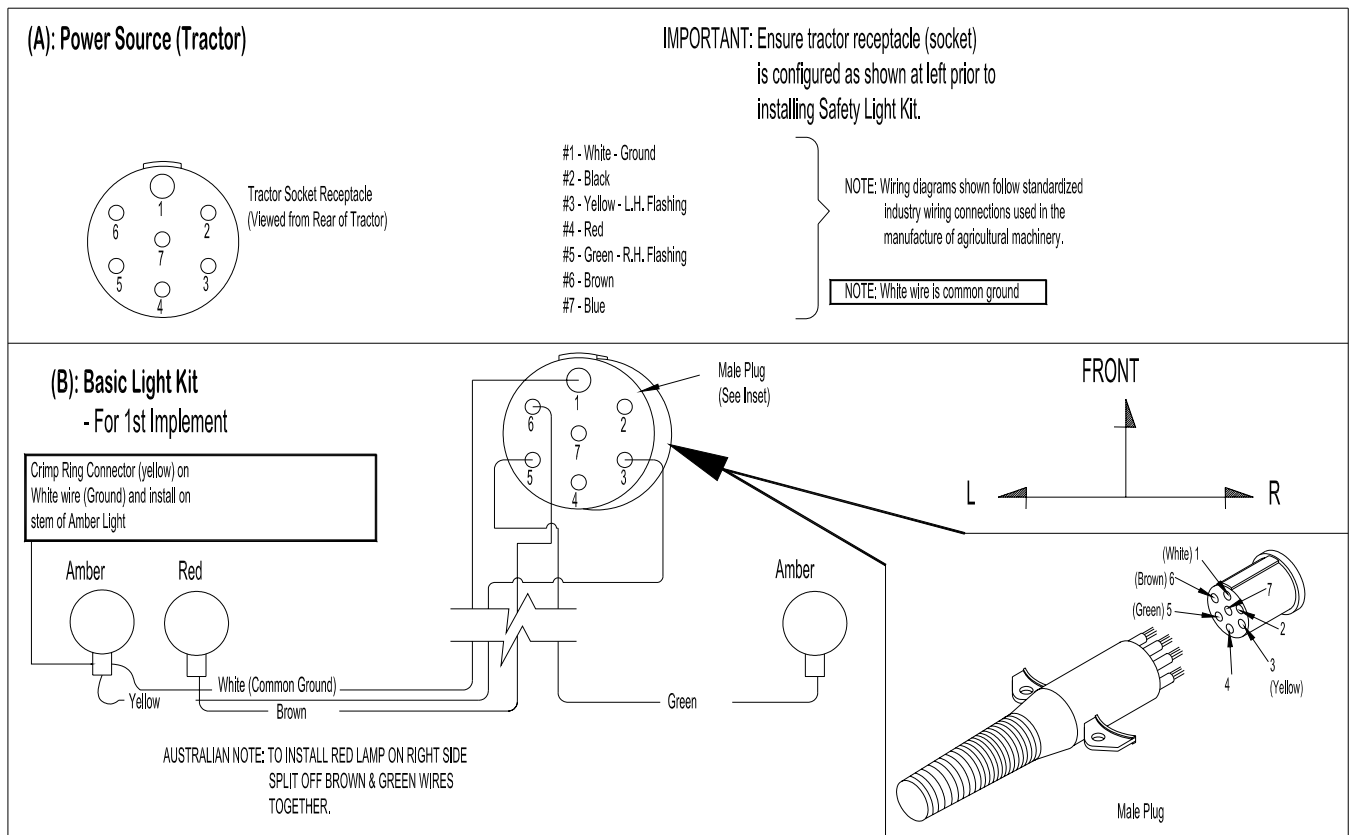


CAUTION: WHEN TRANSPORTING DISC OVER PUBLIC ROADS, USE THE SMV EMBLEM AND WARNING LIGHT FOR PROTECTION OF TRACTOR AND OTHER MOTOR VEHICLE OPERATORS. CHECK LOCAL LAWS FOR WIDTH AND HEIGHT MAXIMUMS.

F. INSTALL ELECTRICAL WIRING AS FOLLOWS:

- F1. See Fig. 33 – Run four (4) wire cables (brown, white, yellow, and green) from tractor socket receptacle to rear of disc. Split off green wire and run it to the R.H. amber lamp. Next, run white wire to amber lamp on L.H. side, then run yellow wire to L.H. amber lamp and run brown wire to red lamp on L.H. side. Strip wires and fasten ring connector to each wire. Install ring connector of each wire to threaded stem of each lamp as shown in Fig. 33. Tighten nut on each lamp.
- F2. Next, disassemble male plug, then insert all wires through spring end of male plug. Strip wires and insert each wire into specific terminal of outer half of male plug. Use Fig 33 to match wire color to proper terminal number. Reassemble both halves of male plug.
- F3. Insert male plug into tractor' socket receptacle. Activate warning light switch and check if all lamps are flashing.
- F4. **IMPORTANT:** Run wires along frame member. Do not run wires across open spaces. Wires that are run across open space will be damaged during discing operations or by people working on the disc.
- F5. Install a ½" I.D. x 9' (12.7mm x 2.74m) long plastic loom over wires that lead from male plug shown in Fig. 36. The plastic loom is installed by pushing the wires into the opening that runs the length of the loom.

FIG 28

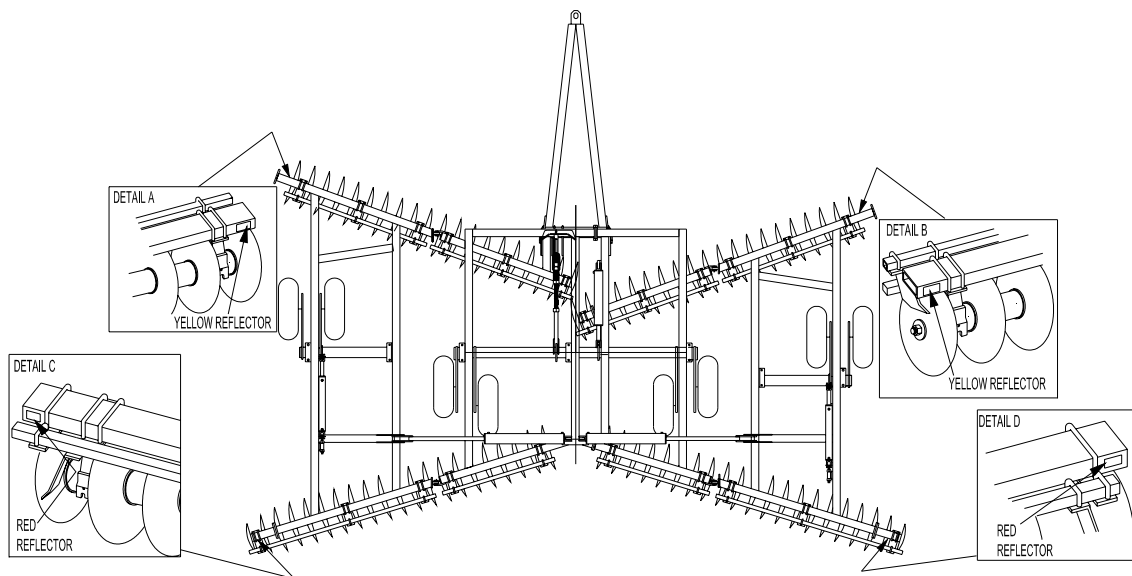


COMPONENTS: BASIC LIGHT KIT

- 1 – 7 pin male plug c/w 55 ft. (13.7m) 14/4 rib wire
- 3 – Nylon connectors (closed end)
- 2 – Lamps – amber both sides
- 1 – Lamp – red one side

- 10 – Cable Ties
- 1 – Ground Connector – ring type (7/16" – ½")
- 1 – 8' (24.4m) ½" plastic loom

Fig. 34



36. REFLECTOR DECAL INSTALLATION – See Fig. 34

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

- Place one 2" x 9" (50.8 x 228.6mm) red reflector decal on rear side of each rear gang beam. Locate decals approximately 1" (25.4mm) from end of gang beam. See detail "C" and "D".
- Place one 2" x 9" (50.8 x 228.6mm) yellow reflector decal on front side of each front gang beam. Locate decals approximately 1" (25.4mm) from end of gang beam. See detail "A" and "B".

**WING BEAM EXTENSIONS
8" SPACING**

MODEL	FRONT EXTENSION LENGTH	REAR EXTENSION LENGTH
4498 - 70B	16" Solid	42" Solid
4498 - 74B	24" Solid	50" Solid
4498 - 78B	36" Solid	58" Solid
4498 - 86B	24" Solid	46" Solid
4498 - 94B	36" Solid	66" Solid

9" SPACING

MODEL	FRONT EXTENSION LENGTH	REAR EXTENSION LENGTH
4499 - 62B	16" Solid	42" Solid
4499 - 66B	24" Solid	50" Solid
4499 - 70B	36" Solid	58" Solid
4499 - 78B	24" Solid	46" Solid
4499 - 86B	42" Solid	66" Solid

NOTE: Model 4490 uses a narrow wing frame (65" wide) for the following models:

8" spacing - 70, 74 and 78 blades

9" spacing - 62, 66 and 70 blades

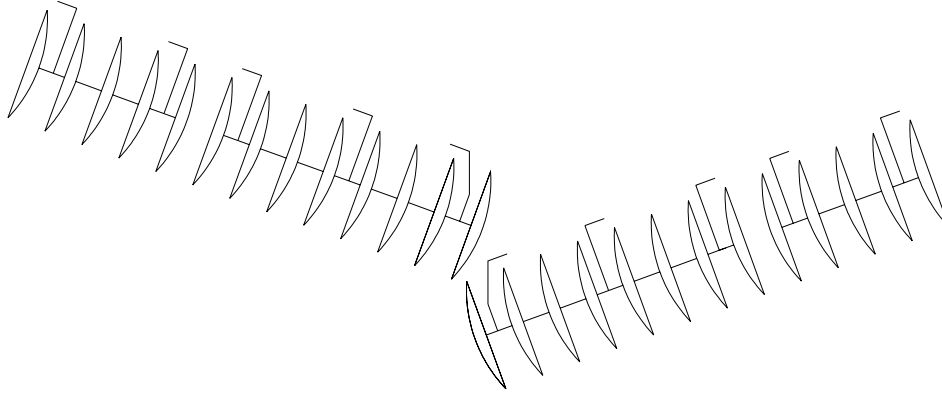
Model 4490 uses a wide wing frame (93" wide) for the following models:

8" spacing - 70, 74 and 78 blades

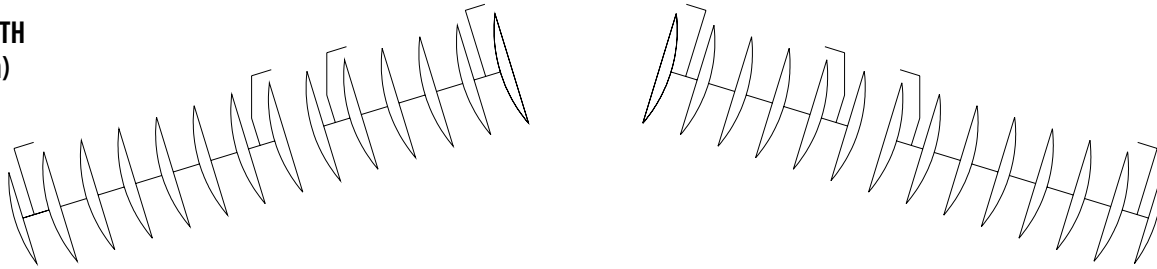
9" spacing - 62, 66 and 70 blades

**DISC GANG PATTERN - 8" SPACING
FRONT
54 BLADE**

MODEL 4490SN



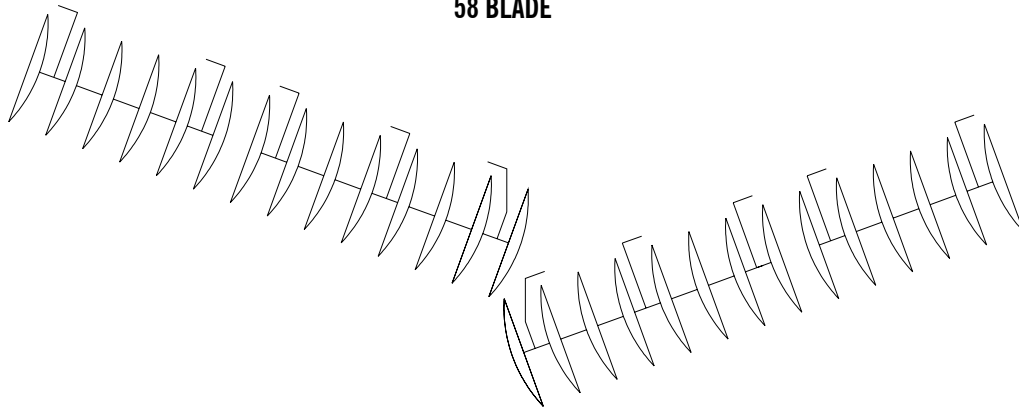
**APPROX. WIDTH
18-1/2' (5.6m)**



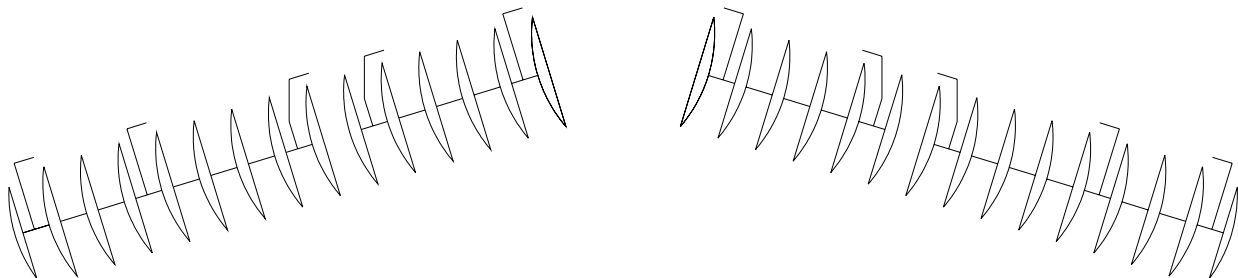
20 BEARINGS

**DISC GANG PATTERN - 8" SPACING
FRONT
58 BLADE**

MODEL 4490SN



**APPROX. WIDTH
20' (6.1m)**



20 BEARINGS

DISC GANG PATTERN - 8" SPACING

FRONT

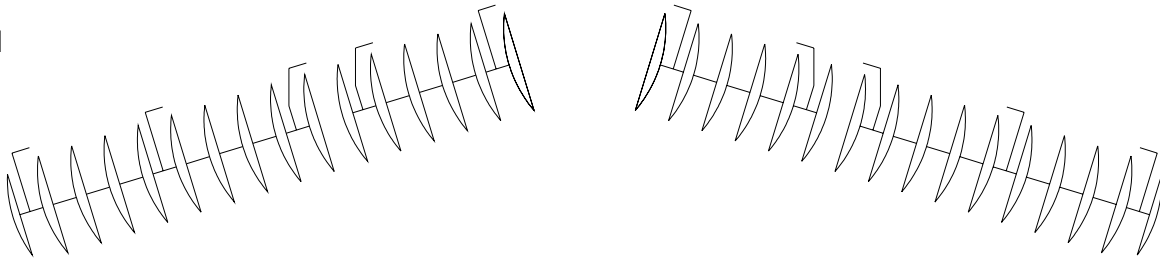
62 BLADE

use 2"
offset

use 2"
offset

MODEL 4490SN

APPROX. WIDTH
21' (6.4m)



20 BEARINGS

DISC GANG PATTERN - 8" SPACING

FRONT

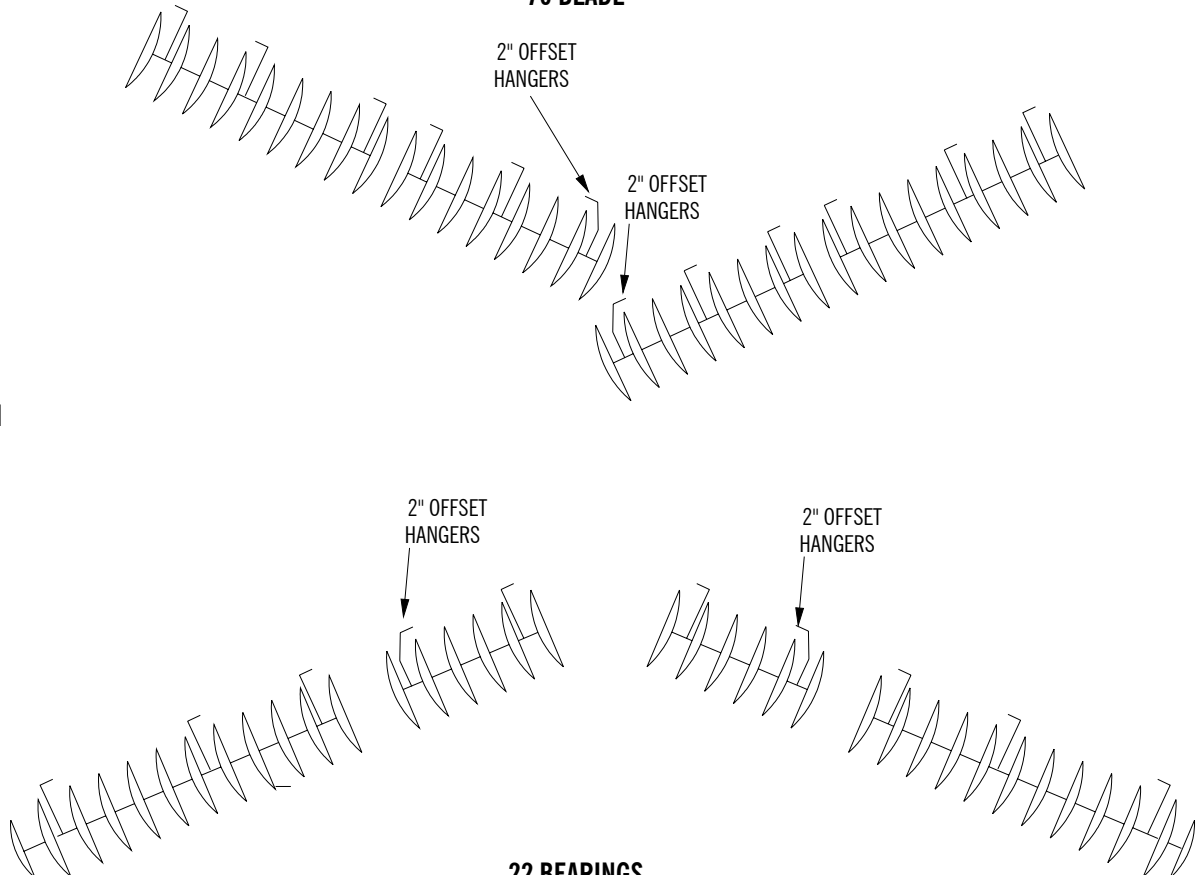
70 BLADE

2" OFFSET
HANGERS

2" OFFSET
HANGERS

MODEL 4490

APPROX. WIDTH
24' (7.3m)



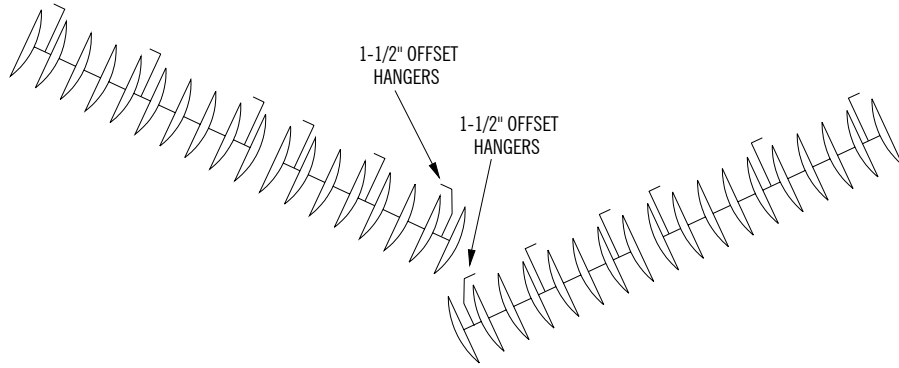
22 BEARINGS

DISC GANG PATTERN - 8" SPACING

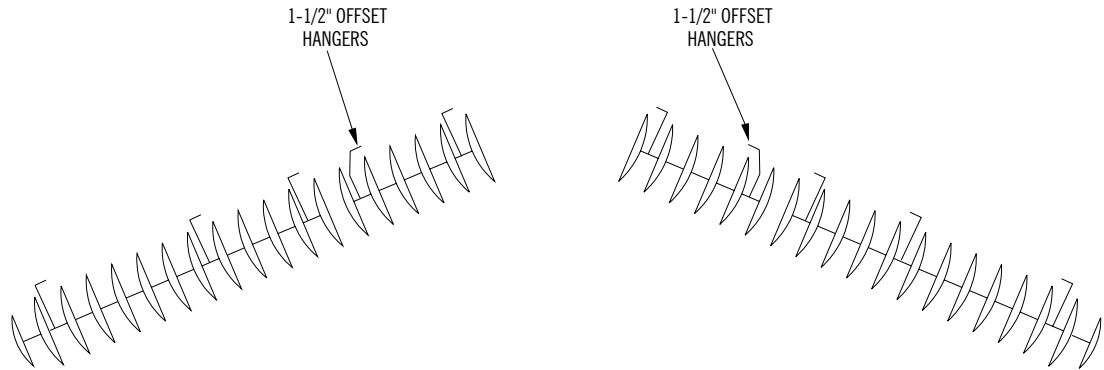
FRONT

74 BLADE

MODEL 4490



APPROX. WIDTH
25-1/2' (7.8m)



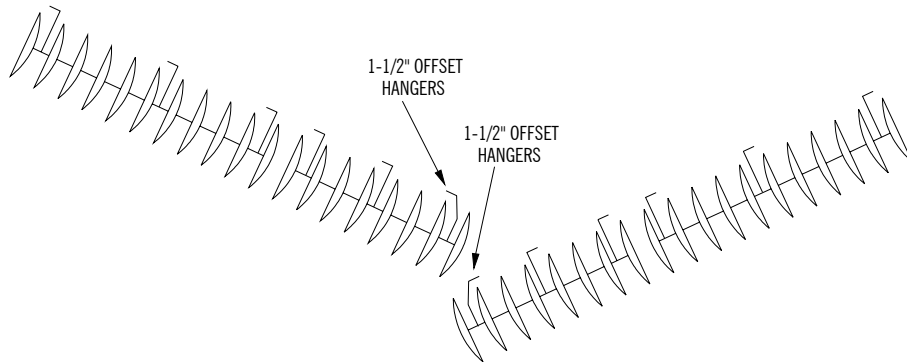
22 BEARINGS

DISC GANG PATTERN - 8" SPACING

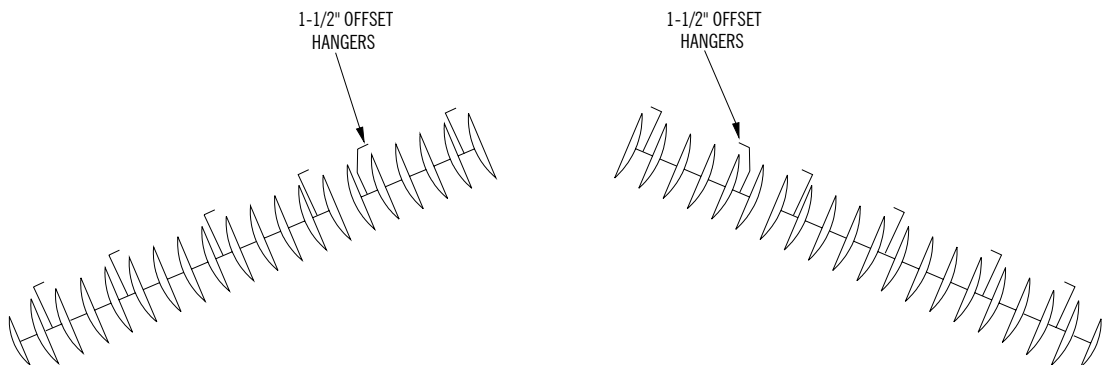
FRONT

78 BLADE

MODEL 4490



APPROX. WIDTH
27' (8.23m)



24 BEARINGS

DISC GANG PATTERN - 8" SPACING

FRONT

86 BLADE

MODEL 4490

1-1/2" OFFSET
HANGERS

1-1/2" OFFSET
HANGERS

**APPROX. WIDTH
29-1/2' (9.0m)**

1-1/2" OFFSET
HANGERS

1-1/2" OFFSET
HANGERS

24 BEARINGS

DISC GANG PATTERN - 8" SPACING

FRONT

94 BLADE

MODEL 4490

1-1/2" OFFSET
HANGERS

1-1/2" OFFSET
HANGERS

**APPROX. WIDTH
32' (9.7m)**

1-1/2" OFFSET
HANGERS

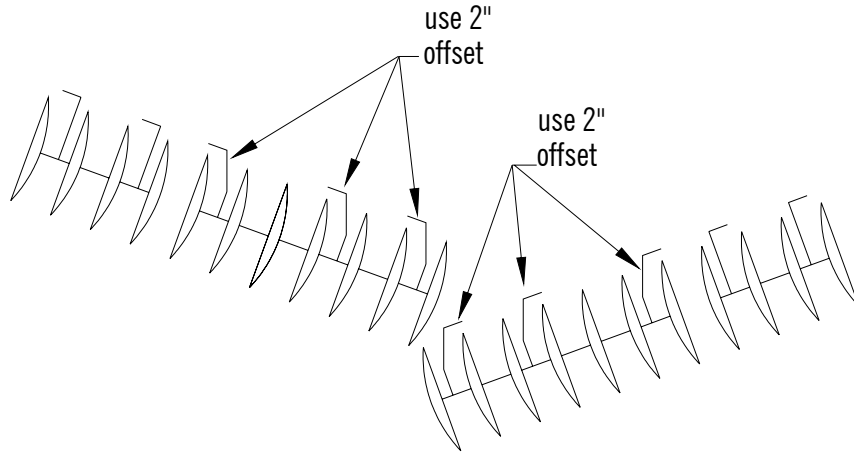
1-1/2" OFFSET
HANGERS

28 BEARINGS

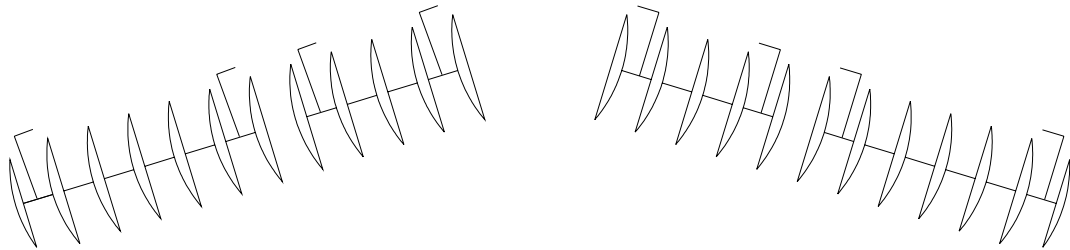
DISC GANG PATTERN - 9" SPACING

**FRONT
46 BLADE**

MODEL 4490SN



**APPROX. WIDTH
18 ft. (5.5m)**

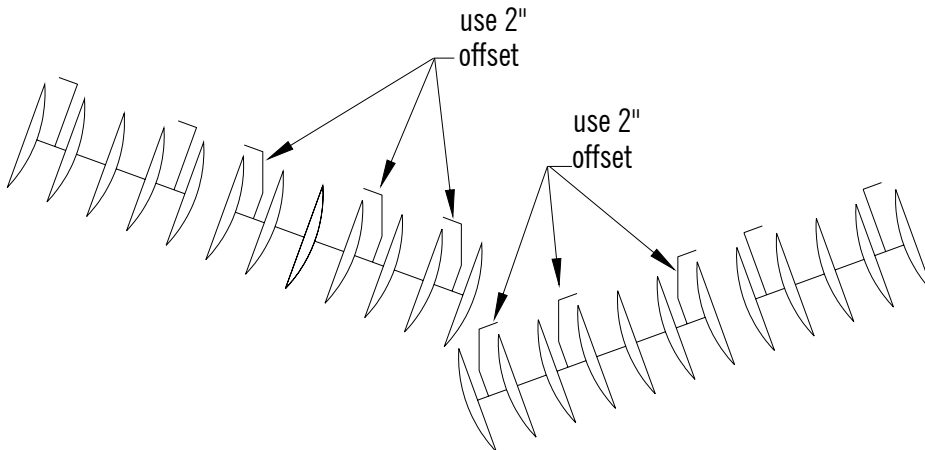


20 BEARINGS

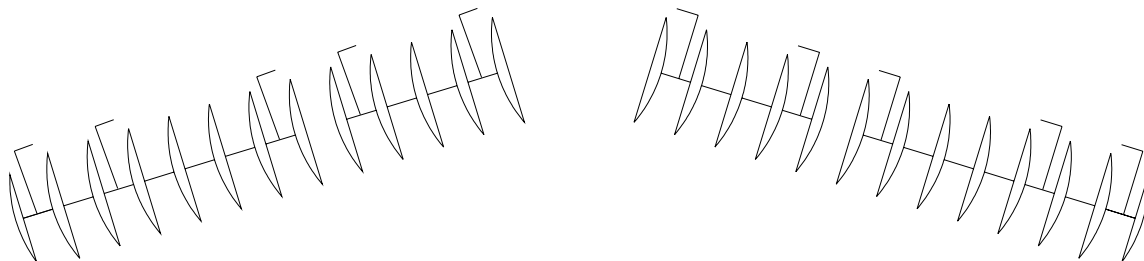
DISC GANG PATTERN - 9" SPACING

**FRONT
50 BLADE**

MODEL 4490SN



**APPROX. WIDTH
19-1/2 ft. (5.9m)**



20 BEARINGS

DISC GANG PATTERN - 9" SPACING

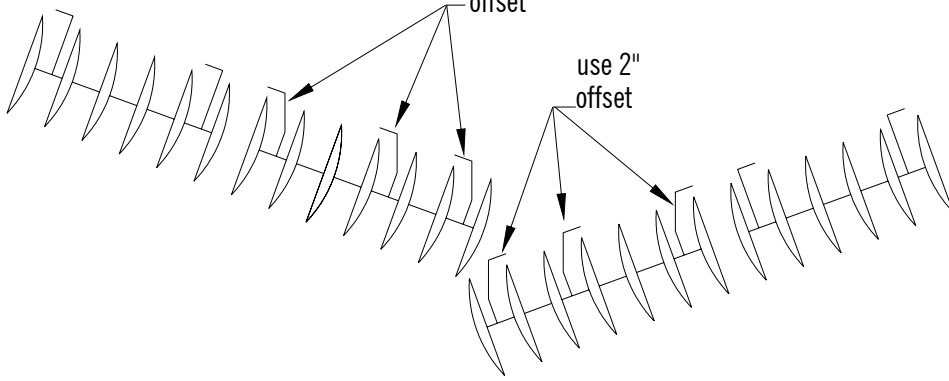
FRONT

54 BLADE

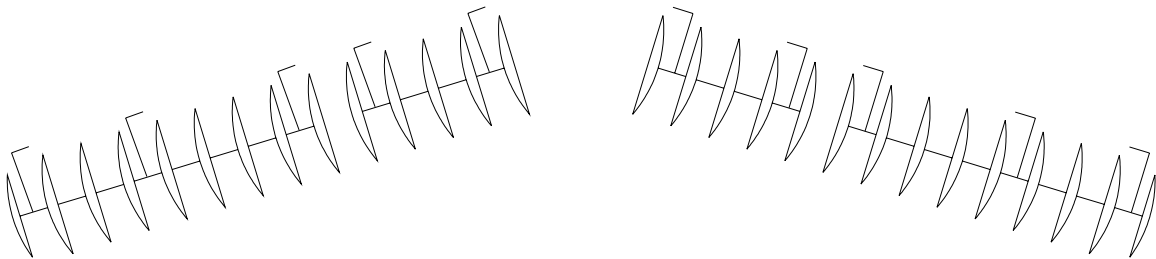
use 2"
offset

use 2"
offset

MODEL 4490SN



APPROX. WIDTH
21 ft. (6.4m)



20 BEARINGS

DISC GANG PATTERN - 9" SPACING

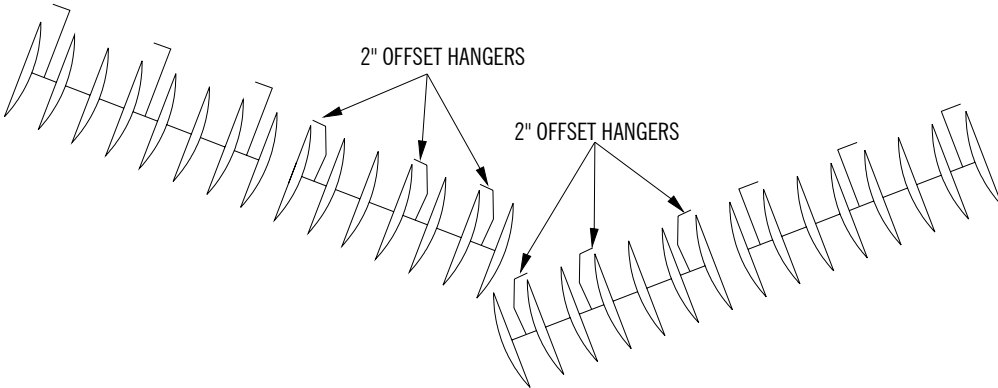
FRONT

62 BLADE

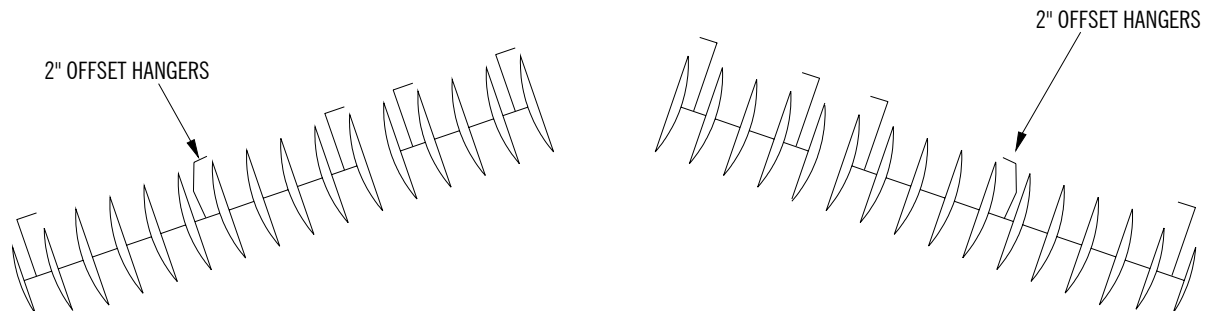
2" OFFSET HANGERS

2" OFFSET HANGERS

MODEL 4490



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



22 BEARINGS

DISC GANG PATTERN - 9" SPACING

FRONT

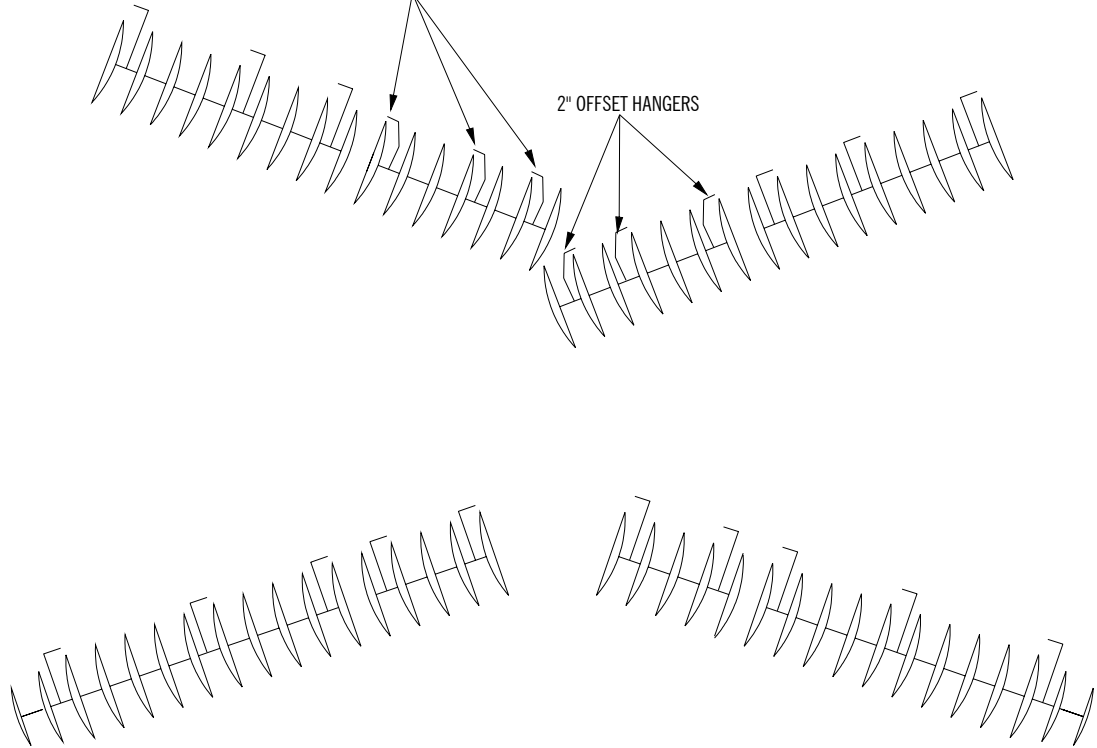
66 BLADE

2" OFFSET HANGERS

2" OFFSET HANGERS

MODEL 4490

APPROX. WIDTH
25 ft. (7.62m)



22 BEARINGS

DISC GANG PATTERN - 9" SPACING

FRONT

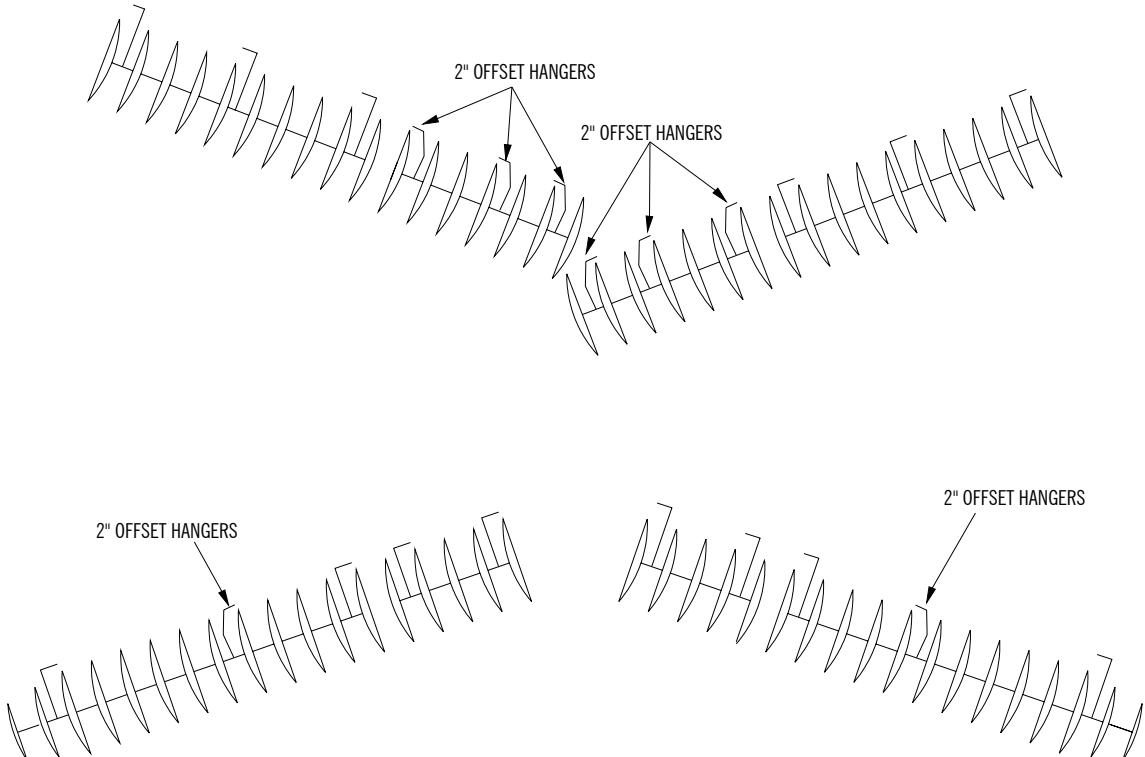
70 BLADE

2" OFFSET HANGERS

2" OFFSET HANGERS

MODEL 4490

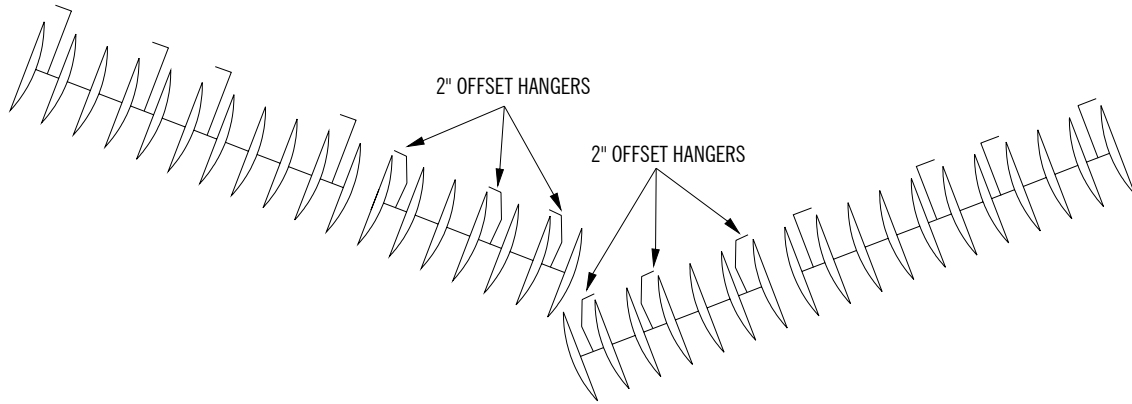
APPROX. WIDTH
26-1/2 ft. (8.08m)



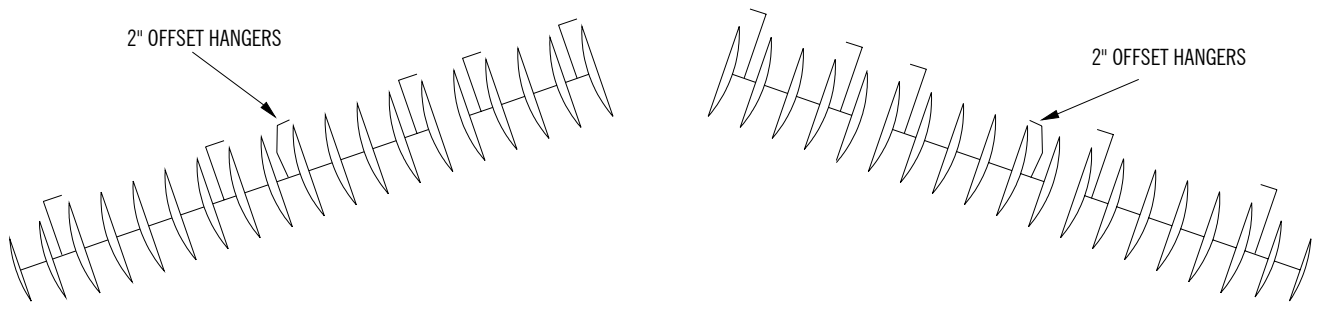
22 BEARINGS

**DISC GANG PATTERN - 9" SPACING
FRONT
74 BLADE**

MODEL 4490



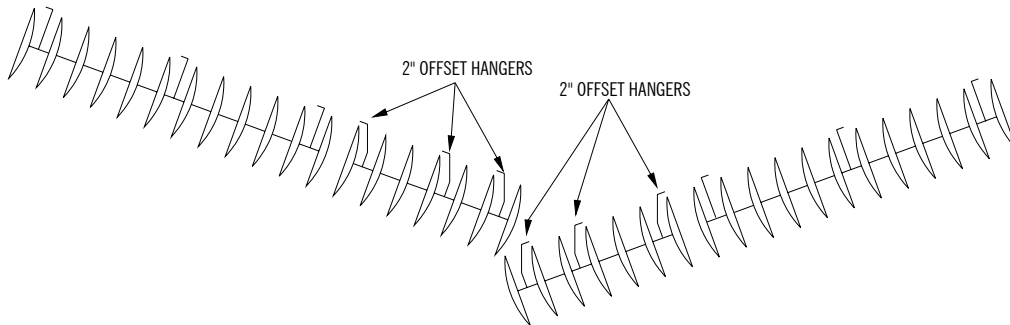
**APPROX. WIDTH
28 ft. (8.53m)**



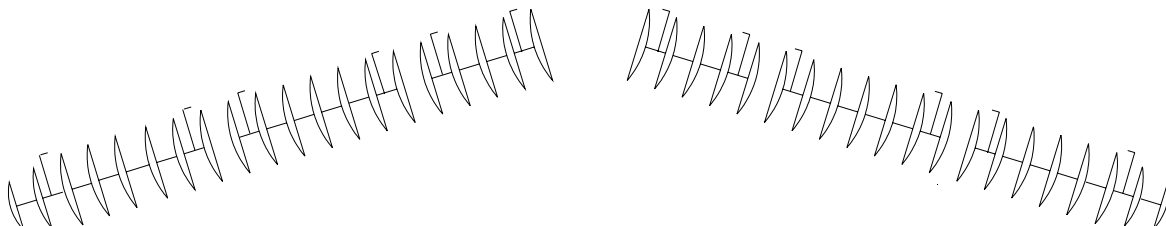
20 BEARINGS

**DISC GANG PATTERN - 9" SPACING
FRONT
78 BLADE**

MODEL 4490



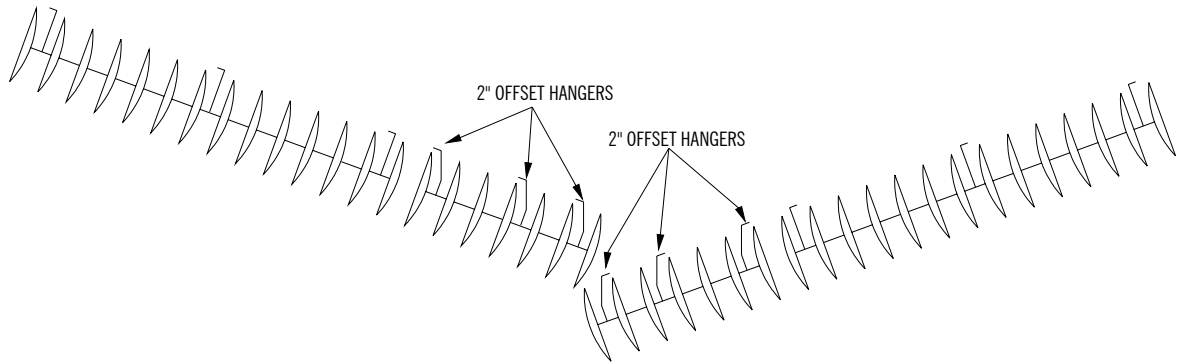
**APPROX. WIDTH
29-1/2 ft. (8.99m)**



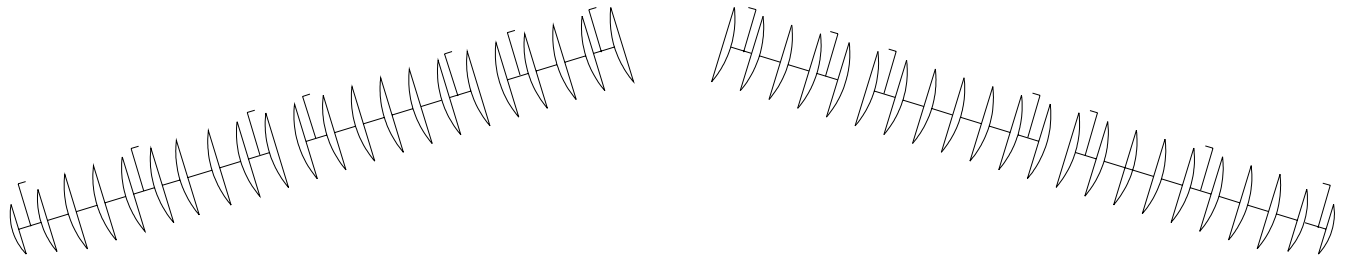
24 BEARINGS

**DISC GANG PATTERN - 9" SPACING
FRONT
86 BLADE**

MODEL 4490



**APPROX. WIDTH
32-1/2 ft. (9.91m)**



26 BEARINGS

PARTS LIST INDEX

PART NO.	DESCRIPTION	PAGE
	Frame	43
	Gang Beam Extension	44
	Paint and Decals	45
	Hitch and Leveling Crank	46
	Rockshaft and Wheel	47
	Hydraulic System	48
	Scraper Assembly	49
	Disc Gang Assembly	50
	Stone Flex Hanger	51
	Rockshaft Cylinders	52
	Wing Lift Cylinder	53
	Cylinder Seal Kits	53
	Light Kit	54

MODEL 4490 DISC

FRAME ASSEMBLY

REF. NO.	PART NO.	DESCRIPTION	QTY REQ'D
1	DFA13520	Main Frame c/w ref. #'s 4, 8, 9, 11 and 12	1
2	DWA13521	L.H. Wide Wing Frame - 93" (2362mm) overall width for 28' (8.53m) models and larger c/w gang beam shims and 3/4" x 2-1/2" (19.1 x 63.5mm) gang beam bolts with nuts and lockwashers	1
	DWA13523	L.H. Narrow Wing Frame - 65" (1651mm) overall width for 27' (8.23m) models and smaller c/w gang beam shims and 3/4" x 2-1/2" (19.1 x 63.5mm) gang beam bolts with nuts and lockwashers	1
3	DWA13522	R.H. Wide Wing Frame - 93" (2362m) overall width for 28' (8.53m) models and larger c/w gang beam shims and with 3/4" x 2-1/2" (19.1 x 63.5mm) gang beam bolts with nuts and lockwashers	1
	DWA13524	R.H. Narrow Wing Frame - 65" (1651mm) overall width for 27' (8.23m) models and smaller c/w gang beam shims and 3/4" x 2-1/2" (19.1 x 63.5mm) gang beam bolts with nuts and lockwashers	1
4	C50546	SMV Bracket	2
5	DC9615	10-7/8" (276.2mm) long Compression Spring	1
6	B100140	1" x 14" (25.4 x 355.6mm) N.C. hex bolt	1
7	B125080	1-1/4" x 8" (31.8 x 203.2mm) N.C. hex bolt	4
8	BW125	1-1/4" (31.8mm) Lockwasher	4
9	BN100	1" (25.4mm) N.C. hex nut	2
10	BN125	1-1/4" (31.8mm) N.C. hex nut	4
11	DFA10536	Single Spring Cushion Plate	1
12	DFA9564	1-1/4" (31.7mm) N.C. I-Bolt Cylinder Lug	2
13		Hinge Lug – Bolt on – Front R.H. and Rear L.H. & R.H. – used 2006 and later.	3
14		Hinge Lug – Bolt on – Front L.H. Only – used 2006 and later.	1
15			
16			
17			

* As Required

MODEL 4490 DISC

GANG BEAM ASSEMBLY

REF. NO.	PART NO.	DESCRIPTION	QTY REQ'D
1	DWA10192 DWA10195 DWA10198	8" SPACING 16" (406.4mm) Front Wing Gang Beam – 70 blade 24" (609.6mm) Front Wing Gang Beam – 74 & 86 blade 36" (914.4mm) Front Wing Gang Beam – 78 & 94 blade 46" (1168.4mm) Front Wing Gang Beam – 82 blade	2
		9" SPACING 16" (406.4mm) Front Wing Gang Beam – 62 & 74 blade 24" (609.6mm) Front Wing Gang Beam – 66 & 78 blade 36" (914.4mm) Front Wing Gang Beam – 70 blade 42" (1066.8mm) Front Wing Gang Beam – 86 & 74 blade	2
	DWA10202 DWA10208 DWA10226 DWA10205 DWA10229	8" SPACING 42" (1066.8mm) Rear Wing Gang Beam – 70 blade 50" (1270mm) Rear Wing Gang Beam – 74 blade 58" (1473.2mm) Rear Wing Gang Beam – 78 blade 46" (1168.4mm) Rear Wing Gang Beam – 86 blade 66" (1676.4mm) Rear Wing Gang Beam – 94 blade	2
		9" SPACING 42" (1066.8mm) Rear Wing Gang Beam – 62 & 74 blade 50" (1270mm) Rear Wing Gang Beam – 66 blade 58" (1473.2mm) Rear Wing Gang Beam – 70 blade 46" (1168.4mm) Rear Wing Gang Beam – 78 blade 66" (1676.4mm) Rear Wing Gang Beam – 86 blade	2
3	DGA10107	12" (304.8mm) Gang Beam Extension	4
4	DF10046	Gang Beam Shim	*
5		¾" x 2-1/2" (19.1 x 63.5mm) N.C. hex bolt Gr. 5 (plated)	32
6		¾" (19.1mm) N.C. hex nut (plated)	32
7		¾" (19.1mm) Lockwasher	32

* As Required

MODEL 4490 DISC

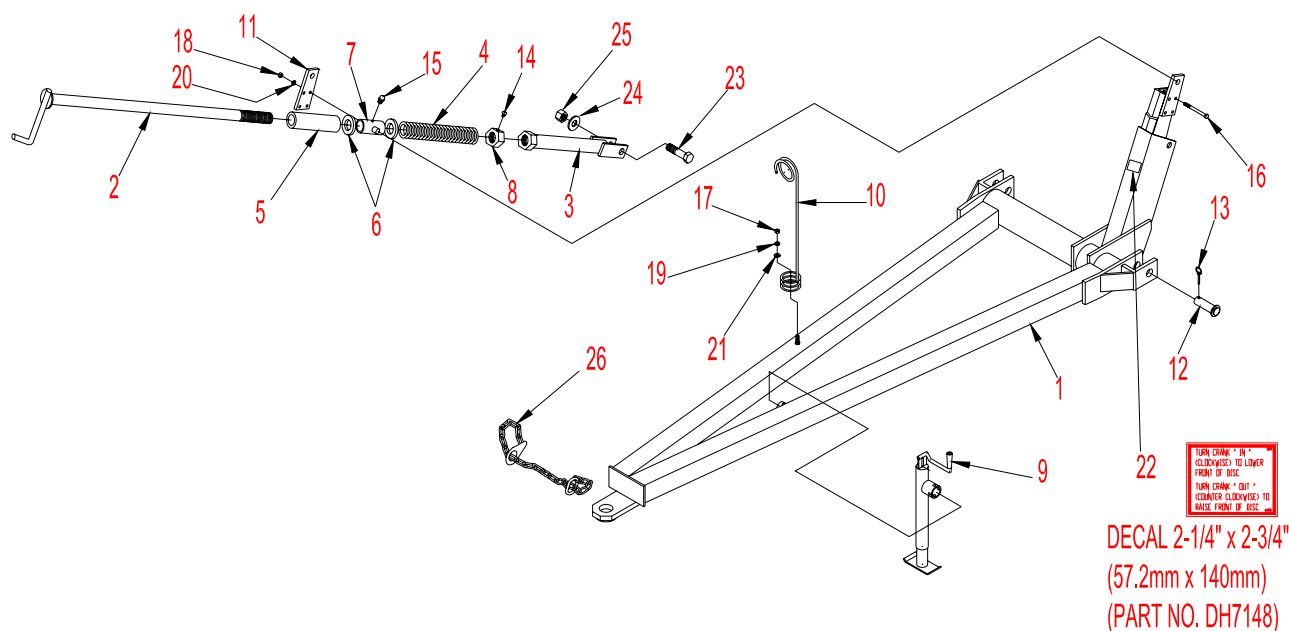
DECALS – FRAME and GANG BEAM

REF. NO.	PART NO.	DESCRIPTION	QTY REQ'D
1	DF13500	4490 Decal – 3-1/4" x 11" (82.6 x 279)	4
2	DF13002	Ezee-On Decal – 2-1/2" x 15" (63.5 x 381mm)	4
3	DF9507	Danger Decal – 3-1/2" x 14-7/8" (88.9 x 311mm)	2
4	DF13001	Hydraulic Lockup Decal – 2-5/8" x 7" (66.7 x 178mm)	1
5	DF7152	Maintenance Decal – 2-1/2" x 9" (63.5 x 229mm)	1
6	DF9506	Danger, Caution Decal – 2-1/4" x 11-1/2" (57.2 x 292mm)	1
7	DF9510	Caution Decal – 3-1/2" x 15-1/4" (88.9 x 387mm)	1
8	DF10057	Yellow Reflector – 2" x 9" (50.8 x 228.6mm)	6
9	DF10050	Red Reflector – 2" x 9" (50.8 x 228.6mm)	6
10	A70023	Serial Tag – 2" x 3-1/4" (50.8 x 82.6mm)	1
11	A75764	Read Manual Decal – 2-5/16" x 4-1/2" (58.6 x 114.3mm)	1
12	DF9510	Safety Recommendation Decal – 3-1/2" x 15-1/4" (88.9 x 387.4mm)	1
13	A75759	Important Decal – 2-5/8" x 4-3/4" (66.7mm x 120.7mm)	1
--	L010	1 Liter Black Paint	*
--	L016	½ Pint Black Paint	*
--	DF7160	1 Liter new Ezee-On yellow paint	*
--	DF7161	½ Pint new Ezee-On yellow paint	*

* as required

NOTE: See Page 46 for a decal on Hitch.

MODEL 4490 DISC

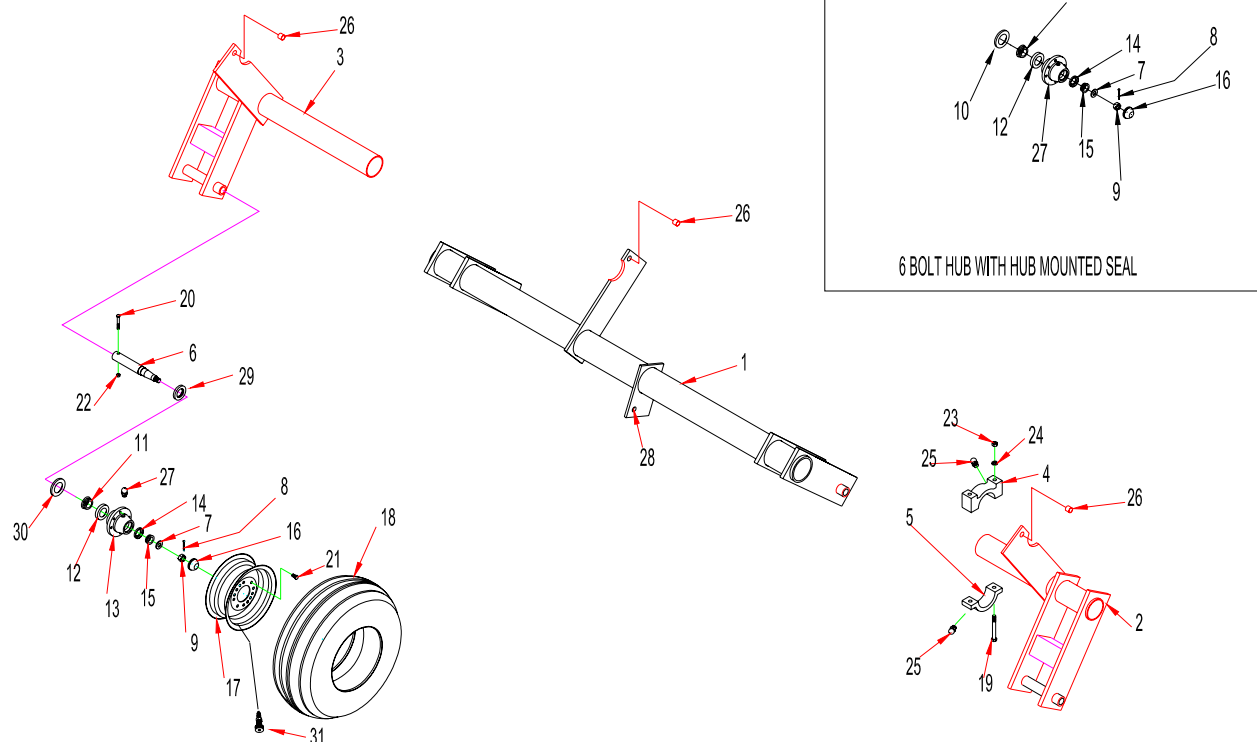


HITCH and LEVELING CRANK ASSEMBLY

REF. NO.	PART NO.	DESCRIPTION	QTY REQ'D
1	DHB13097	Hitch c/w item 11, 12, 13 and 18	1
2	DCA9970	Leveling Crank – 50" (1270mm) Long	1
3	DCA5195	Leveling Link – 16-3/4" (60.4mm) Pipe Length	1
4	DC9618	Compression Spring	1
5	DC13098	Spacer Tube – 2-3/8" O.D. x 3/16" I.D. x 11" (60.2 x 4.76 x 279mm) Long	1
6	DC15	Thrust Bearing – Timken #T199	2
7	DCA5184	Bearing Tube – Leveling Crank	1
8	DH5	2" N.C (50.8mm) Heavy Hex Nut – Drilled for set screw	1
9	DHB5170	Hitch Jack	1
10	DH9961	Hose Support – Spring coil type	1
11	DH5146	Leveling Arm Lug	1
12	DHA9605	Hitch Pin – 1-1/2" Dia. X 5" (38.1 x 127mm)	2
13	DH12517	7/16" x 1-7/16" (10.9 x 36.3mm) Lynch Pin	2
14	---	1/2" x 1" (12.7 x 25.4mm) N.C. Square Head Set Screw	1
15	10GN1	1/4" (6.35mm) – 28 Straight Grease Fitting	1
16	---	1/2" x 5" (12.7 x 127mm) N.C. Hex Bolt	4
17	---	5/8" (15.7mm) N.C. Hex Bolt	1
18	---	1/2" (12.7mm) N.C. Hex Nut	4
19	---	5/8" (15.7mm) Lockwasher	1
20	---	1/2" (12.7mm) Lockwasher	4
21	---	11/16" I.D. x 1-3/4" O.D. (17.2 x 44.4mm) Flatwasher	1
22	DH7148	Crank Decal – 2-1/4" x 2-3/4" (57.2 x 140mm)	1
23	DR5215	1-1/4" x 4-3/4" N.C. (31.7 x 120.6mm) Hex Bolt w/special thread length	1
24	---	1-1/4" (31.7mm) Lockwasher	1
25	---	1-1/4" (31.7mm) N.C. Hex Nut	1

* as required

MODEL 4490 DISC



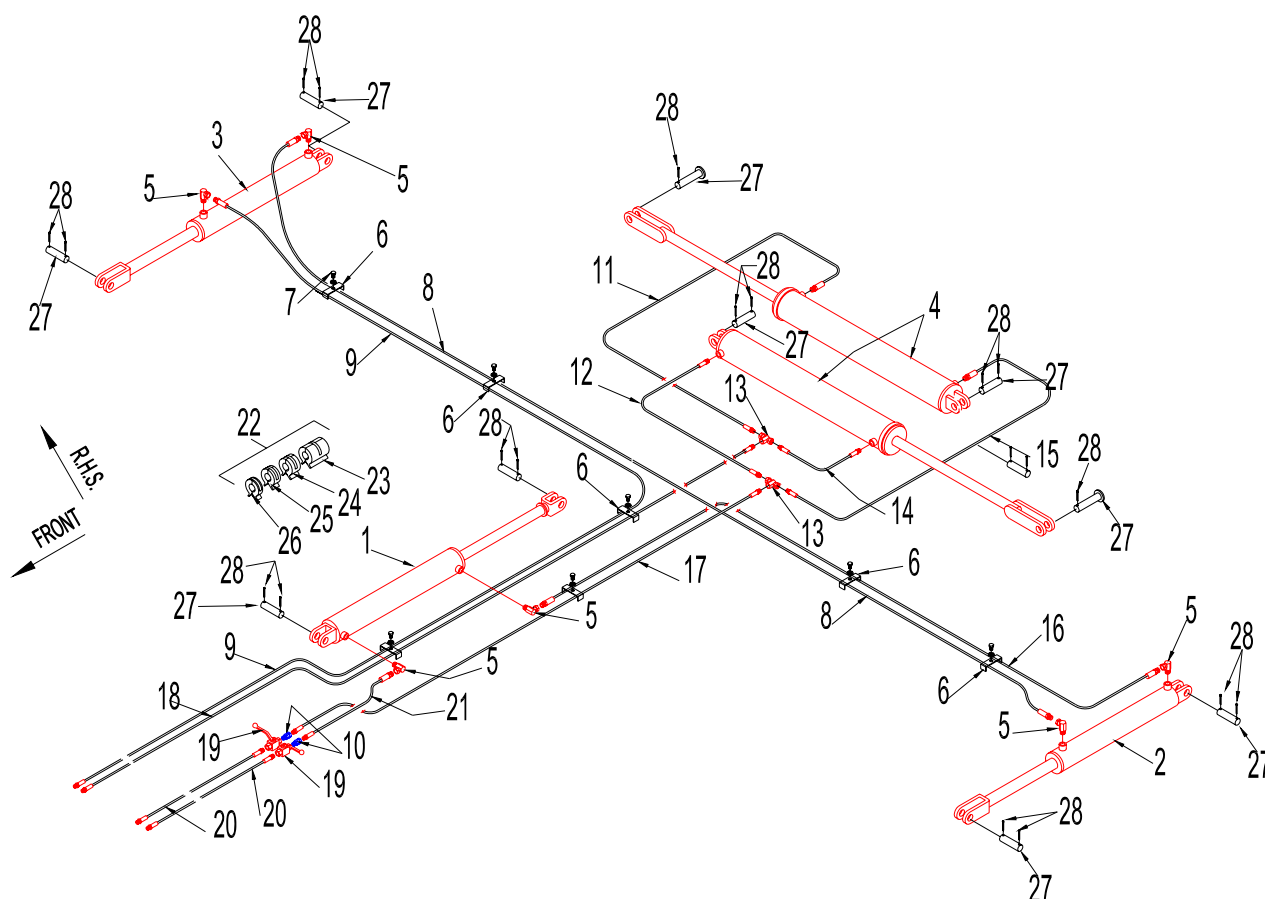
ROCKSHAFT and WHEEL ASSEMBLY

REF. NO	PART. NO	DESCRIPTION	QTY. REQ'D
1	DRA13525	Main Frame Rockshaft	1
2	DRA13093	L.H. Narrow Wing Rockshaft	1
3	DRA13095	R.H. Narrow Wing Rockshaft	1
4	DR8601T	Rockshaft Bearing – top half	7
5	DR8601B	Rockshaft Bearing – bottom half	7
6	DR7156	618 Spindle – 14-1/2" (368.3mm)	*
7	---	2" O.D. x 1-1/16" I.D. x 1/8" (50.8 x 27.0 x 3.2mm) Flatwasher	*
8	---	3/16" x 1-1/4" (4.8 x 31.2mm) Cotter Pin	*
9	DR110	1" N.F. (25.4mm) Hex Slotted Nut	*
10	DR122	Grease Seal	*
11	DR120	Cone Bearing - #LM25580	*
12	DR118	Cup - #LM25520	*
13	DRA9	618 Hub c/w Cups	*
14	DR92	Cup - #LM48510	*
15	DR91	Cone-bearing - #LM48548	*
16	DR123	Hub Cap	*

REF. NO	PART. NO	DESCRIPTION	QTY. REQ'D
17	C60160	15" x 8" (381 x 203.2mm) – 6 bolt rim w/stem protector	*
18	---	11L x 15 FI Load Range F – Main Frame Only	4
		11L x 15 FI Load Range C – Wing Frame Only	4
19	---	3/4" x 6-1/2" N.C. (19 x 165mm) Hex Bolt Gr. 5	*
20	---	1/2" x 3-1/2" N.C. (12.7 x 88.9mm) Hex Bolt Gr. 5	*
21	DR125	9/16" x 1-1/8" (14.3 x 28.6mm) Wheel Bolt	*
22	---	1/2" (12.7mm) N.C. Nylon Locknut	*
23	---	3/4" (19.1mm) N.C. Hex Nut	*
24	---	3/4" (19.1mm) Lockwasher	*
25	10GN1	1/4" (6.35mm) – 28 Straight Grease Fitting	*
26	DR13120	1-1/4" I.D. x 1-1/4" (31.7 x 31.7mm) Long Steel Insert	*
27	10GN3	Pressed in grease fitting	*
	10GN1	1/4" (6.35mm) – 28 Straight Grease Fitting – Threaded	*
28	DR5227	1-1/4" I.D. (31.7mm) Ball Joint – weld-on	*
29	DR13190	Seal – Spindle Mount Type	*
30	DR13191	Seal Cup – Spindle Mount Type Seal	*
31	C60154	Steel Valve Stem	*

*as required

MODEL 4490 DISC



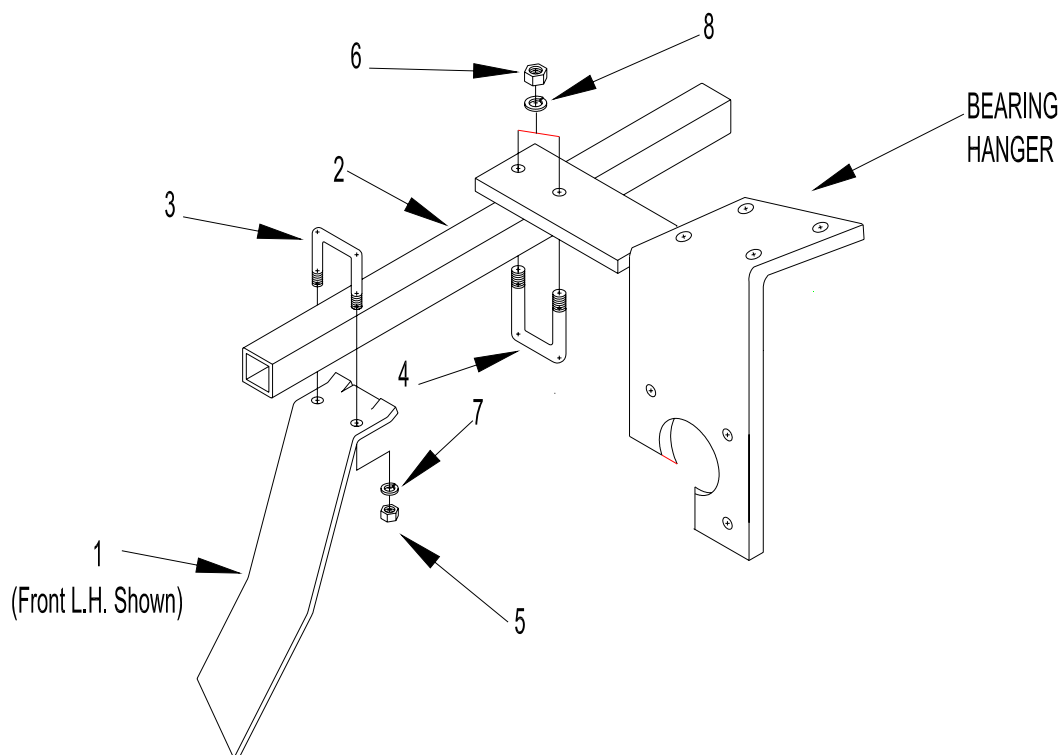
HYDRAULIC ASSEMBLY

REF. NO	PART. NO	DESCRIPTION	QTY. REQ'D
1	306	4" x 24" (102 x 610mm) Main Frame Rockshaft Cylinder	1
2	305	3-1/2" x 24" (89 x 610mm) L.H. Wing Rockshaft Cylinder	1
3	304	3" x 24" (76 x 610mm) R.H. Wing Rockshaft Cylinder	1
4	242	5" x 36" (127 x 914mm) Main Frame Rockshaft Cylinder	2
5	DL9775	1/2" (12.7mm) x 90 degree Swivel Street Elbow	6
6	DL13186	Hose Retainer – 2 Hose	7
7	---	1/2" x 3/4" (12.7 x 19mm) Bolt w/Lockwashers Gr. 5	7
8	D4354	3/8" x 225" (9.4 x 5715mm) Hydraulic Hose – Narrow Wing	1
	D4355	3/8" x 292" (9.4 x 7417mm) Hydraulic Hose – Wide Wing	1
9	D4356	3/8" x 393" (9.4 x 9982mm) Hydraulic Hose – Wide Wing	1
	D4357	3/8" x 412" (9.4 x 10465mm) Hydraulic Hose – Wide Wing	1
10	L1619	3/8" (9.4mm) Male – Female Swivel Adapter	2
11	L2910	3/8" x 42" (9.4 x 1067mm) Hydraulic Hose w/3/8" (9.4mm) ends	1
12	L2937	1/4" x 30" (6.35 x 762mm) Hydraulic Hose w/3/8" (9.4mm) ends	1
13	DL5282	Female Swivel Tee	2
14	H30	3/8" x 30" (9.4 x 762mm) Hydraulic Hose w/3/8" (9.4mm) ends	1
15	D4358	1/4" x 42" (6.35 x 1067mm) Hydraulic Hose w/3/8" (9.4mm) ends	1

REF. NO	PART. NO	DESCRIPTION	QTY. REQ'D
16	D4359	3/8" x 185" (9.4 x 4699mm) Hydraulic Hose – Narrow Wing	1
	D4360	3/8" x 212" (9.4 x 5385mm) Hydraulic Hose – Wide Wing	1
17	D4361	3/8" x 104" (9.4 x 2642mm) Hydraulic Hose w/3/8" (9.4mm) ends.	1
18	D4362	3/8" x 278" (9.4 x 7061mm) Hydraulic Hose w/1/2" & 3/8" (12.7 & 9.4mm) ends	1
19	DL13099	Hydraulic Shut Off Valve	2
20	D4362	3/8" x 168" (9.4 x 4267mm) Hydraulic Hose w/1/2" & 3/8" (12.7 & 9.4mm) ends	1
21	D4364	3/8" x 22" (9.4 x 559mm) Hydraulic Hose w/1/2" & 3/8" (12.7 & 9.4mm) ends	1
22	C50724	Wadler Stroke Control Segment Package – 8-3/4" (222mm)	2
23	C50717	4-1/4" (108mm) Depth Stop	2
24	C50714	2" (50.8mm) Depth Stop	2
25	C50712	1-1/2" (38.1mm) Depth Stop	2
26	C50711	1" (25.4mm) Depth Stop	2
27	DR5262	1-1/4" dia. X 4-3/16" (31.7 x 106.4mm) Clevis Pin	10
28	BP3117	5/16" x 2" (7.87 x 50.8mm) Cotter Pin	18

* as required

MODEL 4490 DISC

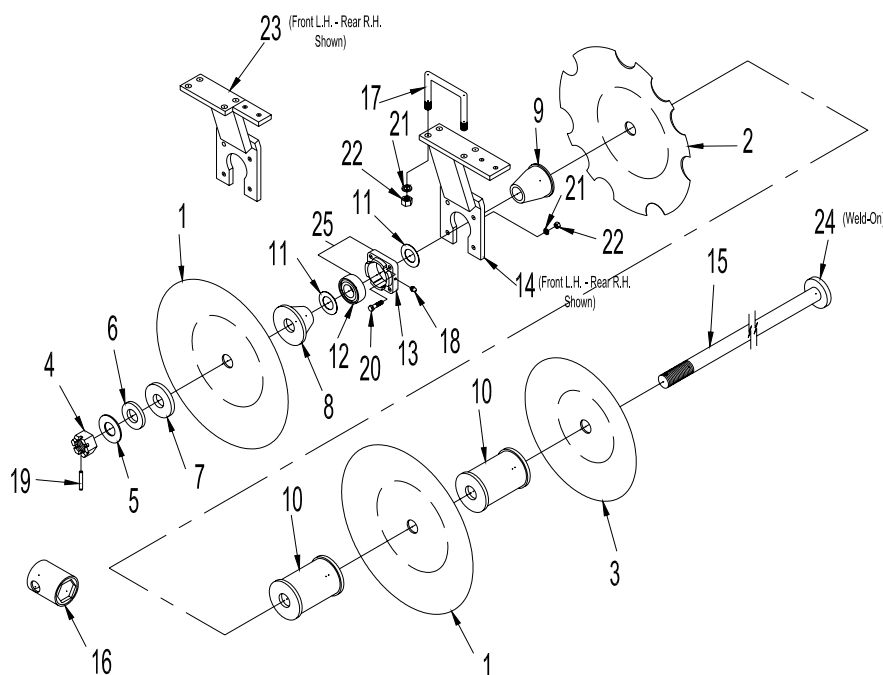


SCRAPER ASSEMBLY

REF. NO.	PART NO.	DESCRIPTION	QTY REQ'D
1	DG6083	Front R.H. – Rear L.H. Scraper	*
	DG6084	Front L.H. – Rear R.H. Scraper	*
2		SCRAPER BAR – 8" (203.2mm) SPACING	
	DS49	6 Blade Scraper Bar – 49" (1245mm)	*
	DS57	7 Blade Scraper Bar – 57-1/2" (1461mm)	*
	DS65	8 Blade Scraper Bar – 65-1/2" (1664mm)	*
	DS73	9 Blade Scraper Bar – 73-1/2" (1867mm)	*
	DS82	10 Blade Scraper Bar – 82" (2083mm)	*
	DS90	11 Blade Scraper Bar – 90" (2286mm)	*
	DS99	12 Blade Scraper Bar – 99" (2515mm)	*
	DS107	13 Blade Scraper Bar – 107" (2718mm)	*
	DS115	14 Blade Scraper Bar – 115-1/2" (2934mm)	*
	DS123	15 Blade Scraper Bar – 123-1/2" (3137mm)	*
		SCRAPER BAR – 9" (228.6mm) SPACING	
	DS45	5 Blade Scraper Bar – 45-1/2" (1156mm)	*
	DS55	6 Blade Scraper Bar – 55" (1397mm)	*
	DS64	7 Blade Scraper Bar – 64" (1626mm)	*
	DS73	8 Blade Scraper Bar – 73-1/2" (1867mm)	*
	DS82	9 Blade Scraper Bar – 82" (2083mm)	*
	DS92	10 Blade Scraper Bar – 92" (2337mm)	*
	DS101	11 Blade Scraper Bar – 101-1/2" (2578mm)	*
	DS110	12 Blade Scraper Bar – 110" (2794mm)	*
	DS120	13 Blade Scraper Bar – 120" (3048mm)	*
	DS129	14 Blade Scraper Bar – 129-1/2" (3289mm)	*
3	DG5308	1/2" x 2" (12.7 x 50.8mm) U-Bolt – plated	*
4	DG5309	5/8" x 2" (15.9 x 50.8mm) U-Bolt – plated	*
5		1/2" (12.7mm) N.C. Hex Nut – plated	*
6		5/8" (15.9mm) N.C. Hex Nut – plated	*
7		1/2" (12.7mm) Lockwasher – plated	*
8		5/8" (15.9mm) Lockwasher – plated	*

* as required

MODEL 4490 DISC

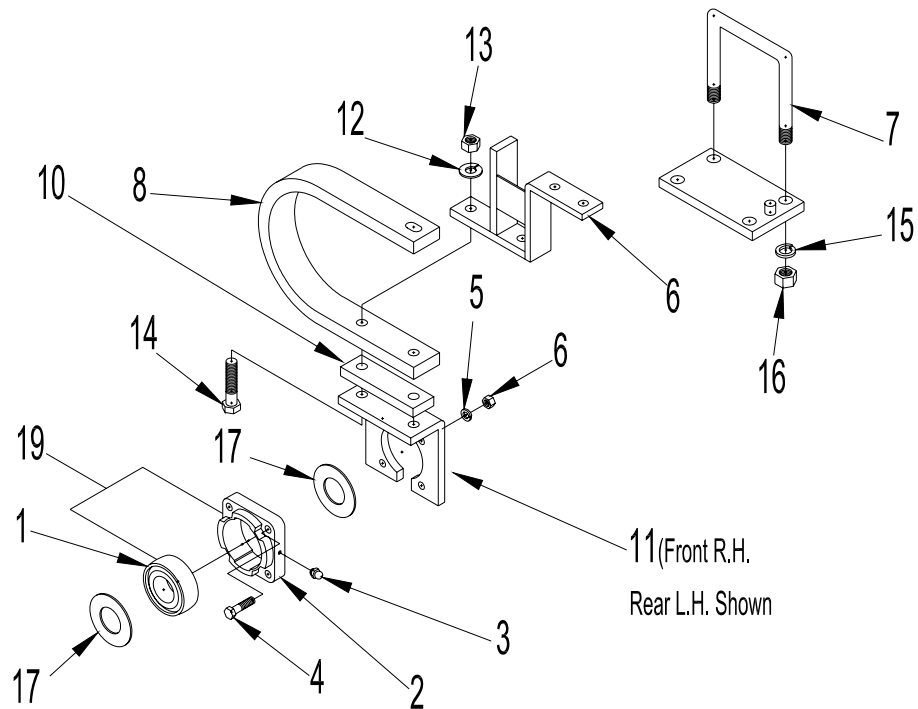


DISC GANG ASSEMBLY

REF. NO	PART. NO	DESCRIPTION	QTY. REQ'D	REF. NO	PART. NO	DESCRIPTION	QTY. REQ'D
1	DG60	22" x 7mm (559mm x .275) Plain Blade	*	15		GANG BOLTS – 8" (203.2mm) SPACING	
	DG76	24" x 7mm (609.6mm x .275) Plain Blade	*		DGA86	6 Blade Gang Bolt – 47" (1194mm) Long	*
	DG137	24" x 8mm (609.6mm x 5/16) Plain Blade	*		DFA87	7 Blade Gang Bolt – 55-1/2" (1410mm) Long	*
2	DG61	22" x 7mm (558.8mm x .275) Notched Blade	*		DGA88	8 Blade Gang Bolt – 64" (1626mm) Long	*
	DG138	24" x 8mm (509.6mm x 5/16) Notched Blade	*		DGA89	9 Blade Gang Bolt – 72-1/4" (1835mm) Long	*
3	DG84	16" x 4mm (406.4mm x .157) Plain Outtrigger Blade	*		DGA90	10 Blade Gang Bolt – 80-3/4" (2051mm) Long	*
	DG133	18" x 5mm (457.2mm x .197) Plain Outtrigger Blade	*		DGA91	11 Blade Gang Bolt – 89-1/2" (2273mm) Long	*
	DG149	20" x 6mm (508mm x .236) Plain Outtrigger Blade	*		DGA92	12 Blade Gang Bolt – 97-1/4" (2470mm) Long	*
4	DG82	2" (50.8mm) Heavy Hex Slotted Nut	*		DGA93	13 Blade Gang Bolt – 105-1/2" (2678mm) Long	*
5	DG89	1/4" (6.35mm) Shim Washer	*		DGA94	14 Blade Gang Bolt – 113-3/4" (2889mm) Long	*
6	DG88	1/2" (12.7mm) Shim Washer	*		DGA95	15 Blade Gang Bolt – 122-1/4" (3105mm) Long	*
7	DG78	5" O.D. x 2" I.D. x 5/8" (127 x 50.8 x 15.9mm) Head Washer	*			GANG BOLTS – 9" (228.6mm) SPACING	
8	DG108	8" (203.2mm) Spacing Short Half Spool – 2-3/8" (69.9mm) Long	*		DGA65	5 Blade Gang Bolt – 47" (1194mm) Long	*
	DGA97	9" (228.6mm) Spacing Short Half Spool – 3-1/4" Long w/5" (127mm) Washer	*		DGA66	6 Blade Gang Bolt – 55-1/2" (1410mm) Long	*
9	DGA102	9" (228.6mm) Spacing Long Half Spool – 4-7/16" (112.7mm) Long – 211	*		DGA67	7 Blade Gang Bolt – 64" (1626mm) Long	*
	DGA103	9" (228.6mm) Spacing Long Half Spool – 4-3/16" (106.3mm) Long – EZ410N	*		DGA68	8 Blade Gang Bolt – 72-1/4" (1835mm) Long	*
10	DGA113	8" (203.2mm) Spacing Full Spool – 8" (203.2mm) Long	*		DGA69	9 Blade Gang Bolt – 80-3/4" (2051mm) Long	*
	DGA98	9" (228.6mm) Spacing Full Spool – 9" (228.6mm) Long w/5" (127mm) washer	*		DGA70	10 Blade Gang Bolt – 89-1/2" (2273mm) Long	*
11	DG236	3-5/8" O.D. x 2" I.D. x 1/16" (92 x 50.8 x 1.59mm) Bearing Shield – 211	*		DGA71	11 Blade Gang Bolt – 97-1/4" (2470mm) Long	*
	DG237	4-1/2" O.D. x 2" I.D. x 1/16" (114 x 50.8 x 1.59mm) Bearing Shield – EZ410N	*		DGA72	12 Blade Gang Bolt – 105-1/2" (2678mm) Long	*
12	DG95	211 Series Greaseable Bearing	*		DGA73	13 Blade Gang Bolt – 113-3/4" (2889mm) Long	*
	DG5364	EZ410N Series Greaseable Bearing	*		DGA74	14 Blade Gang Bolt – 122-1/4" (3105mm) Long	*
13	DG94	211 Bearing Housing Only	*	16	DGA35	Socket Wrench	1
	DG96	EZ410N Bearing Housing Only	*	17	DG6080	5/8" x 4" x 4-7/16" (15.9 x 101.6 x 112.7mm) Long U-Bolt	*
14	DGA6089	Front L.H. – Rear R.H. Straight Bearing Hanger – 211 Bearing	*	18	10GN1	1/4" (6.35	*
	DGA6090	Front R.H. – Rear L.H. Straight Bearing Hanger – 211 Bearing	*	19	DG10310	mm) x 28 Grease Fitting	*
	DGA10280	Front L.H. – Rear R.H. Straight Bearing Hanger – EZ410N Bearing	*	20		7/16" x 3" (11 x 76.2mm) Lock Pin	*
	DGA10281	Front R.H. – Rear L.H. Straight Bearing Hanger – EZ410N Bearing	*	21		1/2" x 2-1/4" N.C. (12.7 x 57.2mm) Hex Bolt – 211 Bearing	*
						5/8" " x 2-1/4" N.C. (15.9 x 57.2mm) Hex Bolt – 410 Bearing	*
						1/2" (12.7mm) Lockwasher – 211 Bearing	*
						5/8" (15.9mm) Lockwasher – 410 Bearing	*
						1/2" (12.7mm) Hex Nut – 211 Bearing	*
						5/8" (15.9mm) Hex Nut – 410 Bearing	*
						Front R.H. – Rear L.H. 2" Offset Hanger (50.8mm) – 211 Series	*
						Front L.H. – Rear R.H. 2" Offset Hanger (50.8mm) – 211 Series	*
						Front R.H. – Rear L.H. 2" Offset Hanger (50.8mm) – EZ410N Series	*
						Front L.H. – Rear R.H. 2" Offset Hanger (50.8mm) – EZ410N Series	*
						5-1/2" (139.7mm) Gang Washer – Weld-On	*
						211 Housing c/w Bearing and Grease Fitting	*
						EZ410N Housing c/w Bearing and Grease Fitting	*

* as required

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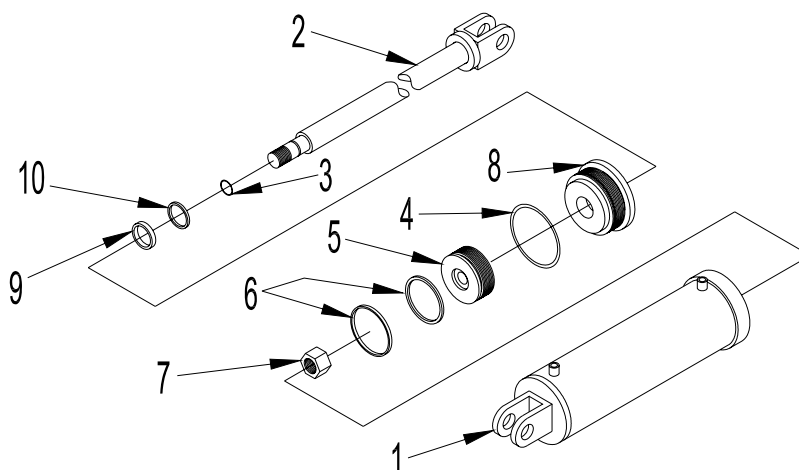


STONE FLEX HANGER ASSEMBLY

REF. NO	PART. NO	DESCRIPTION	QTY. REQ'D	REF. NO	PART. NO	DESCRIPTION	QTY. REQ'D
1	DG95 DG38	211 Series Greaseable Bearing EZ410N Series Greaseable Bearing	* *	10	DGA10295	Backing Plate – Stone Flex Hanger – ¾" (19.1mm) U-Bolt	*
2	DG94 DG96	211 Bearing Housing Only EZ410N Bearing Housing Only	* *	11	DG5342	Bracket Mounting Front L.H. – Rear R.H. 211 Series – Std Stone Flex	*
3	10GN1	¼" x 23 (6.35mm) Grease Fitting	*		DG5343	Bracket Mounting Front R.H. – Rear L.H. 211 Series – Std Stone Flex	*
4	---	½" x 2-1/4" N.C. (12.7 x 57.2mm) Hex Bolt – 211 Bearing	*		DG5344	Bracket Mounting Front L.H. – Rear R.H. 211 Series – 2" (50.8mm) Offset Stone Flex Hanger	*
	---	5/8" x 2-1/4" N.C. (15.9 x 57.2mm) Hex Bolt – EZ410N Bearing	*		DG5345	Bracket Mounting Front R.H. – Rear L.H. 211 Series – 2" (50.8mm) Offset Stone Flex Hanger	*
5	---	½" (12.7mm) Lockwasher – 211 Bearing	*		DGA5324	Mounting Bracket – EZ410N Series – STD Stone Flex Hanger	*
	---	5/8" (15.9mm) Lockwasher – EZ410N Bearing	*		DGA5341	Mounting Bracket – EZ410N Series – 2" Offset Stone Flex Hanger	*
6	---	½" (12.7mm) Hex Nut – 211 Bearing	*	12	---	¾" (15.9mm) Lockwasher	*
	---	5/8" (15.9mm) Hex Nut – EZ410 Bearing	*	13	---	¾" (15.9mm) N.C. Hex Nut	*
7	DG0290	¾" x 4" x 7" (19.1 x 101.6 x 177.8mm) Long U-Bolt	*	14	---	¾" x 3-1/2" (15.9 x 88.9mm) N.C. Hex Bolt	*
8	DG8150	1-1/4" x 2" (31.2 x 50.8mm) Spring Shank	*	15	---	¾" (15.9mm) Lockwasher	*
9	DGA8612	L.H. Scraper Bar Support Bracket – STD Stone Flex Hanger	*	16	---	¾" (15.9mm) Hex Nut	*
	DGA8611	R.H. Scraper Bar Support Bracket – STD Stone Flex Hanger	*	17	DG236	3-5/8" O.D. x 2" I.D. x 1/16" (92. x 50.8 x 1.59mm) Bearing Shield – 211 Series	*
	DGA8623	Scraper Bar Support Bracket – Offset Stone Flex Hanger – Front L.H. or Rear R.H.	*		DG237	4-1/2" O.D. x 2" I.D. x 1/16" (114 x 50.8 x 1.59mm) Bearing Shield – EZ410N	*
	DGA8624	Scraper Bar Support Bracket – Offset Stone Flex Hanger – Front R.H. or Rear L.H.	*	18	DG13510	Bearing Plate	*
				19	DGB5334	211 Housing c/w Bearing and Grease Fitting	*
					DGB5335	EZ410N Housing c/w Bearing and Grease Fitting	*

* as required

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R.H. MAIN ROCKSHAFT CYLINDER – 4" x 24" (101.6 x 610mm) REPHASING CYLINDER

REF. NO	PART. NO	DESCRIPTION	QTY. REQ'D
1	40TU10	Tube Assembly - 4" x 24" (101.6 x 610mm)	1
2	10SH60	Shaft - 2" x 24" (50.8 x 610mm)	1
3	10OR18	1" O.D. x 7/8" I.D. (25.4 x 22.2mm) O-Ring	1
4	10OR17	4" O.D. x 3/16" (101.6 x 4.76mm) O-Ring	1
5	40PB8	Piston – 4" O.D. x 1" I.D. (101.6 x 25.4mm)	1
6	40PS1	4" O.D. (101.6mm) Piston Seal Assembly	1
7	10NU4	1" (25.4mm) – 14 N.F. Hex Nut	1
8	40HP5	Head Plate – 4" O.D. x 2" I.D. (101.6 x 50.8mm)	1
9	10RS2	Rod Seal – 2-3/8" O.D. x 2" I.D. x 3/8" (60.2 x 50.8 x 9.39mm)	1
10	10WS6	Wiper Seal – 2-1/2" O.D. x 2" I.D. x 3/8" (63.5 x 50.8 x 9.39mm) – All Urethane	1

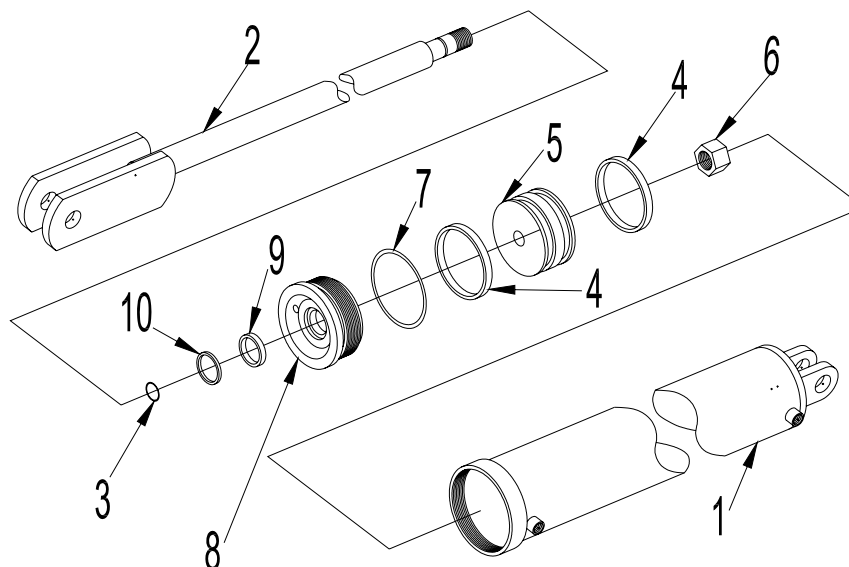
L.H. WING ROCKSHAFT CYLINDER – 3-1/2" x 24" (88.9 x 610mm) REPHASING CYLINDER

REF. NO	PART. NO	DESCRIPTION	QTY. REQ'D
1	35TU15	Tube Assembly – 3-1/2" x 24" (88.9 x 610mm)	1
2	10SH59	Shaft – 1-3/4" x 24" (44.4 x 610mm)	1
3	10OR18	1" O.D. x 7/8" I.D. (25.4 x 22.2mm) O-Ring	1
4	10OR8	3-1/2" O.D. x 3/16" (88.9 x 4.76mm) O-Ring	1
5	35PB8	Piston – 3-1/2" O.D. x 1" I.D. (88.9 x 25.4mm)	1
6	35PS1	Piston Seal Assembly	1
7	10NU4	1" (25.4mm) – 14 N.F. Hex Nut	1
8	35HP9	Head Plate – 3-1/2" O.D. x 1-3/4" I.D. (88.9 x 44.4mm)	1
9	10RS3	Rod Seal – 1-3/4" O.D. x 2-1/8" I.D. x 3/8" (44.4 x 54 x 9.39mm)	1
10	10WS10	Wiper Seal – 1-3/4" O.D. x 2-1/8" I.D. x 1/4" (44.4 x 54 x 6.35mm) – All Urethane	1

R.H. WING ROCKSHAFT CYLINDER – 3" x 24" (76.2 x 610mm) REPHASING CYLINDER

REF. NO	PART. NO	DESCRIPTION	QTY. REQ'D
1	30TU34	Tube Assembly – 3" x 24" (76.2 x 610mm)	1
2	10SH59	Shaft – 1-3/4" x 24" (44.4 x 610mm)	1
3	10OR18	1" O.D. x 7/8" I.D. (25.4 x 22.2mm) O-Ring	1
4	10OR3	3" O.D. x 3/16" (76.2 x 4.76mm) O-Ring	1
5	30PB4	Piston – 3" O.D. x 1" I.D. (76.2 x 25.4mm)	1
6	30PS1	Piston Seal Assembly	1
7	10NU4	1" (25.4mm) – 14 N.F. Hex Nut	1
8	30HP15	Head Plate – 3" O.D. x 1-3/4" I.D. (76.2 x 44.4mm)	1
9	10RS3	Rod Seal – 1-3/4" O.D. x 2-1/8" I.D. x 3/8" (44.4 x 54 x 9.39mm)	1
10	10WS10	Wiper Seal – 1-3/4" O.D. x 2-1/8" I.D. x 1/4" (44.4 x 54 x 6.35mm) – All Urethane	1

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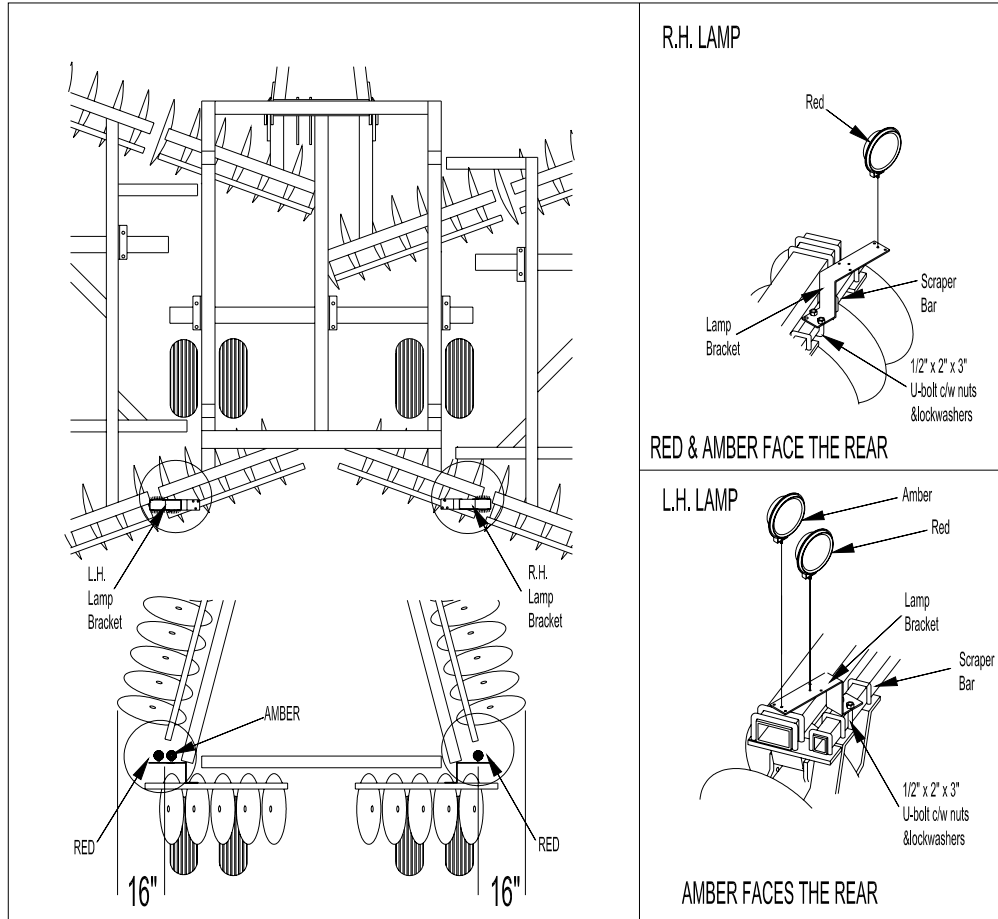
WING LIFT CYLINDER - 5" x 36" (127 x 914mm)

REF. NO	PART. NO	DESCRIPTION	QTY. REQ'D
1	50TU8	Tube Assembly - 5" x 36" (127 x 914mm) for Cylinder #242	1
2	10SH36	Shaft - 1-3/4" x 36" (44.4 x 914mm) for 1-1/4" (31.8mm) Nut	1
3	100R19	O-Ring - 1-1/8" I.D. x 1-1/4" O.D. (28.5 x 31.8mm) for 1-1/4" (31.8mm) Nut	1
4	50CU1	4-1/2" I.D. x 5" O.D. x 1/2" (29.9 x 127 x 12.7mm) U-Cup	2
5	50PB2	Piston - 5" O.D. (127mm) for 1-1/4" (31.8mm) Nut	1
6	10NU3	1-1/4" x 12 U.N.F. (31.8 x 305mm) Hex Lock Nut	1
7	100R14	4-1/2" I.D. x 5" O.D. (29.9 x 127mm) O-Ring	1
8	50HP1	5" (127mm) Head Plate	1
9	10RS3	1-3/4" I.D. x 2-1/8" O.D. x 3/8 (44.4 x 54. x 9.39mm) Rod Seal	1
10	10WS3	1-3/4" I.D. x 2-1/8" O.D. x 3/16 (44.4 x 54. x 4.76mm) Wiper Seal	1

CYLINDER SEAL KITS

KIT NO.	DESCRIPTION	QTY. REQ'D
5017N4	50CU1 4-1/2" I.D. x 5" O.D. x 1/2" (114 x 127 x 12.7mm) U-Cup	2
	100R14 4-1/2" I.D. x 5" O.D. (114 x 127mm) O-Ring	1
	100R19 1-1/8" I.D. x 1-1/4" O.D. (28.5 x 31.8mm) O-Ring w/1-1/4" Nut (31.8mm)	1
	100RS3 1-3/4" I.D. x 2-1/8" O.D. x 3/8" (44.4 x 54. x 9.39mm) Rod Seal	1
	10WS3 1-3/4" I.D. x 2-1/8" O.D. x 3/16" (44.4 x 54. x 4.76mm) Wiper Seal	1
	100R13 1" I.D. x 1-1/4" O.D. O-Ring w/1" Nut (25.4mm)	1
4020N4-0	100R18 1" O.D. x 7/8" I.D. (25.4 x 22.2mm) O-Ring	1
	100R17 4" O.D. x 3/16" (101.6 x 4.76mm) O-Ring	1
	40PS1 4" (101.6mm) Piston Seal Assembly	1
	10RS2 2-3/8" O.D. x 2" I.D. x 3/8" (60.2 x 50.8. x 9.39mm) Rod Seal	1
	10WS6 2-1/2" O.D. x 2" I.D. x 3/8" (63.5 x 50.8. x 9.39mm) Wiper Seal - Urethane	1
3517N4-0	100R18 1" O.D. x 7/8" I.D. (25.4 x 22.2mm) O-Ring	1
	100R8 3-1/2" O.D. x 3/16" (88.9 x 4.76mm) O-Ring	1
	35PS1 3-1/2" (88.9mm) Piston Seal Assembly	1
	10RS3 1-3/4" I.D. x 2-1/8" O.D. x 3/8" (44.4 x 54.0. x 9.39mm) Rod Seal	1
	10WS10 1-3/4" I.D. x 2-1/8" O.D. x 1/4" (44.4 x 54. x 6.35mm) Wiper Seal - Urethane	1
3017N4-0	100R18 1" O.D. x 7/8" I.D. (25.4 x 22.2mm) O-Ring	1
	100R3 3" O.D. x 3/16" (76.2 x 4.76mm) O-Ring	1
	30PS1 3" (76.2mm) Piston Seal Assembly	1
	10RS3 1-3/4" I.D. x 2-1/8" O.D. x 3/8" (44.4 x 54.0. x 9.39mm) Rod Seal	1
	10WS10 1-3/4" I.D. x 2-1/8" O.D. x 1/4" (44.4 x 54. x 6.35mm) Wiper Seal - Urethane	1

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LIGHT KIT ASSEMBLY

REF. NO.	PART NO.	DESCRIPTION	QTY REQ'D