

MODEL 4490 DISC
ASSEMBLY INDEX

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ASSEMBLY INSTRUCTIONS

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



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



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

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

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

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

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



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

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

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

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

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

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

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

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

for the following models:

8" spacing – 86 and 94 blades

9" spacing – 78 and 86 blades

8" spacing – 70, 74 and 78 blades

9" spacing – 62, 66 and 70 blades

Model 4490 uses a wide wing frame (93")

for the following models:

8" spacing – 86 and 94 blades

9" spacing – 78 and 86 blades

8" spacing – 70, 74 and 78 blades

9" spacing – 62, 64 and 70 blades

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

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

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

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

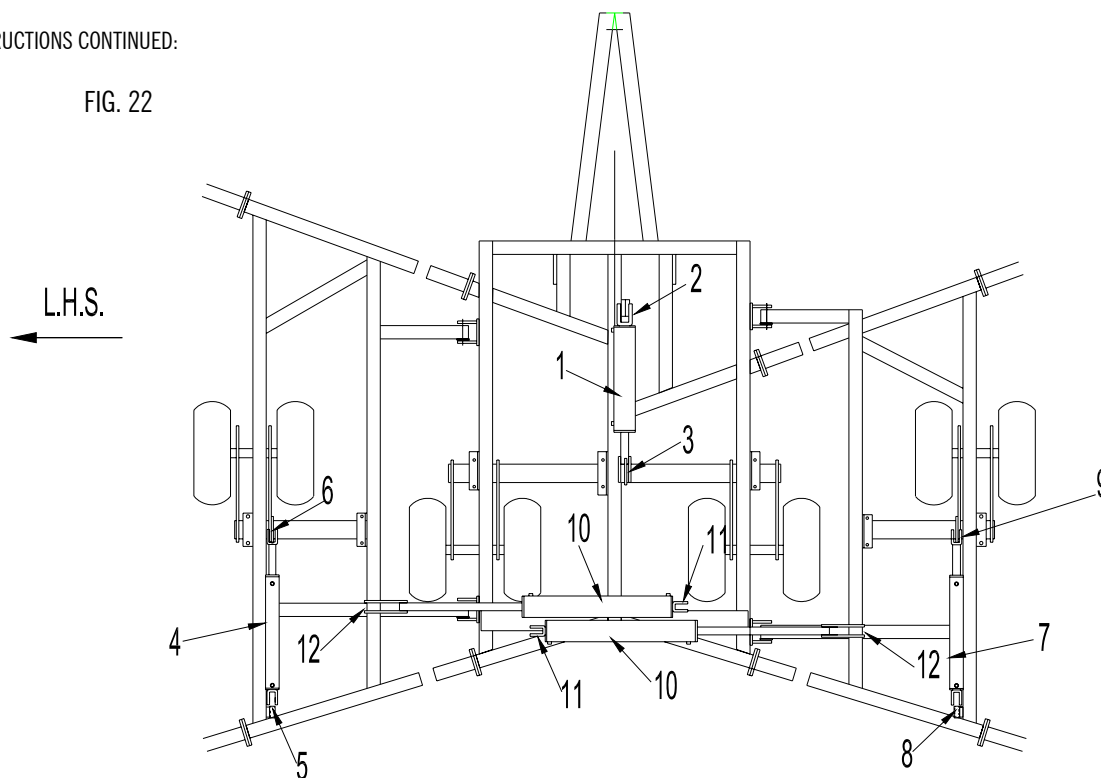
14. See Fig. 20 and 21. Fasten R.H. wing rockshafts, arrow 1, to bottom of R.H. wing frame. Be sure correct rockshaft is used. Wheel legs, arrow 6, should point towards front with cylinder arm pointing up. Secure each rockshaft to wing frame with two (2) cast rockshaft bearings, arrows 2 and Position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

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

- a) Dual wheels - See FIG.19. Install one (1) .6 bolt hub and spindle assembly, arrows 11 and 12, in each end of mount tube welded to wheel legs, arrow 13. Secure each spindle with one (1) 1/2" x 3-1/2" (12.7 mm x 88.9 mm) hex bolt complete with nylon locknut.
- b) Single wheels - See FIG.19. Install one (1) only 6 bolt hub and spindle assembly, arrow 11, in outside end of mount tube welded to wheel legs, arrow 13. Secure spindle with one (1) 1/2" x 3-1/2" (12.7mm x 88.9 mm) hex bolt complete with nylon locknut.
- 18 See FIG.19. Install one (1) wheel and tire assembly, arrow 14, to each hub assembly. Secure with six (6) 9/16 x 1-1/8" (19.3 mm x 28.6 mm) wheel bolts, arrow 5. Tighten wheel bolts to 130 FT. LBS. (18 M. KGS) To determine load range size of wing frame tires for your machine refer to tire chart on page 5.

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

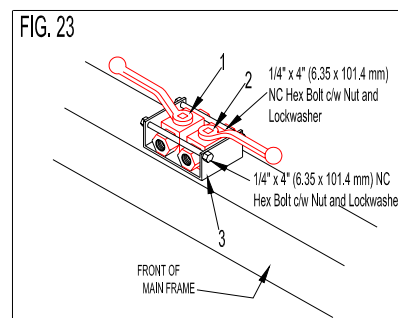
FIG. 22



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

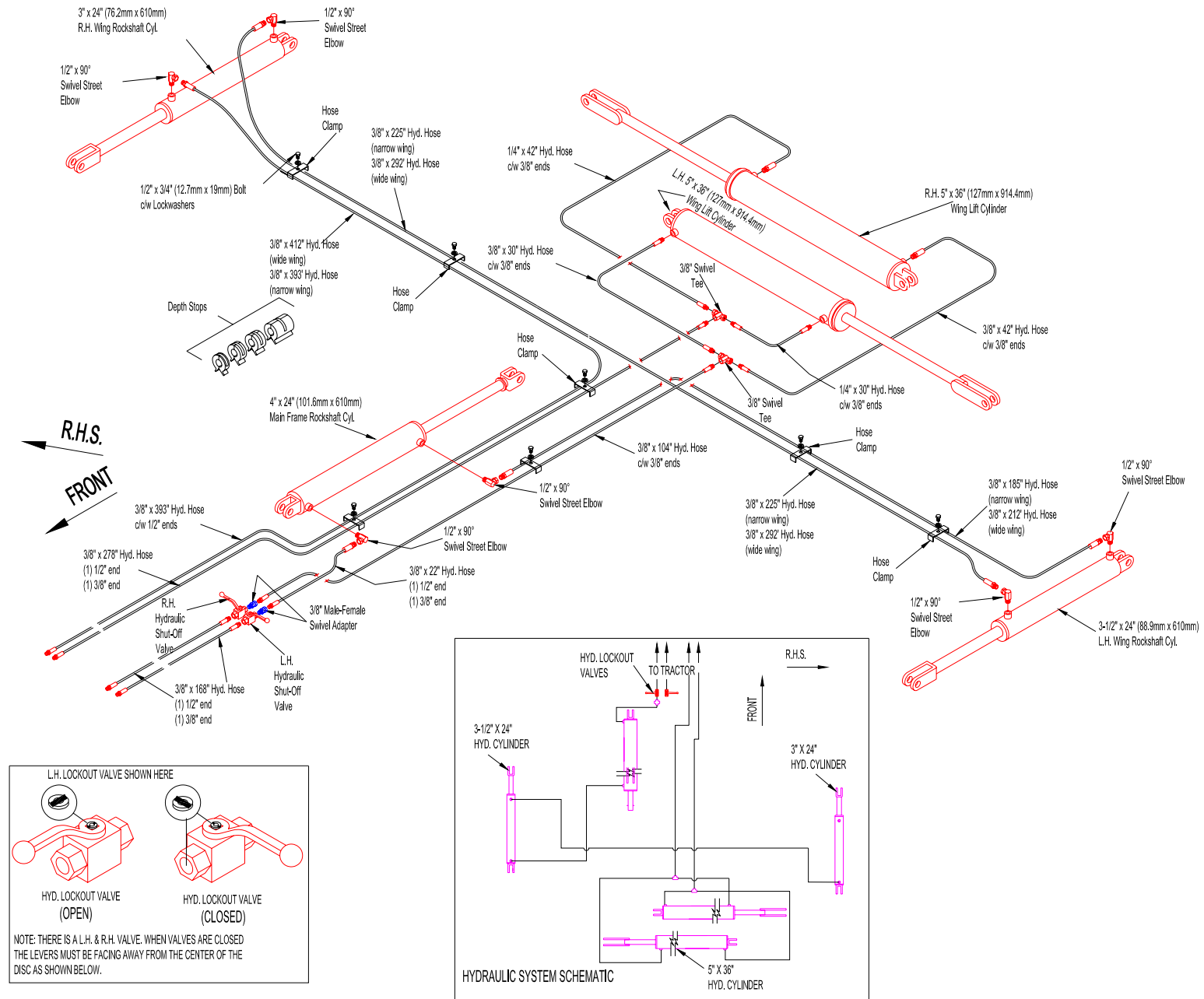
IMPORTANT: *If cylinder pin on barrel end is not positioned properly, serious damage may occur to cylinder or I-bolt. If cylinder barrel is turning so axis of cylinder pin is not horizontal, cylinder will not be free to pivot up and down when cylinder is actuated*

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



4490 DISC - Hydraulic System

FIG 24



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

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

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

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

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

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

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

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

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

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

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

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

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

See Fig. 24. To fill rockshaft cylinders with oil remove depth control stops to allow cylinders to work full length of stroke. Next, pump oil into the cylinders working shafts in and out. After all cylinders have been completely filled with oil, synchronize cylinders by fully extending them. After the first cylinder is fully extended continue to hold hydraulic lever until the other two (2) cylinders are all fully extended. Attach shaft end of each cylinder to rockshaft arm with one (1) 1-1/4" x 4-3/4" (31.7 mm x 121 mm) pin. Secure each pin with two (2) 5/16" x 1-3/4" (7.57 mm x 44.4 mm) cotter pins.

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

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



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



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

- CAUTION:** DO NOT DISCONNECT HYDRAULICALLY OPERATING COMPONENTS WHEN THERE IS PRESSURE WITHIN THOSE COMPONENTS. HYDRAULIC COMPONENTS UNDER PRESSURE MAY CAUSE PARTS AND HYDRAULIC FLUID TO FLY OUT AT A HIGH VELOCITY WHICH COULD CAUSE SERIOUS INJURY.
- CAUTION:** HYDRAULIC OIL ESCAPING UNDER PRESSURE HAS SUFFICIENT FORCE TO CAUSE SERIOUS INJURY. IF INJURED BY ESCAPING FLUID, OBTAIN MEDICAL TREATMENT IMMEDIATELY. CHECK HYDRAULIC HOSES PERIODICALLY FOR SIGNS OF RUPTURE AND LEAKS. USE A CARD BOARD AS A BACKSTOP TO CHECK FOR ESCAPING HIGH PRESSURE OR HOT FLUID.
- CAUTION:** WINGS WILL FREE FALL IF WING CYLINDERS ARE NOT FULL OF OIL, CAUSING SERIOUS DAMAGE OR SERIOUS INJURY OR DEATH TO PERSON(S) NEARBY.
- CAUTION:** TO ASSEMBLE BALANCE OF DISC, EXTEND MAIN LIFT CYLINDERS RAISING FRAME. BE SURE MAIN LIFT CYLINDERS ARE COMPLETELY FILLED WITH OIL. THEN PLACE ADEQUATE SUPPORT UNDER EACH MAIN FRAME AND WING FRAMES. DO NOT USE LOCK OUT VALVE AS SAFETY DEVICE TO PREVENT FRAME FROM FALLING. IF HYDRAULIC HOSE(S) OR FITTINGS FAILED DISC COULD DROP CAUSING SERIOUS INJURY OR DEATH TO PERSON(S) NEARBY.
- WARNING:** DO NOT STAND UNDER WINGS WHILE WINGS ARE BEING RAISED OR LOWERED. IF ANY COMPONENTS OF HYDRAULIC SYSTEM SHOULD FAIL OR IF HYDRAULIC LEVER SHOULD ACCIDENTALLY BE OPERATED, WINGS COULD DROP CAUSING SERIOUS INJURY OR DEATH.

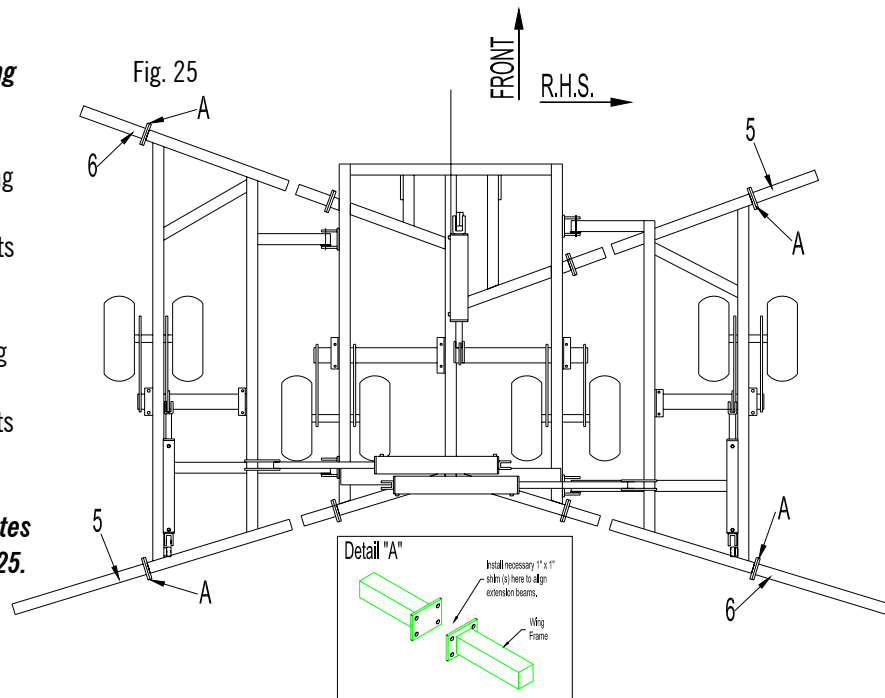
29. ATTACHING GANG BEAM EXTENSIONS- See FIG 25

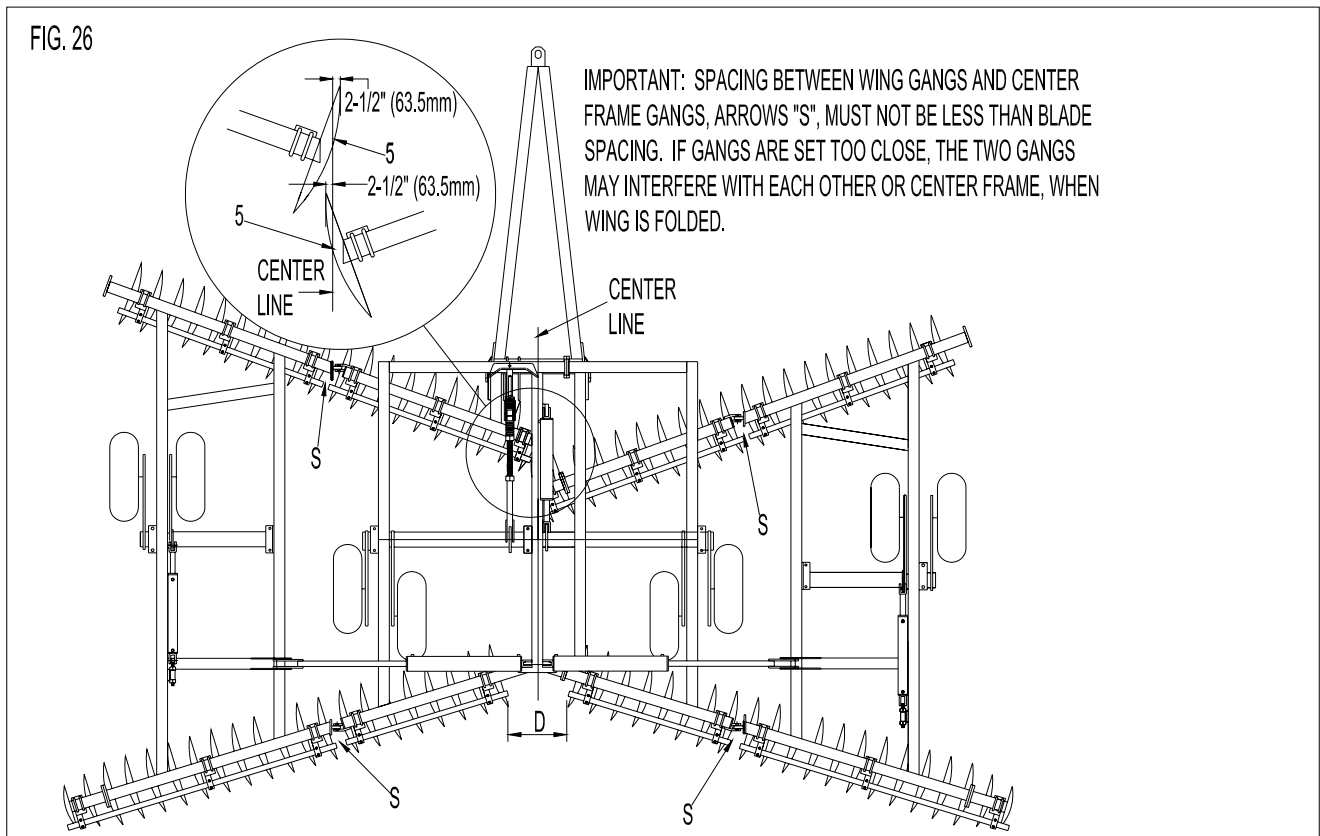
NOTE: See gang beam chart on Page 32 to determine gang beam lengths for the size of your disc.

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

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

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





30. ATTACHING GANG ASSEMBLIES - See FIG. 26

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

- a) **REAR GANGS** - Roll rear gang assemblies in place under rear gang beams. Position rear gangs so that the scrapers are at the rear. The gang assemblies with outrigger blades (small diameter blades) must be positioned at the outside. See FIG. 26. for the direction rear gangs face.

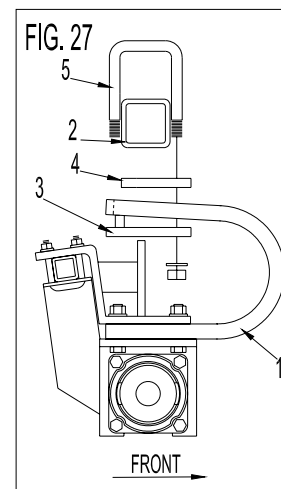
Attach bearing hangers to gang beams with two U-bolts per bearing hanger. Leave U-bolt loose. If disc is equipped with optional spring bearing hangers, see step (c) to attach hangers.

- b) **FRONT GANGS** - Roll front gang assemblies in place under front gang beams. Position gang assemblies so that the scrapers are at the rear. See FIG. 26. for the direction the front gangs face.

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

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

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



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

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

- e) See FIG. 26. Set rear gangs so that the distance between the rear edge of the two inside blades, dimension "D", is equal to 2" (50.8mm) less than blade diameter. For example, if your disc is equipped with 24" (610 mm) diameter blades, dimension "D" would be set at 22" (559 mm). Be sure the rear gangs are centred on the frame.
- f) See FIG. 26. Adjust spacing between rear gang assemblies, arrow 5. This spacing should be the same as the blade spacing in the gang assemblies.
- g) Before tightening bearing hanger U-bolts, loosen U-bolts which fasten scraper bar to bearing hanger. Then check each bearing hanger to make sure hanger is sitting square under gang beam. Also be sure hanger is not turned to one side.
- h) Next tighten U-bolts. For discs equipped with solid hangers, tighten U-bolt to 150 ft. lbs (203.25 N.m). For discs equipped with stone flex hangers, tighten U-bolts to 260 ft. lbs (352.3 N.m)

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

- 31. See FIG. 28. VERY IMPORTANT - Loosen all the bolts, arrow 1, which bolt the bearings to the hangers, arrow 2. Then turn the disc blades to allow the bearings to align themselves. Next tighten all the bolts. This will ensure proper bearing alignment, increasing bearing life.

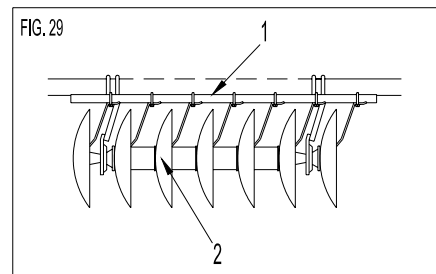
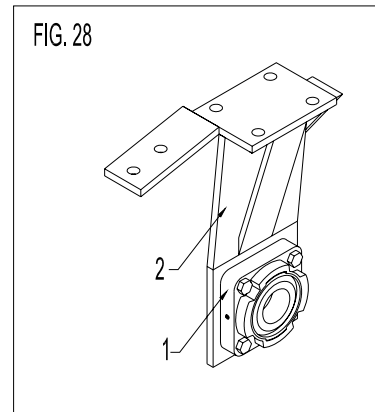
IMPORTANT: WHEN RAISING WINGS FOR TRANSPORT FIRST TIME AFTER ADJUSTING GANGS, RAISE WINGS SLOWLY MAKING SURE WING GANGS CLEAR CENTRE FRAME.

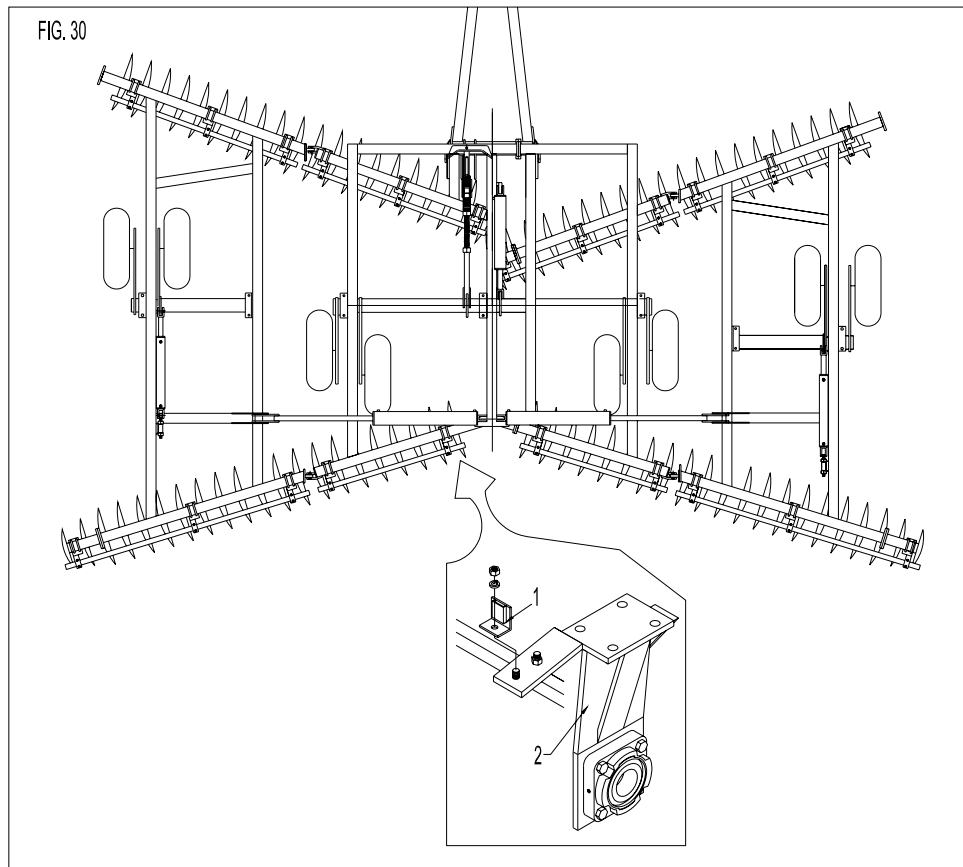
- 32. See FIG. 29. Adjust scraper bar, arrow 1, and scrapers, arrow 2, of each gang so that each scraper blade is in contact with disc blade.

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



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

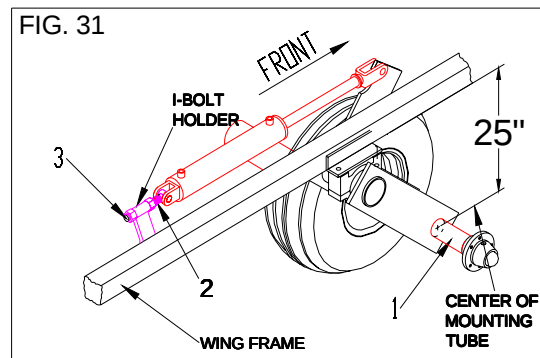




33. See Fig. 30. Mount the SMV bracket, arrow 1, to the main frame's rear inside bearing hanger on the L.H. rear gang. Secure to the top of the scraper bar support with the same U-bolt used to fasten the scraper bar to the bearing hanger.

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

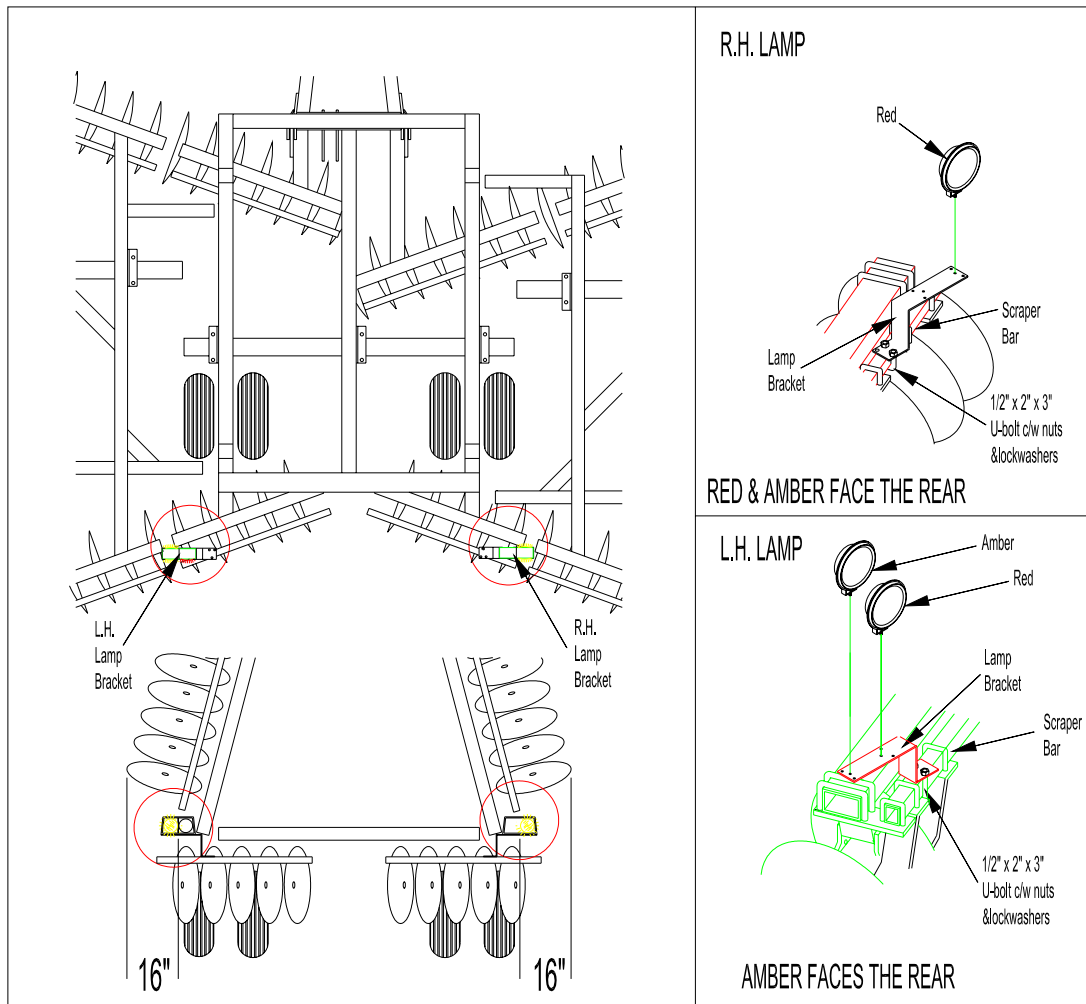
- 1) Raise disc by extending rockshaft cylinder. Be sure wing rockshaft cylinders are fully exterior.
- 2) Check the distance the spindle mounting tube, arrow 1, (welded to bottom of rockshaft wheel leg) is from the bottom of each wing frame. This distance should be 25" (635mm).
- 3) If spindle mounting tube location is not correct, adjust length of wing cylinder, I-bolt, arrow 2.
- 4) After adjustment is complete, lock I-Bolt by tightening front nut, arrow 3, against I-bolt holder.



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

IMPORTANT: Be sure axis of barrel end pin is horizontal and cylinder points are facing up. If cylinder and I-bolt are not positioned properly cylinder will not be free to pivot when activated causing serious damage.

FIG 32



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

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

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

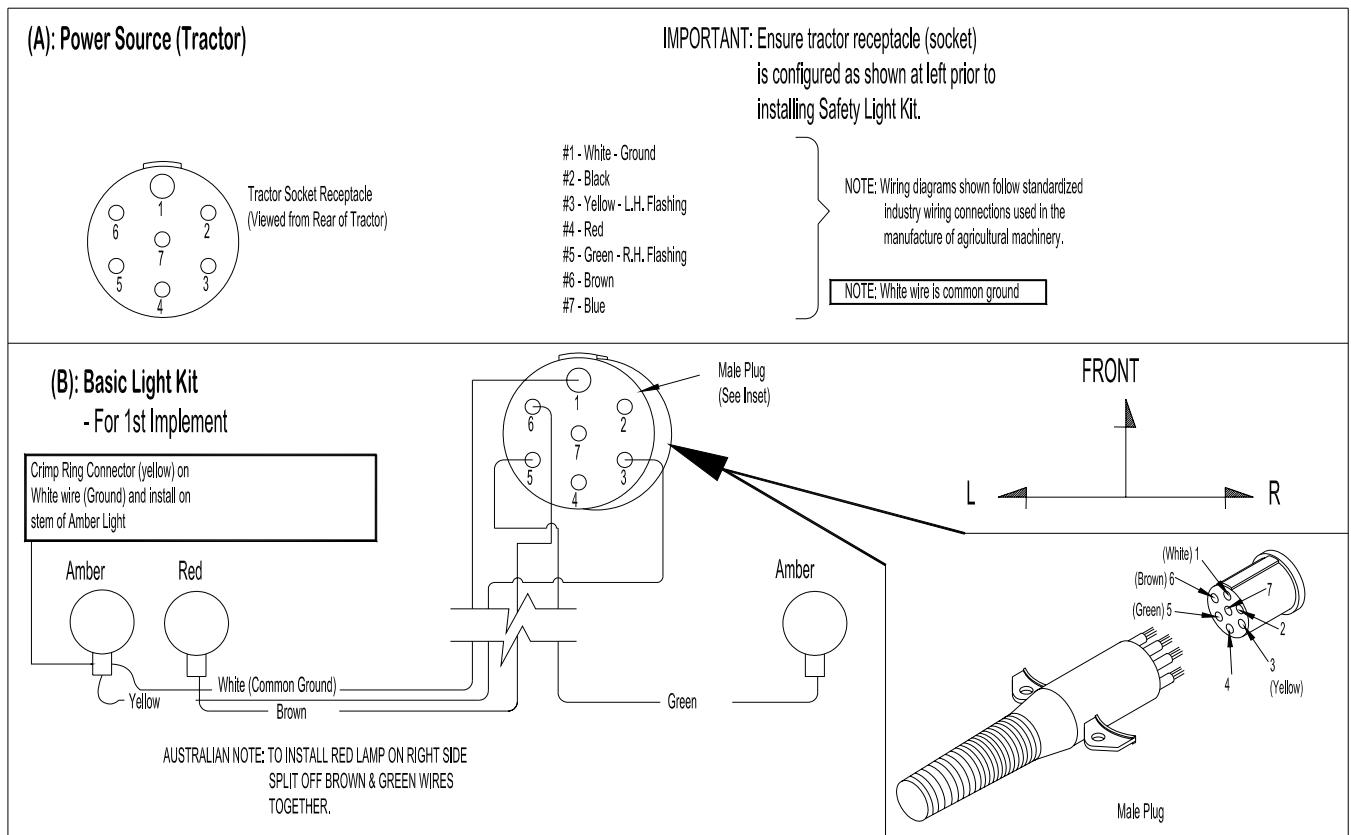


CAUTION: WHEN TRANSPORTING DISC OVER PUBLIC ROADS, USE THE SMV EMBLEM AND WARNING LIGHT FOR PROTECTION OF TRACTOR AND OTHER MOTOR VEHICLE OPERATORS. CHECK LOCAL LAWS FOR WIDTH AND HEIGHT MAXIMUMS.

F. INSTALL ELECTRICAL WIRING AS FOLLOWS:

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

FIG 28

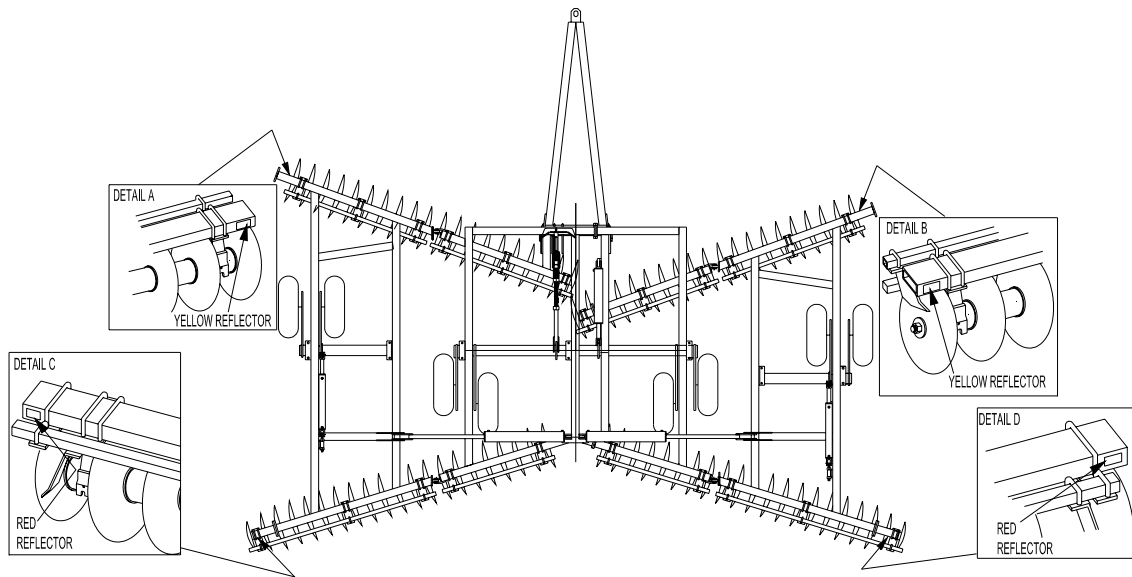


COMPONENTS: BASIC LIGHT KIT

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

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

Fig. 34



36. REFLECTOR DECAL INSTALLATION – See Fig. 34

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

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

**WING BEAM EXTENSIONS
8" SPACING**

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

9" SPACING

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

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

8" spacing - 70, 74 and 78 blades

9" spacing - 62, 66 and 70 blades

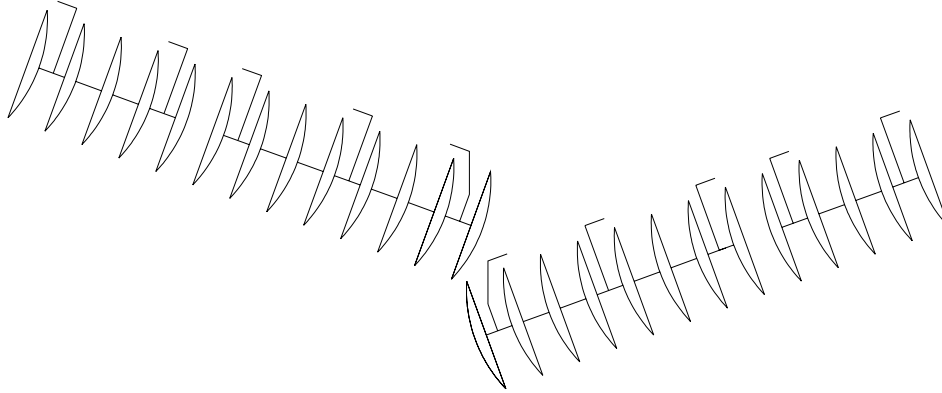
Model 4490 uses a wide wing frame (93" wide) for the following models:

8" spacing - 70, 74 and 78 blades

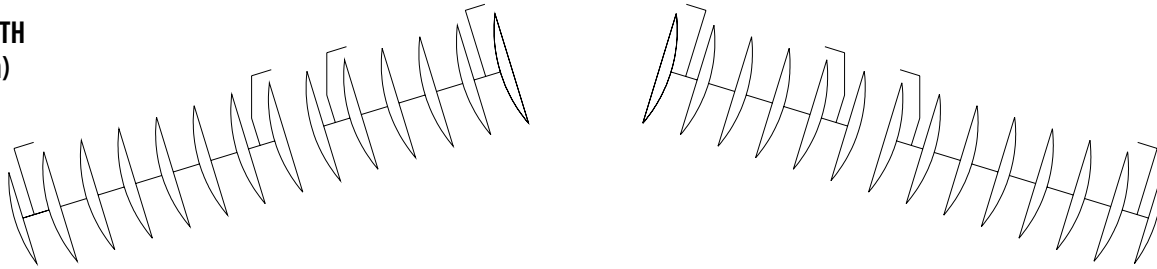
9" spacing - 62, 66 and 70 blades

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

MODEL 4490SN



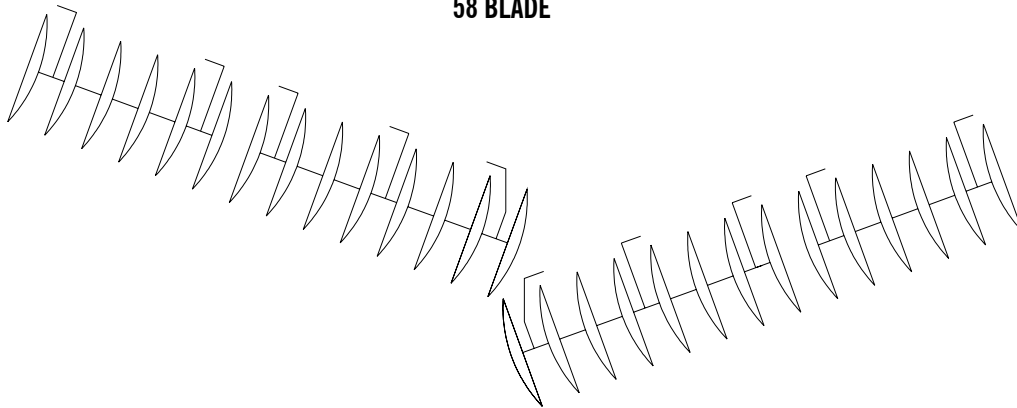
**APPROX. WIDTH
18-1/2' (5.6m)**



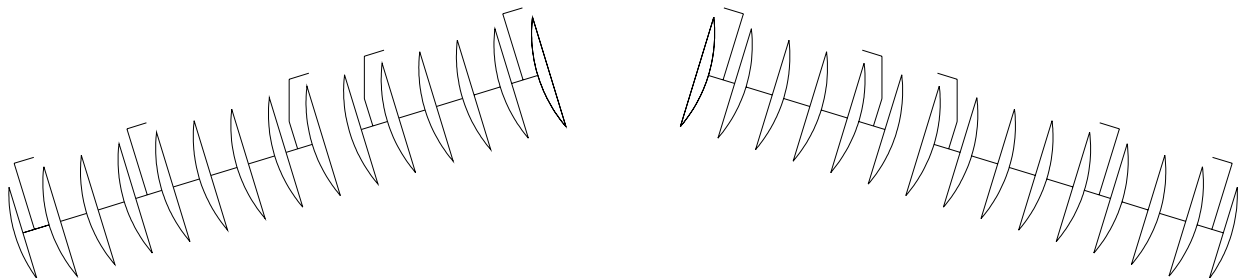
20 BEARINGS

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

MODEL 4490SN



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



20 BEARINGS

DISC GANG PATTERN - 8" SPACING

FRONT

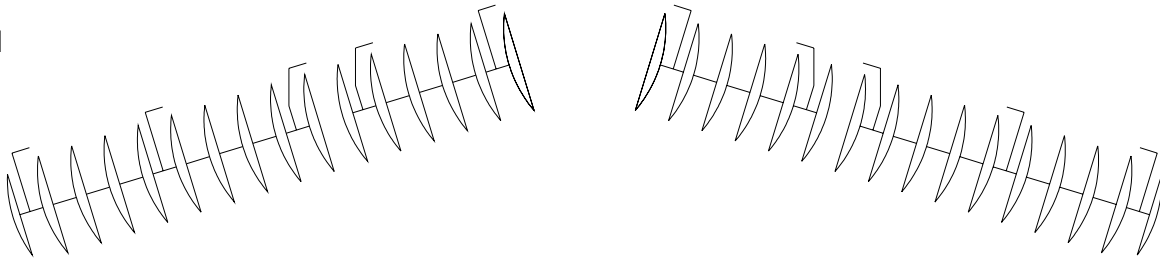
62 BLADE

use 2"
offset

use 2"
offset

MODEL 4490SN

APPROX. WIDTH
21' (6.4m)



20 BEARINGS

DISC GANG PATTERN - 8" SPACING

FRONT

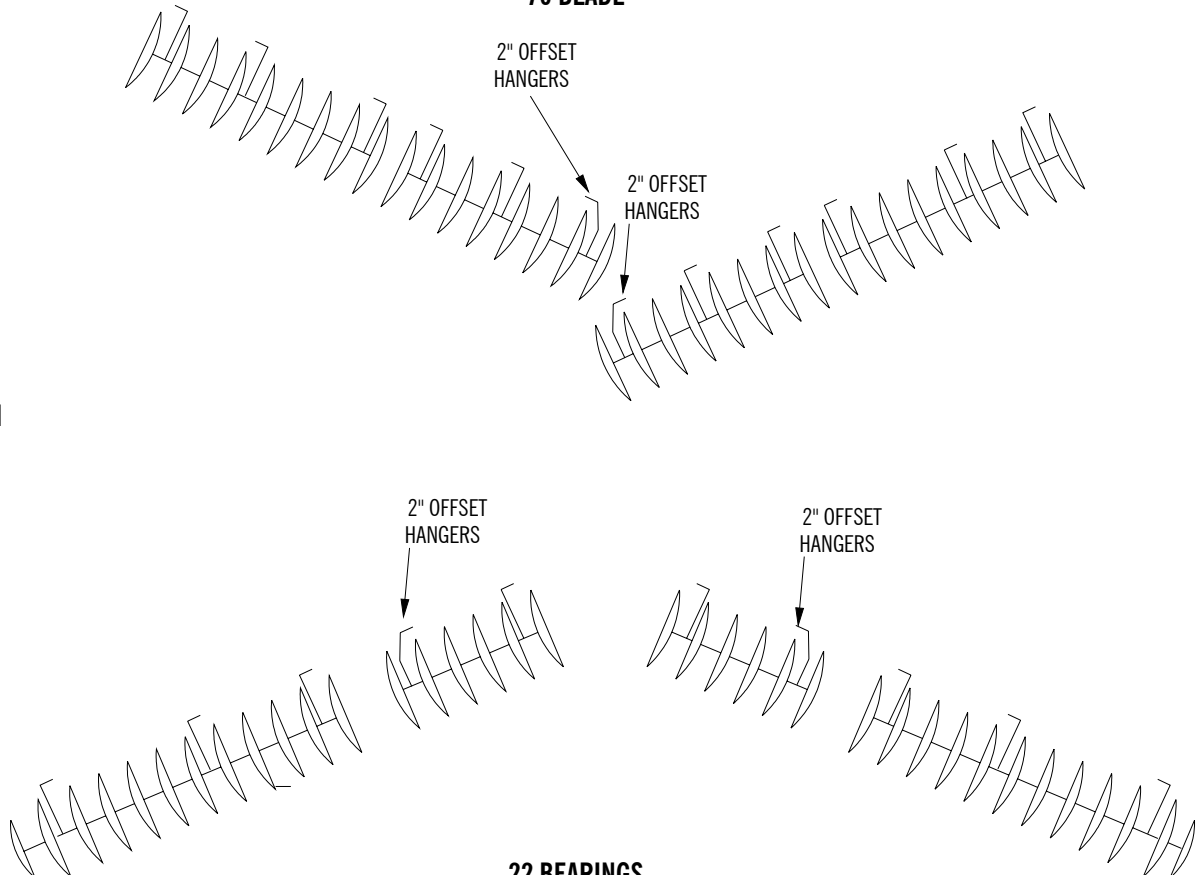
70 BLADE

2" OFFSET
HANGERS

2" OFFSET
HANGERS

MODEL 4490

APPROX. WIDTH
24' (7.3m)



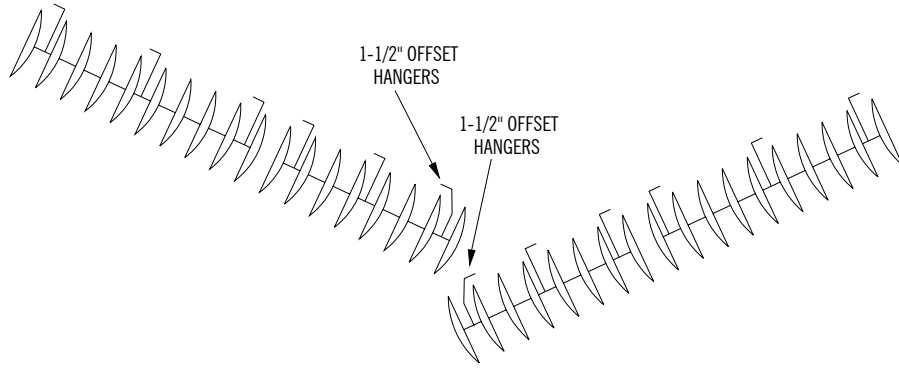
22 BEARINGS

DISC GANG PATTERN - 8" SPACING

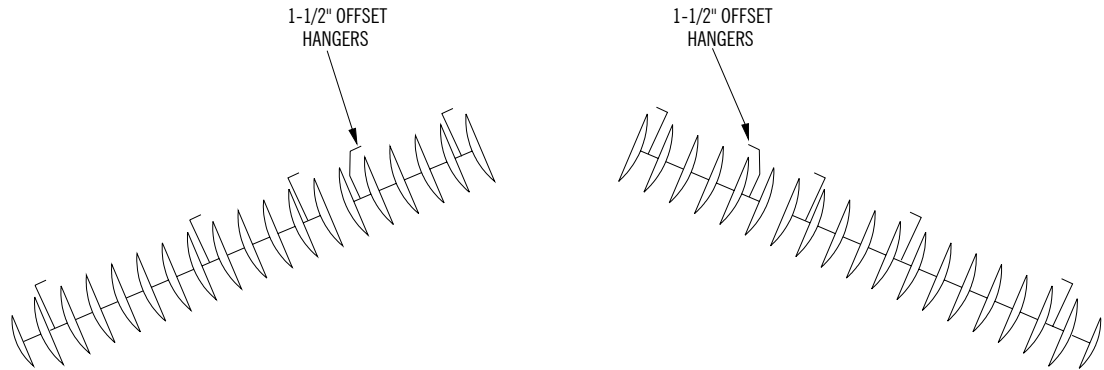
FRONT

74 BLADE

MODEL 4490



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



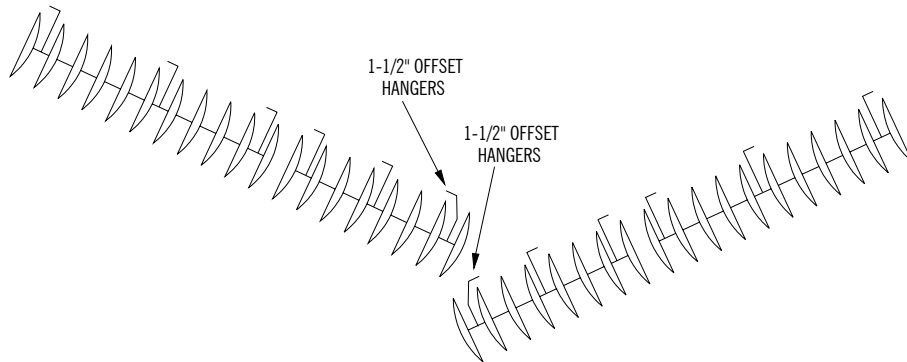
22 BEARINGS

DISC GANG PATTERN - 8" SPACING

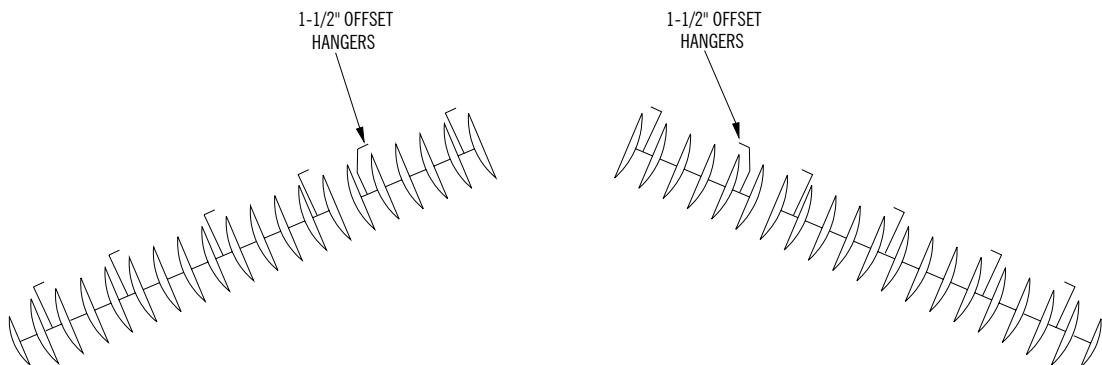
FRONT

78 BLADE

MODEL 4490



**APPROX. WIDTH
27' (8.23m)**



24 BEARINGS

DISC GANG PATTERN - 8" SPACING

FRONT

86 BLADE

MODEL 4490

1-1/2" OFFSET
HANGERS

1-1/2" OFFSET
HANGERS

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

1-1/2" OFFSET
HANGERS

1-1/2" OFFSET
HANGERS

24 BEARINGS

DISC GANG PATTERN - 8" SPACING

FRONT

94 BLADE

MODEL 4490

1-1/2" OFFSET
HANGERS

1-1/2" OFFSET
HANGERS

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

1-1/2" OFFSET
HANGERS

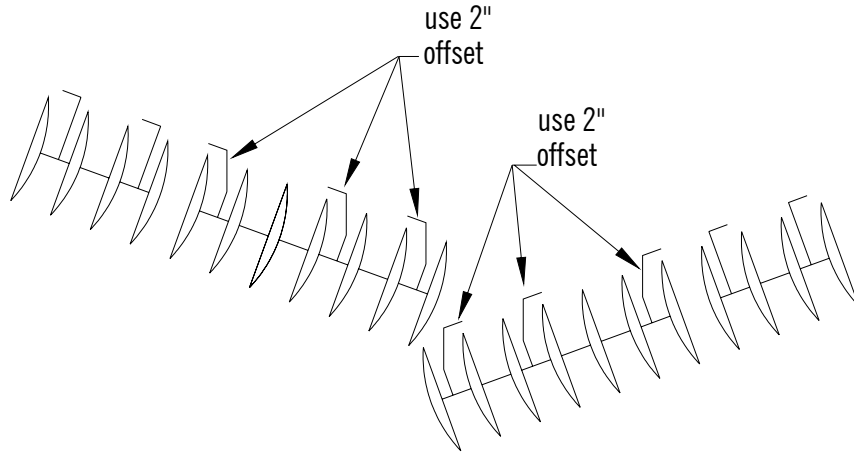
1-1/2" OFFSET
HANGERS

28 BEARINGS

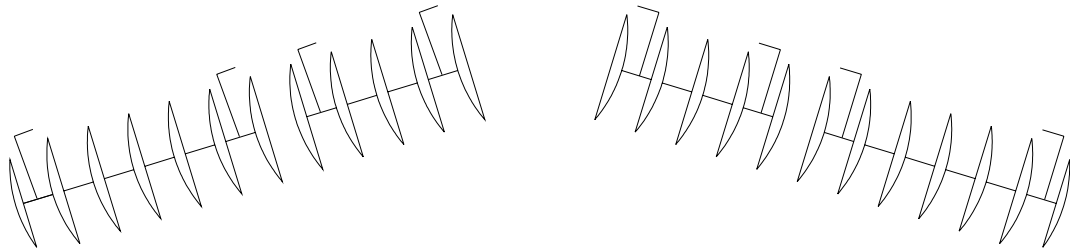
DISC GANG PATTERN - 9" SPACING

**FRONT
46 BLADE**

MODEL 4490SN



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

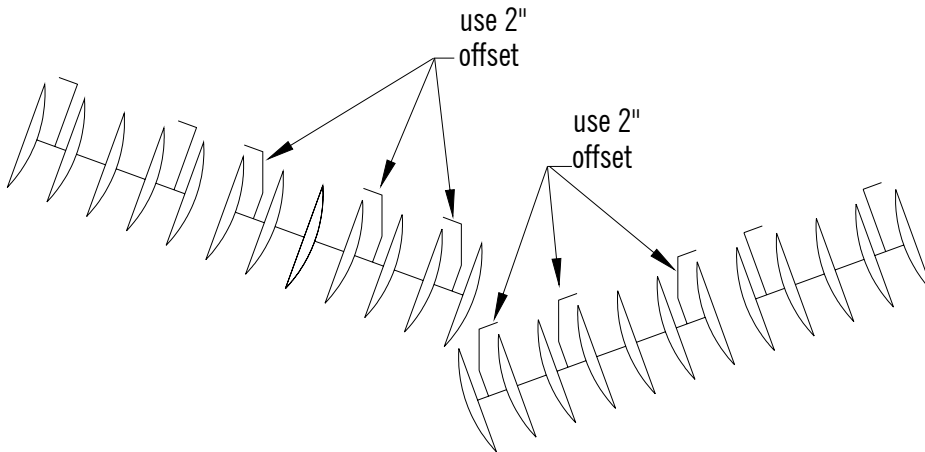


20 BEARINGS

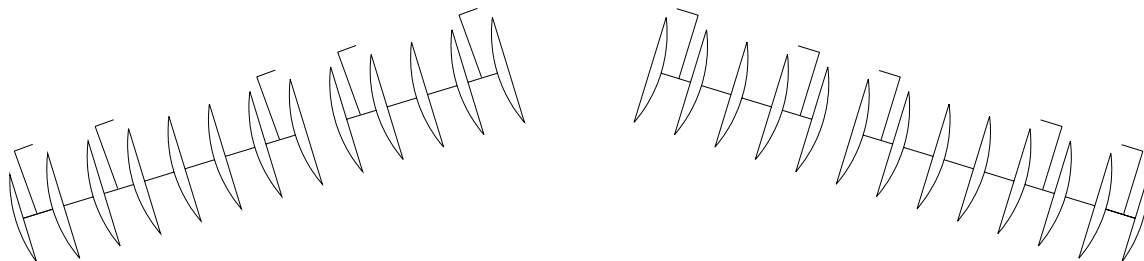
DISC GANG PATTERN - 9" SPACING

**FRONT
50 BLADE**

MODEL 4490SN



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



20 BEARINGS

DISC GANG PATTERN - 9" SPACING

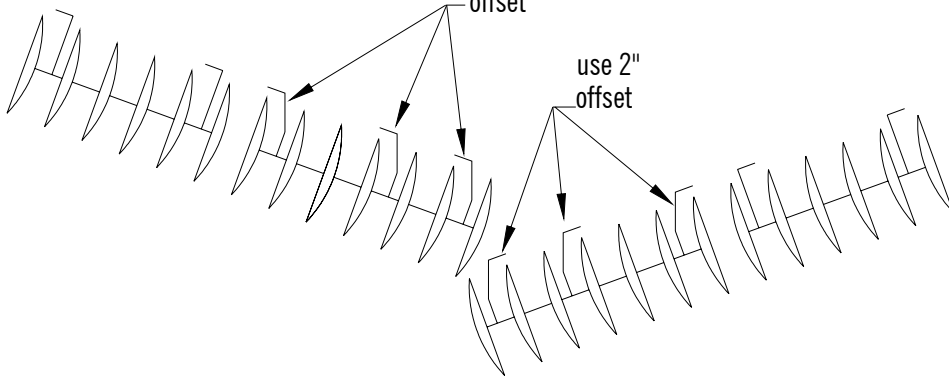
FRONT

54 BLADE

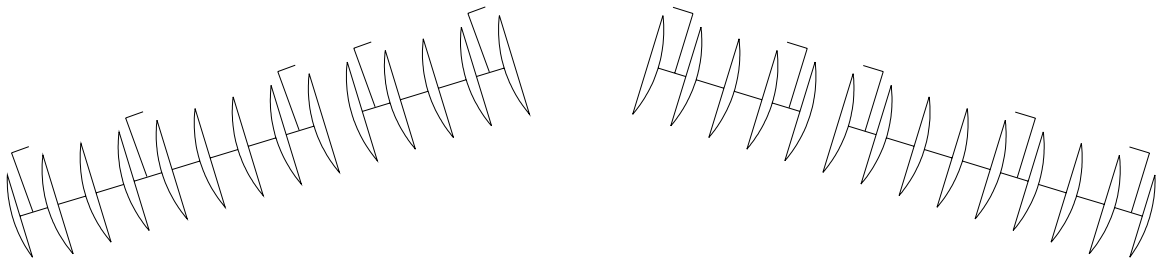
use 2"
offset

use 2"
offset

MODEL 4490SN



APPROX. WIDTH
21 ft. (6.4m)



20 BEARINGS

DISC GANG PATTERN - 9" SPACING

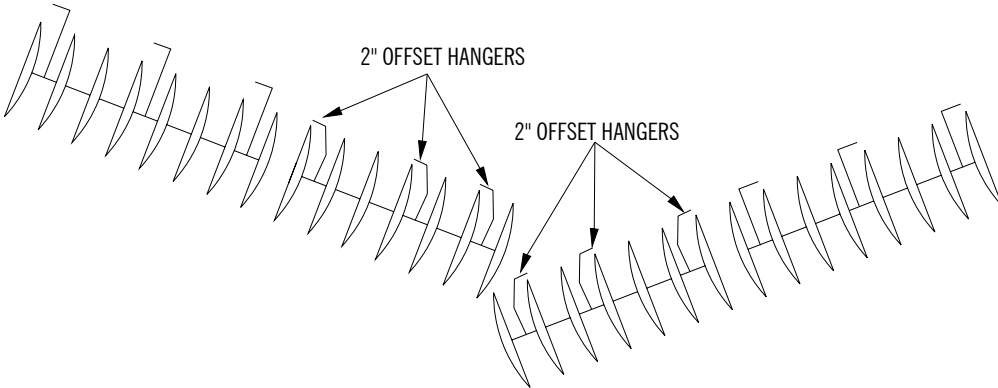
FRONT

62 BLADE

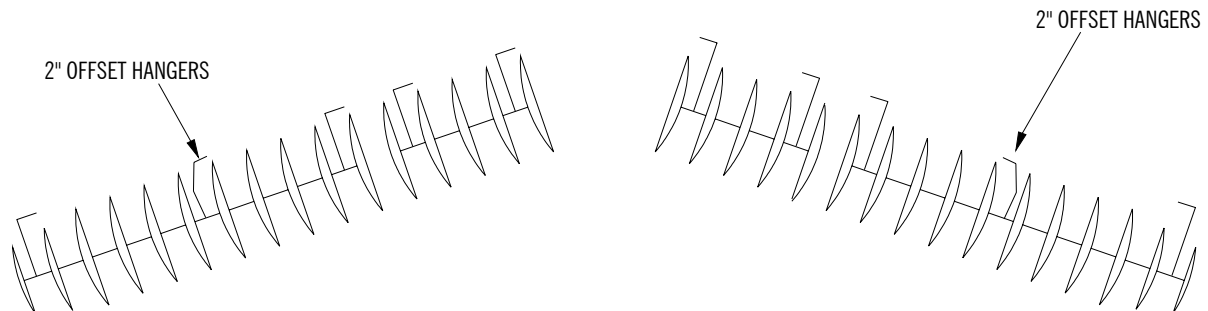
2" OFFSET HANGERS

2" OFFSET HANGERS

MODEL 4490



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



22 BEARINGS

DISC GANG PATTERN - 9" SPACING

FRONT

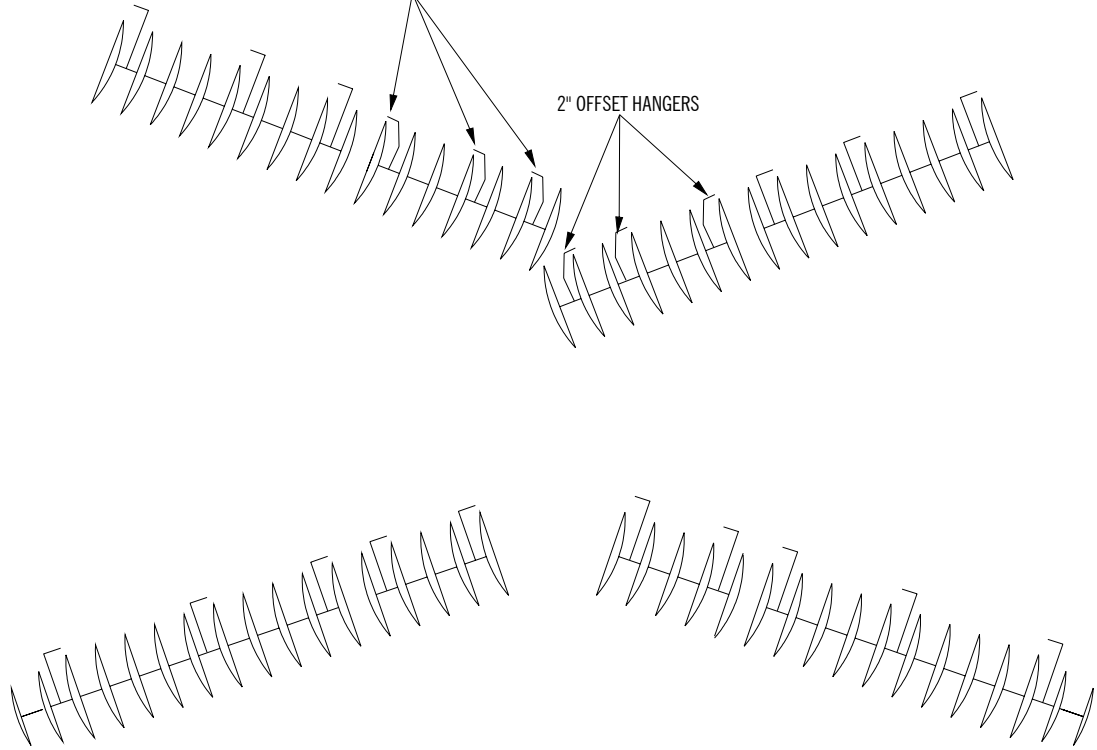
66 BLADE

2" OFFSET HANGERS

2" OFFSET HANGERS

MODEL 4490

APPROX. WIDTH
25 ft. (7.62m)



22 BEARINGS

DISC GANG PATTERN - 9" SPACING

FRONT

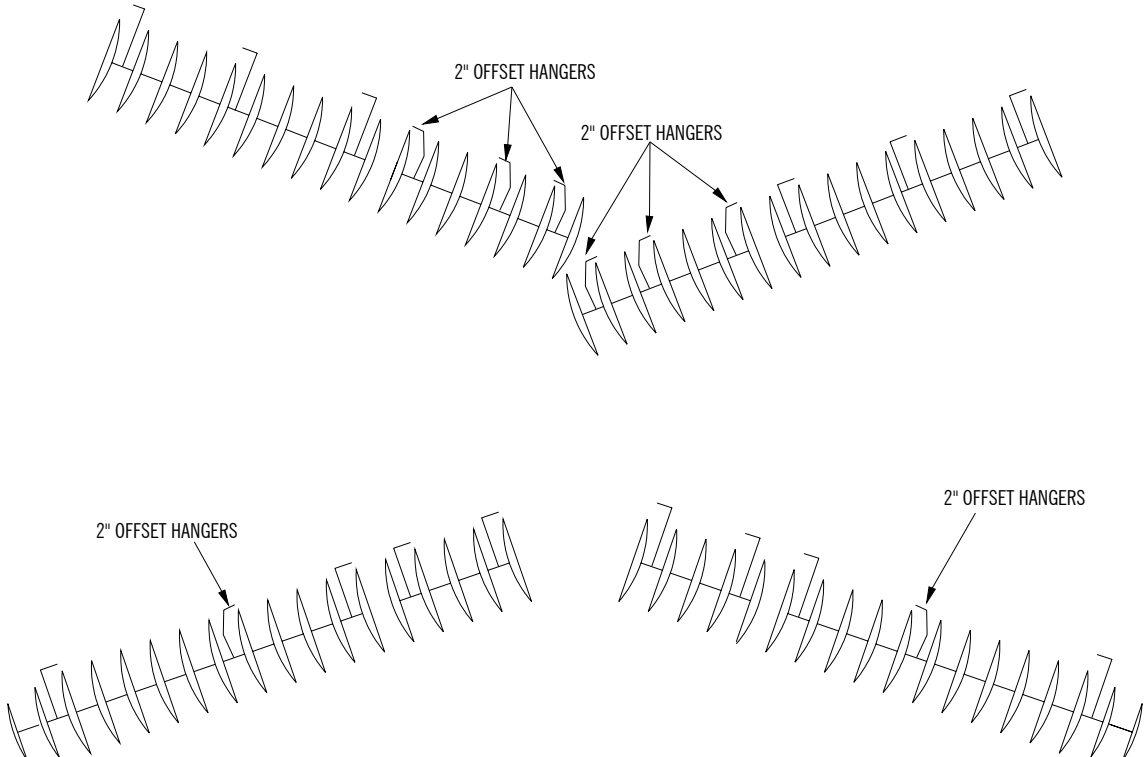
70 BLADE

2" OFFSET HANGERS

2" OFFSET HANGERS

MODEL 4490

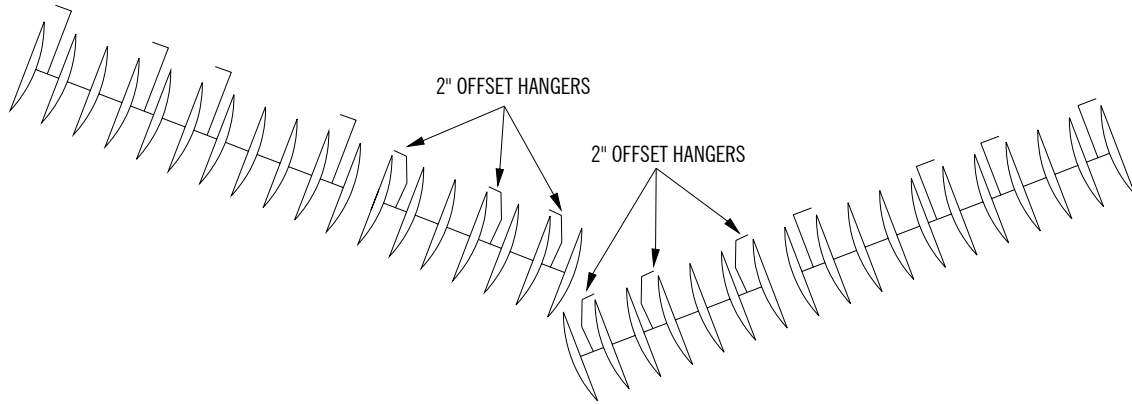
APPROX. WIDTH
26-1/2 ft. (8.08m)



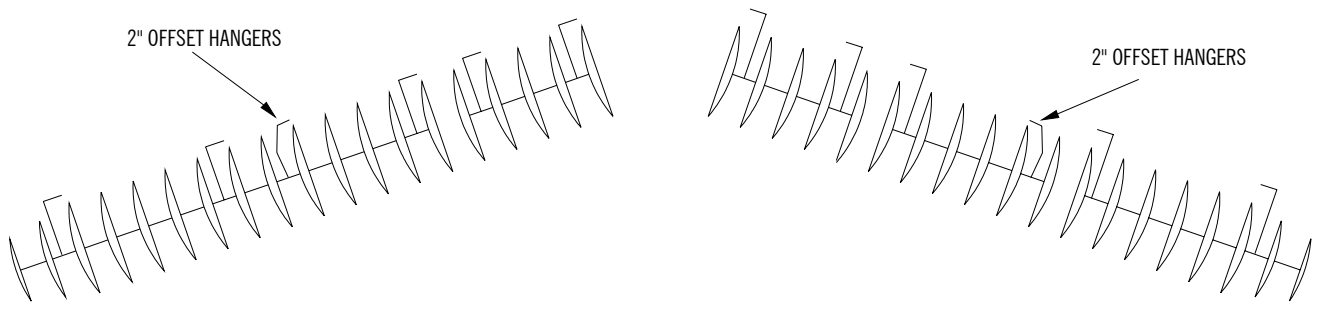
22 BEARINGS

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

MODEL 4490



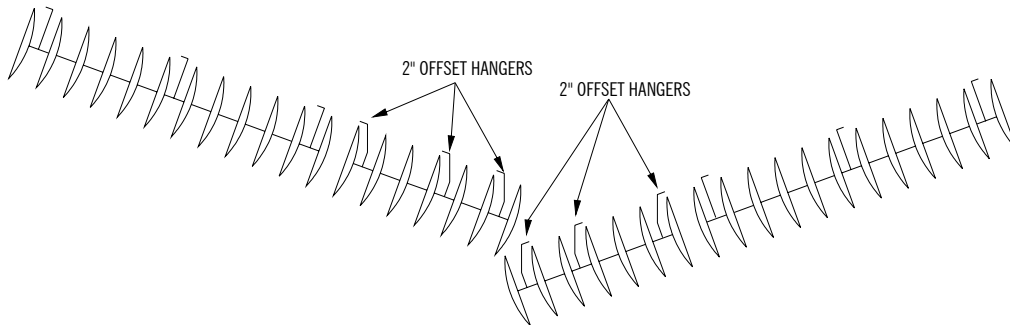
**APPROX. WIDTH
28 ft. (8.53m)**



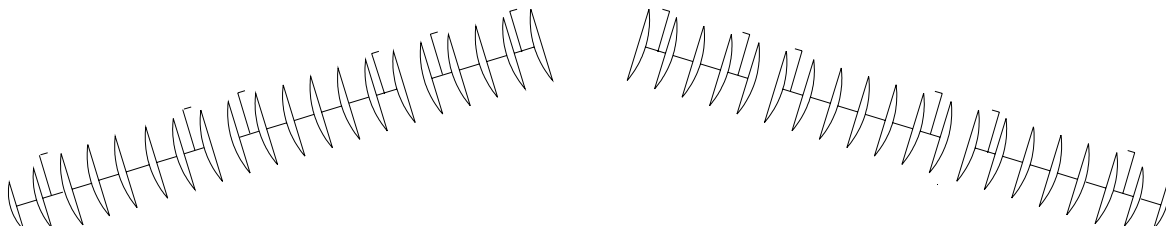
20 BEARINGS

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

MODEL 4490



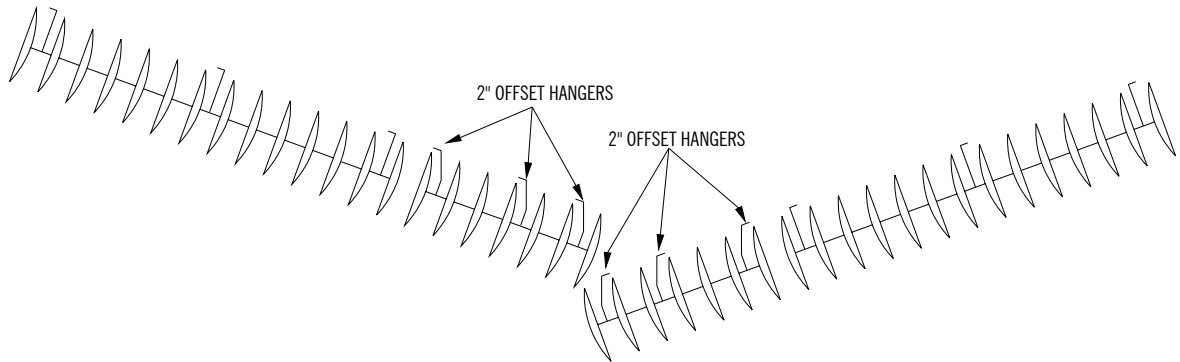
**APPROX. WIDTH
29-1/2 ft. (8.99m)**



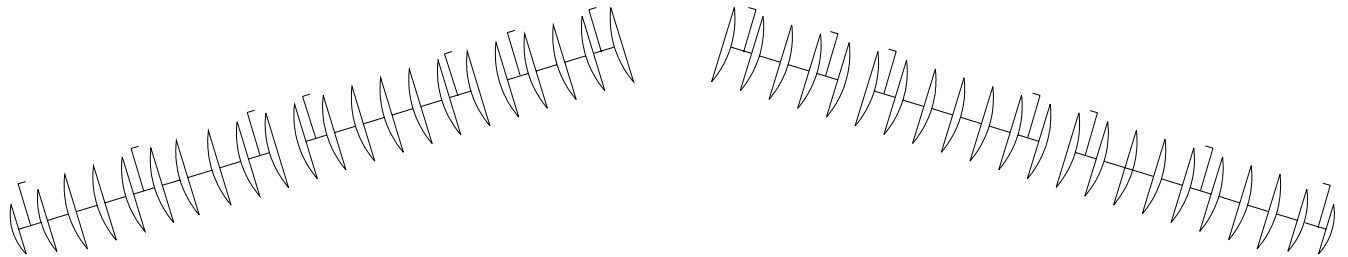
24 BEARINGS

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

MODEL 4490



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



26 BEARINGS