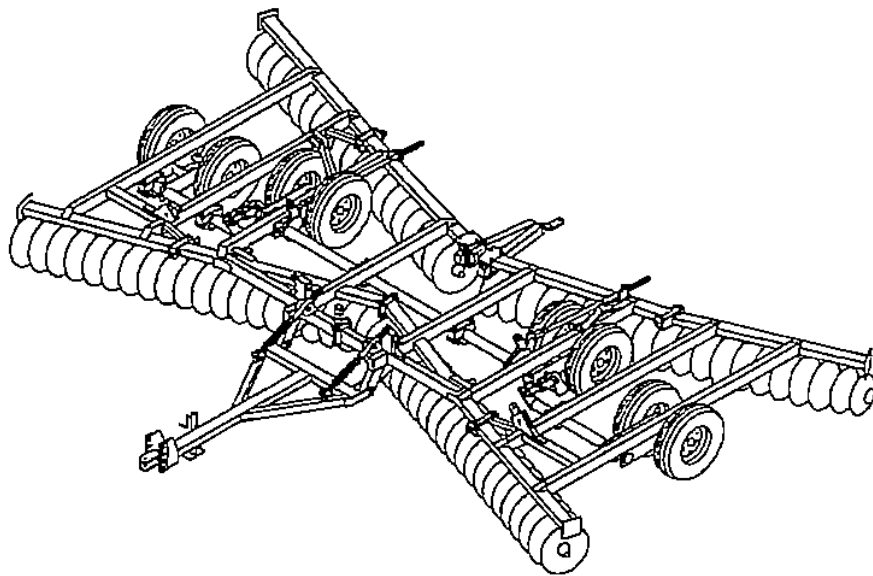




Taylor Pittsburgh Mfg., Inc.
P.O. Box 1866
Athens, TN 37371
423-745-3110

590 Series Flex Wing Tandem Disc Harrow



OWNER'S MANUAL

January 2010

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TO THE DEALER:

The Disc Harrow assembly and proper installation to the tractor is the responsibility of the TAYLOR PITTSBURGH dealer. Read manual instructions and safety rules. Make sure all items on the Pre-delivery and Delivery Check Lists are completed before releasing equipment to the owner.

TO THE OWNER:

Read this manual before operating your TAYLOR PITTSBURGH Disc Harrow. The information presented will prepare you to do a better and safer job. Keep this manual handy for ready reference. Require all operators to read this manual carefully and become acquainted with all the adjustment and operating procedures before attempting to operate. Replacement manuals can be obtained from your dealer or by call 1-423-745-3110, in the USA and CANADA only.

The Disc Harrow you have purchased has been carefully engineered and manufactured to provide dependable and satisfactory use. Like all mechanical products, it will require cleaning and upkeep. Lubricate the unit as specified. Observe all safety information in this manual and safety decals on the Disc Harrow and tractor.

For service, your authorized TAYLOR PITTSBURGH dealer has trained mechanics, genuine TAYLOR PITTSBURGH service parts, and the necessary tools and equipment to handle all your needs.

Provide your model number and serial number to your dealer to obtain correct repair parts.

LIMITED WARRANTY

TAYLOR PITTSBURGH MFG., INC., the manufacturer, warrants only to the Original Purchaser that this equipment, under normal use and service, will be free from defects in material and workmanship for one (1) year from date of purchase providing this equipment is purchased for individual and not for commercial use. Warranty for commercial use is 90 days. This warranty does not apply to any equipment which has been damaged or which has been subjected to abuse, misuse, negligence, abnormal wear and tear, alterations, tampering, or failure to follow operating instructions. This warranty does not cover any product or parts not manufactured by Taylor Pittsburgh Mfg., inc.

Under this warranty, the manufacturer will repair or replace any part which the manufacturer determines has failed during the period of the warranty due to defects in material and workmanship. After approval by the manufacturer, the equipment or defective part must be returned to Taylor Pittsburgh Mfg., Inc., Athens, Tennessee 37371.

PURCHASER'S EXCLUSIVE REMEDY FOR BREACH OF WARRANTY, OTHER DEFECT, OR CONDUCT GIVING RISE TO LIABILITY SHALL BE THE REPAIR OR REPLACEMENT OF THE PRODUCT SOLD, AND THE MANUFACTURER UNDER NO CIRCUMSTANCES SHALL BE LIABLE FOR ECONOMIC LOSS OR INCIDENTAL OR CONSEQUENTIAL DAMAGES, THE MANUFACTURER DISCLAIMS ALL IMPLIED WARRANTIES, INCLUDING THE WARRANTY OF MERCHANTABILITY AND FITNESS FOR PURPOSE.

Taylor Pittsburgh Mfg., Inc., reserves the right to make improvements and changes in specifications without notice or obligation to modify previously sold units.

This manual describes the proper assembly procedures for your seeder / spreader and furnishes operating and maintenance recommendations to help you obtain long and satisfactory service.



SAFETY PRECAUTIONS

The safety of the operator is one of the main concerns in designing and developing a new piece of equipment. Designers build in as many safety features as possible. However, every year many accidents occur which could have been avoided by a few seconds of thought and a more careful approach to handling machinery. You the operator can avoid many accidents by observing the following precautions. To avoid personal injury, study the following precautions and insist that those working with you or for you follow them.

Operating the Tractor/Equipment

- 1) Do not start the engine or operate controls while standing beside the tractor. Always sit in the tractor seat when starting the engine or operating controls.
- 2) Do not allow anyone, except the operator, on the tractor or the implement while the unit is being operated or transported.
- 3) Beware of bystanders while operating the unit.
- 4) Avoid hitting an obstruction, causing personal injury or excessive strain on the tractor or implement.
- 5) Keep hands and feet away from all moving parts.
- 6) Be sure to note all "pinch point" areas of the implement. They are indicated by "pinch point" decals.
- 7) Note all buried wiring, pipes and other obstructions prior to working an area.
- 8) Do not allow children to operate unit and be sure the operator has a thorough understanding of the implement and safety precautions to be followed.
- 9) Use an approved ROPS and seat belt for safe operation. Overturning a tractor without a ROPS can result in death or injury. If your tractor is not equipped with a ROPS and seat belt, see your tractor equipment dealer.
- 10) Always use the seat belt when the ROPS is installed. Do not use the seat belt if the ROPS is not installed.
- 11) Do not operate the tractor engine in an enclosed building without adequate ventilation. Exhaust fumes can cause death.
- 12) Pull only from the swinging drawbar or the lower link drawbar in the down position. Use only a drawbar pin that locks in place. Pulling from the tractor rear axle or any point above the axle may cause the tractor to upset.
- 13) If the front end of the tractor tends to rise when heavy implements are attached to the three-point hitch, install front end or front wheel weights. Do not operate the tractor with a light front end.

14) Drive the tractor with care and at speeds compatible with safety, especially when operating over rough ground, crossing ditches or slopes, or when making turns to prevent overturning.

15) Use the flasher/turn signal lights and SMV emblem when traveling on public roads both day and night. Check local laws regarding transport on public roads.

16) Do not park tractor on a steep slope.

17) Do not get off tractor when it is in motion.

18) Before dismounting from the tractor seat, shut off tractor engine, lock tractor brakes, and lower the implement to the ground.

19) Do not leave equipment in the raised position.

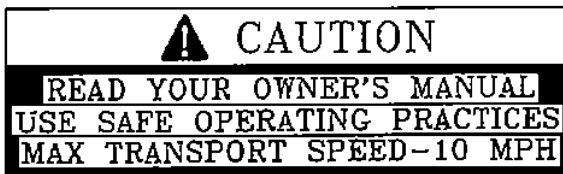
Maintenance

- 1) Keep shields in place at all times.
- 2) Keep safety decals clean and intact. Replace illegible or missing decals.
- 3) When working on the implement in the raised position, **BLOCK IT SECURELY**. Do not work under the implement when supported only by the tractor hydraulic system.
- 4) Do not smoke when refueling the tractor. Keep any type of open flame away. Wait for engine to cool before refueling.
- 5) Keep open flame away from battery or cold weather starting aids to prevent fires or explosions. Use jumper cables according to instructions to prevent sparks which could cause explosion.
- 6) Use caution when working around sharp objects such as discs, blades, tines, etc.
- 7) Do not modify equipment in any way. Modification will void the manufacturer warranty.
- 8) Do not bypass the safety start switch. Consult your dealer if your safety start controls malfunction.



DECAL LOCATIONS

The following safety decals are located on your implement. Read them and follow their instructions for your safety. Keep all decals in place and legible. Replace worn or missing decals. Free replacement safety decals are available through your dealer. Order by number listed.



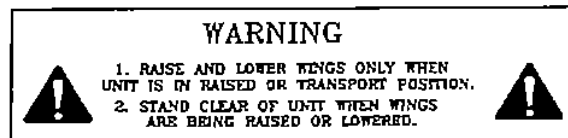
009537 center of main frame in front



029775 center of main frame in front



605176 front of main frame



605177 front of main frame



029772 hydraulic cylinder mount points

INTRODUCTION

This manual covers the assembly, operation, and maintenance of your Series 590 Disc Harrow. Studying and obeying these instructions will insure optimum product performance and longevity. Be sure to read all instructions carefully. Read all safety precautions prior to operation.

Maintain your implement with original repair parts to insure safety and optimum performance.

MODIFICATIONS

It is the policy of the manufacturer to improve its products whenever possible and practical. We reserve the right to make changes, improvements, and modifications at any time without incurring the obligation to make such changes, improvements, and modifications on any implement sold previously.

ASSEMBLY

General

Your Series 590 Disc Harrow is shipped in bundles for assembly. Remove all wiring from bundles as they are called for. Choose a level area to arrange the parts conveniently. Assemble parts for each step loosely to insure fit. Use flatwashers with slotted holes. Always use lockwashers unless a lock nut is called for. Tighten hardware after parts are installed according to the torque chart given. Unless otherwise stated, all hardware is grade 5.



TORQUE IN FOOT POUNDS

BOLT DIA.	3/8	1/2	5/8	3/4	7/8	1
HEX HEAD	9/16	3/4	15/16	1-1/8	1-5/16	1-1/2
UNC						
C 2	18	45	89	160	252	320
A 5	30	88	140	240	360	544
B 8	40	100	196	340	528	792
UNF						
C 2	21	51	102	178	272	368
A 5	32	70	168	264	392	572
B 8	48	112	216	368	792	840

TORQUE CHART

ware is grade 5. The following assembly steps are given to minimize the need for adjustment after assembly. Remember that LEFT and RIGHT are determined by standing at the rear of the implement and facing it.

Main Frame refer to fig. 1

- 1) Position left main frame on supports.
- 2) Remove bolts from right main frame.
- 3) Position right main frame on supports aligned with left main frame.
- 4) Reinstall hardware removed in step 2, except top two bolts on front center plate.

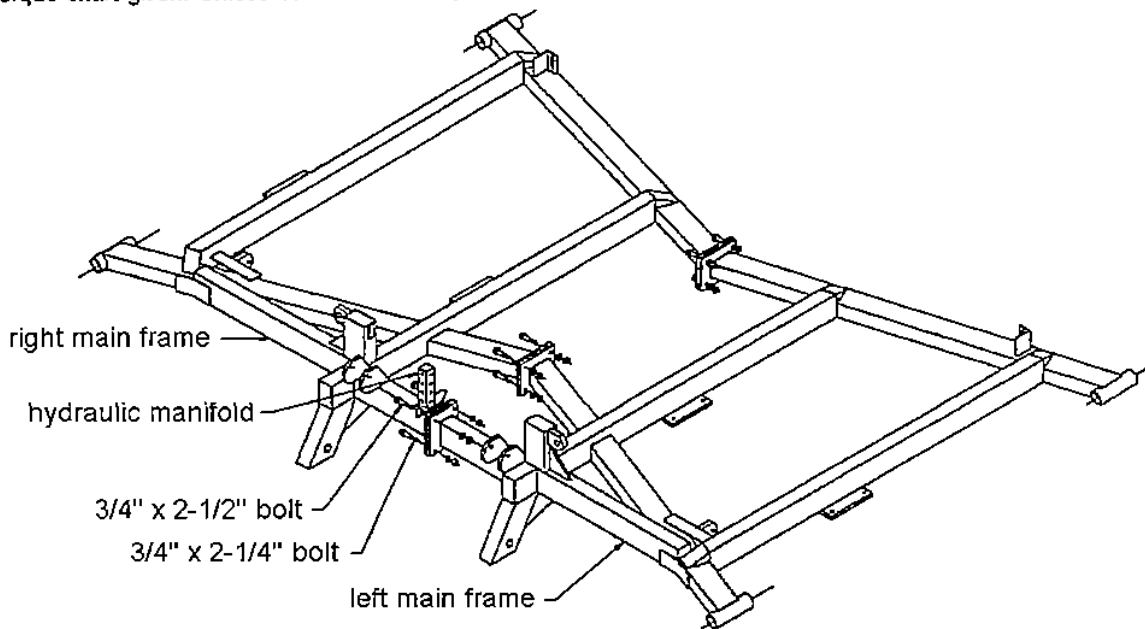


FIGURE 1 - MAIN FRAME ASSEMBLY

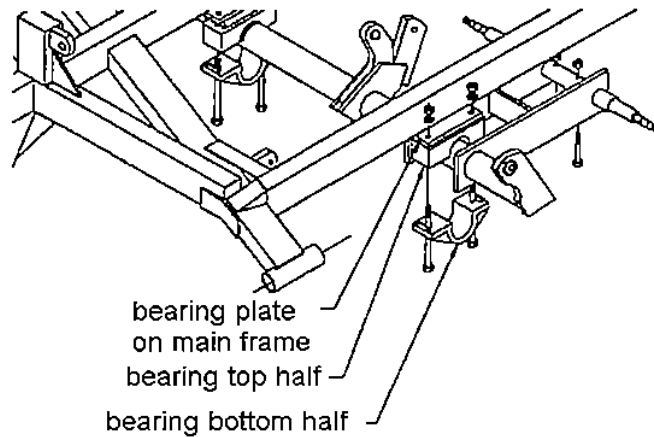


FIGURE 2 - WHEEL LIFT ASSEMBLY

5) Align hydraulic manifold with top two bolt holes in front center plate with ports facing to the front. Reinstall hardware and tighten.

Main Frame Wheel Lift refer to fig. 2

1) Position wheel lift under main frame wheel lift bearing plates with the wheel hubs toward the rear of the unit and the hydraulic cylinder brackets up.

2) Remove bolts connecting bearings to wheel lift. Align wheel lift with bearing plates on main frame.

3) Position top halves of bearings on wheel lift with alemites toward the front. Lift axle up to frame with bearings against bearing plates as shown. Replace bearing cap and bolts. Tighten hardware after wheel lift is correctly positioned.

4) Mount wheels to hubs. Be sure to tighten all lug bolts.

Tongue Assembly refer to fig. 3

1) Align tongue with connectors on main frame making sure spring rod mounts are up. Attach tongue to frame using pins provided. Secure with cotter pins.

2) Install jack stand and use to support tongue.

3) Attach spring rod assemblies to the tongue with the pins provided. Secure with cotter pins.

4) Remove the shoulder bolts from the slide assemblies and rotate the slides so the alemites are up.

5) Insert the slide assemblies into the brackets on the front of the main frame. Align the holes in the slide assemblies with the holes in the brackets. This can be done by rotating the nuts on the spring rod and by adjusting tongue height with the jack stand.

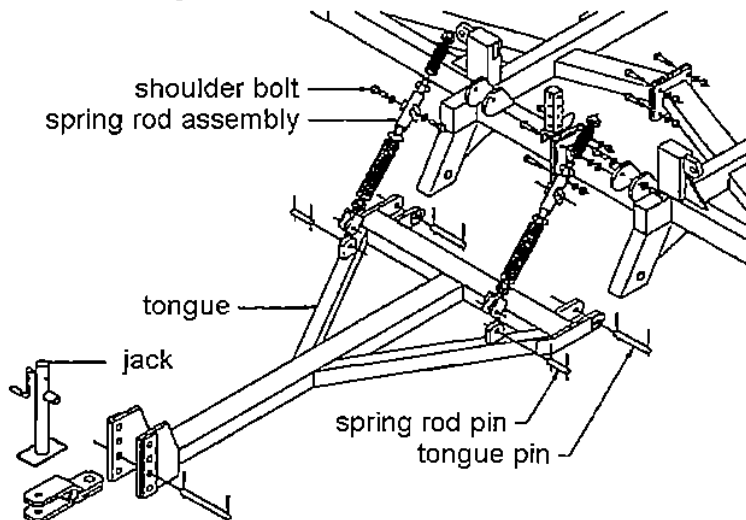


FIGURE 3 - TONGUE ASSEMBLY

6) Insert the shoulder bolts with lockwashers into the brackets and tighten.

7) At this point, if a tractor with hydraulic lift is available, the implement can be raised off its supports. This will allow height adjustment of the unit to aid in assembly. If so desired, install lift cylinders and lines at this time. See **Hydraulic Circuit Assembly**.

8) At this time, proceed to **Gang Assembly** to mount the gangs and scrapers to the main frame. Afterwards, proceed to **Wing Extensions**.

Depth Control Assembly refer to fig. 4

1) Remove pin and depth control cuff from the two depth gauge bars.

2) Slide the end of each bar through the cuff on the rear of the main frame and pin the clevis end of each bar to the wheel lift arm on the main frame wheel lift as shown.

3) Replace the depth cuff behind the bracket on the main frame.

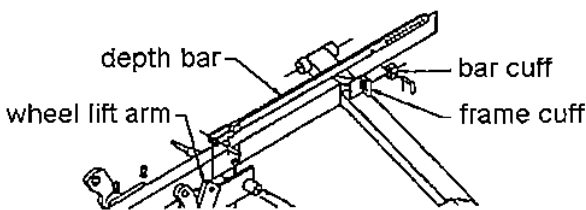


FIGURE 4 - DEPTH CONTROL ASSEMBLY

Wing Extensions refer to fig. 5

If your unit does not have wing extensions, proceed to the next section.

1) Remove hardware from extensions.

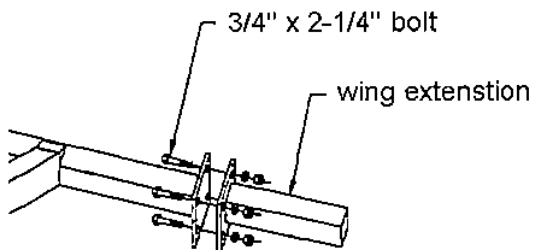


FIGURE 5 - WING EXTENSION ASSEMBLY

2) Align extensions with plates on outside corners of wings. Replace hardware and tighten.

Wing Assembly refer to fig. 6

1) Position left hand wing with long gang frame to the rear. Align hinge clevis with tube on main frame.

2) Remove pins from wing hinges.

3) Align wing with main frame to allow connection. Insert pins from the outside to lock against keys and secure with cotter pin.

4) Repeat procedure for right hand wing.

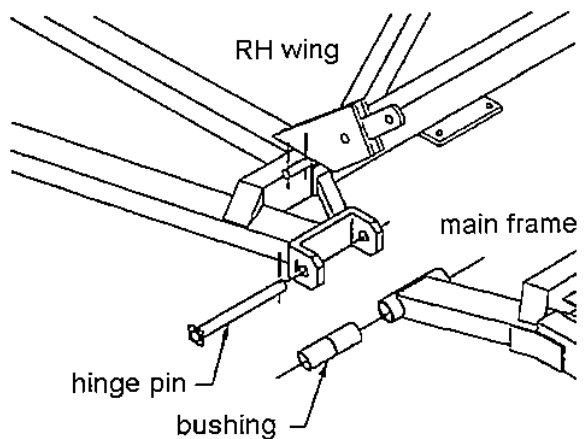


FIGURE 6 - WING HINGE ASSEMBLY

Wing Wheel Lift Assembly

1) Slide the wing wheel lift assemblies under wings with hub to the outside. On large wing units, axles have two hubs.

2) Bolt wheel lifts to wings using same procedure as that of the main frame.

3) Mount wheels to hubs making sure to tighten all lug nuts in an alternating pattern.

Wheel Lift Connectors refer to fig. 7

The wheel lift connectors are located on the wing axles.

1) Make sure harrow is level across the frame including the wings.

2) Remove the pin from the free end of the connector. Adjust the connector to align clevis with hole in wing bracket. Insert pin and secure with cotter pins.

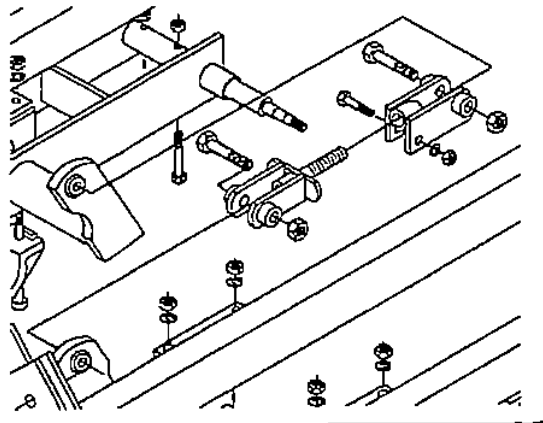


FIGURE 7 - WHEEL LIFT CONN. ASSEMBLY

GANG ASSEMBLY

CAUTION: Wear heavy gloves and boots when handling gangs to avoid injury. Blades are extremely sharp.

General

- Find the gang layout diagram for your model. Use this diagram to determine the positions of the gang assemblies.
- To help determine gang positions, remember that the scrapers go to the rear. This means that the scraper brackets must point toward the rear when the gang is correctly positioned. Also remember that the rear gang blades are cupped to the inside and the front gang blades are cupped to the outside.
- The two outside front gangs are those with one outside blade 2" smaller than the rest. The two outside rear gangs are those with two outside blades smaller than the rest, 1-2", & 1-4". Locate these gangs first.
- Attach all front gangs starting from the center and working outward. Bring the center two gangs in as close as possible to each other to eliminate balk. Be sure these gangs are evenly positioned on main frame. When attaching consecutive gangs, space them 8" or 9" from each other depending on disk spacing. Tighten all hardware as each gang is installed.

- Position the two inside rear gangs centered on the main frame with about 18" between the two inside blades at the closest point. Tighten all hardware as each gang is installed.

Conventional Rigid Hanger Gangs:

The top of the rigid hanger should point to the rear of the unit when the gang is correctly positioned.

- 1) Remove U-bolts from top of hangers.
- 2) Align gang with gang tube and raise into position.
- 3) Replace U-bolts over gang tube and secure with lockwashers and nuts.

Delta Rigid Hanger Gangs:

The delta hangers have a tab on one side for mounting the scrapers. This tab should be to the rear when the gang is correctly positioned.

- 1) Remove the two bolts and top strap from the hangers.
- 2) Position the gang with the hangers against the gang tube. Place the top straps over the hangers on top of the gang tube.
- 3) Replace the hardware and tighten.

Spring Hanger Gangs:

The scraper bracket located within the spring hanger should point to the rear when the gang is correctly positioned.

- 1) Remove the single bolt from each hanger and loosen U-bolt but do not remove.
- 2) Slide gang onto gang tube with thick plate on top and thin plate on bottom between gang tube and hanger. Replace bolt in hanger.

Scrapers

The scrapers bolt to the hangers so that the scraper blades point into the cupped side of the disc blades. With the exception of the inside rear and outside front blades, all of the disc blades get scrapers.

- 1) Lay each scraper bundle with the top leg of the scraper bar pointing down. With the scraper bundles positioned this way, stand on the scraper side of each bundle and note the direction the scrapers point. If the scrapers point to the LEFT, the bundle is a RIGHT HAND assembly and is used on a right front or left rear

gang. If the scrapers point to the RIGHT, the bundle is a LEFT HAND assembly and is used on a left front or right rear gang.

2) Separate all of the scraper bundles as described in step 1, and pair up each scraper bundle with a disc gang. Keep in mind that the inside rear blades do not get a scraper and the outside front blades do not get a scraper.

3) With all of the scraper bundles correctly positioned, bolt them to the disc gangs using the hardware included with each bundle. Slide the scrapers within the slotted holes so the blades nearly touch the disc blades. Tighten hardware.

Hydraulic Circuit Assembly refer to fig. 8
General:

- When installing hydraulic lines, note that only one end swivels, therefore always connect the non-swivel end first.
- Always use a thread sealant when connecting fittings and lines to prevent leaks.
- Do not over tighten fittings.

Installing Cylinders:

1) Connect the base end of the two 4x8 hydraulic cylinders to the brackets on the main frame. Be sure the hydraulic line ports are positioned to the inside.

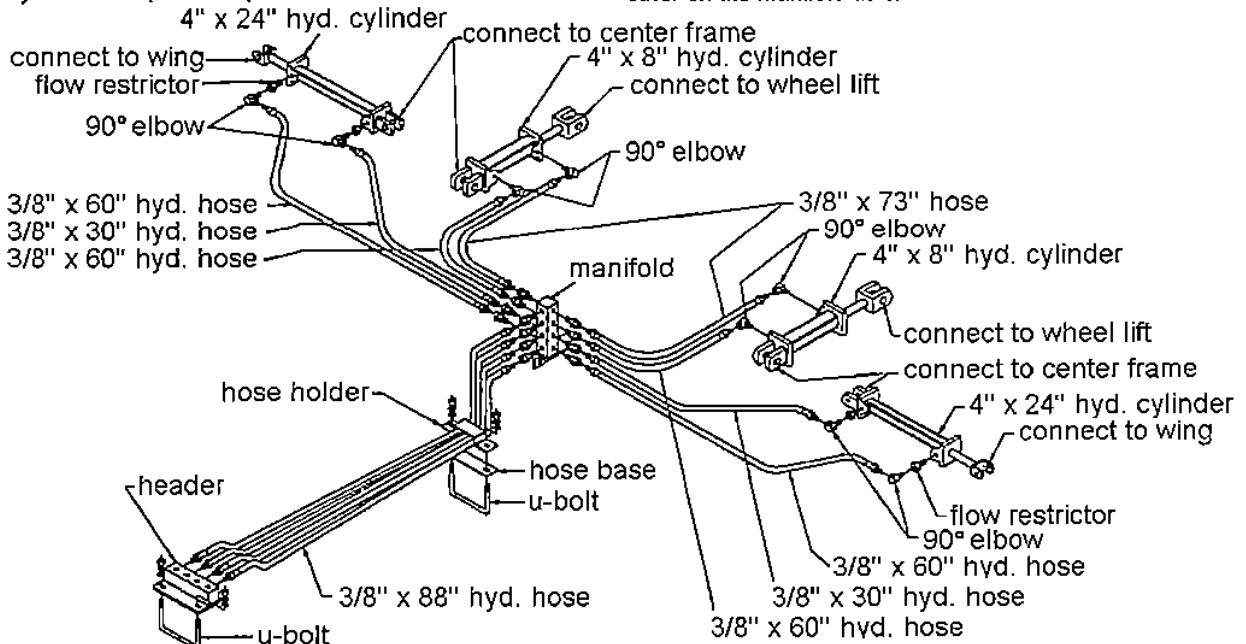


FIGURE 8 - HYDRAULIC CIRCUIT ASSEMBLY

2) Remove the plugs from the two line ports to allow extension of the cylinder rods.

3) Connect the rod end of each cylinder to the brackets on the wheel lift.

4) Connect the base of the two 4x24 cylinders to the brackets on the main frame. Be sure to position the line ports to the front of the unit.

5) Extend cylinder and connect to bracket on wing.

NOTE: Flow restrictors should already be installed in at least one of the line ports. If not, see your dealer about getting flow restrictors for these cylinders.

WARNING: Without flow restrictors in wing cylinders, the wings will drop rapidly when lowered and could cause serious injury and damage to the unit.

6) Install 90 elbows in both ports of the wheel lift cylinders. Tighten with ends pointing forward.

7) Install 90 elbows in the wing lift cylinders. Tighten with ends pointing to the inside.

Installing Lines:

When connecting lines from the cylinders to the manifold, be sure common lines are paired opposite each other on the manifold as shown.

- 1) Separate the lines by length.
- 2) Connect a 30" line from the base end of each wing cylinder to the top hole in the side of the manifold as shown.
- 3) Connect a 60" line from the cylinder port of each wing cylinder to the second hole from top in the manifold.
- 4) Connect a 60" line from the base end of each transport cylinder to the bottom hole in the manifold.
- 5) Connect a 73" line from the cylinder port of each transport cylinder to the second hole from bottom in the manifold.
- 6) Connect four 88" lines from the frame manifold to the tongue header on the front of the tongue. Connect the first line from the top port in the manifold to the far right hand port in the header. Connect the next line from the port second from top to the header port second from far right and so forth. Anchor the lines to the tongue using the clamp assembly provided to keep them from twisting.

BEFORE OPERATION

- 1) Tighten all loose hardware using the torque chart. **SEE ASSEMBLY.** Replace any missing hardware. On new machines, all hardware must be rechecked after first few hours of operation.
- 2) Replace any bent or broken parts.
- 3) Perform lubrication on implement as recommended. **SEE MAINTENANCE.**
- 4) Refer to your Tractor's Owner's Manual for recommended adjustments and weight distribution.
- 5) Inspect hydraulic lines and fittings for wear and leaks. Repair or replace if needed.

CAUTION: Check for small high pressure leaks by passing a piece of cardboard or wood over lines rather than hands. High pressure oil can penetrate skin and can only be removed surgically.

- 6) Read the SAFETY section of this manual to be sure of all precautions.

ATTACHING

Your harrow is equipped with a reversible clevis that can be used with a single or double drawbar.

- 1) With the tongue parallel to the ground in the operating position, position the clevis at the same height as the tractor drawbar.
- 2) Attach the harrow to the tractor using a suitable hitch pin and secure with a halpin clip.
- 3) Connect hydraulic lines to tractor. (Lines running from header to tractor are not supplied.)

OPERATION

First Time Out

- 1) Start tractor engine and slowly lift harrow.

CAUTION: Perform all tractor operations only while seated in the tractor seat. Do not stand beside tractor.

- 2) Watch fittings for leaks. If leaks are noticed, shut off tractor, relieve pressure from hydraulic lines, and make repairs before proceeding.
 - 3) Check movement of wheel lift to be sure there is no interference.
 - 4) Move wheel lift through full range of motion several times to purge air from system.
 - 5) Slowly lift each wing to transport position.
- CAUTION: Be sure all bystanders are clear before lifting wings. Do not walk under raised wings for any reason.**
- 6) Again check for leaks and make necessary repairs before proceeding.
 - 7) Lift and lower wings several times to purge air from lines.
 - 8) After hydraulic system is fully charged, check the level of the tractor's fluid reservoir and refill.

ADJUSTMENTS

Wing Leveling

The wings on your harrow will have the tendency to fold down in operation. Adjust the wings according to your soil conditions and preference. To adjust the wings, shorten the wheel lift connector to raise the position of the wing or lengthen it to lower the position of the wing. Several adjustments may be needed to obtain the desired results.

Front to Rear Leveling

To level the harrow from front to rear, use the spring rods on the tongue.

1) Loosen the top 1 3/8" nut so that no pressure is on the top spring when the harrow is down in operating position. Raise the harrow to transport position to allow easier adjustment of the bottom spring.

2) With the top spring loose, tighten the bottom spring to increase the plowing depth of the rear gangs. To decrease the cutting depth of the rear gangs, loosen the bottom spring by screwing down on the hex nut.

3) After the cutting depth has been adjusted, lift the harrow to its transport position. Tighten the top spring by screwing down on the nut located above the spring until the harrow is approximately level.

Wing Float

The wing can be adjusted to have more floating action in either the up or down direction. For more float in the down direction, screw the clevis on the wing cylinder in. Screw the clevis out for more float in the up direction. Remember that by adjusting for more float in one direction, you give up float in the opposite direction.

Eliminating Balk

Balk is caused by having too much space between the inside front disc blades.

1) Loosen the hardware holding the front gangs to the frame.

2) Slide the inside gangs inward until the butt plates on the inside gangs are touching. Tighten the inside gangs to the frame making sure they are centered on the main frame.

3) Adjust the other gangs in so that correct disc spacing is maintained between the gangs. (8" or 9").

4) Tighten gangs to frame.

If this adjustment does not solve the problem, see about installing a balk breaker attachment.

Adjusting for Ridging and Furrowing

If front to rear leveling does not eliminate the ridge or furrow in the center of the cut, the position of the rear gangs must be adjusted.

1) Loosen the hardware holding the rear gangs to the frame.

2) Move all of the rear gang assemblies out if the harrow is leaving a ridge. If the harrow is not filling up the furrow left by the center of the front gangs, move all of the gangs in toward the center of the unit.

3) Make sure all gangs are moved the same distance in relation to the center. Maintain proper disk spacing between adjacent gangs (8" or 9").

4) Operating speed will affect these adjustments so make adjustments according to the desired operating speed.

Depth of Cut

The depth of cut is controlled by the two transport lift cylinders or by using the depth bars.

1) To use the depth bars, slide the cuff on the depth bar back to increase operating depth and forward to decrease operating depth. Be sure the cuffs are set at the same position. "Half hole" adjustment of the cuff is possible by turning it around and returning it to the same hole.

2) With the cuffs in the desired position, lower the unit until the frame engages the cuffs.

CAUTION: Never locate the cuff in front of the bracket through which the bar slides.

TRANSPORTING

1) Lift harrow as high as possible. Move cuffs on depth bar as far forward as possible. Lower unit to rest on cuffs.

2) Fold wings up into wing stops. Insert transport pin in each wing stop and secure with hairpin clip.

3) Level harrow using top spring on spring rods. See "Front to Rear" Leveling under Adjustments.

4) Transport at no more than 10 mph. Use caution on rough terrain.

5) Check local laws governing transport of farm equipment on public roads.

6) Use caution and be aware of oncoming traffic and roadside obstructions.

7) Always use a slow moving vehicle (SMV) emblem. Mount it to the bracket at the rear of the center frame.

8) DO NOT transport on public roads at night.

MAINTENANCE

Tightening Disk Axles

The disk axles are torqued at the factory and do not require further tightening before use. After the first few hours of operation, the gang components will "seat" themselves which tends to loosen the axles. After this initial run-in period, the disk axle should be checked and retorqued if necessary to a minimum of 1000 ft.-lbs.

To check the tightness of the gang axle, raise the unit off the ground, and strike each blade lightly with a hammer. If a flat sound is heard, the blade is loose and the gang axle must be retorqued. A ringing sound indicates the blade is tight.

After this check, the axles should not require tightening unless the axle nut is removed.

Wheel Hubs

After initial use check wheel hubs for excessive play on spindle. If necessary tighten bearing adjustment nut to eliminate lateral movement on spindle while still allowing hub rotation.

Before Each Use

- 1) Check tires for proper inflation.
- 2) Check over entire implement for missing or worn parts. Make necessary repairs before going to the field.
- 3) Check to see that all hardware is in place and tight.
- 4) Check disc gangs to see that they rotate freely.
- 5) Perform lubrication as described in "LUBRICATION".

6) Check hydraulic system for leaks. Check lines for high pressure pinhole leaks by passing an object over the lines.

CAUTION: Do not use bare hand to check for leaks. Hydraulic fluid under high pressure can penetrate skin and cause poisoning.

Lubrication Schedule

1) Apply grease to the following lubrication points before each use. Be sure to clean grease fittings before applying grease.

- wing hinges
- spring rods
- wheel axle couplers
- disc gang bearings
- wheel lift bearings

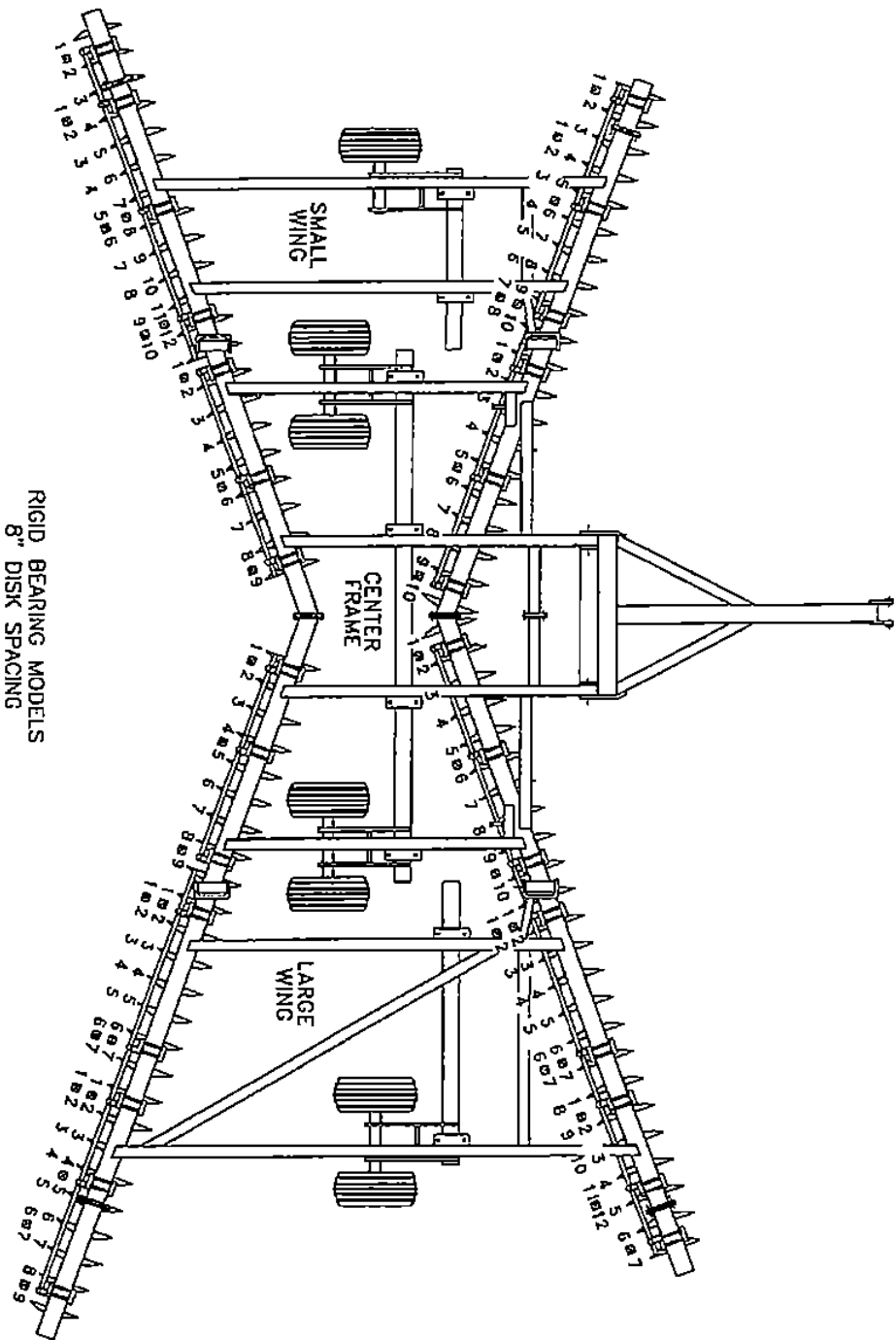
2) Clean wheel hubs at the end of each season. Repack with grease and assemble. Be sure to tighten bearing adjustment nut so hub turns freely without lateral movement on spindle.

STORAGE

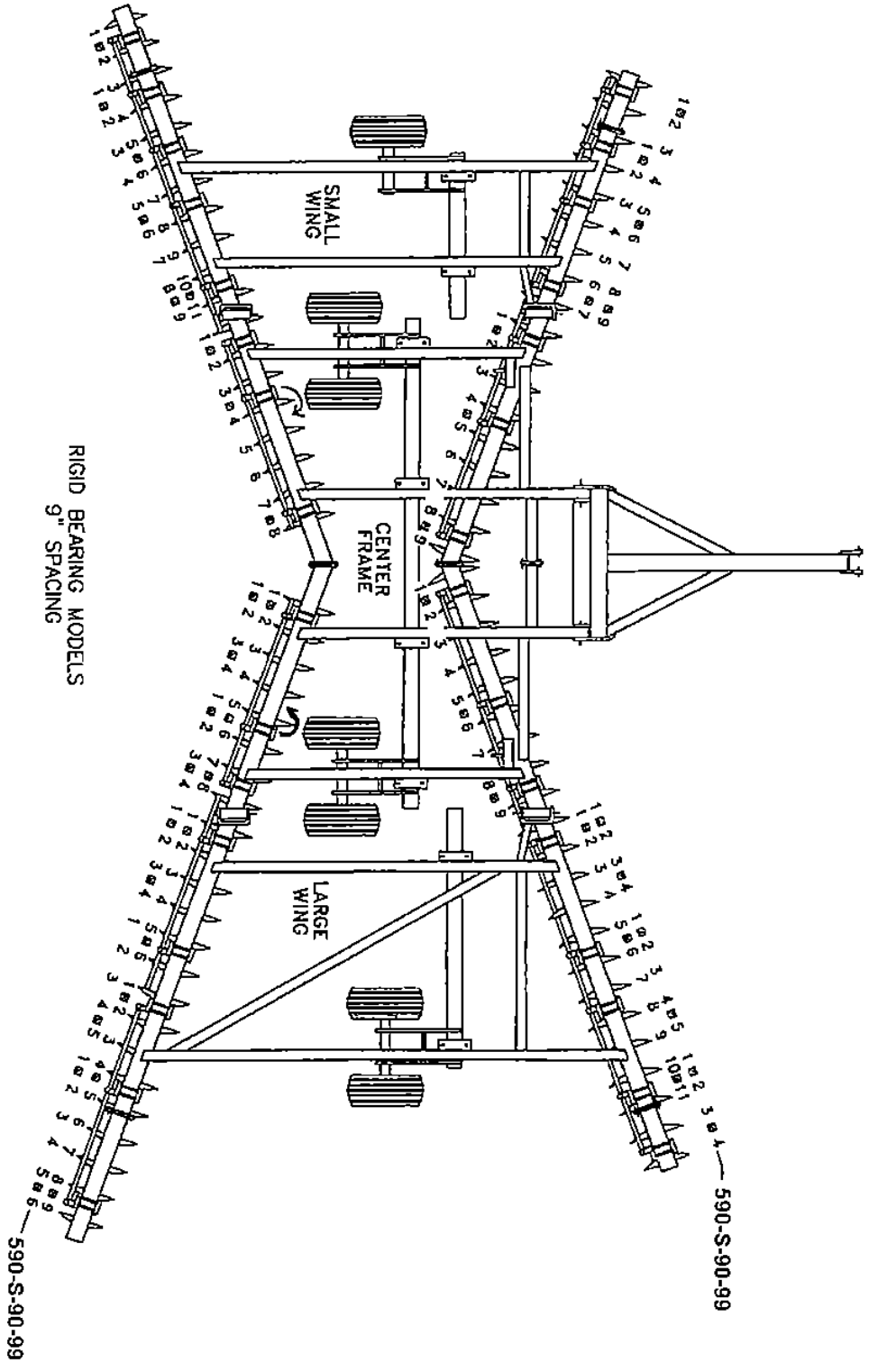
- 1) Store unit under shelter from weather.
- 2) With wings locked in storage position, lower harrow to relieve weight from transport cylinders.
- 3) Support tongue with stand to relieve weight from drawbar.
- 4) Relieve pressure from hydraulic lines before disconnecting from tractor.
- 5) For periods of long storage, coat disk blades and other soil engaging surfaces with oil to prevent rusting.

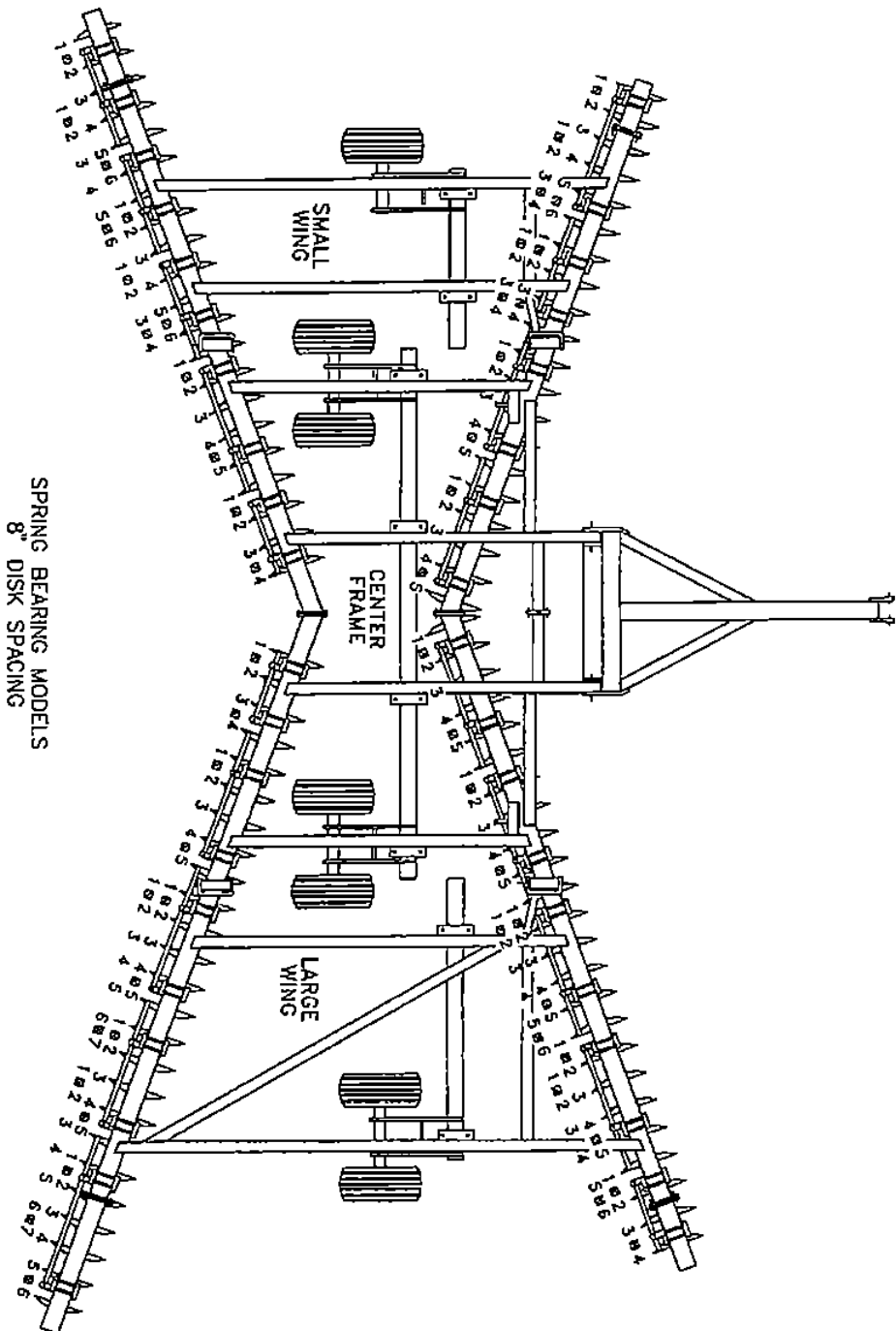
SPRING & RIGID (Delta) TYPE MODEL SPECIFICATIONS						
rigid brg. model no.	spring brg. model no.	no. of disks	approx. weight rigid brg. (lbs.)	approx. weight sprg brg. (lbs.)	disk spacing	D.B.H.P. reqmt.
		74 (36F,38R)	7460	7855	8"	140
		82 (40F,42R)	7935	8380	8"	160
		90 (44F,46R)	8610	9000	8"	180
		98 (48F,50R)	9165	9655	8"	200
		66 (32F,34R)	7375	7850	9"	140
		74 (36F,38R)	7900	8515	9"	160
		82 (40F,42R)	8510	9120	9"	180
590-S-90-99	590-F-90-99	90 (44F,46R)	8920	9600	9"	200
		70 (32F,38R)	7445	7920	9°F,8°R	140
		78 (36F,42R)	7960	8575	9°F,8°R	160
		86 (40F,46R)	8495	9035	9°F,8°R	180
		94 (44F,50R)	8985	9665	9°F,8°R	200

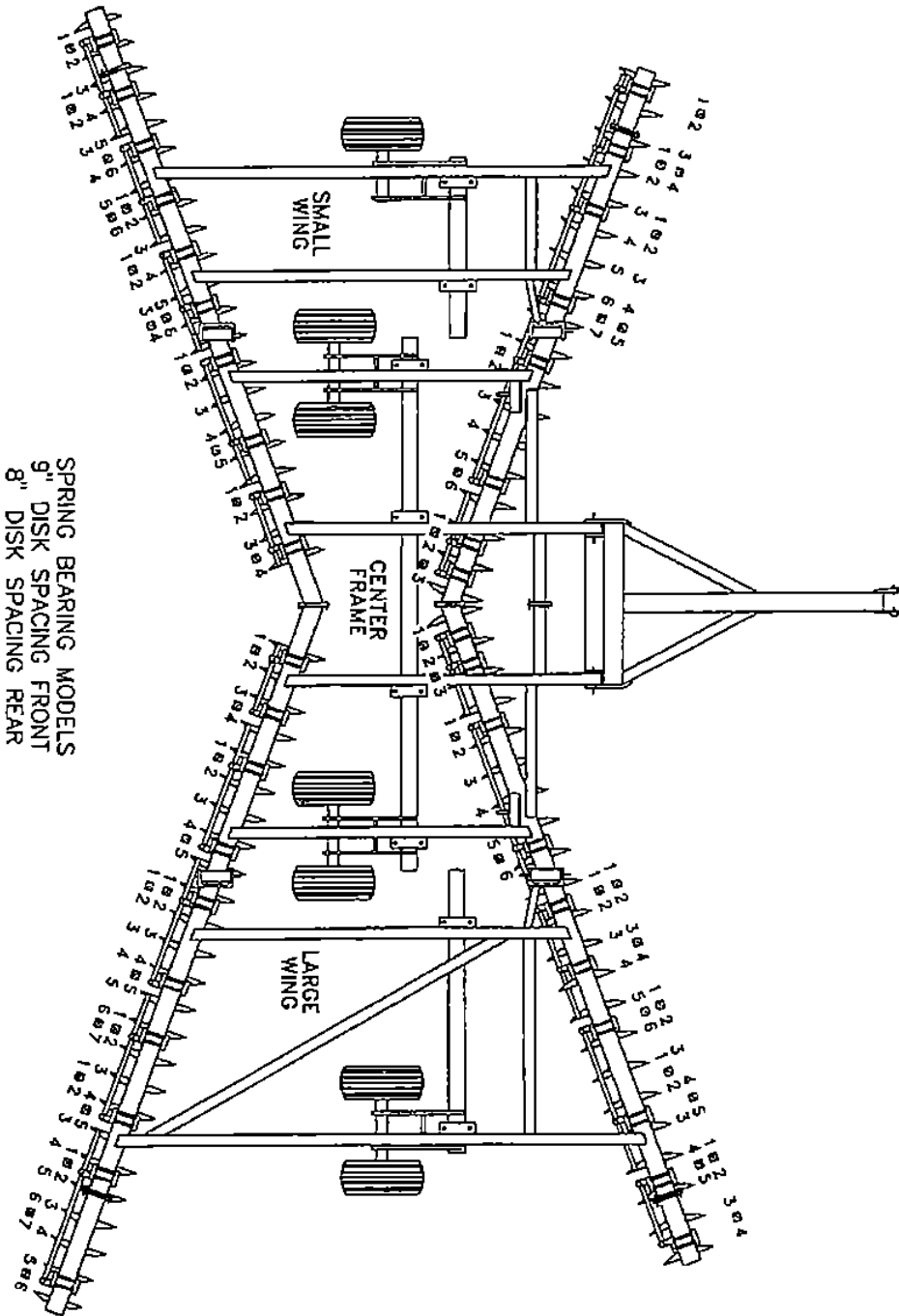
MISCELLANEOUS HARDWARE BY SIZE				
Size	Part Number By Item			
	lockwasher	flatwasher	regular hex nut	locknut
1/4"	303951	-	304003	-
5/16"	303952	303968	304004	-
3/8"	303953	303969	304005	304018
7/16"	303954	303970	304006	304019
1/2"	303955	303971	304007	304020
5/8"	303956	303972	304008	304021
3/4"	303957	303973	304009	304022
7/8"	303958	303974	304010	304023
1"	303959	303975	304011	304024
1 1/8"	303960	303976	304012	304025
1 1/4"	303961	303977	304013	304026



RIGID BEARING MODELS
8" DISK SPACING







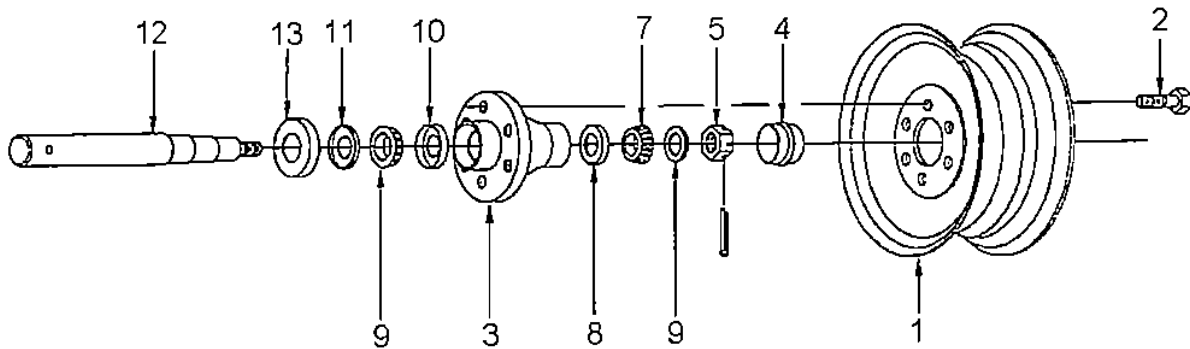
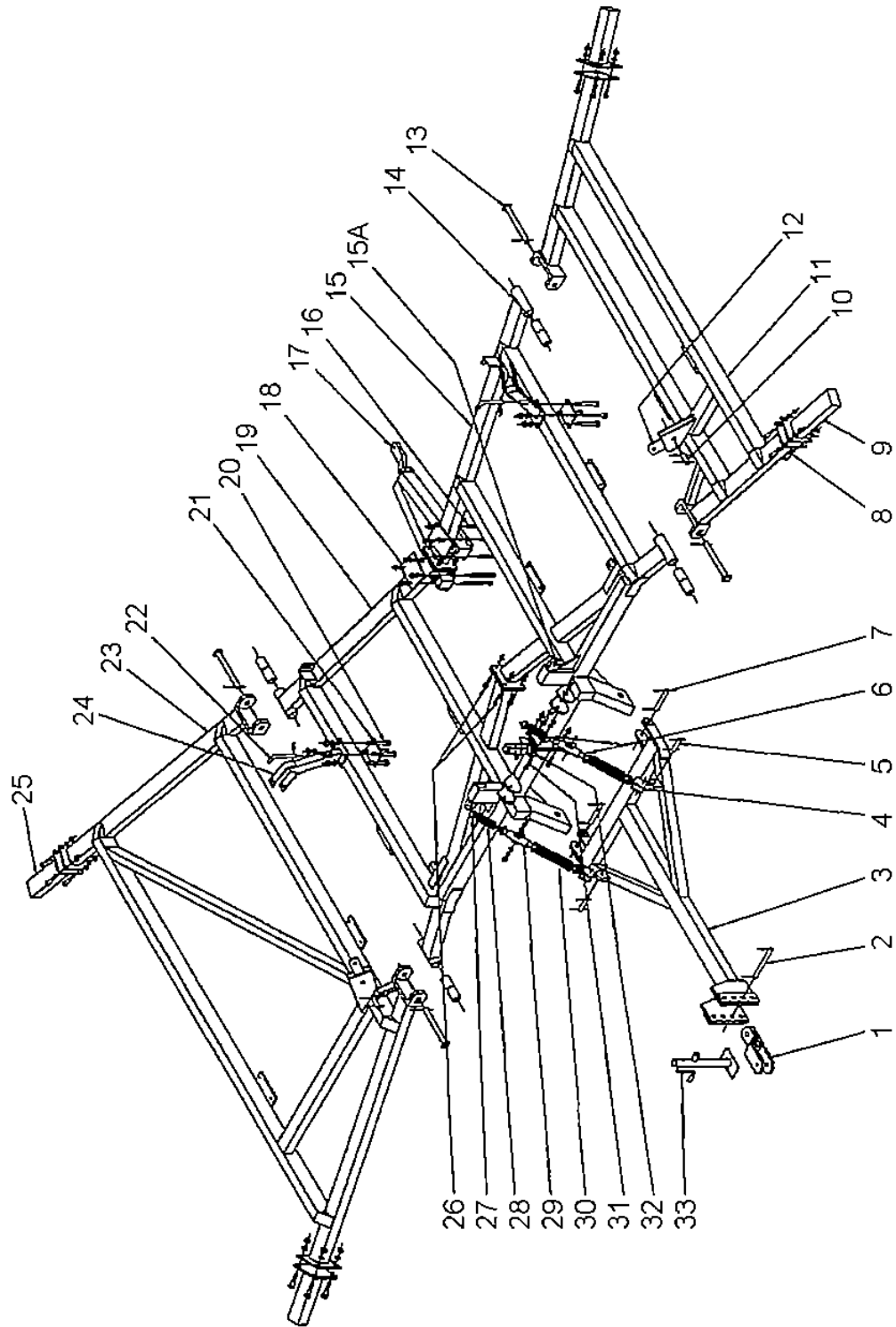


FIGURE 9 - WHEEL COMPONENTS

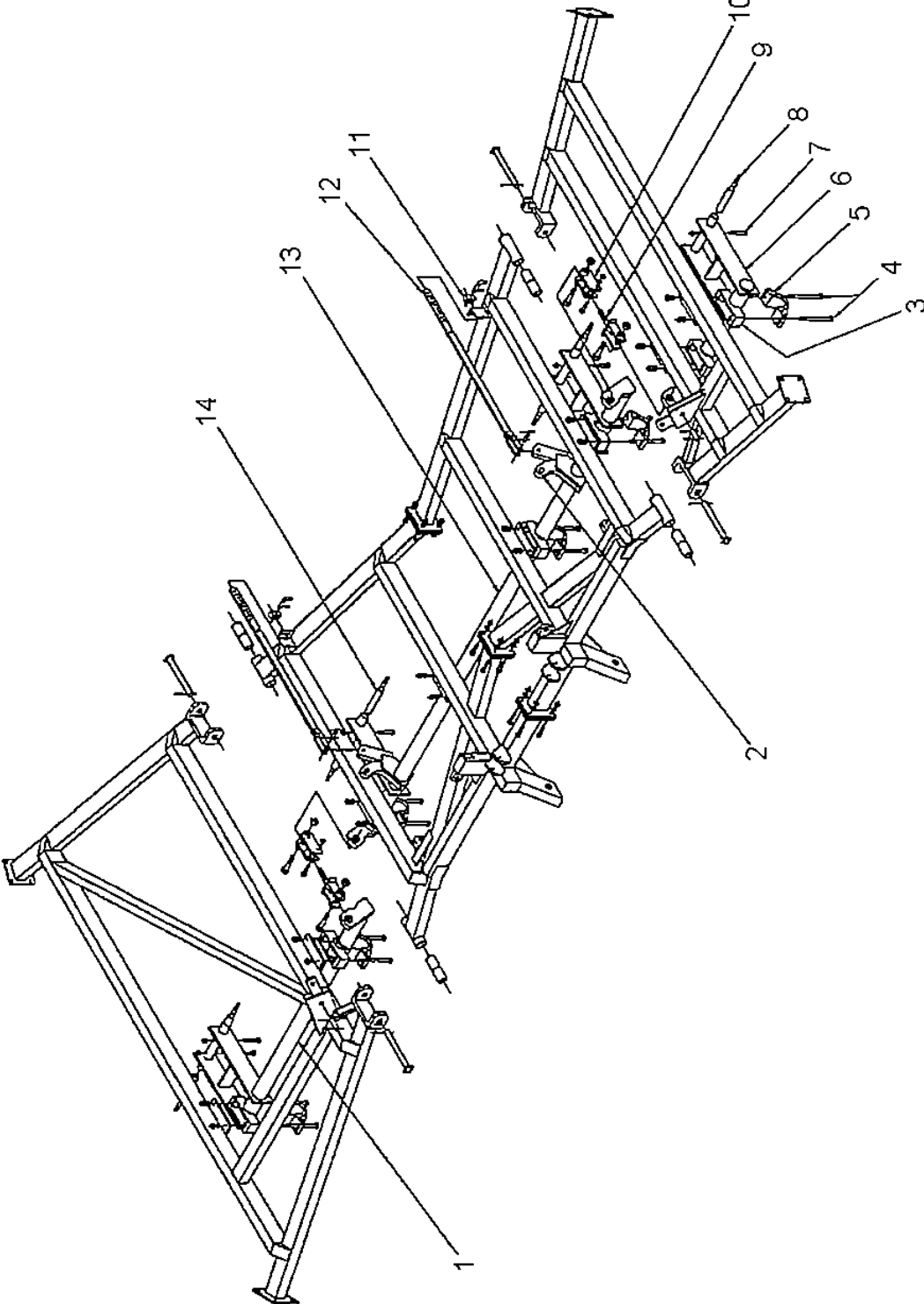
item	part no.	description
1	208861 or 207857	208861 (15" x 8") 207857 (15" x 10") wheel rim
2	403817	lug bolt
3	207889	complete hub assembly (incl. 2-11 & 13)
4	204523	hub cap
5	304037	bearing adjustment nut
	304094	cotter pin
6	211422	flatwasher
7	204524	bearing cone
8	203021	bearing cup
9	204526	bearing cone
10	204525	bearing cup
11	204527	grease seal
12	801214	short spindle used on wings and outside main frame after 10-89
	210685	short spindle used on wings and outside main frame before 10-89
	801215	long spindle used on inside main frame after 10-89
	211284	long spindle used on inside main frame before 10-89
13	204520	dust collar
	207889	complete hub assembly (incl. 2-10 & 13)
	207937	bearing kit (incl. 7-11)

FIGURE 10 - FRAME & TONGUE COMPONENTS



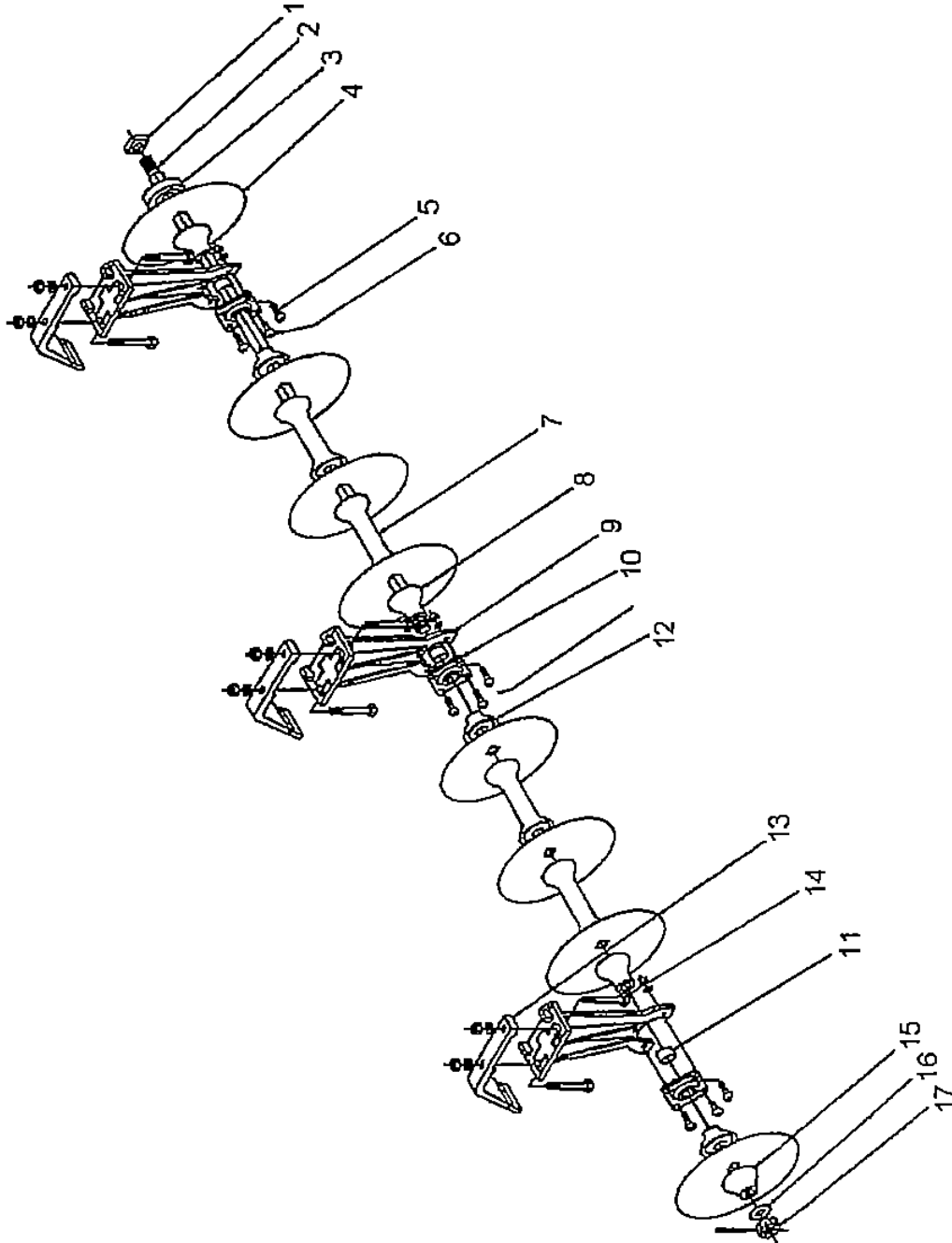
FRAME & TONGUE COMPONENTS refer to figure 10			
Item	part no.	description	qty.
1	209013	clevis	1
2	209186	clevis pin	1
	304151	3/8" x 2" cotter pin	2
3	209531	tongue	1
4	210935	spring rod	2
5	203100	pin	2
	304137	5/16" x 1 1/2" cotter pin	4
6	205163	special washer	4
7	209125	tongue hinge pin	2
	304151	3/8" x 2" cotter pin	4
8	303700	3/4" x 2 1/4" HH bolt	-
9	209018	short extension 18"	-
10	209126	wing float pin	2
	304151	3/8" x 2" cotter pin	4
11	211305	left wing frame - small	1
	211303	left wing frame - large	1
12	209044	wing lift arm	2
	208863	tension bushing	4
13	209128	wing hinge pin	4
	304151	3/8" x 2" cotter pin	4
14	209045	bushing	4
15	211301	left main frame	1
15A	208863	tension bushing	2
16	303716	3/4" x 8 1/2" HH bolt	8
17	211161	tow hitch	1
18	211166	plate	2
	299151	tow hitch attachment	-
19	211300	right main frame	1
20	303690	5/8" x 8" HH bolt	-
21	211259	plate	-
22	211272	wing latch pin	-
	205829	hitch clip pin	-
23	211304	right wing frame - small	1
	211302	right wing frame - large	1
24	813958	wing stop assembly	-
25	209020	long extension 37"	-
26	303700	3/4" x 2 1/4" HH bolt	10
27	304053	1 3/8" hex nut	2
28	206612	top spring	2
29	203742	slide	2
	203748	7/8" x 1 1/2" shoulder bolt	4
	304194	alomite	4
30	209148	bottom spring	2
31	303701	3/4" x 2 1/2" HH bolt	2
32	209246	manifold assembly	1
33	808026	jack	1

FIGURE 11 - TRANSPORT LIFT COMPONENTS



TRANSPORT LIFT COMPONENTS refer to figure 11			
item	part no.	description	qty.
1	801211	right wheel axle - small (after 10-89)	1
	211266	right wheel axle - small (before 10-89)	1
	801213	right wheel axle - large (after 10-89)	1
	211269	right wheel axle - large (before 10-89)	1
2	211273	hydraulic cylinder bracket	2
	208863	tension bushing	2
3	209235	wheel axle bearing	8
4	303736	7/8" x 6" HH bolt	16
5	209236	wheel axle cap	8
	304194	alemite	8
6	801210	left wheel axle - small (after 10-89)	1
	211267	left wheel axle - small (before 10-89)	1
	801212	left wheel axle - large (after 10-89)	1
	211270	left wheel axle - large (before 10-89)	1
7	303658	1/2" x 3 1/2" HH bolt	-
8	801214	short spindle 2" rd. (after 10-89)	-
	210685	short spindle 1 3/4" rd. (before 10-89)	-
9	808793	male swivel assembly	2
	304194	alemite	2
	808786	pin	2
10	808792	female swivel assembly	2
	208936	bushing	2
	808786	pin	2
	303682	5/8" x 4" HH bolt	2
11	204683	depth control cuff	2
	209938	depth bar pin	2
	205829	hair pin clip	2
12	211290	depth control bar	2
13	800912	main frame wheel axle (after 10-89)	1
	211264	main frame wheel axle (before 10-89)	1
14	801215	long spindle 2" rd. (after 10-89)	-
	211284	long spindle 1 3/4" rd. (before 10-89)	-

FIGURE 13 - RIGID GANG COMPONENTS



RIGID DELTA GANG COMPONENTS refer to figure 13		
item	part no.	description
1	208931	1 1/8" square nut
2	207097	4 disc axle 8" sp 29"
	207420	5 disc axle 8" sp 37"
	209359	6 disc axle 8" sp 45"
	209360	7 disc axle 8" sp 53"
	807120	8 disc axle 8" sp 61 1/4"
	807122	9 disc axle 8" sp 69 1/4"
	807123	10 disc axle 8" sp 77 1/4"
	807125	12 disc axle 8" sp 93 1/4"
	206626	4 disc axle 9" sp 32"
	206627	5 disc axle 9" sp 41"
	206618	6 disc axle 9" sp 50 5/16"
	208131	7 disc axle 9" sp 59"
	807121	8 disc axle 9" sp 68 1/4"
	807123	9 disc axle 9" sp 77 1/4"
	807124	10 disc axle 9" sp 86 1/4"
807126	11 disc axle 9" sp 95 1/4"	
3	206613	butt plate
4	see TABLE 1	disc blade
5	303859	1/2" x 1 1/2" carriage bolt
6	303857	1/2" x 1" carriage bolt
7	207339	full spacer 8" sp
	207344	full spacer 9" sp
8	205489	convex half spacer
9	807873	hanger casting
10	811197	bearing
11	807111	spacer 5/16" long 8" sp
	807110	spacer 1 5/16" long 9" sp
12	205486	concave half spacer
13	807874	top strap casting
14	303708	3/4" x 5 1/2" HH bolt
15	204704	end washer
16	303976	1 1/8" flatwasher
17	304039	1 1/8" slotted hex nut

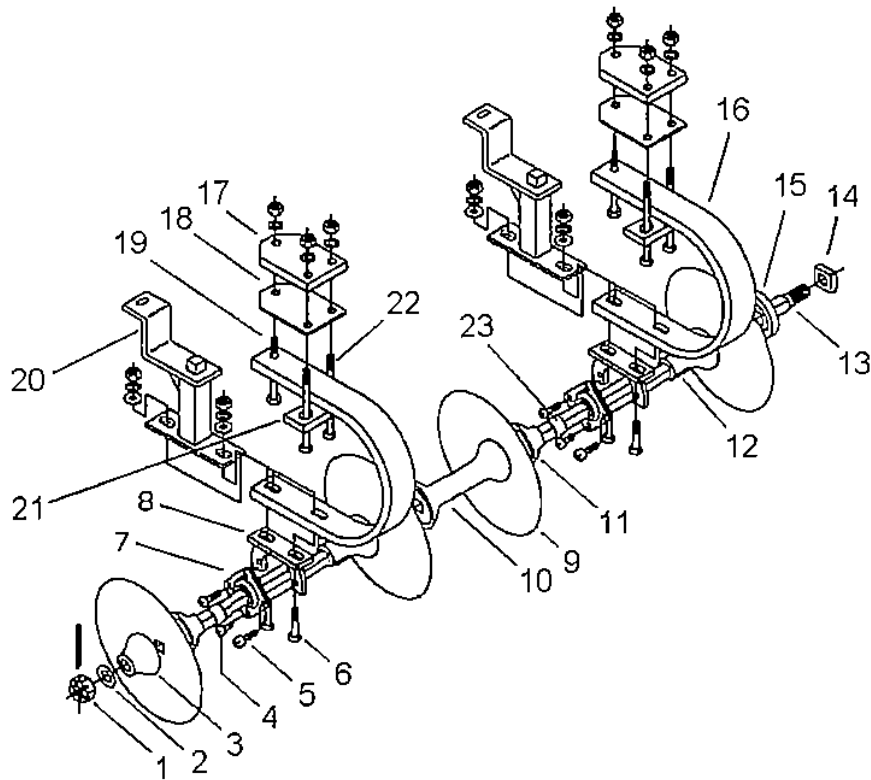


FIGURE 12 - GANG COMPONENTS 1 1/8" AXLE (SPRING)

item	part no.	description	item	part no.	description
1	304039	1 1/8" hex slotted nut		209360	7 disc axle 8" sp - 53"
2	303976	1 1/8" flatwasher		207525	3 disc axle 9" sp - 23"
3	204704	end washer		206626	4 disc axle 9" sp - 32"
4	303857	carriage bolt 1/2 X 1"		206627	5 disc axle 9" sp - 41"
5	303859	carriage bolt 1/2 X 1-1/2"		206618	6 disc axle 9" sp - 50 5/16"
6	303680	5/8" x 3" HH bolt		208131	7 disc axle 9" sp - 59"
7	811197	bearing	14	208931	square nut
8	808755	bearing brkt.	15	206613	butt plate
9	TABLE 1	disc blade	16	207664	spring hanger
10	207339	full spacer - 8" sp	17	207823	top plate
	207344	full spacer - 9" sp	18	208468	support plate
11	207341	concave half spacer - 8" sp	19	303709	3/4" x 6" HH bolt
	205486	concave half spacer - 9" sp	20	808309	scraper brkt. - spring hanger
12	207342	convex half spacer - 8" sp	21	813106	plate
	205488	convex half spacer - 9" sp	22	303711	HH bolt 3/4" x 7"
13	207097	4 disc axle 8" sp - 29"	23	807110	spacer 1-5/16" - 9" sp
	207420	5 disc axle 8" sp - 37"		807111	spacer 5/16" - 8" sp
	209359	6 disc axle 8" sp - 45"			

TABLE 1 DISC BLADES FOR 1 1/8" AXLES	
part number	description
205005	22" diameter with cut out edge heavy duty
204003	20" diameter with cut out edge heavy duty
204005	22" diameter with cut out edge regular duty
204003	20" diameter with cut out edge regular duty
205002	18" diameter with cut out edge regular duty
208440	16" diameter with cut out edge regular duty
205020	22" diameter with solid edge heavy duty
204010	22" diameter with solid edge regular duty
204004	20" diameter with solid edge regular duty
205003	18" diameter with solid edge regular duty
208439	16" diameter with solid edge regular duty

INSTRUCTIONS FOR ORDERING DISC BLADES

When ordering blades, remember that the outside rear gangs get two "taper" blades each and the outside front gangs get one "taper" blade each. Blades are tapered in 2" diameter increments.

- 1) Determine the total number of blades required regardless of size.
- 2) For the main disc size, order 6 LESS than the total required.
- 3) Order four (4) blades 2" smaller in diameter than the main size. These are "taper" blades for the outside front and rear gangs.
- 4) Order two (2) blades 4" smaller in diameter than the main size. These are the outside "taper" blades for the rear gangs.

EXAMPLE: For a harrow requiring 70 disc blades with 20" diameter, order these quantities:

BLADE CONFIGURATION	20" blades	18" blades	16" blades
solid blades front & rear	64 solid	4 solid	2 solid
cut out blades front & rear	64 cut out	4 cut out	2 cut out
cut out front, solid rear	64 cut out	2 cut out, 2 solid	2 solid

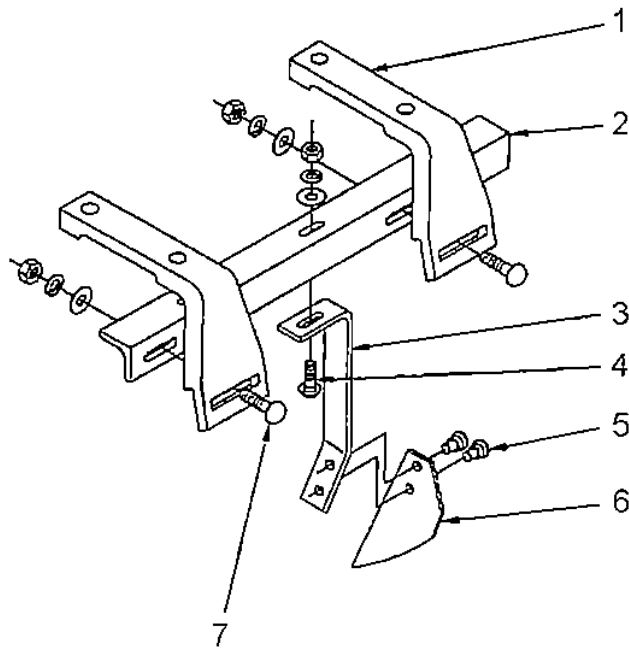


FIGURE 14 - SCRAPER COMPONENTS RIGID MODELS

item	part no.	description
1	807874	top strap casting
2	see TABLE 2	scraper bar
3	N.A.	right front or left rear scraper arm
	N.A.	left front or right rear scraper arm
4	303859	$\frac{1}{2}$ " x $1 \frac{1}{2}$ " carriage bolt
5	N.A.	shoulder rivet
6	N.A.	scraper blade
7	303860	$\frac{1}{2}$ " x $1 \frac{3}{4}$ " carriage bolt
	807098	left front or right rear scraper assembly (incl. 3,5&6)
	807099	right front or left rear scraper assembly (incl. 3,5&6)

NOTE: When ordering scraper components, LEFT refers to left front or right rear and RIGHT refers to the right front or left rear disc gang on the implement. LEFT and RIGHT are determined by standing at the rear of the implement and facing it.

TABLE 2 SCRAPER BAR LISTING (#2 figure 14)				
left hand	right hand	disc gang used on	length	bearings
807264	807263	4 disc 4 scraper 8" spacing	28	2
807266	807265	5 disc 5 scraper 8" spacing	36	2
807130	807129	6 disc 6 scraper 8" spacing	44	2
807132	807131	7 disc 7 scraper 8" spacing	52	2
807134	807133	8 disc 8 scraper 8" spacing	60	2
807136	807135	9 disc 9 scraper 8" spacing	68	3
807138	807137	10 disc 10 scraper 8" spacing	76	3
807140	807139	12 disc 12 scraper 8" spacing	92	3
807268	807267	4 disc 3 scraper 8" spacing	23	2
807270	807269	5 disc 4 scraper 8" spacing	31	2
807142	807141	6 disc 5 scraper 8" spacing	39	2
807144	807143	7 disc 6 scraper 8" spacing	47	2
807146	807145	8 disc 7 scraper 8" spacing	55	2
807148	807147	9 disc 8 scraper 8" spacing	63	3
807150	807149	10 disc 9 scraper 8" spacing	71	3
807152	807151	12 disc 11 scraper 8" spacing	87	3
807272	807271	3 disc 3 scraper 9" spacing	22	2
807274	807273	4 disc 4 scraper 9" spacing	31	2
807276	807275	5 disc 5 scraper 9" spacing	40	2
807154	807153	6 disc 6 scraper 9" spacing	49	2
807156	807155	7 disc 7 scraper 9" spacing	58	2
807158	807157	8 disc 8 scraper 9" spacing	67	2
807160	807159	9 disc 9 scraper 9" spacing	76	3
807162	807161	10 disc 10 scraper 9" spacing	85	3
807164	807163	11 disc 11 scraper 9" spacing	94	3
807278	807277	4 disc 3 scraper 9" spacing	25	2
807166	807165	5 disc 4 scraper 9" spacing	34	2
807168	807167	6 disc 5 scraper 9" spacing	43	2
807170	807169	7 disc 6 scraper 9" spacing	52	2
807172	807171	8 disc 7 scraper 9" spacing	61	3
807174	807173	9 disc 8 scraper 9" spacing	70	3
807176	807175	11 disc 10 scraper 9" spacing	88	3

NOTE: When ordering scraper components, LEFT refers to left front or right rear and RIGHT refers to the right front or left rear disc gang on the implement. LEFT and RIGHT are determined by standing at the rear of the implement and facing it.

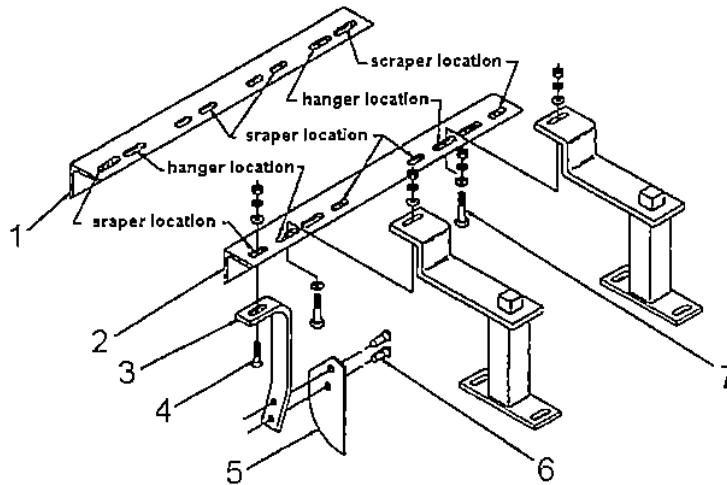


FIGURE 15 - SCRAPER COMPONENTS SPRING MODELS

item	part no.	description
1	see TABLE 3 below	scraper bar
2	see TABLE 3 below	scraper bar
3	N.A.	LH handle (used on left front or right rear gang)
	N.A.	RH handle (used on right front or left rear gang)
4	303859	1/2" x 1 1/2" carriage bolt
5	N.A.	scraper blade
6	N.A.	shoulder rivet
7	303653	1/2" x 2" HH bolt
807098		L.H. scraper (incl. 3,5,&6) (used on left front and right rear gang)
807099		R.H. scraper (incl. 3,5,&6) (used on right front and left rear gang)

TABLE 3 SCRAPER BAR LISTING (#1 & 2 Figure 15)

part no.	disc gang used on	length (inches)
805006	3 disc 3 scraper 8" disc spacing	19"
805007	4 disc 4 scraper 8" disc spacing	27"
805008	5 disc 5 scraper 8" disc spacing	35"
805009	6 disc 6 scraper 8" disc spacing	43"
805010	7 disc 7 scraper 8" disc spacing	51"
805011	4 disc 3 scraper 8" disc spacing	23"
805012	5 disc 4 scraper 8" disc spacing	31"
805013	6 disc 5 scraper 8" disc spacing	39"
805348	7 disc 6 scraper 8" disc spacing	47"
805014	3 disc 3 scraper 9" disc spacing	21"
805015	4 disc 4 scraper 9" disc spacing	30"
805016	5 disc 5 scraper 9" disc spacing	39"
805017	6 disc 6 scraper 9" disc spacing	48"
805018	4 disc 3 scraper 9" disc spacing	24 3/4"
805019	5 disc 4 scraper 9" disc spacing	33 3/4"
805020	6 disc 5 scraper 9" disc spacing	42 3/4"

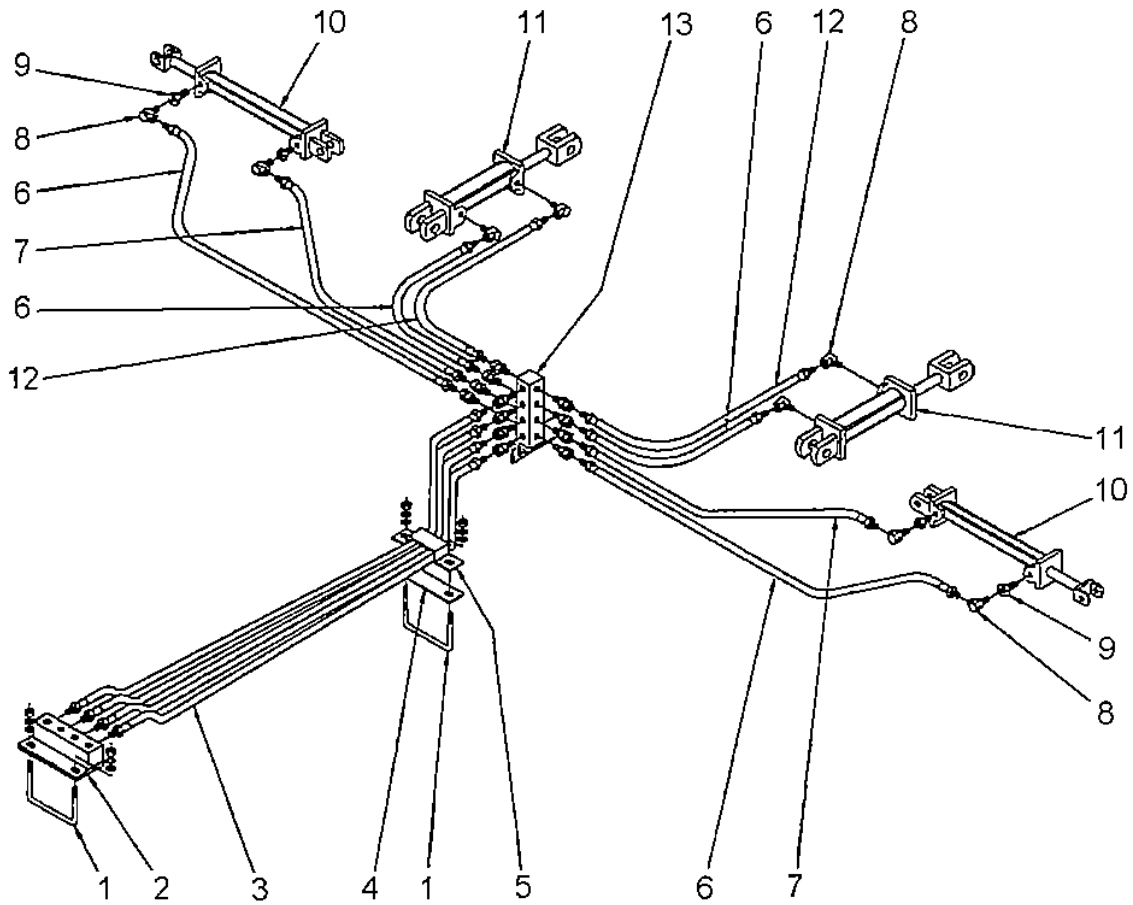
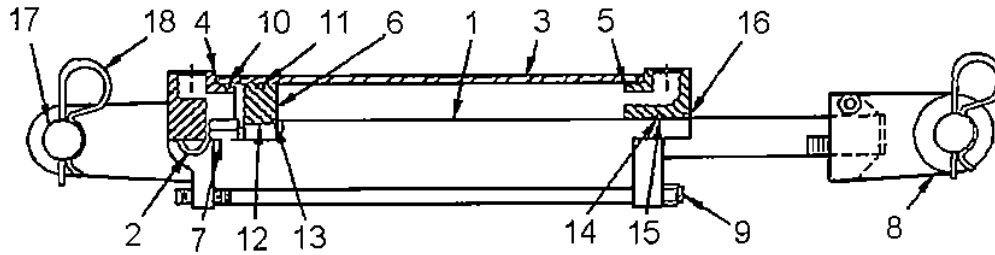


FIGURE 18 - HYDRAULIC COMPONENTS

item	part no.	description
1	209090	5/8" U-bolt
2	209179	header
3	209227	hydraulic hose 88" long
4	209174	hose holder base
5	209173	hose holder
6	207976	hydraulic hose 60" long
7	209245	hydraulic hose 30" long
8	207982	90° elbow
9	208569	flow restrictor
10	207987	4x24 hydraulic cylinder
11	209134	4x8 hydraulic cylinder
12	209244	hydraulic hose 73" long
13	209246	manifold assembly



HYDRAULIC CYLINDER COMPONENTS

Item	part no. 4x8	part no. 4x24	description	qty.
1	209230	208844	piston rod	1
2	208602	208602	pipe plug	2
3	209231	208845	tube	1
4	208846	208846	butt	1
5	208847	208847	gland	1
6	208848	208848	piston	1
7	208849	208849	lock nut	1
8	208850	208850	clevis assembly	1
9	209232	208851	tie rod	4
10	**	**	O-ring	2
11	**	**	O-ring	1
12	**	**	Backup Washer	2
13	**	**	O-ring	1
14	**	**	O-ring	1
15	**	**	Backup Washer	1
16	**	**	wiper	1
17	208859	208859	clevis pin	2
18	208617	208617	hair pin clip	4
19	208569	208569	flow restrictor	2
**	208860	208860	seal kit (inc. 10-16)	1
	209134	207987	cylinder complete	-

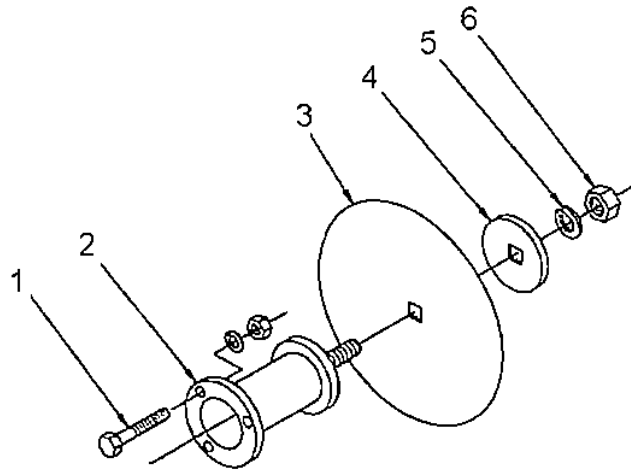


FIGURE 20 - FURROW FILLER ATTACHMENT

item	part no.	description	qty.	item	part no.	description	qty.
1	303651	1/2" x 1 1/2" HH bolt	3		204002	18" CO blade	1
2	206629	spacer 1 1/8" axle	1	4	203986	butt plate	1
3	204000	16" RD. blade	1	5	303958	7/8" washer	1
	204001	18" RD. blade	1	6	304010	7/8" hex nut	1
	205019	16" CO blade	1		200080	furrow filler kit	

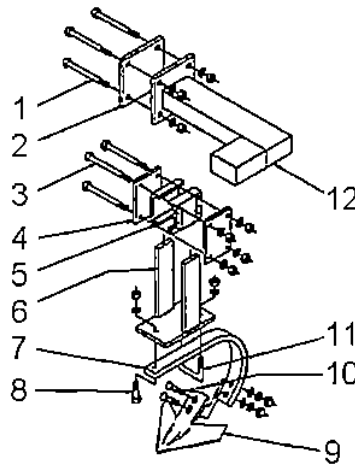
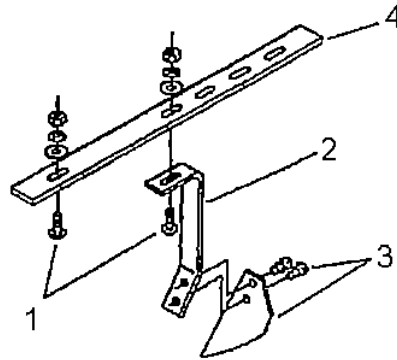


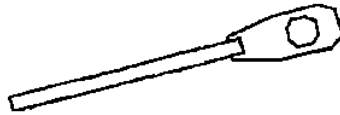
FIGURE 21 - RIGID BALK BREAKER ATTACHMENT

item	part no.	description	qty.	item	part no.	description	qty.
1	303708	3/4" x 5 1/2" HH bolt	4	8	303678	5/8" x 2 1/2" HH bolt	1
2	209263	connector plate	1	9	209408	sweep 8"	1
3	303711	3/4" x 7" HH bolt	4	10	303910	1/2" x 2 1/2" plow bolt	2
4	209777	connector plate	2	11	603984	U-bolt	1
5	209774	cuff assembly	2	12	209778	balk breaker extension	1
6	209772	shank conn. assy.	1				
7	207434	shank 16"	1		299094	complete attachment	

Furrow Filler Scraper			
Item	Part #	Description	Qty
1	303859	Carr Bolt 1/2"X1-1/2"	4
	303955	Lockwasher 1/2"	4
	304007	Hex Nut 1/2" - NC	4
2	N/A	L H Scraper Arm	1
	N/A	R H Scraper Arm	1
3	805000	Scraper Blade	2
	804999	Shoulder Rivot	4
4	809693	Scraper Bar	2
809694		Complete Scraper Kit	



FURROW FILLER SCRAPER KIT



209953	gang bolt wrench
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