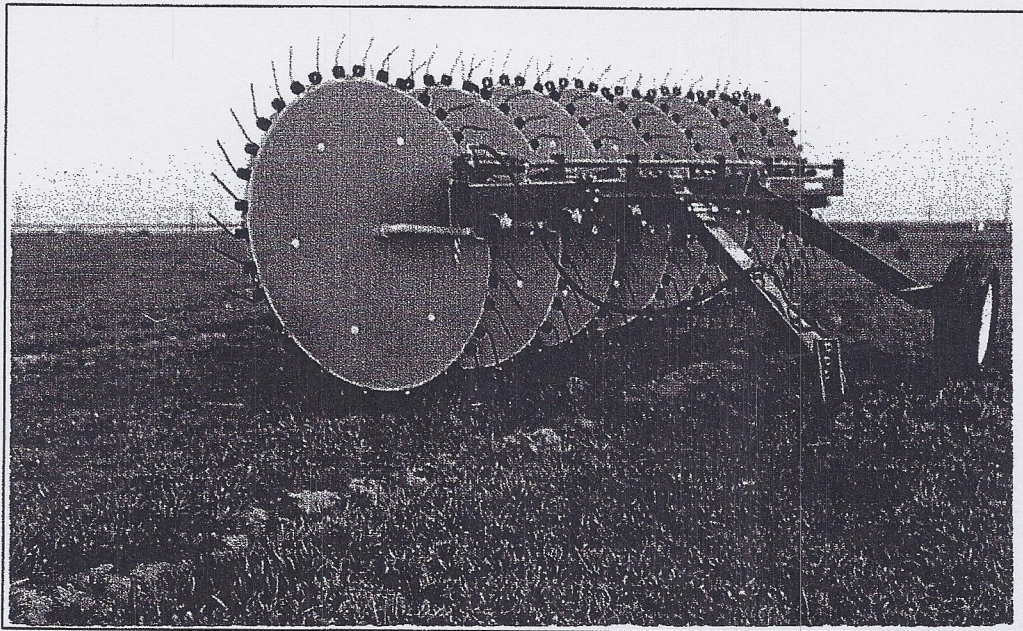


**ASSEMBLY INSTRUCTIONS
AND PARTS MANUAL -----**

**WARRANTY
REGISTRATION
ENCLOSED**

**MODELS 904 - 910
1-WAY PULL TYPE**



MANUFACTURED BY:

**NIKKEL IRON WORKS
17045 CENTRAL VALLEY HWY
SHAFTER, CA 93263**

ALL INSTRUCTIONS REFER TO RAKE FACING DIRECTION OF TRAVEL AS VIEWED FROM THE DRIVER POSITION, SITTING IN SEAT FACING FORWARD. DRIVERS RIGHT TO BE CONSIDERED RIGHT SIDE OF RAKE.

FRAME ASSEMBLY

RAISE MAIN FRAME TO CONVENIENT HEIGHT ON STAND.
SECURE TO PREVENT FRAME FROM FALLING OR TURNING AS ASSEMBLIES ARE ADDED.
(added parts may cause frame to twist to left & fall prior to leg struts & wheels being mounted)

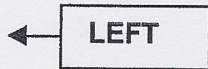
1. Secure lift chains to lift tube with 3/8 x 2-1/4" cap screws and lock nuts. (let hang for now)
2. Assemble bolt-on crank box to one crank and wheel as described in crank assembly instr. *(set aside for now)*
3. Attach leg strut to right side-use 5/8x5" cap screws, lock washers & nuts supplied. Feed bolts through leg strut casting, bushings on frame, and plate of welded spacer assembly. (Both leg struts are same for these rakes) NOTE: Hole for tongue in spacer goes next to frame.
4. Attach leg strut to left end of spacer using 5/8 x 2-1/2 cap screws, lock washers and nuts supplied.
5. Mount ground wheels (after tires are mounted) to hubs. (hubs and spindles are mounted at factory)
6. Attach tongue to spacer using 1-1/8" pin, secure with roll pin, both supplied.
7. Attach adjusting bracket-slide parts go on tongue, plate with tab to frame.
8. Attach hitch to tongue.
9. Install raking wheels using instructions.
10. Install hydraulic hose to hydraulic cylinder--hose to piston end of cylinder, --breather plug to rod end of cylinder. NOTE: Rake operates with one hose only for lift. Down pressure supplied by weight of wheels.
11. Attach required tractor tip to tractor end of hose--tip not supplied.
12. Recheck all bolts, ground wheel lug bolts and fittings.
13. Install bolt-on crank box and wheel assembly. Adjust bolt-on box to let raking wheel clear strut and frame.
14. Raking angle is set at adjusting slide on tongue. This adjustment and raking wheel crop contact is a field adjustment.
15. Check ground wheel for toe-in, set 1/8" + or - and re-install bolt through lever and casting.

WHEEL ASSEMBLY



WHEELS MOUNTED ON RAKE FRAMES THAT WILL BE ON THE RIGHT OF RAKE TO BE ASSEMBLED AS FOLLOWS:

1. Shield boards mount on flat side of wheel only, use long fastener screws in holes toward center of wheel. Short screws are for holes on outer edge of shield. Use large washer under head of screw and next to shield. Clip hooks over wheel spoke in rear of shield.
2. Mount teeth so tines face clockwise direction or if steel tines are used, they are red in color.

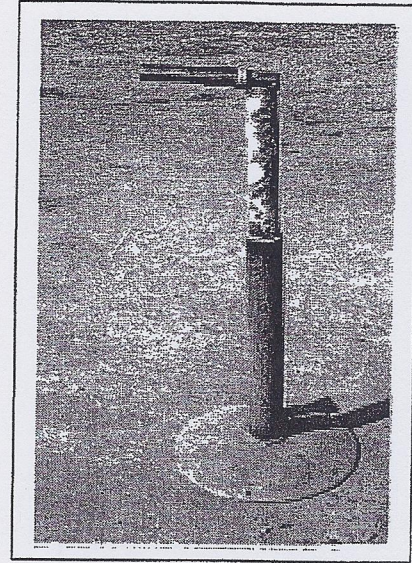
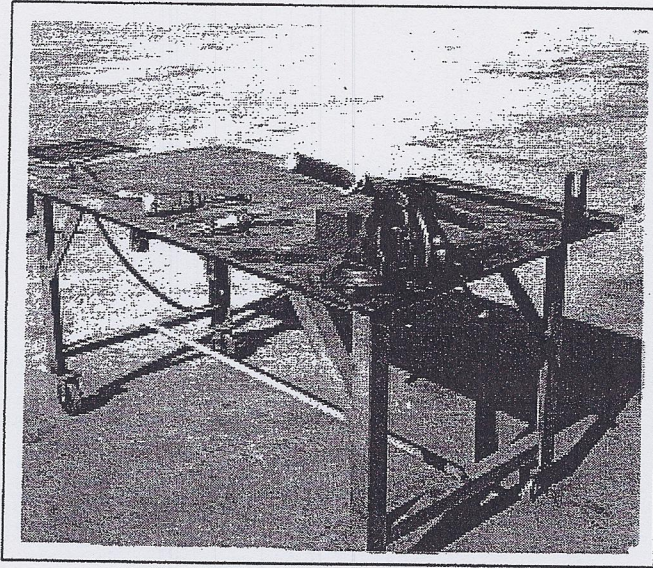


WHEELS MOUNTED ON RAKE FRAMES THAT WILL BE ON THE LEFT OF RAKE TO BE ASSEMBLED AS FOLLOWS:

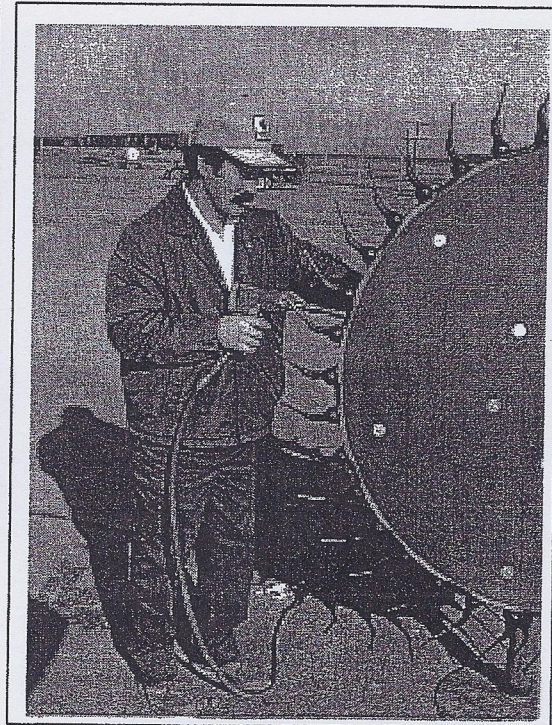
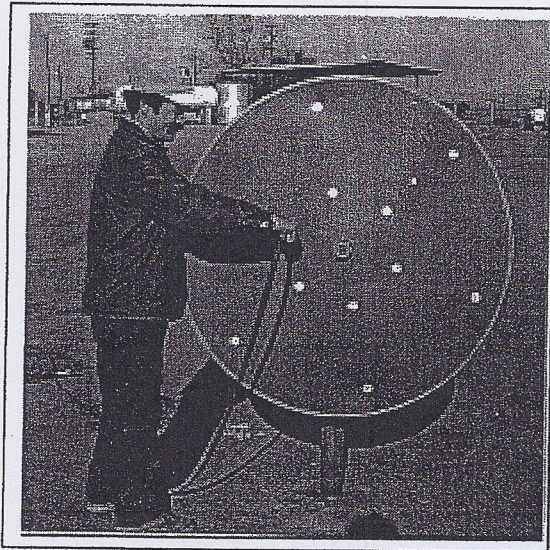
1. Shields as above.
2. Mount teeth so tines face counter-clockwise direction. If equipped with steel tines, use black painted tine.

FOR RUBBER TEETH ----- no clip needed, mount with #92133 bolt/nut

FOR STEEL TEETH ----- mount with #92118 clip and #92133 bolt/nut



TO SPEED UP WHEEL BOARD & TOOTH INSTALLATION YOU CAN CLAMP A 1-1/2" SHAFT IN A VISE AS SHOWN ON THE LEFT OR WELD UP A STAND AS SHOWN ON THE RIGHT. THE USE OF AIR TOOLS WILL MAKE THIS JOB AN EASY ONE.



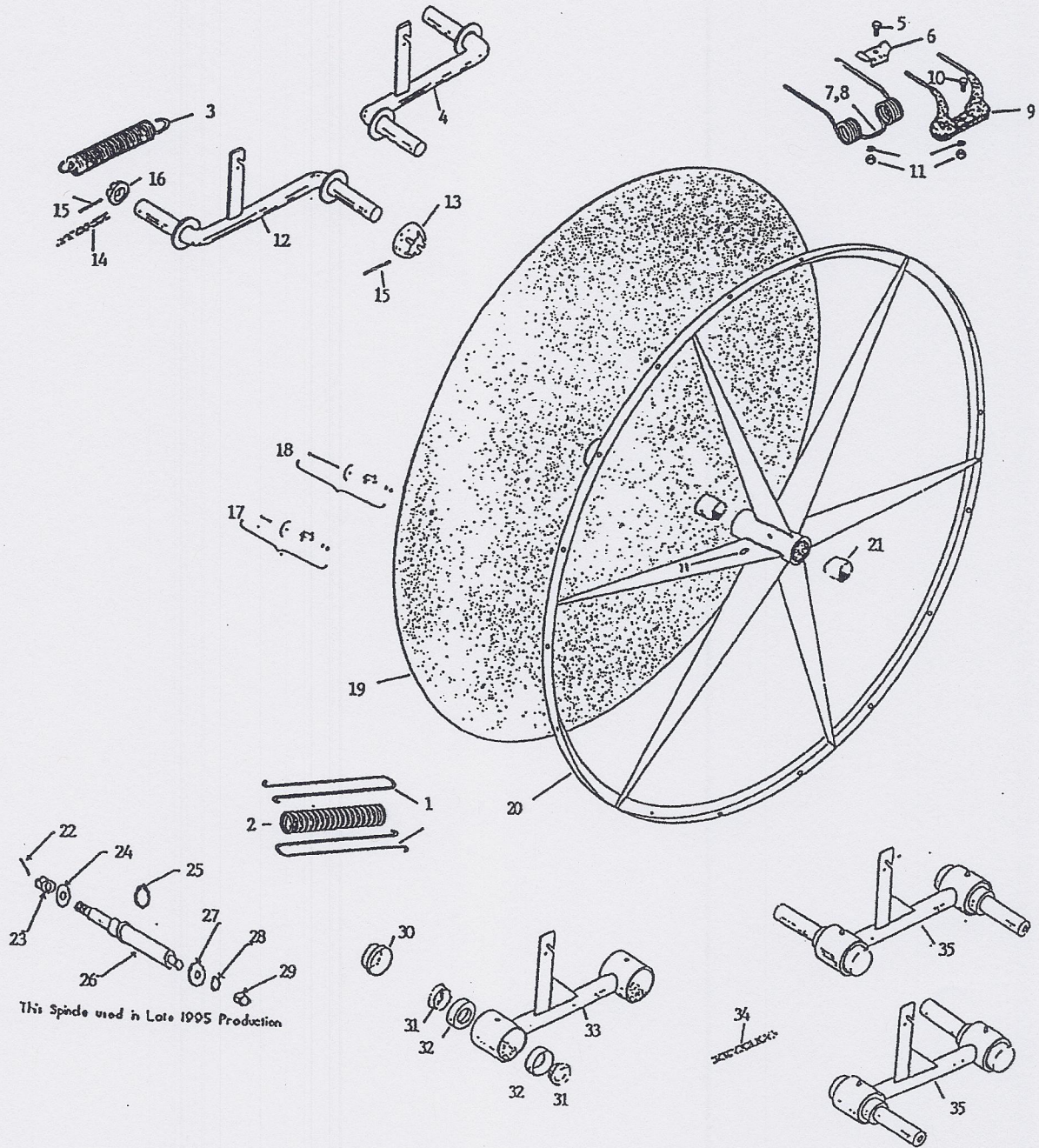
INSTALL WHEEL BOARDS BEFORE INSTALLING TEETH.

INSTALL TEETH USING INSTRUCTIONS ON PREVIOUS PAGE.

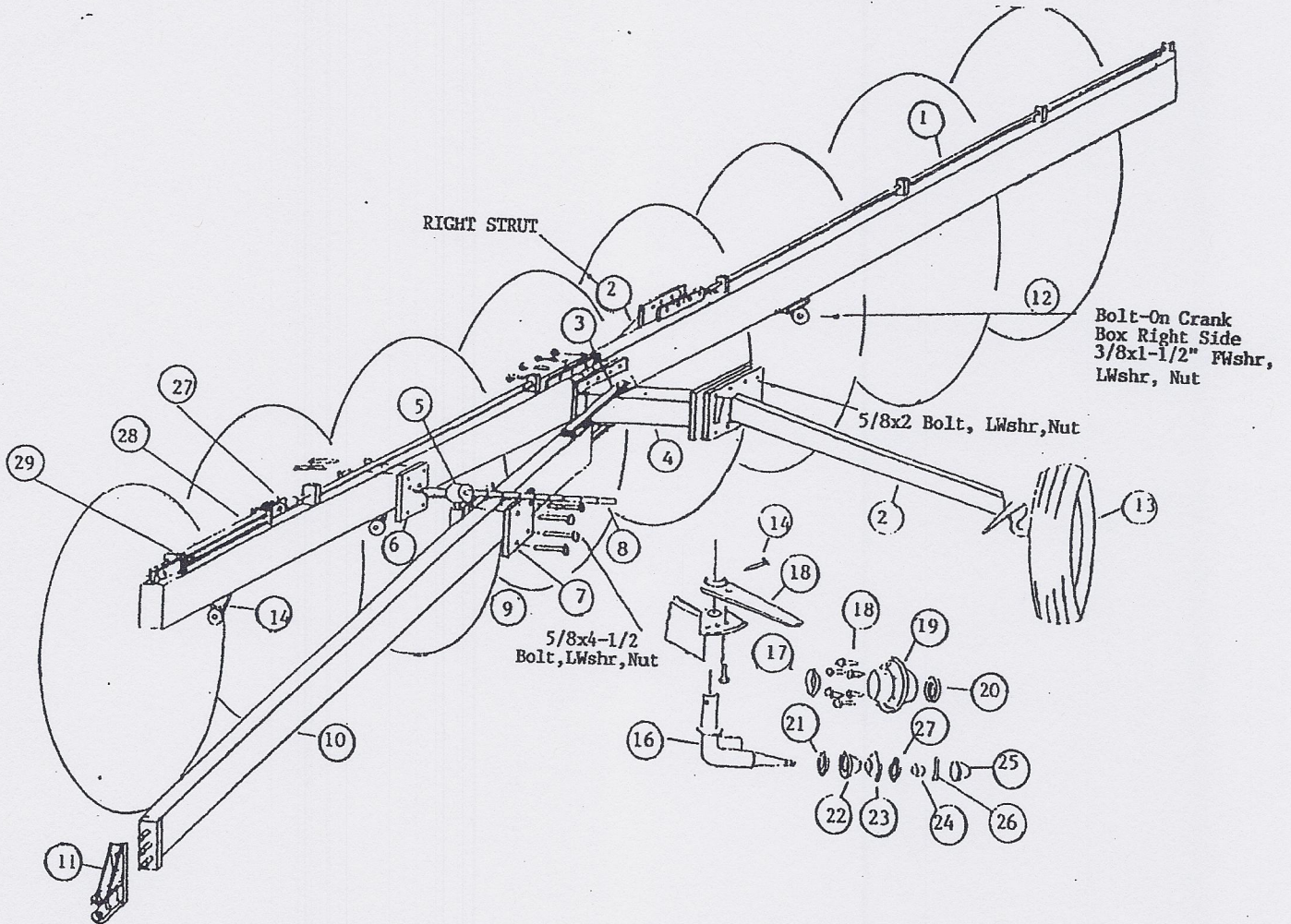
RAKING WHEEL & CRANKS

REF	PART NO.	DESCRIPTION
1	92221A	WIRE FORM
2	92221	COMPRESSION SPRING ONLY
3	92121	EXTENSION SPRING
4	92119L	STANDARD CRANK, LEFT (RED)
5	CSNC06X20	3/8 X 1-1/4" GRD5 NC CAP SCREW
6	92118	STEEL TINE CLIP
7	92117	STEEL TINE, RIGHT (BLACK)
8	92118	STEEL TINE, LEFT (RED)
9	92117RL	RUBBER MTD.TINE, RIGHT OR LEFT
10	92133-01	BOLT, SPECIAL RUBBER MOUNTING
	92133	BOLT/NUT ASSY
11	NUTO6LK	3/8" ALL STEEL LOCK NUT
12	92119	STANDARD CRANK, RIGHT (YELLOW)
13	92107A	WHEEL RETAINER (RED)
14	92122	CHAIN, STANDARD CRANK
15	ROLLP04X48	ROLL PIN
16	92107	CRANK RETAINER, FRAME SIDE (YELLOW)
17	92175	FASTENER ASSY, SHORT SCREW
18	92175A	FASTENER ASSY, LONG SCREW
19	92154C	WHEEL SHIELD (S2S) TEMPERED
20	92114	RAKE WHEEL (all rakes-w/bushing & zerk)
21	92115	bushing (2 per wheel, 4 per walking beam)
22	COT32P	COTTER
23	NUT16NFSLT	SLOTTED AXLE NUT
24	95043	WASHER, HARD
25	95022	SEAL
26	95019	SPINDLE W/NUTS
27	95045	RETAINER (GOLD)
28	95044	INTERNAL LOCK WASHER
29	NUT12NC	HEX NUT 3/4"
30	9041	GREASE CAP
31	9220	BEARING CONE
32	9221	BEARING CUP
33	92219H	SUPPORT SECTION
34	92122A	BEARING CRANK CHAIN (2 PCS-4 & 23 LINKS)
35	95019H00	CRANK KIT KD, ASSEMBLE RIGHT OR LEFT

RAKING WHEEL & CRANKS



PARTS DIAGRAM



PARTS LIST

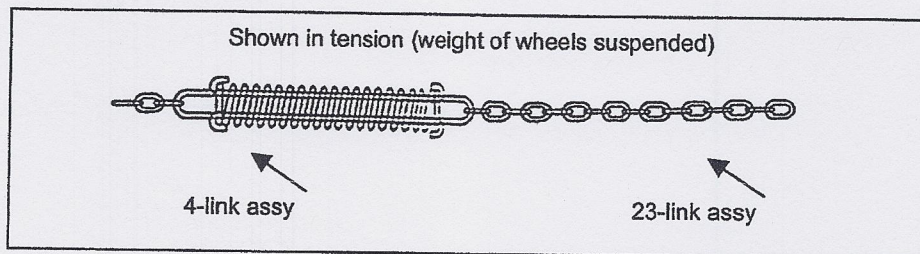
REF	PART NO.	DESCRIPTION
1	9049	TG4 FRAME W/LIFT TUBE
	9050	TG5 FRAME W/LIFT TUBE
	9060	TG6 FRAME W/LIFT TUBE
	9080	TG8 FRAME W/LIFT TUBE
	9100	TG10 FRAME W/LIFT TUBE
2	92185	RIGHT LEG STRUT (2 REGD)
3	92178	1-1/8" PIN
4	9081	TG LEG SPACER
5	9082	OPEN ANGLE CLAMP
6	9083	CLAMP PLATE W/TAB
7	9084	CLAMP PLATE
8	9086	ADJUST ROD
9	9087	CLAMP PLATE W/RECEIVER FOR 9082
10	9085	TG4 THRU 6G8 TONGUE
	9105	TG10 TONGUE
11	92108V1	CLEVIS HITCH
12	92103BR	BELT ON CRANK BOX-RT SIDE
13	92148	6-HOLE 15" WHEEL
14	92189	1/2X2" SPRING PIN
15	92187	ADJ. HANDLE (2 REQD)
16	91346A	SPINDLE
17	9037	BEARING CUP (INNER)
18	9036	1/2" WHEEL BOLT
19	9035	HUB W/CUPS
20	9042	BEARING CUP (OUTER)
21	9038	SEAL
22	9039	BEARING CONE (INNER)
23	9042	BEARING CONE (OUTER)
24	92125	SLOTTED NUT
25	9041	GREASE CAP
26	COT32P	3/32 X 2" COTTER PIN
27	92193	CLEVIS
28	2008ASAE	2/8 HYD. CYLINDER
29	BPC375	HYD. CYLINDER BREATHER

SPRING INSTALLATION

Compression spring (#92121A)
consist of one spring (#92221) and 2 wire forms (#92221A)

Chain will be in two pieces -----

1. Place short chain on one wire form
2. Place long chain on other wire form
3. Feed chain through spring from opposite ends & hook ends of wire forms over coils of spring.
4. Fasten short chain to lift rod or chain hook.
5. Fasten long chain into slot of crank lever. (field adjustment will be necessary)



CRANK INSTALLATION

All cranks can be identified RIGHT or LEFT by observation of chain hook slot. Lay crank on floor and stand behind it with chain hook facing forward.

The leg of the crank in front of chain slot will point to the correct side, RIGHT or LEFT".

Standard cranks are secured to the rake frame using yellow cast washer #92107 and roll pin #92107C.

NOTE: the cast washer can be installed to assure close fit.

Rotate and drive pin through slot that allows best fit without binding. Use the red cast washer #92107A to secure the wheel to crank. The same adjustment can be made at wheel using proper slot in the cast washer.

Bearing cranks for all rakes are secured using 3/4" hex nut, lock washer & heavy washer #95045 at frame and wheel spindles of cranks.

Tighten securely, re-check after 10 hours of running. Check free play of rake wheel bearings after 25 hours. Re-torque to 30fp if necessary. Lubricate by removing, cleaning & repacking annually.

SAFETY PRECAUTIONS



AVOID INJURY OR FATAL ACCIDENTS. READ THESE SAFETY PRECAUTIONS COMPLETELY AND CAREFULLY! UTILIZE THESE INSTRUCTIONS WHEN OPERATING YOUR MACHINE.

This machine is inherently dangerous to children and persons unfamiliar with its operation. The operator should be a responsible adult familiar with farm machinery and trained in this machine's operations. Do not allow persons to operate or assemble this machine until they have read this manual & have developed a thorough understanding of the safety precautions and of how the machine works.

To prevent injury or death, use a tractor equipped with a roll-over protection system (ROPS). Do not paint over, remove or deface any safety or warning decals on your equipment. Observe all decals and practice the instructions on them.

REMEMBER! Your best insurance against accidents is a careful and responsible operator. If there is any portion of this manual or of the machine's operation you do not understand, contact your local authorized dealer.

BEFORE OPERATING

- ** Carefully study and understand your manual.
- ** Give the machine a "once-over" for any loose bolts, worn parts, cracked welds, hydraulic leaks, frayed hoses, etc – make necessary repairs. Follow the Performing Maintenance guidelines.
- ** Be sure the hydraulic lines do not conflict with moving parts.
- ** Be sure the machine is hitched properly to the tractor.

DURING OPERATION

- ** Do not allow others to be careless near this equipment, or to ride in or on it.
- ** Do not clean, lubricate or adjust your equipment while it is running.
- ** Be extra careful on inclines.
- ** Avoid loose fill, rocks & holes; they can be dangerous to the machines operation or movement.
- ** Do not back up with rake wheels lowered to raking position. Tooth breakage may result.
- ** Rake teeth can cause injury. Use special caution when lowering and raising, rake wheels will drop.
- ** Periodically clear machine of hay or other materials to prevent build-up of dry flammable materials.
- ** Always drive at a reasonable speed to maintain control for the situation at hand.

HIGHWAY OPERATION

- ** Comply with your state and local laws governing highway safety and movement of farm machinery on public roads.
- ** Be a safe, courteous operator. Always yield to oncoming traffic in all situations, including narrow bridges, intersections, etc.
- ** Watch for obstructions overhead and to the side while transporting.

PERFORMING MAINTENANCE

- ** Good maintenance is your responsibility. A poorly maintained machine is an invitation to trouble.
- ** Always use proper tools or equipment for the job at hand.
- ** Never use your hands to locate a hydraulic leak. Use a small piece of cardboard or wood. Hydraulic fluid escaping under pressure can penetrate the skin.
- ** Never replace hex bolts with less than Grade 5 bolts, unless otherwise specified.
- ** If the DARF rake is altered or modified from the original design, or if genuine replacement parts or teeth are not used and properly installed, NIKKEL IRON WORKS will not accept any responsibility or liability for injury or warranty.