Farm King

OPERATOR AND PARTS MANUAL

Tandem Disc

6650 LTF Model - Medium Duty - 3 Section

072011 88705169

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Introduction

Keep this manual handy for frequent reference. All new operators or owners must review the manual before using the equipment and at least annually thereafter. Contact your Farm King Dealer if you need assistance, information, or additional copies of the manual. Visit our website at www.buhlerindustries.com/ for a complete list of dealers in your area.

The directions left, right, front and rear, as mentioned throughout this manual, are as seen facing in the direction of travel of the implement.

Safety

Safety Instructions

Remember, YOU are the key to safety. Good safety practices not only protect you, but also the people around you. Make these practices a working part of your safety program. Be certain that everyone operating this equipment is familiar with the recommended operating and maintenance procedures and follows all the safety precautions. Most accidents can be prevented. Do not risk injury or death by ignoring good safety practices.

The alert symbol is used throughout this manual. It indicates attention is required and identifies hazards. Follow the recommended precautions.

The safety alert symbol means...
ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

	CAUTION	The caution symbol indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.
	WARNING	The Warning Symbol indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury, and includes hazards that are exposed when guards are removed. It may also be used to alert against unsafe practices.
	DANGER	The Danger Symbol indicates an imminently hazardous situation that, if not avoided will result in death or serious injury. This signal word is to be limited to the most extreme situations, typically for machine components that, for functional purposes, cannot be guarded.

General Safety

- Have a first-aid kit available for use and know how to use it. Have a fire extinguisher available, stored in a highly visible location, and know how to use it.
- Wear appropriate protective gear. This list may include but is not limited to:
  - hard hat
  - protective shoes with slip resistant soles
  - protective glasses or goggles
  - heavy gloves
  - wet weather gear
  - hearing protection
  - respirator or filter mask
- Read and understand the Operator's Manual and all safety signs before operating, servicing, adjusting, repairing, or unplugging the equipment.
- Do not attempt any unauthorized modifications to your Farm King product as this could affect function or safety, and could affect the life of the equipment.
- Inspect and clean the working area before operating.
- Keep hands, feet, clothing, and hair away from moving parts.
- Ensure bystanders are clear of the area before operating.
- 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.
- Disc should be operated only by persons responsible and qualified to do so.
- Never allow anyone to climb or play on the tractor or disc. They may fall and be seriously injured.
- Lower machine to the ground, place all tractor controls in neutral, stop engine, turn monitor off, set park brake and remove ignition key, before servicing, adjusting, repairing this implement.

Assembly Safety

- 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.
- Use adequate manpower or hoist to lift the heavy components into place. Attempting to lift heavy components by yourself could cause serious injury.
- Be sure all bolts and hydraulic fittings are tight, and all cotter pins are installed in the slotted nuts and pins.
- 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.
- 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.
- 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 thecylinders are not completely filled with fluid, resulting in serious damage to machine or serious injury or death to person(s) nearby.

- 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.
- When attaching gang assemblies, wear protective gloves to prevent injury from cutting edges of blades.
- Before applying pressure to the hydraulic system, be sure all connections are tight and the components are not damaged.
- 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.
- 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.
- Do not stand under folded wings when working on disc. If hydraulic system failed or if hydraulic lever was accidentally operated, wings may fall resulting in serious injury or death to person(s) near disc.
- 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

- Lower machine to the ground, place all tractor controls in neutral, stop engine, turn monitor off, set park brake and remove ignition key before servicing, adjusting, or repairing this disc.
- Follow good shop practices:
  - keep service area clean and dry.
  - be sure electrical outlets and tools are properly grounded.
  - use adequate light for the job at hand.
- Before applying pressure to a hydraulic system, make sure all components are tight and hoses and couplings are in good condition.
- Relieve pressure from hydraulic cylinder before servicing or disconnecting from tractor.
- Clear the area of bystanders when carrying out any maintenance and repairs or making any adjustments.
- Place stands or blocks under the frame before working beneath the machine or when changing tires.
- Use only tools, jacks and hoists of sufficient capacity for the job.

Hydraulic Safety

- Always place all tractor hydraulic controls in neutral before dismounting.
- Make sure that all components in the hydraulic system are kept in good condition and are clean.
- Replace any worn, cut, abraded, flattened or crimped hoses.
- Do not attempt any makeshift repairs to the hydraulic lines, fittings or hoses by using tape, clamps or cements. The hydraulic system operates under extremely high pressure. Such repairs will fail suddenly and create a hazardous and unsafe condition.
- Wear proper hand and eye protection when searching for a high pressure hydraulic leak.Use a piece of wood or cardboard as a backstop instead of hands to isolate and identify a leak.

- If injured by escaping hydraulic fluid, seek medical attention immediately. Serious infection or toxic reaction can develop from hydraulic fluid penetrating the skin surface.
- Before applying pressure to the system, make sure all components are tight and that hoses and couplings are in good condition.

Transport Safety

- Check with local authorities regarding transporting this implement on public roads.
- Always transport at a safe speed. Use caution when turning corners or meeting traffic.
- Make sure the SMV (Slow Moving Vehicle) emblem and all the lights and reflectors that are required by the local highway and transport authorities are in place, are clean and can be seen clearly by all overtaking and oncoming traffic.
- Be sure all amber and red lights are working to safeguard against rear end collisions. Daybreak and dusk are particularly dangerous.
- Be sure that the disc is securely attached to the tractor. Always use a safety chain between the machine and the tractor.
- Do not exceed 20 mph (32 km/h). Reduce speed on rough roads and surfaces.
- Always use hazard warning flashers on tractor and when transporting unless prohibited by law.
- Stay away from overhead high voltage electrical lines when transporting disc. Electrocution can occur without direct contact.

Operation Safety

- Lower machine to the ground, place all tractor controls in neutral, stop engine, set park brake and remove ignition key before servicing, adjusting or repairing implement.
- Do not allow riders on the disc or tractor during operation or transporting.
- Clear the area of all bystanders, before moving tractor and disc.
- Stand clear when folding or unfolding wings. Keep others away.
- Clean reflectors, SMV and lights before transporting.
- Attach disc securely to tractor using a hardened pin and a safety chain.
- Do not exceed a safe travel speed.
- Use hazard flasher on tractor and disc when transporting.
- Stay away from overhead power lines when folding or unfolding wings and during transport.
- Before applying pressure to the hydraulic system, make sure all components are tight and that hoses and couplings are in good condition.
- Review safety instructions annually.

Tire Safety

- Failure to follow proper procedures when mounting a tire on a wheel or rim can produce an explosion which may result in serious injury or death.
- Do not attempt to mount a tire unless you have the proper equipment and experience to do the job.
- Have a qualified tire dealer perform required tire maintenance.

Safety Decals

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

Storage

- Store unit in an area away from human activity.
- Do not permit children to play on or around parked implement.

Specifications

Model	Blade Spacing	Approx. Cutting Width	# of Blades	# of Gang Bearings	Gang Bearing Type		Approx. Transport Width	Approx. Transport Height
					Std	Opt		
6650 LTFLTF	9"	38-1/2"	90	34	410	215	17'6"	13'11"
6650 LTFLTF	9"	40"	106	36	410	215	17'6"	13'11"
6650 LTFLTF	9"	42"	110	36	410	215	17'6"	13'11"
6650 LTFLTF	10-1/2"	38-1/2"	90	32	410	215	17'6"	13'11"
6650 LTFLTF	10-1/2"	40"	94	32	410	215	17'6"	13'11"
6650 LTFLTF	10-1/2"	42"	98	34	410	215	17'6"	13'11"

Tires

CAUTION

When inflating tires use a clip-on chuck and hose extension which will allow operator to stand clear of tire and wheel assembly. Do not stand in front of or over tire when inflating. Exploding tire and wheel parts can cause serious injury.

Tire Location	Tire Sizes	Pressure
Center Frame	4 - 11L x 15 Fl - Load Range F	60 PSI (414 KPA)
Center Frame	4 - 12.5L x 15 Fl, F	60 PSI (414 KPA)
Wing Frame	4 - 11L x 15 Fl - Load Range D	45 PSI (310 KPA)
Wing Frame	4 - 12.5L x 15 Fl - Load Range F	45 PSI (310 KPA)

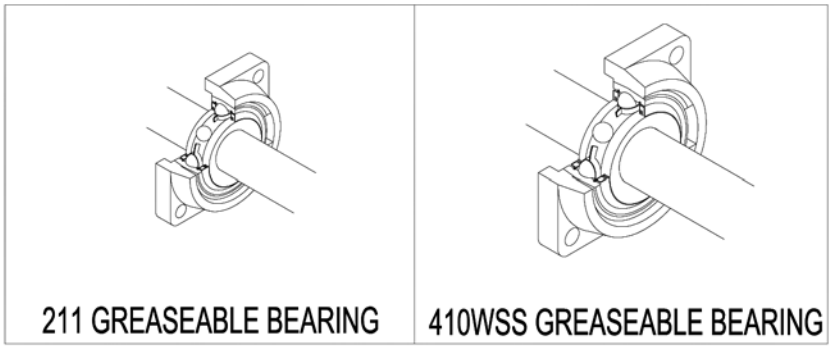
Hydraulic Cylinders

Application	Size	Required

Centre Frame Lift	4" x 24" (101.6 mm x 610 mm) Rephasing	1
L.H. Wing Frame Lift	3-1/2" x 24" (88.9 mm x 610 mm) Rephasing	1
R.H. Wing Frame Lift	3" x 24" (76.2 mm x 610 mm) Rephasing	1
Wing Lift	5" x 36" (127 mm x 1066 mm)	2
Outer Flip-Up Wing	4" x 24" (102 mm x 610 mm)	2

Gang Angle

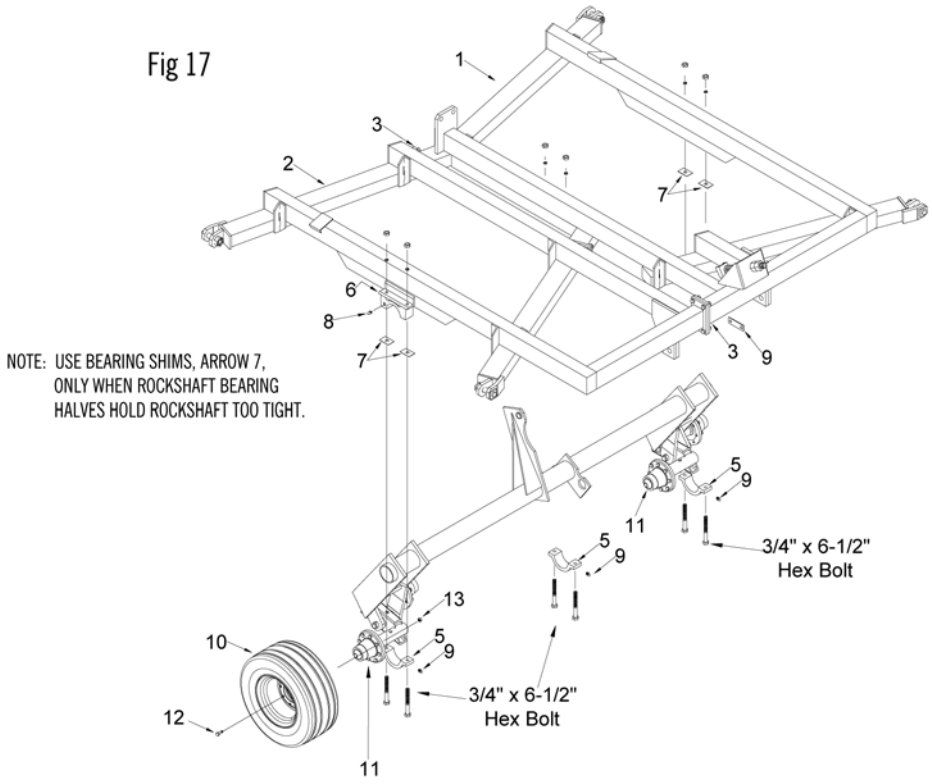
- Front Gang - Fixed - 21 Degrees (Fixed)
- Rear Gang - Fixed - 19 Degrees (Fixed)



Bolt Torques

- Gang bolts - 1-15/16" (49mm) diameter 3200 ft lbs (4339 N.m)
- Leveling crank bolts - 1-1/4" (31mm) diameter 840 ft (1139.2 N.m)
- Wheel bolts - 9/16" (14mm) diamter 130 ft lbs (176.3 N.m)
- Bearing hanger u-bolts - 7/8" (15mm) diameter 130 ft lbs (176.3 N.m) (Solid Hangers)

Assembly Instructions



1. See FIG. 17. Fasten L.H. center frame, arrow 1, and R.H. center frame half, arrow 2, together as shown. Center frame halves are fastened with four (4) 1" x 3-1/4" (25.4mm x 82.3mm) hex bolts c/w nuts and lockwashers at each front, rear and inner connecting plates, arrow 3. Do not tighten bolts until after rockshaft bearings have been installed.

2. See FIG. 17. Raise frame assembly, arrow 1 and 2, approximately 36" (914.4mm) from ground and block securely.

3. See FIG. 17. Fasten center frame rockshaft assembly, arrow 4, to bottom of main frame, with three (3) sets of 5-1/2 "(139.7mm) rockshaft bearing halves, arrow 5. Position rockshaft so that outside bearings are positioned between wheel legs. Fasten each rockshaft bearing assembly to bearing bracket, arrow 6, with two (2) 3/4" x 6-1/2" (19.1mm x 165.1mm) hex bolts c/w nuts and lockwashers.

   NOTE: Position top half bearing so grease hole is on rear side of rockshaft and bottom half so grease hole is on front side of rockshaft.

4. See FIG. 17. Tighten bolts which fasten rockshaft bearing halves, arrow 5, to frame. Next, tighten bolts which fasten frame connecting plates, arrow 3. If there is a gap between the plates, arrow 3, at top or bottom, install a 1-1/2" (38.1mm) wide 2 hole shim, arrow 9, to take up this gap.

   NOTE: If gap is closed by tightening bolts, a preload will be placed on rockshaft bearing. Frame must be level after frame connecting plates, arrow 3, bolts have been tightened.

NOTE: After tightening rockshaft bearing bolts, rockshaft should be free to pivot in bearings. If bearings are too tight, place two (2) 2" x 3" (50.8mm x 76.8mm) shim(s), (as required) between bearing halves, arrow 5.

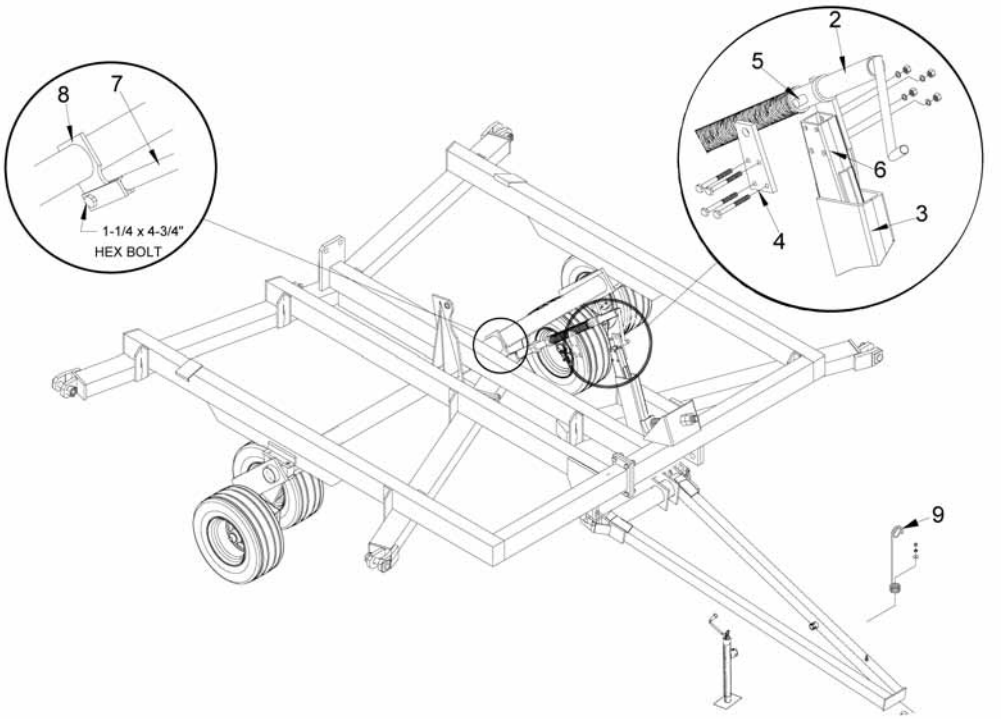
NOTE: Before installing rockshaft bearings, place a coat of grease on bearing surface.

	WARNING	Support center frame securely before assembling components. Inadequate support may result in the heavy components falling and causing serious injury to you or person(s) nearby.

5. See FIG. 17. Install one (1) 1/4" x 28 (6.35mm x 28) grease fitting, arrow 8, in each top rockshaft bearing half. Install one (1) 1/4" x 28 (6.35mm x 28) grease fitting, arrow 9, in each bottom rockshaft bearing half.

6. See FIG. 17. Install one (1) eight bolt tire and wheel assembly, arrow 10, to hub assembly, arrow 11, on each side of each wheel leg. Center frame uses four (4) 11.5L x 15 Fl, load range F tires or 12.5L x 15 Fl load range F tires if tire option is ordered. Secure with six (6) 9/16" x 1-11/16" (14.3mm x 17.5mm) wheel bolts, arrow 12 for 11L x 15 tires or eight (8) 9/16" x 1-11/16" (14.3 x 17.5mm) wheel bolt, arrow 12, for 12.5L x 15 tires. Tighten wheel bolts to 150 ft lbs (203 N.m). Lock each wheel bolt by installing one (1) 9/16" (14.3mm) N.F. hex nut, arrow 13, on thread that extends past hub. Tighten nuts.

Fig. 18



	WARNING	Use adequate manpower or a hoist to lift heavy components in place. Attempting to lift heavy components by yourself could cause serious injury.

7. See FIG. 18. Attach hitch assembly, arrow 1, to hitch lugs, arrow 11, on center frame with two (2) 1-1/2" dia. x 5" (31.8mm x 127mm) pins. Secure each pin with one (1) 7/16" (11.1mm) lynch pin.

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

9. See FIG. 18. Attach clevis end of levelling link, arrow 7, to arm, arrow 8, on rockshaft. Fasten with one (1) 1-1/4" x 4-3/4" (31.8mm x 120.7mm) hex bolt c/w nut and lockwasher. Tighten bolt to 840 foot pounds (1139 N.m).

   NOTE: The 1-1/4" x 4-3/4" (31.6mm x 120.7mm) bolt must be tightened so that the clevis is drawn up tight against the ball joint in arm, arrow 7. Tighten bolt to 840 foot pounds (1139 N.m). Ball must also be free to pivot in socket. Lubricate ball with oil and turn in socket to make sure ball is free to pivot.

10. See FIG. 18. Fasten hose support, arrow 9, to a bolt welded to top of hitch. Secure with one (1) 5/8" (15.9mm) nut, one (1) 11/16" (17.5mm) I.D. flatwasher, and one (1) 5/8" (15.9mm) lockwasher. Tighten nut.

11. See FIG. 18. Mount hitch jack, arrow 10, on round tube welded to inside of hitch. Jack pivots on mounting tube can be placed in vertical position for supporting disc hitch or horizontal position while disc is in motion. Lock jack in desired position with pin.

    NOTE: Jack must be in horizontal position when disc is in motion. If jack is in vertical position when disc is in motion. jack may strike ground or obstruction on ground, causing severe damage to jack, be sure crank of jack is not hanging below hitch when jack is in horzontal position. Place crank on top of hitch to avoid damage.

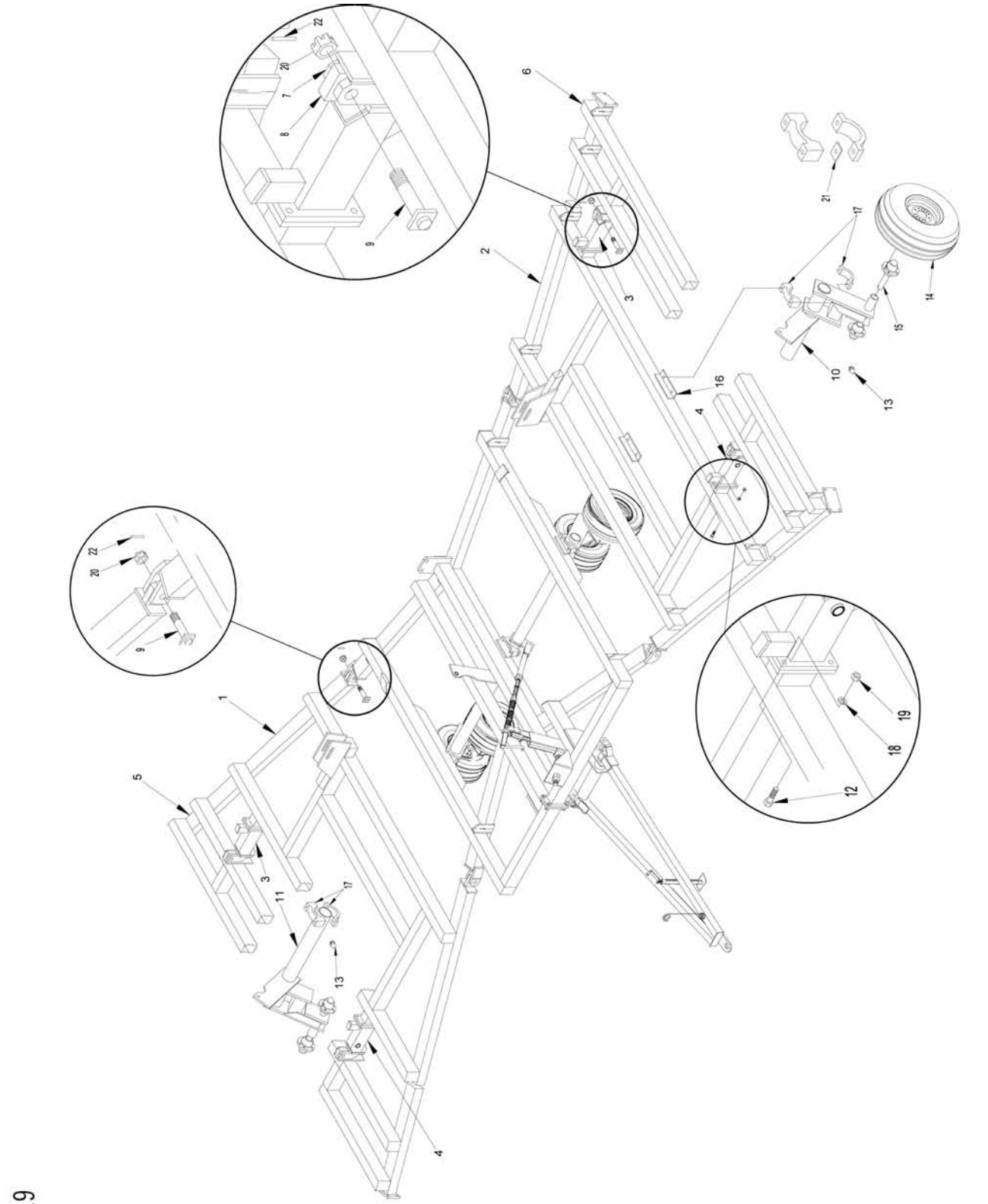


FIG. 19

12. Attaching inner wings to the main frame

A - See FIG. 19. Raise inner wing frame assemblies, arrow 1 and 2, approximately 36" (914 mm) from ground and block securely. Locate one (1) wing frame on each side of main frame. Wing frames are L.H. and R.H. and must be positioned as shown.

B - See FIG. 19. Fasten L.H. and R.H. wing rockshafts, arrow 10 and 11, to bottom of L.H. and R.H. wing frames. Be sure correct rockshaft is used. Wheel leg points forward with cylinder arm on top. Secure each rockshaft to two (2) bearing brackets, arrow 16, with two (2) sets of 5-1/2" (139.7 mm) rockshaft bearings, arrow 17. Fasten each rockshaft bearing set to bearing bracket with two (2) 3/4" x 6-1/2" (19 mm x 165 mm) hex bolts c/w nuts and lockwasher. Position top half of rockshaft bearing so grease hole faces front. Position bottom half of rockshaft bearing so grease holes faces the rear. After tightening rockshaft bearing bolts, rockshaft should be free to pivot in bearing.

NOTE: If rockshaft bearing are too tight and don't allow rockshaft to turn freely, place necessary 2" x 3" (50.8 x 76.2) shims, arrow 21, (as required) between bearing halves. Shim(s) are packed in hydraulic hose and fitting box.

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

C - See FIG. 19. Install one (1) grease fitting, arrow 13, in top half of each bearing assembly.

D - See FIG. 19. Install two (2) 6 bolt hub and spindle assemblies, arrow 15, into spindle mounting tubes at bottom of wheel leg of each rockshaft, arrows 10 and 11. Secure each spindle with one (1) 1/2" x 3-1/2" (12.5mm x 89mm) hex bolt c/w nylon lock nut.

E - See FIG. 19. Install one (1) six bolt tire and wheel assembly, arrow 14, to each hub assembly, arrow 15. Secure each wheel with six (6) 9/16" x 1-1/8" (14.2mm x 28.5mm) wheel bolts tighten wheel bolts to 150 ft lbs (203 N.m.). Each wing frame uses (2) two 11L x 15 FI, Load Range D tires or 12.5L x 15 FI Load Range D tires if tire option is ordered.

F - See FIG. 19. Install front and rear inner wing bolt-on hinge assemblies (2 each) with inner wings on L.H.S and R.H.S, see arrow 3, 4, with sixteen (16) 3/4" x 2-1/2" (19mm x 63.5mm) bolts, arrow 12 c/w nut and washers, arrow 18,19.

G - See FIG. 19. Raise outer wing frame assemblies, arrow 5 and 6, approximately 36" (914 mm) from ground and block securely. Locate one (1) wing frame on each side of main frame. Wing frames are L.H. and R.H. and must be positioned as shown. Connect each outer wing frame to inner wing frame by placing hinge lugs, arrow 7, of outer wings over hinge lug, arrow 8, of inner wing frame. Bolt each hinge assembly together with one (1) 1-1/2" x 5" (38 x 127mm) threaded pin, arrow 9, and slotted nut, arrow 20. Secure slotted nut with one (1) 5/8" x 2" (16 x 50.8mm) cotter pin, arrow 22.

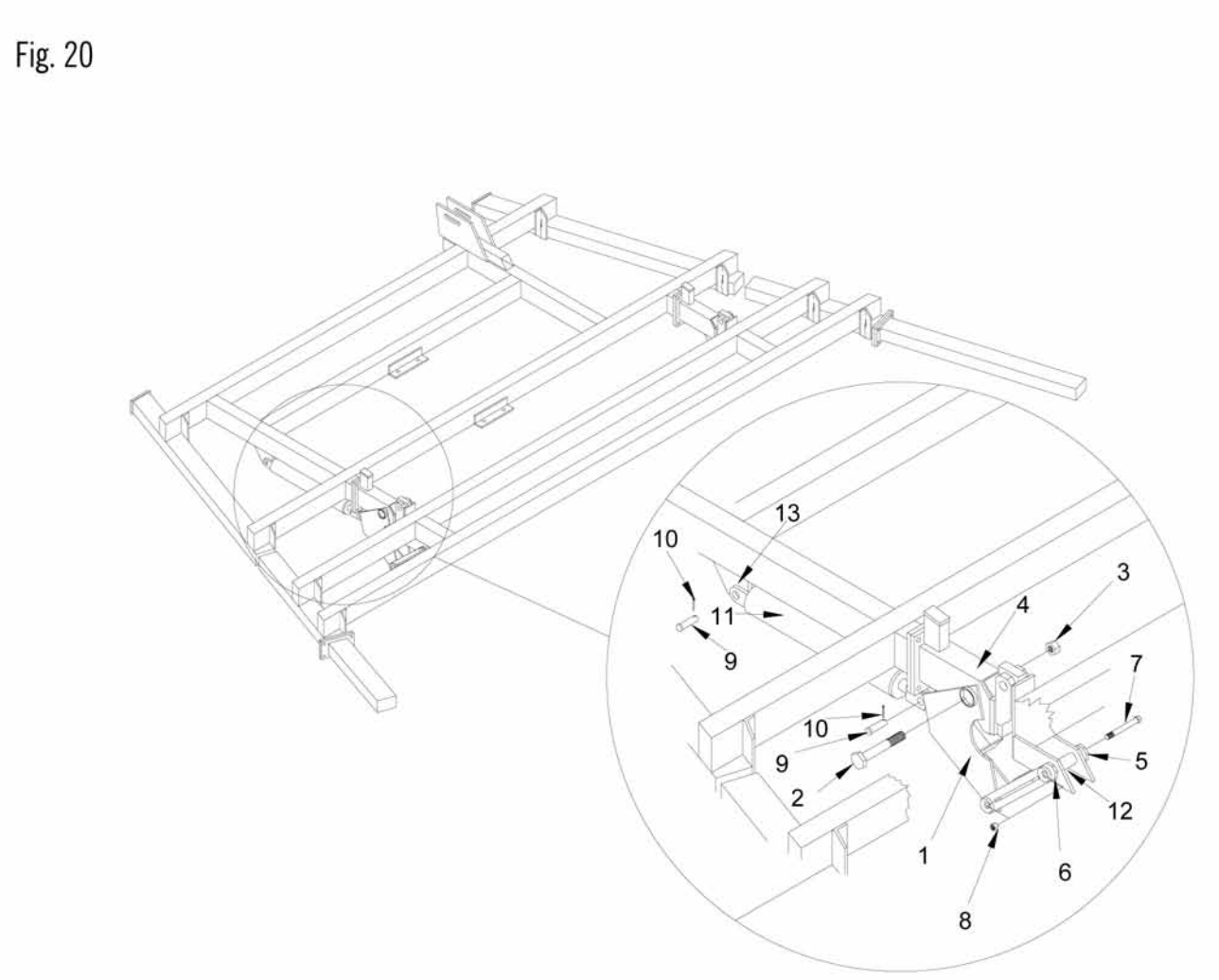
13. Attaching outer wing folding mechanism - See FIG. 20.

A - See FIG. 20. Fasten L.H. and R.H. diamond brackets, arrow 1, to the inner wing hinge beam, arrow 4, with (1) 1-1/4" x 9" (31.7 x 287mm) N.C. hex bolt, arrow 2, c/w 1-1/4 (288.6mm) N.C. locknut, arrow 3.

B - See FIG. 20. Fasten one end of each link strap, arrow 5 and 6, to diamond bracket, arrow 1 with 1" x 8" (25.4 x 203.2mm) N.C. hex bolt, arrow 7, c/w locknut, arrow 8. Fasten other end of each link strap, arrow 5 and 6, to bottom lug, arrow 12, on outer wing. Secure with (1) 1" x 8" (25.4 x 203.2mm) N.C. hex bolt, arrow 7, c/w locknut, arrow 8.

C - See FIG. 20. Fasten barrel end of 4" x 24" (101.6 x 609.6mm) outer wing lift cylinder, arrow 11, to cylinder lug, arrow 13, under inner wing frame. Position cylinder so ports are facing rear of disc. Fasten shaft end of 4" x 24" (101.6 x 609.6mm) outer wing cylinder, arrow 11, to lug on diamond bracket, arrow 1. Secure each end of cylinder with one (1) 1-1/4" x 4-3/16"(31.7 x 120.9mm) pin, arrow 9, c/w 5/16" x 2" (7.9 x 50.8mm) cotter pin arrow 10.

Fig. 20



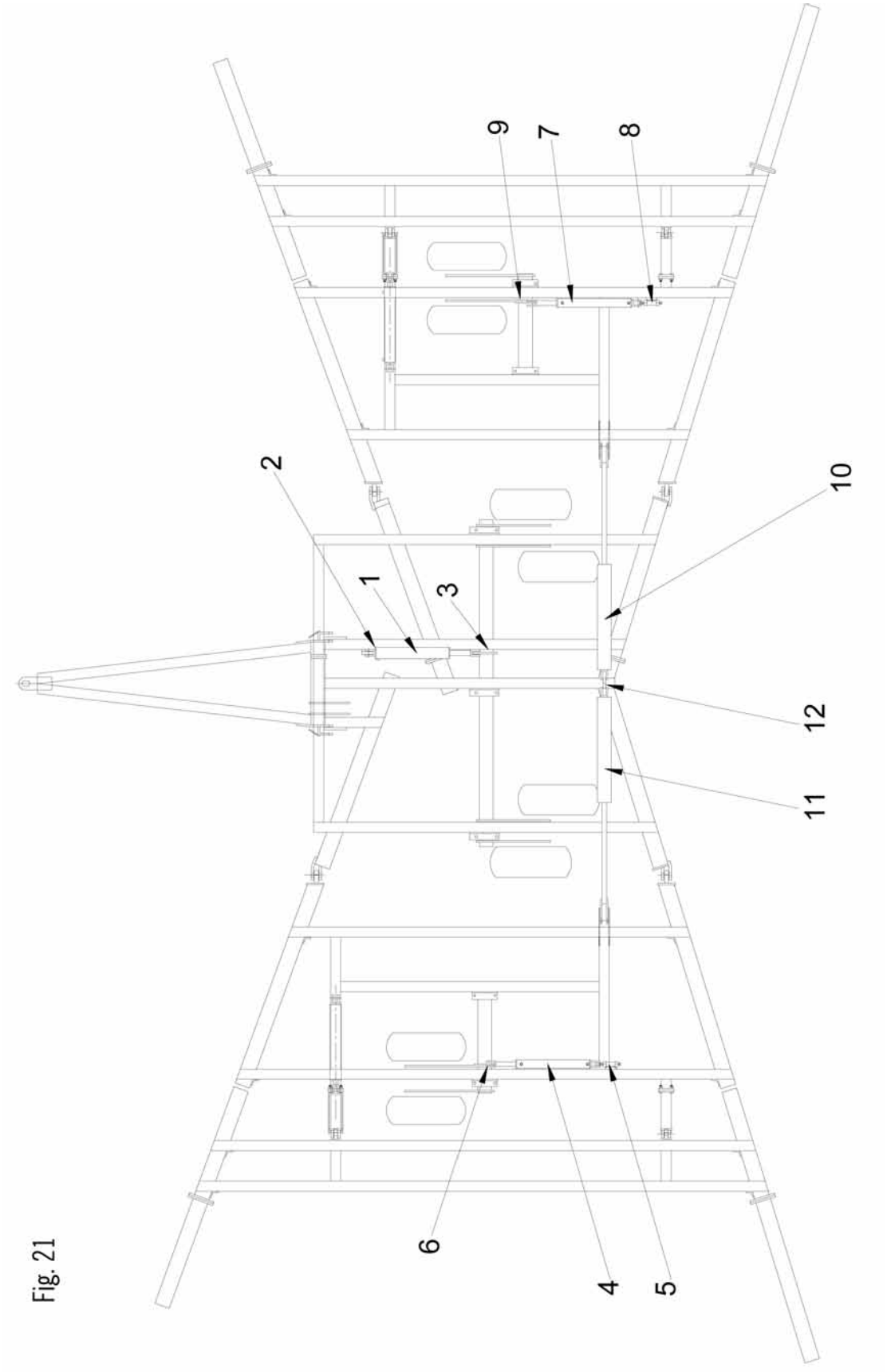


Fig. 21

14. See FIG. 21. 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) clevis pin. Secure cylinder pins with one (1) 5/16" x 2" (7.9 mm x 50.8mm) cotter pin.

15. See FIG. 21. 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 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 cylinder pins with one (1) 5/16" x 2" (7.9 mm x 50.8 mm) cotter pin.

16. See FIG. 21. 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 pins with one (1) 5/16" x 2" (7.9 mm x 50.8 mm) cotter pin.

    NOTE: If cylinder pin on barrel end is not positioned properly, serious damage may occur to cylinder or I-Bolt. If cylinder barrel is turned so axis of cylinder pin is not horizontal, cylinder will not be free to pivot up and down when cylinder is activated.

17. Attaching wing lift cylinders - See FIG. 21.

    Fasten two (2) 5" x 36" (127 mm x 914 mm) wing lift cylinders, arrow 10 and 11, at front of main frame. Position each cylinder with ports facing towards centre of disc. Fasten barrel end of each cylinder to lug, arrow 12, 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 1-3/4" (7.9 mm x 44.5 mm) cotter pin. Attach shaft end of wing lift cylinder after cylinders have been filled with oil. Do not attach shaft ends at this time.

	WARNING	Do not stand under wing while wing is being raised or lowered. If any component should fail, or if hydraulic lever should accidentally be operated, wing could drop.

	CAUTION	Wings will free fall if wing cylinders are not full of oil causing serious damage to machine or serious injury or death to person(s) nearby.

	CAUTION	When transporting disc always place hydraulic lock up valves in CLOSED postion. If hydraulic lever is accidentally operated, the disc could drop or wings could fall.

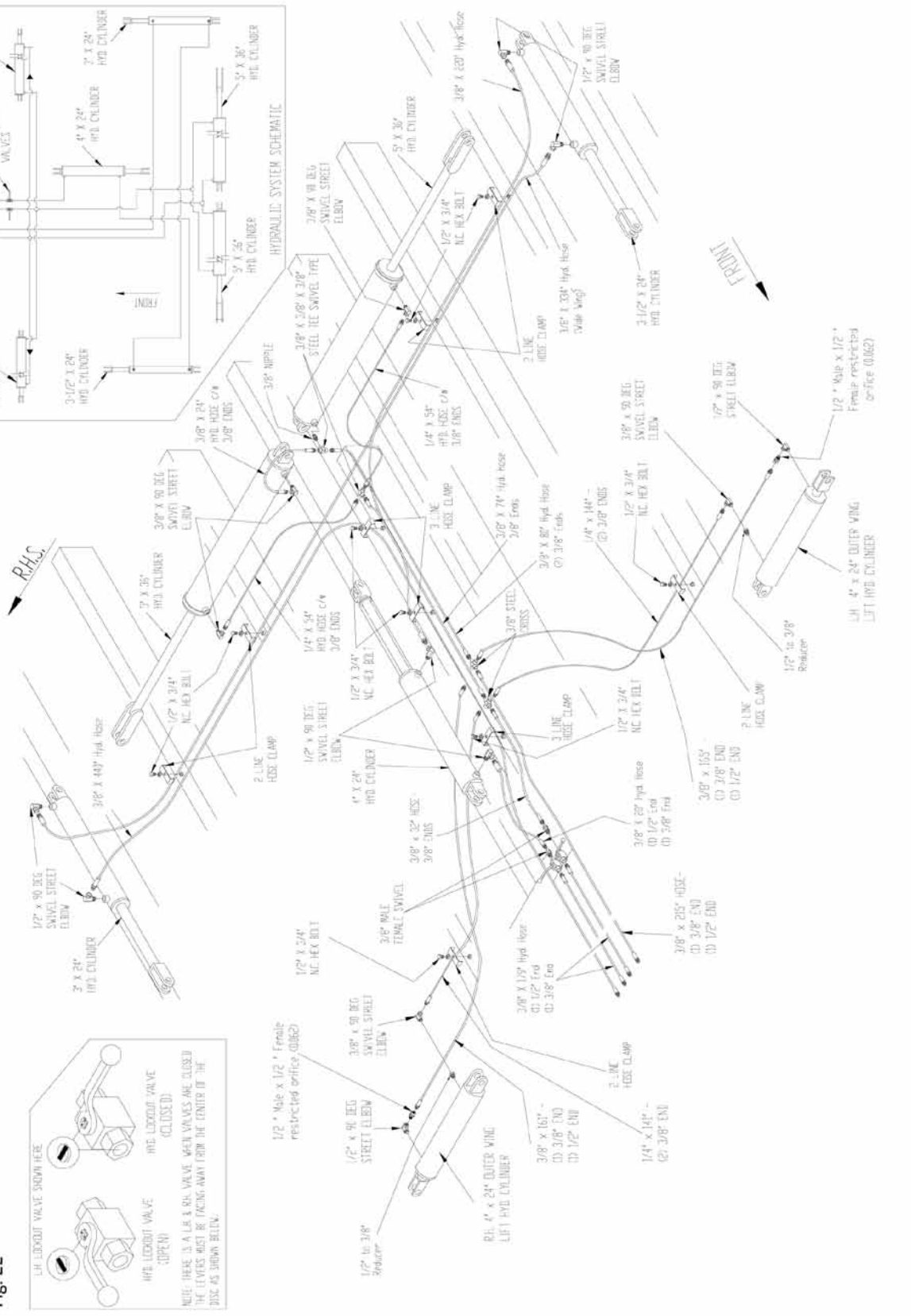

HYDRAULIC SYSTEM SCHEMATIC
TO TRACTOR
HYD LOCKOUT VALVES
4" x 24" HYD CYLINDER
7" x 24" HYD CYLINDER
5" X 36" HYD CYLINDER
3-1/2" X 24" HYD CYLINDER
5" X 24" HYD CYLINDER
FRONT
R.H.S.
LH LOCKOUT VALVE SHOWN HERE
HYD LOCKOUT VALVE (OPEN)
HYD LOCKOUT VALVE (CLOSED)
NOTE: THERE IS A LH & RH VALVE. WHEN VALVES ARE CLOSED THE LEVERS MUST BE FACING AWAY FROM THE CENTER OF THE DISC AS SHOWN BELOW.
3/8" X 449" Hyd Hose
1/2" x 90 DEG SWIVEL STREET ELBOW
2" X 24" HYD CYLINDER
2 LINE HOSE CLAMP
1/2" X 3/4" NC HEX BOLT
7" X 36" HYD CYLINDER
3/8" X 24" HYD HOSE C/W 3/8" ENDS
3/8" X 90 DEG SWIVEL STREET ELBOW
3/8" NIPPLE
3/8" X 3/8" X 3/8" STEEL TEE SWIVEL TYPE
1/4" X 54" HYD HOSE C/W 3/8" ENDS
3 LINE HOSE CLAMP
3/8" X 74" Hyd Hose
3/8" X 80" Hyd Hose (2) 3/8" ends
3/8" STEEL BRASS
1/2" X 90 DEG SWIVEL STREET ELBOW
4" X 24" HYD CYLINDER
3/8" x 32" HOSE 3/8" ENDS
3/8" MALE FEMALE SWIVEL
1/2" X 3/4" NC HEX BOLT
1/2" Male x 1/2" Female restricted orifice (0.062)
1/2" to 3/8" Reducer
3/8" X 24" HYD CYLINDER
RH 4" x 24" OUTER WING LIFT HYD CYLINDER
3/8" X 5/8" Hyd Hose (1) 1/2" End (2) 3/8" End
3/8" x 161" - (1) 3/8" END (1) 1/2" END
1/4" x 141" - (2) 3/8" END
3/8" x 215" HOSE - (1) 3/8" END (1) 1/2" END
3/8" x 22" Hyd Hose (1) 1/2" End (1) 3/8" End
3/8" x 155" (1) 3/8" END (1) 1/2" END
2 LINE HOSE CLAMP
1/4" x 141" - (2) 3/8" ENDS
3/8" X 228" Hyd Hose
1/2" x 90 DEG SWIVEL STREET ELBOW
1/2" X 3/4" NC HEX BOLT
3/8" X 90 DEG SWIVEL STREET ELBOW
1/2" X 2 3/4" HYD CYLINDER
1/2" x 90 DEG SWIVEL STREET ELBOW
1/2" Male x 1/2" Female restricted orifice (0.062)
LH 4" x 24" OUTER WING LIFT HYD CYLINDER

Fig. 22

18. See FIG. 22. 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" (6.35 x 101.6mm) N.C. Hex bolt c/w nuts and lockwashers in bracket to hold valves in place.

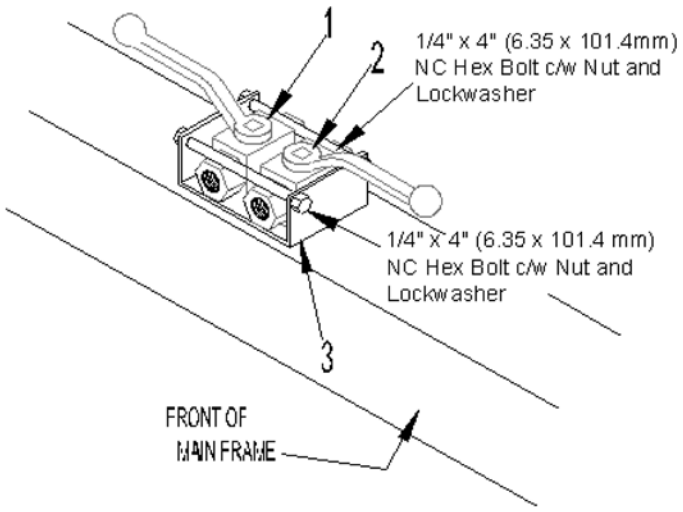


Fig. 23

19. Attaching hydraulic hoses to rockshaft cylinders and wing cylinders. See FIG. 29.

    NOTE: Do not use teflon tape to seal hydraulic hoses and fittings. If pieces of tape get into the hydraulic system they may plug small orifices.

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

    A - See FIG. 22. Install one (1) 1/2" x 90 degree (12.7 mm) swivel street elbow, into the shaft end port of the R.H. 3" x 24" (76.2 mm x 610 mm) wing rockshaft cylinder. Connect one (1) 3/8" x 440" (9.39 mm x 11176 mm) hydraulic hose to 1/2" x 90 degree (12.7mm) swivel street elbow. Then run the hose across the wing frame to the centre of the main frame, and to front of hitch.

    B - See FIG. 22. 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" (76.2 mm x 610 mm) wing rockshaft cylinder. Connect one (1) 3/8" x 334" (9.39 mm x 8483.6 mm) hydraulic hose, to 1/2" x 90 (12.7 mm) degree swivel elbow, on R.H. cylinder. Next run the hose across frame to 1/2" x 90 degree (12.7 mm) swivel elbow, on L.H. cylinder.

C - See FIG. 22. 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 rockshaft cylinder. Connect one (1) 3/8" x 220" (9.39 mm x 5588 mm) hydraulic hose, to 1/2" x 90 degree (12.7 mm) swivel elbow, on main frame rockshaft cylinder. Next run the hose across frame to 1/2" x 90 degree (12.7 mm) swivel elbow on L.H. 4" x 24" (101.6 mm x 610 mm) wing rockshaft cylinder.

D - See FIG. 22. 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 rockshaft cylinder. Connect one (1) 3/8" x 20" (9.39 mm x 508 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.

E - See FIG. 22. Install one (1) 3/8" x 90 degree (9.25 mm) swivel street elbow to the rear R.H wing lift cylinder. Connect one end of (1) 3/8" x 24" (9.39 mm x 609.6mm) hydraulic hose to the barrel end port of 5" x 36" (127mm x 914.4 mm) cylinder and one end to the swivel tee.

F - See FIG. 22. Install one (1) 3/8" (9.39 mm) male x 3/8" (9.39 mm) male nipple, in the barrel end port of the rear L.H. 5" x 36" (127 mm x 914 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) nipple. Install one (1) 3/8" x 90 degree (12.7 mm) street elbow, into the shaft end of L.H. 5" x 36" (127 mm x 914 mm) wing lift cylinder.

G - See FIG. 22. Install one (1) 3/8" x 90 degree (9.39 mm) swivel street elbow, into the barrel end port of the rear R.H. 5" x 36" (127 mm x 914 mm) wing lift cylinder. Install one (1) 3/8" x 90 degree (12.7 mm) street elbow, into the shaft end port, of rear R.H. 5" x 36" (127 mm x 914 mm) wing lift cylinder.

H - See FIG. 22. Install one (1) 3/8" (9.39 mm) male nipple into one (1) 3/8" (9.39 mm) steel cross, and fasten into the rear of the L.H. lockup valve. Then fasten one (1) 3/8" (9.39 mm) male-female swivel into the 3/8" (9.39 mm) steel cross. Fasten one (1) 3/8" x 106" (9.39 mm x 2692.4mm) hydraulic hose to the 3/8" (9.39 mm) tee on the barrel end of the rear L.H. wing lift cylinder.

I - See FIG. 22. Install one (1) 3/8" x 54" (9.39 mm x 1372 mm) hydraulic hose to the 3/8" (9.39 mm) swivel tee on center tube at rear main frame and other end with shaft end of rear L.H. 5" x 36" (127 mm x 914 mm) wing lift cylinder.

J - See FIG. 22. Install one (1) 3/8" x 54" (9.39 mm x 1372 mm) hydraulic hose to the 3/8" (9.39 mm) swivel tee on center tube at rear main frame and other end with shaft end of rear R.H. 5" x 36" (127 mm x 914 mm) wing lift cylinder.

K - See FIG. 22. Install one (1) 3/8" x 115" (9.39 mm x 2921mm) hydraulic hose to the 3/8" (9.39 mm) swivel tee on center tube at rear of main frame fasten opposite end to the 3/8" (9.39 mm) steel cross attached to the L.H. lockup valve front L.H side of frame.

L - See FIG. 22. Install two (2) 3/8" x 179" (9.39 mm x 4546.6 mm) having one (1) 1/2" and one (1) 3/8" hydraulic hoses to the front port of the hydraulic lockup valves, and run hoses to front of hitch.

M - See FIG. 22. Install one (1) 3/8" x 179" (9.39 mm x 4546.6 mm) hydraulic hose having (1) 1/2" and one (1) 3/8" to the 3/8" (9.39 mm) steel cross at the front of disc.

N - See FIG. 22. Install one (1) 3/8" x 165" (9.39 mm x 2286 mm) hydraulic hose to the 3/8" (9.39 mm) steel cross at front and other (1/2") end to the restricted orifice. Attach restricted orifice to the shaft end of L.H. 4" x 24" (101.6 mm x 610 mm) outer wing cylinder.

O - See FIG. 22. Install one (1) 3/8" x 165" (9.39 mm x 2286 mm) hydraulic hose to the 3/8" (9.39 mm) steel cross at front and other (1/2") end to the restricted orifice. Attach restricted orifice to the shaft end of R.H. 4" x 24" (101.6 mm x 610 mm) outer wing cylinder.

P - See FIG. 22. Install one (1) 3/8" x 144" (9.39 mm x 2286 mm) hydraulic hose to the 3/8" (9.39 mm) steel cross at front and other (1/2") end to barrel end of R.H. 4" x 24" (101.6 mm x 610 mm) outer wing cylinder.

Q - See FIG. 22. Install one (1) 3/8" x 144" (9.39 mm x 2286 mm) hydraulic hose to the 3/8" (9.39 mm) steel cross at front and other (1/2") end to barrel end of R.H. 4" x 24" (101.6 mm x 610 mm) outer wing cylinder.

20. Securing hydraulic hoses to frame - See FIG. 22.

    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 four 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.

21. How main lift rockshaft hydraulic system works - See FIG. 29.

    When raising the disc, oil is pumped into the barrel end port of 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.

22. **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. 22. 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, extending cylinders. Hold hydraulic lever for (3) minutes allowing all cylinders to fully extend. Next, fully retract all cylinders then fully extend them and hold hydraulic level another (3) minutes. This procedure will purge air from all cylinders and fully synchronize them. 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.

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

    See FIG. 22. Pump oil into all 36" (914 mm) stroke 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, place shaft end of each cylinder between two cylinder lugs on each wing frame. Pin cylinder shaft to slotted hole in cylinder lugs with one (1) 1-1/4" x 4-3/4" (31.7 mm x 121 mm) pin and two (2) 1-9/32" I.D. flatwashers. 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 to fill the cylinders with oil, they can be seriously damaged if clevis of shaft strikes rockshaft arm or wing cylinder lug.

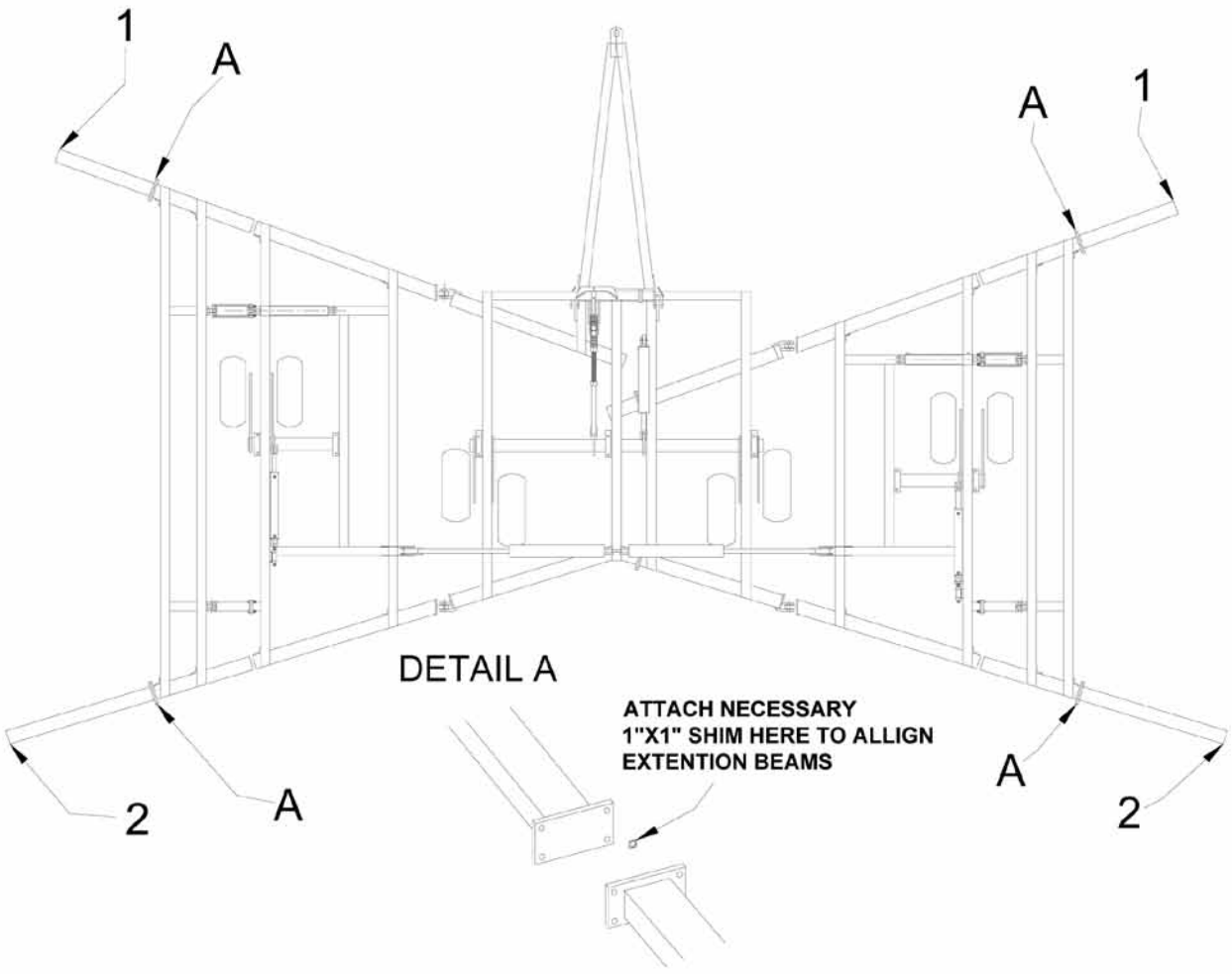
CAUTION	Do not disconnect hydraulically operating components when there is pressure within those components. Hydraulic components under pressure may cause parts and hydraulic fluid to fly out at a high velocity which could cause serious injury.

CAUTION	Hydraulic oil escaping under pressure has suffiecient 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 cardboard 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.

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 main frame and ach wing frames. Do not use lock out valve as safety device to prevent frame from falling. If any hydraulic component failed disc could drop causing serious injury or death to those nearby.

WARNING	Do not stand under wings while wings are being raised or lowered. If any component of hydraulic system should fail or if hydraulic lever should sccidentally be operated, wings could drop causing serious injury or death.



24. Attaching gang beam extensions - See FIG. 24.

NOTE: See gang beam chart to determine length of gang beam extensions for the size of your disc.

A - Front wing - Attach front gang beam extension, arrow 1, to attaching plates that are welded to each wing frame. Fasten with four (4) 3/4" x 2-1/2" (19mm x 254mm) hex bolts c/w nuts and lockwashers. Tighten bolts.

B - Rear wing - Attach rear gang beam extension, arrow 2, to attaching plates that are welded to each wing frame. Fasten with four (4) 3/4" x 2-1/2" (19mm x 254mm) hex bolts c/w nuts and lockwashers. Tighten bolts.

NOTE: Use necessary 1" x 1" (25.4mm x 25.4mm) shim plates to align and level each beam extension. See FIG. 24, Detail A.

CAUTION

To prevent serious injury or death from falling frame, always place adequate supports under three frames.

25. Attaching gang assemblies - See FIG. 25

NOTE: Find gang pattern for your disc.

NOTE: Remove scraper assemblies and bundling tie bars from gang assemblies. The scraper assembly that is bundled with each gang will be assembled together on the disc. Be sure each gang and it's scraper assembly is kept together. The 5/8" x 2" (15.7 x 50.8mm) U-Bolts used to bundle scraper assemblies must be saved to assemble scraper bar to gang beam later.

A - Using gang pattern for your disc - Identify the front and rear gangs. Next, determine which gangs are for R.H.S. and which are for L.H.S. For solid hangers L.H. and R.H. is determined by the 5/8" x 10" (15.7 x 254mm) bearing retainer bolt. When the blades are correctly orientated the double nut end of the 5/8" x 10" (15.7 x 254mm) bolt will face the rear of the disc, see Detail B. If your disc is equipped with stone flex hangers, L.H. and R.H. can also be determined by the opening of the C shank. When blades are correctly orientated the open end of C shank will face the rear of disc, see Detail A.

B - Rear gangs - Roll rear gang assemblies in place under rear gang beams. The gang assemblies with outrigger blades (small diameter blades) must be positioned at the outside. See FIG. 25 for the direction rear gangs face.

Attach bearing hangers to gang beams with two (2) two 7/8" x 6" (22.0 x 152mm) U-Bolts per bearing hanger. Details B and C illustrates how to attach sold hangers. Leave U-Bolt loose. If disc is equipped with optional stone flex bearing hangers, see Step D to attach hangers.

C - Front gangs - Roll front gang assemblies in place under front gang beams. See FIG. 25 for the direction the front gangs face.

Attach bearing hangers to the gang beams with two (2) 7/8" x 6" (22.0 x 152mm) U-Bolts per bearing hanger. Details B and C illustrates how to attach solid hangers. Leave U-Bolts loose. If disc is equipped with optional stone flex bearing hangers, see Step C below to attach hangers.

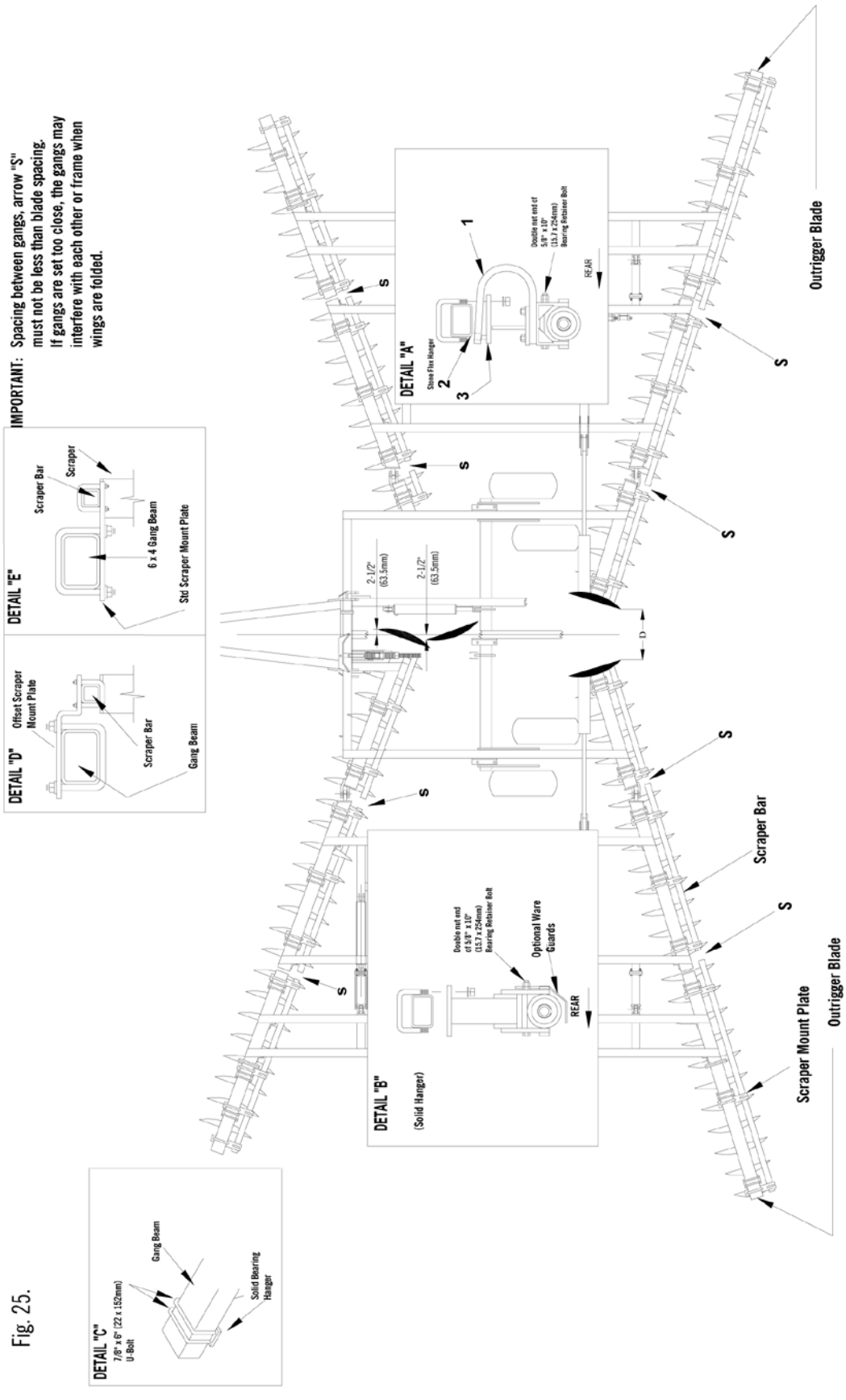

IMPORTANT: Spacing between gangs, arrow "S" must not be less than blade spacing. If gangs are set too close, the gangs may interfere with each other or frame when wings are folded.
DETAIL "E"
Scraper Bar
Scraper
6 x 4 Gang Beam
Std Scraper Mount Plate
DETAIL "D"
Offset Scraper Mount Plate
Scraper Bar
Gang Beam
DETAIL "C"
7/8" x 6" (22 x 152mm) U-Bolt
Gang Beam
Solid Bearing Hanger
DETAIL "A"
Stone Flex Hanger
Double nut end of 5/8" x 10" (15.7 x 254mm) Bearing Retainer Bolt
REAR
DETAIL "B"
(Solid Hanger)
Double nut end of 5/8" x 10" (15.7 x 254mm) Bearing Retainer Bolt
Optional Ware Guards
REAR
2-1/2" (63.5mm)
2-1/2" (63.5mm)
D
S
Outrigger Blade
Scraper Bar
Scraper Mount Plate
Outrigger Blade
NOTE: The maximum setting between rear gangs, dimension "D" is 24" (610mm)

Fig. 25.

D - See Detail A, FIG. 25. If disc is equipped with optional stone flex bearing hangers, fasten each spring hanger assembly, arrow 1, to bottom of gang beam, arrow 2, with one backing plate, arrow 3, and two (2) U-Bolts. Be sure dowel pin of backing plate, arrow 3, is installed in slot of spring shank.

E - See FIG. 25. Set front center frame gangs, so that the leading edge of inside blade, arrow 5, on rear gang is 2-1/2" (63.5mm) past center of disc frame (center line of center frame is shown in FIG. 25).

F - See FIG. 25. Set rear centre fame gangs, arrow 5, so that the distance between the rear edge of the two inside blades, dimension D is equal to 2" (50.8mm) less than diameter of blade to a maximum of 24" (610mm). For example, if your disc is equipped with 24" (610mm) diameter blades, dimension D would be set at 22" (559mm). If your disc is equipped with 26" or 28" (660mm or 711mm) diameter blades, dimension D would be set at a maximum of 24" (610mm). Be sure rear gangs are centered.

G - See FIG. 25. Adjust blade to blade distance between individual gang assemblies. This distance should be the same as the blade spacing of you disc.

NOTE: Space between wing gangs and center frame gangs must not be less than blade spacing. If gangs are set too close, the two gangs may interfere with each other when wings are folded.

H - Before tightening bearing hanger U-Bolts, check each bearing hanger to make sure hanger is sitting square under gang beam. Next tighten U-Bolts to 430 ft lbs (583.0 N.m).

NOTE: If bearing hangers are not sitting square before tightening U-Bolts, thrust will be built into the bearings and the life of the bearing will be shortened.

26. See FIG. 26. 410WSS Bearing Only - Loosen all the bolts, arrow 1, which fastens the bearings to the hangers, arrow 2. Then turn the disc blades to allow the bearings to align themselves. Next, tighten all the bolts. This will ensure proper bearing alignment, increasing bearing life.

27. **NOTE:** When raising wings for transport for first time after adjusting gangs, raise wings slowly making sure wing gangs clear center frame gangs.

28. See FIG. 27. Adjust scraper bar, arrow 1, and scrapers, arrow 2, of each gang so that each scraper blade is in contact with disc blade. Tighten U-Bolts.

NOTE: Disc will require less horse power to pull if scraper are adjusted properly.

FIG. 26

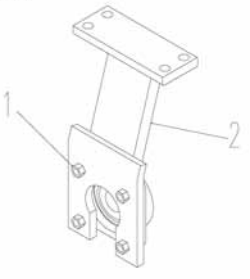


FIG. 27

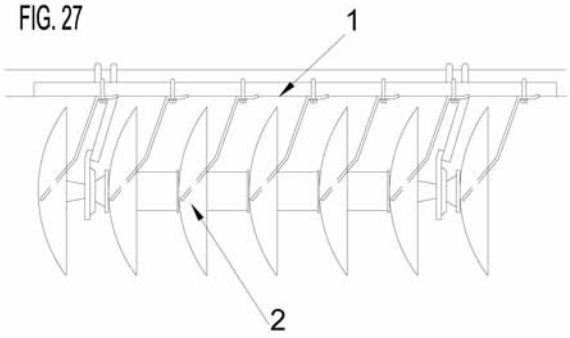
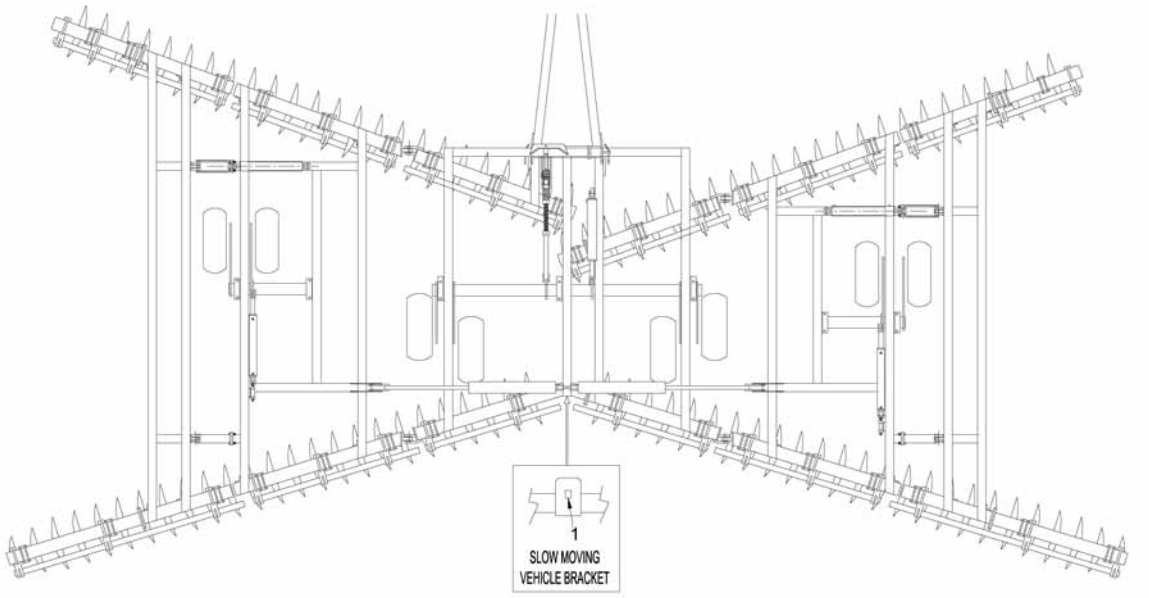


Fig. 28.



29. See FIG. 28. Place the Slow Moving Vehicle sign into the weld-on SMV bracket, arrow 1. Tighten nut.

30. See FIG. 29. Level wing frame with main frame as follows

    1 - Raise disc by extending rockshaft cylinder. Be sure wing rockshaft cylinders are fully extended.

    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.

    NOTE: 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. 29

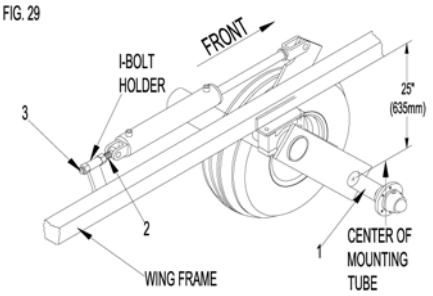
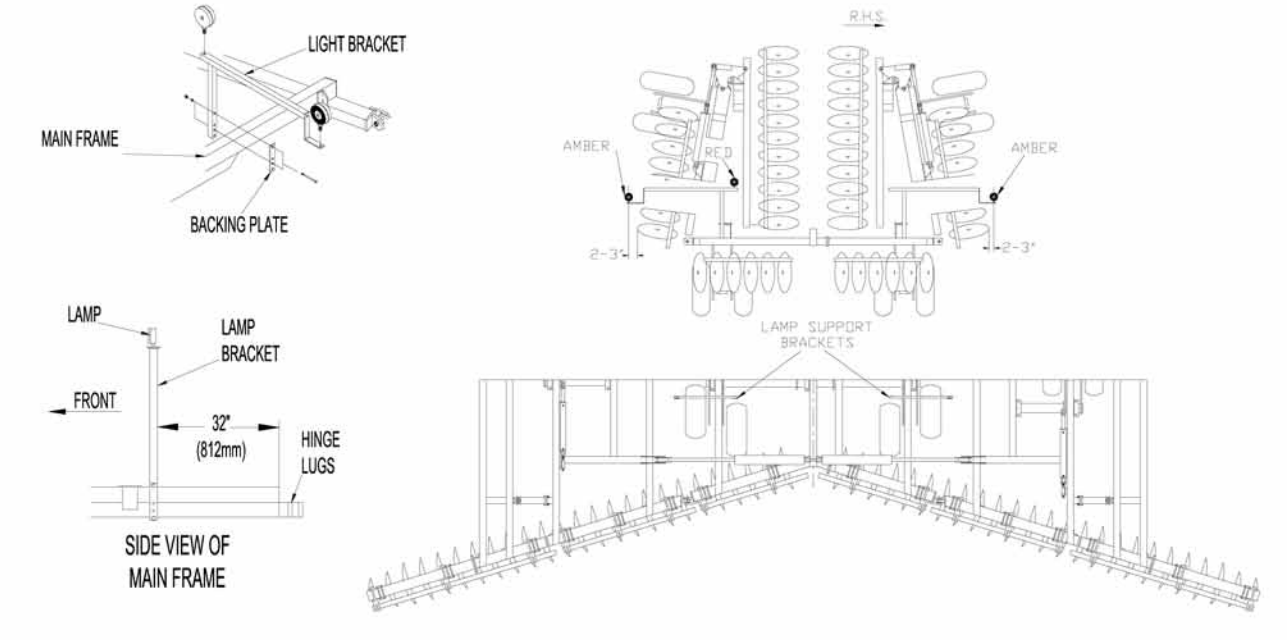


FIG. 30.



31. Warning light kit (optional) - Mount instructions - See FIG. 30.

⚠	WARNING	Do not stand under wings when working on disc. If hydraulic system failed or if hydraulic lever was accidentally operated, wings may fall resulting in serious injury or death to person(s) near disc.

A - With disc folded, install one lamp support bracket on each side of main frame. Locate each bracket on inside of double 4" x 4" (101.6mm x 101.6mm) tubes 32" (812mm) from rear of main frame. Fasten each support with two (2) 1/2" x 7-1/2" (12.7mm x 190.5mm) hex bolts c/w nuts and lockwashers and one (1) backing plate.

NOTE: Lamp brackets must be positioned as shown in ILL. 30 so they don't interfere with the hydraulic hoses when wings are folded.

B - 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 nuts and lockwasher. Do not tighten U-Bolt at this time.

C - Fasten one (1) amber lamp and one (1) red lamp to the L.H. mount plate. Position amber and red lamps so they face the rear with the amber lamp on the outside. Install lamps through 3/4" (19.1mm) holes in mount plate. Secure with nuts. Leave nuts loose on amber lamp so ring connector on wiring can be installed later.

D - Fasten one (1) amber lamp to R.H. mount plate. Position so amber lamp faces rear. Install lamp through 3/4" (19.1mm) hole in mount plate. Secure with nuts.

NOTE: Paragraphs C and D and FIG. 30 describe and show lamp positions for North American public roads. For other countries such as Australia, check local laws and regulations for required warning light mounting positions.

E - Loosen U-Bolt of each mount plate, then with disc folded for transport, position L.H. lamps so center of red lamp is 2 to 3" (50.8mm to 76.2mm) outside widest point of machine. Position R.H. amber lamp so it is 2 to 3" (50.8mm to 76.2mm) outside widest point of machine. Warning lamps must be visible from the front and the rear of the machine. Tighten mount plate U-Bolts.

	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.

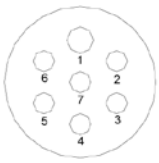
32. See FIG. 31 - Lay wiring harness on hitch and center frame with 7 pin male plug, arrow 4, located at front of wiring harness is tagged L.H.S. (left hand side) and R.H.S. (right hand side) at outer plugs. When laying harness on frame ensure L.H. end of harness is placed on L.H.S. of main frame and R.H. end is placed on R.H.S. of frame. L.H. and R.H. is determined by view of disc from rear.

    NOTE: The R.H. and L.H side of harness must be properly positioned to allow signal light to work properly. Run harness along lamp support brackets. Tie harness to frame and lamp support as required with the straps. Next plug in each amber lamp to two wire plug, arrow 2, at outer ends of harness. Plug in red lamp to a 3 wire plug, arrow 1.

FIG. 31.

(A) Power Source (Tractor) **IMPORTANT:** Ensure tractor receptacle (socket)

Is configured as shown at left prior to Installing Safety Light Kit



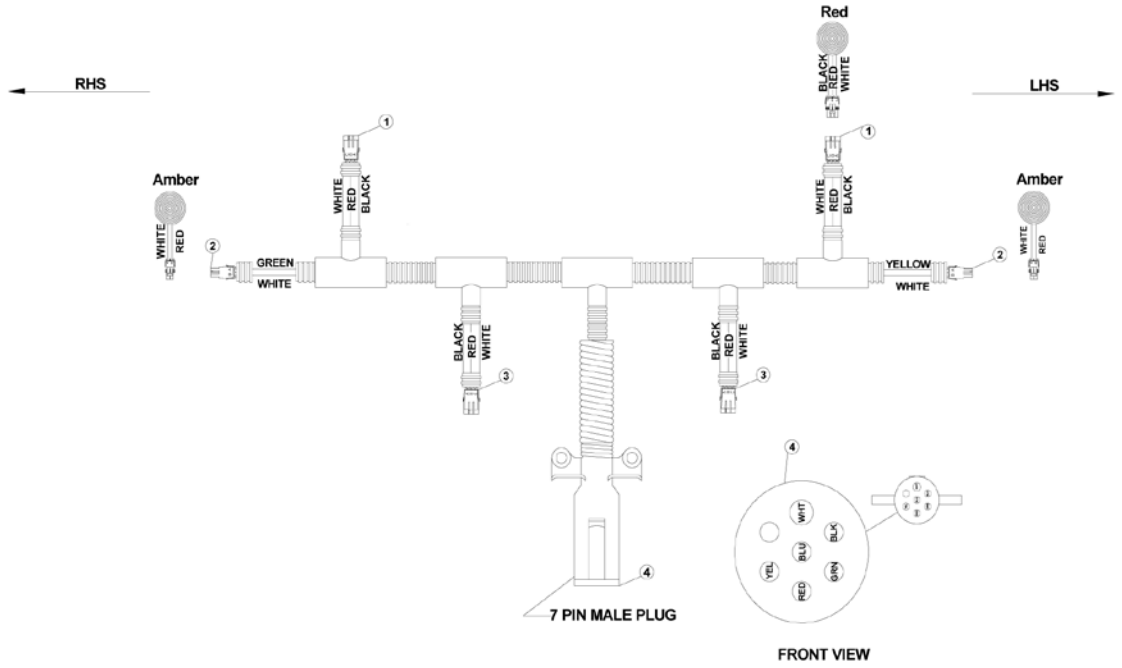
Tractor Socket Receptacle
(Viewed from Rear of Tractor)

#1 – White – Ground
#2 – Black
#3 – Yellow – L.H. Flashing
#4 – Red
#5 – Green – R.H. Flashing
#6 – Brown
#7 – Blue

NOTE: Wiring diagrams shown follow standardized industry wiring connections used in the manufacture of agricultural machinery.

NOTE: White wire is common ground

(B) Wiring Harness



Components:

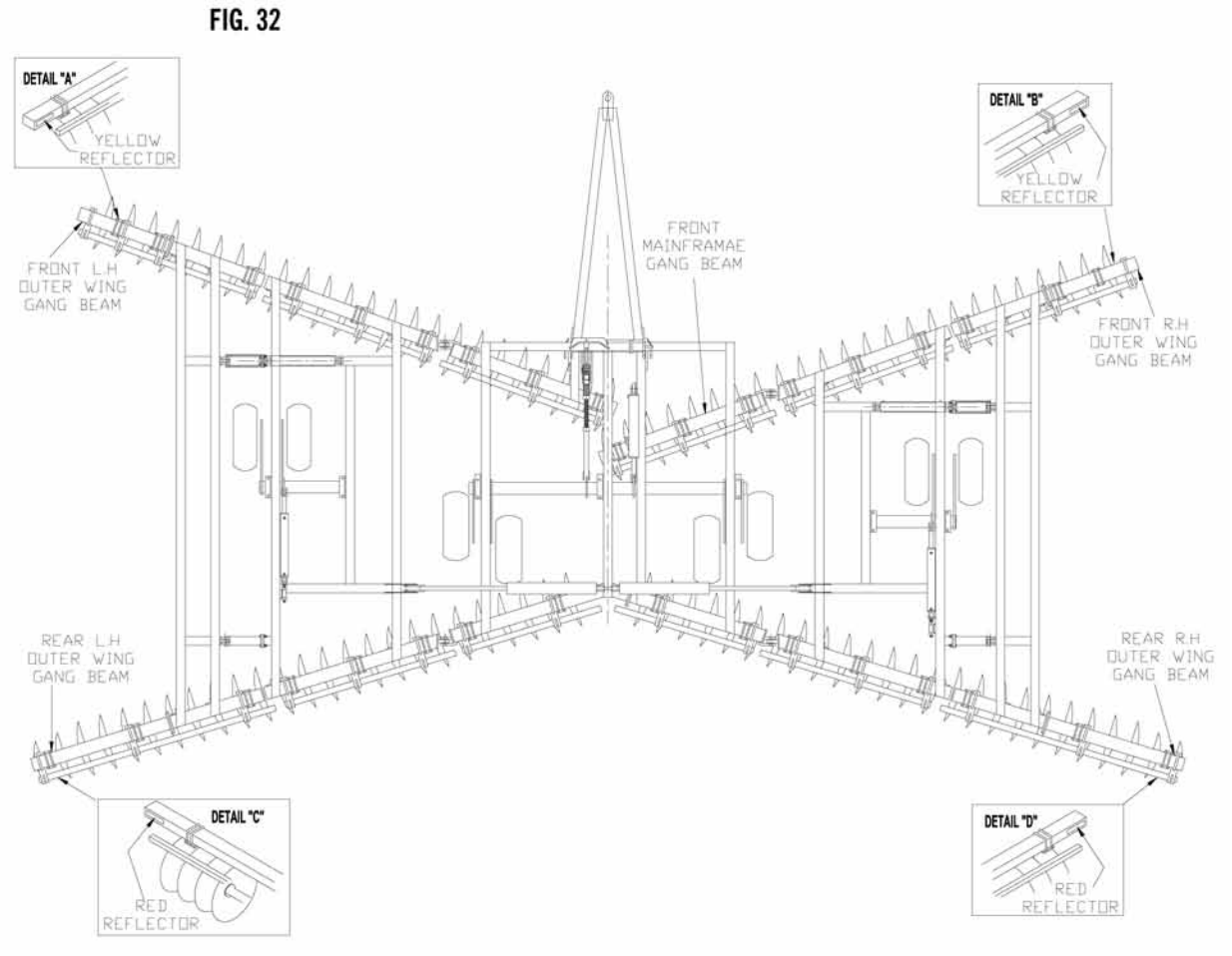
2 - Lamps - amber both sides

1 - Lamp - red one side

1 - Wiring harness

10 - Cable ties

FIG. 32



33. Reflector decal installation - See FIG. 32.

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

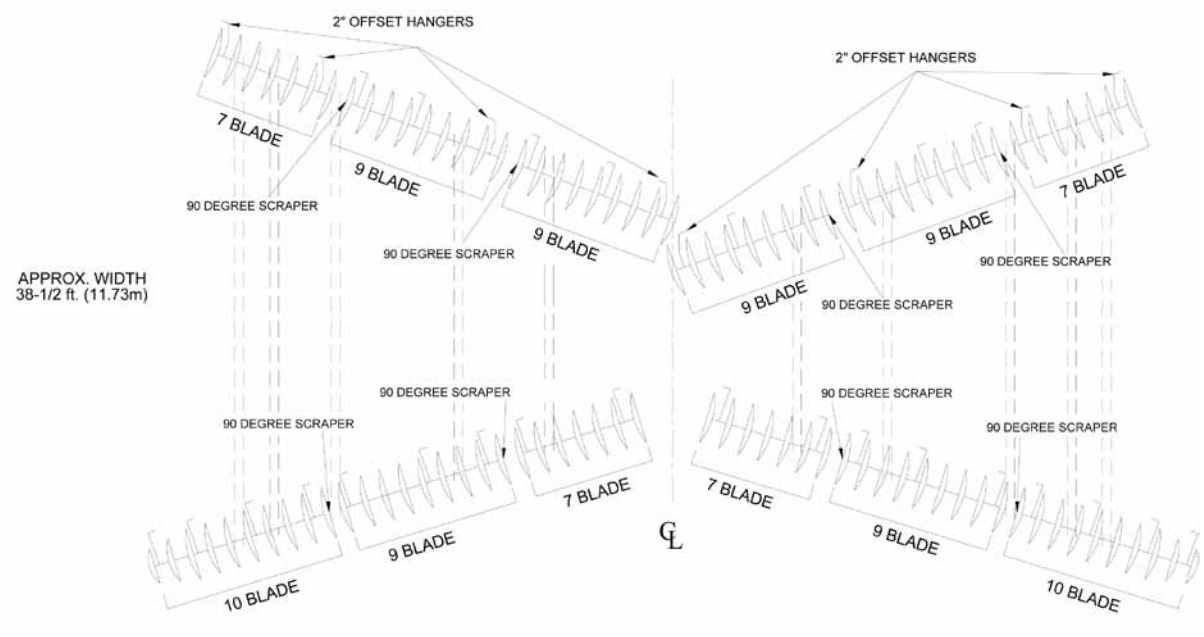
    A - Place one (1) 2" x 9" (50.8mm x 228.6mm) red reflector decal on rear side of each rear gang beam. Locate decals approximately 1" (25.4mm) from end of gang beam. See detail C and D.

    B - Place one (1) 2" x 9" (50.8mm 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.

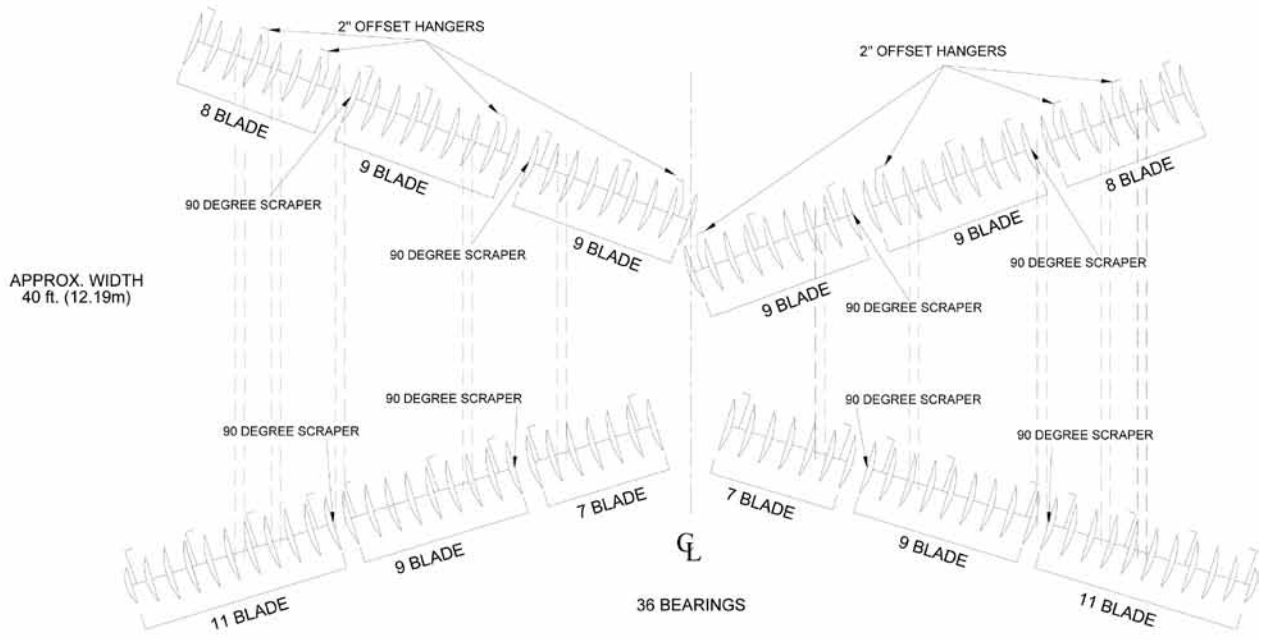
Gang Beam Extensions

Model	Front Extension Length	Rear Extension Length	Front Extension Length	Rear Extension Length
	9" Spacing		10-1/2" Spacing	
6650 LTFLTF 110 Blade	34"	58"	-	-
6650 LTFLTF 106 Blade	24"	49"	-	-
6650 LTFLTF 102 Blade	15"	40"	-	-
6650 LTFLTF 98 Blade	-	-	40"	66"
6650 LTFLTF 94 Blade	-	-	28"	54"
6650 LTFLTF 90 Blade	-	-	18"	45"

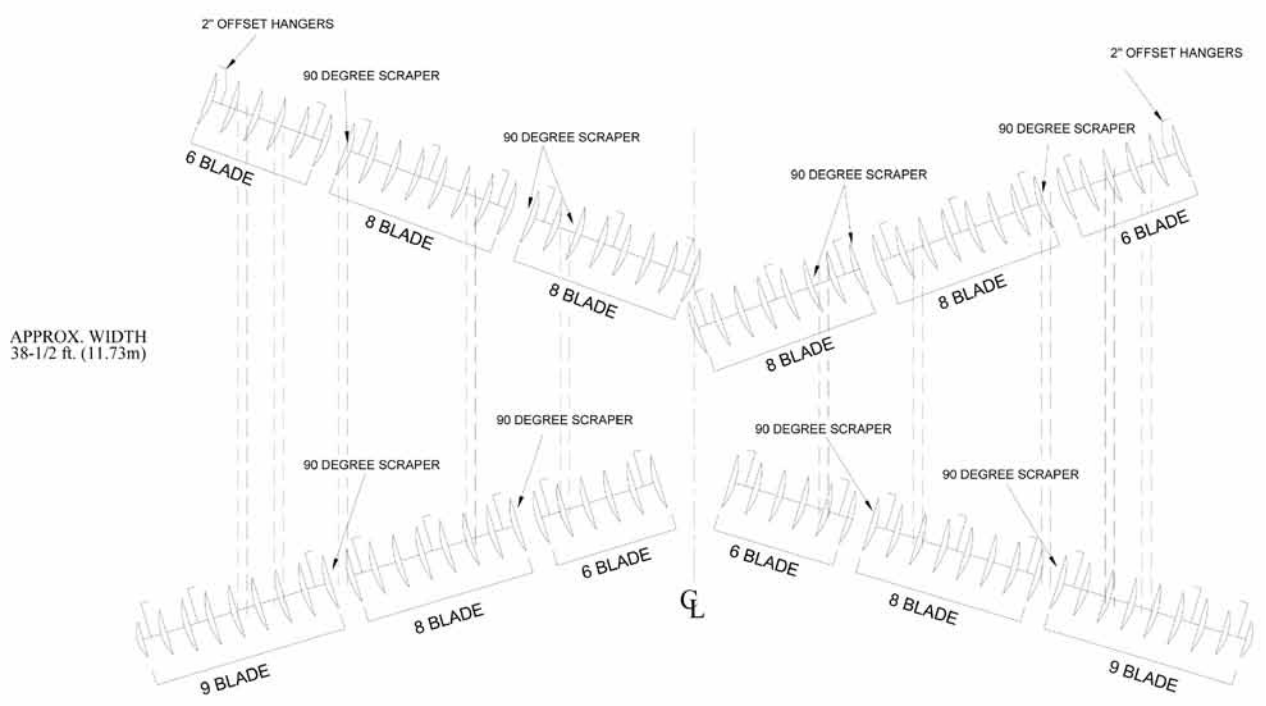
Gang Pattern - 9" Spacing - 102 Blades/34 Bearings - Front



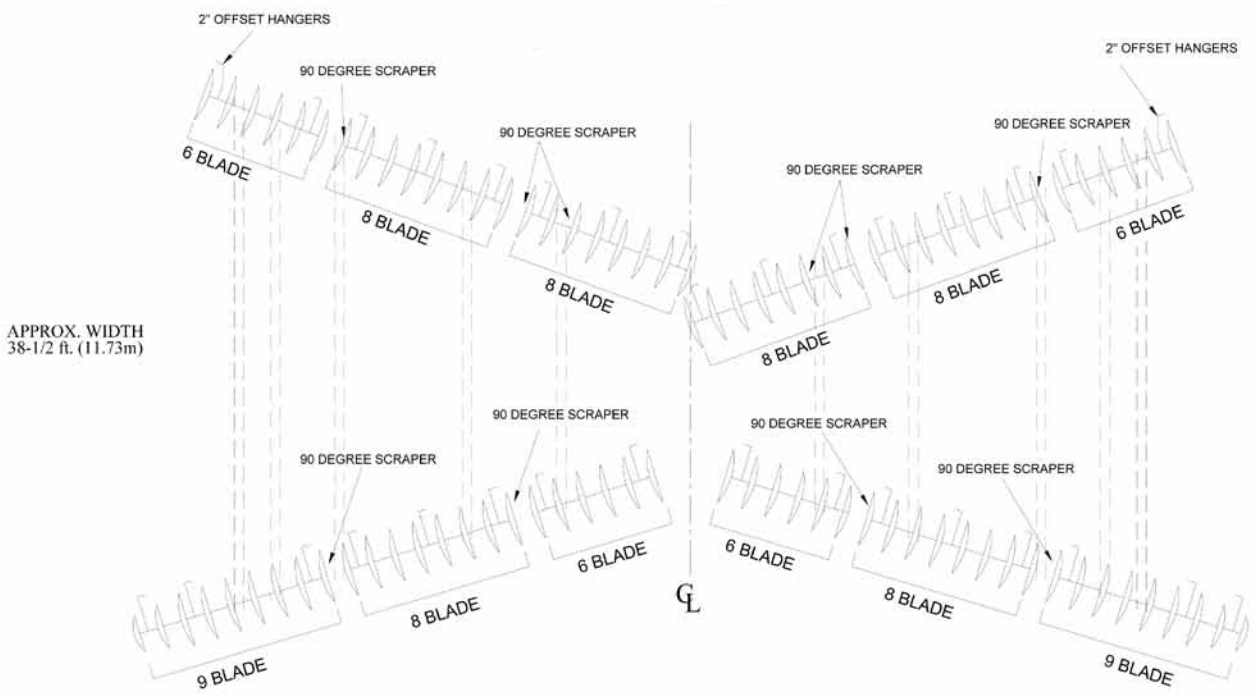
Gang Pattern - 9" Spacing - 106 Blades/36 Bearings - Front



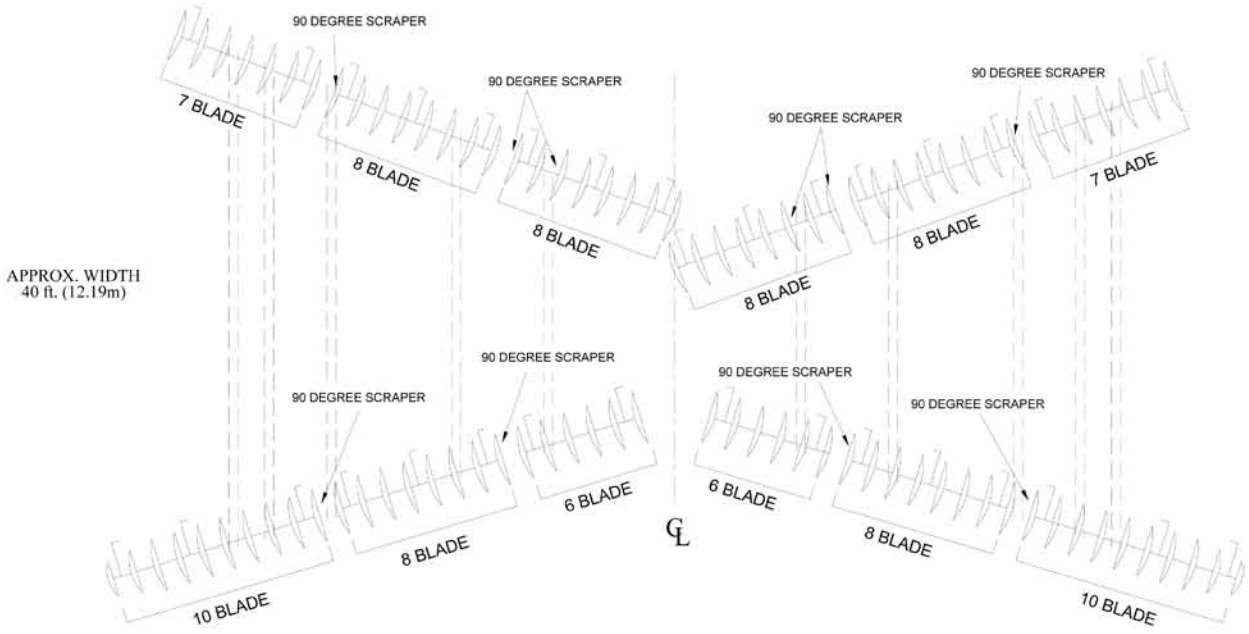
Gang Pattern - 9" Spacing - 110 Blades/36 Bearings - Front



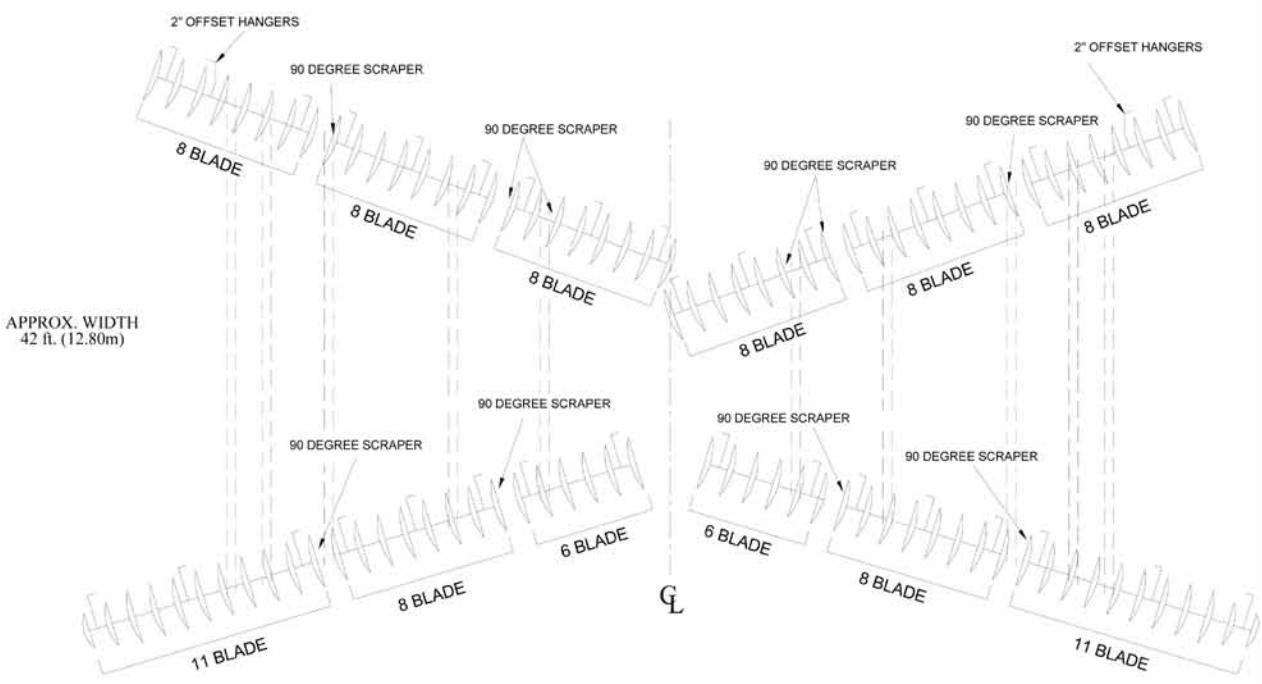
Gang Pattern - 10-1/2" Spacing - 90 Blades/32 Bearings - Front



Gang Pattern - 10-1/2" Spacing - 94 Blades/36 Bearings - Front



Gang Pattern - 10-1/2" Spacing - 98 Blades/34 Bearings - Front



Operation Instructions

1. Before operating disc, refer to safety precautions. Review disc safety items applicable to road transport and field operation of disc.
2. **NOTE:** When lowering wing 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 cylinders are 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 brake is set. The tractor could roll backwards which could result in serious injury or death to you or persons nearby.

3. Do not make sharp turns with the disc in ground. Sharp turns put excess pressure on the gangs.

   It is advisable to always lift machine 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.
4. For best performance, the tractor drawbar should be pinned at center of tractor.
5. Ensure disc is level fore and aft and side to side and cutting depth is properly adjusted. If further adjustments are required.
6. See FIG. 1. When transporting disc, always place hydraulic lockup valves in closed position. Lockup valves are located at the front end of center frame.

	CAUTION	When transporting disc always place both hydraulic lockup valves in closed position. 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.

7. See FIG. 2. When transporting disc always place the complete depth control package 17" (431.80 mm) long on shaft of 4" x 24" (102 mm x 610 mm) centre frame lift cylinder.

	CAUTION	When transporting disc always install the complete package of depth control stops 17" (432mm) long on shaft of center frame cylinder. If any component of hydraulic system failed disc could drop causing serious injury or death to operator or person(s) nearby.

8. **NOTE:** When transporting disc, do not exceed speed of 10 mph (16 km/h).

9. **NOTE:** Do not operate disc in field with wings folded in transport position. Severe damage will occur when discing with wings folded.

10. **NOTE:** Do not disc with front gangs cutting deeper than rear gangs. Disc must be level. If front gangs are lower, excessive strain will be placed on blades, gang bearings and frame hitch, which could lead to premature parts failure, especially outside blades of front gangs.

11. **NOTE:** 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.

FIG. 1

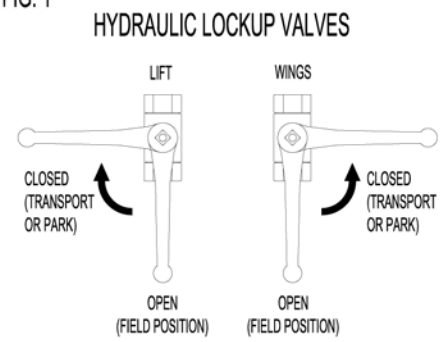
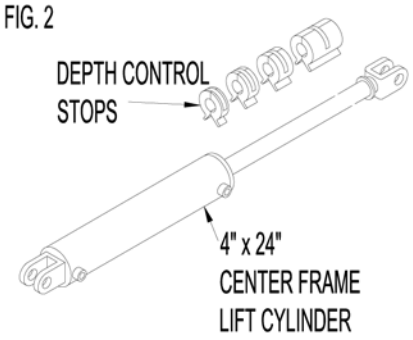


FIG. 2



12. 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.

13. See FIG. 3. 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).

	DANGER	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 damge, injury or death could result from the disc separating from the tractor drawbar.

FIG. 3

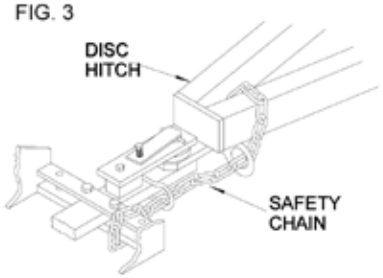
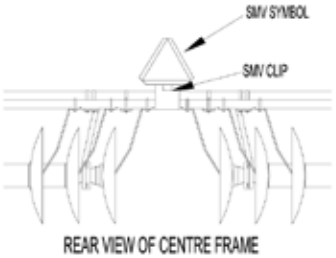


FIG. 4

FIG. 5



DANGER	See FIG. 4. Do not stand under the wing(s) whilte it is being raised or lowered. If any component of the hydraulic system lever was accidentally operated, wing could fall causing serious injury or death.

14. See FIG. 5. Install the SMV emblem in the SMV clip welded to rear of centre frame.

DANGER	See FIG. 4. Do not stand under the wing(s) whilte it is being raised or lowered. If any component of the hydraulic system lever was accidentally operated, wing could fall causing serious injury or death.

CAUTION	Use the SMV emblem (not supplied) and warning lights for the protection of tractor and other motor vehicle operators when transporting the cultivator over public roads. Check local laws regarding transporting regulations.

CAUTION	Disc may fall rearward suddenly and hitch may rise abruptly if disc is unpinned from tractor when disc is fully raised and wings unfolded. Always use caution and ensure other person(s) are not standing near disc when unhitching from tractor.

CAUTION	When trailing the disc over public roads, use the smv emblem and arning 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 (16km/h) when transporting disc on smooth 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 contract with electrical lines. Use care to avoid contact with electrical lines when moving or operating disc. Models equipped with folding gang beams must have these beams folded to give minimum transport height.

	WARNING	When transporting disc, always place hydraulic lock up valves in closed position. If hydraulic lever was accidentally operated, the disc could drop or wings could fall causing serious injury or death to operator and person(s) nearby.

15. Rephasing rockshaft cylinders - Periodically, the hydraulic lift cylinders on wing frame will not be synchronized with center 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) three rockshaft cylinders are fully extended.

	WARNING	Never allow anyone too ride on drawbar of the tractor or on the disc. The person riding may fall and be seriously injured.

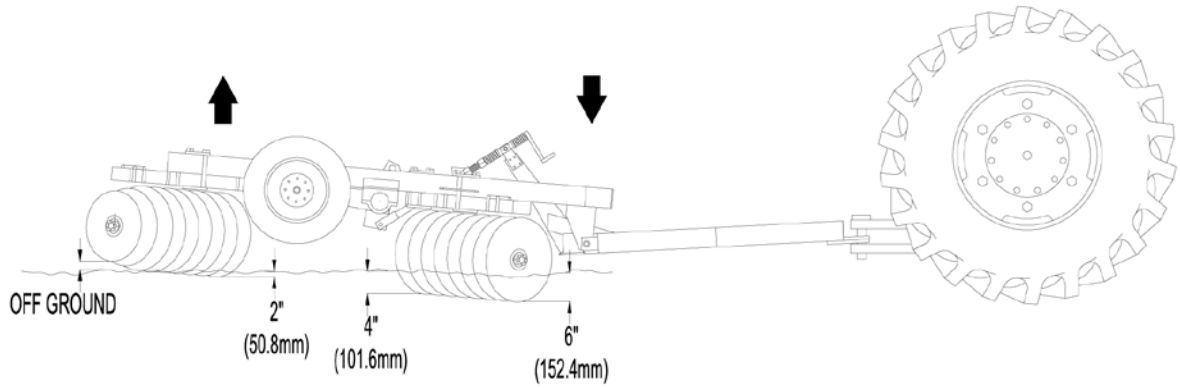
	WARNING	Lower the disc to the ground when servicing or making adjustments. If the disc must be serviced or adjusted in the raised position, place block under frame. Do not rely on hydraulic lock up valves as a safety device. If the hydraulic system failed, or if the hydraulic lever was accidentally operated, the disc could drop.

	CAUTION	When operating on hillsides, use extra care. Tractor may tip sideways if it strikes a hole, ditch or other irregularities.

16. **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.
17. When parking disc always place both hydraulic lockup valves in close position - See FIG. 1.
18. In discing conditions where extreme wing flexibility is required, remove cylinder pin from shaft end of each wing lift cylinder and retract cylinders.

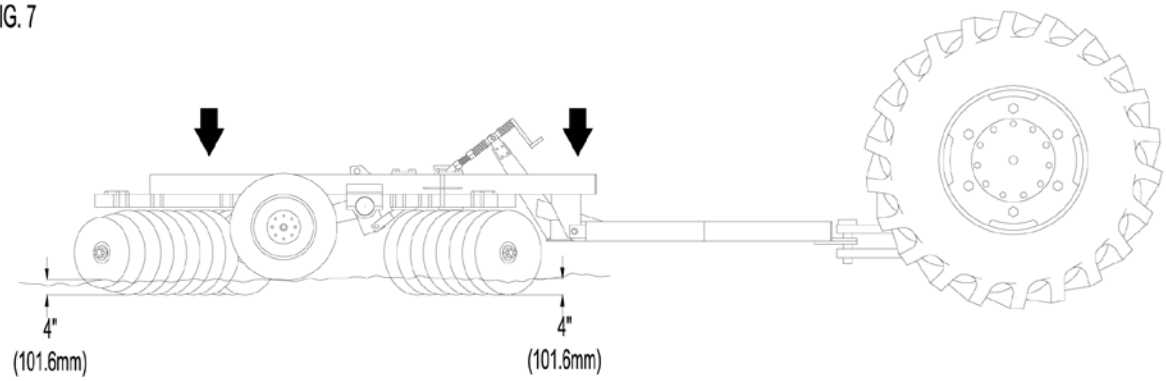
    When reattaching shaft end of wing lift cylinders to wing frame, be sure cylinder shaft does not strike cylinder lug on wing frame. Serious damage may occur to cylinder if cylinder shaft strikes cylinder lug. Before extending cylinder shafts block up cylinder so that cylinder shaft passes over cylinder lugs.

FIG. 6



INCORRECT - WHEELS OFF GROUND

FIG. 7



CORRECT - WHEELS ON GROUND GAUGING DISCING DEPTH

19. To keep disc level transport wheels must be riding on ground gauging desired discing depth, as shown in FIG. 7.

20. If conditions are such that disc can not penetrate to maximum depth, do not raise transport wheels off ground as shown in FIG. 6. Raised transport wheels may cause front of disc to drop causing front gangs to cut deeper than rear gangs.

21. 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.

22. 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.

23. 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.

    NOTE: 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.

Adjustments

1. Lateral adjustment of the front and rear gangs.

   A - Front gangs - See FIG. 8. Loosen bearing hanger U-bolts and adjust front gangs so that leading edge of inside blades are, arrow 1, approximately 2-1/2" (63.5 mm) past centre of disc. The centre of disc is shown in FIG. 8. If the above adjustment is made correctly, the front gang will not leave any unbroken ground at centre of disc.

   B - Rear gangs - See FIG. 9. To adjust rear gangs, loosen bearing hanger U-Bolts.

   The opening between the rear gang 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" (50.8 mm) less than diameter of blades. For example, if your disc is equipped with 26" (660 mm) blades, the opening (Dimension D) should be 24" (610 mm). If your disc is equipped with 28" (711 mm) blades, (Dimension D) would be set at a maximum of 24" (610 mm). An increase in discing speed may required rear gangs to be set further apart. A decrease in discing speed may require rear gangs to be set closer together.

   NOTE: Be sure the blade to blade distance between individual gangs are adjusted to match your discs blade spacing.

   C - When gang adjustments are complete, tighten all bearing hanger U-Bolts. Before tightening bearing hanger U-Bolts, check each hanger to make sure hanger is sitting square under gang beam. If disc is equipped with 410WSS gang bearings, ensure hangers are not turned to one side. Tighten U-Bolt to 430 ft. lbs (583.0 N m). Next, if disc is equipped with 410WSS gang bearings, see section 33 on page 38 for gang bearing alignment procedures.

2. **NOTE:** When raising wings for transport for first time after adjusting gangs, raise wings slowly making sure wing gangs clear center frame gangs.

3. Levelling disc - Front to rear - See FIG. 10. When discing, the front and rear gangs should be cutting at same depth. The levelling , crank, arrow 1, is used to level disc.

   To lower front gangs: Turn crank, arrow 1, in (clockwise)
   To raise front gangs: Turn crank, arrow 1, out (counter clockwise)

FIG. 8

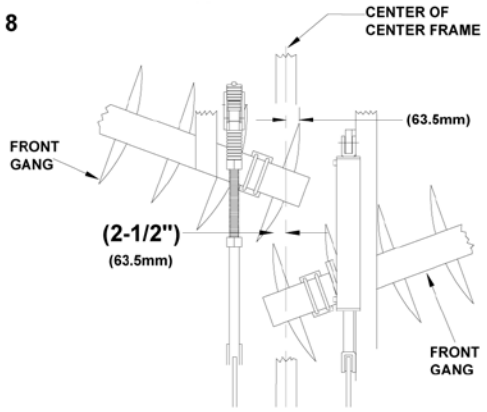
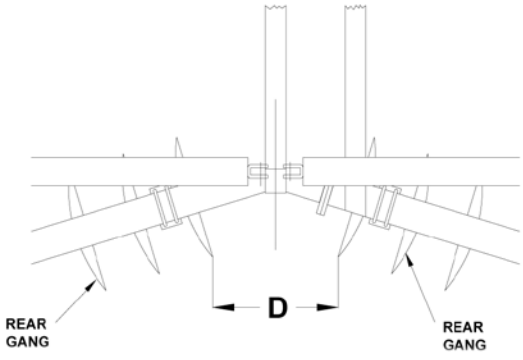


FIG. 9



4. Setting discing depth -See FIG. 10. To set discing depth, lower disc into the ground while moving forward until disc reaches desired discing depth. Install the necessary depth control stops on centre frame cylinder to maintain the desired cutting depth.

FIG. 10

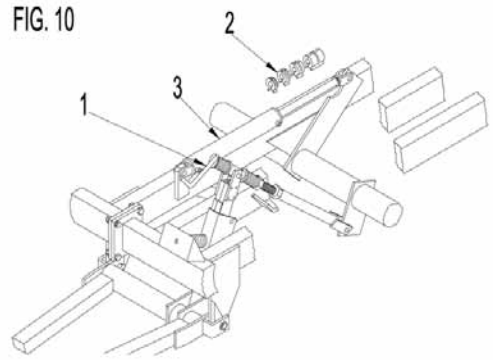
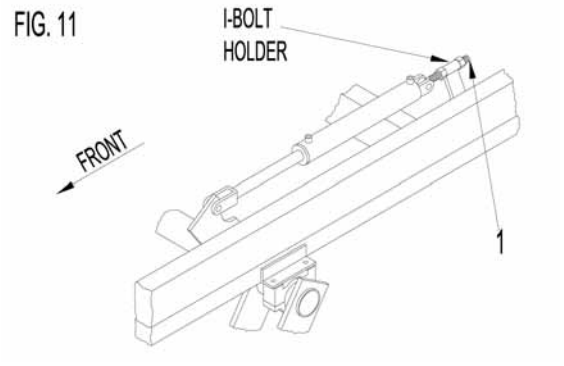


FIG. 11



5. Levelling wing frames - See FIG. 11.
   Before this adjustment is made, be sure centre frame is level from front to rear. After adjustments are complete tighten nuts on cylinder I-Bolt.

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

   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 rear nut of I-Bolt and tighten front nut. This will lower the wheels raising outside of wing. If outside of wing frame needs to be lowered, loosen front nut of I-Bolt and tighten rear nut. This will raise the wheels allowing outside of wing lower. After adjustments are complete, lock I-Bolt by tightening rear nut against I-Bolt holder.

   NOTE: Be sure axis of clevis pin is horizontal and cylinder ports are facing up. If cylinder and I-Bolt are not positioned properly, cylinder will not be free to pivot when activated, causing serious damage.

	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 a hole, ditch or other irregularities.

6. Remove ridge at center of disc - make one or more of the following adjustments:

   A - Level disc from front to rear using levelling crank, see adjustments.
   B - Reduce discing speeds.
   C - Increase distance between rear gangs, see adjustments.

7. Remove furrow at center of disc - make one or more of the following adjustments:

   A - Level disc from front to rear using levelling crank, see adjustments.
   B - Reduce discing speeds.
   C - Decease distance between rear gangs, see 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 adjustments.

9. Reduce gang plugging - make following adjustment:

   D - Adjust scrapers so they contact blades.

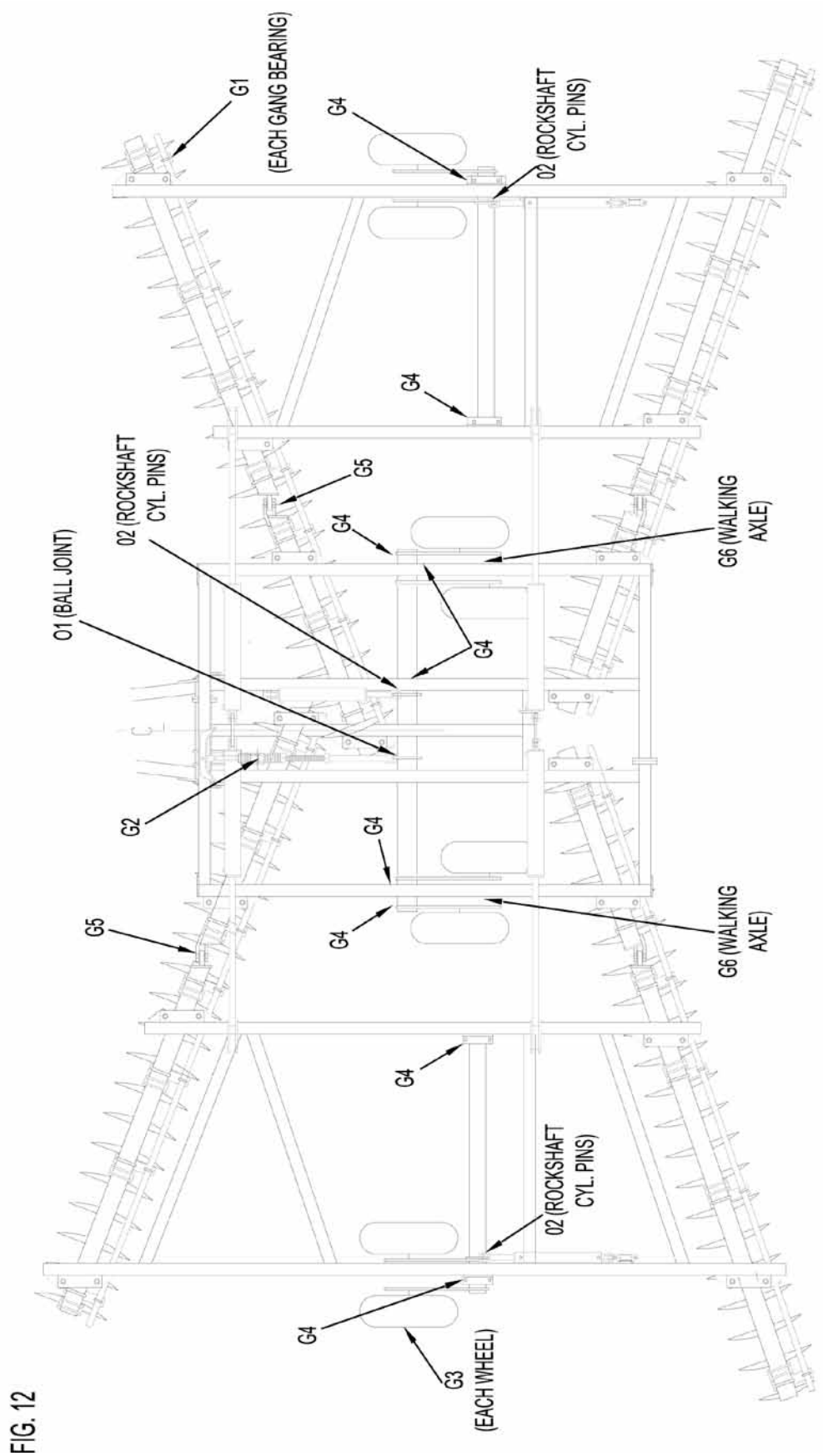

G1
(EACH GANG BEARING)
G4
02 (ROCKSHAFT
CYL. PINS)
G4
G5
02 (ROCKSHAFT
CYL. PINS)
G4
G6 (WALKING
AXLE)
O1 (BALL JOINT)
G4
G2
G4
G5
G4
G6 (WALKING
AXLE)
G4
02 (ROCKSHAFT
CYL. PINS)
G4
G3
(EACH WHEEL)

FIG. 12

Maintenance Instructions

1. Lubrication - see FIG. 12 - All grease lubricating points on disc are marked with arrow G. The oil lubrication points are marked with arrow O.

   G1 - Gang Bearing - for T2-215 Series Gang Bearing - Lubricate every 20 hours of operation. Lubricate until grease comes out around seal. Excessive lubrication will not damage seals. Use high quality SAE multi-purpose grease.

   G2 - Lubricate levelling crank every 100 hours of operation.

   G3 - Lubricate wheels every 50 hours of operation.

   G4 - Lubricate top and bottom half of each rockshaft bearing every 20 hours of operation.

   G5 - Lubricate wing hinge points every 100 hours of operation.

   G6 - Lubricate walking axles every 50 hours of operation.

   NOTE: When you receive your new disc, grease all lubricatiing points before starting to disc.

   01 - Lubricate levelling crank ball joint (with oil) at the end and beginning of each season.

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

2. All bolts and nuts should be checked periodically to make sure they are tight. Special attention should be given to gang bolts, bearing bolts and bearing hanger U-Bolts, and wheel bolts.

   They should be tightened as follows:

   - Gang bolts 1-15/16" (49 mm) diameter - tighten to 3200 ft lbs torque (4339 N.m)
   - Gang beam bolts 1-1/4" (31.7 mm) diameter - 840 ft lbs (1139 N.m)
   - Levelling crank bolt 1-1/4" (31.7 mm) diameter - 840 ft lbs (1139 N.m)
   - Wheel bolts 9/16" (14.2 mm) diameter - 150 ft lbs (203 N.m)
   - Bearing hanger U-Bolts 7/8" (22 mm) diameter - 430 ft lbs (583.0 N.m)

   See FIG. 13. To tighten gang bolt to 3200 ft lbs (4339N.m) install a 10ft (3.05m) bar in socket wrench and apply 320 lbs (145Kgs) of force to end of bar.

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

   NOTE: Severe damage will occur if gang bolts are loose.

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

4. **NOTE:** See FIG. 14.

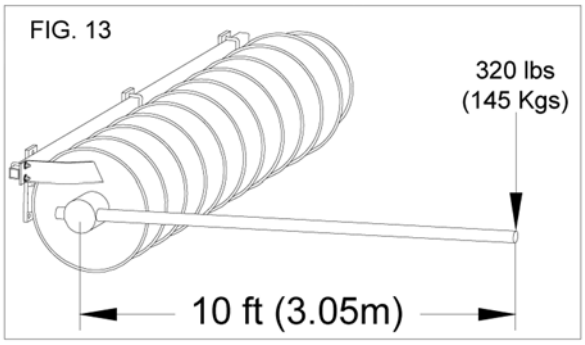
   A - If T2-215 bearing must be dismantled, double set screws must be removed from bottom of housing to remove seal cap.

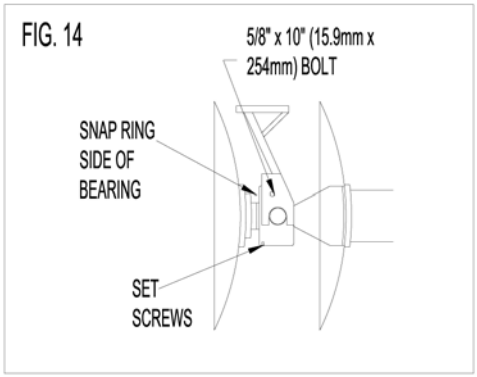
   B - When replacing grease seals in T2-215 bearing, ensure they are installed correctly. The I.D. of the outer shield is larger on one side than the other. Besure the side with the larger I.D. of both seals are facing out. The rubber seal may be damaged if grease seal is not installed correctly.

⚠	CAUTION	Do not service disc while it is in motion. You may fall in front of disc and be seriously injured.

⚠	CAUTION	Lower the disc to the ground when servicing or making adjustments. If the disc must be serviced or adjusted in the raised position, place blocks under frame. DO not rely on hydraulic lockup valves as a safety device. If the hydraulic system failed, the disc could drop.

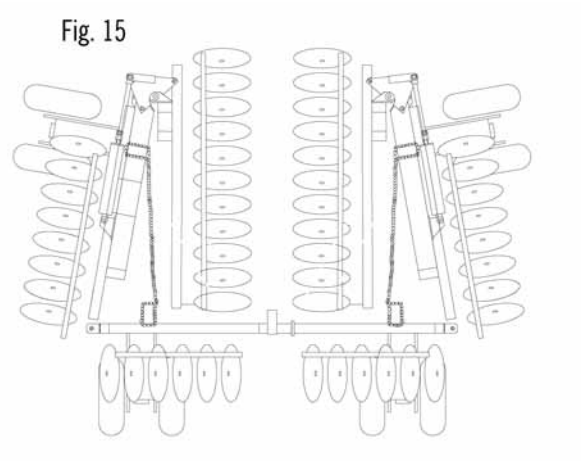
5. See FIG. 14. When reinstalling bearing hanger on T2-215 Bearing (if gangs are dismantled) do not over tighten the 5/8" x 10" (15.7 mm x 254 mm) bolts, which fasten hanger to bearing. Turn lock nut until it is snug against bearing hanger. The bolt may break during field operations if it is tightened using a normal torque.





6. Wing lift cylinder removal - See FIG. 15. If possible lower wings to field position if the wing lift cylinder hydraulic system must be serviced or repaired. If wing lift cylinders must be serviced or repaired with wings in folded position, install a safety chain between each wing frame 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.

Fig. 15



⚠	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 each wing freame and main frame to prevent wings from falling. If wings fell serious injur or death could occur to person(s) nearby and machine would be damaged severely.

7. Keep all safety decals clean and in good condition to provide a constant reminder of safe operating procedures.
8. Replace any destroyed, missing or illegible decals and reflectors.
9. At the end of each season do following:

   A - Relieve pressure in all hydraulic cylinders. Disconnect hydraulic hoses from tractor and cap them.

   B - If disc is to be stored outdoors, cover hydraulic cylinders and hoses with weather proof material and coat all exposed cylinder shafts with grease.

   C - Set planks under each wheel.

   D - Lubricate all grease points.

   E - Check disc for worn or damaged parts. Replace damaged parts during the off season.

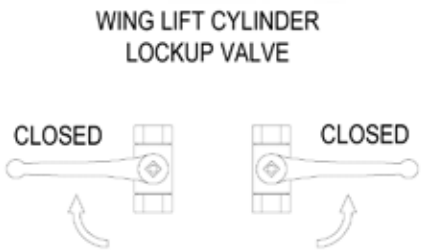
   F - Touch up any scratches with paint.

⚠	CAUTION	Always relieve the pressure in hydraulic system and close both hydraulic lockup valves when disc is not being used.

Important: When storing disc do not leave cylinders under hydraulic system. Especially if cylinders are activated during cool temperatures. The thermal expansion of oil which takes place when the machine is in a warmer environment may cause serious damage to cylinders or hoses. Always release hydraulic pressure and close lockup valves before unhitching from tractor.

NOTE: 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.

Fig. 16



10. Tire maintenance and safety:

A - Keep the pressure equal on all wheels. See specifications for correct tire pressure.

B - Do not inflate tires above recommended pressure.

C - Only experienced personal should attempt to repair a tire or mount tire on a wheel.

D - Do not weld or heat tire and wheel assembly when tire is inflated. The heat may cause an increase in tire pressure causing tire to explode.

E - Periodically check tires for cuts, bulges and damaged rims.

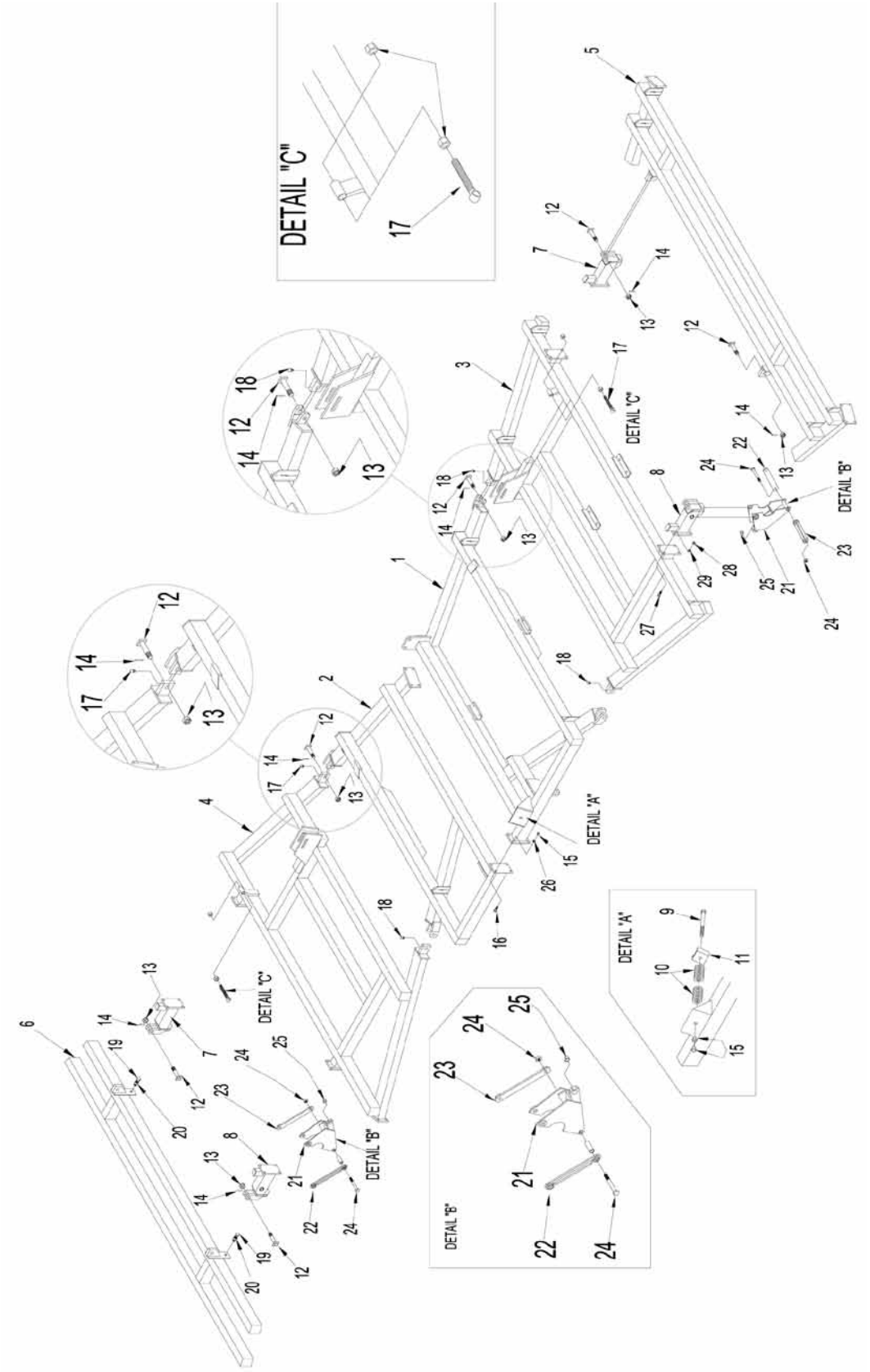
	CAUTION	When inflating tires use a clip on chuck and hose extension which will allow operator to stand clear of tire and wheel assembly. Do not stand in front of or over the tire when inflating. Exploding tire and wheel parts can cause serious injury or death.

Troubleshooting

Problem	Possible Cause	Remedy
Outside blades of front wings are cutting too deep causing disc to ridge at outside.	Wheels raised off ground causing front disc to drop.	Lower wheels to ground so ther gauge discing depth.
	Tire pressure is low on outer wheels causing disc to cut deep at outside.	Inflate tire, see tire pressures.
	Disc is lower at front than at rear.	Using levelling crank raise front of disc - See FIG. 10.
	Wing wheel not adjusted for proper cutting depth.	Raise outside of wing by adjusting lift cylinder I-bolt.
	Wing rockshaft cylinders are not synclironized with centre from rockshaft cylinders.	Rephase rockshaft cylinders.
Outside blades of front wings are not cutting deep enough.	Disc is higher at front than rear	Using levelling crank raise front of disc.
Outside blades on front and rear gangs are cutting too deep.	Tire pressure is low for wing wheels causing wings to cut deeper.	Check tire inflation for all wheels, see tire pressure.
	Outside of wing frame is lower than main frame.	Raise outside of wing with wing rockshaft cylinder anchor bolt.
	Wing rockshaft cylinders are not synclironized with centre from rockshaft cylinders.	Rephase rockshaft cylinder.
Outside blades on front and rear gangs are not cutting deep enough.	Tire pressure is lower on centre section wheels than wing section wheel causing centre section to cut deeper	Check tire inflation for all wheels, see tire pressure.
	Outside of wing frame(s) is higher than main frame.	Lower outside of wing with wing rockshaft cylinder anchor bolt.
	Wing rockshaft cylinder is not syncronized with main frame rochshaft cylinder	Rephase rockshaft cylinder
Disc is leaving a ridge at center of discing	Rear gangs are cutting deeper than front gangs.	Level disc using levelling crank - See FIG. 10.
	a high discing speed is causing disc to throw dirt further resulting in a pile at centre.	Reduce discing speed.
	Rear gangs are too close together.	Increase distance between rear gangs.

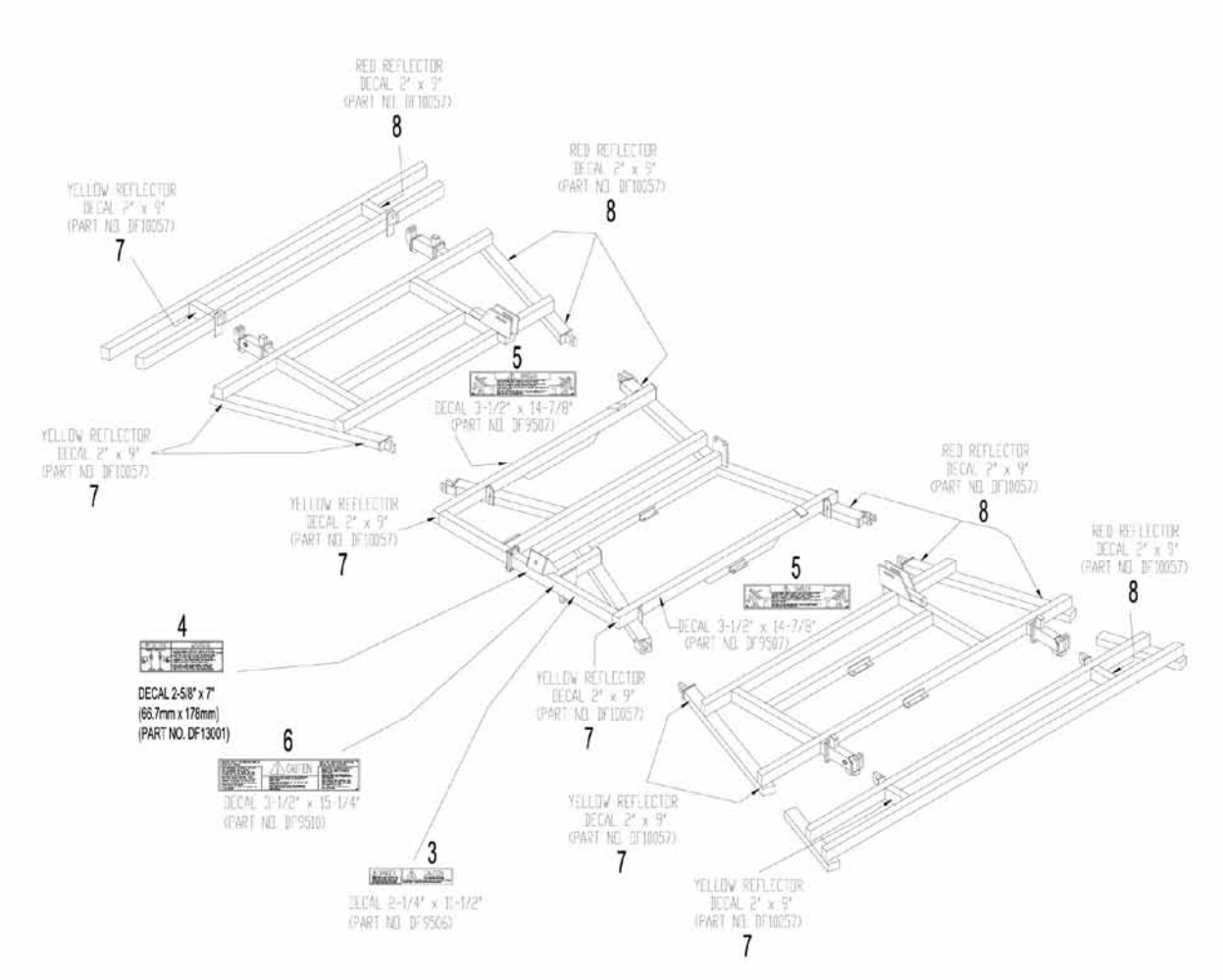
Problem	Possible Cause	Remedy
Rear gangs are not filling furrow left by front gangs at center of disc	Front gangs are cutting deeper than rear gangs	Level disc using levelling crank - See FIG. 10.
	a low discing speed is causing disc to not throw dirt far enough to fill furrow left by front centre blades.	Increase discing speed
	Rear gangs are too far apart.	Decrease distance between rear gangs.
Front gangs are leaving unbroke ground at center of disc.	Front gangs are either overlapped too much or not enough.	Adjust overlap of front gangs.
Disc gangs are plugging When raising disc out of ground, main frame comes out of ground while outside of wing(s) lags behind or does not come out of ground..	Scrapers are too far from blades.	Adjust scrapers so they are contacting blades.
	Thrash conditions too heavy for yourbmachine cylinder(s).	Contact your dealer.
	Piston seals on wing rockshaft cylinder(s) are damaged.	Replace piston seals of wing rockshaft cylinder.
When raising disc out of ground, main frame rockshaft cylinder is fully extended while rockshaft cylinder(s) are not fully extended.	Rockshaft cylinders are not synchronized	Rephrase rockshaft cylinders
When raising disc out of ground wing rockshaft cylinder is fully extended while main frame rockshaft cylinder(s) are not fully extended.	Rockshaft cylinders are not synchronized	Rephrase rockshaft cylinders
Outer wing blades will not penetrate soil	Soil condition too hard for your machine	Add weights to outside of wing frame - makes weights available. Contact your Dealer.
All section of disc will not penetrate soil.	Soil condition too hard for your machine	Contact your dealer.

Frame Assembly



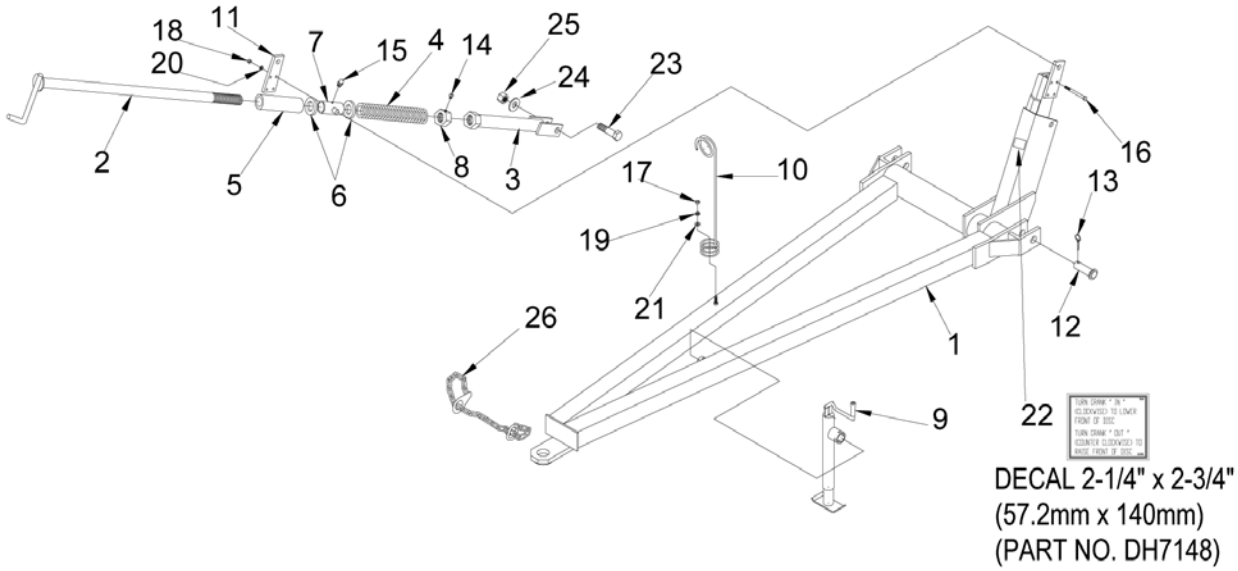
Item	Part #	Description	Qty
1	DF13401	L.H. Main Frame half c/w hex bolt, spring, plate and hex nut	1
2	DF13019	R.H. Main Frame half c/w hinge pin, slotted hex nut, and cotter pin	1
3	DW13460	L.H. Inner Wing Frame - 60" (1524mm) overall width w/ cylinder lug bolt, ref. #17, with two 1-1/4 (31.7mm) hex nuts	1
4	DW13461	R.H. Inner Wing Frame - 60" (1524mm) overall width w/ cylinder lug bolt, ref. #17, with two 1-1/4 (31.7mm) hex nuts	1
5	DW13462	L.H Outer Wing Frame - 20" (508mm) c/w 1-1/4 x 3-1/2 (31.75mm x 89.9mm) N.C Hex Bolt, ref. # 19 with 1-1/4" (31.7mm) N.C Hex Nut ref. 20	1
6	DW13463	R.H Outer Wing Frame - 20" (508mm) c/w 1-1/4 x 3-1/2 (31.75mm x 89.9mm) N.C Hex Bolt, ref. # 19 with 1-1/4" (31.7mm) N.C Hex Nut ref. 20	1
7	DW13464	Front inner wing Bolton hinge assembly	2
8	DW13465	Rear inner wing Bolton hinge assembly	2
9	DFA9564	1" x 14" (25.4 x 356mm) N.C. Hex Bolt	1
10	DC9615	11" (279mm) long compression spring	1
11	DF10046	Single Spring Cushion Plate	1
12	DG13009	1-1/2" Dia. x 5" (38 x 127mm) (Under Head) Wing Hinge Pin	8
13	DH5165	1-1/2" (38.1mm) N.C. Slotted Hex Nut	8
14	BP31225	5/16" (7.8mm) x 2-1/4" (57mm) Cotter Pin	8
15	BN100	1" (25.4mm) N.C. Hex Nut	10
16	BO75025	1" x 3-1/4" (25.4 x 82.6mm) N.C. Hex Bolt	8
17	DR5259	1-1/4" (31.7mm) N.C. I-Bolt for both inner wing frames	2
18	DFA5041	1/4" (6.35mm) - 28 Straight Grease Fitting Top	4
19	B125035	1-1/4" x 3-1/2" (31.7 x 88.9mm) N.C. Hex Bolt	2
20	BN125	1-1/4" (31.7mm) N.C. Hex Nut	2
21	D13336	Outer Wing Triangle Bracket	4
22	D13337	Outer Wing Strap with Hex Hole Washer	2
23	D13338	Outer Wing Strap Rd. Hole Washer	2
24	B100800	1" x 8" (25.4 x 203mm) N.C. Hex Bolt	2
25	L1574	1" (25.4mm) N.C. Hex Steel Lock Nut	2
26	BW100L	1" (25.4mm) lock washer	8
27	B075027	3/4" x 2-3/4" (19 x 69.4mm) N.C. Hex Bolt	16
28	BN075	3/4" (19 mm) N.C. Hex Nut	16
29	BW075L	3/4" (19 mm) Lock washer	16

Decals


RED REFLECTOR
DECAL 2" x 9"
(PART NO. DF10057)
8
YELLOW REFLECTOR
DECAL 2" x 9"
(PART NO. DF10057)
7
5
DECAL 3-1/2" x 14-7/8"
(PART NO. DF9507)
4
DECAL 2-5/8" x 7"
(66.7mm x 178mm)
(PART NO. DF13001)
6
DECAL 3-1/2" x 15-1/4"
(PART NO. DF9510)
3
DECAL 2-1/4" x 11-1/2"
(PART NO. DF9566)

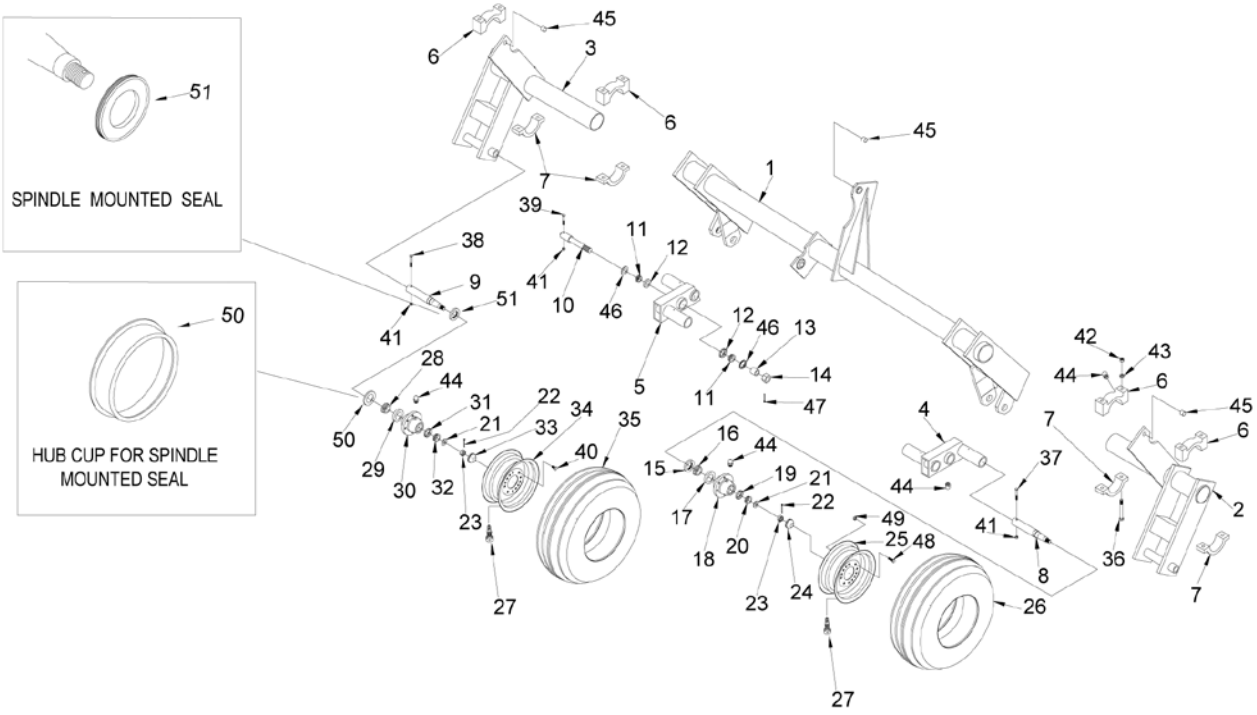
Item	Part #	Description	Qty
1	DF13440	6650 LTF LTF Decal - 3-1/4" x 20x1/4" (82.55 x 514.35mm)	3
2	DF13002	Decal - 2-1/2" x 15" (63.5 x 381mm)	3
3	DF9507	Danger Decal - 3-1/2" x 14-7/8" (88.9 x 378mm)	1
4	DF13001	Hydraulic Lockup Decal - 2-5/8" x 7" (66.8 x 178mm)	1
5	DF9506	Danger, Caution Decal - 2-1/4" x 11-1/2" (57 x 292mm)	2
6	DF9510	Caution Decal - 3-1/2" x 15-1/4" (88.9 x 387mm)	1
7	DF10057	Yellow Reflector - 2" x 9" (50.8 x 229mm)	8
8	DF10050	Red Reflector - 2" x 9" (50.8 x 229mm)	8
-	L010	1 Liter - Black Paint	*
-	L016	1/2 Pint Black Paint	*
-	DF7160	1 Liter new Ezee-On Yellow Paint	*
-	DF7161	1/2 Pint new Ezee-On Yellow Paint	*

Hitch and Leveling Crank Assembly



Item	Part #	Description	Qty
1	DHB13097	Hitch c/w item 11, 12, 13 & 18	1
2	DCA9970	Leveling Crank - 50" (1270mm) Long	1
3	DC13530	Leveling Link - 11-1/2" (292mm) Pipe Length	1
4	DC9618	Compression Spring	1
5	DC13098	Spacer Tube - 2-3/8" O.D. x 3/16" I.D. x 11" Long - (60 x 4.8 x 279mm)	1
6	DC15	Thrust Bearing - Timken #T199	1
7	DCA5184	Bearing Tube - leveling crank	1
8	DH5	2" (50.8mm) N.C. Heavy Hex Nut - drilled for set screw	2
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" (38.1mm) dia. x 5" (127mm)	2
13	DH12517	7/16" (10.9mm) x 1-7/16" (36.3mm) Lynch Pin	2
14	BO50010S	1/2" (12.7mm) x 1" (25.4mm) N.C. Square Head Set Screw	1
15	10GN1	1/4" (6.35mm) - 28 Straight Grease Fitting	1
16	B050050	1/2" (12.7mm) x 5" (127mm) N.C. Hex Bolt	4
17	BN062	5/8" (15.7mm) N.C. Hex Nut	1
18	BN050	1/2" (12.7mm) N.C. Hex Nut	4
19	BW062L	5/8" (15.7mm) Lockwasher	1
20	BW050L	1/2" (12.7mm) Lockwasher	4
21	BW17506812F	11/16" (17.2mm) I.D. x 1-3/4" (44.4mm) O.D. Flatwasher	1
22	DH7148	Crank Decal - 2-1/4" x 2-3/4" (57 x 140mm)	1
23	DR5215	1-1/4" (31.7mm) x 4-3/4" (120.6mm) N.C. Hex Bolt w/ Special Thread Length	1
24	BW125L	1-1/4" (31.7mm) Lockwasher	1
25	BN125	1-1/4" (31.7mm) N.C. Hex Nut	1
26	D13090	Safety Chain 20200 lbs up to 32 ft (9165 Kgs for up to 9.75m)	1
	D13091	Safety Chain 30400 lbs for 35 to 42 ft (13793 Kgs for 10.67m to 12.8m)	1

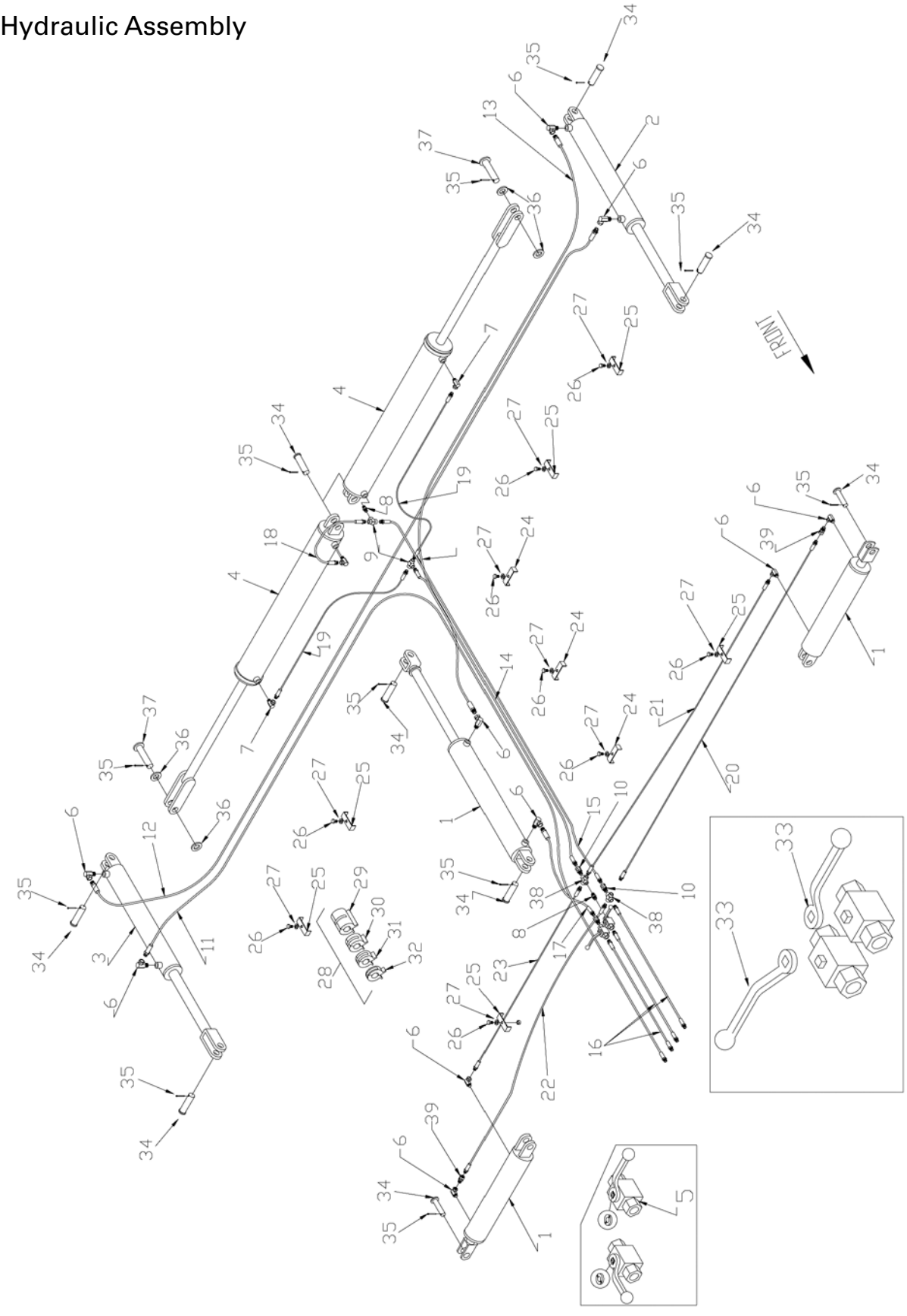
Rockshaft and Wheel Assembly w/ Main Frame Walking Beams



Item	Part #	Description	Qty
1	DRA13531	Main Frame Rockshaft	1
2	DRA13532	L.H. Wing Rockshaft Assembly - 50"	1
3	DRA13533	R.H. Wing Rockshaft Assembly - 50"	1
4	DRA13131	L.H. Walking Beam Main Frame	1
5	DRA13130	R.H. Walking Beam Main Frame	1
6	DR8601T	Rockshaft Bearing - Top Half	4
7	DR8601B	Rockshaft Bearing - Bottom Half	4
8	DR13004	812 Spindle - 13-3/4" (348mm)	4
9	DR7156	618 Spindle - 14-1/2" (368mm)	4
10	DR13007	Pivot Bolt - Main Frame Walking Beam	2
11	DR13124	Cone Bearing # 25877	4
12	DR13125	Bearing Cup #25821	4
13	DR13008	Sleeve-Pivot Pin	2
14	DR13126	1-1/4" (31.7mm) N.F. Slotted Hex Nut	2
15	DR9680	Grease Seal #SE-17	4
16	DR9684	Inner Cone Bearing #3780	4
17	DR9682	Inner Cup #3720	4
18	DRA9679	Hub c/w Cups - 8 bolt	4
19	DR9683	Outer Cup #2720	4
20	DR9685	Outer Cone Bearing #2790	4
21	BW20010612F	2" (50.8mm) O.D. x 1-1/16" (25.5mm) I.D. x 1/8" (3.18mm) Flatwasher	4
22	BP18125	3/16" (4.76mm) x 1-1/4" (31.7mm) Cotter Pin	4
23	DR110	1" (25.4mm) N.F. Hex Slotted Nut	4
24	DR9681	Hub Cab	4
25	S81509	15" (381mm) x 10" (254mm) x 8 Bolt Rim	4
26	11L15FIF	11L x 15 F FI Tire - (Std) - Centre Frame	4
	125L15FIF	12.5L x 15 F FI Tire - (Option) - Centre Frame	4
27	C60154	Valve Stem - Metal	8
28	DR120	Cone Bearing - #LM25580	4
29	DR118	Cup - #LM25520	4
30	DRA9	618 Hub c/w Cups	4
31	DR92	Cup - #LM48510	4
32	DR91	Cone Bearing - #LM48548	4
33	DR123	Hub Cap	4
34	DR5261	15" (381mm) x 8" (203mm) - 6 Bolt Rim - (requires metal valve stem)	4
35	115L15FID	11L x 15 D F1 Tire - (Std) - Wing Frame	4
	125L15FID	12.5L x 15 D F1 Tire - (Option) Wing Frame	4
36	BO75065	3/4" (19mm) x 6-1/2" (165mm) N.C. Hex Bolt Gr.5	4
37	BO50045	1/2" (12.7mm) x 4-1/2" (114.3mm) N.C. Hex Bolt	4

Item	Part #	Description	Qty
38	BO50035	1/2" (12.7mm) x 3-1/2" (88.9mm) N.C. Hex Bolt	4
39	BO50030	1/2" (12.7mm) x 3" (76.2mm) N.C. Hex Bolt	4
40	DR125	9/16" (14.2mm) N.F. x 1-1/8" (28.5mm) Wheel Bolt	56
41	BN050L	1/2" (12.7mm) N.C. Nylon Locknut	10
42	BN075	3/4" (19mm) N.C. Hex Nut	8
43	BW075L	3/4" (19mm) Lockwasher	8
44	10GN1	1/4" (6.35mm) - 28 Straight Grease Fitting	18
	10GN3	Grease Fitting - Press in Type	8
45	DR13120	1-1/4" (31.8mm) I.D. x 1-1/4" (31.8mm) Long Steel Insert	3
46	DR13121	Seal - P/N 18823	1
47	BP31200	5/16" (7.8mm) x 2" (50.8mm) Cotter Pin	1
48	DR9671	9/16" N.F. x 1-11/16" Wheel Bolt	32
49	DR9672	9/16" N.F. Hex Nut	32
50	DR13191	Seal Cup - Spindle Mount Type Seal	4
51	DR13190	Seal - Spindle Mount Type	4

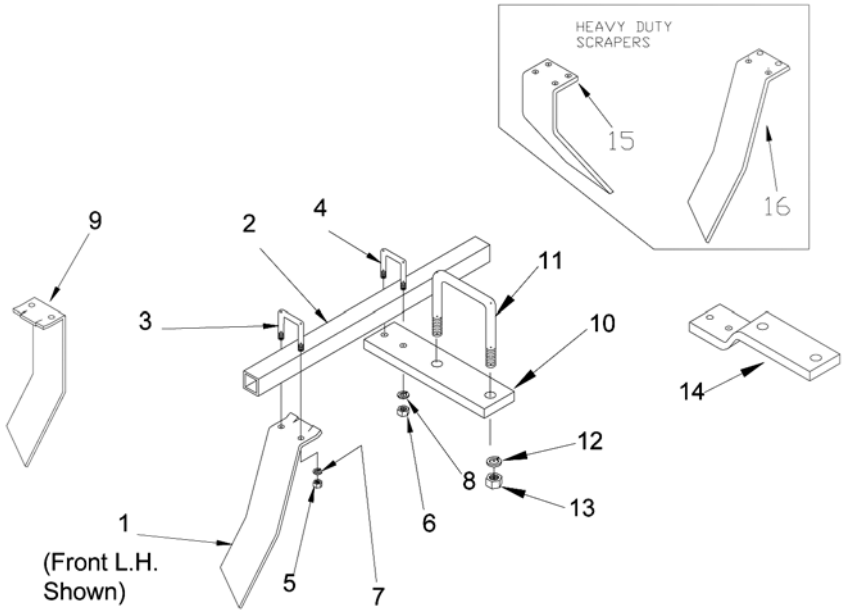
Hydraulic Assembly



Item	Part #	Description	Qty
1	306	4" (101.6mm) x 24" (610mm) Hydraulic Cylinder	3
2	305	3-1/2" (88.9mm) x 24" (610mm) Hydraulic Cylinder	1
3	304	3" (76.2mm) x 24" (610mm) Hydraulic Cylinder	1
4	332	5" (127mm) x 36" (914mm) Wing Lift Cylinder	2
5	DL13099	Hydraulic Lockout Valve	2
6	DL9775	1/2" (12.7mm) x 90 Degree Swivel Street Elbow	6
7	DL9769	3/8" (9.39mm) x 90 Degree Swivel Street Elbow	5
8	S82371	3/8" (9.39mm) Male-Male Union	1
9	DL9767	3/8" (9.39mm) x 3/8" (9.39mm) x 3/8" (9.39mm) Swivel Tee	2
10	L1619	3/8" (9.39mm) Male-Female Swivel	2
11	D4330	3/8" (9.39mm) x 440" (11176mm) Hydraulic Hose c/w 1/2" (12.7mm) Ends	1
12	D4481	3/8" (9.39mm) x 334" (8483.6mm) Hydraulic Hose c/w 1/2" (12.7mm) Ends	1
13	D4483	3/8" (9.39mm) x 220" (5588mm) Hydraulic Hose c/w 1/2" (12.7mm) Ends	1
14	L3012	3/8" (9.39mm) x 74" (1880mm) Hydraulic Hose c/w 3/8" (9.39mm) Ends	1
15	D4517	3/8" (9.39mm) x 80" (2032mm) Hydraulic Hose c/w 3/8" (9.39mm) Ends	1
16	D4382	3/8" (9.39mm) x 179" (4547mm) Hydraulic Hose c/w 3/8" (9.39mm) and 1/2" (12.12.7) Ends	2
17	D4336	3/8" (9.39mm) x 20" (508mm) Hydraulic Hose c/w 3/8" (9.39mm) End & 1/2" (12.7mm) End	1
18	L2939	3/8" (9.39mm) x 24" (610mm) Hydraulic Hose c/w 3/8" (9.39mm) Ends	1
19	P3027	1/4" (6.35mm) x 54" (1372mm) Hydraulic Hose c/w 3/8" (9.39mm) Ends	2
20	D4512	3/8" (9.39mm) x 165 (4191mm) Hydraulic Hose c/w one 3/8" (9.39mm) and one 1/2" (12.7mm) Ends	1
21	D4513	1/4" (6.35mm) x 144 (3657.6mm) Hydraulic Hose c/w 3/8" (9.39mm) Ends	1
22	D4514	3/8" (9.39mm) x 161 (4089.4mm) Hydraulic Hose c/w one 3/8" (9.39mm) and one 1/2" (12.7mm) Ends	1
23	D4515	1/4" (6.35mm) x 141 (3581.4mm) Hydraulic Hose c/w 3/8" (9.39mm) Ends	1
24	DL13186	4 Line Hose Clamp	4
25	DL9779	2 Line Hose Clamp - 3/8" Hose	15
26	BO50075	1/2" (12.7mm) x 3/4" (19mm) N.C. Hex Bolt	19
27	BWO50L	1/2" (12.7mm) Lockwasher Plated	19
28	DR13127	Wadler Universal Stroke Control Segments (8-3/4" (222mm) package)	2
29	C50717	4-1/4" (108mm) Depth Stop	2
30	C50714	2" (50.8mm) Depth Stop	2

Item	Part #	Description	Qty
31	C50712	1-1/2" (38.1mm) Depth Stop	2
32	C50711	1" (25.4mm) Depth Stop	2
33	DL13122	Hyd. Valve Lockout Valve Handle Only - HBVH040608	2
34	DR5262	1-1/4" (31.75mm) x 4-3/4" (120.65mm) Pin	10
35	BP31175	5/16" (8mm) x 1-3/4" (44mm) Cotter Pin	12
36	BW20012925F	2" (50.8mm) O.D. x 1-9/32" (32.5mm) I.D. x 1/4" (6.35mm) Flat washer	8
37	S81865	1-1/4" (31.75mm) x 5-13/16" (147.63mm) Pin	2
38	DL9761	Steel Cross	2
39	DL13206	1/2" NPT M/F Swivel Adapter w/1/16 Orifice	2
40	P80702	1/2" x 3/8" (12.7 x 9.6mm) Reducer	2
41	D4518	3/8" x 215" (9.6 x 5461mm) Hydraulic Hose w/ one 3/8" (9.6mm) and one 1/2" (12.7mm) End	1
42	D4519	3/8" x 32" (9.6 x 812mm) Hydraulic Hose w/ 3/8" (9.6mm) Ends	1

Scraper Assembly



Item	Part #	Description	Qty
1	DG5292	Front R.H. & Rear L.H. Scraper	*
	DG5293	Front L.H. & Rear R.H. Scraper	*

2		Scraper Bars for 9" (228.6mm) Spacing	
	DS67	7 Blade Gang Scraper Bar - 67" (1701.8mm)	*
	DS76	8 Blade Gang Scraper Bar - 76-1/2" (1943mm)	*
	DS81	9 Blade Gang Scraper Bar – 81-1/2" (2070mm) - (90 deg Scraper)	*
	DS79	9 Blade Gang Scraper Bar (For rear inner wing special) - 79-1/2" (1987.5mm) - (90 deg Scraper)	*
	DS91	10 Blade Gang Scraper Bar - 91-1/2" (2324mm) - (90 deg Scraper)	*
	DS99	11 Blade Gang Scraper Bar - 99" (2514.6mm) - (90 deg Scraper)	*
	DS108	12 Blade Gang Scraper Bar - 108" (2743.2mm) - (90 deg Scraper)	*

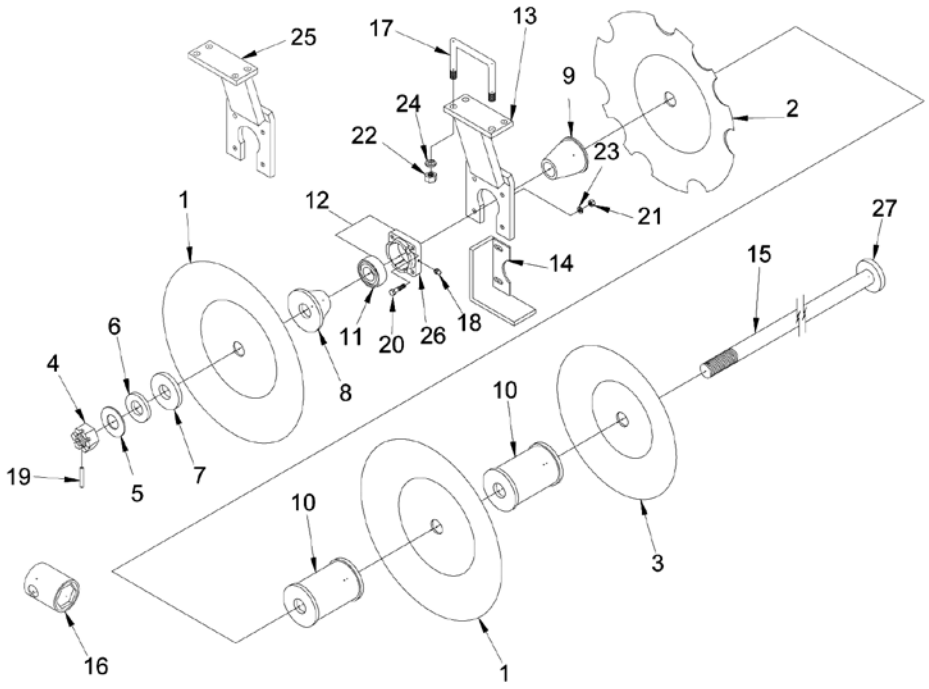
		Scraper Bars for 10-1/2" (266.7mm) Spacing	
	DS65	6 Blade Gang Scraper Bar - 65-1/2" (1663.7mm)	*
	DS67	6 Blade Gang Scraper Bar (for rear main frame special - 67" (1701.8mm)	*
	DS76	7 Blade Gang Scraper Bar - 76-1/2" (1943.1 mm)	*
	DS87	8 Blade Gang Scraper Bar - 87" (2209.8 mm)	*
	DS82	8 Blade Gang Scraper Bar - 82-1/2" (2095.5 mm) - (90 deg Scraper)	*
	DS80	8 Blade Gang Scraper Bar (for rear inner wing frame - 80-1/2" (2044.7mm) - (90 deg Scraper)	*
	DS93	9 Blade Gang Scraper Bar - 93" (2362.2 mm) - (90 deg Scraper)	*
	DS107	10 Blade Gang Scraper Bar - 107-1/2" (2730.5 mm) - (90 deg Scraper)	*
	DS114	11 Blade Gang Scraper Bar - 114-1/2" (2908.3 mm) - (90 deg Scraper)	*

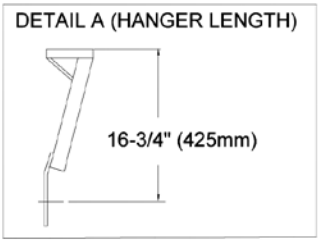
3	DG5308	1/2" (12.7mm) x 2" (50.8mm) U-bolt	*
4	DG5309	5/8" (15.7mm) x 2" (50.8mm) U-bolt	*
5	BN050	1/2" (12.7mm) N.C. Hex. Nut	*
6	BN062	5/8" (15.7m) N.C. Hex. Nut	*
7	BW050L	1/2" (12.7mm) Lockwasher	*
8	BW062L	5/8" (15.7mm) Lockwasher	*
9	DG5297	90 degree Scraper Std. - Frt. L.H. & Rear R.H.	*
	DG5298	90 degree Scraper Std. - Frt. R.H. & Rear L.H.	*
10	DG5296	Straight Scraper Mount Plate	*
11	DG13145	3/4" x 6-7/8" cc x 5-3/4" (19.0mm x 174.5mm x 146.0mm) U-Bolt	*
12	BW075L	3/4" (19.0mm) Lockwasher	*
13	BN075	3/4" (19.0mm) N.C. Hex Nut	*
14	DG5303	Offset Scraper Mount Plate	*

Item	Part #	Description	Qty
15	DG13012	90 degree Scraper Std. - Frt. R.H. & Rear L.H.	*
	DG13013	90 degree Scraper Std. - Frt. L.H. & Rear R.H.	*
16	DG13010	Scraper Heavy Duty - Frt. R.H. & Rear L.H.	*
	DG13011	Scraper Heavy Duty - Frt. L.H. & Rear R.H.	*

* as required

Disc Gang (w/ Standard Hangers for 410WSS Bearings)
9" & 10-1/2" (230 & 267mm) Spacing





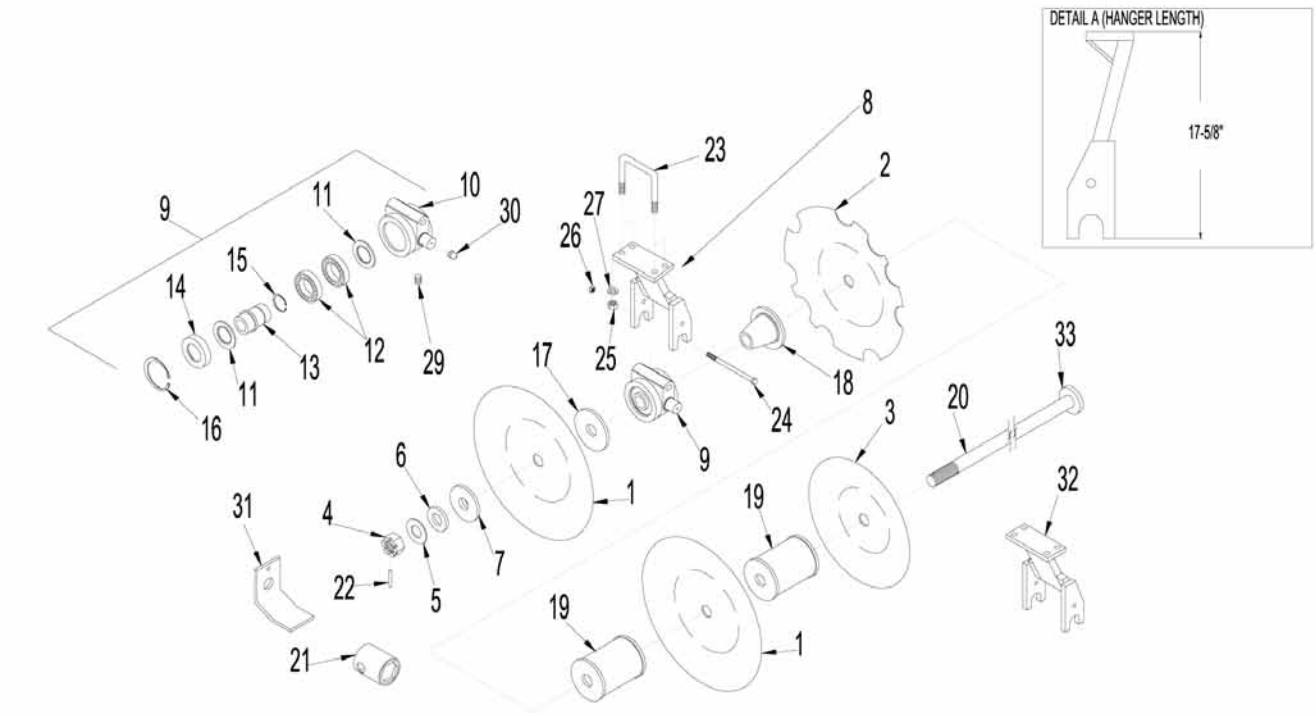
Item	Part #	Description	Qty
1	DG76	24" (610mm) x 9/32" (7mm) Plain Blade	*
	DG137	24" (610mm) x 5/16" (8mm) Plain Blade	*
	DG74	26" (660mm) x 5/16" (8mm) Plain Blade	*
	DG107	26" (660mm) x 3/8" (9mm) Plain Blade	*
	DG157	26" (660mm) x 5/16" (8mm) Plain Cone Blade	*
2	DG138	24" (610mm) x 5/16" (8mm) Notched Blade	*
	DG75	26" (660mm) x 5/16" (8mm) Notched Blade	*
	DG87	26" (660mm) x 3/8" (9mm) Notched Blade	*
	DG159	26" (660mm) x 9mm (.354) Notched Cone Blade	*
3	DG149	20" (508mm) x 6mm (.236") Plain Outrigger Blade	*
	DG64	22" (559mm) x 6mm (.236") Plain Outrigger Blade	*
4	DG82	2" (50.8mm) UNC Heavy Hex Slotted Nut	*
5	DG89	1/4" (6.35mm) Shim Washer	*
6	DG88	1/2" (12.7mm) Shim Washer	*
7	DG13185	5-1/2" (138mm) O.D. x 2" (50.8mm) I.D. x 3/4" (19.0mm) Head Washer (used w/ 24" blades)	*
	DG13184	6" (152mm) O.D. x 2" (50.8mm) I.D. x 1" (25.4mm) Head Washer (used w/ 26" & 28" blades)	*
8	DGA106	9" & 10-1/2" (230 & 267mm) Spacing Short Half Spool for 410WSS Brg. 3-1/4" (82.6mm) Long (Convex Side) w/ 6" (152mm) washer	*
9	DGA136	9" (230mm) Spacing Long Half Spool for 410WSS Brg. 3-11/16" (83.7mm) Long (Convex Side)	*
10	DGA100	9" (230mm) Spacing Spool - 6" (152mm) Dia. Both Ends	*
	DGA101	10-1/2" (267mm) Spacing Spool - 6" (152mm) Dia. Both Ends	*
11	DG108	410WSS Greaseable Bearing - 2-1/16" (52mm) Wide	*
12	DG109	410WSS Bearing c/w Housing and Grease Fitting - 2-1/16" (52mm) Wide	*
13	DGA7183	Standard Bearing Hanger - 410WSS Bearing	*
14	DGA40	Front L.H. & Rear R.H. Bearing Guard - 410WSS Bearing	*
	DGA39	Front R.H. & Rear L.H. Bearing Guard - 410WSS Bearing	*

15		Gang Bolt for 9" (230mm) Spacing	
	DGA67	7 Blade Gang Bolt - 62-3/4" (3937.56mm) Long	*
	DGA68	8 Blade Gang Bolt - 72" (1828.8mm) Long	*
	DGA69	9 Blade Gang Bolt - 81" (2057.4mm) Long	*
	DGA70	10 Blade Gang Bolt - 90-1/2" (2298.7mm) Long	*
	DGA71	11 Blade Gang Bolt - 99-3/4" (253.6mm) Long	*
	DGA72	12 Blade Gang Bolt - 109" (2768mm) Long	*

Item	Part #	Description	Qty
		Gang Bolt for 10-1/2" (266.7mm) Spacing	
	DGA76	6 Blade Gang Bolt - 61" (1549.4mm) Long	*
	DGA77	7 Blade Gang Bolt - 71-1/2" (1816.1mm) Long	*
	DGA78	8 Blade Gang Bolt - 82-1/4" (2089.15mm) Long	*
	DGA79	9 Blade Gang Bolt - 93" (2362.2mm) Long	*
	DGA80	10 Blade Gang Bolt - 104" (2641.6mm) Long	*
	DGA81	11 Blade Gang Bolt - 114-3/4" (2914.6mm) Long	*
16	DGA35	Socket Wrench	*
17	DG5379	7/8" x 6" x 5-7/8" (22 x 152 x 149mm) Long U-Bolt	*
18	10GN1	1/4" (6.35mm - 28 Grease Fitting)	*
19	DG10310	7/16" x 3" (10.9 x 76.2mm) Lock Pin	*
20	BO62022	5/8" x 2-1/4" N.C. (15.7 x 57.2mm) Hex bolt Gr.5	*
	BO62025	5/8" x 2-1/2" N.C. (15.7 x 63.5mm) Hex bolt Gr.5 used with bearing guard	*
21	BN062	5/8" (15.7mm) N.C. Hex Nut	*
22	BN087	7/8" (22.2mm) N.C. Hex Nut	*
23	BW087L	5/8" (15.7mm) Lockwasher	*
24	BW088L	7/8" (22.2mm) Lockwasher	*
25	DGA13152	2" (50.8mm) Offset Hanger - 410WSS Series Bearing	*
26	DG96	Housing - 410WSS Bearing	*
27	DGA5370	5-1/2" (139.7mm Gang Washer - Weld On)	*

*as required

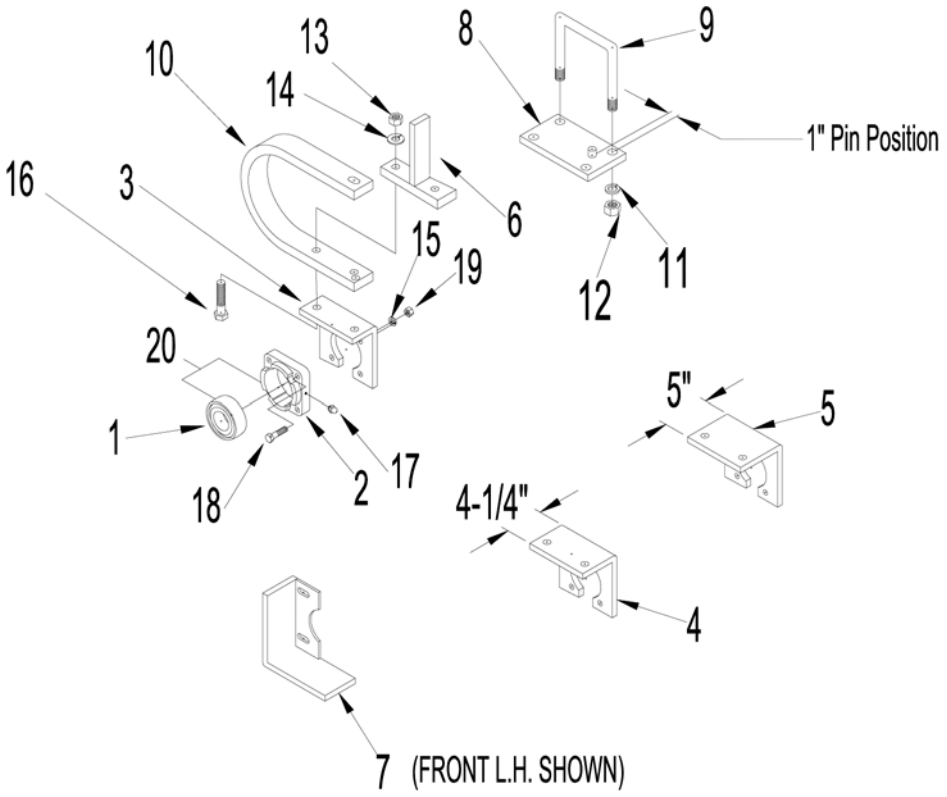
Disc Gang (w/ Standard Hangers for T2-215 Bearings)
9" & 10-1/2" (230 & 267mm) Spacing - Independently Mounted Scraper Bar



Item	Part #	Description	Qty
4	DG82	2" N.C. (50.8mm) Heavy Hex Slotted Nut	*
5	DG89	1/4" (6.35mm) Shim Washer	*
6	DG88	1/2" (12.7mm) Shim Washer	*
7	DG13185	5-1/2" O.D. x 2" I.D. x 3/4" (138 x 50.8 x 19.0mm) Head Washer - used with 24" blades	*
	DG13184	6" O.D. x 2" I.D. x 1" (152 x 50.8 x 25.4mm) Head Washer - used with 26" & 28" blades	*
8	DGA13162	Std. Trunion Mounted Bearing Hanger w/o Scraper Tail - see Detail A	*
9	DGB9900	Housing c/w Bearings, Seals, Sleeve, Snap Ring & Cap T2-215 Series	*
10	DG9901	Housing Only - T2-215 Series	*
11	DG9905	Bearing Seal - National #200322	*
12	DG9904	#6215 Ball Bearing (Modified)	*
13	DG9906	5" (127mm) Sleeve	*
14	DG9902	Bearing Housing Cap	*
15	DG9911	External Snap Ring - Philip French #D1400-75	*
16	DG9910	Internal Snap Ring - Philip French #D1300-130	*
17	DGA10563	9" & 10-1/2" (230 & 267mm) Spacing, Short Half, 1-3/8" (34.9mm) Long Convex Side w/ 6" (152mm) Washer Spool	*
18	DGA10571	9" (230mm) Spacing, Long Half 2-11/16" (68mm) - Concave Side	*
	DGA103	10-1/2" & 12" (267 & 305mm) Spacing Long Half, 4-3/16" (106mm) Long - Concave Side	*
19	DGA100	9" (230mm) Spacing, Full Spool w/ 6" (152mm) Dia. Washer both ends	*
	DGA101	10-1/2" (267mm) Spacing, Full Spool w/ 6" (152mm) Dia. Washer both ends	*
20		Gang Bolts for 9" and 10-1/2" (230 & 267mm) Spacing	*
21	DGA35	Socket Wrench	*
22	DG10310	7/16" x 3" (10.9 x 76.2mm) Lock Pin	*
23	DG5379	7/8" x 6" x 5-7/8" (22 x 152 x 149mm) Long U-Bolt	*
24	BO62100	5/8" x 10" N.C. (15.7 x 254mm) Hex Bolt Gr. 5 - used on machines less bearing	*
	BO62110	5/8" x 11" N.C. (15.7 x 279mm) Hex Bolt Gr. 5 - used on machines equipped w/ bearing	*
25	BN087	7/8" (22.2mm) N.C. Hex Nut	*
26	BN062L	5/8" (15.7mm) N.C. Hex Nylon Lock Nut	*
27	BW087L	7/8" (22.2mm) Lockwasher	*
28	DGA5370	5-1/2" (139.7mm) Gang Washer - Weld On	*
29	DG9912	Set Screw - 1/4" N.C. x 1/2" Long (6.35 x 12.7mm)	*
30	10GN1	1/4" (6.35mm) - 28 Straight Grease Fitting	*
31	DG10590	Bearing Guard - T2-215 Bearing	*
32	DGA13163	2" (50.8mm) Offset Trunion Mounted Bearing Hanger w/o scraper tail - see Detail A	*
	DGA13164	3-1/2" (88.9mm) Offset Trunion Mounted Bearing Hanger w/o scraper tail - see Detail A	*

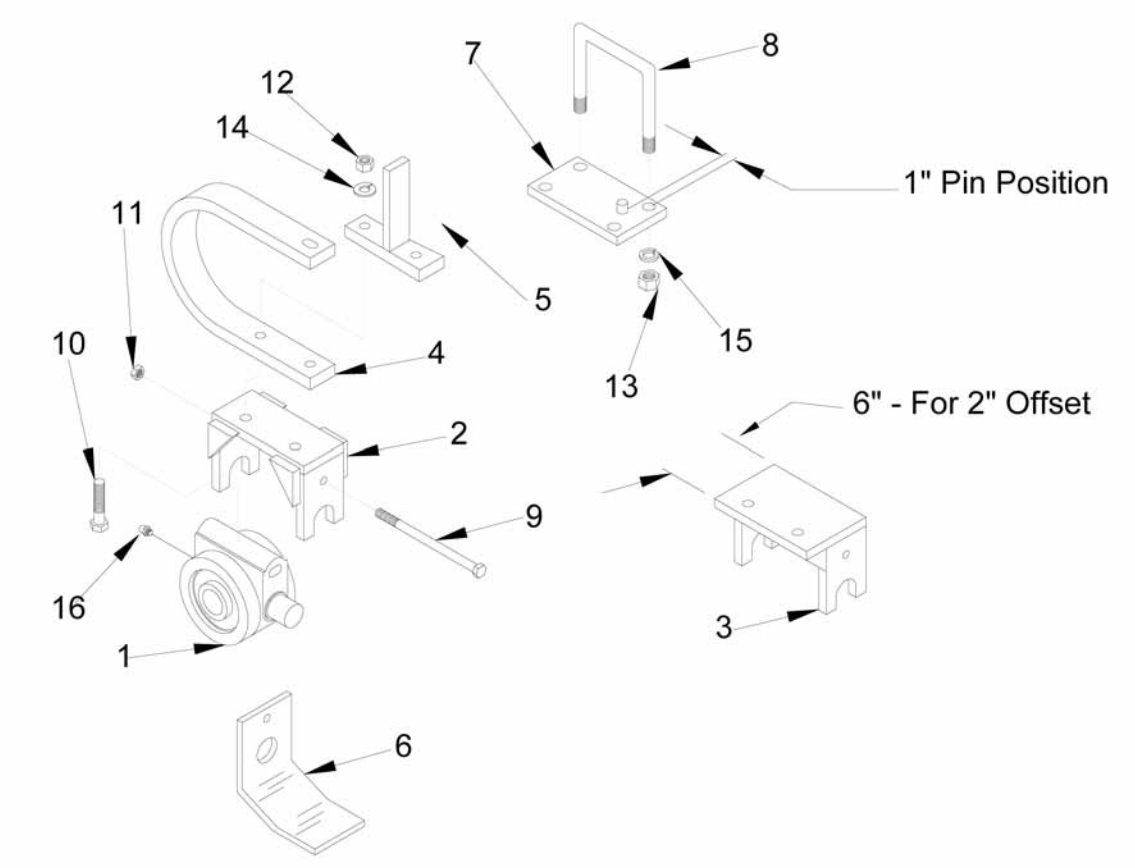
*as required

Stone Flex Hanger for 410WSS Bearings (Optional) - Mounted Scraper Bar Arm



Item	Part #	Description	Qty
1	DG108	410WSS Series Greaseable Bearing - 2-1/16" (52mm) Wide	*
2	DG96	Housing - 410WSS Bearing	*
3	DG5324	Standard Mounting Bracket For 410WSS Bearing	*
4	DGA5376	1-1/2" (38.1mm) Offset Mounting Bracket - 410WSS Bearing	*
5	DGA5341	2" (50.8mm) Offset Mounting Bracket - 410WSS Bearing	*
6	DG5338	Scraper Bar Support - Independently Mounted Scraper Bar	*
7	DGA40	Front L.H. and Rear R.H. Bearing Guard	*
	DGA39	Rear R.H. and Front L.H. Bearing Guard	*
8	DGA5327	Backing Plate - used with independently mounted scraper Only	*
9	DG5378	7/8" (22.2mm) x 6" (152.4mm) x 7-1/8" (181mm) Long U-bolt	*
10	DG5313	1-1/4" (31.7mm) x 2-1/2" (63.5mm) Spring Shank	*
11	BW087L	7/8" (22.2mm) Lockwasher	*
12	BN087	7/8" (22.2mm) N.C. Hex. Nut	*
13	BN075	3/4" (19mm) N.C. Hex. Nut	*
14	BW075L	3/4" (19mm) Lockwasher	*
15	BW062L	5/8" (15.7mm) Lockwasher	*
16	BO75035	3/4" (19mm) x 3-1/2" (88.9mm) N.C. Hex. Bolt	*
17	10GN1	1/4" (6.35mm) - 28 Straight Grease Fitting	*
18	BO62022	5/8" (15.7mm) x 2-1/4" (57.2mm) N.C. Hex. Bolt	*
	BO62025	5/8" (15.7mm) x 2-1/2" (63.5mm) N.C. Hex. Bolt - used with bearing guard	*
19	BN062	5/8" (15.7mm) N.C. Hex. Nut	*
20	DGB109	410WSS Bearing c/w Housing and Grease Fitting - 2-1/16" (52mm) Bearing Width	*

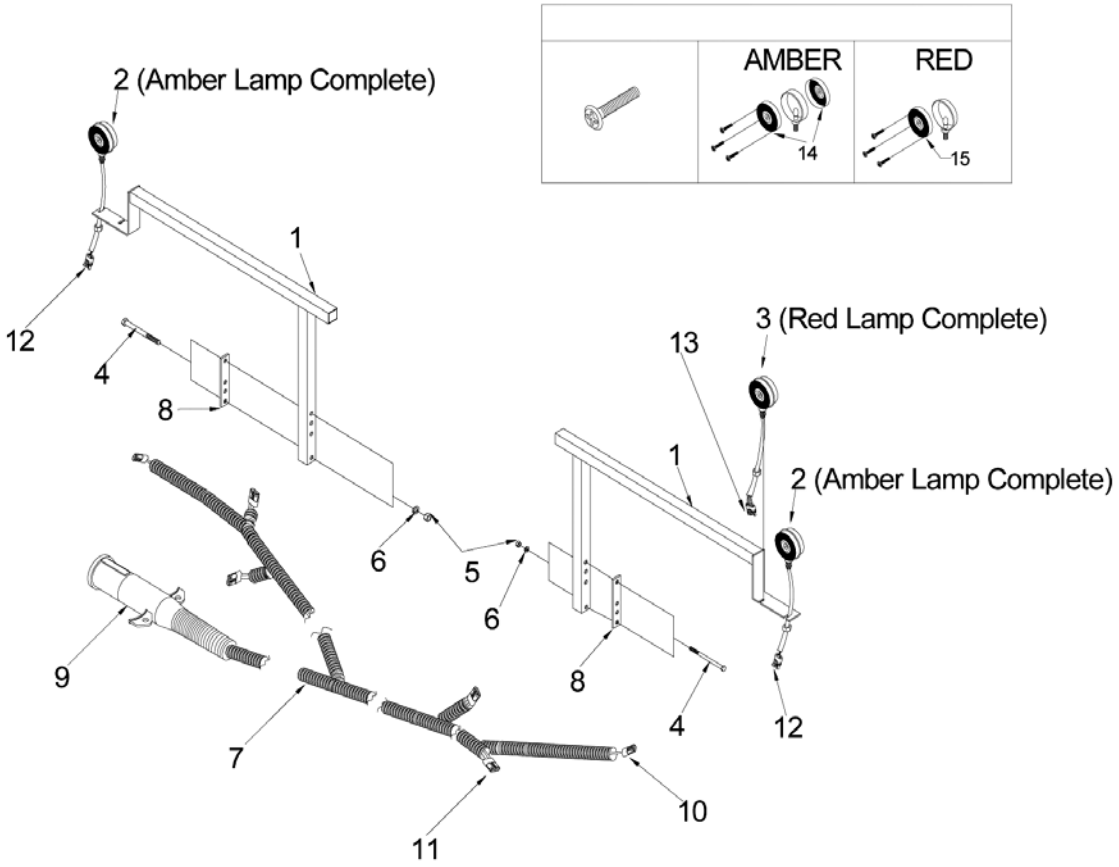
Stone Flex Hanger for T2-215 Bearings



Item	Part #	Description	Qty
1	DGB9900	T2-215 Bearing Assembly	*
2	DGA10570	Standard Mounting Bracket	*
3	DGA10575	2" (50.8mm) Offset Mounting Bracket	*
4	DG5313	1-1/4" (31.8mm) x 2-1/2" (63.5mm) Spring Shank	*
5	DGA5338	Shank Stop - Independently Mounted Scrapers only	*
6	DG10590	Bearing Guard -T2-215	*
7	DGA5327	Backing Plate - Independently Mounted Scrapers only	*
8	DG5378	7/8" (22.2mm) x 7" (178mm) x 7-1/8" (181mm) Long U-bolt	*
9	BO62100	5/8" (15.7mm) x 10" (254mm) N.C. Hex. Bolt - Gr.5	*
10	BO75035	3/4" (19mm) x 3-1/2" (88.9mm) N.C. Hex. Bolt - Gr.5	*
11	BN062L	5/8" (15.7mm) N.C. Hex. Nylon Lock Nut	*
12	BN075	3/4" (19mm) N.C. Hex. Nut	*
13	BN087	7/8" (22.2mm) N.C. Hex. Nut	*
14	BW075L	3/4" (19mm) Lockwasher	*
15	BW087L	7/8" (22.2mm) Lockwasher	*
16	10GN1	1/4" (6.35mm) - 28 Straight Grease Fitting	*

*as required

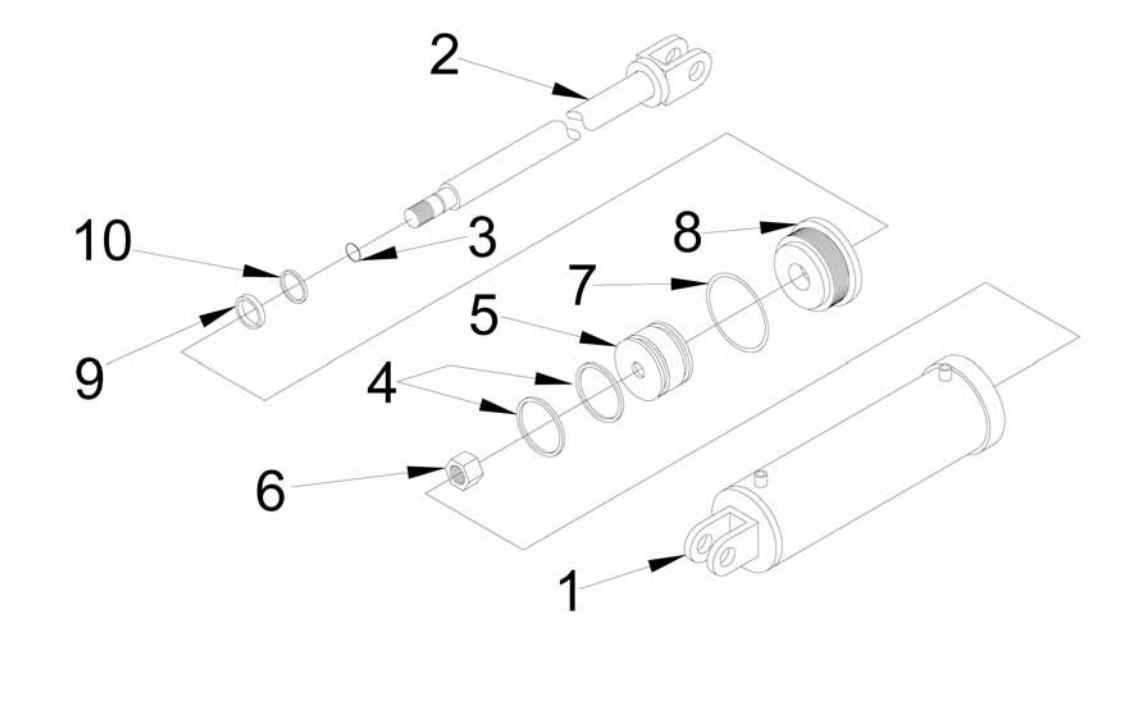
Warning Light Kit



Item	Part #	Description	Qty
1	D6252	Light Bracket	2
2	LK6422	Amber Lamp c/w Washers and Nut	2
3	LK6401	Red Lamp c/w Washers and Nut	1
4	BO50085	1/2" x 8-1/2" (12.7 x 216mm) N.C. Hex Bolts (Plated)	4
5	BN050	1/2" (12.7mm) N.C. Hex Nut (Plated)	8
6	BW050L	1/2" (12.7mm) Lockwasher (Plated)	8
7	LK6427	55' Light Harness	1
8	LK6404	Light Mount Plate	2
9	LK6409	Amber Lamps - for Amber Lights	2
10	Lk6410	Red Lamps - for Red Lights	1

*as required

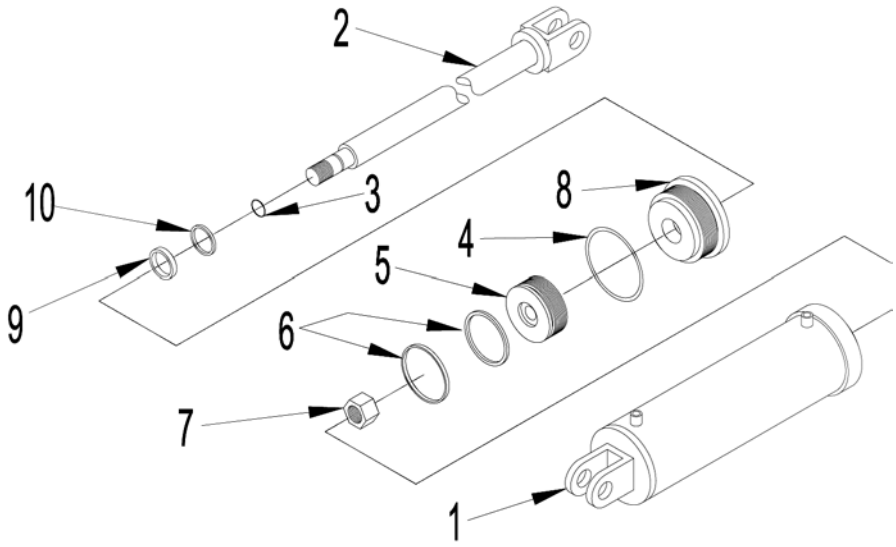
Outer Wing Lift Cylinder - 4" x 24" (102 x 610mm) Cylinder - #241



Item	Part #	Description	Qty
1	40TU9	Tube Assembly - 4" x 24" (102 x 610mm)	1
2	10SH46	Shaft - 1-3/4" x 24" (44 x 610mm)	1
3	10OR13	1/8" x 1-1/4" O.D. (3.3 x 22.2mm) O-Ring	1
4	40CU3	4" x 3/8" (101.6 x 9.6mm) U-Cup	2
5	40PB5	4" O.D. x 2-1/2" (102 x 64mm) Long Piston	1
6	10NU4	1" (25.4mm) Locknut	1
7	10OR17	3/16" x 4" O.D. (4.8 x 102mm) O-Ring	1
8	40HP7	4" O.D. x 1-1/2" I.D. (102 x 38mm)	1
9	10RS3	1-3/4" x 2-1/8" x 3/8" (44 x 54 x 9.39mm) Rod Seal	1
10	10WS3	1-3/4" x 2-1/8" x 3/16" (44 x 54 x 4.8mm) Wiper Seal	1

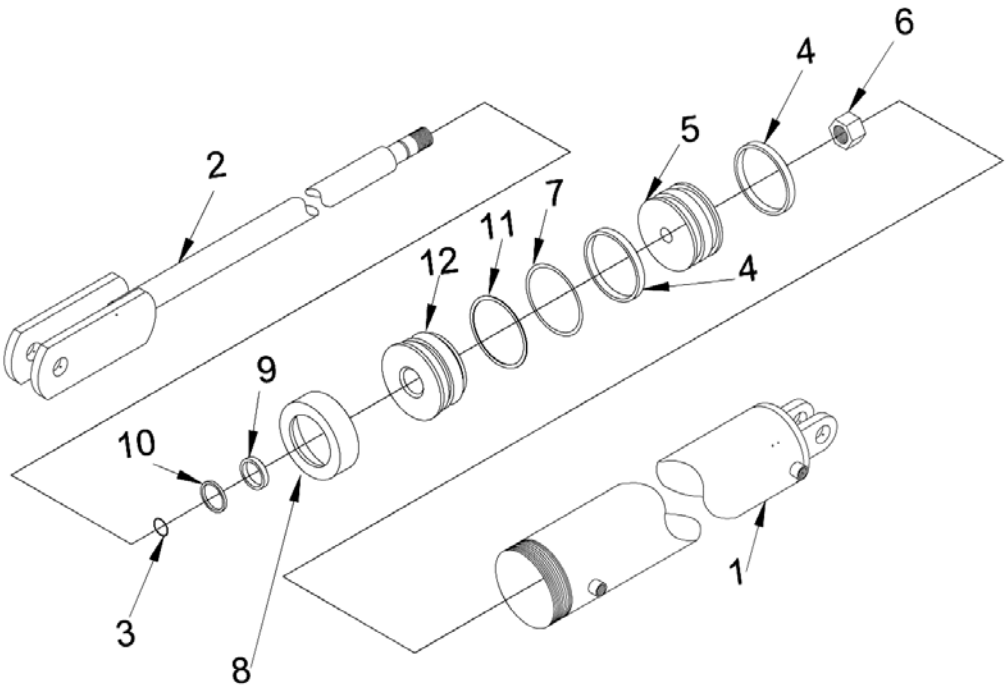
	4017N4	Seal Kit - 4" x 24" Outer Wing Lift	
	40CU3		2
	100R13	1/8" x 1-1/4" O.D. (3.3 x 31.7mm) O-Ring	1
	100R17	3/16" x 4" O.D. (4.8 x 102mm) O-Ring	1
	10RS3	1-3/4" (44mm) Rod Seal	1
	10WS3	1-3/4" (44mm) Wiper Seal	1

Rockshaft Cylinder



Item	Part #	Description	Qty
R.H. Main Rockshaft Cylinder - 4" x 24" (102 x 610mm) Rephasing Cylinder - #306			
1	40TU10	Tube Assembly - 4" x 24" (102 x 610mm)	1
2	10SH60	Shaft - 2" x 24" (50.8 x 610mm)	1
3	10OR18	1" O.D. x 7/8" (25.4 x 22.2mm) I.D. O-Ring	1
4	10OR17	4" O.D. x 3/16" (102 x 4.76mm) O-Ring	1
5	40PB8	Piston - 4" O.D. x 1" (102 x 25.4mm) I.D.	1
6	40PS1	4" (102mm) O.D. Piston Seal Assembly	1
7	10NU4	1" (25.4mm) - 14 N.F. Hex Nut	1
8	40HP5	Head Plate - 4" O.D. x 2" (102 x 50.8mm) I.D.	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) Cylinder - #305			
1	35TU15	Tube Assembly - 3-1/2" (88.9mm) x 24" (610mm)	1
2	10SH59	Shaft - 1-3/4" (44.4mm) x 24" (610mm)	1
3	10OR18	1" (25.4mm) O.D. x 7/8" (22.2mm) I.D. O-Ring	1
4	10OR8	3-1/2" (88.9mm) O.D. x 3/16" (4.76mm) O-Ring	1
5	35PB8	Piston - 3-1/2" (88.9mm) O.D. x 1" (25.4mm) I.D.	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" (88.9mm) O.D. x 1-3/4" (44.4mm) I.D.	1
9	10RS3	Rod Seal - 1-3/4" (44.4mm) I.D. x 2-1/8" (54.0mm) O.D. x 3/8" (9.39mm)	1
10	10WS10	All Urethane Wiper Seal - 1-3/4" (44.4mm) I.D. x 2-1/8" (54.0mm) O.D. x 1/4" (6.35mm)	1
R.H. Wing Rockshaft Cylinder - 3" (76.2mm) x 24" (610mm) Cylinder - #304			
1	30TU34	Tube Assembly - 3" (76.2mm) x 24" (610mm)	1
2	10SH59	Shaft - 1-3/4" (44.4mm) x 24" (610mm)	1
3	10OR18	1" (25.4mm) O.D. x 7/8" (22.2mm) I.D. O-Ring	1
4	10OR3	3" (76.2mm) O.D. x 3/16" (4.76mm) O-Ring	1
5	30PB4	Piston - 3" (76.2mm) O.D. x 1" (25.4mm) I.D.	1
6	30PS1	Piston Seal Assembly	1
7	10NU4	1" (25.4mm) - 14 N.F. Hex Nut	1
8	30HP15	Head Plate - 3" (76.2mm) O.D. x 1-3/4" (44.4mm) I.D.	1
9	10RS3	Rod Seal - 1-3/4" (44.4mm) I.D. x 2-1/8" (54.0mm) O.D. x 3/8" (9.39mm)	1
10	10WS10	All Urethane Wiper Seal - 1-3/4" (44.4mm) I.D. x 2-1/8" (54.0mm) O.D. x 1/4" (6.35mm) All Urethane Wiper Seal	1

Wing Lift Cylinder - 5" x 36" (127 x 914mm) Cylinder - #332



Item	Part #	Description	Qty
1	50TU11	Tube Assembly - 5" x 36" (127 x 914mm)	1
2	10SH36	Shaft - 1-3/4" x 36" (44.4 x 914mm)	1
3	10OR19	1-1/8" I.D. x 1-1/4" O.D. (28.5 x 31.8mm) O-Ring	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	5" O.D. x 1-1/4" I.D. (127 x 31.8mm) Piston	1
6	10NU3	1-1/4" (31.8mm) U.N.F. Hex Lock Nut	1
7	10OR14	4-1/2" I.D. x 5" O.D (29.9 x 127mm) O-Ring	1
8	50HN1	5" Head Nut (N3 Type)	1
9	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
10	10WS3	1-3/4" I.D. x 2-1/8" O.D. x 3/16" (44.4 x 54.0 x 4.76mm) Wiper Seal	1
11	50BR1	5" O.D. x 4-1/2" I.D Backup Ring	1
12	50HP5	5" OD x 1-3/4" I.D. Head Plate (N3 Type)	1

Item	Part #	Description	Qty
	5017N3	#332 Seal Kit	
	50CU1	4-1/2" I.D. x 5" O.D. x 1/2" (114 x 127mm x 12.7mm) U-Cup	2
	10OR14	4-1/2" I.D. x 5" O.D. (114 x 127mm) O-Ring	1
	10OR19	1-1/8" I.D. x 1-1/4" O.D. (28.5 x 31.8mm) O-Ring	1
	10ORS3	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
	10WS3	1-3/4" I.D. x 2-1/8" O.D. x 3/16" (44.4 x 54.0 x 4.76mm) Wiper Seal	1
	10OR13	1" O.D. x 1-1/4" O.D. O-Ring (25.4 x 31.8mm)	1
	50BR1	5" O.D. x 4-1/2" I.D. Backup Ring	1
	4020N4-0	#306 Seal Kit	
	10OR18	1" O.D. x 7/8" I.D. (25.4 x 22.2mm) O-Ring	1
	10OR17	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) All Urethane Wiper Seal	1
	3517N4-0	#305 Seal Kit	
	10OR18	1" O.D. x 7/8" I.D. (25.4 x 22.2mm) O-Ring	1
	10OR8	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 54.0 x 6.35mm) All Urethane Wiper Seal	1
	3017N4-0	#304 Seal Kit	
	10OR18	1" O.D. x 7/8" (25.4 x 22.2mm) I.D. O-Ring	1
	10OR3	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 54.0 x 6.35mm) All Urethane Wiper Seal	1

Delivery Checklist

Pre-delivery

- ☐ Torque all wheel bolts/lug nuts to specifications.
- ☐ Check tire pressures are correct. (Affects leveling process)
- ☐ Level machine. Refer to Operator's Manual for detailed instructions.
- ☐ Lubricate the entire machine as recommended in the Operator's Manual.
- ☐ Check tightness of all bolts.
- ☐ Check the correct # of depth stops are installed on mounting bar. (5)
  *Model 395 Offset takes (8) depth stops.
- ☐ Set front and rear gangs at medium angle.
- ☐ Adjust scrapers so they come into contact with blades.
- ☐ Check Operator's Manual to ensure all decals are correctly installed.
- ☐ Connect disc to tractor with a suitable pin and then lift the hitch jack.
- ☐ Check hydraulic hoses are leak free and hydraulic cylinders are filled with oil.
- ☐ Adjust mounted harrows as required (if equipped).
- ☐ Check overlap measurement of front gangs.
- ☐ Check opening measurement between two inner blades of rear main frame gangs.
- ☐ Check all electrical components (safety lights) and connections.
- ☐ Ensure hydraulic lockout valves function properly.

Dealer Representative:

Date:

Customer Delivery

- ☐ Give the Operator's Manual to your customer.
- ☐ Inform your customer of all safety precautions, maintenance procedures, and proper operation of the disc.
- ☐ Verify correct serial number.
- ☐ Attach disc to tractor.
- ☐ Ensure hitch jack is in transport position.
- ☐ Connect hydraulics, wiring harness, safety chain, etc.
- ☐ Ensure machine functions properly. (Fold/unfold, no leaks, lights work, etc)
- ☐ Take the disc to a field (preferably where the ground is level, if possible) and perform all required leveling adjustments. Follow the Operator's Manual.
- ☐ Explain warranty and fill out registration
- ☐ Start tractor and run all controls so your customer understands the correct operation of the disc and ensure all functions of the disc are working properly.

Dealer Representative:

Date:

Farm King Limited Warranty

This document limits your warranty rights.

Base Limited Warranty

Buhler Industries Inc. provides this warranty only to original retail purchasers of its product. Buhler Industries Inc. warrants to such purchasers that all Buhler Industries Inc. manufactured parts and components used and serviced as provided for in the Operator's Manual shall be free from defects in materials and workmanship for a period following delivery to the original retail purchaser of 12 months (80 days for commercial applications). This limited warranty applies only to those parts and components manufactured by Buhler Industries Inc. Parts and components manufactured by others are subject to their manufacturer's warranties, if any.

Buhler Industries Inc. will fulfill this limited warranty by, at its option, repairing or replacing any covered part that is defective or is the result of improper workmanship, provided that the part is returned to Buhler Industries Inc. within thirty (30) days of the date that such defect or improper workmanship is, or should have been, discovered. Buhler Industries Inc. reserves the right to either inspect the product at the buyer's location or have it returned to the factory for inspection. Parts must be returned through the selling representative and the buyer must prepay transportation charges.

Buhler Industries Inc. will not be responsible for repairs or replacements that are necessitated, in whole or part, by the use of parts not manufactured by or obtained from Buhler Industries Inc. Under no circumstances are component parts warranted against normal wear and tear. There is no warranty on product pump seals, product pump bearings, rubber product hoses, pressure gauges, or other components that require replacement as part of normal maintenance. Also: Buckets and Bucket Tines carry no warranty, Bent Spears carry no warranty, Snowblower Fan Shafts carry no warranty, Mower Blades carry no warranty, Portable Auger Parts Have Two (2) Year Warranty, Loader Parts Have Two (2) Year Warranty. The purchaser is solely responsible for determining suitability of goods sold. This warranty is expressly in lieu of all other warranties expressed or implied. Buhler Industries Inc. will in no event be liable for any incidental or consequential damages whatsoever. Nor for any sum in excess of the price received for the goods for which liability is claimed.

Repair Parts Limited Warranty

Buhler Industries Inc. warrants Farm King replacement parts purchased after the expiration of the Buhler Industries Inc. Limited Warranty, and used and serviced as provided for in the Operator's Manual, to be free from defects in materials or workmanship for a period of thirty (30) days from the invoice date for the parts. Buhler Industries Inc. will fulfill this limited warranty by, at its option, repairing or replacing any covered part that is defective or is the result of improper workmanship, provided that the part is returned to Buhler Industries Inc. within thirty (30) days of the date that such defect or improper workmanship is, or should have been, discovered. Such parts must be shipped to Buhler Industries Inc. at the purchaser's expense.

What is Not Covered

Under no circumstances does this limited warranty cover any components or parts that have been subject to the following: negligence; alteration or modification not approved by Buhler Industries Inc.; misuse; improper storage; lack of reasonable and proper maintenance, service, or repair; normal wear; damage from failure to follow operating instructions; accident; and/or repairs that have been made with parts other than those manufactured, supplied, and or authorized by Buhler Industries Inc.

Authorized Dealer and Labor Costs
Repairs eligible for labor under this limited warranty must be made by Buhler Industries Inc. or an authorized Farm King dealer. Buhler Industries Inc. retains the exclusive discretion to determine whether it will pay labor costs for warranty repairs or replacements, and the amount of such costs that it will pay and the time in which the repairs will be made. If Buhler Industries Inc. determines that it will pay labor costs for warranty work, it will do so by issuing a credit to the dealer's or distributor's account. Buhler Industries Inc. will not approve or pay invoices sent for repairs that Buhler Industries Inc. has not previously approved. Warranty service does not extend the original term of this limited warranty.

Warranty Requirements
To be covered by warranty, each Farm King new product must be registered with Buhler Industries Inc. within thirty (30) days of delivery to original retail purchaser. If the customer decides to purchase replacement components before the warranty disposition of such components is determined, Buhler Industries Inc. will bill the customer for such components and then credit the replacement invoice for those components later determined to be covered by this limited warranty. Any such replacement components that are determined not be covered by this limited warranty will be subject to the terms of the invoice and shall be paid for by the purchaser.

Warranty Claims:
Warranty requests must be prepared on Buhler Industries Inc. Warranty Claim Forms with all requested information properly completed. Warranty Claims must be submitted within a thirty (30) day period from date of failure repair.

Warranty Labor:
Any labor subject to warranty must be authorized by Buhler Industries Inc. The labor rate for replacing defective parts, where applicable, will be credited at 100% of the dealer's posted shop rate.

Exclusive Effect of Warranty and Limitation of Liability

TO THE EXTENT PERMITTED BY LAW, BUHLER INDUSTRIES INC. DISCLAIMS ANY WARRANTIES, REPRESENTATIONS, OR PROMISES, EXPRESS OR IMPLIED, AS TO THE QUALITY, PERFORMANCE, OR FREEDOM FROM DEFECT OF THE COMPONENTS AND PARTS COVERED BY THIS WARRANTY AND NOT SPECIFICALLY PROVIDED FOR HEREIN.

TO THE EXTENT PERMITTED BY LAW, BUHLER INDUSTRIES INC. DISCLAIMS ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ON ITS PRODUCTS COVERED HEREIN, AND DISCLAIMS ANY RELIANCE BY THE PURCHASER ON BUHLER INDUSTRIES INC.'S SKILL OR JUDGMENT TO SELECT OR FURNISH GOODS FOR ANY PARTICULAR PURPOSE. THE PURCHASER'S ONLY AND EXCLUSIVE REMEDIES IN CONNECTION WITH THE BREACH OR PERFORMANCE OF ANY WARRANTY ON PRODUCTS MANUFACTURED BY BUHLER INDUSTRIES INC. ARE THOSE SET FORTH HEREIN. IN NO EVENT SHALL BUHLER INDUSTRIES INC. BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES (INCLUDING, BY WAY OF EXAMPLE ONLY AND NOT LIMITATION, LOSS OF CROPS, LOSS OF PROFITS OR REVENUE, OTHER COMMERCIAL LOSSES, INCONVENIENCE, OR COST OF REPLACEMENT OF RENTAL EQUIPMENT). IN NO EVENT SHALL FARM KING'S CONTRACT OR WARRANTY LIABILITY EXCEED THE PURCHASE PRICE OF THE PRODUCT.

(Note that some provinces or states do not allow limitations on how long an implied warranty lasts or the exclusion or limitation of incidental or consequential damages, so the above limitations and exclusion may not apply to you.) This warranty gives you specific legal rights and you may also have other rights, which vary from province to province or state to state.

Buhler Industries Inc. neither assumes nor authorizes any person or entity, including its selling representatives, to assume any other obligations or liability in connections with the sale of covered equipment, or to make any other warranties, representations, or promises, express or implied, as to the quality, performance, or freedom from defect of the components and parts covered herein. No one is authorized to alter, modify, or enlarge this limited warranty, or its exclusions, limitations and reservations.

Corrections of defects and improper workmanship in the manner, and for the applicable time periods, provided for herein shall constitute fulfillment of all responsibilities of Buhler Industries Inc. to the purchaser, and Buhler Industries Inc. shall not be liable in negligence, contract, or on any other basis with respect to the subject equipment.

This limited warranty is subject to any existing conditions of supply which may directly affect Buhler Industries Inc.'s ability to obtain materials or manufacture replacement parts.

Buhler Industries Inc. reserves the right to make improvements in design or changes in specifications to its products at anytime, without incurring any obligation to owners of units previously sold.

Government Legislation:
Warranty terms and conditions are subject to provincial or state legislation.

Important Note: This warranty does not apply to rentals.

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