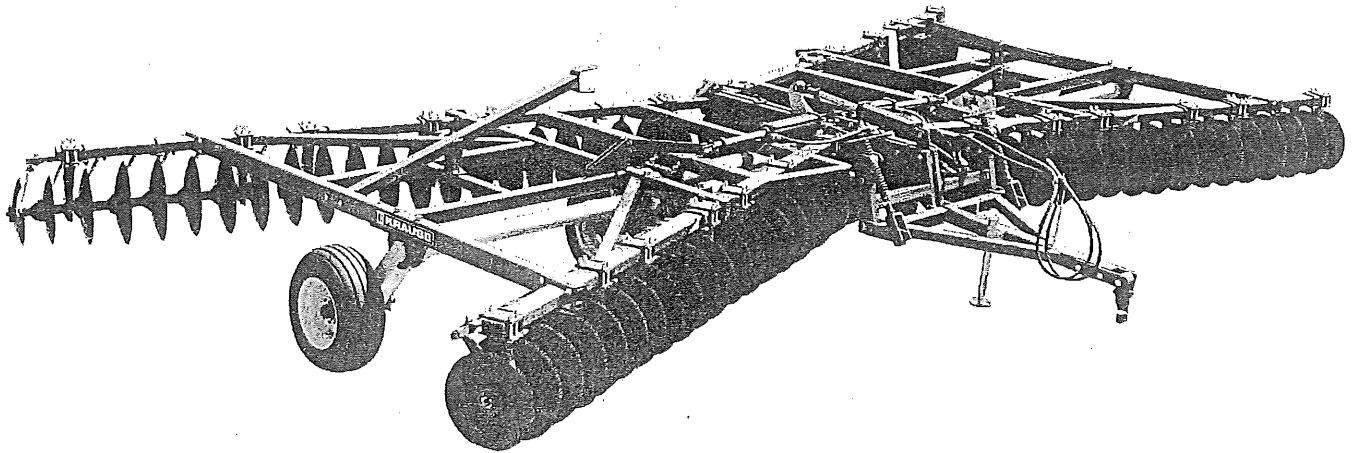




FLEX-WING TANDEM DISC

MODELS

**952A, 955A, 956A,
959A, 960A, 963A**

FLEX GANG MODELS

967, 968, 969

KRAUSE

CONGRATULATIONS

You have just purchased a quality engineered and manufactured Krause tillage tool. Advanced engineering features have been designed into the implement for modern farming operations. As with any investment, a return is expected, and the return received from this investment will be in the form of maximum tillage performance during many years of dependable service.

This manual has been prepared for the primary purpose of furnishing as much information about the new implement as possible. The content provides correct operating instructions, proper maintenance and how to make adjustments if needed. In order to maintain the quality and performance of the new Krause implement, it is important that all the information in the manual be reviewed and studied carefully before operation.

PURCHASE RECORD

DATE _____, 19____

MODEL NUMBER _____

SERIAL NUMBER _____

CUT WIDTH _____



Krause Plow Corporation reserves the right to change any design or specifications without notice or obligations.

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Scraper adjustment 03

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WITH SCRAPERS

967

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MODEL	TOTAL NO. OF DISC BLADES LESS EXTENSIONS	SPACING	DISC BLADE SIZE	ASAE CUT WIDTH	CUT WIDTH CENTER SECTION	CUT WIDTH WING SECTION	WHEEL SPACING BASIC SECTION	WHEEL SPACING WING SECTION	WHEEL SIZE	Suggested Size		APPROX. FOLDED WIDTH OVER DISC OVER TIRES
										HYD. CYL. SIZE BASIC UNIT	HYD. CYL. SIZE WING LIFT	
952A	68	9-1/8	20 or 22	25'-2"	12'	6'-6"	88"/128"	240"	15 X 10	3 X 16*	3 X 16	16'6" 19'
955A	76	8	20 or 22	24'-10"	12'	6'-5"	88"/128"	240"	15 X 10	3 X 16*	3 X 16	16'6" 19'
956A	76	9-1/8	20 or 22	27'-6"	12'	7'-9"	88"/128"	280"	15 X 10	4 X 16	3 X 16*	16'6" 19'
959A	84	8	20 or 22	27'-1"	12'	7'-6"	88"/128"	280"	15 X 10	4 X 16	3 X 16*	16'6" 19'
960A	84	9-1/8	20 or 22	30'-10"	12'	9'-5"	88"/128"	320"	15 X 10	4 X 16	4 X 16*	16'6" 19'
963A	92	8	20 or 22	30'-0"	12'	9'-0"	88"/128"	320"	15 X 10	4 X 16	4 X 16*	16'6" 19'

FLEX GANG MODELS

967	76	8	20 or 22	24'-10"	12'	6'-5"	88"/128"	240"	15 X 10	4 X 16	3 X 16	16'9" 19'
968	84	8	20 or 22	27'-1"	12'	7'-6"	88"/128"	280"	15 X 10	4 X 16	4 X 16	16'9" 19'
969	92	8	20 or 22	30'-0"	12'	9'-0"	88"/128"	320"	15 X 10	4 X 16	4 X 16*	16'9" 19'

* USE NEXT SIZE LARGER CYLINDER IF TRACTOR PRESSURE IS LESS THAN 1600 P.S.I.

CUSTOMER INFORMATION & CHECK SHEET

PRODUCT _____ MODEL _____ DATE _____

CUSTOMER _____ SERIAL _____

ADDRESS _____

DEALER _____

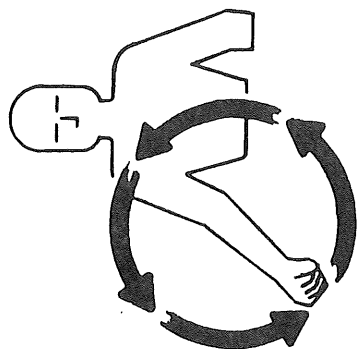
ADDRESS _____

DELIVERY CHECK

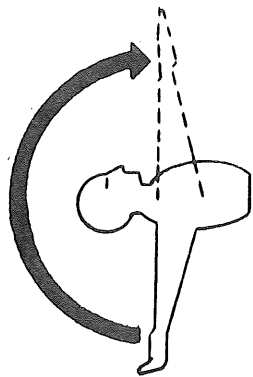
1. ☐ CHECK FOR PROPER AND COMPLETE ASSEMBLY.
2. ☐ FILL ALL HYDRAULIC CYLINDERS WITH TEXICO #303TDH OR EQUIV.
3. ☐ ARE ALL WING AND ROAD LOCKS IN PLACE AND SECURED?
4. ☐ ARE HYDRAULIC HOSES LOCATED SO THEY ARE PROTECTED AGAINST DAMAGE?
5. ☐ WERE RESTRICTORS INSTALLED IN ROD END OF WING LIFT CYLINDERS?
6. ☐ CHECK WHEEL BOLTS - 90 LBS TORQUE. (RECHECK DURING DELIVERY)
7. ☐ WHEEL BEARINGS ADJUSTED AND GREASED.
8. ☐ SAFETY CHAIN ON HITCH.
9. ☐ PROPER TIRE AND PRESSURE.
10. ☐ ALL DECALS INSTALLED.

CUSTOMER INFORMATION

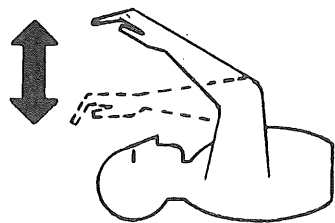
1. ☐ INSTRUCTION MANUAL - HOW TO USE! WHERE TO FIND!
2. ☐ ROAD SPEED, WIDTH, AND HEIGHT.
3. ☐ DO NOT VIOLATE STATE OR FEDERAL LAWS.
4. ☐ EXPLAIN ROAD LOCK PIN USE.
5. ☐ EXPLAIN HYDRAULIC CYLINDER AND STROKE CONTROL USE.
6. ☐ EXPLAIN ADJUSTMENTS - GANGS, ROAD LOCK, CYLINDERS, TONGUE, AND WINGS.
7. ☐ EXPLAIN FIELD SPEED, DEPTH, HORSEPOWER, AND ROCK CONDITIONS.
8. ☐ DO NOT MODIFY AND ADD LOAD TO IMPLEMENT.
9. ☐ CAUTION TO SPECTATORS - WINGS AND BLADES.
10. ☐ CHECK SEASONALLY - TIRES, HUBS, LOCK PINS, BEARINGS.



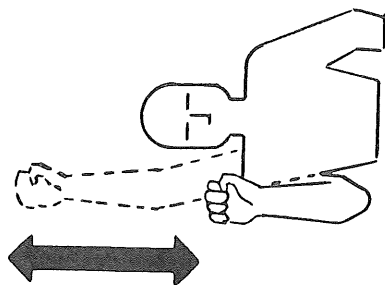
START
THE
ENGINE



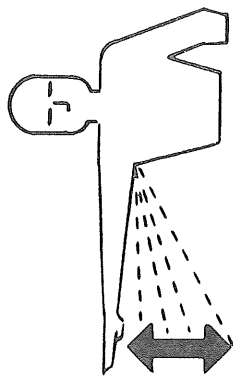
MOVE OUT
OR
TAKE OFF



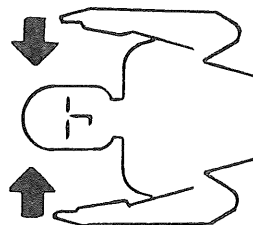
MOVE
TOWARD
ME



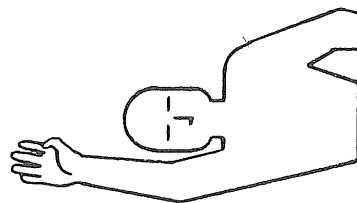
SPEED
IT UP



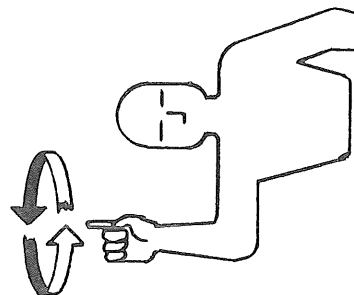
SLOW IT
DOWN



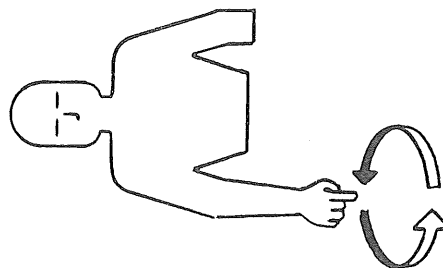
THIS FAR
TO GO



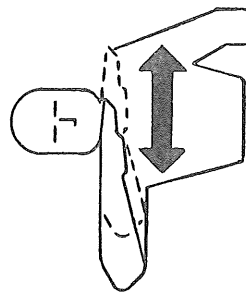
STOP



RAISE THE EQUIPMENT



LOWER THE EQUIPMENT



STOP
THE
ENGINE

OPERATING SECTION

OPERATING INSTRUCTIONS

PREPARING THE DISC HARROW:

Inflate all tires to 35 pounds pressure. Attach 16 inch stroke cylinders. 4 x 16 ASAE standard cylinder is recommended for lifting the unit. 3 x 16 ASAE cylinders may be used for the wing lift on 25 foot sizes, also 27 foot sizes if hydraulic pressure is 1600 P.S.I. or more. Use 4 x 16 ASAE cylinders for wing lift on 30 foot models, use 5 x 16 if hydraulic pressure is less than 1600 P.S.I. See specification page for cylinder size on your unit.

Lubricate all grease fittings.

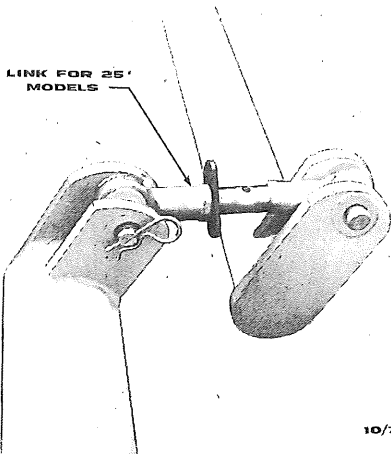
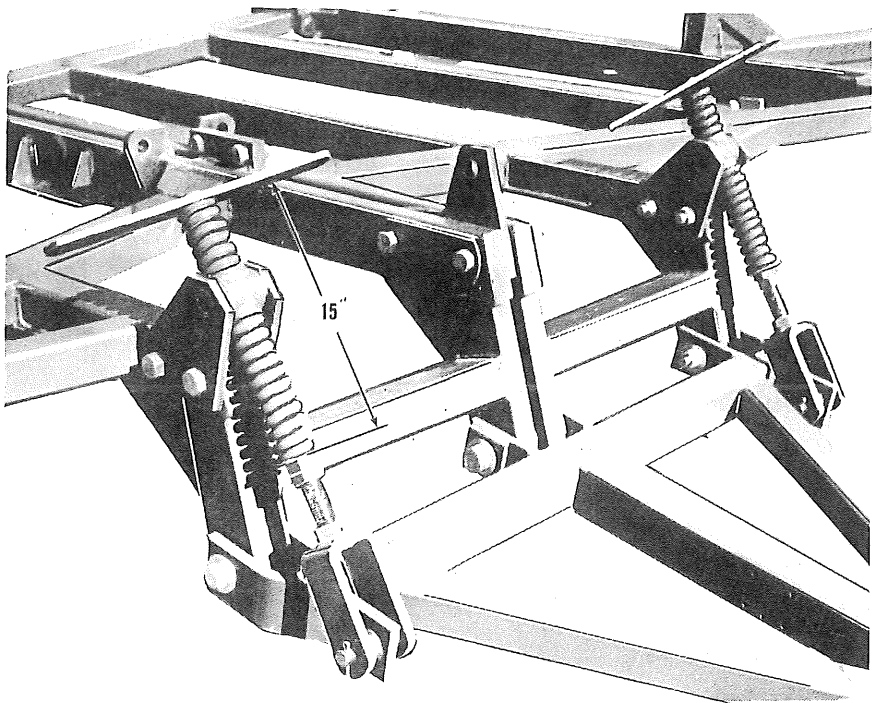
ATTACHING TO TRACTOR:

The disc harrow must be in the raised position before attaching it to, or detaching it from the tractor drawbar. Make sure the tongue jack is in storage position before moving the disc harrow.

When detaching the disc harrow from the tractor, be sure the tongue jack is in position and the hydraulic cylinder hoses are disconnected before driving the tractor away.

FIELD OPERATION

Two leveling screws are provided to level the harrow front to rear, each must be adjusted equally. Adjust leveling screws so that the frame is level when tilling, turn leveling screws clockwise to raise the rear, turn counter clockwise to raise the front. Note: for ease of leveling adjust the leveling screws while the harrow is in the raised position. BE SURE jam nuts on leveling screws are snug against the bottom of the springs to prevent excessive play.



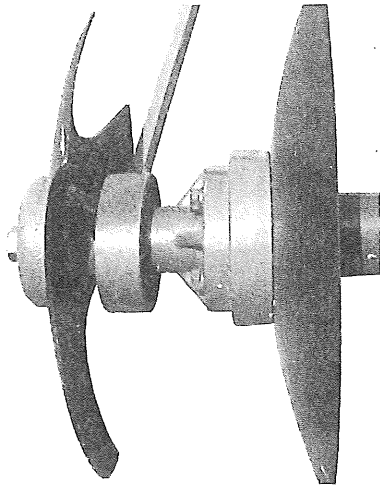
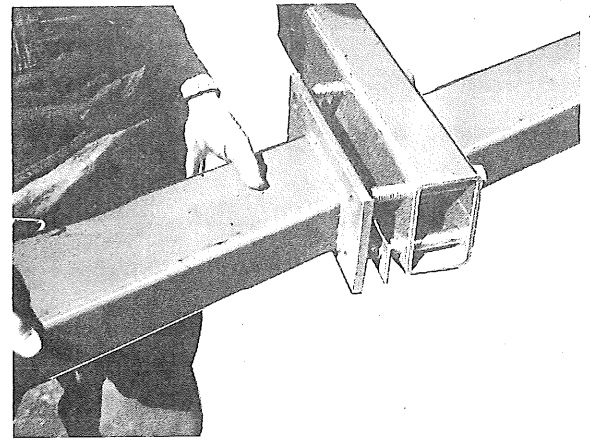
Adjustment links between the main and wing rocker shafts are provided to level the unit from side to side. There are two different adjustment links for these tandems. The 25 foot models require the short link shown in Figure 17. Pre-adjust this link to 11" center to center of the ball ends. The 27 to 30 foot models require the longer link not shown. Pre-adjust these links to 19" center to center of the ball ends. Adjust the screws until wings are level with center section in working position.

NOTE: WINGS MAY NOT NECESSARILY BE LEVEL WITH

CENTER SECTION WHEN THE HARROW IS IN RAISED POSITION.

Wing wheel hubs have off center spindles for additional adjustments. MAKE SURE all hubs are in the same position before attempting to level the unit.

Check wing extensions to make sure they are level with the frame. Shims are provided for making any necessary adjustments.



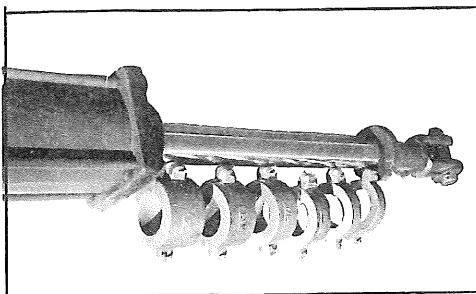
ELIMINATING FURROWS:

SPACING between inside rear blades should be set at approximately 14 inches. Certain field conditions, blade sizes, and tractor speeds will affect this setting, move gangs in or out from normal setting to eliminate a ridge or furrow between rear gangs.

The EXTENSION DISC ASSEMBLY, when mounted to the outer end of each rear disc gang, will level the ridge left by the front gang and the furrow left by the rear gang. A 16 inch blade should be used when the unit is equipped with 20 inch discs, and an 18 inch disc

should be used when the unit is equipped with 22 inch discs.

THERE MAY BE TIMES WHEN A SLIGHT FURROW MAY BE NOTICED AT THE HINGE AREA BETWEEN THE CENTER SECTION AND WING SECTION. KEEPING YOUR SCRAPERS WELL ADJUSTED IN THIS AREA WILL GREATLY REDUCE ANY FURROW LEFT BY THE FRONT GANGS.



ADJUSTING WORKING DEPTH:

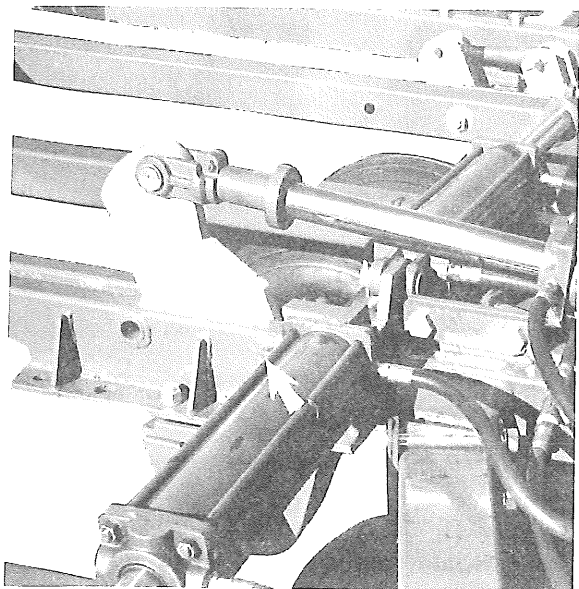
The depth of your disc harrow is controlled by the remote cylinder control lever of the tractor. The disc wheels will act as gauge wheels to regulate working depth. After determining the correct depth, position the stop rings on your hydraulic cylinder so the wheels will raise to the same position each time. Your disc harrow will work more uniformly if some weight of the unit is carried on the wheels. Speed will affect working depth. Do not expect maximum depth at high field speeds. Other factors affecting working

depth are moisture conditions, amount of trash on the surface, polish of the disc blades, blade spacing, and sharpness of disc blades.

FLEXIBILITY:

For maximum flexibility of the wing sections, make sure the wing hydraulic cylinders are fully extended after the wings are down. DO NOT ATTEMPT TO WORK THIS UNIT IN THE FIELD UNLESS THE WING LIFT CYLINDERS OR THE ACCESSORY BAR (PART NO. 1080-27-0) IS INSTALLED TO LIMIT THE DOWNWARD TRAVEL OF THE WINGS.

When working terraced ground, place the wing upon the terrace not over the terrace, as the wings are limited in their downward movement but not in their upward movement.

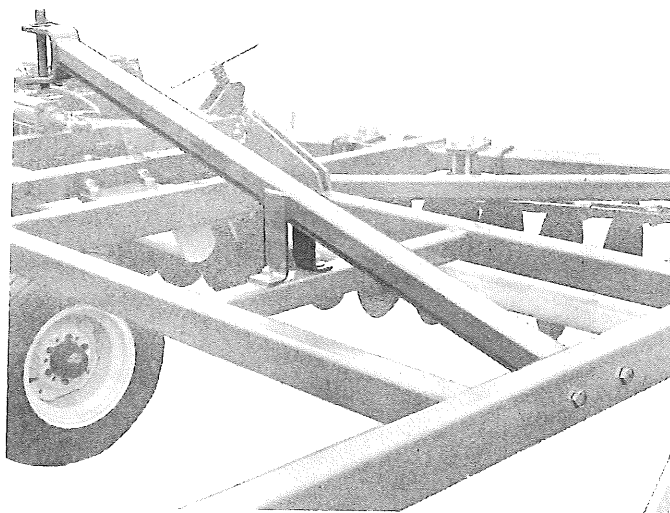


TRANSPORTING

A road lock is provided to hold the harrow in the raised position for road travel. **DO NOT** depend on the hydraulic cylinder to hold the unit in the raised position.

Always pin wings in position during transport, remove pins and lower wings when unit is not in transport.

Note: Make sure all road lock and wing lock pins are removed before operating the hydraulic cylinders. If not, damage may occur to the disc harrow or the hydraulic cylinder.

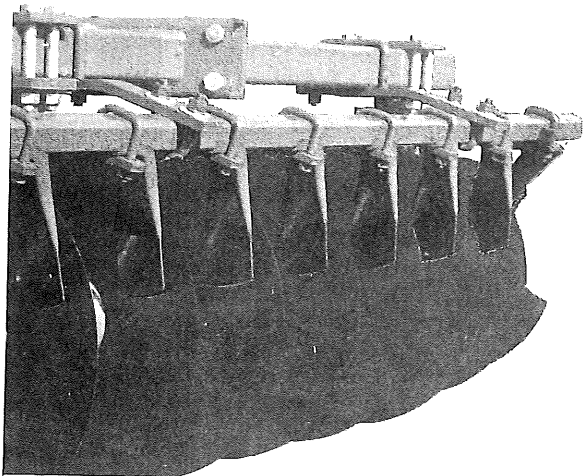


Road at a reasonable speed not to exceed 15 miles per hour.
Pin the tractor drawbar.

Use ASAE slow moving vehicle emblem when transporting on road or highway. Safety light equipment should be installed when harrow is transported on the highway. A safety light bracket is furnished with your unit. See your implement dealer for safety light equipment.

Comply with your state and local laws governing lighting at night and maximum width regulations.

SLOW DOWN: Moving your disc from field to field over rough terrain at high speed will result in major damage.



SCRAPER ADJUSTMENT

The holes in each scraper bracket are slotted and by moving the scraper bar assembly in this slot you can move all scrapers on the bar closer to or farther from the outer edge of the disc blade. Scrapers can be adjusted closer to or farther away from the blade by moving the entire assembly at the bracket location. Also, each scraper blade can be adjusted individually along the scraper bars.

When scrapers are required, adjust blades so the scraping edge of each scraper blade is flush against the disc blade but not tight enough to prevent the gang from revolving

freely. When scrapers are not required, adjust the scraper bars to move scraper blades away from the disc blades. For most conditions, the scrapers should be positioned approximately 2 inches from the cutting edge and approximately 1/8 inch from the disc blade.

Each field requires some individual scraper adjustment, and moving the scrapers one way or the other will help solve your individual scraper problems. Removal of the scraper blade at the bearing arm may be necessary in some conditions. Frequent examination will prevent damage to scraper assemblies and spacer spools.

Due to soil variations there will be times when the center of the disc will run high or low for short periods of time. This is common to all flexible implements and has no real affect on the quality of work.

Note: If the unit runs high in the center due to hard ground, re-check the leveling front to rear and side to side.

SERVICING

General Maintenance

ALL NUTS SHOULD BE CHECKED AND TIGHTENED AFTER THE FIRST DAY'S OPERATION AND PERIODICALLY THEREAFTER. CHECK DISC GANG TIE RODS FREQUENTLY AND KEEP TIGHT AT ALL TIMES. The Krause Disc is a ruggedly designed implement which will perform efficiently if properly adjusted, lubricated, and if the blades are kept sharp. Note: Disc blades should be sharpened by the grinding or shaving process and not by rolling. Blades that have been rolled are not eligible for warranty adjustment.

Lubrication

Minimum lubrication is required as all disc gang bearings have been permanently grease-packed and sealed at the factory. The rocker shaft bearings require periodic lubrication and the wheel hubs should be repacked and adjusted annually. Coat disc blades with rust preventative when harrow is not in use. Regreaseable bearings should be greased after use and before long periods of storage.

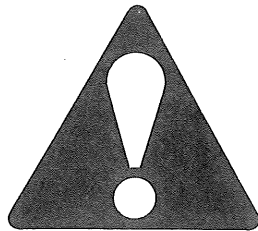
Hydraulics

If the implement hydraulic system has never been used, stored over a period of time, or disassembled for any reason, unpin the rod ends of the cylinders and connect the hoses to the tractor hydraulic couplers. Make sure the tractor reservoir is full of manufacturer's recommended hydraulic oil. Extend and retract the cylinders holding the control lever open and pausing at the end of each stroke. This will bleed the air from the cylinders and hoses. Continue the action several times until the cylinders respond with immediate and solid actuation. When all air has been purged from the system, pin the rod ends to the cylinder lugs and operate the depth control and wing lift thru their complete cycles. Never attach a cylinder to a wing while in a raised position, and keep all persons at a safe distance away from the unit in case of failure.

SAFETY FIRST

Read all Safety Decals on the implement and review the Tractor Safety and Safety First on the back cover of the manual to refresh your memory. Note: A new safety symbol  has been designed to relate a message of: DANGER, WARNING, CAUTION or BE CAREFUL. Watch for this symbol and read the information it relates for your protection.

SAFETY ALERT SYMBOL

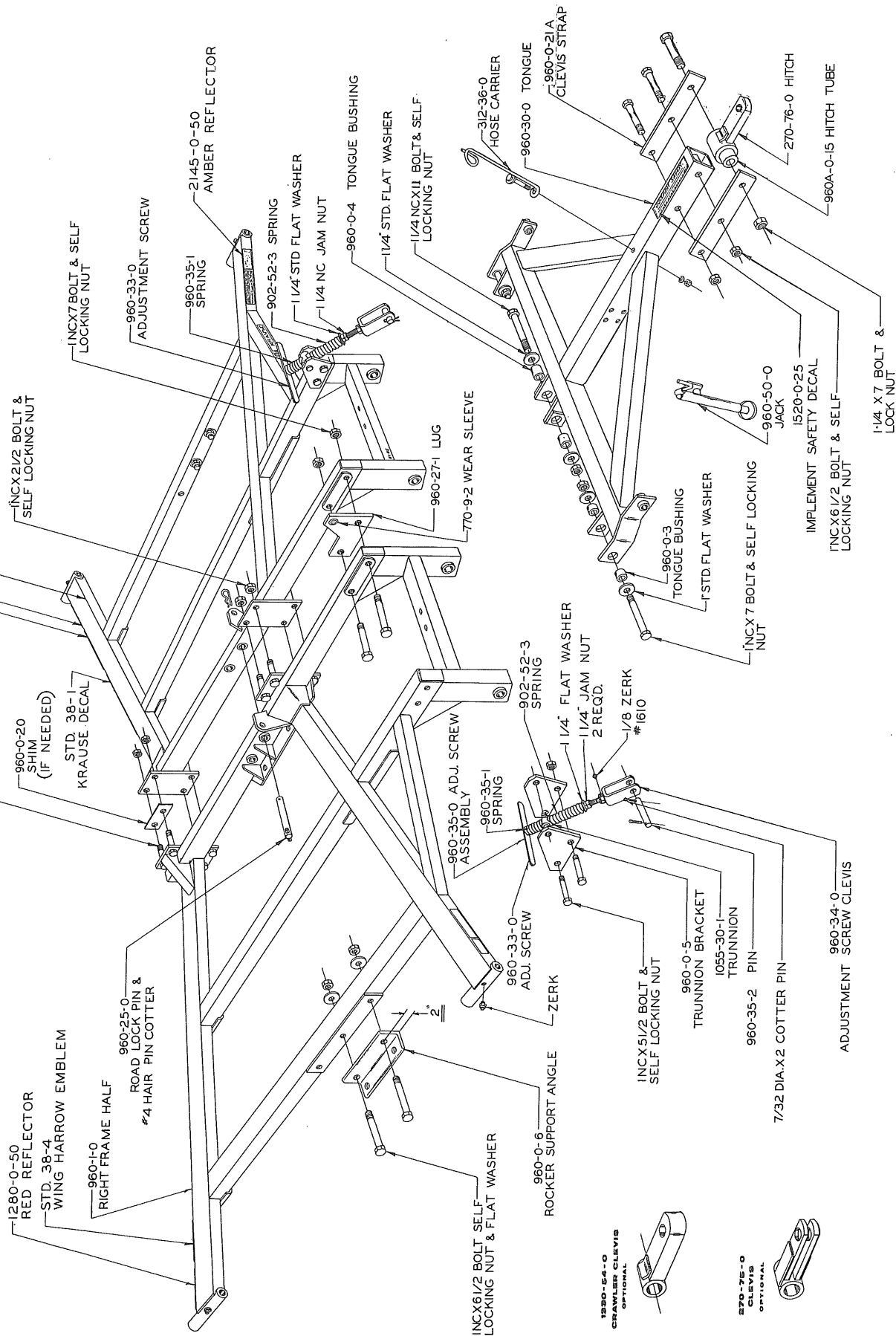


**BE ALERT TO THE POSSIBILITY OF
PERSONAL INJURY. THIS SYMBOL
IDENTIFIES IMPORTANT SAFETY
MESSAGES. CAREFULLY READ THE
MESSAGE THAT FOLLOWS.**

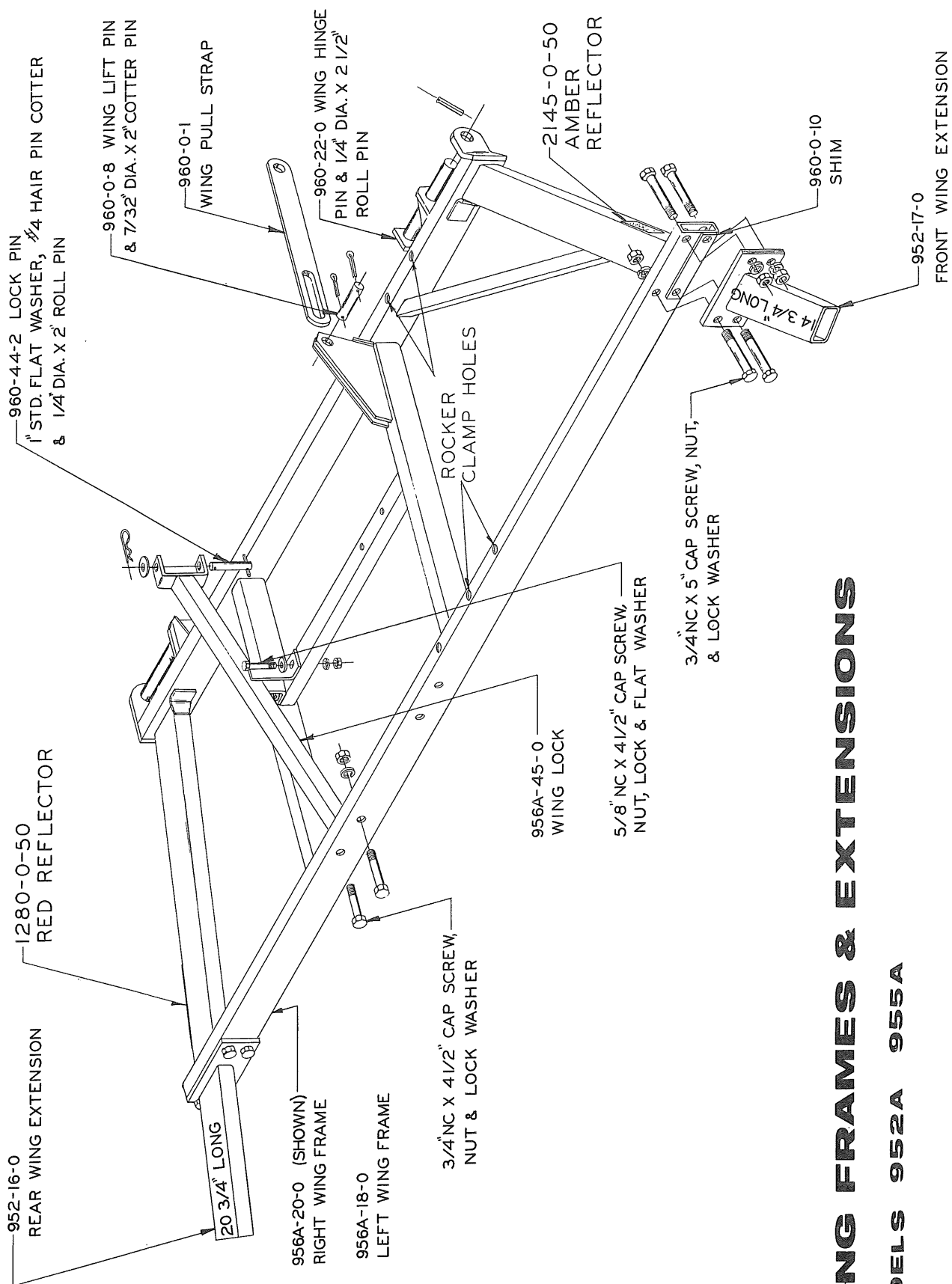
PARTS SECTION

The following illustrated Parts Section has been compiled to reflect part numbers required to order parts, and to support the Assembly Section for dimensions and descriptions of all parts, bolts, pins, etc.

CENTER FRAMES TONGUE

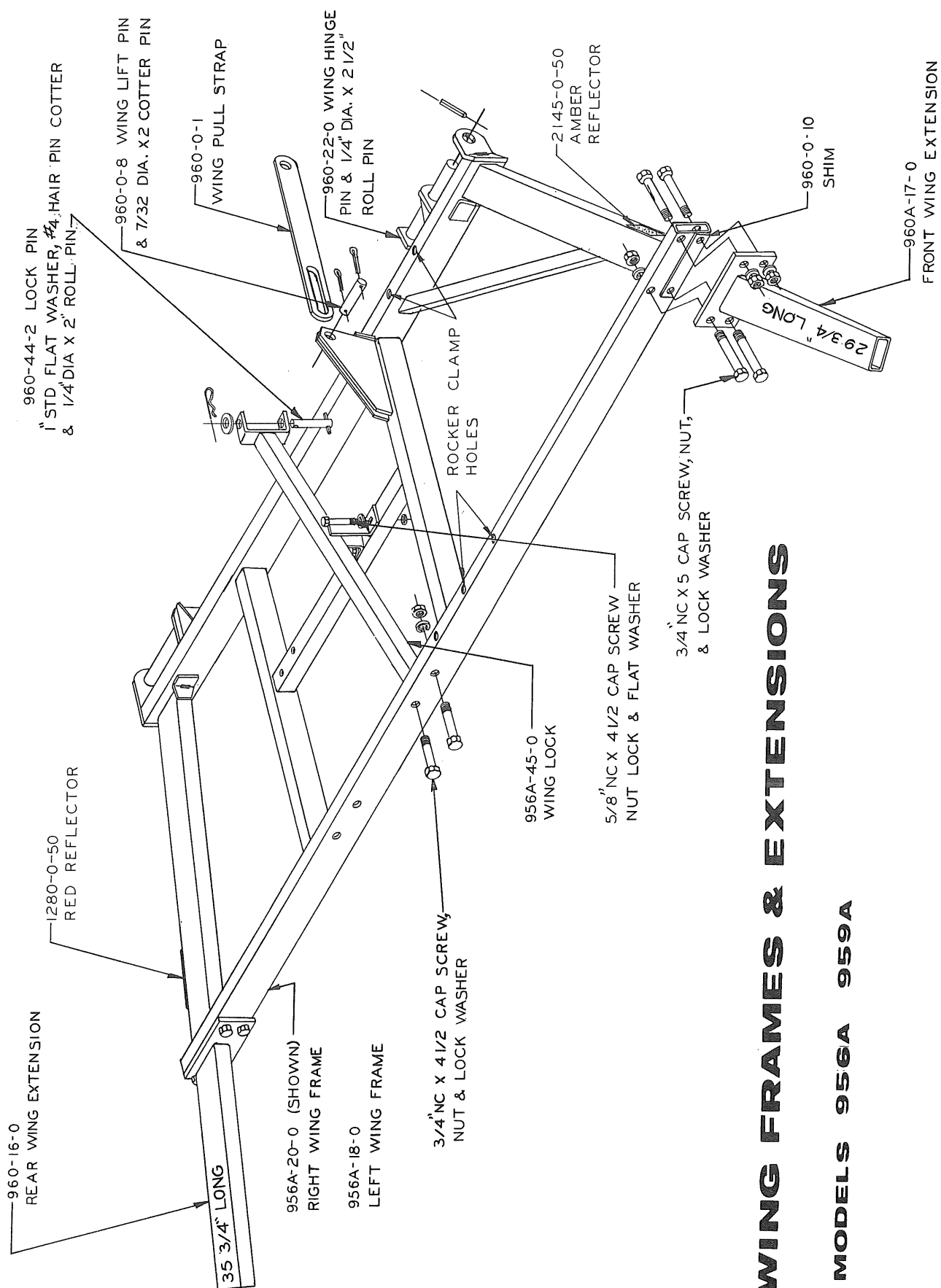


REV. 3/74



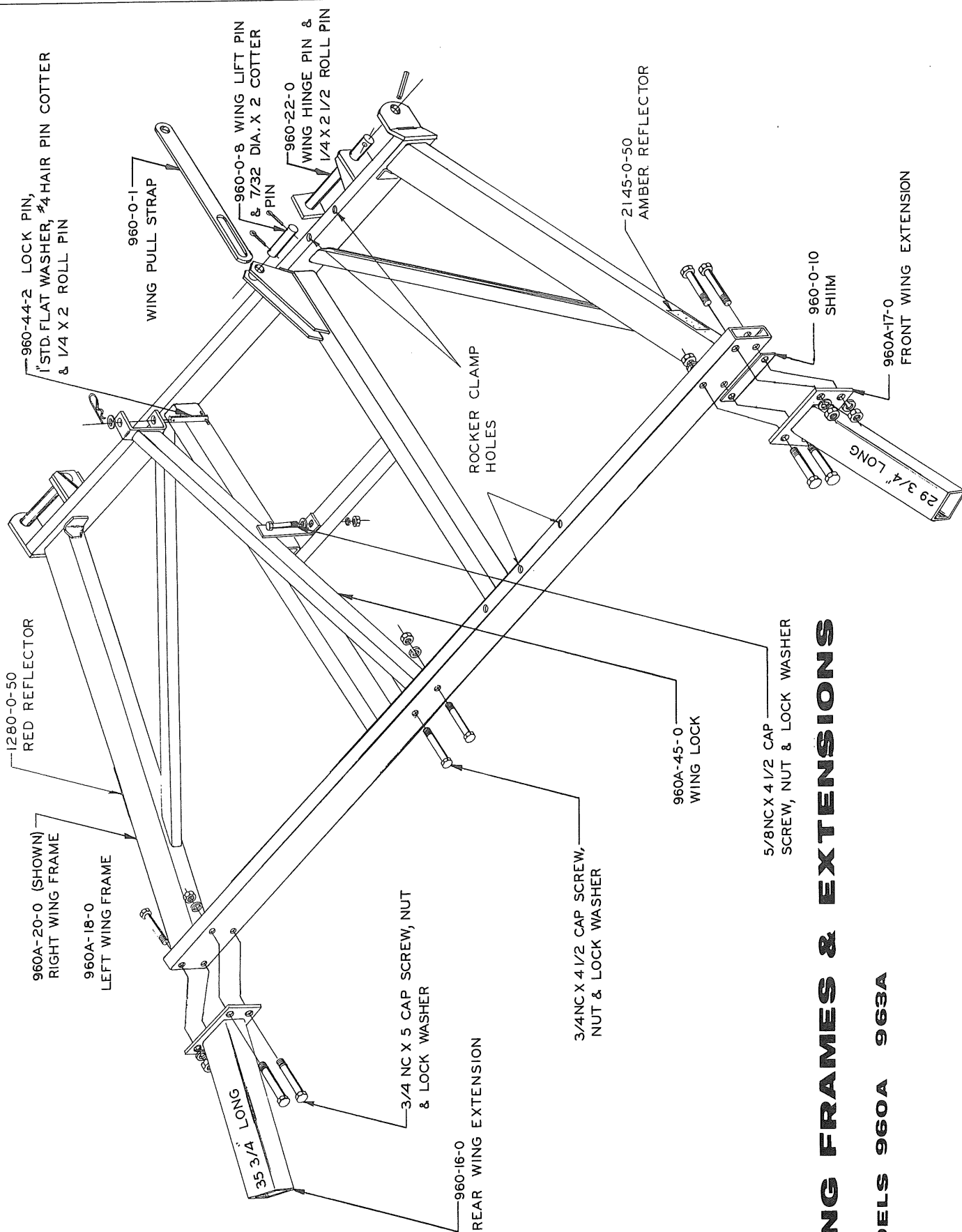
WING FRAMES & EXTENSIONS

MODELS 952A 955A



WING FRAMES & EXTENSIONS

MODELS 956A 959A

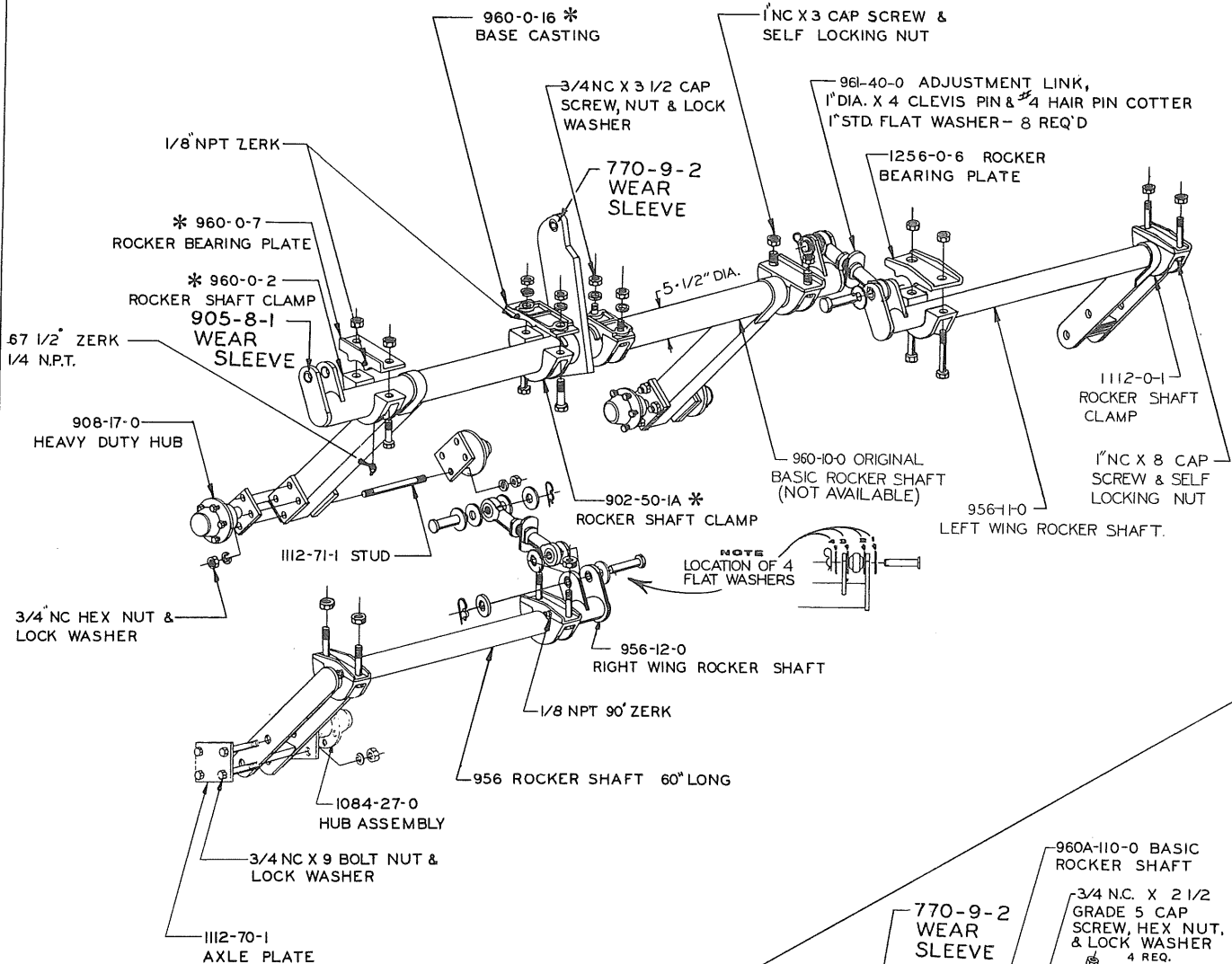
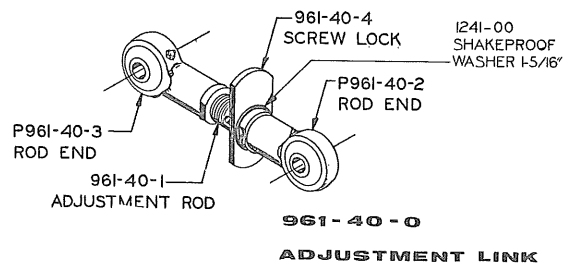


WING FRAMES & EXTENSIONS

MODELS 960A 963A

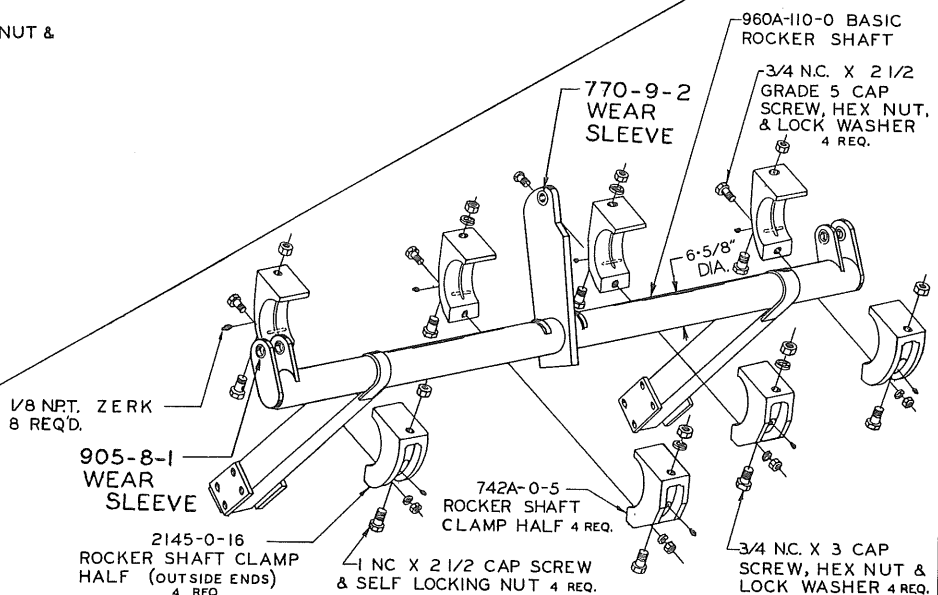
ROCKER SHAFTS

FOR
MODELS 952A 955A 967



* ORIGINAL UPPER AND LOWER CASTINGS MAY BE ORDERED FOR 960A-10-0 ROCKER SHAFT.

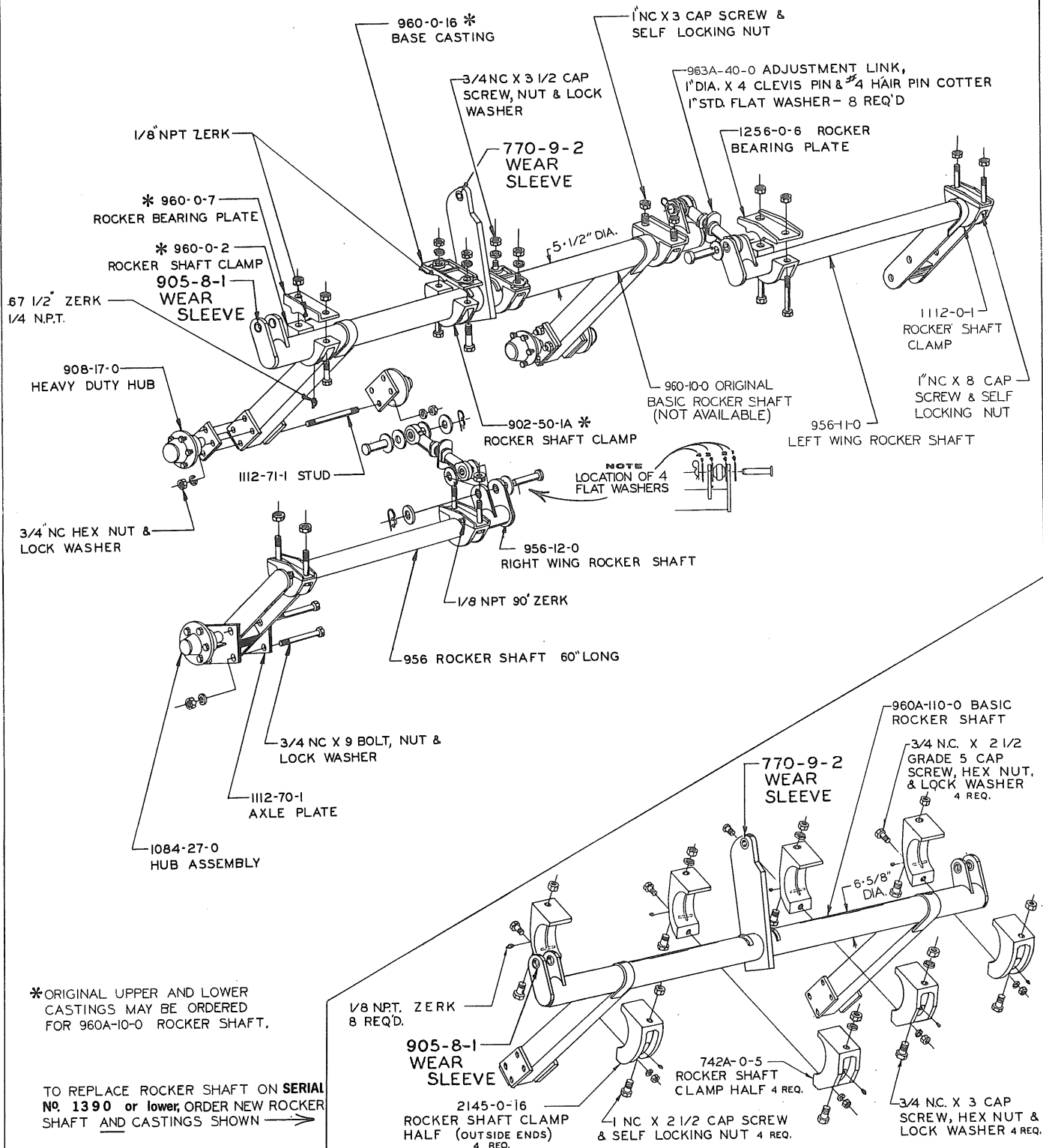
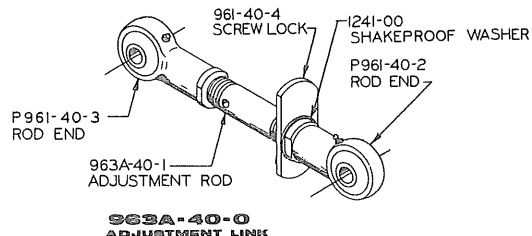
TO REPLACE ROCKER SHAFT ON SERIAL No. 1390 or lower, ORDER NEW ROCKER SHAFT AND CASTINGS SHOWN →



NEW 6" STD. PIPE ROCKER SHAFT
FOR ALL MODELS SERIAL No. 1748 and up.
(must use castings shown)

ROCKER SHAFTS

FOR
MODELS 956A 959A 968



*ORIGINAL UPPER AND LOWER CASTINGS MAY BE ORDERED FOR 960A-10-0 ROCKER SHAFT.

TO REPLACE ROCKER SHAFT ON SERIAL NO. 1390 or lower, ORDER NEW ROCKER SHAFT AND CASTINGS SHOWN →

NEW 6" STD. PIPE ROCKER SHAFT
FOR ALL MODELS SERIAL No. 1748 and up.
(must use castings shown)

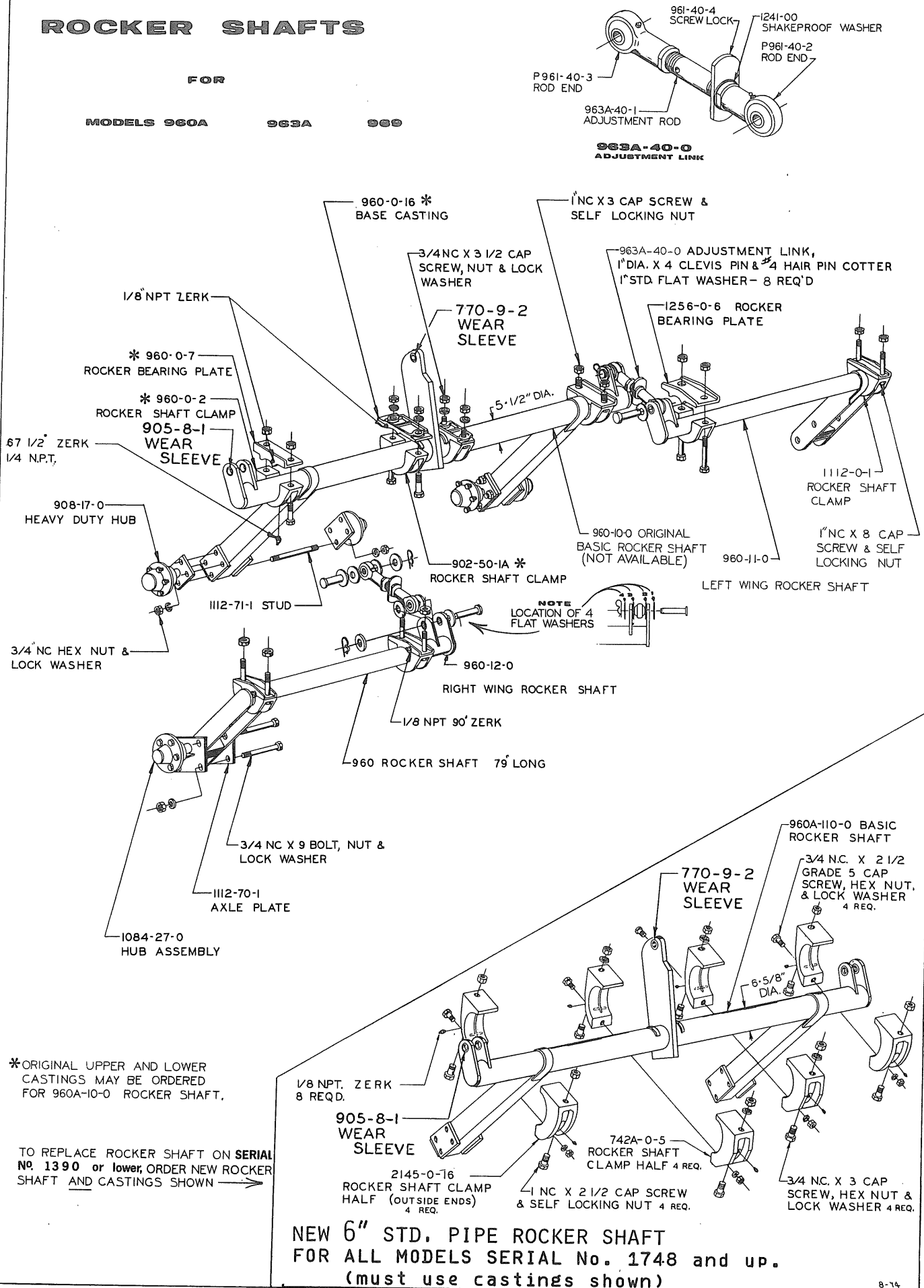
ROCKER SHAFTS

FOR

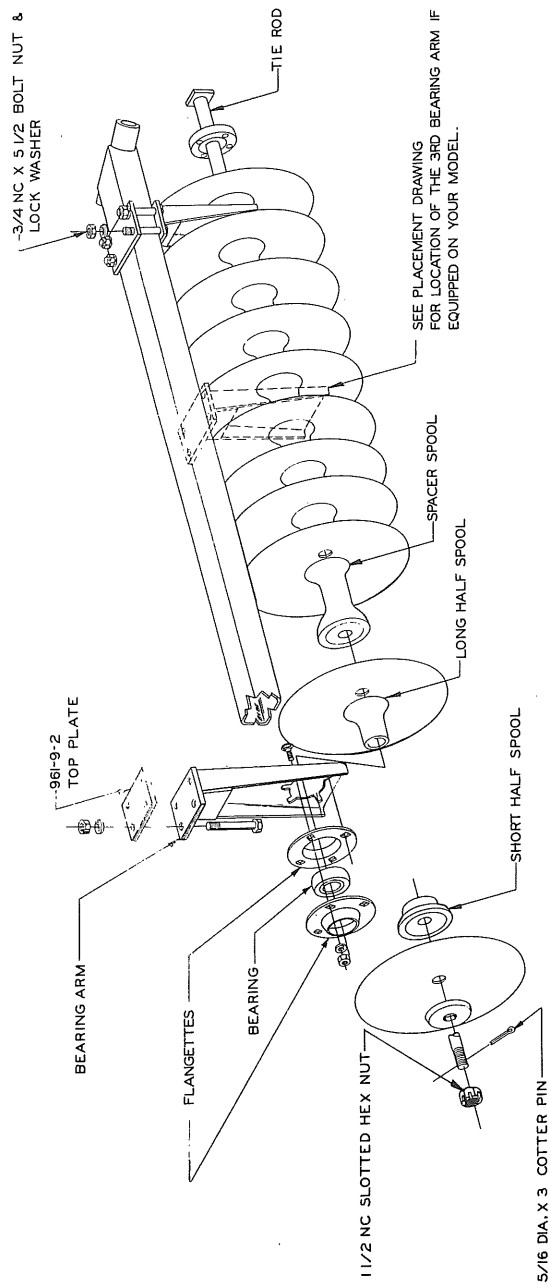
MODELS 960A

963A

969



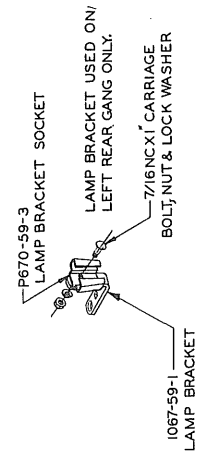
TYPICAL DISC GANG



DISC BLADES 1-74

PART NO.	SIZE	GAUGE	TYPE
1003-C7	20"	9	PLAIN
1003-C8	20"	9	NOTCHED
1003-C11	20"	7	DUB
1001-C8	16"	11	PLAIN
1002-C8	18"	10	PLAIN
1022-C10	22"	9	PLAIN
1022-C11	22"	9	NOTCHED
1022-C12	22"	7	PLAIN
1022-C13	22"	7	NOTCHED

22" BLADES USED ON 8" & 9 1/8" SPACING ONLY

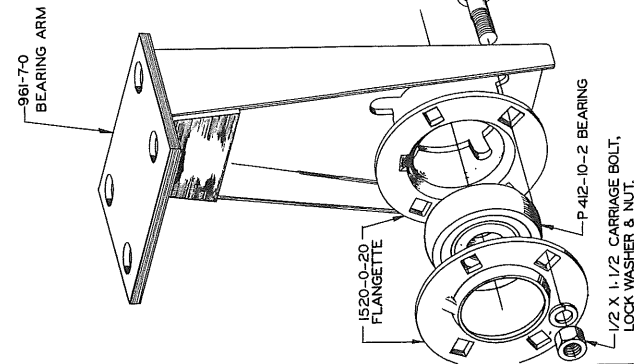


LAMP BRACKET

961-11-0 BEARING ARM

OPTION

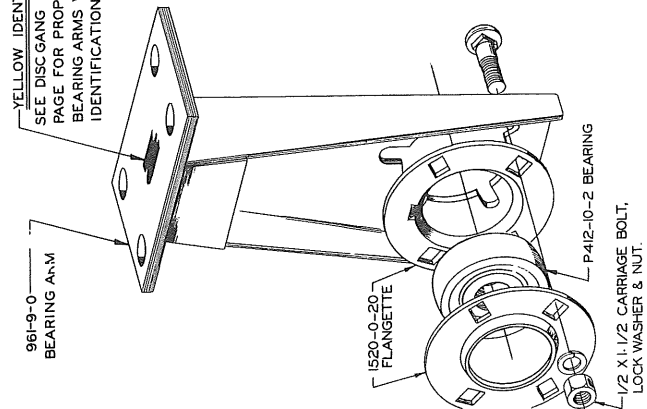
REGREASEABLE BEARING ARM
INTERCHANGEABLE WITH 961-11-0



961-10-0 BEARING ARM

OPTION

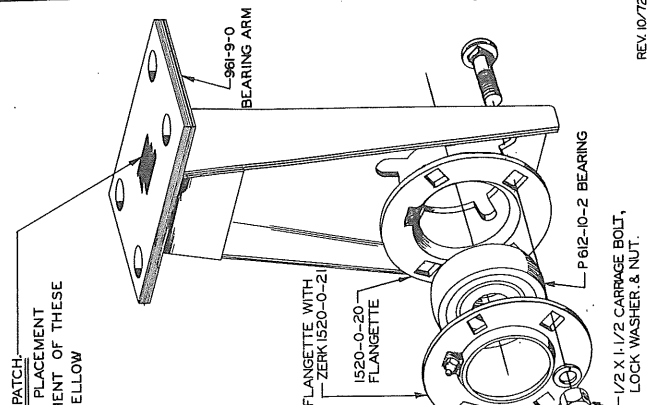
REGREASEABLE BEARING ARM
INTERCHANGEABLE WITH 961-10-0



961-12-0 BEARING ARM

OPTION

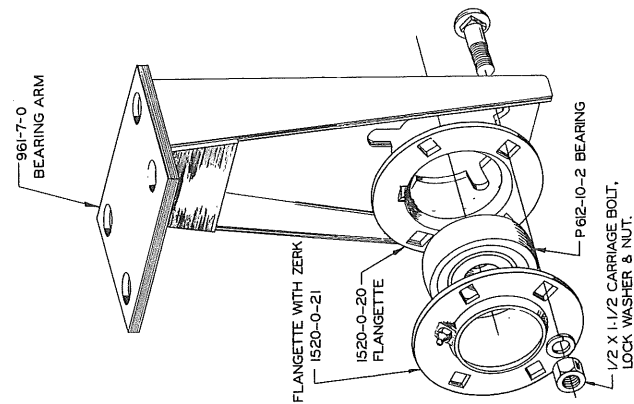
REGREASEABLE BEARING ARM
INTERCHANGEABLE WITH 961-12-0



961-13-0 BEARING ARM

OPTION

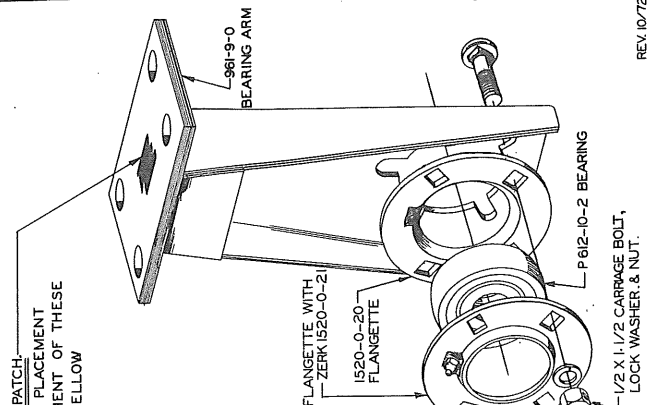
REGREASEABLE BEARING ARM
INTERCHANGEABLE WITH 961-13-0



961-14-0 BEARING ARM

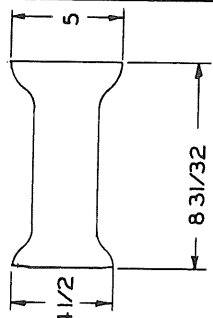
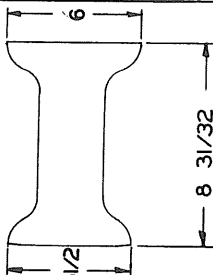
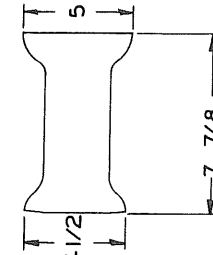
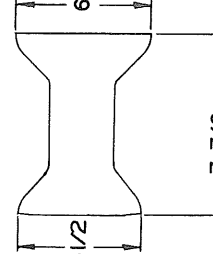
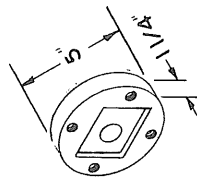
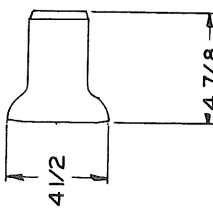
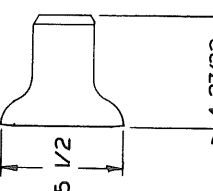
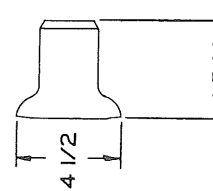
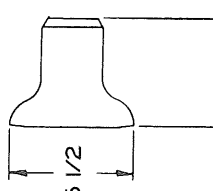
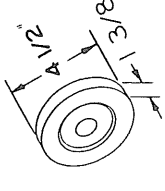
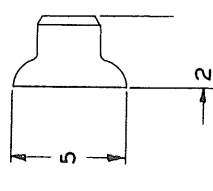
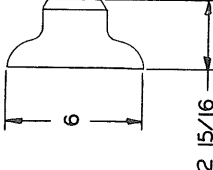
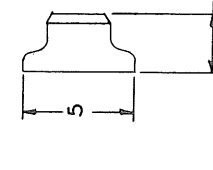
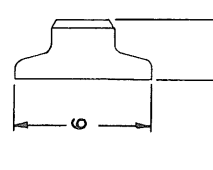
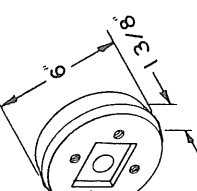
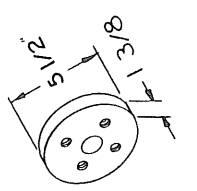
OPTION

REGREASEABLE BEARING ARM
INTERCHANGEABLE WITH 961-14-0



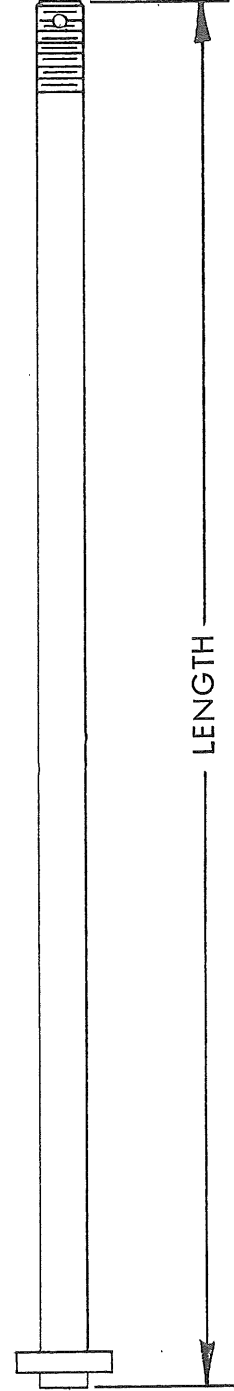
SPACER SPOOLS & END WASHERS

R 10-74

SPOOLS FOR 20" DISC 9 1/8 SPACING	SPOOLS FOR 22" DISC 9 1/8 SPACING	SPOOLS FOR 20" DISC 8 SPACING	SPOOLS FOR 22" DISC 8 SPACING	END WASHERS FOR 20" DISC
616-0-7 SPACER SPOOL 	364-0-7 SPACER SPOOL 	1295-0-7 SPACER SPOOL 	1280-0-7 SPACER SPOOL 	412-19-4 LARGE END WASHER 
616-20-1 LONG HALF SPOOL 	364-0-9 LONG HALF SPOOL 	412-19-1 LONG HALF SPOOL 	374-0-9 LONG HALF SPOOL 	412-19-3 END WASHER 
410-20-2 SHORT HALF SPOOL 	364-0-8 SHORT HALF SPOOL 	1295-0-10 SHORT HALF SPOOL 	1280-0-10 SHORT HALF SPOOL 	374-0-6 LARGE END WASHER 
				374-0-5 END WASHER 

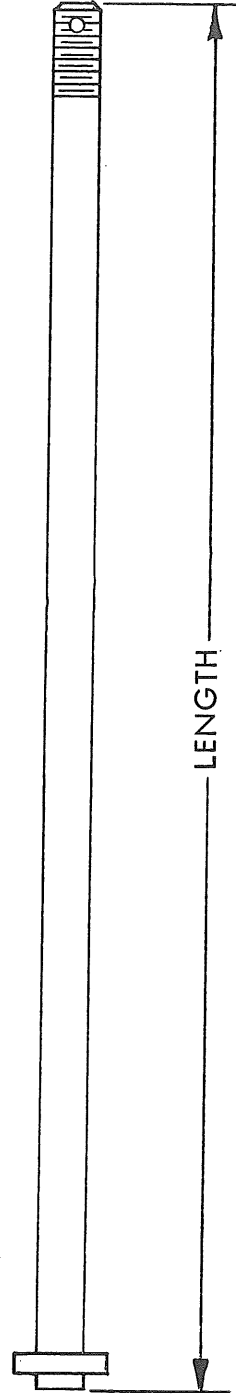
TIE RODS

MODEL	SPACING	NO. OF DISC PER GANG	HOT ROLLED NO.	COLD ROLLED NO.	LENGTH
952A	9-1/8	8	616-18-0	1053-78-0	68-5/8
952A	9-1/8	9	618-18-0	1054-78-0	77-3/4
955A	8	9	616-18-0	1053-78-0	68-5/8
955A	8	10	387-20-0	1056-70-0	76-3/4



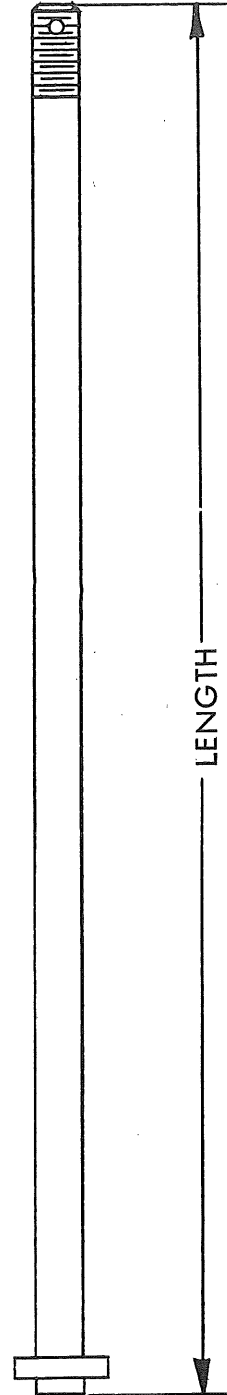
TIE RODS

MODEL	SPACING	NO. OF DISC PER GANG	HOT ROLLED NO.	COLD ROLLED NO.	LENGTH
956A	9-1/8	10	619-18-0	1055-86-0	86-3/8
956A	9-1/8	8	616-18-0	1053-78-0	68-5/8
956A	9-1/8	11	621-18-0	1055-93-0	95-1/2
956A	9-1/8	9	618-18-0	1054-78-0	77-3/4
959A	8	11	1280-25-0	1280-85-0	84-1/2
959A	8	9	616-18-0	1053-78-0	68-5/8
959A	8	12	1282-20-0	1282-80-0	92-1/4
959A	8	10	387-20-0	1056-70-0	76-3/4



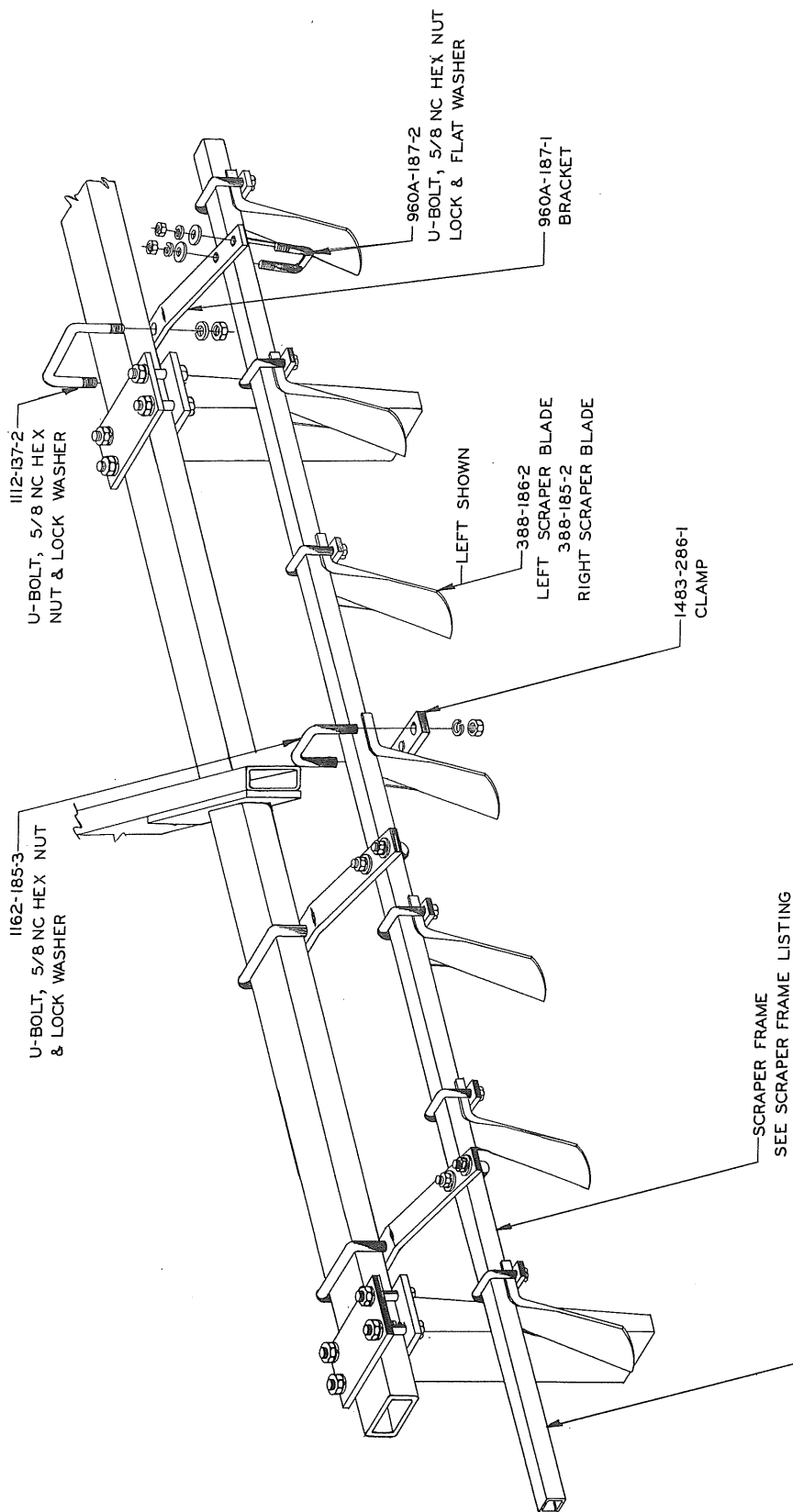
TIE RODS

MODEL	SPACING	NO. OF DISC PER GANG	HOT ROLLED NO.	COLD ROLLED NO.	LENGTH
960A	9-1/8	6	901-18-0	901-28-0	49-7/8
960A	9-1/8	7	614-18-0	614-16-0	59
960A	9-1/8	8	616-18-0	1053-78-0	68-5/8
960A	9-1/8	9	618-18-0	1054-78-0	77-3/4
963A	8	7	1280-20-0	1280-80-0	52-1/4
963A	8	9	616-18-0	1053-78-0	68-5/8
963A	8	10	387-20-0	1056-70-0	76-3/4
963A	8	6	963-18-0	963-14-0	44-1/4



TYPICAL SCRAPER

LEFT REAR 960A SHOWN



SCRAPER FRAMES

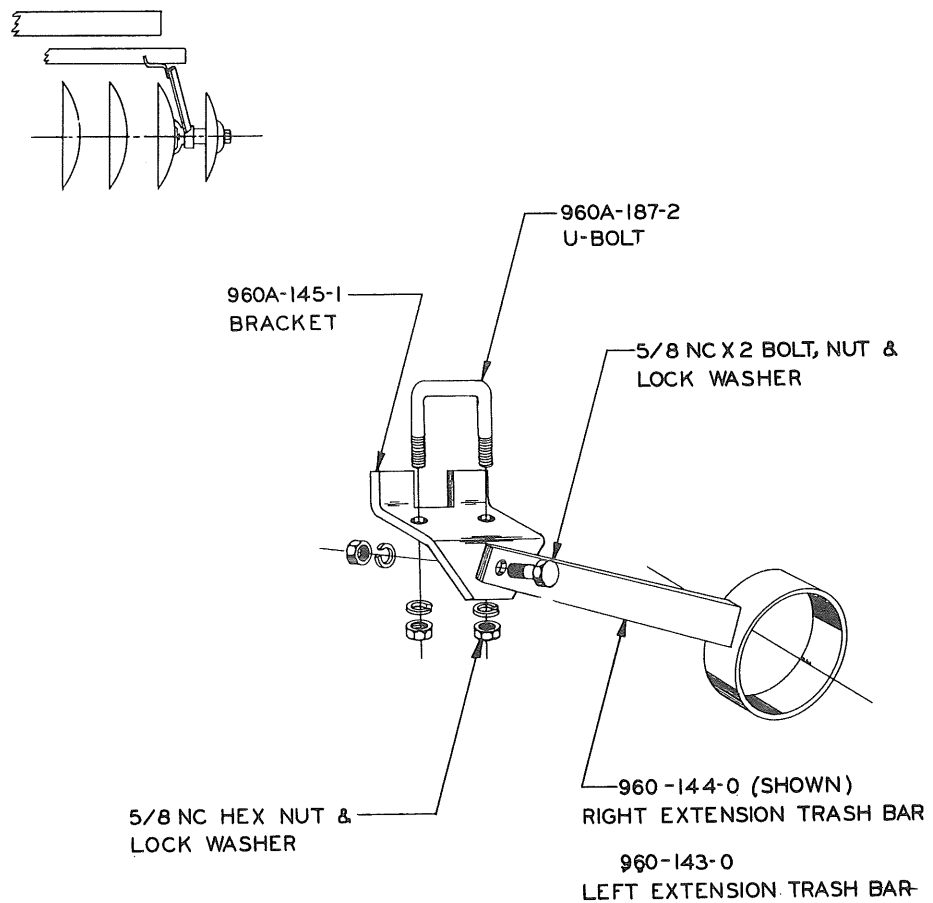
960A-185-1	40"
922-183-1	44"
963A-195-1	56"
1159-183-1	60"
959A-185-1	62"
1160-183-1	68"
956A-185-1	76"
955A-185-1	80"
955A-183-1	86"
1164-183-1	100"
1165-185-1	108"

NOTE:
PLACE LONG SCRAPER FRAMES ON
OUTSIDE REAR GANGS. FRAMES ARE
LONGER TO ACCOMMODATE ADDITION
OF EXTENSION TRASH BAR. YOU MAY
REPOSITION FRAME IF THIS ACCESSORY
IS NOT USED.

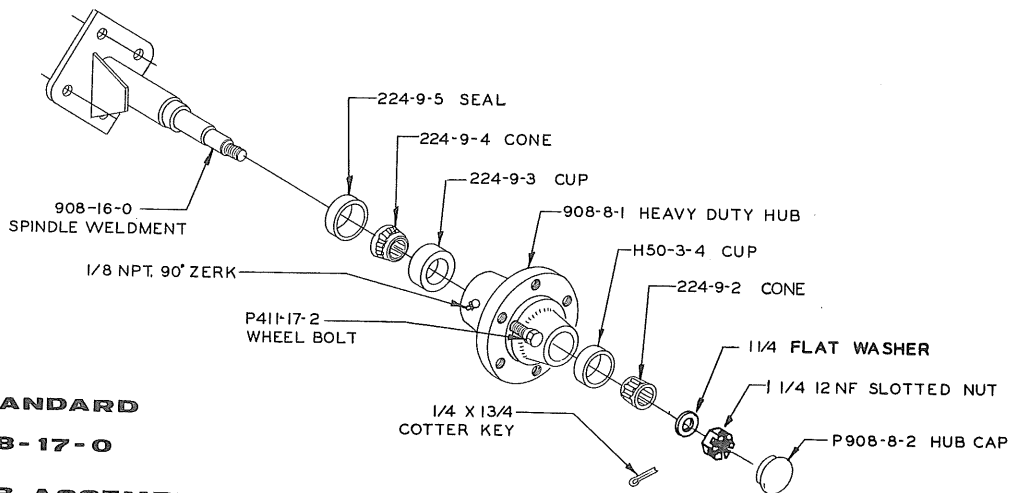
960A-147-0

EXTENSION TRASH BAR (FOR TUBE SCRAPER)

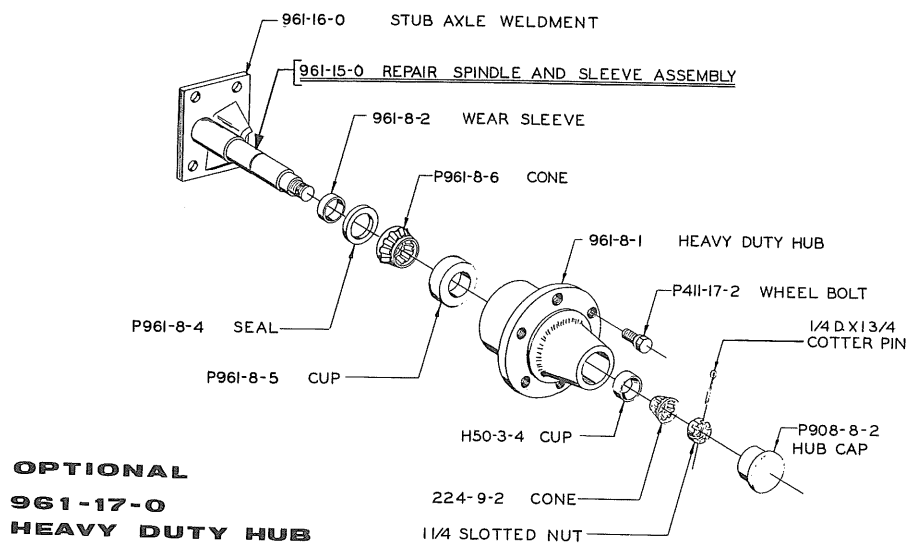
960A-147-0 INCLUDES ONE RIGHT EXTENSION TRASH BAR
AND ONE LEFT EXTENSION TRASH BAR.



HEAVY DUTY HUB ASSEMBLY

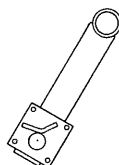
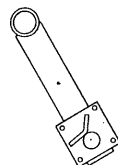


THESE HUBS ARE FOR CENTER ROCKER SHAFT



left
view

right
view



"NOTE POSITION OF
SPINDLE ON ROCKER ARM."

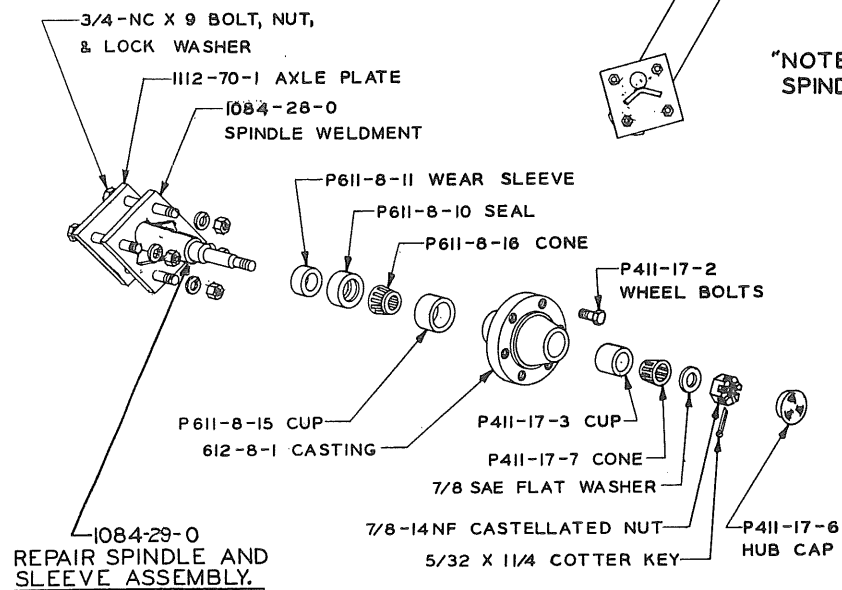
HUB ASSEMBLY

1112-70-0

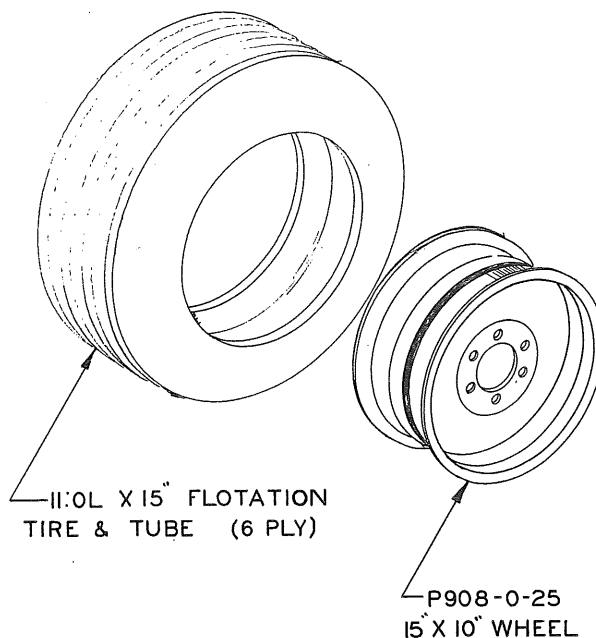
HUB ASSEMBLY
1112-70-0 INCLUDES 1084-27-0
ASSEMBLY, 1112-70-1 AXLE PLATE
& BOLTS

right
view

left
view



8-74



TIRES, TUBES & WHEELS

MIDDLE BEARING ARM ASSEMBLIES WITH SPOOLS

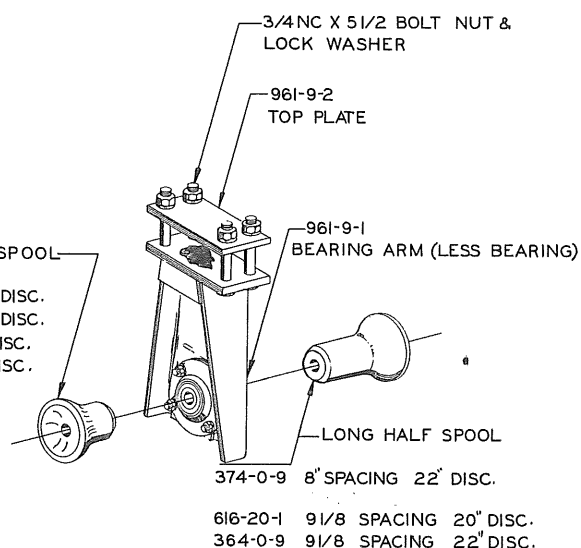
NOTE: ASSEMBLY NUMBER INCLUDES BOLTS,
BEARING ARM, BEARING, FLANGETTES,
TOP PLATE, HALF SPOOLS.

MIDDLE BEARING ARM ASSEMBLY NO.

956-80-0	9 1/8"	STANDARD BEARING ARMS FOR 20" DISC.
959-80-0	8"	
956-81-0	9 1/8"	REGREASEABLE BEARING ARMS FOR 20" DISC.
959-81-0	8"	
956-82-0	9 1/8"	STANDARD BEARING ARMS FOR 22" DISC.
959-82-0	8"	
956-83-0	9 1/8"	REGREASEABLE BEARING ARMS FOR 22" DISC.
959-83-0	8"	

410-20-2 9 1/8" SPACING 20" DISC.
364-0-8 9 1/8" SPACING 22" DISC.
1295-0-10 8" SPACING 20" DISC.
1280-0-10 8" SPACING 22" DISC.

SHORT HALF SPOOL

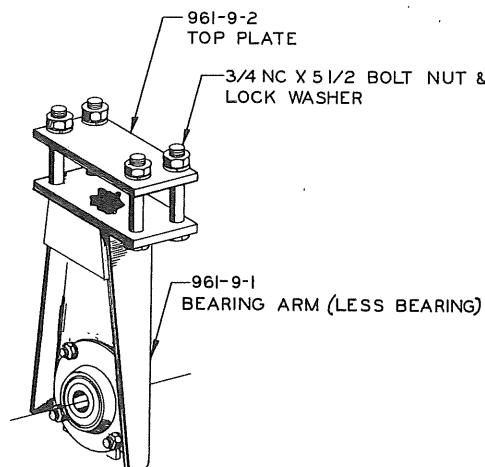


REV. 10/72

NOTE: ASSEMBLY NUMBER INCLUDES BOLTS,
BEARING ARM, BEARING, FLANGETTES,
SUPPORT RING & TOP PLATE.

USED WITH 22" DISC BLADE CONVERSION
ON 8" & 9 1/8" SPACING ONLY.

960-82-0	STANDARD BEARING ARM.
960-83-0	REGREASEABLE BEARING ARM.

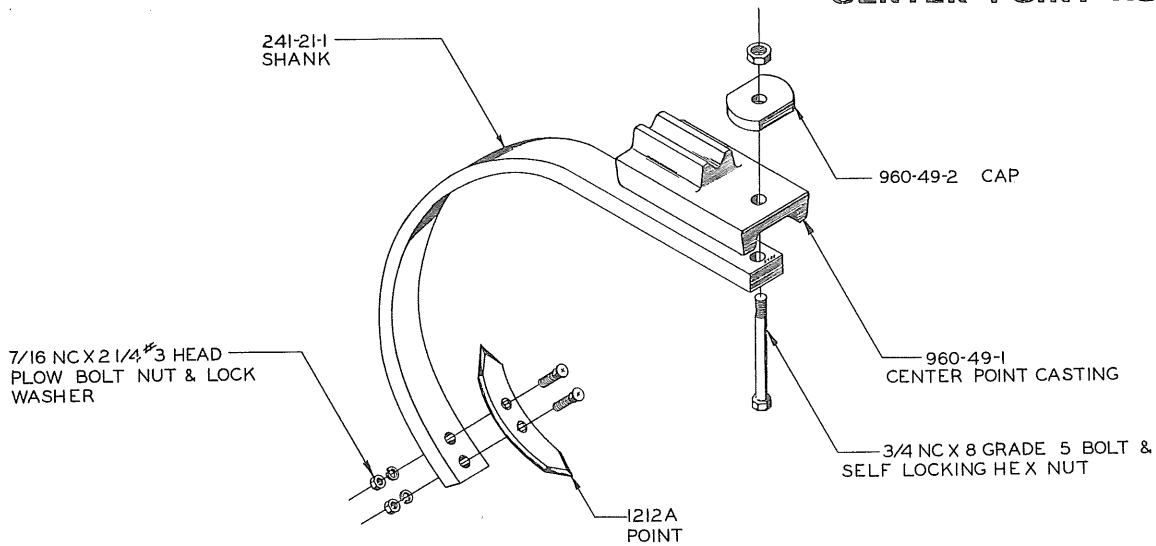


MIDDLE BEARING ARM ASSEMBLIES LESS SPOOLS

REV. 10/72
11-70

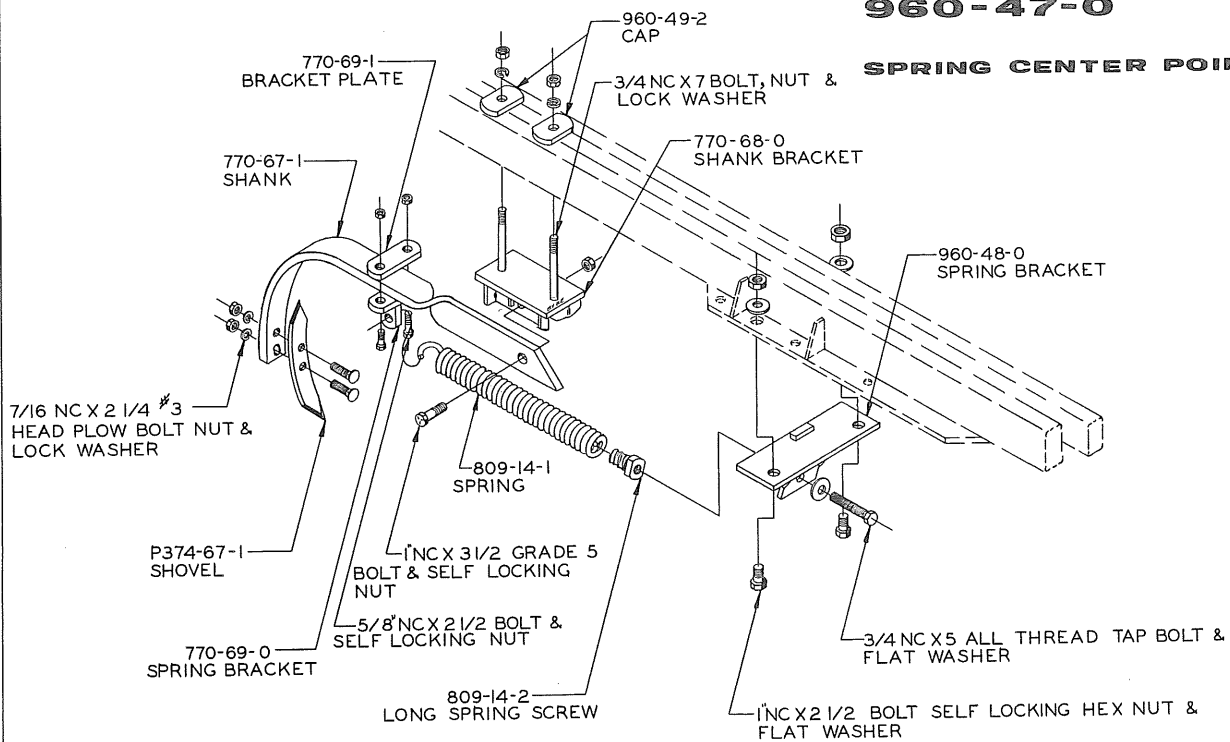
960-49-0

CENTER POINT ASSEMBLY



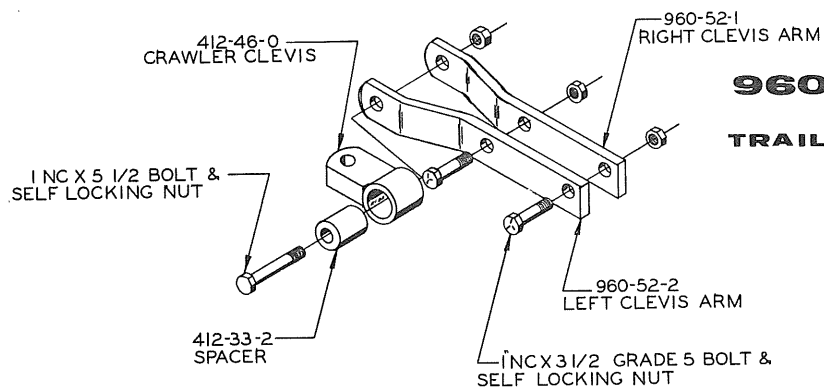
960-47-0

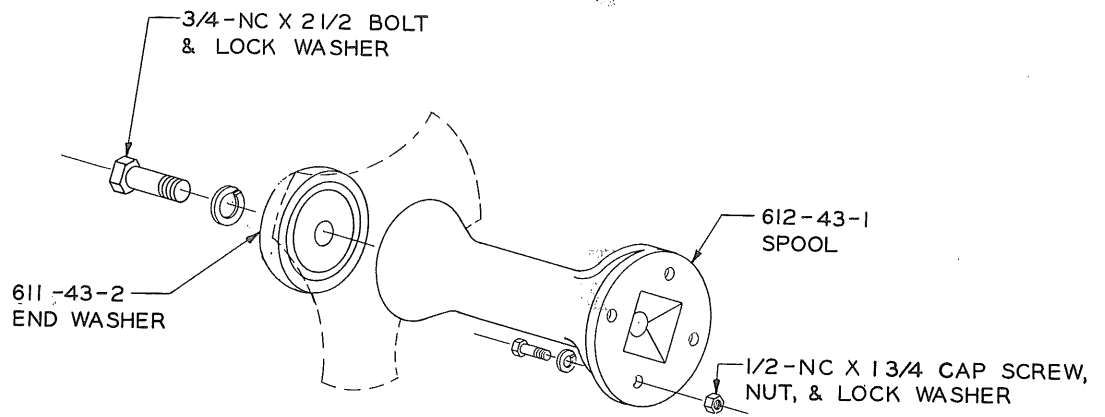
SPRING CENTER POINT ASSEMBLY



960-52-0

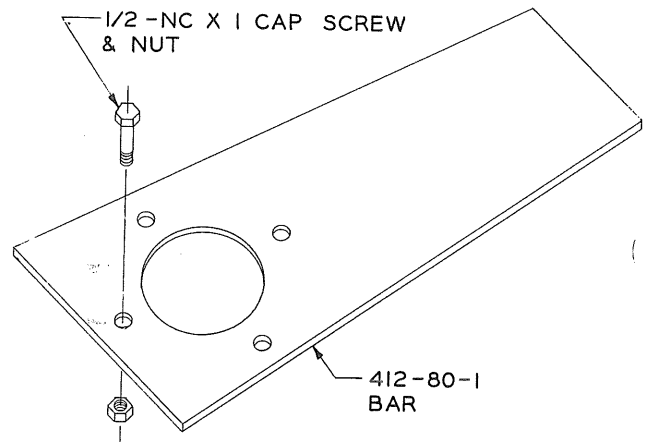
TRAIL HITCH ASSEMBLY





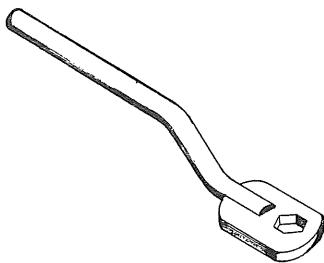
612-43-0

EXTENSION ASSEMBLY



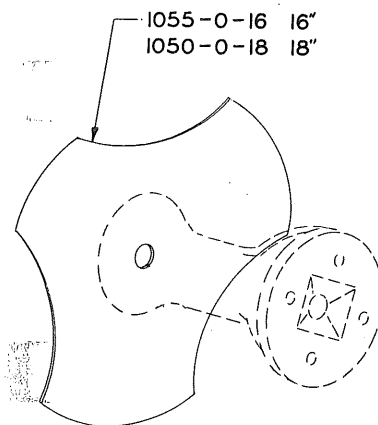
412-80-0

TIE ROD HOLDER



961-25-0

TIE ROD WRENCH

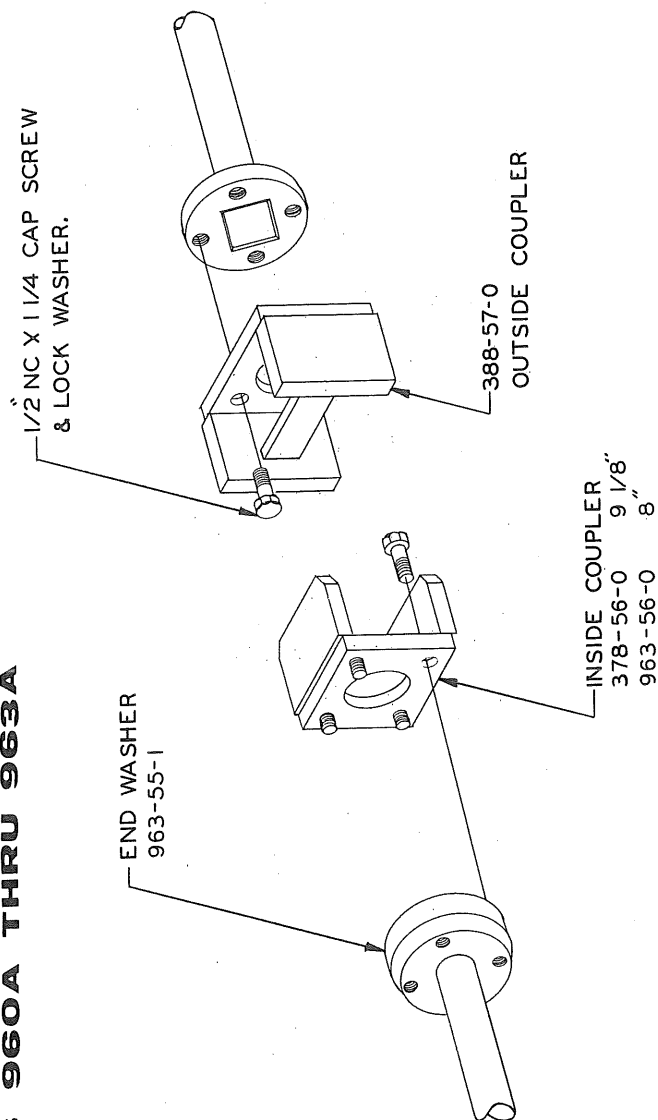


NOTCHED EXTENSION BLADE

REV. 8/74
7-71

TIE ROD COUPLING GROUP

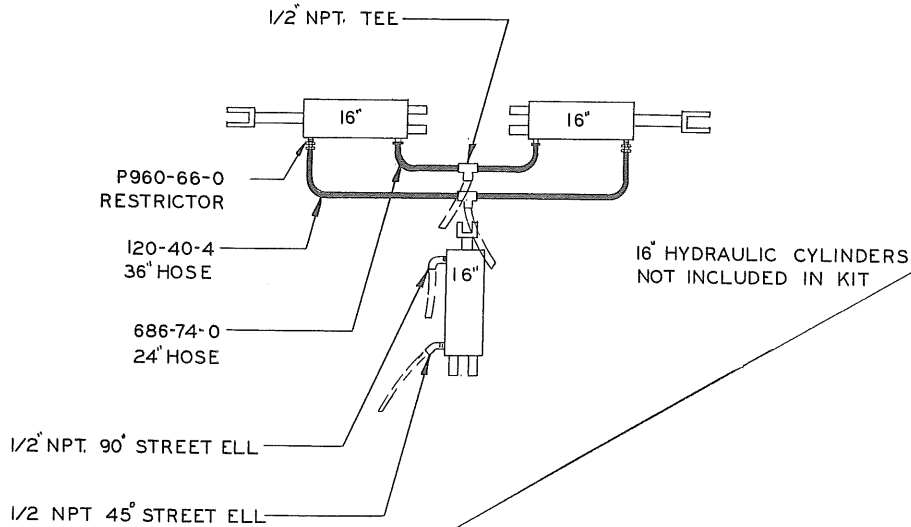
378 - 55 - 0 9 1/8" SPACING
963 - 55 - 0 8" SPACING
FOR MODELS 960A THRU 963A



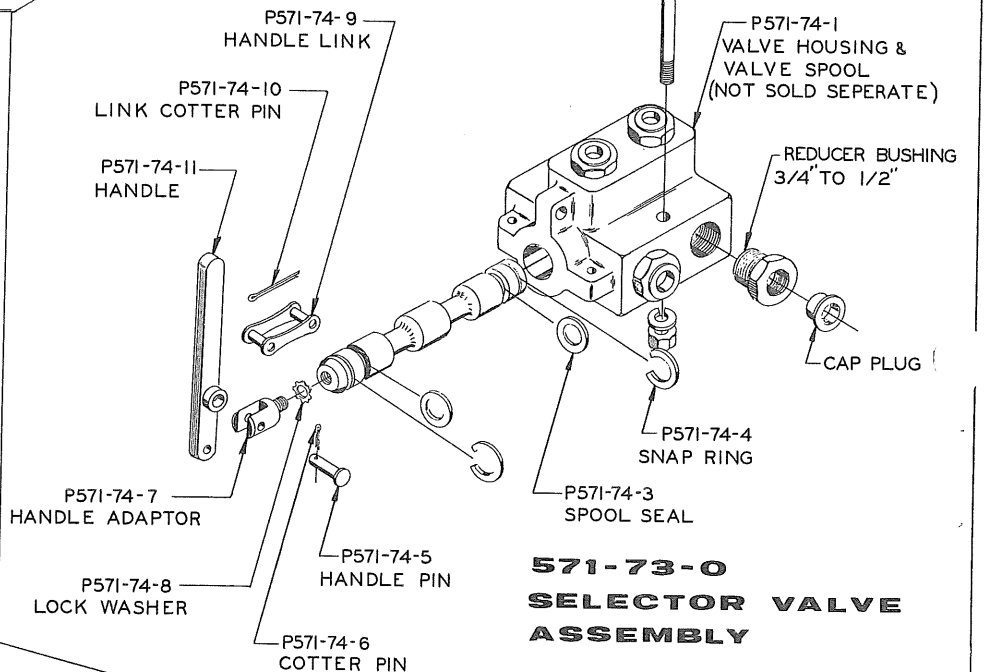
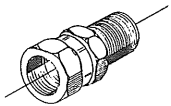
NOTE: TIE ROD COUPLING GROUPS
 ARE USED ON WING GANGS ONLY.
 NOT TO BE USED BETWEEN CENTER
 AND WING GANGS.

960-65-0

HYDRAULIC HOSE ASSEMBLY

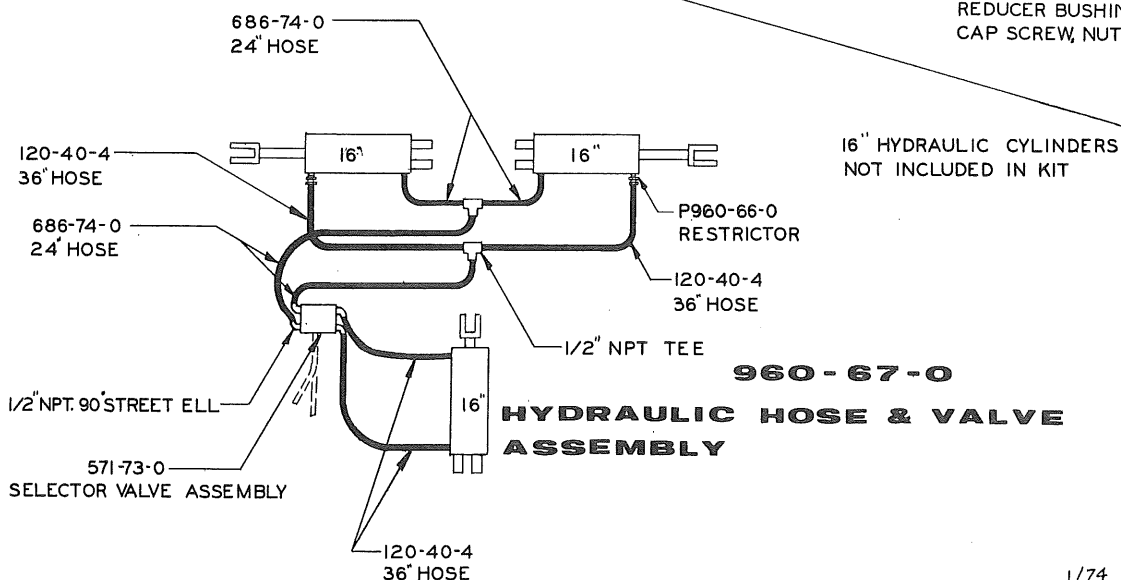


P960-66-0 RESTRICTOR



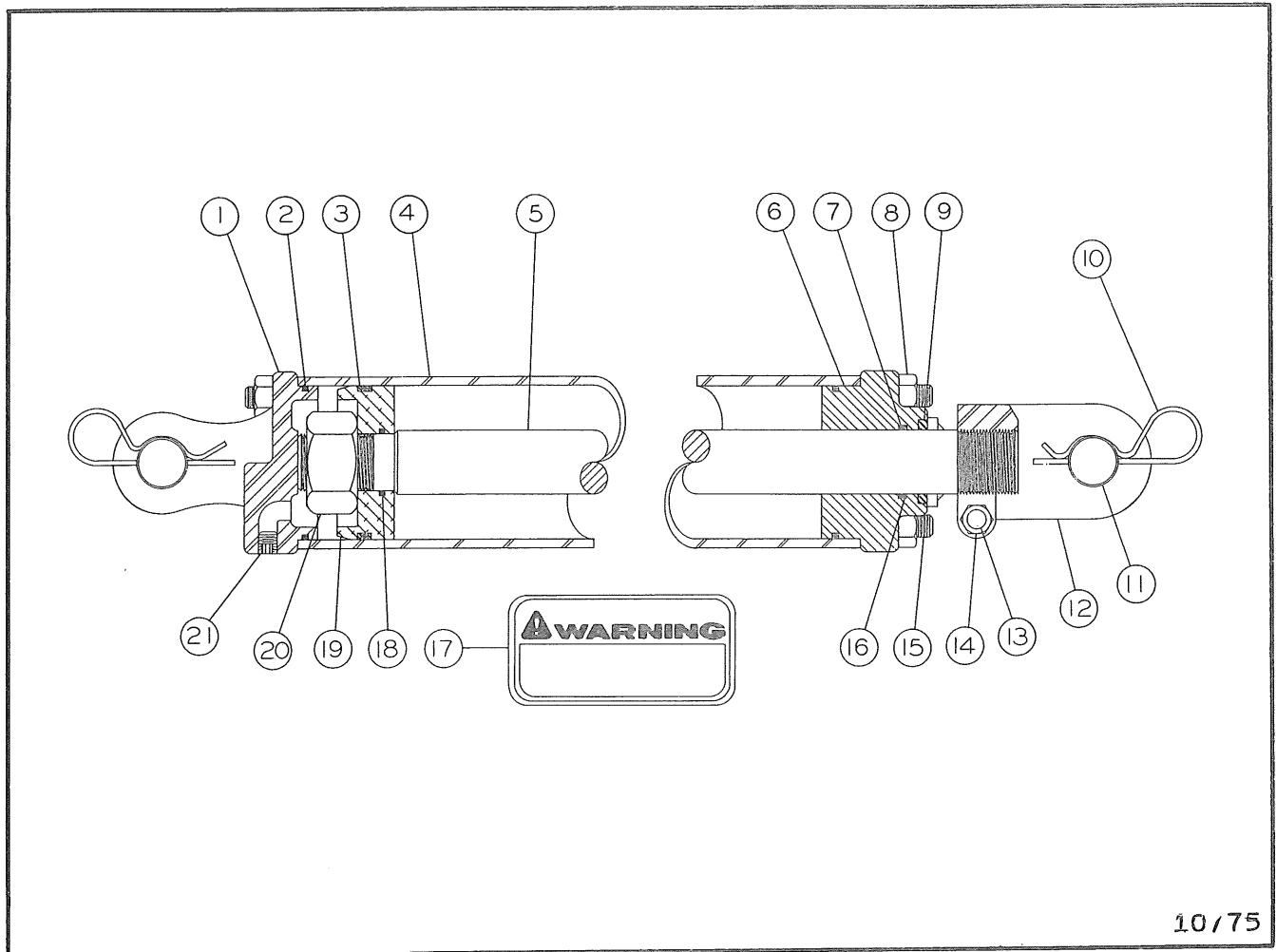
571-73-0 SELECTOR VALVE ASSEMBLY

INCLUDES P571-74-0 SELECTOR VALVE,
REDUCER BUSHING, CAP PLUG & 3/8 X 5 1/2
CAP SCREW, NUT & LOCK WASHER.



960-67-0 HYDRAULIC HOSE & VALVE ASSEMBLY

CROSS HYDRAULIC CYLINDER

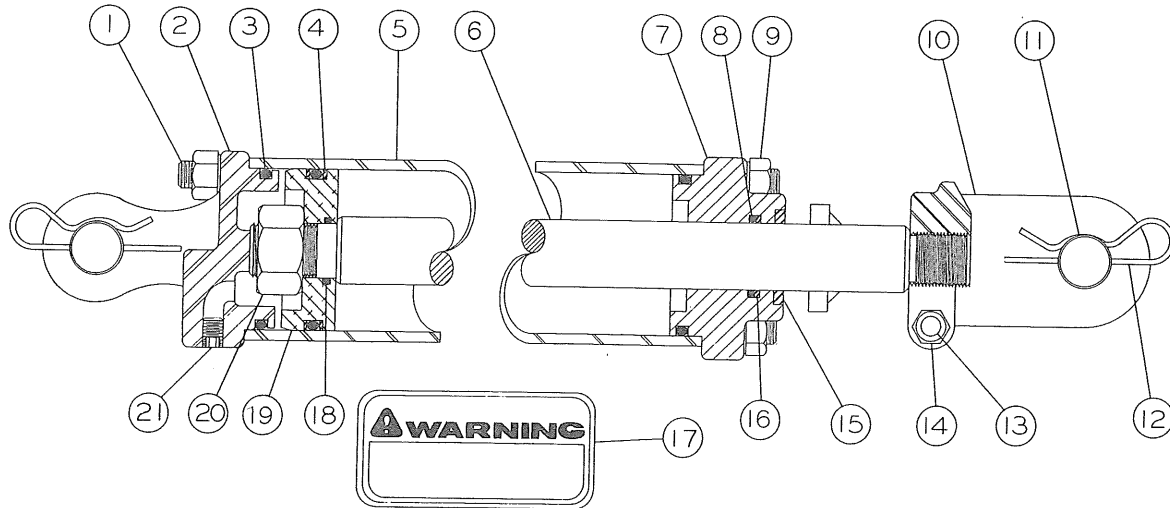


FOR MODELS All **PART LOCATION** Depth Control, Wing Lift Cylinder
 686B-55-0 Assembly 3" x 16"
 Retracted 31-1/2" Stroke 16" Extended 47-1/2" Rod 1-1/4"

ITEM	PART NUMBER	DESCRIPTION	NO. REQ.
1	686B-55-6	Base	1
* 2	686-55-12	O-Ring	3
* 3	686-55-13	Backup	2
4	686-55-4	Tube	1
5	686-55-18	Rod Assembly	1
6	686B-55-2	Head	1
* 7	350-60-14	O-Ring	1
8	686B-55-16	Nut	8
* 9	350-60-13	Lip Type Wiper	1
10	576-25-19	Clip, Pin	2
11	570-25-7	Clevis, Pin	2
12	570-25-1	Rod Clevis	1
13	2145-100-4	Capscrew	1
14	350-60-20	Nut	1
15	686B-55-9	Tie Rod	4
*16	350B-60-22	Backup	1
17	350A-60-25	Cylinder Warning Decal	1
*18	686-55-14	O-Ring	1
19	686-55-5	Piston	1
20	686-55-15	Nut	1
21	350-60-21	Plug	1

* 686B-55-50 Seal Kit (star items contained in kit)

CROSS HYDRAULIC CYLINDER



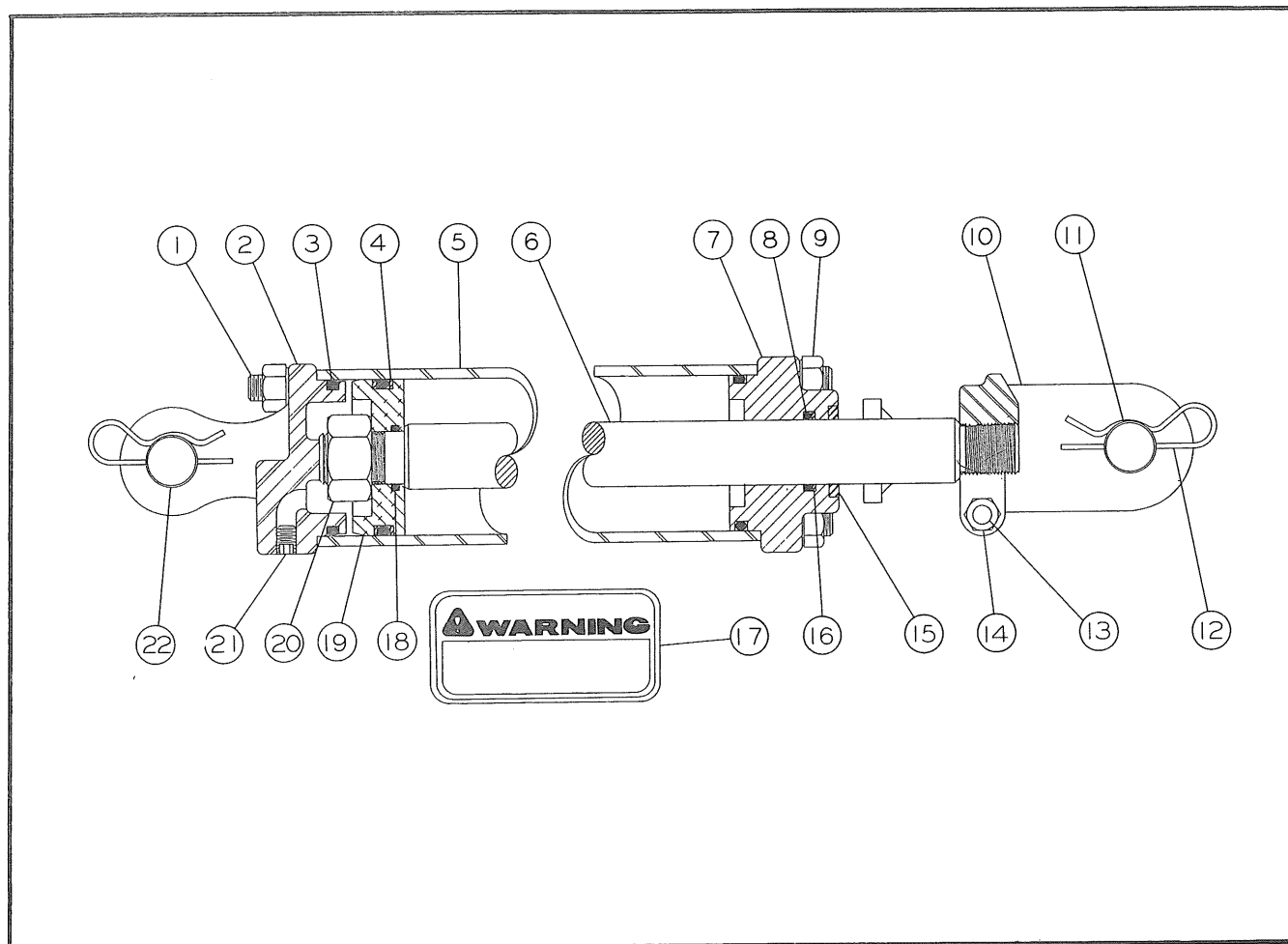
10/75

FOR MODELS All PART LOCATION Depth Control, Wing Lift Cylinder
 570A-25-0 Assembly 4" x 16"
 Retracted 31-1/2" Stroke 16" Extended 47-1/2" Rod 2"

ITEM	PART NUMBER	DESCRIPTION	NO. REQ.
1	570A-25-9	Tie Rod	4
2	570A-25-6	Base	1
* 3	350-60-15	O-Ring	3
* 4	570-25-13	Backup	2
5	570-25-4	Tube	1
6	570-25-3	Rod Assembly	1
7	570A-25-2	Head	1
* 8	570-25-11	O-Ring	1
9	350B-60-18	Nut	8
10	570-25-1	Rod Clevis	1
11	570-25-7	Clevis, Pin	2
12	576-25-19	Clip Pin	2
13	2145-100-4	Capscrew	1
14	350-60-20	Nut	1
* 15	570-25-10	Lip Type Wiper	1
* 16	570A-25-14	Backup	1
17	350A-60-25	Cylinder Warning Decal	1
* 18	350B-60-23	O-Ring	1
19	350-60-8	Piston	1
20	686-55-15	Nut	1
21	350-60-21	Plug	1

* 570A-25-50 Seal Kit (star items contained in kit)

CROSS HYDRAULIC CYLINDER

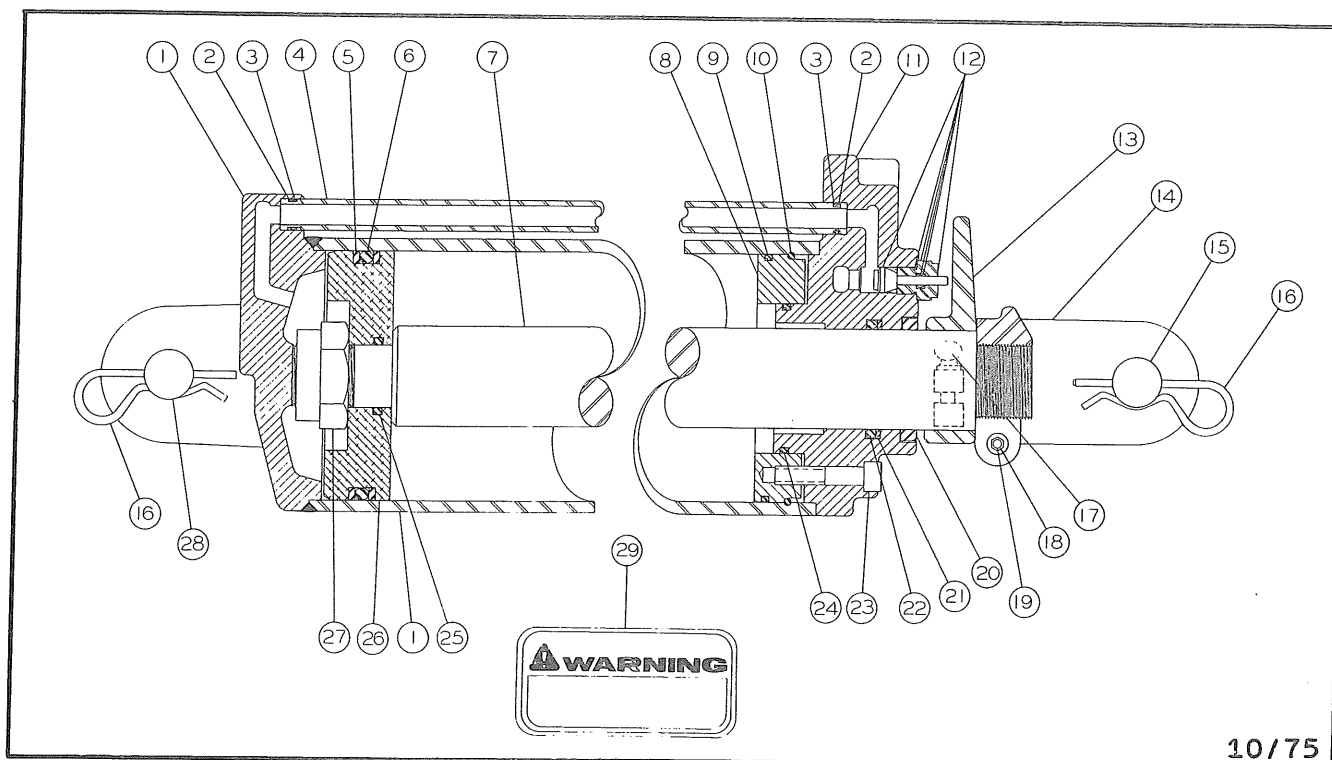


FOR MODELS All **PART LOCATION** Depth Control, Wing Lift Cylinder
 576A-25-0 Assembly 5" x 16"
 Retracted 31-1/2" Stroke 16" Extended 47-1/2" Rod 2"

ITEM	PART NUMBER	DESCRIPTION	NO. REQ.
1	576A-25-9	Tie Rod	4
2	576A-25-6	Base	1
* 3	576-25-12	O-Ring	3
* 4	576-25-13	Backup	2
5	576-25-4	Tube	1
6	576-25-3	Rod Assembly	1
7	576A-25-2	Head	1
* 8	570-25-11	O-Ring	1
9	576A-25-16	Nut	8
10	570-25-1	Rod Clevis	1
11	570-25-7	Clevis Pin	1
12	576-25-19	Clip Pin	2
13	2145-100-4	Capscrew	1
14	350-60-20	Nut	1
*15	570-25-10	Lip Type Wiper	1
*16	570A-25-14	Backup	1
17	350A-60-25	Cylinder Warning Decal	1
*18	576-25-14	O-Ring	1
19	576-25-5	Piston	1
20	576-25-15	Nut	1
21	350-60-21	Plug	1
22	576-25-17	Clevis Pin	1

* 576A-25-50 Seal Kit (star items contained in kit)

CROSS HYDRAULIC CYLINDER



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FOR MODELS All

PART LOCATION Depth Control

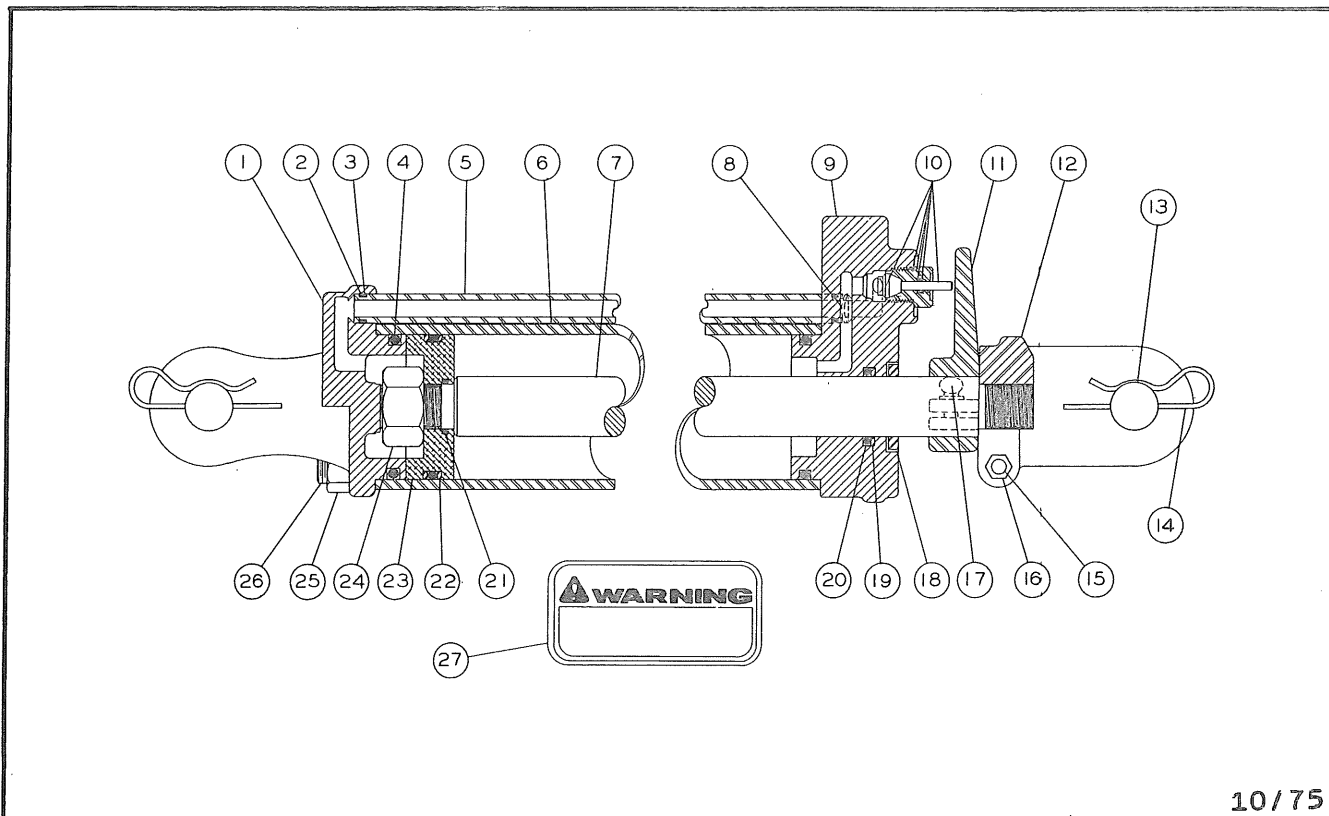
1401-500-0 Assembly 5"X 16" With hydraulic stroke control

Retracted 31-1/2" Stroke 16" Extended 47-1/2" Rod 2"

ITEM	PART NUMBER	DESCRIPTION	NO. REQ.
1	1401-500-1	Tube Assembly	1
2	1330-105-11	O-Ring	2
3	1401-500-13	Back-Up	2
4	1401-500-7	Feed Tube	1
5	P576-25-13	Back-Up	2
6	P576-25-12	O-Ring	1
7	1401-500-2	Rod	1
8	1401-500-3	Retainer	1
9	1401-500-12	O-Ring	1
10	1401-500-9	Retaining ring	1
11	1401-500-4	Head	1
12	1401-301-0	Poppet Assembly	1
13	1401-500-6	Actuator Stop	1
14	1401-500-11	Clevis	1
15	1401-300-8	Clevis Pin	1
16	P576-25-19	Clip Pin	2
17	1330-105-15	Thumbscrew	1
18	P350-60-20	Nut	1
19	2145-100-4	Capscrew	1
20	P570-25-10	Wiper	1
21	P570A-25-14	Back-Up	1
22	P570-25-11	O-Ring	1
23	1401-500-10	Capscrew	5
24	1401-500-11	O-Ring	1
25	P576-25-14	O-Ring	1
26	1401-500-5	Piston	1
27	P576-25-15	Nut	1
28	1401-500-8	Clevis Pin	1
29	P350A-60-25	Cylinder Warning Decal	1

* 1401-500-50 Seal Kit (star items contained in kit)

CROSS HYDRAULIC CYLINDER



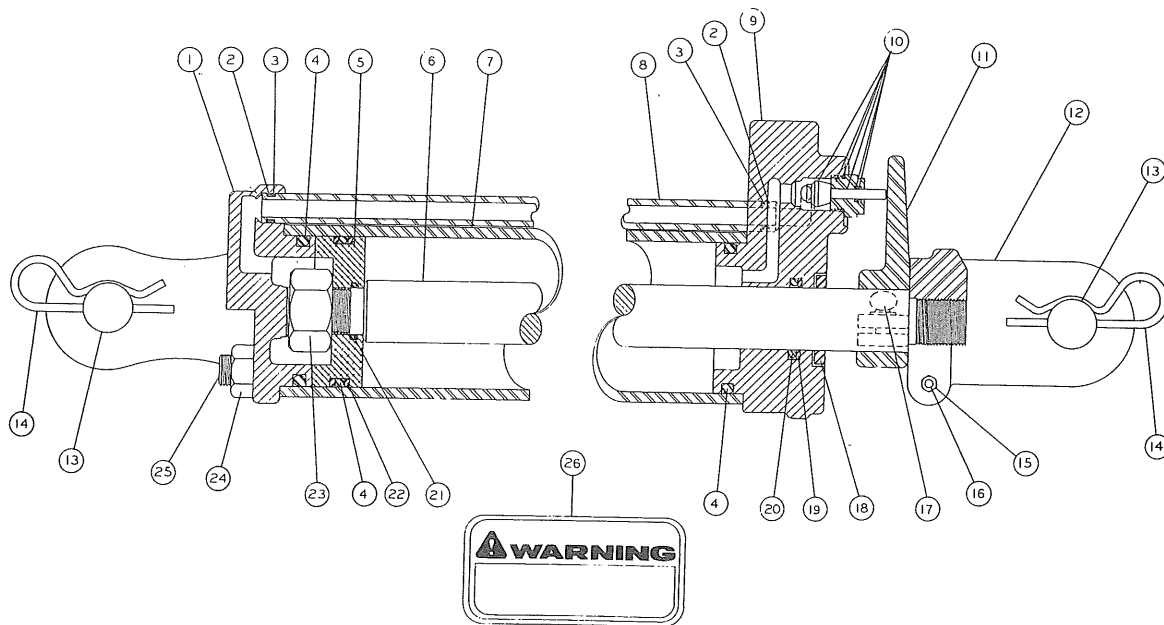
10/75

FOR MODELS All **PART LOCATION** Depth Control
 1401-300-0 Assembly 3" X 16" With Hydraulic Stroke Control
 Retracted 31-1/2" Stroke 16" Extended 47-1/2" Rod 1-1/4"

ITEM	PART NUMBER	DESCRIPTION	NO. REQ.
1	1401-300-6	Base	1
* 2	1330-105-11	O-Ring	2
* 3	1330-105-12	Back-Up	2
* 4	P686-55-12	O-Ring	3
5	1401-300-9	Feed Tube	1
6	1401-300-1	Tube	1
7	1401-300-2	Rod	1
8	1401-300-10	Washer	1
9	1401-300-5	Head	1
10	1401-301-0	Poppet Assembly	1
11	1330-105-5	Actuator	1
12	1401-300-3	Rod Clevis	1
13	1401-300-8	Clevis Pin	2
14	P576-25-19	Clip Pin	2
15	2145-100-4	Capscrew	1
16	P350-60-20	Nut	1
17	1330-105-15	Thumbscrew	1
*18	P350-60-13	Lipe Type Wiper	1
*19	P350B-60-22	Back-Up	1
*20	P350-60-14	O-Ring	1
*21	P350B-60-23	O-Ring	1
22	P686-55-13	Back-Up	2
23	1330-100-5	Piston	1
24	P350-60-17	Nut	1
25	P686B-55-16	Nut	8
26	1401-300-4	Tie Rod	4
27	P350A-60-25	Cylinder Warning Decal	1

* 1401-300-50 Seal Kit (star items contained in kit)

CROSS HYDRAULIC CYLINDER



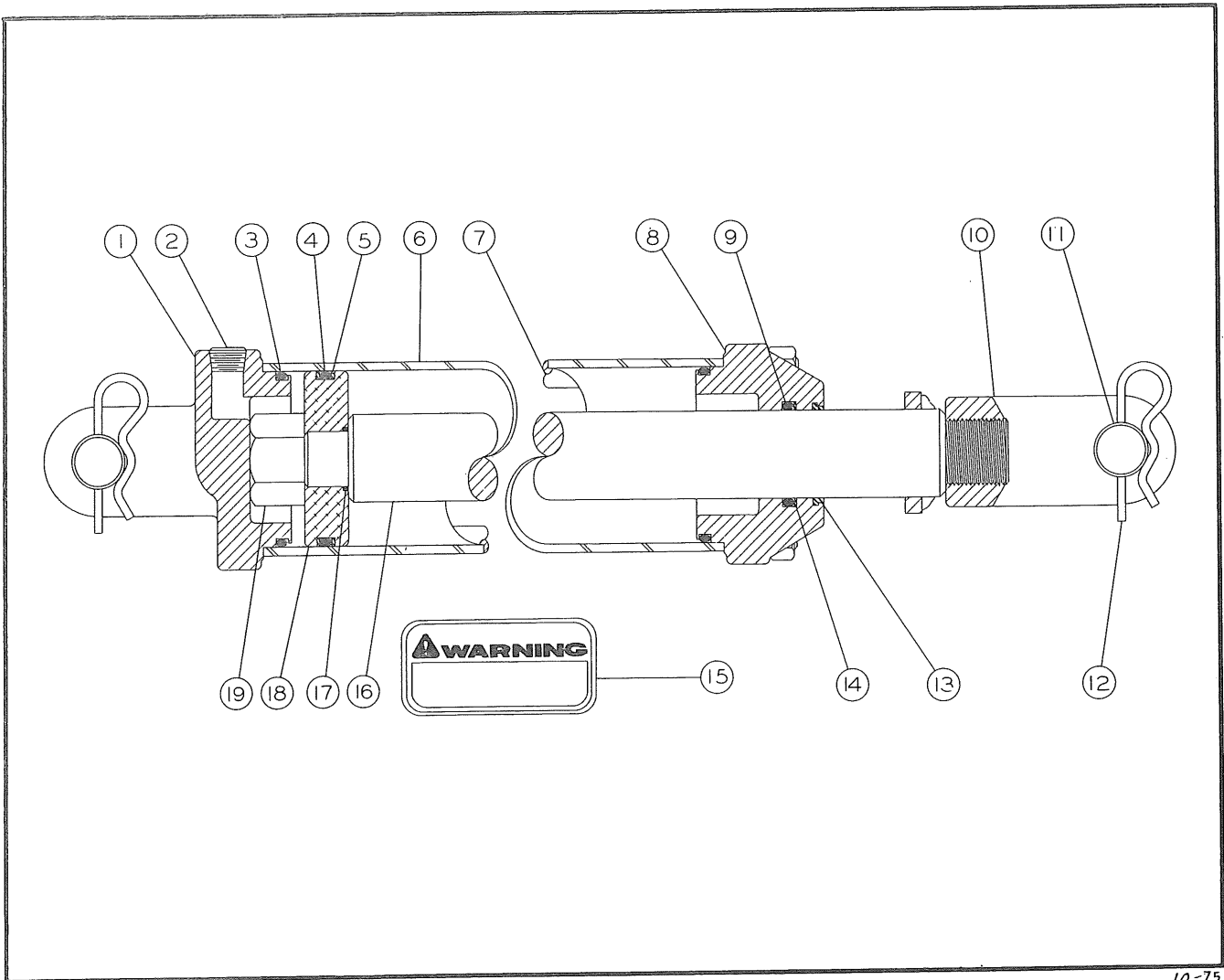
10/75

FOR MODELS All PART LOCATION Depth Control
 1401-400-0 Assembly 4" x 16" With Hydraulic Stroke Control
 Retracted 31-1/2" Stroke 16" Extended 47-1/2" Rod 1-3/4"

ITEM	PART NUMBER	DESCRIPTION	NO. REQ.
1	1401-400-4	Base Clevis	1
* 2	1330-105-11	O-Ring	2
* 3	1330-105-12	Back-Up	2
* 4	P350-60-15	O-Ring	3
5	P350-60-8	Piston	1
6	1401-400-1	Rod	1
7	P570-25-4	Tube	1
8	1401-300-7	Feed Tube	1
9	1401-400-3	Head	1
10	1401-301-0	Poppet Assembly	1
11	1401-400-5	Actuator Stop	1
12	1401-300-3	Rod Clevis	1
13	1401-300-8	Clevis Pin	2
14	P576-25-19	Clip Pin	2
15	P350-60-20	Nut	1
16	2145-100-4	Capscrew	1
17	1330-105-15	Thumbscrew	1
* 18	1401-400-6	Like Type Wiper	1
* 19	1401-400-7	Back-Up	1
* 20	1401-400-8	O-Ring	1
* 21	P350B-60-23	O-Ring	1
* 22	P350-60-16	Back-Up	2
23	P350-60-17	Nut	1
24	P350B-60-18	Nut	8
25	1401-400-2	Tie Rod	4
26	P350A-60-25	Cylinder Warning Decal	1

* 1401-400-50 Seal Kit (star items contained in kit)

PRINCE HYDRAULIC CYLINDER



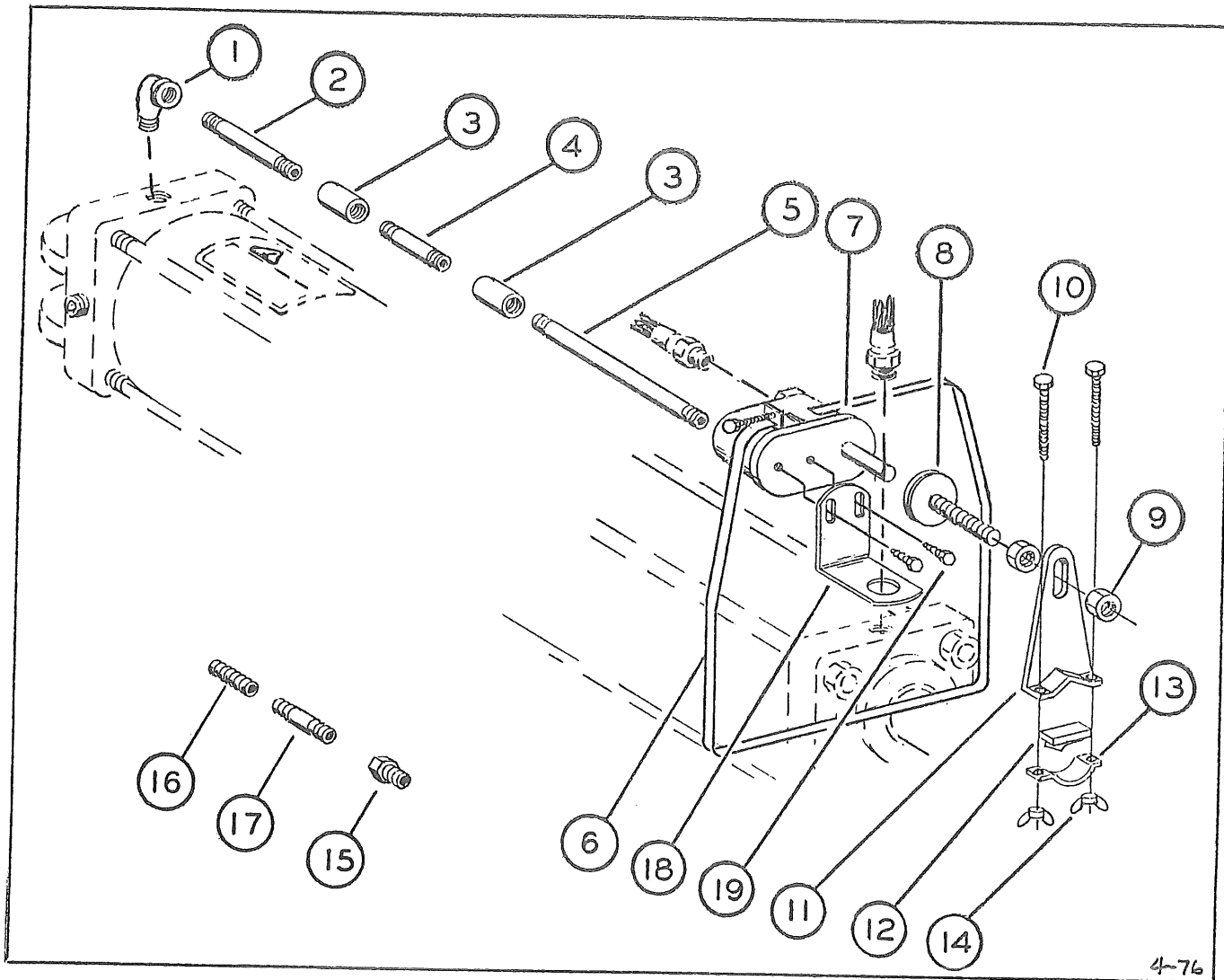
10-75

FOR MODELS All PART LOCATION Wing Lift, Depth Control
 2145-400-0 Assembly 4" x 16"
 Retracted 31-1/2" Stroke 16" Extended 47-1/2" Rod 2"

ITEM	PART NUMBER	DESCRIPTION	NO. REQ.
1	2145-400-4	Base	1
2	2145-400-2	Pipe Plug	1
* 3	2145-400-10	O-Ring	2
* 4	2145-400-11	O-Ring	1
* 5	2145-400-12	Backup	2
6	2145-400-3	Tube	1
7	2145-400-9	Tie Rod	4
8	2145-400-5	Head	1
* 9	2145-400-14	O-Ring	1
10	2145-400-8	Clevis Assembly	1
11	2145-400-17	Clevis Pin	2
12	2145-400-18	Hairpin Clip	4
*13	2145-400-16	Wiper	1
*14	2145-400-15	Backup	1
15	350A-60-25	Cylinder Warning Decal	1
16	2145-400-1	Rod Assembly	1
*17	2145-400-13	O-Ring	1
18	2145-400-6	Piston	1
19	2145-400-7	Lock Nut	1

* 2145-402-0 Seal Kit (star items contained in kit)

STROKE CONTROL KIT

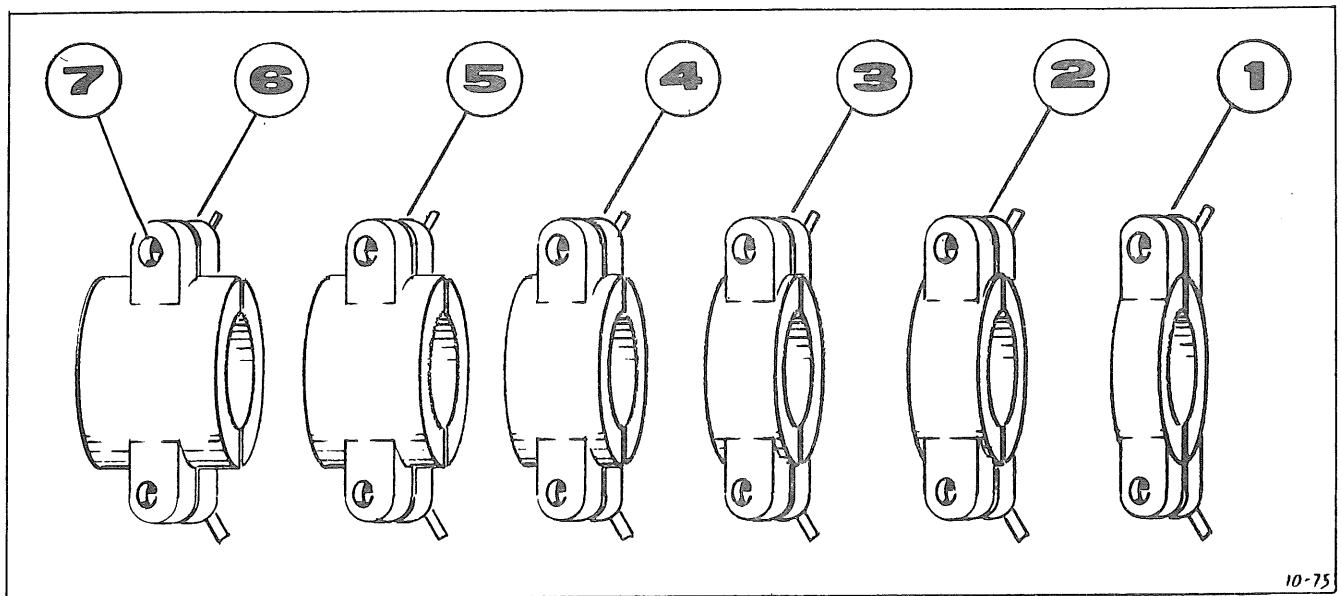


4-76

ITEM	PART NUMBER	DESCRIPTION	NO. REQ.
	2145-401-0	Prince hydraulic stroke control kit	
1	1/2 N.P.T.	90° Street elbow	1
*2	1/2 N.P.T.	Nipple (3" long)	1
3	1/2 N.P.T.	Pipe coupler	2
4	1/2 N.P.T.	Nipple (4" long)	1
5	1/2 N.P.T.	Nipple (8" long)	1
6	2145-401-1	Band clamp	1
7	2145-401-2	Body	1
8	2145-401-3	Striker bolt	1
9	3/8nc	Hex nut	2
10	1/4nc x 2-3/4	Cap screw (all thread)	2
11	2145-401-4	Striker plate	1
12	2145-401-6	Rubber bushing	2
13	2145-401-5	Striker base	1
14	1/4nc	Wing nut	2
*15	5/8-1/2N.P.T.	Reducer bushing	1
*16	1/2 N.P.T.	Close nipple	1
*17	1/2 N.P.T.	Nipple (2" long)	1

* Note: Items marked are not used on a 4" x 16" Prince cylinder

MECHANICAL STROKE CONTROL KIT



FOR HYDRAULIC CYLINDER WITH 1-1/4" ROD DIAMETER.

P755-26-0 MECHANICAL STROKE CONTROL KIT

ITEM	PART NUMBER	DESCRIPTION	Quantity Per Kit
1	770-26-1	3/4" STOP BUSHING HALF	2
2	770-26-2	7/8" STOP BUSHING HALF	2
3	770-26-3	1" STOP BUSHING HALF	2
4	770-26-4	1-1/4" STOP BUSHING HALF	2
5	770-26-5	1-1/2" STOP BUSHING HALF	2
6	770-26-6	2" STOP BUSHING HALF	2
7	1/8" X 2"	COTTER PIN	12

FOR HYDRAULIC CYLINDER WITH 2" ROD DIAMETER.

P570-26-0 MECHANICAL STROKE CONTROL KIT

ITEM	PART NUMBER	DESCRIPTION	Quantity Per Kit
1	570-26-1	3/4" STOP BUSHING HALF	2
2	570-26-2	1" STOP BUSHING HALF	2
3	570-26-3	1-1/4" STOP BUSHING HALF	2
4	570-26-4	1-1/2" STOP BUSHING HALF	2
5	570-26-5	1-3/4" STOP BUSHING HALF	2
6	570-26-6	2" STOP BUSHING HALF	2
7	1/8" X 2"	COTTER PIN	12

FOR HYDRAULIC CYLINDER WITH 1-1/2" ROD DIAMETER.

P908-26-0 MECHANICAL STROKE CONTROL KIT

ITEM	PART NUMBER	DESCRIPTION	Quantity Per Kit
1	908-26-1	3/4" STOP BUSHING HALF	2
2	908-26-2	7/8" STOP BUSHING HALF	2
3	908-26-3	1" STOP BUSHING HALF	2
4	908-26-4	1-1/4" STOP BUSHING HALF	2
5	908-26-5	1-1/2" STOP BUSHING HALF	2
6	908-26-0	2" STOP BUSHING HALF	2
7	1/8" X 2"	COTTER PIN	

ASSEMBLY SECTION

The following section illustrates a general method for assembling and adjusting your Krause Flex-Wing Disc Harrow. You should know the model number of your unit before assembling and whenever making reference to this manual. The following pictures will show bolts, pins, etc., but will not describe them unless an unusual situation exists. You must refer to the illustrated parts section for the detailed dimensions and descriptions. Periodically, a reference may be made to the right or left side of the unit. This reference has been determined while looking from the back toward the direction of travel. If any difficulty should be encountered during the assembly, recheck the illustrations.

PROPER BOLT USE

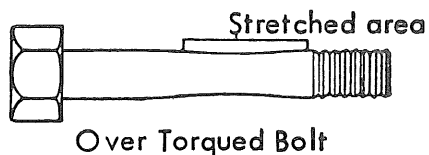
OVER TORQUING is probably one of the most frequent causes for bolt breakage. MAXIMUM TIGHTNESS DOES NOT MEAN MAXIMUM STRENGTH. A bolt in a stretched condition due to over torquing is more subject to failure under a heavy load or sudden shock than a bolt that is correctly tightened. Torque hand wrenches or torque adjustable impact wrenches should be used. If standard wrenches are used, try to refrain from using "cheater bars". This increases the risk of over torquing. When torqued properly, bolts and their joining members will give longer more satisfying service.

The following table lists the torquing requirements for black bolts with coarse threads. Torque values for plated bolts are unavailable due to the unpredictable lubricating effect of the plating. Torque plated slightly less than black bolts.

RECOMMENDED TORQUE VALUES

For S.A.E. Grade 2, Grade 5, and Grade 8 Bolts. Values shown are suggested MAXIMUM for black fasteners, carrying only the residue oil of the manufacture.

		GRADE 2	GRADE 5	GRADE 8
1/4"	Coarse	5Ft. lbs.	8Ft. lbs.	12Ft. lbs.
5/16"	Coarse	11Ft. lbs.	17Ft. lbs.	24Ft. lbs.
3/8"	Coarse	18Ft. lbs.	31Ft. lbs.	44Ft. lbs.
7/16"	Coarse	28Ft. lbs.	49Ft. lbs.	70Ft. lbs.
1/2"	Coarse	39Ft. lbs.	75Ft. lbs.	105Ft. lbs.
9/16"	Coarse	51Ft. lbs.	110Ft. lbs.	155Ft. lbs.
5/8"	Coarse	83Ft. lbs.	150Ft. lbs.	210Ft. lbs.
3/4"	Coarse	105Ft. lbs.	270Ft. lbs.	375Ft. lbs.
7/8"	Coarse	160Ft. lbs.	395Ft. lbs.	605Ft. lbs.
1"	Coarse	235Ft. lbs.	590Ft. lbs.	910Ft. lbs.



SAE
GRADE
2



SAE
GRADE
5



SAE
GRADE
8

Incorrect use of GRADED bolts is another problem. Generally three grades are used, Grade 2, Grade 5, and Grade 8. Grade 2 bolts are used in low stress areas or for shear bolts to protect more expensive parts. Grade 5 bolts are approximately 60-150% stronger than grade 2 and are used in higher stress areas. Grade 8 bolts are approximately 35-55% stronger than grade 5 and are used in extremely high stress areas. It is very important that these bolts are used in the proper locations as recommended.

USE THE CORRECT SIZE
USE THE CORRECT NUT
USE WASHERS IF NEEDED

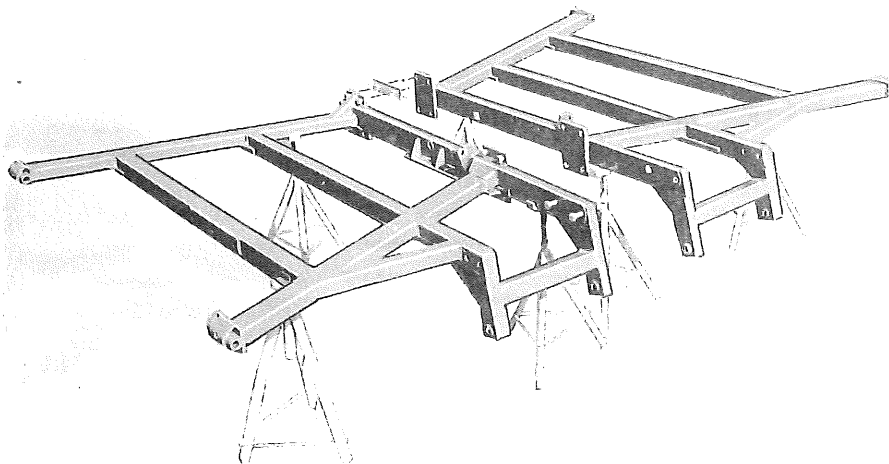
USE THE CORRECT GRADE
USE THE CORRECT TORQUE
KEEP IT TIGHT

ASSEMBLY



1

▲ The following pages will help you assemble, adjust, order parts, and operate your Krause Flex Wing Tandem Disc. Before you start the assembly, it will be necessary for you to know the model number of your Flex Disc. Direct your attention to this model while studying this book. All Flex Discs are basically the same but there are some exceptions and some locations of components that change on the different models. The following assembly pictures will show, but will not describe the fasteners. You must use the parts section for these dimensions and descriptions. When we refer to right and left, we are looking from the back toward the direction of travel. If you encounter any difficulty in assembly, recheck the illustrations.



2

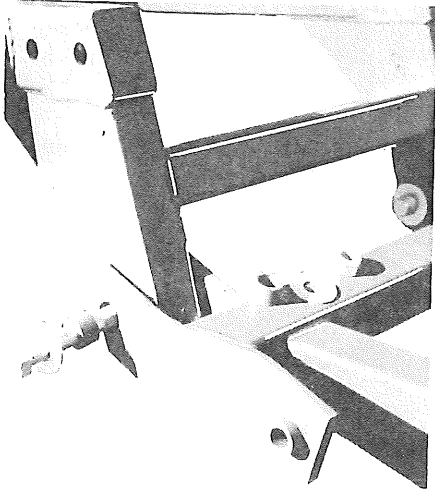
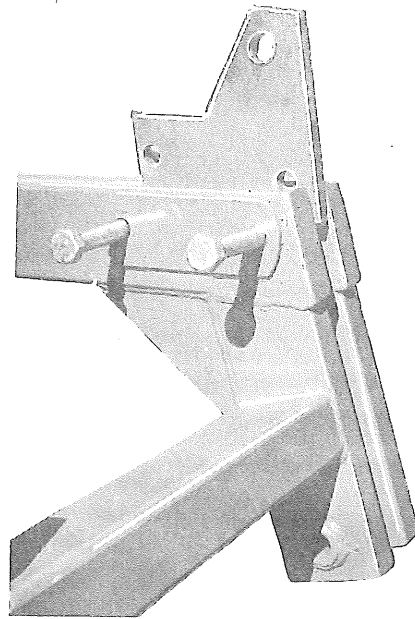
Center Frame

◀ Clear a large area, select the proper tools and equipment to handle the various components. We will describe one of many ways to assemble this Flex Disc. Place the right and left center frames on suitable blocks or stands, approximately 30".

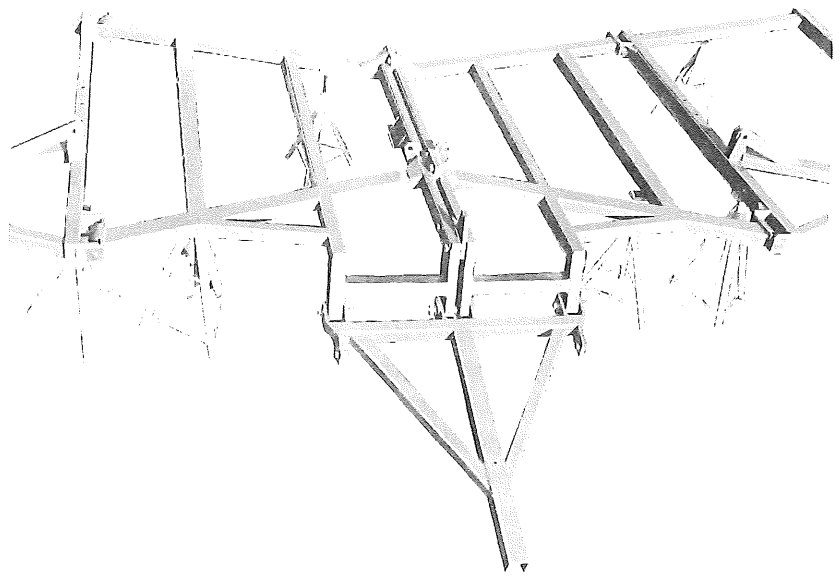
Frame & Tongue

At the front and between the main center frames, attach the hydraulic cylinder lug. Note the location of the top hole and its position to the front of the main frame.

ASSEMBLE ALL PARTS
DO NOT TIGHTEN



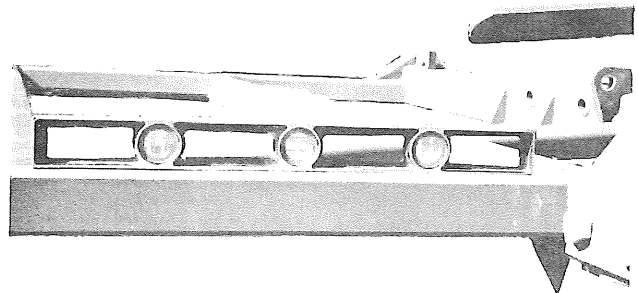
▲ The tongue assembles to the center frame with 3 bolts and 6 wear bushings. DO NOT TIGHTEN THESE BOLTS

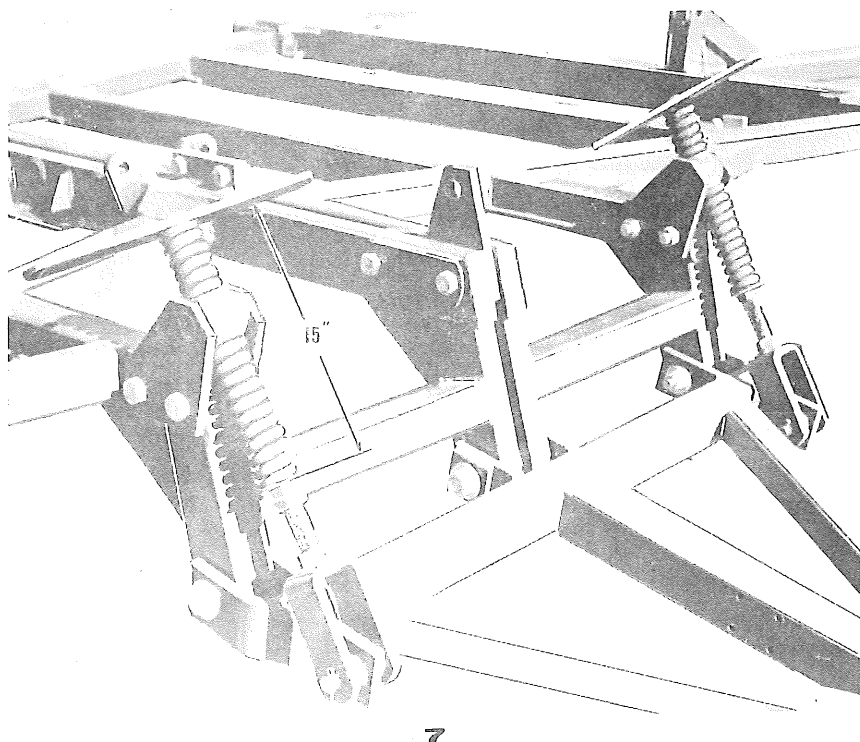


▲ Frame and Tongue Assembled

With center frames and tongue now assembled and all bolts loose, look to Figure 6 showing a common level on one of the front members. You may need this level and the shims shown in Figure 2 to finish this assembly. All welded assemblies will creep and distort, so the shims must be placed between the frame surfaces until you get the desired flat frame. As in all assemblies you will not be exact, but should hold a $\pm 1/4"$ to assure a good performing disc. Frames adjusted,

SECURE ALL BOLTS.





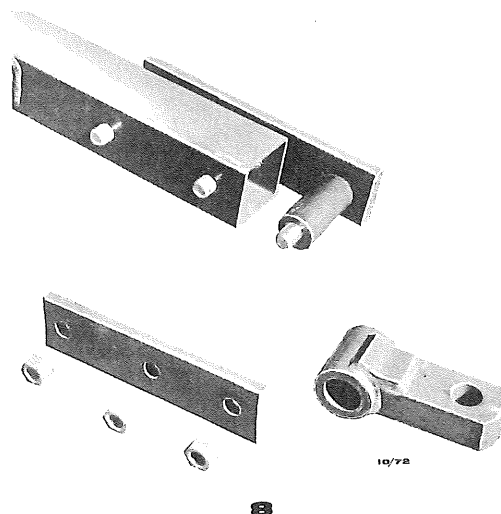
Spring Adjusting Screws

◀ Mount to each side of the frame, the spring adjusting screw assembly. The spring adjusting screw assemblies will transfer weight from gangs to rear. Set the initial assembly adjustment to 15". Use the adjusting screw to level the disc front to rear.

CAUTION: TIGHTEN SPRING JAM NUTS SECURELY

Hitches

A single clevis with a combination of arrangements allows a fit to tractors as a tongue type, or clevis with 1-1/4" or 1-1/2" drawbar pins.



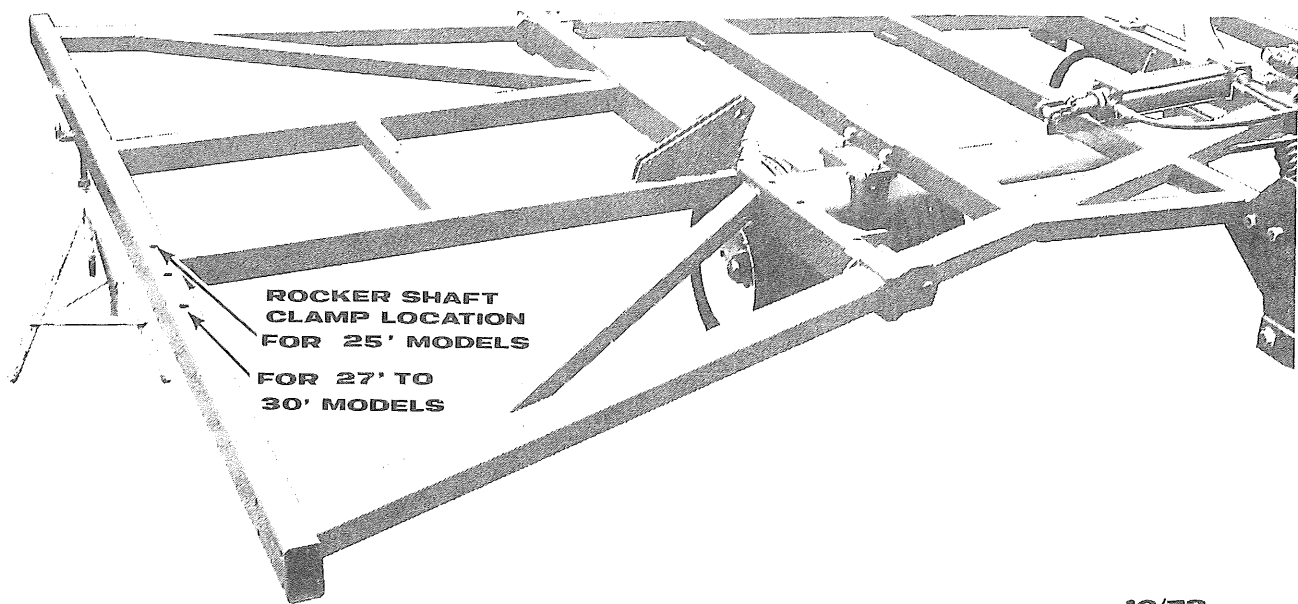
8

Tongue Jack

◀ Tongue jack for help in connecting the flex disc to the tractor. Use pull pin to lock for storing.



9



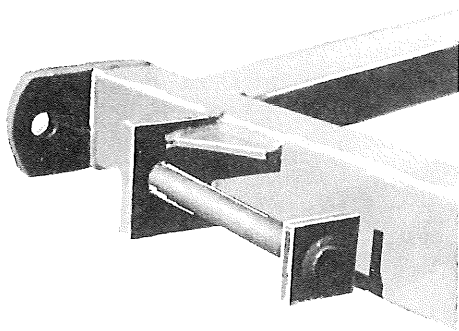
10/72

Wings¹⁰

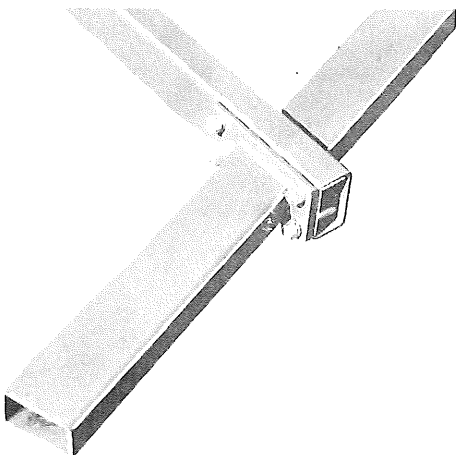
Hinge the right and left wings to the main frame by inserting the large hinge pins from the inside, as shown in Figure 11, and roll pins on the outside.

Wing Extensions

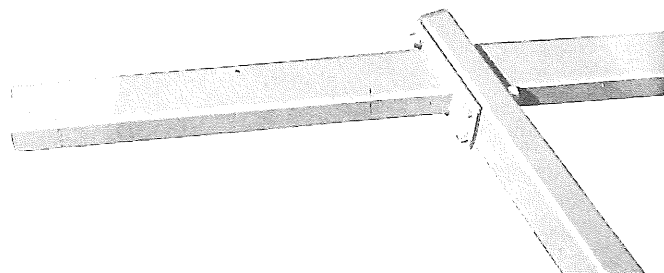
Each wing has a front and rear wing extension. These two extensions are not interchangeable. Check the parts section for the correct length and position of each. Figures 12, 13 and 14 show the correct installations. If the extensions are not level with the wings, there are shims provided in the bolt box.



11



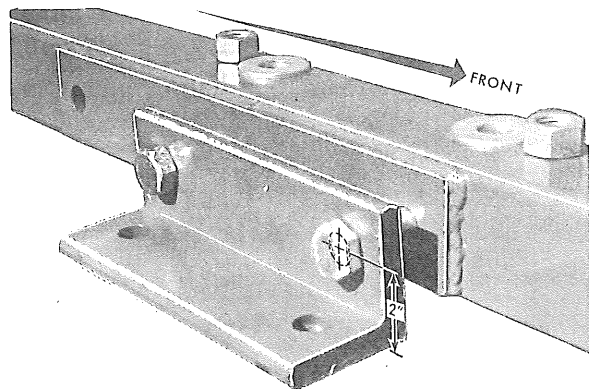
12



13

The wing rocker shaft clamp location is clarified in Figure 10. Notice that the front to rear frame members have three holes drilled for rocker shaft mounting. The 25 foot model wing rocker shafts are clamped to the frame at the middle and rear holes. The 27 to 30 foot models clamp to the middle and front holes.

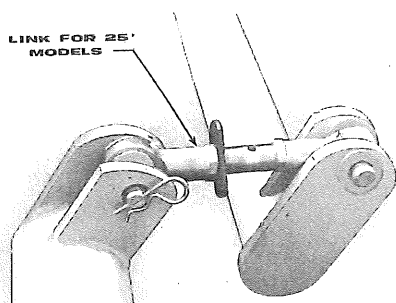
10/72



10/72

15

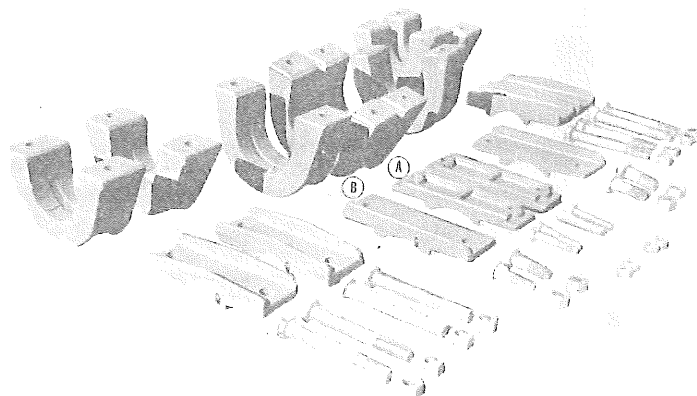
▲ Bolt the outside rocker shaft angle bracket to the main center frame. The bottom of the bracket must be flush with the underside of the main frame.



There are two different adjustment links for these tandems. The 25 foot models require the short link shown in Figure 17. Pre-adjust this link to 11" center to center of the ball ends. The 27 to 30 foot models require the longer link not shown. Pre-adjust these links to 19" center to center of the ball ends. Connect the rocker shaft yokes together with the adjustable links. Make sure the zerks are on top and tighten the lock tabs.

10/72

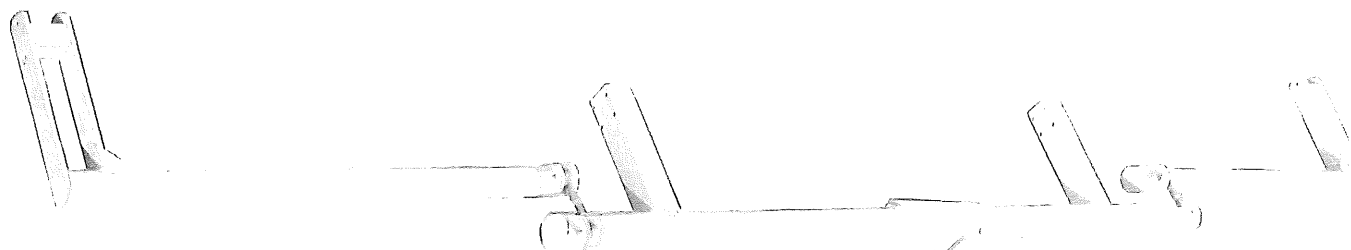
Rocker Shafts & Adjustable Links



16

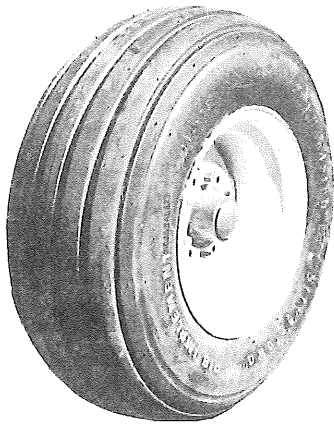
▲ Lay out the rocker shaft clamps, plates, and bolts, as shown in Figure 16. Note the four 5-1/2" center clamps are in the middle, and the four smaller 4-1/2" wing clamps are on each side. This illustration shows the order in which they clamp the rocker shaft to the frame. The wing rocker clamps fit the 4-1/2" tube and use the wear plate with the double flange. They are mounted to the frame with two 1" bolts. The two center section outside clamps fit the 5-1/2" tube and use the wear plate with the single flange. They are mounted to the angle bracket with two 1" bolts. The two center section inside clamps fit the 5-1/2" tube and use the wear plate with no flange. They are mounted with two 3/4" bolts. Assemble the rocker shaft to the main frame with the clamps shown in Figure 16. Check turn the rocker shaft each time you tighten a clamp assembly. **DO NOT LOCK THE ROCKER SHAFT SO IT WILL NOT TURN.** Use shims under the clamps if necessary.

Three rocker shafts linked together.



18

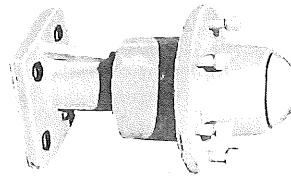
Flotation Tire & Hub Assembly



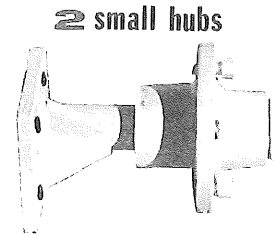
19

▲ Inflate to 35 P.S.I. Check all tire diameters. They should not vary over $\pm 1/2"$.

**TORQUE ALL WHEEL BOLTS
80 to 90 FOOT POUNDS.**



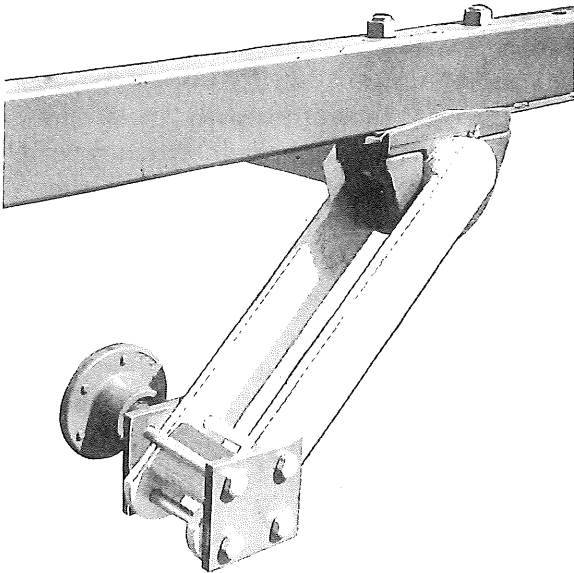
4 large hubs



2 small hubs

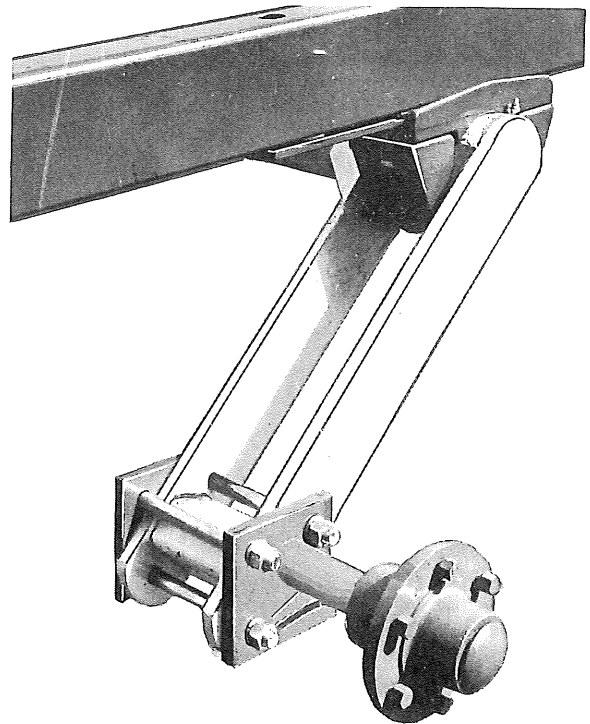
20

▲ The four large hub assemblies are used on the center rocker shaft (2" dia. axle). The two smaller hubs are used on the wing rocker shafts (1-7/8" dia. axle).



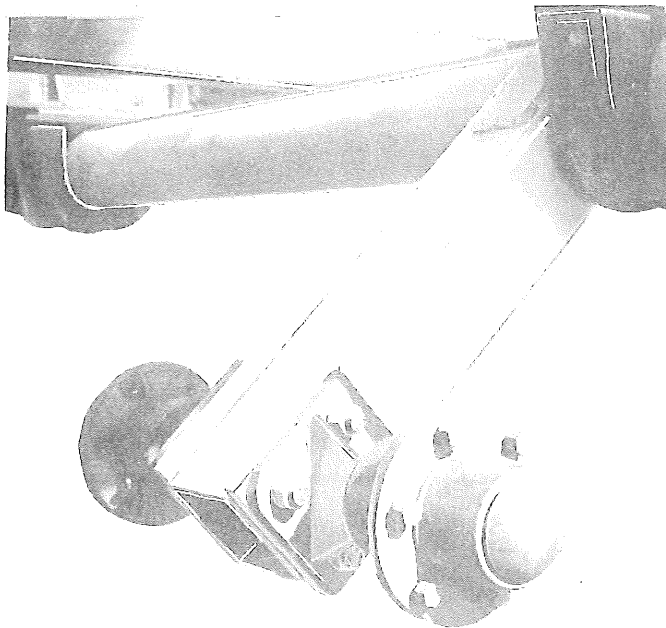
21

▲ On the 25' models, the wing hubs mount to the inside of the wheel arm. Positioned as shown in Figure 21.



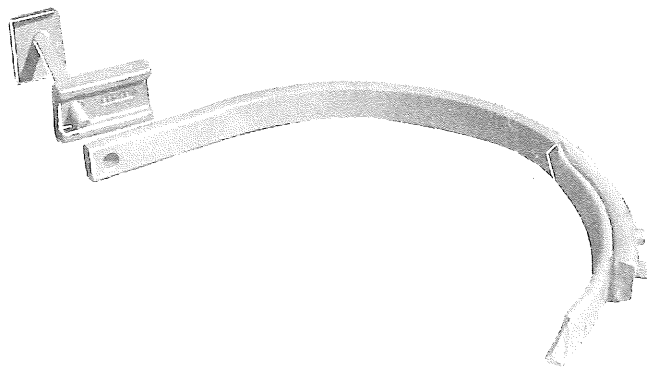
22

▲ On the 27' and 30' models, the wing hubs mount to the outside of the wheel arm. Note the axle in these hub assemblies are not in the center of the mounting plate. The position shown in Figure 22 is used if all tires are the same size. This hub can be rotated for different height adjustments.



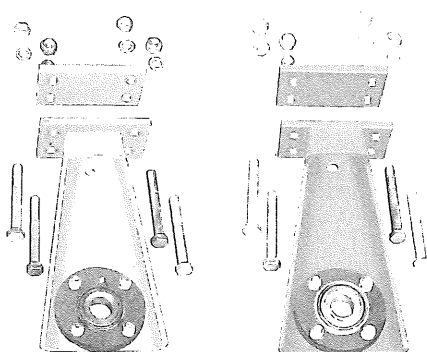
23

▲ Bolt the two large hubs to each of the center rocker shaft wheel arms, as shown in Figure 23.



24

▲ The heavy chisel center point mounts to the center frame with one bolt through the center frame locator.



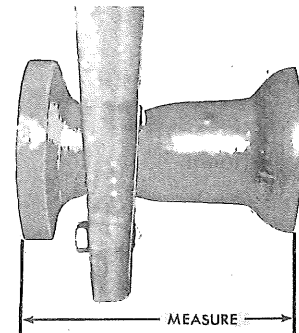
25

▲ There are 2 different bearing arm assemblies on these models. (Fig. 25) To recognize the difference, one has a color code on top of the mounting plate. Check the disc gang & scraper chart for correct locations on your model.

Disc Gangs

Up to this point you have assembled the basic running gear for the Flex Wing Tandem Disc. The following figures will aid you in the assembly of the disc gangs.

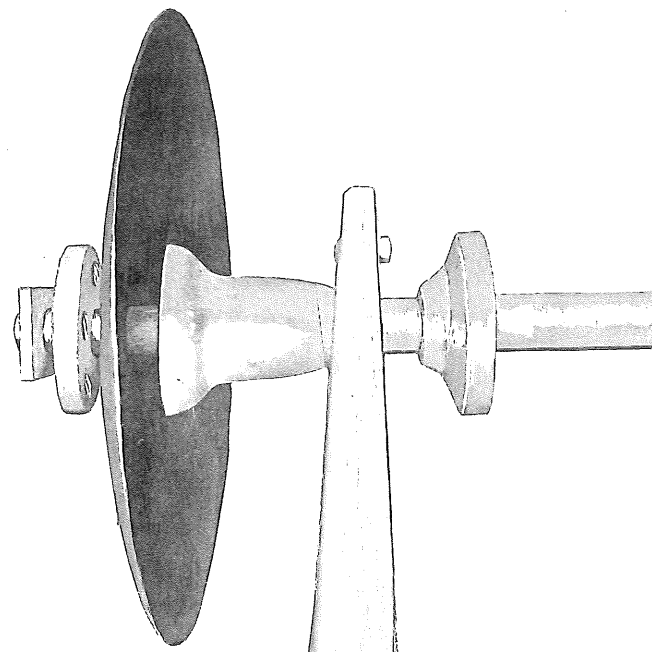
Before continuing with this assembly, you should turn to the parts section and locate the sections that pertain to your model. Note the sizes, length and number of parts needed for your disc gangs, as all models are not alike. Begin with the following Figure 26.



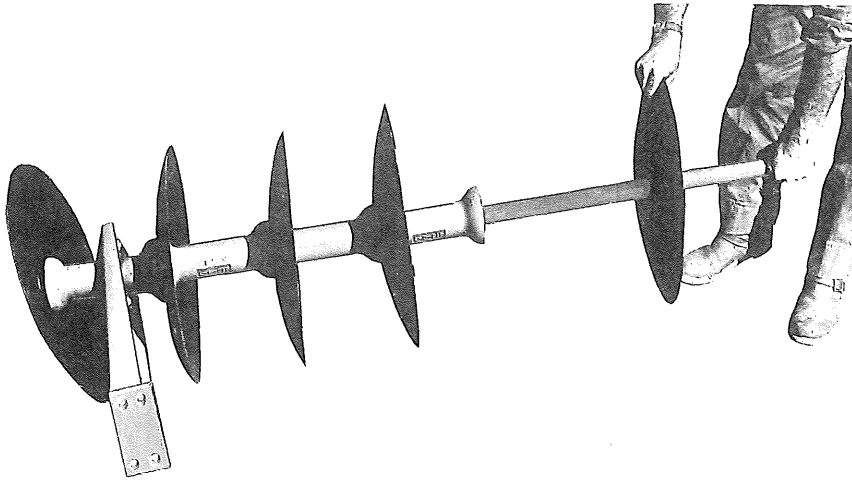
26

▲ Position the half spools against the bearing as shown in Figure 26. Check the length of your spacing to equal the two half spools plus the bearing.

Check for correct tie rod and spool assembly, then proceed with the assembly as shown in Figure 27. First the large end washer is positioned on the square end of the tie rod, then the disc, long half spool, bearing arm, short half spool, disc, spacer spool, etc.



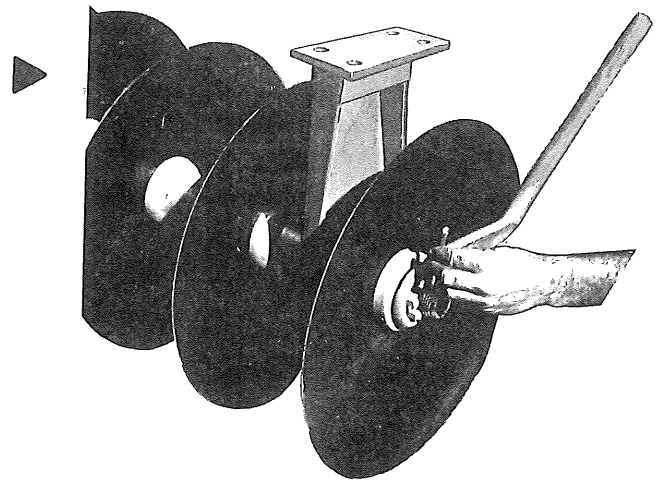
27



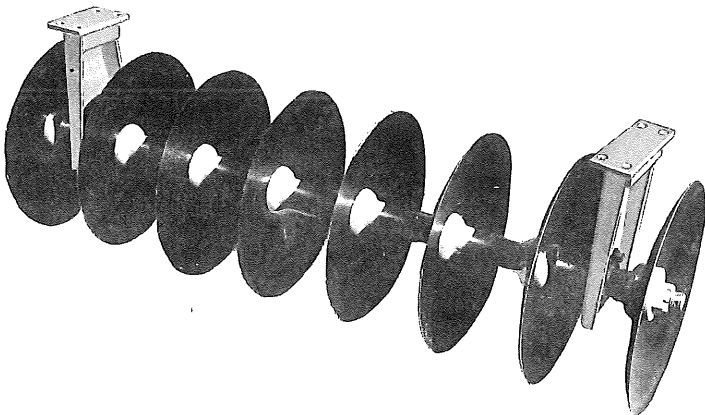
28

◀ Figure 28 shows a partially completed gang assembly. At this time check the line drawing for proper placements of all parts such as bearing arms, disc size and 3rd bearing arms.

Tighten the tie rod nut, shown in Figure 29, and secure with a cotter key. The tightness of the tie rod nut should be checked after the first day of operation, and retightened if loose.



29



30

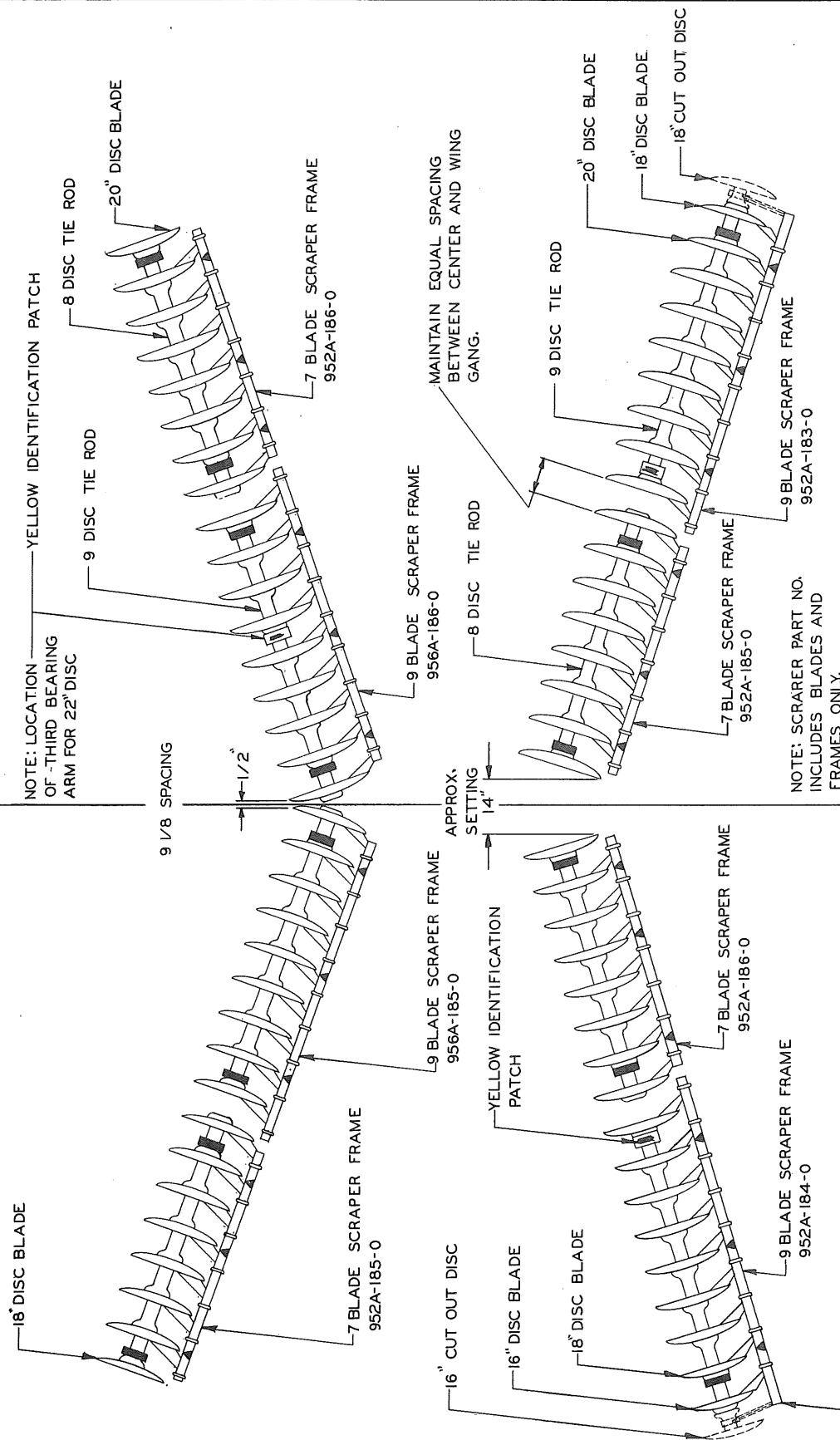
◀ Figure 30 reflects a completed disc gang section. After all disc gang sections are assembled, check the line drawing for correct disc gang placement and location of tapering disc blades.

MODEL 952A

DISC GANG AND SCRAPER PLACEMENT

LEFT SIDE SHOWN WITH 20 DISC

RIGHT SIDE SHOWN WITH 22 DISC

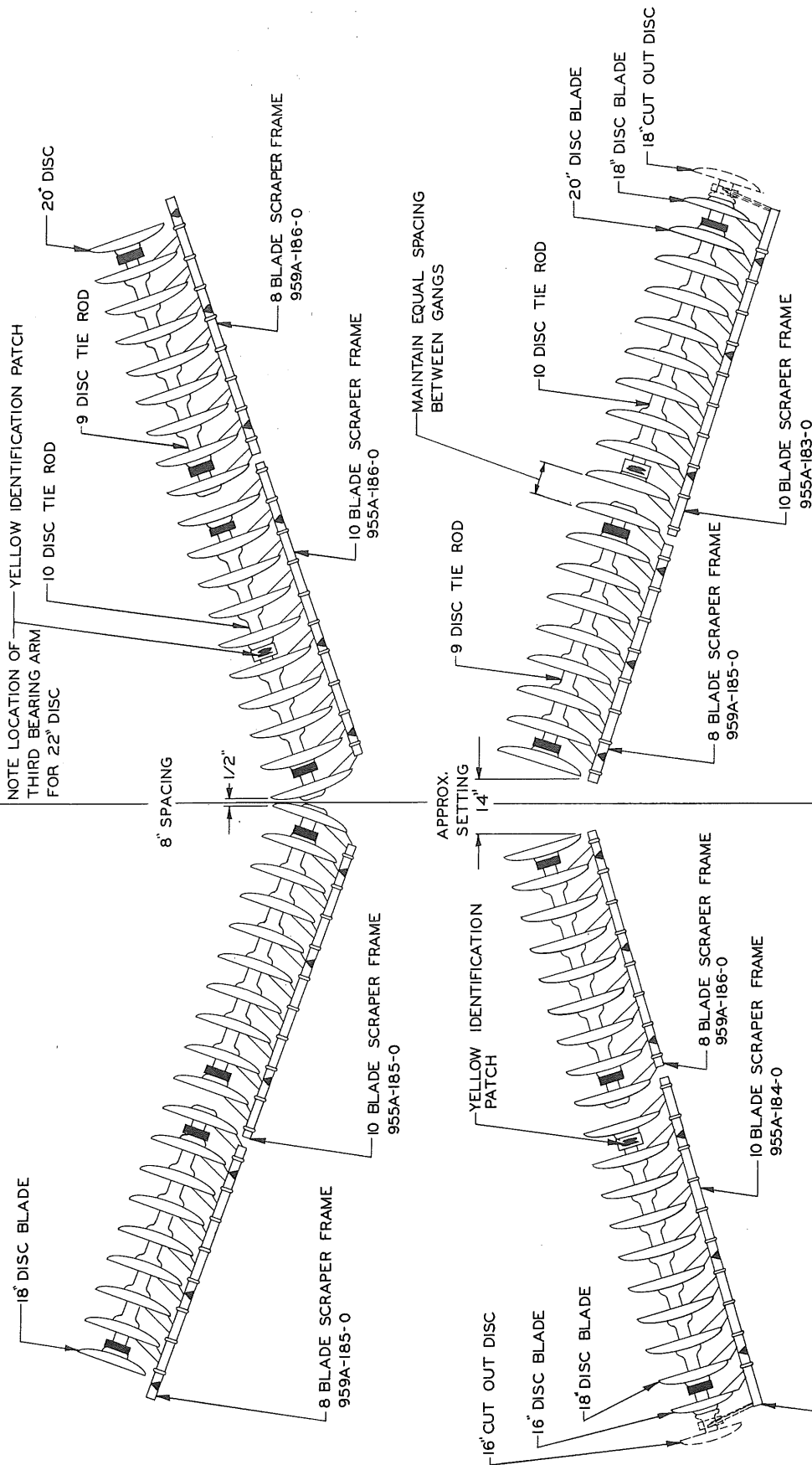


MODEL 955A

DISC GANG AND SCRAPER PLACEMENT

LEFT SIDE SHOWN WITH 20" DISC

RIGHT SIDE SHOWN WITH 22" DISC

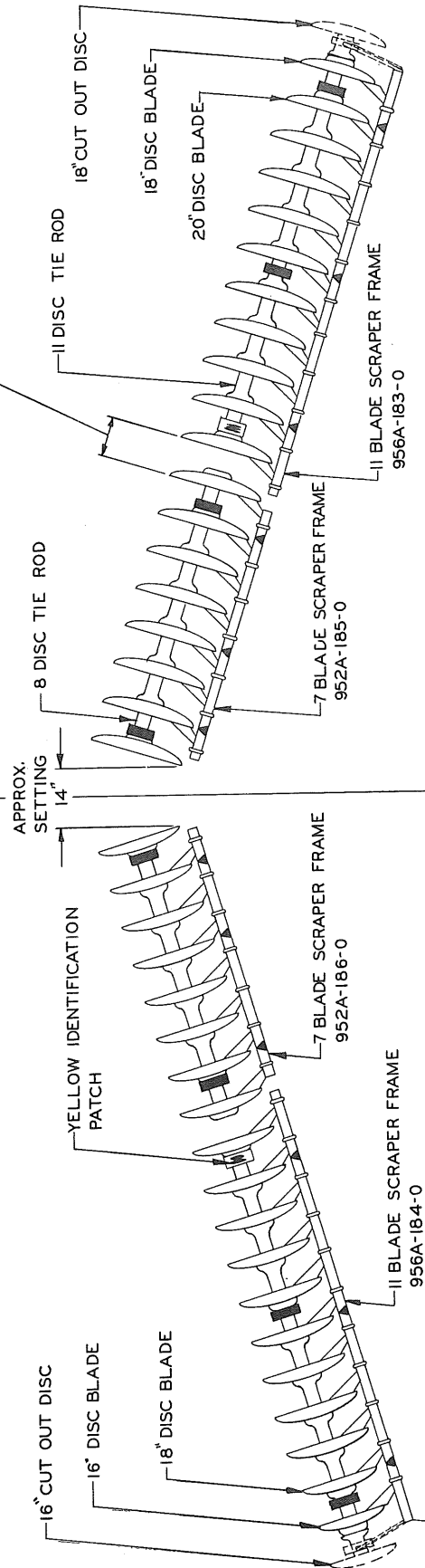
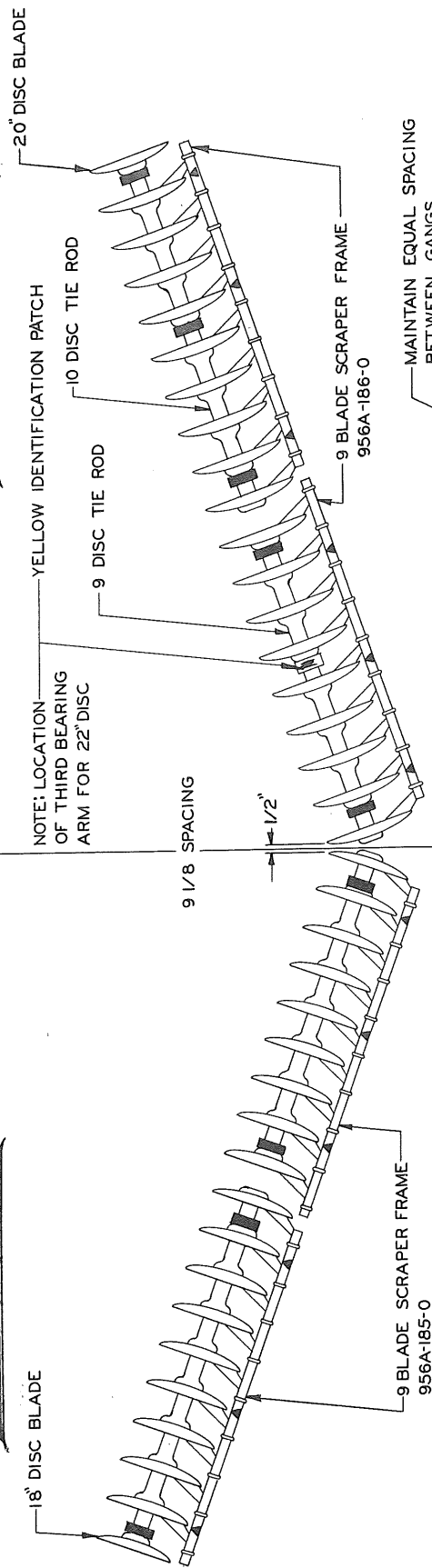


MODEL 956A

DISC GANG AND SCRAPER PLACEMENT

LEFT SIDE SHOWN WITH
20" DISC

RIGHT SIDE SHOWN WITH
22" DISC



- BEARING ARM LOCATION
- SCRAPER BRACKET LOCATION
- NOTE: SCRAPER PART NO. INCLUDES BLADES AND FRAMES ONLY.
- NOTE LOCATION OF BEARING ARM WITH YELLOW IDENTIFICATION PATCH.

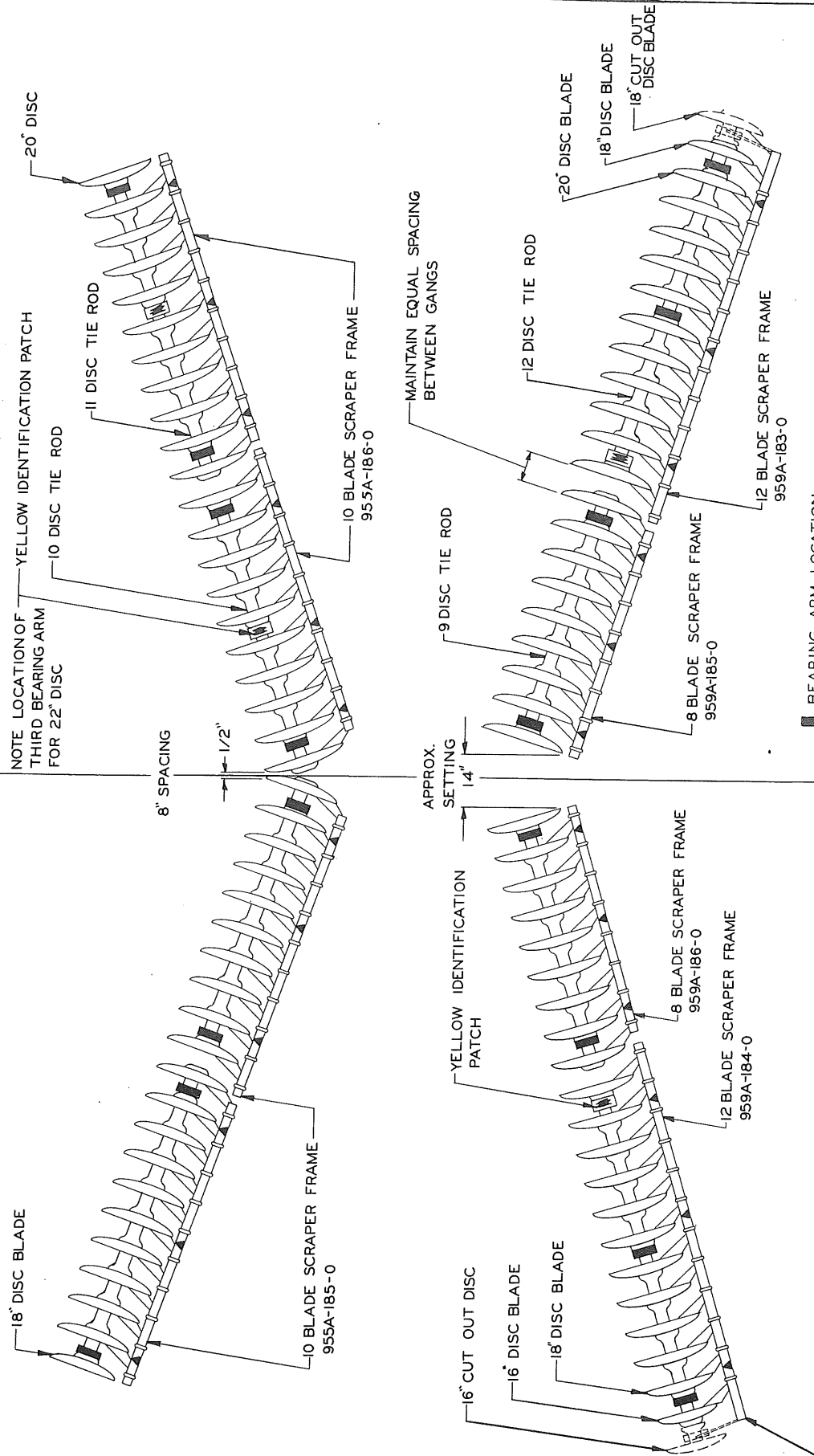
NOTE: PLACE LONG SCRAPER FRAMES ON OUTSIDE REAR GANGS. FRAMES ARE LONGER TO ACCOMMODATE ADDITION OF EXTENSION TRASH BARS.

MODEL 959A

DISC GANG AND SCRAPER PLACEMENT

**LEFT SIDE SHOWN WITH
20" DISC**

**RIGHT SIDE SHOWN WITH
22" DISC**



BEARING ARM LOCATION

SCRAPER BRACKET LOCATION

NOTE LOCATION OF BEARING ARM
WITH YELLOW IDENTIFICATION PATCH.

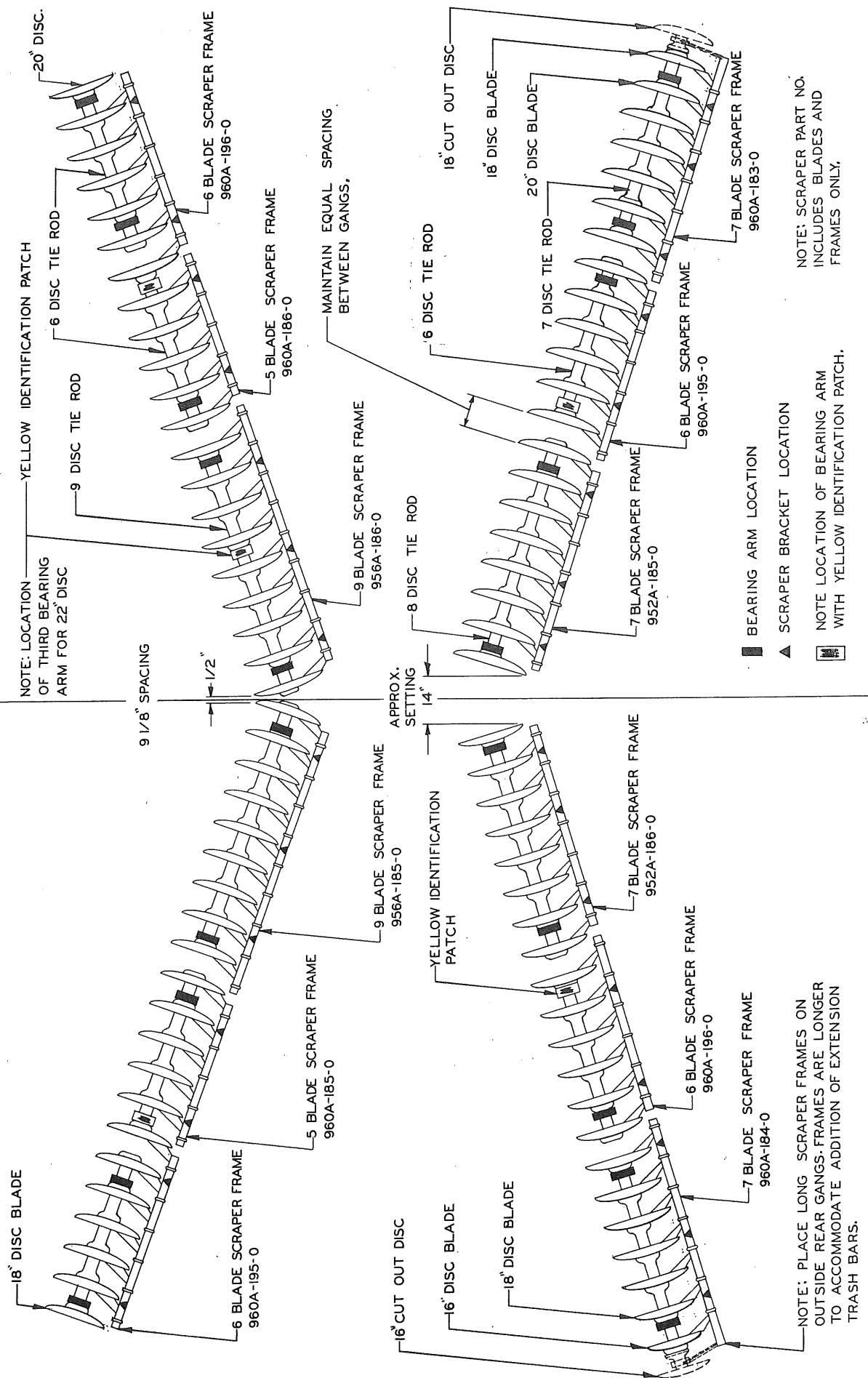
NOTE: SCRAPER PART NO.
INCLUDES BLADES AND
FRAMES ONLY.

MODEL 960A

DISC GANG AND SCRAPER PLACEMENT

LEFT SIDE SHOWN WITH 20" DISC

RIGHT SIDE SHOWN WITH 22" DISC

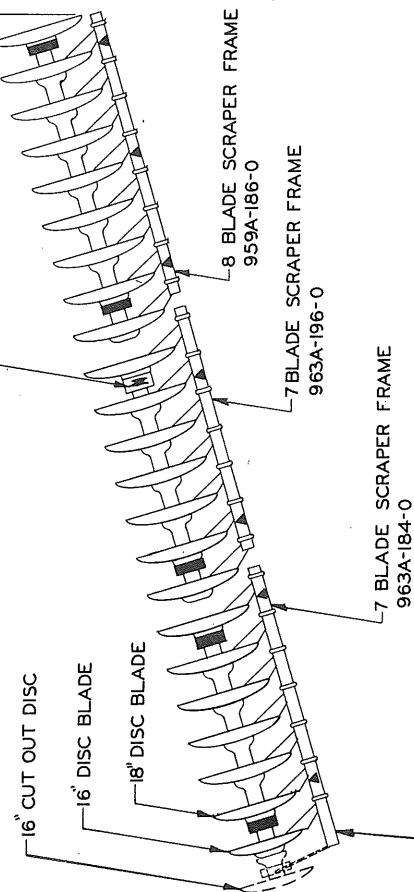
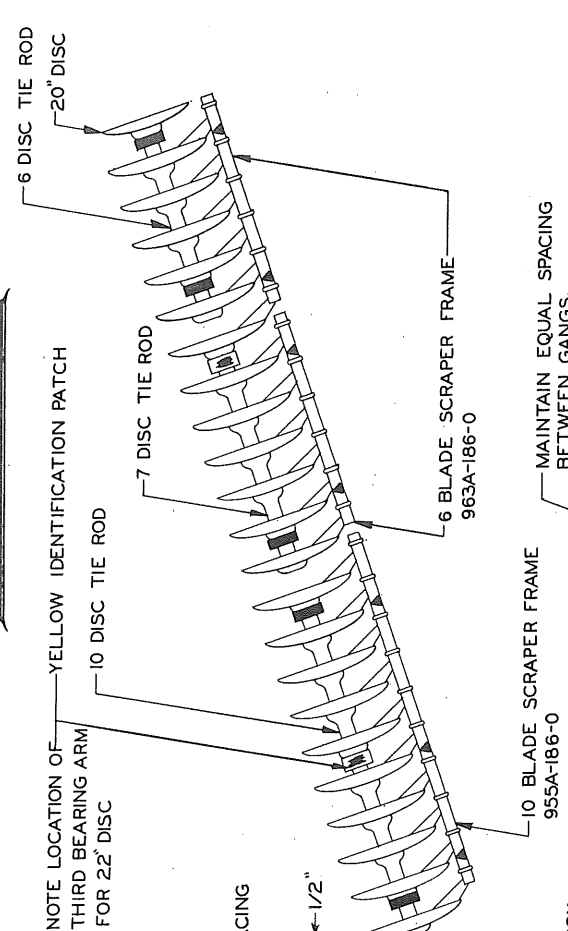
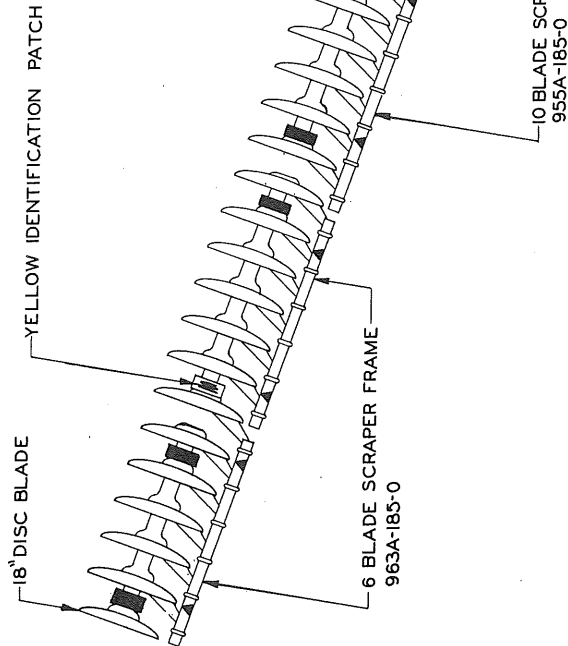


MODEL 963A

DISC GANG AND SCRAPER PLACEMENT

LEFT SIDE SHOWN WITH
20" DISC

RIGHT SIDE SHOWN WITH
22" DISC



APPROX. SETTING 14"

9 DISC TIE ROD

10 BLADE SCRAPER FRAME 955A-186-0

MAINTAIN EQUAL SPACING BETWEEN GANGS.

7 DISC TIE ROD

18" CUT OUT DISC

18" DISC BLADE

20" DISC BLADE

7 BLADE SCRAPER FRAME 963A-183-0

7 BLADE SCRAPER FRAME 963A-195-0

8 BLADE SCRAPER FRAME 959A-185-0

7 BLADE SCRAPER FRAME 963A-184-0

7 BLADE SCRAPER FRAME 963A-196-0

8 BLADE SCRAPER FRAME 959A-186-0

10 BLADE SCRAPER FRAME 955A-186-0

6 BLADE SCRAPER FRAME 963A-186-0

7 DISC TIE ROD

6 DISC TIE ROD

20" DISC

20" DISC BLADE

18" DISC BLADE

18" CUT OUT DISC

BEARING ARM LOCATION

SCRAPER BRACKET LOCATION

NOTE: SCRAPER PART NO. INCLUDES BLADES AND FRAMES ONLY.

NOTE: PLACE LONG SCRAPER FRAMES ON OUTSIDE REAR GANGS. FRAMES ARE LONGER TO ACCOMMODATE ADDITION OF EXTENSION TRASH BARS.

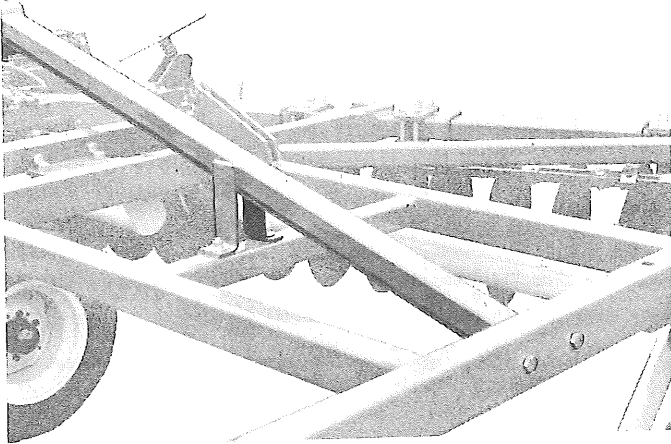


Figure 32

Attach the wing locks to the wing frame members. Refer to the parts section to determine the correct position for the model being assembled.

Models 952A to 955A bolt in the two rear mounting holes and Models 956A to 959A bolt in the two front holes. Models 960A through 963A attach as shown in Figure 32. Be sure to mount the wing locks in the correct location for your model.

TUBE TYPE SCRAPER GROUP ASSEMBLY

Turn back to the placement drawing that pertains to the model being assembled. Check the length of the front and rear scraper tubes and place them behind the appropriate gang. Check the quantity and location of scraper brackets (Figure 33) for each gang beam and attach them to the gang beams loosely. The blade edges should be approximately 1/8" from the concave side of the disc blade. Adjust the position of the brackets if they interfere with the scraper blade adjustments, then tighten all scraper bracket bolts.

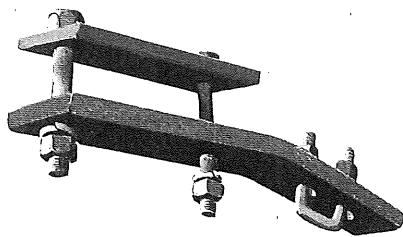
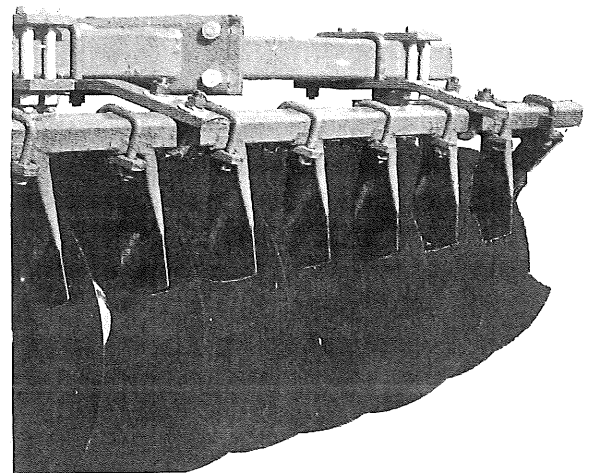
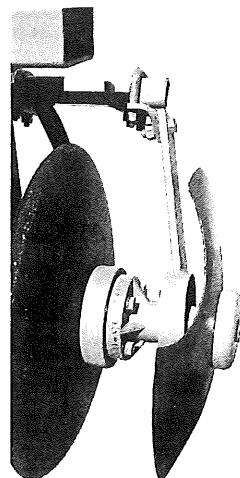


Figure 33

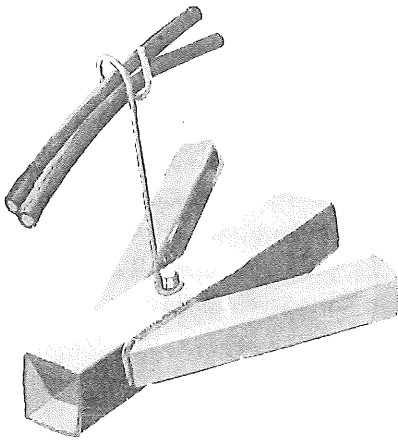
EXTENSION SCRAPER BAR ASSEMBLY

Figure 34 shows one of the loop type scrapers around the center of the extension spool and bolted to the end of the scraper tube on the right rear gang. The 3 notched disc blades may be bolted to the extension spools at this time.



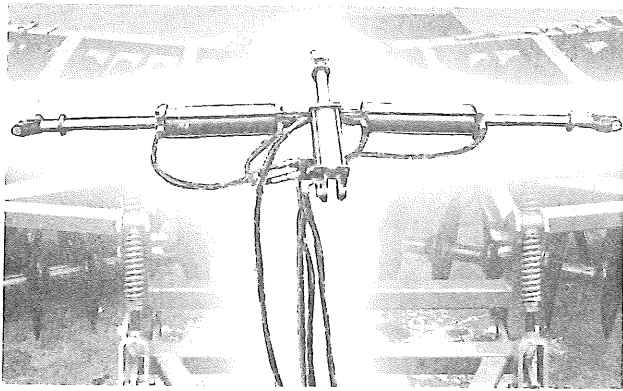
Hydraulics

Figure 36 shows the hose carrier mounted to the tongue.



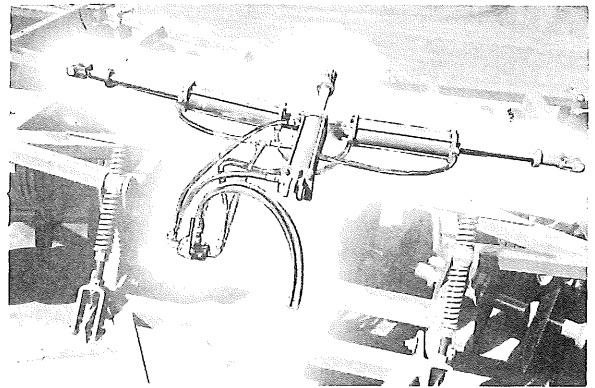
36

Figure 37 shows the hydraulic cylinder and hose arrangement for tractors with dual couplers. See the line drawing for assembly.

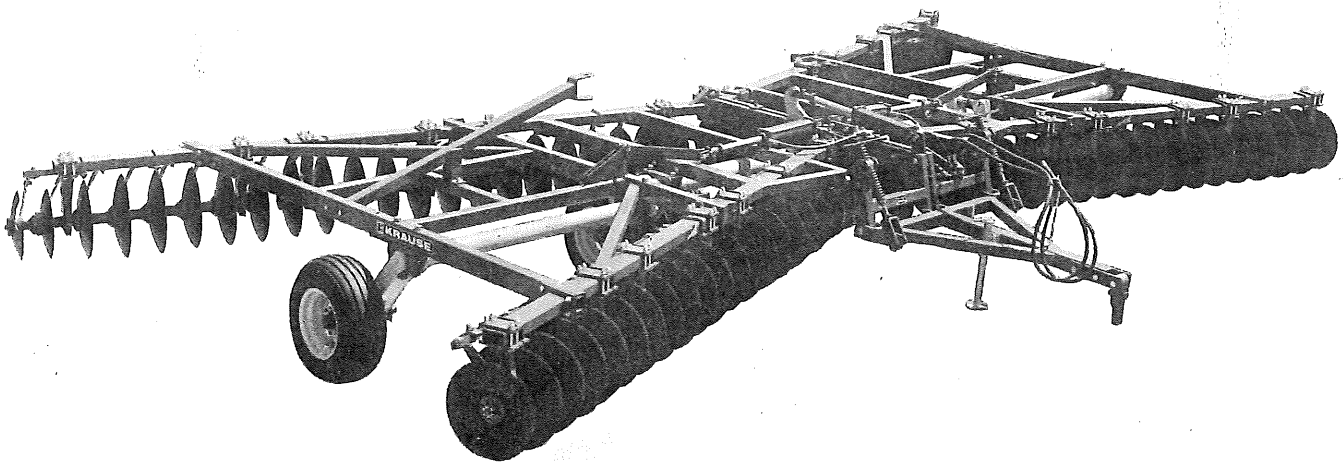


37

Figure 38 shows the hydraulic cylinder and hose arrangement for tractors with single couplers. Note the selector valve. See the line drawing for assembly.



38



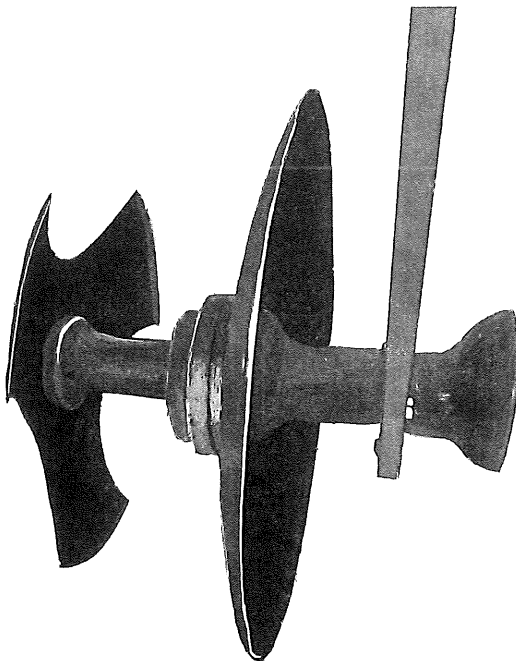
39

A Complete Flex-Wing Tandem Disc

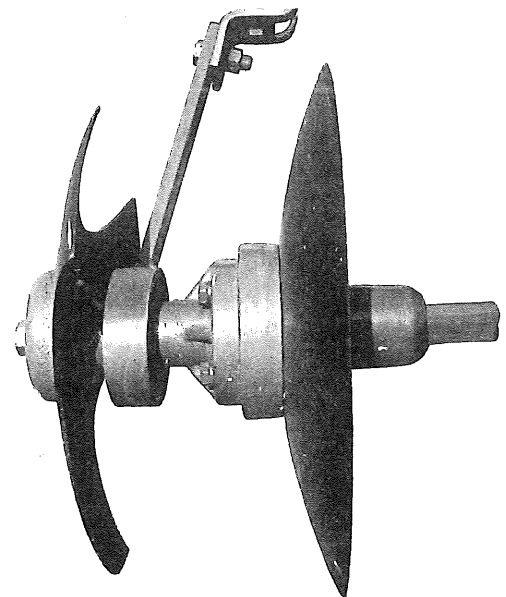
Accessories



▲ 40
Figure 40 shows the hydraulic stroke control rings used on all depth control cylinders.



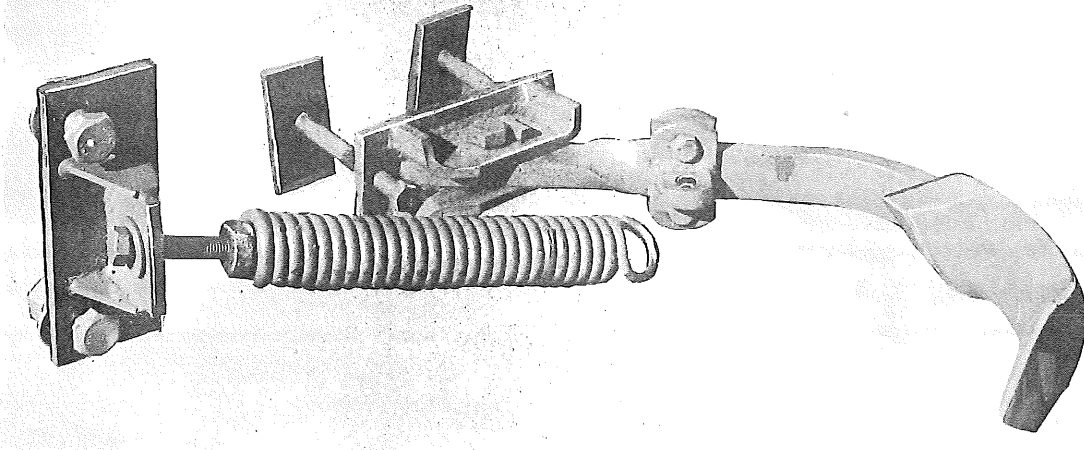
▲ 42
Figure 42 shows the extension spool assembly for mounting a feathering disc blade to the disc gang section.



▲ 43
Figure 43 shows the scraper for the extension spool and disc. Note that when the cut-out disc is used, the scraper is centered between discs.

Accessories

(CONTINUED)



44

Figure 44 is a spring loaded center point. The spring center point is used in areas composed of rock and stumps that could cause damage to the standard center point.

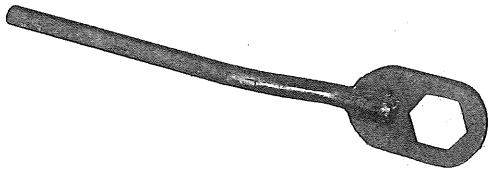


Figure 45 shows a tie rod wrench designed to permit safer and easier tie rod nut adjustments.

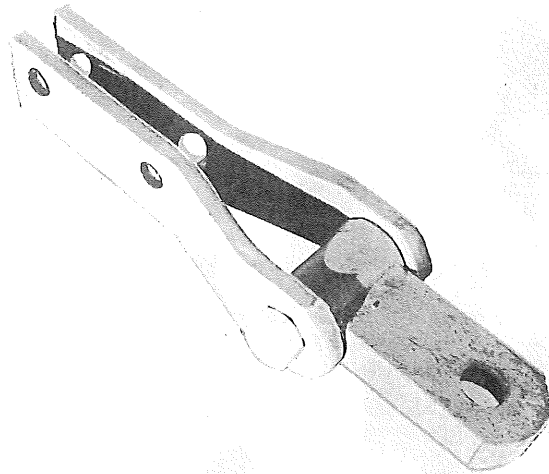
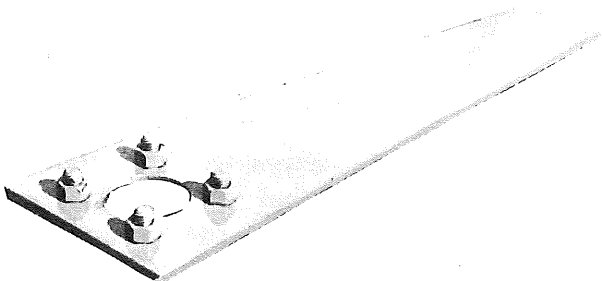


Figure 46 is the rear hitch assembly.



47

Figure 47 shows a tie rod holder. This holder is a tool that can be used during assembly or disassembly of the disc gang sections. The holder bolts to the large end washer and prevents the tie rod from rotating while tightening or removing the tie rod nut.

FLEX GANG SECTION

The following section illustrates a general method for assembling and adjusting the Flex Gang models of the Krause Flex Wing Tandem Disc Harrow models. You should know the model number of the unit before assembling and whenever making reference to this manual.

The basic self-supporting frames and attaching parts are the same as the standard models in the previous sections. The gang assemblies, trash bar, and scraper assemblies are different and are clearly defined in this section with special placement drawings and parts lists to reflect these variations.

The right and left side of the unit is determined by looking from the back of the unit toward the direction of travel.

Assemblers should disregard any yellow part numbers. Use only the black part numbers for correct identification and location of parts.

SPECIFICATIONS

The flex gang models 967, 968 and 969 tandem disc harrows have been designed with special assemblies to permit them to be used in rocky soil conditions.

These models feature a new shock absorbing bearing arm design. Heavy duty scrapers are standard on all models, or trash bars may be used as an option in place of the scrapers.

This supplement manual must be used in conjunction with the 952A-2 Owner's Manual to obtain complete information for assembly, operation and repair parts list. This section contains a placement drawing for each flex gang model that reflects flex gangs, scrapers and trash bar locations.

 This safety alert symbol reflects important safety messages in the manual and on the machine. When you see this symbol carefully read the message that follows. Be alert to the possibility of personal injury.

SIZES

MODELS	967	968	969
TOTAL NO. OF DISC BLADES LESS EXTENSIONS	76	84	92
SPACING	8	8	8
DISC BLADE SIZE 	20or22"	20or22"	20or22"
ASAE CUT WIDTH	24' 10"	27' 1"	30'
CUT WIDTH CENTER SECTION	12'	12'	12'
CUT WIDTH WING SECTION	6' 5"	7' 6"	9'
WHEEL SPACING BASIC SECTION	88/128"	88/128"	88/128"
WHEEL SPACING WING SECTION	240"	280"	320"
WHEEL SIZE	15X10	15X10	15X10
TIE ROD SIZE	1-1/2"	1-1/2"	1-1/2"
HYD. CYL. SIZE BASIC UNIT 	4X16	4X16	4X16
HYD. CYL. SIZE WING LIFT 	3X16	4X16	4X16
APPROX. FOLDED WIDTH	16' 9"	16' 9"	16' 9"

REMEMBER;

You will obtain better penetration and less blade breakage at lower field speed.

Field speed should not exceed 5 M.P.H. in rocky soils.

 Transport or road speed should not exceed 15 M.P.H.

Inflate all tires to 35 P.S.I.

Check wheel bolts for tightness before transport or field use.

Check disc gang tie rods for tightness during the first day of use, and periodically there after.

 Never attach a hydraulic cylinder rod end unless you are sure the system is full of oil and free of air.

 Grease all fittings before each days operation.

▲ 20", 7 gage disc blades are standard.
22", 7 gage disc blades are optional.

● If tractor pressure is low use next size larger cylinder.

ASSEMBLY FOR FLEX GANG MODELS

FRAMES

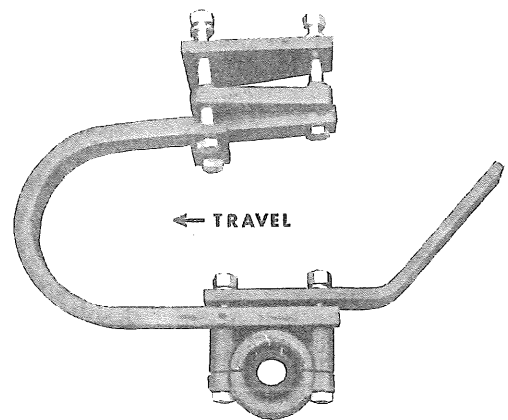
The initial assembly instructions for the basic, self-supporting frames of these models may be obtained from the standard model Assembly Section, pages A1 thru A8 and the parts lists of the **952 A -2**. Refer to this section when the basic unit is ready for disc gang assemblies.

DISC GANGS

Before starting the disc gang assembly, turn to the placement drawings, pages F3 thru F8, that pertain to the model being assembled. Note that there are two drawings for your model. One drawing will reflect your model with optional trash bars and the other will show your model with scrapers. These drawings tell you where a tie rod is located, how many blades and bearing arms are on each tie rod and where the trash bar or scraper brackets are located.

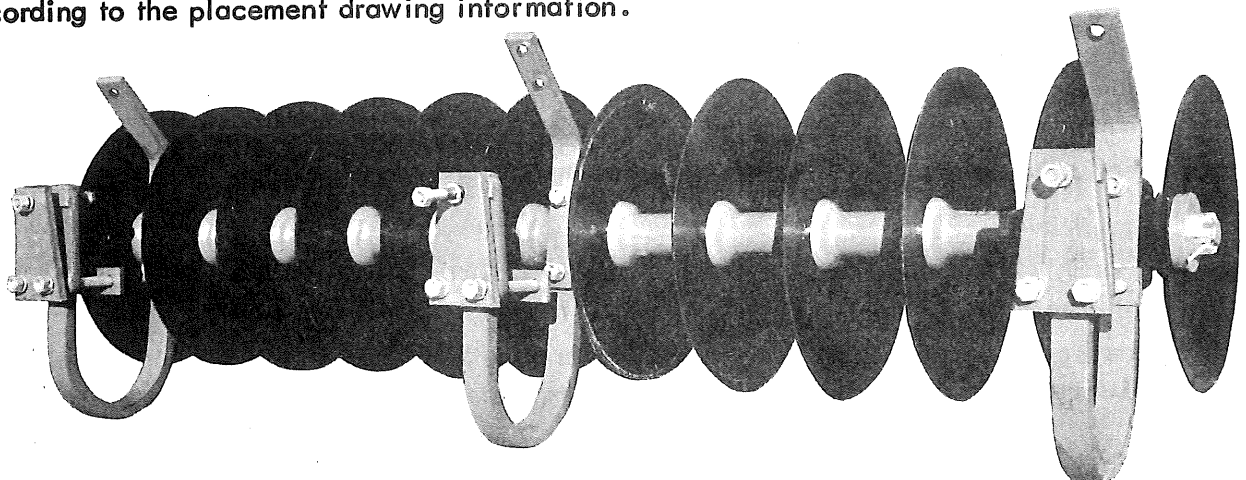
FLEXIBLE BEARING ARMS

Figure 1 shows a flexible bearing arm. Note the direction of travel and the bracket that has been attached to the arm with the bearing housing bolts. It is safer to attach the brackets to the arms at this time in assembly, than after the gangs have been attached to the beams. **NO NOT** torque the two bearing bolts until trash bar assembly is complete. The brackets will determine the location of each bearing arm on a gang assembly, as there are rights, lefts and possible center brackets.



DISC GANG ASSEMBLY

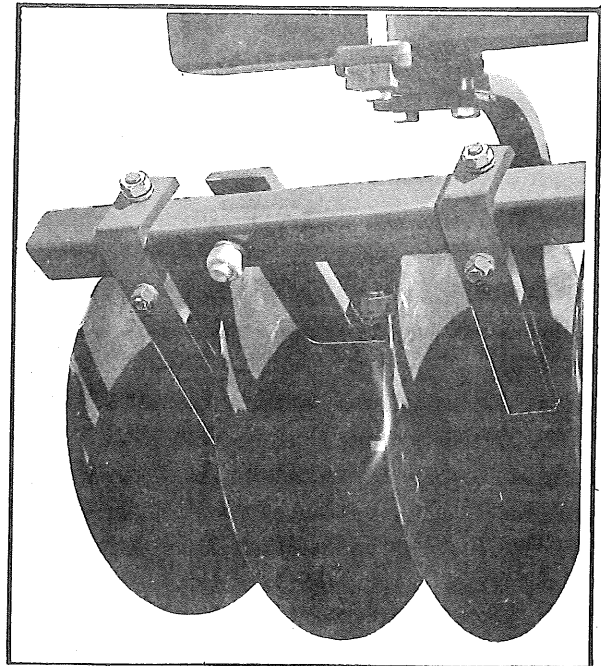
The same procedure for disc gang assembly may be used as described on pages A8 and A9, however, you must pay special attention to the attachment of the bearing arm during assembly. Know the direction of travel for each gang as you assemble it, and be sure the bracketed bearing arms are correctly located. Figure 2 shows a typical flex gang assembly ready to be attached to the frame. The bearing arm locations and the taper blades have been assembled to the tie rod according to the placement drawing information.



When all gangs have been assembled, attach them to the frames of the unit. Attach the front gangs first to prevent a balance problem. The initial settings for adjusting and tightening gangs on the frames at the correct location can be found on the placement drawings.

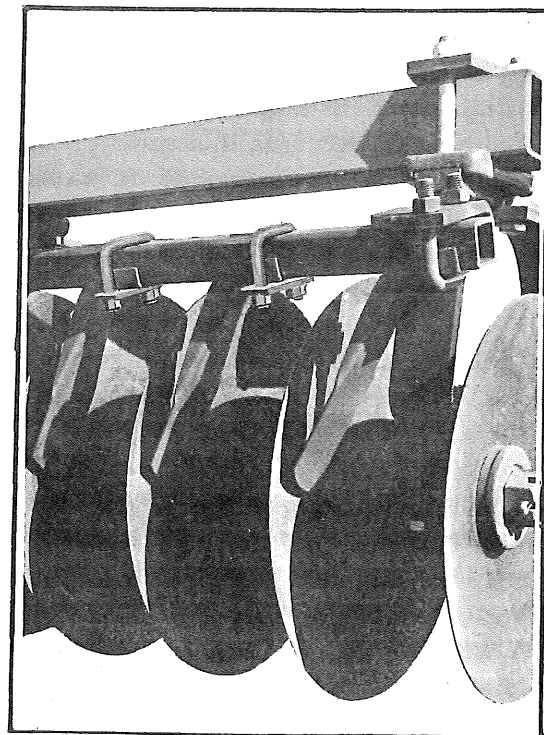
TRASH BARS

Figure 3 shows trash bars attached to a left rear gang. Separate the trash bars and place them behind the correct gangs. Place the necessary bolts, spacers and etc. on the frame just in front of each bracket for trash bar frame attachment. Raise one end of the frame and bolt it to the back of the end bracket. **DO NOT** tighten. Loosely attach a spacer and clamp plate in the bottom hole of the center bracket on the front side. Raise the frame up and over the bracket, resting on the spacer. Bolt the loose end of the clamp plate and a second spacer in the top hole. Attach the remaining end of the frame to the last bracket in the same manner as the first. Tighten all bolts. **DO NOT** forget the two bolts holding the bearing housing and bracket to the bearing arms.



SCRAPERS

Figure 4 shows scrapers attached to a right front gang. The brackets should have been attached to the bearing arms during gang assembly. Tighten the bearing housing casting bolts. Separate the scraper frames, and place them behind the correct gangs. Loosely attach the bracket clips to the brackets and raise the scraper frames under the clips. Attach the frames to the clips with U-bolts. Shift the frames so the scraper blades touch the disc blades. Place a scraper blade between the bracket clip U-bolt and bottom of the scraper frame. Tighten the bracket clip U-bolts but **DO NOT** compress the lock washers. Turn the disc gang to make sure the scraper blades touch the disc blades, but do not restrict the rotation. When the blades are positioned, tighten the frame in place. **NOTE:** Some scraper blades may require individual adjustment. This may be accomplished by loosening the scraper blade U-bolt nuts and tapping the blade into position.



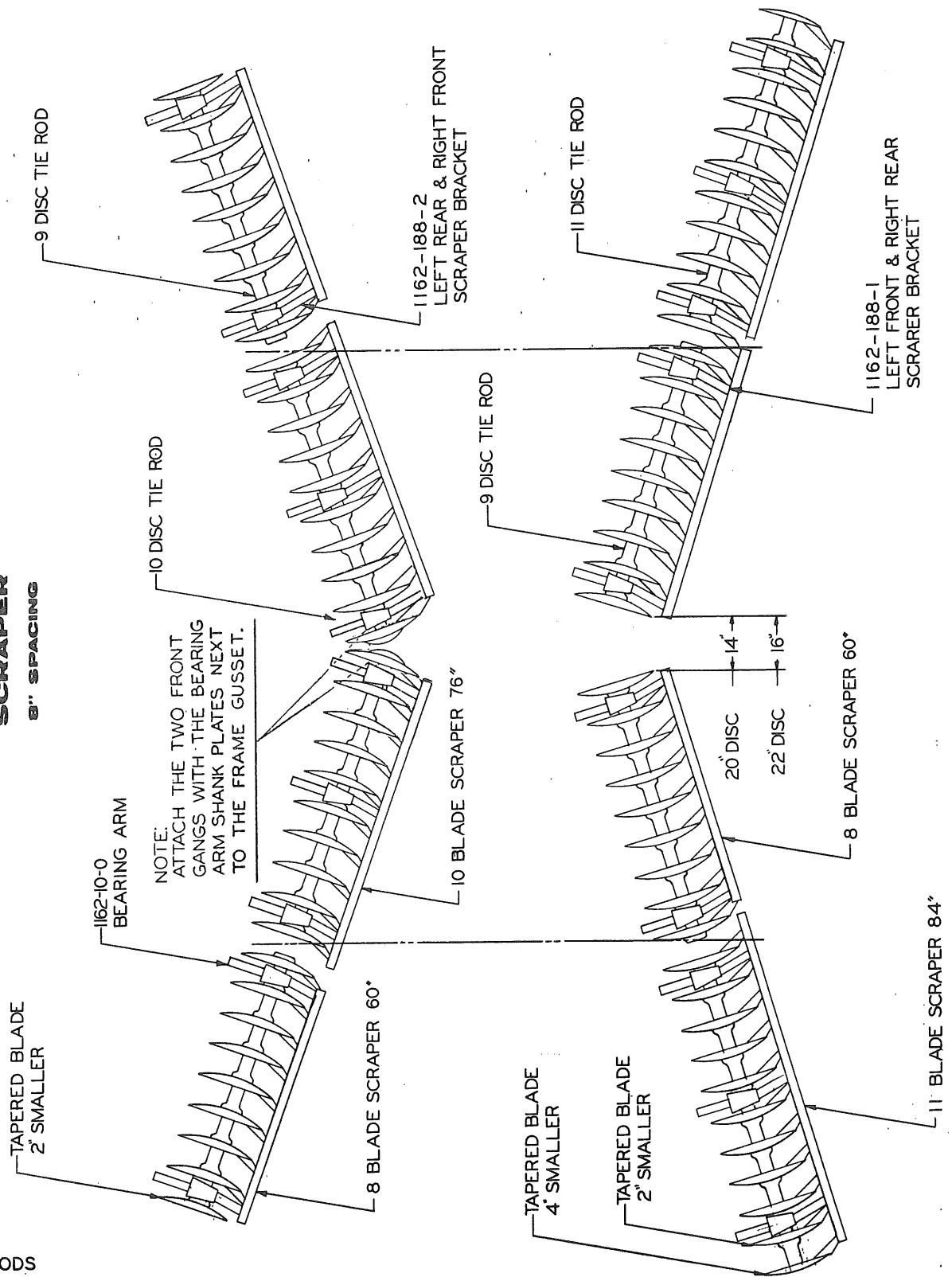
HYDRAULICS

The information for hydraulic cylinder and hose attachment are the same as described on Pages A17.

IMPORTANT

Place all red reflectors, Krause decals, wing caution and implement safety decals on the unit as shown in the parts section P, after the assembly is complete.

MODEL 967 **SCRAPER** **8" SPACING**



TIE RODS

SPACING	No. OF DISC	COLD ROLL No.	LENGTH
8"	9	1053-78-0	68-5/8"
8"	10	1056-70-0	76-3/4"
8"	11	1280-85-0	84-1/2"

TRASH BAR
8" SPACING



SPACING	No. OF DISC	COLD ROLL No.	LENGTH
8"	9	1053-78-0	68-5/8"
8"	10	1056-70-0	76-3/4"
8"	11	1280-85-0	84-1/2"

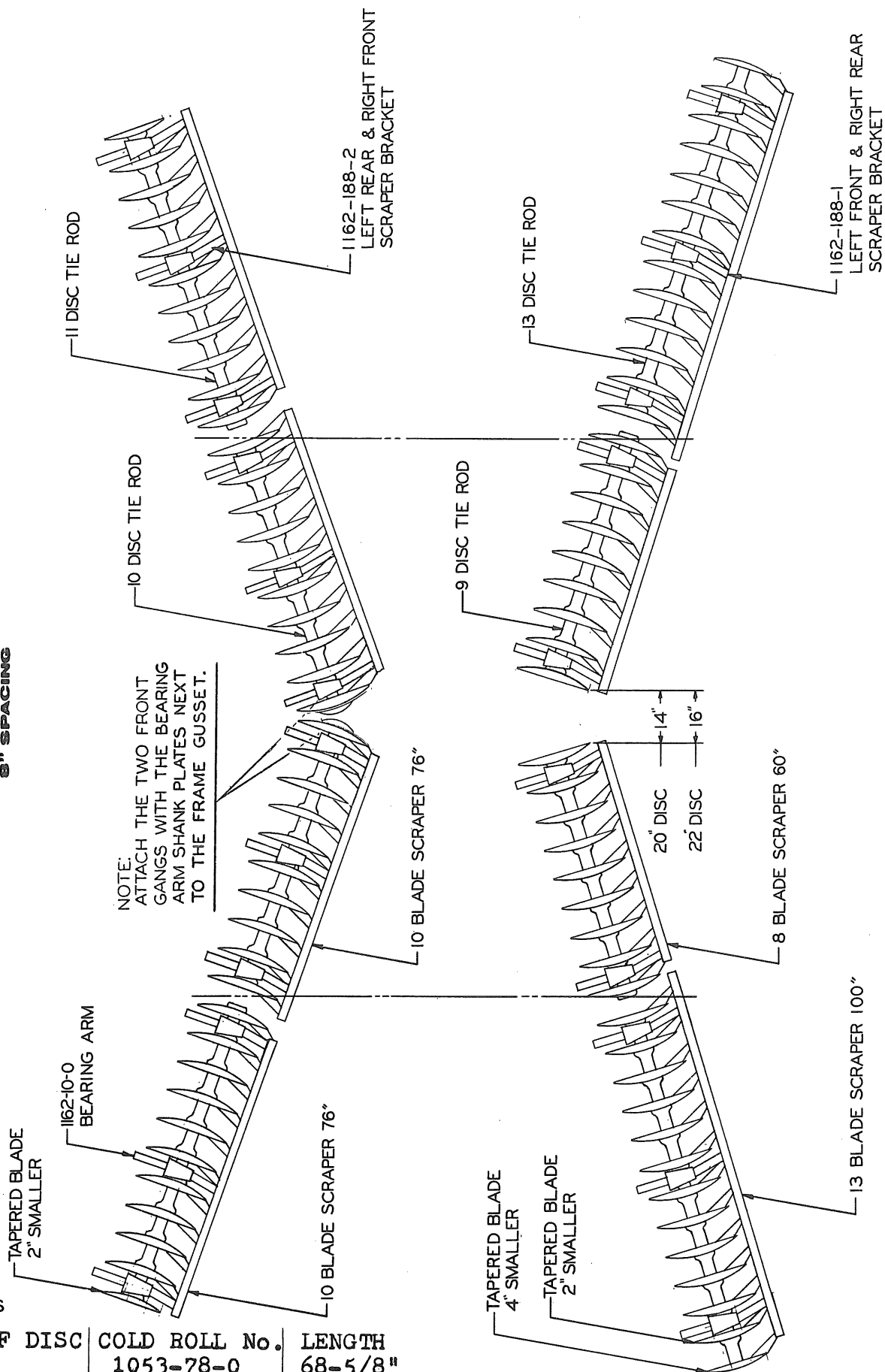
MODEL 968

SCRAPER

8" SPACING

TIE RODS

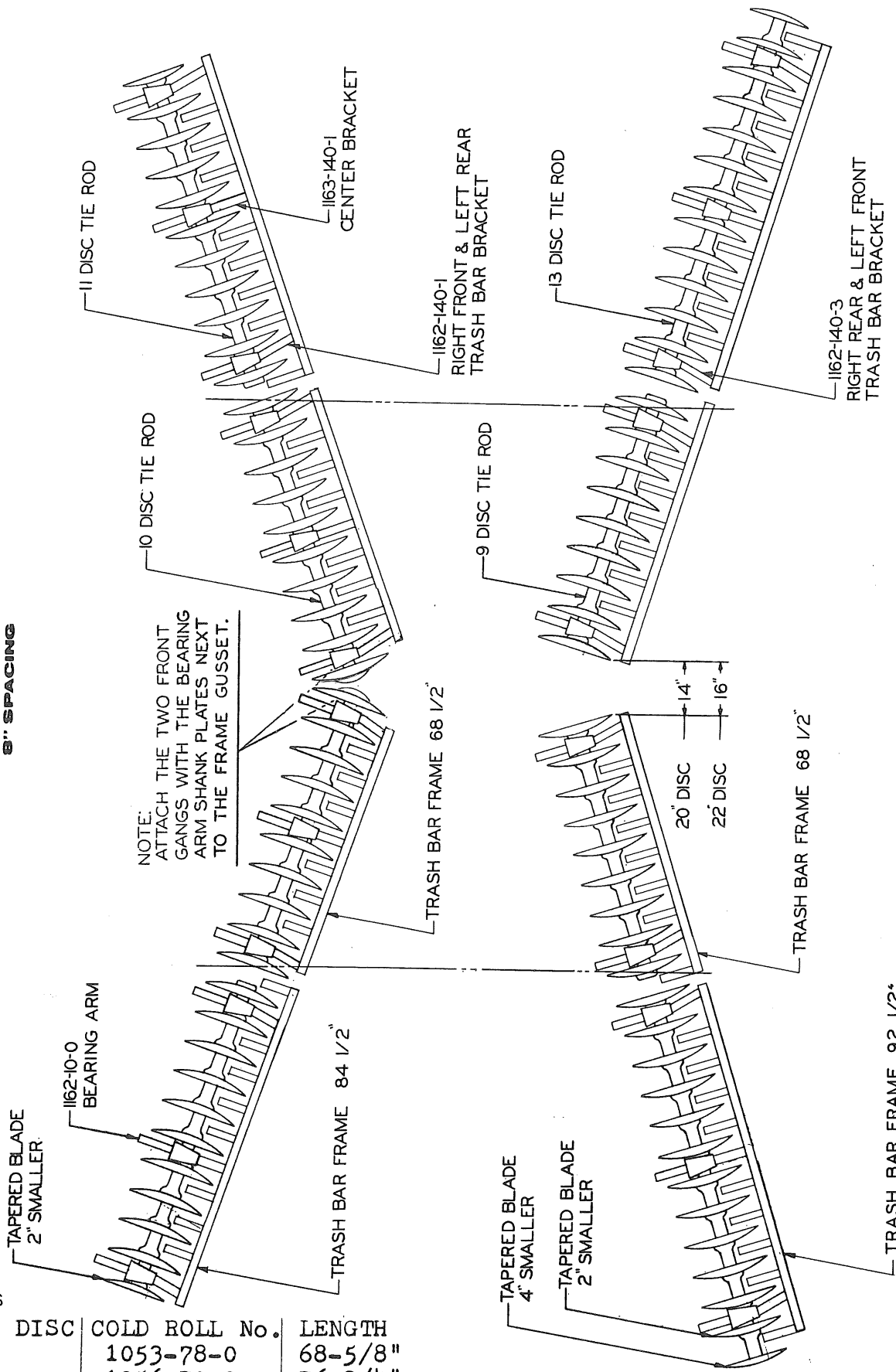
No. OF DISC	COLD ROLL No.	LENGTH
9	1053-78-0	68-5/8"
10	1056-70-0	76-3/4"
11	1280-85-0	84-1/2"
13	1283-80-0	100-3/4"



MODEL 968

TRASH BAR

8" SPACING



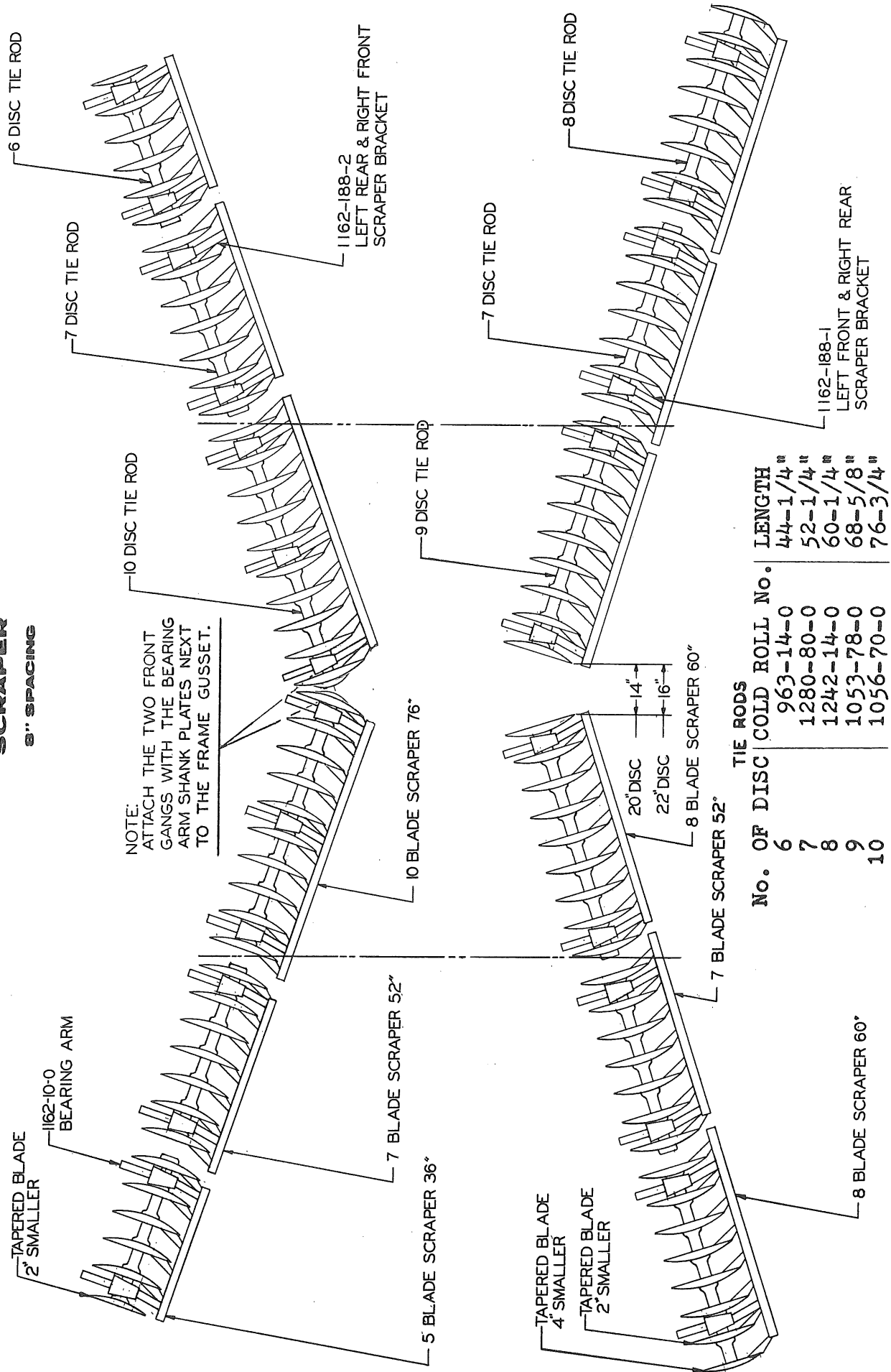
TIE RODS

No. OF DISC	COLD ROLL No.	LENGTH
9	1053-78-0	68-5/8"
10	1056-70-0	76-3/4"
11	1280-85-0	84-1/2"
13	1283-80-0	100-3/4"

MODEL 969

SCRAPER

8" SPACING

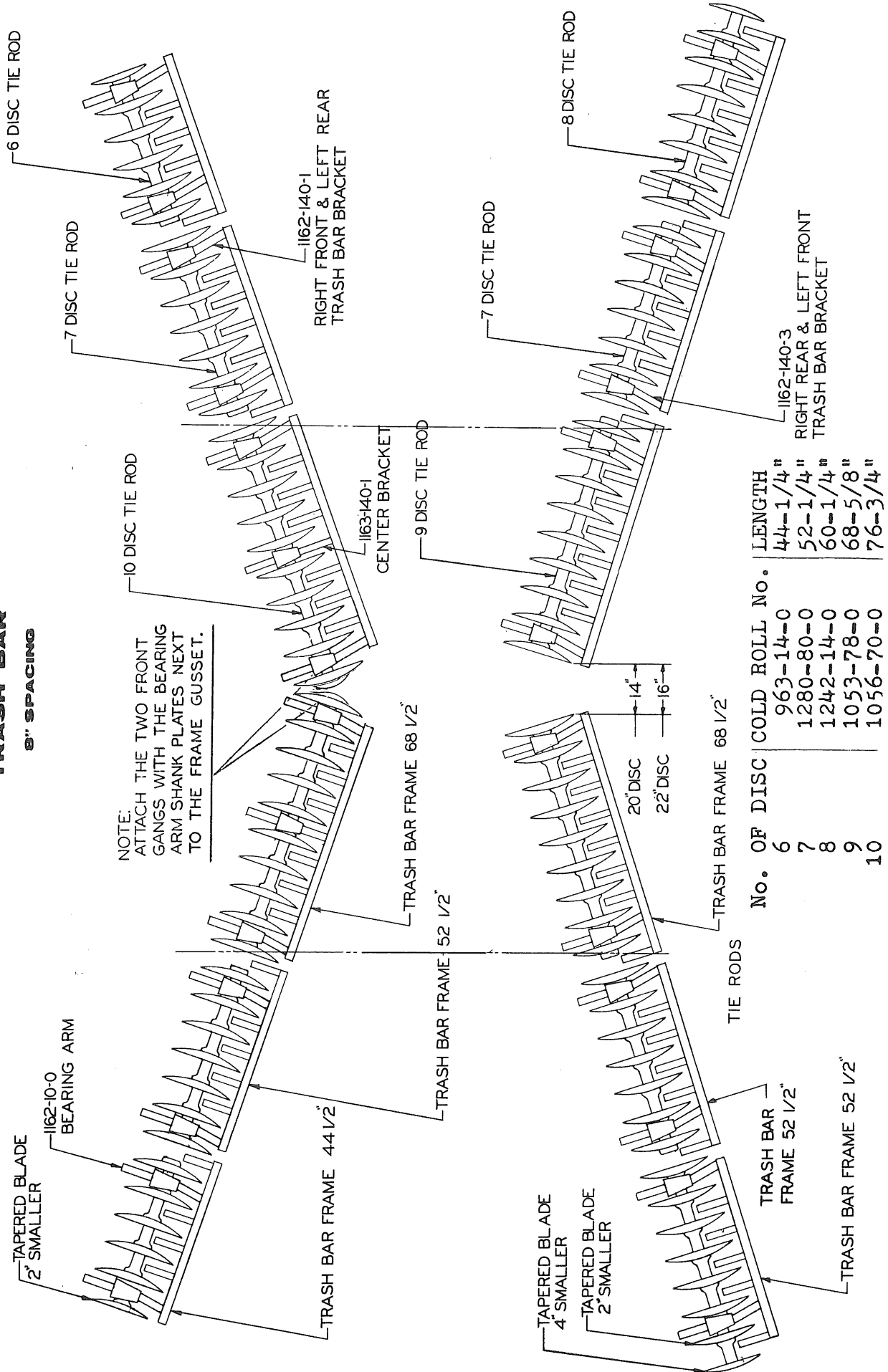


TIE RODS		
No. OF DISC	COLD ROLL No.	LENGTH
6	963-14-0	44-1/4"
7	1280-80-0	52-1/4"
8	1242-14-0	60-1/4"
9	1053-78-0	68-5/8"
10	1056-70-0	76-3/4"

MODEL 969

TRASH BAR

8" SPACING



2/72

F10

1½" TIE ROD

Length _____

The rod number does not include nut or pin.

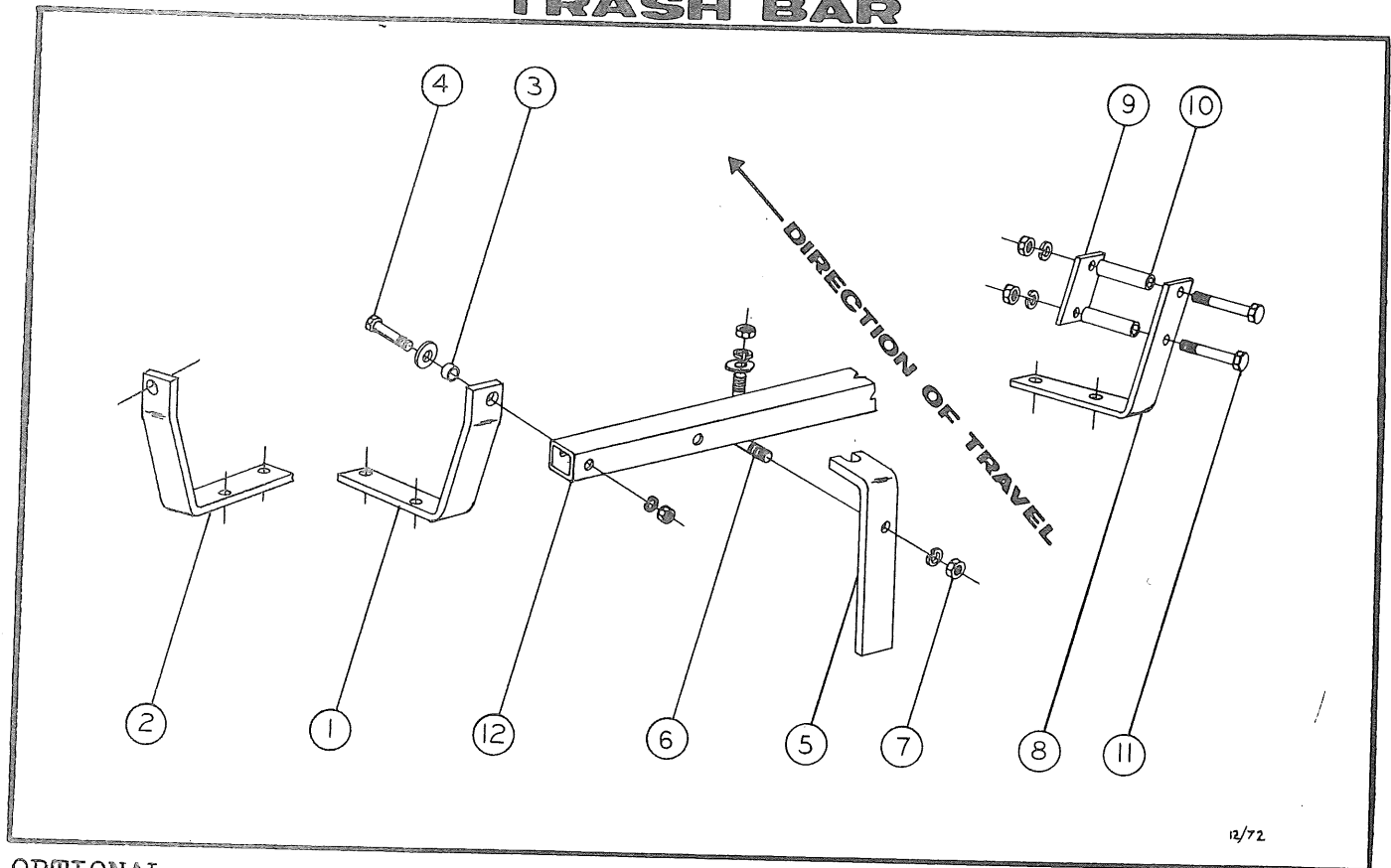
60

Diagram illustrating the components of a disc blade assembly:

- SHORT HALF SPOOL
- SPACER SPOOL
- DISC BLADE
- LARGE END WASHER
- BEARING ARM
- LONG HALF SPOOL

3/73
R 10-74

TRASH BAR



12/72

OPTIONAL PART LOCATION Bracket to bearing arm
FOR MODELS - All flex gang

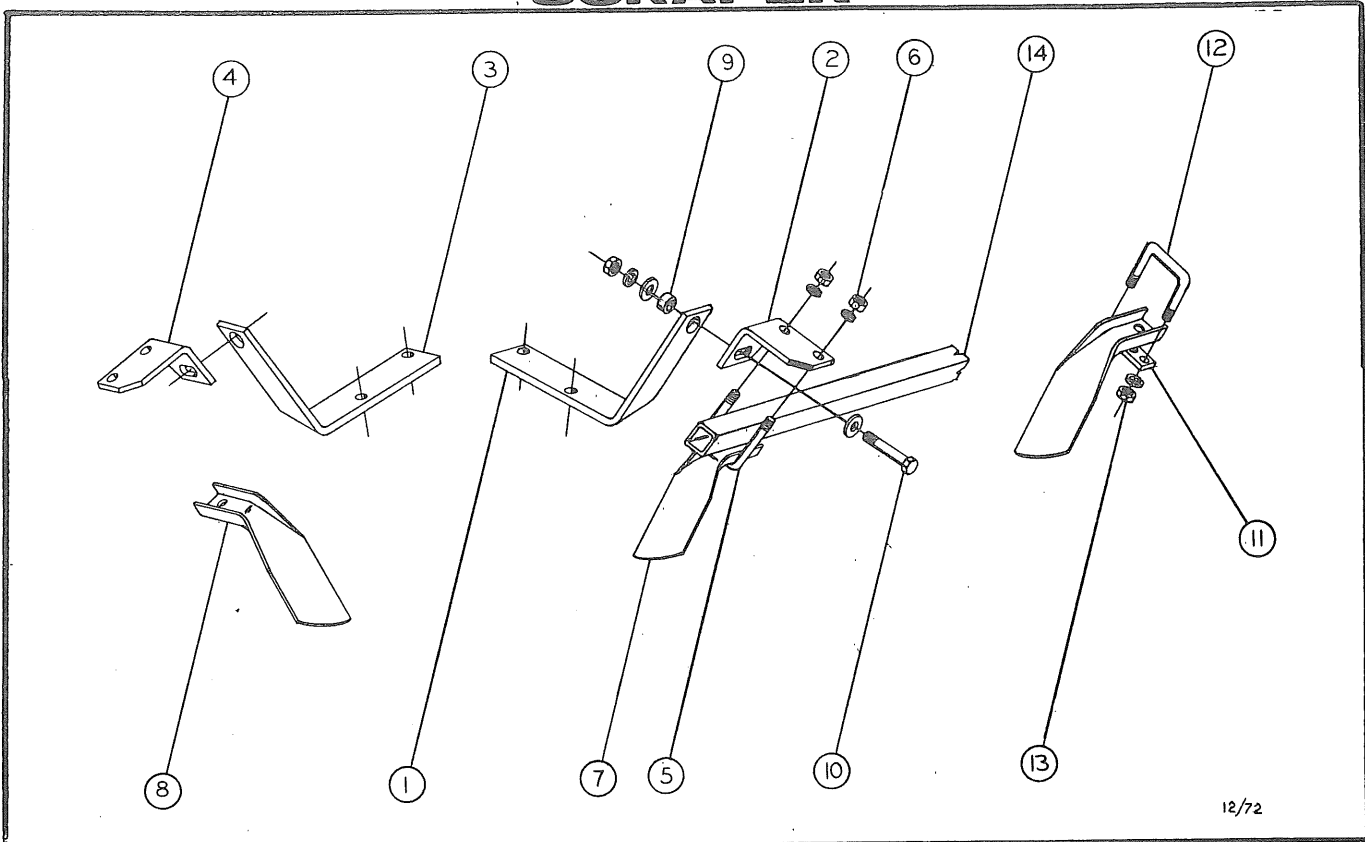
ITEM	PART NUMBER	DESCRIPTION	NO. REQ.
1	1162-140-1	Left rear & right front trash bar bracket	PLACEMENT DRAWING will reflect loc. & quantity req.
2	1162-140-3	Right rear & left front trash bar bracket	
3	1162-140-2	Bushing	
4	3/4nc X 4	Cap screw, lock washer, 2flt washers, nut	
5	922-136-1	Trash bar	
6	950-20-4	L-Bolt	
7	5/8nc	Lock washer, 2flt washers, nut	
8	1163-140-1	Center bracket	
9	1163-140-2	Clamp plate	
10	1163-140-3	Spacer	
11	1/2nc X 4	Cap screw, lock washer, nut	

FRAMES

ITEM	PART NUMBER	DESCRIPTION	NO. REQ.
12	922-134-1	Trash bar at 44-1/2"	PLACEMENT DRAWING WILL REFLECT LGTH. AND LOCATION
	1159-134-1	" " " 52-1/2"	
	1160-134-1	" " " 68-1/2"	
	1161-134-1	" " " 76-1/2"	
	1162-134-1	" " " 84-1/2"	
	1163-134-1	" " " 92-1/2"	

10-73

SCRAPER



STANDARD PART LOCATION Scraper bracket to bearing arm
FOR MODELS = All flex gang

ITEM	PART NUMBER	DESCRIPTION	NO. REQ.
1	1162-188-2	Left rear & right front scraper bracket	PLACE MENT DRAWING will reflect loc. & quantity req.
2	1162-186-2	Left rear & right front bracket clip	
3	1162-188-1	Right rear & left front scraper bracket	
4	1162-185-2	Right rear & left front bracket clip	
5	950-138-2	U-Bolt	
6	5/8nc	Lock washer, nut	
7	388-186-2	Scraper blade(left rear & right front	
8	388-185-2	Scraper blade(right rear & left front	
9	1162-140-2	Bushing	
10	3/4ncX 2-1/2	Cap screw, lock washer, 2flt washers, nut	
11	1483-286-1	Clamp	
12	1162-185-3	U-Bolt	
13	1/2nc	Lock washer, nut	

FRAMES

ITEM	PART NUMBER	DESCRIPTION	NO. REQ.
14	922-185-1	Scraper frame at 36"	PLACE MENT DRAWING WILL REFLECT LGTH. AND LOCATION
	1159-185-1	" " " 52"	
	1159-183-1	" " " 60"	
	956A-185-1	" " " 76"	
	1162-183-1	" " " 84"	
	1164-183-1	" " " 100"	

TRACTOR SAFETY

1. Be physically and mentally ready to operate farm equipment.
2. Be sure employees are sufficiently trained to operate machinery.
3. Never use machinery until all guards and safety devices are in place.
4. Do not smoke before, during or shortly after refueling.
5. Mount a fire extinguisher and first-aid kit to the tractor.
6. Check the tractor wheel bolts before and during roading operations.
7. Hitch drawbar loads low.
8. Do not wrap chain or cable around the axle.
9. Weight the front of the tractor to balance a heavily-burdened drawbar.
10. Use a Slow-Moving Vehicle emblem on roadways.
11. Use a protective cab or roll bar.
12. Be courteous to highway travelers.
13. Do not permit children to ride on farm equipment.
14. Proceed slowly on rough or slippery ground or roadways.
15. Reduce speed when crossing slopes and going up or down hill.
16. Reduce speed when approaching ditches and corners.
17. Be alert to avoid hidden obstacles during operation.
18. Do not labor the tractor under loads better suited to a larger power unit.
19. Always place the tractor out of gear and set the brakes before dismounting.
20. Turn off the power before reaching or poking around machinery.
21. Contain your temper. Anger multiplies the prospect of accidents.
22. Release all hydraulic pressure before shutdown periods.
23. Never leave the keys in an unattended tractor.
24. Keep small children away from idle farm equipment.

SAFETY FIRST

Most accidents are caused by the failure of some individual to observe simple and fundamental safety rules. For this reason, accidents can be prevented by recognizing the cause of the accident and doing something about it before the accident occurs.

Regardless of the care used in the design and construction of equipment, there are many points that cannot be completely safeguarded without interfering with accessibility and efficient operation.

1. Read the owners manual.
2. Attach safety decals and reflectors.
3. Always use a safety chain of tensile strength equal to gross weight of the implement when roading.
4. Use a slow-moving emblem when roading.
5. Comply with state and local laws.
6. Do not walk on gangs or frames.
7. Never stand with feet under soil penetrating devices.
8. Don't clean, oil or adjust an implement with the tractor running.
9. Check wheel bolts before and during transport.
10. Always use wing locks and road locks to hold raised positions.
11. Do not stand between the implement and tractor.
12. Do not road an implement over 15 miles per hour.
13. Never permit riders on implements or tractors.
14. Always store a winged implement with the wings down.
15. Do not stand on or straddle a tongue when unhitching.
16. Connect the road lock(s) or block up the frame before working on or under an implement.
17. Always use authorized parts.
18. Never modify an implement without conferring with an implement representative.
19. The prospect of accidents can be multiplied by anger.
20. Never leave a power unit unlocked.
21. Don't forget your tractor safety rules.
22. Never remove implement locking pins until hydraulic cylinders and lines are full of oil and free of air.

NEVER ATTEMPT TO CLEAN, OIL, OR ADJUST A MACHINE WHILE IN MOTION